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- ◆ Iomega Zip Drive and 3 x100MB cartridges
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- ◆ US Robotics 56KB Modem



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- ◆ 64MB High Performance SDRAM
- ◆ 512KB Internal Cache
- ◆ 8.4GB ATA-33 Hard Drive
- ◆ STB Velocity nVidia AGP Video Card with 4MB SGRAM video memory
- ◆ 17" Colour SVGA Monitor (0.28 dot pitch, 15.9" Viewable Area)
- ◆ 3 PCI, 1 ISA, 1 PCI/ISA Shared and 1 AGP Expansion Slots
- ◆ 14/32X CD-ROM Drive
- ◆ Yamaha XG Software Wavetable Sound and Altec Lansing ACS 90 speakers
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- ◆ 3.5" Floppy Drive
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- ◆ Microsoft Windows NT 4.0
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**CAD USER MAGAZINE SEPT. 1997**

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- ◆ 8.4GB ATA-33 Hard Drive
- ◆ STB Velocity nVidia AGP Video Card with 4 MB SGRAM video memory
- ◆ **NEW-High Performance 19" Colour Monitor (0.26 dot pitch, 17.9" Viewable area)**
- ◆ 3 PCI, 1 ISA, 1 PCI/ISA Shared and 1 AGP Expansion Slots
- ◆ 14/32X CD-ROM Drive
- ◆ Yamaha XG Software Wavetable Sound (speakers optional)
- ◆ Mid-Sized Desktop Chassis
- ◆ Microsoft Office 97 Small Business Edition

DELL FINANCE 3 YEAR RENTAL: £13.00 PER SYSTEM, PER WEEK, EXCLUDING DELIVERY AND VAT  
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- ◆ Intel Pentium II Processor 266MHz
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- ◆ 64MB High Performance SDRAM
- ◆ 512KB Internal Cache
- ◆ 4.3GB ATA-33 Hard Drive
- ◆ STB Velocity nVidia AGP Video Card with 4MB SGRAM video memory
- ◆ 17" Colour SVGA Monitor (0.28 dot pitch, 15.9" Viewable Area)
- ◆ 3 PCI, 1 ISA and 1 PCI/ISA Shared and 1 AGP Expansion Slots
- ◆ 14/32X CD-ROM Drive
- ◆ Yamaha XG Software Wavetable Sound (speakers optional)
- ◆ Mid-sized Desktop Chassis
- ◆ Microsoft Office 97 Small Business Edition

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- ◆ Intel Pentium Processor with MMX™ technology 233MHz
- ◆ Intel 430VX PCiset
- ◆ 32MB High Performance SDRAM
- ◆ 512KB Pipeline Burst Cache
- ◆ 4.3GB ATA-33 Hard Drive
- ◆ STB Nitro 3D™ GX 64-bit PCI graphics card with 4MB EDO Video RAM
- ◆ 17" colour SVGA monitor (0.28 dot pitch, 15.9" Viewable Area)
- ◆ 3 PCI, 2 ISA and 1 PCI/ISA Shared Expansion Slots
- ◆ 14/32X CD-ROM Drive
- ◆ Sound Blaster 16 with WaveSynth wavetable and Altec Lansing ACS 90 speakers
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- ◆ 32MB High Performance SDRAM
- ◆ 512KB Pipeline Burst Cache
- ◆ 4.3GB ATA-33 Hard Drive
- ◆ STB Nitro 3D™ GX 64-bit PCI Graphics Card with 4MB EDO Video RAM
- ◆ 15" Colour SVGA Monitor (0.28 dot pitch, 13.75" Viewable Area)
- ◆ 3 PCI, 2 ISA and 1 PCI/ISA Shared Expansion Slots
- ◆ Sound Blaster 16 with WaveSynth wavetable
- ◆ 14/32X CD-ROM Drive
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## ARE

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- ◆ 32MB SDRAM
- ◆ 512KB High Performance Level II Cache
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- ◆ 20X CD-ROM Drive
- ◆ Integrated 16-bit Sound Blaster Pro-Compatible with internal microphone and Speakers
- ◆ Extra High Performance 128-bit PCI Graphics Controller with 2MB Video RAM
- ◆ Infrared communication port (IrDA 1.1 compatible)
- ◆ Zoomed Video Support
- ◆ 2 Cardbus PCMCIA type II slots
- ◆ Touchpad with 2 buttons
- ◆ Lithium Ion "Intelligent" Battery
- ◆ USB Port
- ◆ Microsoft Office 97 Small Business Edition
- ◆ Executive Carry Case

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PC ADVISOR SEPT. 1997

## DELL INSPIRON 3000 1665T

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## DELL INSPIRON 3000 166T

(As per £1,699 spec. but with 64MB SDRAM and 3.3GB Hard Drive.)

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3COM PCMCIA 3C589 Ethernet Card

**£151.58 inc VAT**

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Additional 8MB RAM

**£97.50 inc VAT**

Inspiron Part Replicator

**£151.57 inc VAT**

## DELL INSPIRON™ 3000 233XT

- ◆ Intel Pentium Processor with MMX technology 233MHz
- ◆ 13.3" XGA TFT Screen (1024x768)
- ◆ 64MB SDRAM
- ◆ 512KB High Performance Cache
- ◆ 4.0GB ATA-33 EIDE Hard Drive
- ◆ 20X CD-ROM Drive
- ◆ Extra High Performance 128-bit PCI Graphics Controller with 2MB Video RAM
- ◆ Infrared communication port (IrDA 1.1 compatible)
- ◆ Zoomed Video Support
- ◆ 2 Cardbus PCMCIA type II slots or 1 type III
- ◆ Integrated Synaptics Touchpad
- ◆ USB Port
- ◆ Lithium Ion "Intelligent" Battery
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DELL FINANCE 3 YEAR RENTAL: £24.68 PER SYSTEM, PER WEEK, EXCLUDING DELIVERY AND VAT.

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- ◆ 32MB EDO ECC RAM (Upgradeable to 512MB)
- ◆ 512KB Secondary Cache
- ◆ Integrated PCI Ultra/Wide SCSI controller
- ◆ 2GB Ultra/Wide SCSI Hard Drive
- ◆ Dell 15" Ultrascan™ Colour Monitor (13.75" Viewable Area)
- ◆ 6 Expansion slots: 3 PCI, 3 EISA
- ◆ Intel Pro 10/100 PCI Network card
- ◆ 12/24X SCSI CD-ROM
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- ◆ 3 year Next Business Day On-Site Service as standard

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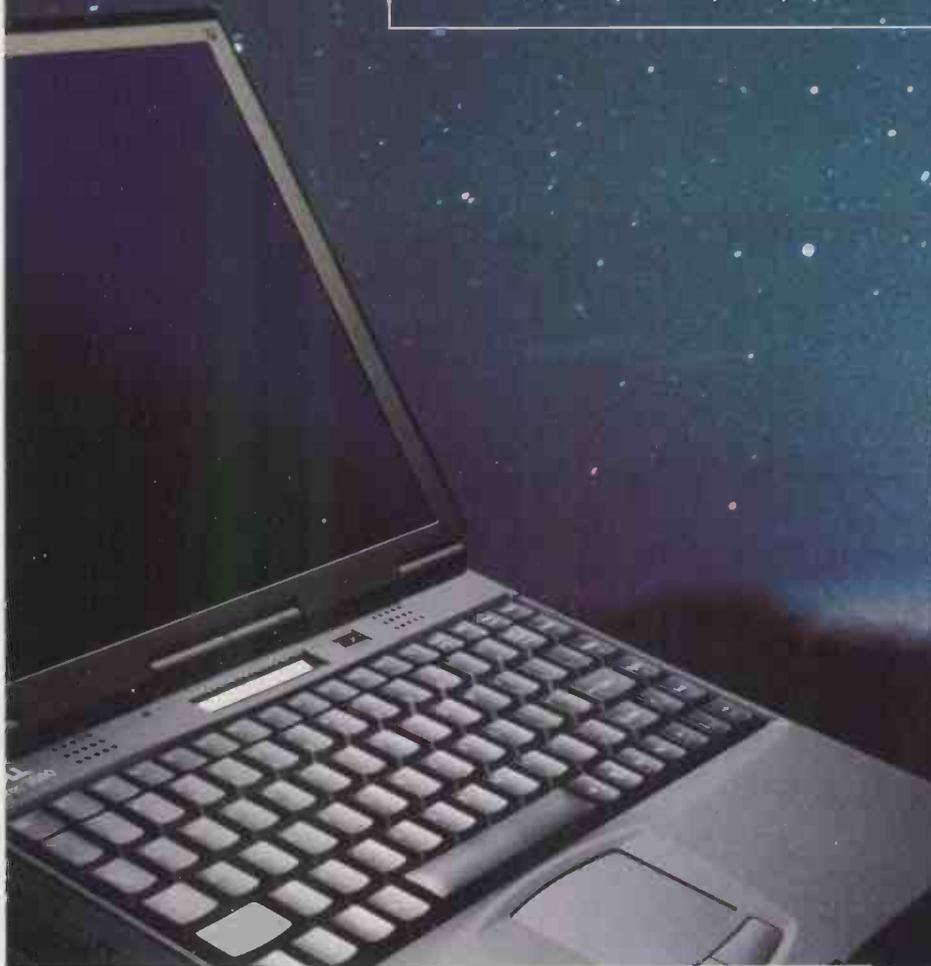
Dell provides an extensive range of multiprocessor servers, factory built to your specifications



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...*"Our top honours go to the Dell Inspiron M233XT. Its overall performance is noteworthy... a solid candidate as a desktop replacement... at an affordable price and without a serious weight penalty"*... Windows Magazine November 1997 Recommended

...*"Dell's Inspiron 3000 M233XT truly offers the very best in portables. Internally and externally, the features of this notebook make it one hot buy you should not pass up"*... Laptop Buyer's guide & Handbook November 1997 Best Buy



## DELL INSPIRON™ 3000 233XT

- ◆ Intel Pentium® Processor with MMX™ Technology 233MHZ
- ◆ 13.3" XGA TFT Screen (1024x768)
- ◆ 32MB RAM
- ◆ 256KB High Performance Cache
- ◆ 3.3GB ATA-33 EIDE Hard Drive
- ◆ 20X CD-ROM Drive
- ◆ Extra High Performance 128-Bit PCI Graphics Controller - with 2MB Video RAM
- ◆ Infrared communication port (IrDA 1.1 compatible)
- ◆ Zoomed Video Support
- ◆ 2 Cardbus PCMCIA type II slots or 1 type III
- ◆ Integrated Synaptics Touchpad
- ◆ Microsoft® Office 97 Small Business Edition
- ◆ Executive Carry Case

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PC Advisor January 1996 - Best Buys for 1996 - Best Power PC

## DELL DIMENSION™ XPS D300 MT

### ◆ Intel Pentium® II Processor 300MHz

- ◆ Intel 440LX AGPset
- ◆ 64MB High Performance SDRAM
- ◆ 512KB Internal Cache
- ◆ 6.4GB ATA-33 EIDE Hard Drive
- ◆ **STB Velocity nVidia AGP Video Card with 4MB SGRAM video memory**
- ◆ **NEW-High Performance 19" Colour monitor (0.26 dot pitch 17.9" Viewable Area)**
- ◆ 3 PCI, 1 ISA, 1 PCI/ISA Shared and 1 AGP Expansion Slots

### ◆ DVD Multimedia Subsystem: DVD-ROM Drive and Decoder Card plus Dolby Surround Sound

- ◆ AWE 64 Sound and Altec Lansing ACS495 Dolby speakers
- ◆ Mini Tower Chassis
- ◆ US Robotics 56Kbps Modem
- ◆ Microsoft® Office 97 Small Business Edition

DELL FINANCE 3 YEAR RENTAL: £15.22 PER SYSTEM, PER WEEK, EXCLUDING DELIVERY AND VAT.

DELL DIMENSION XPS D300 MT

**£1,849 (£2,207.83 INCLUDING DELIVERY & VAT)**



January sales? Flogging old stock? No way. At Dell, New Year - and all year - means leading edge technologies. For example some of our systems include a Digital Versatile Disc (DVD). The hottest and latest systems brought to you faster and more affordably than the competition. The feature-rich Dell Dimension XPS D300MT above is the supreme example. Already highly acclaimed and the fastest performance system within the Dimension range, it won 22 awards in the UK alone in 1997. Need we say more? Open the gatefold and take a closer look at the stars...

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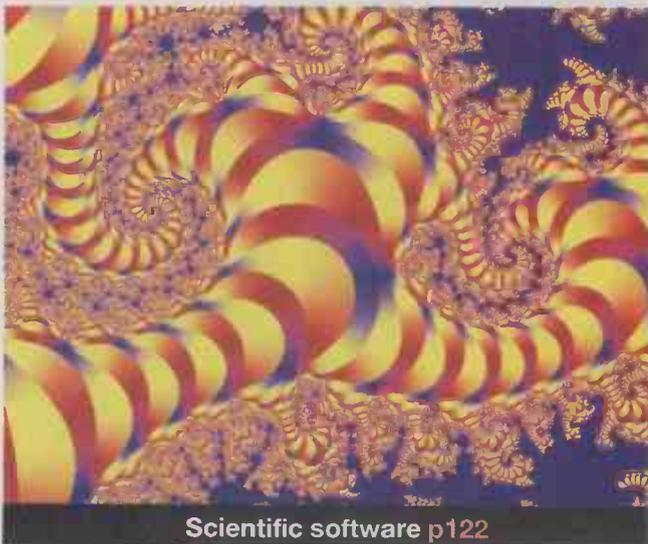
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**DELL®**

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- Intel Pentium® II Processor 233MHz (300MHz Option Available)
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- 64MB EDO ECC RAM (Upgradeable to 512MB)
- 512KB Secondary Cache
- Integrated PCI Ultra/Wide SCSI controller
- 4GB Ultra/Wide SCSI Hard Drive (expandable to 27GB of internal storage)
- 12/24 speed SCSI CD-ROM
- Intel Pro 10/100 PCI Network Card
- 6 Expansion Slots: 3 PCI, 3 EISA
- Mini Tower Chassis (Rackmount option available)
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**FINALIST BEST SERVER**  
PC MAGAZINE TECHNICAL INNOVATION AWARDS 97



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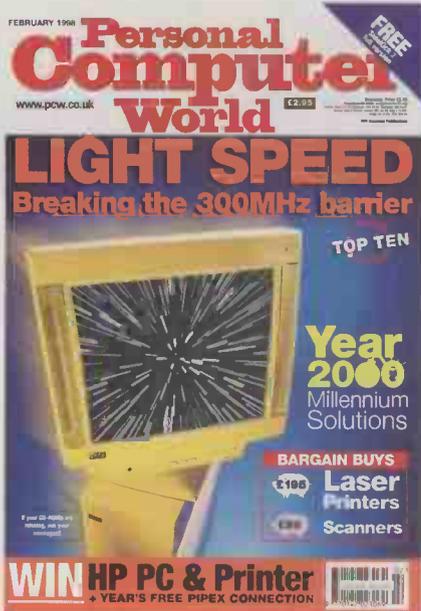
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VNU BUSINESS PUBLICATIONS

# Which is the best computer vendor? One which gives value for money or one with the happiest customers?

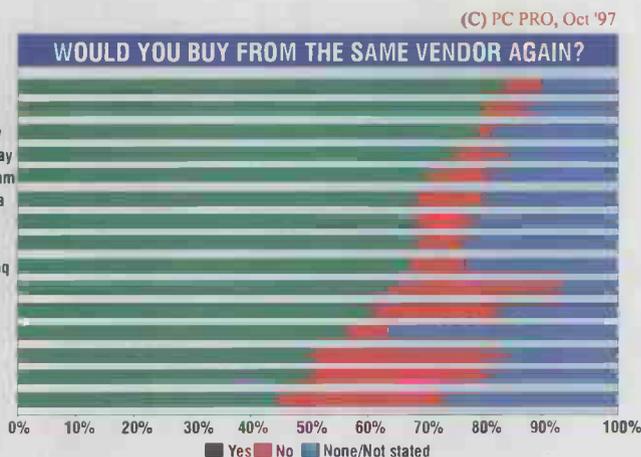
## With Dan you get both.

Dan Technology has enjoyed enormous success in polls conducted this year by the nation's leading computer magazines. In recent months, we've won top honours from the readers of PC Direct, PC Magazine, PCW, What PC? & PC Pro.

Our products, after-sales service, overall reliability — all have always received more than enough votes to place Dan in the first rank of PC vendors. But this year we've done even better. Two of the leading magazines asked their readers the most important question of all: would they buy from the same vendor again? We're proud and delighted to reproduce the answers here.

The August 1997 Service and Reliability Survey in PC Magazine revealed that

Dan users were more likely to stick



with their current PC vendor than owners of any other brand. (Incidentally, this is the third year in a row that Dan has headed PC Magazine's brand loyalty league table.) PC Pro's 1997 PC Awards (October issue) confirmed the trend.

The performance difference between two makes of PC is often measured in fractions of a second. These polls clearly show that service, support and overall reliability are just as important to users as speed, if not more so.



Ask yourself, are you really satisfied with your PC supplier when it comes to these matters? If the answer is no, give us a call and we'll show you why our users keep voting us Number One. If the answer is yes, you're probably a Dan owner already.



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In fact, with over 200 ready-to-use templates covering every conceivable task, nothing takes long to master with ClarisWorks Office.

Its short learning curve means lower training and support costs. And that means a steep productivity curve for you – regardless of whether you work in a Windows 95, Windows NT 4.0 or a Macintosh environment.

And, of course, if you're *already* using the award-winning ClarisWorks 4.0 – 'Best Integrated Package' winner in 1997's What PC? and Software Awards – you'll be keen to upgrade....

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# Editorial

New year, new technology. Whatever you say about the IT industry, it certainly moves at an unhalting pace.

Towards the end of every year is the annual Comdex show in Las Vegas, where the coming year's proposed computer technology is shown off for all to see, touch, enthuse over, and then usually break. Just shy of a quarter of a million developers and marketing types attended last year, along with hassled journalists jostling for the best stories. Our Associate Editor, Clive Akass, braved the casinos and



tacky shows to bring you the hottest news in our Comdex special report in this month's *Newsprint*.

It's very easy to get caught up in all the hype, though. Exhibitors at the Winter 1996 Comdex show assured us that the universal serial bus (USB) and the faster FireWire media interface would be widespread on PCs and peripherals in 1997. But that year hardly saw a mass adoption of USB, and the FireWire front was even quieter.

In the past, much talk followed by a drought of products has typically heralded disaster, with the product or proposed standard disappearing into the obscurity of failed IT. Hopefully, the trend that we are now seeing means there is a lot less of this sort of thing going on.

Products move slowly from development to actual sale because these days, firms cannot afford to make big mistakes. Even though some still slip through the net, in general the time taken is the amount of time needed to get the product right. Take DVD, which, after two years of waiting for various Hollywood distribution agreements, really looks like it is going to take off in 1998.

I genuinely believe that USB and FireWire will finally make it this year, too. When you consider today's ridiculous and confusing situation of having different plugs for almost every device, the simplicity of USB and FireWire just have to take off. It is rather a shame that we could not settle on one truly universal bus.

Finally, it is that time of year again where we ask you to cast your votes in our 1998 PCW Awards. In return for your nominations, we will give one lucky winner £1,000 to spend on PC equipment of their choice. Turn to page 136 to enter, and remember — your votes count!

**Gordon Laing**  
Acting Editor

# Next Month

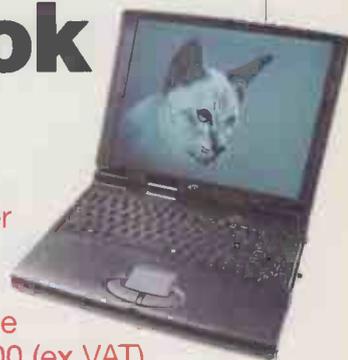


## Mid-range PCs

What's just the business for the home, equally at home with business, and costs below £1,500 ex VAT? A mid-range PC, that's what. Lynley Oram puts them on test.

## Notebook PCs

Portable power has never been so affordable. Adele Dyer and Paul Trueman carry on with the best notebooks for £2,000 (ex VAT).



## Presentation tools

Bin the pointy stick and the blackboard: these days, the best presentations are made with computers. We look at the software and devices designed to help you put your point across.

## Plus...

## Home entertainment

Plugging the PC into your TV may herald a new world of entertainment or annoy the family when EastEnders is on. We look at the bigger picture of convergence in IT and consumer electronics.

**March '98 issue**

■ On sale Thursday 29th January

\* Next month's contents subject to change.

# February **Cover disc**

**Technical Helpline 0891 715929**

Calls cost 50p per minute

Welcome to the February 1998 *Personal Computer World* cover CD-ROM.

## James Bond Interactive Trailer

In the wake of the latest James Bond movie, *Tomorrow Never Dies*, In Chair Viewing presents a fully interactive presentation of the story, the characters and the hardware from the film. There is also an opportunity to see a quality full-screen version of the *Tomorrow Never Dies* film trailer, and if that doesn't keep you going for a while, play an active part in James's mission by getting a coded message to "Q" in a desktop game.

## Playing the competition

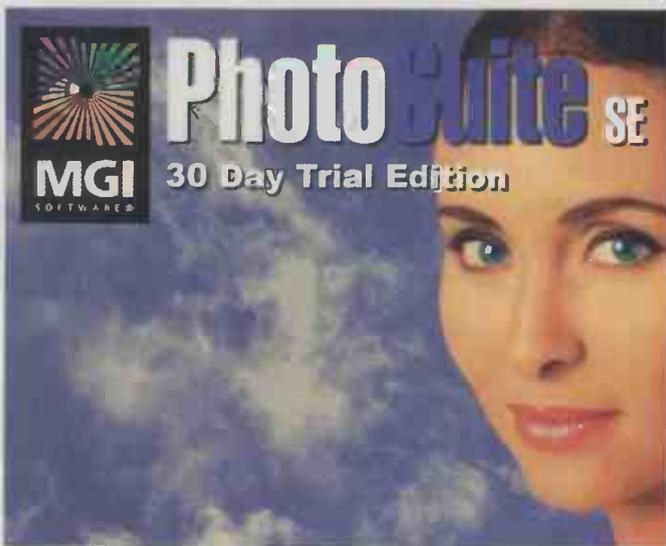
Help Bond get a message through to MI6 using Elliot Carver's satellite system.

Rotate the "CMGN" satellites by rolling over and clicking the rotation arrows. Click the transmission button to send the message from Elliot's HQ [Base 1]. If you have the satellites at the correct angles, the message will be relayed using all the satellites to MI6 [Base 2], where "Q" can decode the information for you.



**PhotolImpact (Windows 95 only)** The complete desktop imaging solution for the web and office, PhotolImpact's WebExtensions technology allows you to create fast, efficient web sites, with animations and dazzling effects. PhotolImpact with WebExtensions provides a set of tools to make imaging for the web and office easy, fast and convenient.

Tomorrow Never Dies: Get your coded message to "Q"



Create wonderful photo effects with this digital image-editing software

## How to use the CD-ROM

Quit existing applications (if you have 16Mb or more of memory you don't have to do this, but will still get better performance if not too many other applications are running). Put the disk into your CD drive:

**Win 95** If you've got Windows 95, the PCW interactive loader will appear on your screen. If your CD doesn't autoloading, go to Start/Run and type in <CD Drive>:\pcw.exe  
**Win 3.1** From Windows Program Manager choose File/Run, then type in <CD Drive>:\pcw.exe and press enter.

### System Requirements

You need a PC with Windows 3.1 or later and a colour VGA display. For best results run it on a Pentium PC with at least 16Mb of memory.

### CD-ROM Problems

The technical helpline is open weekdays from 10:30am to 12:30pm and 1.30pm to 4:30pm, on 0891 715929. Calls cost 50p per minute.

If you experience problems with the CD-ROM, such as a message like "Cannot read from drive D:", please return the disk and a covering note with your name and address and marked "PCW CD FEBRUARY 98" to:

TIB plc  
 TIB House  
 11 Edward Street  
 Bradford  
 BD4 7BH

A replacement disk will be sent to you by post.

**PhotoSuite 8.0** is digital image-editing software which lets you create even more dazzling photo effects with the new Photo Lens Kit, more decorations and more frames. It also provides support for digital cameras and scanners and a photo organiser. There's a Multimedia Library filled with hundreds of professional colour photos, sound effects, music files and animations.

**Sidekick 2.0** This FULL VERSION of Sidekick 2.0 for Windows is one of the best-selling personal organisers ever. Instant productivity and natural ease of use make it the personal software for the individual user. Record and manage all your personal and business information, and your important lists and projects from sales prospects to household inventory. It's all completely customisable so Sidekick works the way you want it to.

You can also try the demo of Sidekick 98, the latest version of the number-one organiser that helps you manage and mobilise all your information.

**Superbase 95** is the relational database with Visual Power. Providing you with the tools you need to get the job done, it is a modern development environment built around a small, fast, efficient and proven database engine and a robust set of tools.

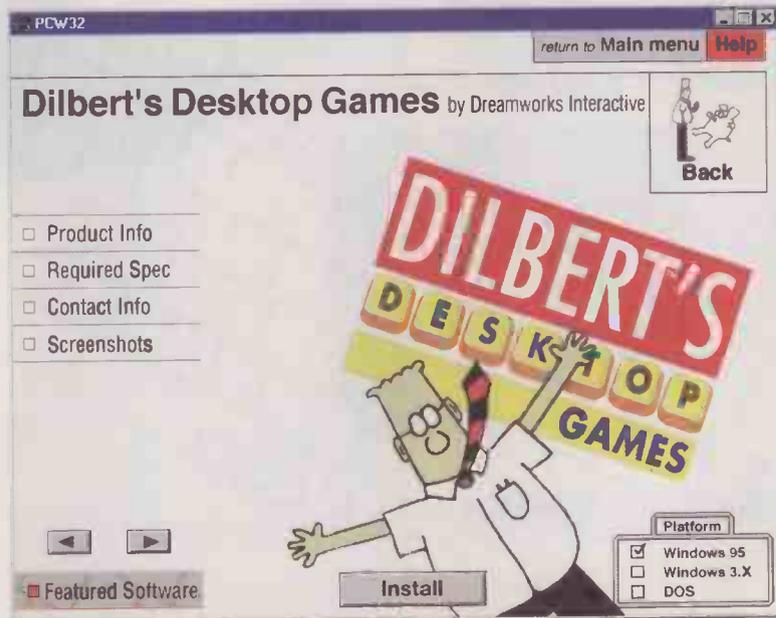
## Featured Games

This month's featured games are: **Dilbert's Desktop Games** Scott Adams' phenomenally popular characters come to

### IMPORTANT NOTICE

The publisher, VNU, has checked the *Personal Computer World* CD-ROM for known viruses at all stages of production, but cannot accept liability for damage caused to your data or your computer system which may occur while using either the disc or any software contained on it. If you do not agree with these conditions, you should not use the disc. It is good practice to run a virus checker on any new software before running it on your computer, and to make regular backup copies of all your important data.

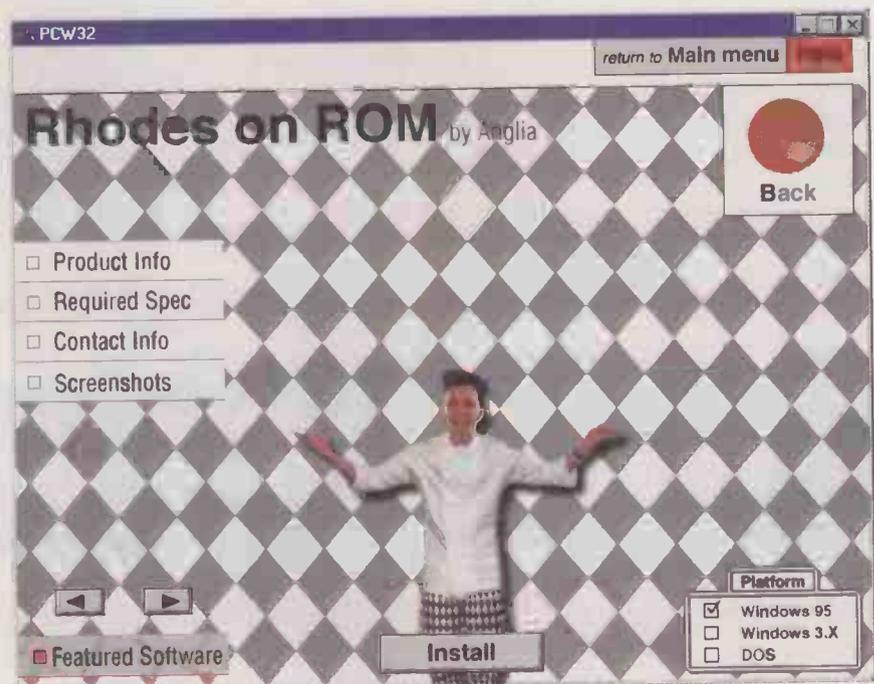
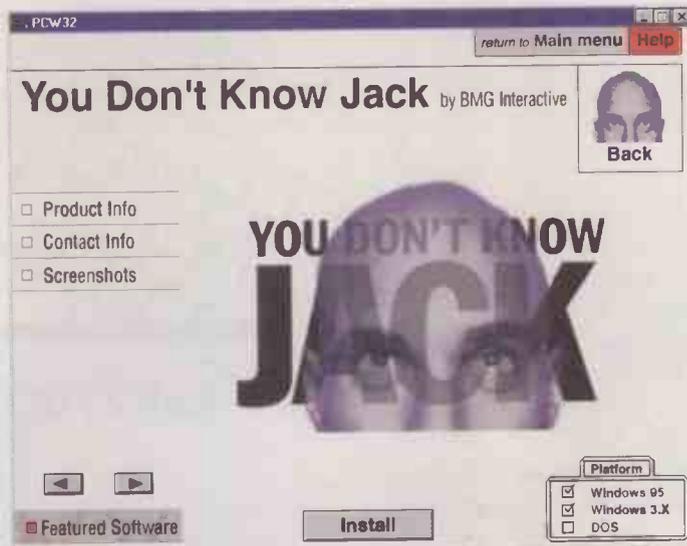
Unless otherwise stated, all the software contained on the CD is for demonstration only. This means that it may be restricted in some way — for example, it may be time-limited or have certain functions disabled.



**Above** Play games with Scott Adams' Dilbert

**Left** This groovy spoof quiz game is lots of fun

**Below** If you can't stand the heat, get Gary Rhodes to lend a helping hand



p16 >



Up-to-date weapons at your disposal in this new flight-sim

life in this hilarious and undeniably fun collection of Dilbert's Desktop Games, including BOSS EVADERS, PROJECT PASS-OFF, CEO SIMULATOR, THE JARGONATOR and more. Full of the irreverent humour of the Dilbert cartoons, this a must for put-upon office workers everywhere.

**Joint Strike Fighter (Windows 95 only)** is the first flight-sim to give simulator fans the opportunity to try out many of the US



## Full working version of Sidekick v2

Sidekick is the best-selling personal organiser software ever, with more than 10 million users around the world. Everyone needs to keep a note of their contacts addresses and telephone numbers and to keep their appointments in a diary. Sidekick obviously offers this, but it also has a lot more to offer besides.

Probably the most useful features are those that let you manage your contacts and information effectively. The cardfiles let you record any kind of data, from personal information like addresses, to the date and chateau of your vintage French wine cellar. A call log system lets you manage your phone calls and recall all the notes you took while on the phone. The View-in-View facility lets you look at your calendar when you are in your contact book and vice versa, and you can merge information into your word processor and spreadsheet.

You can set alarms to remind you to make important phone calls, create to-do lists and note goals. There are backup and restore facilities as well, so if you have a system failure you do not lose all your most precious data.

But perhaps the most compelling reason for using Sidekick is that it is so easy to use. You can be up and running as soon as you have loaded it, and as several PCW reviewers have found, once you have started to use it, you will not want to uninstall it.

**System Requirements** Windows 3.1, 3.11 or 95, 386 or faster, 2Mb RAM, 3Mb hard disk space.



For upgrade prices, please contact: Roderick Manhattan Group 0181 875 4441 [www.rmg.co.uk](http://www.rmg.co.uk)

# NET SOFTWARE.

Every package, every program, starting on p324 in **Direct Buyers World**

military industry's latest weapons still under development. This demo features excellent graphics using the latest 3D technology to render the weapons and closely observed terrains.

## Featured Multimedia

**You Don't Know Jack** A spoof of American quiz shows, this trivia quiz is loud, brash and hilarious nonsense. It refreshes the parts other spoofs cannot reach and takes the artform to the nth degree. You are on an imaginary radio quiz show with quizmaster, musical introductions to questions and "Bronx cheer" buzzers used to answer questions. **Rhodes on ROM TV** cook Gary Rhodes ventures into the world of new media in Rhodes on ROM. This is cooking guaranteed to set your mouth watering and to keep you busy in the kitchen.

### Important notice to readers

The cover CDs for the November issues of *Personal Computer World* and *What PC? and Software* contained a program called Lamb Screen Toy. VNU has been informed that this is commercial software and not available for free use. Please do not download this program onto your system, and if you have, please delete it. Copies of this software may be obtained from Village Centre at [www.villagecenter.co.jp/english/poe.html](http://www.villagecenter.co.jp/english/poe.html)

## Special Notes

The following files, which are referred to in the *Graphics and DTP Hands On* section of the magazine, are not included on the CD: ballofi.jpg, clockfac.jpg, daysky&c.jpg, man.jpg, montage.eps, nightsky.jpg, pic1.eps, pic2.eps, pic3.eps, pic4.eps, pic5.eps, pic6.eps, pic7.eps, pic8.eps, pic9.eps, screen2.jpg, woman.jpg.

These files can be downloaded from the web at the following URL address: [www2.vnu.co.uk/hc/pcw/graphdtp.htm](http://www2.vnu.co.uk/hc/pcw/graphdtp.htm)

### Wanted: Material for PCW cover CD-ROMs

We are always on the look-out for material for our cover-mounted CD-ROMs. If you think you have something that might be suitable, such as software, pictures, fonts or demos, please let us know: email Matt Honeyball at [matt\\_honeyball@vnu.co.uk](mailto:matt_honeyball@vnu.co.uk) or write to him at CD Development, New Media, VNU Business Publications, VNU House, 32-34 Broadwick Street, London W1A 2HG. Please note that Matt cannot accept technical support calls.

## February 1998



### PCW INTERACTIVE Complete Contents List

#### FEATURED SOFTWARE :

#### APPLICATIONS

PhotoImpact, PhotoSuite 8.0,  
Sidekick 2 full version,  
Sidekick 98, Superbase 95

#### GAMES

Age Of Empires, Dilbert's Desktop  
Games, Joint Strike Fighter

#### MULTIMEDIA

You Don't Know Jack,  
Rhodes On ROM



## Personal Computer World

F O L D E R E

#### Software Library

- Dance eJay
- Recall Database
- Visual BASIC
- A1 Collex
- K-Chess Elite
- Epoch Organiser
- Wallpaper Paste
- Arts & Letters Express
- Paintshop Pro 3.12
- Paintshop Pro 4.14
- CyberContact
- NetFerret Utilities
- Internet Explorer 3.03
- Internet Explorer 4
- Acrobat 3
- Cygnus
- DirectX 5
- Icons Control
- Norton Anti Virus
- Winzip 6.3
- Dance music maker
- Business appliance database
- Runtime library
- Addictive puzzle game
- Improve your chess
- Personal Information Manager
- Desktop Wallpaper cycling utility
- Drawing Package
- Latest version
- Latest version
- Internet contact & address manager
- WWW, FTP, E-Mail, NEWS, IRC, phone search utilities
- Internet suite for Win 3.1
- Internet suite for Win 95
- PDF file reader
- Windows HEX editor
- Microsoft video driver
- Icon viewer and editor
- Latest windows archiver

# Borland Delphi Special PCW reader offers

If you want to create software that is fast to develop and speedy to run, Delphi is the best solution. We've got together with Borland to offer *PCW* readers exclusive opportunities to buy the latest versions of Delphi at savings up to 75 percent off! Delphi 2 Developer and the latest Delphi 3 Professional edition, complete with rights to deploy applications are available at very special discounted prices. See opposite page for full details.

Delphi's visual design environment lets you create sophisticated Windows applications faster than any other development tool. Because Delphi is built around an optimising native code compiler, Delphi applications are between ten to 20 times faster than interpreted code.

Delphi delivers three of the key features most sought-after by today's developers:

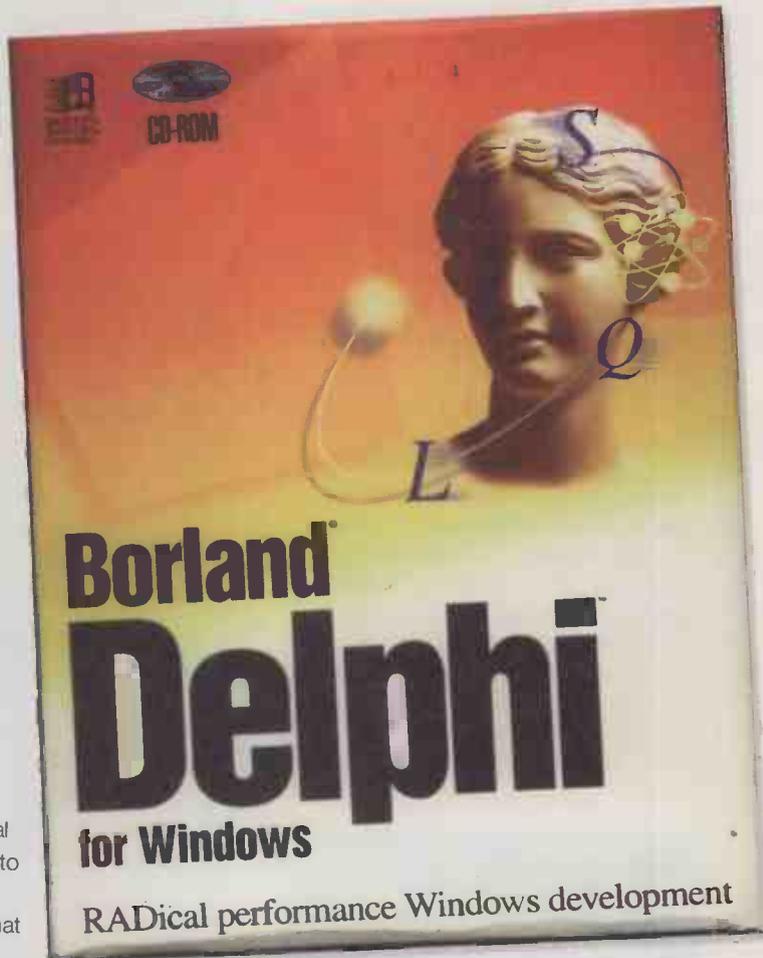
1. Rapid development: On the surface, Delphi looks a lot like Visual Basic. Add a form, pop on a control or two, double-click a button to add a few lines of code, click Run and away it goes.
2. Native code compilation: Delphi compiles to true executables that potentially run as fast as applications created in C or C++.
3. Object orientation: Delphi supports classes with constructors and destructors, inheritance, encapsulation and polymorphism — all the essential characteristics of an object-orientated language.

You can also program procedurally in Delphi. You get the best of both worlds: Delphi is easy to learn if you are familiar with Visual Basic or xBase, but all the benefits of objects are available, too.

Delphi integrates the Borland Database Engine, so you have instant support for dBase, Paradox, and ODBC local databases.

#### System requirements for Delphi 1 on Dec 97's PCW cover CD

- Delphi requires Windows 95, 3.1 or a 100 percent compatible operating system, an 80386 or newer processor (486 recommended) and 6Mb of system memory. A minimum installation requires approximately 30Mb of disk space.
- DCC.EXE, the DOS command-line compiler, requires at least 1Mb of extended memory.
- Delphi has been tested under Windows 95, Windows 3.1, Windows for Workgroups 3.11, Windows NT 3.5 and OS/2 Warp.



It includes the Local InterBase Server so you can create standalone client/server applications with a high-performance ANSI SQL-92 compatible database server.

Also included is Borland's award-winning ReportSmith report writing tool, which allows programmers to prepare innovative reports using live data in all popular database formats.

For more information, browse the Delphi web site at [www.borland.com](http://www.borland.com)

#### Limited licence offered through PCW on Dec 97's free Delphi CD

- This software can only be installed onto a PC once. It is not shareware.
  - Applications developed using the software may not be deployed.
  - The software is for personal use only by software developers and may not be used for development or teaching in a commercial or educational establishment.
  - Programs and applications that have been constructed with the software may not be distributed. The software is provided only with the aim of allowing the owner to learn the use of this software.
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**Learn to program with Delphi: £29.95 + VAT (normally £42.51 + VAT)**

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dan Ultimate/200, Best Buy, What PC?, April '97



dantum /s  
Best Home PC  
1996 Awards



dantum/133  
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December 96



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December 96



Home Plus/133  
5 Star Award  
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dan Home PC/166  
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January 97



dan Ultimate/200  
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February 97



Home Plus/166  
Performance  
February 97



dantum 95/mmx200  
Editor's Choice  
March 97



dantum /166MMX  
Gold Award  
March 97

1997 ANNUAL AWARDS

## “THANK YOU” To Everyone Who Voted For Us

We're proud of the numerous accolades we win for Dan Technology PCs month after month. And nothing gives us more pleasure than being up there amongst the winners of the magazines annual awards. Sometimes our votes come from expert journalists, as with the What PC? Awards. With PC Direct and Personal Computer World, recognition comes from the readers themselves. But wherever they come from, we're very grateful for these tributes to the efforts of our workforce. Thank You.



### PCW Awards 1997, Best On-Site Maintenance - WINNER: Dan Technology

*Dan Technology was a highly placed runner up in every other relevant category.*  
Personal Computer World, July 1997



### PC Direct Hits Awards 1997, Network Servers - WINNER: Dantum Pro Server

*"While the competition did increase, long time off-the-page server champion Dan Technology continued its dominance of this particular market, taking not only one of the runner-up slots, but also retaining its victors laurels with the Dantum Pro Server... [Dan has won the Network Server category every year since 1993]."*  
PC Direct, June 1997



### What PC? Awards 1997, Best Budget PC - WINNER: Dan Home PC

*"An ideal budget buy. Dan has a rock solid reputation, it builds sturdy PCs and prices them competitively. You may be able to buy a higher specified PC elsewhere, but it's doubtful that you'd get comparable quality and support."*  
What PC?, June 1997



### What PC? Awards 1997, Best Professional PC - WINNER: Dan Ultimate PC

*"...should keep even the most demanding user happy for a long time. Yet another winning computer from Dan. It might not be the cheapest, but you get a lot for your money."*  
What PC?, June 1997



## dan Ultimate II Plus

- Intel Pentium®II Processor with MMX™
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Free Slots: 1 PCI

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8MB Xpert@Work AGP SGRAM add £28 (£33 incVAT)  
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dantum /166  
Performance  
November 96



dantum /133  
Highly Commended  
December 96



dantum /200  
Editor's Choice  
December 96



dantum /200  
Best PC  
19 96 Awards



dantum 95/133  
Recommended  
September 96



dantum 95/200  
Buy it  
September 96



dan Home PC/166  
Recommended  
September 96



dan Home Plus/133  
Best Buy  
August 96



Service & Reliability  
User Survey, Desktop PCs  
August 1996



dan Technology  
Most Reliable PC  
July 96



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dan Home Plus, What Personal Computer, October '97



dan Ultimate/200X  
Best Buy  
April 97



danum /200MMX  
Gold Award  
June 97



dan Home PC  
Best Budget PC  
June 97



danum /200MMX  
Best Pro PC  
June 97



Service & Reliability  
User Survey, Desktop PCs  
August 1997



dan Xplora Plus/166  
Editor's Choice  
September 97



dan technology ltd  
1997 Service Award  
October 97



dan Home Plus/233  
Best Buy  
October 97



dan Ultimate/200XE  
Value  
November 97



danum II/266  
Editor's Choice  
January 98

## Popular Upgrades

### Yamaha CDR400t CD Writer

Make your own professional quality CDs with Yamaha's internal SCSI CD writer. The perfect solution for archiving and distributing large amounts of information, the CDR400t can write over 600MB of data (74 minutes of audio) to a single CD. Together with performance speeds of 4x write/6x read and Win95 'Plug & Play' compatibility, the CDR400t is ideal for all your back-up, archiving, database and multimedia storage needs.

Upgrade the 24maxCD-ROM supplied with Ultimate II Plus to:  
**Yamaha CDR400t CD Writer** £259 (£305 inc VAT)

### Creative's SoundBlaster AWE64 Gold

The SoundBlaster AWE64 Gold represents the pinnacle of Creative's renowned audio range. Experience realistic and expressive true instrument reproduction and digital effects with EMU8000 WavEffects synthesis and Creative WaveSynth/WG.



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**SoundBlaster AWE64 Gold** £ 66 (£ 78 inc VAT)

### Yamaha Speakers & SubWoofer

Upgrade the dan Hi-Fi Speakers to Yamaha  
**Yamaha M15 Speakers** £ 21 (£ 25 inc VAT)  
**Yamaha M15 Speakers**  
with **MS10 SubWoofer** £ 78 (£ 92 inc VAT)

### Hauppauge WinTV-Radio Card

Hauppauge Win/TV-Radio is a single slot PCI Card which brings digital video to your PC. It has a 125-channel cable-ready TV tuner and a high quality video digitizer in addition to an FM radio receiver. Watch TV-in-a-window and get multipage Teletext, or "channel surf" FM stereo radio broadcasts. You can display video from VCR, camcorder or any other video source. Spice up your multimedia presentations with still frame capture and even digital movie capture in high quality AVI formats at 25fps. Also available in TV only format.



**Win/TV-Radio Card** £ 101 (£ 119 inc VAT)  
**Win/TV Card** £ 82 (£ 97 inc VAT)

The TV cards & modems will only work in the UK.



Cert. No: 95/4556  
ISO 9002/EN 29002 (BS 5750 Pt 2)

Delivery cost to most of UK for one system is £18.



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July 96



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July 96



danum Home Plus/133  
Best Value Award  
June 96



dan Ultimate/133  
Editor's Choice  
June 96



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Winner 1996 Award  
June 96



danum 95/133  
Best Buy  
June 96



danum DUO Server  
Runner-Up  
June 96



danum PCI Server  
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June 96



dan danum 95/100  
Gold Award  
April 96



dan danum/133  
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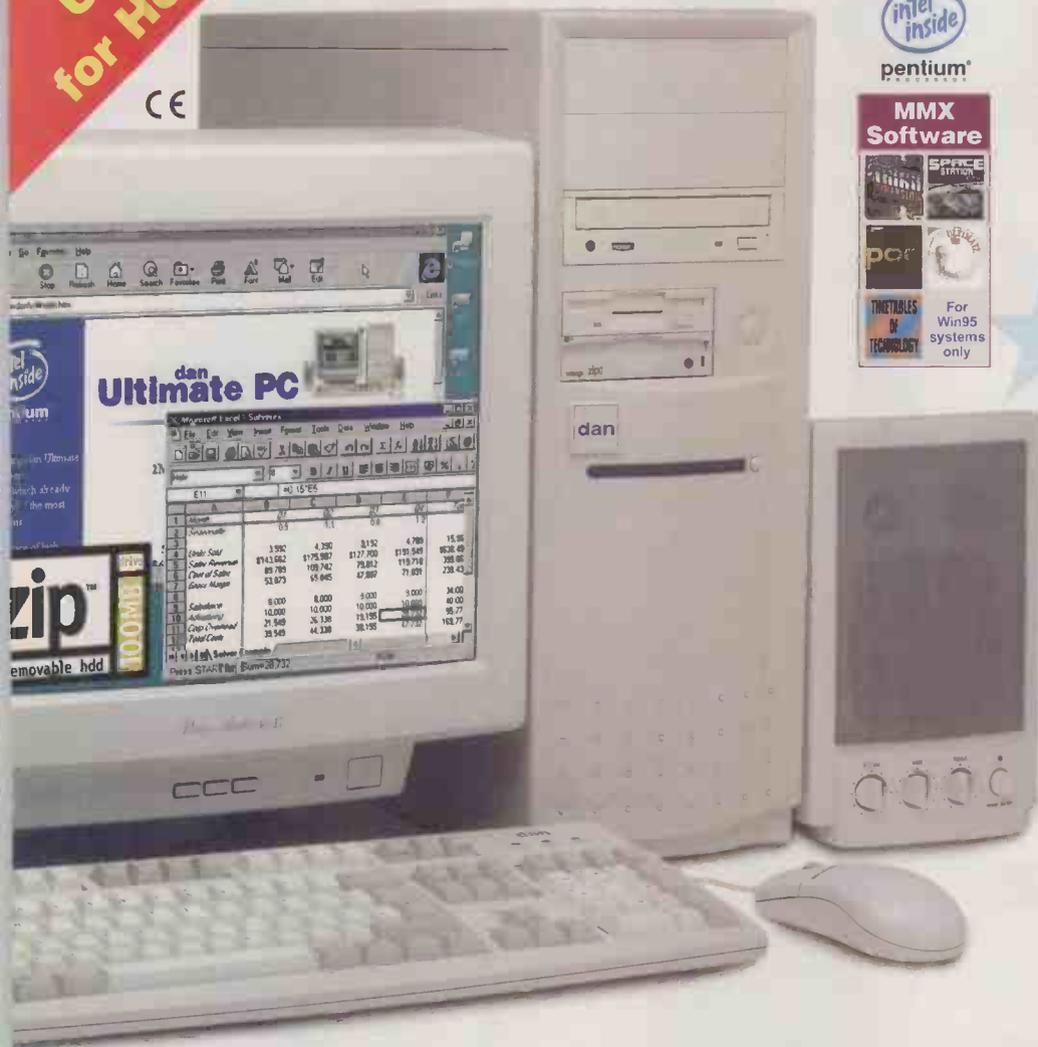
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**Ultimate PCs  
for Home & Office**

“...should keep even the most demanding user happy for a long time. Yet another winning computer from Dan.”

dan Ultimate PC, What PC?, June '97



## dan Ultimate PC

The PC system you always dreamed of

- 64MB SDRAM
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- Win 95 UK Keyboard
- Windows 95 or Win 3.11
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Microsoft IntelliMouse™
- MS Works Suite, Serif Page Plus, Intuit Quicken 6SE, Encarta '98 US & MMX™ Software Bundle



166MMX	£ 1486	£ 1747 incl. VAT	£ 62.17 Monthly Payment
200MMX	£ 1562	£ 1836 incl. VAT	£ 65.31 Monthly Payment
233MMX	£ 1627	£ 1912 incl. VAT	£ 67.99 Monthly Payment

- 32MB Additional Memory Upgrade £ 59 (£70incVAT)
- 6.4GB HDD Upgrade £ 35 (£42incVAT)
- 8MB ATi Xpert@work Upgrade £ 27 (£32incVAT)

The Dan Ultimate PC is a highly specified system based on the Pentium Processor. It has been updated to include more popular upgrades to ensure ultimate performance.

Super-fast processing power is an important element

for the Ultimate PC and together with the Pentium Processor, this system achieves an excellent rating with 512KB of Pipeline Burst Mode Cache Memory combined with 64MB of fast SDRAM.

A spacious 5.2GB hard disk drive is included in the specification and this can be upgraded to a maximum of 18GB. Also included is a 17" high quality monitor which

is partnered with an ATi Xpert@Work 4MB SGRAM video card and a 56KBPS voicefax/modem.

Exceptional Hi-Fi sound is a reality with the multimedia kit which incorporates a 24MAX speed CD ROM and high quality sound card. Also included as standard is an Iomega 100MB Zip Drive, with upgrade options from a range of removable media. Please see below for details.



### Monster 3D DIAMOND

Add 'Killer-3D' To Your PC

- Works with your existing graphics card
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### Hauppauge PCI WinTV Card Upgrade

A PCi single slot Plug and Play card with 125-channel TV tuner, video digitiser and Teletext decoder. Capture pro-quality stills or motion video in A VI format.

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### Iomega 100MB Zip Drive

The Zip is a very affordable personal storage solution that uses 100MB cartridges. You can either backup your entire hard drive or copy selected files up to 100MB. It's an ideal way to move and store personal or confidential information. The Zip cartridges are robust yet small, light and convenient. They're perfect for multimedia, presentations, software applications, financial data, graphics, archiving and more.



Cert. No. 9514556  
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# New systems based on the Pentium® II Processor

"...performance results were the best of the bunch..." \*

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Every PC user wants more speed. Maybe you're an IT manager with a corporate intranet in mind. Or perhaps you're looking for a faster machine to work with at home.

Look no further. Whatever you're planning to do, Dan's Ultimate II and Dantum II/MM systems help you to do it quicker. Using the latest 233MHz, 266MHz or 300MHz Pentium II processors from Intel, these new PCs are built to go just about as fast as a PC can go.

It's not only the processors that give our new systems the edge. There's also the electrifying 64-bit PCI graphics capability; USB ports for easy peripheral connection; up to 256MB RAM; and room to spare for additional storage. Even spatial 3D stereo sound is built in. Add Dan's renowned construction quality and unrivalled reputation for reliability, these new PCs stand among the world's finest.

Call your nearest Dan Technology sales office today for a free information pack. You'll find we're pretty quick off the mark with service too!

\* Dantum review in PC Plus, January 1997



## dan Ultimate II

High-end Pentium®II Processor System

- 64MB SDRAM
- Fast 5.2GB Ultra DMA HDD
- Intel Pentium®II with MMX™ Processor with 512KB Cache Memory
- ATi Xpert@Work 4MB SGRAM Video Card
- 17" Iiyama L/R Monitor (9017T)
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- Windows 95 or NT (extra cost)
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Microsoft IntelliMouse™
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233MHz	£1660	£1951 incl. VAT	£69.36
266MHz	£1849	£2173 incl. VAT	£77.18
300MHz	£2006	£2358 incl. VAT	£83.70

### Ultimate II Upgrades

- 32MB Additional Memory Upgrade £ 59 (£70 incVAT)
- 6.4GB HDD Upgrade £ 35 (£42 incVAT)
- 8MB SGRAM ATi XPert@Work £ 27 (£32 incVAT)
- Windows NT 4 ws Upgrade £ 69 (£82 incVAT)



## dantum II /MM

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- 16-bit Sound Controller
- Advanced Speakers (10W PMPO)
- 56KBPS VoiceFax/Modem (UK only)
- Free Slots: 2 PCI, 1 PCI or ISA & 2 ISA
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- Midi Tower Case w/200W PSU
- Win95 UK Keyboard
- Windows 95 (or NT at extra cost)
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Microsoft IntelliMouse™
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- Windows NT 4 ws Upgrade £ 69 (£82 incVAT)



dan Ultimate II

### Iomega 1GB Jaz Drive

A super-fast removable hard drive that can pack up to 1GB on each cartridge. It's an ideal answer for multi-media - it can record a 2 hour movie, save 8 hours of CD quality sound, save huge graphics files and much more. The Jaz drive's speedy access times and rapid transfer rate mean you can move files around and backup a 1GB hard disk in as little as 5 minutes. There's no limit to the amount of additional cartridges you can use so it's the solution to all your storage needs.



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# Newsprint

## VOX POP

New Year views on where computing is at. Collected by Sue Pederson

### Car's software will cost more than its hardware

■ Peter Cochrane, director of BT Labs, says huge investment in intranets in 1997 may make them more important than the web.



"Wireless technology is also starting to emerge. We're getting rid of all those cables.

"Chips will soon be in everything. This year, many cars have seen their electronic cost exceed their metal cost. So probably in the next couple of years, the software cost will outstrip the metal cost."

Miniaturisation will put PCs into unlikely places, such as a belt or even a brooch. "We will see a migration of technology into jewellery."

### Look before you leap into online sales

■ Ovum analyst Mark Stevenson (right) hopes the SET (Secure Electronic Transaction) standard will make people happier about using credit cards online, but says there is as yet little added-value buying on the net. Companies with the right products are making lots of money online.



"But the bookshop Amazon lost a lot of money last year."

He warns that selling online is not as cheap as people think it is.

"If you're not used to it and can't fulfil the orders, then maybe you shouldn't be doing it."

### Rise of the set-top box

■ Nigel Saker, senior consultant, OTR, sees the PC fragmenting into smart appliances "There will be a lot of interaction through the TV rather than the PC. The TV is a friendly device.

"Set-top boxes will get into houses without people even knowing about them. People will get used to them and then the cable companies can build in more interactive features, probably by the end of next year."

## The PC goes to pieces

This month's *Newsprint*, with more than five pages of reports from Comdex, is a snapshot of desktop computing as we enter 1998.

This is a threshold year much like 1987, when PCs



Sub-\$300 Adaptec PC card, to ship next year, receives Eutelsat digital TV and data

### Outlook for 1998

awaited the power of cheap 486 chips to exploit fully the graphical user interface.

Only now, the bottleneck is bandwidth rather than processing power, and it will not be overcome easily.

The first major step will happen this year when digital radio and TV starts to take off, providing a path for massive data broadcasting (see picture, left).

The PC is getting the fast internal AGP bus (page 29) and new external serial ports (pages 41 and 47). Storage

costs are plummeting (page 27), enabling new activities such as digital photography (page 41).

One trend is for cheaper PCs (page 30), another is towards modularity (page 41), as well as fragmentation into appliances. Most fascinating is the evolution of the mobile, with a fashion for mini-notebooks (pages 26 and 46).

These developments are closely allied to an evolution of input methods ... handwriting (page 29) and speech recognition (page 48), and the feeling mouse (page 47).

Clive Akass

## Big Intel shifts under pressure

Bruce Stephens, PC analyst for IDC, said chip cloners AMD and Cyrix had helped catalyse the desktop market, with Intel shifting strategy in the face of increasing competition by looking at the sub-\$500 PC market. "You're going to see higher levels of integration, new

### VOX POP

high-speed buses...and a greater inclusion of DVD. USB is gaining momentum."

Windows CE dominates handheld devices and will start to take hold in other areas like

Windows terminals, set-top boxes and even cars. High-bandwidth technology like xDSL and cable modems has made slow progress. The cost of desktop LCD monitors has shown a modest fall to below \$2,000, but it is still way above prices of CRT monitors.

## Microsoft adopts HTML as lingua franca

HTML is to be made the lingua franca of Microsoft's Office suite as well as of the web, the company has announced.

One reason for the move is to provide file compatibility between different versions of Office — a bone of some contention among users. Another is to boost the use of intranets for collaborative working by easing the creation of HTML documents, said marketing director Denis Tevlin.

In practice, the move will mean phasing in "hi-fidelity translation" between Word and HTML and back over the next year. The delay is caused by the fact that HTML is not yet up to the task, Tevlin said.

## Aeeiii! say IE 4.0 crash victims

A number of irate users have complained to PCW of system crashes after installing Microsoft's Internet Explorer 4.0 browser.

A new 4.0.1 upgrade addresses some issues. "There were problems with some Compaq Presario users, but we had a fix for that pretty quick," said product manager Martin Gregory. "If you look at the number of downloads — a million in the first 48 hours — there's a very high level of satisfaction."

**APOLOGIES** yet again for problems at our web site caused this month by rewiring at VNU. Our Comdex special pages are now up at [www.pcw.vnu.co.uk](http://www.pcw.vnu.co.uk)

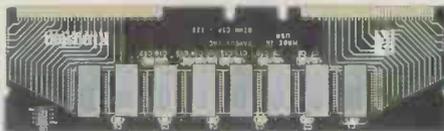
# Wintel loses its grip

Microsoft and Intel, which have dominated the PC world since its beginnings, end the year bigger and richer than ever. Yet the ground was gently slipping from under them. The prime mover of change, not always obviously, was the internet, which has extended within organisations even faster than beyond the firewalls. The result is that computers all over the world are at last talking the same languages: TCP/IP, HTML and, to a lesser extent, Java. Open systems, long a dream

## Overview of 1997

of IT visionaries, have arrived by accident as a byproduct of the net.

Bill Gates may continue



his battle with Sun over Java, but he has already lost this wider war.

Intel may be able to stave off the chip cloners but it is itself buying into alien processors, including

Digital's implementation of Cambridge-based ARM's RISC core.

Computing has cut the umbilical: it no longer needs Wintel. Microsoft and Intel may well continue as strong as ever. But like mighty ex-king IBM, whose throne they usurped during the retreat of the mainframe, they will never hold the same sway again.

**Clive Akass**

**Inset: Faster processors need faster RAM. Fast Direct Rambus DRAM like this, from Kingston, will be in use in 1999.**

## Read-write keeps CD spinning

Bob Peyton, director of IDC's European Storage Research, says DVD has taken off slower than expected and drives will sell in thousands rather than hundreds of thousands.

"You'll see products in the shops next year but significant titles will be missing. The

### VOX POP

games on DVD are magnificent and will be what will drive it. I thought Men in Black was fantastic." DVD-RAM has shot itself in all three feet again. Until there is an installed base of DVD-ROM, it has to compete

with Jaz [Iomega's 1Gb drive]. But prices seem to be coming down. CD-R and CD-RW (read-write) prices are dropping rapidly too. If CD-RW can increase its speed to 16x, you've got a hell of a product for replacing CD-ROM. It will keep the CD alive for longer.

## Computer detects when you're telling the truth

It's not quite computer's intuition, but it's close. Text summarisation software, which works by counting the most frequently used words and then highlighting the sentences where the greatest number of these words occurs, has become increasingly clever at working out the gist of long articles and web pages.

US-based Communication Development has taken it one step further, with CoreTex. Market research companies are starting to use CoreTex to figure out what their interviewees are really saying.

By analysing a person's speech, they say, you can find out whether a person actually does like a product — or if they're telling a porky. Even spookier, it's claimed to be able to decipher the real motives hidden in politicians' speeches: expect a ban soon!

**Susan Pederson**



"Damned machine called me a liar!"

### VOX POP

## Java apps are going to arrive thick and fast

■ Andrew

Hammett (right), director of Bloor Research, said: "I think the Net PC has come and gone. But only ten percent of large corporations say they're just not interested in network computing. The lack of an office suite has slowed down NC development, but Java applications are going to start arriving thick and fast next year."



## No real alternative to ISDN has emerged

■ Ian Keene, senior industry analyst, Dataquest, said 56K modems have done more harm than good so far, with the confusion over standards limiting sales. ISDN in the UK has lacked effective promotion but no alternative is emerging. "Generally, ISDN is on a good growth curve and I can see it being the leading connectivity option [for businesses] over the next five years."

Business and consumer internet access will diverge, and the hot option for businesses will be the outsourcing of remote access to create virtual private networks. "We will see service level guarantees and different classes of service for businesses; but consumers are going to have to wait for some time to get better service.

"No-one is investing long term in backbone equipment and there's no one perfect technology solution. At the same time, we're seeing internet traffic with exponential growth and no sign of levelling off. A lot of ISPs are in fire-fighting mode."

## Y2K bug situation is very, very worrying

■ Robin Guernier (below), director of Taskforce 2000, has said that only one in ten firms are ready for the millennium. "Any sizeable business

that hasn't taken the first step by the end of March is not going to get it done. It's very, very worrying. And remarkably, they're going to introduce the Euro at the same time. Year 2000 must take precedence."



## Microsoft watch

## Legal battles reach Nader

Microsoft's legal troubles continue. The US Computer and Communications Industry Association (CCIA) has condemned its licensing agreements as "restrictive and anti-competitive" and is supporting the Justice Department's anti-trust action against the company. The DoJ alleges that Microsoft has forced PC suppliers to bundle the Internet Explorer browser with machines running Windows 95. The CCIA has taken similar action in the past against IBM and AT&T, among others.

Microsoft declined an invitation to the Appraising Microsoft conference organised by consumer advocate Ralph Nader, saying that it would be "ambushed by sharpshooters."

The forum featured representatives from Netscape and Sun. Microsoft also postponed its Java developers' summit in December, citing scheduling conflicts with the Internet World conference in New York.

Some observers speculated, however, that Microsoft simply wanted to avoid facing developers so soon after the first court hearing in the Sun dispute.

Like an unpopular kid handing out sweets in a desperate attempt to be liked, Microsoft commissioned its own public opinion poll. Unsurprisingly, it discovered that 70 percent of Americans believe the government should keep its nose out of software regulation and let the free market determine what features should be included. The survey also found that Microsoft is the single most admired company in one of the most admired industries in the US.

Islington council tenants criticised Microsoft for excluding them from its "cyberstreet" trial.

The trial gave thirty people free internet subscriptions — and in some cases, free computers — for six months. Council and housing association tenants, however, alleged that only middle class residents who already owned computers were chosen to take part.

Susan Pederson

# Shop-your-boss body's piracy purge riles judge

The anti-piracy body that launched the "shop your boss" scheme in Britain has been pilloried by a Belgian judge for a "dishonest" anti-piracy purge. In a stunning defeat for the Business Software Alliance, the judge told it to stop some of its campaigns.

The BSA has often been criticised for depending on tip-offs and scare tactics. Its members include Microsoft and Novell.

The Belgian ruling at a trade tribunal followed a BSA campaign similar to one launched in Britain in October under the name Crackdown 97.

Acodit, an association of Belgian corporate dealers, complained of an official-looking questionnaire sent to 5000 business. Its president, Jean-Claude Log, said Acodit was swamped



with calls from worried firms who had been asked for details of software use and licences. An accompanying letter threatened to prosecute companies caught using illegal software.

The Belgian Judge said the campaign abused copyright law and was not in accordance with honest

business practices. The judge ordered all filled-in questionnaires destroyed.

The judge has also ordered BSA Belgium to stop offering to pay for tip-offs.

Log welcomed this as a victory for good business practices and manners. "You treat a customer with respect. You

don't threaten him," he said.

In the UK, the BSA says it is doing nothing illegal.

Graham Arthur, a solicitor with its advisers, Covington & Burling, said: "I don't see any basis at all for legal action to be brought against BSA ... arising out of the Crackdown 97 campaign."

Dominique Deckmyn

## First colour-display Windows CE handhelds ship in Britain

Three handhelds using the latest Windows CE 2.0 are now available in Britain. The new operating system supports colour displays, ethernet connectivity and email attachments for Word, Excel and PowerPoint files.

The Compaq C-Series PC Companion features an integrated modem, voice recording and a colour display. It will start

shipping by the end of the second quarter, but prices had not been set at the time of going to press.

Hewlett-Packard's 620LX has a colour display and an optional VGA-out card that allows you to display full-size PowerPoint presentations or Excel spreadsheets. The

dedicated CompactFlash card storage slot frees up the PC Card slot for a modem. The street price is around £699.

Casio plans to release its 80MHz 32-bit

Cassiopeia (left) this month. It has a serial port for the Casio digital camera range and a flash memory port for future upgrades, and will retail for £499.

Microsoft plans to port Windows CE into devices other than handheld PCs.

Anne Mitchard, internet products marketing manager at Microsoft, says that the operating system will eventually appear in web telephones, wallet and car PCs, set-top boxes and DVD browsers.

Susan Pederson

Casio 0181 450 9131, [www.casio.co.uk](http://www.casio.co.uk);

Compaq 0845 270 4000, [www.compaq.co.uk](http://www.compaq.co.uk);

HP 0990 474 747, [www.hp.com/handheld](http://www.hp.com/handheld)



# 200Mb Sony drive enters fray for superfloppy crown

Sony has introduced a third contender into the battle for a successor to the traditional 1.44Mb floppy drive.

The HiFD, shown for the first time at Comdex, takes 200Mb disks but can also read and write 1.44Mb floppies. Sony says it will ship some time next year and will give no details on prices.

It will compete with the well-established Zip, whose 100Mb disks are now a common exchange medium; and the LS-120 (aka the a:drive and the SuperDrive) which takes both 1.44Mb and 120Mb disks but has yet to catch on to the same extent.

Sony claims a maximum transfer rate of 3.6Mb/sec for

the HiFD, compared to a maximum sustained 1.4Mb/sec for the new Zip Plus, and 290Kb/sec for the LS-120.

The marketing manager for Imation's version of the SuperDrive (it is manufactured by several companies) said the HiFD was only a prototype and Sony had yet to show that it could be manufactured. (Sony touted its MD data drive as a floppy replacement four years ago but it did not appear for more than two years — and then at an unrealistic price.)



He also doubted whether the drive could be made thin enough for notebooks — a growing market for both the SuperDrive and the Zip.

But the HiFD could prove competitive with another product from Zip maker, Iomega: see story below.

● Five-page Comdex Special starts on page 41.

**Clive Akass**

## Iomega Clicks into digicam market

Iomega, maker of the Zip drive, may have another winner with its latest wheeze.

It's a tiny portable drive called the Klik!, which uses 40Mb disks the size of a 2p coin and costing \$10. Iomega floated the

idea months ago as the NoHand, a microdrive for fitting into digital cameras and other devices. But the first product is exterior and comes with a docking station (above) for transferring data. Iomega says the \$200 drive will ship next year.

Ironically, one rival may be Sony's 200Mb superfloppy (see story above). Sony already sells a digicam fitted with a floppy, which works well (see page 41).

Flash-memory vendor Sandisk said the Klik could actually boost sales of its products. Marketing vp Leon Maimed said: "People will download from Flash to the Klik."

Iomega 0800 973194; [www.iomega.com](http://www.iomega.com)



## ...as an old rival puts up new competition

Removable-storage specialist Syquest, which was knocked sideways by the success of Iomega's Zip, hit back with its second major product announcement in as many months.

It has launched the 4.7Gb Quest drive, costing \$599 including one cartridge. Additional cartridges cost \$199. It boasts 2Mb caches and Ultra SCSI, allowing



real-time video streaming for applications such as DVD mastering.

The launch at Comdex came just four weeks after the announcement of Syquest's SparQ drive, costing about £125, with 1Gb cartridges costing just £24 each. Both drives are due to ship early next year.

Syquest 0131 339 2022; [www.syquest.com](http://www.syquest.com)

### Storage shorts



■ Tandberg's newest addition to its high-end storage family is the 50Gb MLR3 tape drive, which can back up 28Gb in less than two hours. It comes in internal or external models and is compatible with earlier Tandberg SLR-MLR products. Prices start at £1,795 ex VAT. Tandberg 01582 769071 [www.tandberg.com](http://www.tandberg.com)



■ Trying to decide which way to jump on storage? Panasonic has complicated matters with its new portable PD drive, the awkwardly-named LF1500 EPB. The 650Mb rewritable optical disk and CD-ROM drive, which weighs less than a kilogram, is being touted as the perfect notebook storage. Panasonic promises that its upcoming DVD-RAM drives will both read and write to existing PD disks, and it tosses in Seagate's comprehensive Backup Exec software and a free PD disk — all for £299.

Panasonic 0500 404041 [www.panasonic.co.uk](http://www.panasonic.co.uk)

### File on the Flip side

■ Another portable storage device comes from Amacom. The Flip Disk has a PCMCIA interface one end and a parallel port the other, for easy links to desktops and portables. Inside is a hard disk. Street prices are £350, £440 and £550 ex VAT respectively, for 1.4Gb, 2.1Gb and 3.2Gb capacities.

Amacom 0181 993 7373

p29 >



"I can't see why anyone considering a desktop colour inkjet, would buy anything other than an EPSON."

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*PC Magazine (EPSON Stylus COLOR 800)*



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*Mac User (EPSON Stylus COLOR 3000)*



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*What PC (EPSON GT-5000)*



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*PC PRO (EPSON EPL-N1200 Laser)*



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## What the experts say.

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Logos shown represent awards for specific EPSON products in the last 12 months.

# EPSON®

# Is the writing on wall for the PC keyboard?

Handwriting recognition is beginning to look seriously useful, with Paragraph's CalliGrapher 5.0 for Windows CE walking away with two awards at Comdex.

It offers natural recognition for all styles of handwriting, whether print, cursive, or a mixture of both.

Paragraph claims that the product requires absolutely no training because it relies on fuzzy logic and neural net techniques to recognise your doctorly scrawl.

The software supports drawing, data input and spell-checking as well as standard text. Paragraph offers a free 15-day limited version on its web site, as well as an online demo.



One company is reported to be porting it to the Psion, and another to Windows 95.

Psion also recently announced that handwriting recognition software called Allegro would be built into its EPOC32 operating system for mobile devices.

The software, developed by Papyrus Associates, will then be shipped to EPOC32 licensees, such as Philips, to include in their own devices.

Psion hasn't decided yet whether handwriting recognition will be built into future Psion organisers, though.

CIC announced in

December that Compaq would be bundling QuickNotes with its new C-Series PC Companion (see page 26). QuickNotes lets you capture handwritten notes and drawings on Windows CE handheld PCs, storing them in chronological order for easy access. Its electronic ink compression then reduces the note size to save disk space.

CIC 001 (415) 802 7888, [www.cic.com](http://www.cic.com); Paragraph 001 (800) 810 0055, [www.paragraph.com](http://www.paragraph.com); Psion 0990 143050, [www.pSION.com](http://www.pSION.com)

Susan Pederson

## Non-Intel board makers open up Socket 7 to new fast bus

A flurry of motherboards supporting both the accelerated graphics port (AGP) and Socket 7 chips was released late last year, causing vendors to bicker over which was first.

Intel pushed the AGP bus to speed graphics for video conferencing, games and 3D computer modelling on boards using the Pentium II's Slot 1 architecture. The new non-Intel boards extend the feature to the older Socket 7 used by Intel Pentiums, as well as Cyrix and AMD processors. Their specs were very similar, using VIA Technologies' VP3 chipset. TMC Technology's T15VG has 512Kb onboard cache and allows up to 768Mb of FPM/EDO/SDRAM memory. The board supports USB as well.

FIC's 1stMainboard PA-2012 (pictured) supports up to 1Mb Level II cache, SDRAM and USB, as well as the LS-120 drive.

California Graphics released Sunray II VIA



AGP with a similar spec. It is expected that AGP technology will soon begin appearing in mainstream PCs.

Susan Pederson

FIC [www.fic.com.tw](http://www.fic.com.tw); California Graphics boards available from Mentor Computer Systems 01582 483381, [www.calgraph.com](http://www.calgraph.com); TMC 01438 842 300, [www.mycomp-tmc.com](http://www.mycomp-tmc.com)

### Short stories

#### Millennial electronics revolution predicted

■ A research firm is foregoing gloom and doom predictions for the millennium. It promises a "consumer electronics revolution" that will change our lives over the next three years.

Specialised devices such as smartcards and set-top boxes will begin to appear in greater numbers as prices fall, predicts Nigel Saker, senior consultant at Organisation and Technology Research (OTR). "Because these devices are not all things to all men, they can be made cheaply and robustly," he says. "That's definitely not a feature of the current PC."

He warns PC makers not to be distracted into making faster and faster models. "The danger is that they might miss out on the simpler devices."

He says businesses too will have to adapt. "We're not saying that the high street is going to disappear. But there will be alternative channels, such as buying straight from the manufacturer."

Susan Pederson



■ PC Card makers are getting more sensitive to power drain. This CE-supported wthernet card draws only 5ma compared to 100ma on other comms cards. Meanwhile, BT has launched the Prologue X3, which combines GSM, ISDN and standard phone links. Prices range from £229 to £359, depending on functionality.

Portable Addons 01483 241333; BT [www.bt.com](http://www.bt.com)

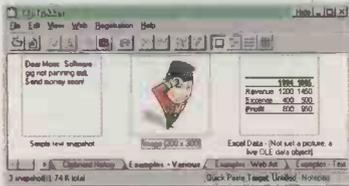
#### Fast Mac notebook

■ Creative types will be rubbing their hands in glee over the PowerBook G3, which incorporates the third-generation G3 processor optimised for the Mac OS. Its 50MHz system bus is 25 percent faster than previous PowerBooks, with a claim that it is the fastest mobile available. The price tag might cause a few wincing, though — £4,149 ex VAT.

Apple 0800 127753

p30 >

## Short stories



■ **ClipTrakker** is a handy new utility from Silicon Prairie Software that allows you to keep track of a number of clipboard items at a time. Sort, print, edit and paste — it retains items even across reboots. It costs US\$25, but you can try it out for free for 30 days at [www.cliptrakker.com](http://www.cliptrakker.com)

## Free Space

■ **FreeSpace**, a new £39.95 Windows 95/NT utility from Atlantic Coast and Mijenix, claims to pack up to 150 percent more files on to your hard drive by selective compression. Atlantic Coast 01297 552222 [www.atlantic-coast.com](http://www.atlantic-coast.com)

## Remote unzipper

■ **Quarterdeck** has added new intranet and internet features to Zip-It 4.0, including I-Zip. It lets you view the contents of zip files over the net and extract which items you want without downloading the entire archive. Zip-It costs £29.99.

Quarterdeck 0645 123521 [www.quarterdeck.com](http://www.quarterdeck.com)



■ Overworked? Then check out Purple Software's 5 Pack of games for the Psion Series 5. You get Home Run, Checkers, Yacht, Theole and Enigma, for £39.95.

Purple Software 0171 387 7777 [www.purplesoft.com](http://www.purplesoft.com)

## Y2K threat to comms

■ Telecomms systems will be hit hard by the Y2K bug, says a report from Mitel. It found that more than a third of UK organisations are unaware of it and only seven percent are preparing for it. Telephone banking, shopping and direct insurance could grind to a halt as a result, the report said.

Mitel 01291 430000; [www.mitel.com](http://www.mitel.com)

# Intel develops cheap PII chip as rivals aim for a \$500 PC

The annual strategy conference run by Phoenix, which writes the BIOS for about three in four PCs, was important even before Intel took a 10 percent stake two years ago.

This year's event focused on the sub-\$1,000 PC, and the living-room PC. Compaq and IBM's low-cost offerings have made most players think twice about competing with them. Packard Bell, which offered the first sub-\$1,000 PC for 1995 Christmas buyers, is

From Tim Bjarin in Silicon Valley

now targeting businesses.

The big news was that Intel's desktop-



systems vp,

Pat Gelsinger, confirmed the development of a Pentium II to power future sub-\$1,000 PCs. Intel CEO

The other major issue at the conference was the PC in the living room. S3 demonstrated its Faroudja chip that allows digital PC output to be used on an analog TV display.

@Home, Web TV and NCI all showed enabled TV models using picture-in-picture designs to marry TV content with specific web content.

Adaptec showed a board that can download 650Mb in 10 minutes from a satellite.

Cyrix and Cirrus Logic

showed reference design for what they called the PC media center, with 3D stereo surround sound, DVD, a 2.6Gb HD, a TV tuner, an enhanced viewing chip like S3's Fouradja, and a 56K modem.

Gateway and Compaq offer much the same set-up but with a 35In PC/TV monitor and a \$3,000 price tag. These reference designs could result in sub-\$1,000 products and allow PC makers into the TV market.

Andy Grove has long denied that Intel would focus on lower-cost processors.

But Computer Intelligence reckons four in ten PCs bought in US shops this Christmas will cost under \$1,000. Most use the Cyrix MediaGX or the AMD K6. Cyrix and AMD are having trouble cloning the PII and a low-end version could be a winner.

National Semiconductor president, Brian Hallas, suggested that we are close to a \$500 PC, with a trend for integrating comms, multi-media and general processing on to one chip.

National, which bought Cyrix with its integrated MediaGX earlier this year, has chips for sound, video and comms. Hallas believes these could power a system costing less than \$500, including a CD drive. Most vendors present had yet to produce a sub-\$1,000 model.

## Norton 3.0 targets Registry

Symantec says it's got all the bases covered with the latest version of its Norton Utilities for Windows 95 disaster recovery software. A new standalone Norton WinDoctor claims to "intelligently detect and fix problems" in the Registry, system files and applications. It deals with problems such as missing DLLs, lost shortcuts and invalid Registry entries.

It also groups problems according to their likely cause, so if you accidentally delete an application, it will identify all the problems caused by your mistake and fix them at once. CrashGuard 3.0 has been fully integrated into Utilities 3.0, running continuously in the background to help stop crashes before they happen.

CrashGuard also includes Norton Anti-Freeze to restore frozen applications. Rescue Disk has been improved, and Zip Rescue now allows users to save rescue information on an Iomega Zip disk.

Some new optimisation features have been added, including the Optimisation Wizard which speeds up booting times by tinkering with the Windows Registry and swap file. Speed Disk has also been radically improved, placing the most often used files at the front of the disk and less used ones at the back, speeding up the system and reducing fragmentation.

Susan Pederson

Symantec 01628 592222; [www.symantec.com](http://www.symantec.com)

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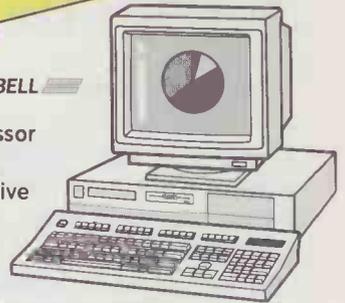
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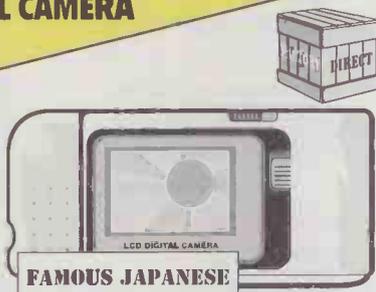
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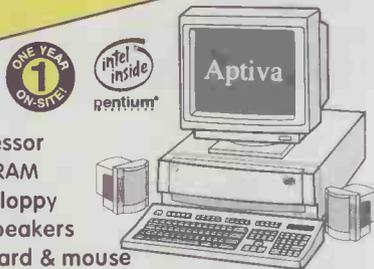
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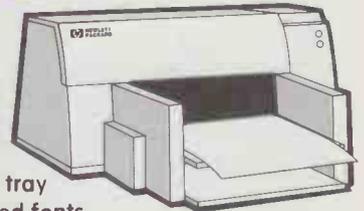
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# Scotch mist surrounds hyperlinks

Scottish courts missed the chance to set a precedent on the legality of hyperlinking when an acrimonious battle between two rival newspapers was effectively settled out of court.

A Court Session judge stated that hyperlinking would still be

complained that *The Shetland News*, an electronic news service, was placing hyperlinks from its web site to their news stories without permission.

*The Times* wanted to ban *The News* from doing so, but the case raised worries that a legal precedent would jeopardise online

if the two parties had had more resources to fight it."

He doubts the settlement will put an end to such disputes. "As



long as the internet was being used by people who were technically minded and not business minded, they didn't really think these things mattered," he said.

"But now we're talking about people with substantial amounts of money invested in their web pages and their web advertising, and they're not going to take it lightly."

**Susan Pederson**

[www.shetland-times.co.uk](http://www.shetland-times.co.uk)

[www.shetland.news.co.uk](http://www.shetland.news.co.uk)



allowed, but that links would have to be acknowledged with a logo. It would also not be allowed to link to individual news stories, but only to the main headline page.

The legal wrangle erupted in 1996 when *The Shetland Times*

freedom. David Flint, a solicitor for the IP and Technology Law Group at MacRoberts, Solicitors, called the settlement "unfortunate". He said: "There wasn't a clear decision made. It would have been interesting to see what would have happened



■ Visitors will be able to get more out of London thanks to a network of touch-screen kiosks from Cityspace. Information Plus (i+) has details in six languages about restaurants, museums, shopping and theatre. Users can book tickets and print out maps. Cityspace 0171 235 2225

Unless you've been locked away behind your virtual reality headset, you can hardly have failed to hear the phrase "centre of excellence" bandied around in recent weeks in connection with Cambridge.

It would seem that excitement has spread to the US, where Intel has followed Microsoft in investing in Cambridge. It has bought the StrongArm technology, based on a core from Acom sibling ARM, from Digital. And it has bought a \$2 million equity in Cambridge Display Technology, which is developing thin flexible light-emitting polymer (LEP) screens for VR-headsets, mobile phones, VDUs, wall-screen TVs and even digital paper.

Intel said: "We make investments with strategic intent in companies where we think they have a technology that will help drive the marketplace." The investment is believed to be Intel's first in a UK start-up.

CDT will announce this month a joint development with a Japanese company for a

## Intel invests as 'digital paper' comes into view

### Caroline Swift continues her reports from Silicon Fen



video display which it will scale onto computer displays.

Mark Gostick, business development manager, said LEP screens can be 40 percent cheaper than comparable technologies.

First products will ship next year: Philips, CDT's first licensee, is working on a backlight for mobile phones, and Uniax will have a dot-matrix display for mobile phones.

CDT will show a prototype mono 2.25in screen in April, which it says will be the first of its size to display video in a way that can be viewed easily. It is expected to be used in portable devices that will act as both viewphones and organisers.

The latest investment leaves Cambridge University with a

stake of up to 25 percent in CDT; a slightly larger share will be owned by a group of entrepreneurs headed by former Trade Minister, Lord Young of Graffham, on completion of its investment over the next four years. By then, the venture company known as Light Emitting Polymer Investments will have invested some £6.6 million in the tiny Cambridge company.

Lord Young will then become chairman of CDT, and the company will be valued at £22 million. Today, it has just 25 staff and, as a victim of the city's success, it has been unable to find suitable premises for expansion. So it will stay in its confined premises down a narrow farm track, investing in a

clean room and equipment — and more staff. Right now, it has vacancies for chemists, physicists and process engineers.

■ Cambridge-based Sibelius Software has shown the US film industry how to hit the right notes. Its Sibelius 7 software, effectively a word processor for music, was used to orchestrate and print the music for *GI Jane*, starring a shorn Demi Moore.

Sibelius turns music, played at a keyboard, into notation for editing, playback and printing. The SMPTE-compatible software can simulate an orchestra in exact synchronisation with video and was used to orchestrate Paul McCartney's new piece, *Standing Stone*.

Sibelius has now opened a Los Angeles office, selling to Hollywood composers.

[www.sibelius-software.com](http://www.sibelius-software.com)

## Internet shorts

**The right type of leaves online**

Hornby Toys is the latest big-name brand to take a leap into the online world. There are dedicated sites for both Hornby Railways and Scalextric, which feature news, products, club details and potted histories. Still to come are online shopping facilities and — this is the exciting bit — a racing game based around Scalextric.

[www.hornby.com](http://www.hornby.com); [www.scalextric.com](http://www.scalextric.com)



## SYNs of the hackers spawn the routers of evil

Hackers have found a new way to crash servers and routers. Land Attack exploits a bug in the TCP/IP stacks of computers running Windows 95, NT, MacOS, HP/UX and Solaris, as well as some routers. However, SCO Open Server, Digital Unix, Novell Intranetware and the "freeware" Unix version Linux, are not vulnerable to the bug.

A hacker launching Land Attack sends a SYN packet to open a connection and "spoofs" the host server into believing that it was self-generated, thus causing it to go into a loop.

"The method is about as efficient as yanking out the power cord," said internet security consultant, Kristof Van Damme.

Most worrying is the fact that the method was detailed in an internet mailing list received by system administrators and hackers alike, so it is now commonly known to hackers all over the world.

"If I were an ISP, I would install a patch as soon as I could get one," warned Van Damme. "Right now, anyone can crash your server without leaving a trace."

**Dominique Deckmyn**  
VNU Newswire

## Sun rises for Java to shine

Sun Microsystems has won the first round in its battle to make Java an international standard. It has gained approval to submit its technology to the International Standards Organisation (ISO).

Only the US and China voted against the move. And of the 24 countries which have a vote, two abstained and 20, including the UK, voted in favour of Sun's bid to be a "Publicly Available Submitter". This enables it to put Java through the two stages of approval for adoption as an ISO standard. The PAS system in effect provides a fast track through the standards process and Sun opponents have argued that it leaves the vendor with too much control over the future direction of the technology.

Sun's euphoria over this victory was dulled by a row over Java benchmarks, ending in the company admitting to having "committed an unintentional error" when it published results for its Just In Time (JIT) compiler last October. Benchmark results suggested that Sun's JIT compiler makes Java apps run 50 percent faster on Sun's Solaris operating system than on WinNT.

Pendragon Software, creators of the widely used CaffeineMark benchmark, claimed that Sun's new product was designed to detect parts of the benchmark, thus producing misleading results. Sun responded with a flat-out denial, stating that its new product had simply "blown the doors off" the benchmark and hinting that Pendragon's criticism was inspired by pressure from Microsoft.

However, independent experts have since verified Pendragon's findings, confirming that the JIT compiler contains a portion of the CaffeineMark benchmark code. This enables the compiler to detect and skip this code, thereby completing the program faster. This is a well known but dubious method of producing better benchmark results.

Sun has now retracted the press release, confessing that "the effect of the benchmark-specific optimisation was described as if it were an indication of overall application performance".

[www.sun.com](http://www.sun.com); [www.iso.ch](http://www.iso.ch);  
[www.webfayre.com](http://www.webfayre.com)

HOME  
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### Home is where the booze is

Now the festive season is over, much of the country will be resolving to stay on the wagon for a while. The trouble is that the long, dark winter evenings tend to drag when you're at home and all you have to look forward to is another EastEnders spat between Phil and Cathy.

A new company called Homebrew Direct may have the answer. It offers brewing kits for beer, wine and liqueurs, together with a range of books and videos on the art of homebrew. All ordering is done online or over the phone. If you are so inclined, the joys of brewing your beer will keep you occupied for a few weeks and give your liver a chance to recover from that Christmas over-indulgence. And who knows? With a bit of luck, the end result might even be drinkable.

[www.homebrewdirect.com](http://www.homebrewdirect.com)



## Java Computing

Before you decide on a PC,  
take a look at the telly.



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**AMD**

## Internet shorts

**Open University promises interactive web lectures**

■ The Open University (OU) is planning to conduct interactive lectures over the net, using speech and audio compression technology from Voxware. According to the OU, quality audio over dial-up connections is essential to keep students interested. Chat rooms and webcasts are planned in the continuing attempt to use the latest technologies for distance learning. This latest announcement follows the decision to use Marimba's Castanet push technology to send notes to students.

[www.open.ac.uk](http://www.open.ac.uk)

**Time to boot for soccer news**

■ UK Football Pages, as its name suggests, aims to list all sites dedicated to UK teams. Developer Lee Brookes says he expects such niche directories to become increasingly common as search engines become more congested.

The football sites are not restricted to Britain. Fans of UK teams have set up sites as far away as Australia.

[www.ukfootballpages.com](http://www.ukfootballpages.com)

# Virgin on the verge

Virgin hopes to boost consumer confidence in net shopping by moving many of its retail businesses online early in 1998. David Clarke, MD of Virgin Net, announced that Virgin would provide a Secure Shopping Guarantee to be built around a secure electronic transaction (SET) standard. The encryption-key service is likely to be the first retail application of SET in the UK.

The Virgin Megastore catalogue will be one of the first services to go live, and Richard Branson has promised that his travel and retail businesses would soon follow. He said: "The internet will either radically change or...enhance our business. But we'll have to provide added value." Also, Clarke revealed the company was considering producing its own set-top box which could cost no more than £200. Branson denied the suggestion that he plans to challenge Microsoft, but admitted: "Virgin is the only British name, on a global scale, that can give Bill Gates a run for his money. But there's still plenty of room for everybody."



Virgin territory: the Megastore will go online in January

[www.virgin.co.uk](http://www.virgin.co.uk)

Susan Pederson

## UK Top Ten Web Sites



Why not start the New Year with this hand-picked selection of the best new sites around, courtesy of Yell [www.yell.co.uk](http://www.yell.co.uk)? Those infamous Saatchis are topping the list but check out the Shell UK site (pictured above) for some seriously cool animated caveman action.

- |    |                              |  |
|----|------------------------------|--|
| 1  | Saatchi & Saatchi            | <a href="http://www.saatchi-saatchi.com">www.saatchi-saatchi.com</a>                         |
| 2  | Shell UK                     | <a href="http://www.shell.co.uk">www.shell.co.uk</a>   |
| 3  | Microsoft Network News       | <a href="http://www.uk.msn.com/default.asp">www.uk.msn.com/default.asp</a>                   |
| 4  | Rise                         | <a href="http://www.rise.co.uk">www.rise.co.uk</a>   |
| 5  | SpiceWorld                   | <a href="http://c3.vmg.co.uk/spicegirls/spiceworld">c3.vmg.co.uk/spicegirls/spiceworld</a>   |
| 6  | Michael Websters Home        | <a href="http://www.swanorth.demon.co.uk">www.swanorth.demon.co.uk</a>                       |
| 7  | Official Edward De Bono Site | <a href="http://www.edwdebono.co.uk/debono/home.htm">www.edwdebono.co.uk/debono/home.htm</a> |
| 8  | Brewworld                    | <a href="http://www.brewworld.co.uk">www.brewworld.co.uk</a>                                 |
| 9  | Webmedia 8080                | <a href="http://webmedia.com/8080/eightfr.html">webmedia.com/8080/eightfr.html</a>           |
| 10 | FontWorks                    | <a href="http://www.fontworks1.type.co.uk">www.fontworks1.type.co.uk</a>                     |

## Netscape loses share

Netscape's share of the browser market continues to fall but is nevertheless holding up well against Microsoft's free Internet Explorer onslaught. According to market analysts, Dataquest, during the third quarter of this year Netscape's share of the browser market fell to just under 58 percent, while Microsoft's rose to around 40.

This turnaround continues the trend from the end of last year when Microsoft had 20 percent and Netscape dominated with 73 percent. However, Netscape has challenged these figures, suggesting it still holds 67 percent of the web browser market. This number, like Dataquest's, is based on data from search engine usage.

Both figures represent actual usage rather than sales figures or the installed base of web browsers. The Dataquest results are based on use of the Alta Vista search engine, while Netscape monitors Excite, Infoseek, Look Smart and Yahoo.

[www.microsoft.com](http://www.microsoft.com)

[www.netscape.com](http://www.netscape.com)

[www.dataquest.com](http://www.dataquest.com)

p38 >

# New Stars from dan

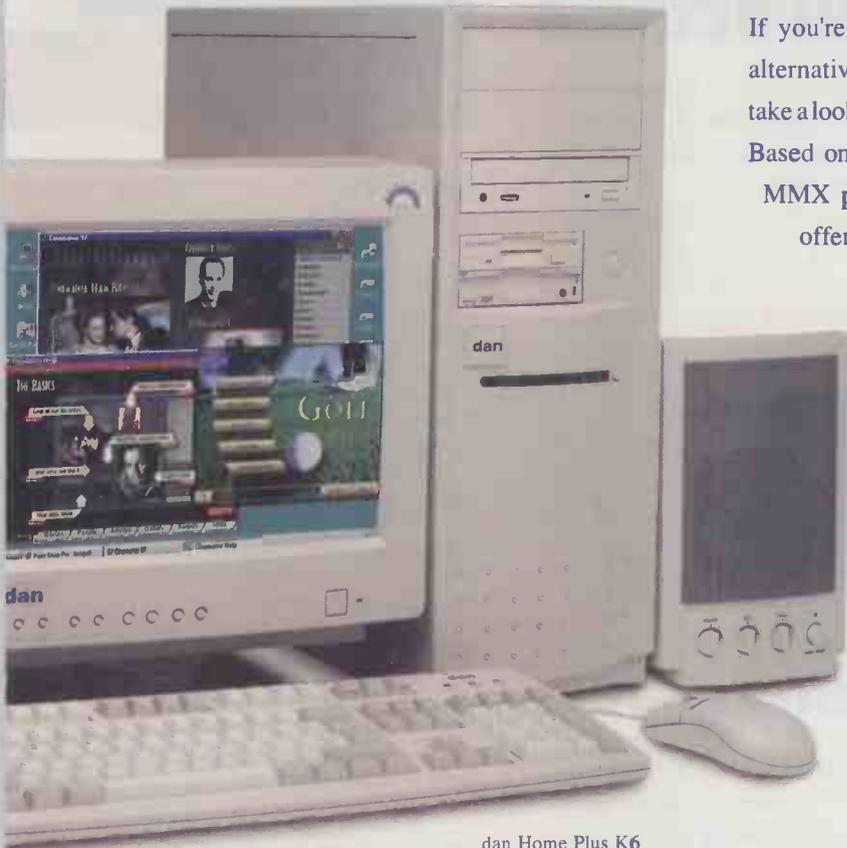
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- 56KBPS VoiceFax/Modem (UK)
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- Soundblaster AWE64 OEM
- dan Hi-Fi Power Speakers (150W PMPO)
- Microsoft IntelliMouse™
- Midi Tower Case w/200W PSU
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- ATi Xpert@Work 4MB SGRAM Video Card
- 17" Iiyama L/R N/I Monitor (9017T)
- 56KBPS VoiceFax/Modem (UK)
- 24MAX EIDE CD-ROM
- SoundBlaster AWE 64 OEM
- Hi-Fi Power dan Speakers (150W PMPO)
- Microsoft IntelliMouse™
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 Further dan technology adverts can be found on pages 333 to 337



# MSN pulls plug on access

MSN is pulling out of service provision in Europe to concentrate on providing content, general manager Mike Delman has announced. MSN access is currently provided in France, Germany and the UK, having been stopped in Belgium this year.

MSN customers will be transferred to other net access providers: in France, to France Telecom; and in Germany, to

Deutsche Telekom. In the UK, the MSN branded service is provided by Pipex, but it is not yet certain whether customers will be turned over to them.

MSN began in 1995 as a proprietary network service, competing with AOL and CompuServe. Following disappointing results, however, the company began converting the network to net standards.

MSN became both an internet provider and a web site, with some parts of the site only accessible to subscribers.

[www.uk.msn.com](http://www.uk.msn.com)



## Pay Barclaycard over the net

Barclaycard customers can now pay their credit-card bill over the internet. Its Netlink service also allows cardholders to check their account balance and their available credit limit. They can also view their previous statement and see subsequent transactions since the last statement was issued.

Transactions, such as settling a bill or applying for a card, are protected by

128-bit encryption. Barclaycard claims to be the first UK company to use this high level of security for financial services.

Another recent Barclaycard innovation is BarclayCoin, a form of electronic money. Customers can download "money" from their credit card to an electronic wallet which can then be used for online shopping.

[www.barclaycard.co.uk](http://www.barclaycard.co.uk)



## Go on, have a whine online

The Parliamentary and Health Service Ombudsman, Michael Buckley, is now on the internet.

If you are wondering what he does, you are not alone. As Mr. Buckley said: "...a recent survey revealed that many people in this country have not heard of the Parliamentary or Health Service Ombudsman, or if they have, they are uncertain about what types of complaint he can investigate. I hope our web site

explains this clearly and will make my office accessible to many more people."

The Parliamentary Ombudsman investigates complaints from those who believe they have suffered because of poor administration by government bodies or have been unjustly refused access to government information. The web site features a guide to the services and an online complaints form for completion.

[www.ombudsman.org.uk](http://www.ombudsman.org.uk)

### Internet shorts

#### BBC NEWS

#### BBC starts net newscasting

The BBC has launched a free continuous news service on the internet.

The site publishes UK, world, science and technology, business and sports news stories as they break, together with background research and analysis. It also includes an hourly five-minute news bulletin with audio and video clips and carries a live transmission of the Nine O'Clock News every night.

Tony Hall, chief executive of BBC News, said: "BBC News Online is all about our commitment to provide a public service news choice for the next generation. We will offer a comprehensive, unbiased, instant news service accessible to all."

Over 40 journalists and web experts are responsible for producing stories specifically for BBC News Online, as well as writing stories fed in from the BBC's 2,000 global news staff. Unlike other free news sites on the web, BBC News Online carries no advertising.

[www.news.bbc.co.uk](http://www.news.bbc.co.uk)

#### Demon deal for small firms

Demon Internet has launched a new service for small businesses (defined as those with 25 PCs and under) who wish to get on the web.

Its new Business Dial-Up service is integrated with Microsoft's Back Office Small Business Server suite and provides net access, email and web hosting (with 10Mb of permanently connected space) from a single modem or ISDN line.

Resellers are being offered good deals to sell BDU, which costs customers an initial £395 (ex VAT), including domain-name registration, plus £60 a month after two months.

Demon 0181 371 1234; [www.demon.net/](http://www.demon.net/)

#### Where's the web site?

The pace of technological change is obviously proving a little too much for some people. PCW has recently had its cockles warmed by the tale of an elderly couple from Portsmouth.

Excited by the radio advertisement to visit a new building, the couple set off for Caversham in Berkshire. After a fruitless search for the location, they finally turned to a local for help...

and discovered the truth about the Thames Valley Web Site.

[www.thamesvalley.co.uk](http://www.thamesvalley.co.uk)



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[www.msn.co.uk](http://www.msn.co.uk)

# The future on show

There was nothing too tasty at this year's Comdex Fall, but some of the exhibits did give an exciting glimpse into the future. Tim Bajarin reports.

**C**omdex was not quite the boring show many have suggested: LCD screens are poised to take over the desktop, high-speed MMX processors are not about to go away, and the PC is about to hit the road.

Gas-plasma screens are back in favour. Gavilan Computers used one on a laptop back in 1984 at a time when mono LCD screens were just coming out and colour LCD had not been perfected. The Gavilan screen emitted a yellow phosphorus glow and you could fry an egg on it. It drew so much power that less than 30 minutes of battery life was the norm. It was also hard to make. Then Toshiba's T1000 popularised

the LCD screen and gas plasma technology fell by the wayside. But gas plasma is starting to look like it can soon be cheap enough to replace CRTs, although it is still pricey and too thirsty for portables.

LCD makers also see a goldmine in replacing desktop CRTs. But they admit it will be some time before 14in to 17in TFT models are cheap enough to compete. But they are looking closely at custom chips from Arithmos, which speed up the refresh rates on relatively cheap dual-scan (DSTN) LCDs.

By late 1998 these chips will refresh dual-scan screens in 100 milliseconds or less, enough for full-motion video. Current dual-scan screens refresh at between 150ms and 300ms. Dual-scan screens are half the cost of faster TFT screens and could

challenge the CRT by 1999.

Meanwhile, PCs are not going away. Most office tasks today require only TIPS (tens of instructions per second) instead of MIPS (millions), but this is about to change. TIPS are fine for text or even simple graphics, but as we move towards more multimedia data types, the PC will finally be called on to really compute.

For audio, animation, video and 3D graphics, the PC is going to need high-speed processing in the CPU and companion chips. Add new interfaces such as voice recognition, spatial pattern matching and biometrics security features, and TIPS computing is history.

New users tempted by next-generation multimedia interfaces won't settle for a stripped-down NC that can only handle simple text and graphics off the web. Of course, you will see the NC in smart phones or areas where dedicated functions or tasks make sense. But the MM PC is going to be the computer of choice.

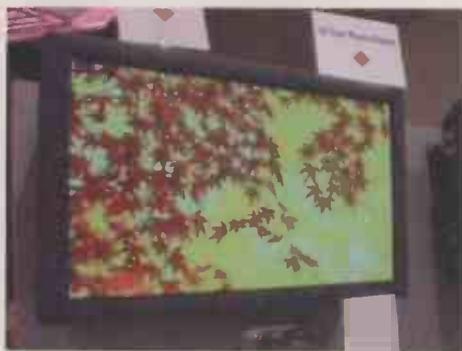
The last technology I saw that could have a dramatic impact on the role of computing in the future was the Auto PC. Intel was showing a mocked-up version of this idea in which an NC-like device, with an LCD screen, was built into the dashboard of a family van. Intel officials suggested it could be used for navigational purposes, as well as traffic reports and news feeds. This takes the concept of mobile computing in another direction and could be an important new platform for PC technology.

In a private session with Microsoft recently, I was shown its Apollo project. This is its version of an Auto PC. While I cannot tell you more about this until after 7th January, when it will be announced at the Consumer Electronics Show in Las Vegas, I can say that its use of Windows CE in a car will cause the entire auto industry to become Microsoft customers in the future.

While none three of these technologies is earth-shattering, if you take each of them and apply them to our industry, you begin to see some very important trends. Eventually, flat-panel displays will make CRT technology completely obsolete. It will take at least ten years, but flat-panel technology will some day be on your living room wall and serve as your PC/TV. This year's Comdex showed us the roots of this future world of video display.

You can also see how MMX technology and high-speed computations will be critical to any PC access device, whether it is in business or the home. And, over time, the PC platform will be extended to all automobiles, making them an important new market for PC technology.

So, while Comdex did not seem like it had anything really new this year, upon further reflection, there really were some important new technologies shown that will soon impact on every part of the PC world. ■



**Top** This Viewsonic 18in LCD monitor will be available next year — at a price. Excellent larger screens were demonstrated at Comdex  
**Above** CRT replacement? A Fujitsu 42in gas-plasma display

## The view from Las Vegas



It was another wait-and-see year at Comdex, the annual showcase for the IT industry. Everyone is waiting for more bandwidth, for this standard or that standard to be finalised, for yet another operating system upgrade. But big changes are imminent and they were all there in embryo.

The bandwidth problem is not limited to net links. Something has to deliver multimedia data streams and that means mega-servers (up to eight processors in parallel, with bigger on the way) joined by big pipes (flavours of the year are fibre channel and gigabit ethernet). But the desktop PC is also about to undergo major transformations which are reflected on these pages.

● More details and pictures are in our in Comdex Web special report at [www.pcw.vnu.co.uk](http://www.pcw.vnu.co.uk). Companies marked in blue here are hyperlinked on those pages.

## Fast buses take PC to a modular millennium

Technology for the PC's two new serial ports is at last coming together, and it will bring more than fast data links.

The Universal Serial Bus, which offers a 12Mbit/sec data link and a 5v power line, was fitted on 36 million PCs last year but is little used. It will take off in 1998 when Windows 98 provides the first robust drivers, the USB Implementers Forum said.

The faster 1394 (aka Firewire) will happen in a big way in 1999. A milestone has just been passed with the agreement of what is called the Open Host Controller Interface (OHCI version 1.0), which provides software control. NEC, Symbios and Texas Instruments (TI) showed OHCI controller chips. USB and 1394 both offer hot swapping, plug-and-play,



and simplified wiring. The 1394 is faster: currently up to 400Mbit/sec, and 800Mbit/sec in 1998.

The two form the backbone of a new architecture called Device Bay, intended to ease the use and expansion of PCs. The first Device Bay products were on show (actually mock-ups, for the most part). Each uses either USB or 1394 and slots into a bay fitted with both. You can add more bays by plugging them into external USB and 1394 ports.

● See our web site at [www.pcw.vnu.co.uk](http://www.pcw.vnu.co.uk) for details and links.

First Device Bay designs



TI's new 1394 interface chip

## Comdex notebook (plus a Psion and a Sony digicam)

Comdex is hard work. You could get lost for a lifetime in the exhibition halls, and briefings and displays sprout in the hotels along the Vegas strip. The hotels, with casinos on the ground floor, are designed to get lost in: the longer the punters stay around the slots and gaming tables, the more money they give to the owners. Outside, walking can be quicker than cab. It's not the best of places to attend a rush of meetings, nor through which to lug a notebook PC, so I kept a Digital Ultra 2000 (reviewed, p75) at my

hotel for heavy-duty work. This was excellent, with its 14.1in TFT screen, 3Gb disk and swappable floppy and CD drives.

For those with a budget that runs to a £4,500-plus machine, I can report that it withstood the rigours of a transatlantic round trip. I took a Psion 5.0 around the show and found I could quite comfortably type mini-articles on it, although I had to resort to paper for fast notes.

I had forgotten to load PsiWin onto the Digital for transferring files from the Psion, so I tried to link the machines via their infrared ports. Each registered the other but refused to transfer data — so much for plug-and-play.

My other toy was a Sony Mavica MVD-FD5 digital camera. I'd wanted one with a zoom lens and had arranged to take an Epson PhotoPC 600, but this failed to turn up in time. The Sony's great advantage is that it has a floppy drive and packs 24 VGA JPG images on a 1.44Mb disk, so there is no problem with transferring files to a PC. I simply



Focusing is tricky with the Sony Mavica as you have only a fuzzy LCD screen to go by. This can be galling when you find Bill Gates standing next to you, presenting what could have been a good news shot. Here, he is frowning at a Mitsubishi AMI-II network computer running the Java OS on a Cyrix MediaGX processor. In the background you can see two portable AMITY wireless NCs also running the Java OS. Not a bit of Microsoft software in sight.

got Windows Explorer to list the JPG files on the floppy and dragged them into Paintshop Pro for sorting and editing. With 32Mb of RAM on the Ultra, there was no problem having them all open at once. It offers VGA resolution, and focusing is capricious, though there is a macro setting for extreme close-ups. But it's a good visual notebook, producing instant pictures at no cost and it's adequate for web use. You can see some of the results, flaws and all, here and on my Comdex Web special report. Remember that the images are reduced in size. I noted with envy a US journalist who was carrying the same Sony with a 10x zoom.

I loaded a beta of Front Page 98 on the Ultra to sketch out my Web special: my first attempt at direct hypermedia reporting. I kept things simple and the environment worked well, but the beta turned out to be flakier than I'd expected and kept losing pages. My fault for relying on unfinished software.



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AMD K6	233 £849	£997.58	£39/m
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What PC? August 1997



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MMX intel inside	233	£1299	£1526.33 £60/m
pentium® II	266	£1499	£1761.33 £70/m



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300 <b>£1549</b>	£1820.08	£72/m	
333 <b>£1649</b>	£1820.08	£72/m	

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233 <b>£1399</b>	£1761.33	£70/m	
266 <b>£1599</b>	£1878.83	£74/m	
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PC Pro June '97



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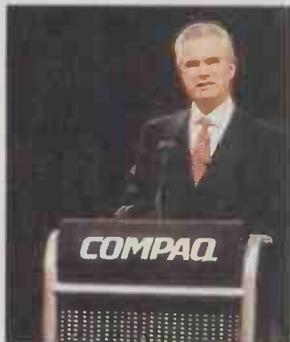


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## Comdex shorts



### 'Big four PC vendors will corner market'

More than seven out of ten PCs sold worldwide in five years' time will come from just four companies, Compaq CEO Eckhard Pfeiffer said in his Comdex keynote speech.

He predicted that Compaq will be one of the top three. He also believed people prefer to buy through dealers offering service and support. "Dell and Gateway offer little in support," he claimed.

### SCSI stays ahead as ATM loses ground

SCSI will not be superseded by 1394 (see p41) for fast data links, according to the head of market-leading I/O specialist, Adaptec. "They will complement each other," Grant Saviers said.

He announced that Adaptec will ship an 80Mb/sec Ultra2 SCSI card, the AHA-2940U2W, in January '98 and said he believed SCSI would remain speedier than 1394. The new card doubles the current top burst rate and quadruples the maximum cable length to 12 metres.

Saviers also said that Asynchronous Transfer Mode (ATM) has lost the battle of the backbones to Fibre Channel and Gigabit Ethernet.

Adaptec was one of the first companies to target ATM cards at the mainstream market. "We backed it but it turns out we were wrong," Saviers told a press briefing.

### Voodoo board

Adrenalin Rush, a low-cost PCI implementation of the fast Voodoo Rush 3D/2D graphics chipset, will ship to Britain early in 1998, according to maker Jazz Multimedia.

Jazz 00 1 408 627 8900;  
www.jazzmm.com

# Rise (and fall?) of the mini-notebook



This machine, called the WordPad, from a small Californian company called H45, is about half as big again as the Psion 5.0 palmtop and much the same weight. It is little more than a basic word processor with a tiny LCD screen and 128Kb of memory.

It functions as a standard remote keyboard when you are at your desk. But you can take it away and keep on typing. When you get back to your desk, you just dump the data back to your PC. The batteries last not just three hours, but three months.

I have long had a hunch that the mobile, driven by a keyboard, pen, and/or voice, will become the universal computing interface; and the WordPad (just \$200 complete with an IR port for your PC) shows how simply it can be done.

Manufacturers are at last trying for portability, and from two directions: from the handheld up, and from the notebook down.

NEC is one of the first to move a palmtop slightly up in size to get a better keyboard. Its CE 2.0-based MobilePro700 H/PC (shown left, next to a Psion 5.0) sports an internal modem, a PC Card slot and a monochrome screen.



The "notebook down" approach is to offer the facilities of a Win95/NT notebook in as light a package as possible. The traditional approach is exemplified by Mitsubishi's beautiful Pedion, an anorexic full A4 size weighing in at just 1.9lbs, only 0.3lb more than the NEC.

But most fashionable at Comdex were mini-notebooks not much bigger than palmtops but running Win95 on colour screens. I have been ear-bashing vendors for years to do something like this, but their designs have caused me to rethink my own ideas.

The implementations are flawed because manufacturers in this market are not interested in making cheap machines which might usurp much of the lucrative corporate market in feature-rich notebooks. Thus, the new minis are light, but not that light — Mitsubishi's Amity CN (below) weighs 2.4lbs and the Hitachi VisionBook Traveler is 2.7lbs.

Prices range from \$2,000; too much for something that, for most people, will be a second machine. The machine that started the mini trend, Toshiba's Libretto (shown top, next to a Psion) is now available with a 120MHz Pentium processor.

These machines stand or fall, as road workhorses, on their keyboards. The Hitachi's was best to my taste but even that was not significantly better than the keyboard on the Psion 5.0; a good comparison because it has the best ergonomics of a pocketable.

The lesson, to me, is that if you are going to go bigger than a pocket machine, weight and ruggedness are more important than size. If I needed Win95 or NT on the road I'd go for a small notebook rather than a mini.



But my needs, and I suspect those of most travellers, are simpler: the kind of basic spreadsheet, organiser, email, and word-processing

facilities you get with a good handheld, plus ruggedness and the ability to swap data easily with a PC. No-one has yet come up with a definitive design. Personally, until handwriting recognition matures, I'd go for a cross between the WordPad for its elegant use of infra-red, the Psion for its guts, and the Apple eMate for its keyboard and ruggedness.

See our web site at [www.pcw.vnu.co.uk](http://www.pcw.vnu.co.uk) for more details and links.

# Touching story of the mouse that feels



Rosenberg:  
computing  
with feeling

Every so often, an invention comes along that obviously will not work and will never catch on. And yet it does work, and it changes lives. One such was the bicycle. Another was the aeroplane. The Feelit mouse, from Immersion, may not be able to match their impact, but it shares that quality of improbability.

When dealing with the virtual world, the mouse gives you the kind of tactile feedback you get from the real world. It's an extension

of techniques used in force-feedback joysticks which feel like the real thing.

Immersion's president, Louis Rosenberg, first experimented with the ideas while researching human/machine interaction at Silicon Valley's prestigious Stanford University. The Feelit mouse, which sits on a motorised pad, is not simply for games. "It opens up an entirely new channel for you to communicate your needs," said Rosenberg. It can even give a sense of



texture, smooth or rough. "Windows is a good place to add feeling. When you drag an icon, it has weight. When you stretch a window, you can feel it stretch." Most usefully, you can "feel" the edge of a window, which can be tricky for novices but

impossible for the poorly sighted, who will clearly benefit most.

It will ship late next year for \$139, complete with Windows software. The prototype at Comdex was rather cumbersome yet worked surprisingly well.

[www.immerse.com](http://www.immerse.com); 408 467 1900

## How an IR port can cost as much as an IR-enabled TV

Infra-red (I-R) ports on PCs are priced way out of proportion to costs, industry figures admitted at Comdex.

I-R ports are now fitted to most handhelds and notebooks yet they feature on few PCs. The result is that many users have no I-R port to at which to point.

I-R dongles which plug into PC serial ports cost upwards of £70 in England and \$50 to \$100 in the US. Yet they are built around a transceiver chip costing less than \$2 — even when bought singly.

PC I-R dongles were even more expensive until recently, costing much the same as a complete television equipped with a virtually identical I-R port plus an I-R remote control.

And I-R is easy to fit onto a PC. An IRDA driver for Win95 has been available for

### Standards get set for infra-red speed-up

The infra-red industry is gearing up for speeds as high as 30Mbps per second. This compares with 4Mbps per second today. Speeds will reach "at least" 10Mbps per second by the end of 1998, said IRDA president, Mike Watson. Specifications are already being drafted and will be finalised by mid-1998. Two moves announced at Comdex extend the IRDA standard to cover control functions.

A draft IRBus spec, backed by Intel and Microsoft, allows two-way control of home appliances and peripherals. It would allow a digital camera, say, to talk directly to a printer. The second move, the IR Mobile Communications standard, defines how PC applications can swap information, such as messages and appointments, with phones.

Details are at [www.irda.org](http://www.irda.org) and [www.irbus.org](http://www.irbus.org).

more than a year, and most motherboards are IR enabled, complete with a pinout for the transceiver. But IR dongles tend to link to



An IBM 31T 1100A infra-red transceiver chip

the serial port, pushing up costs. But Mike Watson, president of the Infra-Red Data Association, agreed that prices are nevertheless high.

And, he said, there have been problems getting PC makers to fit IR ports.

"They said there were not enough devices available to justify them. But that is no longer true, and I think we will see more and more of them fitted next year."



### Finger that intruder

Two new security

products won awards at Comdex. One was this neat fingerprint recognition system which protects your PC from intruders even when you have just walked away from your machine for a few minutes.

You just press your finger on the pad (shown, above) and, if you are authorised, you get your PC back. The package, called U.are.U, costs \$179 from Digital Persona.

The second product, called FaceIt, uses face recognition to protect even individual files. It will also store pictures of people who are denied access and will invite anyone who approaches your desk to leave a message. US prices are \$149 for a single seat or \$4,500 for a site licence. UK availability on neither product was available at the time of going to press.

Digital Persona 00 1 650 261 6070;

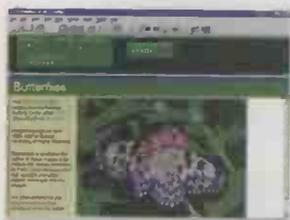
[www.digital.persona.com](http://www.digital.persona.com)

FaceIt developer Visionics

00 1 201 332 9213; [www.faceit.com](http://www.faceit.com)



■ If you must know, she is holding a flexible PC motherboard. More to the point, she is wearing a PC in pouches round her waist. It's from the Flexible PC company at [www.FlexiPC.com](http://www.FlexiPC.com).



### 'Word processor of the future' wins award

■ Microsoft Word step aside... the word processor of the future is called Trellix, according to US reviewers, and is designed to write and collate HTML pages.

Version 1.0, which costs \$99, won an award at Comdex. I did not get a chance to look at it but it will be available here shortly — and so will a PCW review. You can buy it or download a trial copy from [www.trellix.com](http://www.trellix.com).

Trellix (US) 00 1 781 788 9400.

# Listening Windows ushers in voice-driven handhelds

Natural language speech control is to be incorporated into Windows, including cut-down Windows CE, opening the way for tiny, voice-controlled handhelds.

The move seemed on the cards after Microsoft put \$45m into Belgium-based speech specialist Lernout and Hauspie (L&H) last summer. And L&H president, Gaston Bastiaens, spoke of it as a matter of course when he launched L&H's first continuous-speech mass-market software at

Comdex. But he was cagey about dates, saying that only Bill Gates knew those.

The new products, Voice Express and Voice Express Plus, will be on sale for "less than \$100" early next year.

The cheaper Voice Express works only with WordPad, the word processor bundled with Win95; the Plus version works with Word.

Two rival continuous speech products, Dragon's Naturally Speaking and IBM's VoiceType, have been out since September but neither offers natural language speech control.

Voice Express Plus (in company demonstrations, at least) allows you to talk Word through complex formatting and editing tasks more or less as if you were speaking to a human.

This, thanks to the close alliance with Microsoft, goes further than speech recognition. Voice Express insulates you from the minutiae of tasks. You can tell it to make text into two columns, set up a table or add a column of figures, without knowing how it is done within Word. L&H claims, too, that you do not have to train it to your voice (though it gets better with use). Voice Express will ship early in 1998. You can already buy the voice control functions in Kurzweil's Voice Commands (£49.99 inc VAT).

● L&H showed a pager which delivers voice and alphanumeric messages over a standard paging system.

L&H [www.lhs.com](http://www.lhs.com)

## Space saver

The box pictured is actually a keyboard from a Talwan-owned firm called Jamicon, opened up to show



the inside. This holds an entire PC, including a hard drive and expansion slot, yet is only slightly deeper than an ordinary keyboard. All you do to get a working PC is plug in a monitor. Perhaps it has been done before; but if it hasn't, why not?

Jamicon 00 1 818 333 9168 (ext 2565). Kaimei (parent) [www.asianet.com/taiwan/kaimei](http://www.asianet.com/taiwan/kaimei)

### Top 10 Windows software

		Last month
1	Encarta Deluxe 98	Microsoft
2	Bookshelf 1996 (Win95)	Microsoft
3	Money 98 Financial Suite	Microsoft
4	Win95 U/G with Internet	Microsoft
5	Flight Simulator 98	Microsoft
6	Nuts and Bolts (3.1 & '95)	Xatlantic
7	Smart Draw	Kiss
8	Home Essentials 97 C/V	Microsoft
9	World Atlas 98 v3	Microsoft
10	Student Office 97	Microsoft

### Top 10 DOS software

1	DOS 2 Win95 UG with Internet	Microsoft
2	Turbo Pascal v7.0	Borland
3	MS-DOS v6.22 U/G	Microsoft
4	System Commander v3.0	POW
5	Corel WP 6.2 U/G	Corel
6	Turbo C++ v3.0	Borland
7	FSFX UpGrade for MS Flight	Microsoft
8	Novell Personal Netware	Novell
9	Mail PC Remote	Microsoft
10	Procom for DOS	Datastorm

### Top 10 CD-ROMs

		Last month
1	Catz 2	Mindscape
2	Oasis Interactive	Euroscape
3	Dogz 2	Mindscape
4	Encarta 98 Deluxe	Microsoft
5	Encarta 98 World Atlas	Microsoft
6	Encarta 98 Standard	Microsoft
7	Star Wars Trilogy	One Stop
8	StarTrek Encyclopedia	Zablac
9	AA Camping & Caravanning Guide	BTL Publishing
10	Spanish: Language Labs	Europress

### Top 10 peripherals

1	Umax Astra 610 P	Umax
2	HP ScanJet 5P	Hewlett-Packard
3	Righteous 3DFX Accelerator	Orchid
4	Mystique 220 4Mb PCI	Matrox
5	USR Sportster Flash Ex	USR
6	Sidewinder Force Feedback	Microsoft
7	Evergreen 486/586 proc U/G	MID
8	Awe 64 Value ISA	Creative
9	Sidewinder Precision Pro	Microsoft
10	Awe 64 Gold	Creative

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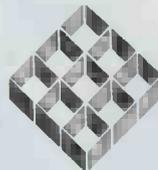
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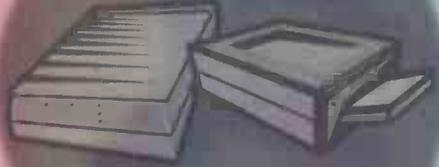
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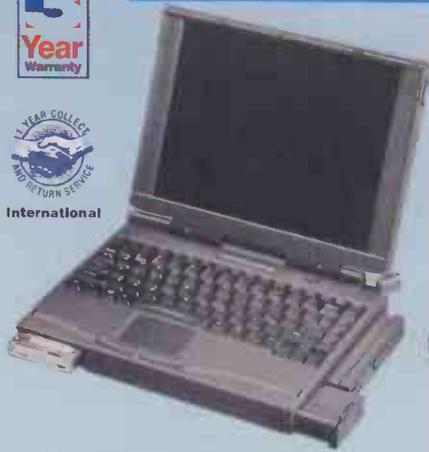
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PC Plus Review - September 97

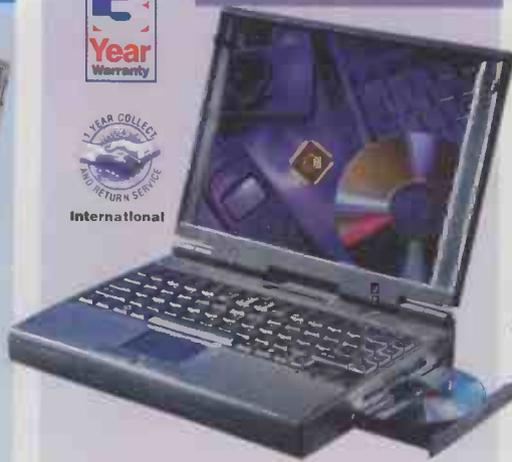
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PC Direct Review - June 97

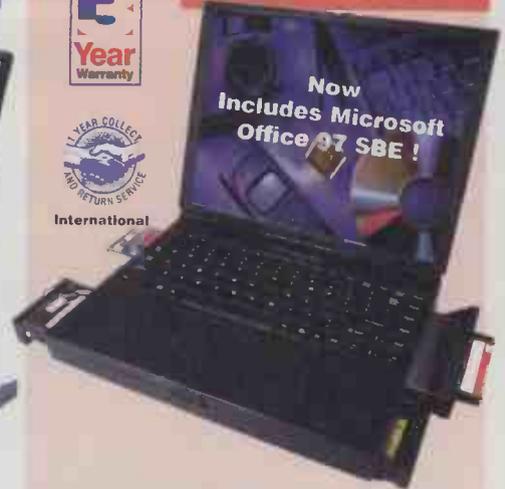
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**S**antorini, 12th November, 1997. This is one of those Greek islands that, bunny-like, you hop across to when you get bored with Athens.

And, as getting bored with Athens isn't something that tends to take long, many people make the hop. Having done so myself, I'm currently on the veranda of my villa, a bottle of local wine by my side (half of it already in me), my laptop on my lap, watching the sun go down. Which, in the off-season, is about all there is to do around here.

The only major drawback with this place is cloud activity. I'm perched here on the lip of a volcanic crater, effectively the top of a mountain, so clouds blow in all the time. Sometimes they just disperse. On other occasions, however, they get wedged in between rocks, crevices and other impediments, and have to be dislodged manually. This morning, for example, I found one had blown into my living room overnight through the open shutters. I had to take a broom to it, chop it into manageable portions, and force them all, one by one, into the kitchen extractor fan.

That aside, I'm essentially just eating, drinking and occasionally logging on — not through a local ISP, though. The biggest hereabouts, Greece's equivalent to Demon, is called Hellas Online. Before I flew out, I emailed the PR department, explaining that I was a columnist on this magazine ("the UK's most prestigious computing title") and would it be possible to sign on with them for the duration of my visit to Greece? You'd have thought the underlying sub-text ("Give me a free account") would have been readily understandable, especially to a nation whose literary luminaries, Herodotus and Thucydides, practically invented the sub-text. Nevertheless, a spokeswoman replied by return saying that not only would I have to pay up to use the service, but I'd be obliged to commit myself to a minimum three-month contract, too. I, of course, emailed them back with a torrent of pro-Lord Elgin sentiments.

This does neatly illustrate one of the major drawbacks of the so-called worldwide web: for people with conventional dial-up connections, it's about as worldwide as my local train service and equally as inefficient. A Demon or a Direct Connection account may be fine in the UK, but try using either abroad and it's like trying to spend Drachma in Camden Market.

You'd have thought that, by now, the various worldwide ISPs would have got their acts together to offer reciprocal agreements as, in effect, do their respective national telephone and postal services. But no. As far as I am aware, there's only one company in the UK which does this sort of thing, and then only to a limited number of other International internet providers.

Thus frustrated, I looked elsewhere. What about Microsoft Network? I asked Text 100, Microsoft's PR company. No chance, mate, they replied. Okay for Western Europe but no point of presence worth talking

about anywhere in the Balkans. Next, I considered CompuServe, but quickly decided against that: from past experience, I know its internet access, especially fundamentals such as Telnet and FTP, can often be something of a joke; likewise AOL, albeit a funnier one.

So, reluctantly I realised that if I wanted to connect at all I'd have to do so via a station-to-station overseas call; Greece to London. This would mean going through the Athens international telephone exchange, which is universally acknowledged as one of the main reasons God created the internet in the first place. It's all pulse dial, non-digital, and crossed lines.

It therefore came as something of shock to me to discover that, although it's virtually impossible to hold an audible conversation on a Greek overseas line, data transfer is, by complete contrast, miraculously efficient. Since I arrived, I've been getting a perfect connection every time and achieving top-whack speeds over the modem. Okay, I'm paying international rates for the pleasure, but at least I'm getting my email and I am able to check my portfolio values.

On the downside, I am still very uncomfortable about lugging this damn laptop around with me. I should have got over this by now, but I haven't. At 3.5lbs, it's not that the thing is particularly cumbersome. It's just that it feels fragile and thievable. The fact that it's heavily insured, all



Michael Hewitt

## Sounding Off

Having tired of Athens, Michael Hewitt is spending some time in Santorini. Never totally away from it all, he tries in vain for some international connectivity.

risks, doesn't do much for me. Apparently, if anything goes wrong, or it gets lost, a couple of hours later I get the hi-tech equivalent of the Milk Tray man scaling my wall to deliver a replacement. Maybe it would be worthwhile dropping it down the cliff just to see that... Maybe not.

Anyhow, it feels quite perverse yacking on about computers on an evening like this, with the sun sinking in the horizon, goats bleating on the hillside and the scent of jasmine wafting in with the light breeze. So I shall shut up now and go and open another bottle of wine. *Kalli nichta!*

■ [Mike.hewitt@mjh1.demon.co.uk](mailto:Mike.hewitt@mjh1.demon.co.uk)

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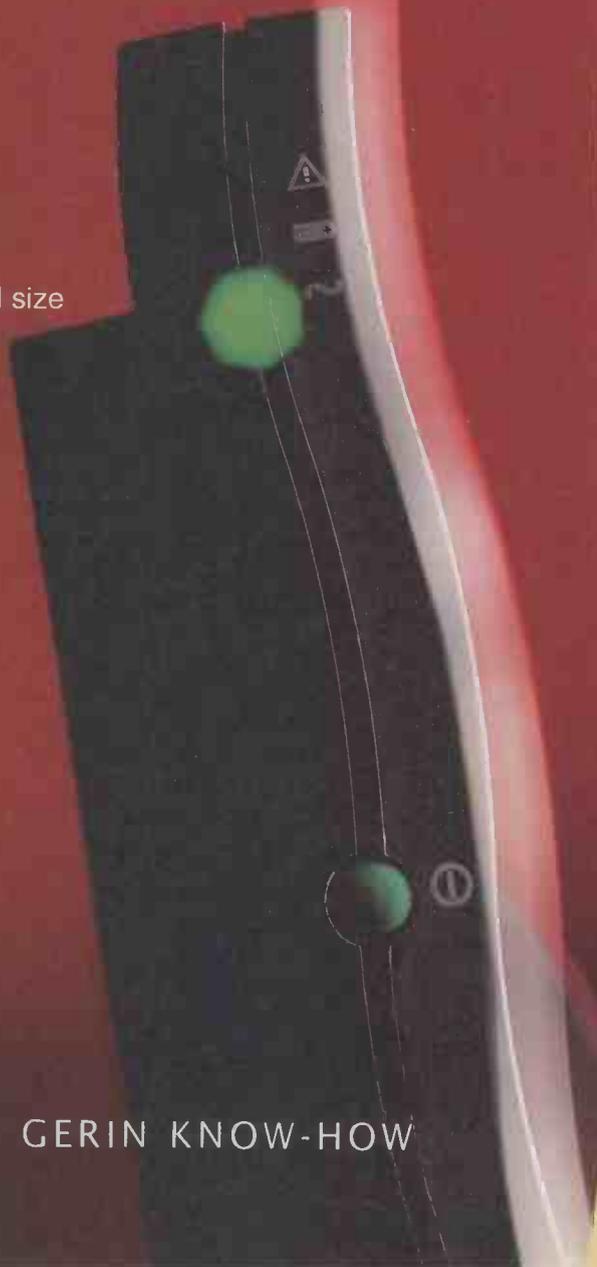
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I am holding over my promised look at hard-disk backup for two reasons. I have been waiting for several months for Hewlett-Packard UK to supply technical literature to back its claim that its CD-R backup system is better than others. Meanwhile, HP has loaned me the low-cost Colorado tape drive which claims to solve the problem with most tape backups: that a crashed Windows PC can no longer access backup data stored under Windows.

The CD-ROM which HP sent was one of its own gold backup CD-Rs containing pre-release software which did not work reliably. Then HP asked for the return of the drive before it had sent a final release pressed CD-ROM! Thanks to talks with Philips and HP in the US, I now have the full story on CD-R backup and will report next month. In the meantime, do not buy one of the new CD-ReWritable drives without the assurance that it will allow selective file deletion and recovery of the released data space, without the need to bulk-erase the whole disc.

#### CE no evil

Imagine the launch of a new VCR, which is sold with the disclaimer that it is not yet ready and the customer will have to upgrade chips within a few months: that is how Version 2 of the Windows CE handheld is being sold. There is also a good chance that this imaginary VCR will stop other equipment in the home working until the owner has identified the cause of the problem and made adjustments which put things back the way they were: that is how Psion is launching Version 2 of the software which connects the Series 5 to a PC.

The Windows CE handheld family is now ten strong. Original backers have been joined by Ericsson, Sharp and Novatel Wireless. Microsoft provides the OS, and has announced Version 2 with improved display standards and easier connection to a desktop. The CE software will not be shipped to handheld manufacturers until late this year, so everything bought before Christmas will have to be upgraded. How this happens, says Microsoft, is up to the individual companies.

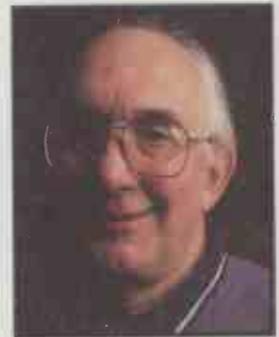
In my October column, I wrote about how the readme files on the Version 1 CE HPC (Handheld PC) Explorer connection software warn of "serious problems" if people use the US-English version with any non-US-English (read British) Win95 PC. Microsoft's David Weeks just ducked my questions.

HPC Explorer is now being replaced by Windows CE Services Version 2.0. Jim Floyd, Microsoft's CE product manager at Redmond, admits: "We only ever made a US-English version of the HPC Explorer software. It was not tested for other language versions of Win95. We know that people used it without problems, but we didn't feel confident and wanted customers to be aware of the risks. Some manufacturers chose to ship handhelds to Europe, but they knew what the caveats were."

Floyd pledges that Version 2 is usable worldwide, without the risk of "serious problems". And, oh yes, another nice touch of Version 2 is that it's incompatible with Microsoft's Outlook Express, the default mail client which comes with Explorer 4, which comes with MSN's new Version 2.5 software.

Marketing manager Oliver Roll and director Judy Gibbons promise that MSN Version 2.5 "cuts confusion" so people can be "up and running within ten minutes". I tried it and got the all-too-familiar error internet mail messages: "Host POP3 could not be found...Host SMTP could not be found". MSN's helpline told me how to change the Tools/Accounts/Server settings to SMTP or POP3.email.msn.com, and then go online and use MSN Communicate to "migrate" my mail client from Exchange to Outlook Express. It makes AOL and CompuServe look so gloriously simple. No-one has yet been able to show me an easy way to make a handheld, either CE or Psion 5, send and receive email with AOL or CompuServe.

Although there are now ten CE licensees, Psion is still safe. The CE gang do not have any marketing policy and are fighting each other for market share instead of creating a new market to challenge Psion. Version 2 of PsiWin, the software which connects the Series 5 to a PC, works like Version 1. It defaults to a setting which continually scans all the Com ports on a PC and stops any existing internet or email software in



Barry Fox

## Straight Talking

Jam yesterday, jam tomorrow, but never jam today. Barry Fox casts a jaundiced eye over the marketing of version 2 software for Windows CE and Psion Series 5.

its tracks. Psion's product manager Daniel Doulton says this was a considered decision. Research showed that 90 percent of users don't know anything about Com ports and welcome the chance to plug in a lead and leave the PC to find the right port and connect. There is no paper manual for PsiWin but people who hit problems can search the electronic help file or print it out.

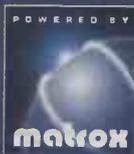
Is it true that only ten percent of users are using a modem? Even if it is true, why can't Psion offer an option: "Do you already connect to the internet or electronic mail with a modem?" What planet do these people hail from?

■ [100131.201@compuserve.com](mailto:100131.201@compuserve.com)

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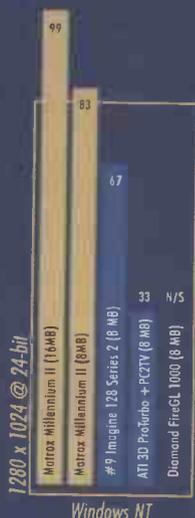
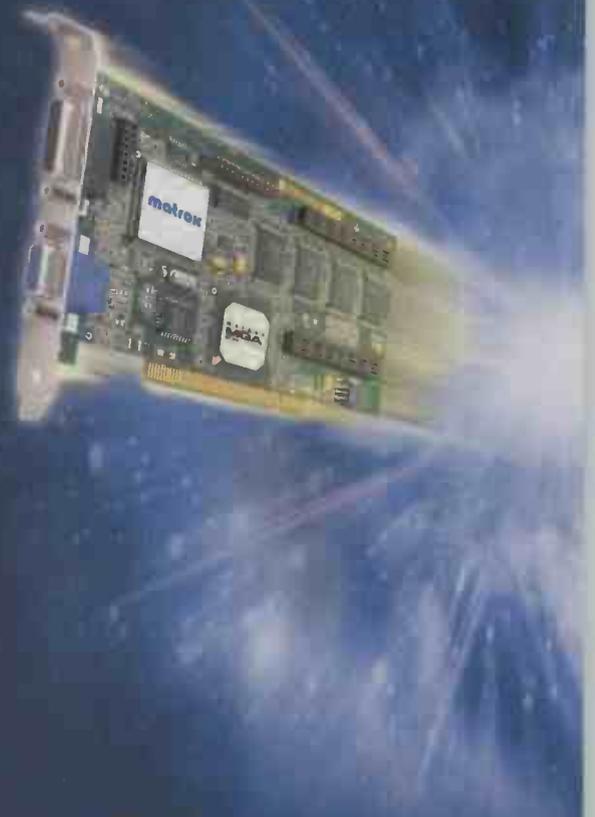
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It is accepted wisdom in business circles that technology shouldn't lead the market. You are not supposed to come up with a great new technology then think of a good reason for its existence. Instead, you identify a business need before finding or developing a technology to fit. But like every good rule, the landscape is littered with examples of it being broken. Never more so than in the intriguing case of the web and micro-franchising. The concept is exquisitely simple, and it could never have happened without the internet. It's a wonderful example of business win-win-win, where everybody involved gets something.

Let's take a concrete example. Say you've got a bookshop. However good your staff — and I am often pleasantly surprised by the quality of staff in a decent bookshop compared with most retailing — obviously, they cannot be experts in every subject. There are currently over a million books in print in the UK (without considering foreign imports): that's a tough product line to know thoroughly. This limited knowledge is going to be equally true in an online bookshop. Internet bookshops are very slick (have a look at Britain's BookPages at [www.bookpages.co.uk](http://www.bookpages.co.uk), IBS at [www.bookshop.co.uk](http://www.bookshop.co.uk) or Amazon in the US at [www.amazon.com](http://www.amazon.com)) but they can only wax lyrical on the obvious titles.

So how could internet bookshops attract customers away from the high street? Obviously there's the convenience of not having to fight through the crowds, especially when faced with the January sales. But what else? One way is to award loyalty points, like supermarkets. Another is to email you when new books, by a favourite author, come out. Yet the internet bookshops need more to help move buyers away from the tactile joy of browsing and flicking through real books.

Let's take a step back from the shop for a moment and consider the internet as a whole. The wonderful thing about it, which has made it into a superb research tool in the past couple of years, is the way in which it taps into pockets of expertise throughout the world.

Say you needed to investigate the history of paperclips. Someone, somewhere, is an enthusiast and has a real passion for paperclips. They will have amassed the sort of knowledge that you can't get by visiting the library (unless they've already written the definitive tome on the subject, and I can't see it staying on the bestseller list for long). The web gives them a chance to set up a paperclip site. Suddenly, you've got all the information you ever wanted — and more. But the enthusiast tends to be disappointed, because there are not many visitors to the site. The knowledge is there, but little used.

The final part of the equation is the potential customer. You know that Aunt Margaret has a profound interest in paperclips, but you've never managed to find a book that would interest a paperclip fan. You've tried the obvious ones like "Paperclips" or "101 things to do with a

paperclip" and drawn a blank. This is three groups of people with a need: net bookshops wanting a device to give them an edge, web-site owners wanting to add value to their site, and purchasers needing specialist guidance.

Enter the micro-franchise. The initial effort must come from the booksellers. They need to set up a mechanism enabling web-site owners to link to the shop and display details of a specific book. As an added incentive, they offer the web-site owner a small cut of the sales value — typically five to 15 percent. Any extra sales via this route and the booksellers are happy. The web-site owner provides information about the books available in a specialist area. The owner provides informed comparison and makes recommendations. And instead of simply providing a book list to read through and forget, there are buttons alongside each book to make an instant purchase if it proves attractive. The site becomes more interesting because it has more to offer (the bookshop may even publicise it) so the web-site owner is happy.

As for the purchaser, suddenly there's a helping hand. They now know the informed choice is between "The joy of paperclips" and "More than a loop of wire". They know that the first has the better illustrations and suggestions for practical things to make with paperclips, while the second has more historical detail and refers to all sorts of



Brian Clegg

# Business Matters

Everyone's a winner! The concept of micro-franchising between retailers and the internet is something everyone can gain from, says Brian Clegg.

unusually-shaped paperclips. The purchaser is happy.

The brilliance of the micro-franchise lies in the relatively low investment for everyone — the enthusiast does most work, but wants to do it anyway — and the remarkable win-win-win outcome. Look out for other micro-franchises. Provided shops can overcome the urge to demand sole representation, I can see anything from a pottery micro-franchise to bonsai trees. For the moment, try [members.aol.com/cubooks](http://members.aol.com/cubooks) to see a bookshop micro-franchise dealing in science fiction and business/creativity.

■ [BrianClegg@msn.com](mailto:BrianClegg@msn.com)



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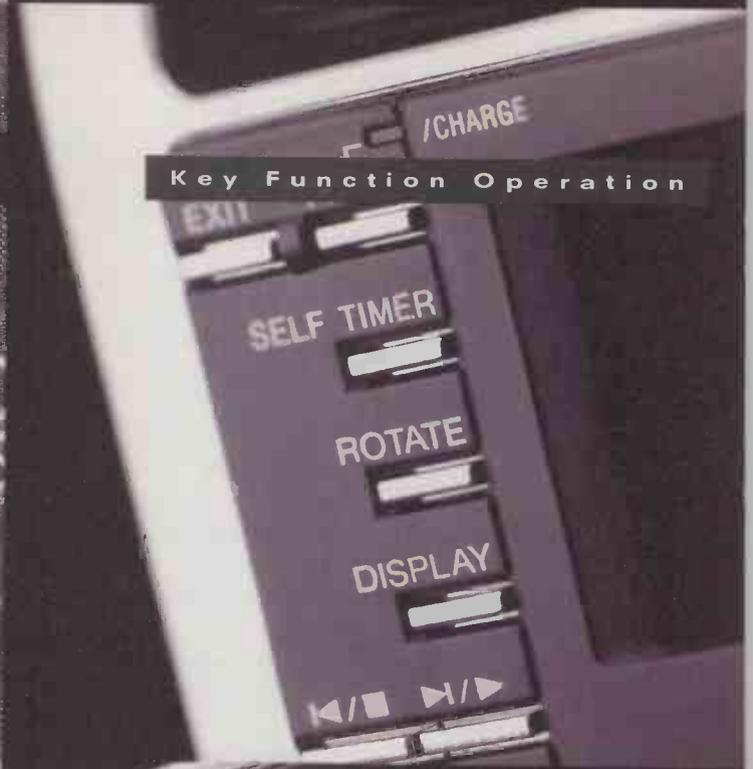


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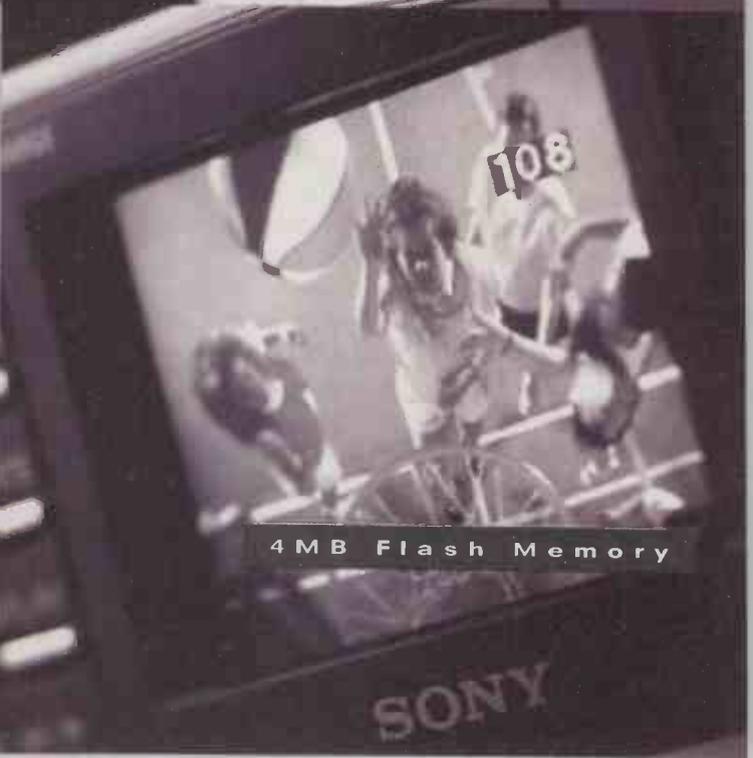
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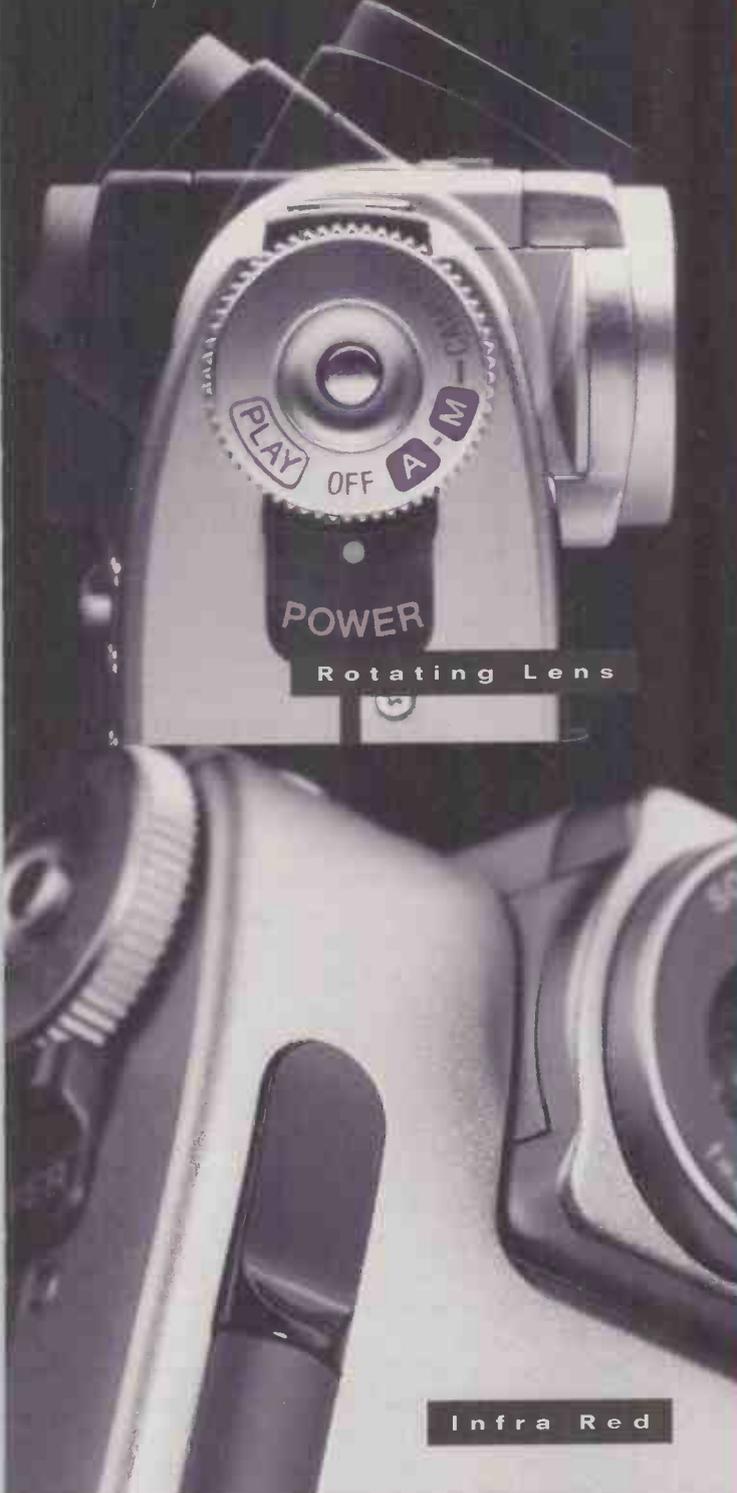
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Tim Nott

**A** month or two ago, the Nott communications facilities were looking rather ropey, centred around a slow, cash-guzzling 14,400 modem. Faced with the amusing choice between the two rival 56K technologies, neither of which are reported to work properly unless both ends have the right bits and pieces and the wind is in the right direction, I thought "stuff this, I'll leapfrog straight to ISDN". So, seeing that France Télécom (FT) maintains a showroom not five minutes from where I sit, I walked in and asked

them to tell me all about Numeris, their ISDN service.

I'd forgotten about our local FT showroom. I think it must be where they send technophobes to recuperate after nervous breakdowns. A friend of mine bought a pager there. It didn't work, so he took it back. "Yes, monsieur, we know it does not work. There is no coverage here." "So why do you sell them?" "For passing trade, monsieur. Would you like your money back?"

I was passed on to a senior official who grudgingly admitted such a thing as Numeris might possibly exist and scribbled down the phone number of the area office, where They Know About Such Things. By now it was lunchtime — and for those of you unfamiliar with life in the Midi-Pyrénées, this entails a complete two-hour shutdown of all industrial, academic and commercial activity, with the exception of the catering trade. So I filled in the time with a little (slow) web surfing and shortly

## From the desktop

The great leap from clapped-out modem to ISDN chez Nott was not without incident, particularly when the un-modem — sorry, *terminal adapter* — turned up.

found the France Télécom web site which told me everything I needed to know, and in English, too.

Unlike its British counterpart, France Télécom seems to have its ISDN marketing sorted out (although I wish it would tell its local branches). Ten days later, I had a large box on the wall. This services two voice lines (keeping the previous numbers) and a new, data-only line. All for a one-off charge of around £60 and a rental of £20 per month for the three lines. There remained the slight technical problem of connecting the PC to the box. As you may know, modems convert digital information to the analogue squeaks and whistles which go down the

phone line. Apparently, this all gets converted back to digital at the exchange, but as I am already pushing the envelope of my sketchy communications know-how, I'll just say that although you don't need a modem with ISDN, you can't just connect your serial port to the box on the wall. You need an un-modem, or to use the technical expression, a Terminal Adapter.

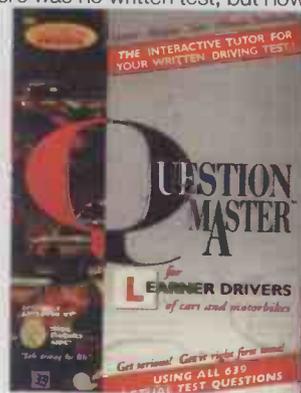
Enter the Pace Ultralink Terminal Adapter. This looks uncannily like a modem, with a row of jolly little red lights at the front. Or rather, it does if I kneel down on the floor, because the serial lead is so short that I have to put the un-modem on top of the PC tower case, which is under the desk. Having run Setup from the accompanying floppy, I found I had some comms software that I didn't need, but no driver. Perusing the manual from hell, which went rapidly from "how to plug it in" (which I'd figured out) to "AT#ippots1=0" (which I'd really rather not know about) left me none the wiser. In any event, installing it as a Generic Modem under Windows 95 worked. Re-reading the manual and contacting the Pace technical support revealed that a specific driver (or rather, a setup file) was supplied on the disk, though apparently this was a closely-guarded secret.

Later, I had the correct setup, er, set up, and "Pace Ultralink ISDN TA" appeared proudly in all the dialog boxes as it should. The only teensy-weensy snagette was that it had stopped working. There followed a long, unproductive exchange with a patient and helpful Pace support person, during which I used a lot of Hayes commands and other bad language.

Eventually, for completely unconnected (no pun intended) reasons, I reinstalled Windows, then reinstalled the Ultralink. It worked beautifully, first time. Dialling is instantaneous, and data transfer on a good day is spectacularly fast. I'm still looking for the ISDN grail, which is an ISP that will let you couple the two channels to get 112Kbps transfers, but even 56Kbps is an improvement.

### Hard drive

I once had a friend whose business plan to start a "fast-learning" driving school fell over at the first fence. No-one, it seemed, wanted to enroll at his school of motoring. In those days, of course, there was no written test, but now the terrors of the exam room are added to the ordeal of the practical test. This month brought two CD-ROMs offering crash courses on the theory part of the UK driving test. The Question Master has the Driving Standards Agency (DSA) seal of approval, but failed to



get mine by putting lots of files in my Windows\System folder, making copious changes and additions to the registry and not providing an uninstallation routine.

Apart from that, there's not a lot to say. You can "Look and Learn" by topics such as Hazard Awareness or Signs and Signals, test your knowledge on the same topics with a reveal button to check your answers, or take a simulated test. It's all a straightforward multiple choice, but it only tells you what is right, not why.

On the other side of the street, Pass First Time Theory Test carries not just the DSA seal but those of the RAC, the Institute of Advanced Motorists and the Driving Instructors' Association. The packaging also carries an endorsement from the British Dyslexia Association Computer Committee and a picture of a small elephant named Ben. Ben represents the Motor and Allied Trades Benevolent Fund which gets a penny for each copy sold. Like Question Master, it runs on both Windows 3.1 and 95, and doesn't come with an uninstallation routine. It did, however, escape The Wrath of Nott by confining its business to its own folder and leaving the registry alone.

It's a lot more ambitious than Question Master, with a multimedia interface, cute little animated icons, and videos of a man with a bad haircut and a worse tie who introduces the program and explains various aspects. This is reassuring, as it is well-known that all good driving instructors have bad haircuts and worse ties. It's also much more instructive on the theory and practice of hazard recognition. There are pictures and videos where you need to click on potential hazards within a time limit, and it can get quite tough. The actual test and preparation are, again, multi-choice questions but the practice section has explanatory hot-links to the relevant section of the Highway Code. Which makes it about five-nil to Pass First Time Theory Test.

#### Greatest hits

What goes around, comes around: and sometimes sooner than one expects. So it was with rather grim curiosity that I opened the INXS Interactive Songbook, just three days after the life of singer Michael Hutchence was so inelegantly wasted. Based on the 1994 Greatest Hits album, it comes on two CDs from Europress. There's discography, biography, videos both of the songs and interviews with the band members, press cuttings and more fan fodder. Despite the two disks (and 30Mb of hard disk space) the videos are of poor quality and — *pet hate alert* — you have to drop your display depth to 256 colours.

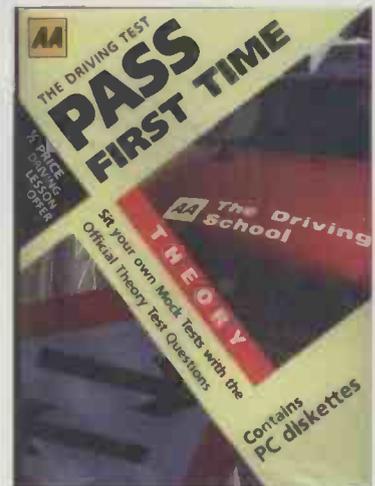
The heart of the matter is the songbook itself. Pick a track and you get the choice of keyboards, guitar or

vocals. The first two give you the chance to tune up and learn the chords used in the song before plunging into the play-along. This latter just shows the words and the chords: there's no musical notation or representation of any other parts, so if you want to learn the solos, you'll have to do so by ear. Furthermore, you're stuck with keyboards and guitar (irrespective of whether there's a keyboard track on the song) so forget those saxophone breaks or bass lines.

Blur's Parklife (three CDs) is also in the same series, and same format, with a few more diversions. There's a sort of monopoly board affair that takes you at random to various activities. As well as all the mainstream fan stuff, you can play Parkman, which is like Pacman only played in a park with dogs chasing the protagonist. You can also go dog-racing or watch Chelsea FC on television in the company of two strange animated puppets and their beer cans. And, of course, you can sing and play along with All-Bran and chums. Other titles in the £29.99 series include Oasis (What's the Story, Morning Glory?) and U2 (Achtung Baby). It's all much more fun than learning your Highway Code or struggling with un-modems.

#### Honestly, I don't make these up...

Seasoned Microsoft (MS) publicity watchers will no doubt remember the use of the Rolling Stones' song, Start Me Up, in the Windows 95 launch frenzy. At the time it was apparent that nobody in the publicity machine had listened to the entire song, particularly the bit that goes, "You make a grown man cry". Since then, according to my reliable TV-watching sources, MS has moved upmarket. The recent TV campaign for Internet Explorer 4 has Mozart's Requiem as background music. As the well-known phrase "Where do you want to go today?™" appears on the screen, the choir is singing "*Confutatis maledictis, flammis acerbis addictis*" which translates as "the damned and accursed are consigned to the flames of hell". Have a nice month, now.



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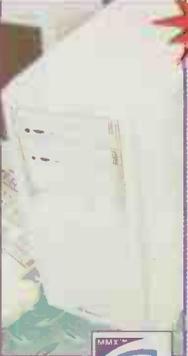
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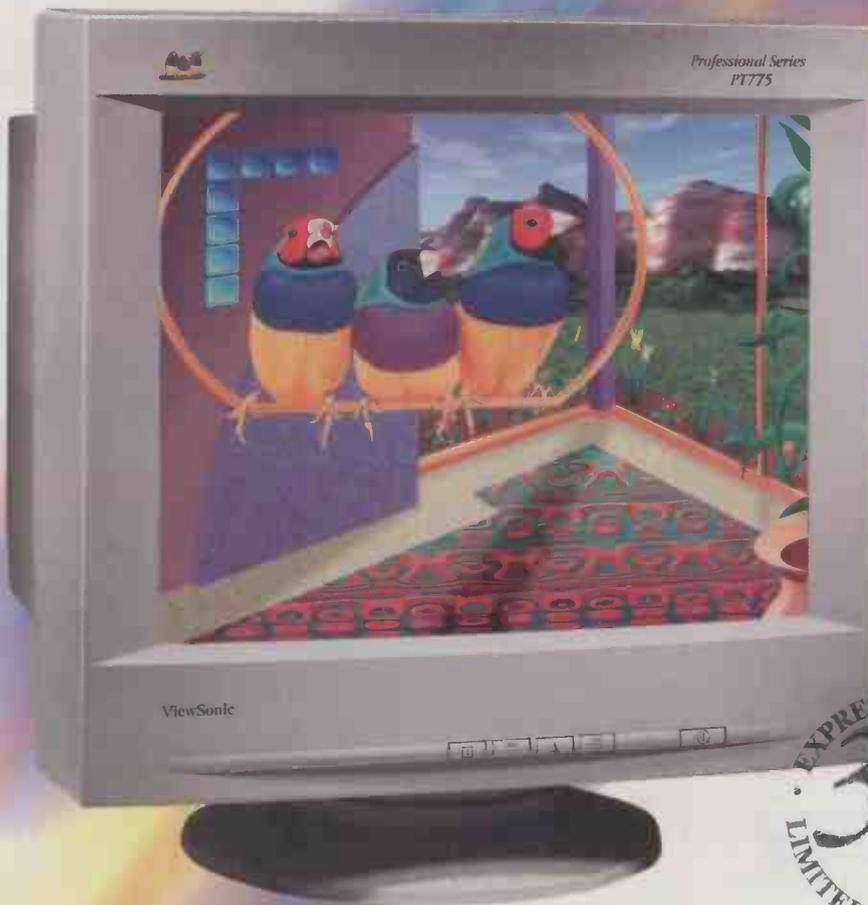
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	Professional Series			Graphics Series	
Model	PT775	P775	GT775	G773	G771
CRT Size/Viewable	17"/16"	17"/16"	17"/16"	17"/16"	17"/16"
Aperture Grille/Dot Pitch	0.25AG	0.25mm	0.25AG	0.26mm	0.27mm
Resolution (max.)	1600 x 1280	1600 x 1280	1600 x 1280	1280 x 1024	1280 x 1024
Recommended Resolution	1600 x 1200 @ 77Hz	1600 x 1200 @ 76Hz	1280 x 1024 @ 80Hz	1024 x 768 @ 87Hz	1024 x 768 @ 87Hz
Video Input Bandwidth	200 MHz	200 MHz	135 MHz	110 MHz	110 MHz

All these models are fully compatible with PC or Mac®.



**ViewSonic®**

ViewSonic Northern Europe Limited,  
ViewSonic House, Fleming Way, Crawley,  
West Sussex RH10 2GA.  
Tel: 01293 643900 Fax: 01293 643910  
[www.viewsonic.com](http://www.viewsonic.com)

Awards and features relate to the ViewSonic product range and not necessarily to the products shown here.



PT813 - 7/97



PC Direkt  
PB10 - 12/96



PT775 - 6/97



PT770 - 9/96



PB15 - 4/97



17PS - 5/96



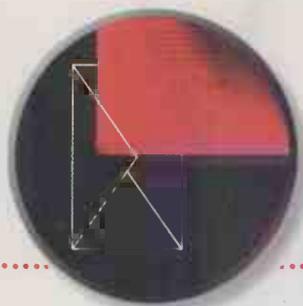
PT775 - 6/97



17GA - 9/96



PB10 - 2/97



# Letters

Send your letters to:

**The Editor**  
 Personal Computer World  
 VNU House  
 32-34 Broadwick Street  
 London W1A 2HG

or email  
[letters@pcw.co.uk](mailto:letters@pcw.co.uk)

or fax 0171 316 9313

In last month's *PCW* we gave the participating companies in our undercover PC group test (Dec '97 issue) the right to reply. The letter reproduced below arrived too late for inclusion in our January issue's Letters.

■ **From: Fox Computers**

Concerning *PCW*'s undercover review, I would like to thank you for the chance to submit a Fox machine and the opportunity to voice an opinion on the review results.

Fox Computer Systems fully supports the nature of "blind" reviews because we believe they are the only real way the general public can receive a genuine and unbiased picture of a company and its products.

However, we are obviously disappointed not to have performed to our normal technical-support and quality-control standards. We continually strive for the highest standard, and while every system undergoes vigorous quality checks, we are unable to control the way in which couriers handle consignments.

A cable dislodged in transit is regrettable, but unfortunately these things can happen. We are currently investigating an effective technique to ensure that this will not re-occur.

Like every technical-support department we have "hot" periods where phones are busy, and at these times we concentrate all available personnel on support. While the

support phone line is answered on average within two minutes, we are looking at further ways of improving efficiency as well as increasing technical support staff.

**Chris Clark**  
 Managing Director  
 Fox Computer Systems

**Game on**

I have read numerous reports about the Cyrix K6 being faster than the Intel Pentium equivalents, so why does my Intel Pentium 233MMX run Quake and a load more games faster than the K6-233 which I tested in the same system?

I suspect it is due to the K6 having a weaker FPU, and if that is the case, wouldn't it be worth the extra £20 to get the Intel chip, because I for one only have a chip running at 233MHz for playing games? If I were just doing family finances and the odd letter, I wouldn't need more than a Pentium 100MHz.

**Will Lean**  
[wjlean@hotmail.com](mailto:wjlean@hotmail.com)

*You are absolutely correct about Intel's MMX Pentium having a stronger FPU. If games are your forte and you want the best possible performance, then the Intel MMX Pentiums are the way to go. Nonetheless, the K6 is an excellent processor and if you're willing to accept a performance deficit of between eight and ten percent on games, we'd say go for it.*

**Bug stings**

There have been several suggestions made about software houses using buyers to debug programs for them. I have just discovered a small but irritating bug within the latest edition of Lotus 1-2-3.

Having spent several hours using the Lotus web site looking for fixes or workarounds, I gave up and telephoned the Customer Support Services.

Apparently, my free support expired one month ago, so just to tell them that there was a bug was going to cost me money. I was referred to the fax-back

## Many happy returns

May 1998 sees the 20th Anniversary of *Personal Computer World*. Yes, we're older than the original IBM PC! To celebrate, we're putting together a special issue, and you can help. We're looking for long-term readers of *PCW*, or anyone who's been involved in the IT industry in some form, to write and tell us how it's changed over the past two decades: which systems, software or events stood out and changed the way you work.

Please write to us at the usual *Letters* address (left). Your contributions will be most welcome. And don't forget to vote in our 1998 Awards (p136) for the chance to have your say and win £1,000-worth of PC equipment of your choice.

# simplify YOUR life

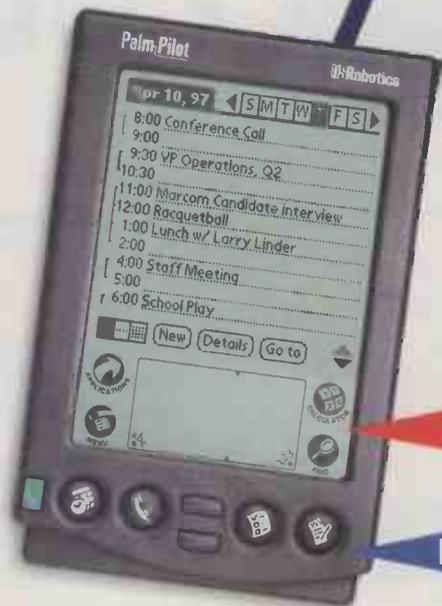
## PalmPilot Personal

- Backlight display
- Instantly syncs data with your PC
- Date book, address book, memo pad, to do list, calculator
- Easy expense tracking
- Stores thousands of entries
- User upgradeable to Professional edition

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- Twice the memory
- Modem in option



Backlight

PC Synchronisation

E-mail

You have a need to update, to enter, to access your information, and all away from your PC. The new PalmPilot connected organiser is how you do it. It lets you manage e-mail, track expenses, take notes, update your agenda or your address book, all while on the go. And HotSync technology lets you synchronise the data with your PC at a touch of a button—no dual entry. PalmPilot is the one link to your most important information. PalmPilot comes complete with docking station, PC software and handbook.



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PalmPilot. From the leader in networking.

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service but even though I told them I had checked out all the web-based information, they still would not let me report this bug without charging me for their time.

This is exactly the sort of customer service that is going to make me change to another company's product. I do not think Lotus is in a strong enough position to lose support from its users, many of whom have stuck with the company for ten years. With many products offering almost identical power and functionality, we can vote with our feet or, in this case, money.

**Dr Steve Mudge**

[s.m.mudge@bangor.ac.uk](mailto:s.m.mudge@bangor.ac.uk)

**Terry Clearkin,**

**European Support**

**Operations Manager,**

**Lotus Development, replies:**

*It is with much regret that I read the letter from Dr Mudge and in*

*particular I regret what appears to have been a simple mis-communication issue.*

*Lotus has never had any policy to use customers to debug our software other than through formal beta software programs where we contract specifically with a strictly limited number of high-usage customers to undertake acceptance testing in a controlled environment, with suitable backup from Lotus.*

*Similarly, it is not Lotus policy to charge our customers simply to report bugs in our software. Any Lotus customer can report a software bug to Lotus Customer Support, in writing, irrespective of their entitlement to telephone-based technical support services.*

*Lotus Customer Support will undertake to extensively research such reports and feed back interim solutions or workarounds only for those*

*customers who are entitled to support under our complimentary or contracted support programs.*

*I very much regret that our policy does not appear to have been clearly explained to Dr Mudge in this instance when he contacted us. I have taken corrective action to ensure that our service-line staff are fully conversant with this policy in order that we can avoid misunderstandings of this nature in future.*

*We very much value the loyalty of our customers and share their strong desire that they gain maximum usage and value from our products. Therefore, we provide a range of very competitively-priced support services to assist them with any problems or queries they may have with our products after the initial period of complimentary support has expired.*

### Mind your language

Brian Clegg, in his "Business Matters" column (PCW, Nov '97) clearly shows that he doesn't understand why people want to use software in languages other than English. I have lived and worked in several countries and can assure you that many people may be proficient software users with a good education, but would still be reluctant to use English-language software because they would not understand it sufficiently to be comfortable using it.

Trying to sell these people US software is very arrogant. In places like Cairo, where I am now, Arabic is the only language with which the vast majority of people will ever come into contact. Apart from language, software also needs to be localised, to be able to handle other alphabets and date formats. In the multimedia

p68 >

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Designed with a totally flat screen, the Panafiat PF70 delivers near-zero reflectivity.

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**Panasonic**  
Flat Monitors





**Egyptian software users wouldn't want English-language versions**

*practice), the obvious candidate, particularly so given the web, is English. My mistake was using the illustration of the global launch of software. I absolutely accept that software has to be localised, so it wasn't a great example. I should have stuck to communications.*

industry, software may also have to be adapted to take local sensitivities into account.

The main reason why major software companies are investing such a lot of money in localisation is not because they are worried about linguistic and cultural diversity, but because they have understood that it makes sense business-wise to give the customers what they want, and that is why localisation is such a booming business. In a similar development, Motorola never sold many pagers in China, until it began to sell models which supported Chinese characters...

**Bart**  
(email address unknown)

*Brian Clegg replies: I agree with everything Bart says, particularly about the need to avoid acting as if the whole world were America. The concept of the "global village" is entirely misleading; it is essential to take local requirements into consideration.*

*Having said that, there is an argument for having a recognised world language to overcome the cost of communications. Just as India uses a single language for legislation, to overcome the variety of languages spoken there, I would argue that the EU, say, would benefit from a similar approach. Given that concept, and putting aside local prejudice (impossible in*

**A quantum leap**

Having logged in to the Microsoft web site to ensure I had downloaded the last update for Cinemania 97 CD, I got the message, "You're already up to date! Check back on 02/05/2036 for new reviews, biographies, articles and web links".

**Les Kneeling**  
[les@lesk.demon.co.uk](mailto:les@lesk.demon.co.uk)

**This service is unavailable**

British Telecom has been hard at work selling ISDN to small businesses as being great for multimedia and the internet. And you can "make and receive calls...as usual".

No you can't. Many owners of small businesses rely on BT's excellent Select Services like Call Return (find out who last phoned), Call Waiting and, most importantly, Call Diversion. What BT doesn't tell you is that when you transfer your existing phone line to the port at the back of your new ISDN adapter, none of these services are available: you cannot forward calls to your mobile or home and cannot even Press 5 if a line is engaged to have it automatically recalled.

BT ISDN says diversion services are

available on speech calls. No they are not, or at least not in the way we have become used to. You can only do it for the whole ISDN line (voice, fax and data), 24 hours in advance.

This is hopeless for small businesses, many of which rely on fast phone diversion when called out. BT's ISDN literature is misleading and economical with the truth in this area, and possibly verges on a breach of the Trades Descriptions Act.

**Brian Champness**

*Clive Akass writes: BT's record on ISDN is not a happy one and misleading advertising does not help. However, PCW has been told that Select Services will be available, in 1998, on a new hybrid service offering both an analogue and ISDN connection (see Newsprint, Jan '98). This will be cheaper than an ISDN installation, although some ISDN features will not be implemented.*

**Give Xerox some credit**

I enjoyed your *Retro* on the Apple Lisa (PCW, Dec 97) but felt a twinge of "What about us?", as would many current or ex-Xerox employees. OK, fair enough, if you can't bolt it to a photocopier, Xerox can't sell it, but if I am not mistaken, it actually had a working GUI PC as early as 1978, well before

Apple started producing its lemon. If truth be told, that's where Apple nicked its design team from.

Let's take a moment to remember that as well as giving me £300 per term while I was at university (bless 'em), Xerox has also come up with some very cool stuff. The whole Windows/Icons/Mouse concept is a Xerox brainchild, along with many other vital technologies including fax and ethernet. It's just a shame it never made any money from them.

**Keith Hunniford**  
[keith@yours.com](mailto:keith@yours.com)

**Unfair to MFDs**

You appear to be particularly harsh on Multifunction Devices (MFDs) in your *No-nonsense Buyer's Guide*. The criticism "if your MFD breaks down, you won't be able to print or receive faxes" is unfair: when any technology breaks down it is unable to fulfil its design purpose.

I understand what you mean about the "eggs in one basket" problem, but your criticism seems to be more techno-fear of the unnaturalness of a printer and fax in the same box, than a valid argument against MFDs.

**Alastair Somerville**  
[crown\\_nail@compuserve.com](mailto:crown_nail@compuserve.com)

*We have nothing against the concept of integrating several peripherals into one handy multifunction device, but most attempts so far have fallen short in some respect.*

*Usually, the printer is based on last year's engine, the scanner is frequently monochrome only, and, more often than not, the fax portion only works when connected to a PC with suitable software. Taking all this, coupled with the fact that if one part fails you effectively lose all your devices, the phrase "missed opportunity" springs to mind.*

**The Canon MultiPASS 190 multi-function device (reviewed in First Impressions, PCW, Jan'98)**





What stands out about our new monitor is that **nothing stands out.**

The SyncMaster 400/500 TFT  
High resolution LCD-TFT  
Flat Panel Monitor

**SAMSUNG**

**Always a great idea.**

Samsung are the number one manufacturer of CRT monitors in the world with a leading market share. Our new LCD TFT monitors are the result of years of ongoing investment in R&D and commitment to technological innovation. With this ownership of the technology and high levels of vertical integration, we can ensure reliability and performance at every stage of development. The TFT range is the next generation of SyncMaster monitors. They have true flicker free real flat screens, high contrast ratios, no picture distortion or interference and weigh just one third of a CRT monitor. Finally, with their ultra wide viewing angles, they are the ultimate monitors whichever way you look at them.

# Gadgets

Compiled by Adam Evans. Photography by David Whyte.

## AVIGO

Hot on the heels of the Palm Pilot comes the AVIGO from Texas Instruments. This sexy-looking PDA has 1Mb RAM and a large rotation display with a backlight for improved visibility. It contains an address book, schedule planner, memo pad, expense manager, data table, calculator and password protection. Data can be synchronised with Lotus Organiser 97, which is included in the package, as is a foldable docking station, and is input by pressing on the picture of a keyboard displayed on the touch-sensitive screen. The AVIGO is available from all branches of Dixons and Staples.

**Price** £229 (£194.89 ex VAT)

**Contact** Texas Instruments 0181 230 3184 [www.ti.com](http://www.ti.com)



## Drum X

DrumX is a terrific idea for all would-be drummers. It is a touch-sensitive console, set out like a conventional drumkit, and replaces your usual mouse mat. There are six pre-programmed drumkits to get you started, including orchestral, power, electronic and jazz (nice). You can link it up with other MIDI devices and choose from up to 120 percussive instruments on the 15 touch-sensitive pads (terrific!). Best of all, it comes with a pair of real drumsticks (great!) so you can start playing along with all your favourite tracks, straight away (*smokin'!*).

**Price** £49.95 (£42.51 ex VAT)

**Contact** Simmons Drums 0500 222220 [www.simmonsdrums.com](http://www.simmonsdrums.com)

## SoundWorks speakers

Big is not necessarily so beautiful in the world of quality audio, as these new speakers from Cambridge SoundWorks prove. These tiny satellite speakers complement an enormous subwoofer which contains three power amplifiers. These SoundWorks speakers can play far louder than conventional models because the low bass is reproduced by its own dedicated amplifier. If the subwoofer is overdriven, the resulting high-frequency distortion components never reach the separately powered speaker cubes and so cannot be heard. All this technical gubbins adds up to producing great-quality audio from speakers that are small enough to fit just about anywhere. What more could you want from a sound system?

**Price** £139 (£118.30 ex VAT)

**Contact** Creative Labs 01245 265265 [www.creativelabs.com](http://www.creativelabs.com)



## Business Card Reader

The average person is given over 60,000 business cards every year. Actually, we made that statistic up, but it certainly feels like a lot and it's a real pain keeping track of all the details. The introduction of this new scanner by Seiko may be the answer to all our troubles. Simply dropping a business card into the slot activates the scanner which, in combination with some cunning software, reads the data on the card and places the information into the right database fields. You can use the supplied contact management software or transfer data to a variety of contact applications such as ACT! and Maximizer.

**Price** £190 (£161.70 ex VAT)

**Contact** Seiko 01628 410357 [www.seikosmart.com](http://www.seikosmart.com)



## Boomerang

Dictaphone invites you to bring the "Power of Voice" to your computer with its Boomerang voice system. Allegedly, its messaging protocol can turn your PC and network into a powerful "voice delivery machine": sounds impressive, doesn't it? Essentially, the system allows you to dictate voice messages into your PC and then either send them across your network to be typed, or across the internet to be enjoyed by the world at large. Here at PCW we cannot quite work out the advantages of emailing voice messages. As far as we're concerned, listening to a long-winded answerphone message is one of the dullest activities on earth.

**Price** £232.65 (£198 ex VAT)

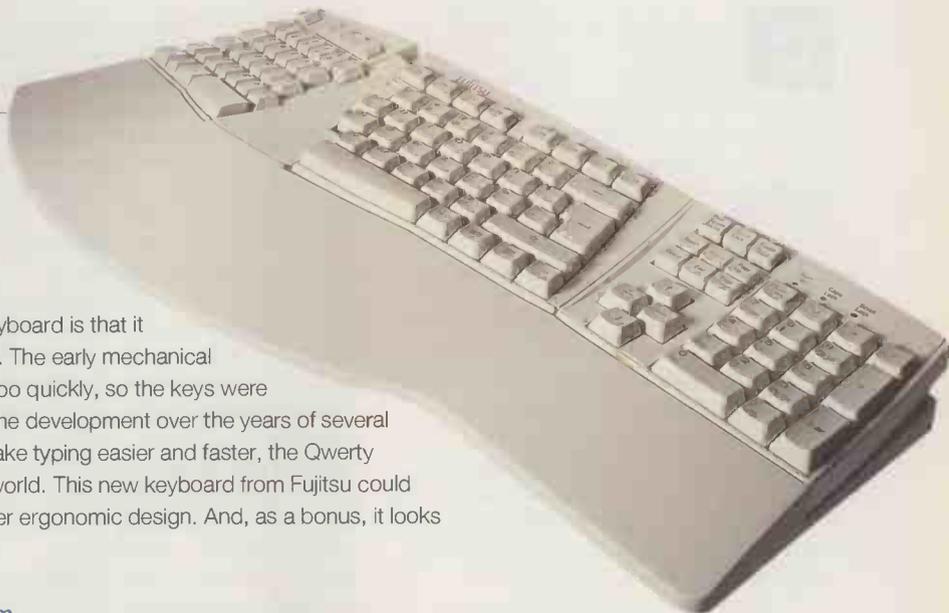
**Contact** Dictaphone 0171 878 5000 [www.dictaphone.com](http://www.dictaphone.com)

## ErgoPro Keyboard

The terrible thing about an ordinary computer keyboard is that it has been specially designed to be difficult to use. The early mechanical typewriters were prone to jamming if you typed too quickly, so the keys were purposely laid out in a random pattern. Despite the development over the years of several different types of keyboard, each designed to make typing easier and faster, the Qwerty keyboard remains the standard throughout the world. This new keyboard from Fujitsu could take some of the sting out of typing, with its clever ergonomic design. And, as a bonus, it looks really cool too.

**Price** £64.63 (£55 ex VAT)

**Contact** Fujitsu 01344 475000 [www.fujitsu.com](http://www.fujitsu.com)



# First Impressions

KT's AGP notebook sticks to the budget; printing in the office perks up with HP's new LaserJet; digital cameras from Agfa and Casio are finger-clicking good; the aroma of JavaBeans pervades the new Visual Café; and First Aid 98 fixes it.

## ■ Hardware

### Carrera Power Media 266

Packed with features and sporting a new IBM processor, this high-end PC is an upgrade dream.

**C**arrera's Power Media MX-PR266 incorporates IBM's brand-new PR266MX processor and an Intel 430 TX chipset. The inclusion of the IBM processor shows a commitment to the continuation of the Socket 7 processor interface, allowing for a wide range of upgrade opportunities without being restricted to Intel products utilising the new Slot 1 connector.

The pre-production model we saw arrived in a large tower case with plenty of room for expansion. One free external 3.5in, one free 5.25in and one free internal 3.5in bay as well as one PCI, one ISA and one shared slot crying out to be filled, offer plenty of opportunity to upgrade at a later date. The two 168-pin SDRAM expansion slots, one of which is free, or four 72-pin SIMM sockets, all of which are free, allow for the 64Mb RAM to be upgraded to a maximum of 256Mb, and the system also incorporates 512Kb pipeline burst synchronous secondary cache.

Opening the case reveals a very tidy interior, with all cables, including the CD audio cable

which in many other PCs is often dragged across the free expansion slots, clipped neatly to the side of the case. Both the memory and the processor are unobstructed and accessible to facilitate easy upgrading. The hard drive, a 4.2Mb Wide SCSI Seagate drive that achieved a data transfer rate of 5.2Mb/sec in our tests, is easily removed using the docking case with integrated handle, while the 24-speed CD-ROM drive transferred data at a rate of 2.3Mb/sec. The full-size ATX motherboard, with matching power supply and large tower case, supports two UART 16550 serial ports for fast data communications and a range of "PC Health Monitoring" options including hardware BIOS virus protection and overheat control alarms.

The serial ports are supplemented by a couple of Universal Serial Bus sockets, which will allow for the connection of USB devices as they become more common in the future.

Graphics, delivered courtesy of an ATI XPERT@work card with 4Mb on-board SGRAM, are clear, sharp and steady on the Iiyama Vision

Master 17 monitor which offers a flicker-free image even at resolutions as high as 1,280 x 1,024 pixels. At a refresh rate of 85Hz on a resolution of 1,024 x 768 we found that it was pleasant to use for extended periods during our tests. The facility to double the graphics card memory to 8Mb will enable users to display a wider range of colours at a higher resolution should they so desire.

A 16-bit Creative Labs SoundBlaster AWE 64 card handles sound, producing rich and satisfying output at a wide range of volumes through the bundled Altec Lansing Power Cube speakers at a maximum of 6W from each satellite speaker and 20W from the woofer. It is both SoundBlaster 16 and, through the incorporation of Wavetable features, AWE 32 compatible. The keyboard, a large KeyTronic model, was sturdy and comfortable to use, giving satisfying tactile feedback throughout our tests, while the mouse was the contoured model from Microsoft which has now become all but standard for bundling with high-end PCs.

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## VNU European Labs



VNU Labs tests all kinds of hardware and software, from PCs to modems to databases. All our tests simulate real-world use and

for the most part are based around industry-standard applications such as Word, Excel, PageMaker and Paradox. Our current PC tests for both Windows 95 and NT are the Sysmark tests from BAPCo. In all our performance graphs, larger bars mean better scores.

## Ratings

- ★★★★★ Buy while stocks last  
 ★★★★ Great buy  
 ★★★ Good buy  
 ★★ Shop around  
 ★ Not recommended

An internal 56Kbps Rockwell modem was included and configured to use COM3, leaving the two serial ports free for external connections, while a Diamond Multimedia FirePort SCSI host adapter offered further opportunities for peripheral attachment. The box also contained a copy of SuperVoice software for data, voice and

fax communication, along with a one-month CompuServe trial.

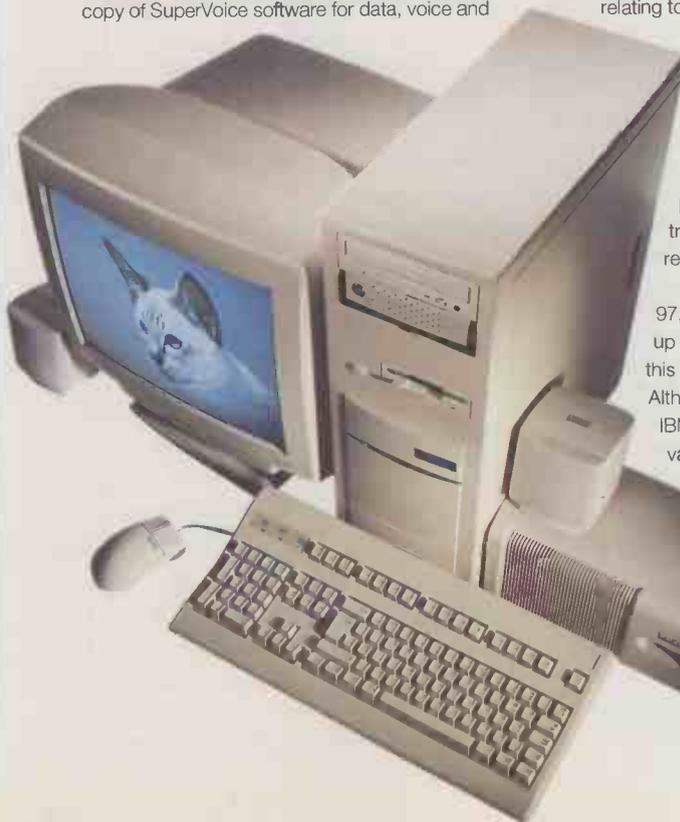
The user manual is well written and easy to follow, and is also included on the hard drive as a Windows help file so that it can always be kept to hand and searched for keywords. All sections relating to upgrading or changing the system configuration are helpfully graded according to the level of experience necessary, so that even novice users can feel confident that if they start out on many of the projects, they should have no trouble in achieving successful results.

Bundled with Lotus SmartSuite 97, which is pre-loaded to get you up and running from the word "go", this is a very impressive package. Although some scorn the Cyrix chip, IBM's dedication offers it an air of validity, and its performance matches that of other non-Intel products. A 233MHz Cyrix chip (PCW, Sept 97) achieved the same benchmark score as a similarly-specified AMD K6-233 (PCW, Aug 97). It is also fully MMX-compliant,

cheaper, and with 64Kb incorporates twice as much L1 cache as a Pentium 2.

On the downside, there are currently very few Socket 7 motherboards incorporating an AGP slot and this PC is no exception. As a result, the graphics card takes up a valuable PCI slot and runs at a maximum of 66MHz rather than the potential 133MHz available with an AGP card.

Nik Rawlinson



## PCW Details

Price £2,579.13 (£2,195 ex vat)  
 Contact Carrera 0171 830 0486  
[www.carrera.co.uk](http://www.carrera.co.uk)

System Reviewed IBM PR-266, 4.2Mb SCSI HD, 64Mb RAM, 17in monitor.

Good Points User manual. Graphics. Keyboard.

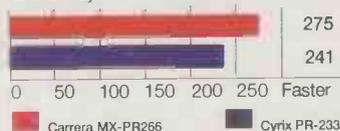
Bad Points No AGP.

Conclusion A feature-packed PC.

★★★★

## Performance results

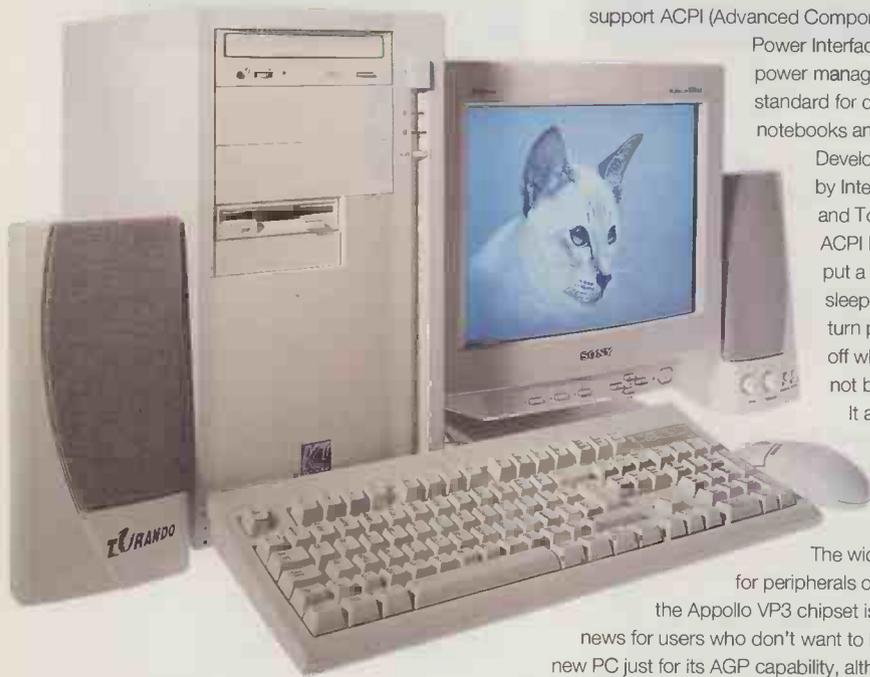
BAPCo Sysmark Windows 95 test scores



Hardware

# KT Micro AGP

Watch those graphics go! This Socket 7/AGP PC is a real fast worker, for those with limited funds.



support ACPI (Advanced Component and Power Interface), a new power management standard for desktops, notebooks and servers.

Developed jointly by Intel, Microsoft and Toshiba, ACPI lets the user put a PC into sleep mode and turn peripherals off when they are not being used.

It also allows more remote control of your PC.

The wide support for peripherals offered by the Apollo VP3 chipset is good

news for users who don't want to buy a whole new PC just for its AGP capability, although you will still need to get hold of a new motherboard.

KT Computers was the first manufacturer to send us a machine built around a Socket 7 with AGP motherboard, and so the Micro AGP attracted some attention when it arrived in the VNU Labs. Making use of the Apollo VP3 chipset, the VIA P55 VP3 motherboard has an AGP slot and a Socket 7 CPU: in the case of the Micro AGP, this is a Pentium 233MHz MMX. We were initially surprised that KT had opted to use the Intel processor rather than an AMD K6. In fact, KT is offering both chips and there is no price difference, but on this particular motherboard the Intel offers better performance. KT does concede however that most users will want to upgrade to the new 300MHz and 333MHz Socket 7 processors coming from AMD in the new year, which will offer a significant price advantage over PII chips of the same clock speed.

The Micro AGP ships with an excellent Sony Trinitron 15in monitor. The controls are not adjusted using an on-screen display and the picture does suffer from moiré, but focus is exceptionally crisp and the colours vibrant.

Powering the display is a Diamond Viper V330 AGP graphics card. In our last graphics card group test the PCI version of this card was the fastest PCI card we tested. This AGP version has 4Mb of SGRAM and uses the same super-fast nVidia Riva 128 graphics accelerator as on the PCI version, and so produced a blisteringly fast score of 50.75 images per second in our Final Reality benchmark. Now that the graphics card has moved on, all four of the PCI slots are free. We were also happy with the AWE 64

sound card and the K56 modem.

Making the most of the chipset's capabilities, KT has installed a 2.5Gb UDMA hard drive. There's 32Mb of SDRAM installed in one of the three available DIMM slots, and 512Kb of on-board cache memory. This motherboard also has two SIMM slots, presumably provided for users buying the motherboard as an upgrade path, as you can't use both SIMMs and DIMMs simultaneously. The CPU is located under the power supply, which makes it a bit tricky to get at, although there shouldn't be any problems installing extra memory modules.

Lynley Oram

**T**his last year has seen 3D graphics coming of age. But PCI, with its 33MHz bus speed and 132Mb/sec peak data transfer speed, almost groans when faced with the task of 3D rendering and has to rely heavily on the CPU. The solution is a dedicated graphics bus — AGP (Accelerated Graphics Port), which has a bus speed of 66MHz and a peak data transfer rate of 533Mb/sec. It also has the entire bandwidth to itself and does not have to share it with other PCI components.

The snag is, until recently, only Pentium II-based PCs with their Slot One design, and also with the Intel 440LX chipset and an AGP slot on the motherboard, supported the standard. As Intel's rivals, AMD and Cyrix, have been bringing out Socket 7 based Pentium-with-MMX standard processors, Intel has not been keen to develop a chipset for Socket 7 which supports AGP.

AGP is ideal for anyone who is into serious 3D gaming or needs workstation graphics power for 3D programming and animation, but AGP cards cost no more than the equivalent PCI-based card. Up to now, anyone who wanted the ultimate games machine but who is on a budget, was torn between having to fork out serious lucre for a PII or settling for less powerful 3D graphics on a Socket 7 machine. But the battle is not yet over for Socket 7 chip manufacturers, as VIA has released a new chipset, the Apollo VP3, that supports AGP on a regular Pentium-class Socket 7 motherboard. This chipset also supports Ultra DMA (also known as Ultra ATA), hard disks, SDRAM and USB. Under Windows 98 it will also

### PCW Details

**Price** £1,291 (£1,099 ex VAT)

**Contact** KT Computers 0181 961 8897  
[www.bt.internet.com/~ktweb](http://www.bt.internet.com/~ktweb)

**System Reviewed** Intel P233MHz MMX, 32Mb SDRAM, 2.5Gb HD, 24X CD-ROM, 15in monitor

**Good Points** Fast graphics. Socket 7/AGP motherboard.

**Bad Points** Overall performance was disappointing, given the AGP card.

**Conclusion** A good graphics machine for those on a budget.

★★★

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### Performance results

**BAPCo Sysmark Windows 95 test scores**

KT Micro AGP	189
Watford Aries P233MMX	209

0 50 100 150 200 Faster

**Quake test scores**

KT Micro AGP	16.47
Watford Aries P233MMX	15.17

0 5 10 15 20 Faster

**Final Reality 3D test scores**

Diamond Viper V330 AGP	3.20
Diamond Viper 330 PCI	2.91

0 1 2 3 Faster

**Final Reality overall test scores**

Diamond Viper V330 AGP	2.51
Diamond Viper 330 PCI	2.32

0 1 2 Faster

## Hardware

# AJP 85-233MMX

Power dressing the PC way with this notebook that will be the perfect presentation partner.

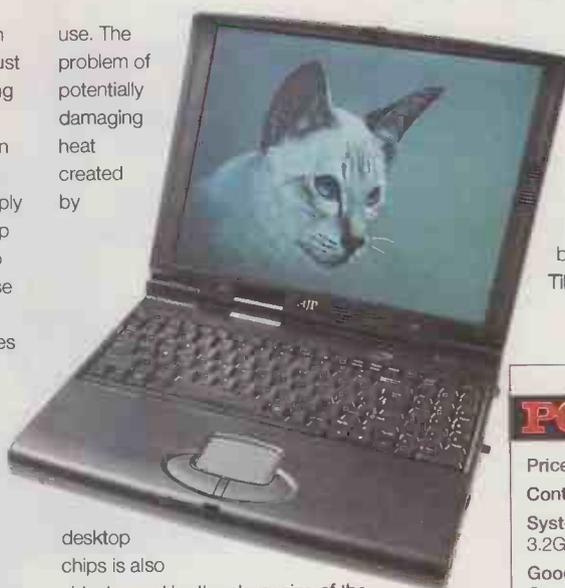
If you thought 14.1 inches of screen on a notebook was too large and just a touch decadent, you are not going to like this AGP notebook. Its screen is a whopping 15.1in TFT which runs 1,024 x 768 in millions of colours in glorious style. It should be said that the term "portable" does not really apply here. The 85-233MMX is intended as a desktop replacement for the power user, someone who needs to take it from, say, his or her desk to use as the ultimate presentation tool.

The extra space afforded by the screen does allow for a few nice touches. There is ample space for both a CD-ROM and a floppy drive, and there is also room for a separate keypad, which is useful for accountants and anyone else who works with figures.

The processor is a desktop P233MMX. Although I do criticise manufacturers who put desktop chips into mobile computers, in this instance AJP gets away with it. The power consumption of the chip is not really an issue as the screen is by far the greatest power drain, and as it is designed to sit on a desk, plugged into the mains all day, a desktop chip is just as easy to

use. The problem of potentially damaging heat created by

desktop chips is also sidestepped by the sheer size of the notebook. In a case this large you have far more room to circulate air without the need for a noisy fan. In fact, when running our benchmark tests, which last for several hours, the notebook never



got more than slightly warm to the touch.

The inclusion of 512Kb L2 cache, 64Mb of RAM as standard upgradeable to 128Mb, a 3.2Gb hard disk and 4Mb of video RAM makes for a good spec.

Power is provided by a 15-cell lithium-ion battery. There are good-sized speakers, but most of all, the test score of 188 was better than any other 233MMX notebook, Tillamook or otherwise, we have seen.

Adele Dyer

### PCW Details

Price £3,025.63 (£2,575 ex VAT)

Contact AJP 0181 452 9090 [www.ajp.co.uk](http://www.ajp.co.uk)

System Reviewed P233MMX, 64Mb RAM, 3.2Gb HD, 15.1in TFT screen.

Good Points Huge and splendid screen. Good performance.

Bad Points Desktop chip, but it gets away with it.

Conclusion An excellent desktop replacement.

★★★★

# Digital HiNote Ultra 2000

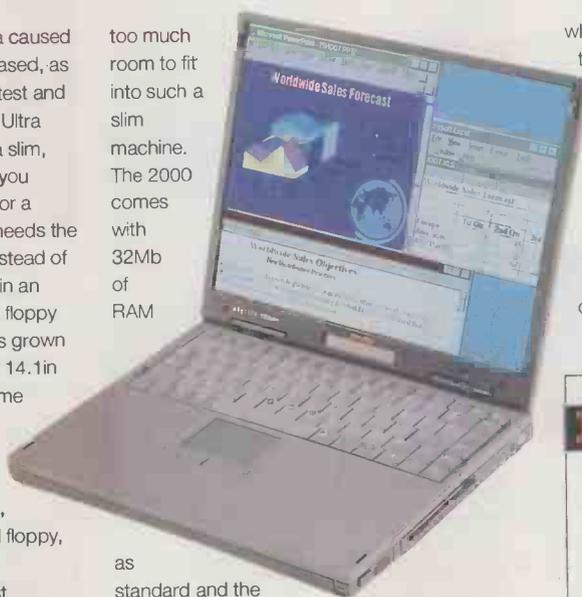
Digital hits the style high notes with this very good-looking high-function notebook.

The original Digital HiNote Ultra caused a bit of a stir when it was released, as it was then the slimmest, lightest and cutest notebook on the market. The new Ultra 2000 takes the basic design principle of a slim, lightweight notebook but with everything you would expect from a desktop, designed for a businessman who travels widely but still needs the power of a high-function notebook. So instead of including the CD-ROM and floppy drives in an add-on base unit, the CD swaps with the floppy drive in a modular bay and the screen has grown from a small 10.4in model to a whopping 14.1in XGA TFT. The thin design does mean some things are compromised, such as not being able to use the floppy and the CD drive simultaneously. Digital assures us that on the models it is selling, you can warm and hot-swap the CD and floppy, although we had problems doing this.

The Ultra 2000 is powered by the last generation of non-Tillamook mobile Pentiums, a P166MMX. Digital says it will be announcing models with faster chips next year, but is not specifying which processors. The mobile chip is not mounted on a mobile module as this takes up

too much room to fit into such a slim machine. The 2000 comes with 32Mb of RAM

as standard and the model we tested had an EIDE hard disk divided into two partitions of 1.58Gb and 1.43Gb. The benchmark score of 122, however, was quite low. There is CardBus support from the two Type II PC Card slots and a built-in 33.6Kbps modem,



which can be upgraded to 56K. However, overall the performance was a little disappointing, with the benchmark scores being quite low and occasional problems with the notebook restarting after each run of the tests.

The design is sparse and modernist with a wide wrist-rest, and it all works together to make the whole look very stylish. The trackpad was responsive: in fact, it was a little too responsive, as it was all too easy to double-click by mistake.

Adele Dyer

### PCW Details

Price £5,286.33 (£4,499 ex VAT)

Contact Digital 0345 227228 [www.digital.co.uk](http://www.digital.co.uk)

System Reviewed P166MMX, 32Mb RAM, 3Gb HD, 14.1in TFT screen.

Good Points Looks fabulous.

Bad Points A few performance niggles.

Conclusion Seriously stylish, although compromises have to be made for this.

★★★★

p77 >

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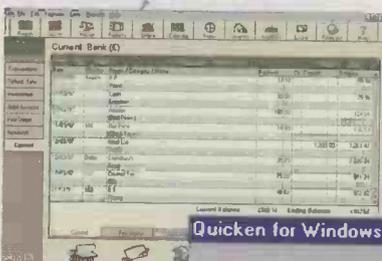
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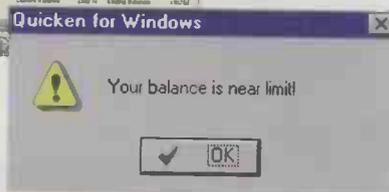
Quicken automatically organises your spending into the categories you choose. With your expenses categorised, Quicken gives you the insight to improve your financial decisions. How much is this car really costing me? How has my spending changed since last year? How much money will I have after this holiday? Quicken's powerful graphs and reports make it effortless to stay in control.

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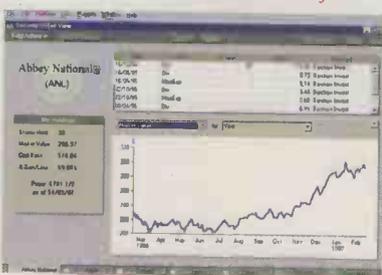
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to download share prices right into your Quicken portfolio manager via our free Internet trial access – a great opportunity to get going on line.

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Quicken runs on Windows 3.X and Windows 95.

## Self assessment

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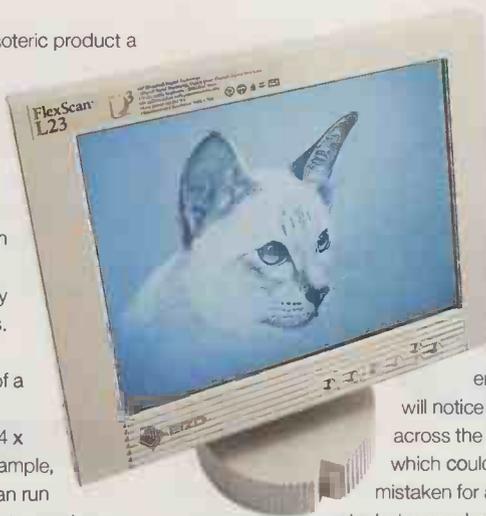
■ Hardware

# Eizo FlexScan L23

A flatscreen PC that will put some seriously good colour into your life. The future looks bright!

**F**rom being a rather esoteric product a few months ago, flatscreen monitors are now almost run of the mill, with most PC manufacturers offering the choice of a flatscreen in their bundles. The FlexScan L23 is the first flatscreen from Eizo, which is known for its high-end monitors aimed primarily at the graphics and CAD markets. The screen on the L23 is 13.8in diagonally, about the equivalent of a 15in CRT monitor. It has a recommended resolution of 1,024 x 768 and a dual input, so if, for example, you have a Mac and a PC, you can run both off one screen and switch between them with one button on the front. However, as Eizo uses a non-standard male-to-male video cable, you will have to order a second cable for £49.

As with most TFTs, the monitor runs at 60Hz. This should be flicker-free, as the transistors which light each pixel should not dim quickly enough for you to notice flicker across the



screen, even at a refresh rate that would have your eyes aching on a CRT. If your graphics are not good

enough, you will notice "jitter" across the screen which could be mistaken for a low refresh rate, but a good-quality

graphics card will see off this problem.

The controls on the front are kept to a bare minimum. There are four little buttons for brightness and contrast and one enter key to set these as default. There is one button to switch from one input to the other and you can set a priority input, although if one machine is off, the

screen automatically switches to the other input. All other functionality, including three colour temperatures, a colour enhancement button and border and black intensity, are controlled by the four buttons and the enter key via the on-screen display. What really marks out this screen is its quality. The image is incredibly sharp and the colours are bright and vibrant. In fact, although it is slightly smaller, it compared very favourably with the NEC MultiSync LCD400 which was awarded Editor's Choice in our October issue.

Adele Dyer

### PCW Details

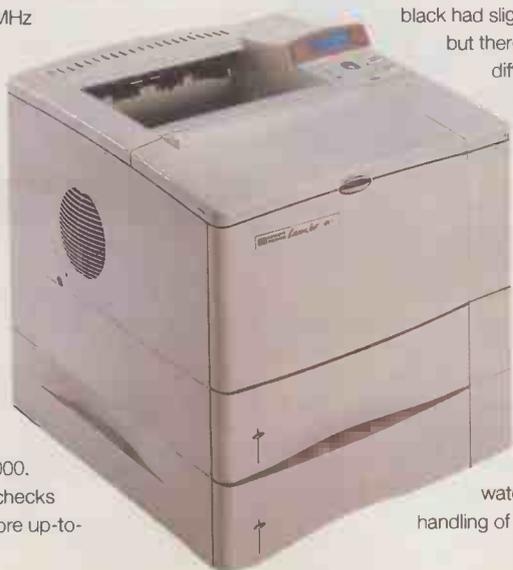
**Price** £2,102.08 (£1,789 ex VAT)  
**Contact** PDS 01483 719500 [www.eizo.com](http://www.eizo.com)  
**Good Points** Sharp, great colours.  
**Bad Points** Like all flatscreens, it is not for paupers like me.  
**Conclusion** One of the best flatscreens on the market.

★★★★

# HP LaserJet 4000 TN

Hewlett-Packard's JetSend technology makes a safe landing in the 4000 TN laserjet printer.

**A**s the first product designed specifically to utilise HP's JetSend technology, which lets peripherals communicate directly without a PC, this workgroup printer promises a lot. It is network-ready with two 250-sheet paper trays, but its strength is a 100MHz RISC processor and 8Mb RAM, upgradeable to 100Mb. Optional extras include duplexing modules and small hard drives, while a spare port lets third-party manufacturers build paper-handling facilities that can be bolted directly onto, and controlled by, the 4000. A single CD, which checks HP's web site for more up-to-



date drivers, takes care of installation, although downloading was fairly slow, even on PCW's leased line. Output quality was outstanding. 220 levels of grey ensured clear gradation in shaded tones and smooth light-to-dark transition without stepping or banding. Large areas of black had slightly variable densities, but there was clear

differentiation between a selection of bars shaded in ten percent increments. Straight, curved and diagonal lines had smooth edges, and circles were true and well proportioned. The driver allows for up to nine pages to be printed on a single

A4 sheet, watermarking, and the handling of a wide range of

media. Eleven preset paper sizes are supplemented by a "custom" option ranging from 3 x 5in to 8.5 x 14in. Delivering ten pages of text in 54 seconds, with the first arriving in 14.3 seconds (16 seconds from sleep mode), this printer is fast. It can be connected directly to Ethernet 10Base-T/BNC and LocalTalk networks in the same way as a terminal, or the file server or PC through which it is linked. Being 25 percent faster than the LaserJet 5, with a 10,000-page toner cartridge and a 65,000ppm duty cycle, the 4000 TN is the ideal choice for offices.

Nik Rawlinson

### PCW Details

**Price** £1662.63 (£1,415 ex VAT)  
**Contact** Hewlett Packard 0990 474747 [www.hp.com/uk/](http://www.hp.com/uk/)  
**Good Points** Fast and feature-packed.  
**Bad Points** Internet install slow.  
**Conclusion** An excellent office workhorse.

★★★★★

## Hardware

# Canon BJC-7000

Just right for a rainy day: we held our printed results under the tap and the ink didn't smudge!

**T**his large printer, with oversized cartridges to match, has five print settings ranging from high-speed 300 x 300dpi to fine 1,200 x 600dpi. It holds two cartridges at a time: black, and either CMY or a six-colour photo cartridge. Its 130-page, 15-envelope sheet feeder is supplemented by a manual-feed slot with a straight paper path. It can print on everything from plain paper to envelopes, fabric sheets, T-shirt transfers and high-gloss paper.

The high-speed setting produced around 2.5 pages per minute from Word, but although the quality of the print was good, with smooth edges and clear lettering in all print sizes, the output was decidedly grey. Upgrading to high-quality 600 x 600dpi took a few seconds less per page and produced extremely high-quality black text.

At 3mins 43secs per page in one of the three "fine" settings, the output was disappointing. Grey lines appeared in the larger letters and the quality of the output as a whole was noticeably diminished.



The BJC-7000 took 53secs to produce a page from Excel, and presented

us with very clear results. The tiny characters were clearly defined and easy to read but we found its handling of business graphics patchy. The bars in the CorelDraw test, which are meant to be smoothly graduated, were clearly stepped in both high-quality and fine settings on either photocopy or inkjet paper, although in its favour, the BJC-7000's manipulation of the reverse hairline was one of the best of any inkjet we have seen.

Using the photo cartridge and inkjet paper to print an A4 TIFF file took just 17mins and 57secs. The image had realistic colours and demonstrated clear differentiation between the tones of all colours in the spectrum.

Results from all cartridges are 100 percent water resistant, and even after submerging them in a bowl of water or placing them under a running tap we could not get the ink to run or smudge.

Nik Rawlinson

### PCW Details

Price TBA

Contact Canon 0121 680 8062  
[www.canon.co.uk](http://www.canon.co.uk)

**Good Points** Quick. High-quality text production. Water resistance.

**Bad Points** Patchy quality of business graphics.

**Conclusion** Versatile. Worth considering for home office use.

★★★★

# Tektronix Phaser 380

It's a big'un — a full-bleed A3 colour printer with good output and suitable for large office use.

**T**he Phaser 380's predecessor, the 350, was a revolutionary colour printer which used the unusual combination of solid ink and offset printing technology. The Phaser 380 is a full-bleed A3 colour printer — something special in the world of colour printers.

The 380 is big and weighs 100kg. Its size is determined by its printing technology. Unlike other colour printers, it uses wax-like colour "stix" which it melts and sprays onto a drum which deposits the whole image, a page at a time, onto paper. And because it's an A3 printer, the drum has to be so much larger.

Commissioning the printer is straightforward and having powered it up, it took about 20 minutes to warm up and deliver a stripy cleaning page. The printer has an energy-saving mode, but this is no more than a gesture as it takes so long to wake up that I can't see anybody using it. It comes with a high-density Centronics parallel port (although an adapter cable is provided), a SCSI port and connector for second paper feed, and there is provision for an ethernet print server card. There is an easy-to-use LCD control panel and four buttons but it's designed to be



configured remotely via your web browser. During testing, the 380's dithering produced a slightly grainy effect, particularly in photos. You could adjust the dithering patterns but the Windows driver made this an unnecessarily fussy business. But for business graphics and other colour work, the colours were fully saturated: solid areas were fully filled, gradients showed no banding, and thin lines in graphics and text were reasonably crisp and clean. And you won't need expensive paper either: it prints out quite happily on the lowest-grade copier stock.

Print speed was a little lower than claimed. It took 120 seconds for the first page of an A3 full-colour page to emerge and thereafter another A3 page was spat out every 40 seconds. A4 page speeds were faster: one every 24 seconds. For an A3 printer these speeds are fairly impressive and compare favourably with ordinary A4 colour lasers. Occasionally on long print jobs it would pause to melt some more ink, which slowed it down slightly.

Roger Gann

### PCW Details

Price From £8,806 (£7,495 ex VAT)

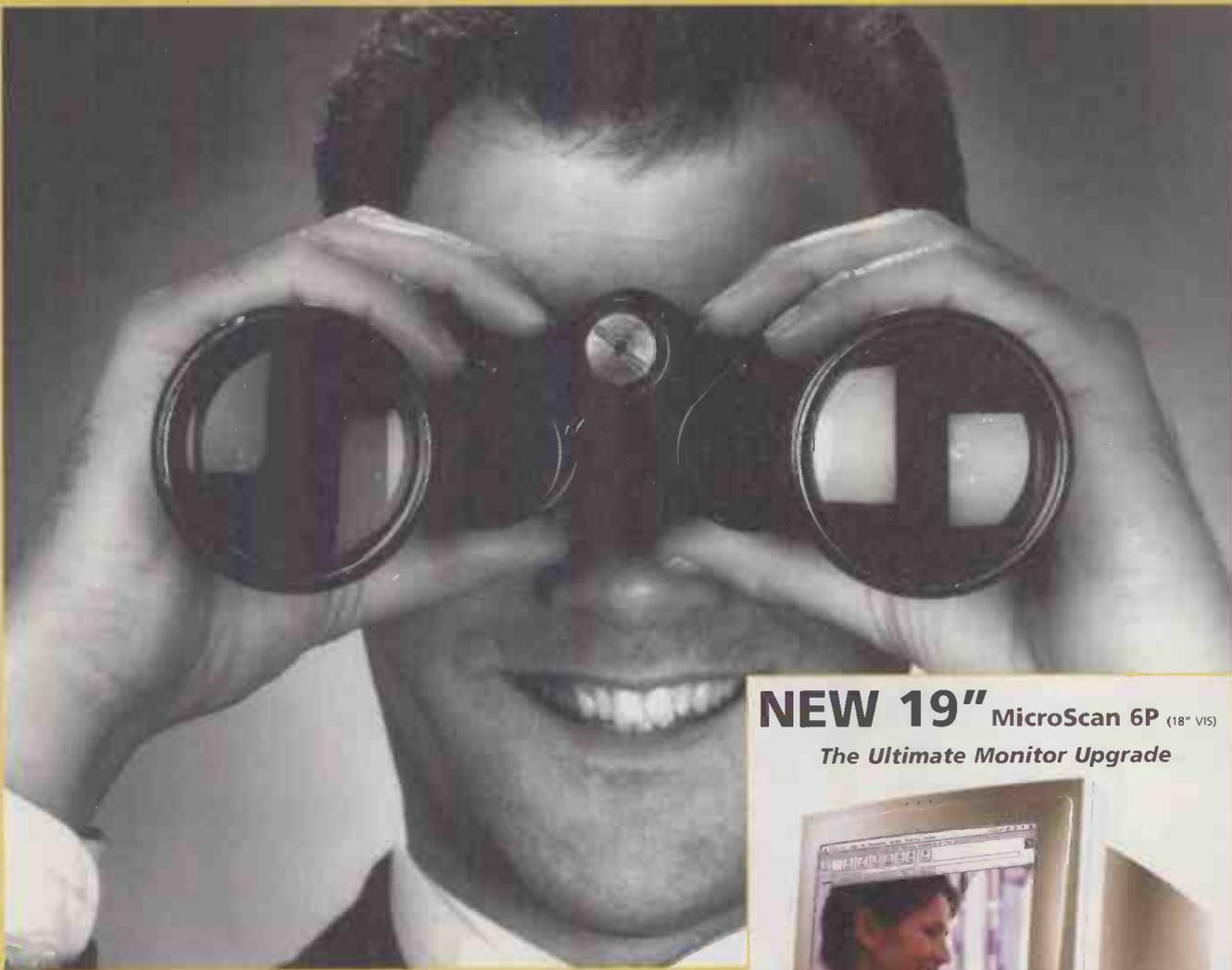
Contact Tektronix UK 01628 403613  
[www.tektronix.com/Color\\_Printers/](http://www.tektronix.com/Color_Printers/)

**Good Points** Great-looking A3 full-colour output at a decent lick.

**Bad Points** Still only 300dpi (300 x 600dpi with extra memory). Dithering can look grainy. Small, 250-sheet paper tray.

**Conclusion** Sounds expensive at £7,500 but not by A3 colour printer standards.

★★★★



## take a closer look

The 19" MicroScan 6P is now widely available from leading resellers in the UK at an incredible street price under £600 (RRP £709.00). Take a closer look at the praise the 6P has already received from PCW, PC Plus and PC Magazine, who were the first to thoroughly test the new monitor before its launch. It is clear! ADI monitors deliver an excellent range of high performance features whilst ensuring superb value.

ADI is one of the largest monitor manufacturers in the world, so you can be confident you are choosing a monitor with an established reputation for innovation, performance and design. The award winning ADI monitor range, now with a three year warranty, has a display solution for everyone so make sure you specify ADI as your monitor choice, and display the best from your PC.



"Focus sharply right into the corners of the screen. The uniformity of colour over the whole screen is excellent, as were the colours themselves, which were bright and vibrant...an excellent monitor for little more than the price of a 17in" (Oct 97)



"With it's excellent picture quality, built in USB hub and microphone, the MicroScan 6P offers great value for money" (Oct 97)



"The screen itself looks huge after you've been using 15-inch or even 17-inch units...with the MicroScan 6P coming in at around £700 (Inc VAT), within a few pounds of some manufacturers 17 inch displays. If you're spending this much money, this is a good buy" (Oct 97)



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**ADI** MicroScan



ADI 17" 5G



ADI 15" 4V



ADI 17X



ADI 17" 5G



ADI 17" 5G



ADI 17" 5V



ADI 17X

## Hardware

# Xerox DocuPrint XJ4C

Xerox goes for the SME market — a fair price for a fair, rather large, colour inkjet printer.

**X**erox is getting into the "small to medium enterprise" inkjet market with the DocuPrint XJ4C. It is a rather large printer with a single print head holding four individually replaceable ink wells (CMYK). An on-screen graphic charts the amount of ink left in each well while four lights on top of the unit warn you when one has run dry. The print driver lets you carry out all maintenance on-screen.

Six media types, from plain paper to transparency, are supplemented by 13 pre-set sizes and a user-defined option. Installation was easy. In operation, the printer was very quiet.

At 54 seconds per page, draft text came out more dark grey than black with the character edges noticeably feathered. This bleeding was still evident, although less pronounced, after selecting normal quality (which takes a minute to produce one page) but still the text was not a

firm black, even on inkjet paper. In high-quality mode the feathering was minimal but certainly visible on the smaller characters, delivering a page of this still dull text in 2mins 16secs.

It takes 1min 47 secs to print a full page from Excel, which makes the

DocuPrint XJ4C slightly slower than many comparable printers.

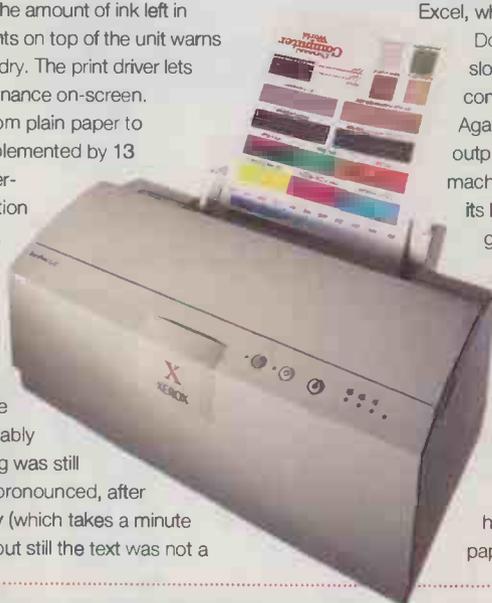
Again, the quality of the output was fuzzy but the machine redeemed itself in its handling of business graphics. Although the

use of photocopy paper and selecting normal quality produced slight banding and flecks of white in the solid blocks of colour, this was much improved at high quality on inkjet paper. The banding

disappeared and the colour blocks were rich and firm. The stepping on the magenta and cyan gradated bars was so slight that it was barely noticeable, but an inverse hairline was not clear.

Photographic reproduction was disappointing. Leaving the driver set to Auto and using high-quality output on inkjet paper produced a rather extreme set of contrasts, but the full-page image arrived in 9mins 28secs. Changing the setting to Photo increased the print time to 10mins 42secs and, while it toned down the colours slightly, the finished product was still more Warhol than Botticelli.

Nik Rawlinson



### PCW Details

Price £198.58 (£169 ex VAT)

Contact Xerox 0800 454 197 [www.xerox.com](http://www.xerox.com)

Good Points Excellent price. Quiet.

Bad Points Disappointing text quality.

Conclusion Fair, but you could buy better.

★★★

# Video Blaster WebCam

Net video-conferencing, stills and video capture — all-in-one. No hardware installation needed.

**I**t wasn't long ago that video conferencing was the sole preserve of elite business users. Today though, thanks to the internet, this technology is available to anyone and so more internet videophone products are being released. The Video Blaster WebCam is one of them, but with a twist.

Unlike many of the current video-conferencing/web-phone packages out there, you don't need special hardware to get it to work. Other products, like Intel's Create and Share and VideoLogic's PCI Captivator, require you to install a video-capture card in your PC. Not so with the WebCam: just a working parallel port and an installed 16-bit sound card, preferably with a duplex option. Bundled with the WebCam is everything else you need to get started: microphone, software and manuals. All you have to provide is an internet connection. It will operate via modem or LAN.

Creative Labs is pitching this product as an all-in-one solution. It will capture stills at resolutions ranging from 128 x 96 to 176 x 144 pixels and full-motion video in resolutions from

200 x 152 to 640 x 480 pixels. The

maximum video-capture speed is 15 frames per second, but if you're running on a 28.8Kbps modem you'll be lucky to achieve this frame rate.

The software bundle is impressive. It comes with Ulead's

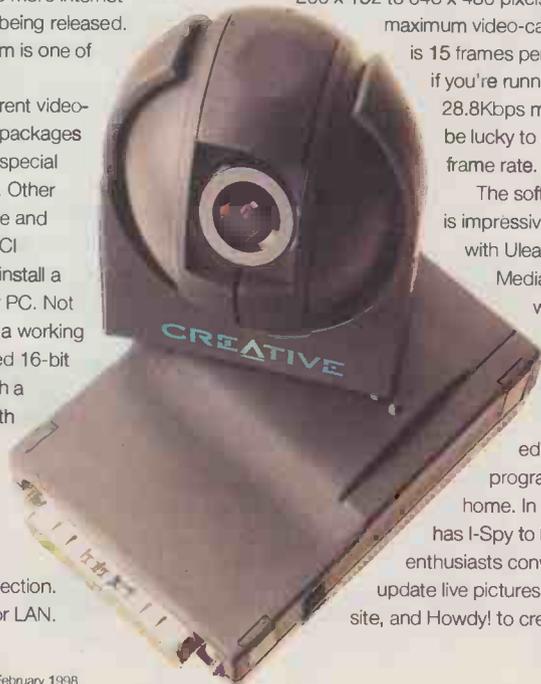
MediaStudio 2.5, which is an excellent, easy-to-use video-capture and

editing program for the home. In addition, it has I-Spy to help web enthusiasts convert and update live pictures to their web site, and Howdy! to create

multimedia email postcards. There's also a webphone to help you make voice or video calls. To top it off, Creative Labs has thrown in HotMetal Light for web-page authoring.

The WebCam is handy for those into easy setup but don't expect perfect images and fluid motion from this kit. It all works, but a little less efficiently than if you had a dedicated video-capture card. The software, though, is great, especially for beginners keen to try PC-based video production, or web enthusiasts wanting to enhance their web pages.

Dylan Armbrust



### PCW Details

Price £149 (£126.80 ex VAT)

Contact Creative Labs 01734 344 322  
[www.creativelabs.com](http://www.creativelabs.com)

Good Points Great software bundle. No hardware installation required.

Bad Points Video camera quality a bit below par.

Conclusion Good for those interested in multimedia web pages or home video-editing on the PC.

★★★



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- Built-in 64-bit PCI Graphics Accelerator with 2MB SGRAM
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- Windows 95 pre-loaded



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- 32 MB EDO SDRAM
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- 16-bit Sound on-board.
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- ATI XPERT@work AGP 4MB SGRAM
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**£1,175.00**

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## Hardware

# Creative Labs PC-DVD Encore Dxr2

DVD is probably the future format for home cinema. Here, we review an all-in-one PC DVD kit.

**R**esembling a conventional CD yet boasting 17Gb maximum capacity, DVD has most recently been described as the Digital Versatile Disc. Originally specified to store over two hours of high-quality MPEG-II digital video per side, DVD looks set to be the future format for home cinema.

The global MPEG-II digital video standard meant that titles bought abroad would play on any machine, but Hollywood, with its staggered movie release dates had other ideas. Its strict regional coding of titles by country meant players in the UK, say, would be able to play back only discs made for the UK. This messing around with the standard significantly delayed the domestic launch of DVD which, despite being ready for release two years ago, has only just become available in the US and Japan.

DVD is a fabulous format for PCs. Like CD-ROM before it, DVD-ROM promises even bigger encyclopaedias and games, and with the aid of an MPEG-II decoding card your PC could play back DVD movies. In a similar move to the first CD multimedia kits of years ago, the usual firms are beginning to offer complete PC DVD kits. Creative Labs' PC-DVD Encore Dxr2 is just that: a box containing an IDE DVD-ROM drive, PCI MPEG-II decoder card, all the cables and drivers you need, and three games remastered on DVD to include extended MPEG-II video clips. The drive plays normal CD-ROMs at up to 20-speed and DVD-ROMs at double-speed. Being a 2nd generation DVD drive, it will also play CD-R discs. You'll need at least a P100 with 16Mb.

Installation is fairly straightforward: connect the DVD ROM drive to a spare E-IDE port, preferably as the master device. If you've already got a CD ROM drive mastering your secondary IDE channel and want to keep the drive installed, Creative recommends making it the slave to the DVD master. Windows 95 should recognise the DVD drive and assign it a drive letter as easily as it does for a conventional CD-ROM drive. The MPEG-II card slips into a spare PCI slot, requires a free IRQ interrupt and happily installs itself using the supplied driver on floppy disk.

On the blanking plate are several connectors. To view DVD video on your monitor, you'll need to plug it into the Creative card and use the supplied cable to pass video through to your existing graphics card. Another plug supplies both composite and S-Video outputs to your TV to watch movies if desired, although the cable Creative supplies is only a couple of metres long. An RCA jack supplies the raw SPDIF digital audio



signal, be it linear PCM stereo or Dolby Digital AC-3 surround, to an optional decoder. Analogue audio is passed from the drives via the Creative card to your sound card, using internal cables.

A CD is supplied with Creative's DVD movie playback and navigation software. When installing for the first time, it asks you which of the six DVD movie regions you are in: Region 1 is North America, Region 2 is Europe, and so on. But what it really means is, which DVD region do you want to be in? If you select Region 1, then the system will happily playback North American titles but not the forthcoming Region 2 European titles. If you select Region 2, then you're sorted for the Euro discs, but not the US ones. You can only have one Region installed at a time and there are currently no European Region 2 titles available. But here's the rub: the software only allows you to change the Regional settings five times, after which you're stuck with the last setting.

A possible solution is to set up two identical Win95 Hardware profiles, with Region 1 installed on one and Region 2 on another. This remains an unproven trick until we receive Region 2 software, but this system certainly played back all our Region 1 titles. And pretty good it looked, too. The NTSC video of Region 1 movies played back on a compatible TV set looked very respectable (much better than VHS and similar to LaserDisc), particularly when using the S-Video connector.

The Dxr2 part of the product name refers to Creative's scaling, interpolation and flicker-elimination of MPEG-II video when played back on your computer's monitor. It certainly worked, but I preferred the image when running full screen at 640 x 480 pixels; at least most people could switch to full 24-bit colour at this resolution. Using the graphics card pass-through cable slightly reduced Windows desktop picture quality at very high resolutions. Sound was good, especially Dolby Digital soundtracks when replayed through an external AC-3 decoder.

The Encore bundle represents great value for anyone wanting a taste of DVD, or to upgrade an old CD ROM drive. But DVD software availability is limited to a handful of US Region 1 imports, so you may want to wait for a proper UK launch.

Gordon Laing

## PCW Details

Price £299 (£254.47 ex VAT)

Contact Creative Labs 01245 265265  
[www.cle.creat.com/](http://www.cle.creat.com/)

Good Points Cheap, complete DVD kit.

Bad Points Early days for DVD titles.

Conclusion Great value for early adopters or CD upgraders.

★★★★

## Hardware



# Agfa ePhoto 1280

# Casio QV700

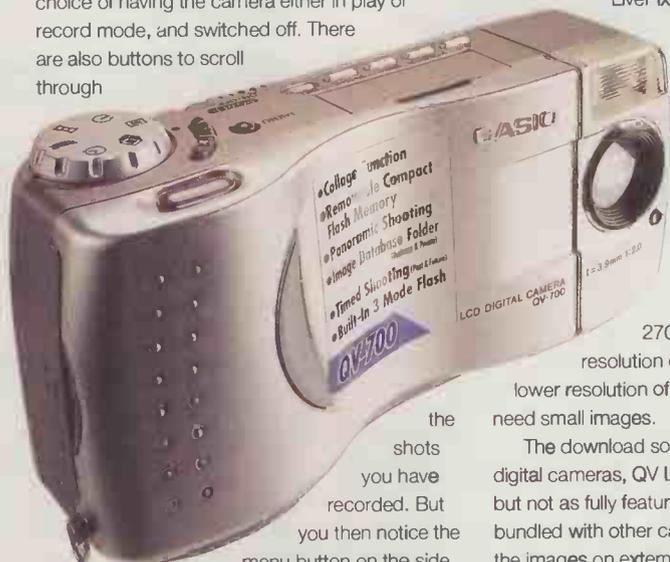
Time for digital cameras: at least one of these snappy little models should click with you.

**T**wo new digital cameras have hit the shops, swelling the numbers of such cameras in the sub-£1,000 range.

Both are the top of the range for their respective manufacturers. The ePhoto 1280, with a top resolution of 1,280 x 1,024 pixels, marks a significant step for Agfa, one of the biggest film manufacturers which up to now has only marketed a basic digital camera (manufactured for them by Sanyo). Casio, meanwhile, has been busily adding new cameras to its range and the QV700 is its latest top-end model.

The Agfa ePhoto 1280 is no great looker, with its grey plastic shell and the large and ungainly swivel lens with the flash attached, but what it lacks in looks it makes up for in quality. It is one of only two sub-£1,000 digital cameras with a resolution of 1,280 x 960 pixels (the other being the Kodak DC-120). There are other resolutions available, too: 1,024 x 768 and 640 x 480, both with two levels of JPEG compression. If image quality and the ability to reproduce your pictures quite large are your prime concerns, the highest resolution gives the ePhoto an edge over the competition. In addition, the camera has a 3X continuous optical zoom, with the lens equivalent to a 38-114mm lens on a 35mm film camera.

At first look, the camera seems to have few options for settings: just a single dial with the choice of having the camera either in play or record mode, and switched off. There are also buttons to scroll through



the shots you have recorded. But you then notice the menu button on the side and a bewildering array of options: everything from aperture settings and white balance, to macro modes and five other focus settings. However, because these options also have an

automatic setting to take you back to the defaults, you need never worry about these things and as they are effectively hidden from you, there is no need to dabble unless you are interested.

A 4Mb CompactFlash card, on which to save your photos, is supplied as standard but at the highest resolution this only stores six shots. However, this increases to 60 if you only use the 640 x 480 pixel resolution with standard compression. It does not help that there is no viewfinder, only an LCD screen which is a notorious drain on power. An AC adapter is an optional extra and the camera is normally powered by four AA batteries. We were supplied with a battery recharging unit but it takes several hours to recharge the batteries so you will need more than one set to keep going when you are out and about.

The ePhoto comes complete with Agfa PhotoWise for downloading, Live Picture PhotoVista for pasting images together and LivePix SE for image manipulation.

By comparison the Casio QV700 does seem a little pedestrian. Casio has a large range of digital cameras and a large slice of the budget market. Almost all their cameras have the same basic design with an LCD panel on the back and a lens which swivels through 270°. The camera has a top resolution of 640 x 480 pixels and a lower resolution of 320 x 240 pixels if you only need small images.

The download software is, as on all Casio's digital cameras, QV Link. It's easy enough to use but not as fully featured as some of the software bundled with other cameras. The QV700 stores the images on external CompactFlash memory; you get a 2Mb card as standard. This will hold 47 economy, 26 standard and 14 fine images. It is powered by four AA batteries and the external power cable is an optional extra.



The controls are reminiscent of Fuji cameras with a simple dial on top, with icons to select your options. You choose whether take photographs in continuous mode (several shots in quick succession) or in panoramic mode. Or you can take a picture of writing, for tilting your pictures, or you can date-stamp them. There is a self-timer on this dial, too.

There are some extra functions, like the TV output port, a self-timer, flash, macro mode and the ability to zoom in to part of an image on the LCD. Overall, though, there is little here that is new or innovative. Casio seems to think it is enough to turn out basically the same camera time and again. The company is looking a little behind the times compared to the cameras being produced by their competitors.

Adele Dyer

## PCW Details

Price £762.58 (£649 ex VAT)

Contact Agfa 0181 231 4906

[www.agfahome.com/ephoto/1280/](http://www.agfahome.com/ephoto/1280/)

**Good Points** Has everything you could want from a digital camera, and more.

**Bad Points** Styling.

**Conclusion** If this had been in our digital cameras group test (Jan '98 issue), it would have won.

★★★★★

Price £499.99 (£425.52 ex VAT)

Contact Casio 0181 450 9131

[www.casio.co.uk](http://www.casio.co.uk)

**Good Points** Versatile and idiot-proof.

**Bad Points** Unadventurous compared to others in its price range.

**Conclusion** Look around at the competition before buying.

★★★



# Business Computers

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### **Creative Labs AWE 64**

Enjoy awesome sound with the Aurora Multimedia and all Sovereign systems. The

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### **56K Modem with fax and voice**

As the Aurora Multimedia and all Sovereign systems include a 56K modem with

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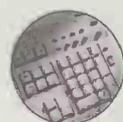


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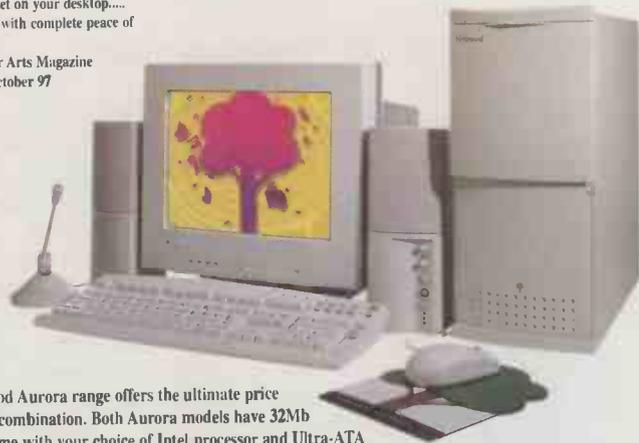
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## Northwood Aurora

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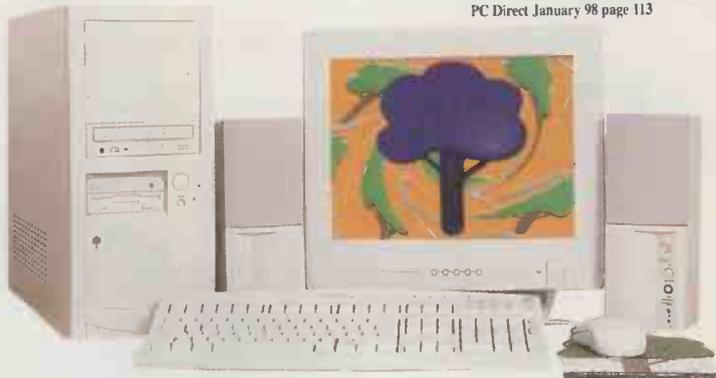
Computer Arts Magazine  
October 97



The Northwood Aurora range offers the ultimate price performance combination. Both Aurora models have 32Mb RAM, and come with your choice of Intel processor and Ultra-ATA hard drive. The Aurora Multimedia goes even further, with the addition of an Iomega Zip drive, 56k modem, AWE 64 sound and stereo speakers. Compare our systems with our competitors, and we're sure you'll find Northwood offers unbeatable value for money.

## Northwood Sovereign

"A well built Pentium II system which can boast high performance and value for money."  
PC Direct January 98 page 113



The Northwood Sovereign range has been expertly designed to satisfy the needs of the power user. With AGP graphics, SDRAM memory, and the latest Intel chipset, these machines offer screaming performance. And don't forget we also include an Iomega Zip drive, 56K modem, AWE 64 sound, stereo speakers and extra time saving features like our unique keyboard and Microsoft Intellimouse. With such impressive specifications, we know you'll find these systems impossible to beat.

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- Ultra-ATA Hard Drive
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- 32Mb EDO Memory
- 2Mb ATI 3D-Charger PCI Graphics Card
- 14" SVGA Colour Monitor 1024 x 768 Ni, .28 dot pitch, MPR2
- 24 Speed Panasonic CD-ROM Drive
- Northwood TS2000 Win 95 Keyboard
- MS IntelliMouse and Northwood Mouse Mat
- Northwood Desktop Case
- Microsoft Windows 95
- Northwood Essential Utilities
- 1st Year On Site Pro-Care Warranty plus 4 Years return-to-base labour only

### Aurora Multimedia

- Intel MMX processor
- Ultra-ATA Hard Drive
- 430TX Motherboard with 512Kb Pipeline Burst Cache
- 32Mb SDRAM Memory
- 4Mb ATI XPERT@WORK PCI Graphics Card
- 15" Digital Control SVGA Colour Monitor 1280 x 1024 Ni, .28 dot pitch, MPR2
- 24 Speed Panasonic CD-ROM Drive
- Internal Iomega 100Mb Zip Drive
- 24 Speed Panasonic CD-ROM Drive
- Creative Labs Awe 64 Sound Card
- Labtec 1025 Amplified Speakers
- 56K Modem
- Northwood Midi Tower Case
- Northwood TS2000 Win 95 Keyboard
- MS IntelliMouse and Northwood Mouse Mat
- Microsoft Windows 95
- Northwood Essential Utilities
- 1st year on site Pro-Care warranty plus 4 Years return-to-base labour only

### Sovereign Multimedia

- Intel Pentium II processor
- Ultra-ATA Hard Drive
- 440LX Motherboard with AGP
- 32Mb SDRAM Memory
- 4Mb ATI XPERT@WORK AGP Graphics Card
- 15" Digital Control SVGA Colour Monitor 1280 x 1024 Ni, .28 dot pitch, MPR2
- 24 Speed Panasonic CD-ROM Drive
- Internal Iomega 100Mb Zip Drive
- Creative Labs Awe 64 Sound Card
- Labtec 1025 Amplified Speakers
- 56K Modem
- Microsoft Windows 95
- Northwood Midi Tower Case
- Northwood TS2000 Win 95 Keyboard
- MS IntelliMouse and Northwood Mouse Mat
- Northwood Essential Utilities
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### Sovereign Professional

- Intel Pentium II processor
- Ultra-ATA Hard Drive
- 440LX Motherboard with AGP
- 64Mb SDRAM Memory
- 8Mb ATI XPERT@WORK AGP Graphics Card
- 17" Digital Control SVGA Colour Monitor 1280 x 1024 Ni, .28 dot pitch, MPR2
- 24 Speed Panasonic CD-ROM Drive
- Internal Iomega 100Mb Zip Drive
- Creative Labs Awe 64 Sound Card
- Labtec 2612 Amplified Speakers with Sub Woofer
- 56K Modem
- Microsoft Windows 95
- Northwood Midi Tower Case
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4.3Gb	<b>£1769</b>	£2067.99	£71.19
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8.4Gb	<b>£2019</b>	£2372.33	£80.74

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	Ex VAT	Inc VAT	Lease Price Per Month
3.5Gb	<b>£894</b>	£1050.45	£36.37
4.3Gb	<b>£919</b>	£1079.83	£37.37
6.4Gb	<b>£999</b>	£1173.83	£40.55

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	Ex VAT	Inc VAT	Lease Price Per Month
3.5Gb	<b>£1259</b>	£1477.73	£50.90
4.3Gb	<b>£1284</b>	£1508.70	£51.89
6.4Gb	<b>£1364</b>	£1602.70	£53.75

#### Intel Pentium II 266MHz

	Ex VAT	Inc VAT	Lease Price Per Month
4.3Gb	<b>£1479</b>	£1737.83	£59.65
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8.4Gb	<b>£1729</b>	£2031.58	£69.60

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	Ex VAT	Inc VAT	Lease Price Per Month
4.3Gb	<b>£1919</b>	£2247.99	£77.16
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Hardware

# Dazzle

What a blinder! PC on... director's chair out... sleeves up... and edit your home videos.

**T**he trouble with home movies is that they are, without exception, frighteningly dull. There may well be ten minutes of solid gold footage on a tape but it will never be noticed if the viewer also has to sit through three hours of mind-numbing dross.

Video editing is a natural application for a PC but until now it has involved fitting an expensive internal add-in card. **Dazzle** is a real-time MPEG-1 encoding device which plugs into the parallel port on a PC. In layman's terms, it takes standard composite or S-Video signals, compresses them by a factor of around 200 and stores them on your hard disk. The resulting movies can be edited and played back on most PCs. A minute of compressed video takes up about 10Mb of space on your hard disk so it is important to have lots of spare room before you begin video editing.

The software interface for Dazzle, called Amigo, is unusual but well designed. It is fairly intuitive so it is easy to get going with the

package after a cursory glance at the manual. Video editing is



carried out with the Cinax Video Editor and if you have a CD-Recordable drive, you can create your own Video CDs with CeQuadrat WinOnCD 3.

In addition to videos, Dazzle can capture still images from a video source so you can effectively use your video camera as a digital camera. Playing about with photographs is great fun and

two of the best packages around, Kai's Power Goo and Adobe PhotoDeluxe 2, are included.

Dazzle is a well-specified package but there are a couple of drawbacks. The first is simply a limitation of MPEG-1 encoding: it is not up to VHS quality, unlike DVD which uses MPEG-2. The second drawback is that Dazzle cannot output compressed footage to a television, which means you'll always have to watch your videos on a computer screen.

Adam Evans

### PCW Details

Price £269 (£228.94 ex VAT)

Contact Imago Micro 01635 294300

[www.imagomicro.co.uk](http://www.imagomicro.co.uk)

Good Points Simple to use. Good clean fun.

Bad Points It cannot record back to videotape. MPEG-1 quality is not as good as VHS.

Conclusion A great package if you are happy to watch your videos on your PC.

★★★★

# Olitec Self Memory 56000

A neat little K56Flex modem with extra features. It could tuck into almost any spare corner.

**W**hile US Robotics has been keeping x2 close to its chest, the Rockwell/Lucent contingent has been more open with its version of 56K technology, and K56Flex modems are available from all and sundry. The not-so-catchily-titled Self Memory 56000 Flash is from French company Olitec and the modem is now available in the UK.

The French are renowned for doing things differently and the 56000 is certainly different. It's not exactly oozing style but since it's the size of a disposable camera, it can at least be tucked away almost anywhere. Like most modems, plugging the various cables into the Olitec's rear makes it markedly less compact. The front of the modem has the usual row of cryptic LEDs, plus a

button to activate the built-in microphone. A speaker is hidden behind a rounded moulding on top. Speaker and microphone quality are both reasonable enough, although there are sockets at the back of the modem for connection to external speakers and the bundled desktop mic.

The Olifaxvoice software covers most requirements, including hands-free speakerphone operation, faxing and voice messaging. The Olitec also has the useful feature of being able to cope with incoming calls when the PC is switched off and can store 50 A4

"average text

density"

faxes or

20

minutes'

worth of

voice

messages.

It's also

supposed to

detect the

difference between

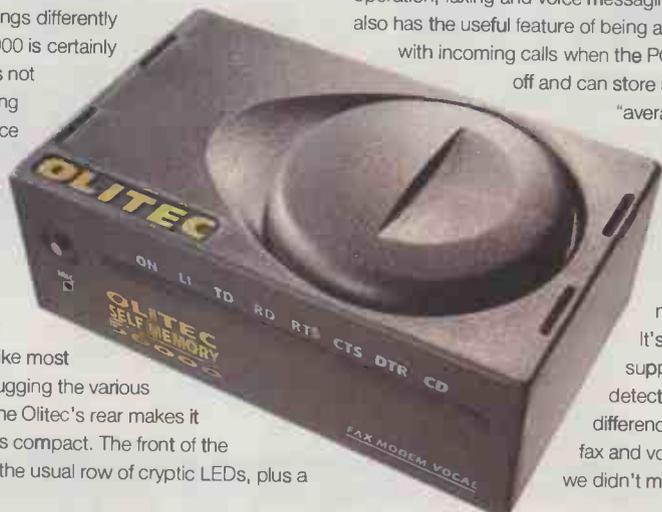
fax and voice calls but

we didn't manage to

activate any of these features using the slightly confused pre-release manual. The finished version will hopefully make things clearer.

As a K56Flex modem, the Olitec Self Memory Flash acquires itself very respectably. Using the same suite of tests as in our group test last November, it gave an average download speed of 35.04Kbps with a compressed executable file and 104.24Kbps with an uncompressed text file (both with hardware compression enabled).

Julian Prokaza



### PCW Details

Price £168.03 (£143 ex VAT)

Contact NP Datacom 01787 476976

[www.olitec.com/sm56english.html](http://www.olitec.com/sm56english.html)

Good Points Respectable 56K performance. Standalone operation.

Bad Points Clumsy back-end with all the cables connected.

Conclusion A neat little performer whose extra features put it a notch above the rest.

★★★★

## Hardware

# Tandberg SLR5

This or that? SLR or DAT? It's your choice, but here is a cheaper alternative to the DAT drive.

**T**raditionally, DAT (Digital Audio Tape) has always been a popular choice for backing-up PCs and entry-level network servers. A combination of a native 4Gb tape capacity and transfer rates of around 35-40Mbytes/min makes it ideal for this type of application. However, there are alternatives as Tandberg Data is keen to point out. The latest tape drive from the Norwegian-based company is the SLR5 which uses meaty 5.25in QIC (Quarter Inch Cartridge) tapes with which hardened UNIX users will be familiar. These offer the same 4Gb capacity as DAT DDS-2 tapes but, at £18 each, cost about a third more. This may seem expensive but when you see the superb build quality you'll understand why, and it's precisely this which causes so much argument about which is the better media.

DAT tapes are cheaper because they have far fewer moving parts and rely on the drive to provide tensioning and alignment, whereas QIC cartridges deal with all this internally. The upshot



is that QIC cartridges don't wear out so quickly so you spend less on

replacements.

The SLR5 is available in internal and external versions and the latter comes with a SCSI cable included. Loading is carried out manually by flipping down the front panel, pushing the tape home and locking the panel shut. As the drive is aimed at network backup I tested it on NetWare and Windows NT Server platforms using Seagate's Backup Exec and Cheyenne's ARCserve software. Installation in all cases was simple, although it's probably safest to make sure ARCserve for NT is fully up to date with Service

Pack 3, available on Cheyenne's web site. Unfortunately, I found performance to be the biggest drawback for the SLR5 as it averaged 28.5Mb/min in all the backup tests; working out at around 25 percent slower than DAT drives.

Even so, the SLR5 makes a strong argument in its defence as it is some £200 less than a DAT drive. The cartridges last up to twice as long as DAT tapes, so operating costs will work out lower in the long run as well.

David Mitchell

### PCW Details

Price Internal £446.50 (£380 ex VAT); external £583.98 (£497 ex VAT)

Contact Tandberg Data 01582 769071  
[www.tdata.no](http://www.tdata.no)

**Good Points** Cheaper than DAT drives and better media longevity.

**Bad Points** Slower than DAT drives.

**Conclusion** If you're more concerned with tape life than backup speed, the SLR5 is a solid choice.

★★★

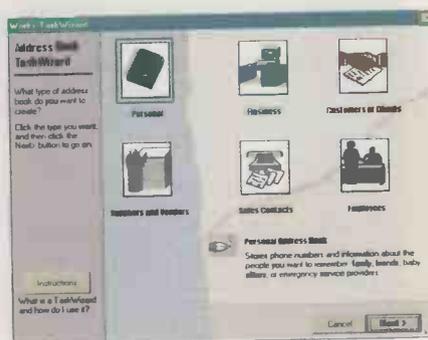
## Software

# Microsoft Works 4.5

Update to the alternative office software suite; great for home use and tops for templates, too.

**W**orks is an excellent alternative to office software suites, especially so for home, school and small office use. It provides a tightly integrated word processor, database and spreadsheet. This version adds internet capability with the inclusion of Internet Explorer 3.02. In addition, Works comes with lots of clipart and document templates to help you create all sorts of documents from a report to a poster. There is an easy-to-use interface and all the basic features of a word processor, database and so on, are provided. The more specialised tools are lacking, which makes Works easier to learn and use.

The enhancements to Works for Windows 95 in this version are minor. They include 100 new templates for creating documents associated with home, school, and social events and activities, and a new Clipart Gallery containing an impressive 7,000 professional-quality images (a massive increase from the previous 107!). Aside from the inclusion of Microsoft Internet Explorer and an updated Works to Word converter, this is essentially all that separates Works 4.5 from earlier releases, which makes this a less than



You can create an address book, too

overwhelming upgrade for existing users. For new users it is a different matter. The templates in particular not only automate the process of creating many common documents, they can also save you having to buy other software applications. For example, there is a template which produces a very acceptable address book and will save you the cost of investing in a stand-alone contacts manager. Another creates To-do lists. You can create a home inventory to list your possessions for insurance purposes and students

and teachers will value the template that helps you create well laid-out reports and theses.

Works 4.5 automates most common tasks with features like Easy Formats and ReportCreator. The clipart gallery is extensive and Works incorporates WordArt for creating effects with text. It is only available on a single CD-ROM.

Paul Begg

### PCW Details

Price £99.99 (£85.10 ex VAT)

Contact Microsoft 0870 6010100  
[www.microsoft.com](http://www.microsoft.com)

**System Requirements** Windows 95

**Good Points** Excellent integration. Templates makes it easy to create almost any sort of document.

**Bad Points** Not much of an upgrade for existing users.

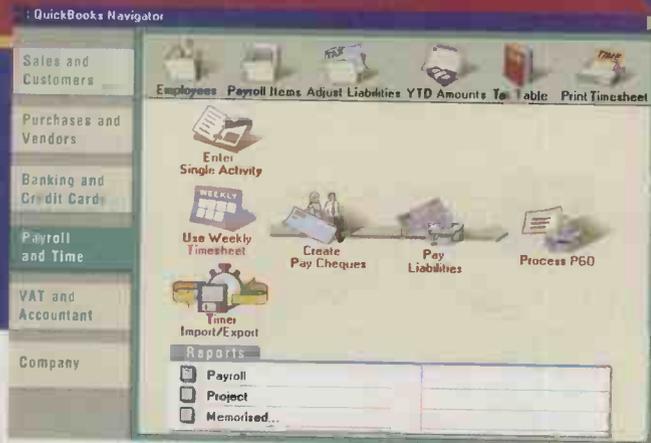
**Conclusion** An excellent introduction to computing for beginners, but there is no reason to upgrade.

★★★

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*Computer Buyer, September 1997.*

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*Mind Your Own Business, June 1997.*

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Systems requirements: Works with Win 3.x or Win 95, 8MB RAM minimum, Hard Disk with 25 MB free space.

■ Software

# BT LineOne v2

A fresh online service intending to create a sense of community for new and existing websters.

**D**esigned to appeal mainly to a British mass-market audience, BT's LineOne goes head-to-head with the established players such as CompuServe, AOL and MSN who have adapted the American model to try and exploit the burgeoning UK online community. Unlike its competitors, LineOne does not try to integrate a regional flavour into a global online community, but aims to create its own community based on British culture: the *Sun*, football, students, Mystic Meg, and the *Funday Times* are all here. Some content is tailor made, mainly that provided by News International, but a large proportion of the sections link through to the web. Although these pages could be accessed through any service provider, LineOne offers extra value via aggregation and presentation.

The LineOne CD Includes Microsoft's Internet Explorer and automatically configures your PC to connect to the LineOne homepage. The CD also includes a number of multiplayer games which can be used in the GameWave section of the site; this is a nice touch as it saves downloading the games.

The installation process was slick: we were on LineOne after only a few minutes. Once on the homepage, you are presented with a graphical menu of the main areas of LineOne, and the Springboard which is a frame that sits at the bottom of the screen. This enables quick access to personal settings, a search facility and a pop-up menu for direct access to each sub-section of the service. The only problem was the Microsoft browser. The bundled version was out of date and, with the latest version, much of the scripting did not work. We eventually managed to get the site to work with Netscape Navigator 4, but hopefully the service will conform to a more open set of standards as it evolves.

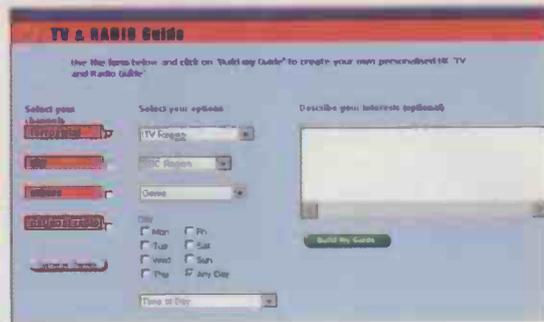
As for content, there is so much of it that we can hardly do it all justice in this review. The news section is the stronghold of News International, including *The Times*, *Sunday Times*, the *Sun* and the *News of the World*, as well as a weather page and Fox News. Sky Sports dominates the sports section, with an excellent real-time display of headlines, and the football section is superb. The money section covers investment, insurance, mortgages and pensions, with helpful comparative listings of credit-card and savings accounts, plus other interactive financial advice.

The education section gives access to the BT Home Campus, a distance learning facility, as well as the *Times Education Supplement* and the BBC's Learning Station. Lifestyle issues, including



**Left** The Homepage has been reorganised since version 1 to make it easier to navigate

**Below** There are many useful services, such as this personalised TV and radio guide



health, food and fashion, are covered and this same section additionally provides links to the new student webzine, 4-D. The shopping area is an online mall covered by LineOne's own charter which guarantees a high standard of security, and includes a number of vendors offering computers, wine, coach and theatre tickets, books, flowers and music, with links to other online shopping areas.

The travel pages range from public transport information to holiday booking through British Airways and include an interactive weather page. Restaurants, music, TV and film listings are in the What's On section, and for those who want to socialise over the net there are online forums, a chat area and an online radio station. The fun section has areas for kids and an excellent gaming section where you can log in and kill fellow LineOne members — virtually, of course!

A comprehensive business section includes online directories of UK businesses, sections for management, marketing, finance, and IT news, and a starting-up guide. The knowledge section offers Discovery World and a science section, plus links to *National Geographic*, the History Channel and the Discovery Channel, and a trivia quiz section. Finally, the internet section offers advice for novice web surfers as well as links to good starting pages and directories.

touches: the speed and ease of use of its popular gaming section, the inclusion of a live chat area, a forums section based on net news standards, and the comprehensive choice of local services like travel, weather, accommodation, TV listings and restaurant guides.

As an online service LineOne is in its infancy, and I'm sure it will evolve as more people join and offer feedback, but LineOne has already provided enough of a reason for people to sign up. Its vision of what an online service can be is more ambitious and appealing than its competitors. LineOne succeeds not only by grouping content together but also offers a truly localised service. Never mind the bugs, the messages stating "Sorry, this bit isn't connected yet", and the hotchpotch of technologies and interfaces. LineOne offers a great introduction for the newcomer, and the opportunity for experienced users, if they give it a chance and a bit of time, to find a place they can call their "Homepage".

Barry de la Rosa

## PCW Details

**Price** £14.95 (£12.72 ex VAT)/month, unlimited use; £9.95 (£8.47 ex VAT) basic, for five hours/month, then £1.50 (£1.28 ex VAT)/hour; £6.95 (£5.92 ex VAT)/month, content only.

**System Requirements** Windows 95/3.1/3.11

**Contact** BT [www.lineone.net](http://www.lineone.net)

**Good Points** Slick interface. Easy to set up. Excellent services. Almost a sense of community.

**Bad Points** Bundled browser. Some content missing, some not appropriate to UK audience. Service not fully evolved.

**Conclusion** A vision of the ideal online service, with flexible membership options, marred by inconsistent content and other growing pains.

★★★★

## Software

## Symantec Visual Café 2.0

Visual development will be less of a grind with JavaBeans — read our taster of this new café.

**N**ot content with being an also-ran to Microsoft and Borland as a supplier of C++ development tools, Symantec jumped early towards Java. First there was Café and then Visual Café, which added visual design tools to an IDE (integrated development environment) for Java. These products gained Symantec a strong market share, at least among those developers who use an IDE.

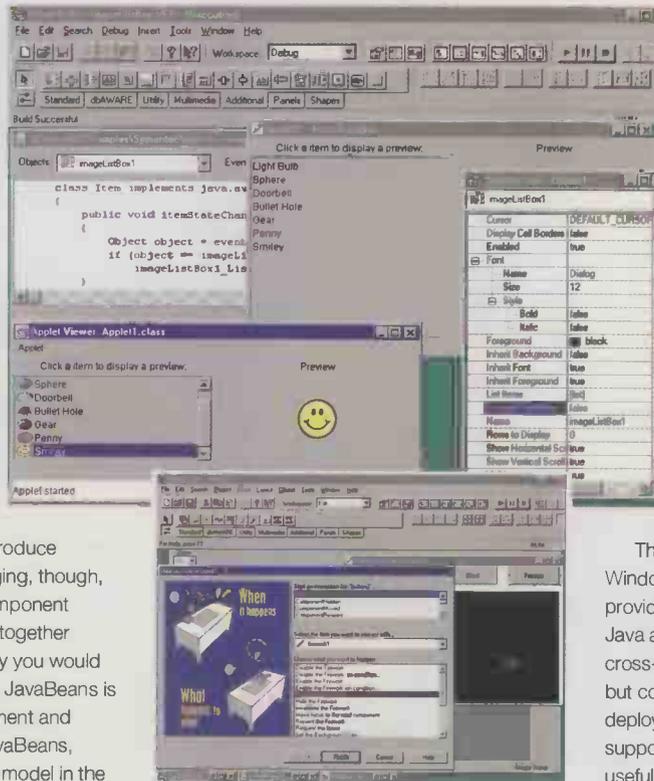
Many have stubbornly preferred to use Sun's JDK (Java Development Kit) along with their favourite text editor, partly to stay up to date with the latest version and partly because all Java tools introduce problems of their own. This is changing, though, with the advent of JavaBeans, a component model for Java which lets you snap together pieces of Java code in the same way you would use ActiveX controls in Visual Basic. JavaBeans is designed for use in a visual environment and Visual Café 2.0 makes full use of JavaBeans, along with the new, improved event model in the JDK 1.1, to provide a compelling visual development tool for Java.

Visual Café for Java is offered in three guises. The Web Development Edition is aimed at web authors and includes a basic version of the development environment along with Visual Page, an HTML editing tool. Netscape Communicator is also bundled.

The Professional Development Edition adds on-the-fly debugging, native code compilation for Windows 95 or NT, and additional components and wizards.

The Database Development Edition adds Symantec's dbAnywhere database server: not itself a database manager, but a middleware product which accepts Java database code and handles connection to ODBC or native data sources. Also bundled is the Sybase SQL Anywhere database manager and Netscape's FastTrack server, providing a comprehensive solution for setting up a data-enabled intranet.

The major new features of Visual Café for Java are first, JDK 1.1 support, including the all-important JavaBeans; and second, native code compilation for Windows. JDK 1.1 is a mixed blessing since browser support for it is patchy. Internet Explorer 4.0 supports most of it yet Symantec has focused on working with Netscape. As a result, Visual Café comes with a beta of Netscape Communicator; necessary,



**Left** The component palette, form designer, property list, code editor, and an applet running in the debugger

**Below** The Interaction Wizard lets you add functionality through point-and-click dialogs

code. It is a great time saver, although not quite the equal of the equivalent tool in PowerSoft's PowerJ.

Another strong feature is project templates. This starts a basic project for you, with choices including applets, applications, database forms, a skeleton JavaBean, a Windows application, and a Windows DLL.

The presence of a native code compiler for Windows runs against the Java spirit but should provide performance benefits for code-intensive Java applications. The idea is that you retain cross-platform portability at the source-code level but compile to native code for Windows deployment. A snag is that a large number of support DLLs are required at runtime. Although useful, this does not make Visual Café a good alternative to Delphi or Visual C++ for creating Windows-only applications.

Despite the rough edges, Visual Café 2.0 is a strong package that performs well. A bonus is the high quality of Visual Page, the bundled web page authoring tool. Serious Java developers should take a look, although competition from Borland, IBM and PowerSoft means that Visual Café is no longer an automatic choice.

Tim Anderson

since the current release version is incompatible with Visual Café's output.

The package mentions special Netscape debugging options but these are not yet available. You should also be cautious about the claimed support for JFC (Java Foundation Classes). This standard class library for Java has not yet been finished by Sun, so any work done with these is subject to change. All these are normal frustrations for web and Java developers, caused by rapidly changing standards, but nonetheless tiresome.

Visual Café's environment includes a form designer, component palette, project manager, debugging windows, a macro recorder and a number of wizards. Although in some respects it has been improved over version 1.0, the new interface has problems. There are some small irritations, like the high-level status bar which, when you drop down a menu, displays its help text behind it and out of sight. More seriously, the environment is too busy and it is easy to end up with a confusion of multiple overlapping windows. Borland's JBuilder and Microsoft's Visual J++ are both superior in this department.

Visual Café does have one ace up its sleeve though, and that is the Interaction Wizard. This lets you automatically link an event from one component to a method or property exposed by another. Visual Café automatically generates the

## PCW Details

Price Web development edition £92.83 (£79 ex VAT); professional development edition £292.58 (£249 ex VAT); database development edition £504.08 (£429 ex VAT)

Contact Symantec 0171 616 5600  
[www.symantec.com](http://www.symantec.com)

System Requirements Win95, NT 4.0 or Mac.

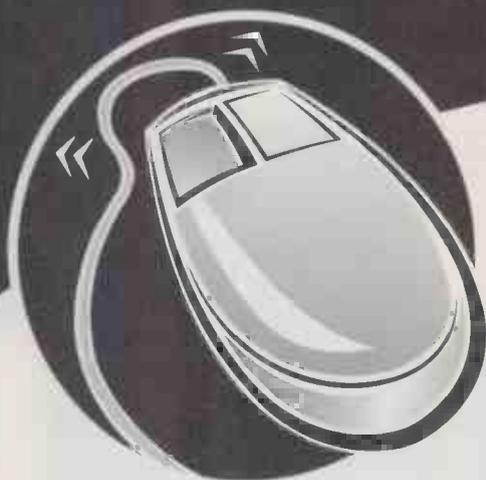
Good Points Strong JavaBeans support. Interaction wizard speeds development. Visual Page is an excellent bonus.

Bad Points Interface can be obstructive. Netscape bits are unfinished, as supplied. Not everyone wants to use dbAnywhere.

Conclusion A worthwhile upgrade offered in a range of generous bundles, but be prepared for some frustrations.

★★★★

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## Software

# Corel PrintHouse 3

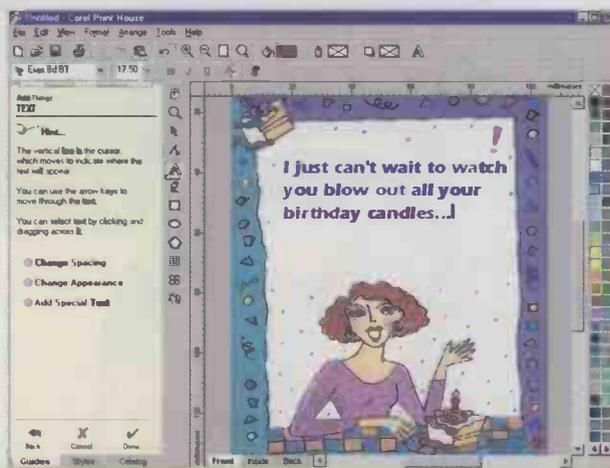
This could be graphics on a grant — lots of print-based graphics resources for the impecunious.

Corel's flagship graphic product, Draw, comes on three CDs, with over 1,000 fonts, 40,000 clipart files, a supporting cast of applications and costs around £395 (ex VAT). But Corel Print House comes on three CDs, with over 300 fonts, 25,000 clipart and photo files, vector-drawing and bitmap-editing applications — and all for less than a tenth of the price of Draw. There's Family and Friends, too, which is an address book and calendar that somehow involves installing 8Mb of Borland database management software: something of an overkill, I felt, just for remembering Aunt Harriet's birthday. Then, there's a copy of Netscape Navigator, so in the unlikely event that you have a modem and an ISP but no web browser, you'll be able to access the Corel Print House home page.

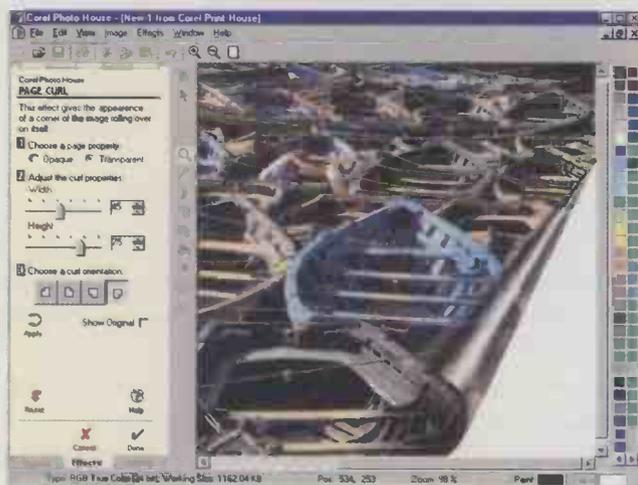
Print-House is meant for greetings cards, letterheads, banners and other simple projects. It certainly has no pretensions to DTP and is not suitable for producing newsletters or anything else that requires more than a few lines of text.

Start up, and you have the choice of either using one of 1,600 sample projects or starting from scratch. Taking the first course, you pass through various levels of sub-decision (cards, birthday, ageing, humorous) before seeing preview samples of the chosen genre. Having picked, you can then print out the project as it is, but more probably, you'll want to customise it.

It is here that the versatility of the tabbed Notebook panel to the left of the screen becomes apparent. It serves to show, via the Guided Activities tab, where you can add or change things, save or print the project. From the Catalog tab, it serves as a browser for the clipart, backgrounds and other resources, which include 1,000 inspirational messages with which to adorn your cards. The Styles tab works in conjunction with the drawing tools, in various roles including thumbnails of fill, outline and text styles ready to



Left Instant cards — guess the punchline



Below Photo fun with the page curl effect

drag and drop onto items. There are conventional option dialogs, too.

Starting from scratch is somewhat harder than you might expect, as Print House seems determined that you create a project, rather than just a picture. However, by pressing the Cancel button at the right time it is possible to start with a blank sheet, then use a conventional toolbar interface similar to, but far simpler than, CorelDraw. There are good drawing facilities here, with lots of colourful blended fills, text-along-paths, dropped shadows and "wrappers" which distort the outline of text or pictures. You can drag text and fill styles into the Style lists for re-use alongside the default versions. Another potentially useful feature is a mail-merger for, say, sending personalised invitations or Christmas cards.

On the bitmapping side, Photo House has an almost identical interface and an impressive range of wizard-driven special effects and filters, including lens flare, distortion, impressionist effect and the now-ubiquitous page curl. There is

support for Adobe-standard plug-ins, and the third-party AutoFX is included. This latter is like a separate program in itself, and can do some weird and wonderful things, but the rather unhelpful interface contrasts poorly with the ever-helpful Corel Notebook.

There's a reasonable set of painting and retouching tools, including an image-spray tool which lets you spatter the virtual canvas with a succession of different sunflowers, penguins or other sets of bitmaps. Finally, just for fun, there are libraries of hat, hair and face "objects" you can add to existing images.

We gave Print House a real-world test as this household needed a customised birthday card in a hurry. We had just one hour to install the software, create the card, include a scanned photo inside, print and sign it. Despite dithering for ages over the huge choice and having to fight the software to resize the card — you don't do Page Setup but go through a rather awkward Convert Project process — we just made it. The only bad point was printing. Having been through a long, paper-wasting, "nanny-knows-best" session to determine which way was up when printing on both sides of the paper, it still got it wrong and we had to try again using manual override.

Despite these small problems, Print House is fun, easy and packed with resources. Note, though, that as the name suggests it is purely for paper output so, unlike the rival Micrografix Draw (reviewed in PCW, Dec '97) there are no web publishing facilities.

Tim Nott

## PCW Details

Price £37.51 inc carriage (£24.92 ex VAT)

Contact Corel 0800 581028 [www.corel.com](http://www.corel.com)

System Requirements Windows 95

Good Points Easy. Fun. Loads of resources.

Bad Points A little limiting for the more ambitious. No web output.

Conclusion An excellent choice for short, paper-based output on a budget.

★★★★



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## Software

# Superbase 3.2

In the lightweight corner, we've a 16-bit database which will run happily on a 386 with 4Mb.

**S**uperbase goes back a long way, to the days of 8-bit home computers and later the Atari ST and Commodore Amiga. Since then it has had a tangled history, as you can tell by tracking its version numbers. The last Atari version was Superbase 4.0. Then SPC took over the product and released a new Windows version called, remarkably, Superbase 2.0.

Unable to compete with heavyweights like Microsoft Access and Borland Paradox, SPC handed Superbase to Computer Concepts, which issued Superbase 95, still a 16-bit application despite the "95" tag.

Superbase made no headway with Computer Concepts either, so its UK-based developers set up their own company. The new version is still 16-bit, and the version number has retreated from 95 to 3.2. It is not a full version upgrade. The printed manuals still cover Superbase 95, with new features described in online documentation. A 32-bit version is, apparently, in preparation but the company says it is not expected, even in beta form, for another six to twelve months yet.

Superbase stores data in its own unique format, which has a range of features. You can define fields as unique, required, read-only, or calculated from other fields. Each can have a validation formula, enabling you to restrict its values to a precise range, or to check that its value matches that in another file. An unusual feature is called multiple responses. It lets you store several values in one field, assigning each value to a different level.

There are surprising omissions, though. One is that you cannot fully enforce referential integrity, to prevent related data files from getting out of step with one another. Another is that Superbase does not understand memo fields used by other systems to store large text documents or multimedia data. Superbase handles this kind of data via external fields which store only a filename. This means that images or sounds, for example, remain as separate files in their original format. Although there are some advantages to this approach, the down side is that you end up with lots of separate files on your hard disk.

Two other key Superbase components are the form designer and the programming language. Through the form designer you can compensate for the weaknesses of the underlying data format by setting up relational links and using features like detail blocks and cascading deletes to correctly handle related files. The form designer has a basic range of graphical and data-aware objects but unfortunately cannot use VBX or OCX controls. There is a way around this using

Right Superbase data files have several advanced options but several striking omissions

Below The Superbase form designer is fine for basic forms but does not support VBX or OCX controls



an accessory called SuperBoxes to hack into the Windows programming interface, but it is not easy. The SuperBasic language lets you create complete custom applications using a full-featured version of Basic and driving SuperBase through its object model.

There are editors for creating custom menus and toolbars. You can also control other applications such as Excel through OLE automation. To complete the picture, there is a visual query builder and a report designer.

New features in Superbase 3.2 include filters for over 250 file formats, enabling you to view a vast range of image and document types via external fields. And there is huge integer maths, with support for integers of up to 122,880 digits, with each digit exactly specified. This is particularly useful for encryption, and an RSA encryption library is supplied. Built-in crosstab queries is a strong feature for applications which need to analyse data.

An internet edition is available, at extra cost, which bundles a QuarterDeck web server with scripts and tools for publishing Superbase data on the web. Superbase is now MDI (Multiple Document Interface) which is a significant

usability benefit over previous versions.

For running a networked database on very low-end PCs, Superbase is ideal although not especially cheap. It also has attractions if you want to write a custom application to manage images in a variety of formats. Existing users will find this a worthwhile yet unspectacular upgrade. It is hard to see it as more

than a niche product though, especially since it is marketed primarily as a development tool where it cannot compete effectively with rival products from Microsoft and Borland.

Tim Anderson

## PCW Details

**Price** Superbase 3.2 £387.75 (£330 ex VAT); personal edition £58.69 (£49.95 ex VAT) no programming capability; network client licences available at extra cost.

**Contact** Superbase Developers 01223 365550 [www.superbase.com](http://www.superbase.com)

**System Requirements** Windows 3.1, 95 or NT (no long filename support).

**Good Points** A lightweight system which requires just a 4Mb 386. Supplied with a huge range of image and multimedia viewers. Crosstab queries for data analysis.

**Bad Points** Too difficult for end-users and too limited for developers. No easy way to use VBX or OCX controls. Still a 16-bit application.

**Conclusion** It would be great to see this British product succeed, but its main attraction will be as an upgrade for existing users.

★★★★

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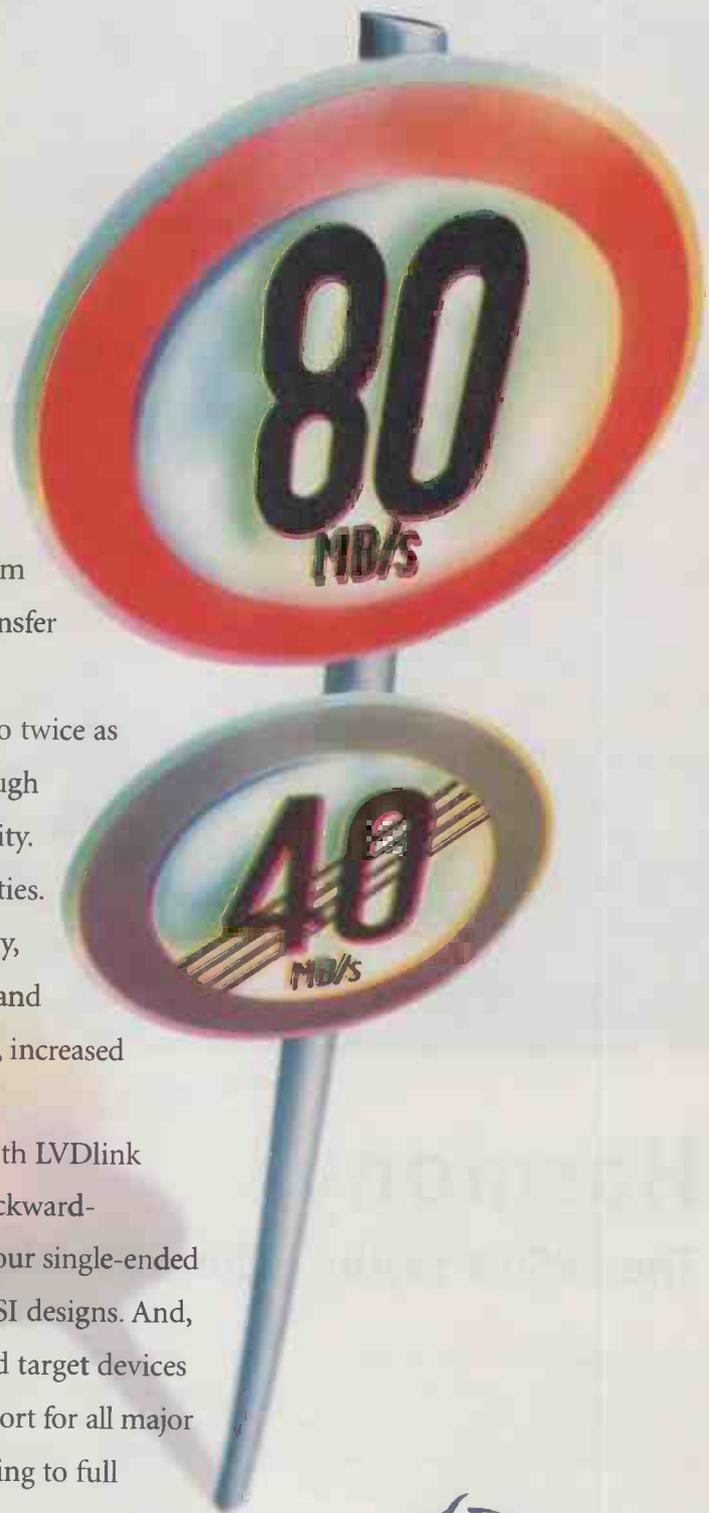
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<i>SYM22801</i>	PCI - Dual Ultra Wide SCSI 2 x	40MB/s
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## Software

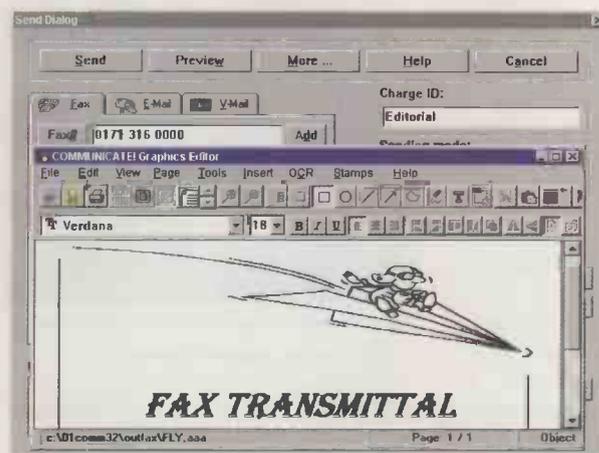
# Communicate!

A comms tool which will handle voice fax and data, plus OCR, email, and contact management.

**C**ommunicate! aims to integrate functions usually found in separate programs. Unfortunately, the program itself is not that impressive and has a number of irritating defects and idiosyncrasies. Most of these centre around its fax and OCR engines, of which more later. It intercepts calls, decides whether they are voice, fax or data transmissions and routes them to an appropriate module. This is where most comms programs stop, but Communicate! goes on to provide email, OCR and contact management.

Sent and received email messages are stored in the outbound and inbound logs along with fax, voice and data files. Faxes are converted into editable text by Calera's OCR engine, which is invoked from a separate graphics editor which has an OCR option on its menu bar. The contact management feature is an extended address book with additional fields (95 in all) to store information like the date of last contact and a date for a scheduled call. Existing address books in dBase and .SDF formats can be imported into the contact manager, and it's during this process you realise that not all is what it seems.

On installation you're offered a 16-bit or 32-bit version of the program. We chose the 32-bit option, which is why we were surprised to see that the import dialog box in the contact manager couldn't display long filenames. But didn't we use a long filename to record voicemail messages? A quick glance back at the voice recorder proves we did. In fact, the program is a mishmash of 16-bit and 32-bit code. The graphics editor and voice file modules support long filenames but the contact manager and inbound/outbound logs don't. A quick scan through the program files on the hard disk revealed a mixture of 16-bit and 32-bit libraries and executables. Even a file called OCR32.EXE turned out to be a 16-bit module. Weirdly, if you export a file from the contact manager or one of the logs you can give it a long filename, even though the directory scroll boxes cannot display them. If you OCR a fax and give it a long filename, the program truncates it to eight



characters. It doesn't ask for permission and truncates Presentation1.txt to Presenta.txt. When you later save Presentation2.txt, it truncates this to Presenta.txt and overwrites the first without notice.

The longer we used the program, the more inconsistencies we found. In the inbound and outbound logs, when you delete a file it's placed on a deleted list. You can view deleted files at any time and remove them permanently by using a purge option. Files scheduled for future transmission don't show up in the outbound log until they have been sent. Prior to this they're stored in a separate queue log, which is doubly inconvenient because its Remove option peremptorily deletes files from the hard disk rather than placing them in the outbound log.

Another annoying quirk is that if you delete a fax image but not its log entry, when you try to view the fax you get an error message that the file cannot be found. Unfortunately, when you click on OK the program closes or crashes. Less serious, but just as irritating, is that the F1 function key is not wired up to the help system.

The data and voice facilities are comprehensive and work well. We liked the conversation recorder, and the auto-learn feature in the terminal program which creates a login

Send your faxes flying out from Windows applications

script by following your keystrokes. If Communicate! is not instructed to answer calls automatically, when you pick up the phone and hear a fax tone it is possible to transfer the call to Communicate! — many answering machines drop the line if you try this.

We had no problems receiving and storing faxes, or sending them from Windows apps via print-to-fax, but outbound faxes

created using the scan-to-fax option had about two inches cropped from their right-hand slides. This seems due to a bug in the .TIF converter for outbound faxes. Inbound faxes, which are stored in an internal format, were unaffected. A related problem with scan-to-fax was that Communicate! did not acknowledge the PC's existing TWAIN scanner until we had installed a second scanner which forced it to choose a TWAIN source.

The contact manager is wrongly named. It's just a souped-up address book with no diary or calendar, no time management, and with only rudimentary printing facilities such as a label generator, with no alignment or preview options.

Paul Wardley

## PCW Details

Price £116.33 (£99 ex VAT)

Contact Peripheral Corner 01420 549794

[www.fracom.co.uk](http://www.fracom.co.uk)

System Requirements Windows 3.x, 95 or NT

Good Points Lots of features.

Bad Points Not all of them work.

Conclusion A versatile program, but not intuitive.

★★★

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PCW **Direct Buyers World**

## Software

# First Aid 98



PC problems? Is it having a nervous breakdown? Here is do-it-yourself brain surgery for PCs.

It is a perversity that as hardware and software manufacturers strive to make computers easier to use, the number of things that can go wrong seems to increase. One of the biggest markets for utilities is problem prevention and problem fixing, and a premier package is First Aid, now at version 5.

The most noticeable change is the new graphical opening screen (shown, right) which represents a desktop containing your computer equipment. Simply click on the picture of whatever is causing you problems, or what you think is causing a problem, and First Aid will automatically run the appropriate diagnostic checks. The desktop is extremely easy to use, but even so, when you first run First Aid 98 a friendly chap pops up to host a video which shows you how to use the product.

Frankly, finding and fixing problems used to be a heart-thumping exercise. The primary improvements to First Aid are to make resolving problems about as heart-thumping as lazing at the seaside in a deck chair eating an ice-cream. There's even a small army of How To videos that show you how to install new software and



The most distinctive difference is the desktop: just click to run diagnostic tests

hardware and undertake simple maintenance, such as cleaning your keyboard.

This new version automatically fixes more problems than previously — it boasts the ability to automatically fix tens of thousands of them! — and if First Aid hits a problem it can't resolve, a new feature called ActiveHelp Support provides a direct email link to the manufacturer who, in theory at least, will help. Additionally, it will examine your internet setup to make sure that it is running smoothly.

First Aid does all the things now expected of such a program, like running a virus check, being able to return your computer to a configuration prior to problems resulting from system changes resulting from a hardware or software installation, and jumping in to prevent system crashes. It comes with loads of reference tools, too, such as address, phone and fax details for hardware and software suppliers, and a glossary of PC terms.

Paul Begg

## PCW Details

Price £34.95 (£29.75 ex VAT)

Contact Cybermedia 0800 973631  
[www.cybermedia.com](http://www.cybermedia.com)

System Requirements Windows 95

Good Points Very easy to use.

Bad Points Resolving a problem manually still isn't easy, there being an option to delete files and links without really knowing their importance.

Conclusion A worthwhile investment. Every PC should have one.

★★★★★

# GuardDog Deluxe

This Rottweiler grows at web gremlins, eats cookies and chases chancers off your hard drive.

If you surf the web under the impression that as long as you keep away from dubious sites and don't download any files from unknown sources, your privacy and security are protected, then think again. During a web session, dozens of files are downloaded to your PC and it's Guard Dog's job to make sure they don't do any harm.

Guard Dog is a set of seven utilities, bound together by a common interface through which each can be turned on or off. If you choose to have Guard Dog load automatically at boot-up, it will automatically run a virus check and wait in the background until it's needed. However, as most of its work is carried out while connected to the web, you might choose to enable it only when logging on for an internet session.

Cookie Blocker prevents unauthorised sites from downloading information to your PC, which can be read by other sites and used to track your browsing habits. System Monitor keeps an eye on downloaded ActiveX and Java controls, which are supposed to provide extra browsing facilities but could be used to tamper with your PC. Guard



GuardDog protects you from the files you download during an internet session

Dog checks to see that they don't scan your hard drive for information or try to format it.

The internet access monitor warns you if programs other than your web browser try to connect to the internet — they could be trying to send data from your PC to a third party — and File Guardian protects your email files, and any others you specify, from prying software.

All these protective mechanisms worked when we deliberately set about triggering them,

but one that didn't is the MyInfo filter. This is meant to prevent a site from passing on information you've provided, to another site, but it only seems to work intermittently.

Another feature is a utility to clear the cache, history log and URL site list after a web session so another user of your PC can't see what you've been doing. It works, but emptying the cache could slow down future browsing sessions.

Paul Wardley

## PCW Details

Price £49.95 (£42.51 ex VAT)

Contact CyberMedia 0800 973631  
[www.cybermedia.com](http://www.cybermedia.com)

System Requirements Windows 95

Good Points Easy to set up and use.

Bad Points Rather expensive if you've already got an anti-virus package and a properly configured web browser.

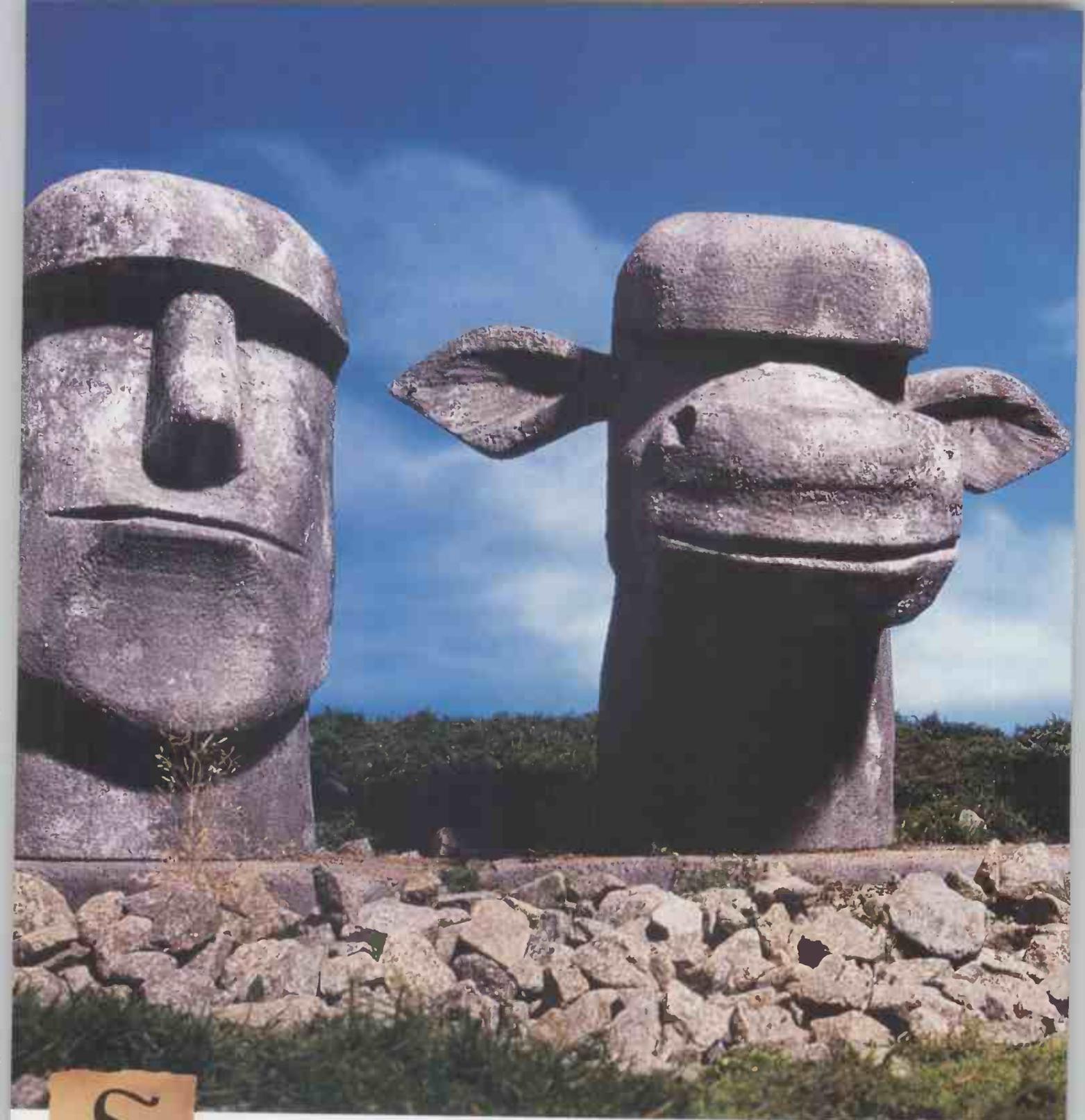
Conclusion If you're worried about privacy, or the net is a mystery to you, buy it.

★★★



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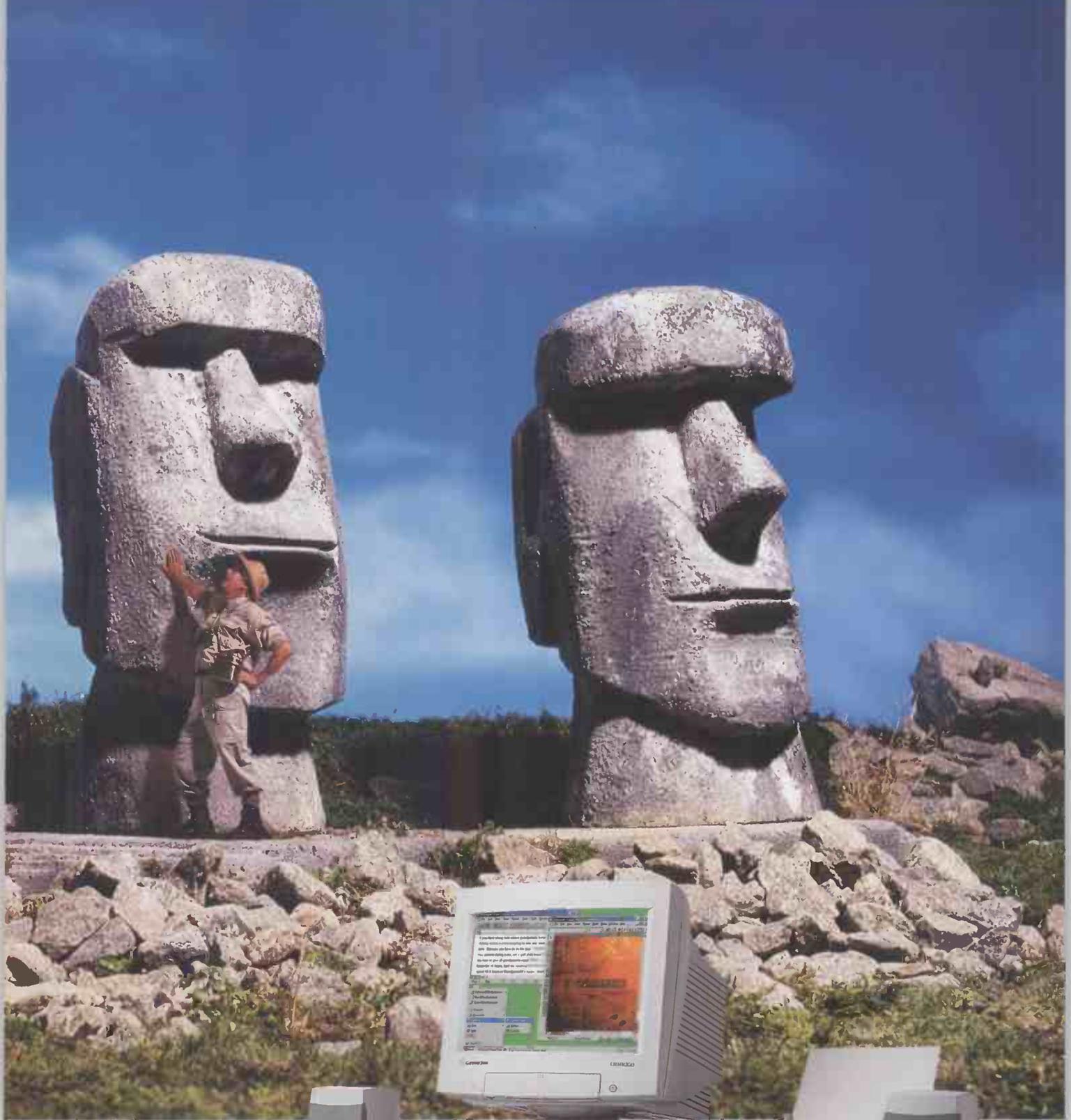
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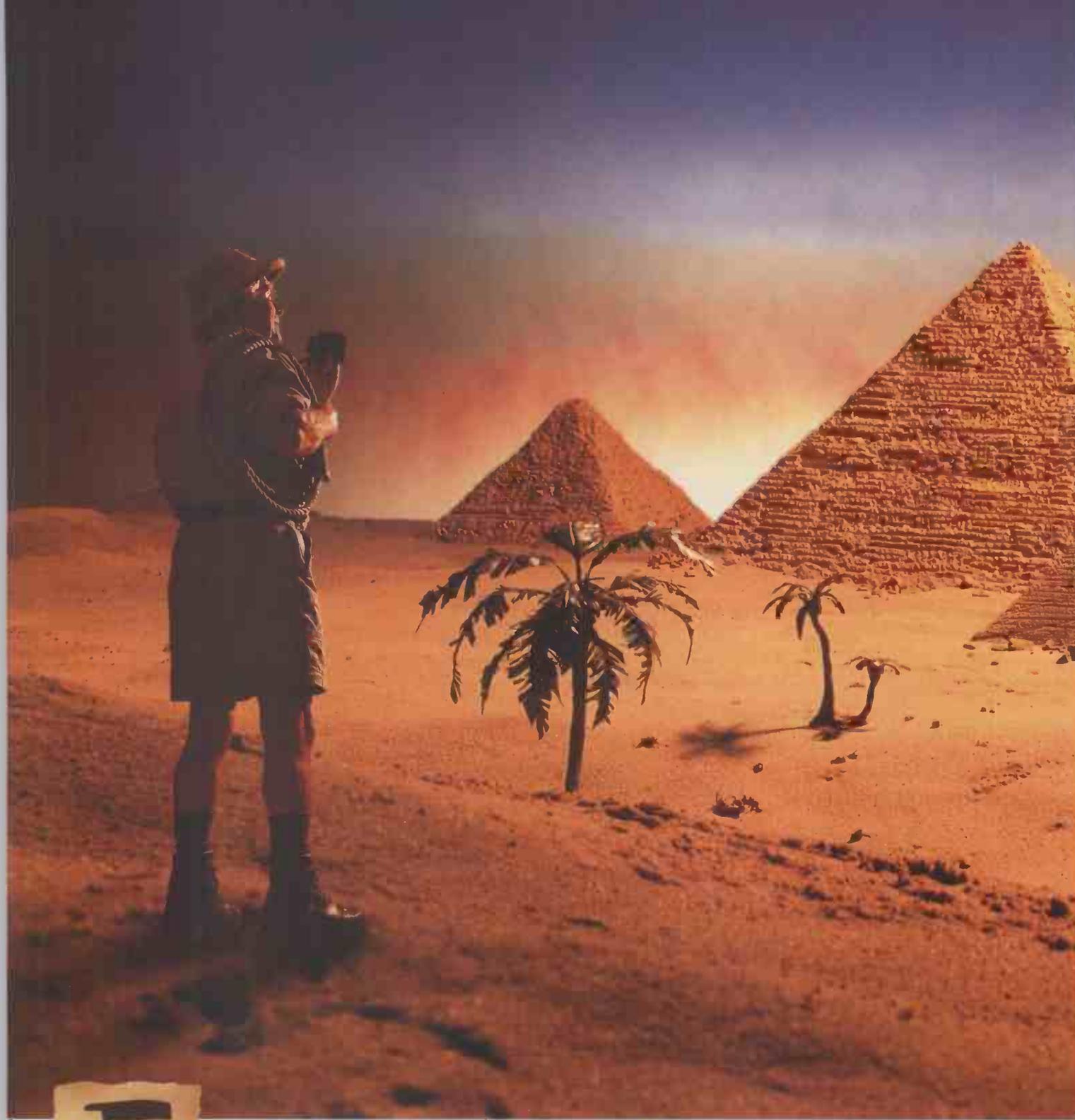
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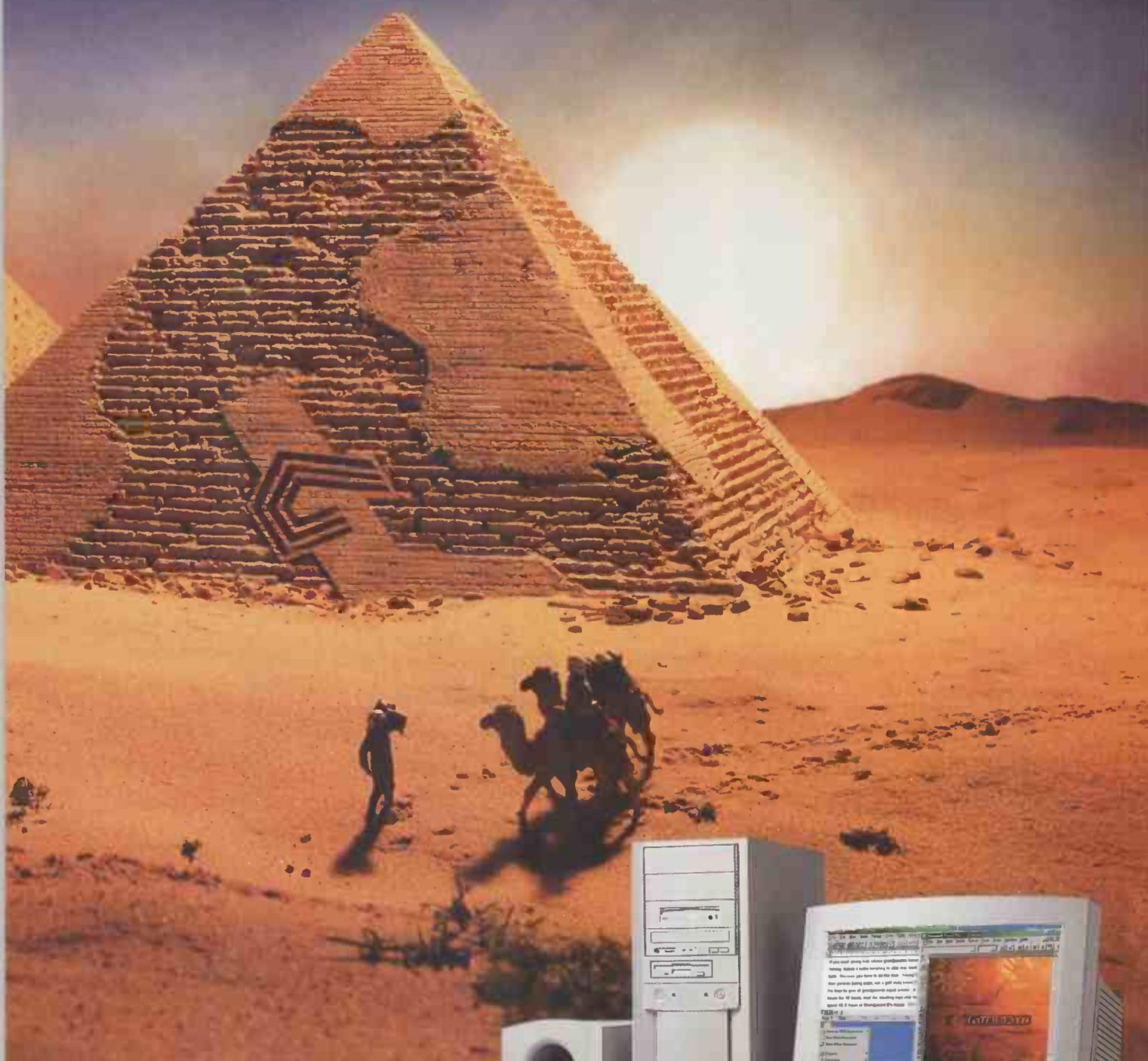
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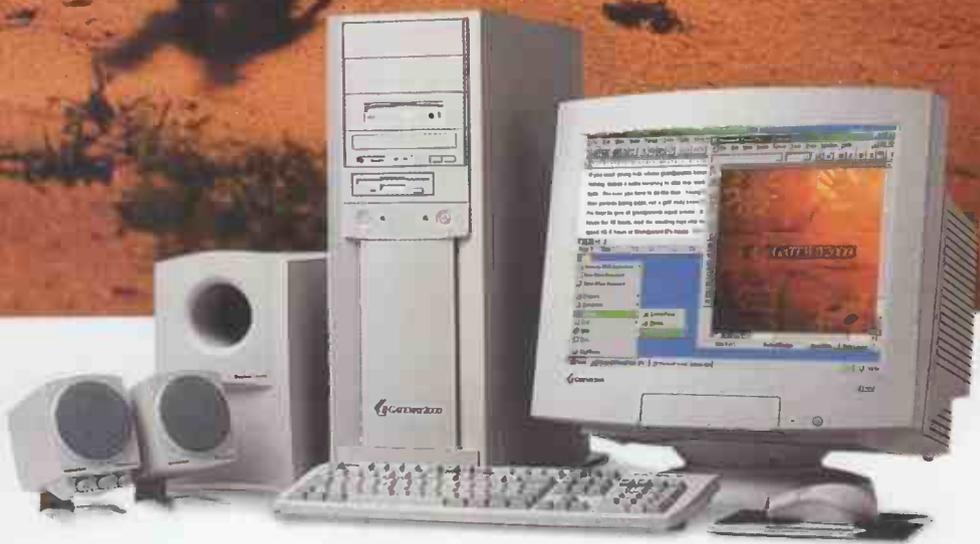
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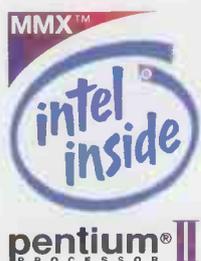
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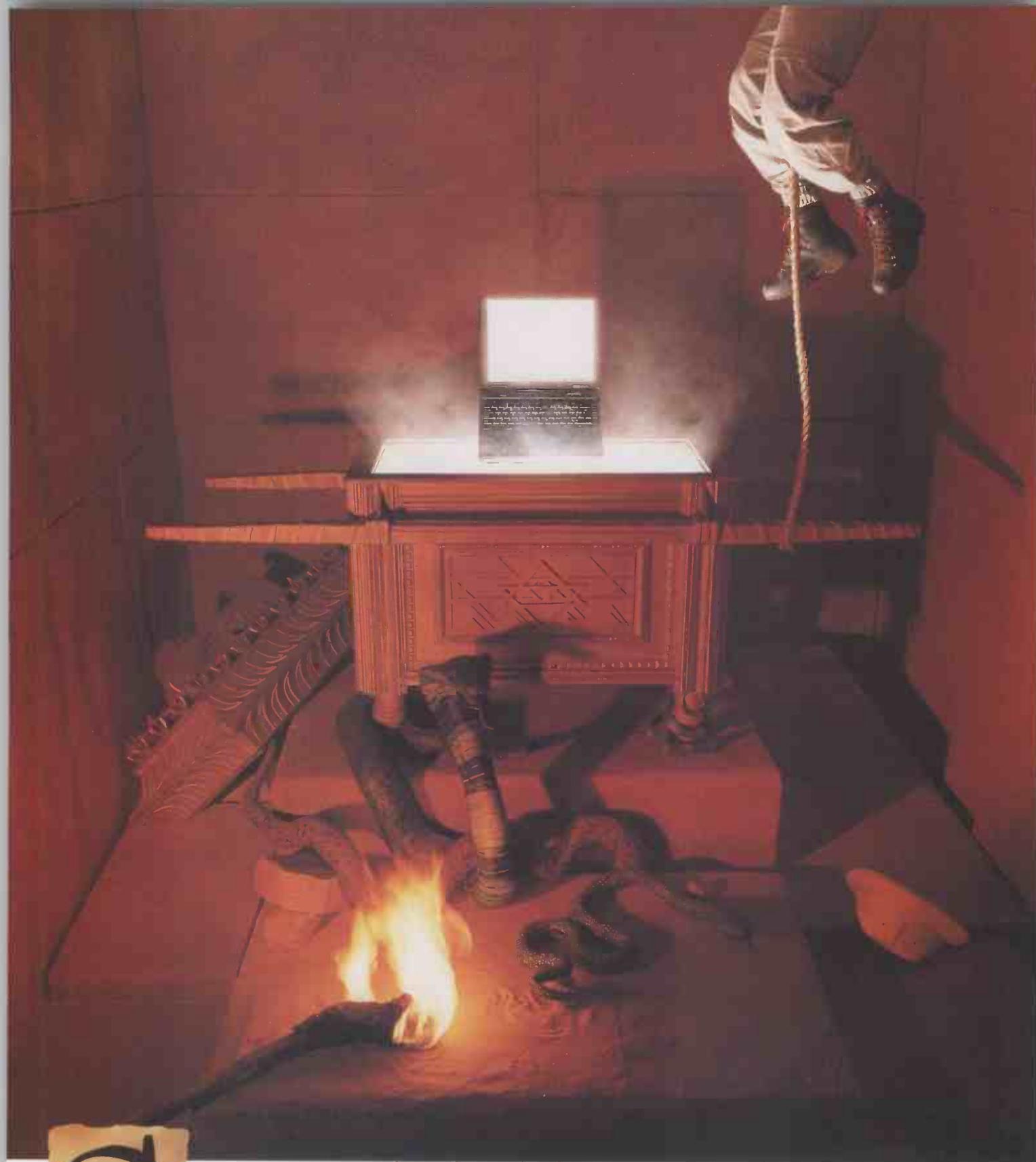


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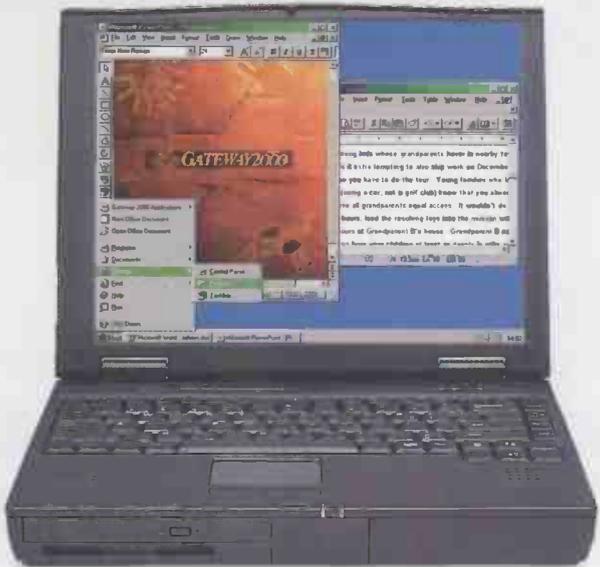
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▶ Gateway Solo 9100 S5-233XL - Intel 233MHz Mobile Pentium Processor with MMX technology

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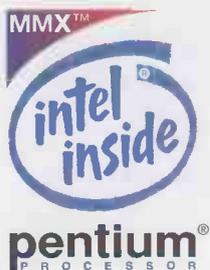
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## NETWORK SOLUTION

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► G-1000 featuring Intel 166MHz Pentium processor with MMX technology

#### \*Gateway Software Bundles:

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# Star Trek Encyclopedia



No Star Trek stone is left unturned in this Interactive Edition — the level of detail is astonishing.

**D**id you know that Starfleet vessels are built the opposite way round to buildings, with the first floor at the top and lower levels assigned higher numbers? Did you realise that in building *Voyager*, the Federation's engineers at Earth Station McKinsey abandoned the traditional optical processors in favour of bio-neural circuitry, or that Robert April and not Christopher Pike was the *Enterprise*'s first captain? If the answer to any of these questions is "no", and you count yourself among the ranks of Star Trek fans, then this four-CD collection is a must. With over 3,000 pictures and 400 video clips from every series and all eight films, this is the ultimate Star Trek resource, answering every one of those burning questions that have nagged you for years. How does a combadge know who needs to receive a message? They all contain a dermal sensor that means each can only be used by a single crew member (in case you were wondering). It also offers the facility to integrate your own research and swap articles with other users, building this already weighty volume into a work of reference second to none.

Complete episode guides from the Next Generation and Deep Space Nine series,



although none of the *Voyager* or Kirk and Spock episodes, include everything you could possibly want to know, from the week in which an episode was first shown and the stardate in which it was set, to a run-down of the storyline. The level of detail is astounding, chronicling even what food was eaten, what it looked like, and in which episode that particular dish appeared, as well as

supplying you with a handful of helpful phrases you might like to use when dining with Bajorans who, it says, use the term "spoonface" when referring to Cardassians. The interface is identical to that used on the *Enterprise* and the ship's computer will infest your PC, which even adopts Trek-speak, asking you to "Please confirm episode module deactivation request" when you click on Quit.

Nik Rawlinson

## PCW Details

Price £39.99

Contact Zablac Entertainment 01626 332233

System Requirements Windows 95

★★★★★

# Wallace and Gromit



Our plasticine friends brought to animated life on your desktop, with Wendolene and Feathers in tow.

**T**here was a time when Christmas meant Julie Andrews and Steve McQueen. These days it means two lumps of plasticine — Wallace and Gromit. And now, their Cracking Animator means you can enjoy them all year around. Divided into three sections offering a range of Windows customisation tools, this is essentially a screensaver creation package. The Expressionator is your chance to manipulate the characters' mouths and expressions to match phrases in much the same way as the Aardman Animation team produce their claymation films. The Scene-o-matic lets you produce your own screensavers. Ten backgrounds can be customised with almost 50 props ranging from Wendolene's stack of wool balls to Gromit's bowl, and any of the six main characters from the animations can be placed within the scene, walking among and around the props.

The final touch is to add sounds or words. Sean the Sheep can baa or eat, while his walking could be accompanied by a choice of only two tunes. Make Wallace dance and proclaim "Maybe this will impress Wendolene", to which she might rather illogically reply, "Thank you for coming so quickly".



The Customatic is like a cut-down kids version of the Windows Control Panel, used to turn your animations into screensavers. The dozens of backgrounds, actions and sounds mean that your Windows desktop need never be boring again. Three ready-made screensavers double as games, with a choice of flinging jam at Wallace's toast, expertly piloting your plane to shoot your porridge gun at Preston's truck, or

catching Feathers, the evil penguin, in a small glass bottle.

The three main sections of the package are accessed by clicking the objects on a desk in Wallace and Gromit's study. Section menus are laid out on the pages of small spiral-bound notebooks and sound customisation is controlled with a small radio. Even the mouse pointer has changed to a wedge of cheese, and clicking a button is accompanied by a fun sound.

Nik Rawlinson

## PCW Details

Price £19.99

Contact BBC Multimedia 01483 204450

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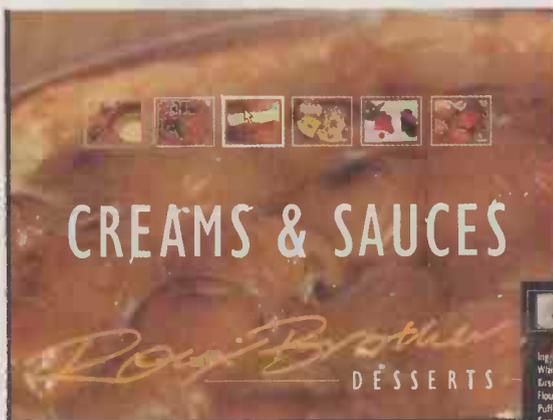
System Requirements Windows 3.1, 3.11 or 95

★★★★★

# Rhodes on Rom & Roux Brothers Desserts

England v France! No, not on the sports field — in the kitchen. Celebrity chefs get creative on CD.

**G**ary Rhodes' speciality is the neglected, and in some quarters even despised, British cuisine and he demonstrated its delights in his various BBC TV series, *Rhodes Around Britain*. In 1996 he entered into partnership with catering giant Gardner Merchant and in January 1997 opened the "City Rhodes" restaurant in London. On this CD-ROM he presents hundreds of his recipes. You can search for just the recipe you want in one of several ways: by region (fancy Irish colcannon, or how about open leek tart with warm poached egg from Wales?); by your mood (something for a romantic evening or just a reviving and tasty meal when you're dog tired); or you can choose a dish by its name. There's a recipe of the day, and a feature called The Melting Pot which lets you specify what you have in your cupboard and Gary will suggest a recipe to suit. The recipes are in text, generally with a picture of the end result, but there's no video and no explanatory commentary, so really the main advantage over a cookery book is the



Left Lots of desserts from the masters

Below Step-by-step instructions for making stunning deserts and a picture of what the finished result should look like

special searching features.

Roux Brothers Desserts is more traditional in design, in that there are video demonstrations and narration by the brothers as well as text recipes you can print out. Thus, rather more than Rhodes, this two-CD set combines elements of both book and video. Inspired by their mother's cooking and after years spent in the private kitchens of the extremely wealthy, in 1967 Michel and Albert Roux opened their first

restaurant, *Le Gavroche*. The success of their restaurant, as much as something of a reputation for being the bad boys of French cuisine because of their stance against the then very fashionable *Nouvelle Cuisine*, have made them famous as the masters of "real cuisine".

Here's your own private cookery lesson with the masters. "Savoury food should look good," says Michel Roux, "but patisserie should be beautiful, artistic and taste

wonderful. As the last dish of the meal it should leave a lasting impression, like the firework display after the concert." Here are no less than forty firework displays, each demonstrated on video and with comment and narration by the brothers. You can watch them prepare a dessert, listen to their tips for guaranteed success, and read and print out a text recipe. Excellent stuff.

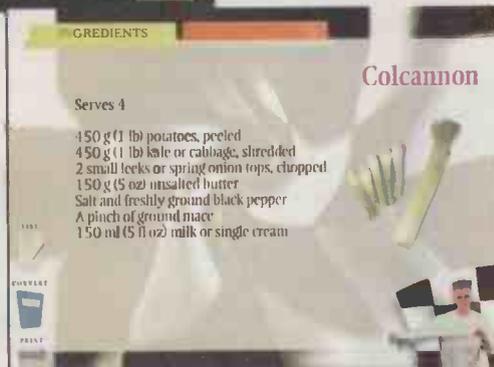
As good as these CDs are, and they are both good and warmly recommended, they cost about twice the price of a cookery book or video. And apart from the ability to search — more relevant to Rhodes on ROM than to the Roux Brothers — you don't derive any significant benefits. A £10 drop in price would bring these CDs into line with competing media.

Paul Begg



The many faces of Rhodes: Click on one of the Garys to select a recipe of the day (above), choose from an A to Z of recipes, or find a recipe using the ingredients you have to hand

Right Choose a tasty regional dish like colcannon from Ireland



## PCW Details

Rhodes on ROM

Price £29.99

Contact Anglia Multimedia 01273 821104

[www.anglia.co.uk](http://www.anglia.co.uk)

★★★★

Roux Brothers — Desserts

Price £29.99

Contact Macmillan Interactive Publishing

0171 881 8070 [www.macmillan.co.uk](http://www.macmillan.co.uk)

★★★★



## Software

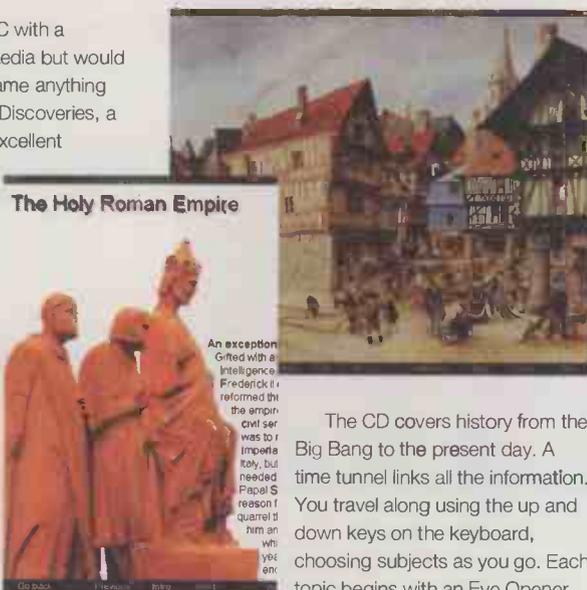
# Discoveries

This really is a discovery. A quartet of reference CDs which will stimulate and enthrall all children.

**D**o you have a home PC with a multimedia encyclopaedia but would be hard pressed to name anything your children have learnt from it? Discoveries, a new world history based on the excellent Gallimard-Larousse historical encyclopaedia, could be a different story.

In place of long texts that leave children bored and none the wiser, Discoveries has interactive screens, magazine-style spreads and loads of pictures. Its use of music, to set the mood for subjects, is as good as any Michael Nyman film score.

Our young testers were sad when learning about life in a Yorkshire cotton mill in the late 18th century, fascinated by a clockmaker's shop in 1500 and impressed by Pasteur in his laboratory. All of them found things to print off and take to school to show their teachers.



The Holy Roman Empire

The CD covers history from the Big Bang to the present day. A time tunnel links all the information. You travel along using the up and down keys on the keyboard, choosing subjects as you go. Each topic begins with an Eye Opener screen that works superbly in capturing a child's interest. Eye Openers are animated murals which open out beyond the screen. You rove up and down, left and right,

discovering animations and voiceovers as you go. Things move and lights come on as you pass over windows. Roofs lift off to reveal what's happening inside buildings.

You can search reference material on topics by word or subject. The presentation is inviting and the quality of archive material is as good as you would expect from Larousse. The company publishes Discoveries, a series of children's reference books that leave Ladybird in the shade.

The program comes on four CDs or one DVD disc. As well as internet links, it has its own web site for updating information. Educational adventure games and historic places to explore in virtual reality are planned.

Debbie Davies

## PCW Details

Price £59.99

Contact IBM World Books 0990 426426

[www.ibm.com](http://www.ibm.com)

System Requirements Windows 95

★★★★★

# Blue Peter CD-ROM

And here's one they made earlier: a collection of past BBC TV programmes, with extras.

**T**he BBC has had plenty of success transferring its programme formats to CD. How well does Blue Peter stand up to a computer makeover?

This CD-ROM is essentially a searchable archive of past programmes. You can search by date or subject, and topics covered include animals, travel, sport, science, music, personalities, cooking, gardening and history. The CD also contains a secret diary where you can enter your private thoughts. The archive material

is presented as a calendar with an entry for each day of the year, as well as an amazing fact. These are not always amazing, though: "Did you know that on this day in 1960... Gary Lineker was born?" is fairly typical of the standard.

Our testers found the Blue Peter CD most interesting as an information resource and used it as they would a multimedia encyclopaedia. It may not be comprehensive, but using the subject material and presentation style of the TV series has its advantages. Compared with the erudite

texts of multimedia reference programs, children found it accessible. It also had a good chance of covering relevant topics. Interviews with Alan Shearer, music from Boyzone and how to make string jewellery were favourites with our testers. The CD includes activities and games. There are 12 things to make and 12 recipes to try.

Visually the CD is disappointing, especially compared with BBC titles like

Animals of Farthing Wood, or Noddy. When you explore a topic, there is a dull, homemade style to its presentation. Most information is based on programme scripts. There are some video clips from the series but reminded our testers of their own scrapbooks. The expectation generated by multimedia is for something more exciting.

The secret diary includes a password. You can enter up to five different passwords so that brothers and sisters can keep their own diary safe on the same program. But you wonder how accessible a computer is for making diary entries last thing at night? This CD is probably best suited to Blue Peter die-hards who sport the badge and have all the annuals, yet still want something new.

Debbie Davies



## PCW Details

Price £24.99

Contact BBC Multimedia 0181 576 2000

[www.beeb.com](http://www.beeb.com)

System Requirements Windows 95

★★★

## Software

# Boggle

Another game makes it onto disc. If playing in English is too easy, then try another language.

**N**ot all games survive transfer to the computer. Lego, for instance, takes on quite a different personality when you move it from the real world of 3D construction onto a computer screen. Boggle, which Hasbro has transferred onto CD, is essentially the same as the physical game and thrives in its new format.

You play traditional Boggle, using dice. The challenge is to shake the lettered dice on a tray and make as many words as you can by using consecutive letters only.

On the CD-ROM, Hasbro has developed five versions of the game. Each can be played at original and at master levels, as well as against the clock. If you want an opponent you can play with friends,

against the computer, or find someone to play with over the internet.

The new game versions use 3D blocks and moving dice. Playing with a cube of dice gives you more words to find, or you can play with dice streaming towards you at varying speeds. There is also a Scrabble version where you move dice

onto a board. Having five game versions gives good play value but the real advantage lies in playing against the computer.

In our first game, we managed 11 words against the computer's 136. In our next game, the computer seemed not to do so well, finding only 36; but that was from an impossible mix of Xs, Zs and almost no vowels. We managed to score one point!

As well as a list of words, you can click on words for a definition. The dictionary is multi-language so, in addition to games English, you could also play in German, Spanish or French. Boggle would amuse children aged five years or more and indeed anyone who likes crosswords.

Debbie Davies



## PCW Details

Price £19.99

Contact Hasbro Interactive 0181 569 1234  
[www.hasbro.co.uk](http://www.hasbro.co.uk)

System Requirements Windows 95

★★★★

# Peter Rabbit



Mr McGregor lives on in CD format. Follow the classic stories, play the games, learn words.

**I**t is a good many years since I have read a Beatrix Potter book (in fact, far more than I would like to admit) but they are books you never forget. In this CD, the Adventures of Peter Rabbit and Benjamin Bunny, Potter's words and some of her drawings and poems have been used, but mostly the illustrations and animations have been recreated in a style which is close to her originals. There is

not the level of detail which made the original pictures so good, but such detail would have been a nightmare to recreate in animated form.

Some of Beatrix Potter's books have already been made into cartoons, but here the text is meant to form the main focus of the child's attention so the animation is relatively limited. The story is broken down into little bits of text with an animated illustration on the same page, much like

the books. The text is highlighted as it is read and when the reading is finished, the difficult words remain highlighted, so if your child does not understand when the sparrow "implores Peter to exert himself" when he gets stuck in a gooseberry bush, he or she can look up "implore" and "exert" in the dictionary, thus helping them to build their vocabulary.

Each illustration has certain hotspots where things happen when you click: birds fly out of trees, squirrels leap from trees,

and butterflies fly off bushes. If you want to explore the scenes further you can leave the story and wander around in places like Peter's wood or Mr McGregor's garden and toolshed. If you click on objects here, you see words highlighted and they will be spoken if you click again. There are a few games hidden away here, such as catching the onions which Peter drops in his haste to find a way out of Mr McGregor's garden, or matching the small animals hiding under plant pots.

From the parent's point of view there are a few built-in extras which can point your child in the right direction. You can choose either American or British English, stop them using the printer unsupervised and not let them quit the program without permission.

Adele Dyer



## PCW Details

Price £19.99

Contact Europress 01625 859333  
[www.europress.co.uk](http://www.europress.co.uk)

System Requirements Windows 3.1 or 95, Mac

★★★★

## Software

## Visual C++ v4.0

Get programming with this: it's a great bargain for students and teachers but a 17in screen is a must.

One day I found I had a computer on which Doom would run but my favourite programming environment wouldn't. Okay, that's a slight exaggeration, as it *would* work but the programs it churned out didn't. So I played Doom for a couple of months and got very bored. When it comes to playing games you can't beat a serious programming session.

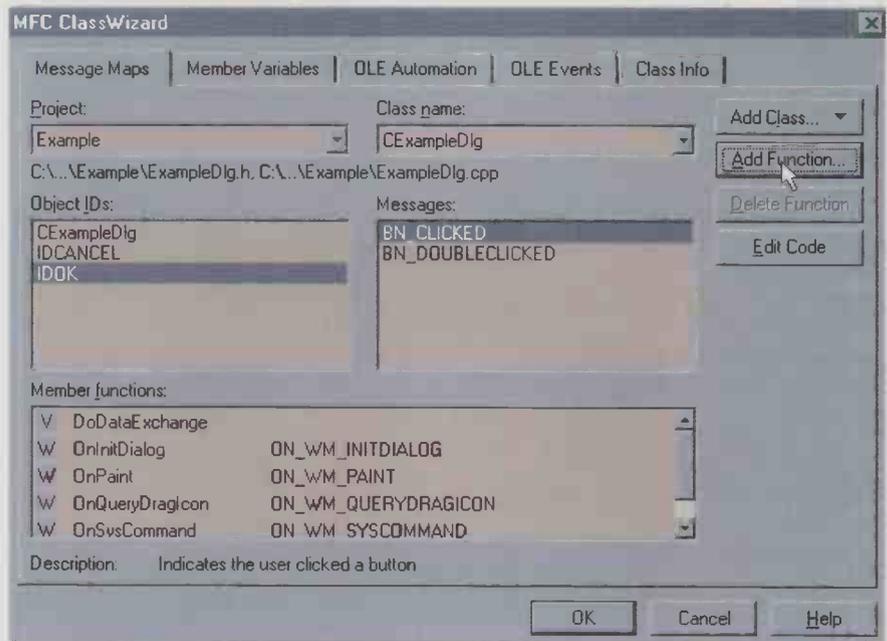
I then discovered that Microsoft was doing a good thing for students and teachers: selling software at a reasonable price. Consequently, I was able to afford a copy of Visual C++ Professional Edition v4.0.

The Microsoft Developer Studio, the heart of the Visual C++ package, is a joy to use. Everything is done via this interface. My only problem with the Developer Studio is that, with its customisable toolbars and docking windows, it can sometimes get a bit cluttered. A 17in monitor would be nice but I find a hotkey to toggle full-screen mode is a workable alternative.

Thanks to the way I purchased VC++, I have no manuals. However, all the manuals are included on the CD-ROM and are fully searchable from within the IDE. Lots of tools are built in, too. While all these tools aim to make programmers nicer people to live with, I can do without most of them. Only AppWizard and the ClassWizard could be considered life enhancing.

The AppWizard does all the initial project creation legwork for you. Answer a few simple questions and it will create the framework for an MDI database app with a floating toolbar and OLE support (or a simple dialog-based app) or even the beginnings of a DLL. You even have the option of extending the AppWizard but as yet I've discovered no real need to do so.

The ClassWizard, on the other hand, deals



with ongoing program creation. It is particularly useful when using the resource editor. Creating a new dialog box takes about two seconds. Thanks to the ClassWizard, creating the derived class that sits behind the dialog also takes about two seconds. All the necessary nuts and bolts of your class are created auto-magically. The ClassWizard also handles dialog box controls. It will add a member variable to a dialog's class, either as a value variable through which you can exchange data with a control, or as a control variable, letting you access the control directly.

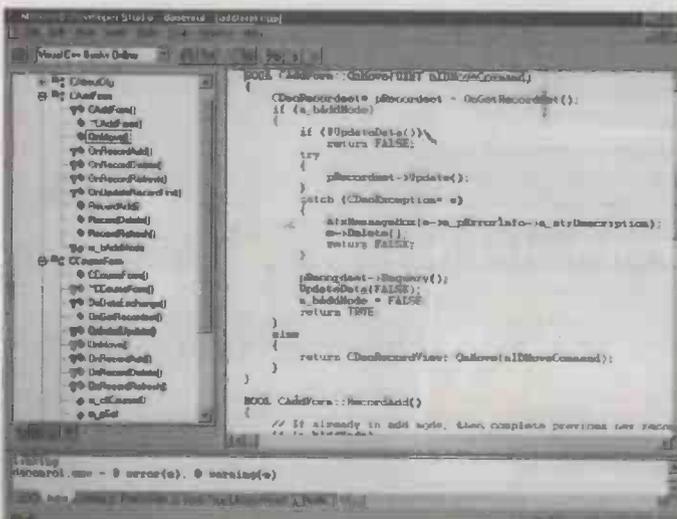
The real power of the ClassWizard is its ability to deal with message maps. Each and every object in a dialog box, including the dialog box

itself, generates messages. As an efficient (lazy) programmer, I don't want to deal directly with these unless I really have to. Thankfully, all I have to remember is what is supposed to happen when a message is generated, then write the code. The ClassWizard takes care of all the tedium.

Two reviews of this most excellent product appeared in the February 1996 and March 1997 issues of *PCW*. The most notable complaint in these articles was that Visual C++ wasn't visual enough (for some reason, Visual Basic is held to be the ultimate in visual programming). Having tried it out, I found that you either do it the Visual Basic way or not at all. With Visual C++ you can do it the VC++ way, or you do it any way you please. The C language (and by extension C++) was designed to be a high-level language with low-level functionality. Visual C++ most definitely meets this goal, and it would lose something if more visual elements were added.

In my opinion, VC++ v4.2 is the version to have. The latest version of Visual C++, version 5, is not as fast. Unfortunately I have only got v4.0... anyone got a copy of v4.2 they don't want?

Peter McGarvey



**PCW Details**

Price Visual C++ 5.0 Pro Upgrade £250 (£212.76 ex VAT); Pro Edition £369 (£314.04 ex VAT); Enterprise CD £819 (£697.02 ex VAT); Enterprise Upgrade £469 (£399.15 ex VAT)  
 Contact Microsoft 0345 002000  
[www.microsoft.com](http://www.microsoft.com)

**Good Points** Flexibility. Great interface.

**Bad Points** Not great if you don't have a 17in monitor.

**Conclusion** Couldn't live without it. Reasonably priced if you're a student or a teacher, otherwise horrifically expensive.

★★★★

1 YEAR TEST

## Hardware

## Kodak DC20

Many digital cameras have hit the shops during 1997. Does one of the first on the market still stand up?

The DC20 was one of the first and definitely one of the cheapest digital cameras available when it was launched, which was just over a year ago. Being a self-confessed gadget freak I had no alternative but to buy one immediately, and although the price has fallen since, I do not regret it.

The tiny silver DC20 can store eight pictures with 493 x 373

pixels, or 16 pictures of 320 x 240 pixels.

Resolutions are good enough to look great on-screen, but there is no way you could use it for professional purposes.

Once captured, the pictures can be downloaded to any Windows or Mac system via the supplied serial lead, and the camera's memory erased.



For me, the big plus is convenience. There's no contest when the alternative to snapping a digital pic is to buy a roll of 35mm film, take 24 pictures, get them processed and then scan the photographs to get them into a digital format. By contrast, pictures taken with the DC20 can be transferred to the PC within five minutes. This is perfect for use with web pages and email, and there are other uses, too. If

someone asks you if you think their front door would look nice painted yellow, it's a minor task to show them, as long as you're familiar with something like Photoshop. It's even

better to be able to hand them a printout, and the DC20 makes a good friend to a good-quality colour inkjet printer.

It isn't perfect of course: there's no flash, which means good lighting is a must. The non-expandable memory is too small. Its eight-picture capacity is not enough to merit taking the camera on holiday, and the fixed focus lens and the lack of a self-timer limit creativity. However, the DC20 is excellent fun, especially as it comes in a bundle with Kai's Power Goo software.

John Kennedy

## PCW Details

Price £140 (£119 ex VAT)

Contact Kodak 0800 281487 [www.kodak.com](http://www.kodak.com)

**Good Points** Tiny, fun, easy to use. Convenient. Excellent software bundle.

**Bad Points** Limited memory. Fixed lens, and an image resolution too low for serious use.

**Conclusion** Great introduction to digital photography.

★★★★

## Texas Instruments TI-92 6 MONTH TEST

A powerful calculator is great for student and mathematician alike. But does the TI-92 match up?

Hyped by its makers as having "the power of a computer lab with the independence of a calculator", the TI-92 replaces the TI-85 as Texas Instruments' most powerful calculator.

One thing that's tough to get used to is the size of this machine. It is slightly larger than a VHS videocassette but considerably heavier. Perhaps something with a flip screen, à la Psion, would have been better?

It has a Qwerty keyboard with reasonable-size keys and a large, 240 x 128 pixel screen. Among its many functions, those which caught my eye were symbolic manipulation (although this is not a new innovation), handsome 3D graphing, a text editor, and interactive geometry. And there is "Pretty Print" which shows results as you would write them, recursively definable sequences, and the possibility of multiple folders (directories). All these functions are easy to use, the manual is helpful and the TI-92's interface is friendly. But some of this counts against it. All the graphics can make the 10MHz Motorola 68000 processor seem quite slow and I miss the TI-85's spontaneity. It has only 70Kb of usable RAM which isn't nearly enough.

TI also left out some of the TI-85's most useful features. If you want to perform base or measurement conversions, differential equations or certain matrix operations, then you'll

either have to squeeze a program into RAM and put up with that processor, or use a TI-85.

The market for the TI-92 may already be shrinking as examination boards have banned its use in exams. Universities are not too enthusiastic about graphic calculators either, especially ones as powerful as this. As with the TI-85, you can link the TI-92 to a PC or a Mac: a group of determined programmers used this to write Fargo, their own OS/shell for the TI-92, which facilitates the execution of assembly language programs.

Richard Guy

## PCW Details

Price £200 (£170 ex VAT)

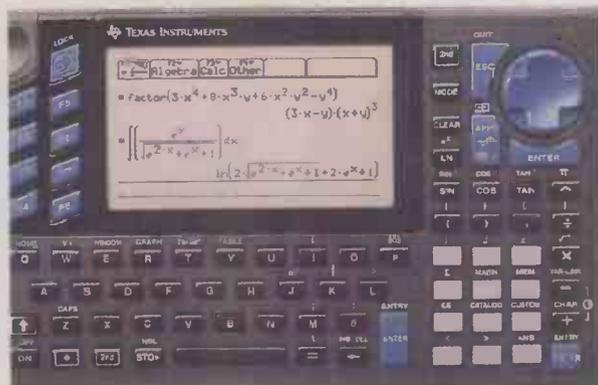
Contact Texas Instruments 0990 402400 [www.ticalc.org](http://www.ticalc.org)

**Good Points** Symbolic manipulation.

**Bad Points** Price, size, memory. Underpowered.

**Conclusion** With a bit more power, this could be a great graphics calculator.

★★★



## ■ Software

# WordPerfect for DOS v5.0

This program has nearly made it into double figures. Can you see wrinkles or has it still got youthful energy?

**I**t may be nine years since I bought WordPerfect 5.0 but I remember it as if it were yesterday. It was the first proper software that I bought for my shiny new Amstrad 1512. Although WordPerfect would load and run from two floppies, for convenience I also added a hard disk to my system at the same time: that shopping trip cost nearly as much as the computer itself!

I had dabbled with other word processors, shareware products mainly, but found most of them rather disappointing in quality and all of them unpredictable when it came to putting words where I wanted them on the page.

I first saw WordPerfect demonstrated at an exhibition. I described to the young lady on the stand the problems I'd been having with columns, and watched as her fingers flashed through a handful of key presses. Then, from the printer, came a page of text in neatly printed columns. I was impressed, and a few days later I went shopping.

Starting the program at home for the first time I was faced with the clean blue screen that all long-time users of WordPerfect know well. At first, trying to find the appropriate combination of keys to create my own columns (or anything else) did not come easily, and I began to wonder whether I'd been a bit rash in my purchase.

The computer which sits on my desk today would give the long-departed Amstrad a terminal inferiority complex, but among all the point-and-click applications you'll still find WordPerfect 5.0 on my hard disk. There's no question that the learning curve was steep and sometimes frustrating but, once learnt, the key-press



combinations which are needed to do just about anything become second nature. When compared with today's quasi-DTP and WYSIWYG applications, WordPerfect may look a bit limited, but most of what the current crop of Windows word processors do can be achieved with WordPerfect. It may not be easy but it can be done! All the formatting functions are easily applied to blocks of text and, most importantly, the embedded formatting codes can be viewed and edited in a separate screen panel. Born of necessity because of the lack of a WYSIWYG display, this facility remains invaluable. Never do you have to puzzle over what caused that one line in the middle to be bold and centred.

But that, perhaps, is to ignore the strengths of WordPerfect. It is a word processor in the truest sense. The clean blue screen, which at first seemed a little unfriendly, lets you focus on the words. There's never an excuse to adjust the left margin midway through typing your document just to make it look better.

Don't misunderstand me — I'm not a Luddite desperately clinging on to my old DOS programs.

I'm an avid user of the latest generation of WPs, but if you need to get large amounts of text into a document, especially if you don't need any fancy formatting, WordPerfect 5.0 will do it with ease. On today's machines it is fast: paging through a 100-page document takes about four seconds; functions like Find and Replace, and Go To, are equally fast. If there is one major drawback it is that the choice of font tends to be limited to those resident in the printer. That said, there is a printer driver creation program which allows you to match the word processor to even the

most eccentric printer.

Of course, one of the reasons for buying a mainstream product is that you can reasonably expect good technical support to be available and the current owner of WordPerfect, Corel, still appears to provide some support for this version through its online Knowledge Base.

In the end, I guess it's simply a case of horses for courses, but there are still a lot of courses where WordPerfect will give you a good run for your money.

Gary Beaton

## PCW Details

**Price** Product discontinued.

**Contact** Corel 01703 814142  
[www.corel.com](http://www.corel.com)

**Good Points** Fast, even on a "classic" machine.

**Bad Points** Takes a while to learn.

**Conclusion** Still a capable and versatile word processor.

★★★

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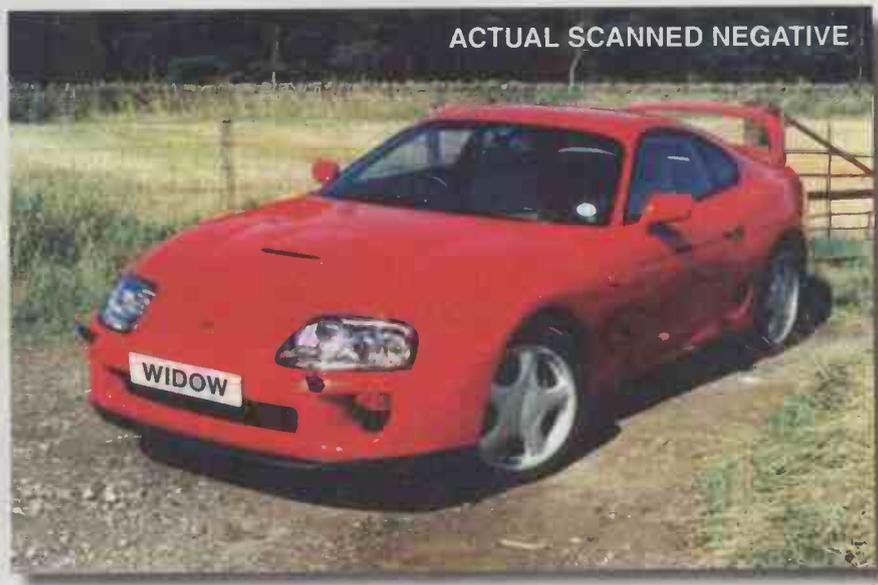
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December 1996 Issue of PC Advisor



March 1997 Issue of PC Guide

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Scanmaker E6 from Microtek  
Scanjet 4B from Hewlett Packard  
GT-5000 from Epson  
ScanTab 2C from Spot Technology



March 1997 issue of PC Format

Computer Buyers Highest Award!



Overall Winner Comparison Review against: Umax, Epson, Mustek, & Trust.  
February 1997 issue of Computer Buyer

PC Home's Highest Award



May 1997 Issue of PC Home

Overall Best Buy out of 15 x Scanner group test!



November 1996 issue 105

Scanner of the Year 1996 in What PC



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In fact when you look at all the other scanner adverts in this magazine ask yourself why have they not used their device to produce their advert? All scanner makers are telling you that their scanners are best, yet very few use their devices. This doesn't make sense, or does it, are they

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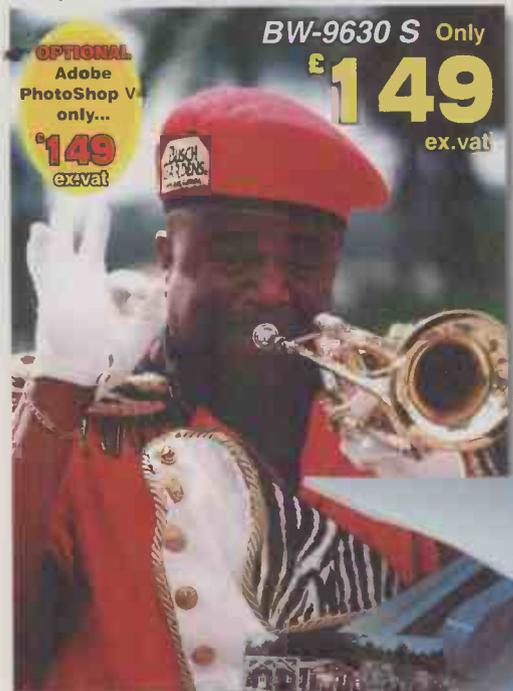


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What makes the difference between good quality scans and great scans? It's obvious, there's nothing more important than high optical resolution and a vast number of colours. These are the two most important factors which make all the difference. There is only one problem, scanners offering this level of specification are expensive. Well not now! You can now buy a Black Widow 600 x 1200 dpi SCSI II scanner for the same price or even less than some 300 x 600 models. Imagine having 8 x the enlargement capability, maintaining even the very finest detail, and producing the type of scans you would only normally find on a Photo-CD. In fact on many occasions you can even improve on an original photo.

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March 1997 Issue of  
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Overall Winner of  
Scanner Round-up  
other scanners inc:

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Scanmaker ES from Microtek  
Scanjet 40 from Hewlett Packard  
GT-5000 from Epson  
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Comparison Review  
against: Umax, Epson,  
Mustek, & Trust.  
February 1997 Issue of  
Computer Buyer

PC Home's  
Highest Award!



May 1997 Issue of  
PC Home

Overall Best Buy  
out of 15 x Scanner  
group test!

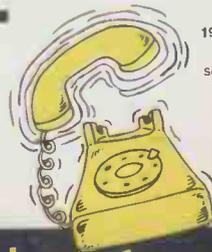


November  
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Scanner of the Year  
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# Budget scanners

A scanner can help you see words and pictures in a whole new way. Lynley Oram puts eight in the frame.

**W**ith the help of devices like scanners, you can do a lot of things on your PC that would once have been beyond the realms of possibility and limited bank balances. In this amazing world of technological miracles, you can scan in a page of text and edit it as though you'd typed in the words yourself. Or you can scan a photo image onto your PC and do whatever you like to it — turn your brother into an alien, or place yourself next to your celebrity "mates".

We've rounded up eight scanners, four of which cost less than £200 ex VAT, and four of which are priced under £100 ex VAT. At these mad prices, users aren't asking themselves whether they need a scanner. They're more likely to be saying: "Why not buy one?"

These budget scanners all connect to your PC via the parallel port. This is a major plus if like a lot of users, you find the prospect of opening up your PC and installing a SCSI card a scary prospect. Now that installation is a piece of cake, the question is, how easy are these scanners to use?

After all, even a hundred quid is a lot of money to spend on a chunk of plastic and circuitry that you can't figure out how to operate. All the scanners reviewed here claim ease of use, but do they deliver?

In this update we test how easy they are to use and how quickly you can get the hang of them. To find out our results, and the answers to other scanning questions, read on: you won't be disappointed.

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## Ratings

- ★★★★★ Buy while stocks last
- ★★★★ Great buy
- ★★★ Good buy
- ★★ Shop around
- ★ Not recommended

Personal  
Computer  
World  
Highly  
Commended

## Aries Scan-It Pro 4830P

The Aries Scan-It Pro 4830P obviously came from the same stable as the Optic Pro 9630P from Plustek. They are both tiny machines, measuring 275 x 80 x 415mm. They both use the same moulded plastic casing, drivers, and Action Manager software for one-touch scanning. The cheery, yellow Aries badge gives this scanner a friendly look.

The idea of just pushing a button to start is heavenly to a user who isn't interested in swotting for a technical degree just to operate a scanner. However, we found Action Manager difficult and confusing to use. It lacked the intuitive feel that other one-touch scanners have, and the process takes far too long to learn. The manual wasn't much help either; if anything, it just added to the confusion.

The Aries Scan-It isn't as highly specified as the Optic Pro, but it is cheaper. It offers an optical resolution of 300dpi which can be interpolated up to 4,800dpi.

Line-art scans were disappointing, with even



interpolated images coming out jagged and unappealing.

No scanner in this round-up managed to detect more than twenty shades of grey, so the Scan-It Pro did well to pick out eighteen. We were more pleased with the raw colour scan, which produced some rich, even, colour tones. The histogram had the perfect amount of fall-off at the extremes, with no evidence of clipping, which is something any decent scanner will avoid.

### PCW Details

Street Price £92.33 (£78.56 ex VAT)  
Contact Watford Electronics 01582 745555; web site under construction  
Good Points Colour scans. Size. Price.  
Bad Points Line-art scans.  
Conclusion At this price, a few jagged edges on the line-art scan hardly seem worth complaining about.

★★★

## Microtek Phantom 4800

Microtek's Phantom 4800 is accompanied by a very good manual. It uses screenshots well, and includes some excellent diagrams. On the downside, this was the only scanner that asked us to enter the BIOS and change the parallel port setting. The manual does fall down here, providing only cursory instructions which won't be a lot of help to an inexperienced user.

The Phantom was one of the speediest scanners in the group, whipping through the colour preview in only 12 seconds. A colour scan took a little longer, at 21 seconds, but an A4 line-art scan was completed in a speedy 14 seconds. Interpolation smoothed out the rough edges on the line-art image.

The raw colour scan produced some rich colour tones, and the Phantom clearly picked out twenty shades of grey. It also produced a good histogram, with no evidence of clipping. This is a good thing, as clipping is a sign that the scanner may be enhancing the apparent contrast of the



image, at the cost of highlight, shadow detail and overall image quality.

Microtek deserves brownie points for being the only company in this round-up to offer an automatic document feeder for its scanner as an optional extra. This little add-on is an absolute must if you are planning on doing a lot of OCR work. However, it won't be available to buy until the first quarter of 1998.

### PCW Details

Street Price £146.88 (£126.71 ex VAT)  
Contact Midwich Thame 01379 649200  
[www.microtek.com](http://www.microtek.com)  
Good Points Manual. Speed and quality of scans.  
Bad Points Having to enter the BIOS.  
Conclusion Great value for money.

★★★★

## Mustek ScanExpress 1200P

The ScanExpress 1200P is the latest entry-level scanner to be offered by Mustek, and has the easiest-to-use TWAIN driver in this group. However, if you find the prospect of any TWAIN driver daunting, don't despair: Mustek has simplified the whole process, with something called Cover Sensor.

Each time the scanner's lid is lifted, it activates the Wizard Dialog Box. From here, scanning is a matter of clicking on an icon, with separate icons available for scanning, copy/fax, email and OCR. The icons all have a picture of their function, making scanning more intuitive and less scary.

A colour preview took a brief 24 seconds; however, a colour scan took a slow 43 seconds. The line-art scan took 23 seconds. Colour-wise, the ScanExpress produced the most vibrant and rich colours in the group. Unfortunately, the histogram revealed clipping at the lightest end of the spectrum.

Bizarrely, the line-art images came out looking chopped, almost like the pixels had been hacked at by a mad chef.



Swapping to colour or greyscale mode produced a normal image, but we were unable to determine where the problem lay — it could be a one-off, to do with the software. Neither were we able to test whether a line-art image would improve with interpolation, as the TWAIN driver allows users to select only pre-set resolution levels, the highest line-art resolution being 600dpi.

### PCW Details

Street Price £163.33 (£139 ex VAT)  
Contact Evesham Micros 01386 765500  
[www.mustek-europe.com](http://www.mustek-europe.com)  
Good Points Cover Sensor. Vibrant colours.  
Bad Points Line-art scans. Restricted resolution settings.

Conclusion Easy to use, but there are better and cheaper scanners.

★★

## Plustek Optic Pro 9630P

Plustek's Optic Pro 9630P is almost identical in appearance to the Aries Scan-It Pro 4830, except for the badge on the lid. It has a higher spec than its sibling however, offering an optical scanning resolution of 600dpi which can be interpolated up to 9,600dpi. Also, Plustek bundles its scanner with the Micrografix PhotoMagic 1.0 image-retouching software. The Plustek and Aries units are the trimmest flatbeds in the group, measuring only 275 x 80 x 415mm.

Naturally, we have some of the same gripes here that we have with the Scan-It Pro, namely with the Action Manager software. This package does offer a variety of faxing, copying and scanning functions, but it is rather hard to get the hang of it. Once you do manage to figure it out, it's a nifty piece of software, as it links the scanner to as many applications as you might have on your computer.

While we found the difference between scans produced by both machines to be minimal, the Optic Pro did



manage to produce ever-so-slightly better images than the Scan-It Pro. Only the raw colour scans were alike. Colours were rich and evenly toned, with no clipping in the histogram, and eighteen shades of grey were detected.

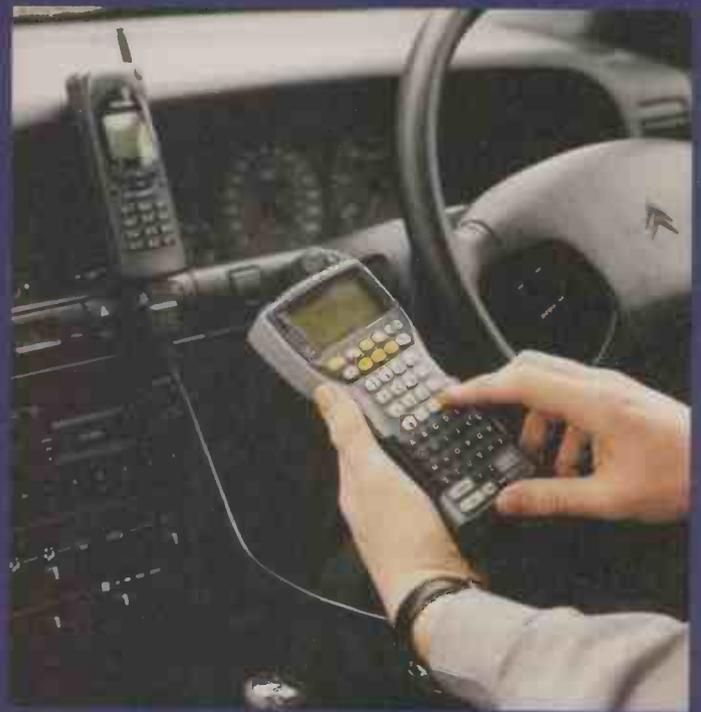
Performance-wise, the Optic Pro managed a colour preview in 29 seconds, a colour scan in 20 seconds and an A4 line-art scan in 28 seconds.

### PCW Details

Street Price RRP £149 (£132.44 ex VAT)  
Contact Plustek 0171 813 3139  
[www.plustek.com](http://www.plustek.com)  
Good Points Size. Software package. Colour scans.

Bad Points Line-art scans.  
Conclusion Not a bad scanner.

★★★



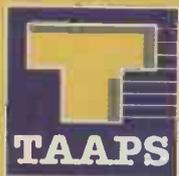
# Handheld computing and bar coding

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Personal  
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World  
Editor's  
Choice

## Primax MediaStorm Colorado Direct

The MediaStorm Colorado Direct is a 30-bit device pitched firmly at the small office/home office user, with heavy emphasis on its ability to act as a fax and photocopier. This is just as well, as it produced some of the least appealing scans in this group.

On the plus side, Primax has made some vast improvements since we last saw one of its scanners. Its manuals are now clear and easy to read, and they make sense.

But the biggest area of improvement is with the TWAIN driver, which is now much easier to use. There are also a few advanced features that even scanning novices should be able to figure out without having to wade through a manual.

While interpolation greatly smoothed out the line-art image, it slightly overdid the job in places, giving the graphic a few extra bumps. However, it was the raw colour scan that really showed the Colorado in a bad light. There was a lot of noise in the mid-range grey, making a solid grey block look dirty and speckled. Not



surprisingly, the histogram revealed some extremely nasty clipping at the dark end of the spectrum. Only thirteen shades of grey were picked out.

Speed-wise, this was one of the slowest scanners in the group, with a colour preview taking 33 seconds and a colour scan taking 38 seconds. An A4 line-art scan took 45 seconds.

### PCW Details

Price RRP £99 (£88 ex VAT)  
Contact Primax 01235 546020  
[www.primax.nl](http://www.primax.nl)  
Good Points TWAIN drive. Price. Software bundle.  
Bad Points Raw colour scan.  
Conclusion OK for beginners, but scans may disappoint.

★★

## Umax Astra 610P

Out of the really big players in the flatbed scanning arena, Umax is the only one currently offering a parallel port interface scanner for less than £100. We had high expectations of the Astra 610P, especially because of its strong pedigree: Umax has received PCW awards two years running for its budget scanners.

The Astra 610P comes with a nice selection of bundled software. For OCR purposes there's Presto! Page Manager, and for image editing, a copy of Adobe PhotoDeluxe. Getting the scanner installed is easy. On the other hand, getting your first scans out of the machine isn't quite as straightforward.

The manual isn't as detailed as some other scanning guides in the group, and it assumes that users have a reasonable level of proficiency when it comes to operating their PC.

For those who prefer their scanners to act more like photocopiers, the Astra has a scanning button. This hardly makes your life easier, as it has to be switched off via the



scanner's software whenever you want to use the printer. With all that bother, it's hardly worth using.

The Astra 610P makes up for it all by producing some excellent scans. Colours were lovely, with no evidence of clipping in the histogram and twenty shades of grey clearly picked out. It turned in a colour preview in 37 seconds, a colour scan in 24 seconds, and an A4 line-art scan in 15 seconds.

### PCW Details

Street Price £98.70 (£84 ex VAT)  
Contact IMC 01344 871329  
[www.imcnet.com](http://www.imcnet.com)  
Good Points Great scans. Software package. Price.  
Bad Points Ease of use.  
Conclusion Great value for money.

★★★★

## Visioneer PaperPort 3000

Better known for its document scanners, Visioneer recently launched two colour flatbed scanners, both priced under £200. Identical in looks, the PaperPort 3000 is the cheaper of the two and carries an RRP of £116.33. However, that price could well drop when the product hits the shelves, as street prices are generally cheaper than those recommended by the manufacturer.

The best thing about opting for a Visioneer is that it comes with the excellent Visioneer PaperPort software. We like icon-based bits of software, mostly because a pictorial representation of the function you want to perform is always much easier to work with. Here, all the applications present on your PC are represented as icons. Once you've performed a scan, it is saved in Visioneer PaperPort as a thumbnail. Scans can be imported into applications the civilised way, by clicking and dragging the thumbnail over an icon and letting go.

However, colours in the raw



colour scan looked washed out, and the histogram revealed clipping at the lighter end of the spectrum. It did manage to detect a fairly respectable nineteen shades of grey, though. The PaperPort 3000 didn't let the side down when it came to speed, turning out a colour preview in 28 seconds, a colour scan in 18 seconds and an A4 line-art scan in 19 seconds.

### PCW Details

Price RRP £116.33 (£99 ex VAT)  
Contact Visioneer 0800 973245  
[www.visioneer.com](http://www.visioneer.com)  
Good Points Software. Ease of use.  
Bad Points Colour scans.  
Conclusion Will suit beginners.

★★★

## Visioneer PaperPort 6000

The PaperPort 6000 is not only the more expensive of Visioneer's two new flatbed scanners, it also carries the heftiest price tag in this group. It still comes in at under £200. The 6000 has a higher spec than its stablemate, offering an optical resolution of 600dpi.

It's the appearance of Visioneer's flatbeds that really make them stand out from the crowd. Unlike the other scanners here, the lid on both of these machines is hinged on the long side rather than at the short end. This is a neat idea, as it means the scanner can be pushed lengthways, to the back of your desk, and still be used comfortably. Measuring 300 x 95 x 410mm, the 6000 will take up slightly less space than an open copy of PCW.

Using the interpolated maximum of 2,400dpi made a huge difference to the line-art scan. Colours produced in the raw colour scan weren't as vibrant as we'd have liked, but they did improve with a little tweaking of the gamma and brightness levels. According to

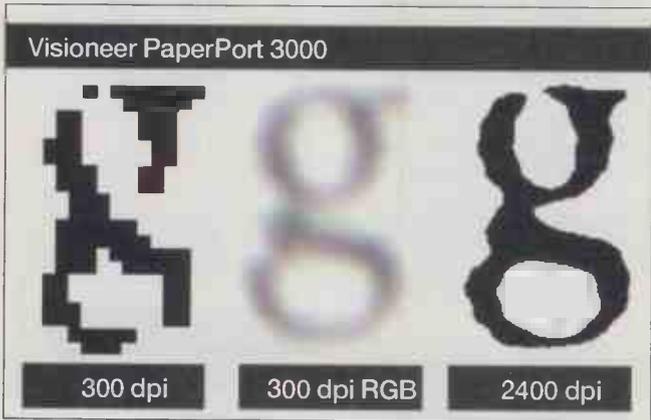
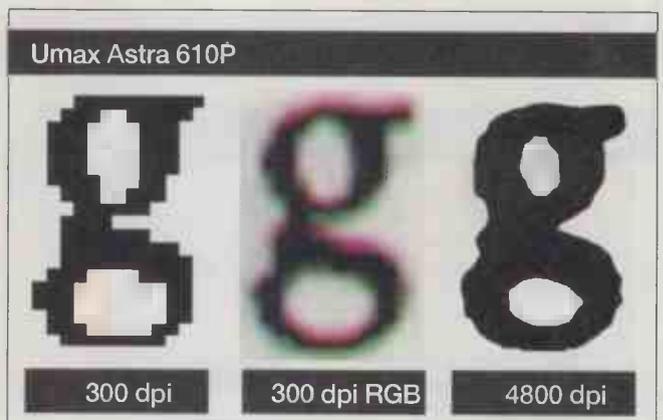
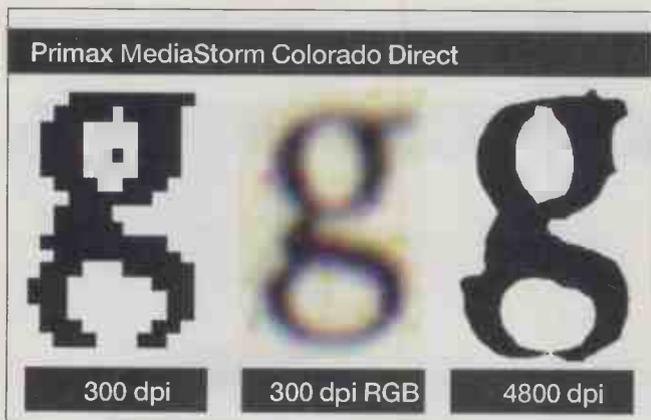
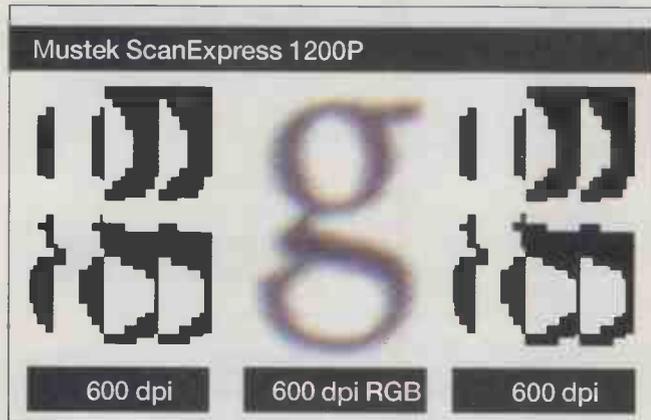
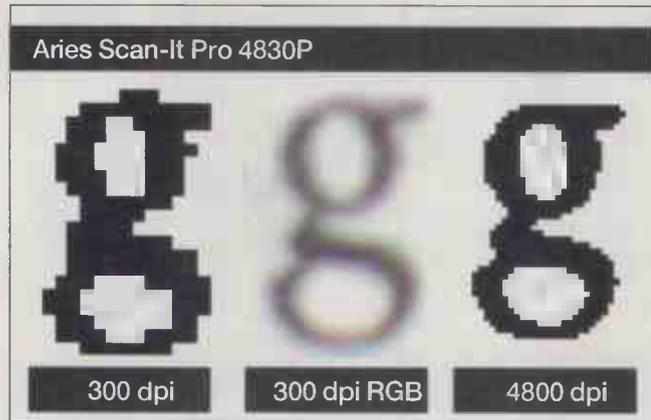


the histogram, all the extremes were covered, with no clipping, and twenty shades of grey were detected. An A4 line-art scan took only 20 seconds and a colour scan took 38 seconds. However, a colour preview took a lengthy 34 seconds. Installation is easy, and the 6000 comes with the excellent Visioneer PaperPort software, as well as Photo Enhancer and Xerox TextBridge.

### PCW Details

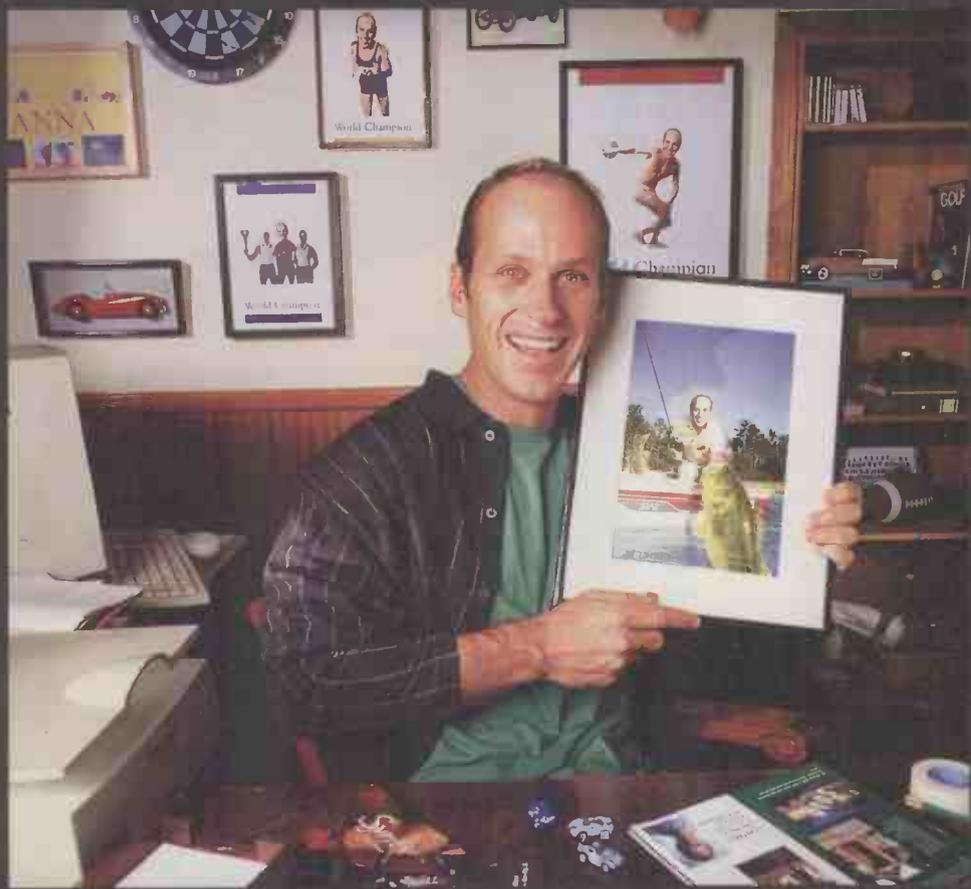
Price RRP £198.58 (£169 ex VAT)  
Contact Visioneer 0800 973245  
[www.visioneer.com](http://www.visioneer.com)  
Good Points Software. Looks. Ease of use.  
Bad Points Speed. Price.  
Conclusion A worthy contender.

★★★★

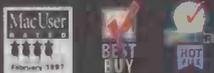


The true resolution of a scanner is its optical resolution, usually measuring 300 or 600 dpi. The scanner firmware or software can also interpolate or "make up" in-between values to effectively increase the resolution. This can only smooth edges, not invent detail that was never captured. We scanned the same tiny character on each model three times and printed them side by side above. Optical resolution in B&W left, then in RGB colour middle, followed by highest interpolated resolution in B&W right. Notice the huge difference in quality, and the often meaningless figures quoted by manufacturers. Fringes in the colour result indicate a lack of convergence that would reduce the quality of detailed colour scans.

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Editor's Choice

**W**e're not about to pronounce the death of the SCSI-based scanner. In a head-to-head comparison, the cheapest SCSI machine in our last group test [August '97] outperformed all the scanners in this update. Bear in mind, though, that that particular scanner carried a price tag of £199 (inc VAT), which is the same as the most expensive scanner in this round-up. Also, the best of these parallel scanners all produced scans that were good enough for use on web sites, Christmas cards, newsletters and any sort of OCR work.

OCR stands for Optical Character Recognition, and it does exactly what it says. That is, the software will recognise scanned text as individual letters and drop the whole lot into a word-processing application, allowing you to edit or change the document.

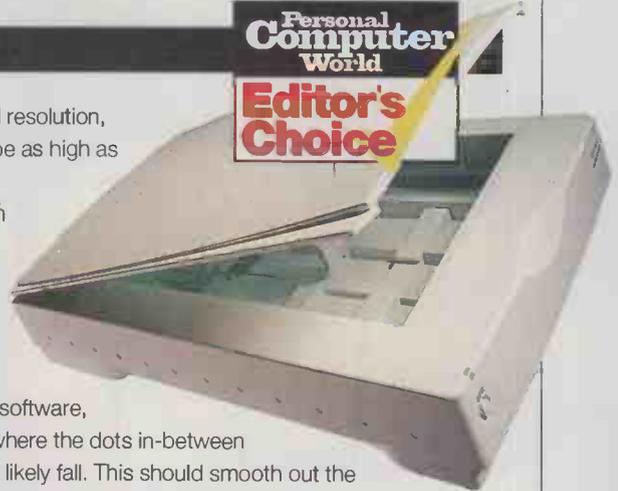
Speed-wise, the fastest of these machines will allow you to preview and scan an image in less than a minute. This is an illusionary figure though, as it fails to take into account all the other time-consuming activities associated with scanning: sticking pointy ears and moustaches on those pictures from the office Christmas party, for example, will take time.

The scanners in this group all had optical resolutions of either 300dpi or 600dpi — optical resolution simply refers to what the scanner sees. The other figure quoted by manufacturers is the

interpolated resolution, which can be as high as 9,600dpi.

Interpolation takes the dots the scanner actually sees, and then, using software, calculates where the dots in-between would most likely fall. This should smooth out the edges on an image, particularly on a line-art image. But no matter what figure is quoted by the manufacturer, a scanner's interpolated resolution is only as good as the software that provides the interpolation, and this varies hugely from manufacturer to manufacturer.

Choosing a winner was difficult. Although there were easier scanners to install, a **Highly Commended** goes to Microtek's **Phantom 4800**. It produced some great scans, and scored highly in the ease of use department. The **Umax Astra 610P** [pictured, above] only just beat it to first place, and receives our **Editor's Choice** because of the great value for money it offers.

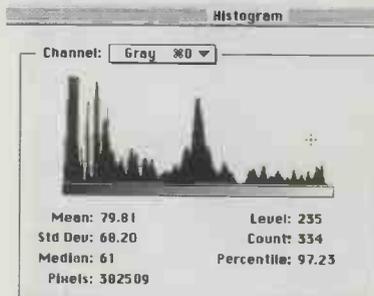


How we did the tests

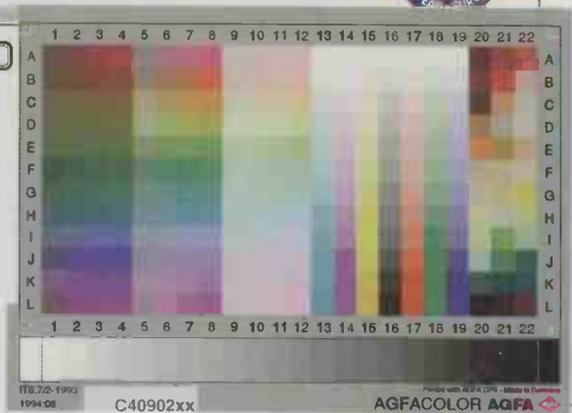


**A**ll the scanners in this round-up were connected to a 166MHz PC with 32Mb of RAM, via the computer's parallel port. We scanned an A5 colour print and an Agfa IT-8 test target at 100dpi. While it is possible to tweak a scanner's settings for the best results, this can be difficult and time consuming, so we have based our conclusions on the raw scans most users will be making. If the TWAIN driver offered a single-click auto-exposure or auto-adjustment feature, we used it, but otherwise we tested the scanner's out-of-the-box performance.

TWAIN is not an acronym; it is, in fact, a standard. The TWAIN driver is the software interface which drives your scanner, delivering an image into the currently active application. For example, Windows 95 has a little piece of software called Imaging. To open this, go to the Start menu, select Programs, Accessories, Imaging. In the File menu, you'll first select your scanner, then choose Scan New to open the TWAIN driver. TWAIN drivers vary between manufacturers but normally include a preview or pre-scan button, and a scan button, as well as controls for adjusting brightness, contrast and resolution.



The IT-8 target and histogram of the coloured portion, above. Note the fall to zero at both far ends, indicating a wide range with no clipping



Using Adobe PhotoShop's histogram facility we analysed the colour and greyscale portions of the IT-8 target. The histograms reveal a scanner's tonal range and any undesirable clipping in the shadow or highlight regions, while revealing any problematic gaps. Resolving power was tested by scanning a tiny six-point letter "g" at the highest optical and highest interpolated resolution offered by each unit (see page 116). Enlarging these and placing them side by side shows clearly that one 300dpi or 600dpi scanner is not the same as another. These letter g's were scanned as line-art images and for good measure we scanned the same letter g at its optical resolution, in colour mode. We also timed how long it took for each flatbed to make an A4 colour preview, scan an A4 photo at 100dpi, and scan an A4 page in mono at 150dpi.

Personal  
**Computer  
World**  
**Editors  
Choice**

**Linear Computers Diamond Unit**

**W**e were stunned when the Unit arrived in five boxes — a huge amount of packaging — but impressed by the feeling of quality once the PC had been assembled.

Internally the machine was tidy and the cables were neatly tied. A large, purple power button and two coloured lights on the front make for a pleasing design. At the rear, ports are unlabelled and there are no USB connectors. There are six SIMM slots, four of which are free, allowing for memory expansion up to 256Mb.

The keyboard detracted from the quality of the machine mainly because it was mapped incorrectly as a US keyboard. Certain

symbols weren't where they should have been and the setup needed to be corrected: a quick and simple adjustment, but nevertheless something which the manufacturer should not have overlooked.

The keyboard also featured a somewhat bizarrely named "Turbo" key. This key (and similarly the Turbo button on the front of the PC) appeared to do nothing when pressed and its function remains a mystery.

The mouse was standard Microsoft issue and worked faultlessly. The 120W speakers produced a great sound, and the sound-card software was easy to configure and use.

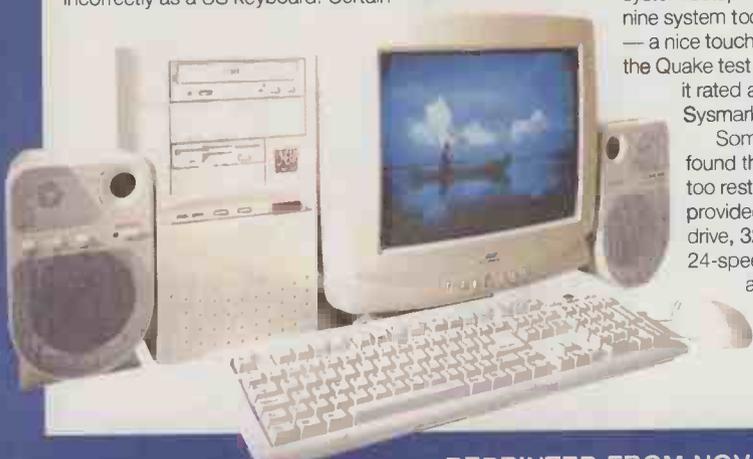
There was no bundled software but the system setup was fine and all nine system tools were installed — a nice touch. Performance in the Quake test was excellent and it rated at fifth place in the Sysmark ratings.

Some manufacturers found the £699 budget too restricting, but Linear provided the largest hard drive, 32Mb RAM, a 24-speed CD-ROM drive, a 4Mb graphics card and a 15in monitor, showing that a budget PC

needn't be lacking in decent components or performance.

Monitor Shinho's AV2 15in CRT display showed no flickering, no streaking and little shadowing. It is MPR II compliant and put in a strong performance.

Aesthetic appeal is high due to the flat screen and nice controls. The dot pitch is 0.28mm and supports a vertical refresh rate of 50-120Hz at 800 x 600.



**PCW Details**

Price £821.33 (£699 ex VAT)  
 Contact Linear Computers 0800 622094  
[www.lin-pic.demon.co.uk](http://www.lin-pic.demon.co.uk)

**Good Points** Large hard disk. Fast CD-ROM. 4Mb graphics card. 15in monitor.

**Bad Points** No DIMM slots. No bundled software. Keyboard.

**Conclusion** A worthy choice. Well specified, with average performance and a quality monitor.

**Build quality** ★★★★★

**Performance** ★★★

**Value for money** ★★★★★

**Overall rating** ★★★★★

REPRINTED FROM NOVEMBER 1997 PCW

**Linear Pentium Diamond System "The Editors Choice"**

- ◆ Intel Triton 430TX Motherboard
- ◆ 512k Pipeline Burst Cache
- ◆ 2.5Gb EIDE Hard Disk Drive
- ◆ 32Mb EDO RAM (2 X 16Mb)
- ◆ 24x Speed CD-ROM Drive
- ◆ 16 bit Sound Card
- ◆ 120w Speakers
- ◆ 15" 0.28NI SVGA Colour Monitor
- ◆ 4Mb S3 Virge 64 bit 3D Graphics Accelerator
- ◆ 1.44Mb Floppy Disk Drive
- ◆ Windows 95 Keyboard (UK Configured)
- ◆ Microsoft Serial Mouse
- ◆ Mini Tower or Desktop Case
- ◆ Windows 95 Pre-installed, supplied with CD & Manual
- ◆ 1 year onsite Warranty (Parts & Labour)
- ◆ 2 further years Return to base (Labour only)
- ◆ Freephone Technical Support

	166MMX	200MMX	233MMX
Intel MMX	£821	£899	£949
AMD K6	£821	£889	£949
Cyrix M 2	£799	£821	

All our prices include VAT

	P2/233	P2/266	P2/300
Intel PII	£1085	£1189	£1339

Linear PII Systems are supplied with the latest Intel LX Chipset Motherboard & 32MB SDRAM in an ATX Case.

The Diamond unit as reviewed above, specified a Gigabyte HX chipset Motherboard. Attention was drawn to the lack of SDRAM DIMM Sockets. We have therefore upgraded to a TX chipset Motherboard, incorporating two SDRAM DIMM Sockets and the Intel TX Chipset. These two improvements represent further future proofing to THE EDITORS CHOICE THE LINEAR DIAMOND UNIT

Due to the huge success of our Diamond System, Linear Computers are please to Announce that we shall continue to offer the Linear Diamond unit until Christmas '97. To show our appreciation of the huge interest in our Diamond System, Linear Computers will include a four CD Microsoft Family Bundle.



Linear Computers, Unit 5,  
 Kimpton Trade & Business Centre,  
 Minden Road, Sutton, Surrey SM3 9PF



Freephone 0800 622 094  
 FAX 0181 641 8862

Table of Features

Personal Computer World

Highly Commended



Manufacturer	Aries	Microtek	Mustek	Plustek
Model name	Scan-It Pro 4830P	Phantom 4800	ScanExpress 1200P	Optic Pro 9630P
Street price (inc VAT)	£92.83	£146.88	£163.33	£149
Street price (ex VAT)	£79	£125	£139	£132.44
Telephone	01582 745555	01379 649200	01386 765500	0171 831 3139
URL	Under construction	<a href="http://www.microtek.com">www.microtek.com</a>	<a href="http://www.mustek-europe.com">www.mustek-europe.com</a>	<a href="http://www.plustek.com">www.plustek.com</a>
Supplier	Watford Electronics	Midwich Thame	Evesham Micros	Plustek
Optical resolution (dpi)	300	300	600	600
Interpolated resolution (dpi)	4800	4800	9600	9600
Colour depth	30-bit	24-bit	24-bit	30-bit
Max scanning area (mm)	297 x 216	297 x 216	297 x 216	297 x 216
Retouching software	Image In Colour 3.6	PhotoImpact	Picture Publisher	PhotoMagic 1.0
OCR software	Recognita Standard 3.2	iPhotoExpress	TextBridge Classic	Recognita OCR
ADF option	<input type="radio"/>	avail early 98	<input type="radio"/>	<input type="radio"/>
Transparency option	<input type="radio"/>	avail early 98	<input type="radio"/>	<input type="radio"/>
Dimensions (wxhxd mm)	275x80x415	290x70x445	298x100x470	275x80x415

Table of Features

Personal Computer World

Editor's Choice



Manufacturer	Primax	Umax	Visioneer	Visioneer
Model name	Colorado Direct	Astra 610P	PaperPort 3000	PaperPort 6000
Street price (inc VAT)	RRP £99	£98.70	RRP £116.33	RRP £198.58
Street price (ex VAT)	RRP £88	£84	RRP £99	RRP £169
Telephone	01235 546020	01344 871329	0800 973245	0800 973245
URL	<a href="http://www.primax.nl">www.primax.nl</a>	<a href="http://www.imcnet.com">www.imcnet.com</a>	<a href="http://www.visioneer.com">www.visioneer.com</a>	<a href="http://www.visioneer.com">www.visioneer.com</a>
Supplier	Primax	IMC	Visioneer	Visioneer
Optical resolution (dpi)	300	300	300	600
Interpolated resolution (dpi)	4800	4800	2400	2400
Colour depth	30-bit	30-bit	30-bit	30-bit
Max scanning area (mm)	297 x 216	297 x 216	297 x 216	297 x 216
Retouching software	MGI Photosuite SE	Presto!Page Manager	Photo Enhancer	Photo Enhancer
OCR software	Readiris OCR	Adobe PhotoDeluxe	Xerox TextBridge	Xerox TextBridge
ADF option	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transparency option	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dimensions (wxhxd mm)	285x80x440	295x100x420	300x95x410	300x95x410

● Yes ○ No



## No other monitor measures up.

**19"**

We've got your measure. We know exactly what you want. A monitor with all the benefits of a large screen that occupies far less room. An FST monitor with a 0.21mm horizontal mask pitch for true 1600 x 1200 display. A monitor no wider than a standard keyboard, with reduced depth to fit on a typical desk. And naturally, you'd like the reassurance and comfort of a Pan-European, three year, On-site Replacement Warranty.

In other words, you want Hitachi's 19" FST (18" viewable)\* CM751ET, specially developed for anyone who needs extra space on their desk.

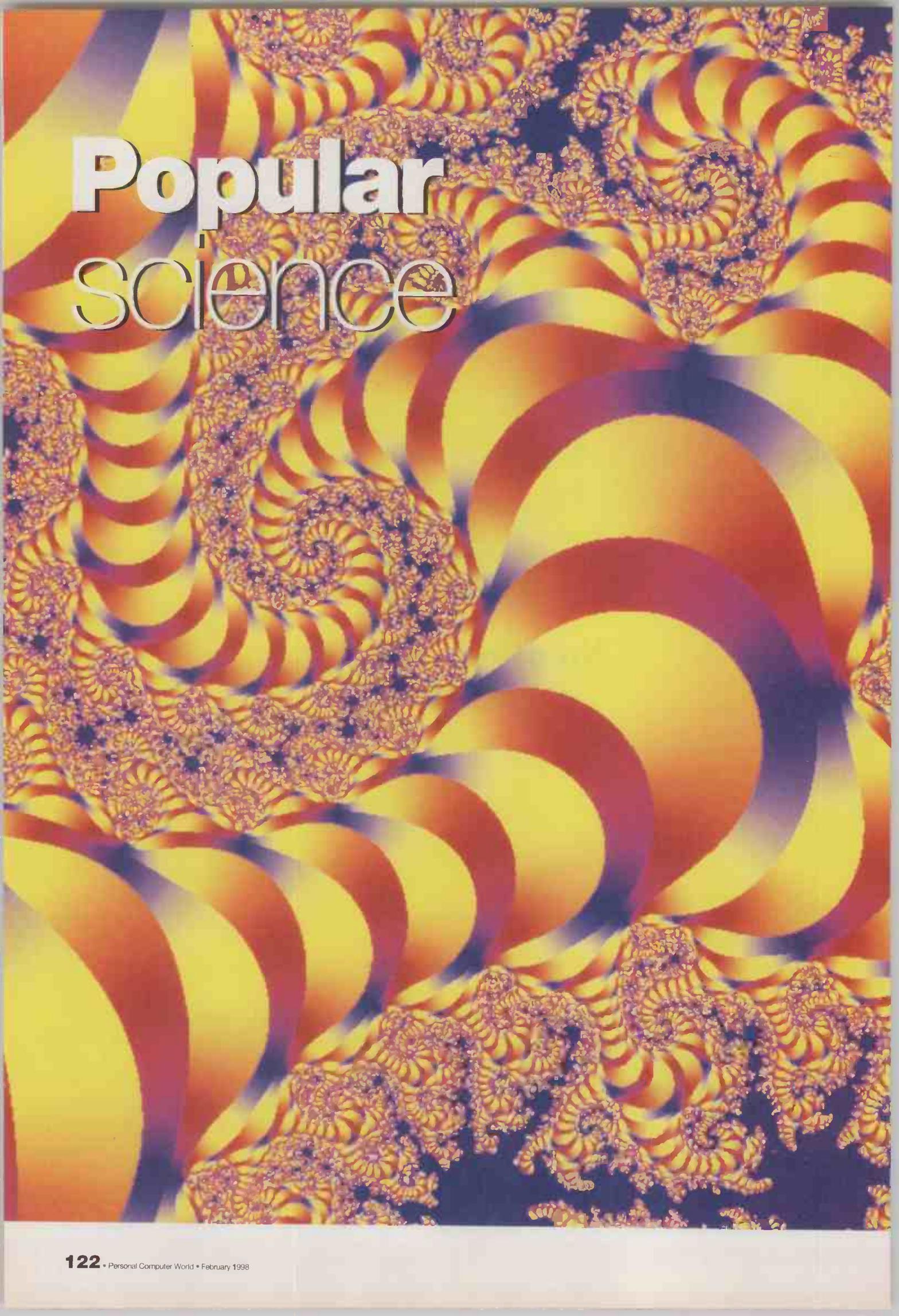
The CM751ET is a perfect fit for you. To find out more call now on 0800 605 605.

\*Sizes in metric are 48.5cm CRT; 45.7 viewable image size.

The Hitachi CM751ET features an Hitachi EDP (Enhanced Dot Pitch) CRT and supports resolutions from 640 x 480 to 1600 x 1200 with an appropriate graphics adapter.

*Masters of Monitor Technology*

**HITACHI**



# Popular science

Don't be put off — scientific software can be employed in many non-scientific areas and you don't have to be a scientist to use it. Eric Adler reviews a selection of software which could be useful to a wide range of laymen in many areas.

**S**cientists use software to take the drudgery out of calculations and, in many cases, to perform those which would otherwise be impossible. They use software to monitor, process and visualise data streams and to analyse and extract information from their data. Software can be used to model systems, to determine what is possible and what is impossible.

Mathematicians use software to investigate not only numbers but also forms and structures within abstract mathematics. These visualisations have developed into new mathematical art forms. Astronomers use software to analyse data arriving from the furthest reaches of the universe in the hopes that we may gain an insight into it all.

People in many spheres, from research pharmacologists to car production-line supervisors, use scientific software to analyse and determine courses of action. Non-scientists can also use the software: punters use neural nets packages to beat the bookies, city traders use mathematical software based on probabilistic models to gain an edge on the market.

Much scientific software is highly specialised, like the dedicated packages used to control laboratory instrumentation. Nevertheless, some packages, particularly those used in university training, have gained in popularity and are to be found on the corporate office workstation and sometimes even on the home and small office PC.

Here, we're looking at the broader picture of scientific software, taking ease of use and general friendliness into consideration, rather than just concentrate on the richest feature lists. A program which is so complicated that time is wasted trying to learn how to use it, is really less sophisticated than software which is easier to use.

We have divided our scientific software reviews into four broad categories: pure mathematics, applied maths, statistics and technical data presentation. There are obviously going to be packages which fall into several categories, so we have tried to focus on application areas rather than package descriptions.

#### Scientific software Contents

- 124 Mathematics packages
- 126 Applied maths packages
- 128 Technical data analysis
- 130 Statistics software
- 132 Editor's Choice

#### Ratings

- ★★★★★ Buy while stocks last
- ★★★★ Great buy
- ★★★ Good buy
- ★★ Shop around
- ★ Not recommended

Pure Mathematics — *The solution of abstract problems using mathematical symbols*

**M**athematicians require software to accept instructions and output results. MathCad, Mathematica 3.01 and Maple V5 can be given normal symbolic mathematics on which to work and they will output the answer in either symbolic or traditional mathematics form. These can then be copied to MS Word documents, making the laborious use of MS Equation Editor a thing of the past. Macsyma does not have symbolic input but will output symbolic maths which can be copied to other Windows applications.

There are two distinct methods of approaching the solution of equations: numerical and symbolic evaluation. All the packages on test have facilities to solve systems of linear equations, non-linear equations, differential equations (...you name it) either symbolically or numerically.

**Symbolic evaluation**

For symbolic evaluation, Mathcad relies on a cut-down Maple kernel which, beyond a given level of complexity, will require an add-on package such as the Numerical Recipes Toolbox.

There is little doubt that the other packages have a stronger abstract symbolic capability but the obvious question for any potential user is whether Mathcad, which scores on ease of use, has sufficient symbolic capability to handle the job.

Maple, Mathematica, and Macsyma all include advanced number theory routines as standard, but this is one area where Maple and Mathematica are way out in front. Which of the two to choose depends upon the nature of the task. Maple, for instance, will factorise large numbers faster but Mathematica "nextprime" can run larger numbers (10,600+) more quickly.

Mathematica and Maple can both output the first 60,000 digits of Pi, while Macsyma can manage the first 10,000 digits without problem but MathCad, being limited to 3,900 digits, is less useful for such work. Derive for Windows is a disappointment in this area, outputting large numbers in a single line which goes off the screen!

Mention linear algebra and most people think of crunching numbers in large matrices; an area in which Matlab (which is essentially a matrix engine) excels. Matlab

completely different aspects of computation — and Macsyma, Maple and Mathematica all feature standard libraries with many routines for handling matrices with symbolic elements. This is an area where Macsyma and Maple appear to be stronger, with larger linear algebra functions as standard.

**3D mathematical art**

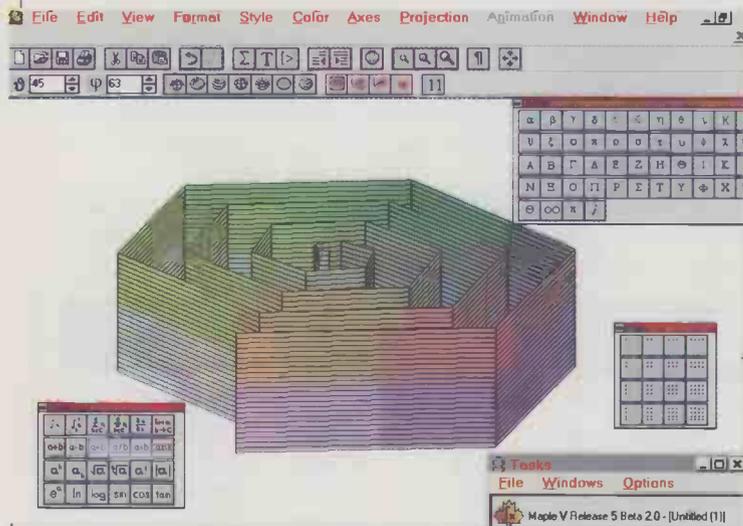
Although some are lacking in 2D functionality, all of these mathematics packages can be used to produce impressive 3D graphics. Some of these 3D graphics are developing into a new art form and packages such as Maple Mathematica and Macsyma offer animated 3D rotations with a choice of viewing position.

The top honours for 3D mathematical art must, however, go to Wolfram, which now publishes coffee-table Mathematica art books. But when it comes to the really spectacular artwork of the Mandelbrot set and other fractal images, then Fractint from the Waite Group is really the only package to use. Visual users may want to play around with the Fractal Explorer in Kai's Power Tools, operating as a plug-in under applications such as Adobe Photoshop or Corel PhotoPaint.

For Linux and Apple Mac users, Mupad can be downloaded by ftp and is also available on CD, complete with handbook, for a mere £45 which makes it good value for money. However, there is no windows version as yet and MuPAD, although powerful, is not easy to use.

**Derive**

Derive is the least expensive of the Windows maths packages, taking up just 2.3Mb of disk space and requiring 8Mb RAM. Within its limitations, it has a good mathematics capability and can produce impressive results. Texas Instruments has Derive installed as standard on the TI-92 pocket calculator, making it the best pocket machine for science. The last Psion product to feature a maths package was the LZ Organiser. This failure to include maths functionality comparable to the TI-92 has been a source of disappointment to many Psion Users.

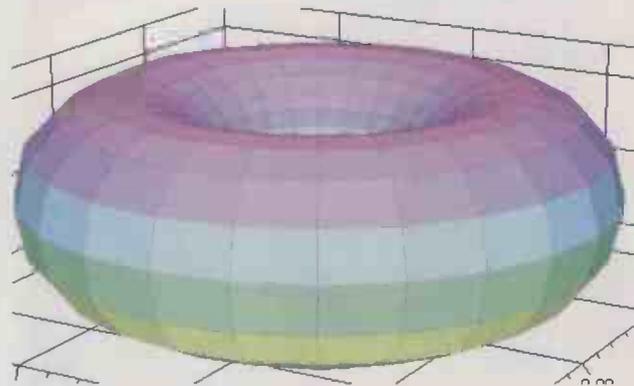


Maple V5 has a strong 3D graphics capability

itself has no symbolic capability but an optional Maple-based symbolic toolbox is available. Matlab is featured in our applied maths review (p126).

All the maths packages on test can perform operations on matrices with numerical elements, and Macsyma offers a high-speed Numkit package as an optional extra.

There is a second, possibly more important aspect to linear algebra — for instance, operations on matrices with symbolic elements such as  $(\sin(x)+ix)$  which require

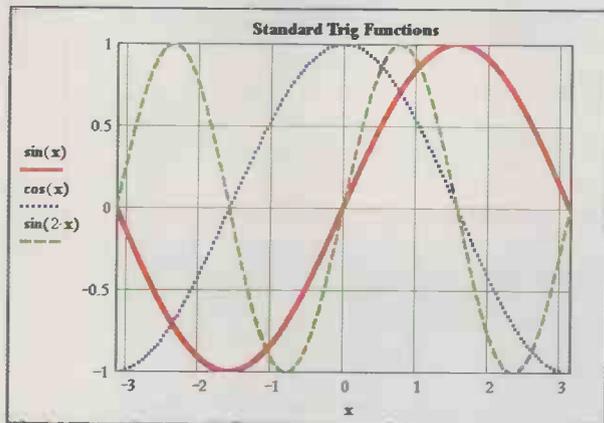


A Macsyma doughnut for the coffee-table art department

**Macsyma**

Only slightly more expensive than Derive is Macsyma: a full-blown symbolic maths package with a notebook interface and click-on editing making it a much better buy. Macsyma is a well structured logical program which, although only a fraction of the price of Mathematica and Maple, is able to challenge these rivals in symbolic mathematics.

Macsyma is programmed in Lisp and can accept queries in plain English: ask it "how do I extract the eigenvectors of a matrix?" and it will answer you in English. Although Macsyma has neither the numerical capability of Mathematica nor the symbolic input of Mathematica, Mathcad or Maple V5, it will run on a 16Mb Pentium PC and provides a vast symbolic



Mathcad 3D graphics

mathematical capability, making it exceptionally good value for money at £180. If you don't need to calculate beyond the first 10,000 digits of pi or factorise numbers with too many digits, then Macsyma is the package to choose.

**Mathcad**

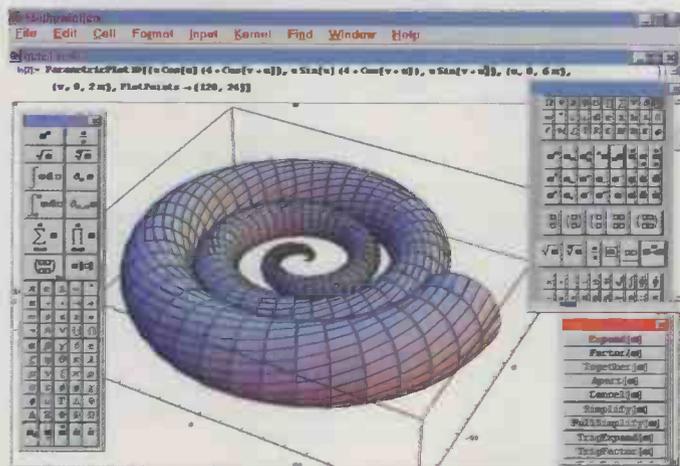
Next comes Mathcad. Although it has neither the same numeric or symbolic capability of Maple or Mathematica, it is less than half the price and is easy to use, with a good interface and a broad range of add-on toolboxes and application packs.

While the facility to perform a multiple 2D plot, or edit, label or legend the traces may not appear to be the most exacting of pure maths software tests, we think it is relevant. GCSE students should be able to plot curves, edit colour and legend the lines. But when it came to it, MathCad 7 was the only software on test do this with easy click-on editing.

**Mathematica**

At first, Mathematica could not be coaxed to pass this test but Wolfram Research replied with a series of command line edits featuring 56 assorted brackets, nested at five levels. Maple and Macsyma will plot and click-edit the curves but will not label the traces. MathCad 7, with its Resource Centre and MathConnex facility scores on range of functionality, value for money and ease of use, and while it does not have the same symbolic or numerical capability of its three rivals it has more than enough for most professional applications. For good performance MathCad 7 requires a Pentium PC or higher with at least 32Mb RAM.

Having had a disappointing, perhaps premature, initial release (v 3.00) Mathematica version 3.01 is much improved



Mathematica 3D graphics are in a class of their own!

$$G(x, x', y, y') =$$

$$\operatorname{Re} \log \left( \frac{\partial_1 \left( \frac{\pi(x+i y+x'-i y')}{4a}, e^{-\frac{a\pi}{b}} \right) \partial_1 \left( \frac{\pi(x+i y-x'+i y')}{4a}, e^{-\frac{a\pi}{b}} \right)}{\partial_1 \left( \frac{\pi(x+i y-x'-i y')}{4a}, e^{-\frac{a\pi}{b}} \right) \partial_1 \left( \frac{\pi(x+i y+x'+i y')}{4a}, e^{-\frac{a\pi}{b}} \right)} \right) \Bigg|_{2\pi}$$

workstation software. This is an encyclopaedic 105Mb package with a heavyweight handbook and a companion MathSource CD-ROM with 100,000 pages of mathematical knowledge, making this Wolfram Research product a formidable mathematics resource by any standards. However, despite improvements to the interface it is still not exactly user-friendly. Although far quicker and more stable than the initial version 3.00 release, Mathematica 3.01 appears underpowered on anything less than a PPro or K6 200 with 64Mb RAM. Mathematica does, however, boast robust numerical routines and now produces better-quality symbolic output.

Logging on to Mathematica!

**Maple**

Many researchers and mathematics lecturers prefer to employ Maple, which is quicker and easier to use and requires fewer resources than its competitors, making it better suited for use on personal computers and lap-top computers.

We were provided with an exclusive beta preview of Maple V5 for this review, and although we cannot really compare a beta with finished products such as Mathematica v3.01, Macsyma 2.6 or MathCad Pro7, we were nonetheless impressed.

Without symbolic input or pasteable symbolic output, Maple V4 is under-featured for the money when compared to Macsyma. But on the basis of a quick evaluation of this beta, it looks as if Maple V5 could be the single pure maths software package which will be the best in every category. Offering symbolic input and output, high-end numerical and symbolic evaluation, high-speed number theory

routines, click-on editing of 2D graphics, rotatable 3D graphics and handling large Mersenne Primes, this is software well worth waiting for.

According to Waterloo, Maple v5 will still be able to run in 8Mb of RAM on a 486, even though such powerful software performs far better on a Pentium or Pentium II with at least 32Mb RAM.

**PCW Details**

**Derive for Windows**

Price £146.88 (£125 ex VAT)  
Contact Chartwell-Yorke 01204 811001  
[www.derive.com](http://www.derive.com)

★★

**Macsyma 2.6**

Price £211.50 (£180 ex VAT)  
Contact Chartwell-Yorke 01204 811001 [www.macsyma.com](http://www.macsyma.com)



★★★★

**Maple V4**

Price £934.13 (£795 ex VAT)  
Contact Adept Scientific 01462 480055  
[www.adeptsience.com/](http://www.adeptsience.com/)



★★★★

**Maple V5**

Price n/a (due for release first half of 1998)  
Contact Adept Scientific 01462 480055  
[www.adeptsience.com/](http://www.adeptsience.com/)

★★★★★

**MathCad Professional 7.0**

Price £464.13 (£395 ex VAT)  
Contact Adept Scientific 01462 480055 [www.adeptsience.com/](http://www.adeptsience.com/)



★★★★

**Mathematica 3.01**

Price £1,286.63 (£1,095 ex VAT)  
Contact Wolfram Research 01993 883400  
[www.wolfram.co.uk](http://www.wolfram.co.uk)

★★★

**MuPad**

Price £52.88 (£45 ex VAT)  
Contact Wiley Tubner 0800 243407  
[web.mit.edu/estradaaj/www/MuPAD\\_HTML/index.html](http://web.mit.edu/estradaaj/www/MuPAD_HTML/index.html)

★★

## Applied Maths — The application of maths to solve real-world problems

The choice of package to use with real data or applied mathematical situations really depends on the level of complexity and the amount of data available. We've singled out Matlab, MathCad and Mathematica.

A high data content or an extremely complicated real-time system simulation probably requires a Matlab

**Centrifugal force**

Input Values  $m_s := 52 \text{ kg}$   $n := 21 \text{ sec}^{-1}$   $r := 200 \text{ mm}$   $\rho := 1 \frac{\text{kg}}{\text{m}^3}$

$\omega := 2 \cdot \pi \cdot n$	$\omega = 131.947 \frac{\text{rad}}{\text{sec}}$	1/sec, 1/min
$v := 2 \cdot \pi \cdot r \cdot n$	$v = 2.639 \cdot 10^4 \frac{\text{mm}}{\text{sec}}$	m/sec, km/hr
$F_Z := m_s \cdot \omega^2 \cdot r$	$F_Z = 1.811 \cdot 10^5 \cdot \text{newton}$	newton, [kgf]
$F_Z := \frac{m_s \cdot v^2}{r}$	$F_Z = 1.811 \cdot 10^5 \cdot \text{newton}$	newton, [kgf]
$F_Z := 4 \cdot \pi^2 \cdot m_s \cdot n^2 \cdot r$	$F_Z = 1.811 \cdot 10^5 \cdot \text{newton}$	newton, [kgf]

Simply change the variable values and the worksheet updates in this MathCad application

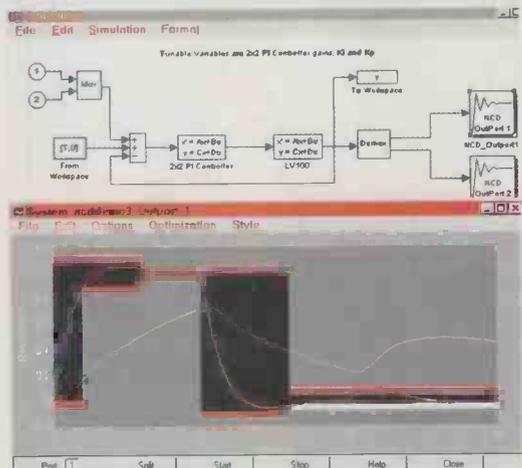
environment, whereas a simpler system may be handled adequately by the MathCad Connex package. While the evaluation of some formulas may require Mathematica or Maple there are many mathematics application areas, ranging from calculations of stresses and strains to rates of interest, for which MathCad is more than ample.

Matlab provides a mathematical environment analogous to installing Windows on a computer: you can "do things" with the base product, although most users take advantage of the numerous additional applications packages and dedicated toolboxes. Matlab users are provided with what is clearly the widest range of high-end quality application-specific packages; a range which spans many scientific disciplines. Signals processing, say, is one area with an obviously high data content. Although both Mathematica and MathCad have signals processing toolboxes, some DSP (Digital Signal Processing) professionals consider Matlab 5 to be the only choice and that other software doesn't even come close. Gerry Cain, Professor of Digital Signal Processing at the University of Westminster has said of Matlab 5: "The move from Matlab 4 to Matlab 5 was a staggering change." Professor Cain, who uses Matlab every day, thinks that "Matlab is a vital accelerator of technical productivity and of the emerging standard of communication between electronics engineers."

While real-time signals processing may require the power of the Matlab matrix engine, there are many areas of applied maths for which such an environment would be superfluous, and here Mathematica and MathCad come into their own with toolboxes and application packages.

Wolfram Research offers about 40 packages, covering areas as diverse as structural mechanics, control systems, wavelets which can be used for finger print and voice print identification, optics, fuzzy logic, mechanical systems electrical engineering and astronomy. These are powerful packages which make full use of the Wolfram Mathematica kernel. The down side is that they are not very user-friendly and an application specialist who was unfamiliar with the Mathematica system would find them almost unusable.

MathSoft, producer of MathCad, has an almost equally wide range of electronic application packages which have the advantage that they are user-friendly with no need for computer syntax. MathSoft has taken a number of classic



NCD filter simulation in Matlab 5

applied mathematics texts, for example *Gieck's Engineering Formulas*, *Roark's Formulas for Stresses and Strains*, *The CRC Materials Science and Engineering Handbook* and turned them into electronic handbooks. The user simply finds the relevant formula, enters the values onto the MathCad page, clicks on "evaluate" and there is the answer.

A unique new feature in MathCad Pro 7 is MathConnex which provides an environment for integrating and linking applications and data sources to create a computational system which can be used to simulate systems and view results. Applications which can be linked in this way include Matlab, Excel and Axum. Mathsoft has reasoned that there are many system application areas which require a small percentage of the capability of the Matlab Simulink system and that these simpler systems can be handled quite adequately by Math Connex inclusive with MathCad Pro 7.

The use of mathematics in finance dates back to the days when Isaac Newton worked for the Bank of England drawing up tables for loan repayments. Nowadays, programmers work in the City developing customised routines for options trading. Many of these routines are based on the Black-Scholes model for option pricing: Macsyma has a Black-Scholes function as has Maple, MathCad and Mathematica. The Matlab Financial toolbox includes a whole range of functions based upon the Black-Scholes model. Wolfram produces two Mathematica financial packages, Mathematica Technical Trader and Finance Essentials, which are used by consultants in financial institutions.

MathCad produces a Financial Analysis package with almost 200 of the most widely-used routines.

Although Matlab 5 can be run on 24Mb RAM, a realistic minimum is 32Mb. A 64Mb workstation environment is recommended for all three packages.

### PCW Details

#### Matlab

Price £1,762.50 (£1,500 ex VAT) base package only

Contact Cambridge Control  
01223 423200 [www.mathworks.com](http://www.mathworks.com)

★★★★★



#### MathCad

Price £464.13 (£395 ex VAT)

Contact Adept Scientific  
01462 480055 [www.mathsoft.com](http://www.mathsoft.com)

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#### Mathematica

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Contact Wolfram Research 01993 883400  
[www.wolfram.com](http://www.wolfram.com)

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PC ADVISOR, November 1997

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Easy to use Central Interface with Integrated look & feel	YES	-	YES	-
Repairs & Recovers Damaged Files and Hard Drives	YES	YES	-	-
Automated Clean & Repair Windows Registry	YES	Minimal	YES	-
Rebuild & Optimise Registry for maximum performance	YES	-	-	-
Optimise Hard Drive (N&B Disk Tune is up to 5x faster)	YES	YES	-	-
Clean up Hard Drive	YES	YES	-	YES
Provides Detailed System Info	YES	YES	-	-
Protects against accidental file delete	YES	YES	-	-
Emergency Rescue & Recovery	YES	YES	Minimal	Minimal
Hardware Diagnostics	YES	DOS only	-	-
Live System Monitor	YES	YES	-	-
Crash Recovery	YES	-	-	YES
Crash Protection	YES	-	-	-
Easy System Configuration	YES	YES	-	-
Zip/Unzip Files	YES	-	-	YES
Drag & Drop Zipping	YES	-	-	YES
Zip Integrated with file and Hard Drive Cleanup	YES	-	-	-
Encrypt/Decrypt Files	YES	-	-	YES
High Security Encryption	YES	-	-	-
Security Integrated with File Compression	YES	-	-	-
Secure Erase Feature	YES	-	-	-
Secure Erase works with compressed drives	YES	-	-	-
Self Decrypting Files for easy e-mailing	YES	-	-	-

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Technical Data Analysis — The presentation of technical information

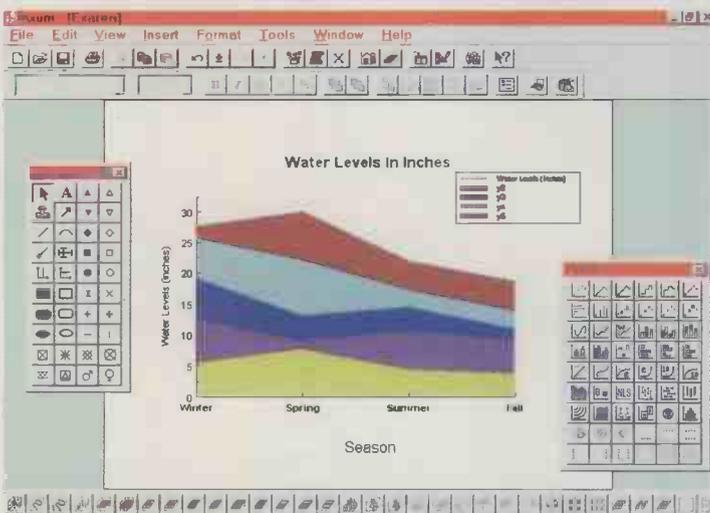
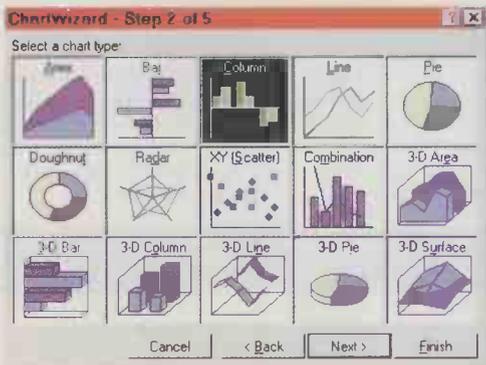
**T**he way information is presented is often as important as the quality of the data and analysis, hence the choice of software can be of paramount importance. Just because researchers work with experimental equipment is no reason why their data analysis and presentation software shouldn't be as easy to use as the front office WP package.

Specialised data presentation packages fall into two general types: those for online data capture and those for the presentation and analysis of static data. Online data capture is often essential for modelling and visualising an on-going process. Output is usually made to the computer screen so page editing is of secondary importance. DADISP, developed to monitor the real-time performance of Indy Race Cars is one such package. Origin v4 from Microcal is another, developed for the needs of laboratory calorimeters. There are many other packages used to visualise data gathered from instruments for chromatography and mass spectrometry: many of the larger instrument manufacturers providing their own dedicated software. Specialist firms such as Adept Scientific and Aston Scientific offer ranges of instrument-specific scientific software.

There is an overlap between the graphics capabilities of statistics packages and that of technical graphics packages like Axum, Origin 5 and Jandel SigmaPlot. Axum has hanging toolbars which permit simple one-click access to more than 50 2D graph types and over 30 3D graph types, and outputs

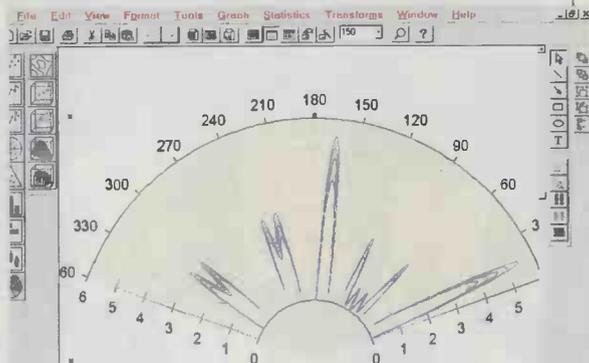
to a pre-formatted graphics page making the production of quality publications a breeze. Axum graphics can be combined and there are one-click "multiple graphs per page" options. There are facilities for non-linear curve fitting, and graphs can be presented in multiple-plot mode. Axum is not designed for time series data, though.

Excel offers a good range of click-on graphics templates



Axum area plot shows diminishing water supplies

Origin 5, which can open Excel, has superb handling of time series data and permits individual sections of a graphic to be enlarged. SigmaPlot is a very good European technical graphing program which can open Excel spreadsheets and apply Jandel graphics templates to highlighted columns. Both Axum and Origin can run in 8Mb RAM but 16Mb is recommended. SigmaPlot is a resource-hungry program



A Fan plot in Jandel SigmaPlot

best run on an NT Workstation, as is Origin if used with Excel.

Every computer should have a spreadsheet and Excel 7.0 is probably the best there is, with excellent data handling and a workbook format. There are many easy-to-access templates for data entry, all employing smooth dll routines which output the results to the Excel spreadsheet. There is a further set of advanced data analysis tools but these are "added-in" macros (with a clumsy, almost jerky feel to them) which increase memory overhead and deteriorate performance. If you're going to use these tools, it's best to run Excel on an NT workstation with at least 64Mb RAM and, preferably, powered by a Pentium II, K6 or similar. Running Excel 7 in Windows 95 with the data analysis tools can occupy, according to Microsoft Resources Monitor, over 100Mb of memory.

Excel's graphics are wizard driven and there is little the matter with the 15 graph types and almost 100 individual templates. The limitations of Excel are that graph types can't be combined, the software doesn't support conditioned or trellis plots and, more importantly, the graphs are not output to a formatted graphics page. Excel offers a massive range of functionality, but even assuming a workstation is available it is questionable whether it is adequate for serious work or whether more specialised software is needed. One obvious solution is to couple the Excel front-end to one of the many specialist packages which can either be run as an add-on to the Excel toolbar or OLE2 linked. Examples of such Excel-enabled software includes Matlab, Mathematica, Unistat, Origin, Arcus and Jandel SigmaPlot.

PCW Details

**Axum**

Price £464.13 (£395 ex VAT)  
Contact Mathssoft 01276 452299  
[www.mathsoft.com](http://www.mathsoft.com)



★★★★★

**DADISP**

Price £1,762.50 (£1,500 ex VAT)  
Contact Adept Scientific 01462 480055  
[www.dsp.com](http://www.dsp.com)

★★★

**Excel 97**

Price £325.48 (£277 ex VAT)  
Contact Microsoft 0345 002000  
[www.microsoft.com](http://www.microsoft.com)

★★★

**Microcal Origin**

Price £517 (£440 ex VAT)  
Contact Aston Scientific  
01296 614144 [www.astonsci.co.uk](http://www.astonsci.co.uk)



★★★★

**SigmaPlot**

Price £411.25 (£350 ex VAT)  
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(+49) 2104 9540  
[www.jandel.com](http://www.jandel.com)



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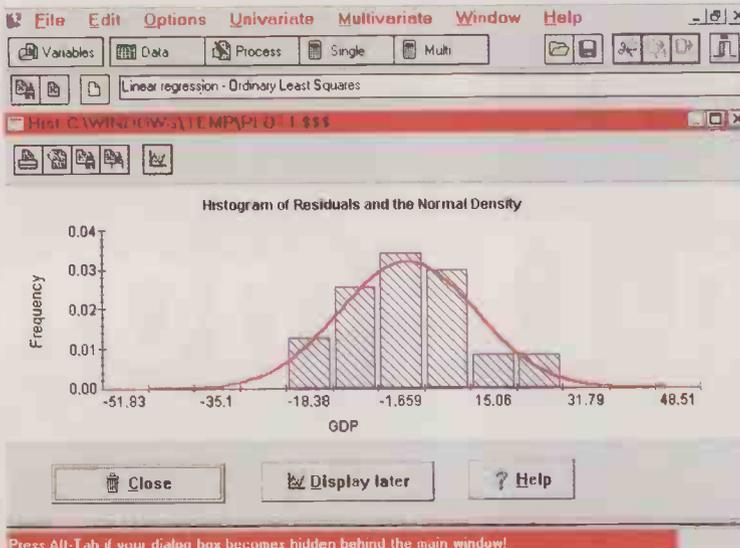
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## Statistics — Interpreting observations and data

**S**tatistics is about getting information from data. You have your data, probably in rows and columns, and you want to extract the absolute maximum of useful information. This is an area in which there is considerable overlap between mathematics and statistics software and although spreadsheets like Excel have essential statistics functionality, specialist capability is usually necessary.

Of the Maths Packages, Mathcad 7, covers 18

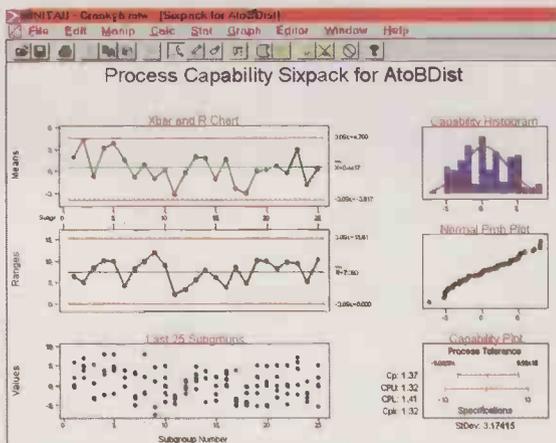


**Microfit offers one-button-specialist graphics output**

distribution functions and includes easy-to-use statistics quick sheets for summary data which can be pasted or imported from Excel. Mathematica Statistics can be linked to an Excel spreadsheet and has specialist statistics graphics, a good range of distribution functions, routines for hypothesis testing and advanced regression analysis. Matlab stats package has inverse and cumulative probability levels for distribution functions, descriptive statistics, linear models and analysis of variance. Macsyma and Maple also have a useful statistics functionality.

There are, however, information aspects which require more than a basic statistics approach. If specialist statistics functions or custom editing of graphic output with point identification or brushing is required then a more

sophisticated package is called for. If you need to be able to predict a future value with maximum certainty, you are probably going to need to use a Neural Network package, and while SPSS and Matlab both offer Neural net toolboxes, this is a very specialised



**Minitab Quality Control Analysis Output**

area often requiring dedicated packages.

If you have time series data consisting of a series of observations on inter-related variables, and want to analyse the relationships between these variables, then you need a good multiple regression package. Microfit is by far the best regression package available, including features for recursive regression and tests for ARIMA and advanced analysis of

residuals not to be found in other packages. However, it must be remembered that Microfit is specialist software best used in conjunction with a more general package such as Minitab or Unistat.

If you have time series data but are a little dubious of possible relationships between variables, perhaps suspecting an underlying pattern in the data, you'll want to analyse in meaningful terms using a package with a good ARIMA capability. Most of the better packages featured here have an ARIMA capability but this is where Statgraphics Plus from Manugistics is really in a class of its own. With a time series module, both state of the art and easy to use, Statgraphics makes the analysis and results readily accessible by non-specialists. Statistica and Mathematica Time Series Packages are strongly featured but Statistica is less than intuitive and the Mathematica module is designed for use by Wolfram experts.

Survival analysis is a relatively new form of statistical analysis developed from the need to analyse historical survival data. Imagine you have patients, some of whom receive one treatment and others a different treatment. Some may die, others may recover and leave your program or die of other causes. Survival analysis techniques are designed to compare the efficiency of two or more treatments and can be used to compare different maintenance programs for machines or failure rates for items such as printers.

There are different approaches to survival analysis, ranging from relatively simple Life Table Analysis, Kaplan-Meier and Lee-Desu, which are included in almost all statistics packages, and then there are the state of the art Cox Regression models available in S-PLUS, SPSS, Statistica, StatView and Unistat 5.0.

A screen of multiple statistical analysis can become cluttered and the well-organised multiple panel output of Statgraphics offers the best screen from which to work. SPSS has also recognised this problem and offers a session tree which permits click-on access to previous analysis. How data is output is also important and a good package is one which will integrate well with other software. There is little point in having a statistics package which will calculate an ANOVA table or a covariance matrix at lightning speed if you then have to re-enter results to obtain a well-formatted report in MS Word.

Outputting to a document is an area where Unistat leads, boasting results in pre-formatted tables, directly pasteable in MS Word or Excel. S-PLUS has a click-on feature to integrate with MS PowerPoint, and SPSS produces table form output with scaleable fonts which can be copied and pasted to other documents. Minitab features a limited range of pre-formatted report output which can be copied and pasted to other documents.

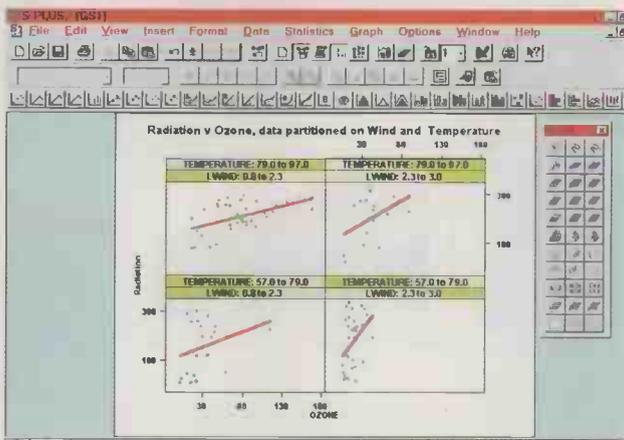
It should be noted that Unistat's facility to link with Excel and Word works perfectly with version 7 (ie Office 95) but, despite a 1.3Mb custom .dll from Microsoft, is slightly less solid in Office 97, hence Unistat users are advised to stay with Office 95.

### S-Plus

Looking at the available packages, S-Plus is by far the most impressive. Weighing in at over 70 megabytes, S-Plus is favoured by academic statisticians and has a compendious range of functions, customisable menu bars and excellent editable graphics routines such as conditioned panelling and trellis plots. Range of functionality is obviously an important aspect of any package and here S-Plus scores with depth and breadth of analytical routines with the additional advantage of the Mathsoft Axum Graphics engine.

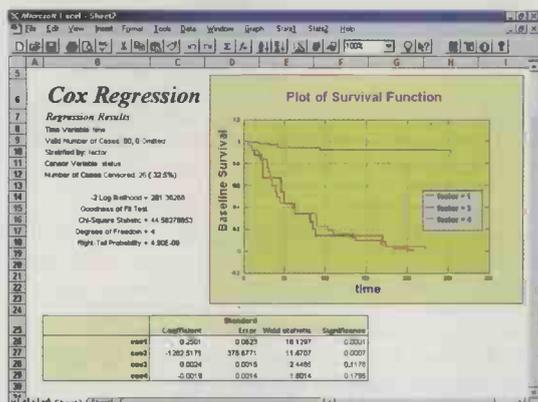
### Statgraphics

Statgraphics has a range of specialist modules featuring strong time series analysis, experimental design, quality control and multivariate methods. With features such as stat folios for combining sets of analyses and a stat gallery permitting graphics to be combined on a formatted page,

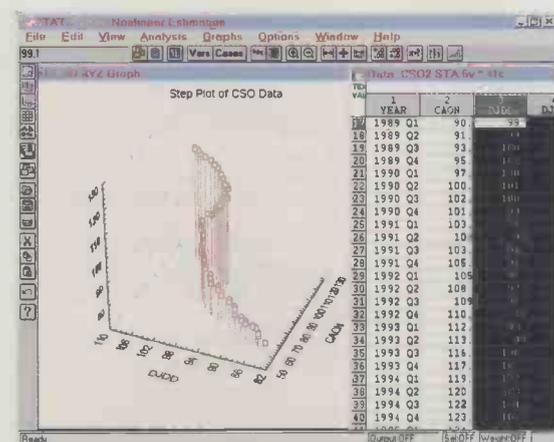


S-Plus graphics, showing multi-panel conditioned graph

Statgraphics is a strong, sophisticated, product. The quality of online help is important and here Statgraphics leads, with a context-sensitive StatAdvisor to assist in interpreting the results of statistical procedures. Although not technically speaking an "expert system" in the AI sense, it does provide expert assistance.



Unistat can perform a stratified Cox regression analysis and create a presentation quality report



Statistica 3D step plot — note the control box for spln

**Unistat**

Unistat is a compact program with the stress on ease of use and quality of output. It is often chosen by scientific researchers who value easy access to the routines which they actually use on a daily basis. Unistat works in conjunction with users to develop routines for specific problem areas. Unistat's Help offers advice on how to proceed and which routine to use, with worked examples from leading textbooks, as does Arcus Biomedical.

**Minitab**

Minitab is the most widely-used package for stats teaching and has good functionality with the accent on industrial control charts, quality control tools and reliability analysis, experimental design and multivariate methods.

**SPSS**

SPSS is a favourite package of UK local government and offers a solid range of add-on

modules with routines for survey analysis and cross-tab tables. While the SPSS base product is somewhat limited in scope, the add-on packs feature unique statistical tools. Although expensive, SPSS offers the best training facilities for new users, making advanced analysis accessible to non-experts.

**Statistica**

Statistica combines a very broad functionality with an exceptional range of graphics options. It can be complicated to use, however, and even experienced researchers can find the interface confusing. While Statistica offers a prodigious range of functionality and five volumes of documentation and on-line examples, it is not the most accessible package and it is seldom the first package I turn to when I need to analyse statistical data.

**Arcus Quick Stat and StatView**

Medical workers and other researchers on a budget would find Arcus Quick Stat hard to beat, with basic descriptives, parametrics, non-parametrics, regressions and correlation analysis. Arcus also features ANOVA, crosstabs and survival analysis. This is the first release of Arcus for Windows and a version upgrade will be available on the internet for registered users. StatView from Cherwell Scientific is broader than Arcus and, with advanced regressions and 17 routines for industrial quality control applications, offers a more general statistics capability. Both StatView and Arcus rely on MS graphics tools for editing graphics output.

**PCW Details**

**Arcus Biomedical 1.01**

Price £282 (£240 ex VAT)  
Contact Research Solutions 01223 425558  
[www.ResearchSolutions.com](http://www.ResearchSolutions.com)

★★★

**Microfit 4.0**

Price £464.13 (£395 ex VAT)  
Contact Oxford Electronic 01865 556767  
[www.oup.co.uk/](http://www.oup.co.uk/)

★★★

**Minitab 11.2**

Price £816.63 (£695 ex VAT)  
Contact Minitab 01203 695730  
[www.minitab.com](http://www.minitab.com)

★★★★

**S-Plus 4.0**

Price £1,756.63 (£1,495 ex VAT)  
Contact StatScience UK 01865 200952 [www.statsci.co.uk](http://www.statsci.co.uk)

★★★★★

**SPSS 7.5**

Price Base £816.63 (£695 ex VAT); base + modules £4,641.25 (£3,950 ex VAT) plus annual licence fee £1,116.25 (£950 ex VAT)  
Contact SPSS 01483 719200 [www.spss.com](http://www.spss.com)

★★★★

**Statgraphics 3.1**

Price Base £634.50 (£540 ex VAT); incl all modules £1,468.75 (£1,250 ex VAT)

Contact Bloomsbury Software 0171 436 9481  
[www.statgraphics.com](http://www.statgraphics.com)

★★★★★

**Statistica 4.0**

Price £934.13 (£795 ex VAT)  
Contact StatSoft 01234 341226  
[www.statsoft.com](http://www.statsoft.com)

★★★★

**StatView 4.5**

Price £468.83 (£399 ex VAT)  
Contact Cherwell Scientific 01865 784800  
[www.cherwell.com](http://www.cherwell.com)

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## Editor's Choice

**W**hich scientific software package to choose depends upon a combination of factors, such as requirements for the application area and subjective preference, not to mention disk space, value for money and available RAM.

For a solid maths reference, Mathematica must be the top choice. However, it requires a workstation environment and falls down on ease of use. Maple is far easier to use and is almost as capable although it lacks Mathematica's encyclopaedic breadth and does not have as many add-on modules. MathCad is the mathematics package to choose for technical professionals, teachers and students who require accessible symbolics without the need for advanced research. Macsyma is a powerful package with an all-round capability which can hold its own, both in numerical and symbolic calculations.

**Pure maths**

Maple v5 beta knocked spots off the other symbolic maths software, scoring a five-star rating. There is, however, a rule at *PCW* that beta software is not eligible for Editor's Choice, which was all that prevented Maple from winning. The Editor's Choice for pure maths is therefore awarded to Macsyma on the basis of an excellent symbolic maths capability in an easy-to-use front-end at a bargain price.

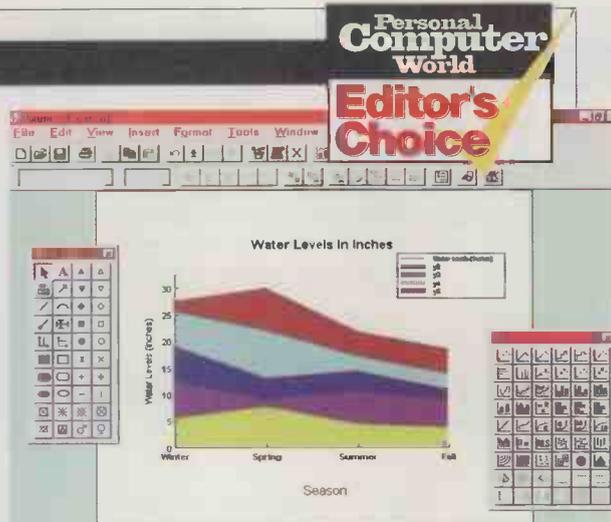
MathCad tied for our **Highly Commended** award, with Maple v4. MathCad scores for ease of use and range of add-on packages, while Maple V4, which can be run on a 486 with just 8Mb RAM scores for strength of symbolic and numerical routines.

Mathematica 3.01 is a quality package but, on balance, we decided that it is crammed with features that few *PCW* readers would ever need or use. We looked at Derive for Windows but were not over-impressed. MuPAD in Linux or on an Apple Mac is a low-cost option worth examining, but MuPAD is command-line based, meaning that it is not exactly user-friendly, and does not feature click-on editing.

**Applied maths**

Editor's Choice for applied maths goes to the MathWorks for Matlab 5, a package which is the most potent scientific software available. Matlab add-on modules are often superior to dedicated application software. The facility to use a full Waterloo Maple kernel as the Matlab Symbolic engine makes Matlab an almost unlimited system and the user-friendly GUI of its application modules gives it an edge over Mathematica, even in areas where the matrix engine is not needed.

The **Highly Commended** award for applied maths packages goes to MathCad Pro7. Mathcad came out ahead of Mathematica 3.01 (from Wolfram), on usability and value for money with the MathConnex module included in the £395 (ex VAT) base price. The strength and range of the Wolfram



Axum is our Editor's Choice for technical data analysis

Applied Mathematica functions is marred by the difficult syntax of the command-line interface.

**Statistics**

SPSS 7.5 is often considered to be the bench mark for statistics, but the full package plus annual licence fee is rather expensive and does not offer value for money. S-Plus 4.0 and Statgraphics Plus 3.1 both represent better value as does UNISTAT 4.5. These are three packages which score for ease of use, range of functionality and quality of output and, considering that one could buy all three for less than the initial cost of the full SPSS, there was little doubt about our decisions. Although still targeted at statistics graduates and other researchers, S-Plus no longer requires an advanced degree of computer expertise to make use of its powerful routines. S-Plus 4.0 is consequently awarded our Editor's Choice for statistics, while Statgraphics 3.1 and Unistat 4.5 both win **Highly Commended** accolades.

**Technical data analysis**

The choice of technical data analysis software depends on user requirements and the nature of the data. The production of publication-quality graphics, if it is to be done well, clearly requires specialist software. We found that the specialist features offered by Axum (e.g. trellis plots and data conditioning) were the most useful and made it our Editor's Choice. Microcal Origin is a specialised laboratory software product but is best of its breed and merits a **Highly Commended** award, as does Jandel SigmaPlot, one of the rare occasions that Windows software from Europe measures up against the best from the US. ■

**Glossary of mathematical terms**

**A.I. (Artificial Intelligence)** The program "learns" a system so that it appears to be intelligent.

**ANOVA (Analysis of Variance)** A method of comparing the means of two or more samples by analysing how they've changed. Useful in analysing multiple effects.

**Command line edit** Where a command must be entered at the prompt (looks like DOS).

**Conditioned panel plots** Where a plot of data is broken down into sections, allowing you to see interrelationships between variables.

**Differential equation** An equation involving rates of change.

**Expert system** An application which uses AI focussed on a specific problem area. Doctors use expert systems in medical diagnosis.

**Linear algebra** The science of dealing with systems of linear equations.

**Linear equation** An equation which assumes straight line relationships between variables such as simultaneous equations.

**Matrix** A rectangular array of numbers or mathematical symbols.

**Mersenne Prime** A prime number of the form  $2^n - 1$ . The first Mersenne Primes are 3, 7, 31, 127 etc.

**NextPrime routine** Routine for finding the next prime number after a

given prime number. Useful for research into the density of primes and the frequency of prime number pairs and triples.

**Non-linear equation** An equation which cannot be converted to a simple linear form.

**Number theory mathematics** is applied to numbers and the relationships between them.

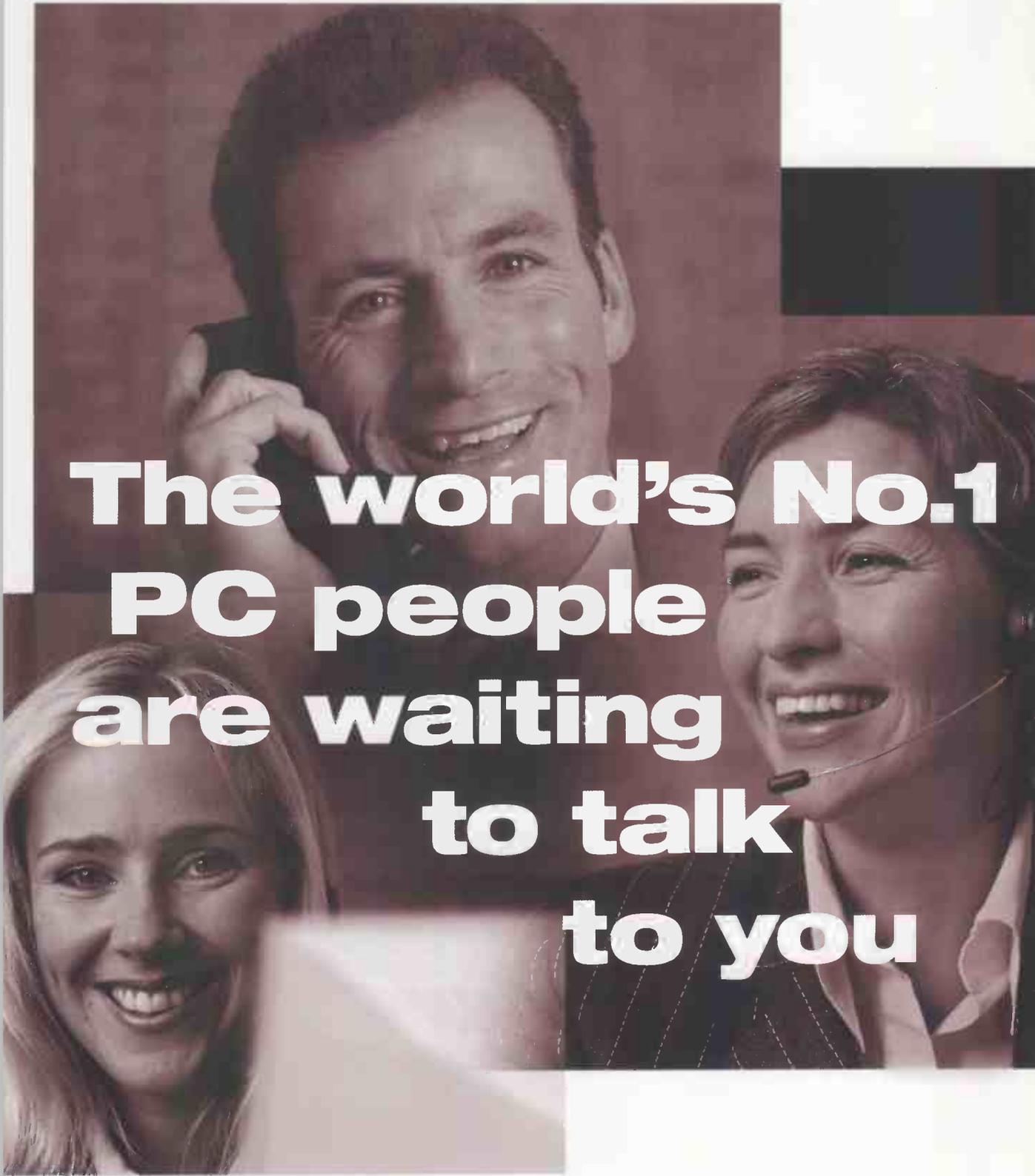
**On-line data capture** Where an instrument is connected to the parallel port on a PC to permit data to be "captured", saved and analysed as it arrives.

**Real-time system** A system which requires analysis of data "as it is happening". The "fly by wire" control systems of Airbus Jets and Boeing 767 planes are examples of real-time systems, as is the monitoring of the engines of Formula One racing cars.

**Robust mathematics** Where every numerical answer is double-checked before it appears on the screen. This makes the program slow to use but (in theory) every digit you get is warranted correct.

**Symbolic evaluation** Solving equations using algebra rather than calculating a numerical answer.

**Trellis plot** A multiple set of graph plots showing each of the inter-relationships between a set of variables as a separate plot.



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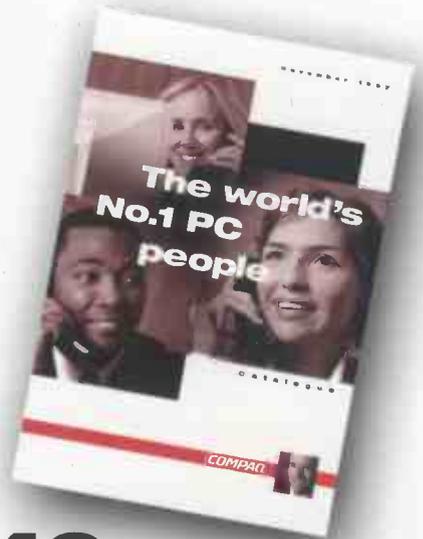
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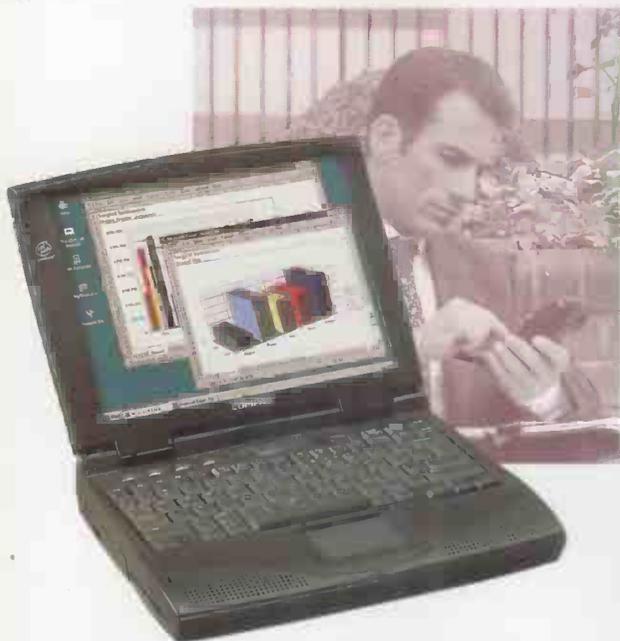
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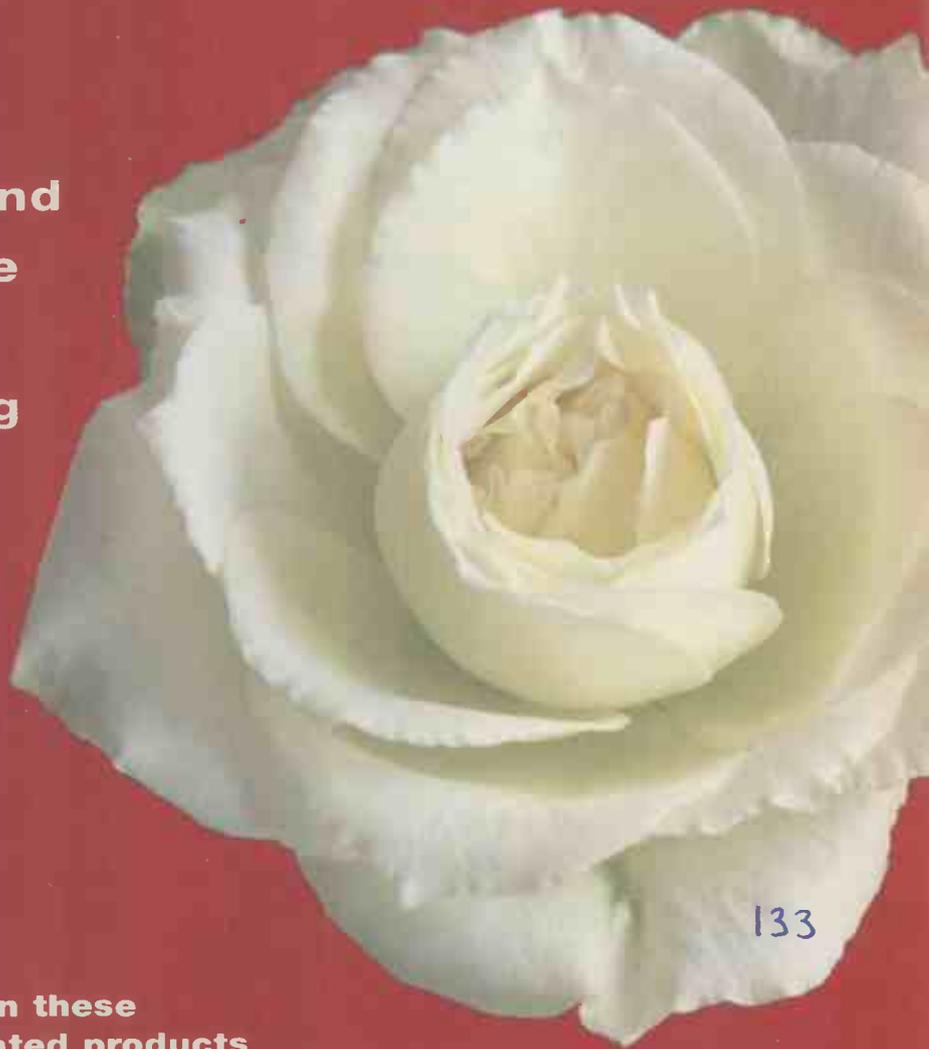
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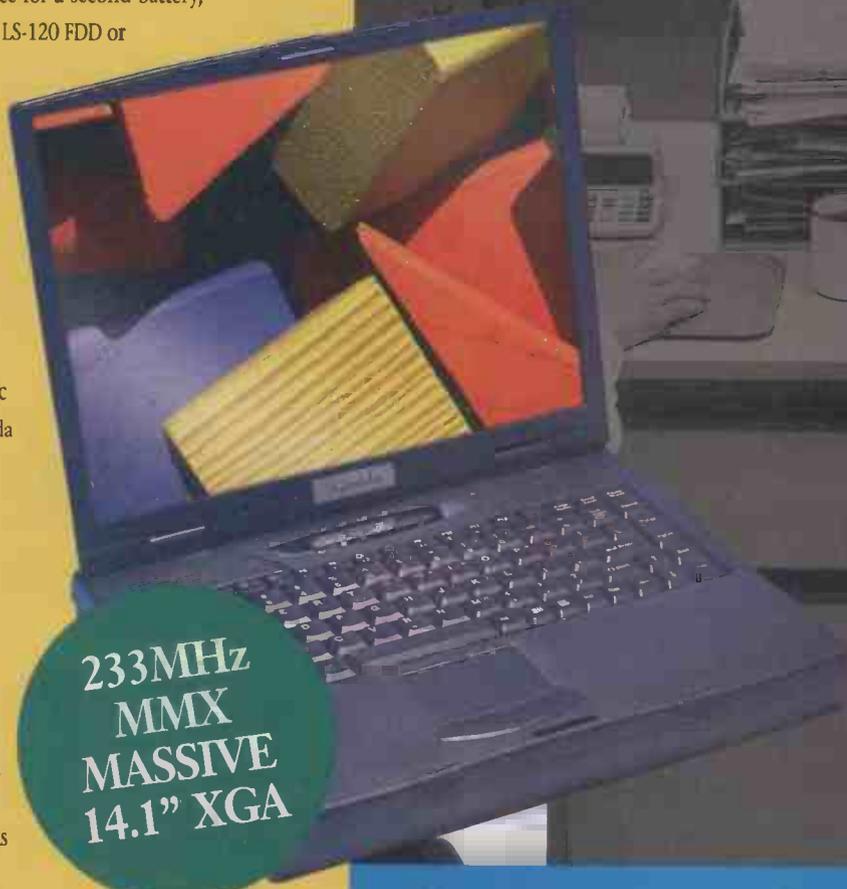
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Best high street retailer			
Best software dealer			
Best hardware dealer			
Best PC supplier (mail order)			
Best telephone support			
Most reliable PC manufacturer			
Hardware awards	Manufacturer	Model	Where did you buy it?
Best PC for business			
Best PC for the home			
Best budget PC			
Best notebook			
Best laser printer under £500			
Best inkjet printer			
Best monitor (from 17in to 19in)			
Best scanner			
Best modem			
Best graphics card			
Best sound card			
Best digital camera			
Best handheld/palmtop			
Software awards	Manufacturer	Title	Where did you buy it?
Best software suite			
Best creative software			
Best web software			
Best accounting software			
Best utility			
Best reference/home CD title			
Best game			
Online awards	Name	Web address	
Best internet service provider			
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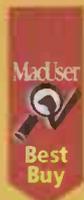
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# Where are the **IT** girls?

Despite recent growth, IT is an industry which still attracts more men than women. Deepa Patel looks at the reasons behind this and how the situation might be improved.

One of the most interesting and promising developments in today's world is the slow, but sure, equalisation of the roles between men and women. As history shows, men have had greater opportunities and, of course, more influence on society, especially in the areas of science and technology. This is not news but it is topical. Now it has become even more topical in our new computer-orientated age. If you go into any office, corner store or supermarket you will see women adeptly handling various types of computer ranging from a checkout scanner to a high-powered office workstation. But, it seems, that is as far as it goes when it comes to women's interest in computer technology.

Once most of these women go home they rarely use, or appear to be interested in, a home computer, especially here in the UK. Is it any surprise, one has to wonder, that there is a shortage of qualified IT professionals if women are not getting involved in the industry? The question is, why? From where does this perceived disinterest come? It is obvious that the advances which have been made in IT over the past 20 years have had a transformative impact on people's lives, both at work and leisure, but has the impact been as dramatic for women? If not, then why not? These questions have been dinner-party debating points for a long time. But what is the answer?

The answer, it appears, comes from what our children learn about IT from an early age, as well as the existing biases against women in today's IT industry. Many of our perceptions of what is interesting stem from school years, so we need to start with education; to look at what young men and women are studying and why. But we also need to examine the attitudes and issues which women face in the IT industry today.

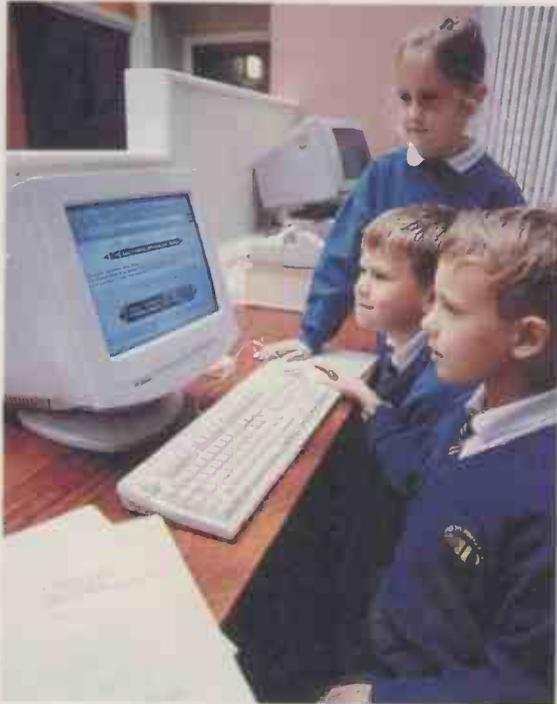
## School for thought

There have been a number of studies carried out since the early eighties which look at female and male participation in the school curriculum. These reveal that boys study maths, science and subjects like computer studies from an early age, and this carries on through their school career. The A-level statistics for 1994 show that despite the fact there were more girls taking A-levels, more boys than girls did science-related subjects.

Research, carried out to look at why there are fewer young women taking these subjects, has revealed that a masculine image of technology, peer pressure and lack of confidence in their ability, plays a large part. Studies by the Engineering Council show that gender stereotyping and the perception of technology as a male domain starts at an early age. Science was seen as an activity carried out by men by 72 percent of five-year-old boys and 65.6 percent of girls. Only nine percent thought that women could be scientists,

ILLUSTRATION: Jake Abrams





A common picture: national statistics show that young girls are still taking a back seat when it comes to computers

while 67.6 percent of boys and 69.6 percent of girls considered hairdressing to be a female occupation. This essentially means that boys consider it the norm to follow these subjects. For girls who consider doing this, there is already a pre-existing feeling of isolation from technological subjects, which carries on as they become adults.

The education system is also finding that boys and girls learn differently. Girls prefer to learn by example while boys prefer to learn by theory. This was also expressed by Jan, a coffee shop manager, who attends an adult education computer class. She observed that her teacher, who is male, was slightly exasperated by the fact that she needed to have everything explained before she tried it. The trial-and-error approach that both boys and men have towards computers and other technology can often make women feel as if they are technophobic. As one young woman in a local youth club put it: "Boys hogged the computers at school" and "pretended that they knew more about them," so she felt stupid and no longer wanted to use a computer. Statements like this can be heard throughout the country's schools and are a good indication of the alienation that young girls and women feel from the whole area of technology.

The home environment also plays a role in the way young women perceive technology. A good example of this is toys. Young men are more likely to have been given toys with which they can tinker, while girls are generally given toys that are about relating to others. Girls tend to have more interest in the toy and its uses. As Ruth, a mathematics and technology teacher, said: "This is one of the factors that leads to boys developing an interest in wanting to know how things work, and girls being more interested in the end product and its use."

Parental and societal attitudes towards women's roles in technology also have an impact on what girls and boys can and cannot do. If you ask the question: "Who has more use or control of the TV remote control or the PC at home?" you can already guess the answer — the man, of the house. One young woman to whom I spoke said that she had never seen her mother use the computer.

All these issues can influence the career choices that women make. Jenny, a network manager said that when

she went to the physics club at school, she found she was the only girl there and after the first meeting never went back, even though she loved physics. She went on to study an arts subject before falling into IT at a later stage in her career. One initiative that has been tried is creating girl-only clubs which allow young girls to explore science in the way they want, and feel comfortable with. It may be seen as controversial by some but it makes sense to many, especially considering the success of girls studying science at single-sex schools.

Other factors, like the timing of subject option decisions, and the influence (or lack thereof) of career advisors and teachers, putting pressure on young people to decide early on what they wish to study, have been found to have an effect on the number of young women choosing IT subjects. It is important to ensure that more time is spent in training teachers to support young women and to challenge the gender stereotypes that both young men and women possess. Ruth also emphasised that to attract greater numbers of young women to IT, more emphasis will have to be put on how technology can be used, rather than how it is developed.

#### Encourage the IT girls

There have been some positive responses to attracting young women to IT. The National Council of Educational Technology (NCET) and the Women's Information and Technology Council (WITEC) have developed projects to achieve this. The NCET project held an IT camp-in for young women, which introduced girls to different aspects of IT such as the internet. The day proved to be very successful and showed that the internet can be used as an important tool in attracting young women to IT. They have also developed an information pack and a video for secondary schools. In addition, WITEC has a database of women working in science, engineering and technology, which means there are now more female role-models who can provide support and advice for young women interested in careers in these areas.

What seems lacking is materials for boys which challenge their assumptions about women. A common example is the idea that it is natural for boys to be drawn to science. This assumption is said to be transmitted either directly or unconsciously to young women and, hence, deters them from being interested in IT. The women I spoke to who had attended all-girls schools in their youth, echoed these sentiments. Many said that when they entered higher education they began to experience some of the stereotyping about women and technology and, as a result, often lost confidence in their ability to study IT-related subjects because they did not approach IT in the same way as men. Karen, a programmer with a large multinational company, said that she wanted to be able to talk about the way she was going to do something, whereas the men she was with tended to work on their own and not discuss the issue.

Figures for higher education show why it is necessary to have these projects. According to the Universities and Colleges Admissions Service (UCAS), only 17 percent of

students involved in computer studies courses are women. Any way you look at it, this a ridiculously low level of participation and illustrates that there is more work still to be done.

The NCET maintains that it is not necessary to have a degree to go into IT: judging by the women IT professionals to whom I spoke, this was the case for half of them. Sarah, IT project manager at a major national bank, is a prime example. She said that she fell into IT while doing a temporary job after leaving university and learned all her IT skills on the job. In her case, the man in her department who was meant to do the IT support work left after two weeks. She was promoted because it was felt that she would be able to relate to the clients, most of whom were women, who needed IT support.

Jenny, too, started her career as a temp and moved into IT. She has spent a good deal of time working to solve hardware-related issues, but confirms that there is still much work to be done to overcome the perception that computers are a man's domain — especially if you happen to be a woman working in that domain. She tells

a story about how the male technicians never allowed her to go near the network cabling cupboard, and whenever she asked questions about IT she was given an answer which made her feel as though it was too complicated to understand. It was only when she was in charge of the overhaul of a computer network that she discovered the job was similar to that carried out by telephone operators in the forties.

**“The IT industry can be massively sexist...mainly due to the background culture of IT managers”**

Peter Kirwan, editor,  
*Computing*

So how does this lack of encouragement for more female involvement in IT affect Britain today? Judging by the statistics, not so well. Only 22 percent of the IT professionals in the UK are women. If you contrast this to the US where 45 percent of IT professionals are women, and then look at Singapore where the proportion jumps to 55 percent, you realise something is definitely askew. The figure drops further if you look for female managers.

One of the women with whom I talked was the only female manager in a team of 30. She felt that on the positive side she was noticed, but that the men around her were also waiting for her to make a mistake. Although she enjoyed her work and would not be doing anything

## Games for the girls

Kelly says: “I don't play computer games because they are all about fighting.” This is a typical young woman's comment about games. So off I went to the local games store to explore what kind of games were available. One of the first things that struck me was how most of the games were about power and control. As Kelly said, she liked playing those games when she was feeling angry, but wished there were more games aimed at young women. The few that are available seem to have an educational slant to them.

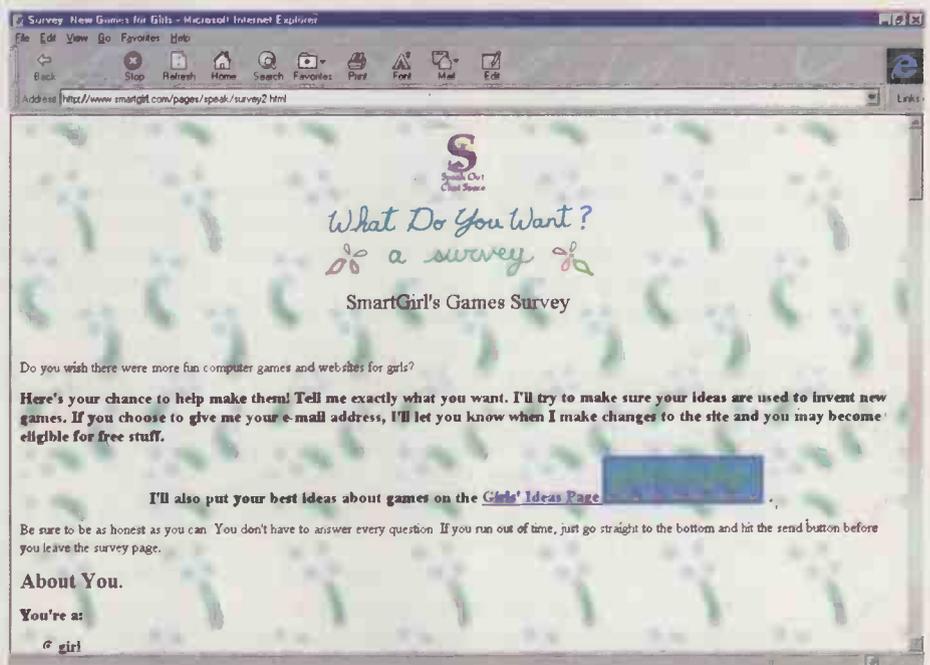
So why are there not more games for women? Stephen McGill, consumer product manager at Microsoft UK, said that although there are few games targeted at young women, Microsoft is creating more female lead figures in all their games to which young women could relate. Sadly, popular characters like Tomb Raider's Lara Croft reinforce stereotypes of the way women should look. Microsoft and Dreamworks are looking at developing more “normal-looking” female characters in the future. They have released a game called *Goosebumps: Escape from Horrorland* (which is based on a popular children's TV programme) in which Lizzy, the 12-year-old lead character, sets out to rescue her young brother and his friend. With this launch, Microsoft's intention was to engage young female games players. When I mentioned the game (while at a youth club) the young women there said they would like to see it, although one of the young men was more interested in whether you could blow people up.

One interesting point about offering both male and female lead characters for players to choose, is that the young men in the group to which I spoke rarely picked the female leads, whereas the young women seemed more willing to select a male lead.

A most encouraging development I discovered was the games reviews on the SmartGirls web page which appealed to teenage girls. The main rule was that “the games must not force the user to play a female character”. They also run an interactive software company, called Girl Games, which designs CD-ROMs specifically for young women. Both of these are Australian initiatives, showing that there are more encouraging projects outside the UK.

The UK games industry does seem to realise the importance of attracting more young women by developing female characters, but the next step will be for them to develop games specifically for women.

SmartGirls is at [www.smartgirl.com](http://www.smartgirl.com)





else, she felt that there was a lot of scope for improvement in male-versus-female perceptions. Even though the IT industry is still quite young, it is no different to more traditional businesses: it is run mostly by men, and there are staggeringly small numbers of women in top positions. Two of the women I asked felt that they had missed out on promotion because of their gender, but thought this would be hard to prove.

#### Out of the loop, out of IT

Peter Kirwan, editor of *Computing*, agrees wholeheartedly with this view. His publication has been running an aggressive "Women in IT" campaign to highlight the issue and raise awareness of the potential results of not attracting women to the IT industry. In his opinion: "The IT industry can be massively sexist... mainly due to the background culture of IT managers." He attributes much of the bias to the "real or perceived" effect of the "skills break" which women might take if they choose to have children. Once they have been out of the IT loop for a while, they are viewed to be behind in their knowledge of the industry.

Rightly or wrongly, this appears to be the reality. The problem with this reality is that it does not solve the issue of the shortage of skilled IT workers. As Kirwan says, the shortfall of skilled IT workers is only now being fully realised, especially with the year 2000 bug looming over every business. He says the industry is "about a year away from difficult shortages" and that attracting women would "clearly be a net addition to the workforce."

Further research has revealed that women feel isolated in these male-dominated environments. Unfortunately, this often means that once there, they don't stay long. Why? In Ruth's view, women just have

different priorities: "They work to live, not live to work." Sarah reinforces this view with her observation that many IT jobs, though very well paid, require long hours. Because of the differing views about what is the greater priority, work or home, it can be difficult for women to become more involved in IT careers.

On the positive side, there are more women becoming involved in the IT industry at project manager level. The reason for this, it seems, is that the need to negotiate and communicate felt by women attracts a higher proportion of them to this type of position. Jo said that nearly all the women within her department were in these roles.

One of the things which attracted her to this position was that it was not a technical post and it involved working with people. Both Jo and Jenny emphasised that their job interest lay in how their work with computers would improve things for people (in preference to development of the hardware). Yet these "people skills" are often devalued within an industry which places more emphasis on technical skills. Sue said that it was only when she attained the position of manager, and was making decisions, were her communication skills seen as being of equal importance to her technical expertise.

#### Time for a change

All these things show that the IT environment, both consciously and unconsciously, can be a difficult environment for women to work in and can be undermining. However, IBM does have a programme to help women get support and skills to enable them to operate better in this male-dominated world.

There is an increasing number of initiatives to attract women into IT, but that is not enough. As author Frances Grundy points out in her book, *Women and Computers*: "Without more women, nothing can change. But this is not enough: there have to be other changes as well." These changes must start not with the new question of why are there not more women in technology, but what is the IT industry and the education system doing to attract more women? In the former question, there is the implicit assumption that it is the responsibility of women to do something about the situation. The latter puts the emphasis on the changes which the male-dominated industry, as well as our education system, needs to make to redress the imbalance.

Without a fresh approach, the situation will remain unchanged.

And considering the future of business, the IT industry and society as a whole, that cannot be good for anyone.

#### PCW Details

Deepa Patel is a freelance writer on issues relating to society and culture.

The NCET has produced information sheets on Gender and IT and Attracting Young Girls to IT, and can be contacted on 01203 416994 <http://ncet.csv.warwick.ac.uk>

WITEC can be contacted on [www.shu.ac.uk/witec](http://www.shu.ac.uk/witec)

*Women and Computers* by Frances Grundy is published by Intellect.

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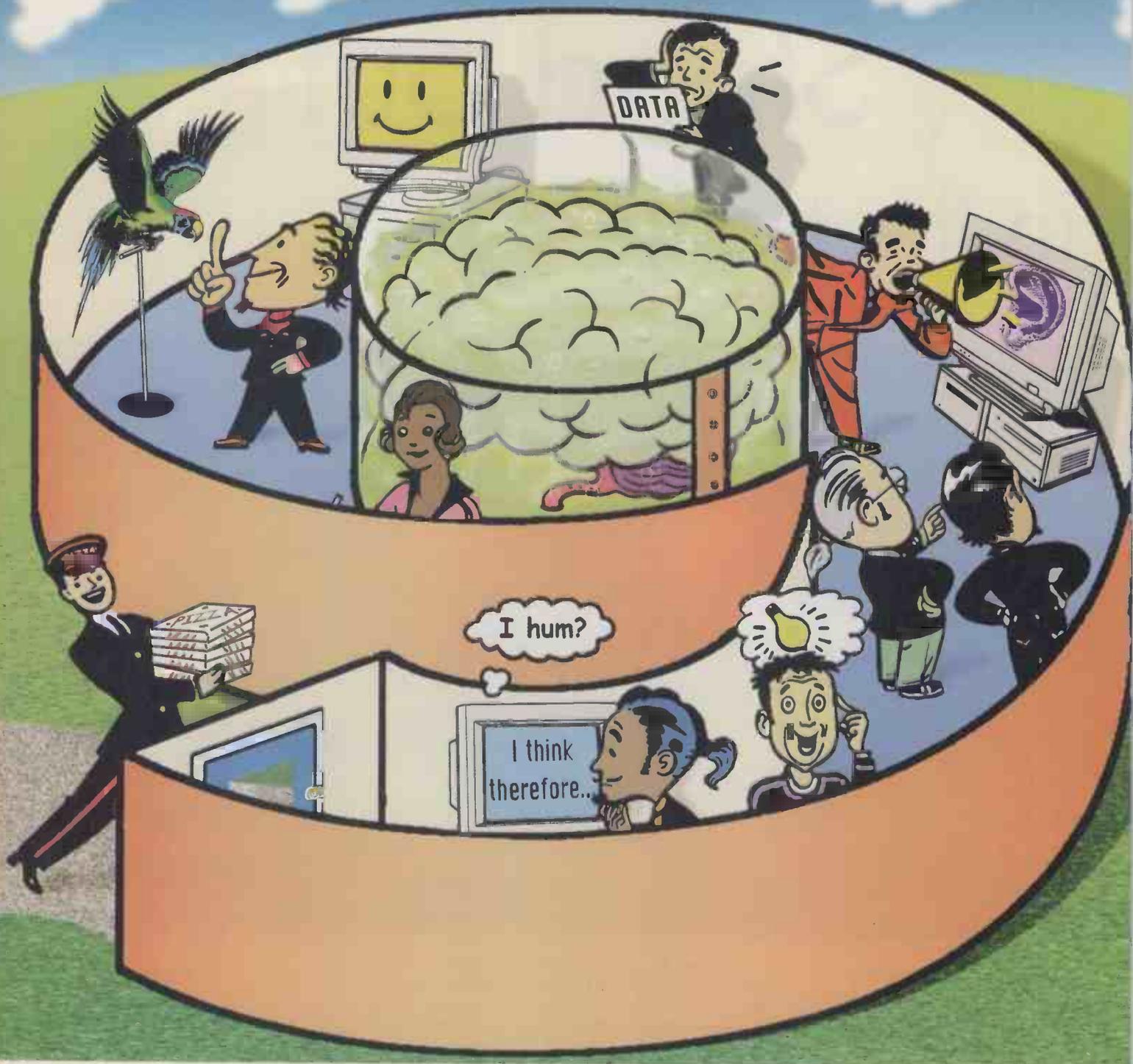
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# On cloud nine

Sean Geer visits Building Nine of Microsoft Labs, the section given over to advanced research. He looks around and learns what's being developed there.

**B**uilding Nine looks like all the other buildings on the sprawling Microsoft campus. It has the same feel, too; labyrinthine corridors, earnest-looking people in heated discussion, rooms full of insanely complex-looking kit. But here, people have more on their minds than rushing products to market or developing new online strategies. This building is home to Microsoft's advanced research labs, the place where the company's technology for the future is being built.

"Labs" in this context is something of a misnomer. There are no signs of any laboratories, as such; nor, indeed, are there any white-coated, clipboard-wielding boffins to be seen in Building Nine. Instead, Microsoft's researchers are almost indistinguishable from their code-crunching companions elsewhere on the campus: lacking the beards and sandals of the hardcore developers, perhaps, but occupying almost identical cubicles in the seemingly endless corridors.

ILLUSTRATION: Paul Shorrocks

Many of Microsoft's employees work alone, with only a sofa-bed and a stack of empty pizza boxes adding to the decor of their allotted space, but many share offices too. In these tiny rooms work some of America's most talented research scientists. Alongside their counterparts at Bell Labs, MIT, IBM and many other organisations, these people are pushing computer technology as far as it will currently go, and they intend to push it a lot further than their competitors.

There's a lot at stake here. If the inhabitants of Building Nine get it right, they could end up building truly intelligent, perhaps even conscious, computers — a prize without value. This is about more than building a newer, flashier Windows interface and better networking technologies; it's about building computers that can recognise users, understand what they say and mean, speak to them and even make decisions of their own. Ultimately, perhaps, it's about building a computer like Arthur C Clarke's HAL 9000, anti-hero of 2001.

These are issues which transcend the worlds of business and consumer software, which is precisely why they're being vigorously pursued by other research organisations, many of which have a reputation and kudos that Microsoft lacks. MIT and its Media Lab, Bell Labs, IBM, Xerox PARC, Stanford and Carnegie-Mellon universities, to name but a few, are all high-profile, big-budget concerns that have for years produced ground-breaking technology we all take for granted. They continue to develop agenda-setting technology — in many cases more advanced than that produced at Microsoft — but their focus is broader and, perhaps, their research ideals purer. In some cases, they just haven't had the commercial nous or experience to bring ideas to market: IBM, for example, invented the SQL database language but wasn't in the mass-market database software business and never quite worked out how to get into it.

Microsoft is more visible and ruthlessly commercial. It also has a couple of operating systems and a vast number of popular products towards which it can direct the results of its research, either as individual components or as a currently undefined whole. It can get it onto more desks than anyone else, faster than anyone else, a fact that will continue to be of interest to the US Department of Justice.

The group's corporate background states, in typical fashion, that it is: "Reinventing the

personal computing experience through research innovation", going on to talk about the creation of "unique synergies" that will result in the development of inevitably "richer" products. So far, so-so: "Improving the end-user experience" is part of the standard Microsoft litany recited by most of its executives and product managers for many years. But on the face of it at least, Microsoft Research seems an organisation in its own right, adopting a different approach to new technology from the development groups elsewhere in the organisation. Founded in 1991, it's run by Rick Rashid, an émigré from Carnegie-Mellon University who, as professor of computer science, worked on the famous Unix-based Mach operating system in the eighties. He was charged with an unusual task: to create a research group with the atmosphere and focus of a university research lab, but which produces new technology for incorporation into a wide range of commercial products.

"I used the model from my Carnegie-Mellon days to build the group here," says Rashid. There's a certain smugness in his voice when he says: "People told me I'd

## Speak and be heard

Speech technologies are at the forefront of Microsoft's research into making computers easier to use. There's little doubt in anyone's mind that speech is a more satisfactory interface between people and computers, and a vast improvement on the clumsy mouse/keyboard combination. Neither is there much doubt that at some point we'll be able to build computers which can not just understand what we say, but reply to us in a conversational manner. That's a long way off, but research is getting us to the point where speech recognition is a useful tool.

There are working products today but they still have drawbacks. For a start, they require a lot of training before they will reliably respond to individual operators' voices; each program requires you to practice saying particular words or phrases before they will operate accurately. They operate badly in noisy environments, need huge dictionaries to be of any real use and have limited error-checking capabilities. Microsoft's WHISPER (Windows Highly Intelligent Speech Recogniser) technology is not yet, and may never be, a shrink-wrapped product, but the company is trying to advance the status of such programs to the point where they can be included in future operating systems and work with all applications on the desktop.

At the heart of WHISPER is a recognition engine that registers the amplitude, duration and pitch of the sounds it picks up. From these, it can start to make sensible guesses about what a word is and how it should be written on the screen. Problems arise when the system picks up homophones, words that sound the same but are spelt differently and mean different things. To deal with this, WHISPER uses context-dependent modelling to determine which word makes the most sense in the context, by looking at preceding and following words and applying some simple grammatical rules. When used by an experienced operator of a well-trained machine, WHISPER can correctly interpret a sentence such as "We need to write a letter to Mr. Wright right now" every time. Current research is focusing on providing intelligent ways of checking sentences for logical errors — catching gender mismatches at the beginning and end of sentences, for instance.

But what about computers which can talk back to the user? Making machines that can talk is possible, as anyone who's heard Stephen Hawking's mechanical voice will know. Making them talk like humans is more difficult, and making them actually converse intelligently is harder still. Microsoft's WHISTLER (Windows Highly Intelligent Stochastic Talker) technology, based on the WHISPER engine, represents a first step towards these developments. The trick is to make the computer mimic the acoustic characteristics of a particular human voice; in particular, the pitch and duration of sounds and the pauses between them (characteristics known as prosody). Prosody varies between one voice and another and is extremely complex in individuals, depending on exactly how individual words and sounds are spoken and pronounced. By transplanting prosody segments from one person's speech and overlaying them on a sample of text to be read back, WHISTLER can synthesise speech that sounds pretty close to the original person's voice.

The drawback is that this only works well if the speech segments are known beforehand — that is, if the text from which the prosody was originally recorded is the same as that to be read back. The problem is caused by the fact that recording the prosody from a person's entire spoken vocabulary in a number of different contexts is more or less impossible, and artificially-generated prosody is not as good as the real thing. So for the time being, WHISTLER's capabilities are limited. Even so, Microsoft has already been able to make it sing, a sure sign that the technology is improving steadily.

never build a great research group in Redmond — you need to be in Palo Alto or Cambridge [Massachusetts, not England]." But build one he has, despite early scepticism that Microsoft, of all people, could do "real" cutting-edge research.

"People would look me and Nathan [Myhrvold, Microsoft's chief technology officer and Rashid's boss] in the eye and say: 'Are you really going to do this?' Now, we've got some of the best researchers in the world. We're very focused on the sort of topics you'd find in a typical university research lab. If you're a researcher, one of your driving forces is 'How do I get my work to make a difference?'" This is a question to which he knows at least part of the answer. Digital's AltaVista search engine still runs on code he wrote in 1985: good evidence that he knows how to turn a research project into products with lasting commercial applications. In the Microsoft context, he still seems to have the knack: "Any product which Microsoft produces today has something in it that came from this research group," he says. An example is the Office Assistant technology in Office 97, based on the efforts of those working on natural-language group and decision theory.

In keeping with the collegiate atmosphere that Rashid has engendered, the department behaves in a decidedly



Rick Rashid, an import from Carnegie-Mellon university, heads up the Microsoft Research team

open and academic manner. In time-honoured fashion, the research group's work is published in open forum at conferences and seminars, and in technical publications. Researchers are even encouraged to write magazine columns where appropriate. "Open" is the key word here. "We just send in the papers, with absolutely no lawyers," claims Rashid. So what's to prevent other people stealing their ideas? Well, nothing at all. But Nathan Myhrvold,

## The meaning of life

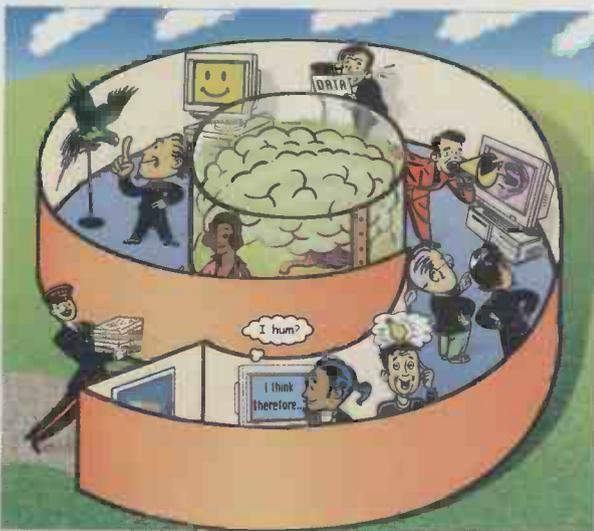
Never mind being able to understand what people say; what do they *mean*? That's a big challenge, and one that's being pursued by researchers all over the world. At Microsoft, Lucy Vanderwende, one of the theoretical linguists hired from IBM in 1992, is trying to teach computers to understand language in the way that people use it. Natural language processing is already used in some MS products: most notably in the Office Assistant in Office 97, which lets you type English-language queries to find help on certain subjects. Elsewhere, such capabilities are already used in specific areas like weather systems and ticketing agencies, where vocabulary is limited and the number of answers to questions such as "What's the weather like in Idaho?" or "When's the next flight to Gatwick?", is limited.

The biggest difficulty facing Vanderwende and her team is that language is inherently ambiguous. Humans resolve such ambiguities instinctively and incredibly quickly, based on our knowledge of context and the real world. Many of the words we know are not just

nouns or verbs but complex concepts with many different associations. Explaining those things to a computer is tricky. Vanderwende's team has had to develop new theories of grammar, borrowing bits and pieces from other people and applying them to the text from two entire dictionaries. The system they've built, called MindNet, takes typed-in sentences and creates a "syntactic sketch" of their structure. These complex-looking sketches split sentences into their grammatical components and into the likely relationship of the words they contain and their relative importance. In the process of building the sketch, the MindNet software examines word definitions and looks for a context it can apply to its sketch to help resolve ambiguities.

An oft-quoted example is the phrase "I saw the mountains flying over Seattle". MindNet can work out that it is the "I" which was flying over Seattle, rather than the mountains. This seems obvious to us, but is hard to explain to a machine which understands logic but not language. It works this out by determining that, according to its dictionaries, things which fly include animals of various kinds, planes, and people (who sometimes refer to themselves as "I") but not geographical features like mountains. This sounds far more straightforward than it actually is; in reality, the system uses an advanced combination of raw word information, grammar, syntax, semantics and discourse to work out the real meaning of a sentence.

Vanderwende says that MindNet's initial visual representations of sentence structure made a massive impact. "Being able to visualise the net was a huge step forward. Once we had the links, the lights started going on." The next step, she says, is to add common-sense reasoning to the system. Other people are already trying this: Cycorp, based in Texas, has a system called Cyc that includes not just dictionary definitions but hundreds of thousands of common-sense assertions such as: "When you run, you move faster than when you walk". In such ways, researchers think we'll find ways to build computers which can learn and converse intelligently with humans. It's brute force, rather than an understanding of lofty consciousness issues, that will make this stuff work. "We're sticking very close to the computer, using our spare time to dream," says Vanderwende.





Nathan Myhrvold, chief technology officer, expects to have a few ideas stolen

says that this is not a problem. "The whole point of research is to take some risks and that means you're going to have some failures. People who are worried about losing a few ideas are people who don't have many ideas! So we may lose a few, but we'll get quite a few, too."

Right now, those ideas are generated and absorbed by about 240 researchers, which is "...more than the computer science department at Bell Labs," according to Rashid. Most of these have come from highly-respected academic research backgrounds, especially from

universities such as Carnegie-Mellon, Stanford and Berkeley. He plans to expand to 600 or so people by the year 2000, not including the 40 or so who will be hired to work at the new Cambridge lab in the UK, announced loudly in the autumn by Bill Gates. The various research teams are currently working on subjects as diverse as natural-language processing, decision theory and adaptive systems, speech synthesis, computer vision, advanced 3D interfaces, virtual worlds and cryptography.

These areas are interesting enough in their own right, but few of them will deliver discrete products that can be put in boxes and sold to punters, despite the fact that the technology is ready enough. Microsoft's continuous speech recognition work, for instance, is more than advanced enough to form the basis of a product which could compete with Dragon Systems' Naturally Speaking or IBM's ViaVoice. But Fil Alleva, a member of the speech group, says that that's not the point. "We don't just want to do a me-too product. It's more important that we get

the technology right and can figure out how to get it to work at a system-wide level." And this seems to be the message of MS researchers. Individual achievements are impressive enough, but taken as a whole they add up to something considerably more than the sum of their parts.

Critics of Microsoft's research approach argue that much of it is not original. Instead, in common with the rest of the company's *modus operandi*, it relies on the "embrace and extend" philosophy which is taking existing ideas and technology through acquisitions of people or companies, and advancing them for its own devices. Indeed, some of the research departments and their work have been transplanted wholesale from other companies. The natural languages group, for example, was swallowed up wholesale when IBM "downsized" its research operation in 1992.

Other criticisms, that Microsoft's work is way behind that of other people, are cautiously acknowledged even within the company itself. Steven Shafer, a senior researcher into computer vision, showed me an impressive-enough demonstration of a machine that could detect and react to its operator in some small but useful ways, such as being able to switch itself on when it perceives a human presence and interpret headshakes to mean either yes or no. But he freely conceded: "You could have seen a better demo than that at MIT three years ago. The value of our research is that we're much more visible." Other critics say that the uneasy balance between pure research and harsh commerce is too stressful for pure researchers, who will leave in droves to return to the world of academe.

Nathan Myhrvold is adamant that Microsoft is at the forefront of a pure, original search for which the purpose is not yet clear. "We've just started an ambitious project in theoretical computer science. Now, most industrial research labs don't do a lot of theory — even a lot of universities don't do a lot of theory. To the extent that they do it, theoretical computer science has developed its own traditions. We are working well outside those traditions. So we hired a bunch of the world's best mathematicians to use some of the sophisticated techniques from mathematics to rethink the fundamentals of computer science." He says this might lead to new models of computation, new ways of thinking about and building computers which go beyond current understanding.

That, perhaps, is something which might persuade its detractors that Microsoft is a serious research establishment. Whether it will ever garner the respect that the industry's old stagers have, is another matter. Antipathy towards the Redmond giant is at an all-time high and it seems unlikely that the world's "serious" research establishments will give it any more credit than is absolutely necessary. Whether that matters or not is, again, another question altogether. Microsoft's researchers want to be taken seriously, but they also want to deliver technology that ends up in serious products, whether those are new word processors or truly intelligent computers. As ever, it's the users who will have the last word on just how good that technology is. ■

## Learning parrot fashion

Microsoft's research into advanced user interfaces involves a complex blend of technologies which make use of speech recognition, linguistics, decision theory, animation and 3D graphics that work together to create intelligent entities. The most visible example of the group's work is Peedy the Parrot, a computer-generated representation of a bird that can respond to commands and perform basic tasks. On a good day, you can ask Peedy to wake up and play you some tunes on his CD jukebox; ask him for something by Madonna or just some jazz and he will, theoretically, oblige. After several years of development, Peedy is still an unreliable companion. On the day I visited, he was especially recalcitrant and I was forced to watch a video of a past performance. On a good day, under quiet conditions and the patient attention of one of his creators, Gene Ball, he can only get it right about half of the time.

Nonetheless, Peedy represents the company's best-yet effort to create a natural way of interacting with a computer that involves no keyboard or mouse intervention. Peedy takes the command-and-control idea found in current speech recognition programs a stage further, providing an entity to which commands can be addressed, rather than a standard computer screen blindly responding to the sound of your voice. Currently, he accepts only voice input; the work of the computer vision group



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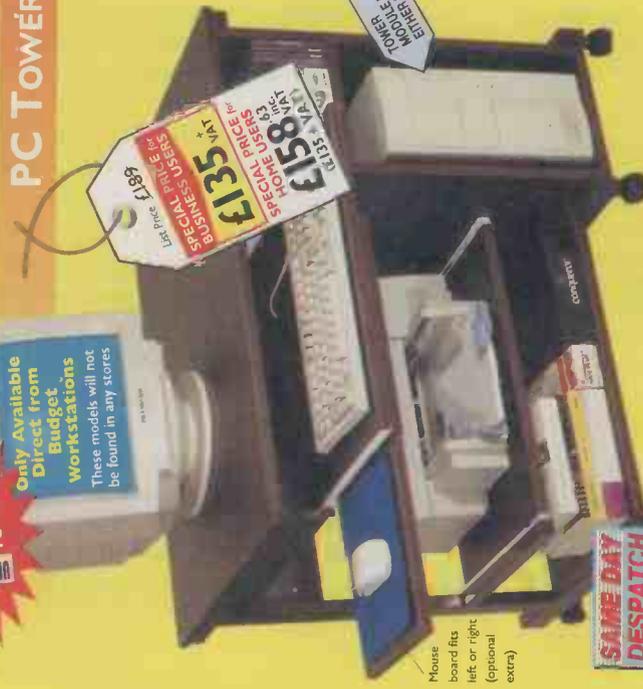
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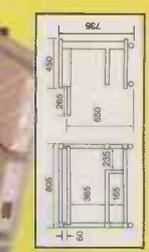
Model	List Price (inc. VAT)	Home Users (inc. VAT)	Business Users (inc. VAT)
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PC MidMaster 750	£149	£128.07	£109
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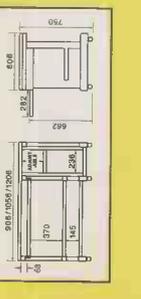
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PC TOWERCENTRE 1200



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PC TowerCentre 1200	£229	£200.33	£179
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Mouse Board	£11	£16.45	£14
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Overshelf 1050	£58	£42.30	£36
Overshelf 1200	£54	£45.83	£39

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- Choice of four finishes

**PC Holdall 600**

Super compact 24" wide to fit in the tightest corner, yet with all the features of the PC Holdall 900.

Mouse board recommended.

Choice of four finishes shown.

Dark Mahogany (Optional)

**Options**

- MOUSE BOARD** ▶ This robust slide-away mouse board can be fitted to either side of the workstation.
- FOLDING EXTENSION** ▶ Gain extra work space with a folding extension, 306mm wide, which fits either side of main workstation and can be raised or lowered in seconds.
- OVER SHELF** ▶ Make use of the dead space above your computer to ensure manuals etc. are readily to hand when you need them. Write to us for all workstation details. 755mm high x 256mm deep with 520mm clear below shelf.

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Amazing Value. Ensure you are comfortable at your workstation

Choose from two styles in five colours. All with spring action fixed/ floating back with lumbar support and gas height adjustment, plus armrests and extra large tilting seat on the Ace.

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- Spacious stationery shelf.
- Range of options available. (see opposite)
- Choice of four finishes.

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Here is the answer if you haven't quite the space for the PC Holdall 900. Useful worktop and space for mouse on keyboard shelf within compact 30" width.

Choice of four finishes shown.

Soft Grey

**PC Holdall 600**

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Mouse board recommended.

Choice of four finishes shown.

Dark Mahogany (Optional)

**Options**

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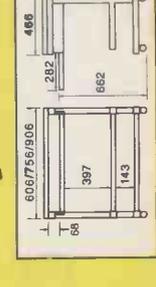
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- Sliding printer shelf for easy access to printer.
- Spacious stationery shelf.
- Range of options available. (see opposite)
- Choice of four finishes.

Model	Code	List Price (inc VAT)	Home Users (inc VAT)	Business Users (inc VAT)
PC Holdall 600	H60	£119	£99.88	£85
PC Holdall 750	H75	£139	£123.38	£105
PC Holdall 900	H90	£159	£135.13	£115
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Mouse Board	M8	£12	£16.45	£14
Overshelf 600	S60	£34	£31.72	£27
Overshelf 750	S75	£41	£38.25	£30
Overshelf 900	S90	£46	£46	£33



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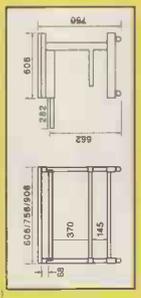
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PC Multimedia Centre 900	X90	£175	£151.58	£129
PC Multimedia Centre 750	X75	£149	£128.08	£109
PC Multimedia Centre 600	X60	£129	£104.58	£89
Extension	XX	£24	£22.33	£19
Mouse Board	M8	£12	£16.45	£14
Overshelf 900	S90	£34	£31.77	£27
Overshelf 750	S75	£41	£38.25	£30
Overshelf 600	S60	£46	£46	£33

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# Thinking aloud

Having founded various high-tech companies, Graham Brown-Martin is, above all, a thinker with his own views on the net and future technologies. Michael Hewitt manages to snare a couple of hours of a busy man's time.

**I**f Graham Brown-Martin's career plan had gone as intended, he might now be orbiting us in the Mir space station. Either that, or standing in the middle of a field with his arm up a cow's backside. That he isn't is due partly to a man down the pub and partly to a maggot. Instead, Graham Brown-Martin — to whom I shall refer hereafter simply as GBM, because (a) his full name is a bit too cumbersome and screws up my spellchecker; and (b) it sounds like a species of nesting bird — has become a millionaire mover and shaker in the multimedia and "ultramedia" business, with fingers in various film, TV, music and art pies.

When the *Daily Telegraph* interviewed him recently, it set great store by the fact that he was born in Bletchley Park (in 1964): it was as if coming from the birthplace of modern computing had somehow given him a leg-up in the business, in much the same way that coming from Bethlehem does if you're in the religion industry. GBM, however, is dismissive of this. "Originally, I had no interest in computers. I wanted to be an astronaut, a vet or a pop star. I had problems with the educational system and, although I was a bookish child, I was diagnosed as hyperactive, which made it difficult to teach me. I got into trouble quite a lot, and was regularly caned."

Regular chastisement failed to quell his high spirits. Nor did it stifle his early, somewhat unorthodox entrepreneurial endeavours. When he was 15, GBM was expelled from school for selling "herbal products", at which point he fell in with "the wrong crowd" and moved into a squat. Fortuitously, so did a rogue Tandy TRS-80, with which he began to toy.

"At that time I was going through a reclusive phase, where I was doing nothing but fiddling with the computer and listening to music — I was keen on playing music, but didn't have the money to buy a musical instrument. Then, one day, I met this guy in a pub who was into video games. We got chatting, I told him that I knew how to use a TRS-80. He said that he'd pay me £1,000 to write a TRS-80 version of *Space Invaders*. I didn't really know anything at all about programming but I went off and figured it all out. Then I wrote the *Space Invaders* game, gave this guy the tape and the source code, and he gave me £1,000 in cash. That's how I got into computers."

With the money earned here, plus some more pocketed for writing a couple of other video games, GBM bought a set of drums. These kept him occupied for a while. In time, however, he realised that banging them still wasn't enough. There remained a void in his life which, he realised, would have to be filled by "a proper job". So, persuaded by his parents, he left the squat for the post of lab assistant at the Open University in Milton Keynes.

"They wanted someone to work in their biology department. Now, it so happened that I'd already read up extensively on biology in my spare time and had kept pythons and lizards as pets. So, although I was by no means an expert, I had a fairly good background in the subject. At my interview, it turned out that one of the women on the interview panel was a herpetologist — a reptile specialist. I think that is what swung it for me."

Although billed as a research assistant, GBM's initial status was that of a grunt (his own word), responsible for clearing out Petri dishes, fetching cups of coffee and saying "Yes sir/No sir" as required. But in time, more responsibilities came his way and he became the lab's resident David Bailey. The Open University wanted to study the effects of radiation on fruit-fly maggots. GBM's job was to photograph them in their various stages of irradiated development. There was one problem, though: the fruit-fly's outer skin was difficult to photograph as it could not easily be detached from the innards. Some way had to be found to cleanly disembowel the thing so that it could be mounted on a slide.

"One day I came across some steak tenderiser — it works by breaking down meat proteins. I had the idea of injecting this into the fruit-fly so it would digest the insect from the inside, leaving its skin intact." It worked, and the Open University team were sufficiently impressed to persuade him to write up exactly how he'd done it for posterity. In time, the piece ended up at *Nature* magazine where it was published to great acclaim. From then on, scientists all over the world began addressing GBM as Dr Graham Brown-Martin. Overwhelmed by this adulation, he decided the time was ripe to move on.

"I didn't see myself as a biologist. I still had the idea of joining the music industry or being an astronaut. But it just so happened that during my time in the labs I'd been



in contact with another group in the university called the Academic Computing Service (ACS). At this stage, I was still writing software in my spare time: someone told me that if I joined ACS I could do this sort of thing and get twice what the lab was paying me. So off I hopped."

ACS was about writing software for academics and helping them to use the technology. For a while, GBM was in his element. "It was at this time that the micros-in-schools thing, a DTI-funded scheme, was starting to happen. It was essentially three British computer firms, one of which was Research Machines. I was writing software for them and got to know the people at Research Machines, who offered me a job."

Which he took, along with a healthy allocation of (then) modestly priced shares in the company. Over the next five years, GBM worked in a number of different areas,

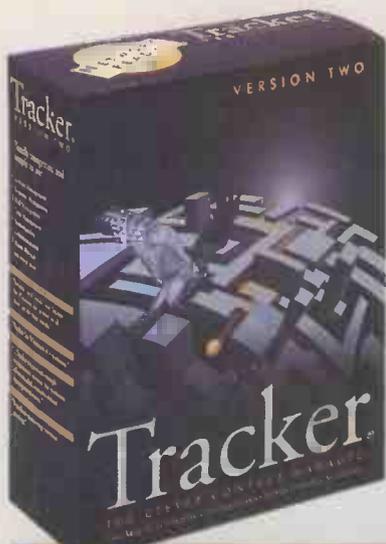
including the much-hyped Domesday Project. This was a schools' project, to do with putting pictures and text onto video discs, a sort of "This is what it's like to live in the 20th century" sort of thing. It was GBM's first brush with what we now called multimedia, and he was hooked.

"I reckoned this was the future. I wanted Research Machines to do more work in this area but they weren't interested. It was at this point that I decided to call it a day. Besides, I didn't feel I could fit in there any more as the company had grown too big and become a little impersonal. And I'd just got married to a 'power puppy' with shoulder pads who worked in the company's marketing department. It was time to move on."

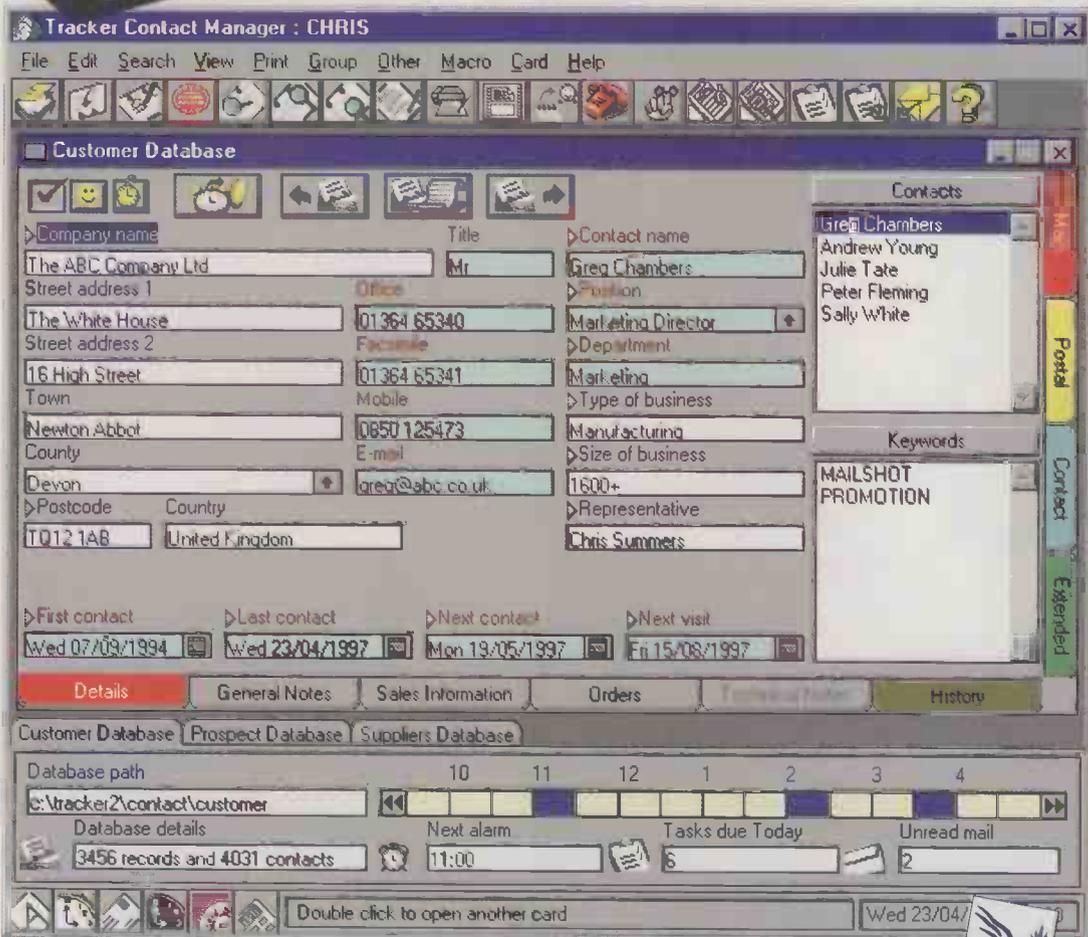
When GBM sold his Research Machines' share allocation, he discovered that he was now a millionaire at the ripe old age of 22. Rather than not letting it change

**Graham Brown-Martin enjoys tinkering with all things high-tech without having to draw up a business plan. He's a "thinker", he says, who doesn't think too highly of the internet**

p157 >



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**“Yes, it [the internet] sells magazines and newspapers...but the idea that if you don't have a web site then you're going to go bust, is just so much bullshit. Very few people, if any, are making any money as a consequence of having a presence on the web”**

his life, he and his wife used the money to set up a company called Next Technology, the first in Europe to focus exclusively on interactive media. In due course, however, things began to turn sour: thanks largely to problems with suppliers, Next Technology eventually went under. As, concurrently, did GBM's marriage.

In 1991 he set up a company called ESP. “At the time, the music industry was being run by bean counters and largely sustained by releasing old tracks on a new format — CD. We had the idea of adding data and video to the CD to supply an interactive experience.”

ESP produced a plethora of interactive music titles, featuring bands like U2, Nine Inch Nails, and The Shamen. On the back of this, GBM set up a record label (EXP) in partnership with Virgin, to promote something called “suburban breakbeat”. But GBM and Virgin were actually dancing to two different tunes: he wanted to concentrate more on the interactive side, while Virgin was more interested in commercial, mainstream material. So GBM sold ESP to Virgin and moved on.

The next company, his current one, is called Hypersonique. Based at London's Elephant & Castle, it doesn't look much at first sight. There's just one room, stuffed full of all the highest-tech computers, videos and other such peripherals imaginable. And there are just two employees: himself and his partner, Buggy G Riphead. Yet this is effectively a multinational organisation which produces pop videos, CDs, interactive CD-ROMs, books, artwork... you name it. And quite recently, it beat off a challenge from George Lucas' Industrial Light & Magic to design a computer for the forthcoming film, *Lost in Space*. So with all these fingers in all these media pies, how come Hypersonique doesn't have a net presence?

GBM is highly dismissive of things internetish. “I believe it's a bit of a hoax. When you've been in the industry a while — any industry, not just computers — you see these things come up, surrounded by hype. It was the case with CD-ROM a few years ago when everyone was suddenly investing in it. So it is today with the internet. Yes, it sells magazines and newspapers, and there are lots of young people dressed in combat trousers putting homepages on it. But the idea that if you don't have a web site then you're going to go bust, is just so much bullshit. Very few people are making money as a consequence of having a presence on the web.

“Another problem is that it's so slow. Theoretically, you should have access to all the world's knowledge. But there's so much dross travelling up and down the internet, what with girly .gifs and Uncle Tom Cobbley and all having enormous homepages, that it slows the whole system. Hypersonique doesn't have a web site, and we won't be adding to the glut. But we will get involved

when the technology can deliver all the things we expect, stuff like full-motion video: none of this MPEG2 12fps garbage. But how long this will take, I don't know.”

Back, then, to the things that Hypersonique is doing at the moment. Among them, the work for *Lost in Space* starring Gary Oldman, William Hurt and Hypersonique's specially designed computer. Or rather, its specially designed visual conception of a computer going through its calculations.

“The producers wanted a computer that was more funky than the flashing lights of HAL in 2001 — *A Space Odyssey*. So we had this idea for a cyber-organic creature that lives in what looks like an aquarium on the deck of the spaceship. It's a sort of visual representation of the computer's thought processes as it continually monitors everything going on in the ship.”

The same sort of computer technology that went into the *Lost in Space* film project is also used by Hypersonique in other areas. For instance, while I was there, they were digitally processing a video tape of some singers in action. The original recording (a girl wearing angel wings and emoting into a microphone) looked pretty straightforward. But once the computer had finished with it, it took on a distinctly surreal, unearthly quality which apparently is in keeping with the group's style of music. This, I was told, was destined to be an interactive title, *Angels Landing*, by the group Salt Tank.

Then there is a new concept called ultramedia. “It is another way of looking at information using different types of sensorial data. It could be graphics or it could be sound. Whatever. Think of the sum  $2 \times 2 = 4$ . In itself, it means nothing; you're not experiencing anything from that calculation. But with ultramedia, you can assign a visual shape to the various numbers. So  $2 \times 2 = 4$  will produce a different shape to  $3 \times 3 = 9$ . Or, on a higher level, you can show the progression of a number as it goes through a formula. What happens if you look up, say, the cosine of a number in a table? Nothing, you just get an answer and that's that. But ultramedia will help show you *why* you're getting that answer. I'm not saying there's any practical application for this. It's simply another way of viewing and interpreting information.”

For the future, GBM has no particular direction. He'll go where the technology leads. Whether he ends up creating interactive CDs, videos, or books, it's all the same to him. The bottom line is communication. “I'm enjoying being able to play with all these hi-tech toys and create some interesting work without having to produce a business plan. If they ever put a blue plaque on my wall to describe my life and what I did, I'd just like it to read: ‘Graham Brown-Martin: Thinker’.”



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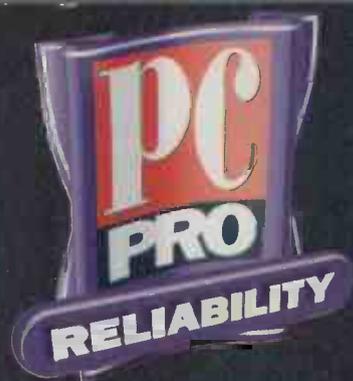
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# Cosmic cases

Are these Pentium II 300MHz machines faster than the speed of light? Well, not quite, but Nik Rawlinson caught up with nine and put them to the test for those with deep pockets.

**P**rocessor speeds continue to climb and this month *PCW* reaches for the outer limits with nine 300MHz Pentium II machines. We opted for 64Mb RAM, full multimedia, a generous hard drive of at least 4Gb and an AGP graphics card. We chose 17in monitors to strike a balance between ease of use and preserving some space on our desks — downsizing often attracts a small reduction in price). Nevertheless, we found that many manufacturers supplied a 19in model as standard.

This group test differs to others we've done: all the machines were to be linked to the *PCW* network to test their compatibility and to see whether the suppliers had configured them or left it for us to do the work. Although our specification was designed mainly to attract workstation PCs, many of the machines submitted could, with very little adaptation, have performed more than competently as a server, making them sensible first purchases for businesses planning a network in the long term.

While bundled software, modems, high-spec graphics and sound cards were a bonus, the environment in which the PCs would be used meant that these bundles were not a main consideration in our final choice of the best machines.

At this level of PC, there is the potential to improve systems: many manufacturers offered us the opportunity to mount two Pentium II processors on the motherboard, effectively doubling the processing muscle. A wide range of hard-drive sizes, memory configurations and free slots and bays made each seem

superior to the rest when considered in isolation, but we were more interested in a rounded picture of how these impressive components would work together, than a demonstration of what high-end processors could do to a mid-range PC.

Finally, in selecting a stable operating system like Windows NT 4.0 with its superior networking facilities, our systems were complete and we could get down to the serious business of testing.

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## Ratings

- ★★★★★ Buy while stocks last
- ★★★★ Great buy
- ★★★ Good buy
- ★★ Shop around
- ★ Not recommended

p163 >

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Sony MPF520 3.5" 1.44MB floppy diskette drive  
ASUS AGP 3DexPlorer 3000 Riva 128 with 4MB SGRAM  
Armari S2 Workstation ATX Tower case with 235Watt ATX PSU 3 x 5.25" Bays, 3 x 3.5" Bays.  
Iiyama MF-8515G Vision Master 350 15" FST Monitor MPR-II, NI 1024 x 768@ 80Hz, Digital Set-up, on-screen display, 0.28 Dot-pitch, Plug 'n' Play.  
Keytronics Win95 tactile 105-key keyboard (PS/2 connection)  
Microsoft Intellipoint Ergo Mouse-II (PS/2 interface)  
Sound Blaster AWE64 Value  
Yamaha YST-MS25 Speakers 2x5W Satellites + 15W Sub Woofer  
Microsoft Windows 95 (OSR2) on CD-Rom with manuals (fully installed) includes Config Safe 95 system configuration manager  
4MB 3DFX Voodoo Accelerator  
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Sony MPF520 3.5" 1.44MB floppy diskette drive  
ASUS AGP 3DexPlorer 3000 Riva 128 with 4MB SGRAM  
Armari S2 Workstation ATX Tower case with 235Watt ATX PSU 3 x 5.25" Bays, 3 x 3.5" Bays.  
Iiyama MF-8515G Vision Master 350 15" FST Monitor MPR-II, NI 1024 x 768@ 80Hz, Digital Set-up, on-screen display, 0.28 Dot-pitch, Plug 'n' Play.  
Keytronics Win95 tactile 105-key keyboard (PS/2 connection)  
Microsoft Intellipoint Ergo Mouse-II (PS/2 interface)  
Lotus SmartSuite 97 (oem)  
Microsoft Windows 95 (OSR2) on CD-Rom with manuals (fully installed) includes Config Safe 95 system configuration manager



### NLX-3DNT

- Pentium II 233 **£1835**exc VAT  
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- Pentium II 300 **£2139**exc VAT  
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Hitachi CDR-8330 24X MAX E-IDE CD-Rom  
Sony MPF520 3.5" 1.44MB floppy diskette drive  
Leadtek Winfast3D L2300 AGP Open GL Accelerator 3D Labs Permedia 2 powered Graphics Engine. 1 million polygons/sec  
Armari S2 Workstation ATX Tower case with 235Watt ATX PSU 3 x 5.25" Bays, 3 x 3.5" Bays.  
Iiyama MT-9017E Vision Master Pro 17 Monitor MPR-II, NI 1600 x 1200@ 72Hz, Digital Set-up, on-screen display, 0.25 Dot-pitch, Plug 'n' Play.  
Keytronics Win95 tactile 105-key keyboard (PS/2 connection)  
Microsoft Intellipoint Ergo Mouse-II (PS/2 interface)  
Sound Blaster AWE64 Value  
Yamaha YST-M20DSP Speakers 2x10W speakers  
Microsoft Windows 95 (OSR2) on CD-Rom with manuals (fully installed) includes Config Safe 95 system configuration manager  
Microsoft Windows NT 4.0 (oem) fully installed  
Lotus SmartSuite 97 (oem)



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Performance of Armari NLX systems with LX chipset and 10ns SDRAM (STREAM memory benchmark COPY32)  
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## Atlantic Proteus

**O**pening this machine revealed that the internal speaker and cooling fan were detached from the case and sliding freely around inside, thereby dramatically reducing the effectiveness of the fan and presenting the added risk of the magnetic speaker coming into contact with other internal components. The keyboard, supplied with wrist-rest, failed to inspire sessions of extended use.

Microsoft Office, Works and Money were bundled along with CorelDraw 4, Simply Speaking, World Book and a selection of shareware products.

Although most of this was pre-installed, the Microsoft products were not.

Getting your hands on the processor would mean removing the power supply unit and we were disappointed to see that the 64Mb memory had been supplied in the form of two 32Mb modules, leaving only one slot free for upgrades. With only two spare PCI slots and no free ISA slots, potential for future expansion was limited. Sound was supplied by an AWE 64 Gold — or would have been had the impressive

speakers been compatible: they had jack connectors instead of phono plugs. But these came in handy for identifying the strange buzzy feeling you got when you touched the case: touching the jack to the metal back plate caused the speakers to crackle with electricity! The accompanying joystick was a nice touch but unlikely to be of use on a machine running Windows NT which is not particularly suited to playing games.

Windows NT asked us to re-seat the installed network card or move it to a different slot before it would proceed with the network installation. When this didn't work, we were forced to install a card of our own before we could get it to talk to the PCW network.

**Monitor** The Taxan monitor was clear, sharp and steady, providing a comfortable, flicker-free image, and was driven by an ATI XPERT@work graphics card with 4Mb RAM. All menu commands were controlled by an intuitive set of buttons on the front panel, and it was capable of a maximum non-interlaced 1,024 x 768 refresh rate of 107MHz.



### PCW Details

Price £2,231.33 (£1,899 ex VAT)  
 Contact Atlantic 0990 134725  
[www.atlanticsystems.com/sys/](http://www.atlanticsystems.com/sys/)  
 Good Points Excellent monitor.  
 Bad Points Sloppy construction.  
 Conclusion Poorly thought out.  
 Disappointing.



## Carrera Technology Power Pro II-300

**T**he well laid-out interior of this large tower machine was fairly full with only two free expansion slots, one PCI and one shared. The dual-processor motherboard had only one processor installed to meet our specification but it gave us the opportunity to upgrade in the future. The back plate of the PC was not labelled, causing some confusion as to which PS/2 port was for the mouse and which was for the keyboard, an unresponsive Mitsumi model.

Although we had requested an AGP graphics card, Carrera had supplied a PCI Diamond Fire GL1000. The company assured us that a PCI card would not slow down system performance, but it nonetheless took up valuable expansion space while leaving the AGP

slot vacant. Sound was provided by a SoundBlaster Pro32 and three Altec Lansing speakers which produced rich, clear output at a wide range of volumes.

Connecting to the network simply meant installing the relevant protocol from the system disks and providing an IP address. The system was bundled with a copy of Lotus SmartSuite 97 and, with four memory slots, only one of which had been used, offered plenty of scope for upgrading in the future. Nevertheless, with one of the largest hard drives in this group test and its already high spec, this is a system you are unlikely to need to alter or upgrade for quite some time.

**Monitor** The Iiyama Vision Master 17, although not offering as good an image as the Pro 17, nevertheless produced a clear, steady picture. A viewable area of 15.7in and a simple three-button control made this monitor pleasant and easy to use. A non-interlaced 1,024 x 768 refresh rate of 85Hz ensured it was flicker-free and easy on the eyes.



### PCW Details

Price £2,579.13 (£2,195 ex VAT)  
 Contact Carrera 0171 830 0486  
[www.carrera.co.uk](http://www.carrera.co.uk)  
 Good Points Second processor slot.  
 Free memory slots.  
 Bad Points Wasted AGP slot. Unlabelled ports.  
 Conclusion Versatile. Expandable.  
 Worth consideration.



## Dan Dantum II/SE300

**T**he ports on the rear panel of this large tower case were not labelled and although we had PS/2 connections, the manual was for a serial mouse and DIN keyboard connector; it was a matter of guesswork and we got it wrong.

The keyboard was dull and soft and, even though Microsoft Works for Windows 95 was pre-installed on the hard drive, the installation disks and manuals were not included; therefore, hard-drive problems could have meant losing our applications.

The case interior was tidy, offering easy access to the processor and memory sockets, and connecting to the network was simple. This was merely a matter of installing the TCP/IP drivers from the Windows NT CD and supplying our IP address.

A 28-day trial version of Pipex Dial 4 accompanied the internal 56Kbps Pace modem, as did a copy of SuperVoice and a microphone. A selection of MMX software, including Space Station Simulator, Pod and The Ultimate Human Body was included, but as these are designed for use under Windows 95 we could only get Space Station Simulator to work.

An internal Jaz drive and a 1Mb disk were included, offering the opportunity for easy backups. Sound came from an AWE 64 sound card and a set of YST-M15 powered multimedia speakers from Yamaha with matching woofer.

Apart from the fact that the 64Mb RAM had been supplied on a single module, leaving two further slots free for future expansion, options for upgrading are limited. The absence of any free ISA slots and only two vacant PCI slots left us feeling slightly restricted.

With only a 12-month return-to-base warranty, this system was not as well supported as many in this group we tested.



**Monitor** An excellent Iiyama Vision Master Pro 17. This provided an exceptional display that, driven by a Matrox Millennium II graphics card with 8Mb RAM on-board, was clear and steady throughout our tests. It gave the best display of the bunch.

### PCW Details

Price £2,909.30 (£2,476 ex VAT)  
Contact Dan 0181 830 1100  
[www.dan.co.uk](http://www.dan.co.uk)

Good Points Monitor. Sound card and speakers. Good benchmark-test results.  
Bad Points Lack of software install disks. No socket labels.

Conclusion Worth consideration if you can afford the high price tag.

★★★

## Dell Dimension XPS-D300

**T**his was the only PC in this group test to arrive in a desktop case. The interior was roomy, and all cabling, although not particularly tidy, was confined to one side of the case. However, the audio cable connecting the CD drive and sound card was stretched across the two free PCI slots.

Having only one serial port means that options for external connectivity are limited until USB devices become more commonplace and can make use of the Dell's two USB ports. But an internal Iomega Zip drive had been included along with a generous pack of three disks. To get us started, MS Office Small Business Edition had also been bundled and there was a Microsoft Intellimouse.

This was one of the few machines in the group to have a nice keyboard that was comfortable to use throughout our tests. Having specified that these machines were to be used for business applications we had not been expecting cinematic sound, but the Altec Lansing speakers and separate subwoofer



provided sound to rival any games machine, through a SoundBlaster AWE 64 Value Card.

We were disappointed to see that only one of the three memory slots remained free, with the 64Mb RAM being split across two 32Mb SDRAM modules. Expansion options were limited by the desktop, with only one free 5.25in external bay and one free 3.5in internal bay.

The case had a plastic cover which, although pliable, was difficult to remove and it took us several minutes to access the interior. Connecting to the PCW network caused no problems; we simply installed the relevant drivers and supplied our IP address using the 3Com 3C900 card.

**Monitor** The Dell branded monitor was clear, sharp and steady. Driven by an STB Velocity 128 graphics card with 4Mb onboard RAM, its 110Hz maximum refresh rate at a resolution of 1,024 x 768 offered an excellent image that was comfortable to view and use for extended periods.

### PCW Details

Price £2,318.28 (£1,973 ex VAT)  
Contact Dell 01344 720000  
[www.dell.com](http://www.dell.com)

Good Points Monitor. Sound. Zip drive.  
Bad Points Case restricts expansion.

Conclusion A feature-packed performer.

★★★★

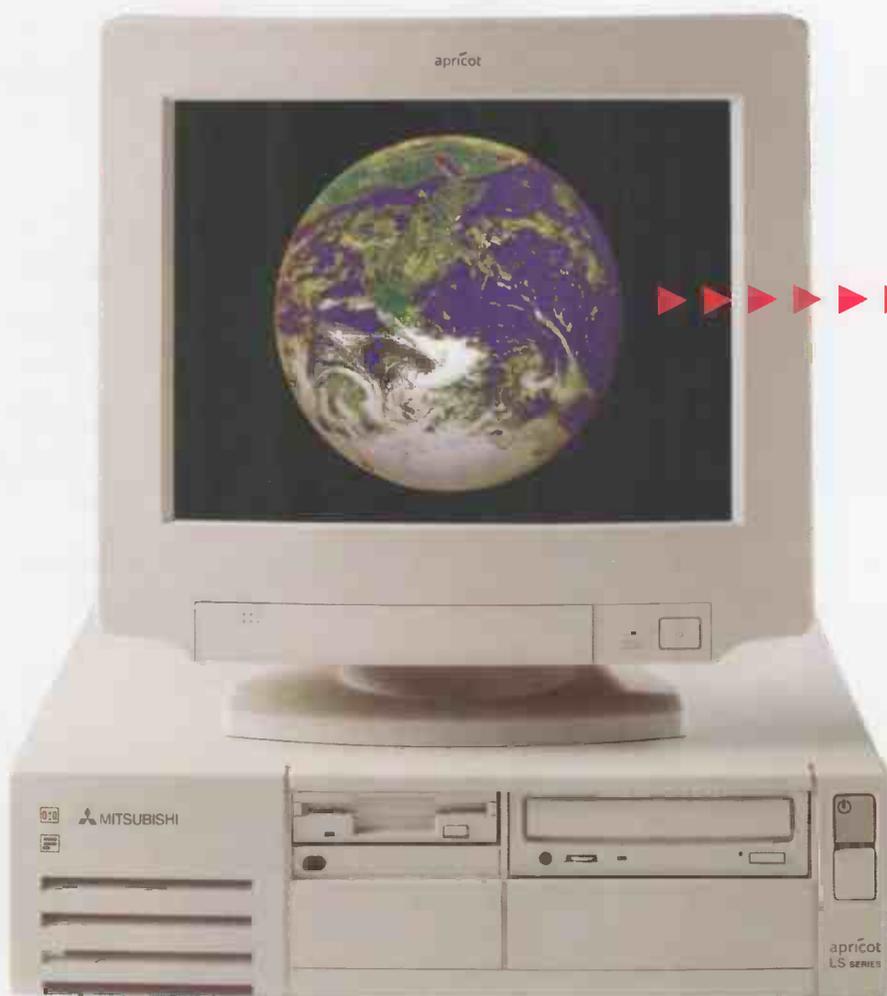
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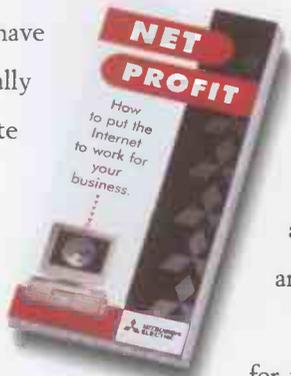
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Personal Computer World  
**Editor's Choice**

### Elonex MTX-6300

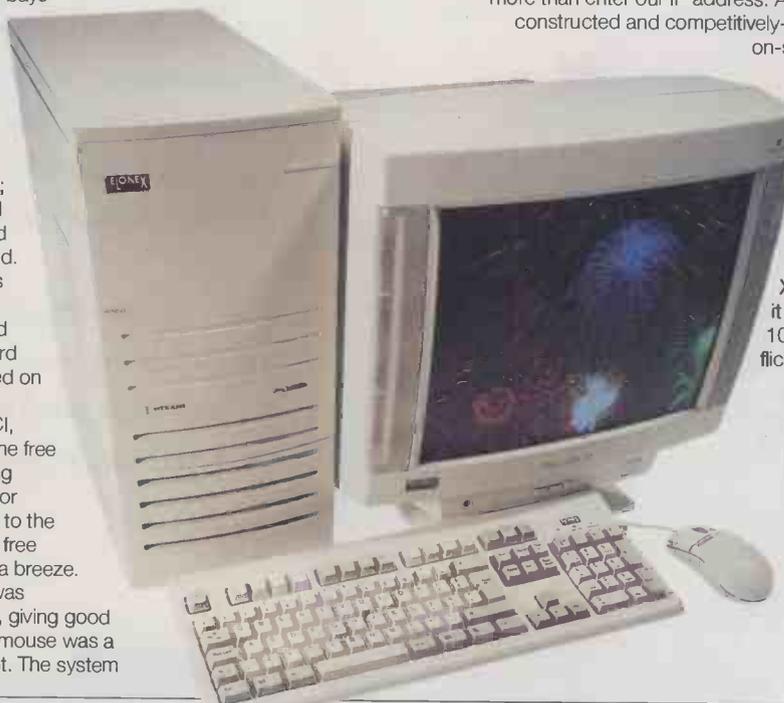
**T**he large, squat case of this PC had a hinged front door hiding eight drive bays: five hot-swappable hard-drive bays, two standard 5.25in bays and a 3.5in bay for a half-height laptop floppy. It was also attractive enough to be displayed proudly on top of the desk. The option of mounting up to five drives in the hot-swappable bays meant that the system could be set up as a RAID array for use as a server. The sides of the case were hinged to allow easy access inside; the screws needed only to be loosened rather than removed.

The interior was the tidiest of any in this test. The sound chips were on-board rather than mounted on an expansion card, leaving two free PCI, one free ISA and one free shared slot, allowing plenty of potential for expansion. Access to the processor and two free memory slots was a breeze.

The keyboard was comfortable to use, giving good feedback, and the mouse was a Microsoft Intellipoint. The system

came bundled with Office 97 Small Business Edition.

Connecting to our network was no problem and no other software needed to be installed. Upon arrival, Windows NT had already been configured with the relevant protocols, so we had to do nothing more than enter our IP address. All in all, this was an impressively-constructed and competitively-priced PC with a one-year on-site warranty.



**Monitor** An Elonex-branded Iiyama Vision Master 17. Its built-in multimedia speakers reduced desk clutter, which we thought to be a particularly sensible idea for a machine intended to be used in a business environment. Driven by an ATI XPERT@work card with 8Mb RAM, it had a maximum refresh rate of 105Hz to deliver a high-resolution, flicker-free image.

#### PCW Details

Price £2,345 (£1,995 ex VAT)  
Contact Elonex 0500 524444  
[www.elonex.co.uk](http://www.elonex.co.uk)  
Good Points Loads of room for expansion. Easy case access. Keyboard.  
Bad Points None.  
Conclusion Well built and well thought out. A very good buy.  
★★★★

### Evesham Vale Platinum PI-300

**T**he compact case made this PC ideal for desktop locations. On arrival, due to a courier's exuberance, the graphics card was slightly mis-seated, preventing the system from booting up until it had been removed and screwed back into place. In the meantime, our attempts to switch on the PC had also reset the BIOS to its default settings, and so the 300MHz processor was instead crawling along at 233MHz. This was easily fixed and the machine excelled in our benchmark tests, benefiting from a speedy hard drive.

An unfortunate internal layout meant that to access the processor would require the removal of the power supply unit. But the overall case design was good, with two free external 5.25in bays plus one internal and one external 3.5in bay. Attractive XY-FI-2 active multimedia speakers capable of a maximum of 64W complemented the AWE 64 Value sound card. The memory was supplied on a single 64Mb SDRAM module, leaving us with two free slots to

increase this in the future; while one free PCI, one free ISA and one free shared slot also offered the opportunity to add further expansion cards at a later date.

Connecting to our network caused no problems using the 3Com Fast EtherLink XL Adapter. Apart from the operating system there was no bundled software, but the power switch had a nice touch: to turn the PC off you must press it for several seconds, during which time an alarm will sound to preclude the accidental loss of work. The two-year on-site warranty with an option to add a further year ensures that your purchase would be well supported.



**Monitor** The Vale came with a 17in Taxan monitor offering a clear, steady, flicker-free image. The lack of excessive reflection or glare made it pleasant to look at for extended periods. Driven by an ATI 3D Rage Pro with 4Mb RAM on-board, it was capable of a maximum refresh rate of 107Hz.

Personal Computer World  
**Highly Commended**

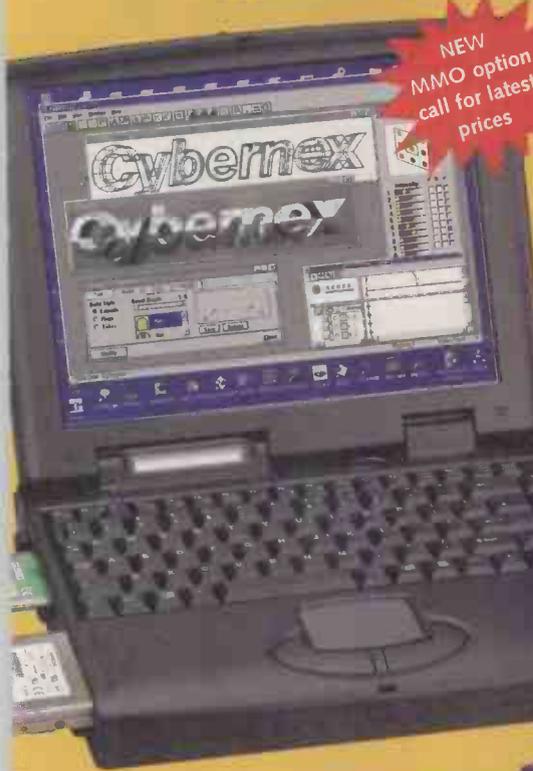
#### PCW Details

Price £2,936.33 (£2,499 ex VAT)  
Contact Evesham 0800 634 5999  
[www.evesham.com](http://www.evesham.com)  
Good Points Fastest in this group. Safety power switch.  
Bad Points Clumsy interior layout.  
Conclusion A machine to suit most business needs.  
★★★★

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## Gateway 2000 G6-300

**T**he Gateway's nicely-designed tower case is best resting on the floor. Although we liked the Intellipoint mouse, the keyboard was disappointing, feeling loose and unresponsive.

The interior of the machine, while roomy and with plenty of space for expansion, was fairly messy and the ribbon cables made access to the memory slots difficult. We were pleased to see a Conner CTT8000S SCSI tape backup device included, along with a free cartridge offering up to a

massive 8Gb of compressed storage. The memory had wisely been supplied on one DIMM, leaving two sockets free to increase our quota at a later date. The metal case, which we found easy enough to remove, proved to be very stubborn when we tried to replace it due to a slightly bent attachment to the rear of the unit.

Windows NT was pre-installed, yet the CD and manuals supplied were for Windows 95 — a mistake that pointed to poor quality control. Bundling Encarta 97, Money 97 and Microsoft Office 97 Small Business Edition, although not necessary for a high-end workstation, added to its value.

Trying to connect to the PCW network caused problems. An incomplete installation meant that certain drivers were either missing or corrupted and, following several attempts, the only solution was to reinstall Windows NT from scratch. However, it was then merely a matter of entering our IP address and logging on. Sound was supplied courtesy of an Ensoniq AudioPCI sound card, and there were two Boston Acoustic speakers consisting of a large subwoofer and two Rubik's-cube-sized units small enough to find space on even the most cluttered desk.

**Monitor** The monitor had the usual Gateway push-and-twist knob. We had requested a 17in but ended up with a 19in display (hence the higher price). Graphics were fed by an Accel Graphics Permedia 2 card with 8Mb SGRAM on-board offering a maximum 1,024 x 768 resolution refresh rate of 85Hz. Although steady and flicker-free, the image was disappointing and "lined".



### PCW Details

Price £3,360.50 (£2,860 ex VAT)  
 Contact Gateway 2000; 0800 552000  
[www.gateway2000.co.uk](http://www.gateway2000.co.uk)  
 Good Points Lots of room for expansion. Monitor controls.  
 Bad Points Wrong manuals. Network problems.  
 Conclusion A good PC let down by some simple flaws.  
 ★★★

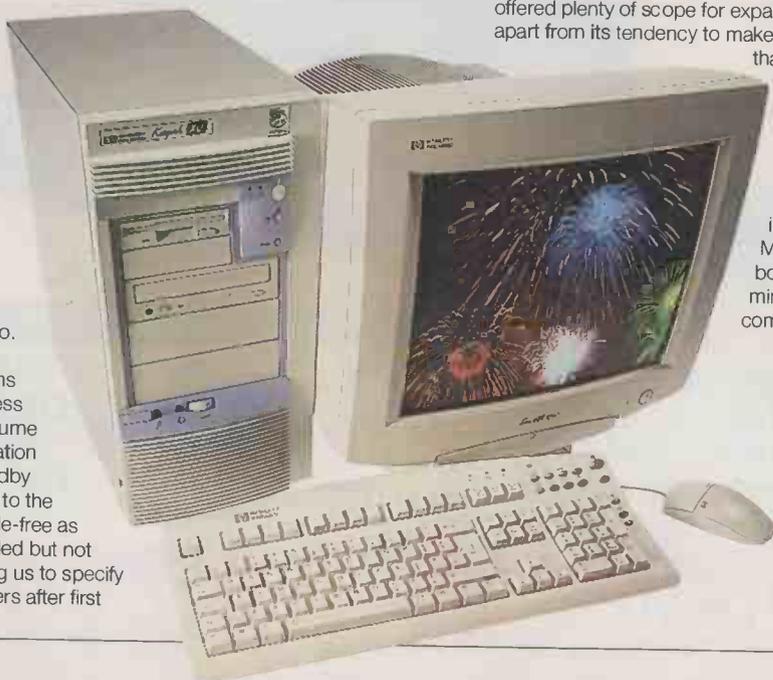
## Hewlett-Packard Kayak XU 6/300

**T**he short, fat case of this PC is two-tone grey with lilac trimmings and easily removed by flipping two catches, without the aid of a screwdriver, to reveal a compact and rather full interior. Accessing the internal components was a struggle. To access either the processor or the memory required the removal of numerous cables, devices and a cooling duct. Removing the case activated the intrusion detector which tells the system to perform a full boot rather than a quick boot on the next startup. Had we not removed this, it would have assumed that the configuration had remained unchanged and fast-booted instead. The keyboard was feature-packed, too. Thirteen user-configurable buttons provide direct access to applications, volume control, PC information and Windows standby mode. Connecting to the network was trouble-free as NT had been installed but not fully set up, allowing us to specify our network adapters after first

switching on. Both Netscape Communicator and Internet Explorer were pre-loaded, with Communicator set as the default browser.

Three free memory slots let us increase allocation to a maximum of 512Mb and a total of four thermostatically controlled fans kept the system cool in extended use. One free PCI, one free ISA and one free shared slot, as well as two free 5.25in and one free 3.5in drive bays, offered plenty of scope for expansion. The only downfall of this PC, apart from its tendency to make us bleed when we fiddled with it, was that, although it had SoundBlaster-compatible 16-bit on-board sound and a headphone/mic combo headset, there were no speakers.

**Monitor** This offered a clear, clean image that was steady and flicker-free in many resolutions. Driven by a Matrox Millennium II AGP card with 4Mb on-board RAM, it offered a picture with a minimum of reflection that was comfortable to use throughout the tests.



### Personal Computer World

Highly Commended

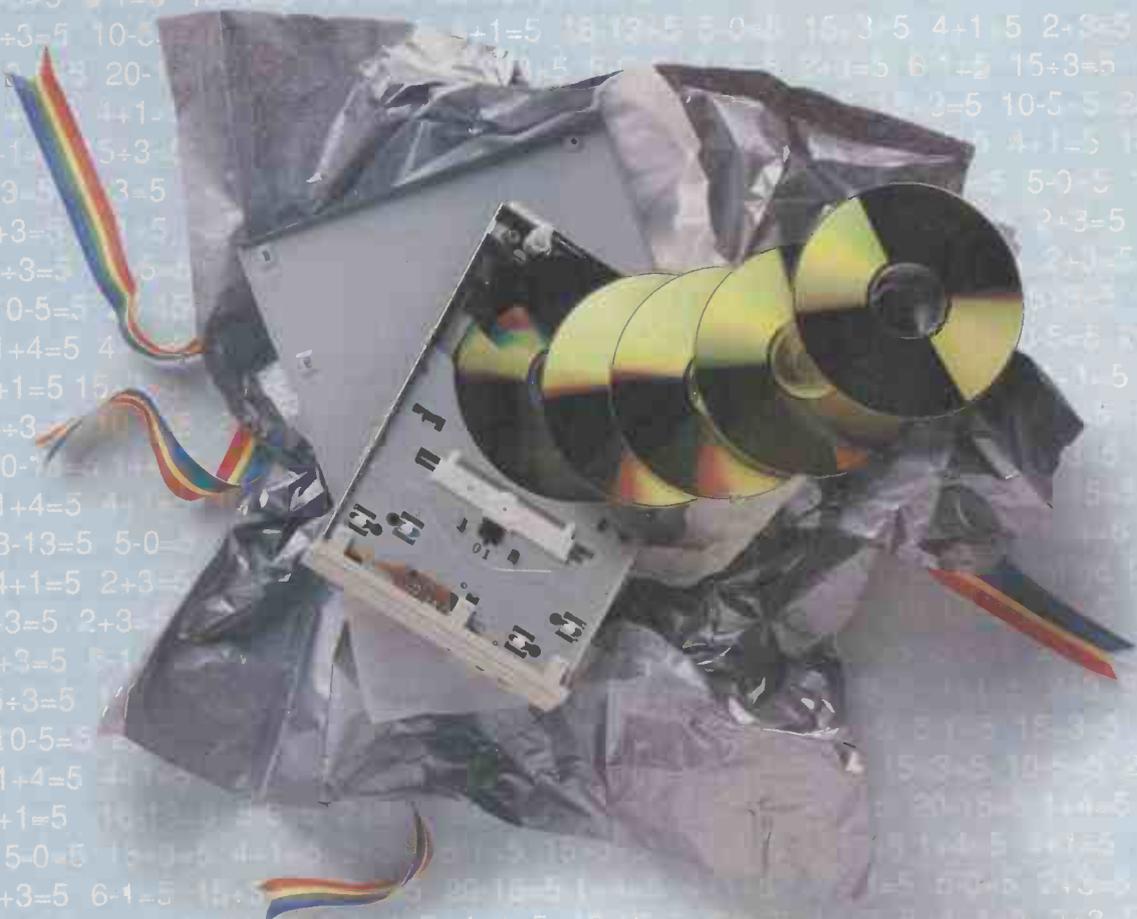
### PCW Details

Price £6,440.18 (£5,481 ex VAT)  
 Contact Hewlett-Packard 0990 474747  
[www.hp.com](http://www.hp.com)  
 Good Points Compact. Attractive. Feature-packed.  
 Bad Points Cluttered, but fitting well.  
 Conclusion A sturdy machine that performed — but it's so expensive!  
 ★★★★★

WHEN

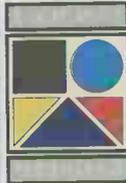
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  - SIMPLY COMPUTERS 0181 523 4020
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  - TECHNOMATIC 0990 246222
  - MEMSOLVE 0151 422 5500
  - R. S. COMPONENTS 01536 201 201

- Where you can buy a system with the mini-changer:**
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- ◆ STB Velocity nVidia AGP Video Card with 4MB SGRAM video memory
- ◆ 17" Colour SVGA Monitor (0.28 dot pitch, 15.9" Viewable Area)
- ◆ 3 PCI, 1 ISA, 1 PCI/ISA Shared and 1 AGP Expansion Slots
- ◆ 14/32X CD-ROM Drive
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- ◆ Mini Tower Chassis
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- ◆ **US Robotics 56KB Modem**

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**DELL DIMENSION XPS D300**  
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### DELL DIMENSION XPS D266

- ◆ Spec as above but with Pentium II Processor 266MHz, 6.4GB Hard Drive

**£1,449 (£1,737.83 INCLUDING DELIVERY & VAT)**

### DELL DIMENSION XPS D266

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- ◆ Intel 440LX AGPset
- ◆ 64MB High Performance SDRAM
- ◆ 512KB Internal Cache
- ◆ 4.3GB ATA-33 Hard Drive
- ◆ STB Velocity nVidia AGP Video Card with 4MB SGRAM video memory
- ◆ 17" Colour SVGA Monitor (0.28 dot pitch, 15.9" Viewable Area)
- ◆ 3 PCI, 1 ISA and 1 PCI/ISA Shared and 1 AGP Expansion Slots
- ◆ 14/32X CD-ROM Drive
- ◆ Yamaha XG Software Wavetable Sound (speakers optional)
- ◆ Mid-sized Desktop Chassis
- ◆ Microsoft Office 97 Small Business Edition

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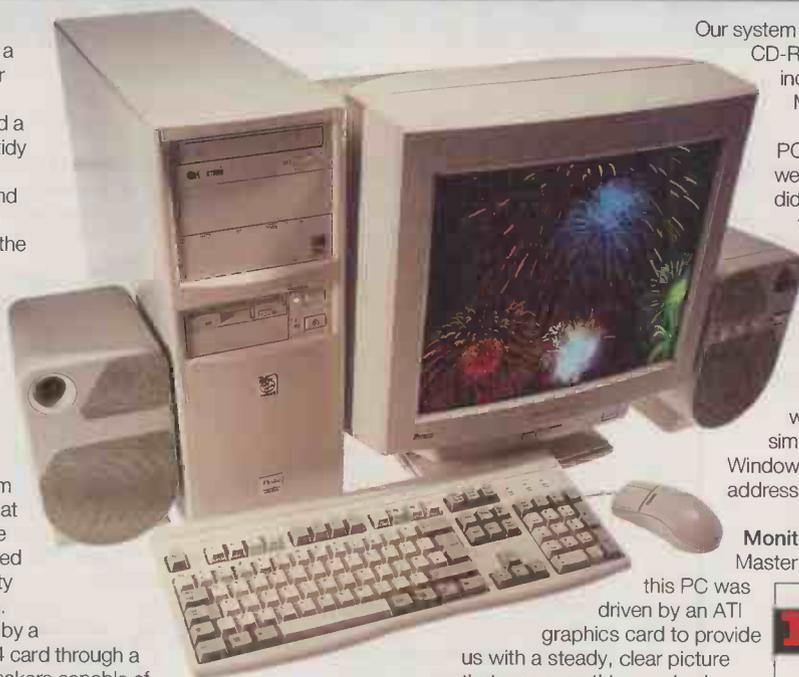
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Opening it up revealed a well thought out and tidy interior with all cables kept out of the way and clipped onto the case itself. Access to both the memory and the processor was easy, with the motherboard remaining largely unobstructed. The memory had been installed to leave us with two free slots, allowing plenty of room to increase the 64Mb at a later date. Three free PCI and one free shared slot also gave us plenty of room for expansion.

Sound was driven by a SoundBlaster AWE 64 card through a large pair of Enact speakers capable of 14W. But however much we liked the Microsoft mouse, we found the Mitsumi keyboard to be dull with a sluggish, spongy response.

An internal SuperDisk drive and LS120 disk replaced the usual 3.5in drive, giving us the opportunity to read and write up to 120Mb on a floppy-sized medium without filling our spare bays with another drive.



Our system was supplied with a 24-speed CD-ROM drive, and would have included a 32-speed model had Mertec had any in stock.

As we had specified that this PC was to be used on a network, we were not surprised to find that it did not include a modem, but apart from the operating system there was also no bundled software. The explanation we were given for this was that we were expected to run all software from a central file server. When it came to connecting to the PCW network we encountered no problems, simply installing the relevant Windows drivers and supplying our IP address.

**Monitor** The impressive Iiyama Vision Master Pro 17 which accompanied

this PC was driven by an ATI graphics card to provide us with a steady, clear picture that was everything we had expected.

This system would normally be supplied with a 19in Microscan 6P monitor and so, by downsizing in this way, we attracted a small reduction in price.

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## Glossary

### ■ DRIVES

**Jaz** A high-capacity SCSI drive capable of storing up to 1Gb on a single cartridge in as little as five minutes. Capable of transferring up to 330Mb per minute. Also available for connection to the parallel port at slower speeds.

**LS120** Looking like a floppy drive and capable of reading and writing to standard 3.5in disks, this drive also has the ability to store up to 120Mb on its own-format floppy. IDE interface or connection via the parallel port.

**Zip** 100Mb drives becoming increasingly popular as a means of backing up or transferring large quantities of data at a time. Available as either an internal SCSI or external device running through the parallel port. The internal version is capable of transferring as much as 60Mb per minute to disk.

### ■ EXPANSION

**AGP (Accelerated Graphics Port)** A short expansion slot designed specifically to connect a graphics card, increasing system speed and leaving PCI and ISA slots free. Operates at 133MHz — over twice the speed of the PCI bus.

**ISA (Industry Standard Architecture)** Older expansion technology designed to be used on PCs with a 286 processor. Still widely used, especially for sound cards, but slower and larger than PCI slots.

**PCI (Peripheral Component Interconnect)** Developed by Intel, an interface allowing the connection of many modern expansion cards.

**Shared** Where a PCI and an ISA slot share a common position on the motherboard, effectively screwed into the same cut-out in the case of the PC.

### ■ MISCELLANEOUS

**ATA** See IDE

**ATX** Specification whereby the motherboard has been rotated a quarter turn to allow the connection of full-length expansion cards. This affects the shape of the case, hence references to ATX cases.

**Graphics card** Card designed specifically to handle graphics instructions. The greater the amount of memory on the card, the more colours it will be able to display on-screen at high resolutions.

**IDE (Integrated Drive Electronics)** A protocol allowing the PC and its devices (drives etc) to communicate. Now being replaced by EIDE (Enhanced IDE).

**IP Address (Internet Protocol Address)** Unique number assigned to a computer to allow it to be identified by other computers on a network.

**Pentium II** Successor to the Pentium Pro processor built by Intel. Incorporates multimedia extensions (MMX) running at a speed of 233MHz or higher. Although previous processors had used the so-called Socket 7 connector (a large, square socket), the Pentium II has been designed to fit into "Slot 1" standing upright on the motherboard, which makes upgrading from Socket 7 systems difficult without investing in a new PC.

**RAID (Redundant Arrays of Inexpensive Disks)** A system whereby a number of hard drives are mounted in a single system. An automatic copying procedure ensures minimal or zero data loss should one of the drives fail and need to be replaced.

**Refresh Rate** The number of times that a screen's display is updated each second. Refresh rates above 72Hz (cycles per second) present the human eye with a steady, flicker-free image.

**SDRAM (Synchronous Dynamic Random Access Memory)** Very fast memory running at the same speed as the processor and allowing data to be written and read simultaneously.

**SGRAM (Synchronous Graphics Random Access Memory)** A type of SDRAM with enhancements for handling 3D graphics and video.

**TCP/IP (Transmission Control Protocol/Internet Protocol)** A set of commands used to control how computers communicate over a network.

**USB (Universal Serial Bus)** A new interface which is becoming more common, allowing any number of peripherals to be connected in a chain, overcoming the current restriction of having only one or two serial ports.

**Windows NT** 32-bit version of the Windows operating system offering a more stable environment for networking applications. Version 4 uses the same interface as Windows 95.

**WRAM (Window Random Access Memory)** A fast type of RAM used on graphics cards, including the Matrox Millennium II.

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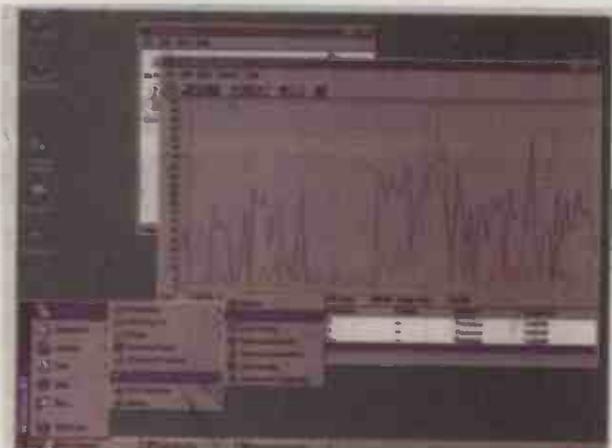
Windows 95 vs Windows NT

**S**ince its inception, Windows NT has been a secure and stable operating system, but it is only with the launch of NT 4.0 with the Windows 95 interface that it has really taken off. But what makes NT different to 95? Well, although they look similar, there are actually a number of differences.

To begin with, unlike 95, NT controls hardware directly without using the system's BIOS. This is a secure technique but it makes NT particular about hardware. In fact, Microsoft even provides a list of compatible hardware (available from [www.microsoft.com](http://www.microsoft.com)), from PC systems to keyboards, which has been tested with NT 4.0. The fact that an item is not on this list does not necessarily mean it won't work, but if you're thinking about installing NT on an existing system it's vital to check every piece of hardware for compatibility.

You must be sure your hardware is properly configured and has no internal address conflicts: unlike 95, NT does not support plug-and-play, so it cannot automatically detect or change settings. As a result, if something is not set up properly, the system could lock up. NT suffers from poor, or even non-existent, device drivers. In general, graphics cards and scanners are particularly badly served in this department, with NT drivers receiving a lower priority from independent hardware manufacturers than those for Windows 95. One supplier went so far as to say that the graphics driver situation was "abysmal". These problems, together with the perceived complexity of Windows NT, mean that for the time being it is pinned down in the corporate environment with little chance of taking over the average home PC.

But let's not get carried away. NT 4.0 is a powerful, secure, stable operating system which operates very successfully in a business environment. It supports multi-processor systems, although opinion is divided over how well it handles the extra processing power, and it deals with internal and network administration far more effectively than Windows 95. One of the more obvious differences is the selection of administrative tools available on the NT Programs



The Administrative Tools in Windows NT allow you to monitor the performance of your system

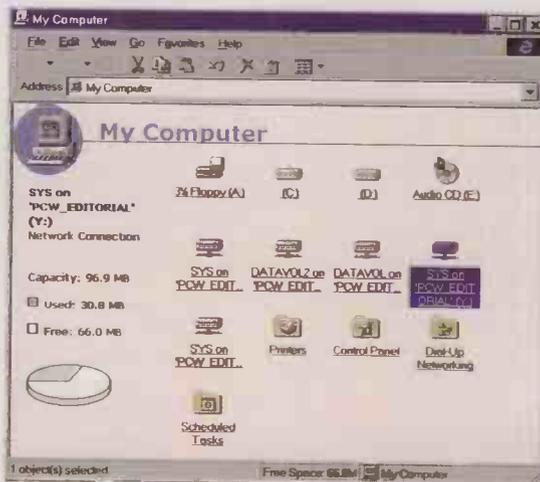
menu. The specialised Backup facility lets you save important information to your local tape drive, and the Performance Monitor enables you to monitor the performance of all computers on your network. Disk Administrator allows you to view and configure the partitions on your hard drive, dispensing with the need for third-party applications when running Win95. User Manager lets you manage security for a network of NT computers, creating accounts and user rights. Event Viewer keeps track of significant occurrences in a program, or in the system, of which you need to be aware. Windows NT Diagnostics displays information about your computer's resources, while Task Manager gives you a simple graph of the processor time taken by each open application and allows you to monitor process status. The File System is the method used for storing and managing data on your hard drive and performs three main functions:

1. Tracking free and used space.
2. Tracking the physical locations of files.
3. Remembering directory structures and filenames.

There is a huge number of different file systems used throughout the computing world but the most common, used by Microsoft operating systems, are FAT, FAT32 and NTFS. The most recent releases of Windows 95 can use FAT and FAT32, while NT 4.0 recognises FAT (File Allocation Table) and NTFS (New Technology File System). FAT is an old and faithful campaigner, having been around since DOS was the only operating system in town, and supports a maximum disk size of 2Gb. Nowadays this is not particularly big, but when FAT was designed, the thought of such a huge hard disk was almost ridiculous. Because of this limitation, larger disks have to be split into two or more sections, called partitions, so that FAT can access them. FAT32 is an enhancement to the standard FAT file system and uses a 32-bit system which both allows you to use disks of up to two terabytes in size, and makes more efficient use of the available space.

NTFS is a very secure file system which, because of the space it uses, is not recommended for disks under 400Mb. It works well on large drives, though, because of the efficient way in which it handles files. There may be a performance issue involved in the choice of FAT or NTFS under NT 4.0, with some PC manufacturers claiming that FAT gives better performance, albeit at the cost of reduced security.

As far as hardware is concerned, there is a good argument for choosing SCSI over EIDE because of the vastly superior way in which it handles multitasking. In six months' time the debate may be Windows 98 vs Windows NT 5.0. It is well known that Microsoft is moving towards one operating system for both home and office and that this will come from



The NT 5.0 interface is likely to be similar to Windows 98

the NT side of the family within a few years. It will take a while but there are definite signs of convergence. Many games software houses are already developing their products for both operating systems in the knowledge that an increasing number of people are choosing NT for their home PCs. Independent hardware manufacturers are also realising that the NT 4.0 user base is growing and are placing more of a priority on providing decent drivers, but this should not be an issue with NT 5.0. Windows 98 and NT 5.0 will have Common Device Drivers, meaning that the same hardware drivers can be used for both operating systems. NT 5.0 will support 64-bit data, in line with Intel's future "Merced" range of processors, and the Interface will probably follow Windows 98 and Internet Explorer 4.0 into the realm of the internet-enabled desktop. The days of a unified Microsoft operating system are not here, but the prospect is getting ever closer.

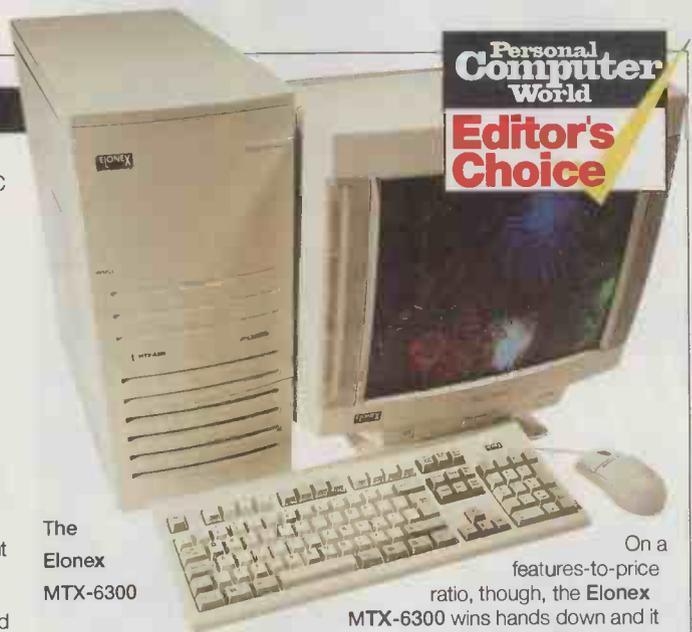
Adam Evans

Editor's Choice

**A**lthough speed should play some part in deciding which PC in this group deserves to be awarded our Editor's Choice, when running Pentium II processors at 300MHz the difference to the end-user will be negligible. Other factors, such as the quality of the monitor, the price of the system and the opportunities for expansion, should play a more important role than usual when comparing PCs of this specification. Many systems we tested exceeded our hopes, with high-quality sound cards, impressive speakers and graphics cards that would not only cope admirably with everything a business graphics package could throw at them, but also hold their own against many dedicated gaming machines.

Having said that, the first of our three Highly Commended awards goes to the PC which performed fastest in our benchmark tests: the **Evesham Vale Platinum PI-300**. This compact machine had nice features, not least of which are the accident-averting power switch and the two-year on-site maintenance warranty. Evesham had been prudent in restricting the memory to one DIMM, and although one of the more expensive PCs in the group, it still clocked in at below the £3,000 mark. We also Highly Commend **Dell's Dimension XPS-D300**. It performed well in tests and the keyboard, mouse and monitor were all of excellent quality. Without cutting corners, Dell managed to keep its price highly competitive and within the reach of many smaller businesses which may want to invest in a quality workhorse built to last.

Our third and final Highly Commended award in this group test goes to **Hewlett-Packard**, which would otherwise have been our Editor's Choice had its price not eclipsed the other contenders. The **Kayak XU 6/300** was sturdily built with an innovative and attractive case packed with features and extras that are unique in its league. It performed well in our benchmark test, appearing in the top three for speed, and the high-quality monitor and user-friendly keyboard made it a joy to use.



The **Elonex MTX-6300**

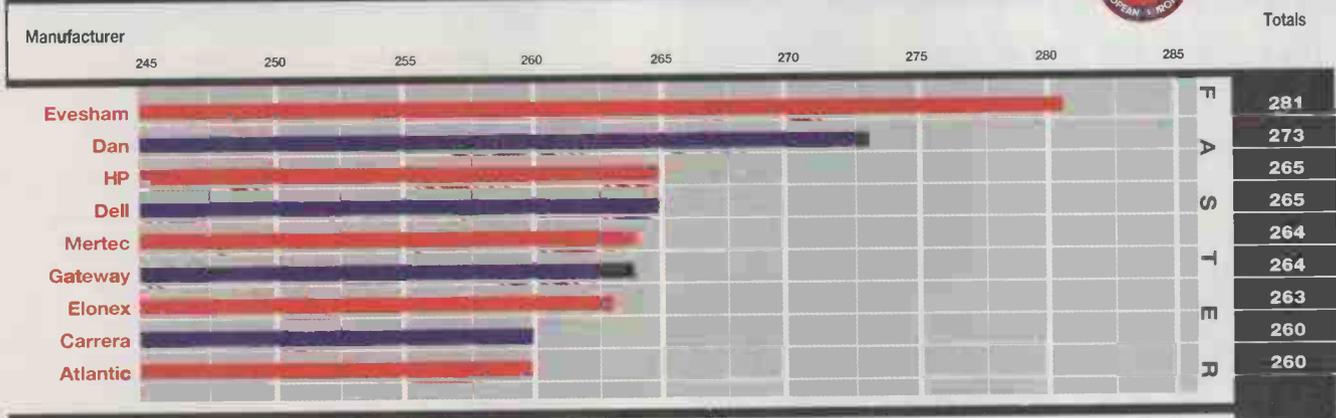
On a features-to-price ratio, though, the **Elonex MTX-6300** wins hands down and it

is for that reason we make it our **Editor's Choice**. It outshone its competitors on expansion opportunities alone and it was the only system to offer hot-swappable drive bays. The Iiyama Vision Master multimedia monitor combined high quality with practicality, reducing desk clutter by doing away with the need for external speakers, and the whole system was well thought out, offering easy access to its carefully-planned interior.

This PC would perform admirably in the role of either a workstation or, with a few additions, a server, making it the ideal purchase for those who want a system that will grow with their needs.

Nik Rawlinson

Performance Results



How we did the tests

Choosing which tests to run on the NT 4.0 workstations was difficult. As always, they had to reflect real-world use, but as the machines span such an enormous price range, picking a typical use wasn't easy. The test we use is the official BAPCo (Business Application Performance Corporation) test for NT 4.0 which is supported by a wide cross-section of the computer industry, including Compaq, Dell, Digital, IBM, Intel, Lotus and Microsoft.

It is based on the time taken to perform common tasks on the following packages: Word 6.0, Excel 5.0, Texim Project 2.0e, Orcad Layout 7.0 and PowerPoint 4.0. These are all full 32-bit versions which run natively on all architectures, except for PowerPoint which is 16-bit and runs under NT emulation. The BAPCo test is an extremely good indicator of the power of a PC under these conditions, although it does have a couple of limitations. As the applications themselves do not directly support multi-processor systems, the test results only show

improvement resulting from NT's own utilisation of the extra available power. Also, the test can place very high-end machines, intended for such things as animation and rendering, at a disadvantage because the expensive specialist 3D graphics cards in these workstations have inferior 2D performance compared with cards like the Matrox Millennium. These limitations would not normally be a problem, but are something we had to consider in our assessment because this group test covers such an extensive variety of PCs.

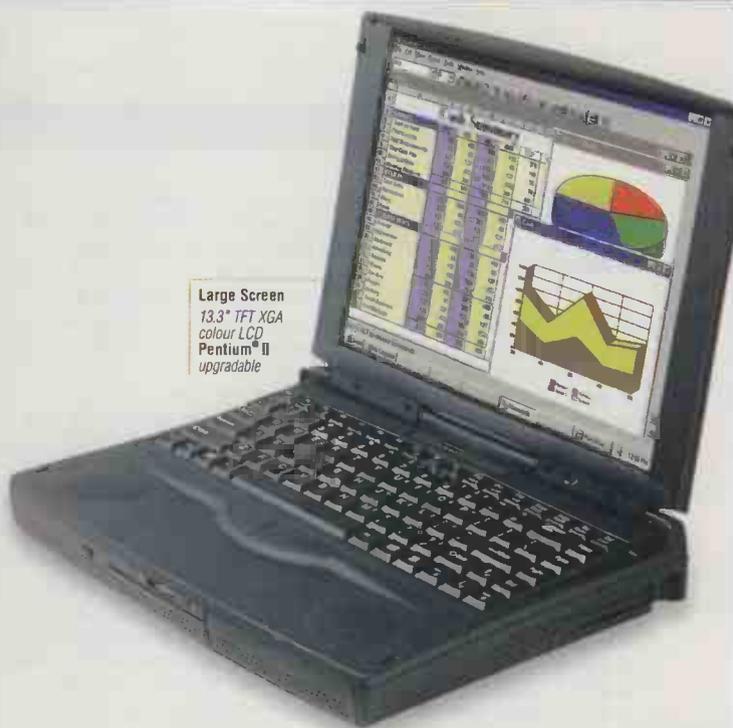
But the BAPCo results are not the final word on the selection of a winner. On one hand, the test produces a result for sheer system performance but it doesn't take into account issues like build quality, customer service and price. That is why you will see that the fastest PC doesn't always win our group tests. On the other hand, speed is not something we wholeheartedly discount, and that is why it's always a point worth mentioning.

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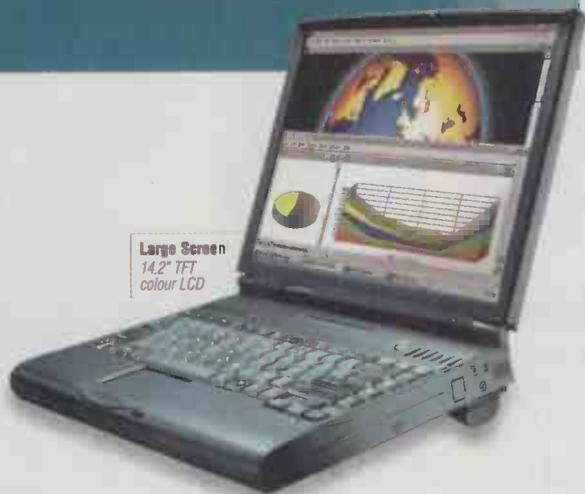
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PC Magazine's aim was to find an inexpensive business desktop PC, packed with as many useful features as possible, with a performance to match. They received 25 systems showing different solutions to their challenge, but the one judged as the closest to the ideal combination was the Hi-Grade Axion PVX.



PVX200  
November '97  
PV2233  
January '98

AXION PVX200	AXION PV2233
200MHz upgradable to 233MHz AMD K6 with MMX™ Technology	233MHz upgradable to 300MHz Intel Pentium® II processor
512K pipeline burst cache	512K pipeline burst cache
Intel 82430TX PCiset	Intel 82440LX PCiset
32Mb SDRAM DIMM, exp. to 256Mb	32Mb SDRAM, exp. to 256Mb
4.2Gb EIDE Ultra DMA/33 Hard Disk Drive	5Gb EIDE Ultra DMA/33 Hard Disk Drive
24-speed IDE CD-ROM drive	24-speed IDE CD-ROM drive
16-bit 3D Sound	16-Bit 3D Sound card
120Mb 3.5" Floppy Disk drive (supports 1.44Mb)	120Mb 3.5" Super Floppy Disk drive (supports 1.44Mb)
VGA ATI 3D Expression PC2TV PCI 64-bit graphics card with 4Mb	VGA ATI 3D Expert@Work AGP (133MHz, 4x PCI speed) 64-bit graphics card with 4Mb SGRAM upgradable to 8Mb
17" Colour SVGA monitor (max res. 1280x1024 60Hz)	15" Colour SVGA monitor (MAX RES. 1280x1024 @ 60MHz) Optional 17" extra £100 + VAT
3COM 3C905 10/100Base-T PCI Ethernet card	3COM 3C905 10/100Base-T PCI Ethernet card

Standard Axion features

LANdesk Client Manager software and integrated smart hardware monitoring  
• 1 enhanced parallel port • 2 16550 UART serial ports • 2 x USB ports  
• 105-key keyboard • 2 button PS/2 mouse • Windows 95, Lotus SmartSuite 97  
• Worldbook encyclopaedia • IBM Voicetype SimplySpeaking Gold with headset/microphone • 1 year on-site warranty for labour and parts.  
Home User: For those who want to have a system at home:- Pace 64K fax/modem, Sound Blaster AWE 64 with Yamaha M15 powered speakers instead of Ethernet £140 + VAT

£1099 £1291<sup>33</sup> inc VAT  
£1340 £1574<sup>50</sup> inc VAT



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# State of the Art



1785XE,  
MacFormat, Jan 97



1785S,  
PC Guide, Sept 96



1785XA,  
PC Magazine, Dec 96



1785D,  
The Mac, Jan 97



1569MS,  
PC World, July 96



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Internet: [www.ctxeurop.demon.co.uk](http://www.ctxeurop.demon.co.uk)

Monitor Specifications*	1569SE	1792UA	1792SE	1769MS	20855XE
Dot Pitch (mm)	0.28	0.25	0.26	0.28	0.28
CRT Type	Flat Square	Trinitron® CRT	Flat Square	Flat Square	Flat Square
Horiz. Scan (KHz)	30-70	30-92	30-92	30-70	30-85
Low Emission	TCO95	TCO	TCO95	MPRII	TCO95
BNC	No	Yes	No	No	Yes



The Monitor Specialists

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Monitors • Notebooks • LCD Displays • Systems

## Table of Features





Manufacturer	Atlantic Systems	Carrera	Dan	Dell	Elonex
<b>Model Name</b>	<b>Proteus</b>	<b>Power Pro II-300</b>	<b>Dantum II / SE300</b>	<b>Dimension XPSD300</b>	<b>MTX-6300/I</b>
Price (ex VAT)	£1,899	£2,195	£2,476	£1,973	£1,995
Price (inc VAT)	£2,231.33	£2,579.13	£2,909.30	£2,318.28	£2,344.13
Telephone	0990 134725	0171 830 0486	0181 830 1100	01344 720000	0500 524444
Fax	01639 821300	0171 299 6600	0181 830 1122	N/A	0181 452 7444
Web address	www.atlanticsystems.com/sys/	www.carrera.co.uk	www.dan.co.uk	www.dell.com	www.elonex.co.uk
Standard warranty	1-yr on-site, 4-yr RTB	1-yr parts, 3-yr lab RTB	1-yr RTB	1-yr collect and return	1-yr on-site
Warranty options	3-yr on-site, 4-yr RTB	on-site + extension	on-site	3 years on-site	extendable
Technical support	9-5 Mon-Fri	9-6 Mon-Fri, 10-5 Sat	9.30-6 Mon-Fri	8-8 Mon-Fri	8.30-6 Mon-Fri / 9-1 Sat
<b>Hardware spec</b>					
Processor	Intel Pentium II - 300	Intel Pentium II - 300	Intel Pentium II - 300	Intel Pentium II - 300	Intel Pentium II - 300
RAM/type/No. of pins	64Mb/DIMM/168	64Mb/SDRAM/168	64Mb/SDRAM/168	64Mb/SDRAM/168	64Mb/SDRAM/168
Hard disk	Quantum ST	IBM Deskstar 8	IBM DHEA	IBM Darkstar 5	Fujitsu MPA 1064
Size(Gb)/Access time (ms)/interface	6.5Gb/9.5ms/ EIDE/UDMA	8.4Gb/5.6ms/ EIDE/UDMA	6.4Gb/9.5ms/ EIDE	6.4Gb/9.5ms/ ATA-33	6.4Gb/9ms/EIDE UDMA / 33 Ultra ATA
<b>Motherboard components</b>					
Manufacturer	Intel	Intel	Austek	Intel	Intel
Model/chipset	ATX/AL-440LX	ATX/Intel Dual 440LX	ATX/Intel 440LX	ATX/Intel 440LX	AL440LX/Intel 440LX
L2 cache/Max cache (Kb)	512/512	512/512	512/512	512/512	512/512
<b>Expansion and I/O</b>					
Spare bays (3.5in/5.25in)	1 x 3.5in/1 x 5.25in	1 x 3.5in/1 x 5.25in	1 x 3.5in/2 x 5.25in	1 x 3.5in/1 x 5.25in	4 x 3.5in/1 x 5.25in
AGP slot	1	1	1	1	1
PCI slots/ISA slots/shared	4PCI / 3ISA / 1 shared	3PCI / 2ISA / 1 shared	5PCI / 2ISA / 0 shared	3PCI / 1ISA / 1 shared	2PCI / ISA / 1 shared
USB/serial/parallel/PS2	2USB/2S/1P/2PS2	2USB/2S/1P/2PS2	2USB/2S/1P/2PS2	2USB/1S/1P/2PS2	2USB/2S/1P/1PS2
<b>Multimedia</b>					
CD-ROM man./model	Goldstar	Panasonic CR-585B	Panasonic CR-585	Toshiba XM6102B	Panasonic CR-585-V
CD-ROM speed/interface	24x/EIDE	24x/EIDE	24x/EIDE	12/24x/EIDE	24x/EIDE
Sound card manufacturer	Creative Labs	Creative Labs	Creative Labs	Creative Labs	Creative Labs
Sound card model	AWE 64 Gold	Pro 32	AWE64	AWE64	Vibra 16 (onboard)
Speakers	500W	Altec Lansing ACS45	Dan Hi-Fi	Altec Lansing ACS290	In monitor
<b>Graphics and monitor</b>					
Graphics card	ATI AGP Rage Pro3D	Diamond Fire GL1000	Matrox Millennium II	STB Velocity 128	ATI Xpert@work
RAM/Max RAM/type	4Mb/16Mb/SGRAM	8Mb/8Mb/SGRAM	8Mb/16Mb/WRAM	4Mb/4Mb/SGRAM	8Mb/8Mb/SGRAM
Monitor model/size	Taxan 750 Ergo/17in	Iiyama 8617T/17in	Iiyama 9017E/17	Dell 1025HS/17	Iiyama Vislonmaster/17
Max refresh rate @ 1,024x768 N/A	107Hz	107Hz	160Hz	110 Hz	Card:150Hz/Mon:105Hz
<b>Other information</b>					
Modem speed (Kbps)	56Kbps	56 Kbps	56 Kbps	56Kbps	N/A
Modem make	N/A	N/A	Pace Microlin Voice	US Robotics	N/A
Misc. hardware	LS120 drive Intel Ether Pro 100 Network Adapter	Intel Pro 10/100 Network Adapter	Imega Jazz 1Gb 3Com 3C905 Network Adapter	Imega Jazz 1Gb 3Com 3C905 Network Adapter	Internal3Com 3C900 Network Adapter
<b>Extras</b>					
Office suite	MS Office 97	Lotus SmartSuite 97	Lotus SmartSuite 97	MS Office 97 SBE	MS Office 97 SBE
Other software	Win NT 4.0 CorelDraw 4 Desktop Lawyer IBM Simply Speaking Worldbook Enc'pedia	Win NT 4.0	Win NT 4.0 LAN Desk Client MS Works	Win NT 4.0	Windows NT 4.0 MMX Bundle

Table of Features



Manufacturer	Evesham	Gateway	Hewlett-Packard	Mertec
<b>Model name</b>	Platinum PI-300	G6-300	Kayak XU 6/300	Titan VI-300
Price (ex VAT)	£2,499	£2,860	£5,481	£1,879
Price (inc VAT)	£2,936.33	£3,360.50	£6,440.18	£2,207.83
Telephone	0800 6345999	0800 552000	0990 474747	0181 667 0990
Fax	01386 765500	N/A	0171 735 5565	01792 473887
Web address	www.evesham.com	www.gateway2000.co.uk	www.hp.com	www.mertec.co.uk
Standard warranty	2 years on-site	1-yr on-site, 2-yr RTB	1-yr on-site, 2-yr RTB	5-yr RTB (2-yr P/L, 3-yr L)
Warranty options	3rd year optional	3-yr on-site	3-yr on-site	1-yr on-site
Technical support	9-5.30 Mon-Fri, 9-3 Sat	8-10 Mon-Sat	N/A	9-6 Mon-Fri
<b>Hardware spec</b>				
Processor	Intel Pentium II - 300	Intel Pentium II - 300	Intel Pentium II - 300	Intel Pentium II - 300
RAM/type/No. of pins	64Mb/SDRAM/168	64Mb/SDRAM/168	64Mb/SDRAM/168	64Mb/SDRAM/168
Hard disk	Cheetah	Seagate	Seagate	IBM Deskstar
Size (Gb)/access (ms)/int	4Gb/7.5ms/Ultrawide SCSI	8.4Gb/11ms/Ultra SCSI	2 x 4.5Gb/9.5ms/Ultra ATA	6.4Gb/9.5ms/EIDE UDMA
<b>Motherboard components</b>				
Manufacturer	Chaintech	Intel Pentium II - 300	HP	Austek
Model/chipset	6 LTM/440LX	Astoria/Intel 440 LX	440 LX	ATX/Intel 440 LX
L2 Cache/max cache (Kb)	512/512	512/512	512/512	512/512
<b>Expansion and I/O</b>				
Spare bays (3.5in/5.25in)	2 x 3.5in/2 x 5.25in	2 x 3.5in/2 x 5.25in	3 x 3.5in/2 x 5.25in	1 x 3.5 (1 int)/2 x 5.25in
AGP slot	1	1	1	1
PCI slots/ISA slots/shared	4 PCI/2 ISA/1 shared	3 PCI/1 ISA/1 shared	3 PCI/2 ISA/1 shared	5 PCI/2 ISA/0 shared
USB/serial/parallel/PS2	2 USB/2S/1P/2PS2	2USB/2S/1P/2PS2	2USB/2S/1P/2PS2	2USB/2S/1P/2PS2
<b>Multimedia</b>				
CD-ROM manufacturer/model	Panasonic CR-585	Plextor	Matsushita	Toshiba XM6102B
CD-ROM speed/interface	24x / EIDE	12x / SCSI	24x / EIDE	24x / EIDE
Sound card manufacturer	Creative Labs	Ensoniq	Creative Labs	Creative Labs
Sound card model	AWE 64 Value	AudioPCI Wavetable	SoundBlaster 16	AWE 64
Speakers	ZYFI	Boston Acoustics	None	Enact 120
<b>Graphics and monitor</b>				
Graphics card	ATI 3D Rage Pro	Accelgraphic Permedia2	Matrox Millennium II	ATI Xpert@Work AGP
RAM/Max RAM/type	4Mb/8Mb/SGRAM	8Mb/8Mb/SGRAM	4Mb/16Mb/WRAM	8Mb/8Mb/SGRAM
Monitor model/size	Taxan 750/17in	EV900/19in	HP1280 UltraVGA/17in	Iiyama V'Master Pro/17in
Max refresh rate @ 1,024 x 768 NI	107Hz	85Hz	68.7Hz	85Hz
<b>Other information</b>				
Modem speed (Kbps)	56	N/A	N/A	N/A
Modem make	N/A	N/A	N/A	N/A
Misc hardware	3Com 905TX 10/100 Network Adapter	TR4 Tape Backup10/100 Network Adapter	N/A	120Mb Super Disk 3Com 3C905 XL Network Adapter
<b>Extras</b>				
Office suite	N/A	MS Office 97 SBE	None	N/A
Other software	Windows NT 4.0	Windows NT 4.0	Windows NT 4.0 Adobe Acrobat Netscape Navigator MS Internet Explorer	Windows NT 4.0 Landesk Client Manager

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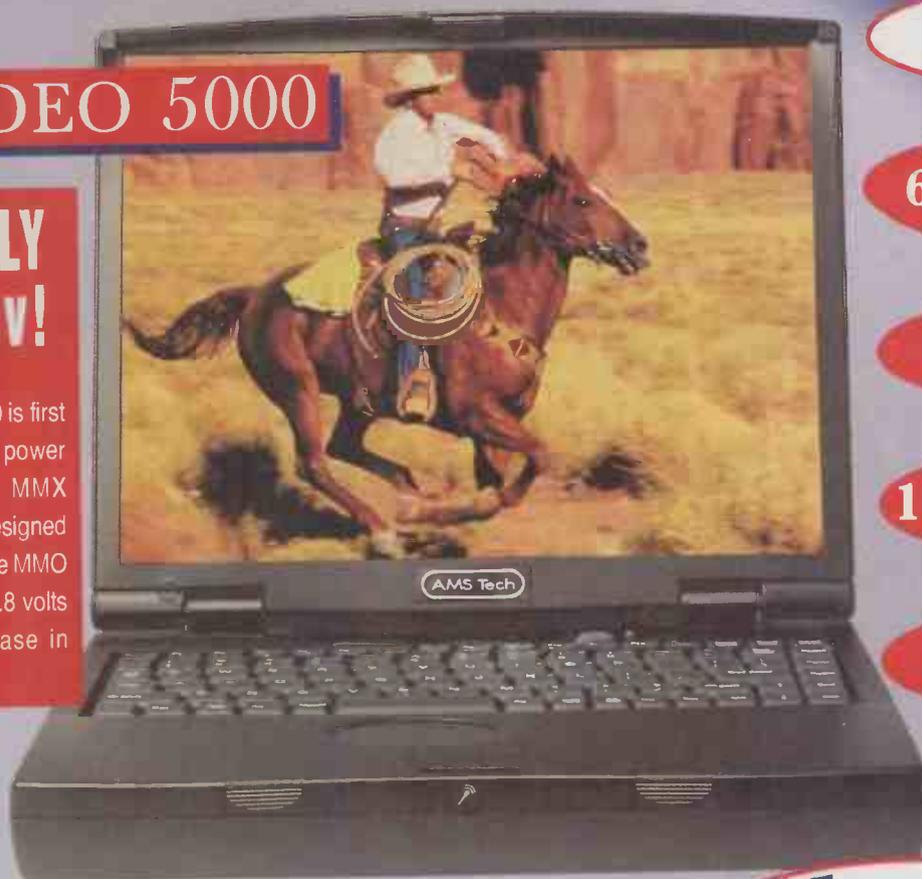
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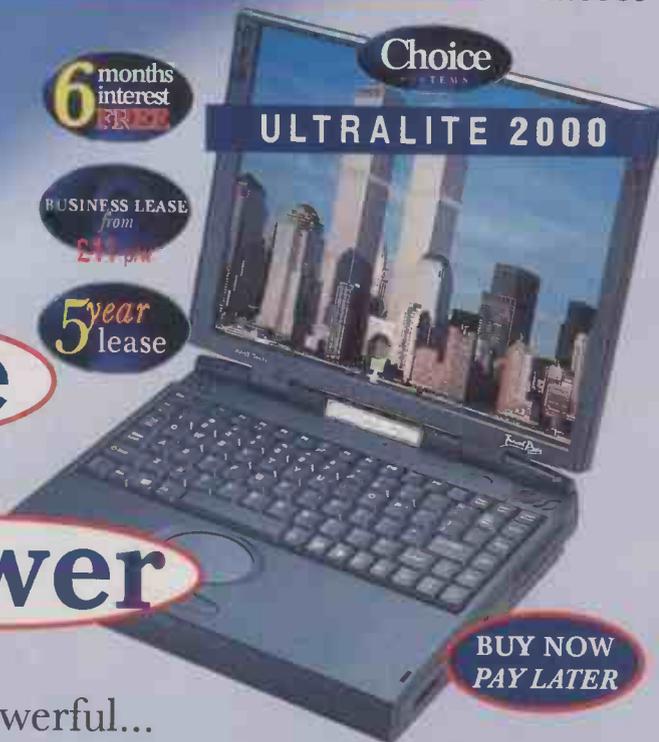
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PENTIUM MMX P166	<b>£1899</b>	<b>£2231.33</b>
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- 3 1/2" FDD
- 2 PCMCIA slots type 2/3
- 2Mb PCI SVGA Graphic Card
- Infra red serial port/serial/parallel
- Touch pad/carry case
- 2 years warranty (1st year P&L/2nd year labour only RTB)

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PENTIUM MMX P166	<b>£1399</b>	<b>£1643.83</b>
PENTIUM MMX P200	<b>£1489</b>	<b>£1749.58</b>

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- Upgrade to 64Mb RAM add £199 + VAT
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- Full size docking station add £349

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MS Encarta 97 & Atlas, MS Works 4, MS Internet Explorer,  
MS Money & MS Football.



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**OPTION 3** add £85 + VAT (£99.88)

MS Windows 95, Lotus SmartSuite 97



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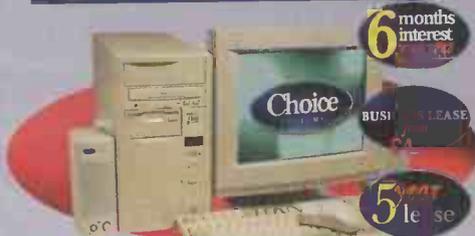
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- Cyrix/AMD compatible
- 2 years standard warranty (1st year P&L/2nd year labour only)

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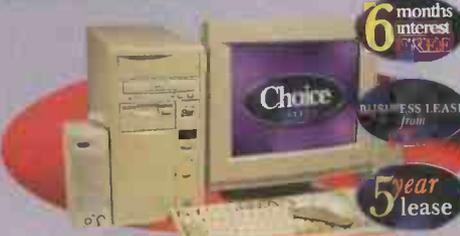
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PENTIUM MMX P200	<b>£699</b>	<b>£821.33</b>
PENTIUM MMX P233	<b>£749</b>	<b>£880.08</b>
AMD K6 MMX P200	<b>£679</b>	<b>£797.83</b>
AMD K6 MMX P233	<b>£729</b>	<b>£856.58</b>

### OPTIONS

- Upgrade to 64Mb RAM add £50 + VAT
- 15" SVGA Monitor add £35 + VAT
- 55.6K Internal Voice Modem add £69 + VAT
- 33.6K Modem add £45 + VAT

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## ULTRA MULTIMEDIA PRO



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- 512K Piplined Cache
- 32Mb fast EDO RAM 60ns (max 128Mb)
- 4.3 Gb latest Ultra DMA HDD
- Year 2000 compliant BIOS
- 3 1/2" FDD (1.44Mb)
- 33.6K fast internal Voice/Fax modem
- 24 x speed quality IDE CD Drive
- Creative Labs AWE 64 value sound card
- 4 Mb 3D SVGA graphic card
- 15" FST Pro SVGA N/I monitor
- 105 key Win 95 UK Cherry Keyboard
- Microsoft original IntelliPoint Mouse
- 2 serial/parallel Ports
- Deluxe mini tower case
- Choice of software not included
- 2 years standard warranty (1st year P&L/2nd Year labour only)



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PENTIUM II 266MHz	<b>£1149</b>	<b>£1350.08</b>
PENTIUM II 300MHz	<b>£1349</b>	<b>£1585.08</b>

### OPTIONS

- 17" SVGA FST add £149 + VAT
- Upgrade RAM to 64Mb add £60 + VAT
- Upgrade to 55.6K Internal Voice Modem add £25 + VAT
- Optional CD writers/tape backup/ethernet cards £Please call

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SYSTEMS

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- Latest Intel LX Chipset Motherboard
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- 6 Gb latest Ultra DMA HDD
- Year 2000 compliant BIOS
- 3 1/2" FDD (1.44Mb)
- Iomega IDE Zip drive
- 55.6K fast internal modem
- 24 x speed quality CD Drive
- 8 Mb Matrox Millennium 2 Graphic Card
- 24 x speed IDE quality CD Drive
- Creative Labs AWE 64 Gold sound card
- 100 watt stereo speakers
- 17" FST Pro SVGA N/I monitor
- 105 key Win 95 UK Cherry Keyboard
- Microsoft original IntelliPoint mouse
- 2 serial/parallel ports
- Deluxe midi tower case
- Choice of software not included
- 2 years standard warranty (1st year P&L/2nd year labour only)



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PENTIUM II 233MHz	<b>£1799</b>	<b>£2113.83</b>
PENTIUM II 266MHz	<b>£1879</b>	<b>£2207.83</b>
PENTIUM II 300MHz	<b>£2049</b>	<b>£2407.58</b>

### OPTIONS

- 21" iiyama SVGA Pro monitor add £699 + VAT
- Upgrade to 128Mb SDRAM add £175 + VAT
- Upgrade to Dual Pentium Motherboard add £125 + VAT

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## WAYS TO PAY

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Total system price inc VAT £1000. Pay 10% deposit of £100 by cheque or credit card then 5 payments of £54.14 = £270.70 total

by Direct Debit and then £629.30 at six months (0% interest) or £54.14 for 24 months. Total paid £1299.36 (APR 19.9%)

## BUSINESS LEASE

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## BUSINESS account

We can offer business accounts to Limited Companies, Government/Education Departments. Call our Corporate Sales Team to open a Credit Account. All finance is subject to status. Choice Systems is licensed by the Department of Fair Trading. Cheque payments are subject to 10 days clearance. We accept: Visa/Access/Amex/Debit Card

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(For Systems Units Only)

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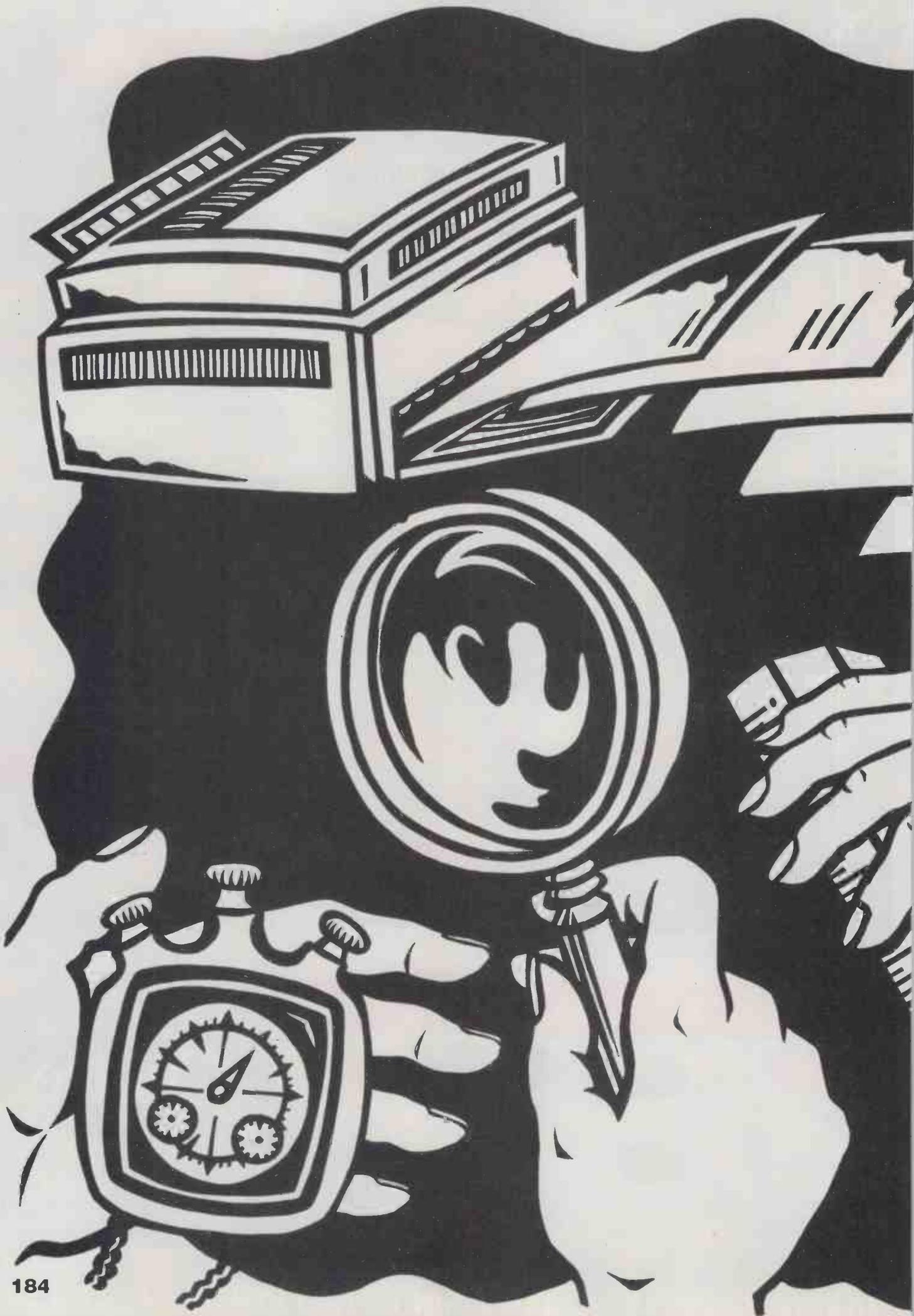
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# Dirty dozen

The laser printer is becoming increasingly affordable and more manageable — we can all do with better output quality and less toner spill. Adam Evans puts twelve to the test.

**M**any people don't like laser printers. They say that compared to inkjets, they are expensive and dull: why print in boring old black and white when you can have glorious all-singing all-dancing colour? But these people are only looking at half the picture. Laser printers have several advantages over the cheaper inkjets. They are cheaper to run and provide considerably better quality output. The ink on the page is dry as soon as it comes out of the printer, so there is none of that blowing on the paper whenever you print an image that uses a lot of black. The paper handling on laser printers is often superior to that of inkjets, with manual inputs and straight paper paths for taking non-standard media. And last, but certainly not least, they're fast. Ten of the twelve printers tested here claim speeds of six pages per minute, with one boasting a staggering eight pages per minute. When you consider these advantages, you start to realise that laser printers may not be so expensive after all. The models reviewed here range from £165 to £299 and demonstrate that a budget laser is certainly not a contradiction in terms. In fact, having one for personal use could be a pretty good idea.

Even though, at first glance, most laser printers seem the same, beneath the surface they can be very different indeed. The features offered by the manufacturers vary considerably and often there is little correlation between functionality and price. We have put each printer in this group through a rigorous testing procedure, checking speed, image quality (including halftones, fine lines, text, solid blacks and white-on-black) and the accuracy of the paper-handling process. The winners and losers in this round-up are judged on these three criteria together with value for money, features and usability.

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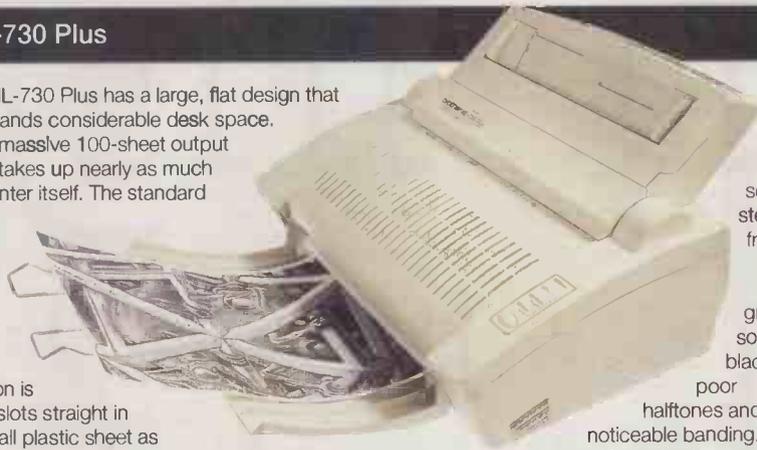
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### Brother HL-730 Plus

**T**he HL-730 Plus has a large, flat design that demands considerable desk space. The massive 100-sheet output tray takes up nearly as much space as the printer itself. The standard paper path is almost straight, making printing on non-standard media considerably easier. Installation is easy: the drum slots straight in and ejects a small plastic sheet as confirmation. The software is similarly easy to set up and provides excellent bi-directional information about printer status. There's an impressive number of features, including native printing from DOS, Level 4 PCL emulation and an optional serial interface. The input paper tray holds a whopping 200 sheets as standard. The life expectancy of a toner cartridge is 2,200 pages at



five percent coverage, although the starter cartridge supplied with new machines can only manage 1,000. The test results are disappointing. The Plus's second-to-last place in the quality test stems from greyish solid blacks, poor halftones and noticeable banding. On the positive side, the graphical images were fairly impressive. The speed test shows the HL-730 Plus to be a decent performer, nestling comfortably in the middle of the pack.

#### PCW Details

**Street Price** £233.83 (£199 ex VAT)  
**Contact Brother** 0161 330 6531  
[www.brother.com](http://www.brother.com)  
**Good Points** Lots of features. Good graphical output. 1Mb memory.  
**Bad Points** Huge footprint. Slowish First Sheet Out Time (FSOT).  
**Conclusion** Great value, but only if you need all the features.  
 ★★★

### Canon LBP-660

**D**espite the fact that the LBP-660 is one of the cheapest printers in the group, we were impressed by the overall build quality. It feels extremely sturdy, making up for the fact that the design is quite dull. Having said this, there is one clever design ploy by Canon: two different-shaped extensions to the output tray support which snap on easily and make using long or heavy paper a breeze. Setting up is simplicity itself with the aid of the excellent *Getting Started* card. The software is similarly easy to install, which is just as well, since the printer relies on it completely. There are no buttons or indicators on the LBP-660 — all the messages from the printer are routed to the PC via the bi-directional parallel interface. We used this system with some trepidation at first, but were eventually impressed by its capabilities.



In addition to the standard 100-sheet input tray there is a manual input with guides. Handling awkward media is made considerably easier with the straight paper path feature, toggled on or off by a cleverly-designed switch on the front of the printer. The speed-test result shows that the Canon LBP-660 is a nippy little number with a particularly impressive First Sheet Out Time (FSOT) of 23 seconds. The quality score is not so spectacular, with poor solid blacks and halftones letting the side down. However, the text and graphics output is considerably better.

#### PCW Details

**Street Price** £216.20 (£184 ex VAT)  
**Contact Canon** 0500 550111  
[www.canon.co.uk](http://www.canon.co.uk)  
**Good Points** Great build quality. Cheap. Quick.  
**Bad Points** Only 256Kb memory. No native DOS printing.  
**Conclusion** A great budget printer.  
 ★★★★★

### Epson EPL-5500

**T**he Epson EPL-5500 is one of a trio of lookalikes in this group test. It's difficult to tell it apart from the Minolta and Lexmark models with the naked eye, but there are a host of differences under the bonnet. The Epson is the most difficult printer to set up out of all the machines tested, because of the poor manual. All the information is there, but the presentation is unclear and the diagrams are unhelpful. On the software side, installing the drivers is a whole lot easier. The Epson has quite a small footprint, although this does increase with the input and output trays extended. The trays do feel a little flimsy but the rest of the construction seems solid enough. The EPL-5500 comes with 1Mb memory as standard, upgradeable to a massive 32Mb. A PostScript version of the printer, with 5Mb memory, is available for around £630. The paper input tray



can accommodate a healthy 150 sheets with output capacity for 100 sheets. A secondary tray is available which brings the total input to 400 sheets, more than enough for any non-workgroup printer. The test results are interesting. The Epson EPL-5500 came out joint third with the Minolta in the image-quality tests, with particularly impressive solid blacks. However, it let itself down in the speed test: 36 seconds for the first page and a horrific 158 seconds for the job to complete. This must be something to do with the drivers, as the Minolta and Lexmark printers, using similar hardware, do a far better job.

#### PCW Details

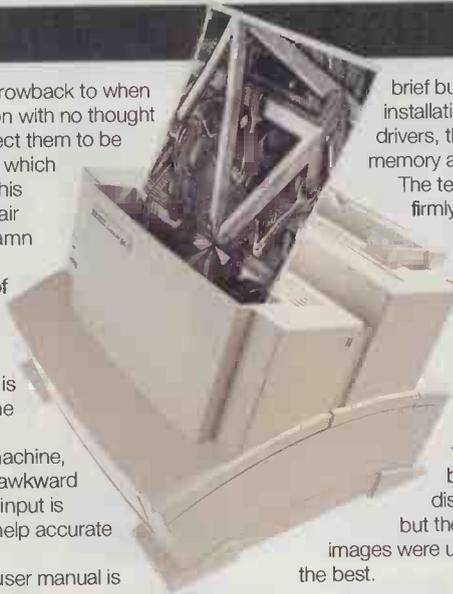
**Street Price** £321.95 (£274 ex VAT)  
**Contact Epson** 01442 261144  
[www.epson.co.uk](http://www.epson.co.uk)  
**Good Points** Great-quality output.  
**Bad Points** Slow. No straight paper path.  
**Conclusion** It could have been a contender, but it's just too slow.  
 ★★★



## Hewlett-Packard LaserJet 6L

**T**he LaserJet 6L looks like a throwback to when printers were all about function with no thought for form. These days we expect them to be sleek, smooth machines with which you can impress your friends. But does this really matter? The 6L may have taken a fair whack with the ugly stick but it's still a damn good printer. The design is similar to the Canon: a largish footprint that, in terms of workspace, is rescued by the use of near-vertical input and output paper trays. Each tray can hold 100 sheets. Another design similarity with the Canon is the clever toggle switch on the front of the machine, which enables you to eject the paper through a slot in the base of the machine, giving a straight paper path for use with awkward non-standard media. The manual paper input is also well designed, with guide levers to help accurate sheet feeding.

Setting up posed no problems. The user manual is



brief but provides all the essential information, from installation to troubleshooting. In addition to the Windows drivers, the Epson features native DOS printing and has 1Mb memory as standard, upgradeable to 8Mb.

The test results are fairly unexciting. The LaserJet 6L is firmly wedged in the middle of the bunch for both

image quality and speed, although, at 25 seconds, the time for the first page out was encouraging. In the quality test, the solid blacks were disappointing but the graphic images were up there with the best.

## PCW Details

Street Price £272.60 (£232 ex VAT)

Contact Hewlett-Packard  
0990 474747 [www.hp.com](http://www.hp.com)

Good Points Reasonably priced. Straight paper path.

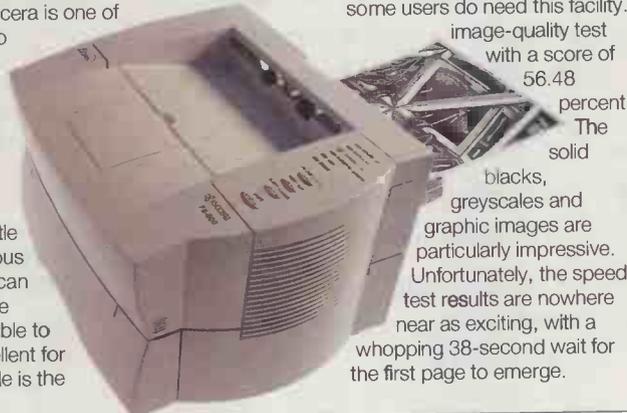
Bad Points Only average performance.

Conclusion Certainly worth considering.

★★★

## Kyocera FS-600

**C**hunky-looking and with a largish footprint, the FS-600 feels solid, although the flip-up guide on the paper output tray is a little flimsy. Setting up the printer and software is easy enough: the manual gives clear instructions that cover the entire procedure. Interestingly, Kyocera is one of only two companies in this group to provide the software on a CD. The input tray has a capacity of 150 sheets and there is a manual input that takes one sheet at a time. The manual feed features one of the most interesting designs we have seen: pull out the main input tray a short distance and then flip up a little platform which has guides for various paper sizes. The main output tray can hold an impressive 150 sheets. The standard memory is 2Mb expandable to a gargantuan 34Mb, which is excellent for a printer at this price. The downside is the



lack of native DOS printing, though this is a drawback that applies to fewer users as time marches on. Here at PCW, we seldom find ourselves printing straight from DOS, although we appreciate that some users do need this facility. The FS-600 comes out top in the

image-quality test with a score of 56.48 percent.

The solid blacks, greyscales and graphic images are particularly impressive. Unfortunately, the speed-test results are nowhere near as exciting, with a whopping 38-second wait for the first page to emerge.

## Personal Computer World

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## PCW Details

Street Price £280.83 (£239 ex VAT)

Contact Kyocera 01734 311500  
[www.kyocera.co.uk](http://www.kyocera.co.uk)

Good Points Great image quality. Reasonably priced.

Bad Points Slow. No native DOS printing.

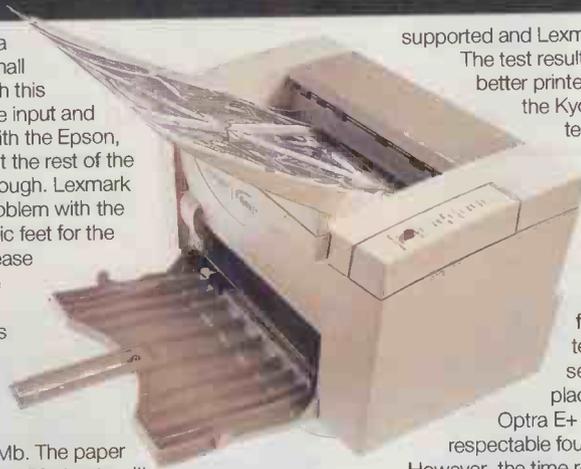
Conclusion If image quality is all you care about, this is the one.

★★★★

## Lexmark Optra E+

**T**he Lexmark Optra E+ has quite a small footprint, although this increases with the input and output trays extended. As with the Epson, the trays feel a little flimsy but the rest of the construction seems solid enough. Lexmark has recognised the slight problem with the trays and provides two plastic feet for the paper input tray, which increase stability. Setting up is simple enough but the process of installing the software drivers seems needlessly complicated.

The Optra E+ comes with 2Mb memory as standard, upgradeable to 5Mb. The paper input tray can accommodate 150 sheets with output capacity for 100 sheets. A secondary tray is available, bringing the total input to 400 sheets. Native DOS printing is



supported and Lexmark provides 5e PCL emulation.

The test results show that the Lexmark Optra E+ is one of the better printers here. Its image-quality score is beaten only by the Kyocera and we were especially pleased with the text, solid blacks and grey-scales. On the downside, the quality of the graphic images was not

quite as good as some of the other printers. The overall time for the speed test was 124 seconds, placing the

Optra E+ in a very respectable fourth position. However, the time recorded for the first page out, at 28 seconds, was rather long.

## PCW Details

Street Price £351.33 (£299 ex VAT)

Contact Lexmark 01628 481500  
[www.lexmark.co.uk](http://www.lexmark.co.uk)

Good Points Great quality and a decent turn of speed.

Bad Points Pricy. No straight paper path.

Conclusion A very good all-rounder.

★★★★



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- MS Windows 95 with disks and manual

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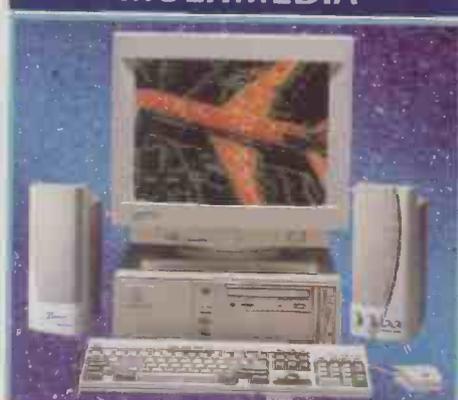
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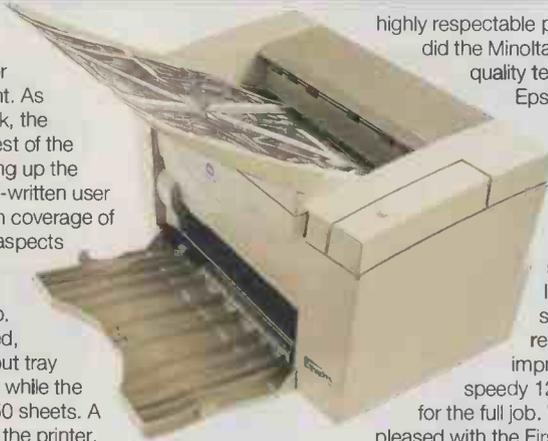
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### Minolta PagePro 6

**T**he Minolta PagePro 6 is a good-looking printer with a small footprint. As with the Epson and the Lexmark, the trays feel a little flimsy but the rest of the machine seems well built. Setting up the printer is made easy by the well-written user manual which provides in-depth coverage of the software and the technical aspects of the machine. The Minolta boasts 2Mb memory as standard, upgradeable to 18Mb. Native DOS printing is supported, as is 5e PCL emulation. The input tray holds a respectable 150 sheets while the output tray has a capacity of 150 sheets. A secondary tray which fits under the printer, with no increase to the footprint, is available, bringing the total input capacity to 400 sheets. A manual-feed mechanism is provided for non-standard media. The Epson and Lexmark printers both turned in



highly respectable performances, so how did the Minolta do? The image-quality test puts it in joint third place with the Epson, both just behind the Lexmark. We were very impressed with the solid black, greyscales, fine lines and graphic images, but the quality of the halftones brings the score down a little. The speed test results are impressive — a speedy 120 seconds for the full job. We were very pleased with the First Sheet Out Time: the Minolta is the second fastest out of the twelve machines, at 22 seconds.

#### PCW Details

**Price Street** £351.33 (£299 ex VAT)  
**Contact** Minolta 01908 200400  
[www.minolta.co.uk](http://www.minolta.co.uk)  
**Good Points** Great image quality. Very quick.  
**Bad Points** Pricey. No straight paper path.  
**Conclusion** An excellent printer.  
 ★★★★★

### Oki OKIPAGE 4w Plus

**T**he OKIPAGE 4w Plus is the cheapest and smallest of the printers in this group test. At four pages per minute, it is also the slowest. Oki has put a lot of thought into the design, and it shows. The 4w Plus is a compact, stylish LED printer with a tiny footprint and only one indicator light, most functions being handled through software.

Setting up is not the easiest experience. The cover does not stay up by itself, which makes it awkward to access the interior of the machine. Fitting the toner cartridge was difficult, with brute force and an excess of toner dust the order of the day. The supplied software is easy to use — essential, as Oki provides no instructions.

The user manuals cover setup and troubleshooting and are by far the clearest in the group. However, they do not go into the same level of detail as many of the others.



The vertical input tray holds 100 sheets and features some rather awkward paper guides. The output is ejected on top of the input tray and is limited to 30 sheets. While this is somewhat limiting, it is one of the things that helps keep the printer's footprint as small as it is.

Predictably, the 4w Plus's test results suffered in comparison with the more expensive printers. The speed test showed up the 4ppm limitation, but the image-quality result shows that cheap does not have to mean inferior, beating both the Brother and the QMS.

#### PCW Details

**Street Price** £193.88 (£165 ex VAT)  
**Contact** Oki 01753 819819  
[www.oki.co.uk](http://www.oki.co.uk)  
**Good Points** Mighty cheap.  
**Bad Points** Slow. Poor image quality. Lacking in features.  
**Conclusion** A good budget buy.  
 ★★★

### Oki OKIPAGE 6ex

**C**oming from the same stable as the stylish 4w Plus (above), you might expect the 6ex to be similarly well designed. Not so: this LED printer looks distinctly old-fashioned, with its LCD and eight multi-function buttons. At a time when most printers are moving towards increased software control, the 6ex stands out from the herd. Whether or not this is a good thing, is purely in the eye of the beholder. The OKIPAGE 6ex is a sturdily-built machine with the exception of the extendable output trays, which are flimsy. With an imposing footprint, this is not a printer you can ignore. The paper input tray has a capacity of 100 sheets and closes with a particularly satisfying clunk. There is a 50 sheet face-down output



tray and a 30-sheet face-up output tray. The most impressive features of this printer are the straight paper path and the manual-feed capability. Pressing a section of the front cover flips up a neat mini input tray with guides for various paper sizes. Oki supplies 2Mb memory as standard, upgradeable to 32Mb. Native DOS printing is supported, as is 5e PCL emulation. The 6ex suffers in the speed test, achieving an overall time of

135 seconds.

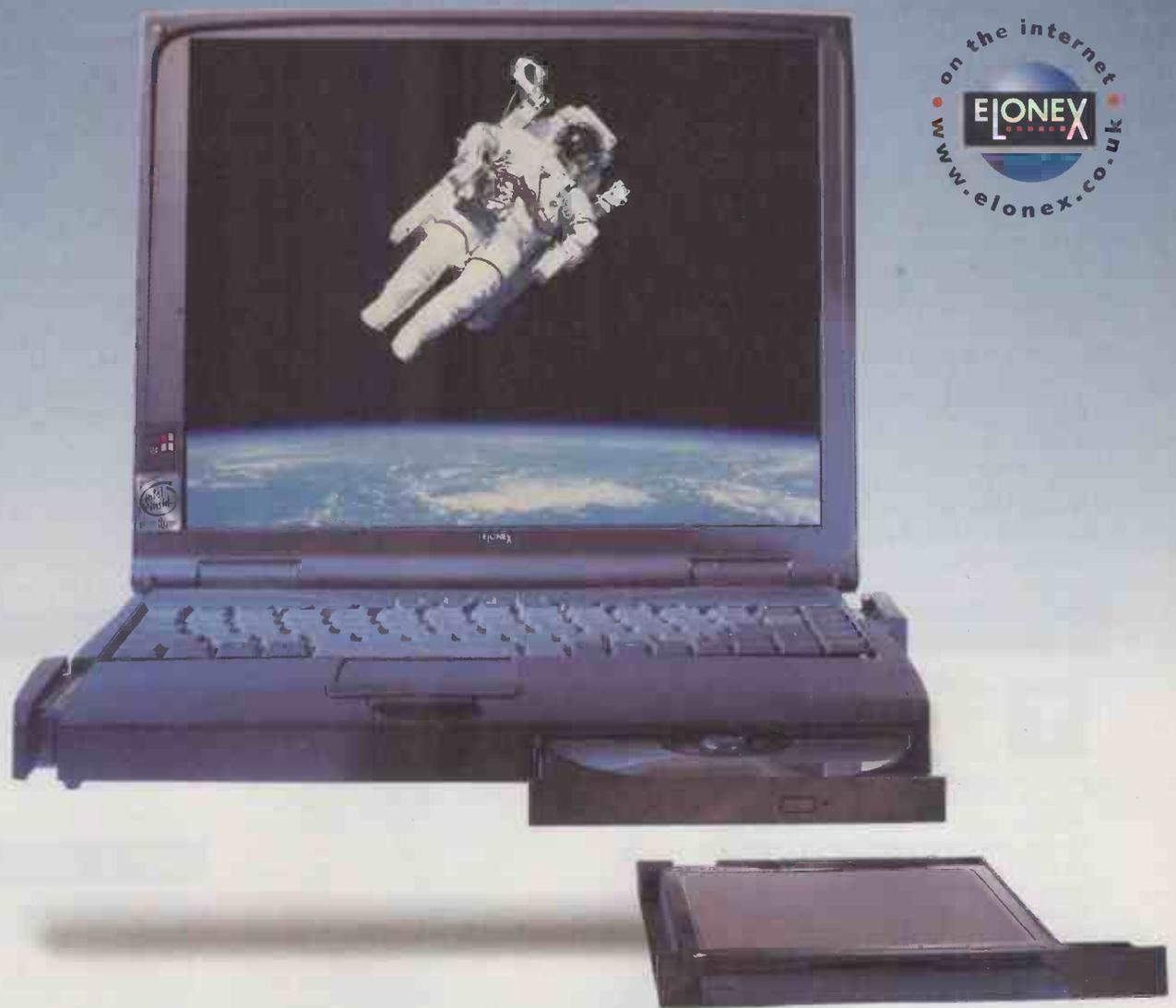
The FSOT of 38 seconds is similarly poor.

The quality test is better, with a mid-table rating. We were impressed by the solid blacks, but noticeable banding and poor greyscales let the side down.

#### PCW Details

**Street Price** £327.83 (£279 ex VAT)  
**Contact** Oki 01753 819819  
[www.oki.co.uk](http://www.oki.co.uk)  
**Good Points** Superb manual. Good paper path design.  
**Bad Points** Pricey. Slow.  
**Conclusion** There are better printers around for the money.  
 ★★

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**Editor's  
Choice**

### Panasonic KX-P6300

**T**he Panasonic KX-6300 is one of the strangest-looking printers we have come across. The tall, boxlike design may be unappealing at first, but it is actually very practical. It is easy to carry around and, more importantly, has a very small footprint, taking up little space on your desk. Setting up is straightforward, as is the software installation. The user manual is comprehensive but not quite as well written as some of the others in the group test.

The Panasonic is a budget printer and lacks many of the features present in the more expensive models. It does support 4.5 PCL emulation for DOS applications running through Windows, but there is no manual-feed mechanism nor a straight paper path. However, this is only an issue if you intend to print on non-standard media which cannot cope with the rigours of navigating the twisty interior of a printer. The supplied



memory is only 256Kb, expandable to 1.25Mb. The input tray can hold 100 sheets, while the output tray has a capacity of 50 sheets.

The Panasonic's test results were very impressive, particularly for a printer at this price. Fifth place in the quality test is down to excellent solid blacks, good white-on-black and graphic images. However, this printer really came into its own in the speed test: first page out in an incredible 19 seconds, followed by a time of 119 seconds for the entire job (beaten only by the eight-pages-per-minute Tally).

#### PCW Details

Street Price £217.38 (£185 ex VAT)

Contact Panasonic 0500 404041  
[www.panasonic.co.uk](http://www.panasonic.co.uk)

**Good Points** Small footprint. Quick. Quality output. Cheap.

**Bad Points** No manual feed or straight paper path. Only 256Kb memory.

**Conclusion** A fabulous printer as long as you don't need the missing features.

★★★★

### QMS DeskLaser 600

**T**he DeskLaser 600 boasts one of the smallest footprints in the group. Unfortunately, the benefits of this are negated by the fact that the output tray clips onto the front of the printer, expanding the space required by the size of a sheet of paper. Nonetheless, the 600 looks good and makes a stylish addition to the desktop. Setting up is simple and is well documented in the user manual. The input tray has a capacity of 100 sheets while the output tray is limited to 30 sheets. The standard paper path is fairly straight which helps when printing on non-standard media. The 1Mb memory is not upgradeable and neither PCL emulation nor native DOS printing are supported. Toner and drum are included within an Imaging Unit which averages 3,000 prints at five percent coverage.



Combining the toner and drum increases the running costs of the printer as you cannot replace the toner separately. The test results were disappointing, to say the least: a quality-test score of 43.52 put it at the bottom of the heap. Noticeable banding, terrible halftones and poor graphic-image output all contributed to its downfall.

The speed-test results are also poor: 39 seconds for the first page out is the longest wait we endured, while 138 seconds for the entire job pushes it towards the back of the field.

#### PCW Details

Street Price £233.83 (£199 ex VAT)

Contact QMS 01784 442255  
[www.qms.com](http://www.qms.com)

**Good Points** Stylish design. Small footprint.

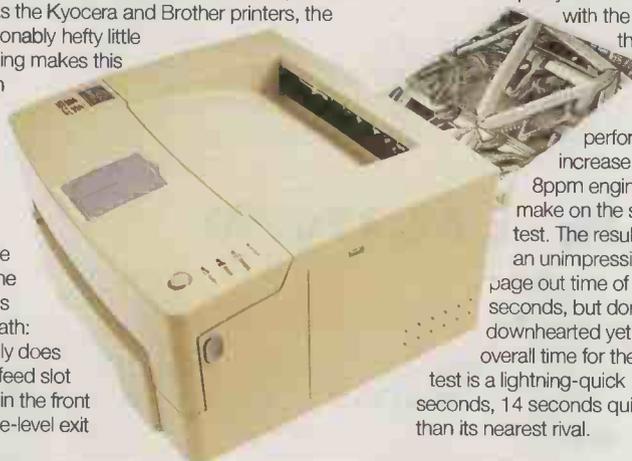
**Bad Points** Poor image quality. Slow.

**Conclusion** There are better printers around for the money.

★★

### Tally T9108

**T**he Tally T9108 is the only 8ppm printer in this group test but it is by no means the most expensive. With a footprint about the same size as the Kyocera and Brother printers, the T9108 is a reasonably hefty little number. However, nice styling makes this printer one of the easiest on the eyes. Setting up is a breeze, and software installation is similarly pain free. Tally supplies an excellent Quick Reference Guide which makes a nice change from having to wade through a manual. One of the best features of the T9108 is the superb straight paper path: in this instance, straight really does mean straight. The manual feed slot is just above the paper tray in the front and leads through to a same-level exit



at the rear. The result of the image-quality test was disappointing, with the Tally appearing in the lower half of the points table. We were very interested to see what

performance increase the 8ppm engine would make on the speed test. The results show an unimpressive first page out time of 29 seconds, but don't get downhearted yet: the overall time for the speed test is a lightning-quick 105 seconds, 14 seconds quicker than its nearest rival.

Personal  
Computer  
World  
**Highly  
Commended**

#### PCW Details

Street Price £298.45 (£254 ex VAT)

Contact Tally 01734 788711  
[www.tally.co.uk](http://www.tally.co.uk)

**Good Points** Super-fast. Great straight paper path.

**Bad Points** Image quality is not the best.

**Conclusion** If you are planning to print reams and reams of text, this is the one for you.

★★★★

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Colour laser printers

**J**ust as it's getting hard to buy a monochrome-only inkjet printer, it won't be too long before the same will be said about colour laser printers. Okay, the personal colour laser printer may be some way away, but it was only a matter of time before monochrome lasers migrated to the individual desktop.

The move towards colour is inevitable for the simple reason that colour conveys more information. It also helps draw the reader in, whether you're printing a brochure, a newsletter, or even a simple business letter. And the current crop of colour lasers deliver more than adequate print quality at both a reasonable speed and price to make them increasingly attractive to small business and workgroups.

They've come a long way, too: the new printers are smaller, lighter, less expensive and easier to use and administrate. They also produce much better-quality colour output than earlier models. Accordingly, the market for colour laser printers is expected to boom: Dataquest forecasts a ten-fold increase in colour laser printer shipments, growing from 32,600 units in 1995 to 304,000 in 2001.

Colour lasers work in an almost identical manner to monochrome (see "How laser printers work", p200). In a monochrome laser this involves just black toner; in a colour laser it additionally involves cyan, yellow and magenta toner, and many colour lasers require the page to make four passes through the print engine in order to collect all four dustings of toner. It's easy to see why colour lasers are so much slower than their mono brethren, with typical speeds in the two- to three-pages-per-

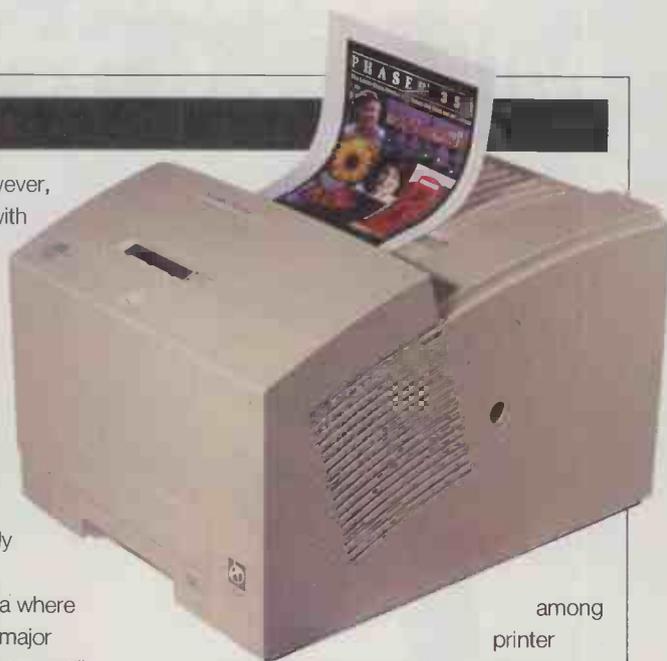
minute (ppm) range. However, when you compare like with like, most colour lasers can knock out black text at a pretty respectable double-figure ppm rate. Note that most colour lasers are primarily PostScript printers, a reflection of the graphics markets these devices are primarily sold into.

Print quality is one area where colour lasers have made major improvements. While most are still bettered by the new wave of very affordable photo-realistic inkjet printers, when it comes to speed they are hard to beat: whereas a full-colour page can take anything from ten to fifteen minutes to produce on an inkjet printer, a colour laser will typically take less than 30 seconds. No other colour printing technology comes close to lasers for output speed.

Most colour lasers offer 300dpi print resolutions but most modern models offer 600dpi, while the Tektronix 560 offers 1,200dpi. However, pure resolution is not everything in colour printing. Most laser printers are incapable of printing shades — they can either place a "dot", or they can't, so they resort to a process called dithering to give the appearance of shading. One cost of dithering is that the effective resolution for the printer is based on the number of dithering cells. With dithering cells of five dots across and five dots down, the effective resolution on a 300dpi printer is only 60dpi (300 divided by five). Some printers can reduce the sometimes-obvious appearance of dithering by offering multi-level or continuous tone (contone) printing.

Contone printers can print more than one shade of each colour per dot. This is typically just 16 shades, considerably less than the 256 shades most thermal dye printers can manage. Thus they still need dithering to produce 16.7 million colours, although they don't need as many dots per cell to simulate a given number of colours.

Cost of ownership is a popular topic



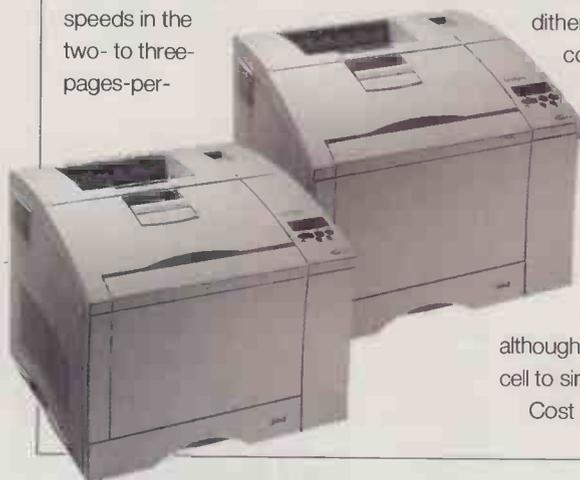
among printer vendors and users,

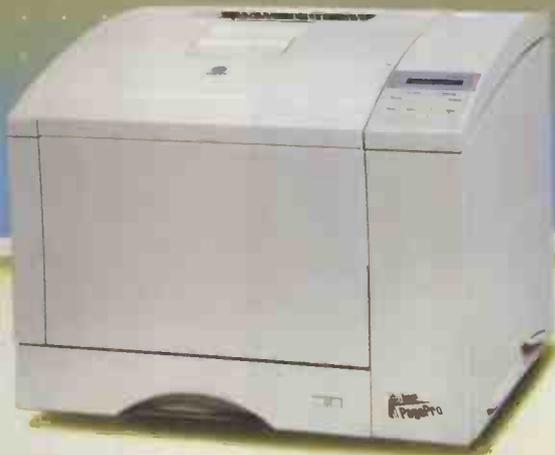
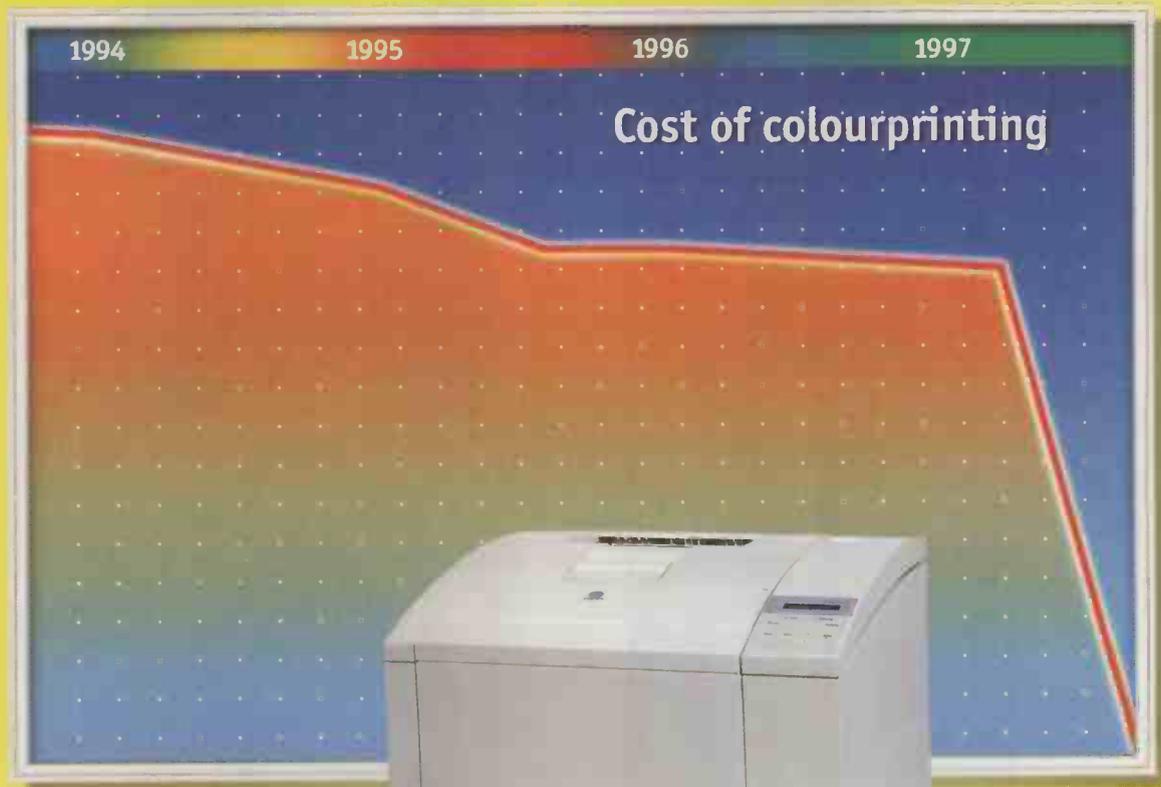
and while colour lasers are both dearer to buy and run than their monochrome rivals, their mono-only text-printing costs per page are only very slightly dearer. This allows colour lasers to wear two hats in a department — as a normal text printer for run-of-the-mill printing, and as a full-colour printer for special reports and presentations.

The choice of colour laser printers is pretty wide these days, with most major manufacturers offering at least one model. As with mono laser printers, the number of printer models may be high but the number of print engines is low. A popular choice is the Canon P320 engine which is found in the Digital ColorWriter 2000, the Lexmark Optra C, the IBM Network Color Printer and the Canon CBLP 360PS, among others. Minolta is another print engine maker: as well as driving its own Color PageWorks, it's also found under the bonnet of the Lexmark Optra SC1275. As well as a good print engine, final output quality is also determined by the raster image processor (RIP) and many vendors have plumped for EFI's Fiery RIP in their colour printers.

So what's a good colour laser? Currently top of the tree is Tektronix with its excellent Phaser 560 and Phaser 350 (although to be pedantic, this is a solid inkjet printer and not a laser) (\$5,000 street). Another good performer is the Lexmark Optra SC 1275, as is the Xerox DocuPrint C55mp and the aforementioned inexpensive Minolta Color PageWorks.

Roger Gann





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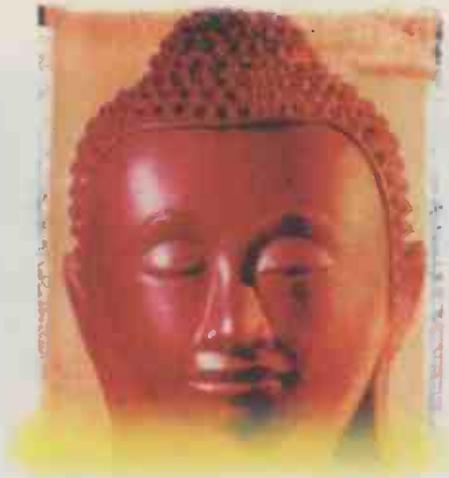
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PCW 02/98

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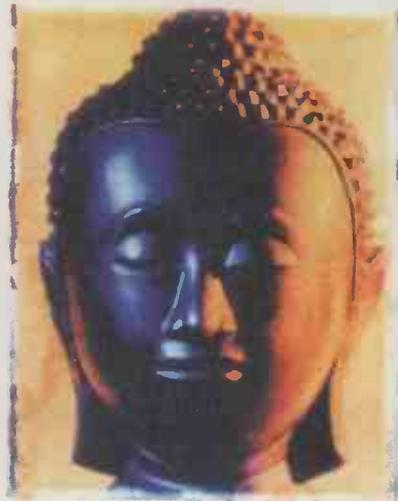


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Panasonic KX-P6300



QMS DeskLaser 600



Tally T91082



Editor's Choice

**W**e were impressed by the overall quality of the twelve laser printers in this group test. We encountered very few problems in setting up and installing the different machines, and there is no genuinely bad printer in sight. However, some are definitely better than others, and we are basing our judgements as follows: print quality is obviously very important, as is the basic speed of the engine. The prices of the printers vary from around £190 to £350 and there is a world of difference in the range of features offered. Value for money is therefore our third concern.

The first **Highly Commended** award goes to the **Kyocera FS-600**. At £280 this is a reasonably-priced printer with a impressive 2Mb memory as standard. It topped the charts in the image-quality tests and only misses out on Editor's Choice because of the disappointing speed test results.

The **Tally T9108**

takes the second **Highly Commended** spot. This eight-page-per-minute printer is lightning-quick over long print jobs and has a good range of features.

The third **Highly Commended** award goes to the **Minolta PagePro 6**. This is a quick, fully-featured printer with excellent image-quality output. The one drawback is the £351 price tag, but if you need an all-singing all-dancing laser printer, this could well be the one for you.

**Editor's Choice** is the **Panasonic KX-P6300**. This is one of the cheapest printers in the group, at a bargain £217. While it lacks many of the features present in the more expensive models, the low price tag coupled with fabulous results in both the speed and quality tests, makes the KX-P6300 a terrific bargain.



Before you bite the bullet and buy your printer, spare a thought for the running costs. Each page you print costs you money; how much depends on the paper you use, and the cost and capacity of the toner cartridge and drum. To complicate matters further, some manufacturers combine the toner and drum in a single unit, forcing you to replace both parts when the toner runs out. These are costs

you need to balance against your projected use of the printer: heavy users should place greater emphasis on the cost of consumables than users making light use of a printer.

This month's *PCW* cover CD contains a handy utility which allows you to compare the lifetime costs of a range of popular printers. **Printer Audit** can be found in the Software Library section.

How laser printers work

**A** laser printer needs to have all the information about a page in its memory before it can start printing. The laser inside the printer is used to draw on a photo-sensitive drum. It takes the image from the memory and, as it tracks from left to right, the laser is turned on and off. Moving the whole laser would be a major mechanical task and is unnecessary. All that has to be moved is the laser beam and this, as with all magic, is done with mirrors.

The printer has a small eight-sided drum and as this spins, the laser moves across the photo-sensitive drum. You can see the same principle in operation if you look at a mirror ball in a disco. The lights bounce off the ball on to the floor, track across the floor and disappear as the ball revolves. In the printer, the mirror drum spins incredibly quickly and is synchronised with the laser switching on and

off. A typical laser printer will perform millions of switches (on and off) every second.

The laser works like a stick drawing in dirt, where the dirt is a static charge on the photo-sensitive drum. Where the laser is turned on, it hits the drum and knocks the charge off. Where the laser is turned off, the charge remains. Inside the printer, the drum rotates to build one horizontal line at a time. Clearly, this has to be done very accurately. The smaller the rotation, the higher the resolution of the printer. Similarly, the faster the laser beam is switched on and off, the higher the resolution.

As the drum rotates to present the next area for laser treatment, the written-on area moves into the laser toner. Toner is a fine dust, usually jet black for traditional monochrome printing but also available in cyan, magenta and yellow for colour printing. The image builds up on the drum as the toner is attracted

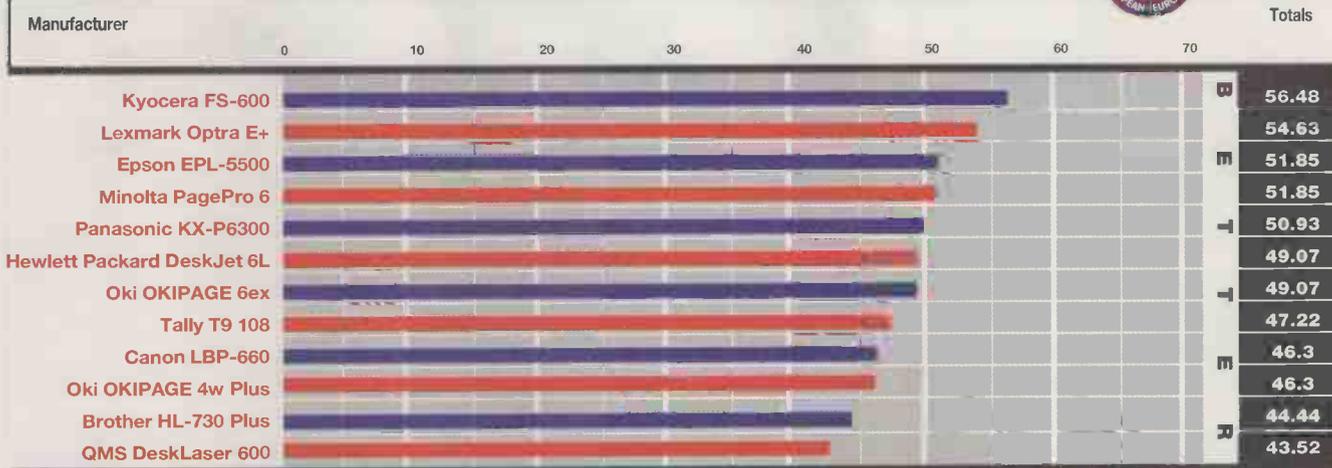
to it by the charge. As the drum rotates, it is pressed against the printing paper which is fed in by a set of rubber rollers. The toner rubs off onto the paper and, as a page of dust will not last long, the paper then passes under a heated roller to melt the toner on.

The page then slides further out of the printer with the drum continuing to rotate and needing to be cleaned. There are two forms of cleaning, physical and electrical. With the former, the toner which was not transferred to the paper is mechanically scraped off the drum and collected in a waste bin. Electrical cleaning takes the form of covering the drum with an even electrical charge so that the laser can write on it once more. This operation is performed by an electrical element called the corona wire. Both the felt pad which physically cleans the drum, and the corona wire, should be changed regularly.

Gordon Laing



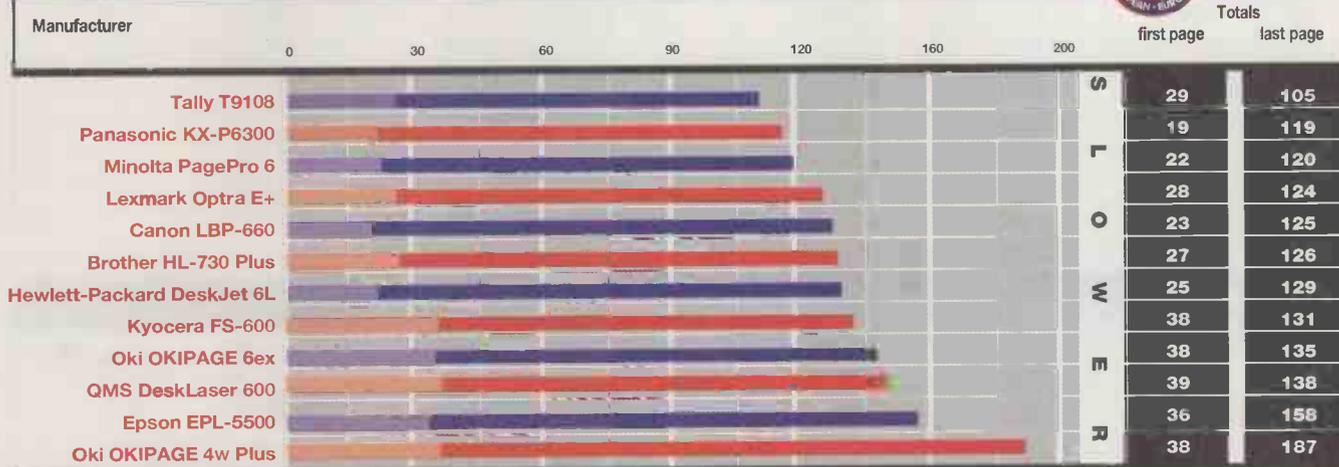
### Quality of output



A score garnered from many pages of printouts covering text, graphics, lines, resolution, halftones, black solidity etc.



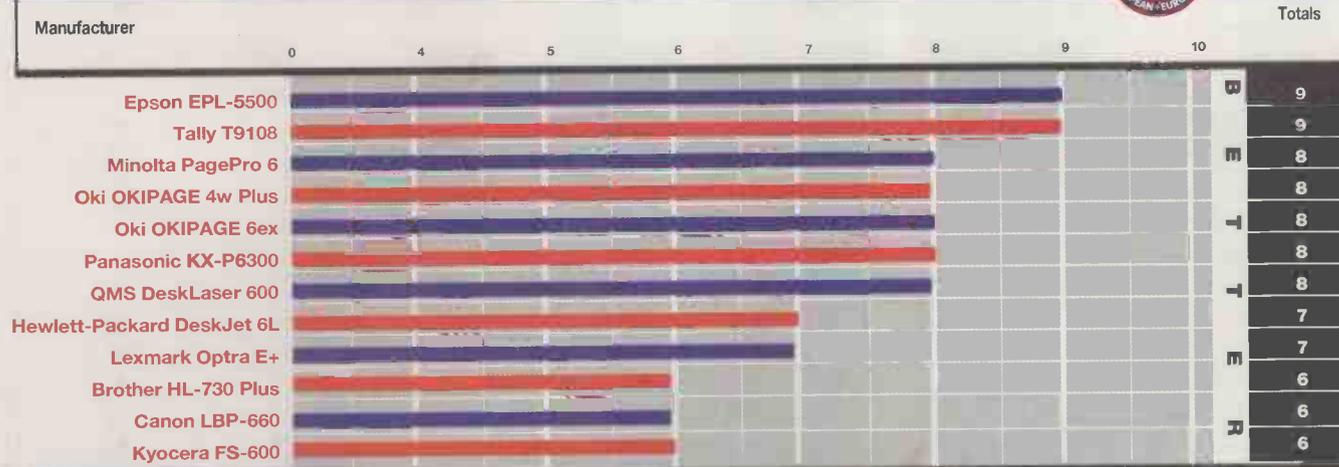
### Speed



Time taken in seconds to print out 11 pages of dense text.



### Positioning



Accuracy and consistency with which the printer positions the printed matter on the page.

Table of Features						
						
						
Manufacturer	Brother	Canon	Epson	Hewlett-Packard	Kyocera	Lexmark
Model Name	HL-730 Plus	LBP-660	EPL-5500	LaserJet 6L	FS-600	Optra E+
Street price (ex. VAT)	£199	£184	£274	£232	£239	£299
Street price (inc VAT)	£233.83	£216.20	£321.95	£272.60	£280.83	£351.33
Telephone	0161 330 6531	0500 550111	01442 261144	0990 474747	01734 311500	01628 481500
Fax	0161 931 2205	0121 693 5070	01442 227227	0171 735 5565	01734 311108	01628 481894
Web address	www.brother.com	www.canon.co.uk	www.epson.co.uk	www.hp.com	www.kyocera.co.uk	www.lexmark.co.uk
Standard warranty	1 yr RTB	1 yr on-site	1 yr RTB	1 yr RTB	1 yr RTB	1 yr RTB
Technical Features						
True DPI level	600 x 600	600 x 600	600 x 600	600 x 600	600 x 600	600 x 600
PCL level	4	4	5e	5e	5e	5e
Native DOS printing	●	○	●	●	○	●
Memory	1Mb	256Kb	1Mb	1Mb	2Mb	2Mb
Maximum memory	2Mb	256Kb	32Mb	8Mb	34Mb	6Mb
Size in mm (w x d x h)	366 x 353 x 250	336 x 321 x 249	352 x 204 x 217	335 x 312 x 228	363 x 360 x 222	348 x 246 x 219
Weight (kg)	6.5	7	5	7	8.5	6
Raw engine speed (ppm)	6	6	6	6	6	6
Paper Handling						
Input capacity (sheets)	200	100	150	100	150	150
Output capacity (sheets)	100	50	100	100	150	100
Manual paper path	●	●	●	●	●	●
Interfaces						
Parallel	●	●	●	●	●	●
Ethernet	○	○	○	○	○	○
Serial	○ (optional)	○	○ (optional)	○	○ (optional)	○

Table of Features						
 						
						
Manufacturer	Minolta	Oki	Oki	Panasonic	QMS	Tally
Model Name	PagePro 6	OKIPAGE 4w Plus	OKIPAGE 6ex	KX-P6300	DeskLaser 600	T9108
Street price (ex VAT)	£299	£165	£279	£185	£199	£254
Street price (inc VAT)	£351.33	£193.88	£327.83	£217.38	£233.83	£298.45
Telephone	01908 200400	01753 819819	01753 819819	0500 404041	01784 442255	01734 788711
Fax	01908 200398	01753 819899	01753 819899	01789 200290	01784 461641	01189 791491
Web address	www.minolta.co.uk	www.oki.co.uk	www.oki.co.uk	www.panasonic.co.uk	www.qms.com	www.tally.co.uk
Standard warranty	1 yr RTB	1 yr on-site	1 yr on-site	1 yr on-site	1 yr RTB	1 yr on-site
Technical Features						
True DPI level	600 x 600	600 x 600	600 x 600	600 x 600	600 x 600	600 x 600
PCL level	5e	4.5	5e	4.5	none	4.5
Native DOS printing	●	○	Yes	○	○	Yes
Memory	2Mb	none	2Mb	256Kb	1Mb	1Mb
Maximum memory	18Mb	n/a	32Mb	1.25Mb	1Mb	17Mb
Size in mm (w x d x h)	340 x 216 x 210	310 x 191 x 150	320 x 360 x 175	132 x 378 x 287	320 x 306 x 146	360 x 364 x 176
Weight (kg)	6	3.8	7.7	6.5	6	9
Raw engine speed (ppm)	6	4	6	6	6	8
Paper Handling						
Input capacity (sheets)	150	100	100	100	100	150
Output capacity (sheets)	100	30	50	50	30	100
Manual paper path	●	●	●	○	○	●
Interfaces						
Parallel	●	●	●	●	●	●
Ethernet	○	○	○	○	○	○ (optional)
Serial	○	○	○ (optional)	○	○	○ (optional)

Key: ● Yes ○ No

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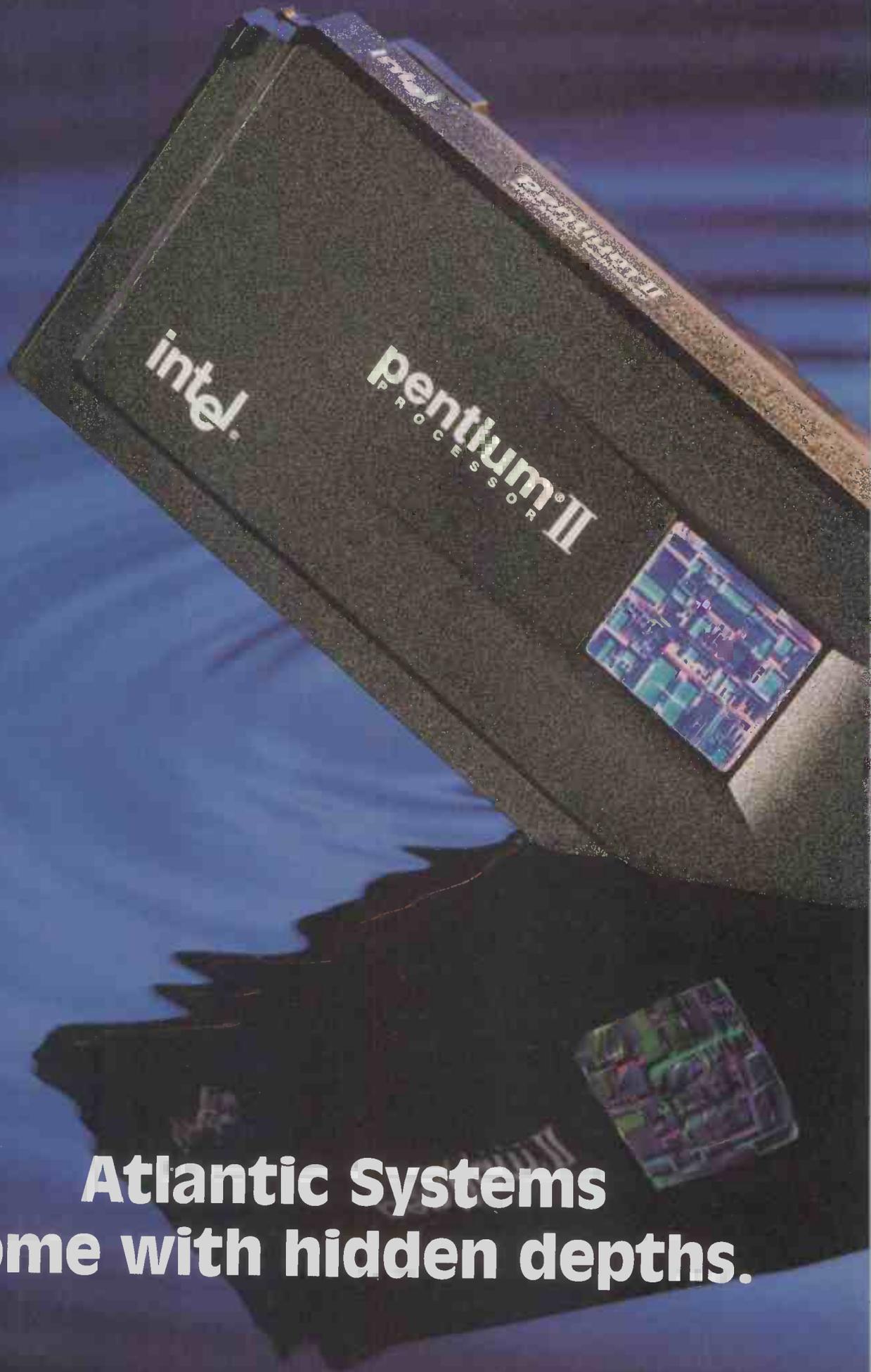


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**15" - 19" upgrade**  
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**14" - 15" upgrade**  
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**14" - 17" upgrade**  
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Upgrade: Word 97, Excel 97, Powerpoint 97,  
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## NOTEBOOK PERIPHERALS

### Mini Docking Station

Port replicator and network connectivity in  
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### Full Docking Station

PCI upgrade slots and network connection.  
£469 / £551.08 inc VAT

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33.6K fax modem,  
Integrated mobile communications  
High speed PCMCIA fax modem  
Data speeds up to 33,600bps  
£99 / £116.33 inc VAT

### Worldwide Warranty

Atlantic Panacom notebooks are covered by  
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your mobile breaks down anywhere in the  
world, we'll collect, repair and return it to  
you within 72 hours.

## AXIS



### 200MHz £639

The Axis is a good starting point for the PC  
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multimedia PC performance affordable.  
The CD audio and MPEG video playback,  
33.6K fax modem with high speed Internet  
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hensive range of software making the  
Atlantic Axis PC perfect for all home and  
business users.

As with all Atlantic PC's the Axis is supplied  
with the Kindware software in support of  
Friends of the Earth.

- Intel Pentium® Processor with MMX™  
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- Intel Pentium® II Processor
- 512k pipeline burst cache
- 16Mb RAM, expandable to 128MB
- 1.6Gb fast E-IDE hard drive
- 64Bit graphics with full screen  
MPEG1 playback
- 14" 0.28 SVGA colour monitor
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- 16 bit plug 'n' play GM wavetable sound
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- 33.6K internal fax & data modem
- 3.5" 1.44Mb floppy disk drive
- 105 key windows® 95 keyboard & mouse
- Mini tower or desktop case
- 3 PCI & 3 ISA slots
- Headset and Microphone
- SOFTWARE  
Microsoft Windows® 95,

Lotus SmartSuite 97 Including:  
WordPro 97,  
Organiser 97,  
1-2-3 97,  
Approach 97,  
Freelance Graphics 97.

Corel Draw Suite 4 Including:  
Draw,  
Photopaint,  
Chart,  
Show.

IBM Worldbook Encyclopedia 97,  
(Software supplied on CD-ROM with  
on-line documentation where appropriate).

Pipex dial 4 - one month free Internet  
access account. No credit card required.

Kindware Desktop Lawyer - essential letters  
& Desktop Lawyer - business & home LE.

- 5 year warranty - 1st year on-site
- Lifetime technical support.
- Buy now pay later

## PRO 98



### 233MHz £939

The Atlantic Pro 98 system delivers high  
performance multimedia with MMX™  
technology as standard. The Pro 98 utilises a  
K56Flex modem with Internet technology and  
voice fax facilities, perfect for high-end home  
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graphics deliver an excellent all round  
performance system.

- Intel Pentium® Processor with MMX™  
technology
- Intel Pentium® II Processor
- Intel® 430TX or AL-440LX ATX motherboard  
with 512k pipeline burst cache
- 32Mb SDRAM, expandable to 128MB
- 4.3Gb Ultra ATA DMA-33 hard drive
- ATI® 3D Rage II + 4Mb graphics card  
with full screen MPEG1 playback
- 15" 0.28 SVGA colour monitor
- 24 Max CD-ROM drive
- 16 bit plug 'n' play GM wavetable sound
- 80 Watt (PMPO) stereo speakers
- K56 Flex internal fax & data modem
- 3.5" 1.44Mb floppy disk drive
- 105 key windows® 95 keyboard & mouse
- ATX mini tower or desktop case
- 4 PCI & 3 ISA slots 1 shared
- 2 USB ports
- Headset and Microphone
- SOFTWARE  
Microsoft Windows® 95,

Lotus SmartSuite 97 including:  
WordPro 97,  
Organiser 97,  
1-2-3 97,  
Approach 97,  
Freelance Graphics 97.

Corel Draw Suite 4 Including:  
Draw,  
Photopaint,  
Chart,  
Show.

IBM Worldbook Encyclopedia 97,  
(Software supplied on CD-ROM with on-  
line documentation where appropriate).

Pipex dial 4 - one month free Internet  
access account. No credit card required.

IBM Simply speaking voice dictation software

Kindware Desktop Lawyer - essential letters  
& Desktop Lawyer - business & home LE.

- 5 year warranty - 1st year on-site
- Lifetime technical support.
- Buy now pay later

Intel Pentium® Processors with MMX™ technology

200MHz	Ex VAT	Inc VAT	*Per Month
	£639	£768.45	£27.24
233MHz	Ex VAT	Inc VAT	*Per Month
	£699	£838.95	£29.74

Intel Pentium® II Processors

233MHz	Ex VAT	Inc VAT	*Per Month
	£799	£956.45	£33.91
266MHz	Ex VAT	Inc VAT	*Per Month
	£959	£1144.45	£40.57
300MHz	Ex VAT	Inc VAT	*Per Month
	£1099	£1308.95	£46.40

\*All monthly payments over 36 months 17.9% APR

Intel Pentium® Processors with MMX™ technology

200MHz	Ex VAT	Inc VAT	*Per Month
	£879	£1050.45	£37.24
233MHz	Ex VAT	Inc VAT	*Per Month
	£939	£1120.95	£39.74

Intel Pentium® II Processors

233MHz	Ex VAT	Inc VAT	*Per Month
	£979	£1167.95	£41.40
266MHz	Ex VAT	Inc VAT	*Per Month
	£1099	£1308.95	£46.40
300MHz	Ex VAT	Inc VAT	*Per Month
	£1249	£1485.20	£52.65

\*All monthly payments over 36 months 17.9% APR

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## PANACOM



### 133Mhz £48 Per Month

Atlantic Panacom notebook computers are cutting edge multimedia PC's in a portable and ergonomic format. Sharp screens and exceptional build quality combined with two years interest free credit make these multimedia PC's hard to resist. All Atlantic notebooks contain specially designed mobile Pentium Processors from Intel®, ensuring enhanced battery performance and MMX™ technology as standard.

- 12.1" SVGA colour display
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- Intel® 82430MX chipset
- 1.44Gb hard disk drive
- 24Mb EDO RAM exp to 72Mb
- 256K level 2 cache
- Neomagic 128bit graphics accelerator
- Removable 12 speed CD-ROM
- 1.44 floppy drive
- 16bit stereo sound with stereo speakers & microphone
- 2 x smart NiMH batteries
- 85 key keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Synaptics® touchpad™
- Parallel (EPP/ECP), serial & infra red, VGA, docking connector & PS2 port
- Built in microphone
- Weight 2.9Kg • Dimensions: 299 x 226 x 51
- Carry case, A/C adapter, manuals
- Microsoft® Windows 95
- SOFTWARE
- IBM Simply speaking voice dictation software.
- Lotus Smartsuite 97

- 1Yr parts & labour warranty, two years RTB
- Lifetime technical support

133MHz	Ex VAT	Inc VAT	*Per Month
	£1299	£1526.33	£48.70

\*Payments over 24 months £59 per month, 17.9% APR

166MHz	Ex VAT	Inc VAT	*Per Month
	£1429	£1679.08	£53.57

\*Payments over 24 months £79 per month, 17.9% APR

### 233Mhz £93 Per Month

- 13.3" XGA TFT colour display
- 233MHz Intel® mobile Pentium® Processor with MMX™ technology-Intel MM0 module
- Intel® 82430MX chipset
- 3.2Gb ULTRA ATA DMA-33 hard disk
- 32Mb EDO RAM exp to 80Mb
- 256K level 2 cache
- Neomagic 128bit 3D graphics accelerator
- 20 speed CD-ROM & 1.44 floppy drive
- Stereo wavetable sound with stereo speakers, wavetable with MIDI
- SMART lithium 45W battery
- 85 key keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Zoomed video port
- Cardbus ready • Synaptics® touchpad™
- Parallel (EPP/ECP), serial(16650) & Infra red (IRDA 1), VGA, docking connector & PS2 Port
- Built in microphone
- Weight 2.9Kg • Dimensions: 299 x 226 x 51
- Carry case, A/C adapter, manuals
- Microsoft® Windows 95
- SOFTWARE
- IBM Simply speaking voice dictation software.
- Lotus Smartsuite 97

- 1Yr parts & labour warranty, two years RTB
- Lifetime technical support

233MHz	Ex VAT	Inc VAT	*Per Month
	£2499	£2936.33	£93.68

\*Payments over 24 months £59 per month 17.9% APR

## NEXUS



### 200MHz £59 Per Month

Atlantic Nexus systems come equipped with the ATI® Xpert@Play performance 3D graphics card with TV output so now you can view games and other PC applications on your monitor or large screen TV for a truly immersive 3D experience. Stunning wavetable synthesis and MIDI features from Creative's AWE-64 Digital audio card also makes the Nexus the intelligent choice for PC musicians and serious game players. Nexus systems feature super fast K56 Flex voice, fax & data modems & include trial access to the Internet via PIPEX.

- Intel Pentium® Processor with MMX™ technology or Intel Pentium® II Processor
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- 32Mb SDRAM, expandable to 128MB
- 3.2Gb ultra ATA DMA-33 hard drive
- ATI® 3D Xpert@Play 4Mb graphics card with full screen standard TV output
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- 15" 0.28 SVGA colour monitor
- 24Max CD-ROM drive
- Creative AWE-64 wavetable soundcard
- 80 watt (PMPO) stereo speakers
- K56 Flex internal fax & data modem
- 3.5" 1.44Mb floppy disk drive
- 105 key windows® 95 keyboard
- MS compatible mouse
- Mini tower or desktop case
- 4 PCI & 3 ISA slots 1 shared
- 2 USB ports
- Headset & microphone
- SOFTWARE

- Microsoft® Windows 95
- Lotus Smartsuite 97 Including: WordPro 97, Organiser 97, 1-2-3 97, Approach 97, Freelance Graphics 97
- Corel Draw suite 4 Including: Draw, Photopaint, Chart, Show.
- IBM Worldbook Encyclopedia 97
- Microsoft® Family pack including: Encarta97, Works, Money, Golf,
- Explore the solar system
- IBM Simply speaking voice dictation software
- The Family Doctor™
- Design It! 3D™
- Kitchen Gourmet™
- The Oregon Trail™
- Key Home Gardener™
- Typing Teacher™
- Kindware Desktop Lawyer - essential letters & Desktop Lawyer - Business & home LE. (Software supplied on CD-ROM with on-line documentation where appropriate).
- Pipex Dial 4 - one month free internet access account. No credit card required.

- 5 year warranty - 1st year on-site
- Lifetime technical support

Intel Pentium® Processors with MMX™ Technology

200MHz	Ex VAT	Inc VAT	*Per Month
	£1199	£1408.83	£59

233MHz	Ex VAT	Inc VAT	*Per Month
	£1329	£1561.57	£65

Intel Pentium® II Processors

266MHz	Ex VAT	Inc VAT	*Per Month
	£1549	£1820.08	£76

\*Payments over 24 months No deposit. 0% interest free

## PROTEUS



### 233MHz £1499

The Proteus range represents the next generation of computer system design. The ATX based Proteus systems feature MMX™ technology, 17" screens, large 8.4Gb Ultra ATA DMA-33 Hard Disk Drives and Microsoft Office97 SBE edition on all models for outstanding 'Future Proofing'. Atlantic PC's are even easier to own right now, with 10% deposit and nothing more to pay for six months, when you have the option to pay the rest interest free, or you can take advantage of our economical 36 monthly repayments scheme.

- Intel Pentium® II Processor
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- 64Mb SDRAM, expandable to 256MB
- 8.4Gb Ultra ATA DMA-33 hard drive
- 8Mb ATI® 3D Xpert@work AGP x2 graphics card
- 17" 0.28 SVGA colour monitor
- 24Max CD-ROM drive
- Creative AWE-64 wavetable soundcard
- 80 Watt (PMPO) stereo speakers
- K56 Flex internal fax & data modem
- 3.5" 1.44Mb floppy disk drive
- 105 Key Windows® 95 keyboard & mouse
- ATX Mini tower or desktop case
- 4 PCI & 3 ISA slots 1 shared
- 2 USB ports
- Headset & microphone
- SOFTWARE:
- Microsoft® Windows 95
- Microsoft® Office 97 SBE Includes: Word 97, Excel 97, Publisher 97,

Small Business Financial Manager 97,

Autoroute express GB,

Outlook 97.

Corel Draw Suite 4 Includes:

Draw, Photopaint, Chart, Show.

IBM Worldbook Encyclopedia 97

IBM Simply speaking voice dictation software

Kindware Desktop Lawyer - essential letters & Desktop Lawyer - business & home LE. (Software supplied on CD-ROM with on-line documentation where appropriate).

Pipex Dial 4 - one month free internet access account. No credit card required.

- 5 year warranty - 1st year on-site
- Lifetime technical support
- Buy now pay later

233MHz	Ex VAT	Inc VAT	*Per Month
	£1499	£1761.33	£56.20

266MHz	Ex VAT	Inc VAT	*Per Month
	£1599	£1878.83	£59.94

300MHz	Ex VAT	Inc VAT	*Per Month
	£1699	£1996.33	£62.92

\*All monthly payments over 36 months 17.9% APR 10% deposit

## WARRANTY

Atlantic PC systems come with a five year warranty as standard, with the first year on-site at no extra cost. Business hours telephone technical support is also provided during the lifetime of the PC. Now home users can upgrade to special 7 day extended telephone helpline for the first year for only £29 + VAT

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### What the papers say

Personal Computer World

Good Points: Software bundle, large hard disk, excellent graphics card.

Bad Points: None

Conclusion: Great specifications and good selection of software make this an attractive choice.

(ATX Proteus PCW Feb '97)

Computer Shopper

"The presentation of this system is good and it boasts high quality components."

(ATX Pro 97 Best Budget Buy Computer Shopper May '97)

Personal Computer World

"This PC has proved to be one tough cookie. It handled everything without hassle."

(Pro 96 long term test: PCW June '97)

PC Advisor

"...this Atlantic machine performed confidently throughout our rigorous testing procedures. The Atlantic gives good performance for an excellent price."

(Pro 97 Recommended PC Advisor Sept '97)

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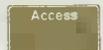
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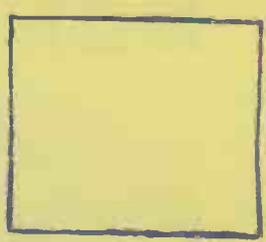
Personal Computer World • February 1998 • 207

Mon		7	14	21
Tue	1	8	15	22
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Thu	3			24
Fri	4			25
Sat	5			26
Sun	6			27



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10

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54

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# Tale of the century

As if the inevitability of a hangover weren't enough, 1st January 2000 will bring many IT headaches, too. Paul Wardley provides the low-down on how to survive the year 2000.

**A**s you read this, you may not yet have shed those extra pounds you put on over Christmas and might still be remonstrating with yourself about the self-inflicted headache brought on by over-zealous indulgence in the New Year festivities. If it's any comfort, this is nothing compared to the headache you'll be facing after the millennium celebrations — unless you act now.

At the start of the year 2000, millions of PCs are going to get confused when they're switched on for the first time: spreadsheet and database programs which have hitherto worked perfectly, could start producing nonsensical results; scheduled network activities may take place randomly or not at all; and accounting systems bulging with data could mysteriously refuse to run.

PC users who bought their equipment in good faith didn't find any warning stickers stating "May not function after 1999" and might be forgiven for being caught unawares, but the problems faced by large enterprises are mostly self-inflicted and stem from poor programming techniques going back 30 years or more. Either through lack of forethought or in a deliberate attempt to minimise the costs of data storage, many programs were written to accept the input of six-digit dates in the form 12/01/98. The century 1900 was implied and not stored along with the rest of the date.

Now the year 2000 is approaching, programs based on six-digit date formats are refusing to accept 21st century dates or, worse still, apparently accepting them but treating them internally as 20th century dates. This can cause relatively trivial problems like the wrong date on a report, but there are implications involving the integrity of entire systems. Order and invoice processing is impossible without accurate date computations, as are financial transactions and scheduled maintenance plans.

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## Ratings

- ★★★★★ Buy while stocks last
- ★★★★ Great buy
- ★★★ Good buy
- ★★ Shop around
- ★ Not recommended

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CRICITY LTD.

System shows that  
 did you last bill  
 year 1900.

**It's your problem**

Smaller enterprises relying on PCs rather than mainframes face different problems to those besetting corporates, but the problems are equally real and the worrying thing is that users have not yet started to address the issues. Those who will suffer are the pedants who insist the new millennium starts on 1st January 2001. They're right. But the rest of us will be celebrating the event a year early, which is when the so-called millennium bug will hit PCs.

Last year, the government set up an organisation called Action 2000 with a brief to help companies prepare for the millennium. With only £1m funding it's unlikely that Action 2000's activities will filter down to medium and small businesses, let alone individual PC owners, so the best course of action is one of self-help. In the jargon of the nineties, you have to take ownership of the problem, and your first task is to understand how computers and software are affected. You can then test them and implement any changes needed.

**Problems, problems...**

PC users have to track down two types of problem, one of which is essentially the same as that facing mainframe users: it resides in commercially-produced software that may not react as expected to the input of six-digit dates in the next century. The other is a flaw in the design of the PC itself, in its real-time clock (RTC) which does not recognise the arrival of the year 2000. The flaw has been there since the introduction of the IBM AT in 1984, but is

only now making its presence felt. The first PC and XT computers were not fitted with real-time clocks and had to have the date entered manually each time they were booted, but the AT introduced two innovations: CMOS RAM to store configuration information, and the inclusion of a real-time clock. Both were integrated in a Motorola MC146818 chip, which provided 64 bytes of CMOS RAM (14 for the real-time clock plus 50 for configuration information) powered by an external battery.

The Motorola chip and its later replacements, like the DS1287, which combines the clock, CMOS and battery in a single module, contain the same basic flaw. While the real-time clock is ticking it constantly updates the time and date stored in CMOS RAM, but does not update the century byte, which always stores the value 19.

PCs don't actually use the real-time clock when they're running. The time from the RTC is picked up by the BIOS and sent to the operating system when a computer boots up. From then on, the operating system keeps its time by counting the ticks of an interval timer. When 31st December 1999 ticks over into 1st January 2000, the operating system will display the correct date, but the century byte in CMOS will remain at 19. So the next time the computer is booted, the BIOS reads the wrong century from the real-time clock. Several things can happen at this stage:

1. If the BIOS does nothing and passes on the year 1900 in the usual way, DOS and Windows will reset the system date to 4th January 1980 or some other arbitrary date they can understand.

- 2. A more capable BIOS will realise the date is wrong and pass on the correct 2000 date to the operating system, although the RTC century will still be set at 19.
- 3. A clever BIOS will not only pass on the correct date to the operating system, it will also update the century byte in CMOS from 19 to 20 so the problem does not arise again. The majority of PCs simply pass on the incorrect date, which is when the trouble begins.

**Avoiding date disasters**

If the system date of a PC used for entertainment, recreation or creative graphics goes out of kilter it may not matter, but any business PC is bound to employ dates within programs like spreadsheets, databases and PIMs and for date-stamping files. Worse, appointment books, accounts software, schedulers and many other applications include

**Quick hardware test**

The way in which to test a PC's ability to handle the year 2000 rollover is to simulate the turn of the century and see what happens. In essence, this is what commercial diagnostic programs do on your behalf. Testing should be done in DOS, not Windows, so if you want to test a Windows NT machine you need a bootable system disk from a DOS or Windows PC. It's a good idea to conduct tests from a bootable floppy whatever machine you're testing. This avoids the pitfall of inadvertently starting Windows with an invalid system date.

1. Boot the PC from a floppy disk and at the A: prompt type Date. Enter 31 December 1999
2. Type Time and enter 23:59:50
3. Wait at least ten seconds to give the clock time to roll into the 21st century. At this stage it's a certainty that the DOS clock will correctly show 1/1/2000. You can check this by typing Date again.
4. Switch off the machine and reboot into DOS from the floppy disk. Type Date and see what it says. If it's 1/1/2000 either your PC has a correctly functioning real-time clock, or the BIOS has automatically corrected the date discrepancy. If the date is 4/1/80 or anything other than 1/1/2000, the machine has problems and you should go to the next step.
5. A PC that cannot roll correctly into the year 2000 is still viable as long as it can retain year 2000 dates when entered manually. To test, type Date and enter 1st January 2000. Switch off the PC for a few seconds and reboot.
6. Type Date. If it says 1/1/2000, the PC will work fine in the year 2000, but you'll have to set the date manually when it arrives. Most PCs are like this. If you encounter one that cannot hold a year 2000 date having manually entered it and rebooted, you must upgrade the BIOS.
7. Do not forget to set the correct date and time before rebooting from the hard disk!

```
ViewCMOS: Conventional CMOS RTC RAM length is 128 (80h) bytes.
ViewCMOS: ** Ho 8236081-type CMOS RAM is available in this machine. **
ViewCMOS: Indicated CMOS RTC date and time is 1900-01-01 00:00:09.
ViewCMOS: Version 5.08 Copyright 1991-97 RightTime, Miami. All Rights Reserved.
ViewCMOS: ** Press ESCape to exit, or any other key to switch RAM display. **

** Conventional CMOS RTC RAM **
x0: x1: x2: x3: x4: x5: x6: x7: x8: x9: xA: xB: xC: xD: xE: xF:
0x-09 00 00 00 00 00 01 01 01 00 26 02 40 80 00 00
0: 1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 11: 12: 13: 14: 15:
1x-40 64 F0 03 0F 80 02 00 FC 2E 00 70 FF FF 00 00
16: 17: 18: 19: 20: 21: 22: 23: 24: 25: 26: 27: 28: 29: 30: 31:
2x-00 00 00 00 00 00 FC 0F 10 FF FF FB 0F 3F 0A 2
32: 33: 34: 35: 36: 37: 38: 39: 40: 41: 42: 43: 44: 45: 46: 47:
3x-00 00 19 80 00 05 FF FF FF FF FF 0F B0 9B E8 1
48: 49: 50: 51: 52: 53: 54: 55: 56: 57: 58: 59: 60: 61: 62: 63:
4x-53 89 88 88 47 F9 FF 47 36 FE FF FF FF FF FF
64: 65: 66: 67: 68: 69: 70: 71: 72: 73: 74: 75: 76: 77: 78: 79:
5x-FD 00 00 FF 3F BF FF B7 F9 FC 0F 00 FF FF FF FF
80: 81: 82: 83: 84: 85: 86: 87: 88: 89: 90: 91: 92: 93: 94: 95:
6x-FF FF FF FF 41 FF FF 00 00 00 00 00 00 00 00 FF 00
96: 97: 98: 99: 100: 101: 102: 103: 104: 105: 106: 107: 108: 109: 110: 111:
7x-00 00 00 00 00 00 00 00 00 F0 FF FF FF 20 D4 F
112: 113: 114: 115: 116: 117: 118: 119: 120: 121: 122: 123: 124: 125: 126: 127:
```

ViewCMOS can be used to see what a real-time clock does during a century rollover. Byte 50 (circled) indicates the century date

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PC brand used: \_\_\_\_\_

# of PC on site: \_\_\_\_\_

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clean-up routines which automatically purge out-of-date files, and the results of running these with an incorrect date could result in huge loss of data.

But all is not doom and gloom: the hardware date defects of a PC can be fixed. In most cases, manually entering the correct date in the year 2000 will reset the CMOS century byte and forestall any problems. In situations where you cannot trust users to do this for themselves, a software fix can be implanted in their PCs to change the century automatically. Good news for users of Windows NT 4.0 (or NT 3.51 with service pack 5) is that the operating system itself will detect the RTC defect and correct it at the turn of the century.

Sadly, there is a small minority of PCs which won't respond to this type of correction. They have BIOSes that cannot handle 21st century dates. A well-known culprit is the Award 4.50G BIOS (released between 26th April 1994 and 31st May 1995) which must be upgraded.

Nearly all PCs can operate successfully in the next century once dates have been set, but there are arguments in favour of modifying them so they can enter the year 2000 unaided. One is that if a PC is left running overnight on 31st December 1999, although the OS time is correct, any software that gets the date from the real-

time clock could go haywire. This is true, but we haven't been able to trace any commercial Windows software that uses the RTC in this way. A more compelling reason for upgrading a PC is to save the trouble of having to manually reboot and reset every machine on a network on the first working day of the year 2000: an onerous task which it would be easy to get wrong.

### Ensuring hardware compliance

If you decide that automatic entry into the year 2000 is not essential, you should still test your PCs to ensure they are able to run properly after a manual date change. If you have only a couple of PCs to test, you can do it yourself by following the instructions in our "Quick hardware test" (p210). If you find this prospect daunting, you can use one of the commercial programs designed to test a PC's year 2000 readiness. Most are sold alongside a hardware or software "fix" which enables the PC to tick over into 2000 without attention. The fix is either a memory-resident program that constantly monitors the time and updates the RTC when required, or an extension BIOS which plugs into an ISA expansion slot and does the same thing.

The cheapest, most reliable fix is to upgrade a PC's

BIOS. Most PCs contain reprogrammable BIOS chips for which updated code can be downloaded from motherboard manufacturers' web sites along with a flash programming utility to perform the task. However, there are reasons why this may be neither a desirable nor practical solution. BIOS designers such as Award and AMI do not supply code direct to end-users; they licence it to motherboard manufacturers and you have to get it from them. It can be difficult to determine the motherboard supplier and the exact type of BIOS required, especially if you have bought your PCs at different times, from different suppliers.

Another pitfall is that flash-programming a BIOS means blanking it first, so for a short period you're working with an essentially brain-dead PC which won't restart if things go wrong. The flash BIOS solution is more likely to appeal to a single-PC owner than to someone running a small business network without the help of a professional administrator.

## How to check your software

Bespoke programs are difficult to check for year 2000 compliance and may need to be modified or rewritten. Off-the-shelf Windows programs can cope with 21st century dates but you must determine how date entries are interpreted and, if necessary, modify working practices in line with your software.

Many software houses have web pages explaining year 2000 compliance but some of the information could be misleading. The Lotus web site states: "All versions of 1-2-3 currently accepts (*sic*) both two-digit and four-digit year designations". See Fig 1 to judge how accurate is this statement. It is true that Lotus 1-2-3 version 4 accepts four-digit dates — but not in this century. It is not an insuperable problem but one which users need to know about. If you are wondering who is still running version 4, the answer is hundreds of thousands of people. It was the bee's knees four years ago and Lotus Organizer 1.x was sold up until 1995, yet it can only support dates between 31st December, 1990 and 31st January, 2001.

There are anomalies in programs from other suppliers: Quattro Pro 7 assumes that all two-digit dates fall in the 20th century but Quattro Pro 8 thinks dates between "00" and "50" are in the 21st century. Excel 95 and Access 95 agree that a two-digit date of "20" represents 1920, but Access 95 thinks the year "19" is in the 20th century and Excel 95 thinks it's in the 21st — and these two programs are part of the same suite! Do those in your organisation using a spreadsheet or database know its date rules? Do you? This checklist will help you plan for 2000:

1. Contact your software suppliers now.
2. Find out the ground rules for the way all your programs handle dates.
3. Test the rules to ensure they are unambiguous.
4. Make a log of all data files which contain dates.
5. Check data files to see if dates are entered appropriately and if date functions work as expected.
6. Work out rules for how dates should be entered from now, and in the 21st century. You may need to change entry techniques after 31/12/99.
7. Make sure everybody knows the rules and starts applying them now.

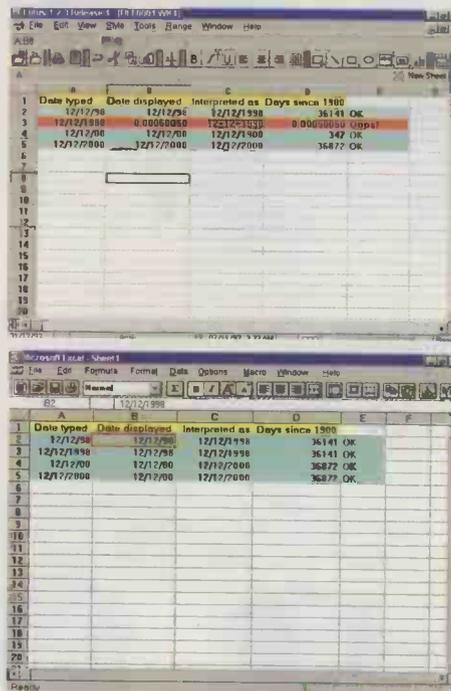


Fig 1 Lotus 1-2-3 (top) and Excel (above): two very different ways of handling dates and a headache for anyone who uses both programs

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## Year 2000 myths and realities

### Myths

- Non-compliant PCs will disintegrate on 1st Jan 2000.
- If you ignore the problem, it will go away.
- Microsoft, Corel, Lotus and the like wouldn't sell software which wasn't ready for the year 2000.
- Your supplier told you that your PCs are year 2000 compliant so you don't need to check them.
- There's plenty of time before the year 2000.

### Realities

- Checking and fixing hardware bugs is easy and should be tackled first.
- Rumours that many PCs do not understand leap year dates in the 21st century are unfounded.
- Checking software for year 2000 compliance is hard and time consuming. The sooner you start, the better.
- Nobody is going to invent a "magic bullet" to fix bugs.
- There are 97 weeks until the year 2000.

### Software compatibility

Testing your hardware and getting it ready for 2000 is relatively straightforward. The time-consuming job is working out which apps on a PC use dates and then finding out how they're going to handle them post-2000.

Software most affected will be spreadsheets and databases and, even on a compliant PC, the way in which 21st century dates are interpreted will lead to problems, especially where computations are involved. A program running scheduled services (anti-virus checks, backups, accounts reconciliation, project and time management) could cause problems by incorrectly interpreting a two-digit year and placing it in the wrong century.

Underlying the applications software on all PCs is the operating system. According to Microsoft, if you use any of its systems you needn't worry, because "From day one, with the initial work on the MS-DOS operating system, Microsoft incorporated the capability to handle dates well into the next century." Er, sorry Microsoft, although we agree that DOS and Windows 95 can handle future date formats, an OS that resets the system date to 4th January 1980 when it is fed an apparently invalid year falls some way short of perfection. Wouldn't it have been better to build in an error handler that stated: "The system date appears to be invalid...please enter the correct date" or would that have been too simple?

## The year 2000 in the home

Home owners face the same problems as business users, but in cases where a PC is used for non-critical applications like word processing, DTP and multimedia, which are not date-sensitive, the implications of running a PC with the wrong date are not too worrying. There's no room for complacency and if you have a home PC you should test it to ensure it can retain year 2000 dates even if you don't plan to install a fix. Manually setting the date in the year 2000 will suffice where the machine is not going to be used during the century rollover. Users of spreadsheets, databases and PIMs should check with software suppliers about the way two-digit dates are interpreted by their

programs. It may be necessary to re-enter some dates and date formulas in order for them to function correctly in 2000 and beyond. As well as the obvious problems for PCs, many of our household gadgets are in fact computers under another name. VCR recorders, central-heating timers and burglar alarms all include embedded controllers that could be affected by the millennium bug. Because embedded controllers don't interact with an operating system you won't encounter the type of problems caused by DOS turning the date back to 4/1/80, but it is possible that clocks governed by embedded controllers could turn back to 1900 or stick at 1999.

Testing such devices is quite straightforward: set the time to just before midnight on 31/12/99 and see what happens. Fixing them is problematic because it involves changing the chips inside, and you have no option but to contact the manufacturers or vendors. Embedded controllers are used outside the home. Police in Cambridgeshire and Derbyshire have cancelled leave during the year-2000 celebrations because of the havoc which may ensue. The Police IT Organisation fears that every burglar alarm could go off at midnight on 31st December 1999, and evidence from security cameras could become inadmissible if the screen shows the wrong date.

The soon-to-arrive Windows 98 includes a fix for non-compliant PCs along the lines of those currently provided by third parties, but this is small consolation to DOS and Windows 95 users. For help through the date minefield, including how popular Windows software is affected, see our advice on "How to check your software" (p212).

The evidence is that most companies are committed to producing programs compliant with the year 2000 from now on, yet few are willing to accept that their older products are deficient and none has, at the time of writing, announced any sort of free upgrade scheme.

The reason you cannot expect a software provider to take on this responsibility is that you have not bought its software; you have only bought a licence to use it. The small print in the licence always includes a statement of limited liability along the lines of Microsoft's: "The software will perform substantially in accordance with the product manuals for a period of 90 days from the date of receipt". Buyers haven't a leg to stand on unless the media itself is corrupt and a program will not load.

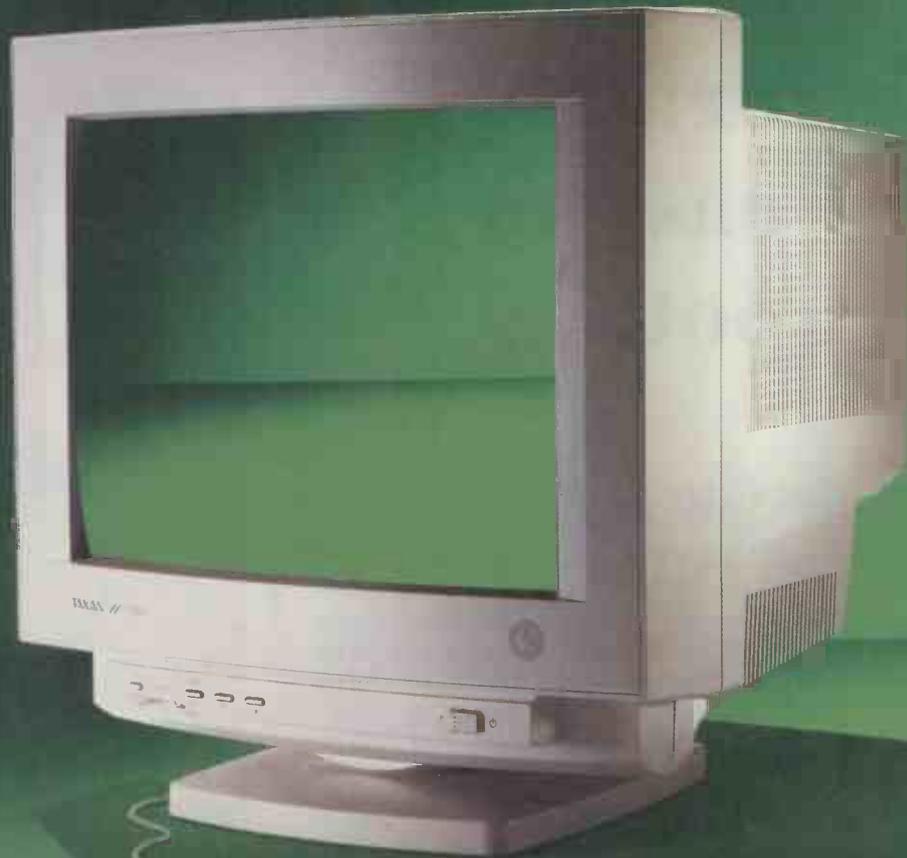
### Bespoke bugs

Checking off-the-shelf software is a headache but it can be done. This may not be the case with bespoke programs written in conventional computer language or developed using the applications programming languages built into many databases. Each version of dBase from III+ onwards has support for 21st century dates via an internal yyyyymmdd date format, but nothing compels programmers to use it and it was common practice to store dates in six-character strings to save on storage space and make them easier to manipulate.

Problems will be caused by specially devised internal date calculations which do not correctly compute across the century boundary and through the use of codes like 00/00/00 and 99/99/99 to indicate ends of files or to mark records for deletion. In the worst cases, a program may have been written to accept dates only within a certain time window, such as "01/01/85" to "31/12/99".

To check customised applications, look at their source code. If this is no longer available you have little alternative but to run sets of test data through them on a PC set first to 20th and then 21st century dates. Suspect programs will have to be replaced or rewritten. ■

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### Date-a-Fix

**T**his is priced for the home market: it does the job, but must be used with caution.

The installation program runs from a DOS prompt and installs an executable file onto the hard disk. Running this file starts the testing sequence. After a reboot, Date-a-Fix reports on the system clock and RTC rollover, power-off RTC rollover and leap year compatibility. As with Fix 2000 (below) a PC with a corrective BIOS was flagged as failing the power-off rollover. This is not a fatal flaw, but the program offers no help in interpreting this or any of its results.

The fix is a TSR occupying 4Kb of RAM. If you choose to exit without installing the fix, Date-a-Fix leaves the system date at whatever value it held following the test, which for a non-compliant PC is probably 4/1/80.



Date-a-Fix is not quite as amateurish as its opening screen suggests, but it is the clumsiest of the commercial test-and-fix programs and should be used with care

#### PCW Details

Price £19.99 (£17.01 ex VAT), site licences available.

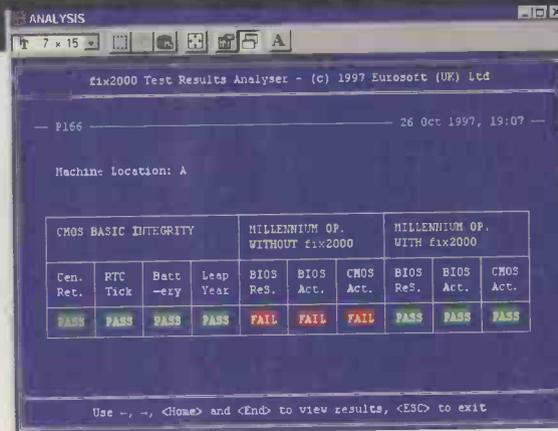
Contact Deeside Technology 0800 7310574 [www.date-a-fix.com](http://www.date-a-fix.com)

Ease of use ★★★  
Features ★★★  
Overall ★★★

A nice touch is that Date-a-Fix can be uninstalled so if you buy a new PC or a new hard disk, it can later be re-installed from the original floppy.

### Fix 2000

**F**ix 2000 comes on a bootable 720Kb floppy. Its seven tests involve a simulated cold boot and the results are each rated pass or fail. Like Date-a-Fix (above) it failed a compliant PC on active CMOS rollover but an on-screen comment explains that such support is not normally found, even in PCs regarded as compliant. Test results can be recorded for review via a separate analysis program. A utility checks whether a fix is in place. This can be a hardware solution (a BIOS extension mounted on an ISA card) or a software fix installed as a TSR or device driver. On a test PC, the software fix worked as a device driver but not as a TSR; we had to edit the AUTOEXEC.BAT and CONFIG.SYS files accordingly. A strong feature is that Fix 2000's diagnostic element can be used to test a



Fix 2000's test results can be viewed after the event in this free-standing analysis program. A more sophisticated logging system is available to corporate users

#### PCW Details

Price With software fix £35.19 (£29.95 ex VAT); with hardware fix £58.69 (£49.95 ex VAT); site licences available.

Contact Eurosoft 01202 297315 [www.eurosoft-uk.com](http://www.eurosoft-uk.com)

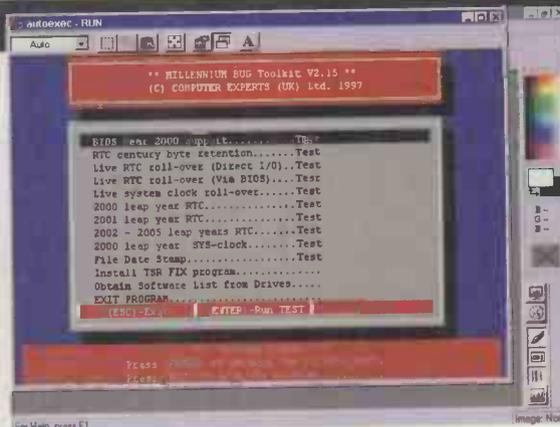
Ease of use ★★★  
Features ★★★★★  
Overall ★★★

number of PCs, though the software fix may only be installed on a single machine. No software scanning is performed.

### Millennium Bug Toolkit v2.15

**T**his tests and fixes a single PC. It runs from a DOS prompt, having transferred the PC's system files to its copy-protected floppy. Ten tests are run in sequence by the user, who also has to turn the machine on and off twice. Each test returns a pass or fail result; if all are positive, you are told that the PC is fully compliant. The fix, if you have to install it, is a 9.5Kb TSR program loaded via AUTOEXEC.BAT. Under certain configurations of Windows, the system files are not successfully copied to the test disk and must be transferred manually.

A strong point is the software scanner. It produces a log file containing filenames, disk locations and information about the year 2000 readiness of the software. There is frequent reference to text files containing summaries of manufacturers' official statements regarding the compliance of their software. If the



Each of Millennium Bug Toolkit's exhaustive tests has to be manually selected, in sequence, by the user

#### PCW Details

Price £44.65 (£38 ex VAT); £470 (£400 ex VAT) for a 50-machine site licence.

Contact Computer Experts 01273 696975 [www.computerexperts.co.uk](http://www.computerexperts.co.uk)

Ease of use ★★★  
Features ★★★★★  
Overall ★★★

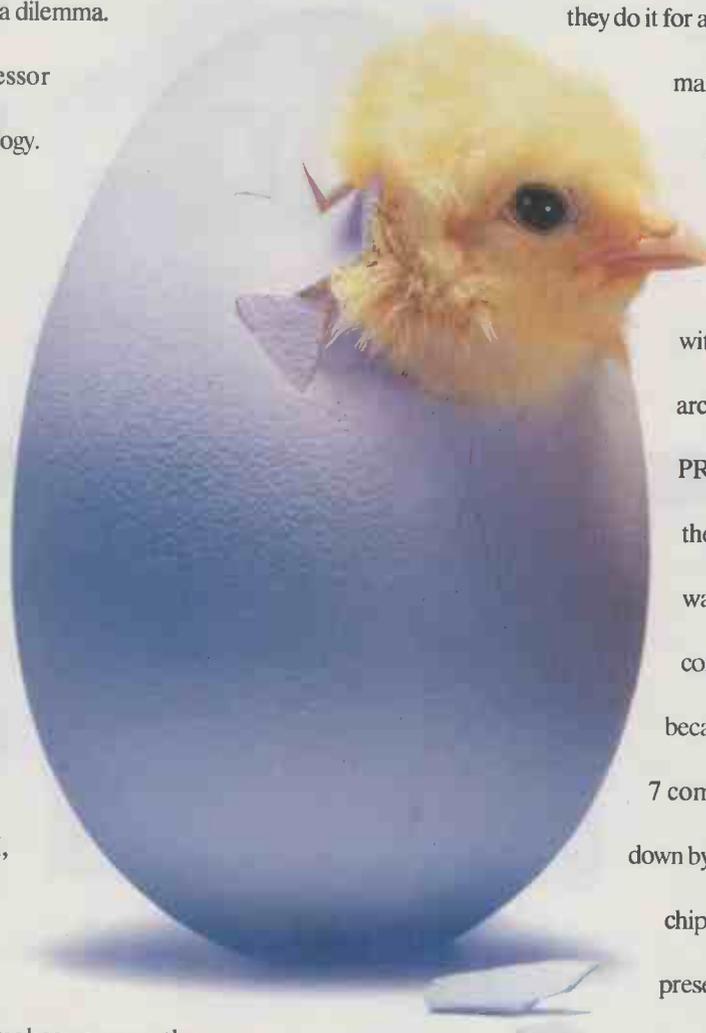
program fails to recognise any programs, you can send the floppy to Computer Experts who will track the missing information.

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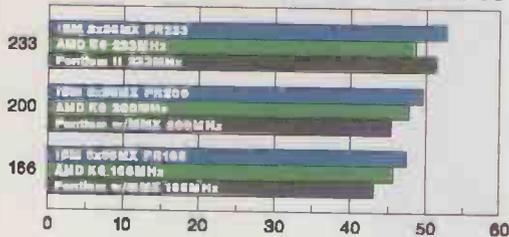
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Benchmark data obtained by XXCal, Inc. Testing Laboratories.

the PR166, PR200 and PR233. All improve on the competition's performance (check out the Winstone 97 Benchmark chart), and



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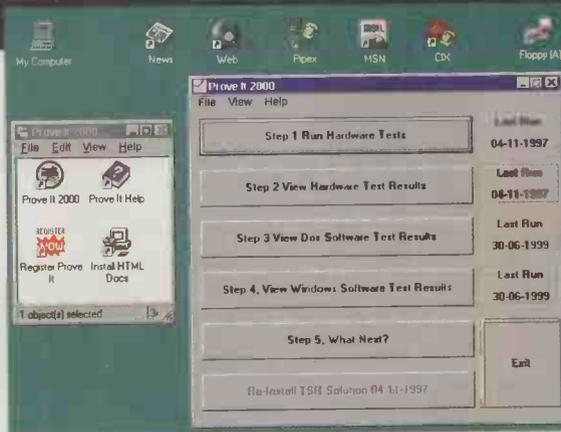
## Prove It 2000

**T**his program has a Windows interface but there is a command-line version on the disk.

It is a one-shot test which copies a PC's system files from the hard disk to its copy-protected floppy. Users run through a series of options to test a PC, view the results, make a log of the software on the hard disk and read advice on how to proceed. The fix, if it is required, is a TSR program occupying around 400 bytes.

Prove It's tests are performed in DOS and involve two user-assisted reboots. All three clocks — BIOS, RTC and the operating system — are tested during power-on and power-off rollovers. Although Prove It passes and fails a PC on individual tests, it is cautious about interpreting the results and informs you of the probability of a PC being compliant. The user must decide whether to install Prove It 2000's fix, install a BIOS upgrade, or

do nothing. Two software scanners have been provided, which jointly return a list of DOS and Windows programs on a hard disk.



Personal  
Computer  
World  
**Editor's  
Choice**

The Windows interface is familiar but Prove It 2000's tests are performed in DOS. Software scanning takes place in Windows

### PCW Details

Price £39.95 (£34 ex VAT); site licences available.

Contact Ninety-Nine 2000: 0990 991999 [www.proveit2000.com](http://www.proveit2000.com)

Ease of use ★★★★★  
Features ★★★★★  
Overall ★★★★★

## Span 2000

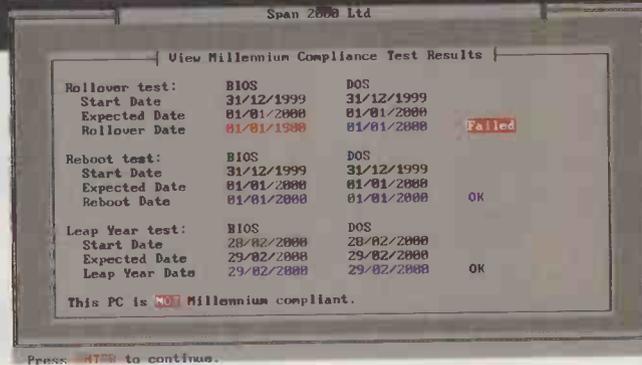
**S**pan 2000 is supplied on a single floppy disk, mercifully free of copy protection. It installs and runs from a DOS prompt and during the testing process performs a soft reboot. On completion of the tests it announces whether the test machine is year 2000 compliant. If it's not, Span 2000 offers to install a fix.

Span 2000's notion of a compliant PC is one that reports the correct date whether or not it is switched on at midnight on 31st December 1999. It tests this by checking the dates reported by DOS and the BIOS during a power-on rollover and after a reboot. It does not read the real-time clock directly and in effect simply automates the actions performed in a manual test.

The software fix is a 512-byte device driver loaded through CONFIG.SYS. Span 2000 can be invoked from a network login script

(a sample is provided) and by responding to DOS error-level codes a server can test and audit a PC, installing the fix if needed.

A basic software scanner tries to identify files containing dates, but flags so many files wrongly that it's not worth using.



Personal  
Computer  
World  
**Editor's  
Choice**

Span 2000 states categorically whether or not your PC has passed its millennium tests and highlights its decision in red

### PCW Details

Price £229 (£195 ex VAT) for unlimited single-site use.

Contact Span 2000; 0800 897695 [www.span2000.com](http://www.span2000.com)

Ease of use ★★★★★  
Features ★★★★★  
Overall ★★★★★

## Shareware tools

**T**here are several freely available programs to help you test and, if necessary, fix PCs with hardware rollover problems.

■ **Ymark2000**, available from NSTL at [www.nstl.com](http://www.nstl.com), addresses the main problem with manual testing: when a machine correctly rolls over into the year 2000 after a reboot, you don't know whether it's because the real-time clock is correct or because the BIOS has adjusted it. Ymark2000 tells you. It performs additional tests on leap year compatibility and can be used to verify that any software fix you install works.

■ **Doschk**, from Saphena at <http://ourworld.compuserve.com/homepages/saphena>, runs from DOS or Windows and reports on the state of the BIOS, RTC and system clocks after a simulated rollover into the year 2000. It does not tell you whether a

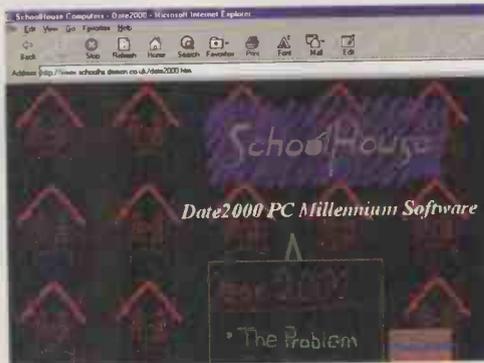
PC can retain a manually-entered year 2000 date but, like Ymark2000, it is useful for testing the efficacy of a fix.

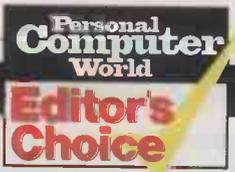
■ **ViewCMOS**, available from its author at

[www.righttime.com](http://www.righttime.com) and from shareware sites, provides an interactive view of the date and time in the real-time clock, as well as the rest of the information stored in CMOS.

Fascinating stuff, and useful for checking the response of the RTC during a rollover test.

■ **Date 2000** (pictured, left) from Schoolhouse Computers at [www.schoolhs.demon.co.uk](http://www.schoolhs.demon.co.uk), comprises a diagnostic program and a TSR fix for non-compliant PCs. It's free for personal use and there are site licensing deals for businesses. The test program is not as easy to install as some of the commercially available products, but Schoolhouse may well have a new product available by the time you read this. Site licences cost between £15-£25 per PC.





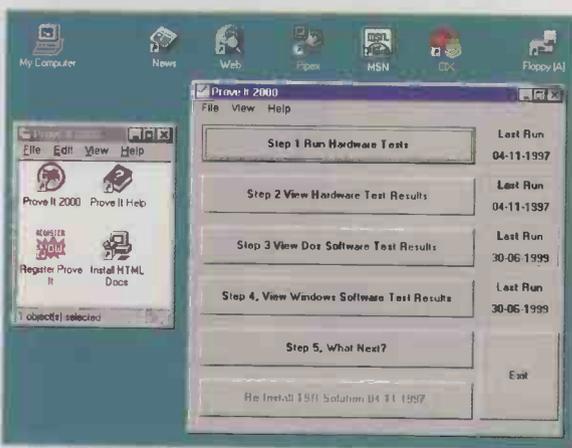
Editor's Choice

**A**ll five programs reviewed here provide software fixes to correctly compensate for the defects in non-compliant test machines, but some are more efficient than others. While the Prove It 2000 fix occupies around 400 bytes of memory, Millennium Bug Toolkit's claims over 9Kb. This has implications for network workstations that are low on base memory.

Date-a-Fix is suitable only for home users who, because it is cheap, will forgive its clunky interface, but any of the other four can be used with confidence in a business environment, provided you interpret their results sensibly.

Fix 2000 could lead the unwary into believing that a compliant PC needs fixing. We had problems running its fix as a device driver but it has the advantage of being able to test any number of PCs and is supplied on a bootable floppy. Millennium Bug Toolkit performs a comprehensive set of tests and offers advice on software compliancy, but it is rather tedious to install and use.

Our Editor's Choices are Prove It 2000 or Span 2000, depending on how many PCs you have to test. The latter is the best option if you have more than five PCs and its unlimited site licence means the more machines you test, the cheaper the unit costs. Prove It 2000 is the one to choose if you have up to five PCs, which can be tested and fixed for £34 each. Site licensing deals are available, but the



unit cost is relatively high unless you have thousands of PCs. Both programs include software scanners to log the executable programs on a hard disk and provide a starting point for enquiries into which of them might need updating.

Whatever diagnostic program you choose, or even if you decide to test manually, the good news is that there's plenty of time before 2000 to check

and fix hardware compliance. Evaluating software may take longer, especially if it involves checking and correcting ad-hoc spreadsheets and databases set up by individuals over the years.

If you leave it too late, the 2000 changeover could interfere with day-to-day business operations. Start now, and squeeze it into your normal review, maintenance and upgrade schedules.



Hot dates: Prove It 2000 (top) and Span 2000 (above)

Table of Features

Supplier	Computer Experts	Ninety-Nine 2000	Span 2000	Deeside	Eurosoft
Name	Millennium Bug Toolkit v2.15	Prove It 2000	Span 2000	Date-a-Fix	Fix 2000
Tel	01273 696975	0990 991999	0800 897695	0800 7310574	01202 297315
URL	www.computerexperts.co.uk	www.proveit2000.com	www.span2000.com	www.date-a-fix.com	www.eurosoft-uk.com
Price (inc VAT)	£44.65	£39.95	£229.13	£19.99	£35.19 / £58.69
Price (ex VAT)	£38	£34	£195	£17.01	£29.95 / £49.95
Checks compliance	●	●	●	●	●
Provides software fix	●	●	●	●	●
Provides hardware fix	○	○	○	○	●
Downloadable?	Demo version	No, but online demo	○	○	○
Suitable for business use?	●	●	●	○	●
Suitable for home use?	●	●	○	●	●
Notes	MBT provides more help with software than any other package.	The only program group with a Windows interface.	Personal version for around £25 is due soon.	Cheapest program on test.	Hardware fix is safest as it can't be erased.

Key: ● Yes ○ No

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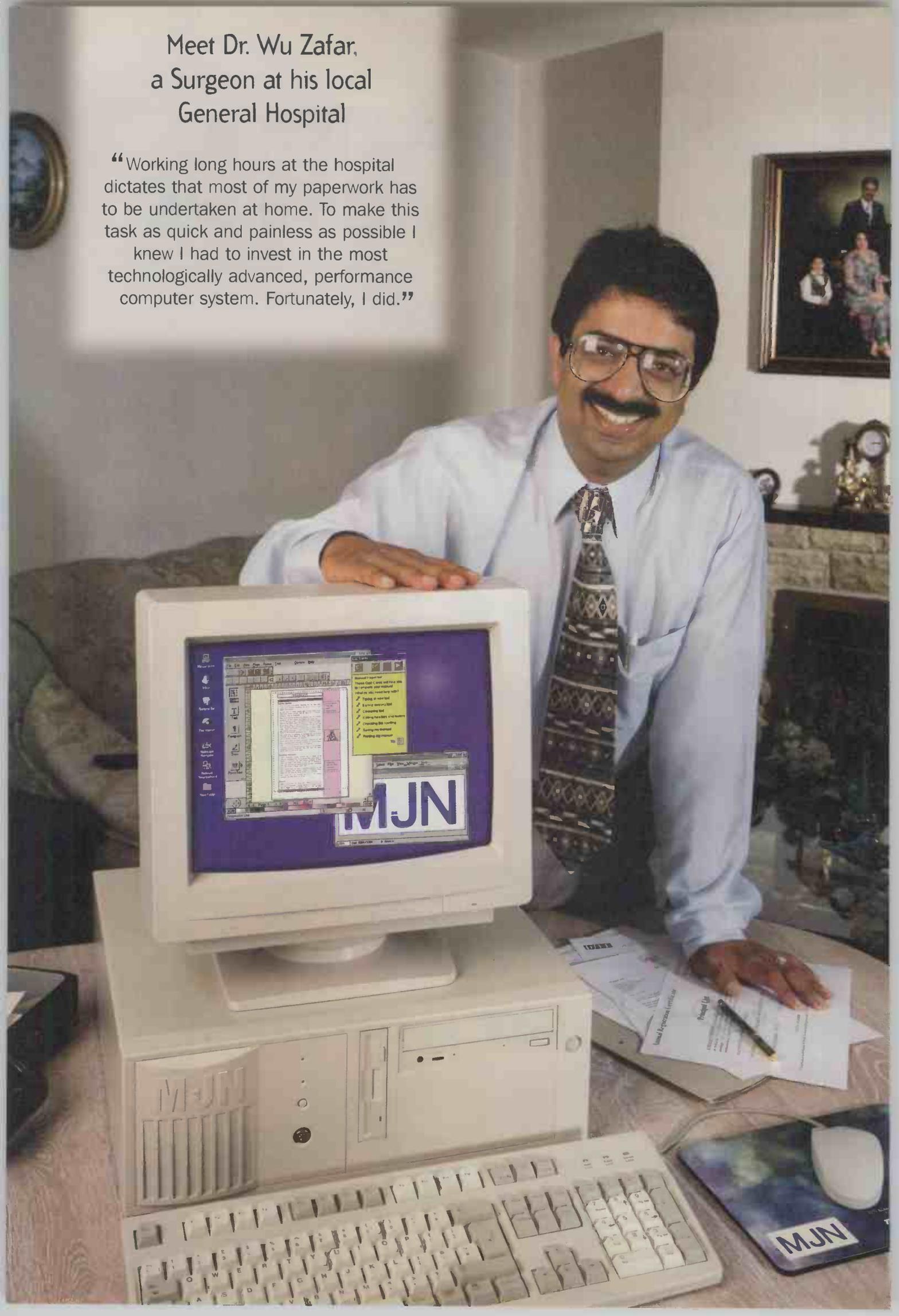


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## Meet Dr. Wu Zafar, a Surgeon at his local General Hospital

“Working long hours at the hospital dictates that most of my paperwork has to be undertaken at home. To make this task as quick and painless as possible I knew I had to invest in the most technologically advanced, performance computer system. Fortunately, I did.”



## Standard Features

- Intel® or IBM processors with MMX™ technology (see relative performance chart on back page)
- 32Mb or 64Mb EDO RAM for superior performance and smooth multi-tasking
- 512K L2 pipeline burst cache
- ATX advanced motherboard with Intel 430TX chipset, PC'97 features, Year 2000 compliant BIOS and suspend/standby power management
- 4.3Gb Ultra ATA (DMA-33) hard disk with maximum data transfer rates of 33Mb/sec (faster than SCSI)
- ATI Rage II+ DVD 3D graphics with 4Mb dedicated video RAM. Microsoft direct 3D support and full-screen MPEG video playback
- 14" or 15" SVGA O.28dp Ni colour screen
- 56K flex voice fax/data/Internet modem using Rockwell hardware chipset with superior performance over software based windows only "win" modems. Flash upgradeable
- 24 speed MAX CD-ROM drive with MAX data transfer rate upto 3600Mb/sec
- Creative Labs 3D Wavetable sound with advanced 3D sound effects, top quality stereo sound with low noise to signal ratio and software wavetable
- Quickshot Sound Force 525 mains powered stereo speaker system
- ATX midi tower system unit with 250w ATX power supply and 7 drive bays
- Videophone-Receive: Capability to receive standard incoming videophone calls. Colour video camera interface included. Plug-in video camera and microphones required for full receive and send facilities are optional extras
- Advanced PC-TV system: multi-channel PCI TV tuner with scalable/full-screen TV window, professional Teletext with video capture facility
- Ports: serial, enhanced parallel, 2 universal serial bus (USB), games, sound, microphone, PS/2 keyboard and PS/2 mouse, four EDO SIMM sockets and two 128-pin SDRAM DIMM sockets, CPU socket 7 with switching regulator, 3 ISA and 3 PCI expansion slots
- 105 PS/2 keyboard, PS/2 mouse and 3.5" 1.44Mb floppy drive
- Microsoft® Windows® 95 with manual and CD
- Lotus SmartSuite 97, Pressworks, SmartPics, Designworks, Homewise, IBM AntiVirus and Quicken pre-loaded
- IBM Voice Type, Simply Speaking Gold voice recognition software (microphone optional extra)

# The right technology

MJN popular multimedia systems incorporating 32Mb or 64Mb RAM, fast 4.3Gb hard disks, 56K voice modems, PC-TV, advanced video phone and voice recognition

## MJN 200M



- Intel® 200MHz Pentium® processor with MMX™ technology
- 32Mb EDO RAM
- 512K Cache
- 4.3Gb Ultra ATA hard disk
- ATI Rage II+ DVD 3D graphics with 4Mb video RAM
- 14" SVGA colour screen (15" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- Creative Labs 3D Wavetable sound
- Stereo mains speakers
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX Intel 430TX chipset motherboard
- Massive software bundle
- All standard features as listed

£1138.<sup>58</sup> Including VAT

£969 Plus VAT Model: 601

## MJN 233M

- Intel® 233MHz Pentium® processor with MMX™ technology
- 32Mb EDO RAM
- 512K Cache
- 4.3Gb Ultra ATA hard disk
- ATI Rage II+ DVD 3D graphics with 4Mb video RAM
- 14" SVGA colour screen (15" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- Creative Labs 3D Wavetable sound
- Stereo mains speakers
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX Intel 430TX chipset motherboard
- Massive software bundle
- All standard features as listed

£1209.<sup>08</sup> Including VAT

£1029 Plus VAT Model: 641

## MJN 200M-2



- IBM 6x86MX PR200 processor with MMX™ technology
- 64Mb EDO RAM
- 512K Cache
- 4.3Gb Ultra ATA hard disk
- ATI Rage II+ DVD 3D graphics with 4Mb video RAM
- 14" SVGA colour screen (15" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- Creative Labs 3D Wavetable sound
- Stereo mains speakers
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX Intel 430TX chipset motherboard
- Massive software bundle
- All standard features as listed

£1232.<sup>58</sup> Including VAT

£1049 Plus VAT Model: 602

## Options

- 15" screen upgrade £70 +VAT = £82.25 extra
- Millennium models with full videophone: Include colour video conferencing camera, PC joystick, PC microphone and over 13 CD multimedia titles. These are full videophone ready with both send and receive at just only £99 +VAT =£116.33 extra

## Interest Free Option

- 6 Months Interest Free Option Only On Millennium Models
- Pay just 10% deposit and the rest in 6 months. APR 0%. Finance also available over longer period of 2.5 years at APR 23.9%. Finance is subject to status, written details available on request
- See finance example on last page

0% APR



Massive preloaded software bundle included with all models

- Voice Recognition
- Video Phone
- TV And Teletext

MJN Millennium models include video camera, joystick, microphone and over 13 CD multimedia titles



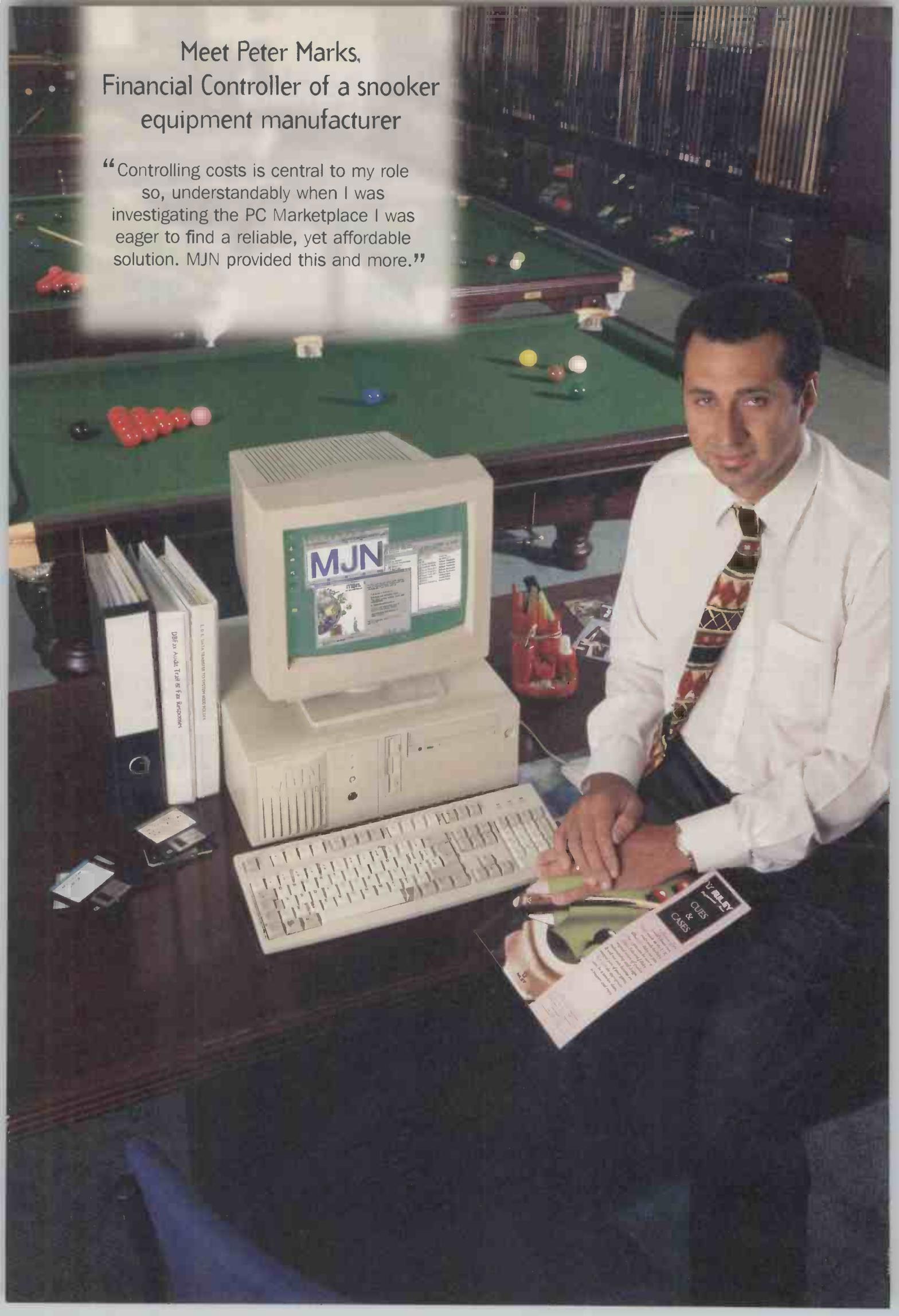
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Meet Peter Marks,  
Financial Controller of a snooker  
equipment manufacturer

“Controlling costs is central to my role so, understandably when I was investigating the PC Marketplace I was eager to find a reliable, yet affordable solution. MJN provided this and more.”



## Standard Features

- Intel® or IBM processors with MMX™ technology (see relative performance chart on back page)
- 32Mb or 64Mb EDO RAM for superior performance and smooth multi-tasking
- 512K L2 pipeline burst cache
- ATX advanced motherboard with Intel 430TX or 440LX chipset, PC97 features, Year 2000 compliant BIOS and suspend/standby power management
- 4.3Gb or 6.4Gb Ultra ATA (DMA-33) hard disk with maximum data transfer rates of 33Mb/sec (faster than SCSI)
- ATI Rage II+ DVD 3D graphics with 4Mb dedicated video RAM. Microsoft direct 3D support and full-screen MPEG video playback
- 15" or 17" SVGA 0.28dp NI colour screen
- 56K flex voice fax/data/Internet modem using Rockwell hardware chipset with superior performance over software based windows only "win" modems. Flash upgradeable
- 24 speed MAX CD-ROM drive with MAX data transfer rate upto 3600Mb/sec
- Creative Labs 3D Wavetable sound with advanced 3D sound effects, top quality stereo sound with low noise to signal ratio and software wavetable
- Quickshot Sound Force 525 mains powered stereo speaker system
- ATX mid-tower system unit with 250W ATX power supply and 7 drive bays
- Videophone-Receive: Capability to receive standard incoming videophone calls. Colour video camera interface included. Plug-in camera and microphones required for full receive and send facility are optional extras
- Advanced PC-TV system: multi-channel PCI TV tuner with scalable/full-screen TV window, professional Teletext with video capture facility
- Ports: serial, enhanced parallel, 2 universal serial bus (USB), games, sound, microphone, PS/2 keyboard and PS/2 mouse, four EDO SIMM sockets and two 128-pin SDRAM DIMM sockets, CPU socket 7 with switching regulator, 3 ISA and 3 PCI expansion slots (4 DIMM slots on 233-2 model)
- 105 PS/2 keyboard, PS/2 mouse and 3.5" 1.44Mb floppy drive
- Microsoft Windows 95 with manual and CD
- Lotus SmartSuite 97, Pressworks, SmartPics, Designworks, Homeview, IBM AntiVirus and Quicken pre-loaded
- IBM VoiceType, Simply Speaking Gold voice recognition software (microphone optional extra)

# The right price

MJN high specification multimedia systems incorporating 56K voice modems  
PC-TV with Teletext, advanced videophone and voice recognition

## MJN 200M-2



- IBM 6x86MX PR200 processor with MMX™ technology
- 64Mb EDO RAM
- 512K Cache
- 4.3Gb Ultra ATA hard disk
- ATI Rage II+ DVD 3D graphics with 4Mb video RAM
- 15" SVGA Colour screen (17" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- Creative Labs 3D Wavetable sound
- Stereo speakers
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX Intel 430TX chipset motherboard
- Massive software bundle
- All standard features as listed

£1314.<sup>83</sup> Including VAT

£1119 Plus VAT  
Model: 750

## MJN 233-2

- Intel® 233MHz Pentium® II processor with MMX™ technology
- 32Mb SDRAM
- 512K Cache
- 4.3Gb Ultra ATA hard disk
- ATI Rage II+ DVD 3D graphics with 4Mb video RAM
- 15" SVGA Colour screen (17" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- Creative Labs 3D Wavetable sound
- Premium stereo speakers (not shown)
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX Intel 440LX chipset motherboard
- Massive software bundle
- All standard features as listed

£1385.<sup>33</sup> Including VAT

£1179 Plus VAT  
Model: 761

## MJN 233M Ex



- Intel® 233MHz Pentium® processor with MMX™ technology
- 64Mb EDO RAM
- 512K Cache
- 6.4Gb Ultra ATA hard disk
- ATI Rage II+ DVD 3D graphics with 4Mb video RAM
- 15" SVGA Colour screen (17" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- Creative Labs 3D Wavetable sound
- Stereo speakers
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX Intel 430TX chipset motherboard
- Massive software bundle
- All standard features

£1467.<sup>58</sup> Including VAT

£1249 Plus VAT  
Model: 605

## Options

- 15" to 17" screen upgrade £150 +VAT = £176.25
- Millennium models with full videophone: Include colour video conferencing camera, PC joystick, PC microphone, and over 13 CD multimedia titles. These are full videophone ready with both send and receive at just £99 +VAT = £116.33 extra

## Interest Free Option

- 6 Months Interest Free Option Only On Millennium Models
- Pay just 10% deposit and the rest in 6 months. APR 0%. Finance also available over longer period of 2.5 years at APR 23.9%. Finance is subject to status, written details available on request
- See finance example on last page

0% APR



Massive preloaded software bundle included with all models

- Voice Recognition
- Video Phone
- TV And Teletext

MJN Millennium models include video camera, joystick, microphone and over 13 CD multimedia titles



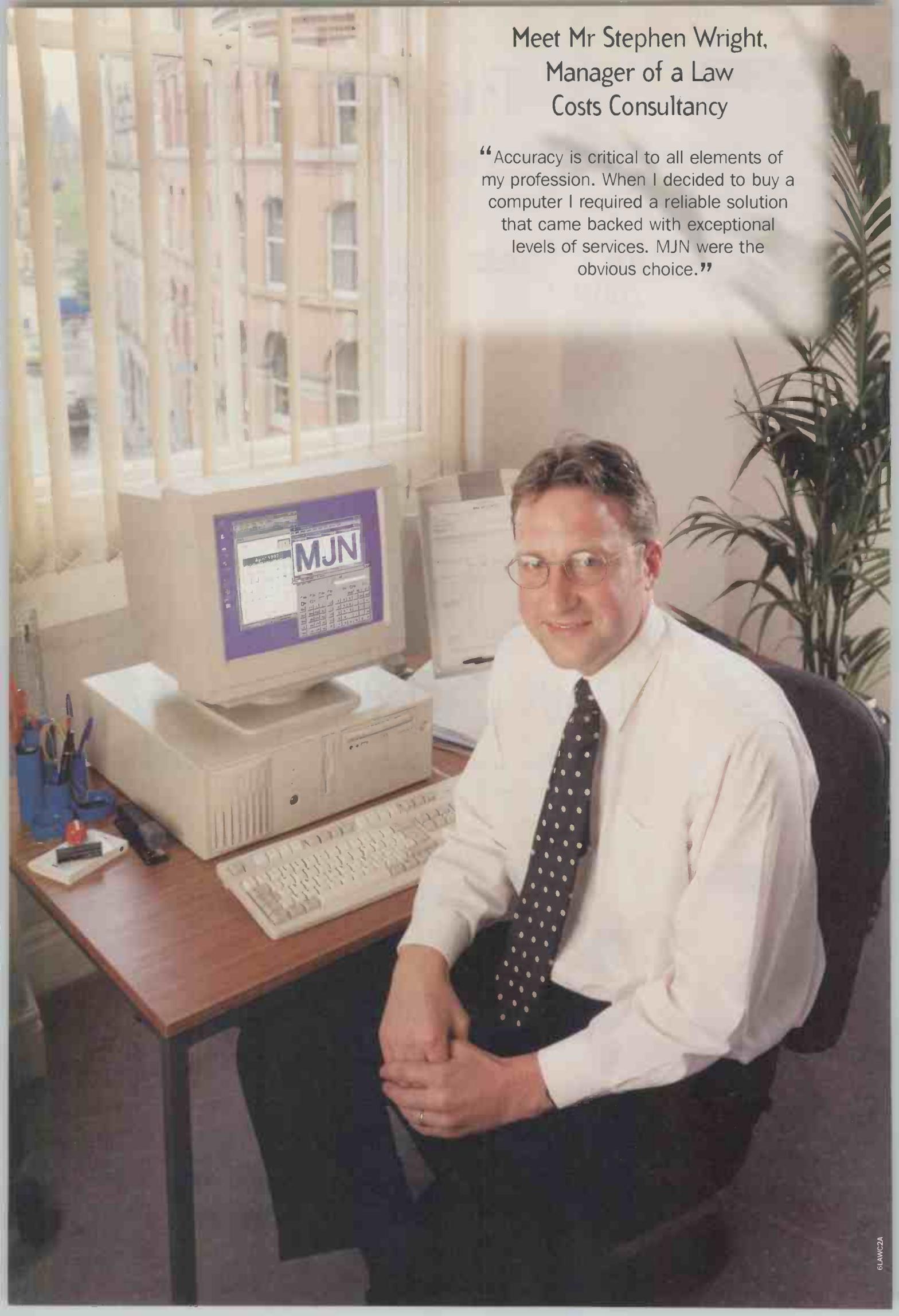
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## Meet Mr Stephen Wright, Manager of a Law Costs Consultancy

“Accuracy is critical to all elements of my profession. When I decided to buy a computer I required a reliable solution that came backed with exceptional levels of services. MJN were the obvious choice.”



## Standard Features

- Intel® Pentium® II or IBM MX processors with MMX™ technology (see relative performance chart on back page)
- 32Mb or 64Mb EDO RAM for superior performance and smooth multi-tasking
- 512K L2 pipeline burst cache
- ATX advanced motherboard with Intel® 440LX chipset (on Pentium® II) or SIS PC97 chipset on 233M-2, Year 2000 compliant BIOS
- 4.3Gb or 6.4Gb Ultra ATA hard disk
- ATI Rage II+ DVD 3D graphics with 4Mb or 8Mb dedicated video RAM. SIS advanced graphics using 4Mb system RAM on 233M-2. Microsoft direct 3D support and full-screen MPEG video playback
- 15" or 17" SVGA 0.28dp NI colour screen
- 56K flex voice fax/data/Internet modem using Rockwell hardware chipset with superior performance over software based windows only "win" modems. Flash upgradeable
- 24 speed MAX CD-ROM drive with MAX data transfer rate upto 3600Mb/sec
- Creative Labs or ESS 3D Wavetable sound with advanced 3D sound effects, top quality stereo sound with low noise to signal ratio and software wavetable
- Quicksot mains powered stereo speaker system (subwoofer system on 300-2)
- ATX mid-tower system unit with ATX power supply and 6 drive bays
- Videophone-Receive: Capability to receive standard incoming videophone calls. Colour video camera interface included. Plug-in camera and microphones required for full receive and send facility are optional extras
- Advanced PC-TV system: multi-channel PCI TV tuner with scalable/full-screen TV window, professional Teletext with video capture facility
- Ports: serial, enhanced parallel, 2 universal serial bus (USB), games, sound, microphone, PS/2 keyboard and PS/2 mouse, 3 ISA and 3 PCI expansion slots
- 105 PS/2 keyboard, PS/2 mouse and 3.5" 1.44Mb floppy drive
- Microsoft Windows 95 with manual and CD
- Lotus SmartSuite 97, Pressworks, SmartPics, Designworks, IBM AntiVirus, Homewise, and Quicken pre-loaded
- IBM VoiceType Simply Speaking Gold voice recognition software (microphone optional extra)

# The right service

MJN Pentium® II and 6x86MX processor based multimedia systems incorporating 56K voice modems, PC-TV with Teletext, advanced videophone and voice recognition.

## MJN 233M-2



- IBM 6x86MX PR233 processor with MMX™ technology
- 64Mb EDO RAM
- 512K Cache
- 6.4Gb Ultra ATA hard disk
- SIS advanced graphics using 4Mb system RAM
- 15" SVGA Colour screen (17" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- ESS 3D Wavetable sound
- Premium stereo speakers (not shown)
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX SIS TX compatible PC97chipset motherboard
- Massive software bundle
- All standard features as listed
- Please check availability

£1397.<sup>08</sup> Including VAT

£1189 Plus VAT

Model: 684

## MJN 266-2



- Intel® 266MHz Pentium® II processor with MMX™ technology
- 64Mb SDRAM
- 512K Cache
- 6.4Gb Ultra ATA hard disk
- ATI AGP Rage Pro 3D graphics with 8Mb video RAM
- 15" SVGA Colour screen (17" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- Creative Labs 3D Wavetable sound
- Premium stereo speakers (not shown)
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX Intel 440LX chipset motherboard
- Massive software bundle
- All standard features as listed

£1761.<sup>33</sup> Including VAT

£1499 Plus VAT

Model: 685

## MJN 300-2



- Intel® 300MHz Pentium® II processor with MMX™ technology
- 64Mb SDRAM
- 512K Cache
- 6.4Gb Ultra ATA hard disk
- ATI AGP Rage Pro 3D graphics with 8Mb video RAM
- 15" SVGA Colour screen (17" optional)
- 56K voice modem
- 24x Max CD-ROM drive
- Creative Labs 3D Wavetable sound
- Executive subwoofer system (shown below)
- Videophone receive
- PC-TV system with Teletext and video capture
- ATX Intel 440LX chipset motherboard
- Massive software bundle
- All standard features as listed

£1996.<sup>33</sup> Including VAT

£1699 Plus VAT

Model: 608

## Options

- 15" to 17" screen upgrade £150 +VAT = £176.25
- Millennium models with full videophone: Include colour video conferencing camera, PC joystick, PC microphone, and over 13 CD multimedia titles. These are full videophone ready with both send and receive and are only £99 +VAT = £116.33 extra

## Interest Free Option

- 6 Months Interest Free Option Only On Millennium Models
- Pay just 10% deposit and the rest in 6 months. APR 0%. Finance also available over longer period of 2.5 years at APR 23.9%. Finance is subject to status, written details available on request
- See finance example on last page

**0% APR**



MJN Millennium models include video camera, joystick, microphone and over 13 CD multimedia titles



Massive preloaded software bundle included with all models

- Voice Recognition
- Video Phone
- TV And Teletext

# MJN®

The right choice™

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Personal Computer World • February 1998 • **227**

At MJN we recognise that the right service, quality, price and technology are key when investing in IT. As such, MJN have designed a range of systems incorporating all these features, within a budget to suit everybody

## The right service

Service and support from experts who know the products



Our philosophy of talking to our customers allows us to build the levels of service and support around you. Because you dictate the levels of service and support, you have the peace of mind that it is second to none.

Our friendly, highly trained team are on hand whenever you need them to answer your questions, provide advice and resolve problems should they occur. All systems carry MJN's one year warranty and a comprehensive range of extended warranty options are available.

## The right quality

Quality, reliability and performance are the driving forces within MJN. These elements are in-built into each stage of the design, development and manufacturing processes to ensure we provide you with a PC system of the highest quality. Our service, support and systems are all accredited with the ISO 9002 Quality Certificate and all new PCs are designed to comply with CE safety and emission standards.



MJN systems have won awards for their outstanding quality

## The right price

Most MJN systems include this wide range of top quality software

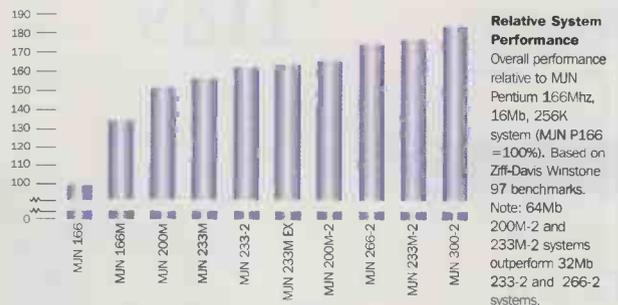


At MJN we recognise financial constraints and have developed a range of systems which combine quality, reliability, performance and advanced technology, at the most competitive prices within the marketplace. By selling direct to you we are able to pass on substantial cost savings.

Interest Free Finance Example: MJN 200M-2 Millennium: Cash price £1099 + £99 + £25 delivery + VAT = £1437.03. Pay just 10% deposit (£144.03) and the rest £1293 in 6 months Interest Free. APR 0% if loan fully paid back within 6 months. Finance also available over a longer period of 2.5 years at APR 23.9%. 24 monthly payments of £70.71 = a total price of £1841.07. Finance is subject to status. Written details are available on request.

## The right technology

As one of the UK's largest established computer manufacturers with close working relationships with the worlds leading component manufacturers, MJN have access to state of the art technology. MJN are amongst the worlds first manufacturers to incorporate voice recognition, videophone and TV as standard in most systems.



## The right choice !

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Customers wishing to join our advertising campaign contact us now !

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**01282 777 555**

Tel. 01282 777 555. Fax 01282 77 08 44. All prices exclude delivery (£25+VAT=£29.38) for UK mainland excluding Scottish highlands. Prices shown with and without VAT at 17.5%. Screen sizes shown are CRT sizes as per industry practice. Depending on package, software is either pre-loaded or supplied on CD with on-line documentation. Pack shots shown for purposes of illustration only. Goods are normally despatched within 10 to 14 days. All orders will be fulfilled within 28 days unless otherwise notified. Specifications, prices and availability are subject to change without notice. Products sold subject to our conditions of sale copies of which are available on request. The peripherals and upgrades listed are sold only with the purchase of an MJN system. The Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of the Intel Corporation. E&OE. All people featured are MJN customers.



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It can evaluate every component needed by the modern personal computer user: desktop PCs, notebooks, printers and CD-ROMS, as well as an ever increasing multitude of software.

First a product is tortuously performance tested

using NSTL benchmarks – the definitive standard for independent benchmarking.

Then it's our journalists' turn, stopping at nothing to get the information you require. Under the supervision of our technical experts, they question how a product will perform in real life situations, until they have all the answers.

What emerges is a product which is well and truly certifiable and a product review which, like the lab tests, is brutally honest.

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- 8 STANDARD MAIL ACCOUNTS
- DAILY BACK UP & UPS
- FULL ACCESS STATISTICS



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YOUR INTERNET PRESENCE IS OUR REPUTATION

# Nod and a wink

Gone are the days of cursing your hardware and making rude gestures at Win95: your PC will soon understand your movements as gestural interfaces gather speed. Toby Howard takes a look at a technology which is just around the corner.

Over the years, *Futures* has reported on ideas for improving the human-computer interface. Now there's a new approach to solving the problem: instead of manipulating keyboards and mice, we shall simply make gestures to our computers. "Hand-waving" will take on a whole new meaning.

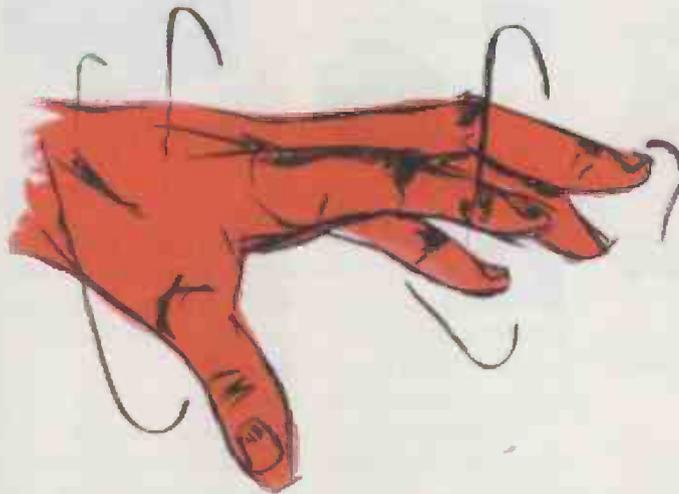
At this summer's SIGGRAPH conference, the most prestigious event in the computer graphics calendar, gesture technology was making a big splash. In the Electric Garden, the showcase for new research, several systems based on gesture analysis were on display. Sony was demonstrating a gestural interface for its PlayStation game, *Tenshindo*. Developed with Pasadena's Holoplex company <[www.holoplex.com](http://www.holoplex.com)>, the system uses video cameras to capture the movements of the two players' bodies. The video images are processed in real time to extract silhouettes which are then matched holographically (exactly how is not revealed) against a set of standard moves which a game character can perform. The closest match is then used to control the character.

According to those who tried the system at the Electric Garden, the results were amazing: as their clumsy kicks and jumps were instantly transformed into the lightning-fast movements of the game characters, the players felt involved with the game action in a way they'd never experienced before. Although the gesture-controlled PlayStation exists only in prototype form, Sony hopes to have it on the market by early 1998.

The first attempts to capture gestures used a glove, wired up with sensors to detect the orientations of the hand and fingers. First developed in the late seventies at the University of Illinois, the "dataglove" became commercially available in 1980. It used optical fibres to measure finger bending and an electromagnetic sensing system for hand orientation. The "datasuit" followed, essentially a pair of instrumented long-johns which allowed the positions of all the user's limbs to be tracked.

But datagloves and datasuits come with a drawback. Because they have to be worn on the body and connected to computers with wires or, more recently, radio links, these devices encumber the user and hinder free expression. The ultimate gestural interface, if it is to succeed, must leave the user unencumbered.

Although work on unencumbered gestural interfaces is only recently making news, its gestation period goes back to the late sixties. Artist and VR pioneer Myron Krueger invented the idea in 1985 with his "Videoplace" installation, in which a participant faces a large video



projection screen. Beneath the screen is a camera which records the participant's moving image, processed in real time to extract a silhouette which is then displayed on the screen. Other computer-generated images can also be displayed on the screen, and the system can detect interactions between parts of the participant's silhouette and the other on-screen graphics. Krueger later extended the idea to create a "Videodesk", which allows users to interact with word-processing and drawing programs using hand and finger movements.

Gestural interfaces also hold huge potential for manipulating 3D graphics. While it's possible to use a conventional mouse to navigate through a scene or manipulate the objects within it, it's always awkward. At SIGGRAPH, ATR Telecommunications Research Laboratories <[www.mic.atr.co.jp](http://www.mic.atr.co.jp)> was demonstrating its multiple-camera approach to recognising palm orientations and finger bending. An operator can control virtual objects in a 3D space, selecting an object by pointing at it and flexing their hands to change its shape.

With the news that future versions of Netscape Communicator and MS Internet Explorer will have VRML display and interaction capabilities, consumers will soon demand better interfaces to 3D graphics, and gesture recognition offers a solution. General Reality Company has announced a wireless dataglove together with Java software for platform-independent gestural control of 3D applications over the internet <[www.GenReality.com](http://www.GenReality.com)>.

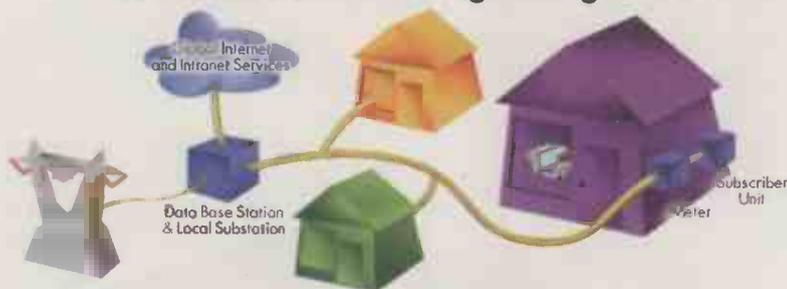
Only time will tell if gestural interfaces will take off. I hope they will: next time your PC freezes up or crashes, wouldn't it be wonderful to make a gesture to it, knowing that for once it understands exactly what you mean? ■

p232 >

With the growth of gestural interfaces, our bodies could soon control our PCs. It will give a whole new meaning to the hands-on approach...

# Our friends **electric**

## Basic Data Networking Configuration



Adam Evans examines plans to use the national electricity grid to transmit data. It's a cheap solution which could become the main way we send and receive information across the net in the coming years.

The new power-line technology acts like a gigantic Local Area Network

**A**s we reported last month in *Internet News*, Nortel and Norweb have signed an agreement to exploit the potential of the national electricity grid for transmitting data. Trials of this new technology have been taking place in Manchester and volume delivery of the product is due to begin in April 1998.

The basic idea behind power-line transmission is refreshingly simple. Equipment is installed at an electricity substation and in the homes that are linked to it. This forms an enormous LAN (Local Area Network), linked to the internet backbone at the substation via standard fibre-optic technology. As with the LAN in your office, this new technology is "always on", meaning that you can start transmitting data immediately without having to dial up a connection.

The equipment at the substation is connected to the low-voltage (240v) power lines and sends radio signals down the grid to a data conversion box in a home or office. This box is installed on the power line just before the electricity meter, with an output for connecting to a PC or other device. Nortel plans to offer a choice of USB or ethernet connection for a computer to receive and send data over the power lines. This means that recently-built PCs should be able to connect without any additional hardware, not even a modem, while older computers will need an inexpensive ethernet card.

The biggest problem Nortel faced was that of electrical interference on the host power line. The solution took three years of research at its European Research and Development Laboratory in Harlow, and Nortel can now send radio signals down the lines with a range of about 300m. This distance is the major limiting factor in power-line technology and is one of the reasons that the first products are aimed at urban environments in Europe and Asia Pacific. An urban substation in the UK serves roughly 200 locations, all within the critical 300m range. Rural areas will miss out on the first phase of power-line technology, but it's possible that future products will be able to extend the range of data transmission.

The maximum transfer rate over a power line is 1Mbit (megabit) in both directions, nearly 20 times the

bandwidth of ISDN. This large bandwidth has to be shared by all the computers served by a single substation. Given that 200 users could, theoretically, be surfing the internet at the same time, you might think that each connection would slow to 0.5 percent of the maximum speed. However, the LAN setup means that bandwidth is used only when actively downloading or uploading data. Nortel predicts that actual data speeds will vary between 500Kbits/sec and 1Mbit/sec.

Power-line technology is not the fastest broadband solution around but it is one of the cheapest. Compared to launching satellites or circling high-altitude planes, the investment costs for the electricity companies are low. Nortel claims that the cost to an operator will be between a third to half of that for ISDN, although how this reflects in the cost to the consumer remains to be seen. Another advantage over some broadband technologies is the equally quick data upload speed from a PC to the internet.

Every urban home and office in the UK is served by an electricity substation with the potential to use power-line technology. Given the right investment and pricing policies (many people are predicting a flat-rate subscription) this could become the primary method for accessing the internet in just a few years. Norweb alone owns around 5,000 substations, most of which will be good candidates for this new technology when it launches in April.

The installation of power-line equipment in homes will have to be carried out by the electricity companies. Roy Williams, project leader at Nortel, believes that they will inevitably move towards becoming ISPs. The other options are for the electricity companies to work in partnership with existing ISPs or for power-line access to be opened up to any ISPs that want it, as with the present telephone network, to avoid a potential near-monopoly by the power companies.

Peter Dudley, vice president of Nortel, claims: "This new technology will unleash the next wave of net growth." The computing world is full of grandiose predictions and hyperbole, but this is one vision that could well materialise. ■

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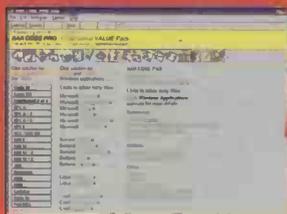


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# Hands On Contents

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All submissions should be emailed to the author of the appropriate column or snailmailed to Hands On, Personal Computer World Editorial, VNU House, 32-34 Broadwick Street, London W1A 2HG. Questions and short hints and tips can be faxed on 0171 316 9313.

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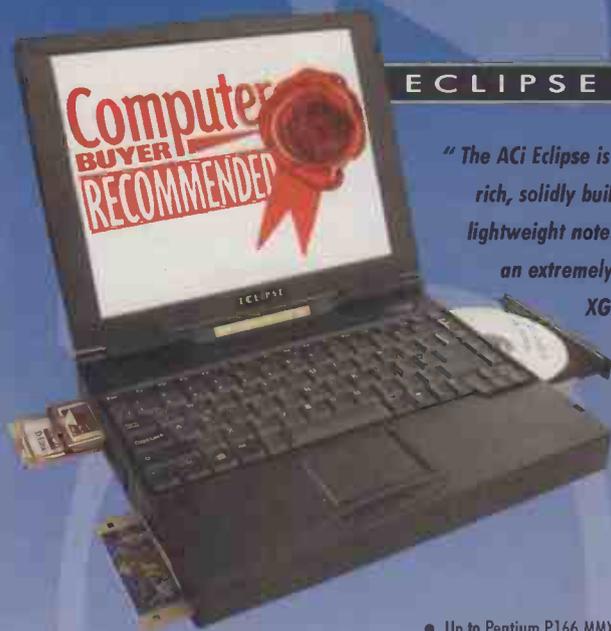
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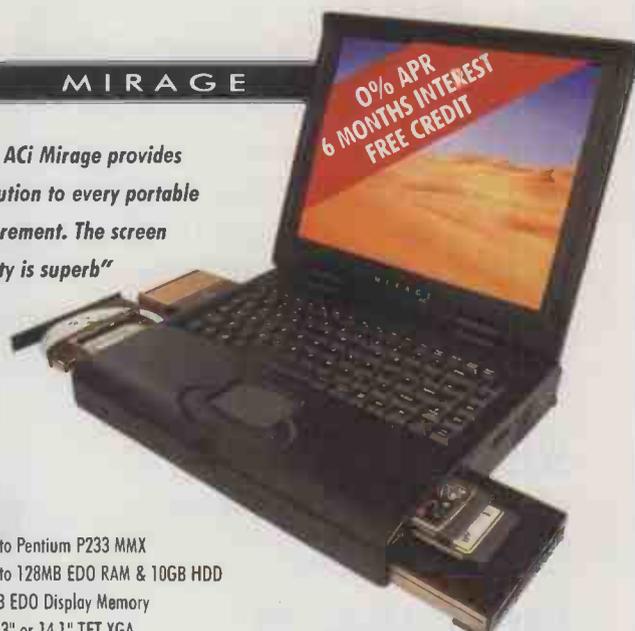


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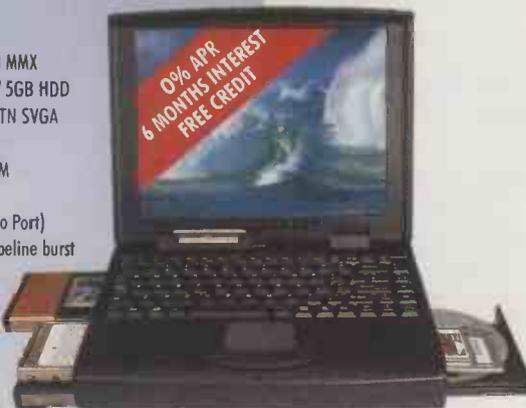
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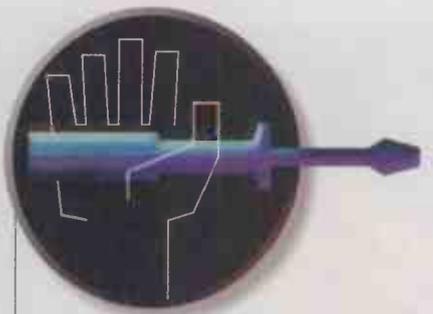
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# A class act

Become a Delphi power programmer by creating your own custom objects. It's all done with classes, as Tim Anderson explains in the third part of our hands-on workshop.

**M**any newcomers to Delphi are already familiar with Visual Basic. This is a mixed blessing. Delphi's visual form designer is similar to VB, but other features are very different. An example is programming with classes, which in Visual Basic has the feel of an optional extra. In Delphi, classes are fundamental and it is vital to understand them. Once you figure out how to use custom objects in Delphi, your programming ability takes a major leap forward.

The first thing to grasp is how classes relate to objects. A class is a definition of an object, but it is not an

object itself. To create a custom object, you need to define its class and then create an instance of the object. For example, reader Phil Whelan has written with a query: "I've just started to use Delphi, and it was going okay until I tried to use variables in a class which I define. It causes a run-time general protection error, every time I try to refer to my class variables."

Phil has not sent in his code, but here is an example that would produce this error. Start a Delphi project and add the code in Listing 1 after the Uses clause in Unit1. Next, in the Implementation section, add

the code in Listing 2.

This class has just one method, which shows its classname. See the tips panel (page 241) for an explanation of the Self keyword. Next, add a button to the form, and in its click event put the following code:

```
var
  MyObject: TMyClass;

begin
  MyObject.ShowClass; {causes error}
end;
```

This compiles just fine, but run it and you

get a General Protection Fault (Fig 1). The reason is that when the ShowClass method is called, MyObject does not exist. Technically, it is a pointer variable that does not contain a valid memory address.

To fix the problem, you have to create an instance of the object and then call the method. Here is the fixed version:

```
var
  MyObject: TMyClass;

begin
  MyObject := TMyClass.create;
  MyObject.ShowClass;
```

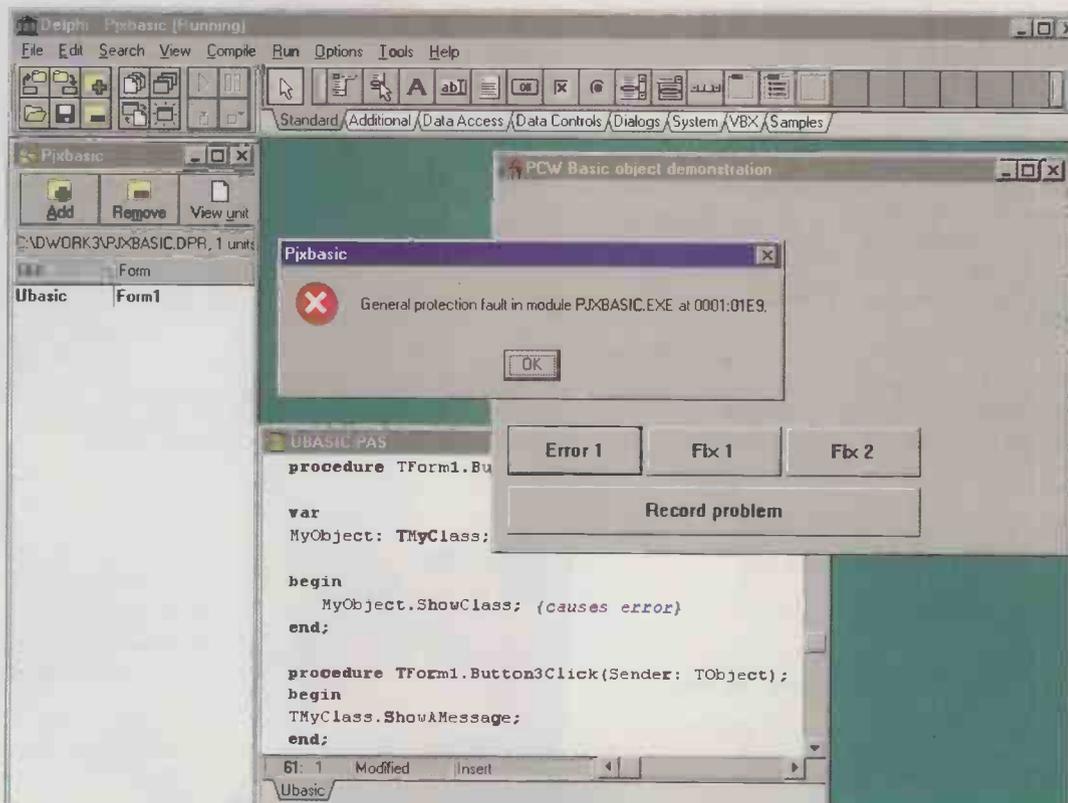


Fig 1 Using an object that has not been instantiated causes this classic Delphi error

```
MyObject.free;
end;
```

Generally, you should never call a method without first creating an instance of the object. Note that you should always free the objects you create (see Tips box, page 241).

There is a way to call class methods without creating an object, and I mention it here for the sake of completeness. If you declare a method with the class keyword, then you can call it directly. For example, you could add this method to TMyClass:

```
class procedure ShowAMessage;
```

and implement it as in Listing 3.

Now you can call TMyClass.ShowAMessage in your code without raising an error. Although it can be handy, this is not something you will want to do very often. The example code for this is on the cover CD, in the project PJXBASIC.DPR.

#### Claiming your inheritance

One of the great things about using classes is inheritance, which lets you create a hierarchy of classes, with each one benefiting from all the functionality of its ancestors. (The Delphi component library, called the VCL, makes tremendous use of inheritance to achieve its results.) Although it can simplify your code, inheritance concepts like virtual or overridden methods can seem mysterious to the average Visual Basic developer. They are not described all that well in the Delphi manuals, so here is an explanation and an example. The example code is in the project called PJXINRT.DPR.

Listing 4 is a custom class. The class has a constructor and three methods, two public and one private. The implementation of the class displays messages in a memo control, using the private procedure AddMessage. This shows you exactly what is going on. For example, Listing 5 is the constructor.

The button called "Create a base object" calls these two public methods. You will see the memo control fill with three messages, one from the constructor, called automatically by the Create method, and the other two from each of the public methods. Now try a class that inherits the TMyBase functionality (Listing 6). The constructor looks like Listing 7.

Note that the constructor uses the inherited keyword to call the TMyBase constructor. As a general rule, you will want to begin all your constructors with a call to the inherited create method. In addition,

#### Listing 1: Starting a Delphi project

```
type
TMyClass = class(TObject)
procedure ShowClass;
end;
```

#### Listing 2: Code for the Implementation section

```
procedure TMyClass.ShowClass;
begin
showmessage(self.classname);
end;
```

#### Listing 3: Implementing the class keyword

```
class procedure TMyClass.ShowAMessage;
begin
showmessage('Hello from TMyClass');
end;
```

#### Listing 4: Custom class

```
type
TMyBase = class
constructor create;
Procedure ThisIsStatic;
Procedure ThisIsVirtual; virtual;
Private
Procedure AddMessage(sMessage: string);
end;
```

#### Listing 5: Constructor

```
constructor TMyBase.Create;
begin
inherited create;
form1.memo1.clear;
self.AddMessage('Base class create method runs');
end;
```

#### Listing 6: Class with TMyBase

```
TMyChild = class(TMyBase)
constructor create;
procedure ThisIsVirtual; override;
procedure ThisIsStatic;
end;
```

#### Listing 7: New constructor

```
constructor TMyChild.create;
begin
inherited create;
self.AddMessage('Child class create method runs');
end;
```

TMyChild implements its own versions of the two public methods. You do not have to

do this. If you want exactly the same functionality, then you can omit the methods

p242 >

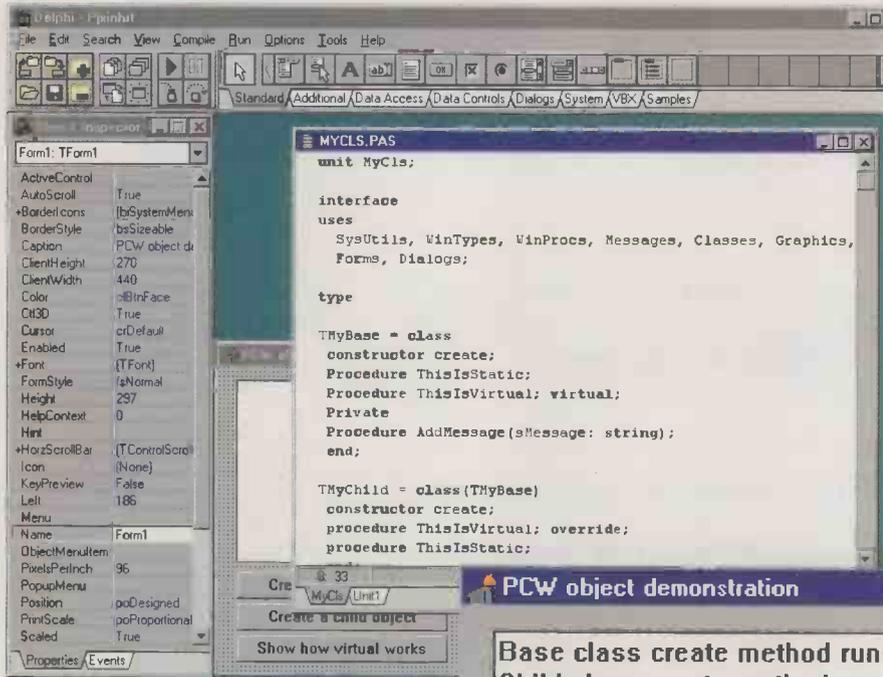


Fig 2 (left) You can define classes in the same units used for forms, but it is neater to store them in separate units. Select New unit from the File menu to add a unit to the project

Fig 3 (below) This application demonstrates use of the override keyword. This shows the result of clicking the button "Show how virtual works". Delphi calls the overridden method correctly, but can only use the original version of the static method

from the declaration and implementation of TMyChild, and it will use the versions defined by TMyBase. For example, Listing 8 is one of MyChild's methods.

Note that this calls self.AddMessage, although AddMessage is not defined by TMyChild. It works by using the inherited AddMessage method in TMyBase.

So why does TMyChild define its own versions of ThisIsVirtual and ThisIsStatic? The technique is called polymorphism. It lets you define custom behaviour for an object, while keeping its interface the same. Very often, this is exactly what you want to do. For example, say you had a TPerson object with properties like

### Listing 8: MyChild method

```
procedure TMyChild.ThisIsVirtual;
begin
  self.AddMessage('The child class virtual method runs');
end;
```

Surname, Address, and Sex, properties common to all persons. You might create two child classes, TClient and TStaffMember, which inherit from TPerson. Now you decide to have a Save method which stores the object's data in a database table.

In your code, you want to do this by writing MyClient.Save or MyStaffMember.Save. The difficulty is that client details are in a database table called CLIENTS, and staff details in a table called STAFF. They may have different fields as well. By defining different Save methods for each class, but

keeping the name the same, you can implement the function as you want. Once you have done that, you do not need to worry any more about where the data gets saved. You can simply call

the save method.

In the tutorial example, when you click the button called Create a child object, the following code runs:

```
var
  mychild: TMyChild;
begin
  mychild := TMyChild.create;
  mychild.ThisIsStatic;
  Mychild.ThisIsVirtual;
  mychild.free;
```

You will see messages showing when the two mychild methods are called. One of the methods is defined in TMyBase using

Base class create method runs  
Child class create method runs  
The child class virtual method runs  
The base class static method runs

Create a base object

Create a child object

Show how virtual works

the virtual keyword, and declared in TMyChild using the override keyword. The other is not. Both seem to work in just the same way, so you may wonder if there is really any difference.

### What override does

To see the difference, look at the DoSomething procedure. Listing 9 is the code. Here is a procedure which takes a TMyBase object as a parameter. Then it calls its two public methods. This gets interesting when you run the code under the button called Show how virtual works:

```
var
  myChild: TMyChild;

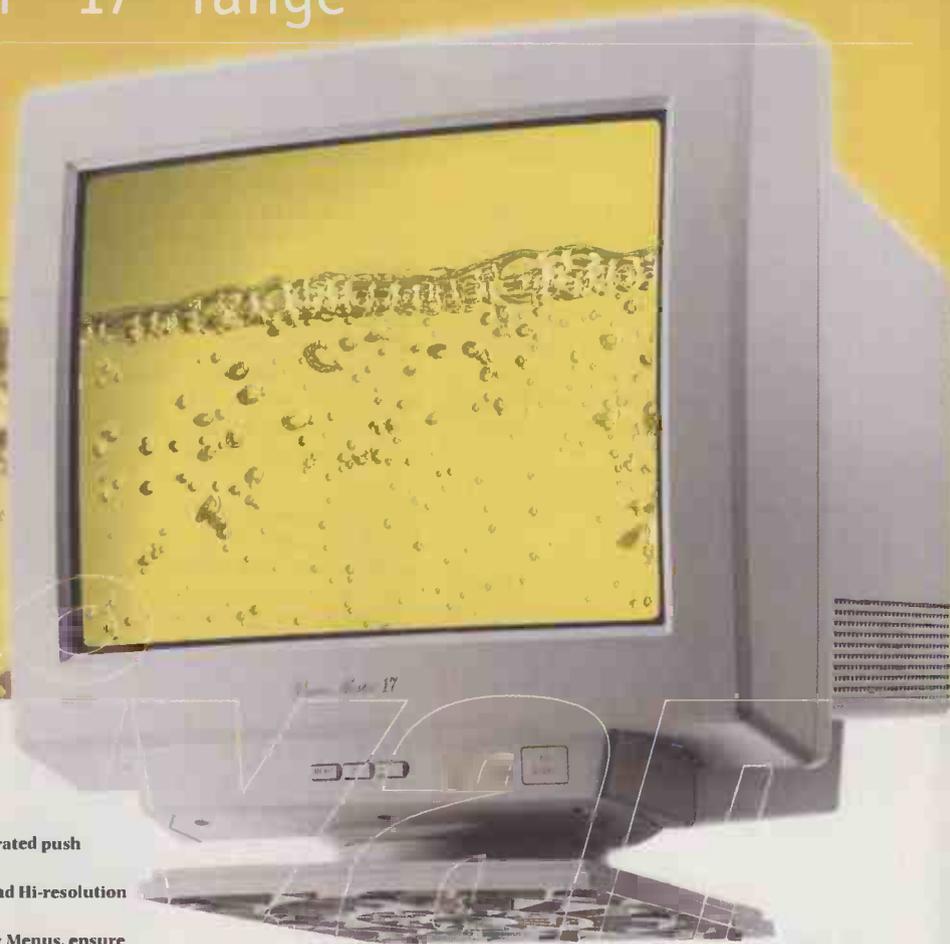
begin
  myChild := TMyChild.create;
  DoSomething(myChild);
  mychild.free;
end;
```

This code passes a TMyChild object to a

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## Delphi Tips: object of the exercise

### ■ Freeing the object

If you create an object in your code, you should free it as well. You do not need to worry about objects like forms and buttons which Delphi creates automatically, since these will also be freed automatically. If you create a form in code, though, you should explicitly free it.

One of the snags here is that if you call the free method on an object which has already been freed, Delphi raises an error. This can happen if there are several exit points in a section of your code. You might decide to place code for freeing an object in several places to ensure that it always gets called. That may mean there is a path through the code that does the job twice, so causing an error.

The solution is to go one step further. When you free an object, set it to nil as well, like this:

```
MyObject.free;
MyObject := nil;
```

You can call the free method on an object that has been set to nil without an error.

This is also handy the other way round. Perhaps you have some code that refers to an object, and there are circumstances in which it might be called before the object is instantiated. Add some start-up code to the application, and set all your custom object variables to nil. Then you can check whether the object is instantiated like this:

```
If MyObject <> nil then
{... do something with MyObject}
```

This only works if you remember to specifically set the object to nil in your code, otherwise you will still get an error. Of course, a better solution is to design your application so well that this kind of defensive programming is not

necessary. In the real world, though, a little pragmatism often helps.

### ■ Using self

The self keyword is a vital part of object-orientated programming. It means "the current instance of the object". Imagine that you have a customer object with a SendFax method. The method sends a fax to the customer, looking up the fax number from a FaxNumber field. Within this method, you can get at the field with self.FaxNumber. The advantage is that if there are several customer objects instantiated, the self keyword ensures that you are referring to the right FaxNumber field or property. I have seen some strange Delphi bugs solved by use of the self keyword. It is also short and easy to type, so make good use of it.

### ■ Objects versus records

A confusing aspect of Delphi is that Borland's naming scheme does not distinguish between objects and other types. All begin with T, so for example TFont is an object type,

TFontName is a string type, and TLogFont is a record type. The distinction between records and objects is particularly confusing at first. Records have fields, but not methods, constructors or destructors. When you declare a record type, Delphi immediately allocates memory for it, whereas when you declare an object, Delphi only creates the equivalent of a pointer variable. That means you can just get on and use a record variable, whereas objects must first be instantiated with Create.

There is a problem, though. When you declare a record, Delphi does not necessarily initialise its fields to sensible defaults. The example project on the cover CD defines the record in Listing 10. Then, it is used like in Listing 11. Oops! Whereas you might expect to see zero, in fact Delphi puts any old number into the integer field (Fig 4). This can cause major problems. The answer is to initialise the fields of a record type before you use them. It demonstrates the advantage of using objects, where initialisation code can be properly encapsulated into the constructor.

### Listing 10: Defining the record

```
type
  TMyRecord = record
    field1: string;
    field2: integer;
  end;
```

### Listing 11: The record in use

```
var
  myRecord: TMyRecord;
begin
  showmessage (inttostr(myRecord.field2)); {get a random number!}
end;
```

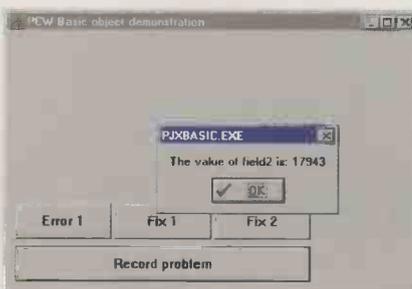


Fig 4 When you use a record type variable, you must initialise its values. Otherwise you get random results like this one

procedure which expects a TMyBase parameter. No problem. Because everything in TMyBase is inherited by TMyChild, Delphi accepts the parameter. When the two methods are called, though, note the difference. The virtual method runs the code

defined in TMyChild, but the static method runs the code defined in TMyBase (Fig 3, p240). Just for fun, try removing the override keyword from the procedure definition for TMyChild. Now neither child method gets called. Then try adding the override keyword to the ThisIsStatic definition. Delphi reports an error: "cannot override a static method". The rule is, if you want to override a method, it must be declared as virtual. Using the dynamic keyword has a similar effect.

What if code in the parent class calls a method that you have redefined in the child class? The override keyword makes all the difference. If you use it, Delphi is smart enough to call the redefined method. If you do not, the parent class method is called.

### Listing 9: DoSomething

```
procedure DoSomething(thisobj: TMyBase);
begin
  thisobj.ThisIsVirtual;
  thisobj.ThisIsStatic;
end;
```

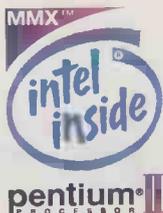
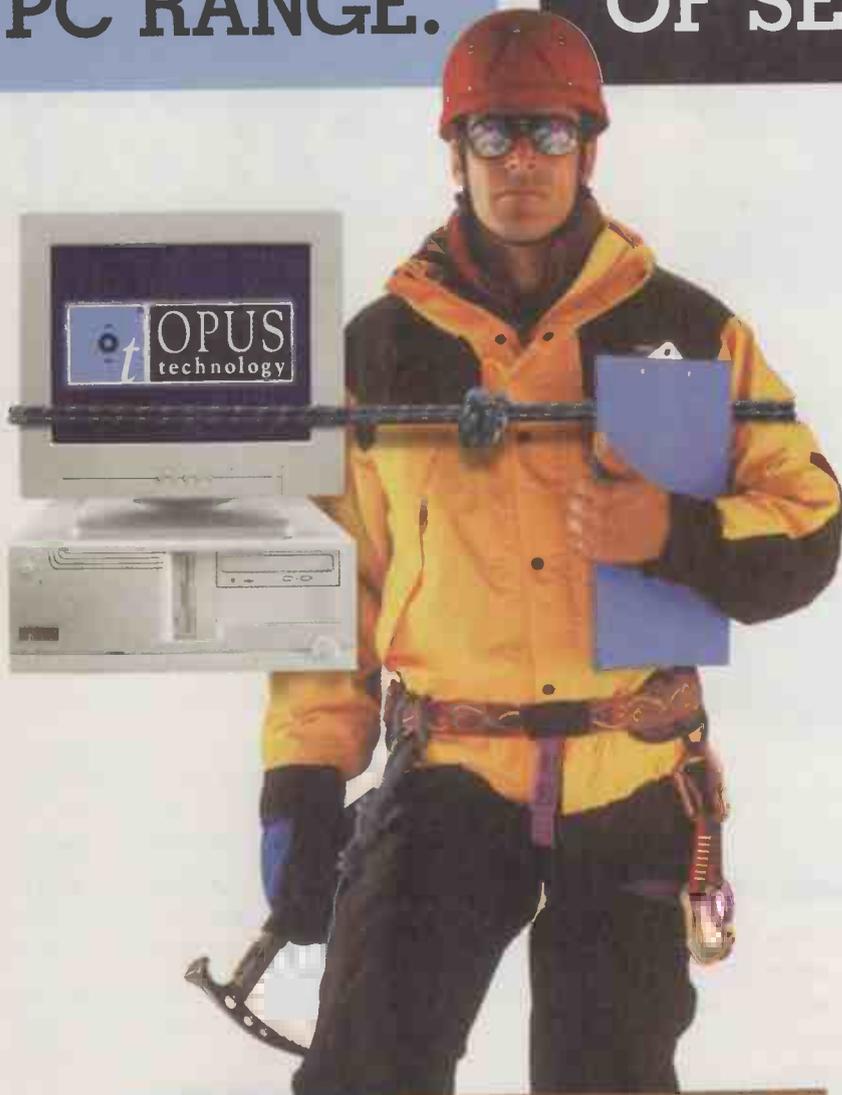
■ Thanks to all of you who have sent email with Delphi comments and queries. It's great to see the tutorial being so widely used.

### PCW Contact

Delphi queries are regularly tackled in *Hands On Visual Programming*. You can contact Tim Anderson with your queries and tips at the usual PCW address (p12) or at [visual@pcw.vnu.co.uk](mailto:visual@pcw.vnu.co.uk)

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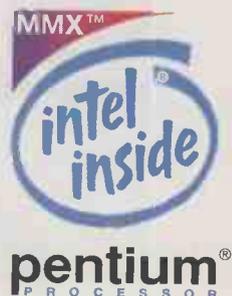
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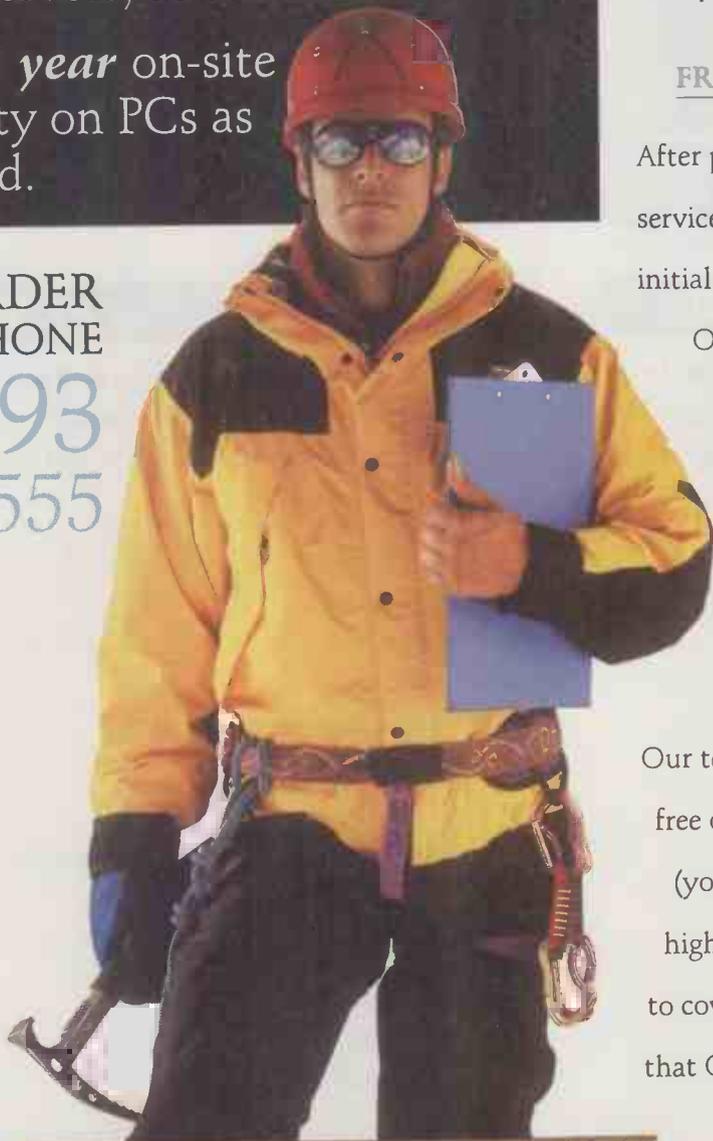
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# Standard issue

How is your information posted on the net? It should be in a standard form that *everyone* can view — Nigel Whitfield stirs it up. And, see how you can automatically update your HTML pages.

**T**here's an old maxim in some of the more technical newsgroups on the internet, about standards:

"Be strict in what you give out and liberal in what you accept." In the rush to make the net a more friendly place, it seems some people have forgotten this, and the results can range from irritating to just plain stupid.

IRC, for instance, is supposed to be a place where people can chat, and with the exception of the ability to send files to other users, it's essentially a text-based system. It's rather irritating, though, when users of some software decide they want to use different colours and the result for others is white text on a white background, or lots of peculiar brackets all over the place.

More incongruous are the effects of Microsoft's Comic Chat, which attempts to turn IRC into a comic strip: all well and good for those using the same program, but it's unsettling, to say the least, when messages like "Butch appears as ANNA" pop up on your screen, let alone all the other garbage added by the system.

Email is affected, too. Those who decide to send questions as a Word for Windows attachment will find them deleted without even having been read. This happens when I read my mail on a Unix system or via the web from a café. Worse still is the gibberish attached to some messages by programs like Exchange, with attachments buried in the middle of information, about which fonts are used.

The net needs facilities to liven up chat rooms, add sparkle to web pages and allow fonts and emphasis in email messages. The trick is to make sure it can be done without inconveniencing people who, for whatever reasons, don't have the latest software installed on their systems. Surprisingly



Don't get scrambled, get some sparkle into your web pages and add some oomph to your email

enough, many of the standards such as MIME have been designed specifically so they will work without inconveniencing people who don't have enhanced systems, or so that alternatives can be provided on

web pages, allowing quick access when you don't want to see all the pictures, or speech synthesisers to read out something more useful than "image image image" for a menu.

The technology is there, but long-time

p252 >

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## Listing 1: Redirecting visitors

```
<HTML>
<HEAD>
<META HTTP-EQUIV=REFRESH CONTENT="15; URL=http://www.myplace.org.uk/">
<TITLE>We've moved!</TITLE>
</HEAD>
<BODY><H1>Our url is now www.myplace.org.uk</H1>
<P>You will be taken there automatically in fifteen seconds</P>
</BODY>
</HTML>
```

computer users may also be familiar with another saying: "Standards are great; everyone has one". The problem arises when people are arrogant enough to assume that if someone doesn't follow their standard, they need to be made to or lose out on part of the information — a route which, some believe, the likes of Microsoft is taking with its steps towards dominance of the web browser market.

Sure, all the bells and whistles are making the net easier to use, and that is welcome; but before you decide to create a web site that relies solely on JavaScript and frames, write all your email in Word and send it as attachments to your messages, or write in coloured text on IRC, stop a moment and think. What are you really trying to do? What is the internet for? Isn't it about communication?

Presentation helps get the message across, but think about the mail that's unreadable when people don't have Word for Windows on their Unix, Mac or Amiga system. Don't fall into the trap of spending so much time on presentation that a sizeable number of net users cannot see your information at all.

### Automatic updating of pages in HTML

Most web pages are, with the exception of those including applets, fairly static things. You visit the page and nothing else happens until you click on a link. The experienced net surfer will have noticed various sites which have a range of clever tricks on them, including the common: "This page has moved; you'll be taken to the new one in ten seconds" type of banner, or a page which includes a picture, updated periodically.

How do they do that? The answer varies, but without having to worry about learning Java or other techniques, there are two ways in which you can achieve this sort of effect: client pull and server push. Client pull is the simplest way of updating a

web page and is supported by rather more browsers than server push. As the name suggests, its operation is down to the web browser rather than the software, which means it's possible to use the technique whatever the type of server on which your pages are hosted — even the free space given out by many service providers.

### Tricks and things

There are things you can do with client pull, especially if you combine it with tricks like the Server Side Includes (which were covered in last month's column) or with other scripting elements. You could use an included script to provide the latest value from a database or some other source of information, and create a page that updates itself every few seconds, giving real-time information.

Setting up a client push is simple — all it takes is a single line in your web page, which needs to appear in the HEAD section rather than the body text. The simplest form, which will make your page reload every five seconds, is a line like this:

```
<META HTTP-EQUIV=REFRESH CONTENT="5">
```

The Refresh command is a standard part of the http response that a server can return, and the value 5 is the number of seconds to wait before fetching the page again. If you set it to zero, the page will be reloaded as soon as the client is able. Adding a separate link to the page will allow people to click on that to go elsewhere, before the page is refreshed.

What if you want to load another page? That's simple, too, and you could use it to create a "slideshow" effect or simply to redirect people to a new location for your page after a number of seconds have elapsed. All you need to remember is that you must specify the full location of the page to which you want people taken: you can't give a relative reference, like you would in the rest of your site. So, to redirect people

to the site [www.myplace.org.uk](http://www.myplace.org.uk), you'd use HTML like the example in Listing 1.

Client pull is a simple technique, although it's not always the best way to do things. Another way of creating pages which update automatically, without having to do more than a simple script, is server push.

In this technique, the web server carries on sending information back to your browser, using a special MIME type called multipart/x-mixed-replace. Be warned, though, that not all web browsers understand this type of information, and it can even cause some versions of Microsoft Internet Explorer to crash completely.

#### Polite request

Nevertheless, when it works it's very useful. You can, for instance, display a page that states "Please wait while we retrieve the information you requested" and have it automatically updated when the server has assembled everything that's needed for the next page. Or you could use a script that generates this type of information to send images to the web browser, giving another way to create a slideshow effect.

The key to server push is the script you write and the headers it sends back to your web browser. As long as the user doesn't

### Listing 2: Page separation

```
print "Content-Type: multipart/x-mixed-replace;boundary=AUniqueSeparator\n\n" ;
print "AUniqueSeparator\nContent-Type: text/html\n\n" ;
print "<H1>This is the first page of the show</H1>\n\n" ;
.
.
.
print "More in 20 seconds...\n\n" ;
sleep 20 ;
print "AUniqueSeparator\nContent-Type: text/html\n\n" ;
print "<H1>Here's page 2</H1>\n\n" ;
.
.
.
print "AUniqueSeparator\nContent-Type: text/html\n\n" ;
print "<H1>And this is the final page</H1>\n\n" ;
.
.
.
print "AUniqueSeparator\n\n" ;
exit ;
```

press the Stop button on the browser or go to another location, the script can continue sending new data. If you write the script in a language like Perl, you don't need to worry about what happens when the connection is closed: it will be taken care of for you.

As well as the initial header specifying the multipart/x-mixed-replace format, you need to decide on a string that will separate the different pages, which shouldn't appear in the pages themselves. Once done, it's pretty simple to create a series of pages

which updates. The Perl script sends out three pages in succession. Each one could contain extra information created by the script, rather than the simple example here; for clarity, the <HEAD> and other essential HTML parts for each page have been omitted from the code in Listing 2

You can use this for images, by specifying the image as a script which sends successive gifs back to the browser. However, this isn't likely to be efficient and, with modern browsers, you'll be best off using animated gifs instead. p254 >

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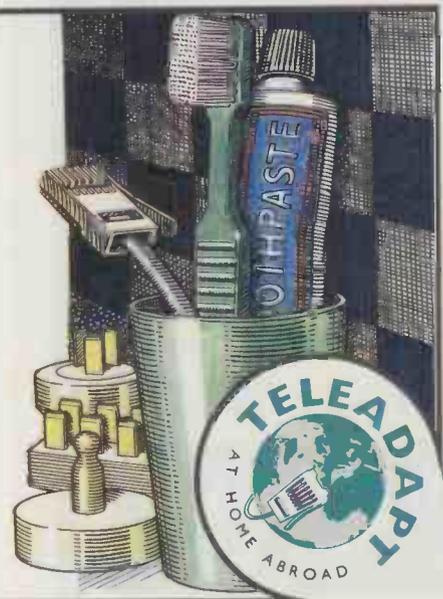
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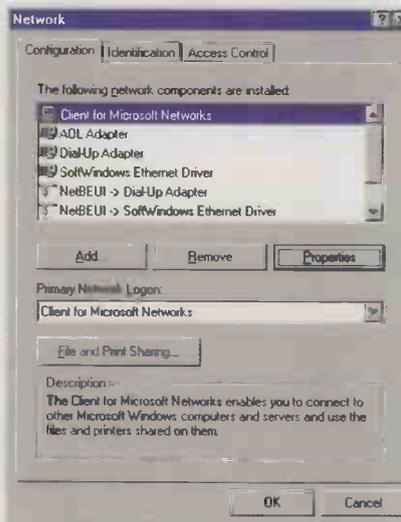
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## Questions & Answers



You can have a LAN and an internet connection, if you first set things up properly

**Q** We want more than one email address and unlimited net access. Unfortunately, BT's technical support line tells me that if we sign up for BT's service (our first choice for long-term stability), their software will disable any LAN connection for that PC. As we want to link our two PCs with a simple network based on WFW3.11 & W95, this is a major stumbling block. BT is unable to explain why this is.

Can you throw any light on it, and advise us whether we will hit this problem with any ISP?

**A** The most likely explanation for the problem is that BT's helpline would rather tell you that something can't be done than run the risk of telling you that it can, and then having to deal with your calls when things go wrong.

You can have a connection to your network and to the internet running on the same machine. Things become complex when you want to run the same protocol on both the network and the internet. You'd have to ensure that you configured both machines with TCP/IP addresses which were valid for private networks, and set the internet properties to use the dial-up link to BT Internet as the default connection.

However, if all you want to do is share files and printers between the two machines, the solution is much simpler: don't install TCP/IP on both machines.

Use the Windows 95 system to connect to the internet, preferably using the built-in dial-up networking. BT's helpline should be able to tell you how to set that up.

On the LAN side use NETBEUI to connect the systems, which is the built-in networking for Windows and can be set up without having to install any other software on Windows for Workgroups.

To make things work smoothly on the Windows 95 system, open the Networks control panel and you'll see two adapters—the network card and the Dial-Up Adapter. Highlight each in turn and click on the Properties button, then choose the Bindings tab.

Ensure that TCP/IP is using only the Dial-Up adapter, and that NETBEUI is restricted to the network card. When you've made your changes you'll be asked to restart the computer, and you should be able to access both the internet and the local network without any problems.

An alternative is to set up the local network and then install internet access software such as Turnpike, which includes its own TCP/IP software that won't interfere with the connection to your LAN.

**Q** I use a Mac for web design, but the rest of the network uses Windows systems running TCP/IP. Is there a simple way that I can connect to drives on the Windows boxes, so I can save web pages directly to the server?

**A** There are a number of solutions. If you don't mind messing about a bit, you could use an ftp program like Fetch on the Mac, combined with an ftp server on one of the Windows systems and transfer your pages over the net when they're finished. However, if you just want to be able to save files directly to a Windows hard disk, perhaps the best solution is the commercial product DAVE, from Thursby Software at [www.thursby.com](http://www.thursby.com). DAVE is a NetBIOS client for the Mac which works over TCP/IP so you can mount shared Windows drives on your LAN or over the net. A demo copy can be downloaded from the site, and version 2, due for release this month, will allow Mac users to share their own drives and printers with Windows systems.

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## Questions &amp; Answers (cont'd)



DAVE is a solution that lets Mac users attach to shared PC drives on a Windows network

**Q** Having installed the Demon software, I find that I can no longer access the internet using AOL. Why?

**A** Why do you want to access the internet via AOL? Unless you're planning to go abroad and use AOL's international access numbers, you'd be best off using Demon for your net access.

You can configure AOL to connect over the internet, enabling you to dial into Demon and run AOL as just another net app, with things like Explorer and mIRC.

If you decide you want to be able to access the net via AOL, the best solution is probably to re-install the AOL software. Make sure you load the correct version for your Windows system and install over the top of your existing config: all your mail messages and preferences will be saved

and transferred. If you're using Win95 with an old version of AOL, you should upgrade.

If you install any other internet software, you should make sure that it doesn't overwrite any of the Winsock files in your Windows\System directory. Keep copies of the Winsock and Wsock32 DLL files in a safe directory so that they can be replaced if necessary. The best solution for Win95 users is to use Dial Up Networking to connect to

true ISPs like Demon, which allows Windows to handle the different configurations, and to install AOL in its own directory with its own software.

**Q** Is it true that when you visit Microsoft's web site, it trawls through your machine and notes what software you have and where you've been surfing?

**A** No, it's a myth. There have been similar stories circulating since the introduction of online registration in Windows 95, and claims that Microsoft was checking to see if you had any illegal software installed on your system. With the advent of ActiveX controls it is, of course, possible for a site to scan your whole system, or indeed do

far worse things, but no reputable site is likely to carry out such a survey. Even if Microsoft were to check what software is on your computer, it's hard to identify people who are accessing the site from many ISPs because you're allocated a different internet address each time you connect to the system. Also, this type of data collection is likely to fall foul of data protection legislation around the world.



AOL can co-exist with other internet software provided that you set things up carefully

### PCW Contact

Nigel Whitfield is a freelance journalist, maintainer of several internet mailing lists and consultant to a number of non-profit organisations. He can be contacted via [internet@pcw.co.uk](mailto:internet@pcw.co.uk)

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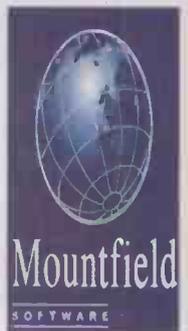
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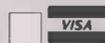
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# The waiting game

Tim Nott continues the theme of what to do if Win95 fails to tell you when it's safe to switch off your PC. Delving into the file system and upper memory could help you solve the problem.

**W**here were we... Oh yes, waiting for our computers to shut down. Last month we looked at the more accessible reasons for this, ranging from damaged exit sound files to something nasty in the virtual device drivers.

This month, we plunge headlong into the fascinating world of the file system and upper memory. (If you're already nodding off, then skip to the section headed "Completing the set", page 256, for the familiar blend of tips and trivia.)

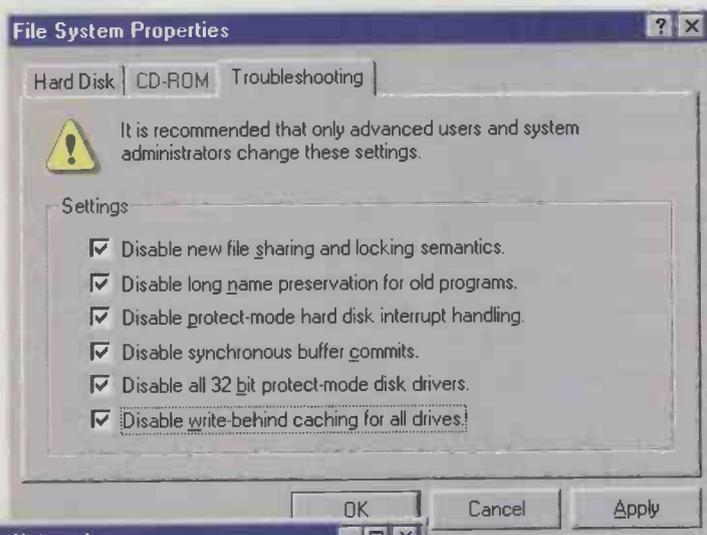
A further, sound-related possibility is a conflict arising from using the PC's internal speaker. If the line

```
wave = speaker.drv
```

appears in the [drivers] section of SYSTEM.INI, try disabling it with a semicolon at the start of the line.

Another possible but uncommon reason is Advanced Power Management on some portables. If the BIOS is set to suspend rather than shut down, Windows can't exit. The proper cure is a BIOS update, but you can work around the problem by disabling APM from the Device Manager. Expand the System Device branch, double-click the APM entry and disable it from the Settings tab.

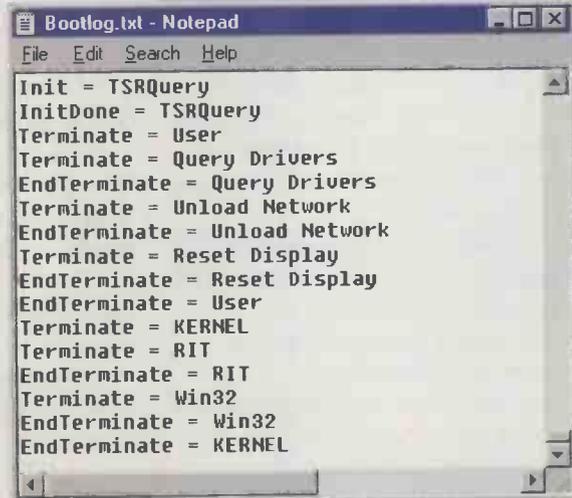
The next suspect is the File System and now it all starts to get rather heavy, so a Registry backup is in order — see the Q&A box on page 256 for the best way to do this. You have of course an emergency boot disk complete with real-mode CD-ROM drivers already prepared. Back in



**Left** Hunting out shut-down problems with the file system

**Below, left** What a well-behaved shut-down should look like in the boot log

the "Disable all 32-bit protect-mode disk drivers" first, to get



your CD-ROM drive back.

If the problem still persists, it could be a device driver problem. Restart the PC, press F8 to get the startup options, then 2 to create a log. Windows will take longer to start and you should then shut down and restart again. Examine the end of the Bootlog.txt file in C:\. You should see a set of Terminate statements, each matched by an EndTerminate one, and the final line should read

```
EndTerminate = KERNEL
```

If it doesn't, then the last unmatched Terminate entry should provide a clue, as follows:

**Query Drivers** Possible memory management problem. Are you running QEMM?  
**Unload Network** Possible conflict with network drivers in CONFIG.SYS.  
**RIT** Possible problem with a sound card or mouse driver.  
**Win32** A 32-bit program is not closing. Microsoft Visual C++ is, apparently, a known offender.

Control Panel, System Properties, turn to the Performance tab, hit the File System button and then the Troubleshooting tab. Tick all the boxes and shut down Windows.

Note that you'll temporarily lose access to your CD-ROM drive unless you have real-mode drivers loaded in CONFIG.SYS and AUTOEXEC.BAT. If this cures the problem, reinstate the options one by one: uncheck

## Questions &amp; Answers

**Q** I created an icon using Paintbrush [see *November's column*] and attached it to a Desktop shortcut. I then realised that it looked wrong against the background so I edited the icon and resaved it, but could not get the shortcut to show the new version.

If I saved the edited icon under a new name, then changed the shortcut to use this, it worked. However, I wanted to keep the icon name so I deleted the first icon, temporarily connected the shortcut to a different icon, then renamed the edited version to the original icon name. Trying to use this for the shortcut reverted to the original, unedited version, which is no longer on my hard disk. I am very confused and frustrated.

Paul Edwards

**A** He's right, you know. I've just tried it, and were there a twist in the immediate vicinity, I would have been driven round it. What's even more frustrating is that you can see the edited icon in the shortcut properties but it still won't change the shortcut itself.

The problem arises because Windows maintains an icon cache: rather than shoot off and fetch icons from every corner of your hard disk, it keeps them in a central file, saving time. However, the cache isn't smart enough to realise an icon file has changed (if MYICON.ICO is in its books, it will continue to use the original version) with the frustrating results as related above.

TweakUI (part of the free MS Powertoys, and an essential Windows add-on) has a Repair tab with a button to update the cache and fix the problem. Alternatively, if you don't have TweakUI, you can rebuild the cache as follows:

1. Right click on the Desktop — select Properties.
2. Go to the Appearance tab.
3. Scroll through the Item list to Icon.
4. Increase the size by one point, then hit Apply. You should see the icon update.

5. Decrease back down, and Apply again, then OK out.

**Q** Can I manually convert Win3.x groups to equivalent groups on the Windows 95 Start Menu?

Knut Jespersen

**A** Yes. Just double-click on the .GRP files.

**Q** I'm sure right-clicking on .INF files used to give an Install option: I remember doing this with the Powertoys. But it doesn't any more...

Stephen Geary

**A** You're right, the Install option should be there because the .INF filetype is reserved for Setup Information files. Fortunately, if you've installed the Powertoys you should have TweakUI. Go to the Repair tab and hit the Repair Associations button.

If you prefer to get your hands dirty, you can open any folder (or Explorer) and from the View menu, select Options then the File Types tab. Scroll down to Setup Information in the list. If it doesn't exist, you will have to create it: click New Type and put Setup Information in the Description... box and .INF in the Associated Extension box.

Next, click the New button to create an action. In the upper Action box type "&Install". Do not include the quotes for any of this, but the ampersand (&) enables the keyboard shortcut (underlined in the menu). In the "Application used..." space, type (all on one line):

```
C:\WINDOWS\rundll.exe setupx.dll,
InstallHinfSection DefaultInstall
132
```

Note that there are spaces after "exe", "Section" and "DefaultInstall".

OK out, and the new Action will appear in the list of the previous dialog. You can also create an Open action that uses C:\Windows\notepad.exe. Having created the latter, highlight it in the list and click the Default button.

The Open entry will then appear bold,

and will be the action that happens when you double-click an INF file.

The icon should look like that of Notepad with a small yellow cog. If you need to find this, browse to C:\WINDOWS\SYSTEM\shell32.dll and scroll through the selection.

If you already have a Setup Information file type, then you need to edit the type, then the actions, to ensure the details are as above.

**Q** Back up the Registry: easy to say, and no doubt sound advice. But how?

Nigel Woolf

**A** My preferred method is to use the Emergency Recovery Utility. Copy the ERU folder from the Other\Misc\ folder on the Windows 95 CD-ROM and follow the instructions in ERU.TXT.

Three things worthy of note are that this backs up not just the Registry but other vital files; you can restore from a command-line prompt (unlike the Configuration Backup utility); and although you're encouraged to back up to a floppy, you probably don't have a hope in hell. The files are just too big and ERU will cheerfully ditch those that don't fit. Back up to a separate folder on your hard disk instead.

**Q** I have seen a version of Windows 95 installed on PCs in shops that is missing parts of the Start menu (e.g. Run or Settings). Is there any way to remove default lines in the Start menu or add lines below Programs?

James Sanders

**A** Taking the latter first — not that I know of. The former can be done by direct Registry editing, but it's much easier to use the System Policy editor which we covered in the September 1996 issue. You'll find POLEDIT.EXE on the Windows 95 installation CD-ROM. The resource kit, also on the CD as W95RK.HLP, contains lots of helpful information on system policies and using Poledit.

**Reset Display** Display driver problem, or video shadowing in the BIOS.

Let's look next at memory management. We've already covered disabling drivers loaded in CONFIG.SYS and AUTOEXEC.

BAT, but now we're going to add some. Edit CONFIG.SYS and add the lines in Listing 1. If this cures the problem, there's a conflict in upper memory. We've excluded Windows from using all the upper memory

(a000-f7ff) so the next stage is to reduce the excluded range; say, to c000-f7ff. If the problem returns, the conflict is in the a000-bfff range. If not, it's in the c000-f7ff.

In either case, continue narrowing the

### Listing 1: Adding some drivers

```
device = c:\windows\himem.sys
device = c:\windows\emm386.exe noems x=a000-f7ff
```

### Listing 2: A shortcut

```
C:\WINDOWS\SendKeys.exe c:\windows\notepad.sk
```

range; say, to a000-aff. You may be able to narrow this further, but if, say, neither a000-a7ff nor a800-afff work, while a000-afff does, you'll have to include the entire range. Just to make things a little more exciting, you may have to exclude more than one range — e.g. x=c000-c7ff x=e000-efff. But that doesn't bear thinking about, does it?

If that doesn't cure it, you're going to have to remove the two lines from CONFIG.SYS and wait for my next column. I know I said we'd do it in two parts, but as it's exceptionally tedious I'm going to stretch it to three. Next month, we'll conclude with more exciting insights into device drivers and plug-and-play.

#### Completing the set

Last August, we printed the tip on how to change the toolbar background bitmap in Internet Explorer 3. We followed this up in November with changing the spinning globe animation.

By the way, there's a year's worth of searchable Hands On, on the CD-ROM each month. So before you email me saying "A few months ago, I remember you did something on..." have a look there. It will save us all time.

Getting back to the point, Henry Bevan completes the set by changing the IE3 window title. Back up that Registry, fire up Regedit, go to

```
Hkey_Local_Machine\ Software\
Microsoft\ Internet_Explorer\ Main
```

and change the value of "Window Title" to whatever catches your fancy. If there isn't a "Window Title" entry, create it as a new string value.

#### You send me

Now here's a clever bloke. Remember that venerable old chestnut, "How to start Notepad with word-wrap on?" In just 7Kb of Visual Basic executable, Kevin Carbonaro has cracked this problem. His Sendkeys utility does just what the name suggests: it starts an application, then sends keystrokes to it. It

requires a little effort on the part of the user.

First, you will need to create a plain text file containing the path and filename of the application, followed by the keystrokes. So, in the Notepad example, you would have a file called NOTEPAD.SK (the SK extension is not mandatory) that reads:

```
C:\Windows\notepad.exe
&
e
w
```

where the first line launches Notepad and the second corresponds to a "sticky" Alt key which waits for the next key, E. Alt + E (as any fule kno) drops the Edit menu, and W turns on word-wrap.

Having created the text file, you then need to create a shortcut with the full paths to Sendkeys and the file as the target (Listing 2). And that's it. There's no fancy installation routine, and the simplest thing is to unzip everything to your Windows folder.

If you would rather put it elsewhere, you will have to modify the sample shortcuts. Sendkeys.zip contains the program, the Sendkeys.txt file (with full instructions) and samples. You will also need VBRUN300.DLL in your Windows\System folder. If you don't have this, it is on our PCW cover-mounted CD-ROM this month.

### The fax of life

Thank you, Tim Medcalf, for sharing with us the following:  
*"I was registering Internet Explorer online. I didn't enter my fax number and ticked the box that indicated that I didn't want Microsoft to fax me for any reason. The next screen showed the message: 'We need your fax number in order to respect your wishes not to receive unsolicited faxes'."*

### PCW Contacts

Email Tim Nott at [win95@pcw.co.uk](mailto:win95@pcw.co.uk) or write to him c/o the usual PCW postal address (p12).

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# Show your true colours

Panicos Georgiades and Gabriel Jacobs help sort out a problem with colour drivers on a 386 PC, sort out mikes which are taking the mickey and solve the missing icons mystery.

**A** happy new year to you all! Did you treat yourself to a new computer for Christmas? If you didn't, and are still struggling to get your 386 to boldly go where no 386 has gone before, remember that those lucky people who have all the state-of-the-art stuff are struggling with bugs in new software.

One of our readers lucky enough to work on a 386 is Jonathan Waite, who writes: *"My old Ambra Sprinta 386 is mostly used by my young children. It was supplied with a 16-colour VGA 640 x 480 driver. Because so many children's games require 256 colours I upgraded with a Microsoft SVGA driver from a PCW cover disk. This is fine for graphics, but it seems to cause a problem if I try to scroll in a list box.*

*"I can get around the problem by changing to the VGA driver for text work, but it would be nice to be able to use 256 colours for clip-art. (My colour printer is still connected to the Ambra.) Any thoughts?"*

The Microsoft SVGA 256-colour driver (Fig 1) is for general use and is supplied in case your own card does not have a specific SVGA driver, or in case you are using a machine (or software) that conflicts with your card's specific SVGA driver.

Our suggestion is to get hold of the SVGA driver for the card that is in your machine: your supplier may be able to help. If you have no luck with your supplier, it is worth opening up the machine and looking at the graphics card — it may be one that is widely used and you can get an updated driver for it from the net. In fact, when your machine boots up, the screen usually displays the graphics card you are using.

Alternatively you can upgrade the graphics card in your machine, and since yours is a 386 it will only take an old-

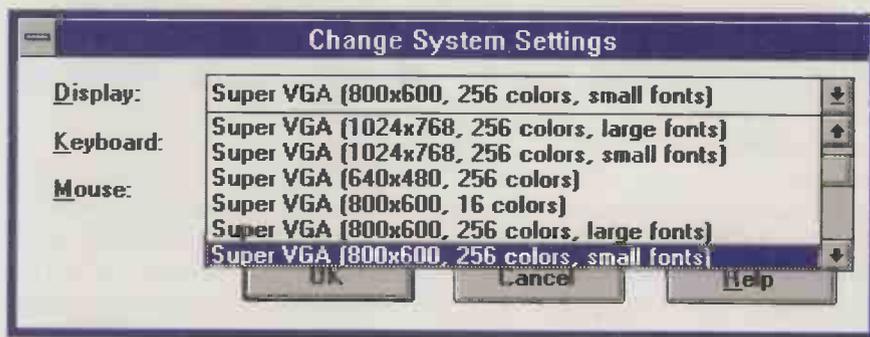


Fig 1 The Microsoft SVGA 256-colour driver is for general use

fashioned card which should not cost you more than £30. In case you need it, and can afford the phone call, we have printed Ambra Technical Support's phone number in the "PCW Contacts" box on page 266.

## Sound sense

Right, we've had colour — now let's have some sound. Better still, let's record it. Alan McArdle writes: *"I have an Escom P60 running DOS 6.22 and Windows 3.11 for Workgroups. I have two microphones: a Ross with its own battery, and a Boeder without a battery (I think). So far, neither of them will record anything, either on my Yamaha Station or on the MS-DOS Sound Recorder, yet both will play back existing WAV files.*

*"I understand from my local independent computer store that it is difficult to install and/or configure a microphone in Windows 3.11, and they will charge me only £25 (ex VAT) if I take in all my hardware except the monitor. But can you please help?"*

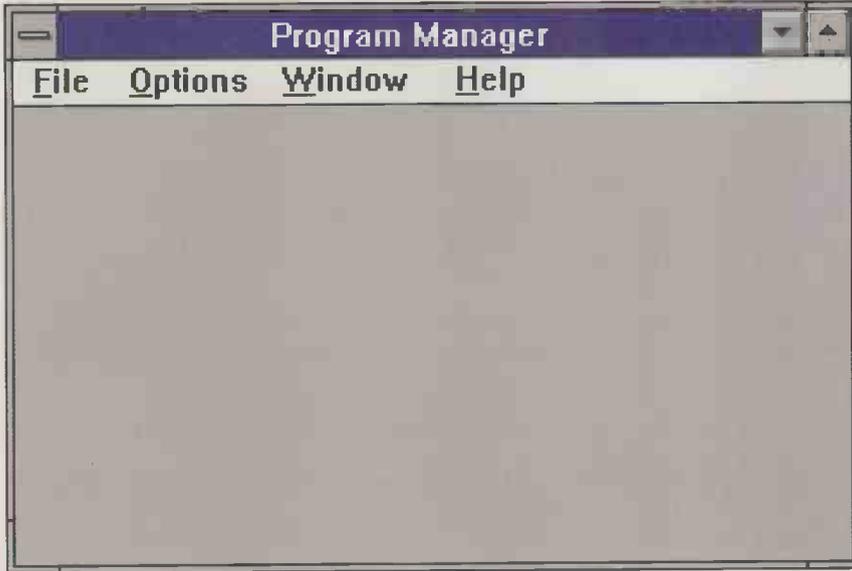
This is a common problem, and for a good reason: we doubt that any PC manufacturer tests this when they assemble a machine. It is not difficult to install and/or configure a microphone in Windows 3.11. Or at least, it shouldn't be.

But £25 (ex VAT) is not a bad deal if your local shop will throw in a new microphone, in case yours do not match your sound card. If one of your microphones came with your sound card, that is the one to use — it should work.

If you do not want to take up the offer, the following will interest you (and others with the same problem). The cause of the problem could be:

1. Wrong microphone for the card.
2. Wrong settings for recording, either in the mixer program or in the installation.
3. Microphone or its cables do not work.
4. Microphone socket on the card does not work, or microphone plugged into the wrong socket.

There are two types of microphone: condenser microphones (otherwise known as electret) which require a battery, and dynamic microphones which do not. You need to look in your sound card's manual to see which one it takes, as it is not likely to take both. While you are studying the card's manual, have a look at what spec is given for ohms (for the mic input). This is likely to be 600ohms but it may be another value; in any case, it should match the value of the microphone. Of course, if one of your microphones came with your card,



**Fig 2** Now you see them, now you don't: have you ever lost your icons?

you do not need to do this.

We will assume that they match. We will additionally assume that you checked the mixer settings on the Yamaha Station and any other program you are using to record (you can also use the Windows Sound Recorder if the level for the microphone is turned up and the microphone is not set to mute).

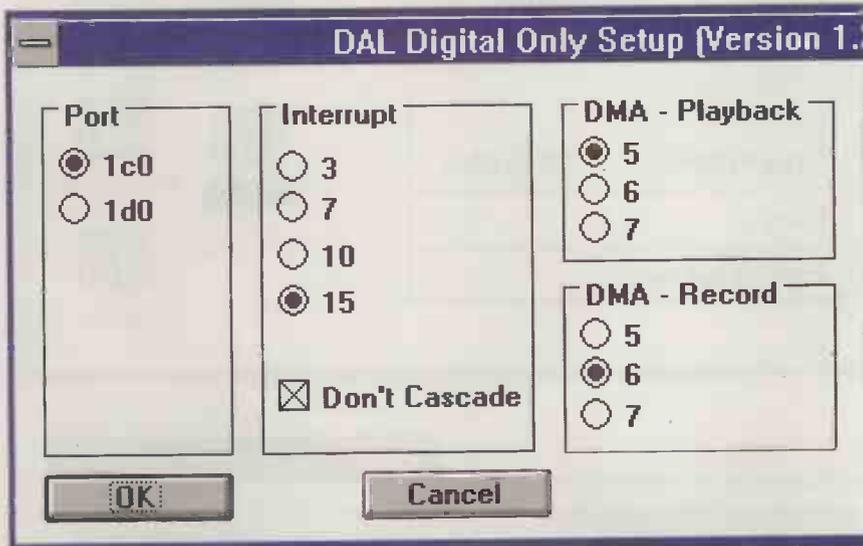
Have you tried recording from any other source, like the CD-ROM drive, the MIDI synthesiser in the card or an external source? If you cannot record from any of these sources either, the problem is likely to be an installation setting for the card, usually an incorrect DMA channel (Fig 3).

You can correct this by using the card's own setup software or going to the Control Panel/Drivers section by clicking on the

sound-card driver (for audio) and changing the settings. If there are a few DMA settings, there are likely to be three or six available, so change the combination. You may need to experiment with these settings and restart Windows for them to take effect. But change them only if you cannot record from other sources either.

Problems may also arise from incorrect interrupts and I/O settings, but these are likely to have more results such as no sound playback or even system crashes.

Failing that, are you using the right socket? Cards usually have two inputs: a microphone (low level) and an Auxiliary-in (high level for use with tape machines, TVs, CDs and other domestic hi-fi equipment). If you plug the microphone into the Auxiliary-in, it won't work.



**Fig 3** DMA channel settings are the ones most likely to cause problems with recording, when everything else works fine

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### The strange case of the missing icons

Have you ever started Windows, only to find that all your icons have gone — stolen or apparently on holiday? It happened to Sazid Aziz

[medusa@ps.cus.umist.ac.uk](mailto:medusa@ps.cus.umist.ac.uk) who writes:

*"I have a problem under Windows for Workgroups 3.11. The trouble is that in some way, all the icons on the Windows main screen seem to have been deleted. The only icons remaining are those which were there*

*initially, when I bought the computer. The programs are still there and I can use them from the Run option on the main Program Manager screen.*

*"The problem also involves any new applications I install. As soon as I exit the Program Manager into DOS, it disappears, and the icons, too, just seem to disappear.*

*"If it makes any difference, my current system is a Pentium 90, with a 1.1Gb hard drive and 24Mb RAM."*

The information about the icons on the desktop is held in a file called progman.ini and this should reside in your Windows directory. If this file is corrupted, or cannot be found, or cannot be written to, or if one of the restrictions settings in it is set to a certain value (see below) then all or some of your icons go walkies.

Check for an invalid PATH= statement in the autoexec.bat. This may result in the inaccessibility of the Windows groups within Program Manager. It occurs when you start Windows from the root directory but does not occur when you start Windows from the Windows directory.

It also occurs if the path is set as  
PATH=C:\WINDOWS

instead of  
PATH=C:\WINDOWS

where C is the drive and WINDOWS is the directory in which Windows resides. Also, if in your progman.ini file (use Notepad to view or edit it) there is a [restrictions] section containing the line

EditLevel=1 (or 2 or 3 or 4)

you will not be able to add or change any of the Program Manager groups, and thus will not be able to add icons (Figs 4 & 5)

The full set of restrictions for EditLevel= is shown in Table 1

Table 1: The full set of restrictions for EditLevel=

EditLevel=n sets restrictions for what you can modify in Program Manager. You can specify one of the following values for n:

- 0 allows you to make any change (the default value).
- 1 prevents you from creating, deleting, or renaming groups. If you specify this value, the New, Move, Copy, and Delete commands on the File menu are not available when a group is selected.
- 2 sets all restrictions in EditLevel=1 and also prevents you from creating or deleting program items. If you specify this value, the New, Move, Copy, and Delete commands on the File menu are unavailable.
- 3 sets all restrictions in EditLevel=2 and prevents you from changing command lines for program items. If you specify this value, the text in the Command Line box, in the Properties dialog box, cannot be changed.
- 4 sets all restrictions in EditLevel=3 and prevents you from changing any program item information. If you specify this value, none of the areas in the Properties dialog box can be modified. You can view the dialog box but all the areas are dimmed.

To enable any of the commands or remove any of the EditLevel= restrictions, either remove the entry from the progman.ini file or set the value to 0.

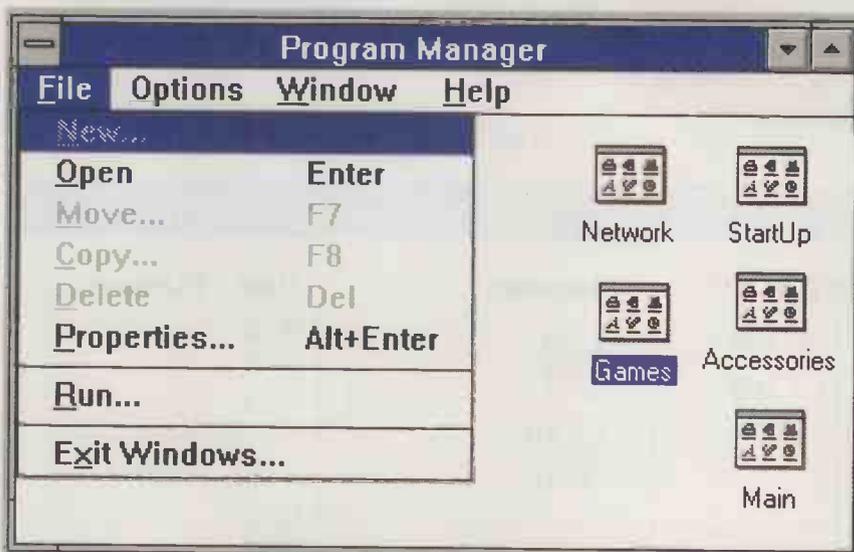
```

MS-DOS Prompt
[Settings]
Window=66 78 436 311 1
display.driv=SUGA256.DRV
Order= 5 2 3 4 1

[restrictions]
EditLevel=1

[Groups]
Group1=C:\WIN311\MAIN.GRP
Group2=C:\WIN311\ACCESSOR.GRP
Group3=C:\WIN311\NETWORK.GRP
Group4=C:\WIN311\GAMES.GRP
Group5=C:\WIN311\STARTUP.GRP

```



Figs 4 & 5 (above)

The EditLevel= line in Progman.ini can prevent programs from installing icons and prevent you from deleting them, creating new ones, and so on

### PCW Contacts

If you have any queries or Win3.1-related topics to discuss, contact Panicos Georghiadis and Gabriel Jacobs at [win3@pcw.co.uk](mailto:win3@pcw.co.uk)

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### PTT Approvals





# Splash the **cache**

Andrew Ward sees performance benefits for Win NT users who cache their disk and take care with their tune-up. And, a new defrag tool which offers benefits over existing models.

I subscribe to the theory that main memory cache, especially if it is automatic and intelligent, as it is in Win NT, ought to be faster than any cached disk controller. Specifically, the reason is that fetching data from main memory will always be faster than fetching it across an I/O bus. In practice, though, I find that Win NT systems benefit enormously from a caching disk controller, and have some results from a DPT SmartCache IV controller that seem to bear this out.

The PM2044U SmartCache IV controller from DPT is an Ultra SCSI narrow controller which takes optional memory expansion modules to provide cache memory. With 4Mb of cache memory, even something simple like rebooting the system was 50 percent faster with all cache features enabled normally — that increase is compared to the same controller with read-ahead and dirty cache sizes set to 0. Caching, however, will still take place, so the benefit over an entirely non-cached system would be even greater.

You should take care to use the supplied Storage Manager tool to tune the cache properly. By setting the maximum read-ahead buffer allocation permitted to 70 percent, system start time actually got worse by some ten percent, compared with the figure for no read-ahead at all — it was 25 percent worse than when read-ahead was set to the default maximum of 30 percent.

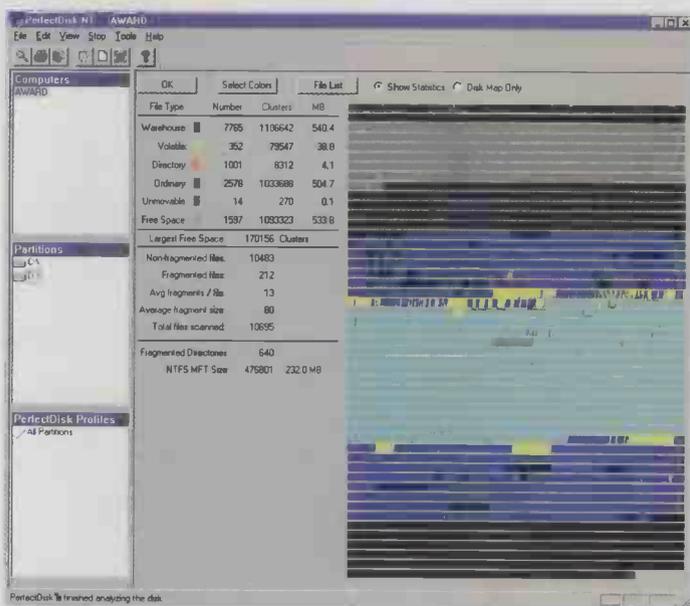
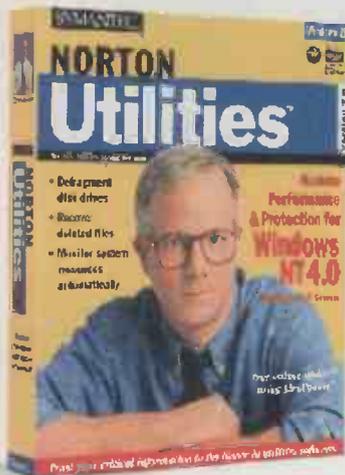


Fig 1 Even after a week of hard use, the disk looks reasonably tidy

## Disk defragmentation

The disk defragmentation debate continues, with Norton Utilities Speed Disk and Executive Software Diskeeper each having their own fans. Meanwhile, a new entrant has appeared on the market — PerfectDisk NT from Raxco Software. You can download a free trial version from

[www.raxco.com](http://www.raxco.com).

Normal defragmentation tools carry out two main activities: they collect together the parts of fragmented files in one place, and they do the same with free space. The latter is important because quite often it is severe free-space fragmentation which limits performance, rather than fragmented files.

PerfectDisk goes one step further and uses a third

technique which, on closer inspection, ought to offer at least three benefits over the other tools. What PerfectDisk does is to attempt to classify files into three different categories according to how often they are used, and then move them to different physical areas of the disk.

The three categories are warehouse, ordinary and volatile files. PerfectDisk uses the age of the file and the date it was last accessed to sort files into these categories.

Warehouse files are those that are not only quite old but also haven't been accessed for a while, and these are pushed to the outer ends of the disk. In theory, these files shouldn't often change, and shouldn't often be needed. Ordinary files are those which are not recent but have been recently accessed. These are placed nearer to the centre of the disk.

Files that are very new and hence most likely to be accessed, edited and deleted, are called volatile files. They are collected

together with free space and put into adjacent blocks in the centre of the disk.

By putting all the most frequently used files in the centre, along with the free spaces, PerfectDisk pretty well guarantees that many disk accesses will take place in one small central area of the disk. The warehouse files at the outer limits will rarely need to be touched, resulting in shorter disk-head movements and hence faster access.

Another benefit is that this optimisation scheme should last longer than most others. The volatile area in the middle will get in a mess, but the outer regions of ordinary and warehouse files should stay fairly clean. Experimental results do seem to bear out this theory. You can see in Fig 1 that a week of heavy use has hardly upset the neat arrangement of files.

Finally, optimisations ought to be quite quick, since it's only largely the middle area that will need optimising, which could be as low as 20 percent of the disk space. The down side is that the very first defragmentation run with PerfectDisk takes a long, long time — allow an hour or two for the average 1Gb to 4Gb hard drive. It's interesting to watch this first run, though:

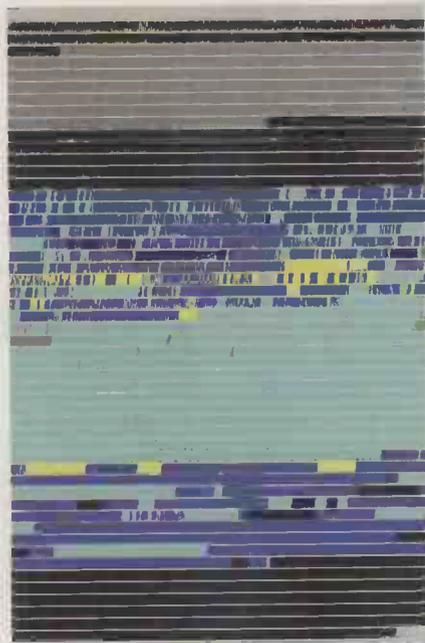


Fig 2 An Ameol purge wreaks havoc with the file classification system used by PerfectDisk

the number of fragmented files increases alarmingly as PerfectDisk goes about its task, before it finally starts dropping back.

Unfortunately, we don't live in a perfect world (well, I certainly don't). Purging an

Ameol database must be the most severe test around for a disk's fragmentation sanity and even a "Perfect" disk suffers. Many of the Ameol data files end up being classified as ordinary, rather than volatile, and a purge will bring about considerable untidiness to your perfect order (Fig 2).

**Command-line dialling**

If you think back to my column in the November issue, I explained how rasdial can be used to automate dial-up from the command line (provided you follow my suggestions and ignore the documentation). Chris Paterson has pointed out that you can also use rasphone, but that this has benefits and disadvantages.

Using rasphone from the command line is rather like using the phonebook interactively. It supports operator-assisted dialling, it will automatically execute log-in scripts and automatically redial. However, it behaves in an interactive fashion in the case of an error, which will severely limit its usefulness in some circumstances. Instead of getting back errorlevel results, you're simply left with an error dialog box In the

```

rasphone [-v] [-f file] [[-e | -c | -d | -h | -r] entry]
rasphone [-v] [-f file] -a [entry]
rasphone [-v] [-f file] -lx link
rasphone -s

-a      Popup new entry dialogs
-e      Popup edit entry dialogs
-c      Popup clone entry dialogs
-v      Prevent entry rename with a or e
-d      Popup dial entry dialogs
-h      Quietly hang up the entry
-r      Quietly delete the entry
-s      Popup status dialogs
-lx     Execute command 'x' on dial-up shortcut file
x       Any of the commands a, e, v, c, d, h, or r
entry  The entry name to which the operation applies
file    The full path to the phonebook file
link    The full path to the dial-up shortcut file

'entry' alone selects the entry in the phonebook dialog
    
```

Fig 3 The remote access service phonebook can also be used from the command line

middle of your screen. As Chris points out: "If you're running the scheduled event in non-interactive mode, then the error dialog will be concealed and the whole thing will fall over with a series of unsuccessful, queued dial-up attempts." The only answer to that is to run the scheduled event in interactive mode and be around to manually close down any error dialogs. Command-line options for rasphone are in Fig 3.

**Performance**

By and large, Windows NT is fairly intelligent when it goes about its memory and cache

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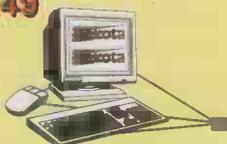
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management. But for the keen, there are all sorts of registry settings that you can tweak to obtain that extra bit of performance, provided you accept that if you subsequently change a parameter of your system, such as the amount of memory, you could well end up with a sub-optimum configuration. You'll face the problem, next time you do a fresh install of NT, of remembering what special tweaks you've carried out.

Ideally, what you should do is to make yourself a document that is effectively an install procedure for NT. It's the perfect place to make a note of all those registry settings you change, as well as boring setup details like IP numbers.

Mike Davies has drawn my attention to the following registry sub-key which stores configuration data for paging files. There are a few values which, with care, can be used to improve performance in certain circumstances. To read up on these, look in the file regentry.hlp that comes with the Windows NT 4 resource kit.

```
HKEY_LOCAL_MACHINE\SYSTEM\
CurrentControlSet\Control\Session
Manager\Memory Management
```

DisablePagingExecutive, the DWORD value, defaults to 0, and allows user-mode and kernel-mode system code to be paged to disk when not in use. By the way, the documentation in the help file on this subject is actually wrong. It suggests that the value 0 disables paging of the executive, when it should be 1. So setting this value to 1 prevents system code being paged out to disk, but should only be applied if you have plenty of physical memory (32Mb or more). Of course, you are penalising application performance at the expense of the kernel, but for most workstation environments it will improve.

Another interesting value in the same sub-key is LargeSystemCache. This determines the size of the file-system cache and also influences how often the system writes changed pages to disk. With the value of 0, you have standard-size file-system cache of around 8Mb; and pages remain in physical memory until the number of available pages drops to around 1,000. With a value of 1, the cache can grow as large as physical memory minus 4Mb.

The default varies, depending on whether you have a server or workstation installation. Not surprisingly, the value is set to 1 (so the system cache is large) for a server and 0 for a workstation, by default. But if you have a server application, like Microsoft SQL

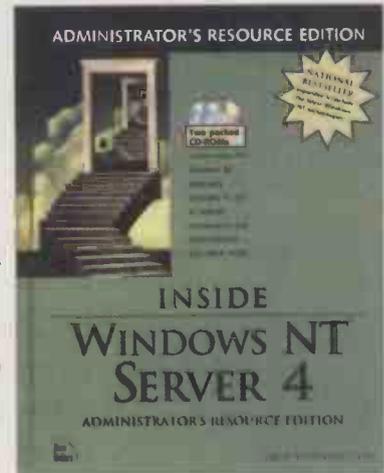
## Book review — *Inside Windows NT Server 4, Administrator's Resource Edition*

If there were prizes for the most pretentious title and the most expensive book, this would stand a good chance of winning both. Nevertheless, there is some very useful material in this volume, which complements other sources well. For instance, the diagrams explaining domain trust relationships are very useful.

*Inside Windows NT* is thorough and would make a useful addition to the bookshelves of anyone embarking on NT 4 network administration. This applies equally whether your background is non-NT, NT 3.51, or even no network administration at all.

Some of the things in Windows NT 4 which are not particularly obvious, such as how to use the DNS manager, are clearly explained, with step-by-step instructions and an ample number of screenshots. But it is really the diagrams that are this book's strong point.

Microsoft BackOffice, and especially IIS, SQL Server and Exchange Server, receive a fair amount of coverage. The two CDs contain the usual collection of useless shareware. *Inside Windows NT Server 4* is available from Computer Manuals (see "PCW Contacts", below)



Server, which embodies its own cache, or one such as IIS that needs lots of memory, it makes sense to put this back to 0, even on a server.

You don't need to edit the registry directly to change this value on a server. In the Control Panel, select Network/Services and double-click Server. To set LargeSystemCache to 1 (the default), select Maximize Throughput for File Sharing, and to set it to 0 select Maximize Throughput for Network Applications.

Now, the interesting part is that LargeSystemCache interacts with another value, Size, which is in HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters

By changing Size from its default of 1 (which means minimise cache memory) to 2, processes and cache are more evenly matched in the fight for memory. This can significantly improve workstation performance: by how much, will depend on how many applications you run and how much memory you have.

### System policies

Back in the October 1997 column, I wrote about the system policy editor.

Unfortunately, what I did not realise at the time was that prior to service pack 3 for Windows NT 4.0, a bug in the policy editor caused it to crash when editing large policy templates (custom ADM files).

What is more unfortunate is that

although the bug has been fixed in service pack 3, yet another bug prevents the updated version from being installed. There is a workaround, however, which appeared in a recent BackOffice newsletter. The problem lies with a mistake in the update.inf file which comes with service pack 3. Overcoming the problem and getting hold of the updated poedit.exe file involves installing the service pack in the normal way and then copying the executable service pack file into a temporary directory.

Next, execute the service pack from the command line with the /X parameter, which will extract the contents into the current (temporary) directory. All you then need to do is copy the file poedit.exe to your system root directory.

If you have not already started working with system policies, now is a good time. Microsoft seems to be making increasing use of them: for example, much of what users are allowed to do with NetMeeting can be controlled by system policies.

### PCW Contacts

Andrew Ward can be contacted at [NT@pcw.co.uk](mailto:NT@pcw.co.uk) or write to him at the usual PCW address (p12).

*Inside Windows NT Server 4, Administrator's Resource Edition*. £65.98 for book and CD; ISBN 1562057278, reference 264786. Available from Computer Manuals 0121 706 6000 [www.compman.co.uk](http://www.compman.co.uk) PerfectDisk NT is available from Raxco Software's web site at [www.raxco.com](http://www.raxco.com)

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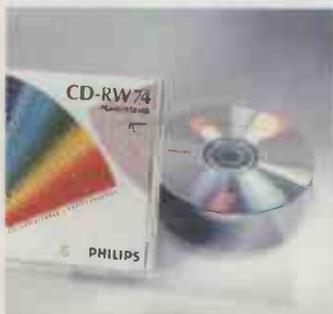


The versatile MP6200S drive handles CD-ROM, CD-R and CD-RW (CD Re-Writable) discs writing at 2x, re-writing at 2x and play back at 6x. You can use the drive with low cost, once written, then only readable CD-Rs for valuable data such as official documents archive data or research documents. Alternatively and here comes the breakthrough, you can also use the drive for use with slightly more expensive CD-RW discs that can be erased and re-written

time and time again, ideal for backing up your data or in any application where you may want to re-use the CD.

Ricoh MP6200S Int SCSI Re-Writable CD 2x 2x 6x, Direct CD (Full kit pictured above is priced below)	<b>£261</b>	£306.68
Ricoh CDRW-PK1 MP6200S Int, EasyCD, MediaStudio, 1520 SCSI Card, Cable, 1 CD-RW, 1 CDR	<b>£333</b>	£391.28

## BACK UP YOUR HARD DISK WITH 650MB CD-RWs & CD-Rs



The Philips CD ReWritable Disc CD-RW 74 complies with the Orange Book Part III specification compatible with all popular CD-RW capable CD Recorders and can be read using CD-RW capable MultiRead CD-ROM drives. The Philips CD-RW 74 utilises an exceptionally stable recording material designed to allow 1,000 ReWrites and long archival life.

Philips Label CD-RW, 74 mins 650MB, 10 to 50 - price each	<b>£11.92</b>	£14.01
Ricoh Label CD-RW, 74 mins 650MB, 10 to 50 - price each	<b>£12.01</b>	£14.11
Unbranded CD-R, 74 mins 650MB, 100 to 250 - price each	<b>£0.79</b>	£0.93
Unbranded silver/blue CD-R, 74 mins 650MB, printable, 100 to 250 price each	<b>£1.38</b>	£1.62
Philips Label CD-R, 74 mins 650MB, 100 to 250 price each	<b>£1.37</b>	£1.61
TDK Label CD-R, 74 mins 650MB, 100 to 250 price each	<b>£1.34</b>	£1.57



## ReWrite CD History with PHILIPS 2x 2x 6x ReWritable CD Recorders

The Philips CDD3600/3610 operates with all major computing systems including Windows NT, Windows 95 and MAC platforms and is available in either SCSI (CDD3600) or E-IDE (CDD3610) versions. As well as CD UDF, the Philips CDD3600/3610 supports TAO (Track At Once) DAO (Disc At Once) and MS (Multi-Session) writing modes and all CD formats including CD Audio, CD-ROM, CD-Bridge, CD-i and Video-CD. CD UDF also creates a bridge between the ISO 9660 layout of CD-ROM discs and the UDF file format selected for DVD media. With the Philips CDD3600/3610 and Adaptec Direct CD 2.0 software, files can be added and deleted to a CD-RW, behaving very much like a large floppy disc or removable hard drive with a 650MB capacity.

Philips CDD3610 Int E-IDE Re-Writable CD 2x 2x 6x, Easy CD Pro & Direct CD	<b>£250</b>	£293.75
Philips CDD3610 Int with software as above & 1 CD-RW, 1 CDR (as pictured above)	<b>£262</b>	£307.85

## CD REVOLUTION PC BASED CD-R & CD-RW DUPLICATORS

The CD Revolution CDR Duplicator is a powerful and attractively priced Intel Pentium II based PC system which incorporates Yamaha CDR400 4x 6x CD Recorders or Ricoh MP6200S 2x 2x 6x ReWritable CD Recorders, combined with the power of Padus DiscJuggler software.

### DiscJuggler Supported CD formats:

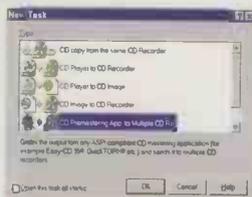
Audio CD, Data CD (CD-ROM, Yellow Book Mode 1), Data CD (XA format), Mixed mode CD (Data + Audio), CDBridge\formatCD(VideoCD), MultisessionCDs (Enhanced CD, Blue Book), Sony PlayStation and Sega Saturn CDs.



### DiscJuggler Software Features (available separately)

- Direct digital-to-digital copying of Compact Disc over the SCSI bus, "on-the-fly" or cached to hard disk.
- Support for the following CD Duplication tasks, Copy CD-Rom directly to CD Recorder, Copy CD-Rom to CD Image file to CD Recorder
- Redirection of the output of Easy-CD or any other ASPI-compliant CD Premastering application to multiple CD-R drives.
- Disc At Once and Track At Once recording
- "On-the-fly" sector cooking with software regeneration of error correction and detection fields and data scrambling.

- Sophisticated audio read resynchronisation for unsurpassed reliability in CD Digital Audio (CD-DA) duplication "redundant" mode guarantees "frame accurate" duplication of audio CDs for demanding professional applications
- Multiple CD duplication tasks run simultaneously



CDR Duplicator(JMR lockable case) (4)4x CDR400, P233 II, 32MB, 4GB HDD, 15" mon, NT4	<b>£3,882</b>	£4,561.35
CDR Duplicator(full tower case) (4)4x CDR400, P233 II, 32MB, 4GB HDD, 15" mon, NT4	<b>£3,406</b>	£4,002.05
CDR Duplicator(JMR lockable case) (4)4x MP6200S, P233 II, 32MB, 4GB HDD, 15" mon, NT4	<b>£4,006</b>	£4,707.05
CDR Duplicator(full tower case) (4)4x MP6200S, P233 II, 32MB, 4GB HDD, 15" mon, NT4	<b>£3,530</b>	£4,147.75

## CD Revolution REWRITABLE CD Recording PCs

### Would you purchase a VCR that could play video's but couldn't record and re-record....?

Probably not! So why think about purchasing a multimedia PC that can play CDs, but can't record and re-record them? With the new CD Revolution Intel Pentium II based PC with integral Philips CDD3610 ReWritable CD Recorder, you can record up to 650MB on recordable CD (CD-R) and/or rewritable CD (CD-RW).

Any file stored on CD-R can be quickly accessed and read directly using any multisession CD-ROM drive or CD recorder. Furthermore any file stored on a CD-RW can be quickly accessed and read using new generation MultiRead capable CD-ROM drives.

### CD-RW PC Specifications:

- Choice of Intel Pentium II Processor with Intel Atlanta LXNA Motherboard
- Internal Philips CDD3610 - 2x record 2x rewrite 6x play E-IDE CD Recorder with 1 off 650MB blank CD (CD-R) and Rewritable CD (CD-RW)
- Adaptec Easy CD Pro CD recording software & Direct CD 2.0 CD packet writing software
- 16MB EDO RAM expandable to 128MB (72 pin)
- 2.0GB fast (10ms) IDE Hard Drive + 3.5" 1.44MB Floppy Drive
- Sony CDU611 24x ATAPI MultiRead CD-ROM Drive
- Matrox MGA Mystique 220 2MB SGRAM
- 16-bit Sound Blaster Card and Yamaha YSTM15 Speakers
- ATX Case with 200W PSU
- 15" Iiyama MT-8617E High Resolution Colour Monitor (The monitor pictured is a 17" Iiyama)
- Professional Keyboard & MS Ergonomic Mouse + Windows 95



Rewritable CD PC with Intel 233MHz Pentium II Processor	<b>£1,372</b>	£1,612.20
Rewritable CD PC with Intel 266MHz Pentium II Processor	<b>£1,526</b>	£1,793.05
Rewritable CD PC with Intel 300MHz Pentium II Processor	<b>£1,576</b>	£1,851.80

## EASY TO INSTALL CD REVOLUTION MULTIREAD CD ROM DRIVE TOWERS

If it's not MultiRead you'll be limited with what you feed!

CDR Tower - SCSI with (5) 20x MultiRead CD-ROM Drives  
**£832** £977.60

CDR Tower - SCSI with (7) 20x MultiRead CD-ROM Drives  
**£1,054** £1,238.45

CDR Tower - Ethernet (7) 20x MultiRead CD-Drives, Axis StorPoint (no software needed) **£1,635** £1,921.13

CDR Tower - Token Ring (7) 20x MultiRead CD-Drives, Axis StorPoint (no software needed) **£1,796** £2,110.30

CDR Tower - SCSI with (14) 20x MultiRead CD-Drives (requires Adaptec 3940 in PC) **£2,036** £2,392.30

CDR Tower - Ethernet (14) 20x MultiRead CD-Drives, Axis StorPoint (no software needed) **£2,721** £3,197.18



The DRD-5200 DVD-ROM drive is a high-performance device that reads DVD discs at up to 2x speed and CDs at up to 24x speed. The dual-laser design ensures compatibility with widely accepted CD-formats, including CD, CD-ROM, CD-Recordable and CD-ReWritable. Moreover, the DRD-5200 is totally compatible with DVD-Video in all territories, including Dolby AC-3, MPEG2 and multi-channel audio. The DRD-5200 can be upgraded to a DVD-Video playback station by adding the required hardware and/or software.

Philips DRD5200 ATAPI Internal Drive 2x DVD-ROM, 24x CD-ROM **£181** £212.68

Philips DRD5200S SCSI Internal Drive 2x DVD-ROM, 24x CD-ROM **TBA**

## External CD Recorders with HDDs



Storage Micro Tower with integral SCSI CD Recorder/Rewritable CD Recorder and SCSI Hard Drive.

The CD Revolution Storage Micro Tower is an external mains powered system which includes a choice of CD Recorder or ReWritable CD Recorder along with a choice of fast SCSI hard drive with a storage capacity of 2, 4 or 9GB. It connects to a PC or Mac via a single SCSI cable and comes complete with CD recording & packet writing software as below for PC users or Toast CD recording software for Mac users.

Ricoh MP6200S 2x 2x 6x & 2.1GB SCSI HDD in ext case, Gear RW/Direct CD **£573** £673.28

Ricoh MP6200S 2x 2x 6x & 4.3GB SCSI HDD in ext case, Gear RW/Direct CD **£646** £759.05

Ricoh MP6200S 2x 2x 6x & 9.1GB SCSI HDD in ext case, Gear RW/Direct CD **£1,118** £1,313.65

Yamaha CDR400T 4x 6x & 2.1GB SCSI HDD in ext case, WinOnCD 3(OEM)/Pk-CD **£568** £667.40

Yamaha CDR400T 4x 6x & 4.3GB SCSI HDD in ext case, WinOnCD 3(OEM)/Pk-CD **£641** £753.80

Yamaha CDR400T 4x 6x & 9.1GB SCSI HDD in ext case, WinOnCD 3(OEM)/Pk-CD **£1,113** £1,307.78

## Budget Priced SONY & YAMAHA CD Recorders

If you just want to be able to record CD-Rs and not CD-RWs then the following budget priced Yamaha or Sony CD Recorders are going to be ideal. With a choice of up to 2x record 8x play from Sony and 4x record 6x play from Yamaha there's a CD recorder to fit most needs.

### SONY 2X 6X AND 2X 8X CD RECORDERS (E-IDE & SCSI)

Sony CDU-926S Int SCSI CD Recorder 2x 6x, FS Software **£167** £196.23

Sony CDU-928E Int E-IDE CD Recorder 2x 8x, FS Software **£167** £196.23

### YAMAHA 4X 6X SCSI CD RECORDERS

Yamaha CDR400T Int SCSI CD Recorder 4x 6x, bare drive **£255** £299.63

Yamaha CDR400T Int SCSI CD Recorder 4x 6x, WinOnCD 3.5(OEM) & Packet CD **£275** £323.13

Yamaha CDR400T Int as above with software, SCSI Card, Cable, 1 CDR **£318** £373.65



## HP SureStore CD-Writer Plus 2x 2x 6x ReWritable E-IDE CD Recorder



CD-Writer Plus gives you a choice. You can use versatile CD-RW media. Think of it as a high capacity, durable floppy. Write, update, erase and rewrite up to 650 MB of data on a single CD up to 1000 times per sector per disc.

Or make your CDs on CD-R media. Create permanent archives of all your critical data with the assurance that the data is secure for up to 100 years. Or create CDs that can play in millions of CD-ROM and Audio CD players worldwide.

HP SureStor 7100i Int E-IDE Re-Writable CD 2x 2x 6x, Easy CD Pro/Direct CD, 1 x CD-RW **£248** £291.40

## PIONEER DVD RECORDER & ELEKTROSON SOFTWARE

THE FUTURE COMING SOON!



Before you get too excited we do not have this product in stock yet but as soon as it's available we will be amongst the first.

However, you can see from the software price that this product is only going to be for the serious user!



### DVR-S101 - SCSI-2 External DVD-R Drive (Preliminary Info)

- DVD-R writing compatible with DVD read-only discs (DVD-Video/ROM)
- Suitable for DVD Authoring and Massive Data Archiving
- Large data capacity: 3.95 Gbytes (3.68 GB) per side
- Tray type easy disc loading
- Recording Speed - 11.08 Mbps

/ 1.32 MB/s ● Recording Method - Disc-at-Once

Pioneer DVR-S101 External SCSI DVD-Recorder **TBA**

Elektroson Gear DVD 1.0 for Win95/NT 4.0 **£2,017** £2,369.98

## UMAX Digital Still Camera UNBELIEVABLE PRICE/ STUNNING QUALITY!



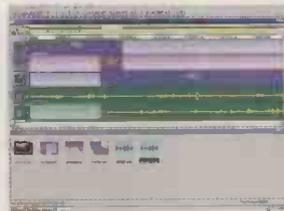
UMAX MDX-8000 - High Resolution/ Low Cost Digital Camera With Sound Capture Capabilities

The High Image Quality MDX-8000 Digital Camera from UMAX (960 x 800 dpi and 30 bit colour) provides sharper details and true colours. Built-in Microphone optionally records 5 seconds of sound with each image. Bundled with 2MB removable Photo Memory Card, stores up to 89 best (960 x 800) or 133 standard (480 x 400) images. RS-232 serial port interface easily connects to computer for fast image retrieval.

**£299** + VAT

Umax MDX-8000 - 960 x 800 pixels Digital Still Camera **£299** £351.33

## DPS SPARK DIGITAL VIDEO PROCESSING with Adaptec Firewire



DPS Spark DV-3000 is a broadcast quality DV editing system, designed for use with a digital video feed from new generation consumer and professional DV camera's. PC connection is made via Adaptec's new Firewire interface.

For users of tradition analogue output video cameras

DPS offer Edit Bay. Both systems come complete with VideoAction editing software.



DPS Spark DV-3000 (full version) - PAL DV Processing/Editing, Adapter Firewire, VideoAction **£575** £675.63

DPS Edit Bay - PAL S-Video/Component Processing/Editing, VideoAction Pro (PC) **£625** £734.38



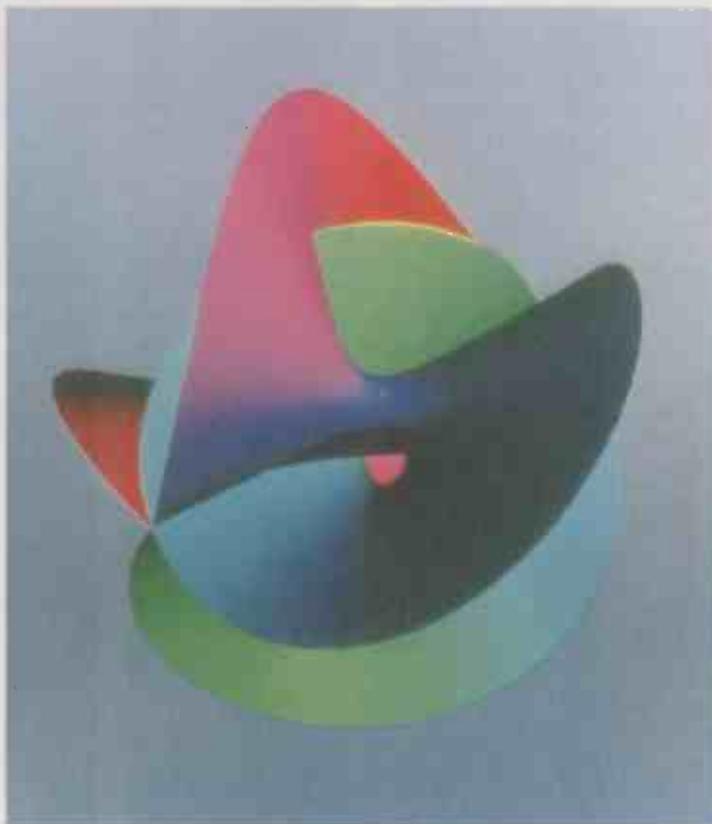
# Routing around

Chris Bidmead is thrilled with his ZyXEL ISDN router — the agony and the ecstasy of ppp setup are things of the past. On a less stable note, there's a cautionary tale about backup. Just do it!

**T**he new ISDN router I mentioned last month is now going flat out, and it's transformed the way I work. You've probably heard the last in this column about the agony and the ecstasy of setting up ppp on Unix machines, because with the router on the network I just don't need to do that any more. Obviously I'm not assuming that all of you have ISDN lines, or that your budget necessarily runs to routers (although router prices have already fallen to what you would have had to pay for a decent modem a couple of years ago), but if you need help in the future with setting up ppp on an individual Unix box, see the fairly extensive coverage we've already done in the column. Or failing that, drop me an email.

## Crucial computer connection

The ZyXEL router looks like a modem and connects to the phone system exactly as you would connect any modem or ISDN terminal adapter (TA). The connection into the computer end is crucially different, though. Instead of coming in through the serial port to an individual machine, the router sits on the network, wired into my SMC TigerHub as a T-Base10 Ethernet device. On the network it behaves like a computer in its own right: a dedicated computer for routing.



There are two other connections into the router: a second phone jack for plugging in an ordinary telephone (this particular router also acts as a TA), and a serial port. This isn't for data transfer: it's for a terminal (or a Unix box running something like minicom) so that you can set up the router's various parameters through its built-in menuing system. The serial port is strictly only necessary to establish the router's dotted quad IP address (my home network is 192.168.1.0, so I've addressed the router as 192.168.1.254), because once you've done this and connected it to the network, you can telnet to it and get through to the

menuing system that way. Access is password protected, so an administrator can prevent users messing about with it.

The ZyXEL Prestige can hold up to four different ISP phone numbers, and you set it up with the passwords for each one individually. All the ISPs I've encountered either use PAP (Password Authentication Protocol) or CHAP (Challenge Handshake Authentication Protocol), and if you remember the coverage of these in this column last year, you'll recall the hours of amusement I had getting them to work with Unix. Not because of any shortcomings of Unix, but because the ISPs seemed to be scared of supporting anything but Windows at the client end.

Well, you don't have to go through any of this with the

Prestige. You just fill in the menu with the correct passwords and tell it what authentication protocol is used, and the router sets up its own internet chap-secrets and pap-secrets tables.

## Elementary tweaking

Once the router knows how to get through to your ISP, every machine on your network knows too, after you've done a little elementary tweaking. The router has to handle this very intelligently, because it may be receiving streams of packets from several machines at once. That in itself isn't too complicated — it's what TCP/IP is all

about. But each of those packet streams will be triggering response streams at the far end, and when these come back down your phone line the router has to be able to return each stream to the correct machine on your network.

If I'm sitting at this machine browsing www.yahoo.com, and you're on another machine across the room ftping a file from ftp.caldera.com, the router has to ensure that these packet streams don't get mixed up. The computer science behind this, called Network Address Translation, or NAT, is somewhat brain-softening and I've no intention of going into it here. Luckily, the router handles all this transparently.

A reader, Dave Page <[dpage@vale-housing.co.uk](mailto:dpage@vale-housing.co.uk)> has convinced me that an IP Masquerading Linux box is much more flexible, and there are situations where a router like mine just won't cut it. More about that next month, when I'll also tell you the very simple tweaks I needed to do to individual Linux, AIX, Windows NT and Window 95 machines to connect them almost instantly to the internet.

#### Drives die: you do need backup

The NEC PowerMate V100 arrived here in April 96, with a 100MHz Pentium and a 1Gb Seagate Medallist hard disk. At the time I described it as "a giant of a machine compared with my network of ageing 486s", and it's certainly been doing sterling work running my NTrigue server software. I depend on NTrigue for the (relatively small) amount of Windows software I run. But a couple of weeks ago, something happened to put a stop to all this.

Here's a tip you'll thank me for: If you try to access a directory and find you can't, and if the failure is accompanied by a strange clicking sound as though a Death Watch beetle has somehow got into your machine, don't do what I did. Don't take the machine down and try to reboot it. What I should have done is got cracking immediately to back up everything off that hard drive I could still get hold of.

The clicking sound characterises a surface failure on the hard disk. With luck, it will be localised to a few files or directories, while the machine is still up. But if you take the machine down and try to boot it again, there is a strong probability that it won't respond. That's what happened in my case.

So there I was with a PowerMate with no hard drive. The good news was that the drive was still under warranty and Seagate was

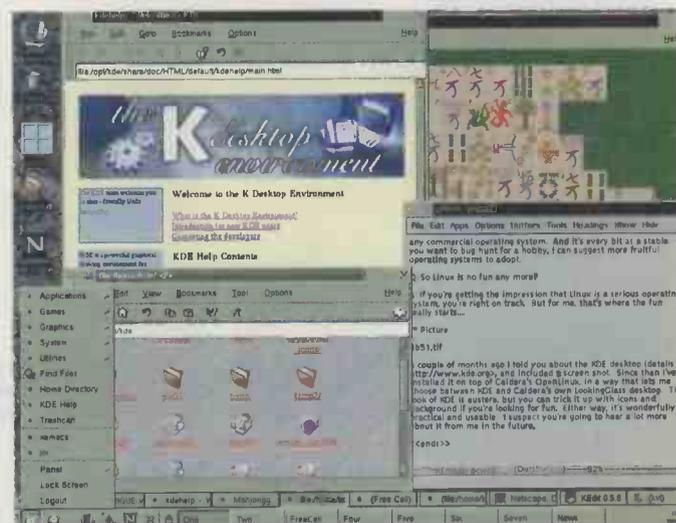
prepared to replace it with a refurbished unit. The bad news was that I was responsible for shipping it off to Amsterdam and that I risked being without a machine until it was returned, as it turned out, several weeks later.

Happily, Steve Perkins, technical products manager for drive manufacturer Western Digital, has been a good friend of this column in the past. As well as being a primary

source of information about the sometimes tricky technicalities of installing Unix onto EIDE and SCSI drives, he helped me out about five years ago with a 1Gb upgrade to one of the 486s on this network (a drive that's still running cheerfully). This time he came up trumps: alas, he couldn't readily lay his hands on a 1Gb EIDE drive to match the Seagate, but would a 5.1Gb drive do instead? Yes, Steve, it would do very nicely. The drive arrived the next day.

Steve tells me that the WD Caviar 5100RTL retails as an add-on drive kit for around £250; as an old hand who fitted his first 3Mb drive back in 1982, I'm staggered by the accessible prices these days. My only whinge with the Caviar is that the accompanying software and documentation take it for granted that you'll be installing the drive into a Windows system. If indeed this is what you're doing, the extra stuff that comes in the box (which even includes adapters for 3.5in and 5.25in drive bays) makes this a breeze to do. But when I saw that the setup software insisted on dividing the drive into 2Gb partitions because of "DOS limitations", as a Unix user I felt deeply superior. Until I remembered that in this case, it was actually Windows NT I was installing.

Well, no 2Gb partition limitation for Windows NT, you might think. In fact, you'd be wrong. A modern Linux distribution confronted with a raw drive quickly



A couple of months ago I told you about the KDE desktop (details at [www.kde.org](http://www.kde.org)) and included a screenshot I stole from the web site. Since then I've installed it for myself on top of Caldera's OpenLinux, in a way that lets me choose between KDE and Caldera's own LookingGlass desktop. The basic look of KDE is austere, but you can trick it up with icons and backgrounds if you're looking for fun. Either way, it's wonderfully practical and usable, and I suspect you're going to hear a lot more about it from me in the future.

discovers the drive is unpartitioned and unformatted, and offers to take you through those processes. When I tried re-installing NTrigue on this basis, after the third boot diskette I ran into a message to the effect that the installation couldn't proceed because something had gone wrong during the "DOS stage of Setup". After much experimentation and a phone call to the very helpful technical people at Insignia, I discovered that Windows NT 3.51 insists on finding a DOS partition on the disk, whether you want one or not. No partition, no installation. This idea may once have made perfect sense to someone at Microsoft, but it makes no sense to me.

Luckily (well, just being sensible really) the key stuff I needed on that defunct Seagate was backed up. But it reminded me to remind you about the crucial importance of backup. From your emails I get the impression that many of you regard backup as a luxury, something you might get round to installing after you've upgraded your video card, hard disk and memory. Wrong, believe me. Backup is something I'll be returning to in the months to come.

**PCW Contacts**

Email Chris Bidmead at [unix@pcw.co.uk](mailto:unix@pcw.co.uk)

ZyXEL ISDN router from P&L Systems  
[info@ppls.co.uk](mailto:info@ppls.co.uk)



## Two into one does go

But how? When you have two PCs, one Warp 3, the other Warp 4, how do you connect them in a network? Over to you, says Terence Green. Plus, the future of OS/2 desktop apps.

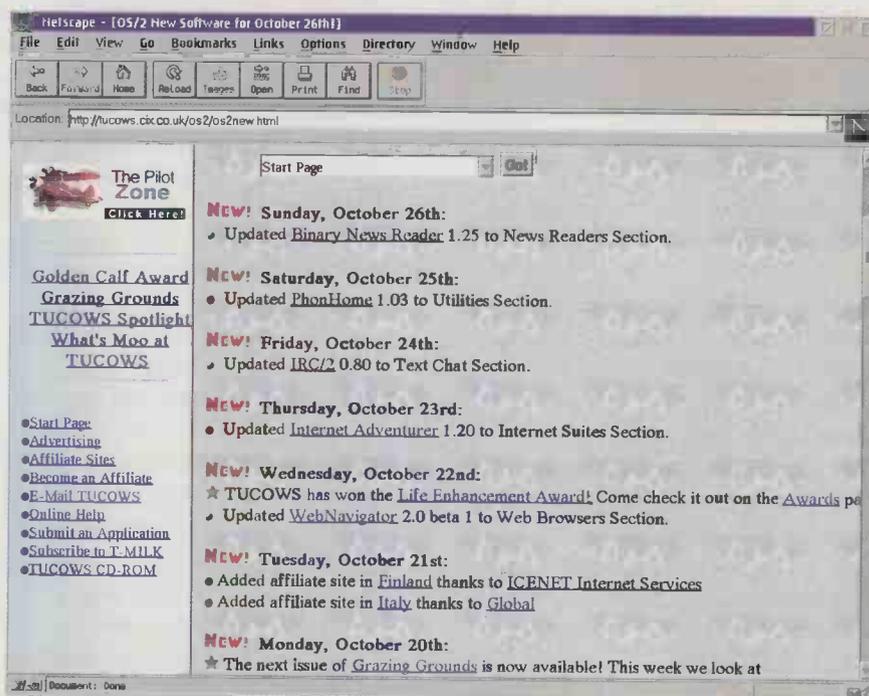
**R**egular reader John Hines writes to say that the column is "very keen on the networking aspects of Warp" but "often too advanced for me". Point taken, John, but consider this: this column is the only OS/2 column in the UK and is read by a very broad spectrum of OS/2 users, from corporates down to end-users. It needs to cover news and mini-reviews as well as hints and tips. As a result, and because of space constraints, I tend to rely a lot on sign-posting internet material and to back that up by responding via email to reader enquiries.

John's current problem is networking. He has two PCs, one using Warp 3, one Warp 4, which he wishes to connect in a network. Ordinarily I would suggest upgrading to Warp 4, but the PC running Warp 3 is a 386.

Steve Bailey has a similar problem in that he needs to connect a Warp 3 system to Windows 95, but he has to keep the Warp system at the Warp 3 level.

The easy answer would have been Warp Connect with the OS/2 Peer, but it is no longer sold by IBM. John tried Little Big Lan because, like me, he has heard that it can be made to work, but he hasn't been successful, even after trying to run it in a Specific DOS version. I can't find any advice on how to get LBL to work, so if any reader has the answer, do write in.

I can't think of any easy ways to connect PCs running Warp 3 and Warp 4 without buying Warp Server. It might be possible to source a copy of Warp Connect or Artisoft LANtastic for OS/2 in the small ads in Loot or Micro Mart. Beyond that, it gets expensive or tricky or both. Obviously Warp Server has client software, but it's neither a cheap



Visit the TUCOWS web site for another source of OS/2 material. The UK mirror site is at [www.tucows.cix.co.uk/os2/](http://www.tucows.cix.co.uk/os2/)

solution nor an appropriate one for two PCs.

My next thought was to use TCP/IP since that is included in both Warp 3 and Warp 4, but that can be very complicated for non-technical users. John Summerfield has a web page at [www.ami.com.au/os2/](http://www.ami.com.au/os2/) which details a way of linking two Warp systems with TCP/IP using a serial cable and the PPP dialler, but I wouldn't recommend it as an "easy" solution.

So how about it: does anyone have an easy solution?

### Software updates

Richard Stephens wants to know whether it is safe to use the IBM service for remote

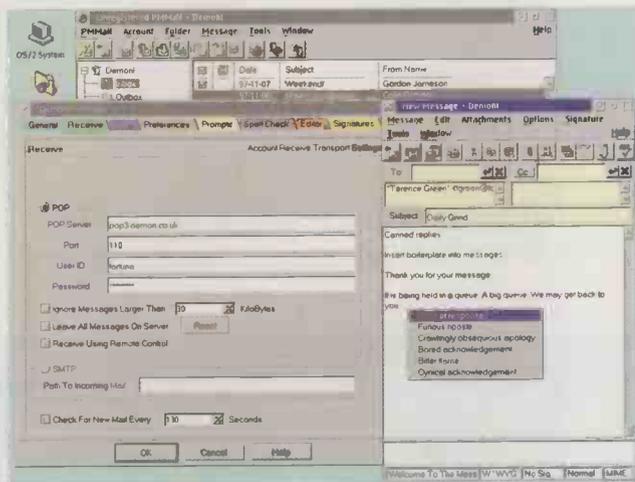
install of Fix Packs. This is the service found at [ps.boulder.ibm.com/softupd.html](http://ps.boulder.ibm.com/softupd.html) which enables a Fix Pack to be installed over the internet. You need Netscape Navigator for OS/2 or the Web Explorer in order to do this.

If you try this with a flaky dial-up connection or insufficient free space on your hard disk, it could go wrong, but it's unlikely as it is really no different to downloading the Fix Pack to a local drive and installing from there. It's simply the install process that has been automated.

The Software Updates page is a good location to browse before downloading any Fix Packs, as it displays the latest official updates. Sometimes, Fix Packs which have

## The mail must get through, so cut out the spam!

Lately I've been receiving rather more spam than I think I deserve, some of it emanating from PR agencies who send out megabyte-sized Word files that cripple my mail system. Having looked around, I've more or less settled on PM Mail because it has a bunch of nifty filters. You can find it at several sites including BMT Micro <[www.bmtmicro.com](http://www.bmtmicro.com)>.



Filter out spam and over-sized email messages with PM Mail 1.95. The registered version also handles multiple email accounts

not been officially released appear on Hobbes and Leo and the like, and these should not be applied to your working system unless you like experimenting and know how to back out of an update.

### Desktop applications: what now?

Richard Stephens also enquires after the fate of Describe, the OS/2 word processor. The company went into liquidation and no-one has picked up the product. He wonders why no-one is interested in reviving it. The simple answer is that there is no future for independent applications in the word processor and spreadsheet category. This applies to Windows as well as OS/2. No-one can make money with applications like this, given the price of complete suites such as Microsoft Office and Lotus SmartSuite.

The future of OS/2 desktop applications undoubtedly exists in the world of Java, specifically Java components. Looking ahead, one can see that the future of applications on Windows is there too. That much is obvious from the efforts being made by Microsoft to halt or stall the inexorable advance of Java.

Vast office suites that deliver 80 percent more function than most users need, cost a fortune to support and roll out over networks,

are the way of the past and no amount of fancy footwork can change that. But the problem with new ideas like Java is that people must have the product in their hands before they can visualise how to use it.

The general refrain has been that there are no real Java applications yet, but give it time — it's only a little over 30 months since Java was launched. Corel made a hash of its ported Java office suite, but it is regrouping with a more sensible approach written in Java

from the ground up, which should be ready later in 1998. Long before that, however, you should be

able to get to grips with Java productivity applets thanks to Lotus.

On 3rd November Lotus announced that eSuite, the Java productivity applet suite formerly known as Kona, will ship at the beginning of 1998. eSuite includes a web interface complete with browser and email plus several productivity applets. Have a look on the Lotus web page <[www.lotus.com](http://www.lotus.com)> for more details.

### PCW Contact

Terence Green can be contacted by post via the usual PCW address (p12) or by email at [os2@pcw.co.uk](mailto:os2@pcw.co.uk)

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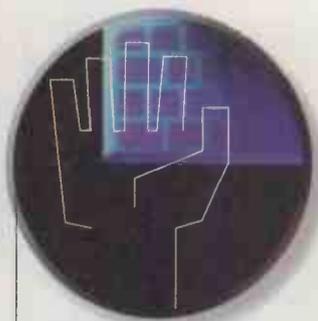
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# Stationery target

The envelope issue, closed: now you can save the default position. A reader has come up with the answer, which is presented here by Tim Nott. Plus, location and overtyping tips.

In December's column, I dealt with the dreaded Word envelope problem. To recap, there seemed to be no way of saving the default position and text attributes of the address when using the Tools, Envelopes and Labels command. I offered the usual bribes and David Musgrove rose to the occasion with the following, simple, procedure:

1. Open an existing template, or create a new one.
2. Tools, Envelopes, then format the options accordingly, including the distances from the top and from the left. Add the envelope to the template.
3. Save the template.
4. Delete the envelope (i.e. page 0).
5. Save the template again and close.

All new documents based on that template will inherit the address positioning you set up in step 2. Don't ask me why — I only work here. I feel it's worth a book token, though, especially as David worked this out through trial and error. However, I'd also add that my addresses kept printing out double-spaced, probably because I was copying an address with hard returns at the end of each line; so I altered the Envelope Address style in the letter template to give no spacing afterwards, in the paragraph settings.



Fig 1 Paul Herber's new, improved Diacrit helps you type in the right accent

The other mysterious problem I had was that every envelope I created was addressed to Merlot International, author of the Office Toys package I reviewed last month. Whether this was a result of my messing about or an incomplete removal of the trial product, it seems that I had an AutoText entry in NORMAL.DOT called EnvelopeExtra1, which contained the offending text: it wasn't replacing the address but was in a frame overlaying it.

Deleting the AutoText entry solved the problem. Which, while we're at it, brings us to a little gilding of the lily.

If you want to add a graphic (or more text) to your envelope, follow the rigmarole above, then, when you've added the envelope, insert the graphic. Right-click to get the properties and check that it doesn't "move with text" and is positioned relative to the page, rather than margin or paragraph. With the graphic still selected, go to the

## Listing 1: WordBasic last location macro

```
Sub AutoClose()
    ActiveDocument.Bookmarks.Add Range:=Selection.Range, Name:="Here"
End Sub
Sub AutoOpen()
    Selection.GoTo What:=wdGoToBookmark, Name:="Here"
End Sub
```

## Listing 2: VBA last location macro

```
Sub AutoClose()
    ActiveDocument.Bookmarks.Add "Here"
End Sub
Sub AutoOpen()
    If ActiveDocument.Bookmarks.Exists("Here") Then Selection.GoTo wdGoToBookmark, , , "Here"
End If
End Sub
```

Insert menu and choose AutoText/New..., then type EnvelopeExtra1 into the box. Save the template, delete the envelope, save the template as before. The new graphic should now appear on all envelopes you create in documents based on that template.

### Documents revisited

Here's a rather good tip from the ever-prolific Shane Devenshire of Walnut Creek, California: "One thing I miss in Word is a standard spreadsheet feature — returning to the last location when a document is opened. In Excel, 1-2-3 and Quattro Pro, for example, when you open a spreadsheet you find your cursor at the same location as when you left. Although this seems a logical convenience, it has never been a built-in feature of Word. To solve this oversight, I constructed the following two macros which are now part of my NORMAL.DOT. Note that you must name the macros AutoClose and AutoOpen."

Listing 1 is the WordBasic version. For those of you watching in VBA, see Listing 2.

### Diacrit update

Paul Herber's Diacrit (July's column) is a handy way of inserting accented characters into any application. The good news is that version 1.7 is now out (Fig 1), with improvements including a design facelift, the incorporation of Irish Gaelic and the removal of the limit on the number of languages. It's on the CD as diacrit17.zip. No fancy installation routine — just unzip the files into a folder of your choice; and I should also say directory, as it works under Windows 3.1, too. In fact, it works better under 3.1, as you can "direct paste" from Diacrit without going via the clipboard.

### Overtyping tip

Alan Deacon mailed me, not so long ago, bemoaning the fact that: "In Word 6 you could change between Insert and Overtyping mode by pressing the Insert key on the keyboard. With Word 97, this seems to be no longer possible. To switch in Word 97 one needs to double-click with the mouse on the OVR panel in the status bar. This is much less convenient, as one has to leave the keyboard to use the mouse while typing. It does not seem to be a problem with the keyboard as the Insert key is recognised in other applications."

At the time I replied that it worked here, and that maybe the problem was in a Compatibility setting, which wasn't terribly

## Questions & Answers

**Q** Can I store templates in more than one folder, split up into letters, reports, faxes and so on. I tried creating sub-folders in my Word 97 template folder (using Explorer) but they don't appear in the Word "File/New..." dialog.

Fred Wayne

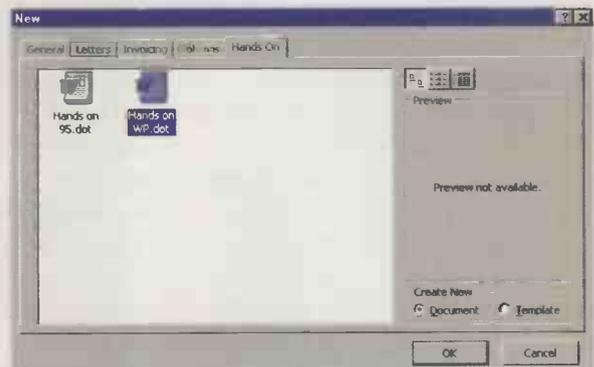


Fig 2 Adding your own custom template tabs

**A** You were very close, Fred. Try populating the new folders with some templates before going back to the Word "New..." dialog. You will then see the sub-folders appear as tabbed pages in the dialog (Fig 2).

**Q** As an ex-WordPerfect user, I miss being able to print a list of files now that I'm using Word. I'm sure there must be a way to do it, but can't find it, despite having read the manuals. In a document folder you can view a list of files in different ways, but it seems that it cannot be printed.

Sheila O'Byrne

**A** This is something I need to do fairly often to list all the screenshot files I have created to go with an article. Up to now, I have used the old standby of opening a DOS box in the relevant folder and directing the DIR command to file (e.g. DIR \*.GIF > GIFLIST.TXT).

However, as Sheila implies, surely there has to be a better way? The good

news is that there is. The bad news is that it takes a macro. Listing 3 is an absolutely no-frills example in WordBasic.

It prompts for the path you want searched, then uses the "FileFind" command to generate a file list in the array "mydocs\$()". Then, it lists each qualifying file on a separate line.

In this example, the "FileFind" command (which should all be on one line) has the options to look for all files ("\*.") and to search sub-directories (.SubDir = 1). Change the latter to 0 if you do not want to include sub-directories, and the former to suit the extension required.

You might want to create a dialog to enter the file extension and sub-directory options — I leave this as an exercise for the reader.

**Q** How do I create the less common fractions, such as 1/3?

Sheila O'Byrne [again!]

### Listing 3: No-frills file list macro

```
Sub MAIN
  CurrentDir$ = InputBox("Enter the folder path")
  FileFind .SearchPath = CurrentDir$, .Name = "*.*", .SubDir = 1
  size = CountFoundFiles() - 1
  If size >= 0 Then
    Dim mydocs$(size)
    For count = 0 To size
      mydocs$(count) = FoundFileName$(count + 1)
      Insert mydocs$(count)
      InsertPara
    Next
  End If
End Sub
```

## Questions &amp; Answers (cont'd)

**A** You'll find that 1/4, 1/2 and 3/4 are built in to standard fonts as single characters (ANSI 188-190). Word's "Autoformat as you type" has an option to convert these on the fly if you type, say, one-slash-two. Failing that, you can grab them from the character map, or type Alt + 0188, 0189 or 0190. The others you'll have to fabricate. To get 1/3, for example, the quick way is to format the figure one in superscript and the figure three in subscript. This doesn't match the built-in fractions very well, so you may want to experiment further.

In 12pt Times New Roman text, I can get a better result with superscript: figure one in 9pt, italic-slash in 12pt, then a normal, 6pt, figure three. Having done all this, you could then create an AutoCorrect entry to do this automatically when you type 1/3.

**Q** I am having a problem with my word processors, namely MS Word 97 and WordPad. The problem is that the only font I can access is Roman 10cpi.

I have also tried virus scanning, in case I had a macro virus, and the Repair Font Folder utility in Tweak UI, but with no success.

Paul Rimmington

**A** It's an oldie but it's a baddie, and it's particularly relevant to word processing and claims a lot of victims. If you don't have a printer driver installed that supports TrueType, then you won't be able to use TrueType fonts. The "Generic/Text only" doesn't. It's a trap that often gets notebook users who only print from their desktop machine, and it's been around since Windows 3.1.

**Q** In Word 7, and previous versions, tables defaulted to having no borders. In Word 97 this appears to be reversed. How can I stop new tables having borders?

Alex Nash

helpful but it was the best I could do. Fortunately, Alan solved the problem himself, like this:

"I hadn't set the shortcut key for this action. I assumed it was a default shortcut. In case anybody else wants to know: Tools, Customise, Keyboard... button. Then in the

**A** You're going to love this, Alex. I quote from that font of all wisdom, the Microsoft Knowledgebase: "This is a design change in Microsoft Word 97 for Windows. When you insert a table with the 'Insert Table' toolbar button, Word automatically applies a 0.5pt grid border by default. NOTE: There is no way to disable this functionality or to change the applied border size."

There are only two things I can add. One is, why the "design change"? I can't believe anyone really wanted this. The other is that the quickest way to get rid of the things is to place the cursor anywhere in the table and select "None" from Table, Table AutoFormat.

**Q** How can I reprogram the right mouse button menu in Word 97?

Andrea Holmes

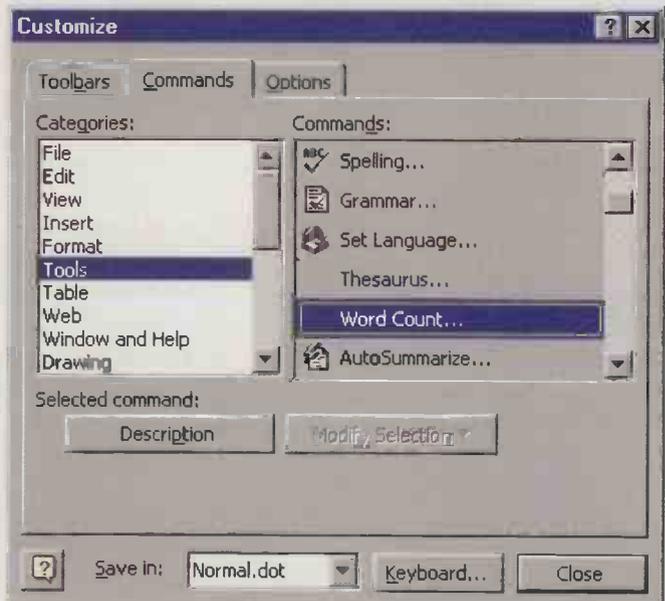
**A** Go to Tools, Customise. From the Toolbars tab, check Shortcut Menus. A toolbar will appear with three menus: Text, Tables and Draw.

To take an example, let's say you want the Word Count command available from the Text right-mouse menu (Fig 3). Click on Text, then again on Text from the list that drops down. The standard right-button text-editing menu will appear and stay open.

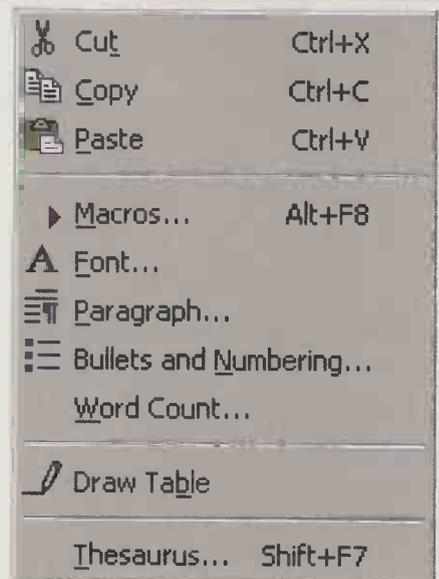
If you want to remove items, just drag them off. If you want to add commands, then go back to the still-open Customise

Category list select All Commands, and in Commands select Overtyping. Click in the Press New... box and press the Insert key, then Assign, Close and OK back out.

"If you want this change to be global, choose NORMAL.DOT from the 'Save changes in' list."



**Fig 3** Adding commands (left) to the right mouse button (below left)



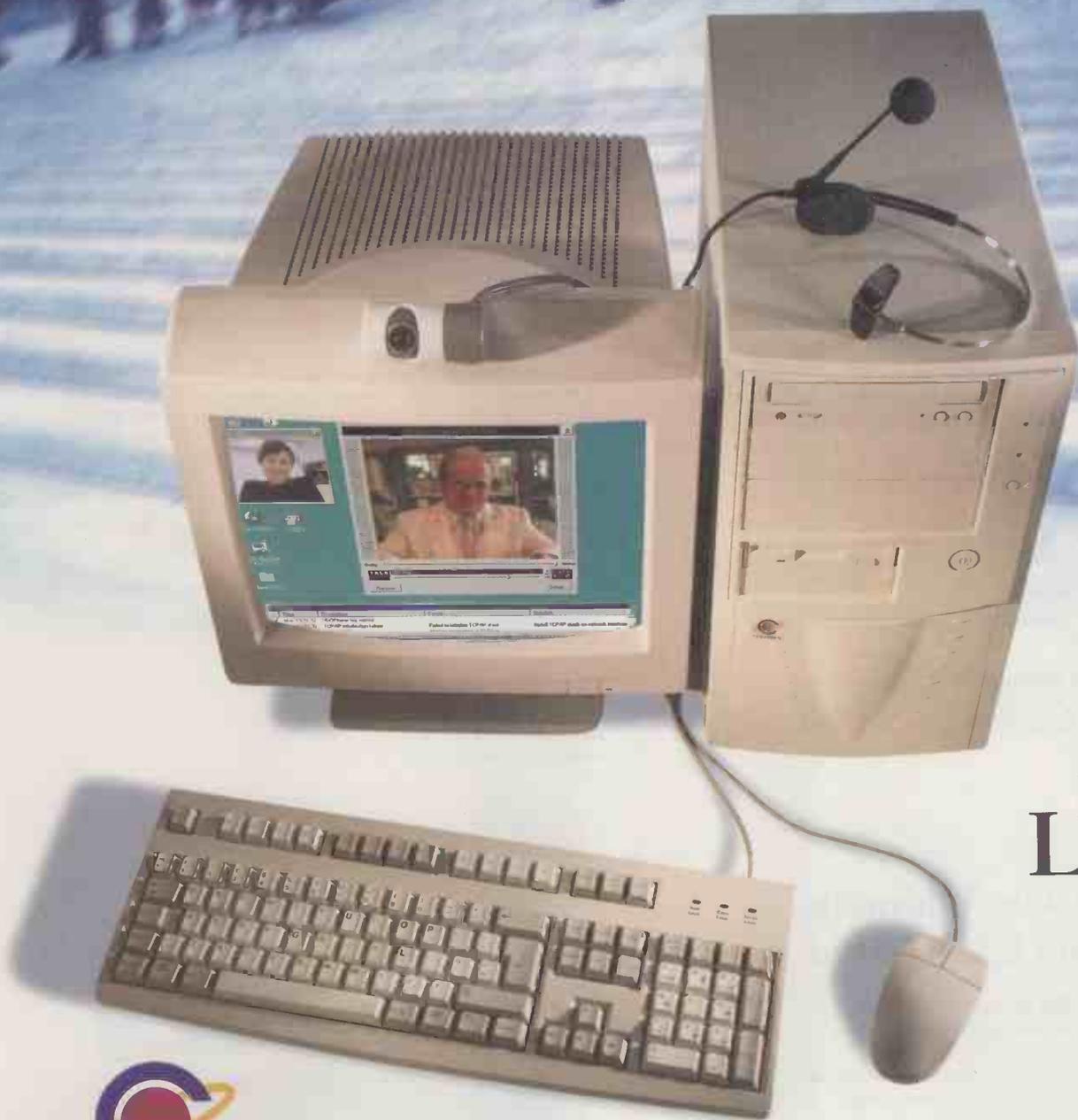
dialog and switch to the Commands tab. Use the Categories and Commands lists to find the command you want and drag it on to the place you want in the menu. Close the Customise dialog and the Menu toolbar and all its sub-menus will disappear.

I've just done this with the Tools/Word Count command and can now see, with minimal mouse-movement, that it's time I stopped for this month.

**PCW Contacts**

You can contact Tim Nott by post via the usual PCW address (page 12) or at [wp@pcw.co.uk](mailto:wp@pcw.co.uk)

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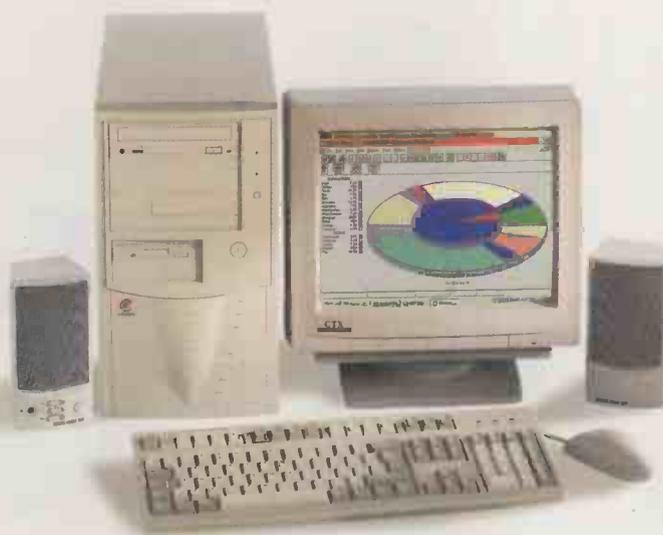
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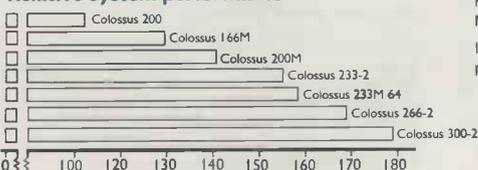
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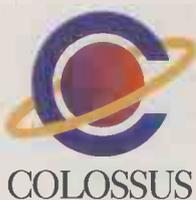


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- 🌀 Sockets/slots: four for EDO simms; two for 128-pin SDRAM dimms; CPU socket 7 with switching regulator; 3 ISA and 3 PCI expansion slots
- 🌀 105 PS/2 keyboard; PS/2 mouse and 3.5" 1.44Mb floppy drive
- 🌀 Microsoft® Windows®95 with manual and CD
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COL5MM4A



# Received wisdom

The Received formula calculates interest received on fixed deposits, but what if you need exact figures at various times? Stephen Wells looks to the Future Value function.

**R**eader Mathew Ong, of Borneo, came across a copy of *PCW* in a church sale! Following this splendid introduction to the magazine, he wrote to ask the formula for calculating the interest on fixed deposits. He had been advised to use the RECEIVED formula but it didn't give him the exact answer.

The RECEIVED function, in the Analysis ToolPak, calculates the amount received at maturity for a fully invested security, normally a bond. Its formula is Investment divided by 1 minus (Discount times DIM over B), where the Discount is the security's discount rate, DIM is the number of days from issue to maturity, and B is the number of days in the year (some institutions use 360, others use 365). What Matthew probably wants is the formula

$$=PV*(1+Rate)^{Nper}$$

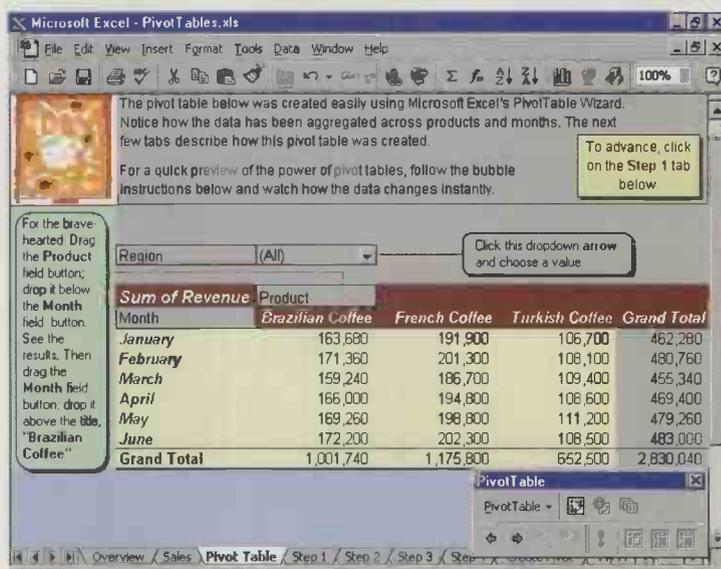
where PV stands for present value, Rate is the interest rate for the period and Nper is the number of payment periods. The carat mark (^) means "to the power of".

If you start with a capital amount of £1,000 and interest is not compounded and five percent is paid annually, then after a year, the account is worth £1,050. If it is compounded monthly and left for a year, then after the first month, the account is worth £1,004.17, after the second year £1,008.35, and after the twelfth it is worth £1,051.16.

Using the formula above, for this example: PV = 1,000, Rate = 5%/12 and Nper = 12. To compound quarterly, the Rate is 5%/4 and the Nper 4. To compound daily, the Rate is 5%/365 and the Nper 365.

Typically, you wouldn't create your own formula but use Excel's Future Value function FV(Rate,Nper,Pmt,PV). To use the same example, FV(5%/12,12,-1000).

**Fig 1** On this month's *PCW* cover disc is a useful, short, tuition file for Excel 5 and above which gives you practice in making PivotTables



Payment (Pmt) doesn't apply, so you just put the comma in to acknowledge its absence. The principal amount, or Present Value, is entered as a negative because Excel assumes cash you pay out, such as deposits in savings, is best represented by negative numbers, and cash you receive, like dividend cheques, is shown as positive numbers.

## Consolidation in Excel

Louis Passfield, in Brighton, wants to summarise his worksheets of recorded results in the field of human exercise physiology. His needs are too specialised to detail here, but it prompts me to cover the basics of consolidation in Excel.

Say you have 12 worksheets and the tabs are named January to December. The 13th sheet is for a summary. Column A and Row 1 are for labels. In cell B2 of the summary sheet you want the total of each

B2 cell in all the monthly sheets.

Click B2 on the summary sheet and select the SUM tool, or enter =SUM. Choose the January tab. Hold Shift and click the December tab. The December sheet is displayed. Click B2 on that sheet and press Enter. You are returned to the summary sheet and the total has been entered. The formula will be

$$=SUM('January:December'!B2)$$

Click on the fill handle in B2 in the summary sheet and drag this formula down to the bottom row of the sheet and across to the last column, and all the other comparable totals will immediately be entered. In other words, cell AF14 will have

$$=SUM('January:December'!A14)$$

There were 11 functions you could use for consolidation in Excel 4, and in later versions this was increased to 18. To quickly access those functions and take advantage of other options for

## Questions & Answers

**Q** In Excel 95 I have set up a Report Manager for January and was hoping that I could apply this to every other month of the year. However, if I load February, I do not seem to be able to apply the same conditions to this workbook as for January, because the report manager is empty for February.

Cedric Roberts

**A** The set of display and print settings which applies to a workbook is called a View, so start by creating a View that includes all the options you want. This will be used by every worksheet in the workbook. What you might have to do is combine your workbooks so that all the worksheets are in one book. Keep backups before you try this.

**Q** Is there no way to change the defaults for the header and footer options in Page Setup to something else, such as "None"? Also, I often need to set custom number formats and find it irritating that I have to set these for every workbook instead of being able to set them as a format available to all.

I don't suppose there is a way to achieve this, other than setting up some macros linked to buttons to do the job? I suppose I will have to wait until Microsoft implements it in some future version of Excel.

Chris Vivian

**A** You can have these defaults and many more if you put them in the template which initially opens.

Open a new workbook. Set the number and type of sheets you want initially in your workbooks; the cell formats you want on the Format menu (particularly Custom formats); cell styles; page formats and print area settings for each sheet; text you want to repeat in each new workbook or worksheet, such as page headers and row and column labels; attached custom toolbars; and macros, hyperlinks, and ActiveX controls on forms.

You can also hide sheets, rows and columns and prevent changes to worksheet cells, and set workbook calculation options and window display (with the Tools, Options command).

Once everything is as you want it, choose Save As on the File menu. In the File name box, type Book. In the Save As type box, choose Template (\*.xlt). In the Save In box, select the XLSTART

folder (which will probably be in the C:\Program files\Microsoft Office\Office directory). Click Save.

The defaults you have saved will be available when Excel opens, and in all new workbooks which you subsequently create by clicking New. To copy styles from another workbook, open it and then open the workbook or template in which you want to put the styles. Choose Style on the Format menu. Choose Merge. In the Merge Styles From box, double-click the workbook which contains the styles you want to copy.

**Q** I want to be able to change Excel's default directory. I have Excel 4, running under Windows 3.1 on an older machine, and the latest Excel on a newer one.

James Thompson

**A** With Excel 4, you use a startup switch. Choose Run from the File menu of File Manager and enter Excel.exe followed by a space, followed by /p directory path. To name the working directory "James", you would enter Excel.exe /p c:\James.

In Excel 97, choose Tools, Options, General, Default file location. If you have never changed it since installation, it will say C:\My Documents. Replace this with C:\James.

**Q** One minute, there I was, dragging and dropping using the grey outline box as a visual clue to where the cells would drop. But the next time I used Excel, that feature had gone. Where to? I have no idea. I can see no way to "enable" this feature in Excel "options".

Johnathan Cobb

**A** It took me a couple of messages back and forth to understand Johnathan's problem. You can enable or disable drag and drop under Tools, Options, Edit, Settings. But once you have it, the little grey range indicator box comes too.

As Johnathan has Office 95, I asked him to check Word — he said it was working OK there. I also asked him if the AutoFill handle in Excel gave him a grey box? Then he told me he had found the solution. According to Johnathan, he had installed a new Hercules Stingray 128-3D graphics card which came with a new driver, version 1.07. He went back to using an older version of the driver (1.04c) and everything returned to normal. You could say the old grey box is just what it used to be. ➤

consolidation, like summarising Lotus 1-2-3 worksheets on an Excel worksheet, you can use the Consolidate facility on the Data menu. Here, you can choose whether data from other workbooks is to be linked or not. If it is linked, the summary sheet will update when the source numbers are changed.

One of the things Louis commented on was the difficulty of understanding PivotTables. I agree with him, so to help Louis, myself, and other readers I've put a training course (developed by Ganesh Ram, of Baarns Consulting, India, for Microsoft) on this month's PCW CD. Just open

PivotTables.xls in Excel 5 or higher (Fig 1)

### Remote control

There can be a remote circumstance in which Excel 97 doesn't recalculate automatically. You need a run of 18 or more consecutive formulas, where each formula refers to the cell to the left of itself and this run of formulas occurs in a row number that is divisible by 16 with a remainder of 1 (for example, row 33). There must also be a formula that references at least one cell in a row above the run of formulas.

To try it, go to row 33. Select D33:U33 and type =C33+1. Press Ctrl+Enter. In cell A36, enter =D33. In cell A37, enter =D17.

Now change the value in cell C33. Under these circumstances, the value in cell A36 does not recalculate.

Microsoft knows about this and you can download a fix from its web site at [www.microsoft.com/Excel/Recalc.htm](http://www.microsoft.com/Excel/Recalc.htm).

However, before it works you need to have the Office 97 SR-1 patch. Because there have been various versions of this, you should download the Office 97 SR-1 version checker.

But that's all too much of a palaver for me. I just press Ctrl+Alt+F9 and the cells recalculate as they should.

## XLS How-to: Useful bits & pieces

### Formulas

*How does Excel distinguish between a name and just text in a formula?*

Define text by putting it in double quotations.

*How can I quickly insert a name in a formula?*

Start the formula with an equals sign and at the point you want to enter a name, press F3. This will display a list of the available names and you click on one. Shift+F3 offers a list of functions.

### Functions and fields

*What's the difference between the COUNT and COUNTA functions?*

You use COUNT when you want to know how many cells in a range contain numbers. COUNTA tells you how many cells in the selected range are not empty.

*How many fields can Excel display on a data form?*

Up to 32. But you can have up to 256 fields in an Excel list which is used as a database.

### Listing & sorting

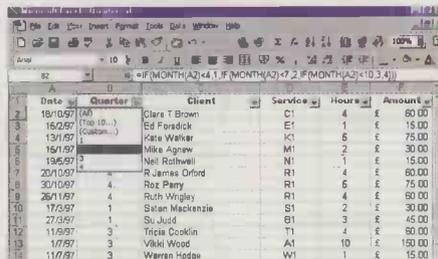
*How can I sort my invoices by Quarters?*

If the dates of the invoices are in column A, insert an extra column to hold the number of the quarter — say, column B. Row 1 has the labels, Date and Quarter and so on. In cell B2, insert the code in Listing 1. Click on the row number and choose Data, Filter, AutoFilter. Click on the new down arrow in B1 and choose 1 — that displays all the invoices in the first quarter; or choose 2 to see or print the second quarter's invoices; and so on (Fig 2). If you don't want column B to print out, right-click on

the column label and choose Hide.

*How can I make an Excel list of my Microsoft Outlook Contacts addresses?*

Open Outlook. Choose successively: File, Import and Export, Export to a file, Contacts folder, Excel. Name the new file and choose its directory. All the field names will appear in the first row. Click the row letter and make them



Date	Quarter	Client	Service	Hours	Amount
16/10/97	Q1	Clara T Brown	C1	4	£ 60.00
16/02/97	(Top 10...)	Ed Fordick	E1	1	£ 15.00
13/1/97	(Bottom...)	Kate Walker	K1	6	£ 75.00
16/1/97		Nike Agnew	M1	2	£ 30.00
19/5/97		Neil Rothwell	N1	1	£ 15.00
20/1/07		R James Orford	R1	4	£ 60.00
30/1/07		Roz Perry	R1	6	£ 75.00
26/1/97		Ruth Wingley	R1	4	£ 60.00
17/3/97		Satan MacKenzie	S1	2	£ 30.00
27/3/97		Su Judd	S1	3	£ 45.00
11/9/97		Tricia Cooklin	T1	1	£ 15.00
17/7/97		Viki Wood	V1	10	£ 150.00
11/7/97		Warren Hodge	W1	1	£ 15.00

**Fig 2** It's easy to sort your invoices by date, in Quarters: add a column and use AutoFilter

bold or coloured. This change of format will tell Excel to leave them at the top when you sort.

*Can I create my own fill series?*

Yes. Enter the list on a separate worksheet in the order you will always want it. It might be counties, products or salespeople. If the list will contain numerals, like stock numbers, format the empty cells as text before you enter them. Choose Tools, Options, Custom Lists, Import.

### On the net

*How can I get the latest US stock quotes?*

In Excel 97, select Data/Get External Data from the menu bar and then Run Web Query. In the dialog box with available

query files, double-click "Detailed stock quote by PC Quote, Inc." Specify where you want to put the quote, and enter the symbol for the stock in which you're interested (Fig 3).

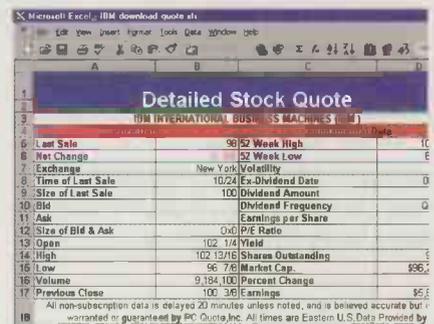
*When I dial to connect to the internet, my PC speaker is too loud.*

With Windows 95, choose Start, Settings, Control Panel. Then open the Modems icon and choose General, Properties, and move the speaker volume slider to the left.

### Printing

*How can I be sure I have the right printer drivers installed?*

In Win95 choose Start, Settings, Control Panel, Printers, "your printer", File, Properties, General, Print Test Page. The printout will detail your driver settings and confirm whether they are correct.



Detailed Stock Quote		
IBM INTERNATIONAL BUSINESS MACHINES (IBM)		
	Symbol	Exchange
1	IBM	NYSE
2	IBM	NYSE
3	IBM	NYSE
4	Last Sale	90 5/2 Week High
5	Net Change	52 Week Low
6	Exchange	New York Volatility
7	Time of Last Sale	10:24 Ex-Dividend Date
8	Size of Last Sale	100 Dividend Amount
9	Bid	Dividend Frequency
10	Ask	Earnings per Share
11	Size of Bid & Ask	P/E Ratio
12	Open	102.114 Yield
13	High	102.13/15 Shares Outstanding
14	Low	96.7/6 Market Cap.
15	Volume	9,184 100 Percent Change
16	Previous Close	100.3/6 Earnings
17	All non-subscription data is delayed 20 minutes unless noted, and is believed accurate but not warranted or guaranteed by PC Quote, Inc. All times are Eastern U.S. Data Provided by	

**Fig 3** Excel has web query forms, made to accept stock exchange listings from the internet

*How can I omit parts of the worksheet when I print it?*

Hold down the Ctrl key and select parts of the sheet you want to print. Choose View/Page Break Preview from the

main menu. Then choose File/Print Area/Set Print Area from the main menu and click OK.

### Listing 1

```
=IF (MONTH(A2)<4, 1, IF (MONTH(A2)<7, 2, IF (MONTH(A2)<10, 3, 4)))
```

## Book review — Quick Course in Microsoft Excel 97

I have been surprised lately by the number of advertisements for PAs in the appointments pages of the broadsheet press, which call for experience not only of word processing, which is to be expected, but also spreadsheets. Often, Office 97 is specified. For those senior secretaries who are not up to speed in Excel 97, this book makes an ideal starter course. It bills itself, quite fairly, as "The Best Low-Cost Training for New Users".

Although it doesn't include a disc with examples, it illustrates how to quickly set up brief ones. It then clearly explains everything about entering data as text, values, dates and times; using ranges; keyboard shortcuts; and properly saving workbooks. There is a comprehensive section on



editing, formatting, and preparing for printing. Calculations, functions, and graphing are well explained, too.

The second part of the book delves more comprehensively into presenting data, sorting and filtering lists, creating simple applications like an estimate, and creating multiple scenarios. *Quick Course in Microsoft Excel 97* demonstrates, in easy steps, how to create spreadsheets for performing important tasks such as analysing income, budgeting, and projecting a profit margin using iteration.

This 192-page, well-illustrated book is good value at £13.99 and is available from Computer Manuals.

### PCW Contacts

Stephen Wells welcomes problems, solutions or suggestions relating to spreadsheets. Write to him at the usual PCW address (p12) or email [spreadsheets@pcw.co.uk](mailto:spreadsheets@pcw.co.uk)

Computer Manuals 0121 706 6000  
[www.compman.co.uk](http://www.compman.co.uk)



# The search for **truth**

Mark Whitehorn reports on his quest to discover why minus one is considered to be true while zero is false. Plus, useful tricks in Access to help you with data entry and retrieval.

**A**ccess provides tricks to aid data entry. Not only are these worth knowing about, but if you develop applications for others, they are well worth passing on to your users.

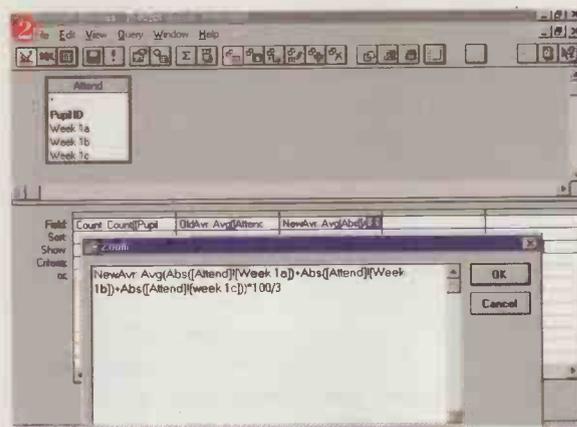
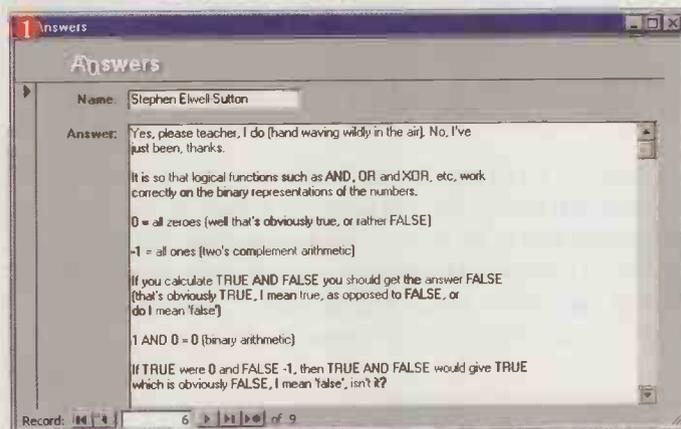
As soon as you create a new record, any default value that has been set for a field will appear.

- If you enter a different value (thus replacing the default value) you can “recall” the default value by pressing Ctrl+Alt+spacebar. (*The + symbol means that these three keys are pressed simultaneously.*)
- To replace an existing value with the value from the previous record, is Ctrl+'. Before anyone else points out that the relational model doesn't support the concept of a “previous” record, I'll do so myself (Access just maintains the concept for our convenience and this shortcut happens to be very useful during data entry):  
Insert the current date is Ctrl+;  
Insert the current time is Ctrl+:  
(i.e. Ctrl and colon, so on most keyboards it is effectively three keys at once — Ctrl, Shift and the key that is both semi-colon and colon. Sounds confusing, but easy to do in practice).
- To put a carriage return into a memo or text field is Ctrl+Enter

## Filtering by selection

Filter by selection appeared in Access 97 and is a great boon; under-used in my opinion, and also worth passing on to your users.

- Suppose you have a large table of data (viewed either as a table or via a form). If you move the cursor into a given field and press the “Filter by Selection” button, you can effectively query the table to reveal only those records which have the value in the



field that you selected. So, given 8,000 customer records, you can filter out those customers who live in Worcester, say. It gets better because you can then select another field and, by clicking the button again, you effectively add the value in that field to the selection criteria. This makes it easy to home in on the records you want.

## Why is the TRUTH so negative?

A question I raised a couple of issues ago was: “Does anyone know which bit of computer history means that -1 is regarded

as true, while zero is false?”

The response was excellent and I now have an answer. In fact, I have several, some of which differ significantly in detail. (*Sigh!...*) Life is never simple.

I have included all the replies to date in the Access database on our cover-mounted CD-ROM which you can browse for detail — it is best viewed using the form called ANSWERS (Fig 1). Anyway, a quick summary follows.

The convention is adopted so that logical functions such as AND, OR and XOR etc, work correctly on the binary representations of the numbers. These functions

work correctly when binary 0 is used to represent FALSE and binary 1 is used to represent TRUE.

“But just a minute,” you cry. “I thought TRUTH was -1, not 1?” And so it is, but that is in the decimal world, not the binary. To explain further: suppose you are going to use a byte (eight bits) to store a representation of TRUE and FALSE. Since binary 0 is FALSE and binary 1 is TRUE, it seems logical to fill all of the eight bits as follows:

- All zeros (that is, 00000000) mean FALSE.

p290 >

## Questions & Answers

**Q** I am a schoolteacher and use Microsoft Access to run all my administration within my department. I use a yes/no field to mark the register and I do this by dividing each week into three. I have tried to add these together to give me an average attendance for each pupil, but because the yes/no field returns values of 1 and 0, the average appears as -?????. Is there any way of converting the 1 to a positive number? The expression I use to do this in a query is:

Average:

```
Avg((Attend)![Week1a]+[Attend]![Week 1b]+
[Attend]![week 1c])*100/3
```

Brian Phibben

**A** You can return a positive value from a Yes/No field using the ABS function. For example, in a query,

```
Expr1: Abs([Week 1a])
```

will return +1 for every "Yes". Essentially, the ABS function will simply remove the minus sign. So, your formula could be rewritten as

```
NewAvr: Avg(Abs([Attend]![Week
1a])+Abs([Attend]![Week 1b])+Abs
([Attend]![week 1c]))*100/3
```

This is demonstrated in the Access 2.0 file included on our cover-mounted disc.

**Q** I am currently working for the Cystic Fibrosis Trust and have a database which has been created in Access 2.0. The database collects clinical information on cystic fibrosis. One of the fields within the database collects the patient's town of birth. What I would like to do is have a drop-down selection box which gives a listing of all the towns in the UK. Do you have, or would you know where I could get, such information in a suitable format?

Fiona Muhsin

**A** Your question is interesting because for the first time that I can remember in this column, it concerns the data and not the database. I have an incomplete list of towns (about 550) which I am happy to send you. I think that such a list might be useful for many readers.

• If anyone has a suitable list (that they are certain is not copyright) please send it to me. I will combine all the lists into one, remove the duplicates and publish the finished list on our cover disc in a variety of formats (say, Access and text) so we can all benefit.

• All ones (that is, 11111111) mean TRUE, which is what happens at the binary level.

However, PCs use what is known as "two's complement arithmetic" and in this notation the binary number 11111111 represents -1 rather than the 255 which you might expect. So, at the binary level, Access uses 11111111 to represent TRUE and at the decimal level we see that as -1.

### More on dates

In December I published a list of data manipulation functions from Simon Faulkner. John McCormack writes: "The LastOfMonth formula (as per Simon Faulkner) did not work out when I tried it yesterday, 31/10/1997. It gave 30/10/1997 as the last day of the then current month (Oct'97).

"It seems in cases like this that one ends up with the last day NUMBER of the previous month. The above instance also

happens for July31 (you get July30) because the last day of the previous month is a 30th. Ditto for similar 30...31 duo's. And for 23rdMarch you get 28/3/1997.

"Nevertheless, Simon's formulas could be very useful. If he amended his LastOfMonth to

```
DateAdd("d",-1,DateAdd("m",1,
now()-day(now))+1)
```

this might improve that formula. It kicks forward to the first day of the following month with the latter part, and then steps back one day to land at the last day of the current month. But check it out because I only figured it out ten minutes ago!

"Your Database articles are the best thing in PCW for me, and many ideas there are very useful, so I do hope I might be wrong in the above assessment, to avoid upsetting the good work of volunteers of useful information such as Mr Faulkner."

This is a sentiment with which I heartily concur. I certainly value the contributions that readers make to this column, especially those which stimulate others into responding, as John has done.

### Making the grade

Also regarding the December issue, reader Peter Vize provided a solution for producing grades for student marks.

Peter's solution used a table like this:

MAX	MIN	GRADE
999	70	A
70	65	B
65	60	C
60	50	D
50	40	E
40	0	F

Meanwhile another reader, David Watson, writes: "I am intrigued to work out what grade I would be if I scored 70 marks according to the table on p280 [PCW Dec'97]. Would it be an A or a B?"

The answer is that he gets a B (which wouldn't please him, I suspect!). Well spotted, David. The table should in fact be:

MAX	MIN	GRADE
999	70	A
69	65	B
64	60	C
59	50	D
49	40	E
39	0	F

### Digging for gold in the data dictionary

A while ago I published a database which acted as a user interface to the data dictionary (a.k.a. system catalog) of Access 2.0. In common with all good RDBMSs, Access maintains a data dictionary as data in tables so that users can easily access information about the database itself. Reader Chris Veness has provided an excellent example of why this can be so useful (Fig 2, p289).

"Sometimes I have developed Access databases which have included a permanently increasing selection of reports as users come along to me requesting extra functionality. It can be useful to be able to give users access to these reports without either forcing them into the 'Database Window', or having a hard-wired list of available reports which has to be changed each time a new report is created to satisfy users' constant lust for new views on their information.

"The solution I have found is to create a pick list (combo box) which lists the reports

available in the database, with a label 'View Report:' or suchlike. When a report is selected from this pick list, the report is displayed in print preview mode which can either be inspected on-screen or sent directly to the printer. The secret is to use an unbound combo box with the Row Source set to

```
SELECT DISTINCTROW Name
FROM MSysObjects
WHERE Type = -32764
ORDER BY Name;
```

"Although not a documented Access

will appear in the list as if by magic, without further work.

"As a refinement, you might not want users to see all the reports in the database. In this case, limit the query to return a particular subset of the reports [Listing 2].

"If you're ambitious, you can make the information shown in a report tie in with information the user has on-screen. Say, for example, the user is displaying information in a form about a particular media type, perhaps by selecting it in a combo box named cboSelectMediaType. If the report

should also be limited to that media type, then in the event procedure, add a wherecondition to the OpenReport method so that it reads like [Listing 3]."

I have constructed an example of this and it is on our CD as an Access 7.0 file called CHRIS.MDB. Anyone working in Access 2.0 will need to modify the above code slightly before it runs, because of the code differences between the various versions of Access.

In CHRIS.MDB I have made the system files visible. I have also constructed a

combo box which uses the same technique to list, but not open, the forms that are available in the database. Forms are represented as -32768 in MSysObjects.

### Listing 1: Name change

```
Private Sub cboRptLst_AfterUpdate()
Dim stDocName As String
On Error GoTo Err_cboRptLst_AfterUpdate
stDocName = Me!cboRptLst
DoCmd.OpenReport Me!cboRptLst, acPreview
' leave the pick list blank
Me!cboRptLst = ""

Exit_cboRptLst_AfterUpdate:
Exit Sub

Err_cboRptLst_AfterUpdate:
MsgBox Err.Description
Resume Exit_cboRptLst_AfterUpdate
End Sub
```

### Listing 2: Limiting the query

```
SELECT DISTINCTROW Name
FROM MSysObjects
WHERE (Type = -32764) AND (Name Like "List of*")
ORDER BY Name;
```

### Listing 3: Adding a wherecondition to OpenReport

```
stWhereCondition = "[MediaType] = " & Me!cboSelectMediaType & ""
DoCmd.OpenReport stDocName, acPreview, , stWhereCondition
```

feature, this seems to produce a list of reports just as it would appear in the Database Window.

"Now set the After Update property to the following Event Procedure, changing cboRptLst to the name of your combo box [as shown in Listing 1]. This can be done as a macro if you prefer, using OpenReport and SetValue.

"Now when you select a report from the pick list it will be previewed on the screen. If you create a new report in the database it

### PCW Contact

Mark Whitehorn welcomes readers' correspondence and ideas for the Databases column. Write to him at the usual PCW address (p12) or email him at [database@pcw.co.uk](mailto:database@pcw.co.uk)

Mark Whitehorn's book, *Inside Relational Databases with Examples in Access*, is available at a special price to PCW readers: see our Reader Offers on page 322.

• Also, a copy of the book will be awarded to each reader who makes a significant contribution to the Hands On Databases column.

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**SUPER BASE**



# At your **service**

The best way to maintain the reliability of your system is to service it regularly; preventative maintenance is what it needs, writes Roger Gann. It will repay your efforts many times over.

**J**ust as you have your car serviced annually, even though there may be nothing seemingly wrong with it, so you can give your PC a service to keep it in tip-top condition. This needn't be difficult. Unless you're running the PC in a particularly harsh environment, perhaps the best preventative maintenance you can carry out is simply to look after it, treat it with respect and don't abuse it. There are a number of steps you can take.

As always, bear in mind the grizzled maxim, "If it ain't broke, don't fix it". And don't overdo it: take the usual safety precautions, like powering down and disconnecting the PC from the mains.

*Remember: when working inside the PC chassis, avoid deadly static by earthing yourself beforehand, or wear a wrist-earthing strap.*

## Clean machine

A good place to start is personal (computer) hygiene. PCs get grubby on the outside but they also get dirty on the inside. This is because the cooling fan in the power-supply unit sucks air in from the front of the casing and blows it out the back. The air that comes in is not particularly clean, neither is it filtered, so it will carry dust with it, some of which will be deposited on the cards, the motherboard and on the rear fan grille.

Luckily, the most important PC components (e.g. hard disk and chips) are sealed, so

these won't be troubled by accumulated dust. The areas where dust can penetrate and cause harm include places like chip sockets and expansion slots. By and large, dust won't cause much of a problem, but nevertheless, the potential is there. The dust may contain chemicals, such as those in cigarette smoke. These chemicals conduct electricity, causing minor shorts and electrical signal paths where they should not be. Such chemicals accelerate corrosion on socket- or slot-based components.

So, keeping the innards of your system unit clean is good practice and it could

improve the reliability of your PC. I once serviced a PC that had been used in the clothing industry; its motherboard was entirely covered in a half-inch-thick quilt of fluff, which is great for overheating a PC!

## Tools for the job

To clean your PC and its components you'll need a few tools, including:

- a small, soft brush (a 1 in paint brush, say);
- a can of compressed air (available from most good camera shops, such as Tecno);
- lint-free cleaning swabs; and
- some isopropyl alcohol, which you should

be able to get from a chemist.

It is probably quite tempting to simply poke a vacuum cleaner nozzle into your system unit's innards. but I would advise against this as I understand that they are capable of generating prodigious amounts of static electricity, which is definitely a health risk for chips.

## Freshen floppy disk drives

Floppy disks are very reliable and don't often go wrong, so there's little to do during the annual service apart from cleaning. After a period of time a floppy drive will get dirty — even if you don't use it! This is because the drive acts as another casing air inlet and the cooling fan sucks air through the drive, coating it with dust and fluff — hold a lighted fag in front of a disk drive and see where the smoke goes! It needs to be

p294 >



cleaned out, and rather than remove and dismantle it, I use a compressed air spray to blast out dust and grottness from the drive. I then clean the head, because that will need it, too.

The read/write head needs regular cleaning. About once a year is probably the right frequency for most users. It is possible to clean it with a cotton bud dipped in isopropyl alcohol but access is almost impossible so, as with VCRs, use a special head-cleaning kit. They're simple to use: apply a few drops of cleaning solution to the cleaning disk and pop it into the drive. You then "access" the disk; the head does a "seek" and, in doing so, cleans itself.

#### No seedy ROM drives

CD-ROMs are just as susceptible to dirt as floppy drives, although most good designs are "sealed" to prevent the ingress of dust; a small speck on the lens can cause mis-reads and skipping. Normally, CD-ROM drives are just too complicated to clean manually, but it is possible to buy CD-ROM cleaning kits from hi-fi stores. These resemble CD-ROM discs which just insert as per normal and "play" for a few seconds; a rotating brush gently wipes the lens.

#### Hard-disk housekeeping

There's no cleaning to carry out on hard disks but there are some housekeeping tasks you ought to undertake, like deleting all those unwanted .TMP and .BAK files and defragmenting the drive. You should also perform a hard disk media test. This tests every sector on your hard disk to make sure that it is capable of holding data safely. If it fails the test, it's marked as being "bad" and DOS won't use it again. Windows 95 comes with ScanDisk, which is OK, but Norton Disk Doctor is probably better.

#### Expansion slots and cards

It's good practice to remove all expansion cards from the machine every year or so. The reason for this is that over time, the contacts on the card's edge connector and those inside the expansion slot can tarnish and perhaps go intermittent.

By extracting and re-inserting a card, you make a clean electrical contact, cutting through any tarnish. You can soak your swabs in the isopropyl alcohol and thoroughly clean all the contacts in the expansion slots. You can also clean the edge connectors on expansion cards in this way.

*Don't use a pencil rubber to clean contacts!*

Remove SIMMs and reseat them while you're at it. It's also a good idea to unplug all the ribbon data cables, examine them for wear or kinks and reconnect them. If your CPU has a cooling fan, clean the dust from the fan blades.

#### Chip creep

Chip creep doesn't refer to the grease-ball behind the counter at the Fryer's Delight, but a condition that gradually unseats socketed chips. Creep is caused by repeated expansion and contraction brought about by heating and cooling when you turn the PC on and off. This makes socketed components, such as cache RAM and ROM BIOS chips, gradually "walk" their way out of a socket. Once a year, you should gently reseat them in their sockets.

You don't have to remove them to do this; you just push them back into their socket. This is easy if the socket is on an expansion card because you can remove the card and lay it flat, thus ensuring that the PCB is adequately supported when you do your pressing.

It's a simple task, but don't forget to earth any static you might be carrying before touching any chips. Place a thumb on the proud chip and push down. You'll be rewarded by a satisfying scrunching sound as the chip returns to its rightful place. Exercise caution when pressing down on any socketed chips on the motherboard, being careful not to over-stress or crack it.

#### Keyboard clean-up

Keyboards seem to accumulate all sorts of grot with amazing ease. Open up any keyboard and you'll be amazed at what's inside: breadcrumbs, staples, paper clips, belly-button fluff... you name it, it'll be in there. But keyboards are resilient beasts, and often, a good clean will fix an iffy key.

The first step to spring cleaning your keyboard is simply to turn it upside down and give it a good shake. Or you could give it a going-over with a compressed air spray or vacuum cleaner.

For more thorough cleaning you'll need to whip off the casing, which will most likely be held on by half a dozen self-tapping screws. Or it could be a clip-fit design, so spring the clips back to release the casing.

Stand by for a fluff alert as you lift off the casing. Keyboards vary greatly in design, but by and large, the plate with the keys on and the PCB will be permanently mated so you won't be able to clean the main board

(or film). Sometimes, if you have a dodgy key, you can unclip it and give it (and the relevant bit of the PCB) a clean.

If you use your keyboard a lot, then the key tops will be looking a little grubby. I've found that cleaning the keycaps can be very frustrating as it's difficult to do properly *in situ*. Additionally, you run the risk of flooding the keyboard with a "mud" of cleaning solution and greasy grunge. Some keycaps just pull off so you can then wash them in the kitchen sink; but you've got 102 keys on that keyboard and you must make sure you put them all back in their right places!

#### A squeaky-clean mouse

You should also take the opportunity to clean your mouse — although this is one job you'll probably have to do more than once a year. A mouse invariably has to travel over a less-than-squeaky-clean surface and, inevitably, the ball picks up dirt and fluff and transfers it to the internal rollers. This results in an uneven, unresponsive mouse action with jerky on-screen cursor movements.

Here's how to clean your ball: undo the locking ring on the underside of the mouse and let the ball drop out. This can be washed under the tap and left to dry. Now look inside the ball chamber: you should see a pair of rollers, or wheels. These convert the ball motion into the electrical signals which move the cursor on-screen. They will probably have a stripe of dirt on them. You can use the isopropyl alcohol to soften the dirt and then use something non-metallic (like the plastic clip from a ballpoint pen) to scrape it off. Make sure that the debris is removed from inside the ball chamber. Don't forget to clean your mouse mat; it, too, is probably covered in debris.

#### A clean screen

There's not much you can do with a monitor apart from cleaning the screen and casing. You can use a screen wipe, but I often use good old Windolene or Mr Muscle on my old NEC 4FGe. Turn it off, unplug it and don't put too much fluid on it; a monitor handles some very high voltages and, clearly, excessive water is not a good idea.

#### PCW Contact

Roger Gann can be contacted by post c/o PCW at the usual address (p12) or via email at [hardware@pcw.co.uk](mailto:hardware@pcw.co.uk)

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# Brass tacks

Handling the horns can be tricky. Steven Helstrip and Rob Young take a deep breath, show how to create a realistic brass sound, and put some spit and polish on the final effect.

**C**ontinuing our series on effective instrument emulations, it's now the turn of brass programming.

Let's start at the obvious place, your brass patch. If you use General MIDI, GS or XG, there's a brass section waiting for you at patch 62. If you use something different, it's a safe bet that you've got at least one ensemble brass patch. However, the odd thing is that most "expert" MIDI programmers tell you not to use it: "It's an ill wind, used only by the lazy or the confused. Use trumpets and trombones instead."

Unless you have 32 channels or more with which to play, that's not a view to take too seriously. Brass section patches are

often full and powerful, but many trumpet sounds just squeak and it takes an awful lot of squeaking to create the same effect. The point, as always, is that if the patch makes the sound you want, regardless of its name, what really counts is how you use it.

Most brass work falls into one of two categories: occasional stab chords and short fills to highlight a phrase or rhythm, or almost constant lines and solos. The brass section patch is usually ideal for stabs, needing just a short, loud chord. To get the best from the patch in most synths, raise the note velocities as much as possible and adjust the overall mix of the sound using the channel's Main Volume controller (7) or

Expression (11). Make the top or dominant note of the chord a little longer and louder than the others. For brass fills, exaggerate the velocity differences between accented and unaccented notes, and consider doubling the top line of the fill with a trumpet patch on another channel, pitched slightly sharp by enclosing the line between two pitch-bend events.

Add some spice by double-tracking the stabs and fills: make a copy of your brass track, assign it to a different channel, and pan each to opposite extremes. Equally effective is to split three-note stab chords over three channels panned centre/halfway-left/halfway-right.

Fig 1 A three-note fall at the end of a short brass fill gives a huge boost to its realism

**List - brass, 0007.01.000, 0008.01.000**

Start-Pos.	Length	Vel.1	Val.2	Val.3
0007.01.190	190	C3	94	94
0007.01.190	190	C4	96	96
0007.01.378	184	D3	121	121
0007.01.378	184	D4	124	124
0007.02.188	352	F3	114	114
0007.02.188	346	F4	119	119
0007.03.140	60	E3	87	87
0007.03.140	60	E4	72	72
0007.03.196	72	D#3	78	78
0007.03.196	74	D#4	65	65
0007.03.258	50	D3	69	69
0007.03.258	54	D4	60	61

**New release — Cubase VST**

It has been some time since we last saw a major release of Cubase for the PC. This time around, the improvements are substantial, delivering a mind-blowing studio direct to your desktop — literally. The main focus in this release is the integration of VST (Virtual Studio Technology). In addition, Cubase is now native to Windows 95 and the graphics have been brought into line with the Mac version.

VST was first developed to take advantage of the PowerMac's built-in DSPs to handle real-time processing of EQ and effects. The lack of a DSP in PC architecture has meant we have had to wait an extra year for the PC to catch up in the processing department. With a highly-specced system, VST is capable of handling up to 32 tracks of digital audio with up to four bands of parametric EQ on each channel.

The fun doesn't stop there. There are four effects-sends on each channel and a generous offering of built-in effects, similar to those found in WaveLab. There are two basic types of effect used in VST, mixer and master effects. Mixer effects are applied separately to each audio channel by using the effect-sends and include reverbs, delays and choruses. Master effects are inserted on the mix bus and include four real-time stereo multi-effects processors. Steinberg has included an "open" plug-in interface for additional third-party effects and mastering tools from ProSonic and Spectral Designs.

**The Channel Mixer**

For each audio channel there is a mixer which includes an EQ section, an effects-send strip and a master fader (Fig 3). Each EQ module is fully parametric, ranging from 20Hz right up to 16kHz. There are four frequency presets, to hone in on low, low-mid, high-mid and high frequencies. In addition, a 100-point Q parameter enables you to finely control the

width of the frequency band.

Frequencies can be boosted or attenuated 12dB.

Effects-sends can either be pre- or post-fader and you can set the send level for each of the four effects. The master strip enables you to set the gain and pan position, and provides buttons for solo mute.

Every parameter in the EQ, effects and master section can be automated, or captured by enabling the write button in the mixer window. Adjustments, made while in play, are stored on a special audio mix track. When replayed, all movements are played back in real-time, unleashing extensive creative possibilities including the ability to filter-sweep, control reverb parameters, and more. The write function also works in Stop mode, allowing abrupt changes to be made within a mix. Changes made in this way are recorded at the current Song Position. To fine-tune your movements, the mix track can be edited within the List editor.



**Fig 2 (right)** Electro Fuzz takes mono input from a mixer effect and distorts it

**Fig 3 (below)** Cubase VST, on your desktop



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## Cubase VST (cont'd)



Fig 4 (top) Scopian is an oscilloscope with adjustable sensitivity

Fig 5 (above) Stereo Wizard enhances or widens the final mix

The power of VST is astonishing, way out in front of any application in this category. Determined to stay ahead, Steinberg hasn't even charged for it. A free upgrade is available for registered users who have purchased Cubase v3 since 15th January 1997 and the price for the

complete package remains at £329 (inc VAT), bringing a truly professional whole-in-one studio solution within reach of every PC owner. My one criticism is that documentation is only provided in Acrobat. This keeps the cost down, but I wouldn't mind paying an extra fiver for a printed manual.

Price Cubase VST £329 (£280 ex VAT), Cubase Score VST £499 (£424.68 ex VAT)

Contact Harman Audio 0181 207 5050

Rating ★★★★★

#### VST Effects

Most of the effects are presented in a familiar studio rack design and provide comprehensive yet intuitive editable parameters. Like the real thing, you have to switch on the power and begin by choosing one of the presets. Here's a selection of what's on offer:

- **WunderVerb 3** Provides a smooth, dense reverberation. It's not quite a Lexicon but can be effective when used sparingly within a mix. It comes with ten preset patches ranging from gated verbs through to large halls.
- **Electro Fuzz** This is a model of a typical transistor fuzzbox (Fig 2). It takes a mono input from a mixer effect and completely distorts it. Parameters include boost, to control the amount of distortion; clipback, which inverts the clipped signal; and volume.
- **Stereo Wizard** This is a master effect and is used to enhance, or widen, the final stereo mix (Fig 5). Its parameters are simply amounts from 0 to 1 with six decimal places and a swap left and right channel.
- **Scopian** Another master effect. It is basically an oscilloscope (Fig 4) offering adjustable sensitivity on the X and Y axis.

To create constantly moving harmonised brass arrangements, it's often best to start with several channels assigned to your various instruments. These might be trumpet, trombone and sax patches, they might all be the brass section patch, or a combination of both. Record each instrument's line individually and edit it to add as much realism as you can (see below). Remember that an "ensemble anything" should sound like a group of individuals, not a hand on a keyboard.

You can create an effective brass section with only four or five channels, panning each channel differently and perhaps adding a little chorus to blend them together. The ensemble effect can be heightened by detuning each channel to different degrees: insert pitch-bend events such as 0:63 or 0:66, or use the RPN Coarse Tuning controller, 101:0, 100:2, 6:64, raising or lowering the value for CC6 to sharpen or flatten the pitch.

#### Brass realism

The most fundamental point about wind playing is that the player needs to breathe! This fact is especially important when you are programming single lines. A 16-bar trumpet solo with no breathing space will

sound synthetic, regardless of any other touches of realism you add. Try humming a line to discover where you need to breathe, and where long notes start to tail off.

On a similar point, brass instruments are monophonic. You can get away with short "overlaps" of a couple of ticks to create a very legato effect, but anything more than that will detract from the realism. Whether you're programming solo lines, full brass arrangements or just a few stabs and fills, there's a range of techniques you can use to add some extra realism:

1. **Falls** A fall is a run of short notes, descending in semitones and decreasing in volume, which can be used to good effect at the end of a stab chord, fill, or single-line phrase. Although you could use pitch-bend to achieve a similar effect, the best results come from inserting real note events (Fig 1).
2. **Tailing-off** Brass notes rarely just stop when the player pauses for a breath; they first fade in volume. This is easiest to accomplish by step-entering about half a dozen Expression events just before the note ends, dropping from the initial 127 to around 100.
3. **Bends** Brass notes often slide up to pitch (use the pitch-bend wheel), especially so with loud or high notes.

4. **Forced notes** You could think of this as an increase in "puff" as the player forces the volume higher and, perhaps, raises the pitch. Insert an Expression event of around 90 before the note-on, then use about a dozen more to increase the value to 127 where the volume-change occurs, coupled with pitch bend to force the note up in pitch.

5. **Vibrato** Players usually introduce a vibrato during sustained notes. Careful use of the modulation wheel might achieve a suitable effect provided the modulation speed is fairly slow, but you'll get more realism from entering a series of pitch-bend events that alternate between about 0:60 and 0:68. This can take some time to perfect, but Cubase users, among others, can save the part containing these events and import it whenever it's needed again.

■ *As promised, Audio Compositor (AC21.zip) is on this month's PCW CD-ROM. We couldn't include it last month due to space constraints.*

#### PCW Contacts

Steven Helstrip and Rob Young can be contacted at the usual PCW address or via email at [sound@pcw.co.uk](mailto:sound@pcw.co.uk)

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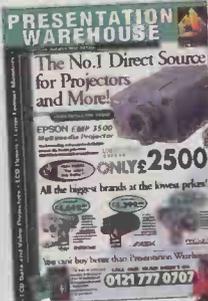
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# The full **monty**

No half measures — choose the right images, decide on a theme and follow Ken McMahon as he shows you how to create a full photomontage. It's easy with his step-by-step guide.

**L**ast month we looked at where to get your hands on royalty-free digital photography. Now I'm going to show you how to put it to good use, by creating a photomontage using Adobe Photoshop 4.

There are all sorts of reasons you might want to do this. It may be that a single image doesn't say everything you want, or you need a more complex image as a background illustration.

If you haven't got Photoshop 4, don't worry too much. Most, if not all of this stuff can be done in other packages — even budget ones. The critical features you need are layers and the ability to create alpha channels for saving and loading selections.

You can produce

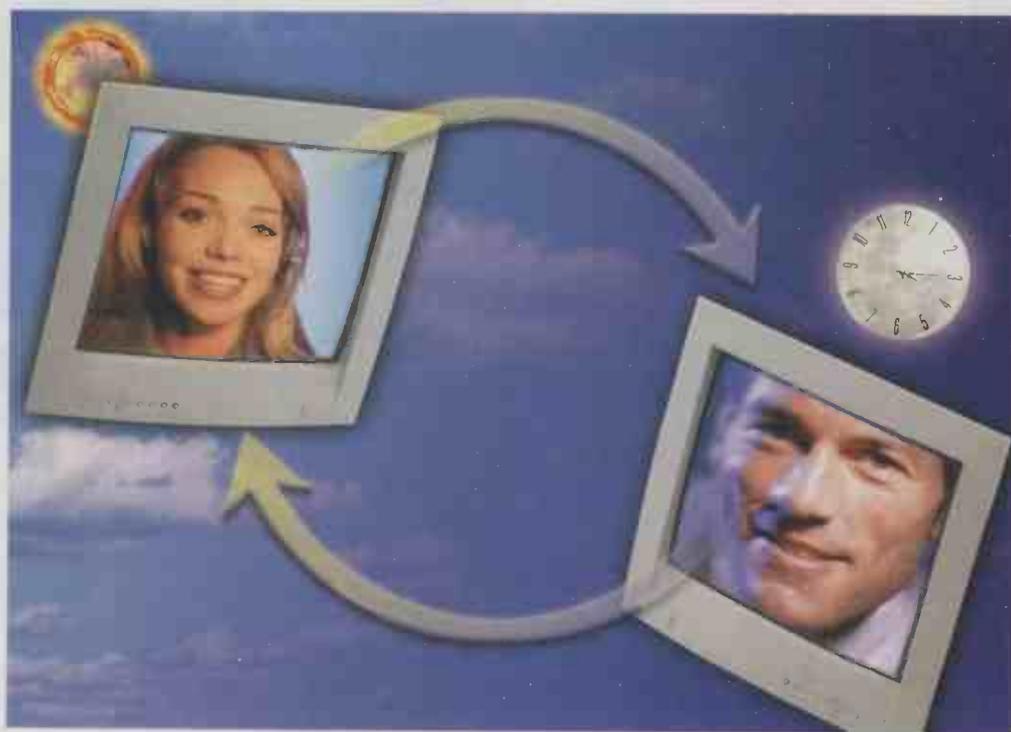
photomontages without these features, but it just takes a lot more work.

All the images I've used are from Photodisc's CD collection (I've given the details on page 304). You can also get them from [www.photodisc.com](http://www.photodisc.com)

## What do you want to say?

Before you even look at any pictures, decide what it is you want to say. It's no good looking through collections of photos, hoping they'll inspire you with a brilliant compositional idea.

For the purpose of this exercise I decided to create a composition illustrating the virtues of video-conferencing, so I knew



The finished montage — easier than you might think

I'd need some talking heads, possibly a globe of some description, maybe some cable, monitors, and associated communications hardware.

After a brief perusal of the photodisc catalogues I had around ten assorted images which I thought might work. At this stage it's helpful to sketch your composition: a rough back-of-an-envelope job will do.

Once you've got this far, you can afford to be influenced by what you have in front of you. A particular picture may suggest a different sort of composition from the one you originally thought of. I decided to give my composition a day/night theme because I came across some rather good daytime

and nighttime sky shots which I thought would make an interesting backdrop.

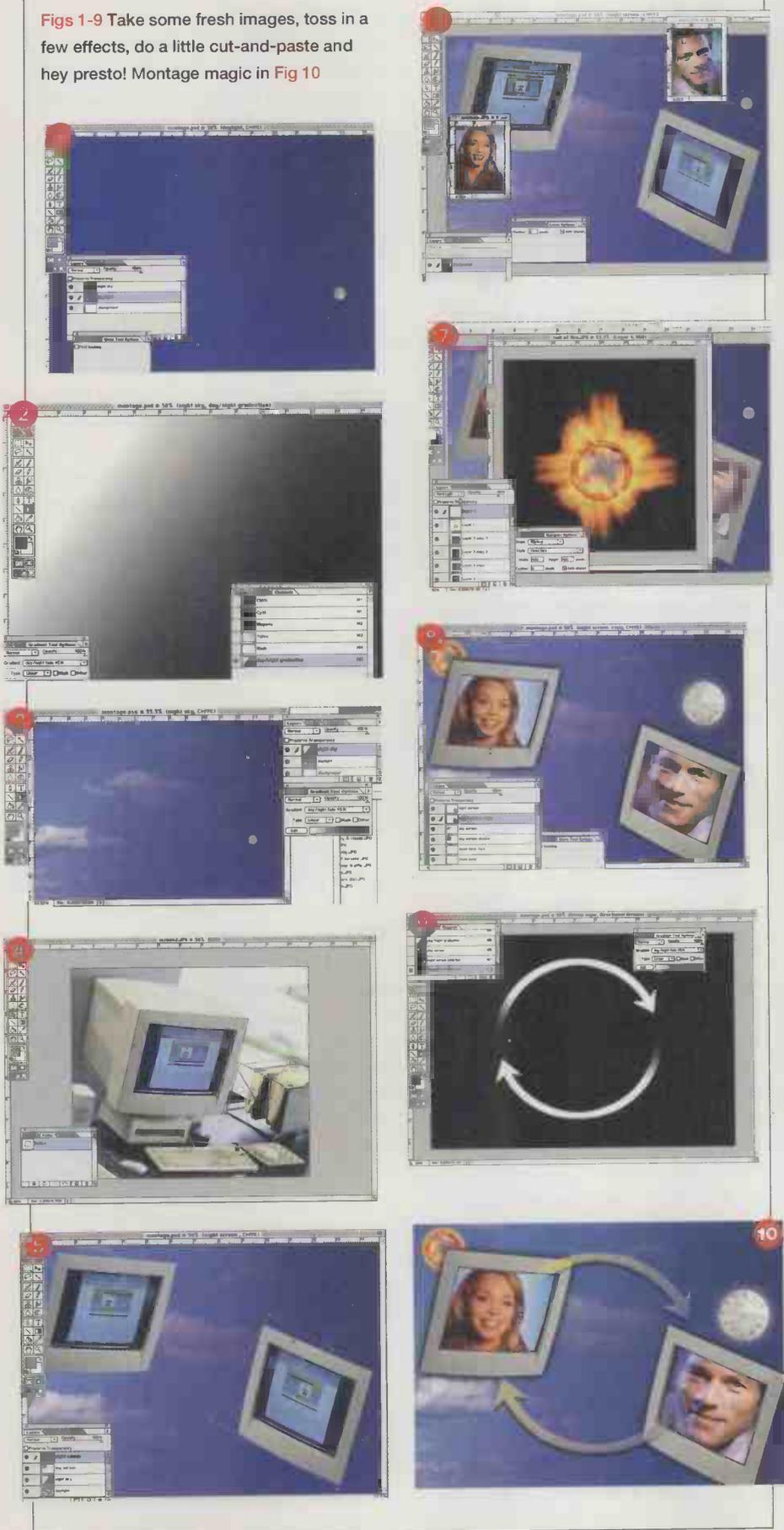
## Getting going

The first step is to set up a blank document. Mine is A6 at 300dpi. Next, we need to get our two main background images in position on their own respective layers (Fig 1).

I decided to incorporate the day/night theme by splitting the frame diagonally from left to right and having each of the video-conferencing in different time zones. If you are using big, hired images you will need to downsample and crop so that they come in at the right size. Some of the Photodisc images are available in low, medium and

The photomontage, step by step

Figs 1-9 Take some fresh images, toss in a few effects, do a little cut-and-paste and hey presto! Montage magic in Fig 10



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## Questions & Answers

In the November issue of *PCW*, you ask for suggestions on future articles. Might I suggest that you cover the issues involved in calibration, by which I mean the correlation between what appears on the screen after a scan and what actually prints out. I have been trying for some months to calibrate my scanner/printer/monitor with Corel Photopaint and as yet have had little success.

Corel v6 does not include in its templates my particular printer (HP 870Cxi). It will not accept the printer's installation disk and throws a wobbly at the end of the procedure by saying it cannot agree the test scan. I find the online help next to useless and Corel technical support for version 6 makes one feel like a second-class citizen — not that any advice they gave made sense, anyway. I would very much like to see an article covering all aspects of this particular area of graphics.

W English

OK, in the issue after next I'll take a close-up look at colour calibration. In the meantime, to whet your appetite I can tell you that there are a number of proprietary colour management systems around. You might have heard of Apple's ColorSync, the Kodak Colour Management System (KCMS) or Agfa's Fototune. They all do the same thing, which is to eliminate (or at least reduce) the colour inconsistencies in different input and output devices, or to make sure that what appears on your monitor closely matches what is produced by your printer.

They all work in a similar way: by referencing profiles of different monitors and printers (you produce a profile of your scanner by scanning a test card which is then compared with a pre-scanned

control), the colour management system can adapt the output data to take account of an individual scanner, monitor or printer's specific colour bias. So, you can be more confident that a printout from your Epson colour printer will closely match the image on your Hitachi monitor. Or if you give the file to someone else, or publish it on the web, it will look the same on someone else's Philips, Eizo or Mitsubishi screen — providing their system is also calibrated using the same system.

Colour management systems have their shortcomings, though, and I'll tell you more about them in the April issue.

Q What's the best way of importing images into Powerpoint 3.0? My hardware is too outdated to support newer versions. Trying to insert JPEG or GIF images brings up an error message that the graphics filter for these files is missing. Is PCX the best option?

Also, is there any way of importing a GIF image with transparent background?

Steve Yentis

I no longer have a copy of Powerpoint 3 but I think I'm on safe ground stating that it's unlikely it would support either JPEG or GIF, both of which are relatively new file formats.

You're on pretty safe ground with PCX and TIF, and EPS should also be okay (Powerpoint 4 supports TIF and EPS). If you don't have the necessary import filters, try reinstalling: it may just be that when you originally installed the application, you opted not to install the filters in order to save some space. The same thing applies for transparent GIFs (or GIF89a, as they're also known). They weren't invented when Powerpoint 3 was born, so it won't recognise the format. If you want to put an

irregular image, say a logo, onto a coloured or gradient background without an unsightly white square around it, you could create the logo in position together with the background in a bitmap editor, save it as a TIF or EPS file and import the entire thing into Powerpoint.

Q I have a photograph which I scanned (Sun "Scantak") at both 300 and 450dpi. Using an HP DeskJet 690C under FotoTouch Color, I expected the 450dpi to print out 50 percent larger than the 300dpi. It printed out exactly the same size. Is the original size held on record somewhere in the .BMP file's header?

I find dpi very difficult to grasp in these terms. The same file displayed in either PaintBrush or FotoTouch (1:1) looks enormous: is this because of the much lower screen resolution?

Philip Freeman, Haifa, Israel

A 5in x 4in image that is scanned same size at 300ppi will have a pixel size of 1,500 x 1,200; that's all you really need to know. If you print it at its original 5 x 4 size its printed resolution will be 300ppi (not the same thing as its halftone screen resolution — see my November '97 column for an explanation). Printed at 10 x 8, it drops to 150ppi. Altering the output size of the image (without resampling) inversely affects its output resolution.

The answer to your final question is, yes. The resolution of an average screen is around 75ppi, so your 300dpi scan would display on-screen at four times its original size but you won't be able to see all of it, even on a 21in screen at 1,024 x 768 resolution. In fact, the size of the screen is irrelevant. Clearly, an image that measures 1,500 x 1,200 pixels is not going to fit on a screen that measures 1,024 x 768. >

high res, but you'll still need to do some resizing to get them just right. Photoshop 4 creates a new layer when you paste in the clip. Just rename it so it's easy to see what's what in the layers palette.

You need to create a selection mask. Select the channels tab in the layers palette (Fig 2) and from the menu select new channel. Then double-click the gradient tool and select the black-to-white gradient from

the pull-down menu (I've edited the gradient and renamed it). Using the gradient tool, create a black-to-white gradient at 45 degrees, from the top left to bottom right of the screen (Fig 3).

Return to the layers palette and ensure you have the top layer selected by clicking on it in the layers palette. Choose "load selection" from the select menu and in the pull-down menu select the channel you just

created. Mine is called day/night graduation (sounds like an ad for a 24-hour university!).

Now hit the backspace key and the bottom half of the top (night) image disappears in gradual fashion, revealing the day layer below. (If the wrong half of the image disappears, it means you checked "colour indicates selected areas" instead of the default masked areas when you created the alpha channel.) You might need to

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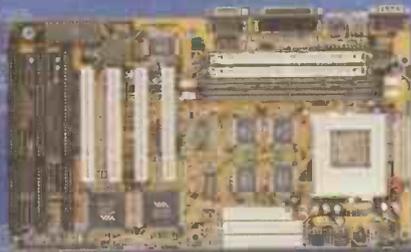
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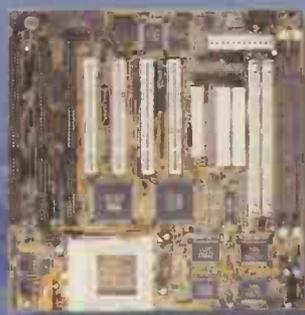
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**Q** For ages I've wanted to learn how to create my own fonts, so I was pleased when you announced that this was to be your subject in the December issue of *PCW*. Now I have at last read it, I am disappointed. Your tutorial hinges on my possession of CorelDraw 7. I don't happen to own it and it isn't practical to buy it just for your tutorial.

You mention specialised font-editors: Fontastic, Fontographer, Type Designer, but you do not supply any contacts. I searched through the advertisements in *PCW* but didn't find any of those

programs advertised. So, sadly, I have gained no benefit from your article.

Andrew Romer

**A** I'll give a list of phone numbers for all the main font-editor suppliers next month. In the meantime, why not check out Dave Emmet's shareware TrueType font editor? It's called Softy, runs under Windows and lives on Dave's homepage at [home.iclweb.com/icl1/d.w.emmett](http://home.iclweb.com/icl1/d.w.emmett). As Dave admits: "It's no match for Fontographer, but a lot cheaper."

There are two versions, 1.05 and 1.06, and Dave's page has a (short) list of

known bugs so you can spot the crash before it hits.

I downloaded 1.05 and had a quick play before bedtime, and I have to say that if you want to get involved in some sleeves-rolled-up, no-nonsense font fun, there have got to be worse ways. Softy's spartan interface and edit window provide everything you need to create and edit glyphs, and there's a help file that would put some commercial software vendors to shame. Dave reckons that it's the only shareware font editor available for Windows. ■

experiment with the gradient to get the precise result you want. When you're happy with it, you can merge the two layers to conserve memory.

#### Talking heads

Now we want to create our talking heads which will appear inside a display monitor.

First, using the pen tool, create a path around that bit of the monitor you want (Fig 4). Then, from the pen palette menu, make a selection and copy. Once again, try to make sure any image you're about to paste in is roughly the right size and resolution, or you'll have a lot of scaling to do later.

Paste in the screen twice and give each layer an appropriate name (or simply duplicate the layer) — I've called them "day screen" and "night screen" (Fig 5). We can use the same monitor for each head by horizontally flipping and rotating one to make it face the other.

The next job is to cut and paste the heads onto the screens (Fig 6), but first we have to get rid of the existing screen image. This is done by selecting the screen, again using the path tool, making a selection (use a two-pixel feather to soften the edge slightly) and filling with a gradient.

For both screens I used a slightly off-horizontal gradient with a mid-point highlight to create the illusion of slight curvature. The colour for each gradient was obtained using the eyedropper to sample the day and night skies behind each screen.

#### Sun and moon

Next, I wanted to create a sun clock for the daylight side of the screen and a moon clock for the night. The clock pic is from the

PhotoDisc Object Series House Works CD. The Object series conveniently provides you with pre-drawn clipping paths so you don't have to do your own. The clock was pasted on top of the fireball image which had been copied and rotated three times to produce an even glow all around. The fire effect on the clock face (Fig 7) was achieved by changing the mode of the clock (upper) face layer to colour burn.

The clock face (without the wood surround bit) was then repasted on top (layer 4) using hard-light mode with an opacity of 85 percent to give the relief effect. The ellipse marquee was then used with a feather of 16 to copy the central section for pasting into the montage. When using the feather, or any other tool that uses a pixel-based measure, remember that the same settings will give a coarser effect on lower-resolution images.

The new moon (Fig 8) was created in a similar way: by pasting on the clock face using 72 percent opacity and the hard-light blending mode, and using the blur filter to create the glow.

Finally, the circular arrows were added (Fig 9). These were created in another alpha channel using the ellipse tool and stroking the selection with a width of 16 pixels. I used the maximum filter to make them a little less regular looking (having first deselected) and added the arrowheads using the pen tool to create a selection which was then filled with white.

The selection was then loaded into a new layer and filled with white. To create the drop shadow, just duplicate the layer, invert it and use the gaussian blur filter — in this case, with a value of six pixels.

A few final adjustments were made, and

as the white was a bit overpowering I decided to use a coloured gradient fill for the arrows and to stroke them with a slightly feathered selection to give them some depth — all done using the same alpha channel selection.

I also added a drop shadow to the screens by duplicating the layer and using the output level slider to turn everything black, and applying the gaussian blur filter to the resultant black box.

#### Trial and error

The whole thing, including picture selection, took about four hours, although I could probably do it again in about half that time.

You have to experiment a bit as things don't always work out. I spent some time creating a sun-to-moon transition across the sky at the top, but after I'd done it I decided it looked naff. I could also have saved time by not bothering with the graduated fill on the night-side screen, which was totally obscured by the man's head. It would have been nice, after the work it took, to have been able to see all of the sun, but there wasn't anywhere for it to go other than behind the top corner of the day screen.

■ If you want to know more about royalty-free digital pictures, check out last month's column. All the pictures I've used are from Photodisc's CD collection and are also available at [www.photodisc.com](http://www.photodisc.com) along with around 70,000 others.

#### PCW Contact

Ken McMahon can be contacted at the usual *PCW* address (p12) or via email at [graphics@pcw.co.uk](mailto:graphics@pcw.co.uk)

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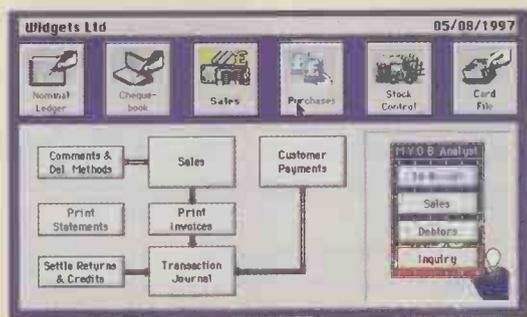
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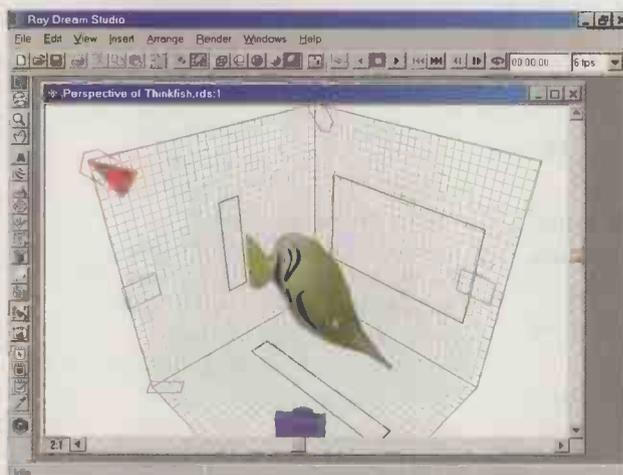


# Return to **render**

Benjamin Woolley checks out the latest update to Ray Dream Studio, which includes a revolutionary new rendering feature: the Natural Media renderer uses different LiveStyles.

I was surprised to discover that Ray Dream Studio 5, the eagerly awaited update to one of the most important mid-range packages on the market, brought my poor old Compaq DeskPro 566 to its knees, even though Ray Dream's minimum hardware requirement is a 486 system with 16Mb of RAM (with 24Mb+ recommended). Perhaps, with Ray Dream so bounteously loaded with goodies, I should excuse such sluggishness? I suppose I should be thankful that all the hourglass-watching left me more time to admire the package's interface, because it remains one of the most elegant around.

You do most of your work in a single "perspective" window which features a base plane and, optionally, two side planes (Fig 1). Each of these has projected upon it the bounding box for each axis of the currently selected object (like a shadow cast from lights to either side and overhead). You can use this bounding box to move and scale the object along the axis of the plane. This is an extremely intuitive



**Fig 1** The Ray Dream Studio 5 interface: by 3D standards, a simple, uncluttered workspace. The small blue object at the bottom of the window is the render camera. The red cone in the top left-hand corner is a spotlight

way of manipulating 3D objects on a flat screen. Much easier, I think, than the more conventional approach of having a selection of orthographic views (top, bottom, left, right, front, back) displayed simultaneously. Ray Dream also boasts a more generous selection of tools, some of them exceptionally powerful for a package in this price range.

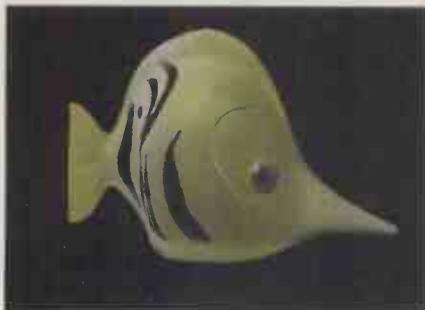
As mentioned in last month's column, physics has arrived in the form of collision detection. There are also four environmental

primitives: fountain, cloud, fog and fire. These are (pardon the pun) primitive primitives. In particular, you cannot edit the textures ("shaders", in Ray Dream parlance) they use, which means the results they produce are not particularly realistic. They are easy and fun to use though, and would look good in any scene designed to achieve an artistic, rather than photorealistic, effect.

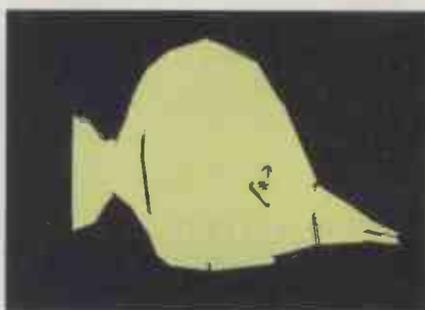
## LiveStyle revolution

Which brings me to the unique, indeed revolutionary, feature in this new release: the Natural Media renderer. I first wrote about it in the August 1997 column and have keenly anticipated its arrival ever since.

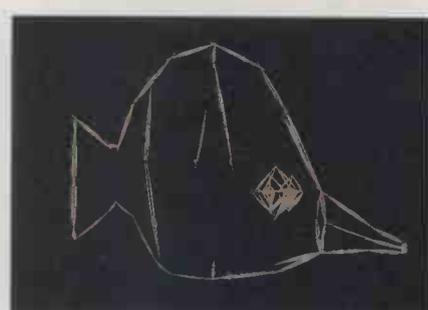
**Fig 2** An angel fish rendered using Ray Dream's default adaptive renderer



**Fig 3** The same fish Thinkfish style — using the Basic Draw LiveStyle



**Fig 4** In the Crystal style



Developed by Thinkfish, the aim of the Natural Media renderer is to render images in different artistic styles, called LiveStyles.

A selection of these LiveStyles are supplied as standard with Ray Dream and you can get three free ones via the Thinkfish web site at [www.thinkfish.com](http://www.thinkfish.com). Others can be bought online for around \$20.

Deploying the Natural Media renderer is simple. Ray Dream Studio offers it as one of four different rendering methods which you can pick for any scene. The other three are Ray Tracer, Draft Z-Buffer and Adaptive, the latter using different rendering techniques depending on the scene's content. You click on the Natural Media option and then select the LiveStyle you want: Basic Draw, Crystal, Silk Screen, Charcoal, and so on.

One of the much-vaunted benefits of Thinkfish's rendering technology is that it is a lot faster than photorealistic rendering methods, and this proved to be the case. When you select the Natural Media rather than the Adaptive renderer (the default), scenes appear in a fraction of the time. Indeed, as implemented here, the Natural Media technology proves itself to be a natural for real-time rendering and it seems that some companies are looking to see if they can use it for applications (such as online games) which need this facility.

Fast it may be, but easy it is not. The "Basic Draw" LiveStyle produced relatively predictable results, but the others more often than not yielded featureless blocks of colour or tangles of lines.

Natural Media rendering is an entirely new approach to 3D graphics. Scenes built for conventional renderers, as my hours of frustrating experimentation revealed, are often technically unsuitable for artistic rendering. There seems to be two reasons, smoothing and texturing.

With most renderers, the joins between the polygons that make up each object are smoothed over when the angle between them is under a certain threshold. The result

## Out with the old...

In the time-warped world of monthly magazines, the New Year arrives in February, so this seems like a good time to look at what 1998 might hold for the graphics enthusiast. Last year, I wrote that 1997 would be a year of evolution rather than revolution for 3D, and I think I have been proved right: VRML remains marginal but shows signs of promise; hardware acceleration technology has consolidated; no creative barriers have been broken in 3D content, but there is a lot more about.

In some respects, I am more sanguine about 1998. Early last year, manufacturers promised that PCs featuring the Advanced Graphics Port (or AGP, a special slot for graphics cards; see my July 97 column) would start to ship in the second half of 1997, and much to everyone's amazement, they did. Volume deliveries were well under way by November (hopefully avoiding a repeat of the shameful episode last year, when Christmas buyers were sold non-MMX systems only to see them made obsolete with the appearance of MMX equivalents a month later).

- AGP now looks set to become as standard to mainstream personal computing as the PCI interface. It should revolutionise real-time 3D-rendered content like games, and it is significant that one of the first AGP-aware programs to be shipped is a game — G-Police from Psygnosis. It may help promote VRML from the periphery of the Internet.

- The prospects for 3D graphics authoring software look good from a price/performance point of view. You can now buy a range of professional-grade packages for less than £500. However, they still lack a set of sensible standards for plug-ins and file formats — there is no Adobe Photoshop of the 3D graphics world to encourage interoperability. Perhaps one will emerge this year.

- On the content front, we have Lara Croft of Tomb Raider fame leading the way in populating the 3D world with a new breed of computer-generated character. I expect we will be seeing a lot more of her pneumatic geometry filling the virtual world. I will take a closer look at Lara in next month's column. ■

is a curve instead of an edge, indicated by contours in shading and highlights. With a LiveStyle, such joins are often ignored, becoming solid blocks of colour or texture. Unfortunately, this means it is often impossible to tell what shape the object is supposed to be. The problem can sometimes be solved by reducing the number of polygons that make up the shape, but often the only solution is to change the underlying geometry.

The texturing problem is trickier because texturing is inherent to rendering. The texturing tools supplied with RayDream are specifically designed to produce photorealistic results. Unfortunately, parameters such as shininess or facilities like bump mapping are meaningless when you are using Natural Media rendering — or at least they are unless the renderer knows how to deal with them. All the LiveStyles I tried seemed to ignore all texturing information other than an object's base colour, which is, in a sense, what you would

expect. However, there were no alternatives provided, nor any information as to how you could adapt conventional textures to get satisfactory results with different LiveStyles.

In fact, it was the general lack of information which was the biggest disappointment about LiveStyles: there was none to be found in the Ray Dream manual, which is a particular shame because in every other respect the documentation for version 5 is exceptionally clear and comprehensive for a package at this price.

At the time of writing, Thinkfish provided nothing but a paltry FAQ on its web site <[www.thinkfish.com/tsupport.html](http://www.thinkfish.com/tsupport.html)> with a few hints and tips aimed at QuickDraw developers. Perhaps there will be more on the site by the time you read this.

Such shortcomings are perhaps to be expected with a technology this new. Renderers aimed at producing particular styles of output (notably a cartoon-style look to an animation) are widely used in the professional market, but the Natural Media renderer is the first I have encountered to provide an adaptable method of generating artistic output. Perhaps we must give it time to develop? It was a shame that this, its first appearance in the graphics mainstream, should have been so half-hearted.

Fig 5 In the Sketch 1 style

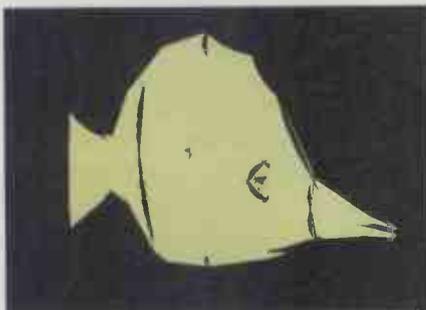
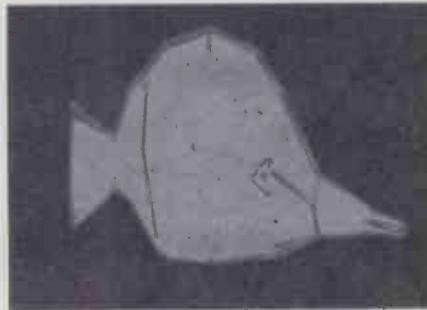


Fig 6 In the Ink Wash style



## PCW Contacts

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# Dynamic developments

Developers should consider an HTML interface: Tim Anderson looks at Dynamic HTML — it changes the concept of a web page to something more like a VB form than a document.

**A**lthough originally designed as a document format with hypertext links, HTML as seen in the latest Netscape and Microsoft web browsers is more like a programming language.

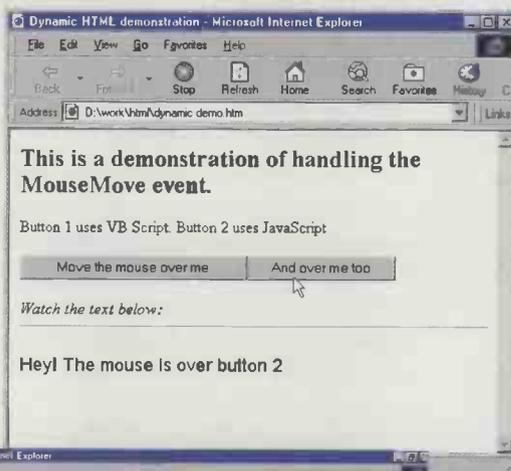
The difference is more than just a set of new tags: rather than merely adding a set of fancy new tags, Dynamic HTML changes the concept of a web page to something more like a Visual Basic form than a conventional document. If you take advantage of the new features, creating a web page is more in the realm of interface design than text authoring.

Developers building applications should consider whether to provide an HTML interface either alongside or in place of a traditional Windows approach. However, considering something is not the same as doing it, and a web-based application introduces a host of new problems and decisions that you might prefer to avoid.

## What can dynamic HTML do?

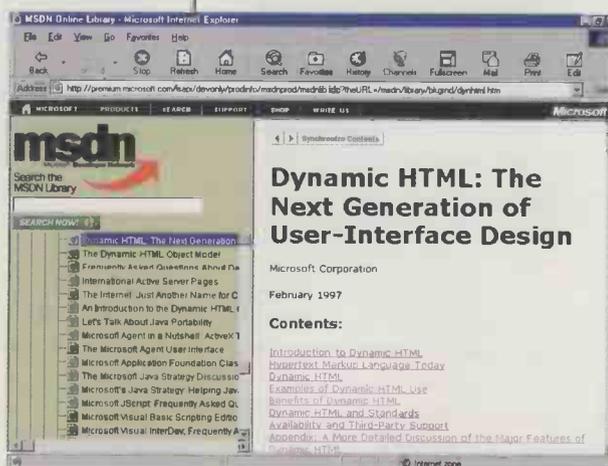
At the heart of the new standard is the document object model. In principle, every part of a web page is now an object that can be controlled via scripting. Objects can also receive events and you can write code to respond to those events.

If you have worked with the likes of Visual Basic or Delphi, these are familiar concepts, although the way they are implemented in HTML is different.



Left Using Dynamic HTML, you can implement a help text which changes as the user moves the mouse over a page

Below, left There is lots of information about Dynamic HTML on the Microsoft web site. The nice tree control is a Java applet



Another feature that makes it easier to design forms in HTML is position properties, which let you specify a layout with pixel-precision instead of relative positioning — and, with overlapping objects. You can display HTML pages as modal dialogs, using the ShowModalDialog method.

To give you an idea of what is involved, Listing 1 shows some example code. It demonstrates how you can display a help text when the user moves the mouse over a button by responding to the MouseOver event in Dynamic HTML.

By contrast, HTML 3.2 buttons only have a click event. The first step is to give each object you want to control an ID property, as in:

```
<BUTTON ID=Button1>
```

Then you can reference the button and its properties or methods in script code. There are several ways to handle events, and the example shows both VBScript and JavaScript in use.

Using VB you can handle an event by naming a function correctly, as in:

```
Button1_onMouseOver()
```

The other technique, used in the JavaScript example, is to define the event handler in the tag for the button, as in:

```
ONMOUSEOVER=Button2_onmouseOver()
```

You can call the function anything you like. Note the paragraph which contains the help text is an object and the text is changed by manipulating its InnerText property.

## Which way now?

Developers, coding for the new generation of web browsers, can create rich interfaces with features which are not far short of those found in an environment such as Visual Basic or Delphi. This presents a bewildering set of choices, even assuming that you have decided to use a web-based

## Listing 1: MouseOver help

```
<HTML>
<HEAD>
<TITLE>Dynamic HTML demonstration</TITLE>
</HEAD>
<BODY>
<H2> This is a demonstration of handling the MouseMove event.</H2>
<P> Button 1 uses VB Script. Button 2 uses JavaScript.</P>
<BUTTON ID=Button1>Move the mouse over me</BUTTON>
<BUTTON ID=Button2 ONMOUSEOVER=Button2_onmouseOver() ONMOUSEOUT=Button2_onmouseOut()>
And over me too</BUTTON>
<BR>
<p>
<EM>Watch the text below:</EM>
<HR>
<FONT FACE="ARIAL" SIZE=4><P ID=InfoText>This will change as you move the mouse</P></FONT>
</BODY>

<SCRIPT LANGUAGE=VBSCRIPT>
Sub Button1_onmouseOver()
InfoText.innerText = "Hey! The mouse is over button 1"
End Sub
Sub Button1_onmouseOut()
InfoText.innerText = "Watch this space"
End Sub
</SCRIPT>

<SCRIPT LANGUAGE=JAVASCRIPT>
function Button2_onmouseOver() {
InfoText.innerText = "Hey! The mouse is over button 2";}
function Button2_onmouseOut() {
InfoText.innerText = "Watch this space"; }
</SCRIPT>
</HTML>
```

## Fig 1: Choosing code for web apps

When coding web applications, which way do you code? Here are some key issues.

### Dynamic HTML

#### Advantages

- ✓ Performs well once the scripts have been downloaded.
- ✓ Reduced burden on server.
- ✓ Easy to build feature-rich forms.

#### Disadvantages

- ✗ Compatibility issues between Navigator and Internet Explorer.
- ✗ Code tricky to manage and debug.

### Java applets

#### Advantages

- ✓ Powerful, productive language.
- ✓ Good for distributed applications.

#### Disadvantages

- ✗ Compatibility issues.
- ✗ Large applets are slow to download.

### ActiveX controls

#### Advantages

- ✓ Only downloaded once, when first used.
- ✓ Excellent performance.
- ✓ All features of Windows are available.

#### Disadvantages

- ✗ Not cross-platform.
- ✗ Security issues deter internet users.

### Server-side scripting

#### Advantages

- ✓ Solution for cross-platform net deployment.
- ✓ Integrates with legacy systems.
- ✓ Use whatever language you like.

#### Disadvantages

- ✗ Hard to achieve a rich interface with server-side scripting alone.
- ✗ Places a performance burden on the server.

solution rather than a traditional networked application. Fig 1 highlights some of the key issues.

Frankly, the best solution for internet development at the moment is server-side scripting: CGI scripts, Active Server Pages or whatever server-side technology you prefer. Otherwise, you have to wrestle with compatibility issues and the problems of managing parallel sets of pages for different browsers and browser versions.

The same will apply to large and diverse intranets. If you can specify all the browsers though, both Internet Explorer 4.0 and Navigator 4.0 are great client platforms.

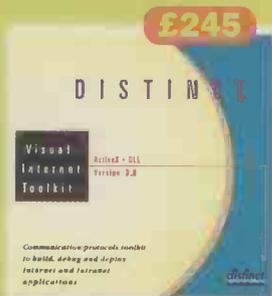
For Windows I would tend to favour IE 4.0, because its flavour of Dynamic HTML is closer to what is likely to become the official standard, and because ActiveX controls have the performance of native code. When you install IE 4.0 though, be sure to leave out the Active Desktop. In my experience it is horrifically unreliable in its first release.



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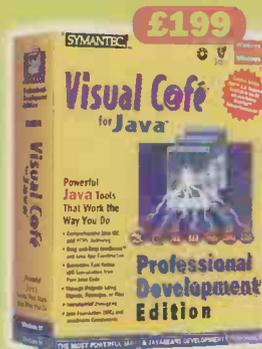
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## Questions & Answers

**Q** I have written, within Excel, a custom VBA function. I have transferred my data to Access 97 because of the much better querying facilities. I tried to copy the VBA module but without success, because Access 97 does not recognise the Normsdist function. Is there a way for an Access 97 query to utilise an Excel 97 function?

R Sarno

**A** This is quite easy. In Access 97, open up the code editor, for instance by opening a module. Select References from the Tools menu and check MS Excel 8.0 Object Library. Now you can write VBA code like in Listing 2.

This does run Excel in the background, so performance will suffer. But if you use a global reference to Excel and keep it active while your application runs, then performance will be fine once it has loaded. The other option is to find or write a VBA version of NormsDist.

### Listing 2: VBA code

```
Dim xl As New Excel.Application
Dim result As Double
result = xl.WorksheetFunction.NormSDist(1.33)
MsgBox "The result is: " + Str(result)
```

**Q** In Visual Basic 4, I've hit a brick wall when trying to write toolbar information to the Win95 registry. When I follow this help file, it doesn't have the desired effect. It just adds an entry into the registry containing Question Marks for its Key name, etc.

Mark Gales

**A** The Visual Basic toolbar control is an ActiveX control, one of the Windows 95 controls in COMCTL32.OCX. Working in concert with an imagelist control, you can create a toolbar with icons, tooltips, text captions etc.

The toolbar does not float or dock, but it does have a nice feature: the user can customise it by adding and rearranging the icons. At runtime, a double-click opens the

### Listing 3: Puzzling parameters

```
object.SaveToolBar(key As String, subkey As String, value As String)
```

customise dialog, or you can call the customise method (Fig 2). To make the changes permanent, the control has SaveToolBar and RestoreToolBar methods, which use the registry to store settings.

This works fine in Visual Basic 5.0 and has not changed much since VB 4.0, so why does it not work for Mark? There are a couple of possibilities: one is an ActiveX

problem, probably that COMCTL32.OCX is incorrectly registered; or there is a version incompatibility in one of its dependencies.

ActiveX and registry problems are Visual

Basic's biggest weakness and Microsoft has yet to come up with a proper solution. Sometimes, re-registering the control with REGSVR32.EXE works. Other times, you have to remove and reinstall Visual Basic. In the worst case, the easiest solution is to reinstall Windows.

Usually, ActiveX problems reveal themselves with corrupt icons in the Visual Basic toolbox or strange error message about incorrect registration,

**Fig 2** Visual Basic's toolbar control allows the user to customise the icons and save the settings. The innards of its registry functions are a mite puzzling, though

or errors when you try to install or remove components from VB, or when you use the object browser.

Even if all is well with the registry, the SaveToolBar method has puzzling features. One is that the documentation has contradictory information about the parameters it takes. According to Visual Basic's 5.0 online help, it looks like Listing 3.

According to Books Online: "The first

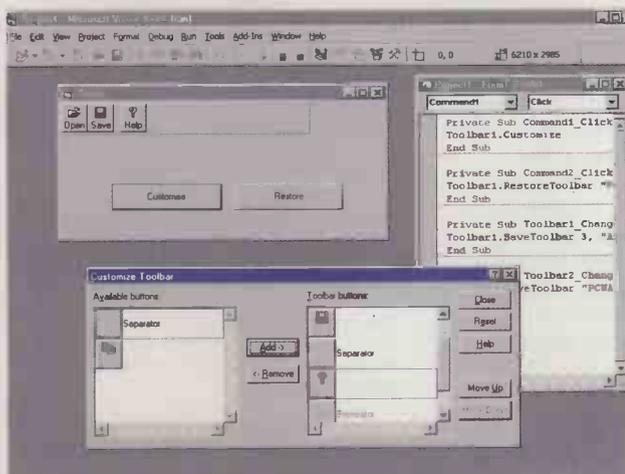
argument, key, must be an integer. The second and third arguments, subkey and value, must be strings". This makes more sense, since the API registry functions take as one of their parameters an integer representing the handle of a root key in the registry, such as HKEY\_CURRENT\_USER. It may not matter much, since on this NT 4.0 system, SaveToolBar and RestoreToolBar ignore the first parameter. Whether there is a number or a string there, the setting ends up in HKEY\_CURRENT\_USER under the value used for the subkey.

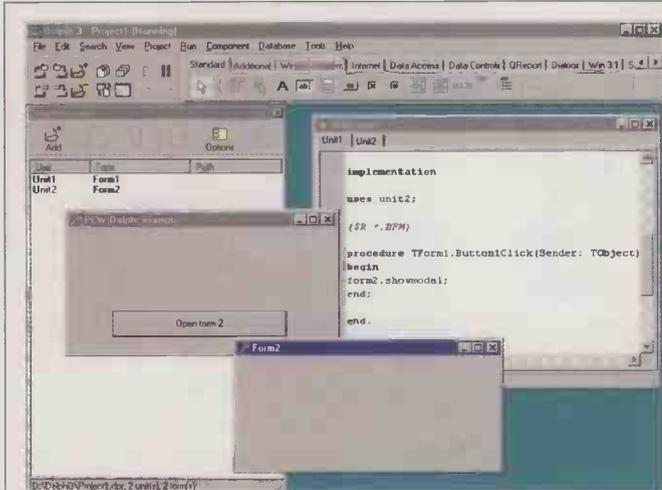
This is not really a problem unless you were relying on that first parameter to distinguish one application from another. You might argue that the toolbar settings should be stored under the "VB and VBA Program Settings" subkey, for consistency with VB's SaveSetting function. It looks messy, and should be referenced in Microsoft's otherwise excellent knowledgebase on the MS Developer Network CD and online resource.

**Q** I wish to include validation of user input within simple input screens, which displays a message and prevents the user from leaving a text box (input) if the user's input does not meet the required rules. I have scoured the VB5 manuals and help, but have got to the point now where I am just confusing myself even more.

John Bend

**A** The answer is simple: do not try to do this! John doesn't say how he tried to code the validation, but he probably used the LostFocus method of a textbox to validate the contents. If it failed validation, he used SetFocus to send the user back to try again. This works with just one text





**Fig 3** All in the Uses clause: getting Delphi to open one form from another

**Q** I do not seem to be able to get a multiple window application to work. I want another window to open when I click a button,

but instead Delphi issues the "Unknown identifier" line and I cannot understand why. I simply created a window with a button, then added another form, and added some code to the button-clicked procedure (Form2.ShowModal, or something like that), but I still get the error.

Jamie

**A** The best way to explain this is that Delphi only exposes code on a need-to-know basis. Although both Form1 and Form2 are part of your application, code in

Form1's unit cannot see the code in Form2's unit unless you explicitly allow it. To do this, add the unit name to the uses clause in either the interface or the implementation part. See Listing 4 for an example.

Although confusing at first, this is a Delphi strength. It reduces the risk of running the wrong code by mistake, like when different modules have procedures with the same name.

Should you add the reference to the interface or implementation? All things being equal, it is better to use the implementation part (Fig 3). This is more efficient for Delphi's compiler. But sometimes you will have no choice. For instance, if you are referring to a unit that defines a type and you want to declare a procedure which uses the new type in the interface part, then the reference will have to go there, too.

Another problem you will run into is that of circular references. If you put a reference to unit2 in unit1's interface, Delphi will not let you refer to unit1 in unit2's interface. The solution is to move one of these references into the implementation part.

box, but where more than one field is involved it becomes a nightmare. The problem is that you cannot prevent VB from firing other GotFocus and LostFocus events; for instance, if the user is trying to move to another text box which also has validation routines. There are also anomalies concerning the order in which these events fire: you can very easily leave your application in a loop with no exit.

I am not saying it is impossible to use GotFocus and LostFocus with some combination of flags that would make it work, but it is better to use another technique. The best way is to do all your validation in one routine; for instance, when the user tries to exit the form or save the data. You can set validation rules to be enforced by a database engine, or use the Validate event of the data control. Another possibility is a timer control which checks the validity of fields at regular intervals. All these work better than using LostFocus.

#### Listing 4: Units, uses and implementation

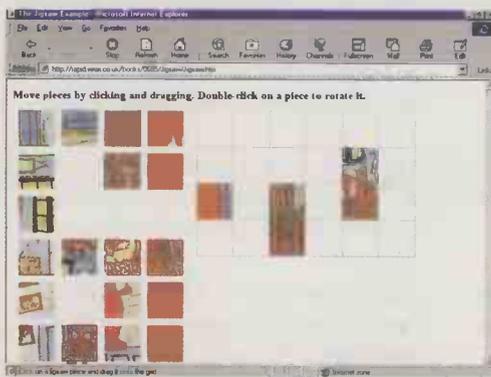
```
implementation
uses unit2;
procedure TForm1.Button1Click(Sender: TObject);
begin
Form2.showmodal;
end;
```

### Book review — *Instant IE4 Dynamic HTML*

Authors Alex Homer and Chris Ullman have aimed at those already familiar with HTML and scripting. There is an explanation of Dynamic HTML concepts followed by chapters on style sheets, the object model, event handling, dialogs, and data binding. A reference section lists properties, methods and events plus all the dynamic HTML tags. There is a quick guide to VB Script and JavaScript.

Chapter 8 covers the compatibility issues between Microsoft Internet Explorer and Netscape Navigator, the only two heavyweight browsers left in the game. Both have implemented Dynamic HTML but there are substantial differences. The authors conclude that if you want to use Dynamic HTML, "The only real answer is to maintain at least two different versions of your complete web site." That also explains the book's title. (If you want to use Netscape Dynamic HTML, you need the parallel Netscape edition of the book.)

This drag 'n' drop jigsaw has been built with Dynamic HTML (Wrox Press [www.wrox.co.uk](http://www.wrox.co.uk))



#### PCW Contacts

Tim Anderson welcomes your Visual Programming tips and queries. He can be contacted at the usual PCW address (p12) or at [visual@pcw.vnu.co.uk](mailto:visual@pcw.vnu.co.uk)

Computer Manuals 0121 706 6000 for *Instant IE4 Dynamic HTML* by Alex Homer and Chris Ullman. Wrox Press £22.99. Netscape edition available.

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# Address code

Why use static configuration for IP addresses, when you could save yourself time and effort by setting up a dynamic host configuration protocol? Bob Walder goes for the easy life.

**H**ow many of you had a go at implementing a bit of TCP/IP on your networks after last month's column? Assuming you understood what I was waffling about and managed to get your clients and servers speaking, using nothing but good old TCP/IP, you will by now have realised what a complete pain in the bum it is to manage your IP addresses!

Static configuration of IP addresses, the method I described to you last month, can be expensive in terms of administrative time and effort — particularly so in the case of large networks with hundreds or thousands of clients. Even small networks of just a few clients can be troublesome to administer if you are regularly making changes to your network (as I do in my test lab, for instance).

Help is at hand, however, with Dynamic Host Configuration Protocol (DHCP) which allows all hosts attached to the network to learn their addresses dynamically each time they boot up, or are moved to a new subnet. Each time they are turned off or removed from the network, however, the address is automatically returned to a "pool" to be re-used by another device.

## Setting up DHCP

The first job is to designate one of your NT Servers as the DHCP server for your network. Clearly, this machine requires a static address since it would have nowhere to look for a dynamic address, given the fact there will be no DHCP server available when it boots up. On this machine you



install the DHCP service:

1. Select the Network icon in the Control Panel.
2. Fire up the Services window.
3. Click on the Add button.
4. Select the Microsoft DHCP Server from the available services.
5. Insert the NT Server CD-ROM and click on OK to copy the necessary files.
6. Reboot your NT Server.

When the machine reboots, the DHCP

Server will start automatically. This can be configured via the DHCP Manager utility that can now be found under the Start/Programs/Administrative Tools menu.

Strangely enough, the DHCP Server is not activated automatically and must be manually added to the list of available DHCP Servers in this utility. You must also define a "scope", which is the range of IP addresses that have been assigned to you by your ISP and which are available to be

allocated automatically to your client PCs. This is done as follows:

1. On the Server menu, click Add.
2. In the dialog box which appears, type the IP address of the local NT Server.
3. Click OK.
4. Double click the DHCP server you have just added.
5. On the Scope menu, click Create.
6. In IP Address Pool, enter the IP address in your "pool" in the Start Address field.
7. In End IP Address, enter the last IP address in the range.
8. If you wish to exclude addresses, enter these in the Exclusion Range.
9. Under Lease Duration, click Unlimited (later on you can determine a shorter period to lease addresses if you wish).
10. In the Name field, type in the name of the scope (any name you like, to identify it).
11. Click OK.

There are a couple of things to bear in mind when defining your scope. The first is that most organisations will have a group of devices such as domain controllers, DNS servers, WINS servers, routers and other DHCP servers, to which they wish to assign a fixed set of static IP addresses. This can be done in a couple of ways.

The first is to keep back a consecutive group of numbers from those allocated to you and assign these directly to the appropriate machines. The second is to "Reserve" those addresses on the DHCP server we have just created:

1. In DHCP Manager, double-click the DHCP server you want to manage (you should have only one at this stage).
2. Click the scope in which you wish to add reservations (again, you should only have a single scope defined at this point).
3. On the Scope menu, click Add Reservations.

4. Enter the IP address you wish to allocate to a specific machine.
5. Enter the MAC address of the machine in the "Unique Identifier" field. The MAC address can be obtained via the IP Configuration utility which will be located in the SYSTEM directory of every Windows machine on your network. The Win95 version is a Windows program called WINIPCFG.EXE, while, strangely, the NT version is DOS-based and is called IPCONFIG.EXE. Simply double-click on the WINIPCFG file in Explorer under Windows 95 — the Adapter Address is what you are looking for. Under NT, drop to the command line and type

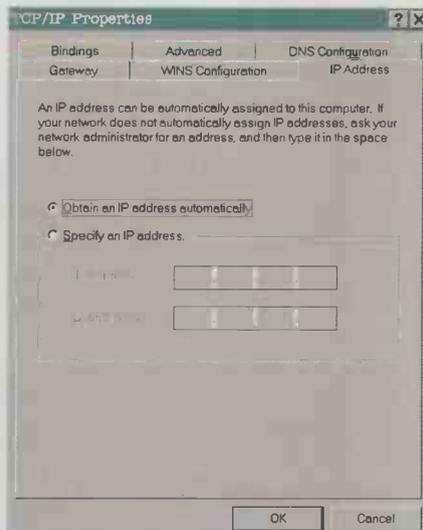


Fig 1 Configuring a Windows 95 client to automatically assign an IP address

IPCONFIG -ALL and read off the Physical Address value. In both cases, it will be presented as a 17-character string in the format 00-00-92-9B-2B-A9: you type this in as a 12-character string, simply omitting the hyphens. It is very important that you get this identifier exactly right or the reservation will not work.

6. Enter the computer name in the Client Name field.
7. Click Add.

The next time that particular client attempts to connect to the DHCP server, it will be allocated the address which you have just reserved for it. But the IP address is not the only thing we can provide automatically from the DHCP server: we can also supply the Default Gateway, DNS Servers and the Domain Name. This we do through setting Global DHCP Options:

1. Select Global from DHCP Options menu.
2. Click on the Value button.
3. Select 003 Router, click on Add and enter the IP address of your Default Gateway.
4. Select 006 DNS Servers, click on Add and enter the IP addresses of your DNS servers (just as you did last month in the DNS Configuration tab of your client).
5. Select 015 Domain Name, click on Add and enter your Domain Name.
6. Click OK.

Finally, we must configure the client. The first thing is to undo most of the work we did last month. Assuming our client is a Windows 95 machine (NT machines are very similar):

1. Select the Network icon in the Control Panel.
2. Double-click the TCP/IP component.

p317 >

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**Questions & Answers**

**Q** In a recent issue, I read with interest your answer to the question about which Windows 95 Service Pack to install. However, I think you misunderstood Mr Mallik's question, since there are Win95 Service Pack 1's available for both English and Pan-European English.

If you check out Microsoft's web pages at [www.microsoft.com/windows/software/servpak1/sphome.htm](http://www.microsoft.com/windows/software/servpak1/sphome.htm) you will see advice like: "Do not install the Service Pack 1 Update English version on the English Pan European version of Windows 95 or any other non-English version of Windows 95".

This is not as clear as it might be. Suppose you have a machine purchased in Britain, running Win95 with all the messages and so on appearing in English. You might go for the English version, especially as it is not uncommon for Britain (wrongly) to be classified separately from the rest of Europe. Also, maybe your machine was purchased from an international, perhaps US-owned company. Can you be sure they will have given you the European version of the software rather than American?

Or, you might go for the English Pan-European version. But look at the sentence above closely, especially the use of the word "other". This seems to imply that the English Pan-European version is a non-English version, in which case maybe you shouldn't go for this one if all messages appear in English.

Matters are further confused if you look for more information about the English Pan-European version. If you follow the links from the above URL, you end up at [www.microsoft.com/windows/software/localize/pan.htm](http://www.microsoft.com/windows/software/localize/pan.htm). This page contains comments such as: "Note: In order to use these components, you must be running the Pan-European version of Windows 95". There is no mention of English Pan-European here. None of this seems designed to reassure the unsure user.

I think the question of how to identify for sure which language version of Win95 you are running is a

good one, and one to which I would also like to know the answer!

Mark Pack

**A** My apologies to Mr Mallik if indeed I did misunderstand his original question. This poser set me to thinking and asking around, but to date I have been unable to come up with the definitive answer. Time, therefore, to throw it open to you readers:

- Can anyone out there shed any light on this question? How do we determine exactly which language version of Win95 we are running and which version of Service Pack 1 is applicable in each case? Answers to the usual email address, please [see "PCW Contacts", p318].

**Q** In your December column, you mentioned virus hoaxes and wrote that it is not possible to invoke any sort of virus by opening an email message; yet your colleague, Brian Clegg, wrote in his column [Business Matters]: "I received a document by email and dropped it onto my desktop. Before I could open it, all the bells and whistles went on my virus checker."

Two seemingly different views. Does it all depend on which software you use to open email? Or are you categorically stating that it is impossible to transmit a virus by email?

Liz Cook

**A** If you have a virus checker which is capable of detecting viruses in Word documents, or those buried in zip files, then it will, indeed, sound all the "bells & whistles" as soon as you try to move it or open it. It was the fact that Brian saved the infected attachment to a file that triggered this (some anti-virus packages can even detect the problem at the email server itself). However, there was no way that the virus could ever do anything by simply opening the email message which carried it. I am not saying that it is impossible to transmit viruses by email: quite the contrary. The growth of email, and the trend of sending spreadsheets and docs by email, has done more to increase the spread of viruses than anything else.

The point I was trying to make is that you can ignore the hoax messages which tell you that as soon as you open the

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## Questions & Answers (cont'd)

email message, you will invoke the virus: this isn't possible. You would have to actually open or otherwise execute the virus file *attached* to the message in order to trigger it. There is one caveat, however.

Those of you using Outlook are provided with the option to use Word as your email editor. Apart from the fact that it is too slow, cumbersome and resource hungry for such a simple task, it does potentially

leave you open to macro virus attacks. If you *must* use Word as your email editor, ensure you disable macros and run an effective anti-virus package like Trend's PC-Cillin. Better still, avoid Word as an email editor and you won't have the problem. Does this clarify things? ■

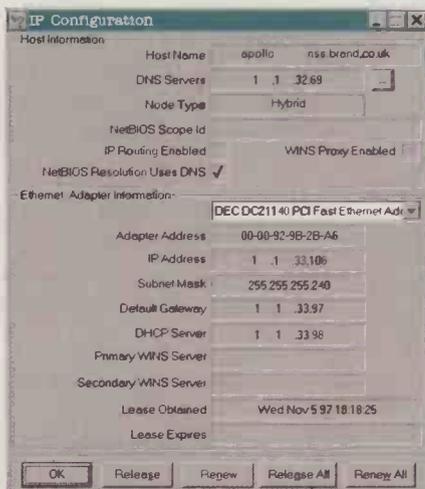


Fig 2 Running the IP Configuration utility under Windows 95

3. Select the IP Address tab and check the box marked "Obtain an IP Address Automatically" (Fig 1).
4. Select the DNS Configuration tab and remove the Domain Name and DNS Servers specified there.
5. Select the Gateway tab and remove any Default Gateway addresses defined there.
6. Select the WINS Configuration tab and check the box titled Use DHCP for WINS Resolution.
7. Click OK.
8. Reboot your machine.

Once your machine reboots, you should still be able to access the network and use your default gateways to access the Internet, since all the relevant information should now be provided by the DHCP Server. To check that this is happening, run WINIPCFG again. If you click on the More Info button you should see a display similar to that in Fig 2.

The DHCP Server address should match that of the server we created earlier, and entries for the DNS Servers, IP Address and Default Gateway would be filled in correctly based on the information we provided to that DHCP Server. Just for the heck of it, click on the Renew button and watch the Lease Obtained date and time change as a new lease is obtained.

## Book Review: *Introducing Windows 98 (Beta Release)*

Author Russell Borland  
 Publisher Microsoft Press  
 Price £18.49

Oh dear. As if it weren't bad enough that we are bombarded with beta copies of software from the likes of Microsoft, we now have to contend with beta books too! The thing even opens with a paragraph headed "Limitations", where it presents half a page of legal waffle along the lines of "information contained herein should not be interpreted to be a commitment on the part of Microsoft", and that "Microsoft cannot guarantee the accuracy of any information presented after the date of publication". The bottom line is that anyone who buys this book to find out more about the Win98 beta product may well be faced with the prospect of buying another version of the book when the final code is released. Oh well, *c'est la vie*.

Having got that out of the way, the book itself, as an introduction to the features of Windows 9x, is not at all bad (and is certainly reasonably priced). The opening chapter is a fairly predictable, but nevertheless useful, list of the new features. After that, the book takes you through the Windows 9x interface (including the new Active Desktop), Internet Explorer 4.0, NetShow 2.0 (network broadcasting), NetMeeting 2.0 (conferencing and application sharing), Windows Messaging (including Outlook Express) and web authoring (with FrontPad).

For those interested primarily in networking, I am afraid you get only about 40 pages out of the 440, and no real detail. A lot of it reads more like marketing literature than true reference or tutorial material. Unfortunately, the same level of coverage is given to printing, communications, mobile computing services and multimedia services.

The final section of the book is given over to hardware and software support, starting off in an easy-to-understand manner, with excellent coverage of the base system architecture followed by chapters on plug-and-play, display support, device support, language support, robustness, systems management and the TV Viewer. There is twice as much about the TV Viewer as there is about Systems Management, but a measly five pages on user profiles and system policies is simply not good enough.

If you don't already have a book entitled Introduction to Windows 95, this particular tome is a reasonable grounding in Win9x technology and provides a useful early look at all the new features to come in Windows 98, even if it lacks any real nitty-gritty detail. However, if you do have some Windows 95 books lying around, there is an awful lot of that information which will be duplicated here, so you might be better off reading a few in-depth magazine reviews to glean details of the new features in Win98. For anyone looking for coverage of networking topics, you should leave well alone.

■ My thanks to Computer Manuals (0121 706 6000) for keeping me supplied with review copies.



So there you are: a couple of heavy-duty tutorials in successive months. If you can work your way through them, you should have everything you need to configure a TCP/IP network with "self managing" addresses.

Of course, if all you have is a relatively static network with three or four IP addresses, then you don't have to worry about DHCP. In such cases, I certainly would not recommend implementing it just for the heck of it, unless you enjoy risking the wrath of the "God of The Blue Screen

Crash". However, if your IP addresses change on a regular basis, or, like me, you frequently add, remove or swap clients around on your network and you have more than a few IP addresses to manage, then DHCP could be just what you're looking for.

### PCW Contacts

Bob Walder can be contacted via the PCW office (p12) or email [networks@pcw.vnu.co.uk](mailto:networks@pcw.vnu.co.uk)

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# The healthy option

Don't suffer system crashes, software crises, backaches, headaches and RSI — follow Lynley Oram's advice for improved PC reliability and performance, as well as your personal comfort.

**O**f you want to get the best performance from your PC, it will help if you keep an eye on various aspects of your system setup. And it will do your personal performance no end of good if you make sure that you are comfortable when sitting at your PC. We're talking about ergonomics and the art of computer maintenance.

## Hard times

Let's start with your hard drive. Good housekeeping in this area is vital if you've been using your PC for a while. However, if you only got your PC last month, then cut the next section out and keep it for future reference — you can skip straight to the bit about ergonomics.

The hard drive, or disk, is important when it comes to getting the most out of your system. Most people think of the hard drive as merely a storage area for data and applications. But under Windows, the hard drive is not only a passive storage area, it acts as a swap space for data which Windows continually moves in and out of memory depending on system requirements.

Now may be the time to do a "clean-out" of your hard drive and get rid of all the rubbish accumulated there. The easiest way of freeing up space on your hard drive is to regularly delete any data files or applications which are no longer needed.

Some software programs come with their own uninstall procedure. Or, if you are using Windows 95, you can use the Add/Remove New Hardware wizard, which you will find in the Control Panel by double-clicking on the My Computer icon.

Unwanted files and folders can be removed using File Manager (in Win3.1) or Windows Explorer (in Win95). To search for files of a certain type, use the View menu or the Search/Find command. For example, type in \*.tif if you want to look for that type of graphic file, or \*.doc to locate all Word document files.

In particular, look out for graphics files (they are easily created and then forgotten) as they are hungry for disk space. Also look at the help files on your system — these

have the .hlp extension. Help files can occupy an enormous amount of disk space but only remove them if you don't need them any more. That goes for any "spring cleaning" you carry out.

Next, look for temporary files. These are files with the extension .tmp or .swp and begin with a tilde (~). In Windows 95, using the Windows Explorer, you will find these in the Windows folder nested in another folder called Temp. Temp files are like plaque on your teeth — you'll be surprised at how quickly they can build up. If you are using Win3.1, these must be deleted using DOS when Windows is not running.



Most temporary files are stored in the TEMP directory, which is identified in your AUTOEXEC.BAT file by the line:

```
SET TEMP = path
```

## Scandisk and defrag

How often do you run a scandisk or defrag your hard drive? I know these are as interesting as watching paint dry, but they should be used regularly if you want to keep your PC happy: the way that files are stored on a disk is complex and it can go wrong.

Imagine your hard drive is a library and the information stored on it is the books in that library. You'll be familiar with the index system which libraries use to help you find

the book you want; well, your hard drive has something similar to a library's card index. Located at the start of your hard drive is a File Allocation Table (FAT) which holds information about all the files on the hard disk. Without the FAT, MSDOS would not be able to access the data, even though the files themselves may be in perfect condition. This is like a book in the library being filed in the wrong place: no matter how accurate the index, it will be very hard to find it.

Occasionally, something goes wrong and the operating system (OS) loses track of files. This can be caused by an error in

your application software or by accidentally turning off your machine while a program is running. This is

The defragmenting tools in Windows 95 (left) can be run at the same time as other applications

In Windows 3.1 (below) they must be run from DOS



where scandisk and defrag come in handy. Both these facilities are supplied with MSDOS version 6.0 and upwards.

The first, scandisk, recovers and removes files which have become lost. The second, defrag, improves hard disk performance by defragmenting files or moving them into continuous blocks. It's rather like the librarian having a tidy-up of the shelves, and is recommended after a



To minimise screen flicker, you should adjust your monitor's refresh rate. To do this in Windows 95, right-click on the desktop, click on the Settings tab, and click on Advanced Properties

equipment suppliers. These allow the height of the screen to be adjusted, and it's important when evaluating such systems to ensure that they are strong and stable. Alternatively, try using various stable objects: this may be a good place to store back issues of *PCW*, for instance!

If your screen is too high and it's sitting on top of the system's desktop case, move the system case; there may be sufficient space beneath your desk. Alternatively, raise your chair and get a foot-rest.

### Refreshing change

Refresh rates is one area which just cannot be over-emphasised. Your computer is constantly redrawing the picture on your screen and if this is done fast enough, your eye won't detect any movement.

The speed at which the picture is redrawn is known as the refresh rate and is measured in the number of complete redraws per second, or hertz (Hz). If that isn't set high enough, and really it should be set at 75Hz or higher, then your eye may detect a flicker which can cause nausea and headaches. If you have the choice of interlaced or non-interlaced, go for the latter, as it draws a complete screen per refresh cycle.

In Windows 95, right-click on the desktop and go to Properties. In the Display Properties box, click on the Settings tab. Click on the Advanced Properties button. In the Adapter tab, there will be a drop-down menu called Refresh Rates and there should be a range of refresh rates available, although there may only be two options — Adapter Default and Optimal.

Thanks to plug-and-play, your PC, given the name of your monitor, will think it knows the best refresh rate. This is not always reliable, so if you're still not happy with your refresh rate even if it is set to optimal, you could try changing the monitor. In Advanced Properties click on the Monitor tab, hit Change and select Show All Devices. Here, you could select a type of monitor that you know will give you a good refresh rate: for example, an NEC Multisync 4FG will support a resolution of 1,024 x 768 at 75Hz non-interlaced.

bout of spring cleaning.

Under Windows 95, both of these are located in the Start Menu: go to Programs, Accessories, System Tools. Before DOS version 6.0 this kind of maintenance was carried out by "chkdsk". This command is still in DOS, but it is not as sophisticated as scandisk when it comes to recovering data.

Don't wait for something to go wrong before defragmenting your hard drive. It is a procedure that should be carried out regularly, otherwise the increased fragmentation will begin to have a dramatic effect and slow your system's performance.

Data is stored in a logical order on your hard drive, so the processor can access it as quickly as possible. Nevertheless, over time the data becomes fragmented. This means it is stored in several areas on the hard disk, although it will still be treated as one file. Because of this fragmentation, the processor has to hunt about for data and make more movements to get hold of the file. Your data is safe, but this is not a healthy state in which to leave your hard drive. Windows 3.1 users will need to type the command "defrag" at the C: prompt and select the full optimisation option.

### Are you sitting comfortably?

According to the dictionary, ergonomics is "the study of the relationship between humans and machinery". Lately it seems to have become a buzzword. But don't write it off as some trendy fad, because it isn't. Ergonomics has a direct bearing on your life, health and future.

The ideal workstation is: a swivel chair on five castors, with your feet flat on the floor and your arms at a 90-degree angle over the keyboard. If the desk is too high or, like me, you're too short to meet both of these requirements, the most simple

remedy is a foot-rest. Any pointing device should be within comfortable reach, and a document holder is recommended for touch-typing.

Opinion is divided on the best keyboard/mouse/trackball and there is a frightening number of so-called ergonomic products on the market. Any ergonomics consultant will insist on putting the individual first: in other words, go for what feels right for you. I find ergonomic keyboards, the curved kind that divide in the middle, very comfortable and easy on the wrists. The best advice is to try these devices before you buy.

Generally, make sure you take regular breaks from your screen, and at least use a wrist-rest if you do a lot of typing. You won't actually notice the benefits from all of this, and that's a good thing: the best way to avoid wrist and back pain in the future is to take precautions now.

### The eyes have it

You don't need reminding that your eyes are precious and you only get one pair. And because of the amount of time you spend in front of a screen, the monitor has a very important place in the ergonomics of the workplace.

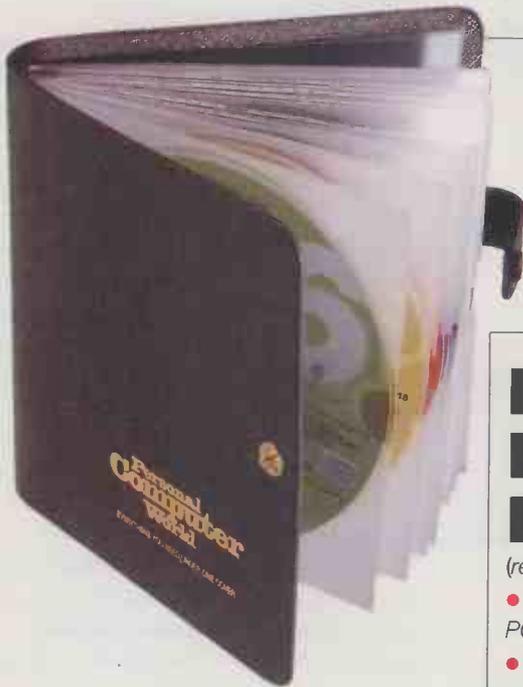
A monitor should have a stand which can tilt and swivel — it's rare these days to find one that doesn't. First, make sure your screen is positioned with a slightly upward tilt so that you are looking slightly down at the screen. Next, swivel the monitor about until you find a comfortable working position, one which minimises reflections on the screen from other light sources such as windows and overhead lighting.

If you are having trouble getting your monitor to the right height, you can get special platforms from a number of office

### PCW Contact

Lynley Oram welcomes feedback and suggestions from readers. Email her at [beginners@pcw.co.uk](mailto:beginners@pcw.co.uk)

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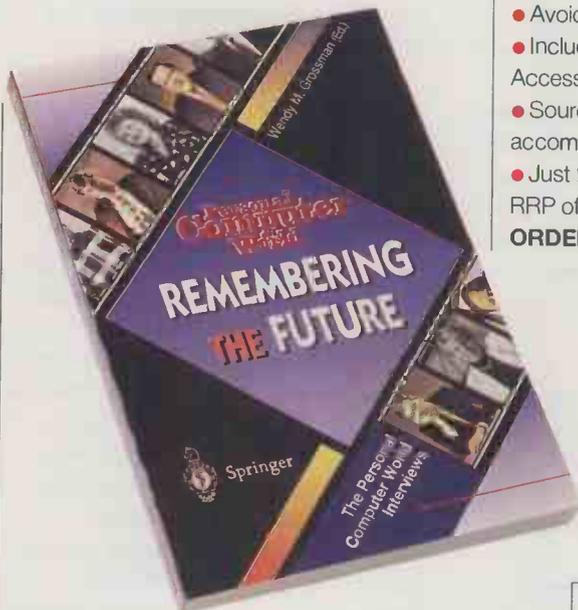
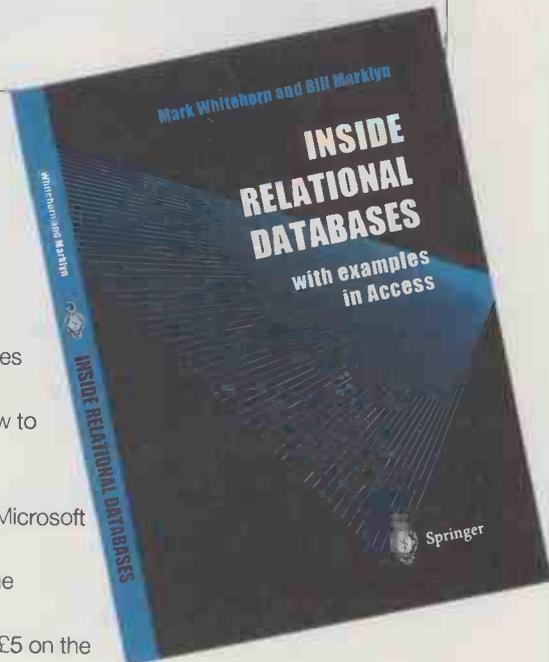
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(reviewed in PCW November, p329)

- Written by Mark Whitehorn, who writes PCW's Hands On Databases column.
- Explains everything you need to know to create efficient relational databases.
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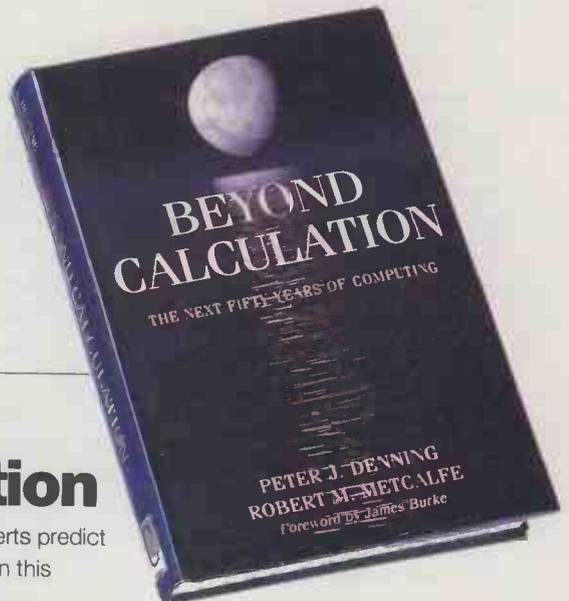
- Collected interviews from *Personal Computer World*, including Bill Gates, Michael Dell of Dell Computers and Intel's Andy Grove.
- £9.95 (inc P&P) — over 30 percent off the RRP of £14.95.

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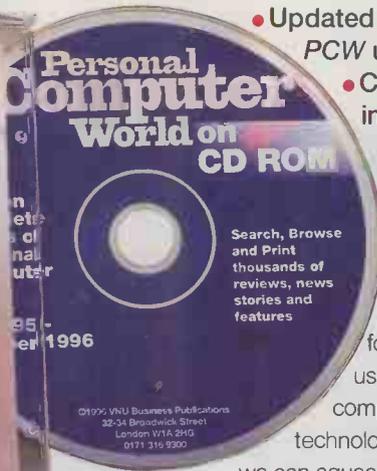
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# Tomb Raider 2

Personal  
Computer  
World  
Recommended

Lara Croft returns — globetrotting, meaner and more agile.

**L**ara Croft has been many things in the past year: from software's biggest star on the cover of *The Face*, to U2's playmate, to *FHM*'s cover girl in the form of "Lara" Rhona Mitra, and more. Tomb Raider 2 (TR2) returns us to what Ms Croft does best: running, exploring and shooting, while not wearing many clothes.

As the divine Ms C you are searching for the mystical dagger of Xian which, æons ago, belonged to an evil overlord. If the myth is true, then striking yourself with the dagger will give you supernatural powers. A sinister cult, "Fiama Nera", has sprung up around the dagger which is hidden in a vault in the overlord's ancient palace, waiting for the chosen one to release it with the right key.

Lara's search for the key takes her from the Great Wall of China to Venice, through a spot of deep-sea diving to exploring a sunken galleon, and on to Tibet and treasure!

Instead of lurching into the game unprepared, there is the option to hone your skills on a purpose-built assault course at Lara's stately mansion, before exploring the rest of Ms Croft's palatial residence. Our unfeasibly proportioned heroine talks you through the moves you need, as well as introducing some new ones. There are still the graceful somersaults and flying leaps of before, only now Lara can also climb walls. The controls seem a little more refined than before, although the handling of delicate moves still seems a little ponderous at times.

If you haven't played the original, now is your chance to practice the intricate moves you are going to need later. There's no point getting started if you don't know the basics: for example, not knowing how to back-flip while climbing walls in Venice will scupper any chance you may have of progressing.

TR1 was mostly confined to the interior of the temple which Lara had to explore, but this sequel is out in the open air. And along with mountainous terrain and deep-sea exploration, there are urban settings like the episode on the waterways of Venice. This is where Lara's other new skill comes in handy: she can drive anything from motorboats in Venice to skidoos on icy wastes.

The Venetian canals are particularly fun: you can wreak havoc on gondolas and



**Left**  
Lara Croft, the reason polygons were invented

gunmen alike, and explore the underground cisterns and their geographically-improbable waterfalls. Our heroine can't shoot from the motorboat but this is compensated for by the skidoo with side-mounted machine-guns which Lara uses while in Tibet.

TR2 is as demanding as it is machivellian and there are hernia-inducing moves to be made every other minute. Working out the timing is a relative cinch compared with finding out where to jump from/what to pull/what to push and when to duck and roll. To appreciate all those polygons and the speed with which they move, use the new feature of a swooping point of view around Lara to look around, below or above her.

Another change that makes a lot of difference to gameplay is the number of Uzipping goons you encounter. Compared to the solitary adventuring of the first game, TR2 is positively bustling with bad guys, Tibetan warrior monks and wild animals.

There are those who say this increased body count is an attempt by Eidos to net those shoot-em-up fans who wouldn't otherwise go for a more thoughtful game,



**Below**  
Feel free to wreak havoc and disrupt the gondoliers' trade

TR2 being as much about busting heads as scratching them. Of course, Lara's perfect polygonal pins, wafer-thin waist and a chest that would have puzzled Isaac Newton himself, certainly won't harm sales. If it took you months to complete Lara's first adventure, you'd better cancel those holidays — you could be stuck on this until the next millennium.

Paul Trueman

## PCW Details

Price £39.99

Contact Core Design 01332 297797

[www.eidos.com](http://www.eidos.com)

System Requirements Windows 95, 16Mb RAM, 4X CD-ROM, P90 (P133 recommended), DirectX 5.0-compatible SVGA graphics card, 16-bit sound card.

★★★★★

# Blade Runner

The gamester's cut. Will the cult film spawn a cult game, too?

**R**leased way back in 1982, Blade Runner, the film, met with indifference. But as with all cult successes, the reputation of the film has grown; so much so that Blade Runner, the game, is considered to be a going concern 15 years on.

Your character is rookie "Runner" Ray McCoy who must solve a series of cases in order to progress. The more cases you solve, the more of futuristic Los Angeles you get to see, flying in your patrol car between the LAPD precinct, your apartment and the replicant lowlife.

Blade Runner is on four CDs and a full installation will set your hard drive back a punitive 1.5Gb, although you can survive on the bare essentials with 170Mb. As you might expect from a game with four CDs, this is a vast software experience, with stunning graphics, ambient sound and speech, and



over 70 motion-captured characters, some of whom reprise their roles from the film. And here there's another treat: you can interact with the characters and visit rainy Chinatown or the angular Tyrell Corporation.

Blade Runner plays like the film. Nothing happens for long periods, yet never before has "nothing" happened with greater aplomb: the ambience, visuals and music are faithful to the film, and the plot can take

Sharpen up your skills and rout those replicant lowlifes

numerous alternate routes. Help the replicants if you wish, choosing what evidence to share with fellow cops, or bump off unhelpful witnesses and get a reputation as a bent cop. If you have a robust PC and days to spare, this is a game to go for.

Paul Trueman

## PCW Details

Price £44.99

Contact Virgin Interactive 0171 368 2255  
[www.westwood.com](http://www.westwood.com)

**System Requirements** Windows 95/Windows NT 4.0, P90 (P133 recommended), 16Mb RAM, 2Mb graphics card with DirectX 5.0 drivers, 4X CD, 16-bit sound card, mouse.

★★★★

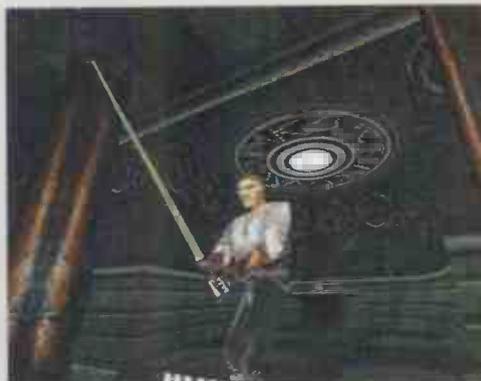
# Jedi Knight-Dark Forces II

Harness the Force: wield your Jedi light-sabre for good or evil.

**I**f you didn't know the Star Wars legend, it would be easy to dismiss Jedi Knight as just another Quake-a-like. The basic premise is simple: wander around a 3D world blasting virtually everything you see. Stormtroopers die and leave you their rifles, and you can pick up anything from a concussion rifle to a real light-sabre (every boy's dream!).

The sabres are different to those seen in early eighties' playgrounds as they really glow and, impressively, the graphics allow the light to be mapped to the movement of the blade. Ward off a blow, guard against the blast from your enemies' weapons and use it to kill them, too. That is, as long as you are mastering the lore of the Jedi. You must explore Kyle Katarn's past — in particular, the fate of his father.

Inevitably, there's a personal conflict to resolve. The Force (source of a Jedi's



strength, according to the Yoda) has both dark and light sides. Kyle's powers can follow one side or the other and there are Seven Dark Jedi who want to boost their own powers by raiding the Valley of the Souls, an ancient Jedi burial ground. The dark side, which you unlock by killing defenceless civilians, gives you tremendous destructive power, while the light side, the one you know you *ought* to follow, presents

The light from your sizzling light-sabre is mapped to the movement of the blade

more of a challenge.

Whichever side you choose, you can enjoy this game as a simple blast-em-up, especially if you choose to fight your friends using the multiplayer option, or as a serious extension to the Star Wars canon. Fight on, Jedi — and may the Force be with you!

John Sabine

## PCW Details

Price £44.99

Contact Virgin Interactive 0171 368 2255  
[www.lucasarts.com](http://www.lucasarts.com); [www.starwars.com](http://www.starwars.com)

**System Requirements** Windows 95, P90, 16Mb RAM (32Mb recommended), 2X CD-ROM drive (4X recommended), 33Mb hard disk space to install plus 20Mb swap file. SVGA graphics card, 16-bit sound card. Requires DirectX 5.0.

★★★★★

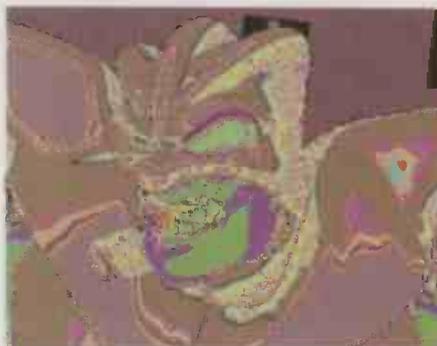
# Goosebumps

Get sucked into *Attack of the Mutant* — it's life as a comic strip.

**L**ooking for a game for your kids? Well, if they like comic books and fancy being pulled into the picture, then they might find this game exciting — but don't count on it. Although we reviewed the first *Goosebumps* game, *Escape from Horrorland*, a few months ago and were seriously impressed by it, *Attack of the Mutant* is lacking in many areas.

It is about a child, who is supposed to be the player, reading a comic on the school bus one morning. The bus comes to a stop. You get off the bus and suddenly, your surroundings turn into those of the comic — “*Attack of the Mutant*”.

The goal, according to the manual, is to “...join forces with the League of Good Guys to stop the Mutant from turning the world into a giant comic book.” Hmm... OK, so what does that mean? Not a great deal. Essentially, you just wander around a castle



picking up clues and trying to solve puzzles without really knowing why you are doing it.

It lacks the personal touch of *Escape from Horrorland*, where Lizzy would stop to have a chat with you and guide you in the right direction. You and Lizzy were mates in a funny kind of way, as you were helping her to find her lost family. In *Attack of the Mutant* you are solo, playing a nameless character trying to save the world from... a comic

The mutant menace will try to turn your world into a comic book

book. It's just not right. The animation is great, but the game isn't scary. *Goosebumps* is supposed to have you quaking in your boots.

If it's a thrilling, spooky little PC game you're after, stick with *Escape from Horrorland*. Your kids will thank you for it.

Etelka Clark

## POW Details

Price £29.99

Contact Microsoft 0345 002000  
[www.microsoft.com](http://www.microsoft.com)

**System Requirements** Windows 95/Windows NT 4.0, P75, 16Mb RAM, 25Mb hard disk space, SVGA graphics card, 16-bit sound card, CD-ROM.

★★

# Grand Theft Auto

Naughty, but nice: shocking, high-speed fun on four wheels.

**G**rand Theft Auto is the sort of lurid, violent, sinful software that every right-thinking person would do well to condemn and ensure their children are never allowed to play. If I could stop myself playing the damn thing for long enough, I'd be right with them.

You are the member of a gang struggling for supremacy in a massive sprawling metropolis. You are given orders by your bosses, beginning with lowly car hijackings and drug-dealing. If you meet with success — killing innocent people, violating traffic laws — you will be rewarded with better jobs and your legs won't get broken!

The original soundtrack is a pleasant surprise and the game is highly enjoyable. Although the city seems to have an excellent public transport system, it is advisable to “car-jack” a fast, sporty number if you don't want to look soft in



Reckless renegades running the streets

even think about using the street maps, such is the speed of some of the cars.

Despite its vicarious illegal thrills, *Grand Theft Auto* is basically about driving as recklessly but as stylishly as possible. It's unlawfully enjoyable.

Paul Trueman

front of your gang. Unless you have a “3DFX” card, you will have to settle for the “High-Colour” game, a riot of colours moving at extreme velocity. The overhead point-of-view swoops in and out of the action flawlessly, depending on what's happening below, and the speed at which you must drive ensures a giddy sensation after only 15 minutes of gameplay. Don't

## POW Details

Price £44.99

Contact SKS 01373 455999  
[www.bmginteractive.com](http://www.bmginteractive.com)

**System Requirements** DOS/Windows 95, 486DX4/100MHz, 16Mb RAM, 512Kb VESA-compatible SVGA graphics card, 16-bit sound card.

★★★★

# Brainteasers

## Quickie

Quickly, can you think of an anagram for MONEY-BAG?

## This Month's Prize Puzzle

This shouldn't be too difficult for most of you. Also, for the really smart ones, an analytical solution is possible. But don't worry if you can't manage that: I'm sure you'll be able to get the solution by number-crunching.

Secretary (to the boss): "Mr Johnson, I've shortlisted three applicants for the Stores Controller job, and I've just noticed something very unusual.

"If you take each of their birthdates as they are written — i.e. ddmmy — and

divide by your age, there is always a remainder that is equal to my age."

"That's a coincidence," said Mr Johnson. "What are their birthdates?"

"They are 13th August 1962, 17th November 1965, and 21st March 1961."

How old are Mr Johnson and his secretary, respectively? (Whole numbers of years, of course.)

Send your answers on a postcard or on the back of an empty, sealed envelope, to: PCW Prize Puzzle - February 1998

P.O. Box 99

Harrogate

N. Yorks HG2 0XJ

to arrive not later than 20th February 1998.

*Please do not send solutions on floppy*

disks or in envelopes. Good luck!

## Winner of November 1997 Prize Puzzle

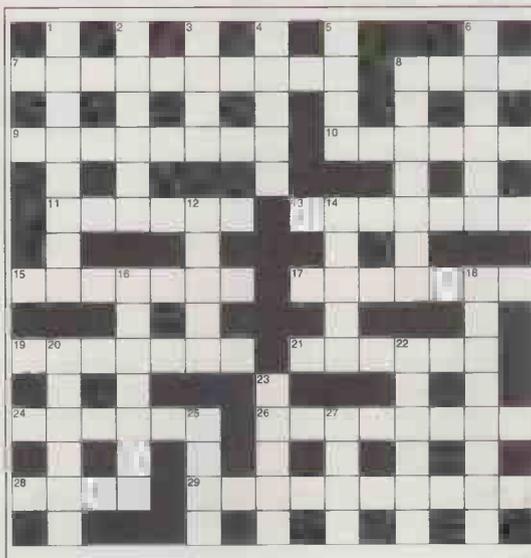
Our November problem, asking for the distance between Pueblo Primo and Pueblo Medio, seemed to be rather too easy for the 100 or so entries that we received.

The correct solution was that the distance is 15 miles, and the winning card, drawn at random, came from Scotland — Mr (we assume) W Jack of West Lothian. Congratulations, Mr Jack, your prize will be with you shortly.

Meanwhile, to all the others — keep trying, it could be your turn next.

JJ Clessa

# Prize Crossword No. 4

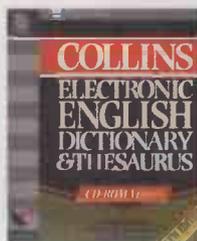


Haven't got a clue? Maybe you could do with the help of the Collins Electronic Dictionary & Thesaurus.

Each month, we're offering one lucky PCW reader the chance to win a copy. Send your completed crossword to PCW February Prize Crossword, VNU House, 32-34 Broadwick Street, London W1A 2HG, to arrive by 26th January 1998.

■ December's winner is Mr PJ McGrath of Huntingdon, Cambs.

• Please state clearly on your entry if you do not wish to receive promotional material from other companies.



- 4 Secret supply (5)
- 5 Rim (4)
- 6 Meeting programme (6)
- 8 Pleading (7)
- 12 See 3 down
- 14 Concepts (5)
- 16 Hesitated (7)
- 18 Gibberish (8)
- 20 Football team number (6)
- 22 Frozen spike (6)
- 23 Rent asunder (5)
- 25 Tresses (4)
- 27 Leave out (4)

## December Solutions

### Across

- 7 Video 8 Cell 9 Port 11 Sector 12 Explorer 13 Java 15 Bug 16 Crash 19 Scanner
- 20 Default 23 Pixel 25 OCR 26 Gate 28 Netscape 30 Serial 32 Wave 33 Slot 34 Table

### Down

- 1 Mime 2 Restrain 3 Revenge 4 Siple 5 Uproar 6 True 10 Trebles 14 ASCII 17 Spilt
- 18 Depress 21 Algerian 22 Somehow 24 Easter 27 Pause 29 Elan 31 Ally

## Across

- 7, 9, 13 and 15  
Fast phone line, in full (10, 8, 7, 7)
- 8 Program glitches (4)
- 9 See 7 across
- 10 See 24 across
- 11 Specialist technical shop (6)
- 13 See 7 across
- 15 See 7 across
- 17 Combining two files (7)
- 19 and 26  
Net's SP (7, 8)

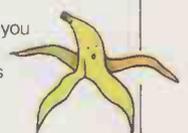
- 21 Give a name and place to data (6)  
24 and 10  
Web hunter? (6, 6)
- 26 See 19 across
- 28 Component that records onto tape (4)
- 29 Return a device to its original state (10)

## Down

- 1 Musical group (8)
- 2 Loom user (6)
- 3 and 12  
Junk (4-1-4)

## Crossword, PCW January '98

Did last month's crossword make you cross and confused? Sorry, it's all our fault — somehow, our wires got crossed when we were preparing it. Please accept our apologies. We print the correct crossword here, with all the right clues.



# Books

The Which? net guide is a cracking read and tells you all you need to know: *and you can win a copy*. Plus, Dilbert looks to the future.

## The Dilbert Future: Thriving on Stupidity in the 21st Century

■ We've probably all noticed the usual career path of famous cartoonists: they become well known, make tons of cash, and publish a book of their old cartoon strips and make even more money.

The likes of Jim Davis (Garfield) and Garry Trudeau (Doodles) have trodden this route, and now it's the turn of Scott Adams again, with his latest book, *The Dilbert Future*.

Mind you, the book isn't as bad as my cynicism. It's actually quite funny. Adams has managed to maintain his quirky but oh-so-true view of life in the office, with a bit of democracy, sex and technology thrown in for good measure. Interspersed throughout, of course, are the comic strips featuring the trials and tribulations of Dilbert

and his switched-on pet, Dogbert.

The book is based around his predictions for the future. Some are completely absurd. Prediction 29, for instance: "In the future, religious groups will get mad at me, thus boosting my book's sales." Or there's Prediction 12: "In the future, ISDN services will improve to the point where you can mention it in a crowd without generating laughter." His predictions make you laugh, but in that nervous way you do when you see someone slip on ice — it's humorous to watch, but the truth is, it's

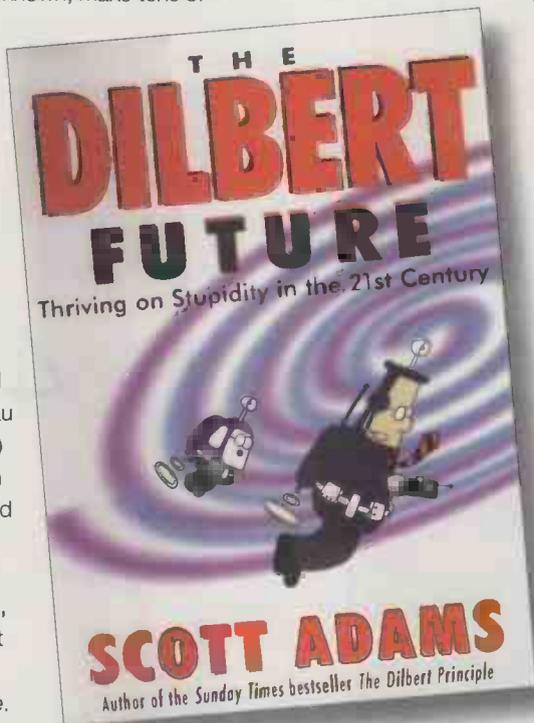
not supposed to be funny.

Adams also provides serious observations throughout the book which, perversely, allow you to relax a little after having found yourself agreeing with his dark and ironic views.

*The Dilbert Future* is a must-

read for anyone who works in an office setting, because it's funny and, alarmingly, so very true.

Dylan Armbrust



## ■ The Which? Guide to the Internet

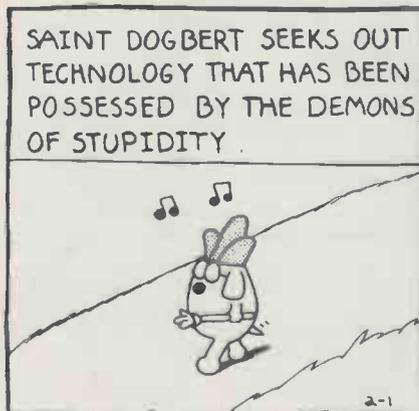
What with Hollywood featuring the internet at every turn, bookstores with whole shelves devoted to the subject and the broadsheets producing weekly online guides, there must now be fewer people unaware of the net than there are Brits in the Chelsea First XI. Then again, the Which? team is the nation's most reliable consumer guide this side of Anne Robinson on Watchdog.

Most internet guides are content to laboriously explain why the global network started and which buttons to press to install Netscape's plug-ins. But *The Which? Guide to the Internet* is more concerned with what this all means for consumers, whether or not they are first-time buyers.

This book covers the sort of topics that will be useful for the average internet consumer, and it's surprising that more

## Win a Which? Guide to the net

Which? Software has 30 copies of the *Which? Guide to the Internet* to give away to PCW readers. Simply send in your name and address on the back of a postcard or sealed envelope, and address it to PCW, Which? Guide to the Internet Competition, VNU House, 32-34 Broadwick Street, London W1A 2HG. The first 30 entries received will be sent a copy of the book by post.



## Top Ten Books

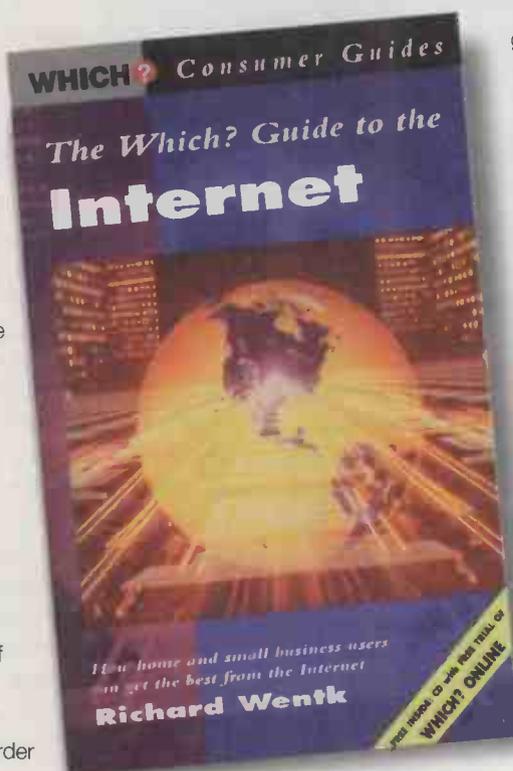
1	The Internet & World Wide Web: The Rough Guide 1998	Rough Guides	£5.00
2	C++ Programming Language, 3rd Edition	Addison-Wesley	£27.95
3	Java Examples in a Nutshell	O'Reilly	£14.95
4	Windows NT in a Nutshell	O'Reilly	£14.95
5	Java in a Nutshell, 2nd Edition	O'Reilly	£14.95
6	UML Distilled: Applying the Standard Object Modelling Language	Addison-Wesley	£23.95
7	Software Project Survival Guide	Microsoft Press	£22.49
8	Word Annoyances	O'Reilly	£21.95
9	Inside Microsoft SQL Server 6.5	Microsoft Press	£46.99
10	COM & DCOM	Wiley	£27.50

Prices include VAT on disks and CD-ROMs. List supplied by The PC Bookshop, 21 Sicilian Avenue, London WC1A 2QH. Telephone: 0171 831 0022. Fax: 0171 831 0443

writers aren't covering this area. For instance, most guides treat the choice of ISP and modem as *de-facto* choices already made by the user. Yet here we get a chance to see the differences and relative merits/drawbacks between raw connections and online services such as AOL, as well as a series of questions you should be asking support staff in order to get the best from your net connection.

Concentrating on cost effectiveness for both the home and business user, Richard Wentk's guide comprehensively explains the mechanics, advantages and pitfalls of email packages, newsgroups, netiquette and the constantly shifting sands of security concerns and bandwidth. What is remarkable is that the book never slips into technobabble or patronising explanations of the Back button. Instead it draws on illuminating and personal case studies and interesting net history, like the Church of Scientology/NewsGroup fracas, to get its point across.

The appendix is the book's mainstay, serving as a reference guide for more experienced users. Also included here is a brief introduction to HTML, technical information, and some handy reference books and sites. There are even up-to-date



guidelines about the new 56.6K modems and the validity of ISDN or satellite connections for business users, including speculative prices and advice on approaching web design companies.

This is one of the most useful internet guides around: packed with easy-to-read advice and some good case studies to ensure you get the best out of your time

online. A net guide

more concerned about your needs than those of your PC. A Which? Online trial CD is included in the price.

Rob Venes

## FOW Details

**The Dilbert Future: Thriving on Stupidity in the 21st Century**

Author Scott Adams

Publisher Boxtree

ISBN 0-7522-1118-8

Price £12.99

★★★

**The Which? Guide to the Internet**

Author Richard Wentk

Publisher Which?

ISBN 0-85202-683-8

Price £9.99

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# What's on the **Agenda?**

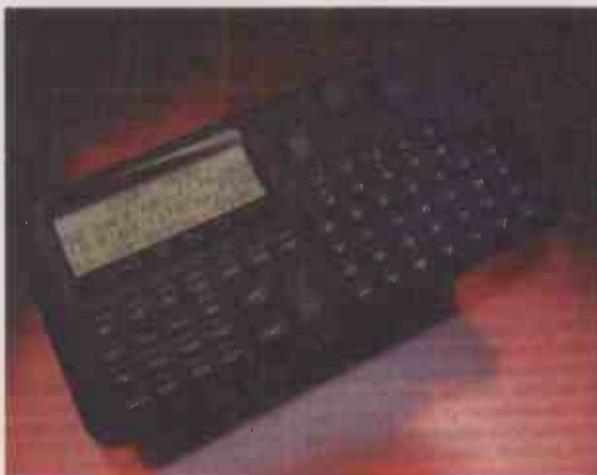
The Microwriter keyboard offered the unique opportunity of touch-typing on a PDA. Today, only Psion comes close to it.

**T**he Microwriter Agenda was born to good parents: one was the product's designer, Cy Endfield, the other was respected city banker, Sir Mark Weinberg. But let's start with the Agenda's elder brother. Born in 1979, this machine was a big, ugly child that had few admirers. It was an organiser with no word-processing features but with one unique family trait — the Microwriter keyboard.

If you've never seen a Microwriter, let me explain. There are just five keys, arranged in an ergonomic pattern. You rest your fingers on the keys and each character is entered using a different combination of key presses, called chord keying. The manual suggested that the user imagine these combinations as describing the shape of the character. This strategy worked, and after a few days of practice most users could touch-type at reasonable speed by pressing the combinations. The first model was not a raging success, so the company produced an add-on chord-key keypad for the then phenomenally successful BBC Micro. Meanwhile, in the background, the team worked on a new design.

In 1989, the new-born Agenda arrived in the world. The full course of cosmetic surgery had worked and we had a sleek, rather sexy matt-black handheld unit which promptly won the UK Design of the Year award. It was about the size of a modern-day Psion, but deeper and heavier. It continued the family name by using a unique five-fingered Microwriter keyboard, but added a tiny keyboard and a numeric keypad for financial work.

The Agenda sported an LCD screen which could display 20 characters across and four lines down. It sounds cramped and small now, but back in the digital watch inspired days of the early nineties, this was good visual acreage. The basic model was supplied with 32 or 64Kb of main system RAM which could be expanded by memory cartridges. The processor powering this machine remains, unfortunately, a mystery: I've tried to find out by looking on the



casing of my old model but cannot see any clues. However, I can reveal that the rival pocket computers of the time were running 8088s, the 8-bit processor that made Intel rich and drove a million IBM PCs.

Rival PDAs (Personal Digital Assistant) of the time included Atari's long-forgotten Portfolio, and the Poquet. But although these units would not have looked odd to today's user and had a traditional-style keyboard, they lacked the unique Microwriter keyboard of the Agenda.

If you build up the touch-typing feature, you have to make sure that the software is up to the job. Agenda's built-in applications included a reasonable word processor (more of an editor by today's standards) which allowed basic text formatting, pagination and editing using Microwriter key strokes. Other utilities included a calculator, a diary and an address book. You could upgrade the calculator software to a sophisticated financial planner designed by Sir Mark himself. After a few months, the company launched a BASIC-style language that allowed programmers to fashion their very own Agenda utilities.

Unlike most PDAs, including today's crop of delights, the Agenda was pretty useful as a way of taking notes. I remember one computer journalist who would sit at the back of a press conference and take down everything he needed by twitching over the five-key pad. Being young and

easily impressed, I thought this a great idea and tried to do the same, but spent most of my time trying to recall the key combos and missed the crucial facts.

If you took the time to learn the key combinations, the Agenda had the distinction of being a PDA which would allow touch-typing: no crouching over the dull screen, just a few wiggles of the fingers and the words would flow.

The touch-typing business is a serious limitation in today's PDAs, and only Psion has got close to cracking it with the keyboard on its model 5.

Generally, the Agenda was a mixed success. As a unique, stylish accessory it was hard to beat. It was reasonably priced, had all the features you might want and could link up to any PC or Mac. Yet it still did not really catch on. After a year, just 12,000 units had been sold. Microwriter launched an add-on fax modem, but with its limited screen, composing a fax was a painful experience. It boosted the available software, but this didn't trigger massive sales. Chief designer Cy Endfield died in 1995, but the chord-keying dream lives on with Bellaire Electronics which supports the Agenda and develops new products.

In the end, the unique keyboard was the birth and death of the Agenda. Everyone talked about the keyboard and ignored the bigger achievements. Microwriter had launched a PDA which could accept touch-typing, had a full complement of good financial and text applications, linked to any standard desktop and could be expanded using the programming language.

I guess it was ahead of its time; now, we are used to the foibles of PDAs and put up with more than we realise. The Agenda was different from the norm and, like all such products, rather misunderstood. ■

Simon Collin

# Win an HP Pavilion PC

And to help you look good in print, HP is also giving away a fabulous DeskJet 690C colour printer, and is throwing in a 12-month email account with UUNET's-PIPEX Dial. It could be you!

One of PCW's New Year resolutions is to carry on giving our readers the chance to win great prizes every month. And this month, Hewlett-Packard is giving readers the chance to win a great first prize, an HP Pavilion 3120 PC, an HP DeskJet 690C printer and a free 12-month email account with UUNET's-PIPEX Dial.

The Pavilion 3120 is worth £1,199 (inc VAT) and comes with a 15in monitor, Intel 166MHz and MMX 166MHz processor, and built-in fast fax and data modems. It comes bundled with Microsoft Works for Windows 95, and educational and entertainment software including Infopedia by the Learning Company, FIFA 97 and SimCity 2000. 3D stereo speakers are also part of the package.

This PC is perfect for the home. Equipped with HP PhotoSmart imaging capability, you can develop and edit photographs and incorporate them into a wide range of documents.

HP Pavilion PC customers will receive 60 days' free software support on all pre-loaded software, including Microsoft's Windows 95.

The HP Pavilion 3120 works smoothly with other HP products including scanners, digital cameras and printers like the HP DeskJet 690C, worth £205 (inc VAT). This beautiful colour printer produces photographic-quality images by using the optional photo cartridge and HP photo paper. The DeskJet 690C can print up to 5 pages per minute for black and 1.7 pages per minute for colour. It also includes Photo Resolution Enhancement technology (Photo-REt).

● Two runners-up will win a 12-month email account with UUNET's-PIPEX Dial.

■ To enter this competition, just answer the following question:

*How many days of free software support do customers get when buying an HP Pavilion 3120?*

A 40    B 50    C 60



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## Rules of entry

The competition is open to readers of *Personal Computer World*, except for employees (and their families) of VNU Business Publications and Hewlett-Packard. The Editor of *Personal Computer World* is the sole judge of the competition and his decision is final. No cash alternative is available in lieu of prizes.

## How to enter the competition

- Via our web site at [www.pcw.co.uk](http://www.pcw.co.uk).
- Or write your name, address and answer on a postcard, along with your daytime phone number. Mark your card with the correct name of the competition and send it to: PCW/February Competition, P.O. Box 191, Woking, Surrey GU21 1FT. Entries must arrive by Friday 27th February 1998.
- Please state clearly on your entry if you do not wish to receive promotional material from other companies.

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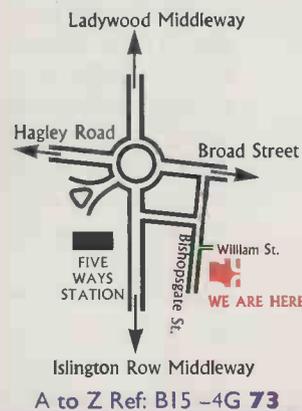
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**PC Format, Best Value Award, (dan Home Plus), June '96**

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WHAT PC, Best Buy (dan Home Plus/133), Aug '96

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  - Enlarge any area of the TV picture you select.

**WARRANTY:** All Dan systems and components come with one year back-to-base parts/labour guarantee and Lifetime Hotline telephone support. Optional next-working-day (subject to customer location and time of call) response ON-SITE MAINTENANCE (£42 for the first year - UK mainland only). **14 DAY MONEY BACK GUARANTEE IF NOT SATISFIED** (excludes printers & software). All software supplied on original media, except for Works which is only pre-installed on the hard disk. Dan Technology systems prices and specifications are subject to change without notice. All sales are subject to Dan Technology Ltd terms and conditions, a copy of which may be obtained on request. Dan Technology is a trademark of Dan Technology Ltd which is a subsidiary of Dan Technology Holdings Ltd. Intel Inside logo & Pentium are registered trademarks and MMX is a trademark of the Intel Corporation. All trademarks acknowledged.

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**Business  
PCs, Workstations  
and File Servers**

“ Dan has a deserved reputation for producing well specified, solidly built machines. ”

Personal Computer World (PCW), March '97

All prices exclude delivery & VAT @ 17.5%. E. & O.E.

In Dan Technology's ten years of supplying built-to-order computers direct to UK end users, we have earned universal acclaim for our "quality first" approach. Our products enjoy an unrivalled reputation for solid reliability, class-leading performance and great value for money.

Our customer service has won accolades too, with readers' awards this year from no fewer than four of the country's leading magazines — PCW, PC Magazine, What PC? and PC Pro. And when two of them asked their readers if they'd buy again from the same vendor, both found that Dan has the nation's most satisfied customers.

So if you care about quality as well as price, look at Dan's range. We think you'll like what you see.

**NEW**

**dantum**

Entry-level Pentium® Processor System

- 16MB EDO RAM
- Choice of Hard Disk Drive
- Intel Pentium® Processor w/MMX™
- 512KB Pipeline Burst Cache Memory
- 2MB EDO RAM/64-bit Video Card
- 14" Super VGA L/R N/I Monitor
- 24MAX EIDE CD-ROM
- Free Slots: 2 PCi, 1 PCi or ISA & 2 ISA
- Fast EIDE PCi HDD Controller
- 1.44MB Floppy Disk Drive
- Desktop Case w/200W PSU
- Win 95 UK Keyboard
- Windows 95 or Win 3.11
- 1 Parallel & 2 Fast Serial Ports
- Microsoft IntelliMouse™
- MS Works Suite, Quicken 6SE



**dantum II**

Classic Pentium II® Processor System

- 32MB SDRAM RAM
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- Intel Pentium II® Processor with 512KB Cache Memory
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- Win 95 UK Keyboard
- Windows 95
- 1 Parallel & 2 Fast Serial Ports
- Microsoft IntelliMouse™
- MS Works Suite & Quicken 6SE



**dantum II WS**

Dual Pentium® II WORKSTATION

- 64MB SDRAM
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- Iomega 100MB ZIP Drive + 1 cart.
- 8MB Xpert@work AGP Video Card
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- 56KBPS VoiceFAX/Modem (UK only)
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- Dual Port SCSI Controller (Ultra & Wide)
- Free Slots: 1 PCi or ISA & 2 ISA
- 1.44MB Floppy Disk Drive
- Midi Tower Case w/200W PSU
- Windows NT Workstation
- 1 Parallel, 2 Serial & 2 USB Ports
- MS IntelliMouse™, Win95 UK Keyboard
- MS Works Suite, Quicken 6SE



Pentium Processor	166MMX	200MMX	233MMX
1.2GB	£ 639	£ 718	£ 786
2.1GB	£ 662	£ 741	£ 809
3.2GB	£ 683	£ 762	£ 830
4.3GB	£ 699	£ 778	£ 846
5.2GB	£ 731	£ 810	£ 878
2.10GB	£ 886	£ 965	£ 1033
4.10GB	£ 1091	£ 1170	£ 1238

Pentium II	233MHz	266MHz	300MHz
2.1GB	£ 1006	£ 1202	£ 1366
3.2GB	£ 1027	£ 1223	£ 1387
4.3GB	£ 1043	£ 1239	£ 1403
5.2GB	£ 1075	£ 1271	£ 1435
6.4GB	£ 1111	£ 1307	£ 1471
2.10GB	£ 1230	£ 1426	£ 1590
4.10GB	£ 1435	£ 1631	£ 1795

single Pentium II	233MHz	266MHz	300MHz
6.4GB UDMA EIDE	£ 1941	£ 2137	£ 2301
4.1GB WIDE SCSI	£ 2090	£ 2286	£ 2450
9.0GB WIDE SCSI	£ 2355	£ 2551	£ 2715

4MB ATi Xpert@work upgrade £ 61  
16bit Soundcard & Speakers £ 26

ATi TV & Teletext Card £ 58  
16bit Soundcard & Speakers £ 26

As above with 2 CPUs installed as standard

dual Pentium II	233MHz	266MHz	300MHz
6.4GB UDMA EIDE	£ 2163	£ 2555	£ 2883
4.1GB WIDE SCSI	£ 2312	£ 2704	£ 3032
9.0GB WIDE SCSI	£ 2577	£ 2969	£ 3297

**Delivery** cost to most of UK for one system is £15.

Call for low cost upgrade to Office 97 & Office 97 Pro



**Network Workstations**



All dan PCs can be used as workstations by adding a network card. The most popular card is the 16-bit Ethernet Novell NE2000 compatible. However, the 3COM 509 or the PCi card can give higher performance.

Example of Workstations:

**Entry level Station**  
dantum /166MMX /W  
dantum /166MMX £ 639  
16-bit Ethernet card £ 19  
Workstation price £ 658

**Best Seller Station**  
dantum II/233MHz /W  
dantum II/233MHz £ 1006  
3COM509 card £ 55  
Workstation price £ 1061

**Power User Station**  
dantum II WS /W  
dantum II WS/266MHz £ 1941  
PCi Ethernet card £ 62  
Workstation price £ 2003



Dan Desktop Case with 15" Monitor



"When it comes to customer satisfaction, Dan is still top of the desktop PC vendors. For the fifth year in a row it has won the Overall Satisfaction category. The first year Dan won, cynics said that the company was small so customer service was easy, and that as it grew standards would fall. But five years on, Dan is still growing and still at the top... Dan can truly be said to be the best organisation at delivering excellence in customer satisfaction." PC Magazine, August 1997  
Service & Reliability 1997 Reader Survey



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“ One company has become synonymous with servers and that is dan, which has a wide range of options to suit many different network needs. ”

Winner & Runner-up of Network Servers Category, Readers Survey - Direct Hits 1994, 95, 96 & 97, PC Direct, June '96

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We understand that your business will depend on your network; no one is more reliable than Dan with its numerous magazine and reader awards, including being the winner and runner-up in the Server category of PC Direct's Reader survey for the last 4 years.

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## dantum Server

Award Winning Fileservers

- 64MB SDRAM
- Choice of Ultra DMA HDD from table
- Intel Pentium® Processor with MMX™
- Intel TX Chipset
- 512KB Pipeline Burst Cache Memory
- 2MB EDO RAM 64-bit Video Card
- 14" Monochrome VGA Monitor
- 24MAX Speed EIDE CD-ROM
- 32-bit PCI Network Card (3COM900)
- Fast EIDE PCI HDD or Adaptec AHA-2940 PCI SCSI Controller
- Free Slots: 3 PCI, 1 PCI or ISA & 1 ISA (SCSI systems have one PCI slot less)
- 1.44MB Floppy Disk Drive
- Full Size Tower Case w/250W PSU
- Win 95 UK Keyboard
- Windows 95 or Win 3.11
- 1 Parallel & 2 Fast Serial Ports
- Microsoft IntelliMouse™



## dantum II Server

Pentium II® Processor System

- 64MB SDRAM
- Choice of Ultra DMA HDD from table
- Intel Pentium®II Processor
- with 512KB Cache Memory
- Intel LX Chipset
- 2MB EDO RAM 64-bit Video Card
- 14" Super VGA L/R N/I Monitor
- 24MAX Speed EIDE CD-ROM
- 32-bit PCI Network Card (3COM900)
- Fast EIDE PCI HDD or Adaptec AHA-2940 PCI SCSI Controller
- Free Slots: 1 PCI, 1 PCI or ISA & 1 ISA (SCSI systems have one PCI slot less)
- 1.44MB Floppy Disk Drive
- Full Size Tower Case w/250W PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Win 95 UK Keyboard
- Windows 95 or NT (at extra cost)
- Microsoft IntelliMouse™



**NEW**

## dantum II Duo Server

DUAL Pentium II® Processor System

- 64MB SDRAM
- Choice of Wide SCSI HDD
- Choice of single or dual Intel Pentium II® Processor with 512KB Cache Memory
- Intel LX Chipset
- 2MB EDO RAM 64-bit Video Card
- 14" Super VGA L/R N/I Monitor
- 24MAX Speed SCSI CD-ROM
- 32-bit PCI Network Card (3COM900)
- Dual Port SCSI Controller (Ultra & Wide)
- Free Slots: 1 PCI, 1 PCI or ISA & 2 ISA
- 1.44MB Floppy Disk Drive
- Full Size Tower Case w/250W PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Win 95 UK Keyboard
- Windows NT Server (5 user licence)
- Microsoft IntelliMouse™

Pentium Processor	166MHz	200MHz	233MHz
3.2GB	£ 860	£ 939	£1007
5.2GB	£ 908	£ 987	£1055
2.1GB SCSI	£1063	£1142	£1210
4.1GB SCSI	£1268	£1347	£1415

pentium II	233MHz	266MHz	300MHz
3.2GB	£1060	£1256	£1420
4.3GB	£1076	£1272	£1436
5.2GB	£1108	£1304	£1468
6.4GB	£1144	£1340	£1504

single pentium II	233MHz	266MHz	300MHz
4.1GB WIDE SCSI	£2109	£2305	£2469
9.0GB WIDE SCSI	£2374	£2570	£2734

As above with 2 CPUs installed as standard

dual pentium II	233MHz	266MHz	300MHz
4.1GB WIDE SCSI	£2331	£2723	£3051
9.0GB WIDE SCSI	£2596	£2988	£3316

For Novell Netware File Servers: you must upgrade the EIDE CD-ROM to SCSI add £ 33 (plus £ 110 for SCSI controller if needed - Adaptec AHA 2920)

Call for Windows NT WS Upgrade from Windows 95



## Network Upgrades

### Miscellaneous

+32MB SDRAM Memory Upgrade	£ 61
14" Colour Monitor from 14" Mono	£ 48
15" Colour Monitor from 14" SVGA	£ 43

### Uninterruptible Power Supplies - UPS

600VA UPS Line Interactive (Fiskars)	£ 278
800VA UPS ON-Line (Fiskars)	£ 529
1000VA UPS Line Interactive (Fiskars)	£ 438

### Network Cards

16-Bit Network Card Ethernet (Novell NE2000 Compatible - Thin Ethernet & Twisted Pair)	£ 19
16-Bit Network Card Ethernet (3COM509)	£ 55
32-bit PCI Ethernet Card (3COM900)	£ 62
32-bit PCI 100Mbps base-T Ethernet Card (3COM905)	£ 52
32-bit PCI Intel Express Pro 100UTP Card	£ 49

### Network 10-Base-T Hubs

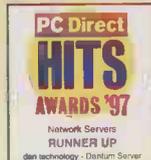
8 Port 10 base-T Mini Ethernet Hub	£ 35
16 Port 10 base-T Mini Ethernet Hub	£ 102

### Tape Streamers for Servers

(Controller, Tapes & Backup Software not included)	
2GB (4GB compressed) DAT Streamer	£ 465
4GB (8GB compressed) DAT Streamer	£ 606
12GB (24GB compressed) DAT Streamer	£ 837

**4 YEARS**

Winner & Runner-up of Network Servers Category, Readers Survey - Direct Hits 1994, 95, 96 & 97



pentium II



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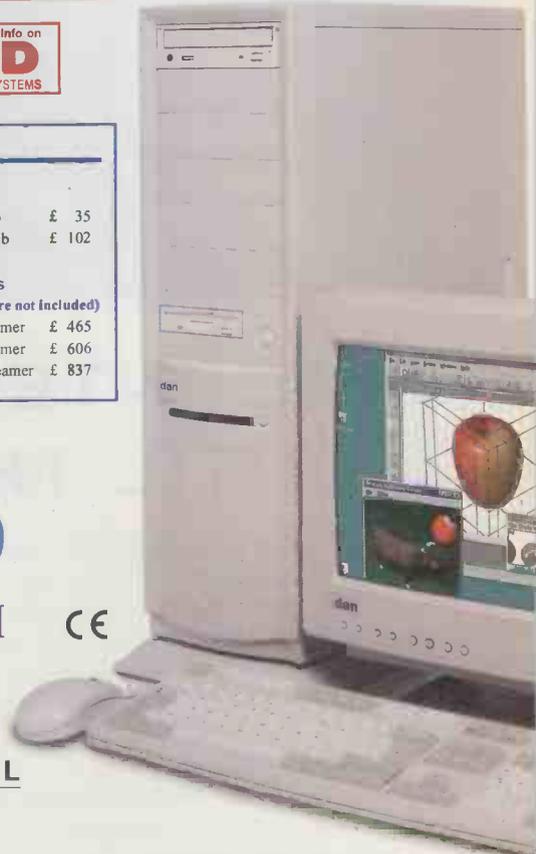
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# WE INTERROGATE PRODUCTS UNTIL THEY'RE CERTIFIABLE.

It's the toughness of VNU European Labs that gives Personal Computer World the edge over its competitors. Because when we get a product behind closed doors, we have ways of making it talk.

Our testing facility is Europe's most advanced, which along with Amsterdam, Brussels, Milan and Madrid forms part of our multi-million pound network.

It can evaluate every component needed by the modern personal computer user: desktop PCs, notebooks, printers and CD-ROMS, as well as an ever increasing multitude of software.

First a product is tortuously performance tested

using NSTL benchtests – the definitive standard for independent benchmarking.

Then it's our journalists' turn, stopping at nothing to get the information you require. Under the supervision of our technical experts, they question how a product will perform in real life situations, until they have all the answers.

What emerges is a product which is well and truly certifiable and a product review which, like the lab tests, is brutally honest.

So as a reader, you know that whatever you're going to put a product through, it's already been through hell and back with us.





## Memory



### 72-pin Modules

4MB Memory Module with Parity	£ 15 ( 18)
4MB Memory Module EDORAM	£ 11 ( 13)
8MB Memory Module with Parity	£ 30 ( 36)
8MB Memory Module EDORAM	£ 13 ( 16)
16MB Memory Module with Parity	£ 47 ( 56)
16MB Memory Module EDORAM	£ 25 ( 30)
32MB Memory Module EDORAM	£ 50 ( 59)

### 30-pin Modules

1MB Memory Module with Parity	£ 7 ( 9)
4MB Memory Module with Parity	£ 11 ( 13)

### 168-pin Modules

16MB Memory Module SDRAM	£ 30 ( 36)
32MB Memory Module SDRAM	£ 59 ( 70)

**RAM Prices are subject to change. Call for latest prices.**

## Video Cards



ATI PCI 64-bit 2MB EDO RAM Video Card	£ 23 ( 28)
ATI 3D Charger PCI 2MB Video Card + 2games	£ 32 ( 38)
ATI Xpert@Work PCI 4MB SGRAM Video Card	£ 82 ( 97)
ATI AGP Xpert@Work PCI 4MB SGRAM Video Card	£ 89 ( 105)
ATI Xpert@Work PCI 8MB SGRAM Video Card	£ 109 ( 129)
Matrox Mystique 220 PCI 4MB SGRAM Video Card	£ 79 ( 93)
Matrox Mystique 220 PCI 8MB SGRAM Video Card	£ 118 ( 139)
Matrox Millennium II PCI 4MB WRAM Video Card	£ 114 ( 134)
Matrox AGP Millennium II PCI 4MB Video Card	£ 115 ( 136)
Matrox Millennium II PCI 8MB WRAM Video Card	£ 194 ( 228)
Matrox Rainbow Runner Studio	£ 135 ( 159)
Diamond 3D Monster Accelerator Card	£ 98 ( 116)

## The Company



**Tel: 0181 830 2492**

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**Opening Hours: Mon-Fri 10am-6pm**

## Hard Disk Drives



1.2 GB EIDE	£ 82 ( 97)
1.6 GB EIDE	£ 96 ( 113)
2.0 GB EIDE	£ 104 ( 123)
2.5 GB EIDE	£ 116 ( 137)
3.2 GB EIDE	£ 124 ( 146)
4.0 GB EIDE	£ 140 ( 165)
5.2 GB EIDE	£ 170 ( 200)
6.4 GB EIDE	£ 205 ( 241)
2.1 GB SCSI	£ 136 ( 160)
4.0 GB SCSI	£ 333 ( 392)
9.0 GB SCSI	£ 591 ( 695)
2.1 GB Wide SCSI	£ 263 ( 310)
4.0 GB Wide SCSI	£ 348 ( 409)

**"The dp Assurance" - All dp hard drives are supplied complete with 3.5" to 5.25" conversion kits, drive and screws. A dual EIDE ribbon cable can also be supplied at an additional cost of £ 7 (£ 8 inc. vat).**

HDDs greater than 525MB require systems with LBA BIOS or the use of a controller like the VESA Local BUS Promise 2300Plus.

Adaptec PCI 2920 SCSI controller	£ 105 ( 124)
Adaptec PCI 2940 SCSI controller	£ 184 ( 217)
Adaptec PCI 2940 UW SCSI controller	£ 209 ( 246)
Promise VESA 2300plus EIDE controller	£ 32 ( 38)

## Network Products



ISA 16-bit Ethernet Combo Network Card	£ 18 ( 22)
ISA 32-bit 3COM 509 Combo Network Card	£ 53 ( 63)
EISA 32-bit 3COM 592 Network Card	£ Call (Call)
PCI 32-bit 3COM 905 Base-T Network Card	£ 50 ( 59)
PCI 32-bit 3COM 900 Combo Network Card	£ 60 ( 71)
PCI 32-bit Cogent EM960C Network Card	£ Call (Call)
PCI 32-bit 4-port Cogent Network Card	£ 374 ( 440)
8-port 10 base-T mini Ethernet Hub	£ 33 ( 39)
16-port 10 base-T mini Ethernet Hub	£ 98 ( 116)

## Multimedia Devices



24max Speed IDE CD-ROM	£ 51 ( 60)
16max Speed IDE CD-ROM	£ 54 ( 64)
24x Speed SCSI CD-ROM	£ 83 ( 98)
Yamaha CDR400t CD Writer	£ Call (Call)
Sound Blaster 16	£ 18 ( 22)
Sound Blaster AWE 64 SE (OEM)	£ 49 ( 58)
Sound Blaster AWE 64 Gold	£ 115 ( 136)
dp Hi-Fi Power Speakers (150W PMPO)	£ 16 ( 19)
Yamaha YST M15 Speakers	£ 37 ( 44)
Yamaha YST M15 Spkrs + MSW10 Subwoofer	£ 93 ( 110)

## New Product Info



dp Midi Tower Case with 200W PSU	£ 42 ( 51)
----------------------------------	------------

*supports 3 external (front loading) 5.25" drive bays,  
2 external 3.5" and 1 internal 3.5" drive bays.*

## CPUs/Motherboards



### CPUs

AMD K6-200MHz	£ 120 ( 141)
AMD K6-233MHz	£ 171 ( 201)
Pentium 166MHz w/MMX	£ 86 ( 102)
Pentium 200MHz w/MMX	£ 162 ( 191)
Pentium 233MHz w/MMX	£ 227 ( 267)
Pentium II 233MHz	£ 214 ( 252)
Pentium II 266MHz	£ 403 ( 474)
Pentium II 300MHz	£ 560 ( 658)

### Motherboards

PCI Pentium VX w/512K Pipeline Cache	£ 67 ( 79)
PCI AT Pentium TX w/512K Pipeline Cache	£ 83 ( 98)
PCI ATX Pentium TX w/512K Pipeline Cache	£ 109 ( 129)
PCI PCI Pentium II LX	£ 123 ( 145)
PCI Dual Pentium II LX w/AHA-2940 SCSI Cont.	£ 287 ( 338)

## Backup Devices



2GB DAT Tape Streamer	£ 415 ( 488)
2GB (4GB w/compression) DAT Tape Streamer	£ 448 ( 527)
4GB (8GB w/compression) DAT Tape Streamer	£ 584 ( 687)
Seagate Tape Stor 8000 (IDE or SCSI)	£ 268 ( 315)
IOMEGA 2GB Floppy Tape Streamer + tape	£ 78 ( 92)
IOMEGA 3200 Internal Tape Drive + tape	£ 123 ( 145)
IOMEGA 100MB ZIP Int. ATAPI Drive	£ 61 ( 72)
IOMEGA 100MB ZIP Cartridge	£ 10 ( 12)
IOMEGA 1GB JAZ Internal SCSI Drive	£ 208 ( 245)
IOMEGA 1GB JAZ Cartridge	£ 55 ( 65)

*Jaz Drives require SCSI Controller & backup software.*

Adaptec AHA-1520 SCSI 16-bit Controller for SCSI Tape Streamers & Jaz	£ 47 ( 56)
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## Fax/Modems



Internal 33.6KBPS Win Fax/Modem w/voice	£ 75 ( 89)
Internal 56.6KBPS Fax/Modem w/voice	£ 83 ( 98)
External 56.6KBPS Fax/Modem w/voice	£ 117 ( 138)
US Robotics Ext. 33.6KBPS Fax/Modem w/voice	£ 125 ( 147)
Sportster External 33.6KBPS Flash Fax/Modem	£ 137 ( 161)
Pace ISDN Terminal Adapter	£ 260 ( 306)

**All modems are BABT Approved**

## Input Devices



Cherry Keyboard for Windows 95	£ 15 ( 18)
Keytronics Keyboard for Windows 95	£ 16 ( 19)
Microsoft Natural Keyboard	£ 38 ( 45)
Microsoft IntelliMouse	£ 40 ( 47)
Joystick	£ 18 ( 22)

Prices in brackets include VAT @ 17.5% E.&O.E.

## Monitors



15" iiyama MF8515G SVGA Colour Monitor FST Tube, .28dot, 1600x1200 @ 85KHz	£ 212 ( 250)	21" iiyama 9221 SVGA Colour Monitor DiamondTron, .28ag, 1800x1440 @ 75KHz	£ 1026 ( 1206)
17" iiyama 8617T SVGA Colour Monitor FST Tube, .26dot, 1600x1200 @ 86KHz	£ 430 ( 506)	14" CTX SVGA Colour Monitor Shadow Mask, .28dot, 800x600 @ 72KHz	£ 116 ( 137)
17" iiyama 9017T SVGA Colour Monitor DiamondTron, .25ag, 1600x1200 @ 72KHz	£ 474 ( 557)	15" CTX SVGA FST Colour Monitor Shadow Mask, .28dot, 1024x768 @ 72KHz	£ 158 ( 186)
21" iiyama 9021T SVGA Colour Monitor DiamondTron, .30ag, 1600x1200 @ 92KHz	£ 981 ( 1153)	17" CTX 1785S FST SVGA Colour Monitor Shadow Mask, .28dot, 1280x1024 @ 65KHz	£ 348 ( 409)

## TV & Teletext Cards



### ATI 2MB EDO RAM Video Card and ISA Tuner Card



**£ 79 ( 94) TV Card only £ 56 ( 66)**

This two card combination enables your the PC to receive TV broadcast signals directly from an aerial or cable and display a live TV program on your standard VGA monitor. You can connect it to a VCR, laser disk player or camcorder to capture and save images or movie clips for use in other applications. In addition you can also display Teletext pages with Fasttext.

### Hauppauge PCI WinTV Card £ 82 ( 97)



The Hauppauge WinTV PCI board is a single slot Plug and Play card with a 125-channel TV tuner and video digitiser and Teletext Decoder. Capture pro-quality stills or motion video in AVI format. Fully compatible with wide range of PCI VGA cards.

# Personal Computer World Order form

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CARD NUMBER (below)	TOTAL
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.....	<input type="checkbox"/> COST OF EXTENDED WARRANTY <input type="checkbox"/> HELPLINE
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# No-nonsense Buyer's



The *PCW* Buyer's Guide is packed with sensible advice about what to buy and how to buy it safely. Buying direct through our pages can save you hundreds of pounds, but do stick to our 12-point guide to buying direct.

## Twelve rules for buying safely

1. Always use a *PCW* order form.
2. Keep the original advertisement.
3. Keep copies of all correspondence. If you speak on the phone make a note of to whom you spoke.
4. On large orders, obtain a written quotation.
5. If possible, pay with a personal credit card. All transactions over £100 should be covered by the card company's insurance scheme.
6. Does the price quoted include everything discussed? Is VAT extra?
7. Check how the supplier will deliver and whether or not delivery times are guaranteed.
8. Is free telephone technical support included in the price? Some suppliers offer support only on premium 0891 numbers. Is it easy to get through? Try dialling the number to test it out.
9. Is the warranty return-to-base or onsite? "Return-to-base" means that you'll have to pay to ship the product back to the supplier.
10. If you're paying extra for online support, does the manufacturer offer guaranteed response times? If you rely on your PC for your business you'll need it fixed, pronto.
11. Is the supplier reputable? Does it comply with BS5750 or ISO900? If in doubt, ask to see customer testimonials.
12. When your PC arrives, check that all branded components are genuine.

## Buying a PC

PCs get cheaper and faster all the time and your state-of-the-art PC can quickly become outdated. That may not matter, though, if it still does what you require. But if you're buying a new general-purpose PC now, it should be fitted with a CD-ROM drive, sound card and speakers so that you'll be able to play games and run a wide range of modern software.

## Minimum specifications

- It is a false economy to buy a new PC with less than 16Mb of RAM. The jump from 8Mb to 16Mb of RAM makes a huge difference to performance.
- Ensure Pentium motherboards have an Intel Triton 430 VX, HX, TX or compatible chipset.
- Avoid 14in monitors. The difference between 14in and 15in doesn't sound much but means the screen is 15 percent smaller. If you can afford it, buy a 17in monitor.

## Other things to consider

Most small PC manufacturers buy their motherboards from Taiwanese or far eastern manufacturers. Larger companies either design their own motherboards (e.g. Apricot, Compaq, IBM) or get motherboards built to their specification (e.g. Gateway). Intel chips are no longer the only choice. AMD's K6 processors are well worth considering, too. It is amazing how hard disks fill up and it's unusual to have *too much* disk space.

Some suppliers offer you the choice of Windows 95 or Windows NT. For general home or small office use, Windows 95 is still the best choice. You may need to consider NT for some specialist applications like programming, DTP or CAD.

Practically every month, CD-ROM drives get faster. Higher speeds and bigger numbers just mean you can access files from them more quickly and that video clips on them play more smoothly.

Look closely at the software that's bundled with your PC. If you want an Office suite it's usually cheaper to buy it bundled with your PC. Software bundles can also be an excuse for manufacturers to unload piles of old or second-rate software. Check whether you get the original media if you need to re-install.

For this Buyer's Guide we've drawn up four specifications. We haven't mentioned particular manufacturers because you'll find up-to-date PC reviews in every issue of *PCW*.

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Anthony George

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### PCW Second-hand spec

Buying second-hand or discontinued kit is the cheapest way to get started. This is the minimum spec we think you should choose for general business use, playing games and accessing the internet.

- Windows 3.1 or 3.11
- DX2 66MHz 486 processor
- 8Mb RAM
- Graphics card with 512Kb of memory
- 200Mb hard disk
- 3.5in floppy disk
- CD-ROM drive
- 14in colour monitor

### PCW Minimum specification

This is the absolute minimum spec we think you should consider if you are buying a new PC. Suitable for general business use: word processing, databases, spreadsheets and, with a modem, accessing the internet.

- Windows 95
- 133MHz Pentium-class processor
- 16Mb RAM
- Graphics card with 1Mb of memory
- 1.2Gb hard disk
- 12-speed CD-ROM drive
- 15in colour monitor
- PCI local bus

### PCW Recommended spec

If you are not short of cash, this is the specification we recommend. No-one at PCW would settle for less.

- Windows 95 or Windows NT 4.0
- Pentium or equivalent 166MHz processor
- 256Kb secondary cache
- 32Mb EDO RAM
- Graphics card with 2Mb of memory
- 2Gb hard disk (modern computer software takes up a lot of space)
- 12-speed CD-ROM drive
- 17in colour monitor
- 16-bit SoundBlaster-compatible sound card

### PCW Best specification

This is as good a PC as you are likely to need for most software. For some specialist applications, like professional DTP or CAD, you may need even more memory, a bigger hard disk, a more powerful graphics card or a larger monitor.

- Windows 95 or Windows NT 4.0
- Pentium 233MHz MMX or Pentium II
- 512Kb secondary cache
- 32Mb EDO memory
- 4Gb hard disk
- 16- or 20-speed CD-ROM drive
- 17in colour monitor
- 4Mb VRAM or WRAM graphics card (this means your graphics card can display more colours, and at a higher resolution on your monitor: 16 million colours at a resolution of up to 1,280 x 1,024)
- 16-bit wavetable sound card

# Buying a Notebook

Notebooks belong in the one area in which it is often safer to stick to brand names. It is not so much that some of the Far Eastern kit doesn't work perfectly well, but reliability seems to be a problem and it can be fiendishly difficult to obtain spares. A useful guideline when choosing a notebook is to try before you buy.

Remember that standard notebook specifications are generally a step or two behind their desktop equivalents.

## What to look for in a notebook

■ **Pointing device** There has been a move away from trackballs to trackpads. Some notebooks, notably IBM Thinkpads, use stick technology (a device which looks like the rubber on top of a pencil and is controlled by the use of one finger).

■ **CD-ROM drives** These are rapidly becoming standard in notebooks. If your notebook is going to be your only machine, it's worth getting one.

■ **Floppy disk drive** Often, there is a choice between a CD-ROM drive and a floppy disk drive. If the notebook is to be your only machine, make sure that the CD-ROM drive and the floppy drive can be used simultaneously.

■ **PC Cards** Modern notebooks all have at least one PC Card slot. They take credit card-sized expansion cards which add a fax-modem, a network interface card or even an extra hard disk to your computer.

■ **Battery life** Battery life varies, from as little as 30 minutes to over six hours. Lithium Ion and Nickel Metal Hydride batteries have now replaced the older NiCad (Nickel Cadmium) batteries.

■ **TFT screens** TFT screens are of a higher quality than dual-scan or passive-matrix screens, using a sharper picture and no shadowing or ghosting.

■ **Warranty** Drop a notebook and it may break, so it is vital to check the terms of your warranty. How long is it? What level of service is provided? Remember — better safe than sorry.

### PCW Minimum specification

Notebooks change quickly. It is possible to pick up end-of-line machines with Pentium processors from brand-name manufacturers like Toshiba and Compaq at discounted prices of £1,000 or less. These can be a very good buy. Just make sure they can run the software you need to use.

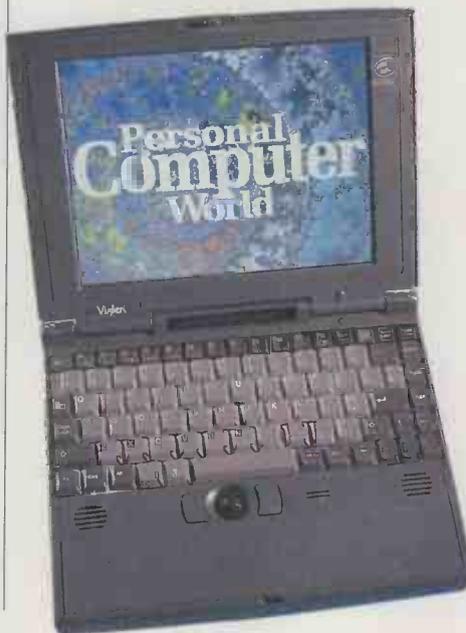
### PCW Recommended spec

- Windows 95
- Pentium 133
- Quad- or six-speed CD-ROM drive
- 16Mb RAM
- On-board graphics with 1Mb of memory, PCI local bus
- 850Mb hard disk, 3.5in floppy disk drive and/or dual-speed CD-ROM drive
- TFT 800 x 600 screen

### PCW Best specification

The state-of-the-art notebook: either you're loaded, or your company's picking up the tab.

- Windows 95 or Windows NT
- Pentium 166MMX
- 256Kb secondary cache
- 32Mb RAM
- On-board graphics with 2Mb of VRAM memory, PCI local bus
- 1.2Gb hard disk
- 3.5in floppy disk drive
- Eight-speed CD-ROM drive
- Active matrix 1,024 x 768 TFT screen
- Long battery life



# Glossary

## of computing terms

### A

#### Access time

The time it takes for a device to access data. The access time, quoted in milliseconds (ms) for hard disks and nanoseconds (ns) for memory, is usually an average as it can vary greatly. Together with the transfer rate, it is used to gauge the performance of hard disks and other devices. The lower the number, the better the performance.

#### Applications

An application, or package, is one or more programs used for a particular task. For example, word processing, invoicing or spreadsheeting. Applications are bought shrink-wrapped (wrapped in cellophane for general use) or custom-built for specific uses.

#### ASCII (American Standard Code for Information Interchange)

Usually a synonym for plain text without any formatting (like italics, bold or hidden text). Since computers naturally use binary rather than Roman characters, text has to be converted into binary in order for the processor to understand it. ASCII assigns binary values to Roman characters. RTF, a Microsoft standard, adds extra formatting features to plain ASCII.

### B

#### Backwards compatible

Compatibility of hardware or software to older versions of the product or standard.

#### Baud rate

The number of electronic signals that can be sent along a communications channel every second. In common usage, it is often confused with bits per second. These days modem speeds are normally measured in bits per second. (See V and Bit).

#### BIOS

Basic Input/Output System. Software routines that let your computer address other devices like the keyboard, monitor and disk drives.

#### Bit

Binary digit, the basic binary unit for storing data. It can either be 0 or 1. A Kilobit (Kbit) is  $2^{10}$  (1,024 bits); and a Megabit is  $2^{20}$ , which is just over a million bits. These units are often used for data transmission. For data storage, megabytes are more generally used. A megabyte (Mb) is 1,024 kilobytes (Kb) and a Kb is 1,024 bytes. A gigabyte (Gb) is 1,024Mb. A byte (binary digit eight) is composed of eight bits.

#### Bug (See Crash)

#### Boot

Short for bootstrap. Refers to the process when a computer loads its operating system

into memory. Reboot means to restart your computer after a crash, either with a warm reboot (where you press Ctrl+Alt+Del) or a cold reboot, where you switch the computer off and back on again.

#### Bus

A "data highway", which transports data from the processor to whatever component it wants to talk to. There are many different kinds of bus, including ISA, EISA, MCA, and local bus (PCI and VL-bus).

### C

#### Cache (See Memory)

#### COAST

Cache On A Stick.

#### CD-ROM

A CD-ROM is the same as a normal audio CD, except it can store data as well as sounds. A CD-ROM player can be attached to your computer to read information from the CD-ROM into the computer's memory in the same way that a domestic CD player reads information from the CD into your hi-fi. The advantage of distributing information on CD-ROM rather than other media is that each one can hold up to 680Mb of data: equivalent to about 485 high-density 3.5in floppy disks. The disadvantage, however, is that you can only write once on CD-ROMs, yet this makes them ideal for archiving.

#### CISC (See RISC)

#### CPU

Central Processing Unit. Normally refers to the main processor or chip inside a PC. (See Processor.)

#### Crash

Common term for when your computer freezes. Can be caused by a power surge, a bug (which is a fault in software) or a GPF.

### D

#### DRAM (See Memory)

#### DOS (Disk Operating System)

Once the standard operating system for PCs, it is now being replaced by Windows 95 and Windows NT.

#### DPI (Dots Per Inch)

Common measure of the resolution on a printer, a scanner or a display.

#### Drive controller card

An expansion card that interprets commands between the processor and the disk drives.

#### Drivers

Pieces of software that "drive" a peripheral. They interpret between the computer and a device such as a CD-ROM. If you have a SCSI CD-ROM drive connected, you will be able to use it on a PC or a Mac just by loading up the relevant driver on each machine.

### E

#### EIDE (See IDE)

#### EISA (Extended Industry Standard Architecture)

A bus standard designed to compete with MCA. Now being replaced by PCI.

#### Electronic mail (E-mail, email)

Still the biggest single use of the internet. When you sign up with an ISP you are given an email address. Usually you can incorporate your name, or part of it, into your email address to make it easy to remember.

#### Expansion card

Circuit boards which fit inside PCs to provide extra functionality. For example, one might be an internal modem, providing the same functions as an external version (which is more common) but sitting inside the PC. Expansion cards are designed to be fitted and removed by people with little knowledge of PCs.

### F

#### Floppy disk drive

Practically all PCs come with a floppy disk drive: 3.5in HD (high density) 1.44Mb floppy disks are now the standard. They come in hard plastic cases and have replaced the older, literally floppy, 5.25in disks.

#### Fonts

A font is an alphabet designed in a particular style. Fonts apply both to screen and printed letters. TrueType and Type 1 fonts are stored as shape descriptions, scalable to any size.

#### Format

To wipe a floppy or hard disk in order to prepare it to accept data.

### G

#### GPF

General protection fault.

#### Graphics card

An expansion card which interprets commands from the processor to the monitor. If you want a better, higher-resolution picture or more than your existing setup, you'll need to change your graphics card and/or your monitor.

#### GUI (Graphical User Interface)

(See Windows)

### H

#### Hard disk

Sometimes called a fixed disk, hard disks are hermetically sealed rigid disks able to store data and programs. Disk capacities increase all the time. The standard is now 1Gb but disks of up to 9Gb are available.

#### Hardware

All electronic components of a computer system, including peripherals, circuit boards and input/output devices.

#### HTML (Hypertext mark-up language)

The standard language used in the creation of web pages, which can be read by web browsers.

### I

#### IBM-compatible

Originally meant any PC compatible with DOS.

Now tends to mean any PC with an Intel or compatible processor capable of running DOS or Windows.

#### **IDE (Integrated Drive Electronics)**

A control system designed to allow computer and device to communicate. Once the standard for PC hard disks, now being replaced by EIDE (enhanced IDE) which offers improved performance and extra features.

#### **Internet**

Millions of computers interconnected in a global network.

#### **ISP (Internet Service Provider)**

ISPs provide access to the internet. You use your modem to dial the ISP's modem. The ISP has a high-bandwidth permanent connection to the internet.

#### **IRDA (Infra-Red Data Association)**

The standard for exchanging data using infra-red, typically from PDAs or notebooks to a PC or printer.

#### **ISA (Industry Standard Architecture)**

This was the original bus architecture on 286 PCs. Also known as the AT bus (the 286 was known as the AT), it remains in use today. Slow by modern standards, but so widely accepted that expansion cards are still made for it. (See EISA, PCI.)

#### **ISDN (Integrated Services Digital Network)**

Offers significant advantages over analogue telephone lines. It can handle multiple transfers on a single connection and is faster. In the UK, however, costs of installation and rental remain high.

#### **J**

**JPEG** (See MPEG)

#### **K**

**Kbit (kilobit), Kb (kilobyte)**

(See Bit)

#### **L**

**LAN (Local Area Network)**

(See Network)

#### **Local Bus**

PCI (Peripheral Component Interconnect), developed by Intel, is now the standard for local bus architecture. It is faster than the older VL-Bus (Video Electronic Standards Association local bus) it replaces.

#### **M**

**Macintosh (Mac)**

A personal computer made by Apple and which is incompatible with PCs. Developed as a rival standard, its operating system looks like Windows but pre-dates it and (in some people's view) looks and works much better.

#### **Maths co-processor**

A specialised chip that handles mathematical calculations (floating point operations) for the processor. Modern processors such as the Pentium have a co-processor built into them.

**Mbit (megabit)** (See Bit)

**Mb (megabyte)** (See Bit)

#### **MCA**

A type of bus designed by IBM to beat EISA. Although faster, it never became popular: this was because every machine that used it had

to pay a royalty to IBM, and because it was not backwards-compatible with ISA.

#### **MPEG (Moving Picture Expert Group)**

A standard for compressing video, available in several flavours: MPEG 1, MPEG 2, MPEG 4. JPEG (Joint Photographic Expert Group) is a standard for still image compression.

#### **Memory**

The term normally refers to RAM (Random Access Memory). This is the kind which disappears when you turn off your computer and is much faster to access than a hard disk. It acts as a staging post between your computer's hard disk and its main processor.

- **Cache memory** Temporary memory set aside to store the information that is accessed most frequently. The Pentium processor has 8Kb of in-built cache. This can be further speeded up by a secondary cache, typically 256Kb. Part of your DRAM is often used to cache your hard disk.

- **DRAM (Dynamic Random Access Memory)** This requires its contents to be replaced every one thousandth of a second and is the most common form of memory found in PCs.

- **EDO (Extended Data Out RAM)** Memory that is cached to improve performance.

- **FPM RAM (Fast page mode)** Like EDO Ram but without the onboard cache

- **ROM (Read-Only Memory)** A type of memory which can only be read: you can't make changes to it as you can to RAM. It is commonly used for things that will never need to be changed, like the information the computer requires when you start it up.

- **SDRAM (Synchronous DRAM)** The latest type of fast memory. This runs at the same speed as the processor and allows the input and output of data at the same time.

- **SRAM (Static RAM)** Retains memory until the power is switched off.

- **VRAM (Video RAM)** Faster than DRAM, this is used by graphics cards.

#### **MMX (Multimedia extensions)**

(See Pentium)

#### **Modem**

The word is a contracted version of "modulator/demodulator", which means that a modem is a box (or, less commonly, an expansion card) that lets your computer talk over phone lines to other computers.

#### **Monitor**

Your computer's screen. Signals are sent to it from the video card.

#### **Motherboard**

The main printed circuit board which houses processor, memory and other components.

#### **N**

#### **Network**

A network is a group of computers linked together with cable. The most common form of network is a LAN (Local Area Network), where electronic mail and other files can be exchanged between users without swapping floppy disks. Printers and other resources can be shared. All the PCs on a LAN are connected to one server, which is a powerful PC with a large hard disk that can be shared by everyone.

#### **O**

#### **OS (Operating System)**

The operating system communicates with the hardware and provides services and utilities to applications while they run, such as saving and retrieving files.

#### **P**

#### **PC Card**

Formerly PCMCIA. A standard to allow PCs, particularly notebooks, to be expanded using credit card-sized cards.

#### **PDA (Personal Digital Assistant)**

Small electronic organisers. The Psion 3a is a typical example.

**PCI** (See Local bus)

**PCMCIA** (See PC Card)

**Package** (See Applications)

#### **Parallel ports**

Used by your PC to communicate with the outside world, usually via a printer. Information can travel in parallel along a series of lines, making it faster than serial ports which can only handle one piece of information at a time.

#### **Pentium**

Fast 32-bit processor with a built-in 16Kb cache. Now the standard on PCs. It is about to be replaced by the Pentium MMX chip which has extra instructions and a 32Kb cache. The Pentium Pro is a higher-end workstation CPU with 256Kb cache meant for full 32-bit operating systems like Windows NT.

#### **Pixel**

Picture element. The smallest addressable dot displayed on a monitor.

#### **PowerPC**

This family of RISC chips is the result of a collaboration between IBM, Apple and Motorola. It is now used in all Apple Macintosh computers and many IBM workstations.

#### **Processor**

Chip which does most of a computer's work.

**Programs** (See Applications)

#### **Public domain**

Software that is absolutely free. The author usually retains the copyright but you can make as many copies as you want and pass them to other people. "Public domain" software is often confused with "shareware".

#### **Q**

#### **QWERTY**

The name of a standard English-language keyboard, derived from the first six letters in the top row. French equivalent is AZERTY.

#### **R**

#### **RAM (Random Access Memory)**

(See Memory)

#### **Reboot**

(See Boot)

#### **RISC (Reduced Instruction Set Computing)**

These are beginning to replace CISC (Complex Instruction Set Computing) as they're usually faster. The PowerPC chip is a typical example.

#### **ROM (Read Only Memory)**

(See Memory)

#### **RTF (Rich Text Format)**

(See ASCII)

**S**  
**SCSI**

Small Computer System Interface is a bus that comes as standard in a Macintosh and is beginning to rival EIDE on PCs.

**Serial port**

Serial ports (com1 and com2) are used by your PC to communicate with the outside world. Mostly used by modems and similar devices which communicate quite slowly. Faster communications are achieved through the parallel port.

**Shareware**

A method of distributing software. It is freely available, but not free of charge. You are honour-bound to pay a small fee to the software's developer if you continue to use the program after a set period.

**SIMM (Single Inline Memory Module)**

The standard modules for memory expansion on PCs. Older 30-pin SIMMs have now been replaced by the 72-pin variety available in capacities up to 16Mb.

**T****Tape streamer**

Magnetic tape recorder for backing up data from a hard disk.

**U/V****UART (Universal Asynchronous Receiver Transmitter)**

Pronounced "you-art", this is a chip that allows

your PC to cope with high-speed communications.

**V.34 Plus, V.34, V.32bis**

A series of CCITT standards which define modem operations and error correction. There are more than 20, but the key ones are:

- **V.32bis**, the standard for 14.4Kbps (kilobits per second) modems.
- **V.34**, the standard for 28.8Kbps modems (see Baud).
- **V.34 Plus**, the new standard for speeds up to 33.6Kbps.

**VESA (See Local Bus)****VGA**

Video Graphics Array is the name given to a popular display. VGA graphics have 640 pixels horizontally and 480 vertically, and can display 16 colours. SuperVGA (SVGA) graphics can display 800 x 600 or 1,024 x 768 in as many colours as the memory in your graphics card will allow: up to 16.4 million, or true colour.

**VL-Bus (See Local Bus)****VRAM (See Memory)****W****Windows**

A GUI (Graphical User Interface) developed by Microsoft. Windows is intended to make programs easier to use by giving them a standard, mouse-driven interface.

- **Windows 3.11** 16-bit operating system.

- **Windows NT Robust**, fully 32-bit operating system from Microsoft. The latest, version 4.0, features a Windows 95 interface.

- **Windows 95** Major improvement to Windows 3.11, with a redesigned interface. Less prone to crashes and easier to use, but requires more memory.

**Winsock**

Short for "sockets for Windows". The Winsock.dll is an extension for Windows which is necessary for connecting to TCP/IP networks.

**World Wide Web**

Service on the internet using special software called web browsers (Netscape and Internet Explorer are two best-known browsers) to give access to pages of information with text, pictures and multimedia.

**WYSIWYG**

"What You See Is What You Get": what you see on the screen is exactly what you will get when you print out your work.

**Z****ZIF (Zero Insertion Force)**

Sockets used for large CPUs. Lifting a handle enables you to remove the processor.

**ZIP**

The common standard for compressing files so that they take up less space. Zipped files have the extension .zip and are compressed and decompressed using shareware utilities such as Winzip and PKZip.

# Buying a Printer

There are two main types of printer: laser and inkjet.

**Lasers**

Most office printers are lasers. They work much like photocopiers. They are cheap to run and print quickly. The disadvantage is the higher initial cost and mono output. Laser printers are available in all sizes and all prices. Small desktop printers cost as little as £300. You can buy colour laser printers but they are still expensive; typically £5,000 or more.

**Types of laser**

PCs print by sending a description of the page to be printed down a printer cable. There are three commonly-used page description languages (PDLs):

• **PostScript**

This sends an outline in vector form (see Drawing Software) to the printer where it is rasterised (converted into dots) and printed to the device's best ability. PostScript is device-independent so the image looks the same on a monitor (75dpi), a laser printer (300dpi) and a professional image-setter (2,400dpi).

• **PCL (Printer Control Language)**

Hewlett-Packard's alternative to PostScript,

licensed to many clone-printer manufacturers. Printers using PCL tend to be cheaper than PostScript ones, but output will vary from one machine to another, making it less well suited to professional use.

• **GDI (Graphical Device Interface)**

These printers download the description of your page, already used by Windows, straight to your printer. They only work with Windows but are cheap and fast. They are only suitable for a personal printer and will not work across a network.

■ **Inkjets**

Inkjets work by spraying ink onto paper. There are still some mono inkjet printers available, but it is best to stick with a colour inkjet as the price difference is negligible. They are cheap to buy but more expensive to run, and slower. Even cheap inkjets can print in good-quality colour, especially on high-resolution paper.

**PCW Recommended products****Inkjet printers**

**Canon BJC-80:** RRP £233;  
Canon 0121 680 8062 (PCW January 98)  
**ALPS MD-1000:** RRP £299;  
ALPS 0800 973405 (PCW January 98)

**Laser printers**

• **Cheap:** Panasonic KX-P6300 £217;  
Panasonic 0500 404041  
**Kyocera F5-600:** £280; Kyocera 01734 311500  
(PCW February 1998)  
• **Sub-£750:** Hewlett-Packard 5P:  
HP 01344 369222 (PCW November 95)  
• **Network lasers**  
**Hewlett-Packard 5M:** RRP £1,659 ex VAT;  
HP 01344 369222

## Buying a **Multi Function Device**

For home use and in small offices, a hybrid device could be the answer.

Typically, MFDs combine a printer, a fax machine and photocopying and scanning capability into one device. And while this saves space, it does have some drawbacks. For one thing, they tend to be based on inkjet technology which means higher running costs and lower speeds than laser-based units. Many only offer black-and-white printing; while colour models are appearing in greater volume, they tend to be based on earlier inkjet printing technologies rather than the current state-of-the-art models. Also, the scanning quality is no match for a dedicated scanner:

it's normally only 200dpi, which is the same quality as a fax machine and, worse, often black-and-white only. Finally, there's one fundamental problem — if your MFD breaks down, you won't be able to print or receive faxes. That said, they are here to stay, and some people love 'em.

### **PCW** Recommended products

Hewlett-Packard OfficeJet: £650;  
HP 0990 474747 (PCW January 97).



## Buying a **Digital Camera**

Just about every camera manufacturer now offers a budget-priced device and prices start from as little as £135.

A digital camera works like a conventional camera except that instead of a film, it has a grid of light-

sensitive elements. These convert light into a voltage proportional to the brightness, which is then converted into digital information the PC can understand.

The elements produce a colour bitmap file, typically of 640 x 480 pixels, although models boasting 800 x 600, 1024 x 768 and even higher resolutions are becoming increasingly common.

Most digital cameras use flash memory to store images, and offer a wired connection to a computer — slow serial on budget models or fast SCSI on professional ones.

Some cameras feature removable memory cards, usually compatible with the PC

Card standard. Quality is getting better all the time, but to match the print quality of a 35mm film camera today, you'll still have to spend thousands of pounds. The current crop of entry-level to mid-range cameras are, however, more than suitable for electronic publishing on CD-ROM or the internet.



### **PCW** Recommended products

Sony DSC-F1: £546; Sony 0990 424424  
(PCW January 98)

Sanyo Digicam: £449.99; Sanyo 01923 477295  
(PCW January 98)

Epson Photo PC: £781.38; Epson 0800 289622  
(PCW Jan 98)

## Choosing an **ISP**

With over 100 ISPs to choose from, choosing an Internet Service Provider has never been so difficult.

All ISPs (Information Service Providers) allow you to send and receive email across the Internet, browse and surf the world wide web and download files from Internet servers. But there are big differences between the quality of service that each provides in terms of technical support and the quality of software supplied when you first sign up. Usually they

charge a flat monthly rate for Internet access of around £10, but on top of that you also have to pay for your phone charges

### ■ Choosing a Content Provider

There are really only three players in this field: AOL, CompuServe and MSN. They are not the best or fastest way of browsing the world wide web. Instead they aim to supply their own content in the form of discussion areas, online magazines and easily searchable file libraries. All these services offer free trials which is a good way of finding out if they're for

### **PCW** Recommended products

**Our PCW Award winners in July 97:**  
Pipex Dial: Major player with an excellent reputation.

**BT Internet:** BT has now got its act together with internet service provision.

**Direct Connection:** One of the best of the smaller ISPs.

### Content providers

**AOL:** 0171 385 9404; Consumer-orientated service that offers good performance even for users of older 14.4K modems.

**CompuServe:** 0800 289378; more business content than AOL.

# Buying a **Monitor**

Regardless of your computer application, you'll be looking at your monitor all day, so make sure you get a good one.



Some people claim not to see monitor flicker, but your brain does, resulting in fatigue and headaches. A refresh rate of 70Hz or higher will produce a flicker-free image on most monitors.

Interlacing also results in flicker. Always run in non-interlaced modes and ignore interlaced quotes. The resolution refers to the number of dots (pixels) horizontally and vertically on-screen. Standard VGA mode runs at 640 x 480 pixels, while other typical modes include 800 x 600 and 1,024 x 768. The more pixels, the more you'll be able to fit on the screen, but

everything will be smaller and may only be suitable on a larger screen. Go for a 15in or 17in monitor capable of running a resolution of 1,024 x 768 non-interlaced at 70Hz or higher.

The visible area of most monitors (and TVs for that matter) is smaller than the model implies: a 15in screen may only have a 14.5in visible area, and a 17in may have only 16in visible. Aperture grille tubes such as Sony's Trinitron or Mitsubishi's Diamondtron are very bright, but need two fine but visible wires running across the screen for stability.

## PCW Recommended products

Panasonic Panasync 5G (£385 ex VAT); Taxan EV750 (£493 ex VAT); ADI 5G (£429 ex VAT); Iiyama Vision Master Pro 17 (£510 ex VAT). See PCW May 97 for reviews.

Contacts Panasonic 0500 404041; Taxan 01344 484646; ADI 0181 236 0801; Iiyama 01438 745482

# Buying a **Scanner**

Scanners are used to import text, graphics or pictures into a PC. They vary from low-cost hand scanners not much bigger than a mouse, to drum scanners costing thousands of pounds. The latter are designed to scan photographic transparencies to professional standards.

## ■ Flatbed scanners

These are the most common type of scanner, and cost from around £300 to more than £3,000.

They are capable of scanning colour pictures to a high standard. Most have transparency adaptors as optional extras.

## ■ Document scanners

A new category of scanner which aims to combine the reliability of a flatbed scanner with speed and portability. They are intended for OCR and document management. Most will cope with photographs and some with colour, but it's not really their forté.

## PCW Recommended products

### Document scanners

Visioneer PaperPort VX: street price £299; Computers Unlimited 0181 200 8282  
Logitech PageScan Colour: street price £155; Logitech 01344 894300

### Flatbed scanners

• **Intermediate**  
Agfa Studio Star: street price £499 (ex VAT); Agfa 0181 231 4906 (PCW August 97)

• **Budget**  
Umax Astra 610P: £99; IMC 01344 871329 (PCW February 1998)  
Microtek Phantom 4800: £147; Midwich Thame 01379 649200 (PCW February 1998)

# Buying a **Storage Device**

For backup and storage there's a range of devices available — conventional tape backup devices, superfloppies like the LS120 and proprietary systems like the Iomega Zip drive.

Additional storage devices, taking removable media, offer endless capacity. Iomega's ZIP drive and OR Technologies' a: drive (aka LS120) offer 100Mb and 120Mb respectively. The a: drive is an alternative to a floppy as it is compatible with normal floppies. The ZIP drive only works with ZIP cartridges.

Iomega's Jaz drive and SyQuest's SyJet, take 1Gb and 1.5Gb respectively. The SyJet is quicker and boasts cheaper media, but it's new as against Iomega's proven device.

Larger storage means slow, cheap tape

drives with big capacity, perfect for overnight backup. Most quote compressed capacity, double "native" uncompressed capacity. DAT DDS-2 drives offer 4Gb native, which Seagate matches with faster Travan TR4 cartridges on its TapeStor 8000. Iomega's cheaper, slower Ditto 2000 offers 2Gb compressed backup.

CD recorders, offering double-speed writing and quad-speed reading, are around £400 ex VAT. The fastest are 24-speed, but there's little benefit in anything over 12.



## PCW Recommended products

Iomega ZIP drive: internal £89 ex VAT; 100Mb media £10 ex VAT; Iomega 0800 973194 (PCW August 97)

Iomega JAZ drive: internal £189 ex VAT; 1Gb media £60 ex VAT; Iomega 0800 973194 (PCW August 1997)

Iomega Ditto 2000: external £89 ex VAT; Iomega 0800 973194 (PCW July 97)

Seagate TapeStor 8000: internal £220 ex VAT; Seagate Technology 01628 890366 (PCW July 97)

Monitor 500

**Personal Computer World**  
**Editors Choice**

"Award winning machines" PCW Oct 97

**SYSTEMS**  
**Review**

"...the build quality is first rate..."  
 "...component level tests reveal excellent graphics performance..."

**PC Direct** -  
**Nov 97**

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- ✓ 1.44Mb 3.5" FDD
- ✓ 1Mb S3 64 Bit Graphic Accelerator
- ✓ 105 Win 95 Keyboard
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- ✓ Mini Tower or Desktop Case
- ✓ Ethernet Card



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- ✓ 16Mb EDO RAM
- ✓ 14" .28Ni SVGA Monitor
- ✓ 16xCD ROM
- ✓ 50 Watt Speakers
- ✓ 16Bit Wavetable Soundcard
- ✓ 4Mb S3 64 Bit Graphic Accelerator
- ✓ 1.44 Mb 3.5" FDD
- ✓ Win 95 K/board ✓ Serial Mouse
- ✓ Mini Tower or Desktop Case
- ✓ Windows 95 on CD with Manual

PENTIUM	166	200	233	266	300
INTEL MMX	£499	£589	£639		
INTEL PII			£849	£959	£1099
AMD K6	£495	£579	£629		
CYRIX M2	£489	£509			

LATEST INTEL TRITON LX CHIPSET MOTHERBOARD AND ATX CASES STANDARD WITH PII SYSTEMS

PENTIUM	166	200	233	266	300
INTEL MMX	£669	£749	£799		
INTEL PII			£979	£1079	£1229
AMD K6	£665	£729	£795		
CYRIX M2	£649	£669			

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**£1399**  
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- ✓ 4.3Gb Ultra DMA HDD
- ✓ 17" SVGA Colour Monitor
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- ✓ 32Mb SD RAM
- ✓ 2Mb Matrox Mystique 64bit 3D Graphics card
- ✓ Matrox Rainbow Runner Video Capture and Editing card
- ✓ 1.44Mb FDD
- ✓ Windows 95 Rel II on CD with Manual
- ✓ Mini Tower or Desk Top Case (ATX on PII systems)

PENTIUM	166	200	233	266	300
INTEL MMX	£1399	MMX £1489	MMX £1539		
INTEL PII			PII £1695	PII £1795	PII £1945
LATEST TRITON TX MOTHERBOARD			ATX CASES STANDARD WITH PII SYSTEMS		



Linear Performa Ultima  
from  
**£1219**  
inc vat

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- ✓ AWE 64 Gold Creative Soundblaster
- ✓ 4Mb Matrox Millenium 220 Video Card (Superb Graphics)
- ✓ Win 95 Keyboard ✓ Serial Mouse
- ✓ US Robotics 56.6 Win Modem
- ✓ Choice of Case
- ✓ Windows 95 on CD with Manual
- ✓ Lotus Smartsuite on CD with Manual
- ✓ Microsoft Family Bundle

PENTIUM	166	200	233	266	300
INTEL MMX	£1235	MMX £1310	MMX £1365		
INTEL PII			PII £1525	PII £1629	PII £1775
AMD	K6 £1229	K6 £1299	K6 £1375		
CYRIX	M2 £1219	M2 £1235			
LATEST INTEL TRITON LX CHIPSET MOTHERBOARD AND ATX CASES STANDARD WITH PII SYSTEMS					



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inc vat

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- ✓ 3.5Gb Ultra DMA HDD
- ✓ 20x CD ROM
- ✓ Win 95 Keyboard
- ✓ 15".28Ni SVGA FST Monitor
- ✓ 4Mb Hercules Terminator 3D DX 64 Bit Accelerator Card (Superb Graphics)
- ✓ AWE64 Value Creative Soundblaster
- ✓ 120 Watt Speakers ✓ Serial Mouse
- ✓ 33.6K Int/Voice/Fax Modem
- ✓ Choice of Case
- ✓ Windows 95 on CD with Manual
- ✓ Lotus Smartsuite on CD with Manual
- ✓ Microsoft Family Bundle

PENTIUM	166	200	233	266	300
INTEL MMX	£949	MMX £1029	MMX £1069		
INTEL PII			PII £1229	PII £1329	PII £1475
AMD	K6 £939	K6 £999	K6 £1059		
CYRIX	M2 £899	M2 £929			
LATEST INTEL TRITON LX CHIPSET MOTHERBOARD AND ATX CASES STANDARD WITH PII SYSTEMS					

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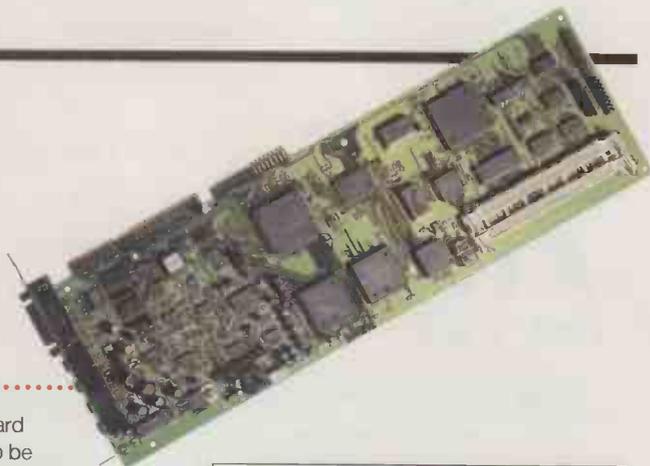
# Buying a Sound Card

You need one of these to add sound capability to your PC.

Check compatibility with your CD-ROM drive, and remember that 16-bit cards capable of 44KHz provide higher-quality sound than slower 8-bit cards. Better sound cards now include wavetable synthesis which means they have samples of real instruments held in ROM.

The quality of wavetable synthesis still varies widely. Even cheap cards which have the inferior Frequency Modulation synthesis

should have a daughterboard connector allowing them to be upgraded to wavetable. The newer cards are also plug and play which means, in theory, that you should be able to plug them straight into a PC without any extra configuration. Most cards are bundled with extra software, normally sequencers, wave editors and audio players.



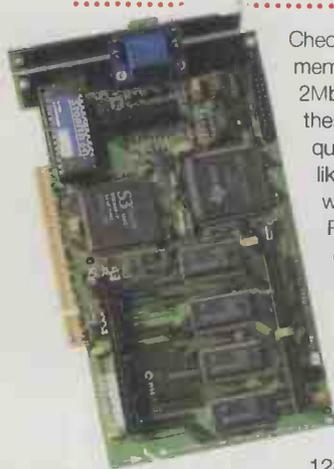
### PCW Recommended products

**AWE 64 Gold:** £199; Creative Labs 01734 344322 (PCW June 97)

**Maestro 32/96:** £139; Terra Tec 01635 294394 (PCW June 1997)

# Buying a Graphics Card

The graphics card sits inside the PC and controls the features which the software displays on the monitor.



Check the amount of memory on the card. 2Mb is standard these days. Better-quality cards are likely to be fitted with VRAM (Video RAM). Also, check out the performance capability of the card. Video cards come as 16-bit, 32-bit, 64-bit and even 128-bit: a large

number of bits means faster performance.

The most important aspect of your video card, and the most frequently quoted feature, relates to the resolution that the card supports in Windows. This is measured by the number of pixels the card displays on-screen. The absolute minimum these days is 1,024 x 768 with a refresh rate of 70Hz.

A 2Mb card can display 16-bit colour (65,000 colours) at 1,024 x 768 pixels. A 1Mb card can manage only 8-bit colour (256 colours) at 1,024 x 768 pixels. To display 24-bit colour (16 million colours) at 1,024 x 768 you'll need 4Mb of memory. The refresh rate (measured in Hz) is important, too. It represents the number of frames displayed on-screen per second. A flickering display is very tiring to use.

Find out if your video card is "local bus". Local bus (PCI or VL) is an interface which connects your video card to the motherboard. It allows the memory in the card to be addressed directly by the CPU, which makes it a lot faster than the standard ISA interface.

### PCW Recommended products

**ATI Xpert@ play:** £163 (4Mb); ATI 01628 533115

**Hercules Stingray 128/3D:** £210 (6Mb); Hercules 01635 294300

**Orchid Righteous 3D:** £132; Orchid 01256 479898 (PCW January 1998)

# Buying a Fax Modem

You'll need a modem to connect to the internet or an online service, such as CompuServe or AOL, and also to send and receive email.

Modems are available in three formats: either as PC Cards to plug into notebooks, or as external boxes, or as expansion cards. PC Card modems are the most expensive, while external modems cost slightly more than expansion cards.

Apart from the casing and the external power supply, there is often very little difference between the internal and external

versions of a modem. Most now have a built-in fax capability, which means you can receive faxes on your personal computer to view or print out.

Go for a V.34 28.8Kb/sec modem or one of the new V.34+ 33.6Kb/sec modems. Or, look out for the new 56K versions: these use one of two rival technologies but as yet are unsupported by Information Service Providers.



### PCW Recommended products

**Fax modems**

• Internal

**Pace 56 Voice:** £169; PMC 0990 561001 (PCW November 97)

# Buying Software

Only a few years ago there were dozens of different software applications in each category. During the past two years or so, however, there has been rapid product consolidation. Other magazines list large numbers of packages, most of which are out of date and not worth considering. We've distilled each category down to just one or two recommended products.

**A**  
**■ ACCOUNTS SOFTWARE** One of the few categories in which there are still masses of packages on the market at a huge range of different prices. Accounts is also one of the last bastions of DOS.  
**Recommended products:** MYOB, Intuit QuickBooks.

**B**  
**■ BROWSERS** are programs which are used to navigate the internet. A modern browser lets you navigate web pages, download files and send and receive email.  
**Recommended products:** There are only two worth talking about: Netscape Navigator and Microsoft Internet Explorer.

**C**  
**■ CAD SOFTWARE** Computer Aided Design covers everything from architectural drawings, through office planning, to complex engineering drawings.  
**Recommended products:** AutoCAD is the industry standard but we think MicroStation 95 is a more capable product at the high end of the market. At the cheap end, DesignCAD 3D offers astonishing value for money.

**■ CONTACT MANAGERS** (See PIMs)

**D**  
**■ DATABASE** At its simplest, an electronic card index. For just a few hundred names and addresses an electronic-type Filofax, such as Lotus Organizer, may be more appropriate. But for more sophisticated applications like tracking products and customers, the power of a relational database is required. Databases are generally the least user-friendly of the main suite applications. In most offices you are likely to use a database

application that somebody else has written for you.

**Recommended products:** Lotus Approach, Microsoft Access.

**■ DESKTOP PUBLISHING SOFTWARE (DTP)** This is software used to create newsletters, magazines, books, brochures or advertisements. Typically, it enables you to incorporate graphics, lay out text in multiple columns and run text around graphics. You also have control over how text appears, in varying degrees of sophistication.  
**Recommended products:** The high-end market leader is Quark XPress on the Mac. On the PC, PageMaker is strong. For serious work on a budget we recommend Serif Publishing Suite, and for sheer ease of use, Microsoft Publisher.

**■ DRAWING SOFTWARE** Programs for drawing, which work using vectors. This means each shape drawn is described using mathematical equations.  
**Recommended products:** At the budget end of the market, MicroGraphx Windows Draw 5 stands out. At the professional end, Corel Draw 7 gets our vote.

**■ IMAGE EDITING SOFTWARE** A program for editing bitmap files (files made up of pixels). Typically used for converting graphics files, retouching photographs and preparing pictures for printing.  
**Recommended products:** For simple image editing the popular shareware program, PaintShop Pro, is fine. For professionals, Adobe's Photoshop is the industry standard.

**■ INTEGRATED PACKAGES** Typically, these combine the functionality of a database, word processor and spreadsheet in one application. This makes it easy to move data from one component to another but

integrated packages tend to lack some of the advanced features of individual applications.

**Recommended product:** Microsoft Works.

**J**  
**■ JAVA.** A language based on C++, but easier to learn and use. Java runs on a "virtual machine" interpreter, so programs can run on many different platforms.  
**Recommended products:** Borland JBuilder

**M**  
**■ MULTIMEDIA AUTHORING TOOLS** Programs designed for producing interactive multimedia applications; typically for training applications or for CD-ROMs. The software lets you control and manipulate different types of media such as sound files, audio files, video clips and graphic files.  
**Recommended product:** Macromedia Director, the product used to produce PCW's cover-mounted CD-ROM, gets our vote.

**O**  
**■ OCR SOFTWARE** Optical Character Recognition software converts printed text into computer text you can edit. You will need a scanner or fax card to get the printed text onto your PC. OCR saves re-keying documents and can cut down drastically on paper filing systems.  
**Recommended products:** OmniPage is the best product we have found, but TextBridge offers most of the same capabilities for less cash.

**P**  
**■ PERSONAL INFORMATION MANAGERS (PIMs)** PIMs are an electronic way of storing names, addresses, phone numbers and appointments. Contact managers take the idea one step further to include business information about dealings with clients.

**Recommended products:** SideKick 95 and Organizer are excellent PIMs. For contact managers we would recommend Goldmine for Windows.

**■ PRESENTATION GRAPHICS** Increasingly, the trend is towards doing presentations on a PC and the latest packages tackle this by including sound, sophisticated transitions between slides and support for video clips.  
**Recommended products:** Powerpoint and FreeHand are both capable products sold with Microsoft Office and SmartSuite respectively.

**■ PROGRAMMING TOOLS** Applications designed for writing software. These range from "low-level" languages which are powerful but difficult to learn and use, to "high-level" languages which, although much easier to use, generally sacrifice performance and flexibility in the process. Commercial programs like Word for Windows are written using low-level languages. Bespoke applications and prototypes are often written using Delphi or Visual Basic.  
**Recommended products:** Delphi 3.0 is a great example of scalability, catering for beginners and serious developers working on major projects. Optima Power++ is the pick of the high-end Windows development tools.

**■ PERSONAL FINANCE PACKAGES** These help manage home finances. They are also well suited to some small businesses and tend to be easier to use than full-blown accounts packages.

**Recommended product:** Quicken is the outstanding product in this category and has no serious rivals.

**■ PROJECT MANAGEMENT** Programs for managing large projects — anything from building a power station to planning a

marketing campaign.

**Recommended product:**  
SuperProject 4.0 for Windows.

**R**

■ **REMOTE CONTROL S/W** Lets you access and control a PC remotely, usually via a modem.

**Recommended product:**  
ReachOut, for its simple interface and support for different networks, particularly TCP/IP.

**S**

■ **SPREADSHEET** This is an electronic version of what would be an old-fashioned ledger.

Excellent graphing and charting facilities are included.

**Recommended products:**  
Lotus 1-2-3, Microsoft Excel.

■ **SUITES** Most general business software is now sold in suites.

Two suites are widely available: Lotus SmartSuite and Microsoft Office. Lotus SmartSuite also contains a database. With Microsoft Office, you pay extra for Office Professional which contains Microsoft's Access database.

**Recommended product:**  
Microsoft Office is close to the

industry standard. Its high level of integration gives it the edge over the opposition.

**V**

■ **VISUAL PROGRAMMING** (see Programming Tools)

**W**

■ **WEB EDITORS** Programs designed to do for web page design what DTP did for magazines and newsletters. They let you create web pages without writing HTML. You can incorporate graphics, backgrounds, tables, images and sounds.

**Recommended products:**  
HotMetal Pro 3.0 is our first choice, while Adobe Pagemill is a capable alternative.

■ **WORD PROCESSOR** An application in which you can write letters and prepare reports, or produce a simple newsletter. The latest word processors have advanced features such as outliners, table editors and facilities for adding columns of figures.

**Recommended products:**  
Microsoft Word is the clear market leader but WordPro is a capable alternative.

**A-Z of Recommended Software Products**

■ *If you would like to read any of the reviews of software listed here and do not have the original issues, you can order Personal Computer World on CD-ROM. It costs just £9.95 (including postage and packing). See pages 322/323 for full details.*

Category	Product	Supplier	Contact	Price (ex VAT)	Date of PCW review	
<b>A</b>	Accounts	MYOB	Bestware	01752 201901	£195	April 1997
	Accounts	QuickBooks	Intuit	01932 578501	£125	April 1997
<b>B</b>	Browsers	Netscape Navigator	Netscape	0181 564 5100	£49	Mar 1997
	Browsers	Internet Explorer	Microsoft	0345 002000	Free	Jun 1996
<b>C</b>	CAD	Microstation	Bentley	01344 412233	£3,495	Jan 1997
	CAD	DesignCAD 3D	BVG	01874 611633	£149.95	Jan 1997
<b>D</b>	Database	Approach 97	Lotus	01784 455445	£40	Oct 1997
	Database	Access 97	Microsoft	0345 002000	£235	Oct 1997
	Desktop publishing	XPress 3.3	Quark	01483 454397	£795	May 1997
	Desktop publishing	Publisher	Microsoft	01734 270000	£70	May 1997
	Desktop publishing	Publishing Suite 3.07	Serif	0115 9421502	£99	May 1997
	Drawing	CorelDraw 7	Corel	0800 973189	£495	Sept 1997
	Drawing	Windows Draw 5	MicroGraphx	0345 089372	£38.30	Sept 1997
<b>I</b>	Image editing	Photoshop	Adobe	0181 606 4000	£382	Dec 1996
	Image editing	PaintShop Pro	Digital Workshop	01295 258335	£49.95	Jun 1995
	Integrated package	Works/Win 95	Microsoft	0345 002000	£93.61	Apr 1997
<b>J</b>	Java programming	JBuilder	PowerSoft	01628 597100	£399	N/A
<b>M</b>	Multimedia authoring	Director 5.0	Macromedia	0181 200 8282	£99	Oct 1996
	<b>O</b>	OCR	PaperPort Plus	Visioneer	0800 973245	£58.72
OCR		Presto! OCR Pro 3.0	Guildsoft	01752 895100	£58.72	Dec 1997
<b>P</b>	Personal finance	Quicken	Intuit	0800 585058	£34	May 1996
	PIM/contact manager	Organizer 2.1	Lotus	01784 455445	£99	Jun 1997
	PIM/contact manager	Goldmine for Windows	Elan Software	0171 454 1790	£395	Jun 1997
	PIM/contact manager	Sidekick 95	Starfish UK	0181 875 4400	£39	Jun 1997
	Presentation graphics	Freelance	Lotus	01784 455445	£415	Nov 1996
	Presentation graphics	Powerpoint	Microsoft	0345 002000	£220	Nov 1996
	Programming tools	Power ++ 2.0	PowerSoft	01628 597100	£345	Sept 1997
Programming tools	Delphi 3.0	Borland	01734 320022	£89	Apr 1997	
Project management	SuperProject 4.0	Computer Associates	01753 679679	£495	May 1996	
<b>R</b>	Remote control/Access	PC Anywhere	Symantec	01628 592320	£139	Nov 1997
<b>S</b>	Spreadsheet	Excel	Microsoft	0345 002000	£220	May 1995
	Spreadsheet	1-2-3	Lotus	01784 455445	£365	May 1997
	Suite	Office (Standard)	Microsoft	0345 002000	£360	Jul 1997
	Suite	Office (Professional)	Microsoft	0345 002000	£460	Jul 1997
	<b>W</b>	Web authoring	HotMetal Pro 4.0	SoftQuad	0181 387 4110	£69
Web authoring		FrontPage 98	Microsoft	0345 002000	£99	Jan 1998
Word processing		Word	Microsoft	0345 002000	£220	Oct 1996

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• Intel P233Mhz MMX • 32MB EDO Ram • 5.12GB H. disk • 13.3 Hi-res TFT • Swapable 20x CD-Rom • 16-bit Stereo sound • 2x 32bit PCMCIA • Opt. Video conference • Infra-red • 3.64kg • 3 Year Int'l. Warr.

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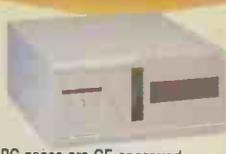


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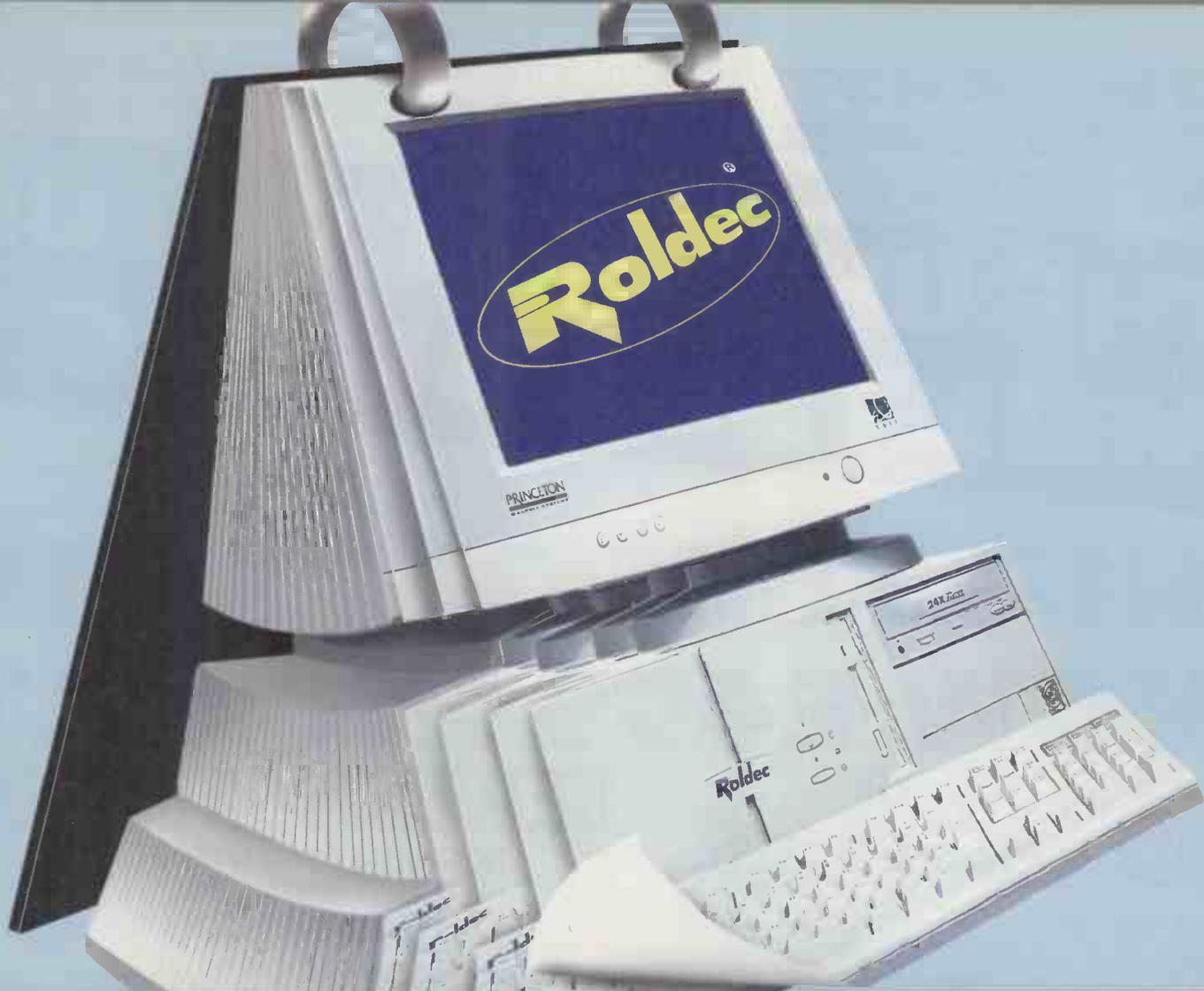
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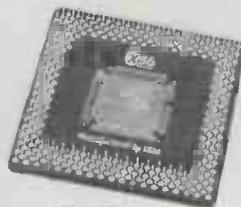
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F-3500, 5500A, 3400/+, FS400, FS6500, FS7000	■	£19	£34	£53	■
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Tally	1mb	2mb	4mb	8mb	16mb
MT-904, 904 Plus.	£25	■	■	■	■
MT-905, 906.	■	£59	£89	■	■
MT-908.	■	£29	£39	■	■
MT-9008 /PS, 9108.	£19	£24	£29	£49	■

OKI	1mb	2mb	4mb	8mb	16mb
OL 400.	£45	£59	■	■	■
OL 400, 410, 600 & 610 /e, /ex.	£45	£69	£95	■	■
OL 410, 810.	£39	£52	£69	■	■
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OL 810 /e, /ex.	■	£45	£59	£79	■
OL 830, 840, 850.	■	£59	■	■	■

Panasonic	1mb	2mb	4mb	8mb	16mb
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KXP-4410, 4420 & 4430, 4450i, 4451.	£43	£69	£92	■	■
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SHARP	1mb	2mb	4mb	8mb	16mb
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ODF-1000, 2200, 2400, 2600.	£60	£90	£150	■	■

Panasonic	1mb	2mb	4mb	8mb	16mb
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Xerox 4030		£69 £185

### CANON SUPPLIES

CANON INK CARTRIDGES		Black	Colour
Canon BN22/32	(BJ1101)	4.95 P/H	£25
Canon BJ130	(BJ1481)	10.95	
Canon BJ300/330	(BJ1642)	10.95	
Canon BJ10/20	(BC01)	13.25	
Canon BJ200/230	(BC02)	14.50	
Canon BJC210/240	(BC02/05)	14.50	17.95
Canon BJC240 Photo Cart. (BC06)		17.95	Kit 22.95
Canon BJC240 Fluorescent (BC09F)			19.95
Canon BJ30/70	(BC10)	21.95	
Canon BJ30/70 TANKS 3's (BC10)		9.95	
Canon BJ70	(BC11)		24.95
Canon BJ70 TANKS 3's (BC11)		8.95	13.95
Canon BJC600 (BJ201BK/C/M/Y)		6.95	5.95
Canon BJC500 SET OF COLOURS			20.95
Canon BJC600/610 PRINTHEAD			£82
Canon BJC800	(BJ1643)	13.95	17.95
Canon BJC4000 Ser. (BC20/21)		19.95	30.95
Canon BJC4000 TANKS (BC21)		5.95	12.95
Canon BJC4200/4550 Photo Cart (BC22)			23.95
Canon BJC4200/4550 Photo Kit (BC22K)			29.95
Canon BJC4200/4550 Fluorescent (BC29F)			24.95

### EPSON SUPPLIES

EPSON INK CARTRIDGES		Black	Colour
Stylus Col. Pro XL	(S020034/36)	10.50	21.95
Stylus Pro XL+	(S020034/66)	10.50	22.95
Stylus Photo	(S020093/20110)	13.95	15.95
Stylus 200	(S020047/97)	13.95	19.95
Stylus 300 (4 Colour Cart.)	(S020138)		17.50
Stylus 500	(S020093/97)	13.50	18.95
Stylus 400/600	(S020093/89)	13.50	14.95
Stylus 800/1520	(S020108/20089)	14.95	14.95
Stylus Col. II/HS/820	(S020047/99)	12.95	17.95
Stylus 1500	(S020062/49)	31.95	19.95
Stylus 3000	(S020118/C30/M26/Y22)	35.95	36.95

### HP SUPPLIES

HP INK CARTRIDGES		Black	Colour
HP Deskjet Portable	(51633/25)	13.95	16.25
HP D/Jet 500 Series	(51626/23)	15.25	16.25

### OTHER SUPPLIES

Apple Stylewriter		Black	Colour
Apple Stylewriter I/II (APM8041G)		13.95	
Apple Stylewriter 2400	(Cart)	22.95	28.95
Apple Stylewriter 2400 (Ink Tank)		6.50	12.95
Apple Stylewriter 2500 (Cart)		22.95	28.95
Apple Stylewriter 2500 (Ink Tank)		6.50	12.95
Apple Stylewriter 2200 (Cart)		29.95	34.95
Apple Stylewriter 2500 (HighCap)		15.95	
Apple Stylewriter 2200 (Ink Tank)		11.95	17.95
Brother HJ100/400	(BRIN10)	31.50	
Brother HJ770	(BRIN20)	22.50	
Kodak Diconix 150/180/330C		9.95	14.95
IBM Execjet II/III/100/150C		20.95	25.95
IBM 4079 Plus (CYMK) (6's)		14.95	19.95
Mannesmann T7070 PRINTHEAD		25.95	37.95
Mannesmann T7070 TANKS		4.95	12.95
Olivetti JP150/170/350 Series		18.95	
Olivetti JP360/450		18.95	27.50
Olivetti Printhead +4 Ink Tanks		38.95	
Olivetti JP790 High Resolution Block		23.95	32.95
Olivetti JP790 Printhead+1 Refill		37.50	43.95
Olivetti JP790 Refills (2's)		12.95	19.95
Xerox 4020 (Pack of 2's)		8.50	8.50
Xerox 4020 Maintenance Fluid			13.95



EPSON INKJET PAPER MEDIA		Black	Colour
Photo Paper 4"x6" (20)	(S041134)	5.25	
A6 Photo Inkjet Card (50)	(S041054)	6.95	
A4 Glossy (15)	(S041071)	21.95	
A4 Photo Glossy (20)	(S041126)	6.95	
A4 1440 Dpi (100)	(S041061)	8.95	
A4 360 Dpi (100)	(S041059)	6.95	
Letter Ink Transfer (10)	(SE41001)	10.50	
A4 Transparency (30)	(S041063)	31.95	
A3 Glossy (10)	(S041073)	37.95	
A3 1440 Dpi (100)	(S041068)	25.95	
A3 360 Dpi (100)	(S041065)	18.95	
Super A3 Glossy (10)	(S041074)	49.95	
Super A3 1440 Dpi (100)	(S041069)	29.95	
Super A3 360 Dpi (100)	(S041066)	21.95	
A3 Photo Glossy (20)	(S041125)	19.95	
A3+ Photo Glossy (20)	(S041133)	20.95	
A2 Photo Glossy (20)	(S041123)	34.95	
A2 1440 Dpi (30)	(S041079)	27.95	
A2 360 Dpi (30)	(S041078)	22.95	
13"x19" Ink Transfer (10)	(SE41003)	69.95	



HP INKJET PAPER MEDIA		Black	Colour
HP Premium Inkjet Paper (200)	(516342)	12.95	
HP Premium Glossy Paper (10)	(C3831A)	5.95	
HP Premium Glossy Paper (50)	(C3837A)	27.95	
HP Premium Photo Paper (7)	(C6040A)	6.50	
HP BrightWhite Inkjet Paper (200)	(C5977A)	4.95	
HP BrightWhite Inkjet Paper (500)	(C1825A)	7.95	
HP Photo Paper (Deskjet 690) (20)	(C1847A)	7.95	
HP Deluxe Photo Paper (890C) (7)	(C6057A)	9.50	
HP Banner Paper 90gsm/2Fold (100)	(C1821A)	7.95	
HP Greeting Card Paper A4 (20)	(C6042A)	5.50	
HP Premium Transparency (20)	(C3832A)	12.95	
HP Premium Transparency (50)	(C3835A)	29.95	

CANON INKJET MEDIA		A4	A3
Coated Paper (200)	(LC101)	19.95	39.95
DoubleSided Coated (200)	(LC301)	12.95	25.95
High Resolution (200)	(HR101)	18.50	20.95
Glossy Paper (A4-50/A3-10)	(GP201)	23.95	11.95
High Gloss Film (20)	(HG101)	16.95	38.95
Iron-on-Transfer Sheets (TR101)		11.95	
Transparency (50)	(CF102)	34.95	
Back Print Film (20)	(BF102)	29.95	49.95

### KODAK SUPPLIES

PHOTO INKJET PAPER		15's	50's
Kodak Letter Weight Paper		8.95	23.95
Kodak Photo Weight Paper		8.95	23.95

### 3M FILM SUPPLIES

3M INKJET TRANSPARENCY (A4)		Black	Colour
3M Films Epson/Canon Colour (50)	(CG3410)		20.95
3M Films HP Deskjet/Paintjet (50)	(CG3460)		22.95
3M Films Canon/Dec/Epson/HP (50)	(CG3480)		25.95

### LS120/Ditto/Zip Drives

PARALLEL PORT DRIVES		1's	5's
3M SuperDisk LS-120 120Mb Floppy Drive		£109	
SONY StorStation 2Gb Tape Back-up Drive		£105	
IOMEGA ZIP Drive 100Mb Zip Drive		£95	

### DATA STORAGE CARTRIDGES

3M Data Cartridges		1's	5's
3M DC 2120 (120Mb/250Mb)		6.50	£32
3M DC 2120Xi (QIC-80 Formatted)		5.95	£28

### 3M TRAVAN CARTRIDGES

3M Travan Cartridges		1's	5's
3M TR1 Travan 400Mb		13.50	£66
3M TR2 Travan 800Mb		22.95	£113
3M TR3 Travan 1600Mb		18.95	£93
3M TR4 Travan 4000Mb		21.95	£108

### DDS TAPES

Digital Data Storage		1's	5's
3M D4/120M 4mm DDS2		10.95	£53
3M D4/90M 4mm DDS1		3.95	£18
3M D4/60M 4mm DDS1		4.95	£23
3M D8/112M 8mm		4.95	£23

### MAGNETO OPTICAL

Magneto Optical		1's	5's
TDK / MAXELL 3.5" 230Mb		8.95	£42
TDK / MAXELL 3.5" 128Mb		7.95	£35
TDK / MAXELL 3.5" 540Mb		26.50	£125
TDK / MAXELL 3.5" 640Mb		27.95	£130

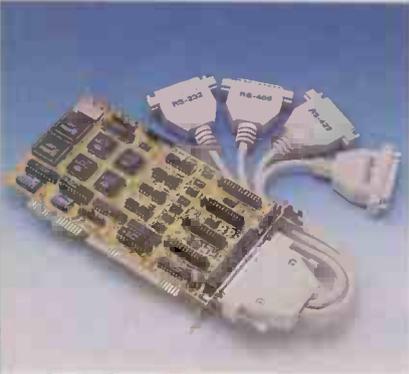
### 3M DC2120 Ximat (QIC80)

### 10 x Cartridges for £54

3M DC 2120XLXi (Formatted)		8.50	£41
3M MC 3000XLUMAT (700Mb)		16.95	£83
3M MC 3000XLUMAT (1400Mb)		18.95	£93
IOMEGA Ditto 2Gb		12.95	£64
3M DC 600A 60Mb		11.50	£56
3M DC 6150 150Mb		7.95	£38
3M DC 6250 250Mb		10.95	£53
3M DC 6525 525Mb		11.50	£56

# Industrial Workstations, Industrial PCs, Embedded Board Computers, Data Acquisition and Control, Serial Communications.

## COMMUNICATIONS INTERFACES



### 4-Port Multi-User Serial Card

High Quality AT Bus 4-Port Serial Communications Card. Shown above. Supplied with 16550 UARTs for baud rates to 115kbps

- ▼ Port address 100H - 3F8H
- ▼ Interrupts IRQ2-7, 10-12, 15
- ▼ Transmit & Receive LEDs
- ▼ Compatible with Arnet 4-Port Card
- ▼ Can be used for adding 4 ports to Windows and SCO Unix
- ▼ Also supports RS422/RS485
- ▼ Supplied with 4-way cable set

£135

### 16550 Serial Card

Ideal for hardware requiring high speed communications. Highly recommended for Windows.

- ▼ Two 16550 serial ports COM1-COM4, IRQ2-5
- ▼ Bi-directional Parallel Port LPT1-LPT3, IRQ5,7
- ▼ Optional games port
- ▼ Enable/disable any port

£45

### AT bus Serial Card

The most flexible 2-Port Serial Card on the market. Supports any port address and high interrupts. Perfect for COM1-COM4 under windows.

- ▼ 2 RS232 serial ports
- ▼ Interrupts IRQ2-7, 10-12, 14-15
- ▼ Port address 100H-3F8H
- ▼ 16 bit AT bus

£75

16550 option supplied as standard

### Dual RS422/RS485 Card

Offering 2 high speed serial ports for transmissions up to 4000 feet

- ▼ 2 RS422/RS485 serial ports
- ▼ Supplied with 16550 UARTs
- ▼ Up to 115K baud
- ▼ Port address 200H-3F8H
- ▼ IRQ2-7, 10-12, 15
- ▼ 16 bit AT bus

£69

Also Isolated RS422/RS485 Card £89

### DigiBoard Serial Cards

The Best Engineered Multi-Channel Boards on the market today. The DigiCHANNEL PC/X is ideal for use in multi-user environments, most operating systems are supported with drivers available for DOS, XENIX, UNIX, OS/2, and many more.

PC/4	4-Port RS232 Card	£295
PC/8	8-Port RS232 Card	£395
PC/4s	4-Port with 16550	£325
PC/8s	8-Port with 16550	£450
PC/4r	4-Port Acceleport	£395
PC/8r	8-Port Acceleport	£495

### DigiBoard PC/Xe Cards

The DigiCHANNEL PC/Xe range are intelligent multi-port RS232 high speed communication boards with on-board 80186 processor and 64K memory for increased throughput. Drivers available for DOS, Windows NT, Windows, OS/2, Xenix and UNIX.

PC/2e	2-Port Intelligent Card	£189
PC/4e	4-port Intelligent Card	£395
PC/8e	8-Port Intelligent Card	£495

### Digiboard PC/Xem System

An Intelligent Modular System offering 16 to 64 high speed serial channels. The system comprises one host adapter with on-board 20MHz RISC processor and 1 to 4 external concentrators each providing 16 serial ports. Data rates of 115kbps can be achieved on 32 ports. Drivers for DOS, SCO UNIX, OS/2, Netware Connect and Windows NT.

PC/Xem	Host Adapter	£395
Ports/16em	Connector Box	£600

### Isolated RS232 and Current-Loop Card

Providing 2 Isolated RS-232 or current loop serial ports with baud rates up to 56Kbps.

- ▼ Supplied with 16550 UARTs
- ▼ Provides 500VDC isolation
- ▼ Port address 200H - 3F8H
- ▼ Interrupts IRQ2-7, 10-12, 15
- ▼ 16-Bit AT bus

£105

### Synchronous Serial Card

Single channel, multi-protocol communications adapter which uses an AMD 85C30-10 serial communications controller (SCC) as standard.

- ▼ RS232 interface
- ▼ Synchronous mode to 1.23M baud
- ▼ IRQ2-7, 10-12, 14-15
- ▼ DMA Channels 1 - 3

£220

Also Synchronous RS422/RS485 £220

### Remote Data Acquisition Modules for RS485 Network

ADAM Modules (shown below) are compact intelligent sensor-to-computer interface units designed specifically for reliable operation in harsh environments. Their built-in microprocessors, encased in rugged industrial grade plastic packages provide analog I/O, digital I/O, thermocouple measurement and data display. Each module has a built-in RS485 serial interface for data transfer with the host computer.



### Isolated RS232/RS485 Converter

ADAM modules need only 2 wires to communicate with their controlling host computer over a multidrop RS-485 network. ADAM modules also accept any power source between 10V and 30V and are protected against power reversal.

- ▼ Automatic control of data flow
- ▼ Input RS232 (4-wire)
- ▼ Output RS485 (2-wire)
- ▼ Baudrate 1.2K to 38.4K

£70

### Analog Input module

ADAM modules can accommodate multiple types and ranges of analog input. You select type and range remotely by issuing ASCII commands from your host computer.

- ▼ Input for thermocouple, mV, V, or mA
- ▼ Input range 15mV to 2.5V, 20mA
- ▼ 10 samples per second
- ▼ 1 digital input / event counter
- ▼ 2 digital outputs
- ▼ Baudrate 1.2K to 19.2K

£129

### ADAM Modules

ADAM 8ch Analog Input Module	£155
ADAM 8ch Thermocouple Module	£169
ADAM Analog Output Module	£129
ADAM Digital I/O Module	£90
ADAM Relay Output Module	£90
ADAM Counter/Frequency Module	£129
ADAM IP66 Industrial Enclosure	£85
ADAM Power Supply Unit 24V	£149

### IEEE-488 Interface Card

Provides complete IEEE-488 functionality on a half size card.

- ▼ Powerful, easy to use software command set
- ▼ DMA & Interrupt
- ▼ On-board firmware driver
- ▼ 16 digital outputs
- ▼ Basic, Pascal & C drivers
- ▼ IEEE-488 cable 2m

£175

### Digital I/O Card

The simple solution for providing digital I/O and timer functions.

- ▼ 32 digital inputs
- ▼ 32 digital outputs
- ▼ 3 channel programmable counter/timer
- ▼ Breadboard area

£75

### 144 bit Digital I/O Card

High Density mixed digital I/O Card for industrial monitoring & control.

- ▼ 144 Digital I/O lines
- ▼ Buffered circuits for higher driving capacity than the 8255
- ▼ Interrupt handling
- ▼ Output status readback

£135

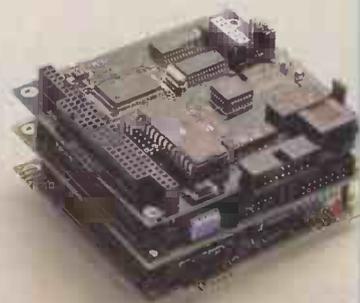
### Wiring Kit & Relay Boards

Wiring Terminal Board	£30
Industrial Wiring Kit	£45
Isolated Digital input board 16ch	£79
Isolated Digital input board 24ch	£89
Relay Board 16ch, 120V 1A	£89
Relay Board 24ch, 120V 1A	£110
Relay Board 16ch, 250V 5A	£110
Relay Board 24ch, 250V 5A	N/A
SSR Module Carrier Board 8ch	£60
SSR Module Carrier Board 16ch	£95
SSR Module 280V AC 3A	£9
SSR Module 60V DC 3A	£9

### PC-104 MODULES

PC-104 Modules (shown below) simply stack together to form a compact modular PC- based system which has very low power consumption.

PC-104 386SX/33 CPU Module 1Mb	£299
PC-104 SVGA Display Module	£100
PC-104 Ethernet Module	£99
PC-104 Super I/O Module	£99
PC-104 RAM/ROM Disk Module	£85
PC-104 PCMCIA Memory Module	£250
PC-104 RS422/RS485 Module	£185
PC-104 Digital I/O Module	£115
PC-104 Global Positioning (GPS)	£450



### Analog & Digital I/O Card

Versatile fully integrated multifunction A/D, D/A and Digital I/O card.

- ▼ 12 bit 40KHz
- ▼ 16 single-ended or 8 differential A/D inputs
- ▼ 1 D/A output
- ▼ 16 digital inputs
- ▼ 16 digital outputs
- ▼ Pacer Clock
- ▼ Timer/Counter
- ▼ DMA and Interrupt
- ▼ Wiring Terminal Board

£189

### High Performance A/D Card

The complete and cost-effective solution for your PC based automation needs.

- ▼ 12 bit 100KHz
- ▼ 16 single-ended or 8 differential A/D inputs
- ▼ Built in 1K word FIFO
- ▼ Amplifier x0.5 to x1000
- ▼ 1 D/A Output
- ▼ 16 digital inputs
- ▼ 16 digital outputs
- ▼ Pacer Clock
- ▼ Timer/Counter
- ▼ DMA and Interrupt
- ▼ Wiring Terminal Board

£365

### Relay Output and Isolated Digital Input Card

Offering 8 programmable electro-mechanical relays for ON/OFF control or small power switching, and 8 opto-isolated inputs which can be used as digital input under noisy environment or floating potential.

- ▼ 8 on-board SPDT relays
- ▼ LED indicators to show activated relays
- ▼ 8 opto-isolated digital input channels
- ▼ Easy to use and program

£80

### Industrial I/O Cards

D/A Output Card 2ch.	£155
D/A Output Card 6ch.	£265
D/A Output Card 12ch.	£375
24 bit Digital I/O Card	£50
48 bit Digital I/O Card	£65
32 ch Isolated Digital I/O Card	£99
32 ch Isolated A/D Card	£265
4 1/2 Digit Voltmeter Card	£295

### Industrial Workstation with 15" Colour CRT

Rugged heavy duty workstation for 19" rack or panel mounting.

- ▼ Highly integrated PC Workstation
- ▼ 1024 x 768 Colour CRT Monitor
- ▼ 27-key membrane keypad
- ▼ IP56/IP52 sealed hardened front panel
- ▼ Heavy duty aluminium and steel chassis
- ▼ 250-watt power supply
- ▼ 8 ISA slots

£1550

### Industrial Workstation with 10.4" LCD Display

Rugged heavy duty workstation with flat-panel LCD display and 80-key membrane keypad.

- ▼ Highly integrated PC Workstation
- ▼ 640 x 480 colour TFT display
- ▼ 19" rack/panel mount
- ▼ IP56/IP52 front panel
- ▼ 200-watt power supply
- ▼ 8 ISA slots

£1850

### High Density Flash Card

Half-size disk card which can use up to 32Mb of Flash memory to replace a hard disk drive. It offers faster access times and better protection from vibration and contaminants than physical hard drives. Emulates drive C: bootable or drive D: Supports DOS, Windows, QNX and pSOS.

Flash Card 1Mb	£69
Flash Card 2Mb	£89
Flash Card 4Mb	£139
Flash Card 8Mb	£230
Flash Card 16Mb	£415
Flash Card 32Mb	£780

### Passive Backplanes

Passive Backplane 3 slot	£30
Passive Backplane 6 slot	£25
Passive Backplane 8 slot	£35
Passive Backplane 12 slot	£40
Passive Backplane 14 slot	£45
Passive Backplane Dual 8+4 slot	£60
Passive Backplane Dual 8+6 slot	£60

### Disk Drives & Controllers

Only supplied as part of a system.

Floppy Drive 1.44Mb	£40
Floppy Drive 1.2Mb	£40
IDE Hard Drive 1.7Gb	£155
IDE Hard Drive 2.0Gb	£175
IDE Hard Drive 3.5Gb	£215
SCSI Hard Drive 2.0Gb	£270

### Industrial 19" Chassis

The rugged all steel chassis conforms to the 19" rack mounting standard. The unit includes a 14 slot passive backplane and a high efficiency power supply (250W) in a dual-fan cooled chassis.

- ▼ Supports 386 and 486 CPU Cards
- ▼ 10 long/4 short slots (ISA bus)
- ▼ Mounting for up to 4 drives
- ▼ Hold down clamp to protect plug in cards from vibration
- ▼ Positive air pressure inside generated by dual (push-pull) cooling fans
- ▼ Removable air filters

£295

### Industrial 19" Chassis ISA/PCI backplane

The same robust 19" Industrial Chassis as described left but fitted with a special backplane offering 4 PCI slots and 9 ISA slots for use with our Pentium range of CPU Cards.

- ▼ High Quality and Reliability
- ▼ Heavy-duty steel construction
- ▼ Supports Pentium CPU Cards
- ▼ 4 PCI short slots
- ▼ 9 ISA long slots
- ▼ 1 CPU Card slot
- ▼ PICMG Standard

£300



### Industrial CPU Cards ISA-Bus

Industrial Grade CPU Cards designed to be highly reliable in harsh industrial environments. Built to ensure high end stability under extremes of temperature, shock and vibration. Special features include watchdog timers, RAM/ROM disk, PC-104 interface, floppy/IDE interface, parallel and RS232/RS485 serial ports.

Half-size Cards	
CPU Card 386SX/40 ISA-bus	£199
CPU Card 486DX4/100 ISA-bus	£250
CPU Card Pentium/133 ISA-bus	£400
CPU Card Pentium/166 ISA-bus	£425
CPU Card Pentium/200 ISA-bus	£450

### Industrial CPU Cards ISA/PCI-Bus

Additional features to those above include 2 Enhanced IDE controllers, SCSI controller and PS/2 Mouse Port.

Full-size Cards	
CPU Card Pentium/166 MMX ISA/PCI	£450
CPU Card Pentium/200 MMX ISA/PCI	£550
CPU Card Pentium/233 MMX ISA/PCI	£680
CPU Card Pentium/166 MMX + SCSI	£540
CPU Card Pentium/200 MMX + SCSI	£640
CPU Card Pentium/233 MMX + SCSI	£770

### Display and Keyboards

14" SVGA Colour Monitor	£225
Rack Mount Kit for 14" Monitor	£220
SVGA Display Card 1Mb ISA bus	£60
SVGA Display Card 2Mb PCI bus	£60
Rack Mounted Compact Keyboard	£195
Compact keyboard	£60
Standard Keyboard	£40

### Memory Components

Only supplied as part of a system	
SIMM 4Mb 72pin parity	£25
SIMM 8Mb 72pin parity	£45
SIMM 16Mb 72pin parity	£90
SIMM 4Mb 72pin EDO	£20
SIMM 8Mb 72pin EDO	£30
SIMM 16Mb 72pin EDO	£60
SIMM 32Mb 72pin EDO	£120



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30 days credit available to all our business and education customers. Automatic £3000 credit limit subject to no adverse credit history. Please telephone for details. All major credit/debit cards accepted.

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We can also be contacted by email at:

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[support@adv-net-sol.co.uk](mailto:support@adv-net-sol.co.uk) For technical support

[finance@adv-net-sol.co.uk](mailto:finance@adv-net-sol.co.uk) For credit and leasing enquiries.

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Lifetime Labour Warranty



24 speed CDROM



## PCM<sup>1</sup> Windows 95 Workstation

PCM<sup>1</sup> is a machine designed specifically for Windows 95, utilising the latest TX chipset from Intel, MMX processors and Diamond Stealth accelerators.

P166 MMX	£799	£938.83	
P200 MMX	£874	£1026.95	VAT
P233 MMX	£949	£1115.08	VAT

**Choice of:**  
Microsoft Works 95  
or Lotus Smartsuite 97  
pre-installed with all PC systems

### PCM<sup>1</sup> Specifications:

- Intel 430TX Chipset
  - 512K Pipeline Burst Cache
  - Choice of Intel MMX Processors
  - 32 MByte EDO 60ns RAM
  - 2.6 GByte Fujitsu Ultra DMA Drive
  - 2 MByte Diamond Stealth 3D Graphics Accelerator
  - 15" ADI Digital Monitor (3 year Warranty)
  - Choice of Mini-Tower/ Desktop case
  - Toshiba 24 speed CD-ROM
  - 32 Voice Wave-table Sound Card
  - Mains Powered Multi-media Speakers
- For other items included with this PC please refer to: \*All machines include

## ANS File Server Systems

A full range of network servers are available from ANS, including Hewlett Packard NetServers and our own RAID and entry level systems. Please telephone or email: [servers@adv-net-sol.co.uk](mailto:servers@adv-net-sol.co.uk) for more information.

### \*All machines include

- 3.5" Floppy Disk Drive
- Windows 95 Keyboard
- Microsoft Mouse
- Windows 95 Release 2
- Choice of MS Works 95 or Lotus Smartsuite 97
- One year on-site warranty with extended schemes available.

## PG<sup>2</sup> Games Station

PG<sup>2</sup> combines the power of Intel MMX processors and the new Matrox Mystique 220 to bring you high performance 3D games and devastatingly quick graphics.

P166 MMX	£949	£1115.08	
P200 MMX	£1025	£1204.38	VAT
P233 MMX	£1099	£1291.33	VAT

### PG<sup>2</sup> Specifications:

- Intel 430TX Chipset
  - 512K Pipeline Burst Cache
  - Choice of Intel MMX Processors
  - 32 MByte EDO 60ns RAM
  - 2.6 GByte Fujitsu Ultra DMA Drive
  - 4 MByte Matrox Mystique 220 Graphics Card
  - 15" ADI Digital Monitor (3 year Warranty)
  - Choice of Mini-Tower/ Desktop case
  - Toshiba 24 speed CD-ROM
  - Creative Labs AWE64 Wave-table Sound Card
  - Mains Powered 100W Speakers with Sub-Woofer
  - Mystique 3D Games Pack
- For other items included with this PC please refer to: \*All machines include

## UPGRADES

• 14" - 15" Monitor	£40
• 14" - 17" Iiyama Monitor	£320
• 15" - 17" Iiyama Monitor	£280
• Extra 32M Memory	£70
• 33K Fax/Voice/Modem	£47
• 56K Fax/Voice/Modem	£65
• MS Office 97 Pro	£120
• MS NT Workstation	£55

Systems tailored to individual requirements

## PPX<sup>3</sup> Power User

PPX<sup>3</sup> is based around the next generation Intel Pentium II processor. The Iiyama monitor is driven through the Accelerated Graphics Port system, and the memory sub-system consists of 64 bit 10ns DIMMS.

Pentium II 233MHz	£1649	£1937.58	VAT
Pentium II 266MHz	£1739	£2043.33	VAT
Pentium II 300MHz	£1899	£2231.33	VAT

### PPX<sup>3</sup> Specifications:

- Intel 440LX Chipset
  - Choice of Intel Pentium II Processors
  - 64 MByte Synchronous 10ns DIMMS
  - 4.3 GByte Fujitsu Ultra DMA Drive
  - 4 MByte Accelerated Graphics Port Video
  - 17" Digital Iiyama Monitor (1280 x 1024@60Hz)
  - Midi-Tower case
  - Toshiba 24 speed CD-ROM
  - Creative Labs AWE64 Wave-table Sound Card
  - Mains Powered 100W Speakers with Sub-Woofer
- For other items included with this PC please refer to: \*All machines include

\*Details correct at time of going to press. Prices and specifications subject to change without notice. Sales subject to our standard terms & conditions. E&OE



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Network Cards	Exc VAT	Inc VAT
ISA NE2000 Compatible Network Combo Card	14.00	16.45
PCI NE2000 Compatible Network Combo Card	19.00	22.33
PCMCIA NE2000 Compatible Network Combo Card	62.00	72.85
3Com 3C509B Combo	59.00	69.33
3Com 3C905TX PCI 10/100MHz	53.00	62.28



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Lan Research 8 Port Ethernet Stackable Hub	59.00	69.33
Lan Research 16 Port Ethernet Stackable Hub	115.00	135.13
D-Link 8 Port Ethernet Hub	59.00	69.33
D-Link 12 Port Ethernet Hub	114.00	133.95
D-Link 16 Port Ethernet Hub	119.00	139.83
D-Link 24 Port Ethernet Hub	165.00	193.88
Hewlett Packard Hubs and Switches	Call	Call
Hewlett Packard 16 Port Ethernet Switch	699.00	821.33

Network Cables	Exc VAT	Inc VAT
1 Metre CAT5 Patch Cable	2.00	2.35
2 Metre CAT5 Patch Cable	3.00	3.53
3 Metre CAT5 Patch Cable	4.00	4.70
5 Metre CAT5 Patch Cable	5.00	5.88
10 Metre CAT5 Patch Cable	7.00	8.23
1 Metre BNC Cable	2.00	2.35
2 Metre BNC Cable	3.00	3.53
3 Metre BNC Cable	4.00	4.70
5 Metre BNC Cable	5.00	5.88
10 Metre BNC Cable	7.00	8.23
305 Metre Roll of UTP CAT5 RJ45 Cable	99.00	116.33
100 Metre Roll of BNC RG58 Cable	39.00	45.83
BNC T-Pieces	2.00	2.35
BNC Terminators	2.00	2.35

Network Operating Systems	Exc VAT	Inc VAT
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MS Windows NT	Call	Call

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APC Smart-UPS 1000VA (inc. Powerchute)	310.00	364.25
APC Smart-UPS 1400VA (inc. Powerchute)	399.00	468.83
APC Smart-UPS 2200VA (inc. Powerchute)	577.00	677.98
APC Smart-UPS 3000VA (inc. Powerchute)	1,095.00	1,286.63

DAT Drives	Exc VAT	Inc VAT
HP DAT 2 GByte	341.00	400.68
HP DAT 4 GByte	373.00	438.28
HP DAT 8 GByte	535.00	628.63
HP DAT 2 GByte in External Case	411.00	482.93
HP DAT 4 GByte in External Case	443.00	520.53
HP DAT 8 GByte in External Case	605.00	710.88
Fuji DAT Tape 90m (2/4 GByte)	5.00	5.88
Fuji DAT Tape 120m (8 GByte)	11.00	12.93

CPUs	Exc VAT	Inc VAT
Intel Pentium 200	Call	Call
Intel Pentium MMX 166	95.00	111.63
Intel Pentium MMX 200	151.00	177.43
Intel Pentium MMX 233	232.00	272.60
Intel Pentium Pro 200	Call	Call
Intel Pentium II 233	329.00	386.58
Intel Pentium II 266	431.00	506.43
AMD K6-166MMX	78.00	91.65
AMD K6-200MMX	131.00	153.93
AMD K6-233MMX	204.00	239.70
Cyrix/IBM M2 166MX (inc. fan)	68.00	79.90
Cyrix/IBM M2 200MX (inc. fan)	95.00	111.63
Cyrix/IBM M2 233MX (inc. fan)	205.00	240.88
Heatsink & Fan	4.00	4.70
Pentium Pro Heatsink & Fan	7.00	8.23

Memory	Exc VAT	Inc VAT
4 MByte 72 pin EDO SIMM	10.00	11.75
4 MByte 72 pin Parity SIMM	17.00	19.98
8 MByte 72 pin EDO SIMM	18.00	21.15
8 MByte 72 pin Parity SIMM	34.00	39.95
16 MByte 72 pin EDO SIMM	30.00	35.25
16 MByte 72 pin Parity SIMM	43.00	50.53
32 MByte 72 pin EDO SIMM	61.00	71.68
32 MByte 72 pin Parity SIMM	92.00	108.10

Modems	Exc VAT	Inc VAT
33.6K Internal Fax/Modem	49.00	57.58
33.6K External Fax/Modem	63.00	74.03
56K Internal Fax/Modem	68.00	79.90
56K External Fax/Modem	79.00	92.83
PCI ISDN Terminal Adapter	97.00	113.98

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12x SCSI CD-ROM	65.00	76.38
16x SCSI CD-ROM	79.00	92.83
Philips CD Writer Kit	225.00	264.38
RIICOH Storm Re-Writeable CD	299.00	351.33

SCSI Controllers	Exc VAT	Inc VAT
Adaptec AHA2940u Ultra SCSI	125.00	146.88
Adaptec AHA2940uw Ultra Wide	174.00	204.45
Adaptec 3985 PCI RAID	440.00	517.00
DPT PM3334 PCI RAID Controller	895.00	1,051.63

Input Devices	Exc VAT	Inc VAT
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Microsoft Natural Keyboard	47.00	56.23
Microsoft Mouse Serial	18.00	21.15
Microsoft Mouse PS2	18.00	21.15

Scanners	Exc VAT	Inc VAT
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HP Scanjet 5P	163.00	191.53
HP Scanjet 4C	459.00	539.33
Avision 9600 dpi 30 bit	89.00	104.58

Drives (EIDE & Floppy)	Exc VAT	Inc VAT
3.5" Floppy Drive	15.00	17.63
Fujitsu 1.2 GByte Ultra DMA	70.00	82.25
Fujitsu 1.7 GByte Ultra DMA	90.00	105.75
Fujitsu 2.6 GByte Ultra DMA	106.00	124.55
Fujitsu 3.5 GByte Ultra DMA	135.00	158.63
Fujitsu 4.3 GByte Ultra DMA	165.00	193.88
Fujitsu 5.2 GByte Ultra DMA	215.00	252.63

Fujitsu Ultra Wide SCSI Drives	Exc VAT	Inc VAT
2.2 GByte Ultra Wide 7,200rpm	310.00	364.25
4.4 GByte Ultra Wide 7,200rpm	430.00	505.25
9.1 GByte Ultra Wide 7,200rpm	719.00	844.83

Motherboards	Exc VAT	Inc VAT
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QDI Jumperless 512K Cache TX P75-P233 ATX	89.00	104.58
QDI Pentium Pro 440FX	110.00	129.25
QDI Dual Pentium Pro 440FX ATX	235.00	276.13
QDI Pentium II for 233 and 266 CPU ATX	139.00	163.33

Sound Cards & Speakers	Exc VAT	Inc VAT
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Expertmedia 3201 3D Full Duplex 32 Voice Wavetable	31.00	36.43
Creative Labs Soundblaster 64 OEM	50.00	58.75
Creative Labs Soundblaster 64 Value	62.00	72.85
Creative Labs Soundblaster AWE 64 Gold Version	115.00	135.13
Logic 3 Screenbeat 225 25 Watts Mains	19.00	22.33
Logic 3 Screenbeat 250 50 Watts Mains	28.00	32.90
Logic 3 Screenbeat 280 80 Watts Mains	54.00	63.45
Logic 3 Screenbeat 310 100 Watts Mains	66.00	77.55
Logic 3 Screenbeat 300 120 Watts Mains with Sub-woofer	90.00	105.75

Video Cards	Exc VAT	Inc VAT
Diamond Stealth 2000 2 MByte EDO 3D	39.00	45.83
Diamond Stealth 3240 2 MByte VRAM 3D	77.00	90.48
Diamond Stealth 3400 4 MByte VRAM 3D	101.00	118.68
Diamond Monster (3DFX Voodoo) 1 MByte VRAM	110.00	129.25
Matrox Mystique 220 4 MByte VRAM 3D	85.00	99.88
Matrox Millennium II 4 MByte VRAM	144.00	169.20
Matrox Millennium II 8 MByte VRAM	189.00	222.08
Mystique 2 MByte Upgrade	33.00	38.78
Millennium 2 MByte Upgrade	51.00	59.93
Millennium 4 MByte Upgrade	99.00	116.33
Matrox Rainbow Runner Studio	150.00	176.25

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ADI 14" Digital 0.28dp 1024x768@60Hz NI	111.00	130.43
ADI 15" Digital 0.28dp 1280x1024@60Hz NI	162.00	178.60
ADI 17" Digital 0.28dp 1280x1024@60Hz NI	335.00	393.63
Iiyama 8617E 17" 0.26dp 86KHz	399.00	468.83
Iiyama 9017E 17" 0.25dp Diamondtron 90KHz	425.00	499.38
Iiyama 8221T 21" 0.27dp 82KHz	859.00	1,009.33
Iiyama 9021T 21" 0.30dp Diamondtron 90KHz	899.00	1,056.33

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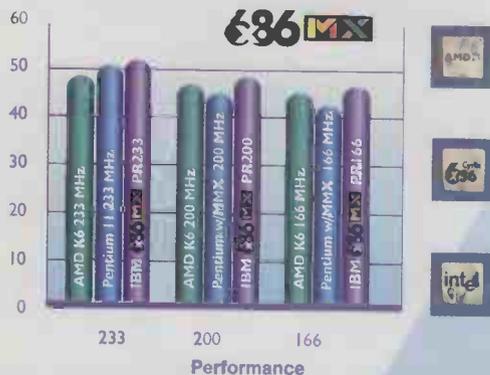
Kit	X4	X8	X16	X24
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UP300	CDR	16 Sound	Card	Speakers
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Test Configuration Mtech R534G M/board, 512k pipeline burst cache, 32 mb EDO Memory, Matrox Millenium w/4mb Adaptec AHA 2940 SCSI - 3 host plus adaptor, Barracuda SCSI Drive  
All results set forth above were obtained through bench marking performance by XXGal, Inc. Testing Laboratories, an independent laboratory not affiliated with IBM

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686 166+	£479.00	£562.82
686 200+	£495.00	£581.62
686 166MMX	£495.00	£581.62
686 200MMX	£525.00	£616.87
Intel 150	£509.00	£598.07
Intel 166MMX	£529.00	£621.57
Intel 200MMX	£575.00	£675.62
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K6 233	£525.00	£616.87
686 166+	£385.00	£452.37
686 200+	£399.00	£468.82
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ME8CE	8MB 72Pin EDO SIMM	£12.00	£14.10
ME168C	16MB 72Pin SIMM	£28.00	£32.90
ME168CE	16MB 72Pin EDO SIMM	£21.00	£24.68
ME32C	32MB 72 Pin SIMM	£52.00	£61.10
ME32CE	32MB 72Pin EDO SIMM	£40.00	£47.00
ME32S	32MB SDRAM 64 Bit	£52.00	£61.10
ME64S	64MB SDRAM 64 Bit	£119.00	£139.82
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VC20	S3 Trio 64V+ 2MB EDO	£19.00	£21.33
VC40	S3 Virge 2MB 3D2000	£23.00	£27.03
VC41	S3 Virge 4MB 3D2000	£35.00	£41.13
VC45	Mega 3D 4MB Cirrus GD5464	£39.00	£45.83
<b>MATROX</b>			
VC-101	4MB 220V Matrox Mistique	£75.00	£88.13
VC-151	4MB Matrox Millennium 2	£115.00	£135.13
VC-151B	4MB Matrox Millennium 2 Business	£125.00	£146.88
VC-151R	4MB Matrox Millennium 2 Retail	£125.00	£146.88
VC-158	8MB Matrox Millennium 2	£179.00	£210.33
VC-130	Matrox Rainbow Runner	£115.00	£135.13
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VC78	ATI Charger 4MB	£37.00	£43.48
VC79	ATI 3D Charger 4MB	£45.00	£52.88
VC80	ATI 3D Expression 2MB	£45.00	£52.88
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VC87	ATI Expert at Work	£92.00	£108.10
VC88	ATI 3D Pro Turbo 4MB PC2TV	£85.00	£99.88
VC88	ATI 3D Pro Turbo 8MB PC2TV	£119.00	£139.83
VC92	ATI Expert at Play	£105.00	£123.38
<b>HERCULES</b>			
VC300	Hercules Stingray 3D 6MB Voodoo	£155.00	£182.42
VC400	Hercules Stingray 3D 8MB Voodoo	£175.00	£205.62
VC500	Apocalypse 3D 4MB	£95.00	£111.62
VC600	Apocalypse 5D 6MB	£145.00	£170.37
<b>DIAMOND</b>			
VC60	Diamond 3D2000	£35.00	£41.13
VC62	Diamond 3D2000 pro 4MB	£49.00	£57.58
VC89	Diamond 3D Monster 4MB Voodoo	£99.00	£116.33
VC6S	Diamond Fire GL 8MB	£115.00	£135.13
	Diamond Viper 4MB	£105.00	£123.00
VC9S	4MB Orchid Righteous 3D	£99.00	£116.33
VC9I	Maxi 4MB Voodoo FX	£89.00	£104.58

## CD Rom

from £25 + Vat

### Mitsumi CD-Recorder

- á 6x Read 2x Write.
- á Supports: CD-DA, CD-Rom mode 1, mode 2, CD-ROM XA form 1 and 2, CD-I
- á 1MB Buffer.
- á 16-bit IDE.

£197 + Vat

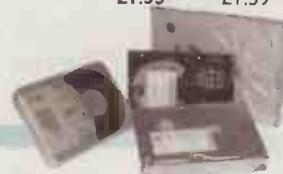
**MITSUMI**



		Ex. Vat	Inc. Vat
CD4M	X4 Mitsumi CD Rom Drive	£25.00	£29.37
CD8M	X8 Mitsumi CD Rom Drive	£33.00	£38.77
CD16H	X16 Hitachi CD Rom Drive	£42.00	£49.35
CD16G	X16 Goldstar CD Rom Drive	£44.00	£51.70
CD16TX	X16 Toshiba CD Rom Drive	£45.00	£52.87
CD24C	X24 Creative CD Rom Drive	£49.00	£57.57
CD24P	X24 Panasonic CD Rom Drive	£45.00	£52.87
CD24PI	X24 Pioneer CD Rom Drive	£49.99	£58.75
CD24A	X24 Acer CD Rom Drive	£42.00	£49.35
CD24G	X24 Goldstar CD Rom Drive	£52.00	£61.10
<b>CD Writers</b>			
CDRM26	Mitsumi X6 IDE Drive INT	£179.00	£210.33
CDR27	6x2 Rewritable CD kit INT	£315.00	£370.13
CD5	CD writable Disks	£1.35	£1.59

## Hard Drives

from £65 + Vat



		Ex. Vat	Inc. Vat
<b>Seagate</b>			
HD12S	Seagate 1.2GB	£69.00	£81.08
HD17S	Seagate 1.7GB	£85.00	£99.88
HD21S	Seagate 2.1GB	£92.00	£108.10
HD21SU	Seagate 2.1GB Ultra DMA 33	£95.00	£111.62
HD32SU	Seagate 3.2GB Ultra DMA 33	£112.00	£131.60
HD43SU	Seagate 4.3GB Ultra DMA 33	£149.00	£175.08
<b>Quantum</b>			
HD21QS	Quantum 2.1 GB Stratus Ultra DMA	£99.00	£116.32
HD32QS	Quantum 3.2GB Stratus Ultra DMA	£110.00	£129.25
HD43QS	Quantum 4.3GB Stratus Ultra DMA	£149.00	£175.08
HD38QBF	Quantum 3.8GB Fireball	£169.00	£198.58
HD43QBF	Quantum 4.3GB Cyclone	£119.00	£139.82
HD65QBF	Quantum 6.5GB Cyclone	£175.00	£205.62
HDMQS	Quantum 6.4GB Stratus Ultra DMA	£185.00	£212.37
HDC2	APAC Removeable Drive Caddie	£14.00	£16.45
<b>Maxtor</b>			
HD1M	Maxtor 1GB	£65.00	£76.37
HD13M	Maxtor 1.3GB	£75.00	£88.13
HD21M	Maxtor 2.1GB Ultra DMA33	£95.00	£111.63
HD25M	Maxtor 2.5GB Ultra DMA 33	£109.00	£128.07
HD52M	Maxtor 5.2GB Ultra DMA 33	£175.00	£205.62
HD7M	Maxtor7GB Ultra DMA33	£199.00	£233.82
<b>Fujitsu Ultra DMA</b>			
HD17F	Fujitsu 1.7GB Ultra DMA 33	£85.00	£99.87
HD26F	Fujitsu 2.6GB Ultra DMA 33	£103.00	£121.02
HD35F	Fujitsu 3.5GB Ultra DMA 33	£112.00	£131.60
HD43F	Fujitsu 4.3GB Ultra DMA 33	£143.00	£168.02
HD52F	Fujitsu 5.2GB Ultra DMA 33	£179.00	£210.38

## Fax Modems

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### Diamond 56K Modem

- á Up to 56,000 bps.
- á Software Flash upgradeable.
- á Trio Communication Software
- á Windows 95 PnP Compatible



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		Ex. Vat	Inc. Vat
FM35	Rockwell BABT 33600 INT	£35.00	£41.13
FM30	Diamond 33600 Voice BABT INT	£42.00	£49.35
FM40	Diamond 33600 Voice BABT EXT	£49.00	£57.58
FM41	US Robotics WIN Modem 33600	£59.00	£69.38
FM56	Datafax 56600 Internal	£55.00	£64.63
FM57	Diamond 56600 Internal Supra	£69.00	£81.08
FM58	Diamond 56600 External Supra	£79.00	£92.83
FM33	Ultimate 33600 Fax BTAP	£39.00	£45.83
FM56	Ultimate 56600 Fax/Modem	£55.00	£64.63

# CPU'S



		Ex.Vat	Inc. Vat
AMD			
C166A	AMD K5 PRI66 CPU	£59.00	£69.32
C166AK6	AMD K6 166 CPU	£72.00	£84.60
C200AK6	AMD K6 200 CPU	£105.00	£123.38
C233A	AMD K6 233 CPU	£175.00	£205.63
INTEL			
C150I	Intel P150 CPU	£65.00	£76.38
C166MMX	Intel 166 MMX CPU	£75.00	£88.12
C200MMX	Intel 200 MMX CPU	£129.00	£151.57
C233MMX	Intel 233 MMX CPU	£179.00	£210.32
C233P2	Intel Pentium2 233	£CALL	£CALL
C266P2	Intel Pentium2 266	£CALL	£CALL
C300P2	Intel Pentium2 300	£CALL	£CALL
CYRIX			
C166C	Cyrix 686 I 66	£39.00	£45.83
C200IBM	IBM 686 200	£45.00	£52.88
C200C	Cyrix 686 200	£47.00	£55.23
C166MMX	Cyrix 166 MMX	£52.00	£61.10
C200MMX	Cyrix 200 MMX	£75.00	£88.12
C233MMX	Cyrix 233 MMX	£CALL	£CALL
C166IBM	IBM 166 MMX	£49.00	£57.57
C200IBM	IBM 200 MMX	£69.99	£82.25
SGS Thomson			
C166ST	686 P166+	£39.00	£45.82

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# Motherboards

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## A-Trend TX Motherboard

- Ultra DMA33 Support.
- 2 1655A fast UARTs.
- Intel 430TX Chipset.
- Ultra Multi-I/O chipset.
- 4 PCI, 3 ISA Slots
- 512K on-board Cache.
- 4 72-pin Simm Sockets.
- 2 168-pin Sockets.

£54.00 +Vat

## Tekram TX Motherboard

- Intel 430TX Chipset.
- 4 PCI, 3 ISA Slots
- 512K on-board Cache.
- Ultra Multi-I/O chipset.
- Ultra DMA33 Support.
- 4 72-pin Simm Sockets.
- 2 1655A fast UARTs.
- 2 168-pin Dimm Sockets.

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## Gigabyte TX Motherboard

- Ultra DMA33 Support.
- 2 1655A fast UARTs.
- Ultra Multi-I/O chipset.
- 4 72-pin Simm Sockets.
- 2 168-pin Sockets
- Multi-I/O chipset.

£75.00 +Vat

### PC CHIPS

		Ex. Vat	Inc. Vat
M100-V	Optl Viper Up to 233 MHz	£27.00	£31.73
M101	VX Pro Motherboard 512k	£39.00	£45.83
M102	TX Pro Motherboard 512k	£43.00	£50.53
M99B	Intel Triton VX 430 Motherboard	£39.00	£45.83
M92 -TXP	Intel Triton TX430 512k Cache	£53.00	£62.28

### GIGABYTE

M92HXG	Gigabyte HX Motherboard 512k V2	£69.00	£81.08
M92TXG	Gigabyte TX Motherboard 512k	£75.00	£88.13
M92-HXGA	Gigabyte HX Mboard 512k ATX	£92.00	£108.10
M92-TXGA	Gigabyte TX Mboard 512k ATX	£99.00	£116.33

### MICRONICS

M150	Twister AT 430 TX 512k	£95.00	£111.63
M151	Twister ATX 430 TX 512k	£95.00	£111.63
M152	Thunderbolt AT 430 TX 512k	CALL	CALL
M153	Spitfire 440 LX 512/1024k	CALL	CALL

# Upgrade Kits

from £94 +Vat

Motherboard & Processor Bundle  
Pentium VX Motherboard, Heatsink & fan, IMB Video Card  
Upgrade to TX Motherboard £10.00. Upgrade to 2MB Video Card £7.00

		Inc. Vat	Inc Vat
UP20	Cyrix 686 P166 Upgrade Kit	£94.00	£110.50
UP30	Cyrix 686 P200 Upgrade Kit	£104.00	£122.20
UP40	Intel Pentium 166MMX Upgrade Kit	£140.00	£164.60
UP50	Intel Pentium 200MMX Upgrade Kit	£194.00	£227.95
UP60	AMD K6 166MMX Upgrade Kit	£129.00	£151.57
UP70	AMD K6 200MMX Upgrade Kit	£165.00	£193.87

# Printers

from £85 +Vat

		Ex. Vat	Inc. Vat
PR62	Epson 300 Inkjet Colour Printer	£107.00	£125.73
PR60	Epson 400 Inkjet Colour Printer	£131.00	£153.93
PR61	Epson 600 Inkjet Colour Printer	£172.00	£202.10
PR35	Hewlett Packard 690 Plus	£142.00	£166.85
PR37	Hewlett Packard 870 Cxi	£202.00	£237.35
PR100	Olivetti 170C	£95.00	£111.62
PR37	Hewlett Packard 4L	£85.00	£99.77
PR38	Hewlett Packard 6L	£233.00	£273.77
PR39	Hewlett Packard Laser Printer	£455.00	£534.62
Scanners			
SCAN50	Musteck Paragon	£69.00	£81.08
SCAN99	Musteck Paragon 600 II N SCSI	£79.00	£92.83
SCAN60	Musteck Paragon II EP Parallel	£85.00	£99.88
SCAN100	Musteck Paragon 600 II CD SCSI	£89.00	£104.58

# Sound Cards

from £9 +Vat

## Creative AWE 64 Gold

- 64 Voice Wavetable.
- 4MB Ram on-board.
- 20-bit digital SPDIF.
- Stereo Digital Mixer.

£105.00 +Vat



## Pine 3D 16-bit Sound Card

- 16-bit Stereo A/D and D/A.
- Full Duplex monophonic.
- 20 Voice / 70 Operator Synthesizer

£14.00 +Vat



		Ex. Vat	Inc. Vat
SO02	MaxPower 16 Bit	£12.00	£14.10
SO45	Pine ESS 1868 3D Sound Card	£14.00	£18.45
SO06	Pine ESS 16-bit Sound Card	£9.00	£10.58
SO15W	Audio Excell 16 PnP Wavetable	£15.00	£17.63
SO15	Audio Excell 3D PnP	£10.00	£11.75
SO25	Yamaha 3D PnP 32 Sound	£16.99	£19.96
SO21	100 Plus Sound Card	£12.00	£14.10
SO12	CreativeLabs SoundBlaster 16	£28.00	£32.90
SO64V	Creative Labs AWE 64V	£48.00	£56.40
SO64G	Creative Labs AWE 64 Gold	£105.00	£123.38

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## 240 Watt Speakers

- Built-in Amplifier.
- 240 Watt PMPO.
- Surround Sound Function.

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		Ex. Vat	Inc. Vat
SP30	Ultimate 30 Watt Speakers	£7.99	£9.39
SPI60S	Ultimate 160 Watt Speakers	£18.00	£21.15
SF240	Ultimate 200 Watt Speakers	£19.00	£22.35
SPI20W	Wavemaster 120 Watt Speakers	£16.00	£18.80
SP240W	Wavemaster 240 Watt Speakers	£22.00	£25.85
SP300	Trust 300 Watt Speakers	£33.00	£38.78
SP25Y	Yamaha 25Watt Speakers subWoofer	£59.00	£69.32

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MOI5HO	Hansol 15" Digital 500A	£145.00	£170.38
MOI5H	Hansol 15" Digital 500P	£155.00	£182.00
MOI5HS	Hansol 15" Digital Speakers	£175.00	£205.63
MOI7HO	Hansol 17" Monitor 700A	£269.00	£316.08
MOI7H	Hansol 17" Monitor 700P .26	£339.00	£398.33
ADI			
MOI14A	14" ADI Provista E30 Digital	£105.00	£123.37
MOI15A	15" ADI Microscan 4P Digital	£165.00	£193.87
MOI17A	17" ADI Microscan 5P Digital	£309.00	£363.07
MOI17AT	17" ADI Microscan 5G Digital .26	£369.00	£433.57
MOI17XA	17" ADI 17X A4 Pivot	£309.00	£363.07
MOI19A	19" ADI 6P Digital	£575.00	£675.62
MO21A	21" ADI 6G Digital	£839.00	£985.82
Targa			
MOI14T	14" Targa Digital Monitor	£95.00	£116.33
MOI15T	15" Targa Digital Monitor	£139.00	£163.33
MOI17T	17" Targa Digital Monitor	£265.00	£311.38

# Network Products

## Videa Ethernet Adapter



á High Performance 10Base2 and 10Base T  
á BNC/UTP Ports  
á Novell NE2000 Compatible.

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		Ex. Vat	Inc. Vat
NC09	ISA NE2000 Net Card BNC Rj45	£13.99	£16.45
NC20	PCI NE2000 Net Card BNC Rj45	£19.00	£23.33
NET-T	Network terminator- 50ohm	£1.00	£1.18
NET-TP	Network T-piece	£2.00	£2.35
NET-CABLE	Network Cable 100M	£19.00	£22.33
NET-CABLE	Network Cable per metre	£0.75	£0.88
NET-CP	Crimp Plug	£1.00	£1.18

# Backup Devices from £69 + Vat

## Omega Zip Drives

á 100MB Storage Capacity  
á Internal or External versions.



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á 120MB Storage Capacity.  
á Reads / Writes 3.5" HD / DD Floppy Disks.  
á 5 Times faster than a conventional Floppy.  
á Functions as standard Drive A.



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		Ex. Vat	Inc. Vat
ZIP200	Omega ZIP Drive 100MB Internal	£69.00	£81.07
ZIP100	Omega ZIP Drive 100MB External	£87.00	£101.06
ZIP300	Omega ZIP Drive SUSI Internal	£87.00	£101.06
ZIP400	Omega ZIP Drive SUSI External	£87.00	£101.06

# Input Devices

		Ex. Vat	Inc. Vat
M102	Ultimate 2 Button Mouse	£2.50	£2.94
M103	Quality 3 Button Mouse	£3.50	£4.11
M110	Mitsumi 2Button Mice	£6.00	£7.05
M120	Microsoft 2Button Mice	£12.99	£15.26
K50	Mitsumi 105 Windows95 Keyboard	£10.00	£11.75
K10	STD 105 Windows 95 Keyboard	£5.99	£7.04
K15	Ultimate Windows 95 Keyboard	£6.99	£8.21
K55	Microsoft Natural Keyboard	£44.00	£51.70
K25	Keytronics Windows 95 Keyboard	£25.00	£29.37
K33	BTC Windows 95 Keyboard	£7.99	£9.39
K33	M Power Windows 95 Keyboard	£7.99	£9.39

## Floppy Drives

FD1P	Panasonic 1.44 Floppy Drive	£12.99	£15.26
FD1S	Sony 1.44 Floppy Drive	£14.00	£16.45
FD1M	Mitsumi 1.44 Floppy Drive	£11.99	£14.09
FD-A120	120MB Floppy Drive	£65.00	£76.37

## Coolers

HSF4	486 Heat Sink & Fan	£3.00	£3.53
HSF5	Pentium Heat Sink & Fan	£4.00	£4.70
HSF6	686 Heat Sink & Fan Heavy Duty	£5.00	£5.38
HSF8	Pentium and 686 Fan	£5.00	£5.38

## TV Cards

TV10	Hauppauge PCI TV Card	£75.00	£88.13
TV20	Hauppauge PCI TV& Radio Card	£85.00	£99.86

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## Hansol 400A 14" Colour Monitor

á 14" Diagonal FST. 0.28 Dot Pitch.  
á Up to 1024x768 at 60Hz (NI)  
á 3 Years on-site Warranty.  
á Microprocessor Digital Control.

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## Hansol 500M 15" Colour Monitor

á 15" Diagonal FST. 0.28 Dot Pitch.  
á Up to 1024x768 at 60Hz (NI)  
á 3 Years on-site Warranty.  
á With Speakers.

£175 + Vat



## Hansol 700P 17" Colour Monitor

á 17" Diagonal FST. 0.26 Dot Pitch.  
á Up to 1600x1200 at 66.6Hz (NI).  
á 3 Years on-site Warranty.  
á Microprocessor Digital Control.

£339 + Vat



## ADI Provista 14" Colour Monitor

á 14" FST 0.28 Dot Pitch  
á Up to 1024x768 at 60 Hz (NI).  
á 3 Years Warranty (2 years on-site).  
á Microprocessor Digital Control.

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# Cases

from £21 + Vat

		Ex. Vat	Inc. Vat
CS30	Ultimate Quality Minitower Case	£21.00	£24.68
CS40	Ultimate Quality Desktop Case	£21.00	£24.68
CS32	Ultimate Quality Full Tower Case	£36.00	£42.30
CS15	WT Quality Minitower Case	£21.00	£24.68
CS16	WT Quality Desktop Case	£21.00	£24.68
CS17	WT Quality Midtower Case	£26.00	£42.30
CS18	WT Quality FullTowerCase	£38.00	£44.65
CS80	Enlight EN6562 Minitower Case	£39.00	£45.83
CS85	Enlight EN6414 Desktop Case	£41.00	£48.18
CS90	Enlight Midtower Case	£56.00	£65.80
CS130	Enlight Midtower ATX Case	£65.00	£76.37
CS200	ATX Midtower Case	£55.00	£64.62
CS210	ATX Full Tower Case	£85.00	£99.87
CS220	ATX Desktop Case	£55.00	£64.62

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56k modems offer all the benefits of 33.6 voice modems such as Email, fax, Internet access etc. The 56k standard allows you to download from supporting internet service providers at speeds up to 56k. Meaning less time connected and therefore smaller phone bills.

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- Intel Pentium<sup>®</sup> processor with MMX<sup>™</sup> technology
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- 2Mb ATI 3D graphics card, with full screen MPEG playback
- 14" ADI SVGA Monitor (1024 x 768)
- 512K Pipeline Burst Cache
- 24x max CD ROM Drive
- Soundblaster 16 P n P
- High powered speakers
- Microsoft Mouse
- Microsoft Works
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- 5 Year Warranty & Lifetime Technical support
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- Intel 430 VX Chipset, 1.44Mb Floppy, 105 Key keyboard, Socket 7, 1 parallel & 2 Serial ports, 3 PCI & 2 ISA free slots.

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- 15" ADI SVGA Monitor (1280 x 1024)
- 512K Pipeline Burst Cache
- 24x max CD ROM Drive
- Soundblaster 16 P n P
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- 4.3Gb Ultra ATA Hard Drive
- 4Mb ATI 3D graphics card, with full screen MPEG playback
- 15" ADI SVGA Monitor (1280 x 1024)
- 56K Voice/Fax Data Modem
- 512K Pipeline Burst Cache
- 24x max CD ROM Drive
- Soundblaster AWE 64 P n P
- High powered speakers
- Microsoft Mouse
- Microsoft Home software
- Microsoft Windows 95 OSR/2
- 5 Year Warranty & Lifetime Technical support
- ATX Mini Tower or Desktop case
- Intel 430 TX Chipset, 1.44Mb Floppy, 105 Key keyboard, Socket 7, 1 parallel & 2 Serial ports, 3 PCI & 1 ISA free slots.

**166MHz with MMX<sup>™</sup> Technology**  
**£669** ex VAT **£786** inc VAT  
200MHz with MMX<sup>™</sup> Technology **£749** ex VAT **£880** inc VAT  
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**Encarta 97, Works, Money, Golf, Scenes, Wine Guide, Auto Route, Dangerous Creatures, Fine Artist, Corel Draw.**

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- Intel Pentium® processor with MMX™ technology
- 32Mb Fast EDO RAM
- 4.3Gb Ultra ATA Hard Drive
- 4Mb ATI 3D Expert graphics card, with full screen MPEG playback
- 15" ADI SVGA Monitor (1280x1024)
- 56k Voice/Fax Data Modem
- Iomega Zip Drive
- 512K Pipeline Burst Cache
- 24x max CD ROM Drive
- High powered speakers
- Microsoft Office
- Microsoft Office Pro 97
- Microsoft Windows 95 OSR/2
- 5 Year Warranty & Lifetime Technical support
- ATX Mini Tower or Desktop case
- Intel 430 TX Chipset, 1.44Mb Floppy, 105 Key keyboard, Socket 7, 1 parallel & 2 Serial ports. 3 PCI & 1 ISA free slots.

**IOMEGA**  
Zip Drive

## CRESTA

- Intel Pentium® II processor with MMX™ technology
- 32Mb Fast EDO RAM
- 4.3Gb Ultra ATA Hard Drive
- 4Mb ATI 3D Expert graphics card, with full screen MPEG playback
- 17" ADI SVGA Monitor (1280 x 1024)
- 56k Voice/Fax Data Modem
- 512K Pipeline Burst Cache
- 24x max CD ROM Drive
- Soundblaster AWE 64 P n P
- High powered speakers
- Microsoft Mouse
- Microsoft Home software
- Microsoft Windows 95 OSR/2
- 5 Year Warranty & Lifetime Technical support
- ATX Mini Tower or Desktop case
- Intel 430 TX Chipset, 1.44Mb Floppy, 105 Key keyboard, Socket 7, 1 parallel & 2 Serial ports. 3 PCI & 1 ISA free slots.

## ULTRA MEDIA

- Intel Pentium® II processor or Intel Pentium® processor with MMX™ technology
- 64Mb Fast EDO RAM
- 8.3Gb Ultra ATA Hard Drive
- 8Mb ATI 3D Expert graphics card, with full screen MPEG playback
- 3Dfx accelerator card
- 17" ADI SVGA Monitor (1280 x 1024)
- 56k Voice/Fax Data Modem
- Iomega Zip Drive
- 512K Cache
- 24x max CD ROM Drive
- Soundblaster AWE 64 P n P
- Satellite & Bass Sub Woofer speakers
- Microsoft Intelli Mouse
- Microsoft Home software
- Microsoft Windows 95 OSR/2
- 5 Year Warranty & Lifetime Technical support
- ATX Full Tower Case
- Intel 430 TX/440LX Chipset, 1.44Mb Floppy, 105 Key keyboard, Socket 7/Slot 1, 1 parallel & 2 Serial ports, 3 PCI & 1 ISA free slots.

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- \*Data Acquisition Cards.
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- \*D/A Output Cards.
- \*Timer/Counter Card.
- \*RS-422/485 Interface.
- \*Relay Output Card.
- \*Stepping Motor Controller Cards.
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- \*Application Software.

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- \* For 14"/15" Monitors
- \* Extruded aluminium handles
- \* Knock down type , 8U High
- \* Protective Lexon anti-glare screen built in
- \* 14" Touch screen option available

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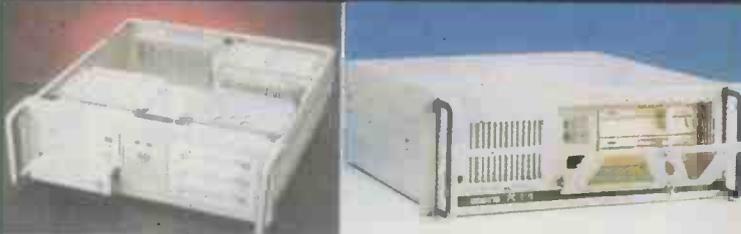
- \* 1U High
- \* Space for Mouse
- \* Extruded Aluminium Handle

**£176**

- \*Accommodates 14" monitors
- \*19" rack/panel mount
- \*Provides hold-down device
- \*Touch Screen Support

**£205**

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- \* 19" Hard Disk/CD ROM enclosure 4U.
- \* Designed for disk array system.
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- \* 48 programmable I/O lines
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- \* Speeds up to 38.4kbps (8-ports) **£283**
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- \* Free Dos and Windows driver, Datascope utility (PC-ComLIB) included

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 62 Way D-Type to 8 Line 25 Ways D-Type Cable for the above **£20**

### 4-port RS-232/422/485 Interface Card



- \* Each port configurable for RS-232/422/485
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- \* Extended "AT" interrupt selection
- \* Free Dos and WIN NT driver (PC-ComLIB) included

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### High Density Flash Solid State Disk Card

- \* Auto Bootable
- \* 1-32 MB on-board capacity
- \* Up to 128MB (4 cards per system)
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- \* Fully MS-DOS, MS-Windows, Unix and QNX compatible
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## Adam 4000 Series



### GENERAL FEATURES

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- \* Field-configurable via software
- \* ASCII command/response protocol
- \* +10 to +30 VDC power requirement
- \* Mounts easily on panel, DIN-rail or piggyback stack

- Analog Input Module(mV, VmA, Thermocouple) **£131**
- Analog Input Module(mVmA, High Voltage) **£131**
- Analog Input Module(RTD) **£131**
- Analog Input Module with Display(mV,mA) **£168**
- Analog Output Module(V or mA) **£131**
- 8-channel Analog Input Module(mV,VmA) **£170**
- 8-channel Thermocouple Input Module **£183**
- Digital I/O Module **£96**
- Isolated Digital I/O Module **£96**
- Relay Output Module **£96**
- Counter/Frequency Input Module with Display **£168**
- RS-485 repeater Module **£71**
- Isolated RS-232/RS-485 Converter Module **£71**
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- Industrial Power Supply (110VAC or 220VAC) **£149**

## MIC-2000 Series PC-Based



- \* Open ISA-bus architecture
- \* Flexible modular design
- \* Front panel I/O access
- \* Extractor handle design for easy module installation
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## Motion Control

### 3-axis Stepping Motor Control Card



- \* Step rate up to 16 Kpps
- \* 3 intelligent chips for simultaneous control of up to 3 motors
- \* 5 DI per axis for limit switching

- \* Half-sized PC add-on card **£239**
- 3-axis Servo Motor Control Card **£331**

## Industrial WorkStations

### Industrial Workstation with 14" Colour CRT Monitor



- \* Highly-Integrated PC workstation
- \* 1024x768 colour CRT Monitor
- \* 19" rack/panelmount
- \* 250-watt power supply **£1463**
- \* 8 PC/AT compatible slots
- \* 27-key membrane keypad

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- \* Industrial Workstation with 9.4" B&W LCD Display **£879**
- \* Panel PC with 9.4" DSTN Display **£1498**
- \* Industrial PC Workstation with 15" Colour CRT Monitor with 3 PCI Bus **£1546**
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### PC- Based industrial computer



This slim panel PC provides a fully integrated 486-based PC a built in 50W power supply and comprehensive networking support, three RS-232 and one RS-232/422/485 ports. It is an ideal solution for distributed control and monitoring applications.

- \* 486 all-in-one PC-board (up to DX4-120x5x86)
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- \* 10.4" Colour TFT LCD display, touch screen optional
- \* Watchdog timer
- \* One Parallel (ECP, EPP)
- \* 4 Isolated digital I/O
- \* Space for 2.5" HDD
- \* Ethernet, Novell NE-2000 compatible. 10 Base-T interface
- \* 342mm(W)x265mm(H)x61.5mm(D)

## Application Software

### GENIE Software



- \* Real-time DA&C, graphic display & data logging (MS Windows)
- \* Icon-based, object oriented
- \* Unlimited number of blocks & I/O devices
- \* User programmable blocks
- \* Supports most LabCards & ADAM 4000 Series

**£170**

- Visual Basic Custom Controls **£54**
- DASYLab Light for Windows (32 Block) **£748**
- Windows Charting Tool (C++) **£243**
- Windows Charting Tools DLL Source C++ **£243**
- Windows Charting Tools (VBasic) **£243**
- Labtech Control Pro (Windows) **£2766**
- Labtech Notebook Pro (DOS & Windows) **£1184**

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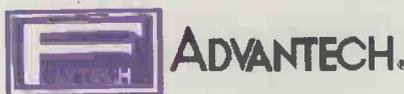
## PC/104 Modules

### 386SX-33 CPU Module

- \* Low power consumption
- \* Up to 4MB ZIP DRAM
- \* Built in RTC with lithium battery backup
- \* Single +5 V operation
- \* 60° operation **£254**



- Super I/O Module **£88**
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- Ethernet Module **£94**
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- PCMCIA slot Module **£215**
- Flat Panel/CRT VGA Module **£195**
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- Four port RS-232 Module **£104**
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# OfficeStation 97™

## Multimedia Systems



## 200M

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- 24 Speed Max CD-ROM drive
- ESS 3D wavetable sound
- Sound Force Stereo mains speakers
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Microsoft  
**Office 97**  
Small Business Edition

### Microsoft Office 97

bundle includes:



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As above but with IBM 200MX processor with MMX technology and 64Mb EDO RAM.

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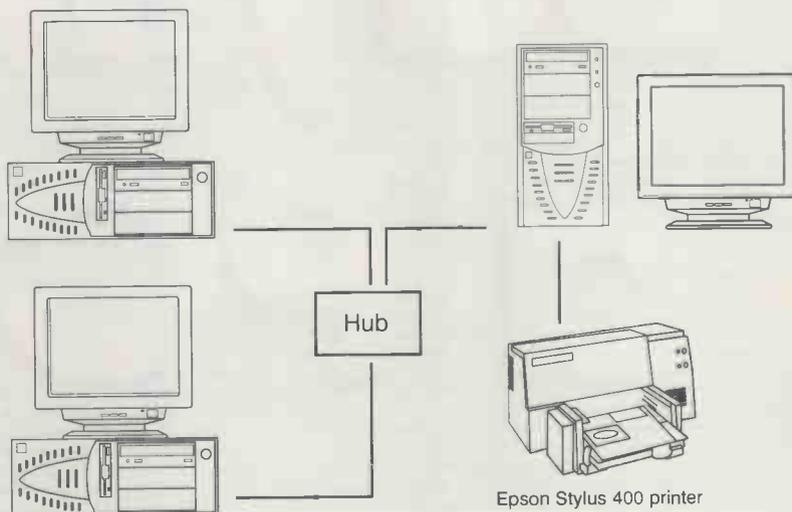
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- 2) Workstation computers
- 3) Epson Stylus colour 400 inkjet printer
- 4) 5 port hub, cables and all other items

Product code 400-30-162

£ 4228.<sup>83</sup> inc. VAT

£ 3599 +VAT

### Options

**5 User Solution** £5599 +VAT = £6608.20  
 Product code:- 400-30-163  
**Solutions with Epson EPL 5500 600dpi Laser Printer** are £100 +VAT =£117.50 extra.  
 product codes:- 3 User 400-30-164; 5 User 400-30-165

## Product Specification

### WorkStation Computers

- Colossus 166M ATX Desktop
- Intel® (100/10 Mb/sec) PCI network card
- Intel Pentium 166MHz processor with MMX™ technology
- 32Mb EDO RAM
- 4.3Gb Ultra ATA hard disk
- 24 MAX CD-ROM Drive
- SIS advanced graphics using 4Mb system RAM
- 15" SVGA 0.28dp NI colour screen
- ESS 3D wavetable sound built-in
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- Business software bundle
- All standard items such as keyboard, mouse, Windows 95, ports
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As Workstations but:-

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- Larger 6.4Gb hard disk
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- 56k Flex v34 modem

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- Surge protected extension power socket for central computer
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- Lotus ScreenCam 97 recorder
- Lotus Organizer 97 Scheduler
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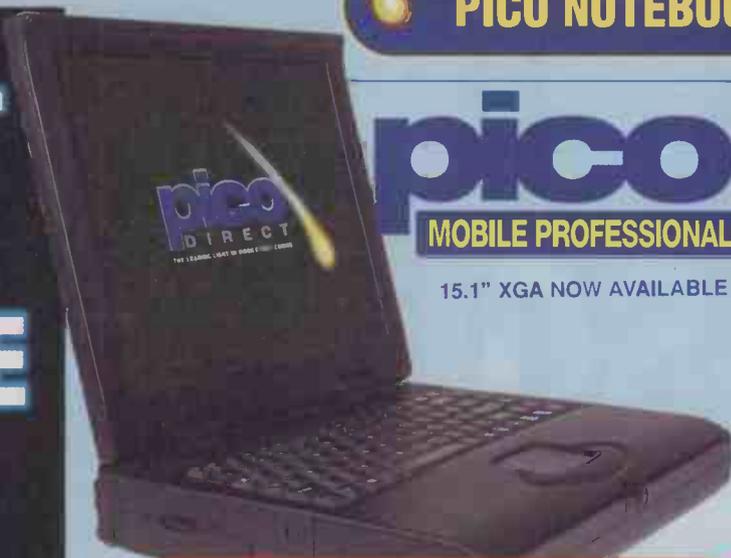
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## pico MOBILE PROFESSIONAL

15.1" XGA NOW AVAILABLE

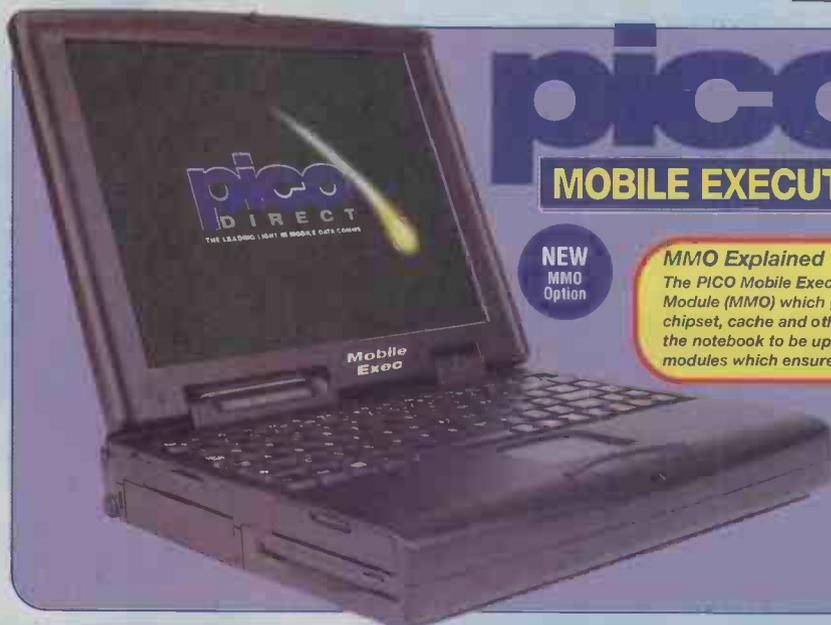


- Upgradeable to Intel Pentium 233 MMX
- XGA, TFT 13.3"/14.1" Active matrix screen up to 1280x1024 resolution
- 32MB EDO RAM upgradeable to 128MB, 512 KB cache
- 3.5" (1.44MB) floppy disk drive
- Removable interchangeable 2.1GB Hard Disk
- 4MB EDO graphics card
- External Monitor Port, Supports 1280x1024
- A4 size Windows 95 keyboard
- Built-in 20 Speed CD ROM
- 16Bit Wavetable Sound System with Stereo Speakers and Microphone
- IrDA and FIR Infrared technology
- Built-in Trackpad for ease of use
- Lilon Battery for additional battery time
- MPEG for live video and CDI as standard
- Delux carry case with additional compartments for accessories
- 2 x PCMCIA slots, 2 x Type II or 1 x Type III
- TV Output, Video and ZV port
- 3 Year support plan
- Line in jacks, headphone jack
- Serial Port, Parallel Port MIDI and dual USB Ports
- 323(w) x 263.5(d) x 58mm
- Weight 4.1Kg

- 512KB cache, 20 speed CD-ROM for instant response
- Quicker processing with power up to 233MHz MMX
- Amazing graphics with 4MB EDO video
- Crystal clear image with XGA resolution
- 14.1" Screen available now

Machines come configured with 2.1GB Hard Disk, 32MB EDO RAM, MPEG and Duracell Smart Battery

MODEL	PROCESSOR	SCREEN	PRICE
76166	Intel P166MHz MMX	13.3" TFT XGA	£1725
76200	Intel P200MHz MMX	13.3" TFT XGA	£1799
76233	Intel P233MHz MMX	13.3" TFT XGA	£1875
76166	Intel P166MHz MMX	14.1" TFT XGA	£1825
76200	Intel P200MHz MMX	14.1" TFT XGA	£1899
76233	Intel P233MHz MMX	14.1" TFT XGA	£1975



## pico MOBILE EXECUTIVE

NEW MMO Option

### MMO Explained

The PICO Mobile Executive now features the revolutionary new Intel Mobile Module (MMO) which gives increased longevity by integrating a processor, chipset, cache and other electrical circuitry onto a single chip. This allows the notebook to be upgradeable to a faster processor by simply changing modules which ensures future proofing against advances in technology.

- Upgradeable to Intel Pentium 233 MMO
- SVGA 12.1" TFT OR 12.1" DSTN colour screen
- 32MB EDO RAM upgradeable to 72MB
- Built-in 20 speed CD ROM & 3.5" Floppy Disk Drive
- 512KB Cache
- 2MB Graphics card, Windows accelerator
- TV output, Serial/Parallel port
- Built-in sound card and speakers
- IRDA port, supports 1280x1024 to external monitor
- 3 year support plan
- Carry case

Machines come as standard with 2.1Gb Hard Disk, 32Mb EDO RAM, MPEG & Duracell Smart Battery

MODEL	PROCESSOR	12.1" DSTN	12.1" TFT
62166MMX	Intel P166MMX	£1075	£1349
62200MMX	Intel P200MMX	£1149	£1425
62233MMX	Intel P233MMX	£1225	£1499
62200MMO	Intel P200MMX MMO		£1799
62233MMO	Intel P233MMX MMO		£1925

Please call for PICO Mobile Professional and Executive accessories and options

### APEX DATA V34 FAX/DATA MODEM



Internal line interface. No lumps, no bumps. No expensive replacement cable.

- Worldwide approval
- Easy 5 step Installation
- Comes complete with enablers, socket services and client drivers

**Only £129+vat**  
Fully installed with notebook

### PREMAX/ACTIONTEC ETHERNET COMBO



- Auto install
- Compatible with Novell Netware, IBM LanServer, Microsoft LAN Manager, Windows for Workgroups, RTI SOFT, LANTastic and other ODI or NDIS systems

**Only £79+vat**  
Fully installed with notebook

### PICO FINANCE

PICO Direct is a licensed credit broker

- Company lease purchases
- 1-3yr personal finance packages
- 6 month interest free options

APR 0% Interest: Free if you repay before or with your 6th monthly repayment. Otherwise APR 27.5%. Typical example: Cash price £1800; Loan amount £1800. Either, make monthly repayments of £71.19 and settle the outstanding balance in full within 6 months. Total amount payable £1800 - APR 0%. Or, make 36 monthly repayments of £71.19. Total amount repayable £2562.84 - APR 27.5%.

## PICO WARRANTY

- Lifetime telephone support
- Inclusive 3 year support plan
  - 1st year full parts and labour
  - 2nd year labour free
- Optional 2nd & 3rd year full parts and labour
  - Insurance backed
  - £125/year

## PICO ASSURANCE

Providing quality products that are reliable backed by the best in-house technical support. Special insurance packages available on all Pico notebooks

## PICO PEDIGREE

Part of the DIP Group of Companies, a multi million pound research and development IT Group established over 11 years. Products developed include the Atari Portfolio and Sharp 3000 PDA's

- Upgradeable to 233MMX
- Upgradeable to 5Gb Hard disk drive, 80MB RAM
- 2.1Gb Hard disk as standard

## pico MOBILE DIPLOMAT

A brand name notebook, top quality components, ergonomic design with Intel mobile CPUs from probably the largest notebook manufacturer in the world.

- Intel MMX Pentium processor
- 16MB EDO RAM expandable to 80MB
- 512KB Level 2 Pipeline Burst Cache RAM
- 2MB EDO Video RAM
- 256KB Flash ROM BIOS
- 2.5" 2.1GB removable HDD
- 3.5" 1.44MB Floppy
- 20 speed CD-ROM
- Built-in 16-bit stereo sound system, Soundblaster Pro compatible
- PCMCIA slots: 2 x Type II or 1 x Type III & 1 x Type II
- Built-in Trackpad mouse module
- Duracell Smart rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- Serial Parallel & PS2 Ports
- Monitor & MIDI Ports
- Docking station port
- IrDA Port
- Windows 95 keyboard
- Carry Case
- 299mm x 232mm x 54.4mm. 3.2Kg



Machines come as standard with Intel MMX Processor, 2.1GB Hard Disk, 32MB RAM and 20 speed CD-ROM

MODEL	PROCESSOR	12.1" DSTN	12.1" TFT
87-166	Intel P166MMX	£1025	£1299
87-200	Intel P200MMX	£1099	£1375
87-233	Intel P233MMX	£1175	£1449

## pico MOBILE AMBASSADOR

For the power user who wants to be one step ahead of the rest, this range of notebooks combines the latest notebook technology and design to provide a completely upgradeable system that will provide years of use and great value for money.

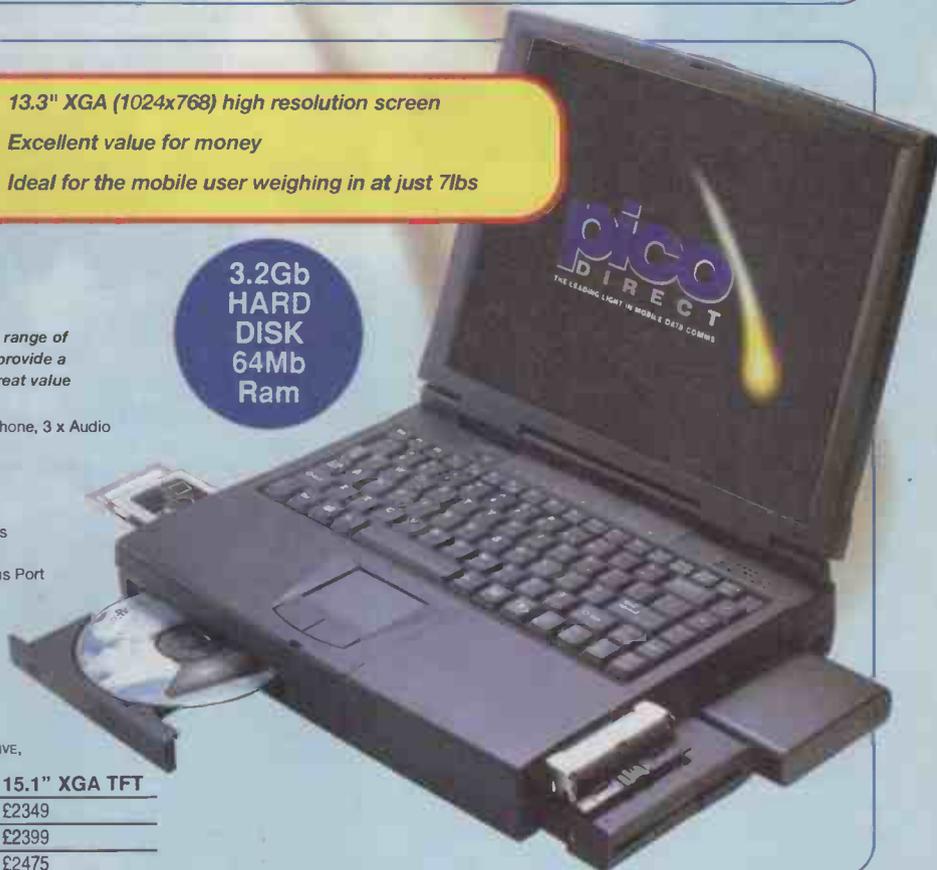
- Intel MMX Pentium processor
- 16MB EDO RAM expandable to 144MB
- 512KB Level 2 Pipeline Burst Cache RAM
- 2MB EDO Video RAM
- 256KB Flash ROM BIOS
- 2.5" 2.1GB removable HDD
- 3.5" 1.44MB Floppy
- 20 speed CD-ROM drive
- Built-in 16-bit stereo sound system, Soundblaster Pro compatible
- PCMCIA slots: 2 x Type II or 1 x Type III
- Built-in Trackpad mouse module
- Duracell Smart rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- Serial Parallel & PS2 Ports
- Monitor & MIDI Ports
- USB - Universal Serial Bus Port
- Docking station port
- IrDA Port
- Windows 95 keyboard
- Carry Case
- 314mm x 244mm x 59.5mm. 3.7Kg

MACHINES COMES AS STANDARD WITH INTEL MMX PROCESSOR, 3.2GB HARD DRIVE, 64MB RAM, & 20 SPEED CD-ROM

MODEL	PROCESSOR	13.3" XGA TFT	15.1" XGA TFT
88-166	Intel P166MMX	£1825	£2349
88-200	Intel P200MMX	£1899	£2399
88-233	Intel P233MMX	£1975	£2475

- 13.3" XGA (1024x768) high resolution screen
- Excellent value for money
- Ideal for the mobile user weighing in at just 7lbs

3.2Gb  
HARD  
DISK  
64Mb  
Ram



## HP 360LX PALMTOP PC

with Windows CE version 2  
• NEW • NEW • NEW • NEW •

This new product from Hewlett Packard distributed by PICO Direct is the first Windows CE Palmtop available with touch sensitive wide screen for point and access into applications. A new wave in mobile communications is upon us and set to help the most discerning of mobile professionals

MODEL	320LX	360LX
Display	640x240 LCD, 4 Grey Levels, Touch Panel, Backlit	640x240 LCD, 16 Grey Levels, Touch Panel, White backlight
Memory	5MB ROM Upgradeable, 4MB RAM	8MB RAM, 16bit Bus, 60Mhz CPU
Expansion Slot	1 x PC Card Type II, Compact Flash	1 x PC Card Type II, Compact Flash
Interface	1 x RS232C, 1 x IrDA, Includes PC Cable and docking station	1 x RS232C, 1 x IrDA, Includes PC Cable and docking station
Applications	Pocket Internet Explorer (ROM Based)	Powerpoint Viewer, Improved Excel (print option), improved Word (Spellchecker)
Price	£379	£499



- The ONLY CE Machine with a full 640x240 screen
- Windows 95 look and feel
- Pocket applications matched to MS Office 95
- Pocket Schedule
- Pocket Word for Windows
- Pocket Excel
- Pocket Mail
- Pocket Internet Explorer

- PERIPHERALS**
- 4MB Compact Flash - £59
  - 8MB Compact Flash - £84
  - 12MB Compact Flash - £129
  - 16MB Compact Flash - £164
  - 32MB Compact Flash - £279
  - Compact Flash PC Card Reader - £79
  - Leather Case - £49
  - 3 Year Warranty - £66
  - Chess - £49

HP200LX: 16MB + COLOUR SCREEN ECALL

## CE PERIPHERALS

PICO CE Modem 33.6 + GSM upgrade option	£175
Mail-on-the-Run	£69
Send/receive e-mail remotely by cable or modem	
AA World Travel Companion	£24
Everything about the world's 22 most visited cities	
Notable Dates and Events 1998	£12
On Schedule for Windows CE	£39
Contact and information manager	
IntelliSync for CE	£79
Backgammon & Chinese Chess	£49

## PSION SERIES 5

- Full VGA-width touch sensitive screen
- Backlight. Multiple zoom
- 2 x AA batteries give 1 month typical useage
- Connect to PCs, printers, modems and mobile phones
- Laptop style touch type keyboard
- Digital recording and playback of voice memos
- Compact Flash slot for extra memory
- Infra-red for wireless comms
- Wordprocessor, spreadsheet, time manager, database, sketch, calculator, world information.



**BUNDLE OFFER**  
Series 5, 8MB + PSiWin + 8MB CFlash £474

Series 5 4MB with PsiWin -£324  
Series 5 8MB with PsiWin -£409  
3C 2MB Backlit - £279  
3C 2MB - £249  
3C 1MB - £225

Compact Flash 4MB	£59	Chess	£26
Compact Flash 8MB	£84	Berlitz Interpreter	£29
Compact Flash 12MB	£129	Finance Pack 3a	£44
Compact Flash 16MB	£164	Aluminium Desk Stand	£15
AC Adaptor	£20	128KB Flash	£29
128KB RAM	£39	512KB Flash	£74
512KB RAM	£109	1MB Flash	£99
1MB RAM	£209	2MB Flash	£189
Leather Wallet	£20	4MB Flash	£289
Games Pack 3	£26	Data View	£49
Mac Comms Link	£64	PsiWin	£84
Parallel Cable	£26	Autoroute	£57
Fax Modem	£154	ACT for Psion	£79
Microfax	£179	Telenote	£59

## HP200LX PALMTOP PC

- 2MB & 4MB versions
- 80 columns by 25 lines
- MS DOS 5.0
- Complete suite of built in applications
- PCMCIA Version 2 Type II
- 40 hours on 2 x AA alkaline batteries



2MB - £299  
4MB - £399

PC Cable	£19	2 Year Extended Warranty	£42
Mac Cable	£19	Palmware	£45
Connectivity Pack	£67	Printer Adaptor	£45
Leather Case	£25		
AC Adaptor	£29		

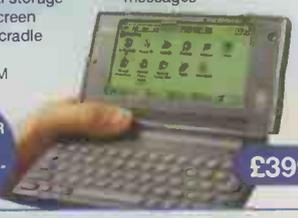
## PCMCIA MEMORY

256KB SRAM	£34	10MB ATA Flash Card	£199
512KB SRAM	£69	20MB ATA Flash Card	£349
1MB SRAM	£99	30MB ATA Flash Card	£549
2MB SRAM	£184	40MB ATA Flash Card	£659
5MB ATA Flash Card	£139		

## PHILIPS VELO with Windows CE

The Velo incorporates everything you'd expect from Windows CE but uniquely includes a simple connector for your GSM phone enabling you to tie into corporate e-mail, send faxes and browse the internet.

- Record up to 16 minutes of voice memos
- Miniature card slot for additional storage
- Backlit screen
- Docking cradle included
- 4MB RAM
- Includes BABT modem cable
- Indicator lights showing charging, communicating, and receiving alarms or messages



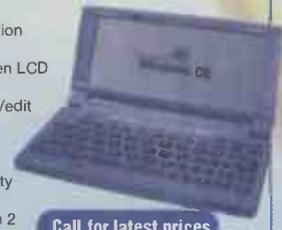
**BUNDLE OFFER**  
Velo + 8MB C Flash - £549

£399

## SHARP HC-4100A with Windows CE (v.2)

Sharp's unique image editor allows you to draw and edit image files as well as capture images from the Internet or with the optional digital camera card.

- 7 one-touch application keys
- 640x240 touch screen LCD
- Backlit VGA screen
- Image editor. Create/edit images.
- Voice recorder
- Multimedia E-mail
- Seamless connectivity
- PC Card slot Type II
- CE Windows Version 2
- Optional docking station



Call for latest prices

## USR PALM PILOT

Stores thousands of addresses, phone and fax numbers, hundreds of To-Do lists and personal notes and dozens of e-mail messages. The backlit screen lets you see it all easily.

- Seamless synchronisation with a desktop
- Find information instantly
- Long battery life
- Intuitive easy-to-use interface with accurate pen recognition
- Optional SnapOn GSM adaptor enables you to update your schedule, access your e-mail and synchronise all your data wherever you are



GSM adaptor for Palm Pilot. £99

Professional - £213  
Personal - £159

## HANDHELD

### TORNADO PSTN + GSM + ISDN



- Supports Nokia, Motorola, Siemens and Sony
- Runs under Windows '95 and NT
- Automatically switches from PSTN to GSM and ISDN
- Approved in 27 countries worldwide

£369

### PC CARDS

Argosy CD-ROM	
6 Speed	£169.00
8 Speed	£189.00
10 Speed	£204.00
Game Card Joystick	£45.00
Colour Handy Scanner	£149.00
Actiontec SCSI	£89.00
Smart Serial Port	£99.00

### OPTION GSM CELLULAR + PSTN

Works with Nokia, Ericsson, Panasonic, Sony and Siemens handsets.



- Choice of handset
- GSM speeds upto 9600
- 14.4 or 33.6
- GSM or PSTN
- Supports SMS
- Internal line interface
- Effortless installation and auto-configuration

GSM Only £129

### NOKIA 9000

- Digital cellular phone
- Cellular Data/Fax modem
- Personal Internet access terminal
- Messaging terminal (SMS, DTMF and business cards)
- Personal organiser



£199  
When including Connection to Orange network

### PICO PORTFOLIO

- PICO in handheld market for 11 years
- Designed and developed Atari Portfolio and Sharp PC 3000
- Comprehensive range of Palmtops
- Specialists, We know our products.
- Independent advice
- Match products to your requirements
- Software development for corporate applications
- We simplify your choice

### SIMPLE COMPACT FLASH

Works with Psion Series 5, HP 300/320LX, all CE machines (except Philips Velo) and most digital cameras. No battery required.

4MB Compact Flash	£59.00
8MB Compact Flash	£84.00
12MB Compact Flash	£129.00
16MB Compact Flash	£164.00
32MB Compact Flash	£279.00

### OTHER HANDHELDS

HP Omnigo 700	£589	Apple Newton 2000	£679
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## CTX EZ SHOW

The 3 data & video projectors in the CTX range only weigh 4.5Kg, offering the lightest solution for the travelling executive and mobile presenter. They project at a brightness of 250-350 ANSI lumens for 'Lights On'

presentations producing a 60" image at 2 metres. CTX EzShow provide great resolutions & high definition images. The unit will arrive 'ready-to-go' with shipping box & hard carry case, 4 bulbs and a remote control with full controls including zoom.

Colours 16.7 million colours  
Video NTSC/ PAL / SECAM  
Dimensions 26.7cm x 15.3cm x 40.7cm  
Audio Built-In  
Warranty 2 year full Parts and Labour

CTX EzShow 500 (640x480) 250ANSI	£1499
CTX EzShow 550 (800x600) 270ANSI	£1995
CTX EzShow 550M (800x600) 350ANSI	£2695
CTX EzShow 600 (800x600) 500ANSI	£2995

ONLY  
4.5KG

## HITACHI CPL750

The CPL550 (640x480 resolution) and the CPL750 (800x600) Hitachi Video data projectors have

stunning brightness with 500 ANSI lumens, the display on both models is incredible in bright rooms. With Polysilicon technology the projectors will astound and add to every corporate presentation and training session. The other unique feature about this model is that it includes 2 video and 2 VGA outputs.

Colours 16.7 million colours  
Video NTSC/ PAL / SECAM  
Weight 7.5Kg  
Dimensions 32cm x 17cm x 46cm  
Audio Built-in  
Warranty 2 year RTB Warranty Plan including Parts and labour  
Accessories Remote Mouse as standard

Hitachi CPL 550 (640x480) 500ANSI	£2450
Hitachi CPL 750 (800x600) 500ANSI	£2995
Hitachi CPL 850 (800x600) 700ANSI	£3295

500  
ANSI

## AUDIO VISUAL

### ASK 970

With true 1024x768 resolution and 400 ANSI lumens, the ASK 970 projector has been designed to deliver the ultimate in high resolution projection. With the facility to work with PC, MAC, workstations and video, the Ask 970 is perfect for CAD/CAM applications. The unit can be ceiling mounted which is perfect for boardroom installation.

Colours	16.7 million colours	1024X 768
Lamp	Metal Halide	
Weight	12.5 kg	
Dimensions	32.2cm x 24.5cm x 63.8cm	
Accessories	Bat Mouse as standard	
Warranty	2 year RTB warranty parts and	
ASK 970 (1024X768) 400ANSI	£3750	
ASK A6 (1024X768) 5Kg	£5675	
ASK 8300 (800X600)	£3295	
ASK 1280 (1280*1024)	£6995	

## INFOCUS 720

The Infocus 720 is very portable at only 5.4kg. It has all the features for the future with 450 ANSI Lumens and true 800x600 resolution and the facility to compress to 1024x768 resolution.

July 97 Editor's Choice PC Magazine.

Infocus 720	£3995
Infocus 730	£5995
Infocus 420 (500 ANSI, SVGA, 3.1kg)	£3895

## SANYO 5505

The Sanyo 5505 video and data projector combines polysilicon technology with 800x600 resolution and 500 ANSI lumens to produce razor sharp, brilliant images in well-lit rooms. The unit comes with a power focus zoom lens giving you flexibility to place it at any distance in the room.

LCD Panel 800x600 Polysilicon  
Brightness 650 ANSI Lumens  
Colours 16.7 million colours  
Video NTSC/PAL/SECAM X 2  
Weight 7.5Kg  
Dimensions 29.6cm x 45.9cm x 14.9cm  
Accessories Pointing device as standard

Sanyo 5505 (800x600) 650ANSI	£3295
Sanyo 8805 (1024x768) 450ANSI	£5395
Sanyo 5605 (700ANSI)	£3895

POLYSILICON  
TECHNOLOGY

## ASK A4 & A6

300:1  
CONTRAST  
RATIO

5kg

The lightest, brightest and fastest data & video projector available today. Designed with the mobile presenter in mind at only 5KG and a massive 500ANSI lumens of power. The A4 has the highest contrast ratio of them all at 300:1 and leaves your audience with a lasting impression. The A4 has a power zoom lens, PC Mouse control, reveal functions, four high output speakers and up to 6 sources can be attached simultaneously.

ASK A4 (800X600)	£3795
ASK A6 (102X768)	£5675

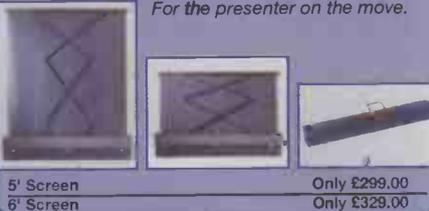
## PICO EXECUTIVE SALES KIT



ASK A4 + PICO Mobile Executive Includes Scala 100 & laser pointer £4999

### THE MOBILE SCREEN

For the presenter on the move.



5' Screen	Only £299.00
6' Screen	Only £329.00

## PHILLIPS PRO SCREEN 4600

The Phillips Pro Screen 4600 has the new LIMESCO function (Line Memory Scan

Convertor), it uses metal halide bulbs which have a life span of up to 6000 hrs, ensuring excellent projection after months of intensive use, with 450 ANSI and 16.7 million colours.

Phillips 4600 (800X600)	£3995
Phillips 4100 (800X600)	£3395
Both models include Scalla 100 & soft carry case	

UP TO  
6000 HRS  
LAMP LIFE

## SPECIAL AV EQUIPMENT

### GyroPoint

A unique mouse remote that works at up to 22 metres

GyroPoint Mouse	£219.00
-----------------	---------



KNDERMAN  
TRUE SXGA  
(1280X1024)  
VIDEO/DATA  
PROJECTOR FOR  
LESS THAN £10,000

### PICO Mobile Projector Trolley

A TV and Video trolley. If you have long corridors to travel!

PICO Mobile trolley	£299.00
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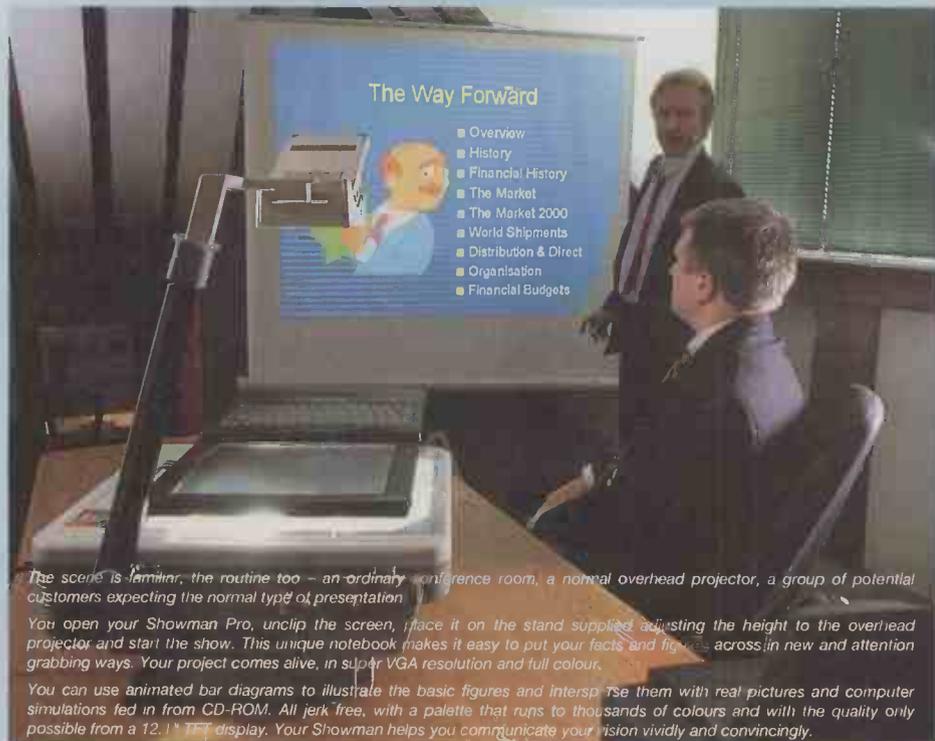
Hire option for projectors starting from £75.00 per day  
Up to 1 week of hire charges fully refundable against any projector purchase - The ultimate in try before you buy.

**pico**  
DIRECT  
THE LEADING LIGHT IN MOBILE DATA COMMS

**SALES 01483 20 20 22**  
**FAX 01483 20 20 23**  
MON - FRI 8AM - 6PM, SAT 10AM - 1PM  
Shop On-Line, 24 Hours at: [www.picodirect.co.uk](http://www.picodirect.co.uk)

**TAKE YOUR PRESENTATION ON THE ROAD!**

*A notebook incorporating a built-in panel for overhead projector presentations*



The scene is familiar, the routine too - an ordinary conference room, a normal overhead projector, a group of potential customers expecting the normal type of presentation.

You open your Showman Pro, unclip the screen, place it on the stand supplied adjusting the height to the overhead projector and start the show. This unique notebook makes it easy to put your facts and figures across in new and attention grabbing ways. Your project comes alive, in super VGA resolution and full colour.

You can use animated bar diagrams to illustrate the basic figures and intersperse them with real pictures and computer simulations fed in from CD-ROM. All jerk free, with a palette that rups to thousands of colours and with the quality only possible from a 12.1" TFT display. Your Showman helps you communicate your vision vividly and convincingly.

**SHOWMAN 8600/9600 SERIES**

**Specification**

- In-built TFT overhead projector tablet with 12.1" SVGA
- Intel CPU upgradeable from P133 to P233MMX multimedia
- 128bit Video graphics with MPEG as standard for full screen video presentation
- 32MB EDO RAM as standard expandable to 128MB
- 11/16 Speed CD ROM built-in with 3.5" 1.44MB floppy drive
- 2.1GB Hard Drive upgradeable to 3GB and beyond
- 86 key Win '95 keyboard with multi language options
- USB, serial, IrDA, CRT, parallel ports
- PS2 KB & mouse port, docking slot, ZV port & card bus
- 512KB L2 Pipeline Burst Cache RAM
- PCMCIA slots: 2 x Type II or 1 x Type III
- 16 bit 3D sound with speakers, headphone microphone line in & line out
- Autoswitching mains charger
- Smart battery
- Built-in touch pad
- Firm carry case with fan & stand
- TV NTSC output
- Slimline design: only 53mm & 3.3Kg
- CD & FDD exchangeable for 2nd battery or 2nd HDD
- Full 3 year support plan

**8600/9600 PRICING**

MODEL 9600 - PRICES FOR CONFIGURATIONS OF: 2.1GB HARD DRIVE, 32MB EDO RAM, WINDOWS '95 & CD ROM (INCLUDES BUILT-IN PROJECTION PANEL)

PROCESSOR	12.1" TF
Pentium 166MMX	£2199
Pentium 200MMX	£2299
Pentium 233MMX	£2399



**Accessory**

Accessory	Price
Logitech infra Red Remote Control	£69
Portable 400W OHP Inc. Carry Case	£459
RAM Upgrade Per 16MB	£95
TV Card	£89
Extended Warranty per Year	£125
Magneto Optical Drive (M/O)	£199
120MB Floppy Disk Drive	£199
Port Replicator	£99
Lithium Battery	£149
Windows '95	£75
Car Adaptor	£45
Upgrade to 3GB HDD	£120
Video Capture Module	£199

**HOW TO ORDER**

1. Call us on 01483 20 20 22
2. Fax us on 01483 20 20 23
3. Send your cheque/postal order or credit card details to the address below.  
Note that your credit card will not be debited until goods are despatched
4. Visit our showroom and see the entire range in action
5. Send or call for our free product and PCMCIA directory

**SALES**

**01483 20 20 22**

Or our easy-to-remember number:  
**0700 PC MOBILE**

**FAX**

**01483 20 20 23**

Technical Support:: 01483 209200

**Mon to Fri 8am - 6pm**  
**Sat 10am - 1pm**

- \* All prices quoted exclude VAT
- \* Delivery charges - next day £10, 2-3 day £8
- \* We accept VISA ACCESS SWITCH AMEX



# the new magazine for network and communications professionals

New technology and changing working practices mean that corporate responsibility for voice and data communications are increasingly falling to Network and Communications Professionals in the IT department.

Every month VNU Communications World will deliver the information Network Professionals need to keep up with the latest convergence developments.



fusing

Technology

The latest communications products, industry news and analysis as well as the best communications vacancies from the publishers of Network News and Network Solutions.

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display phil jennings 0171 316 9138

Call Us Now On:  
0121 766 5559

**Byte Direct** - the complete

**COMPAQ**

# DeskPro 2000 Range

From **£599** Ex VAT



Monitor not included

**Complete  
2000/4000/6000  
DeskPro Ranges  
Available -  
Call for Details**

### Compaq Monitors

V40	14"	Inc VAT £171.55	<b>£145</b>	Ex VAT
V50	15"	Inc VAT £402.50	<b>£230</b>	Ex VAT
V70	17"	Inc VAT £493.50	<b>£420</b>	Ex VAT
V90	19"	Inc VAT £728.50	<b>£620</b>	Ex VAT
V110	21"	Inc VAT £1351.25	<b>£1150</b>	Ex VAT

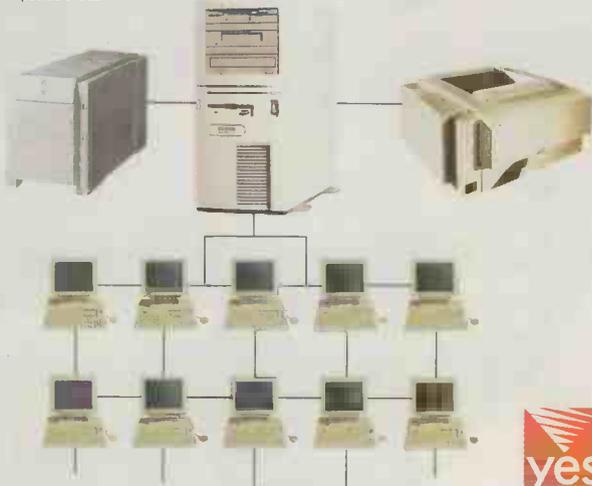
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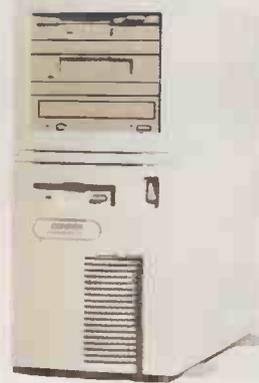
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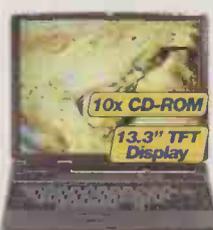
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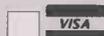
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55.6 Int. Highway	£62.28
56.6 Int. Powerbox	£63.45
Hatnes ISDN Terminal	£245.57

## Memory

16mb 168pin 3.3v DIMM	£41.13
32mb 168pin SDRAM	£57.57
64mb 168pin SDRAM	£146.88
1mb, 30pin SIMM	£4.11
4mb, 72pin EDO	£10.28
8mb, 72pin EDO	£14.10
16mb, 72pin EDO Parity	£48.76
16mb, 72pin Parity	£41.13
16mb, 72pin EDO	£23.50
16mb, 72pin Non Parity	£34.07
32mb, 72pin EDO	£55.22
256kb Cache Coast Module	£9.40

## Motherboards

Elite VX 512k MMX	£51.70
Generic VX Pro 512k MMX	£45.83
Generic TX Pro 512k MMX	£52.88
Gigabyte HX-1 512k	£61.10
Gigabyte TX-3 512k MMX	£95.83
Opti Viper VX	£34.08
QDI TX 512k	£88.13
Generic AT FX Pro	£92.83
Gigabyte Dual Pro	£222.08
QDI Pro	£99.88
Elite ATX Pro	£69.33
Gigabyte Pentium Pro	£163.33
Gigabyte ATX LX Pentium2	£193.88
Microstar P2 LX	£132.78
Supermicro ATX SKS Pro/2 SCSI	£398.33

## CD-Roms

12 Speed BTC IDE	£45.83
24 Speed Momiutsu IDE	£52.88
24 Speed ACER IDE	£50.52
100 Speed Max Elite IDE	£77.55
Mitsumi 6200 CD Writer Retail Kit	£235.00
6-2 Philips CDR2600 SCSI R/W Kit	£276.13
6-2 JVC Int OEM Kit	£269.07
6-2 Philips CDR3610 R/W Kit	£319.60

## Sound

Generic 16bit Sound Card	£11.75
Yamaha 16bit Sound Card	£16.45
Soundblaster Vibra 16 OEM	£33.49
Soundblaster AWE 64 OEM	£64.63
Soundblaster AWE 64 Retail	£72.85
Soundblaster AWE 64 Gold Retail	£132.78
Typhoon 25watt Speakers	£16.45
Generic 80watt Speakers	£16.45
Generic 240watt Speakers	£19.98
Generic 320watt Speakers	£23.50

## Printers

Epson 300 Colour	£129.00
Epson Stylus 600 Colour	£217.38
Epson Stylus 800 Colour	£331.35
Hewlett Packard HP870CXI	£258.50
QMS DeskLaser 600	£211.50

## Cases

Deluxe Mini Tower AT Case	£27.03
Deluxe Desktop AT Case	£28.20
Deluxe Curve Desktop AT Case	£49.35
Deluxe Desktop ATX Case	£52.88
Deluxe Curve Midi Tower AT Case	£51.70
Deluxe Midi ATX Case	£55.22
Deluxe Full Tower AT Case	£49.35
Deluxe Full Tower ATX Case	£70.50

# P.C. Systems

## Entry Level.

- VX-Pro 512k MMX Ready Motherboard
- 1.3gb EIDE Hard Disk Drive
- 1mb Video Card
- 8mb 60ns EDO Ram
- Win95 Keyboard
- 3 Button Mouse
- 3.5" Floppy Drive
- Cyrix P166+ MX CPU
- Deluxe Mini Tower Case
- 14" SVGA Monitor With 3 years On-site Warranty

**£449**  
INC VAT

## Added Value.

- VX-Pro 512k MMX Ready Motherboard
- 1.6gb Mode 4 EIDE Hard Disk Drive
- S3 Virge 2mb Graphics Card
- 8mb 60ns EDO Ram
- Win95 Keyboard
- 3 Button Mouse
- 3.5" Floppy Drive
- Cyrix P166+ CPU
- Deluxe Mini Tower Case
- Soundblaster Pro Comp. Soundcard
- 14" SVGA Monitor With 3 years On-site

**£589**  
INC VAT

## Multi-Media System.

- TX-Pro 512k MMX Ready Motherboard
- 1.6gb Mode 4 EIDE Hard Disk Drive
- 4mb S3 Virge Graphics Card
- 16mb 60ns EDO Ram
- Soundblaster 16 Vibra
- 12 Speed CD-Rom
- Win95 Keyboard
- 3 Button Mouse
- 3.5" Floppy Drive
- Cyrix P166+ Mx Processor
- Deluxe Mini Tower Case
- 14" SVGA Monitor With 3 years On-site

**£489**  
INC VAT

## Pro-Spec System.

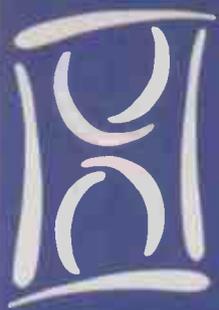
- Gigabyte TX-3 Motherboard
- 3.5gb UDMA Hard Drive
- AWE64 Soundcard
- 32mb EDO Ram
- Cherry 95 Keyboard
- 24x CD-Rom
- MS Type Mouse
- 3.5" Floppy Drive
- Cyrix P166+ MX CPU
- Deluxe Mini Tower Case
- 4mb Ati Rage 3d Graphics Card
- 15" SVGA Monitor With 2 years On-site

**£889**  
INC VAT

## Custom Systems Also Built

**Tel: 0161 248 4383**

Prices Correct At The Time Of Going To Print. All Offers Are Subject To Availability. Prices, Manufacturers And Specifications Are Subject To Change Without Prior Notice. Full Terms & Conditions Available On Request. 2.5% Surcharge On Credit Cards. Additional Charges Apply For Delivery. Your Statutory Rights Are Not Affected. Aria Technology Cannot Be Held Responsible For Any Damage/Costs Incurred When Following Any Advice We Give. Credit & COD Terms Available Subject To Status. All Registered Trade marks Acknowledged To Their Owners. E & OE.



# PC Buyer™

January Sales Offers

All Offers End 31st Jan 1998

Buy Now...Pay June 98

# 0%

Interest Free Credit

Expert Advice And  
Special Offers From The

## UK's N°1

Direct Computer Supplier To  
Homes And Small Businesses



### Money Back Guarantee

All Time Computer systems are provided with a 14 day money back guarantee. If you are not completely satisfied with your PC system you can return it to us for a full refund (excluding carriage).

# SALE

NOW ON

## The Family PC Exec For Only

- 166MX with MMX Technology
- 32Mb EDO RAM
- 4.3Gb Hard Disk
- 24x CD-ROM
- 3D Wavetable Sound
- 4Mb SIS Graphics
- FREE Printer

£ **29** Per Month  
2 Years Interest Free Credit

See Back Page For Full Details  
See Inside For Ordering Information

Plus A Lot More...

Freephone Time Now

# 0800 77 11 07



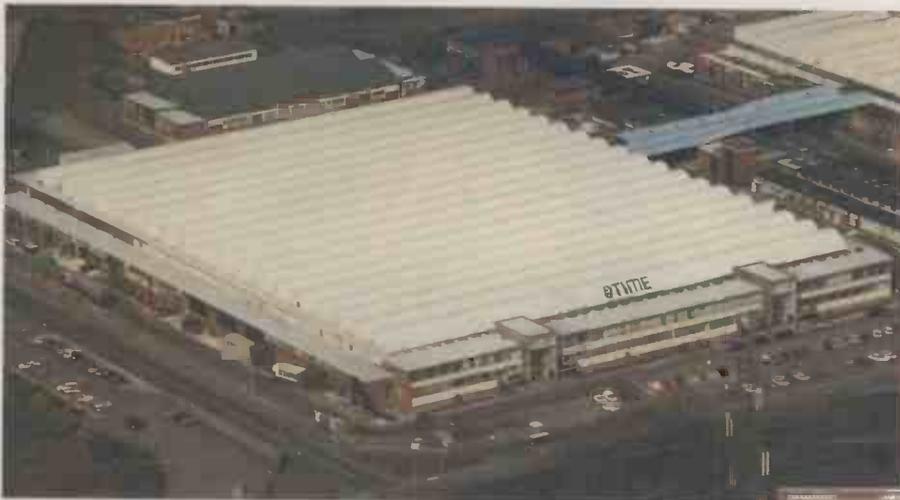
# TIME™

## COMPUTER SYSTEMS

# Buy With **Confidence** From **Time**

## UK's Leading PC Supplier For 10 Years

Time Computers have been established as one of the UK's leading PC suppliers for over 10 years with many hundreds of thousands of satisfied customers. We supply more PC systems direct to home users than any other UK company.



Time Computers HQ is situated in the Ribbles Valley near the M65 & M66 motorway network

## Buy Direct From The Manufacturer - No Middlemen!

Time Computers and our sister companies (Colossus and Omega) manufacture all the PC systems we sell. This means that your PC has been designed, manufactured, configured, delivered, supported, serviced and, if necessary, upgraded by the same company. We take total responsibility.



Direct support and service staff will provide help when needed

## Designed For Home And Small Business Buyers

Our direct relationship with customers allows us to fully assess customer needs and design these features into our products. All our systems come with a 90 minute video user guide, comprehensive, yet easy to follow documentation and are ready to use with appropriate pre-loaded software.

## Pre Sales Advice

Our knowledgeable sales staff are fully trained on all the latest technology available within the PC industry and are on hand to answer all your questions. They will discuss your specific requirements, provide free expert advice on the system most suitable for your needs and recommend how you will get the best out of it.

## Repair And Upgrade Facilities

As well as local service centres, we have fully equipped in-house central facilities to repair all the systems we sell. This ensures a fast turn around should your system ever develop a fault. Our upgrade service will enable you to keep your system future-proof by installing new processors, more RAM and larger storage devices.

## Buy Now... Pay June '98 Interest Free Credit



Most models can be purchased on interest free credit. You can pay just 10% deposit with 6 months interest free credit - see examples shown.

## Money Back Guarantee



We endeavour to provide complete customer satisfaction, and you may, for whatever reason, return your PC complete to us within 14 days for a full refund (excluding carriage costs). This limited 14 day money back guarantee is in addition to your statutory rights.

## Full Service, Support And Warranty

We have over 700 staff all dedicated to providing the best quality and service. We offer comprehensive direct hotline hardware support in addition to support via our 42 showroom service centres nationwide.



One of the Time Computer Systems testing and configuration areas

## How Can We Offer Such Amazing Value?

Compare the quality, specification, features and prices of our systems with consumer systems from other suppliers in the world. We can offer such amazing value for several reasons:

**We Only Supply PC Systems** We are focused and very efficient at manufacturing and supplying PC systems. We do not supply other electrical goods.

**We Get Better Value From Suppliers** Our huge buying power, together with the fact that we promote suppliers brands and software in our advertising allows us to negotiate very low prices on the top quality components and software.

**We Move Faster** Our flat overhead structure, centralised resources, family culture and focus on the UK PC industry enables us to deliver more suitable products for UK consumers than the slow moving, big

multinationals. VideoPhone, voice recognition and PC-TV are just some examples.

**You Can Come And See Us** Unlike some direct suppliers, who are actually based overseas with redirected UK telephone numbers, we have 42 showrooms/service centres nationwide. These are located primarily in retail parks with easy access, where you can come and have a face to face chat with one of our PC specialists.

**No Old Technology** Because PC technology is moving at a rapid pace, a PC system from other retailers may depreciate whilst sitting in their store. We commence building your system on the day you place your order and aim to have it delivered to you within a few days. This ensures you receive the latest technology and the best possible price.

**No Middlemen** We manufacture and supply direct so you do not have to pay the extra 20% to 30% margin of the large electrical retailers. Our systems are therefore

# How To Order

## Choose Direct Or Retail

Order your PC direct by calling on 0800 771107 now for quick delivery or alternatively visit one of our 42 showrooms located nationwide, all fully staffed with PC specialists.

**Direct Freephone Order Line**  
**0800 771107**

**Direct Sales Order Line**  
**01282 777 111** use if Freephone is engaged

**Upgrades No - 01282 77 99 78**

**Head Office** - Granville House, Blackburn Rd, Burnley, Lancashire. Fax: 01282 77 07 01

**Showrooms located within the superstores of**

## POWERHOUSE

- Aylesbury** - Unit 2 Cambridge Close, Cambridge Retail Park, Aylesbury. Tel: 01296 436767
- Banbury** - 2 Lockheed Close, Banbury Retail Park, Banbury. Tel: 01295 279585
- Basildon** - Unit 6B, Mayflower Retail Park, Arterial Rd, Basildon. Tel: 01268 282526
- Bracknell** - Unit 6B, Skimpedhill Lane Retail Park, The Peel Centre, Bracknell. Tel: 01344 486353
- Brentwood** - 81/85 High Street, Brentwood. Tel: 01277 263541
- Bristol** - Unit 2, Block C, Lysander Rd, Patchway, Cribbs Causeway, Bristol. Tel 0117 950 2076
- Cambridge** - The Bee Hive Centre, Coldhams Lane, Cambridge. Tel: 01223 360899
- Cannock** - Unit 10, Orbital Retail Centre, Cannock. Tel: 01462 433966
- Cardiff** - Unit 1G, Surrey Road, Cardiff Bay Retail Park, Cardiff. Tel: 01222 232 453
- Cardiff** - Newport Road, Cardiff Tel: 01222 461714
- Chippenham** - Unit 3B, Hathaway Retail Park, Foundry Lane, Chippenham. Tel: 01249 461230
- Coventry** - Unit 3, Gallagher Retail Park, Stoney Stanton Rd, Coventry. Tel: 01203 663588
- Dagenham** - Unit 3, Merrilands Retail Park, Ripple Rd, Dagenham. Tel: 0181 517 2785



- Derby** - Unit 2, The Kingsway Retail Park, Derby. Tel: 01332 349443
- Guildford** - Ladymead Retail Park, Europa Park Rd, Guildford. Tel: 01483 562448
- Hayes** - Unit 4 Lombardy Retail Park, Cold Harbour Lane, Hayes. Tel: 0181 573 1531
- Hedge End** - Unit 1, 27 Hedge End Retail Park, Toll Bar Way, Southampton. Tel: 01489 795975
- Huntingdon** - Unit B, Huntingdon Retail Park, St Peters Rd, Huntingdon. Tel: 01480 459392
- Ipswich** - Unit 3, Sandlings Retail Park, Ransomes Way, Ipswich. Tel: 01473 729308
- Kettering** - Unit 5, Kettering Retail Park, Carina Road, Kettering. Tel: 01536 519813
- London** - Unit 2, Humphrey St, Southwark, London. Tel: 0171 394 7315
- Northampton** - Riverside Retail Park, Northampton. Tel: 01604 415018
- Norwich** - Unit 1, Blackberry Court, Sweetbriar Rd, Norwich. Tel: 01603 484752
- Poole** - Unit 3, Manning Heath Retail Park, Yarrow Rd, Poole. Tel: 01202 743138
- Slough** - 300 Bath Rd, Slough. Tel: 01753 534636
- Solihull** - Unit 3, Sears Retail Park, Marshall Lake Rd, Solihull. Tel: 0121 733 1936
- Southampton** - Unit 4, Nursling Ind Estate, Southampton. Tel: 01703 740693
- Stevenage** - Roaring Meg Retail Park, Monks Wood Way, Stevenage. Tel: 01438 741435
- Stoke** - Festival Park, Etruria, Stoke. Tel: 01782 279895
- Swindon** - Unit 4, Greenbridge Retail Park, Drakes Way, Swindon. Tel: 01793 434112
- Tamworth** - Unit H, Ventura Retail Centre, Bitterscott, Tamworth Tel: 01827 63963
- Worcester** - Unit C, Elgar Retail Park, Blackpole, Worcester. Tel: 01905 757947

**Glasgow** - 34-38 Sauchiehall St, Glasgow. Tel: 0141 331 0573

**Hull** - Ferensway, Hull

**Leeds** - Unit 13, Crown Point Retail Park, Leeds Tel: 0113 2432589

**Preston** - Unit 5, The Capitol Centre, London Way, Preston. Tel: 01772 562370

**Sheffield** - Unit K, Meadowhall Retail Centre, Sheffield Tel: 0114 2431193

**Telford** - 125 Ashdown Lane, Telford Shopping Centre, Telford. Tel 01952 291 372

**Watford** - Unit 10, Asda Shopping Centre, St. Albans Rd, Watford. Tel: 01923 247535



## Other Time Showrooms

- Blackburn** - Unit 6, Whitebirk Trading Estate, Peel Centre, Hyndburn, Blackburn. Tel: 01254 693303
- Canterbury** (Opening Soon)
- Gateshead** - MetroCentre, Unit 6, Cameron Walk, Red Quadrant, Gateshead. Tel: 0191 461 0942

## IMPORTANT Ordering Information And Conditions Of Sale

Send no money now. Please phone or visit your local showroom. Prices are shown both without and with VAT and exclude delivery charge which varies with destination. UK Mainland courier delivery charge (excluding scottish

highlands) is £25 +VAT = £29.38. Showroom prices that are shown as "Total Price" will include the stated delivery charge. Prices and specifications are subject to change. Goods subject to availability and to our conditions of sale copies of which are available on request. Systems normally delivered within 7 to 14 days. All goods will be delivered within 28

days unless otherwise specified. Depending on application, software packages are pre-loaded or supplied on CD with on-line help. There is a printed software guide covering the pre-loaded software. Traditional manuals and retail packs not supplied- pack shots are shown to illustrate the software only. In the PC industry, screen sizes are measured using the CRT

tube size; thus the visible diagonal on a 14" screen may only be 13". All offers are limited by quantity or date. All trademarks acknowledged. Intel Inside and Pentium are registered trademarks and MMX is a trademark of Intel corporation. PC Buyer, Compass and Time Logo are trademarks of Time Computer Systems Ltd. E&OE.



# Systems From **Time** Include Most Of These **Features** As Standard!

## PC-TV System And Teletext

233 and higher models also function as a high resolution colour TV with full-feature down-loadable Teletext.



## Voice Recognition

IBM VoiceType Simply Speaking GOLD is pre-loaded which together with the optional microphone allows you to command your PC and dictate virtually into any Windows 95 program!



## Full Protection

Complete with Recovery Disk which restores factory settings and IBM AntiVirus software pre-loaded.



## Best Business Software

Lotus SmartSuite 97 PLUS 8 pre-loaded packs including word processor, spreadsheet, database, graphics, organizer, e-mail and more.



## General Software

Desktop publishing, art, design and drawings, home utilities and personal finance.



## Educational/Home Software Option

Top quality CD software bundle with EXEC models includes 13 CDs covering all aspects of educational, home and general PC usage.



## Interest Free Credit Option

All models are available on 6 months Interest Free Credit Option. Simply pay 10% deposit and the rest within 6 months INTEREST FREE! See example shown.



## Joystick And Microphone Headset Option

Quality PC joystick and microphone headset are included with EXEC models.



## Digital Photography Ready

Simply attach the optional colour digital photographic camera to the COM 1 port on these systems to download, manipulate and printout your photographs.



## Games Bundle Option

Games bundle option includes 6 chart topping best sellers including RAC Rally, Theme Hospital, FIFA 97, PGA Golf, Magic Carpet 2 and Command & Conquer.



## Easy To Set-Up And Use

Complete with comprehensive 90 minute video user guide, beginner's getting started sheet and detailed documentation folder.



## Compass™ Menu System

Intuitive front end menu system with built-in security on the best selling 200M-2 models shields new users from complexities of the operating system and provides password protection for other users, including children with different levels of access.



## Money Back Guarantee

All Time Computer systems are provided with a money back guarantee. If you are not completely satisfied with your PC system you can return it to us within 14 days for a full refund (excluding carriage). Buy with confidence.



# Time Delivers Real Benefits From The Latest Technology

The PC systems on offer incorporate some of the most advanced technology available. Time Computers have also incorporated ease of use and applied the latest technology to deliver real benefits for home and business users.

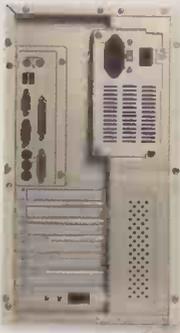
## Processors

Intel® Pentium® processors with MMX™ technology include all the features of the standard Pentium® plus the ability to run software designed for MMX™ at a faster rate. They also include 32K internal cache so that even standard software runs faster. The Pentium® 166MHz with MMX™ runs standard software faster than the Pentium® 200MHz without MMX™. We offer the even

faster Pentium® 200MHz MMX in our entry level 200M system and 233MHz version in our 233M system.

Intel Pentium® II processors are based on the Pentium® Pro

**ATX design showing mounted ports and plenty of room for expansion.**



## ATX System Designs

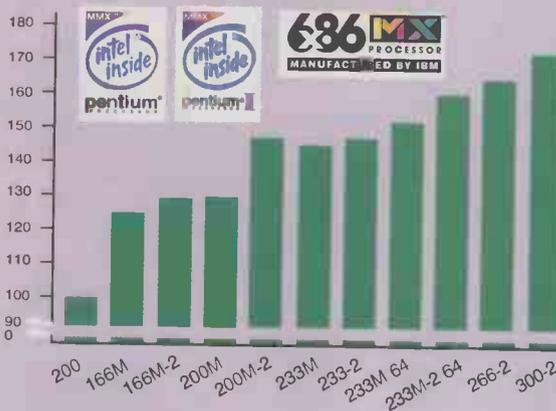
The new generation of ATX cases provide significant advantages over standard cases which enhance upgradeability and system cooling. Our most popular models come as midi tower cases and provide 7 drive bays. Most ports are mounted directly on the motherboard without using any of the expansion slots. The end result is greater reliability, easier maintenance and expandibility.

## ATX PC '97 Motherboards

Many models use the latest ATX motherboard with Intel 430TX chipset supporting key PC '97 design features including advanced power management. Some models also use the latest advanced SIS598 chipset motherboard which has all the features of the 430TX chipset and even higher performance, plus the additional capability of supporting a wider range of bus speeds and wider processor support.

## Relative System Performance

Compare system performance at a glance



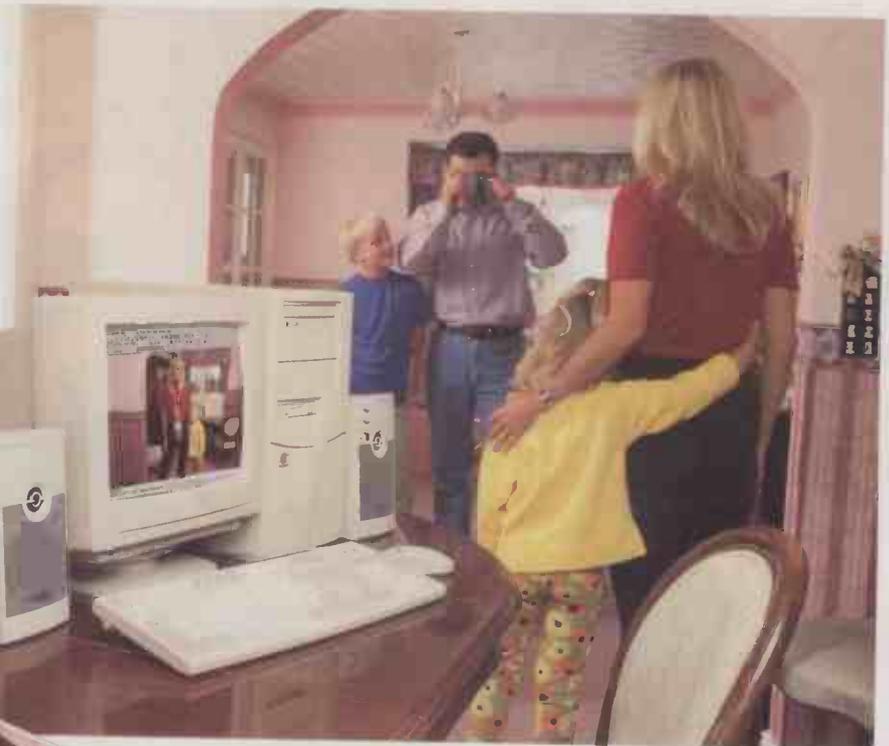
### Please Note

The 64Mb 200M-2 system using 6x86MX processor with MMX™ technology is faster than the 233M and 233-2 systems using Intel 233MHz Pentium® processor with MMX™ and Pentium® II 233MHz processors. The 200M-2 also benefits from running at a faster motherboard bus speed of 75MHz.

The chart shows the relative system performance as measured against our P200 system using Intel Pentium® 200MHz processor, 16Mb RAM and 256K cache. (P200 = 100%). The data is based on industry standard Ziff-Davis Winstone 97 benchmarks.

processor and are more suited to business use. However, they also include MMX™ technology and provide the fastest performance for both multimedia and business. We offer 266MHz and 300MHz models in our "Ultimate" systems.

The new IBM/Cyrix 6x86MX processors with MMX™ technology provide similar performance to the Pentium® II at much lower prices and also include MMX™ technology. The most popular are the 6x86MX 166, 200 and 233. These processors can also run at a faster motherboard bus speed of usually 75MHz.



Using a digital camera is just the same as using any standard camera, you can view your pictures on screen and print them out, all without the need for film processing



### VideoPhone

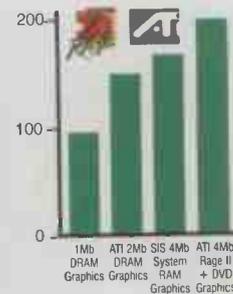
VideoPhone allows visual video broadcast over standard telephone lines. Instead of using the phone you use your PC fitted with appropriate modem, sound, microphone, camera, video capture and video conferencing software. VideoPhone receive only systems are configured with appropriate hardware and software to receive standard video broadcasts. By purchasing the optional camera and microphone these can also send video broadcasts and thus have full videophone capability.

### High Performance Graphics

ATI is the leader in high performance 3D graphics and many of our systems now include the latest ATI Rage II+ DVD 3D graphics processor with 4Mb dedicated video RAM and the fastest graphics handling we have ever seen. SIS Advanced Graphics system



Relative graphics performance as measured by Ziff-Davis Graphics Mark 97 benchmarks (1Mb card = 100%)



Advanced Graphics system incorporates elements of the AGP (Advanced Graphics Port) design with the graphics chip directly addressing system RAM and avoiding PCI bottleneck. These systems can address 4Mb system RAM for Video to provide superb colours at high resolutions.

### Digital Camera Photography

Our PC systems have been designed to work with the latest digital photography cameras. Select the required camera option and simply connect to the COM1 port to download photographs to the PC. Advanced software allows manipulation, storage and printing of these photographs.



VideoPhone allows visual video broadcast calls over standard telephone lines.

### Compass™ Menu System

200M-2 Home Offices models come pre-loaded with the Time Compass front end menu system with built-in security and password protection. This gives you the option to use all the main features of the systems from a simple menu without learning the complexities of the operating system and provides protection from other users including children with different levels of access. The system resembles a house with many rooms containing different applications which can be launched at the press of a button.



### PC-TV with Teletext

233MHz and faster systems include PC-TV tuner which delivers all the benefits of a standard TV with ability to run in a sizeable window or full-screen. The advanced Teletext facility allows the system to cache all the Teletext pages within a minute allowing fast searches. Unlike the Internet, all this data is free as there are no telephone charges.

### Speech Recognition

EXEC WinStation and Time Machine models include a microphone and together with the pre-loaded IBM Simply Speaking GOLD voice recognition and dictation software allow you to control many Windows 95 functions and dictate virtually into any Windows 95 application.



Command many Windows 95 functions and dictate virtually into any application

**SALE  
NOW ON**

# Home Office PC

Ideal for home and small business use



200M-2 model with  
Compass menu  
system shown

## FREE 56k Modem

Offer extended to another 1000 Orders Only

FREE 56K voice modem included with PC package converts your PC into a powerful fax machine, allows fast Internet connection with electronic mail (e-mail), data communications and full-feature voice mail facilities (limited offer).





## Interest Free Credit Available On All Models

**Example 200M-2:** Pay the whole amount now for fast delivery or pay just £117.25 (10%) deposit and then nothing to pay for 6 months. After 6 months pay the rest. Total price = cash price = £965 + £25 delivery + VAT = £1163.25 Inc. VAT. APR 0% only if loan fully repaid within 6 months.

Finance also available over longer period of 2.5 years at APR 23.9%. Finance is subject to status. Written details are available on request.

### Key Features Of The Best Selling 200M-2 Model



#### 64Mb RAM

Massive 64Mb RAM enhances the performance of this system and allows smooth multi-tasking. This 64Mb 200M-2 system out-performs our 32Mb 233MMX and 233-2 Pentium® II systems.



#### 56K Voice Modem

Latest 56K flex voice fax/data/Internet modem has all the benefits of a 33.6 voice modem plus the ability to download at speeds approaching 56k via supporting Internet providers. (Limited Offer).



#### 64-bit 4Mb Graphics And MPEG

SIS advanced graphics using 4Mb system RAM, MPEG and Microsoft direct 3D support together with crisp sharp screens provide the ideal display.



#### 4.3Gb Hard Disk

This massive 4.3Gb unit gives you all the storage you are ever likely to need. Includes latest Ultra ATA interface to deliver the best performance.



#### 24x CD

High performance 24x Max CD-ROM drive delivers twice the maximum performance of 12x CD-ROM drives and allows programs to run and load faster.



#### 3D Wavetable Sound

ESS 3D Wavetable stereo sound with 3D effects and software wavetable synthesis for the best quality.



#### VideoPhone Ready

Colour video camera interface and VideoPhone software included to receive incoming video broadcasts. Optional colour video camera enables full send and receive facility.



#### Voice Recognition

IBM VoiceType Simply Speaking GOLD is pre-loaded and together with optional microphone (included with EXEC models) allows you to command your PC and dictate virtually into any Windows 95 program!



#### Compass Menu System

Intuitive front end menu system with built in security on our best selling 200M-2 model shields new users from complexities of the operating system and provides password protection from other users including children with different levels of access.



#### 200MMX Processors

The 200M system utilises the Intel 200MHz Pentium® processor with MMX™ technology giving far better performance than 166 MMX™ systems. This new 200M-2 system runs at 75MHz bus (compared with 66MHz bus on others) and is even more powerful than the 200M system plus has 64Mb RAM.

### Popular Options

- **Colour VideoPhone Camera**  
Special bundle price £79 + VAT = £92.83 (RRP £175.08)
- **6 Top Games Bundle**  
£39 + VAT = £45.83
- **Epson Stylus Color 300 InkJet Printer**  
£129 + VAT = £151.58

# Buy Now... Pay June 98

Time Computers have redefined the ideal home PC. Compare the specification, features and benefits of these state of the art systems with any other consumer PC.

Our 200M system with Intel® Pentium® 200MHz processor with MMX™ technology includes graphics at just £895 +VAT on Interest Free Credit!

The new advanced 200M-2 system provides even more power and is in-fact faster than our 32Mb 233M and 233-2 Pentium® II systems due to the amazing IBM MX processor with MMX™ technology and massive 64Mb RAM. At a price of just £965 +VAT, with interest free credit, it surely is the best advanced PC deal in the UK! Order any of these systems early and also receive a FREE 56K voice modem. (limited offer).

## 200M

Home Office PC

- **200MMX** Intel Pentium® 200MHz processor with MMX™ technology
- **32Mb** EDO RAM
- **4.3Gb** Ultra ATA hard disk
- **24x** Max CD-ROM
- **3D Wavetable Stereo Sound**
- **SIS 64-bit Advanced Graphics** using 4Mb RAM and MPEG
- **512k** Pipeline burst cache
- **Stereo Speakers** Sound Force 525 mains powered speakers
- **14"** Screen SVGA NI 0.28dp colour screen (15" £69 +VAT = £81.08 and 17" £219+VAT = £257.33 extra)
- **ATX** midi-tower design with ATX PC'97 motherboard and 2 USB Ports
- **FREE 56K Voice Modem** with hardware chipset. Flash upgradeable

£1051.63 inc. VAT  
**£895 + VAT**  
 Previous Price £1098.63

## 200M-2

Home Office PC

- **200MMX** IBM 6x86MX PR200 processor with MMX™ technology
- **64Mb** EDO RAM
- **Compass Menu System**
- **4.3Gb** Ultra ATA hard disk
- **24x** Max CD-ROM
- **3D Wavetable Stereo Sound**
- **SIS 64-bit Advanced Graphics** using 4Mb RAM and MPEG
- **512k** Pipeline burst cache
- **Stereo Speakers** Sound Force 525 mains powered speakers
- **14"** Screen SVGA NI 0.28dp colour screen (15" £69 +VAT = £81.08 and 17" £219+VAT = £257.33 extra)
- **ATX** midi-tower design with ATX PC'97 motherboard and 2 USB Ports
- **FREE 56K Voice Modem** with hardware chipset. Flash upgradeable

£1133.88 inc. VAT  
**£965 + VAT**  
 Previous Price £1169.13

### Both Systems Include

- **Software Bundle** SmartSuite 97 (6 packs), Lotus e-mail, Lotus SmartPics, Pressworks, Designworks, Homewise, Quicken and IBM AntiVirus pre-loaded, EZ Language 2 and Pacioli Accounts on CD.
- **All Standard Features** Windows 95 with manual and CD, 105 keyboard, 1.44Mb floppy drive, PS/2 mouse, advanced motherboard with all standard ports (games, serial, parallel etc.) and year 2000 compliant BIOS, 90 min video user guide, recovery disk, 14 day money back guarantee, full support and 12 months warranty extendible to 5 years.

Product Codes: 200M 14" 400-30-300  
 200M 15" 400-30-301  
 200M 17" 400-30-302

Product Codes: 200M-2 14" 400-30-303  
 200M-2 15" 400-30-304  
 200M-2 17" 400-30-305

### Exec Models

EXEC Models are also available and include voice recognition, PC joystick, PC microphone and 13 CDs with 15 superb multimedia titles at only £79 +VAT (£92.83 Inc. VAT) extra.

200M EXEC 14" 400-30-306 200M-2 EXEC 14" 400-30-309  
 200M EXEC 15" 400-30-307 200M-2 EXEC 15" 400-30-310  
 200M EXEC 17" 400-30-308 200M-2 EXEC 17" 400-30-311



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# TIME™

## COMPUTER SYSTEMS

**SALE  
NOW ON**

# Professional PC

Ideal for the professional power user

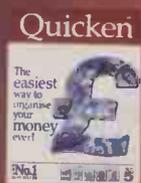


Exec model shown with optional VideoPhone camera

## FREE 56k Modem

Extended to another 1000 Orders

FREE 56K voice modem included with PC package converts your PC into a powerful fax machine, allows fast Internet connection with electronic mail (e-mail), data communications and full-feature voice mail facilities (limited offer).





### Interest Free Credit Option Available On All Models

**Example 233M-2:** Pay the whole amount now for fast delivery or pay just £143.45 (10%) deposit and then nothing to pay for 6 months. After 6 months pay the rest. Total price = cash price = £1185 + £25 delivery + VAT = £1426.45 Inc. VAT. APR 0% only if loan fully repaid within 6 months.

Finance also available over longer period of 2.5 years at APR 23.9%. Finance is subject to status. Written details are available on request.

## Take A Look At The Ultimate 233M-2 Specification



### 64Mb RAM

Massive 64Mb RAM enhances the performance of this system and allows smooth multi-tasking. This 64Mb 233M-2 XL system out-performs our 32Mb 233-2 and 266-2 Pentium® II systems.



### 56K Voice Modem

Latest 56k flex voice fax/data/Internet modem has all the benefits of a 33.6 voice modem plus the ability to download at speeds approaching 56k via supporting Internet providers. (Limited Offer).



### 64-bit 4Mb Graphics and MPEG

SIS advanced graphics using 4Mb system RAM and superb performance. Includes MPEG and Microsoft direct 3D support. Together with crisp sharp 15" or 17" screens, these systems provide the ideal display.



### 6.4Gb Hard Disk

This massive 6.4Gb unit delivers all the storage requirements of professional users. Includes latest Ultra ATA interface to deliver the best performance.



### 24x CD-ROM

High performance 24x Max CD-ROM drive delivers twice the maximum performance of 12x CD-ROM drives and allows programs to run and load faster.



### 3D Wavetable Sound

ESS 3D Wavetable stereo sound with 3D effects and software wavetable synthesis for the best quality.



### VideoPhone Ready

Colour video camera interface and VideoPhone software included to receive incoming video broadcasts. Optional colour video camera enables full send and receive facility.



### PC-TV System With Teletext

This advanced TV system allows this system to function as a high resolution colour TV with full-feature downloadable Teletext.



### Voice Recognition

IBM VoiceType Simply Speaking GOLD is pre-loaded and together with optional microphone (included with EXEC models) allows you to command your PC and dictate virtually into any Windows 95 program!



### 233MMX Processor

If you are considering a high performance 233 system, you will find that this system featuring IBM 6x68MX PR233 processor with MMX™ technology delivers far better value than 233MHz Pentium® II systems of a similar price. (If you really need Pentium® II systems which are in fact more suited for business/corporate use and work best with Windows NT, our recommendation would be the higher speed 266MHz or 300MHz models).

## Popular Options

- **Colour VideoPhone Camera**  
Special bundle price £79 +VAT =£92.83 (RRP £175.08)
- **6 Top Games Bundle**  
£39 +VAT = £45.83
- **Epson Stylus Color 300 InkJet Printer**  
£129 +VAT = £151.58

# Buy Now... Pay June '98

## The new 233M-2 and 233M Professional PC systems from Time Computers are packed with features and include the highest specification for the ultimate performance.

Our popular 233M Professional PC system with Intel® Pentium® 233MHz processor with MMX™ technology includes 32Mb RAM, fast 4.3Gb ultra ATA hard disk, ATI 4Mb Rage II+ DVD 3D graphics, 3D Creative Labs Wavetable sound and advanced PC-TV system with Teletext at just £1045 +VAT on interest free credit!

The Superb 233M-2 system includes a massive 64Mb RAM and fast Ultra ATA 6.4Gb hard disk to yield performance figures faster than our Pentium® II 233MHz systems. This amazing specification is available at just £1185 +VAT. Order any of these systems early and also receive a free 56K voice modem. (limited offer).

## 233M

Professional PC

- **233MMX** Intel Pentium® 233MHz processor with MMX™ technology
- **32Mb** EDO RAM
- **4.3Gb** Ultra ATA hard disk
- **TV And Teletext** Full feature PC-TV system with business Teletext
- **24x** Max speed CD-ROM
- **ATI Rage II+ DVD 3D Graphics** with 4Mb dedicated video RAM and MPEG
- **Creative Labs 3D Wavetable Stereo Sound**
- **512k** Pipeline burst cache
- **Stereo Speakers** Sound Force 525 mains powered speakers
- **14" Screen** SVGA NI 0.28dp colour screen (15" £69+VAT = £81.08 extra) (17" £219 +VAT = £257.35 extra)
- **ATX** mid-tower design with ATX PC'97 motherboard and 2 USB Ports
- **FREE 56K Voice Modem** with hardware chipset. Flash upgradeable

£1227.88 inc. VAT

SALE £1045 + VAT

Previous Price £1263.13

## 233MXL

As above but with 64Mb RAM and 6.4Gb hard disk £149+VAT = £175.08 extra

## All Systems Include

- **Software Bundle** SmartSuite 97 (6 packs), Lotus e-mail, Lotus SmartPics, Pressworks, Designworks, Home-wise, Quicken and IBM AntiVirus pre-loaded, EZ Language 2 and Pacioli Accounts on CD.
- **All Standard Features** Windows 95 with manual and CD, 105 keyboard, 1.44Mb floppy drive, PS/2 mouse, advanced motherboard with all standard ports (games, serial, parallel etc.) and year 2000 compliant BIOS, 90 min video user guide, recovery disk, 14 day money back guarantee, full support and 12 months warranty extendible to 5 years.

Product Codes: 233M 14" 400-30-270    Product Codes: 233MXL 14" 400-30-427    Product Codes: 233M-2 15" 400-30-429  
 233M 15" 400-30-312    233MXL 15" 400-30-314    233M-2 17" 400-30-430  
 233M 17" 400-30-313    233MXL 17" 400-30-315

## Exec Models

233M EXEC Models are also available and include voice recognition, PC joystick, PC microphone, larger premium speakers and 13 CDs with 15 superb multimedia titles at only £89 +VAT (£104.58 Inc. VAT) extra.

233M EXEC 14" 400-30-271    233MXL EXEC 14" 400-30-428  
 233M EXEC 15" 400-30-316    233MXL EXEC 15" 400-30-318  
 233M EXEC 17" 400-30-317    233MXL EXEC 17" 400-30-319  
 233M-2 EXEC 15" 400-30-431  
 233M-2 EXEC 17" 400-30-432

## 233M-2

Professional PC

- **233MMX** IBM 6x68MX PR233 processor with MMX™ technology
- **64Mb** EDO RAM
- **6.4Gb** Ultra ATA hard disk
- **TV And Teletext** Full feature PC-TV system with business Teletext
- **24x** Max speed CD-ROM
- **SIS 64-bit Advanced Graphics** using 4Mb, MPEG and Microsoft Direct 3D
- **ESS 3D Wavetable Stereo Sound**
- **512k** Pipeline burst cache
- **Stereo Speakers** Sound Force 525 mains powered speakers
- **15" Screen** SVGA NI 0.28dp colour screen (17" £150+VAT =£176.25 extra)
- **ATX** mid-tower design with ATX PC'97 motherboard and 2 USB Ports
- **FREE 56K Voice Modem** with hardware chipset. Flash upgradeable

£1397.08 inc. VAT

SALE £1185 + VAT

Previous Price £1498.13



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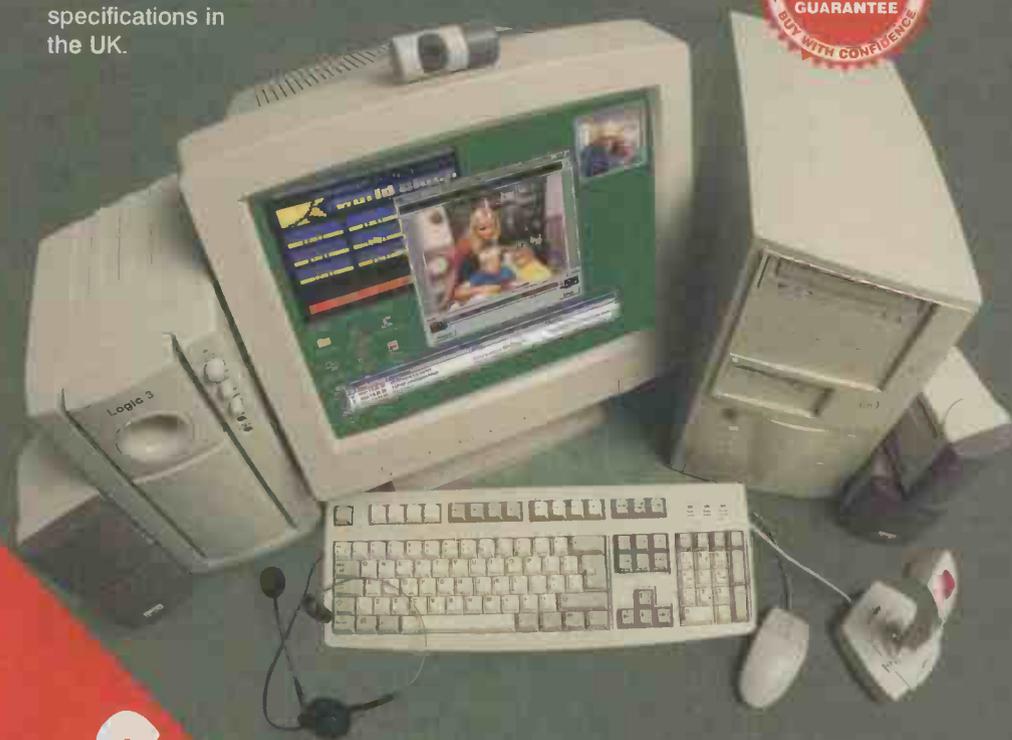
# TIME

COMPUTER SYSTEMS

# Ultimate PC

The Ultimate PC systems are based on the Intel Pentium® II 266 or 300MHz processors and include Intel's latest LX chipset, advanced ATI Rage II+ DVD 3D graphics with 4Mb or 8Mb Video RAM, 64Mb SDRAM and 6.4Gb Ultra ATA hard disk.

Together with 56K voice modem, VideoPhone receive, an advanced PC-TV system with Teletext and video capture, and all the other high performance features, these systems offer the best specifications in the UK.



266-2 XL Exec model shown with optional VideoPhone camera

**SALE NOW ON**



## Exec Models

EXEC Models are also available and include voice recognition, PC joystick, PC microphone and 13 CDs with 15 superb multimedia titles at only £79 +VAT (£92.83 Inc. VAT) extra.



## Product Codes:

- 266-2 15" 400-30-326
- 266-2 17" 400-30-327
- 266-2 XL 15" 400-30-330
- 266-2 XL 17" 400-30-331
- 300-2XL 15" 400-30-328
- 300-2XL 17" 400-30-329



## Interest Free Credit Option Available On All Models

See example on previous page.

# 266-2

Ultimate PC

- **266MMX** Intel 266MHz Pentium® II processor with MMX™ technology
- **64Mb** SDRAM
- **512k** Pipeline burst cache
- **6.4Gb** Ultra ATA hard disk
- **ATI Rage II+ DVD 3D graphics** with 4Mb video RAM
- **15" SVGA Screen** 0.28dp NI colour screen (17" model £150+VAT = £176.25)
- **56K Voice Fax/Data/Internet Modem** Flash upgradeable
- **24x** Max CD-ROM drive
- **Creative Labs 3D Wavetable sound** with stereo sound and software wavetable
- **Speakers** premium mains stereo speakers (not shown)
- **VideoPhone Receive** only, with camera interface
- **PC-TV** system with Teletext and video capture
- **ATX Midi-Tower** system with 6 bays
- **ATX Advanced Motherboard** with latest Intel 440LX chipset, PC'97 features, 2 USB ports and all standard ports
- **Software Bundle** with Lotus SmartSuite 97 and other titles
- **All Standard Items** 105 PS/2 keyboard, PS/2 mouse, 3.5" 1.44Mb floppy drive, User Video, Microsoft Windows 95 and 14 day money back guarantee

**£1756.63** inc. VAT  
**£1499** + VAT

Previous Price 1815.38

Product Codes: 266-2 15" 400-30-324  
 266-2 17" 400-30-325

## 266-2 XL Model

As above but with 8Mb ATI AGP graphics card and executive subwoofer system  
**£149 +VAT = £175.08 Inc. VAT extra**  
 Product Codes: 266-2 XL 15" 400-30-320  
 266-2 XL 17" 400-30-321

## 300-2 XL Model

As above but with Intel Pentium® II 300MHz processor, 8Mb ATI AGP graphics card and executive subwoofer system  
**£299 +VAT = £351.32 Inc. VAT extra**  
 Product Codes: 300-2XL 15" 400-30-322  
 300-2XL 17" 400-30-323

## Epson Stylus Color 300

The Epson Stylus colour inkjet printer is ideal for home and small business use with upto 720dpi resolution.

- 720 x 360 dpi Resolution
- Prints on plain, coated papers, envelopes and OHP transparencies.
- Permanent Piezo print-head
- 1.2 Minute per page colour printing
- Up to 3 pages per minute in mono
- Ink cartridge 4 colour
- Status monitor
- 1 Year Warranty (RTB)



Product Code: 013-30-016

**£129** + VAT

**£151.58** Inc. VAT



### Epson Stylus Color 400

- 720 x 720 dpi Resolution
  - Prints on plain, coated papers, envelopes and OHP transparencies.
  - Permanent Piezo print-head
  - Up to 3 pages per minute colour printing
  - Up to 4 pages per minute in mono
  - Dual head printing (both mono and colour cartridges)
  - Status monitor, 1 Year Warranty (RTB)
- Product Code: 013-30-010

**£159+VAT**  
**£186.83 inc. VAT**



### Epson Stylus Color 600

- Upto 1440 dpi Resolution
  - Upto 4ppm colour printing
  - Upto 6ppm mono printing
  - Photo real colour printing
  - Laser sharp mono printing
  - 1 Year Warranty (RTB)
- Product Code: 013-30-013

**£219+VAT**  
**£257.33 inc. VAT**

**Please Note**  
Remember to select your required PC printer cable option with all printers



### Agfa ePhoto 307 Digital Camera

- 640 x 480 Dpi or 320 x 240 Dpi
  - 24 bit colour
  - 43mm glass lens (Equivalent to 35mm)
  - Focus free and Built in flash
  - Ten second self timer
  - Agfa PhotoWise™ software
  - Adobe PhotoDeluxe™ software
- Product Code: 016-25-001  
**£249+VAT £292.58 Inc. VAT**



### Iomega Tape Back-Up

- 2Gb External parallel tape back-up
  - Easy to use
  - Plugs into back of PC
  - Tape cartridges at extra cost (see below)
- Product Code: 326-04-015  
**£129+VAT £151.58 Inc. VAT**  
2Gb Tape cartridge  
**£19+VAT £22.33 Inc. VAT**  
Product Code: 326-04-016



### VideoPhone Camera

Rockwell Quartz eye videophone colour video camera attaches to the video camera port on our PC systems and delivers full videophone capability.  
Product Code: 167-25-001  
**£149+VAT £175.08 inc. VAT**  
**Special bundle price with PC**  
**£79+VAT £92.83 inc. VAT**



## Top Quality Games Bundle

Six exciting arcade games on CD-ROMS with full documentation. This special price is only with the purchase of a PC system from Time.

### RAC Rally

Rally Championship is THE definitive motorsport simulation of the decade! It's all there, from frighteningly realistic handling of six high performance cars, to superbly textured 3D panoramic views of nearly 300 miles of roads and tracks. The only way you'll beat it is to jump in a car and do the real thing.

### PGA European Tour Golf

The world's premier golf simulation has three exceptionally detailed courses - Wentworth, Gut Kaden in Hamburg and The K Club in Ireland with in-game commentary from Peter Alliss, the voice of golf. European weather effects are included as well as picture in picture, hole fly-bys and reverse angle replay for all round on-the-course coverage.

### FIFA 97

Smooth, lifelike real-time rendered 3D graphics for smooth continuous play with new player artificial intelligence for professional standard passing and shooting decisions. Includes commentary from John Motson with summaries from Andy Gray and is presented by Des Lynam.

### Theme Hospital

It's a matter of laugh or death in the sequel to the best selling Theme Park. Design, maintain and manage a hi-tech hospital facility, making the most of limited resources and turning cures into cash. The Grim Reaper stalks the corridors, the ill have some very odd ailments, and the staff want to play doctors and nurses together!

### Magic Carpet 2

Magic Carpet was one of the greatest action games of all time. Now with Magic Carpet 2 the actions faster, darker and a lot bloodier! All-new mission-based levels add another dimension to the gameplay but maintain the unique mix of frenzied action and strategy.

### Command and Conquer

Build and better your bases. Unite or divide your forces. Develop and utilise guerrilla tactics and a wealth of potent electronic hardware in your attempt to crush the opposition. Every action can so easily trigger a fast and violent reaction. Every real-time battle can so easily rage long and hard.

Product Code: 999-30-330

**£39** + VAT

**£45.83** Inc. VAT

## Microsoft Office 97

Systems are also available bundled with Microsoft Office 97 (Office Station and 'B' models). Please call for details of these systems. Office 97 is not available separately.



Microsoft Financial Manager



Microsoft Spreadsheet



Microsoft Organizer



Microsoft Desktop Publishing



Microsoft Word Processor



Microsoft Internet Explorer



Microsoft Network Trial



Microsoft Route Planner

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See Page 3 How To Order



COMPUTER SYSTEMS

# Software Included As Standard With All Models



## Lotus 1-2-3 Spreadsheet

Lotus 1-2-3 97, is packed with innovative features to streamline the most common spreadsheet tasks. Designed to eliminate typical problems and help users complete everyday tasks quicker, easier and with greater success, 1-2-3 features SmartMasters, Lotus Maps, One-Step Charting and multi currency formats.



## Lotus WordPro 97 Word Processor

WordPro 97 is the first team word processor, and includes a streamlined 'smart' interface making it easier for individuals to accomplish everyday word processing tasks. WordPro offers SmartAssistance, a personalised way of helping users complete tasks. Features include SmartMasters, which allow you to breeze through everyday word processing tasks, and SmartCorrect which allows you to amend common typing mistakes as you type.



## Lotus Organizer 97 Scheduler

Lotus Organizer 97 integrates seven keys to successful Time Management, Calendar, To Do List, Address Book, Planner, Call Manager, Notepad and Anniversary Reminder. Use Organizer to schedule appointments, create prioritised to do lists, plan major events, store and organise addresses, track phone calls, make notes, sort information, and mark important dates. Organizer makes it easier than ever to manage your time, and boost productivity.



## Lotus ScreenCam 97 Recorder

Lotus ScreenCam enables you to capture, on-screen moving images and sound - like having a VCR in your PC! Record and playback with or without a soundtrack to build true multimedia presentations.



## Lotus Approach 97 Database

Designed for anyone who can use a spreadsheet, Lotus Approach is the award winning relational database which allows users to track, manage and analyse information. With an intuitive notetab interface, designed for users to become productive quickly, and PowerClick reportwriter professional looking reports can be produced with ease. Other features include SmartIcons, allowing you to group, sort or summarise data and a charting facility for professional data presentation.



## Lotus SmartPics Clipart

Add extra sparkle to business presentations, enhance memos, reports, overheads and handouts, with Lotus SmartPics. With thirty general business categories including: realistic people, business symbols, international icons, computers, military, medical illustrations, backgrounds and cartoons.



## Lotus Freelance 97 Presentations

Lotus Freelance 97 is a presentations package, providing users with everything they need to create compelling visual communications for practical everyday use. With tools to help develop both a text-based document and a visual version or presentation at the same time.



## Lotus Mail E-Mail

Lotus Mail is the easiest, most complete e-mail package for the Internet. It's got all the "must have" business features... tough security, spell checking, nested mail folders, automatic addressing, on-line directory lookups and much more.



## Microsoft Windows 95

Microsoft Windows 95 is the latest version of Microsoft's best selling operating system that allows you to command your PC. Also included from Microsoft are: *Internet Explorer* The best Internet browsing package. *Microsoft Network 30 Day Trial* 30 Days of free use of the Microsoft network and Internet.



## Quicken v5 Personal Finance

Quicken v5 manages all aspects of your financial life, for home or work, in one format and place. Easy to use and quick to update, Quicken v5 presents your financial information in the way you want to see it. With all the records at your fingertips, understanding and controlling your finances is easy.



## IMSI EZ Language 2 Language Tutor

EZ Language 2 is the fastest way to learn a language, and includes 1000 new words and 250 phrases in French, German, Italian, Spanish Russian and Japanese. Colour pictures matched to each word, native voices, music, animations, maps, photographs and travel tips are just a few of the features of EZ Language 2. (Not included with Family PC)



## GSP Designworks Art & Drawings

No design experience is required to use Designworks 3. PagePilots will help you create cards, certificates, posters, report covers and logos in minutes, all you do is simply type the text. You can also experiment with a range of 'easy to use' graphic effects, including blends, skews, rotations and fill styles.



## GSP Homewise Utilities

Homewise is the ultimate home and family organiser. Homewise organises everything from your home contents insurance to dinner parties, reminds you when household jobs need to be done and who should be taking care of them. Prepare checklists for when you go away on holiday or for your weekly shopping. Create personal diaries, school timetables, address books and store details of legal documents and medical histories.



## GSP Pressworks Desktop Publisher

Pressworks is the DTP program to use for professional looking document creation. Produce professional printed stationary using a desktop printer, no experience is necessary, simply tell the program what type of document you require and PagePilots create instant designs for you. Pressworks 2 comes complete with word processing functions, fonts and graphic samples, a clipart organiser, and a Photo CD Browser.



## IBM AntiVirus Protection

IBM AntiVirus is a comprehensive but easy to use virus checker for DOS and Windows. It will scan your hard disk and diskettes for any viruses that may be present and automatically remove them. It is the software that IBM use to protect their own PCs.



## Pacioli 2000 Accounts

The easy to use, best selling, award winning accounting package. With eight integrated, full featured modules, Pacioli 2000 gives you enough power to run a small to medium sized business. It puts you back in control, to manage cash flow, automatically generate invoices, plan budgets and generate reports. (Not included with Family PC).

# Extra Software Included With Exec Models Only



## IBM Voice Type Simply Speaking GOLD

Wouldn't you rather talk than type, making your work faster and so much easier? With Simply Speaking GOLD, you can dictate text and commands directly into your favourite Windows applications by simply speaking to your computer. Fast accurate reports, memos, letters and e-mail. Express yourself without worrying about the keyboard. Take control of your work. This software is pre-loaded on all models. Microphone included with Exec models only.



## Compton's Interactive Encyclopedia 1997

Learning is made fun and easy for the whole family with Compton's Interactive Encyclopedia. Complete with six interactive learning environments, 35,000 articles, more than 8,000 photographs and illustrations, Interactive Encyclopedia features 100 full-motion videos, slide shows, 3D animations and presentations.



## Compton's World Atlas CD 1997

Visit any country in the world, instantly and easily, with Compton's Interactive World Atlas 1997. Whether you are writing a report, planning travel, or exploring the world, it provides you with all the information you need. It includes over 600 detailed maps, thousands of statistics and in depth articles.



## GSP Instant Will Maker

With Instant Will Maker you'll have access to all the information you need to create a Will for all the family. Using a unique Will Plot, you simply follow a series of questions and answers which takes you through the whole process in a matter of minutes.



## KeyCAD Pro CAD Package

Computer aided design is no longer for the technical elite with KeyCAD Pro providing the power of high-end CAD programs. It's the easiest way to draft, plan, layout or design any project on your computer with engineered precision.



## David Bellamy's Endangered Wildlife

Endangered Wildlife featuring David Bellamy includes maps, artwork, live footage and sounds from around the world. Features include video clips of animals in natural habitats, with information on individual species physical traits and diet, together with games and puzzles to make learning fun.



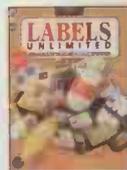
## Infopedia UK Encyclopedia

Infopedia is one of the largest, most powerful information packed CD-ROM reference tools available today. Designed to make learning simple and fun for users of all ages, Infopedia features more than 250,000 entries. These include over 150 videos and animations, over 5,000 photographs, over 850 maps, flags, charts and tables, and more than 450 sound clips.



## Project Manager Pro

Take control of all your projects, including managing deadlines, tasks and resources with Project Manager Pro. Features include 'date offset', which instantly identifies tasks that are ahead or behind schedule, and automatic date tracking enabling you to track projects past and present at a glance.



## Labels Unlimited

Labels Unlimited allows you to create labels in any size and style for a single envelope or a major mailing. With features enabling you to sort names and addresses automatically, pre-formatted templates, and 2,600 clipart images, label printing could not be easier.



## Geoff Hamilton's Garden Designer

If you are planning a border or an entire garden, Garden Designer helps with its step by step approach. Features include over 1,500 photographs and illustrations, plant care information, and a garden filter to help you choose the plants that are suitable for your gardens conditions. Garden Designer also features monthly charts providing handy reminders for year round garden maintenance.



## Dr. Hilary Jones' Doctor In The House

Specifically designed for use in the home, Doctor in the House provides a practical approach to medical issues. Items covered include health, nutrition and fitness, what to do in the event of an accident or emergency and suggests what might be wrong when you're feeling ill. Please note that this program contains medical information, and does not offer medical advice.



## Read, Write & Type

Read, Write & Type is a typing tutor aimed at children aged 6-8 and teaches phonics, finger placement, reading and writing. Features include 57 sound games, 40 animated stories, with over 600 words to type, and a word processor with a talking keyboard. Sequences begin with single letters, and progress through whole words to complete sentences with capitalisation and punctuation.



## Gizmos & Gadgets

Aimed at children aged 7-12, Gizmos & Gadgets builds an understanding of physical science. Complex principles including magnetism, force, electricity, gears, balance energy and simple machines, are explained using over 200 easy to understand real-world puzzles and simulations



## Multipedia Bookshelf

Multipedia is a collection of 16 top-selling reference works linked together through a custom designed reference engine. Designed to complement any existing encyclopedias or bookshelf products Multipedia titles include: The Oxford Dictionary of Music, The Oxford Dictionary of Art, Barron's Dictionary of Business and Finance, The Hutchinson Guide to the World, and Ballentine's Law Dictionary.



## BodyWorks v5

Bodyworks v5, provides a comprehensive, exciting and detailed reference guide to the human anatomy. Uncover the secrets of the nervous, digestive and respiratory systems. Explore the structure of the skeleton, muscles and organs. Discover how eyes focus and how blood maintains its temperature.



## GSP Instant Cards And Invitations

Instant Cards and Invitations provides a quick and simple way to create your own celebration cards and invitations. Features include clipart images, a range of fonts, and an address book.

# Family PC

**High specification state of the art PC system with fast 166M-2 MMX processor, 4.3Gb Ultra ATA hard disk, 32Mb EDO RAM, 24 speed CD, 3D Wavetable sound and 4Mb SIS graphics at just £899 +VAT!**

Buy with the Exec Family Bundle below and pay just £29 per month on 2 Years Interest Free Credit. Order early and get a FREE Epson Stylus Color Inkjet Printer (Limited first 2000 orders).

## 166M-2

Family PC

- **166MMX** IBM 6x86MX PR166 processor with MMX technology with performance similar 200MHz Intel Pentium with MMX technology
- **32Mb** EDO RAM
- **4.3Gb** Ultra ATA hard disk
- **24x** Max CD-ROM
- **3D Wavetable stereo sound**
- **SIS 64-bit Advanced Graphics** using 4Mb of RAM, MPEG & Microsoft direct 3D support
- **512k** Pipeline burst cache
- **Stereo Speakers** Sound Force 525 mains powered speakers
- **14" Screen** SVGA NI 0.28dp colour screen (15" £69 +VAT = £81.08 and 17" £219+VAT = £257.33 extra)
- **ATX** system with PC97 chipset and 2 USB ports
- **RAC Rally, Interactive Sailing and Mini-Office Typing**
- **All Standard Features** Massive Preloaded Software, Windows 95, 105 keyboard, 1.44Mb floppy drive, Ps/2 mouse, advanced motherboard with all standard ports and year 2000 compliant BIOS, 90 minute video user guide, recovery disk, full support, 14 day money back guarantee (excluding carriage) and 12 months warranty extendible to 3 or 5 years
- **FREE Printer Offer** - limited to first 2000 orders only

Product codes: 14" 272; 15" 273; 17" 274

**£1056.33** inc. VAT  
**£899** + VAT

### 200M-2 Best Buy Model £12.19 Extra per month

As 166M-2 above but with faster 200MX processor with MMX Technology, massive 64Mb EDO RAM, 56K voice/fax/data/internet modem, Premium speakers and full VideoPhone with colour video camera. **£249 +VAT = £292.58 inc. VAT extra**  
Product codes: 14" 275; 15" 276; 17" 277



**£29**  
Per Month

**2 Years Interest Free Credit**

When Purchased with Family Exec Bundle Below

### Amazing Spec

- 166M-2 MMX Processor
- 32Mb RAM
- 4.3Gb Hard Disk
- 24x CD-ROM
- SIS 4Mb Graphics
- 3D Wavetable Sound
- Massive Software Bundle
- **FREE PRINTER** (limited to first 2000 only)



## FREE PRINTER



First 2000 orders only  
All Family PC Models ordered early qualify for a free Epson Stylus Color 300 720dpi Inkjet printer. (Select required PC cable).

### FAMILY PC EXEC Bundle

16 software titles, 5 top games, joystick, headset microphone and Compass Menu CD.  
Only £148 +VAT = £173.90 extra.

166M-2 14" 278; 15" 279; 17" 280  
200M-2 14" 281; 15" 282; 17" 283



### 2 YEARS INTEREST FREE CREDIT

EXAMPLE Family PC 166M-2 Exec: Pay just £125.96 (10%) deposit and 24 monthly payments of £47.29 or £563.60 deposit and 24 monthly payments of £29. Total price £899 +£148 +£25 delivery +VAT = £1259.60 = Cash price. APR 0%. Finance is available subject to status. Written details are available on request.

Freephone Time Now Offers End 31st January

**0800 77 11 07**

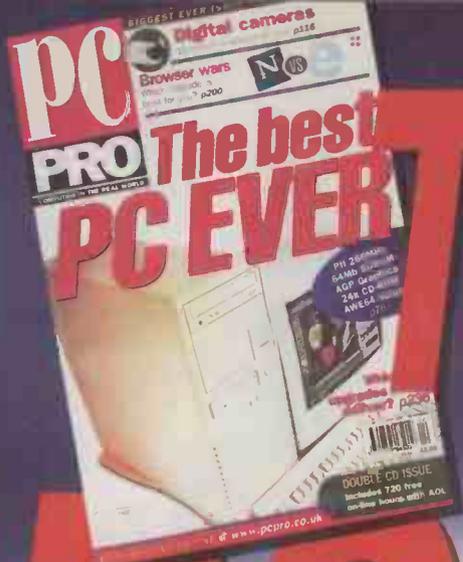
Sales Lines Are Open Monday - Friday 8.30am - 8.00pm, Saturday 9.00am - 5.00pm

See Page 3 How To Order



COMPUTER SYSTEMS

INSBCK3A

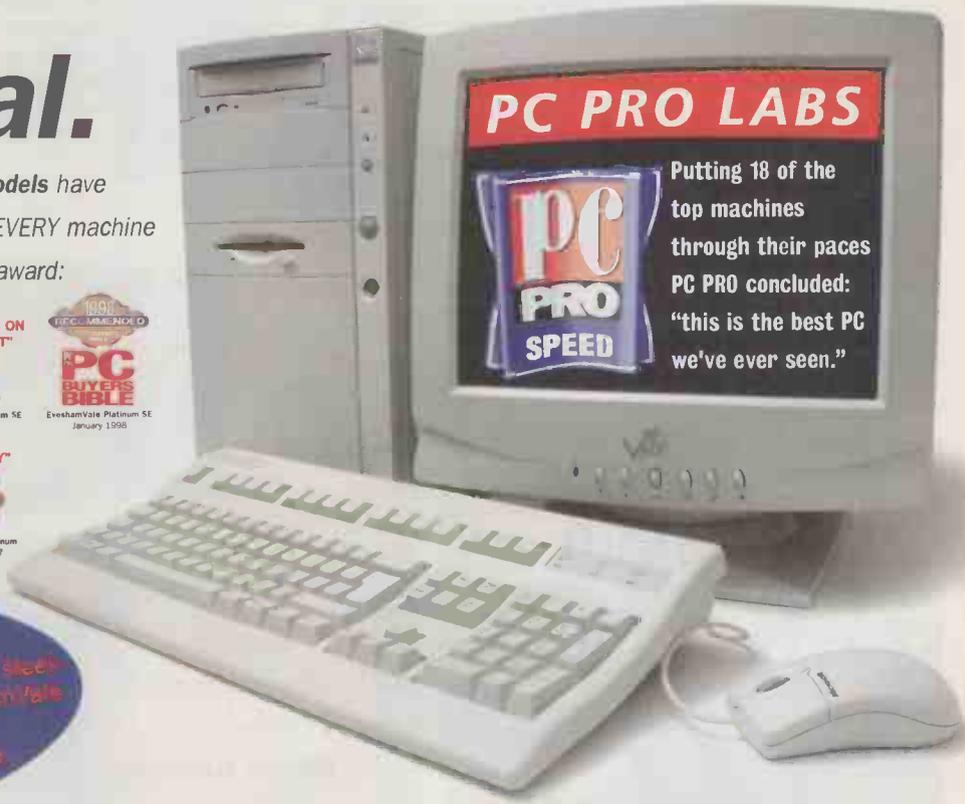


# The best PC EVER

**It's official.**

EveshamVale Pentium® II processor based models have swept the board with phenomenal success – EVERY machine submitted for review has come home with an award:

- |  |  |   |   |  |
|--|--|---|---|--|
| <p><b>"BEST PC EVER"</b><br/>PC PRO SPEED<br/>EveshamVale Platinum<br/>December 1997</p> | <p><b>"BEST PC FOR UNDER £1500"</b><br/>THE LIST<br/>EveshamVale Platinum SE<br/>December 1997</p> | <p><b>"EDITORS' CHOICE"</b><br/>PC MAGAZINE<br/>EveshamVale Platinum SE<br/>October 1997</p>    | <p><b>"FASTEST PC ON THE PLANET"</b><br/>EveshamVale Platinum SE<br/>October 1997</p> | <p><b>1997 RECOMMENDED PC BUYER'S BIBLE</b><br/>EveshamVale Platinum SE<br/>January 1998</p> |
| <p><b>"WELL WORTH A PC PLUS GOLD"</b><br/>EveshamVale Platinum<br/>January 1998</p>      | <p><b>"FASTEST PC"</b><br/>THE LIST<br/>EveshamVale Platinum SE<br/>December 1997</p>              | <p><b>"STATE-OF-THE-ART"</b><br/>PC PRO SPEED<br/>EveshamVale Platinum SE<br/>December 1997</p> | <p><b>"BEST BUY"</b><br/>EveshamVale Platinum<br/>December 1997</p>                   |  |



Putting 18 of the top machines through their paces PC PRO concluded: "this is the best PC we've ever seen."

**PII 266MHz  
64Mb SDRAM  
AGP graphics  
24x CD-ROM  
AWE64 Value**

## EveshamVale

We're rather proud of our **small print...** and our **Headlines are pretty good too!**



**Evesham Micros** FREEPHONE DIRECT SALES **0800 6345 999** **Evesham Micros**  
Web: <http://www.evesham.com>

# EveshamVale

## Quality product, Quality team



### The best Warranty,

We are so confident in the quality of components being used in our systems that we are able to make this industry leading offer. Prestige and Platinum systems are now covered by two years parts and labour on-site maintenance as standard. Fileservers and DesignStations come with three years cover. Compare this with our competitors - you could pay a lot of money for such peace of mind.



Tim Bailey Senior Technician  
Is a member of Evesham  
Micros' own on-site  
support team.

At Evesham Micros we understand it isn't enough to build an award winning PC range like EveshamVale without the right people to support it. We believe in taking care of our customers, from friendly sales advice to unrivalled technical support. In the unlikely event of something going wrong we have our own dedicated team ready to help.

### Service



Wendy Paul  
Telesales

Our EveshamVale technical department is manned by friendly &

### & Freephone Support

knowledgeable staff who have a full history and build schedule of each individual PC. You can now reach them via a Freephone number, Monday to Saturday. If no engineers are available for your immediate attention one will return your call.



Rob Nichols  
Technical Support

## Quantity Business Buyers

Evesham Micros are represented in the UK by four major branches and a further 'Business Office' at Glasgow.

All of our Business Sales divisions have a team with a wealth of experience and enthusiasm, and whether your needs are large or small they are ready to discuss your requirements and advise on the ideal solution. In addition, the Birmingham, Evesham, Milton Keynes and Cambridge branches host a full compliment of installation and support staff, ready to commission and support even the most challenging system.

If your company has 10 or more PCs please call the Business Sales FREEPHONE number which will route you through to your nearest branch.

FREEPHONE BUSINESS SALES:

**0800 765500**



Sarah  
Cockerton  
Customer Services

Left Birmingham  
Corporate Sales team

Far left Oxford College

Below New Birmingham  
showroom

Business Sales  
Centres  
**Glasgow**  
**Birmingham**  
**Evesham**  
**Milton Keynes**  
**Cambridge**



## Plus Flexible Finance Options

### Buy now - pay July 1998 (6 months interest free).

Buy any EveshamVale Media98 PC and you can defer payment for 6 months. How the scheme works: You enter a credit agreement at time of purchase, but pay nothing for 6 months. After this time you have the choice to either:

- Settle in full (at the original cash price - interest free), or
- Start a 3 year repayment plan with 36 equal monthly payments - APR 24.9% (and you still pay no interest on the first 6 months).

### No deposit personal finance.

Flexible credit agreement to spread payment over 12, 24 or 36 months. No deposit. APR 16.7% Available with any purchase over £500.

**Account facilities and leasing contracts** available to qualified commercial customers.

Credit available subject to status. Written details available on request.



Certificate No. 18 31710  
ISO9002 (MS750) part 24

**Evesham Micros**

FREEPHONE DIRECT SALES

**0800 6345 999**

Web: <http://www.evesham.com>

**Evesham Micros**

**BIRMINGHAM**  
0121 683 6868  
Fax: 0121 683 6869

# EveshamVale

## Prima

We have set out to build a quality PC and sell it at a keen price, whilst still offering a standard of equipment that allows us to maintain our award winning level of service and support. The Prima is the result and is now established as a standard setting entry level PC, as confirmed by winning Computer Shopper's "Best Buy" award when pitted against computers from 13 leading suppliers.

From  
**£499**+VAT (586.33)

### Prima Standard models:

- ◆ 512kb Pipeline-Burst cache
- ◆ 16Mb or 32Mb RAM
- ◆ Intel Socket 7 for processor upgrades
- ◆ 64 bit SIS Advanced graphics using 2Mb system RAM with Microsoft 3D support
- ◆ 14" SVGA monitor
- ◆ 14 day moneyback guarantee
- ◆ 1 year on-site maintenance for parts and labour
- ◆ Lifetime technical support hotline

### Prima Multimedia models and Media98 models have the following additional hardware:

- ◆ Panasonic CR-585 24x CD-ROM drive
- ◆ SoundBlaster 16 compatible sound card
- ◆ Zy-Fi Compact amplified speakers

### All Prima models also feature:

- ◆ Year 2000 ready BIOS
- ◆ 3xPCI & 3x16-bit expansion slots
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 3.5" 1.44Mb floppy disk drive
- ◆ Mini-tower case
- ◆ TÜV approved power supply with low noise fan
- ◆ 'Windows95' keyboard
- ◆ Mouse
- ◆ Windows 95 installed, with full manuals and disks supplied



A Prima Multimedia PC

### EveshamVale Prima

	Standard	MULTIMEDIA	Media98
PR166 MMX, 16Mb RAM, 2.1Gb HDD	£499+VAT (£586.33)	£569+VAT (£668.58)	£649+VAT (£762.58)
<b>636</b> 200, 32Mb RAM, 3.2Gb HDD	£599+VAT (£703.83)	£669+VAT (£786.08)	£749+VAT (£880.08)
<b>AND2</b> 200 MMX, 32Mb RAM, 3.2Gb HDD	£629+VAT (£739.08)	£699+VAT (£821.33)	£779+VAT (£915.33)
<b>K56</b> P200 MMX, 32Mb RAM, 3.2Gb HDD	£659+VAT (£774.33)	£729+VAT (£856.58)	£809+VAT (£950.58)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See below for details of Media98 pack.

### Prima upgrades

<b>OPERATING SYSTEM</b>		Multimedia Labs TC1500 speakers - see page 14 (Multimedia models).....	£39+VAT (£45.83)
Windows NT4 (supplied on CD-ROM).....	£75+VAT (£88.13)	<b>COMMUNICATIONS</b>	
<b>RAM &amp; DISK DRIVES</b>		K56flex EveshamVale modem.....	£59+VAT (£69.33)
16Mb to 32Mb RAM.....	£50+VAT (£57.58)	"Internet ready" pack (K56flex) - see p13.....	£159+VAT (£186.83)
32Mb to 64Mb RAM.....	£60+VAT (£70.50)	<b>OMEGA STORAGE SOLUTIONS</b>	
Panasonic 120Mb floppy disk drive instead of 1.44Mb unit.....		100Mb zip drive (internal).....	£75+VAT (£88.13)
	£60+VAT (£70.50)	1Gb jaz drive inc. SCSI card (internal).....	£281+VAT (£330.18)
<b>MONITORS</b>		CAS & VIDEO CARD.....	£40+VAT (£47.00)
15" monitor (as EveshamVale Prestige).....	£50+VAT (£58.75)	Desktop case with 2Mb ATI video card.....	£40+VAT (£47.00)
17" monitor (as EveshamVale Platinum).....	£200+VAT (£235.00)	<b>SUPPORT</b>	
<b>MULTIMEDIA HARDWARE</b>		Basic installation/training service.....	£50+VAT (£58.75)
24x CD-ROM drive (Standard models).....	£50+VAT (£58.75)	Second year maintenance.....	£40+VAT (£47.00)
Panasonic 650Mb PD drive instead of CD-ROM.....	£149+VAT (£175.08)	Second and third year maintenance Insurance.....	£109 (VAT exempt)
Panasonic PD media.....	£19+VAT (£22.33)		
Panasonic PD media 3 pack.....	£49+VAT (£57.58)		

### Reviews

**Computer BUYER RECOMMENDED**

"Its quality and breadth make the Evesham well worth its asking price." EveshamVale Prima June 1996

**COMPUTER SHOPPER**

"Good specification, good performance and a good price." EveshamVale Prima December 1996

**Computer BUYER RECOMMENDED**

"If we were choosing the machine that combined performance, presentation and configuration then our choice would be narrowed down to the Evesham...we fully approve of its documentation, setup and choice of components" EveshamVale Prima August 1996

**Computer BUYER RECOMMENDED**

"There is little doubt that the Evesham is the winner as far as performance goes. It raced ahead of the competition." EveshamVale Prima March 1997

## Multimedia software bundles Available with any EveshamVale Multimedia or Media98 PC

### Media98

- ◆ Microsoft Works for Windows 95
- ◆ Microsoft Encarta 98 (international edition)
- ◆ Microsoft Monster Truck Madness
- ◆ Microsoft 3D Movie maker
- ◆ Microsoft Magic School Bus Rainforest
- ◆ Microsoft Money
- ◆ Microsoft Golf 3
- ◆ Microsoft Football
- ◆ Microsoft Cinemania
- ◆ Suncom joystick

£249+VAT (£294.83)

### Family & Friends

A combination of popular game and utility titles, including the ultimate route planner that covers the whole of Europe!

- ◆ Route 66 (European edition)
- ◆ ChessNet 3
- ◆ Video Poker
- ◆ A typing tutor
- ◆ Screamer II
- ◆ Caribbean Stud Poker
- ◆ Simon the Sorcerer II
- ◆ BlackJack
- ◆ Solitaire
- ◆ Antics

£49+VAT (£57.58)

### Microsoft Office97 Professional

For the home user we offer Office97 Professional Student Edition:

- ◆ Word 97
- ◆ Excel 97
- ◆ Outlook 97
- ◆ Access 97
- ◆ Powerpoint 97

£99+VAT (£116.33)

To qualify you or someone in your family needs to be aged 18 or over and in full or part time education, on a Dept for Education & Employment (DfEE) recognised course, as either a student or teacher. Product supplied via voucher redemption.

### Microsoft Office97 Small Business Edition

- ◆ Word 97
- ◆ Excel 97
- ◆ Outlook 97
- ◆ Publisher 97
- ◆ AutoRoute Express

£169+VAT (£198.58)

Product supplied is Office97 Upgrade Pack, plus a suitable product to upgrade from.

### Microsoft Office97 Professional

- ◆ Word 97
- ◆ Excel 97
- ◆ Outlook 97
- ◆ Access 97
- ◆ Powerpoint 97

£239+VAT (£280.83)

Product supplied is Office97 Upgrade Pack, plus a suitable product to upgrade from.

# EveshamVale

## Prestige

### Amazing new prices on Pentium® II processor models

#### Prestige Standard models:

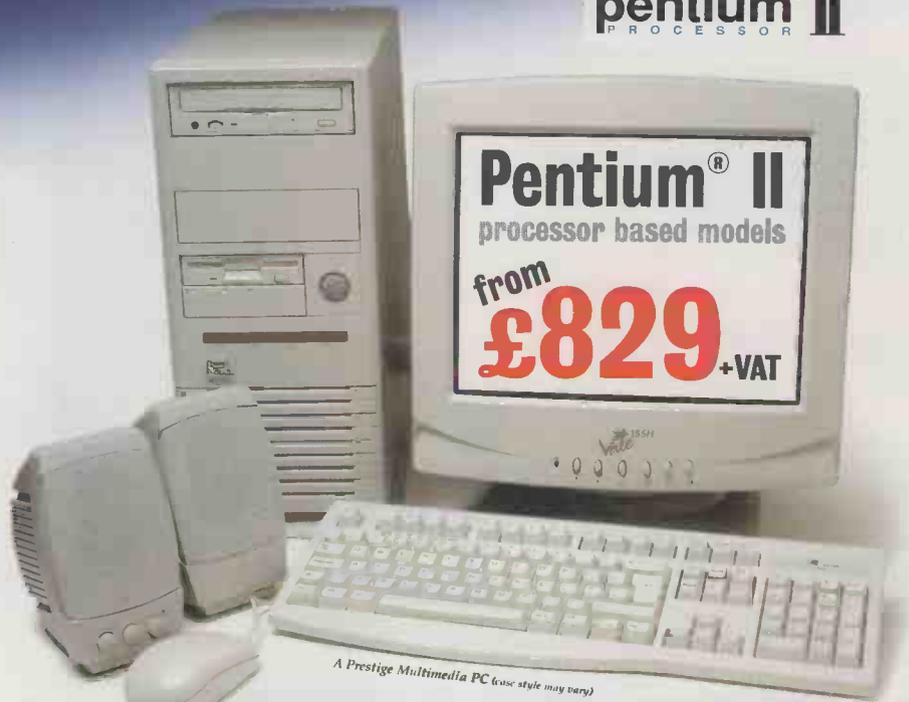
- ◆ Intel 440LX PCIset (Pentium II processor models)
- ◆ Intel 430TX PCIset (all other models)
- ◆ 512kb Pipeline-Burst cache
- ◆ 32Mb SDRAM, expandable to 256Mb
- ◆ 2Mb ATI 3D Charge video card
- ◆ 15" EveshamVale 15SH monitor
- ◆ 2x Universal Serial Bus (USB) ports
- ◆ 14 day moneyback guarantee
- ◆ 2 years on-site maintenance for parts and labour
- ◆ Lifetime technical support hotline

#### Prestige Multimedia models and Media98 models have the following additional hardware:

- ◆ Panasonic CR-585 24x CD-ROM drive
- ◆ Genuine Creative Labs SoundBlaster 16 sound card
- ◆ Zy-Fi amplified speakers

#### All Prestige models also feature:

- ◆ Year 2000 ready BIOS
- ◆ 4xPCI & 3x16-bit expansion slots (one shared)
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 3.5" 1.44Mb floppy disk drive
- ◆ Choice of desktop or midi-tower case
- ◆ TÜV approved power supply with low noise fan
- ◆ 'Windows95' keyboard
- ◆ Mitsumi mouse
- ◆ Windows 95 installed, with full manuals and disks supplied



A Prestige Multimedia PC (case style may vary)

from **£829**+VAT

### EveshamVale Prestige – Pentium® II processor models

	Standard	MULTIMEDIA	Media98
P-II 233, 32Mb RAM, 3.2Gb HDD	<b>£829</b> -VAT (£974.08)	<b>£919</b> -VAT (£1079.83)	<b>£999</b> -VAT (£1173.83)
P-II 266, 32Mb RAM, 3.2Gb HDD	<b>£1029</b> -VAT (£1209.08)	<b>£1119</b> -VAT (£1314.83)	<b>£1199</b> -VAT (£1408.83)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See page 3 for details of Media98 pack.

### EveshamVale Prestige

	Standard	MULTIMEDIA	Media98
PR166 MMX, 32Mb RAM, 2.1Gb HDD	<b>£649</b> -VAT (£782.58)	<b>£739</b> -VAT (£888.33)	<b>£819</b> -VAT (£962.33)
200 MMX, 32Mb RAM, 3.2Gb HDD	<b>£739</b> -VAT (£888.33)	<b>£829</b> -VAT (£974.08)	<b>£909</b> -VAT (£1068.08)
P200 MMX, 32Mb RAM, 3.2Gb HDD	<b>£769</b> -VAT (£903.58)	<b>£859</b> -VAT (£1009.33)	<b>£939</b> -VAT (£1103.33)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See page 3 for details of Media98 pack.

### Prestige upgrades

#### OPERATING SYSTEM

Windows NT4 (supplied on CD-ROM).....£75+VAT (£88.13)

#### RAM & DISK DRIVES

32Mb to 64Mb RAM.....£60+VAT (£70.50)

Panasonic 120Mb floppy disk drive

instead of 1.44Mb unit.....£60+VAT (£70.50)

#### VIDEO CARDS & MONITORS

15" Taxan Ergovision 550 TCO95.....£70+VAT (£82.25)

17" EveshamVale 17SH.....£150+VAT (£176.25)

17" iiyama Vision Master.....£280+VAT (£329.00)

17" Taxan Ergovision 750 TCO95.....£300+VAT (£352.50)

#### MULTIMEDIA HARDWARE

24x CD-ROM drive (Standard models).....£50+VAT (£58.75)

Panasonic 650Mb PD drive instead of CD-ROM.....£149+VAT (£175.08)

Panasonic PD media.....£19+VAT (£22.33)

Panasonic PD media 3 pack.....£49+VAT (£57.58)

Multimedia Labs TC1500 speakers

(Multimedia models) – see p14.....£39+VAT (£45.83)

TC1500 & SP7001 speakers (Multimedia models).....£79+VAT (£92.83)

#### COMMUNICATIONS

K56flex EveshamVale modem.....£59+VAT (£69.33)

"Internet ready" pack (K56flex) – see p13.....£159+VAT (£186.83)

#### IONBGA STORAGE SOLUTIONS

100Mb zip drive (internal).....£75+VAT (£88.13)

1Gb jaz drive inc. SCSI card (internal).....£281+VAT (£330.18)

#### SUPPORT

Basic installation/training service.....£50+VAT (£58.75)

Third year maintenance insurance.....£99 (VAT exempt)

See page 3 for details of Media98 pack.

See page 3 for details of Media98 pack.

## Reviews



"The Evesham uses quality components throughout which help maximize the potential of its powerful CPU...faster than some Pentium 200s! One of the best MMX machines we tested, the Evesham is a great example of the technology's potential." EveshamVale Prestige April 1997



"The Prestige is a good machine at a very competitive price. If you're working to a tight budget, this machine must be at the top of your short list!" EveshamVale Prestige November 1996



"Superb value in a machine which doesn't compromise on speed either...comes with such a good selection of peripherals and software that it scoops our Value award." EveshamVale Prestige March 1997



"For the price you get a well-made computer from a reputable supplier, with a good mix of software." EveshamVale Prestige November 1996

**Buy now – pay July 1998**

Buy any EveshamVale Media98 model and you can defer payment for 6 months – see page 2 for details.

## Multimedia software bundles

Available with any EveshamVale Multimedia or Media98 PC – see page 3 for details

**Evesham Micros**

FREEPHONE DIRECT SALES

**0800 6345 999**

Web: <http://www.evesham.com>

**Evesham Micros**

**0121 683 6868**

BIRMINGHAM

Fax: 0121 683 6869

# EveshamVale

**SeePU**  
Simple Jumperless CPU  
upgrade installation

**APTC**  
Active Processor Temperature  
Control: - multi-level CPU  
temperature protection function

## Platinum

**"THE BEST PC EVER"**  
EveshamVale Platinum PC Pro, December 1997

We have long maintained the tradition that every component in the Platinum must be chosen for outstanding performance, reliability and pleasure of use, as well as being technically bang up to date. This formula has earned the Platinum range a consistent stream of awards, including no less than four PC Magazine Editors' Choices.

### Platinum models:

- ◆ Chaintech 6LTM motherboard with Intel 440LX PCIset, and SeePU and APTC technologies (Pentium® II processor models)
- ◆ Chaintech motherboard with Intel 430TX PCIset, and SeePU and APTC technologies (all other models)
- ◆ 512kb Pipeline-Burst cache
- ◆ 32Mb SDRAM, expandable to 256Mb
- ◆ 2x Universal Serial Bus (USB) ports
- ◆ 3.2Gb Quantum Fireball ST Ultra ATA hard disk
- ◆ 4Mb ATI Xpert@work AGP 3D graphics accelerator (Pentium® II processor models)
- ◆ 4Mb Matrox Mystique 220 3D multimedia accelerator (all other models)
- ◆ 17" EveshamVale monitor
- ◆ Panasonic CR-585 24x CD-ROM drive
- ◆ Creative Labs SoundBlaster AWE64 Value wavetable sound card
- ◆ Microsoft Intellimouse
- ◆ 14 day moneyback guarantee
- ◆ 2 years on-site maintenance for parts and labour
- ◆ Lifetime technical support hotline

### Platinum models also feature:

- ◆ Year 2000 ready BIOS
- ◆ 4xPCI & 3x16-bit expansion slots (one shared)
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 3.5" 1.44Mb floppy disk drive
- ◆ Zy-Fi amplified speakers
- ◆ Keytronic PS/2 'Windows 95' keyboard
- ◆ Choice of high quality ATX style desktop or midi-tower case
- ◆ TÜV approved power supply with low noise fan
- ◆ Windows 95 installed, with full manuals and disks supplied



A Platinum PC with the EveshamVale 17SH monitor

See page 7 for the Platinum "A list" models >>>

### Pentium® II processor models 32Mb SDRAM, 3.2Gb hard disk

	MULTIMEDIA	Media98
P-II 233	£1149-VAT (£1350.08)	£1229-VAT (£1444.08)
P-II 266	£1349-VAT (£1585.08)	£1429-VAT (£1679.08)
P-II 300	£1499-VAT (£1761.33)	£1579-VAT (£1855.33)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

### 32Mb SDRAM, 3.2Gb hard disk

	MULTIMEDIA	Media98
200 MMX	£1019-VAT (£1197.33)	£1099-VAT (£1291.33)
P200 MMX	£1049-VAT (£1232.58)	£1129-VAT (£1326.58)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

### Platinum upgrades

<b>OPERATING SYSTEM</b>		
Windows NT4 (supplied on CD-ROM)	.....	£75+VAT (£88.13)
<b>RAM &amp; DISK DRIVES</b>		
32Mb to 64Mb RAM	.....	£60+VAT (£70.50)
32Mb to 128Mb RAM	.....	£340+VAT (£399.50)
Panasonic 120Mb floppy disk drive instead of 1.44Mb unit	.....	£60+VAT (£70.50)
<b>VIDEO CARDS &amp; MONITORS</b>		
Millennium II 4Mb	.....	£39+VAT (£45.83)
17" iiyama Vision Master	.....	£120+VAT (£141.00)
17" Taxan Ergovision 750	.....	£150+VAT (£176.25)
17" iiyama Vision Master ES	.....	£160+VAT (£188.00)
17" iiyama Vision Master Pro	.....	£170+VAT (£199.75)
21" iiyama Vision Master Pro	.....	£700+VAT (£822.50)
<b>MULTIMEDIA HARDWARE</b>		
No CD-ROM drive	.....	deduct £50+VAT (£58.75)
Panasonic 650Mb PD drive instead of CD-ROM	.....	£149+VAT (£175.08)
SoundBlaster AWE64 Gold	.....	£80+VAT (£94.00)
Multimedia Labs TC1500 speakers - see page 14	.....	£39+VAT (£45.83)
TC1500 & SP7001	.....	£79+VAT (£92.83)
<b>COMMUNICATIONS</b>		
56klex EveshamVale modem	.....	£59+VAT (£69.33)
"Internet ready" pack - see page 13	.....	£159+VAT (£186.83)
<b>OMEGA STORAGE SOLUTIONS</b>		
100Mb zip drive (internal)	.....	£75+VAT (£88.13)
1Gb jazz drive inc. SCSI card (internal)	.....	£281+VAT (£330.18)
<b>SUPPORT</b>		
Basic installation/training service	.....	£50+VAT (£58.75)
Third year maintenance insurance:		
Models up to £2500	.....	£99 (VAT exempt)
Models over £2500	.....	£119 (VAT exempt)

See page 3 for details of Media98 pack.

See page 3 for details of Media98 pack.

## Reviews

**PERFORMANCE**  
"Evesham has mixed and matched a fine photo system, based around quality components."  
EveshamVale Platinum  
November 1997

**TOP 50**  
"This is a well thought-out home system. It's quick, well built... the software, modem and joystick provided are of high enough quality to be genuinely useful."  
EveshamVale Platinum  
November 1997

**Computer BUYER**  
"This PC turned in a blindingly fast performance in our labs. Evesham impressed in every area, and had all the mod cons such as an ATX format motherboard and Matrox Mystique 3D graphics card. A great PC to own."  
EveshamVale Platinum February 1997

**WHAT PC?**  
"The construction quality and internal layout of the midi tower case are exemplary. The Platinum 200 is good to look at and easy to use... it's hard not to like this PC."  
EveshamVale Platinum January 1997

**PC PRO**  
"THE BEST PC EVER"  
"You'll be amazed at how much power you can buy for £1500. We put 18 machines through their paces. Only two come up trumps, and one is the best PC we've ever seen."  
"Despite the affordable price point, Evesham has still managed to include cutting-edge components to produce a machine that can cope with anything thrown at it."  
"Evesham has created a lightning-fast PC at a really low price point. If you want cutting-edge technology, without taking out a second mortgage, look no further. This is a worthy speed award winner."  
"The EveshamVale Platinum is quite simply the fastest PC on test, and considering the price it's an amazing machine."  
"Evesham is definitely building a reputation for producing fast PCs. The Platinum is the second Pentium II-based Evesham system to win an award in three months."  
EveshamVale Platinum  
December 1997

**PC PRO PERFORMANCE FEATURES VALUE FOR MONEY OVERALL**  
○○○○○○  
○○○○○○  
○○○○○○  
○○○○○○

**THE A LIST**  
BEST PC FOR UNDER £1500:  
"Fast, future-proof, well-equipped and based around lightning-fast Pentium II technology"  
EveshamVale Platinum December 1997

**PC ANSWERS**  
"It may look ordinary enough, but this system trashes a P200... If you're looking for real muscle without hitting big money then this is the place to look... You would be hard put to find anything as fast for the money."  
EveshamVale Platinum July 1997

**PC Guide**  
Long term test: "Still good looking, even after our thorough testing, the Evesham Micros Vale Platinum looks as though it is a true winner." "Impressively, the support line was answered immediately and we were put straight through to a technician... and 10 minutes after encountering the problem it was solved."  
EveshamVale Platinum February 1997

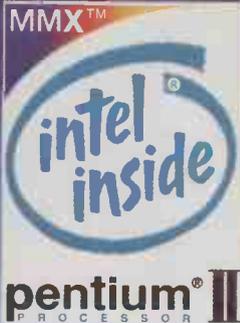
**CD ROM Today**  
This year's top five £1500 PCs.  
"This is the first machine we've seen (previewed in the June issue of PC Plus) with the new AMD K6 processor, which promises MMX compatibility along with better performance and lower prices. In the case of this Platinum that's very much what you get. A very fast graphics card and particularly good monitor are welcome."  
EveshamVale Platinum July 1997

**PC MAGAZINE**  
"Thanks to its inexpensive but powerful AMD K6 chip, the EveshamVale Platinum K6 delivers an excellent combination of price and performance compared to the Platinum Pro competition. Despite being one of the first K6-based systems we've reviewed, Evesham Micros' Platinum K6 shows no signs of being hurriedly assembled. On the contrary, the EveshamVale Platinum K6 is solidly built and a very good performer."  
EveshamVale Platinum June 1997

**PC Plus**  
"This is a well specified system... and is configured appropriately for both home and games usage, delivering very good performance."  
"Evesham's Vale gets our vote for its overall level of presentation."  
EveshamVale Platinum December 1997

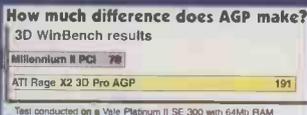
**PC Plus**  
"We can always rely on Evesham to come up with something good..."  
"The Platinum is an unpretentious machine with a lot under the hood."  
"Add in a two year, on-site warranty to the machine and you have a high value bundle which few suppliers can touch. This is a machine which should last you well to the millennium and is a sound buy for serious home use and the odd game. It's well worth a PC Plus Gold."  
PC Plus Verdict 10/10  
EveshamVale Platinum January 1998

# EveshamVale



## Platinum SE

All EveshamVale Platinum models with Pentium II processor are based on the new Chaintech 6LTM motherboard with Intel's 440LX chipset. This adds support for SDRAM and Ultra ATA hard disks, as well as AGP (Accelerated Graphics Port) – the new standard for video sub-systems. Take a look at the graph to see the benefits of AGP.



### Platinum SE models:

- ◆ Chaintech 6LTM motherboard with Intel 440LX PCIset, and SeePU and APTC technologies
- ◆ 512kb Pipeline-Burst cache
- ◆ 64Mb SDRAM, expandable to 256Mb
- ◆ 2x Universal Serial Bus (USB) ports
- ◆ 6.4Gb Quantum Fireball ST Ultra ATA hard disk
- ◆ 8Mb ATI Xpert@work AGP 3D graphics accelerator
- ◆ or 4Mb Matrox Millennium II PCI (no cost option)
- ◆ 17" Taxan Ergovision 750 TCO95 monitor with DiamondTron tube
- ◆ Panasonic CR-585 24x CD-ROM drive
- ◆ Creative Labs SB AWE64 Value wavetable sound card
- ◆ Multimedia Labs TC1500 speakers
- ◆ K56flex modem
- ◆ Microsoft Intellimouse
- ◆ 14 day moneyback guarantee
- ◆ 2 years on-site maintenance for parts and labour
- ◆ Lifetime technical support hotline

### Platinum SE models also feature:

- ◆ Intel Slot One for processor upgrades
- ◆ Year 2000 ready BIOS
- ◆ 4xPCI & 3x16-bit expansion slots (one shared)
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 3.5" 1.44Mb floppy disk drive
- ◆ Keytronic PS/2 "Windows 95" keyboard
- ◆ Choice of high quality ATX style desktop or midi-tower case
- ◆ TÜV approved power supply with low noise fan
- ◆ Windows 95 installed, with full manuals and disks supplied



A Platinum SE PC with optional 21" Taxan DiamondTron monitor

### Pentium II processor models 64Mb SDRAM, 6.4Gb hard disk

	MULTIMEDIA	Media98
P-II 233	£1599-VAT (£1878.83)	£1679-VAT (£1872.83)
P-II 266	£1799-VAT (£2113.83)	£1879-VAT (£2207.83)
P-II 300	£1949-VAT (£2290.08)	£2029-VAT (£2384.08)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

See page 3 for details of Media98 pack.

### Platinum SE upgrades

<b>OPERATING SYSTEM</b>	
Windows NT4 (supplied on CD-ROM)	£75+VAT (£88.13)
<b>RAM &amp; DISK DRIVES</b>	
64Mb to 128Mb RAM	£260+VAT (£305.50)
64Mb to 256Mb RAM	£649+VAT (£762.58)
Panasonic 120Mb floppy disk drive instead of 1.44Mb unit	£60+VAT (£70.50)
<b>VIDEO CARDS &amp; MONITORS</b>	
Matrox Millennium II 8Mb	£99+VAT (£116.33)
17" iiyama Vision Master Pro	£20+VAT (£23.50)
21" Taxan Ergovision	£530+VAT (£622.75)
21" iiyama Vision Master Pro	£550+VAT (£646.25)
<b>MULTIMEDIA HARDWARE</b>	
No CD-ROM drive	deduct £50+VAT (£58.75)
Panasonic 650Mb PD drive instead of CD-ROM	£149+VAT (£175.08)
Panasonic PD media	£19+VAT (£22.33)
Panasonic PD media 3 pack	£49+VAT (£57.58)
SoundBlaster AWE64 Gold	£80+VAT (£94.00)
TC1680 speakers system	£89+VAT (£104.51)
SP7001 sub-woofer	£39+VAT (£45.83)
<b>COMMUNICATIONS</b>	
12 months Internet access	£99+VAT (£116.33)
No modem	deduct £50+VAT (£58.75)
<b>OMEGA STORAGE SOLUTIONS</b>	
100Mb zip drive (internal)	£75+VAT (£88.13)
1Gb jaz drive inc. SCSI card (internal)	£281+VAT (£330.18)
<b>SUPPORT</b>	
Basic installation/training service	£50+VAT (£58.75)
<b>Third year maintenance insurance:</b>	
Models up to £2500	£99 (VAT exempt)
Models over £2500	£119 (VAT exempt)

## Reviews

**PC Direct BEST BUY**  
"This month, just one system has been rated as so outstanding that it has been awarded a PC Direct Best Buy award." EveshamVale Platinum SE April 1996

**Personal Computer World**

"In our tests the Evesham performed superbly thanks to a decent configuration... Build quality is exceptional... Aspiring PC manufacturers should get hold of one of Evesham's machines to see how it's done." EveshamVale Platinum SE October 1996

**PC MAGAZINE UK EDITORS CHOICE**

"Our Editors' Choice goes to the EveshamVale Platinum SE 266, based on its combination of price, features and performance"

"As well as being one of the fastest systems here, the Platinum PII SE 266's build quality is of the highest order"  
"the whole system feels solid and reliable"

"The best combination of performance, features and price is offered by the EveshamVale Platinum SE 266. Our brief to the manufacturers emphasised performance, features and manageability appropriate to the needs of an advanced Windows 95 user, and this system combines all of these in a package that offers superb value for money"

"Performance, good build quality, good expansion capabilities, a well-thought-out design and a good support package all combine to produce an award-winning system"

"few could challenge the outright Windows 95 performance of this system at the price."  
"In Brief: fast, well constructed, and tremendous value for money – in fact, there's not much to criticise about this system."

EveshamVale Platinum SE October 1997

**PC MAGAZINE**

"The EveshamVale Platinum SE gave a good account of itself in both the high-end tests and the PhotoDeluxe MMX test. With a generous games/multimedia bundle, plus an internal 33.6kbps modem, it's good value for money." EveshamVale Platinum SE March 1997

**PC MAGAZINE UK EDITORS CHOICE**

"consistently among the best performers in PC Labs' tests, with notably good graphics and disk WinMark results... outstripping the others on price and features, was our Editors' Choice, the EveshamVale Platinum SE Pro." EveshamVale Platinum SE November 1996

**PC Plus**

"Fastest PC on the Planet"  
"Evesham has put together a 'no expense spared' system, which shows what the 266MHz Pentium II can do – It's breathtaking"  
"Evesham must know something others don't about heat generation – there's certainly little to support the 'hot running' rumours here"  
"The NT results could best be described as blistering"  
"What distinguishes this machine beyond doubt is its Windows NT performance. Turning in a PC Plus index of 4.24, the highest we've ever seen, earns it a Performance award"  
"PC Plus Verdict: 9/10"  
EveshamVale Platinum SE August 1997

**PC GAMER**

"I thought you might like to read about the fastest PC I've ever tested"  
"All this cutting edge hardware adds up to a machine which goes faster than a greyhound on Lassie Vindaloo Chunks."  
"PC Gamer Verdict: 88%"  
EveshamVale Platinum SE July 1997

**computer arts**

"As always, we tried hard to be critical – but this time around, we have to hold our hands up and admit that the Platinum SE is a great system. So, is there anything negative to say? We could try and claim that the casing is plain and ugly, but then, they all aren't they?"  
Rating: ★★★★★  
EveshamVale Platinum SE November 1997

**PC MAGAZINE**

"Top-notch performance plus a below-average price make the EveshamVale Platinum SE K6 200 excellent value for money."  
EveshamVale Platinum SE November 1997

## Multimedia software bundles

Available with any EveshamVale Multimedia or Media98 PC – see page 3 for details

**Evesham Micros**

REEPHONE DIRECT SALES  
**0800 6345 999**  
Web: <http://www.evesham.com>

**Evesham Micros** BIRMINGHAM  
0121 683 6868  
Fax: 0121 683 6869

# JOIN

# THE A LIST



AND GET THE T-SHIRT!



The 'A List' is the recognition that *PC Pro* magazine bestows on the very best PCs and components that it tests. EveshamVale models currently occupy the two top positions – 'Fastest PC' and the 'Best PC for under £1500'.

## "THE BEST PC EVER"

The Platinum 'A List' is identical to the "Best PC ever" featured in *PC Pro*, except that we now supply our own monitors (and a choice of the 17" Taxan, also from the 'A List'). Oh - and we have reduced the price too!

### Platinum 'A List' key features:

- ◆ 266MHz Intel Pentium® II processor
- ◆ 64Mb SDRAM
- ◆ Choice of monitors: EveshamVale 15SH or 17SH, or 17" Taxan DiamondTron

Other features as standard Platinum models (page 5)

Now £130 less than the review price!

Platinum 'A List' models		
	MULTIMEDIA	Media98
15" EveshamVale	£1269-VAT (£1491.00)	£1349-VAT (£1585.00)
17" EveshamVale	£1419-VAT (£1667.33)	£1499-VAT (£1761.33)
17" Taxan	£1569-VAT (£1843.50)	£1649-VAT (£1937.50)

See page 3 for details of Media98 pack.

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

See Platinum models (page 5) for upgrades



### PC for under £1500: EveshamVale Platinum

"Fast, future-proof, well-equipped and based around lightning fast Pentium II technology"



### "THE BEST PC EVER"

"You'll be amazed at how much power you can buy for £1500. We put 18 machines through their paces. Only two came up trumps, and one is the best PC we've ever seen"

"Despite the affordable price point, Evesham has still managed to include cutting edge components to produce a machine that can cope with anything thrown at it"

"Evesham has created a lightning-fast PC at a really low price point. If you want cutting-edge technology, without taking out a second mortgage, look no further. This is a worthy speed award winner"

"Evesham is definitely building a reputation for producing fast PCs. The Platinum is the second Pentium II-based Evesham system to win an award in three months"

"The EveshamVale Platinum is quite simply the fastest PC on test, and considering the price it's an amazing machine"

"Verdict: A Pentium II system built from top-quality components at a great price. The performance is superb, earning Evesham the Speed award"

EveshamVale Platinum December 1997

PC PRO PERFORMANCE	OOOOO
PC PRO FEATURES	OOOO
PC PRO VALUE FOR MONEY	OOOOO
PC PRO OVERALL	OOOOO

## "FASTEST PC"

The Platinum SE 'A List' is based on the "Fastest PC" featured in *PC Pro*, with 300MHz Pentium® II processor and 64Mb SDRAM, but we have now improved the performance even further with the AGP video card.

### Platinum SE 'A List' models also feature the following 'A List' components:

- ◆ 4.5Gb Seagate Cheetah hard disk and Adaptec 2940UW controller (SCSI models)
- ◆ Creative Labs SoundBlaster AWE64 Gold wavetable sound card

We have also introduced an IDE model to keep costs reasonable:

- ◆ 6.4Gb Quantum Fireball ST Ultra ATA hard disk (IDE models)

All other features as standard Platinum SE models - see left

Platinum SE 'A List' models		
	MULTIMEDIA	Media98
IDE model	£1999-VAT (£2340.83)	£2079-VAT (£2442.83)
SCSI model	£2499-VAT (£2936.33)	£2579-VAT (£3030.33)

See page 3 for details of Media98 pack.

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

See Platinum SE models for upgrades



### Fastest PC: EveshamVale Platinum SE

"There's more to building a fast PC than just including a state-of-the-art processor. Evesham Micros obviously realises this, as it's surrounded a 300MHz Pentium II



processor with numerous high-performance components in this system... It's these components, as well as the 300MHz processor, that lifts the Platinum SE above the competition"

"The Platinum is also extraordinarily well featured... it may seem expensive, but it's actually a fair price to pay for such a future-proof PC"

"Summary: An incredibly fast and well-featured system at a fair price, considering the specs"

EveshamVale Platinum SE December 1997



PC PRO PERFORMANCE	OOOOO
PC PRO FEATURES	OOOOO
PC PRO VALUE FOR MONEY	OOOOO
PC PRO OVERALL	OOOOO

## Why not choose your 'A List' PC with the 'A List' monitor?



"A brilliant monitor with great image quality owing to the excellent DiamondTron tube."

"A beneficial aspect of the DiamondTron tube is its so-called short neck, which reduces the depth of the cabinet, leaving more actual desk space free in front of it."

"Given the price, the peace of mind bestowed by the TCO95 certification, which is the toughest standard governing electromagnetic emissions, and the combination of comprehensive controls and good image quality, the Ergovision is well worth a look."

Taxan Ergovision 750 TCO95 June 1997



"The DiamondTron tube is bright and vibrant... The image is sharp, clean and does not suffer from misconvergence... The power supply and regulator are excellent, and were unfazed by our tricky tests."

"Great spec, image and price... An excellent choice."

Taxan Ergovision 750 TCO95 May 1997



A Platinum SE 'A List' PC with 17" Taxan DiamondTron monitor

CAMBRIDGE  
01223 323898  
Fax: 01223 322883

Evesham Micros

FREEPHONE DIRECT SALES  
0800 6345 999  
Web: <http://www.evesham.com>

Evesham Micros

MILTON KEYNES  
01908 230898  
Fax: 01908 230865

# EveshamVale

## Voyager 2000

**A flexible approach to mobile computing.**

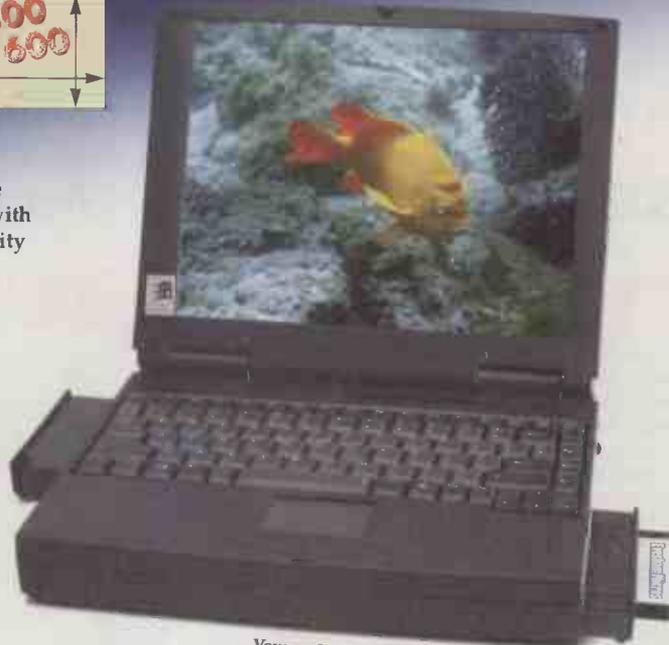
The Voyager 2000 is the perfect solution for the person on the move. With the unique adaptability of the two device bays this notebook provides the user with all the performance they would demand from a desktop PC, but with flexibility that is hard to beat.

### Voyager 2000 models:

- ◆ 2 year warranty, with accidental damage insurance
- ◆ Intel Pentium® processor
- ◆ 256kb asynchronous cache
- ◆ 16Mb EDO RAM (max 64Mb)
- ◆ Removable hard disk
- ◆ 2Mb 64bit PCI graphics accelerator
- ◆ 12.1" colour display with 800x600 SVGA resolution
- ◆ 3.5Ah NiMH battery
- ◆ Extensive power management features, including 'suspend to RAM' and 'suspend to disk'

### Voyager 2000 models also feature:

- ◆ 297 x 231 x 52mm
- ◆ 3.2kg
- ◆ Good solid keyboard with Windows 95 keys
- ◆ Built-in touchpad with palm rest
- ◆ Built-in 16bit stereo sound with stereo speakers and microphone
- ◆ 3.5" floppy drive
- ◆ Windows 95 installed
- ◆ ZV-enabled PCMCIA ports for two type II or one type III card
- ◆ 16550 compatible serial port
- ◆ EPP/ECP bi-directional parallel port
- ◆ PS/2 mouse or keyboard port
- ◆ External monitor port (runs simultaneously)
- ◆ Jacks for external speakers and stereo line in
- ◆ Infra red data link
- ◆ Anchor for Kensington security cable



Voyager 2000

### 12.1" display, NiMH battery, 16Mb EDO RAM

	Standard	Media98
166 MMX, DSTN, 1.4Gb HDD	£999+VAT (£1173.83)	£1179+VAT (£1385.33)
166 MMX, TFT, 1.4Gb HDD	£1249+VAT (£1467.58)	£1429+VAT (£1679.08)
200 MMX, DSTN, 2.1Gb HDD	£1099+VAT (£1291.33)	£1279+VAT (£1502.83)
200 MMX, TFT, 2.1Gb HDD	£1349+VAT (£1585.08)	£1529+VAT (£1796.58)

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Media98 models include the cost of the CD-ROM drive.

See page 3 for details of Media98 pack.

### FLEXIBLE DEVICE BAYS

The Voyager 2000 has two device bays, so you can fit any two of the following:

- Battery (standard)
- Mains PSU (standard)
- Floppy drive (standard)
- CD-ROM drive (optional)
- Second battery (optional)

For example - if you are away on business, the mains PSU fits inside and you can leave the battery at home. For long distance travelling you can fit two batteries.



Mains PSU installed in the left hand device bay



CD-ROM drive (optional) installed in the right hand device bay

Devices clip in and out, and can be changed in seconds. The mains PSU connects via a cable if both of the bays are otherwise occupied.

**Buy now - pay July 1998**

Buy any EveshamVale Media98 model and you can defer payment for 6 months - see page 2 for details.

### Voyager 2000 upgrades

POWER SUPPLY	
Additional battery	£79+VAT (£92.83)
Car cigar lighter adaptor	£79+VAT (£92.83)
RAM & HARD DISK	
16Mb RAM module	£69+VAT (£81.08)
32Mb RAM module	£139+VAT (£163.33)
1.4Gb to 2.1Gb HDD	£70+VAT (£82.25)
MULTIMEDIA	
10x CD-ROM drive (included as standard with Media98 models)	£99+VAT (£116.33)
COMMUNICATIONS	
"Internet ready" pack - see page 13	£179+VAT (£210.33)
DESKTOP EXPANSION	
External keyboard	£29+VAT (£34.08)
Zy-Fi® 2 amplified speakers - see page 14	£29+VAT (£34.08)

**We've got you ...**

### 2 YEAR WARRANTY WITH ACCIDENTAL DAMAGE INSURANCE

On-site maintenance is not really practical with notebook computers - but how many of our competitors look after you this well? All Voyager notebooks have a two year 'return to base' warranty with accidental damage insurance as well! For a modest sum you can extend this peace of mind to three years.

### Computer Luggage

**Stylish, practical carry cases for your notebook and accessories.**



Pisa £65+VAT (£76.38)



Hamburg £50+VAT (£58.75)



New York (back pack) £35+VAT (£41.13)



Madrid £30+VAT (£35.25)

### Multimedia software bundles

Available with any EveshamVale Multimedia or Media98 PC - see page 3 for details

**Evesham Micros**

FREEPHONE DIRECT SALES  
**0800 6345 999**  
Web: <http://www.evesham.com>

**Evesham Micros** BIRMINGHAM  
**0121 683 6868**  
Fax: 0121 683 6869

# EveshamVale

## Voyager 3000

**Now a fast multimedia notebook can be slim and stylish!**

The Voyager 3000 stands at just 1.8" high – yet for it's compactness it's hard to believe what's been squeezed in.

The Voyager 3000 series incorporates a low voltage Intel Mobile Pentium processor for maximum battery life and outstanding performance. Boasting speeds of up to 233 MHz with MMX technology and an expansion capability of up to 96Mb EDO RAM, this provides you with all the muscle you need, not only for today's demanding multimedia applications, but also for tomorrow's!

### Voyager 3000 models:

- ◆ 2 year warranty, with accidental damage insurance
- ◆ Low voltage Intel Mobile Pentium® processor for maximum battery life
- ◆ 256kb asynchronous cache
- ◆ 32Mb EDO RAM (max 96Mb)
- ◆ High performance 2.1Gb enhanced IDE hard disk
- ◆ 2Mb 64bit PCI graphics accelerator
- ◆ 800x600 resolution with 64000 colour palette
- ◆ 4.0Ah NiMH battery
- ◆ Extensive power management features, including 'suspend to RAM' and 'suspend to disk'
- ◆ 10 speed CD-ROM drive built-in
- ◆ Superior quality fit and finish
- ◆ Super slim design

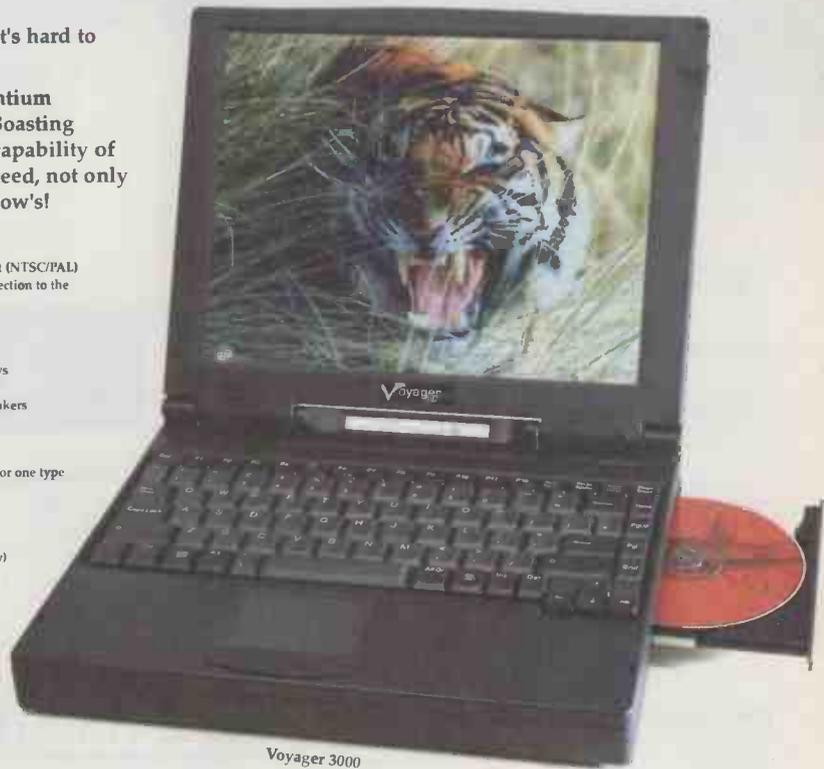
### Voyager 3000 models also feature:

- ◆ Composite video output for suitable TV set (NTSC/PAL)
- ◆ Optional port replicator gives instant connection to the peripherals on your desk
- ◆ MIDI/game port
- ◆ 2 year 'return to base' warranty
- ◆ 297 x 236 x 46mm (11.3" & 12.1" models)
- ◆ Good solid keyboard with Windows 95 keys
- ◆ Built-in touchpad with palm rest
- ◆ Built-in 16bit stereo sound with stereo speakers and microphone
- ◆ 3.5" floppy drive
- ◆ Windows 95 installed
- ◆ ZV-enabled PCMCIA ports for two type II or one type III card
- ◆ 16550 compatible serial port
- ◆ EPP/ECP bi-directional parallel port
- ◆ PS/2 mouse or keyboard port
- ◆ External monitor port (runs simultaneously)
- ◆ Jacks for external speakers and stereo line in
- ◆ Infra red data link
- ◆ Anchor for Kensington security cable



### Value for money 10/10.

"Looking at the Voyager's sleek lines, it's hard to believe what's been squeezed in." "The Voyager is quite an achievement. It's only the second notebook we've seen to pack hard drive, floppy, CD-ROM, PCMCIA slots and battery into an A4-sized case, and this is a lot less bulky than most of the others in the group." EveshamVale Voyager 3000 May 1997



Voyager 3000

### NiMH battery, 32Mb EDO RAM, 2.1Gb HDD

	MULTIMEDIA	Media98
166 MMX 11.3" DSTN	£1399-VAT (£1643.83)	£1479-VAT (£1737.85)
166 MMX 12.1" TFT	£1749-VAT (£2055.08)	£1829-VAT (£2149.08)



See page 3 for details of Media98 pack.

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch.

### Voyager 3000 upgrades

<b>POWER SUPPLY</b>	
NiMH battery (3000 models).....	£69+VAT (£81.08)
Li-Ion battery (3500 models).....	£99+VAT (£116.33)
Additional PSU .....	£59+VAT (£69.33)
Car cigar lighter adaptor .....	£79+VAT (£92.83)
<b>RAM &amp; HARD DISK</b>	
16Mb RAM module .....	£79+VAT (£92.83)
32Mb RAM module .....	£149+VAT (£175.08)
64Mb RAM module .....	£299+VAT (£351.33)
2.1Gb to 3.2Gb HDD .....	£100+VAT (£117.50)
<b>COMMUNICATIONS</b>	
"Internet ready" pack	
- see page 13 .....	£179+VAT (£210.33)
<b>DISKTOP EXPANSION</b>	
Port replicator .....	£69+VAT (£81.08)
External keyboard .....	£29+VAT (£34.08)
Zy-Fi 2 amplified speakers	
- see page 14 .....	£29+VAT (£34.08)



Voyager 3000 closed view

## ...covered

### 3RD YEAR WARRANTY

Models up to £1700+VAT.....£99  
 Models from £1700+VAT to £2500+VAT.....£129  
 Models from £2500+VAT to £3200+VAT.....£179  
 The extended warranty rates are exempt from VAT and are applicable only at time of purchase.

## Voyager 3500

### Voyager 3500 models differ in the following respects:

- ◆ 1024x768 resolution 13.3" TFT display with 64000 colour palette
- ◆ 3.6Ah Li-Ion battery for maximum life and minimum weight
- ◆ 3.2Gb hard disk
- ◆ 310 x 245 x 52mm



### Li-Ion battery, 32Mb EDO RAM, 3.2Gb HDD

	MULTIMEDIA	Media98
P200 MMX 13.3" TFT	£2499-VAT (£2936.33)	£2579-VAT (£3030.33)
P233 MMX 13.3" TFT	£2649-VAT (£3112.58)	£2729-VAT (£3206.58)

See page 3 for details of Media98 pack.

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch.

### PCMCIA CARD OPTIONS

EveshamVale 33.6 modem .....	£99	(£116.33)
EveshamVale ethernet adaptor .....	£79	(£116.33)
USR Sportster Xjack modem .....	£119	(£182.13)
Pace microlin NB 33.6 voice .....	£169	(£190.33)
3Com Etherlink III 10BaseT LAN & 33.6 modem combo .....	£179	(£209.15)
Psion Gold Card 56.6 modem .....	£229	(£263.20)
Psion Gold Card Combo LAN & 33.6 modem .....	£231	(£271.43)
Xircom Global Access 10BaseT LAN & 33.6 modem combo .....	£219	(£257.33)

CAMBRIDGE  
 01223 323898  
 Fax: 01223 322883

Evesham Micros

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0800 6345 999

Web: http://www.evesham.com

Evesham Micros

MILTON KEYNES

01908 230898

Fax: 01908 230865

# EveshamVale

**PROFESSIONAL**

## Rapier Server EL

- Intel Pentium® 200MHz processor with Intel 430TX chipset
- or Intel Pentium® II 233MHz processor with Intel 440FX chipset
- 32Mb high performance RAM
- 512kb Pipeline-Burst cache
- 3.2Gb IDE hard drive
- 10/100Mbps PCI ethernet card
- Panasonic CD-ROM drive
- 1Mb PCI video card
- 14" SVGA colour monitor
- ATX style midi-tower case
- 3 years on-site maintenance

from **£899**+VAT

Business Rental Scheme: **£32.34**+VAT per month  
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details.

**PII-233 model**  
from **£1149**+VAT

Business Rental Scheme: **£41.33**+VAT per month  
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details.

### Rapier/EL upgrades

<b>PROCESSOR</b>	
P II-233 to P II-266.....	£200+VAT
P II-233 to dual P II-233.....	£200+VAT
P II-233 to dual P II-266.....	£600+VAT
Rapier EL models do not support dual CPUs	
<b>RAM</b>	
32Mb to 64Mb.....	£60+VAT
64Mb to 128Mb.....	£150+VAT
<b>HARD DISK</b>	
2Gb SCSI to 4Gb SCSI.....	£350+VAT
2Gb SCSI to 9Gb SCSI.....	£590+VAT

## Rapier Server

Rapier Server models differ from Rapier EL models in the following respects

- Intel Pentium® II 233MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard
- 64Mb high performance RAM
- Adaptec Ultra Wide SCSI controller
- 2Gb SCSI hard drive
- Dedicated case with 6 further drive bays behind lockable front panel
- Dual redundant PSUs

from **£1899**+VAT

Business Rental Scheme: **£68.31**+VAT per month  
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details.



An EveshamVale Rapier fileserver

## Reviews



"If you were going to invest in a dual processor-capable Pentium Pro system of this spec, then you should be looking to

spend your money with someone who understands how to configure it. Evesham fits this profile... Evesham was also the only company to install the latest NT Service pack. This gives you confidence that the company actually understand the issues that NT raises. We were sufficiently well impressed with the Evesham, both in terms of its components and its configuration, that it receives a Technical Merit award."

June 1997  
EveshamVale  
Platinum SE  
Dual Pro



"Business NT servers"  
June 1996  
EveshamVale Fileservers

## COMPUTERWEEKLY

Best "Product knowledge of sales staff"  
in 'Quality of IT Suppliers 1995' survey.

## EveshamVale Samurai RAID Server

EveshamVale Samurai RAID Servers provide the ultimate solution to your mission critical system requirements. The stability of the Adaptec RAID controller combines with the power of Intel's Pentium® II processor giving maximum performance under Windows NT or Netware. By utilising this industry proven technology you can rest assured that your data integrity will be maintained.



An EveshamVale Samurai RAID server

## Samurai RAID Server

- Intel Pentium® II 233MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard
- 512kb Pipeline-Burst cache
- Adaptec AAA-131 RAID controller
- 64Mb high performance RAM
- 10/100Mbps PCI ethernet card
- Dual redundant PSUs
- Panasonic CD-ROM drive
- 10Gb SCSI RAID 5 array with hot swappable hard drives
- 1Mb PCI video card
- 14" SVGA colour monitor
- 3 years on-site maintenance



Closed view

from **£3249**+VAT

Business Rental Scheme: **£116.87**+VAT per month  
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details.

Hardware delivery and commissioning  
by an Evesham Micros engineer  
is included in the price

### Samurai upgrades

<b>PROCESSOR</b>	
P II-233 to P II-266.....	£200+VAT
P II-233 to dual P II-233.....	£200+VAT
P II-233 to dual P II-266.....	£600+VAT
<b>RAM</b>	
64Mb to 128Mb.....	£150+VAT
64Mb to 256Mb.....	£649+VAT
<b>RAID ARRAY</b>	
10Gb to 20Gb RAID.....	£1249+VAT
Adaptec to DPT 4Mb RAID controller.....	£799+VAT
<b>DAT DRIVE</b>	
4/8Gb DAT drive.....	£650+VAT

### Business Sales Centres:

**EVESHAM** (fax 01386 795354)

**BIRMINGHAM** (fax 0121 683 6869)

**NOW OPEN IN GLASGOW** (fax 0141 445 2626)

• **MILTON KEYNES** (fax 01908 230865)

• **CAMBRIDGE** (fax 01223 322883)



For six years we've made EveshamVale Computers the centre of our business...  
...isn't it time they were the centre of yours?

### EveshamVale OfficeStation

The workhorse with a thoroughbred heart  
Designed to meet the most exacting departmental needs, the EveshamVale OfficeStation uses a core of genuine Intel products. The PC is based on an Intel designed and manufactured Pentium® II motherboard featuring that latest 440LX chipset, and an Intel 10/100 network card. Combined with trusted components from other top name suppliers, and EveshamVale build quality, the result is a dependable platform that can form the mainstay of any office environment.

## OfficeStation

- Genuine Intel motherboard with Intel 440LX chipset
- Intel Pentium® II processor
- 32Mb SDRAM
- 512kb Pipeline-Burst cache
- 3.2Gb Ultra ATA hard drive
- 4Mb ATI AGP video card
- 15" EveshamVale monitor
- Panasonic 24x CD-ROM drive
- Intel 10/100Mbps ethernet
- Creative Labs 16-bit audio
- Low profile desktop case
- LANDESK client manager licence
- 1 year on-site maintenance



EveshamVale OfficeStation

PII-233 model **£1099**+VAT

Business Rental Scheme: £39.53+VAT per month  
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details

PII-266 model **£1299**+VAT

Business Rental Scheme: £46.73+VAT per month  
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details

### OfficeStation upgrades

- RAM  
32Mb to 64Mb .....£60+VAT
- MONITOR:  
15" to EveshamVale 17" .....£200+VAT
- WARRANTY  
2 years on-site maintenance .....£40+VAT



"Evesham's Vale Professional NT Workstation is a very capable and well specified Pentium Pro system, and although expensive, represents good value for money... Well-specified thanks to it's well integrated Intel motherboard, the NT Workstation has performance to spare."

June 1997 DesignStation



"The well-balanced configuration and great build quality makes for a good workhorse with a huge capacity"

February 1997 DesignStation.

"the folk in the UNIX camp must be beginning to sweat... As Evesham Micro's flagship CAD machine, the DesignStation is a solid machine from the motherboard up." August 1997 DesignStation



"a well specified and capable system and in use proved to be an ideal system for running CAD solid modelling applications... For someone moving from DOS of Windows 3.11 up to a Windows NT platform, this system represents good value for money." July 1997 DesignStation

### EveshamVale DesignStation

Power user? CAD/CAM user?  
Experience astonishing performance at a fraction of the cost of a typical Workstation from the likes of Sun or Silicon Graphics with EveshamVale DesignStations. Using a combination of single or dual Intel Pentium II processors, huge RAM capacity, the latest Diamond GL equipped graphics cards and Microsoft's Windows NT4 operating system, you are guaranteed unsurpassed power for your pound.

## DesignStation

- Intel Pentium® II 266MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard featuring Intel 440LX chipset
- 64Mb SDRAM
- 512kb Pipeline-Burst cache
- Adaptec UW SCSI controller
- 2Gb SCSI hard drive
- Panasonic 24x CD-ROM drive
- 4Mb Matrox Millennium II PCI video card
- 17" Taxan Ergovision 750 TCO95 monitor with DiamondIron tube
- 3 years on-site maintenance

from **£2099**+VAT

Business Rental Scheme: £75.50+VAT per month  
3 year term payable quarterly by Direct Debit. Other terms are available - Please call for details



EveshamVale DesignStation with optional Diamond video card and dual 21" monitors

### DesignStation upgrades

PROCESSOR		MONITOR	
P II-266 to P II-233.....	deduct £200+VAT	17" to iiyama 17" Pro .....	£20+VAT
P II-266 to P II-300.....	£150+VAT	17" to 21" Taxan DiamondIron.....	£530+VAT
P II-266 to dual P II-266 .....	£400+VAT	17" to iiyama 21" Pro .....	£550+VAT
P II-266 to dual P II-300 .....	£700+VAT	VIDEO CARD	
RAM		4Mb ATI Xpert@work AGP ..no cost option	
64Mb to 128Mb.....	£150+VAT	8Mb ATI Xpert@work AGP .....	£60+VAT
64Mb to 256Mb.....	£649+VAT	Diamond GL1000 .....	£130+VAT
HARD DISK		40Mb Diamond GL3000.....	£1200+VAT
2Gb to 4Gb SCSI.....	£350+VAT	Diamond GL4000 .....	£2200+VAT
2Gb to 9Gb SCSI.....	£550+VAT	DAT DRIVE	
		4/8Gb DAT drive.....	£650+VAT



## INTERGRAPH SOLID EDGE™

Powerful 3D Solid Modelled CAD

If you are interested in the power and flexibility of a professional 3D CAD system then you must look at Solid Edge - we believe that £ for £ nothing else comes close. Evesham Micros is a Solid Edge Business Partner and we would be delighted to discuss your requirements.



## 3D Studio MAX R2

The market leader in 3D graphics - we can supply you the fantastic new version and some amazing systems to run it on! Call us to discuss your requirements.

EveshamVale Fileservers and DesignStations have 3 years on-site maintenance for parts and labour, operated by Evesham Micros' own engineers, with next business day response.

**Evesham Micros**

FREEPHONE BUSINESS SALES  
**0800 765500**  
Web: <http://www.evesham.com>

**Evesham Micros** 11

# Evesham Micros Peripherals

## MOTHERBOARDS

Buy a motherboard and processor together, you get a free heatsink and fan.

Name	Form factor	Processor support			Chipset	Cache	RAM support			Exp. slots			USB	Price
		K6	Pentium	Pentium II			Fast page/EDO	SD	ISA	PCI	AGP			
Intel Mari	ATX		●		430HX	256kb	●			3*	4*		N/A	£69+VAT (£81.08)
Chaintech 5TDM	Baby AT	●	●		430TX	512kb	●	●		3*	4*		Opt!	£69+VAT (£81.08)
Chaintech 5TTM	ATX	●	●		430TX	512kb	●	●		4*	4*		Opt!	£75+VAT (£88.13)
Supermicro P5MMA	ATX		●		430TX	512kb	●	●		3*	4*		●	£95+VAT (£111.63)
Supermicro P5MMS	Baby AT		●		430TX	512kb	●	●		4*	4*		●	£99+VAT (£116.33)
Chaintech 6LTM	ATX			●	440LX	on CPU	●	●		3*	4*	1	●	£119+VAT (£139.83)
Tyan Tahoe 2	ATX			Dual	440FX	on CPU	●	●		3*	5*		Opt!	£239+VAT (£280.83)

\*One slot shared \*\*Use of USB requires cable @ £5+VAT (£5.88)



**CHAINTECH**  
COMPUTER CO., LTD.



innovative simple CPU installation via BIOS - no jumpers  
High security Active Processor Temperature Control - multi-level CPU temperature protection function



5TDM

"Features the spectacular SeePI jumpers CPU setup"

"I suggest that you seriously consider the Chaintech 5TDM"

Ratings: Performance ★★★★★  
Ease of use ★★★★★  
Documentation ★★★★★

6LTM

"After re-running the tests with a genuine Intel Pentium II-300, the 6LTM proved to be one of the most stable LX motherboards ever reviewed on Anand's Hardware Tech page"

"excellent real world performance of the 6LTM"

"At all speeds the Chaintech 6LTM smokes the competition"

"the 6LTM will hold its ground as one of the best Pentium II LX boards on the market, today and in the future"

Ratings: Performance ★★★★★  
Ease of use ★★★★★  
Stability ★★★★★



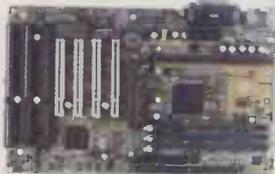
"Technology Creativity" award, Chaintech 5TDM & 5TTM, June 1997



Chaintech 5TDM, June 1997



Tyan Tahoe 2, June 1997



### Chaintech 6LTM

- Pentium II ATX motherboard
- Supports 66, 68.5, 75 & 83MHz bus speeds

£119+VAT (£139.83)



### Chaintech 5TTM

- Pentium class 5 ATX motherboard
- Supports 66 & 75MHz bus speeds

£75+VAT (£88.13)



### Chaintech 5TDM

- Pentium class Baby AT motherboard
- Supports 66 & 75MHz bus speeds

£69+VAT (£81.08)

## Motherboard special offers:

- Chaintech 5TDM with K6-200 MMX processor, fan, & 32Mb SDRAM .....£249+VAT (£292.58)
- Chaintech 5TTM with Pentium® P200 MMX processor, fan, & 32Mb SDRAM .....£279+VAT (£327.83)
- Chaintech 6LTM with Pentium® II 233 processor, fan, & 32Mb SDRAM .....£359+VAT (£421.83)
- Chaintech 6LTM with Pentium® II 266 processor, fan, & 32Mb SDRAM .....£559+VAT (£656.83)

## MEMORY MODULES

1Mb 30-pin.....£15+VAT (£17.63)	8Mb EDO .....£22+VAT (£25.85)
4Mb 30-pin.....£25+VAT (£29.38)	16Mb EDO .....£36+VAT (£42.30)
4Mb 72-pin.....£17+VAT (£19.98)	32Mb EDO .....£69+VAT (£81.08)
8Mb 72-pin.....£32+VAT (£37.60)	SDRAM DIMMs for 430VX/TX
16Mb 72-pin.....£65+VAT (£76.38)	32Mb .....£60+VAT (£70.50)
4Mb EDO .....£17+VAT (£19.98)	

## 120MB FLOPPY DRIVE

### Panasonic Superdisk LS-120

- LS-120 Internal with controller card .....£99+VAT (£117.50)
- 120Mb floppy disk .....£14+VAT (£16.45)
- Panasonic 1.44Mb floppy disk drive .....£15+VAT (£17.63)

## UPGRADE PCs

**Q** How do you give your system a serious performance boost without spending a fortune?

**A** Easy - get one of our 'Upgrade PCs' and use your existing monitor, floppy drive etc.

## UPGRADE YOUR PC!

### 430VX upgrade PC

Midi-tower case fitted with:

- ◆ 430VX chipset motherboard
- ◆ Processor & fan
- ◆ Power supply
- ◆ 16Mb EDO RAM
- ◆ 1Mb video card

NB - has baby AT keyboard port and serial mouse port

AMD K6-200 MMX .....£299+VAT (£351.33)

Pentium® 200 MMX .....£339+VAT (£398.33)

### Pentium II upgrade PC

Midi-tower case fitted with:

- ◆ ATX style motherboard with 440LX chipset
- ◆ Pentium II processor
- ◆ Power supply
- ◆ 32Mb SDRAM

NB - has PS/2 keyboard and mouse ports

Pentium® II 233 .....£429+VAT (£504.08)

Pentium® II 266 .....£629+VAT (£730.08)

### ATX upgrade PC

Midi-tower case fitted with:

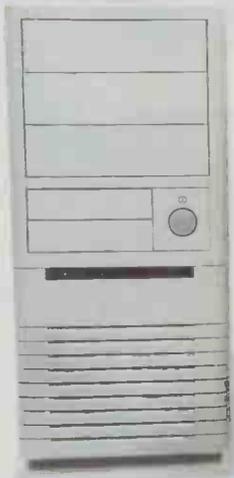
- ◆ 430TX chipset ATX motherboard
- ◆ Processor & fan
- ◆ Power supply
- ◆ 32Mb SDRAM

- ◆ 2Mb video card
- ◆ 24 speed CD-ROM drive

NB - has PS/2 keyboard and mouse ports

AMD K6-200 MMX .....£449+VAT (£527.58)

Pentium® 200 MMX .....£489+VAT (£574.58)



(Case style may vary)

## PROCESSORS



K6-200 MMX .....£120+VAT (£141.00)
K6-233 MMX .....£180+VAT (£211.50)
Pentium 200 MMX.....£159+VAT (£186.83)
Pentium 233 MMX .....£225+VAT (£264.38)
Pentium II 233 .....£209+VAT (£245.58)
Pentium II 266 .....£409+VAT (£480.58)
Pentium II 300 .....£559+VAT (£656.83)
K6 & Pentium require Socket 7, Pentium II requires Slot One
Heatsink and fan recommended for all processors.
Pentium class h/sink & fan .....£10+VAT (£11.75)

## UPGRADE TO MMX™

Improve your Pentium PC performance by up to 75%\* with a K6 MMX upgrade.



Ziff Davis WinBench® 97 Version 1.0 - CPUmark16 benchmark comparison



Each kit contains a processor with MMX technology, and an adaptor to fit it to your existing Pentium compatible motherboard.

K6-200 MMX kit .....£139+VAT (£163.33)
Pentium P200 MMX kit.....£179+VAT (£210.33)
Pentium P233 MMX kit.....£249+VAT (£292.58)

\*Based on your motherboard supporting 200MHz CPUs. Upgrades will still work on machines which support frequencies lower than this with a relative reduction in performance. AMD-K6 upgrades are not suitable for Intel Endeavour, Mari or Tucson motherboards.

## CASES WITH POWER SUPPLY

Style	Form factor	Drive bays		Price
		Internal	External	
Desktop	Baby AT	2x3.5"	3x5.25" 2x3.5"	£55+VAT (£64.63)
Midi tower	Baby AT	2x3.5"	3x5.25" 2x3.5"	£45+VAT (£52.88)
Desktop	ATX	4x3.5"	2x5.25" 2x3.5"	£59+VAT (£69.33)
Midi tower	ATX	3x3.5"	2x5.25" 3x3.5"	£59+VAT (£69.33)

## HARD DISKS & CONTROLLERS

Optional installation kit (5.25" mounting bracket kit plus cables) .....£10+VAT (£11.75)

HD I/O card .....£15+VAT (£17.63)



## Quantum® thinkBIGGER®

Bigfoot 2.1Gb IDE (5.25").....£99+VAT (£116.33)
Fireball ST Ultra ATA 3.2Gb IDE (3.5") .....£125+VAT (£146.88)
Fireball ST Ultra ATA 6.4Gb IDE (3.5") .....£215+VAT (£252.63)
Viking 2.2Gb SCSI (3.5") .....£309+VAT (£363.08)
Viking 4.5Gb SCSI (3.5") .....£459+VAT (£539.33)
Atlas II 4.5Gb Wide SCSI (3.5") .....£519+VAT (£609.83)
Atlas II 9.1Gb Wide SCSI (3.5") .....£899+VAT (£1056.33)

## Seagate

214Mb IDE .....£69+VAT (£81.08)
1.2Gb IDE (ST31276A) .....£99+VAT (£116.33)
Barracuda 4Gb SCSI (ST34371N) .....£479+VAT (£562.83)



100Mb (SCSI) .....£49+VAT (£57.58)



Promise PCI Ultra ATA controller .....£49+VAT (£57.58)

**NEW!**

## SCSI/RAID CONTROLLERS



2910 SCSI controller .....£89+VAT (£104.58)
2920 SCSI controller .....£99+VAT (£116.33)
2940UW SCSI controller .....£189+VAT (£222.08)
AAA-131 RAID controller .....£299+VAT (£351.33)
AAA-133 RAID controller .....£499+VAT (£596.33)



FirePort 40UW PCI Ultra Wide SCSI controller .....£79+VAT (£92.83)

## MODEMS



### Quality hardware modems

Internet access starter pack: Includes full Internet and World Wide Web access software, with first month membership free and 10 hours free on-line time

33.6 voice/data internal.....	£45.99 VAT (£52.88)	K56flex internal.....	£59.99 VAT (£69.33)
33.6 voice/data external.....	£59.99 VAT (£69.33)	K56flex external.....	£79.99 VAT (£92.83)
33.6 PCMCIA.....	£99.99 VAT (£116.33)	Cables included with all EveshamVale modems	



APPROVED for connection to telecommunication systems specified in the instructions for use subject to the conditions set out in them.

### SPECIAL OFFER!

Pace 28.8 external with cable.....	£35.99 VAT (£41.13)
K56flex Voice internal.....	£109.99 VAT (£128.08)
K56flex Voice external.....	£132.99 VAT (£155.10)
External version supports UK Caller ID.	
International Travel Pack.....	£39.99 VAT (£45.83)
Allows use of modem in the USA and most of Europe.	



Sportster 33.6 internal.....	£109.99 VAT (£128.08)
Sportster 33.6 external.....	£109.99 VAT (£128.08)
Sportster 56.6 Flash external.....	£119.99 VAT (£139.83)
Courier ISDN internal.....	£289.99 VAT (£339.58)
Courier ISDN external.....	£290.99 VAT (£340.75)
Sportster WinModem.....	£77.99 VAT (£90.48)

All modems include Internet connection software with free trial connection period.

### At last A COMPLETE INTERNET SOLUTION!

- Choice of EveshamVale internal or external K56flex modems (see above)
- 12 Months UNLIMITED Internet Access via Premier Internet - one of the UK's largest providers
- 100% UK local rate telephone access
- Full e-mail account
- Full technical support

Many packages offer 30 day trial access often with limited access times and leading to high monthly charges. At Evesham Micros we believe in providing a product which is ready to use minutes after you open the box. Join the internet revolution safe in the knowledge that you will have nothing to pay (apart from local rate telephone calls) for 12 months.

Internal version.....	£159.99 VAT (£186.83)
External version.....	£169.99 VAT (£198.58)
Software only.....	£99.99 VAT (£116.33)



## MONITORS



All Taxan monitors have 3 years warranty (1st year on-site).

15" Ergovision 550 TCO95.....	£209.99 VAT (£245.58)
17" Ergovision 730 TCO.....	£370.99 VAT (£434.75)
17" Ergovision 750 TCO95 DiamondTron.....	£461.99 VAT (£541.68)
17" Ergovision 760 TCO95.....	£360.99 VAT (£423.00)
21" Ergovision 2150 TCO95 DiamondTron.....	£949.99 VAT (£1115.08)
10.4" Crystalvision 600.....	£902.99 VAT (£1059.85)
12.1" Crystalvision 620.....	£1149.99 VAT (£1350.08)
14.5" Crystalvision 650.....	£1699.99 VAT (£1996.33)

ViewSonic® 17" 17GS.....	£399.99 VAT (£468.83)
17" PT770.....	£469.99 VAT (£551.08)
21" PB10.....	£979.99 VAT (£1150.33)
21" PB15.....	£1179.99 VAT (£1385.33)

SHINHO	
14" SM483.....	£109.99 VAT (£128.08)
15" SM585.....	£159.99 VAT (£186.83)
17" SM785.....	£299.99 VAT (£351.33)

NEC	
15" MultiSync A500.....	£189.99 VAT (£222.08)
17" MultiSync A700.....	£349.99 VAT (£405.38)

Please note that industry standard practice is to quote a monitor's CRT size - the actual viewing area is approximately 1" less.



With over 20 UK magazine awards for technical excellence, display quality and value for money, iiyama monitors are firmly established as the choice of the professional user.

The Evesham difference  
All our iiyama prices include 3 years on-site maintenance, normally £££ extra.

15" Vision Master 350 (MF-8515G).....	£199.99 VAT (£233.83)
17" Vision Master 17 (MF-8617).....	£399.99 VAT (£468.83)
17" Vision Master 17ES (MF-8617ES).....	£435.99 VAT (£511.13)
17" Vision Master Pro 17 (MT-9017).....	£439.99 VAT (£515.83)
21" Vision Master 21 (MF-8221).....	£925.99 VAT (£1086.88)
21" Vision Master Pro 21 (MT-9021T).....	£989.99 VAT (£1126.83)
21" Vision Master 500 (MF-8721T).....	£959.99 VAT (£1126.83)
21" Vision Master Pro 500.....	£999.99 VAT (£1173.83)
Vision Master Pro Lite 35 (LP-1014P).....	£2019.99 VAT (£2372.33)

## PSION ORGANISERS



Series 3C 2Mb.....	£255.99 VAT (£299.83)
Series 5 4Mb.....	£369.99 VAT (£433.58)
Series 5 8Mb.....	£419.99 VAT (£492.33)



## UPSs

Protect your installation from mains power faults with an uninterruptible power supply.

### Station series UPSs

- Reliable protection from mains surges, spikes, noise and failure
- Interface port and power management software for automatic system shutdown and remote alarm notification by paging/email

Station 280 (280VA).....	£99.99 VAT (£116.33)
Station 420 (420VA).....	£129.99 VAT (£151.58)
Station 650 (650VA).....	£189.99 VAT (£222.08)
Station 1000 (1000VA).....	£249.99 VAT (£292.58)

### System series on-line UPSs

- PowerSave software and intelligent interface allows comprehensive monitoring and control, plus automated alarm and shutdown routines

System 1000 (1000VA).....	£599.99 VAT (£703.83)
System 3000 (3000VA).....	£1249.99 VAT (£1467.58)

## VIDEO CARDS



Mach64 1Mb (PCI Bus).....	£29.99 VAT (£34.08)
Xpert@work 4Mb (AGP Bus).....	£99.99 VAT (£116.33)
Xpert@work 8Mb (AGP Bus).....	£139.99 VAT (£163.33)
Xpert@play 4Mb (PCI Bus).....	£110.99 VAT (£129.25)
Xpert@play 8Mb (PCI Bus).....	£150.99 VAT (£176.25)
TV card.....	£69.99 VAT (£81.08)



Stealth 3D 2000 2Mb (PCI Bus).....	£39.99 VAT (£46.83)
Monster 3D 4Mb (PCI Bus) OEM version.....	£105.99 VAT (£123.38)



m3D.....	£75.99 VAT (£88.13)
Upgrade from 2Mb to 4Mb for Mystique.....	£49.99 VAT (£57.58)
Mystique 220 4Mb (OEM version).....	£69.99 VAT (£81.08)
Upgrade from 4Mb to 8Mb for Millennium.....	£79.99 VAT (£92.83)
Millennium II 4Mb (OEM).....	£99.99 VAT (£116.33)
Rainbow Runner Studio.....	£119.99 VAT (£139.83)

Note: Rainbow Runner requires Pentium P90 or higher, Matrox Mystique, and CD-ROM drive. Cannot be used in conjunction with Mystique memory upgrades. Large hard disk recommended for video capture. Videoconferencing requires modem and video camera.



Righteous 3D.....	£119.99 VAT (£139.83)
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## STORAGE & BACKUP



Iomega ditto tape drives:

2Gb internal.....	£67.99 VAT (£78.73)
2Gb external 'parallel port'.....	£102.99 VAT (£119.85)
Tapes for ditto 2Gb.....	3 pack £39.99 VAT (£45.83)
Tapes for ditto 3.2Gb.....	£25.99 VAT (£29.38)

Iomega ditto Max tape drives:

7Gb internal.....	£99.99 VAT (£116.33)
7Gb external 'parallel port'.....	£129.99 VAT (£151.58)
Tapes for ditto 2Gb.....	2 pack £35.99 VAT (£41.13)

Iomega zip drives:

100Mb external 'parallel port'.....	£99.99 VAT (£116.33)
Cartridge for zip drive.....	£12.99 VAT (£14.10)
Cartridge for zip drive.....	.6 pack £55.99 VAT (£64.63)
Battery pack for zip drive.....	£49.99 VAT (£57.58)

Iomega jaz drives:

1Gb internal.....	£212.99 VAT (£249.10)
1Gb external 'parallel port'.....	£269.99 VAT (£316.08)
Cartridge for jaz drive.....	£69.99 VAT (£81.08)
PCI SCSI interface card for jaz drive.....	£69.99 VAT (£81.08)



3.2Gb TapeStor Internal.....	£129.99 VAT (£151.58)
3.2Gb TapeStor external 'parallel port'.....	£119.99 VAT (£139.83)
Tapes for 3.2Gb TapeStor.....	£25.99 VAT (£29.38)
All TapeStor capacities quoted are with 2x compression	
4/8Gb DAT drive internal bare mechanism.....	£650.99 VAT (£763.75)
120m DAT tape.....	£25.99 VAT (£29.38)

## Network Products



Plug-N-Play ethernet adaptor.....

£19.99 VAT (£22.33)	
PCI ethernet adaptor.....	£29.99 VAT (£34.08)
Etherspeed adaptor (10/100 Mbps).....	£49.99 VAT (£57.58)
PCMCIA ethernet adaptor.....	£99.99 VAT (£116.33)
Mini-hub (pocket size, 5 ports, stackable).....	£45.99 VAT (£52.88)



Pro 10+ ISA.....	£75.99 VAT (£88.13)
Pro 10/100 PCI.....	£55.99 VAT (£64.63)
3Com™	
3C509 Combo.....	£75.99 VAT (£88.13)
3C589 PCMCIA Combo.....	£119.99 VAT (£139.83)
3C905 10/100Mbps PCI.....	£65.99 VAT (£76.38)
5 pk.£315.99 VAT (£370.13)	20 pk.£1100.99 VAT (£1292.50)

OfficeConnect products:

3C16704 Hub TP4.....	£51.99 VAT (£59.99)
3C16700 Hub 8/TP0.....	£79.99 VAT (£92.83)
3C16702 Hub TP16C.....	£175.99 VAT (£205.63)
3C16720 Hub 8/TP100.....	£485.99 VAT (£569.88)
3C16730 Switch 140.....	£675.99 VAT (£793.13)
3C410000 Remote 510.....	£400.99 VAT (£470.00)
3C410011 Gateway 535.....	£995.99 VAT (£1169.13)
3C8842 NetBuilder 142.....	£1005.99 VAT (£1180.88)



OfficeConnect Print Server.....	£245.99 VAT (£287.88)
OfficeConnect Fax Server.....	£1075.99 VAT (£1263.13)
OfficeConnect CD-ROM Server.....	£450.99 VAT (£528.75)



Jet Direct External Plus 3.....	£265.99 VAT (£311.38)
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### Cabling & Terminators

Ethernet cable with BNC plugs:	BNC T Connector.....	£3.20 VAT (£3.84)
5m length.....	Through Connector.....	£1.80 VAT (£2.16)
10m length.....	Cable plug.....	£1.75 VAT (£2.10)
20m length.....	Terminator.....	£2.00 VAT (£2.40)

## SOFTWARE

### DR SOLOMON

for Win 95 (Quarterly).....	£77.99 VAT (£90.48)	for Windows NT Server (Quarterly).....	£259.99 VAT (£304.33)
for Win 95 (Monthly).....	£138.99 VAT (£162.15)	for Windows NT Server (Monthly).....	£389.99 VAT (£457.08)
for Win NT (Quarterly).....	£78.99 VAT (£91.65)		
for Win NT (Monthly).....	£139.99 VAT (£163.33)		

### MICROSOFT

Autoroute Express 5.....	£43.99 VAT (£50.53)	Office 97 Pro CCP.....	£225.99 VAT (£264.38)
Bookshelf.....	£35.99 VAT (£41.13)	Office 97 Std CCP.....	£163.99 VAT (£191.53)
Cinemania 97.....	£22.99 VAT (£25.85)	Office 97 Small Business Edition.....	£163.99 VAT (£191.53)
Encarta 97.....	£34.99 VAT (£39.95)	Picture It!.....	£36.99 VAT (£42.30)
Encarta 97 World Atlas.....	£34.99 VAT (£39.95)	Project.....	£104.99 VAT (£124.55)
Flight Sim for Win 95.....	£32.99 VAT (£37.40)	Publisher 97.....	£75.99 VAT (£89.13)
FrontPage 97.....	£119.99 VAT (£139.83)	Publisher Student License £35.99 VAT (£42.30)	
Greetings Workshop.....	£22.99 VAT (£25.85)	Windows 95 upgrade.....	£65.99 VAT (£77.58)
Home Essentials.....	£89.99 VAT (£104.58)	Office 97 Professional.....	£99.99 VAT (£116.33)
Money 97.....	£22.99 VAT (£25.85)	For the home user we offer Office97 Professional Student Edition. Are you or someone in your family aged 18 or over and do you have part-time education on a Dept. for Education & Employment (DEE) recognised course as either a student or teacher? If so you qualify for this offer! (Product supplied via voucher redemption.)	
Music Central 97.....	£22.99 VAT (£25.85)		

### COREL

CorelDRAW 7 for Windows 95 CCP.....	£149.99 VAT (£175.08)	Word Perfect Suite 8 CCP.....	£99.99 VAT (£116.33)
Office Pro 7 CCP.....	£129.99 VAT (£151.58)		

### McAfee

Deluxe (2 years).....	£55.99 VAT (£64.63)	Internet updates (1 year).....	£25.99 VAT (£29.38)
Quarterly updates (1 year).....	£35.99 VAT (£41.13)		

### NORTON

Utilities for Win 95 CCP.....	£31.99 VAT (£36.43)	WinFax Pro for Win 95.....	£69.99 VAT (£81.08)
Utilities for Win 95 full.....	£53.99 VAT (£62.28)	AntiVirus for Win 95.....	£36.99 VAT (£42.30)
Utilities for Win NT full.....	£68.99 VAT (£79.90)		

### OTHERS

Powerquest DriveCopy.....	£194.99 VAT (£223.33)	Rescue Me for Win 3.1/95.....	£25.99 VAT (£29.38)
Powerquest Partition Magic.....	£45.99 VAT (£52.88)	Rescue Me (NT).....	£35.99 VAT (£41.13)
Taxcalc.....	£45.99 VAT (£52.88)	CheckIt Diag.....	£45.99 VAT (£52.88)
Cheyenne Backup.....	£39.99 VAT (£45.83)	Route 66 UK & Ireland.....	£35.99 VAT (£41.13)
Cheyenne Infinite Disk.....	£39.99 VAT (£45.83)	Route 66 Europe.....	£36.99 VAT (£42.30)
Cheyenne Anti-Virus.....	£39.99 VAT (£45.83)	Route 66 UK Ultimate Traveller.....	£72.99 VAT (£84.60)

# MULTIMEDIA LABS SPEAKER SYSTEMS



## Multimedia Labs TC1680

High End, Thin Line, Tri-Amp with SP7002 and SP508 Speakers

PC Amp, with it's advanced three channel amplifier incorporating Spatializer® 3-D Audio Technology, 2 way satellite speakers and an earth shaking subwoofer, is the first and last multimedia sound system you need ever purchase!

PC PRO April 1997  
The system produced a well defined, crisp and clear sound. Bass response is more than adequate, and the complex controls allow users to modify the sound to their own tastes.



only £109.95+VAT (£128.08)

## TC 1500

Compact Hi-Fi Stereo 75 Watt Amplifier System

Micro size amplifier 1 1/8" W x 7" H x 6" D giving 12 Watts RMS per channel at less than 1% THD (1kHz).  
• 75 Watts maximum power rating both channels driven.

A BARGAIN AT ONLY £49.95+VAT (£57.58)

• Unique palm size remote IR control.  
• Two way speaker system with side firing 4" woofers and front firing high frequency piezo tweeters.



## UPGRADE your existing speaker system with the Killer Sub ▶ SP7001

75 Watts RMS mono power with built in electronic crossover.  
• Free standing, speaker cabinet made of natural wood material for perfection in bass response. Size: 6 1/4" W x 12" H x 10" D.

50 Watt Amplified Bass Reflex Subwoofer

only £39.95+VAT (£45.83)

SPECIAL OFFER!  
TC1500 & SP7001  
£85+VAT (£99.88)



## Panasonic CD-ROM

### CR-585 24x

Bare drive

£50.95+VAT (£58.75)

Includes cables  
NB - Bare drive and packs 218/228/238 require motherboard with secondary IDE connector

Pack 22B

Bare drive with SB 16 card

£69.95+VAT (£81.00)

Pack 21B

Bare drive with TC 1500

M/M Labs TC1500 speakers

£96.95+VAT (£112.80)

Panasonic CR-506 8x SCSI CD-ROM drive.....£65.95+VAT (£76.38)



## CD-ROM WRITERS



Everything you need to make and read your own data/audio CDs!

SureStore CD-RW 7100 2x write, 6x read (internal kit).....£260.95+VAT (£305.50)

SureStore CD-RW 7100 2x write, 6x read (external kit).....£320.95+VAT (£376.20)

Blank CD-RW disk.....£15.95+VAT (£17.63)

Blank CD-R disks: Single.....£2.35+VAT (£2.85) 5 pack.....£9.95+VAT (£10.58)

10 pack.....£17.95+VAT (£19.98) 20 pack.....£33.95+VAT (£38.78)

Labeller kit: label applicator, labelling software, and 20 labels

CD labeller kit.....£22.95+VAT (£25.85) 50 labels.....£10.95+VAT (£11.75)

## KEYBOARDS, JOYSTICKS ETC

### MITSUMI

Mouse as used in EveshamVale Prestige PCs.....£10.95+VAT (£11.75)

EveshamVale Windows 95 Keyboard.....£10.95+VAT (£11.75)



### KEY TRONIC

'Windows 95' Keyboard as used in EveshamVale Platinum PCs.....£25.95+VAT (£29.38)

"one of the best weighted and most comfortable set of keys of any mainstream keyboard and with its well raked rows and full Win95 compatibility, it gets our top vote."  
PC Plus, January 1997

F1 SIM.....£135.95+VAT (£156.63)

F1 SIM compact.....£65.95+VAT (£76.38)

### DIGITAL EDGE



F1 SIM RACING SIMULATOR

### PC GAMER

"This is undoubtedly the most advanced, well built and realistic steering wheel money can buy."  
Rating: 90% April 1996

### MSC

MSC Multi-System - combined steering wheel, handlebars, yoke.....£49.95+VAT (£57.58)



It's a bike!



It's a plane!



It's a car!

## NEW! DVD DRIVE

### Panasonic

SR-8582B 2xDVD drive (IDE Interface, 20x CD-ROM drive).....£139.95+VAT (£163.33)

## Panasonic PD DRIVE

650Mb rewritable optical disk drive

Easy to use, high speed, high capacity, rewritable and removable memory - combined with a fast CD-ROM drive.

- Uses high speed, optical disks with massive 650Mb capacity
- Amazingly low cost media
- As easy to use as a floppy drive
- Reads conventional CD-ROM disks with 8x performance



Internal model

£199.95+VAT (£233.83)

External model

£269.95+VAT (£316.08)

PD media

Single.....£19.95+VAT (£22.33)

3 pack.....£49.95+VAT (£57.58)

10 pack.....£149.95+VAT (£175.08)

Requirements: Enhanced IDE interface and 5.25" drive bay (internal version only); Parallel port (external version); Pentium processor or equivalent; and DOS 6.0, Windows 3.1, Windows 95 or Windows NT 3.51 or higher

## CD-ROM AUTO-CHANGER

- 6 disc half height internal auto-changer
- Change discs with a mouse click or the touch of a button
- True 8x performance - 190ms access
- Enhanced IDE interface - requires suitable sound card or motherboard



only £109.95+VAT (£128.08)

Drive with SoundBlaster 16 card.....£154.95+VAT (£180.95)

CD-524EK 24x IDE CD-ROM drive.....£69.95+VAT (£81.00)

## ZY-FI SPEAKERS

### ZY-FI COMPACT £12.95+VAT (£14.10)

- Built-in Stereo Power Amplifier
- 16 Watts PMPO (4 Watts RMS)
- Active or Passive use (active use requires batteries or optional mains adaptor)
- Magnetically shielded
- Volume Control
- Bass Booster
- Treble Booster



### ZY-FI 2 £29.95+VAT (£34.08)

- Built-in Stereo Power Amp
- 64 Watts PMPO (12 Watts RMS)

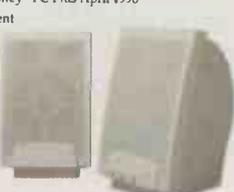
- Magnetically shielded
- Volume control
- Tone control
- Styling as Zy-Fi2 Pro (below)

### ZY-FI 2 PRO £49.95+VAT (£57.58)

"These are the boys to add a bit of oomph to your PC." PC Answers "Recommended" March 1995  
Rating 9/10. "Excellent value for money." PC Zone April 1995  
Rating 9/10. "A lot of sound for the money" PC Plus April 1996

Rating 6/6. "sound quality on a different level from the other speakers"  
PC Guide "Best Buy" September 1996

- Built-in Stereo Power Amplifier
- 120 Watts PMPO (36 Watts RMS)
- Magnetically Shielded
- 140 x 230 x 150mm
- Volume Control
- Bass control
- Treble control



### ZY-FI BASS £75.95+VAT (£88.13)

- Subwoofer unit 80 Watts PMPO (20 Watts RMS). Dimensions 273 x 165 x 275mm
- Built-in Power Amplifier
- Satellite speakers 24 Watts PMPO (6 Watts RMS). Dimensions 120 x 96 x 96mm
- 5.25" subwoofer drive unit
- 3" satellite units
- Magnetically shielded
- Individual volume and bass controls
- External mains PSU



## SOUND CARDS



Plug-N-Play 3D sound card with Spatializer 3D sound system, universal wavetable upgrade port and MIDI/joystick port.....£25.95+VAT (£29.38)

Wavetable sound card (no CD-ROM interface).....£49.95+VAT (£57.58)

### CREATIVE

SoundBlaster AWE64 Value (no IDE interface).....£69.95+VAT (£81.08)  
SoundBlaster AWE64 Gold.....£129.95+VAT (£151.58)

## Killer sound for awesome 3D gaming!



Sound is amplified, directed to specific positions, and approaches you from all directions



Requires Windows 95, Pentium P90 or higher, 8Mb RAM, PCI expansion slot, CD-ROM drive, and amplified speakers  
Please note: OEM version

only £95.95+VAT (£111.63)

## Microsoft

IntelliMouse.....£45.95+VAT (£52.88)  
Home Mouse with 'Intellipoint' software.....£18.95+VAT (£21.15)  
Natural Keyboard.....£57.95+VAT (£66.98)

# Evesham Micros

FREEPHONE DIRECT SALES  
**0800 6345 999**  
Web: http://www.evesham.com

**Evesham Micros** BIRMINGHAM  
0121 683 6868  
Fax: 0121 683 6869

# FLATBED SCANNING from £69 +VAT (€81.08)



- All Mustek Scanexpress flatbeds use *single-pass scanning* – much faster than models which scan each colour separately
- Colour, 8-bit grey and line art modes
- 12 built-in halftoning patterns
- Simply connects to your parallel port for easy installation
- 'Small footprint' design with compact exterior dimensions and 216mm x 296mm scan area
- Image scanning and photograph re-touching software, and powerful OCR software

Requirements: Pentium processor, Windows 3.1x/95, mouse, CD-ROM drive, SVGA graphics or higher, at least 16Mb RAM, and hard disk with at least 70Mb free

**WINNER**  
 "...ease of use, great colour quality and exemplary OCR output...offers both low price and impressive speed via its Enhanced Parallel Port interface...fast and easy to setup—just five minutes and you're done"  
 August 1997 Mustek Paragon 600

**PC FORMAT** "The bundled software is impressive... The scans themselves...are satisfying and higher than you could reasonably expect for the price. The design of the case is sleek and it's compact enough to fit on the smallest desktop."  
 March 1997 Mustek Paragon 600

FamilyPC

**EASY INSTALL**  
 Connects to Parallel Port

**CD-ROM Today**  
 "This scanner gives a whole new meaning to easy installation – it really is an absolute dream."  
 June 1997  
 Mustek Paragon 600 EP

**WINNER**  
 SYMBOL OF EXCELLENCE

**BEST BUY**



## A4 COLOUR SHEETFEED SCANNER

Expand your PC into a multi-purpose office tool – scan documents of all sizes for filing or faxing, or use with a printer for easy copying.

- 300dpi colour resolution, interpolated to 1200dpi
- Document size: 216x356mm max, 51x89mm min
- 10 sheet automatic document feeder
- Very compact "small footprint" design
- Includes iPhoto Plus™ top professional Windows based image scanning and photograph re-touching software, and iWordInx™ OCR software



Colour 800 hand scanner with interface card.....£49 +VAT (€57.58)  
 Colour 800 hand scanner with 'parallel port' interface .....£99 +VAT (€116.33)

<p><b>Scanexpress 600</b>                  300x600dpi                  1200dpi                  24-bit                  FREE SOFTWARE: ImagePals GO! TextBridge OCR</p> <p>£69 +VAT (€81.08)</p>	<p><b>Scanexpress 1200</b>                  600x1200dpi                  2400dpi                  30-bit                  ImagePals GO! TextBridge OCR</p> <p>£139 +VAT (€163.33)</p>
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## PICTURE THIS! - DIGITAL CAMERAS

**Mustek Digital Camera VDC-100**  
**£89 +VAT (€104.58)**

System requirements: 486 or higher processor, Windows 3.1 or higher, 3.5" floppy disk drive, hard disk drive with at least 15Mb available, 8Mb RAM or higher, 256 colour VGA display or higher, RS232 serial port



- Capture vibrant colour images any time, any place for instant use with your PC or laptop
- Simple point and shoot operation – fixed focus lens and automatic exposure
- Store up to 20 images in memory, then download to your PC with the serial cable supplied
- iPhoto Express image editing software supplied to view and manipulate your images on your PC. You can also create exciting photo-based documents such as personalised greetings cards and Invitations
- Use it to build-up your family album, or create flyers, adverts, newsletters, reports, or for property guides or insurance claims
- Up to 480x320 resolution with 24 bit colour
- Includes carrying pouch
- Compact lightweight design

## Superb colour pictures – straight into your PC. No fuss, no films, no developing costs, and no scanner required!

**Mustek Digital Camera VDC-200**



- 1.8" colour LCD screen for viewing and picture review
- Up to 640x480 resolution with 24 bit colour
- Fixed focus lens – 250mm to infinity
- Stores up to 48 frames
- Built-in 2Mb flash memory
- Internal slot supports CF card for extra memory
- Auto flash
- Preview the output image on the camera, a PC or your TV screen
- Complete with batteries, image editing software, TWAIN driver, carry pouch and Mains power supply!

**£199 +VAT (€233.83)**

System requirements: as VDC-100

**CASIO**

- Integral TFT colour LCD screen helps with picture composition, and can be used for immediately viewing and editing stored pictures
- Auto focus and auto exposure
- 270° lens rotation (except QV-70) allows you to shoot at awkward angles and still view the screen
- View pictures on your PC or TV
- Record on to VCR
- 10 second self timer (except QV-70)
- Macro focusing down to 150mm
- Software supplied to manipulate your images on your PC

System requirements: as Mustek VDC-100

**QV-11** (Illustrated)

- 1.8" LCD screen
- Store for up to 96 images in memory
- 320x240 resolution

**£225 +VAT (€264.38)**

**QV-200**

- 1.8" LCD screen
- Store for up to 192 images in memory
- Up to 640x480 resolution

**£299 +VAT (€351.33)**

Mains PSU for QV-11/100/200/300...£12 +VAT (€14.10)  
 Mains PSU for QV-70/700.....£24 +VAT (€28.20)

**DP-8000** (Illustrated)

From camera to print in an instant

- High quality dye-sublimation colour printer connects directly to Casio QV cameras
- 416 built-in templates allow creative postcards, calendars etc
- Also connects to PC
- Paper and postcard media available (148 x 100 mm)

**£299 +VAT (€351.33)**



**VIDEO CAPTURE**

**Instant video capture.**

**LOGITECH SNAPPY**

16 million colours at up to 1500x1125

**£145 +VAT (€170.36)**

- Snappy Video Snapshot grabs amazing stills from any PAL video source such as camcorder, VCR, TV etc.
- Includes Adobe's outstanding PhotoDeluxe for painting and retouching your pictures, Kal's Power Goo for Incredible special effects, and Gryphon's award-winning Morph programme.

System requirements: 386 or higher processor, Windows 3.1 or higher, hard disk drive with at least 40Mb available, 8Mb RAM or higher, 256 colour VGA display or higher, parallel port

**HP SCANJET 5P**

Quality colour scanning at the touch of a button.

**hp**

New model available January – call for details

- Easy installation and setup
- 300dpi optical resolution, interpolated to 1200x1200
- Bundled software: HP PictureScan with HP AccuPage, Corel PHOTO-PAINT Select for Windows, PaperPort for HP, Caere OCR

Requirements: Pentium processor, Windows 3.1x/95, Mouse, CD-ROM drive, SVGA graphics or higher, at least 16Mb RAM, and hard disk with at least 70Mb free

ScanJet 6100C.....£479 +VAT (€562.83)      3 year On Site maintenance £660 (€775.55)  
 Graphics Pro 4C.....£549 +VAT (€645.06)  
 Office Pro 4C.....£599 +VAT (€703.83)

**SOFTWARE OFFERS**

Compatible with any Mustek scanner

**Photo Impact 3.0 SE & WordInx**  
 for Windows95 – allows text import directly into MS Word

**Photoshop 3.0 LE**  
 Premier image manipulation for Windows 3.1/95

£15 +VAT (€17.55)

**TRY BEFORE YOU BUY**

Sample disk pack for each of the scanners, plus the digital camera, containing images to provide an exact representation of each model's capabilities. A fact sheet is also included containing loading instructions, scanning information, and printed originals.

£5 +VAT (€5.88) incl delivery.

Refundable on purchase of a scanner.

# PRINTERS

HP DeskJet – Laser-sharp type & brilliant colour, at an amazing price...

## HP DeskJet 670C

An incredible printer at an incredible price

**£129+VAT**  
(£151.58)

Print in black or colour without changing cartridges Versatile media handling – prints on plain, glossy or recycled paper, transparencies, envelopes, labels ■ up to 4ppm black, up to 1.5ppm colour (Econofast mode) ■ Quick and easy driver installation ■ HP's RealLife Imaging System with HP Resolution Enhancement technology (REI) ensures photo quality colour and sharp, crisp blacks ■ HP ColourSmart technology automatically adjusts settings for best colour – no more guesswork ■ Up to 600 x 600dpi for precise black, and 600 x 300dpi for superb colour

Black consumable kit...£19+VAT (£22.33) Colour consumable kit...£19+VAT (£22.33) HP Support pack 3 year On-Site maintenance agreement...£40+VAT (£47.00)

## HP DeskJet 690C Plus

**£159+VAT**  
(£186.83)



HP's RealLife Imaging System plus Photo REI with Photo Cartridge gives outstanding photo quality images

Black consumable kit...£19+VAT (£22.33) Colour consumable kit...£18+VAT (£21.15) HP Support pack 3 year OSM...£40+VAT (£47.00)

HP DeskJet 690C Plus with EasyPhoto Reader

Scan and print your photos from your PC with ease  
**£209+VAT** (£245.58)

## HP DeskJet 870C



## HEWLETT PACKARD



**£212+VAT**  
(£249.10)

Professional series printer with premium performance to increase office productivity ■ 6000dpi high resolution black printing ■ Up to 600 x 300dpi colour printing

HP's Colour Resolution Enhancement technology for superior quality colour ■ Up to 8ppm black, up to 4ppm colour ■ Print on plain, glossy or recycled paper, transparencies, envelopes and labels

Comprehensive support for many operating systems including DOS, Windows 3.1/95 and Macintosh ■ 26 scalable fonts plus 125 TrueType fonts for Windows ■ 1000 page per month duty cycle (black)

Black consumable kit...£20+VAT (£23.50) Colour...£17+VAT (£19.98) HP Support pack 3 year On-Site maintenance agreement...£65+VAT (£77.55)

## LaserJet 6L

Simply the best low cost laser printer



Crisp, clear, permanent HP LaserJet printing on letterheads, envelopes and transparencies ■ True 600 x 600dpi ■ 1MB standard, expandable to 9MB ■ High performance 6 pages per minute ■ Patented fuser technology eliminated warm-up time ■ Time saving 18 second first page out ■ Simplified control panel ■ HP PrintSmart technologies provide simple, complete printing for Windows and/or DOS ■ 26 TrueType scalable fonts built-in ■ Optional network upgrade

**£249+VAT**  
(£292.58)

Consumable kit...£45+VAT (£52.88) HP Support pack 3 year On-Site agreement...£71+VAT (£90.48)

## LaserJet 5

High performance, user friendly printing



Accelerated printing technologies for faster return to application and faster first page out ■ 12ppm print engine with 35000 page monthly duty cycle ■ Simple, easy to understand control panel ■ 250 sheet A4 input tray and 100 sheet multi-purpose input tray ■ True 600dpi x 600dpi quality, with HP Resolution Enhancement technology ■ 5 model has parallel and serial ports ■ 5N model adds HP JetDirect server giving ethernet port ■ Vast array of upgrades such as RAM, PostScript Level 2, paper trays etc

**£709+VAT**  
(£833.08)

HP LaserJet 5N...£899+VAT (£1056.33) Consumable kit (5/N)...£65+VAT (£76.38) HP Support pack 3 year On-Site maintenance agreement (5/N)...£180+VAT (£211.50)

HP DeskJet 340	£149+VAT (£175.08)	HP DeskJet 1600CM	£1329+VAT (£1561.58)
Black consumable kit	£18+VAT (£21.15)	Consumables & OSM as DeskJet 1600	
Colour consumable kit	£18+VAT (£22.33)	HP LaserJet 5 SI	£1949+VAT (£2290.09)
3 year on-site maintenance	£40+VAT (£47.00)	Consumable kit	£110+VAT (£129.25)
HP DeskJet 890	£269+VAT (£316.08)	3 year on-site maintenance	£530+VAT (£622.75)
Black consumable kit	ECall	HP LaserJet 6 P	£505+VAT (£593.38)
Colour consumable kit	£26+VAT (£30.55)	Consumable kit	£59+VAT (£69.33)
3 year on-site maintenance	£66+VAT (£77.55)	3 year on-site maintenance	£142+VAT (£166.85)
HP DeskJet 1100	£299+VAT (£351.33)	HP LaserJet 6 MP	£629+VAT (£739.08)
Black consumable kit	ECall	Consumable kit	£59+VAT (£69.33)
Colour consumable kit	ECall	3 year on-site maintenance	£142+VAT (£166.85)
3 year on-site maintenance	£80+VAT (£94.00)	HP OfficeJet 350 printer/scanner/fax	£449+VAT (£527.58)
HP DeskJet 1600	£899+VAT (£1056.33)	HP OfficeJet 590	£369+VAT (£433.58)
Black consumable kit	£20+VAT (£23.50)	HP OfficeJet Pro 1150C	£599+VAT (£703.83)
Colour consumable kit	£21+VAT (£24.68)		
3 year on-site maintenance	£105+VAT (£123.38)		

## EPSON®

Stylus 300 Colour	£132+VAT (£155.10)
Black consumable kit	£18+VAT (£21.15)
Colour consumable kit	£19+VAT (£22.33)
3 year on-site maintenance	£40+VAT (£47.00)
Stylus 600	£183+VAT (£215.03)
Black consumable kit	£18+VAT (£21.15)
Colour consumable kit	£17+VAT (£19.98)
3 year on-site maintenance	£65+VAT (£76.38)

Stylus 800	£239+VAT (£280.63)
Consumables & OSM as Stylus 600	
Stylus Photo	£335+VAT (£393.63)
Consumables & OSM as Stylus 600	
Stylus 1520	£609+VAT (£715.58)
Black consumable kit	£18+VAT (£21.15)
Colour consumable kit	£17+VAT (£19.98)
3 year on-site maintenance	£199+VAT (£233.83)

Colour LaserJet 5

**£2949+VAT**  
(£3465.08)

HP Colour LaserJet 5M  
HP Support pack 3 year On-Site maintenance agreement (5/M)...£3749+VAT (£4405.08)  
£948+VAT (£1113.90)

HEWLETT PACKARD  
Authorised Reseller  
Personal Computer  
Products



## CLEARANCE BARGAINS

Categories: 1. As new, complete  
2. Slightly soiled, complete  
3. Soiled, incomplete

### NOTEBOOKS

Vale Voyager II Mk I High spec Pentium notebook, SVGA colour, internal CD-ROM drive etc...£ Various please call Evesham branch for details

### BACKUP DEVICES

Seagate 3.2Gb TapeStor external Category 1...£99+VAT (£116.33)

### MODEMS

SPECIAL OFFER - ALL FAX/MODEMS INCLUDE INTERNET ACCESS SOFTWARE WITH FREE TRIAL CONNECTION PERIOD  
Pace Netlink 34 NEW...£29+VAT (£34.08)

### HARD DISKS

Seagate 540Mb 2.5" Cat 1...£79+VAT (£92.83)  
Voyager 1.1Gb 2.5" Cat 1...£129+VAT (£151.58)

### KEYBOARDS

Enhanced keyboard Cat 2...£15+VAT (£17.63)

### MOTHERBOARDS

Microstar MS4134 Cat 2...£45+VAT (£52.88)

### MONITORS

17" GoldStar Studworkworks Category 2...£349+VAT (£410.08)  
15" Iiyama Vislon Master Category 2...£185+VAT (£217.38)

### PRINTERS

INKJET  
Canon BJC-600 Category 2...£99+VAT (£116.33)

Canon BJC-4100 Category 3	£99+VAT (£116.33)
Canon BJC-4200 Category 2	£129+VAT (£151.58)
Epson Stylus 200 Category 2	£139+VAT (£163.33)
Epson Stylus 600 colour Category 2	£159+VAT (£186.83)
HP DeskJet 670C Category 2	£109+VAT (£128.08)

### SCANNERS

Mustek A4 800dpi Cat 2...£99+VAT (£116.33)  
Mustek A4 sheetfed mono Category 2...£69+VAT (£81.08)

Please contact our Evesham branch for these products. All are clearance lines, shop soiled or second hand stock and all carry 12 months warranty. This stock changes quickly - please call to check availability before ordering.  
More clearance bargains are held at our other branches - please call them if you do not see what you require.

# Evesham Micros

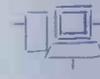
## HOW TO ORDER...

Call us now on  
**0800 6345 999**

TELESALES OPENING TIMES:  
0900 - 1900 Monday-Friday  
0900 - 1730 Saturday



Mail Order Fax:  
**01386 765354**



Order by Email:  
[sales@evesham.com](mailto:sales@evesham.com)



Send Cheque, Postal Order or credit card details to:

**Evesham Micros Ltd.,**  
Unit 9, St Richards Road,  
Evesham, Worcs. WR11 6TD

### DELIVERY

Same day despatch whenever possible.  
All orders are shipped by Insured Courier. The Standard service for orders up to £300 ex VAT value is charged at £5+VAT (£5.88) - normally the second working day after despatch. All orders above this value use the Express service - normally the next working day after despatch. Orders from £300 to £750 are charged at £10+VAT (£11.75), and orders above £750 are charged at £15+VAT (£17.63). (UK mainland only, others please call). Please note that 5 banking days must be allowed for cheque clearance. Immediate clearance on Bank Drafts and Building Society cheques.  
Account facilities available to qualified commercial customers.

Credit card orders: We do not charge the card until the goods are despatched.



Always a good sign.

Introducing the  
**EVESHAM MICROS VISA CARD**  
see our Web site or call for details

### RETAIL SHOWROOMS

Monday-Friday 0900-1900, Saturday 0900-1730

EVESHAM	BIRMINGHAM
St Richards Rd, Four Pools Industrial Estate, Evesham, Worcs WR11 6TD ☎ 01386 765500 fax : 01386 765354	Melchett Rd, Kings Norton Business Centre, Kings Norton, Birmingham B30 3HP ☎ 0121 683 6868 fax : 0121 683 6869

CAMBRIDGE	MILTON KEYNES
5 Glisson Road, Cambridge CB1 2HA ☎ 01223 323898 fax : 01223 322883	320 Witton Gate, Milton Keynes MK9 2HP ☎ 01908 230898 fax : 01908 230865



### CHECK OUT OUR WEB SITE

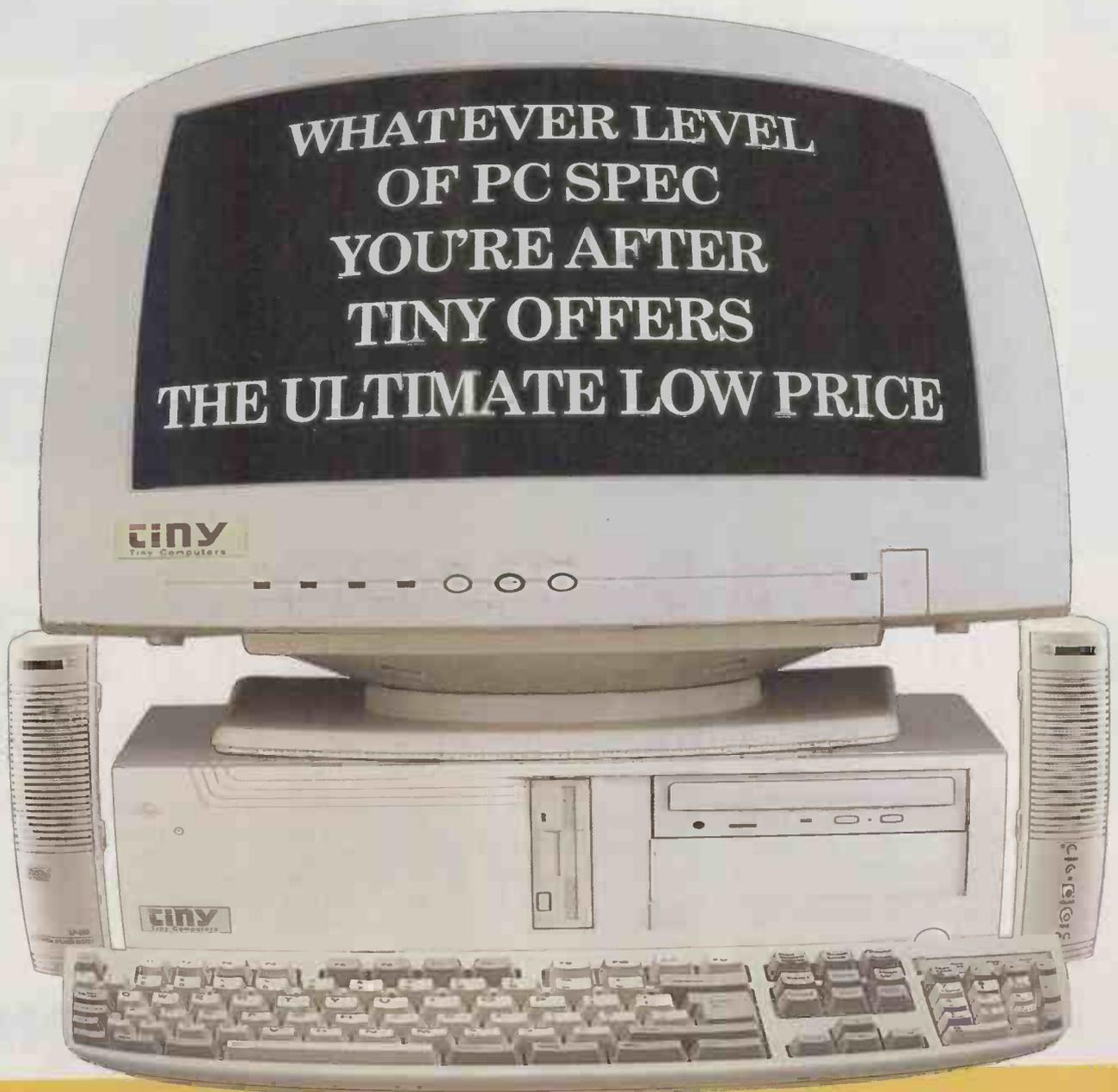
<http://www.evesham.com>

### 1 YEAR WARRANTY ON ALL GOODS

All orders are subject to Evesham Micros standard Terms and Conditions of trading. These are available on request.

THIS ADVERT IS EFFECTIVE FROM 1/11/98  
SOME PRICES AND SPECIFICATIONS MAY CHANGE AFTER 31/1/98

Our prices always  
reflect the best  
value.



**TINY**



# First we make it easy for you to understand what you get from our computers.

Tiny have been making computers since 1981 and now have thousands of satisfied customers who we listen to, helping us to understand what you want and need from a PC.

## Buying Guide

Unless you are immersed in technology day in, day out the prospect of buying a PC can be a daunting one. As the UK's leading Independent PC manufacturer, we pride ourselves on understanding our customers' needs. That's why each of our staff are trained to advise you in plain English on the best system for you and your budget.

As well as being jargon-free, whenever you visit one of our showrooms you can be assured of a hassle-free zone where, until you require advice, you can spend some hands on time with your preferred system before making any decision. You can also buy your system direct via our freephone sales line.

## Delivery

Our courier will deliver direct to you between 9am and 6pm on the date stated on your order form. We regret that we are unable to state exact delivery times, however, in the unlikely event of a delay, we will contact you.



Tiny head office at Redhill



Typical Tiny Showroom

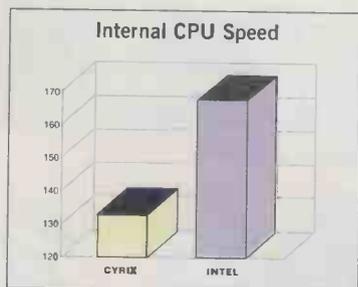
## Then we make sure our computers give you a level of performance and price you won't find anywhere else.



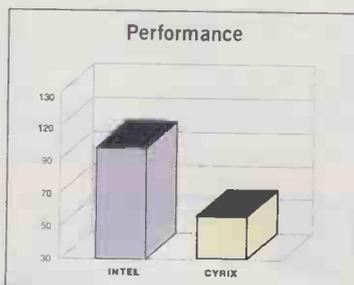
The processor is the brain of the PC and therefore makes the biggest difference to the price. All of Tiny's systems include Intel Pentium® processors with MMX™ technology or Intel Pentium® II processors which are measured in true MHz, which indicates it's clock speed. Beware of other PC manufacturers who use non-Intel processors. They often use a different scale such as Performance Related (e.g. PR200), which may be up to 30% slower in true MHz.

## Warning

MMX™ technology software is designed specifically to Intel standards to deliver consistently high levels of performance in multimedia, games and graphics applications. The use of non-Intel processors can lead to performance inconsistencies with these MMX™ technology software applications and is therefore not recommended.



This graph indicates how much faster the Intel Pentium® Processor runs internally in comparison to the equivalent processor from Cyrix.



This graph shows a direct head-to-head test using 3D WinBench 97™ comparing an Intel 166 MHz Pentium® Processor with MMX™ technology to a Cyrix 6x86-PR166 MMX™ processor.



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Delivery charges may vary for some UK areas and Ireland. Please ask for details.

TINY

# And then everything else that matters.

To help you make your decision we have compiled the following information to take the mystery out of computers and to explain much of the jargon that is used

## RAM (Random Access Memory)

This is the kind of memory the contents of which disappears when you turn off your computer and is much faster to access than a hard disk. It acts as a staging post between your computer's hard disk and it's processor. Tiny PCs feature two types of RAM - either fast EDO RAM or ultra fast SDRAM. The more RAM you have in your system, the more multiple tasks your PC will be able to perform, resulting in faster, smoother applications. Investing in more RAM will provide a greater level of future proofing as more and more memory intensive applications appear.

## Motherboard

This is the most important part of the system. If the processor is the brain, the motherboard is the spine which supplies all the electrical connections among various components of the computer. Tiny Computers use the latest and fastest chipsets available in the world: the i430TX PCiSet and i440LX PCiSet, both from Intel. The i440LX is currently the fastest in the world being over 15% faster than its nearest rival. This means your system can access programmes more quickly and will be more able to handle future hardware and software developments.

*Beware of buying systems with out of date motherboards. Systems with VX and FX are obsolete and will not comply with PC '97.*

## ATX & PC '97

All Tiny systems are ATX which means that all of the components are laid out in a more structured and efficient way. With more of the components integrated into the motherboard, there are fewer wires, making upgrading and maintenance easier. ATX also provides greater reliability and power management features such as suspend and standby - saving the lengthy boot-up every time you wish to use your machine.

*Beware of systems being sold by other manufacturers that do not conform to PC'97. Systems that are PC'97 compliant are guaranteed to be compatible with current and pending releases of operating system from Microsoft such as Windows - the industry leader.*

## Graphics Cards

The Graphics Card creates the image you see on your monitor. The type of card you have in your PC affects the quality of image you see. Thanks to MMX™ technology, all of Tiny's systems are capable of rendering 3D graphics; however, in some of our latest systems we use the AGP (Advanced Graphics Port) based ATI Expert @ Work 4MB SG RAM AGP, running at 133MHz which is four times faster than a standard PCI graphics adapter (33MHz). This means that for the first time, you can have true arcade quality graphics on your PC.

*Warning: When buying a PC, ensure that the Graphics Card does not steal main system RAM, thus reducing the overall performance of the computer, but instead has dedicated high speed graphics memory, as in all Tiny PCs. Our dedicated graphics RAM and 3D graphics chip mean you can take advantage of the realistic 3D, full colour graphics that the multimedia applications of tomorrow will deliver.*

## Soundcards

The majority of existing soundcards are 16-bit, including the basic soundcard and Wavetable32. The '32' of Wavetable32 refers to the number of different instruments that can be played at once. The Intel Pentium® II processor means you can now experience 3D sound, which makes the sound appear as though it is coming from a sound stage wider than the area in which the speakers are placed, therefore creating a much more enjoyable and realistic listening experience.

*Beware of other vendors offering "software" wavetable solutions - these waste valuable system resources and thus slow down the computer. Our wavetable 32 soundcard is a hardware wavetable solution, delivering superb sound, without harming system performance*

## CD & DVD Drives

A CD ROM Drive is essential on a modern PC. Each disk can contain up to 680MB of data and therefore is essential for storing the latest software. The CD ROM drives that come with most Tiny systems are 24 speed max - more than fast enough for the software that is available today.

The Tiny Movie Centre and Sound & Vision Systems (within these pages) bring you incredible images with their Intel Pentium® II processors and DVD ROM drives. The advent of DVD (Digital Versatile Disk) means that you can now view digitised video on your PC, clearer than you could ever see on your TV or at the cinema. Plus a DVD ROM drive can perform all the usual tasks of a normal CD ROM drive only better, an excellent way to future proof now!

## Voice Fax/Modem

A modem connects the PC to the telephone line. All Fax Modems supplied by Tiny are internal, running at 56,600 bps. Tiny's modems also allow you to send and receive faxes just like having a normal fax machine. As with all modems you can also connect to the Internet where you can 'surf' looking for information and free software.

## Cache

Cache is a smaller area of ultra fast memory that is used as a buffer between the processor and the RAM memory to prevent your computer from being slowed down by other components. This results in an overall increase in system efficiency, thereby making your PC run more smoothly.

## Hard Disk Drive

This is where software is permanently stored even when the PC is switched off. It is best to buy the largest drive you can afford, as technology advances, software is needing more and more space on the hard disk. Tiny systems now include Ultra DMA Hard Drives which operate at twice the transfer rate of other IDE Hard Drives, therefore accessing your software much faster.

## Monitor

All Tiny monitors are SVGA and non-interlaced (pin-sharp to reduce eye-strain). They will run most software, including 3D games and are available in 14", 15" and 17" sizes. As the monitor is part of the PC you will be looking at all day, it is advisable to buy the largest your budget will allow.

## Software

Throughout the life of your PC, your software library will grow and grow. To get you off to a good start, Tiny has teamed up with the major software manufacturers to offer some of the best known and most useful titles available. When you buy your PC, the software will be pre-loaded to save you time, but we also supply you with back-up disks in case you decide to re-install them. Beware: A lot of our competitors sell systems without back-up disks.

## The Year 2000

All Tiny PCs are 2000 compliant which means that your system will not need costly re-programming at the turn of the millennium.

## COMPLETE PEACE OF MIND

All Tiny systems benefit from a high level of service including after sales support which offers a 12 months parts & labour warranty including collect & return at our expense (UK mainland). We can also tailor an on-site service contract for you.

Customer satisfaction is our utmost priority - we have a large technical call centre and a unique customer care policy; all customers are phoned within two working days of delivery of PC to ensure a high standard of customer care quality. Additionally all Tiny systems come with an easy to use system restorer pack. In case of disaster, you can reset your computer to its original format.



Tiny customer support teams

51 SHOWROOMS NATIONWIDE

TINY

# Home Leisure Plus System



## SOFTWARE INCLUDED

- MICROSOFT FAMILY '98:**  
 MS Works 4 (Spreadsheet, Word Processor, Database)  
 • MS Encarta '98 (Encyclopaedia)  
 • MS Money '98 (Home Finance)  
 • 3D Movie Maker  
 • MS Golf Version 3  
 • Flight Simulator '98
- MMX™ TECHNOLOGY SOFTWARE:**  
 Pod • Ultimate Human Body 2  
 • Space Station Simulator • Third Dimension • Timetables of Technology
- HOME ENTERTAINMENT SOFTWARE:**  
 Bodyworks • Kitchen Gourmet  
 • Design IT! 3D • The Oregon Trail  
 • Home Gardener • Typing Teacher  
 • Reading Journey • Berlitz French

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 200 MHz Pentium® Processor with MMX™ technology
- High Performance Intel i430 TX Chipset Motherboard (7 PCI/ISA slots)
- 512K Pipeline Burst Cache
- 32MB FAST EDO RAM (expandable to 256MB)
- 4.3GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor †(Max resolution 1024 x 768)
- 4MB 3D Superfast 64bit Graphics Card with MPEG software
- 24 Speed Max CD ROM Drive
- Wavetable 32 Stereo Soundcard plus 180 Watt PMPO Speakers
- Canon BJC 250 Colour Printer
- Voice Fax/Modem 56Kbps (56K flex) with BT LineOne Internet Access

- 1.44MB FDD
- 2 USB Ports
- Joystick
- PS2 Keyboard
- PS2 Mouse
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Latest MMX™ technology Software
- Home Entertainment Software
- 12 Months Collect & Return Parts & Labour Warranty

**£1099** ex VAT  
**£1291** inc VAT

**0%**

**PAY NOTHING UNTIL 1999 - NOT EVEN A DEPOSIT**

**26.9%**

### REPAYMENT EXAMPLE

PC cash price £1323.05 (Inc. Delivery £27.00+ VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £51.94. Total amount payable £1869.84. APR 26.9%. Written quotations upon requests. Finance subject to status.

**0 8 0 0 7 3 1 3 4 7 6**

† Industry standard practice is to measure monitors using CRT size. Actual viewing area can be approx 1.2" less.

**tiny**



## Budget 166M System

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 166 MHz Pentium® Processor with MMX™ technology
- High Performance Intel i430 TX chipset Motherboard (7 PCI/ISA slots)
- 512K Pipeline Burst Cache
- 16MB FAST EDO RAM (expandable to 256MB)
- 2.1GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 14" SVGA .28 Colour Monitor† (Max resolution 1024 x 768)
- 2MB 3D 64bit High Performance Graphics Card with MPEG software
- 1.44MB FDD
- 2 USB Ports
- PS2 Keyboard
- PS2 Mouse
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- 12 Months Collect & Return Parts & Labour Warranty

### MULTIMEDIA UPGRADE OPTION

**£90** ex VAT  
**£105.75** inc VAT  
(Specification as opposite)

#### PLUS

- 24 Speed Max CD ROM & 16bit Stereo Soundcard & 180 Watt PMPO Speakers

**£549** ex VAT  
**£645.08** inc VAT

## Home Value Plus System

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 166 MHz Pentium® Processor with MMX™ technology
- High Performance Intel i430 TX chipset Motherboard (7 PCI/ISA slots)
- 512K Pipeline Burst Cache
- 16MB FAST EDO RAM (expandable to 256MB)
- 2.1GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 14" SVGA .28 Colour Monitor† (Max resolution 1024 x 768)
- 2MB 3D 64bit High Performance Graphics Card with MPEG software
- 24 Speed Max CD ROM Drive
- 16bit Stereo Soundcard plus 180 Watt PMPO Speakers
- Canon BJC 250 Colour Printer
- 1.44MB FDD • 2 USB Ports • Windows 95
- Joystick • PS2 Keyboard • PS2 Mouse
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Latest MMX™ technology software
- Home Entertainment Software
- 12 Months Collect & Return Parts & Labour Warranty

**£859** ex VAT  
**£1009.33** inc VAT

### PAY NOTHING UNTIL 1999 - NOT EVEN A DEPOSIT

#### REPAYMENT EXAMPLE

PC cash price £1041.05 (Inc. Delivery £27.00 + VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £40.87. Total amount payable £1471.32.

APR 26.9%. Written quotations upon requests. Finance subject to status.

#### SOFTWARE INCLUDED

##### MICROSOFT FAMILY '98:

- MS Works 4 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia)
- MS Money '98 (Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

##### MMX™ TECHNOLOGY SOFTWARE:

- Pod • Ultimate Human Body 2 • Space Station Simulator
- Third Dimension • Timetables of Technology

##### HOME ENTERTAINMENT SOFTWARE:

- Bodyworks • Kitchen Gourmet • Design IT! 3D • The Oregon Trail
- Home Gardener • Typing Teacher • Reading Journey • Berlitz French

## Home Study System

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 166 MHz Pentium® Processor with MMX™ technology
- High Performance Intel i430 TX chipset Motherboard (7 PCI/ISA slots)
- 512K Pipeline Burst Cache
- 32MB FAST EDO RAM (expandable to 256MB)
- 3.5GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- 2MB 3D 64bit High Performance Graphics Card with MPEG software
- 24 Speed Max CD ROM Drive
- Wavetable 32 Stereo Soundcard plus 180 Watt PMPO Speakers
- Voice Fax /Modem 56Kbps (56K flex) with BT LineOne Internet Access
- 1.44MB FDD • 2 USB Ports
- Joystick • PS2 Keyboard • PS2 Mouse
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Latest MMX™ technology Software
- 12 Months Collect & Return Parts & Labour Warranty

**£879** ex VAT  
**£1032.83** inc VAT

### HOME MEDIA OPTION

Pay nothing until 1999 – not even a deposit. Specification as above plus a stack of home entertainment software (Bodyworks • Kitchen Gourmet • Design IT! 3D • The Oregon Trail • Home Gardener • Typing Teacher • Reading Journey • Berlitz French)

**£949** ex VAT **£1115.08** inc VAT

#### SOFTWARE INCLUDED

##### MICROSOFT FAMILY '98:

- MS Works 4 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia)
- MS Money '98 (Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

##### MMX™ TECHNOLOGY SOFTWARE:

- Pod • Ultimate Human Body 2
- Space Station Simulator
- Third Dimension • Timetables of Technology

**51 SHOWROOMS NATIONWIDE**

**tiny**

# Home Studio™ System



- SOFTWARE INCLUDED**
- MICROSOFT FAMILY '98:**  
 MS Works 4 (Spreadsheet, Word Processor, Database)  
 • MS Encarta '98 (Encyclopaedia)  
 • MS Money '98 (Home Finance)  
 • 3D Movie Maker  
 • MS Golf Version 3  
 • Flight Simulator '98
- MMX™ TECHNOLOGY SOFTWARE:**  
 Pod • Ultimate Human Body 2  
 • Space Station Simulator • Third Dimension • Timetables of Technology
- HOME ENTERTAINMENT SOFTWARE:**  
 Bodyworks • Kitchen Gourmet  
 • Design IT: 3D • The Oregon Trail  
 • Home Gardener • Typing Teacher  
 • Reading Journey • Berlitz French

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 200 MHz Pentium® Processor with MMX™ technology
- High Performance Intel i430 TX Chipset Motherboard (7 PCI/ISA slots)
- 512K Pipeline Burst Cache
- 32MB FAST EDO RAM (expandable to 256MB)
- 4.3GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- 4MB 3D Superfast 64bit Graphics Card with MPEG software
- 24 Speed Max CD ROM Drive
- Wavetable 32 Stereo Soundcard plus 180 Watt PMPO Speakers
- Fuji Digital Camera with removable flash memory
- Voice Fax/Modem 56Kbps (56K flex) with BT LineOne Internet Access
- Epson Stylus 400 Photo-Ready Colour Printer
- 1.44MB FDD • 2 USB Ports

- Joystick • PS2 Keyboard
- PS2 Mouse • Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Image Editing Software
- Over £300 of Microsoft Family '98 Software
- Home Entertainment Software
- Latest MMX™ technology Software
- 12 Months Collect & Return Parts & Labour Warranty



**£1279** ex VAT  
**£1502.83** inc VAT

**0%**

**PAY NOTHING UNTIL 1999 - NOT EVEN A DEPOSIT**

**26.9%**

REPAYMENT EXAMPLE

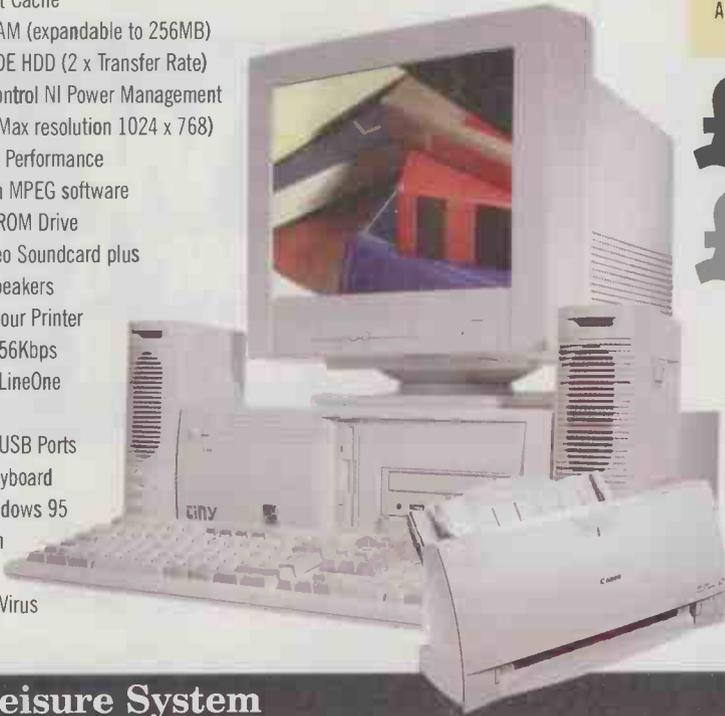
PC cash price £1534.55 (Inc. Delivery £27.00+ VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £60.25. Total amount payable £2169.00. APR 26.9%. Written quotations upon requests. Finance subject to status.



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## Home Study Plus System

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 166 MHz Pentium® Processor with MMX™ technology
- High Performance Intel i430 TX Chipset Motherboard (7 PCI/ISA slots)
- 512K Pipeline Burst Cache
- 32MB FAST EDO RAM (expandable to 256MB)
- 3.5GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- 2MB 3D 64bit High Performance Graphics Card with MPEG software
- 24 Speed Max CD ROM Drive
- Wavetable 32 Stereo Soundcard plus 180 Watt PMPO Speakers
- Canon BJC 250 Colour Printer
- Voice Fax /Modem 56Kbps (56k flex) with BT LineOne Internet Access
- 1.44MB FDD • 2 USB Ports
- Joystick • PS2 Keyboard
- PS2 Mouse • Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Home Entertainment Software
- Latest MMX™ technology Software
- 12 Months Collect & Return Parts & Labour Warranty



**PAY NOTHING UNTIL 1999 - NOT EVEN A DEPOSIT**

### REPAYMENT EXAMPLE

PC cash price £1205.55 (Inc. Delivery £27.00 + VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £47.33. Total amount payable £1703.88.

APR 26.9%. Written quotations upon requests. Finance subject to status.

**£999** ex VAT  
**£1173** inc VAT

### SOFTWARE INCLUDED

#### MICROSOFT FAMILY '98:

- MS Works 4 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia)
- MS Money '98 (Home Finance)
- 3D Movie Maker • MS Golf Version 3
- Flight Simulator '98

#### MMX™ TECHNOLOGY SOFTWARE:

- Pod • Ultimate Human Body 2
- Space Station Simulator • Third Dimension • Timetables of Technology

#### HOME ENTERTAINMENT SOFTWARE:

- Bodyworks • Kitchen Gourmet
- Design IT! 3D • The Oregon Trail • Home Gardener • Typing Teacher • Reading Journey • Berlitz French

## Home Leisure System

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 200 MHz Pentium® Processor with MMX™ technology
- High Performance Intel i430 TX Chipset Motherboard (7 PCI/ISA slots)
- 512K Pipeline Burst Cache
- 32MB FAST EDO RAM (expandable to 256MB)
- 4.3GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- 4MB 3D Superfast 64bit Graphics Card with MPEG software
- 24 Speed Max CD ROM Drive
- Wavetable 32 Stereo Soundcard plus 180 Watt PMPO Speakers
- Voice Fax/Modem 56Kbps (56K flex) with BT LineOne Internet Access
- 1.44MB FDD • 2 USB Ports
- Joystick • PS2 Keyboard
- PS2 Mouse
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Latest MMX™ technology Software
- 12 Months Collect & Return Parts & Labour Warranty



### HOME MEDIA OPTION

Pay nothing until 1999 – not even a deposit. Specification as above plus a stack of home entertainment software (Bodyworks • Kitchen Gourmet • Design IT! 3D • The Oregon Trail • Home Gardener • Typing Teacher • Reading Journey • Berlitz French)

**£1049** ex VAT **£1232** inc VAT

**£989** ex VAT  
**£1150** inc VAT

### SOFTWARE INCLUDED

#### MICROSOFT FAMILY '98:

- MS Works 4 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia)
- MS Money '98 (Home Finance)
- 3D Movie Maker • MS Golf Version 3
- Flight Simulator '98

#### MMX™ TECHNOLOGY SOFTWARE:

- Pod • Ultimate Human Body 2
- Space Station Simulator • Third Dimension • Timetables of Technology

# Office Connect System



pentium® II  
PROCESSOR



#### SOFTWARE INCLUDED

- MICROSOFT FAMILY '98:**  
MS Works 4 (Spreadsheet, Word Processor, Database)  
• MS Encarta '98 (Encyclopaedia)  
• MS Money '98 (Home Finance)  
• 3D Movie Maker  
• MS Golf Version 3  
• Flight Simulator '98

- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 233 MHz Pentium® II Processor
- High Performance Intel AL 440 LX Motherboard Chipset with Advanced Graphics Port (7 PCI/ISA slots)
- 512K CPU Cache
- 32MB FAST SD RAM (expandable to 384MB)
- 5.2GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- 4MB 3D Superfast 64bit Graphics Card with MPEG Software
- 24 Speed Max CD ROM Drive
- Wavetable 32 3D Integrated Sound plus 180 Watt PMPO Speakers
- Canon BJC 250 Colour Printer
- Voice Fax/Modem 56Kbps (56K flex) with BT LineOne Internet Access

- 1.44MB FDD
- 2 USB Ports
- Windows 95
- Joystick • PS2 Keyboard
- PS2 Mouse
- Over £300 of Microsoft Family '98 Software
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- 12 Months Collect & Return Parts & Labour Warranty

**£1199** ex VAT  
**£1408** inc VAT <sup>.83</sup>

**0%**

#### HOME MEDIA OPTION

Pay nothing until 1999 – not even a deposit. Specification as above plus a stack of home entertainment software (Bodyworks • Kitchen Gourmet • Design IT! 3D • The Oregon Trail • Home Gardener • Typing Teacher • Reading Journey • Berlitz French)

**26.9%**

**£1269** ex VAT **£1491** inc VAT <sup>'08</sup>

**tiny**

**0 8 0 0 7 3 1 3 4 7 6**

## Home Entertainment TV System

- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 233 MHz Pentium® II Processor
- High Performance Intel AL 440 LX Chipset Motherboard with Advanced Graphics Port (7 PCI/ISA slots)
- 512K CPU Cache
- 32MB FAST SD RAM (expandable to 384MB)
- 5.2GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- 4MB 3D Superfast 64-bit Graphics Card with MPEG Software
- 24 Speed Max CD ROM Drive
- Wavetable 32 3D Integrated Sound
- 500 Watt PMPO Sub Woofer and 2 Satellite Speakers
- Voice Fax/Modem 56Kbps (56K flex) with BT LineOne Internet Access
- TV Tuner with Teletext
- 1.44MB FDD
- 2 USB Ports
- Joystick
- PS2 Keyboard
- PS2 Mouse
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Home Entertainment Software
- 12 Months Collect & Return Parts & Labour Warranty

**PAY NOTHING UNTIL 1999 - NOT EVEN A DEPOSIT**

### REPAYMENT EXAMPLE

PC cash price £1491.08 (Inc. Delivery £20.00 + VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £58.54. Total amount payable £2107.44.

APR 26.9%. Written quotations upon requests. Finance subject to status.

### SOFTWARE INCLUDED

#### MICROSOFT FAMILY '98:

MS Works 4 (Spreadsheet, Word Processor, Database) • MS Encarta '98 (Encyclopaedia) • MS Money '98 (Home Finance) • 3D Movie Maker • MS Golf Version 3 • Flight Simulator '98

#### HOME ENTERTAINMENT SOFTWARE:

Bodyworks • Kitchen Gourmet • Design IT! 3D • The Oregon Trail • Home Gardener • Typing Teacher • Reading Journey • Berlitz French

**£1249** ex VAT  
**£1467** inc VAT



## Sound & Vision Freedom System

- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 233 MHz Pentium® II Processor
- High Performance Intel AL 440 LX Chipset Motherboard with Advanced Graphics Port (7 PCI/ISA slots)
- 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 5.2GB Ultra DMA IDE HDD (2 x Transfer Rate)
- ATI Xpert @ Work 4MB SG RAM AGP 133 MHz Arcade Quality Graphics & MPEG Software
- DVD ROM
- Wavetable 32 3D Integrated Sound
- 5 Speakers
- Dolby ProLogic Surround Sound Card
- Voice Fax/Modem 56Kbps (56K flex) with BT LineOne Internet Access
- TV Tuner with Teletext
- TV Scart Connector
- Hardware MPEG 2
- 1.44MB FDD
- 2 USB Ports
- Tiny Cordless Infrared Keyboard
- PS2 Mouse
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Amazing arcade quality AGP Games
- Over £300 of Microsoft Family '98 Software
- Home Entertainment Software
- 12 Months Collect & Return Parts & Labour Warranty

**PAY NOTHING UNTIL 1999 - NOT EVEN A DEPOSIT**

### UPGRADE OPTION

Upgrade to an Intel 266MHz Pentium® II Processor

**£200** ex VAT  
**£235** inc VAT

### SOFTWARE INCLUDED

#### MICROSOFT FAMILY '98:

MS Works 4 (Spreadsheet, Word Processor, Database) • MS Encarta '98 (Encyclopaedia) • MS Money '98 (Home Finance) • 3D Movie Maker • MS Golf Version 3 • Flight Simulator '98

#### HOME ENTERTAINMENT SOFTWARE:

Bodyworks • Kitchen Gourmet • Design IT! 3D • The Oregon Trail • Home Gardener • Typing Teacher • Reading Journey • Berlitz French  
**AGP GAMES**  
Formula 1 • Terracide

**£1499** ex VAT  
**£1761** inc VAT



# Movie Centre Freedom System



### UPGRADE OPTION

Upgrade to an Intel 300MHz Pentium® II Processor

**£150** ex VAT  
**£176.25** inc VAT

### SOFTWARE INCLUDED

**MICROSOFT FAMILY '98:**  
MS Works 4 (Spreadsheet, Word Processor, Database)  
• MS Encarta '98 (Encyclopaedia)  
• MS Money '98 (Home Finance)  
• 3D Movie Maker  
• MS Golf Version 3  
• Flight Simulator '98

**HOME ENTERTAINMENT SOFTWARE:**  
Bodyworks • Kitchen Gourmet  
• Design IT! 3D • The Oregon Trail  
• Home Gardener • Typing Teacher  
• Reading Journey • Berlitz French

**AGP GAMES**  
Formula 1 • Terracide

- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
- ATX Form Factor conforming with PC '98
- Intel 266 MHz Pentium® II Processor
- High Performance Intel AL 440 LX Motherboard Chipset with Advanced Graphics Port (7 PCI/ISA slots) • 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 6.4GB Ultra DMA IDE HDD (2 x Transfer Rate)
- ATI Xpert @ Work 4MB SG RAM 133 MHz Arcade Quality Graphics & MPEG Software • DVD ROM • Wavetable 32 3D Integrated Sound
- 5 Speakers • Dolby Prologic Surround Sound Card
- Philips Proscreen 6000 SVGA Projector
- Voice Fax/Modem 56Kbps (56K flex) with BT LineOne Internet Access
- TV Tuner with Teletext • TV Scart Connector • Hardware MPEG II
- 1.44MB FDD • 2 USB Ports • 68" Freestanding Projector Screen
- **Tiny Cordless Infrared Keyboard** • "GoldenEye" on DVD ROM
- PS2 Mouse • Windows 95 • Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Amazing arcade quality AGP Games
- Over £300 of Microsoft Family '98 Software • Home Entertainment Software
- 12 Months Collect & Return Parts & Labour Warranty



**£2299** ex VAT  
**£2701.33** inc VAT

**0%**

**PAY NOTHING UNTIL 1999 - NOT EVEN A DEPOSIT**

**26.9%**

REPAYMENT EXAMPLE

PC cash price £2736.58 (Inc. Delivery £30.00 + VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £107.44. Total amount payable £3867.84.

APR 26.9%. Written quotations upon requests. Finance subject to status.

**0 8 0 0 7 3 1 3 4 7 6**

**Tiny**

# Choose how to buy

**1** Simply go to your local Tiny showroom and try before you buy. Demonstrations are on hand from our friendly, knowledgeable staff.

**ALTRINCHAM**  
119 George Street

**BELFAST**  
17 Wellington Place (next to BT shop)

**BIRMINGHAM**  
79 Smallbrook Queensway (Nr New Street BR)

**BOLTON**  
The Gates Centre (Upstairs next to Boots)

**BRIGHTON**  
40 London Rd. (opp Co-op Dept store)

**BRISTOL**  
Union Gallery, The Galleries Shopping Centre, Broadmead

**BROMLEY**  
185 High Street (2 mins from Cinema)

**CAMBRIDGE**  
1 Emmanuel Street (Next to Natwest, opp Robert Sayle)

**CANTERBURY**  
6 Iron Bar Lane (Thru pathway opp M&S)

**CARDIFF**  
91 St. Mary St, (Heol Eglwys Fair) opp Morgan Arcade

**CHELMSFORD**  
3 Market Road, (opp County Hall)

**CHESTER**  
82 Northgate Street (opp Odeon cinema)

**COVENTRY**  
19 Shelton Square (nr Market Hall)

**CRAWLEY**  
County Mall (next to Robert Dyas)

**CROYDON**  
15 St. Georges Walk, Croydon (opp Winfields)

**EALING**  
4 Central Buildings (opposite Ealing Broadway Station)

**EDINBURGH**  
Cathedral Mall, St James Centre

**EXETER**  
22 Bedford Street (opp Main Post Office)

**GLASGOW**  
52 Queen Street (beside St George's Sq)

**GLOUCESTER**  
12 Bell Walk, Eastgate Centre

**GUILDFORD**  
The Friary Shopping Centre (rear of HMV)

**HUDDERSFIELD**  
14 The Shambles (opp BHS)

**ILFORD**  
Mid Level, The Exchange Centre (nr C&A)

**IPSWICH**  
Tower Ramparts Centre (next to Top Man)

**KINGSTON**  
8 Castle Street (off Clarence Street)

**LAKESIDE - OPENS DECEMBER**  
Lakeside Shopping Centre (opp Midland Bank)

**LEEDS**  
Theatre Walk (Top Floor), The Headrow Centre

**LEICESTER**  
9 Belgrave Gate, (nr Clock Tower) Haymarket Centre

**LINCOLN**  
Waterside Shopping Centre (next to Partners)

**LIVERPOOL**  
71 Bold Street (opp Forbidden Planet)

**LONDON W1**  
Sonic Foto Centre, 256 Tottenham Court Rd

**LONDON SW10**  
300 Fulham Road, Chelsea (nr Finborough Rd)

**LONDON EC2**  
Liverpool Street Arcade, Liverpool Street (opp BR)

**MANCHESTER**  
Piccadilly Plaza (nr Mosley St tram stop)

**MANCHESTER**  
Arndale Centre (Voyager's Walk)

**MILTON KEYNES**  
Silbury Boulevard (next to Games Workshop)

**NEWCASTLE**  
High Friars, (next to WH Smith) Eldon Square

**NORTHAMPTON**  
42 Princes Walk (near Morrel's Cafe)

**NORWICH**  
15 Westlegate (opp McDonald's)

**NOTTINGHAM**  
Upper Mall, (Next to Boots), The Victoria Centre

**OXFORD**  
2 King Edward Street (off High Street by Oddbins)

**PETERBOROUGH**  
Rivergate Centre (Rivergate Arcade, nr Asda)

**READING**  
Broad Street Mall, (Upper Level - opp Food Court)

**SHEFFIELD**  
31 Market Street, Meadow Hall (opp. C&A)

**SOLIHULL**  
23 Drury Lane (in Mell Sq)

**SOUTHAMPTON**  
The Bargate Shopping Centre (Ground Floor)

**STOKE**  
49 Parliament Row (corner of Old Hall Street)

**SWINDON**  
Brunel Centre (Above + opp M&S)

**TUNBRIDGE WELLS**  
18 Camden Road (behind Royal Victorian Centre)

**WATFORD**  
42 Charter Place (Upper Level - opp C&A)

**WOLVERHAMPTON**  
Mander Centre (off Mander Sq)

**2** FOR NEXT DAY DESPATCH, ORDER DIRECT! FREEPHONE

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- **BY CREDIT CARD** - Provide your Visa, MasterCard or Amex details including expiry date.
- **BY FAX** - Send a list of the products you require together with credit card details including expiry date, your name, address and telephone number to **01293-822514**



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# Accessories

Accessories

## MEDIA STORAGE

AC500	3.5" LOCKABLE DISK BOX - 50	£4.00	£5.29
AC505	3.5" LOCKABLE DISK BOX - 100	£6.00	£7.64
AC510	5.25" LOCKABLE DISK BOX - 50	£5.00	£5.88
AC700	CD RACK - UP TO 16 CDS	£4.00	£4.70
AC715	CD TOWER HPLDS 20 CDS	£9.00	£10.58

## HIGH QUALITY OPTICAL GLASS FILTERS

Featuring anti-glare/radiation, anti static, anti radiation, enhances screen sharpness and contrast, eliminates screen flicker. These screen filters have an optical coating that absorbs and disperses the reflection from the coated glass filter & external light.

AC600	14"-15" OPTICAL GLASS FILTER	£29.00	£34.08
AC610	17"-19" OPTICAL GLASS FILTER	£39.00	£45.83

## PRINTER AND BASE UNIT STANDS

AC640	PRINTER STAND	£9.00	£10.58
AC650	ADJ. BASE UNIT STAND (UP TO 183MM)	£10.00	£11.75
MEDIA FORCE MONITOR ARMS AND STANDS			
AC675	ARM - MAX WEIGHT 25KG, PLATFORM 290mm X 290mm,		
K/DOWN TRAY EXTENDS 215mm		£39.00	£45.83
AC680	STAND TILT AND SWIVEL	£20.00	£23.50
DUST COVERS			
AC760	K/BOARD DUST COVER LARGE	£4.50	£5.28
AC770	MONITOR DUST COVER MED	£7.50	£8.81
AC780	MONITOR DUST COVER LARGE	£7.50	£8.81
AC790	MONITOR & BASE UNIT MED	£7.50	£8.81
AC800	MONITOR & BASE UNIT LARGE	£7.50	£8.81

AC810	PRINTER DUST COVER	£7.50	£8.81
MOUSE ACCESSORIES			
AC70	HIGH QUALITY MOUSE MAT	£2.00	£2.35
AC70-M	POCKET - ATTACHES TO SIDE OF ANY PC	£2.50	£2.94
AC70-W	HIGH QUALITY WRIST PAD	£5.00	£5.88
FLOPPY DISK ACCESSORIES			
AC830	FLOPPY DRIVE LOCK - PROTECTS AGAINST UNAUTHORISED ACCESS	£7.50	£8.81
FOOT RESTS			
AC630	TILT ADJUSTABLE FOOTREST	£16.00	£18.80

## ESSELTE

### CANON INK JET CARTRIDGES

ESS100	BJ300	Black x 2	£3.50	£4.11
ESS110	BJC600	Black x 2	£3.50	£4.11
ESS120	BJC600	Yellow x 2	£3.50	£4.11
ESS130	BJC600	Magenta x 2	£3.50	£4.11
ESS140	BJC600	Cyan	£3.50	£4.11
ESS150	BJC800	Black	£4.00	£4.70
ESS160	BJC800	Yellow	£4.00	£4.70
ESS170	BJC800	Magenta	£4.00	£4.70
ESS180	BJC800	Cyan	£4.00	£4.70
ESS190	BJC4000	Black	£4.00	£4.70
ESS200	BJC4000	Colour	£6.00	£7.05
ESS210	BJC70	Colour x 3	£10.00	£11.75
ESS220	BJC70	Black x 3	£8.00	£9.40
ESS230	BJ30	Black x 3	£10.00	£11.75

### EPSON STYLUS INK JET CARTRIDGES

ESS240	800/1000 - Black	£10.00	£11.75
ESS245	Colour - Black	£6.00	£7.05
ESS250	Colour - Colour	£10.00	£11.75
ESS255	Colour II - Black	£6.00	£7.05
ESS260	Colour II - Colour	£6.00	£7.05
ESS265	200/500 - Black	£5.00	£5.88
ESS270	200/500 - Colour	£16.00	£18.80

### TONER CARTRIDGES

ESS275	HP/Canon Series II/III	£32.00	£37.60
ESS280	HP II / III	£39.00	£45.83
ESS285	HP IIIi / 45i	£59.00	£69.33
ESS290	HP LaserJet 4M/4	£55.00	£64.63
ESS295	HP LaserJet 4L	£42.00	£49.35
ESS300	IBM4019/29	£75.00	£88.13

### TONER KITS

ESS305	Brother HL 630 / 660	£15.00	£17.63
ESS310	OKI OL 400/800	£15.00	£17.63
ESS315	OKI OL 400e	£12.00	£14.10

## paperlite

### Electronic Filing Systems

Paperlite electronic notepad & pen with NoteIt! software



ESS345 Electronic NotePad £99.00 £116.33  
ESS350 Retail PaperMaster Deluxe Software £79.00 £92.83

Paperlite Mono sheetfed scanner with PaperMaster



ESS335 Paperlite Classic Mono £99.00 £116.33

C100 Colour sheetfed scanner with PaperMaster Deluxe



ESS340 Paperlite C100 £175.00 £205.63

Paperlite puts a real filing cabinet inside your PC. PaperMaster software lets you scan any document; faxes, press clippings, business cards and photos at the touch of a button. Documents appear on screen & can be immediately filed into virtual folders & drawers. Paperlite - the electronic solution for filing & finding.

## DATALINE FAX ROLLS



DATALINE FAX ROLLS - PRICE PER PACK OF 6

ESS355	210 x 300 x 12.7mm	£12	£14.10
ESS360	216 x 300 x 12.7mm	£12	£14.10
ESS365	210m x 300 x 25.4mm	£12	£14.10
ESS370	210 x 150 x 12.7mm	£12	£14.10
ESS375	216 x 300 x 12.7mm	£12	£14.10
ESS380	210 x 1000 x 25.4mm	£27	£31.73
ESS385	216 x 150 x 12.7mm	£12	£14.10
ESS390	216 x 500 x 25.4mm	£24	£28.20
ESS395	210 x 240 x 12.7mm	£12	£14.10

## ERGONOMIC MOUSE



The world's only PROVEN ergonomic mouse

ESS320	Right Handed - Serial	£55.00	£64.03
ESS325	Right Handed - PS/2	£55.00	£64.03

## PC SECURITY FROM QUALTEC

ESS415	<b>NOTEBOOK KIT</b>		
	Most complete deterrent kit for mobile computers	£19.00	£22.33
ESS420	<b>LOK KIT II</b>		
	3 Plate Security System - Small Yet Powerful	£17.00	£19.98
ESS425	<b>UNI KIT II</b>		
	Secures computers & peripherals, plus faxes and copiers	£17.00	£19.98
ESS430	<b>CHASSIS LOCK</b>		
	Protects the interior of your computer limiting access	£27.00	£31.73

# Back-Up

## DYMO™ Labelling Systems

ESS410 3500 £69.00 £81.08

DANMERE BACKER			
T907	DANMERE BACKER	£34.00	£39.95
T907-P	DANMERE BACKER PARALLEL PORT	£59.00	£69.33
D2			
T540-E	540MB EXT REMOVABLE DRIVE INCLUDES CABLE SOFTWARE AND 1 CARTRIDGE	£209.00	£245.58
T540-M	540MB CARTRIDGE FOR ABOVE	£39.00	£45.83
EXABYTE TAPE PRODUCTS			
T78-E	EAGLE 3.2GB INTERNAL	£92.00	£108.10
FUJI MEDIA			
AC81	1.44MB FLOPPY DISKS 10 PACK	£3.00	£3.53
CD165-F74	MIN CD RECORDABLE	£3.00	£3.53
T43-F	4MM DAT TAPE 90M	£5.00	£5.88
T45-F	4MM DAT TAPE 120M	£14.00	£16.45
T44-F	8MM DAT TAPE 112M	£5.00	£5.88
OP25	230MB 3.5" OPTICAL DISK	£11.00	£12.93
OLYMPUS EXTERNAL DRIVES - all with 1 Maxell Media			
T400	POWER MO 230-II - Parallel	£249.00	£292.58
T410	POWER MO 230-II - Mac & SCSI	£229.00	£269.08
OLYMPUS INTERNAL DRIVES - all with 1 Maxell Media			
T420	POWER MO 230 SCSI	£219.00	£257.33
T430	POWER MO 230 K1 & SCSI card	£259.00	£304.33
HEWLETT PACKARD HP COLORADO			
T601	T3000I INTERNAL 3.2GB	£109.00	£128.08
T500-I	INTERNAL 5GB IDE	£127.00	£149.23
T500-E	EXTERNAL 5GB PARALLEL PORT	£159.00	£186.83
T610	T4000S INTERNAL 8GB	£225.00	£262.03
T615	T4000ES EXTERNAL 8GB	£285.00	£334.88
T620	T41 8GB INTERNAL STREAMER	£245.00	£287.87
HP EXTENDED WARRANTIES			
TS110	SUPPORT PACK FOR T41	£40.00	£47.00
TS120	SUPPORT PACK FOR 2000/5000/DAT8	£47.00	£55.23
TS130	SUPPORT PACK FOR DLT30	£140.00	£164.50
TS140	SUPPORT PACK FOR DLT 40	£192.00	£225.60
HP SURESTORE DAT PRODUCTS			
T60-S	HP SURESTORE 2000I	£439.00	£515.83
T61-S	HP SURESTORE 2000E	£523.00	£614.53
T62-S	HP SURESTORE 5000I	£489.00	£574.58
T63-S	HP SURESTORE 5000E	£549.00	£645.08
T64-S	HP SURESTORE DAT 8i	£615.00	£722.63
T65-S	HP SURESTORE DAT 8e	£669.00	£786.08
T241	HP SURESTORE DAT 24i	£795.00	£934.13
T24E	HP SURESTORE DAT 24e	£899.00	£1056.33
DLT130	HP SURESTORE DLT30e 15/30GB	£1799.00	£2113.83
DLT140	HP SURESTORE DLT40e 20/40GB	£2830.00	£3325.25
DLT170	HP SURESTORE DLT70e 70GB	£4399.00	£5168.83
HP DATPACK			
TD110	DATPACK 5000I FOR NOVELL AND NT	£785.00	£922.38
TD120	DATPACK 5000E FOR NOVELL AND NT	£855.00	£1004.63

IOMEGA ZIP PRODUCTS			
T70	PARALLEL PORT ZIP DRIVE (+ 1 MEDIA)	£86.00	£101.05
T71	SCSI ZIP DRIVE (+ 1 MEDIA)	£89.00	£104.58
T71-I	INTERNAL SCSI ZIP DRIVE	£89.00	£104.58
T700	INTERNAL IDE ZIP DRIVE	£86.00	£101.05
T70-P	ZIP PLUS	£149.00	£175.08
T76	ZIP ZOOM CARD	£27.00	£31.73
T72	ZIP MEDIA SINGLE	£9.00	£10.58
T72-B	ZIP MEDIA 6 PACK	£48.00	£56.40
T72-R	10 PACK & FREE RECORDIT 5/WARE	£89.00	£104.58
IOMEGA JAZZ PRODUCTS			
OP26	JAZZ INTERNAL 1GB	£179.00	£210.33
OP30	JAZZ EXTERNAL 1GB	£231.00	£271.43
TAC10	JAZZ TRAVELLER SCSI TO P/P Converter	£38.00	£44.65
OP35	JAZZ DISK SINGLE	£57.00	£66.98
OP35-3	JAZZ DISK 3 PACK	£165.00	£193.88
IOMEGA DAT PRODUCTS			
T85	DITTO 800MB TR1 EXT PARALLEL PORT	£79.00	£92.83
TDM10	DITTO MAX 7GB - INT	£99.00	£116.33
TDM20	DITTO MAX 7GB - EXT	£129.00	£151.58
TDM30	DITTO MAX PRO 10GB - INT	£189.00	£222.08
TDM40	DITTO MAX PRO 10GB - EXT	£189.00	£222.08
TDC10	DITTO MAX 3GB MEDIA	£15.00	£17.63
TDC20	DITTO MAX 7GB MEDIA	£18.00	£21.15
TDC30	DITTO MAX 10GB MEDIA	£22.00	£25.85
T200-I	2GB DITTO INTERNAL	£58.00	£69.15
T200-E	2GB DITTO EXTERNAL	£68.00	£80.40
T205	2GB MEDIA FOR T200-I & T200-E	£13.00	£15.28
IOMEGA BUZ PRODUCTS			
TB10	BUZ - MULTIMEDIA	£149.00	£175.08
NOMAI 750.c			
TN130	750Mb Parallel Port	£219.00	£257.33
TN140	750Mb Ext. SCSI	£185.00	£217.38
TN150	750Mb Ext. SCSI & Card	£235.00	£276.13
TN160	750Mb Int. SCSI	£159.00	£186.83
TN170	750Mb Int. SCSI & Card	£219.00	£257.33
TN180	750Mb Media	£39.00	£45.83
PANASONIC PD DRIVES			
PD220	INT. PD IDE DRIVE KIT (6X)	£189.00	£222.08
PD225	INT. PD IDE DRIVE KIT (8X) LFI196AB	£199.00	£233.83
PD330	EXT. PP PD DRIVE KIT LFI500EPB	£249.00	£292.48
CD200	INTERNAL PD DRIVE KIT	£159.00	£186.83
CD210	INTERNAL PD KIT WITH SCSI ADAPTOR	£328.00	£385.40
CD215	EXTERNAL PD DRIVE KIT SCSI	£317.00	£372.48
CD205	650MB PD MEDIA	£19.00	£22.33
SEAGATE TAPE PRODUCTS - ALL TAPESTOR PRODUCTS COME WITH 1 FREE TAPE EXCEPT 190c			
T90	TAPESTOR 3200 INT TR3	£106.00	£124.55
T90-E	TAPESTOR 3200 EXT PARALLEL	£109.00	£128.08
T62-8	TAPESTOR 8000 INT SCSI	£209.00	£245.57

T64-E	TAPESTOR 8000 INT IDE	£209.00	£245.57
T63-E	TAPESTOR 8000 EXT SCSI	£269.00	£316.07
T2400	SCORPION STD2400N 4GB	£349.00	£410.08
T2800	SCORPION STD2800N 8GB	£459.00	£539.33
SYQUEST			
TS150	SyJetTM 1.5Gb Parallel Port - Ext	£278.00	£326.65
TS160	SyJetTM 1.5Gb SCSI - Ext	£278.00	£326.65
TS170	SyJetTM 1.5Gb SCSI - Int	£211.00	£247.93
TS180	SyJetTM 1.5Gb EIDE - Int	£211.00	£247.93
TS100	EZFlyerTM 230Mb Parallel Port - Ext	£115.00	£135.13
TS110	EZFlyerTM 230Mb SCSI - Ext	£115.00	£135.13
TS120	EZFlyerTM 230Mb EIDE - Int	£115.00	£135.13
SYQUEST - MEDIA			
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CS902	FULL TOWER WITH PSU	£75.00	£88.13
CS803	FULL TOWER WITH PSU ATX	£75.00	£88.13
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CS105	D607 DESKTOP WITH PSU	£49.00	£57.58
CS110	D602 MIDI TOWER WITH PSU	£65.00	£76.38
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CS601	D702 MIDI TOWER WITH PSU	£55.00	£64.63
CS500	D803 MINI TOWER WITH PSU	£45.00	£52.88
CS501	D807 DESKTOP WITH PSU	£45.00	£52.88
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CS5	MINI TOWER WITH PSU	£35.00	£41.13
CS10	DESKTOP WITH PSU	£38.00	£41.13
CS16	MIDI TOWER WITH PSU	£45.00	£52.88
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CS17	ATX MIDI TOWER WITH PSU	£68.00	£76.38
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POWER SUPPLIES			
CS02	200W AT PSU	£15.00	£17.63
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TS180	1.5Gb EIDE - Int	£211.00	£247.93
TS190	1.5Gb Cartridge	£78.00	£91.65
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# Cables

- Belkin

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RC30-60	SINGLE DRIVE 60CM	£5.00	£5.88
RC40	2 DRIVES 58CM	£6.00	£7.64
SCSI III			
RC60	SINGLE DRIVE 30CM	£21.00	£24.68
RC70	SINGLE DRIVE 60CM	£24.00	£28.20
RC80	2 DRIVE 90CM	£37.00	£43.60
RC80	3 DRIVE 90CM	£39.00	£45.83
RC90	4 DRIVE 100CM	£59.00	£69.33
RC100	ASCI III/SCSI I ADAPTOR MD868M/50M	£27.00	£31.73
BC110	SCSI III/SCSI I ADAPTOR MD868F/50F	£23.00	£27.03
EXTERNAL SCSI CABLES AND SCSI TERMINATORS - SCSI I			
RC120	DB25M/CENT 50M 1.8M	£10.00	£11.75
RC130	CENT 50M/CENT 50M 90CM	£10.00	£11.75
RC125	TERMINATOR SINGLE CENT 50M 1.8M	£13.00	£15.28
RC135	TERMINATOR SINGLE CENT 50M PASSIVE	£7.00	£8.23
RC140	TERMINATOR SINGLE CENT 50M ACTIVE	£12.00	£14.10
RC145	TERMINATOR IN LINE CENT 50M/CENT 50F PASSIVE	£12.00	£14.10
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BC175	MICRO DB50M/MICRO DB50M 1.8M	£27.00	£31.73
BC180	MICRO DB50M/DB25M 1.2M	£25.00	£29.38
BC185	MICRO DB50M/DB25M 1.8M	£30.00	£35.25
BC190	TERM. MICRO DB50M SINGLE END PASSIVE	£16.00	£18.80
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BC200	SCSI II/SCSI III HDD868M/MICRO DB50M	£35.00	£41.13
BC205	HDD868M/CENT 50M 1.2M	£35.00	£41.13
BC210	HDD868M/CENT 50M 1.8M	£38.00	£44.65
BC215	DB25M/HDD868M 1.2M	£59.00	£69.33
BC220	TERM. MICRO DB68M SINGLE ENDED ACTIVE	£49.00	£57.58
HIGH QUALITY PRINTER CABLES - ASSEMBLED			
RC300	ASSEMBLED 1.8M BI-DIRECTIONAL	£3.50	£4.11
RC305	ASSEMBLED 3M BI-DIRECTIONAL	£4.50	£5.29
HIGH QUALITY PRINTER CABLES - MOULDED			
BC310	IBM NOTEBOOK PARALLEL 50CM	£6.50	£7.64
BC315	PREMIUM 1.8M BI-DIRECTIONAL	£7.50	£8.81
BC320	PREMIUM 3M BI-DIRECTIONAL	£8.50	£9.98
BC325	PREMIUM 4.5M BI-DIRECTIONAL	£10.50	£12.34
RC330	PREMIUM 6M BI-DIRECTIONAL	£10.50	£12.34
RC340	PREMIUM 7.5M BI-DIRECTIONAL	£11.50	£13.51
BC345	IEEE 1284 1.8M BI-DIRECTIONAL	£12.50	£14.68
RC350	IEEE 1284 3M BI-DIRECTIONAL	£14.50	£17.04
HIGH QUALITY SERIAL PRINTER AND MODEM CABLES			
BC370	IBM PC/LASERJET CABLE 3M	£8.50	£9.98
BC375	IBM AT/LASERJET CABLE 3M	£8.50	£9.98
BC380	IBM PC/HAYES MODEM CABLE 1.8M	£7.50	£8.81
BC385	IBM PC/HAYES MODEM CABLE 3M	£8.50	£9.98
RC390	IBM AT SERIAL ADAPTOR DB9M/DB25F	£4.50	£5.29
BC395	IBM AT SERIAL ADAPTOR DB9F/DB25M	£4.50	£5.29
BC400	IBM AT/HAYES MODEM CABLE 1.8M	£6.00	£7.05
BC410	IBM AT/HAYES MODEM CABLE 3M	£6.00	£7.05
BC420	NULL MODEM ADAPTOR DB25 M/F	£5.00	£5.88
BC425	INTERNAL/EXTERNAL SERIAL CABLE 3M/6.0M	£9.40	£11.08
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BC430	LAPTOP KEYBOARD/MOUSE SPLITTER CABLE 6 PIN MINI DIN MALE/2 X 5 PIN MINI DIN FEMALE	£9.00	£10.58
BC435	J/STICK "Y" 1.8M DB15M/2 X DB15 F	£7.50	£8.81
BC440	JOYSTICK EXTENSION DB15 M/F 1.8M	£7.50	£8.81
BC445	IBM PC 5 PIN DIN/K/DB9 EXT CABLE 1.8M	£6.00	£7.05
BC450	AT/PS2 KEYBOARD CONVERTOR 5 PIN DIN F/6 PIN DIN M	£5.00	£5.88
BC455	REVERSE BC450	£5.00	£5.88
BC490	PS2 6 PIN DIN KEYBOARD EXT. 3M	£6.00	£7.05
BC470	AC POWER CABLE EXTENSION 1.8M	£6.00	£7.05
BC475	AC UK POWER CABLE 1.8M	£6.00	£7.05
BC480	VGA MONITOR EXTENSION CABLE 1.8M	£6.00	£7.05
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TEX70	IDE NEST READY TR-4 TAPE DRIVE	£199.00	£233.83
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TEX90	IDE NEST READY LS120 DRIVE	£129.00	£151.58
TEX100	IDE NEST READY 1.4GB HARD DRIVE	£269.00	£316.08
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BC510	25 PIN MALE TO MALE 3M	£6.50	£7.63
BC515	25 PIN MALE TO MALE 4.5M	£8.50	£9.99
BC520	25 PIN MALE TO FEMALE 1.8M	£6.50	£7.63
BC525	25 PIN MALE TO FEMALE 3M	£6.50	£7.63
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BC530	DB25 FEMALE/FEMALE	£4.50	£5.28
BC535	DB25 MALE/MALE	£4.50	£5.28
BC540	DB9 FEMALE/FEMALE	£4.50	£5.28
BC545	DB9 MALE/MALE	£4.50	£5.28
INTERNAL RIBBON CABLES			
BC550	IDE DUAL HARD DRIVE CABLE 48CM	£5.00	£5.88
BC555	UNIVERSAL FLOPPY CONTROLLER	£5.00	£5.88
BC560	Y PWR/SPLITTER CABLE 5.25" 4 PIN MALE / 2 X FEMALE	£5.00	£5.88
BC570	IRC II CD AUDIO CABLE, UNL. 3 CONNECTOR	£5.00	£5.88
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BC590	UTP CAT 5 2.1M PATCH	£5.00	£5.88
BC600	UTP CAT 5 4.2M PATCH	£6.00	£7.05
BC610	UTP CAT 5 7.5M PATCH	£6.00	£7.05
BC620	UTP CAT 5 15M PATCH	£12.00	£14.10
BC625	BNC 1.5M PATCH	£5.00	£5.88
BC630	BNC 3M PATCH	£5.00	£5.88
BC635	BNC 7.5M PATCH	£10.00	£11.75
BC635	BNC 15M PATCH	£15.00	£17.63
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BC800	1.5m Grey	£2.50	£2.94
BC801	1.5m Black	£2.50	£2.94
BC802	1.5m Blue	£2.50	£2.94
BC803	1.5m Green	£2.50	£2.94
BC804	1.5m Red	£2.50	£2.94
BC805	1.5m Yellow	£2.50	£2.94
BC806	3m Grey	£3.50	£4.11
BC807	3m Black	£3.50	£4.11
BC808	3m Blue	£3.50	£4.11
BC809	3m Green	£3.50	£4.11
BC810	3m Red	£3.50	£4.11
BC811	3m White	£3.50	£4.11
BC812	3m Yellow	£3.50	£4.11
BC813	7.5m Grey	£7.50	£8.81
BC814	7.5m Blue	£7.50	£8.81
BC815	7.5m Black	£7.50	£8.81
BC816	7.5m Green	£7.50	£8.81
BC817	7.5m Red	£7.50	£8.81
BC818	7.5m Yellow	£7.50	£8.81
BC819	7.5m White	£7.50	£8.81
BC820	7.5m Grey	£7.50	£8.81
BC821	15m Grey	£12.00	£14.10
BC822	15m Black	£12.00	£14.10
BC823	15m Blue	£12.00	£14.10
BC824	15m Green	£12.00	£14.10
BC825	15m Red	£12.00	£14.10
BC826	15m White	£12.00	£14.10
BC827	15m Yellow	£12.00	£14.10
BC828	30m Grey	£24.00	£28.20
BC828	30m Black	£24.00	£28.20
BC828	30m Blue	£24.00	£28.20
BC828	30m Green	£24.00	£28.20
BC828	30m Red	£24.00	£28.20
BC828	30m White	£24.00	£28.20
BC828	30m Yellow	£24.00	£28.20
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BC650	20 PIECE TOOL KIT	£19.50	£22.91
BC650	36 PIECE TOOL KIT	£37.50	£44.06
BC655	55 PIECE TOOL KIT	£47.50	£55.83
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BC700	2 POSITION MANUAL SWITCH KIT WITH ALL CABLES TO CONNECT 2 COMPUTERS TO 1 PRINTER	£27.50	£32.31
BC710	2 POSITION MANUAL SWITCH KIT WITH ALL CABLES TO CONNECT 1 COMPUTER TO 2 PRINTERS	£27.50	£32.31
COMPACT PARALLEL SWITCHES ALLOW 2 OR 4 PCs TO SHARE ONE PRINTER OR CONNECTION OF 1 PC TO 2 OR 4 PRINTERS.			
BC720	COMPACT PARALLEL AUTO SWITCH REVERSIBLE 2 POSITION	£25.50	£29.96
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BC740	IEEE 1284 BI-DIRECTIONAL 2 WAY	£24.00	£28.20
BC745	IEEE 1284 BI-DIRECTIONAL 4 WAY	£42.50	£49.93
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BC910	HP recommended Bitronics Manual reversible 2-1 switch (incl. IEEE 117123-KIT)	£39.00	£45.83
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BC910	OmniView 2 port (FD1064U)	£139.00	£163.33
BC920	OmniView 4 port (FD1066U)	£229.00	£269.08
BC930	OmniView AT cable kit (A3X932U)	£10.00	£11.75
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CD1200	CREATIVE LABS KIT INFRA 1800™ 12X WITH ENCART97 & ACTUA SOCCER	12X	£83
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CD909	WEARNES RETAIL KIT	12X	£55
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CD925	PIONEER	24X	£59
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CD108	DYSAN RETAIL KIT (multi-read)	20X	£60
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CD400	AMACOM 4X PCMCIA	£135	£158.63
CD402	AMACOM 8X PCMCIA	£155	£182.13
CD406	AMACOM 16X PCMCIA	£175	£205.63
AMACOM EZCD PLUS WITH AUDIO			
CD407	AMACOM 8X PCMCIA	£175	£205.63
CD409	AMACOM 16X PCMCIA	£215	£252.63
AMACOM EZCD SOUND WITH BUILT IN SOUND CARD			
CD303	AMACOM 4X	£155	£182.13
CD305	AMACOM 8X	£175	£205.63
CD309	AMACOM 16X	£190	£223.25
EXTERNAL AMACOM EZCD CD ROMS			
CD300	AMACOM 4X PARALLEL	£115	£135.13
CD302	AMACOM 8X PARALLEL	£135	£158.63
CD308	AMACOM 16X PARALLEL	£155	£182.13
CD95	MICROSOLUTIONS 4X	£130	£152.75

## CD-Writers

HEWLETT PACKARD			
CDR-700	SureStore 70100e-CD-RW-2X2X6-INT	£249	£292.58
CDR-710	SureStore 70100e-CD-RW-2X2X6-EXT	£299	£351.33
FLASMON			
CD18	CDR4240 2x4 EXT. BARE DRIVE	£449	£527.58
CD170	CDR4400 4x4 INT. BARE DRIVE	£615	£722.63
CD173	CDR4240 2x4 EXT. FULL KIT	£399	£468.83

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CDR-430	CDR200T-VK 2x6 EXT. DRIVE VALUE KIT	£259	£292.58
ALL ABOVE VALUE KITS COME WITH WINON CD Pro, Packet CD			
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CDR-440	4x2x6 INTERNAL IDE CD-RW VALUE KIT	£339	£398.33
CD450	Yamaha CD Media	£2	£2.35
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CDR-50	REWRIEABLE CD CUTTER & S/W	£299	£351.33
CDR-60	AS ABOVE & SCSI CARD + 5 CD/R AND 1 CD/RW MEDIA	£339	£398.33
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MITSUMI			
CDR-100	2x6 INTERNAL IDE (Inc. Software)	£199	£233.83
NOMAI			
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CDR-225	CD-RW-Internal Drive + S/Ware	£309	£363.08
CDR-200	CD-RW-External Parallel Port	£359	£421.83
CDR-205	CD-RW EXT BARE DRIVE & S/W	£339	£398.33
CDR-210	CD-RW-Ext SCSI & Card & S/W	£359	£421.83
CD65-N	NOMAI CD MEDIA	£3	£3.53
CDW-10	NOMAI RE-WRITABLE CD MEDIA	£14	£16.45
TRAXDATA			
CDR-300	All kits come with software & 1 CDR. Kits which include a SCSI card come with software & 2 CDR's		
CDR300	CDR2604 2x6 Int kit with SCSI card	£245	£287.88
CDR310	CDR2604 2x6 Int kit with SCSI card	£213	£250.28
CDR320	CDR2604 2x6 Int kit with SCSI card	£289	£339.58
CDR330	CDR2604P 2x6 Ext parallel port kit	£289	£339.58
CDR340	CDR4604 4x6 Int kit with SCSI card	£329	£386.58
CDR350	CDR4604EL 4x6 Int kit	£299	£351.33
CDR360	CDR2804 2x8 Int IDE drive+software	£429	£487.88
CDR370	CDRW220EL 2x6 CD/RW Int+software	£329	£386.58
CDR380	PressIt Label Kit	£17	£19.98
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CDR-200	CD-RW-External Parallel Port	£359.00	£421.83
CDR-205	CD-RW-Ext Bare Drive+S/W	£339.00	£398.33
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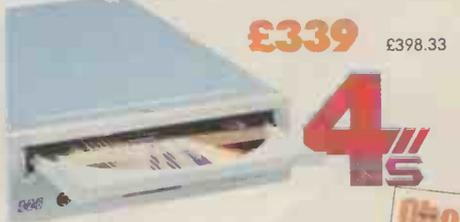
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C185	Cyrix M2 233+	£209.00	£245.58
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C163	P200+/150MHz	£59.00	£69.33
C166-1	166MMX	£75.00	£88.13
C200-1	200MMX	£100.00	£117.50
C233-1	233MMX	£169.00	£198.58
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C210	Intel Pentium Pro 180 (256K)	£279.00	£327.83
C200	Intel Pentium Pro 200 (256K)	£325.00	£381.88
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C266-2	Intel Pentium II 266MHz	£369.00	£433.58
C300-2	Intel Pentium II 300MHz	£499.00	£586.33

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## GIGABYTE TX CHIPSET



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DC9	Casio QV-300	£349.00	£410.08
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DC44	Casio QV-700	£375.00	£440.63
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DC8	Kodak DC25	£169.00	£198.58
DC4	Kodak DC50	£269.00	£316.08
DC19	Kodak DC120	£489.00	£534.58
DC40	Kodak DC210	£589.00	£692.08
DC5	Kodak Power Adaptor for DC50	£55.00	£64.63
DC11	4Mb Card for DC50	£109.00	£128.08
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DC13	Sanyo Image PC	£299.00	£351.33
DC20	Sanyo DigiCAM	£445.00	£522.88
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DT13	A3 Graphics Tablet	£479	£562.83
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FX15	FAX102C	£297.00	£348.33
FX20	FAX103C	£339.00	£398.33
FX25	FAX8000P	£594.00	£697.95
FX30	MFC-9000	£662.00	£777.85
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FX35	SFX-115	£165.00	£193.88
FX40	SFX-215	£209.00	£245.58
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AD640	FLIP DISK	6.4GB	£Call
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ED43-A	EZ DISK	1.6GB	£285.00
ED44-A	EZ DISK	2GB	£325.00
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ED40-AD	DISKLITE	1.2GB	£299.00
ED140-AD	DISKLITE	1.4GB	£329.00
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NO47-T	Toshiba	1.7GB	£189.00
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NO300-T	Toshiba	3.0GB	£339.00
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HD56-F	2.5Gb LIMITED STOCK		£105.00
HD170-F	MPA3017U	1.7GB	£93.00
HD260-F	MPA3026U	2.6GB	£115.00
HD350-F	MPA3035UD	3.5GB	£129.00
HD430-F	MPA3043	4.3GB	£159.00
HD520-F	MPA3052U	5.2GB	£175.00
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HD43-SS	ST31720A	1.7GB	£85.00
HD44-SS	ST32122A	2.1GB	£105.00
HD56-SS	ST32531A	2.5GB	£112.00
HD320-SS	ST33232A	3.2GB	£129.00
HD430-SS	ST34342A	4.3GB	£169.00
HD640-SS	ST36450A	6.4GB	£209.00
HD640-SU	ST36451A	6.4GB	£219.00
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HD400-M	M4540	4.0GB	£209.00
HD500-M	M4550	5.0GB	£249.00
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HD160-SA	31601A	1.6GB	£95.00
HD211-SA	321620A	2.1GB	£104.00
HD251-SA	32550A	2.5GB	£112.00
HD170-SA	VG31702A	1.7GB	£99.00
HD340-SA	VG33402A	3.4GB	£129.00
HD420-SA	VG34202A	4.2GB	£155.00
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HD121-DM	Diamond Max	1.2GB	£81.00
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HD210-DM	Diamond Max	2.1GB	£108.00
HD251-DM	Diamond Max	2.5GB	£112.00
HD320-DM	Diamond Max	3.2GB	£125.00
HD430-DM	Diamond Max	4.3GB	£157.00
HD510-DM	Diamond Max	5.1GB	£185.00
HD520-DM	Diamond Max	5.2GB	£189.00
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HD700-DM	Diamond Max	7.0GB	£219.00
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HD210-W	AC12100	1.2GB	£117.00
HD320-W	AC23200	3.2GB	£139.00
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HD640-W	AC36400	6.4GB	£219.00
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HD320-ST	F/BALL ST	3.2GB	£129.00
HD430-ST	F/BALL ST	4.3GB	£165.00
HD640-ST	F/BALL ST	6.4GB	£205.00
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HD420-CY	CYCLONE	4.3GB	£129.00
HD640-CY	CYCLONE	6.4GB	£189.00
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HD640-I	DESKSTAR 5	6.4GB	£219.00
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HD210-S	ST52160N	2.1GB U	£143.00
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HD900-SW	ST19101W	9.1GB U/W	£959.00
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HD440-F	M29545 AV	4.4GB	£439.00
HD440-FW	M29545Q AVW	4.4GB	£509.00
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HD451-MS	4743W	4.5GB U/W	£269.00
HD61-MS	4345N	4.5GB USCSI	£349.00
HD61-MSAV	4345AV	4.5GB USCSI	£399.00
HD61-MSW	4345W	4.5GB U/W	£399.00
HD60-MSWAV	4345WAV	4.5GB U/W	£429.00
HD61-MSWAV	3243AV	4.3GB	£319.00
HD66-MS	3391NS	9.1GB USCSI	£629.00
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HD66-MSW	3391W	9.1GB	£629.00
HD66-MSWAV	3391WAV	9.1GB U/W	£649.00
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HD55-Q	FIREBALL	2.1GB	£145.00
HD211-ST	FIREBALL ST U	2.1GB	£149.00
HD321-ST	FIREBALL ST U		£185.00
HD431-ST	FIREBALL ST U		£221.00
HD641-ST	FIREBALL ST U		£315.00
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HD910-Q	ATLAS II	9.1GB	£659.00
HD910-QWATLAS II WIDE		9.1GB	£665.00
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HD60-IW	IBM USTAR ES W	4.3GB	£249.00
HD450-I	IBM U/STAR2 XP	4.5GB	£420.00
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K15	CHERRY 6000 UK KEYBOARD	£17.00	£19.98
K16	CHERRY 3000 UK KEYBOARD	£22.00	£25.85
ALPS			
K11	ALPS WIN'95 KEYBOARD	£10.00	£11.75
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K50	KEY TRONIC KT6105	£15.00	£17.63
K51	KEY TRONIC KT2000 WIN 95	£20.00	£23.50
K52	KEY TRONIC TRACKBALL	£50.00	£58.75
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K5	BTC 102 KEYBOARD	£8.00	£9.40
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K39	BTC WIN 95 MEMBRANE KEYBOARD	£9.00	£11.17
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K1PS2	4725 P52 KEYBOARD	£25.00	£29.38
K20	4870 CLICK KEYBOARD	£18.00	£21.15
K25-95	4725 WIN 95 KEYBOARD	£25.00	£29.38
ERGONOMIC KEYBOARDS			
K30	MICROSOFT NATURAL KEYBOARD	£49.00	£57.58
K26	TRUST ERGONOMIC KEYBOARD	£22.00	£25.85
K29	EZKEY 3D ERGONOMIC DESIGN	£27.00	£31.73
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M12	MITSUMI HIGH QUALITY SERIAL	£7.00	£8.23
M15-M	MEDIAFORCE ERGO	£10.00	£11.75
M15-R	MICROSOFT ERGONOMIC	£29.00	£34.08
M16	MICROSOFT INTELLIMOUSE	£40.00	£47.00
M170	MICROSOFT INTELLIMOUSE TRACKBALL	£40.00	£47.00
M17	MICROSOFT HOME	£15.00	£17.63
M151	PRIMAX VENUS 3 BUTTON	£19.00	£22.33
M152	PRIMAX RAINBOW 3 BUTTON	£9.00	£10.58
M153	BEEBLE MOUSE - WALNUT BURL	£8.00	£9.40
M154	BEEBLE MOUSE - U.S.A. FLAG	£8.00	£9.40
M156	WHALE MOUSE - WALNUT BURL	£9.00	£10.58
M157	WHALE MOUSE - GREY	£9.00	£10.58
M175	DIGITAL EDGE 3 BUTTON MOUSE	£7.00	£8.23
M180	DIGITAL EDGE POINT MOUSE	£9.00	£10.58
M185	DIGITAL EDGE POINT MOUSE P5/2	£13.00	£15.28
M190	DIGITAL EDGE DOLPHIN MOUSE	£18.00	£21.15
M195	DIGITAL EDGE TRACK POINT	£25.00	£29.38
M165	TRUST AMI MOUSE COMBO DE LUX	£8.00	£9.99
M110	TRUST AMI MOUSE 97	£17.00	£19.99
M1105	TRUST AMI MOUSE	£7.00	£8.22
M1100	LOGITECH MOUSEMAN 96	£25.00	£29.38
M115	LOGITECH MOUSEMAN CORDLESS	£35.00	£41.13
M1120	LOGITECH PILOT MOUSE	£15.00	£17.63
M1125	TRACKMAN MARBLE	£45.00	£52.88
MAS	DISNEY MOUSE MAT WITH CALC.	£6.00	£7.05

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# Need more memory?



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Generally the golden rule in determining how much memory you require is to add the amounts of RAM needed to run all of the applications you'll want to have open at the same time.

Most systems today will come with at least 16Mb of RAM, though you will need to consider at least 32Mb for true Multi-Tasking and 64Mb for Desktop Publishing.

## IF ALL MEMORY IS THE SAME, WHY DO SOME BRANDS FAIL MORE OFTEN THAN OTHERS?



Manufacturer	STOCK CODE	Model	Kingston Part	Description	Manufacturer's Part	Exc.Vat	Inc.Vat
AST	MEK900	Advantage 600 and 800 series	KST0987/4	(Mod)	500987-002, 500981-008	£17	£19.98
AST	MEK85	Bravo LC,LP,MS,MS-T/P/66-166	KST0987/8	(Kit)	500987-003, 501340-001	£33	£38.78
AST	MEK863	And MT series	KST0987/16	(Mod)	500987-004	£57	£66.98
AST	MEK901		KST0987/32	(Kit)	500987-005	£114	£133.95
AST	MEK902	Manhattan G,V	KST486P/16	(Kit)	501159-003	£86	£101.05
AST	MEK903		KST486P/32	(Kit)	501159-004	£133	£156.28
AST	MEK904		KST486P/64	(Kit)	501159-005	£266	£312.55
AST	MEK905	PowerExec 3/255L-C,	KST0984/4	(Mod)	500984-001, 501318-001	£38	£44.65
AST	MEK906	4/255L Special ED,4/335L	KST0984/16	(Mod)	500984-003, 501318-003	£76	£89.30
Compaq	MEK907	Deskpro XL 450-590	KTC1 481/8	(Kit)	148188-001, 148188-291	£43	£50.53
Compaq	MEK908	Proliant 1500 5/75, 5/90, 5/120	KTC1 481/16	(Kit)	148188-001, 148189-291	£86	£101.05
Compaq	MEK909	1500R 5/75, 5/100, 5/120	KTC1 481/32	(Kit)	148188-001, 148190-291	£133	£156.27
Compaq	MEK910	ProSignia 300 5/75, 5/90, 5/120	KTC1 481/64	(Kit)	148188-001, 148190-292	£266	£312.55
Compaq	MEK911	LTE 5000, 5100 & 5200 series	KTC-E5000/8	(Kit)	213515-001, 213515-291	£48	£56.40
Compaq	MEK912		KTC-E5000/16	(Kit)	213515-002, 213515-292	£76	£89.30
Compaq	MEK913		KTC-E5000/32	(Kit)	213515-003, 213515-293	£147	£172.73
Compaq	MEK914		KTC-E5000/64	(Kit)	213515-004, 213515-294	£285	£334.88
Compaq	MEK915	DeskPro 2000, 4000, & 5200 series	KTC2430/8	(Kit)	243011-002	£33	£38.78
Compaq	MEK916		KTC2430/16	(Kit)	243012-002	£67	£78.73
Compaq	MEK917		KTC2430/32	(Kit)	243013-002	£114	£133.95
Compaq	MEK918		KTC2430/64	(Kit)	243014-002	£228	£267.90
Compaq	MEK929	Armada 4000 series	KTC-A4100/8	(Kit)	217914-001	£48	£56.40
Compaq	MEK920		KTC-A4100/16	(Kit)	217915-001	£76	£89.30
Compaq	MEK921		KTC-A4100/32	(Kit)	217916-001	£147	£172.73
Dell	MEK300	Dimension XPS 486, Optiplex 486's	KTD-LMT/4	(Mod)	310-3325	£17	£19.98
Dell	MEK872	Netplex 486	KTD-LMT/16	(Mod)	310-3327	£57	£66.98
Dell	MEK922	Dimension p133v, p166v, p200v	KTD-SDRAM/8	(Mod)	n/a	£48	£56.40
Dell	MEK334	Dimension XPS p133s, p166s, p200s	KTD-SDRAM/16	(Mod)	n/a	£71	£83.43
Dell	MEK545		KTD-SDRAM/32	(Mod)	n/a	£133	£156.28
Dell	MEK923		KTD-CXPRO/16	(Mod)	n/a	£81	£95.18
Dell	MEK321	Optiplex CXPRO series	KTD-CXPRO/32	(Mod)	n/a	£152	£178.60
Dell	MEK924		KTD-CX1/64	(Mod)	n/a	£352	£413.60
Dell	MEK925		KTD-CXPRO/128	(Mod)	n/a	£699	£821.33
Digital	MEK501	Digital Hitote VP 520, 525, 535	KTV-VP500/8	(Kit)	FR-PCP9M-BA	£48	£56.40
Digital	MEK506		KTV-VP500/16	(Kit)	FR-PCP9M-BB	£81	£95.18
Digital	MEK511		KTV-VP500/32	(Kit)	FR-PCP9M-BC	£157	£184.48
H/Packard	MEK926	Pavillon 7270, 7275z, 7280P,	KTH-VL4/8	(Kit)	D3646B	£33	£38.78
H/Packard	MEK532	7285, 7295V	KTH-VL4/16	(Kit)	D3647B	£67	£78.73
H/Packard	MEK927		KTH-VL4/32	(Kit)	D3648B	£114	£133.95
H/Packard	MEK928		KTH-VL4/64	(Kit)	D4543A	£228	£267.90
IBM	MEK929	Aptiva M30, M31, M40, M41, M50, M51	KTM-APT/4	(Mod)	92G7539, 070N04Y	£17	£19.98
IBM	MEK930	M53, M55, M60, M61, M62	KTM-APT/8	(Mod)	92G7541, 070N08Y	£33	£38.78
IBM	MEK931	M70, M71, A12, A50, A90, A92	KTM-APT/16	(Mod)	92G7543, 070N16Y	£57	£66.98
IBM	MEK932	PC 300 Series Model 350 6581, 6583	KTM-APT/32	(Mod)	92G7545, 070N32Y	£114	£133.95
		Model 330 6571, 6573, 6575					
Toshiba	MEK933	T2100-T2155 CS/CDS/CDT	KTT2100/8i	(Mod)	PA2027U, NW2027U	£43	£50.53
Toshiba	MEK934		KTT2100/16i	(Mod)	NW2028U	£76	£89.30
Toshiba	MEK935		KTT2100/24i	(Mod)	NW2029U	£109	£128.08
Toshiba	MEK936	Portege 610 CT	KTT610/8i	(Mod)	NW2031U	£52	£61.10
Toshiba	MEK839	Satellite 110CS/CT, 115CS, 200DS, 205 CDS	KTT610/16i	(Mod)	NW2032U	£81	£95.18
Toshiba	MEK937	Satellite Pro 420/425/430 CDS/CDT,	KTT610/32i	(Mod)	NW2034U	£147	£172.73

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MES-9	1MB	30 Pin	9 chip	£12	£14.10	
ME10	4MB	30 Pin	3 chip	£15	£17.63	
ME10-9	4MB	30 Pin	9 chip	£19	£22.33	
72-PIN FAST PAGE MODE MEMORY						
ME15-60	4MB	1 X 32	72 Pin	60NS	£12	£14.10
ME20-60	8MB	2 X 32	72 Pin	60NS	£19	£22.33
ME25-60	16MB	4 X 32	72 Pin	60NS	£35	£41.13
ME30	32MB	8 X 32	72 Pin	70NS	£69	£81.08
72-PIN PARITY MEMORY						
ME17	4MB	1 X 36	72 Pin	70NS	£14	£16.45
ME22	8MB	2 X 36	72 Pin	70NS	£29	£34.08
ME27	16MB	4 X 36	72 Pin	70NS	£41	£48.18
ME35	32MB	8 X 36	72 Pin	70NS	£83	£97.53
72-PIN EDO MEMORY SIMMS						
ME18	4MB	1 X 32	72 Pin	60NS	£9	£10.58
ME24	8MB	2 X 32	72 Pin	60NS	£16	£18.80
ME29	16MB	4 X 32	72 Pin	60NS	£29	£35.24
ME34	32MB	8 X 32	72 Pin	60NS	£59	£69.33
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DMS8	8MB	64Bit	168 Pin	15ns	£29	£34.08
DMS16	16MB	64Bit	168 Pin	15ns	£59	£69.33
DMS32	32MB	64Bit	168 Pin	15ns	£89	£104.58
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SS15	Saver 8 30 Pin	to 1 - 72 Pin Left	£25	£29.38
SS20	Saver 8 30 Pin	to 1 - 72 Pin Right	£25	£29.38
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Modems and ISDN terminal adaptors

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F56-E	K56 EXT. Voice BAPT APPROVED	£75.00	£88.13
<b>TRUST FAX MODEMS</b>			
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F66-3V	33.6 INTERNAL BAPT APPROVED VOICE	£69.00	£81.08
F67-3	33.6 EXTERNAL BAPT APPROVED	£99.00	£116.33
<b>MOTOROLA MODEMS</b>			
F206	PCMCIA 33.6 PRO DATA / FAX	£123.00	£144.53
F207	BITSURFER PRO ISDN OFFICE SOLUTION	£209.00	£245.58
F410E	ModemSURFR 56K EXT.	£85.00	£99.88
F420-I	VoiceSURFR 56K INT.	£85.00	£98.88
F420-E	VoiceSURFR 56K EXT.	£95.00	£111.63
<b>HAYES MODEMS</b>			
FH700	ACCURA 33.6 INT. VOICE FAX DATA	£87.00	£102.23
FH720	ACCURA 33.6 EXT DATA FAX Voice	£95.00	£111.63
FH740	ACCURA ISDN TERMINAL ADAPTOR	£174.00	£204.45
FH750	ACCURA ULTIMATE CHALLENGE	£115.00	£135.13
FH800	ACCURA 56K EXT VOICE/FAX/DATA	£99.00	£116.33
FH810	ACCURA 56K INT VOICE/FAX/DATA	£89.00	£104.58
FH760	ACCURA 336 PCMCIA	£96.00	£112.80
FH770	OPTIMA BUSINESS MODEM	£163.00	£191.53
FH780	OPTIMA 336 GLOBAL PCMCIA MODEM	£139.00	£163.33
FH781	GLOBAL GSM UPGRADE KIT-NOKIA 2110	£99.00	£116.33
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F500	MICROLIN 33.6 VOICE INT	£89.00	£104.58
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F520	MICROLIN 33.6 PCMCIA	£129.00	£151.58
F511	56K VOICE INTERNAL	£109.00	£128.08
F521	56K VOICE EXTERNAL	£123.00	£144.53
<b>GREY CELL SYSTEMS</b>			
FGC10	GCS4000 V34 PCMCIA MODEM/FAX/GSM	£149.00	£175.08
FGC20	GCS4020 GSM UPGRADE-NOKIA 2110 RANGE	£119.00	£139.83
FGC30	GCS4021 GSM UPGRADE FOR NOKIA 8110	£119.00	£139.83
FGC40	GCS4022 GSM UPGRADE FOR PANASONIC G350/400/500	£119.00	£139.83
<b>PSION DACOM</b>			
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FP110	GOLD CARD 336 GLOBAL	£155.00	£182.13
FP120	GOLD CARD GLOBAL 56K	£199.00	£233.83
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FP130	NOKIA 2110	£99.00	£116.33
FP140	PANASONIC G350/400/500	£99.00	£116.33
FP150	NOKIA 8110	£99.00	£116.33
<b>PSION DACOM GOLD CARD GLOBAL GSM UPGRADE</b>			
FP160	NOKIA 2110	£99.00	£116.33
FP170	PANASONIC G350/400/500	£99.00	£116.33
FP180	NOKIA 8110	£99.00	£116.33
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F90-3	SPORTSTER 33.6 INT WITH VOICE	£96.00	£112.80
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F705-E	SPORTSTER FLASH 33.6 WITH VOICE	£109.00	£128.08
<b>ABOVE INCLUDES FREE UPGRADE TO 56Kbps</b>			
F96	SPORTSTER 28.8 PCMCIA	£109.00	£128.08
F97	COURIER V34 EXTERNAL	£194.00	£227.95
F97-1	COURIER V34 INTERNAL	£194.00	£227.95
F701	SPORTSTER ISDN EXTERNAL	£99.00	£116.33
F710-1	COURIER ISDN INTERNAL	£259.00	£304.33
F710-2	COURIER ISDN EXTERNAL	£259.00	£304.33

<b>XIRCOM PC CARD (PCMCIA) MODEMS AND ISDN PERFORMANCE SERIES GLOBAL ACCESS</b>			
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XIR902	Credit card GSM for Phillips Spark/Flizz (from Oct 96) /Genie CGSM-PHI-1/M	£135.00	£158.63
XIR903	Credit card GSM for Siemens S3 Family/Sony CMD-100/CMD-200 CGSM-SIE-1/M	£135.00	£158.63
XIR904	Credit card GSM for Siemens S4 Family/CMDX-1000 CGSM-SIE-2/M	£135.00	£158.63
XIR190	Credit card ethernet-336 Modem 10BaseT CEM-33BT/M	£169.00	£198.58
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XIR210	Credit card Token ring +336 Modem UTP/STP CTM-33CTP/E	£299.00	£351.33
XIR220	Credit card Modem 336 only + GSM CEM56-100BTX/M	£115.00	£135.13
XIR230	Credit card ethernet 10/100 + 56k modem + GSM CEM56-100BTX/M	£239.00	£280.83
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XIR300	Upgrade kit for GSM connection to 56k models, Philips Genie GSMCK-56PHI-3	£79.00	£92.83
XIR310	Upgrade kit for GSM connection to 56k models, Siemens S3/Sony CMD-100, CMD-200 GSMCK-56SIE-1	£79.00	£92.83
XIR320	Upgrade kit for GSM connection to 56k models, Siemens S4/Sony CMDX-1000 GSMCK-56SIE-2	£79.00	£92.83
<b>ISDN</b>			
XIR330	C/card ISDN adaptor (2B+D) C-EURO/M	£180.00	£222.08
XIR340	C/card ISDN adaptor (2B+D) w/RV5-om s/w	£239.00	£280.83
<b>ACCESSORIES</b>			
XIR350	International modem travel kit - WEU 12 country adaptors	£40.00	£47.00
XIR350	International modem travel kit - EEU 9 country adaptors	£40.00	£47.00

**US Robotics** **DON'T WAIT FOR THE REST!**



**F705-E Sportster Flash**  
**£109.00** £128.08



**F700-1 WinModem**  
**£58.00** £128.08



**F97 F97-1 Courier Modem**  
**£194.00** £227.95



**F701 Sportster ISDN**  
**£99.00** £116.33

**P56-K 56K int. with voice**  
**£57** £66.98

**F256-E K56 ext with voice**  
**£75** £88.13

**Hayes modems** **HOW FAST DO YOU WANT TO GET THERE?**

**ACCURA RANGE**

**K56 VOICE FAX DATA MODEMS**  
Transmit Data In The Blink Of An Eye

FH800 56K Modem  
**£99.00** £116.33

FH810 56K Modem int  
**£89.00** £104.58

**HAYES ACCURA PCMCIA 336**

- Low Cost PC (PCMCIA) Card
- 33,600 bits per second (v34)
- Fax - send and receive
- Complete with data, fax and Internet software

FH760 PCMCIA 336  
**£96.00** £112.80

**ISDN TERMINAL ADAPTOR**

This External ISDN Adaptor is a low cost solution for people who need ISDN facilities. Comes with Hayes 5 Year Product Guarantee.

FH740 ISDN Terminal Adaptor  
**£174.00** £204.45

**MSN BUNDLE**

FH830 MSN 56K - EXTERNAL  
**£103** £121.03

FH840 MSN 56K - INTERNAL  
**£99** £116.33

**TDS**

**INCLUDES NEARLY £200 WORTH OF CONNECTIONS - FREE**



**"ISDN IN A BOX"**

Included with the "ISDN in a box" are:

- FREE connection to BT ISDN worth £199 plus VAT
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- FREE Telepower Pro - the ultimate CD telephone directory

In terms of speed & connectivity, Connect Digital X4 promises:

- Four times the normal downloading speed
- Sub-one second connection time
- Net browsing at twice the conventional speed
- Data transfer rates of up to 128K bits per second



**£149 + VAT** TDS10

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V15 ViewMate  
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# Monitors

Model	Specs	Price	Price
<b>ADI MONITORS</b>			
MO24E	PROVISTA E30 14"	£109.00	£128.08
MO34E	PROVISTA E40 15"	£145.00	£170.38
MO525	MICROSCAN 4P 15"	£165.00	£193.88
MO527	MICROSCAN 5P 17"	£309.00	£363.08
MO522	MICROSCAN 5G 17"	£369.00	£433.58
MO521	MICROSCAN 17X+Portrait	£309.00	£363.08
MO19	MICROSCAN 6P 19"	£579.00	£680.33
MO524	MICROSCAN 6G 21"	£839.00	£985.83
<b>CTX MONITORS</b>			
MO610	1451 ELR14"	£109.00	£128.08
MO602	1569 SE 15"	£167.00	£196.23
MO611	1569 UA 15"	£219.00	£257.33
MO609	1569 MS 15" 1280X1024 0.28DP	£199.00	£233.83
<b>MO603</b> 1792 SE 17" 1600X1200 0.26DP ..... £399.00 £468.83			
<b>MO604</b> 1785 S 17" 1600X1200 0.26DP ..... £349.00 £410.08			
<b>MO605</b> 1785 XE17" 1600X1200 0.26DP ..... £369.00 £433.58			
<b>MO606</b> 1785 XA17" 1600X1200 0.26DP ..... £429.00 £504.08			
<b>MO612</b> 1792 UA17" 1600X1200 0.25DP ..... £429.00 £504.08			
<b>MO607</b> 2085 XE 20" 1600X1200 0.28DP ..... £699.00 £821.33			
<b>MO608</b> 2185 XE 21" 1600X1200 0.28DP ..... £899.00 £1056.33			
<b>IYAMA</b>			
MO105	MF 851 5G VISION MASTER 350 15"	£189.00	£222.08
MO101	MF861 7E VISION MASTER 17 17"	£399.00	£468.83
MO108	MF861 7ES VISION MASTER 17ES 17"	£429.00	£504.08
MO109	MF861 7T VISION MASTER 17T 17"	£409.00	£480.58
MO102	MT901 7E VISION MASTER PRO 17 17"	£439.00	£515.83
MO110	MT901 7T VISION MASTER PRO 17 17"	£445.00	£522.88
MO103	MF822 1T VISION MASTER 21 21"	£925.00	£1086.88
MO104	MT902 1T VISION MASTER PRO 21 21"	£959.00	£1126.88
MO106	MF872 1T VISION MASTER 500 21 21"	£959.00	£1126.88
MO107	MT922 1T VISION MASTER PRO 500 21 21"	£999.00	£1173.83
MO111	LP101 4A LCD PANEL 13.8" TFT	£1899.00	£2231.33
MO105-W	VISION CARE 15 3 YEARS ON SITE	£15.00	£17.63
MO102-W	VISION CARE 17 3 YEARS ON SITE	£39.00	£45.83
MO104-W	VISION CARE 21 3 YEARS ON SITE	£49.00	£57.58
<b>MEDIAFORCE</b>			
MO914	MEDIAFORCE14" VALUE	£89.00	£104.58
MO915	MEDIAFORCE15" VALUE	£135.00	£158.63
MO917	MEDIAFORCE17" VALUE	£260.00	£305.50
MO910	MEDIAFORCE 14" 3 YEARS ON SITE	£100.00	£117.50
MO911	MEDIAFORCE 15" 3 YEARS ON SITE	£155.00	£182.13
MO912	MEDIAFORCE 17" 3 YEARS ON SITE	£289.00	£339.58
<b>MICROVITEC MONITORS</b>			
MO900	DELTA-SCAN1 4SV	£129.00	£151.58
MO902	PRO-SCAN1 7SX	£399.00	£468.83
MO904	PROTEUS 34X TFT LCD PANEL	£2295.00	£2696.63
MO904	NOKIA		
MO300	449XI 15" TRINITRON 0.25DP	£249.00	£292.58
MO301	449XA 15" TRINITRON 0.25DP	£259.00	£304.33
MO306	447V 17" FST 0.26DP SPEAKERS TCO	£369.00	£433.58
MO307	417TV 17" FST 0.28DP SPEAKERS/TV	£535.00	£628.63
MO308	447E 17" TRINITRON 0.25DP	£495.00	£581.63
MO302	447XI 17" TRINITRON 0.25DP	£435.00	£511.13
MO303	447XAV 17" TRINITRON 0.25DP	£549.00	£645.08
MO309	447XAVC 17" TRINITRON 0.25DP	£825.00	£969.38
MO304	445XI 21" CRT 0.28DP	£905.00	£1063.38
MO305	445XAV21" CRT 0.28DP	£1049.00	£1232.58
MO310	445XAVC 21" CRT 0.28DP	£1250.00	£1468.75
<b>PANASONIC MONITORS</b>			
MO700	TXT 156515" MONITOR	£179.00	£210.33
MO701	TXT 156315" MONITOR	£235.00	£276.13
MO702	TXD 1562F15" MONITOR	£285.00	£334.88
MO703	TXD 1734 17" MONITOR	£355.00	£417.13
MO704	TXD 1734F 17" MONITOR	£415.00	£487.63
MO705	TXD 175317" MONITOR	£495.00	£581.63
MO706	TXD 216221" MONITOR	£950.00	£1116.25
<b>SAMSUNG MONITORS</b>			
MO200	SM500s15"	£179.00	£210.33
MO201	SM500b15"	£199.00	£233.83
MO204	SM700s17"	£349.00	£410.08
MO205	SM700p17"	£449.00	£527.58
MO203	SM21GLS21"	£889.00	£1044.58
<b>SMILE</b>			
MO5	SMILE MONO VGA 9" MA0933	£79.00	£92.83
MO9	SMILE COLOUR VGA 9"	£259.00	£304.35
MO11	SMILE COLOUR 10" CA601 3DS	£229.00	£269.08
MO55	SMILE 14" CA641 5DL 0.28DP	£104.00	£122.20
MO29-2	SMILE 15" CA6536DL 0.28DP	£145.00	£170.38
MO29-SL	SMILE 15" CA6536SL 0.25DP	£179.00	£210.33
MO45-DL	SMILE 17" CA1716DL 0.28DP	£319.00	£374.83
MO53	SMILE 17" CA6736DL 0.28DP	£275.00	£323.13
MO54	SMILE 17" CA6736SL 0.25DP	£349.00	£410.08
MO50	SMILE 17" CA1716CL 0.26DP	£375.00	£440.63
MO60	SMILE 20" CA2011 0.28DP	£680.00	£799.00
MO62-D	SMILE CA2111 0.28DP	£799.00	£938.83
<b>SONY MONITORS</b>			
MO400	CPD 100 SX15" MONITOR	£194.00	£227.95
MO401	CPD 100 SFT15" TCO	£224.00	£263.20
MO402	CDP 200 SX 17" MONITOR	£359.00	£421.83
MO403	CDP 200 SFT 17" TCO	£382.00	£448.85
MO404	CDP 300 SFTS20" TCO	£899.00	£1056.33
MO405	CDP 17 SE2T5 17" TCO 95	£560.00	£658.00
MO406	GDM 20 SE2T5 20" TCO 95	£999.00	£1173.83
MO408	GDM W900 SUPER WIDE 24" MONITOR TCO 95	£2350.00	£2761.25
MOW400	EXTEND PACK A 3 YEARS ON SITE 15"	£49.00	£57.58
MOW402	EXTEND PACK B 3 YEARS ON SITE 17"	£95.00	£111.63
MOW404	EXTEND PACK C 3 YEARS ON SITE 20"	£109.00	£128.08
<b>TAXAN MONITORS</b>			
MO512	ERGOVISION 430LR LR14"	£113.00	£132.78
MO502	ERGOVISION 530 TCO15"	£227.00	£266.73
MO511	ERGOVISION 550 TCO95 15"	£218.00	£256.15
MO503	ERGOVISION 730 TCO17"	£370.00	£434.75
MO504	ERGOVISION 740 TCO 17"	£446.00	£524.05
MO505	ERGOVISION 750 TCO 95 17" DIAMONDTRON	£461.00	£541.68
MO509	ERGOVISION 2040 TCO 20"	£664.00	£780.20
MO510	ERGOVISION 2040 TCO 95 20"	£683.00	£802.53
MO508	ERGOVISION 2150 TCO 95 21" DIAMONDTRON	£949.00	£1118.08
<b>TRUST MONITORS</b>			
MO17	CN2528D 14"	£109.00	£128.08
MO38-P	PRECISION VIEWER 15"	£159.00	£186.83
MO48-P	PRECISION VIEWER 17"	£309.00	£363.08
MO48-V	VISUALSOUND 17"	£299.00	£351.33
MO48-T	PRO VISUAL 17"	£325.00	£381.88
MO61	CM 5031 20" MONITOR	£515.00	£605.13
<b>VIEWSONIC MONITORS</b>			
MO800	E645 14"	£118.00	£138.65
MO801	E655 15"	£190.00	£223.25
MO31	V1SE515"	£199.00	£233.83
MO33	GRAPHIC 15G515"	£235.00	£276.13
MO47	GRAPHIC 17G5 17"	£395.00	£464.13
MO48	V17EA 17"	£376.00	£441.80
MO36	MULTIMEDIA 15GA15"	£259.00	£304.33
MO49	MULTIMEDIA 17GA 17"	£449.00	£527.58
MO44	PROFESSIONAL 17P517"	£449.00	£527.58
MO803	PROFESSIONAL P81021"	£965.00	£1133.88

Monitors

## iiyama

**THE NEW VISION MASTER™ 350 COLOUR MONITOR MODEL MF8515**

MO105 350 **£189** £222.08

**THE AWARD WINNING VISION MASTER™ PRO 17 COLOUR MONITOR MODEL MT9017**

MO102 PRO17 **£439** £515.83

**THE NEW VISION MASTER™ PRO500 COLOUR MONITOR MODEL MF9221**

MO107 PRO500 **£999** £1173.83

**MO201 SYNCMASTER SM500B - 15"**

- 15" FST CRT
- 3 Yr onsite warranty

**£199.00** £233.83

**MO205 SYNCMASTER SM700S - 17"**

- 3 Yr onsite warranty
- On-screen display

**£349.00** £410.08

**MO604 SYNCMASTER SM700B 17"**

- 17" FST Invar non-glare dynamic focus CRT

**£449.00** £527.58

**17L VISUAL SOUND**

- 17" FST MONITOR
- 0.31mm dot pitch

MO48-V 17L **£299.00** £351.33

**17" FST PRO VISUAL**

- 17" FST MONITOR
- 12 Month RTB Guarantee

MO48-I 17" VFM **£325.00** £381.88

**17" FST MONITOR**

- 17" Flat Sq. Tube
- 0.28mm dot pitch

MO48-P 17" FST **£309.00** £363.08

**PRO-SCAN 17SX**

- 17" Flat Sq. Microfilter Tube
- Anti Static/Reflect INVAR Shadow Mask
- 0.24mm Dot Pitch
- 1600x1200@76Hz Flicker Free
- On Screen Display
- 3 Year on-site "swap out" warranty

MO902 PROSCAN 17SX **£399.00** £468.83

**15" 1569MS**

MO609 **£199** £233.83

**14" 1451ELR**

MO610 **£109** £128.08

**ERGOVISION 430 L**

**TAXAN**

The Ergovision 430LR is an excellent quality 14" monitor with 13.1" viewable.

MO511 430L **£113.00** £132.78

**ERGOVISION 550 TCO95**

**TAXAN**

The Ergovision 550TCO 95 displays a crisp clear picture with its 15" screen

MO512 550TCO 95 **£218.00** £256.15

**ERGOVISION 750 TCO95**

**TAXAN**

The multiple award winning 750 features a 17" Diamondtron tube.

MO505 750 TCO95 **£461.00** £468.83

**MEDIA FORCE**

**14" VFM MONITOR**

- 14" Tint glare or non-glare
- 1024x768 NI res.

MO914T4 **£89.00** £104.58

**15" VFM MONITOR**

- 15" Flat Sq. Tube
- 0.28mm dot pitch
- 1024x768 (Flicker Free) NI res.
- 260x195mm display size
- 12 Month RTB Guarantee

MO915 **£135.00** £158.63

**17" VFM MONITOR**

- 17" Flat Sq. Tube
- 0.28mm dot pitch
- 1024x768 (Flicker Free) NI res.
- 12 Month RTB Guarantee

MO917 **£260.00** £305.50

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(13.8" Viewable)  
 ■ New look MicroScan monitor with added features

**£165.00** £193.88



## 17" MICROSCAN 17X+

(15.5" Viewable)  
 ■ Unique portrait monitor  
 ■ Display a full page of A4 on screen

**£309.00** £363.08



## NEW - MICROSCAN 6P 19"

**£579.00** £680.33

### QUICKORDER LISTING ALL PRICES EX VAT

MO24E	Provista E30 14" (800 x 600 @ 85Hz)	£109.00	MOS22	Microscan 5G 17" (1600 x 1200 @ 75Hz)	£369.00
MO34E	Provista E40 15" (1024 x 768 @ 85Hz)	£145.00	MOS21	Microscan 17x+ (1024 x 768 @ 75Hz)	£309.00
MOS25	Microscan 4P 15" (1024 x 768 @ 85Hz)	£165.00	MO19	Microscan 6P 19" (1600 x 1200 @ 75Hz)	£579.00
MO42	Microscan 5P 17" (800 x 600 @ 85Hz)	£309.00	MOS24	Microscan 6G 21" (1600 x 1200 @ 75Hz)	£839.00

Monitors - Motherboards

## NEC VISUAL EQUIPMENT

The solution for today's sophisticated presentations

<b>MONITORS</b>			
NEC-1	MULTISYNC XM29 PLUS . . . . . 29"; 0.6 DOT PITCH; 1024 x 768@75Hz; DYNAMIC FOCUS	£1899	£2231.33
NEC-2	MULTISYNC XP29 PLUS . . . . . 29"; 0.6 DOT PITCH; 1600 x 1200@75 Hz; DYNAMIC FOCUS	£2799	£3288.83
NEC-3	MULTISYNC XM37 PLUS . . . . . 37"; 0.85 DOT PITCH; 1024 x 768@75 Hz; DYNAMIC FOCUS	£4899	£5756.33
NEC-4	MULTISYNC XP37 PLUS . . . . . 37"; 0.85 DOT PITCH; 1600 x 1200@75Hz; DYNAMIC FOCUS	£5899	£6931.32
<b>LCD PROJECTORS</b>			
NEC-5	MULTISYNC MT810 . . . . . TFT; 600 ANSI LUMENS; 200:1 CONTRAST RATIO; 800 x 600	£4399	£5168.83
NEC-6	MULTISYNC MT100 . . . . . TFT; 550 ANSI LUMENS; 200:1; 1024 X 768, MAX 300" IMAGE	£5999	£7048.83
SAN-1	PLC50605 . . . . . SVGA; PORTABLE LCD MULTIMEDIA	£4495	£5281.63
SAN-2	PLC8805 . . . . . XGA; PORTABLE LCD MULTIMEDIA	£5995	£7044.13
<b>OPTIONS FOR THE NEC PROJECTORS</b>			
NEC-7	MT DOCUMENT CAMERA . . . . . PORTABLE DOCUMENT CAMERA	£679	£797.83
NEC-8	LAMP . . . . . LAMP FOR THE MT 810 AND MT 1000 NEC PROJECTORS	£199	£233.83
NEC-9	SOFT CASE . . . . . SOFT CASE FOR THE MT 810 AND THE MT 1000	£99	£116.33
NEC-10	HARD CASE . . . . . HARD CASE FOR THE MT 810 AND THE MT 1000	£179	£210.33
NEC-11	MOUNTING KIT . . . . . CEILING MOUNTING KIT FOR THE MT RANGE	£179	£210.33
<b>LCD MONITORS</b>			
NEC-12	M/SYNC LCD 400 S/FINE . . . . . 14.1" 1024 X 768 MAX	£1899	£2231.33
NEC-13	M/SYNC LCD 2000 S/FINE . . . . . 20.1" 1280 X 1024 MAX	£5699	£6696.33



NEC-5 MT810 **£4399** £5168.83  
 NEC-6 MT100 **£5999** £7048.83

# Motherboards

<b>PC CHIPS MOTHERBOARDS</b>			
M100-V	OPTI VIPER P75-166Mhz . . . . .	£29	£34.08
M47	486 PCI . . . . .	£29	£34.08
M37	486 VLB - LIMITED STOCK . . . . .	£29	£34.08
M99-2	VX CHIPSET . . . . .	£45	£52.87
CM2-VX	256K CACHE MODULE FOR M99-2 . . . . .	£10	£11.75
CM3	512K CACHE MODULE FOR M99-2 . . . . .	£15	£17.63
M210	VX PRO CHIPSET 512K PLB cache baby AT£49	£57.57	
M220	TX PRO CHIPSET 512K PLB cache baby AT£59	£69.33	
M300	Intel TX CHIPSET 512K PLB cache baby AT£69	£81.08	
M101	PENTIUM PRO 440FX . . . . .	£105	£123.37
<b>QDI MOTHERBOARDS</b>			
M203	QDI JUMPERLESS LEGENO I - ATX . . . . .		£186.83
	SINGLE PII INTEL LX + AGP - 233-333	£159	£88.13
M202	QDI JUMPERLESS TX CHIPSET . . . . .	£75	
<b>GIGABYTE MOTHERBOARDS</b>			
M92-HX5	GIGABYTE 512K HX CHIPSET . . . . .	£85	£99.88
M92-TX	GIGABYTE 512K TX CHIPSET . . . . .	£95	£111.63
M92-UX	GIGABYTE 512K HX CHIPSET (ATX Format) £99		£116.33
<b>ELITE MOTHERBOARDS</b>			
M810	P5-TX-A 430HX - ATX - 512K . . . . .	£92	£108.10
M820	P5-TX-A Pro 430TX - ATX - 512K . . . . .	£99	£116.33
M897	P5SJA SIS5582 ATX - USB UDMA 33 - 512K£79	£92.83	
M830	PK6FA PII 440FX - ATX - 512K . . . . .	£159	£186.83
M870	P6LX-A PII Single Slot 440LX - ATX . . . . .	£159	£186.83
M880	P6LX-A UWSCSI PII Single Slot 440LX - ATX£239	£280.83	
M890	P6LX-A UWSCSI PII Dual Slot 440LX - ATX£299	£351.33	
M840	P5TX-AR 430TX - ATX - 512K . . . . .	£145	£170.38
M850	TX-BE-512 430TX - 3/4Baby AT - 512K£85	£99.88	
M860	VX-BE-512 430VX - 3/4Baby AT - 512K£89	£104.58	
CM2-96	256K CACHE FOR ELITE 256K M/B . . . . .	£12	£14.10
M895	P6LX-A Single Slot Bare Bones System £239		£280.83
<b>ASUSTEK MOTHERBOARDS</b>			
M400	TX97-E 430TX-512k-Baby AT format £125	£146.87	
M410	TX97-E 430TX-512k-ATX . . . . .	£129	£151.57
M415	TX97-XE + Creative Labs sound on board £155	£182.12	
M420	P/II-PSST2P4 HX-512K-Baby AT format £105	£123.37	
M530	P2L-97 - Pentium II LX ATX . . . . .	£169	£198.58
<b>MICRONICS MOTHERBOARDS</b>			
M500	M75-HI HX 512K ATX + C/Labs vibra £129	£151.58	
M505	M75Tw Twister TX 512K baby AT . . . . .	£99	£116.33
M510	M75Tw Twister TX 512K ATX . . . . .	£99	£116.33
M515	W6-LI-Dual Pentium Pro + . . . . .		£351.33
M520	M1 SF5w Stingray Pentium II ATX . . . . .	£177	£207.98
M525	M1 Dfd Fortress Dual Pentium II . . . . .	£266	£312.55
M530	M1SLT Tigercat Pentium II ATX 440LX £239		£280.83
<b>SUPERMICRO MOTHERBOARDS</b>			
M240	PSMMA98 Intel 430TX P75-233 - . . . . .		£138.65
	512K - ATX . . . . .	£118	
M250	PSMMS98 Intel 430TX P75-233 - . . . . .		£142.18
	512K - AT . . . . .	£121	
M260	PGDNE Dual P-Pro 440FX - Baby AT . . . . .	£219	£257.33
M270	PGDKS Dual PII 200 - 300 Mhz 440FX - . . . . .	£299	£351.33
	ATX . . . . .		
M280	P6SLE Single PII 200-300 Mhz 440LX - . . . . .	£159	£186.83
	ATX . . . . .		
M290	PGDLE Dual PII 200-300 Mhz 440LX - . . . . .	£319	£374.83
	ATX . . . . .		
M295	P6OLS as above with UW-SCSI onboard£365		£428.83
<b>TYAN MOTHERBOARDS</b>			
MT100	S1571 TITAN TURBO AT-2 P75-233 . . . . .	£89	£104.58
	512K - INTEL TX . . . . .		
MT110	S1573 TITAN TURBO ATX-2 P75-233 . . . . .	£93	£109.28
	512K - INTEL TX . . . . .		
MT120	S16925 TIGER ATX SINGLE PII P75-233 . . . . .	£169	£198.58
	- INTEL LX + AGP . . . . .		
MT130	S1696DLUA THUNDER 2 ATX DUAL PII - P75-233 . . . . .	£359	£421.83
	- INTEL LX + AGP + U/WIDE SCSI . . . . .		
<b>STOCK CLEARANCE MOTHERBOARDS</b>			
M94	INTEL VX 75-133Mhz-256K- . . . . .		£45.83
	LIMITED STOCK . . . . .	£39	
M98-H	CHAINTTECH INTEL HX 256K . . . . .	£55	£64.63
M98-V	CHAINTTECH INTEL VX 256K . . . . .	£55	£64.63
M47-E	486 WITH CYRIX 586 100Mhz . . . . .	£69	£81.08
	ON BOARD . . . . .		
M96	ELITE INTEL HX 75 - 166 - 256K . . . . .	£69	£81.08
M96-V	ELITE INTEL VX 75 - 166 - 256K . . . . .	£59	£69.33
M93	INTEL VX 75 - 133 - LIMITED STOCK . . . . .	£32	£37.60

## INTEL 233MMX

PC Chips TX Pro Motherboard with 512K Cache	£75.00	+vat
Intel Pentium 233 MMX CPU	£199.00	+vat
2Mb MediaForce S3 Virge Video Card	£35.00	+vat
Heavy Duty Heat Sink & Fan	£8.00	+vat
<b>Total Individual Cost</b>	<b>£317.00</b>	<b>+vat</b>
<b>Total Bundle Cost</b>	<b>£295.00</b>	<b>+vat</b>

**SAVE £25.86** £295.00 + VAT

## INTEL PII 233

Elite P6KFA Motherboard PII 440FX Chipset - 512K ATX	£159.00	+vat
Intel Pentium PII 233 CPU	£309.00	+vat
Hercules Terminator 3D DX 4Mb Video Card	£62.00	+vat
<b>Total Individual Cost</b>	<b>£530.00</b>	<b>+vat</b>
<b>Total Bundle Cost</b>	<b>£489.00</b>	<b>+vat</b>

**SAVE £48.25** £489.00 + VAT

## MICRONICS

### M1-SLT TIGERCAT 440LX

<ul style="list-style-type: none"> <li>Supports Intel PII 233-300 Mhz VRM integrated.</li> <li>Intel 440LX chipset</li> <li>ATX form factor with PS2 style keyboard/mouse connectors</li> </ul>	
	<b>£239.00</b>
	£280.83

### M7-STw 430TX CHIPSET

<ul style="list-style-type: none"> <li>Supports Intel 75-200mhz, Intel MMX 166-233 (Integrated VRM), Cyrix, AMD K5 / K6</li> <li>Intel 430TX chipset</li> </ul>	
	<b>£99.00</b>
	£116.33

### M1-DFd 440FX CHIPSET

<ul style="list-style-type: none"> <li>Supports Dual Intel Pentium PII 233-300Mhz</li> <li>Intel 440FX chipset</li> <li>Max memory 1024Mb</li> </ul>	
	<b>£266.00</b>
	£312.55

### M1-DFd STINGRAY

<ul style="list-style-type: none"> <li>Single Intel Slot 1 supports 233/266 MHz Pentium II processor</li> <li>Integrated VRM</li> <li>Intel 440FX chipset</li> </ul>	
	<b>£259.00</b>
	£304.33

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- ATX format Pentium class motherboard
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- PC98 solution (see box)
- Intel 430TX PCIs et
- 512k pipelined burst synchronous cache
- 8MB to 256MB EDO, SDRAM or FPM
- 2 Ultra DMA EIDE, 1 floppy
- 1 ECP/EPP parallel, 2 UART 16550 serial
- 2 USB, 1 infrared port

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## SUPER P5MMS98 RELIABILITY & VALUE FROM THIS SUPERB BOARD

- Pentium class motherboard
- Supports high-speed 75MHz bus
- PC98 solution (see box)
- Intel 430TX PCIs et
- 512k pipelined burst synchronous cache
- 8MB to 256MB EDO, SDRAM or FPM
- 2 Ultra DMA EIDE, 1 floppy
- 1 ECP/EPP parallel, 2 UART 16550 serial
- 2 USB, 1 infrared port

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- multiple onboard voltage monitors
- fan status monitors, auto on/off control
- CPU/chassis temperature control
- CPU overheat alarm and control
- chassis intrusion detection
- Intel LANdesk Management support

**ACPI/PC 98 FEATURES:**

- Remote modem ring-on
- ACPI OnNow standby mode
- Real time clock wake-up alarm
- Main switch override mechanism
- Boot support for USB keyboard

### IBM 6X86 CPUs -

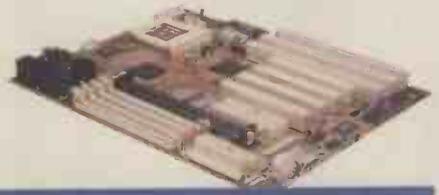
C161	P150+/120MHz	£35	£41.13
C162	P166+/110MHz	£45	£52.88
C163	P200+/150MHz	£59	£69.33
C166-I	166MMX	£75	£88.13
C200-I	200MMX	£100	£117.50
C233-I	233MMX	£169	£198.58

### VALUE BUNDLES

Super P5MMA98 & IBM166MMX	Should Be £193.00- <b>£185.00</b>	£217.38
Super P5MMS98 & IBM166MMX	Should Be £196.00- <b>£188.00</b>	£220.90
Super P5MMA98 & IBM200MMX	Should Be £218.00- <b>£210.00</b>	£246.75
Super P5MMS98 & IBM200MMX	Should Be £221.00- <b>£213.00</b>	£250.28

# SUPERMICRO®

## ELITEGROUP



### TX-B-512

- CPU** Supports Intel MMX™/Cyrix M1-M2/AMD K5/6 All processors 75 - 233Mhz
- Architecture** 4 PCI Slots and 3 ISA Slots Intel 430TX Chipset
- Cache** 512K Cache as Standard
- I/O Spec** 4 IDE Devices & 2 Floppy D/Drives Supports: PIO Mode 4 & DMA Mode 2 Ultra DMA/33 2xUSB Ports (ready)
- Memory** Uses 72-pin SIMM modules x 4 auto-banking in multiple configuration up to 256Mb. Supports both Fast Page Mode & EDO DRAM Two 168 Pin DIMM Sockets (SDRAM)
- Features** Advanced configuration power Interface (ACPI). PC97 compliant
- Size** 218mm x 281mm (BABY AT)

M850 **£85.00** £99.88

## QDI JUMPERLESS MOTHERBOARDS

### QDI TX JUMPERLESS MOTHERBOARD

- Intel 82430TX Chipset**
- CPU** Supports Intel/Cyrix/AMD K5/6 - P75 - 233Mhz
- Architecture** 4 PCI Slots and 3 ISA Slots
- Cache** 512K Cache as Standard Supports: 4 IDE Devices & 2 Floppy D/Drives PIO Mode 4 & DMA Mode 2 Ultra DMA/33
- Memory** Uses 72-pin SIMM modules x 4 auto-banking in multiple configuration up to 256Mb.
- BIOS** Supports both Fast Page Mode & EDO DRAM Two 168 Pin DIMM Sockets Supports Flash ROM, PnP, Green Feature, NCR810 SCSI Bios.
- Size** 22cm x 25cm

M202 **£75.00** £88.13

### QDI LEGEND I INTEL 440LX

- Intel 440LX Chipset**
- CPU** Supports Intel Pentium II 233 - 333Mhz
- Architecture** 4 PCI Slots and 3 ISA Slots
- VGA Bus** 1 x AGP (Accelerated Graphics Port)
- I/O Spec** Supports: 4 IDE Devices & 2 Floppy D/Drives PIO Mode 4 & DMA Mode 2 UDMA 33 2 USB Ports on board PS2 Mouse & Keyboard Connectors
- Memory** 4 x 168 pin DIMM Supports up to 512Kb SDRAM or 1Gb EDO
- Advanced** SpeedEasy for Jumperless CPU upgrade Modem Ring on
- Board Size** ATX - 30.5cm x 24.4cm

M203 **£159.00** £186.83

## MAXPOWER MAXQUALITY MINPRICE!

### TX PRO CHIPSET - 512K



M220 **£59.00** £69.33

M100-V OPTI VIPER P75-P166 **£29.00** £34.08

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Motherboards - SuperMicro



# Networking

## Networking

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A-44 Line-R LR12501	£120	£141.00
A-45 BK2500V 250VA BackUPS	£75	£88.13
A-15 BK600EC 600VA BackUPS	£137	£160.98
A-20 BackUPS Pro 280PnP - c/w PowerChute Pro	£105	£123.38
A-25 BackUPS Pro 420PnP - c/w PowerChute Pro	£159	£186.83
A-30 BackUPS Pro 650PnP - c/w PowerChute Pro	£189	£222.08
A-35 BackUPS Pro 1000PnP	£284	£339.58
A-40 BackUPS Pro 1400PnP	£374	£439.45
A-45 SmartUPS 2501	£155	£182.13
A-50 SmartUPS 4501	£215	£252.63
A-55 SmartUPS 7001 NET - c/w PowerChute Plus	£245	£287.88
A-60 SmartUPS 10001 NET - c/w PowerChute Plus	£299	£351.33
A-65 SmartUPS 14001 NET - c/w PowerChute Plus	£399	£468.83
A-70 SmartUPS 22001 NET - c/w PowerChute Plus	£825	£969.38
A-80 SmartUPS 700RMI rack mount	£345	£405.38
A-90 SmartUPS 1000RMI rack mount	£489	£574.58
A-100 SmartUPS 1400RMI Rack mount	£659	£774.33
A-110 SmartUPS 2200RMI rack mount	£979	£1156.33
A-120 SmartUPS 3000RMI rack mount	£1179	£1385.33
A-130 SmartUPS 700XL extended run	£379	£445.33
A-140 SmartUPS 1000XL extended run	£469	£551.08
A-150 SmartUPS 2200XL extended run	£899	£1056.33
A-160 SmartUPS V/5 420	£159	£186.83
A-170 SmartUPS V/5 650	£195	£229.13
A-180 SmartUPS V/5 1000	£319	£374.83
A-190 SmartUPS V/5 1400	£388	£455.90
TRUST		
N88 325UPS	£69	£81.07
N87 525UPS	£99	£116.32
NETWORKING - 3COM Network Cards		
N152 E/Link III 3C509B ISA RJ45 Bare Card	£55	£64.63
N103 E/Link III 3C509B ISA Combi Bare Card	£55	£64.63
N151 E/Link III 3C509B ISA RJ45 Card Retail	£65	£76.38
N159 E/Link III 3C509B ISA Combi Card Retail	£73	£85.77
N53-5 E/Link III 3C509B ISA BNC 5 Pack	£269	£316.08
N153 E/Link III 3C509B ISA RJ45 5 Pack	£269	£316.08
N154 E/Link III 3C509B ISA BNC 5 Pack	£309	£363.08
N104 E/Link III 3C900 PCI Combi Bare Card	£79	£92.83
N140 E/Link III 3C900 PCI RJ45 Card Retail	£69	£81.08
N141 E/Link III 3C900 PCI Combi Card Retail	£79	£82.83
N158 E/Link III 3C905 PCI 10/100 RJ45	£79	£82.83
N157 EtherLink III 3C589 PCMCIA Combi (Card Only)	£89	£104.58
N157-R EtherLink III 3C589 PCMCIA Combi (Retail Box)	£109	£128.08
N142 EtherLink III 3C589 PCMCIA RJ45	£95	£111.63
N143 Token Link 3C619C ISA 16 Bit	£165	£193.88
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N430 12 Port Hub TP 3C16670C	£345	£405.38
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N458 Hub 100 Managed 3C215A	£1155	£1357.13
N459 TR 12 Port TP 3C510510B	£865	£1016.38
N461 TR 24 Port TP 3C510511B	£1145	£1345.38
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N463 Switch Hub 12 Port TP 3C16405	£699	£821.33
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N807 Switch 3000 TX 3C16941A	£1849	£2172.58
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NR120 SuperStack II PS hub 50 12x10BaseT, 1x100BaseTX	£696	£817.80
NR130 SuperStack II cascade cable	£23	£27.03
NR140 S/Stack II hub 100 12x 100BaseTX 3C250-B TX	£719	£844.83
NR150 S/Stack II hub 100 T4 12x 100BaseTX 3C250-T4	£799	£938.83
NR160 S/Stack II hub 100 Management mod. 3C215A	£369	£433.58
NR170 SuperStack II hub 100 expansion cable 3C219	£42	£49.33
NR180 SuperStack II hub 100 12x 10BaseTX Transceiver module 3C252-TX	£719	£844.83
NR190 SuperStack II hub 100 12x 100BaseFX Fibre transceiver module 3C252-TX	£719	£844.83
NR200 SuperStack dual speed hub 10/100 12port 3C16590	£729	£856.58
NR210 SuperStack dual speed hub 10/100 24 port 3C16591	£1169	£1373.58
NR220 SuperStack II Switch 1000 12x 10BaseT, 1x 100BaseTX 3C16901A	£989	£1162.08
NR230 SuperStack II Switch 1000 24x 10BaseT, 1x 100BaseTX 3C16900A	£1379	£1620.33
NR240 SuperStack II Switch 320 12x 10BaseT, 2x 100BaseTX 3C16406A	£599	£703.83
NR250 SuperStack II Switch 3000 12x 10/100BaseTX auto sense 3C16942A	£1429	£1679.08
NR260 SuperStack II Switch 3000 5x 100Base Sx 3C16940A	£3799	£4463.83
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NR280 hub/4TPC 4x 10BaseT, 1x BNC/AUI 3C16703	£65	£76.38
NR290 hub/8TPD 8x 10BaseT 3C16700	£59	£69.33
N400 hub/8TPC 8x 10BaseT, 1x BNC 3C16701	£77	£90.48
NR310 hub/TP16 16x BNC thin ethernet 3C16702	£150	£176.25
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NR340 Remote 510 ISDN Router (data only) 3C410000	£360	£423.08
NR350 Remote 520 ISDN Router (data/voice) 3C410005	£485	£569.88

NR360 Remote 531 ISDN Router (data/voice/WAN) 3C410010	£675	£793.13
NR360 ISDN Gateway 535 L'net access Router 3C410011	£880	£1034
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CIS500 CPAT751 ISDN (BRI) 1 RJ45/BNC 4 users	£715	£840.13
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CIS520 CPAT1005 ISDN (BRI) 1 RJ45 PCMCIA Flash mem.	£1129	£1326.58
CIS530 CPAT1005DB-60 1 RJ45 PCMCIA Flash mem.	£1129	£1326.58
CIS540 CPAT2501 DB-60 1 RJ45 Aux, 1 AUI	£1549	£1820.08
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CIS560 CPAT251 DB-60 1 RJ45 Aux, 2 AUI	£1919	£2254.83
CIS570 CPAT509 DB60, 8 RJ45, 1 AUI	£1919	£2254.83
CIS580 CPAT251 DB60, 16 RJ45, 1 AUI	£2349	£2760.08
CIS590 CPAT2507 DB60, 1 RJ45 AUX, 16 RJ45	£2349	£2760.08
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N-D20 DE650CT PCMCIA Combi	£69	£81.08
N-D25 DT-220+ Token Ring Card	£229	£269.08
N-D50 DE-805TP Hubby 5 Port +4/board Port Power	£43	£50.53
N-D51 Kit inc. 1xHubby, 2xDE220PT, 2x6mtr cable	£85	£99.88
N-D54 DE-809TP 9 Port RJ45 Hub	£48	£56.40
N-D55 DE-809TC 8 Port RJ45 Hub With 1 BNC Hub	£49	£57.58
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N-D58 DE-812TP 12 Port Hub 12 RJ45 +BNC+AUI Hub	£99	£116.33
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N-D160 DES220TX 100TX module for DES220S	£239	£280.83
N-D200 DES320S 5 Port 10/100 auto Managed Hub	£1199	£1408.83
N-D205 DES320S 8 Port N/Way/FDX/HDX	£1049	£1232.58
N-D250 DFE808TX 8 Port 100TX Hub	£345	£405.38
N-D255 DFE816 16 Port 100BaseTX Hub	£499	£586.33
N-D260 DFE812TX + Stackable 12 Port 100BaseTX	£499	£586.33
N-D300 D950 Print Server for Novell/Combi 2Pwr, 1Ser	£149	£173.90
N-D305 DE960 Multi Protocol Ethernet Print Server	£239	£280.83
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N-S15 SMC EtherEZ ISA Combi	£61	£73.94
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N-S35 SMC EtherPower PCI Card RJ45 10/100	£55	£64.62
N-S40 SMC EtherPower PCI Card Combi	£79	£92.83
N-S45 SMC EtherPower PCI Card Combi 5 Pack	£219	£257.32
N-S100 SMC Tiger Hub TP6 6 Port	£105	£123.37
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N-H10 Hub 16 RJ45 Ports	£270	£317.25
N-H15 Hub 12 RJ45 + 1 BNC Ports	£334	£392.45
N-H20 Hub 24 RJ45 + 4 Telco + 1 BNC	£625	£734.38
N-H25 Hub 48 RJ45 + 4 Telco + 1 BNC	£1175	£1380.63
N-H30 Hub 12 RJ45 + SNMP Module	£570	£669.75
N-H35 Hub 24 RJ45 + SNMP Module	£860	£1010.50
N-H40 100VG 7 R45 Hub	£380	£446.50
N-H45 100VG High Speed 7 RJ45 Hub	£460	£540.50
N-H50 100VG 14 RJ45 Hub	£995	£1169.13
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N-H55 Ext.Print Server 1 Printer RJ45/BNC Parallel Port	£195	£229.13
N-H60 Ext.Print Server 3 Printer RJ45/BNC	£285	£334.88
N-H65 Jet Direct Token Ring Print Server	£299	£351.33
N-H70 Jet Direct External 100VG Print Server	£349	£410.08
N-H80 Jet Direct Internal 100BaseT Print Server	£215	£252.63
N-H85 Jet Direct Internal BNC RJ45 Print Server	£239	£280.83
N-H90 Jet Direct Internal Token Ring / RJ45	£359	£421.83
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N5 Novell NE2000 Plus 16 Bit BNC	£45	£52.88
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N-N20 Novell NE2000 Plus 16 Bit RJ45 5 Pack	£225	£264.38
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NT-15 16 Port 10BaseT Concentrator AUI + BNC	£265	£311.38
NT-20 24 Port 10BaseT Concentrator AUI + BNC	£385	£452.38
NT-50 2 Port Repeater AUI/RJ45	£185	£217.38
NT-55 2 Port Repeater BNC/BNC	£209	£245.58
NT-60 2 Port Repeater BNC/RJ45	£199	£233.83
NT-65 4 Port Repeater 4 BNC + 1 AUI	£385	£452.38
NT-70 8 Port Repeater 8 BNC + 1 AUI	£499	£586.33
NT-100S Simline Transceiver BNC	£19	£22.33
NT-105 Simline Transceiver RJ45	£19	£22.33
NT-110 Micro Transceiver BNC/AUI	£34	£39.95
NT-115 Micro Transceiver RJ45/AUI	£34	£39.95
KINGSTON TECHNOLOGY		
N202 EtherRx PnP ISA Combi Card	£22	£25.85
N205 EtherRx PCI Combi Card	£39	£45.83
N205-100 EtherRx PCI 10/100 Combi Card	£59	£69.33

N207 EtherRx PCMCIA Combi Adapters	£75	£88.13
N210 EtherRx 8 Port Workgroup Hub	£79	£92.83
N215 EtherRx 16 Port Stackable Hub	£95	£111.63
N220 EtherRx 16 Port Workgroup Hub	£139	£163.33
N212 EtherRx 8 Port 100TX Hub	£385	£452.38
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XIR110 C/card ethernet adaptor 10Base2 CE2-10B2/M	£99	£116.33
XIR120 C/card ethernet adaptor Combo CE2-10B2/M	£109	£128.08
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XIR130 C/card .net adaptor 10/100 U/G10BaseT CE3-10BT/M	£80	£94
XIR140 Credit card ethernet adaptor 10/100 upgradeable 10BaseT+10Base2 CE3-10B2/M	£107	£125.73
XIR150 Credit card ethernet adaptor 10/100 ready 100BaseTX CE3-10BTX/M	£99	£116.33
XIR160 10/100 upgrade for CE3 10Mbps models	£Call	£Call
XIR170 C/bus 32 bit eth. adaptor 10/100 100BaseTX	£99	£116.33
XIR180 Token ring Performance series Credit card T.R. Ad. lbps, UTP/STP PS-C-2-16CTP/E	£169	£198.58
GLOBAL ACCESS		
XIR190 C/card .net+336 Modem 10BaseT CEM-338T/M	£169	£198.58
XIR200 C/card .net+336 Modem 10BaseT/10Base2 CEM-338C/M	£189	£222.08
XIR210 Credit card Token ring +336 Modem UTP/STP CTM-33CTP/E	£299	£351.33
XIR220 Credit card Modem 336 only	£115	£135.13
XIR230 Credit card ethernet 10/100 + 56K modem + GSM CEM56-100BTX/M	£239	£280.83
XIR240 Credit card ethernet 10/100 + 56K modem + GSM + MiniDock CEM56-100MD/M	£239	£280.83
XIR400 MiniDock connector system for 56k	£29	£34.08
XIR270 Upgrade kit for GSM connection to 56k models. Ericsson GA318/GH338/GH388 GSMCK-56ERI-1	£79.00	£92.83
XIR280 Upgrade kit for GSM connection to 56k models. Phillips Flazr GSMCK-56PHI-1	£79	£92.83
XIR290 Upgrade kit for GSM connection to 56k models. Phillips StarK GSMCK-56PHI-2	£79	£92.83
XIR300 Upgrade kit for GSM connection to 56k models. Phillips Genie GSMCK-56PHI-3	£79	£92.83
XIR310 Upgrade kit for GSM connection to 56k models. Siemens S3/Sony CMD-1000, CMD-200 GSMCK-56SIE-1	£79	£92.83
XIR320 Upgrade kit for GSM connection to 56k models. Siemens S4/Sony CMDX-1000 GSMCK-56SIE-2	£79	£92.83
ISDN		
XIR330 Credit card ISDN adaptor (2B+ adaptors)	£40	£47
PARALLEL PORT PRODUCTS		
XIR250 Pocket ethernet adaptor 10BaseT PE3-10BT/GB/E	£169	£198.58
XIR260 Pocket ethernet adaptor 10BaseT/10Base2	£189	£222.08
MEDIA FORCE		
N08 ISA PnP Combo card	£12	£14.10
N09 ISA RJ45 only	£11	£10.15
N20 PCMCIA Combo	£14	£16.45
N90 10/100 PnP Network Card	£139	£145

N1120	E/Express PRO 100+ PCI 100BaseTX/10BaseT	£48	£56.40
N1130	E/Express PRO 100+ PCI 100BaseTX/10BaseT 5 pack	£230	£270.25
N1140	E/Express PRO 100+ PCI 100BaseTX/10BaseT 20 pack	£850	£998.75
N1150	E/Express PRO 100 PCI Server	£479	£562.83
N1160	E/Express PRO 10/100 PCMCIA 16 bit	£100	£117.50
N1170	E/Express PRO 10/100 PCMCIA Cardbus 32bit	£100	£117.50
N600	Netport Express Pro Multi Protocol Ext Print Server 3 port PCLA2153	£219	£257.33
N610	N/Express Pro Multi Protocol Int Print Server M10 PCLA3152	£153	£179.78
N620	N/Express PRO/100 Multi Protocol 3 port Ext Print Server EPCLA2453	£229	£269.08
N630	Express 100BaseT stand alone hub 8 port EE100x8	£299	£351.33
N640	E/Express 12 port 10/100BaseTX, 2 expansion slots EE110TX12W	£639	£750.83
N650	E/Express 24 port 10/100BaseTX. EE110TX24W	£999	£1173.83
N660	E/Express SNMP management module for use with 12 port hubs	£449	£527.58
N670	EtherExpress cascade cable	£49	£57.58
N800	E/Express 24 port switch with pre-installed 100meg module. ES10T24	£1129	£1326.58
N810	As N800 with layer 3 switching capability and full RMON support. ES10T24PLUS	£1549	£1820.08
N680	E/Express 10/100BaseTX switching hub, 8 ports + 4 expansion ports. ES101TXW	£1299	£1526.33
N690	E/Express 8 port Fibre fast ethernet switch with layer 3 capability. ES100FX	£4899	£5756.33
N1700	10/100BaseTX expansion module ES101MATX	£599	£703.83
N1710	100BaseFX expansion module. ES101MAFX	£1199	£1408.83
N1720	Cascade cable. ES100CC	£39	£45.83
N820	Express 9100 Router, X.25 and Frame Relay Support - Encrypted. ER9100C	£549	£645.08
N830	Express 9100 Router, as above with no encryption - ER9100C	£549	£645.08
N840	Express 9201 Router, ISDN Support + modem slot for analogue - Encrypted. ER9201W	£549	£645.08
N850	Express 9201 Router, as above but with no encryption. ER9201WC	£549	£645.08
N860	Express 9300 Router, RJ45 and AUI only - ISDN/Encrypted. ER9300W	£549	£645.08
N870	Express 9100 Router, as above with no encryption. ER9300WC	£549	£645.08

ENW-8300-2T	£23	£27.03
NM140 Boot Rom for 8300 series	£5	£5.88
NM160 High Performance 2-in-1 Ethernet Pocket Lan card BNC/10BaseT/ENW-EPP-CT	£75	£88.13
NM170 2-in-1 E.net PCMCIA card BNC/10BaseT ENW-3500-2T	£65	£76.38
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NM180 5 port palm 4x10BaseT/1xBNC, metal EH-500	£39	£45.83
NM190 5 port palm 5x10BaseT, plastic EH-501	£39	£45.83
NM200 8 port multi hub 8x10BaseT/1xBNC EH-800	£49	£57.58
NM210 8 port un-managed hub 8x10BaseT/1xBNC/1xAUI+802	£69	£81.08
NM220 16 port mini hub 16x10BaseT/1xBNC/1xAUI EH-1600	£99	£116.33
Rack Mountable un-managed 10BaseT Hubs		
NM230 16 port 16x10BaseT/10BaseT uplink x 1/2xBNC/2xAUI EH1602R	£129	£151.58
NM240 24 port 24x10BaseT/10BaseT uplink/2xBNC/2xAUI EH-2400	£199	£233.83
NM250 32 port 32x10BaseT/10BaseT uplink/2xBNC/2xAUI EH-3200	£249	£292.58
Ethernet transceivers		
NM260 AUI to BNC ET506	£18	£21.15
NM270 AUI to 10BaseT ET-507	£18	£21.15
NM280 AUI to ST (fibre) ET-108A	£94	£110.45
NM290 10BaseT to BNC ET-509	£79	£92.83
Coax Repeater		
NM300 2 port 2xAUI/BNC ER-200	£99	£116.33
NM310 4 port BNC ET506 4x AUI/BNC ER-400R	£199	£233.83
100BaseTX Fast Ethernet Stackable Standard Hubs		
NM320 5 port palm top stackable FN-500	£239	£280.83
NM330 8 port palm top stackable FN-800	£319	£374.83
NM340 4 port stackable with bridging port FNB-400	£259	£304.33
NM350 8 port stackable with bridging port FNB-800	£469	£551.08
NM360 12 port stackable with bridging port FNB-1200	£599	£703.83
NM370 Fibre-Optic module for FNB series (SC type)	£235	£276.13
NM380 Fibre-optic module for FNB series (ST type)	£235	£276.13
NM390 8 port stackable 10/100 100BaseTX FH-801	£439	£515.83
NM400 16 port stackable 10/100 100BaseTX FH-1601	£719	£844.83
NM410 100BaseFX Fibre-Optic module (ST type)	£259	£304.33
NM420 10BaseT bridging module FH-10T	£179	£210.33
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NM430 8 port 10/100BaseTX FNSW-8080	£1199	£1408.83
NM440 2 port 10/100BaseTX, 8 port 10BaseT FNSW-1020	£949	£1115.08
NM450 2 port 10/100BaseTX, 16 port 10BaseT FNSW-1820	£1099	£1291.33
NM460 1 port 100BaseTX, 1 port 100BaseFX, 8 port 10BaseT FNSW-1021F	£1129	£1326.58
NM470 1 port 100BaseTX, 1 port 100BaseFX, 16 port 10BaseT FNSW-1821F	£1329	£1561.58
10/100 Desktop Express Switching Hubs		
NM480 4 port 10/100BaseTX FHSW-4040A	£599	£703.83
NM490 8 10/100BaseTX FHSW-8080A	£1049	£1232.58

NM500 2 port 100BaseTX, 8 port 10BaseT FHSW-1020N	£679	£797.83
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NM510 2 port 10/100BaseFX FS-2020A	£549	£645.08
NM520 1 port 10/100BaseTX, 1 port 100BaseFX FS-2020AF	Ecall	Ecall
Intelligent 10/100 Network solution		
NM530 32 port e.net 10BaseT SNMP master hub EH-3200M	£829	£974.08
NM540 16 port e.net 10BaseT SNMP master hub EH-1600M	£499	£586.33
NM460 32 port e.net 10BaseT SNMP slave hub EH-3200S	£609	£715.58
NM470 16 port e.net 10BaseT SNMP slave hub EH-1600S	£359	£421.83
NM480 8 port ethernet 10BaseT SNMP slave hub EH-800S	£189	£222.08
NM490 PlanetView Win. based SNMP management S/W	£299	£351.33
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NM500 12 port 100BaseTX FHSW-1212	£2299	£2701.33
NM510 2 port 100BaseTX, 10 port 10BaseT FHSW-1202 E1219	£1432.33	
NM520 2 port 100BaseTX, 24 port 10BaseT in 4 switching cluster FHSW-2602	£999	£1173.83
NM530 1 port 100BaseTX, 24 port 10BaseT with 1 switching module slot FHSW-2602A	£1349	£1585.08
Ethernet Print servers and Internet Router		
NM540 1 port direct attached Print Server (IPX/SPX, NDS, SMB) PS-3N-D	£149	£175.08
NM550 1 port direct attached Print Server (IPX/SPX, TCP/IP, Apple, SMB) PS-5P-D	£185	£217.38
NM560 2 parallel/1 serial Print Server (IPX/SPX, NDS, SMB) PS-3N-M	£229	£269.08
NM565 3 parallel Fast Ethernet Print Server (IPX/SPX, NDS, TCP/IP, Apple, SMB) FPS-5P-M	£279	£327.83
NM570 Single port ethernet router with 1xBNC/10BaseT, 1 port DB-9 RT-101	£239	£280.83
NM575 4 Port Internet sharing hub IH-400	£199	£233.83
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NM580 5 user Novell "Intranetware for Small Businesses (Netware 4.11) with EHS01 hub and 5 x ENW-2400P-T ISA (10BaseT) network cards INW-055P-1	£449	£527.58
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PR273 BROTHER HL-1060 10PPM LASER £399.00 £468.83	PR-15 OPTRA S 1250 £179.00 £484.83	HP GENUINE CONSUMABLES
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CT-E1 FABRIC LX30005015073 £18.00 £15.28	HEWLETT PACKARD	CT12 BJC70 BLACK £4.00 £4.70
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INKJET CARTRIDGES	PR22 DJ 340 COLOUR PORTABLE £166.00 £169.20	CT-OL5 OLIVETTI BLACK JP170/450 (PACK OF TWO) £15.00 £17.63
CT-E6 BLACK 300 5020031 £13.00 £15.28	PR66 DJ 340CBI (INFRARED) COLOUR PORTABLE £166.00 £169.20	CT-OL10 OLIVETTI COLOUR PRINTHEAD £31.00 £34.43
CT-E15 BLACK 400/500/600/PHOTO 5020093 £14.00 £16.45	PR67 DJ 670C £121.00 £142.18	CT-OL6 OLIVETTI BLACK PRINTHEAD £39.00 £45.83
CT-E25 BLACK 800/15205020108 £16.00 £18.80	PR22 DJ 690C PLUS £150.00 £176.25	CT-OLKIT OLIVETTI COLOUR KIT JP170 £35.00 £41.13
CT-E19 BLACK PRO/XL+5020034 £10.00 £11.75	PR47 DJ 820CXI £153.00 £179.78	LEXMARK GENUINE CARTRIDGES
CT-E21 BLACK 30005020118 £14.00 £16.45	PR59 DJ890C £202.00 £237.35	CT40 LEXMARK 1020/2050 COLOUR £26.00 £30.55
CT-E40 COLOUR 820/11/HS020049 £19.00 £22.33	PR29 DJ 1100C £215.00 £299.63	CT41 LEXMARK 1020/2050 BLACK £22.00 £25.85
CT-E10 COLOUR 200/5005020097 £20.00 £23.50	PR46-M DJ 1600CN INCLUDING JETDIRECT £1110.00 £1304.25	CT44 LEXMARK 2070 BLACK £24.00 £28.20
CT-E15 COLOUR 400/500/600S020093 £14.00 £16.45	PR46-M 450 SHEETFEEDER £1280.00 £1504.00	CT45 LEXMARK 2070 COLOUR £26.00 £30.55
CT-E20 COLOUR 400/600/800/15205020089 £17.00 £19.98	L662 PHOTOSMART PRINTER £323.00 £379.53	BROTHER GENUINE CARTRIDGES
CT-E22 COLOUR PRO/PRO XLS020236 £22.00 £25.85	LASERJETS	CT-85 BROTHER TN100 FOR 600 RANGE £190.00 £22.33
CT-E23 COLOUR PRO XL+ 5020066 £14.00 £16.45	PR51 LJ 6L £232.00 £272.60	CT-810 BROTHER TN200 FOR 700 RANGE £190.00 £22.33
CT-E24 COLOUR PHOTOS020110 £14.00 £16.45	PRC51 LJ 6L COMPANION £121.00 £142.18	CT-B15 BROTHER TONER12 FOR 1260E & 1660 £89.00 £104.58
CT-E26 CYAN 30005020130 £14.00 £16.45	PR404 LJ 6MP £480.00 £564.00	OKI PRINTER CARTRIDGES
CT-E27 MAGENTA 30005020126 £14.00 £16.45	PR411 LJ 4000 £592.00 £695.60	CT-O5 OKI 4W TONER £18.00 £21.15
CT-E28 YELLOW 30005020122 £14.00 £16.45	PR412 LJ 4000T £749.00 £880.08	CT-O15 OKI 600E/610/810 TONER £17.00 £19.98
LASER TONERS	PR414 LJ 4000N £855.00 £1004.63	CT-O15 OKI 1200/16N TONER £39.00 £45.83
CT-E6 DEVELOPER UNIT EPL-5500S050005 £45.00 £52.88	PR413 LJ 4000TN £1061.00 £1246.68	
CT-E7 PHOTOCONDUCTOR UNIT EPL-5500 S051029 £45.00 £52.88	PR34 LJ 5 £674.00 £791.95	
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CT-E31 IMAGING CARTEPL-N2000S051035 £140.00 £164.50	PR406 LJ 4MV £1724.00 £2025.70	
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	PR42 COLOUR LJ 5 £851.00 £12174.93	
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## OKI

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 ■ HP PCL4.5

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 ■ Fast 8PPM

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 ■ 4PPM

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 ■ Up to 3ppm  
 ■ 600 x 300 dpi (B/W)  
 ■ 300 x 300 dpi (col)  
 ■ PCL3+ emulation

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 ■ Up to 3ppm  
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PR-OL10 JP170C  
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- Epson AutoColour function
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- Windows '95 ICM Colour matching
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- Laser Sharp Mono printing
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### EPSON PHOTOPC 600



DC41PhotoPC 600  
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- Wide format up to A2 in size



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PR-K30 FS-600  
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This easy to install and set-up 12ppm Network printer offers a low cost of ownership at just 0.4p per page, plus a clear upgrade path and an ability to overlay fonts, forms & logos.

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£170.38



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**HP DESKJET 340C**



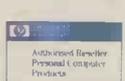
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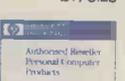
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PR-MDC61 DIMAGE V  
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**PAGEPRO 6L**

**WINDOWS PRINTER**

**PAGEPRO 6EX**

**TWIN P/PORT & INFRARED**

**PAGEPRO 12**

**1250 SHEET INPUT**

**PAGEPRO 20**

**OVERSIZED A3**



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PR-M3PAGEPRO 6EX  
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PR-M5 PAGEPRO 20  
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**BJC-250**

PR-72 BJC-250  
**£105.00**  
£123.38



**BJC-4300**

- A4/Letter colour
- Photo-kit option
- 4.5 ppm mono/1 ppm colour
- 720x360 dpi
- 3 year warranty
- Automatic power off
- Win/DOS compatible

PR-71 BJC-4300  
**£151.00** £177.43



**BJC-80**

- Smoothing function gives 720x360 dpi
- A4 colour portable
- 360x360 dpi
- 3.3 ppm mono
- 1.5ppm colour
- LCD control panel
- 30 capacity sheet feeder

PR-61 BJC-80  
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**Canon**

**BJC-620**

- Photographic quality - photo-real output
- 2.14 ppm mono / 1.71 ppm colour
- 100 sheet A4 feeder
- 720x720 dpi
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- 1 year warranty

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Scanners

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SC215	VUEGOSCAN 310P 4800 DPI FLATBED	£89.00	£104.58
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AGFA			
SC-A5	SNAPSCAN 310	£145.00	£170.38
SC-A35	SNAPSCAN 600	£275.00	£323.13
SC-A40	SNAPSCAN 600 ARTLINE	£399.00	£468.83
SC-A20	STUDIOSTAR	£525.00	£616.88
SC-A25	ARCUS II & TRANSPARENCY UNIT	£1310.00	£1539.25
SC-A30	DUOSCAN	£2695.00	£3166.63
BTC			
SC-B5	6630 SHEETFED SCANNER	£85.00	£99.88
CANON			
SC-C5	CANOSCAN 300	£129.00	£151.58
SC-C10	CANOSCAN 300 INC SCSI ADAPTOR	£259.00	£304.33
SC-C15	CANOSCAN 600	£454.00	£533.45
SC-A20	CANOSCAN 600 INC SCSI ADAPTOR	£519.00	£609.83
SC-C30	FILM ADAPTOR FOR CANOSCAN 600	£355.00	£417.13
EMERALD			
SC-E200	EMERALD 4800DPI FLATBED	£119.00	£139.83
EPSON			
SC140	GTX-5000 PARALLEL	£184.00	£216.20
SC145	GTX-5000 SCSI	£246.00	£289.05
SC101	GT-8500 PARALLEL	£300.00	£352.50
SC102	GT-8500 SCSI	£300.00	£352.50
SC100	GTX-8500 PARALLEL	£389.00	£433.58
SC105	GTX-8500 SCSI	£392.00	£460.60
SC120	GTI-8500 SCSI	£469.00	£551.08
SC121	GT-9500 PARALLEL	£383.00	£450.03
SC122	GTI-9500 SCSI	£383.00	£450.03
SC131	GTX-9500 PARALLEL	£446.00	£524.05
SC132	GTX-9500 SCSI	£469.00	£551.08
SC133	GTI-9500 SCSI	£538.00	£632.15
SC95	TRANSPARENCY ADAPTOR FOR 5000 RANGE	£365.00	£428.88

SC97	TRANSPARENCY ADAPTOR FOR 9500 RANGE	£365.00	£428.88
SC98	TRANSPARENCY ADAPTOR FOR 8500 RANGE	£365.00	£428.88
GENIUS			
SC-G5	SCANMATE COLOUR DELUX	£55.00	£64.63
SC-G10	SCANMATE COLOUR PORTABLE	£49.00	£57.58
SC-G35	COLOURPAGE LIVE	£95.00	£111.63
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SC151	55 SHEETFED COLOUR-GREYSCALE SCANNER	£129.00	£151.58
SC156	SP COLOUR SCANNER	£149.00	£175.08
SC157	PHOTOSMART SCANNER	£323.00	£379.53
SC165	SUPPORT PACK FOR 4C/4SI	£129.00	£151.58
SC170	SUPPORT PACK FOR 4S/4P	£66.00	£77.55
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SC-L16	PAGESCAN COLOUR PRO	£129.00	£151.58
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SC65	HAND HELD COLOUR SCANNER	£45.00	£52.88
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SC-M5	SCANMAKER E3(OMNIPAGE&S/WIZARD)	£145.00	£170.38
SC-M10	SCANMAKER E3(PHOTOSHOP LE)	£185.00	£217.38
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SC-M20	SCANMAKER E6(OMNIPAGE&S/WIZARD)	£323.00	£379.53
OLYMPUS			
SC-E510	FILM SCANNER	£349.00	£410.08
PLUSTEK			
SC-P5	OPTICPRO A31 30-BIT COLOUR	£335.00	£393.63
SC-P10	FBIII 30-BIT COLOUR	£82.00	£96.35
SC-P15	FBIV 30-BIT COLOUR SCANNER	£119.00	£139.83
TRUST			
SC53	7200 SCSI CONNECT	£115.00	£135.13
SC61	4800 FLATBED	£215.00	£252.63

SC70	4800 SHEET FED SCANNER PARALLEL PORT	£125.00	£146.88
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SC105-U	ASTRA 610P	£84.00	£98.70
SC100-U	ASTRA 600S	£129.00	£151.58
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SCW-U	ASTRA 610/600 2 YEARS RTB WARRANTY	£29.00	£34.08
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- Warranty: 1 year all parts and labour

SC-P5 **£335.00** £393.63

### FBIII 30-BIT COLOR



#### FEATURES

- Res: 400 x 800 dpi (max: 6,400x6,400 dpi)
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- G-scale: 10 b/pixel Lineart (B/W): 1 b/pixel
- Scanning Area: 11.69" x 17"
- Interface: EPP
- 1 year limited warranty

SC-P10 **£82.00** £96.35

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- 300x600 dpi optical resolution
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- 1024 greyscale levels
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- 600x1200 dpi optical res.
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- 30-bit single pass colour CCD
- 1024 greyscale levels
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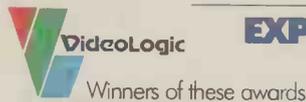
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V-D35	VIPER 330 RIVA 128 4Mb PCI	£155.00	£182.13
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V213	DYNAMITE 3D GL 4Mb PCI BUS	£129.00	£151.58
V214	DYNAMITE 3D GL 4Mb AGP BUS	£139.00	£163.33
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V300	53 VIRGE 3D EDO DRAM 2MB	£35.00	£41.13
V303	53 VIRGE 3D EDO DRAM 4MB	£45.00	£52.88
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V302	VOODOO FX	£99.00	£116.33
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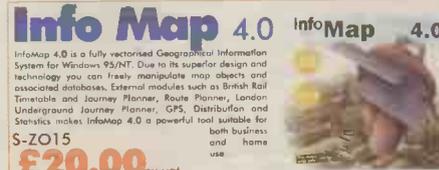


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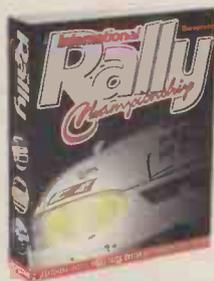
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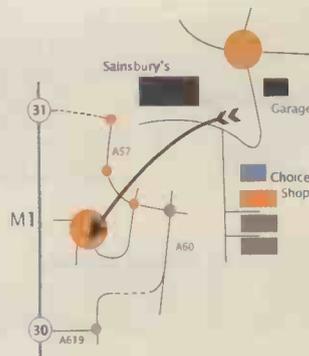
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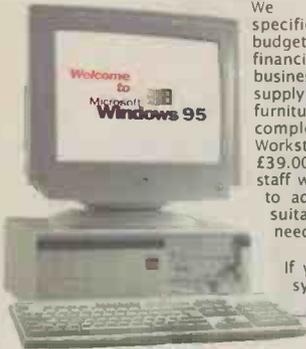
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- Choice of Desktop or Minitower case
- 12 Months ExpressCare Warranty

Below are full system prices with CPU options

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MODEMS - with 1Mth FREE Internet Access with Force9		
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MOUSE		
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MOUSE		
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- ADI 14" MicroScan E30 Colour Monitor
- 4Mb 53 Virge - EDO RAM Video Card

- Floppy Disk Drive 1.44Mb 3.5"
- Windows 95 Pre-loaded with discs
- 105 Key Windows Keyboard & Mouse
- Choice of Desktop or Minitower case
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Intel		
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Left are full system prices with CPU options



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<b>Corporate Sales</b>	9am - 7pm / Sat 9am - 6pm	<b>Tel: 01582 745566</b>	<b>Fax: 01582 745523</b>

**e-mail - sales@watford.co.uk**

### Where to find us:

**Luton HQ & Retail Store** (see map)  
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### Watford Retail Store

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(A411 - Near Watford Springs)

(Free private customer parking and wheelchair access available at both sites.)

**FREE Mystery CD**  
with every order



## ORDERING FROM WATFORD ELECTRONICS

**By Phone:** Call us on 01582 745555. Lines are open from 8.30am - 7pm Mon-Fri and 9am - 6pm on Saturday. Payment can be made using Visa, MasterCard, Switch or Delta cards. Note: Your Credit/Debit card will not be charged until goods are despatched. All salesline calls are recorded in order to monitor and improve service levels.

**By Fax:** Fax us on 01582 488588, 24 hours a day. When placing a Credit Card order, please ensure you give the name on the card, credit card number, expiry date and billing address. Delivery will be made to the billing address unless stated otherwise.

**By Post:** Send your order and cheque (cost of goods + delivery +17.5% VAT) to the Luton office (address at foot of page 3). Please call Sales to confirm the delivery price and allow five working days for cheque clearance.

**Official Orders:** Orders received from the Public Sector, Educational Establishments and approved companies are welcomed. To open an account please call Corporate Sales on 01582 745566. Official Purchase orders can be faxed on 01582 745523

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All goods supplied, except software, mice, joysticks and clearance offer items, carry a minimum of 12 months return to base warranty (unless stated otherwise). For certain products a warranty may entail dealing direct with the manufacturer. Watford Electronics reserves the right to repair or replace an item which becomes faulty after 14 days of the invoice date. If, within 14 days of the invoice date, but before using the product, or opening the software package, you realise that the product is unsuitable, please call Customer Services on 01582

745545 to obtain a Returns Authorisation Number and we will be happy to refund the cost of the item. Please note that in these circumstances there will be a handling fee of £10 or 15% of the cost (whichever is the higher). Where items are returned to us for repair under warranty, we do not provide goods on loan under any circumstances. Under no circumstances will Watford Electronics accept the return of opened, non-faulty software. All manufacturers 'money-back' guarantees are dealt with by the relevant manufacturers and you should contact them to arrange the return and refund.

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All items, offers, specifications and prices are correct and believed, in good faith, to be available at the time of going to press, but this may change due to circumstances beyond our control. Any free gift offered must be requested at the time of placing your order. Goods are not sold on a trial basis. Please check the suitability of the products with your system and/or the manufacturer before ordering. Photographs of products featured in the catalogue may be for illustration and identification purposes only. Goods are sold subject to our full terms and conditions of sale which are available on request from our Customer Services on 01582 745545.

**0% FINANCE NOW AVAILABLE**  
0% Finance offer. Finance available subject to status. Written details available upon request. All trademarks are acknowledged. E&OE.

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We will match the advertised price of our competitors (including delivery) subject to not selling below our cost price. We reserve the right not to beat prices of liquidated, end of line or OEM items and will not match prices that have been printed incorrectly. The price guarantee is only available at the time of ordering and is available for Mail Order purchases only.

**FREE CD & SPECIAL OFFER SOFTWARE**  
CD software is subject to availability, and may be in promotional packaging (packaging may refer to boxes, manuals, etc.). Software pack shots are for illustration purposes only. Don't forget to ask for your free CD software when ordering. If no software is specified, none will be sent.

**ALL PRICES QUOTED IN THIS ADVERT ARE EFFECTIVE FROM 1.1.98.** Some specifications may change after 31.1.98.

Some prices may change due to circumstances beyond our control. Whilst we endeavour to provide pricing which is correct at the time of going to press, please confirm prices at the time of ordering.

These statements do not affect and are in addition to the customers statutory rights. Except where stated otherwise, all prices exclude VAT and Carriage. E&OE.

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## Connect **2** Internet Internet access from **£5.99**



"We guarantee one of the best connections in the UK!"

"We will refund your outstanding balance, subject to period elapsed, if you are not 100% satisfied"

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£7.04 inc VAT

## Aries 21" Monitor

- ▲ 21" CRT
- ▲ 0.26mm dot pitch (anti-static, anti-glare)
- ▲ 50-120KHz Horizontal freq.
- ▲ 50-120Hz Vertical freq.
- ▲ 1200 x 1024 max resolution
- ▲ Vertical/Horizontal, position, size, brightness, contrast, tilt, Plug & Play
- ▲ 7 User Programmable Modes



**3 YEAR UNIQUE WARRANTY**

**£699**  
£821.33 inc VAT

## EDO Memory



**8MB EDO RAM**

FROM **£12**  
£14.10 inc VAT

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**32MB EDO RAM**

FROM **£59**  
£69.33 inc VAT

**16MB EDO RAM**

FROM **£27**  
£31.73 inc VAT

## Aries Scanners

### Aries Optic Pro® 9630P

9600dpi & a billion colours in one clean sweep!



**£79**

£92.83 inc VAT



**£99**

£116.33 inc VAT

### Aries Optic Pro® 4830P

A billion colours in one clean sweep!

## Aries K56 Fax/Modem



**SUPER VOICE "PC Magazine Best Buy"**



INTERNAL **£57**  
£66.98 inc VAT

EXTERNAL **£67**  
£78.72 inc VAT

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## Aries TV/Teletext Card

The best card currently available

Lets You Watch TV While You Are Working On Your PC



**£59**

£69.33 inc VAT

## Epson Stylus Colour 800 Printer

**EPSON** £65

**£221**

£259.68 inc VAT

- ▲ Photo-Real colour as standard
- ▲ High capacity dual ink cartridge system
- ▲ Optimised printing of video/digital camera images
- ▲ Optional Postscript & network capability
- ▲ 1 year RTB warranty with optional 3 year on-site warranty



## Omega 100Mb Internal ZIP Drive

Picture for illustrative purposes only

**£72**

£84.60 inc VAT

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## Traxdata

CD-R Media

**£1.49**  
£1.75 Inc VAT



CD-RW Media

**£15**  
£17.62 Inc VAT

CD-R  
10  
Pack

**£14**  
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**£74**  
£86.95 Inc VAT

CD-R  
50  
Pack

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OFFERS

## Elite Motherboard

P5TX-B (Baby-AT)

- ▲ Intel 430TX Chipset
- ▲ CPU Support for Intel, AMD and Cyrix (MMX), P75 - P233 Speeds
- ▲ 512KB level 2 Cache
- ▲ 4 x SIMM and 2 x DIMM socket for SD-RAM, 256MB total
- ▲ Support for UltraDMA/33 Hard Drives (33MB per sec)
- ▲ 2 x fast serial and 1 x fast parallel
- ▲ AT keyboard & PS/2 Mouse Connecto
- ▲ 2 x USB Ports
- ▲ Baby-AT Format (218mm x 281mm)



**£79**  
£92.83 Inc VAT

## Canon BJ250 Printer



**£104**  
£122.20 Inc VAT

FREE  
Thomas Cook  
voucher worth  
£140

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## Comptons

All 5 for only **£19.95\***



**£19.95**  
£23.44 Inc VAT

- ▲ Encyclopedia '98
- ▲ World Atlas
- ▲ The Complete Cookbook
- ▲ The Complete Reference Collection
- ▲ Genius of Edison

\*When purchased with any other product

## Diamond Stealth Powerful High-Speed Graphics & 3D Multimedia Accelerator



2Mb Card  
**£36**  
£42.30 Inc VAT

4Mb Card  
**£52**  
£61.10 Inc VAT

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OFFERS

## Lexmark ColourJet 7000 Printer

Includes LivePix CD-ROM photo software and Lexmark Photo Collection CD



**£255**  
£299.63 Inc VAT

## Symantec Norton Security Solution

Solve your computers' virus, security & utility headaches in one purchase

**£79**

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18840



## Corel Gallery Magic 65,000

**£10\***

£11.75 Inc VAT  
19023



\* When purchased with  
Corel Draw V8.0 (18887)



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# Ericsson ph 628

Combines classic elegance with all the features you need.

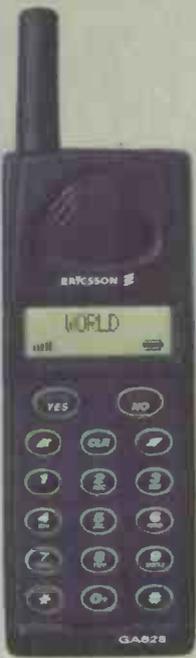
- ▲ Slim and light, weighs only 170 grammes
- ▲ Up to 120 minutes talktime or up to 24 hours standby
- ▲ Extra 99 memory locations in phones
- ▲ Built-in calculator
- ▲ Easy to read display with dark graphics
- ▲ Data capability at up to 9600bps

Plus optional hands free car kit accessory available, recommended by One 2 One

- ▲ Free Phone with Free connection
- ▲ Free Sony Walkman
- ▲ Up to 6 months free line rental on second year on

On both Vodafone and Cellnet connections, any phone applicable (offer until 31st Dec 97)

**ALL THIS FREE**  
When you connect to Vodafone or Cellnet



Ericsson 628



Sony CMDX 1000e

**Data compatible Any Tariff**

Product Information	
Talktime:	up to 120 mins
Standby time:	up to 24 hours
Phone Colour:	dark grey

# Nokia 502

Phone	Price Inc. VAT	Tariff	Offer
Nokia 502	£79	talk 15	plus £25 M&S Voucher plus £50 Free accessories
Nokia 502	£79	talk 60	£70 credit note plus £25 M&S Voucher or £150 Free accessories
Communicator	£229		£30 credit note Plus £25 M&S Voucher

The Nokia 502 is a great phone from one of the leading manufacturers. Rugged and easy to use, the 502 gives outstanding performance with the standard battery. So whether you go away on business or for the weekend, it's sure to keep going as long as you do.

Features include:

- ▲ Up to three and a half hours talktime or up to 100 hours standby with the standard battery
- ▲ One-touch access to voicemail
- ▲ One-touch dialling for first nine numbers stored
- ▲ Easy call divert feature
- ▲ Easy to use menu and display
- ▲ Keypad lock to prevent accidental dialling

Plus optional hands free car kit accessory available, recommended by One 2 One

**FREE Accessories Including In Car Charger & Leather Case**

Product Information	
Talktime:	up to 210 mins*
Standby time:	up to 100 hours*
Recharge time:	55 mins
Phone colour:	grey

\*Manufacturers quoted times

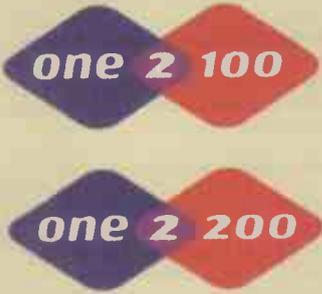


## one 2 one



Phone	Price Inc. VAT	Tariff	Offer
M760	£9	One 2 Weekend	£20 credit note
Ericsson	£49	One 2 30	£49 credit note

Connection to:



Gives you the following free of charge:  
Free connection worth £35  
Free copy ASAP Wordpower worth £49

**All connections to One 2 One before 31st December 1997 entitles you to a FREE Weekend stay at a UK Hotel - see offer terms.**

NB.- standard Air Time tariffs apply.

## Special Offers

**Nokia 8110i  
£69 inc vat  
connected to medium or regular user**

**Ericsson 688  
£69 inc vat  
connected to medium or regular user**

**Ericsson 788  
£149 inc vat  
connected to medium or regular user**

**Startac 85  
£229 inc vat  
connected to medium or regular user**



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FOR ORDERING INFORMATION SEE PAGE 2

Prices exclude carriage & VAT @ 17.5% except where shown.



# Connect 2 Internet



How easy is an Internet connection with Connect 2 Internet?

**VERY EASY!**



UNBELIEVABLE  
VALUE

And at just **£5.99** per month from  
Watford Electronics it is great value too!

## Benefits of Connect 2 Internet Access

- ▲ **100% Local Call Rate**  
With 100% local rate calls no matter where you are in the UK, the Internet is available to you for just the cost of a local call. If you're a BT customer, add our number to your Friends & Family list for even greater savings!
- ▲ **Unlimited Access - NO hourly charges**
- ▲ **56k Ready**  
The growth of technology continues unabated, and the speed of your modem continues to get faster. Connect 2 Internet are committed to providing the latest technology to ensure that your connection is fast and reliable. Already we are supporting the emerging K56flex standard. With a new 56k modem the speed of your connection will be noticeably faster! Buy your 56k modem from Watford Electronics and you are guaranteed compatibility.
- ▲ **5Mb Free Web Space**  
Create your own Web Site with a massive 5Mb of Web space free, and you will have room to develop a site to tell the world about yourself.
- ▲ **Easy Installation**  
All you need to get fast Internet access quickly and easily, is supplied on the simple to use installation CD. Simply pop the CD into your drive, follow the simple setup instructions.
- ▲ **No Set-Up Charges**  
Your Connect 2 Internet subscription is all you have to pay to get on-line immediately (and the cost of your local telephone call). Unlike other companies, there are no setup charges, installation charges, connection charges or other hidden fees.
- ▲ **Outstanding Customer Care**  
Connect 2 Internet are committed to providing you with the easiest (yet technically excellent) and quickest connection to the Internet, we are also committed to providing outstanding customer care and service.
- ▲ **Fast Browsing**  
Our networks are being constantly monitored to ensure that your connection is not only reliable but fast.
- ▲ **Introduce a friend for even more benefits**  
There's nothing better than our own subscribers recommending Connect 2 Internet to their family and friends. So if you introduce us to someone you know we will give you a whole months subscription free of charge. For instance if you introduce just 3 friends you will receive a whole Quarters subscription worth £31.69 free of charge. This is a limited offer please contact [penny@connect-2.net](mailto:penny@connect-2.net) for more information.

Confused by what the other ISP's are offering you?

Compare the great value of Connect 2 Internet with the competition

Company	Local rate call up to 56kpbs	ISDN or modem at the same price	No setup charge	Annual cost based on hours on-line per month		
				6 hours	12 hours	24 hours
AOL	No	No	Yes	£144.00	£179.40	£179.40
BT Internet	No	Yes	Yes	£107.21	£107.21	£107.21
CompuServe	No	Yes	Yes	£99.60	£229.20	£237.60
Easynet	Yes	No	No	£139.40	£139.40	£139.40
Pipex Dial	Yes	Yes	No	£147.10	£147.10	£147.10
Virgin	Yes	Yes	Yes	£118.70	£118.70	£118.70
Connect 2 Internet	Yes	Yes	Yes	£5.99	£83.88	£83.88

All prices correct as of 18th November 1997. Prices exclude VAT.

Choose from four great value subscription deals, to suit your needs

Subscription Duration	Monthly	Monthly inc VAT	Total	Total inc VAT
Two Year Subscription for Dial-Up Accounts	£9.99	£7.04	£199.80	£168.92
Annual Subscription for Dial-Up Accounts	£6.99	£8.21	£83.88	£88.56
Quarterly Subscription for Dial-Up Accounts	£8.99	£10.56	£26.97	£31.69
Monthly Subscription for Dial-Up Accounts	£9.99	£11.74	£9.99	£11.74

Just like the rest of Connect 2 Internet our pricing has been set so as to be simple and easy. Basically the longer you subscribe to Connect 2 Internet the cheaper it gets.

▲ **Introducing Microsoft FrontPage hosting**

The FrontPage Hosting Service quite simply allows a business or individual to develop and host a web, quickly, cheaply and efficiently. For a typical business it's all that you will require to get a presence on the Internet and allow your customers to find you!

Visit [www.connect-2.net/frontpage](http://www.connect-2.net/frontpage) for more information.

- ▲ £249 +VAT No extra or hidden charges
- ▲ 10 MB of server disk space
- ▲ Unlimited email address forwarding
- ▲ Microsoft FrontPage Server Extensions
- ▲ Microsoft Active Server Page Scripting
- ▲ Detailed monthly web usage statistics
- ▲ Free transfer of any existing Domain Name
- ▲ Microsoft Index Server for quick searches of all your web documents
- ▲ 24 hour unlimited access through FrontPage, Visual InterDev or FTP
- ▲ Custom CGI and PERL 5 script support via your own cgi-bin directory.



Call Watford Electronics today to subscribe to **Connect 2 Internet**  
your easiest route to the Information Super Highway!



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[www.watford.co.uk](http://www.watford.co.uk)

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# NEW YEAR SPECIAL BUY NOW PAY NOTHING UNTIL JULY 1998

APR **0%**\*  
Interest Free Credit - No Deposit  
See Payment Option 2

## Aries POWER MEDIA '97 PC

Free Colour Printer & Modem

Ideal PC System for Education, Family and Small Business

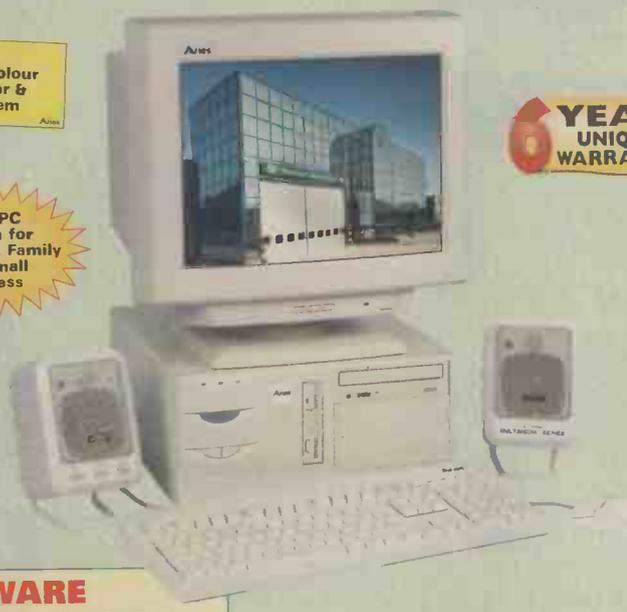
6 YEAR UNIQUE WARRANTY



FREE with Aries Power Media '97 PC system

Colour Inkjet Printer

While stocks last



**NO DEPOSIT 3 Methods of Payment**  
Example - Cyrix PR200+ System

- 1) Pay with order**  
Pay the whole amount by credit card/cheque. Total Price £859 + £20 carriage & VAT = £1032.83.
- 2) 0% - 6 Months Interest Free Credit\***  
No payments for 6 months, and then pay the difference of £1032.83. Total Price = £1032.83 inc VAT. Interest Free Credit. APR 0%.
- 3) 3 Years Credit\* - APR 17.9%**  
Pay £36.61 per month for 3 years (36 months). Total Price = £1317.76 inc VAT. APR 17.9%.

### ARIES POWER MEDIA '97 PC

- ▲ Intel or Cyrix Processor
- ▲ 32Mb RAM
- ▲ 64 bit SIS advanced graphics using 2Mb system RAM with Microsoft 3D support
- ▲ Bios is year 2000 compliant
- ▲ 3.2Gb 11ms Hard Disk Drive
- ▲ 14" SuperVGA Low Radiation 1024 x 768 0.28mm Digital Colour Monitor
- ▲ 24X MAX Speed CD ROM Drive
- ▲ PC Joystick
- ▲ 16 bit 3D SoundBlaster Compatible sound card
- ▲ HiFi Mains Powered Speakers (not shown)
- ▲ Desktop Case + PSU (CE approved)
- ▲ 1.44Mb 3.5" Drive
- ▲ IDE Controller Card
- ▲ Aries 105 key Win 95 Keyboard
- ▲ Full Support & 6 Year Warranty - 1st year return to base, parts & labour - then 5 years labour only
- ▲ Microsoft Compatible Mouse
- ▲ Microsoft Windows 95
- ▲ CD Software Bundle (see details opposite)
- ▲ Optional upgrade to K56 - 5600 VOICE Internal/Fax/Modem for £49.95 (valid only at time of purchase)
- ▲ FREE Colour Inkjet Printer

### SOFTWARE BUNDLE PACK\*

**Lotus SmartSuite 97**  
Consisting of:  
▲ Lotus 1-2-3  
▲ Lotus Approach  
▲ Lotus ScreenCam  
▲ Lotus WordPro  
▲ Lotus Freelance  
▲ Lotus Organizer

**Plus Compton's Multimedia CDs**  
Consisting of:  
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▲ World Atlas  
▲ Genius of Edison  
▲ Interactive Cookbook  
▲ Reference Collection 98

**Plus the following selected titles**  
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▲ Luckmans Web Edit Pro  
▲ Bodyworks 5  
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**Option 2** 0% APR  
**Option 3** 9.9% APR  
Finance is available subject to status. Be sure you can afford the payments prior to entering into an agreement. Written details available upon request.

\*While stocks last (Special Promotion). Some items may be replaced with equivalent or alternative software. Offer while stocks last

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FROM **£899**

Cyrix M2 P200MX  
**£939**  
£1103.33 inc. VAT

Cyrix M2 P233MX  
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Intel P166 MMX  
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Intel P200 MMX  
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£1138.58 inc. VAT

Intel P233 MMX  
**£1029**  
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FAX: 01582 488588

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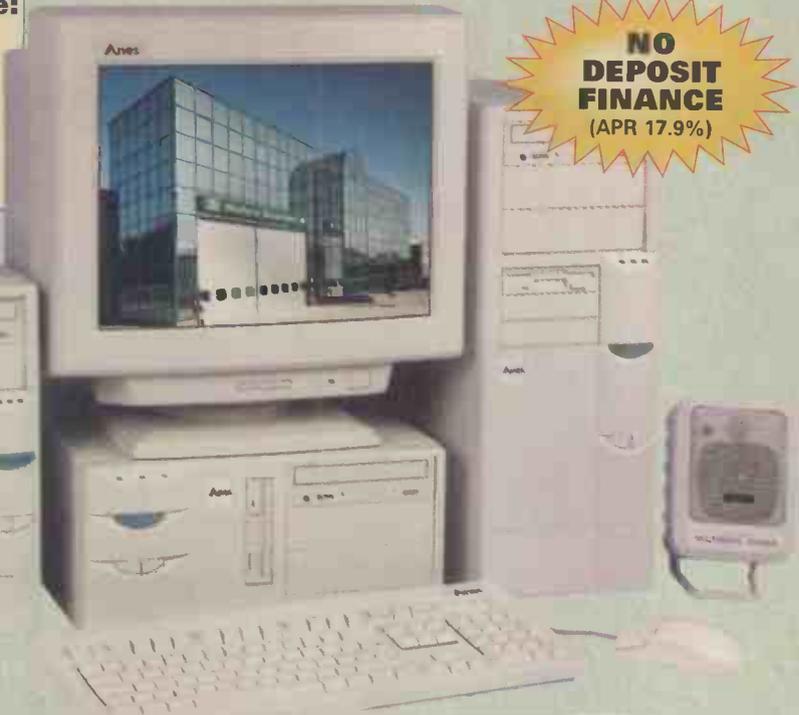


# Aries **AWARD WINNING,**

## All ARIES PCs Include:

- ▲ 1.44Mb 3.5" Drive
- ▲ Enhanced Dual Channel Fast IDE Controller Card
- ▲ Enhanced EPP/ECP Parallel Ports
- ▲ Dual Hi-Speed Serial Ports
- ▲ Aries 105 key Win 95 Keyboard
- ▲ MS Compatible Mouse
- ▲ MS Windows 95

**Corporate Sales**  
Fax Number  
01582 745523



**NO DEPOSIT FINANCE**  
(APR 17.9%)



"For speed demons, we recommend Watford's Aries Perfecta ELS. The dependable 3Com Etherlink rounds off a fairly impressive server from Watford"  
**PC Advisor**



"Want a well specified PC for less than £1,000.00 inc VAT? The Aries Perfecta fits the bill"  
**PC Pro**



"The fastest PC on test is also remarkably well rounded, displays on a damned fine monitor driven by the best video card going"  
**Computer Buyer**



"The Aries PC... it does leave you wanting for very little, which is no mean feat at this price"  
**PC Pro**



"A well specified system, at a competitive price"  
**Computer Shopper**



"A well thought out machine... lots of software nicely put together"  
**PCW**

**ARIES PC'S**



"If you buy from Watford you won't be disappointed. The Aries flies along; it's the fastest machine in the test"

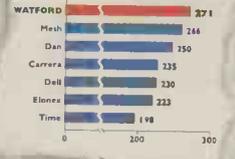
### PC Direct

"At the time of writing, the Aries TX97 is the fastest Pentium we have tested, with a Winstone rating of 50.5."

### Computer Buyer Labs Sept 97



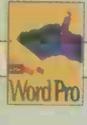
### What PC? Dec 97



## ARIES SYSTEMS SOFTWARE BUNDLE PACK

All ARIES Systems\* Include:  
**Lotus SmartSuite 97**

- Consisting of:
- ▲ Lotus 1-2-3
  - ▲ Lotus Approach
  - ▲ Lotus ScreenCam
  - ▲ Lotus WordPro
  - ▲ Lotus Freelance
  - ▲ Lotus Organizer



### Plus Compton's Multimedia CDs

- Consisting of:
- ▲ Encyclopedia 98
  - ▲ World Atlas
  - ▲ Genius of Edison
  - ▲ Interactive Cookbook
  - ▲ Reference Collection 98



\* Except where specified otherwise  
† When purchased with any PC on these 2 pages

**Full Network Services and Installation MS Windows NT & Novell Netware**  
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**£94 WORTH OVER £400**



### MS Office 97 Professional Offer

If you or any of your family (5 years plus) are in full or part-time education you qualify for this money-saving offer. Includes:  
▲ MS Word 97 ▲ MS Excel 97 ▲ MS Access 97  
▲ MS Outlook 97 ▲ MS Powerpoint 97  
Product is supplied on CD ROM only, with on-line documentation, via voucher redemption.

## Internal iomega 100 Mb ZIP Drive



**£76**  
£89.30 inc VAT



When purchased with any Aries PC advertised on these pages

**Watford Electronics**  
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REFER TO TERMS & CONDITIONS ON PAGE 2

# VALUE FOR MONEY PC'S

## ARIES MULTIMEDIA '97 PRO

**FROM £599**

- ▲ Intel or Cyrix Processor
- ▲ 64 bit SIS advanced graphics using 2Mb system RAM with Microsoft 3D support
- ▲ 16Mb EDO RAM expandable to 128Mb
- ▲ 512K Pipeline Burst Cache Memory
- ▲ Bios is year 2000 compliant
- ▲ 1.7Gb 11ms Hard Disk Drive
- ▲ 14" SuperVGA Low Radiation 1024x768 0.28mm Digital Colour Monitor (12 months Swap-Out Warranty)
- ▲ Multimedia Ready - See below
- ▲ Software Bundle Pack (see details page opposite)
- ▲ 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only
- ▲ Desktop Case + PSU (CE approved)

**Multimedia Specification**

- ▲ 24X MAX Speed CD ROM Drive
- ▲ 16 bit Stereo Sound Card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- ▲ 25W Mains Powered Speakers

**CHOOSE YOUR OWN PROCESSOR**

<b>NEW YEAR SPECIAL</b>	CYRIX M2 P200MX 200MHz Processor	CYRIX M2 P233MX 233MHz Processor
	<b>£639</b> <small>£750.83 inc. VAT</small>	<b>£729</b> <small>£866.58 inc. VAT</small>
	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£27</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£30</b>
INTEL P166MMX 166MHz Processor	INTEL P200MMX 200MHz Processor	INTEL P233MMX 233MHz Processor
<b>£599</b> <small>£703.83 inc. VAT</small>	<b>£669</b> <small>£786.06 inc. VAT</small>	<b>£759</b> <small>£891.83 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£25</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£30</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£34</b>

## ARIES PERFECTA '97

**WINNER - TOP 50 Computer Buyer-Oct 97**

**FROM £779**

- ▲ Intel or Cyrix Processor
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- ▲ 16Mb EDO RAM expandable to 128Mb
- ▲ 512K Pipeline Burst Cache Memory
- ▲ Bios is year 2000 compliant
- ▲ 3.2Gb 11ms Ultra DMA Hard Disk Drive
- ▲ Matrox Mystique 2Mb SGRAM Video Card
- ▲ 15" SuperVGA Low Radiation 1280x1024 NI 0.28mm Digital Colour Monitor (12 months Swap-Out Warranty)
- ▲ Aries K56 56600 VOICE Internal Fax/Modem with 30 days Internet Access
- ▲ Multimedia Ready - See below
- ▲ Software Bundle Pack (see details page opposite)
- ▲ 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only
- ▲ Mini Tower Case + PSU (CE approved)

**Upgrade to 32Mb EDO RAM £19.95**

**Multimedia Specification**

- ▲ 24X MAX Speed CD ROM Drive
- ▲ Creative Labs SoundBlaster AWE64 sound card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- ▲ 80W Mains Powered Speakers

**PERFORMANCE ★★★★★**  
Processor, hard disk and graphics.  
Computer Buyer October '97

**CHOOSE YOUR OWN PROCESSOR**

CYRIX M2 P166MX 166MHz Processor	CYRIX M2 P200MX 200MHz Processor	CYRIX M2 P233MX 233MHz Processor
<b>£779</b> <small>£915.33 inc. VAT</small>	<b>£839</b> <small>£985.83 inc. VAT</small>	<b>£899</b> <small>£1056.33 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£30</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£32</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£35</b>
INTEL P166MMX 166MHz Processor	INTEL P200MMX 200MHz Processor	INTEL P233MMX 233MHz Processor
<b>£799</b> <small>£938.83 inc. VAT</small>	<b>£869</b> <small>£1021.08 inc. VAT</small>	<b>£929</b> <small>£1091.58 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£31</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£33</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£36</b>

## ARIES PROFESSIONAL SE

**WINNER - VALUE AWARD PC PRO Labs, July 97**

**FROM £759**

- ▲ Intel Advance Triton II TX chipset PCI Motherboard
- ▲ Intel Pentium Processor
- ▲ Bios is year 2000 compliant
- ▲ 32Mb EDO RAM expandable to 128Mb
- ▲ 512K Pipeline Burst Cache Memory
- ▲ 2.1Gb 10.5ms Ultra DMA Hard Disk Drive
- ▲ Matrox Mystique 2Mb SGRAM Video Card
- ▲ 15" SuperVGA Low Radiation 1280x1024 NI 0.28mm Digital Colour Monitor (12 months Swap-Out Warranty)
- ▲ Multimedia Ready - See below
- ▲ Software Bundle Pack (see details page opposite)
- ▲ 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only
- ▲ Mini Tower Case + PSU (CE approved)

**Multimedia Specification**

- ▲ 24X MAX Speed CD ROM Drive
- ▲ Creative Labs SoundBlaster AWE64 sound card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- ▲ 80W Mains Powered Speakers

**CHOOSE YOUR OWN PROCESSOR**

CYRIX M2 P166MX 166MHz Processor	CYRIX M2 P200MX 200MHz Processor	CYRIX M2 P233MX 233MHz Processor
<b>£759</b> <small>£891.83 inc. VAT</small>	<b>£819</b> <small>£962.33 inc. VAT</small>	<b>£879</b> <small>£1032.83 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£29</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£32</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£33</b>
INTEL P166MMX 166MHz Processor	INTEL P200MMX 200MHz Processor	INTEL P233MMX 233MHz Processor
<b>£779</b> <small>£915.33 inc. VAT</small>	<b>£849</b> <small>£997.58 inc. VAT</small>	<b>£908</b> <small>£1066.90 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£30</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£33</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£35</b>

## ARIES PRO MEDIA TX '97

**FROM £839**

- ▲ Intel Advance Triton II TX chipset PCI Motherboard
- ▲ Intel/AMD Processors
- ▲ 32Mb EDO RAM expandable to 128Mb
- ▲ 512K Pipeline Burst Cache Memory
- ▲ Bios is year 2000 compliant
- ▲ 3.2Gb 11ms Ultra DMA Hard Disk Drive
- ▲ Matrox Mystique 2Mb SGRAM Video Card
- ▲ 15" SuperVGA Low Radiation 1024x768 0.28mm Digital Colour Monitor (12 months Swap-Out Warranty)
- ▲ Aries K56 56600 VOICE Internal Fax/Modem with 30 days Internet Access
- ▲ Multimedia Ready - See below
- ▲ Software Bundle Pack (see details above)
- ▲ 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base, labour only
- ▲ Mini Tower Case + PSU (CE approved)

**Multimedia Specification**

- ▲ 24X MAX Twenty Four Speed CD ROM Drive
- ▲ Creative Labs SoundBlaster AWE64 sound card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- ▲ 80W Mains Powered Speakers

**CHOOSE YOUR OWN PROCESSOR**

AMD K6-166 MMX Enabled Processor	AMD K6-200 MMX Enabled Processor	AMD K6-233 MMX Enabled Processor
<b>£839</b> <small>£985.83 inc. VAT</small>	<b>£899</b> <small>£1056.33 inc. VAT</small>	<b>£969</b> <small>£1138.58 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£33</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£35</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£37</b>
INTEL P166MMX 166MHz Processor	INTEL P200MMX 200MHz Processor	INTEL P233MMX 233MHz Processor
<b>£869</b> <small>£1021.08 inc. VAT</small>	<b>£939</b> <small>£1103.33 inc. VAT</small>	<b>£999</b> <small>£1173.83 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£34</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£36</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£38</b>

## ARIES PERFECTA-II '97

**WINNER - RECOMMENDED AWARD WHAT PC?, Dec 97**

**FROM £1099**

- ▲ NEW - Intel 440LX - AGP chipset and Intel Slot One for processor upgrades - ATX
- ▲ Intel Pentium II Processor
- ▲ Bios is year 2000 compliant
- ▲ 32Mb SDRAM expandable to 384Mb
- ▲ 512K Pipeline Burst Cache Memory
- ▲ 3.2Gb 11ms Ultra DMA Hard Disk Drive
- ▲ New Diamond Viper 330 4Mb Graphics Card
- ▲ 15" SuperVGA Low Radiation 1024x768 0.28mm Digital Colour Monitor
- ▲ Multimedia Ready - See below
- ▲ Software Bundle Pack (see details above)
- ▲ 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base, labour only
- ▲ Midi Tower ATX Case + PSU (CE approved)

**DIAMOND**

**Multimedia Specification**

- ▲ 24X MAX Twenty Four Speed CD ROM Drive
- ▲ Creative Labs SoundBlaster Compatible 16-bit 3D sound card
- ▲ 80W Mains Powered Speakers

**CHOOSE YOUR OWN PROCESSOR**

INTEL PENTIUM II 233 233MHz Processor	INTEL PENTIUM II 266 266MHz Processor	INTEL PENTIUM II 300 300MHz Processor
<b>£1099</b> <small>£1291.33 inc. VAT</small>	<b>£1199</b> <small>£1408.83 inc. VAT</small>	<b>£1339</b> <small>£1573.33 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£42</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£46</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£51</b>
INTEL PENTIUM II 333 333MHz Processor	<b>NO DEPOSIT FINANCE</b> Finance calculation example: Cash Price: £999 + Carriage & VAT = £1197.33 = 36 equal monthly payments of £42.48 - Total Price = £1529.28. Finance is available subject to status. Be sure you can afford the payments prior to entering into an agreement.	
<b>£1499</b> <small>£1761.33 inc. VAT</small>	<b>APR 17.9%</b>	
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£57</b>		

## ARIES PERFORMA-II '97

**WINNER - RECOMMENDED AWARD WHAT PC?, Dec 97**

**FROM £1499**

- ▲ NEW - Intel 440LX - AGP chipset and Intel Slot One for processor upgrades - ATX
- ▲ Intel Pentium II Processor
- ▲ 64Mb SDRAM expandable to 384Mb
- ▲ 512K Pipeline Burst Cache Memory
- ▲ Bios is year 2000 compliant
- ▲ 6.4Gb Ultra DMA 10ms Hard Disk Drive
- ▲ AGP graphics card with 8Mb SDRAM
- ▲ 17" SuperVGA Low Radiation 1600x1200 0.28mm Digital Colour Monitor
- ▲ Aries K56 56600 VOICE Internal Fax/Modem with 30 days Internet Access
- ▲ Multimedia Ready - See below
- ▲ Software Bundle Pack (see details above)
- ▲ 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only
- ▲ Midi Tower ATX Case + PSU (CE approved)

**Multimedia Specification**

- ▲ 24X MAX Twenty Four Speed CD ROM Drive
- ▲ Creative Labs SoundBlaster AWE64 sound card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- ▲ 80W Mains Powered Speakers

**CHOOSE YOUR OWN PROCESSOR**

INTEL PENTIUM II 233 233MHz Processor	INTEL PENTIUM II 266 266MHz Processor	INTEL PENTIUM II 300 300MHz Processor
<b>£1499</b> <small>£1761.33 inc. VAT</small>	<b>£1599</b> <small>£1878.83 inc. VAT</small>	<b>£1739</b> <small>£2043.33 inc. VAT</small>
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£57</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£61</b>	<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£66</b>
INTEL PENTIUM II 333 333MHz Processor	<b>Ultra DMA Hard Disk</b> The new Ultra ATA interface offers the fastest IDE hard disk performance yet. ▲ Quantum Fireball ST 6.4Gb Ultra DMA hard disk ▲ 10ms average access time ▲ Up to 33Mb/sec burst data transfer rate (up to 50% faster than standard EIDE).	
<b>£1999</b> <small>£2348.83 inc. VAT</small>		
<small>EasyPlan Finance (APR: 17.9%) Monthly Payment</small> <b>£76</b>		

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**FOR ORDERING INFORMATION SEE PAGE 2**

Prices exclude carriage & VAT @ 17.5% except where shown.





# Aries Networking Solutions

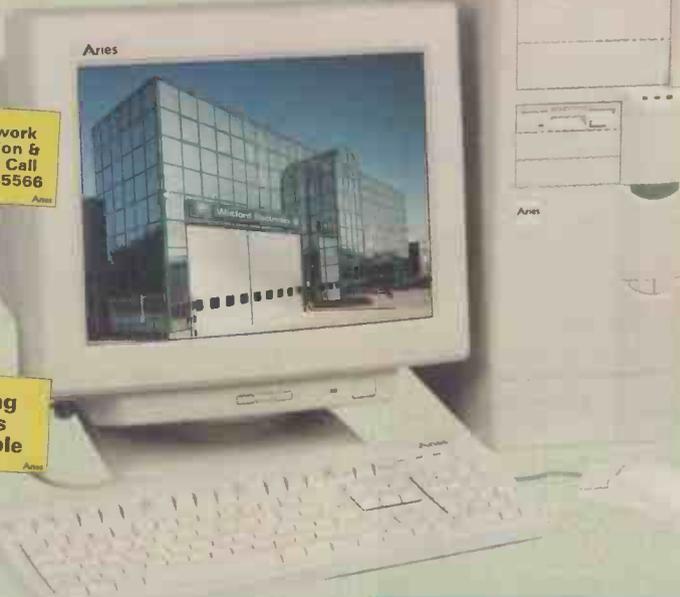


"For speed demons, we recommend Watford's Aries Serva EL. The dependable 3Com Etherlink rounds off a fairly impressive server from Watford"  
PC Advisor, Nov '97

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**FACT: Over 60% of businesses that suffer from major data loss go bankrupt in the following year!**

To ensure that this is only ever a meaningless statistic to you, Watford Electronics have launched a range of network servers centering on reliability and performance.

From small businesses to large corporations, Watford Electronics has a range of high performance servers designed to withstand the demands of each environment. With twenty-five years experience, Watford Electronics has the resources and expertise to design and implement a networking solution to your specification.

Using the latest technology to ensure the fastest possible performance and hardware options available such as RAID which, when used with the backup solution provided as standard, should ensure that your all important data will never be lost. Watford Electronics' servers are specifically designed for Windows NT, Netware and SCO Unix.

**YOUR networking solution is only a phone call away.**



## OPERATING SYSTEMS

### MS Windows NT Server

MS BackOffice Small Business Server contains the essential services that small businesses need to easily run their operations and communicate with customers and partners in new and more efficient ways. Designed for businesses with up to 25 PCs, Small Business Server addresses the cost and complexity issues that have blocked small businesses from tapping the power of the Internet and intranet computing previously.

MS BackOffice Small Business Server includes:

- ▲ MS Windows NT Server v4.0
- ▲ MS Outlook
- ▲ MS Exchange Server v5.0 including
- ▲ MS SQL Server v6.5
- ▲ MS Internet Information Server

Product	Code	Price	Inc. VAT
MS BackOffice Small Business Server + 5 Clients	18796	£879.00	£1032.83
MS BackOffice Small Business Server + 25 Clients	18797	£1449.00	£1702.57
Additional Client Licences (5 Pack)	18798	£185.00	£217.37

### Novell IntraNetWare

Novell NetWare is the ideal platform for your business, whether you are just starting out or have hundreds of users. Providing all the features you would expect from a product of this calibre, including level C2 security, fault tolerance, management facilities and lots more. Also included are Multiprotocol Router, WAN extensions, FTP services, NetWare Webserver and Netscape Navigator.

Product	Code	Price	Inc. VAT
IntraNetWare 5 User	17791	£450.00	£528.75
IntraNetWare 10 User	17799	£850.00	£998.75
IntraNetWare 25 User	17800	£1405.00	£1650.87
IntraNetWare 50 User	17801	£2000.00	£2350.00
IntraNetWare 100 User	17802	£2820.00	£3313.50
IntraNetWare - Additional 10 Users	17819	£535.00	£628.62
IntraNetWare - Additional 25 Users	17792	£1220.00	£1433.50
IntraNetWare - Additional 50 Users	17820	£1850.00	£2173.75

SFT III Options available for total fault tolerance. Call for a competitive quotation.

### SCO OpenServer

SCO OpenServer is the next generation of server operating systems that make it easier to build powerful business critical solutions. It is no doubt the most robust Unix environment available for Intel platforms, and together with its user friendly GUI environment make SCO the perfect choice. The latest version also has built in Internet support, security to C2 level and full interoperability with other networking systems such as IPX/SPX, NFS and MS Windows 95/NT.

Product	Code	Price	Inc. VAT
SCO OpenServer v5.0.4 Enterprise 5 User	14281	£693.95	£815.29
SCO OpenServer v5.0.4 Development Tools	14284	£446.95	£523.49
SCO OpenServer v5.0.4 Additional 10 Users	14571	£284.95	£334.82
SCO OpenServer v5.0.4 Additional 25 Users	14572	£606.95	£713.16

Other SCO products available, please call for details and pricing.

## Aries Serva EL

- ▲ Intel Advance Triton TX chipset PCI Motherboard
- ▲ Intel P233MMX - 233Mhz Processor
- ▲ 512K Pipeline Burst Cache Memory
- ▲ Bios is year 2000 compliant
- ▲ 32Mb EDO RAM expandable to 128Mb
- ▲ 3.2Gb 11ms Hard Disk Drive
- ▲ 14" Aries SuperVGA Low Radiation Colour Monitor
- ▲ 16X IDE CD ROM Drive
- ▲ 2Mb PCI Video Accelerator Card
- ▲ 3.5" 1.44Mb Floppy Disk Drive
- ▲ Aries Advanced 105 Key Keyboard
- ▲ 3 Button Microsoft compatible Mouse
- ▲ IEC Mains Power Lead
- ▲ Seagate 3.2Gb Travan Int. Backup unit
- ▲ 12 months RTB warranty parts and labour
- ▲ Etherlink III 3C905B UTP/ISA Combo
- ▲ Midi-Tower case + PSU (CE approved)

INTEL P233MMX  
233Mhz PROCESSOR  
**£999**  
£1173.83 inc. VAT

## Aries Serva ML

- ▲ Intel Advance Triton II 440FX chipset PCI - Slot one -ATX
- ▲ Intel Pentium II 233 - 233Mhz Processor
- ▲ 512K Pipeline Burst Cache Memory
- ▲ Bios is year 2000 compliant
- ▲ 32Mb EDO RAM expandable to 128Mb
- ▲ 4.3Gb SCSI-II 10ms Hard Disk Drive
- ▲ 2940AU PCI SCSI Controller
- ▲ 14" Aries SuperVGA Low Radiation Colour Monitor
- ▲ 16X SCSI CD ROM Drive
- ▲ 2Mb PCI Video Accelerator Card
- ▲ 3.5" 1.44Mb Floppy Disk Drive
- ▲ Aries Advanced 105 Key Keyboard
- ▲ 3 Button Microsoft compatible Mouse
- ▲ IEC Mains Power Lead
- ▲ HP Surestore 5000I 5.0Gb Int. SCSI Backup unit
- ▲ 12 months RTB warranty parts and labour
- ▲ Etherlink III 3C509B Combo ISA
- ▲ Midi-Tower case + PSU (CE approved)

INTEL PENTIUM II  
233Mhz PROCESSOR  
**£1799**  
£2113.83 inc. VAT

## Aries Serva XL

- ▲ Intel Advance Triton II LX chipset PCI - Slot one -ATX
- ▲ Intel Pentium II 300 - 300Mhz Processor
- ▲ 512K Pipeline Burst Cache Memory
- ▲ 64Mb SDRAM 3.3v expandable to 256Mb
- ▲ Bios is year 2000 compliant
- ▲ 2 x 4.3Gb SCSI-II 10ms Hard Disk Drive
- ▲ 2940AU PCI SCSI Controller
- ▲ 14" Aries SuperVGA Low Radiation Colour Monitor
- ▲ 16X SCSI CD ROM Drive
- ▲ 2Mb PCI Video Accelerator Card
- ▲ 3.5" 1.44Mb Floppy Disk Drive
- ▲ Aries Advanced 105 Key Keyboard
- ▲ 3 Button Microsoft compatible Mouse
- ▲ IEC Mains Power Lead
- ▲ SONY STD-5000 4Gb Dat Int. SCSI Backup unit
- ▲ 12 months RTB warranty parts and labour
- ▲ Intel Etherexpress Pro 100 server card - with the NEW i960 controller
- ▲ Midi-Tower case + PSU (CE approved)

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300Mhz PROCESSOR  
**£2699**  
£3171.33 inc. VAT



## Watford Electronics

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# The Aries MediaBook® Plus

## Incredible Value, Warranty & Support

**NEW LOW PRICE**

FROM **£1149**

### ARIES MediaBook® PLUS

- Processor**
  - Intel Low Powered Pentium Processor
  - Intel Pentium Processors upgradable to 200MHz MMX using ZIF socket
- Memory**
  - 16Mb RAM on-board expandable to 48Mb
  - 256K Level 2 Write-Back Cache, Pipeline Burst SRAM
- Storage**
  - 1.4Gb Removable Hard Disk Drive
  - 1.44Mb 3.5" Floppy Drive
- Multimedia - CD ROM Drive/Sound System**
  - 16X Speed CD ROM Drive
  - 16 bit Stereo Sound System
  - Sound Blaster, Sound Blaster Pro and MS Sound System - Windows compatible
  - Built-in Microphone
  - Built-in Stereo Speakers
- Display/Video System**
  - 12.1" Super VGA 800 x 600 - 65,000 Colours Dual Scan DSTN or Active Matrix TFT LCD Screen
  - Supports up to 1024 x 768 - 256 Colours mode on external monitor
  - Simultaneous display of both screen & external video
  - Windows GUI accelerator
  - Full power management
  - PCI Bus Colour Graphics Interface with 2Mb Video RAM
  - Software MPEG drivers
  - Printing Device/Keyboard
  - Latest technology TouchPad with ALPS drivers
  - Both external PS/2 mouse (optional) and Integral TouchPad can work concurrently
  - Windows 95 86 Key Keyboard
- I/O Ports**
  - ▲ Infra Red Communication Port - IrDA standard
  - ▲ Built-in TV Port
  - ▲ MIDI/Game Port
  - ▲ PCMCIA Slot - 2 x Type II OR 1 x Type II and 1 x Type III
  - ▲ 16550 UART Hi-Speed Serial Port
  - ▲ EPP/ECP Hi-Speed Parallel Port
  - ▲ External auto-sensed PS/2 keyboard/mouse port
  - ▲ Jacks for Stereo Line In/Line Out & Ext. Microphone
- Power Management**
  - ▲ Multiple-mode power management scheme
  - ▲ APM 1.1 support
  - ▲ Static Suspend
  - ▲ Suspend to HDD
  - ▲ Modem ring and any key triggered resume
  - ▲ Battery gas gauge support
  - ▲ Suspend or warning on low battery
- Security**
  - ▲ Kensington Security Cable Lock Anchor
  - ▲ MASTER Password support
  - ▲ Password protection for Set-Up entry screen
- Notebooks Supplied with:**
  - ▲ Carrying case
  - ▲ AC/DC Adaptor
- Optional Operating System**
  - ▲ Microsoft Windows 95 (with manual/CD)
  - ▲ MS DOS v6.22/Windows v3.11
  - ▲ MS NT Workstation upgrade
- Weight & Dimensions**
  - ▲ 3.2Kg/7lbs approx
  - ▲ 299(w) x 230(d) x 56(h)mm

12.1" Super VGA TFT or Dual Scan Screen. Includes high performance 128 bit video acceleration controller (800x600 resolution & 1024 x768 up to 65,000 colours on external monitor)

Zoom Video (ZV) Port supported  
PCMCIA Ports - 2 x Type II or 1 x Type III or 1xType II & 1 x Type III simultaneously

Removable / Interchangeable Hard Disk Drive  
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**Corporate Sales Fax Number 01582 745523**

All MediaBook Notebooks are supplied with an AC Adapter, user guide, drive disks and a Carrying Case. The Notebook weighs approximately 3.2Kg and is 299mm(w) x 230mm(d) x 56mm(h).

3 years warranty consists of 12 months Return to Base and 2 years Return to Base Labour only warranty.

### UPGRADE OPTIONS

	Price	Inc VAT
16Mb to 32Mb RAM Upgrade	£99	£116.33
16Mb to 48Mb RAM Upgrade	£179	£210.33
16Mb to 80Mb RAM Upgrade	£299	£351.33
Upgrade 1.4Gb to 2.1Gb Hard Disk	£129	£151.58
Upgrade 1.4Gb to 3.2Gb Hard Disk	£269	£316.08
PCMCIA V34 33,600 Fax/Modem	£99	£116.33
PCMCIA GSM Fax/Modem* 33600	£149	£175.08
PCMCIA Ethernet Card (BNC/UTP)	£69	£81.08
Microsoft Windows 95	£56	£65.80
Removable HDD Kit	£35	£41.13
NiMH Battery Pack	£85	£99.98
Lithium Ion Battery Pack	£144	£169.20
Upgrade NiMH to Lithium Ion Battery	£59	£69.53
Additional Power Charge/Adaptor	£65	£76.38
External Charger Unit	£45	£52.88
Car Lighter Adaptor	£48	£56.40
Seculock - Kensington Lock System	£45	£52.88

\*Requires telephone adaptor

DESCRIPTION	PRICE	FINANCE PER WEEK FROM	PRICE	FINANCE PER WEEK FROM
Dual Scan 12.1" Colour Display	£1149	£11.31	£1219	£12.15
TFT Active Matrix 12.1" Colour Display	£1399	£14.75	£1469	£15.49

## MediaBook® 800 Aries

### 13.3" Screen TFT Notebook Computer

- ▲ Intel Pentium MMX Low Power Processor
- ▲ 32Mb expandable to 64/128Mb
- ▲ 3.1Gb HDD, 5.25" 12X CD-ROM, 3.5 FDD module swappable x/CD-ROM module
- ▲ TFT 13.3"
- ▲ 2Mb Video EDO RAM
- ▲ Built in 2 stereo speakers & 1 microphone. 16-bit stereo sound blaster compatible 3D Audio & wavetable
- ▲ TouchPad pointing device
- ▲ Sanyo 18650 battery
- ▲ 313 x 260 x 45mm
- ▲ 3.1 - 3.3kgs (7.0 - 7.3lb)
- ▲ Optional 33.6Kbps PCMCIA Fax/Modem

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£2701.33 Inc. VAT

## TOSHIBA Notebooks

All the latest features at prices that everyone can afford...

**Tecra 500 Series**  
**£2768**  
£3252.40 inc. VAT

- Tecra 500 Series**
- ▲ 150 Mhz Intel Pentium Processor
  - ▲ 16Mb EDO RAM (Upgradeable to 144Mb)
  - ▲ 2168 Mb HDD
  - ▲ 12.1" TFT colour display
  - ▲ ZV Port and 32-bit CardBus Technology
  - ▲ Manufacturers Limited 3 Year Warranty

Model	Part No.	CPU	RAM/Max	HDD(MB)	Screen	Price	Inc. VAT
Tecra 520CDT	14399	5/166mmx	32Mb/160Mb	2168	12.1"TFT	£2264	£2660.20
Tecra 530CDT	14401	5/166mmx	32Mb/160Mb	2168	12.1"TFT	£2432	£2857.60
Tecra 740CDT	14357	5/120	16Mb/144Mb	2168	13.3"TFT	£2768	£3252.40
Satellite 220CS	14387	5/133	16Mb/144Mb	1440	12.1"DSTN	£1003	£1178.53
Satellite Pro 440CDX	14388	5/133mmx	16Mb/144Mb	1440	12.1"LCD	£1592	£1870.60
Satellite Pro 440CDT	14395	5/133mmx	16Mb/144Mb	1440	12.1"TFT	£1595	£1874.13
Satellite Pro 460CDT	14396	5/166mmx	32Mb/160Mb	2168	12.1"TFT	£1928	£2265.40
Portege 300CT	14398	5/133mmx	32Mb/64Mb	1440	10.4"TFT	£1844	£2166.70
Libretto 50CT	14397	5/75	16Mb/32Mb	810	6.1"TFT	£1088	£1278.40

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PALMTOPS



Authorised Reseller  
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Products

# The New HP 300 Series Palmtop PCs

## From only £395+VAT



Hewlett-Packard & Microsoft have jointly developed the smallest PC that fits in the palm of your hand - and yet it has a full-width screen, just like a PC.



New Wide Screen

- ▲ **Familiarity of Microsoft Windows 95 & NT 4.0**  
Microsoft Windows CE is designed with the look and feel of Microsoft Windows 95 and Windows NT 4.0.
- ▲ **Stay in Touch**  
Access the latest up-to-the-minute information via fax, email, worldwide web from the HP 300 Series palmtop PCs, wherever you may be.
- ▲ **Get in Synch!**  
Fast and easy synchronization between your palmtop PC and your desktop PC.

- ▲ **Expandability**  
The HP 300 Series palmtop PCs are designed to allow for easy software & hardware upgradeability.
- ▲ **Comfortable Keyboard**  
The keyboard is ergonomically designed with a wide spacing to facilitate easy typing.
- ▲ **Direct Printing**  
Print directly to a PCL printer via the infra-red port.



Product	Code No.	HP Part No.	Price	Inc. VAT
<b>Palmtop PC's</b>				
HP 320LX Palmtop PC 4Mb	17863	F1221A	£395.00	£464.13
<b>Accessories</b>				
HP 300 Series Palmtop AC Adaptor	17864	F1218A	£19.00	£22.33
HP 300 Series Palmtop Connectivity Cradle	17865	F1224A	£19.00	£22.33
HP 300 Series Palmtop Leather Case	17866	F1227A	£44.00	£51.70
HP 300 Series Palmtop Synch Cable	17868	F1223A	£10.00	£11.75
HP 300 Series Palmtop Spare Pens (Pack of 3)	17869	F1225A	£6.00	£7.05
HP Compact Flash 2Mb & PCMCIA Adaptor for the Palmtop	17870	F1229A	£63.00	£74.02
HP Compact Flash 4Mb & PCMCIA Adaptor for the Palmtop	17871	F1231A	£94.00	£110.45
<b>Support Pack</b>				
HP Support Pack - 3 Year Next Day Unit Exchange	17867	H5465A	£59.00	£69.32

### Software Built into ROM Operating System

- ▲ Microsoft Windows CE Applications
- ▲ Microsoft Pocket Word
- ▲ Microsoft Pocket Excel
- ▲ Microsoft Pocket Internet Explorer
- ▲ Microsoft Pocket H/PC Explorer
- ▲ Tasks
- ▲ Calendar
- ▲ Contacts
- ▲ Calculator
- ▲ World Clock
- ▲ Inbox (e-mail client)
- ▲ bFAX PRO: send & receive faxes (HP 320LX)
- ▲ Terminal application (TTY, VT-100 emulation)
- ▲ Remote Networking (for connecting to remote access servers)
- ▲ Solitaire
- ▲ Direct printing from HP Palmtop PC to HP PCL printers (from Pocket Word and Information Manager)
- ▲ Any 320LX bought after 2nd September now has V2.0 software



# PHILIPS VELO 1

Now you can run Windows® anywhere and everywhere. The Velo 1 handheld PC runs Microsoft® Windows® CE and "pocket" versions of Windows applications you already know, like Word™ and Excel™. Besides that, it has everything you need to tie into corporate e-mail, send faxes and browse the internet. And that is just the beginning. You can organise your files, track your schedule, record notes and yes, even play solitaire... in places you never could before.

- ▲ High-performance 3.3V 32-bit MIPS R3910 RISC processor @ 36.864 Mhz. Designed for fast access and high throughput of Windows CE applications.
- ▲ Fast on-board memory. Standard 4MB EDO DRAM that can be easily expanded, and 8MB Fast Page Mode ROM.
- ▲ Quick Start Keys (10). You can jump-start all your applications with the touch of a key on the Velo 1 61-key QWERTY keyboard.
- ▲ Velo Voice Memo. You can record up to 16 minutes (per MB of storage) of thoughts
- ▲ Telephone line connector. V.32 bis/ter data/fax modem to fax, e-mail or access the World Wide Web.
- ▲ GSM connection. Make a connection to your GSM phone and enter the world of wireless communication.
- ▲ High-speed I/O. RS-232 serial port up to 230 Kps., for easy synchronisation with your PC.
- ▲ IrDA infrared transceiver (up to 115 Kbps). You can send files or messages to other handheld PCs or IrDA-compatible devices.
- ▲ Backlit, non-glare touchscreen display. Grayscale LCD (480x240 pixels, .24mm dot pitch, .23mm dot size) & on-demand backlighting, complete with a contrast dial.
- ▲ International Keyboard. Enter accented characters and other special characters in an easy way.
- ▲ Audio speaker. For .wav file playback.
- ▲ Miniature Card slots. Two industry-standard expansion slots for more DRAM, Flash memory or even ROM software upgrades.
- ▲ Room for Type II PC Card. Simply add an optional Type II PC Card V-module for global positioning systems or custom applications.
- ▲ Power (battery compartment). Runs for about 15 hours on two AA batteries or a NiMH rechargeable battery pack.



### Built-in Software

Microsoft Pocket Word, Pocket Excel and Pocket Internet Explorer, HPC explorer, Fax, World Clock, Solitaire, Calculator, Contacts, Tasks and Calendar. Microsoft Schedule + 7.0a. Inbox, complete with Microburst Virtual Courier™, Personal Edition, ties you directly into cc:Mail or MS Mail. Allpen® Mobile Forms Database.

### Supplied Accessories

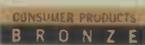
Telephone line Connectivity Kit, AC adapter, two AA batteries, CR2032 lithium backup battery, stylus, 9-to-25 pin adapter, pouch and the Velo Dock.

### Optional Velo 1 Accessories

2MB DRAM Miniature Card, 4MB DRAM Miniature Card, 2MB Flash memory Miniature Card, 4MB Flash memory Miniature Card, Type II PC Card V-Module, Velo Dock, Velo to PC Travelling Cable, NiMH Rechargeable Battery Pack, Wireless Connectivity Kit, Travelling AC adapter and the Velo Carrying case.

### Warranty

One years parts and labour. 24 hour replacement within Europe.



Product	Price	Inc. VAT
Velo Dock	£69.99	£82.24
4Mb DRAM	£179.99	£211.49
4Mb Flash	£199.99	£234.99
R Batteries	£39.99	£46.99
V-Module	£99.99	£117.49
8Mb DRAM	£299.99	£352.49
Carry Case	£49.99	£58.74
UK/AC Adaptor	£34.99	£41.12



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# OPTI Portable PC Carry Cases

Opti's range of high-quality carry cases, are designed to provide practical lightweight protection for your portable PC, against the rigours of travelling. When you are carrying the best portable computing equipment available, you need a high-quality case to transport it. Opti offer a range to suit every storage need and budget. Opti cases offer the best possible protection against the elements, made from strong, durable materials these cases are both lightweight and hard wearing. You can rely on Opti carry cases to provide years of hardwearing and reliable service. Protect your investment.

## Opti Professional Carry Case

High quality construction. Stylishly designed, hard wearing, completely portable and lightweight with dedicated storage for CD's, floppy disks, adapter, cables, PC Cards and all other portable peripherals, the Opti Professional is the ultimate mode of transport for your portable PC. Comes complete with detachable, matching mobile telephone case and padded shoulder strap.

Professional

£39

£45.83 inc. VAT

## Opti Executive Carry Case

Stylishly designed semi-rigid carry case made from ABS material allowing optimal balance between weight and stiffness. Complete with shock-absorbing rubber feet, double-secured handle, detachable padded shoulder strap and multi-functional designated storage facilities.

Executive

£72

£84.60 inc. VAT

## Opti Impact Carry Case

Specially designed to transport your portable PC and LCD Flat Screen display in complete safety with dedicated pockets for CD's and floppy disks as well as ample space for your power supply/adapter and accessories. Comes complete with detachable, padded shoulder strap.

Impact

£172

£202.10 inc. VAT

## Opti Office Carry Case

The mobile office solution for your portable PC and printer. By lowering the front panel of this custom-designed, durable case, your printer will be readily accessible and ready to start working. With ample room for your PC, printer, documents and accessories this case represents the professional solution and the ultimate in portable office portability.

Office

£220

£258.50 inc. VAT

## HANDHELD COMPUTERS

### HP PALMTOP

17862	HP 300LX Palmtop PC 2Mb	£324
17863	HP 320LX Palmtop PC 4Mb	£396
—	HP 360LX Palmtop PC 8Mb Colour	£585
17864	HP 300 Series AC Adaptor	£19
17865	HP 300 Series Connectivity Cradle	£25
17866	HP 300 Series Leather Case	£44
17868	HP 300 Series Palmtopsync Cable	£10
17869	HP 300 Series Spare Pens 3PK	£6
17870	HP Compact Flash 2Mb & PCMCIA Adaptor	£63
17871	HP Compact Flash 4Mb & PCMCIA Adaptor	£94

### PSION COMPUTERS

14344	3C 2Mb - with BackLit Display	£250
14404	5+ 4MB including PsiWin	£349
14405	5+ 8Mb includes PsiWin	£379



### PSION ACCESSORIES

14033	128K Flash Solid State Disk	£26
13753	128K RAM Solid State Disk	£37

10845	256K Flash Solid State Disk	£39
10846	512K Flash Solid State Disk	£64
10843	512K RAM Solid State Disk	£95
10847	1Mb Flash Solid State Disk	£87
13755	1Mb RAM Solid State Disk	£177
13758	2Mb Flash Solid State Disk	£138
10848	4Mb Flash Solid State Disk	£255
10875	Act	£74
13770	AutoRoute	£50
10840	Desk Stand	£14
13768	Finance Pack	£49
13539	Games Pack 3A	£32
10221	Leather Case 3A/3C	£20
17491	Lotus Organizer 97 & AgendaLink NEW	£69
10854	MAC RS232 Serial Link	£56
10201	Mains Adaptor	£12
17501	Memo Voice for 3A & 3C	£19
10852	Parallel Interface Link	£25
14228	Parallel Interface Link Siena and 3C	£32
10859	Professional Finance	£38
15492	Psi Win v1.1 - Siena and 3C	£60
10856	PsiWin RS232 PC Serial Link	£59
10858	Series 3/3A Fax Modem	£179
13767	Spreadsheet	£24
16744	SSD Drive Siena and 3C	£64

### US ROBOTICS

14515	Pilot Professional	£213
14516	Pilot Personal	£156

## OPTI Picture MAGIC

### Sound and Vision



Opti Picture Magic

£289

£339.58 inc. VAT

The Picture Magic from Opti has made affordable, high resolution photographs possible. Whether for business, Web Site development or entertainment the Picture Magic Digital Camera combines both quality images with sound capture facilities

The Opti Focus is supplied complete with the highly acclaimed Adobe PhotoDeluxe

- ▲ Hi Res. Camera with Sound Capture Capabilities
- ▲ True Colour/Sharper Images (1000x800 Max.)
- ▲ Built-In Microphone for 5 seconds Audio per image
- ▲ Stores up to 89 (1000x800) or 133 (500x400) images
- ▲ RS-232 Port connects directly to your computer
- ▲ Bundled with 2MB removable Photo Memory Card

## OPTI IMAGE

The Opti Image 13.8" TFT Flat Screen Panel is just one in the new range of space-saving, high resolution innovative monitors from Opti International. In addition to the 13.8" series, Opti have available the ultimate in size and quality, the amazing 17"er. What would be wishful thinking to most busy executives has now become reality with Opti International.

Opti Image

£1555

£1827.12 inc. VAT



- ▲ 13.8" TFT LCD Screen
- ▲ 1024 x 768 High-Quality Resolution
- ▲ Sleek, slimline design
- ▲ Distortion-free image
- ▲ Vivid High-Brightness Colour Image

## OPTI FREEDOM

### No Strings Attached!



Opti Freedom

£49

£57.58 inc. VAT

Not just a clever name! The Opti 'Freedom' allows true freedom in two respects. Firstly, giving you the opportunity to work away from your desk (up to 23ft away!) in true comfort and secondly freeing space on your desk. No more troublesome wires, mouse and mouse pad. Fully compliant with Windows95 - a true multimedia accessory with integrated controls for all your multimedia needs.

- ▲ Infrared Wireless Keyboard
- ▲ Operates from up to 23ft away
- ▲ 14 Programmable Function Keys
- ▲ I-Point™ Stick and Click Buttons built-in



**Sales Hotline: 01582 745555**

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# UltraPad Series

Graphics Tablets for CAD and DTP Professionals



**Pressure Sensitive Pens**



The natural way to use your computer for all CAD and DTP professionals

It's as easy, as comfortable, and as natural as using a pen. Whether you're painting in Painter, retouching in Live Picture or Photoshop, or working with a host of other programs, a Wacom cordless pen and graphics tablet can significantly enhance your creativity and ease of working. Pressure-sensitive pens allow you to vary line thickness, colour density or other characteristics, depending on the application. Already the most widely used graphics tablets for professional electronic artwork production, Wacom's innovative features combine ergonomics with lifelike simulation of traditional graphics tools.

You can customise your graphics tablet to match your personal style or specific requirements. There are UltraPads designed specially for handwriting recognition; UltraPads with ink or pencil lead so you can record on paper what you're drawing on screen; and pens with thick barrels and an extra-soft feel for using with painting software.



Star of the UltraPen series is the UltraPen Eraser

The first dual-function, pressure-sensitive pen. Simply flip the pen and erase, or assign the spongy eraser tip to a drawing function such as Photoshop's Dodge and Burn. All Wacom tablets are supplied with an Ultra Pen Eraser and spare nibs. Various UltraPen Pucks (cursor) are also available, which are ideal for CAD use.

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The first dual-function, pressure-sensitive pen. Simply flip the pen and erase, or assign the spongy eraser tip to a drawing function such as Photoshop's Dodge and Burn. All Wacom tablets are supplied with an Ultra Pen Eraser and spare nibs. Various UltraPen Pucks (cursor) are also available, which are ideal for CAD use.

**For CAD and All DTP Professionals**

ArtPad II

ArtPad II is Wacom's smallest graphics tablet and is ideal for educators, hobbyists and children to quickly create compelling, original artwork. Ideal as a creative input device for space conscious professionals or simply for anyone in need of a mouse alternative.

Features

- ▲ Ideal for DTP, graphics, sketching and drawing where desk space is limited.
- ▲ Active surface area of 4"x5"
- ▲ 256 levels of pressure
- ▲ Comes complete with UltraPen Eraser
- ▲ Comes bundled with PenTools Photoshop Software

From **£99 + VAT**

**FREE** Macromedia® Graphic Suite worth **£199** only with UltraPad -while stocks last



Product	Code No.	Price	Inc. VAT
Art Pad II & PenTools	15937	£109.27	£109.27
UltraPad A2 Serial	17362	£1259	£1479.32
UltraPad A3 Serial	16351	£479	£562.32
UltraPad A4 Serial	16329	£275	£323.13
UltraPad A5 Serial	15936	£179	£210.32

## CH Racing System

Leave your competition in the dust with CH Products' wheel and pedal combination. The CH Racing System comes complete with a high-performance racing wheel with 160 degree range of motion, four push buttons and foot pedals for acceleration and brake. Built for speed and designed for comfort, the CH RACING WHEEL gives you the winning edge to burn rubber and leave the competition in the dust.

Become a road warrior with the system that was built for speed and durability. Adjust the sturdy clamps and convert your desk space into a driving machine. The CH RACING SYSTEM is built with the highest quality components and comes with an unbeatable three-year warranty.

**Racing Wheel**  
18669 **£49**  
£57.58 inc. VAT

### FEATURES

#### Wheel:

- ▲ 160 Degree range of motion: Total freedom to manoeuvre the road.
- ▲ Four push buttons: For quick response. Rated to 10 million presses each!
- ▲ Sturdy base: For a comfortable ride!
- ▲ Adjustable Clamps: Mounts easily to desktop.
- ▲ 7 Foot cable: For greater reach.
- ▲ With CH Pedals and Pro Pedals from CH.

**NEW**



#### Pedals:

- ▲ Durable Construction: High performance pedals to accelerate and brake.
- ▲ Two-Mode selector switch: Choose between two pedal modes to assure compatibility with DOS and Windows®95 games.

#### System:

- ▲ Three-year warranty
- Compatible: Windows®95 and DOS games.



**Pedals and Wheel**  
18668 **£75**  
£88.13 inc. VAT

## Force FX

Have you ever wanted to truly feel the game you are playing? How about fighting the vibration of your tank traversing rough terrain or struggling as you pull seven Gs in your jet? Well hang on tight because CH Products has revolutionised gameplay with the first ever joystick equipped with the power of force-feedback. The FORCE FX is the product of choice for those of you tough enough to take on what a game was really meant for.....reality.

CH products FORCE FX is guaranteed to knock your socks off with six built in effects you can experience through the stick in many variations of magnitude, duration, direction and repetitiveness. Each variation is determined through your favourite I-FORCE supported game. Feel your vehicle shift gears and experience what happens when you run into a wall with Jolt motion. Vector FORCE yanks your arm as you struggle to pull G's in your jet. Hold on as X & Y Vibration motion comes alive as you drive over bumpy roads and rev engines. With SPRING effect in FORCE FX you can feel stiff airplane throttle: and recoiling gunfire with button reflex. BUFFETING motion reacts in your hand as you experience an explosion and air turbulence.

### FEATURES

- ▲ Offers six built-in force-feedback effects: JOLT, VECTOR FORCE, X&Y VIBRATION, SPRING, BUTTON REFLEX and BUFFETING; each having limitless variations and combinations of magnitude, duration, direction and repetitiveness.
- ▲ F-16 JET GRIP: An authentic look, modelled after the F-16 Fighting Falcon.
- ▲ TWO 4-WAY SWITCHES, FIVE FIRE BUTTONS, TRIGGER and TRIM CONTROLS: Add increased control and precision during game-play. Provides 14 functions as a stand-alone stick.
- ▲ Ideal to use in conjunction with the PRO THROTTLE: Provides games with 34 functions, 14 from FORCE FX and 20 from the PRO THROTTLE.
- ▲ 7-FOOT CABLE ASSEMBLY: High-quality, metal connector mounts easily to the gameport using thumbscrews.
- ▲ HIGH QUALITY CONSTRUCTION and DESIGN: Potentiometers rated to 2 million cycles; push buttons rated to 10 million presses; 4-way switches rated to 1 million presses each direction.
- ▲ 6-MONTH WARRANTY

**NEW**



**FORCE FX is guaranteed to knock your socks off**

**Joystick**  
18670 **£99**  
£116.33 inc. VAT



**Watford Electronics**

www.watford.co.uk

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# RICOH

DIGITAL SOLUTIONS

## RICOH RDC-300 DIGITAL CAMERA

### RDC-300 Features at a glance:

- ▲ 640 X 480 pixels
- ▲ Close focusing to 1cm
- ▲ Compact & lightweight
- ▲ JPEG & PAL compatibility
- ▲ 4mb internal memory
- ▲ TFT monitor for preview & playback
- ▲ Auto flash, Auto exposure, Auto white balance
- ▲ Supplied with Photo Studio Lite editing Software (PC or Mac)



RDC-300  
**£309**  
£363.98 inc. VAT

## RICOH RXP-10 PHOTO PRINTER

### RXP-10 Features at a glance:

- ▲ Print directly from your Ricoh digital camera
- ▲ Connect via your computer
- ▲ A6 Dye sublimation
- ▲ PC or MAC compatible
- ▲ Automatic paper feeding tray
- ▲ Supplied with trial paper pack (25 sheets & ink ribbon cassette), Connection cables & Driver software



RXP-10  
**£339**  
£398.33 inc. VAT

### SPECIAL OFFER

RDC-300 Digital Camera and the RXP-10 Photo Printer Bundle  
**£625** £734.38 inc. VAT

## RICOH RDC-2E DIGITAL CAMERA

### RDC-2E Features at a glance:

- ▲ High quality resolution: 768 X 576 pixels
- ▲ Close focusing to 1cm
- ▲ Compact & lightweight
- ▲ Auto focus
- ▲ Auto exposure
- ▲ 2Mb internal memory - accepts optional PCMCIA memory cards
- ▲ TFT monitor for preview & playback
- ▲ Supplied with Photo Studio editing Software (PC or Mac format)

RDC-2E  
**£449**  
£527.58 inc. VAT



## RICOH RDC-2L DIGITAL CAMERA

### RDC-2L Features at a glance:

- ▲ High quality resolution: 768 X 576 pixels
- ▲ Close focusing to 1cm
- ▲ Compact & lightweight
- ▲ Auto focus
- ▲ Auto flash
- ▲ Auto exposure
- ▲ 2mb internal memory - accepts optional PCMCIA memory cards
- ▲ TFT monitor for preview & playback
- ▲ Twin lens - equivalent to 35mm & 55mm
- ▲ Audio facility - up to 10 seconds with each image
- ▲ Supplied with Photo Studio editing Software (PC or Mac format)

Supplied with Photo Studio



RDC-2L  
**£559**  
£656.83 inc. VAT

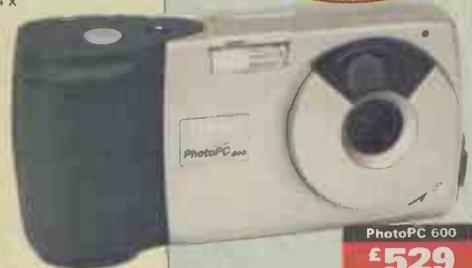
## DIGITAL CAMERAS & ACCs

<b>AGFA</b>	
16870 E-Photo 307 Digital Camera	£215
<b>CANON</b>	
17858 PowerShot 350 Digital Camera	£379
15842 PowerShot 600 Digital Camera	£532
16980 PowerShot 170Mb Ram Card	£325
<b>CASIO</b>	
17694 QV11-1 PC Digital Camera	£193
18894 QV70-1 PC Digital Camera	£225
15585 QV100 Digital Camera (4Mb)	£279
18895 QV200-1 PC Digital Camera	£252
14874 QV300 Telephoto/Normal Lens Camera	£344
18896 QV700 Digital Camera + Compact Flash	£339
15409 QG100 Printer for above Cameras	£125
DP8000 Colour Printer	£299
<b>CHINNON</b>	
16872 ES3000 Digital Camera	£675
<b>COMPRO</b>	
16874 Digital Camera - Motion & Still Image Capture	£99
<b>EPSON</b>	
15838 PhotoPC 500	£271
18589 Photo PC600	£529
15839 LCD Monitor for PhotoPC 500	£135
15840 Optional Power Supply	£55
<b>FUJI</b>	
18897 DX-5 Digital Camera	£214
15938 DS-7 Digital Camera	£265
18898 DX-7 Digital Camera	£295
16875 Fuji Film Smart Media Image Memory Card for DS-7 (3 Pack)	£122
16876 Fuji Film PC Card Adaptor Kit for DS-7	£68
<b>HEWLETT PACKARD</b>	
18899 Photo Smart Digital Camera	£199
18900 Photo Smart Ac Mains Adaptor	£35
<b>KODAK</b>	
15195 DC20 Digital Camera	£112
16089 DC25 Digital Camera	£159
15535 DC50 Digital Camera	£259
18245 DC120 Digital Camera	£445
18901 DC210 Digital Camera	£555
<b>OLYMPUS</b>	
18255 P-150E Digital Color Printer	£295
17923 C-400 Digital Camera	£255
17925 C-410L Digital Camera	£449
14591 C-820L Digital Camera	£695
<b>PANASONIC</b>	
17931 KXL600a Digital Camera	£245
17932 KXL-D50 1.8" TFT Colour LCD Monitor	£169
14451 KXL-D52 4MB Memory Card	£99
14434 KXL-D56 AC Adaptor, Case, and Tripod Attachment	£39
<b>RELISYS</b>	
18693 Silver Fox	£99
<b>RICOH</b>	
17678 RDC-2L PC Digital Camera	£673
17888 RDC-2E Digital Camera	£425
18370 RD 300	£295
17679 LCD Monitor DM-2	£199
17680 AC Adaptor AC-2	£45
17681 Case SC-2	£39
17682 Remote Control DR-2	£40
17683 Software Photostudio (PC) CC-2	£80
17684 Flash Memory ATA Card 5Mb	£300
17685 Flash Memory ATA Card 10Mb	£450
17686 Flash Memory ATA Card 20Mb	£700
<b>SANYO</b>	
17725 VPC G200 Digital Camera 4Mb Ram	£319
16896 VPC-G1 Image Digital Camera	£292
<b>SONY</b>	
17728 DSC-F1 Digital Camera	£525
17729 DPP-M55 Digital Printer	£339
<b>VIDEOLABS</b>	
16901 Flexcam Desktop TV Camera	£349

## EPSON

### EPSON PhotoPC 600

- ▲ XGA Resolution up to 1024 x 768, 24 bit colour images
- ▲ Prints directly to the EPSON Stylus Photo - no PC required
- ▲ Displays presentations directly through video output - no PC required
- ▲ High quality built-in 2" LCD colour viewfinder
- ▲ 4MB internal memory and external CompactFlash card (option 4MB, 15MB) for flexible image storage
- ▲ PAL TV/Video output for excellent large screen viewing
- ▲ Digital zoom, panoramic, B&W and Macro image capture modes
- ▲ Multi-frame mode (captures nine sequential shots of the same basic image in one frame)
- ▲ PictureWorks HotShots, PhotoEnhancer & NetCard, Presto! PhotoAlbum! and EPSON Photo! Suite software packages for Windows 95



PhotoPC 600  
**£529**  
£621.58 inc. VAT

### Options - call for pricing

- ▲ AC Adaptor
- ▲ CompactFlash PCMCIA card adapter
- ▲ 4MB and 15MB CompactFlash Memory Cards
- ▲ Direct Print Kit Software and Cable

### EPSON PhotoPC 500



- ▲ High quality 24 bit colour images
- ▲ Capacity for 30 high resolution or 60 standard images
- ▲ Windows and Macintosh compatible
- ▲ Twain compliant
- ▲ Built-in automatic flash with red-eye reduction feature
- ▲ Self timer
- ▲ Auto focus from 2 feet to infinity
- ▲ Expandable storage for up to 200 images
- ▲ PhotoEnhancer photo editing software

PhotoPC 500  
**£271**  
£318.43 inc. VAT

LCD Monitor  
**£135**  
£158.62 inc. VAT

Opt. Power Supply  
**£55**  
£64.63 inc. VAT

- ▲ Optional LCD display
- ▲ Output your pictures with photo-real quality on an Epson Stylus inkjet printer



**Sales Hotline: 01582 745555**

**FAX: 01582 488588**



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Prices exclude carriage & VAT @ 17.5% except where shown.



**MultiSync A500 - 15" Colour Monitor for the cost conscious user**

- ▲ 15" FST Dot Trio Desktop Monitor
- ▲ 0.28mm Dot Pitch, 13.8" Visible Image Size
- ▲ ESVA Capability (1024 x 768 at up to 80Hz)
- ▲ Maximum Resolution of 1280 x 1024 @ 60Hz
- ▲ 3 year parts and labour warranty
- ▲ OptiClear™ Anti-Glare, Anti-Reflection, Anti-Static Screen Coating
- ▲ MPR-II Compliant for Low Radiation and Static Emissions
- ▲ Digital Controls and On-Screen Display for Easy Set-up
- ▲ VESA Power/Asset Management to cut running costs
- ▲ Fully IBM Compatible. Apple Mac support up to 1024 x 768

MultiSync A500  
14535  
**£199**  
£233.83 inc. VAT

**MultiSync E500 - 15" High Quality Colour Monitor for the business user**

- ▲ 15" FST Cromaclear™ Desktop Monitor
- ▲ 0.25mm Slot Pitch, 13.8" Visible Image Size
- ▲ ESVA Capability (1024 x 768 at up to 86Hz)
- ▲ Maximum Resolution of 1280 x 1024 @ 65Hz
- ▲ 3 year parts and labour warranty
- ▲ OptiClear™ Anti-Glare, Anti-Reflection, Anti-Static Screen Coating
- ▲ TCO'95 Compliant for ultra-low radiation and environmental safety
- ▲ Digital Controls and On-Screen Display for Easy Set-up
- ▲ VESA Power/Asset Management to cut running costs
- ▲ Fully IBM Compatible. Apple Mac support up to 1024 x 768

MultiSync E500  
14536  
**£259**  
£304.33 inc. VAT

**MultiSync A700 - 17" Colour Monitor for the more demanding user**

- ▲ 17" FST Dot Trio Desktop Monitor
- ▲ 0.28mm Dot Pitch, 15.6" Visible Image Size
- ▲ ESVA Capability (1024 x 768 at up to 85Hz)
- ▲ Maximum Resolution of 1280 x 1024 @ 65Hz
- ▲ 3 year parts and labour warranty
- ▲ OptiClear™ Anti-Glare, Anti-Reflection, Anti-Static Screen Coating
- ▲ MPR-II Compliant for Low Radiation and Static Emissions
- ▲ Digital Controls and On-Screen Display for Easy Set-up
- ▲ VESA Power/Asset Management to cut running costs
- ▲ Fully IBM Compatible. Apple Mac support up to 1152 x 870

MultiSync A700  
14357  
**£379**  
£445.33 inc. VAT

**MultiSync E700 - 17" High Quality Colour Monitor for demanding business applications**

- ▲ 17" FST Cromaclear™ Desktop Monitor
- ▲ 0.25mm Slot Pitch, 15.6" Visible Image Size
- ▲ XSVGA Capability (1280 x 1024 at up to 75Hz)
- ▲ Maximum Resolution of 1600 x 1200 @ 65Hz
- ▲ 3 year parts and labour warranty
- ▲ OptiClear™ Anti-Glare, Anti-Reflection, Anti-Static Screen Coating
- ▲ TCO'95 Compliant for ultra-low radiation and environmental safety
- ▲ Digital Controls and On-Screen Display for Easy Set-up
- ▲ VESA Power/Asset Management to cut running costs
- ▲ Fully IBM Compatible. Apple Mac support up to 1152 x 870

MultiSync E700  
14542  
**£499**  
£586.33 inc. VAT



**iiyama Vision Master Monitors THE IMAGE OF PERFECTION**

The Vision Master™ range of professional colour monitors is designed to perform to the highest standards. They incorporate all the features that are required to run the most demanding applications. Utilising the most advanced production techniques, iiyama are committed to producing the best possible displays with the highest levels of reliability available today. Our Development Team are dedicated to sourcing components that provide the ultimate solution, ensuring that Vision Master™ products always out perform the competition.



- ▲ 17" 0.26mm FST colour
- ▲ Up to 1280x1024 NI@80Hz
- ▲ On-Screen Display Menu
- ▲ Colour Balance Control
- ▲ VESA & Energy Star Power Saving
- ▲ MPRII, TUV & CE Compliance

MF-8617T  
10086  
**£399**  
£468.83 inc. VAT

- ▲ 21" 0.22mm(Htz) FST colour
- ▲ Up to 1800x1400 NI@75Hz
- ▲ On-Screen Display Menu
- ▲ Colour Balance Control
- ▲ VESA & Energy Star Power Saving
- ▲ MPRII, TUV & CE Compliance



MF-8221  
17524  
**£925**  
£1086.88 inc. VAT



- ▲ 21" 0.30mm Diamondtron colour
- ▲ Up to 1600x1200 NI@75Hz
- ▲ On-Screen Display Menu
- ▲ Colour Balance Control
- ▲ MPRII, TUV & CE Compliance

MF-902IT  
10089  
**£909**  
£1068.08 inc. VAT

**SHINHO**

**AV2**



The Shinho AV2 range of colour monitors are designed for quality and reliability, and built to world leading manufacturing standards on ISO9001 production lines. Low power consumption, automatic powersave, accurate digital controls and distinctive ergonomics make the AV2 range one of the most reliable, user and ecologically friendly quality monitors available worldwide.

**3 YEARS ON-SITE SWAP OUT WARRANTY AS STANDARD**

SM483C1V  
14"/0.28mm FST  
Up to 1024 x 768  
Analogue Controls

SM483C1V  
**£99**  
£116.33 inc. VAT

SM785F2  
17"/0.28mm FST  
Up to 1280 x 1024  
Digital OSD Controls

SM785F2  
**£299**  
£351.33 inc. VAT

SM585F2  
15"/0.28mm FST  
Up to 1280 x 1024  
Digital OSD Controls

SM585F2  
**£148**  
£173.90 inc. VAT

SM765F2  
17"/0.26mm FST  
Up to 1280 x 1024  
Digital OSD Controls

SM765F2  
**£315**  
£370.13 inc. VAT

**Features:**

- ▲ Low Power Consumption
- ▲ VESA & EnergyStar Power Management
- ▲ MPRII, TUV & CE Compliant
- ▲ Ergonomic Design
- ▲ Dynamic Focus
- ▲ Plug & Play Compatible



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# Aries THE MONITOR SPECIALISTS

## 14" EnergyPro

- ▲ 14" CRT
- ▲ 0.28mm dot pitch (anti-static, anti-glare)
- ▲ 30-50kHz Horizontal freq.
- ▲ 50-100Hz Vertical freq.
- ▲ 1024 x 768 Max Resolution
- ▲ Vertical/Horizontal, position, size, brightness, contrast
- ▲ 7 User Programmable Modes



**14" EnergyPro**  
10079  
**£95**  
£111.63 inc. VAT



## 15" EnergyPro

- ▲ 15" CRT
- ▲ 0.28mm dot pitch (anti-glare, anti static)
- ▲ 30 - 66kHz Horizontal frequency
- ▲ 50 - 100Hz vertical frequency
- ▲ 1280 x 1024 Max Resolution
- ▲ Digital control
- ▲ 7 User Programmable Modes



**15" EnergyPro**  
10075  
**£148**  
£173.90 inc. VAT



## 17" 8000s EnergyPro+

**PC Magazine - Highly Recommended**

"Sharp image and vibrant colours. Very good value for money."

- ▲ 17" High Res Screen
- ▲ 0.26mm Aperture Grille
- ▲ Antistatic, anti reflection screen
- ▲ 30 - 85kHz horizontal
- ▲ 50 - 120Hz vertical freq.
- ▲ 1600x1200 NI Max Res
- ▲ On screen display
- ▲ TCO Compliance
- ▲ Plug and Play



**17" EnergyPro+**  
15857  
**£325**  
£381.87 inc. VAT



## 17" Energy Pro

This 17" diagonal flat square technology CRT monitor provides an entry level solution for those wishing to use business, small office / home office, home education / entertainment, general graphics and windows applications.

- ▲ 17" CRT
- ▲ 0.28mm dot pitch (anti-glare, anti static)
- ▲ 30 - 65kHz horizontal freq.
- ▲ 50 - 120Hz vertical freq.
- ▲ 1280 x 1024 Max Resolution
- ▲ Digital control
- ▲ Windows Plug & Play
- ▲ EPA, MPRII, CE



**17" EnergyPro**  
10074  
**£285**  
£334.88 inc. VAT



## 21" EnergyPro

- ▲ 21" CRT
- ▲ 0.26mm dot pitch (anti-static, anti-glare)
- ▲ 50-120KHz Horizontal freq.
- ▲ 50-120Hz Vertical freq.
- ▲ 1200 x 1024 max resolution
- ▲ Vertical/Horizontal, position, size, brightness, contrast, tilt, Plug & Play
- ▲ 7 User Programmable Modes



**21" EnergyPro**  
10071  
**£899**  
£1056.33 inc. VAT



**Introducing two new Ergovision Monitors from Taxan**

**430 LR**  
**£113**  
£132.78 inc. VAT

**Ergovision 430 LR**

- ▲ 14" (13.1" Viewable)
- ▲ 0.28mm Dot Pitch
- ▲ 270mm x 200mm Display Area (Max)
- ▲ 30-54kHz (Horizontal Scan Freq.)
- ▲ 50-110kHz (Vertical Scan Freq.)
- ▲ 1024 x 768 up to 66Hz Display Resolution

**550 TCO 95**  
**£199**  
£233.83 inc. VAT

**Ergovision 550 TCO 95**

- ▲ 15" FST (13.7" Viewable)
- ▲ 0.27mm Dot Pitch (Aperture Grille)
- ▲ 30-69kHz (Multiscan)
- ▲ Fully TCO 95 Compliant
- ▲ 1280 x 1024 up to 64Hz Display Area
- ▲ Windows 95 Plug & Play

### MONITORS

**ARIES**

3 Yr Warranty incl. 1st Year On-Site Swap Out

10073	14" EnergyPro LR 0.28mm SuperVGA	£99
10075	15" EnergyPro LR 0.28mm 1280x1024 NI	£135
18929	15" EnergyPro LR Trinitron NEW	£185
10074	17" EnergyPro LR 0.28mm 1280x1024 NI	£285
15857	17" 8000S EnergyPro + 0.26mm	£329
18930	17" 8500T EnergyPro Trinitron 1600x1200 NI	£359
18844	21" 9000s EnergyPro 0.26+C417mm 1600x1200 NI	£699

**CTX**

3 Yr Warranty incl. 1st Year On-Site Swap Out

10082	1451ELR 14" Colour Monitor	£109
15434	1569SE 15" Colour Monitor	£167
15437	1569MS 15" MultiMedia Colour Monitor	£199
18931	1569UA 15" Trinitron Colour Monitor	£219
10090	1769SE 17" Colour Monitor	£369
18683	1792SE 17" Colour Monitor	£349
17704	1769MS 17" Multimedia Colour Monitor	£349
17705	1785XE 17" Colour Monitor	£369
15678	1785XA 17" Colour Monitor	£429
18686	1792UA 17" Trinitron Colour Monitor	£389
15436	2085XE 20" Colour Monitor	£699
17706	2185XE 21" Colour Monitor	£899



**IYAMA - Covered by 3 yr Warranty**

13447	MF8516G 15" Colour Monitor	£189
14435	MF8617T 17" Colour Monitor	£399
16431	MF8617ES 17" Colour Monitor with Speakers	£435
17445	MT9017T PRO 17" Colour Monitor	£439
17524	MF8721T 21" Colour Monitor	£925
10089	MT9022T 21" Diamondtron Colour Monitor	£909
	MT9221T 21" Colour Monitor	£950
17707	LP-1014P 13.8" LCD Colour Monitor	£1,495
	LP-1014A 13.8" LCD Analogue monitor	£1,495

**MITSUBISHI - Covered by 3 yr Warranty**

16367	Diamondscan 15HX 15" 0.28dp Monitor	£239
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16371	Diamondpro 67TXV 17" Diamondtron Monitor	£425
16368	Diamondscan 17HX 17" 0.26dp Monitor	£365
14240	Diamondpro 87TXM 17" Diamondtron Monitor	£475
16369	Diamondpro 91TXM 21" Diamondtron Monitor	£1,049
18932	17" 3 Years On-Site Maintenance	£45
18933	21" 3 Years On-Site Maintenance	£50

**NEC MULTISYNC - Covered by 3yr Warranty**

18934	A100 15" Colour Monitor	£169
14536	E500 15" Colour Monitor	£208
13191	M500 15" Colour Monitor	£258
15154	M700 17" Colour Monitor	£425
14327	P750 17" Colour Monitor	£558
17721	E1100 21" Colour Monitor	£849
17722	P1150 21" Colour Monitor	£1,123
15733	XM29 29" Multimedia Colour Monitor	£2,329
15734	XM37 37" Multimedia Colour Monitor	£5,030

**NOKIA - Covered by 1 year Warranty**

16310	449X1 15" Colour Monitor	£249
17708	449XA 15 Colour Monitor with Speakers	£259
15075	447V 17" Colour Monitor with Speakers	£369
17576	447X1 17" Colour Monitor	£435
17709	447XAV 17" Monitor with Speakers, Sub Woofer & Mic	£549
17710	447XAVC 17" Monitor with Speakers, Sub Woofer & Mic & Camera	£999

**PHILIPS - Covered by 3 years Warranty**

15503	417TV 17" Colour Monitor with Speakers & Built in TV	£535
15153	445X1 21" Colour Monitor	£940
17711	445XAV 21" Monitor with Speakers, Sub Woofer & Mic	£1,250
17712	445XAVC 21" Monitor with Speakers, Sub Woofer & Mic & Camera	£1,280

**PANASONIC - Covered by 2 years Warranty**

16944	Panaview 530 9.4" TFT	£1,599
16945	Panaview 550 10.4" TFT	£1,799
15954	TXD1562FU 15" Multimedia	£227
15952	TXD1563 15" Pro 4G	£222
15951	TXD1565U 15" Panasync 4	£179
10095	TXD1734 17" 5G	£348
15872	TXD1734FU 17" Multimedia	£378
15953	TXD1753 17" Pro 5G	£419
15360	TXD2162 21" Pro 7G	£884

**PHILIPS - Covered by 3 years Warranty**

16946	14" Mono 14M	£69
10099	142 Enhanced VGA Colour 14C	£102
10100	15" Brilliance AutoScan Colour105	£219
16948	15" High Resolution AutoScan 105B	£189
16949	17" Autoscan Colour Brilliance 107	£375
16950	17" Brilliance Colour 107B	£349
18935	21" Colour 201B	£829
18936	21" Brilliance Colour 201	£1,269
18937	21" Brilliance Colour 201CS	£1,428

**PRINCETON**

16955	14" NI 0.26dp SVGA Colour Monitor	£119
16956	15" NI 0.26dp SVGA Colour Monitor	£159
16957	17" NI 0.26dp SVGA Colour Monitor	£309
18938	19" NI 0.26dp SVGA Colour Monitor	£599

**SAMSUNG - Covered by 3 years Warranty**

10103	Syncmaster 3NE 14" Colour Monitor	£125
10104	Syncmaster 15GLE 15" Colour Monitor	£198
10105	Syncmaster 15GLI 15" Colour Monitor	£219
10106	Syncmaster 17GLI 17" Colour Monitor	£354
10107	Syncmaster 17GLS1 17" Colour Monitor	£455

**SONY - Covered by 1 year Warranty**

14208	CPD100SX 15" Colour Monitor	£194
14333	CPD100SFT 15" Colour Monitor	£224
17492	CPD200SX 17" Colour Monitor	£359
14334	CPD200SFT 17" Colour Monitor	£382
17739	GDM17SE2T5 17" Colour Monitor	£585
14331	CPD300SFT5 20" Colour Monitor	£779
17587	GDM20SE2T5 20" Colour Monitor	£1,115
17589	GDMW900 24" Colour Monitor	£2,500

**SHINHO - Covered by 3 years Warranty**

17713	SM483C1V 14" 0.26dp Colour Monitor	£99
17714	SM585F1/F2 15" 0.26dp Colour Monitor	£151
17715	SM785F1/F2 17" 0.26dp Colour Monitor	£312
17716	SM765F 17" 0.26dp Colour Monitor	£327

**TAXAN - Covered by 3 years Warranty**

19014	EV430LR 14" Colour Monitor	£113
14200	530TCO 15" Colour Monitor	£227
14202	740TCO 17" Colour Monitor	£446
14203	740TCO95-S 17" Multimedia Colour Monitor	£461
14368	750TCO95-S 17" Colour Monitor	£461
18371	2040 TCO92 20" Colour Monitor	£664
14437	2150TCO95 21" Colour Monitor	£949
18939	Crystalvision 600 TFT Colour Monitor with Speakers	£902
18940	Crystalvision 620 TFT Colour Monitor with Speakers	£1,149
18941	Crystalvision 650 TFT Colour Monitor with Speakers	£1,699

**VIEWSO NIC - Covered by 3 years Warranty**

10113	14" 14E641 1024 x 768	£118
10114	15" 15E655 1024 x 768	£205
10116	15" 15G5 1280 x 1024	£235
10117	15" 15GA 1280 x 1024 with Speakers	£269
10118	17" 17EA 1280 x 1024 0.27 with Speakers	£395
10119	17" 17GS 1280 x 1024 0.27	£429
10120	17" 17GA 1280 x 1024 0.27 with Speakers	£469
10121	17" 17PS Professional 1600 x 1200 0.25	£449
16958	17" PT770 Pro. 1600 x 1280 0.25	£486
17743	17" PT775 Pro. 1600x1200 @ 77Hz 0.25	£539
10084	20" G800 1600 x 1200 0.28	£759
16959	21" PB10 Professional 1600 x 1200 0.25	£965
16960	21" PB15 Professional 1800 x 1440 0.25	£1,249

**Sales Hotline: 01582 745555** **FAX: 01582 488588**

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# Aries Scan-it Pro<sup>®</sup> 4830P

With 4830 dpi, captures colour in all its detail!

Over  
10,000  
sold

Type:	Flatbed with original "One Touch key" function
Scanning speed:	Full colour, 300 dpi 39 seconds (scanning time only)
Max document size:	A4
Optical resolution:	300 x 600 dpi
Max resolution:	4800 x 4800 dpi interpolated
Colour scanning method:	Single pass
Colour mode:	30 bits per pixel - 1 billion colours
Grey mode:	8 bits per pixel
Bi tone:	1 bit per pixel
Hardware interface:	EPP (Enhanced printer port)
Software interface:	TWAIN compatible
Dimension:	298(w) x 426mm(d) x 78mm(h)
Lamp:	Xenon glow lamp using cold scan technology
Weight:	Only 4.9 Kg
Power:	Standby: 2.5 Watts; Operation: 13 Watts
Software:	Xerox Textbridge OCR or Caere OmniPage LE - Wordscan SE software, RecognitaPlus OCR, Imageln and Fax-Copy Action Manager
System Configuration:	IBM Compatible PC, 386/486/Pentium, CD-ROM drive, Win 3.11 or higher, 4Mb RAM & 20Mb hard disk
Warranty:	1 Year return to base

- ▲ Parallel connector - Scan-it Pro doesn't require an interface, the computer doesn't need to be opened so it's very easy to install and your printer connects to the scanner
- ▲ Colour, single pass scanner at 4800 dpi
- ▲ Copy function - press a button on the scanner and the image will be sent direct to your printer
- ▲ Fax function - press a button on the scanner and the software supplied allows you to dial the number and the image is sent direct
- ▲ OCR function - press a button on the scanner and the OCR supplied software will read the text straight into your chosen word processing software



ONLY  
**£79**  
inc. VAT £92.83

Scan-it Pro 4830P  
**£79**  
£92.83 inc. VAT



"The Scan-It Pro is a fantastic tool... a very snazzy compact scanner... easy to set up... the software is excellent"



Computer Shopper

**FREE**  
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Buy Separately  
for £29 + VAT  
or FREE with any  
Aries Scanner  
See below for details

**FREE**  
CALYPSO  
GRAPHIC  
DESIGN  
SOFTWARE  
with all Scanners  
on this page



The OpticPro 9630P color flatbed scanner is a feature-packed product at a very affordable price. Not only does it share the specifications of many high-end scanners - such as single-pass scanning, a cold-cathode lamp and up to 9600dpi resolution - it also installs in minutes without any additional hardware or tools. Add to that a unique collection of software offered only by Plustek! Software for Optical Character Recognition (OCR), image editing and multifunction document processing like faxing and copying. You've never seen so much scanning power in such a simple package: the OpticPro 9630P.

## Aries Optic Pro<sup>®</sup> 9630P

9600dpi & a billion colours in one clean sweep!

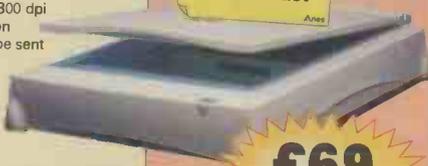
- ▲ Optic Pro Resolution 9600dpi
- ▲ Optical Resolution 600dpi
- ▲ 30 Bit colour
- ▲ Easy "Plug In" installation
- ▲ TWAIN compatible
- ▲ Includes: OCR and Image Editing software
- ▲ Works with your parallel port Specifications as above



**£99**  
inc. VAT £116.33

## Aries Scan Pro<sup>®</sup> 4800P

- ▲ Parallel connector - Scan-it Pro doesn't require an interface, the computer doesn't need to be opened so it's very easy to install and your printer connects to the scanner
- ▲ Colour, single pass scanner at 4800 dpi
- ▲ Copy function - press a button on the scanner and the image will be sent direct to your printer
- ▲ Fax function - press a button on the scanner and the software supplied allows you to dial the number and the image is sent direct
- ▲ OCR function - press a button on the scanner and the OCR supplied software will read the text straight into your chosen word processing software



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While  
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FREE software when ordering!**

## Zoner Callisto 2.0

Zoner Callisto 2.0 can handle all your graphics projects. **NEW**

It features:  
Two other applications are bundled FREE with Callisto. Media Explorer - a multimedia file manager which is tightly integrated into the Windows 95 system, and Viewer - a image file viewer and converter.

**FREE**  
with every scanner  
on this page

Callisto 2.0

**£36**

£42.30 inc. VAT



- ▲ A fully 32-bit application taking maximum advantage of Windows95
- ▲ New SmartFresh technology for fast redraw
- ▲ Multiple pages

- ▲ Multiple views
- ▲ Unlimited OLE
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- ▲ Rich-text editor, tables, layers and more



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# THE HP Scanjet Family

EASY TO USE SCANNERS FOR EVERY OFFICE SITUATION  
 The Intelligent Scanning Solution

HP 3 year support pack from £65 + VAT

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 Buy HP SupportPack

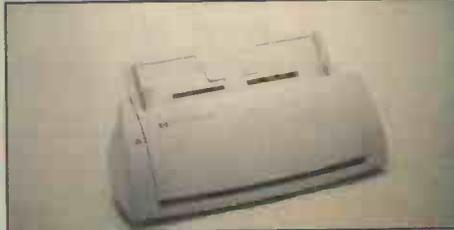
## ScanJet 6100c

- ▲ Type: Flatbed, Colour
- ▲ Resolution: 600 dpi, Enhanced 2400 dpi
- ▲ Interfaces: SCSI
- ▲ Compatibility: Windows & Macintosh

ScanJet 6100c **£440** £517.00 inc. VAT  
 Transparency Adaptor **£367** £431.23 inc. VAT  
 Auto Document Feeder **£257** £301.98 inc. VAT



## ScanJet 5s



- ▲ Type: Sheetfed, colour/greyscale
- ▲ Resolution: 300 dpi, Enhanced 600 dpi
- ▲ Interfaces: Parallel Port pass through I/F
- ▲ Compatibility: Windows & Macintosh

ScanJet 5s **£134** £157.45 inc. VAT

**FREE CALLISTO 2.0 GRAPHIC DESIGN SOFTWARE** with all scanners on this page

## ScanJet 5p

- ▲ Type: Flatbed, Colour
- ▲ Resolution: 300 dpi, Enhanced 1200 dpi
- ▲ Interfaces: SCSI
- ▲ Compatibility: Windows & Macintosh

ScanJet 5p **£146** £171.55 inc. VAT  
 HP Support Pack **£65** £76.37 inc. VAT



The HP Scanjet Family are a range of affordable colour flatbed scanners. Compact in design, you can conserve precious desk space. HP have built in energy-saving features

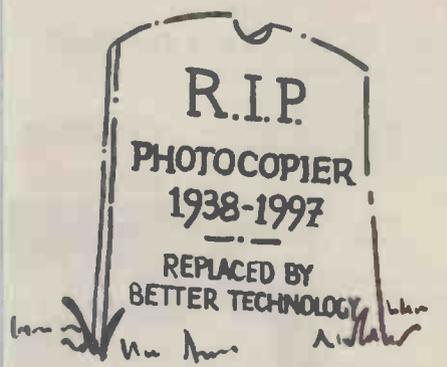
that will significantly reduce the amount of power the scanners consume, minimising cost of ownership and impact on the environment. The HP Scanjet family provides an easy and

convenient way to scan your images and text, enabling you to change the look of your documents, Streamline communications and eliminate time-consuming typing.

**Warranty: 1 year HP Express Exchange (most of Europe), 1 year Technical support.**

**Options: HP SupportPack for 2 years additional coverage. HP First - Fax information Retrieval System by phone**

DON'T MAKE A GRAVE MISTAKE...



...SIMPLY TURN YOUR PC INTO A PHOTOCOPIER!

with **soft copier**™

Easy to use simple interface

Available for Windows 3.x/95/NT

Save valuable office space and reduce maintenance costs

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Soft Copier **£34** £39.95 inc. VAT

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# EPSON

Includes Free OCR Imaging Software

## GTX-5500 SCANNER

**NEW**

Compact 400 dpi, 30 bit colour scanner for business and home use

- ▲ Small footprint
- ▲ Single pass, full 30 bit colour scanning
- ▲ TET (Text Enhancement Technology) for higher OCR accuracy
- ▲ AAS (Auto Area Segmentation) for accurate copying and faxing
- ▲ Complete, easy-to-use package including both hardware and software

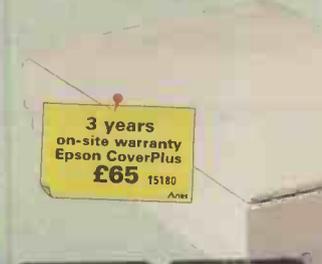


GTX 5500 **£209** £245.58 inc. VAT

Epson quality colour scanning. Made easy, Made affordable

## GTX-5000 SCANNER

In addition to advanced features like Epson Text Enhancement Technology, a maximum resolution of 2400dpi\* - and specially developed user interface the Epson GT-5000 comes complete with dedicated software for PC users. Applications that will enable you to take on a wide range of everyday and more demanding DTP tasks. You can scan everything from photos to magazine cuttings, typed manuscripts to A4 business documents - in colour or high speed mono and with Epson flatbed precision.



3 years on-site warranty Epson CoverPlus **£65** £151.80

Parallel **£154** £183.74 inc. VAT

SCSI **£246** £289.05 inc. VAT

\* Interpolated



**Sales Hotline: 01582 745555**

FAX: 01582 488588

FOR ORDERING INFORMATION SEE PAGE 2

Prices exclude carriage & VAT @ 17.5% except where shown.



# UMAX The Astra 610P and 1210P Series

The Affordable 30-bit Desktop Scanner and High Quality Scanner for the Office



### FEATURES

- ▲ Single pass, colour CCD
- ▲ 30-bit, over one billion colours
- ▲ Optical resolution: 300 x 600 dpi
- ▲ Maximum resolution: 4,800 x 4,800 dpi
- ▲ Choice of SCSI (610S), Parallel (610P) or USB (610U) computer interfaces
- ▲ "Bit Enhancement Technology" to optimise your scanned image
- ▲ Scan area up to 8.5" x 11.7"
- ▲ Software:
  - Vista Scan - easy to use scanner control software
  - PhotoDeluxe - photo editing software from Adobe
  - Presto!PageManager - all-in-one scanning solution
  - UMAX Copy Utility - turns your printer into a copy machine



**Astra 610P Parallel**  
17929  
**£84**  
+ VAT  
£98.70 inc. VAT

**Astra 610S SCSi**  
19007  
**£129**  
+ VAT  
£151.58 inc. VAT

**Adobe Photoshop 4.0**  
**£130** when purchased with any scanner

### FEATURES

- ▲ Single pass, colour CCD
- ▲ 30-bit, over one billion colours
- ▲ Optical resolution: 600 x 1200 dpi
- ▲ Maximum resolution: 9,600 x 9,600 dpi
- ▲ Scan area up to 8.5" x 11.7"
- ▲ "Bit Enhancement Technology" to optimise your scanned image
- ▲ Choice of SCSI (1210S) or Parallel (1210P) computer interfaces
- ▲ Software:
  - Vista Scan - easy to use scanner control software
  - PhotoDeluxe - photo editing software from Adobe
  - Presto!PageManager - all-in-one scanning solution
  - UMAX Copy Utility - turns your printer into a copy machine

**Astra 1210P Parallel**  
18623  
**£169**  
+ VAT  
£198.58 inc. VAT

**Astra 1210S SCSi**  
19006  
**£229**  
+ VAT  
£269.08 inc. VAT

**£29.95** + VAT

## The Next Generation in Prepress Scanning Power

With a true optical resolution of 600 x 1200dpi (achieving a maximum resolution of 9600 x 9600dpi via software interpolation) the PowerLook II leads the field with a dynamic range of 3.3D. MagicScan intelligent scanner control software and MagicMatch (which incorporates Kodak's colour management software) ensures consistent high quality results and increased productivity.



**A4 Size**  
Large scan area for accommodating A4-size or multiple originals



**Smart Frame Holders**  
For high productivity, automatic scans in the multiple and batch scanning modes



**3.3D High Dynamic Range**  
Captures more details for professional scans



**Direct CMYK Scans**  
For increased productivity

**From £749**  
inc. VAT £880.07



**Adjustable Lamp Intensity**  
Yields high image quality scans for all types of images.

Product	Code No.	Price	Inc. VAT
Scanner Including Adobe Photoshop FE	17998	£899.00	£1056.32
Powerbook Colour Studio 11	17997	£749.00	£880.07
Transparency Adaptor	14439	£250.00	£218.74



\*Includes MagicScan & MagicMatch



## The Art of Being Unique

**EXCLUSIVE FREE**  
CALLISTO 2.0 GRAPHIC DESIGN SOFTWARE WITH ALL SCANNERS ON THIS PAGE

The Infinity line of scanners brings the latest technology to your tabletop at the most affordable price. Utilising Cold Scan single pass technology, which uses a Xenon glow lamp to give lower running cost, Relisys scanners don't require a warm up time and have an automatic shut off feature. In fact, Relisys has developed the Infinity series with total upgradeability in mind, perhaps making it the last scanner you'll ever buy.

### Relisys 2000 Camera "Simple to use, Easy for Fun"

- ▲ No films needed: unlimited image storage
- ▲ Shoot and store
- ▲ Easily connect to your computer
- ▲ Enhancing, editing, and organising images
- ▲ Extend your creativity for business or fun
- ▲ Display, print or communicate via Internet

**Silver Fox Camera**  
**£99**  
£116.33 inc. VAT

### Features

- ▲ High quality 24 bit images up to 16.88 million colours
- ▲ Standard resolution (320x240 pixels)
- ▲ Fine resolution (640x480 pixels)
- ▲ Unlimited storage expandable with RFM cards (Replaceable Flash Memory cards)
- ▲ Focus free from 0.4m to ∞
- ▲ Built-in auto flash light



### Free Software

Free application software package for Image Editing & Optical Character Recognitions (OCR) is bundled to scan text, photos, books & other illustrations through OC or Macintosh platform.

**FREE**  
Image Editing & OCR Software with all Relisys Scanners



**Scorpio Scanner**  
**£139**  
£16.33 inc. VAT

**Taurus Scanner**  
**£199**  
£233.33 inc. VAT

### Benefits of Relisys Infinity Series Scanners

- ▲ **Green Scanner**  
The infinity Series uses a technology called Cold Scan which incorporates a Xenon glow lamp that has excellent temperature characteristics and does not require ventilation, therefore lamp life and energy is conserved. Relisys scanners do not require a warm up time and have an auto-shut off feature when not in use, making the Infinity a true "Green Scanner".
- ▲ **Upgradeable System**  
Buffer Size can be easily upgraded by the user to 4M maximum to significantly improve the scanning speed. Image pixel depth can also be upgraded to 36 bits per pixel in the future if desired.
- ▲ **Dust Free and Power Savings**  
Dust interference is eliminated with a sealed chassis. No cooling fan is needed due to cold scan technology.
- ▲ **Easy Maintenance**  
Main board can be easily pulled out from rear side for maintenance.



Specifications	Relisys Infinity Series TAURUS	Relisys Infinity Series SCORPIO
Scanner Type	Flatbed, single pass color image scanner	Flatbed, single pass color image scanner
Subscanning Mode	Movement of the scanning head	Movement of the scanning head
Light Source	Xenon glow lamp	Xenon glow lamp using cold scan technology
Effective Scanning Area	8.5" x 13" (216mm x 330mm)	8.5" x 14" (216mm x 356mm), A4
Scanning Resolution	Optical: 600 x 1200dpi in increments of 1 dpi Maximum: 9600 x 9600 dpi by software interpolation (The horizontal and vertical resolution can be changed independently)	Optical: 300 x 1200 dpi in increments. Maximum: 4800 x 4800 dpi by software interpolation (The horizontal and vertical resolution can be changed independently)
Image Data	Color: 30 bits per pixel, 1 billion colors. Gray Scale: 10 bits per pixel, 1024 levels. Bi-Tone: 1 bit per pixel	Color: 30 bits per pixel, 1 billion colors. Gray Scale: 10 bits per pixel, 1024 levels. Bi-Tone: 1 bit per pixel
Raw Scanning Speed	135 seconds for A4 size document (600 dpi, color)	40 seconds for A4 size document (300 dpi, color)
Interface and Platform	SCSI-2 for PC, Macintosh	SCSI-2 for PC, Macintosh



**Watford Electronics**

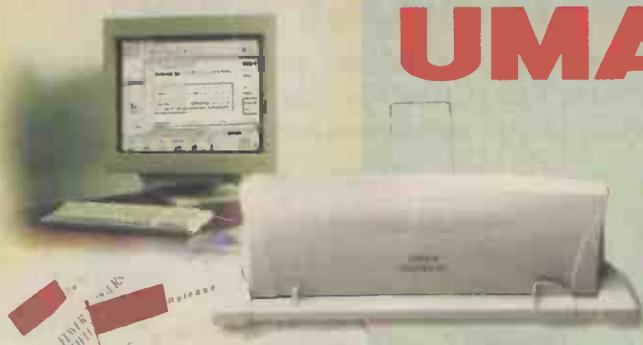
www.watford.co.uk

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN TELEPHONE: 01923 237774

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**"That's the Watford Promise"**

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# UMAX

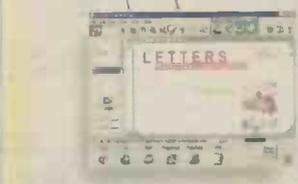


Includes **FREE** Presto! photo album software

## PageOffice IIC

**The High Quality and Versatile "One Click" Colour Scanner**

Umax PageOffice IIC is the easiest-to-use colour scanner for your home and business applications, combining the power of colour scanning with the versatility of a flatbed scanner. Perfect for the small office/home office and personal users. PageOffice IIC scans documents such as faxes, magazine clips, photographs, forms and even checks in colour, grayscale or black and white modes in just a few seconds.



- Email** - send/distribute via E-mail
- Print** - print out documents or make copies
- Fax/Modem** - send document through fax/modem
- OCR** - toggle between image/text modes with built-in OCR
- Edit** - edit text and image documents via Write and PageImage

Specifications	
Scanner Type	Sheet-fed or Motorized mode
Resolution	300 x 600 dpi optical (H x V), 4800 dpi interpolated
Scanning mode	Black & White mode, Halftone mode (256 steps), Error diffusion (1 pattern), 8-bit Gray scale (256 levels), 24-bit colour (16.7 million colours), 8-bit colour (256 levels), 1-bit lineart, 2 steps
Scan speed	47 sec at 300 dpi, colour, A4 size
Scan size	Letter, legal, A4, B5, A5, business card
Scan width	Max. 216mm; Min. 50mm
Paper thickness	0.07mm ~ 1.2mm
Interface	Printer port (Up to EPP mode)
Power source	110V or 220V, 50 ~ 60 Hz, external
Power consumption	12 watts max.
Dimension: (W x H x D)	305mm x 65mm x 95mm not include base
Weight	1.6kg
Software	Presto! PageManager & PhotoAlbum
System requirements	IBM PC 386 or higher, Microsoft Windows 3.1/Windows 95 Dos 5.0 or higher, 4MB RAM, 8-16MB is recommended One printer port (SPP/EPP), Fax modem & printer (optional)

**NEW**

Page Office IIC  
**£75**  
19005  
£88.13 inc. VAT

## Maxmedia TV II plus

**Professional VGA-to-TV Converter**  
For Business, Education and Entertainment Presentations

**NEW**



Maxmedia Plus  
**£89**  
19001  
£104.58 inc. VAT

Think of the impact and convenience of presenting demonstrations, from your laptop or desktop computer directly on a TV screen. The power of your ideas communicated with computer graphics, text and video would be seen with ease and comfort by your audience on the large screen. You can also record your on-screen video directly to a VCR. Enter the world of video publishing! Offer copies of your presentation or training session to your audience.

Specifications	
Input Graphic Video	VGA up to 640x480x72 Hz and 800x600x60 Hz
Convertible Resolution	
Output TV Video	Composite Video, S-VHS and RGB Video
Video Signal Processing	3 Lines Flicker Reduction Vertical Up & Down Scaling to Fit TV Display
Remote Control	Power On/Off, Computer Mode Select, Reset Display Parameters, Save Display Parameters, Freeze, Zoom, Brightness Adjustment, Display Picture Size Control, Vertical & Horizontal Pan Control, Vertical & Horizontal Position Control
System Requirement	IBM Compatible, TV Set with Composite Video Input (Using RCA Jack), S-VHS Input or Analog RGB Video Input
Physical Dimension	230(L) x 140(W) x 47(H) mm

- ▲ "Plug and present". No software required
- ▲ Supports Multi-Standard Computer Systems, IBM, PC, MAC, NEC & more
- ▲ "Power Down Pass Through" Display Technology for Cabling Convenience
- ▲ Convertible Graphic Resolution Up to 800 x 600 True Colour
- ▲ Flicker Reduction Architecture
- ▲ "Freeze Frame" image control capability
- ▲ True Whole Frame Store with 768K Bytes Field Memory
- ▲ Vertical Up and Down Scaling to Fit TV Display Size
- ▲ Both Horizontal and Vertical Overscan/Underscan
- ▲ Built-in Key Switches and Remote Controller
- ▲ Zoom Capability
- ▲ Supports Multi-Standard TV Video Output NTSC/PAL Switchable



## PhotoRun

**The Lightest Pocket-sized Digital Camera**



Includes **FREE** Presto! photo album software

Specifications	
Image Device	1/5-inch, 250K-pixel CCD
Resolution	504 x 378 pixels or 320 x 240 pixels
Colours	24-bit, millions of colours
Storage	Compact Flash memory card 2MB, upgradable to 20MB
Image Capacity	15 Images at 2MB memory card
Focal Length	60mm
Focus Distance	0.5m to infinity
Aperture Range	f/2.8
Battery	AAA Alkaline x 2
Dimension	19.8 (D) x 112 (W) x 63 (H) mm
Weight	100 grams
Order Information	PhotoRun-NB (for notebook users): 2 MB Compact Flash Card & PCMCIA adapter PhotoRun-PC (for desktop PC users): 2 MB Compact Flash Card & Compact Flash Card drive kit
Options	Compact Flash Card drive for desktop PC (through parallel port)

Notebook  
**£69**  
19003  
£81.08 inc. VAT

PC  
**£159**  
19002  
£186.83 inc. VAT

Flash Card  
**£CALL**  
£CALL inc. VAT

- Pocket-sized, light-weighted and easy to carry
- No external cable required for downloading images into PC
- Compact Flash memory card for image storage, up to 300 images capacity
- PCMCIA interface adapter for notebook or PC connection
- Powered by 2 AAA batteries
- Two image sizes, high quality: 504 x 378, standard quality: 320 x 240
- User friendly Presto! PhotoAlbum & ProImage Plus softwares included



**Sales Hotline: 01582 745555**

**FAX: 01582 488588**

**FOR ORDERING INFORMATION SEE PAGE 2**

Prices exclude carriage & VAT @ 17.5% except where shown.



## HP DeskJet 670C

**Incredible printer at an incredible price!**

### Easy to use

Achieving great quality with affordable costs has never been easier: the HP DeskJet 670C has two built-in cartridges - one for colour and one for black - which means there is no need to switch cartridges.

### Great results, even on plain paper

The HP DeskJet 670C comes with HP's RealLife Imaging system for true-to-life images. Your printed documents are given maximum appeal with crisp black text and photo-quality colour: professional-standard printing - on plain paper! And you can use HP's exclusive built-in ColorSmart technology to produce spectacular colour - automatically.

- ▲ Print technology: Plain paper drop-on-demand thermal inkjet printing.
- ▲ Black print speed: Microsoft® Windows® EconoFast mode 4 pages per minute; Normal mode 2.5 pages per minute.
- ▲ Colour print speed: Microsoft® Windows® EconoFast mode 1.5 pages per minute.
- ▲ Warranty: One Year

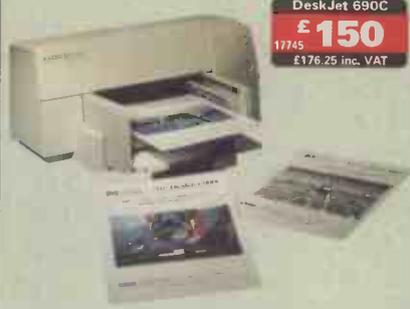


DeskJet 670C  
**£121**  
 17745  
 £142.18 inc. VAT

## HP DeskJet 690C

**The ultimate in colour print quality and printer versatility for the family and the small office environment**

- ▲ Black Resolution: Best mode 600 x 600 dpi, Normal mode 600 x 300 dpi, EconoFast 300 x 300 dpi
- ▲ Colour Resolution for Standard Pen Set: 300 x 300 dpi on plain paper, 600 x 300 dpi black and colour on HP Premium Paper and HP DeskJet Photo Paper
- ▲ Colour Resolution for Photo Pen Set: 600 x 300 dpi with 6 inks on all paper types with Photo Resolution Enhancement technology (Photo-RET)
- ▲ MS Windows® compatible, OS/2 and an extensive range of DOS software programs
- ▲ One year warranty



DeskJet 690C  
**£150**  
 17745  
 £176.25 inc. VAT

## HP DeskJet 890C Professional Series

**Outstanding print quality at unrivalled speed**



The HP DeskJet 890C Professional Series printer delivers:

- ▲ Outstanding print quality: The HP DeskJet 890C Professional Series printer incorporates PhotoREt II, HP's latest technological innovation, to deliver photo-quality output, even on plain paper.
- ▲ Professional printing without the waiting: Prints at up to 9 pages per minute in crisp, sharp black and up to 5 pages per minute in vibrant colour.
- ▲ Business connectivity: Can be used with Win 95, Win NT 4.0, Win 3.x or DOS systems.
- ▲ Print Technology: Plain paper drop-on-demand thermal inkjet printing
- ▲ Warranty: One Year

DeskJet 890C  
**£255**  
 18476  
 £299.63 inc. VAT

## HP LaserJet 5/5M/5N

**High-performance, user friendly printing for a variety of needs**

The HP LaserJet 5, 5M and 5N printers combine improved performance with a range of features and options particularly suited to the varied needs of small workgroups.

HP LaserJet 5 - the expandable solution. The HP LaserJet 5 is supplied with a 12 page-per-minute engine, Accelerated Printing technologies, HP PCL 6 and 4 Mbytes RAM. Memory can be expanded to 52 Mbytes and an HP JetDirect card be added for network connectivity. Features 45 built-in scalable TrueType fonts plus HP FontSmart for font management and for 65 additional TrueType fonts for Windows®. Also comes with HP JetAdmin printer management software.

HP LaserJet 5N - the network-ready solution. In addition to the standard features of the HP LaserJet 5, the HP LaserJet 5N is supplied network ready with an HP JetDirect Card for Ethernet 10Base-T.

HP LaserJet 5M - the mixed-environment solution. The HP LaserJet 5M includes 6 Mbytes RAM, an HP JetDirect card for LocalTalk and Ethernet, Adobe PostScript Level 2 printer language, 35 built-in PostScript fonts plus HP FontSmart with a further 75 PostScript fonts.



- ▲ Speed & Throughput: 12-pages-per-minute
- ▲ Resolution: 600 x 600 dpi with Resolution Enhancement technology (RET)
- ▲ Memory: 4 Mbytes standard RAM with Memory Enhancement technology (MET)
- ▲ Paper Handling: Up to 4 input bins with a total capacity of 850 sheets and 75 envelopes
- ▲ Warranty: One Year

LaserJet 5  
**£674**  
 10000  
 £791.95 inc. VAT

## HP OfficeJet 590

**All-in-One • Colour Printer • Fax • Copier • Scanner**

The All-in-One product that makes it easy to do your work

- ▲ All-In-One: Printing, Faxing, Copying, Scanning in one product
- ▲ Great colour images and black text printing
- ▲ Easy to use software that lets you move between functions with a single mouse click
- ▲ Superior hardware/software integration
- ▲ Industry leading printing technology
- ▲ Built with HP's leading quality and reliability

### Colour Printer

- ▲ Print Resolution: Black 600 x 600 dpi, Colour 600 x 300 dpi
- ▲ Print Technology: Inkjet with ColorSmart technology
- ▲ Print Speed: 4ppm Black, 1ppm Colour

### Fax

- ▲ Paper Type: Plain
- ▲ Memory: 65 pages
- ▲ Transmission/Reception: HP OfficeJet or PC
- ▲ Send Resolution: Standard, Fine, 300 dpi, Photo
- ▲ Speed Dialing - Compatibility: 100 numbers - CCITT/ITU Group 3
- ▲ Phone Line: Able to share line with telephone & answering machine; automatic fax/answering machine switching

### Copier

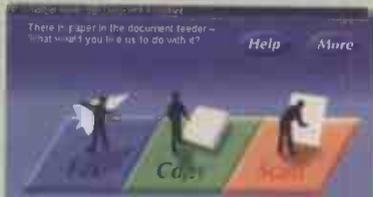
- ▲ Copy Resolution: 600 x 300 dpi text, 300 x 300 dpi image resolution
- ▲ Number of Copies: Up to 99
- ▲ Copy Speed: 50 seconds per page

### Scanner

- ▲ Scanner Resolution: 600 dpi enhanced, 300 dpi optical
- ▲ Interface: TWAIN
- ▲ Optical Character Recognition: Includes OmniPage Limited Edition™ software from Caere

### General

- ▲ Warranty: One Year



OfficeJet 590  
**£339**  
 14553  
 £398.32 inc. VAT

LaserJet 5N  
**£847**  
 14607  
 £995.23 inc. VAT

LaserJet 5M  
**£997**  
 10001  
 £1171.48 inc. VAT

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 Products



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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN TELEPHONE: 01923 237774

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 ON ALL PRODUCTS  
 • ALL THE TIME •  
 "That's the Watford Promise"**

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# Add A Splash Of Colour To Your Life!

## The NEW Lexmark 1000 Low Cost - High Performance Colour Printer

The affordable Lexmark 1000 Colour Jetprinter offers big colour results for anyone from 8 to 80. It delivers high quality colour documents at up to 600 dpi in both black and colour. With the Lexmark 1000, you'll be able to produce colourful school and business reports, make fun birthday banners and party invitations, even create and print customised designs for T-shirts! Perfect for kids, students, mums and dads, anyone who wants to add a splash of colour to their life!

- ▲ Get Big Colour On A Small Budget
- ▲ Ultra Small Footprint Saves Valuable Desk Space
- ▲ 600 x 600 dpi Resolution In Both Colour & Black
- ▲ One-Year, Next Business Day Exchange Warranty



**Lexmark 1000**  
**£101**  
 19571  
 £118.68 inc. VAT

### 9 PIN MATRIX PRINTER

**EPSON - Covered by 1 year Warranty**

10026	Epson FX870 80col	£247
13379	Epson FX2170 132col	£395
13372	Epson LX300 80col	£97
10036	Epson LX1050+ 132col	£200
Panasonic - Covered by 1 year warranty		
13367	Panasonic KXP1150 80col	£87
16873	Panasonic KXP3200 80col	£169
10010	Panasonic KXP3696 132col (1 year onsite)	£255

### 24 PIN MATRIX PRINTER

**CITIZEN - Covered by 1 year Warranty**

17493	Citizen ProDot 450 L 106col	£599
17494	Citizen ProDot 810 X 136col	£853
EPSON - Covered by 1 year Warranty		
13658	Epson DLQ3000 132col	£831
10035	Epson LQ300 80col	£115
10049	Epson LQ570+ 80col	£216
14418	Epson LQ670	£230
13378	Epson LQ870	£377
14072	Epson LQ2070 132col	£330
10048	Epson LQ2170 132col	£468
PANASONIC - Covered by 1 year Warranty		
13363	Panasonic KXP2023 80col	£108
10053	Panasonic KXP3626 132col (1 year onsite)	£255

### INKJET PRINTERS

**BROTHER - Covered by 1 year onsite Warranty**

18518	Brother MFC3000 Colour Printer/Copier/Scanner	£449
CANON - Covered by 1 year Warranty		
14468	Canon BJC250 Colour	£103
14188	Canon BJC620 Colour	£169
15825	Canon BJC4200 Colour	£129
15672	Canon BJC4500 Colour	£230
16997	Canon BJC5500 Colour	£448
CITIZEN - Covered by 1 year Warranty		
13384	Citizen Printiva 600C Colour	£285
17489	Citizen Printiva 1700C Scanner/Printer Colour	£305
EPSON - Covered by 1 year Warranty		
18197	Epson Stylus 300 Colour	£106
14294	Epson Stylus 400 Colour	£133
16402	Epson Stylus 600 Colour	£185
16403	Epson Stylus 800 Colour	£221
14295	Epson Stylus 1520 Colour	£593
17843	Epson Stylus 3000 Colour	£1,118
17918	Epson Stylus Photo Colour	£308
10040	Epson Stylus Pro XL+ Colour	£445
HP - Covered by 1 year Warranty		
15370	HP DeskJet 340 Colour	£144
14552	HP DeskJet 400L Colour NEW	£86
17746	HP DeskJet 670 Colour	£121
17745	HP DeskJet 680 Plus Colour	£150
14071	HP DeskJet 870 CXI Colour	£202
18476	HP DeskJet 890C Colour	£255
14548	HP DeskJet 1100C Colour	£285
13710	HP DeskJet 1600 Colour	£871
10007	HP DeskJet 1600M Colour	£1,280
14553	HP OfficeJet 590 Colour	£339
14356	HP OfficeJet LX 1150 C Colour	£491
LEXMARK - Covered by 3 years Warranty 1st year onsite		
18571	Lexmark 1000 ColourJet Colour	£101
17723	Lexmark 2030 ColourJet Colour	£127
15478	Lexmark 2050 ColourJet Colour	£169
14457	Lexmark 3000 ColourJet Colour	£145
14456	Lexmark 7000 ColourJet Colour	£229
10059	Lexmark Win/Writer 2070 600x600dpi Colour	£242
18487	QMS Magicolor CX 40Mb 1200dpi Colour	£4,295

### RIBBONS/INK CARTRIDGES

18523	Brother MC3000 Black Cartridge	£13
18522	Brother MC3000 Cyan Cartridge	£5
18521	Brother MC3000 Magenta Cartridge	£5
18520	Brother MC3000 Yellow Cartridge	£5
11342	Canon BJ10ex/BJ10sx	£13

11422	Canon BJC70 / BJC70 Black Cart.- 3Pack	£8
11432	Canon BJC200 /210/230/240 Black Ink	£14
15322	Canon BJC200 /210/230/240 Black Ink	£18
11343	Canon BJC300/BJ330	£9
11423	Canon BJC70 Ink Tank Black Ink	£10
11424	Canon BJC70 Ink Tank Colour Ink	£14
11420	Canon BJC70 / BJ30 Black Cart.	£22
16879	Canon BJC240 Fluorescent Ink Cartridge - BC09F	£21
16616	Canon BJC240 Photo Ink Cartridge - BC06	£20
11646	Canon BJC600 - Black	£4.50
13683	Canon BJC600 - Cyan	£4.50
11608	Canon BJC600 - Magenta	£4.50
11607	Canon BJC600 - Yellow	£4.50
11581	Canon BJC800 - Black	£13
13727	Canon BJC800 - Cyan	£17
11584	Canon BJC800 - Magenta	£17
13728	Canon BJC800 - Yellow	£17
11409	Canon BJC4000 /4100/4200/4550/5550 Colour Ink Tank	£12.00
11406	Canon BJC4000 /4100/4200/4550/5550 Ink Tank	£5.00
16680	Canon BJC4200 /4550 Fluorescent Ink Cartridge	£21
14289	Canon BJC4200 /4550 Photo Ink Cartridge	£27
11321	Citizen 120D+	£5
14024	Citizen Printiva 600C Black Ink Cart	£5
11548	Citizen Printiva 600C Cyan Ink Cart	£6
11552	Citizen Printiva 600C Magenta Ink Cart	£6
11554	Citizen Printiva 600C Yellow Ink Cart	£6
11539	Citizen Printiva 600C Metallic Cyan Ink Cart	£10
11558	Citizen Printiva 600C Metallic Gold Ink Cart	£12
11556	Citizen Printiva 600C Metallic Magenta Ink Cart	£12
17495	Citizen ProDot 450 L Black Ribbon	£7
17497	Citizen ProDot 810 X Black Ribbon	£22
17498	Citizen ProDot 810 X Colour Ribbon	£40
11338	Citizen Swift 24/200/240/ABC Black Ribbon	£5
13653	Citizen Swift 24/200/240/ABC Colour Ribbon	£11
11378	Citizen Swift 24X Black Ribbon	£7
11377	Citizen Swift 24X Colour Ribbon	£13
18456	Epson DFX5000+/8000 Black Ribbon	£13
18461	Epson DFX5000+/8000 Ribbon Refill	£12
18460	Epson DLQ3000 Black Film Ribbon	£16
11408	Epson DLQ3000 Black Ribbon	£14
11409	Epson DLQ3000 Colour Ribbon	£20
11322	Epson EX800/1000 Black Ribbon	£5
11310	Epson EX800/1000 Colour Ribbon	£9
18454	Epson FX/LQ2170/LQ2070 Black Ribbon	£13
13733	Epson LQ1100 Black Ribbon	£4
13689	Epson LQ1500 Colour Ribbon	£14
11445	Epson LQ300 Colour Ribbon	£15
11442	Epson LQ570/LQ870 Black Ribbon	£5
11323	Epson LQ1000/1050/1070/1170 Black Ribbon	£12
11444	Epson LQ1070/LQ1170 Black Ribbon	£4
18457	Epson LQ1500 Black Ribbon	£5
11334	Epson LQ2550 Black Ribbon	£5
13737	Epson LQ2550 Colour Ribbon	£12
11445	Epson LX86/80, GX80 Black Ribbon	£4
13732	Epson LX100	£3
18459	Epson LX300 Colour Ribbon	£13
11471	Epson SQ850/2550 Black Ink	£17
15369	Epson SQ870/SQ1170 Black Ink	£16
18458	Epson TLQ4800 Black Ribbon	£14
13771	Epson Stylus 200/500	£18
11586	Epson Stylus 300 Black Ink	£15
13772	Epson Stylus 400/500/600 Black Ink	£13
11592	Epson Stylus 400/800+/1000 Black Ink	£5
13760	Epson Stylus 400/800+/1000 Double Black Ink	£14
11671	Epson Stylus 1500 Black Ink	£28
16404	Epson Stylus Colour 400/600/800/1520 Black Ink	£16
16405	Epson Stylus Colour 800/1520 Black Ink	£16
11532	Epson Stylus Colour 820/1170 Black Ink	£13
11535	Epson Stylus Colour 820/1170 Colour Ink	£19
18436	Epson Stylus Colour 3000 Black Ink	£36
18437	Epson Stylus Colour 3000 Cyan Cartridge NEW	£38
18439	Epson Stylus Colour 3000 Magenta Cartridge NEW	£38
18440	Epson Stylus Colour 3000 Yellow Cartridge NEW	£38

11396	Yellow Cartridge NEW	£38
11395	Epson Stylus Colour/Pro/Pro XL Tri Colour	£20
13708	Epson Stylus Colour Pro XL+ Tri Colour	£21
11395	Epson Stylus Colour/Pro/Pro XL+ Black Ink	£10
17919	Epson Stylus Photo 5 Colour Ink	£13
11400	HP DeskJet 310/320/340 Black Ink	£14
11348	HP DeskJet 350 / 400 / 500 Black Ink	£15
11347	HP DeskJet 350 / 400 / 500 Colour Ink	£16
11519	HP DeskJet 600/660/690 Black Ink	£16
11522	HP DeskJet 600/660/690 Colour Ink	£16
14192	HP DeskJet 690 Photo Colour	£22
11502	HP DeskJet 820/850/870 Colour Ink	£18
15128	HP DeskJet 1200/Copyjet/Designjet650	£16
11600	HP DeskJet 1200/1600/Copyjet - Cyan	£19
11598	HP DeskJet 1200/1600/Copyjet - Magenta	£19
11599	HP DeskJet 1200/1600/Copyjet - Yellow	£19
11601	HP PaintJet XL300	£13
11602	HP PaintJet XL300 - Cyan	£14
11603	HP PaintJet XL300 - Magenta	£14
11604	HP PaintJet XL300 - Yellow	£14
15224	Kaga KP810 Ribbon	£5
11674	Lexmark 150C/1020C Black Ink	£19
15554	Lexmark 150C/1020C Colour Ink	£26
14209	Lexmark 2050 Black Ink	£20
14210	Lexmark 2050 Colour Ink	£26
14150	Lexmark 2070 Black Ink	£24
14151	Lexmark 2070 Colour Ink	£26
16681	NEC P30/P320	£25
13750	NEC P62/P72/P90 Black Ribbon	£8
11301	Panasonic 1123 / 1124 / 2023	£5.50
11265	Panasonic 1150/1170/1180	£5
11384	Panasonic 1624/2624	£7
11339	Panasonic 2180/2123/2124/2135 Black Ribbon	£7
11559	Panasonic 3696/3626	£10
11567	Star LC10/LC20/LC100 Black Ribbon	£4
11331	Star LC10/LC20/LC100 Colour Ribbon	£6
11349	Star LC200 Black Ribbon	£5
11379	Star LC200 Colour Ribbon	£11
11385	Star LC240 Col LC2430 Black Ribbon	£7
11386	Star LC240 Col LC2430 Colour Ribbon	£10
18473	Star LC15/LC1521 Black Ribbon (5 pack)	£23
11413	Star SJ144 Black Ribbon	£6
13762	Star SJ144 Black Ribbon	£8

### CUT SHEET FEEDERS (CSF)

10983	Canon BJC300 2nd Bin	£39
11182	EPSON LQ860 Single Bin CSF	£29
15491	EPSON LQ570, 870, FX870, C806382	£38
11184	EPSON LQ1050, FX105 CSF 7340GE	£39
11158	EPSON LQ1170 Hi-Cap C806481	£49
11178	EPSON SQ870 Hi-Cap CSF C806481	£89
11153	Fujitsu CSF for B200	£10
14544	NEC CSF for P30 423	£20
10942	NEC CSF for P60 / P62 - 10003351	£25
10982	Star CSF for LC20 - SF10DT	£39
11163	Star LC240 - SF10DS 89590290	£35
10994	Star CSF for LC24-300 SF10DW	£38
11159	Star LC200 SF10DN 89590190	£35

### ACCESSORIES

13744	Canon BJC300/70 Battery Pack & Adapter	£47
15164	EPSON LX300 Colour Kit	£29
17841	Epson Ethernet Interface for Stylus 1520 Printer	£279
14195	Epson Stylus 200 Colour Kit	£32
15193	Epson Stylus 820 Colour Kit	£29
16715	HP DeskJet 320/340 Infra Red Adapter	£32
11649	HP DeskJet 600 Colour Kit (C4534A)	£28
14182	HP DeskJet 690C Photo Colour Kit (C4584A)	£30
14267	HP Infra Red Adaptor for 310/320/340	£29

### PRINTER LEADS

**1.8 METRE**

12332	1.8m 18wire PC Parallel	£3
12385	1.8m 25wire PC Parallel Enhanced EPP	£5
12360	1.8m 25 Male 'D' to 25 Female 'D'	£4
12356	1.8m 25 Male 'D' to 25 Male 'D'	£4
12340	1.8m Centronics Male to Centronics Male	£7
<b>5 METRE</b>		
12343	5m 18wire PC Parallel	£8
12383	5m 25wire PC Parallel Enhanced EPP	£10
12365	5m 25 Male 'D' to 25 Female 'D'	£8
12370	5m 25 Male 'D' to 25 Male 'D'	£8
12375	5m Centronics Male to Centronics Male	£8
<b>10 METRE</b>		
12346	10m 18wire PC Parallel	£13
12384	10m 25wire PC Parallel Enhanced EPP	£15
12368	10m 25 Male 'D' to 25 Female 'D'	£12
12372	10m 25 Male 'D' to 25 Male 'D'	£12
12378	10m Centronics Male to Centronics Male	£11

### PAPER & TRANSPARENCIES

11311	9.5"x11" Fanfold Paper - 1000shts	£6
11313	9.5"x11" Fanfold Paper - 2000shts	£11
11315	A4 70g Fanfold Paper - 2000shts	£15
11450	A4 80g White Laser Paper - 500shts	£3
11595	A4 90g White Laser Paper - 500shts	£5
16743	Canon BJC4000 Coated Paper - 200shts	£18
16741	Canon BJC4000 High Gloss Film - 50shts	£29
16742	Canon BJC4000 Transparencies - 50 Shts	£31
14313	Canon BJC4550 Coated Paper A3 - 200shts	£25
18443	Epson A2 Photo Quality Glossy Paper - 20shts	£32

14307	Epson A2 Stylus Photo Quality Ink Jet paper - 30shts	£22
18442	Epson A3 Photo Quality Glossy Paper - 20shts	£16
11672	Epson A4 360 dpi Stylus Coated Paper - 100shts	£6
15146	Epson A4 720 dpi Stylus Coated Paper	£11
16737	Epson A4 High Gloss Paper for Stylus 15shts	£20
18441	Epson A4 Photo Quality Glossy Paper - 20shts	£16
16738	Epson A4 Transparencies for Stylus 30shts	£32
14298	Epson A4 Stylus Photo Quality Ink Jet Paper - 100shts	£8
16736	HP A4 DeskJet Cut Sheet Paper - 200shts	£15

### LABELS

11480	70mm x 37mm A4 Laser Labels - 2400	£15
11317	89mm x 36mm Single Row Fanfold Labels - 1000E5	£5
11318	89mm x 36mm Twin Row Fanfold Labels - 1000 E5	£5
11320	102mm x 36mm Twin Row Fanfold Labels - 1000E5	£5

### EXTENDED ON-SITE WARRANTY PACKS

**EPSON COVER PLUS**

15072	Group 1 - LQ100+/Stylus 820/Stylus IIS	£37
15180	Group 2 - LX300/1050+/LQ300/Stylus/Pro GT300/GT5000/Sty400/Sty600/Sty800	£60
15181	Group 3 - FX870/1170/570+/870/Sty1000/EPL5500/EPL5500	£95
15182	Group 4 - FX2170/LQ2170/GT8500/GT9000	£145
15183	Group 5 - DFX5000+/DLQ3000/Sty1500	£195
15184	Group 6 - DFX8000/Pro XL+/EPL9000	£255

### HEWLETT PACKARD SUPPORT PACKS

16704	HP 5SI Copier (HP5499A)	£846
16481	Colour LaserJet 5/5M (HP5505A)	£894
16479	Copylet/Copyjet M/Scanjet 5 (HP5485A)	£299
15943	Deskjet 820 CXI (HP5462A)	£47
14241	Deskjet 870CXI/6CSE/Scanjet 4S+4P+5P (HP5465A)	£66
12518	Deskjet 1600/CM (HP5473A)	£102
12513	Deskjet/Deskwriter 340/400/600/690/693 (HP5461A)	£40
12515	Deskjet/Deskwriter 660C/850C (HP5466A)	£65
13740	LaserJet 4V/4MV (HP5482A)	£235
14080	LaserJet 5/5M/5N (HP5479A)	£180
13720	LaserJet 5L (HP5500A)	£77
16284	LaserJet 5SI/5SI MX/5SI NX (HP5492A)	£530
13743	LaserJet 6P/6MP/Scanjet 4C/Scanjet 4Si (HP5476A)	£142

### KEYOCERA WARRANTY PACKS

14310	Keyocera FS400	£89
16709	Keyocera FS1550/FS1600	£179
16706	Keyocera FS3400/FS3600	£195

### LEXMARK WARRANTY PACKS

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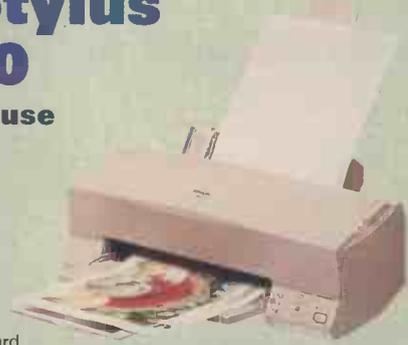
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REFER TO TERMS & CONDITIONS ON PAGE 2

**LASER PRINTERS**

**BROTHER - Covered by 1 year Warranty**

4133	Brother HL730 6ppm	£199
5366	Brother HL760 6ppm	£229
14470	Brother HL760 (5Mb) 6ppm	£245
14239	Brother HL1060 10ppm (1 year onsite)	£399
5121	Brother HL1260E 2mb 12ppm (1 year onsite)	£599
16648	Brother HL1260E 6Mb 12ppm (1 year onsite)	£615
14268	Brother HL1600 4MB 16ppm (1 year onsite)	£699
16650	Brother HL1660 10MB 16ppm (1 year onsite)	£715

**CANON - Covered by 1 year Warranty**

17859	Canon LBP660 6ppm	£184
16586	Canon LBP1260+ 12ppm	£698

**EPSON - Covered by 1 year Warranty**

10023	Epson EPL5500 1Mb 5ppm	£274
14107	Epson EPL5500 2Mb 5ppm	£319
4233	Epson EPL5500 PS 5Mb 5ppm	£570
7901	Epson EPL-N1200 12ppm	£593
1902	Epson EPL-N1200EN 12ppm	£791
17903	Epson EPL-N1200PS 12ppm	£986
7904	Epson EPL-N2000 20ppm	£1,278
17905	Epson EPL-N2000PS 20ppm	£1,582

**HP - Covered by 1 year Warranty**

15168	HP LaserJet 4MV 16ppm	£1,724
10000	HP LaserJet 5 12ppm	£674
10003	HP LaserJet 5 Colour 10ppm (1 year onsite)	£2,861
10001	HP LaserJet 5M 12ppm	£997
10004	HP LaserJet 5M Colour 10ppm (1 year onsite)	£3,600

10002	HP LaserJet 5N 12ppm	£847
14607	HP LaserJet 5N Colour (1 year onsite)	£3,142
14134	HP LaserJet 5Si 24ppm(1 year onsite)	£1,649
16154	HP LaserJet 5Si MX 24ppm(1 year onsite)	£2,249
17628	HP LaserJet 6L 6ppm	£232
14169	HP LaserJet 6MP 8ppm	£592
15368	HP LaserJet 6P 8ppm	£480
18802	HP LaserJet 4000	£749
18809	HP LaserJet 4000T	£855
18810	HP LaserJet 4000N	£963
17629	HP LaserJet Companion	£115
14604	HP PhotoSmart Photo	£319

**KYOCERA - Covered by 1 year Warranty**

14464	Kyocera FS600 6ppm	£239
10024	Kyocera Ecosys FS1550+ 10ppm	£679
14273	Kyocera Ecosys FS1700 12ppm	£695
15894	Kyocera Ecosys FS3400+ 18ppm	£899
17517	Kyocera Ecosys FS3700 18ppm	£985
16608	Kyocera Ecosys FS6500 13ppm A3	£1,175

**LEXMARK - Covered by 1 year on-site Warranty**

10012	Lexmark Optra C (8Mb, 600dpi) 12ppm	£4,554
10013	Lexmark Optra E Model A 6ppm	£299

16331	Lexmark Optra E Postscript 6ppm	£558
16655	Lexmark Optra Lxi+ Postscript 16ppm	£1,554
16656	Lexmark Optra Lxn+ Postscript 16ppm	£1,609
16653	Lexmark Optra Rt+ Postscript 16ppm	£987
14075	NEC SuperScript 860 8ppm	£248

**OKI - Covered by 1 year on-site Warranty**

14235	OKI OKIPAGE 16N 16ppm	£623
13560	OKI DL6e 6ppm	£219
10037	OKI DL6ax 6ppm	£271
10038	OKI DL810ex (600dpi) 8ppm	£399

**PANASONIC - Covered by 1 year on-site Warranty**

14040	Panasonic KXP6300 6ppm	£172
13366	Panasonic KXP6500 6ppm	£235
14407	Panasonic KXP7200 20ppm	£1,175

**QMS - Covered by 1 year Warranty**

18506	QMS 2060EX A4/A3 (48Mb) 20ppm	£3,599
18500	QMS 2060GX A4/A3 (16Mb) 20ppm	£2,249
18482	QMS 2060WX A4/A3 (8Mb) 20ppm	£1,069
18480	QMS DeskLaser 600 6ppm 1 year RTB	£178
16587	QMS Magicolor CX 8Mb Colour 2ppm	£2,999
18501	QMS Magicolor CX EX Ethernet Printer	£3,899
18429	QMS Magicolor WX Colour 3-6ppm	£2,499

**SHARP - Covered by 1 year Warranty**

17511	Sharp JX9460 6PPM	£539
16612	Sharp JX9680 12PPM	£580

**LASER RAM UPGRADES**

12480	1Mb Oki OL400e	£108
12482	1Mb Panasonic KXP4400 - PEM3	£45
13783	1Mb Panasonic KXP4410/4430 (Add On Chip to Ram Card - 13777) - P445	£99
13777	1Mb Panasonic KXP4410/4430 (Ram Card with 1Mb) - P444	£99
16717	2Mb Oki OL400e	£118
12481	2Mb Panasonic KXP4400/5400	£110
14089	2Mb Panasonic KXP4410/4430	£110
12470	4Mb HP LaserJet 4/4M/4S/4SiMX	£99
15471	4Mb HP LaserJet 4P/4MP/5/5M/5MP/6P/6MP	£39
13809	4Mb HP LaserJet 5L	£59
16716	4Mb Panasonic KXP4400/5400 - PEM2	£165
16432	8Mb HP LaserJet 4P/4MP/4+ /4M+ /5P/5MP/6P/6MP/5/5M/5N	£65

**LASER CONSUMABLES**

11416	Brother HL600 Series Drum	£99
11415	Brother HL600 Series Toner	£19
14222	Brother HL730/760 Series Toner	£19
17645	Brother HL1060 - TN300 Toner	£19

11307	Canon LBP4/Star LP4/ HP IIP Plus/ HP IIP Toner	£45
11308	Canon LBP8/ HP/ HP/II/ HP/III/ HP/IIID Toner	£63
15468	Epson EPL3000 Toner	£73
11593	Epson EPL4000/4100/4300 Drum	£112
11573	Epson EPL4000/4100/4300 Toner	£86
11304	Epson EPL5000/5200 Toner	£92
15163	Epson EPL5500 Drum	£42
11653	Epson EPL5500 Toner	£30
11529	Epson EPL5600 Toner	£78
11614	Epson EPL7100/7500/8100 Toner	£131
18463	Epson EPL9000/PS Imaging Cartridge NEW	£151
18464	Epson EPLN2000 Imaging Cartridge NEW	£140
11430	Epson GQ5000/3500 Toner	£16
11436	Epson GQ5000/3500 Drum	£110
11477	HP 4/4+/4M+/ Toner	£54
11216	HP 4V/4M/4P/4MP Toner	£39
11418	HP 4V/4MV Toner	£84
11537	HP 5L Toner	£36
11526	HP 5P/5MP/6P/6MP Toner	£45
11426	HP 5SI Toner	£95
15192	HP III/5/4Si Toner	£72
14606	HP PhotoSmart Cartridge - Orange Star NEW	£24
14605	HP PhotoSmart Cartridge - Purple Moon NEW	£24
14234	Kyocera 800 Toner	£29
15927	Kyocera 3400/6500/1550 Toner	£44
11540	Kyocera FS400 Toner	£15
18471	Kyocera FS1700/3700 Toner Kit NEW	£60
16659	Lexmark Optra C Black Toner	£73
16674	Lexmark Optra C Cyan Toner	£85
16676	Lexmark Optra C Magenta Toner	£85
16675	Lexmark Optra C Yellow Toner	£85
11621	NEC 610/660/660i EP Toner	£73
15060	NEC S60/S62/S90 Toner	£117
14196	Oki 4W Toner	£18
13561	Oki OL400/410/800/810/830/840/850/870 Drum	£149
11429	Oki OL400/410/800/810/830/840/850/870 Toner	£17
15248	Oki OL400E/OL400W/410E/410EX/600EX/610EX/810EX Drum	£129
11482	Oki OL400E/OL400W/410E/410EX/600EX/610EX/810EX Toner (4851)	£15
11390	Panasonic KXP4400/5400 Drum	£95
13501	Panasonic KXP4400/5400 Toner	£9
11389	Panasonic KXP4410/4430/4440 Developer	£98
11388	Panasonic KXP4410/4430/4440 Drum & Ozone	£98
11577	Panasonic KXP4410/4430/4440 Toner	£28
11127	Panasonic KXP4420 Developer	£57
11333	Panasonic KXP4420 Drum	£57
11447	Panasonic KXP4420 Toner	£26
11219	Panasonic KXP4450/4450i/4451/4455 Developer	£60

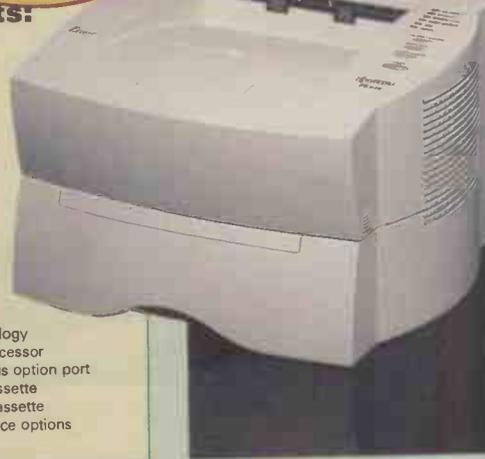
15065	Panasonic KXP4450/4450i/4451/4455 Drum	£75
11214	Panasonic KXP4450/4450i/4451/4455 Toner	£20
11425	Panasonic KXP6100/6150 Toner	£12
11679	Panasonic KXP6300/6500 Toner	£12
18485	QMS 2060 Toner NEW	£165
18481	QMS DeskLaser 600 Toner NEW	£65
18493	QMS Magicolor CX/EX Developer - Black NEW	£145
18494	QMS Magicolor CX/EX Developer - Cyan NEW	£145
18495	QMS Magicolor CX/EX Developer - Magenta NEW	£145
18496	QMS Magicolor CX/EX Developer - Yellow NEW	£145
18489	QMS Magicolor CX/EX Microfine Toner - Black NEW	£45
18491	QMS Magicolor CX/EX Microfine Toner - Cyan NEW	£110
18490	QMS Magicolor CX/EX Microfine Toner - Magenta NEW	£110
18492	QMS Magicolor CX/EX Microfine Toner - Yellow NEW	£110
11332	Qume Crystalprint Toner Drum	£149
16613	Qume Crystalprint Toner Toner	£108
16615	Sharp Toner 9200/9210 (92BC) Drum	£51
16678	Sharp Toner 9660/9680 (96DC) Drum	£99
16677	Sharp Toner 9660/9680 (96DC) Toner	£95
11589	Star LS5 Toner	£68
11562	Star WinType 4000 Toner	£68

**LASER ACCESSORIES**

14471	Brother HL1060 Serial VF RS100M	£79
14419	Brother HL1660 Second Duplex Unit	£380
15716	HP LaserJet 4 JetDirect Ethernet Card	£235
10946	HP LaserJet 4 Lower Paper Cassette	£199
17502	HP LaserJet 5 Colour Postscript SIMM	£339
14379	Kyocera FS3700/FS1700 Duplex Unit	£345
14382	Kyocera FS3700/FS1700 Output Stacker - 500 sht	£105
11431	Panasonic KXP4420 Ozone Filter	£9
11326	Panasonic KXP4450/4455 Ozone Filter	£20
18484	QMS 2060 A4 Paper Cassette NEW	£100
18483	QMS 2060 Letter Paper Cassette NEW	£100
18498	QMS Magicolor CX/EX Fuser & Oil Cleaning Pad NEW	£30
18497	QMS Magicolor CX/EX OPC Belt Cartridge NEW	£250
18488	QMS Magicolor CX/EX Paper Cassette NEW	£105
18499	QMS Magicolor CX/EX Waste Toner Kit NEW	£10

# KYOCERA FS600

**NEW**



- Key Benefits:**
- ▲ Very fast processor ensures rapid delivery of first page
  - ▲ Robust design and construction
  - ▲ Low-cost modular upgrade options
  - ▲ Low-cost per page
  - ▲ Ideal personal or shared printer

- Basic Specifications:**
- ▲ 600dpi, 6ppm laser printer
  - ▲ Cartridge-free technology
  - ▲ 50MHz Power PC processor
  - ▲ IEEE 1284 parallel plus option port
  - ▲ Internal 150-sheet cassette
  - ▲ Optional 250-sheet cassette
  - ▲ Ethernet/serial interface options

**FS600**  
14464  
**£239**  
£280.83 inc. VAT

Product	Code No.	Price	Inc. VAT
250 Sheet Cassette	14479	£120	£141.00
RJ45 Network Card	14500	£112	£131.60
Serial Interface Card	14501	£25	£29.38
1YR Echoshield On Site Warranty	14502	£44	£51.70
3YR Echoshield On Site Warranty	14504	£99	£116.33
TK16 Toner	14503	£30	£35.25

## A sensational new concept in Compatible Inkjet Cartridges

**Dataproducts**  
Group Hitachi Koki

**HEWLETT PACKARD**  
new compatible Click-in system

- ▲ 1 Modified HP 51625A inkjet cartridge
- ▲ 2 tanks each of: Cyan, Magenta, and Yellow
- ▲ 100% HEWLETT PACKARD COMPATIBLE
- ▲ UPTO 45% more ink capacity per colour tank verse original
- ▲ Pre-primed, ready to use
- ▲ Re-use printhead a minimum of 5 times
- ▲ Replace only the colour you need with replacement tanks

**Click-In System** £34.99  
£41.11 inc. VAT

**Replacement Tank** £16.99  
£19.96 inc. VAT

**CANON**  
compatible cartridges

- Includes 3x9ml colour kit
  - 100% Canon/Apple compatible
  - Tri colour and single black
- From £4.25**

**EPSON**  
compatible cartridges

- Includes 20 ml ink per colour
  - 100% Epson compatible
  - Tri colour and single black
- From £6.99**

- ▲ **SAVE SAVE SAVE £££**  
Our cartridges could save you up to 3 times the cost of an OEM cartridge. **Check out HP click-ins**
- ▲ **100% WRITTEN GUARANTEE**  
That if the cartridge should harm your printer in any way it will be repaired or replaced according to the conditions
- ▲ **INCREDIBLE FREE CD OFFER**  
A choice of 3 CD's with more to collect with each purchase
- ▲ **TECHNICAL SUPPORT**  
A helpful and informative service designed to advise and assist with your concerns and queries 0990 275220
- ▲ **TOP QUALITY INK**  
ISO 9001 certified manufacturing, controlled ink formulation to provide better colour and trouble free printing
- ▲ **QUALITY CONTROL**  
Every inkjet cartridge developed goes through 21 quality tests before leaving the factory

Make/Model	OEM Part No	Time	Price	Inc. VAT
HP DESKJET 500/500C	HP51625A	SYSTEM	£35	£41.13
HP DESKJET 500/500C	HP51625A	TANKS	£17	£19.98
HP DESKJET 500/500C	HP51625A	SYSTEM	£35	£41.13
HP DESKJET 500/500C	HP51625A	TANKS	£17	£19.98
CANON BJC-400/4100	BCI-21	BLACK	£4.25	£4.99
CANON BJC-400/4100	BCI-21 COL	TRI COL	£7	£8.23
CANON BJC-600/610	BJI-201 BK	BLACK	£4.25	£4.99
CANON BJC-600/610	BJI-201 COL	C/M/Y COL	£11	£12.93
EPSON STYLUS COL/PRO/PRO XL	SQ20034	BLACK	£7	£8.23
EPSON STYLUS COL/PRO/PRO XL	SQ20036	TRI COL	£15	£17.63
EPSON STYLUS COL IM/S	SQ20047	BLACK	£7	£8.23
EPSON STYLUS COL IM/S	SQ20049	TRI COL	£11	£12.93

**FOR A MORE COMPREHENSIVE COMPATIBLE LIST AND NEWS OF OUR NEW RANGE CALL 01582 745555**

**Sales Hotline: 01582 745555** **FAX: 01582 488588**

**FOR ORDERING INFORMATION SEE PAGE 2**

Prices exclude carriage & VAT @ 17.5% except where shown.

# Advancing the Art of Printing

**Color JetPrinter Range** - Multimedia Printers from the World's Fastest Growing Printer Company

**PRINT LEXMARK**

## ColorJet 1000 & Disney Print Studio

**All the family prints... in the most colourful way!**

### Family Colour Printer & Disney's Print Studio featuring Hercules

- Up to 600 x 600 dpi resolution
- 1 ppm in colour draft mode and 3 ppm in black draft mode
- One colour print cartridge included
- Compatibility Windows 95 & 3.1x
- Compact and easy to use
- Disney's Print Studio CD ROM



**PRINT LEXMARK**

**LEXMARK 1000**

**NEW**

1000 + Disney Studio

**£101**

£118.68 inc. VAT

## ColourJet 7000

Includes LivePix CD-ROM photo software and Lexmark Photo Collection CD



**NEW**

Don't forget to ask for your free software when ordering

Colour Jet 7000

**£229**

£269.08 inc. VAT

- Up to 8ppm - mono
- Up to 3ppm - colour
- Automatic envelope feeding
- 150 sheet input tray
- Up to 1200 x 1200 dpi resolution in black and colour

## ColorJet 2030 PE - Let your imagination fly!

You'll soon be using its breathtaking colours to bring out the professional best in you...



**PRINT LEXMARK**



Colour Jet 2030

**£127**

17723 £149.22 inc. VAT



It's all in the box!

- Super Sharp Waterproof Black Ink™ and bright colour cartridges
- Lexmark starter paper pack
- ColorFine™ 2 software
- Lexmark Photo Collection (200 photos)
- Lexmark Workshop™ CD

- Up to 600 x 300 dpi - Mono & Colour
- Up to 3ppm - Mono
- Up to 2ppm - Colour
- ColorFine 2 software for best colour balance
- 100 sheet paper handling
- 1 year warranty

## ColorJet 3000

Full color inkjet printer for business environments

**User Friendly**

- Up to 5ppm - mono
- Up to 1ppm - colour
- Supersharp waterproof black ink for precision text
- 2 head design for added convenience, improved performance and reduced printing cost
- Up to 600 x 300 dpi

Color Jet 3000

**£152**

£178.60 inc. VAT



**Canon**

# Get Real with PhotoRealism™



## Canon BJC-250

- Increased media support, T-Shirt transfer and Canon's new GP-201 Glossy Photo Paper.
- Improved Windows® 3.1/95 printer driver
- Supports a wide range of media
- Optional PhotoRealism™ & Fluorescent neon inks available
- 100 sheet built in sheet feeder
- FREE Software

FREE Thomas Cook voucher worth £140



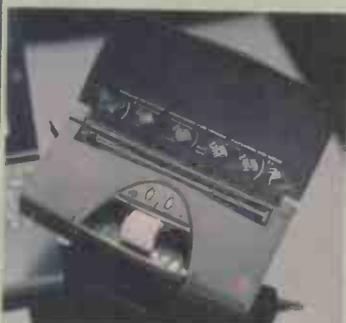
FREE BC02 Mono Cart. Software worth £14.99  
FREE Printmaster Gold Publishing Software worth £29.99

Subject to availability

## Canon BJC-80

Travel around the world with the BJC-80, and you'll always have the facility for high quality A4 printing at your fingertips.

- 720 x 360 dpi Mono on plain paper with smoothing
- 4.5 ppm - Draft mode mono
- 1.9 ppm - High Speed colour graphics
- Incorporates new Image Optimizer technology - smooths away jagged edges!
- Optional Colour Image Scanner Cartridge - 360 dpi resolution
- Built in IrDA Sensor for auto infra-red communication



## Canon BJC-4300

The BJC-4300 is equally at home in the study or office. For family and business use, from club newsletter to working at home, every document you produce will be in high quality, impressive colour.

FREE CATZ Software worth £14.99  
FREE Printmaster Gold Publishing Software worth £29.99



Subject to availability

FREE Thomas Cook voucher worth £140

- 720 x 360 dpi
- Incorporates new Image Optimizer technology
- Optional Colour Image Scanner Cartridge

## Canon BJC-7000

Inspired input - Outstanding output.

- 1200 x 600 dpi output - Superb Photo Realism quality
- Stunning output on plain paper using new P-POP Plain Paper Optimised Printing Technology
- A4+ Paper Handling - Ideal for DTP applications
- Prints on up to 550gsm Card - Unrivalled versatility
- Ultra fast prints speeds - Up to 4.5PPM mono / 3.2PPM colour
- Long Life Cartridges
- One year RTB warranty



**NEW**

Product	Code No.	Price	Inc. VAT
BJC-250	14468	£104	£122.20
Black Cartridge	11432	£14	£16.45
Colour Cartridge	15322	£18	£21.15

Product	Code No.	Price	Inc. VAT
BJC-80	14608	£143	£168.03
Black Cartridge	11420	£20	£23.50
Colour Cartridge	18829	£21	£24.68
BJC-80 & Scanner Cart.	14609	£187	£219.73

Product	Code No.	Price	Inc. VAT
BJC-4300	14610	£141	£165.68
Black Cartridge	11402	£21	£24.68
Colour Cartridge BC21e	18828	£25	£29.38
IS22 Image Cartridge	18836	£70	£82.25
BJC-4300 & Scanner Cart.	-	£185	£217.38

Product	Price
BJC-7000	£CALL
Colour Cartridge (contains BC161 Ink tank)	£CALL
Black Cartridge	£CALL
Photo Cartridge (contains BC162 ink tank)	£CALL
Colour Ink Tank	£CALL
Photo Ink Tank	£CALL

# You And Canon Can

Please call for details on Scanners, Digital Cameras and enhanced warranty



**Watford Electronics**

www.watford.co.uk

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN TELEPHONE: 01923 237774

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**brother**<sup>®</sup>  
More than just features

**HL-730**

The award winning, low-cost printing solution.

The ideal desktop printer, providing the 'best of both worlds' by allowing you to print directly from Windows and DOS.

- ▲ Windows and direct DOS printing
- ▲ True 600dpi print resolution
- ▲ 6 pages per minute print speed
- ▲ Straight paper path technology
- ▲ Easy to set up and use
- ▲ Low running costs
- ▲ Microfine toner included
- ▲ 200 sheet adjustable paper tray



Computer HOUSE OFFICE AWARD WINNER

TONER FOR ABOVE  
14222 **£19**  
£22.32 inc. VAT

HL-730  
14133 **£205**  
£240.88 inc. VAT

**HL-760**

The professional printing solution

The high quality, affordable laser printer offering superb output - up to 1200dpi, network connectivity options and multi-emulations for professional documentation.



- ▲ Windows and direct DOS printing
- ▲ True 1200dpi print resolution
- ▲ 6 pages per minute print speed
- ▲ Straight paper path technology
- ▲ Auto interface/emulation switching
- ▲ 200 sheet adjustable paper tray
- ▲ PCL 5e compatible
- ▲ Multiple emulations
- ▲ Low running costs

HL-760  
15366 **£229**  
£269.08 inc. VAT

**MC-3000**

The NEW three-in-one colour printer, copier and scanner

Printer

- ▲ 720x720dpi resolution
- ▲ 2.5 colour or 5 monochrome pages per minute
- ▲ 200 sheet capacity

Copier

- ▲ Reproduce colour documents direct from your desk

Scanner

- ▲ Automatic colour matching software
- ▲ 24bit technology
- ▲ 1200dpi final resolution
- ▲ Software includes - Xerox OCR 'Textbridge', Visionear 'PaperPort' and Unleaded Systems iPhotoExpress'

**3 in 1**

**NEW**

MC-3000  
**£449**  
£527.58 inc. VAT

**HL-1060**

High quality print at a surprisingly low price

A laser printer that makes high quality, high speed and high capacity highly affordable.

- ▲ Up to 1200 x 600 dpi printing
- ▲ 10 pages per minute print speed
- ▲ Dual bin as standard
- ▲ Straight paper path
- ▲ Multiple emulations
- ▲ Auto interface switching
- ▲ Network connectivity option
- ▲ 2Mb RAM



TONER  
17645 **£20**  
£23.50 inc. VAT

HL-1060  
14133 **£349**  
£410.08 inc. VAT

**HL-1260e**

Stunning graphic and text reproduction

Incorporating Brother's own high speed 12ppm engine and 1200dpi, the Brother HL-1260e delivers superb quality output with stunning graphic and text reproduction, for professional documentation.

- ▲ PCL5e/BR-Script
- ▲ True 1200 x 600 dpi
- ▲ 650 sheet paper input
- ▲ 2Mb memory upgrade to 66Mb

HL-1260e  
15121 **£693**  
£914.27 inc. VAT

What is Straight Paper Path Technology?



- ▲ Reduces annoying jams and curls
- ▲ Prints envelopes reliably
- ▲ Prints on a wide variety of stocks and sizes
- ▲ Less paper path distance, faster throughput
- ▲ Multiple emulations
- ▲ Auto interface switching
- ▲ Network connectivity option

**Hewlett Packard**

The Ultimate in Affordable Quality wherever you are!

HP HEWLETT PACKARD  
Authorised Reseller  
Personal Computer Products

**The Laserjet 6L**

The HP LaserJet 6L printer is just right for the individual business user working at home or at the office. It offers high print speed, great output quality, exceptional media versatility and compatibility with popular operating systems. It is also compact, quiet and reliable.

▲ Fast and efficient personal laser printing.

A 6-page-per-minute engine and 18 seconds for first-page-out ensure rapid results. A patented instant-on fuser eliminates the delays associated with slow warm-up. Improved I/O handling means even faster return-to-application.

▲ Ideal for the individual user.

Space-saving and affordable, the HP LaserJet 6L printer puts out fast, high-quality laser printing well within the reach of the individual user in any size office.

▲ Rapid results with 6-ppm engine

▲ Razor sharp text and crisp graphics thanks to a true 600x600 dpi, HP Ret and microfine toner

▲ Able to print on envelopes, labels, postcards and transparencies

▲ Compatible with major IT platforms

▲ Compact, affordable and reliable



Fastest personal laser printing for professionals

Laserjet 6L  
**£232**  
£272.60 inc. VAT

**The NEW HP Laserjet Companion**

The NEW HP LaserJet companion HP's small personal LaserJet printer accessory adding copy, fax, file and read capabilities.

▲ Expands the functionality of your personal HP LaserJet printer, allowing you to

- Copy. Convenience copies at the touch of a button, even with the PC switched off.
- File. Storage of many types of documents on PC.
- Read. Conversion of hardcopy documents to editable text.
- Fax. Send faxes in conjunction with a PC fax modem.

▲ Easy to use thanks to intuitive 2-button control and auto-launch software with drag-and-drop functions

▲ Light-weight & compact, fits between your PC & printer

▲ Can be employed with any HP LaserJet 4,5 or 6 Series printer

▲ 4 additional functions for just one low price

▲ 4 high-quality functions, one low price. The HP LaserJet companion is great value for money, providing 4 extremely useful functions at exceptionally low cost. It makes an ideal addition to any personal HP LaserJet printer, taking up the minimum of desk space.



Read it, Copy it, File it, Fax it!

HP Laserjet Comp.  
**£115.50**  
£135.71 inc. VAT

**The HP 670C Deskjet**

▲ Black & Colour ink cartridges work together, so no switching from one to the other.

▲ Print speed (1-4 PPM black, 0.3-1.5 PPM colour).

▲ Hassle free printing on a wide variety of paper, including cards, envelopes, transparencies & labels.

▲ Automatically feeds up to 20 envelopes or 30 index cards.

▲ HP's RealLife Imaging for true-to-life images.

▲ Crisp black text and photo quality colour printing.

▲ Spectacular colour automatically with HP ColourSmart.

▲ No special paper required. • Quick and easy installation.

▲ Compatible with Win3.1, Win95, and DOS.



HP 670C DESKJET  
**£121**  
£142.18 inc. VAT

For more information on any of the Hewlett Packard range, call our Sales Specialists on 01582 745555



**Sales Hotline: 01582 745555**

FAX: 01582 488588

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# EPSON

## EPSON Stylus Color 300

New low cost 4 colour inkjet printer, ideal for both education and at home



**NEW**

BLACK **£12**  
£14.10 inc. VAT

COLOUR **£19**  
£22.32 inc. VAT

**INK CARTRIDGES FOR STYLUS 400/600/Photo**

## EPSON Stylus Color 400

**UNBELIEVABLE VALUE**

Low cost easy to use advanced 720 dpi colour printer. Photo-real output at 720 dpi without any additional options



- ▲ 720 dpi printing in colour & mono with Epson MicroDot™
- ▲ Photo Real Colour & Laser Sharp Mono Printing as standard
- ▲ Up to 3ppm Colour, 4ppm Mono printing on plain paper
- ▲ 1 year RTB warranty with optional 3 year on-site warranty
- ▲ Epson CoverPlus 3 year extended warranty service available - £65

EPSON COVER plus **£65**

Stylus Color 400  
**£133**  
14294  
£156.28 inc. VAT

PRINTERS

- ▲ Affordable four colour inkjet
- ▲ Up to 720dpi colour & true black printing
- ▲ Photo Real colour as standard
- ▲ Single four colour (CMYK) ink cartridge
- ▲ Up to 3ppm black and 1.2ppm colour
- ▲ Designed exclusively for Windows
- ▲ Epson AutoColour function
- ▲ Epson Quick-Dry Inks
- ▲ Windows '95 ICM Colour Matching
- ▲ 1 year RTB warranty with optional 3 year on-site warranty

Stylus Color 300  
**£121**  
18197  
£142.18 inc. VAT

COLOUR INK CART.  
**£15**  
£17.62 inc. VAT

BLACK INK CART.  
**£13**  
£15.28 inc. VAT

## EPSON EPL-5500

The little **BIG** laser from Epson.

Just half the size of other conventional lasers, the EPL-5500 is compact enough for any desktop.



- ▲ World's most compact 6ppm Laser - 5Kg, small footprint
- ▲ True 600 x 600dpi - with BiRTech and MicroGray Technology
- ▲ HP PCL5e, GL2 - Optional PostScript, Epson FX and LQ, IBM, WPS emulations
- ▲ 1Mb (upg. to 32Mb) - with Epson's Memory Improvement Technology
- ▲ SparcLite 22.5 MHz RISC CPU - very fast printing
- ▲ 150 Sheet Paper Tray - Optional 250 Sheet Paper tray available

EPSON COVER plus **£65**

Product	Price inc. VAT
1Mb	£319.00
2Mb	£319.00
5Mb PS	£570.00

## EPSON

COVER plus **+**

Epson CoverPlus is a new extended warranty service designed to offer a flexible and comprehensive service for all Epson printers, scanners and video projectors. It gives customers the option with the product to cover them for extra entitlement should their product develop any fault. Peace of mind through reliability.

- ▲ 3 year extended warranty service available on all Epson printers, scanners and video projectors.
- ▲ Flexible cover - 4 or 8 hour on-site response packages
- ▲ Product history known as own product is repaired not replaced
- ▲ Warranty is transferable if product is sold on
- ▲ Epson trained engineers and Epson spares used
- ▲ Options also covered if included with registered product
- ▲ Refer to specific product for price

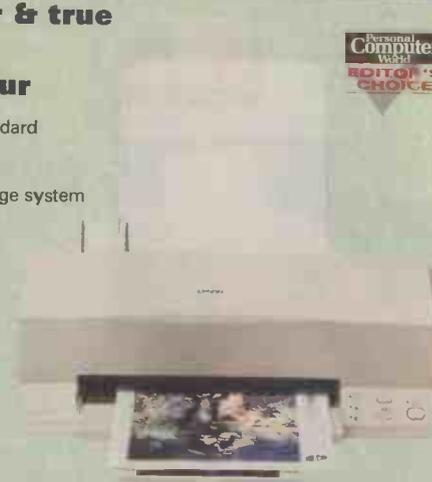
## EPSON Stylus Color 600

**1440dpi colour & true black printing PhotoReal colour**

- ▲ Photo-Real colour as standard
- ▲ Up to 4ppm colour 6ppm mono printing
- ▲ Advanced dual ink cartridge system with Epson Quick Dry Ink.
- ▲ Optimised printing of video/digital camera images
- ▲ 1 year RTB warranty with optional 3 year on-site warranty

EPSON COVER plus **£65**

Stylus Color 600  
**£169**  
16402  
£195.58 inc. VAT



## EPSON PhotoStudio

### EPSON Stylus Photo

EPSON Stylus Photo Studio has been designed as a dedicated photo printer for home, business or professional users.

- ▲ Photo Reproduction Quality output (PRQ)
- ▲ Optimised for photo reproduction (can also print text as usual)
- ▲ Prints 4" x 6" format and enlargements to A4 size
- ▲ Normal and light colour QuickDry Inks (6 colour printer)
- ▲ Up to 720 x 720 dpi resolution
- ▲ From 2 minutes per 4" x 6" photo size print
- ▲ Windows and Macintosh Compatible
- ▲ Comes bundled with Software including LivePix for Windows 95 and Macintosh

**NEW**



Stylus Photo  
**£308**  
£361.90 inc. VAT

BLACK INK CART.  
**£12**  
£14.10 inc. VAT

COLOUR INK CART.  
**£19**  
£22.32 inc. VAT

EPSON COVER plus **£65**

### EPSON FilmScan 200

EPSON Photo Studio FilmScan 200 is a dedicated film scanner for high quality scanning of 35mm positive, negative, mounted slides or the new Advanced Photo System format if the optional Advanced Photo System cartridge holder is installed.



EPSON COVER plus **£259**

- ▲ Affordable high quality scanning
- ▲ 1200 dpi optical resolution up to 4800 dpi with interpolation
- ▲ 30 bit per pixel image processing in colour single pass scanning
- ▲ Optical Advanced Photo System cartridge holder
- ▲ Batch scanning capability - up to 6 images, simultaneously
- ▲ Fully TWAIN compliant
- ▲ PC and Mac compatible (both parallel and SCSI versions available)
- ▲ Bonus Pictureworks PhotoEnhancer and Presto Photo Album software included

Scanner for MAC  
**£326**  
£383.05 inc. VAT

SCSI Scanner Windows  
**£326**  
£383.05 inc. VAT



**Watford Electronics**

www.watford.co.uk

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN TELEPHONE: 01923 237774

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**"That's the Watford Promise"**

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# Panasonic

## KXL-783A

- Connects to a Notebook Computer through a standard PCMCIA Type II Card (PCMCIA Type II Card and Cable are included).
- 8x Speed External Drive.
- Windows 95, Windows 3.1, Windows NT 3.51, OS/2 Warp V3 Ready.
- Operates on Compact and Lightweight AC Adaptor. Six (6) "AA" LR6" Size Alkaline Batteries (not supplied).
- Supports Many CD-ROM Formats.
- SPATIALIZER-delivers 3-Dimensional Surround Sound. Expands the sound from two conventional speakers.
- Lays Audio CD's.
- Built-in Stereo Speakers and Headphone Jack - Use as a Portable Audio CD Players - Great for Music and Game Play!
- SCSI-2 Command Compatible. Easy to Install Software. Helpful 3.5" Setup Disk Included.



▲ Power Save Feature. Drive enters "sleep mode" after 4 minutes to Extend Battery Life.

Ask for your FREE Software when ordering

**KXL-783A**  
**£244**  
16936 £286.70 inc. VAT

**NI-CD BATTERY**  
**£39**  
17730 £45.82 inc. VAT

### IDE CD ROM DRIVES

#### SIXTEEN SPEED

6777 Aries 16X IDE CD ROM Drive	£43
8155 Hitachi CDR-8130 16X	£46
6809 Mitsumi FX140 16X	£43
7854 Philips 16x	£52
7692 Toshiba XM56002B 16x MAX	£49



#### TWENTY FOUR SPEED

14442 Aries 24x IDE CD ROM Drive	£46
18259 Aztech Zeta 24x	£69
18478 CDR585B Creative Blaster24x	£52
18260 Goldstar 24x	£51
18156 Hitachi CDR-8330 24X	£55
17889 Mitsumi FX240 24X	£51
18261 Pioneer DR511 24x	£55
17693 Panasonic CR585 - 3600Kbs Max 128K Cache 85ms	£49
18262 Teac CD524E 24x	£55

### SCSI CD ROM DRIVES

#### SIXTEEN SPEED

17807 Teac CD-516S 16x MAX	£72
18263 Toshiba XM3801B 16x Internal	£95

#### TWENTY SPEED

17698 Plextor PX20TSI 20 Speed MAX Internal	£99
17699 Plextor PX20TSE20 Speed MAX External	£132

#### TWENTY FOUR SPEED

18264 Pioneer DRU24x 24x Internal	£89
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#### THRITY TWO SPEED

18907 Plextor PX32TSI 32 Speed MAX Internal	£125
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### JUKEBOX ROM DRIVES

15850 Nakamichi MJ5.16 16x 5CD SCSI Internal	£265
15470 Pioneer DRM-624X Quad Speed 6 Disk Jukebox 150ms 1800KB/s	£369

### PARALLEL CD ROM DRIVES

13690 Amacom EZCD 4x	£115
15760 Amacom EZCD 4x with Sound	£155
15763 Amacom EZCD 8x	£130
15762 Amacom EZCD 8x Sound	£175
14509 Amacom EZCD x16	£155
14510 Amacom EZCD x16 with Sound	£185
15555 Backpack 8S	£179
15556 Backpack 8S - with Sound	£190
16830 Backpack PD/CD	£425
16831 CD Shuttle P - 8X CD Rom	£229

### PCMCIA CD ROM DRIVES

16584 Amacom EZCD Card x4 - Quad Speed	£129
16585 Amacom EZCD Card x8 - Eight Speed	£145
17770 Amacom EZCD Plus - Eight Speed CD-Rom /Audio	£169
14510 Amacom EZCD Plus - Sixteen Speed CD-Rom /Audio	£199
14509 Amacom EZCD x16 - Sixteen Speed	£165
15666 Freecom Power CD/BS PCMCIA	£109
15847 FREECOM PDWER x12 CD Rom	£195
16936 Panasonic Travelspin KXL-783A	£244
17730 Panasonic Rechargeable NiCad Battery - KXL-030 for KXL-783A	£39

### READ/WRITE CD ROM DRIVES (CD-R/CD-RW)

<b>ARIES</b>	
17892 Compro 8x R 4x W SCSI Incl. Card	£379
<b>HEWLETT PACKARD</b>	
18427 Surestore 7100i CD-RW 2x2x6 Internal IDE	£232
18428 Surestore 7100e CD-RW 2x2x6 External Parallel	£285
<b>MITSUMI</b>	
16794 CR2600 CD-Recorder 6x Read, 2x Write E-IDE	£189
<b>NOMAI</b>	
17897 680.RW Internal EIDE 6x Read, 2x Write	£265
17893 680.RW External Parallel 6x Read, 2x Write	£342
17894 680.RW External SCSI Incl. Card 6x R, 2x W	£359
17895 680.RW Internal SCSI Incl. Card 6x R, 2x W	£309
17896 680.RW Internal SCSI Bare 6x Read, 2x Write	£299
<b>PHILIPS</b>	
17794 CDR265 Internal Kit	£285
CD03610 Internal EIDE 6x 2x 2x	£255
<b>PLASMON</b>	
17700 CDR480i-S1 Internal 8xR 4xW	£375
17701 CDR480i-S1-PC Int 4x W, 8x R AdapteX I/F	£445
17702 CDR480E-S1 - External 4X Write 8X Read	£405
17703 CDR480E-S1-PC - Ext 4x W/8x R inc AdapteX I/F	£469
<b>RICOH</b>	
17808 MP6200 CD-RW/CD-R Int 6x Read 2x W BARE	£299
17844 MP6200 CD-RW/CD-R Int 6x Read 2x W KIT	£342
17845 MP6200 CD-RW/CD-R External 6x Read 2x Write	£385
<b>SONY</b>	
17846 CD-Rom Writer Int (CDU-928E) 8xR, 2xW EIDE	£221
17847 CD-Rom SCSI Writer Int (CDU-926S) Bare + SW	£289
17848 CD-Rom SCSI Writer Kit Int (CDU-926S) Kit	£303
16821 Teac CD-R504S 4xWrite CD-Writer	£399
<b>TRAXDATA</b>	
16285 CDR2604 6x Read 2x Professional Kit	£245
18959 CDR2604 6x Read 2x Professional Kit External	£289
16346 CDR4604EL 6x Read 4x Write Entry level	£299
16347 CDR4604 6x Read 4x Professional Kit	£329
18510 CDRW2260 6x 2x 2x Professional Kit	£249
18927 CDRW2260EL 6x 2x 2x Entry Level	£219
14474 CDRW4260 6x 4x 2x Professional Kit	£369
14514 CDRW4260EL 6x 4x 2x Professional Entry level	£305
<b>YAMAHA</b>	
17898 CDR400T 4x Write 6x Read Internal S/W & SCSI Card	£305

13657 CDR400C 4X Int FULL KIT Caddy Loading	£299
17809 CDR400TX 4X External Tray Loading + Software	£335
18928 CRW4001T 4x 2x 6x Internal IDE Tray load + software	£399
18634 CDRW4001 4x 6x Internal EIDE Kit	£354

### DIGITAL VIDEO DISK DRIVES (DVD)

18477 Creative DVD Encre Kit	£255
17513 Hitachi DVD 4.7Gb Int Bare Drive ATAPI - G02000	£259
17245 Toshiba DVD 4.7Gb Internal IDE Bare Drive ATAPI - SD-M 1002	£210
17744 Sony DVD 4.7Gb Internal	£CALL

### OPTICAL DRIVES

16832 Plasmon DW260 2.6Gb External	£1,295
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### MULTIMEDIA KITS

17644 KTX Work & Play 12X Multimedia Kit	£139
18479 Creative Blaster 24X Discovery Kit	£105
16806 Diamond Ultrakit 12000 12x Multimedia Kit	£195

### SOUND/MIDI DEVICES

<b>ARIES</b>	
13920 16 Bit 3D PnP Sound Card (SB Compatible)	£29
<b>AZTECH</b>	
10446 Sound Galaxy Waverider Pro 32 3D (I) PnP	£34
<b>CREATIVE LABS</b>	
10482 Sound Blaster 16 Value PnP	£32
17851 Sound Blaster AWE64 Value	£56
16807 Sound Blaster AWE64 GOLD	£106
17833 4MB Ram Upgrade for AWE64	£29
10383 300 Blaster Game Player	£195
<b>DIAMOND</b>	
18658 Monster Sound 3D	£99
<b>EVOLUTION ELECTRONICS</b>	
15852 Commodore MK10 Keyboard Pack	£39
15851 Commodore MK149 Keyboard Pack	£92
<b>GRAVIS</b>	
16839 UltraSound ACE Wavetable Add In Card	£75
14014 UltraSound MIDI Kit	£39
10460 UltraSound PnP	£109
14013 UltraSound PnP PRD	£129
<b>ORCHID</b>	
14031 NuPanel	£19
10721 Wavebooster 2Mb	£19
<b>TYPHOON</b>	
16842 Gold PnP	£20
16843 Wave Star 32 3D	£25
16844 FM Radio Card	£22

### SPEAKERS & ACCESSORIES

16364 SP261 15W HiFi Plus Speakers	£25
10699 SP681 10W HiFi Speakers	£19
10747 SP868 80W Power Speakers	£25
10200 Stereo Speakers	£9
10185 Screen Microphone	£8
10128 Stereo Headphones	£5
16846 Typhoon Desktop Adjustable Microphone	£7
16847 Typhoon Headset with Microphone (Full Duplex)	£9
16845 Typhoon Lapel/Monitor-Mount Mini Microphone	£5
Yamaha YST-M15 10W Speakers	£45
Yamaha YST-M25 25W Speakers	£65
Yamaha YST-M20DSP 10W Digital Surround Processing Speakers	£49

### CD MEDIA & ACCESSORIES

11966 Writeable Blank CD Media (CD-R Disks)	£1.49
14458 Writeable Blank CD Media (CD-R Disks) 10 Pack	£14
14459 Writeable Blank CD Media (CD-R Disks) 50 Pack	£69
18016 ReWriteable Blank CDRW Media	£16
16348 Traxdata Press-it CD Labelling Kit	£17
17247 CD Cleaning Kit - Polish, Lens Cleaner, Cloth etc.	£20
18343 Traxdata Audio Accessories Recording Kit	£49
17251 Traxdata Press-it Pack of 50 White Labels	£11
17252 Traxdata Press-it Pack of 50 Blue Labels	£13

17253 Traxdata Press it Pack of 50 Yellow Labels	£13
17254 Traxdata Press it Pack of 50 Red Labels	£13
17255 Traxdata Press it Pack of 50 Gold Labels	£13
17256 Traxdata Press it Pack of 50 Silver Labels	£13
17257 Traxdata Press it Pack of 50 Clear Labels (Laser Printer)	£22
17258 Traxdata Press it Pack of 50 Clear Labels (Inkjet Printer)	£CALL

### CONTROLLER CARDS

#### 16-BIT ISA BUS

10348 AT Multi VD - 2S/P/G	£9
10351 AT Multi VD - IDE/FDD/2S/P/G	£11
10392 AT Multi VD - 2S(16550)/P	£18
10349 2xIDE/2x FDD Controller	£9
17217 Promise EIDEmax 4EIDE (LBA Interface for up to 8.4Gb Drives)	£27
14775 Promise EIDepro 4 EIDE 2S/1P (16550 LBA)	£35
13870 Single RS232 (16550) Serial Card	£15

#### VESA LOCAL BUS

10389 VL Multi VD - IDE/FDD/2S/P	£12
10385 VL Multi VD - IDE/FDD/2S(16550)/P	£26
17219 Promise EIDE 2300Plus 4HDD/2FDD 2S (16550), 1P 1G	£35
10354 Promise EIDE 4030Plus 4HDD/2FDD 2S (16550), 1P 1G - OK Cache	£99

#### ADAPTEC

17220 EIDE - AT 32 VP Kit	£25
17221 EIDE - AT 42 VP Kit (Inc Floppy Controller)	£34
17222 EIDE - AT 52 VP Kit (Inc Floppy & serial/parallel)	£41

#### PCI BUS

10384 Enhanced IDE Controller	£16
17223 Promise DC5030 4HDD IDE (Bus Master) OK Cache	£105
18035 Promise Ultra ATA PCI 4ATA/IDE	£59

### SCSI CARDS

#### ADAPECT BARE BOARD

17225 1542CP ISA SCSI Bare	£112
17226 2940AU PCI Ultra SCSI Bare	£129

#### SCSI KITS

14476 AAA-113 PCI to Wide Ultra SCSI Array	£570
10381 1460 PCMCIA SCSI Kit	£105
1480 PCMCIA SCSI Kit	£155
10499 1505 Total CD Kit	£32
10395 1542CP ISA SCSI Controller Kit	£152
13936 2742 EISA SCSI Controller Kit	£219
17229 2825 Total Advantage VL Kit	£75
14477 2910B PCI SCSI Kit	£65
10488 2920 PCI SCSI Controller Kit	£89
10399 2940AU PCI SCSI Controller Kit	£149
13074 2940UW PCI Ultra Wide SCSI Controller Kit	£175
10483 358 Mini SCSI Plus Enhanced Parallel	£79
10487 3940 PCI Multi-Channel SCSI Controller Kit	£254
17230 3940UW PCI SCSI Ultra Wide Multi Channel Kit	£293
15748 3985 PCI Raid Kit	£445

#### BUS LOGIC

17231 KT 930C PCI ULTRA SCSI Adaptor Kit	£115
17232 BT 930C PCI ULTRA SCSI (Card Only)	£95
17233 KT 950C PCI ULTRA WIDE SCSI Adaptor Kit	£165
17234 BT 948 PCI SCSI Adaptor	£149
17235 KT 445C VLB 32 Bit SCSI Adaptor	£95
17236 KT 545C ISA 16 Bit SCSI Adaptor	£129
<b>CMD</b>	
17238 6500 PCI SCSI Host Adaptor	£148
17239 6520 PCI SCSI (OK) Expandable to 64Mb	£195

#### SYMBIOS LOGIC

17735 SYM8150S SCSI Card	£75
17736 SYM8251S Wide SCSI Card	£105
17737 SYM8750SP Ultra SCSI Card	£95
17738 SYM8751SP Ultra Wide SCSI Card	£95

#### PROMISE

14480 Promise SCSI Plus 7 x SCSI Devices PCI	£69
14481 Promise SCSI Max 15 x SCSI Devices PCI Fast/Wide	£95
14482 Promise SCSI-Ultra 20 x SCSI Devices SCSI I	£95

### PCMCIA CARD ADAPTORS

17243 Psion Gold Drive PCMCIA Card Reader	£89
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# Sales Hotline: 01582 745555

**FAX:**  
01582 488588



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Prices exclude carriage & VAT @ 17.5%  
except where shown.

# NOMAI 750.C

Removable Disk/ Hard Drive

www.nomai.fr



- ▲ SYQUEST, EZ135 and EZ270 COMPATIBLE
- ▲ Fast: hard disk performance in a 3.5" removable format
- ▲ Reliable: proven quality of typical fixed hard drives
- ▲ More than 600 times the capacity of the standard floppy
- ▲ Unlimited capacity: Use one disk per project, account or client
- ▲ Easy to use and carry: the most compact design in high capacity devices
- ▲ Endless high capacity mobile storage at a very attractive cost per megabyte
- ▲ Choose NOMAI 750,540 or any 270 or 135 MB SyQuestTM compatible disks

NT COMPATIBLE



The only removable storage solution to give you the choice of using 4 capacities of media

Product	Price	Inc. VAT
135 Mb Disk	£12.00	£14.10
270 Mb Disk	£28.00	£32.90
540 Mb Disk	£29.00	£34.07
750 Mb Disk	£39.00	£45.82

Product	Price	Inc. VAT
Internal SCSI	£155.00	£182.13
External SCSI	£179.00	£210.33
18298 Parallel Kit	£30.00	£32.50
17914 Parallel External	£209.00	£245.58
18150 ISA SCSI Kit	£49.00	£57.58
18149 PCI SCSI Kit	£69.00	£81.08

**Specifications:**  
 Technology Winchester Magnetic Hard Drive  
 Capacity per media 750MB, 540MB, 270MB, 135MB  
 Interface SCSI 2 or Parallel Port  
 Reliability - MTBF 250,000 hours  
 Cache size 512 k  
 Average Seek Time 10 msec  
 Disk Data Transfer Rate up to 8.8 MB/sec (Maximum with SCSI 2)  
 Sustained Transfer Rate up to 3.8 MB/sec (Maximum with SCSI 2) (Write and Read)  
 1 Year warranty NOMAI 750 drive  
 5 Year warranty NOMAI Disks  
 Physical Characteristics of External Unit:  
 Height 33 mm Width 109 mm Depth 180 mm Weight 735 gms



# NOMAI 680.RW

CD-Recordable/Rewritable Compact Disc Drive

3 DRIVES IN ONE

Unique multi-function concept combining 6X CD-ROM reader, 2X CD-Recorder and the world's first 2X CD-ReWritable drive! The NOMAI 680.RW is a 6X CD reader which play any CD type (CD-ROM, CD-AUDIO, CD-VIDEO,...) In addition to recording information on low cost CD-Recordable (CD-R) media, the NOMAI 680.RW is also the first drive on the market to write and rewrite newly standardised CD-Rewritable (CD-RW) discs.



- ▲ Drag and drop your files (UDF standard file management) and create your own CD
- ▲ Easy to use and carry
- ▲ Easy to install



Free CD Labelled Software Supplied

Endless high capacity mobile storage at a very attractive price: Use CD-Recordable or CD-ReWritable, depending on the task at hand.

- ▲ CD-R media offers the advantages of low cost and worldwide compatibility with the installed base of CD equipment.
- ▲ CD-RW media means disc space can be reused over and over again thereby bringing down cost of disc ownership. The CD-RW media is also suited for the new MultiRead compatible CD-ROM drives, plus MultiRead DVD-ROM drives.

Product	Code	Price	Inc. VAT
External Parallel	17893	£342.00	£401.85
External SCSI Inc. Card	17894	£359.00	£421.83
Internal EIDE	17897	£265.00	£311.38
Internal SCSI Inc. Card	17895	£309.00	£363.08
Internal SCSI	17896	£299.00	£351.33

**Specifications:**  
 Capacity: 680 Mbytes  
 Average access time (1) 290 msec  
 Max. access time (1) 550 msec  
 Transfer rate (mode 2) (Zoned 6 speed) 1146 KB/sec (read only)  
 Transfer rate (mode 2) (Double speed) 352.6 KB/sec (reading or writing)  
 Transfer rate (mode 2) (Single speed) 176.4 KB/sec (reading or writing)  
 Form factor 5.25" half height built-in  
 Dimensions (internal drive):  
 Height 41.5 mm Width 146 mm Depth 206 mm  
 1 Year warranty on all drives and media

CD-R	£2.99	£3.51 inc. VAT
CD-RW	£14	£16.45 inc. VAT



AMACOM

The Flip Disk is a revolutionary, new portable data storage device that is smaller, faster and offers greater capacity than anything else on the market

- ▲ Powered directly from your Notebook or PC
- ▲ No need for external power supplies or batteries
- ▲ No interface cable required
- ▲ Up to 6.4GB of data storage capacity (using data compression)
- ▲ 2.5" industry standard hard drives used
- ▲ MTBF rating of 300,000 power-on-hours
- ▲ Built-in shock absorbers for added reliability

### Key Features

Connects via PCMCIA/Parallel Ports  
 Unique Design  
 High Build Quality & Reliability  
 Includes 'Novadisk' Backup Software

Flip disk

NEW



2.8GB	4.2GB	6.4GB
£335	£433	£549
18574	18575	18576
£393.63 inc. VAT	£508.78 inc. VAT	£645.08 inc. VAT

# EZCD PLUS

Portable 8 & 16 speed PCMCIA CD-Rom & Mobile

CD PLAYER

- ▲ Connects to PCMCIA equipped portables & desktops
- ▲ Mobile Audio CD player
- ▲ Draws power from the PC
- ▲ Fully hot swappable



£169  
£198.58 inc. VAT

- ▲ Maximum performance - 1.2 MB sustained data transfer rate
- ▲ Small, lightweight & very attractive design
- ▲ Easy to install software driver included
- ▲ Multisession photo CD mode 1 & 2 compatible.

Product	Code No.	Price	Inc. VAT
PCMCIA 4X	16584	£129	£151.58
PCMCIA 8X	16585	£145	£170.38
PCMCIA 8X Plus Audio	17770	£169	£198.58
PCMCIA 16X	16785	£165	£193.88
PCMCIA 16X Plus Audio	14510	£199	£233.83
Parallel 4X	13690	£115	£135.12
Parallel 8X	15763	£139	£163.32
Parallel 16X	14509	£155	£182.13
Parallel & Sound 4X	15760	£155	£182.13
Parallel & Sound 8X	15762	£175	£205.63
Parallel & Sound 16X	14510	£185	£217.38

FREE LIFETIME TECHNICAL SUPPORT

# OPTI Byte-Fly

If you are looking for a fast reliable way to increase the hard drive storage of your Portable PC, do fast file transfers or backup with direct access to disk retrieval plus have mobile disk storage that goes where you go, then we have developed a fantastic solution. Users can travel between office and home without exposing their expensive portable PC to risk of damage or theft. You can use the Opti Byte-Fly to transport data from work to home, office to remote location and on clients calls where security of data is important.

The Opti Byte-Fly is a fast, compact 2.5" hard drive that puts anything between one and five gigabytes of data in the palm of your hand. The Byte-Fly connects to the PCMCIA slot of any portable PC or compliant PC and is powered from the PCMCIA interface.

External HDD 1.6GB	External HDD 3.2GB
£270	£520
£317.25 inc. VAT	£611.00 inc. VAT

- ▲ Small, 150mm x 76mm x 30mm
- ▲ Lightweight, less than 200g (including Hard Disk)
- ▲ PCMCIA connection
- ▲ Powered by PCMCIA interface
- ▲ Auto configurable of Hard Disk types
- ▲ High Shock Resistance
- ▲ High Capacity, up to 5GB - 2.5" high specification drives
- ▲ Windows 95 Plug & Play, DOS, DR-DOS and OS/2 2.X. Support

# OPTI Battery Bank

The best companion for the portable PC user external, rechargeable battery bank



The Opti Battery Bank is the perfect battery run-time solution for high performance portable PC's, Pentium CPU, TFT LCD, high capacitance memory and CD-Rom. The Opti Battery Bank fits most portable PC's and increases run-time by up to four hours. Ideal for out of date notebooks - customers still need a battery source even if they can no longer find or buy any more internal battery.

Battery Bank  
£73  
£85.78 inc. VAT

- ▲ Increase you portable PC's run-time by up to four hours
- ▲ Includes a NiMH battery, rechargeable up to 1000 times
- ▲ Includes a fast charge circuit which can be recharged anywhere
- ▲ On-line swapping, without switching off PC. No more lost data. No more interruption
- ▲ Easy to plug and charge/recharge
- ▲ Light, totally portable and elegantly designed, only 600g.
- ▲ Easy to carry, with scratch-proof and anti-vibration casing
- ▲ Ergonomically designed
- ▲ Available to fit most current portable PC's. Including Toshiba, Compaq and Olivetti™.



Watford Electronics

www.watford.co.uk

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 RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN TELEPHONE: 01923 237774

LOWEST PRICE ON ALL PRODUCTS  
 • ALL THE TIME •  
 "That's the Watford Promise"

REFER TO TERMS & CONDITIONS ON PAGE 2

# HP SureStore CD - Writer Plus 7100i/e

**HEWLETT PACKARD**  
 Authorised Reseller  
 Personal Computer  
 Products

**TAKE COVER**  
 Buy HP Support Pack

Simple as a floppy with all the qualities of a CD!

The HP SureStore CD-Writer Plus 7100 uses revolutionary CD-rewritable technology to enable you to write, update, erase and rewrite up to 650MB of data on a single CD-RW disc. Now you can use CDs just like a floppy for dynamic storage applications such as multimedia presentations, audio and photographic projects which can then be easily transported to other users. For maximum versatility the HPSureStore CD-Writer Plus is compatible with both CD-RW and existing CD-R media.

**Internal & External Models Available**



Win 95 and Win NT 4.0 Compatible

## Easy to install and use

- ▲ Install Assistant enables customers to install their HP CD-Writer Plus quickly and easily. The new software scans the users system to check for other IDE devices and available resources; it then recommends the best installation of the HP SureStore CD-Writer Plus. This gives customers peace of mind and it ensures optimal performance of the CD solution.
- ▲ New standard, CD-UDF, provides drive-letter access so users can simply 'drag and drop' files from the drive to the CD.
- ▲ DirectCD, an Adaptec software package for Windows'95 and Windows NT, enables users to write directly to CD from applications.

## Totally Versatile

- ▲ Both drive and media use rewritable technology, enabling users to write, update, erase and rewrite up to 650MB of data on a single CD up to 1000 times per second per disc.
- ▲ Compatible with write-once CD-R media.
- ▲ Internal and external versions meet customers needs of cost, space and portability.

## HP service and support

- ▲ One-year warranty guarantees the best services.
- ▲ HP's European Customer Support Centre provides technical information via telephone directly with online agents who are trained to assist with setup, configuration, startup and troubleshooting of HP products.

**Pack 450 floppy disks onto one CD!**

<b>Internal</b> 18427 <b>£232</b> £272.60 inc. VAT	<b>External</b> 18428 <b>£285</b> £334.88 inc. VAT	<b>3 Pk CDR Media</b> <b>£45</b> £52.88 inc. VAT
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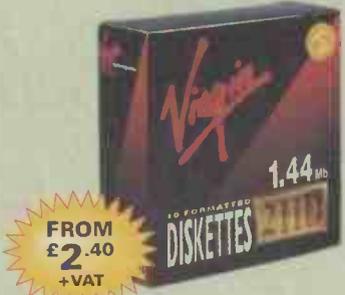
- ▲ Transfer rates (based on 150 KB/second): 1x read/write, 2x read/write, 6x read only.
- ▲ Write methods: track at once, disc at once, incremental and MultiSession.
- ▲ Write verification: automatic power control to dynamically adjust laser write power.
- ▲ Format and ECC standard: red, yellow, orange and green books.
- ▲ Recording format: UDF and ISO 9660.
- ▲ Media: HP CD-RW and HP CD-R discs.
- ▲ Media capacity: up to 680MB.
- ▲ Connectivity: parallel port connection for external model.

One year warranty - best service guaranteed

For more information on the new HP SureStore CD Writer Plus 7100i/e and all HP Products visit our World Wide Web site at <http://www.hp.com/go/cdr>.



# THE COMPLETE RANGE FROM THE BRAND YOU CAN TRUST



FROM **£2.40** +VAT



All Virgin Diskettes are guaranteed to be supplied virus free, certified 100% error free and subject to a lifetime guarantee.

FROM **£3** +VAT

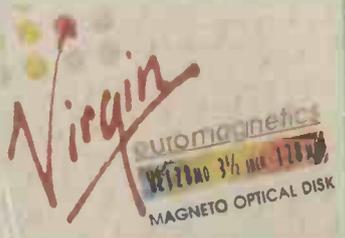


Virgin 1/4" Data Cartridge range - superior performance features include; high speed operating capacity and anti-heat distortion baseplate technology.



Helical scan recording on 4mm & 8mm tape represents state of the art technology in recording capacity.

Product	Price	Inc. VAT
3.5 HD IBM Diskettes (10 pack)	£2.40	£2.82
3.5 HD Unf Diskettes (10 pack)	£2.40	£2.82
3.5 HD IBM Diskettes (22 pack)	£4.80	£8.64
6150 Data Cartridge	£6.50	£7.64
6250 Data Cartridge	£8.50	£9.99
6525 Data Cartridge	£8.75	£10.33
9120 Data Cartridge	£14.25	£16.74
9250 Data Cartridge	£16.60	£19.51
9500 Data Cartridge	£21.25	£24.97
2120 Unf Data Cartridge	£3.00	£5.53
2120XL Form Data Cartridge	£6.00	£7.05
3000XL Form Data Cartridge	£10.69	£12.56
500MB QIC 80 Travan	£17.40	£20.45
2.2GB QIC 3020 Travan	£20.50	£24.09
4mm 60mtr Dat Tape	£3.50	£4.11
4mm 90mtr Dat Tape	£3.20	£3.76
4mm 120mtr Dat Tape	£10.59	£12.44
8mm 112mtr Dat Tape	£3.50	£4.11
8mm 160mtr Dat Tape	£7.59	£8.92
74Min 700MB Gold back	£2.89	£3.40
74Min 700MB Green back	£2.10	£2.47
5.25 650MB Optical	£20.00	£23.50
5.25 594MB Optical	£20.00	£23.50
3.5 128MB Optical	£5.20	£6.11
3.5 230MB Optical	£6.25	£7.34
5.25 650MB Optical	£20.00	£23.50



Virgin Magneto Optical - the ideal solution for increasing storage requirements for today's applications which include imaging, CAD, medical, animation, pre-press, multimedia or general datastorage.



Quality products you can rely on



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FAX: 01582 488588

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Prices exclude carriage & VAT @ 17.5% except where shown.



**DAT/TAPE & ZIP BACKUP DRIVES**

<b>AMACOM</b>	
16962 2/4Gb External DAT Parallel & SCSI	£699
16963 4/8Gb External DAT Parallel & SCSI	£899
16964 4/8Gb External TR-4 Parallel & SCSI	£469
<b>BACKPACK</b>	
16966 8000T TR-4 (4Gb)	£415
16965 8000T TR-1 (800Mb)	£99
<b>DANMERE</b>	
16770 Danmere Backer (Video Cassette) Win/Win95	£34
Danmere Backer Win/Win95 Parallel Port	£49
<b>HP COLORADO (INTERNAL)</b>	
15715 Travan 3.2Gb Internal (T3000)	£109
18425 Travan 5Gb Internal (C4354A) IDE	£127
15345 Travan 8Gb Internal SCSI (T4000s)	£222
<b>HP COLORADO (EXTERNAL)</b>	
15735 Travan 8Gb External SCSI (T4000es)	£279
18426 Travan 5Gb External (C4361A) Parallel	£156
<b>HEWLETT PACKARD (INTERNAL)</b>	
16969 HP C1533 4/8Gb DAT OEM Internal	£525
16967 HP C1534 2Gb DAT OEM Internal	£339
16968 HP C1536 2/4Gb DAT OEM Internal	£375
<b>HEWLETT PACKARD (EXTERNAL)</b>	
16972 HP C1533/E 4/8Gb DAT OEM External	£659
16970 HP C1534/E 2Gb DAT OEM External	£452
16971 HP C1536/E 2/4Gb DAT OEM External	£529
<b>HP SURESTORE</b>	
15190 SureStore 2000e 2.0Gb External SCSI	£439
15189 SureStore 2000i 2.0Gb Internal SCSI	£439
15237 SureStore 5000e 5.0Gb External SCSI	£542
10782 SureStore 5000i 5.0Gb Internal SCSI	£475
15186 SureStore DAT 8e 8.0Gb External SCSI	£669
10815 SureStore DAT 8i 8.0Gb Internal SCSI	£613
17814 SureStore DAT 8eU 8.0Gb External SCSI	£689
SureStore DAT 24x6e 24Gb Autoloader DAT Internal SCSI	£795
16913 SureStore DAT 24x6e 24Gb Autoloader DAT External SCSI	£879
15736 SureStore DLT30E 30Gb External SCSI	£1,799
15737 SureStore DLT40E 40Gb External SCSI	£2,830
16365 SureStore DLT71E 70Gb External SCSI	£4,399
16434 SureStore T4I 8Gb Internal SCSI	£249
<b>HEWLETT PACKARD DATPACK</b>	
16973 DATpack HP Surestore 5000i/Arcade NT	£785
16974 DATpack HP Surestore 5000i/Arcserve Network	£815
16975 DATpack HP Surestore 5000e/Arcade NT	£855
16976 DATpack HP Surestore 5000e/Arcserve Network	£885
<b>HEWLETT PACKARD EXTENDED WARRANTIES</b>	
16977 Support Pack for Surestore 12000 Dat Drives	£118
16978 Support Pack for Surestore 6000 Dat Drives	£66
16979 Support Pack for Surestore 2000/5000 Dat Drives	£47
16981 Support Pack for Surestore T4I Tape Drives	£40
16982 Support Pack for Surestore DLT30e Drives	£140
16983 Support Pack for Surestore DLT40e Drives	£192
<b>ACCESSORIES</b>	
15194 HP Colorado ISA External Kit (KE10)	£59
10366 HP Colorado ISA Fast Tape Controller (FC20)	£44
13449 HP Colorado ISA Fast Tape & H/W Comp. (TC15)	£109
11995 HP Colorado Windows Backup Software (SK7)	£39
<b>OMEGA STORAGE SOLUTIONS</b>	
BUZ- Multimedia	£149
— Ditto 2Gb External Parallel Port Bundle (c/cas + 3xMedia + Software)	£125
15560 Ditto 2Gb External Parallel Port	£88
15559 Ditto 2Gb Internal	£59
10795 Ditto 3200Mb External Tape Drive	£119
10794 Ditto 3200Mb Internal Tape Drive	£99
18431 Ditto MAX 7Gb Internal	£99
18430 Ditto MAX 7Gb External	£129
18433 Ditto Max Pro 10Gb Internal	£189
18432 Ditto Max Pro 10Gb External	£189
16909 Ditto Cleaning Kit	£15
16985 Ditto Dash 2Mb/Sec Controller	£35
13082 Jaz 1Gb External SCSI	£228
13081 Jaz 1Gb Internal SCSI	£175
— Jaz 2Gb External SCSI	call
— Jaz 2Gb Internal SCSI	call
16992 Jaz Carry Case	£26
16991 Jaz Jet Interface	£69
— Iomega zip 100Mb EIDE Internal	£69
10800 ZIP 100Mb External SCSI	£88
10787 ZIP 100Mb Parallel Port	£87

15883 ZIP 100Mb SCSI Internal	£88
18434 ZIP Plus	£149
16908 ZIP Card PCMCIA to SCSI Adapter	£69
15885 ZIP Zoom Card	£25
<b>MEMORY TECHNOLOGY - SCSI / PARALLEL</b>	
16994 DATshuttle 4000 2GB/4GB, 20MB/min parallel, 35MB/min SCSI	£705
16995 DATshuttle 8000 4GB/8GB, 20MB/min parallel, 40MB/min SCSI	£923
<b>MEMORY TECHNOLOGY - PARALLEL</b>	
16993 TapeShuttle 3200MC - 1.6GB/3.2GB TR-3, 9MB/min parallel	£315
<b>EXABYTE</b>	
17130 Eagle TR-3 Internal Floppy Tape Backup Solution (Up to 4.4Gb)	£95
<b>SEAGATE TAPESTRIP - INTERNAL</b>	
10809 3.2Gb Travan Internal (TST3200) TR3	£106
15562 8000 INT SCSI TST8000R-SBET (TR4)	£209
15564 8Gb TR-4 Falcon Internal IDE TST8000	£205
<b>SEAGATE TAPESTRIP - EXTERNAL</b>	
15563 8000 EXT SCSI TST8000ES-SBET - TR4	£265
17134 3.2Gb Travan Parallel Port (TST3200) TR3	£109
<b>SEAGATE DAT</b>	
17135 4Gb DAT Drive External SCSI (DDS-DC)	£429
17136 8Gb DAT Drive External SCSI (DDS-2)	£555
17131 2Gb DAT Drive Internal SCSI (DDS-1)	£329
17132 4Gb DAT Drive Internal SCSI (DDS-DC)	£395
17133 8Gb DAT Drive Internal SCSI (DDS-2)	£495
<b>SONY</b>	
17137 TSL-7000 DDS Auto Loader Internal	£1,399
17138 TSL-7000 DDS Auto Loader External	£1,425
17139 STD-5000 4Gb-16Gb DSS2 Internal	£425
<b>TANBERG OATA (INTERNAL)</b>	
17140 TDC-3660 250Mb Bare Drive	£261
17149 TDC-3820 525Mb Bare Drive	£320
17142 TDC-4120 1.2Gb Bare Drive	£325
17143 TDC-4220 2.5Gb Bare Drive	£455
17144 TDC-4222 5.0Gb Bare Drive	£459
17145 Panther 5540 2.0Gb Internal Kit	£339
17146 Panther 6528 4.6Gb Internal Kit	£389
<b>TANBERG OATA (EXTERNAL)</b>	
17147 Panther 8884 250Mb Kit	£382
17148 Panther 8885 525Mb Kit	£455
17149 Panther 9934 1.2Gb Kit	£539
17150 Panther 5098 2.5Gb Kit	£595
17151 Panther 5519 5.0Gb Kit	£620
17152 Panther 5541 2.0Gb Kit	£445
17153 Panther 6528 4.6Gb Kit	£500
<b>DATA CARTRIDGES</b>	
13983 100Mb ZIP Disk	£9
14001 100Mb ZIP Disk 6-Pack	£47
13186 1Gb Jaz Disk	£55
17154 1Gb Jaz Disk 3-Pack	£165
15551 2Gb DITTD TAPE	£13
15878 2Gb DITTO TAPE 3PK	£38
11941 4mm DAT 2.0Gb 5pk	£39
11939 8mm DAT 2.3Gb	£8
11830 DC2120	£7
11982 DC2120XL	£11
11828 DC6250	£12
16771 HP 8Gb/16Gb 4mm Dat Tape 125 Metre (DDS-3) C1517A	£99
11978 MC3000XL	£15
11985 Travan TR1	£15
17525 Travan TR1 XTRA 1GB	£17
11969 Travan TR3	£21
16095 Travan TR3 XTRA 4.3GB	£18
15359 Travan TR4	£25

**REMOVABLE HARD/OPTICAL DRIVES**

<b>NOMAI</b>	
17914 Nomai 750.c Parallel Port External	£209
17915 Nomai 750.c SCSI External	£179
17917 Nomai 750.c SCSI Internal Bare	£155
<b>SYQUEST</b>	
15739 EZFlyer 230Mb External Parallel Port	£92
15738 EZFlyer 230Mb External SCSI	£92
18636 EZFlyer 230Mb Internal IDE	£100
16098 Syjet 1.5Gb External SCSI	£245
10345 Syjet 1.5Gb Internal IDE	£188
16096 Syjet 1.5Gb Internal SCSI	£186
16097 Syjet 1.5Gb Parallel	£247
<b>SYQUEST MEDIA</b>	
11954 SQ800 5.25" 88Mb Cartridge for SQ5110c & SQ5110	£26

11974 135Mb Cartridge	£13
17156 230Mb EZFlyer Cartridge 3-Pack	£53
17157 230Mb EZFlyer Cartridge 5-Pack	£76
15740 230Mb EZFlyer Cartridge Single	£19
11964 SQ2000 5.25" 200Mb Cartridge for SQ5200	£35
11959 SQ310 105Mb Cartridge for SQ3105A & SQ3105S	£35
11960 SQ327 270Mb Cartridge for SQ3270	£39
11938 SQ400 5.25" 44Mb Cartridge for SQ555	£29
16099 Syjet Cartridge	£75
17166 Syjet Cartridge 3-Pack	£199
<b>PANASONIC</b>	
17168 PD Drive (LF1004B)	£279
17169 PD Drive Internal (LF1004BS)	£299
17170 PD Drive Kit Internal (LF1004BK)	£305
15270 PD Drive Internal Kit (LF1004BKS)	£340
17171 PD Drive External (LF1000HB)	£369
17172 PD Drive External Kit (LF1000HBK)	£420
17849 PD Drive E IDE 6x / Optical (LF-1195)	£199
11976 PD Media 650Mb	£20
<b>EXTERNAL SCSI CASES</b>	
11918 External SCSI Hard Drive case	£99
17177 Removable SCSI Hard Drive Rack	£29

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<b>WATFORD SPECIAL PRICED IDE HARD DRIVES</b>	
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15741 AR2000MB 2.1Gb	£98
17260 AR3200MB 3.2Gb	£115
18945 AR4300MB 4.3Gb	£135
18946 AR6400MB 6.4Gb	£205
<b>FUJITSU - Covered By 3 Year Warranty</b>	
15671 MPA3017AT 1.7Gb ATA3 5400RPM 128K Cache	£89
16464 MPA3026AT 2.6Gb ATA3 10ms 5400RPM 128K Cache	£104
18266 MPA3035AT 3.5Gb ATA3 10ms 5400RPM 128K Cache	£123
18267 MPA3052AT 5.2Gb ATA3 10ms 5400RPM 128K Cache	£164
<b>IBM - Covered By 3 Years Warranty</b>	
18947 00K0400 4.3Gb EIDE/Ultra ATA 9ms	£149
18948 09J0308 6.4Gb EIDE/Ultra ATA 9ms	£219
18949 00K0394 8.4Gb EIDE/Ultra ATA 9ms	£359
<b>MAXTOR - Covered By 3 Year Warranty</b>	
<b>DIAMOND MAX RANGE</b>	
18950 8175004 1.7Gb EIDE/Ultra DMA ATA 10ms	£87
18951 82560D3 2.5Gb EIDE/Ultra DMA ATA 10ms	£109
18952 8324004 3.2Gb EIDE/Ultra DMA ATA 10ms	£121
18953 8432004 4.3Gb EIDE/Ultra DMA ATA 10ms	£147
18954 85250D6 5.2Gb EIDE/Ultra DMA ATA 10ms	£175
18955 87000D8 7.0Gb EIDE/Ultra DMA ATA 11ms	£215
<b>QUANTUM - Covered By 2 Year Warranty</b>	
<b>ULTRA ATA RANGE</b>	
17780 Fireball Stratus 1.5Gb 10ms	£85
17781 Fireball Stratus 2.1Gb 10ms	£105
17782 Fireball Stratus 3.2Gb 10ms	£125
17505 Fireball Stratus 4.3Gb 10ms	£152
17504 Fireball Stratus 6.4Gb 10ms	£212
18165 Pioneer 2.1Gb 11ms Eide	£109
<b>SEAGATE - Covered By 3 Year Limited Warranty</b>	
10336 ST31277A Medalist 1.2Gb EIDE 12ms 4500RPM 64K Cache	£72
15955 ST31722A Medalist 1.7Gb Ultra ATA 12ms 4500RPM	£82
10338 ST32122A Medalist 2.1Gb Ultra ATA 12.5ms 4500RPM	£102
16063 ST323531A Medalist Pro 2.5Gb 12ms 5400RPM 128K Cache	£103
17569 ST33232A Medalist Pro 3.2Gb Ultra ATA 12ms 4500RPM	£121
16280 ST34342A 4.3Gb Ultra ATA 12ms 4500RPM	£149
18282 ST36450A 6.4Gb 10ms 512K cache	£211
<b>WESTERN DIGITAL - Covered By 3 Year Warranty</b>	
10335 AC2100 1.2Gb 10ms 5200RPM 128K Cache	£95
10326 AC21600 1.6Gb 10ms 5200RPM 128K Cache	£99
10341 AC22100 2.1Gb Ultra ATA 12ms 5200RPM	£112
10342 AC32500 2.5Gb Ultra ATA 12ms 5200RPM	£115
15358 AC33200 3.2Gb 12ms 5200RPM	£132
18561 AC34300 4.3Gb Ultra ATA 12ms 5200RPM	£159
18560 AC35100 5.1Gb Ultra ATA 12ms 5200RPM	£195
18559 AC36400 6.4Gb Ultra ATA 12ms 5200RPM	£205

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<b>HITACHI</b>	
15353 DK211a-51 540Mb 12ms 4464RPM 128K Cache	£79
15569 DK13A11 1.4Gb 12ms 4464RPM 128K Cache	£115
16885 DK225A21 2.1Gb 12ms 4464RPM 128K Cache	£165
17530 DK226A32 3.2Gb 12ms 128k cache	£285
<b>TOSHIBA</b>	
15498 MK1401MAV 1.4Gb 13ms 128k Cache 12.5mm high	£115
17586 MK2103MAV 2.16Gb IDE Hard Disk	£145
17850 MK3003MAN 3.0Gb IDE Hard Disk 19mm	£231

**PCMCIA/PARALLEL DRIVES**

18574 Flip Disk 2.8Gb PCMCIA/Parallel Port Hard Drive	£335
18575 Flip Disk 4.2Gb PCMCIA/Parallel Port Hard Drive	£433
18576 Flip Disk 6.4Gb PCMCIA/Parallel Port Hard Drive	£549

**3.5" SCSI HARD DISK DRIVES**

<b>FUJITSU - Covered By 5 Year Warranty</b>	
16100 M2952SY 2.2Gb 10ms 7200RPM 512K Cache Ultra	£289
16487 M2952QA 2.2Gb 10ms 7200RPM 512K Cache Ultra Wide	£299
16101 M2954SY 4.3Gb 10ms 7200RPM 512K Cache Ultra	£445
16488 M2954QA 4.3Gb 10ms 7200RPM 512K Cache Ultra Wide	£459
16102 M2949SY 9.1Gb 10ms 7200RPM 512K Cache Ultra	£622
16489 M2949QA 9.1Gb 10ms 7200RPM 512K Cache Ultra Wide	£659
<b>MICROPOLIS - Covered By 5 Year Warranty</b>	
15900 4345 Tomahawk 7200rpm 4.3Gb 8.8ms	£328
16493 4345WS Tomahawk 4.3Gb U/W 7.9ms	£328
16494 4345AV 4.3Gb 7.9ms	£380
16495 4345WAV 4.3Gb 7.9ms	£385
16492 3391 Tomahawk 7200rpm 9.1Gb 8.9ms	£499
16496 3391WS Tomahawk 9.1Gb U/W 7.9ms	£526
16497 3391AV 9.1Gb 7.9ms	£533
16498 3391WAV 9.1Gb 7.9ms	£533
<b>QUANTUM - Covered By 2 Year Warranty</b>	
16491 Fireball Stratus 2.1Gb 10ms SCSI	£139
14484 Fireball Stratus 3.2Gb 11ms SCSI	£179
18297 Fireball Stratus 4.3Gb 10ms SCSI	£199
14486 Fireball Stratus 6.4Gb 10ms SCSI	£272
10334 Atlas II 4.5Gb 8ms SCSI Narrow	£345
16490 Atlas 9.1Gb 8ms SCSI Narrow	£544
<b>SEAGATE - Above 1.2Gb = 5 Year</b>	
16503 ST52160N Medalist Pro 2.1Gb 10ms ULTRA 11ms 5400RPM 128K Cache	£130
18641 ST32272N Barracuda 2.1GB ULTRA 9ms 7200RPM 512K Cache	£265
18642 ST32272W Barracuda 2.1GB ULTRA Wide 10ms 5400RPM 256K Cache	£295
18643 ST34572N Barracuda 4.5Gb ULTRA 9ms 7200RPM 512K Cache	£342
18644 ST34572W Barracuda 4.5Gb ULTRA WIDE 9ms 7200RPM 512K Cache	£362
16505 ST19101N Barracuda 9.1Gb ULTRA 9ms 7200RPM 512K Cache	£615
16506 ST19101W Barracuda 9.1Gb ULTRA WIDE 9ms 7200RPM 512K Cache	£655
17538 ST34501N Cheatah 4.5Gb Ultra 8ms 10000RPM	£455
<b>WESTERN DIGITAL - Covered By 3 Year Warranty</b>	
16106 2.1Gb 8ms 7200RPM 512K Cache Ultra Narrow	£259
16107 2.1Gb 8ms 7200RPM 512K Cache Ultra Wide	£269
16109 4.3Gb 8ms 7200RPM 512K Cache Ultra	£379
16108 4.3Gb 8ms 7200RPM 512K Cache Ultra Wide	£393
<b>PCMCIA HARD DRIVES</b>	
<b>PORTABLE ADD-ONS</b>	
17180 Disk Mobile - 260Mb PCMCIA Type III	£295



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**BACKUP/HDD/CDR**

IDE and SCSI to Parallel Port A comprehensive range of portable back up solutions, easily connected via the parallel port, SCSI controller or PCMCIA slot. All products feature attractive shielded casings, carrying handle, internal power supply, documentation and software drivers.

Product	Price	Inc. VAT
DAT Connect 2000 - DDS-1, 2GB Parallel & SCSI, includes Seagate Backup for Windows 3.X/95 and DOS	£659	£774.33
DAT Connect 5000 - DDS-1, 2-4GB Parallel & SCSI, includes Seagate Backup for Windows 3.X/95 and DOS	£719	£844.83
DAT Connect 10000 - DDS-2, 4-8GB Parallel & SCSI, includes Seagate Backup for Windows 3.X/95 and DOS	£869	£1021.08
Tape Connect 4000/8000 MB, TR-4 drive, Parallel & SCSI	£509	£598.08
PD Connect Panasonic PD drive, 650 MB optical and 4X speed CD-ROM, Parallel & SCSI	£389	£457.08
CD Connect 24X-P, 24X speed, parallel	£239	£280.83
CD-Rec Connect, 2X write/6X read, Parallel & SCSI, incl. Adaptec Easy CD Creator/Direct CD & 2 CD-R Disks	£449	£527.58
CD-RW Connect-PS, 2X write/6X read, Parallel & SCSI, includes Easy CD Creator/Direct CD & 1 CD-RW Disk	£509	£598.08

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The latest range of add on SCSI peripherals on the market housed in attractive desktop enclosures. All products feature SCSI in/out connections, SCSI ID, internal PSU. Tower solutions available for direct Network Connection.



Product	Price	Inc. VAT
DAT Satellite external SCSI - DDS-1, 2GB, includes Seagate Backup for Windows 3.X/95 and DOS	£509	£598.08
DAT Satellite external SCSI - DDS-1, 2-4GB, includes Seagate Backup for Windows 3.X/95 and DOS	£529	£621.58
DAT Satellite external SCSI - DDS-2, 4-8GB, includes Seagate Backup for Windows 3.X/95 and DOS	£659	£774.33
DAT Satellite external SCSI - DDS-2, 4-8GB, includes Seagate Backup for Windows 3.X/95 and DOS	£929	£1091.58
DAT Satellite external SCSI - DDS-3, 12-24GB, includes Seagate Backup for Windows 3.X/95 and DOS	£349	£410.08
PD Satellite, external SCSI Panasonic PD drive 650 MB optical + 4X speed CD-ROM	£419	£492.33
CD-RW Satellite, external SCSI CD-ReWritable 2X (re)write, 6X read	£339	£398.33
CD-Rec. Satellite, external SCSI CD-Recorder 2X write, 6X read	£469	£551.08
MO Satellite, external SCSI - 640 MB rewritable optical		

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# THE REVOLUTION IN DATA STORAGE



Swap Drive with Swap Bay

Works like a removable car stereo. The Swap Bay is installed into the 5.25" aperture of your computer and connected to the SCSI controller. The Internal SCSI Kit is available as a hard drive, Jaz drive, Zip Drive, SyJet drive Noma drive and tape drive. Needless to say, other devices are possible and may be available on demand. All Swap drives are interchangeable in one universal Swap Bay.



**Also available in IDE version**



Swap Drive with Swap Dock

Convert your Swap Drive into an external device with a Swap Dock. With the optional Swap Dock you can convert your Swap drive with a simple 'click' into an external device that connects to the parallel port of every computer, or directly to a SCSI adapter. A PCMCIA adapter is available as an option for notebooks.

Product	Price	Inc. VAT
Swap Dock - PS, for external connection to the parallel port & SCSI controller (PCMCIA optional)	£59	£69.33
Swap Bay - PS, for internal connection (directly to SCSI controller)	£19	£22.33
Swap Disk Drive - PS, harddrive 2.1GB for use with Swap Dock or Swap Bay	£229	£269.08
Swap Disk Drive - PS, harddrive 4.3GB for use with Swap Dock or Swap Bay	£319	£374.83
Swap ZIP Drive - PS, 100MB for use with Swap Dock or Swap Bay	£119	£139.83
Swap JAZ Drive - PS, 1GB for use with Swap Dock or Swap Bay	£199	£233.83
Swap SyJet Drive - PS, 1.5GB for use with Swap Dock or Swap Bay	£269	£316.08
Swap Tape Drive - PS, 8GB TR-4 for use with Swap Dock or Swap Bay	£329	£386.58

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Prices exclude carriage & VAT @ 17.5% except where shown.



# Cristie PROFESSIONAL BACKUP SPECIALISTS

Established for over 25 years, Cristie is a leading European specialist in the design and manufacture of data backup and storage systems for PC's and networks and is the world's longest established PC backup brand.

Cristie provide complete solutions covering the full range of drive technologies, software, consultancy, installation, training, maintenance and technical support. ISO9002 approved quality systems ensure that products are manufactured and supported to the highest standards.

## TS5000 Series DAT Tape Drives



Complete with backup software & one piece of media

**NEW**

- ▲ Capacities from 6Gbytes to 24 Gbytes
- ▲ Parallel port and SCSI interfaces for ease of connection
- ▲ Internal and external versions available
- ▲ Read after write data verification for high data integrity
- ▲ Supports DOS; Windows 3.x, 95 & NT, OS/2 and Novell
- ▲ Compatible with most leading backup applications including Cristie's SDB and PC-BaX
- ▲ Two year warranty and unlimited telephone technical support on product registration
- ▲ ISO9002 quality assured manufacture and support

EXT SCSI  
**£950**  
TS5800  
£1116.25 inc. VAT

EXT SCSI  
**£1197**  
TS5824  
£1406.48 inc. VAT

Specification		
Name	TS5800	TS5824
Capacity - native / compressed	4Gb / 8Gb	12Gb / 24Gb
Speed per min - parallel / SCSI	20Mb / 44Mb	20Mb / 88Mb
Configuration	Portable	Portable
	Ext SCSI	Ext SCSI
Size (mm) (w x h x l)	118x85x300	118x85x300
Mains input	100-260V 50-60Hz	100-260V 50-60Hz
Weight (portable / external)	2.64Kg	2.64Kg
Media	4mm DAT DDS3 (125M)	

## OD1000 Series OPTICAL Disk Drives

The OD1640 is a 3.5 inch 640Mb removable Magneto-Optical disk drive. It is available as an internal SCSI-only drive or portable model featuring both parallel and SCSI interfaces. Each OD1640 comes complete with one MO disk.

Specification	
Name	OD1640
Capacity	640Mb
Access Time	35ms
Interface	Parallel & SCSI
Configuration	Portable
	Int SCSI
Size (mm) (w x h x l)	118x85x300
Mains input	100-260V 50-60Hz
Weight (portable / external)	3.75Kg
Media	3.5" 640Mb Optical Disk

Cristie and PC-BaX are registered trademarks of Cristie Electronics Limited. All other trademarks acknowledged.

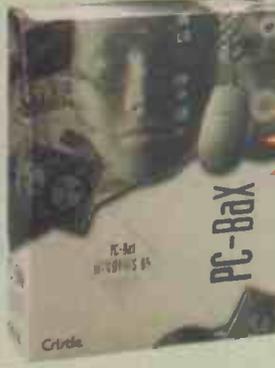
- ▲ 640Mb removable Magneto-Optical disk drive
- ▲ Parallel port and SCSI interfaces for ease of connection
- ▲ Operates as a logical drive or as a backup device
- ▲ Internal and external versions available
- ▲ Supports DOS; Windows 3.x, 95 & NT and OS/2
- ▲ Two year warranty and unlimited telephone technical support on product registration
- ▲ ISO9002 quality assured manufacture and support

EXT SCSI  
**£655**  
OD1640  
£769.63 inc. VAT



**NEW**

## PC-BaX Backup and Recovery Software for Windows 95



Cristie PC-BaX for Windows 95 is a fully featured 32-bit multi-threaded backup and recovery application designed to give optimum performance and portability. It fully supports Windows 95 file systems and backs up all Local Registry, Security and long file names. The user interface, data format and command script language are common across OS/2, Windows 95 and NT enabling easy migration between platforms.

**FULL ON-LINE SUPPORT**

WINDOWS 95  
**£51**  
£59.93 inc. VAT

System Requirements	
PC-BaX for Windows 95	
Operating System	Windows 95 or later
Memory	8Mb RAM
Disk Space	2Mb

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**NEW**

- ▲ Supports Windows 95 including Registry and long file name support
- ▲ Easy to use configurable graphical interface and full on-line help
- ▲ Fully featured Media Library
- ▲ Scheduler with full integration into Windows 95 System Agent
- ▲ Command Line support for integration with other system processes
- ▲ Supports a wide range of Tape, Disk and Autochangers
- ▲ Common tape format for DOS, Windows 3.x, 95 & NT, and OS/2
- ▲ Support for software and hardware data compression for increased capacity and performance

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# HP Colorado 5GB and 5GB External

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 Products

**Breakthrough performance for full system protection**  
 Looking for a PC backup solution that won't keep you waiting?  
 The new HP Colorado 5GB and 5GB external deliver extremely  
 high performance and high capacity at an astonishingly low price.



Both models provide an impressive capacity of up to 5GB on a single data cartridge and store data at a rate of up to 2GB in well under an hour. Weighing in at less than a kilo, the external model makes an ideal companion for your portable PC.

Product	Price	Inc VAT
HP Colorado 5GB (inc. tape) Internal	£137.00	£160.98
HP Colorado 5GB (inc. tape) External	£174.00	£204.45
HP Colorado 5GB (no tape) Internal	£127.00	£149.22
HP Colorado 5GB (no tape) External	£156.00	£183.30

- ▲ Disaster recovery for Windows 95 with full system protection
- ▲ 2.5GB native capacity, up to 5GB compressed
- ▲ Backup at up to 2GB in less than an hour
- ▲ Includes Colorado Backup by Cheyenne for Windows 95, Windows and DOS
- ▲ Supports Windows NT 4.0 backup utility
- ▲ HP's unique Install Assistant software for easy installation and configuration of internal drives
- ▲ Low cost HP Colorado 5GB media

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- ▲ New: Great Multimedia Software



Complete package, everything you need to get started on a PC or a Macintosh is included.

- ▲ ZipPlus drive
- ▲ AutoDetect™ cable for SCSI or parallel port, PC or Macintosh
- ▲ One multilingual Zip tools disk and one installation floppy
- ▲ Iomega CD-ROM containing Zip Tools & other third party software
- ▲ Adobe® PhotoDeluxe™ CD-ROM (PC & MAC)
- ▲ Owner's Manual
- ▲ Multimedia software guide



Product	Price	Inc. VAT
Zip 100 PC Parallel	£89	£104.58
Zip 100 SCSI Ext.	£91	£106.93
Zip 100 SCSI Int.	£91	£109.23
Zip 100 EIDE	£72	£84.60
Zip 6 pack disks	£47	£55.22
Zip disk	£9	£10.58

**From £72 + VAT**

# Yamaha CRW4001

Once again, Yamaha has broken new ground in CD recording. The CRW4001 is the only CR-ReWritable in the world which is capable of 4x write speed. The CRW4001 is actually three CD drives in one; a reader at 6x speed, a writer at quad speed and a re-writer at double speed. CD-RW is both the logical progression from, and the ultimate companion to CD-R; and in a field where speed is crucial, drives which write at less than 4x speed are simply not worth considering. As the consistent pace-setters in CD technology, Yamaha now brings blistering speed, total reliability and outstanding compatibility to a CD-RW drive - the CRW4001.



- ▲ 3 Drives in 1 - 6x Read, 4x Write 2x Re-Writer
- ▲ No other CDRW drive writes data as fast
- ▲ Supports seven variants of the CD format - the only truly cross platform medium
- ▲ Multi-Read capability allows almost any conceivable format of CD to be read
- ▲ Delivers high capacity drag & drop storage on a reliable, cost effective re-usable media

CRW4001 Value Kit ships with industry standard pre-mastering and packet writing software - accessing the full power of the drive through a straightforward operating system.

**CRW4001**  
**£399**  
 18634 £468.83 Inc. VAT

## Simple PC recording software

The easiest way to record music and audio on your computer - and mix, match and edit it!

- ▲ Allows simple recording and editing of music, audio and speech on a PC
- ▲ Records up to: 100 hours on a 1GB Jazz® disk (30 hours stereo) 10 hours on 100MB Zip disk (2 hours stereo)
- ▲ Allows audio files to be sent over the internet
- ▲ Accepts inputs from CDs, microphones or line in source
- ▲ Can play back in any order with full mix, match, dub and edit facilities
- ▲ Simple 'Drag and Drop' operation



**Recordit**  
**£Call**  
 £Call inc. VAT

## DITTO 2Gb Bundle Backup Tape Drive

**NEW LOW PRICING**

- ▲ Ditto 2Gb external tape drive including Iomega software and starter pack
- ▲ Ditto Carry Case
- ▲ Ditto 2Gb Media (three)
- ▲ Ditto NT driver



**Ditto 2Gb Bundle**  
**£125**  
 18653 £146.88 inc. VAT

**Cleaning Kit**  
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 16909 £17.63 inc. VAT

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18432 Ditto Max Pro 10GB Ext.	£189	£222.08
18433 Ditto Max Pro 10GB Int.	£189	£222.08

**Sales Hotline: 01582 745555**

**FAX: 01582 488588**

**FOR ORDERING INFORMATION SEE PAGE 2**

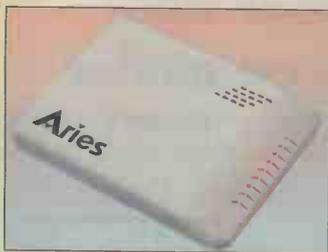
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**FAX/MODEMS**

**ARIES**

- 15592 V34 33.6 Internet/Comms Pack - Internal ...£35
- 15591 V34 33.6 Internet/Comms Pack - External ...£45
- 17664 V34 56.6 Internet/Comms Pack - Internal ...£55
- 17665 V34 56.6 Internet/Comms Pack - External ...£62



**APEX DATA**

- 16764 Clipper Com World PCMCIA Fax/Data Modem V34 ...£149

**DIAMOND**

- 15571 Supra Express 33.6 internal + Voice ...£39
- 17899 Supra Express 33.6 External + Voice ...£46
- 18265 Supra Express 56.6 External + Voice ...£84

**HAYES**

- 14249 Accura 33.6 Internet Kit Deluxe - Internal ...£81
- 14262 Accura 33.6 Message Modem - Internal ...£85
- 14250 Accura 33.6 Message Modem - External ...£95
- 17499 Accura 56K Voice Modem - Internal ...£95
- 17500 Accura 56K Voice Modem - External ...£97
- 14248 Optima 33.6 Business Modem ...£163
- 14319 Optima 33.6 Fax PCMCIA Card ...£134
- 14319 Optima 56K Fax PCMCIA Card ...£189
- 14320 Optima Panasonic GSM Kit ...£89
- 14321 Optima Alcatel GSM Kit ...£89
- 16755 ESP High Speed Serial Card 1 Port ...£55



**MICROCOM**

- 17323 Office Porte 33.6 Voice Fax Modem ...£119

**MOTOROLA**

- 15062 Bit Surfer Pro ISDN Fast Internet Modem ...£212

- 16760 Premier 33.6 Data/Fax Modem ...£169

- 17835 PCMCIA Pro 33.6 Data/Fax Modem ...£123

- 17837 Voice Surfer 56k FLASH - with Voice INT ...£92

- 17838 Modem Surfer 56k Internet Solution Fax Modem EXT ...£82

- 17839 Voice Surfer 56k Home/Office Solution - with Voice EXT ...£95

**PSION DACOM**

- 15708 Surfer 33.6 Data/Fax Modem ...£79

- 18942 Surfer Pro 33.6 External ...£79

- 18943 GoldCard V34 + Global PCMCIA ...£154

- 18944 Goldcard 56K Global PCMCIA ...£192

**PACE**

- 12354 Netlink Gold V34 28.8 ...£98

- 13188 Linnet Message Desk V34 28.8 - Internal ...£119

**US ROBOTICS**

- 14265 Sportster 33.6 Winmodem ...£68

- 14028 Sportster Voice 33.6 - Internal ...£96

- 14027 Sportster Voice 33.6 - External ...£96

- 14264 Sportster FLASH 56.6 ...£106

- Sportster Winmodem PC Card PCMCIA ...£70
- 12325 Courier V34 33.6 - Internal ...£195
- Courier V34 33.6 - External ...£194

**ISDN**

**BRITISH TELECOM**

- 12204 Ignition ISDN Terminal Adaptor 64K ...£299

**DIAMOND**

- 17900 Supra ISDN Netcommander ...£32

**ELSA**

- 17660 Quickstep 1000 Plug and Play ISDN ...£99

- 17661 Microlink ISDN TL V34 ...£245

- 17663 Microlink ISDN TL PRO ...£244

**HAYES**

- 14322 Accura 64K External ...£174

**TELES FROM ELECTRONIC FRONTIER**

- 16751 Teles PnP Card - Internal ISDN Card ...£99

- 16752 Teles SO TA - External ISDN (Parallel Port) ...£139

**US ROBOTICS**

- 14261 Courier I V34 Analogue or ISDN - Internal ...£259

- 14260 Courier I V34 Analogue or ISDN - External ...£259

- 18587 Sportster ISDN ...£98

**CONNECTING CABLES**

- 12360 25 Male - 25 Female 2m ...£7

- 13724 25 Male - 9 Female 2m ...£8

**MODEM ADAPTER KITS**

- 15868 Avro Pacific International Kit ...£39

- 15871 Avro Pacific Six Piece Kit ...£25

- 15873 Avro Pacific Fax Friend Auto Switch ...£45

- 16757 Pace International Modem Adaptor Pack ...£25

**ELSA**



**Elsa Quickstep 1000**

- ▲ First in a new generation of ISDN PC boards from Elsa Windows 95pc transformed into an ISDN terminal with fax.
- ▲ ISDN Communication at 64Kbps
- ▲ Fax Group 3
- ▲ Comprehensive Windows 95 Software
- ▲ Virtual Com port
- ▲ Full CE approvals and technical support

**Quickstep 1000**  
**£99**  
 17660 £116.33 inc. VAT

**Elsa Microlink ISDN TL V.34**

- ▲ External ISDN adaptor and V.34 28.8 modem for simple PC connection
- ▲ V.42 Data compression for transfer up to 230,499 BPS
- ▲ Automatic inbound detection for ISDN, Modem, fax and Voice
- ▲ Personal voicemail
- ▲ Group 3 Fax

**ISDN TL V.34**  
**£245**  
 17661 £287.88 inc. VAT

**Elsa Microlink ISDN TI Pro**

- ▲ External ISDN adaptor, as Microlink TL V.34 but excluding modem capability

**ISDN TI Pro**  
**£244**  
 17663 £286.70 inc. VAT

**"THE low cost ISDN SOLUTIONS"**

**3Com** **US Robotics**  
 The Intelligent Choice in Information Access

**SPORTSTER ISDN TA**

Sportster ISDN TA is a low-cost, easy to use Terminal Adapter for ISDN connectivity. Sportster ISDN TA is a complete communications solution, enabling high-speed data transfer, remote access to office LANs plus capabilities for data-intensive SOHO users and Internet access.



**SPORTSTER ISDN TA IS SUPPLIED WITH DATA COMMUNICATIONS SOFTWARE CABLES AND CONNECTORS-PLUS FREE LIFETIME TECHNICAL SUPPORT AND A 5 YEAR WARRANTY**

**Sportster ISDN TA**  
**£98**  
 £115.15 inc. VAT

- ▲ High-Speed Data Transfer
- ▲ Remote LAN Access
- ▲ Homeworking
- ▲ Internet Access

**SPORTSTER WINMODEM PC CARD**

**NEW**

- ▲ x2 Upgradeable
- ▲ Supports data speeds of up to 33,600bps
- ▲ Includes Pan European internal DAA (line interface)
- ▲ Internet Ready
- ▲ Call Discrimination
- ▲ Personal Voice Messaging
- ▲ Remote Voice Message Retrieval
- ▲ Sends & Receives Faxes

- ▲ Fax on Demand
- ▲ Software Upgradeable
- ▲ Windows Plug & Play
- ▲ Voice/Fax/Data Software



**Winmodem PC Card**  
**£70**  
 £82.25 inc. VAT

**SPORTSTER WINMODEM**

33.6 Internal Faxmodem for Windows

- ▲ Internal and PCMCIA versions available
- ▲ Internet Ready and compatible at up to 33,600bps
- ▲ Full Duplex Speakerphone\*
- ▲ Personal Voice Mail - Mailbox Voice Mail\*
- ▲ Send and receive faxes directly from your PC
- ▲ Call discrimination: voice/data/fax
- ▲ Remote Fax Retrieval
- ▲ Software Upgradeable\*\*
- ▲ Fax-On-Demand - Faxes stored for

- distribution
- ▲ Remote Voice Message Retrieval\*
- ▲ Voice/data/fax software
- ▲ Windows Plug and Play Support
- ▲ Free Lifetime Technical Support
- ▲ 5 Year Warranty
- ▲ BABT approved



**Sportster Winmodem**  
**£68**  
 14265 £79.90 inc. VAT

**THE COURIER I**

- ▲ Automatic Call Discrimination
- ▲ Software-downloadable Flash ROM
- ▲ Integrated V.34+Faxmodem
- ▲ Flash upgradeable to x 2
- ▲ Analogue Device Port
- ▲ Award Winning VEverything\*
- ▲ Active Terminal Adapter
- ▲ AT-Command Set Compatibility
- ▲ Multiple Rate Adaption Standards
- ▲ Plug and Play Support
- ▲ 230.4K Serial Technology
- ▲ User Configurable Dial Security
- ▲ Dial-Back Security
- ▲ Asynchronous/Synchronous PPP
- ▲ Software included

Internal and External versions available. Free Lifetime Technical Support. 5 Year Warranty.

**RING SALES HOTLINE FOR NEW LOWER PRICING**



**Internal**  
**£254**  
 14261 £298.45 inc. VAT

**External**  
**£259**  
 14260 £304.33 inc. VAT

**SPORTSTER FLASH**

56Kbps Ready External Faxmodem with Personal Voice Mail

Download from the Internet at an amazing 56kbps with the New Sportster Flash faxmodem - the first x2 ready product from U.S. Robotics. Nearly 100% faster than the 28.8kbps speed currently available over ordinary telephone lines, Sportster Flash users will be able to flash upgrade their modem to x2 at no extra charge, simply by dialling into the U.S. Robotics Bulletin Board\*.



**Sportster Flash**  
**£106**  
 14264 £124.55 inc. VAT

**A SOUND CARD (WITH AUDIO CABLE), EXTERNAL SPEAKER OR HEADSET IS REQUIRED TO UTILISE ALL VOICE FEATURES INCLUDING THE HANDS FREE TELEPHONE FUNCTION**

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 www.watford.co.uk

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**LOWEST PRICE ON ALL PRODUCTS • ALL THE TIME • "That's the Watford Promise"**

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# Aries

## K56 Internal Fax/Modem with 12 months internet access only £129<sup>+VAT</sup>

MODEMS

### ARIES GLOBAL COMMUNICATOR®

"The easiest way to connect to the Internet"

If you want to get onto the Internet or send faxes from your PC then you need Aries Modems. Each modem is tested by our technicians and comes with Compuserver trial kit including 10 hour Free Internet access, Free Netscape World Wide Web Browser Software, Free 30 days unlimited access to the internet via Pipex or AOL plus full Superfax Voice data and fax software. Turn your PC into a Fast Moving Communications Centre by using an Aries Modem

- ▲ Models: Aries V34 Voice 33,600bps or Aries K56.6 Voice Fax/Modem, up to 56,600bps receive, flash-upgradable to ITU56K.
- ▲ Operational Modes: K56(up to 56600bps) or V34(up to 33600bps), V32bis(14400bps), V32(9600), V22bis(2400), V22(1200), V23(1200/75 asymmetric), V21(300) Async. full duplex data on dial-up lines. Also supports Autosync (TM), V80 (Synchronous Access Mode) and also PC-based DSVD. Modem has low-power sleep mode.
- ▲ Fax Operations: V21, V22bis(2400), V22ter(4800), V29(9600), V17(14400)
- ▲ Autodial by command. Tone and Pulse dial. Answering conforms to V25
- ▲ Data Compression: MNP-5 and V.42bis

- ▲ Handset Socket: BT socket on rear panel, wired in parallel with line connection.
- ▲ Voice Record Source: From Microphone or remotely from Telephone Line.
- ▲ Voice Replay: To Telephone Line, Internal Modem Speaker or External Speaker via rear panel connector.
- ▲ Mic Connector: 3.5mm Jack Socket on rear panel.
- ▲ Speaker Connection: 3.5mm Jack.
- ▲ PC Interface: ISA bus 16-bit slot. DIL switch selects COM 1,2,3,4 and IRQ 3,4,5 or 9 (or Plug&Play option).
- ▲ HAYES Compatible, Extended AT command set.
- ▲ Supplied with Supervoice software (for Windows 3.1 & 95), to provide Full Duplex Speakerphone, Answering Machine, Fax send/receive, faxback and file transfer.
- ▲ BABT approved, CE marked.
- ▲ When refitted and as long as it is not a hardware modification



**56K Voice Fax/Modems from £57**

### Aries PCMCIA 33,600 baud Fax/Modem

- ▲ 33.6 Operational modes: V34 (up to 33.6bps), V32bis (14400bps) V32 (9600bps), V22bis (2400), V22 (1200), V23 (1200/75), V21(300) Asynchronous data, full duplex over dial-up lines
- ▲ Fax Interface: EIA 578 (Class 1), EIA 592 (Class 2)
- ▲ Auto-Dial: Tone dialling, Auto-senses speed of called modem
- ▲ PC Interface: PCMCIA (V2.01)
- ▲ Other features: BABT approved, CE approved



**WINTER SPECIAL**  
While stocks last

PCMCIA 33,600  
**£89**  
£104.58 inc. VAT

All Fax/Modems supplied by Watford Electronics include:

- ▲ Free Connect 2 Internet Access CD
- ▲ Free Microsoft Internet Explorer 3.0 Browser software
- ▲ Free Luckmans Best of Web and Luckmans Web Edit Pro HTML editing software worth £45!
- ▲ Software supplied on CD



**SUPER VOICE**  
"PC Magazine Best Buy"

### ARIES K56 56,600bps Voice Fax/Modem

Internal	External
<b>£57</b>	<b>£67</b>
£66.98 inc. VAT	£78.73 inc. VAT

### ARIES V34 28,800bps Voice Fax/Modem

External
<b>£45</b>
£52.88 inc. VAT

**ARIES K56 Flash Upgradeable to ITU56K Global Standards**

### (Fast, Easy and Affordable!) with Watford Electronics

Did you know that Watford Electronics is now an Internet Service Provider (ISP)? And, although we are amongst the lowest priced, we offer one of the most comprehensive packages available!

From just £5.99\* a month you get hi-speed connection to the Internet and much, much more.

Subscription Duration	Price
Two Year Subscription	£119.99
Annual Subscription	£62.99
Six Months Subscription	£37.99
Quarterly Subscription	£15.99
Monthly Subscription	£9.99

#### Bundle Prices:

Extraordinary deals to get you into the fast lane of the Information Superhighway:

Bundle	Price
Aries 33.6K Internal Fax/Modem with 12 months Internet access	£115
Aries 33.6K External Fax/Modem with 12 months Internet access	£125
Aries 33.6K Internal Fax/Modem with 2 years Internet access	£189
Aries 33.6K Internal Fax/Modem with 2 years Internet access	£199
Aries K56 Internal Fax/Modem with 12 months Internet access	£129
Aries K56 External Fax/Modem with 12 months Internet access	£139
Aries K56 Internal Fax/Modem with 2 years Internet access	£205
Aries K56 External Fax/Modem with 2 years Internet access	£215

\* All subscription prices are subject to VAT

- ▲ Watford provides hi-speed access at one of the lowest modem-to-user ratios in the country, which means that you are unlikely to not get connected at the busiest times
- ▲ Absolutely NO HIDDEN CHARGES
- ▲ Flat rate billing and unlimited access
- ▲ Unlimited email addresses
- ▲ Up to K56 56.6K modems and ISDN
- ▲ 100% UK coverage at local call rates
- ▲ Easy installation and use
- ▲ Both dial up and ISDN for the same price
- ▲ Free web space to create your own web site
- ▲ Free Microsoft Explorer web navigation software
- ▲ Back up and support from Watford Electronics
- ▲ We will be happy to refund the amount paid for outstanding months if you are not entirely satisfied



**Internet Connection from £5.99**  
"Will not be beaten on price"



"We guarantee one of the best connections in the UK!"



"We will refund your outstanding balance, subject to period elapsed, if you are not 100% satisfied"



**Sales Hotline: 01582 745555**

**FAX: 01582 488588**

**FOR ORDERING INFORMATION SEE PAGE 2**

Prices exclude carriage & VAT @ 17.5% except where shown.



# Aries MULTIMEDIA BUNDLES

"Your Complete Multimedia Solution...."



▲ SoundBlaster 16bit compatible sound card  
▲ 16x IDE CD Rom Drive  
▲ 10W Magnetically Shielded Speakers

**£72**  
Multimedia Bundle  
18021  
£84.60 inc. VAT



**EASY INSTALLATION**

▲ 16-bit 3D Stereo CD-quality Recording and Playback  
▲ Support MSDOS, Microsoft® Windows 3.1/3.11/NT/95  
▲ Plug & Play Ready  
▲ MPU-401 UART & MIDI Interface  
▲ Game Port Interface  
▲ OPFM™ Synthesizer  
▲ Support Sound Blaster™ Pro and MPC Compatible Games and Applications



**The Ultimate in Sound Technology**

▲ SoundBlaster AWE 64 sound card  
▲ 16x IDE CDx Rom Drive  
▲ 25W Magnetically Shielded Speakers

**£79**  
Multimedia Bundle  
18372  
£92.83 inc. VAT



**Unbeatable Value**

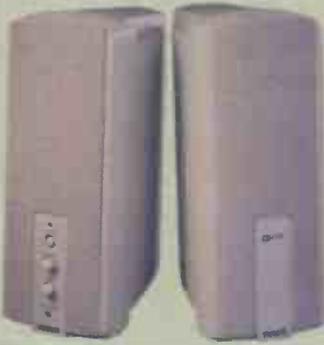
▲ SoundBlaster AWE 64 sound card  
▲ 24x IDE CD Rom Drive  
▲ 25W Magnetically Shielded Speakers

**£89**  
Multimedia Bundle  
18373  
£104.58 inc. VAT

**Choose any 3 FOR ONLY £15 ex VAT**  
When ordering any Aries Multimedia Bundle

THE GENIUS OF EDISON, THE COMPLETE COOKBOOK, LUCKMAN'S ZIP™, COMPTON'S ENCYCLOPEDIA 98, LUCKMAN'S WEB EDIT PRO, REFERENCE COLLECTION, LUCKMAN'S UNINSTALLER, BODYWORKS 5, COMPTON'S WORLD ATLAS

## YST-M15 Powered Speakers



▲ Amplifier Output 10 Watts/Channel  
▲ Frequency Response 70HZ - 20KHZ plus or minus 3dB  
▲ Driver Unit 8cm Full-range cone, magnetic shielding  
▲ Dimensions (WxHxD) 94x245x155mm

**YST-M15**  
**£45**  
£52.88 inc. VAT

# Yamaha Speakers

## YST-MS25 Powered Speakers



**NEW**

▲ Amplifier Output 25 total power  
▲ Frequency Response 40HZ - 20KHZ plus or minus 3dB  
▲ Driver Units 5cm Full-range cone (satellites) 13cm base cone (subwoofer), magnetic shielding  
▲ Dimensions (WxHxD) 80x70x120mm (satellites), 202x147x210mm (subwoofer)

**YST-MS25**  
**£65**  
£76.38 inc. VAT

## YST-M20DSP Powered Speakers



▲ DSP(Digital Surround Processing)  
▲ Amplifier Output 10 Watts/Channel  
▲ Frequency Response 70HZ - 20KHZ plus or minus 3dB  
▲ Driver Unit 8cm  
▲ Dimensions (WxHxD) 94x245x155mm

**YST-M20DSP**  
**£49**  
£57.58 inc. VAT

**£79**  
£92.93 inc. VAT

**Free Adjustable Chair With Each Workstation Ordered**



**Aries All Purpose System Workstation**  
W 635 x D 492 x H 815mm  
▲ Sliding Keyboard  
▲ Middle Printer Shelf  
▲ Mouse Mat  
▲ Castors



**Aries Compact Workstation**  
W 675 x D 470 x H 815mm  
▲ Sliding Keyboard  
▲ Sliding Printer Shelf  
▲ Mouse Mat Shelf  
▲ Bottom Storage  
▲ Castors

**£89**  
£104.58 inc. VAT

**£79**  
£92.83 inc. VAT



**Aries Tower Workstation**  
W 860 x D 506 x H 740mm  
▲ Sliding Keyboard  
▲ Middle Printer Shelf  
▲ Bottom Storage  
▲ Tower Compatible  
▲ Large Worksurface



**Easy Chair**  
**£29**  
£34.07 inc. VAT

**2004 Easy Chair**  
▲ Mechanical Height Adjustment  
▲ Available in 5 colours: Peat / Charcoal / Red / Blue / Grey



**Comfort Chair**  
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£57.58 inc. VAT

**2005 Comfort Chair**  
▲ Back Adjustment  
▲ Height Adjustment  
▲ Comfortable Long Use  
▲ 5 Colours



**Executive Chair**  
**£69**  
£81.08 inc. VAT

**2006 Executive Chair**  
▲ Back Adjustment  
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▲ Ideal Home Use  
▲ 5 Colours  
▲ Arms Included

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• ALL THE TIME •  
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# Apocalypse 3Dx



**Dedicated 3D accelerator for arcade-level performance**

- ▲ Advanced 3D realism & improved 3D image quality with bilinear texture filtering
- ▲ Accelerates PowerVR and Direct3D titles
- ▲ Five Free Games: Ultimate Race, Wipeout 2097, Tomb Raider\*, Terracide\*, MechWarrior II, Plus trial games CD (\* denotes OEM version)
- ▲ Works with any Windows 95 Accelerator card via Microsoft DirectX 3.0
- ▲ NEC/VideoLogic PCX2 PowerVR 3D processor
- ▲ 4MB of high performance SDRAM texture memory on board
- ▲ Optimal platform P166 with 32MB RAM or above; min requirement P133 with 32MB RAM; 2MB or above graphics accelerator



## Apocalypse 3Dx Press Awards to date

- ▲ PC Answers - Platinum Award, July 97
- ▲ PC Games (Germany) - Recommended Award, July 97
- ▲ Boot (US) - Kick Ass Award, May 97
- ▲ PC Guide - Best Buy, July 97
- ▲ What PC? - Five Star Award, July 97
- ▲ Games Mansion - Five Star Award, July 97
- ▲ PC Plus - Best Value Award, Oct 97
- ▲ PC Fun (France) - Recommended Award



3Dx  
18524  
**£69**  
£81.08 inc. VAT

3Dx Value Pack  
18582  
**£49**  
£57.58 inc. VAT

5D 6MB  
18279  
**£137**  
£160.98 inc. VAT



GRAPHICS CARDS

## DIAMOND MULTIMEDIA

NOW AVAILABLE

### Viper V330 Graphics Accelerator Card

- ▲ High-Resolution Graphics-Acceleration up to 1600 x 1200
- ▲ TrueColour with 1024 x 768, 120Hz
- ▲ High Performance 2D / 3D and Video Accelerator with 4MB SGRAM
- ▲ Supports DirectX 5 (incl. Direct3D and DirectDraw)
- ▲ High Quality Video X and Y Scaler

What the press says...

"This card ran 3D Winbench so fast, it finished before I could blink!" "Benchmarks don't tell the whole story though. Direct3D games ran very, very fast as well!"  
Computer Gaming World 11/97

Viper V330  
108608  
**£195.95**  
£229.13 inc. VAT

### SupraExpress 56K External



K56 flex technology - plug and play ready

#### Benefits

- ▲ 56,000 bps: ideal for ultra high speed Internet and online surfing
- ▲ All-in-one: Internet, fax, home banking and data transfer
- ▲ Video phone ready
- ▲ Microphone and speaker jack

#### Features

- ▲ Rockwell K56 flex tech.
- ▲ 14,400 bps fax data transfer
- ▲ Plug & Play installation

56K External  
18265  
**£75**  
£88.13 inc. VAT

### Monster Sound



Next Generation DirectSound™ 3D Accelerator

#### Benefits

- ▲ Uses the latest Windows® 95 sound standard
- ▲ Most realistic audio playback using interactive positional
- ▲ 3D sound technologies
- ▲ Audio playback support for quad speakers
- ▲ Fully DirectSound™ compatible Multi-Stream audio support

#### Features

- ▲ Windows® 95, DirectSound™ support
- ▲ Easy Plug & Play installation
- ▲ Software wavetable synthesiser with hardware module (optional)
- ▲ Special effects supported (Reverb, Chorus, Pitch Shift)
- ▲ Multi-stream support for interactive real-time mixing of up to 24 different audio streams simultaneously (Mono/Stereo)
- ▲ Advanced speaker configuration tool (stereo, quad speaker, headphones etc.)
- ▲ Virtual Sound Blaster™, FM, MIDI and Joystick support (for Windows® 95)
- ▲ Windows® 95 drivers incl. Sound Blaster™ and MPU 401 emulation

DirectSound

Monster Sound  
18658  
**£99**  
£116.33 inc. VAT

### Stealth 3D 2000 Pro



Powerful High-Speed Graphics & 3D Multimedia Accelerator

Stealth 3D 2000 Pro  
16843  
**£42**  
£49.35 inc. VAT

#### Benefits

- ▲ High-speed 2D, 3D and video acceleration for demanding applications
- ▲ Improved 3D performance
- ▲ Realistic games and multimedia through advanced built-in 3D features

#### Features

- ▲ High-performance 64 bit graphics accelerator with max.4Mb EDO DRAM
- ▲ TrueColor acceleration up to 1024 x 768 at 120Hz
- ▲ Flicker-free refresh up to 120Hz
- ▲ High-quality video playback
- ▲ DOS, Windows® 3.1x, Windows® 95 and Windows NT™ Support
- ▲ Supports DirectX™ and Direct3D™
- ▲ Version with PAL TV-Out available

Also Available

Stealth 3D 2000  
16849  
**£35**  
£41.13 inc. VAT

Stealth 3D 2000  
16850  
**£45**  
£52.88 inc. VAT

### Fire GL 1800 Pro



Ultimate 2D and 3D Graphics for WindowsNT™

#### Benefits

- ▲ No-compromise 2D and 3D graphics for Windows®95 and Windows NT™ - supports Direct3D™ and OpenGL
- ▲ Affordably 3D functionality in an affordable solution
- ▲ Double buffering, texture mapping and video hardware support
- ▲ Integrated geometry processing reduced CPU load and boosts 3D performance

#### Features

- ▲ Fast 3D graphics - up to 600k polygons/s (HighColor, textured and z-buffered)
- ▲ High-speed texturing - up to 30 Mill.pixels/s
- ▲ Ultra-high resolutions up to 1600 x 1200, 75Hz and HighColor
- ▲ TrueColor acceleration up to 1152 x 870, 75Hz
- ▲ OpenGL, HEIDI and Direct3D™ support for Windows NT™ and Windows®95 applications
- ▲ Drivers for Windows®95, Windows NT™ 3.51 and Windows NT™ 4.0 includes productivity tools for AutoCAD

Fire GL 1800 Pro  
18142  
**£159**  
£186.83 inc. VAT



**Sales Hotline: 01582 745566**

**FAX: 01582 745523**

FOR ORDERING INFORMATION SEE PAGE 2

Prices exclude carriage & VAT @ 17.5% except where shown.



**GRAPHICS CARDS**

**ARIES**

10387	Aries 4Mb SVGA 64 BIT DRAM	
	PCI Graphics Card	£29
10350	Aries 1Mb Super VGA ISA Graphics Card	£35
<b>ATI</b>		
18845	3D Charger 2Mb Range	£39
18846	3D Charger 4Mb Range	£55
18249	3D Pro Turbo Plus PC2TV 4Mb PCI	£99
18250	3D Pro Turbo Plus PC2TV 8Mb PCI	£139
18251	AT-TV Card - TV Tuner & Video Capture	£63
17516	Video Xpression Mach64 VT 1Mb SDRAM PCI	£39
17518	Video Xpression Mach64 VT 2Mb SDRAM PCI	£45
18594	Xpert @Play 4Mb AGP + TV Output Oem	£120
18595	Xpert @Play 4Mb PCI + TV Output Oem	£124
18596	Xpert @Play 8Mb AGP + TV Output Oem	£135
18597	Xpert @Play 8Mb PCI + TV Output Oem	£147
18847	Xpert @ Work 4Mb PCI Dem	£106
11848	Xpert @ Work 4Mb AGP Oem	£115
11849	Xpert @ Work 8Mb PCI Oem	£145

**CREATIVE**

18598	Graphic Blaster Eclipse	call
18599	Graphic Blaster Exxtreme	£69
18600	Graphic Blaster Exxtreme 4Mb Upgrade	call

**DIAMOND**

18601	Diamond Edge 3D Pirox 2Mb Graphic Card	£42
16849	2MB Stealth 3D 2240 DRAM PCI	£35
16843	2MB Stealth 3D 2240 Pro DRAM PCI	£42
18602	2MB Stealth 3D 2240 Pro + PAL Tv Output	£54
18603	4Mb Stealth 3D 2240 Pro + PAL Tv Output	£79
18604	4Mb Stealth 3D 2400 Pro DRAM PCI	£49
16850	4Mb Stealth 3D 2400 DRAM PCI	£45
18142	8Mb Fire GL 1800Pro	£175
18143	16Mb Fire GL 3000	£585
18605	24MB Fire GL 3000	£679
18606	16MB Fire GL 4000	call
18607	8MB Fire GL Pro AGP	£199
18850	4Mb Viper V330 PCI	£110
18608	4Mb Viper V330 PCI + TV Out put	£125

**DIAMOND ADD-ON CARDS**

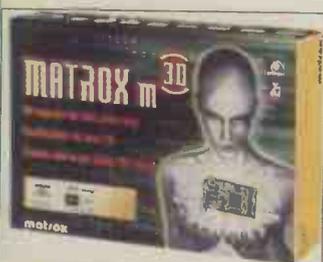
16855	Monster 3d Add-On OEM Version	£97
16856	Monster 3d Add-On Retail Version	£118

**HERCULES**

18851	4Mb Dynamite 3D GL AGP	£139
18852	4Mb Dynamite 3D GL PCI	£129
18610	8Mb Dynamite 3D GL AGP	£179
18611	8Mb Dynamite 3D GL PCI	£169
17670	6Mb Stingray 128 3D Video PCI	£159
18609	8Mb Stingray 128 3D Video PCI	
	+ TV Output	£179
17671	2Mb Terminator 3D DX PCI	£59
17672	4Mb Terminator 3D DX PCI	£65
18853	4Mb Thriller 3D AGP	£119
18854	4Mb Thriller 3D PCI	£129
18855	8Mb Thriller 3D AGP	£165
18856	8Mb Thriller 3D PCI	£179

**MATROX**

18857	2Mb Mystique Business 220 PCI	£59
18858	4Mb Mystique Business 220 PCI	£74
18157	2Mb Mystique Home 220 PCI	£57
18158	4Mb Mystique Home 220 PCI	£74
18160	4Mb Millennium II 250 PCI	£109
18162	8Mb Millennium II 250 PCI	£164
18612	4Mb Millennium II AGP	£169
18613	8Mb Millennium II AGP	£199
18179	Matrox Rainbow Runner Upg. for Mystique	£125
18859	Matrox M3D Power VR II	£59



16649	Millenium 2Mb to 4Mb Upgrade	£45
10466	Millenium 2Mb to 8Mb Upgrade	£89
10467	Millenium 4Mb to 8Mb Upgrade	£109
13428	Mystique 2Mb to 4Mb Upgrade	£30

**NUMBER NINE**

16866	2Mb 9FX Reality 772 ( S3 Virge ) PCI	£125
16867	4Mb 9FX Reality 772 ( S3 Virge ) PCI	£179
16868	4Mb Imagine 128 Series 2	£315
18614	8Mb Imagine 128 Series 2 EDO DRAM	£388
18555	4Mb Revolution 3D PCI	£209
18556	4Mb Revolution 3D AGP	£231
18399	8Mb Revolution 3D PCI	£275

**ORCHID**

15875	4Mb EDO Righteous 3D	£105
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**STB**

18615	Nitro 3D 2Mb S3 Virge GX	£49
18616	Nitro 3D 4Mb S3 Virge GX	£64
18860	4Mb Velocity 3D MPEG VRAM PCI	£125
18861	8Mb Velocity 3D MPEG VRAM PCI	£175

**VIDEOLOGIC**

17675	1Mb Grafistar 410 DRAM PCI	£29
17676	2Mb Grafistar 410 DRAM PCI	£39
15861	2Mb Grafistar 450 DRAM PCI	£55
17677	4Mb Grafistar 550 DRAM PCI	£75
18862	4Mb Grafistar 560 DRAM PCI	Call
18863	4Mb Grafistar 560 DRAM AGP	Call
18864	2MB Grafistar 600 Pro PCI	Call
15829	4Mb Apocalypse 3D PCI SDRAM	£39
18254	4Mb Apocalypse 3DX PCI SDRAM	£69
18582	4Mb Apocalypse 3DX PCI SDRAM Value Pack	£49
18279	6Mb Apocalypse 5D PCI SDRAM	£137

**MULTIMEDIA VIDEO/TV CARDS**

**AIMS LABS**

16617	Grab-it ! Video Capture	£109
18552	Video Highway Xtreme	£105

**AZTECH**

15071	Video Galaxy Gamma MPEG Upgrade	£105
16871	Video Galaxy Gamma Oscar Pro MPEG Decoder Card	£109

**CONNECTWARE**

15864	1Mb RasterMedia 3 in 1 With Tuner Card (while Stocks Last)	£295
15865	2Mb RasterMedia 3 in 1 With Tuner Card (while Stocks Last)	£339
15866	TV Tuner / Video 4Mb Capture Card	£95

**CREATIVE LABS**

16090	3D Blaster 4Mb PCI	£87
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13925	MP 400 (MPEG Player)	£107
10402	TV Coder External	£103
10353	Video Blaster RT300	£199
18617	Video Blaster PCI	£87

**FAST**

16091	AV Master PCI	£679
16881	EPS60 Card MPEG Upgrade	£225
16878	F60 Card with MJPEG	£135
16879	FPS60 Card MPEG Upgrade	£225
15439	FPS60 MPEG PowerPack	£295
10453	FPS60 Video Capture Card	£325
10433	Movie Machine II	£315
10435	MPEG Extension for Movie Machine	£222
10437	Screen Machine II	£554
16877	Screen Machine II MJPEG Upgrade	£289

**HAUPPAUGE**

17571	WinTV Video Teletext & Radio Card	£89
15402	WinTV PCI (TV & Teletext Card)	£85
16030	WinTV PRIMIO (TV Card)	£65
15664	WinTV Video Magic MJPEG	£169
10674	WinTV WinCinema Pro	£195
13827	WinTV WinMotion 60 MJPEG	£294

**INTEL**

18909	Smart Video Recorder III	£155
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**LOGITECH**

15698	Snappy Video Capture	£135
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**MIRO**

17687	mroMedia PCTV	£49
16092	Video DC10	£189
* Buy DC10 and ask for PCTV at £10 only		
15867	Video DC30 PCI	£599
18902	Video DC30 Plus Video capture Card	£985
18903	Video DV100 Video capture card	999
16984	Video Director Studio 200	£225

**VIDEOLOGIC**

10372	Captivator Pro ISA	£145
17688	Captivator PCI	£49
16086	MPEG Star U/G for Grafistar 400 Special Offer	£35

**PROJECTOR UNITS**

**CHUNTEX**

16902	CTX EzPro 500 Projector	£2,235
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**EPSON**

16903	EMP-3500 Multimedia Projector	£3,790
17364	EMP-5000 Multimedia Projector	£5,120

**SANYO**

16904	Professional PLC-400 M Projector	£1,795
16905	Professional PLC-5500B Projector	£4,995

**SONY**

16906	DK-1 Projector	£1,300
16907	PC200E PC Projector	£1,100

**VIDEO CONFERENCING**

16916	Connectix Colour QuickCam Video Camera	£99
18904	Connectix Quickcam Colour & Videophone	£155
16915	Connectix Mono QuickCam Video Camera	£62
	Connectix QuickCam Video Camera Parallel	£89



16917	Connectix Videophone	£59
13824	Creative Labs Share Vision PC 3000	£599
18905	Creative Labs VideoBlaster WebCam	£99
18618	Diamond 2000 Video phone Kit	call
16920	Intel ProShare Premier Edition SFW	£195
16919	Intel ProShare Video System 200	£1,580
18179	Matrox Rainbow Runner	£125
18256	Videologic Captivator PCI/VIC	£145

**SECURITY DEVICES**

11922	DisKey 1 - 3.5" Disk Drive Lock	£25
11923	SecuKit XL 11 - Permanent Plate Kit 2 Plates	£32
11926	CompuLock - a Lock to the Interior & Mouse Trap	£19
11927	LockKit Portable - Notebook Lock	£24
<b>WOBBLER - Movement Security Alarms</b>		
15675	ISA Model 5 - PC Security Alarm	£59
15860	PCI Model 6 - PC Security Alarm	£59
15676	External Unit - Security Alarm	£59



**COMPUTER CASES WITH PSU**

10149	Desktop Case	£31
10148	Full Tower Case	£79
15114	Mini Tower Case	£42
10147	Mini Tower Case	£31

10134	Multimedia Desktop Case (with Stereo Speakers)	£74
10150	Slimline Desktop Case	£35
10166	Workstation Case	£31
17470	Desktop Case for ATX motherboards	£51
17472	Full Tower Case for ATX motherboards	£89
10146	200W PSU for Mini/Desktop	£24

**HARD DRIVE ACCESSORIES**

10917	Hard Drive Fixing Kit	£5
12006	Single IDE Interface Lead	£6
10735	Removable IDE Hard Disk Kit	£25
16117	Datavise Quickdrive Kit - Parallel Port External HDD Kit	£75

**FLOPPY DISK DRIVES**

10305	3.5" 1.44Mb Internal Drive	£15
17162	LS 120Mb 3.5" Floppy Disk Drive	£75
17163	3M 120Mb Media	£15
10924	Qual PC FDD Interface Cable	£5
10917	3.5"/5.25" Fixing Kit	£5

**CABLES & ACCESSORIES**

17165	Extra Long 5 Head Floppy Cable	£7
10924	Standard 5 Head Floppy Cable	£5
12006	Single 40w - 40w IDE Internal Cable	£6
12020	Dual 40w - 40w IDE Internal Cable	£8
12005	Single 50w - 50w SCSI Internal Cable	£8
12026	Dual 50w - 50w SCSI Internal Cable	£9
12133	Triple 50w - 50w SCSI Internal Cable	£15
12009	External 50w - 50w SCSI Cable	£16
12008	External 25w - 50w SCSI Cable	£16
12069	External 50w HD - 50w SCSI 2 Cable	£25
10927	Centronics 50 to 25 Pin M	£18
12009	Centronics 50 to Centronics 50	£16

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<b>LIFE TIME WARRANTY</b>		
11956	10x DSHD 1.44Mb 135tpi Black	£4
11957	10x OSHD 1.44Mb 135tpi Coloured	£5

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16730	All Purpose System Workstation in Grey (WE1023)	£59
16729	All Purpose System Workstation in Light Oak (WE1022)	£59
16728	All Purpose System Workstation in Mahogany (WE1033)	£59
16943	Budget Workstation (WE1082)	£50
16723	Compact Computer Centre in Grey (WE1001)	£69
17557	Compact Computer Centre in Light Oak (WE1002)	£69
16722	Compact Computer Centre in Mahogany (WE1003)	£69
16732	Computer Trolley in Grey (WE1071)	£99
17554	Desktop Workstation in Grey (WE1041)	£51
17556	Desktop Workstation in Mahogany (WE1043)	£51



17555	Desktop Workstation in Light Oak (WE1042)	£51
16727	System Workstation in Grey (WE1011)	£69
16731	System Workstation in Grey (WE1031)	£119
16726	System Workstation in Light Oak (WE1013)	£69
16725	System Workstation in Mahogany (WE1012)	£69



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REFER TO TERMS & CONDITIONS ON PAGE 2

# RINGDALE

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The 100base TX range of Fast Ethernet hubs can be used to create power workgroups and provide interconnection to centrally located servers.

**4 Port Hub**  
**£159**  
£186.83 inc. VAT

**8 Port Hub**  
**£299**  
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**16 Port Hub**  
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**PrintPro '97 Pocket Printserver**  
The PrintPro '97 is a pocket size printserver offering the most compact 3rd generation printer to LAN connectivity. A single 10baseT connection is provided and the unit simply plugs into the parallel port on the printer.

**PrintPro '97**  
**£125**  
£146.88 inc. VAT

- ▲ 10baseT RJ45 network connection
- ▲ Novell, WFWG, Win95, Unix support
- ▲ Supports most popular LAN protocols
- ▲ LED indicators for data traffic signals
- ▲ Windows Printing System software included
- ▲ Mains power supply unit

**PeripheralVision\***  
PeripheralVision\* enables the user to design and manage their network in a total graphical solution. It will 'discover' any device on a TCP/IP network and construct a map of the LAN.

**PeripheralVision**  
**£159**  
£186.83 inc. VAT

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- ▲ Graphically map out & manage the whole LAN
- ▲ Supports Windows 95 and Windows NT
- ▲ Analyses status of hubs, servers, PCs etc
- ▲ Requires MS TCP/IP

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Print to remote printers anywhere in the world using the internet. Easy installation on Windows 95 or NT and totally user friendly.

**Internet Print System**  
**£25**  
£29.38 inc. VAT

Product	Code No.	Price	inc. VAT
<b>Ethernet Printservers</b>			
FastPort 10/100 Pocket TP	18247	£199.00	£233.83
RP21 Inline BNC/TP 10Mbps	15631	£145.00	£170.38
PrimServ3 BNC/TP - 2P/1S	18720	£199.00	£233.83
FastJet 10/100 MIO TP only	18721	£225.00	£264.38
PrintProFL Fibre Optic - 1P	18793	£549.00	£645.08
<b>ISDN Routers</b>			
10base2/T Ethernet Router	18793	£225.00	£264.38

**intel**

The industry standard for Fast Ethernet. The Pro/100 is the first and rapidly emerging standard for Fast Ethernet. With its dual speed operation the Pro/100 will run in 10Mb mode and automatically switch to 100Mb when the network is upgraded. Intel provide the complete solution - network adapters for both workstations and servers, hubs, switches and printservers.

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  - 18713 EtherExpress Pro/100 PCI Server Adaptor .....£302.95
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  - 18655 EtherExpress Pro/100 Mobile 16bit PC Card .....£88.95
  - 18654 EtherExpress Pro/100 Mobile 32bit Cardbus .....£98.95
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  - 17306 Express 10/100 12pt .....£663.95
  - 18718 Express 10/100 24pt .....£1,030.95
- 10/100MBS ETHERNET SWITCHES**
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  - 18236 NetPortExpress Pro/100 Ext - 1x Par .....£161.95
  - 18071 NetPortExpress Pro/100 Ext - 2xPar,1xSer .....£217.95

**3Com**

The Fast Etherlink 10/100 adapters sets the industry standard for performance. With 3Com's exclusive Parallel Tasking technology, you can get maximum speeds at both 10Mbps and 100Mbps. Installation is simplicity - the adapter autosenes the LAN speed, making upgrading easy. The perfect compliment is the range of OfficeConnect hubs and switches giving you a complete system from a name you can trust.

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- 11446 3C509B ISA BNC/TP \* .....£71.95
- 16703 3C592B EISA BNC/TP .....£121.95

- 17288 3C589D 16bit PC Card TP only .....£78.95
  - 11479 3C589D 16bit PC Card BNC/TP .....£104.95
  - 17345 3C900 PCI TP only \* .....£63.95
  - 11438 3C900 PCI BNC/TP \* .....£77.95
  - 17857 3C563 16bit PC Card BNC/TP & 33.6 Modem .....£189.95
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- 16763 3C905 10/100 PCI TP only \* .....£56.95
  - 17638 3C597X EISA TP only .....£139.95
  - 18210 3C575TX 16bit PC Card \* .....£86.95
  - 19009 3C574TX 32bit CardBus TP only \* .....£93.95
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  - 18701 3C16702 OfficeConnect TP16C 16pt 10Mb£124.95
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  - 18703 3C16721 OfficeConnect TP1200 12pt 100Mb£286.95
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- 18704 3C16590 SuperStack 10/100 12pt .....£742.95
  - 18705 3C18591 SuperStack 10/100 24port .....£1,170.95
  - 18706 3C250ATX SuperStack 100 12port .....£749.95
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**Genius**

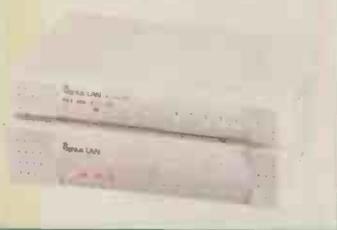
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- 11456 GE2000 III ISA BNC/TP .....£19.95
- 12123 GE2500 II PCI BNC/TP .....£24.95
- 13355 E3000 II Parallel BNC/TP .....£39.95
- 11638 ME3000 II PCMCIA BNC/TP .....£49.95

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- 12116 GF100TX PCI TP only .....£47.95

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- 12168 GH4080 Mini 8pt,1xBNC .....£43.95
  - 12199 GH4160 Mini 16pt,1xBNC,1xAUI .....£94.95
  - 14186 GH4160/R 19" Rack 16pt,1xBNC,1xAUI .....£128.95
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- 15627 GF4080TX 19" Rack 8pt .....£379.95
  - 15628 GF4120TX 19" Rack 12pt .....£514.95
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  - 17856 GPS300 Pocket M/Protocol - 1xPar .....£112.95



**D-Link**

DLink provides complete solutions to cover all networking requirements. From small workgroups to large corporate installations spanning multiple sites, you can be rest assured that using Dlink will give you the solution you want.

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- 18201 DE220PCT ISA BNC/TP .....£15.95
- 12121 DE530CT PCI BNC/TP .....£19.95
- 18202 DE660CT 16bit Cardbus BNC/TP .....£42.95

**100MBS ETHERNET ADAPTERS**

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- 18203 DFE650TX 10/100 16bit Cardbus .....Call
- 10MBS ETHERNET HUBS**
- 18214 DE805TP Mini 5pt .....£39.95
  - 18215 DE809TP Mini 8pt + link .....£47.95
  - 18216 DE816TAC Mini 16pt,1xBNC,1xAUI .....£114.95
  - 18217 DE812TP 19" Rack 12pt,1xBNC,1xAUI .....£94.95
  - 18218 DE816TP 19" Rack 16pt,1xBNC,1xAUI .....£104.95
  - 18219 DE824TP 19" Rack 24pt,1xBNC,1xAUI .....£141.95
- 10MBS MANAGED ETHERNET HUBS**
- 18220 DE1812T 19" Rack 12pt,1xAUI Master .....£568.95
  - 18221 DE1824T 19" Rack 24pt,1xAUI Master .....£464.95
  - 18222 DE1812T 19" Rack 12pt,1xAUI Client .....£197.95
  - 18223 DE1824T 19" Rack 24pt,1xAUI Client .....£304.95
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  - 18226 DFE1612TX 19" Rack 16bit Managed Master .....£1,194.95
  - 18227 DFE1212TX 19" Rack 12pt Managed Client .....£672.95
- 10/100MBS ETHERNET SWITCHES**
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- ETHERNET PRINTSERVERS**
- 18234 DP300 10/100 Ext 2xPar,1xSer .....£327.95

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RG58 Thin Ethernet Cable	12010 £0.99	12063 £1.15	12012 £1.65	12014 £2.50	12016 £4.95	12019 £7.50	12053 £9.95	12056 £12.95	12029 £23.95	---
Category 5 UTP Cable	12040 £0.95	12043 £1.20	12045 £1.85	12047 £2.35	12049 £4.50	12051 £7.35	12060 £11.95	12058 £15.95	---	17327 £89.95

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- 12089 BNC Outlet - Single Flush Mount .....£2.10
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- 15379 RJ45 Outlet - Single Flush Mount .....£7.95
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- 7328 EAD Outlet - Dual Flush Mount .....£19.95
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- 7347 12port 19" Patch Panel .....£79.95
- 15197 24port 19" Patch Panel .....£89.95

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- 12140 BNC Male Crimp Plug .....£0.65
- 12143 BNC Female Barrel Connector .....£0.99
- 12141 BNC T Connector .....£1.20
- 12142 BNC 50ohm Terminator .....£0.95
- 12144 BNC 50ohm Terminator & Earth .....£1.35
- 12748 RJ45 8P8C Crimp Plug .....£0.25

**TOOLS**

- 11760 Thin Ethernet Crimp Tool .....£10.95
- 11763 Thin Ethernet Cable Stripper .....£6.95
- 12084 RJ45 Crimp Tool .....£11.95
- 15073 Round UTP Cable Stripper .....£10.95
- 15217 Krone IDC Crimp Tool .....£19.95

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The AdvanceStack range of hubs and switches offer seamless integration of your networks. Together with the range of high performance printservers and ethernet cards, you will quickly have the total network solution.

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- 17346 J3200A AdvanceStack 12R 12pt .....£266.95
- 18709 J3202A AdvanceStack 24R 24pt .....£494.95

**100MBS ETHERNET HUBS**

- 18228 J3235A AdvanceStack 8TX 8pt .....£381.95
- 18710 J3234A AdvanceStack 12TX 12pt .....£575.95

**10/100MBS ETHERNET SWITCHES**

- 18711 J3175A AdvanceStack 208T 8x10/1x100 .....£660.95
- 18712 J3245A AdvanceStack 800T 4x100 .....£829.95

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- 15216 J2552B JetDirect MIO - BNC/TP .....£226.95
- 18235 J2556B JetDirect MIO - 10/100 TP .....£247.95
- 14384 J2591A JetDirect EX+ BNC/TP - 1xPar .....£179.95
- 17329 J2593A JetDirect EX+3 BNC/TP - 3xPar .....£234.95

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- 15273 BackUPS Pro 420 PnP - 420VA .....£148.95
- 14149 BackUPS Pro 650 PnP - 650VA .....£191.95

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- 18725 SmartUPS v/s 420 - 420VA .....£154.95
- 14588 SmartUPS v/s 650 - 650VA .....£193.95
- 14589 SmartUPS v/s 1000 - 1000VA .....£288.95
- 14590 SmartUPS v/s 1400 - 1400VA .....£387.95

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# DO YOU HATE TO WAIT?

## Convert your 486 System into a CPU MAXimiser Upgrade

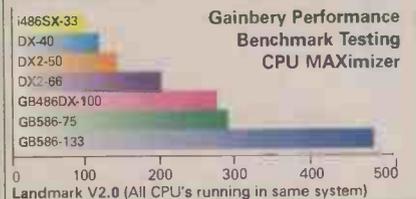
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Maximizer 586  
15620  
**£85**  
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Easy Installation:  
1. Power down your machine, and yourself to the metal frame  
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	SX2-66, DX2-66, DX4-100		

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10622	4M x 32, 16Mb 72pin	£27
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10614	1M x 36, 4Mb 72pin	£13
10617	2M x 36, 8Mb 72pin	£25
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13621	8M x 36, 32Mb 72pin	£72
10625	1M x 32, 4Mb EDO	£8
10626	2M x 32, 8Mb EDO	£15
10627	4M x 32, 16Mb EDO	£29
10644	8M x 32, 32Mb EDO	£59
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16335	Pentium P166 MMX NEW	£76
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17907	Pentium II 266MHz	£349
18572	Pentium III 300MHz	£519
18640	Pentium III 333MHz	£579
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17908	AMD K6 - 166	£69
17633	AMD K6 - 200	£115
17634	AMD K6 - 233	£153
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18239	Cyrix M2 - PR200	£98
18240	Cyrix M2 - PR233	£205
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13945	SGS 486DX4-100	£24
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15620	GB586-133	£85
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	Mx-Pro 180MHz T with MMX	£125
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17790	Make-It 386DX - 486	£79
16606	Make-It 486 - 586	£85
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17909	Pentium TX Chipset 512K Cache Motherboard	£99
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	Intel 440LX chip set Dual PII Socket ELITE	£442
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18053	VX Chipset 512K Cache Motherboard	£89
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	Pentium II ATX	£155
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16593	Micronics M6Mi-001 Intel 440FX Chipset, Up to 384Mb Ram (ATX Form Factor)	£249
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<b>ARIES</b>		
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17654	SCANIT PRO 4830P	£79
18141	SCANIT PRO 9630P	£99
18380	SCANIT PRO A3P	£399
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16513	Duo Scan	£2,795
16508	SnapScan Colour 310	£149
14546	SnapScan Colour 600	£279
16511	Studio Star Colour	£519
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13405	Scanafax - makes your fax machine into a scanner	£29
<b>CANON</b>		
14275	CanoScan 300	£129
14276	CanoScan 300 + SCSI	£259
14278	CanoScan 600	£454
14279	CanoScan 600 + SCSI	£515
18619	Film Adaptor fro CanoScan 600	£355
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17927	FilmScan 200 SCSI	£326
13374	GTx5000 Flatbed Scanner - Parallel	£154
13375	GTx5000 Flatbed Scanner - SCSI	£246
10218	GTx8500 Flatbed Scanner - Parallel	£369
10219	GTx8500 Flatbed Scanner - SCSI AT VF	£392
17946	GTI 8500 Flatbed Scanner - SCSI	£469
14185	GTI9500 Flatbed Scanner - Parallel	£446
14184	GTI9500 Flatbed Scanner - SCSI	£469
17796	GTI9500 Flatbed Scanner - SCSI	£538
<b>GENIUS</b>		
10232	Scanmate Colour Deluxe	£55
18906	Scanmate Colour Portable	£59
18620	Color Page CS	£105
18621	Color Page HR2	£225
18622	Color Page EP	£95
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13516	ScanJet 4SI Mono	£999
14328	ScanJet 5P Colour	£149
17952	ScanJet 5S Colour	£134
17952	ScanJet 6100C	£449
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12519	Support Pack for Scanjet 4C/4SI - HP5475A	£125
14241	Support Pack for Scanjet 4S/4P/5P - HP5465A	£65
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13519	Scanman EasyTouch	£39
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15697	PageScan Colour Pro	£129
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17995	Astra 1200s Colour Scanner	£229
18623	Astra 1210P Colour Scanner	£169
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16524	Powerlook 2000 1000 x 2000 Optical dpi, 10,000 x 10,000 Max dpi	£2,799
16523	Powerlook II Pro 600 x 1200dpi Colour Scanner	£1,499
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17186	Visioneer Paperport iX Windows Scanner	£115
15783	Visioneer Paperport MX Windows Scanner	£99
18624	Visioneer Paperport 3000	£125
18625	Visioneer Paperport 6000	£195
18626	Visioneer Paperport Strobe	£165
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<b>GENIUS</b>		
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16110	Mouse Dear Serial or PS2	£9
10124	MouseOne 2B - PS/2	£9
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18627	MouseMan	£23
10210	MouseMan - Bus	£39
18628	MouseMan Plus 3B - Serial & PS/2	£27
15699	MouseMan Cordless Pro - Serial & PS/2	£35
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13910	Pilot TrackMan	£23
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17250	G80-3000H4 External Notebook Numeric Keypad	£5
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13868	Analogue Joystick	£1
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15705	Sidewinder Game Pad	£1
13901	Sidewinder Std.	£1
18330	Sidewinder Precision	£30
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# Aries

**NEW**

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- 3D Features**
- ▲ Perspective correct textures
  - ▲ Bi-linear and tri-linear filtering with detail
  - ▲ Level of detail (LOD) MIP mapping
  - ▲ Sub-pixel correction
  - ▲ Polygon-based Gouraud shading and texture modulation
  - ▲ 24-bit internal, 16-bit dithered RGB frame buffer
  - ▲ Multiple format texture buffer (8-Bit and 16-Bit)
  - ▲ 2 Mbyte of frame buffer memory
  - ▲ 2 Mbyte of texture memory

- ADDITIONAL FEATURES**
- ▲ Anti-aliasing
  - ▲ Depth buffering (16 bit)
  - ▲ Alpha blending
  - ▲ Per pixel special effects: fog, transparency, translucency
  - ▲ Texture morphing, compositing, animation
  - ▲ Linear frame buffer access

- COMPATIBILITY**
- ▲ Support for full-screen games under Windows 95, MS-DOS and Windows 3.1 using 3D APLs including Microsoft Direct 3D, Intel 3DR, Criterion Renderware, Argonaut bRender and more

**System Requirements**  
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# Aries

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Plug in our multimedia TV and Teletext card and watch TV on your PC.

Now you can have both PC and TV for a fraction of the cost of both and have lots more fun - the new Aries TV Teletext Card gives you true TV performance (in full screen or 'window' mode) and lets you capture screen shots of your favourite programmes and videos, even from your camcorder! Imagine having your favourite PC program and favourite TV gameshow running simultaneously on your screen then calling up Teletext for information on tomorrow's weather - the possibilities are endless.

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Why didn't somebody invent this years ago?



**Lets You Watch TV While You Are Working On Your PC**

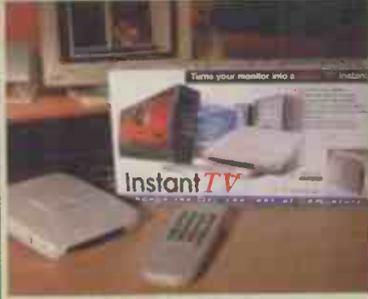
**"You can split your screen into a Teletext page, TV screen and PC"**

**System requirements:**  
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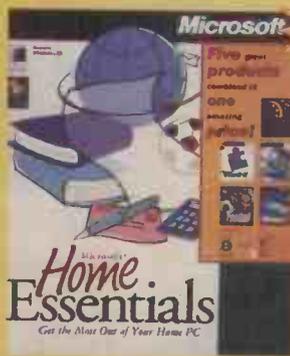
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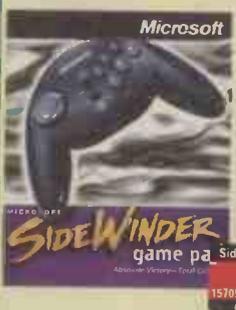
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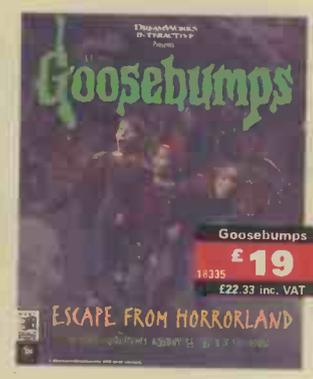
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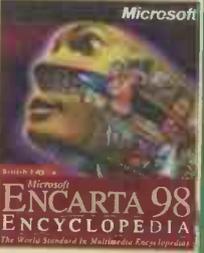
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13873	Micrografx Designer Power Pack Print Studio v5	£275.00
15799	Micrografx Windows Draw & Print Studio v5	£39.00
13934	Micrografx Windows Draw v5 Win95 NT Only CD	£30.00
13889	Micrografx Reality v2 for Windows CD	£93.00
15477	NBA PhotoWallet	£68.00
10568	RMG Inspiration for Windows	£84.00
15660	Sierra Print Artist CD	£16.00
18368	Softkey Photofinish V4.0 Win 95 CD	£39.00
13978	Visio Shapes - Adv. Elec. Engineering DK	£39.00
11659	Visio Shapes - Adv. Flowcharting DK	£39.00
11651	Visio Shapes - Adv. Network Diagrams DK	£39.00
13989	Visio Shapes - Adv. Space Planning DK	£39.00
11066	Visio Shapes - Biotechnology/Medicine DK	£39.00
11663	Visio Shapes - Chemical Engineering DK	£39.00
11085	Visio Shapes - Home Planning DK	£29.00
13881	Visio Shapes - Insurance DK	£39.00
11662	Visio Shapes - Marketing DK	£39.00
13882	Visio Shapes - Mechanical Engineering DK	£39.00
11657	Visio Shapes - Software Diagrams DK	£39.00
15994	Visio Shapes - Chemistry Win 3.x DK	£39.00
18382	Visio V5 Professional Win 95 CD	£219.00
18383	Visio V5.0 Professional Upgrade Win 95 CDE	£149.00
18384	Visio Technical V5 Win/Win 95 CD	£219.00
18385	Visio Technical V5 Win/Win 95 CD Upgrade	£129.00
18386	Visio V5 Win3.x/Win 95	£96.00
18387	Visio V5 Win3.x/Win95 Uppg.	£58.00

**GRAPHICS - PRESENTATION**

13148	Asymetrix 3D F/X CD	£69.00
17967	Lotus Approach 97 Win 3.x Win95 CD	£36.50
17968	Lotus Approach 97 Win 3.x Win95 DK	£36.50
17969	Lotus Approach 97 1-User Licence	£31.00
17970	Lotus Freelance Graphics 97 Win 3.x Win95 CD	£36.50
17971	Lotus Freelance Graphics 97 Win 3.x Win95 DK	£36.50
17972	Lotus Freelance Graphics 97 1-User Licence	£31.00
17824	Lotus ScreenCam 97 WIN 95 DK	£23.00
16296	MS Powerpoint 97 WIN 95 CD	£225.00
16397	MS Powerpoint 97 WIN 95 1 MLP	£89.00
16297	MS Powerpoint 97 WIN 95 Comp. + CCP Uppg.	£89.00
11583	MS Powerpoint WIN v4	£224.00
11779	MS Powerpoint v4 CCP Uppg.	£82.00
16174	MS Powerpoint WIN v4 1-MLP	£199.00
10893	RMG TrueSpace SE v1	£77.00
11906	RMG TrueSpace v2 CD	£362.00
15819	Scala Multimedia MM100 CD	£99.00
16323	SPC Active Office Win v4	£29.00
15487	SPC ASAP Wordpower	£86.00
11820	SPC Harvard Graphics WIN v3.0	£195.00
16175	SPC Harvard Graphics WIN v3 Comp.Uppg.	£87.00
15681	SPC Harvard Graphics v4 WIN 95	£215.00
15682	SPC Harvard Graphics WIN95 v4Uppg.	£95.00
11821	SPC Harvard Spotlight WIN v1.0	£89.00

**HOME INTEREST & LIFESTYLE**

18005	AA Virtual London Win3.1 Win 95 CD	£29.00
18006	AA Interactive Britain & Ireland Win3.1 Win 95 CD	£29.00
18007	AA Birds of Britain & Europe Win3.1 Win 95 CD	£29.00

10445	Adobe Premiere V4.2 WIN CD	£299.00
18320	Broderbund Family Tree Maker Basic Edition Win3.1/95 CD	£16.00
18337	Broderbund Family Tree Maker Std Edition Win3.1/95 CD	£28.00
18338	Broderbund Family Tree Maker Deluxe Edition Win3.1/95 CD	£43.00
17981	DK Family Health Encyclopedia Win 95 CD	£24.00
18507	Data Becker Techno Maker Win3.1/95 CD	£20.00
18508	Data Becker Techno Maker Plus Win3.1/95 CD	£10.00
18512	Data Becker Techno Maker/Plus Bundle Win3.1/95 CD	£22.00
12596	Europress BBC 3D Garden Designer 2 CD	£16.00
13299	Europress BBC 3D Interior Designer CD	£12.00
13141	FastTrack 3D Landscape 2 Deluxe CD	£30.00
13308	FastTrack Garden Encyclopaedia v1 CD	£15.00
16147	FastTrack Garden Encyclopaedia 2 Deluxe CDE	£24.00
15691	FastTrack Visual Home CD	£34.00
18881	Grisoft The Wonders of the Universe Win95 CD	£21.00
18339	Magix Music Maker 3.0 CD	£30.00
18340	Magix Music Studio 3.0 CD	£30.00
18341	Magix Music Studio 3.0 Deluxe CD	£65.00
16448	Magix Music Painter DK	£21.00
16449	Magix Dance & House Wave Soundpool CD	£12.00
16450	Magix HipHop/P-Funk/Rap Wave Soundpool CD	£12.00
16451	Magix TripHop/Jungle Wave Soundpool CD	£12.00
16453	Magix Soul/R&B/Funk Wave Soundpool CD	£12.00
16458	Magix Ambient/Chill Wave Soundpool CD	£12.00
16384	MGI PhotoSuite Starter Kit Edition Win3.x Win 95 CD	£14.00
16395	MGI PhotoSuite Edition Win3.x Win 95 CD	£32.00
15820	MS Greetings Workshop Win 95 CD	£18.50
18289	MS Greetings Workshop Deluxe V2.0 32-Bit CD	£25.00
11363	Pinnacle Video Director Home v1.1 WIN	£42.00
11364	Pinnacle Video Director WIN Suite v2.5	£72.00
13110	GSP Geoff Hamilton Garden Designer CD	£14.00
15227	GuidSoft Family Lawyers CD	£19.00
13090	GuidSoft Family Origins	£18.00
11292	RMG Planix Home Architect 3D	£25.00
15958	RMG Planix Photo Landscape	£20.00
12622	SMC BodyWorks v5 CD	£10.00

**INTEGRATED PACKAGES & BUNDLES**

11365	Clarix Works v4 WIN 95	£86.00
13218	Corel Office Companion CD Win	£61.00
15407	Corel Office Professional v7 WIN 95 CD	£182.00
15406	Corel Office Professional v7 WIN 95 U/G CDE	£118.00
15390	Corel Office Professional Win 3 U/G CD	£118.00
12896	Corel Office Professional Win 3 CD	£185.00
11894	Corel WordPerfect Suite v6 Win 3 3.5"	£189.00
13620	Corel WordPerfect Suite v6 Win 3 CD	£165.00
11888	Corel WordPerfect Suite v6 Win 3 Uppg. 3.5"	£92.00
12912	Corel WordPerfect Suite v6 Win 3 Uppg. CD	£63.00
18348	Corel WordPerfect Suite v7 Win 3.1x CD	£179.00
18349	Corel WordPerfect Suite v7 Upgrade Win 3.1x CD	£99.00
17764	Corel WordPerfect Suite v8 Win 95 CD	£169.00
17766	Corel WordPerfect Suite v8 Upgrade Win 95 CD	£99.00
17830	Corel WordPerfect Suite v8 Professional Win 95 CD	£249.00
17831	Corel WordPerfect Suite v8 Professional Comp Uppg Win 95 CD	£149.00
16696	Lotus SmartSuite 97 Win 95/NT CD	£290.00
16697	Lotus SmartSuite 97 Win 95/NT Upgrade CD	£110.00
16698	Lotus SmartSuite 97 Win 95/NT 1LLP	£260.00
16699	Lotus SmartSuite 97 Win 95/NT 1LLP Upgrade	£117.00
16701	Lotus SmartSuite 97 Win 95/NT CD Media Pack	£16.00
16177	Lotus SmartSuite v4 (inc WordPro 96) 1-LLP	£284.00
11367	Lotus SmartSuite v4 (inc WordPro 96) DK	£290.00
12630	Lotus SmartSuite v4 (inc WordPro 96) CD	£290.00
11368	Lotus SmartSuite v4 competitive Uppg. DK	£112.00
12629	Lotus SmartSuite v4 competitive Uppg. CD	£112.00
18295	MS Home Essentials 98 Win95 CD	£78.00
16435	MS Office Developer Edition 1997 C/V Uppg	£330.00
16436	MS Office Developer Edition 1997 Disk Set	£48.00
16438	MS Office Developer Edition 1997 Doc Set	£80.00
16439	MS Office Developer Edition 1997 Product Uppg CD	£195.00
16440	MS Office Developer Edition 1997 1MLP	£490.00
16441	MS Office Developer Edition 1997 Version Uppg 1MLP	£300.00
16442	MS Office Developer Edition 1997 Product Uppg 1MLP	£178.00

16443	MS Office Developer Edition 1997 CD	£530.00
16749	MS Office 97 Small Business Edition CD	£325.00
16750	MS Office 97 Small Business Edition Upgrade CD	£149.00
16289	MS Office 97 for Windows 95 CD	£323.00
16396	MS Office 97 for Windows 95 1MLP	£310.00
16400	MS Office 97 CCP Uppg. for WIN 95 1-MLP	£145.00
16290	MS Office 97 CCP Uppg. for WIN 95 CD	£149.00
16287	MS Office Pro 97 + Bookshelf Win 95 CD	£419.00
16288	MS Office Pro 97 + Bookshelf CCP Uppg. Win 95 CD	£205.00
16398	MS Office Pro 97 Win 95 1 MLP	£399.00
16399	MS Office Pro 97 Win 95 CCP 1 MLP	£198.00
11253	MS Office v4.2 for Windows DK	£325.00
16401	MS Office v4.2 for Windows CD	£325.00
10544	MS Office v4.2 for Windows 1 MLP	£285.00
11254	MS Office v4.2 CCP Uppg. for Windows	£161.00
11255	MS Office v4.2 Comp. Uppg. for windows	£12.00
11169	MS Office Pro v4.3 for windows DK	£427.00
15228	MS Office Pro v4.3 for windows CD	£422.00
11781	MS Office Pro v4.3 1-MLP for windows	£355.00
15876	MS Office Pro CCP Uppg. for windows DK	£242.00
12906	MS Office Pro CCP Uppg. for windows CD	£242.00
11171	MS Office Pro v4.3 Comp.Uppg. for windows DK	£289.00
14054	MS Works for WIN 95 DK	£68.00

**LANGUAGES & DEVELOPMENT TOOLS**

16797	Borland C++ Builder Client/Server V1.0 CD	£1,160.00
16798	Borland C++ Builder Client/Server Upgrade CD	£1,005.00
16799	Borland C++ Builder Professional V1.0 CD	£360.00
16800	Borland C++ Builder Professional Upgrade V1.0 CD	£225.00
16802	Borland C++ Builder V1.0 CD	£61.00
16803	Borland Learn to Program With C++ Builder V1.0 CD	£35.00
12763	Borland C++ v5 CD	£199.00
12762	Borland C++ v5 Uppg CD	£106.00
12759	Borland C++ v5 Development Suite CD	£285.00
12761	Borland C++ v5 Development Suite U/G CD	£166.00
17596	Borland Delphi V3 Standard NT/Win 95 CD	£69.00
17597	Borland Delphi V3 Professional NT/Win 95 CD	£349.00
17598	Borland Delphi V3 Professional Upgrade NT/Win 95 CD	£201.00
17600	Borland Delphi V3 Client/Server NT/Win 95 CD	£1,299.00
17601	Borland Delphi V3 Client/Server Upgrade NT/Win 95 CD	£999.00
15376	Borland IntraBuilder NT/WIN95CD	£59.00
16179	Borland IntraBuilder Professional NT/WIN95 CD	£289.00
16180	Borland IntraBuilder Professional Uppg NT/WIN95 CD	£239.00
16181	Borland IntraBuilder Client Server NT/WIN95 CD	£1,159.00
18181	Borland JBuilder Standard WIN95 WIN NT CD	£79.00
18182	Borland JBuilder Professional WIN95 WIN NT CD	£349.00
18183	Borland JBuilder Professional Uppg WIN95 WIN NT CD	£229.00
11271	Borland RAD Pack for Delphi DK	£123.00
11965	Borland Turbo Assembler DOS/WIN DK	£56.00
11090	Borland Turbo C++ DOS v3	£53.00
15160	Borland Turbo C++ WIN v4.5 CD	£52.00
11006	Borland Turbo Pascal DOS v7 DK	£73.00
11154	Borland Turbo Pascal Win v1.5 DK	£77.00
10291	Borland Pascal & Objects v7.0	£215.00
11825	Borland Visual Solutions	£59.00
11152	MS Macro Assembler DOS v6.11	£95.00
17469	MS Visual Basic Enterprise 5.0 Win95 CD	£779.00
17471	MS Visual Basic Enterprise 5.0 Win95 V/UPG CD	£469.00
17473	MS Visual Basic Enterprise 5.0 Win95 MLP£736.60	
17474	MS Visual Basic Enterprise 5.0 Win95 V/UPG MLP	£423.50
17459	MS Visual Basic STD Edition 5.0 Win95 CD	£64.00
17460	MS Visual Basic STD 5.0 Win95 V/UPG CD	£36.00
17462	MS Visual Basic Pro 5.0 Win95 CD	£321.00
17463	MS Visual Basic Pro 5.0 Win95 C/UPG CD	£189.00
17464	MS Visual Basic Pro 5.0 Win95 V/UPG CD	£167.00
17465	MS Visual Basic Pro 5.0 Win95 V/UPG MLP£151.50	
17455	MS Visual C++ Enterprise 5.0 Win95 CD	£819.00
17456	MS Visual C++ Enterprise 5.0 Win95 V/UPG CD	£469.00
17458	MS Visual C++ Enterprise 5.0 Win95 V/UPG MLP	£423.50

17446	MS Visual C++ Learning Ed. 5.0 Win95 CDE	£62.85
17448	MS Visual C++ Pro 5.0 Win95 CD	£314.00
17450	MS Visual C++ Pro 5.0 Win95 V/UPG CDE	£213.00
17453	MS Visual C++ Pro 5.0 Win95 V/UPG MLP	£191.75
17477	MS Visual Studio 97 Pro Win95 CD	£682.00
17874	MS Visual Studio 97 Pro Upgrade Win95 CD	£325.00
17478	MS Visual Studio 97 Enterprise Win95 CD	£969.00
17875	MS Visual Studio 97 Enterprise Upgrade Win95 CD	£677.00

**LEISURE & ENTERTAINMENT**

18537	BBC Results - The BBC Sports Quiz Win95 CD	£24.00
18546	BBC Wallace & Gromit Cracking Animator	£15.00
18547	BBC Wallace & Gromit Fun Pack Win3.1/95 CD	£15.00
12725	Broderbund Tortoise and Hare CD	£19.00
15584	Corel Super Ten Pack for Adults	£29.00
13950	Corel Super Ten Pack for Kids	£29.00
17659	DK Amazing Animals CD-Rom Activity Pack Win 95	£21.00
18469	Disney 101 Dalmations Animated Storybook CD	£29.00
12624	Disney Aladdin Activity Centre CD	£29.00
15881	Disney GameBreak! Timon & Pumbaa's Jungle Games CD	£26.95
18467	Disney Hercules Animated Storybook CD	£29.00
18468	Disney Hunchback Animated Storybook CD	£26.00
12626	Disney Lion King Animated Storybook CD	£29.00
11768	Disney Lion King Print Studio	£25.00
11879	Disney Lion King Screen Savers	£19.00
15882	Disney Lion King Activity Centre CD	£29.00
11876	Disney Mickey & Crew Screen Savers	£19.00
13847	Disney Pocahontas Animated Story Book CD	£29.00
18466	Disney Toy Story Activity Centre CD	£29.00
13846	Disney Toy Story Screen Saver	£18.00
18465	Disney Magic Artist Win95 CD	£29.00
15880	Disney Winnie Pooh and the Honey Tree Animated CD	£26.95
15809	IBM Jungle Book CD	£25.00
12847	IBM Peter & The Wolf CD	£21.00
12604	Softkey Explorers of The New World CD	£24.00
12996	Softkey InfoPedia 2.0 CD	£15.00
12620	Softkey Leonardo The Inventor CD	£10.00
12997	Softkey Martial Arts Explorer CD	£10.00

**MS MULTIMEDIA TITLES**

12938	MS Art Gallery CD	£24.00
15398	MS Cinemania 1997 WIN CD	£19.00
15394	MS Music Central 97 WIN 95 CD	£19.00
18293	MS Picture It 2.0 32-Bit UK, AUS, NZ only CDE	£32.00

**MS STUDENT LICENCES**

14029	Microsoft Office 95 / Office 97	£94.00
12107	Microsoft Publisher 97	£38.00
14030	Microsoft Visual Basic Pro or Visual C++	£94.00
12108	Microsoft Windows 95 or Windows NT	£38.00
12106	Microsoft Works 95	£32.00

**MULTIMEDIA TOOLS**

13150	Asymetrix Digital Video Producer CD	£69.00
12104	Asymetrix Toolbox v4 DK	£99.00
15506	Asymetrix Multimedia Toolbox v4.0 CD	£489.00
12778	Asymetrix Multimedia Toolbox v4 CBT CDE	£708.00
12768	Digital Workshop Illuminatus 3	£98.00
16198	Digital Workshop Illuminatus 3 Comp. Uppg.	£47.00
17979	Macromedia Director V6 Win95 CD	£729.00
17980	Macromedia Director Multimedia Studio V6 Win95 CD	£799.00

**NETWORKING**

13999	Novell Netware v3.
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17801	Novell IntranetWare V4.11 50 User CD	£2,000.00
17813	Novell IntranetWare V4.11 50 User Upg From Any Version CD	£840.00
17802	Novell IntranetWare V4.11 100 User CD	£2,820.00
17815	Novell IntranetWare V4.11 100 User Upg From Any Version CD	£1,180.00
17803	Novell IntranetWare V4.11 250 User CD	£5,500.00
17816	Novell IntranetWare V4.11 250 User Upg From Any Version CD	£2,110.00
17804	Novell IntranetWare V4.11 500 User CD	£10,000.00
17817	Novell IntranetWare V4.11 500 User Upg From Any Version CD	£2,650.00
17806	Novell IntranetWare V4.11 1000 User CD	£19,950.00
17818	Novell IntranetWare V4.11 1000 User Upg From Any Version CD	£3,550.00
17819	Novell IntranetWare V4.11 10 User Additive Licence	£535.00
17792	Novell IntranetWare V4.11 25 User Additive Licence	£1,220.00
17820	Novell IntranetWare V4.11 50 User Additive Licence	£1,850.00
15138	Novell Personal Netware 1.0	£44.00

**OCR & SCANNING SOFTWARE**

18884	BuzzSoft SoftCopier Win3.1/95/NT DK	£34.00
16822	Caere Omniform 2.0	£109.00
10700	Caere OmniPage Direct WIN v2 DK	£48.00
15507	Caere OmniPage Pro WIN v6	£304.00
15196	Caere OmniPage Pro WIN v6 Retail U/G DK	£69.00
18514	Caere OmniPage Pro v8 Win95/NT CD	£395.00
18515	Caere OmniPage Pro v8 Upgrade Win95/NT CD	£99.00
10570	Caere Wordscan Plus WIN v4	£289.00
16395	Xerox Paxis Pro97 Win 95 CD	£69.00
11054	Xerox TextBridge WIN v3 DK	£62.00
10916	Xerox TextBridge Professional DK	£239.00
18558	Xerox TextBridge Pro 98 Win95/NT4.0 CD	£58.00

**OPERATING SYSTEMS**

13470	IBM PC DOS 7	£57.00
12564	MS Plus! for Windows 95 CD	£27.00
10866	MS Plus! for Windows 95 3.5"	£26.00
16199	MS Plus! for Windows 95 MLP	£25.00
10717	MS-DOS to WIN 95 Upgrade 3.5"	£115.00
10720	MS-DOS to WIN 95 Upgrade 1 MLP	£99.00
13272	MS WIN to WIN 95 Version Upg. CD	£58.00
10713	MS WIN to WIN 95 Version Upg. DK	£58.00
10715	MS WIN to WIN 95 Version Upg. 1 - MLP	£57.00
10537	MS DOS v6.22 Upgrade 3.5"	£38.00
15171	MS DOS v6.22 Upgrade 1-MLP	£33.00
11262	MS Windows v3.11 3.5"	£69.00
15821	MS Windows v3.11 Upgrade CCP	£39.00
11060	MS Windows v3.11 1-MLP	£56.00
10547	MS WFWG v3.11 DK	£86.00
10292	MS WFWG v3.11 1-MLP	£85.00
10548	MS WFWG v3.11 Add-on/WIN OK	£39.00
10551	MS WFWG v3.11 Add-on/DOS	£40.00
15256	MS Windows NT Workstation v4.0 CD	£214.00
15260	MS Windows NT Workstation v4.0 1 - MLP	£195.00
15261	MS Windows NT Workstation v4.0 Upg CD	£99.00
15654	MS Windows NT Server v4.0 CD + 5 Lic. CD	£549.00
15265	MS Windows NT Server v4.0 CD + 5 Lic. Upg	£282.00
15656	MS Windows NT Server v4.0 + 10 Lic. CD	£769.00
15657	MS Windows NT Server v4.0 + 10 Lic. CD Upg	£376.00
11361	MS NT Client Access Licenses	£26.00
13086	MS NT Client Access Licenses 20 PACK	£479.00

**PROJECT MANAGEMENT**

13829	IMSI Turbo Project V1.0 Win DK	£69.00
11538	MS Project WIN v4.0 DK	£282.00
11841	MS Project WIN v4.0 CCP Upg	£80.00
15267	MS Project v4.1 WIN95	£285.00
10824	MS Project v4.1 CCP Upg. WIN 95	£82.00
16321	Siemens Nixdorf SmartAssist Win95 /NT DKE84.00	
16322	Siemens Nixdorf SmartAssist Win95 /NT CDE84.00	
15497	Softkey Key Project Manager WIN CD	£29.00

**ROUTE PLANNERS**

18003	AA StreetMaster London Win 95 CD	£29.00
18004	AA MileMaster Britain & Ireland Win3.1 Win 95 CD	£29.00
18807	Grisoft InfoMap 4.0 Win95/NT CD	£20.00
18284	MS Autoroute Express Europe V6 32-Bit CD	£39.00
18285	MS Autoroute Express G/Britain V6 32-Bit CD	£39.00

18144	Routeplanner V1.9 UK,Ireland,Europe CD	£32.00
18148	Routeplanner V1.9 Europe CD	£32.00
18146	Ultimate Travel Bundle V1.9 CD	£55.00

**SPREADSHEETS**

12900	Corel Quattro Pro CD WIN	£44.00
11071	Lotus 1-2-3 DOS R4	£296.00
11861	Lotus 1-2-3 WIN R5.0	£212.00
11370	Lotus 1-2-3 WIN R5.0 Competitive Upg.	£72.00
10681	Lotus 1-2-3 WIN R5 1-LLP	£193.00
16291	MS Excel 97 for Windows 95 CD	£224.00
16292	MS Excel 97 WIN 95 Competitive + CCP Upg. CD	£89.00
16392	MS Excel 97 Windows 95 1-MLP	£215.00
10553	MS Excel WIN v5.0 DK	£225.00
10771	MS Excel v5.0 CCP Upg. DK	£81.00
11580	MS Excel v5.0 Competitive Upg	£106.00
10554	MS Excel WIN v5.0 1-MLP	£196.00
12231	SPC Harvard ChartXL V2	£135.00

**TRAINING AIDS**

All BVG Products also available on Video

15346	Borland Learn to Program With Delphi	£33.00
16803	Borland Learn to Program C++	£33.00
17398	BVG Getting Started with Word 97 Win CD	£18.50
17399	BVG Intermediate Guide to Word 97 Win CD	£18.50
17400	BVG Advanced Guide to Word 97 Win CD	£18.50
17401	BVG Getting Started with Powerpoint 97 Win CD	£18.50
17402	BVG Advanced Guide to Powerpoint 97 Win CD	£18.50
17403	BVG Guide to Powerpoint 97 Presentations Win CD	£18.50
17404	BVG Getting Started with Excel 97 Win CD	£18.50
17405	BVG Intermediate Guide to Excel 97 Win CD	£18.50
17406	BVG Advanced Guide to Excel 97 Win CD	£18.50
17407	BVG Guide to Excel 97 Formulas and Functions Win CD	£18.50
17408	BVG Guide to Excel 97 Macros and Charts Win CD	£18.50
17409	BVG Getting Started with Access 97 Win CD	£18.50
17410	BVG Intermediate Guide to Access 97 Win CD	£18.50
17411	BVG Advanced Guide to Access 97 Win CD	£18.50
17412	BVG Getting Started with CorelDraw 7.0 Win CD	£18.50
17413	BVG Advanced Guide to CorelDraw 7.0 Win CD	£18.50
17414	BVG Getting Started with Windows 97 Win CD	£18.50
17415	BVG Advanced Guide to Windows 97 Win CD	£18.50
17416	BVG Guide to Using Internet with Windows 97 Win CD	£18.50
15987	BVG Excel 5.0 Introduction Win CD	£18.50
15990	BVG Excel 95 Introduction Win CD	£18.50
15995	BVG Word 6.0 Introduction Win CD	£18.50
15996	BVG Word 6.0 Advanced Win CD	£18.50
15997	BVG Word 95 Introduction Win CD	£18.50
15999	BVG Word 95 Advanced Win CD	£18.50
16003	BVG Windows 95 Introduction Win CD	£18.50
16004	BVG Windows 95 Advanced Win CD	£18.50
16015	BVG Access 95 Advanced Win CD	£18.50
15985	BVG Access 2.0 Introduction Win CD	£18.50
16016	BVG Access 2.0 Advanced Win CD	£18.50
16026	BVG Visual Basic 4.0 Introduction Win CD	£18.50
16028	BVG Visual Basic 4.0 Advanced Win CD	£18.50
17417	BVG Getting Started with Office 97 CD Productivity Pack	£42.00
17418	BVG Advanced Guide to Office 97 CD Productivity Pack	£42.00
17438	BVG Getting Started with Office 97 VIDEO Productivity Pack	£30.00
17439	BVG Advanced Guide to Office 97 VIDEO Productivity Pack	£30.00
17440	BVG Windows NT 4.0 VIDEO Productivity Pack	£30.00
12733	CRT Easy Tutor Learn Windows 95 CD	£25.00
16376	CRT Easy Tutor Learn Office 97 CD	£17.00
16377	CRT Easy Tutor Learn Computing CD	£25.00
16378	CRT Easy Tutor Learn Internet 97 CD	£25.00
16379	CRT Easy Tutor Learn Windows NT 4.0 CD	£41.00
16380	CRT Easy Tutor Learn Word 95 CD	£41.00
14035	Softkey WinTutor 95 CD	£12.00

**UTILITIES - GENERAL**

16408	Authentex DataSAFE Win3.1/95/NT DK	£34.00
11561	Central Point PC Tools v2 WIN DK	£72.00
15259	Central Point XTree Gold for Windows v4	£72.00
14011	Central Point XTree Gold v3 DOS	£89.00

17880	Computhink The Paperless Office	£99.00
16151	Cross Atlantic Jet-It!	£16.95
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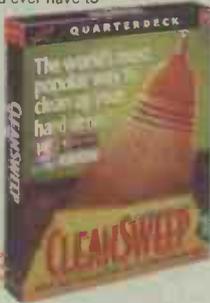
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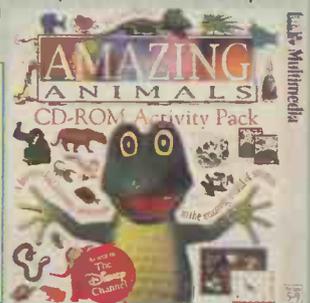
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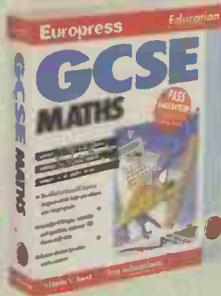
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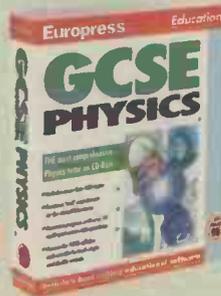
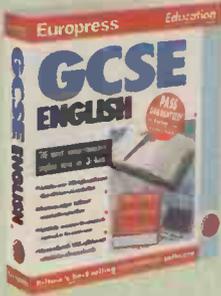
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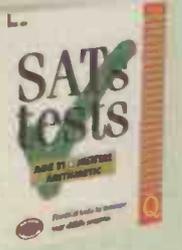
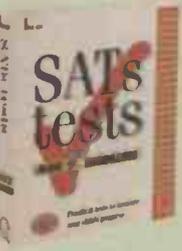
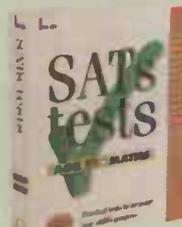
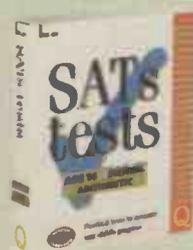
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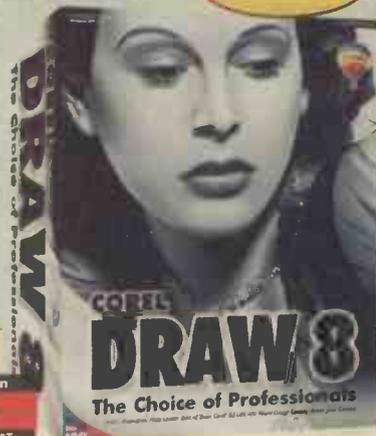
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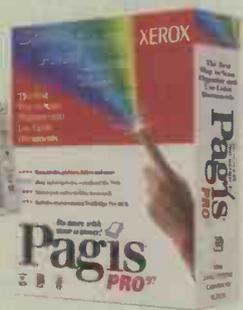


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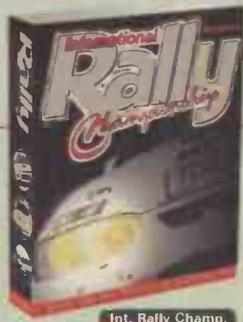
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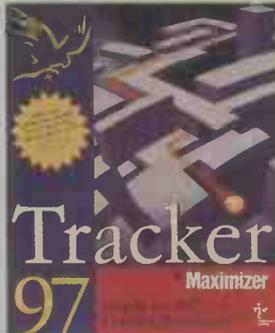
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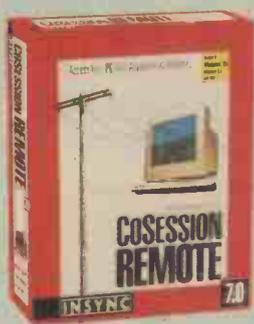
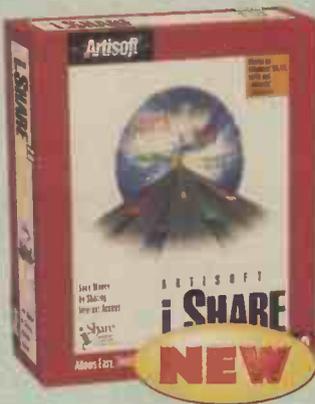
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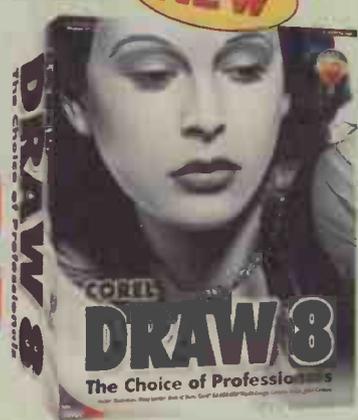
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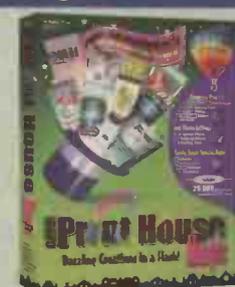


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Byte Magazine, February 1997

Information Week  
27 May 1997

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C++ Builder Pro	16799	£360	£423.00
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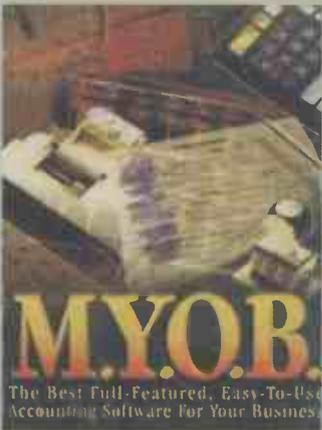
Product	Code No.	Price	Inc. VAT
J Builder Pro	18182	£149	£175.08
J Builder Pro Upgrade	18183	£229	£269.08
J Builder Standard	18181	£79	£92.83

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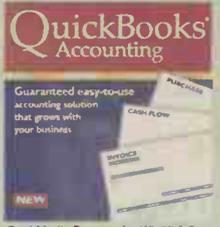
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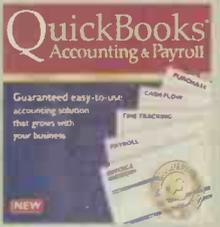
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Minimum System Requirements

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### 3D Landscape 2 Deluxe

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- ▲ Imperial or Metric measurements
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- ▲ See your garden age over the years
- ▲ Shadow Caster helps plan where shadows fall
- ▲ Unique slope feature

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- ▲ Video clips on plant care
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- ▲ Pest and disease control information
- ▲ Print out any plant record complete with attributes
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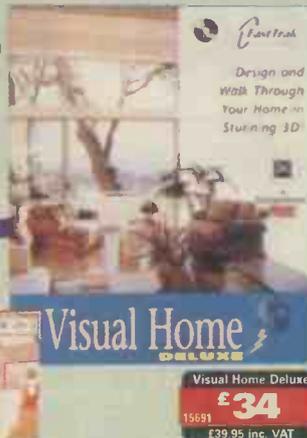


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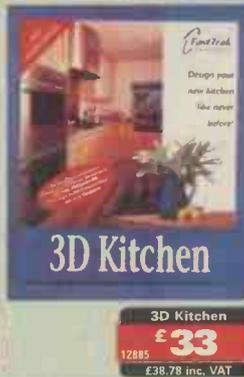


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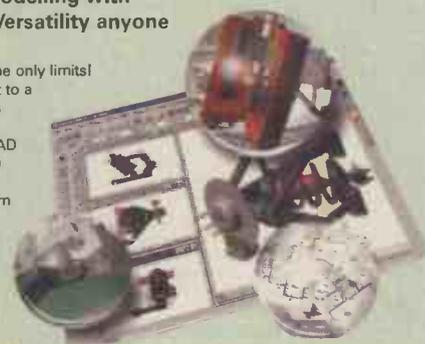
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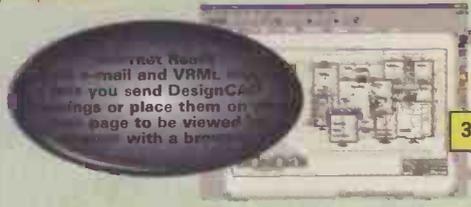


Internet Ready

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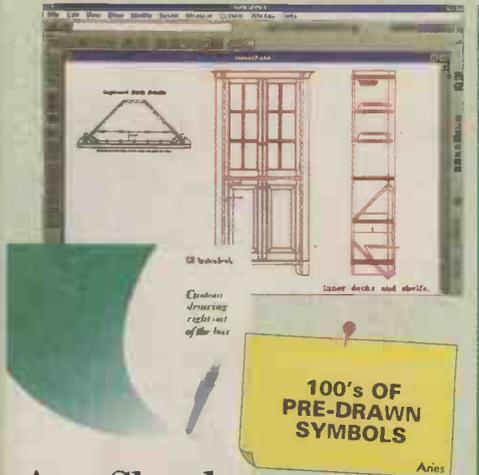
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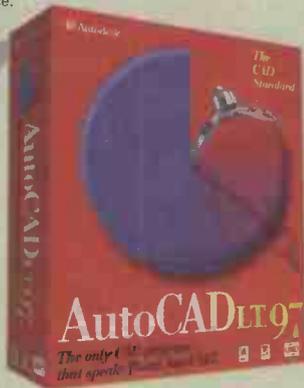
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## Autodesk View 1.2 for Windows 95 3.1 & NT

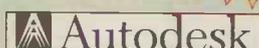
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The Home Page

**2** Our site uses the latest security and animation features, your browser may not have the necessary plug-in installed. Our site will download and install these automatically. If this is the case your browser will display an initial 'splash screen' containing instructions and a 'continue' hot link. Once you have read the text click 'continue'!



Personal Computer Configuration.

**3** You may need to update your browsers Authenticode security certificates, you will be taken to Microsoft's Authenticode download area. Download the file 'auth2all.exe' and run it. Once installed quit your browser and the repeat step 1. Your browser will now launch our Home Page or ask you to install Macromedia Flash. If your browser supports ActiveX (Internet Explorer 3.0) the download will happen automatically, click 'Yes' on the authorisation certificate once it appears.

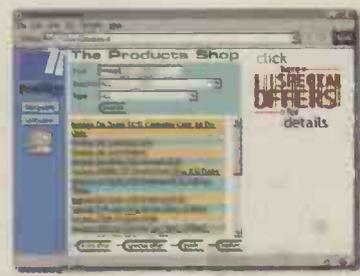
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This month Watford Electronics announces the launch of its Internet shopping experience, Watford Online. This premier Internet Commerce site is one of the first of its kind to offer a total on-line shopping solution.

Utilising the very latest technology from Microsoft, this site provides unrivalled on-line ordering and information services. You may browse our extensive range of Aries personal computer products and peripherals, search our ever changing database of over 5000 products, or choose from a specially selected range from big name manufacturers.

With extensive product information, high quality images and a totally customisable computer configuration system you can be sure to make the right choice first time.

Simply follow our six easy steps and you will be up and running in minutes!



Products Search

**4** If all is well and your plug-in's are installed you will see our Home Page (see screen shot) now you can start to explore. Click on any of the buttons on the right, the logos in the Computer Essentials section or the green words on the edges of the screen to move to one of the six sections and find out more about the products on offer.



Company Information

**5** Once you find the product you want, click the green button 'Add to Basket' to put that product in your personal shopping trolley. Continue to shop and add as many items as you like. Once you are ready to purchase click the 'Purchase' button and then follow the simple purchase procedure by entering your delivery and credit card details. If you need a further description of the shopping procedure or any aspect of the site it can be found in the sites interactive guide.



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# PowerQuest - the hard drive utility experts

## PartitionMagic 3.0

**PartitionMagic is the revolutionary utility that lets you create, resize and move hard-disk partitions on the fly.**

Now, all the benefits of hard-disk partitioning can be yours without the hassles and risk of data loss.

### Reclaim Wasted Disk Space

With partitions of over 1 GB you can have up to 40% of your hard drive completely wasted. PartitionMagic 3.0 allows you to reclaim the wasted space that comes from inefficient storage methods by shrinking large FAT partitions and restructuring cluster sizes.

### Safely Run Multiple Operating Systems

PartitionMagic 3.0 makes it easy to run DOS, Windows 3.1, Windows 95 and NT on the same machine without compatibility problems. And switching between operating systems is easy using Boot Manager, from IBM, included with PartitionMagic 3.0.

### Organise and protect your data

Physically separate data, applications and operating systems into their own dedicated partition. This simplifies backups, especially to devices like ZIP drives and the Uninstaller applications mover lets you move entire applications from one partition to another without losing a single setting or file.

### PartitionMagic Tip to Speed Up Windows

Improve Windows performance by creating a partition just for your swap file. Because you do not save anything into the partition it never becomes fragmented and your system never slows down.

#### Quotes

"An invaluable product for the power user"  
PC Direct April '97

"a disk utility no office should be without"  
PC Advisor March '97

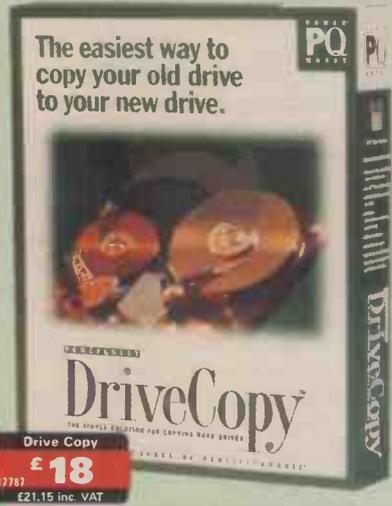
"It's Indispensable"  
PC Pro March '97

"Unique dazzling and indispensable, PartitionMagic is a must have product in an era of larger and larger hard disks"  
PC Magazine US



## DriveCopy

**The safest, easiest, and most affordable way to copy everything from your old hard drive to your new hard drive.**



### Star Features

- ▲ Features a simple user interface
- ▲ Easily and safely copies original drive to new drive
- ▲ Supports every major operating system
- ▲ Includes easy-to-follow user manual
- ▲ Reduces a time-consuming process to a few simple steps

No re-installing, no data loss, no headaches

### Safe and Easy data Migration

There was a time when upgrading to a new hard drive meant hours of downloading your data, applications, and operating systems to disk; then hours more of reinstalling everything to your new hard drive. If it all went well, you could be looking at a few days worth of work. Of course, there was always the risk of scrambling your data or losing it altogether in the process. Fortunately, now there's DriveCopy, from Powerquest®. With a few simple steps, everything from your old hard drive is automatically copied to your new one without losing a single preference, setting, or byte of data. No re-installing, no data loss, no headaches.

The price of a new hard drive is at an all time low. And now, with DriveCopy, so is the cost of actually upgrading your current drive. DriveCopy does away with all the hassles and prohibitive costs that were once associated with upgrading to a new hard drive. The process that used to take as much as several days to complete can now be done in a matter of minutes. And rather than paying a professional up to £150 to copy everything from your old drive to your new one, you can save yourself the trouble (and the cash) by using DriveCopy. So go ahead - update your dinosaur with a new high capacity hard drive. With DriveCopy, it's never been easier or more affordable.

### Supports Every Major Operating System

With so many operating systems in use today, it doesn't make sense to limit the support of a data migration product to only one or two. Instead, DriveCopy supports all of the popular operating systems they use. Windows 95, Windows 95b, Windows 3.1, Windows NT, DOS, OS/2

## Drive Image Everything you need to duplicate your hard drive.

**Complete hard-drive imaging for fast backups, hard-drive upgrades, and system recovery.**

### Star Features

- ▲ Create a compressed 'Image File' of a partition - or an entire drive!
- ▲ Store files on Jaz, Zip, CD-Rom, Hard Drives.
- ▲ Download backed-up image files to new hard drive or for easy disaster recovery
- ▲ Download to drives of different sizes or geometry.
- ▲ Operating system independent.

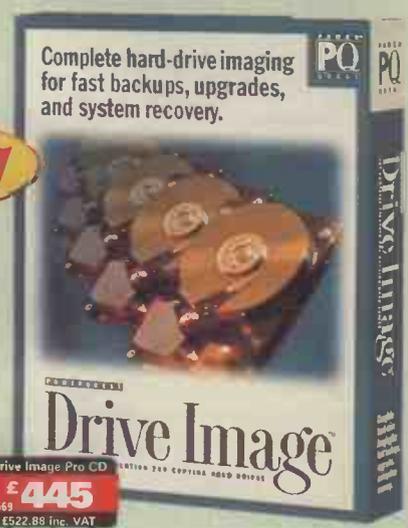
Drive Image is a complete hard-drive imaging solution for fast backups, upgrades and system recovery. This is the easiest, fastest, and most comprehensive system for complete hard drive duplication we've seen, and a must for today's busy PC user. Drive Image lets you easily create a compressed image file of an individual partition or an entire hard drive. This file can be stores on a network, Jaz, Zip, CD-ROM, or other hard drive and then downloaded to make quick work of backups, disaster recovery, or upgrading to a new, larger capacity hard drive. With Drive Image, image files can be downloaded to drives of the same size or resized to fit drives of different size and geometry for maximum flexibility - a great feature.

Drive Image uses innovative new "SmartSector™" technology (which copies only used sectors) rather than slower, file-based copying, so it is very fast and completely operating system independent, so it will work with any files you have. Just a couple of mouse clicks!

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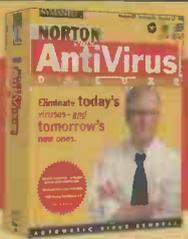
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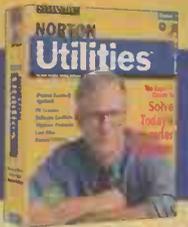
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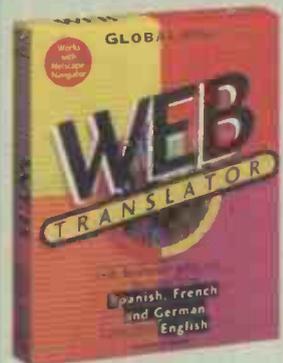
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- ▲ 17-77 Mb hard disk space
- ▲ MS Windows 3.1 or higher
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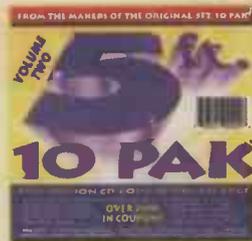
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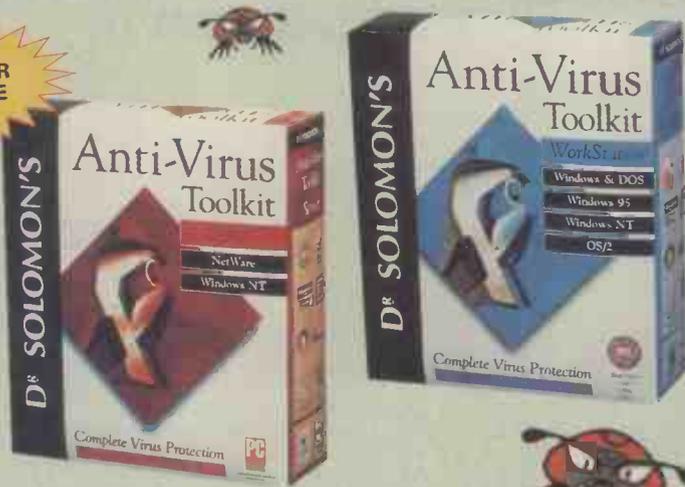
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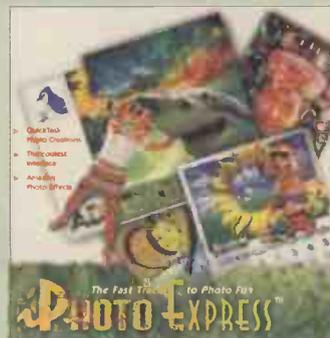
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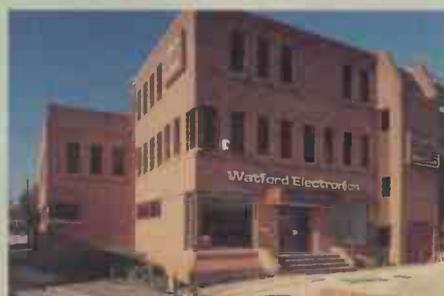
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CP6495	Satellite Pro 480CDT	£2545	(£2990.38)
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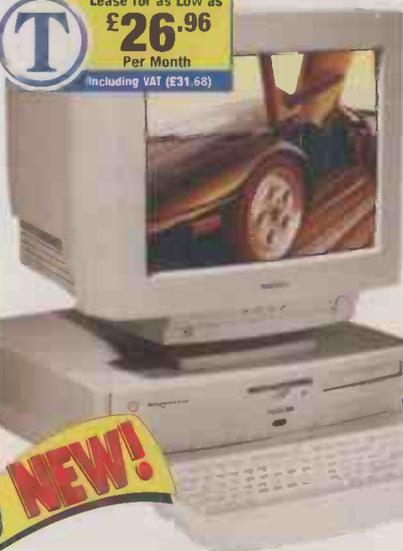
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- ✓ Integrated Intel EtherExpress Pro/100B LAN adapter
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Deliver Charge is subject to 17.5% VAT

Code	Model	CPU	RAM/Max	HDD/CD	Price	Inc VAT
CP5021	Equium 5160D	Pentium 166MHz MMX	32MB/192MB	2.07GB	£799	(£938.83)
CP5032	Equium 5200D	Pentium 200MHz MMX	32MB/192MB	2.38GB/12XCD	£935	(£1098.63)
CP5722	Equium 5230D	Pentium 233MHz MMX	32MB/192MB	3.0GB/24XCD	£1059	(£1244.33)
CP5020	Equium 6200D	Pentium Pro 200MHz	32MB/128MB	2.95GB/12XCD	£1189	(£1397.08)
CP5722	Equium 6230D	Pentium II 233MHz	32MB/384MB	3.0GB/24XCD	£1315	(£1545.18)
CP5019	Equium 6260M	Pentium II 266MHz	32MB/256MB	4.0GB/16XCD	£1445	(£1697.88)
MT1394	DP566M 15" Monitor				£259	(£304.33)
MT1395	DP782M 17" Monitor				£339	(£398.33)
MT1508	17" Multimedia Microfilter Monitor				£379	(£445.33)

### TECRA 520/530CDT

Lease for as Low as  
**£77.22**  
Per Month  
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**ONLY £2289**  
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- ✓ Intel Pentium 166MHz MMX
- ✓ 32MB EDO RAM (max. 160MB)
- ✓ 2.1GB HDD
- ✓ 10X CD-ROM Drive
- ✓ 12.1" TFT Screen (800x600 or 1024x768)
- ✓ Three Year International Warranty

CP4997 Satellite Pro 520CDT £2289 (£2689.58)  
CP4998 Satellite Pro 530CDT £2459 (£2889.33)

### TECRA 740CDT

Lease for as Low as  
**£94.43**  
Per Month  
Including VAT (£111.32)

**£2799**  
Including VAT (£3288.83)

- ✓ Intel Pentium 166MHz MMX
- ✓ 16MB EDO RAM (max. 140MB)
- ✓ 3.0GB HDD
- ✓ 10X CD-ROM Drive
- ✓ 13.3" XGA TFT Screen
- ✓ Three Year International Warranty

CP4790 Tecra 740CDT £2799 (£3288.83)

### Libretto 50CT

**ONLY £1099**  
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- ✓ Intel Pentium 75MHz
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- ✓ 810MB HDD
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- ✓ Full Windows 95
- ✓ One Year International Warranty

CP4966 Libretto 50CT £1099 (£1291.33)

### TECRA 750CDT

Lease for as Low as  
**£114.54**  
Per Month  
Including VAT (£135.99)

**£3395**  
Including VAT (£3989.13)

- ✓ Intel Pentium 233MHz MMX
- ✓ 32MB EDO RAM (max. 160MB)
- ✓ 5.1GB HDD
- ✓ 20X CD-ROM Drive
- ✓ 13.3" XGA TFT Screen
- ✓ Three Year International Warranty

CP6315 Tecra 750CDT £3395 (£3989.13)

### PORTÉGÉ® 300CT

**ONLY £1865**  
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- ✓ Intel Pentium 133MHz MMX
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- ✓ 10.4" TFT Screen
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CP4999 Portégé 300CT £1865 (£2649.63)

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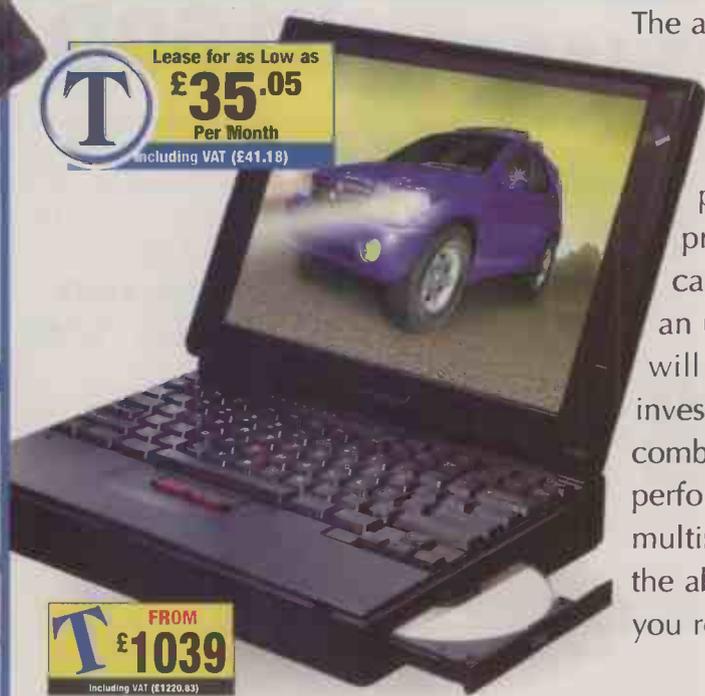


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## ThinkPad 310... The least expensive way to think



**T** Lease for as Low as  
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**T FROM £1039**  
Including VAT (£1220.83)

The affordable solution for mobile life-style. Designed to appeal to those who purchase the most processor power they can afford and want an upgrade path that will protect their investment. The ThinkPad combines portability performance and exciting multimedia features with the ability to upgrade as you require.

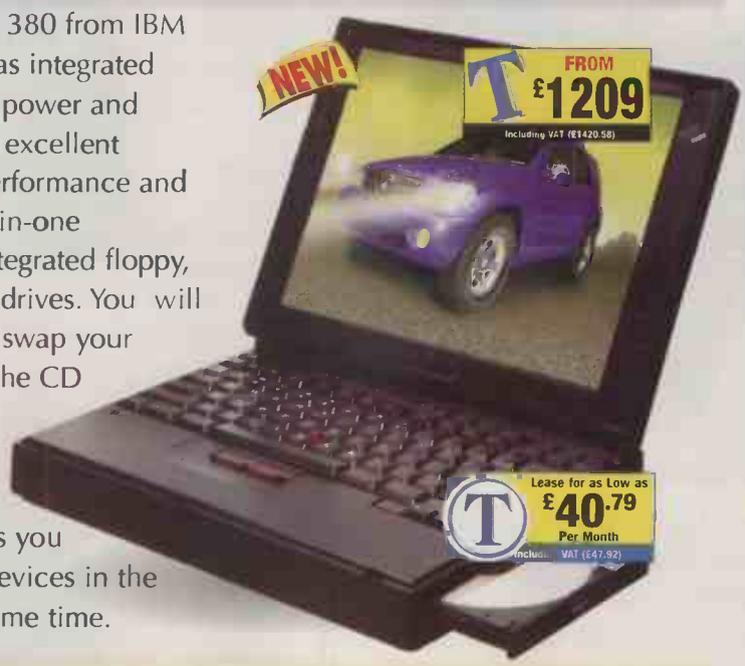
- ✓ Intel Pentium 133MHz and 150MHz with MMX (Except model 100)
- ✓ 16MB RAM (Expandable to 64MB)
- ✓ 1.08GB or 1.6GB Hard Drive
- ✓ 11.3" to 12.1" DSTN or TFT Screens

CODE	MODEL	CPU	RAM/MAX	HDD/CD	SCREEN	PRICE	Incl. VAT
CP6345	ThinkPad 310E Model 400	Pentium 133MHz MMX	16MB/64MB	1.6GB	12.1" DSTN	£1039	(£1220.83)
CP6346	ThinkPad 310ED Model 500	Pentium 133MHz MMX	16MB/64MB	1.6GB/10X	12.1" DSTN	£1215	(£1422.27)
CP6347	ThinkPad 310E Model 600	Pentium 150MHz MMX	16MB/64MB	1.6GB	11.3" TFT	£1575	(£1850.63)

## The All-in-One ThinkPad 380 Series from IBM

- ✓ Intel Pentium 150MHz and 166MHz with MMX Technology
- ✓ 12.1" FRSTN or TFT Colour display
- ✓ 2.1GB, 3.3GB or 5.0GB Hard Drives
- ✓ 16MB Ram (expandable to 80MB)
- ✓ 8X to 20X CD-ROM (optional on Model 400)
- ✓ Lotus SmartSuite License
- ✓ Three Spindle Design

The new ThinkPad 380 from IBM can be described as integrated convenience with power and usability. It has an excellent combination of performance and price, plus the all-in-one convenience of integrated floppy, CD and hard disk drives. You will no longer need to swap your floppy drive with the CD drive because IBM's new "Three-Spindle" Integration enables you to have all three devices in the notebook at the same time.



**NEW!** **T FROM £1209**  
Including VAT (£1420.58)

**T** Lease for as Low as  
**£40.79**  
 Per Month  
Including VAT (£47.92)

SKU	Model	CPU	Ram/Max	HDD/CD	Screen	Price	Inc. VAT
CP5739	ThinkPad 380 Model 400	Pentium 150MHz MMX	16MB/80MB	2.1GB	12.1" FRSTN	£1209	(£1420.58)
CP5740	ThinkPad 380 Model 5A0	Pentium 166MHz MMx	16MB/80MB	2.1GB/20XCD	12.1" FRSTN	£1519	(£1784.83)
CP5741	ThinkPad 380 Model 6A0	Pentium 166MHz MMX	16MB/80MB	3.3GB/20XCD	12.1" TFT	£2135	(£2508.63)
CP5742	ThinkPad 380 Model 7A0	Pentium 166MHz MMX	16MB/80MB	5.0GB/20XCD	12.1" TFT	£2335	(£2743.63)

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# The PC 300GL/PL from IBM®

## Performance, Manageability and Asset Protection



The PC 300GL desktop computers from IBM are ideal for your business, because these PC's let you concentrate on doing business. The first in a new series of highly managed PC's, the IBM PC 300GL gives you all the performance, manageability, and asset protection you need for core computing tasks, while maintaining maximum affordability

### Performance

Performance is something the PC 300GL has plenty of. Choose from a range of models offering:

- ✓ Intel Pentium® with MMX™ processors up to 233MHz
- ✓ 64-Bit PCI graphics with 50ns EDO video RAM
- ✓ 256KB synchronous pipeline burst L2 cache
- ✓ SDRAM memory
- ✓ Windows95 or NT pre-loaded
- ✓ SMART Hard Disks up to 4.2GB EIDE
- ✓ Integrated 10BaseT Ethernet (on selected models)
- ✓ Integrated audio and 16X CD-ROM (on selected models)
- ✓ Lotus SmartSuite 97 license included on all models

### Manageability

When it comes to controlling and maintaining your networked PC's the PC 300GL comes with a dazzling array of manageability features that put you firmly in control, including:

- ✓ Wake on LAN (allows software upgrades without leaving PC on overnight)
- ✓ Setup over LAN
- ✓ Flash over LAN (Allows bios upgrade without inserting a disk in every machine)
- ✓ Advanced DMI (v2.0)

### Asset Protection

To meet your asset management needs, the IBM PC 300GL comes with AssetCare, IBM's complete asset management system. AssetCare enables real-time tracking of IBM's new monitors and other system assets, through features such as:

- ✓ Serialisation/registration of high value components
- ✓ S.M.A.R.T. Drives (inform you of failures before they even happen)
- ✓ ConfigSafe
- ✓ IBM Vital Product Data

**The best computer for business is the computer that lets you concentrate on doing business**

CODE	MODEL	CPU	RAM/MAX	HDD/CD	OS	Price	Inc VAT
CP6137	IBM PC 300GL	Pentium 200MHz MMX	16MB/128MB	2.5GB	W95	£725	(£851.88)
CP6136	IBM PC 300GL	Pentium 200MHz MMX	32MB/128MB	4.2GB	WNT	£899	(£1056.33)
CP6148	IBM PC 300GL	Pentium 200MHz MMX	32MB/128MB	2.5GB/16X	WNT	£955	(£1122.13)
CP6139	IBM PC 300GL	Pentium 233MHz MMX	32MB/128MB	2.5GB	W95	£899	(£1056.33)
CP6138	IBM PC 300GL	Pentium 233MHz MMX	32MB/128MB	4.2GB	WNT	£1015	(£1192.63)
CP5777	IBM PC 300PL	Pentium 200MHz MMX	32MB/128MB	2.5GB	W95	£895	(£1051.63)
CP5778	IBM PC 300PL	Pentium 200MHz MMX	32MB/128MB	4.2GB	W95	£939	(£1103.33)
CP5801	IBM PC 300PL	Pentium 200MHz MMX	32MB/128MB	4.2GB/24X	W95	£1045	(£1227.88)
CP5799	IBM PC 300PL	Pentium 233MHz MMX	32MB/128MB	4.2GB	W95	£1105	(£1298.38)
CP5802	IBM PC 300PL	Pentium 233MHz MMX	32MB/128MB	4.3GB/24X	W95	£1349	(£1585.08)



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## Compaq Armada 1500 Family



**Affordable, All-In-One Notebook for the Business Professional**

- ✓ Fully integrated features
- ✓ Practical business solution
- ✓ Compaq value & quality

### Everything is integrated

As the inventor of the very first portable PC, Compaq has spent more than a decade studying mobile computing needs. We understand you want a simple life so, into this eye-catching new design, we build features such as the AC adapter, diskette drive and, if required, a CD-ROM drive. There's nothing to assemble and no extra parts to carry or lose - you're ready to go!

### The choice of the business professional

We also have unrivaled business computing knowledge and expertise. The Armada 1500 Notebook is simple to use, is tested and proven with today's widest range of business PC cards, can link to your office network and can enable you to communicate on the move.

### Outstanding price/performance

Trust Compaq to get the important things right. We minimise the cost yet maximise performance with features such as an optional 10X CD-ROM drive. The result is a full-featured notebook that represents excellent value.

Lease for as Low as  
**£42.68**  
 Per Month  
 Including VAT (£50.15)

**£1265**  
 Including VAT (£1486.38)

Code	Description	CPU	RAM/MAX	HDD/CD	Display	Price	Inc Vat
CP5552	Armada 1530D	Pentium 133MHz MMX 16MB/80MB	1.4GB/10X	12.1" DSTN	£1265	(£1486.38)	
CP5807	Armada 1540D	Pentium 150MHz MMX 16MB/80MB	2.1GB/20X	12.1" DSTN	£1295	(£1521.63)	
CP4830	Armada 1550T	Pentium 133MHz	16MB/80MB 1.4GB	12.1" TFT	£1469	(£1726.08)	
CP5282	Armada 1580DT	Pentium 150MHz MMX 16MB/80MB	2.1GB/10X	12.1" TFT	£1629	(£1890.58)	
CP6006	Armada 1590DT	Pentium 166MHz MMX 16MB/80MB	2.1GB/20X	12.1" TFT	£1695	(£1991.63)	

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## AST Ascentia M

**Up to 233MHz of Pentium® Processor Power for the High-end User!**

- ✓ Intel Pentium® Processor 133MHz, 150MHz, 166MHz, 200MHz and 233MHz with MMX technology
- ✓ 16MB, 32MB or 64MB Expandable to 128MB
- ✓ 1.6GB, 2.1GB, 3.0GB HDD or 4.0GB (Ultra-DMA 33) removable HDD
- ✓ 12.1" DSTN or TFT and 13.3" TFT
- ✓ 20X CD-ROM (optional on M5130S)
- ✓ Windows 95 or Windows NT 4.0 pre-installed

**AST**  
COMPUTER

Optional CD-ROM on Model 5130S



**£1179**  
 Including VAT (£1385.33)

Item #	Model	CPU	RAM/Max	HDD	Screen	Price	Exc VAT
CP5678	Ascentia M 5130S	Pentium 133MHz with MMX	16MB/128MB	1.6GB	12.1" DSTN	£1179	(£1385.33)
CP5868	Ascentia M 5130T	Pentium 133MHz with MMX	32MB/128MB	1.6GB/20X	12.1" TFT	£1599	(£1878.83)
CP5670	Ascentia M 5150T	Pentium 150MHz with MMX	32MB/128MB	2.1GB/20X	12.1" TFT	£2019	(£2372.33)
CP5672	Ascentia M 5160T	Pentium 166MHz with MMX	32MB/128MB	3.0GB/20X	12.1" TFT	£2269	(£2666.08)
CP5674	Ascentia M 5200T	Pentium 200MHz with MMX	32MB/128MB	3.0GB/20X	12.1" TFT	£2525	(£2966.88)
CP5676	Ascentia M 5200X	Pentium 200MHz with MMX	32MB/128MB	3.0GB/20X	13.3" TFT	£2859	(£3359.33)
CP6066	Ascentia M 5230X	Pentium II 233Mhz with MMX	64MB/128MB	4.0GB/20X	13.3" TFT	£3279	(£3852.83)

VAT (@ 17.5%) inclusive prices shown in brackets. Carriage charges: see page 2 for details. All prices & specifications subject to change without notice. Our standard terms and conditions of sale apply to all sales (available on request). Returned goods may be liable to a restocking charge. E&OE. You may receive direct mail promotions from other companies unless you advise us by writing to Sales Administration Dept at the address above. Customer Services: 0990 168624 - Sales Admin: 0990 168623

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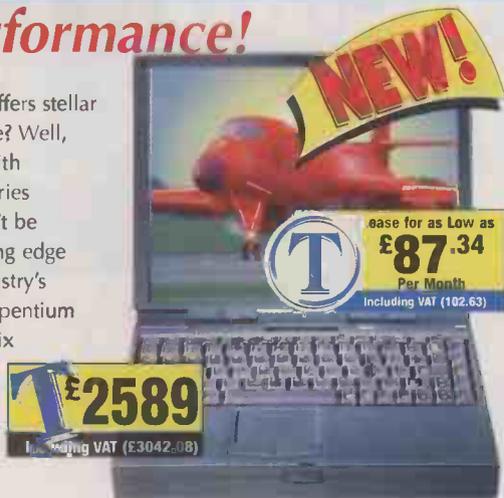


## OmniBook 3000

Ground breaking price and performance!

- ✓ Intel Pentium 200 or 233MHz MMX
- ✓ 16MB EDO RAM (expandable to 144MB)
- ✓ 2.1 or 4.0GB Hard Drive
- ✓ 13.3" XGA TFT Screen
- ✓ Three-Year Worldwide Warranty
- ✓ Windows 95

Waiting to find a notebook PC that offers stellar performance at a down-to-earth price? Well, stop waiting and start computing - with Hewlett-Packard OmniBook 3000 Series Notebook. If you know HP, you won't be surprised by this notebook PC's cutting edge technologies: Your choice of the industry's fastest, 233MHz or 200MHz mobile pentium processors. A huge 13.3" active matrix display. Simple connectivity. And much more. What may surprise you is that you can get all this - at such an affordable price.



Code	Description	CPU	RAM/MAX	HDD/CD	Display	Price	Inc Vat
CP1772	OmniBook 3000CTX	Pentium 200MHz MMX	16MB/144MB	2.1GB	13.3" XGA TFT	£2589	(£3042.08)
CP6330	OmniBook 3000CTX	Pentium 233MHz MMX	16MB/144MB	4.0GB	13.3" XGA TFT	£3219	(£3782.33)

## OmniBook 5700

Hewlett-Packard Powerhouse!

- ✓ Intel Pentium 150 or 166MHz MMX
- ✓ 16MB or 32MB EDO RAM (expandable to 128MB)
- ✓ 1.86GB or 2.79GB Hard Drive
- ✓ 12.1" XGA TFT or SVGA Screen
- ✓ Three-Year Worldwide Warranty
- ✓ Windows 95 or WfWG 3.11

Once you've tried this powerhouse notebook you may just leave your desktop behind - permanently! Whether it is the Pentium 166MHz MMX processor or the 12.1 TFT screen, the HP OmniBook 5700 PC will fill all of your desktop- to-go PC needs, now and in the future.



Code	Description	CPU	RAM/MAX	HDD/CD	Display	Price	Inc Vat
CP4505	OmniBook 5700CT	Pentium 150MHz MMX	16MB/128MB	1.86GB	12.1" SVGA TFT	£1875	(£2203.13)
CP5470	OmniBook 5700CT	Pentium 166MHz MMX	16MB/128MB	1.86GB	12.1" SVGA TFT	£2099	(£2466.33)
CP5002	OmniBook 5700CTX	Pentium 166MHz MMX	16MB/128MB	1.86GB	12.1" XGA TFT	£2099	(£2466.33)
CP4506	OmniBook 5700CTX	Pentium 166MHz MMX	32MB/128MB	2.79GB	12.1" XGA TFT	£2369	(£2783.58)

## OmniBook 800

Good things come in small packages!

- ✓ Intel Pentium 166MHz MMX
- ✓ 16MB EDO RAM (expandable to 80MB)
- ✓ 2.0GB Hard Drive
- ✓ 10.4" SVGA TFT Screen
- ✓ External 3.5" FDD
- ✓ Windows 95 or WfWG 3.11

With its lightweight, yet sturdy, 1.75-kilogramme package and it's slim profile, the HP OmniBook 800 PC is among the most portable notebooks in the industry. And good things come in this small package, all of which are backed by HP's full three year warranty. In short, the HP OmniBook 800 notebook PC is as flexible as it is portable.



Code	Description	CPU	RAM/MAX	HDD/CD	Display	Price	Inc Vat
CP4703	OmniBook 800CT	Pentium 166MHz MMX	16MB/80MB	2.0GB	10.4" SVGA TFT	£2325	(£2731.88)

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MY6590	2MB X 64	16MB	£54.95	£64.57	EURMY1235	1MB X 36-70NS 72PIN	4MB	£19.95	£23.44
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	64MB	MY3923	£129.00	£151.58

## GATEWAY

G5-166,166M,G5-200,200M 16MB	MY6590	£52.95	£62.22
G6-233,G6-300,G6-300XL 32MB	MY6589	£84.95	£99.82
ALL SDRAM SERIES 64MB	MY7504	£199.00	£233.83

DX2/66, DX2/50 4MB	EURMY1245	£12.95	£15.22	
(Deluxe & Mini Computer) 8MB	EURMY1249	£19.95	£23.44	
	16MB	EURMY1252	£39.95	£46.94

P5-100XL,75,90,90XL 4MB	EURMY1336	£12.95	£15.22
P5-120,133XL,150,166XL 8MB	EURMY1332	£19.95	£23.44
Pentium Pro G6-150,G6-200 16MB	EURMY1555	£39.95	£46.94
(for all Pentium to be installed in pairs) 32MB	EURMY1643	£69.95	£82.19

## DELL

POWEREDGE 2100, 32MB	MY7515	£179.00	£210.33	
22,004,100	64MB	MY7514	£299.00	£351.33
	128MB	MY7516	£659.00	£774.33

DIMENSION XPS P100,P100C, 8MB	EURMY1613	£33.95	£39.89
P120C,P133C, DIMENSION 16MB	EURMY1614	£69.95	£82.19
P60,P75,P90, OPTIPLEX XL,XM,32MB	EURMY1615	£129.00	£151.58
XMT590,5100,5120,575			

DIMENSION P166S, P200S8MB	MY6462	£49.95	£58.69	
	16MB	MY6454	£59.95	£70.44
	32MB	MY6463	£89.95	£105.69

OMNIPLEX 560ME,566ME, 8MB	EURMY0863	£59.95	£70.44	
590ME, POWEREDGE XE590, 16MB	EURMY0864	£104.00	£122.20	
5,100,560,566,590	32MB	EURMY0865	£209.00	£245.58

OPTIPLEX GXL, GXM,GXMT 8MB	MY6464	£39.95	£46.94
Pentium Family, OPTIPLEX CL. 16MB	MY6467	£99.95	£117.44
GM, GMT Pentium Family 32MB	MY6466	£CALL	£VALUE!

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	32MB	MY6706	£199.00	£233.83
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PERFORMANCE ME SERIES 4MB	EURMY0862	£24.95	£29.32	
	8MB	EURMY0863	£49.95	£58.69
	16MB	EURMY0864	£104.00	£122.20
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PERFORMANCE T-L-M SERIES, 4MB	EURMY0860	£19.95	£23.44
466i,433/5i,425Si,450Si,433E 16MB	EURMY0861	£64.95	£76.32

POWERLINE 466/450/433/ 4MB	EURMY0844	£79.95	£93.94	
425/420 TE/DE, DE/2/E, 8MB	EURMY0845	£59.95	£70.44	
466SE/DSA	16MB	EURMY0846	£99.95	£117.44
	32MB	EURMY0853	£209.00	£245.58

## hp HEWLETT PACKARD

NetServer E30 SERIES 8MB	MY7105	£59.95	£70.44	
(Needs to be added in pairs) 16MB	MY7107	£89.95	£105.69	
	32MB	MY7106	£189.00	£222.08

NetServer LC SERIES 8MB	EURMY1617	£49.95	£58.69	
(Needs to be added in pairs) 16MB	EURMY0918	£89.95	£105.69	
	32MB	EURMY1618	£189.95	£223.19

NetServer E40 SERIES 8MB	MY7105	£59.95	£70.44	
(Needs to be added in pairs) 16MB	MY7107	£89.95	£105.69	
	32MB	MY7106	£189.00	£222.08
	64MB	MY7624	£319.00	£374.83

NetServer LD Pro 16MB	MY7625	£99.95	£117.44	
NetServer LH PLUS, 32MB	MY7116	£169.00	£198.58	
NetServer LH Pro 64MB	MY7117	£399.00	£468.83	
	128MB	MY7115	£789.00	£927.08

NetServer LXe Pro, LX Pro 16MB	MY7107	£89.95	£105.69
(Needs to be added in pairs) 32MB	MY7106	£189.00	£222.08
16 Mb and 32 Mb SIMMS 64MB	MY7624	£319.00	£374.83
maybe mixed, or 64Mb and 128MB	MY7626	£549.00	£645.08
128Mb may be mixed in memory board only.			

VECTRA VE2,VL4, VA,X 16MB	EURMY1623	£69.00	£81.08	
M4&XA SERIES 32MB	EURMY1622	£129.00	£151.58	
	64MB	MY7627	£219.00	£257.33

VECTRA XU&XW 32MB	MY7628	£219.00	£257.33	
ECC DIMMS 64MB	MY7629	£329.00	£386.58	
	128MB	MY7630	£749.00	£880.08

VECTRA VL4 590,5/100,5/ 8MB	EURMY1624	£33.95	£39.89
120,5/133 MT 16MB	EURMY1623	£69.95	£82.19
VECTRA 500 TOWER,VE 32MB	EURMY1622	£129.00	£151.58
(PENTIUM MODELS EDO MEMORY)			

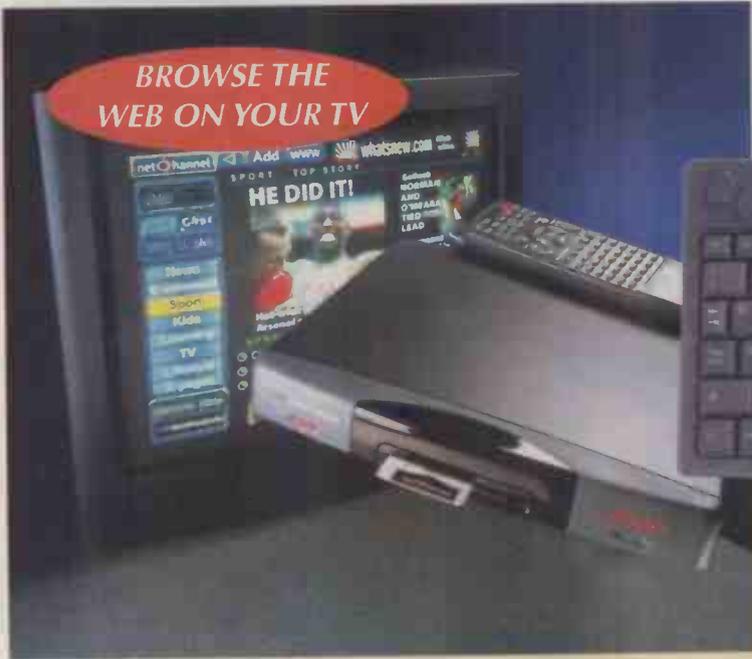
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## HP LaserJet 4000

- ✓ Less waiting for output:
- ✓ 16ppm engine
- ✓ 100MHz processor
- ✓ Greater Print Quality:
- ✓ FastRes 1200 for quality business documents
- ✓ ProRes 1200 for quality graphic intensive documents
- ✓ 220 levels of grey
- ✓ HP JetAdmin
- ✓ Win NT 4.0 driver included

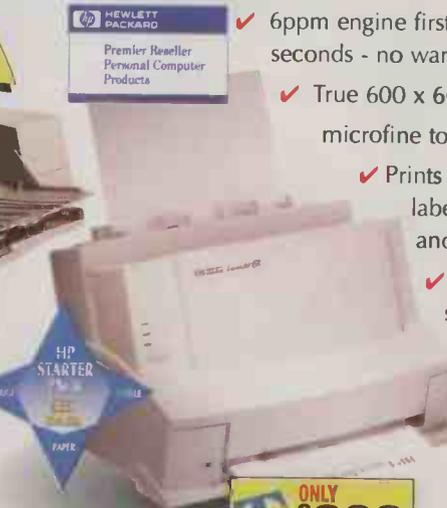


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PR12987	HP LaserJet 4000 Base Unit	'749.00	(£880.08)
PR12978	HP LaserJet 4000T With 2x250 Sheet input Trays	'855.00	(£1004.43)
PR12975	HP LaserJet 4000N With 500 Sheet Tray & EIO Net Card	'963.00	(£1131.53)
PR12976	HP LaserJet 4000TN With 2x250 Sheet Trays & EIO Net Card	'1061.00	(£1246.68)
PA0990	HP Standard Capacity Toner Cartridge	'76.00	(£89.30)
PA0991	HP High Capacity Toner Cartridge	'108.00	(£126.90)
553095	HP Support Pack for LaserJet 4000 Series	'180.00	(£211.50)

## HP LaserJet 6L

- ✓ 6ppm engine first page out in 18 seconds - no warm up time
- ✓ True 600 x 600dpi REt and microfine toner
- ✓ Prints on envelopes, labels, post cards and transparencies
- ✓ 26 Intellifont scalable typefaces built in
- ✓ 1 MB Standard, effectively doubled with MET



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PR12230	HP LaserJet 6L Printer	'232.00	(£272.60)
EURPA1261	HP LaserJet 6L Toner Cartridge	'59.95	(£70.44)
BN4262	HP 6L & 3 Year On-Site Warranty	'299.95	(£352.44)

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The HP LaserJet companion is an entirely new concept, turning any personal HP LaserJet printer, Series 4, 5 or 6 into a solution which provides 4 additional productivity-boosting capabilities:

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copies at the touch of a button

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**Fax:** Send faxes in conjunction with a PC fax modem

PR12232 HP LaserJet Companion £115.00 (£135.13)



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## HP LaserJet 5

**"Standard Office Issue"**

- ✓ Fast 12ppm @ 600dpi
- ✓ plus HP REt
- ✓ New design; latest PCL6; IR capability

EURPR1666	HP LaserJet 5	'674.00	(£791.95)
EURPR1664	HP LaserJet 5N (PC,NW)	'847.00	(£995.23)
EURPR1665	HP LaserJet 5M (PC,MAC)	'997.00	(£1171.48)
PR7350	Toner: HP LaserJet 4+4M+5/5M	'69.95	(£82.19)



## HP LaserJet 6P

**"Personal Quality"**

- ✓ Superb 600x600dpi with HP REt, 8ppm engine
- ✓ Excellent graphics with min. 128 levels of grey
- ✓ Dual paper bins and manual option
- ✓ PC parallel port and infra-red

PR11827	HP LaserJet 6P	'480.00	(£564.00)
INP0975	HP LaserJet 6MP (Mac/PC)	'592.00	(£695.60)
BN3936	HP 6MP & Support Pack	'610.00	(£716.75)
PR11350	Toner: HP LaserJet 6P/6MP	'59.95	(£70.44)



## HP LaserJet 5SI

**"High Volume Office Printer"**

- ✓ Superb print quality, 24ppm
- ✓ Very flexible- A3/A4 Capable
- ✓ Outstanding reliability
- ✓ Network, PostScript, Duplex options

EURPR1490	HP LaserJet 5SI	'1649.00	(£1937.58)
EURPR1489	HP LaserJet 5SIMX (PC, NW, MAC)	'2249.00	(£2642.58)
PR12038	HP LaserJet 5SIMX Mopier	'4326.00	(£5083.05)
PR12116	HP LaserJet 5SINX	'1799.00	(£2113.83)
EURPA1278	Toner HP LaserJet 5SI/5SIMX	'139.95	(£164.44)

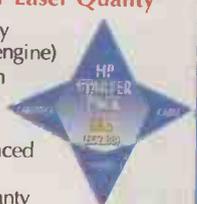


## HP Colour LaserJet 5

**"Incredible Colour Laser Quality"**

- ✓ 1200 dpi image quality through REt (300 dpi engine)
- ✓ 10ppm mono, 2-3ppm colour
- ✓ A3/A4 capable
- ✓ 20MB memory; Enhanced PCL5
- ✓ One year on-site warranty

EURPR1643	HP Colour LaserJet 5	'2861.00	(£3361.68)
EURPR1642	HP Colour LaserJet 5M	'3600.00	(£4230.00)
PR12969	HP Colour LaserJet 5N	'3142.00	(£3691.85)
EURPRO660	Toner: Black	'6.95	(£11.69)
	Toner: Colour (specify C, M or Y)	'26.95	(£31.67)



## HP LaserJet 4V

**"Ultimate A3 Printer"**

- ✓ Paper handling from A5 to A3
- ✓ Fast 8ppm A3, 16ppm A4
- ✓ 120 dpi with 106 grey shades
- ✓ PostScript and Network options

EURPR0433	HP LaserJet 4V (PC)	'1185	(£1392.38)
EURPR0434	HP LaserJet 4MV (PC/Mac)	'1724	(£2025.70)
EURPR0607	Toner: HP LaserJet 4V/4MV	'109.95	(£129.19)
EURBN3613	HP 4MV & Support Pack	'1399	(£1643.83)



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PR12804	HP DeskJet 890C	£255.00	(£299.63)	PR12805	HP DeskJet 1100C	£285.00	(£334.88)
WR1219	HP Support Pack	£66.00	(£77.55)	234318	HP Support Pack	£40.00	(£47.00)
51645A	Black Ink Cartridge	£18.75	(£22.03)	51645A	Black Ink Cartridge	£18.75	(£22.03)
C1823A	Colour Ink Cartridge	£19.95	(£23.44)	51641A	Colour Ink Cartridge	£19.45	(£22.85)

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- ✓ 600 x 300 dpi colour
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- ✓ Up to 99 copies from original
- ✓ 600dpi enhanced scanning
- ✓ Digital zoom from 50% to 200% image size

PR12623	Office Jet 590	£341	(£400.68)
51629A	HP Black Ink Cart	£17.95	(£21.09)
51649A	HP Colour Ink Cart	£18.95	(£22.23)
WR1219	HP Support pack for 590	£66.00	(£77.55)
PR12187	HP OfficeJet 1150C	£491	(£576.93)
51645A	HP Black Ink Cart. 1150C	£19.95	(£23.44)
51641A	HP Color Cart. 1150C	£24	(£28.20)
EURWR1112	HP Support Pack for 1150C	£118	(£138.65)

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**PLUS 3 yr OSM £185**  
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- ✓ HP RealLife Imaging System
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- ✓ 30 TrueType Fonts
- ✓ Up to 5ppm black, 1.7ppm colour
- ✓ Optional Photo REt for better colours
- ✓ Includes Photo Colour cartridge

PR12348	HP Deskjet 690C+	£150	(£176.25)
EURPR1138	HP Colour Ink Cart	£22.95	(£26.97)
EURPR1139	HP Black Ink Cart	£19.95	(£23.44)
AC20411	HP Photo Colour Kit	£42.00	(£49.35)
AC20412	HP Photo Paper	£11.85	(£13.93)

#### HP DeskJet 670C

**PLUS 3 yr OSM £155**  
(£182.13)

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- ✓ 600 x 600 dpi black, 600 x 300 dpi colour
- ✓ Automatic colour adjustment: HP ColorSmart technology
- ✓ HP RealLife Imaging System

PR12315	HP DeskJet 670C Printer	£119	(£139.83)
BN4288	HP 670C & 3 Year On-Site Warranty	£155	(£182.13)
EURPR1139	HP Tri-Colour Inkjet Cart	£19.25	(£22.62)
EURPR1138	HP Tri-Colour Inkjet cart	£18.95	(£22.27)
EURPA1652	HP Premium Glossy Paper A4 (10 Sheets)	£8.70	(£10.22)

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- ✓ Fast black 8 ppm and colour
- ✓ Expandable paper handling, 4 MB
- ✓ Network connectivity options

EURPR1011	HP DeskJet 1600C	£871.50	(£1064.01)
EURPR1021	HP DeskJet 1600CM (NW/MAC)	£1280	(£1504.00)

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- ✓ 600 x 300 dpi black with HP REt

EURPR1468:	HP DeskJet 340	£144	(£169.20)
PR11832	HP DeskJet 340cbi Printer	£166.50	(£195.64)
EURAC3005	Black Cartridge	£19.95	(£23.44)
PR5650	Colour Cartridge	£22.95	(£26.97)

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Up to 3ppm

# Incredible Inkjets from EPSON

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Colour printing at 720x720 dpi on plain paper

- ✓ 720x720 dpi black and colour including printing on plain paper
- ✓ Up to 4ppm in black, Up to 3ppm in colour
- ✓ Photoreal colour as standard
- ✓ Single four colour colour (C,M,Y,K) ink cartridge
- ✓ Epson Auto colour function
- ✓ Windows '95 ICM colour matching
- ✓ 1 year RTB warranty with optional on-site warranty

**ONLY £133**  
Including VAT (£156.28)

PR12103	Stylus Color 400	£133	(£156.28)
PR12592	Stylus Color 300	£106	(£124.55)

**Peace of mind through reliability**

EPSON COVER plus **£65** (£76.38)

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When you purchase an Epson Stylus Colour 400 or Epson Stylus Colour 600 Includes: PrintArtist v4, LivePix Special Edition, the Big red Racing Game, and photo quality media pack. Bundles more fun with Epson!

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- ✓ Incredible 1440 dpi colour or true black printing with Epson Microdot
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- ✓ Photoreal Colour and Laser Sharp Mono Printing as standard
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- ✓ Includes Look Your Best Color Pak

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PR12058	Stylus Color 600	£169.00	(£198.58)
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- ✓ Ultra fast print speed - up to 8ppm mono, 7 ppm colour
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- ✓ Optional Postscript and Network Capability
- ✓ 1 Year RTB with optional 3 year on site warranty

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PR12059	Stylus Colour 800	£221.00	(£259.68)
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## HP DESKJET CARTRIDGES

Code	Description	Price	Inc VAT
51626A	HP Inkjet Cartridge, black for DJ, DJ+/DJ400/500/560C/Officejet	£14.65	(£17.21)
51625A	HP Inkjet Cartridge, colour for DJ 500C - 560C, DJ Portable 310/320/340	£15.95	(£18.74)
51629A	HP Inkjet Cartridge, black for DJ 600/660C/670C/690C/694C	£16.75	(£19.68)
51649A	HP Inkjet Cartridge, colour for DJ 600/660C/670C/690C/694C	£18.90	(£22.21)
51633M	HP Inkjet Cartridge, black for DJ Portable 310/320/340	£13.95	(£16.39)
51640A	HP Inkjet Cartridge, black for DJ 1200C/Copyjet	£15.75	(£18.51)
51640C	HP Inkjet Cartridge, cyan, for DJ 1200C/1600C/Copyjet	£18.75	(£22.03)
51640M	HP Inkjet Cartridge, magenta for DJ 1200C/1600C/Copyjet	£18.75	(£22.03)
51640Y	HP Inkjet Cartridge, yellow for DJ 1200C/1600C/Copyjet	£18.75	(£22.03)
51645A	HP Inkjet Cartridge, black for DJ 850C/820Cxi/870Cxi/890C/1100C/1600C/Officejet Pro	£16.95	(£19.92)
51641A	HP Inkjet Cartridge, colour for DJ 850C/820Cxi/870Cxi/1100C/Officejet Pro	£18.45	(£21.68)
C1823A	NEW! HP Inkjet Cartridge, colour for DJ 890C	£24.45	(£28.73)
C4534A	HP Colour Set for DJ 600	£27.95	(£32.84)

## DESIGNJET CARTRIDGES

Code	Description	Series 700	Series 600	Series 200	Series 300	Series 400	Price	Inc VAT
51640AE	HP DesignJet Cartridge, black	650C	230/250C	330/350C	430/450C/455CA		£15.75	(£18.51)
51650C	HP DesignJet Cartridge, cyan	650C	250C				£22.55	(£26.50)
51650M	HP DesignJet Cartridge, magenta	650C	250C				£22.55	(£26.50)
51650Y	HP DesignJet Cartridge, yellow	650C	250C				£22.55	(£26.50)
51645AE	HP DesignJet Cartridge, black	700/750C/755					£16.95	(£19.92)
51644CE	HP DesignJet Cartridge, cyan	750C/755		350C	430/450C/455CA		£26.45	(£31.08)
51644ME	HP DesignJet Cartridge magenta	750C/755		350C	430/450C/455CA		£26.45	(£31.08)
51644YE	HP DesignJet Cartridge, yellow	750C/755		350C	430/450C/455CA		£26.45	(£31.08)
51626AE	HP Cartridge, Double Capacity, black Ink Cartridge	600	200/220				£14.65	(£17.21)

## HP INKJET PAPER AND FILM

Code	Description	Price	Inc VAT
C3831A	HP Premium Glossy Paper, A4, 10 sheets	£7.85	(£9.22)
C3837A	HP Premium Glossy Paper, A4, 50 sheets	£31.90	(£37.48)
C3832A	HP Premium Transparency Film, A4, 20 sheets	£13.95	(£16.39)
C3835A	HP Premium Transparency Film, A4, 50 sheets	£29.50	(£34.66)
C3835S	HP Premium Transparency Film, A4, 250 sheets	£149.95	(£176.19)
51630S	HP CX JetSeries Transparency Film for PaintJet, A4, 50 sheets	£39.95	(£46.94)
51630R	HP Z-Fold CX JetSeries Paper for PaintJet (210 x 305), 250 sheets	£15.75	(£18.51)
51630Z	HP CX JetSeries Paper (PaintJet), A4, 200 sheets	£12.20	(£14.34)
51631B	HP CX JetSeries Paper (PaintJet), A3, 200 sheets	£33.95	(£39.89)
51634Z	HP Premium Inkjet Paper, A4, 200 sheets	£12.65	(£15.22)
C1856A	NEW! HP Premium Inkjet Paper, A3, 100 sheets for DJ 1100C	£18.95	(£22.27)
C6042A	NEW! HP Greeting Card Paper, A4, 20 sheets / 20 envelopes	£5.45	(£6.40)



## HP COLOUR LASERJET SUPPLIES

Code	Description	Price	Inc VAT
C3102A	Colour Toner cyan	£26.95	(£31.67)
C3103A	Colour Toner yellow	£26.95	(£31.67)
C3104A	Colour Toner magenta	£26.95	(£31.67)
C3105A	Colour Toner black	£5.90	(£6.93)
C3964A	Coating Kit	£38.75	(£45.53)
C3965A	Black Developer	£135.95	(£159.74)
C3966A	Colour Developer	£395.95	(£465.24)
C3967A	Drums Unit	£244.95	(£287.82)
C3968A	Transfer Belt	£129.95	(£152.69)
C3969A	220 Volt Fuser	£185.95	(£218.49)

## HP LASERJET TONER CARTRIDGES

Order No	Description	Price	Inc VAT
C4127A	Toner Cartridge for LJ 4000	£54.95	(£64.57)
C4127X	High Capacity Toner Cartridge for LJ 4000	£66.95	(£78.67)
92274A	Toner Cartridge for LJ 4L/4ML, 4P/4MP	£38.95	(£45.77)
92275A	Toner Cartridge for LJ IIP/IIIP+, IIP	£47.70	(£56.05)
92291A	Toner Cartridge for LJ III/III+, 4SiMX	£65.95	(£77.49)
92295A	Toner Cartridge for LJ II/IIID, III/IIID	£39.50	(£46.41)
92298X	High Capacity Toner Cartridge for LJ 4/4M, 4+/4M+, 5/5N/5M	£65.95	(£77.49)
92298A	Toner Cartridge for LJ 4/4M, 4+/4M+, 5/5N/5M	£54.95	(£64.57)
C3900A	Toner Cartridge for LJ 4V/4MV	£82.95	(£97.47)
C3903A	Toner Cartridge for LJ 5P/5MP, 6P/6MP	£45.95	(£53.99)
C3906A	Toner Cartridge for LJ 5L	£33.95	(£39.89)
C3909A	Toner Cartridge for LJ 5Si, 5SiMX	£138.50	(£162.74)
92285A	Toner Cartridge for LJ Plus, LJ 500 Series	£72.95	(£85.72)

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## Umax Scanners

### Umax Astra 600S & 610P The Affordable 30-Bit Desktop Scanner

- ✓ Optical resolution of 300 x 600dpi
- ✓ Maximum Resolution of 4800 x 4800dpi
- ✓ Choose either Parallel (EPP & SPP) or SCSI Models



Adobe PhotoDeluxe supplied with 10P & 1210P

**T 610P**  
£84  
Including VAT £98.70

### Umax Astra 1200S & 1210P The Mainstream Business and Graphics Scanner!

- ✓ 30-bit, Single Pass Scanner
- ✓ Optical Resolution of 600 x 1200dpi
- ✓ Maximum Resolution of 9600 x 9600dpi



NEW!

Extended Warranties available

**UMAX**

IN6702	Astra 610P Parallel	*84	(£98.70)
IN6703	Astra 610P Parallel and Photoshop LE	*114	(£133.95)
INP1145	Astra 600S SCSI	*129	(£151.58)
IN6265	Astra 600S SCSI with Photoshop LE	*159	(£186.83)
INP1214	Astra 1200S SCSI	*229	(£269.08)
IN6327	Astra 1200S SCSI with Photoshop V4	*339	(£398.33)
IN6697	Astra 1210P Parallel	*169	(£198.58)
IN6748	Astra 1210P Parallel with Photoshop V4	*279	(£327.83)

## Hewlett Packard Scanners

### HP ScanJet 5P Scanner

The perfect tool for capturing high-quality colour and monochrome images to create impressive presentations, reports, and promotional materials.

- ✓ Scanner type: flatbed, one-pass colour and monochrome
- ✓ 1200dpi enhanced resolution; 300dpi optical
- ✓ 24-bit colour (16.7 million colours)
- ✓ Manufacturer's one-year warranty; HP Express Exchange one-year technical support at no charge



Scans at the push of a button

**T FROM ONLY**  
£149  
Including VAT £175.08

PR12095	ScanJet 5P	*149	(£175.08)
WR1219	Support Pack for 5P	*66	(£77.55)
IN6422	ScanJet 6100C	*449	(£527.58)
IN6120	ScanJet 5S	*135	(£158.63)



## Epson Scanners

### Epson GTX-5500 - The 30-Bit Colour Scanner for Business and Home Use

- ✓ Optical Resolution 400dpi
- ✓ 30-Bit Colour Depth
- ✓ Small footprint
- ✓ TET (Text Enhancement Technology for higher OCR accuracy)



NEW!

**T SCANNERS FROM**  
£154  
Including VAT £180.95

EURIN1350	GTX-5000 PCP Parallel	*154	(£180.95)
IN6715	GTX-5500 SCSI	*209	(£245.58)
EURIN1228	GTX-8500 Parallel	*369	(£433.58)
IN5928	GTX-9500 SCSI	*469	(£551.08)
IN6717	GTX-12000 Parallel & SCSI	*1315	(£1545.13)

# Plustek OpticPro Scanners

### Plustek OpticPro FB III

The FB III scans an A4 document, full colour, in a single pass. It comes complete with easy to use image and OCR software. It's high resolution produces excellent image quality. With it's original "One touch key" function it makes it the friendliest scanner to use.

- ✓ 30 Bit colour, flatbed scanner
- ✓ Optical resolution 300 x 600dpi
- ✓ Maximum resolution 4800 x 4800 dpi



**T ONLY**  
£79  
including VAT £92.83

### Plustek OpticPro FB IV

The FB IV scans an A4 document, full colour, in a single pass. It comes complete with a professional easy to use editing and OCR software. It's high resolution produces excellent image quality. It's "one touch key" makes it the easiest and friendliest scanner to use.

- ✓ 30 Bit colour, flatbed scanner
- ✓ Optical resolution 600 x 600dpi (Max 4800dpi)
- ✓ Full colour, 300dpi in 39 seconds (scanning speed only)



**T ONLY**  
£125  
including VAT £146.88

NEW!

### Plustek OpticPro A3I

- ✓ 30-bit colour A3 scanner
- ✓ Optical resolution 400 x 800dpi
- ✓ Parallel port connection withpass through port
- ✓ Scanning area 11.69" x 16.90"



**T ONLY**  
£345  
including VAT £405.38

NEW!

IN6718	Plustek FB III Scanner	*79	(£92.83)
IN6719	Plustek FB IV Scanner	*125	(£146.88)
IN6716	Plustek A3I Scanner	*345	(£405.38)



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## FEATURES

### CASIO



Casio QV-70

### MAG



### Mag Monitors

XJ707  
 17" Antiglare/  
 Antistatic Monitor  
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## iiyama Vision Master Monitors

The most up-to-date and best price/performance range of 15", 17" and 21" CRT based monitors.

### Vision Master™ 15

MF-8515G

- ✓ Up to 1280x1024 @ 65Hz
- ✓ Up to 1024x768 @ 85Hz
- ✓ 15" FST 0.28mm
- ✓ OSD Menu
- ✓ 27-69KHz, 50-160KHz
- ✓ Windows 95 Plug 'n Play

MT1277 '189 (£222.08)



AS LOW AS  
**£189**  
 including VAT (£222.08)

### Vision Master 450

S901GT

- ✓ High contrast 19" FST screen
- ✓ 0.27dot pitch, dual focus CRT
- ✓ Flicker Free display up to 1600 x 1200 @ 80Hz or 1280x1024 @ 100H
- ✓ High resolution on-screen display
- ✓ Windows 95 Plug & Play DDC compatible



**NEW!**

MT1613	MT-9017T	17" Monitor	£439	(£515.83)
MT1186	MF-8617ES	17" Monitor	£435	(£511.13)
MT1387	MF-8721T	21" Monitor	£925	(£1086.88)
MT1501	MT-9221T	21" Monitor	£950	(£1116.25)
EURMT0318	MT-9017E	17" Monitor	£439	(£515.83)
MT1744	S901GT	19" Monitor	£599	(£703.83)
MT1324	MT-9021T	21" Monitor	£909	(£1068.08)

On-Site warranties available.

## NEC MultiSync Monitors



### MultiSync A500

- ✓ 15" Colour Monitor
- ✓ Low radiation and static emissions (TCO-95)
- ✓ OptiClear CRT coating for high picture quality
- ✓ Digital controls On-screen display
- ✓ VGA to 1280 x 1024(ni) @ up to 65Hz
- ✓ 0.2mm dot pitch

MT1584 '178 (£209.15)

### MultiSync A700

- ✓ 17" Colour Monitor
- ✓ Digital controls On-screen display
- ✓ Easy adjustment of all screen parameters
- ✓ VGA to 1280 x 1024(ni) @ up to 65Hz
- ✓ Flicker free display capability up to 1024 x 768
- ✓ 0.28mm Dot Pitch
- ✓ Low radiation and static emissions

MT1582 '329 (£386.58)



**NEW!**

## NEC

PR12349	Superscript 1260 laser	£525	(£616.88)
PR11494	Superscript 860 GDI Pro	£249	(£292.58)
MT1388	Multisync E1100	£845	(£992.88)
MT1217	Multisync P1150	£1125	(£1321.88)
MT1270	Multisync P750	£529	(£621.58)
MT1117	Multisync M700	£425	(£499.38)
EURMT0626	Multisync M500	£255	(£299.63)
MT1589	Multisync E500	£239	(£280.83)
MT1583	Multisync E700	£439	(£515.83)

# Optiquest Monitors

## OPTIQUEST Q41

- ✓ 14" Colour Monitor with 13.2" diagonal viewable screen
- ✓ Easy Access Up-Front controls
- ✓ Fine 0.28mm Dot Pitch
- ✓ 1024 x 768 resolution
- ✓ Anti-Glare treatment
- ✓ Exceeds MPR-II and EPA Energy Star™ requirements



**NEW!**

**ONLY**  
**£109**  
 including VAT £1128.08

MT1398	Optiquest V655	£169	(£198.58)
MT1674	Optiquest Q41	£109	(£128.08)

## OPTIQUEST V95

- ✓ 19" Colour Monitor with 18" diagonal viewable area
- ✓ 0.26mm dot pitch
- ✓ 1280 x 1024 Max resolution @ 88Hz
- ✓ Anti-static, anti-reflection screen
- ✓ Super contrast, flat square screen
- ✓ On view control system to customise display image



**ONLY**  
**£599**  
 including VAT (£703.83)

MT1620	Optiquest V95	£599	(£703.83)
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## OPTIQUEST V115

- ✓ 21" Colour Monitor with 20" diagonal viewable screen
- ✓ 0.26mm dot pitch
- ✓ 1,600 x 1,280 max resolution @ 87Hz refresh rate
- ✓ On View controls
- ✓ Anti-Static, anti-glare screen
- ✓ Super contrast screen



**ONLY**  
**£799**  
 including VAT £938.83

MT1621	Optiquest V115	£799	(£938.83)
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## OPTIQUEST Q71

- ✓ 17" Colour Monitor with 16" diagonal viewable area
- ✓ Digital controlled monitor with on-screen programming
- ✓ Exceeds EPA Energy Star™ guidelines
- ✓ 0.28mm dot pitch
- ✓ 1280 x 1024 NI Maximum resolution
- ✓ Advanced Colour management system matches screen colours to printer output



**ONLY**  
**£319**  
 including VAT £374.83

MT1405	Optiquest Q71	£319	(£374.83)
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# OPTIQUEST®

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## Taxan UK market leader

### ERGOVISION 760 TCO 95

- ✓ 17" Short neck CRT (15.5" viewable)
- ✓ Footprint equivalent to 14" monitor
- ✓ AGRAS Face treatment
- ✓ 30-70kHz Horizontal scan frequency
- ✓ 1024 x 768 up to 86Hz
- ✓ Fully TCO 95 compliant



MT1313

### ERGOVISION 2150 TCO 95

- ✓ 21" Diamontron Monitor
- ✓ 0.28mm, Aperture Grille Pitch
- ✓ 30-95 kHz (Multiscan)
- ✓ Fully TCO 95 Compliant
- ✓ 1600 x 1200 up to 75Hz
- ✓ Windows 95 Plug & Play



MT1318

**TAXAN**

### ERGOVISION 430 LR

- ✓ 14" (13.1" Viewable) Display size
- ✓ 0.28mm Dot Pitch
- ✓ 270x200mm display area (max)
- ✓ 800 x 600 up to 85Hz
- ✓ Non glare/anti static face treatment
- ✓ 30-54kHz horizontal scan frequency



MT1679

### ERGOVISION 550 TCO 95

- ✓ 15" FST (13.7" Viewable)
- ✓ 0.27mm dot pitch
- ✓ AGRAS Face Treatment
- ✓ 30-69kHz horizontal scan frequency
- ✓ 800 x 600 up to 110Hz
- ✓ Fully TCO 95 compliant



MT1680



MT1679	Ergovision 430 LR 14"	£113	(£132.78)
MT1680	Ergovision 550 TCO 95 15"	£199	(£233.83)
MT1681	Ergovision 550 TCO 95-S 15"	£208	(£244.40)
MT1688	Ergovision 2040 TCO 95 20"	£683	(£802.53)
MT1333	Ergovision 760 TCO 95-S 17"	£370	(£434.75)
MT1274	Ergovision 730 TCO 95	£370	(£434.75)
EURMT0472	Ergovision 730 TCO 95-S	£379	(£445.33)
MT1169	Crystalvision 620 12.1"	£1377	(£1617.98)
MT1170	Crystalvision 650 14.5"	£1852	(£2176.10)

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- ✓ Sony Trinitron 15" 90 degree deflection
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- ✓ 0.25 mm stripe pitch
- ✓ 1280 x 1024 resolution
- ✓ Vesa DPMS and EPA Energy Star Compliant TCO95
- ✓ 3 Year warranty



### XJ707

- ✓ 17" High Contrast 90 degree deflection
- ✓ Anti glare / anti static
- ✓ JAG wheel feature
- ✓ 0.26 mm stripe pitch
- ✓ Max resolution 1280x1024 non interlaced
- ✓ 3 Year warranty



### DX 715T

- ✓ Diamontron 17" 90 degree deflection
- ✓ Anti glare / anti static
- ✓ 0.25 mm stripe pitch
- ✓ 1280 x 1024 resolution @ 86KHz
- ✓ Vesa DPMS and EPA Energy Star Compliant TCO95
- ✓ 3 Year warranty



### XJ530

- ✓ 15" FST Tube 90 degree deflection
- ✓ Anti glare / anti static
- ✓ JAG wheel feature
- ✓ 0.28 mm stripe pitch
- ✓ Max resolution 1280x1024 non interlaced
- ✓ 3 Year warranty

MT1666	MAG DX 15T 15" Technitron Monitor	£195	(£229.13)	MT1662	MAG DJ 920 21" Innovision Monitor	£815	(£957.63)
MT1668	MAG DJ 700 17" Innovision Monitor	£335	(£393.63)	MT1663	MAG DJ 717 17" Innovision Monitor	£365	(£428.88)
MT1660	MAG DJ 530 15" Innovision Monitor	£175	(£205.63)	MT1661	MAG DX 715T 17" Technitron Monitor	£405	(£475.88)
MON0575	MAG DJ 800 19" Innovision Monitor	£575	(£675.63)	MT1664	MAG DX 1595V 15" Value Series Monitor	£155	(£182.13)



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2.1GB Hard Drives



Iomega Zip Drives

224426: Parallel  
224425: SCSI Ext  
EURDR4672: SCSI Int

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## Orpheus Multiple Storage Drive Cases



### Map 5021

- ✓ Designed for 5.25" SCSI full height drive devices
- ✓ Power supply with UL, CSA, TUV approvals.
- ✓ Cases compatible with SCSI-1, SCSI-2 and SCSI-3 interfaces. IDE and PCMCIA options available

### Map 5041

- ✓ As above for four devices
- ✓ 200 Watt power supply

### Map 5081

- ✓ As above for eight devices
- ✓ 250 Watt power supply

### Just Cooler

Just Cooler gives you the answer when your HDD overheats!!!

Item	Description	Price	Inc VAT
AC22189	CD-ROM case	£30.95	(£36.37)
AC22191	Std 5.25" SCSI case	£38.95	(£45.77)
AC22192	Premier 3.5" SCSI case	£40.95	(£48.12)
AC22193	Premier 5.25" SCSI case	£40.95	(£48.12)
AC22194	Delux 3.5" metal SCSI case	£41.95	(£49.29)
AC22195	Premier 2 bay 3.5" SCSI Case	£52.95	(£62.22)
AC22196	Premier 2 bay 5.25" SCSI Case	£52.95	(£62.22)
AC22199	Premier 4 bay 5.25" SCSI Case	£70.95	(£83.37)
AC22200	Premier 8 bay 5.25" SCSI Case	£106.95	(£125.67)
AC22201	Just Cooler	£15.95	(£18.74)

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Siena

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CP3773	Pision Siena 1MB	£169.95	(£199.69)

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- ✓ Fully functional QWERTY keyboard
- ✓ Modem connection for fax, email and internet connection (optional)



SERIES 3c

CP4369	Pision Series 3C 2MB Backlit	£249.95	(£293.69)
CP4369	Pision Series 3C 2MB Backlit with PsiWin	£297.00	(£349.98)
CP5287	Pision Palmtop Series 5 4MB	£369.00	(£433.58)
CP5286	Pision Palmtop Series 5 8MB	£419.00	(£492.33)

## 3Com PalmPilot

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- ✓ Fast, streamlined access to applications and data, including pocket e-mail - professional only
- ✓ An intuitive, easy-to-see interface with an accurate input system
- ✓ Long battery life

CP5585	Palm Pilot Professional	£229.00	(£269.08)
CP5586	Palm Pilot Personal	£159.00	(£188.83)
AC23359	Palm Pilot Professional Upg	£84.00	(£98.70)
AC23360	Palm Pilot Modem	£84.00	(£98.70)
AC23362	Deluxe leather carry case	£50.00	(£58.75)
PDA0315	Slim leather carry case	£17.00	(£19.98)

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### SlimSCSI PCMCIA

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APA-1450B For Removable Drives

- ✓ Configured especially for notebooks
- ✓ Supports removable media devices with SCSI-2
- ✓ Full Plug-and-Play Support for Windows 95

EX7657 £69.95 (£82.19)

EUREX0631	AVA-1505 Total CD	£34.00	(£39.95)
EX7250	AHA-2940AU PCI Ultra SCSI Master	£149.00	(£175.08)
236129	AHA-2940UW PCI Ultra Wide SCSI	£175.00	(£205.63)
EUREX2476	AHA-3940U PCI Multichannel	£259.00	(£304.33)
236131	AHA-3940UW PCI Wide Multichannel	£285.00	(£334.88)

## Videologic Graphics Cards

### Apocalypse 3Dx

From the award winning Apocalypse family

ONLY £79 including VAT (£92.83)

- ✓ 3D accelerator for the games enthusiast who demands arcade level game play
- ✓ Improved 3D image quality with bilinear texture filtering
- ✓ Accelerates PowerVR titles and Microsoft Direct 3D games
- ✓ Ultimate Race: Mech Warrior2, plus Wipeout 2097, and games sampler, Plus Jomb Raider and Terracide (OEM Versions)
- ✓ Optimal platform P166 with 32MB RAM or above. Minimum requirement: P133 with 24MB RAM
- ✓ Works with your existing Windows 95 graphics card (DirectX compatible)
- ✓ 4MB of high performance SDRAM texture memory on board

EX7636	Apocalypse 3D	£49	(£57.58)
EX8101	Apocalypse 3Dx	£79	(£92.83)
EUREX2872	Grafixstar 600	£85	(£99.88)

### Sound Blaster AWE64

Gold - Your Golden opportunity

4mb of onboard RAM (Upgradeable to 12mb) Gold Plated line out connections give you CD quality - 90dB signal/noise ratio Use the S/PDIF digital

connector to get an amazing - 120dB signal/noise ratio Ultra realistic instrument Creative WaveGuide Synthesis

EX7695	Sound Blaster AWE64 Gold	£129.95	(£152.69)
EX8111	Sound Blaster AWE64 Value	£69.95	(£82.19)
EX7337	Sound Blaster 16 Value	£39.95	(£46.94)
EX8139	Sound Blaster AWE64 Discovery Kit	£115.00	(£135.13)
EX7967	Sound BlasterCD 24X	£59.95	(£70.44)

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## Hard Drive Warehouse

Item	Capacity	Interface	Manufacturer	Model	Access time/ms	Cache/KB	Price	Inc. VAT
DR6872	1.2GB	Ultra ATA	Seagate	ST31277A	12.5	128	£89.00	£104.58
DR7312	1.6GB	Ultra ATA	Western Digital	AC11600	<12	128	£115.00	£135.13
DR7066	1.7GB	Ultra ATA	Seagate	ST31722A	12	128	£99.00	£116.33
EX8304	2.1GB	Ultra ATA	Seagate	ST32122A	12	128	£115.00	£135.13
DR7415	2.1GB	Ultra ATA	Quantum	Fireball SE	9.5	128	£109.00	£128.08
EX8305	3.2GB	Ultra ATA	Seagate	ST33232A	12	128	£145.00	£170.38
DR7414	3.2GB	Ultra ATA	Quantum	Fireball SE	9.5	128	£119.00	£139.83
DR7313	3.2GB	Ultra ATA	Western Digital	AC23200	11.5	128	£155.00	£182.13
DR7412	4.3GB	Ultra ATA	Quantum	Fireball SE	9.5	128	£149.00	£175.08
DR6976	4.3GB	Ultra ATA	Western Digital	AC34300	<12	256	£199.00	£233.83
DR6912	5.1GB	Ultra ATA	Western Digital	AC35100	<12	256	£249.00	£292.58
DR7411	6.4GB	Ultra ATA	Quantum	Fireball SE	9.5	128	£219.00	£257.33
NEW	6.4GB	Ultra ATA	Seagate	ST36451A	9.5	512	£249.00	£292.58
DR7410	8.4GB	Ultra ATA	Quantum	Fireball SE	9.5	128	£259.00	£304.33
DR7409	2.1GB	Ultra SCSI	Quantum	Fireball SE	9.5	512	£139.00	£163.33
DR6103	2.1GB	Ultra SCSI	Western Digital	Enterprise	8	512	£275.00	£323.13
DR6719	2.2GB	Ultra SCSI	Seagate	ST32272N	9.4	512	£265.00	£311.38
DR7417	3.2GB	Ultra SCSI	Quantum	Fireball SE	9.5	512	£169.00	£198.58
DR7416	4.3GB	Ultra SCSI	Quantum	Fireball SE	9.5	512	£199.00	£233.83
DR6106	4.3GB	Ultra SCSI	Western Digital	Enterprise	8	512	£399.00	£468.83
DR5832	4.5GB	Ultra SCSI	Quantum	Atlas II	8	512	£448.00	£526.40
DR6586	4.5GB	Ultra SCSI	Seagate	ST34572N	9.4	512	£419.00	£492.33
DR5830	9.1GB	Ultra SCSI	Quantum	Atlas II	8	1024	£699.00	£821.33
DR5537	9.1GB	Ultra SCSI	Seagate	ST19171N	9.7	512	£708.00	£831.90
DR6107	2.1GB	Ultra Wide SCSI	Western Digital	Enterprise	8	512	£289.00	£339.58
DR7041	2.2GB	Ultra Wide SCSI	Seagate	ST32272W	9.4	512	£299.00	£351.33
DR6110	4.3GB	Ultra Wide SCSI	Western Digital	Enterprise	8	512	£419.00	£492.33
DR5831	4.5GB	Ultra Wide SCSI	Quantum	Atlas II	8	512	£449.00	£527.58
DR7042	4.5GB	Ultra Wide SCSI	Seagate	ST34572W	9.4	512	£455.00	£534.63
DR6100	9.1GB	Ultra Wide SCSI	Quantum	Atlas II	8	1024	£708.00	£831.90
DR5637	9.1GB	Ultra Wide SCSI	Seagate	ST19171W	9.7	512	£767.00	£901.23

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THE MOST AFFORDABLE CD-RECORDERS AROUND  
Ultimate Hassle-free Quad speed CD-Recording

### CD-RW Drives

Quad-Speed Write, Six-Speed Read & Two speed rewrite, inclusive of software for Windows 3.11, 95 & NT, Cables, Audio cable, 1 blank CD-R, 1 blank CD-RW disk, media and documentation.



The Latest drives from Dynatek

DR7396 Internal IDE CDRW-4001 £369 (£433.58)

DR7451 Internal SCSI CD-RW-4001 £369 (£433.58)

### CD-R Drives

#### CDM-260

Dual-Speed Write, Six-Speed Read CD-R, SCSI Controller, CD-R software for Windows 3.11, 95 & NT (OS/2 available), SCSI cable, media and documentation

DR5608 Internal CDM-260 CD Recorder £249 (£292.58)

DR5609 External CDM-260 CD Recorder £299 (£351.33)

#### CDM-460

Quad-Speed Write, Six-Speed Read CD-R, CD-R Software for Windows 3.11, 95 & NT (OS/2 available), SCSI cable (Internal Only), media and documentation

DR5804 Internal CDM-460 CD Recorder £339 (£398.33)

DR5805 External CDM-460 CD Recorder £389 (£457.08)

#### CDM-4120

Quad-Speed Write, Twelve-Speed Read, Inclusive of CD-R software for Windows 3.11, 95 & NT, SCSI cable (Internal only), 2 Blank media and documentation

DR7391 Internal CDM-4120 CD Recorder £389 (£457.08)

DR7393 External CDM-4120 CD Recorder £439 (£515.83)

### & Duplication

#### DynaTek

#### CDM4000

#### CDM-4000

simplifies the whole process of CD recording. The magic is in the design. Everything you need to record

CDs is contained in a single external unit, including 4x CD Recorder, 4x CD reader, 1GB AV hard drive and a specially designed controller to make it all work.

The CDM-4000 guarantees an uninterrupted data path from the hard drive to the recorder, reducing wasted media. The unique system also allows you to continue using your computer while it's recording, so you can continue your work. With its separate quad speed reader, duplicating CDs is also simplicity itself. (subject to copyright restrictions)



CDM-4000 FROM £1645 including VAT (£1932.88)

DR6775 Windows 95 £1645 (£1932.88)

DR5371 Macintosh £1645 (£1932.88)

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### UMAX



**Umax Astra 610P**

The Affordable 30-Bit Desktop Scanner  
 See Page 17



**HP CD-R & CD-RW**  
 Order now! HP multipack 2 CD - Recordables plus 1 CD -Rewritable  
 Only £21.95  
 C4433C

The HP 3-Pack  
 3 CD - Rewritables  
 Only £45.95  
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# SyQuest Storage Devices

## EZFlyer™ 230MB

*A super fast hard drive that's also portable!*

Get the performance and speed of a hard drive with the flexibility of a portable hard drive! Capable of storing up to 230MB on a 3.5" cartridge, the EZFlyer™ 230 is an ideal real-time file manager offering endless storage. It is perfect for data intensive applications such as desktop publishing, multimedia, video and music.

- ✓ Average seek time of 13.5ms and a transfer rate up to 2.4MB/sec (SCSI model)
- ✓ Small and lightweight
- ✓ Superior hard drive performance



**e2 flyer 230MB**

Store 230MB on a single cartridge

**ONLY £99**  
 INCLUDING VAT (£116.33)

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 Including VAT (£233.83)



**A SyJet 1.5GB cartridge can hold...**

- ✓ 1500 pictures (full colour 450x750, 24 bit Pixel)
- ✓ 2 Hours of audio (Stereo 44Khz, 16 bits)
- ✓ More than 80 minutes of video (broadcast quality 50:1 MPEG Compression)

## SyJet™ 1.5GB

*Super-fast, 1.5GB removable storage!*

The SyJet 1.5GB from SyQuest solves the ultimate storage problem - limited hard drive space! With 1.5GB of capacity and super fast hard drive speed, you can access files in seconds. With burst rates of 10MB/sec and a sustained transfer rate of 7MB/sec, the SyJet is ideal for audio/visual applications that require high performance. There are various models to suit all users; choose either Parallel, Internal or external SCSI and Internal IDE. Why not create your own internet drive - browse and download all your internet files straight to SyJet™.

- ✓ Seek time of under 12ms
- ✓ 512K Intelligent caching buffer
- ✓ Choose either Parallel, IDE or Internal/External SCSI models



Item	Description	Price	Inc VAT	Item	Description	Price	Inc VAT
DR7090	EZFlyer 230MB Internal IDE	£99.00	(£116.33)	DR6375	SyJet 1.5GB Internal SCSI	£199.00	(£233.83)
DR5178	EZFlyer 230MB External Parallel	£99.00	(£116.33)	DR6376	SyJet 1.5GB Internal IDE	£199.00	(£233.83)
DR5193	EZFlyer 230MB External SCSI	£99.00	(£116.33)	ME6833	EZFlyer 230MB Cartridge	£19.95	(£23.44)
DR6120	SyJet 1.5GB External Parallel	£249.00	(£292.58)	ME7304	SyJet 1.5GB Cartridge	£89.00	(£104.58)
DR6373	SyJet 1.5GB External SCSI	£249.00	(£292.58)				

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**HP HEWLETT PACKARD HP Storage Solutions**

**HP SureStore CD-Writer 7100 Plus**

Simple as a floppy with the qualities of a CD!

The SureStore 7100 Plus uses revolutionary CD-rewritable technology to enable you to write, update, erase and rewrite up to 650MB of data on a single CD-RW disc. Now you can use CDs just like a floppy for dynamic storage applications such as multimedia presentations, audio and photographic projects which can then be easily transported to other users. Choose either Internal EIDE or External Parallel.

- ✓ Write, update and rewrite CD's
- ✓ 6X Read, 2X Write, 2X Re-write
- ✓ Save and distribute up to 650MB of information
- ✓ Easy to use 'drag-and-drop' functionality
- ✓ Includes Adaptec's DirectCD software for Windows 95 and Windows NT 4.0



The latest Re-writable technology

**FROM £245**  
Including VAT (£287.88)

**HP Colorado 5GB**

Breakthrough performance for full system protection

Looking for a PC backup solution that won't keep you waiting? The new HP Colorado 5GB drives deliver extremely high performance and high capacity at an astonishingly low price. Allowing you to store 5GB on a single data cartridge\* and store data at a rate of up to 2GB in well under an hour\*\*

- ✓ Disaster recovery for Windows 95 with full system protection
- ✓ 2.5GB native capacity, up to 5GB compressed
- ✓ Includes Colorado Backup by Cheyenne for Windows 95, Windows and DOS
- ✓ Supports Windows NT 4.0 backup utility



Store up to 5GB

**FROM £145**  
Including VAT (£170.38)

Includes your first Tape

**HP SureStore T4**

Cost effective backup for small business LANs

The HP SureStore T4 provides a complete solution for network backup at a surprisingly low price. It's native capacity is 4GB - enough for a complete backup of a small client-server network to a single tape. With software data compression, the capacity increases to a maximum of 8GB\*

- ✓ Comprehensive backup solution including network drivers and Colorado Backup software
- ✓ 25-35MB/min typical backup, 60MB/Min maximum
- ✓ Tape Assure for easy hardware installation
- ✓ 2 Year Express Exchange hardware warranty
- ✓ Includes Colorado Backup by Cheyenne for Windows 95, Windows and DOS for the backup of peer-to-peer Lans



Cost effective Network Backup

**FROM £249**  
Including VAT (£292.58)

Code	Item	Price	Inc VAT	Code	Item	Price	Inc VAT
DR6995	SureStore 7100 Plus Internal IDE	£245.00	(£304.33)	DR7036	SureStore T4 External SCSI	£299.00	(£351.33)
DR6996	SureStore 7100 Plus External Parallel	£299.00	(£374.83)	DR7151	SureStore 2000i DAT 2GB Int SCSI	£475.00	(£558.13)
DR7034	Colorado 5GB Int IDE with 1 Tape	£145.00	(£170.38)	DR7152	SureStore 2000e DAT 2GB Ext SCSI	£555.00	(£652.13)
DR7035	Colorado 5GB Ext Parallel with 1 Tape	£169.00	(£198.58)	DR7153	SureStore 5000i DAT 4GB Int SCSI	£485.00	(£569.88)
DR5623	Colorado T3000i TR-3 3.2GB Int IDE	£109.00	(£128.08)	DR7154	SureStore 5000e DAT 4GB Ext SCSI	£565.00	(£663.88)
DR5792	SureStore T4 Internal SCSI	£249.00	(£292.58)	DR7155	SureStore DAT8i DAT 8GB Int SCSI	£595.00	(£699.13)
				DR7156	SureStore DAT8e DAT 8GB Ext SCSI	£679.00	(£797.83)

\* Via Compression \*\* Speeds may vary according to PC

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**ME7460**

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The Zip Plus™ drive allows you to use the same 100MB disks as the Classic Zip drive but also offers increased performance and portability.

- ✓ AutoDetect™ allows you to move the Zip Plus between PC and Macintosh platforms.
- ✓ The Zip Plus drive is up to 50X faster than a floppy
- ✓ Up to 40% faster\* than the Zip Classic drive
- ✓ NEW Lightweight Universal Power Supply & Power Management features

### The one drive for all your large files!

The Zip Plus™ drive's small 3.5" removable disks are great for transporting large files. Use them to ship desktop publishing documents to the service bureau, carry multimedia presentations to business conferences, or store backup files off site.

\* Speed using SCSI connection under windows 95



### Zip Drives

DRI2274 Zip Plus Parallel & SCSI	£129	(£151.58)
224426 Zip Classic Parallel	£89	(£104.58)
224425 Zip Classic SCSI	£89	(£104.58)

### Zip Media

ME7001 3-Pack of disks	£27.95	(£32.84)
ME7028 6-Pack of disks & FREE Caddy	£52.00	(£61.10)
ME7460 10-Pack of disks & RecordIt software	£89.00	(£104.58)
BN4383 50-Pack of disks	£415	(£487.63)

### Multimedia software supplied FREE with Zip Plus

- Digital imaging  
Adobe PhotoDeluxe  
Image AXS
- Off-line Web Browsing  
Web Buddy
- Audio recording  
RecordIt
- Multimedia e-mail  
Netcard

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# US Robotics Modems

## Sportster® Flash 56K Ready

### External Faxmodem with Personal Voice mail

Download from the Internet at an amazing 56kbps with the Sportster Flash. Nearly 100% faster than the 28.8Kbps speed currently available over ordinary telephone lines. Sportster flash users can now upgrade to X2 free by calling the US Robotics bulletin board.

Over 300 major internet and On-line Services have agreed to adopt X2 technology - worldwide. When not downloading from an X2 host, you're still connected at speeds of up to 33,600bps - the latest approved v.34 standard.



**£97.95**  
 Including VAT (£115.09)

## Sportster Voice 33,600 Faxmodem with Personal Voice mail

The Sportster Voice modem provides Internet Access, fax, e-mail, personal voice mail and speaker phone facilities in one compact unit. The speakerphone facility allows the Sportstervoice to be used as a hands free telephone - giving you a complete communications solution.

## Sportster Winmodem 336 PC Card

Designed exclusively for Windows™ 95, the Sportster PC Card utilises the processing capabilities of your own computer and functionality of Windows to provide a complete communications device for the home, office and travelling user. Features include Pan European approvals, worldwide Internet access at 33,600bps, Fax, E-mail and Personal Voice Mail.



**£109.95**  
 Including VAT (£129.19)

## Sportster ISDN TA Terminal adapter for ISDN Connectivity

Sportster ISDN TA allows you to send and receive data at up to 64kbps over the ISDN high-speed network, but at the same rate as normal telephone charges. Sportster ISDN TA is supplied with data communications software, cables and connectors - plus free lifetime technical support and 5 years warranty

MM4049 Sportster Flash 56K Ready External	£109.95	(£129.19)
DMD1773 Sportster Voice 33.6 External	£97.95	(£115.09)
DMD1584 Sportster Voice 33.6 Internal	£97.95	(£115.09)
DMD3151 Sportster WinModem 33.6 PC Card	£79.95	(£93.94)
MM4047 Sportster Winmodem 33.6 Internal Windows only	£75.00	(£88.13)

234937-5 Courier V34 33.6 External	£194.00	(£227.95)
DMD1316 Courier V34 33.6 Internal	£194.00	(£227.95)
MM3994 Courier-I-ISDN/V34 External	£254.00	(£298.45)
MM3993 Courier-I-ISDN/V34 Internal	£254.00	(£298.45)
DMD3129 Sportster ISDN TA	£109.95	(£129.19)



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- ✓ Upgradeable via 2MB flash memory
- ✓ Globally approved
- ✓ Compatible with telephone networks worldwide
- ✓ Ready for GSM Fax & Data
- ✓ Onboard DAA with country switching software
- ✓ Lifetime Warranty

Code	Description	Price	Inc VAT
DMD2964	Gold Card Global 56K+Fax	£214.95	(£252.57)
DMD2578	Gold Card Global V.34+Fax	£155.00	(£182.13)
DMD2583	GSM Nokia 2110 Upgrade	£99.00	(£116.33)
DMD2585	GSM Nokia 8110 Upgrade	£99.00	(£116.33)
DMD2581	GSM Panasonic Upgrade	£99.00	(£116.33)

## Olitec Self Memory 56000

Unbelievable !!  
Receive and store faxes and messages when your computer is switched off !!



- ✓ Unique: the first fax/modem that can receive and store faxes and messages with or without a computer.
- ✓ Stand alone: retrieve messages from remote location even when computer is switched off.
- ✓ Powerful: stores more than 50 faxes or 20 min. of messages.
- ✓ Handy: keeps all the information in its own memory even if powered off.
- ✓ Smart: automatically recognise voice or fax.
- ✓ Compact: as small as a pack of cigarettes



Code	Description	Price	Inc VAT
DMD2923	Olitec Self Memory 56000	£119.00	(£139.83)

## Hayes 56K Modems

### OPTIMA 56K Global PC Card

- ✓ K56Flex for downloading from the Internet
- ✓ Flash Upgradeable
- ✓ Approved for use in over 30 countries
- ✓ Optional GSM support for Nokia and Panasonic phones
- ✓ Self contained card with no external circuitry
- ✓ PCMCIA Release 2.0 & 2.1, Type II



### Hayes/Microsoft MSN 56K Modem

- ✓ Contains user-friendly step-by-step instructions
- ✓ Download from the Internet at 56K
- ✓ Flash Upgradeable
- ✓ One month free access to MSN and the Internet
- ✓ Send and Receive faxes
- ✓ Voice answer phone facility
- ✓ Speaker phone facility for hands free voice communications



Order No.	Description	Price	Inc VAT
DMD3281	Optima 56K Global PC Card	£215.00	(£252.63)
DMD3098	Accura 56K MSN Internal	£99.00	(£116.33)
DMD3099	Accura 56K MSN External	£115.00	(£135.13)
DMD2531	Accura 336 PC Card	£99.00	(£116.33)
MM4051	Accura ISDN TA	£175.00	(£205.63)
DMD2185	Accura 336 Message Internal	£95.00	(£111.63)
MM4017	Accura 336 Message External	£85.00	(£99.88)
MM4018	Optima 336 Business External	£169.00	(£198.58)

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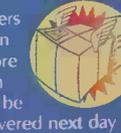
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UT6985



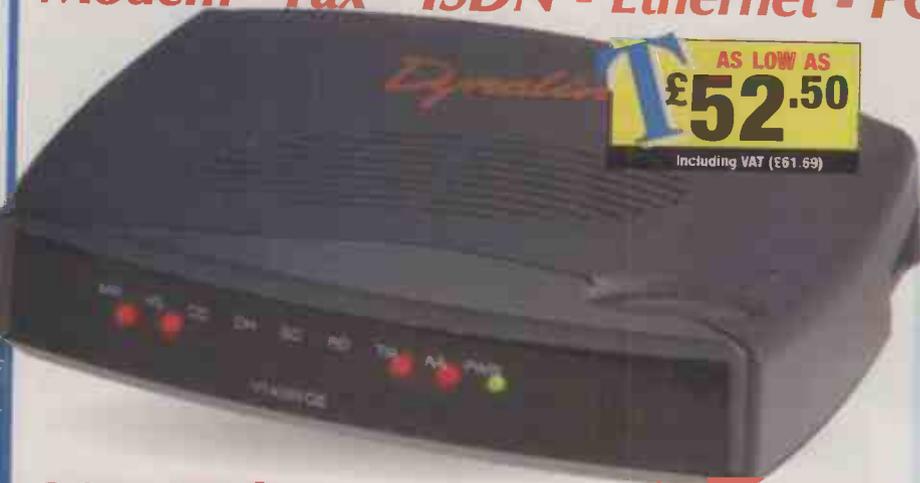
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Everything you need to duplicate your hard drive  
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236168	HP LJ 5SI	£1,649.00	£1,937.58
PR12116	HP L5 5SI NX	£963.00	£2,113.83
236292	HP LJ 5SI MX	£2,249.00	£2,642.58
PR12038	HP L5 5SI MX MOPIER	£4,326.00	£5,083.05
EURPR0433	HP LJ 4V	£1,184.00	£1,391.20
EURPR0434	HP LJ 4MV	£1,724.00	£2,025.70
PR12987	HP LJ 4000	£749.00	£880.08
PR12978	HP LJ 4000T	£855.00	£1,004.63
PR12975	HP LJ 4000N	£963.00	£1,131.53
PR12976	HP LJ 4000TN	£1,061.00	£1,246.68
EURPR1666	LASERJET 5	£674.00	£791.95
EURPR1665	LASERJET 5N	£847.00	£995.23
EURPR1664	LASERJET 5M	£997.00	£1,171.48
PR11827	HP LJ 6P	£480.00	£564.00
INP0975	HP LJ 6MP	£592.00	£695.60
PR12230	HP LJ 6L	£232.00	£272.60
PR12232	LJ COMPANION	£115.00	£135.13

**INKJET**

Code	Description	Price	Inc VAT
234090	DJ1600C	£871.00	£1,023.43
234082	DJ1600CM	£1,280.00	£1,504.00
PR12805	DJ 1100C	£285.00	£334.88
PR12804	DJ 890C	£240.00	£282.00
PR12738	DJ 870CXI	£202.00	£237.35
PR12740	DJ690C PLUS PHOTO READER	£209.00	£245.58
PR12348	DJ 690C PLUS	£150.00	£176.25
PR12315	DJ670C	£119.00	£139.83
PR12741	DJ 400L	£ 86.00	£101.05
224340	DJ 340C	£144.00	£169.20
PR11832	DJ 340CBI	£166.00	£195.05

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Code	Description	Price	Inc VAT
PR12187	OFFICEJET PRO 1150C	£491.25	£577.22
PR12623	OFFICEJET 590	£341.25	£400.97

**CANON LASER**

Code	Description	Price	Inc VAT
PR12944	LBP-2460	£1,499.00	£1,767.33
PR11992	LBP-1260+	£699.00	£821.33
PR12274	LBP-660	£184.00	£216.20

**INKJET**

Code	Description	Price	Inc VAT
PR12101	BJC-4550	£475.00	£558.13
PR11899	BJC-4500	£199.00	£233.83
PR11932	BJC-620	£169.00	£198.58
PR12936	BJC-4300	£149.00	£175.08
PR12040	BJC-4200	£129.00	£151.58
PR12856	BJC-250	£109.00	£128.08
PR12947	BJC-80	£142.00	£166.85
PR12890	BJC-80 + Scanner	£200.00	£235.00
234340	Bj-30	£124.00	£145.70

**EPSON LASER**

Code	Description	Price	Inc VAT
PR11954	EPL-N2000	£1,278.00	£1,501.65
PR11953	EPL-N2000PS	£986.00	£1,158.55
PR11952	EPL-N1200	£593.00	£696.78
PR11956	EPL-N1200EN	£791.00	£929.43
PR11955	EPL-N1200PS	£986.00	£1,158.55
236234	EPL5500+1MB	£274.00	£321.95
236235	EPL5500+2MB	£319.00	£374.83
EURPR1496	EPL5500PS	£570.00	£669.75

**INKJET**

Code	Description	Price	Inc VAT
PR12407	STYLUS COLOUR 3000	£1,118.00	£1,313.65
PA12124	STYLUS COLOUR 1520	£593.00	£696.78
236241	STYLUS PRO XL+ A3	£446.00	£524.05
PR12059	STYLUS COLOUR 800	£221.00	£259.68

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PR12058	STYLUS COLOUR 600	£169.00	£198.58
PR12103	STYLUS COLOUR 400	£133.00	£156.28
PR12592	STYLUS COLOUR 300	£308.00	£361.90
PR12406	STYLUS PHOTO	£305.00	£358.38
IN6396	STYLUS FILMSCAN SCST PC	£326.00	£383.05

**DOT MATRIX**

Code	Description	Price	Inc VAT
PR12990	DLQ3000+ 24 Pin	£791.00	£929.43
EURPR1617	LQ2170 24 Pin	£468.00	£549.90
PR11855	LQ-2070 24 Pin	£325.00	£381.88
96595	LQ870 24 Pin	£359.00	£421.83
PR12408	LQ-670 24 Pin	£220.00	£258.50
PR4480	LQ570+ 24 Pin	£205.00	£240.88
234460	LQ300 24 Pin	£109.00	£128.08
EURPR1102	DFX-8000 9 Pin	£191.00	£224.43

Code	Description	Price	Inc VAT
EURPR0226	DFX-5000+ 9 Pin	£1,226.00	£1,440.55
EURPR1608	FX-2170 9 Pin	£369.00	£433.58
97485	FX-1170 9 Pin	£307.00	£360.73
PR13065	FX-880 9 Pin	£247.00	£290.23
234459	LX1050+ 9 Pin	£200.00	£235.00
201457	LX300 9 Pin	£97.00	£113.98

**NEC**

Code	Description	Price	Inc VAT
PR11494	SUPERSCRIP 860 PRO	£248.00	£291.40
PR12349	SUPERSCRIP 1260	£525.00	£616.88
EURPR1277	PINWRITER P2X	£95.00	£111.63
PR12378	DOT MATRIX P72X	£399.00	£468.83

**PANASONIC LASERS**

Code	Description	Price	Inc VAT
PR12487	KX-P7200	£1,175.00	£1,380.63
EURPR1298	KXP4430	£455.00	£534.63
236455	KXP-6500	£239.00	£283.00
224026	KXP-6150	£279.00	£327.83
EURPR1689	KXP-6300	£172.00	£202.10

**DOT MATRIX**

Code	Description	Price	Inc VAT
EURPR1432	KXP-3626 24 Pin	£255.00	£299.63
PR11944	KX-P2124 24 Pin	£189.00	£222.08
PR4440	KX-P2023 24 Pin	£109.00	£128.08
224028	KXP-3696 9 Pin	£255.00	£299.63
PR12165	KX-P3200 9 Pin	£175.00	£205.63
EURPR1690	KXP-1150 9 Pin	£87.00	£102.23

**BROTHER LASERS**

Code	Description	Price	Inc VAT
PR11845	HL-1660 4MB	£699.00	£821.33
PR12164	HL-1660 10MB	£715.00	£840.13
PR6517	HL-1660EX 4Mb	£909.00	£1,068.08
PR12400	HL-1660EX 10Mb	£925.00	£1,086.88
207556	HL-1260E 2MB	£599.00	£703.83
PR11844	HL-1260E 6MB	£615.00	£722.63
PR12138	HL-1260EX 2MB	£805.00	£945.88
PR12971	HL-1260EX 6MB	£815.00	£957.63
PR11850	HL-1060 2MB	£399.00	£468.83
PR12970	HL-1060 6MB	£415.00	£487.63
PR11843	HL-760 1Mb	£229.00	£269.08
PR12797	HL-760 5MB	£245.00	£287.88
PR12163	HL-730 1Mb	£199.00	£233.83

**KYOCERA LASERS**

Code	Description	Price	Inc VAT
EURPR1680	FS-6500 Plus	£1,179.00	£1,385.33
PR12021	FS-3700	£985.00	£1,157.38
PR12695	FS-1700N	£899.00	£1,056.33
EURPR1685	FS-3400 Plus	£795.00	£934.13
PR12020	FS-1700	£704.00	£827.20
EURPR1682	FS-1550+	£615.00	£722.63
224415	FS-400	£305.00	£358.38
PR12696	FS-600	£239.00	£280.83

**SEIKOSHA**

Code	Description	Price	Inc VAT
PR13047	Smart Label Printer 220	£199.00	£233.83
PR13046	Smart Label Printer 210	£159.00	£186.83
91702	Smart Label Printer E230	£99.00	£116.33
IN5572	Smart Business Card Reader	£169.00	£198.58
UT7035	Smart Disk Labeller SAW	£20.00	£23.50
PR12170	OP-1200 Laser Printer	£679.00	£797.83

**FAXES BROTHER**

Code	Description	Price	Inc VAT
FX0935	1030	£339.00	£398.33
FX0936	1020	£297.00	£348.98
FX0928	520DT	£211.00	£247.93
FX0919	510	£169.00	£198.58

**MULTI-FUNCTION**

Code	Description	Price	Inc VAT
MM4000	MFC-9000	£662.00	£777.85
MM4001	8000P	£594.00	£697.95
MM4125	MC3000	£499.00	£586.33

**PLOTTERS HEWLETT PACKARD**

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PR11994	DESIGNJET 750C PLUS A1	£3,055.00	£3,589.63
PR11995	DESIGNJET 750C PLUS A0	£3,729.00	£4,381.58
PR12596	DESIGNJET 450C A1	£1,492.00	£1,753.10
PR12967	DESIGNJET 450C A0	£1,942.00	£2,281.85
PR11996	DESIGNJET 700 A1	£2,255.00	£2,649.63
PR11993	DESIGNJET 700 A0	£2,689.00	£3,159.58
PR12964	DESIGNJET 430 A1	£1,042.00	£1,224.35
PR12965	DESIGNJET 430 A0	£1,642.00	£1,929.35

**MONITORS IYAMA**

Code	Description	Price	Inc VAT
MT1501	21" Vision Master Pro	£950.00	£1,116.25
MT1324	21" Vision Master Pro 21 MT-9021T	£909.00	£1,068.08
MT1744	19" Vision Master 450"	£599.00	£703.83
MT1613	17" Vision Master MF-9017T"	£454.00	£533.45
MT1186	17" Vision Master 17ES MF-8617ES	£435.00	£511.13
MT1626	17" Vision Master MF-8617T"	£399.00	£468.83
MT1277	15" Vision Master 15C"	£219.00	£257.33
MT1277	15" Vision Master MF-8515C"	£189.00	£222.08
MT1372	13.8" Vision Master Prolite 35"	£202.00	£237.85
MT1387	21" TFT LCD Panel	£2,115.95	£2,486.24

**MITSUBISHI**

Code	Description	Price	Inc VAT
MON0442	21" Diamond Pro 91TXM"	£949.00	£1,115.08
MON0439	17" Diamond Pro 87TXM"	£449.00	£527.58
MON0461	17" Diamond Pro 67TXM"	£399.00	£468.83
MT1561	17" Diamond Pro 17HX"	£435.00	£511.13
MON0423	15" Diamond Pro 15HX"	£269.00	£316.08

**NEC**

Code	Description	Price	Inc VAT
MT1217	21" MultiSync P1150"	£1,099.00	£1,297.33
MT1388	21" E1100"	£929.00	£1,091.58
MT1117	17" M700 MultiSync"	£425.00	£499.38
MT1270	17" P750"	£559.00	£656.83
EURMT0526	15" M500 MultiSync"	£249.00	£292.58
MT1584	MultiSync A500 15"	£195.00	£229.13
MT1582	MultiSync A700 17"	£349.00	£410.08
MT1589	MultiSync E500 15"	£239.00	£280.83
MT1583	MultiSync E700 17"	£439.00	£515.83

**OPTIQUEST**

Code	Description	Price	Inc VAT
MT1621	Optquest V115 21"	£799.00	£938.83
MT1620	Optquest V95 19"	£599.00	£703.83
MT1401	Optquest V775 17"	£399.00	£468.83
MT1399	Optquest 1769D 17"	£349.00	£410.08
MON0490	Optquest V773 17"	£349.00	£410.08
MT1405	Optquest Q71 17"	£319.00	£374.83
MT1398	Optquest V6		



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<b>LOGITECH</b>			
EURAC2977	TRACKMAN MARBLE MOUSE	£42.00	£49.35
EURIN0077	PILOT II MOUSE PS/2	£15.00	£17.63
EURIN0002	PILOT II MOUSE SERIAL	£15.00	£17.63
EURIN1199	MOUSEMAN CORDLESS RH COMBO	£35.00	£41.13
EURIN1200	MOUSEMAN BUS CORDED	£40.00	£47.00
201207	PILOT TRACKMAN SERIAL	£23.00	£27.03
EURIN1204	TRACKMAN PORTABLE COMBO	£32.00	£37.60
IN5872	MOUSEMAN CORDLESS PRO	£35.00	£41.13
IN6111	SURFMAN	£45.00	£52.88
IN6501	Trackman	£25.00	£29.38
IN6440	Mouseman +	£29.00	£34.08
IN6440	Pilot Mouse Plus	£16.45	£19.33
IN6260	MouseMan for Notebooks	£35.00	£41.13

Code	Description	Price	Inc VAT
<b>ZYE TECHNOLOGY</b>			
IN6376	3 BUTTON MOUSE	£7.99	£9.39
IN6374	POINT MOUSE	£13.99	£16.44
IN6378	POINT MOUSE PS/2	£14.99	£17.61
IN6377	DOLPHIN MOUSE	£24.99	£29.36
IN6375	DOLPHIN MOUSE PS/2	£24.99	£29.36



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IN6370	MOUSE/MAT BUNDLE	£12.99	£15.26
IN6369	WIN 95 KEYBOARD	£24.99	£29.36
IN6373	WIN 95 KEYBOARD PS/2	£24.99	£29.36

Code	Description	Price	Inc VAT
<b>WACOM</b>			
EURIN1546	WACOM ULTRAPAD A3	£479.00	£562.83
EURIN1547	WACOM ULTRAPAD A4	£295.00	£346.63
EURIN1548	WACOM ULTRAPAD DIN A5	£199.00	£233.83
EURIN1538	WACOM ARTPAD II 4 X 5/ DABBLER BUNDLE CD ROM	£99.00	£116.33

## DIGITAL CAMERAS

Code	Description	Price	Inc VAT
<b>CASIO</b>			
IN6216	QV-11 DIGITAL CAMERA	£199.00	£233.83
IN5910	QV-100 DIGITAL CAMERA	£339.00	£398.33
PR11742	QG-100 PRINTER	£159.00	£186.83
IN6073	QV-300 DIGITAL CAMERA	£395.00	£464.13
INP1161	DP-8000 DIGITAL PHOTO PRINTER	£319.00	£374.83
IN6575	QV-70 DIGITAL CAMERA	£229.00	£269.08
IN6576	QV-200 DIGITAL CAMERA	£289.00	£339.58
IN6577	QV-700 DIGITAL CAMERA	£375.00	£440.63

Code	Description	Price	Inc VAT
<b>KODAK</b>			
INP0890	DC-20 DIGITAL CAMERA	£115.00	£135.13
IN5974	DC-25 DIGITAL CAMERA	£159.00	£186.83
INP0647	DC-50 DIGITAL CAMERA	£269.00	£316.08
IN6267	DC-120 DIGITAL CAMERA	£485.00	£569.88
IN6713	DC-210 ZOOM CAMERA	£589.00	£692.08

Code	Description	Price	Inc VAT
<b>AGFA</b>			
IN5994	E-PHOTO 307	£254.00	£298.45

## FUJI



Code	Description	Price	Inc VAT
IN6136	DS-7	£355.00	£417.13
IN6412	DX-5	£279.00	£327.83
IN6207	NC-3D PRINTER	£299.00	£351.33

Code	Description	Price	Inc VAT
<b>CANON</b>			
IN6061	POWERSHOT 600	£669.00	£786.08
IN6515	POWERSHOT 350	£419.00	£492.33

Code	Description	Price	Inc VAT
<b>EPSON</b>			
IN6016	PHOTO PC-500	£295.00	£346.63
IN6527	PHOTO PC-600	£529.00	£621.58

Code	Description	Price	Inc VAT
<b>CONNECTIX</b>			
IN5435	QUICKCAM	£65.00	£76.38
IN5829	QUICKCAM COLOUR	£119.00	£139.83
EURCM1130	VIDEO PHONE	£55.00	£64.63
GRA1744	PHOTO MATE	£39.00	£45.83
GRA2161	PHOTO BADGE	£49.00	£57.58
IN6682	QUICKCAM VC	£89.00	£104.58
BS11330	DIGITAL RADAR	£25.00	£29.38
AC23776	FAMILY ANTICS	£34.00	£39.95

Code	Description	Price	Inc VAT
<b>SONY</b>			
INP1211	DK-1 CAMERA	£999.00	£1,173.83

Code	Description	Price	Inc VAT
<b>SONY PRINTER</b>			
IN62301	SONY PRINTER	£315.00	£370.13
IN6191	DSC-F1 CAMERA	£525.00	£616.88
IN6346	MAVICA FD5	£379.00	£445.33
IN6403	MAVICA FD7	£499.95	£587.44
<b>PANASONIC</b>			
IN6515	KXL-600A	£255.00	£299.63
<b>OLYMPUS</b>			
IN6513	C410L Digital Camera	£499.00	£586.33
IN6512	C-400 Digital Camera	£425.00	£499.38
PR12835	P150E Printer	£340.00	£399.50
IN6511	ES-10 Scanner	£382.00	£448.85
IN6517	1400L CAMERA	£425.00	£499.38
IN6514	820L Digital Camera	£765.00	£898.88
IN6512	400L Digital Camera	£425.00	£499.38
IN6591	420L Digital Camera	£425.00	£499.38
IN6517	C1400L Digital Camera	£425.00	£1,298.38

Code	Description	Price	Inc VAT
<b>MULTIMEDIA</b>			
<b>FOCUS</b>			
EX6768	PC MICRO PRESENTER	£115.00	£135.13
EX7199	PC MICRO PRESENTER PLUS	£199.00	£233.83
EX7297	PC MICRO COMMANDER	£79.95	£93.94
GRA13400K	PRESENTER TVIEW GOLD	£325.00	£381.88
EX7604	PRESENTER TV GOLD PLUS	£399.00	£468.83
GRA2321	TVIEW SILVER	£249.00	£292.58

Code	Description	Price	Inc VAT
<b>WINNOV</b>			
EX7309	VIDEUM AV	£139.00	£163.33
EX7312	VIDEUM CONF PRO	£279.00	£327.83
EX7311	VIDEUM CAM	£139.00	£163.33
EX7303	VIDEUM CAM COMBO	£249.00	£292.58
EX7305	VIDEUM TV	£69.00	£81.08

Code	Description	Price	Inc VAT
<b>SPEAKERS</b>			
<b>SONY</b>			
MUS0462	SONY SPEAKER SRS-PC51 2 X 2.5W AMPLIFIERS	£55.95	£65.74
MUS0452	SONY SPEAKER SRS-PC21 2 X 2W AMPLIFIERS	£29.95	£35.19
MUS0451	SONY SPEAKER SRS-PC41 2 X 3W AMPLIFIERS	£49.95	£58.69
MUS0450	SONY SPEAKER SRS-PC91 2 X 10W AMPLIFIERS	£95.95	£112.74

Code	Description	Price	Inc VAT
<b>TYPHOON</b>			
EURAC3668	TYPHOON 25 WATT SPEAKERS	£19.95	£23.44
EURAC3667	TYPHOON 80 WATT SPEAKERS	£24.95	£29.32
EURAC3666	TYPHOON 120 WATT SPEAKERS	£34.95	£41.07
EURAC3665	TYPHOON 150 WATT SPEAKERS	£59.95	£70.44

## PDA



Code	Description	Price	Inc VAT
<b>PSION</b>			
CP5286	Psion Organisation Series 5 BMB	£419.00	£492.33
CP5287	Psion Organisation Series 5 4MB	£369.00	£433.58
CP3773	Psion Siena 1MB Organiser	£169.95	£199.69
CP3779	Psion Siena 512K Organiser	£109.95	£129.19

Code	Description	Price	Inc VAT
<b>3COM</b>			
CP5586	3Com Palm Pilot Organiser	£159	£186.83
CP5585	3Com Palm Pilot Professional	£229.00	£269.08
AC22932	3Com Palm Pilot Upgrade	£99.00	£116.33
AC22935	3Com Pilot Modem	£99.00	£116.33

Code	Description	Price	Inc VAT
<b>HP</b>			
CP4923	HP 300LX Palmtop 3MB	£349.00	£410.08
CP4796	HP 300LX Palmtop with backlit 4MB	£495.00	£581.63

## CD-R/CD-RW DRIVES



Code	Description	Price	Inc VAT
<b>DYNATEK</b>			
DR7451	2X Write 2X Rewrite 6X Read Internal SCSI	£369.00	£433.58
DR7396	2X Write 2X Rewrite 6X Read Internal EIDE	£369.00	£433.58
DR5608	2X Write 6X Read Internal SCSI	£249.00	£292.58
DR5609	2X Write 6X Read External SCSI	£299.00	£351.33
DR5804	4X Write 6X Read Internal SCSI	£339.00	£398.33
DR5805	4X Write 6X Read External SCSI	£389.00	£457.08
DR7391	4X Write 12X Read Internal SCSI	£389.00	£457.08
DR7393	4X Write 12X Read External SCSI	£439.00	£515.83
DR6775	4X Mastering System for Windows	£1,645.00	£1,932.88
DR5371	4X Mastering System for Mac	£1,645.00	£1,932.88

Code	Description	Price	Inc VAT
<b>HEWLETT PACKARD</b>			
DR6995	2X Write 2X Rewrite 6X Read Internal EIDE	£245.00	£287.88
DR6996	2X Write 2X Rewrite 6X Read External Parallel	£299.00	£351.33

Code	Description	Price	Inc VAT
<b>YAMAHA</b>			
EX8382	4X Write 6X Read Internal SCSI	£329.00	£386.58
DR5984	4X Write 6X Read External SCSI	£335.00	£393.63
DR7439	4X Write 2X Rewrite 6X Read Internal EIDE	£349.00	£410.08

Code	Description	Price	Inc VAT
<b>CD-ROM DRIVES</b>			
<b>AMACOM</b>			
236418	4X External Parallel	£119.00	£139.83
DR5483	8X External Parallel	£139.00	£163.33
DR7029	16X External Parallel	£159.00	£186.83
2000101	4X External Parallel & Sound	£159.00	£186.83
DR5484	8X External Parallel & Sound	£179.00	£210.33
DR7032	16X External Parallel & Sound	£195.00	£229.13
236420	4X External PCMCIA	£135.00	£158.63



Code	Description	Price	Inc VAT
<b>COLORADO</b>			
DR5485	8X External PCMCIA	£149.00	£175.08
DR7033	16X External PCMCIA	£169.00	£198.58
DR6680	8X External PCMCIA & Audio CD	£175.00	£205.63
DR7506	16X External PCMCIA & Audio CD	£205.00	£240.88

Code	Description	Price	Inc VAT
<b>MICROSOLUTIONS</b>			
DR5196	8X External Parallel	£149.00	£175.08
DR5195	8X External Parallel & Sound	£189.00	£222.08
DR6886	8X External Parallel Slimline	£179.00	£210.33
DR6887	8X External Parallel Slimline & Sound	£225.00	£264.38

Code	Description	Price	Inc VAT
<b>TAPE DRIVES</b>			
<b>AMACOM</b>			
DR5900	2/4GB DAT External Parallel & SCSI	£655.00	£769.63
DR5901	4/8GB DAT External Parallel & SCSI	£869.00	£1,021.08
DR7507	12/24GB DAT External Parallel & SCSI	£1,169.00	£1,373.58
DR5899	4/8GB TR-4 External Parallel & SCSI	£485.00	£569.88

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## SCSI CONTROLLER CARDS ADAPTEC

EX8071	ISA AHA1520A	£49.95	£58.69
234675	ISA MASTER KIT AHA1542CP	£152.50	£179.19
12104	ISA SCSI DIRECTION AHA1522B	£87.00	£102.23
2005007	ISA TOTALCD AVA1505	£34.00	£39.95
EX7808	PCI AHA2910B	£85.00	£99.88
EUREX2748	PCI AHA2920	£92.50	£108.69
EUREX2476	PCI MULTICHANNEL KIT AHA3940U	£259.00	£304.33
EX6529	PCI RAID AHA3985	£545.00	£640.38
EX7250	PCI ULTRASCASI MASTER AHA2940AU	£149.00	£175.08
236129	PCI ULTRAWIDE AHA2940UW	£175.00	£205.63
EX7649	PCI WIDE DIFFERENTIAL AHA2944W	£285.00	£334.88
236131	PCI WIDE MULTICHANNEL AHA3940UW	£285.00	£334.88
EX7657	PCMCIA REMOVABLE APA1450A	£69.95	£82.19
EX8263	PCMCIA UNIVERSAL APA1460A-2	£105.00	£123.38
EX8385	PCMCIA CARDBUS APA1480A	£139.95	£164.44

## MODEMS

DYNALINK	33.6K Internal	£52.50	£61.69
DMD2388	56K Internal	£92.50	£108.69
DMD2972	33.6K External	£65.00	£76.38
DMD2387	56K External	£105.00	£123.38
DMD2973	56K External	£125.00	£146.88
DMD2974	Active External ISDN TA		

HAYES	33.6K Internal Accura Message	£95.00	£111.63
DMD2185	56K Internal MSN Bundle	£99.00	£116.33
DMD3098	33.6K External Accura Message	£95.00	£111.63
MM4017	33.6K External Optima Business	£165.00	£193.88
DMD3099	56K External MSN Bundle	£115.00	£135.13
DMD2531	33.6K PCMCIA Accura	£99.00	£116.33
MM4019	33.6K PCMCIA Optima CSM	£135.00	£158.63
MM4051	Accura ISDN TA	£175.00	£205.63

MOTOROLA	56K Internal VoiceSurf Solution	£95.00	£111.63
DMD2395	56K External Internet Solution	£95.00	£111.63
DR4067	56K External Home/Office Solution	£105.00	£123.38
DR4068	33.6K PCMCIA PC & Mac	£112.00	£146.88
MM4016	BiSurf Pro ISDN TA	£279.00	£327.83

US ROBOTICS	33.6K Internal Sportster	£97.95	£115.09
DMD1584	33.6K Internal Courier	£194.00	£227.95
DMD1316	33.6K Internal Winmodem Win 95 only	£75.00	£88.13
MM4047	33.6K External Winmodem Win 95 only	£109.95	£129.19
MM4049	56K Ready External Sportster Flash	£109.95	£129.19
DMD1773	33.6K External Sportster	£97.95	£115.09
234937-5	33.6K External Courier	£194.00	£227.95
DMD3151	33.6K PCMCIA Winmodem Win 95 only	£79.95	£93.94

## SCANNERS

AGFA	SnapScan 310 SCSI	£139.00	£163.33
IN6534	SnapScan 600 SCSI	£299.00	£351.33
INP1255	SnapScan 600 Arline SCSI	£339.00	£398.33
IN6612	StudioStar & Photoshop LE	£495.00	£581.63
IN5891	StudioStar & Full Photoshop	£545.00	£640.38
IN5859	DuScan & Full Photoshop	£2695.00	£3166.63
IN6280			

EPSON	GTX-5000 Parallel	£154.00	£180.95
EURIN1350	GTX-5000 SCSI	£209.00	£245.58
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EURIN1229	GTI-8500 SCSI	£469.00	£551.08
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IN5928	GTI-9500 SCSI	£469.00	£551.08
IN6044	GTI-9500 SCSI	£538.00	£632.15
IN6717	GT-12000	£1,315.00	£1,545.13

HEWLETT PACKARD	ScanJet 5P SCSI	£149.00	£175.08
PR12095	ScanJet 6100C SCSI	£449.00	£527.58
IN6422	ScanJet 5s	£135.00	£158.63
IN6120	Network ScanJet 5 (Ethernet)	£1,699.00	£1,996.33
IN6155	Network ScanJet 5 (Token Ring)	£1,799.00	£2,113.83

LOGITECH	FreeScan Parallel	£135.00	£158.63
IN6502	PageScan Color Parallel	£92.50	£108.69
IN5930	Scanman 2000	£85.00	£99.88

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PLUSTEK	OpticPro FB III	£79.00	£92.83
IN6718	OpticPro FB IV	£125.00	£146.88
IN6716	OpticPro A3p	£355.00	£417.13

UMAX	Astra 610P Parallel	£84.00	£98.70
IN6702	Astra 610P Parallel & Photoshop LE	£114.00	£133.95
IN6704	Astra 610P Parallel & Full Photoshop v4	£194.00	£227.95
INP1145	Astra 600S SCSI	£129.00	£151.58
IN6265	Astra 600S SCSI & Photoshop LE	£159.00	£186.83
IN6328	Astra 600S SCSI & Full Photoshop v4	£329.00	£386.58
IN6326	Astra 1200S SCSI	£229.00	£269.08
INP1214	Astra 1200S SCSI & Photoshop LE	£259.00	£304.33
IN6327	Astra 1200S SCSI & Full Photoshop v4	£339.00	£398.33
IN6697	Astra 1210P Parallel	£169.00	£198.58
IN6747	Astra 1210P Parallel & Photoshop LE	£199.00	£233.83
IN6748	Astra 1210P Parallel & Full Photoshop v4	£279.00	£327.83

## NETWORKING ADAPTER CARDS

DEC1473	3COM ETHERLINK III UTP ONLY (3C5098-TPO)	£32.95	£38.72
DEC1474	3COM ETHERLINK III UTP ONLY ISA 5 PACK 3C5097UP	£155.95	£182.24
DEC2425	3COM ETHERLINK III UTP/BNC ISA 3C5091PC	£39.95	£46.94
DEC1477	3COM ETHERLINK III COMBO ISA CARD 3C509B-COMBO	£66.95	£78.66
DEC2235	3COM ETHERLINK XL PCI UTP ONLY 3C900-TPO	£55.95	£65.74
DEC2338	3COM 10/100 PCI CARD 3C905-TX	£52.95	£62.22
DEC2340	3COM 10/100 PCI CARD 3C905-TX 5 PACK	£247.95	£291.34
DEC1490	ALLIED TELESYN AT-2000T PNP RJ45 ETHERNET CARD	£15.95	£18.74
DEC1805	ALLIED TELESYN AT2000T PNP RJ45 BUT 5 GET 1 FREE!	£79.75	£93.71
DEC1491	ALLIED TELESYN AT2000U PLUS RJ45/BNC/AUI CARD	£22.95	£26.97
DBN0280	ALLIED TELESYN AT2000U COMBO 5 PACK + 1 FREE	£114.75	£134.83
DBN0417	ALLIED TELESYN AT-210T BUY 5 GET 1 FREE BUNDLE	£89.75	£105.46
DEC2970	ALLIED TELESYN AT-2500TX 10/100 ETHERNET CARD	£29.95	£35.19
EURDEC1091	D-LINK DE220PCT PLUG&PLAY ISA CARD RJ45/BNC	£15.89	£18.67
EURDEC1109	D-LINK DFE-500TX PCI FAST ETHERNET CARD	£32.95	£38.72
DEC2955	SMC EZ CARD 10 ISA RJ45 CARD	£19.50	£22.91
DEC2957	SMC EZ CARD 10 ISA RJ45/BNC	£20.50	£24.09
DEC2652	SMC ETHERPOWER III 10/100 PCI CARD WITH EPIC TECH	£45.00	£52.88
DEC2968	INTEL ETHEREXPRESS PRO/100+ PCI	£48.95	£57.15

## PCMCIA CARDS

DEC1481	3COM ETHERLINK III LAN PC CARD RJ45	£74.95	£88.07
DEC1483	3COM ETHERLINK PCMCIA COMBO 3C589	£99.00	£116.33
DEC2432	3COM ETHERLINK III LAN + 33.6K PC CARD RJ45	£169.00	£198.58
MM3962	PSION DACOM GOLDCARD ETHERNET ONLY 50-4000	£90.00	£105.75
MM3963	PSION DACOM GOLDCARD V34 + ETHERNET/MODEM 33.6	£219.00	£257.33
EURDEC1141	GREY CELL GCS2210 PCMCIA RJ45	£89.95	£105.69
DEC2260	XIRCOM PCMCIA ETHERNET ADAPTER 10/100 100BTX	£94.99	£111.16
DEC2403	XIRCOM COMBO ETHERNET + MODEM 33.6 PCMCIA CARD	£209.00	£245.57

## HUBS

DEH2289	3COM OFFICECONNECT 4 PORT UNMANAGED HUB 3C16704-XX	£39.00	£45.83
DEH1721	3COM OFFICECONNECT 8TPO 10BASE-T HUB 3C16700	£49.00	£57.57
DEH2431	3COM SUPERSTACK II ENTRY HUB 12 PORT 3C16440	£159.00	£186.83
DEH1961	3COM SUPERSTACK II 12 PORT HUB 3C16670A	£264.00	£310.20
DEH1954	3COM SUPERSTACK PS HUB 40 12 PORT 3C16405	£219.00	£257.33
DEH2053	INMAC 8 PORT COMPACT HUB WITH AUI	£39.95	£46.94
DEH2054	INMAC 8 PORT COMPACT HUB WITH AUI/BNC	£49.95	£58.69
DEH2051	ALLIED TELESYN 4 PORT MINI HUB AT-MR41ST	£34.00	£39.95
DEH2050	ALLIED TELESYN 8 PORT MINI HUB EXT PSU AT-MR81ST	£42.00	£49.35
DEH1485	ALLIED TELESYN 12 PORT 10BASE-T HUB W/AUI & BNC	£89.95	£105.69
DEH2968	ALLIED TELESYN AT-MR904TX 4 PORT 100BTX HUB	£145.00	£170.38
DEH2969	ALLIED TELESYN AT-MR908TX 8 PORT 100MB STACK HUB	£299.00	£351.33
DEH1598	SMC ETHEREZ 5 PORT HUB SMC360ST	£39.95	£46.99
DEH1599	SMC 8 PORT HUB & 1 BNC SMC360STC	£55.99	£65.79
DEH2409	BAY NETWORKS NETGEAR FE108 8 PORT 100MB HUB	£248.00	£291.40
DEH1725	HP ADVANCED STACK 10BASE-T 8E HUB J3128A	£89.00	£106.50
EURDEH1003	D-LINK DE-809TP 9 PORT HUB (9 RJ45)	£37.95	£45.34
DEH2736	INTEL EXPRESS STANDALONE 8 PORT FAST HUB EE100TX	£269.00	£316.08

## SWITCHES

DEH2740	3COM SUPERSTACK 3000 AUTOSENSING 10/100 SWITCH	£1499.00	£1761.33
DEH1969	3COM SUPERSTACK II SWITCH 1000 12 PORT 3C16901A	£999.00	£1173.83
DSD1715	BAY NETWORKS NETGEAR 2 PORT 10/100 AUTO-SEN SWITCH	£198.95	£233.77
DSD1716	BAY NETWORKS NETGEAR 4 PORT 10/100 AUTO-SEN SWITCH	£355.00	£417.12

Code Description Price Inc VAT

DEH3098	ALLIED TELESYN AT-MS203 2 PT RJ45 10/100 SWITCH	£299.00	£351.33
DEH3095	ALLIED TELESYN AT-MS201 2 PT 10/100 SWITCH RJ45/ST	£379.00	£445.33
DEH2597	D-LINK 5 PORT RJ45 10/100 SWITCH DES-3205	£1329.00	£1561.58
DEH2565	D-LINK 5 PORT UNMANAGED SWITCH DES-805	£389.00	£457.08
DEH3074	*SMC EZ SWITCH 8+2TT 8 10BASE-T, 2 100BTX SMC6400TT	£499.00	£586.33
DEH2684	*SMC TIGERSWITCH 8TT 8 10BT, 2 100BTX SMC6500TT	£599.00	£703.83
DEH2318	INTEL EXPRESS 10/100 FAST ETHERNET SWITCH ES101TX	£1299.00	£1526.33

## PRINT SERVERS

DEP1448	Intel Netport Express PRO (Int) Print Server (RJ45&BNC)	£155.95	£183.24
DEP2627	Intel Netport Express PRO (ext) Print Server (RJ45&BNC 2XParallel/1 serial)	£223.95	£263.14
DEP1608	Interlink Netprint Blue (RJ45) Print Server w/WinClient/NT, TCP/IP, Netbeui	£139.00	£163.33
DEP1579	HP Jet Direct Ex Plus RJ45 Print sr J292A	£99.95	£117.44
211890	Hewlett Packard J2552B JetDirect Card for RJ45, BNC & LocalTalk	£219.00	£257.33
2000262	Hewlett Packard J2591A JetDirect Plus for RJ45/BNC	£189.00	£222.08
234886	Hewlett Packard J2593A JetDirect EXPLUS 3 Ethernet RJ45/BNC	£229.00	£269.08

## NETWORK OPERATING SOFTWARE

DCS2944	Microsoft Windows NT Server 4.0 with 5 Client Access Licenses	£539.00	£633.85
DCS2945	Microsoft Windows NT Server 4.0 with 10 Client Access Licenses	£745.00	£875.38
DCS2949	Microsoft Windows NT Workstation 4.0	£212.00	£249.10
DCS4405	Microsoft BackOffice Small Business Server 4.0 w/5 clients	£939.00	£1,103.33
DCS4406	Microsoft BackOffice Small Business Server 4.0 w/10 clients	£1529.00	£1,796.30
DCS3219	Novell IntranetWare with 10 Users	£845.00	£992.88
DCS3220	Novell IntranetWare with 25 Users	£1,495.00	£1,756.63
DCS3571	Novell IntranetWare for Small Business Server with 5 user connections	£379.95	£446.44
DCS3569	Novell IntranetWare for Small Business single user connection	£27.95	£32.84
DCS3292	Cheyenne InnoLAN 4.0 for Windows NT Single Server (including 25 users)	£389.00	£457.08
DCS4377	Cheyenne ARCServe for Windows NT-single Server	£289.00	£339.58
DCS4294	Intel LANDesk Virus Protect single server v5.0	£639.00	£750.83
DCS2846	Lansource Faxport v6.0 with 5 user license	£239.00	£280.83
DCS2844	Lansource Faxport v6.0 with 10 user license	£359.00	£421.83

## UPS

DUP1165A	APC Back-UPS 300va New!	£69.95	£82.19
DUP1016B	APC Back-UPS 500va New!	£99.00	£116.33
DUP1018B	APC Back-UPS 650va New!	£139.00	£163.33
DUP1713	APC Smart-UPS 450INET	£159.00	£186.83
DUP1682	APC Smart-UPS 1000INET	£279.00	£327.83

## TRANSCEIVERS & MEDIA CONVERTERS

DET1014	ATI AT-MX105 Slimline Transceiver (BNC)	£17.95	£21.09
DET1016	ATI AT-210T5 Slimline Transceiver (RJ45)	£13.99	£16.44
DET1015	ATI AT-210T Micro Transceiver (RJ45)	£19.95	£23.44
DBN0417	ATI AT-210T Micro Transceiver (RJ45) BUY 5 GET 1 FREE	£89.75	£105.46
DET1472	ATI Media Converter RJ45 to AUI	£59.95	£70.44

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DCA2611	0.6m Category 5 patch cable Grey	£3.79	£4.45
DCA2607	1.5m Category 5 patch cable Grey	£4.39	£5.16

DCA2697	3.0m Category 5 patch cable Grey	£5.49	£6.45
DCA2232	0.6m Moulded Category 5 Snagless patch cable Grey	£4.49	£5.28
DCA2237	1.5m Moulded Category 5 Snagless patch cable Grey	£4.99	£5.86
DCA2240	3.0m Moulded Category 5 Snagless patch cable Grey	£5.99	£7.04

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EURAC3655	Value Bidirectional Printer Cable 1.8m	£6.95	£8.17
AC20383	Value Bidirectional Printer Cable 3.0m	£9.95	£11.69
DCA2550	Double Shielded DB9F/DB25M 1.8M cable	£29.99	£35.24
DCA2539	Double Shielded DB9F/DB25M 3.6M cable	£32.99	£38.76
DCA2534	Double Shielded DB25F/DB25M 1.8M cable</		



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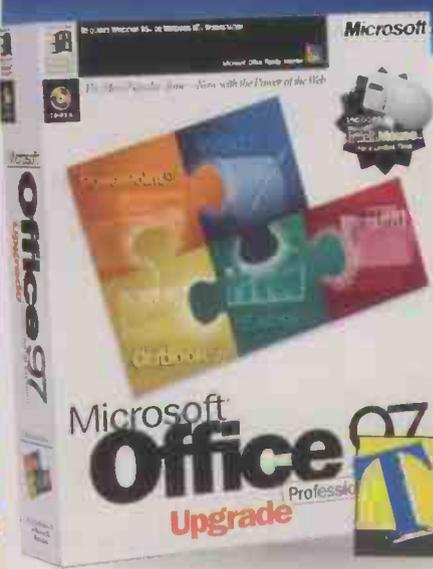
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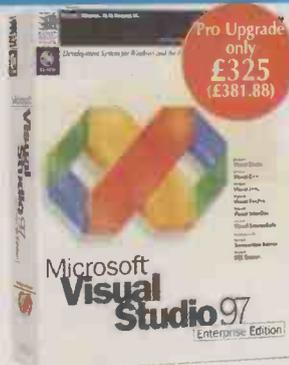
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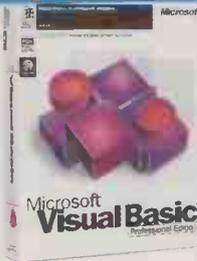


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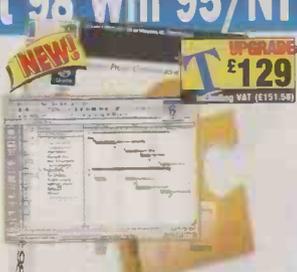
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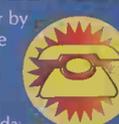


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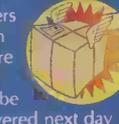
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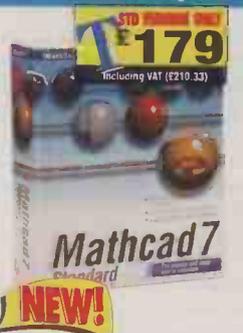
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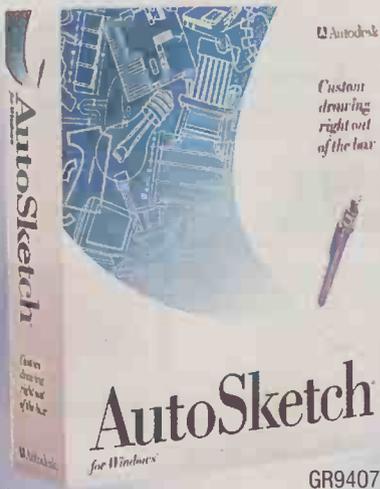
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BS11130	Office Forms V1.0 Win/W95 CD	£75.00	(£88.13)
UT7241	Formtool 97 Win/W95 CD	£69.00	(£81.08)
WP2975	DragonDictate Win/W95 Solo CD	£36.00	(£42.30)
CM2729	Dragon Naturally Speaking Win 95/NT CD	£198.00	(£232.65)
BS11088	Post II software notes V1.5 Win/W95/NT 3.5	£20.00	(£23.50)
BS11089	Post II starter kit Win/W95/NT 3.5	£22.00	(£25.85)
PA0408	Post II notes for Inkjet/Laser Printers	£15.00	(£17.63)
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EURDCS1349	Faxport V5.1 - 5 User Add On CD	£199.00	(£233.83)
DCS3509	Faxport V6 Win 95/NT - 5 User Lic CD	£275.00	(£323.13)
DCS3513	Faxport V6 Win 95/NT - 5 User Add-on	£199.00	(£233.83)
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CM2743	Lotus ccmail R8 ADV System pack 50 User Upg	£324.00	(£385.10)
CM2739	Lotus ccmail R8 ADV System pack Upg CD	£240.00	(£282.00)
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EURPM1152	Sidekick 95 Deluxe W95 CD	£30.00	(£35.25)
PM0343	Symantec Act V2.0 Win 3.5	£129.00	(£151.58)
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NT8036	Filemaker Pro V3.0 Server NT	£799.00	(£938.83)
DB0751	Lotus Approach Win 95/NT Single Lic PK	£42.00	(£49.35)
DB0752	Lotus Approach 97 Win 95/NT 3.5	£42.00	(£49.35)
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DB0720	MS Access 97 W95 CD	£224.00	(£263.20)
SI2444	MS Access 97 W95 Comp Upg CD	£89.00	(£104.58)
EURDB0045	MS Access V2 Developers Kit 3.5'	£225.00	(£264.38)
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DB0706	MS VFPxpro Pro 5.0 W95/NT CD	£335.00	(£393.63)
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GR9963	Corel Photo Paint Plus V7 Win 95/NT CD	£209.00	(£245.58)
GR9964	Corel Photo Paint Plus V7 Upp/WIN 95/NT CD	£69.00	(£81.08)
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GR9958	Freehand Graphic Studio Upp from V5 to V7 W95/NT CD	£159.00	(£186.83)
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UP3785	MGFx Graphics Suite W95 Upp/Comp CD	£118.00	(£138.65)
GR9908	MGFx Simply 3D V2 Win 95/NT CD	£55.00	(£64.63)
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GR10000	Adobe Illustrator V7 W95/NT CD	£249.00	(£292.53)
GR10001	Adobe Illustrator V7 Upgrade W95/NT CD	£79.00	(£92.83)
GR10240	Micrografix Draw V6.0 W95 / NT CD	£38.00	(£44.65)
GR9836	Small Bus Graphics & Print W95/NT CD	£70.00	(£82.25)
EURCGR1848	Visual Reality V2.0 Win / W95 / NT CD	£93.00	(£109.28)
EURCGR1625	Truespace V2 Win 3.5	£362.00	(£425.35)
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GR9860	Photoshop V4.0 Upp From Mac CD	£149.00	(£175.08)
GR9774	Photoshop V4.0 Win/W95/NT CD	£369.00	(£433.57)
GR9775	Photoshop V4.0 Win/W95/NT Upp CD	£139.00	(£163.33)
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GR9423	Kai's Power Tools V3 Win 95/NT 3.5	£99.00	(£116.33)
EN9670	Kai's Power Goo Win/WIN 95/NT CD	£39.00	(£45.83)
GR9731	Bryce 2 For Win 95/NT CD-Rom	£129.00	(£151.58)
GR9973	Bryce 2 Accessory Kit Win95/NT CD	£45.00	(£52.88)
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GR10050	Fractal Design Painter v5 Win 95/NT Upp	£79.00	(£92.82)
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EURLN0226	Toolbook V4 Win/W95 / NT 3.5' + CD	£97.00	(£113.98)
GR9724	Illuminatus V3.0 Win / W95 3.5 + CD	£98.00	(£115.15)

GR9967	Director 6 Win 95/NT CD	£725.00	(£851.88)
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UP3870	Director 6 Multimedia Studio Win 95/NT CD	£399.00	(£468.83)
GR9676	Click And Create Win/WIN95/NT CD	£299.00	(£351.33)
UP3602	Click And Create Comp Upp CD	£159.00	(£186.83)
UT7108	Videotrope V1 Win 95/ NT 4 3.5	£30.50	(£35.83)

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GR9997	Lotus Freelance Graphics 97 Win 95/NT 3.5	£42.00	(£49.35)
GR9853	MS Powerpoint 97 W95 CD	£222.00	(£260.85)
512449	MS Powerpoint 97 W95 Comp Upp CD	£89.00	(£104.58)
WP2730	SPC ASAP Wordcover V1.95 Win/WIN 95/NT 3.5	£69.95	(£82.19)
GR9713	Corel Presentations V7 Win 95 CD	£45.00	(£52.88)

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EURUP2065	Adobe Premiere V4.2 Upp CD	£99.00	(£116.33)
EURGR1841	Asymetrix Digital Video Producer CD	£69.00	(£81.08)
GR9966	Corel Lumiere Suite V1 Win 95/NT CD	£49.00	(£57.58)

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CM2664	Webseeker V3.0 Win 95/NT CD	£37.00	(£43.48)
CM2665	Webwhacker V3.0 Win 95/NT CD	£37.00	(£43.48)
GR9776	Adobe PageMill V2.0 W95 / NT 3.5'	£63.00	(£74.02)
DCS3443	Antisoft I-Share V2	£140.00	(£164.50)

DCS3444	Artisoft Xtramail V1 NT	£270.00	(£317.25)
DCS3442	Artisoft Xtramail V1 Win95	£170.00	(£199.75)
CM2435	Intra Builder Client / Server W95 NT CD	£1,135.00	(£1,333.63)
DB0697	Intra Builder Pro W95 / NT CD	£289.00	(£339.58)
UP3826	Intrabuilder Pro Win 95/NT Upp CD	£229.00	(£269.08)
DB0696	Intra Builder W95 / NT CD	£59.00	(£69.33)
CM2520	Claris Home Page V2 W95 / NT CD	£68.00	(£79.90)
GR9712	Corel Web Designer V1 W95 CD	£65.00	(£76.38)
EURGR1902	Corel Web Gallery Win / W95 / NT CD	£46.00	(£54.05)
GR9721	Corel Web Graphics Suite V1 Win/W95/NT CD	£139.00	(£163.33)
CM2650	Corel Web Master Suite V1 Win 95/NT CD	£129.00	(£151.58)
CM2540	Eudora Pro V3 Win/WIN 95 3.5	£60.00	(£70.50)
GR9919	MicroGrafix WebTriCity Win Win 95 CD	£93.00	(£109.27)
EURCM1246	Bkstage Dskp Studio V1 Win/W95/NT CD	£440.00	(£517.00)
UT6911	Mcafee Web Crypto V1.0 Win/W95 3.5	£25.00	(£29.38)
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COM0365	Virtus 3D Website Builder CD	£60.00	(£70.50)
EURCM1228	Softquad Hotmetal Pro V3 W/W95/NT CD	£75.00	(£88.13)
CM2790	SoftQuad HotMetal Pro 4 Win95/NT CD	£75.00	(£88.13)
CM2662	Softquad Hotmetal Intranet Publisher Win95/NT CD	£249.00	(£292.58)
CM2620	Softquad Netmailer 1.01 Win/WIN 95 CD & 3.5	£22.99	(£27.01)
UT6866	Symantec Internet Fast Find 3.5'	£32.00	(£37.60)
UT7008	Travelling Software Webex	£29.95	(£35.19)
CM2625	Peak NetJet V1.5 Win 95/NT CD	£25.00	(£29.38)
GR9992	Macromedia Flash V2 Win 95/NT CD	£159.00	(£178.25)
UP3915	Macromedia Flash V2 Win 95/NT CD Upp	£92.95	(£109.21)
EURUT1626	Cybersitter V1.2 Win 3.5'	£29.00	(£34.08)
CM2621	Tierra Highlights V2.0 Win 95/NT 3.5	£25.00	(£29.38)
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EN9848	MS Encarta 98 World Atlas CD	£32.00	(£37.60)
GR10023	Route 66 Europe Win/WIN 95 CD	£29.99	(£35.23)
GR9729	Route 66 Ultimate Travel Bundle Win Win 95 CD	£64.00	(£75.20)
BS11304	AA Milemaster Britain	£31.00	(£36.42)
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## NETWORKING

DCS3287	Lantastic V7 1 User 3.5	£79.00	(£92.83)
NT7899	Lantastic V7 1 User CD	£61.00	(£71.68)
DCS2823	Lantastic V7 Starter Kit 2 PCs	£169.00	(£198.58)
DCS3465	Lotus Notes 4.5 Client CD	£275.00	(£323.13)
DCS3466	Lotus Notes 4.5 Desktop Client Upp CD	£55.00	(£64.63)
DCS3523	Lotus Domino R4.5 Server for Multi-Processor	£1,999.00	(£2,348.83)
CM3118	Lotus Domino Server V4.6 Single Processor CD	£1022.00	(£1200.85)
DCS3521	Lotus Domino R4.5 Starter pack	£845.00	(£992.87)
DCS3217	Intranetware 5 User	£389.00	(£459.08)
DCS3219	Intranetware 10 User	£759.00	(£891.83)
DCS3220	Intranetware 25 User	£1,449.00	(£1,702.58)
DCS3221	Intranetware 50 User	£1,899.00	(£2,231.33)
DCS3222	Intranetware 100 User	£2,699.00	(£3,171.33)
DCS3223	Intranetware 250 User	£5,199.00	(£6,108.88)
DCS3571	IntranetWare for Small Business (incl. 5 users)	£379.95	(£446.44)
DCS3569	IntranetWare for Small Business 1 Connection	£27.95	(£32.04)
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DCS3823	Upp to IntranetWare for Small Business 5 users	£205.95	(£241.99)
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## OCR

BS10577	OmniForm V2 Win / W95 / NT 3.5'	£129.00	(£151.58)
OC0077	OmniPage Pro V6.0 Win 3.5'	£322.00	(£378.35)
UP3787	OmniPage Pro V6.0 Win Upp from Any Oct 3.5	£95.00	(£111.63)
OC0302	Caere OmniPage Pro V8.0 Win 95/NT CD	£322.00	(£378.35)
OC0303	Caere OmniPage Pro V8.0 Win 95/NT Upp any OCR CD	£95.00	(£111.63)

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EURLP0419	MS Win 95 1 MLP	£105.00	(£123.38)
OP0811	MS Win 95 Upp 5 in 1 pack Win 95 CD	£66.00	(£77.55)
	Includes - MS Win 95 Upp CD, MS Internet Starter Kit V3 CD, MS Beyond the limit 'Ultimate Climber' CD, MS Fire Artist CD an MS Press CD		
OF0812	MS Win 95 CCP Upp CD	£59.00	(£69.33)
EURLP0420	MS Win 95 Upp 1 MLP	£57.00	(£66.98)
DCS2945	MS Win NT Svr V4.0 + 10 U CD	£759.00	(£891.88)
DCS2944	MS Win NT Svr V4.0 + 5 U CD	£542.00	(£636.85)
DCS2947	MS Win NT Svr V4.0 + 5 U Upp CD	£279.00	(£327.83)
DCS3119	MS Win NT Svr V4.0 Client Lic 1 MLP	£35.00	(£41.13)

## PROJECT MANAGER

DCS2949	MS Win NT Wksn V4.0 CD	£214.00	(£251.45)
DCS2943	MS Win NT Wksn V4.0 Upp CD	£99.00	(£116.33)
PM0824	Imsi Turbo Project V1.0 Win / W95 3.5'	£65.00	(£76.38)
201430	MS Project V4 Win 1 MLP	£275.00	(£323.13)
201429	MS Project V4 Win 3.5'	£285.00	(£334.88)
207534	MS Project V4 Win CCP Upp 3.5'	£82.00	(£96.35)

## REFERENCE

EN9747	Corel All Movie Guide V2.0 Win/W95 CD	£17.00	(£19.98)
ED7607	MS Bookshelf 96 Win / W95 CD	£34.95	(£41.07)



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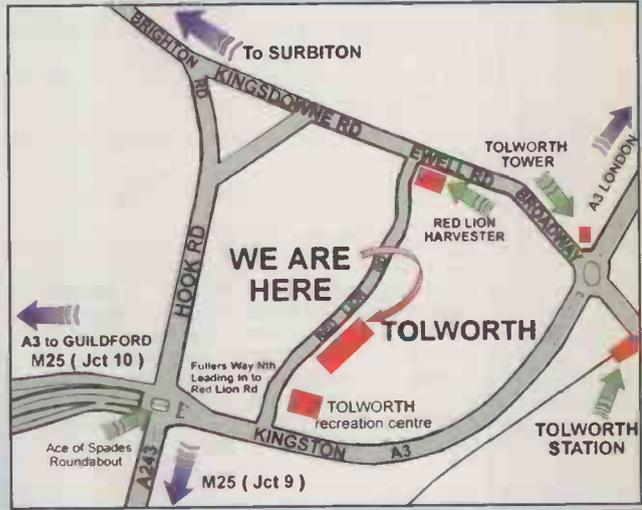


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## We have moved!!

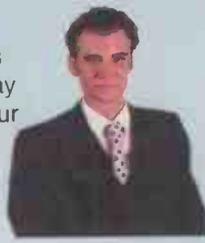
Due to a massive increase in sales over the previous 12 months we have moved to larger premises. This will improve our service to you with larger stockholding's ready for despatch, a wider product range, notebook and desktop PC's on demonstration, and a sales collection counter with plenty of parking.

## Where to find us:



### Collection of goods

Our trade collection counter on the ground floor is open 9am - 8pm Mon - Fri, 9am - 5pm on Saturday and 10.30am - 4.30pm on Sundays. Simply call our sales team to check availability and price, we will then allocate and hold the stock for you for 48 hours. We will also give you a sales order reference to speed up the collection.

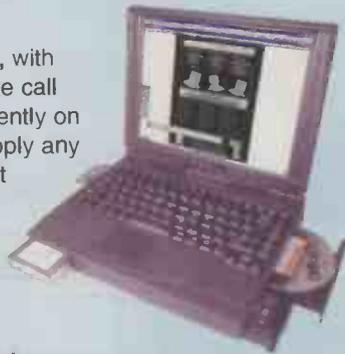


### Corporate sales

Our Corporate sales team are the best in the business. We have dedicated product specialists across the range who are happy to quote on all your IT requirements. We can often arrange demonstrations on specialist items such as projectors, flat panel displays and high end scanners. Our buying power means we can usually locate items in short supply - just call and try us!

## Notebook demonstration area

On the first floor you can find our notebook demonstration area, with models from Toshiba, Panasonic, ANR and many others. Please call before visiting to confirm that the model you wish to see is currently on demonstration and available in stock. We are also happy to supply any accessories you might require, and our technicians will gladly fit notebook memory upgrades while you wait.



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PAYMENT - No charge is made for credit card payments. Please allow six working days for cheque clearance. Bank transfers/Bankers Drafts/Building Society cheques normally clear instantly - please call to confirm. Credit accounts are available subject to status.  
WARRANTY - All goods except consumables come with a minimum 12 month warranty, this will in some cases require dealing directly with the manufacturers. On receipt please check that your goods are correct and in working order, any defects or errors must be reported within 7 days. Non-defective returns must be made within 7 days and will be subject to a re-stocking fee of 15%, software packages can only be returned unopened.

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- Cache: 512 pipelined Burst SRAM
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Serial Ports  
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2x USB Ports
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233 Watt ATX PSV
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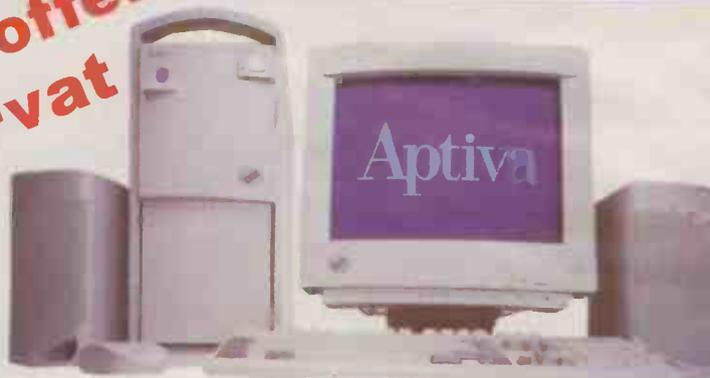


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- Intel P133 12Mb RAM
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- 8x CD ROM
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- Software supplied on CD ROM
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- Software includes, Microsoft windows 95,  
Microsoft Encarta, Lotus Smart Suite, Triple Play Plus  
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**NOTE: APTIVA 400 IS AVAILABLE AS A DESKTOP MODEL ONLY.**



**£499 ex vat 586.32 inc vat**

**ThinkPad**



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- Pentium 120MHz
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- 8MB - 40MB SO DIMM
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- Free 24 hour telephone hardware support

**Other IBM systems**

Model	CPU	Memory	HD	ex vat	inc vat
PCGL-6282-690	P166iMMx	16	2.5Gb	<b>£599</b>	703.82
PCGL-6282-830	P200MMX	32	2.5Gb	<b>£749</b>	880.07
PCGL-6282-860	P233MMX	32	2.5Gb	<b>£899</b>	1056.32
PCPL-6592-500	P233MMX	32	4.3Gb	<b>£1399</b>	1643.82

**IBM ThinkPad models**

Model	CPU	Memory	HD	Screen	CD	ex vat	inc vat
TP310-400	P133MMX	16	1.6Gb	12.1"DS	-	<b>£1099</b>	1291.32
TP310-500	P133MMX	16	1.6Gb	12.1"DS	10x	<b>£1299</b>	1526.32
TP310-600	P150MMX	16	1.6Gb	11.3"TFT	-	<b>£1699</b>	1996.32
TP365-2X9/CD	P133	8	1.08Gb	11.3"DS	6x	<b>£969</b>	1138.57
TP380-400	P150MMX	16	2.0Gb	12.1"DS	-	<b>£1199</b>	1408.82
TP380-5A0	P166MMX	16	2.0Gb	12"DS	8x	<b>£1499</b>	1761.32
TP380-7A0	P166MMX	16	5.0Gb	12"TFT	20x	<b>£2099</b>	2466.32
TP560-400	P166MMX	16	2.1Gb	12.1"TFT	-	<b>£2399</b>	2818.82
TP560-700	P233MMX	32	4.0Gb	12.1"TFT	-	<b>£2899</b>	3406.32
TP765-X9J	P166MMX	32	3.0Gb	13.3"TFT	-	<b>£3299</b>	3876.32
TP760-X9J	P166MMX	32	5.0Gb	12.1"TFT	-	<b>£2899</b>	3406.32

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## NEUTRON

- 13.3" XGA (1024 x 768) or TFT Display
- Intel 233Mhz Mobile Module Processor with MMX Technology
- Intel Mobile Triton 82430 TX chipset • PCI Bus
- Support Intel MMO (upgradeable)
- 48 Mb SDRAM standard expandable to 144 Mb
- 512Kb Level 2 Cache
- NeoMagic 2160 128bit Graphics Accelerator
- Toshiba 2.1 Gb E-IDE hard drive 4200RPM, 128Kcache, 7.14ms
- 20xCD-ROM, 1.44 Floppy Drive
- Carbus Ready
- Lithium Ion 45W Battery
- Intel P11X4 EIDE Ultra DMA Controller (33Mb p/s)
- USB port • Dimensions 303 x 234 x 51.5mm
- 16 Bit Crystal CS4237b WaveTable Audio Chip with SRS 3D Stereo Sound with Speakers Mic and MIDI • Synaptic Touchpad
- 86/87 Key Keyboard with Microsoft WIN95 Keys
- 2 PCMCIA Type II or type III slots
- 256KB Level 2 Cache (on P200) or 512KB (on P233)
- Parallel (EPP/ECP), Serial (16650) & Infra Red, VGA, Docking Connector and PS/2 port
- International adaptor
- Deluxe carry case



**From £2499+VAT**

**NEUTRON MMO MODELS WITH 48Mb, 2.1Gb, 12xCD  
12.1" TFT Screen 13.3" TFT Screen**

	ex vat	inc vat	ex vat	inc vat
P200MMX	£2299	2701.32	£2499	2936.32
P233MMX	£2399	2818.82	£2599	3053.82

## ELECTRON MMX

- 12.1" SVGA (800 x 600) DSTN or TFT Display
- Intel MMX Mobile Pentium Processors
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- 32 Mb EDO RAM (upgradeable to 80Mb)
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- Combo 12xCD-ROM & 1.44" Floppy Drive
- 16 BSS 1878 wavetable Stereo Sound with speakers and MIDI
- Lithium Ion 45w Battery
- Synaptic Touchpad
- 85 Key Keyboard with Microsoft WIN95 Keys
- 2 PCMCIA Type II or type III slots
- 256Kb Level 2 Cache
- Parallel (EPP/ECP), Serial (16650) & Infra Red, VGA, Docking Connector and PS/2 port
- International AC Adapter
- International adaptor
- Deluxe carry case



**From £1399+VAT**

**ELECTRON MMX WITH 32Mb, 1.4Gb, 12xCD**

**12.1" DSTN Screen 12.1" TFT Screen**

	ex vat	inc vat	ex vat	inc vat
P133 MMX	£1349	1585.07	£1799	2113.82
P150 MMX	£1449	1702.57	£1845	2167.87
P166 MMX	£1549	1820.07	£1945	2285.37

### Credit

Credit example using the Electron MMX, 12.1" DSTN: Pay just £165.55 (10%) deposit and then 36 monthly payments of £50.96. Total amount repayable = £2000 APR 14.9%. Finance is subject to status, written details are available on request, minimum order value £200.

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**TOSHIBA 230CX**  
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 £1310.12 inc vat

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- Intel Pentium P133MMX with 16Mb Ram
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- Three year warranty
- 10X CD ROM



Satellite



**TOSHIBA 440CDX**  
 £1235 ex vat  
 £1451.12 inc vat

## TECRA 750CDT

- Intel Pentium P233MMX
- 13.3" XGA TFT screen
- 5.1Gb Hard Drive
- DVD ready, 20 x CD ROM
- Video Conferencing ready



**TOSHIBA 750CDT**  
 £3299 ex vat  
 £3876.32 inc vat

Personal Computer World Recommended

Satellite 220CS	£988	1160.90	Libretto 70CT NEW	call	call	Tecra 740CDT	£2719	3194.82
Sat Pro 440CDT	£1565	1838.87	Libretto 50CT	£999	1173.83	Tecra 520CDT	£2225	2614.37
Sat Pro 480CDT	£2475	2908.12	Portege 300CT	£1814	2131.45	Tecra 530CDT	£2389	2807.07
Sat Pro 460CDX	£1565	1838.87						

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Take your office wherever you go. The PSION SERIES 5 gives you the computing power you need without the excess weight. With a fully featured, built in time manager, contact database, voice recorder and drawing package, the SERIES 5 is as valuable personally as it is professionally.

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  - Pack of 3 spare pens £7 8.22
  - Leather case £45 52.88
  - Compact Flash 2Mb inc adapter £59 69.33
  - Compact Flash 4Mb inc adapter £89 104.58

HP 320LX Palmtop PC £345 405.38  
 HP 360LX Palmtop PC £439 515.83  
 HP Colour Palmtop - Available Soon!! Call

## VELO 1 PHILIPS



The Award Winning Philips Velo 1 packs everything you need from your desktop into a small 17 cm case for the road. It's built for Windows CE, the pocket version of Windows 95. But it also has Pocket Word, Pocket Excel, Pocket Internet explorer...along with software for corporate e-mail, a database, voice recording and scheduling.

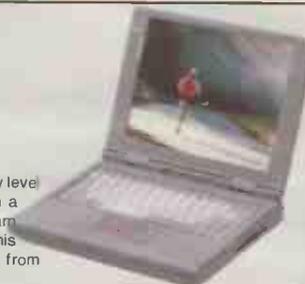
- Integrated Voice recorder
- Integrated 19-2 Kbps data / fax modem
- Backlightable display
- GSM Connection



Philips VELO1 ex vat inc vat  
 £445 522.87

## SIEMENS NIXDORF SIEMENS PRO VIEW

The SCENIC Mobile 300 is a State of the Art entry level notebook with interchangeable 8x CD-ROM. With a 133Mhz Intel Pentium processor, 8Mb of Ram upgradeable to 40Mb and a 1.35Gb hard disk, this notebook represents superb value for money from Europe's largest manufacturer.



Model	HDD	Screen	ex vat	inc vat
Mobile 300	P133Mhz, 8Mb Ram, 1.35GbHDD, 11.3" screen		£899	1056.33
	8 speed CD-Rom		£159	186.82

The Siemens Nixdorf SCENIC Mobile 700 and 710 models provide the ultimate high end multimedia notebook solution. Unique Pro view models come with detachable screens allowing you to deliver professional presentations in conjunction with an OHP display unit. You simply remove the 12.1" TFT SVGA display, place it on the projector and start your presentation. The projector in combination with Full screen/Full motion MPEG video playback and stereo audio function gets your message across in a big way!!



Processor	HDD	Screen	Memory		CD	ex vat	inc vat
			Std	Max			
P166MMX	2.1Gb	12.1" TFT	16Mb	192Mb	20x	£2999	3523.83
P166MMX	2.1Gb	12.1" TFT	32Mb	192Mb	20x	£3249	3817.58
P166MMX	3.0Gb	12.1" TFT	32Mb	192Mb	20x	£3499	4111.33
P200MMX	3.0Gb	12.1" TFT	32Mb	192Mb	20x	£3599	4228.82
P233MMX	3.0Gb	12.1" TFT	32Mb	192Mb	20x	£3749	4405.08
<b>ProView Models:-</b>							
P166MMX	2.1Gb	12.1" Removable	32Mb	192Mb	20x	£3499	4111.33
P166MMX	3.0Gb	12.1" Removable	32Mb	192Mb	20x	£3699	4346.33
P233MMX	3.0Gb	12.1" Removable	32Mb	192Mb	20x	£3999	4698.83

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# Panasonic

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If it seems like you never have enough storage on your notebook PC, Panasonic has good news. Now breakthroughs in optical disk technology can solve the problem for good. The new CF63 from Panasonic comes fitted with a DVD ROM drive that also acts as a 20X CD ROM drive allowing up to 2Hrs of high quality MPEG playback.

**Panasonic CF63**  
**£3499 ex vat**  
£4111.32 inc vat

- Intel Pentium 166MMX with 32Mb EDO DRam (upgradable)
- 13.3" XGA TFT (1024x768), 4Mb VRAM
- 650MB DVD-ROM drive and 20X speed CD-ROM drive
- 3.24Gb Hard Disk and internal 3.5" floppy drive
- SoundBlaster Pro compatible with built-in speakers/microphone
- Windows 95

### CF61 MODELS

KXF4 150MMX 2Gb 16MB 12.1" XGA TFT 8xCD **£2249** 2642.57

**UNIQUE RUGGEDIZED  
CASING FROM Panasonic**

## CF25 RUGGEDIZED NOTEBOOK

**Ruggedized design for high performance  
under tough conditions**



Designed for harsh field and office conditions in mind, the CF-25 and CF-25 MKII are ruggedized notebook PC's built to resist water, vibration, shock and dust. Panasonic's unique Shirato Ruggedized Mounting System is employed. With these notebooks, Panasonic's high standards of performance can now be yours over a wider mobile computing range.

**FROM  
£1399 ex vat**

- Intel Pentium 120-150MHz processors
- 10.4" or 12.1" TFT SVGA colour screen
- CD-ROM drive options available.
- 8Mb or 16Mb of EDO RAM (upgradeable)
- Windows 95 operating system included

DJC4 120Mhz 1.35Gb 16MB 12.1" TFT Win95 **£1399** 1643.82  
EGC2V 133Mhz 1.35Gb 8MB 10.4" TFT Win95 **£1679** 1972.82  
FJF4 150Mhz 2Gb 16MB 12.1" TFT Win95 **£2825** 3319.37

### CF35 MODELS

KJF4 150MMX 2Gb 16MB 12.1" TFT Win95 **£2275** 2673.12  
EJC4 133Mhz 1.44Gb 16MB 12.1" TFT Win95 **£2249** 2642.57



**ThinkPad**



- Pentium 120MHz
- 12.1" TFT
- 8MB - 40MB SO DIMM
- Super-slim and lightweight
- Standard I/O plus floppy, audio
- 85-key, palm rest, TrackPoint III
- Windows 95
- Lotus SmartSuite on CD included FREE
- 1 year warranty with international service
- 60 days preinstalled operating system software support
- Free 24 hour telephone hardware support

**LIMITED OFFER**

**£799+VAT**

CALL FOR PRICING ON OTHER THINKPAD MODELS

## olivetti ECHOS PRO NOTEBOOKS

One glance at an Olivetti Echos PRO multimedia notebook tells you that they too have a certain something - distinctive lines that only a company with Olivetti's design heritage could understand. But take a closer look and you'll see that the Olivetti Echos PRO range has everything you need for business on the move. Capable, powerful and adaptable - there is an Olivetti notebook to suit the way you work and to suit your budget.

	ex vat	inc vat
P133E 11.3" TFT, 16Mb, 1.4Gb, CD	£1399	1643.83
P150D 12.1" CSTN, 16Mb, 1.4Gb, CD	£1225	1439.38
Pro P133S 12.1" TFT, 16Mb, 2.0Gb, CD	£1539	1808.32
Pro P150S 12.1" TFT, 16Mb, 2.0Gb, CD	£1699	1996.32
Pro P150X 12.1" TFT, XGA, 16Mb, 2.0Gb, CD	£1899	2231.32
Pro P166SM 12.1" TFT, 16Mb, 2.0Gb, CD	£1899	2231.32
Pro P166XM 12.1" TFT, 32Mb, 3.0Gb, CD	£2649	3112.58

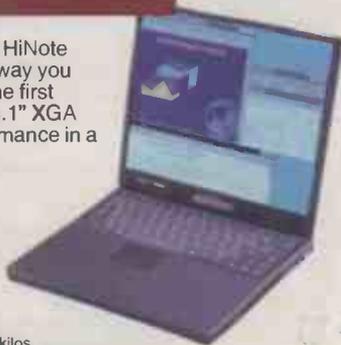
**14.1" TFT IS HERE FROM**

# digital

## HI-NOTE ULTRA 2000

The truly revolutionary DIGITAL HiNote 2000 notebook will change the way you look at notebooks forever. It's the first premium notebook to offer a 14.1" XGA TFT display, and sizzling performance in a thin and light form factor.

- 14.1" XGA TFT Screen
- 166MHz Pentium processor with MMX technology, 512K L2 cache
- Outstanding graphics with 2MB VRAM
- 3.2 GB storage; user-removable hard disk drive
- Long life Lithium Ion battery
- Only 33mm thin and weighing only 3.0 kilos
- Windows95 and Windows NT Workstation 4.0 configurations available
- 32MB EDO RAM (max configuration 144MB)
- Three year limited international warranty

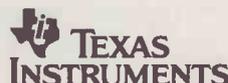


### HI-NOTE VP 500

The DIGITAL Hi-Note VP 500 notebook, now with the Intel Pentium MMX processor, offers all the power of a desktop, with integrated 12x CD-ROM and last 128 bit PCI graphics for stunning multimedia demonstrations. Optimized for Windows 95 and Windows NT v4.0, Pentium/PCI powered and network ready. The DIGITAL Hi-Note VP 500 notebook is the mobile client for every enterprise, combining high performance, connectivity, multimedia, modularity and a low price.

HiNote Ultra 166MMX, 32Mb, 14.1" TFT	<b>£3750</b>	4406.25
HiNote VP 575 166Mhz MMX, 16Mb, 2.16Gb, TFT, CD	<b>£2350</b>	2761.25
HiNote VP 562 133Mhz MMX, 16Mb, 1.44Gb, DSTN, CD	<b>£1499</b>	1761.32
HiNote VP 567 133MMX, 16Mb, 1.44Gb, TFT, CD	<b>£1849</b>	2172.57

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Extensa™ TravelMate™  
ACER products developed by TI

## Acer Extensa 355 Notebook

Another incredible value for money notebook offer from tech direct!! Check the features and call for your own Star of Texas!!

- Intel Pentium 133Mhz processor and 66Mhz host bus
- 11.3" DualScan Colour LCD display (800 x 600)
- 1.4Gb enhanced-IDE upgradeable Hard Disk
- 1Mb EDO Video Ram, 32-bit PCI bus
- 16Mb EDO Ram expandable to 48Mb
- 1.44Mb 3.5" built-in floppy disk drive
- PCI Local Bus with video accelerator
- 2 x Type II PCMCIA slots, serial port, EPP/ECP parallel port,
- external VGA port, PS/2 port
- 64-bit memory bus, 256Kb Flash Bios, 256Kb 2nd level Synchron SRAM cache
- NiMH battery, International AC Adaptor
- Win95 keyboard and built-in touchpad
- Includes Microsoft Windows 95 pre-loaded
- One year worldwide limited warranty



**£775+  
VAT**

Extensa 390C	<b>£1199</b>	1408.82	<b>Extensa 355</b> <b>£775 ex vat</b> £910.62 inc vat
Extensa 390CX	<b>£1599</b>	1878.82	
Extensa 7060	<b>£2349</b>	2760.07	
Extensa 7063	<b>£2449</b>	2877.57	

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5

# Grey Cell Systems PC Cards

## SERIES 4000 FAX/MODEM/V.34/GSM

International modem with integrated electronics and twice as much flash memory as any other.

When you're on the move, you need to keep in touch. The 4000 Series PC Card lets you connect to market leading GSM mobile phones as well as standard telephone lines (33.6Kbps) so that you can stay connected, wherever

- V.34 modem combined with support for GSM data
- Global modem with flag software selector
- Internal DAA - no external pods
- GSM support for multiple handsets
- Flash upgradeable to support future phones

**£290 ex vat**  
**£340.75 inc vat**

## SERIES 6000 GSM DATA CARDS

For GSM data only, the Series 6000 allows data, fax and SMS functionality whilst connecting to most of the leading handsets.

Series 6000 GSM DATA Card **£240** 282.00

Compatible with most NOKIA, ERICSSON, PANASONIC and ORANGE phones. PLEASE CALL TO CHECK YOUR MODEL.

## SERIES 3400 FAX/V.34/ETHERNET PC CARD

East-to-install PC Card providing Ethernet, fax and modem functions all in one

- V.34 fax/modem combined with Ethernet on 1 card
- Global modem with flag software selector
- 10Base-T and 10Base-T/BNC combo available
- 100% NE 2000 driver compliant
- Windows 95 Plug & Play, Windows NT compatible
- Internal DAA No external pods

10Base-T **£220** 258.50 10Base-T/BNC **£240** 282.00

## SERIES 2200 ETHERNET CARDS

Type II 10Base-T Ethernet Card **£90** 105.75  
Type II 10Base-T/2 Ethernet Card **£106** 124.55  
Type II Fibre Ethernet Card **£280** 329.00



## Fast Upgrade For Compaq, IBM And Toshiba Notebooks

### NOVA Max Hard Drive Solutions

- 1.0Gb, 2.1Gb And 3.0Gb Available
- Micro-Code Software Ensuring Compatibility
- Removable And Replacement options
- Full Step by Step instructions.
- Disk Management software Included.
- Free Technical Support all Backed By 3 Year Manufacturers Warranty

Replacement	1.0GB	1.4GB	2.1GB
	<b>£139</b> 163.32	<b>£165</b> 193.87	<b>£225</b> 264.37
Removable	1.0GB	1.4GB	2.1GB
	<b>£175</b> 205.62	<b>£209</b> 245.57	<b>£269</b> 316.07

### CALL for price

The Nova MicroMate external drive solution is available for use with all notebooks using the PCMCIA socket for power & data transfer, offering an increase in capacity & performance in a true mobile solution.

The MicroMate true capacity drives are available in up to 5Gb capacity making use of plug & play embedded support to allow simple set up & usage, the MicroMate can be used as a single machine capacity increase or can be used as a shared large capacity storage device.

A rugged enclosure guarantees the MicroMate as a notebook device that can safely be used on the move, with power & drive access indicators for easy diagnostics, a standard type II PCMCIA interface ensures compatibility with a vast range of leading brand notebooks. NOVA offer free technical support on all NOVA MicroMate storage products as well as a full 3 year manufacturers warranty.



# Xircom 33.6 PC Card Modem

The Mobile Networking Experts

The Xircom Global ACCESS family of 33.6 PC Card Modem products provide versatile communication solutions for accessing information from any locations, anywhere in the world. Whether in the office, at home or travelling internationally, the Xircom GlobalACCESS 33.6 PC Card Modem provides the versatility, performance, and ease-of-use that make it the ideal solution for all your mobile connectivity needs.



**Xircom 33.6**  
**£114 ex vat**  
**£133.95 inc vat**

## CreditCard Ethernet

### 10/100+Modem 56

The CreditCard Ethernet 10/100+ Modem 56TM Global ACCESS is the ideal multi-function solution for portable PC users. A member of Xircom's award winning family of the Fast Ethernet products, it combines a 10/100Mbps Ethernet adapter, a high-speed 56K modem and GSM capabilities in PC Card.



**Xircom 10/100+Modem 56**  
**£225 ex vat** £264.37 inc vat

## CreditCard Ethernet Adapter 10/100

Portable PC users can now connect to both 10Mbps Ethernet and 100Mbps Fast Ethernet networks with this high performance PC Card. Autonegotiation of 10Mbps or 100Mbps speeds provides a seamless connection in both network environments. Fast ethernet is the natural migration path for over-burdened 10Mbps Ethernet networks.



**Xircom Adapter 10/100**  
**£98 ex vat** £115.15 inc vat

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The Global ACCESS CreditCard GSM provides notebook users with data and fax communications over GSM

(Global Systems for Mobile Communications) networks worldwide. Connect your GSM handset to the Xircom CreditCard GSM PC Card and turn your notebook into a mobile office.



**Xircom CreditCard GSM**  
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6.4GB **£539** £633.32

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- Incorporates industry standard, very reliable 2.5" Hard Drives
- Built in shock absorbers for extra reliability
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4 speed CD-ROM **£115** 135.12 16 speed CD-ROM **£144** 169.20

8 speed CD-ROM **£129** 151.58

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8 speed CD-ROM **£139** 163.33

AMACOM EZCD PLUS - External PCMCIA CD-ROM & Audio CD Player

EZCD PLUS x8 - Eight speed CD-ROM/Audio CD Player **£165** 193.88

## Robotics

Sportster X-Jack 28.8k PCMCIA **£106** £124.55  
Sportster Winmodem PCMCIA **£75** £88.13  
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# ASK

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- The Smallest, Lightest SVGA Projector Available
- 500 ANSI Lumens for Bright Presentations
- True 800 x 600 (SVGA) Resolution
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- The Batmouse II Remote Control with Trackball
- Advanced Autosync Feature
- HiFi Stereo Sound System
- 4 x Stereo Speakers
- Whisper Quiet Operation
- Ceiling Mountable or Desktop

**ASK A4**  
**£4380 ex vat**  
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## ASK IMPRESSION A6

- True 1024 x 768 Resolution LCD projector for PC, MAC or Video
- 4 x Stereo Speakers, High Fidelity sound system
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- 2 x 8 pin female mini DIN for mouse cable
- 3.5mm stereo jack for line output
- 16.7 million colours

**ASK A6**  
**£6160 ex vat**  
 £7238 inc vat

# SHARP

## SHARP XGNV1E



**SHARP XGNV 1E**  
**£3900 ex vat**  
 £4582.50 inc vat

- One of the smallest SVGA projectors available
- Surround sound Speaker system
- LCD SVGA Resolution (800 x 600)
- 400 ANSI Lumens
- Desktop or Ceiling Mounting
- Width 262 x Depth 383 x Height 120 mm
- Includes Remote Control with batteries
- Includes Mouse Control cable and lens cover



# CTX



## EZPRO 500/550

The EzPro 500/550 is the premiere personal projector for professionals who take to the road with business presentations. Made by CTX, the EzPro 500/550 establishes a new standard in projection brightness, portability and affordability. The EzPro 500/550 provides 270/250 ANSI lumens to project images brilliantly onto walls or screens - without dimming the lights

- Compact design for portability
- High power, low cost 400W EVD halogen lamp
- Less than half the weight of most LCD projectors
- Pop-up lens folds into projector for extra durability
- Will play from PC, MAC or video source



**EZPRO 500**  
**£1440 ex vat**  
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**EZPRO 550**  
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# EPSON

## EPSON EMP5000



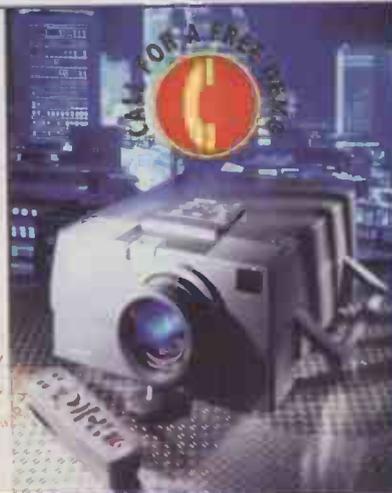
**EPSON EMP 5000**  
**£4280 ex vat**  
 £5029.00 inc vat

- Ultra compact portable projector
- True SVGA (800 x 600) Resolution
- 500 ANSI Lumens
- Stereo Speakers with Surround Sound
- Multiple Input Sources with Auto Recognition
- Presentation Enhancement Software
- Remote Control Operation up to 10 metres

## EPSON EMP7000

- Ultra Compact multimedia projector
- True XGA (1024 x 768) Resolution
- Supports SXGA, SVGA and VGA
- 400 ANSI Lumens
- Stereo Speakers with Surround Sound
- Multiple Input Sources with Auto Recognition
- Presentation Enhancement Software
- Rear and Ceiling Projection
- Auto Set Up buttons for faster use
- Workstation Connectivity with optional cables
- Remote Control Operation up to 10 metres
- Projection Distance from 1 to 10 metres
- Width 245 x Depth 380 x Height 159 mm
- Weight just 6.6kg

**EPSON EMP 7000**  
**£6155 ex vat**  
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# NEC

## MultiSync Projectors



### MT810

- LCD Panel 800 x 600 TFT
- Image Size: Min 48.3cm Max 118.1cm
- Projection Distance: Min 3.3Ft Max 39.4Ft
- 600 ANSI
- 16.7 Million RGB
- Video Compatibility: NTSC/PAL/SECAM
- 640 x 480, 800 x 600, 1024 x 768

**NEC MT 810**  
**£4902 ex vat**    £5759.85 inc vat



### MT1000

- LCD Panel 1024x768 TFT
- Image Size: Min 48.3cm Max 118.1cm
- Projection Distance: Min 3.3Ft Max 39.4Ft
- 550 ANSI
- 16.7 Million RGB
- Video Compatibility: NTSC/PAL/SECAM
- PC Compatibility: 800 x 600, 1024 x 768, 1280x1024

**NEC MT 1000**  
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# HEWLETT PACKARD

## HP Colour LaserJet 5

Guaranteed **Lowest U.K. Prices on Hewlett Packard Printers** Just call us!

- Astonishing print quality
- Very low cost per page
- Networkable and manageable
- Robust and reliable
- Easily installed
- High speed printing

### Superb colour print quality

- HP Image REt 1200 technology for highest resolution possible in millions of colours.
- Smooth, natural colour transitions.
- Uses HP's Direct to Drum technology to place colours exactly where they should be.
- Gives a smart, non-reflective matt finish to prevent glare from overhead lighting.
- 120 levels of grey at 106 lines per inch with Windows.
- 2 modes for speed
- HP FrontSmart font management software provides 110 fonts.
- Supports Pantone colours

### Reliable with full warranty

- 30,000 page/month duty cycle.
- One-year, on site warranty.
- 500 sheet input and long-life consumables for unattended printing



### Perfectly simple to use

- Automatic, problem-free loading of drivers
- Easy-to-learn driver interface.
- HP colourSmart automatically optimises text, graphics and photo print quality.
- Simple colour matching with 'quick-click colour' buttons.

### Connects to almost any network

- Includes JetAdmin management and configuration software
- Easy connectivity to IBM mainframes or DEC and HP minis.
- Supports almost all operating environments, call for details.

	HEWLETT PACKARD	LaserJet 5M
£3600	ex vat	£4230.00 inc vat
	HEWLETT PACKARD	LaserJet 5
£2861	ex vat	£3360.67 inc vat

### Speed and performance

- 10 pages/minute monochrome
- 2-3 pages/minute colour
- Impressive return-to-application time.
- Delivered with enough memory to print wide variety of colour documents

# MINOLTA

## MINOLTA COLOR PAGE PRO LASERPRINTER

- 3 pages per minute full-colour laser printer
- 12 ppm high speed monochrome printing
- Intel 33MHz RISC processor & high speed parallel port
- 4MB standard memory (upgradeable to 68MB)
- 150 sheet multipurpose tray & 250 sheet A4 cassette
- Optional 2nd 250 sheet paper cassette
- Optional Ethernet or Token Ring cards
- Upgradeable to Postscript Level 2
- Handles up to 157g/m<sup>2</sup> light card
- Simple to change consumables
- True 600 dpi colour resolution

Color PagePro **£1999** 2348.82

Minolta enters the exciting colour production market with a superb, easy-to-use and versatile laser printer. Ideal as a day to day monochrome office printer but also perfectly capable of instant high quality 600 dpi colour production. Before you consider purchasing another monochrome laser, why not upgrade yourself to colour capability today!



## MINOLTA PAGE PRO 6E LASERPRINTER



- Minolta Super Fine Micro-Toning System
- 600 dots per inch resolution
- 2Mb standard memory (max 34Mb)
- Energy save and Toner save functions
- Multipurpose 150 sheet tray
- 6 pages per minute
- Two parallel ports
- INFRA - RED port

PagePro 20	<b>£1045</b>	1227.87
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Stylus 800 Colour	£243	289.53
Stylus Photo	£308	361.90
Stylus 1000	£292	343.10
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Stylus Colour 3000	£1118	1313.65
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Deskjet 690C+	£150	176.25
Deskjet 820Cxi	£153	179.78
Deskjet 870Cxi	£202	237.35
Deskjet 890C	£255	299.63
Deskjet 1600C	£871	1023.43
Deskjet 1600CN	£1110	1304.25
Deskjet 1600CM	£1280	1504.00
Deskjet 1100C	£285	334.88
Officejet 590	£339	398.33
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**LEXMARK**

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**INKJET CARTRIDGES**

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Stylus 400/500/600 Black	£14	16.45
Stylus 200/500 Colour	£18	21.15
Stylus 800/1520 Black	£18	21.15
Stylus Photo 5 Colour	£14	16.45
Stylus 3000 Black	£38	44.65
Stylus 3000 Colours	£38	44.65
Stylus 4/6/800/1520 Colour	£14	16.45
Stylus Colour/Pro Black	£10	11.75
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Stylus Pro XL+ Colour	£22	25.85

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DJ 600/660/690	£16	18.80
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DJ 820/850/870 Colour	£18	21.15
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DJ 690 PhotoRealistic Kit	£29	34.07
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**LEXMARK**

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ColourJet 2050 Black	£19	22.32
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Brother FAX 1020	£254	298.45
Brother 520DT	£178	209.15
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**HEWLETT PACKARD**

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**SAMSUNG**

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SF 910 TAM	£184	216.20
SF 2900M TAM	£194	227.95
SF 4100 Multifunction	£299	351.33
SF 4200 Multifunction	£398	467.65
SF 5600	£639	750.83

**SHARP**

FO-1450	£215	252.63
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FO-2700M	£479	562.83
FO-4850	£219	251.58
UX-70	£145	170.38
UX-75	£159	186.83
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RANK XEROX have a history of excellence in document management - With products installed in many leading corporates worldwide. Now, as they focus on the direct channel, Tech Direct are proud to be able to supply their products. Their feature rich, price competitive products are already winning awards.

**DOCUPRINT 4512**



**RANK XEROX 4512**  
£699 ex vat  
£821.33 inc vat

Let the DocuPrint 4512 show you a new side of productivity. Xerox have included many features in this model as standard that are expensive options on printers from some other manufacturers: Duplex printing, 2 x 250 sheet paper input bins and a one year on site "swap out" warranty to name but a few.

- 600 x 600 dpi laser technology
- Up to 12ppm print speed
- Duplex standard - two sided printing
- Two built-in 250 sheet universal trays
- Long-life recyclable cartridges

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£1056.33 inc vat

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**NEW DOCUPRINT XJ4C**



The XJ4C makes an excellent debut in the inkjet market for Xerox. Not only does it provide excellent value for money at £129 but its 4 colour head technology ensures running costs are kept low. Plus, the optional high capacity black turbo cartridge lets you print laser like quality at an incredible 6ppm. For superior colour documents, the XJ4C also utilises "SmartPrint" automatic image enhancement. If that's not enough, the XJ4C also provides "on screen feedback" to let you know when your ink is running low. No more "DOWN TIME" for your print jobs!.

- 4 ink print head system
- On screen prompt for low ink
- Prints up to 6 ppm Mono 1.5 ppm Colour
- Suitable for both DOS and Windows Printers
- Free image software enhancement

**RANK XEROX XJ4C**  
£129 ex vat  
£151.58 inc vat

**DOCUPRINT C55**

The No1 colour laser in the U.K here's why -



**RANK XEROX C55**  
£2899 ex vat  
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For colour laser technology that meets the demands of busy workgroups and high quality documents you expect from laser printing look to the most fully featured desktop colour laser printer for the price - the DocuPrint C55.

PC Plus, Editors Choice beating Lexmark, HP and QMS  
"Xerox has come through with a stonking little colour laser printer, which offers a lot at a low price."

- 600 x 600 dpi colour and mono resolution
- Upto 12 pages per minute performance
- 30Mb standard memory - upgradable
- Multiple media versatility
- PCL 5C emulation, Adobe PostScript L2

Network World, Recommended against HP 5SI mopier, Lexmark Optra S 2450n, QMS 2425Ex Print System  
"Yes, even against the cream of monochrome printers, the C55 more than holds its own - it beats them!"

**NEW HOMECENTRE**

Colour printer, Colour Copier, Detachable Colour Scanner ALL IN ONE!



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£339 ex vat  
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4510	£795	934.12	4517 D	£999	1173.82	N24	£1599	1878.83
4510MP	£1149	1350.07	4517 MP	£999	1173.82	N32	£1749	2055.08
			4520	£1899	2231.33			

**brother**

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HL 760	£225	264.38
HL 760 5Mb	£244	288.70
HL 1060	£344	404.20
HL 1260e 2Mb	£575	675.63
HL 1260e 6Mb	£589	692.08
HL 1660	£659	774.33
HL 1660	£675	793.13
HL 1660ex	£859	1009.33
MC 3000	£439	515.83

**Canon**

LBP 660	£184	216.20
LBP 1260+	£609	715.57

**EPSON**

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EPL 5500 2Mb	£319	374.82
EPL 5500 PS	£570	669.75
EPL 9000	£580	681.50
EPL 9000 PS	£982	1153.85
EPL N1200	£593	696.77
EPL N1200 EN	£791	929.42
EPL N1200 PS	£986	1158.55
EPL N2000	£1278	1501.65
EPL N2000	£1582	1858.85

**HEWLETT PACKARD**

Laserjet 6L	£217	254.97
Laserjet 6P	£480	564.00
Laserjet 6MP	£592	695.60
Laserjet 4000	£749	880.08
Laserjet 4000T	£855	1004.63
Laserjet 4000N	£963	1131.53
Laserjet 4000TN	£1061	1246.68
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FS 3700	£849	997.58
FS 6500	£1169	1373.58
FS 7000	£1749	2055.08

**LEXMARK**

Optra S1250	£655	769.62
Optra S1650	£769	903.57
Optra S1850N	£949	1115.07
Optra S2450	£1499	1761.32
Optra S2450N	£1749	2055.07
Optra SC1275 Colour	£2748	3230.07
Optra SC1275N Colour	£3049	3582.57

**OKI**

OKIPAGE 4W Plus	£165	193.87
OKIPAGE 6e	£195	229.13
OKIPAGE 6ex	£239	280.83
OKIPAGE 810ex	£392	460.60
OKIPAGE 16N	£622	730.85

**Panasonic**

KX P6300	£172	202.10
KX P6500	£232	272.60
KX P7200	£1179	1385.32

**Tally**

T 9108	£229	269.07
T 9208	£279	327.82
T 9014	£499	586.32

**LASER TONERS**

HL 630/631/660	£19	22.32
HL 730/760	£19	22.32
HL 1060/1660	£19	22.32
HL 1260	£70	82.25

**Canon**

LBP 460	£40	47.00
LBP 1260	£63	74.02

**EPSON**

EPL 5000/5200	£92	108.10
EPL 5500	£39	45.82

**HEWLETT PACKARD**

LaserJet IIP/IIP	£46	54.05
LaserJet I/II	£12	49.35
LaserJet 4/4+5	£54	63.45
LaserJet 4L/4P	£39	45.82
LaserJet 4V	£84	98.70
LaserJet 4VP	£45	52.87
LaserJet 5P/6P	£36	42.30
LaserJet 5L	£95	111.62
LaserJet 5SI	£95	111.62

**KYOCERA**

FS 400	£15	17.62
FS 600	£26	30.55
FS 1550/1600/3400/3600	£44	51.70
FS 1700/3700	£39	45.82
FS 1700/3700 HiCap	£49	57.57

**OKI**

OL 1200ex/Okipage 16n	£35	41.12
Okipage 4w	£18	21.15

**Panasonic**

KX P4410/4430/4400	£28	32.90
KX P4400/4401/5400	£10	11.75
KX P6100/6150	£12	14.10
KX P6300/6500	£12	14.10

**Tally**

T 9108/9208	£80	94.00
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Lines open: 9am - 6pm Weekdays



# HEWLETT PACKARD

## HEWLETT PACKARD OFFICEJETS

### HP OfficeJet 1150C

**PRINTER:**

- Superb colour and 256 greyscales
- 600 x 300 dpi colour, up to 4 ppm
- 600 x 600 dpi black, up to 8 ppm

**COPIER:**

- Digital copying in colour and black
- Near Photo Quality
- Up to 7 ppm in black
- Up to 3 ppm in colour
- Sizing adjustable 50% to 400%

**SCANNER:**

- 24-bit colour scanning
- 300 dpi optical resolution
- 1200 dpi enhanced resolution
- Includes HP PictureLink for Win 95
- Includes Adobe PhotoDeluxe image software
- Includes Caere OmniPage LE OCR
- Connects via Parallel port



**hp HEWLETT PACKARD OfficeJet 1150C**  
**£491 ex vat** £576.93 inc vat

**hp HEWLETT PACKARD OfficeJet 1150C**  
**£610 ex vat** £716.75 inc vat

WITH 3YR ON - SITE SUPPORT PACK

### NEW - HP OfficeJet 590 - NEW

**PRINTER:**

- 600 x 300 dpi colour up to 2 ppm
- 600 x 600 dpi black up to 5 ppm
- Prints on plain paper, transparencies and glossy

**COPIER:**

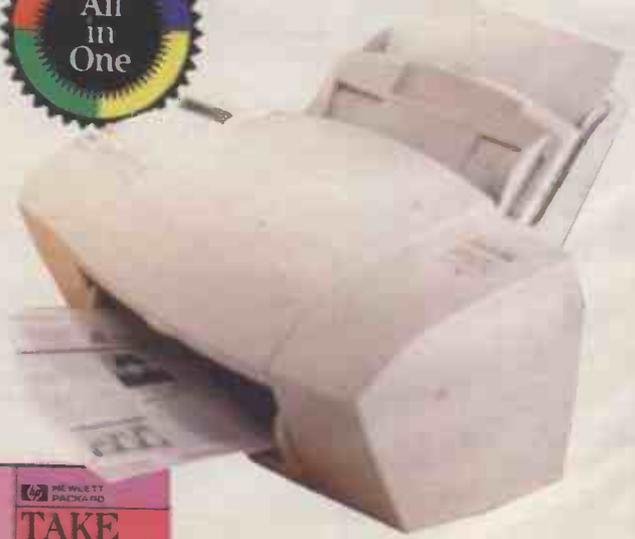
- 256 greyscale copying
- Size adjustable 50% to 200%
- Up to 99 copies

**SCANNER:**

- 300 dpi optical resolution
- 600 dpi enhanced resolution
- 256 greyscale scanning
- Includes Caere OmniPage LE OCR

**FAX:**

- 100 number speed dialling
- 65 page memory
- 20 page document feeder
- 14,400 bps send speed
- Auto redial, delayed dialling



**hp HEWLETT PACKARD OfficeJet 590**  
**£339 ex vat** £398.33 inc vat

**hp HEWLETT PACKARD OfficeJet 590**  
**£404 ex vat** £474.70 inc vat

WITH 3YR ON - SITE SUPPORT PACK

10 tech direct

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# HEWLETT PACKARD

Guaranteed Lowest U.K Prices on Hewlett Packard Printers Just call us!

## HP LaserJet 5Si

- 24 page per minute throughput
- 600 x 600 dpi plus enhancement
- 4Mb memory (optional to 132Mb)
- HP JetAdmin software
- Intelligent media handling



HP LaserJet 5Si £1649 ex vat £1937.57 inc vat



WITH 3YR HP SUPPORT PACK

## HP LaserJets

	EX VAT	INC VAT	EX VAT	INC VAT
HP LASERJET 6L	£232	272.60	£307	360.72
HP LASERJET 6P	£480	564.00	£619	727.32
HP LASERJET 6MP	£592	695.60	£731	858.92
HP LASERJET COMPANION	£138	162.15	Call	Call
HP LASERJET 5	£674	791.95	£854	1003.45
HP LASERJET 5N	£847	995.22	£1027	1206.72
HP LASERJET 5M	£997	1171.47	£1177	1382.97
HP LASERJET 5SIMX	£2249	2642.57	£2778	3264.15
HP LASERJET 5SINX	£1799	2113.82	£2328	2735.40
HP LASERJET 5SIMOPIER	£4326	5083.05	£5055	5939.62
HP LASERJET 4000	£749	880.08	£929	1091.58
HP LASERJET 4000T	£855	1004.63	£1035	1216.13
HP LASERJET 4000N	£963	1131.53	£1143	1343.03
HP LASERJET 4000TN	£1061	1246.68	£1241	1458.18
HP LASERJET 4MV	£1724	2025.70	£1959	2301.82
HP LASERJET 5 COLOUR	£2861	3361.67	£3800	4465.00
HP LASERJET 5M COLOUR	£3600	4230.00	£4539	5333.32

## HP DeskJet 870Cxi



- 600 x 300 dpi colour
- For Windows 95 and 3.x

HP DeskJet 870Cxi £202 ex vat £237.35 inc vat



WITH 3YR HP SUPPORT PACK

## HP DeskJets

	EX VAT	INC VAT	EX VAT	INC VAT
HP DESKJET 340 Colour	£144	169.20	£183	215.02
HP DESKJET 340 CBI	£166	195.05	£205	240.87
HP DESKJET 400 L Colour	£86	101.05	£105	126.87
HP DESKJET 670 Colour	£121	142.17	£160	188.00
HP DESKJET 690C+	£150	176.25	£190	223.25
HP DESKJET 720 New!!	£186	218.55	call	call
HP DESKJET 870Cxi Colour	£202	237.35	£267	313.72
HP DESKJET 890c New!!	£255	299.62	£320	376.00
HP DESKJET 1100c New!!	£285	334.87	£324	380.70
HP DESKJET 1600 C	£871	1023.42	£976	1146.80
HP DESKJET 1600 CM	£1280	1504.00	£1385	1627.37
HP DESKJET 1600 CN	£1110	1304.25	£1215	1427.62

## HP Plotters

	EX VAT	INC VAT	EX VAT	INC VAT
HP DESIGNJET 430 A1	£1192	1400.60	Call	Call
HP DESIGNJET 430 A0	£1642	1929.35	Call	Call
HP DESIGNJET 450C A1	£1492	1753.10	Call	Call
HP DESIGNJET 450C A0	£1942	2281.85	Call	Call
HP DESIGNJET 455CA A1	£1942	2281.85	Call	Call
HP DESIGNJET 455CA A0	£2242	2634.35	Call	Call
HP DESIGNJET 700 A1	£2317	2722.47	Call	Call
HP DESIGNJET 700 A0	£2767	3251.22	Call	Call
HP DESIGNJET 750C A1/D	£3142	3691.85	Call	Call
HP DESIGNJET 750C A0/E	£3742	4396.85	Call	Call
HP DESIGNJET 755CM A0	£5017	5894.98	Call	Call
HP DESIGNJET 2000CP	£5392	6335.60	Call	Call
HP DESIGNJET 2500CP	£6292	7393.10	Call	Call



## ALL YOU NEED FROM A PRINTER IN BLACK & WHITE

### NEW - KYOCERA FS-600 LASER PRINTER

The PC Direct Verdict (Jan '98) on the FS-600 was as follows:  
 With a price of just £299, the FS-600 is great value for money. It easily attains its quoted speed of 6ppm, and has a very low time-to-first-page. Paper handling is a cut above most of its rivals thanks to an optional second cassette and print quality is also on a par with any 600dpi machine. The FS-600 is an excellent choice for personal use or to share among a small workgroup particularly in view of its highly competitive price.



- 600dpi, 6ppm laser printer
- Cartridge - free technology
- 50MHz PowerPC processor
- Internal 150 - sheet cassette
- Ethernet/serial interface options

#### Upgrade Options:

Paper feeder	£119	139.82
Serial Interface	£26	30.55
Ethernet I/F	£99	116.32
Toner refill	£26	30.55

#### Warranty Options:

1-year on-site	£49	57.57
3-year on-site	£99	116.32

£239 ex vat £280.82 inc vat

CHECK THE SPEC!!  
Fantastic value for money new model!!

Ecosys FS-1550 10ppm	£562	660.35
Ecosys FS-3400 18ppm	£769	903.58
Ecosys FS-6500 13ppm A3 printer	£1169	1373.58
Ecosys FS-7000 28ppm	£1749	2055.08

### KYOCERA OFFICE LASER PRINTERS

Easy-to-install and setup, Kyocera's two office laser printers, the FS-1700 and the FS-3700 provide a superb office printing solution. At just 0.4 pence per page they provide an ultra low cost of ownership. With intelligent features such as the ability to overlay fonts, forms and logos and with clear upgrade paths via modular paper handling options the FS-1700 and FS-3700 prove excellent all round office printers.

- 12ppm and 18ppm network laser printers
- Optional multi-protocol Ethernet interface
- 2Mb Pre-installed Memory
- Fully SNMP compliant/Windows plug & play
- High speed parallel and serial interfaces
- Supported by Kyocera PrintMonitor management utility
- 250 sheet standard cassette plus 100 sheet multi-purpose feed

#### Upgrade Options:

500 sheet cassette	£190	223.25
Compact cassette	£190	223.25
Duplex upgrade	£490	575.75
15-bin sorter/stacker	£1155	1357.13
1500 sheet bulk stacker	£615	722.63
Regular toner refill	£39	45.82
High capacity refill	£49	57.57

#### Warranty Options:

1-year on-site	£99	116.32
3-year on-site	£199	233.82



Kyocera FS-1700 (12 PPM) Kyocera FS-3700 (18 PPM)  
£629 ex vat £739.08 inc vat £849 ex vat £997.58 inc vat

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# EPSON

Guaranteed Lowest U.K. Prices on EPSON Printers Just call us!

Printers - Faxes & Copiers



**FREE** Printing Media Package:  
A4 Photo Quality Glossy Paper  
A4 Photo quality Inkjet Paper  
A6 Greeting cards Envelopes  
4x6 Photo Paper Transfer T-Shirt  
Self Adhesive Paper

Epson Stylus Color 400 And 600  
Low cost Hi quality. Ideal for:  
Business Presentations, Design  
proofing, Documents, Letters,  
Business Stationery, Photo-  
reproduction, Envelops, Stickers  
& 'T' Shirts.

## EPSON STYLUS COLOR 400

The EPSON Stylus Color 400 produces 720 dpi output on plain paper providing superb colour output at an exceptional price - and for a limited period includes the Epson Fun Factory bundle.

**EPSON Stylus 400**  
**£133 ex vat**  
£156.27 inc vat

- 720 dpi PhotoReal colour inkjet
- Up to 3 pages per minute in colour
- Up to 4 pages per minute in black
- Epson Quick-Dry inks - ideal for most media
- Windows compatible software with online help
- Class leading Epson MicroPiezo Technology
- 3 Year Extended Warranty £65 + VAT

## EPSON STYLUS COLOR 600

The EPSON Stylus Color 600 produces high-definition 1440 dpi PhotoReal colour printing at an affordable price, making it ideal for any application demanding the ultimate results! Now includes the Epson Fun Factory bundle.

**EPSON Stylus 600**  
**£169 ex vat**  
£198.58 inc vat

- 1440 dpi PhotoReal colour inkjet
- Up to 4 pages per minute in colour
- Up to 6 pages per minute in black
- Advanced dual ink cartridge system
- Fully Windows or Mac compatible
- Easy to use with in-built online help
- 3 Year Extended Warranty £65 + VAT

**FREE** Software PrintArtist v4 - imaging editing graphics software with 25 Funtastic Fonts, 100+ fab photos & 1000+ clip art images (Windows & Macintosh)

**FREE** LivePix Special Edition - Professional photo image editing software (Windows only)

**FREE** The Big Red Racing Game (A seriously rapid rock and roll racing game where absolutely anything goes - fast and frantic fun!)

**FREE**  
WITH THE EPSON STYLUS  
400 & 600  
PERFORMING PRINTERS



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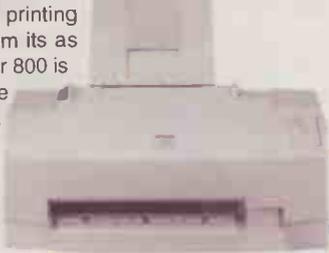
FREE WITH THE EPSON STYLUS

# EPSON



## EPSON STYLUS COLOR800

Combining 1440dpi PhotoReal colour printing with phenomenal print speeds - at 8ppm its as fast as a laser - the EPSON Stylus Color 800 is the ultimate performance printer for the busy office and graphics professionals.



- 1440dpi PhotoReal colour - no upgrades required
- Up to 7ppm colour, up to 8ppm mono printing
- EPSON Super MicroDot technology
- 720dpi plain paper printing
- Windows and Mac compatible
- Network + PostScript capability
- 3 Year Extended Warranty £65 + VAT

**SUPER 1440dpi PRINTER**

**EPSON STYLUS 800**  
**£221 ex vat** £259.68 inc vat

**NEW**

## EPSON GT-5500 Other epson scanners see page 17

Compact 400 dpi, 30 bit colour scanner for business and home use

- Single pass, full 30 bit colour scanning
- TET ( Text Enhancement Technology ) for higher OCR accuracy
- AAS ( Auto Area Segmentation ) for accurate copying and faxing
- Complete, easy-to-use package including both hardware and software

**EPSON GT - 5500**  
**£209 ex vat** £245.57 inc vat



- Up to 720dpi colour + true black printing
- Single four colour (CMYK) ink cartridge
- Up to 3ppm black and 1.2ppm colour
- EPSON Quick-Dry inks
- Designed exclusively for Windows
- EPSON autoColour function
- 3 Year Extended Warranty £40 + VAT



## EPSON STYLUS COLOR 300

A new low cost four colour inkjet printer for the home, home office or education establishments. With the single four-in-one-colour ink cartridge, you can achieve high quality colour and true BLACK output at an affordable price. Includes PhotoReal colour as standard.

**EPSON STYLUS 300**  
**£106 ex vat** £124.55 inc vat

**NEW 720dpi PRINTER**

## EPSON STYLUS PHOTO

The Epson Stylus Photo is the ultimate colour photo printer for homes, businesses and professionals.

- Photo Reproduction Quality output
- Optimised for photo reproduction
- Prints 4" x 6" format and enlargements to A4
- Normal and light colour QuickDry inks
- Up to 720 x 720 dpi resolution
- Free LivePix software for Win95/MAC
- 3 Year Extended Warranty £65 + VAT



## NEW EPSON PhotoPC 600

**EPSON PHOTOPC 600**  
**£529 ex vat** £621.57 inc vat

The EPSON PhotoPC 600 makes high resolution digital photography a breeze. This latest EPSON digital camera has exciting **NEW** features.

- XGA Resolution up to 1024 x 768 pixels, 24 bit colour images
- Prints directly to the EPSON Stylus Photo - no PC required
- Displays presentations directly through video output - no PC required
- High Quality built-in 2" LCD colour viewfinder
- Digital zoom, panoramic, B&W and Macro image capture modes
- 4MB internal memory and external CompactFlash card (option 4MB, 15MB) for flexible image storage
- Picture works, Hotshots, PhotoEnhancer & Netcard, Presto PhotoAlbum and EPSON Photo Suite software packages for Windows 95 and Power Macintosh computers

**EPSON STYLUS PHOTO**  
**£308 ex vat** £361.90 inc vat



### NEW One Box Solutions from EPSON

	ex vat	inc vat
Colour in Colour out (save over £20)	£263	309.02
EPSON Stylus Colour 400 & GT 5000		
PhotoStudio in a Box 1 (save over £80)	£750	881.25
EPSON Stylus Photo & Epson PhotoPC 600		
PhotoStudio in a Box 2 (save over £50)	£581	682.67
EPSON Stylus Photo & Epson FilmScan 200		

	ex vat	inc vat		ex vat	inc vat
Stylus 200	£105	123.37	PhotoPC 500	£271	318.42
Colour 200	£111	130.42	PhotoPC 600	£529	621.58
Stylus Photo	£308	361.90	EPL-N1200	£593	696.77
Stylus Pro XL+	£446	524.05	EPL-N1200EN	£791	929.42
Stylus 1000	£292	343.10	EPL-N1200PS	£986	1158.55
Stylus 1520	£593	696.77	EPL-N2000	£1278	1501.65
Stylus 3000	£1118	1313.65	EPL-N2000PS	£1582	1858.85

### EPSON DOT-MATRIX RANGE

• Professional features + simple operation is the trademark of the printers in Epson's range of dot-matrix models.

LX 300	£97	113.97	LQ 800	£115	135.12
LX 1050+	£200	235.00	LQ 570+	£216	253.80
FX 870	£247	290.22	LQ 670	£230	270.25
NEW FX 880	Call		LQ 870	£377	442.97
FX 1170	£307	360.72	LQ 2070	£330	387.75
FX 2170	£395	464.12	LQ 2170	£468	549.90
DFX 5000+	£1226	1440.55	DLQ 3000	£831	976.42
DFX 8000+	£1911	2245.42	NEW DLQ 3000+	Call	



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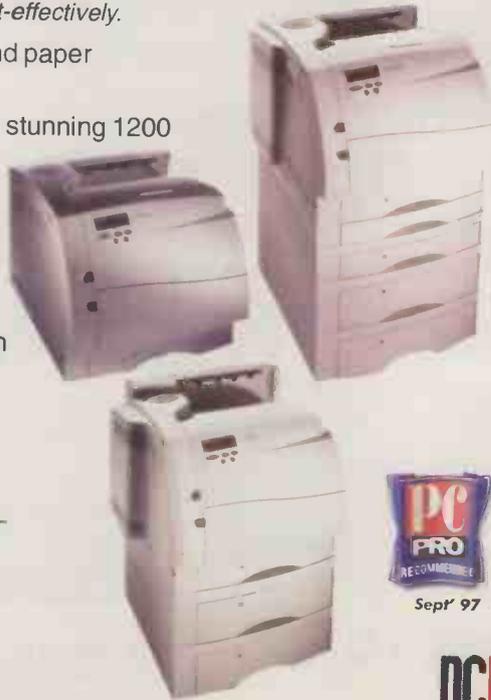


# LEXMARK

## The Optra S Family

The Optra S family is comprised of three outstanding laser printers featuring 12, 16 and 24ppm print speeds. Right out of the box they set the standard for performance with industry leading speed, output quality (1200 x 1200dpi) and versatility. With an unsurpassed range of paper handling options to choose from, you can build printing solutions that are perfectly adapted to your business needs and productivity goals. The fact is, Optra S printers adapt to your current and future requirements like no other printers on the market: quickly, easily and extremely cost-effectively.

- Outstanding media support and paper handling options for all models
- Blazing throughput, producing stunning 1200 x 1200 dpi output
- Industry-leading printer networkability
- Developed for Reduced Total Cost of Printing
- Various Paper Handling Option Packages available from tech direct



### Optra S 1250

- Desktop or small workgroups

- 1200 x 1200 dpi image quality
- 12 page per minute performance
- 4Mb memory (68Mb maximum)
- Intel 33 MHz processor

£689 ex vat £809.57 inc vat

tech direct will not be beaten for price on Lexmark printers !!

### Optra S 1650

- Medium to large workgroups
- 1200 x 1200 dpi image quality
- 16 page per minute performance
- 4Mb memory (132Mb maximum)
- Intel 66 MHz processor

£845 ex vat £992.87 inc vat

PC PRO	PERFORMANCE	★★★★★
	FEATURES	★★★★★
	VALUE FOR MONEY	★★★★★
	OVERALL	★★★★★

### Optra S 2450

- Demanding departmental use
- 1200 x 1200 dpi image quality
- 24 page per minute performance
- 4Mb memory (132Mb maximum)
- Intel 66 MHz processor

£1659 ex vat £1949.32 inc vat

- 2450 Network £1794 + vat



## THE LEXMARK INKJET RANGE

### NEW - LEXMARK 1000 Add a splash of colour to your life!



LEXMARK 1000  
£101 ex vat £118.67 inc vat

Near Photographic quality colour inkjet  
Up to 600 x 600 dpi colour and black printing  
Up to 3.5 pages-per-minute black draft  
Up to 1.5 pages-per-minute colour draft  
Free ColorFine 2 printer driver software  
Windows 95 and Windows 3.x compatible  
Plug and Play operation for ease of use

### State of the art colour printer NEW - LEXMARK 7000

Up to 1200 x 1200 dpi colour and black printing  
Up to 8 pages-per-minute black draft  
Up to 3 pages-per-minute colour draft  
150 sheet input tray  
50 sheet label or transparency capacity  
Free LivePix CD-ROM Photo Software  
Free Lexmark Photo Collection CD  
Windows 95 and Windows 3.x compatible

LEXMARK 7000  
£249 ex vat £292.57 inc vat



### NEW - LEXMARK 3000

Designed for office and home use where high quality output and performance are required from a variety of operating systems

LEXMARK 3000  
£149 ex vat £175.07 inc vat

- 600 x 300dpi
- Up to 5ppm black
- For use with Windows 3.1x and '95, Windows NT 3.51\* and 4.0 and OS/2
- Dual cartridge design
- Super sharp waterproof black ink
- Trouble-free printing on paper, transparencies, labels and envelopes
- Upgradeable to 6-colour printing with PhotColourStudio



tech direct

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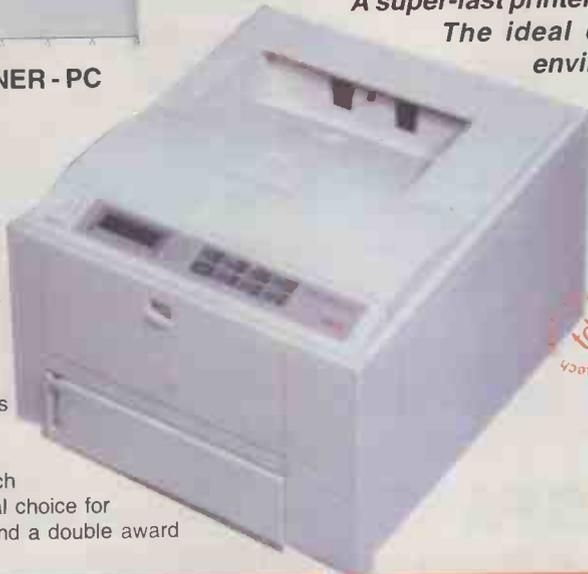
# OKI

## OKIPAGE 16N

**A super-fast printer which offers top-quality output. The ideal choice for demanding office environments, and a double award winner in the latest review.**

### QUALITY AND VALUE WINNER - PC PRO NOVEMBER '97

The OkiPage 16N not only won the prestigious PC Pro printer review for both Value and Quality - but actually scored an unbelievable 6 out of 6 in every category. The toner and drum are separate in the 16N to also save considerable money on your running costs, and according to the PC PRO review the engine runs 13% faster than its closest rival, the HP Laserjet 5M. The PC Pro overall verdict was as follows: 'A super-fast printer which offers top-quality output. The ideal choice for demanding office environments, and a double award winner.'



- 16 pages per minute at 600 x 600 dpi
- Network and Postscript cards installable
- PCL5e (HP LaserJet 4 compatible)
- 6 Mb as standard (up to 66 Mb)
- 45 scalable fonts x 3 bitmap fonts
- High capacity 500 sheet tray

**OKI 16N**  
**£622 ex vat**  
**£730.85 inc vat**



PC PRO PERFORMANCE	○○○○○○
PC PRO QUALITY	○○○○○○
PC PRO VALUE FOR MONEY	○○○○○○
PC PRO OVERALL	○○○○○○

## OKIPAGE 6e

- 600 dpi class resolution with MicroRes 600
- Standard 1Mb memory expandable to 18Mb
- Drivers for Win3.x, Win95 & Windows NT
- Separate toner and drum units
- Toner Recycling System
- Energy Star approved
- Optional 2nd paper cassette
- 45 Scaleable fonts



**OKI OKIPAGE 6e**  
**£195 ex vat** **£229.13 inc vat**

## OKIPAGE 4W PLUS

- **New** LED 4ppm personal page printer from OKI
- Excellent alternative to a network laser
- Fast high quality text and graphics output
- Improved paper guide system and cover latch
- 600 dpi class with MicroRes 600
- Improved Windows 3.x/95 driver
- New Windows NT 4.0 driver



**OKI 4W PLUS**  
**£165 ex vat** **£193.87 inc vat**

### THE RANGE OF OKI PRINTERS

OKIPAGE 6e - 600dpi, 6ppm, PCL5e	<b>£195</b>	229.13
OKIPAGE 6ex - 1200dpi, 6ppm, PCL5e, 2Mb	<b>£239</b>	280.83
OKIPAGE 810ex - 600dpi, 8ppm, PCL5e, 2Mb	<b>£392</b>	460.60
OKIPAGE 4W Plus - 600 dpi, 4ppm	<b>£165</b>	193.87
OKIPAGE 16N - 600 dpi, 16ppm	<b>£622</b>	730.85

### OKI DOT-MATRIX RANGE



ML280	<b>£192</b>	225.60	ML3320	<b>£325</b>	381.88
ML320P	<b>£308</b>	361.90	ML3390	<b>£345</b>	405.38
ML321P	<b>£367</b>	431.23	ML3321	<b>£379</b>	445.33
ML380P	<b>£224</b>	263.20	ML3391	<b>£395</b>	464.13
ML385	<b>£319</b>	374.83	ML521P	<b>£399</b>	468.83
ML395M	<b>£644</b>	756.70	ML590P	<b>£439</b>	515.88
ML395C	<b>£715</b>	840.13	ML591P	<b>£509</b>	598.08
ML520P	<b>£337</b>	395.98	ML3410	<b>£610</b>	951.75

## OKI FAX MACHINES

### OKIFAX 4100

The OKIFAX 4100 is a high-quality, high performance desktop LED facsimile, perfect for use in small and home offices and for personal desktop use.



- Fast 14.4k modem speed
- 100 sheet paper capacity
- Memory expandable to 75 pages
- Separate toner and drum
- Advanced dialling features
- Power save mode
- Energy saving system

**£489 ex vat**  
**£574.57 inc vat**

### OKIFAX 740

The OKIFAX 740 is ideal for the small office, workgroup or business, offering all the convenience of plain paper faxes with the quality and economy of inkjet printing.



- 150 page plain paper handling
- Telephone/facsimile auto switch
- Error correction mode (ECM)
- 512Kb memory (upgradeable to 1.5Mb)
- 18 seconds per A4 sheet
- 10 one touch numbers
- 50 autodial numbers

**£339 ex vat**  
**£398.32 inc vat**

### OKIFAX 740MF

The OKIFAX 740mf is now offered at this incredible price for a limited period, offering 2 in 1 functionality for plain paper faxing and inkjet printing in mono or full colour!!



**PRICE CRASH!!**

- 18 secs/page transmission speed
- 600 dpi mono/300dpi colour printing
- Autodial: 10 one-touch/50 speed-dial
- Print speeds up to 3 ppm mono
- Compact and space saving design
- Windows 3.11 and 95
- 150 sheet paper tray

**£349 ex vat**  
**£410.08 inc vat**

**Southampton Sales: 01703 308611**    **Leeds Sales: 0113 292 0611**  
**Manchester Sales: 0161 930 8611**    **Glasgow Sales: 0141 308 8611**  
**Birmingham Sales: 0121 607 8611**    **Bristol Sales: 0117 900 0611**

### PRICEWATCH

We will usually match or beat any price lower than our own

Printers - Faxes & Copiers

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 Technical Support email: [ts@techdirect.co.uk](mailto:ts@techdirect.co.uk)



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# AGFA



## ARCUS II



The Arcus II features 36-bit pixel depth, a true density range of 3.0D, resolution up to 2400 ppi for continuous tone pictures and an astounding 3600 ppi for line art. Clearly this is the desktop professional!

- Desktop, flatbed, single pass colour scanner
- 600 x 1200 ppi optical resolution
- 2400 ppi by interpolation, 3600 ppi in line art
- FotoLook, FotoFlavor + FotoTune LE software
- Photoshop 3.0 full version software

**AGFA** ARCUS II  
**£1299 ex vat**  
 £1526.33 inc vat

## NEW - SNAPSCAN 310 - NEW



SnapScan is designed for use with every desktop PC or Macintosh, at home or office. It's a low cost, A4 flatbed scanner, which automatically captures images of outstanding quality within seconds.

- Desktop, CCD flatbed, single pass colour scanner
- 300 x 600 ppi optical resolution
- 4800 x 4800 ppi through interpolation
- 30 bit colour depth, 10 ms/line scan speed
- FotoLook and FotoSnap 2.09 software

**AGFA** SnapScan 310  
**£134 ex vat**  
 £157.45 inc vat

Improved version of the award winning SnapScan



**£209 ex vat**  
 £245.57 inc vat

**ePHOTO 307 DIGITAL CAMERA**  
 Now you can quickly and easily create digital photos and transfer them to your PC. The new Agfa ePhoto 307 is ideal for both business and home use. Not only is the ePhoto 307 efficient and economical, but it's also fun!

- 640 x 480 or 320 x 240 pixels
- Stores 36 high or 72 standard resolution images
- High quality 24-bit colour images
- Built-in auto flash from 3-10 feet

## NEW - SNAPSCAN 600 - NEW



**£275 ex vat**  
 £323.13 inc vat

Low cost scanning is raised to superb quality levels by the SnapScan 600. It's an outright winner in the personal, A4 flatbed scanner market. Razor-sharp images are captured on PC.

- The ultimate low-cost A4 flatbed scanner
- 600 x 1200 ppi resolution, 30 bit colour depth
- Interpolated resolution up to 4800 ppi
- FotoLook, FotoSnap + FotoFlavor software
- OmniPage LE OCR software

## STUDIOSTAR



**£479 ex vat**  
 £562.83 inc vat

Studiostar is the fastest, sharpest Legal/A4 flatbed scanner in its class, offering exceptional value for money. Its very high scanning speed produces colour previews of your photographs or artwork in less than 10 seconds.

- 600 x 1200 resolution
- Colour line speed 6.5 ms/line
- FotoLook, FotoSnap
- Softcopy, Omnipage
- Photoshop LE, OCR software

**£529 ex vat**  
 £621.58 inc vat

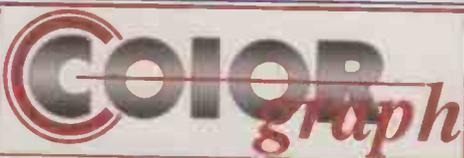
DuoScan

**£2590 3043.25**



**AGFA** PAPER  
*AgfaJet*

	ex vat	inc vat
Ink Jet Paper A4 200 Sheets	£16.13	18.95
Ink Jet Paper A3 200 Sheets	£38.26	44.95
Ink Jet Photographic Paper 20 Sheets	£14.85	17.45
Ink Jet Photographic Paper 50 Sheets	£34.00	39.95
Ink Jet Transparency Film 50 Sheets	£34.00	39.95
Ink Jet Multi Pack (5 sheets Photographic - 5 sheets Transparency Film - 10 HI Res Paper)	£8.47	9.95



## PIXPRINT 150 DYE SUBLIMATION PRINTER

The PIXprint 150 is designed to print photographs from a PC, MAC, Video source or a digital camera. This small and inexpensive printer produces glossy photographic quality prints using dye sublimation technology. The printer is user friendly, inexpensive to operate and prints are produced in a rapid ninety seconds. Windows 95 and MAC drivers allow easy connection to a computer environment. PIXprint is ideal for printing images from many sources e.g. scans, digital cameras.



**NEW**

**£269 ex vat**  
 £316.07 inc vat

- Photo quality 16.7 million colours
- Around 90 seconds print speed
- Prints up to 25 photos unattended
- Compact, stylish desktop design

## VIDEO COPY PRO

VIDEO copy pro is a stand alone unit which will accept a variety of video signals in PAL, NTSC or SECAM format, captures a single frame and then outputs to a colour printer. A video output is provided so that both the captured image and live video can be displayed. A serial port provides a link to a PC or MAC



**£299 ex vat** £351.32 inc vat

Images can be printed, displayed or manipulated with the software provided. The unit features an on screen menu for system setup.

## SHINKO

COLORSTREAM II

The new ColorStream II dye-sublimation PostScript super A and B size printers set new standards in quality, reliable and performance printing.

Shinko produce a range of industry-leading dye-sublimation and thermal transfer printers all with superb quality features.

### COLORSTREAM II DYE-SUB PRINTERS

Colorstream A4 Dye-sub - New	£5995	£7044.12
Colorstream A3 Dye-sub - New	£11495	£13506.62

A3 Colour 3-pass Dye-sub	£8499	£9986.32
A3 Colour 1-pass Dye-sub	£7950	£9341.25
A3 Thermal transfer	£4950	£5816.25
A4 Thermal transfer	£2950	£3466.25

# UMAX

ASTRA 600S AND 610P INCLUDE ADOBE PHOTO DELUXE SOFTWARE - FREE!!

## NEW - ASTRA 610P

PARALLEL & SCSI VERSIONS



The parallel version of the Astra 610 flatbed scanner features a through parallel port for printer connection, plus all the superb features of the Astra 600S SCSI version at a super

**Amazing low price 30 bit scanner!!**

- Single pass colour scanner
- 30-bit, over one billion colours
- 600 x 300 dpi optical resolution
- Easy-to-fit model
- User friendly

**ASTRA 610P** £75 ex vat  
 £88.12 inc vat

**610S SCSI** £109 ex vat  
 £128.08 inc vat

## ASTRA 1210P FLATBED SCANNER



**£169 ex vat**  
 £198.57 inc vat

- 600 x 1200 dpi optical resolution
- New 30-Bit model
- Free Umax VistaScan software
- Adobe Photoshop LE £30 + vat

Astra 1200S Flatbed Scanner	£229	269.07
Astra 1200S with PhotoShop 4.0	£349	410.07
With PhotoShop & Transparency Adapter	£548	643.90
2nd year extended warranty for ASTRAS	£29.95	35.25
Powerlook ColourStudio 2LE	£749	880.08

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Lines open: 9am - 6pm Weekdays

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tech direct

CALL OUR WAITING SALES TEAM NOW ON  
**0181 286 2222**

# Kodak



## NEW DC120 CAMERA

- 1280 x 960 resolution (1.2 million colours)
- 2Mb internal memory stores 20 pictures
- Optional PCMCIA cards for extra storage
- 1.6" colour LCD viewfinder
- Focus free lens with 3X zoom
- 24-bit colour and built in flash

Aug '97 **£429 ex vat** £504.07 inc vat

## DC210 ZOOM CAMERA

- Video out to TV/VCR
- 2X zoom lens
- 1.8" colour LCD
- Resolution 1152 x 864



**£535 ex vat** £628.62 inc vat

# CASIO

## QV-300 CAMERA

- 640 x 480 resolution (JPEG compression)
- 2.5 inch colour TFT LCD screen
- 4Mb flash memory built in
- Wide angle and telephoto lens options



**£325 ex vat** £381.87 inc vat

QV - 100	<b>£269</b>	316.07
QV - 11	<b>£195</b>	233.82
QV - 700	<b>£325</b>	381.87
DP8000 PhotoPrinter	<b>£254</b>	304.32

## Panasonic

KXL - 600A **£249** 292.58

GR-DVX Digital Video Camera **£1199** 1408.82

GR-DVJ70 Digital Video Camera **£1099** 1291.32

VIVICAM 3000 **£299** 351.33

VIVICAM 2500 **£189** 222.07

MPP-2i Motion Picture Phone **£99** 116.32

## Canon

POWERSHOT 600 **£519** 609.82

POWERSHOT 350 **£379** 445.32

AGFA	ex vat	inc vat	RICOH	ex vat	inc vat	MINOLTA	ex vat	inc vat
ePhoto 307	<b>£207</b>	243.22	RDC - 300	<b>£288</b>	338.40	RD - 175	<b>£3795</b>	4459.12
KONICA	<b>£399</b>	468.82	RDC - 2L	<b>£494</b>	580.45	Dimage V	<b>£469</b>	551.07
Q - Mini			RDC - 2E	<b>£399</b>	468.82	JVC DVX	<b>£1139</b>	1338.33

COMPACT FLASH	4Mb	8Mb	12Mb	16Mb	24Mb	32Mb	40Mb	SSFDC	2Mb	4Mb
Canon Powershot 350								FujiFilm DX-5		
Epson Photo PC 600 XGA								Olympus D-220L, D-320L		
Kodak DC25, DC-120								<b>MINIATURE CARD</b>		
Panasonic Cool Shot KXL-600A, KXL-601A								Hewlett Packard HP PhotoSmart	2Mb	4Mb
Vivitar Vivicam 3000										

COMPACT FLASH CARDS	ATA FLASH CARDS
Compact Flash Card 4Mb <b>£65</b> 76.37	ATA Flash Card 4Mb <b>£65</b> 76.37
Compact Flash Card 8Mb <b>£89</b> 104.57	ATA Flash Card 8Mb <b>£89</b> 104.57
Compact Flash Card 12Mb <b>£145</b> 170.37	ATA Flash Card 12Mb <b>£145</b> 170.37
Compact Flash Card 16Mb <b>£179</b> 210.32	ATA Flash Card 16Mb <b>£179</b> 210.32
Compact Flash Card Adapter <b>£19</b> 22.32	ATA Flash Card Adapter <b>£19</b> 22.32

# OLYMPUS



## C-820L

- 810,000 Pixel Camera
- Autofocus
- Recording on next generation SmartMedia Cards
- Data Transfer via PCMCIA adapter
- Optional SmartMedia Cards
- 2" TFT Colour LCD Screen
- Versatile Built-in flash
- Continuous Shooting Mode
- TV Connection
- Highest Resolution in Its class
- Light and Compact Design
- Upgrade to award winning C-800L
- All Glass Lenses

**£765 ex vat** £898.87 inc vat

## C-1400L

- 1.4 Million Pixel Camera
- 1280 x 1024 Resolution
- 36-110 mm (equivalent) Zoom
- 2.8-3.9 Aperture
- SLR - see through the lens!
- 2" TFT LCD Screen
- Built-in flash
- TTL Metering
- Exposure Compensation
- Removable Smart Media (inc 2 x 4Mb)
- Leather Case
- Rechargeable batteries and charger
- PhotoSoap Software



**£1106 ex vat** £1299.55 inc vat

C-420L Digital Camera	<b>£425</b>	499.37	P 300 Printer	<b>£599</b>	599.25
C-410L Digital Camera	<b>£499</b>	586.33	PCMCIA Adapter	<b>£16</b>	81.07
C-800L Digital Camera	<b>£679</b>	797.82	4 Smart media	<b>£16</b>	81.07

# SANYO

## DIGICAM X300e

**£595 ex vat** £699.12 inc vat

## DIGICAM G200

### AS SEEN ON TV

- 4Mb Memory 60/120 images (high resolution/standard resolution)
- 2.0" Polysilicon TFT LCD screen
- Auto focus, Optical viewfinder
- 6 second audio annotation
- Video output, built in flash
- VPC G1 £295+vat



**£385 ex vat** £452.37 inc vat

# EPSON

EPSON PHOTOPC 500 **£308** £361.90

EPSON PHOTOPC 600 **£499** £586.33

# FUJIFILM

FUJI DX-7 **£279** £327.82

FUJI DX-5 **£108** £233.82

Most digital cameras come with only enough built-in memory to store about a dozen pictures. Flash cards are used as "digital film" to increase photo storage capacity. Flash cards are "must" add-ons for today's digital cameras and HPCs. And Simple Technology flash cards are available in a range of MB capacities to match your budget and needs.

### CompactCard Adapter

- A 68-pin CF PC card adapter is available, allowing the 50-pin CompactCard to be inserted into desktop and notebook PC's.

### CompactCard™

- Ultra-small and rugged solid state flash memory devices that store data indefinitely without the use of a battery
- CompactCard dynamically supports 3.3 and 5 volt systems



### ATA Flash

- The ATA flash Memory PC Card is similar to a floppy disk, but has an on-board ATA controller which eliminates the need for FFS software and ensures compatibility
- Solid-state construction with no moving parts
- Ability to retain information written to it without use of a battery
- DOS, Windows 3.x/95 and Mac compatibility
- Ultrasonically-welded steel case for maximum durability
- Five year warranty



CoolPix 300	<b>Nikon</b>	<b>£119</b>	585.15
CoolPix 100		<b>£119</b>	386.57
Coolscan 35mm Scanner external		<b>£119</b>	585.15
Coolscan 35mm Scanner internal		<b>£119</b>	467.65
Supercoolscan		<b>£119</b>	1350.05

EPSON			
GT 5000 PC Parallel	GTX-5000WINP	<b>£154</b>	180.95
GT 5000 PC SCSI	GTX-5000WINS	<b>£246</b>	289.05
GT 8500		<b>£300</b>	352.50
GT 8500 PC Parallel	GTX-8500WINP	<b>£369</b>	433.58
GT 8500 PC SCSI	GTX-8500WINS	<b>£392</b>	460.60
GT 8500 PC SCSI	GTI-8500WINS	<b>£469</b>	551.08
GT 9500		<b>£383</b>	450.03
GT 9500 PC Parallel	GTX-9500WINP	<b>£446</b>	524.05
GT 9500 PC SCSI	GTX-9500WINS	<b>£469</b>	551.08
GT 9500 PC SCSI	GTI-9500WINS	<b>£538</b>	632.15
NEW GT 12000		<b>£1315</b>	1545.12

Logitech			
PageScan Colour parallel	<b>£85</b>	99.87	Freescan
			<b>£119</b>
			146.87

HP Scanjet 5P	<b>HP</b>	<b>£149</b>	175.75
HP Scanjet 6100C		<b>£449</b>	527.57

OLYMPUS			
ES-10 Scanner		<b>£199</b>	448.85
Paperport 3000	<b>visioneer</b>	<b>£99</b>	116.32
Paperport 6000		<b>£169</b>	198.57
Paperport Strobe		<b>£139</b>	163.32
Paperport mx		<b>£69</b>	81.07
Paperport ix		<b>£69</b>	81.07

ALL VISIONEER PRICES ARE QUOTED AFTER £30 REBATE - LIMITED OFFER

NEW Colorpage EP	<b>Genius</b>	<b>£119</b>	86.95
NEW HR5 Flatbed Scanner		<b>£119</b>	175.07
VIVIScan UltraPhoto	<b>Vivitar</b>	<b>£79</b>	92.82
VIVIScan VSF-300 Scanner		<b>£79</b>	92.82

Southampton Sales: 01703 308611 Leeds Sales: 0113 292 0611  
 Manchester Sales: 0161 930 8611 Glasgow Sales: 0141 308 8611  
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**PRICEWATCH**  
 We will usually match or beat any price lower than our own

**Scanners & Cameras**

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 Technical Support email: ts@techdirect.co.uk



# Monitors & Graphics cards

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## Explosive Acceleration for 3D Games

*Dedicated 3D accelerator for arcade-level performance*

- Advanced 3D realism & improved 3D image quality with bilinear texture filtering
- Accelerates PowerVR and Direct3D titles
- Included: Tomb Raider, WipeOut 2097, Ultimate Race, Mech Warrior, Terracide
- NEC/Videologic PCX2 PowerVR 3D processor
- Works with any Win95 accelerator card via Microsoft DirectX 3.0
- 4MB of high performance SDRAM texture memory on board
- Minimum requirement: P133 with 24MB

- GrafixStar 550 2Mb 2D/3D
- GrafixStar 550 4Mb 2D/3D
- GrafixStar 600 2D
- Apocalypse 3D Accelerator
- Apocalypse 3DX Accelerator
- Apocalypse 5D Accelerator
- Captivar PCI/VC Videophone

	ex vat	inc vat
GrafixStar 550 2Mb 2D/3D	£58	68.14
GrafixStar 550 4Mb 2D/3D	£76	89.29
GrafixStar 600 2D	£55	64.63
Apocalypse 3D Accelerator	£39	45.83
Apocalypse 3DX Accelerator	£68	79.90
Apocalypse 5D Accelerator	£129	151.58
Captivar PCI/VC Videophone	£148	173.90

## MONITORS

tech direct	EX VAT	INC VAT
14" 1024 x 768	£89	£104.58
15" 1280 x 1024	£119	£139.83
17" 1280 x 1024	£239	£280.83

CM802 21"	£869	£1021.08
CM2011 20"	£719	£834.83
CM802ET 21"	£929	£1091.58
CM802ET 17"	£314	£368.95
CM803ET 21"	£1039	£1220.83
LCD0130E 13.3"	£1569	£1843.58

PanaSync 4 15"	£179	£210.32
PanaSync 4G 15"	£219	£257.33
PanaSync 15MM 15"	£225	£264.38
& Speakers	£225	£264.38
PanaSync 5G 17"	£299	£351.32
PanaSync 17MM 17"	£375	£440.63
& Speakers	£375	£440.63
PanaSync Pro 5G 17"	£399	£468.83
PanaSync Pro 7G 21"	£879	£1032.83

MF 8515G 15"	£179	£210.32
MF 8515G 17"	£374	£439.45
MF 8617E 17"	£399	£468.83
MF 8617T 17"	£375	£440.63
MT 9017T 17"	£414	£486.45
MF 8221T 21"	£849	£997.57
MT 9021T 21"	£849	£997.57
MF 8721T 21"	£864	£1015.20
MT 9221T 21"	£879	£1032.82
LP-1014P 13.3"	£1489	£1749.58

Provisia E30	£105	£123.38
Provisia F40	£139	£163.32
Microscan 4P	£159	£186.32
Microscan 5P	£299	£351.32
Microscan 5G	£299	£351.32
Microscan 17X*	£299	£351.32
Microscan 6P	£549	£645.07
Microscan 6G	£775	£910.62

VISION MASTER PRO 17"

Provisia E30

## CTX

1569SE 15" MONITOR	1569MS 15" MONITOR	1769MS 17" MONITOR
<ul style="list-style-type: none"> <li>15" flat square display</li> <li>13.8" viewable image</li> <li>0.28mm dot pitch</li> <li>1280 x 1024 @ 60Hz</li> <li>On-screen display</li> <li>Plug &amp; Play compatible</li> <li>Energy Star compliant</li> <li>MPRII, TCO 92, CE</li> </ul>	<ul style="list-style-type: none"> <li>15" flat square display</li> <li>13.8" viewable image</li> <li>0.28mm dot pitch</li> <li>1280 x 1024 @ 60Hz</li> <li>On-screen display</li> <li>Integrated speakers</li> <li>Microphone jack</li> <li>EPA, TCO 92, CE</li> </ul>	<ul style="list-style-type: none"> <li>17" flat square display</li> <li>15.7" viewable screen</li> <li>0.28mm dot pitch</li> <li>1280 x 1024 @ 60Hz</li> <li>On-screen display</li> <li>Integrated speakers</li> <li>Energy Star compliant</li> <li>MPRII, CE</li> </ul>

1785S 17" MONITOR	1785XE 17" MONITOR	2185XE 21" MONITOR
<ul style="list-style-type: none"> <li>17" flat square display</li> <li>15.7" viewable image</li> <li>0.26mm dot pitch</li> <li>1600 x 1200 @ 70Hz</li> <li>On-screen display</li> <li>Plug &amp; Play compatible</li> <li>Energy Star compliant</li> <li>MPRII, CE</li> </ul>	<ul style="list-style-type: none"> <li>17" flat square display</li> <li>15.7" viewable image</li> <li>0.26mm dot pitch</li> <li>1600 x 1200 @ 70Hz</li> <li>On-screen display</li> <li>Plug &amp; Play compatible</li> <li>BNC Connectors</li> <li>TCO 92, MPRII, CE</li> </ul>	<ul style="list-style-type: none"> <li>21" flat square display</li> <li>20" viewable image</li> <li>0.26mm dot pitch</li> <li>1600 x 1200 @ 70Hz</li> <li>On-screen display</li> <li>Plug &amp; Play compatible</li> <li>BNC Connectors</li> <li>TCO 92, MPRII, CE</li> </ul>



# PHILIPS

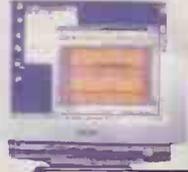
## PHILIPS 104S DISPLAY

- 14" Super VGA and 8514A/XGA
- Resolution: 800 x 600 & 1024 x 768
- High resolution 0.28mm picture tube
- Black Matrix dark glass tube
- Power management - EPA Energy Star
- Low emission levels - MPRII standard
- Fixed interface cable
- Tilt and swivel pedestal integrated

PHILIPS 104S  
£99 ex vat  
£116.33 inc vat

## PHILIPS 105S DISPLAY

- High resolution 15" autoscans monitor
- Resolution: 1024 x 768 non interlaced
- Fine 0.28mm dot pitch horizontal
- Flat square screen with anti-glare
- Low emission MPRII standards
- EPA Energy Star power management
- DDC 1/2B for optimal video configuration
- Digitally controlled geometric adjustment



PHILIPS 105S  
£155 ex vat  
£182.13 inc vat

## PHILIPS 107S DISPLAY

- High resolution 17" colour monitor
- Flicker free up to 1024 x 768 @ 75Hz
- High resolution 0.28mm dot pitch
- Flat square screen with anti-glare
- Low emission MPRII standards
- EPA Energy Star power management
- DDC 1/2B for optimal video configuration
- Digitally controlled geometric adjustment



PHILIPS 107S  
£279 ex vat  
£327.83 inc vat

## PHILIPS MONITORS

104S 14"	£99	£116.33	107S 17"	£279	£327.83	201B 21"	£800	£950.58
104B 14"	£115	£135.13	107B 17"	£339	£398.33	201BR 21"	£1419	£1667.33
105S 15"	£155	£182.13	107BR 17"	£439	£515.82	201BRC 21"	£1569	£1831.83
105B 15"	£189	£222.07	20C 20"	£579	£680.32	29PX 29"	£1569	£1842.57
105BR 15"	£194	£227.95	200B 20"	£649	£762.57	33PX 33"	£1579	£1855.33



## XPERT@Work

XPERT@Work is the most powerful graphics accelerator for corporate and small business, with fast 2D and 3D performance, three times that of previous boards and the best video acceleration for the price on the market. Designed as the ideal accelerator for business applications, the XPERT@Work provides levels of visual display not previously available to the business user in a mainstream priced board.



- The fastest performance for greater productivity in Windows NT and Windows 95
- Up to 8MB of ultra fast SGRAM for high resolution and true colour acceleration
- A huge 230 Mhz RAMDAC
- Optimised for the best performance on Pentium II/PRO systems
- Flicker-free images at up to 200Hz refresh rate to eliminate eye strain
- Rock solid stability and worry free compatibility with ATI's Microsoft certified drivers
- Available in 2MB and 4MB upgradeable or 8MB memory configurations

4MB	£125 ex vat	£146.88 inc vat	8MB	£180 ex vat	£185.65 inc vat
OEM 4MB	£95 ex vat	£115.15 inc vat	OEM 8MB	£124 ex vat	£145.70 inc vat



## XPERT@Play

XPERT@Play sets a new standard for 3D gaming, multimedia and entertainment applications. "Best of Breed" design uses a single card/slot solution to provide high powered, fully featured 3D performance for intense gaming.



- A huge 230 Mhz RAMDAC
- 4KB on-chip texture cache
- Microsoft certified drivers
- High performance 3D, 2D and video acceleration with TV-out display
- Brute force 3D acceleration with over 1 million triangles per second with setup engine, texture cache and more
- DVD quality full screen, full motion video
- Floating point set up engine, up to 1.2 million triangles per second
- Superior 3D quality with bilinear filtering, alpha blending and special effects
- Great gaming in Windows 95 (Direct 3D, DirectDraw) and DOS
- Connect to a large screen TV for truly engrossing game play, or record your stratospheric scores on a VCR
- Includes the hottest games - Formula 1, Terracide and WIRL

4MB	£138 ex vat	£162.15 inc vat	8MB	£188 ex vat	£197.40 inc vat
OEM 4MB	£108 ex vat	£126.90 inc vat	OEM 8MB	£138 ex vat	£162.15 inc vat





# matrox



# MYSTIQUE

## The Complete Windows, 3D and Video Accelerator

- Fast Windows, 3D and Video at up to 1600X1200 resolution
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- 5 free software titles included
- Upgradeable with Matrox Rainbow Runner series if video add-on's

4MB  
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 £85.78 inc vat

COMBO



## Rainbow Runner plus Mystique 220 4Mb

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## Low cost 3D accelerator for games

- 30 frames per second of blazing speed
- Support for resolutions up to 1024 x 768
- Support for a wide number of Direct 3D games
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- Works with your existing graphics card



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- Video upgrades for Matrox Mystique, Mystique 220 and Millennium II
- TV Tuner option available



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Monitors & Graphics cards

- PC and Mac compatible
- 15" colour monitor with 35.6cm diagonal viewable area
- Energy Star compliant
- Screen definition aided by 0.27mm dot pitch and anti-glare screen coating
- Plug & Play for Win 95
- Displays 1,024 x 768 pixels at 85Hz refresh
- Provides max resolutions of 1,280 x 1024 and refresh rate as high as 160Hz



**15 GS**  
**£188 ex vat**  
 £220.90 inc vat

**15 GA**  
**£224 ex vat**  
 £263.20 inc vat

(15GA model includes built-in speakers)



(17GA model includes built-in speakers)

**17 GA**  
**£398 ex vat**  
 £467.65 inc vat

**17 GS**  
**£368 ex vat**  
 £432.40 inc vat

- PC and Mac compatible
- 17" colour monitor with 40.6cm diagonal viewable area
- Displays 1,024 x 768 pixels at 86Hz refresh
- Screen definition aided by 0.27mm dot pitch and anti-glare screen coating
- Provides max resolution of 1280 x 1024 and refresh rate as high as 160Hz
- Plug & Play for Win 95



**E 655**  
**£178 ex vat**  
 £209.15 inc vat

- 15" Great Value Colour Monitor
- PC and Mac compatible
- Max resolution 1280 x 1024
- 0.28mm dot pitch
- 35cm diagonal viewing
- Anti-glare, anti-static screen treatment
- OnView controls
- Plug & Play for Win 95
- EPA Energy Star and MPRII compliant



**PT 813**  
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 £1056.33 inc vat

- 21" colour monitor with 20" diagonal viewable area
- 0.28mm aperture pitch
- 1600 x 1200 resolution at 85Hz
- Sonic Tron™ vertically flat screen
- Super Contrast screen
- OnView controls
- ViewMatch colour control
- TCO, MPR-II and Energy Star compliant



**E 641**  
**£109 ex vat**  
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- 14" Digitally controlled Monitor
- PC and Mac compatible
- Max resolution 1024 x 768
- 0.28mm dot pitch
- 33.3cm diagonal viewing
- Anti-glare, anti-static screen treatment
- Plug & Play for Win 95
- EPA Energy Star and MPRII compliant



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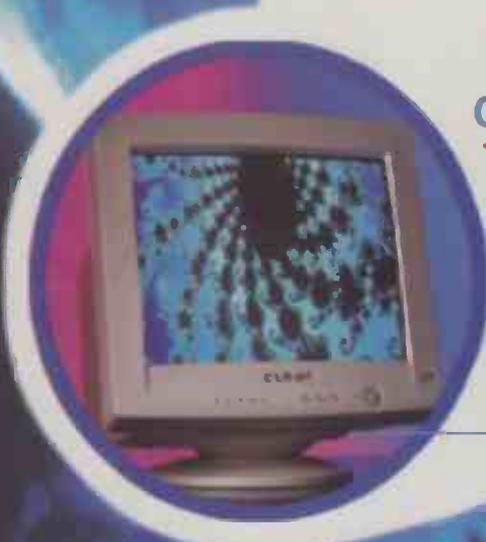
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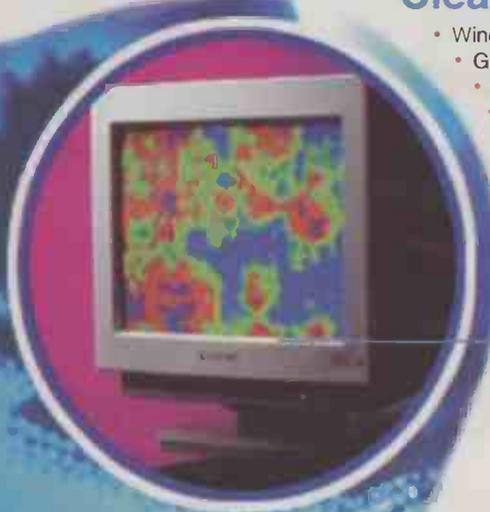
**Clear S15**

- Windows - PNP
- Good all Round Performance from 15" FST
- Microprocessor Driven Controls
- Maximum Resolution: 1280 x 1024
- Semi - Tint, Anti-Glare
- Excellent Resolution with 0.28mm Dot Pitch
- 30 ~ 70 kHz Horizontal, 50 ~ 120 Hz Vertical Frequency Range

**clear s15**

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**Clear GX 15**

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- Anti-Glare, Anti-static, Anti-Reflection
- Excellent Resolution with 0.28mm Dot Pitch
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- TCO 92

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- Excellent Resolution with 0.25mm Dot Pitch
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**clear GX17+**

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modems



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Hayes legendary modems and the Microsoft Network MSN have teamed up to deliver The Complete Internet Solution, offering one easy path to the Internet.

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- Download from the Internet at up to 56,000 bit/s
- Flash upgradeable
- FAX send and receive
- FAX-on-demand
- Voice answer phone
- Speakerphone facility lets you use your modem as a hands free telephone

**ACCURA 33.6 PC CARD**

- Throughputs of up to 115,200 bit/s, reliable data and fax communications, all from a credit card sized modem that plugs easily into the PCMCIA slot (Type II or III) on your portable PC
- Data/FAX discrimination
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- Group 3 FAX (Class 1 & 2)
- Free SmartCom communication and Internet software with free access

**ACCURA 56K MODEM**

- K56Flex technology allows download speeds from the Internet at up to 56,000 bit/s.
- Flash upgradeable
- V.42 standard error control prevents line noise from corrupting data.
- FAX send and receive
- FAX-on-demand
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- Dial-in to collect your messages while you're away
- Choose between the external model or the internal ISA card
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Accura 56K Speakerphone Modem Internal	£89	104.58
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Optima 336 Global PCMCIA Modem	£139	163.33
GSM Accessory Kit for Nokia 2110 Global	£99	116.33
GSM Accessory Kit for Nokia 8110 Global	£99	116.33
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**Sportster Flash**

Download from the Internet at an amazing 56Kbps with the New Sportster Flash faxmodem - this modem now comes with 56Kbps capability as standard from U.S.Robotics and runs nearly 100% faster than the 28.8Kbps speed currently available over ordinary telephone lines. Sportster Flash is the #1 modem!!



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Designed exclusively for the Windows environment Sportster Winmodem 33.6 Faxmodem provides you with Internet access at up to 33,600bps, fax, e-mail, personal voice mail, fax-on-demand and speakerphone facilities all in one compact unit.



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**USRobotics Range**

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Courier V34 33.6	£188	220.90	Sportster Voice	£96	112.80
Sportster 28.8 XJack	£106	124.55	<b>USR Pilot</b>		
PCMCIA Winmodem	£69	81.07	USR Pilot 1000	£130	152.75
			USR Pilot 5000	£149	175.07

<b>MOTOROLA</b>	VoiceSURFER 56K F420 Internal	£79	92.82
	VoiceSURFER 56K F420 External	£95	111.62
	ModemSURFER 56K F410 External	£79	92.82
	PCMCIA V.34 F206 PCMCIA V.34	£123	144.62
	BitSURFER PRO F207 BitSURFER	£209	245.57

<b>tech direct</b>	33k6 Voice Internal	£42	49.35
	33k6 Voice External	£52	61.10
	56k Voice Internal	£65	76.37
	56k Voice External	£75	88.12

<b>DIAMOND</b>	Supra Express 33.6i ASVD Internal		44.65
	Supra Express 33.6i ASVD External		52.87
	Supra Express 56e External		86.95

<b>DYNALINK</b>	33k6 Voice Internal		56.40
	33k6 Voice External		72.85
	33k6 PCMCIA		101.05
	56K Voice Internal		92.82
	56K Voice External		104.57
	56K PCMCIA		128.07

<b>Grey Cell Systems</b>	GCS 4000 33k6 PCMCIA	£159	186.82
	GSM Upgrade	£119	139.82

<b>pace</b>	Microlin 33k6 Internal	£97	113.97
	Microlin 33k6 External	£97	113.97
	Microlin Voice 33k6 Internal	£112	131.60
	Microlin Voice 33k6 External	£112	131.60
	Microlin Voice 33k6 PCMCIA	£139	163.32
	Microlin Voice 56k Internal	£109	128.07
	Microlin Voice 56k External	£123	144.52
	Message Desk 34Plus 33k6 External	£139	163.32

<b>PSION</b>	Surfer 33k6 Voice External		92.82
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	Gold Card V32bis PCMCIA		116.33
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<b>Xircom</b>	Credit Card 33k6 PCMCIA	£139	163.32
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**VideumCam For Notebooks And Desktops**

The complete videoconferencing solution!

- 30 frames per second Audio and Video capture
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- Complete Plug and Play with Quick Start Guide included

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- Use multiple cameras at same time!
- Takes no IRQ or DMAs - Plug and Play!
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- Zoom, pan, tilt ANY camera remotely via the Internet
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# TRAXDATA

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Internal SCSI Kit (no card)	£195 69.07	£325 381.87
Internal SCSI Kit (inc card)	£249 92.57	£249 292.57
Internal IDE Kit (2X8)	£249 92.57	
External SCSI Kit (inc card)	£299 351.32	£439 515.82
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Int. SCSI CD-RW 2x2x6	£309 363.07	
Int. PCI CD-RW 2x2x6	£369 433.57	

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CALL FOR PRICES ON: MAC, RE-WRITABLE, EXTERNAL & IDE

# YAMAHA 4x2x6

The World's first 4x2x6 CD-ReWritable drive from Yamaha. **£299 351.33**



Yamaha presents the CDR4000, the newest & most advanced in the CD EXPERT series. It merges the proven technology of the award-winning CDR400 with a host of powerful new features. It boasts the ability to write at 4X & read at 6X. It has a 2MB buffer for stabilized recording, & supports variable and fixed packet writing. Yamaha provides a wide line-up of CD Recorders to suit your taste: Tray or Caddy, Internal or External, SCSI or IDE, 4X-write or 2X-write. Whichever you choose you will enjoy the power, reliability & ease-of-use of this new recording workhorse from Yamaha.

### YAMAHA CDR SERIES MODELS

CDR400t	4X-write 6x-read internal retail kit	£289	339.58
CDR200t	2X-write 6X-read internal retail kit	£199	233.83

Yamaha CDR kit contents: Yamaha CDR Recorder, Yamaha-Certified CD Recorder software, SCSI ribbon cable, Audio cable, 2 x Yamaha 74 min CD Recordable disks, User installation guide, mounting screws / jumper.

## NOMAD

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### 2X2X6 EIDE KIT

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### 680 RW Ext Kit

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 • Adaptec Easy CD Pro 2.11 & Direct CD Software Included with all drives.

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### RICOH MP6200S Inc SCSI CARD

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**TEAC CD R50S**  
 £319 ex vat £374.82 inc vat

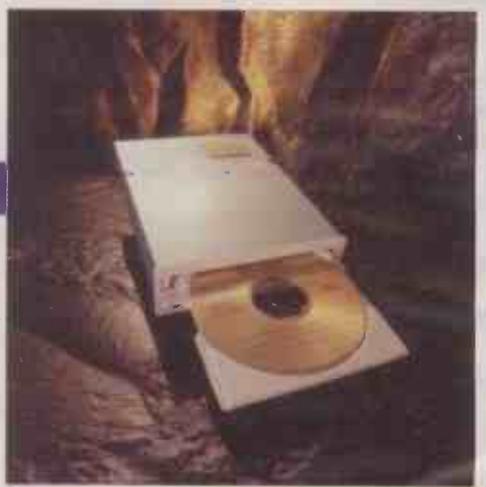
## TEAC CD - 524E



The 24 speed CD-524E drive offers a combination of speed and multiple enhancement such as advanced noise/vibration control.

- ATAPI interface for high speed data transfer 13.3Mb/sec
- Motorised tray loading mechanism for trouble - free operation with either vertical or horizontal mounting
- High loading durability
- 4 speed audio performance ensures reproduction of high - quality sound
- Intelligent media handling

**TEAC 24 Speed CD ROM**  
 £49 ex vat £57.57 inc vat



## JUKEBOX IDE CD-ROM

8 speed, 6 disk, internal

- IDE/ATAPI Interface
- 8x playback performance
- 1,200KBps data transfer rate
- 190ms average access time

**TEAC JUKEBOX IDE**  
 £99 ex vat £116.32 inc vat



Mitsumi award winning CR - 2600TE comes bundled with the "Mitsumi music centre" (including the original Magix Software for producing your own music) Also included is TO GO! V4.0 CD writer Software. At only £189 + vat, it's hardly surprising that this is our best selling CD writer.  
**Important note:** Unlike CD-RW media self-written audio CD's can be played on any audio CD player in any CD-ROM drive.

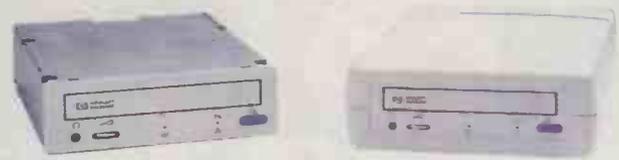
Mitsumi's new CR-2600TE is the world's first ATAPI CD-recordable drive. It lets you easily create custom CD's holding up to 650Mb of data or 74 minutes of audio - in around 30 minutes!

- Combines a 2x writer and 6x reader
- Playback Speed: 900KB/s
- Write up to 650Mb of data per disk
- Easy installation
- Unique dust-proof design reduces the possibility of writing errors, increases reliability
- 1Mb buffer cuts underruns and gives high data accuracy
- ATAPI Enhanced IDE interface
- Windows 95 Compatible.
- Ideal for data intensive applications such as multimedia, electronic publishing, training, promotional tools, and data archiving
- Includes ToGo! CeQuadrat 4.0, Magix Music Maker & Magix Music Editor software, audio cable, IDE data cable, instruction manual, 3 recordable CD's and a blank media
- 1 year warranty

**MITSUMI CR 2600TE**  
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# hp HEWLETT PACKARD

CD - Writer Plus 7100



**hp HEWLETT PACKARD 7100 Internal**  
**£228 ex vat** £267.90 inc vat

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**Simple as a floppy with the qualities of a CD!**

- Write, update and rewrite CD's
- Save and distribute up to 650Mb of information
- Easy to use 'drag and drop' functionality
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The HP Surestore CD-Writer Plus 7100 uses revolutionary CD-rewritable technology to enable you to write, update, erase and rewrite up to 650MB of data on a single CD-RW disc. Now you can use CD's just like a floppy.

ex vat inc vat

SureStore CD-Writer PLUS 7100 external  
 SureStore CD-Writer PLUS 7100 internal  
 HP Rewritable CD  
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 Standard Media

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- AWE 64 8Mb Memory Upgrade
- AWE 64 12Mb Memory Upgrade
- AWE 64 24Mb Memory Upgrade
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- Blaster CD 24X
- Discovery 24X Kit
- Creative DVD Kit
- CS 120 Speakers
- TV Coder External
- WebCam
- VideoBlaster PCI
- VideoBlaster RT300
- Action Blaster
- MIDI Cable
- Hands Free Microphone
- 3D Blaster PCI

£105	123.38
£29	34.08
£45	52.88
£75	88.13
£125	146.88
£55	64.63
£34	39.95
£54	63.45
£89	104.57
£198	232.65
£10	11.75
£109	128.08
£99	116.33
£89	104.58
£198	232.65
£25	29.38
£19	22.33
£19	22.33
£59	69.33

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Kao are one of the worlds largest manufacturers of magnetic and optical storage media. Kao CD-R features the following:

- 74 minutes / 650Mb storage
- Pure gold reflective layer
- "HardCoat" surface gives protection from scratches
- Excellent resistance to UV light
- Guaranteed life of 70 years
- Complete with jewel case



**£1.39 ex vat** £1.63 inc vat

Models Interface Speed In/Ext Ex Vat Inc Vat

Models	Interface	Speed	In/Ext	Ex Vat	Inc Vat
<b>CD-ROM DRIVES</b>					
<b>CREATIVE</b>					
CR-585B	IDE	24	Int	£54	63.45
<b>tech direct</b>					
8X Speed IDE	IDE	8	Int	£32	37.60
24X Speed IDE	IDE	24	Int	£39	45.82
<b>GOLDSTAR</b>					
GCD-R8240	IDE	24	Int	£48	56.40
<b>MITSUMI</b>					
FX-800	IDE	8	Int	£32	37.60
FX-240	IDE	24	Int	£44	51.70
<b>Panasonic</b>					
CR-585	IDE	24	Int	£44	51.70
CR-506	SCSI	8	Int	£48	56.40
<b>PLEXTOR</b>					
PX-20TSI Tray Loading	SCSI	20	Int	£104	122.20
PX-20TSE Tray Loading	SCSI	20	Ext	£164	192.70
<b>SAMSUNG</b>					
SCR 2340	SCSI	24	Ext	£49	57.57

Models Interface Speed In/Ext Bare Drive Software S/W & SCSI Card

Models	Interface	Speed	In/Ext	Bare Drive Ex Vat	Inc Vat	Software Only Ex Vat	Inc Vat	S/W & SCSI Card Ex Vat	Inc Vat
<b>CD RECORDING</b>									
<b>MITSUMI</b>									
CR2600TE	IDE	6x/2x	Int	£199	233.82	£179	210.32		
CDR	IDE	6x/2x	Int						
<b>NOMAL</b>									
CD-RW	IDE	6x/2x	Int			£229	269.07		
CD-RW	SCSI	6x/2x	Int			£259	304.32	£289	339.57
CD-RW	SCSI	6x/2x	Ext			£299	351.32	£349	410.07
CD-RW	Parallel	6x/2x	Ext			£315	370.12		
<b>RICOH</b>									
MP 6200 CD-RW	SCSI	6x/2x	Int	£253	298.45			£298	350.15
MP 6200 CD-RW	SCSI	6x/2x	Ext	£338	397.15			£384	451.20
<b>SONY</b>									
CDU-928E	IDE	8x/2x	Int			£224	263.20		
<b>DYNATEK</b>									
CDM-260YI	IDE	6x/2x	Int			£235	276.12		
CDM-260YD	IDE	6x/2x	Ext			£269	316.07		
CDM-260YD-M	IDE	6x/2x	MAC			£249	292.57		
CDM-460YI	IDE	6x/4x	Int			£299	351.32		
CDM-460YD	IDE	6x/4x	Ext			£349	410.07		

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 We will usually match or beat any price lower than our own

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Lines open: 9am - 6pm Weekdays



DynaTek's award winning DAT Drive is on offer to customers who require high performance, value for money and reliability. The DynaTek DAT drives ensure data integrity through three levels of error correction and conform to DDS standards, which are the world-wide standards of excellence.

### COMPLETE SOLUTIONS FOR TAPE BACKUP

DynaTek offer DDS, DDS-2, DDS-3 DAT bundles including internal or external drive, cleaning cartridge, media and Backup Exec Software for NetWare, NT, Windows and Windows 95. Each DynaTek DAT drive has a HP mechanism and is enclosed in a compact, rugged chassis for maximum reliability.

	ex vat	inc vat
External DAT2000 2Gb DDS DAT Bundle	£495	581.62
Internal DAT2000 2Gb DDS DAT Bundle	£459	539.32
External DAT4000 2-4Gb DDS DAT Bundle	£505	593.37
Internal DAT4000 2-4Gb DDS DAT Bundle	£475	558.12
External DAT8000 4-16Gb DDS-2 DAT Bundle	£665	781.37
Internal DAT8000 4-16Gb DDS-2 DAT Bundle	£599	703.82
External DAT12000 12-24Gb DDS-3 DAT Bundle	£849	997.57
Internal DAT12000 12-24Gb DDS-3 DAT Bundle	£814	956.45
External DAC144000 144Gb DDS-3 DAT Autoloader Bundle	£2395	2814.12

## Quantum™ HARD DRIVES

### FireBall ST - The choice for power users!

This range is the first to use the Quantum Pioneered Ultra ATA interface to double the burst rate from 16.6Mb/sec to 33Mb/sec. For SCSI-3 based systems, the Fireball ST is available with the ultra SCSI-3 interface for burst data transfer rates of up to 20Mb per second.



Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
Fireball Status 1620	1.6Gb	EIDE/Ultra DMA ATA	10ms	5400	£85	99.87
Fireball Status 2160	2.1Gb	EIDE/Ultra DMA ATA	10ms	5400	£99	116.32
Fireball Status 3240	3.2Gb	EIDE/Ultra DMA ATA	10ms	5400	£114	139.95
Fireball Status 4320	4.3Gb	EIDE/Ultra DMA ATA	10ms	5400	£154	180.95
Fireball Status 6480	6.4Gb	EIDE/Ultra DMA ATA	10ms	5400	£188	220.90
Fireball Stratus 2110	2.1Gb	UltraSCSI	10ms	5400	£139	163.32
Fireball Stratus 3220	3.2Gb	UltraSCSI	10ms	5400	£175	205.62
Fireball Stratus 4320	4.3Gb	UltraSCSI	10ms	5400	£198	232.65
Fireball Stratus 6480	6.4Gb	UltraSCSI	10ms	5400	£248	291.40

### Atlas II - ideal for workstation and high-end users



The Atlas II range of drives offer high capacity and feature the most advanced technology for exceptional performance and higher a real density making these drives outstanding mass storage solutions.

Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
Atlas II 3455OS	4.5Gb	UltraSCSI	8ms	7200	£344	404.20
Atlas II 3455OSW	4.5Gb	UltraWideSCSI	8ms	7200	£344	404.20
Atlas II 39100S	9.1Gb	UltraSCSI	8ms	7200	£543	638.02
Atlas II 39100SW	9.1Gb	UltraWideSCSI	8ms	7200	£543	638.02

### Bigfoot CY - For the personal computer user!

The Quantum Bigfoot drives meet the increased demand for storage by combining advanced recording techniques with the increased data area of 5.25" disks.



Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
Bigfoot 1280	2.1Gb	EIDE 5.25"	16ms	3600	£79	92.83
Bigfoot 2550	2.5Gb	EIDE 5.25"	16ms	3600	£114	133.95



### IOmega ZIP 180 Parallel

Affordable personal storage to backup, organise and move your stuff.



- Affordable personal storage and backup
- 100Mb and 25Mb capacity
- Fast, Easy, Worry-free back-up
- Zip Tools software included
- Move your work easily to any location

Zip Drive Internal	£85	99.87	Zip Zoom Card	£25	29.37
Zip Drive External	£85	99.87	Zip 100Mb Disk	£8.95	10.51
Zip Drive SCSI	£85	99.87	Zip Disk 6 Pack	£46	54.05

The NEW "ZIP PLUS" 40% faster than ordinary Zip £145 ex.vat 170.38 inc vat

### IOmega JAZ

With the combination of Jaz drives and disks you have the answer to all your storage needs, both for today and for the future.

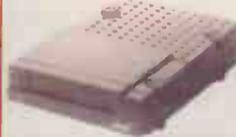
- Provides 1Gb of disk space on each disk
- Portable - for transporting information
- Faster than most hard drives
- Easy to use Jaz Tools software
- Eliminate the anxiety of drive upgrades



Jaz Internal 1Gb	£172	202.10	Jaz Disk Single	£54	63.45
Jaz External 1Gb	£226	265.55	Jaz Disk 3 Pack	£154	180.95

### IOmega DITTO

The Ditto tape drive makes backing up your stuff easier than ever and without waiting!



- Universal Travan Drive
- One-step easy backup
- Plug and go installation
- Internal or external models
- 2 year manufacturer warranty

Ditto 2Gb Internal	£54	63.45	Ditto 3.2Gb Int	£94	110.45
Ditto 2Gb External	£85	99.87	Ditto 3.2Gb Ext	£104	122.20

## Seagate HARD DRIVES

### Medalist Family Hard Drives

- 100% IDE compatible
- Seek times as fast as 10msec and spindle speeds of up to 5,400 RPM



Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
Medalist ST31277A	1.2Gb	EIDE	12ms	5400	£68	79.90
Medalist ST31722A	1.7Gb	EIDE/Ultra ATA3	12ms	4500	£79	92.82
Medalist ST32122A	2.1Gb	EIDE/Ultra ATA3	12.5ms	4500	£89	104.57
Medalist ST32531A	2.5Gb	EIDE	12ms	4500	£99	116.32
Medalist ST33232A	3.2Gb	EIDE/Ultra ATA3	10.5ms	4500	£119	139.82
Medalist ST34342A	4.3Gb	EIDE/Ultra ATA3	14ms	4500	£144	169.20
Medalist Pro ST36451A	6.4Gb	EIDE/Ultra ATA3	10.5ms	5400	£199	233.82
Medalist Pro ST52160N	2.1Gb	UltraSCSI	11ms	5400	£129	151.57

### Cheetah Family Hard Drives

- High performance ultra SCSI
- Average seek times as fast as 7.5 msec.
- Industry's highest performance 10,000 RPM 3.5" disc drives



Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
Cheetah ST34501N	4.5Gb	UltraSCSI	8ms	10000	£399	468.82
Cheetah ST34501W	4.5Gb	UltraWideSCSI	8ms	10000	£415	487.62
Cheetah ST19101N	9.0Gb	UltraSCSI	8ms	10000	£655	769.62
Cheetah ST19101W	9.0Gb	UltraWideSCSI	8ms	10000	£675	793.12

### Barracuda Family Hard Drives

- Standard Ultra SCSI
- Up to 1,000,000 hour MTBF
- 7,200 RPM spindle speed



Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
Barracuda ST32272N	2.2Gb	UltraSCSI	9ms	7200	£224	263.20
Barracuda ST32272W	2.2Gb	UltraWideSCSI	9ms	7200	£244	286.70
Barracuda ST34572N	4.5Gb	UltraSCSI	9ms	7200	£342	401.85
Barracuda ST34572W	4.5Gb	UltraWideSCSI	9ms	7200	£359	421.82
Barracuda ST19171N	9.0Gb	UltraSCSI	9ms	7200	£565	663.87
Barracuda ST19171W	2.2Gb	UltraWideSCSI	9ms	7200	£585	687.37

# IMATION "Plugs in via your Parallel Port"

Home of 3M Innovation

The new diskette standard is here! If you're like most computer users, your data storage needs are rapidly outgrowing the capacity of your system. Multimedia programs, digitised photographs, Internet downloads and other large files can overwhelm your hard drive quickly. Yet they rarely fit on standard 3.5" diskettes. This drive has already been adopted by many leading world manufacturers such as Compaq, Microsoft, Fujitsu / ICL, Panasonic & Samsung to name just a few. Isn't it time you upgraded your system?



**120MB capacity**  
Each SuperDisk diskette uses LS-120 technology to hold more data than 83 conventional 3.5" floppies and 20 percent more data than alternative high-capacity floppy solutions.

**Familiar technology**  
SuperDisk diskettes are the same size and shape as standard floppy diskettes. The drive works just like the one you use today - but much faster!

**Dual compatibility**  
The IIMATION SuperDisk Drive and other LS-120 drives read and write both 120MB SuperDisk diskettes and all standard high-density and double-density diskettes.

**IMATION SuperDisk**  
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<b>HP COLORADO</b>	
T3000I Internal 3.2GB	£105 123.37
T4000S Internal 8GB	£219 257.32
T4000ES External 8GB	£278 326.65
T41 8GB Internal Streamer	£244 286.70
<b>HP SURESTORE DAT PRODUCTS</b>	
HP SURESTORE 2000I	£438 514.65
HP SURESTORE 2000E	£515 605.12
HP SURESTORE 5000I	£459 539.32
HP SURESTORE 5000E	£528 620.40
HP SURESTORE DAT 8i	£558 655.65
HP SURESTORE DAT 8E	£638 749.65

## Seagate

All Tapestor products come with one free tape except Tapestor 3200ext parallel

<b>Seagate Tape Products</b>	
Tapestor 3200 INT TR3	£98 115.15
Tapestor 3200 EXT Parallel	£109 128.07
Tapestor 8000 INT SCSI	£209 245.57
Tapestor 8000 INT IDE	£198 232.65
Tapestor 8000 EXT SCSI	£265 311.37
Scorpion STD 2400N 4GB	£344 404.20
Scorpion STD 2800N 8GB	£454 533.45

## SyQuest

<b>SyJet 1.5Gb Parallel Port - Ext</b>	
SyJet 1.5Gb SCSI - Ext	£248 291.40
SyJet 1.5Gb SCSI - Int	£248 291.40
SyJet 1.5Gb EIDE - Int	£186 218.55
EZFlyer 230Mb Parallel Port - Ext	£186 218.55
EZFlyer 230Mb SCSI - Ext	£92 108.10
EZFlyer 230Mb EIDE - Int	£92 108.10
<b>SYQUEST MEDIA</b>	
SyJet 1.5Gb Cartridge	£77 90.47
SyJet 1.5Gb Cartridge - 3 pack	£188 220.90
EZFlyer 230Mb Cartridge	£16.95 19.91
EZFlyer 230Mb Cartridge - 5 pack	£75 88.12

## Panasonic

### LS-120 Disk Drive

- Compatible with existing 3.5" diskettes
- Reads/writes LS-120 diskettes
- Reads/writes standard 3.5" diskettes
- Compatible with today's computers
- Replaces 1.44MB drive
- Supported by DOS, Win95, WinNT
- Supported by all major BIOS providers
- Same form factor as 3.5" FFD's
- Fits virtually any computer chassis

- High performance
- Five times faster than standard 1.44Mb drives when using LS-120 diskettes
- Three times faster than standard drives when using existing 1.44Mb diskettes
- Interchange
- 120Mb interchange among LS-120 users
- Data interchange operations identical to existing diskettes - 120Mb/1.44Mb/720Kb
- Functions as standard Drive A
- Can act as a Boot drive
- Viewed as Drive A for any diskette

£69 ex vat £81.07 inc vat

## HARD DRIVES

Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
<b>IBM</b>						
00K0400	4.33Gb	EIDE/Ultra DMA/33	9.5ms	5400	£149	175.07
09J0308	6.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	£194	227.95
00K0394	8.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	£269	316.07

Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
<b>Quantum</b>						
Fireball Stratus 2110	2.1Gb	UltraSCSI	10ms	5400	£139	163.32
Fireball Stratus 3220	3.2Gb	UltraSCSI	10ms	5400	£175	205.62
Fireball Stratus 4320	4.3Gb	UltraSCSI	10ms	5400	£198	232.65
Fireball Stratus 6480	6.4Gb	UltraSCSI	10ms	5400	£248	291.40
Atlas II 3455OS	4.5Gb	UltraSCSI	8ms	7200	£344	404.20
Atlas II 3455OSW	4.5Gb	UltraWideSCSI	8ms	7200	£344	404.20
Atlas II 39100S	9.1Gb	UltraSCSI	8ms	7200	£543	638.02
Atlas II 39100SW	9.1Gb	UltraWideSCSI	8ms	7200	£543	638.02
Viking	2.2Gb	UltraSCSI	8ms	7200	£222	260.85
Viking	2.2Gb	UltraWideSCSI	8ms	7200	£222	260.85
Viking	4.5Gb	UltraSCSI	8ms	7200	£319	374.82
Viking	4.5Gb	UltraWideSCSI	8ms	7200	£319	374.82

Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
<b>Seagate</b>						
Medalist Pro ST52160N	2.1Gb	UltraSCSI	11ms	5400	£129	151.57
Barracuda ST32272N	2.2Gb	UltraSCSI	9ms	7200	£224	263.20
Barracuda ST32272W	2.2Gb	UltraWideSCSI	9ms	7200	£244	286.70
Barracuda ST34572N	4.5Gb	UltraSCSI	9ms	7200	£342	401.85
Barracuda ST34572W	4.5Gb	UltraWideSCSI	9ms	7200	£359	421.82
Barracuda ST19171N	9.0Gb	UltraSCSI	9ms	7200	£565	663.87
Barracuda ST19171W	2.2Gb	UltraWideSCSI	9ms	7200	£585	687.37
Cheetah ST34501N	4.5Gb	UltraSCSI	8ms	10000	£399	468.82
Cheetah ST34501W	4.5Gb	UltraWideSCSI	8ms	10000	£415	487.62
Cheetah ST19101N	9.0Gb	UltraSCSI	8ms	10000	£655	769.62
Cheetah ST19101W	9.0Gb	UltraWideSCSI	8ms	10000	£675	793.12

Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
<b>WESTERN DIGITAL</b>						
Enterprise AC22170	2.1Gb	UltraSCSI	8ms	7200	£218	256.15
Enterprise AC22170	2.1Gb	UltraWideSCSI	8ms	7200	£229	269.07
Enterprise AC24360	4.3Gb	UltraSCSI	8ms	7200	£319	374.82
Enterprise AC24360	4.3Gb	UltraWideSCSI	8ms	7200	£334	392.45

## EIDE HARD DISCS

Models	Capacity	Interface	Access time	Speed	Ex Vat	Inc Vat
<b>Maqtor</b>						
81280A Diamond Max	1.2Gb	EIDE	10ms	5400	£75	88.12
81750D2 Diamond Max	1.7Gb	EIDE/Ultra DMA/33	10ms	5200	£89	104.57
82100A Crystal Max	2.1Gb	EIDE	12ms	4480	£99	116.32
82160D2 Diamond Max	2.1Gb	Ultra DMA	10ms	5200	£99	116.32
84320D4 Diamond Max	4.3Gb	Ultra DMA	10ms	5200	£145	170.37
86480D6 Diamond Max	6.4Gb	Ultra DMA	10ms	5200	£198	232.65
88400D8 Diamond Max	8.4Gb	Ultra DMA	10ms	5200	£248	291.40
85120A Diamond Max	5.1Gb	EIDE	10ms	5400	£179	210.32
87000A Diamond Max	7.0Gb	EIDE	10ms	5400	£215	252.62
87000D8 Diamond Max	7.0Gb	EIDE/Ultra DMA/33	10ms	5200	£215	252.62
<b>FUJITSU</b>						
FUJ-1624	2.1Gb	Ultra DMA			£97	113.97
FUJ-3026AT	2.6Gb	Ultra DMA			£108	126.90
FUJ-3035AT	3.5Gb	Ultra DMA			£119	139.82
FUJ-3043AT	4.3Gb	Ultra DMA			£144	169.20
	5.2Gb	Ultra DMA			£169	198.57
<b>Quantum</b>						
Fireball Status 1620	1.6Gb	EIDE/Ultra DMA ATA	10ms	5400	£85	99.87
Fireball Status 2160	2.1Gb	EIDE/Ultra DMA ATA	10ms	5400	£99	116.32
Fireball Status 3240	3.2Gb	EIDE/Ultra DMA ATA	10ms	5400	£114	133.95
Fireball Status 4320	4.3Gb	EIDE/Ultra DMA ATA	10ms	5400	£154	180.95
Fireball Status 6480	6.4Gb	EIDE/Ultra DMA ATA	10ms	5400	£188	220.90
Cyclone 2111	2.1Gb	EIDE	14ms	3600	£88	103.40
Cyclone 4335	4.3Gb	EIDE	14ms	3600	£114	133.95
Cyclone 6510	6.5Gb	EIDE	14ms	3600	£158	185.65
<b>SAMSUNG</b>						
31601A	1.6Gb	EIDE	11ms	5400	£85	99.87
32160A	2.1Gb	EIDE	11ms	5400	£98	115.15
325430A	2.5Gb	EIDE	11ms	5400	£108	126.90
Seagate	3.4Gb	EIDE	11ms	5400	£135	158.62
Medalist ST31277A	1.2Gb	EIDE	12ms	5400	£68	79.90
Medalist ST31722A	1.7Gb	EIDE/Ultra ATA3	12ms	4500	£79	92.82
Medalist ST32122A	2.1Gb	EIDE/Ultra ATA3	12.5ms	4500	£89	104.57
Medalist ST32531A	2.5Gb	EIDE	12ms	4500	£99	116.32
Medalist ST33232A	3.2Gb	EIDE/Ultra ATA3	10.5ms	4500	£119	139.82
Medalist ST34342A	4.3Gb	EIDE/Ultra ATA3	14ms	4500	£144	169.20
Medalist Pro ST36451A	6.4Gb	EIDE/Ultra ATA3	10.5ms	5400	£199	233.82
<b>WESTERN DIGITAL</b>						
AC21600	1.6Gb	EIDE	12ms	5200	£94	110.45
AC22000-UD	2.0Gb	EIDE/Ultra DMA/33	12ms	5400	£106	124.55
AC22500-UD	2.5Gb	EIDE/Ultra DMA/33	12ms	5400	£112	131.60
AC33000-UD	3.0Gb	EIDE/Ultra DMA/33	12ms	5400	£119	139.82
AC34000-UD	4.0Gb	EIDE/Ultra DMA/33	12ms	5400	£148	173.90
AC35000-UD	5.1Gb	EIDE/Ultra DMA/33	12ms	5400	£178	209.15
AC36400-UD	6.4Gb	EIDE/Ultra DMA/33	12ms	5400	£194	227.95

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1Mb £9 10.57	16Mb —	4Mb £10 11.75	32Mb £49 57.57
4Mb £14 16.45	—	8Mb £15 17.62	64Mb £209 245.57
—	—	16Mb £25 39.37	—
72 PIN PARITY		72 PIN EDO	
4Mb £19 22.32	32Mb £75 88.12	4Mb £8 9.40	32Mb £49 57.57
8Mb £29 34.07	64Mb £245 287.87	8Mb £13 15.27	64Mb £170 199.75
16Mb £29 34.07	—	16Mb £25 29.37	—

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8Mb	£19 22.32
16Mb	£35 41.12
32Mb	£64 75.20
64Mb	£245 287.87

**72 PIN PARITY**

4Mb	£11 12.33
8Mb	£34 39.95
16Mb	£54 102.77
32Mb	£99 116.32
64Mb	£245 287.87

**72 PIN EDO**

4Mb	£13 15.27
8Mb	£19 22.32
16Mb	£32 37.60
32Mb	£59 69.32
64Mb	£209 245.57

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  - Performa 200, 410, 430
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  - LC475, LC550, LC630
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- MITAC**
  - DX2/66, DX4/100
  - P60
- MJN**
  - DX2/66, DX4/
  - 100, P75, P100, P120
  - P133
- Mr PC**
  - A2
  - A3
  - B2
  - D
  - Omega
- Opus**
  - DX2/66, DX4/100
  - Prelude
  - Premier, Prestige
  - Triton
- Packard Bell**
  - 386, 486sx
  - 486DX
  - Executive, Force, Legend
- Phoenix**
  - Power Stations, Servers
  - Workstations, Pentium Pro, MMX
- Simply**
  - OX2, DX4, P60, 75, 90
  - Windows
  - Office '95
- Time**
  - Cd system 4/5/6/8/9
  - Time Machine 96-1/2/3
  - Omega
  - Time Machine 96-5/6/7
- Viglen**
  - Genie 486, Contender
  - Pentium EX
  - Pentium EDO
  - Power 100
  - Ultimate 120, 133
  - Genie PCI

## SUPER DISK™ Floppy Disk Drive



The new 120 Mb diskette standard is here! If you are like most computer users your data storage needs are rapidly out growing the capacity of your system. Multimedia programs, digitised photography, Internet downloads and other large files can overwhelm your hard drive quickly.

The new Super Disk with a 120Mb capacity can easily cope with these new demands. The drive has already been adopted by many leading world manufacturers such as Compaq, Microsoft, Fujitsu, ICL, Panasonic & Samsung to name just a few, isn't it time you upgraded your system?

**Familiar technology**  
SuperDisk diskettes are the same size and shapes as standard floppy diskettes. The drive works just like the one you use today - but much faster!

**120MB capacity**  
Each SuperDisk diskette uses LS - 120 technology to hold more data than 83conventional 3.5" floppies and 20percent more data than alternative high-capacity floppy solutions

**Dual compatibility**  
The Imation SuperDisk Drive and other LS - 120 Drives read and write both 120MB SuperDisk diskettes and all standard high-density and double-density diskettes

Standalone version plugs directly in to your parallel port

<b>SuperDisk Drive</b>	<b>£99.00</b>
<b>SuperDisk</b>	<b>£9.00</b>

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### Corel WordPerfect Suite 8

Delivering the power you need with the ease of use you want, Corel WordPerfect Suite 8 unleashes your full productivity potential. Take advantage of leading-edge collaboration and productivity tools and advanced Web technology that lets you connect to the world. Corel WordPerfect Suite 8. It's pure communication power.



**COREL** WordPerfect Suite 8  
**£145 ex vat** £170.38 inc vat

### Corel Print House™ Magic, Version 3

Create dazzling greeting cards, banners, invitations, business cards, flyers and more in a flash. Use thousands of fully customizable samples or create your own designs with the assistance of wizards and advanced drawing tools. Touch up or alter your favourite photographs using Corel Photo House™ 2 and keep track of addresses and special events with Corel Family & Friends™. Let context-sensitive help make complex tasks, such as double-sided printing, a breeze.

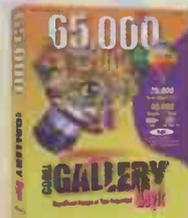


**COREL** Print House V.3  
**£38 ex vat** £44.65 inc vat

### Corel GALLERY™ Magic 65,000

Corel GALLERY™ Magic 65,000 is an ideal choice for all your desktop, multimedia and Internet publishing needs. Enhance brochures, newsletters, presentations, school projects, videos, greeting cards, posters and more. With a built-in mini editors to edit your favourite clipart image or photo.

- 25,000 vector images,
- 40,000 photos,
- 500 fonts,
- 100 animated .GIFs
- 100 theme sets for the Web.

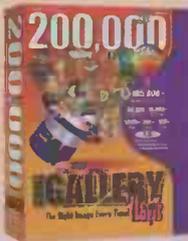


**COREL** Gallery Magic 65,000  
**£18 ex vat** £21.15 inc vat

### Corel GALLERY™ Magic 200,000

Packed with a full-colour clipart manual, powerful visual file manager and more, Corel GALLERY Magic makes it easy to stay organized. Search multiple libraries with the wizard-style search interface to find the image you need, then drag and drop it into most applications. Preview thumbnails and manipulate bitmap images using the Image Editor. Add pizzazz to greeting cards, newsletters, flyers, business stationery, invitations and more. Corel GALLERY Magic 200,000—the right image every time!

- Theme sets for the Web,
- 105,000 Clipart images,
- 80,000 photos
- Hundreds of fonts,
- Animated .GIFs,
- Sounds,
- Video clips.



**COREL** Gallery Magic 200,000  
**£38 ex vat** £44.65 inc vat



### Corel® WordPerfect® Suite 7 for Windows® 3.1x

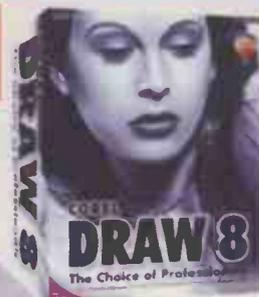
Corel® WordPerfect® Suite 7 for Windows® 3.1x redefines the office suite to fit the way you work today perfectly. Increase your productivity, optimize workgroup collaboration and enjoy all the benefits of the top-selling Corel WordPerfect Suite 7 for Windows 95 in a familiar 16-bit environment. World class applications, exceptional graphics power, and refined file management tools and features empower your business communications while advanced Internet connectivity lets you link, read and create files for the World Wide Web. Take advantage of software innovation and discover why Corel WordPerfect Suite 7 for Windows 3.1x is an ideal choice for any office task.

**COREL** WordPerfect Suite 7  
**£38 ex vat** £44.65 inc vat

# COREL DRAW 8

## NEW

- DTP & ILLUSTRATION
- PHOTO EDITING
- WEB BACKGROUNDS
- ANIMATION
- 3D DESIGN & MORE



### CorelDRAW 8

Created for the professional illustrator, graphic artist and desktop publisher, CorelDRAW 8 makes optimum performance its top priority. With interactive tools and utilities, plus Corel PHOTO-PAINT 8 for photo editing and bitmap creation and CorelDREAM 3D 8 for 3D modeling and rendering, CorelDRAW 8 is all you need to explore your creativity!

Upgrade **£145 ex vat** New **£289 ex vat**



### Corel WebMaster Suite

Corel WebMaster Suite brings a new level of power to the world of Web site creation and management. With state of the art authoring tools, professional site management functionality and sophisticated graphics, animation and 3D VRML, Corel WebMaster Suite delivers everything you need to effectively create and manage your Web site.

**£138 ex vat**  
£162.15 inc vat

### Professional Photos

Discover where to find the image you need quickly and easily using the Corel Stock Photos Reference Catalogue and CD-ROM. 20,000 thumbnail images on a large variety of subjects are included to help you locate the ideal Corel Professional Photo CD-ROM. Using a quick keyword search, the Visual Search Database will scan for photo thumbnails from the 20,000 included on the general subject required. A visual list of the related photos and their series will appear on-screen, making it easy to find and purchase a specific image. With a full-colour reference guide, the Corel Stock Photos Reference Catalogue and CD-ROM is an ideal reference tool to find just the right image.

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9am - 5pm Saturdays  
10.30 - 4.30pm Sundays

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## ACCOUNTS

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<b>GUILDSoft</b> M.Y.O.B V6 for Windows on 3.5	£115	135.13
<b>INTUIT</b> Quickbooks Accounting V5 on CD & 3.5	£167	196.23
Quickbooks Accounting & Payroll V5 on CD & 3.5	£255	299.63
Quicken 6 Deluxe for Win 95 & 3.1 on CD	£43	50.53
Quicken 6 for Win 95 & 3.1 on 3.5 or CD	£28	32.90
<b>MICROSOFT</b> Money 97 for Windows 95 on CD or 3.5	£19	22.33
Small Business Manager CD	£48	56.40

## CAD

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<b>AUTODESK</b> AutoCad Release 2 LT for Windows 3.1 on 3.5	£285	334.88
AutoCad Release 2 LT for Windows 3.1 on CD	£285	334.88
AutoCad LT 3.1 Upgrade from LT Earlier Version on CD	£82	96.35
AutoCad LT 3 for Windows 95 on CD	£419	492.33
AutoCad LT 95 Upgrade from LT Any Version on CD	£175	205.63
Autodesk View V1 on CD	£119	139.83
Autosketch V2.1 for Win 3.1/Win 95 on CD & 3.5	£45	52.88
Genius LT95 for Windows 95 on CD	£350	411.25
Genius LT3.1 for Windows 3.1 on CD	£142	166.85
<b>COREL</b> Visual CADD on CD Win 95 & NT (NOT 3.1)	£215	252.63

## DATABASE

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<b>MICROSOFT</b> Access V2.0 on 3.5	£222	260.85
Access V2.0 CCP Upgrade on 3.5	£81	95.18
Access 97 for Windows 95 on CD	£224	263.20
Access 97 Competitive & Version Upgrade for Win 95 on CD	£88	103.40
Access Developes Toolkit V7 for Win 95 on CD	£335	393.63
Visual FoxPro V3 for Windows on CD or 3.5	£120	141.00
Visual FoxPro V3 for Windows Ver UPG on CD or 3.5	£69	81.08
Visual FoxPro V3 for Windows Professional CD or 3.5	£299	351.33
Visual FoxPro V3 for Win Prof Comp UPG on CD or 3.5	£185	217.38
Visual FoxPro V5 for Windows Professional on CD	£319	374.83
Visual FoxPro V5 Version Upgrade for Windows on CD	£199	233.83

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<b>ADOBE</b> Illustrator V7 for Windows 95 on CD	£172	202.10
Illustrator V7 for Windows 95 Upgrade from V4 on CD	£79	92.83
Pagemill V2 Windows 95 on CD	£59	69.33
Pagemaker V6.5 Win 95 on CD	£355	417.13
Pagemaker 5 to 6 Upgrade on CD & 3.5	£86	101.05
Pagemaker U/G from any previous version to V6.5 Win 95 CD	£89	104.58
<b>MICROSOFT</b> Publisher for Windows V2.0 on 3.5	£65	76.38
Publisher 97 for Windows 95 on CD	£65	76.38
Publisher 97 for Windows 95 on 3.5	£65	76.38
Publisher 97 Upgrade for Windows 95 on 3.5	£39	45.83
Publisher 97 Upgrade for Windows 95 on CD	£39	45.83
<b>QUARK</b> Express V3.32 for Windows on 3.5	£550	646.25

## GRAPHICS - DESIGN

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<b>ADOBE</b> Acrobat V3 for Windows 3.1 & 95 on CD	£129	151.58
Acrobat Capture V2 for Windows 95 on CD	£440	517.00
Type Manager WP V3 on 3.5	£25	29.38
After Effects for Windows 95 on 3.5	£471	553.43
After Effects Pro for Windows 95 on 3.5	£944	

## INTEGRATED

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<b>MICROSOFT</b> Small Business Manager CD	£48	56.40
Home Essentials 97 for Win 95 on CD	£76	89.30
Office 97 Standard Edition for Win 95 on CD	£320	376.00
Office 97 Version & Competitive Upgrade for Win 95 on CD	£148	173.90
Office 97 Small Business Edition for Win 95 on CD	£325	381.88
Office 97 Small Business Edition Ver & Comp on CD	£148	173.90
Office Pro 97 with Bookshelf Basics for Win 95 on CD	£418	491.15
Office Pro 97 Upgrade with Bookshelf for Win 95 on CD	£205	240.88
Office 97 Developers Edition for Win 95	£525	616.88
Office 97 Developers Upgrade from Office Pro 97 on CD	£195	229.13
Office 97 Developers Edition Comp/Ver U/G on CD	£330	387.75
Office 97 V4.2 on 3.5 or CD	£325	381.88
Office 97 V4.2 CCP Upgrade on 3.5	£161	189.18
Office 97 V4.2 Competitive Upgrade on 3.5	£212	249.10
OfficePro V4.3 on 3.5 or CD	£419	492.33
OfficePro V4.3 CCP Upgrade on 3.5	£242	284.35
OfficePro V4.3 CCP Upgrade on CD	£242	284.35
Works V3.0 Upgrade Win/Dos on 3.5	£54	63.45
Works V3.0 Windows on 3.5	£75	88.13
Works V4 for Windows 95 on 3.5 only	£73	85.78

# Visio



### Diagram your information systems and business processes.

Visio Professional 5.0 is the ideal tool for creating physical or logical network diagrams, mapping Web sites, planning software development, designing databases, analyzing your business processes, and more. Work with 980 network and telecom shapes, including more than 600 manufacturer-specific shapes. Even create custom solutions with built-in **Microsoft Visual Basic for Applications (VBA)**.

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### Create and share 2D technical drawings more efficiently

Visio Technical 5.0 spans the needs of 2D technical drawing professionals. It's the ideal tool for space plans, HVAC designs, electrical schematics, process plant designs, mechanical drawings, and more. Create drawings by dragging and dropping intelligent SmartShapes® symbols that behave like the bolts, stairs, and other real-world objects they represent.

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### Create smart business diagrams quickly.

Visio Standard 5.0 helps you diagram and track your workflow, communicate your department's reporting structure, or enhance your presentations with complete ease. It's the ideal tool for flowcharts, organization charts, project timelines, marketing visuals, and more. Plus, Visio Standard shares a common interface with your Microsoft Office tools for smooth integration with your desktop.

£16.32inc vat

# ZETAfax

Zetafax has proven itself as the first choice for reliable corporate fax server software at thousands of customer sites over the past five years. Zetafax has proven itself to be one of the world's favourite LAN fax software packages for Windows NT and is now sold in 25 countries and available in seven languages.

Supports Windows NT4.0, Windows 95, Windows 3.11, and Windows NT3.51 Runs on Windows NT Server, Novell Netware and most other PC Networks - E-mail integration with Microsoft Exchange, Microsoft Mail, Lotus cc:Mail, Lotus Notes and Groupwise Easy to install, manage and use Full e-mail integration: 'fax just like e-mail' Cross platform support Microsoft BackOffice integration Sophisticated permission system New address books These standard system support one fax line for incoming/outgoing faxes.



	ex vat	inc vat
5 user system	£350	£411.25
10 user system	£495	£581.63
25 user system	£995	£1169.13
50 user system	£1495	£1756.63
100 user system	£2195	£2579.13
250 user system	£3995	£4694.13
Single user system for Win NT	£95	£111.63
Additional line pack - upgrade for an extra fax line	£495	£581.63
Unlimited line pack	£995	£1169.13
Application Programmers Interface	£495	£581.63
Direct dial routing option for Zetafax (up to 25 users)	£495	£581.63
Direct dial routing option for Zetafax (over 25 users)	£995	£1169.13

Zetafax maintenance agreements are available at 15% of the software costs per annum.



# DON'T TYPE TALK!

## DRAGON DICTATE SOLO

Includes a high quality noise-cancelling microphone  
New UK English Version 120,000 word vocabulary  
with 30,000 word active customisable dictionary

The only PC dictation program to do ALL this!

Dictates, edits, moves and formats text and numbers directly  
within your chosen application for Windows 95 or Windows 3.1.

Voice controls Microsoft Exchange, Netscape  
Navigator Ver 3.0, Adobe Acrobat Reader and Windows  
accessories, including Write, WordPad, Calculator, Solitaire  
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- Voice -activates commands and pull down menus
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- Creates accurate documents by dictating to your PC
- Spells correctly every time
- Reduces repetitive keyboard and mouse motions
- Fast enrolment and Quick Training program included

£36 ex vat £42.30 inc vat

### DICTATE TO YOUR PC AND CONTROL YOUR WINDOWS APPLICATIONS BY VOICE ALONE!

Work directly within your choice of MS Word, Excel, Access, PowerPoint or Internet Explorer - just say the words!

NEW! DragonDictate Solo Pro Classic  
The Premier PC Dictation Program

The power of speech is here! Concentrate on your work,  
not your computer!

Dictate into MS Word, Lotus WordPro and Corel WordPerfect!

- Now you can work in multiple applications at the same time!
- UK English dictionary - understands regional accents!
- 120,000 word vocabulary with 30,000 word active dictionary.
- Reach possible dictation speeds of 70 - 120 words per minute, increasing with use.
- Control most other Windows applications\* just by saying what you see on the screen.
- Contains over 4,500 voice macros to recall standard templates & paragraphs by a single voice command.
- Voice-control your mouse, so your keyboard becomes an option, not a necessity.

Dictation training gets you started right away NEW Solo Pro Classic is a professional quality speech recognition system instantly recognises your Windows application and allows you to work within it using commands that you already know. You can avoid your keyboard altogether, so it's ideal if you prefer to avoid typing in a busy business environment.

Fully supports dictation and command-control in all Windows applications prior to Microsoft Office 97. Supports dictation only in Microsoft Office 97 applications.

£63 ex vat £74.03 inc vat

### Dragon Naturally Speaking

- True Continuous Speech
- Speak Without Having to pause

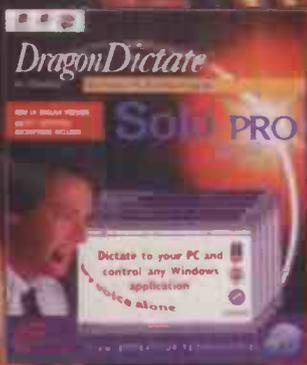
Highly Accurate

30,000 word active vocabulary

Words can be added

- Natural Spelling

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## ADOBE

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Photoshop U/G From any previous full version to V4 CD (requires S/N)	£128	150.40
Photoshop V4 for Windows	£370	434.75
Premier Software V4.2 on CD & 3.5	£295	346.63
Photo Deluxe 1.0 for Win 95 on CD	£52	61.10
Texturemaker for Win 95 on 3.5	£92	108.10
Publishing Collection for Win 95 on CD	£740	869.50

## OPERATING SYSTEMS

### MICROSOFT

3 in 1 Value Pack on CD Contains:-Windows 95 Upg Plus, MS Internet Starter Kit	£65	76.38
DOS 6.22 Upgrade on 3.5	£38	44.65
Windows to Win 95 Upgrade on CD	£58	68.15
Windows to Win 95 Upgrade on 3.5	£58	68.15
DOS to Windows 95 on 3.5	£111	130.43
DOS to Windows 95 1 User Lic	£99	116.33
Plus for Windows 95 on CD	£26	30.55
Plus for Windows 95 on 3.5	£26	30.55
Windows for workgroups 3.11 on 3.5	£89	104.58
Windows for workgroups Upgrade on 3.5	£40	47.00
Windows NT Server V4 with 5 Client Licences on CD	£544	639.20
Windows NT Server V4 Ver Upg + 5 Client Licences on CD	£279	327.83
Windows NT Server V4 Comp Upg + 5 Client Licences on CD	£282	331.35
Windows NT Server V4 with 10 Client Licences on CD	£761	894.18
Windows NT Server V4 Upgrade + 10 Client Licences on CD	£372	437.10
Windows NT Workstation V4 on CD	£213	250.28
Windows NT Workstation V4 Upgrade From Prev Ver NT on CD	£99	116.33
File & Printer Server for Windows NT on CD	£69	81.08
Netware Services for Win NT on CD	£115	135.13

## SPREADSHEETS

### LOTUS

1-2-3 V4.0 DOS on 3.5	£210	246.75
1-2-3 97 for Windows 95 on CD	£219	257.33
1-2-3 97 Version U/G for Windows 95 on CD	£83	97.53

### MICROSOFT

Excel V5.0 on 3.5	£224	263.75
Excel V5.0 CCP Upgrade on 3.5	£81	95.18
Excel 97 for Windows 95 on CD	£221	259.68
Excel 97 Competitive & Version Upgrade for Win 95 on CD	£87	102.23

## WORD PROCESSING

### ADOBE

FrameMaker V5.5 Authoring/Publish for Win 95 on CD	£432	507.60
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### LOTUS

Word Pro 97 for Win 95 & NT	£36	42.30
Organizer 97 for Windows 95 on CD	£37	43.48
Word Pro 96 for Win 95 on 3.5	£48	56.40
Organizer V2.1 on 3.5	£39	45.83

### MICROSOFT

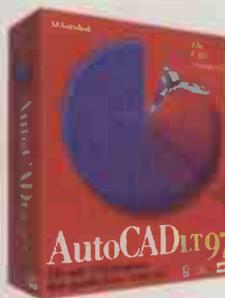
Word V6.0 for Windows on 3.5	£219	257.33
Word V6.0 CCP Upgrade on 3.5	£81	95.18
Word V6.0 Comp Upgrade on 3.5	£105	123.38
Word 97 for Windows 95 on CD	£220	258.50
Word 97 Competitive & Version Upgrade for Win 95 on CD	£87	102.23

## VOICE RECOGNITION

IBM VoiceType Simply Speaking for Windows 95 CD	£33	38.78
IBM VoiceType Simply Gold for Windows 95 on CD	£59	69.33
Dragon Dictate Solo for Windows 95 on CD	£39	45.83
Dragon Dictate Naturally Speaking on CD	£427	501.73
Dragon Dictate Professional for Win 95/3.11 on CD	£74	86.95

## Autodesk

### Auto CAD LT 97



£15 ex vat £487.63 inc vat

AutoCAD LT® 97 is the only CAD program that speaks 100 percent fluent AutoCAD®. Loaded with powerful 2D drawing and editing features, AutoCAD LT® 97 now has a drag & drop Content Explorer™ for easy symbol management, Office 97 logo compliance plus precision drawing tools like AutoSnap™ and PolarSnap™. You can even share drawings on the Internet.

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# SHARP

## FO-1450 FACSIMILE



The SHARP FO-1450 is a compact personal facsimile, ideal in domestic, home and small business environments. The FO-1450 uses plain paper and thermal ink film transfer technology. The FO-1450 has an extremely low profile as well as a small footprint for minimal space usage.

**£215 ex vat**    **£252.62 inc vat**

- 300 sheet drawer capacity
- 20 sheet auto document feeder
- 2 in 1 print function
- Standard 512 KB memory
- Substitute reception
- Help function
- 64-level halftone control
- Anti-junk fax function
- Answering machine hook-up
- Broadcasting
- Extension telephone transfer
- Memory transmission
- 9 second transmission
- 20 one touch, 79 two touch dialling
- Timer transmission
- Superfine resolution
- Error correction mode
- Electronic telephone directory

## UX-70 FACSIMILE



The SHARP UX-70 is a compact personal facsimile, ideal in domestic, home and small business environments. The UX-70 is approximately 2cm smaller than its predecessor and features new soft touch keys.

**£129 ex vat**    **£151.57 inc vat**

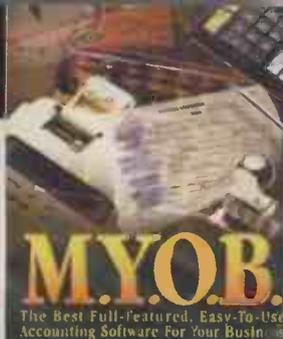
- Answerphone hook-up
- 5 one touch, 10 two touch dialling
- Auto fax/phone changeover
- Extension phone transfer
- 15-sheet auto document feeder
- Copier function
- Auto-redial
- Polling function
- 20 second transmission

## SHARP FACSIMILE RANGE

UX-70	<b>£129</b>	151.57	FO-1450	<b>£215</b>	252.62
UX-75	<b>£145</b>	170.37	FO-2600	<b>£445</b>	522.87
UX-81	<b>£159</b>	186.82	FO-2700M	<b>£479</b>	562.82
UX-85	<b>£180</b>	211.50	FO-4850	<b>call</b>	<b>call</b>

# Accounting Software

The best full featured, easy to use small business accounting software



Eliminate the need for expensive external financial help. Even if you have no previous experience - M.Y.O.B. lets you take charge of your own finances with an award winning interface that makes accounting easy for everyone.

## M.Y.O.B V6

- Easy to understand Financial reports
- No End of Day or Month procedures to perform
- Select stock items by name or number
- Print Delivery Notes or Labels to send out with your goods
- Recurring sales and purchases for your repeat sales/orders
- Comprehensive context sensitive help



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M.Y.O.B Version 6	<b>£114</b>	£133.95
M.Y.O.B Premier 3 user pack	<b>£495</b>	£581.62
M.Y.O.B. Test Drive Version 6	<b>£8</b>	£9.40
Technical Support 1 Year	<b>£69</b>	£81.07
Technical Support 2 Year	<b>£115</b>	£135.12
M.Y.O.B. Upgrade & Support Bundle Version 6	<b>£99</b>	£116.32
M.Y.O.B. Upgrade from Bestbooks	<b>£85</b>	£99.87
M.Y.O.B. upgrade to V 6 (no existing support)	<b>£55</b>	£64.62
M.Y.O.B. upgrade to V 6 (with existing support)	<b>£37</b>	£43.47
M.Y.O.B. Cross Platform Upgrade (Mac/PC)	<b>£75</b>	£88.12

Sales & Collections 9am - 8pm Weekdays  
9am - 5pm Saturdays  
10.30 - 4.30pm Sundays

Customer Services: 0181 286 2286  
Technical Support: 0181 286 2286  
Lines open: 9am - 6pm Weekdays

## NETWORK CARDS

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3COM		
3C-509B RJ45 ISA bare card	£39	45.82
3C-509B Combo ISA bare card	£49	57.57
3C-900TPO RJ45 PCI bare card	£45	52.87
3C-900 Combo PCI bare card	£59	69.32
3C-905 10/100 PCI bare card	£45	52.87
3C-509B RJ45 ISA	£69	81.07
3C-509B Combo ISA	£79	92.85
3C-509B RJ45 PCI	£55	76.37
3C-900 Combo PCI	£79	92.85
3C-905 10/100 PCI	£65	76.37
3C-575TX 10/100 PCMCIA cardBus	£89	104.57
3C-589 RJ45 PCMCIA	£79	92.85
3C-589 Combo PCMCIA	£105	123.37
3C-592 Combo EISA	£135	158.62
3C-597TX 10/100 EISA	£159	186.82
3C-563 RJ45 & 3366 Modem PCMCIA	£199	233.82
3C-563 Combo & 3366 Modem PCMCIA	£225	264.37
TECH DIRECT		
Combo ISA PnP	£12	14.10
Combo PCI	£16	18.80
10/100 PCI	£26	30.55
Combo PCMCIA	£48	56.40
DLINK		
DE-220PC Combo ISA PnP	£19	22.32
DE-530C Combo PCI	£24	28.20
DPE-500TX 100Mb PCI	£36	42.30
DE-660C Combo PCMCIA	£46	54.05
DE-620C Combo Parallel	£71	83.43
GENIUS		
16bit Combo PnP	£20	23.50
32bit Combo PCI	£25	29.37
10/100 PCI	£55	64.62
Pocket Parallel	£46	54.05
Combo PCMCIA	£35	41.62
GREYCELL		
RJ45 PCMCIA	£89	104.57
Combo PCMCIA	£105	123.37
RJ45 Ethernet & 3366 Modem PCMCIA	£219	257.32
Combo Ethernet & 3366 Modem PCMCIA	£249	292.57
INTEL		
Ether Express Pro 10+ Combo	£65	76.37
Ether Express Pro 10+ Combo Flash	£68	79.90
Ether Express Pro 10+ Combo PCI	£69	81.07
Ether Express Pro 100 ISA	£109	128.07
Ether Express Pro 100 PCI	£49	57.57
Ether Express Pro 100 EISA	£165	193.87
PSION DACOM		
GoldCard Combo PCMCIA	£85	99.87
GoldCard Combo & V34 Modem PCMCIA	£204	239.70
SMC		
8416BT EtherEZ Combo ISA PnP	£48	56.40
8432BT EtherPower Combo PCI	£49	57.57
9332BDBT EtherPower 10/100 PCI	£55	64.62
8020T EtherEZ RJ45 PCMCIA	£79	92.82
8020BT EtherEZ Combo PCMCIA	£108	126.90
XIRCOM		
RJ45 Parallel	£162	190.35
BNC Parallel	£165	193.87
Combo Parallel	£199	222.07
RJ45 PCMCIA (10/100 upgradeable)	£97	112.22
Combo PCMCIA (10/100 upgradeable)	£107	125.72
10/100 PCMCIA	£39	45.82
10/100 PCMCIA CardBus	£128	150.40
RJ45 Ethernet & 3366 Modem PCMCIA	£181	212.67
Combo ethernet & 3366 Modem PCMCIA	£209	245.57
RJ45 10/100 & 56k Modem PCMCIA	£229	269.07

## NETWORK HUBS

	ex vat	inc vat
3COM		
Office connect		
3C16700 8TP0 8port	£59	63.32
3C16701 8TPC 8port	£78	91.65
3C16710 8TPM 8port	£233	273.77
3C16720 8TP100 8port 100TX SuperStack II	£389	457.07
3C16702 16TPC 16port	£147	172.72
3C16590 Dual Speed 12port	£739	868.32
3C16591 Dual Speed 24port	£1169	1373.50
3C16670A 12port	£275	323.12
3C16671A 24port	£475	558.12
3C250TX 12port 100TX	£1075	1263.12
BAY NETWORKS NETGEAR		
EN104UK 4port	£55	64.62
EN108UK 8port & AUI	£69	81.07
EN116UK 16port & AUI	£139	163.32
EN308UK 8port & BNC & AUI	£99	116.32
EN316UK 16port & BNC & AUI	£159	186.82
FE104UK 4port 100Mb	£149	175.07
GENIUS		
GH4080 8port	£59	69.32
GH4160 16port	£89	116.32
GH4080R 8port 100TX	£399	468.82
GH4120R 12port 100TX	£585	687.37
FE108UK 8port 100Mb	£289	339.57
FE508UK 8port 100baseTX	£229	261.57
FE516UK 16port 100baseTX	£399	468.82
TECH DIRECT		
5port	£33	38.77
8port	£45	52.87
16port	£95	111.62
8port 100TX	£279	327.82
DLINK		
DE805TP 5port	£40	47.00
DE905 2 User starter kit	£79	92.82
DE809TC 8port & BNC	£49	57.57
DE809TP 8port	£69	79.90
DE812TP* 12port	£89	104.57
DE816TP16port	£155	182.12
DE824TP 24port	£165	193.87
DE1812 12port	£214	251.45
DE1824 24port	£324	380.70
DPE808TX 8port 100TX	£249	292.57
DPE812TX 12port 100TX	£425	499.37
DPE816 16port 100TX	£559	656.82
SMC		
3605-EZ EtherEZ 5T 5port	£52	61.10
3608TC-EZ EtherEZ 8TC 8port	£79	92.82
3616TC-EZ EtherEZ 16TC 16port	£173	203.27
5203TC-EZ EtherEZ 8port 100TX	£392	460.60
FMS II 12port	£379	445.32
FMS II 24port	£70	787.25
NETWORK SWITCHES		
3COM		
3C16405 Port Switch 12port	£17	252.62
3C16406 Port Switch 24port	£294	351.20
3C16901A Switch 1000 12port	£349	411.07
3C16900A Switch 1000 24port	£1379	1620.32
3C16941A Switch 3000TX 18port	£1635	1921.12
3C16942A Switch 3000TX 12port	£1969	2313.57
BAY NETWORKS NETGEAR		
SW507UK 2port 10/100	£359	421.82
SW507UK 7port 10/100	£689	809.57
DLINK		
DES802 2port 10/100	£205	240.87
DES805 5port 10/100	£388	455.90
DES810 10port 10/100	£635	746.12
DES1004 4port N-Way	£489	574.57
DES1008 8port N-Way	£699	821.07
DES2205 5port 10/100	£545	640.37
DES2208 8port 10/100	£659	780.32
DES3208 8port 10/100	£1145	1345.37

# APC

## SMART-UPS

APC's Smart-UPS are the perfect uninterruptible power supply (UPS) for file servers, minicomputers, UNIX CPUs, internet hubs, telecommunications systems and other mission critical applications. If downtime has immediate effects on your business, you need an APC Smart-UPS. Protect your data, protect your hardware, increase your productivity with APC.

- Lightning and Surge Protection shields hardware
  - Network-grade Line Conditioning prevents glitches
  - SmartBoost automatically corrects brownout conditions
  - SmartTrim automatically corrects overvoltage conditions
  - Sine Wave Output suits sensitive loads
- |                |             |        |                |              |         |
|----------------|-------------|--------|----------------|--------------|---------|
| SmartUPS 450i  | <b>£224</b> | 263.20 | SmartUPS 1400i | <b>£373</b>  | 438.27  |
| SmartUPS 700i  | <b>£228</b> | 267.90 | SmartUPS 2200i | <b>£539</b>  | 633.32  |
| SmartUPS 1000i | <b>£286</b> | 336.05 | SmartUPS 3000i | <b>£1079</b> | 1267.82 |

## BACK-UPS PRO

- Correction of power failures and electrical interferences
- Automatic regulation of undervoltages and overvoltages
- Quick battery recharging system
- Serial port for automatic OS shutdown
- Supplied with the PowerChute Pro UPS management software (for Win 95, Win 3.1 Win NT and OS/2)
- Plug & Play installation for Win 95
- Protection against overvoltages and power surges
- Built - in 10 Base-T network card surge protection for maximum system integrity
- Automatic and programmable testing and diagnostics
- User - replaceable batteries
- Optimised battery life

BackUPS 300 MI	<b>£89</b>	104.58	B/UPS Pro 420i	<b>£145</b>	170.37
BackUPS 500 MI	<b>£125</b>	146.88	B/UPS Pro 650i	<b>£185</b>	217.37
BackUPS 650 MI	<b>£189</b>	222.08	B/UPS Pro 1000i	<b>£279</b>	327.82
B/UPS Pro 280i	<b>£95</b>	111.62	B/UPS Pro 1400i	<b>£373</b>	438.27

# novatech

News • Latest Products • Latest Price Listings

Issue No: 8 January 1998

# FREE Corel DRAW

(version 4) Plus seven other exciting applications  
Hurry! While stocks last.



See  
page 2

## with Hewlett Packard ink cartridges!



See  
page 10

### New Canon BJC 7000



**Free**  
delivery on  
consumables!  
See pages 30 & 31

# JANUARY 1998



Printers



Scanners



Modems



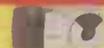
Memory



Monitors



Software



Cameras

and much  
more inside...

# Free Corel DRAW 4

How would you like to receive Corel Draw 4 absolutely free? The application is still renowned as one of the most versatile and user friendly drawing programmes ever written. Retailing at around £49.00, it allows you to create dynamic illustrations and charts, edit photos, perform direct scanning and produce on-screen presentations.

Well now, for a limited time, on selected Hewlett Packard ink cartridges, it does indeed come totally free on the excellent 'Big CD' along with seven other superb value programs.

To complement Corel Draw 4, you could use Corel Print House 1.1, to create professional looking greeting cards, stationary, brochures, invitations, business cards and more. The program has an easy-to-use interface with 600 professionally designed samples.

You could also add photographs to your graphical masterpieces using PhotoFinish 4.0, an easy to use yet remarkably powerful image editing tool that lets you enhance any photo image at the touch of a button. Use special effects on scanned or stock photos to sharpen up, retouch, crop or even re-colour.

The leading word processor, Corel WordPerfect also comes free on the CD. Version 6.1 of the product, to be precise. Create dazzling documents using

charts, table and columns with the aid of easy on-line help, pop-up wizards and customisable tool bars. This champion word processor will also read and write to most popular formats. If all that sounds too good to be true, and more value than even the most conscientious buyer can handle, then you'll be staggered to learn that there are four more excellent programmes on the CD as well!

With Hanes T-Shirt Maker, you can create full-colour, customised T-shirts in just minutes. Utilising ready to use templates and artwork, or your own imported photos, and then iron the image straight onto a T-shirt to make a truly original and outstanding piece of clothing.

Finally, for those of you considering joining the 'Word Wide Web' on the Internet, CompuServe 3.0.2., using Microsoft Internet Explorer will give you fast and reliable access when used in conjunction with a modem. Best of all, there is no charge for either your first month of membership and your first 10 hours of internet browsing.

With the eight different software packages included on this 'Big CD', you can have total creative freedom, and with the HP Inkjet cartridge itself, whichever program you use, you can be certain that the results will be always clear and always sharp.

Andy Logan

## The Personal Touch

If you are within travelling distance of Novatech, it is always worth remembering that we have a sales counter in the building.

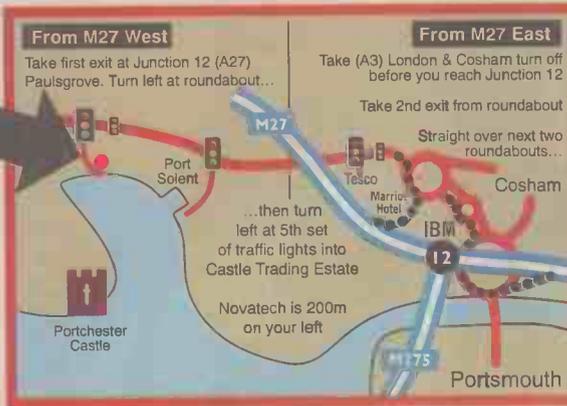
Collecting your goods just couldn't be simpler. All you need to do is phone our friendly, professional sales team to check stock availability and price. If the item you require is in stock, then we will gladly hold it aside for you for up to 24 hours.

Just leave your name and a contact telephone number, and your sales contact will give you an order number to quote on your arrival at the building.

We accept Visa, MasterCard, American Express & Switch, and can also provide a cheque clearing service if the amount of the purchase is higher than your cheque guarantee card limit. We gladly welcome personal callers and are happy to assist you.



Our friendly team are waiting to take your call.



Novatech Hamilton Road Cosham Portsmouth PO6 4PU

## TOP TEN

LAST MONTHS BEST SELLERS

- |                             |     |
|-----------------------------|-----|
| 1 Spot Scantak 2c           | P13 |
| 2 Epson Stylus Color 600    | P6  |
| 3 Novatech 14" Monitor      | P16 |
| 4 Epson Stylus Color 400    | P6  |
| 5 Novatech 20X Max CD Rom   | P19 |
| 6 Novatech 33.6 Int. Modem  | P15 |
| 7 HP DeskJet 670C           | P9  |
| 8 Quantum IDE HD 3.2Gb      | P27 |
| 9 HP DeskJet 690C           | P9  |
| 10 Novatech 33.6 Ext. Modem | P15 |

**NEW PRODUCT**

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**Star Buy!**

Look for these logos to help you rapidly find new products and those which have recently reduced in price.

Each month we will select an incredible value Star Buy (see front cover)

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**PRICE REDUCED**

**Call now for Next Day Delivery**

Please read the order information on the back page before ordering.

Cameras 12 CD ROMS 18 Consumables 30 Fax Machines 25 Graphics Cards 26 Hard Drives 27 Listings 24 Memory 4 Modems 14 Monitors 16 Motherboards 18 Networking 20

# plus more!



**Corel Print House™ 1.1**  
For great-looking greeting cards, stationery, banners, brochures, invitations, business cards, posters, and signs. Powerful drawing tools, plus an easy-to-use interface with 600 professionally designed samples.



**Word Perfect 6.1**  
A champion word processor. Makes it easy to use colours, chart, tables and columns in your documents. Will read and write to most popular formats. Easy-on-line help, with pop-up wizards to help you and customisable tool bars.



**Calendar Creator™ 4.0**  
Create your own custom calendars. For your computer desktop or to print out - with your own personal choice of pictures, format (weekly, monthly...) and style. Use the software to instantly organize, track and manage significant dates.



**Key Label Designer™**  
The world-leader in labeling software - and also ideal for home and hobbies. Create stunning labels for gifts, audio and video tapes, addresses. Choose from over 500 built-in formats for nearly every label brand on the market.



**CompuServe 3.0.2™**  
With Microsoft Internet Explorer. CompuServe members have fast, reliable access to the internet and worldwide e-mail links to millions of addresses. There is no charge for your first month of membership and your first 10 hours of internet browsing.



**Hanes® T-Shirt Maker**  
Full-colour, customized T-shirt in minutes. Choose between ready to use templates and artwork, or import your own photos etc. Print onto HP Iron-on T-Shirt Transfer media using your HP colour inkjet printer, and then iron it onto a T-shirt.



**Corel DRAW™ 4**  
Create dynamic illustrations and charts, edit photos, perform direct scanning, even produce on-screen presentations with the world's most famous drawing program. Includes word processing and multipage layouts. As well as 100 fonts and 1000 clipart images.



**Photo Finish® 4.0**  
Easy to use yet remarkably powerful image editing tools that let you enhance any photo image with the touch of a button. Sharpen up. Rebalance colours. Crop. Retouch. And with lots of special effects! Works with scanned or stock photos.

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David Furby

## Why choose Novatech?

- 1 We've been successfully trading for ELEVEN years, which has provided financial stability.
- 2 Our friendly sales team are second to none at dealing with your enquiry, and taking your order.
- 3 If you experience any problems our excellent technical support team will be waiting to help.
- 4 Our 3:1 sales to after sales staff ratio offers one of the highest levels of support in the industry.
- 5 It is FREE to call us! We don't expect an order every time, don't hesitate to call with your enquiry.
- 6 We were voted No. 1 for scanners by PC Direct, you get the same service on all of our products.
- 7 We ship over 500 orders every day and take care over every single one, including yours!
- 8 We keep huge stocks for rapid delivery. Don't hesitate to call us to check availability.
- 9 Our Price Promise ensures that we will beat all but the silliest of prices, do call us and ask.
- 10 We are a family run business and intend to offer an excellent service for many years to come.

Dear Reader

Welcome to our January Edition!

To celebrate the New Year we've dug out this incredible offer from Hewlett Packard (see above).

After the expense of Christmas you have to welcome 8 free software packages for the price of an inkjet cartridge! Hurry! While stocks last.

As we enter our eleventh year, I would like to thank every single one of our 100,000+ loyal customers for helping to make Novatech what it is today.

A prosperous New Year to you all...

David Furby

davidfurby@novatech.co.uk

**Call us on FREEPHONE: 0800 777500**

**novatech 3**

# CLICK Making Memory Easy..

**14 day money back**

# Desktop Memory

Find the type of memory for your PC using the coloured dots or call our experts for help.

**AMSTRAD**

- 7 Series
- 9 Series

**APPLE**

- Quadra 700,900,950
- Performa 200,410,430
- Quadra 610,650,800,840
- LC475,LC550,LC630
- PowerMac 6100,7100
- Performa 5200,5300
- Performa 6200
- PowerMac 7, 8, 9000 series

**AST**

- Bravo LC,LP,MS,MT
- Premmia LX, GX, MX
- Advantage series

**COMPAQ**

- Deskpro 2, 4, 6000 series
- Deskpro XL 6100, XL 6150
- Presario 4764, 4770, 8772
- Proliant 2500 / 2500R
- Proliant 800, 2100, 4300

**COLOSUS**

- 150 Multimedia DT, 166 +PMT
- 166MMT, 200+ System 97-1B
- 200M System 97-3, 97-5

**DAN**

- Dantum/S, 95/S, Value/S
- Home, Home +
- Dantum, Dantum Pro
- Ultimate, Ultimate +

**DELL**

- Dimension XPS Pro 180n
- Dim P133v,166v+,M166s,M200s
- Dimension XPS H233, H266
- XPS Pro 200N/NT, Pro 200N MT
- Performance L, M, T
- Power Edge 2100, 4100
- Power Edge 2200, 4200
- Omniplex, Optiplex
- Optiplex GXpro 6150, 6200
- Optiplex GXI 5133, 5166, 5200
- XPS P200s,P166s

**ELONEX**

- Kayak Server
- PC5120, PC5166, PT6200

**ESCOM**

- DX2,P60,P75,P100

**EYESHAM**

- Vale Prima/MMX/686
- Vale Prestige/MMX/686
- Platinum/MMX/Pro
- Platinum SEMMX/SE Pro/Dual

**FUJITSU**

- ErgoPro X453/100, 133, 166
- ErgoPro X653/166, 200, 166s

**GATEWAY**

- PC4sx33,DX33v,
- 66v,P/v,
- P4D
- P575,90,100,120,
- 133 EDO, 133 Elite
- P5-133, 166, 200 Elonex
- P5 150MM, 166MM, 200MM
- G6-233, 266, 233M, 266XL
- G6 - 200, 200XL

**HIGHMEAD**

- DX2/66,DX4/100
- P75,P90,P100

**ICL**

- Ergo Pro

**HEWLETT PACKARD**

- Vectra VE, VL, VA, XM, XA
- Vectra XU, XW
- Netserver Lh+ 5/133, Lh2 Pro
- Netserver Ld Pro 6/180
- N2,M2,XM2,VL2

**IBM**

- Aptiva 300, M, A Series
- 700 Series
- Valuepoint
- PS/2
- PC 365 EDO Model
- PC 300GL, 6282-3XX
- PC Server 325 Pro180, Pro200

**MITAC**

- DX2/66,DX4/100
- P60

**MJN**

- Discovery 150, 166+
- 150, 166, 200 M Series
- 150B, 200+B, Lan PC

**OLIVETTI**

- SNX 400

**OPUS**

- Powerhouse 166M, 200M, P200
- Premier PR150
- Prestige PR166/MM
- Fileserver PR150, Pro P200

**PACKARD BELL**

- 386, 486sx
- 486DX

**SIMPLY**

- DX2,DX4,P60,75,90
- Family Series, Internet Series
- Office 97

**VIGLEN**

- Bus PC133,166+,200+,PC Pro2000
- Genie 486, Contender
- Home 133, 150, Performance166M
- Pentium EX
- Ultimate 120,133
- Ultimate 166M, Awsome 200M

Decide how much more memory you need – Remember if you have a Pentium PC and use SIMMs you'll need to upgrade in pairs (eg. for 16Mb you need 2 x 8Mb modules)

Memory Type / Size	1Mb	4Mb	8Mb	16Mb	32Mb	64Mb	
30 Pin	£5	£13	—	—	—	—	ex VAT
	£5.88	£15.28					inc VAT
72 Pin Parity	—	£14	£25	£36	£72	—	ex VAT
		£16.45	£29.38	£42.30	£84.60		inc VAT
72 Pin Non Parity	—	£9	£14	£29	£59	—	ex VAT
		£10.58	£16.45	£34.08	£69.33		inc VAT
72 Pin EDO 60ns	—	£9	£14	£29	£59	—	ex VAT
		£10.58	£16.45	£34.08	£69.33		inc VAT
168 Pin Sync. Dram	—	—	—	£39	£69	£162	ex VAT
				£45.83	£81.08	£190.35	inc VAT
168 Pin FPM Dimm	—	—	—	£41	£72	£145	ex VAT
				£48.18	£84.60	£170.38	inc VAT
168 Pin EDO Dimm (Unbuffered)	—	—	—	£42	£79	£165	ex VAT
				£49.35	£92.83	£193.88	inc VAT
168 Pin EDO ECC	—	—	—	£54	£114	£227	ex VAT
				£63.45	£133.95	£266.73	inc VAT

Prices correct at time of going to press & may be subject to fluctuation. Please call to check - it's free.

# Notebook & Camera Memory



## Notebook Memory

	4Mb	8Mb	16Mb	32Mb
<b>Acer</b>				
Acernote 760i,780i,900i,350,350e,355	●	●	●	●
Acernote 350P, 510, 810, 970,370 Series	●	●	●	●
<b>AST</b>				
Ascentia 700, Bravo Notebook	●	●	●	●
Ascentia 800N 4/33, 4/50, 900N 4/50, 4/75	●	●	●	●
Ascentia 950N	●	●	●	●
Ascentia A Series, Ascentia J Series, P Series	●	●	●	●
Power Exec 4/25SL Colour	●	●	●	●
<b>COMPAQ</b>				
LTE Lite 4/25C,/33C,/25E,/25SL Mono Notebk	●	●	●	●
LTE Elite 4/40C,/50E,/40CX,/50CX,/75CX	●	●	●	●
LTE 5000Series 5000P75,5100P90,5200 P120	●	●	●	●
Concerto 4/25, 4/33	●	●	●	●
Contura 4/25, 4/25c, 4/25cx	●	●	●	●
Contura 400C, 400CX, 410, 410C, 410CX	●	●	●	●
Contura 420 Dx4/75, 430 Dx4/100	●	●	●	●
Contura Aero 4/25, 4/33C	●	●	●	●
Armada 1100,1120,1130,1500,4100 series	●	●	●	●
Presario 1010, 1020, 1030, 1060, 1070, 1080	●	●	●	●
<b>DEC</b>				
DEC Hi-Note, Hi-Note Ultra, Ultra II	●	●	●	●
DEC Hi-Note VP CSS, CTS, LSS, LTS	●	●	●	●
DEC Hi-Note VP 520, 525, 535, 560, 565, 575	●	●	●	●
<b>DELL</b>				
Latitude 425,433,433c,433cx,450c,450cx	●	●	●	●
Latitude XP 450c,475c,4100c,4100cx, XPI	●	●	●	●
Latitude MX,MC,LX4100C	●	●	●	●
Latitude XPI 100,133	●	●	●	●
Latitude LM P133ST, M166ST, LM CD P150ST	●	●	●	●
<b>GATEWAY</b>				
2000 Handbook 486, Liberty DX2/50,DX4/100	●	●	●	●
Solo 2000 V75, P3C, 2100 S90,S120,SS133XL,S150	●	●	●	●
Solo 9100	●	●	●	●
<b>HEWLETT PACKARD</b>				
Omnibook 600C,600CT	●	●	●	●
Omnibook 4000,5000,5500	●	●	●	●
Omnibook 800	●	●	●	●
<b>IBM</b>				
Thinkpad 701,230C,230CS	●	●	●	●
ThinkPad 700, 700C, 720,720C	●	●	●	●
ThinkPad 730T,730TE,345C,345CS,355,360	●	●	●	●
ThinkPad 750,755,370C	●	●	●	●
ThinkPad 760C,760CD,760L,760LD	●	●	●	●
ThinkPad 760EX,760ED,760EL,365X,365XD,560,535	●	●	●	●

## Notebook Memory

	4Mb	8Mb	16Mb	32Mb
<b>NEC</b>				
UltraLite Versa, Versa E, M, P, V 4000 P75	●	●	●	●
Versa 4050 P90, Versa 4050H, 6000	●	●	●	●
Versa S,2000	●	●	●	●
<b>OLIVETTI</b>				
Echos Pentium series, Echos Pentium Pro	●	●	●	●
<b>PANASONIC</b>				
CF21P,CF41mkII,mkIII,Pentium	●	●	●	●
<b>TEXAS-INSTRUMENTS</b>				
Extensa 450,455,455T,550,555CD,560,565	●	●	●	●
Extensa 510	●	●	●	●
Extensa 600,650,Travelmate,6020,6030,6050	●	●	●	●
Travelmate 5000, 5300	●	●	●	●
<b>TOSHIBA</b>				
Portege 610, 620 Series	●	●	●	●
Satellite Pro 400, 410, 415, 420, 425, 430 Series	●	●	●	●
Satellite Pro 100, 105, 110, 115, 200, 210 Series	●	●	●	●
Dynabook Satellite Pro 430, 110, 200 Series	●	●	●	●
Dynabook Satellite 220, 440	●	●	●	●
Tecra T500, 510, Portege 650, 660	●	●	●	●
Tecra T700CS,T700CT	●	●	●	●
Tecra T710CS, T710CT, T720CS, T720CT, T730	●	●	●	●
T2000, T2000SX, T2000SXe, T2200SX;	●	●	●	●
T1000LE, T1800, T1850, T1850C Notebook	●	●	●	●
T2100/CS/CT, T2105/CS/CT;	●	●	●	●
T2150CDT, T2150CDS, T2155CDT, T2155CDS;	●	●	●	●
T2110, T2115, T2130, T2135	●	●	●	●
T4400, T6400, T6600 Notebook (All)	●	●	●	●
T4500, T4600, T4700, T4800, T4850CT;	●	●	●	●
T1900, T1910, T1950, 1960 (All), T4900CT;	●	●	●	●
T2400, T2450, T3400, T3600	●	●	●	●

## Digital Camera Memory

	4Mb	8Mb	16Mb	32Mb
<b>Associated Press NC 2000</b>	●	●	●	●
<b>Canon EOS-1N, EOS-DCS1, EOS-DC33</b>	●	●	●	●
<b>Canon Powershot 600</b>	●	●	●	●
<b>Canon Powershot 350</b>	●	●	●	●
<b>Chinon ES-1000, ES-3000</b>	●	●	●	●
<b>Dycam DC-10</b>	●	●	●	●
<b>Fuji DS-505a, DS-515a, DS-220</b>	●	●	●	●
<b>Kodak DC50, DCS420, DCS460, DCS465</b>	●	●	●	●
<b>Kodak EOS DCS1, DCS2, DCS5</b>	●	●	●	●
<b>Kodak DC25, DC120</b>	●	●	●	●
<b>Nikon E2N, E2S</b>	●	●	●	●
<b>Ricoh RDC-2, RDC-2E</b>	●	●	●	●

Memory Size	4Mb	8Mb	16Mb	32Mb	
<b>Price Band A</b>	<b>£37</b>	<b>£44</b>	<b>£74</b>	<b>£149</b>	<b>ex VAT</b>
	£43.48	£51.70	£86.95	£175.07	inc VAT
<b>Price Band B</b>	<b>£39</b>	<b>£53</b>	<b>£87</b>	<b>£173</b>	<b>ex VAT</b>
	£45.83	£62.27	£102.22	£203.27	inc VAT
<b>Price Band C</b>	<b>£45</b>	<b>£61</b>	<b>£102</b>	<b>£209</b>	<b>ex VAT</b>
	£52.88	£71.67	£119.85	£245.57	inc VAT
<b>Price Band D</b>	<b>£49</b>	<b>£74</b>	<b>£119</b>	<b>£239</b>	<b>ex VAT</b>
	£57.58	£86.95	£139.83	£280.83	inc VAT
<b>Price Band E</b>	<b>£55</b>	<b>£89</b>	<b>£154</b>	<b>£309</b>	
	£64.63	£104.58	£180.95	£363.08	inc VAT
<b>Price Band F</b>	<b>£59</b>	<b>£89</b>	<b>£169</b>	<b>£279</b>	
	£69.33	£104.58	£198.58	£327.83	inc VAT
<b>Price Band G</b>	<b>£83</b>	<b>£139</b>	<b>£249</b>	—	
	£97.53	£163.33	£292.58		inc VAT
<b>Price Band H</b>	<b>£63</b>	<b>£99</b>	<b>£159<sup>(15Mb)</sup></b>	<b>£269<sup>(30Mb)</sup></b>	<b>ex VAT</b>
	£74.03	£116.33	£186.83	£316.08	inc VAT

We also stock a wide range of notebook accessories & upgrades. See listings.

Call us on **FREEPHONE: 0800 777500**

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# Money-saving 'one-box' solutions

'Colour-In Colour-Out' – Stylus Color 400 printer and GT5000 Scanner for only £263! <sup>ex VAT</sup>



ONE BOX SOLUTION... Stylus Color 400 & GT5000 Save over £20!

EPSON Stylus Color 400 **£133** <sup>ex VAT</sup> **£156** <sup>inc VAT</sup>  
EPS-STY400

- 720 dpi printing in colour & mono with Epson MicroDot™
- Photo Real Colour & Laser Sharp Mono Printing as standard
- Up to 3ppm Colour, 4ppm Mono printing on plain paper
- Windows compatible
- Prints on plain paper with Epson Quick-Dry ink
- Easy to use, in built online help – Epson Answers
- Epson AutoColour function
- Advanced Dual Ink Cartridge System with Epson Quick-Dry Ink
- Optimised Printing of Video/Digital Camera Images
- Windows '95 ICM & Colour Matching
- 1 year RTB with optional 3 Year On Site Warranty
- Epson CoverPlus three year extended warranty service available
- Free 'Epson Fun Factory' bundle for PC and Mac

The EPSON Stylus Color 400 is a high quality inkjet printer providing 720 x 720 dpi Photo Real output on plain paper providing outstanding results for the business or home user.

## Photo Real Colour at 1440 dpi!

EPSON Stylus Color 600 **£169** <sup>ex VAT</sup> **£198** <sup>inc VAT</sup>  
EPS-STY600

- 1440 dpi colour or true black printing with Epson Super MicroDot™
- Photo-Real Colour & Laser Sharp Mono Printing as standard
- Windows & Mac Compatible
- Easy to use, in built online help – Epson Answers
- Up to 4ppm Colour, 6ppm Mono Printing
- Advanced Dual Ink Cartridge System with Epson Quick-Dry Ink
- Epson AutoColour Function
- Optimised Printing of Video/Digital Camera Images
- Windows '95 ICM & Colour Sync 2.0 Compliance
- 1 year RTB with optional 3 Year On Site Warranty
- Free 'Epson Fun Factory' bundle for PC and Mac

PRICE REDUCED



## Ultra Fast – 8 pages per minute!

EPSON Stylus Color 800 **£221** <sup>ex VAT</sup> **£259** <sup>inc VAT</sup>  
EPS-STY800

- Ultra fast print speed – up to 8ppm mono, 7ppm colour
- 1440 dpi with Epson Super MicroDot™ & Epson Super MicroWeave™
- Laser Sharp mono and photo-real colour printing as standard
- Windows & Mac Compatible
- Optional Postscript & Network Capability
- High capacity dual ink cartridge system
- Epson AutoColor Function
- Optimised Printing of Video/Digital Camera Images
- Windows '95 ICM & Colour Sync 2.0 Compliance
- 1 year RTB with optional 3 Year On Site Warranty
- Epson CoverPlus three year extended warranty service available – £65

PRICE REDUCED



## Low cost colour inkjet printer

EPSON Stylus Color 300 **£106** <sup>ex VAT</sup> **£124** <sup>inc VAT</sup>  
EPS-STY300

- Affordable four colour inkjet
- 720 dpi colour and true black printing
- Photo Real colour & laser sharp mono as standard
- Speed: 3ppm black and 1.2ppm colour
- Excellent results on many medias including plain paper
- Designed exclusively for Windows using EPSON printer driver
- On-line help and Epson Answers hints & tips software
- Epson quick dry inks
- Windows driver provided on CD ROM
- 1 year RTB with optional 3 Year On Site Warranty
- Epson CoverPlus three year extended warranty service available



### Inkjet Cartridge Finder for Epson

Full Consumables listings including coated papers inside back cover.

Stylus	300	400	600	800	Photo	Product Code	Price ex VAT
Black	●	●	●	●	●	I-EPS20093	£12.89
Colour	●	●	●	●	●	I-EPS20089	£15.67
Black	●	●	●	●	●	I-EPS20108	£15.21
4 Colour	●	●	●	●	●	I-EPS20138	£15.80
5 Colour	●	●	●	●	●	I-EPS20110	£14.90

## EPSON Photo Studio



EPSON Stylus Photo **£308** <sup>ex VAT</sup> **£361** <sup>inc VAT</sup>  
EPS-STYPHO

- Photo Reproduction Quality output (PRQ) reproduction (can also print text as usual)
- Prints 4" x 6" format and enlargements to A4 size
- Normal and light colour QuickDry inks (6 colours)
- Up to 720 x 720 dpi resolution
- From 2 minutes per 4"x 6" photo print
- Windows and Mac Compatible
- LivePix for Windows 95 & Mac

ONE BOX SOLUTION... Stylus Photo & FilmScan 200 Save over £50!

Buy both products and save money with our One Box Solutions. There are 4 to choose from, call for details.



- Affordable high quality scanning
- 1200 dpi optical res. (4800 int)
- 30 bit per pixel image processing
- Single pass scanning
- Optional APS cartridge holder
- Batch scanning capability
- Fully TWAIN compliant



EPSON FilmScan 200 **£326** <sup>ex VAT</sup> **£383** <sup>inc VAT</sup>  
SCSI EPS-FS200S

EPSON®

COVER plus

Epson CoverPlus is a new extended warranty service designed to offer 3 years on-site repair, from the date of purchase, by an Epson trained engineer on Epson printers and scanners.

Please call for price

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www.novatech.co.uk

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Please read the order information on the back page before ordering.

# Free EPSON Fun Factory...

EPSON®

Let your imagination run wild!

Included in the Fun Factory are:

## Software

**PrintArtist v4** – Imaging editing graphics and software with 25 fantastic fonts, 100+ fab photos and 1000+ clip art images (Windows and Mac)

**LivePix Special Edition** – Professional photo image editing software (Windows only)

**The Big Red Racing Game** (A seriously rapid rock and roll racing game where absolutely anything goes – fast and frantic fun)

## Print Media

2 sheets of A4 Photo quality glossy paper  
 2 sheets of A4 Photo quality inkjet paper  
 3 A6 Greeting cards  
 3 Envelopes  
 5 4" x 6" Photo paper  
 2 sheets of Transfer T-shirt paper  
 2 sheets of self adhesive paper

Epson Fun Factory comes only when you purchase an Epson Stylus 400 or 600.



Fun Factory comes with...

See facing page	EPSON Stylus Color 400 EPS-STY400	£133 <small>inc VAT</small>	£156.28 <small>inc VAT</small>
	EPSON Stylus Color 600 EPS-STY600	£169 <small>inc VAT</small>	£198.8 <small>inc VAT</small>



## Camera that prints directly to your Epson Stylus Photo

Exciting new features including 3x digital zoom, built-in 2" colour LCD viewfinder and much more... the most fully featured digital camera in its class.



### PhotoPC 600

CAN-BJC620

£495 £581  
inc VAT

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- XGA Resolution up to 1024 x 768 pixels, 24 bit colour images
- Prints directly to the Epson Stylus Photo – no PC required
- Displays presentations directly through video output – no PC required
- High quality built-in 2" LCD colour viewfinder
- 4Mb internal memory and external CompactFlash card (option 4mb, 15Mb)
- PAL TV/Video output for excellent large screen viewing
- Digital zoom, panoramic, B&W and macro image capture modes
- Multi-frame mode (captures 9 sequential shots in 1 frame)
- PictureWorks HotShots, PhotoEnhancer & NetCard, Presto! PhotoAlbum and Epson Photo! Suite software packages for Windows 95 and Power Macs

## Compact 30 bit colour scanner

Compact 400 dpi, 30 bit colour scanner for business and home use.



### GT-5500

EPS-GT5500

£209 £245  
inc VAT

- Small footprint
- Single pass, full 30 bit colour scanning
- TET (Text Enhancement Technology) for higher OCR accuracy
- AAS (Auto Area Segmentation) for accurate copying and faxing
- Complete, easy-to-use package including both hardware and software



ONE BOX SOLUTION... Stylus Photo & Photo PC 600

**Save over £80!**

Buy both products and save money with our One Box Solutions. There are 4 to choose from, call for details.

EPSON®

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# New HP LaserJet 4000

The new 17-page-per-minute HP LaserJet 4000 warms up in less than 15 seconds and achieves a first page out time with Instant-on-Fuser Accelerated also in less than 15 seconds. Featuring HP Transmit Once capability, it allows Mopying (Multiple Original Prints) with saves on trips to the photocopier. With HP FastRes 1200 (1200 dpi quality) at full speed and (PCL 6) HP ProRes 1200 (True 1200 dpi) at half engine speed (PCL 6 & PostScript) the LaserJet 4000 allows the maximum flexibility in speed and performance. Uses up to five input bins with a total capacity of up to 1,100 sheets and 75 envelopes means less refills and its straight paper path means less jams.

- Resolution Enhancement technology (REt) 220 levels of grey
- Prints 1/6" from edge of the page
- Standard 10,000 page UltraPrecise toner cartridge
- 300 dpi and 600 dpi
- HP JetAssist connector for easy installation of paper handling accessories Paper level indicators
- Standard output capacity of 300 sheets (250 sheets face-down and 50 sheets face-up) with output full sensor
- Standard input capacity of 600 sheets (100 sheet multipurpose tray and a 500 sheet tray or two 250-sheet trays)
- PostScript Level 2 Emulation
- Duty Cycle up to 65,000 pages per month



LaserJet 4000 HP-DJ890C

£749 ex VAT £880 inc VAT



LaserJet 5 HP-LJ5 £674 ex VAT £791 inc VAT

- Easier to use
- Intuitive control panel with new "Go" & "Job Cancel"
- Enhanced performance for faster output
- Hardware-assisted scaling, halftoning/compression
- New bi-directional port transfers data twice as fast
- Dependable 35,000 page monthly duty cycle
- Uses the same toner cartridge as HP LaserJet 4 Plus
- HP warranty, reliability, service and support



LaserJet 5Si HP-LJ5Si £1649 ex VAT £1937 inc VAT

- 24 pages per minute
- 40MHz RISC processor
- First page out in 16 seconds
- 600 x 600 dpi plus REt & HP microfine toner
- 4Mb upgradeable to 132Mb
- Optional PostScript Level 2

Departmental printers have never been easier to use than the Laserjet 5Si. It is a high volume, high quality machine with a 24 page per minute engine and true 600 x 600 dpi. Point and click control and monitoring of print jobs and the printer itself, reducing time-consuming hassles for both end-user and network administrator.



LaserJet 5Si Mopier HP-LJ5SiMOP £4326 ex VAT £5083 inc VAT

- 24 page per minute
- 3,100 sheet capacity with 4 input sources
- Send multiple print jobs once, collated at the Mopier
- Mailbox & stapler offers 5 addressable output sources
- A3 paper size max. size 297 x 450mm
- 600 x 600 dpi with microfine toner
- 12Mb upgradeable to 76Mb
- Handles 60gsm to 200gsm paper
- Enhanced software for Windows 3.1 & 95

With the new 'HP transmit once' feature, the HP Laserjet 5Si Mopier is ideal for making Multiple Original Printouts (MOPies) in conjunction with lower network traffic. And because each MOPY is a laser-sharp original, there is no generational deterioration in quality.

LaserJet 5N HP-LJ5N £847 ex VAT £995 inc VAT

- Network ready for Ethernet 10Base-T environments
- Novell NDPS capability with latest version of Netware
- Industry standard parallel, serial & wireless ports

LaserJet 5M HP-LJ5M £997 ex VAT £1179 inc VAT

- Network ready PC/Mac environments
- Genuine Adobe PostScript Level 2 & new HP PCL 6
- Industry standard parallel, serial & wireless ports

### Laser Toner Finder for Hewlett Packard

	LaserJet 5	5N	5M	5Si	5Mop	6P	6L	Product Code	Price
Toner	●	●	●	●	●	●	●	LTC03	£56.50
Toner	●	●	●	●	●	●	●	LTC40	£144.76
Toner	●	●	●	●	●	●	●	LTC04	£56.86
Toner	●	●	●	●	●	●	●	LTC05	£41.88
									ex VAT

Full Consumables listings inside back cover.



# Brilliant photo-quality colour for every business need!

Add vibrant, natural-looking colour to all your business documents faster than ever-with the HP DeskJet 890C Professional Series printer.

The HP DeskJet 890C with HP PhotoREt II delivers the smallest ink drops in the inkjet printing industry as compared to other desktop inkjet printers. The result? More shades of colour for brilliant photo-quality images on any paper-plain or special.

You'll spend less time waiting for the printer, and more time managing your business.

**HP PhotoREt II**



- Multiple users with optional HP DirectJet print servers
- 3,000 pages per month duty cycle
- Compatible with DOS, Windows 3.1x, 95, NT 4.0
- Handles a wide variety of media
- 9 pages per minute black
- 5 pages per minute colour
- One year warranty

**DeskJet 890C**

HP-DJ890C

**£255**

**£299**

ex VAT inc VAT



**DeskJet 670C+**

**£121**

**£142**

ex VAT inc VAT

## Incredible Printer, Incredible Value!

- RealLife system for true-to-life imaging
- Two built in cartridges. 1 black, 1 colour
- Up to 4 pages per minute black
- Up to 1.5 pages per minute colour
- Windows and DOS compatible

Achieving great quality with affordable costs has never been easier: the HP DeskJet 670C has two built in cartridges – one for colour and one for black – which means there is no need to switch between cartridges.

### Inkjet Cartridge Finder for Hewlett Packard

DeskJet	400L	670C	690C	Product Code	Price	Full Consumables listings including coated paper inside back cover.
Black	●				£12.89	
Colour		●			£15.67	
Black			●	1-51629A	£17.90	
Colour			●	1-51649A	£19.18	
					ex VAT	



**DeskJet 690C+**

**£150**

**£176**

ex VAT inc VAT

- Now Includes HP Photo Cartridge
- 600 x 600 dpi mono
- 600 x 300 dpi colour
- 30 TrueType fonts
- 512K RAM, 32K receive buffer
- Black Econofast 1.7 ppm (normal mode 0.8 ppm)
- Colour 1.7 ppm (normal 0.8 ppm) 0.25 Photo Cart

## DeskJet 690C + EasyPhoto reader

For an extra £18 + VAT you can have the EasyPhoto reader with your HP DeskJet 690C!

The EasyPhoto reader is a scanner made by Storm and is featured in PC Advisor. It is designed as a photo scanner, but also has a few extra tricks, like a detachable scan head which you can use like a hand-held scanner to scan pages from books and magazines. The easy to set up software supports MMX and includes Adobe Photo Deluxe. Scan speed is very respectable (600dpi) and overall accuracy is excellent.



**690C + Photo Reader**

**£168**

**£197**

ex VAT inc VAT



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PACKARD**

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# Inspired input - Outstanding output



- 1200 X 600 dpi output - Superb PhotoRealism™ quality
- Stunning output on plain paper using new P-POP - Plain Paper Optimised Printing technology
- A4+ Paper Handling - Ideal for DTP applications
- Prints on up to 550gsm Card - Unrivalled versatility
- Ultra fast prints speeds - Up to 4.4PPM mono/3.2PPM colour
- Long Life Cartridges
- One year RTB warranty



Canon BJC-7000

£259 £304<sup>30</sup>  
inc VAT

## New Creative Colour Printer



- New image optimizer technology
- Allows enlarging & printing without 'jaggedness'
- Mono 720 x 360 dpi Colour 360 x 360 dpi
- T-shirt transfer & new GP-201 glossy paper
- Improved Windows 3.1x/95 driver -
- Better colour matching
- PhotoRealism™ & fluorescent inks available
- 100 sheet built-in sheet feeder
- More media Support - banners & glossy paper
- Automatic power off function
- 1 Year return to Canon Warranty
- Reduction facility using IBM/Epson emulations - A3 to A4

Free holiday voucher with your BJC-250\*

£140



Canon BJC-250

£101 £118<sup>22</sup>  
inc VAT

\* Offer ends January 31st 1998 Subject to availability

- Free £140 Thomas Cook holiday voucher
- Free BC-02 mono cartridge (RRP £19.99 ex VAT)
- Free Print Master Gold software

## Complete independence when you're out & about

Travel around the world with the BJC-80 and you'll always have the facility for high quality A4 printing at your fingertips. Compact, lightweight and easily portable, it outputs bright, vivid colours at unrivalled colour quality for a portable in its class.

- 720 x 360 dpi mono on plain paper with smoothing
- 720 x 360 dpi colour graphics/photos
- 4.5 ppm - draft mode mono
- 1.9 ppm - high speed colour graphics
- Incorporates new Image Optimizer technology - smoothes away jagged edges
- New BC-11e Cartridge - Smudge proof and fade resistant
- Automatic sheet feeder - carries 30 sheets at a time
- Built in IrDA sensor for automatic infra red communication - Windows 95 only
- Compatible with Windows (95, 3.1x and NT)
- Optional colour image scanner cartridge - 360 dpi resolution (Windows only)
- Optional universal power adapter - Enables local power supply wherever you travel in the world
- One year return to Canon warranty - operates on an international basis



Canon BJC-80

CAN-BJC80

£142 £166<sup>25</sup>  
inc VAT

Canon BJC-80 plus scanner cartridge

CAN-BJC80+

£185 £217<sup>38</sup>  
inc VAT

## Intense colour that shines out every time

The BJC-4300 is equally at home in the study or office. For family and business use, from club newsletters to working at home, every document you produce will be in high quality, impressive colour.

- Free Thomas Cook voucher
- Free software
- 720 x 360 dpi mono on plain paper with smoothing
- 720 x 360 dpi colour graphics
- 360 x 360 dpi using drop modulation technology
- 4.5 ppm - draft mode mono
- 0.23 ppm - standard speed colour graphics
- Incorporates new image optimizer technology
- Drop modulation technology
- New BC-21e cartridge - smudge proof and fade resistant
- Compatible with Windows 95, 3.1x and NT
- Optional colour image scanner cartridge - 360 dpi resolution (Windows only)
- Supports all types of media including - new Banner paper
- One year return to Canon warranty



Subject to availability

£200



**Canon**

CANON. YOUR FIRST CHOICE

Canon BJC-4300

CAN-BJC4300

£139 £163<sup>27</sup>  
inc VAT

Canon BJC-4300 plus scanner cartridge

CAN-BJC4300

£181 £212<sup>38</sup>  
inc VAT

# Entry Level through to professional user laser printers



The Brother HL-730 Plus offers all the features of the award winning HL-730 with a host of added features for the same price. In addition we are offering the HL-730 Plus with 1MB of memory as standard, intelligent sleep mode (allows the printer to adjust its sleep time to suit usage), pre-emptive wake-up and e-mail printing with easy to use software for POP3 mail services.



- 6 ppm print speed
- True 600 dpi print resolution
- 1Mb standard memory
- Straight paper path technology
- Windows and direct DOS printing
- Automatic e-mail printing software
- Intelligent sleep mode
- Easy to set up and use
- Low running costs
- Microfine toner included
- 200 sheet adjustable paper tray

### Laser Toner Finder for Brother Printers

Brother Toner	HL730	HL760	HL1060	HL1260	Product Code	Price
Toner	•	•			LTC52	£19.17
Toner			•		LTC53	£13.89
Toner				•	LTC03	£66.50

ex VAT

Full Consumables listings inside back cover.

**HL730 Plus**

BRO-HL730

**£205** **£240**  
ex VAT inc VAT



**HL1060** BRO-HL1060 **£349** **£410**  
ex VAT inc VAT

- 10 ppm print speed
- Up to 1200 x 600 dpi resolution
- Dual bin as standard
- Straight paper path
- Choice of 2Mb & 6Mb memory
- Multiple emulations
- Auto interface switching
- Network connectivity option



**HL1260e** BRO-HL1260 **£599** **£703**  
ex VAT inc VAT

- 12 ppm high speed resolution
- Up to 1200 x 600 dpi resolution
- 650 sheet paper input
- Advanced network capability
- Flexible paper handling
- Choice of 2Mb or 6Mb standard memory
- Duplex option - automatic double sided printing



**HL760** BRO-HL760 **£229** **£269**  
ex VAT inc VAT

- 6 ppm print speed
- Up to 1200 x 600 dpi print resolution
- Straight paper path technology
- Choice of 1Mb or 5Mb standing memory
- Windows and direct DOS printing
- PCL 5e compatible
- Multiple emulations
- Auto interface/emulation switching

**1200 dpi!**

The HL-760 boasts the added benefits of 1200 x 600 dpi, PC (HPIV) and Windows emulation RISC processing power and extra memory for more graphics intensive applications.

### Colour Printer - Print your colour documents

Thanks to Brother's unique Piezo technology, the MC-3000's 4 colour Inkjet printer produces superb quality prints (up to 720 x 720 dpi resolution) at impressive speeds of up to 2.5 colour pages or 5 monochrome per minute. Easy upkeep and low running costs are the norm because it utilises individually replaceable ink cartridges (CMYK).

### Colour Copier - duplicate your documents in full colour

Brother MC-3000 is also a fantastic colour copier whose digital quality compares with the copies previously you had to buy from outside. The Brother MC-3000 readily takes on the task of reproducing all your colour documents from your desktop, at a speed that compares with laser colour copiers. All this is offered at a fraction of the price of laser colour copies made outside your office with the further cost advantage, that you won't have to run far and wide to get them.

### Colour Scanner - Scan your documents and digitise them in colour

The Brother MC-3000 also features a really professional scanner, with its 24 bit technology and its final resolution of 1200 dpi, you can scan your photos, illustrations and graphics with a palette of 16.7 million colours and 256 greyscales. The Brother MC-3000 is supplied with Xerox OCR text Bridge OCR (optical character recognition software) plus the outstanding Visioneer PaperPort software. With this you have a simple and user friendly tool for storing managing and annotating scanned documents and instantly inserting them into your Microsoft Word, Excel or PowerPoint documents. In other words, you are ready to produce documents that are up to the most stringent professional standards.



**MC-3000** BRO-MC3000 **£499** **£586**  
ex VAT inc VAT

## All the power of a colour printshop on your desktop!

Brother presents the MC-3000, a multi-function problem solver that offers you all the tools that you need to bring out the best in your professional documents.

A high quality 4 Colour Inkjet Printer, a digital colour copier and a colour scanner, all in one!



Call us on FREEPHONE: 0800 777500

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# New digital cameras from Olympus...

**NEW  
PRODUCT**



- 640 x 480 (high res) – 350,000 pixel imager
- 3.3v Smart Media Cards increase versatility
- Supplied with replaceable 2Mb Smart Media Card
- SM Cards available in 2Mb, 4Mb & soon 8, 32 & 64Mb!
- Panorama function for synthesising up to 20 images

**PRICE  
REDUCED**

Olympus C-420L

MAT-ME3D

**£425** ~~£499~~

39  
inc VAT



- 1024 x 768 (high res) – 810,000 pixel imager
- 3.3v Smart Media Cards increase versatility
- Supplied with replaceable 2Mb Smart Media Card
- SM Cards available in 2Mb, 4Mb & soon 8, 32 & 64Mb!
- Panorama function for synthesising up to 20 images

Olympus C-820L

MAT-ME222

**£765** ~~£899~~

39  
inc VAT

## All-in-one SLR digital camera



- High Resolution 1,400,000 pixel CCD imager
- Aspherical 3x zoom lenses
- Developed from decades of Olympus optical experience
- Allows wide angle landscapes & effective close-ups
- f2.8 lens with zoom range equivalent to 36-110mm in 35mm

**PRICE  
REDUCED**

Olympus C-1400L

OLY-1400

**£1105** ~~£1299~~

45  
inc VAT

## Personal Digital Photo Lab



- Dye sublimation printer for brilliant picture quality
- Less than two minute to produce postcard size prints
- Print directly from camera or via PC

# OLYMPUS

Digital Photo Lab

OLY-300E

**£510** ~~£599~~

43  
inc VAT

**12** novatech



www.novatech.co.uk

**PRICE  
REDUCED**

**Call now for Next Day Delivery**

Please read the order information on the back page before ordering.

# Award-winning scanners



**Now 30 Bit!**

**ScanTak 3C**

SPO-ST3C

**£69**  
ex VAT

**£81**  
inc VAT

The ScanTak-3c A4 flatbed has won awards all over the world. And it's not difficult to see why. Superb value package with Scantastic™ software incorporating sophisticated image manipulation and OmniPage OCR from Caere.

**PRICE REDUCED**

**PC Direct HITS AWARDS '97**

**BEST KINDY BUY COMPUTER SHOPPER LABS**

**14 day money back**

**Single-Pass, 24-Bit Colour Scanner**

<b>RESOLUTION</b>	300 X 600 dpi
<b>INTERPOLATED</b>	4,800 x 4,800
<b>MODES</b>	Colour, Greyscale, B/W
<b>30-BIT COLOUR</b>	Billions of colours
<b>8-BIT GREYSCALE</b>	256 Shades
<b>MAX SCAN AREA</b>	216 x 297mm
<b>DIMENSIONS</b>	488 x 297 x 56mm
<b>WEIGHT</b>	3.5 KG

**SCANTASTIC SOFTWARE INCLUDES:**

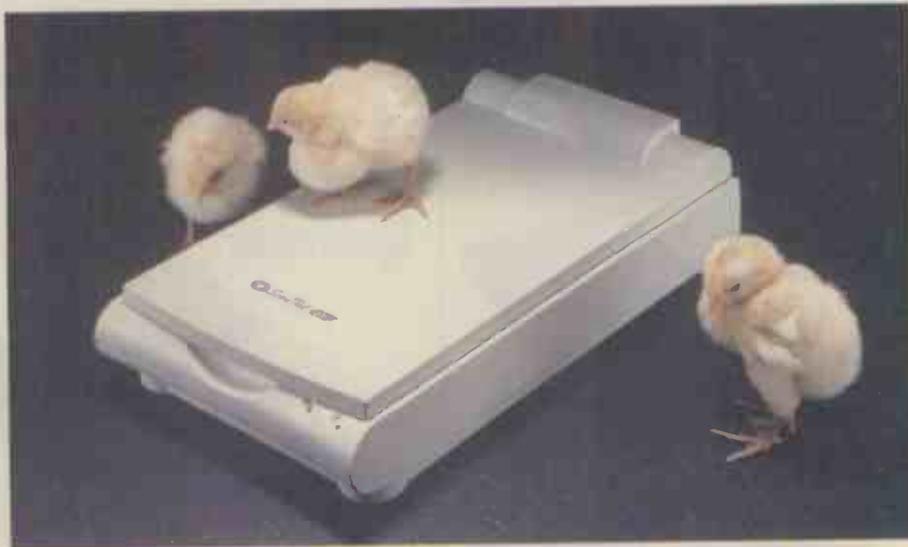
Interactive Prescan Window:	Colour and B/W
Batch Scan:	Scan more than one window
Downloadable Gamma Correction:	Gamma value
Shadow / Highlight:	B or W point setting
Zoom In / Out Prescan	Real Time Flip/Invert
Optical Character Recognition	Image Editing
Business Card Reader	Colour Matching
Scan to E-mail	Colour Copy
Fax Enhancement	Slide Show
Digital Copy	Photo Album
Auto Image Enhancement	Magic Morphing

**SYSTEM REQUIREMENTS**

<b>IBM PC 486</b>	8Mb RAM
<b>MS-DOS 6.0</b>	Windows 3.1x, 95

**SPOT**  
The Most Advanced Graphics

# Scan negatives & prints!



**FotoTak-6**

SPO-PT6

**£129**  
ex VAT

**£152**  
inc VAT

The FotoTak-6 scans transparencies as well as prints for only £129! Perfect for web page images, family photos and any image A5 size or smaller. After all, how often do you scan entire pages?

**ComputerLife Buy it**

**14 day money back**

**Single-Pass, 24-Bit Colour Scanner**

<b>RESOLUTION</b>	600 x 1200 dpi
<b>MODES</b>	Colour, Greyscale, B/W
<b>24-BIT COLOUR</b>	16.7 Million
<b>8-BIT GREYSCALE</b>	256 Shades
<b>MAX SCAN AREA</b>	178 x 127mm
<b>DIMENSIONS</b>	330 x 188 x 46mm
<b>WEIGHT</b>	1.5 KG

**SCANTASTIC SOFTWARE INCLUDES:**

'Net Web Publisher	Metatools - Power Goo Lite
Micrografix	Greeting Card - Windows Draw
Scan-on-T-Shirt Program	Scan to Puzzle Game

**SYSTEM REQUIREMENTS**

<b>IBM PC 486</b>	8Mb RAM
	Windows 95

**SPOT**  
The Most Advanced Graphics

**Call us on FREEPHONE: 0800 777500**

**novatech 13**

# Get connected in a Flash!

## Winmodem PC card

Designed exclusively for the Windows™ 95 operating environment, the Sportster Winmodem PC Card (PCMCIA) utilises the processing capabilities of your own computer and the functionality of Windows to provide a complete communications device for the home, office and travelling user. With windows 95 already on your computer most of the installation chores are completed for you, ensuring the modem is easy to install and use.

Features include Pan European approvals, world-wide Internet access at up to 33,600, Fax, E-mail and Personal Voice Mail.



Software upgradeable to future enhancements including x2 Technology.



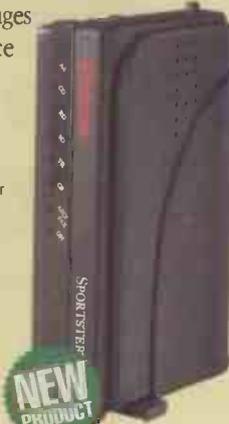
Winmodem PCMCIA **£75** **£88**  
USR-338PM ex VAT inc VAT

## New Sportster Message Plus...

Complete feature-rich communications package for the home or office. Independent voice messaging feature can store fax and fax and voice messages when your computer is switched off. A separate memory chip is available to store approximately 25 fax pages or approximately 35 voice messages (of about 20 seconds in length).

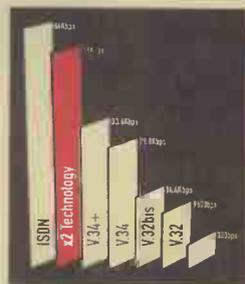
Integrates 56kbps x2 Technology, v.34 33600 bps and other modem speeds, Fax speeds up to v.17 14400 bps, Error correction, Data Compression. PL.

Flash Memory upgradeable, personal voice messaging (up to 1000 Mailbox) Remote message retrieval, Hands free Speakerphone, Fax on Demand plug and play support (inc. disk), Voice/Fax/Data software and all cable included, BABT approved and CE marked. 5 year warranty & free lifetime Technical Support.



NEW PRODUCT

Sportster Message Plus **£122** **£143**  
USR-MESS ex VAT inc VAT



Download from the Internet at an amazing 56Kbps with the Sportster Flash - the first x2 ready Sportster from US Robotics. Nearly 100% faster than the highest speed over normal telephone lines.



Sportster Flash **£99** **£116**  
USR-FLASH ex VAT inc VAT

## Sportster ISDN Terminal Adapter

Sportster ISDN TA is a low-cost, easy to use terminal adapter for ISDN connectivity. ISDN is the fast developing technology which works over a totally digital network, and allows for clear visual communication from your workplace.



Sportster ISDN **£101** **£118**  
USR-ISDN TA ex VAT inc VAT

## The best of both worlds ...

The Courier-I modem is ideal for multiple applications requiring both analogue and ISDN - connectivity because it allows access to ISDN services but still maintains compatibility with existing analogue services.



- Free 'net trials with: Virgin, AOL, Netcom & CompuServe
- With award winning V.Everything software



The Courier-I **£239** **£280**  
USR-CHE ex VAT inc VAT

## Internal Faxmodem for Windows

Designed exclusively for the Windows environment, the Sportster Winmodem provides 33.6 'net access, fax, voice mail and speaker-phone facilities at an amazingly low price.



- 5 year warranty
- Free 'net trials with: Virgin, AOL, Netcom & CompuServe
- Free lifetime technical support

WinModem **£75** **£88**  
USR-WINMOD ex VAT inc VAT

All Modems are:

APPROVED for connection to telecommunications systems specified in the instructions for use subject to the conditions in them.

U.S. Robotics. From the leader in networking.



# High Speed connection at low prices.

PIPEX



These superb modems feature in our Top Ten best sellers every month!

- Free 30 day internet connection at 33.6
- Supervoice 2/Fax/Voice software
- 14,400 bps Fax
- Group 3 compatible
- Fully B.A.B.T. approved
- Pipex Dial Trial at 33.6
- Auto Dialing
- Auto Answering
- Auto Speed Selection
- Power On Self Test
- MS Windows 95

- Free 30 day internet connection at 33.6/56
- Supervoice 2/Fax/Voice software
- 14,400 bps Fax
- Group 3 compatible
- Fully B.A.B.T. approved
- Pipex Dial Trial at 33.6
- Auto Dialing
- Auto Answering
- Auto Speed Selection
- Power On Self Test
- MS Windows 95

**Includes:**

- Modem Unit
- Telephone Cable
- Operation Manual
- Communication Software
- Power Adapter
- RS-232C
- Cable



**14 day money back**

33.6 Netsurfer2 Ext. NOV-NS33/E

**£47** **£55**  
ex. VAT inc. VAT



**14 day money back**

**Includes:**

- Modem Unit
- Telephone Cable
- Operation Manual
- Communication Software

33.6 Netsurfer2 Int. NOV-288INT

**£38**  
ex. VAT

**£44**  
inc. VAT

56K Netsurfer2 Int. NOV-56I

**£59**  
ex. VAT

**£69**  
inc. VAT

All Modems are:

**APPROVED** for connection to telecommunications systems specified in the instructions for the use subject to the conditions set out in them.

**novatech.**

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## 19" Microscan 6P (18"V)

- Use 1280 x 1024 and 1600 x 1200 flicker free
- Integral Microphone, stereo speaker option
- 0.26mm dot pitch, TCO 95 approved
- Built in USB hub

**PRICE REDUCED**

ADI Microscan 19" ADI-19 **£559** **£656**  
ex VAT inc VAT



## 17" Microscan 5G (16"V)

- Resolution 1280 x 1024 & 1600 x 1200 flicker free
- 0.26 Dot pitch for sharp focus
- On Screen display and colour adjustment
- TCO 95 approval as standard

ADI Microscan 5G ADI-5G **£359** **£421**  
ex VAT inc VAT



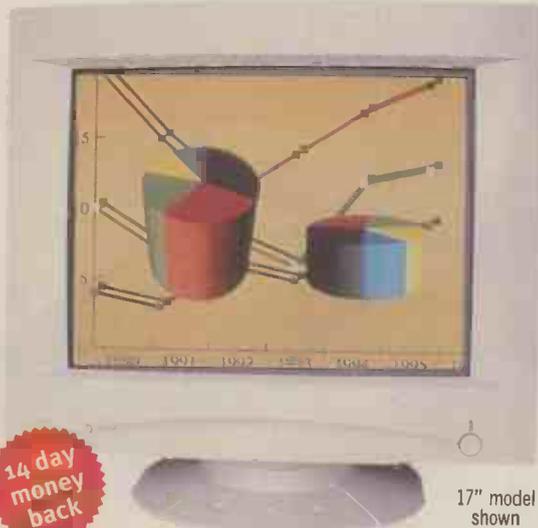
## 15" Microscan 4P (13.8"V)

- New look Microscan monitor with added features
- Integral microphone and stereo speaker option
- Resolution of 1024 x 768 flicker free
- USB hub option for easy peripheral connection

ADI Microscan 4P ADI-4V **£160** **£188**  
ex VAT inc VAT

# Display Excellence

- 14"-21" Professional colour monitors
- Superb value for money compared to other leading brands
- Award winning monitors
- 3 year warranty (2 year on site, 3rd year RTB)
- See page 27 to choose from the complete ADI range.



**14 day money back**

17" model shown

# Three year on-site warranty!

For the ultimate peace of mind, a three year on-site warranty cannot be beaten. If anything goes wrong, a technician comes to you!

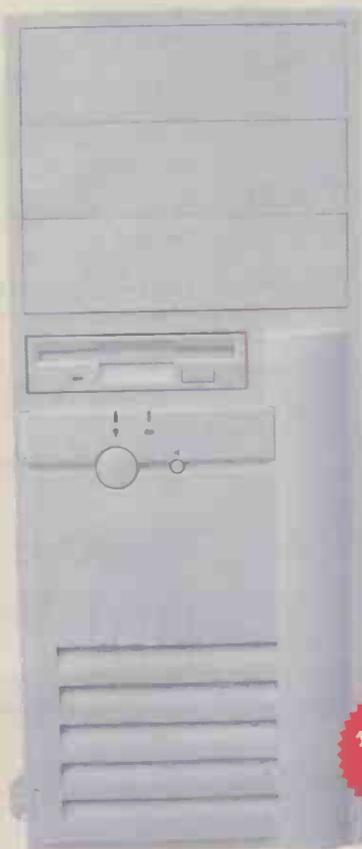


### Size (viewable)

	14" (13.2")	15" (13.8")	17" (15.9")	17" (15.9")	21"
Screen	Diagonal FST	Diagonal FST	Diagonal FST	Diagonal FST	Diagonal FST
Dot Pitch	0.28mm	0.28mm	0.27mm or 0.28mm	0.25mm or 0.26mm	0.26mm
Reflection	Non-Glare	Non-Glare	Non-Glare	Non-Glare	Non-Glare
Synchronization					
Horizontal	30-48KHz	30-55KHz	30-69KHz	30-85KHz	30-85KHz
Vertical	50-120Hz	50-120Hz	50-120Hz	50-120Hz	
User controls			Yes	Yes	Yes
OSD control	Yes	Yes	Yes	Yes	Yes
MPRII	Yes	Yes	Yes	Yes	Yes
AC POWER					
AC Input (50/60 Hz)	90-264V AC	90-264V AC	100-264V AC	100-264V AC	100-250V AC
Video					
Band Width	65MHz	65MHz	110MHz	120MHz	
connector	15pin, D-sub	15pin, D-sub	15pin, D-sub (M)	15pin, D-sub (M)	15pin, D-sub (M)
Plug-N-Play	Yes	Yes	Yes	Yes	Yes
Maximum Resolution	1024 x 768 @ 60 Hz	1024 x 768 @ 60Hz	1024 x 768 @ 85 Hz	1280 x 1024 @ 75Hz	1280 x 1024 @ 82Hz
Physical Characteristics					
L x W x H	439mm x 455x 405	459mm x 446 x 492	1280x 1024 @60 Hz	1600 x 1200 @ 66 Hz	1600 x 1200 @ 70 Hz
Weight	11.5Kg	12.7Kg	544mm x 530 x 553	544mm x 530 x553	
Warranty	3 Year On-site	3 Year On-site	17.6Kg	19.14Kg	
Product Code	NOV-1428	NOV-1528	3 Year On-site NOV-1728	3 Year On-site NOV17/26	NOV21/28
Ex Vat	£102	£144	£263	£333	£809
Inc Vat	£120	£169	£309	£391	£951

# Do it Yourself...

A cost effective way to upgrade your PC and take advantage of the latest technology



14 day money back

With the explosion of new technologies more and more people want to upgrade their systems but don't need to replace all the expensive components on board. Top of the list for upgrading are CPU's, Memory and the ability to fit the latest PCI cards. Novatech have introduced a range of Self Build Systems which provide the bare bones of an upgradeable PC. Allowing you to utilise your existing HDD, Graphics card etc thus reducing dramatically the cost of the project while benefiting from the devices built into the new motherboard including USB, I/O, Cache, ATX Power(ATX System only). Alternatively by adding components from the extensive Novatech range you can very inexpensively build a complete new computer.



\*Case designs subject to change without notice.

## ATX System **£189** **£222.08**

BAR-ATXX ex VAT inc VAT

- Elite P5 TX-A ATX Motherboard with:
- Award Flash Bios
- Intel TX Chipset
- Processor Support  
One Socket 7 which supports:  
Pentium P200MMX  
AMD K6  
Cyrix IBM 6x86+
- Expansion Slots  
3 x 16 bit ISA Slots  
4 x 32 bit PCI Slots
- Memory  
3 Dimm Sockets supporting 256Mb
- Cache Ram  
512K On Board
- I/O Ports  
2 High Speed 16s550 UART Serial Ports  
1 EPP/ECP Parallel Port
- 2 USB Ports
- PS/2 Mouse and Keyboard Connectors
- On - board I/O for 2FDD & 4 IDE Devices
- Novatech ATX Midi Tower Case with :  
3 x 5.25" Drive Bays  
2 x 3.5" Drive Bays  
235 Watt ATX Power Supply
- 3.5" 1.44Mb Floppy Disk Drive
- Warranty 12 Months Exchange

## AT System **£99** **£116.32**

BAR-ATXX ex VAT inc VAT

- VX Motherboard with:
- Award Flash Bios
- VX Pro Chipset
- Processor Support  
One Socket 7 which supports:  
Pentium P200MMX  
AMD K6  
Cyrix IBM 6x86+
- Expansion Slots  
3 x 16 bit ISA Slots  
4 x 32 bit PCI Slots
- Memory  
2 Dimm Sockets  
4 x 72 Pin EDO
- I/O Ports  
2 High Speed 16s550 UART Serial Ports  
1 EPP/ECP Parallel Port
- USB Connector on Board
- AT Keyboard Connectors
- On - board I/O for 2FDD & 4 IDE Devices
- Novatech AT Midi Tower Case with :  
3 x 5.25" Drive Bays (1 with Removable HDD Cradle)  
2 x 3.5" Drive Bays  
200 Watt Power Supply
- 3.5" 1.44Mb Floppy Disk Drive
- Warranty 12 Months Exchange

Now with  
**512K Cache  
on board**

## PCW Built One!

"Plugging the whole lot together and watching it go is definitely a satisfying experience... Novatech's technical support line is also a major selling point"

PCW August '97

Personal Computer World recently put together a Novatech Bare Bones system for £1,500 including software and a printer. Below we have listed two typical systems which you can build using Novatech products:

### ATX System

Bare Bones	£189
Intel P200 MMX	£166
16 Mb SD Ram	£56
4.0 Gb HDD	£149
Novatech 20 Speed CD	£49
Novatech 33.6 Int. Modem	£38
Novatech Magic 3D Voodoo	£119
Novatech 3D Sound Card	£19
Novatech 15" Monitor	£144
Novatech PS2 Keyboard	£14
PS2 3 Button Mouse	£14

### AT System

Bare Bones	£99
AMD K6/166	£81
8 Mb Ram	£20
1.7 Gb HDD	£94
Novatech 20 Speed CD	£49
Novatech 33.6 Int. Modem	£38
Novatech S33D Video Card	£35
Novatech 3D Sound Card	£19
Novatech 14" Monitor	£105
Windows Keyboard	£8
3 Button Mouse	£6

Total Cost Ex Vat **£957** **£554**

Call us on **FREephone: 0800 777500**

**novatech** 17

# World Class Motherboards

PS/2 Mouse Header

4 x 72 Pin SIMM Sockets  
8 to 256Mb for EDO or Fast Page Mode DRAM

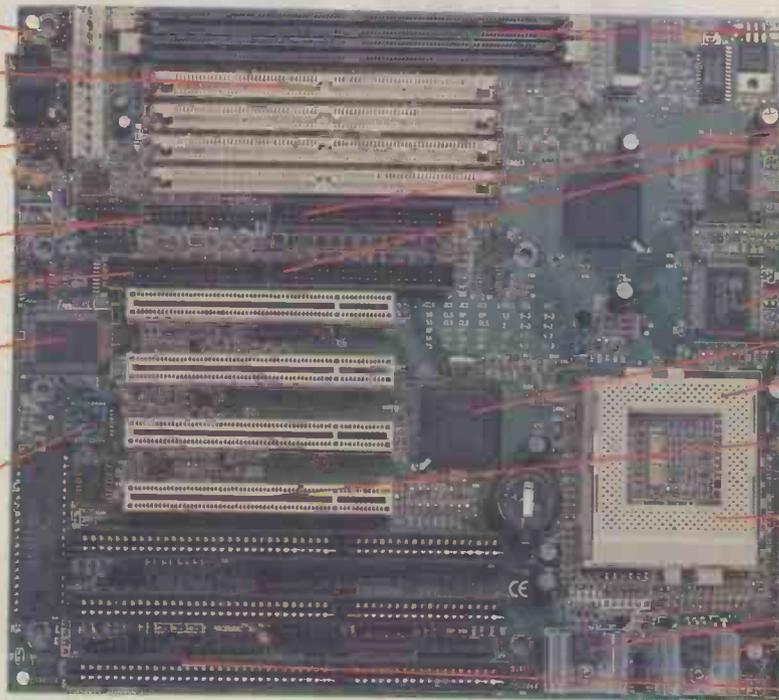
2 USB  
(Universal Serial Bus)

Enhanced Parallel Port

Floppy Port

NS Enhanced I/O Chipset  
1 Floppy Port  
2 High speed serial ports  
1 Enhanced parallel port (SPP/EPP/ECP)  
IrDA

Flash EPROM  
Award Flash BIOS  
Plug & Play ready  
Built in NCR 810 and Adaptec 7850 SCSI BIOS  
DMI ready



2 x 168 Pin DIMM Sockets  
8 to 128Mb for SDRAM

2 Enhanced IDE Ports  
Ultra DMA/33  
PIO Mode: 3,4  
DMA Mode 2

On-Board 256K/512K  
Pipeline Burst SRAM

Intel 430TX Chipset

ZIF Socket for Pentium  
Processor

4 PCI Local Bus Slots -  
Concurrent PCI architecture

SpeedEasy  
Jumper free for CPU setting

Built-in 3.3V and 2.5V Regulators

3 ISA Bus Slots

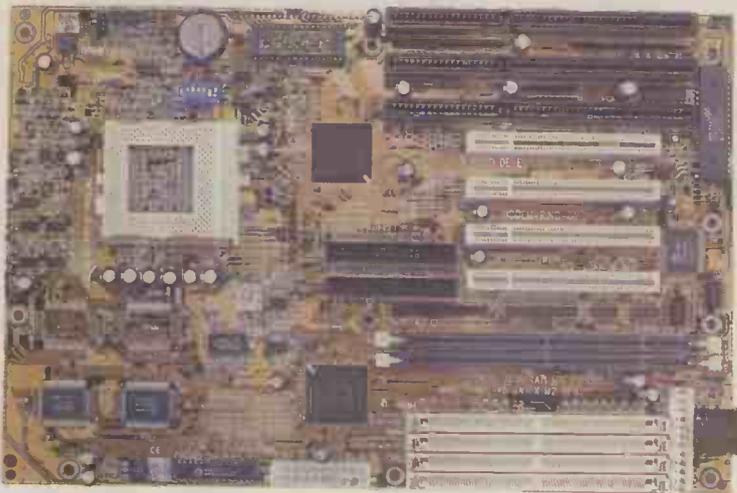
QDI Titanium TX/B Motherboard

QDI-EXP2

£83  
inc VAT

£97<sup>35</sup>  
inc VAT

QDI



Gigabyte Intel 430TX Motherboard

GIG-TX

£82  
inc VAT

£96<sup>35</sup>  
inc VAT

- Intel 75-200Mhz Pentium - Processor (OverDrive, MMX)  
AMD K5/Cyrix 6x86 Processor support
- 256KB/512KB PB SRAM
- 8-256MB EDO/FP/Sync. DRAM
- 4 x 72 pin SIMM socket
- 2 x 168 pin DIMM socket
- 4 x Master PCI slot
- 3 x ISA 16 bit slot
- ATAPI & high speed I/O
- USB port (optional)

**Special Function** CPU over heat protect  
Switching mode Voltage regulator on Board  
Modem Ring On, Win95 Power Off

**Processor** Intel Pentium Processor 90-200Mhz  
(Auto detect & Setup Intel P55C Processor)  
AMD K5/K6 Processor support  
Cyrix IBM/6 x 86/M2 Processor support  
ZIF Socket 7 for the Intel Pentium  
OverDrive Processor, MMX Processor

**Chipset** Intel 82430TX PCIsset  
UMC 8669 I/O chip

**Cache Memory** 256KB/512KB PB SRAM on board

**System Memory** 8Mb to 256Mb DRAM size  
Support 4 x 72 pin 32/36 bit access capability  
Support 2 x 168 pin 64/72 bit Dimm module  
Use 4/8/16/64/128Mb Simm module DRAM with fast page Mode or EDO DRAM and sync. DRAM (3.3v)

**PCI IDE** 2 x Pci Bus Master IDE ports (up to 4 IDE Devices)  
Support PIO Mode 3,4 IDE & Atapi CD ROM  
Support DMA Mode 1,2 & Ultra DMA/33

**I/O Interface** AT Keyboard & PS/2 Mouse support  
1 x floppy port (up to 2.88Mb)  
2 x serial ports (16550 high speed)  
1 x parallel port (EPP/ECP)  
2 x USB ports (optional)  
IrDA TX/RX Header (optional)

**Expansion Slot** 4x PCI 32 bits slots  
3 x ISA 16 bit slots

**BIOS** 128Kb Flash Eeprom  
Award PCI Bios with Green  
Plug & Play features support

**Board Size** AT Form Factor



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Call now for Next Day Delivery

Please read the order information on the back page before ordering.

# The Worlds Fastest Chip

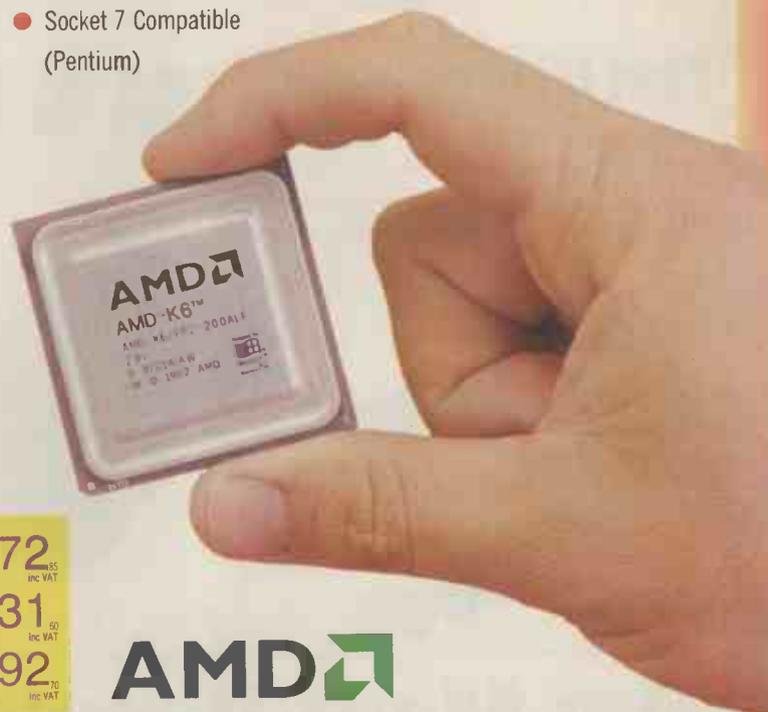
AMD are the world's second largest supplier of 32 bit Windows compatible processors, supplying over 75 million x 86 processors since the advent of the IBM PC and more than 30 million Windows compatible CPUs in the past three years alone.

Run with AMD for the ultimate reliability, compatibility and value.

- Runs Windows 95 & NT either in 16 bit or 32 bit mode at full speed
- Maximises MMX enabled applications
- Six Issue RISC86 superscalar Microarchitecture
- Socket 7 Compatible (Pentium)

## WinBench 97 Test Results

Pentium P166	340
AMD K5 PR 166	348
Pentium P200 MMX	428
AMD K6 PR166 MMX	470
AMD K6 PR200 MMX	518
Pentium Pro P200	608
AMD K6 PR233 MMX	627



AMD K6 166Mhz	AMD-K6/166	£62 <small>ex VAT</small>	£72 <small>inc VAT</small>
AMD K6 200Mhz	AMD-K6/200	£112 <small>ex VAT</small>	£131 <small>inc VAT</small>
AMD K6 233Mhz	AMD-K6/233	£164 <small>ex VAT</small>	£192 <small>inc VAT</small>



# 24x Speed for only...



# £49!

Novatech 24x CD ROM Drive NOV-CD16 **£49** ex VAT **£57** inc VAT

- Supports DOS/Windows 3.1, 95, NT, OS2 Warp
- Compatible with CD ROM, Audio CD, Video CD, CD-1 Movie, CD Plus, I-TRAX Enhanced CD, Photo CD, Karaoke CD
- 3600Kb/sec max Data transfer rate
- 125ms Typical @ 1/3 stroke access time
- Emergency eject
- Power saving feature
- Digital volume control

**Star Buy!**

**14 day money back**

**24X<sup>Max</sup> CD 624A**



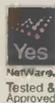
**novatech!**

**Call us on FREEPHONE: 0800 777500**

**novatech!** **19**

## Stackable Hubs

- LED's for easy Collision & Link/activity status
- Stackable Hubs Support up to 32 Ports
- Free Technical Support
- Lifetime Warranty
- 8 or 16 RJ45 Ports, a BNC Port and crossover switch



# Networking from a name you can trust...



8 Port KIN-BTP/S **£85** **£99**  
ex VAT inc VAT

## Fast Ethernet Card

- Automatic 10/100Mbps Speed Selection
- Support for more than 30 popular networking systems
- Bus-Mastering DMA for high throughput, Low CPU utilization
- Supports Full Duplex in both Fast Ethernet & Ethernet mode
- Free Technical Support
- Lifetime Warranty



RJ45 Card KIN-KNE100 **£42** **£49**  
ex VAT inc VAT

## ISA & PCI Combo Cards...

- NE2000 Compatible
- Support for more than 30 popular networking systems inc.
- Windows, OS/2 & Novell
- Boot ROM Support
- Supports Full Duplex Ethernet Operation
- Free Technical Support
- Lifetime Warranty



PCI KIN-40BT/1 **£30** **£35**  
ex VAT inc VAT



ISA 20bt KIN-2021LC **£23** **£27**  
ex VAT inc VAT

# The Most Popular Ethernet Adapters Worldwide

### Etherlink 3

- Most popular Ethernet adapter
- New shielded RJ-45 connector
- Includes quick start guide
- CE compliant



3C 509B Combo

3C 509B Combo 5 pack

**£69** **£81**  
ex VAT inc VAT

**£309** **£363**  
ex VAT inc VAT

### Etherlink XL 10/100 TX

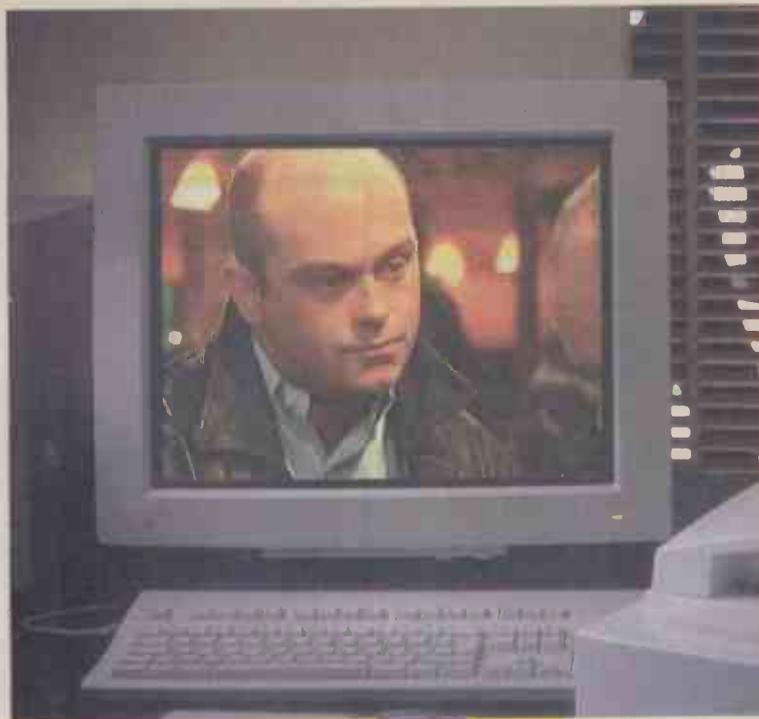


- Plug & Play
- 802.3u compatible
- 3Com Parallel tasking
- PACE technologies performance
- Powerful network management
- Unmatched 3Com reliability

10/100 TX PCI 3C-905 **£54** **£63**  
ex VAT inc VAT

10/100 TX PCI 5 pack 3C-905/S **£256** **£300**  
ex VAT inc VAT





# Turn your Monitor into a remote control TV!



Instant TV AIM-INSTTV

£116 ex VAT £99 inc VAT

- High Quality TV/Video in all resolutions
- Remote control included
- Full screen display
- No PC power on required
- Stereo audio input/output
- Optional interface sound card
- Brightness/Contrast/Saturation

**14 day money back**

Novatech's Instant TV turns your monitor into a remote control digital TV instantly!

When you're not working, make use of that expensive PC monitor by it turning into a remote control TV.

novatech.

# Superb Value Sound Card

- Plug-and-Play under Windows 95
- Newest Sound Chip ES 1869 or ES 1868 from ESS
- Full Duplex Internet Phone Enabled
- Compatible with Sound Blaster Pro, AdLib, & Windows Sound System

**14 day money back**

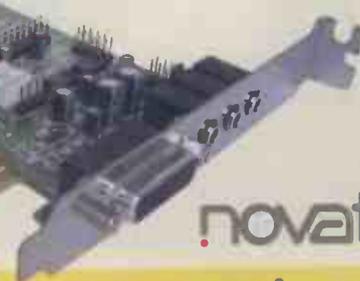
- Advanced Stereo ESFMTM FM Music Synthesis
- Compatible with Yamaha OPL3
- ES 1869 spatializer 3D Sound on Board
- WaveBlaster Compatible Extension Connector for Wavetable Upgrade
- MPU-401 Interface for General MIDI and MT-32
- Software Configurable 6-Channel Stereo Mixer for recording from Multiple Sound Sources
- Line-out with ANTI-Pop Function (SC200)
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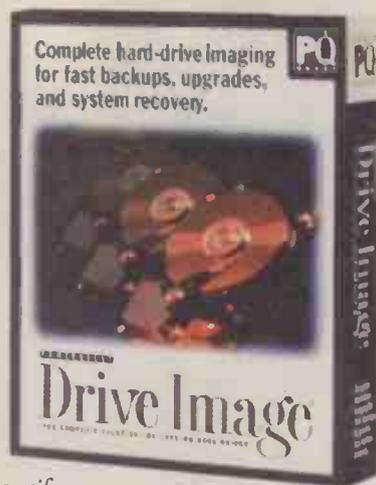
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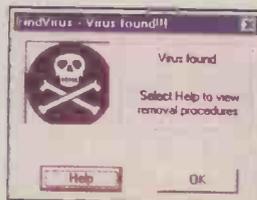
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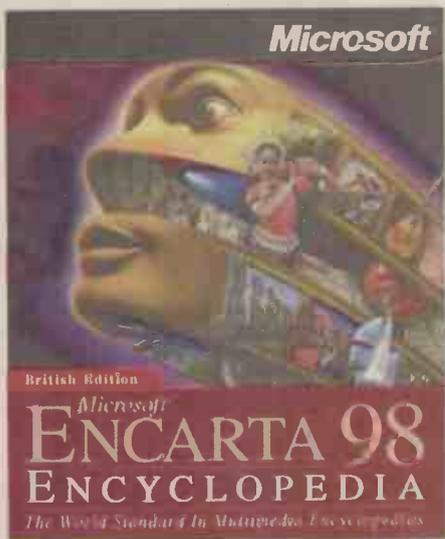
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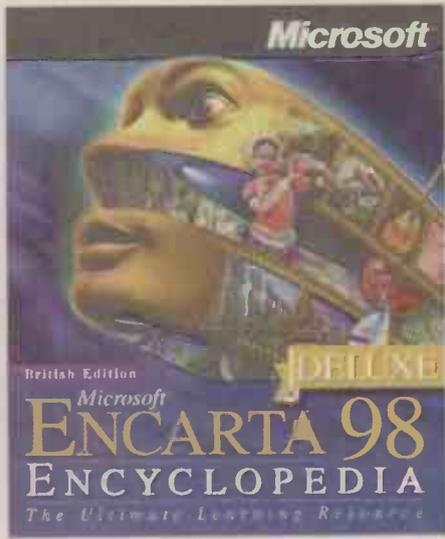
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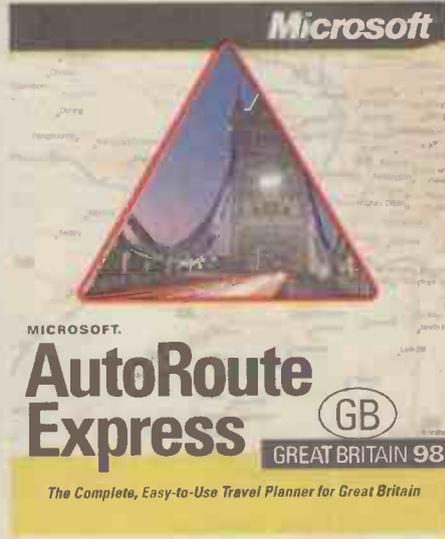
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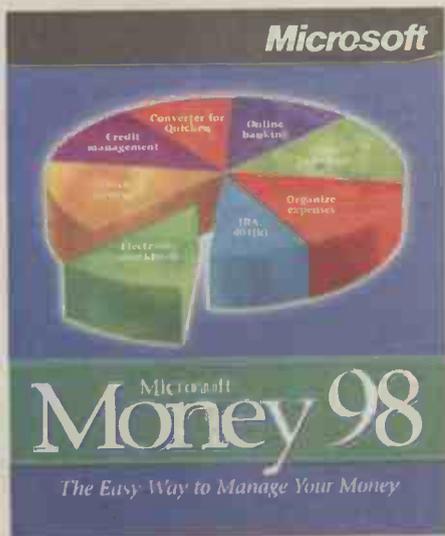
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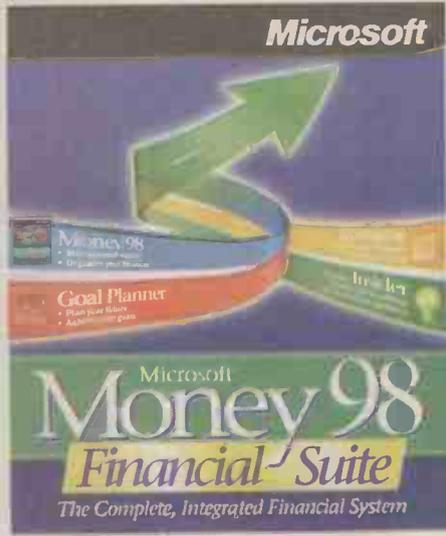
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<b>Lasers</b>			
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BRO-HL760	HL760 1Mb 600dpi	£229	£269.08
BRO-HL765-	HL760 5Mb 600dpi	£245	£287.88
BRO-HL1060	HL1060 600dpi 10ppm	£349	£410.08
BRO-HL1066	HL 1060 6Mb 600dpi	£415	£487.63
BRO-HL1260	HL1260e 2Mb 600dpi	£599	£703.83
BRO-HL1266	HL1260e 6Mb 600dpi	£615	£722.63
BRO-HL1660	HL1660 4Mb 600dpi	£699	£821.33
BRO-HL1610	HL1660 10Mb 16ppm	£715	£840.13

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CAN-BJC150	BJC150	£95	£111.63
CAN-BJC250	BJC250 Colour	£101	£118.68
CAN-BJC430	BJC 4300	£139	£163.33
CAN-BJC43+	BJC 4300 Plus Scanner	£181	£212.68
CAN-BJC455	BJC4550 A3 Portrait Col	£186	£218.55
CAN-BJC555	BJC5550 A3 Colour	£441	£518.18
CAN-BJC620	BJC620 Colour	£165	£193.88
CAN-BJC700	BJC7000 A4 Colour	£259	£304.33
<b>Lasers</b>			
CAN-LBP660	LBP660 600dpi 6ppm	£184	£216.20

Epson		Exc Vat	Inc Vat
<b>9 Pin Dot Matrix</b>			
<b>Inc Vat</b>			
EPS-LX300	LX300	£97	£113.98
EPS-LX1050	LX1050+	£200	£235.00
EPS-FX870	FX870	£247	£290.23
EPS-FX1170	FX1170	£307	£360.73
EPS-FX2170	FX2170	£395	£464.13
EPS-DFX500	DFX5000+	£1,226	£1,440.55
EPS-DFX800	DFX8000	£1,911	£2,245.43
<b>24 Pin Dot Matrix</b>			
<b>Exc Vat</b>			
EPS-LQ300	LQ300	£115	£135.13
EPS-LQ570	LQ570+	£216	£253.80
EPS-LQ670	LQ670	£230	£270.25
EPS-LQ870	LQ870	£377	£442.98
EPS-LQ2070	LQ2070	£330	£387.75
EPS-LQ2170	LQ2170	£468	£549.90

Inkjets		Exc Vat	Inc Vat
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EPS-STY300	Stylus Colour 300	£106	£124.55
EPS-STY400	Stylus Colour 400	£133	£156.28
EPS-STY600	Stylus Colour 600	£169	£198.58
EPS-STY800	Stylus Colour 800	£221	£259.68
EPS-STYPHO	Stylus Photo	£308	£361.90
EPS-STYCXL	Stylus Pro XL+	£446	£524.05
EPS-STY152	Stylus 1520 A2 Portrait	£593	£696.78
EPS-STY3A2	Stylus 3000 A2 1440dpi	£1,118	£1,313.65
EPS-PHFILM	Stylus Photo & Fscan 200	£580	£681.50
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Lasers		Exc Vat	Inc Vat
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EPS-EPL55P	EPL5500 5Mb P/Script	£570	£669.75
EPS-N1200	EPL-N1200 600dpi 12ppm	£593	£696.78
EPS-N1200N	EPL-N1200 Network	£791	£929.43
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EPS-N2000	EPL-N2000	£1,278	£1,501.65
EPS-N2000P	EPL-N2000 Postscript	£1,582	£1,858.85

Hewlett Packard		Exc Vat	Inc Vat
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HP-DJ340CB	DeskJet 340 + Batt + I/Red	£166	£195.05
HP-DJ400L	DeskJet 400L Color	£86	£101.05
HP-DJ670C	DeskJet 670C	£121	£142.18
HP-DJ690C	DeskJet 690C + Photo Cart	£150	£176.25
HP-DJ690PS	DeskJet 690C + Photo Studio	£168	£197.40
HP-DJ870CX	DeskJet 870Cxl	£202	£237.35
HP-DJ890C	DeskJet 890 Colour	£255	£299.63
HP-DJ1100C	Deskjet 1100 Colour	£285	£334.88
HP-DJ1600C	DeskJet 1600C	£871	£1,023.43
HP-DJ1600M	DeskJet 1600CM PS	£1,280	£1,504.00
HP-OJ590	OfficeJet 590	£341	£400.68
HP-OJ1150C	OfficeJet 1150C Scan, copy	£491	£576.93

Lasers		Exc Vat	Inc Vat
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HP-LJ6P	LaserJet 6P	£480	£564.00
HP-LJ6MP	LaserJet 6MP	£592	£695.60
HP-LJ5	LaserJet 5	£674	£791.95
HP-LJ5N	LaserJet 5N Network	£847	£995.23
HP-LJ5M	LaserJet 5M	£997	£1,171.48
HP-LJ4V	LaserJet 4V A3	£1,184	£1,391.20
HP-LJ4MV	LaserJet 4MV Pscript A3	£1,724	£2,025.70

Printers

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HP-LJ5SIN	LaserJet 5SINX Network	£1,799	£2,113.83
HP-LJ5SIMX	LaserJet 5SIMX	£2,249	£2,642.58
HP-LJ5MOP	LaserJet 5SI MOPIER	£4,326	£5,083.05
HP-LJ4000	LaserJet 4000 C4118A	£749	£880.08
HP-LJ400T	LaserJet 4000T C4119A	£855	£1,004.63
HP-LJ400N	LaserJet 4000N C4120A	£963	£1,131.53
HP-LJ40TN	LaserJet 4000TN C4121A	£1,061	£1,246.68
<b>Colour Lasers</b>			
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HP-LJ5CM	Colour LaserJet 5M	£3,600	£4,230.00
HP-LJ5CN	Colour LaserJet 5N	£3,142	£3,691.85

Lexmark		Exc Vat	Inc Vat
<b>Inkjets</b>			
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LEX-J3000	JETPRINTER 3000	£110	£129.25
LEX-J7000	JETPRINTER 7000	£187	£219.73
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LEX-S1650	Optra S 1650 16ppm	£768	£902.40
LEX-S1650N	Optra S 1650 N Network	£948	£1,113.90
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KYO-FS3700	FS3700	£862	£1,012.85
KYO-FS7000	FS7000	£1,861	£2,186.68

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TAL-7060	7060	£165	£193.88
<b>Lasers</b>			
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TAL-9208	9208	£317	£372.48
TAL-9014	9014	£536	£629.80
TAL-9014D	9014D	£595	£699.13

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HP-DJ430A0	DesignJet 430 A4-A0	£1,643	£1,930.53
HP-DJ450A1	DesignJet 450C A4-A1	£1,493	£1,754.28
HP-DJ450A0	DesignJet 450C A4-A0	£1,943	£2,283.03
HP-C6069A	430/450C Stand & Bin A1	£139	£163.33
HP-C4717A	430/450C A1 Roll Feed Kit	£139	£163.33
HP-C6070A	430/450C Stand & Bin A0	£168	£197.40
HP-C4719A	430/450C A0 Roll Feed Kit	£139	£163.33
HP-DJ700A1	DesignJet 700 A4-A1	£2,318	£2,723.65
HP-DJ700A0	DesignJet 700 A4-A0	£2,768	£3,252.40
HP-DJ750A1	DesignJet 750C+ A4-A1	£3,143	£3,693.03
HP-DJ750A0	DesignJet 750C+ A4-A0	£3,743	£4,398.03
HP-DJ755CM	DesignJet 755CM + A4-A0	£5,687	£6,682.23

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BT-IM350	Image 350 Plain Paper Fax	£296	£347.80
BT-IM370	Image 370 PP Fax/Answer	£334	£392.45
BT-BF550E	Plain Paper Inkjet Fax	£557	£654.48
BT-BF850S	SE Laser Plain Paper Fax	£1,076	£1,264.30

Brother		Exc Vat	Inc Vat
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BRO-1030	1030	£318	£373.65
BRO-8000	8000P	£575	£675.63

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OKI-4100	4100	£483	£567.53

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C3768A	Paper Handling Controller	£192	£225.60
C3765A	Envelope Feeder	£352	£413.60
C3763A	2000-Sheet Input Tray	£839	£985.83
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C3925A	Tray, Letter size	£79	£92.83
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C3921A	500 Sheet Feeder	£192	£225.60
C3927A	Power Envelop Feeder	£223	£262.03

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CAN-GRP1	BJ30,BJ70,BJ230	£28	£32.90
CAN-GRP2	LBP460,BJC4100	£48	£56.40
CAN-GRP3	BJC4200,4550,620	£64	£75.20

Epson 3 year warranty		Exc Vat	Inc Vat
EPS-GRP1/8	LQ100, Stylus 200	£40	£47.00
EPS-GRP2/8	Stylus 600,800, GT5000	£65	£76.38
EPS-GRP3/8	EPL-5500	£99	£116.33
EPS-GRP4/8	GT8500,GT9500	£149	£175.08
EPS-GRP5/8	Stylus 1520	£199	£233.83
EPS-GRP6/8	EPL-9000	£259	£304.33

Hewlett Packard 3 year warranty		Exc Vat	Inc Vat
HP-H5461A	DeskJet 340CBI,400,690C,	£40	£47.00
HP-H5462A	DeskJet 820Cxl,Companion	£47	£55.23
HP-H5464A	200LX Palmtop	£42	£49.35
HP-H5465A	DeskJet 870/890,ScanJet 5P,5S	£66	£77.55
HP-H5470A	OfficeJet 350	£102	£119.85
HP-H5471A	OfficeJet Pro 1150C	£118	£138.65
HP-H5473A	DeskJet 1600C,CM	£105	£123.38
HP-H5475A	ScanJet 4C,5C	£140	£164.50
HP-H5476A	LaserJet 6P,MP	£142	£166.85
HP-H5479A	LaserJet 5,5M,5N	£180	

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Brother		Exc Vat	Inc Vat
LPM-024/4	HL-6 Series 2Mb Board	£59	£69.33
LPM-024/4	HL-6 Series 4Mb Board	£86	£101.05
LPM-001/1	HL630, 641,730 1Mb	£59	£69.33
LPM-001/15	HL630, 641,730 1.5Mb	£79	£92.83
LPM-002/4	HL-660, HL-1260 4Mb Mod	£65	£76.38
LPM-002/8	HL-660, HL-1260 8Mb Mod	£99	£116.33
LPM-002/4	HL-760 4Mb Module	£65	£76.38
LPM-002/8	HL-760 8Mb Module	£99	£116.33
LPM-002/16	HL-760 16Mb Module	£189	£222.08
LPM-002/32	HL-760 32Mb Module	£309	£363.08
LPM-023/1	HL-8, 8D, 8e, 8V 1Mb	£79	£92.83
LPM-023/2	HL-8, 8D, 8e, 8V 2Mb	£105	£123.38

Canon		Exc Vat	Inc Vat
LPM-004/4	LBP860, LBP1260 4Mb	£59	£69.33
LPM-004/8	LBP860, LBP1260 8Mb	£99	£116.33
LPM-004/16	LBP860, LBP1260 16Mb	£169	£198.58
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Epson		Exc Vat	Inc Vat
LPM-007/4	EPL 5600, 5500, 9000 4Mb	£69	£81.08
LPM-007/8	EPL 5600, 5500, 9000 8Mb	£119	£139.83
LPM-007/16	EPL 5600, 5500, 9000 16Mb	£199	£233.83
LPM-007/32	EPL 5600, 5500, 9000 32Mb	£309	£363.08

Hewlett Packard		Exc Vat	Inc Vat
LPM-008/4	Ljet 4+,4M+,4V,4MV 4Mb	£39	£45.83
LPM-008/8	Ljet 4+,4M+,4V,4MV 8Mb	£65	£76.38
LPM-008/16	Ljet 4+,4M+,4V,4MV 16Mb	£119	£139.83
LPM-008/4	Ljet 5/P/MP,6P/MP 4Mb	£39	£45.83
LPM-008/8	Ljet 5/P/MP,6P/MP 8Mb	£65	£76.38
LPM-008/16	Ljet 5/P/MP,6P/MP 16Mb	£119	£139.83
LPM-008/4	Colour Laserjet 5, 5M 4Mb	£39	£45.83
LPM-008/8	Colour Laserjet 5, 5M 8Mb	£65	£76.38
LPM-008/16	Colour Laserjet 5, 5M 16Mb	£119	£139.83
LPM-008/32	Colour Laserjet 5, 5M 32Mb	£209	£245.58
LPM-008/4	Laserjet 5Si,5Si MX 4Mb	£39	£45.83
LPM-008/8	Laserjet 5Si,5Si MX 8Mb	£65	£76.38
LPM-008/16	Laserjet 5Si,5Si MX 16Mb	£119	£139.83
LPM-008/32	Laserjet 5Si,5Si MX 32Mb	£209	£245.58
LPM-008/4	Deskjet 1600C,CN,CM 4Mb	£39	£45.83
LPM-008/8	Deskjet 1600C,CN,CM 8Mb	£65	£76.38
LPM-008/16	Deskjet 1600C,CN,CM 16Mb	£119	£139.83
LPM-008/32	Deskjet 1600C,CN,CM 32Mb	£209	£245.58
LPM-008/4	Laserjet 4P,4MP 4Mb	£39	£45.83
LPM-008/8	Laserjet 4P,4MP 8Mb	£65	£76.38
LPM-009/4	Designjet 600, 650C 4Mb	£45	£52.88
LPM-009/8	Designjet 600, 650C 8Mb	£79	£92.83
LPM-010/1	Laserjet 4L 1Mb	£39	£45.83
LPM-011/4	LaserJet 5L, 5L-FS 4Mb	£59	£69.33
LPM-011/8	LaserJet 5L, 5L-FS 8Mb	£109	£128.08
LPM-009/4	D/Jet 230,230C,650C 4Mb	£45	£52.88
LPM-009/8	D/Jet 230,230C,650C 8Mb	£79	£92.83
LPM-009/16	D/Jet 230,230C,650C 16Mb	£139	£163.33
LPM-009/32	Design 230,230C,650C 32Mb	£239	£280.83
LPM-009/4	Design 700, 750C/C+ 4Mb	£45	£52.88
LPM-009/8	Design 700, 750C/C+ 8Mb	£79	£92.83
LPM-009/16	Design 700, 750C/C+ 16Mb	£139	£163.33
LPM-009/32	Design 700, 750C/C+ 32Mb	£239	£280.83
LPM-009/4	L/Jet 4, 4M, 4Si, 4SIMX 4Mb	£45	£52.88
LPM-009/8	L/Jet 4, 4M, 4Si, 4SIMX 8Mb	£79	£92.83
LPM-009/4	DskJet 1200C,C/PS 4Mb	£45	£52.88
LPM-009/8	DskJet 1200C,C/PS 8Mb	£79	£92.83
LPM-009/4	DesignJet 200, 220 4Mb	£45	£52.88
LPM-009/8	DesignJet 200, 220 8Mb	£79	£92.83
LPM-012/2	LaserJet II, IID 2Mb	£109	£128.08
LPM-012/4	LaserJet II, IID 4Mb	£149	£175.08
LPM-013/2	LJet III, IIID, IIP, IIIP 2Mb	£99	£116.33
LPM-013/4	LJet III, IIID, IIP, IIIP 4Mb	£145	£170.38

Kyocera		Exc Vat	Inc Vat
LPM-014/1	F800, 800A, 800T 1Mb	£79	£92.83
LPM-014/2	F800, 800A, 800T 2Mb	£109	£128.08
LPM-014/4	F800, 800A, 800T 4Mb	£159	£186.83

Lexmark		Exc Vat	Inc Vat
LPM-015/4	LaserPrinter 4039 4Mb	£45	£52.88
LPM-015/8	LaserPrinter 4039 8Mb	£69	£81.08
LPM-015/4	Opra Lxl,R,Lx+,C,Rx 4Mb	£45	£52.88
LPM-015/8	Opra Lxl,R,Lx+,C,Rx 8Mb	£69	£81.08
LPM-015/16	Opra Lxl,R,Lx+,C,Rx 16Mb	£129	£151.58
LPM-015/32	Opra Lxl,R,Lx+,C,Rx 32Mb	£219	£257.33

Printer Memory

OKI		Exc Vat	Inc Vat
LPM-016/1	OL400e,400ex,410ex 1Mb	£89	£104.58
LPM-016/2	OL400e,400ex,410ex 2Mb	£119	£139.83
LPM-016/4	OL400e,400ex,410ex 4Mb	£179	£210.33
LPM-016/1	OL600,600e/ex,610ex 1Mb	£89	£104.58
LPM-016/2	OL600,600e/ex,610ex 2Mb	£119	£139.83
LPM-016/4	OL600,600e/ex,610ex 4Mb	£179	£210.33
LPM-017/2	OL1200, OL1200ex 2Mb	£59	£69.33
LPM-017/4	OL1200, OL1200ex 4Mb	£109	£128.08
LPM-017/8	OL1200, OL1200ex 8Mb	£159	£186.83

Panasonic		Exc Vat	Inc Vat
LPM-019/1	KXP4420,P4450I,P4451 1Mb	£69	£81.08
LPM-019/2	KXP4420,P4450I,P4451 2Mb	£99	£116.33
LPM-019/4	KXP4420,P4450I,P4451 4Mb	£149	£175.08
LPM-024/1	KX-P4450 1Mb	£69	£81.08
LPM-019/1	KX-P4410, P4430 1Mb	£69	£81.08
LPM-019/2	KX-P4410, P4430 2Mb	£99	£116.33
LPM-019/3	KX-P4410, P4430 3Mb	£129	£151.58
LPM-019/4	KX-P4410, P4430 4Mb	£149	£175.08
LPM-020/2	KX-P4401 1Mb	£99	£116.33
LPM-020/4	KX-P4401 4Mb	£149	£175.08
LPM-022/1	KX-P4400 1Mb	£59	£69.33
LPM-022/2	KX-P4400 2Mb	£89	£104.58
LPM-022/4	KX-P4400 4Mb	£139	£163.33

Scanners

Agfa		Exc Vat	Inc Vat
AGF-SP310	SnapScan 310	£138	£162.15
AGF-SP600	SnapScan 600	£294	£345.45
AGF-SSL	StudioStar + PhotoShop LE	£484	£568.70
AGF-SSF	StudioStar + PhotoShop 4	£530	£622.75
AGF-ARC2/P	Arcus II + PhotoShop 4	£1,347	£1,582.73
AGF-DUO/P	DuoScan	£2,575	£3,025.63

Canon		Exc Vat	Inc Vat
CAN-80 CART	BJC 80 Scanner Cart	£65	£76.38

Epson		Exc Vat	Inc Vat
<b>Flatbed Scanners</b>			
EPS-GTX50P	Epson GTX5000 Parallel	£154	£180.95
EPS-GT550S	Epson GT5500 Scsl for PC	£209	£245.58
EPS-GT550M	Epson GT5500 Mac	£209	£245.58
EPS-GTX50S	Epson GTX5000 Scsl	£246	£289.05
EPS-GTX50M	Epson GTX5000 Mac	£223	£262.03
EPS-GTX85P	Epson GTX8500 Parallel	£369	£433.58
EPS-GTX85S	Epson GTX8500 Scsl	£392	£460.60
EPS-GTX85M	Epson GTX8500 Mac	£369	£433.58
EPS-GT185S	Epson GT18500 Scsl	£469	£551.08
EPS-GT185M	Epson GT18500 Mac	£469	£551.08
EPS-GTX95P	Epson GTX9500 Parallel	£446	£524.05
EPS-GTX95S	Epson GTX9500 Scsl	£469	£551.08
EPS-GTX95M	Epson GTX9500 Mac	£446	£524.05
EPS-GT195S	Epson GT19500 Scsl	£538	£632.15
EPS-GT195M	Epson GT19500 Mac	£538	£632.15

Film Scanners		Exc Vat	Inc Vat
EPS-FS200S	FilmScan 200 PC SCSI	£326	£383.05
EPS-FS200M	FilmScan 200 Mac	£326	£383.05

Hewlett Packard		Exc Vat	Inc Vat
HP-LJCOM	LaserJet Companion	£116	£136.30
HP-SJ55	ScanJet 5S Portable Colour	£134	£157.45
HP-SJ5P	ScanJet 5P Flatbed Colour	£144	£169.20
HP-SJ6100	ScanJet 6100C Flatbed Col	£432	£507.60

Spot		Exc Vat	Inc Vat
SPO-PT6	fotoTak 6 A5 Col Flatbed	£99	£116.33
SPO-PT6/T	fotoTak 6 Transparency unit	£30	£35.25
SPO-ST3C	ScanTak 3C A4 Col Flatbed	£69	£81.08
SPO-DYN6P	Dynotak 6P Parallel	£89	£104.58

Visioneer		Exc Vat	Inc Vat
VIS-PPMX	Paperport MX Mono	£85	£99.88
VIS-PPIX	Paperport IX Keyboard Mono	£85	£99.88
VIS-PPS	Paperport Strobe Colour	£143	£168.03

Modems

Hayes		Exc Vat	Inc Vat
HAY-A56/I	Accura 56k Fax/Voice Int.	£87	£102.23
HAY-A56/E	Accura 56k Fax/Voice Ext.	£96	£112.80
HAY-AISDN	Accura ISDN Terminal adapt	£173	£203.28

Motorola		Exc Vat	Inc Vat
MOT-56INTX	56k Internet Solution Ext.	£83	£97.53
MOT-56VSUR	56k VoiceSurfr Internal	£83	£97.53
MOT-56VHOM	56k VoiceSurfr External	£95	£111.63
MOT-BSP	Bit Surfr Pro ISDN	£259	£304.33

Modems

Novatech		Exc Vat	Inc Vat
NOV-33/I	33.6 Fax/Voice Internal	£38	£44.65
NOV-33/E	33.6 Fax/Voice External	£47	£55.23
NOV-56/I	56k Fax/Voice Flash Int	£59	£69.33
NOV-56/E	56k Fax/Voice Flash Ext	£69	£81.08

US Robotics		Exc Vat	Inc Vat
<b>Sportster</b>			
USR-WINMOD	WinModem 33.6 Int.	£75	£88.13
USR-SV33/I	Voice 33.6 Int.	£101	£118.68
USR-FLASH	Flash X2	£99	£116.33
USR-MESS+	Sportster Message Plus	£122	£143.35
USR-288PCM	X-Jack V34 PCMCIA	£107	£125.73
USR-336PCM	Xjack Winmod PCMCIA	£75	£88.13
USR-ISDN TA	Sportster ISDN T/A	£101	£118.68

Courier		Exc Vat	Inc Vat
USR-CVF	V34 Internal	£191	£224.43
USR-CVFE	V34 External	£191	£224.43
USR-C/I	Courier I ISDN Internal	£195	£229.13
USR-C/E	Courier I ISDN External	£239	£280.83

Zoom		Exc Vat	Inc Vat
ZOO-336I	33.6 Internal	£49	£57.58
ZOO-336E	33.6 External	£63	£74.03
ZOO-56I	56k Internal	£81	£95.18
ZOO-56E	56k External	£100	£117.50

Cameras

Agfa		Exc Vat	Inc Vat
AGF-EP307	ePhoto 307	£203	£238.52

Casio		Exc Vat	Inc Vat
CAS-QV11	QV11 320x200	£189	£222.07
CAS-QV70	QV70 320x240	£211	£247.92
CAS-QV100	QV100 640x480	£239	£280.82
CAS-QV200	QV200 640x480	£253	£297.27

## Monitors

		Exc Vat	Inc Vat
<b>ADI</b>			
ADI-E30	Provista E30 14"	£107	£125.73
ADI-E40	Provista E40 15"	£145	£170.38
ADI-4P	Microscan 4P 15"	£160	£188.00
ADI-5P	Microscan 5P 17"	£289	£339.58
ADI-5G	Microscan 5G 17"	£359	£421.83
ADI-DUO	Microscan Duo 17"	£249	£292.58
ADI-17X+	Microscan 17X+	£309	£363.08
ADI-6P	Microscan 6P 19"	£559	£656.83
ADI-6G	Microscan 6G 21"	£809	£950.58
<b>CTX</b>			
CTX-1451	1451CLR 14"	£104	£122.20
CTX-1569	1569SE 15"	£159	£186.83
CTX-1569MS	1569MS 15" Multimedia	£189	£222.08
CTX-1769MS	1769MS 17" Multimedia	£309	£363.08
CTX-1792	1792SE	£313	£367.78
CTX-1785XE	1785XE 17"	£332	£390.10
CTX-1792UA	1792UA 17"	£369	£433.58
CTX-1785	1785XA 17"	£389	£463.58
CTX-2185	2185XE 21"	£799	£938.83
<b>Iiyama</b>			
IIL-8515G	Vision Master 15G	£180	£211.50
IIL-8617E	Vision Master 17E	£376	£441.80
IIL-8617ES	Vision Master 17ES	£408	£479.40
IIL-9017T	Vision Master Pro 17	£422	£495.85
IIL-8721T	Vision Master 500	£868	£1,019.90
IIL-9221T	Vision Master Pro 500	£896	£1,052.80
IIL-TS17	Touch Screen 17"	£999	£1,173.83
IIL-TS21	Touch Screen 21"	£1,425	£1,674.38
<b>Mag Innovision</b>			
MAG-XJ530	Mag Innovision XJ530 15"	£169	£198.58
MAG-DX15T	Mag Technitron DX15T 15"	£195	£229.13
MAG-XJ707	Mag Innovision XJ707 17"	£305	£358.38
MAG-XJ717	Mag Innovision XJ717 17"	£349	£410.08
MAG-DX715	Mag Technitron DX715 17"	£389	£457.08
MAG-DJ800	Mag Innovision DJ800 19"	£555	£652.13
MAG-DJ920	Mag Innovision DJ920 21"	£799	£938.83
<b>Novatech</b>			
NOV-1428	1428 14" .28dp Digital	£102	£118.85
NOV-1528	1528 15" .28dp OSD DDC	£144	£169.20
NOV-1728	1728 17" .28dp OSD DDC	£263	£308.03
NOV-1726	1726 17" .26dp 1600*1200	£333	£391.28
NOV-2128	21" .28dp	£809	£950.58
<b>Panasonic</b>			
PAN-PS4	Panasync 4 15"	£174	£204.45
PAN-4GMM	Panasync 4 Multimedia 15"	£171	£200.93
PAN-4GPRO	Panasync 4G Pro 15"	£225	£264.38
PAN-5G	Panasync 5G 17"	£302	£354.85
PAN-5GMM	Panasync 5G 17" MM	£361	£424.18
PAN-PRO5G	Panasync Pro 5G	£401	£471.18
<b>Phillips</b>			
PHI-14M	14M 14" Mono	£82	£96.35
PHI-104S	104S 14" SVGA	£102	£119.85
PHI-104B	104B 14" NI SVGA	£117	£137.48
PHI-105S	105S 15"	£164	£192.70
PHI-105B	105B 15"	£187	£219.73
PHI-105BR	105BR 15"	£195	£229.13
PHI-107S	107S 17"	£281	£330.18
PHI-107B	107B 17"	£342	£401.65
PHI-107BR	107BR 17"	£393	£461.78
PHI-109B	109B 19"	£576	£678.80
PHI-201B	201B 21"	£826	£970.55
PHI-201BR	201BR 21"	£1,425	£1,674.38
PHI-201BRC	201BRC 21" CYBER	£1,566	£1,840.05
PHI-33PX	33PX 8001 33"	£1,589	£1,867.08
<b>Sony</b>			
SON-100SX	100SX 15"	£194	£227.95
SON-100SFT	100SFT 15"	£224	£263.20
SON-200SX	200SX 17"	£359	£421.83
SON-200SFT	200SFT 17"	£382	£448.85
SON-17SE2	17SE2T5 17"	£569	£668.58
SON-300SFT	300SFT5 20"	£779	£915.33
SON-20SE2	20SE2T5 20"	£920	£1,081.00
SON-W900	W900 24" Superwide	£1,839	£2,160.83
<b>Taxan</b>			
ErgoVision			
TAX-430	430 LR 14"	£109	£128.08
TAX-550	550 TC095 15"	£189	£222.08
TAX-550A95	550 TC095 + Audio 15"	£199	£233.83
TAX-730	730 TCO 92 17"	£359	£421.83
TAX-730A	730 TCO 92 + AUDIO	£369	£433.58
TAX-730A95	730 TCO 95 + AUDIO	£379	£445.33
TAX-740	740 TCO 92	£446	£524.05
TAX-740A95	740 TCO 95 + AUDIO	£451	£529.93
TAX-750	750 TCO 95	£431	£506.43
TAX-2040	2040 TCO 92	£644	£756.70
TAX-2040DB	2040 TCO 95	£673	£790.78
TAX-2150	2150 TCO 95	£919	£1,079.83
<b>LCD DISPLAYS</b>			
NEC-LCD400	LCD 400 14" Display	£1,706	£2,004.55
<b>CTX</b>			
CTX-P550	10.4" TFT + Speakers	£840	£987.00
CTX-P600	12.1" TFT + Speakers	£1,012	£1,189.10
CTX-P740	14.1" TFT + Speakers	£2,145	£2,520.38
CTX-P745	14.5" TFT + Speakers	£1,575	£1,850.63
<b>Panasonic</b>			
PAN-LC40	14" TFT	£1,604	£1,884.70
<b>Phillips</b>			
PHI-4500	14.5" TFT + Speakers	£1,393	£1,636.78
<b>Taxan</b>			
TAX-600	10.4" TFT	£902	£1,059.85
TAX-620	12.1" TFT	£1,149	£1,350.08
TAX-650S	14.5" TFT	£1,699	£1,998.33

## Graphics Cards

		Exc Vat	Inc Vat
<b>ATI PCI</b>			
ATI-TV	ATI TV Tuner	£60	£70.50
Oem version no box or games			
ATI-CHA2/O	3D Charger + 2Mb Sgram	£37	£43.48
ATI-CHA4/O	3D Charger + 4Mb Sgram	£52	£61.10
ATI-CHT2/O	3D Charger + PC2TV 2Mb	£50	£58.75
ATI-CHT4/O	3D Charger PC2TV 4Mb SGram	£60	£70.50
ATI-TVG	ATI TV Games Pack	£15	£17.63
<b>Xpert</b>			
ATI-XPW4	Xpert @ Work 4Mb Sgram	£127	£149.23
ATI-XPW8	Xpert @ Work 8Mb Sgram	£159	£186.83
ATI-XP4/O	Xpert @ Play 4Mb Sgram	£139	£163.33
ATI-XP8/O	Xpert @ Play 8Mb Sgram	£169	£198.58
ATI-XWA4	Xpert @ Work 4Mb Sgram AGP	Call	
ATI-XWA8	Xpert @ Work 8Mb Sgram AGP	Call	
ATI-XPA4	Xpert @ Play 4Mb Sgram AGP	Call	
ATI-XPA8	Xpert @ Play 8Mb Sgram AGP	Call	
ATI-XP2UP	Xpert 2Mb Upgrade	£29	£34.08
ATI-XP4UP	Xpert 4Mb Upgrade	£59	£69.33
Oem version no box or games			
ATI-XW4/O	3D Xpert @ Work 4Mb Sgram	£99	£116.33
ATI-XPW8/O	3D Xpert @ Work 8Mb Sgram	£125	£146.88
ATI-XP4/O	3D Xpert @ Play 4Mb Sgram	£109	£128.08
ATI-XP8/O	3D Xpert @ Play 8Mb Sgram	£135	£158.63
ATI-XWA4/O	3D Xpert @ Work 4Mb Sgram AGP	£109	£128.08
ATI-XWA8/O	3D Xpert @ Work 8Mb Sgram AGP	£132	£155.10
ATI-XPA4/O	3D Xpert @ Play 4Mb Sgram AGP	£115	£135.13
ATI-XPA8/O	3D Xpert @ Play 8Mb Sgram AGP	£148	£173.90
<b>Diamond</b>			
Diamond Stealth PCI			
3D Edge			
DIA-3D2200	3D2200 2mb Edo Dram no upg	£34	£39.95
DIA-3D2240	3D2240 2mb Edo upg to 4mb	£36	£42.30
DIA-3D224P	3D2240 Pro 2mb Edo 3D Virge	£42	£49.35
DIA-3D2400	3D2400 4mb Edo no upgrade	£45	£52.98
DIA-3D240P	3D2400 Pro 4mb Edo 3D Virge	£49	£57.58
DIA-3D24PT	3D2400 4mb Edo Dram Pro TV	£55	£64.63
DIA-MONS/O	Stealth Monster 3D OEM	£97	£113.98
DIA-MONS	Stealth Monster 3D	£109	£128.08
DIA-MONS/S	Stealth Monster 3D S/store	£118	£138.65
DIA-VIP4/O	Viper 4Mb PCI	£109	£128.08
DIA-VIP4/A	Viper 4Mb AGP	£109	£128.08
DIA-VPTV/4	Viper 4Mb PCI TV Output	£125	£146.88
<b>Fire</b>			
DIA-GL1800	Diamond Fire GL1800 8mb	£124	£145.70
DIA-GL180P	Diamond Fire GL1800 8mb Pro	£140	£164.50
<b>Hauppauge</b>			
HAU-TVPCI	Win Tv PCI	£85	£99.88
HAU-CIN95	Cinemanla pro 95 ISA	£189	£222.08
HAU-TVPREM	Hauppauge Win TV PCI Prmlto	£55	£64.63
HAU-TVPR	Hauppauge Win TV PCI Radio	£89	£104.58
HAU-VMAG	Hauppauge Videomagic ISA	£169	£198.58
<b>Matrox</b>			
Retail Box			
MAT-MI2/4	Millennium II 220DAC 4Mb	£107	£125.73
MAT-MI2/8	Millennium II 220DAC 8Mb	£154	£180.95
MAT-MN254	Millennium II 250DAC 4Mb	£120	£141.00
MAT-MN258	Millennium II 250DAC 8Mb	£164	£192.70
MAT-MNU/4	Millennium II 4mb upgrade	£77	£90.48
MAT-MNU/8	Millennium II 8mb upgrade	£120	£141.00
MAT-MNU/12	Millennium II 12mb upgrade	£170	£199.75
MAT-ME24HR	Mystique 220 4mb Home	£70	£82.25
MAT-RR	Matrox Rainbow Runner Studio	£115	£135.13
MAT-M3DI	Matrox M3D accelerator card	£59	£69.33
Oem (No Games)			
MAT-ME24HO	Mystique 220 4mb Home OEM	£68	£79.90
MAT-MI24/O	Millennium II 220DAC 4Mb OEM	£89	£104.58
MAT-MI28/O	Millennium II 220DAC 8Mb OEM	£135	£158.63
<b>Maxi</b>			
MAX-GV004	Maxi Gamer 4Mb Voodoo3 3D FX	£100	£117.50
<b>Novatech</b>			
NOV-S33D	S3 3D DX Virage Mpeg 2mb PCI	£35	£41.13
NOV-S332UP	S3 3D 2Mb upgrade	£25	£29.38
NOV-S331U	S3 3D DX 2Mb Upgrade	£25	£29.38
NOV-S33D4	S3 3D DX Virage Mpeg 4mb	£55	£64.63
<b>Orchid</b>			
ORC-RIG/3D	Righteous 4mb Dram PCI	£110	£129.25
<b>Videologic</b>			
VID-APO3D	Apocalypse 3D 4mb Edo PCI	£39	£45.83
VID-A3DX	Apocalypse 3DX	£69	£81.08
VID-A5D	Apocalypse 5D	£137	£160.98
VID-A5DS	Apocalypse 5D Sonic	£164	£192.70
VID-G410/1	Grafixstar 410 1mb PCI	£26	£30.55
VID-G410/2	Grafixstar 410 2mb PCI	£35	£41.13
VID-G550/4	Grafixstar 550 4mb PCI	£65	£76.38
VID-600P/2	Grafixstar 600 2mb PCI	£58	£68.15
VID-5604/O	Grafixstar 560 4mb PCI	CALL	
VID-560A4O	Grafixstar 560 4mb AGP	CALL	
VID-600/2	Grafixstar 600 2mb PCI Dram	£56	£65.80
VID-600/2U	Grafixstar 600 2mb upgrade	£38	£44.65
VID-CAP	Captivator PCI	£52	£61.10
VID-CAP/VC	Captivator PCI/VC with camera	£149	£175.08
VID-SONIC	Sonic Storm PCI Sound Card	£55	£64.63

## Palmtops

		Exc Vat	Inc Vat
<b>Hewlett Packard</b>			
300 Serles Windows CE Palmtops			
HP-300LX	300LX 2Mb	£324	£380.70
HP-320LX	320LX 4Mb Backlit	£396	£465.30
HP-H5465A	3yr Next Day Exchange	£66	£77.55
HP-F1225A	Spare pens - pack of 3	£7	£8.23
HP-F1227A	Leather Case	£47	£55.23
HP-F1229A	CompactFlash 2Mb + adapt	£63	£74.03
HP-F1231A	CompactFlash 4Mb + adapt	£95	£111.63
OmniGo 700LX			
HP-F1206A	OmniGo 700LX Comm	£589	£692.08
<b>Pision</b>			
PSI-SIE/1	Pision Sienna 1Mb	£182	£213.85
PSI-3C/2	Pision 3C 2Mb	£262	£307.85
PSI-5/4	Pision Serles 5 4Mb	£332	£390.10
PSI-5/8	Pision Serles 5 8Mb	£376	£441.80
<b>U.S. Robotics</b>			
USR-P/PER	Pilot Personal	£156	£183.30
USR-P/PRO	Pilot Professional	£213	£250.28
USR-P/CASE	Pilot Leather Case	£19	£22.33
<b>Soundcards &amp; Speakers</b>			
<b>Creative Labs</b>			
CRE-SB16	S/Blaster 16 PnP Non IDE	£35	£41.13
CRE-AWE64V	Sound Blaster AWE 64 Value	£55	£64.63
CRE-AWE64G	Sound Blaster AWE 64 Gold	£104	£122.20
<b>Novatech</b>			
NOV-SC16	16bit PnP Sound Card	£19	£22.33
<b>Labtech</b>			
LAB-2.7W	2.7 Watt Speaker	£12	£14.10
LAB-5WATT	5 Watt Speaker	£18	£21.15
LAB-10WATT	10 Watt Speaker	£26	£30.55
LAB-20WATT	20 Watt Speaker	£60	£70.50
<b>Typhoon</b>			
TYP-25	25 Watt		

**Motherboards**

		Exc Vat	Inc Vat
<b>Gigabyte</b>			
GIG-T2	Gigabyte Intel 430tx AT	£75	£88.13
GIG-TX	Gigabyte Intel 430tx	£82	£96.35
GIG-LX	Gigabyte Intel 440Lx Pent2	£155	£182.13
<b>QDI</b>			
QDI-TX1B	TITANIUM IB TX	£83	£97.53
QDI-EXP	EXPLORER 4 VX	£65	£76.38
<b>AIR</b>			
AIR-TXA	Intel 430 Tx AT Format	£82	£96.35
AIR-TX	Intel 430 Tx ATX Format	£95	£111.63
AIR-LXI	Intel 440 Lx ATX Format	£155	£182.13
AIR-LXS	Intel 440 Lx + UW SCSI ATX	£279	£327.83
<b>PC CHIPS</b>			
CHI-VXPRO	PC CHIPS VX Pro C.set 512K	£43	£50.53
CHI-TXPRO	PC CHIPS TX Pro C.set 512K	£49	£57.58
CHI-430TX	PC CHIPS 430TX C.set 512K	£57	£66.98

**Processors**

		Exc Vat	Inc Vat
<b>Intel MMX Pentium</b>			
ITL-166MMX	Pentium MMX 166MHz	£78	£91.65
ITL-200MMX	Pentium MMX 200MHz	£126	£148.05
ITL-233MMX	Pentium MMX 233MHz	£158	£185.65
<b>Intel Pentium II</b>			
ITL-P2/233	Pentium II 233MHz	£171	£200.93
ITL-P2/266	Pentium II 266MHz	£355	£417.13
<b>AMD K6</b>			
AMD-K6/166	K6 166MHz	£62	£72.85
AMD-K6/200	K6 200MHz	£112	£131.60
AMD-K6/233	K6 233MHz	£164	£192.70

**Removable Storage**

		Exc Vat	Inc Vat
<b>Atapi</b>			
ZIP-ATAPI	Zip Atapi * Internal IDE	£59	£69.33
<b>Iomega</b>			
IOM-ZIP+	ZIP Drive Parallel & SCSI	£109	£128.08
IOM-ZIP/P	ZIP Drive 100Mb Ext Parallel	£86	£101.05
IOM-ZIPS/I	ZIP Drive 100Mb Int SCSI	£86	£101.05
IOM-ZIP/S	ZIP Drive 100Mb Ext SCSI	£86	£101.05
IOM-ZIP/1	ZIP 100Mb Disk	£10	£11.75
IOM-ZIPC/N	Zip Carry Case Normal	£18	£21.15
IOM-ZIPC/M	Zip Carry Case Mini	£9	£10.58
IOM-DMAXE	External 5/7Gb Dittomax	£125	£146.88
IOM-DMAXPE	External 10Gb Dittomax Pro	£184	£216.20
IOM-DITNT	Ditto NT Tools Software	£14	£16.45
IOM-JAZ/I	JAZ Drive 1Gb Internal SCSI	£173	£203.28
IOM-JAZ/E	JAZ Drive 1Gb External SCSI	£227	£266.73
IOM-JAZ/1	JAZ 1Gb Disk	£69	£81.08
IOM-JAZ/T	Jaz Traveller/Par.-SCSI Adapt	£34	£39.95
IOM-JAZ/C	Jaz Carry Case	£19	£22.33
<b>SysQuest</b>			
SYS-EZ230S	EZ Flyer 230Mb Ext SCSI	£93	£109.28
SYS-EZ230P	EZ Flyer 230Mb Ext Parallel	£93	£109.28
SYS-230MB	EZ Flyer 230Mb Disk	£15	£17.63
SYS-SJ15IE	SyJet 1.5Gb Internal IDE	£187	£219.73
SYS-SJ15IS	SyJet 1.5Gb Internal SCSI	£187	£219.73
SYS-SJ15ES	SyJet 1.5Gb External SCSI	£250	£293.75
SYS-SJ15EP	SyJet 1.5Gb Ext Parallel	£250	£293.75
SYS-1500MB	SyJet 1.5Gb Disk	£74	£86.95
<b>Hewlett Packard</b>			
HP-C3322C	Re-writable CD/ 7100 series	£18	£21.15

**CD ROM Drives**

		Exc Vat	Inc Vat
<b>Creative Labs</b>			
CRE-CD24	Blaster CD24 EIDE	£60	£70.50
<b>Goldstar</b>			
GOL-8160B	CDR8160B 16X Max EIDE	£49	£57.58
GOL-8241B	CDR8241B 24X Max EIDE	£61	£71.68
<b>Hitachi</b>			
HIT-CD16	16 Speed EIDE 125ms acces	£53	£62.28
HIT-CD24	24 Speed EIDE 125ms acces	£61	£71.68
<b>Hewlett Packard</b>			
<b>Reader/Writer</b>			
HP-7100I	CD Writer Plus EIDE	£239	£280.83
HP-7100E	CD Writer Plus Parallel	£293	£344.28
<b>Novatech</b>			
NOV-CD24	24X Max Speed IDE	£49	£57.58

**Controller Cards**

		Exc Vat	Inc Vat
<b>Novatech</b>			
CLI-MIO	IDE 2Hdd 2Fdd 1Parr 1Game	£14	£16.45
	2 16550 Serial Ports		
<b>Adaptec</b>			
<b>EIDE Controllers</b>			
ADA-AT32	EIDE-AT32 ValuePak	£25	£29.38
ADA-AT42	EIDE-AT42 ValuePak	£34	£39.95
ADA-AT52	EIDE-AT52 ValuePak	£43	£50.53
<b>SCSI Controllers</b>			
ADA-1520	AHA1520B ISA kit	£94	£110.45
ADA-2825	AHA2825 VL Bus kit	£87	£102.23
ADA-2920	AHA2920 PCI kit	£91	£106.93
ADA-2940	AHA2940 Ultra PCI kit	£152	£178.60
ADA-2940UW	AHA2940 Ultra Wide PCI kit	£177	£207.98
ADA-3940	AHA3940 Ultra PCI kit	£257	£301.98
ADA-3940UW	AHA3940 Ultra Wide PCI kit	£293	£344.28
ADA-1460	1460-2 SCSI PCMCIA kit	£98	£115.15

**IDE Hard Drives**

		Exc Vat	Inc Vat
<b>Fujitsu</b>			
FUJ-3017AT	MPA3017AT-UDMA 1.7Gb	£81	£95.18
FUJ-3026AT	MPA3026AT 2.6Gb	£100	£117.50
FUJ-3035AT	MPA3035AT-UD 3.5Gb	£116	£136.30
FUJ-3043AT	MPA3043AT 4.3Gb	£136	£159.80
FUJ-3064AT	MPB3064AT 6.4Gb 11ms	£189	£222.08
<b>Quantum Fireball ST</b>			
QUA-ST2160	Stratus 2160 2.1Gb 10ms	£105	£123.38
QUA-ST3240	Stratus 3240 3.2Gb 10ms	£110	£129.25
QUA-ST6480	Stratus 6480 6.4Gb 10ms	£197	£231.48

		Exc Vat	Inc Vat
<b>Seagate IDE</b>			
SEG-31277A	ST31277A 1.2Gb 12ms	£83	£97.53
SEG-31720A	ST31720A 1.7Gb 12ms	£76	£89.30
SEG-32122A	ST32122A 2.0Gb 12.5ms Ultra	£97	£113.98
SEG-32531A	ST32531A 2.5Gb 11ms	£107	£125.73
SEG-33232A	ST33232A 3.2Gb 10.5ms Ultra	£124	£145.70
SEG-34342A	ST34342A 4.3Gb 12ms Ultra	£149	£175.08
SEG-36451A	ST36451A 6.4Gb 9.5ms Ultra	£204	£239.70

		Exc Vat	Inc Vat
<b>Western Digital IDE</b>			
WES-1600	AC-21600 1.6Gb <12ms	£94	£110.45
WES-2000UD	AC-22000 2.0Gb <12ms Ultra	£109	£128.08
WES-2100	AC-221000 2.1Gb <12ms	£98	£115.15
WES-2500	AC-22500 2.5Gb 11ms	£115	£135.13
WES-3100	AC-33100 3.1Gb <12ms	£123	£144.53
WES-4000	AC-34000 4.0Gb 11ms	£147	£172.73
WES-5100	AC-35100 5.1Gb 11ms	£162	£190.35
WES-6400	AC-36400 6.4Gb 9.5ms	£183	£215.03

		Exc Vat	Inc Vat
<b>Toshiba Notebook Drives</b>			
NB-HTD1401	T2100,T4500 Series 1.4Gb	£119	£139.83
NB-HTD2101	T2100,T4500 Series 2.1Gb	£179	£210.33
NB-HTD3003	T2100,T4500 Series 3.0Gb	£409	£480.58
NB-HTD1401	Satellite/Pro Series 1.4Gb	£119	£139.83
NB-HTD2101	Satellite/Pro Series 2.1Gb	£179	£210.33
NB-HTD3003	Satellite/Pro Series 3.0Gb	£409	£480.58
NB-HTD1401	Portege 610,700,710 1.4Gb	£119	£139.83
NB-HTD2101	Portege 610,700,710 2.1Gb	£179	£210.33
NB-HTD3003	Portege 610,700,710 3.0Gb	£409	£480.58

**SCSI Hard Drives**

		Exc Vat	Inc Vat
<b>Quantum Fireball Stratus</b>			
QUA-FS2110	2110 2.1Gb 10ms Ultra SCSI	£146	£171.55
QUA-FS3220	3220 3.2Gb 10ms Ultra SCSI	£159	£186.83
QUA-FS4320	4320 4.3Gb 10ms Ultra SCSI	£203	£238.53
QUA-FS6480	6480 6.4Gb 10ms Ultra SCSI	£230	£270.25

		Exc Vat	Inc Vat
<b>Seagate Baracuda ST</b>			
SEG-32272N	ST32272N 2.2Gb 9ms U.S.CSI	£269	£316.08
SEG-34572N	ST34572N 4.5Gb 9ms U.S.CSI	£382	£448.85
SEG-19171N	ST19171N 9Gb 9ms U.S.CSI	£683	£802.53

		Exc Vat	Inc Vat
<b>Western Digital Enterprise</b>			
WES-22170	AC-22170 2.1Gb 8ms Ultra SCSI	£278	£326.65
WES-24360	AC-24360 4.3Gb 8ms Ultra SCSI	£416	£488.80
WES-22170W	AC-22170 2.1Gb 8ms Ultra Wide	£261	£306.68
WES-24360W	AC-24360W 4.3Gb 8ms U.Wide	£328	£385.40

**Memory**

		Exc Vat	Inc Vat
<b>30 Pin</b>			
RAM-S170	1Mb 1 x 9 3 chip	£5	£5.88
RAM-432	4Mb 4 x 9 3 chip	£13	£15.28
RAM-432/TP	4Mb 4 x 9 9 chip	£25	£29.38

		Exc Vat	Inc Vat
<b>72 Pin Non Parity</b>			
RAM-472/32	1x32 4Mb 70ns	£9	£10.58
RAM-872/32	2x32 8Mb 70ns	£14	£16.45
RAM-16/32	4x32 16Mb 70ns	£29	£34.08
RAM-32/32	8x32 32Mb 70ns	£59	£69.33

		Exc Vat	Inc Vat
<b>72 Pin Parity</b>			
RAM-472/36	1x36 4Mb 70ns	£14	£16.45
RAM-872/36	2x36 8Mb 70ns	£25	£29.38
RAM-16/36	4x36 16Mb 70ns	£36	£42.30
RAM-32/36	8x36 32Mb 70ns	£72	£84.60

		Exc Vat	Inc Vat
<b>72 Pin EDO 60ns</b>			
RAM-472EDO	1x32 4Mb 60ns	£9	£10.58
RAM-872EDO	2x32 8Mb 60ns	£14	£16.45
RAM-16EDO	4x32 16Mb 60ns	£29	£34.08
RAM-32EDO	8x32 32Mb 60ns	£59	£69.33

		Exc Vat	Inc Vat
<b>168 Pin 5v Fast Page</b>			
RAM-168/16	2x64 16Mb	£41	£48.18
RAM-168/32	4x64 32Mb	£72	£84.60
RAM-168/64	8x64 64Mb	£145	£170.38

		Exc Vat	Inc Vat
<b>168 Pin 5v EDO Unbuffered</b>			
RAM-5EU16	2x64 16Mb	£42	£49.35
RAM-5EU32	4x64 32Mb	£79	£92.83
RAM-5EU64	8x64 64Mb	£165	£193.88

		Exc Vat	Inc Vat
<b>168 Pin 3.3v Synchronous DRAM</b>			
RAM-SD16	2x64 16Mb	£39	£45.83
RAM-SD32TX	4x64 32Mb for TX Mboards	£69	£81.08
RAM-SD32VX	4x64 32Mb for VX Mboards	£73	£85.78
RAM-SD64	8x64 64Mb	£162	£190.35
RAM-SD128	16x64 128Mb	£489	£574.58

		Exc Vat	Inc Vat
<b>168 Pin 3.3v EDO Unbuffered</b>			
RAM-DU16	2x64 16Mb	£42	£49.35
RAM-DU32	4x64 32Mb	£79	£92.83
RAM-DU64	8x64 64Mb	£165	£193.88

		Exc Vat	Inc Vat
<b>168 Pin 3.3v EDO Buffered</b>			
RAM-DB16	2x64 16Mb	£42	£49.35
RAM-DB32	4x64 32Mb	£79	£92.83
RAM-DB64	8x64 64Mb	£165	£193.88

		Exc Vat	Inc Vat
<b>168 Pin 3.3v ECC Unbuffered</b>			
RAM-CU16	2x6		

## Networking

### 3Com

Network Cards		Exc Vat	Inc Vat
3C-509T/1	3COM 509B TPO	£34	£39.95
3C-509T/5	3COM 509B TPO 5 Pack	£159	£186.83
3C-509T/20	3COM 509B TPO 20 Pack	£579	£680.33
3C-509C/1	3COM 509B Combo	£69	£81.08
3C-509C/5	3COM 509B Combo 5 Pk	£309	£363.08
3C-509C/20	3COM 509B Combo 20 Pk	£1,118	£1,313.65
3C-900	3COM 900 Combo PCI	£75	£88.13
3C-900/5	3COM 900 Combo PCI 5 Pk	£353	£414.78
3C-905	3COM 905 10/100 TX PCI	£54	£63.45
3C-905/5	3COM 905 10/100 TX PCI 5 Pk	£256	£300.80

### Network Hubs

Network Hubs		Exc Vat	Inc Vat
3C-16700	8 Port Office Connect	£56	£65.80
3C-16701	8 Port + 1 BNC Office Con.	£72	£84.60
3C-16670A	12 Port SuperStack II Hub 10	£285	£334.88
3C-16671A	24 Port SuperStack II Hub 10	£504	£592.20
3C-16673B	12 Port SuperStack II Man.	£530	£622.75
3C-250B-TX	12 Port SuperStack II Hub 100TX	£740	£869.50

### Kingston

Network Cards		Exc Vat	Inc Vat
KIN-2021LC	ISA 20bt Combo Card	£23	£27.03
KIN-2021/6	ISA 20bt Combo Card 6 Pack	£134	£157.45
KIN-40BT/1	PCI 40bt Combo Card	£30	£35.25
KIN-40BT/6	PCI 40bt Combo Card 6 Pack	£162	£190.35
KIN-KNE100	PCI 10/100Mbps RJ45 Card	£42	£49.35
KIN-PCM/M	PCMCIA Combo Card	£79	£92.83

### Network Hubs

Network Hubs		Exc Vat	Inc Vat
KIN-5TP/SO	5 Port Solo Workgroup	£55	£64.63
KIN-BTP/S	8 Port Stackable	£85	£99.88
KIN-8TP/WG	8 Port Workgroup	£75	£88.13
KIN-8PTX/S	8 Port 100Mbps Stackable	£325	£381.88
KIN-16/WG	16 Port Workgroup	£130	£152.75
KIN-16/S	16 Port Stackable	£139	£163.33

### SMC

Network Cards		Exc Vat	Inc Vat
SMC-EZUTP	SMC EtherEZ ISA RJ45	£30	£35.25
SMC-EZUTP5	SMC EtherEZ ISA RJ45 5 Pk	£139	£163.33
SMC-EZCOM	SMC EtherEZ ISA Combi	£34	£39.95
SMC-EZCOM5	SMC EtherEZ ISA Combi 5 Pk	£159	£186.83
SMC-PCICOM	SMC EtherPower PCI Combo	£42	£49.35
SMC-PCIC5	SMC EtherPower PCI Combo 5Pk	£205	£240.88
SMC-10/100	SMC EtherPower PCI 10/100	£42	£49.35
SMC-10/1005	SMC EtherPower PCI 10/100 5Pk	£205	£240.88

### Network Cables

10 Base 2 Thin Ethernet		Exc Vat	Inc Vat
CAB-TN2	BNC Thin Ethernet 2 Metre	£5	£5.88
CAB-TN3	BNC Thin Ethernet 3 Metre	£6	£7.05
CAB-TN5	BNC Thin Ethernet 5 Metre	£9	£10.58
CAB-TN10	BNC Thin Ethernet 10 Metre	£15	£17.63

10 Base T & 100Mbps Category 5		Exc Vat	Inc Vat
CAB-C5/05	RJ45 Category 5 1/2 Metre	£4	£4.70
CAB-C5/1	RJ45 Category 5 1 Metre	£5	£5.88
CAB-C5/2	RJ45 Category 5 2 Metre	£6	£7.05
CAB-C5/3	RJ45 Category 5 3 Metre	£7	£8.23
CAB-C5/5	RJ45 Category 5 5 Metre	£10	£11.75
CAB-C5/10	RJ45 Category 5 10 Metre	£17	£19.98

## Notebook Upgrades

### PCMCIA CD-Rom Drives.

NB-CD12XPC	12-Speed PCMCIA CD-Rom	£229	£269.08
NB_CD8XPA	8-Speed Parallel CD-Rom	£185	£217.38

### PCMCIA Network Cards.

NB-KINETPC	PCMCIA Net Card 10baseT/2	£69	£81.08
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### Combined Modem And Network Cards.

NB-PAEM001	Net Mobile Net/V.34 Modem	£249	£292.58
NB-PAEM002	Net Mobile combo Net/V.34	£269	£316.08
NB-PATM002	Token ring Net/V.34 Modem	£329	£386.58

### PCMCIA and GSM Modems

NB-PAPC100	Euromodem V34 Data/fax	£159	£186.83
NB-PAPC003	Freespirit V.34 GSM ready	£159	£186.83
NB-PAPC006	Freespirit V.34 Nokla 2110/BT	£309	£363.08

Please call for connection to many other phones.

### Desktop - PCMCIA Adaptors.

NB-PACM001	PCMCIA front slot adaptor	£79	£92.83
NB-PACM002	PCMCIA front & rear slots	£129	£151.58
NB-PACM003	PCMCIA rear slot adaptor	£65	£76.38

### New Media PCMCIA Products.

NB-PANM008	GameJammer PCMCIA Sound	£149	£175.08
NB-PANM009	Laptalk Speakers	£85	£99.88
NB-PANM007	Toast'n Jam Sound+SCSI	£299	£351.33
NB-PANM004	.WAVJammer 16-Bit Sound	£189	£222.08
NB-PAMP001	Vision Mobile PCMCIA MPEG	£179	£210.33

### Targus Notebook Carry Cases

TAR-CN01	Notebook Carry Case	£37	£43.48
TAR-CNP1	Notebook Plus with extra stor	£57	£66.98
TAR-CUN1	Notebook and Printer case	£65	£76.38

### Batteries

NB-BAT003	Apple Powerbook 140,150,160	£49	£57.58
NB-BAT003	AST Bravo NB, 700N	£79	£92.83
NB-BAT005	AST Power Executive	£89	£104.58
NB-BAT006	Compaq LTE Elite	£109	£128.08
NB-BAT007	Compaq LTE Lite	£109	£128.08
NB-BAT008	Compaq Contura 3/20,3/25	£69	£81.08
NB-BAT009	Compaq Contura Aero	£63	£74.03
NB-BAT010	Toshiba T1900,1910,1950,4700	£95	£111.63
NB-BAT011	Toshiba T4500,T4600 Series	£139	£163.33
NB-BAT012	Toshiba Satellite, Satellite Pro	£229	£269.08
NB-BAT013	Toshiba Portege	£229	£269.08
NB-BAT014	Tosh T2100,2110,2130 Series	£95	£111.63

### PCMCIA Hard Drives.

NB-PAPH520	520Mb PCMCIA Hard Drive	£409	£480.58
NB-PAPH260	260Mb PCMCIA Hard Drive	£249	£292.58

## Notebook Hard Drives

### Toshiba

NB-HDT1401	Toshiba T2100 Series 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T2100 Series 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T2400 Series 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T2400 Series 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T3400CT 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T3400CT 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T3600CT 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T3600CT 2.1Gb	£249	£292.58
NB-HDT3003	Toshiba T3600CT 3.1Gb	£489	£574.58
NB-HDT1401	Toshiba T4400C 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T4400C 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T4400SXC 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T4400SXC 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T4500C 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T4500C 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T4600C 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T4600C 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T4700C 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T4700C 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T4800/T4850 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T4800/T4850 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba T4900 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba T4900 2.1Gb	£249	£292.58
NB-HDT3003	Toshiba T4900 3.1Gb	£489	£574.58
NB-HDT1401	Tosh Satellite Pro 100 1.4Gb	£189	£220.08
NB-HDT2101	Tosh Satellite Pro 100 2.1Gb	£249	£292.58
NB-HDT1401	Tosh Satellite Pro 4** 1.4Gb	£189	£220.08
NB-HDT2101	Tosh Satellite Pro 4** 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba Satellite 4** 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba Satellite 4** 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba Portege 610 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba Portege 610 2.1Gb	£249	£292.58
NB-HDT1401	Toshiba Tecra 7** Series 1.4Gb	£189	£220.08
NB-HDT2101	Toshiba Tecra 7** Series 2.1Gb	£249	£292.58
NB-HDT3003	Toshiba Tecra 7** Series 3.1Gb	£489	£574.58

### Flipdisk PCMCIA / Parallel Hard Drives

NB-FD28	2.8Gb external hard drive	£346	£406.55
NB-FD42	4.2Gb external hard drive	£447	£525.23
NB-FD64	6.4Gb external hard drive	£544	£693.20

## UPS

APC BackUPS Pro		Exc Vat	Inc Vat
APC-B280	280 PnP Inc Powerchute Pro	£96	£112.80
APC-B420	420 PnP Inc Powerchute Pro	£145	£170.38
APC-B650	650 PnP Inc Powerchute Pro	£185	£217.38
APC-B1000	1000	£270	£317.25
APC-B1400	1400	£348	£408.90

APC SmartUPS		Exc Vat	Inc Vat
APC-S450I	450i NET	£224	£263.20
APC-S700I	700i NET	£228	£267.90
APC-S1000I	1000i NET	£286	£336.05
APC-1400I	1400i NET	£371	£435.93
APC-2200I	2200i NET	£537	£630.98

Software

Adobe		Exc Vat	Inc Vat
ADO-ACRO/3	Acrobat 3.0	£129	£151.58
ADO-ILL4	Illustrator v 7	£178	£209.15
ADO-PS4/U	Photoshop v4.0 ver update	£128	£150.40
ADO-PS4/T	Photoshop v4.0 LE UP/G	£130	£152.75
ADO-PS	Photoshop v4.0	£371	£435.93
ADO-PM6/U	PageMaker 6.5 ver update	£86	£101.05
ADO-PM6	PageMaker 6.5	£366	£430.05

Autodesk		Exc Vat	Inc Vat
AUT-ACL/W	AutoCAD LT Win 3.1	£285	£334.88
AUT-ACL97	AutoCAD LT Win 97	£425	£499.38

Borland		Exc Vat	Inc Vat
BOR-DS3	delphi 3 standard	£72	£84.60
BOR-DP3	delphi 3 professional	£325	£381.88
BOR-DPU3	delphi 3 professional upg	£203	£238.53
BOR-DC3S	delphi 3 client server	£1,128	£1,325.40
BOR-DCSU3	delphi 3 client server upg	£895	£1,051.63
BOR-JB	jbuilder Std	£69	£81.08
BOR-JBP	jbuilder Professional	£326	£383.05

Caere		Exc Vat	Inc Vat
CAE-OP/U	OmniPage 8 Win 95 Upg	£70	£82.25

Corel CD ONLY		Exc Vat	Inc Vat
COR-CD5/C	Corel Draw 5	£124	£145.70
COR-CD7/U	Corel Draw 7 Upg Win95	£138	£162.15
COR-CD7	Corel Draw 7 Win95	£273	£320.78
COR-CD8	Corel Draw 8	£299	£351.33
COR-CD8/U	Corel Draw 8 Upg	£149	£175.08
COR-WP6/T	WordPerfect 6.1 Upg Win 3.1	£59	£69.33
COR-WP61C	WordPerfect 6.1 Win 3.1	£150	£176.25
COR-WPSU	WordPerfect Suite 8 Upg	£84	£98.70
COR-WPS8	WordPerfect Suite 8 Win 95	£174	£204.45
COR-WPS8P	WordPerfect Suite 8 Pro	£217	£254.98
COR-WPS8PU	WordPerfect Suite 8 Pro Upg	£123	£144.53

Dorling Kindersley		Exc Vat	Inc Vat
DOR-SEX	Anne Hoopers Sex Guide	£24	£28.20
DOR-AMAFAM	Bma Family Medical Guide	£23	£27.03
DOR-CHRON	Chronicles of the 20th Cent	£23	£27.03
DOR-CROSS	Cross Section Stowaway	£17	£19.98
DOR-EXPN	Encyclopedia of Nature	£23	£27.03
DOR-SPACE	Encyclopedia of Space	£23	£27.03
DOR-EWSE	Eye Witness of Science	£23	£27.03
DOR-HIST	History of the World	£23	£27.03
DOR-IDICT	My First Dictionary	£17	£19.98
DOR-PBDAY	PB Bears Birthday Party	£17	£19.98
DOR-TWTW	The Way Things Work 2	£23	£27.03
DOR-HUMBOD	Ultimate Human Body 2	£23	£27.03
DOR-VRB	Virtual Reality Bird	£17	£19.98
DOR-VRC	Virtual Reality Cat	£17	£19.98
DOR-WRA	World Reference Atlas	£29	£34.08

Dragon Dictate		Exc Vat	Inc Vat
DRD-SOLO	Dictate Solo	£49	£57.58
DRD-NATSPK	Naturally Speaking	£190	£223.25

IBM		Exc Vat	Inc Vat
IBM-V/TYPE	V/Type Simply Speaking 95	£33	£38.78
IBM-VTG	Simply Speaking Gold	£67	£78.73
IBM-VIAV	ViaVoice 95	£61	£71.68
IBM-VIAUPG	ViaVoice 95 Upgrade	£38	£44.65

IDP		Exc Vat	Inc Vat
IDP-STC97	IDP Super Tax Calc 97	£18	£21.15

Intuit		Exc Vat	Inc Vat
INT-Q6/D	Quicken for Windows 6 Disk	£28	£32.90
INT-Q6/CD	Quicken for Windows 6CD	£28	£32.90
INT-Q6DLX	Quicken Deluxe 6 CD	£44	£51.70
INT-QB5U	Quick Books v 5 upgrade	£109	£128.08
INT-QB5	Quick Books v5	£168	£197.40
INT-QBP5U	Quick Books v5 + Payroll upg	£166	£195.05
INT-QBP5	Quick Books v5 + Payroll	£256	£300.80

Lotus		Exc Vat	Inc Vat
LOT-SS97U	SmartSuite 97 Upg + V/type	£111	£130.43
LOT-SS97	SmartSuite 97 + IBM V/type	£298	£350.15

NAB		Exc Vat	Inc Vat
NAB-NBOLT	Nuts & Bolts	£32	£37.60

Software

Novell		Exc Vat	Inc Vat
NOV-312/5	Netware v3.12 5 User	£439	£515.83
NOV-312/10	Netware v3.12 10 User	£1,033	£1,213.78
NOV-41/5	IntraNetware 4.11 5 User CD	£422	£495.85
NOV-41/10	IntraNetware 4.11 10 User CD	£833	£978.78
NOV-41/25	IntraNetware 4.11 25 User CD	£1,500	£1,762.50
NOV-41/50	IntraNetware 4.11 50 User CD	£1,999	£2,348.83

Quarterdeck		Exc Vat	Inc Vat
QUA-CS95	CleanSweep 95	£25	£29.38
QUA-MAGN	MagnaRam 97	£18	£21.15
QUA-QEM97	Qemm 97	£46	£54.05

Quark		Exc Vat	Inc Vat
QUA-EXP/V4	QuarkXPress V.4	£688	£808.40

PowerQuest		Exc Vat	Inc Vat
POW-PMAGIC	Partition Magic	£39	£45.83
POW-DCOPY	Drive Copy	£18	£21.15
POW-DI	Drive Image	£42	£49.35

Microsoft Windows 95		Exc Vat	Inc Vat
MS-W95+VP	Windows 95 Value Pack	£61	£71.68
MS-PLUS/CD	MS Plus! for Windows 95	£27	£31.73

Microsoft Windows 95 Apps		Exc Vat	Inc Vat
MS-AC97/U	Access 97 upgrade	£88	£103.40
MS-AC97	Access 97	£222	£260.85
MS-EX97/U	Excel 97 upgrade	£88	£103.40
MS-EX97	Excel 97	£222	£260.85
MS-FP97/U	Frontpage 97 upgrade	£67	£78.73
MS-FP97	Frontpage 97	£111	£130.43
MS-ESSEN	Home Essentials upgrade	£78	£91.65
MS-OUT	Outlook 97	£89	£104.58
MS-PP97/U	Powerpoint 97 upgrade	£88	£103.40
MS-PP97	Powerpoint 97	£222	£260.85
MS-PJ41/U	Project 4.1 upgrade	£112	£131.60
MS-PJ41	Project 4.1	£299	£351.33
MS-PUB97/C	Publisher 97	£68	£79.90
MS-TEAM	Team Manager 97	£339	£398.33
MS-WD97	Word 97 upgrade	£88	£103.40
MS-WD97/U	Word 97	£222	£260.85

Microsoft Home & Business		Exc Vat	Inc Vat
MS-MON98	Money 98	£19	£22.33
MS-MON98D	Money 98 Deluxe	£31	£36.43
MS-GREET2	Greetings W.shop Deluxe 2.0	£24	£28.20
MS-PICTURE	Picture It 2.0	£30	£35.25

Microsoft Reference		Exc Vat	Inc Vat
MS-ENCARTA	Encarta 1998 Encyclopedia	£32	£37.60
MS-ENCDLX	Encarta 1998 Deluxe	£51	£59.93
MS-EWA	Encarta World Atlas 3.0 1998	£32	£37.60
MS-AXGB/6	AutoExpress GB V 6.1	£38	£44.65
MS-AXEUR/C	AutoExpress Europe V 6.0	£38	£44.65
MS-CIN	Cinemaniam 1997	£19	£22.33

Microsoft Office		Exc Vat	Inc Vat
MS-OF97/U	Office 97 upgrade	£149	£175.08
MS-OF97	Office 97	£326	£383.05
MS-SB97/U	Office 97 small bus. upg	£149	£175.08
MS-SB97	Office 97 small business	£326	£383.05
MS-OP97/U	Office 97 Professional upg	£204	£239.70
MS-OP97M	Office 97 Prof upg + mouse	£223	£262.03
MS-OP97	Office 97 Professional	£418	£491.15
MS-OD97/U	Office 97 Developer upg	£330	£387.75
MS-OD97	Office 97 Developer	£525	£616.88

Microsoft for Students		Exc Vat	Inc Vat
MS-OS	Office Pro 97	£88	£103.40
MS-PS	Publisher 97	£34	£39.95
MS-VS	Visual Basic + Visual C++	£67	£78.73
MS-WINS	Win 95 + Win NT Dual boot	£38	£44.65

Microsoft Entertainment		Exc Vat	Inc Vat
MS-CHAOS	Chaos Island	£19	£22.33
MS-GOOSE	Goosebumps - the Mutants	£19	£22.33
MS-FS98	Flight Simulator 98	£31	£36.43
MS-AGE	Age of Empires	£25	£29.38

Software

MS-CLOSE/C	Close Combat 2 A Bridge	£25	£29.38
MS-CART	CART Precision Racing	£24	£28.20
MS-PUZZLE	The Puzzle Collection	£15	£17.63
MS-MAGIC	Magic School BusRainforest	£19	£22.33

Microsoft Languages		Exc Vat	Inc Vat
MS-VB5/U	Visual Basic 5 Learning upg	£37	£43.48
MS-VB5L	Visual Basic 5 Learning	£63	£74.03
MS-VBP5/U	Visual Basic Pro 5 Upgrade	£167	£196.23
MS-VBP5	Visual Basic Pro 5	£320	£376.00
MS-VBE5/U	Visual Basic Enterprise 5 upg	£467	£548.73
MS-VBE5	Visual Basic Enterprise 5	£779	£915.33
MS-VC5L	Visual C++ 5 Learning	£64	£75.20
MS-VCP5	Visual C++ Pro 5	£320	£376.00
MS-VJP	Visual J++ Pro	£62	£72.85
MS-VSP/U	Visual Studio Pro Upgrade	£334	£392.45
MS-VSP	Visual Studio Pro	£670	£787.25
MS-VSE/U	Visual Studio Enterprise upg	£678	£796.65
MS-VSE	Visual Studio Enterprise	£986	£1,158.55

Microsoft Windows NT v 4.0		Exc Vat	Inc Vat
MS-N4WU	NT Workstation 4.0 upgrade	£99	£116.33
MS-N4W	NT Workstation 4.0	£214	£251.45
MS-N4S5U	NT Server 4.0 + 5 Clients upg	£279	£327.83
MS-N4S5	NT Server 4.0 + 5 Clients	£544	£639.20
MS-N4S10U	NT Server 4.0 10 Clients upg	£372	£437.10
MS-N4S10	NT Server 4.0 + 10 Clients	£761	£894.18
MS-N4C1U	NT Client 4.0 Licence upg	£14	£16.45
MS-N4C1	NT Client 4.0 Licence	£26	£30.55

Pegasus		Exc Vat	Inc Vat
PEG-SOLACC	Solo Accounts	£47	£55.23
PEG-SOLPAY	Solo Payroll	£35	£41.13
PEG-CAPLITE	Capital Lite Accounts	£64	£75.20
PEG-CAPPAY	Capital Lite Payroll	£70	£82.25

PlanIT		Exc Vat	Inc Vat
PLA-BUSP	PlanIT Business Plan	£67	£78.73
PLA-H&S	PlanIT Health & Safety	£88	£103.40
PLA-STAFF	PlanIT Staff Appraisal	£67	£78.73
PLA-CONAG	PlanIT Contracts & Agree	£88	£103.40
PLA-LTR	PlanIT Letters	£19	£22.33
PLA-LLTR	PlanIT Legal Letters	£25	£29.38
PLA-BUSSUI	PlanIT Business Suite	£289	£339.58

SoftQuad		Exc Vat	Inc Vat
SOF-HMP	Hot Metal Pro v 4	£68	£79.90

Symantec		Exc Vat	Inc Vat
NOR-AV4D	Norton Anti Virus v4 Deluxe	£41	£48.18
NOR-FF	Norton Internet FastFind	£30	£35.25
NOR-NAV95	Norton Navigator 95	£69	£81.08
NOR-AW8	Norton PC Anywhere v8 (HR)	£95	£111.63
NOR-U95/CD	Norton Utilities 2 Win 95 CD	£48	£56.40
NOR-HAND	PC Handyman	£12	£14.10

Dr Solomons Anti-Virus		Exc Vat	Inc Vat
DRS-HOME/G	Home Guard	£22	£25.85
DRS-AVW	Dos & Win 3.1 Qtrly updates	£65	£76.38
DRS-AV95	Windows 95 Qtrly updates	£65	£76.38
DRS-AVNT	Windows NT Qtrly updates	£65	£76.38
DRS-AVNS	Netware Server Qtrly updates	£230	£270.25

Visio		Exc Vat	Inc Vat
VSO-STD	Visio Standard v5	£94	£110.45
VSO-TECH	Visio Technical v5	£210	£246.75
VSO-PRO	Visio Professional v5	£210	£246.75
VSO-STD/U	Visio Standard 5 Upgrade	£62	£72.85
VSO-TECH/U	Visio Technical 5 Upgrade	£93	£109.28
VSO-PRO/U	Visio Pro. 5 Upgrade	£93	£109.28

## Free Delivery on Consumables only orders

### Laser Consumables

#### Brother

		1+EX VAT	3+EX VAT	1+INC VAT	3+INC VAT
LTC12	HL4,HL6	76.39	73.33	89.76	86.17
LTC33	HL630,HL631,HL660	20.14	19.33	23.66	22.72
LTC52	HL730,HL760	19.17	18.40	22.52	21.62
LTC53	HL1060	13.89	16.32	13.33	15.67
LTC03	HL1260,HL1660	66.50	63.84	78.14	75.01

#### Canon

LTC02	LBP-8 Series MKIII	50.14	48.13	58.91	56.56
LTC12	LBP-4	56.13	53.88	65.95	63.31
LTC03	1260 Series	66.50	63.84	78.14	75.01
LTC05	LBP460,465	41.88	40.20	49.20	47.24

#### Epson

EPS-EP55DEV	EPL-5500/W Developer Unit	44.64	42.85	52.45	50.35
EPS-EPL55PU	EPL-5500/W Photoconductor Unit	50.00	48.00	58.75	56.40
LTC44	EPL-9000/PS Imaging Cartridge	173.25	166.32	203.57	195.43
LTC36	EPL-N1200/EPL-5600 Imaging Cart	90.28	86.67	106.08	101.83
LTC54	EPL-N2000 Imaging Cartridge	173.61	166.67	203.99	195.83
LTC20	EPL-5000/5200 Imaging Cartridge	113.89	109.33	133.82	128.47
LTC19	EPL-4000/4100/4300 Toner Cartridge	100.63	96.60	118.23	113.51
EPS-EPL4PU	EPL-4000/4100/4300 Photoconductor	129.17	124.00	151.77	145.70
LTC18	EPL-7100/7500/8100 Imaging Cart	162.99	156.47	191.51	183.85

#### Hewlett Packard

LTC02	92295A LaserJet II,III	50.14	48.13	58.91	56.56
LTC12	92275A LaserJet IIP,IIP	56.13	53.88	65.95	63.31
LTC21	92291A LaserJet IIISI	79.76	76.57	93.72	89.97
LTC03	92298A LaserJet 4,4M,5,5M,5N	66.50	63.84	78.14	75.01
LTC08	92274A LaserJet 4L,4P,4MP	46.81	44.93	55.00	52.80
LTC32	C3900A LaserJet 4V,4MV	96.64	92.77	113.55	109.01
LTC05	C3906A LaserJet 5L, 6L	41.88	40.20	49.20	47.24
LTC04	C3903A LaserJet 5P,5MP,6P,6MP	55.86	53.63	65.64	63.01
LTC40	C3909A LaserJet 5Si,5SiMX,5SiNX	144.76	138.97	170.10	163.29
HP-C3102A	C3102A Color LaserJet 5,5M Cyan	26.57	25.51	31.22	29.97
HP-C3103A	C3103A Color LaserJet 5,5M Yellow	26.57	25.51	31.22	29.97
HP-C3104A	C3104A Color LaserJet 5,5M Magenta	26.57	25.51	31.22	29.97
HP-C3105A	C3105A Color LaserJet 5,5M Black	5.82	5.59	6.84	6.56

#### Kyocera

LTC16	TK6 F800,800T,820	29.17	28.00	34.27	32.90
LTC15	TK9 FS1500,1550,1600	31.94	30.67	37.53	36.03
LTC37	TK11 FS400	14.44	13.87	16.97	16.29

#### Lexmark

LTC38	ValueWriter 1382760	88.19	84.67	103.63	99.48
LTC42	Opra R, Opra L 7000 page Toner	125.43	120.41	147.38	141.49
LTC41	Opra R, Opra L 14000 page Toner	155.56	149.33	182.78	175.47
LTC47	Opra C Black	84.42	81.04	99.19	95.22
LTC48	Opra C Cyan	97.61	93.71	114.69	110.11
LTC50	Opra C Magenta	97.61	93.71	114.69	110.11
LTC49	Opra C Yellow	97.61	93.71	114.69	110.11
LTC46	Opra E	49.19	47.23	57.80	55.49

#### Nec

LTC28	SuperScript 610,660	91.61	87.95	107.64	103.34
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#### Oki

LTC09	OKI 16n	34.13	40.10	32.76	38.49
LTC25	OL400/800 Toner	18.63	17.88	21.88	21.01
LTC26	400e,600,610, 6e, 6ex	16.44	15.79	19.32	18.55
LTC45	OkiPage 4w	17.36	16.67	20.40	19.58

### Laser Consumables

#### Panasonic

		1+EX VAT	3+EX VAT	1+INC VAT	3+INC VAT
LTC10	KX-P450 KX-P4450 Toner	20.83	20.00	24.48	23.50
LTC13	KX-P451 KX-P4420 Toner	30.28	29.07	35.58	34.15
LTC30	KX-P455 KX-P4400 Toner	10.74	10.31	12.61	12.11
LTC14	KX-P453 KX-P4410/4430/4400 Toner	29.17	28.00	34.27	32.90
LTC35	KX-P457 KX-P6100 Toner	12.17	11.68	14.30	13.72
LTC43	KX-P459 KX-P6500 Toner	13.44	12.91	15.80	15.17

#### Sharp

LTC39	Sharp JX9200,9210	39.90	38.31	46.89	45.01
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#### Star

LTC07	Laser 5 Series	81.94	78.67	96.28	92.43
LTC31	Wintype 4000	72.22	69.33	84.86	81.47

### Inkjet Paper

#### Canon

CAN-102A4	CF102A4 Transparencies - 50	30.56	29.33	35.90	34.47
CAN-P11A4	GP-101A4 Glossy Paper - 50	20.63	19.80	24.23	23.27
CAN-C101A3	LC-101A3 Coated A3 Paper - 200	38.89	37.33	45.69	43.87
CAN-C301A4	LC-301A4 Bubble Jet paper A4 - 200	11.57	11.11	13.59	13.05
CAN-C301A3	LC-301A3 Bubble Jet Paper A3 - 200	25.42	24.40	29.86	28.67
CAN-FS101	Fabric Sheet - 10	31.94	30.67	37.53	36.03
CAN-F102A4	BF-102A4 Back Print Film A4 - 20	25.83	24.80	30.35	29.14
CAN-F102A3	BF-102A3 Back Print Film A3 - 20	55.56	53.33	65.28	62.67
CAN-HG101	HG-101 High Gloss Film A4 - 20	16.60	15.93	19.50	18.72
CAN-G101A3	HG-101A3 High Gloss Film A3 - 20	37.50	36.00	44.06	42.30
CAN-G101A2	HG-101A2 High Gloss Film A2 - 10	40.28	38.67	47.33	45.43
CAN-R101A4	HR-101A4 High Res Paper A4 - 200	17.47	16.77	20.53	19.71
CAN-R101A3	HR-101A3 High Res Paper A3 - 100	17.47	16.77	20.53	19.71
CAN-TR101	TR-101 T-Shirt Transfer Material - 10	11.39	10.93	13.38	12.85

#### Epson

EPS-41001C	Letter Iron On Transfer (720 Dpi) (10)	10.04	9.64	11.80	11.33
EPS-41031	A4 Starter Pack	13.94	13.39	16.38	15.73
EPS-41054	A6 Photo Quality Card (1440 Dpi) (50)	6.17	5.92	7.25	6.96
EPS-41059	A4 360 Dpi Ink Jet Paper (100)	6.81	6.53	8.00	7.68
EPS-41061	A4 Photo Quality Paper (1440 Dpi) (100)	8.11	7.79	9.53	9.15
EPS-41063	A4 Ink Jet Transparencies (360 Dpi) (30)	35.04	33.64	41.17	39.53
EPS-41065	A3 360 Dpi Ink Jet Paper (100)	18.50	17.76	21.74	20.87
EPS-41066	360 Dpi Ink Jet Paper (A3 + B) (100)	21.28	20.43	25.00	24.00
EPS-41068	A3 Photo Quality (Up To 1440 Dpi) (100)	24.01	23.05	28.22	27.09
EPS-41069	Super A3 Photo Quality 1440 Dpi (10)	29.17	28.00	34.27	32.90
EPS-41071	A4 Photo Glossy Film 1440 Dpi (15)	21.85	20.97	25.67	24.64
EPS-41073	A3 Photo Glossy Film 1440 Dpi (10)	39.63	38.04	46.56	44.70
EPS-41074	Super A3 Photo Film 1440 Dpi (100)	47.43	45.53	55.73	53.50
EPS-41078	A2 360 Dpi Ink Jet Paper (30)	17.17	16.48	20.17	19.36
EPS-41079	A2 Photo Quality (Up To 1440 Dpi) (30)	22.04	21.16	25.90	24.86
EPS-41102	Photo Quality Banner Paper 1440 15m	21.46	20.60	25.21	24.21
EPS-41106	A4 Photo Quality Self Adhesive Pap (10)	7.08	6.80	8.32	7.99
EPS-41107	A6 Photo Quality Film 1440 Dpi (10)	3.54	3.40	4.16	4.00

#### Hewlett Packard

HP-51634Z	A4 Premium 200 sheets	15.28	14.67	17.95	17.23
HP-C1847A	A4 Photo Paper 20 sheets	7.64	7.33	8.98	8.62
HP-C3831A	A4 Glossy 10 sheets	9.03	8.67	10.61	10.18
HP-C3837A	A4 Glossy 50 sheets	34.72	33.33	40.80	39.17
HP-C3832A	A4 Transparency 20 sheets	18.06	17.33	21.22	20.37
HP-C3835A	A4 Transparency 50 sheets	30.56	29.33	35.90	34.47

**Eight free software titles where you see the Big CD\***



**Inkjet Cartridges**

Canon		1+EX VAT	3+EX VAT	1+INC VAT	3+INC VAT
I-BJ10E	Canon BJ10e	14.89	14.29	17.49	16.79
I-BJ200	Canon BJ200EX, BJ230 Black Ink Tank	14.69	14.11	17.27	16.58
I-BJ30B	Canon BJ30 Black Ink Tank 3 pack	9.74	9.35	11.44	10.98
I-BC10	Canon BJ30 Print Head Cartridge	23.33	22.40	27.42	26.32
I-BJ300	Canon BJ300, BJ330 Black Ink Tank	9.01	8.65	10.59	10.17
I-BJ21C	Canon BJC4000 Series 3 Colour Ink Tank	11.86	11.39	13.94	13.38
I-BC20	Canon BJC4000 Series Black High Capty	22.50	21.60	26.44	25.38
I-BJ21BLK	Canon BJC4000 Series Black Ink Tank	4.47	4.29	5.25	5.04
I-BC21	Canon BJC4000 Series Print head Cart	34.00	32.64	39.95	38.35
I-BJ600B	Canon BJC600 Series Black Ink Tank	5.56	5.33	6.53	6.27
I-BJ600CY	Canon BJC600 Series Cyan Ink Tank	4.69	4.51	5.52	5.30
I-BJ600M	Canon BJC600 Series Magenta Ink Tank	4.69	4.51	5.52	5.30
I-BJ600Y	Canon BJC600 Series Yellow Ink Tank	4.69	4.51	5.52	5.30
I-BJ70C	Canon BJC70 3 Colour Ink Tank	14.67	14.08	17.23	16.54
I-BJ70B	Canon BJC70 Black Ink Tank 3 pack	8.33	8.00	9.79	9.40
I-BC11	Canon BJC70 Print head Cartridge	30.74	29.51	36.11	34.67
I-BJ800B	Canon BJC800 Black Ink Tank	14.35	13.77	16.86	16.18
I-BJ800CY	Canon BJC800 Cyan Ink Tank	19.44	18.67	22.85	21.93
I-BJ800M	Canon BJC800 Magenta Ink Tank	19.44	18.67	22.85	21.93
I-BJ800Y	Canon BJC800 Yellow Ink Tank	19.44	18.67	22.85	21.93

**Citizen**

I-CIT315	Printiva 600c Black	5.02	4.18	5.90	4.92
I-CIT316	Printiva 600c Cyan	5.02	4.18	5.90	4.92
I-CIT317	Printiva 600c Magenta	5.02	4.18	5.90	4.92
I-CIT318	Printiva 600c Yellow	5.02	4.18	5.90	4.92
I-CIT319	Printiva 600c Met Gold	13.60	11.33	15.98	13.32
I-CIT321	Printiva 600c Met Red	13.60	11.33	15.98	13.32
I-CIT322	Printiva 600c Met Blue	13.60	11.33	15.98	13.32

**Epson**

I-EPS20093	Epson Stylus Color 500/600 Black	12.89	12.37	15.14	14.54
I-EPS20097	Epson Stylus Color 200/500 Colour	18.89	18.13	22.19	21.31
I-EPS20089	Epson Stylus 400/600/800/1520 Col	15.67	15.06	18.41	17.70
I-EPS20108	Epson Stylus Color 800/1520 Black	15.21	14.60	17.87	17.16
I-EPS20034	Epson Stylus Color/Pro/XL+ Black	10.67	10.24	12.53	12.03
I-EPS20036	Epson Stylus Color/Pro/XL+ Colour	21.64	20.77	25.43	24.41
I-EPS20066	Epson Stylus Pro XL+ Colour	21.64	20.77	25.43	24.41
I-EPS20047	Epson Stylus Color II/200/820 Black	12.86	12.35	15.11	14.51
I-EPS20049	Epson Stylus 1500/820/II Colour	18.89	18.13	22.19	21.31
I-EPS20062	Epson Stylus 1500 Black	30.15	28.95	35.43	34.01
I-EPS20025	Epson Stylus 400/800 mono Black	8.00	7.68	9.40	9.02
I-EPS20138	Epson Stylus 300 4 Colour	15.80	15.17	18.57	17.82
I-EPS20110	Epson Stylus Photo 5 Colour	14.90	14.31	17.51	13.81

**Hewlett Packard**

I-51604A	ThinkJet, QuietJet Plain Paper Black	8.78	8.43	10.31	9.90
I-51606A	PaintJet Black	21.08	20.24	24.77	23.78
I-51606C	PaintJet Colour	22.50	21.60	26.44	25.38
I-51606B	PaintJet XL Black	21.72	20.85	25.52	24.50
I-51606C	PaintJet XL Cyan	22.67	21.76	26.63	25.57
I-51606R	PaintJet XL Magenta	21.72	20.85	25.52	24.50
I-51606Y	PaintJet XL Yellow	21.72	20.85	25.52	24.50
I-51625A	DeskJet 300+500 Series, Col	20.64	19.81	24.25	23.28
I-51626A	500 Srs,Fax,OffJet LX,350	17.92	17.20	21.05	20.21
I-51629A	DeskJet 600 Series Black	17.90	17.19	21.04	20.19
I-51649A	DeskJet 600 Series Colour	19.18	18.41	22.54	21.64
I-51633M	DeskJet Portable,300 Series Black	18.40	17.67	21.62	20.76
I-51639A	PaintJet XL300 Black	14.71	14.12	17.28	16.59
I-51639C	PaintJet XL300 Cyan	16.46	15.80	19.34	18.57
I-51639M	PaintJet XL300 Magenta	16.46	15.80	19.34	18.57

**Inkjet Cartridges**

\*While stocks last

		1+EX VAT	3+EX VAT	1+INC VAT	3+INC VAT
I-51639Y	PaintJet XL300 Yellow	16.46	15.80	19.34	18.57
I-51640A	DJ1200,Design 230-350, CopyJet Blk	16.46	15.80	19.34	18.57
I-51640C	DeskJet 1200, DeskJet 1600 Cyan	21.53	20.67	25.30	24.28
I-51640M	DeskJet 1200, DeskJet 1600 Magenta	21.53	20.67	25.30	24.28
I-51640Y	DeskJet 1200, DeskJet 1600 Yellow	21.53	20.67	25.30	24.28
I-51645A	DeskJet 820,850,870 1600C BK	19.24	18.47	22.60	21.70
I-51641A	DeskJet 820,850,870 Colour	22.86	21.94	26.86	25.78
I-51650C	DesignJet 650C Cyan	25.28	24.27	29.70	28.51
I-51650M	DesignJet 650C Magenta	25.28	24.27	29.70	28.51
I-51650Y	DesignJet 650C Yellow	25.28	24.27	29.70	28.51
I-51644C	DesignJet 750C,755CM Cyan	24.24	23.27	28.48	27.34
I-51644M	DesignJet 750C,755CM Magenta	24.24	23.27	28.48	27.34
I-51644Y	DesignJet 750C,755CM Yellow	24.24	23.27	28.48	27.34

**Lexmark**

I-4070	4070 Black Ink	23.14	20.05	27.19	23.56
I-1020	150, 1020, ExecJet II Black	26.08	22.60	30.64	26.56
I-1020C	150, 1020, ExecJet II Colour	33.54	29.07	39.41	34.15
I-2070B	2070 Black	35.26	30.56	41.43	35.91
I-2070C	2070 Colour	39.26	34.03	46.13	39.98

**Original Ribbons**

**Epson**

O2273FN	MX/FX/RX80,800LX800,850	2.58	2.48	3.04	2.91
O2320FN	MX/FX/RX100,105,1000,1170,LX1050	3.29	3.16	3.87	3.71
O2774FN	EX800,EX1000 Black	4.67	4.48	5.48	5.26
O2877FN	LQ2500,2550,860,1060 Black	5.83	5.60	6.85	6.58
O2986FN	LQ100 Black	4.08	3.92	4.80	4.61
O2477FN	LQ500,LQ570,LQ800,850,870	3.50	3.36	4.11	3.95
O2478FN	LQ1000,LQ1050,LQ1170	3.79	3.64	4.46	4.28
O2454FN	LX80,LX86,GX80	4.54	4.36	5.34	5.12
O2884FN	DFX5000,DFX8000	16.71	16.04	19.63	18.85

**Panasonic**

PAN-115	KX-P115 KX-P1081,1170,1695	5.57	5.35	6.54	6.28
PAN-145	KX-P145 KX-P1123,1124,1124I	5.89	5.65	6.92	6.64
PAN-155	KX-P155 KX-P1540,1624,1654,2624	7.53	7.23	8.85	8.49
PAN-160	KX-P160 KX-P2135	8.15	7.83	9.58	9.20

**Data Cartridges & Disks**

**Iomega**

IOM-DC2GB	Delto 2Gb Tapes	11.57	11.11	13.59	13.05
3M-TR3	Delto 3.2Gb Tapes	22.50	21.60	26.44	25.38
IOM-ZIP/1	Zip 100Mb Disk	9.83	9.44	11.55	11.09
IOM-ZIP/6	Zip 100Mb Disk 6 Pack Inc Caddy	58.33	56.00	68.54	65.80
IOM-JAZ/1	Jaz 1Gb Disk	70.81	67.97	83.20	79.87

**Sysquest**

SYS-135MB	EZ135 Disk	15.28	14.67	17.95	17.23
SYS-230MB	EZ 230 Flyer Disc	16.94	16.27	19.91	19.11
SYS-1500MB	SyJet 1.5Gb Disc	68.06	65.33	79.97	76.77

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**novatech 31**

# Your Guide to Trouble Free Buying from Novatech

## Buying items

We go to every effort to ensure that you do experience trouble-free buying from Novatech.

If you have bought from us recently you will notice the name and number of your own personal sales contact printed on your invoice.

You may find it helpful to use your sales contact for all your future purchasing. Over time, your sales contact will gain an understanding of your particular needs and in the event of any problems you have someone you 'know' at Novatech, instead of just another voice.

## Returning items

In the unlikely event that your product needs to be returned to Novatech the technical support will either issue a returns number or if the product is memory ask you to fill in the Memory Returns form sent with all memory orders.

If you have to send anything back to us we always recommend that you use an insured delivery service which can provide you with a proof of delivery. It is always a good idea to keep the original packaging for as long as possible as this is always the safest way to transport the product.

14 day money back

## Our money back policy

Look out for the products marked '14 day money back'. You can try these products for 14 days and if you are not entirely satisfied simply call after sales to arrange for their return for full refund (less carriage). You don't even have to give a reason for their return. As a measure of our confidence you will see that most of our own products are covered by this satisfaction guarantee.

## Warranties

All of the products we sell, except consumables, have at least 12 months warranty, many have more. If you want to know about the warranty on your product and extended or on-site warranty options our sales department will be glad to help.

## What if the product does not work?

Should you have a problem with any product you have purchased from us the first thing to do is call our technical support department on 01705 322522. They are open from 9:00am - 5:30pm Monday to Friday and 9:00am - 4:00pm on Saturdays.

## Are You a big Spender?

If you are purchasing regularly for a Government Body, Educational Establishment or Large Company we may be able to offer you a 30 Day Account. All we ask is that you complete an account application form and make sure payment is made on time. To find out more:

For **Government & Education** Adrian Hunt is your dedicated account Executive. You can call him direct on 01705 322505.

For **Large Companies** Sally Tuppen is our dedicated Corporate account Executive. You can call her direct on 01705 322508.

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### Opening Hours

Sales:  
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Saturday 9am - 4pm

After Sales:  
Monday - Friday 9am - 5.30pm  
Saturday 9am - 4pm

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Fax (01705) 322500  
sales@novatech.co.uk

After Sales:  
Tel (01705) 322522  
Fax (01705) 322533  
aftersales@novatech.co.uk  
techsupport@novatech.co.uk

### Payment

We will not debit your card before the day of despatch. Please allow 7 working days for cheques to clear before despatch. Proforma invoices will be supplied on request. Bank transfers welcome, please ask for details. We welcome official orders from Government, quoted PLCs and Education bodies. Our terms for these orders are strictly 30 days from invoice date.

## Delivery Charges

Next Working Day\* £10 (£11.75 inc VAT) on all orders over £60.  
Orders under £60 3 - 5 day option at £5 (£5.88 inc VAT) or Next Day as above.

**FREE DELIVERY ON ALL CONSUMABLES**

\*If you pay by credit card before 5pm for items in stock we will despatch that day for delivery the next working day. (UK Mainland only. Excludes outlying areas and orders placed on Saturday. If you require delivery on Saturday or off the mainland please call for price.)

### Terms & Conditions

Goods are not supplied on a trial basis. You must check specifications & compatibilities with manufacturers before buying. Prices & specifications may change without notice. Goods are offered subject to our standard conditions of sale - available on request.

E & OE. Partners DRM & J Furby

### Warranty & Support

In addition to any manufacturers warranty supplied, all the products we sell are covered by our own 12 month return to base warranty. Should you have a problem our dedicated after sales team will be waiting to help - Call (01705) 322522

If you find the identical product cheaper, elsewhere, we will beat the advertised total price (including delivery) subject to not selling below our cost price. This refers to UK products available ex stock. We reserve the right not to beat prices on liquidation, end of line or OEM items and will not match prices that have been printed incorrectly or prices that the advertiser can not supply owing to lack of stock. Please note that the Price Promise is only available at the time of ordering and is applicable to mail order purchases only.

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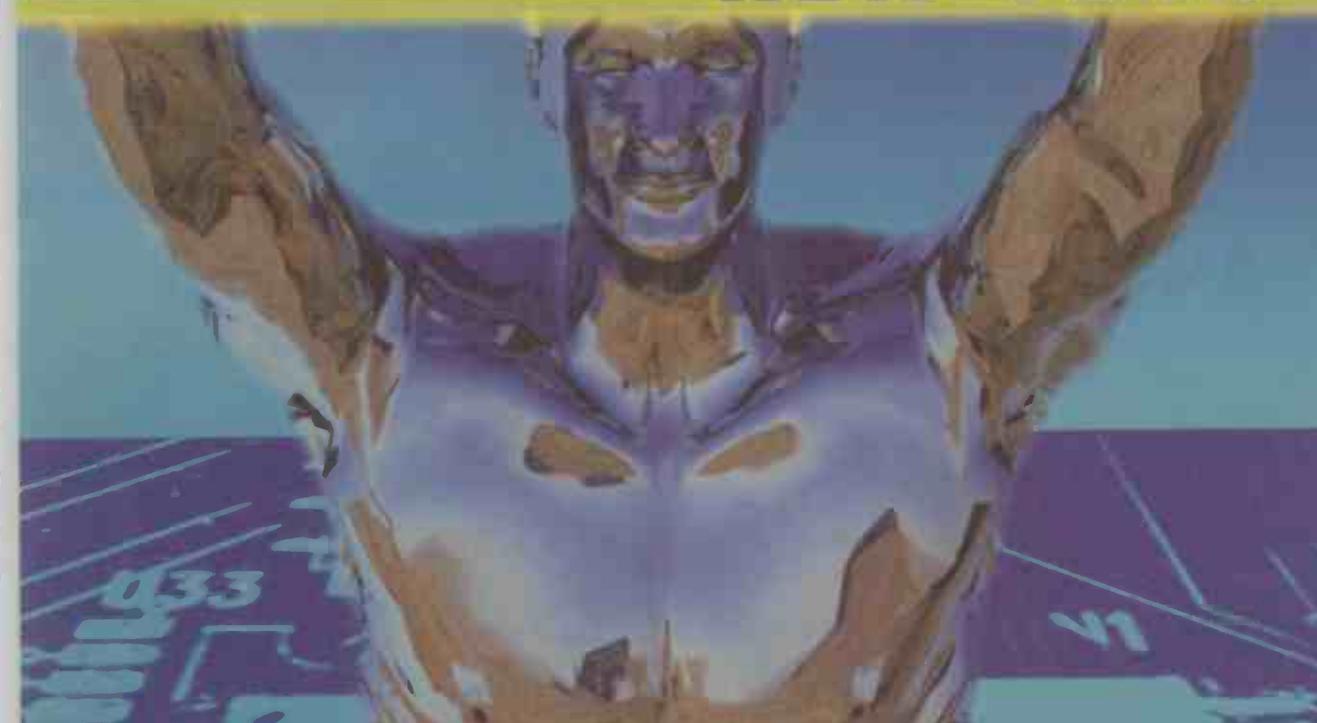
**JANUARY 1998**



# WELCOME TO A BIGGER & BETTER NEW YEAR

**SYSTEMS**

**PC UPGRADES & SYSTEMS**



# GUARANTEED!

**NEW! DIGITAL CAMERAS**



**Page 37**

**NEW! MEDIA & CONSUMABLES**



**Pages 29-35**

**NEW! NETWORK PRODUCTS**



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**SMC : THE HIGHEST STANDARDS - THE LOWEST PRICES**



## Welcome to the New Year edition of the SMC Catalogue.

In any well-run business, the New Year is a time for making plans for the times ahead, for putting a stake in the ground for what is to be achieved, and how that will be accomplished.

In 1997, we had a very successful year in further improving the quality of our operation, and in 1998 we will be growing strongly but carefully. We will be constantly reviewing our quality standards with a view to further enhancement as growth provides us with new opportunities.

At SMC, we formed the company to provide the highest level of service available, and therefore we exist for our customers. We believe - and have been proved right - that with unflagging dedication to giving our best, the rest will follow. While SMC is obviously one of the

UK's leaders, we are not the biggest supplier in the market (nor ever want to be) but extensive customer research has proved that almost nobody cares about that: we want recognition for what we do, not how many boxes we shift.

During the coming year we hope that, in addition to our many thousands of regular customers, those of you who haven't used us yet will try us and benefit from our complete focus on quality. We have probably the most effective operation in the market, but should you have a problem of any sort, you will find that we have capable and organised support staff who will help you in a friendly and positive way.

May we wish you a happy and prosperous New Year, and we are looking forward to serving you in 1998.

## SMC Guarantees You Peace Of Mind

We appreciate that the products we sell are of a technical and sometimes confusing nature, and occasionally problems may arise, we therefore offer you the following guarantees:

- Guarantee 1.** Our 7 day option - When you receive your purchase, if you are not completely satisfied, we will gladly exchange it or refund the purchase price less carriage charges.
- Guarantee 2.** Our 30 day option - If any product that you order fails within 30 days, we will gladly exchange it or refund the purchase price less carriage charges.
- Guarantee 3.** Warranties - We will recognise all manufacturers warranties on any products purchased from us. Just arrange to return the product to us and we will handle it from there.
- Guarantee 4.** Quick response - If you have need to use any of the above options, please contact our Customer Service Department on 01753 550999 for an immediate no fuss response.

So with this in mind, browse through the following pages of our catalogue and order with total confidence in the knowledge that every product will perform to your expectations -

### OR WE WILL TAKE IT BACK.

(Does not include: Printers and Software as they are sealed items, or made-to-order items such as Systems and cables - Full details on request)

### ORDERING IS EASY WITH SMC

- BY TELEPHONE:** Call the Sales Hotline on 01753 550333. Lines are open from 8.30am - 6.30pm Monday to Friday and 9am - 1pm Saturday.
- BY POST OR FAX:** All orders must state the products you require, a telephone number, full delivery address and date. **FAX on 01753 524443.**  
Uncovered personal cheques may take 14 working days to clear.
- IN PERSON:** Collectors welcome. You are advised to call & reserve stock beforehand. A convenient Pick-Up Point has been provided for easier collection.

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### WHERE TO FIND SMC

SMC Computers Plc. 253-257 Farnham Road, Slough, Berkshire, SL2 1HA

# NEW PRODUCTS THIS MONTH

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**OLYMPUS**

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## VIDEO IMAGING

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See Pages 37

Also a full range of film scanners and digital products.

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## NETWORKING

A new range of INTEL and 3COM

A full range of networking cards, switches and hubs including cabling.

See Pages 32 - 33 For the best range of BNC and RJ45 network cards and add-on's.

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**NEW PRODUCT**

## GRAPHICS CARDS

Accelerated 2D and 3D FX graphics cards  
for quality Video and extreme gaming.

See Pages 24 - 25 For the best range of 2D and 3D graphics cards and upgrades.

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**SPACE..**

## IOMEGA PARALLEL PORT ZIP DRIVES

For 100Mb Zip Drives & 1.0Gb Jaz Drives See Page 20

The largest range of Parallel Port Storage solutions at the best prices.

**NEW PRODUCT**



**NEW PRODUCT**



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**3**



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# SMC : THE BEST FOR MEMORY UPGRADES



## UNLEASH YOUR POTENTIAL....

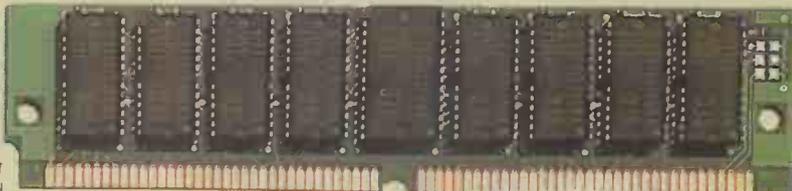
**Speak to us about matched memory - and you'll see the difference**

Unfortunately, you can't tell if a memory module is absent-minded just by looking at it. So, it's reassuring to know that at SMC we haven't forgotten the importance of quality control. By instigating more frequent batch checks and tougher tests we aim to maintain the quality of our goods, and safeguard our hard won reputation for reliability. Our range of SIMMS and Matched Memory is exhaustive, and because we stock in depth we can guarantee swift delivery times and very competitive prices. All SMC customers have access to a superb level of technical support. Best of all, you only need to take a glance at our prices to see that you won't pay any extra for an extra special service. In fact, once you've done business with us, we think you'll recall us again and again and again.

## What is a SIMM?

### SMC GUIDE TO SIMM MEMORY...

72 PIN SIMM ACTUAL SIZE. CHIP CONFIGURATIONS MAY VARY



Industry standard SIMMS (Single In-line Memory Module) as fitted to IBM clone or unbranded machines are based on DRAM (Dynamic Random Access Memory) chips and provide a cost effective way of adding memory to the machine. However care must be taken and the following factors considered before you attempt a memory upgrade:

- The majority of machines use either standard SIMMS in a 30 pin or 72 pin form or a combination of the two. You will need to check which your machine takes before making your purchase.
- SIMMS are installed in slots which are generally laid out in banks i.e. split into single slots or pairs each being referred to as a bank. The SIMMS when fitted into a bank of two slots need to be fitted as a pair. A bank of four would require four SIMMS. Therefore the chosen upgrade would have to be determined by the number of SIMMS in any particular bank and the option of SIMM size available.
- 30 pin SIMMS are supplied in the older form of 9 chip or the newer 3 chip versions. Older 80286 and early 80386 machines normally require the 9 chip type whilst later 80386 and 80486 machines use the 3 chip and in most cases will also take the 9 chip versions.
- 72 pin SIMMS are only fitted to later 80486 machines and the new 80586 or PENTIUM based machines. These are usually fitted singularly on 80486 machines or in pairs as is the case of 80586 Pentium machines.

In some machines the memory is required to self test, this is done with the aid of a built-in Parity chip. 30 pin SIMMS are naturally an 8 bit SIMM with a one bit parity chip making them a 9 bit SIMM. 72 pin SIMMS are 32 bit with a four bit parity chip making them a 36 bit SIMM. Some proprietary SIMMS as used in branded machines use this parity chip to hold a machine instruction code that identifies itself to the machine enabling it to be seen by the system. Where some machines have their own memory test built in the additional parity chip is not required.

# GENERIC MEMORY

**SMC**  
COMPUTERS

## EDO Memory - 72 Pin

Mb	Description	Speed	Part No	ex VAT	inc VAT
4Mb	1Mb x 32bit	60ns	13-97-0400	£10	£11.75
8Mb	2Mb x 32bit	60ns	13-97-0801	£15	£17.63
16Mb	4Mb x 32bit	60ns	13-97-1601	£28	£32.90
32Mb	8Mb x 32bit	60ns	13-97-3201	£55	£64.63
64Mb	16Mb x 32bit	60ns	13-97-6401	£195	£229.13
128Mb	32Mb x 32bit	60ns	13-97-1281	£276	£324.30

Non-Parity EDO Memory requires Motherboard support, but offers faster performance.

## SIMMS - 72 Pin

Mb	Description	Speed	Part No	ex VAT	inc VAT
1Mb	Full Parity, 256k x 36bit	70ns	13-97-0117	£24	£28.20
2Mb	Full Parity, 512k x 36bit	70ns	13-97-0217	£44	£51.70
4Mb	Nan Parity, 1Mb x 32bit	60ns	13-97-0406	£10	£11.75
		70ns	13-97-0407	£12	£14.10
4Mb	Full Parity, 1Mb x 36bit	60ns	13-97-0416	£14	£16.45
		70ns	13-97-0417	£14	£16.45
8Mb	Nan Parity, 2Mb x 32bit	60ns	13-97-0806	£15	£17.63
		70ns	13-97-0807	£18	£21.15
8Mb	Full Parity, 2Mb x 36bit	60ns	13-97-0816	£27	£31.73
		70ns	13-97-0817	£35	£41.13
16Mb	Nan Parity, 4Mb x 32bit	60ns	13-97-1606	£30	£35.25
		70ns	13-97-1607	£34	£39.95
16Mb	Full Parity, 4Mb x 36bit	60ns	13-97-1616	£38	£44.65
		70ns	13-97-1617	£42	£49.35
32Mb	Nan Parity, 8Mb x 32bit	60ns	13-97-3206	£55	£64.63
		70ns	13-97-3207	£65	£76.38
32Mb	Full Parity, 8Mb x 36bit	60ns	13-97-3216	£78	£91.65
		70ns	13-97-3217	£85	£115.15

Note: Standard 36-bit SIMMS have full parity checking. We batch test SIMMS to ensure quality & reliability. 60ns Simms are in better supply than 70ns. We strongly advise the purchase of 60ns, please check your manual for compatibility.

## SO DIMM Memory - 72 Pin

Voltage	Mb	Description	Speed	Part No	ex VAT	inc VAT
3.3v	4Mb	1 x 4 chip	70ns	19-93-0413	£36	£42.30
3.3v	4Mb	1 x 16 chip	70ns	19-93-0433	£36	£42.30
3.3v	8Mb	1 x 16 chip	70ns	19-93-0833	£62	£72.85
3.3v	8Mb	2 x 8 chip	70ns	19-93-0823	£64	£75.20
3.3v	16Mb	4 x 4 chip	70ns	19-93-1613	£86	£101.05
5v	4Mb	1 x 4 chip	70ns	19-93-0415	£36	£42.30
5v	4Mb	1 x 16 chip	70ns	19-93-0435	£35	£41.13
5v	8Mb	1 x 16 chip	70ns	19-93-0835	£48	£56.40
5v	8Mb	2 x 8 chip	70ns	19-93-0825	£64	£75.20
5v	16Mb	4 x 4 chip	70ns	19-93-1615	£84	£98.70

Due to various options available, please check machine compatibility before ordering. Chip size, voltage, buffering, clock speeds and fitting can all differ. We recommend the use of matched modules, especially for branded machines. Please call for details.

## PRODUCT INFORMATION

### EDO MEMORY

New generations of Pentium-class chipset designs are typically tuned to support Extended Data Out (EDO), an enhanced design for managing DRAM chips. EDO SIMMS offer a cost-effective alternative to installing a secondary cache as a means of boosting system performance. For top-level configurations, EDO RAM combined with a secondary cache will ensure optimum performance for all memory accesses.

Not sure which module to use?

Our sales staff can quickly identify the right memory for your system.  
Call SMC for the best in memory upgrades.

**FREE!**  
ANTI-STATIC  
WRIST STRAP

with all orders over £35.00  
Please ask when ordering.



30 PIN SIMM ACTUAL SIZE. CHIP CONFIGURATIONS MAY VARY



## SDRAM Memory - 168 Pin

Mb	Description	Part No	ex VAT	inc VAT
8Mb	1Mb x 64bit	19-95-0821	£33	£38.78
16Mb	2Mb x 64bit	19-95-1622	£39	£45.83
32Mb	4Mb x 64bit	19-95-3224	£68	£79.90
64Mb	8Mb x 64bit	19-95-6468	£198	£232.65
128Mb	16Mb x 64bit	19-95-1280	£448	£526.40

Non-Parity SDRAM, Synchronous, 3.3volt, requires Intel VX/TX/LX chipset & motherboard support. 168pin DIMM, Dual InLine Memory Module.

## SIMMS - 30 Pin

Mb	Description	Speed	Part No	ex VAT	inc VAT
1Mb	1Mb x 9bit, 3 chip	60ns	10-97-1963	£6	£7.05
		70ns	10-97-1973	£7	£8.23
		80ns	10-97-1983	£18	£21.15
1Mb	1Mb x 9bit, 9 chip	60ns	10-97-1969	£12	£14.10
		70ns	10-97-1979	£11	£12.93
		80ns	10-97-1989	£22	£25.85
4Mb	4Mb x 9bit, 3 chip	60ns	10-97-4963	£12	£14.10
		70ns	10-97-4973	£18	£21.15
4Mb	4Mb x 9bit, 9 chip	60ns	10-97-4969	£18	£21.15
		70ns	10-97-4979	£19	£22.33
16Mb	16Mb x 9bit, 9 chip	60ns	10-97-7976	£99	£116.33

Note: All 30pin SIMMS from SMC have full parity checking. We batch test SIMMS to ensure quality & reliability. 60ns Simms are in better supply than 70ns. We strongly advise the purchase of 60ns, please check your manual for compatibility.

## INSIDE INFORMATION

Did you know - SMC, as a totally independent and British owned company - has an unrivalled commitment to serving its customers.

Our sales grew by 80% in 1996, so we cut back our growth plans for 1997 to ensure that our service levels did not suffer. In 1998, we are on target for further increases in sales and in managing that growth, our primary objective is to maintain our operating standards. Do you know anyone else who thinks like that?

Yet we are still able to maintain our prices as amongst the most competitive in the market, which is ongoing proof of our belief that if you make the effort to do something really well, the results will follow.

**5** Year  
Warranty  
-Batch  
Tested



**SALES HOTLINE 01753 550333**

E&OE. A Full list of SMC Terms & Conditions is available on request

**5**

# KINGSTON MEMORY



**IF ALL MEMORY IS THE SAME, WHY DO SOME BRANDS FAIL MORE OFTEN THAN OTHERS?**

**Upgrading memory is the single most cost effective way of increasing system performance and productivity.**

**But Not All Memory is Created Equal.**

Knowing what questions to ask about memory will save you time and money.

**Warranties - what do they mean?**

Insist on a lifetime warranty from an established manufacturer.

**What about support?**

Make sure your memory comes from a manufacturer that offers free, expert technical support.



**What are the testing procedures?**

Choose memory from a manufacturer who tests every single module 100% of the time.

**Is compatibility absolute?**

Modules must be specifically designed for the exact systems they will be used in.

**Where do the components come from?**

Only accept chips purchased directly from manufacturers such as IBM, Samsung and Toshiba.

**Kingston Technology is the world's leading supplier of computer memory. All Kingston memory is guaranteed for 100% compatibility and reliability and carries a lifetime warranty.**

## KINGSTON GENERIC MEMORY

Systems	Mb	Part No	ex VAT	inc VAT
72 Pin Non-Parity Simms 60 or 70Ns (Available in Tin (T) or Gold (G))	4Mb	KTM1x32L-60T	£16	£18.80
	8Mb	KTM2x32L-60T	£25	£29.38
	16Mb	KTM4x32L-60T	£46	£54.01
	32Mb	KTM8x32L-60T	£89	£104.58
	64Mb	KTM16x32L-60T	£187	£219.73
72 Pin Parity Simms 60 or 70Ns (Available in Tin (T) or Gold (G))	4Mb	KTM1x36L-60T	£22	£25.85
	8Mb	KTM2x36L-60T	£35	£41.13
	16Mb	KTM4x36L-60T	£58	£68.15
	32Mb	KTM8x36L-60T	£117	£137.48
	64Mb	KTM16x36L-60T	£209	£245.58
72 Pin EDO Non-Parity Simms 60Ns (Available in Tin (T) or Gold (G))	4Mb	KTM1x32L-60ET	£16	£18.80
	8Mb	KTM2x32L-60ET	£25	£29.38
	16Mb	KTM4x32L-60ET	£46	£54.01
	32Mb	KTM8x32L-60ET	£94	£110.45
72 Pin Parity EDO Simms 60Ns (Available in Tin (T) or Gold (G))	4Mb	KTM1x36L-60ET	£20	£25.50
	8Mb	KTM2x36L-60ET	£33	£45.82
	16Mb	KTM4x36L-60ET	£55	£64.63
	32Mb	KTM8x36L-60ET	£108	£126.90
168 Pin DIMM, Synchronous (Gold Connectors)	64Mb	KTM66x64/64	£260	£305.50
	128Mb	KTM66x64/128	£514	£603.95

JUST A FEW EXAMPLES OF THE MASSIVE RANGE AVAILABLE RING NOW FOR THE LATEST PRICING ON YOUR MODEL



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TECHNOLOGY  
COMPUTING WITHOUT LIMITS



## KINGSTON MATCHED MEMORY

Systems	Mb	Part No	ex VAT	inc VAT
<b>AST</b>				
Manhattan G V	16Mb	KST486P/16	£72	£84.60
LP, MS, MS-T P/66-166, MT series	32Mb	KST486P/32	£122	£143.35
	64Mb	KST486P/64	£242	£284.35
PowerExec 3/255L-C, 4/255L	8Mb	KST09484/8	£36	£42.30
Special ED, 4/33SL	16Mb	KST09484/16	£60	£70.50

## COMPAQ

DeskPro 2000, 4000, 6000 series	8Mb	KTC2430/8	£32	£37.60
	16Mb	KTC2430/16	£45	£52.88
	32Mb	KTC2430/32	£83	£97.53
	64Mb	KTC2430/64	£181	£212.68
Armado 7000 series D/MT, 1500 series D/M/T, 1130/T	16Mb	KTC2721/16	£48	£56.40
	32Mb	KTC2721/32	£96	£112.80
Deskpro 2000, 4000, 6000 MMX Series	64Mb	KTC2721/64	£217	£254.98
	16Mb	KTC2428/16	£48	£56.40
	32Mb	KTC2428/32	£91	£106.93
	64Mb	KTC2428/64	£250	£293.75
Presario 4800s, 4200s, 4500s	128Mb	KTC2428/128	£593	£696.78
	16Mb	KTC-P4800/16	£57	£66.98
	32Mb	KTC-P4800/32	£114	£133.95
	64Mb	KTC-P4800/64	£299	£351.33

## DELL

Dimension XPS 486, Optiplex 486s, Netplex 486	4Mb	KTD-LMT/4	£15	£17.63
Performance 425(s), 433(s), M, T and L series	16Mb	KTD-LMT/16	£44	£51.70
Dimension p133v, p166v, p200v	8Mb	KTD-SDRAM/8	£47	£52.23
Dimension XPS p133s, p166s	16Mb	KTD-SDRAM/16	£60	£70.50
	32Mb	KTD-SDRAM/32	£108	£126.90
Optiplex GXPRO series	16Mb	KTD-GXPRO/16	£65	£76.38
	32Mb	KTD-GXPRO/32	£120	£141.00
	64Mb	KTD-GX1/64	£270	£317.25
	128Mb	KTD-GXPRO/128	£528	£620.40

## IBM

Thinkpad 760 series, ELDS, 560, 360, 380s	8Mb	KTM760ELD/8	£42	£49.35
	16Mb	KTM760ELD/16	£45	£52.88
	32Mb	KTM760ELD/32	£103	£121.03
Aptiva 2137 E series	16Mb	KTM2137/16	£60	£70.50
	32Mb	KTM2137/32	£111	£130.43
	64Mb	KTM2137/64	£279	£327.83
Aptiva L series, C series, S series 2136 E series	16Mb	KTM7318/16	£48	£56.40
	32Mb	KTM7318/32	£88	£103.40
	64Mb	KTM7318/64	£186	£218.55

## DIGITAL

Digitel Hinote VP 520, 525, 535	8Mb	KTV-VP500/8	£34	£39.95
	16Mb	KTV-VP500/16	£58	£68.15
	32Mb	KTV-VP500/32	£109	£128.08

## HEWLETT PACKARD

Pavillion 7270, 7275Z, 7280P, 7285S, 7295V	8Mb	KTH-VL4/8	£32	£37.60
	16Mb	KTH-VL4/16	£45	£52.88
	32Mb	KTH-VL4/32	£83	£97.53
	64Mb	KTH-VL4/64	£181	£212.68
Loserjet 4000s	16Mb	KTH-J4000/16	£58	£68.15
	16Mb	KTH-J4000E/16	£56	£65.80
	32Mb	KTH-J4000/32	£149	£175.08

## TOSHIBA

Tecro 750s, Portege 650, 660s	16Mb	KTT2100/16i	£54	£63.45
	32Mb	KTT2100/32i	£117	£137.48
	64Mb	KTT2100/64i	£222	£260.85
Portege 610 CT, Satellite 110CS/CT 115CS, 200CDS, 205CDS, Sattelite Pro 420/425/ 430 CDS/CDT	8Mb	KTT610/8i	£51	£59.93
	16Mb	KTT610/16i	£63	£74.03
	32Mb	KTT610/32i	£106	£125.55

Kingston manufactures memory for nearly every system in use today. Call for details of the right memory for your machine.

# COMPAQ

## Laptop Memory

Systems	Mb	Part No	ex VAT	inc VAT
Armada 1100 Series 1125, 1120T, 1120, 1100	8Mb	17-09-7708	£79	£92.83
	16Mb	17-09-7716	£149	£175.08
Armada 1130 Series	16Mb	17-30-6216	£129	£151.58
	32Mb	17-30-6232	£248	£291.40
Armada 1500 Series	8Mb	17-09-1508	£45	£52.88
	16Mb	17-09-1516	£80	£94.00
	32Mb	17-09-1532	£195	£229.13
	64Mb	17-09-1564	£385	£452.38
Armada 4100 Series (Kits) 4160T, 4150, 4131T, 4130T, 4125D, 4120T, 4120, 4110D, 4110, 4100	8Mb	17-09-7808	£89	£104.58
	16Mb	17-09-7816	£169	£198.58
	32Mb	17-09-7832	£286	£336.05
Armada 7750, 7730, 7710	8Mb	17-09-1508	£45	£52.88
	16Mb	17-09-1516	£80	£94.00
	32Mb	17-09-1532	£195	£229.13
	64Mb	17-09-1564	£385	£452.38
Concerto 4/33, 4/25	4Mb	17-09-3204	£45	£52.88
	8Mb	17-09-3208	£55	£64.63
	16Mb	17-09-7216	£112	£131.60
Contura 4/25, 4/25CX, 4/25c	4Mb	17-09-5204	£49	£57.58
	8Mb	17-09-5208	£85	£99.88
	16Mb	17-09-5216	£115	£135.13
Contura 400/410/420/430 Series 430C, 430CX, 420C, 420CX, 410C, 410CX, 400C 250, 400CX 250	4Mb	17-09-5104	£49	£57.58
	8Mb	17-09-5108	£69	£81.08
	16Mb	17-09-5316	£117	£137.48
Contura Aero 4/33C, 4/25	4Mb	17-09-5152	£49	£57.58
	8Mb	17-09-5156	£69	£81.08
	16Mb	17-09-5158	£115	£135.13
LTE 5000 Series (Kits) 5400, 5380, 5300, 5280, 5250 5200, 5150, 5100, 5000	8Mb	17-09-3608	£48	£56.40
	16Mb	17-09-3616	£88	£103.40
	32Mb	17-09-3632	£168	£197.40
	64Mb	17-09-3664	£328	£385.40
LTE Elite Series 4/75C, 4/75CX, 4/75CXL, 4/50CX 4/50E, 4/40C, 4/40CX	4Mb	17-09-3204	£45	£52.88
	8Mb	17-09-3208	£55	£64.63
	16Mb	17-09-7216	£112	£131.60
LTE Lite 4/33C, 4/25, 4/25C, 4/25E	4Mb	15-09-0604	£49	£57.58
	8Mb	15-09-0608	£69	£81.08
	16Mb	15-09-0616	£99	£116.33
Presario Notebook 1080, 1075, 1070, 1060, 1030, 1020, 1010	8Mb	17-09-1808	£55	£64.63
	16Mb	17-09-1816	£95	£111.63
	32Mb	17-09-1832	£185	£217.38

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COMPUTERS

# ZENITH

## Laptop - Desktop Memory

Systems	Mb	Part No	ex VAT	inc VAT
Z300/400 Series	4Mb	17-89-5304	£39	£45.83
	16Mb	17-89-5316	£127	£149.23
Z-386SX/DX, Z-433/SX, Z-425/SX, Z-420/SX				
Z-386SX/20, Z-386SX16 (Kit)	2Mb	17-89-0102	£26	£30.55
Z-Select 100 486 Series Z-466X, Z-450X, Z-433D, Z-433S, Z-425S	4Mb	17-89-1004	£77	£90.48
	8Mb	17-89-1008	£85	£99.88
	16Mb	17-89-1016	£85	£99.88
	32Mb	17-89-1032	£165	£193.88
Z-Server EX & LT Series (Kits) EX P66E, 450DE, 433DE LT P60E, 466XE, 433DE	8Mb	17-89-7508	£89	£104.58
	16Mb	17-89-7516	£109	£128.08
	32Mb	00-00-0000	£POA	£POA
	64Mb	00-00-0000	£POA	£POA
Z-Server SE & DE Series (Kits) 450DE, 433DE, 425SE	8Mb	17-89-7508	£89	£104.58
	16Mb	17-89-7516	£109	£128.08
	32Mb	00-00-0000	£POA	£POA
Z-Station 325Sh, 325Sn	1Mb	17-89-5301	£29	£34.08
	4Mb	17-89-5304	£39	£45.83
Z-Station 450XEn, 433Dh, 433DEh, 425Sh, 420Sh, 420SEh, 420Sn, 420SEn	4Mb	17-89-5304	£39	£45.83
	16Mb	17-89-5316	£127	£149.23
<b>LAPTOPS</b>				
Mastersport 386SL, 386SLe	2Mb	£127	£127	£149.23
ZDS-600NL Series 625nl, 620nl	2Mb	17-89-2502	£39	£45.83
Z-Note GT P90, P75 (Kits) 450DE, 433DE, 425SE	8Mb	00-00-0000	£POA	£POA
	16Mb	00-00-0000	£POA	£POA
	32Mb	00-00-0000	£POA	£POA

## PRODUCT INFORMATION

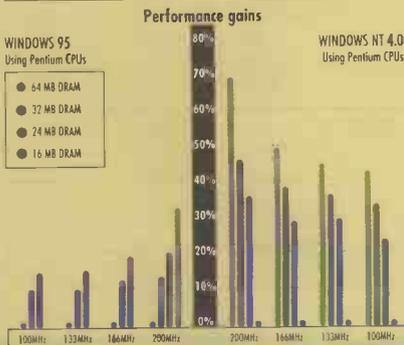
### Windows '95

Windows '95 requires a minimum of 8Mb of RAM memory. 12Mb is recommended.  
An upgrade now will do wonders for your system's performance.

### 'BP' Memory & Faulty Memory Chips Warning!

'BP' memory simulates parity with 'logic parity' and may cause compatibility problems with some systems that require standard 9bit or 36bit SIMM's that have full parity, self checking built in. Check system requirements, or ask your sales contact who can advise you. Some Memory suppliers are using Faulty Memory Chips which, just like bad-sectors on Hard Drives maps out the good areas. Unlike some suppliers, SMC will only ever supply the highest quality modules which we batch test & back with a 5 Year Warranty!

MEMORY UPGRADE PERFORMANCE CHART



### HOW MUCH MEMORY?

Increasing memory is the single best way to improve system performance. A recent study on productivity by PC Computing demonstrated how adding just 4Mb of memory increased productivity by upto 26%. The productivity gains achieved as a result of adding extra memory are shown in chart opposite.



**Worry-Free!**

**Intel overdrive options for many of the systems listed.**

See page 12

**SALES HOTLINE 01753 550333**

**SMC Computers Plc**  
253-257 Farnham Road. Slough. Berkshire. SL2 1HA



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## COMPAQ

### Desktop Memory

Systems	Mb	Part No	ex VAT	inc VAT
Deskpro Series (Kits) 5133, 5120, 5100, 590, 575	8Mb	13-97-0407x2	£30	£35.25
	16Mb	13-97-0808x2	£76	£89.30
	32Mb	13-97-1607x2	£156	£183.30
	64Mb	13-97-3207x2	£332	£390.10
Deskpro Series (Kits) 5166 1200/2000, 5150 1200/2000, 5133 1200/2000, 2000, 5120 1200, 5100 840/1200, 575 840	8Mb	13-97-0407x2	£30	£35.25
	16Mb	13-97-0808x2	£76	£89.30
	32Mb	13-97-1607x2	£156	£183.30
	64Mb	13-97-3207x2	£332	£390.10
Deskpro 2000 (-6000) Series (Kits) 6200/2500/CD, 6180/1200/CD	8Mb	13-97-0407x2	£30	£35.25
	16Mb	13-97-0808x2	£76	£89.30
	32Mb	13-97-1607x2	£156	£183.30
	64Mb	13-97-3207x2	£332	£390.10
Deskpro 2000 (-5000) Series (Kits) 5200/2500, 5166/2500, 5166/2500/CD, 5166/1200, 5133/2500, 5133/2500/CD, 5133/1200, 5120/1200, 5100/1200	8Mb	13-97-0407x2	£30	£35.25
	16Mb	13-97-0808x2	£76	£89.30
	32Mb	13-97-1607x2	£156	£183.30
	64Mb	13-97-3207x2	£332	£390.10
Deskpro 2000/ML Series (Kits) 5166 2000/ML, 5150 2000/ML, 5133 2000/ML	8Mb	13-97-0407x2	£30	£35.25
	16Mb	13-97-0808x2	£76	£89.30
	32Mb	13-97-1607x2	£156	£183.30
	64Mb	13-97-3207x2	£332	£390.10
Deskpro 5/66M, 5/60M (Kits)	16Mb	17-09-0301x4	£35	£41.13
	32Mb	17-09-0304x4	£45	£52.88
	64Mb	17-09-0304x4	£45	£52.88
	128Mb	17-09-0304x4	£45	£52.88
Deskpro 590MX, 575MX (Kits)	8Mb	13-97-0407x2	£30	£35.25
	16Mb	13-97-0807x2	£48	£56.40
	32Mb	13-97-1607x2	£106	£124.55
	64Mb	13-97-3207x2	£194	£227.95
Deskpro 4100, 466, 450	4Mb	13-97-0407	£12	£14.10
	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
Deskpro XE 560 (Kits)	8Mb	17-09-8008	£85	£99.88
	16Mb	17-09-8016	£115	£135.13
	32Mb	17-09-8032	£185	£217.38
	64Mb	17-09-8064	£255	£299.63
Deskpro XE 4100, 466, 450, 433s	2Mb	17-09-0102	£38	£44.65
	4Mb	13-97-0417	£14	£16.45
	8Mb	13-97-0817	£35	£41.13
	8Mb	17-09-0817	£35	£41.13
Deskpro 486s/16M,25M, 33M, 50M 66M,	4Mb	17-30-9204	£28	£32.90
	8Mb	19-97-0817	£38	£44.65
Deskpro 386/33L, 486/25, 33L, 50L	2Mb	17-09-1002	£84	£98.70
	8Mb	17-09-1008	£109	£128.08
	32Mb	17-09-1032	£585	£687.38
Deskpro XL 450, 466, 560, 566 575, 590, 5100, 5120, 5133 Kit	4Mb	17-09-0804	£79	£92.83
	8Mb	17-09-0808	£48	£56.40
	16Mb	17-09-0816	£89	£104.58
	32Mb	17-09-0832	£169	£198.58
Presorio 633, 650, 660	4Mb	13-97-0417	£14	£16.45
	8Mb	13-97-0817	£35	£41.13
	16Mb	13-97-1617	£42	£49.35
	32Mb	13-97-3217	£85	£99.88

### Desktop Memory

Systems	Mb	Part No	ex VAT	inc VAT
Presorio CDS-510, 520, 524, 526, 20, 724, 860, 920, 924 7Series Presorio CDTV-520, 528, 920 Series	4Mb	13-97-0407	£12	£14.10
	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
Presorio 7170,7180,9546,9548, 9564 Series (Kit-2)	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
	64Mb	00-00-0000	£332	£390.10
Presorio CDS-774,972,982,992, CDTV-978 Series (Kit-2)	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
	64Mb	00-00-0000	£332	£390.10
Proliant 1000 486DX2/66, 1000R	8Mb	13-97-0817	£35	£41.13
	16Mb	13-97-1617	£42	£49.35
	32Mb	13-97-3217	£85	£99.88
Proliant 1000 5/60, 2000 486/50, 5/66, 90, 2000R Kit	16Mb	17-09-8016	£115	£135.13
	32Mb	17-09-8032	£185	£217.38
	64Mb	17-09-8064	£255	£299.63
	128Mb	17-09-8088	£495	£581.63
Proliant 4000 486/50, 4000 5/66, 90, 100, 4000R 5/66, 5/100, 4500 133, 4500R Kit	16Mb	17-09-8016	£115	£135.13
	32Mb	17-09-8032	£185	£217.38
	64Mb	17-09-8064	£255	£299.63
	128Mb	17-09-8088	£495	£581.63
Proliant 1500 & 1500R 5/75, 100, 120 Kit	16Mb	17-09-0808	£48	£56.40
	32Mb	17-09-0816	£89	£104.58
	64Mb	17-09-0832	£169	£198.58
	128Mb	17-09-8064	£255	£299.63
Prolinea 4/25s, 33, 33s, 50, 66 CDS	1Mb	17-09-0101	£26	£30.55
	2Mb	17-09-0102	£38	£44.65
	4Mb	13-97-0417	£14	£16.45
	8Mb	13-97-0817	£35	£41.13
	16Mb	13-97-1617	£42	£49.35
	32Mb	13-97-3217	£85	£99.88
Prolinea Desktop 450, 466, 4100	2Mb	17-09-0102	£38	£44.65
	4Mb	13-97-0407	£12	£14.10
	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
	32Mb	13-97-3207	£65	£76.38
Prosignio VS 486SX/33, DX/33, DX2/66	4Mb	13-97-0417	£14	£16.45
	8Mb	13-97-0817	£35	£41.13
	16Mb	17-09-6216	£266	£312.55
	32Mb	17-09-6232	£789	£927.08
Prolinea 575, 590, 5100, 5133 Series (Kit-2)	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
	64Mb	00-00-0000	£332	£390.10
Prolinea 575e,MX, 590MX, 5100e, 5120e, MX Series (Kit-2)	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
	64Mb	00-00-0000	£332	£390.10
Prolinea MT 4/33s, 50, 66	2Mb	17-09-0102	£38	£44.65
	4Mb	13-97-0417	£14	£16.45
	8Mb	13-97-0817	£35	£41.13
	16Mb	13-97-1617	£42	£49.35
Prosignio PC Server 486/33, 486DX2/66	4Mb	17-30-9204	£28	£32.90
	8Mb	13-97-0817	£35	£41.13
	16Mb	13-97-1617	£42	£49.35
	32Mb	13-97-3207	£65	£76.38
Prosignio 300 5/75,5/90,5/120,500 5/90 Kit	8Mb	17-09-0808	£48	£56.40
	16Mb	17-09-0816	£89	£104.58
	32Mb	17-09-0832	£169	£198.58
	64Mb	00-00-0000	£POA	£POA

# IBM MEMORY



## Desktop Memory

Systems	Mb	Part No	ex VAT	inc VAT
APTIVA 300, 500 & 700 486s	4Mb	13-97-0407	£12	£14.10
	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
APTIVA PENTIUM Series (Kit of 2)	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
	64Mb	00-00-0000	£332	£390.10
IBM PC300, 330, 350 486s	4Mb	13-97-0407	£12	£14.10
	8Mb	13-97-0807	£18	£21.15
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
IBM PC300, 330, 350 Pentiums (Kit-2)	8Mb	17-97-0807	£24	£28.20
	16Mb	13-97-1607	£34	£39.95
	32Mb	13-97-3207	£65	£76.38
	64Mb	00-00-0000	£332	£390.10
IBM PC700, 730, 750 Pentiums (Kit-2)	8Mb	17-30-9108	£52	£61.10
	16Mb	13-97-1617	£42	£49.35
	32Mb	13-97-3217	£85	£99.88
	64Mb	00-00-0000	£398	£467.65
PC SERVER 77i (ECC)	4Mb	17-30-2904	£65	£76.38
	8Mb	17-30-2908	£85	£99.88
	16Mb	00-00-0000	£489	£574.58
PC SERVER 300, 320, Server 85 (Kit-2)	8Mb	17-30-9108	£52	£61.10
	16Mb	13-97-1617	£42	£49.35
	32Mb	13-97-3217	£85	£99.88
	64Mb	00-00-0000	£398	£467.65
PC SERVER 95 & 500 Series (ECC) (Kit-2)	8Mb	17-30-2908	£85	£99.88
	16Mb	17-30-7816	£133	£156.28
	32Mb	17-30-7832	£255	£299.63
PC SERVER 486 & Pentium Series (Kit-2)	4Mb	00-00-0000	£60	£70.50
	8Mb	17-30-9108	£52	£61.10
	16Mb	00-00-0000	£192	£225.60
	32Mb	00-00-0000	£398	£467.65
PS/1 486 Series with IBM 72pin slots	2Mb	17-30-9302	£36	£42.30
	4Mb	17-30-9204	£28	£32.90
	8Mb	17-30-9208	£55	£64.63
	16Mb	17-30-1516	£98	£115.15
	32Mb	00-00-0000	£199	£233.83
PS/1 486 Series with IBM 30pin slots	4Mb	17-30-1404	£35	£41.13
	16Mb	10-97-4973 x4	£136	£159.80
PS/1 2011 & 2121 286/386sx Series	2Mb	17-30-1202	£69	£81.08
	4Mb	17-30-1304	£75	£88.13
PS/1 2123 PRO 386SX	2Mb	17-30-9302	£36	£42.30
	4Mb	17-30-9204	£28	£32.90
	8Mb	17-30-9108	£52	£61.10
PS/1 386SX Series	2Mb	17-30-9102	£69	£81.08
	4Mb	17-30-9204	£28	£32.90
	8Mb	17-30-9108	£52	£61.10
PS/2 SERIES - PLEASE CALL - MODEL SPECIFIC				
PS/VP 6382,6384,6387 with IBM 72pin slots	2Mb	17-30-9302	£36	£42.30
	4Mb	17-30-9204	£28	£32.90
	8Mb	17-30-9108	£52	£61.10
	16Mb	13-97-1617	£42	£49.35
PS/VP 6384 Series with IBM 30pin slots,	4Mb	17-30-1404	£35	£41.13
	8Mb	10-97-4973 x4	£136	£159.80
PS/VP 6384 C00, C20, C40 Series	2Mb	17-30-9102	£69	£81.08
	4Mb	17-30-9304	£44	£51.70
	8Mb	17-30-9208	£55	£64.63
PS/VP 6381 SI Series	4Mb	00-00-0000	£30	£32.25
	16Mb	13-97-1617	£42	£49.35

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## Laptop Memory

Systems	Mb	Part No	ex VAT	inc VAT
<b>LAPTOPS</b>				
ThinkPad 350, 350C Series	4Mb	17-30-7504	£66	£77.55
	8Mb	17-30-0408	£86	£101.05
	16Mb	17-30-0416	£129	£151.58
ThinkPad 360, 360C, CE, CSE, CS, P, PE ThinkPad 345C, CS	4Mb	15-09-0604	£49	£57.58
	8Mb	15-09-0608	£69	£81.08
	16Mb	15-09-0616	£99	£116.33
ThinkPad 355, 355C, 355Cs ThinkPad 370C, 730T, 730TE	4Mb	15-30-4204	£69	£81.08
	8Mb	15-30-4208	£79	£92.83
	16Mb	15-30-4416	£125	£146.88
ThinkPad 365C, CD, CS, CSD, 365E, ED	4Mb	17-30-0498	£25	£29.38
	16Mb	17-30-1698	£80	£94.00
ThinkPad 560; 365X, 365XD, 380 Series ThinkPad 760E, 760ED, 760EL, 760ELD	8Mb	17-30-6208	£75	£88.13
	16Mb	17-30-6216	£129	£151.58
	32Mb	17-30-6232	£248	£291.40
ThinkPad 500 Series ThinkPad 510Cs *16Mb only available on 510Cs	4Mb	17-30-0704	£68	£79.90
	8Mb	17-30-0708	£119	£139.83
	16Mb	17-30-0716*	£229	£269.08
ThinkPad 701C, 701CS Butterfly Series	4Mb	17-30-0498	£25	£29.38
	8Mb	17-30-0898	£55	£64.63
	16Mb	17-30-1698	£80	£94.00
ThinkPad 710T	4Mb	17-30-7504	£66	£77.55
	8Mb	17-30-7508	£99	£116.33
ThinkPad 720, 720C, 700, 700C	4Mb	15-30-4204	£69	£81.08
	8Mb	15-30-4208	£79	£92.83
ThinkPad 750, 750C, Ce, Cs, P Series ThinkPad 755C, Cs, CD, CDV, CE, CSE, CV	8Mb	15-30-4208	£79	£92.83
	16Mb	15-30-4416	£125	£146.88
	32Mb	15-30-4232	£219	£257.33
ThinkPad 755CX, CV, CD, CDV	4Mb	17-30-0504	£45	£52.88
	8Mb	17-30-0508	£77	£90.48
	16Mb	17-30-0516	£109	£128.08
ThinkPad 760C, 760CD, 760L, 760LD	8Mb	17-30-0908	£89	£104.58
	16Mb	17-30-0916	£149	£175.08
ThinkPad 820 Series	8Mb	17-30-8208	£79	£92.83
	16Mb	17-30-8216	£129	£151.58
ThinkPad 850 Series	8Mb	15-30-4208	£79	£92.83
	16Mb	15-30-4416	£125	£146.88
	32Mb	15-30-4232	£219	£257.33

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Systems	Mb	Part No	ex VAT	inc VAT
4000/XE Series (Kits)	8Mb	17-20-1208	£59	£69.33
486/66, 486/50, 486/33	32Mb	13-97-1617x2	£124	£145.70
	64Mb	13-97-3217x2	£238	£279.65
Dimension 425si, 433i/si, 450i, 466i, XPS 450V, 466V	4Mb	13-97-0407	£12	£14.10
	16Mb	13-97-1607	£34	£39.95
Dimension XPS 486 Midsize 4100, 466	4Mb	13-97-0407	£12	£14.10
	16Mb	13-97-1607	£34	£39.95
Dimension XPS P60 FS (Kits)	8Mb	13-97-0407x2	£32	£37.60
	16Mb	13-97-0807x2	£56	£65.90
	32Mb	13-97-1607x2	£96	£112.80
Dimension XPS P166C, P133C, P120C, P100C, P100i, P90 (EDO Kits)	8Mb	13-97-0400x2	£26	£30.55
	16Mb	13-97-0801x2	£42	£49.35
	32Mb	13-97-1601x2	£84	£98.70
	64Mb	13-97-3201x2	£168	£197.40
Dimension XPS M200s, P166s, M166s, P133v, P133s	8Mb	19-95-0821	£33	£38.78
	16Mb	19-95-1622	£39	£45.83
Dimension P200v, P166v	32Mb	19-95-3224	£68	£79.90
Dimension XPS H266, H233 (Kits)	32Mb	00-00-0000	£POA	£POA
	64Mb	00-00-0000	£POA	£POA
Dimension XPS Pro Series (Kits)	8Mb	13-97-0400x2	£26	£30.55
200n, 180n, 150n	16Mb	13-97-0801x2	£42	£49.35
Dimension P75T, P90T etc., EDO Kits	32Mb	13-97-1601x2	£84	£98.70
	64Mb	13-97-3201x2	£168	£197.40
Low Profile Power Desktop 486 P Series	4Mb	13-97-0418	£28	£32.90
	16Mb	13-97-1617	£42	£49.35
NetPlex 486/25s, 33s, 33d, 50d, 66d	4Mb	13-97-0407	£12	£14.10
	16Mb	13-97-1607	£34	£39.95
OmniPlex 4100/ME, 466/ME, 450/ME, 433/ME	8Mb	13-97-0407x2	£32	£37.60
	16Mb	13-97-0807x2	£56	£65.90
	32Mb	13-97-1607x2	£96	£112.80
OmniPlex 590/ME, 566/ME, 560/ME (Kits)	8Mb	13-97-0417x2	£42	£49.35
	16Mb	13-97-0817x2	£78	£91.65
	32Mb	13-97-1617x2	£124	£145.70
	64Mb	13-97-3217x2	£238	£279.65
OptiPlex 433/e, 450/e, 466/e, 4100/e, 466/L(E)	4Mb	13-97-0407	£12	£14.10
	16Mb	13-97-1607	£34	£39.95
OptiPlex (V) Series 486 s/L, L, s/MX, MX Series	4Mb	13-97-0407	£12	£14.10
	16Mb	17-20-1416	£75	£88.13

## Desktop - Laptop Memory

Systems	Mb	Part No	ex VAT	inc VAT
OptiPlex DGX Series (Kits)	8Mb	17-20-1208	£59	£69.33
5166, 5133, 5120, 5100, 590	16Mb	13-97-0817 x2	£78	£91.35
	32Mb	13-97-1617 x2	£124	£145.70
	64Mb	13-97-3217 x2	£238	£279.65
OptiPlex XL/XM/XMT Series (Kits)	8Mb	13-97-0407 x2	£32	£37.60
5133, 5120, 5100, 590, 575	16Mb	13-97-0807 x2	£56	£65.80
	32Mb	13-97-1607 x2	£96	£112.80
OptiPlex GXpro 6200, 6180	16Mb	00-00-0000	£POA	£POA
OptiPlex GXiL/M/MT 5200, 5166, 5133	32Mb	00-00-0000	£POA	£POA
	64Mb	00-00-0000	£POA	£POA
	128Mb	00-00-0000	£POA	£POA
Performance 486 T, M, L, s/M, s/L Series	4Mb	13-97-0407	£12	£14.10
	16Mb	13-97-1607	£34	£39.95
Performance 425s/ME, 433/ME, 433s/ME, 450/ME, 466/ME (Kits)	8Mb	13-97-0417 x2	£42	£49.35
	16Mb	13-97-0817 x2	£78	£91.65
	32Mb	13-97-1617 x2	£124	£145.70
Power Desktop 486 D Series	4Mb	13-97-0418	£28	£32.90
	16Mb	13-97-1617	£42	£49.35
PowerEdge SP-2, SP Series (Kits)	8Mb	13-97-0417 x2	£42	£49.35
SP-2 5133, 5100, 590, 575; SP 5100, 590, 566, 560	16Mb	13-97-0817 x2	£78	£91.65
	32Mb	13-97-1617 x2	£124	£145.70
	64Mb	13-97-1617 x2	£238	£279.65
PowerEdge XE-2, XE Series (Kits)	8Mb	13-97-0417 x2	£42	£49.35
XE-2 5133, 5100; XE 5100, 590, 566, 560	16Mb	13-97-0817 x2	£78	£91.65
	32Mb	13-97-1617 x2	£124	£145.70
	64Mb	13-97-1617 x2	£238	£279.65
PowerEdge SP 466, 450, 433 (Kits)	8Mb	13-97-0417 x2	£42	£49.35
	16Mb	13-97-0817 x2	£78	£91.65
	32Mb	13-97-1617 x2	£124	£145.70
PowerEdge XE 466, 450, 433s, 433 (Kits)	8Mb	13-97-0407 x2	£32	£37.60
	16Mb	13-97-0807 x2	£56	£65.80
	32Mb	13-97-1607 x2	£96	£112.80
PowerEdge XL, EL5133, EL5120, EL5100, EL590, EL575 (Kits)	8Mb	00-00-0000	£POA	£POA
	16Mb	00-00-0000	£POA	£POA
	32Mb	00-00-0000	£POA	£POA
	64Mb	00-00-0000	£POA	£POA
PowerEdge 4100, 2200, 2100/200, /180	32Mb	00-00-0000	£POA	£POA
	64Mb	17-20-2164	£399	£468.83
	128Mb	00-00-0000	£POA	£POA
<b>LAPTOPS</b>				
Latitude 475mc, 450mc, 450mxc, 433m, 433mc	4Mb	17-90-5304	£48	£56.40
	8Mb	17-90-5308	£68	£79.90
	16Mb	17-90-5316	£92	£108.10
Latitude 433cx, 433c, 433 (Kits)	4Mb	17-90-2504	£52	£61.10
	16Mb	17-90-2516	£98	£115.15
Latitude LX 4100D, 4100T, 475D	4Mb	17-90-5304	£48	£56.40
	8Mb	17-90-5308	£68	£79.90
	16Mb	17-90-5316	£92	£108.10
Latitude XP 4100C, 4100CX, 475C, 450C	4Mb	17-20-5304	£25	£29.38
	8Mb	17-20-5308	£49	£57.58
	16Mb	17-20-5316	£95	£111.63
Latitude XPI P133ST, P120D/ST, P100SD, P90, P90D/ST/T, P75D/T	4Mb	17-20-5304	£25	£29.38
	8Mb	17-20-5308	£49	£57.58
	16Mb	17-20-5316	£95	£111.63
Latitude LM P166, P133ST, P100SD (Kits)	8Mb	00-00-0000	£POA	£POA
	16Mb	00-00-0000	£POA	£POA
	32Mb	00-00-0000	£POA	£POA

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Systems	Mb	Part No	ex VAT	inc VAT
T1850c, T1850, T1800, T1000LE	4Mb	17-75-2004	£48	£56.40
	8Mb	17-75-2008	£77	£90.48
T1960C,CS,CT, T1950,CS, CT, T1910,/120,CS, T1900,C T200, T200CS (Dynapad)	4Mb	17-75-1904	£39	£45.83
	8Mb	17-75-1908	£55	£64.63
	16Mb	17-75-1916	£98	£115.15
T2200SX, T2000SX	4Mb	17-75-2004	£48	£56.40
T2000Sxe, T2000	8Mb	17-75-2008	£77	£90.48
T2155CDS, T2150CDS,CDT, T2135CT, T2130CS,CT, T2115CS, T2110CS, T2105,CT, T2100,CS,CT	4Mb	17-75-2104	£37	£43.48
	8Mb	17-75-2108	£46	£54.05
	16Mb	17-75-2116	£79	£92.83
	24Mb	17-75-2124	£135	£158.63
T2450CT, T2400CS,T2400CT	4Mb	17-75-3604	£44	£51.70
	8Mb	17-75-3608	£65	£76.38
	16Mb	17-75-3516	£109	£128.08
T3100e	2Mb	17-75-3202	£49	£57.58
T3100SX	2Mb	17-75-3002	£49	£57.58
	4Mb	17-75-3004	£53	£62.28
T3200	3Mb	17-75-3103	£125	£146.88
T3200SX	2Mb	17-75-3102	£49	£57.58
	4Mb	17-75-3304	£58	£68.15
T3200SXC	2Mb	17-75-3202	£49	£57.58
	4Mb	17-75-3204	£52	£61.10
T3600CT, T3400CT*, T3400* *16Mb Part No is 17-75-3616	4Mb	17-75-3604	£44	£51.70
	8Mb	17-75-3608	£65	£76.38
	16Mb	17-75-3516	£109	£128.08
T4400C DX, T4400C SX, T4400SXC, T4400SX	2Mb	17-75-4402	£49	£57.58
	4Mb	17-75-4404	£54	£63.45
	8Mb	17-75-4408	£85	£99.88
	16Mb	17-75-4416	£139	£163.33
	32Mb	17-75-4432	£199	£233.83
T4900CT, T4850CT, T4800 CT, T4700 CS,CT, T4600C, T4600, T4500C, T4500	4Mb	17-75-1904	£39	£45.83
	8Mb	17-75-1908	£55	£64.63
	16Mb	17-75-1916	£98	£115.15
T4900CT, T4850CT	32Mb	17-75-4732	£225	£264.38
T5200, T8500 Series (Kits)	2Mb	17-75-5202	£65	£76.38
	8Mb	17-75-5208	£89	£104.58
T6600C, T6600C/CD, T6600C/CDV, T6400DX, T6400DXC, T6400SX, T6400SXC	2Mb	17-75-4402	£49	£57.58
	4Mb	17-75-4404	£54	£63.45
	8Mb	17-75-4408	£85	£99.88
	16Mb	17-75-4416	£139	£163.33
	32Mb	17-75-4432	£199	£233.83

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Portege 660CDT, 650CT	8Mb	17-75-6508	£45	£52.88
	16Mb	17-75-6516	£79	£92.83
	32Mb	17-75-6632	£165	£193.88
	64Mb	17-75-6664	£499	£586.33
Portege 620CT, 610CT	8Mb	17-75-6108	£55	£64.63
	16Mb	17-75-6116	£99	£116.33
	32Mb	17-75-6132	£188	£220.90
Satellite 105CS, 100CS Series	8Mb	17-75-6108	£55	£64.63
	16Mb	17-75-6116	£99	£116.33
Satellite PRO 405, 400 Series	8Mb	17-75-6108	£55	£64.63
	16Mb	17-75-6116	£99	£116.33
Satellite 210,205,200,115,110 Series	8Mb	17-75-6108	£55	£64.63
	16Mb	17-75-6116	£99	£116.33
Satellite Pro 430,425,420,415,410 Series	8Mb	17-75-6108	£55	£64.63
	16Mb	17-75-6116	£99	£116.33
Satellite PRO 460CDT, 445CDX, 445CDT, 440CDT, 440CDX	8Mb	17-75-6508	£45	£52.88
	16Mb	17-75-6516	£79	£92.83
	32Mb	17-75-6532	£187	£219.73
	64Mb	17-75-6564	£250	£293.75
Satellite 225CDS, 220CDS	128Mb	17-75-6528	£799	£938.83
TECRA 740, 730, 720, 710 Series	8Mb	17-75-6108	£55	£64.63
	16Mb	17-75-6116	£99	£116.33
	32Mb	17-75-6132	£188	£220.90
TECRA 700CS, 700CT Series	8Mb	17-75-6308	£109	£128.08
	16Mb	17-75-6316	£155	£182.13
	32Mb	17-75-6332	£277	£325.48
TECRA 530CDT, 520CDT, 510CDS, 510CDT, 500CS, 500CDT	8Mb	17-75-6508	£45	£52.88
	16Mb	17-75-6516	£79	£92.83
	32Mb	17-75-6532	£187	£219.73
	48Mb	17-75-6548	£250	£293.75
	128Mb	17-75-6528	£799	£938.83
Equium 6200 Desktop Series	8Mb	00-00-0000	£POA	£POA
	16Mb	00-00-0000	£POA	£POA
	32Mb	00-00-0000	£POA	£POA
Equium 5200, 5160 Desktop Series	16Mb	13-97-0801x2	£42	£49.35
	32Mb	13-97-1601x2	£84	£98.70
	64Mb	13-97-3201x2	£168	£197.40

# SMC HELPS YOU UNLEASH YOUR POTENTIAL

## PRODUCT INFORMATION

### Making the perfect match..

It's important to remember that although some system modules make look similar they are often configured for a particular system. Matched memory modules from SMC are designed to meet the original manufacturers specifications. They will slot perfectly into your PC with the minimum of fuss. All matched memory upgrades are supplied with a full 5 year warranty. When ordering don't forget to ask about our free anti-static wrist straps to ensure safer installation.

### Right across the board..

We can supply system matched memory for PC's built by the world's leading manufacturers, including - Acer, AST, Ambro, Apple, Apricot, Brother, Canon, Compaq, Dell, Elonex, Escom, Gateway, Hewlett Packard, IBM, INTEL, NEC, Toshiba and Zenith. Don't worry if your PC isn't listed here, we cater for many more systems and our memory module experts will be only too happy to help.

**5** Year  
Warranty  
-Batch  
Tested



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**SMC Computers Plc**  
253-257 Farnham Road. Slough. Berkshire. SL2 1HA

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## SMC : THE BEST FOR PERFORMANCE

### SMC : UK's Most Dynamic Supplier...

When you buy a Motherboard from SMC, you get full telephone technical support. You also get SMC's free 16 page, easy to follow Installation Guide.

Subjects covered include:-

Mounting the Board, installing Processors and Memory, making Power and Case connections. Basic and Advanced connections, configuring your BIOS and a section on Troubleshooting.



**FULL OF TIPS**



### INTEL Overdrive Processors

Part No	Model-Description	ex VAT	inc VAT
<b>Pentium MMX Overdrive</b>			
09-31-5205	200Mhz Pentium MMX OverDrive, for 3.3v, built on fan, for Pentiums at 100/133/166Mhz with Socket 7 ZIF	£155	£182.13
09-31-5185	180Mhz Pentium MMX OverDrive, for 3.3v, built on fan, for Pentiums at 90/120/150Mhz with socket 5/7 ZIF (upgrades P75 to P150Mhz)	£129	£151.58
09-31-5165	166Mhz Pentium MMX OverDrive, for 3.3v, built on fan, for Pentiums at 100Mhz with o socket 5/7 ZIF	£105	£123.38
MMX Overdrives will upgrade all Pentium PC's to MMX technology!			
<b>Pentium P60/P66</b>			
09-31-5105	Pentium 120/133Mhz OverDrive, built on fan, for a PENTIUM at 60 or 66Mhz with a Socket 4 ZIF	£113	£132.78
<b>486 to Pentium Overdrive</b>			
09-31-5083	83Mhz Pentium OverDrive, P24T, 5v, built on fan for a 486 PC with a Socket 3 ZIF	£114	£133.95
Please note: The Pentium P60/P66 and 486 to Pentium Overdrives are soon to be discontinued. There are, at present, no alternatives - don't delay - upgrade today!			

### Processors

Part No	Model-Description	ex VAT	inc VAT
<b>Intel Pentium MMX - Socket 7, 1Yr Warranty</b>			
09-31-4166	Intel Pentium MMX P166 - 166Mhz, 2.8v	£79	£92.83
09-31-4200	Intel Pentium MMX P200 - 200Mhz, 2.8v	£139	£163.33
09-31-4233	Intel Pentium MMX P233 - 233Mhz, 2.8v	£199	£233.83
<b>Intel Pentium MMX - Socket 7, 3 Yr Warranty (Boxed, with HS &amp; Fan)</b>			
09-31-6166	Intel Pentium MMX P166 - 166Mhz, 2.8v	£95	£111.63
09-31-6200	Intel Pentium MMX P200 - 200Mhz, 2.8v	£155	£182.13
09-31-6233	Intel Pentium MMX P233 - 233Mhz, 2.8v	£225	£264.38
<b>AMD-K6 MMX Enhanced Processors - Socket 7</b>			
09-05-6166	AMD K6 - 166Mhz (MMX), 3.2v	£69	£81.08
09-05-6200	AMD K6 - 200Mhz (MMX), 3.2v	£112	£131.60
09-05-6233	AMD K6 - 233Mhz (MMX), 3.2v	£159	£186.83
<b>Cyrix 6x86 &amp; 6x86MX Processors - Socket 7</b>			
09-17-5126	Cyrix 6x86-120 - P150+, 3.3v	£45	£52.88
09-17-5136	Cyrix 6x86-133 - P166+, 3.3v	£49	£57.58
09-17-6166	Cyrix 6x86MX-166, 166Mhz. Requires M/B support	£79	£92.83
09-17-6200	Cyrix 6x86MX-200, 200Mhz. Requires M/B support	£109	£128.08
<b>Pentium Pro - Socket 8</b>			
09-31-3200	Intel Pentium Pro 200Mhz - with 256k cache	£322	£378.35
<b>Pentium II - Slot 1, 3 Yr Warranty (Boxed, with HS &amp; Fan)</b>			
09-31-8233	Intel Pentium II (MMX) 233Mhz - with 512k cache	£269	£316.08
09-31-8266	Intel Pentium II (MMX) 266Mhz - with 512k cache	£355	£417.13
09-31-8300	Intel Pentium II (MMX) 300Mhz - with 512k cache	£489	£574.58
<b>486 - Socket 3</b>			
09-17-4066	Cyrix 486DX2-66 - 66Mhz, 5v	£23	£27.03
We recommend the use of a Heat Sink and Fan Unit for all bare CPUs (unboxed).			

# MOTHERBOARDS & CPU's



## Intel & TMC Motherboards

Part No	Model-Description	ex VAT	inc VAT
<b>INTEL ATX Pentium II</b>			
07-31-2081	Intel 'Atlanta' (MMX) Intel 440LX Chipset, Slot 1 P233-P300MHz Pentium II option, 3 x PCI, 1 x ISA, 1 x AGP graphics, 3x 168pin DIMM, max. 384Mb, USB connectors, Ultra IDE, 3Yr Warranty	£129	£151.58
07-31-2061	Intel 'Portland' (MMX) Intel 440FX Chipset, Slot 1 P233-P266MHz Pentium II option, AMI BIOS, 3 x PCI, 2 x ISA, 1 x shared PCI/ISA Bus, 256Mb max.	£125	£146.88

### INTEL ATX Pentium/Pentium Pro

07-31-2053	Intel 'Venus', Intel Natoma chipset, Pentium Pro, Socket 8, 150/180/200MHz, 4 x PCI, 2/3 ISA Slots, No Sound.	£115	£135.13
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All above motherboards (unless specified otherwise) are ATX, fitted with USB support, 16Bit Yamaha Sound, Built-in floppy/EIDE support, 1 Enhanced Parallel & Fast Serial Ports. They require SIMMs in pairs, 4x 72 pin, 128Mb max memory, Windows 95 Plug & Play.

### TMC ATX Pentium

07-97-5901	Intel 'TX' Chipset, 4 x ISA Bus, 256Mb max memory, 2x 168pin DIMM, 512Kb BPL cache	£85	£99.88
07-97-5797	Intel 'VX' Chipset, 3 x ISA Bus, 128Mb max memory, 512Kb Burst Pipeline cache, 2x 168pin DIMM sockets	£75	£88.13

### TMC Baby AT Pentium

07-97-5925	Intel 'TX' Chipset, 3 x ISA Bus, 2x 168pin DIMMs, 256Mb max memory, 512Kb BPL cache, 2x USB ports	£82	£96.35
07-97-5197	Intel 'VX' Chipset, 3 x ISA Bus, 512Kb Burst Pipeline cache, 1x 168pin DIMM	£67	£78.73

All above motherboards (unless specified otherwise) are fitted with 4 x PCI Bus, AMI/Award BIOS, 4 x 72 pin memory slots, a Pentium Socket 7 ZIF, Built-in Floppy / EIDE support, 2x USB connectors. Enhanced Parallel & Fast Serial Ports. They require pairs of SIMMs (or 1x DIMM where applicable). Windows 95 Plug & Play. TX chipset supports Ultra IDE.

### TMC ATX Pentium Pro/Dual Pentium Pro

07-97-5825	Intel 'FX' Chipset, 4x PCI, 4x ISA Bus, Socket 8 for Pentium Pro 150 - 200MHz CPU, 6x 72 pin Simms 768Mb max memory, 2x USB connectors, modem ring on	£135	£158.63
07-97-5849	Intel 'FX' Chipset, 5x PCI, 3x ISA Bus, Dual Socket 8 for Pentium Pro 150 - 200MHz CPUs, 8x 72 pin Simms 1Gb max memory, 2x USB connectors	£199	£233.83

All TMC Pentium Pro & Dual PP motherboards are fitted with Intel 82440FX Chipset, AMI/Award BIOS, Built-in Floppy / EIDE support, 1 Enhanced Parallel & Fast Serial Ports.

### TMC ATX Pentium II

07-97-1060	Intel 'LX' Chipset, (82440LX), 3x PCI, 3x ISA, 1x AGP, slot 1 for pentium II 233-333MHz, 4x DIMM sockets, max. mem 1Gb., supports Advanced Graphics.	£129	£151.58
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All above motherboards (unless specified otherwise) are fitted with AMI/Award BIOS, a Pentium II Slot 1, Built-in Floppy / EIDE / UIDE support, USB Ready, Enhanced Parallel & Fast Serial Ports. They use DIMM memory. Windows 95 Plug & Play, Hardware Monitoring.

## Heat Sink and Fan Units

Part No	Model-Description	ex VAT	inc VAT
09-95-4240	486 processor low profile	£7	£8.23
09-95-5090	Pentium P75 through to P233	£9	£10.58
09-95-6000	Pentium Pro 200	£12	£14.10
09-95-6086	Cyrix 6x86MX Ball Bearing unit	£14	£16.45
09-95-5266	AMD and Intel Pentium Ball Bearing unit	£15	£17.63

Heat sink and fan units only available when purchasing CPU. We recommend the use for all CPUs. Ball Bearing units are designed for use with CPUs that run at very high temperatures.



## Gigabyte Motherboards

Part No	Model-Description	ex VAT	inc VAT
<b>ATX Form Factor</b>			
07-93-5055	GA-586ATX - Intel 'TX' Chipset (82430TX), 3 x ISA, 2x DIMM Sockets, 256Mb max memory, Supports Ultra DMA/33, USB connectors	£85	£99.88
07-93-5051	GA-586UX - Intel 'HX' Chipset (82340HX), USB	£75	£88.13
<b>BABY AT Form Factor (Spin AT keyboard connection)</b>			
07-93-5035	GA-586TX - Intel 'TX' Chipset (82430TX), 3 x ISA, 2x DIMM Sockets, 256Mb max memory, Supports Ultra DMA/33, USB connectors	£79	£92.83
07-93-5031	GA-586HX - Intel 'HX' Chipset (82340HX), 6x 72 pin, USB connectors	£77	£90.48

All Gigabyte motherboards (unless specified otherwise) are fitted with AMI/Award BIOS, a Pentium Socket 7 ZIF, 512kb Pipeline Burst, 4 x PCI, 4 x ISA, 4x 72pin SIMM Sockets. 512Mb max memory. Built-on floppy & EIDE support, 1 Enhanced Parallel & Fast Serial Ports. They require SIMMs in pairs (or 1x DIMM where applicable). Windows 95 Plug & Play. TX chipset supports Ultra IDE. All have PS/2 Mouse connection.



## ASUSTEK Motherboards

Part No	Model-Description	ex VAT	inc VAT
<b>ASUS ATX Pentium</b>			
07-99-0400	TXP4-X, 4 x PCI, 4 x ISA Bus, no LDCM	£95	£111.63
07-99-0500	TX97-XE, 4x PCI, 4 x ISA Bus, supports LDCM	£105	£123.38
07-99-0510	TX97-XES, as TX97-XE with Creative Labs ViBRA sound	£125	£146.88
ATX Motherboards have a PS/2 style keyboard and mouse connector			
<b>ASUS Baby-AT Pentium</b>			
07-99-0405	TXP4, 4 x PCI, 3 x ISA Bus, no LDCM	£89	£104.58
07-99-0505	TX97-E, 4 x PCI, 3 x ISA Bus, supports LDCM	£99	£116.33
Baby-AT Motherboards have an AT style 5pin and serial mouse connector			

All above motherboards (unless specified otherwise) are fitted with an Intel 430TX chipset. 4x 72pin SIMM, 2x 168pin DIMM sockets, Max. memory is 256Mb, 512k Pipeline Burst Cache on-board. Built-on EIDE/UIIDE support with UIIDE drivers for Windows 95/NT4. Floppy, USB, IrDA, 1 Parallel, 2 Serial os stanard (high speed). LDCM Hardware monitoring support (Includes Intel LonDesk CD for live PC monitoring), Full documentation. High quality boards.

### ASUS ATX Pentium II

07-99-0700	P2L97, 5x PCI, 2x ISA Bus with 3x 168pin SDRAM	£129	£151.58
07-99-0710	P2L97-S, 5x PCI, 2x ISA Bus, *SCSI, 3x 168pin SDRAM	£189	£222.08
07-99-0715	P2L97-DS, 4x PCI, 2x ISA Bus with 4x 168pin SDRAM, Dual Pentium II support, Max. 512Mb, On board *SCSI	£339	£398.33

All above motherboards (unless specified otherwise) are fitted with an Intel 440LX chipset. SDRAM DIMM sockets, Max. memory is 384Mb, Built-on EIDE/UIIDE support with UIIDE drivers for Windows 95/NT4. Floppy, USB, 1 Parallel, 2 Serial as stanard (high speed). LDCM Hardware monitoring support (Includes Intel LonDesk CD for live PC monitoring), Full documentation. \*On board SCSI is an Adaptec AIC 7880 UltraSCSI Controller. AGP support.

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E&OE. A Full list of SMC Terms & Conditions is available on request

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**First choice for the best in:**

## STORAGE & BACKUP

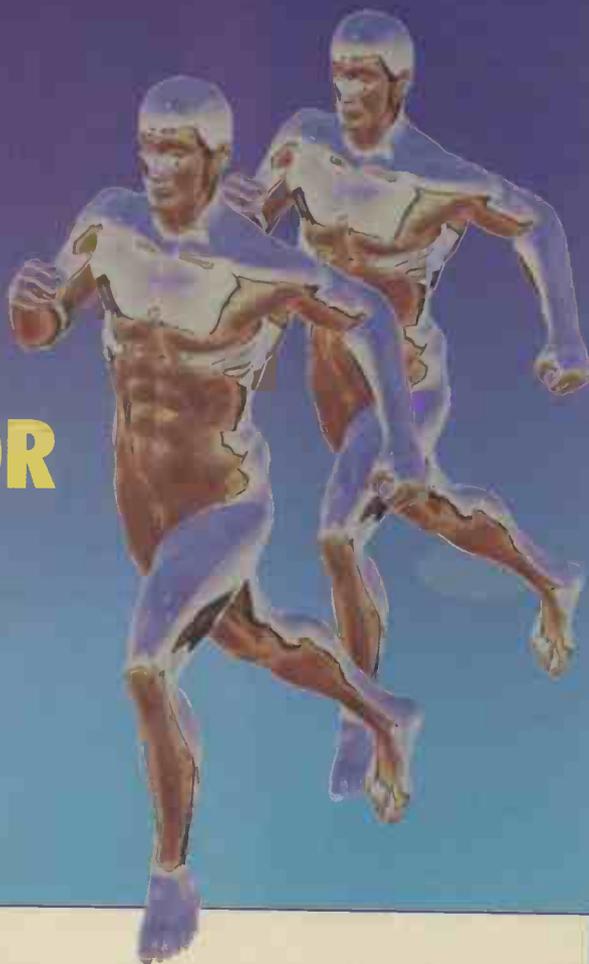
**Tape Drives 15**  
**DAT Drives 14**

**IDE Harddrives 17**  
**U-IDE Harddrives 17**

**SCSI Harddrives 19**  
**U-SCSI Harddrives 19**

**Removable Drives 8**

# SMC : THE BEST FOR BACKUP



## SMC : When it counts....

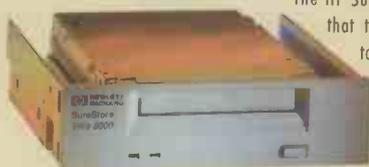
When the power goes down and your system crashes, chances are you lose your data. To a small business that can be a fatal disaster. It doesn't have to be with a tape drive from SMC. Our experience of tape backup and storage can ensure that you minimise the risk. A small investment now could save you more in the long run, so speak to us now, and we can advise on which tape drive would be best for you.



## HEWLETT PACKARD

SMC provides a flexible choice of tape drives for networks and individual PC systems.

This is true of the HP range of drives, which makes it a good choice for anyone considering tape back-up. For backup from any system configuration, SMC has a choice of drives and software, or you can choose a complete plug-and-play solution. At the top of the HP range is the industry leading C5648A DAT Autoloader. Based on the fastest DDS-3 DAT drive in the industry today, the C5648A DAT Autoloader uses standard DDS-3 125M cartridge tapes with a native capacity of 12Gb, using compression this increases to typically 24Gb, giving a typical capacity of 144Gb using a six cartridge magazine.



The HP SureStore range differ due to the fact that they are supplied with one media tape, one cleaning tape, basic backup software and a thicker manual. Internal drives have a bracket set whilst External drives are supplied with a cable.

## DAT Drives

Part No	Description	Tape	Fixture	ex VAT	inc VAT
42-28-0120	C1534, 2Gb, 11Mb/min,	B1	Internal	£335	£393.63
42-28-0125	C1534-X, 2Gb, 11Mb/min,	B1	External	£435	£511.13
42-28-0130	C1536, 4Gb, 22Mb/min,	B1	Internal	£375	£440.63
42-28-0135	C1536-X, 4Gb, 22Mb/min,	B1	External	£475	£558.13
42-28-0140	C1599A, 4-8Gb, 44Mb/min,	B1, B2	Internal	£499	£586.33
42-28-0145	C1599A-X, 4-8Gb, 44Mb/min,	B1, B2	External	£575	£675.63
42-28-0240	C1554A, 12-24Gb, 44mb/min,	B1, B2, B3	Internal	£689	£809.58
42-28-7144	C5648A, 72-144Gb, DDS-3 Autoloader 5 1/4" FH	B1, B2, B3	Internal	£1829	£2149.08

The above DAT drives are OEM, bare mechanisms. They are 3 1/2" high and are supplied with manuals.

### Hewlett Packard Surestore

42-28-2020	Surestore 2000, 2Gb, 11Mb/min,	B1	Internal	£439	£515.83
42-28-2025	Surestore 2000, 2Gb, 11Mb/min,	B1	External	£515	£605.13
42-28-2050	Surestore 5000, 4Gb, 22Mb/min,	B1	Internal	£469	£551.08
42-28-2055	Surestore 5000, 4Gb, 22Mb/min,	B1	External	£545	£640.38
42-28-2067	Surestore DAT8i, 4-8Gb, 44Mb/min,	B1, B2	Internal	£595	£699.13
42-28-2069	Surestore DAT8e, 4-8Gb, 44Mb/min,	B1, B2	External	£665	£781.38
42-28-2070	Surestore DAT24i, 12-24Gb, DDS-3,	B1, B2, B3	Internal	£795	£934.13
42-28-2073	Surestore DAT24e, 12-24Gb, DDS-3,	B1, B2, B3	External	£879	£1032.83
42-28-2144	Surestore DAT24X6e AUTOLOADER 72-144Gb, uses 6x DDS-3 tapes	B1, B2, B3	External	£2175	£2555.63

The Surestore DAT drives are 5 1/4" HH and are supplied with a cleaning tape, blank media tape, basic backup software, a thicker manual and internal drives include side rails. 3 year on-site options are available, please ask.

# TAPE BACKUP



## DAT DRIVES

Part No	Description	Tape	Fixture	ex VAT	inc VAT
<b>Seagate</b>					
42-13-0200	4320, 2Gb, 11Mb/min,	B1	Internal	£345	£405.38
42-13-0400	4324, 4Gb, 22Mb/min,	B1	Internal	£375	£440.63
42-13-0405	4354, 4Gb, 22Mb/min,	B1	External	£445	£522.88
42-13-0800	4326, 8Gb, 44Mb/min,	B1, B2	Internal	£499	£586.33
42-13-0805	4356, 8Gb, 44Mb/min,	B1, B2	External	£569	£668.58
<b>Sony</b>					
42-71-0020	SDT-2000E, 2Gb, 11Mb/min,	B1	Internal	£355	£417.13
42-71-0040	SDT-5200, 5Gb, 22Mb/min,	B1, B2	Internal	£409	£480.58
42-71-0080	SDT-7000 QUAD, 4-8Gb, 44Mb/min,	B1, B2	Internal	£489	£574.58
42-71-0090	SDT-5000, 4.8Gb, 22Mb/min,	B1, B2	Internal	£455	£534.63
42-71-0120	SDT-9000 12-24Gb, 22Mb/min,	B1, B2, B3	Internal	£649	£762.58
42-71-0320	TSL-7000 Autoloader, 64Gb, 22Mb/min,	B1, B2	Internal	£1349	£1585.08
42-71-0325	TSL-7000 Autoloader, 64Gb, 22Mb/min,	B1, B2	External	£1399	£1643.83
<b>Wangdat</b>					
42-84-1000	3100, 2Gb, 11Mb/min,	B1	Internal	£345	£405.38
42-84-1005	3100, 2Gb, 11Mb/min,	B1	External	£435	£511.13
42-84-2000	3200, 4Gb, 22Mb/min,	B1	Internal	£399	£468.83
42-84-2005	3200, 4Gb, 22Mb/min,	B1	External	£489	£574.58
42-84-4000	3400DX, 8Gb, 44Mb/min,	B1, B2	Internal	£495	£581.63
42-84-4005	3400DX, 8Gb, 44Mb/min,	B1, B2	External	£595	£699.13
42-84-9000	TS3900i, 12-24Gb, DDS-3,	B1, B2, B3	Internal	£695	£816.63
42-84-9005	TS3900e, 12-24Gb, DDS-3,	B1, B2, B3	External	£755	£887.13



## BACK-UP Software

Part No	Make & Model	ex VAT	inc VAT
<b>Cheyenne</b>			
01-90-7001	Cheyenne Backup for Win95, Single user, easy to use, includes a scheduling facility	£89	£104.58
<b>Arcserve 6 for Netware, Server based, supports DOS, OS/2, Windows 3.x and Windows 95 workstations (optional support packs for UNIX, Macintosh and Windows NT Servers and Workstations), better support for NetWare 4.1 than previous versions, with an improved Windows'95 style user interface.</b>			
01-90-6011	Single Workgroup Edition	£320	£376.00
01-90-6015	Enterprise Edition (Supports Multiple Servers)	£789	£927.08
<b>Arcserve 6 for Windows NT. Supports Windows NT, Windows'95 and Windows 3.x. Clients (optional agents available for NetWare, UNIX, OS/2 and Macintosh). Windows NT 4.0 compatible, with a built in Virus Scanner.</b>			
01-90-6033	Workstation Edition (W95 Client Not Supported)	£125	£146.88
01-90-6031	Single Server Edition	£330	£387.75
01-90-6035	Enterprise Edition (Supports Multiple Servers).	£559	£656.83

## Seagate Software

01-13-0351	Windows 95 for single user, complete data protection for your workstation, includes Job scheduling, Network aware, will backup any workstation or network	£74	£86.95
01-13-0500	Windows NT 4.0 Workstation Edition, hassle free install, Includes Job scheduling, protects even Netware data, offers true 32-bit backup to a host of devices	£135	£158.63

## Tape Drives

Part No	Description	Tape	Fixture	ex VAT	inc VAT
<b>Colorado/HP</b>					
48-10-2000	TRAVAN T3000, 1.6-3.2Gb, 9.5Mb/min	A3	Internal	£109	£128.08
48-10-2505	TRAVAN 5Gb, 2.5-5Gb, EIDE/ATAPI	A5	Internal	£129	£151.58
48-10-2509	TRAVAN 5Gb, 2.5-5Gb, Parallel Port	A5	External	£159	£186.83
<b>Wangtek</b>					
48-84-1000	51000ES, 1Gb, 17Mb/min,	D2, D3, D4	Internal	£279	£327.83
<b>Iomega Ditto</b>					
46-35-2000	Ditto 2000 Insider, 2.0Gb, 19Mb/min,	E1	Internal	£55	£64.63
46-35-2009	Ditto 2000, P/Port, 2.0Gb, 19Mb/min,	E1	External	£86	£101.05
46-35-2003	Ditto 2000 Bundle, Parallel Port, 2.0Gb, Carry Case, 3x Ditto tapes, 19Mb/min,	E1	External	£119	£139.83
46-35-3070	Ditto Max, P/Port, 3-7Gb, 36Mb/min,	Tba	Internal	£99	£116.33
46-35-3075	Ditto Max, P/Port, 3-7Gb, 36Mb/min,	Tba	External	£129	£151.58
46-35-3010	Ditto Max Pro, P/Port, 3-10Gb, 36Mb/min,	Tba	Internal	£189	£222.08
46-35-3015	Ditto Max Pro, P/Port, 3-10Gb, 36Mb/min,	Tba	External	£189	£222.08
26-35-0030	Ditto Dash, Controller Recommended for highest throughput with Internal Ditto drives.	ISA		£19	£22.33
<b>Seagate</b>					
48-13-3200	TSM 3200R, 3.2Gb, 19Mb/min,	A3	Internal	£106	£124.55
48-13-8000	TST 8000R-A EIDE, 4.0Gb, 54Mb/min,	C7	Internal	£208	£244.40
48-13-8005	TST 8000R-S SCSI, 4.0Gb, 54Mb/min,	C7	Internal	£209	£245.58
48-13-8015	TST 8000ES-S SCSI, 4.0Gb, 54Mb/min,	C7	External	£265	£311.38

## DLT Drives

Part No	Description	Tape	Fixture	ex VAT	inc VAT
<b>Hewlett Packard</b>					
42-28-1549	SureStore DLT30e, 30Gb	F1	External	£1699	£1996.33
42-28-1579	SureStore DLT40e, 40Gb	F2	External	£2849	£3347.58
42-28-5658	SureStore DLT70e, 70Gb	F2	External	£4399	£5168.83

DLT offers high performance backup drives for the new generation of high end servers & workstations. Exceptionally reliable DLT technology, fast backup speeds & advanced error detection all offer complete peace of mind. All the products are supplied with:- User documentation, CD containing TapeAssure, SCSI cable, SCSI terminator, power cable, DLT cleaning cartridge and one piece of DLT media for instant use. A SCSI controller is required.

## INSIDE INFORMATION

Did you know - Although primarily a Direct Mail supplier, SMC has a dedicated Pick-Up Point for counter collections.

To get the best from our service, please call our Sales Hotline to discuss your purchase. We'll take your details, reserve stock and allocate you a reference number so that you have priority treatment when you arrive.

That's a better service than a superstore - and at much lower prices!

## PRODUCT INFORMATION

### Why do I need to backup?

Making sure that your data is safe, to most people, only ever becomes important when the data isn't there anymore. Imagine how many hours it would take to re-install software, set up your applications as you had them before and then re-type all your work!

At SMC, we can offer easy-to-use Parallel Port devices which simply plug on to your printer port and can support from 400Mb through to 8Gb - right through to a massive 144Gb for complex systems requiring a storage media for huge amounts of data (144Gb is roughly equivalent to 225 CD's each full of 650Mb of data!).



For a full selection of tape media - see the tape selection chart. The chart will also indicate which tape you will require for the drives listed in these pages.

### Tape selector chart page 29

Fast, convenient and safe. The ideal way to store, back-up and transfer data across a number of platforms. Fully portable for use with laptops, running through a standard or enhanced parallel port.

**For P/Port see page 20**



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**SMC Computers Plc**  
253-257 Farnham Road. Slough. Berkshire. SL2 1HA

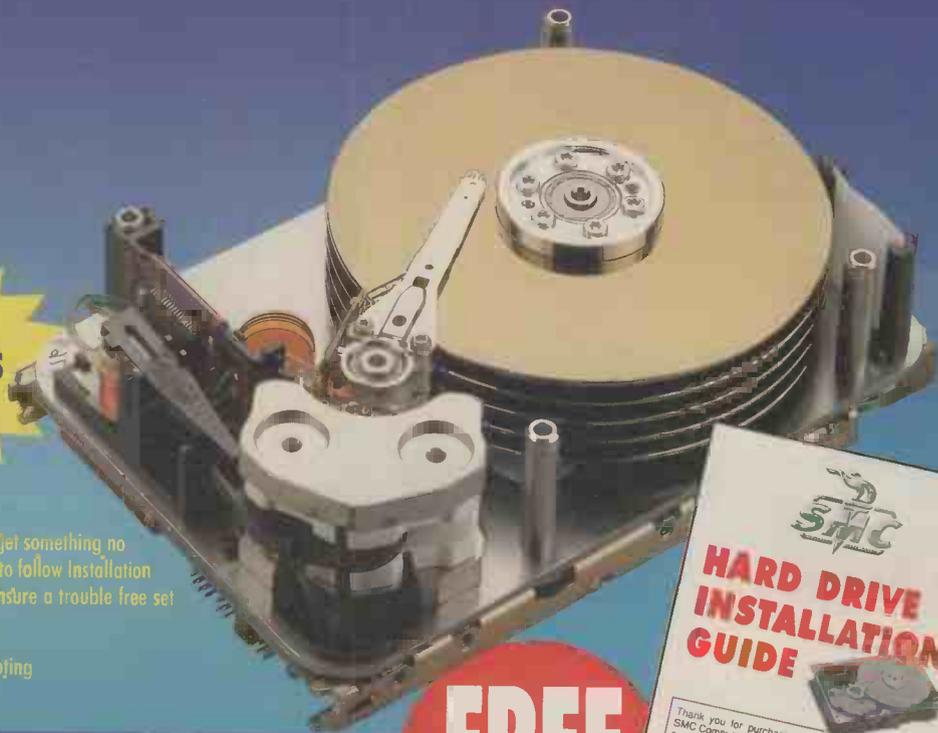
**15**

# SMC: THE BEST FOR HARD DRIVES

**CHECK OUT  
CABLES & BOXES  
ON PAGE 29**

When you buy a Hard Drive from SMC you get something no other company offers - a free 24 page, easy to follow Installation Guide containing everything you need to ensure a trouble free set up. It covers:

- Getting started & Basic Troubleshooting
- IDE/EIDE Hard Drive Installation
- CMOS configuration
- Installing with & without a translating BIOS
- SCSI Hard Drive installation & configuration
- Creating a bootable floppy disk
- Windows NT & Windows'95



**HARD DRIVE  
INSTALLATION  
GUIDE**

**FREE**

**WHEN YOU BUY  
FROM SMC**

Thank you for purchasing your new hard drive from SMC Computers. As part of our commitment to total customer service, we have produced this guide to total you a smooth and trouble free installation which will give this is intended as a generic guide and, as such, details may vary slightly depending on your hard drive and PC system manufacturers. Make sure you have your system and DOS manuals to hand for reference.  
The guide covers IDE / EIDE and SCSI drives.

## SMC : The UK's Premier Hard Drive Supplier...

### Why the difference?

SMC Computers has always offered the largest range of the latest drives on the market: top brand names with the highest quality and keenest pricing and our expertise in offering and supporting the best in the market is second to none. All our drives come with a full installation guide and mounting screws, and are backed by both our '7day' and '30day' guarantees in addition to the manufacturers warranty.

### IDE/EIDE Controllers

Part No	Make & Model	ex VAT	inc VAT
<b>IDE</b>			
24-95-1300	IDESPC, ISA, 2HDD/2FDD, Standard I/O Port	£13	£15.28
24-97-0300	ADP60, ISA, 2HDD, LBA Support	£29	£34.08
24-97-0355	ADP60F, ISA, 2HDD/2FDD, LBA Support	£35	£41.13
<b>EIDE</b>			
24-97-1360	EIDEMAX, ISA, 2HDD, ATAPI/CD-ROM, LBA.	£25	£29.38
24-97-1365	EIDEPRO, ISA, 4HDD/2FDD, ATAPI/CD-ROM, LBA	£39	£45.83
24-91-2300	DC2300+ VESA, 4HDD/2FDD, ATAPI/CD-ROM, LBA	£35	£41.13
24-91-4035	DC4030+ Cache, 4x HDD, 1x ATAPI/CD-ROM, LBA	£85	£99.88

### EIDE/CDROM - UIDE Controllers

Part No	Make & Model	ex VAT	inc VAT
<b>EIDE/CD ROM</b>			
24-91-5175	16030/CD 32, ISA, 4HDD, 1x ATAPI/CD-ROM, LBA	£27	£31.73
<b>FloppyMax</b>			
24-97-0120	FloppyMax, ISA Add-on for LS-120 (120Mb A:Drive)	£25	£29.38
<b>ULTRA DMA33 (UIDE)</b>			
24-97-0033	Promise Pro ATA Ultra33, PCI add-on controller supporting Quantum ST and UIDE drives. Co-exists with existing IDE/EIDE - ATAPI devices	£44	£51.70

# EIDE & UIDE HARD DRIVES

**Seagate**

**TOSHIBA**

**WESTERN DIGITAL**

**SAMSUNG**

**Quantum**

**FUJITSU**

**IBM**

**SMC**  
COMPUTERS

## EIDE Hard Drives

Part No	Size	Make	Model	Cache	Access	ex VAT	inc VAT
<b>1.2Gb - 1.7Gb</b>							
30-64-1288	1.2Gb	Quantum	BF1280AT 5¼"	128k	15.5ms	£59	£69.33
30-95-1201	1.2Gb	Samsung	WNR312016A	128k	11ms	£95	£111.63
30-70-1201	1.2Gb	Seagate	ST31276A	64k	12.5ms	£75	£88.13
30-86-1206	1.2Gb	Western D	AC11200A	128k	10ms	£95	£111.63
30-95-1601	1.6Gb	Samsung	WNR31601A	128k	11ms	£99	£116.33
30-86-1602	1.6Gb	Western D	AC21600A	128k	12ms	£99	£116.33
30-24-3017	1.7Gb	Fujitsu	MPA3017AT	128k	11ms	£89	£104.58

### 2.0Gb - 6.4Gb

30-70-2132	2.0Gb	Seagate	ST32132A	128k	12ms	£99	£116.33
30-95-2152	2.1Gb	Samsung	WNR321520A	128k	11ms	£109	£128.08
30-86-2005	2.1Gb	Western D	AC22100A	128k	12ms	£105	£123.38
30-24-3026	2.5Gb	Fujitsu	MPA3026AT	128k	11ms	£109	£128.08
30-95-2543	2.5Gb	Samsung	WNR325430A	128k	11ms	£125	£146.88
30-70-2503	2.5Gb	Seagate	ST32531A	128k	12ms	£109	£128.08
30-86-2502	2.5Gb	Western D	AC22500A	256k	11ms	£119	£139.83
30-86-3100	3.1Gb	Western D	AC33100A	128k	12ms	£129	£151.58
30-24-3035	3.5Gb	Fujitsu	MPA3035AT	128k	11ms	£125	£146.88
30-86-4000	4.0Gb	Western D	AC34000A	128k	12ms	£159	£186.83
30-39-5160	5.1Gb	Maxtor	85120A	256k	10ms	£175	£205.63
30-24-3052	5.2Gb	Fujitsu	MPA3052AT	128k	11ms	£175	£205.63
30-70-6401	6.4Gb	Seagate	ST36450A	512k	9.9ms	£199	£233.83

All the hard drives come with a 3 year warranty unless otherwise stated & are 3.5". Please see Ultra IDE Hard Drives section for further options. UIDE compatible with IOE/EIDE.



For a full selection of drive boxes and accessories, including cables and mounting brackets for both EIDE/UIDE and SCSI drives listed in these pages.

**Drive accessories page 21**

## EIDE 2.5" Hard Drives

Part No	Size	Make	Model	Cache	Access	ex VAT	inc VAT
<b>1.4Gb - 3.2Gb</b>							
30-75-1403	1.4Gb	Toshiba	MK1403MAV	128k	13ms	£115	£135.13
30-75-2103	2.1Gb	Toshiba	MK2103MAV	128k	13ms	£149	£175.08
30-75-0035	3.2Gb	Toshiba	MK3205MAV	128k	13ms	£297	£348.98

These drives have a 44-pin connector. Please check your system for compatibility. All drives are 12.7mm in height. These Hard Drives come with a 2 year warranty.

## Utility Software

Part No	Make & Model	ex VAT	inc VAT
01-93-8642	Ontrack Disk Manager - purchased with a hard drive	£15	£17.63
01-93-8644	Ontrack Disk Manager full retail version	£35	£41.13
01-93-8402	Ontrack Drive Racket - purchased with a hard drive	£12	£14.10
01-93-8404	Ontrack Drive Racket full retail version	£17	£19.98
01-94-0002	Partition Magic - Data management software	£44	£51.70
01-94-0030	Drive Image - Drive Data backup/recovery software	£43	£50.53
01-94-0035	Drive Image Professional - Drive Data cloning software	£499	£586.33



## ULTRA IDE Hard Drives

Part No	Size	Make	Model	Cache	Access	ex VAT	inc VAT
<b>1.6Gb - 6.4Gb</b>							
30-64-0163	1.6Gb	Quantum	ST1620AT	128k	<10ms	£92	£108.10
30-86-2009	2.0Gb	Western D	AC22000AU	128k	11ms	£109	£128.08
30-39-2160	2.1Gb	Maxtor	82160D2	256k	9.7ms	£109	£128.08
30-64-0213	2.1Gb	Quantum	ST2160AT	128k	<10ms	£109	£128.08
30-64-0323	3.2Gb	Quantum	ST3240AT	128k	<10ms	£119	£139.83
30-86-3200	3.2Gb	Western D	AC33200AU	256k	11ms	£129	£151.58
30-86-4009	4.0Gb	Western D	AC34000AU	128k	<12ms	£149	£175.08
30-39-4320	4.3Gb	Maxtor	84320D4	256k	9.7ms	£159	£186.83
30-64-4320	4.3Gb	Quantum	ST4320AT	128k	<10ms	£159	£186.83
30-70-4342	4.3Gb	Seagate	ST34342A	128k	12ms	£149	£175.08
30-86-4300	4.3Gb	Western D	AC34300AU	256k	<11ms	£155	£182.13
30-86-5100	5.1Gb	Western D	AC35100AU	256k	<11ms	£185	£217.38
30-39-6480	6.4Gb	Maxtor	86480D6	256k	9.7ms	£219	£257.33
30-64-6480	6.4Gb	Quantum	ST6480AT	128k	<10ms	£209	£245.58
30-86-6400	6.4Gb	Western D	AC36400AU	256k	<9.5ms	£199	£233.83
30-39-8400	8.4Gb	Maxtor	88400D8	256k	9.7ms	£269	£316.08

All the hard drives come with a 3 year warranty unless otherwise stated and are 3.5". They can all work as standard IDE/EIDE or as Ultra IDE, DMA-33 drives (max. transfer 33Mbs).

We recommend the Promise PCI Ultra33 controller for optimized transfer rates.

**WARNING:** At present various manufacturers are in the process of moving to UIDE. Certain companies will still have drives with standard IDE/EIDE performance. To ensure that the drive you order is IDE/EIDE and UIDE compatible SMC lists these drives separately.

## INSIDE INFORMATION

Did you know - SMC Computers originally specialised in data storage (that's hard disks and tape drives) and has grown from what was a very technical and specialised area into the one-stop PC source it is today.

In expanding our product range, we have retained our expertise: we don't feel anyone can come close to our excellence in supplying the right product for customers needs.

We have also steadily expanded our market to cater for serious home users, businesses both large and small, government departments, local authorities, schools, universities, hospitals and the Ministry of Defence.

So in dealing with SMC, you are choosing a supplier with proven experience of providing a comprehensive range of products for an enormous variety of applications and customer needs - and getting it right.

**Performance with DRIVE..**



**SALES HOTLINE 01753 550333**

**E&OE. A Full list of SMC Terms & Conditions is available on request**

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# SMC : THE BEST FOR STORAGE SOLUTIONS

"Unlimited Hard Drive Space....."



Iomega



**NEW LOW PRICE**  
PARALLEL PORT  
ZIP DRIVES



**CONTROLLERS & ACCESSORIES**



## SMC : The UK's No.1 Storage Supplier...

With applications that use large amounts of data, it is often advantageous to use removable media, where a single drive can be used to run a library of disks, each containing data for a specific task or application. Removable media solutions also provide a very fast and flexible method of backing up and archiving data.



### IOMEGA Removable Drives

Part No	Make & Model	ex VAT	inc VAT
<b>IOMEGA ZIP DRIVES</b>			
35-35-0105	100Mb, SCSI (External) Interface, 1.25Mb per second	£89	£104.58
35-35-0100	100Mb, SCSI (Insider) Inc. Controller, 1.25Mb per sec	£89	£104.58
37-35-0100	100Mb, Parallel port, 1.25Mb per second	£86	£101.05
35-35-3537	100Mb, ZIP Plus, Parallel port & SCSI combined	£115	£135.13
<b>IOMEGA JAZ DRIVES</b>			
35-35-1000	1.0Gb, SCSI (Internal) Interface, 10Mb per second	£175	£205.63
35-35-1005	1.0Gb, SCSI (External) Interface, 10Mb per second	£229	£269.08
35-35-2000	2.0Gb, SCSI (Internal) Interface, 10Mb per second	£319	£374.83
35-35-2005	2.0Gb, SCSI (External) Interface, 10Mb per second	£375	£440.63

### IOMEGA ZIP CARTRIDGES

95-35-0101	100Mb, Single	£70	£11.75
95-35-0110	100Mb, 10 Pack (multi coloured disks)	£85	£99.88

### IOMEGA JAZ CARTRIDGES

95-35-1001	1.0Gb, Single	£58	£68.15
95-35-2001	2.0Gb, Single	£92	£108.10

### IOMEGA Accessories

Part No	Description	ex VAT	inc VAT
<b>ZIP Accessories</b>			
70-35-0003	Zip Drive Carry Case	£19	£22.33
26-35-0284	Zip Drive PCMCIA to SCSI card	£65	£76.38
<b>JAZ Accessories</b>			
70-35-0003	Jaz Drive Carry Case	£19	£22.33
26-35-0450	Jaz Drive PCMCIA to SCSI card	£89	£104.58
26-35-0347	Jaz Drive ISA 16-bit SCSI interface card	£65	£76.38
26-35-0346	Jaz Drive PCI Bus-mastering SCSI interface card	£69	£81.08
75-35-0231	Jaz Drive Parallel to SCSI convertor	£29	£34.08

Be your own DJ

Recordit software included free of charge with every 10 pack of multi coloured Zip media:- Part No: 95-35-0110.

**recordit.** software

Record your favorite CDs

# SCSI & ULTRA HARD DRIVES



## Ultra SCSI Hard Drives

Part No	Size	Make	Model	Cache	Access	RPM	ex VAT	inc VAT
<b>1.0Gb</b>								
35-70-1051	1.0	Seagate	ST31055N Hawk*	256k	9	5411	£189	£222.08
<b>2.1Gb - 6.4Gb</b>								
35-30-2103	2.1	IBM	46H6124	512k	8.5	5400	£145	£170.38
35-64-2105	2.1	Quantum	ST2160S Fireball ST	128k	<10	5400	£145	£170.38
35-70-2151	2.1	Seagate	ST32155N Hawk	256k	9	5411	£199	£233.83
35-70-2160	2.1	Seagate	ST52160N Medalist Pro	128k	11	5400	£129	£151.58
35-86-2173	2.1	Western D	E2170-0003 Enterprise	512k	8	7200	£259	£304.33
35-24-2200	2.2	Fujitsu	M2952S AL3	512k	8	7200	£295	£346.63
35-70-2260	2.2	Seagate	ST32272N Barracuda	512k	8.8	7200	£199	£233.83
35-24-4400	4.3	Fujitsu A/V	M2954S AL3	512k	10	7200	£359	£421.83
35-30-4303	4.3	IBM	46H6127 Ultrastar 2ES	512k	8.5	5400	£199	£233.83
35-64-4305	4.3	Quantum	ST4320S Fireball ST	128k	<10	5400	£205	£240.88
35-86-4363	4.3	Western D	E4360-0003 Enterprise	512k	8	7200	£359	£421.83
35-30-4527	4.5	IBM	27H1713 Ultrastar 2XP	512k	7.5	7200	£385	£452.38
35-64-4500	4.5	Quantum A/V	XP34550S Atlas II	512k	8	7200	£375	£440.63
35-70-4505	4.5	Seagate A/V	ST34501N Cheetah	512k	7.5	10033	£429	£504.08
35-70-4515	4.5	Seagate	ST34572N Barracuda	512k	8.8	7200	£429	£504.08
35-64-6405	6.4	Quantum	ST6480S Fireball ST	128k	<10	5400	£275	£323.13

Part No	Size	Make	Model	Cache	Access	RPM	ex VAT	inc VAT
<b>9.1Gb</b>								
35-24-9100	9.1	Fujitsu A/V	M2949S AL3*	512k	9.5	7200	£599	£703.83
35-30-9114	9.1	IBM A/V	27H1714 Ultrastar 2XP	512k	7.5	7200	£525	£616.88
35-64-9100	9.1	Quantum A/V	XP39100S Atlas II	1024k	8	7200	£575	£675.63
35-70-9105	9.1	Seagate A/V	ST19101N Cheetah	512k	8	10033	£709	£833.08
35-70-9175	9.1	Seagate A/V	ST19171N Barracuda	512k	8	7200	£599	£703.83

Part No	Size	Make	Model	Cache	Access	RPM	ex VAT	inc VAT
<b>23Gb</b>								
35-70-0230	23	Seagate	5 1/4" ST423451N Elite	2048k	13	5400	£1189	£1397.08

All above drives are Ultra SCSI (20Mbs) compatible. Drives marked with an \* are Fast-SCSI2 (10Mbs) only.

## Ultra Wide SCSI Hard Drives

Part No	Size	Make	Model	Cache	Access	RPM	ex VAT	inc VAT
<b>2.1Gb - 4.5Gb</b>								
35-30-2107	2.1	IBM	46H6125 Ultrastar 2ES	512k	8.5	5400	£149	£175.08
35-70-2153	2.1	Seagate	ST32155W Hawk	512k	9	5411	£229	£269.08
35-86-2177	2.1	Western D	E2170-0007 Enterprise	512k	8	7200	£269	£316.08
35-24-2203	2.2	Fujitsu	M2952QA AL3	512k	8	7200	£309	£363.08
35-70-2265	2.2	Seagate	ST32272W Barracuda	512k	8.8	7200	£309	£363.08
35-24-4403	4.3	Fujitsu A/V	M2954QA AL3	512k	10	7200	£369	£433.58
35-30-4307	4.3	IBM	46H6128 Ultrastar 2ES	512k	8.5	5400	£205	£240.88
35-86-4367	4.3	Western D	E4360-0007 Enterprise	512k	8	7200	£389	£457.08
35-30-4537	4.5	IBM A/V	27H1772 Ultrastar 2XP	512k	7.5	7200	£389	£457.08
35-64-4507	4.5	Quantum A/V	XP34550W Atlas II	512k	8	7200	£379	£445.33
35-70-4507	4.5	Seagate A/V	ST34501W Cheetah	512k	7.5	10033	£439	£515.83
35-70-4517	4.5	Seagate	ST34572W Barracuda	512k	8.8	7200	£439	£515.83

Part No	Size	Make	Model	Cache	Access	RPM	ex VAT	inc VAT
<b>9.1Gb</b>								
35-24-9103	9.1	Fujitsu A/V	M2949QA AL3	512k	9.5	7200	£619	£727.33
35-30-9171	9.1	IBM A/V	27H1771 Ultrastar 2XP	512k	7.5	7200	£535	£628.63
35-64-9107	9.1	Quantum A/V	XP39100W Atlas II	1024k	8	7200	£585	£687.38
35-70-9177	9.1	Seagate A/V	ST19171W Barracuda	512k	8	7200	£629	£739.08
35-70-9107	9.1	Seagate A/V	ST19101W Cheetah	512k	8	10033	£729	£856.58

Part No	Size	Make	Model	Cache	Access	RPM	ex VAT	inc VAT
<b>23Gb</b>								
35-70-0231	23	Seagate	5 1/4" ST423451W Elite	2048k	13	5400	£1229	£1444.08

All above drives are Ultra-Wide SCSI (40Mbs). Drives marked with an \* are Fast-Wide SCSI2 (20Mbs) only.

## SCSI Controller Cards

Part No	Model	Interface	Ext.Con	Max. Devices	Boot Bios	ex VAT	inc VAT
<b>Adaptec Kits (includes software and internal cable)</b>							
<b>ISA Bus</b>							
26-03-1542	AHA1542CP	FastSCSI2	Micro-D	7&FDD	Y	£152	£178.60
<b>EISA Bus</b>							
26-03-2742	AHA2742AT	FastSCSI2	Micro-D	14&FDD	Y	£222	£260.85
26-03-2747	AHA2742W	WideSCSI2	Micro-D wide	15&FDD	Y	£245	£287.88
<b>PCI Bus</b>							
26-03-2910	AHA2910B	FastSCSI2	Micro-D	7		£65	£76.38
26-03-2920	AHA2920	FastSCSI2	Micro-D	7		£88	£103.40
26-03-2941	AHA2940UA	UltraSCSI	Micro-D	7	Y	£149	£175.08
26-03-2947	AHA2940UW	UltraWide	Micro-D wide	15	Y	£175	£205.63
26-03-3940	AHA3940U	UltraSCSI	Micro-D	14	Y	£249	£292.58
26-03-3947	AHA3940UW	UltraWide	Micro-D wide	30	Y	£285	£334.88
<b>PCMCIA (PC Card)</b>							
26-03-1460	APA1460A-2	FastSCSI2	PCMCIA, SCSI I&2 cables, 7			£98	£115.15
<b>MCA</b>							
26-03-1640	AHA1640	FastSCSI2	Micro-D on MCA bus	7	Y	£199	£233.83
<b>RAID 0, 1, 0/1, or 5 (PCI Bus-Network &amp; WinNT)</b>							
26-03-0131	AAA-131	UltraWide	Micro-D wide	45		£279	£327.83
26-03-0133	AAA-133	UltraWide	Micro-D wide	45		£479	£562.83

Part No	Model	Interface	Ext.Con	Max. Devices	Boot Bios	ex VAT	inc VAT
<b>Adaptec Bare Cards (do not include software or cables)</b>							
<b>ISA Bus</b>							
26-03-1520	AHA1520B	FastSCSI2	Micro-D	7		£55	£64.63
26-03-1549	AHA1542	FastSCSI2	Micro-D	7&FDD	Y	£115	£135.13
<b>PCI Bus</b>							
26-03-2943	AHA2940UA	UltraSCSI	Micro-D	7	Y	£125	£146.88
26-03-2949	AHA2940UW	UltraWide	Micro-D wide	15	Y	£156	£183.30

## Desktop RAID Solution

Part No	Make & Model	ex VAT	inc VAT
00-00-0000	EZIRAID, 8.6Gb usable complete PCI RAID solution, UltraWide SCSI performance (max. capacity 21Gb).	£3999	£4698.83

## INSIDE INFORMATION

Did you know - SMC maintains a constant emphasis on training in all aspects of its operation to ensure that staff are able to provide the highest levels of service.

In addition to full-time staff employed to teach and reinforce job skills and procedures, we periodically engage outside agencies to provide another perspective, and in 1997 we received the Thames Valley Business of the Year award in recognition of the investment we have made in training.

When we say that we are continually seeking improvement in what we do - we mean it.

**CHECK  
HARDDRIVE  
CABLES & BOXES  
ON PAGE 21**



**SALES  
HOTLINE 01753 550333**

**SMC Computers Plc**  
253-257 Farnham Road, Slough, Berkshire, SL2 1HA

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# PARALLEL PORT DRIVES

**SMC**  
COMPUTERS



High capacity - up to 6.4Gb\*  
PCMCIA & Parallel Port interface  
Either draws power from mains or PC  
Incorporates Toshiba Disk Drives  
Fast access and data transfer  
Includes Novadisk backup software  
\*Using compression ratio of 2:1



37-92-9064 **£555** **£652.13**  
6.4Gb Flip disk - Innovative Portability

## AMACOM Parallel Port

Part No	Make & Model	ex VAT	inc VAT
<b>FLIP DISK</b>			
37-92-9028	2.8Gb, Parallel Port/PCMCIA, 13ms access, 128Kb	£335	£393.63
37-92-9042	4.2Gb, Parallel Port/PCMCIA, 13ms access, 128Kb	£435	£511.13
37-92-9064	6.4Gb, Parallel Port/PCMCIA, 13ms access, 128Kb	£555	£652.13
<b>EZCD CD-ROM DRIVES</b>			
51-92-0004	4 speed, Parallel Port, 250ms access, 128Kb cache	£115	£135.13
51-92-0008	8 speed, Parallel Port, 145ms access, 256Kb cache	£135	£158.63
51-92-0016	16 speed, Parallel Port	£155	£182.13
<b>EZCD CD-ROM DRIVES with 16bit Sound</b>			
51-92-1004	4 speed, Parallel Port, 250ms access, 128Kb cache	£155	£182.13
51-92-1008	8 speed, Parallel Port, 145ms access, 256Kb cache	£175	£205.63
51-92-1016	16 speed, Parallel Port	£179	£210.33
<b>EZCD CARD</b>			
51-92-3004	4 speed CD, PCMCIA, 250ms access, 128Kb cache	£135	£158.63
51-92-3008	8 speed CD, PCMCIA, 145ms access, 256Kb cache	£149	£175.08
51-92-3016	16 speed CD, PCMCIA	£165	£193.88
<b>EZCD PLUS</b>			
51-92-5008	8 speed CD, PCMCIA	£169	£198.58
51-92-5016	16 speed CD, PCMCIA	£199	£233.83

The EZCD Plus can be used as a stand alone CD player. A mains adaptor and battery pack is included or power can be drawn direct from your PC.

## IOMEGA Removable Drives

Part No	Make & Model	ex VAT	inc VAT
<b>IOMEGA ZIP DRIVES</b>			
35-35-0105	100Mb, SCSI (External) Interface, 1.25Mb per second	£89	£104.58
35-35-0100	100Mb, SCSI (Insider) Inc. Controller, 1.25Mb per sec	£89	£104.58
37-35-0100	100Mb, Parallel port, 1.25Mb per second	£86	£101.05
35-35-3537	100Mb, ZIP Plus, Parallel port & SCSI combined	£115	£135.13

### IOMEGA ZIP CARTRIDGES

95-35-0101	100Mb, Single	£10	£11.75
95-35-0103	100Mb, 6 Pack	£54	£63.45
95-35-0110	100Mb, 10 Pack (multi coloured disks)	£85	£99.88

### ZIP PORTABLE ACCESSORIES

70-35-0003	Zip Drive Carry Case	£19	£22.33
26-35-0284	Zip Drive PCMCIA to SCSI card	£65	£76.38

### JAZ PORTABLE ACCESSORIES

70-35-0003	Jaz Drive Carry Case	£19	£22.33
26-35-0450	Jaz Drive PCMCIA to SCSI cord	£89	£104.58
75-35-0231	Jaz Drive Parallel to SCSI convertor	£29	£34.08

Fast, convenient and safe. The ideal way to store, back-up and transfer data across a number of platforms. Fully portable for use with laptops, running through a standard or enhanced parallel port.

### ditto 2Gb External Bundle



## Parallel Port Tape Drives

Part No	Description	Tape	Fixture	ex VAT	inc VAT
<b>COLORADO</b>					
46-10-2505	HP Travan 5Gb, 2.5-5Gb	A5	External	£134	£157.45
<b>IOMEGA DITTO</b>					
46-35-2009	Ditto 2000, P/Port, 2.0Gb, 19Mb/min,	E1	External	£86	£101.05
46-35-2003	Ditto 2000 Bundle, Parallel Port, 2.0Gb, Carry Case, 3x Ditto tapes, 19Mb/min,	E1	External	£119	£139.83
46-35-3075	Ditto Max, P/Port, 3-7Gb, 36Mb/min,	Tba	External	£129	£151.58
46-35-3015	Ditto Max Pro, P/Port, 3-10Gb, 36Mb/min, Tba		External	£189	£222.08

## Parallel Port CD-ROM Drives

### MicroSolutions Backpack Parallel Port

Part No	Make & Model	ex VAT	inc VAT
51-42-0800	8x CD-ROM, <180ms, 1,200Kb/s max	£144	£169.20
51-42-0804	8x CD-ROM with MS/Sound, <180ms, 1,200Kb/s max	£179	£210.33
51-42-1000	Bantam CD-ROM, 150ms, 1,200Kb/s max, weighs 21oz	£185	£217.38
51-42-1004	Bantam CD-ROM & Sound, 150ms, 1.2Mb/s max, 21oz	£215	£252.63

As well as DOS, Windows, Win95 - Bantam drive supports WinNT. Lightweight and sleek design.

### Micro Solutions Bantam CDROM



Bantam CD-ROM available with or without sound. Lightweight, portable multimedia solution.

**NEW LOW PRICE PARALLEL PORT ZIP DRIVES**

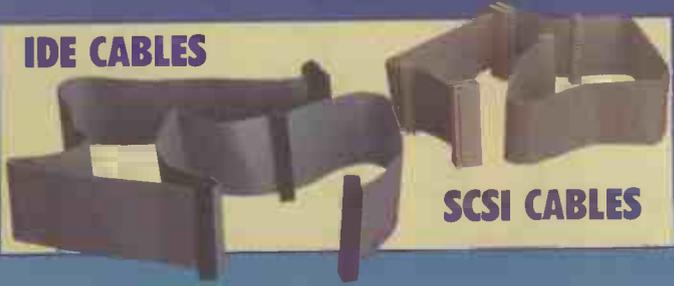
**zip drive**

Cases sold separately. See product listings above.

# DRIVE ACCESSORIES



External SCSI Boxes (Boxes may vary)



## IDE CABLES

## SCSI CABLES

## Data Cables

Part No	Make & Model	ex VAT	inc VAT
<b>External SCSI Cables - 1m</b>			
75-95-3521	25-pin to 50-pin Centronics	£14	£16.45
75-95-3551	50-pin Centronics to 50-pin Centronics	£15	£17.63
75-95-3552	50-pin Centronics to 50-pin Centronics - 2 metres	£18	£21.15
75-95-3571	50-pin Micro D to 50-pin Centronics	£20	£23.50
75-95-3572	50-pin Micro D to 50-pin Centronics- 2 metres	£28	£32.90
75-95-3721	50-pin Micro D to 25-pin D	£20	£23.50
75-95-3771	50-pin Micro D to 50-pin Micro D	£25	£29.38
75-95-3661	Wide SCSI to Wide SCSI	£35	£41.13

<b>Internal SCSI Cables - 50 pin</b>			
75-95-1501	Single drive, 19 inches	£8	£9.40
75-95-1502	Dual drive, 38 inches	£10	£11.75
75-95-1503	Triple drive, 38 inches	£15	£17.63
75-95-0500	Custom made to order, as required	£POA	£POA

<b>Internal SCSI Cables - 68 pin</b>			
75-95-1703	Triple drive, for Wide SCSI	£20	£23.50
75-95-1705	5 drives, for Wide SCSI	£25	£29.38

<b>Internal IDE Cables</b>			
75-95-1401	Single Drive, 40 Way Ribbon, 12.5", 2 x IDC40	£8	£9.40
75-95-1402	Dual Drive, 40 Way, 18" (4" gap), 3 x IDC40	£10	£11.75
75-95-0400	Custom made, 40 Way Ribbon, up to 20"	£POA	£POA

Note: Cable lengths may vary - IDE will support max of 2x drives per cable



Wide SCSI      Centronics 50      Micro D      25-way D

## External SCSI Cables

## Parallel Port Drive Box

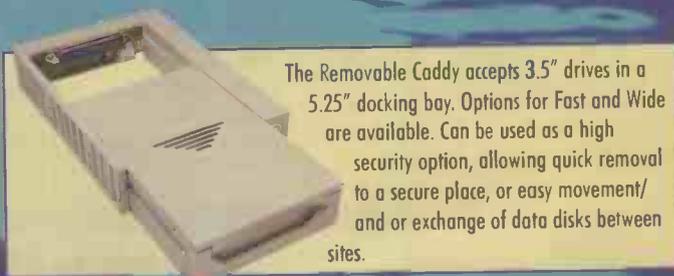
Part No	Make & Model	ex VAT	inc VAT
73-97-1183	Parallel Port Box for IDE/EIDE drives (inc. software)	£69	£81.08

Ideal solution for turning a standard Hard drive into a portable solution. Easy to install and includes software to work with any size drive.

## External Boxes

Part No	Make & Model	ex VAT	inc VAT
<b>Centronics</b>			
73-97-3113	1 x 3.5"HH/FH, 40 watt, Centronics Ext. Interface	£69	£81.08
73-97-3213	2 x 3.5"HH/FH, 65 watt, Centronics Ext. Interface	£99	£116.33
73-97-3413	4 x 3.5"HH/FH, 2 x 65 watt, Centronics Ext. Interface	£189	£222.08
73-97-3114	1 x 3.5"HH/LP, 30 watt, Centronics Ext. Interface	£69	£81.08
73-97-6114	1 x 5.25"FH, 65 watt, Centronics Ext. Interface	£94	£110.45
73-95-9412	2 x 5.25"HH, Conversion Kit for 73-97-6114	£14	£16.45
73-97-5116	1 x 5.25"HH, 40 watt, Centronics Ext. Interface	£62	£72.85
73-97-5114	1 x 5.25"FH, 30 watt, Centronics Ext. Interface	£65	£76.38
73-97-6215	2 x 5.25"FH, 2 x 65 watt, Centronics Ext. Interface	£175	£205.63
73-95-9524	4 x 5.25"HH, Conversion Kit for 73-97-6215	£24	£28.20
73-97-6315	3 x 5.25"FH, 3 x 65 watt, Centronics Ext. Interface	£239	£280.83
73-95-9536	6 x 5.25"HH, Conversion Kit for 73-97-6315	£34	£39.95
73-97-6415	4 x 5.25"FH, 4 x 65 watt, Centronics Ext. Interface	£345	£405.38
<b>Micro-D</b>			
73-97-3133	1 x 3.5"HH/FH, 40 watt, Micro D Ext. Interface	£79	£92.83
73-97-3233	2 x 3.5"HH/FH, 65 watt, Micro D Ext. Interface	£119	£139.83
73-97-3433	4 x 3.5"HH/FH, 2 x 65 watt, Micro D Ext. Interface	£199	£233.83
73-97-5134	1 x 5.25"FH, 30 watt, Micro D Ext. Interface	£85	£99.88
<b>Fast-Wide</b>			
73-97-3152	1 x 3.5"HH/FH, 40 watt, Fast Wide Ext. Interface	£95	£111.63
73-97-3252	2 x 3.5"HH/FH, 65 watt, Fast Wide Ext. Interface	£145	£170.38
73-97-3452	4 x 3.5"HH/FH, 65 watt, Fast Wide Ext. Interface	£215	£252.63

All boxes are TUV approved and come with a 3 year warranty. Wide SCSI options are available on selected models. Please call for details.



The Removable Caddy accepts 3.5" drives in a 5.25" docking bay. Options for Fast and Wide are available. Can be used as a high security option, allowing quick removal to a secure place, or easy movement/ and or exchange of data disks between sites.

## Hard Drive Mounting Kits

Part No	Make & Model	ex VAT	inc VAT
<b>SCSI</b>			
79-95-1135	Mounts 3.5" drive into a 5.25" bay. No slide rails	£9	£10.58
79-97-3502	Removable caddy for 3.5" drives. Uses a 5.25" bay	£35	£41.13
79-97-3504	Metal version of above - performance drive support	£59	£69.33
79-97-3506	Removable caddy, Metal version for Fast-Wide drives	£79	£92.83
<b>IDE/EIDE</b>			
79-95-1135	Mounts 3.5" drive into a 5.25" bay. No slide rails	£9	£10.58
79-97-3102	Removable caddy for 3.5" drives. Uses a 5.25" bay	£25	£29.38

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SOUNDCARDS  
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**Sound Cards 20-21**

**Multimedia Kits 20-21**

**Speakers 21**

**CD-ROM Drives 23**

**CD-Writers 22-23**

**DVD Drives 23**

**3D Graphics 24-25**

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**IYYAMA 34**

**Memory 4-11**

**MMX CPU's 12**

**Harddrives 14-17**

**Multimedia**

**Systems 36-39**

The Sound Blaster AWE64 Value breaks the 32 voice barrier to give you incredible audio realism. It's the most compatible sound card you can buy, running with more applications than any other soundcard but at an incredible price.

Enjoy the smoothest, most realistic audio experience with 64 voices of Advanced WavEffects. Listen to expressive, true to life instrument reproductions as well as stunning sound effects. Thrill to ultra realistic sound for your games and multimedia. Immerse yourself in 3D Positional Audio. Treat your ears to the astounding sound quality of SoundFont technology, playing back customised samples from your applications. Surf the sounds of the Internet with Inspire, Creative's own multimedia wizard.

The Sound Blaster AWE64 Value lives up to its name for great value and great performance.



**Creative AWE64 Sound Cards**

Part No	Make & Model	ex VAT	inc VAT
53-15-6425	AWE64 Value Plug'n'Play	£57	£66.98
53-15-6445	AWE64 GOLD Plug'n'Play	£107	£125.73

**Creative Speakers**

Part No	Make & Model	ex VAT	inc VAT
57-15-0020	Creative CSW20 Speakers - 5Watt RMS	£POA	£POA
57-15-0050	Creative CSW50 Speakers - 11Watt RMS	£POA	£POA
57-15-0100	Creative CSW100 Speakers and Amplifier - 17Watt RMS	£59	£69.33
57-15-0200	Creative CSW200 Speakers and Amplifier - 23Watt RMS	£99	£116.33
57-15-0350	Creative CSW350 Speakers and Amplifier - 68Watt RMS	£179	£210.33

**"Upgrade to higher sound - NOW!"**

\*From now until the 31st of March 1998 you can claim a rebate of £23.00 against a new AWE64 Gold card or £12.00 against an AWE64 Value card. All you need to do is to fill out the application form you receive with your NEW AWE 64 card and return it with your old Soundcard - this applies to ALL old soundcards - not just Creative Labs cards. Look-out for details on the Special promotion packs.

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At SMC we believe in listening to our customers.

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# SOUND CARDS & KITS

**CREATIVE**  
CREATIVE LABS

**GRAVIS**

**DIAMOND**  
MULTIMEDIA



**SMC**  
COMPUTERS

## Creative Sound Cards

Part No	Make & Model	ex VAT	inc VAT
<b>SB16</b>			
53-15-1639	SB16 Value Plug 'n Play - 16bit FM Stereo, Offers CD quality audio, MIDI/Joystick interface, Windows 3.1x - Win'95 Audio and Internet tools.	£34	£39.95
<b>AWE64</b>			
53-15-6425	AWE64 Value Plug 'n Play - 64 Voice Wavetable, Creative WaveSynth, Wave Guide, 16bit FM Stereo, 512Kb RAM (max 24Mb), Windows 3.1x/95 software.	£57	£66.98
53-15-6445	AWE64 Gold Plug 'n Play - 64 Voice Wavetable, 4Mb RAM (max 28Mb), Gold RCA connectors for clearer audio, supplied with audio sequencing software. Offers real-time music editing and 8 track digital recording.	£107	£125.73

ALL Creative SoundBlaster cards are full boxed product, designed to take advantage of Intel Pentium technology & EIDE/ATAPI CD-ROM motherboard support, and use 16-bit ISA.

## Upgrades & Accessories

19-15-6404	4Mb Memory Module for SB64 Series	£35	£41.13
19-15-6408	8Mb Memory Module for SB64 Series	£55	£64.63
Allows you to download more sound fonts onto your card. Also includes SoundFont Gold CD.			
82-15-0213	Action Blaster - Games Accessories kit - including SBS38 Speakers, Joystick, 3x CD games titles - Slipstream, Virtual Pool, FIFA Soccer (titles may change)	£29	£34.08

## Gravis Sound Cards

Part No	Make & Model	ex VAT	inc VAT
53-91-0501	Ultrasound Plug 'n Play - Full Duplex, 32 Voice wavetable, 16bit Stereo, IDE CD-ROM interface, Upgradable to 8Mb of RAM. Dos/Windows/Win'95 software, Over 200Mb of games and demos	£75	£88.13
53-91-0503	Ultrasound Plug 'n Play Pro - As above + 512Kb on Board	£99	£116.33
57-91-2403	Gravis MIDI Adaptor - Supports MIDI in, out and through. 2x Joystick connectors supplied with 6' MIDI cable	£39	£45.83
82-91-2400	Gravis PC Pro Joystick - 5x Fire buttons, Analogue, Adjustable handle settings, Free software	£19	£22.33
82-91-2501	Gravis PC Gamepad Pro - Digital 10x Button gamepad	£29	£34.08

## Diamond 3D Sound Cards

Part No	Make & Model	ex VAT	inc VAT
53-19-2030	Diamond Monster 3D Sound, Supports Microsoft Direct Sound for Window '95. Audio playback support for 4 speakers - Multi-stream audio, PCI.	£89	£104.58

## Speakers

Part No	Make & Model	ex VAT	inc VAT
57-93-3105	Labtec LCS-1024 - 10 watt	£37	£43.48
57-93-7133	Yamaha M15 - 10 watt	£38	£44.65
57-93-7135	Yamaha SS510 Sub Woofer	£63	£74.03
57-93-5525	Yamaha YST-MSW5 Sub Woofer + Speakers	£59	£69.33

## Internet & Communications

Part No	Make & Model	ex VAT	inc VAT
64-15-0167	WebCam - Full colour internet Video solution Capable of 16.7million colour live video capture Supports AVI, e-mail, requires Windows'95. Connection via Parallel port, with any modem.	£89	£104.58



**SBAWE64  
Discovery Kit**  
59-15-2464  
£103 £121.03 Inc.VAT

## Creative Multimedia Kits

Part No	Make & Model	ex VAT	inc VAT
59-15-2464	SBAWE64 DISCOVERY Complete kit contains: the SoundBlaster AWE64 Value Sound Card, Blaster CD24x (the latest CD-ROM drive from Creative Labs) and powered STEREO Speakers. Software: Windows / Win'95 drivers and Actua Soccer	£103	£121.03

## INSIDE INFORMATION

Did you know - SMC Computers was formed in 1991 after the present directors had had unsatisfactory dealings with computer companies of the time. It was felt that there was a lack of ability, or proper care, or both, in the market and that a space existed for a capable and properly committed company. We are happy to say that while SMC has grown into one of the UK's leading PC and upgrade companies, all of the companies that served us so badly have either gone out of business or have been taken over.

## Video Blaster WebCam

**LIVE VIDEO OVER THE INTERNET...**

Video Blaster WebCam gives you everything you need to capture, create and communicate with live full colour video on the internet. It's an affordable and easy-to-use upgrade kit which will get you up and running with live video from your own PC in minutes. No installation is required - it just plugs in like a printer.



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## Diamond Graphics Cards

Part No	Make & Model	ex VAT	inc VAT
<b>Diamond FireGL Series</b> - Premium performance 2D/3D professional graphics			
1D00 Series - Based on 3Dlabs Permedia 2 graphics chip and rendering engine. Excellent for Windows 95, outstanding Windows NT OpenGL acceleration.			
64-19-1008	Diamond FireGL 1000Pro PCI - 8Mb SGRAM	£125	£146.88
64-19-1108	Diamond FireGL 1000Pro - 8Mb SGRAM for AGP slot	£139	£163.33
<b>Diamond Viper Series</b> - True 128bit Power for incredible 2D, 3D & Video.			
Blistering Windows 95 and Windows NT performance. Hardware accelerated OpenGL, multiple monitor support with multiple cards. NVIDIA RIVA chipset. 1600x1200 by 64k, 1152x864 by 16.7m colours at 85Hz, 230MHz RAMDAC, 100MHz SGRAM.			
64-19-2004	Diamond Viper V330 PCI - 4Mb SGRAM	£109	£128.08
64-19-2104	Diamond Viper V330 PCI - 4Mb SGRAM with TV Output	£129	£151.58
64-19-2704	Diamond Viper V330 - 4Mb SGRAM for AGP slot	£109	£128.08

## Diamond Graphics Cards

Part No	Make & Model	ex VAT	inc VAT
<b>Diamond Stealth3D 2000</b> - Fast 2D Graphics - Plus 3D!			
64bit graphics processor with an S3 ViRGE chipset. 2Mb card gives 1280x1024 by 256 colours at 75Hz, 800x600 by 16.7m colours at 85Hz & 1024x768 by 64k at 100Hz. 4Mb card gives 1280x1024 by 64K colours at 60Hz, 1024x768 by 16.7m colours at 85Hz & 1280x1024 by 256 at 75Hz. Supports software MPEG.			
64-19-1422	Diamond Stealth3D 2000 2240 - 2Mb EDO-DRAM	£35	£41.13
64-19-1424	Diamond Stealth3D 2000 2400 - 4Mb EDO-DRAM	£45	£52.88
<b>Diamond Stealth3D 2000 Pro</b> - Outrageously Fast 2D, 3D, Video - TV option			
64bit graphics processor with an S3 ViRGE DX chipset. 2Mb card gives 1600x1200 by 256 colours at 65Hz, 800x600 by 16.7m colours at 100Hz & 1152x864 by 64k at 85Hz, 4Mb max. 4Mb card gives 1600x1200 by 256 colours, 1280x1024 by 64k colours at 75Hz & 220MHz RamDAC max refresh 120Hz.			
64-19-1442	Diamond Stealth3D 2000 Pro - 2Mb EDO-DRAM	£42	£49.35
64-19-1444	Diamond Stealth3D 2000 Pro - 4Mb EDO-DRAM	£49	£57.58
Diamond Stealth3D 2000 Pro with TV Output option, view PC software on your TV!			
64-19-1452	Diamond Stealth3D 2000 ProTV - 2Mb EDO-DRAM	£55	£64.63
64-19-1454	Diamond Stealth3D 2000 ProTV - 4Mb EDO-DRAM	£62	£72.85

## SMC : looking ok....

When you don't see us, it's difficult for us look good. That's why we always perform at our best. Our approach is different, and we're sure you'll like it. Our staff are trained on the latest products, and on the wide range of services we provide. We thrive on improvement and quality of service and we're sure you'll agree - this makes us look not just good, but great.

### DOUBLE VISION



64-19-8001  
**£109** (£128.08 inc VAT)

\*DOS and Windows 3.11 programs require accelerated drivers



64-53-2030  
**£109** (£128.08 inc VAT)

\*DOS and Windows 3.11 programs require accelerated drivers

#### BOTH INCLUDE:

- > 4Mb Fast EDO-DRAM
- > 3Dfx Interactive Voodoo Graphics
- > Real time interactive rendering
- > Direct 3D support in Windows '95
- > Monster 3D - 5 year warranty
- > Dual 64bit memory architecture
- > Full motion frame rates
- > Awesome 3D software titles
- > Righteous 3D - 2 year warranty

Advanced 3D features include:- Bilinear filtering, anti-aliasing, Gouraud shading, MIP mapping, perspective texture mapping, texture modulation, per-pixel alpha blending, texture compositing/morphing.

Both cards are designed to work with your existing graphics card.

### DOUBLE VISION



64-97-0287  
**£55** (£64.63 inc VAT)

3DX - 4Mb SDRAM Value version

64-97-0265  
**£129** (£151.58 inc VAT)

5D - 6Mb version

#### Apocalypse 3DX:

- > 4Mb Fast SDRAM texture memory
  - > NEC PCX1/PowerVR 3D processor
  - > Runs MS DirectX, Win'95 Direct3D
  - > Add-on uses existing graphics card
  - > Windows™ 95 Plug'n'Play, PCI Bus
- Apocalypse 3D has the power to deliver complex effects at very high frame rates, bringing arcade-level performance to your desktop. Take full advantage of all the latest 3D games.

#### Apocalypse 5D:

- > 4/6Mb Fast SDRAM texture memory
  - > NEC PCX1/PowerVR 3D processor
  - > Runs MS DirectX, Win'95 Direct3D
  - > Full 3D & 2D Graphics Acceleration
  - > Windows™ 95 Plug'n'Play, PCI Bus
- Apocalypse 5D supports all the features needed to deliver stunning 3D realism and lightning fast 2D graphics (400% more bandwidth over 64bit DRAM cards). Comes with 5 of the best 3D games.

# GRAPHICS & VIDEO




## ATI Graphic Cards

Part No	Make & Model	ex VAT	inc VAT
<b>PCI Graphics Cards</b>			
64-97-0302	ATI 3D Charger OEM, 2Mb SGRAM	£39	£45.83
64-97-0304	ATI 3D Charger OEM, 4Mb SGRAM	£49	£57.58
64-97-0602	ATI 3D XPERT @ Play OEM, TV Out, 2Mb SGRAM	£99	£116.33
64-97-0604	ATI 3D XPERT @ Play OEM, TV Out, 4Mb SGRAM	£109	£128.08
64-97-0608	ATI 3D XPERT @ Play OEM, TV Out, 8Mb SGRAM	£139	£163.33
64-97-0502	ATI 3D XPERT @ Work OEM, TV Out, 2Mb SGRAM	£89	£104.58
64-97-0504	ATI 3D XPERT @ Work OEM, TV Out, 4Mb SGRAM	£99	£116.33
64-97-0508	ATI 3D XPERT @ Work OEM, TV Out, 8Mb SGRAM	£129	£151.58
64-97-1604	ATI 3D RETAIL XPERT @ Play TV Out, 4Mb SGRAM	£139	£163.33
64-97-1608	ATI 3D RETAIL XPERT @ Play TV Out, 8Mb SGRAM	£169	£198.58
64-97-1504	ATI 3D RETAIL XPERT @ Work TV Out, 4Mb SGRAM	£125	£146.88
64-97-1508	ATI 3D RETAIL XPERT @ Work TV Out, 8Mb SGRAM	£159	£186.83

All ATI 'XPERT' graphics cards marked retail are supplied with extra software, XPERT @ Play has Formula 1, Terracide & Wirl 3D. XPERT@Work has Wirl, Simply3D & Photosuite.

### AGP Graphics Cards

64-97-0614	ATI 3D XPERT @ Play OEM, TV Out, AGP 4Mb SGRAM	£119	£139.83
64-97-0618	ATI 3D XPERT @ Play OEM, TV Out, AGP 8Mb SGRAM	£149	£175.08
64-97-0514	ATI 3D XPERT @ Work OEM, TV Out, AGP 4Mb SGRAM	£109	£128.08
64-97-0518	ATI 3D XPERT @ Work OEM, TV Out, AGP 8Mb SGRAM	£139	£163.33



## Matrox Graphics Cards

Part No	Make & Model	ex VAT	inc VAT
<b>Matrox Millennium II</b>			
Optimized 64-bit MGA-2164W dual-ported processor, 250MHz RAMDAC offering flicker-free, maximum memory 16Mb WRAM. Supports up to 1920x1200. Max.refresh 200Hz - now offers faster 2D than before and supports Direct3D (D3D) applications. Software and drivers supplied. True 24-bit colour for photo realistic displays available at 1920x1080 with 8Mb!			
64-95-2004	Matrox Millennium II - 4Mb WRAM	£112	£131.60
64-95-2008	Matrox Millennium II - 8Mb WRAM	£169	£198.58
<b>Matrox Millennium II WRAM upgrades</b>			
64-95-0042	Matrox Millennium II - 4Mb WRAM upgrade	£79	£92.83
64-95-0082	Matrox Millennium II - 8Mb WRAM upgrade	£125	£146.88
64-95-0122	Matrox Millennium II - 12Mb WRAM upgrade (4Mb board only)	£179	£210.33

### Matrox Mystique Memory

Matrox Mystique SGRAM Upgrade for original 2Mb version only, not 220 series			
64-95-0102	2Mb SGRAM (expansion to 4Mb)	£32	£37.60

### Matrox Millennium MPEG

Matrox Millennium MPEG upgrade for a bare 2Mb or 4Mb board only, not Millennium II			
64-95-1036	Media XL-MPEG board (fits into memory slot).	£189	£222.08

### Matrox Mystique/Mystique 220 Rainbow Runner

Video upgrade for Matrox Mystique/Mystique 220. High quality video editing on the PC. Hardware MPEG1 on board to enable video capture/playback. PC to PAL video output. Video editing, conferencing and recording included. Easy to use on screen PC-VCR Remote. Supports both live and still frame capture. Sound captured through your normal SoundCard.

64-95-1199	Matrox Rainbow Runner daughter board odd-on for 2Mb or 4Mb (original) Mystique HQ video capture.	£119	£139.83
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### Matrox Mystique 220 - Home & Business Series

64 bit MGA graphics processor based on the award winning Matrox Mystique now with faster 3D facilities and better support for larger 21" monitors. For greater choice the graphics card is available in 2 versions: Home includes - Disney's Toy Story, MotorRacer, 3D Game Demo's, Utilities and Software MPEG; Business includes - Netscape Navigator, Micrograf Simply 3D, Serif PagePlus, Utilities and Software MPEG. Operating sys drivers included.

64-95-2202	Matrox Mystique 220 Home - 2Mb SGRAM	£65	£76.38
64-95-2402	Matrox Mystique 220 Business - 2Mb SGRAM	£65	£76.38
64-95-2204	Matrox Mystique 220 Home - 4Mb SGRAM	£79	£92.83
64-95-2404	Matrox Mystique 220 Business - 4Mb SGRAM	£79	£92.83

Matrox Mystique 220 SGRAM upgrades (2,4,6Mb) available - please ask for details

### Matrox m3D

Based on the PowerVR PCX2 processor, this card balances price with incredible 3D gaming.

64-95-0403	Matrox m3D PCI add-on - 4Mb SDRAM, includes games	£65	£76.38
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## Videologic Graphics Cards

Part No	Make & Model	ex VAT	inc VAT
<b>PCI Graphics Cards</b>			
64-97-1411	Grafixstar 410, S3 Trio64V2, 1Mb EDO DRAM	£29	£34.08
64-97-0224	Grafixstar 410, S3 Trio64V2, 2Mb EDO DRAM	£39	£45.83
00-00-0000	Grafixstar 450 Pra	£POA	£POA
00-00-0000	Grafixstar 560	£POA	£POA
00-00-0000	Grafixstar 600 Pro	£POA	£POA
64-97-0287	Apocalypse 3Dx Value, Power VR chipset, 4Mb SDRAM	£55	£64.63
64-97-0213	Apocalypse 3Dx, Retail Pack, 4Mb SDRAM	£69	£81.08
64-97-0265	Apocalypse 5D, ET6100, 128-bit processor, 6Mb memory	£129	£151.58
64-97-0234	Apocalypse 5D, ET6100, 128-bit processor, 8Mb memory	£149	£175.08

## Video Imaging

Part No	Make & Model	ex VAT	inc VAT
62-15-0313	VideoBlaster RT300 - Display/capture real time video, compression up to 30fps, built-in i750, 320x240 at 30fps	£125	£146.88
62-15-1311	TV Coder (external) - Display SVGA screens on TV or video, works with desktops and laptops, 800x600, 64,000 colours	£103	£121.03

## TV Cards - for Windows 95 Only

Part No	Make & Model	ex VAT	inc VAT
<b>Hauppauge</b>			
62-95-0105	Win TV PCI - Plug'n'Play card, 125 channel	£75	£88.13
62-95-0215	Win TV RADIO - as above with additional radio tuner	£89	£104.58

TV and professional Teletext (supporting DDE) for Win95 only. Frame grabbing & video clip capture. No feature connector required, data is fed direct through the bus. Supports higher resolutions up to 1600 x 1200 full colour display, requires Direct Draw drivers. Displays live video in fully movable and sizable window. Captures live video at 320 x 240 upto 15-25 frames per second (limited by system spec), creating Microsoft Video for Windows compatible AVI files in a compressed YUV format, 24bit images with high 4:2:2 digitising.

## PRODUCT INFORMATION

### What is AGP?

Designed by Intel, AGP stands for Accelerated Graphics Port. AGP streamlines the flow of data between the processor, graphics accelerator and system memory, delivering a new level of rich media and graphics performance to the PC. For the home user, AGP supports improved texture rendering in 3D software, including games, entertainment, educational and digital imaging applications. Business users will see smooth performance in 3D applications from CAD programs to sophisticated data visualization and web authoring tools.

AGP frees system resources with its high-bandwidth and is supported in all new Intel based LX chipsets from SMC - See ASUS and Intel in the motherboards section.

# Performance from STYLE..



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E&OE. A Full list of SMC Terms & Conditions  
is available on request

**25**

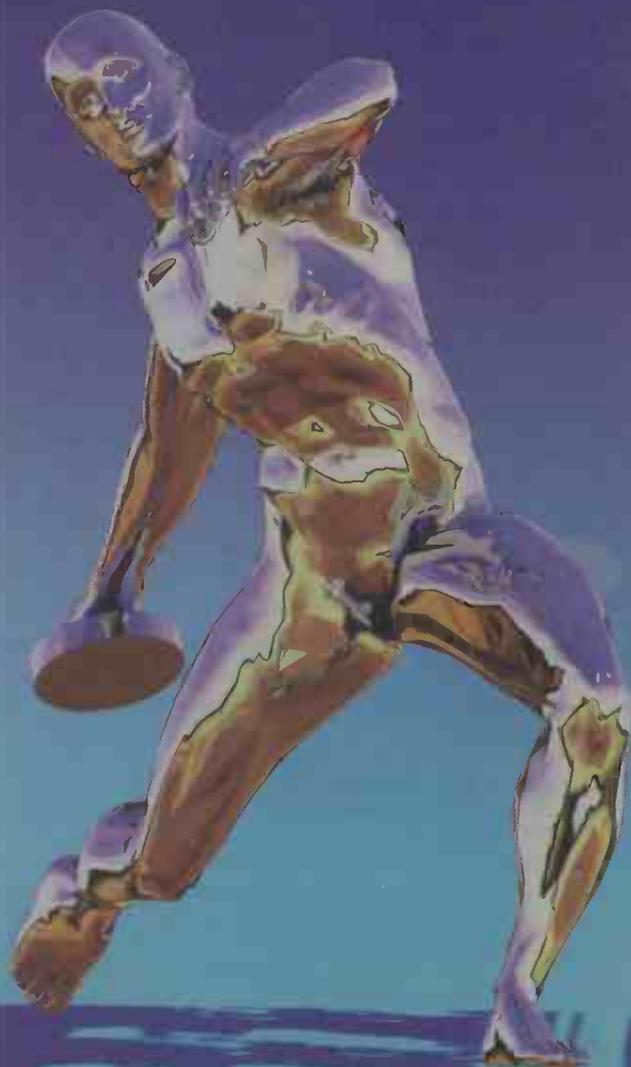


## SMC : THE BEST FOR CD-ROM

**Speak to us now about  
Multimedia....**

**We'll show you the difference**

At SMC we understand the need for performance and speed, coupled with reliability and quality. Our range of drives cover all applications, for the person who wants the best from his games, the family that wants to benefit from the latest in edutainment, to the professional who is mixing video and sound. They can all benefit from the latest high speed CD-ROM drives from SMC.



### EIDE/ATAPI CD-ROM Drives

#### EIDE/ATAPI

Part No	Make	Model	Speed	Access	D/Tran	Mount	ex VAT	inc VAT
51-48-0404	Mitsumi	FX400	4x	250	600	Internal	£28	£32.90
51-48-0800	Mitsumi	FX800	8x	x	1200	Internal	£35	£41.13
51-48-0162	Mitsumi	FX162	16x	x	2400	Internal	£45	£52.88
51-48-0240	Mitsumi	FX240	24x	x	3600	Internal	£52	£61.10
51-26-0840	Goldstar	GCD-R580B	8x	150	1200	Internal	£38	£44.65
51-93-0068	Teac	CD-C68 *	8x	190	1200	Internal	£105	£123.38
51-26-8160	Goldstar	CRD-8160B	16x	150	2400	Internal	£45	£52.88
51-75-6002	Toshiba	XM6002B	16x	100	2400	Internal	£49	£57.58
51-15-2402	Creative	Blaster CD	24x	90	3600	Internal	£62	£72.85
51-26-8240	LG Goldstar	CRD-8240B	24x	90	3600	Internal	£55	£64.63
51-57-0585	Panasonic	CR-585	24x	85	3600	Internal	£55	£64.63
51-62-2400	Pioneer	DR-A24X	24x	75	3600	Internal	£55	£64.63
51-95-2430	Samsung	SCR2430	24x	x	3600	Internal	£55	£64.63
51-93-0524	Teac	CD524E	24x	x	3600	Internal	£55	£64.63
51-75-6102	Toshiba	XM6102B	24x	90	3600	Internal	£55	£64.63
51-75-6202	Toshiba	XM6202B	32x	x	4800	Internal	£79	£92.83

All D-ROM drives running at 12x or greater are MPC-3 Compatible

\* & disc Autchanger Player. All CD-ROMs are tray loading, supplied with software drivers / audio cable

### PRODUCT INFORMATION

DVD (Digital Versatile Disk) looks exactly like a normal CD, but stores over 26 times the amount of data. A standard DVD disk can hold over two hours of high quality MPEG-2 video with better than CD quality audio. DVD-ROM disks can be used to distribute all types of computer data with storage capacities in of between 4.7Gb and 17.0Gb, making them ideal for distribution of multimedia or interactive titles, including music videos and full length movies.



Watch Video Quality  
Full Length Movies  
Or Play Video  
Intensive PC Games  
Through Your TV..

### DVD-ROM Drives

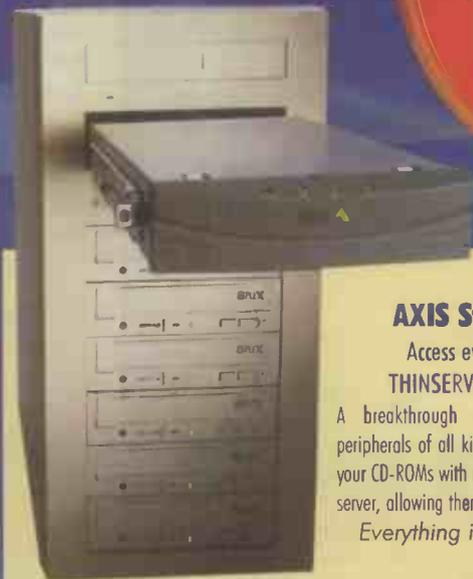
#### DVD CD-ROM Drive Creative Labs Kit

Part No	Make & Model	ex VAT	inc VAT
51-15-1700	PC-DVD Encore Kit. Includes: Internal EIDE/ATAPI DVD-ROM Drive for Win95, (Offers full 17Gb), MPEG-2 PCI Decoding Card with full screen & TV out for Broadcast quality output, all required Cables, 2x Titles (Claw & Wing Commander4). Compatible with standard CD Discs, Plays Movies to your monitor or TV. Creative DVD has a unique view zone function.	£219	£257.33



**CREATIVE**  
CREATIVE LABS

# CD-ROM & CD TOWERS



## SCSI CD-ROM Drives

### SCSI

Part No	Make	Model	Speed	Access	D/Tran	Mount	ex VAT	inc VAT
51-62-1406	Pioneer	DRM-624X <sup>6</sup>	4x	150	600	External	£329	£386.58
51-57-0506	Panasonic	CR-506B <sup>1</sup>	8x	150	1200	Internal	£69	£81.08
51-93-1210	Plextor	12Plex <sup>c</sup>	12x	110	1800	Internal	£135	£158.63
51-93-1215	Plextor	12Plex <sup>c</sup>	12x	110	1800	External	£169	£198.58
51-75-5701	Toshiba	XM5701B <sup>1</sup>	12x	115	1800	Internal	£69	£81.08
51-93-1516	Teac	CD516S <sup>1</sup>	16x	115	2400	Internal	£79	£92.83
51-93-2000	Plextor	20Plex <sup>1</sup>	20x	95	3000	Internal	£106	£123.38
51-93-2005	Plextor	20Plex <sup>1</sup>	20x	95	3000	External	£145	£170.38
51-62-2415	Pioneer	DR-U24X <sup>1</sup>	24x	75	3600	Internal	£85	£99.88
51-93-3200	Plextor	PX32Tsi <sup>1</sup>	32x	85	4800	Internal	£POA	£POA
51-93-3205	Plextor	PX32Tse <sup>1</sup>	32x	85	4800	External	£POA	£POA
51-93-3210	Plextor	PX32Csi <sup>c</sup>	32x	85	4800	Internal	£POA	£POA
51-93-3215	Plextor	PX32Cse <sup>c</sup>	32x	85	4800	External	£POA	£POA
51-75-6201	Toshiba	XM6201B <sup>1</sup>	32x	x	4800	Internal	£POA	£POA

Plextor drives have a 2year warranty and the 32 speed-drives are Ultra SCSI

<sup>6</sup> 6-disc Autochanger Player. <sup>1</sup> Tray Loading. <sup>c</sup> Caddy Loading

## AXIS StorPoint™

Access everything with  
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A breakthrough technology that makes peripherals of all kind 'network ready'. Access your CD-ROMs with no intermediate PC client or server, allowing them to work faster & smarter.

Everything is plug and play!

## Toshiba CD-ROM Towers

Part No	Model Specifications	ex VAT	inc VAT
51-75-0807	Standalone, 8x bay, 7x 12speed SCSI CD-ROM's	£729	£856.58
51-75-0908	Standalone, 8x bay, 7x 32speed SCSI CD-ROM's	£889	£1044.58
51-75-1614	Standalone, 16x bay, 14x 12speed SCSI CD-ROM's	£1459	£1714.33
51-75-1715	Standalone, 16x bay, 14x 32speed SCSI CD-ROM's	£1639	£1925.83
51-75-5707	Axis/Toshiba, 8x bay, 7x 12speed, Networking	£1199	£1408.83
51-75-6207	Axis/Toshiba, 8x bay, 7x 32speed, Networking	£1359	£1596.83
51-75-5714	Axis/Toshiba, 16x bay, 14x 12speed, Networking	£2189	£2572.08
51-75-6214	Axis/Toshiba, 16x bay, 14x 32speed, Networking	£2339	£2748.33

## CD-ROM & Accessories

Part No	Description	ex VAT	inc VAT
<b>Accessories</b>			
75-95-1402	EIDE Data Cable for up to 2 drives	£10	£11.75
51-95-9700	CD-ROM Caddy (spare drive caddy)	£9	£10.58
75-75-0404	ATAPI to ATAPI, 4-4pin for EIDE CD-ROMs	£8	£9.40
75-57-0570	Panasonic Cable for SCSI CD-ROM only (not IDE)	£8	£9.40
75-75-0751	Toshiba Cable, 3-4 for 3xxx series	£8	£9.40
75-75-0757	Toshiba Cable, 4-4 for 4xxx series	£8	£9.40
75-75-0753	Toshiba Cable, 4-4 for 5xxx series	£8	£9.40

These cables are only available when purchasing a CD-ROM Drive.

## Plextor CD-ROM Towers

Part No	Model Specifications	ex VAT	inc VAT
51-93-0708	Standalone, 8x bay, 7x 20speed SCSI CD-ROM's	£925	£1086.88
51-93-0809	Standalone, 8x bay, 7x 32speed SCSI CD-ROM's	£1099	£1291.33
51-93-1416	Standalone, 16x bay, 14x 20speed SCSI CD-ROM's	£1899	£2231.33
51-93-1517	Standalone, 16x bay, 14x 32speed SCSI CD-ROM's	£2279	£2677.83
51-93-0720	Axis/Plextor, 8x bay, 7x 20speed, Networking	£1395	£1639.13
51-93-0732	Axis/Plextor, 8x bay, 7x 32speed, Networking	£1579	£1855.33
51-93-1420	Axis/Plextor, 16x bay, 14x 20speed, Networking	£2599	£3053.83
51-93-1472	Axis/Plextor, 16x bay, 14x 32speed, Networking	£2989	£3512.08

## Micro Solutions Bantam CD-ROM



Bantam CD-ROM available  
with or without sound.  
Lightweight portable solution.

## Parallel Port CD-ROM Drives

### MicroSolutions Backpack Parallel Port

Part No	Make & Model	ex VAT	inc VAT
51-42-0800	8x CD-ROM, <180ms, 1,200kb/s max	£144	£169.20
51-42-0804	8x CD-ROM with MS/Sound, <180ms, 1,200kb/s max	£179	£210.33
51-42-1000	Bantam CD-ROM, 15Dms, 1,200kb/s max, weighs 21oz	£185	£217.38
51-42-1004	Bantam CD-ROM & Sound, 150ms, 1.2Mb/s max, 21oz	£215	£252.63

As well as DOS, Windows, Win95 - Bantam drive supports WinNT. Lightweight and sleek design.

## PRODUCT INFORMATION

The AXIS StorPoint™ CD, enables you to share and access CD-ROMs over your network quickly and easily. It supports all computer systems simultaneously, including Windows NT, NetWare, Unix and Intranet. Place it wherever you want and connect up to seven CD-ROM drives of any brand (The options listed above are offered with Toshiba or Plextor SCSI CD-ROM drives). AXIS StorPoint™ CD installs in minutes and operates entirely independent of any file server. There are no additional costs since AXIS StorPoint™ CD is software and licence free.

## CD-ROM JukeBoxes

Part No	Make & Model	ex VAT	inc VAT
51-62-1418	Pioneer DRM-1804X - Quad Speed, 300ms, 600Kb/s, 18 CD's, 3 Drives, External	£1339	£1573.33
51-62-1450	Pioneer DRM-5004X - Quad Speed, 500 CD's, 1 Drive (max 4), 600Kb/s, 280ms, External	£12959	£15226.83



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# CD-ROM WRITERS

**SMC**  
COMPUTERS



## Easy CD Creator™

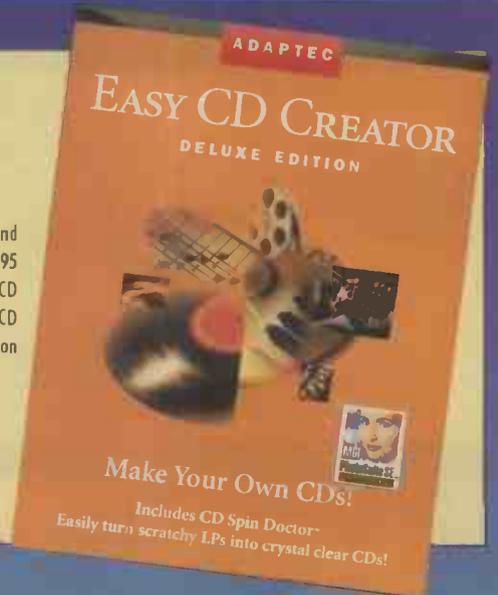
- > Store your photographs & video
- > Save your presentations & graphics
- > Back up your important files to CD
- > Duplicate CD's with CD Copier

Write your own CD's with CD-Recordable (CD-R) and CD-Writable (CD-RW) players. Optimized for Win'95 and Windows NT v.4, featuring easy to use CD Creation software, CD Spin Doctor, Picture CD Creator, Video CD Creator, Sound Editor and Session Selector software, and audio cable.

01-91-2445

**£65** £76.38 inc VAT

Easy CD Creator - Deluxe Edition



## CD-ROM Re-Writers (CD-RW)

Part No	Make & Model	ex VAT	inc VAT
52-28-7100	HP Surestore 7100i, EIDE/ATAPI, 1Mb cache, 1x CD-RW, 6x Play, 2x Write & 2x Re-write, software, Internal	£239	£280.83
52-28-7109	HP Surestore 7100e, Parallel Port, 1Mb cache, 1x CD-RW, 6x Play, 2x Write & 2x Re-write, software, External	£299	£351.33

Designed for Windows 95 or Windows NT4. CD-RW disks can be read in CD-RW drives, Multiread drives and DVD drives. Once your CD-RW is ready you can produce a standard CD (CD-R) for all CD players!

Warning: Requires Pentium 133Mhz, 32Mb RAM, Win'95, 1x un-shared IDE channel or EPP port.

## Panasonic PD Writer

Part No	Make & Model	ex VAT	inc VAT
51-57-0410	LF1004BK Internal kit, incl: SCSI adaptor, cables, sw	£249	£292.58
51-57-0811	LF1196AB Internal EIDE, 8x CD + 60Mb Optical	£199	£233.83
51-57-0815	LF1500EPB External P/Port, 8x CD + 60Mb Optical	£255	£299.63

All kits include cables and software. External kits include one PD Optical Disk. Fully featured SCSI adaptor included in kits is an Adaptec AHA1520A.

## CD-ROM Recorders (CD-R)

Part No	Make & Model	ex VAT	inc VAT
<b>Plasmon CD-Writer Kits and bare drives</b>			
52-95-2120	CDR4801 - 4x write, 8x play, bare drive, Internal	£299	£351.33
52-95-2122	CDR4801-S1 Kit - 4x write, 8x play, SCSI controller, Int	£439	£515.83
52-95-2125	CDR480E - 4x write, 8x play, bare drive, External	£520	£611.00
52-95-2127	CDR480E-S1 Kit - 4x write, 8x play, SCSI controller, Ext	£429	£504.08

Plasmon Drives have a 1Mb Cache and 175ms Access time and are all tray loading.

All above CD Recorders are SCSI, come with CD software for Win 3.1x, NT 3.51 & 4, Win95.

### Plexor CD-Writer drives

52-93-4120	PX-R412Ci - 4x write, 12x play, bare drive, Internal	£POA	£POA
52-93-4125	PX-R412Ce - 4x write, 12x play, bare drive, External	£POA	£POA

Plexor Drives have a 2Mb Cache and 190ms Access time and are all Caddy loading.

They are supplied with Software and cables and 1x caddy. 1 year warranty.



CALL FOR PRICES ON: MAC, RE-WRITABLE, EXTERNAL & IDE

## Optical Writers

Part No	Make & Model	ex VAT	inc VAT
50-24-0640	FUJITSU M2513A 640Mb, 2.1Mb/s, 237Kb Cache, Internal	£255	£299.63
50-57-1500	Panasonic LF7304 - 1.5Gb, 512Kb Cache, 1.5Mb/s, 45ms Internal	£1399	£1643.83
50-57-1505	Panasonic LF7300B - 1.5Gb, 512Kb Cache, 1.5Mb/s, 45ms External	£1459	£1714.33
50-91-0230	Olympus PowerMO 230 II Universal - 230Mb, 256Kb Cache, 2Mb/s, 34ms, 1x media, External P/Port & SCSI	£199	£233.83
50-91-2600	Olympus PowerMO 2600 - 2.6Gb, 4Mb Cache, 4.1Mb/s, 34ms, 1x media, External	£1399	£1643.83

All opticals are SCSI devices requiring a SCSI Controller, unless specified otherwise.

## CD-ROM Recorders (CD-R)

Make & Model	Part No	ex VAT	inc VAT
Kits including SCSI controller (Inc. WinOnCD Software)			
52-95-2604	CDR 2604 - 2x 6x Internal SCSI	£225	£264.38
52-95-4604	CDR 4604 - 4x 6x Internal SCSI	£329	£386.58
Bare drive units (Inc. WinOnCD Software)			
52-95-2600	CDR 2604 EL - 2x 6x Internal SCSI	£199	£233.83
52-95-4600	CDR 4604 EL - 4x 6x Internal SCSI	£315	£370.13
99-95-0020	PRESSIT - CD Labeller	£20	£23.50

All CD Writer's include data cable, power cable, CD marking pen, software for Win, Win95, NT4

# MEDIA SELECTOR



## CD-ROM Media

Part No	Description	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
<b>CD-ROM Media</b>		<b>Qty 1-4</b>		<b>Qty 5-19</b>		<b>Qty 20+</b>	
95-97-7174	CD Gold - CD medio (74 Mins)	£4	£4.70	£3	£3.53	£2	£2.35
95-97-0700	TRAX CD Gold - CD media (74 Mins)	£5	£5.88	£4	£4.70	£3	£3.53
95-97-0774	TRAX CD Re-writable, CD-RW players	£19	£22.33	£16	£18.80	£14	£16.45



## Optical Media

Part No	Make & Model (Media Ref)	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
<b>Optical Media</b>		<b>Qty 1-4</b>		<b>Qty 5-19</b>		<b>Qty 20+</b>	
95-97-0128	128Mb, (LMD300)	£16	£18.80	£13	£15.28	£11	£12.93
95-97-0230	230Mb, Fujitsu M2512A (OM230)	£11	£12.93	£9	£10.58	£8	£9.40
95-97-0640	640Mb, Fujitsu M2513A (OM640)	£29	£34.08	£14	£16.45	£12	£14.10
95-97-0653	650Mb, Panasonic LF1004-PD Drive	£19	£22.33	£16	£18.80	£15	£17.63
95-97-1300	1.3Gb, HP C1716T, HP C2550A	£28	£32.90	£22	£26.38	£20	£23.25
95-97-1500	1.5Gb, Panasonic LF7304, LF7300B	£88	£103.40	£83	£97.53	£80	£94.00



## Removable Media

Part No	Make & Model	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
<b>Removable Media</b>		<b>Qty 1-4</b>		<b>Qty 5-19</b>		<b>Qty 20+</b>	
95-35-0101	Iomega Zip 100Mb, Single	£10	£11.75	£8	£9.40	£7	£8.23
95-35-0110	Iomega Zip 100Mb, 10 Pack (Multi-Coloured 10-pack, Inc Software)	£85	£99.88	£80	£94.00	£75	£88.13
95-35-1001	Iomega Jaz 1.0Gb, Single	*NO KEY*	*NO KEY*	£55	£64.63	£52	£61.10
95-35-2001	Iomega Jaz 2.0Gb, Single	£92	£108.10	£89	£104.58	£86	£101.05
95-73-3135	Syquest 3.5" 135Mb, Single	£15	£17.63	£13	£15.28	£12	£14.10
95-73-3270	Syquest 3.5" 270Mb, Single	£37	£43.48	£32	£37.60	£30	£35.25
95-73-5044	Syquest 5.25" 44Mb, Single	£29	£34.08	£26	£30.55	£24	£28.20
95-73-5088	Syquest 5.25" 88Mb, Single	£32	£37.60	£29	£34.08	£27	£31.73
95-73-5200	Syquest 5.25" 200Mb, Single	£45	£52.88	£37	£43.48	£35	£41.13



## Floppy Disks

Part No	Make & Model	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
<b>Floppy/Super Floppy Media</b>		<b>Qty 1-4</b>		<b>Qty 5-19</b>		<b>Qty 20+</b>	
95-93-0140	1.44Mb 3.5" DS,HD	£1	£1.18	£4	£4.70	£3	£3.53
95-71-0144	Sony - 1.44Mb 3.5" DS,HD (Box-10)	£7	£8.23	£7	£8.23	£6	£7.05
95-95-0144	3M - 1.44Mb 3.5" DS,HD (Box-10)	£7	£8.23	£8	£9.40	£7	£8.23
95-95-1200	3M - 120Mb 3.5" LS-120	£12	£14.10	£12	£14.10	£11	£12.93



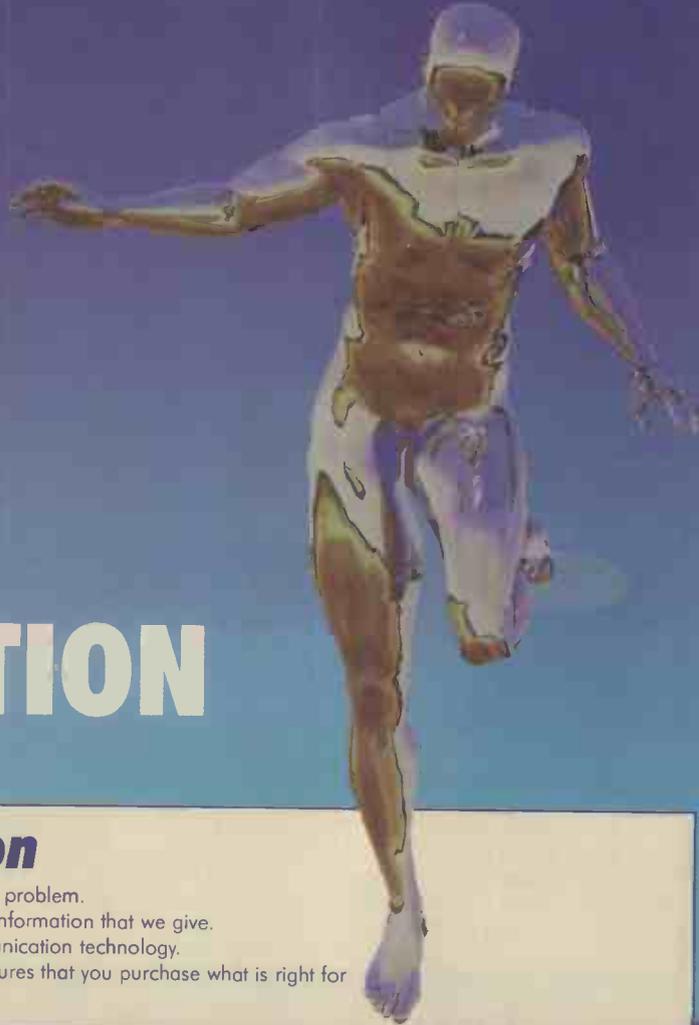
## Tape Media Selector Chart

Part No	Make & Model	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
<b>Tape Type (Price each)</b>		<b>Qty 1-4</b>		<b>Qty 5-19</b>		<b>Qty 20+</b>	
95-95-0805	A1 TR1 (QIC Formatted)	£15	£17.63	£13	£15.28	£12	£14.10
95-95-3405	A3 TR3 (QIC Formatted)	£18	£21.15	£16	£18.80	£15	£17.63
95-95-8005	A4 TR4 (QIC Formatted)	£24	£28.20	£21	£24.68	£19	£22.33
95-95-2505	A5 TR4/5Gb (QIC Wide Formatted)	£21	£24.68	£18	£21.15	£16	£18.80
95-95-9409	B1 DAT 4mm 90metre DDS-1	£6	£7.05	£5	£5.88	£4	£4.70
95-95-9412	B2 DAT 4mm 120metre DDS-2	£13	£15.28	£11	£12.93	£10	£11.75
95-95-9417	B3 DAT 4mm 125metre DDS-3	£23	£27.03	£20	£23.50	£18	£21.15
95-95-0120	C1 DC2120 unformatted	£8	£9.40	£7	£8.23	£6	£7.05
95-95-0125	C2 DC2120 pre-formatted	£12	£14.10	£10	£11.75	£9	£10.58
95-95-0255	C3 DC2120XL pre-formatted	£10	£11.75	£8	£9.40	£7	£8.23
95-95-0345	C4 DC3000XL pre-formatted	£13	£15.28	£11	£12.93	£10	£11.75
95-95-0680	C5 DC3000XL unformatted	£15	£17.63	£13	£15.28	£12	£14.10
95-95-1365	C6 DC1400	£19	£22.33	£17	£19.98	£16	£18.80
95-95-4005	C7 DC3080XLF (QIC Formatted)	£20	£23.50	£17	£19.98	£15	£17.63
95-95-0150	D1 DC6150	£10	£11.75	£8	£9.40	£7	£8.23
95-95-0250	D2 DC6250	£12	£14.10	£10	£11.75	£9	£10.58
95-95-0520	D3 DC6525	£15	£17.63	£13	£15.28	£12	£14.10
95-95-1000	D4 DC9100	£19	£22.33	£17	£19.98	£16	£18.80
95-35-2002	E1 Ditto 2000 Medio	£14	£16.45	£12	£14.10	£10	£11.75
95-28-0514	F1 HP DLT Tape III, 30Gb	£35	£41.13	£33	£38.78	£32	£37.60
95-28-5141	F2 HP DLT Tape IV, 40Gb	£69	£81.08	£64	£75.20	£61	£71.68
95-95-9130	DAT 4mm Tape Cleaner	£10	£11.75	£8	£9.40	£7	£8.23



SALES HOTLINE **01753 550333**

SMC Computers Plc. 253-257 Farnham Road.  
Slough, Berkshire. SL2 1HA



## SMC : THE BEST FOR COMMUNICATION

### SMC : Your Internet Solution

Communication is definitely the future.... time and distance are no longer a problem. At SMC we understand the need to communicate and pride ourself on the information that we give. Our in-house training means that we keep up to date with the latest communication technology. Buying a modem from SMC is as easy as talking, because our expertise ensures that you purchase what is right for you. When you buy from SMC.....you buy right.

**56 Kbps**  
READY



**Sportster** 91-79-3396

**US Robotics**  
The Intelligent Choice in Information Access

**£108 Ex.VAT**  
Inc VAT £126.90

**FLASH External Faxmodem with Personal Voice Mail**  
With the first 'x2' ready product from U.S. Robotics, you can download from the internet at an amazing 56Kbps. That's nearly twice as fast as the 28.8Kbps speed currently available over ordinary telephone lines. Over 100 major internet and on-line services have agreed to adopt x2 technology, and when not downloading from an x2 host, you'll still connect at speeds of up to 33,600bps - the latest approved V.34 standard.

**Sportster Winmodem** 91-79-3392

**33.6 Internal Faxmodem for Windows™ with Personal Voice Mail**

This modem was designed exclusively for the Windows environment, providing you with internet access at up to 33,600bps, fax, e-mail, personal voice mail and speakerphone facilities all in one compact unit.\*

The Sportster Winmodem is easy to install and use. With the windows operating system already on your PC, all the installation chores are done for you. Simply insert the Sportster Winmodem and away you go!

\*To utilise all voice features an external speaker, headset or soundcard is required.

**NEW**



**£69 Ex.VAT**  
Inc VAT £81.08

All 33,600 modems from SMC Computers are 56k upgradable.  
Contact US Robotics (0800 225252) for details.

# MODEMS

## Sportster Winmodem

Designed exclusively for Windows™ 95 operating environment, the Sportster Winmodem PC Card (PCMCIA) utilises the processing capabilities of your own computer and the functionality of Windows to provide a complete communications device for the home, office and travelling user.

**US Robotics**



## US Robotics Modems

Part No	Make & Model	ex VAT	inc VAT
<b>US Robotics - SPORTSTER Range 5YR Warranty, free Lifetime tech. support</b>			
<b>External</b>			
91-79-2896	Sportster 33.6 Voice*, 33,600bps max. Data Speed, 14,400bps Fax Speed, (with voice mail/Data/Fax/Internet software & cables), X2 Compatible.	£97	£113.98
91-79-3396	Sportster Flash, 56Kbps max. Data Speed, 14,400bps Fax Speed, (with voice mail/Data/Fax/Internet software & cables), X2 Compatible. V.34 std	£108	£126.90
<b>PCMCIA</b>			
91-79-4288	Sportster 28.8 PCMCIA XIACK, 28,800bps Data Speed, 14,400bps Fax Speed uses standard PCMCIA Type II /III slot, inc. software	£108	£126.90
91-79-3356	Sportster Winmodem PC card, 33,600bps Data Speed, 14,400bps Fax Speed uses standard PCMCIA Type II /III slot, inc. software. Requires Windows '95	£70	£82.25
<b>Internal</b>			
91-79-2892	Sportster 33.6 Voice*, 33,600bps Data, 14,400bps Fax Speed, with Data and Fax software, X2 Compatible	£97	£113.98
91-79-3392	Sportster 33.6 Winmodem, 33,600bps Data, 14,400bps Fax, with Data/Fax software, X2 Compatible. Win'95	£69	£81.08

Features and benefits:- Compact, easy to use products designed to offer the fastest connection to the outside world. Based on an Award winning series - their performance, features, reliability & low price are hard to beat.

\* The Sportster 33,600 voice modems are hardware upgradeable through US Robotics direct (may be chargeable)

### US Robotics - COURIER Range 5YR Warranty, free Lifetime tech. support

91-79-3402	Courier Dual Standard V34 + Fax, 33,600bps Data 14,400bps Fax, with Data/Fax software, Internal	£194	£227.95
91-79-3406	Courier Dual Standard V34 + Fax, 33,600bps Data 14,400bps Fax, with Data/Fax software, External	£194	£227.95

Features and benefits:- Dial security with passwords for optimum security, Adaptive Speed Levelling (reduces speed in the transmit & receive channels when line conditions are poor), automatic Fax/Data selection, Universal Connect - automatically detects & connects at the fastest speed. Upgradable flash memory. For the communications professional looking for advanced performance at an affordable price - the COURIER delivers.

## BT Modems

Part No	Make & Model	ex VAT	inc VAT
<b>BT</b>			
91-92-3356	Prologue K56EV+, Uses 56K Flex technology, Data/Fax/Voice. Flash upgradeable firmware	£99	£116.33
91-92-0333	Prologue x3 PCMCIA, 33600kbps data, 14,400kbps fax Flash EPROM, Upgradeable to ISDN or GSM	£149	£175.08
All the above modems are supplied with software and cables.			
91-92-4110	Prologue x3 PCMCIA GSM (Motorola) upgrade	£119	£139.83
91-92-1210	Prologue x3 PCMCIA GSM (Nokia 1210) upgrade	£159	£186.83
91-92-8110	Prologue x3 PCMCIA GSM (Nokia 8110) upgrade	£161	£189.18
91-92-3128	Prologue x3 PCMCIA ISDN upgrade	£94	£110.45

### MAKING THE RIGHT CONNECTION



**"Download at up to 56Kb per second"**



Check with your Internet service provider (ISP) for compatibility. Access speeds cannot be guaranteed.

**SMC**  
COMPUTERS

## Pace Modems

Part No	Make & Model	ex VAT	inc VAT
<b>Pace</b>			
91-91-5662	56k Voice Modem, uses 56k Flex technology, Internal	£79	£92.83
91-91-5666	56k Voice Modem, uses 56k Flex technology, External	£117	£137.48
91-91-3362	Microlin 33.6, 33,600Kbps Data, 14,400bps Fax, Int.	£96	£112.80
91-91-3366	Microlin 33.6, 33,600Kbps Data, 14,400bps Fax, Ext.	£96	£112.80
91-91-3364	Microlin NB33.6 Voice PCMCIA, 33,600bps Data, 14,400bps Fax, Voice Software, External	£135	£158.63
91-91-3382	Microlin 33.6 Voice, 33,600Kbps Data, 14,400bps Fax, Voice Software, Internal	£115	£135.13

All Pace Modems include cables, Manuals, software, 2Yr warranty, Lifetime technical support and FREE Internet trial bundles.

## Motorola Modems

Part No	Make & Model	ex VAT	inc VAT
<b>Motorola</b>			
91-97-2260	Modemsurfer 56K. Data/Fax modem, External	£82	£96.35
91-97-2259	Voicesurfer 56K. Voice/Data/Fax modem, Internal	£82	£96.35
91-97-2258	Voicesurfer 56K. Voice/Data/Fax modem, External	£95	£111.63
91-97-0336	PCMCIA V.34. PC/Mac, Data/Fax modem, Type II slot.	£119	£139.83

All the above modems are supplied with software and cables.

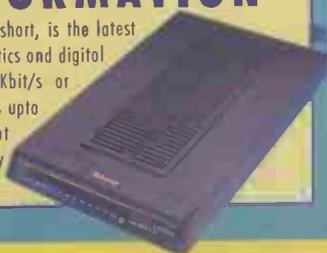
## ISDN Modems

Part No	Make & Model	ex VAT	inc VAT
<b>Motorola</b>			
91-97-2222	Motorola Bitsurfer Pro, Office Solution, External Supplied with cables, File transfer/Internet software.	£209	£245.58
<b>US Robotics</b>			
91-79-4902	USR Courier-I, ISDN ONLY, Supports X2 Technology, V34, 64Kbps, 14,400 Fax, Active Terminator, with Data/Fax software, requires ISDN - supports analogue, Internal	£259	£304.33
91-79-4906	USR Courier-I, ISDN ONLY, Supports X2 Technology, V34, 64Kbps, 14,400 Fax, Active Terminator, with Data/Fax software, requires ISDN - supports analogue, External	£259	£304.33
<b>BT</b>			
91-92-5128	Prologue 128 PTA, Passive ISDN adapter card. Internal	£69	£81.08
91-92-7128	Express Lane, Intelligent ISDN interface card. Internal	£272	£319.60
91-92-9128	Ignition ISDN terminal adapter	£259	£304.33

All the above ISDN modems require the use of an ISDN line.

## PRODUCT INFORMATION

Integrated Services Digital Network or ISDN for short, is the latest telecommunications technology, utilising fibre optics and digital systems. Data transfer is pushed up to 64Kbit/s or 128Kbit/s using bonded (2x) channels, with rates upto 460Kbit/s using V.42 bis compression not uncommon. In short it's 5 times faster, for only twice the price of a standard modem.

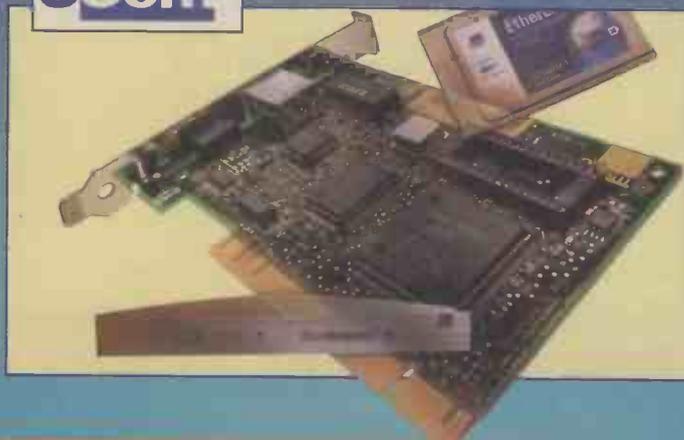


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SMC Computers Plc. 253-257 Farnham Road.  
Slough. Berkshire. SL2 1HA

**31**

# NEW FROM SMC : NETWORK PRODUCTS

## 3COM Network Cards

Part No	Make & Model	ex VAT	inc VAT
<b>ISA</b>			
84-90-0931	Etherlink III, (3C509B-TP) AUI/RJ45	£65	£76.38
84-90-0933	Etherlink III, (3C509B-TP) AUI/RJ45 - 5pk	£275	£323.13
84-90-0935	Etherlink III, (3C509B-TP) AUI/RJ45 - 20pk	£975	£1145.63
84-90-0951	Etherlink III, (3C509B-Combo) BNC/AUI/RJ45	£75	£88.13
84-90-0953	Etherlink III, (3C509B-Combo) BNC/AUI/RJ45 - 5pk	£305	£358.38
84-90-0955	Etherlink III, (3C509B-Combo) BNC/AUI/RJ45 - 20pk	£1175	£1380.63
<b>PCI -10Mb/s</b>			
84-90-1900	Fast Etherlink XL, (3C900-TPO) RJ45	£65	£76.38
84-90-5900	Fast Etherlink XL, (3C900-TPO) RJ45 - 5pk	£279	£327.83
84-90-2900	Fast Etherlink XL, (3C900-TPO) RJ45 - 20pk	£1009	£1185.58
84-90-9951	Fast Etherlink XL, (3C900-Combo) BNC/AUI/RJ45	£75	£88.13
84-90-9953	Fast Etherlink XL, (3C900-Combo) BNC/AUI/RJ45 - 5pk	£348	£408.90
<b>PCI -100Mb/s</b>			
84-90-1905	Fast Etherlink XL, (3C905-TX) UTP	£57	£66.98
84-90-5905	Fast Etherlink XL, (3C905-TX) UTP - 5pk	£255	£299.63
84-90-2905	Fast Etherlink XL, (3C905-TX) UTP - 20pk	£935	£1098.63
<b>EISA</b>			
84-90-9251	Etherlink III, (3C592-Combo) BNC/AUI/RJ45	£125	£146.88
<b>MCA</b>			
84-90-2911	Fast Etherlink III, (3C529) BNC/AUI	£145	£170.38
84-90-2931	Fast Etherlink III, (3C529-TP) BNC/AUI/RJ45	£139	£163.33
<b>PCMCIA - Mobile adapter 10/100Mb/s</b>			
84-90-1575	Fast Etherlink III, Card Bus PC Card (3C575-TX) UTP	£88	£103.40
84-90-5575	Fast Etherlink III, Card Bus PC Card (3C575-TX) UTP 5pk	£415	£487.63
<b>PCMCIA - Combined 33.6Kbp/s Modem + 10Mb/s Lan Adapter</b>			
84-90-1563	Fast Etherlink XL, (3C563D-TP) RJ45	£167	£196.23
84-90-5563	Fast Etherlink XL, (3C563D-TP) RJ45 - 5pk	£769	£903.58
84-90-5631	Fast Etherlink XL, (3C563D-Combo) BNC/RJ45	£219	£257.33
84-90-5635	Fast Etherlink XL, (3C563D-Combo) BNC/RJ45 - 5pk	£879	£1032.83

## 3COM OfficeConnect

Part No	Make & Model	ex VAT	inc VAT
<b>4 Port Stackable Hub 10Mb/s</b>			
84-90-1674	OfficeConnect TP4, 8x RJ45 (3C16704)	£39	£45.83
84-90-1673	OfficeConnect TP4 Combo, 8xRJ45/1xAUI/BNC (3C16703)	£55	£64.63
<b>8 Port Stackable Hub 10Mb/s</b>			
84-90-1670	OfficeConnect 8TP0, 8x RJ45 (3C16700)	£59	£69.33
84-90-1671	OfficeConnect 8TPC, 8x RJ45/1x BNC (3C16701)	£77	£90.48
<b>16 Port Stackable Hub 10Mb/s</b>			
84-90-1672	OfficeConnect TPC16C, 16x RJ45/1x BNC (3C16702)	£139	£163.33
<b>4 Port Stackable Hub 100Mb/s</b>			
84-90-6723	OfficeConnect TP400, 4x UTP (3C16723)	£129	£151.58
<b>8 Port Stackable Hub 100Mb/s</b>			
84-90-6722	OfficeConnect TP800, 8x UTP (3C16722)	£235	£276.13
<b>12 Port Stackable Hub 100Mb/s</b>			
84-90-6721	OfficeConnect TP1200, 12x UTP (3C16721)	£339	£398.33
<b>4 Port Office Connect Switch 100Mb/s</b>			
84-90-6730	OfficeConnect Switch 140, (3C16730) 1x UTP 100Mb -in, 4x RJ45 10Mb -out	£469	£551.08

All OfficeConnect Hubs & Switches are supplied with a user-guide, power adapter, stacking clips and rubber feet as standard.

## 3COM Superstack Hub/Switches

Part No	Make & Model	ex VAT	inc VAT
<b>12 Port</b>			
84-90-6406	SuperStack II PS Hub 40, 12 port, TP	£219	£257.33
84-90-6450	SuperStack II Switch 3000, 10/100Mb/s, 12 port	£1465	£1721.38
<b>24 Port</b>			
84-90-6406	SuperStack II PS Hub 40, 24 port, TP	£389	£457.08
84-90-6450	SuperStack PS 50, 24 port	£699	£821.33

## Intel Network Cards

Part No	Make & Model	ex VAT	inc VAT
<b>ISA Network interface card - 10Mb/s Ethernet</b>			
84-31-8220	Ether Express Pro, (8220B), 10+, TP	£44	£51.70
84-31-5822	Ether Express Pro, (8220B), 10+, TP - 5 Pack	£214	£251.45
84-31-8210	Ether Express Pro, (8210B), 10+, TP/BNC	£58	£68.15
84-31-5821	Ether Express Pro, (8210B), 10+, TP/BNC - 5 Pack	£285	£334.88
84-31-8200	Ether Express Pro, (8200B), 10+, COMBO	£64	£75.20
84-31-5820	Ether Express Pro, (8200B), 10+, COMBO - 5 Pack	£313	£367.78

## PCI Network interface card - 100Mb/s Fast Ethernet

84-31-8460	Ether Express Pro, (8460), 100+, UTP	£52	£61.10
84-31-5846	Ether Express Pro, (8460), 100+, UTP - 5 Pack	£244	£286.70
84-31-8465	Ether Express Pro, (8465), 100+, UTP	£49	£57.58
84-31-8467	Ether Express Pro, (8465), 100+, UTP - 5 Pack	£249	£292.58
84-31-8480	Ether Express Pro, (8480), 10+, Server Adaptor	£339	£398.33

## PCMCIA Mobile Adapters - 100Mb/s Fast Ethernet

84-31-1600	Ether Express Pro, (1600), 10/100+, 16Bit, UTP	£97	£113.98
84-31-3200	Ether Express Pro, (3200), 100+, 32Bit, UTP - 5 Pack	£119	£139.83



## Intel Network Switches

Part No	Make & Model	ex VAT	inc VAT
<b>8 Port</b>			
84-31-1018	Ethernet switch, (101TXW) 10/100Mb/s Autosensing	£1388	£1630.90
84-31-1001	Express 100FX Switch, (100FX) Fibre switch	£5359	£6296.83
<b>24 Port</b>			
84-31-1024	Ethernet switch, (10T24) 10Mb/s, 100Mb/s Up-link	£1259	£1479.33

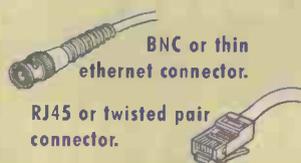
## Intel Network Hubs

Part No	Make & Model	ex VAT	inc VAT
<b>8 Port</b>			
84-31-1008	Express 100 Stand-alone Hub, (100TX8) 100Mb/s	£319	£374.83
<b>12 Port</b>			
84-31-1112	Express 10/100Mb/s Stackable Hub, (110TX12W)	£726	£853.05
<b>24 Port</b>			
84-31-1124	Express 10/100Mb/s Stackable Hub, (110TX24W)	£1137	£1335.98

## SMC ISA Network Cards

Part No	Make & Model	ex VAT	inc VAT
<b>BNC</b>			
84-93-2411	SMC EZ P'n P, 16-bit ISA, w/stations, small servers	£55	£64.63
<b>COMBO</b>			
84-93-1651	SMC E16, 16-bit ISA, w/stations, small servers	£62	£72.85
84-93-2451	SMC EZ P'n P, 16-bit ISA, w/stations, small servers	£44	£51.70

## PRODUCT GUIDE



BNC or thin ethernet connector.

RJ45 or twisted pair connector.

## Network Cables

Part No	Make & Model	ex VAT	inc VAT
<b>BNC Accessories</b>			
86-95-1371	Thin Ethernet cable, segments made to order. per metre	£1	£1.18
86-95-1311	BNC solderless crimp connectors	£3	£3.53
86-95-1353	BNC Ethernet terminator	£5	£5.88
86-95-1331	BNC 'T' piece	£6	£7.05
86-95-1302	2m BNC Thin Ethernet cable with crimps - ready made	£4	£4.70
86-95-1305	5m BNC Thin Ethernet cable with crimps - ready made	£7	£8.23
86-95-1310	10m BNC Thin Ethernet cable with crimps - ready made	£11	£12.93
86-95-1320	20m BNC Thin Ethernet cable with crimps - ready made	£17	£19.98
86-95-1330	30m BNC Thin Ethernet cable with crimps - ready made	£24	£28.20

## RJ45 Accessories

86-95-4502	2m RJ45 Ethernet/Fast Ethernet cable - ready made	£5	£5.88
86-95-4503	3m RJ45 Ethernet/Fast Ethernet cable - ready made	£6	£7.05
86-95-4505	5m RJ45 Ethernet/Fast Ethernet cable - ready made	£8	£9.40
86-95-4510	10m RJ45 Ethernet/Fast Ethernet cable - ready made	£12	£14.10
86-95-4520	20m RJ45 Ethernet/Fast Ethernet cable - ready made	£18	£21.15
86-95-4530	30m RJ45 Ethernet/Fast Ethernet cable - ready made	£25	£29.38

## UPS's

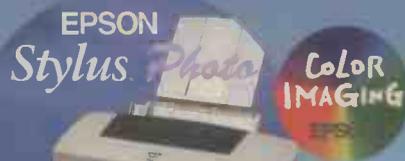
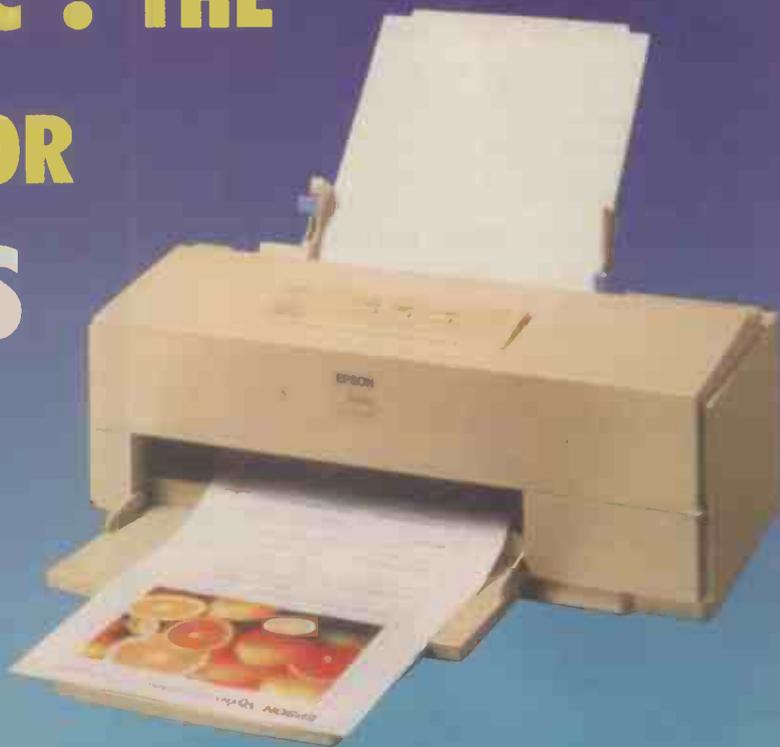
Part No	Make & Model	ex VAT	inc VAT
<b>BackUPS - Lowest cost protection for desktop PC's</b>			
89-90-0250	BackUPS 250, 175 watts, for 486 with 15" monitor	£55	£64.63
89-90-0402	BackUPS 400, 285 watts, for Pentium with 15" monitor	£69	£81.08
89-90-0602	BackUPS 600, 425 watts, for Pentium with 17"+ monitor	£137	£160.98
<b>BackUPS PRO - High Performance PC protection with voltage regulation and shutdown software for Windows, Win95. Supplied with serial cable.</b>			
89-90-0280	BackUPS PRO 280, 200 watts, for 486 with 15" monitor	£99	£116.33
89-90-0422	BackUPS PRO 420, 300 watts, for Pentium with 15" monitor	£145	£170.38
89-90-0652	BackUPS PRO 650, 460 watts, for Pentium with 17"+ monitor	£189	£222.08
<b>SmartUPS - High Performance protection for servers, with Smart Boost, Smart Trim and shutdown software for Windows, Win95, WinNT, SCO UNIX, Novell Network. Supplied with serial cable.</b>			
89-90-0710	SmartUPS 700, 500 watts, for Pentium with 17"+ monitor	£229	£269.08
89-90-1010	SmartUPS 1000, 700 watts, for single server	£279	£327.83
89-90-1410	SmartUPS 1400, 1000 watts, for single server	£373	£438.28
89-90-2210	SmartUPS 2200, 1550 watts, for multiple servers	£539	£633.33
89-90-3010	SmartUPS 3000, 2135 watts, for multiple servers	£1079	£1267.83

According to computer insurer SAFEWARE, electrical power surges, brown-outs and black-outs, account for hundreds-of-thousands of computer losses per year, ranking second only to theft.

An APC UPS can protect against all mains surges and outs. So why leave it to chance. Protect yourself with an APC from SMC.



## SMC : THE BEST FOR PRINTERS



### Laser Printers

Part No	Make & Model	ex VAT	inc VAT
<b>Hewlett Packard</b>			
99-28-7442	Hewlett Packard- 4MV 600dpi, 16ppm	£1675	£1968.13
99-28-7451	Hewlett Packard- 4V 600dpi, 16ppm	£1159	£1361.83
99-28-7522	Hewlett Packard- 5M 600dpi, 12ppm	£969	£1138.58
99-28-7524	Hewlett Packard- 5N 600dpi, 12ppm, 10 BaseT	£829	£974.08
99-28-7500	Hewlett Packard- 5 600dpi, 12ppm	£655	£769.63
99-28-7555	Hewlett Packard- 5Si 600dpi, 24ppm	£1599	£1878.83
99-28-7560	Hewlett Packard- 5SiMX 600dpi, 24ppm, Network	£2229	£2619.08
99-28-7565	Hewlett Packard- 5SiNX 600dpi, 24ppm	£1779	£2090.33
99-28-7570	Hewlett Packard- Colour Laserjet 5	£2729	£3206.58
99-28-7610	Hewlett Packard- 6L 600dpi, 6ppm (replaces HP5L)	£229	£269.08
99-28-7631	Hewlett Packard- 6MP 600dpi, 8ppm	£575	£675.63
99-28-7650	Hewlett Packard- 6P 600dpi, 8ppm	£465	£546.38
99-28-4118	Hewlett Packard- 4000 1200dpi, 17ppm	£729	£856.58
99-28-4119	Hewlett Packard- 4000T 1200dpi, 17ppm	£835	£981.13
99-28-4120	Hewlett Packard- 4000N 1200dpi, 17ppm	£939	£1103.33
99-28-4121	Hewlett Packard- 4000TN 1200dpi, 17ppm	£1029	£1209.08
<b>Canon</b>			
99-91-7173	Canon LBP1260+ - 600dpi, 12ppm	£645	£757.88
<b>Epson</b>			
99-93-7151	Epson EPL5500 - 600dpi, 6ppm	£274	£321.95
99-93-7120	Epson EPL-N1200 - 600dpi, 12ppm	£589	£692.08
99-93-7191	Epson EPL9000 600dpi x 600dpi, 8ppm	£579	£680.33
99-93-7200	Epson EPL-N2000 - 600dpi, 20ppm A4, 11ppm A3	£1275	£1498.13
<b>Brother</b>			
99-90-0073	Brother HL730 - 300dpi, 6ppm	£218	£256.15
99-90-0076	Brother HL760 - 600dpi, 6ppm	£259	£304.33
99-90-7605	Brother HL760 - 600dpi, 6ppm, 5Mb Mem	£279	£327.83
99-90-0126	Brother HL1260 - 600dpi, 12ppm	£636	£747.30
<b>OKI</b>			
99-93-9601	OkI OL6E - 600dpi, 6ppm	£219	£257.33
99-93-9603	OkI OL6EX - 600dpi x 1200dpi, 6ppm	£279	£327.83
99-93-9810	OkI OL810EX - 600dpi, 8ppm	£399	£468.83

### Inkjet Printers

Part No	Make & Model	ex VAT	inc VAT
<b>Epson</b>			
99-93-5132	Epson Stylus 200 - 720dpi, 3ppm	£104	£122.20
99-93-5130	Epson Stylus Color 300 - 720dpi, 3ppm	£107	£125.73
99-93-5131	Epson Stylus 1000 - 360dpi, 180cps, A3	£289	£339.58
99-93-5153	Epson Stylus Pro XL+ (A3) - 720dpi, 3ppm	£433	£508.78
99-93-5140	Epson Stylus Color 400 - 720 dpi, 4ppm	£133	£156.28
99-93-5160	Epson Stylus Color 600 - 1440 dpi, 6ppm	£185	£217.38
99-93-5180	Epson Stylus Color 800 - 1440 dpi, 8ppm	£243	£285.53
99-93-5252	Epson Stylus Color 1520 - 1440 dpi, 800cps LQ, A3	£555	£652.13
99-93-5191	Epson Stylus Photo - 720dpi, 1ppm	£292	£343.10
99-95-5300	Epson Stylus Color 3000 - 1440 dpi, A2	£1099	£1291.32
<b>Hewlett Packard</b>			
99-28-5034	HP DeskJet 340 - 600x300dpi, 2ppm	£139	£163.33
99-28-5042	HP DeskJet 400L - 600x300dpi, 3ppm	£86	£101.05
99-28-5067	HP DeskJet 670C - 600dpi, 4ppm	£119	£139.83
99-28-5068	HP DeskJet 690C+ - 600dpi, 5ppm	£155	£182.13
99-28-5082	HP DeskJet 820Cxi - 600dpi, 5ppm	£153	£179.78
99-28-5087	HP DeskJet 870Cxi - 600dpi, 7ppm	£199	£233.83
99-28-5089	HP DeskJet 890C - 600dpi, 9ppm	£255	£299.63
99-28-0110	HP DeskJet 1100C - 600dpi, 6.5ppm, A3	£285	£334.88
99-28-5160	HP DeskJet 1600C - 600dpi, 8ppm	£839	£985.83
99-28-5164	HP DeskJet 1600CN - 600dpi, 8ppm	£1065	£1251.38
99-28-5168	HP DeskJet 1600CM - 600dpi, 8ppm	£1239	£1455.83
Both the CN and CM models are Network Ready, The CM is Postscript Ready.			
<b>Canon</b>			
99-91-5030	Canon BJC30 (cream) - 720x360dpi, 1.7ppm	£124	£145.70
99-91-5070	Canon BJC70 (cream) - 720x360dpi, 3ppm	£142	£166.85
99-91-5250	Canon BJC250 - 720x360dpi, 3ppm	£105	£123.38
99-91-5620	Canon BJC620 - 720dpi, 1.87-2.14ppm	£169	£198.58
99-91-6430	Canon BJC4300 - 720x360dpi, 4.5ppm	£149	£175.08
99-91-6455	Canon BJC4550 - 720x360, 4.8ppm, A3	£199	£233.83
99-91-6550	Canon BJC5500 - 360dpi, 0.8ppm, max A2	£455	£534.63
<b>Colour Printer Ink Cartridge Guide:</b>			
■ ■ ■ ■ One chamber, ■ ■ ■ ■ Two chambers, ■ ■ ■ ■ Four chambers			
All quoted print speeds may vary depending upon configuration and print settings.			

# PRINTERS & CONSUMABLES



## Dot Matrix Printers

Part No	Make & Model	ex VAT	inc VAT
<b>Epson</b>			
99-93-0131	Epson LX300 - 80 columns, 9 pin, 264cps, 4Kb Buffer	£95	£111.63
99-93-0137	Epson LX1050+ - 136 columns, 9 pin, 240cps, 4Kb Buffer	£195	£229.13
99-93-0880	Epson FX880 - 80 columns, 9 pin, 455cps, 32Kb Buffer	£245	£287.88
99-93-0135	Epson FX1170 - 136 columns, 9 pin, 342cps, 24Kb Buffer	£299	£351.33
99-93-0139	Epson FX2170 - 136 columns, 18 pin, 440cps, 64Kb Buffer	£369	£433.58
99-93-0311	Epson LQ300 - 80 columns, 24 pin, 240cps, 8Kb Buffer	£112	£131.60
99-93-0313	Epson LQ570+- 80 columns, 24 pin, 269cps, 8Kb Buffer	£207	£243.23
99-93-0315	Epson LQ870 - 80 columns, 24 pin, 330cps, 8Kb Buffer	£365	£428.88
99-93-0322	Epson LQ2070 - 136 columns, 24 pin, 330cps, 64Kb Buffer	£319	£374.83
99-93-0320	Epson LQ2170 - 136 columns, 24 pin, 440cps, 64Kb Buffer	£449	£527.58
<b>Panasonic</b>			
99-57-1150	Panasonic KXP1150 - 80 columns, 9 pin, 240cps, 4Kb Buffer	£89	£104.58
99-57-2023	Panasonic KXP2023 - 80 columns, 24 pin, 192cps, 14Kb Buffer	£112	£131.60
99-57-3626	Panasonic KXP3626 - 136 columns, 24 pin, 300cps, 40Kb Buffer	£255	£299.63



## Printer Consumables

Part No	Make & Model	ex VAT	inc VAT
<b>Hewlett Packard Laser Toner</b>			
96-28-7413	HP92274A - Laserjet 4L/4P/4ML/4MP	£42	£49.35
96-28-7313	HP92275A - Laserjet IIP/IIIP/IIIPplus	£49	£57.58
96-28-7354	HP92291A - Laserjet IIISi/4Si/4Si MX	£69	£81.08
96-28-7230	HP92295A - Laserjet IID/IIID	£45	£52.88
96-28-7434	HP92298A - Laserjet 4/4M/4+/4M+/5/5N/5M	£62	£72.85
96-28-7451	HPC3900A - Laserjet 4V/4MV	£89	£104.58
96-28-7551	HPC3903A - Laserjet 5P/5MP/6P/6MP	£48	£56.40
96-28-7515	HPC3906A - Laserjet 5L/6L	£39	£45.83
96-28-4127	HPC4127A - Laserjet 4000	£60	£70.50
96-28-0412	HPC4127X - Laserjet 4000 long life	£86	£101.05
<b>Hewlett Packard Deskjet Ink Cartridges</b>			
96-28-5030	HP51633M - 310/320/340/DW310,320,340	£19	£22.33
96-28-5060	HP51629A - 600/660C/690C/DW600,660C	£18	£21.15
96-28-5069	HP51649A - 600/660C/690C/DW600,660C	£19	£22.33
96-28-5080	HP51645A - 820Cxi/850C/870Cxi/1600C/1600CM	£18	£21.15
96-28-5089	HP51641A - 820Cxi/850C/870Cxi	£19	£22.33
96-28-5120	HP51640A - 1200C/1200C PS	£19	£22.33
96-28-5123	HP51640C - 1200C/1200C PS/1600C/1600CM	£21	£24.68
96-28-5125	HP51640M - 1200C/1200C PS/1600C/1600CM	£21	£24.68
96-28-5127	HP51640Y - 1200C/1200C PS/1600C/1600CM	£21	£24.68
<b>Epson Supplies</b>			
96-93-4000	S020093 - Stylus Color 500/400/600/Photo	£15	£17.63
96-93-8009	S020089 - Stylus Color 400/600/800/1520	£19	£22.33
96-93-8200	S020047 - Stylus 820/200/Color IIs/II,Color200	£14	£16.45
96-93-8209	S020049 - Stylus 1500/820/Color IIs/II	£19	£22.33
96-93-8005	S020110 - Stylus Photo	£15	£17.63



## HP 3 Year On-Site Support Packs

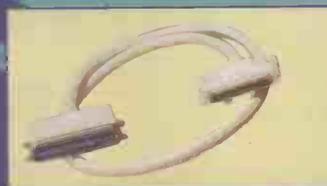
Part No	Make & Model	ex VAT	inc VAT
99-28-9461	H5461A - DeskJet 340,4/600,67/690C,SST4i,1100C	£40	£47.00
99-28-9462	H5462A - DeskJet 820Cxi, SS2/5000, PS Camera	£47	£55.23
99-28-9464	H5465A - DeskJet 870, 890C, OfficeJet 500/590 Scanjet 4S/P,5S/P, SS6000, PS PhotoPrinter/Scanner	£66	£77.55
99-28-9470	H5470A - OfficeJet 350, ScanJet 6100C	£102	£119.85
99-28-9471	H5471A - Officejet Pro 1150C, SS12000	£118	£138.65
99-28-9473	H5473A - Deskjet 1600C/CM	£105	£123.38
99-28-9475	H5475A - Scanjet 4Si, SS30e DLT	£140	£164.50
99-28-9476	H5476A - Laserjet 5/6P, 5/6MP	£142	£166.85
99-28-9479	H5479A - LaserJet 5, 5M, 5N	£180	£211.50
99-28-9482	H5482A - LaserJet 4V, 4MV	£235	£276.13
99-28-9492	H5492A - LaserJet 5Si MX/NX	£530	£622.75
99-28-9500	H5500A - LaserJet 5L, 6L	£77	£90.48
99-28-9501	H5501A - Colour LaserJet 5/5M	£948	£1113.90
99-28-9511	H5511A - SS40e DLT	£192	£225.60



## Epson 3 Year On-Site Support

Part No	Make & Model	ex VAT	inc VAT
99-93-0018	Group 1 - Stylus 200, Stylus Color 200, LQ100+	£40	£47.00
99-93-0028	Group 2 - Stylus Color 400/600/800, LX300/1050+ LQ300, GT-5000/5500	£65	£76.38
99-93-0038	Group 3 - Stylus 1000, FX870/880/1170 LQ570+, LQ870/2070, EPL-5500/5500W	£99	£116.33
99-93-0048	Group 4 - FX2170,LQ2170,GT-8500/9500 EPL-N12000/N12000EN/N12000PS	£149	£175.08
99-93-0058	Group 5 - Stylus 1520, DFX5000+, DLQ3000+	£199	£233.83
99-93-0068	Group 6 - Stylus Pro XL+,EPL9000/N2000/N2000PS DFX8000, GT-12000	£259	£304.33

All Epson Cover Plus (std) Warranties are 3 Year on-site, with an 8hr response time.



## Printer Cables

Part No	Description	ex VAT	inc VAT
75-95-6002	1.8M, 25pin D to 36pin Centronics (Std Parallel)	£5	£5.88
75-95-6003	3.0M, 25pin D to 36pin Centronics (Std Parallel)	£7	£8.23
75-95-6005	5.0M, 25pin D to 36pin Centronics (Std Parallel)	£9	£10.58



## HP All-In-One

Part No	Make & Model	ex VAT	inc VAT
99-28-3590	HP OfficeJet 590 Colour Printer/Copier/Fax/Scanner 600x300dpi colour printing, 600x600dpi mono printing, A4 copier with digital zoom, 300dpi optical mono scanner, includes software & OCR.	£339	£398.33
99-28-3050	HP OfficeJet Pro 1150C Colour Printer/Copier/Scanner 600x300dpi colour printing, 600x600dpi mono printing, A4 copier with digital zoom, 300dpi optical 24bit colour scanning, includes software & OCR.	£489	£574.58

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Since the introduction of affordable technology, scanners have played an increasing role in most Desktop Publishers activities. Allowing anybody who wishes to get their message across that certain individuality. SMC has always brought you the best range available and this selection of scanners is no exception, so whether you are a professional designer, a catalogue producer or just looking for that finishing touch to get your point across, we are sure you will find just the product that suits your needs and your budget - which is true of all the products we aim to supply.

## Epson Scanners

Part No	Make & Model	ex VAT	inc VAT
97-93-0507	Epson GTX5000 - Parallel interface, Flatbed, 24-bit colour, A4, 1200/300dpi Software and OCR package	£159	£186.83
97-93-0553	Epson GTX5500 - SCSI interface-ISA SCSI Controller, Flatbed, 30-bit colour, A4, 1600/400dpi, Software and OCR package	£215	£252.63
97-93-0857	Epson GTX8500 - Parallel interface, Flatbed, 30-bit colour, A4, 1600/400dpi, Software and OCR package	£369	£433.58
97-93-0853	Epson GTX8500 - SCSI interface-ISA SCSI Controller, Flatbed, 30-bit colour, A4, 1600/400dpi, Software and OCR package	£389	£457.08
97-93-0855	Epson GT18500, SCSI interface-ISA SCSI Controller, Flatbed, 30-bit colour, A4, 1600/400dpi, Adobe PhotoShop Full Version	£465	£546.38
97-93-0957	Epson GTX9500 - Parallel interface, Flatbed, 36-bit colour, A4, 2400/600dpi Software and OCR package	£445	£522.88
97-93-0953	Epson GTX9500 - SCSI interface-ISA SCSI Controller, Flatbed, 36-bit colour, A4, 2400/600dpi, Software and OCR package	£465	£546.38
97-93-0955	Epson GT19500 - SCSI interface-ISA SCSI Controller, Flatbed, 36-bit colour, A4, 2400/600dpi, Adobe PhotoShop Full Version	£535	£628.63

Epson GT-12000 A3 scanner available, please call for details.

## HP Scanners

Part No	Make & Model	ex VAT	inc VAT
97-28-0050	HP ScanJet 5S - Parallel interface, pass-thru sheet feed, 24bit colour A4, 600/300dpi, software and OCR.	£133	£156.28
97-28-0055	HP Scanjet 5P, 1200/300dpi, full A4 24bit colour, inc. SCSI controller card, cables, OCR and software.	£148	£173.90
97-28-6100	HP Scanjet 6100C - 2400/600dpi, full A4 30bit colour, inc. SCSI controller card, cables, OCR and software. Also includes 35mm adaptor.	£444	£521.70

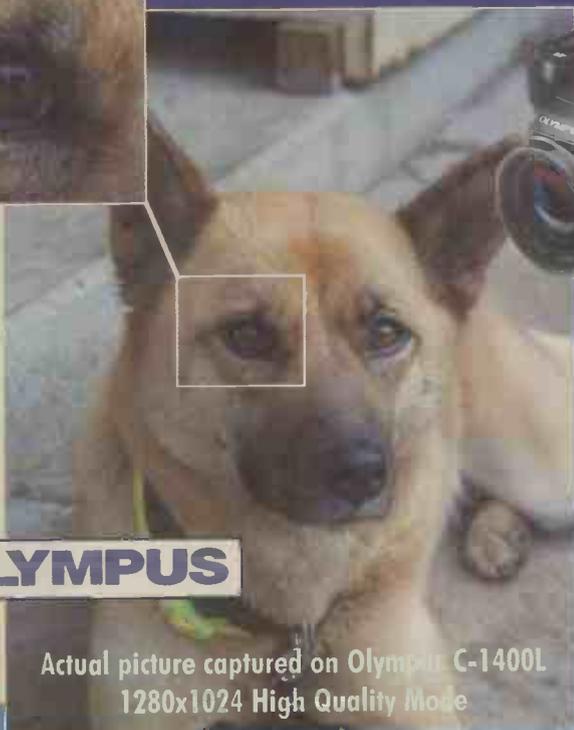
## Logitech Scanners

Part No	Make & Model	ex VAT	inc VAT
97-97-0606	Scanman Color 2000 - Parallel interface, Windows '95 Only, 400dpi, 24-Bit colour handheld, software & OCR.	£75	£88.13
97-97-0902	Logitech PageScan Colour Pro - Parallel, 24-bit colour, 400dpi, Software and OCR, Win'95 only, Without Feeder.	£129	£151.58
97-97-1002	Logitech FreeScan - Parallel, 30-bit colour, 600dpi, Software and OCR, Win'95 only, 25pg Feeder. 4800Dpi enhanced.	£129	£151.58

# IMAGE TECHNOLOGY



Actual size



**C-1400L**  
Olympus  
98-91-1400  
£1099 £1291.33 inc.VAT

**OLYMPUS**

Actual picture captured on Olympus C-1400L  
1280x1024 High Quality Mode

## Olympus Digital Cameras

Part No	Make & Model	ex VAT	inc VAT
98-91-0420	C-420L, 640x480 pixels (HQ mode), 2Mb memory, 350,000 pixel CCD, Soft case and AC adaptor	£425	£499.38
98-91-0820	C-820L, 1024x768 pixels (HQ mode), 2Mb memory, 810,000 pixel CCD, LCD monitor, on-screen display	£765	£898.88
98-91-1400	C-1400L, 1280x1024 pixels (Super HQ/HQ mode), 2x 4Mb memory, 1,410,000 pixel CCD, LCD monitor, on-screen display, 3x Zoom, Auto focus, Soft case, Battery charger kit	£1099	£1291.33

Olympus has used its renowned optical expertise to develop high resolution lenses that push the CCD's performance to the max. All cameras feature; auto focus, built-in flash, 12s self timer and a TTL viewfinder, Supplied with interface cables and software.

## EPSON Digital Cameras

Part No	Make & Model	ex VAT	inc VAT
98-93-0500	PC500, 640x480 pixels (High Quality mode), 330,000 pixel CCD, 2Mb memory	£279	£327.83
98-93-0600	PC600, 1024x768 pixels (XGA mode), 810,000 pixel CCD, 4Mb memory, Zoom focus.	£529	£621.58

The above cameras also feature: auto focus, built-in flash, 10s timer. They run from AA batteries (supplied) with a mains adaptor optional. Interface cables and software supplied.



## HP Digital Cameras

Part No	Make & Model	ex VAT	inc VAT
98-28-5340	PhotoSmart Digital Camera, 640x480 pixels (HQ mode), 2Mb memory	£215	£252.63

The above camera also features: auto focus, built-in flash, 10s timer. Runs with 4x AA batteries, with a mains adaptor optional. Interface cables and software supplied.

## Digital Printers

Part No	Make & Model	ex VAT	inc VAT
99-91-0150	Olympus P-150E, 640x480, 16.7m colours using dye sublimation (148Dpi), ideal for C-420L Camera	£339	£398.33
99-91-0300	Olympus P-300E, 1280x1024, 16.7m colours using dye sublimation (306Dpi), for C-820L/1400L Camera	£509	£598.08
99-93-5191	Epson Stylus Photo, 720Dpi, 4"x6" - A4, 1ppm	£292	£343.10
99-28-3804	HP PhotoSmart Photo Printer, 4"x6" - 8"x10", Enhanced printing quality with photographic resolution	£335	£393.63

The Olympus digital printers support either parallel or direct printing. A cable and software are supplied for PC and MAC. Dye sublimation produces a higher quality image through lower resolution over standard printing.

## Digital Film Scanners

Part No	Make & Model	ex VAT	inc VAT
97-93-0201	Epson FilmScan 200, 35mm film scanner, SCSI interface	£325	£381.88
97-93-0235	Epson FilmScan 200 Advanced Photo System Holder, film cartridge holder for batch scanning	£85	£99.88
97-28-5100	HP PhotoSmart Photo Scanner, 35mm-5"x7" photo, 35mm negative or slide scanner, External SCSI	£334	£392.45
97-91-0010	Olympus ES-10 Film Scanner, 35mm negative or slide scanner, Parallel Device	£379	£445.33
97-91-1010	Olympus ES-10 Advanced Photo System Adapter	£135	£158.63

This product is supplied with an interface card, cables and software. It is an external device that supports negative and positive scanning at 1200x2400 dpi, max 4800 dpi - 30 bit colour. Optional film (APS) holder.

This product is supplied with cables and software. It is an external device that supports 35mm negatives and slides at 2400dpi and Photos at 300 dpi, 30 bit colour.

This product is supplied with cables and software. It is an external Parallel device that supports 35mm negatives and slides at 1770dpi, 24 bit colour.

## Digital Accessories

Part No	Make & Model	ex VAT	inc VAT
70-91-0006	Olympus C-6AG, AC adaptor for complete range	£59	£69.33
19-91-0102	Olympus M-2PE, 2Mb Smartmedia Memory Card	£35	£41.13
19-91-0104	Olympus M-4PE, 4Mb Smartmedia Memory Card	£52	£61.10
96-91-5050	Olympus P-50NE, A6 paper for P-150E Printer (x50)	£34	£39.95
96-91-6060	Olympus P-60NE, A6 paper for P-300E Printer (x60)	£42	£49.35
70-93-7022	Epson 240V, AC adaptor for PPC500 Camera	£POA	£POA
70-93-7032	Epson 240V, AC adaptor for PPC600 Camera	£POA	£POA
19-93-8251	Epson 4Mb Memory for PPC500 Camera	£POA	£POA
19-93-8311	Epson 4Mb Memory for PPC600 Camera	£POA	£POA
70-28-5345	HP AC adaptor for PhotoSmart Digital Cameras	£POA	£POA
19-28-5347	HP 4Mb Memory for PhotoSmart Digital Cameras	£POA	£POA



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05-95-5213  
£55 £64.63 Inc.VAT

**Cinemania 97 (Edutainment)**  
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**Front Page 97 (Application)**  
05-50-7155  
£109 £128.08 Inc.VAT

**Money 98 (Application)**  
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**Bookshelf (Edutainment)**  
05-95-5213  
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**05-50-9507 £99 £116.33**  
Must be purchased with a new Harddrive or Motherboard & Harddrive.  
No support is offered by Microsoft with Service Release 2.

**Microsoft®**

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The latest version of the popular operating system for IBM and compatible PC's. Full Plug'n'Play with graphical interface, Drag'n'Drop with simple user friendly interface. Whole list of new features which include:

- FAT32 Support for drives upto 2Tb, more efficient disk use
- Better Hardware Support
- DirectX ver.2 Multimedia Graphics Driver
- Enhanced Multimedia Support:- Direct 3D and direct support for MMX
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- Internet Mailing News
- Net Meeting
- Drivespace update for harddisk compression

**PowerPoint 97 (Application)**  
01-50-3357  
£222 £260.85 Inc.VAT

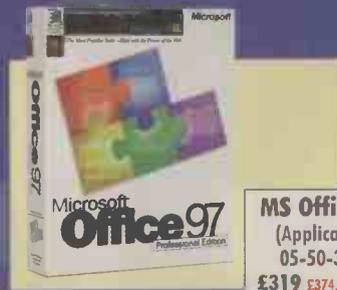
**Age of Empires (Edutainment)**  
05-50-0131  
£25 £29.38 Inc.VAT



**LIMITED OFFER WHILE STOCKS LAST**

## Edutainment

Part No	Description	ex VAT	inc VAT	ex VAT	inc VAT
<b>MULTIMEDIA EDUCATIONAL</b>					
<b>MICROSOFT</b>		<b>3.5" FLOPPY</b>		<b>CD-ROM</b>	
05-50-5381	500 Nations			£19	£22.33
05-95-5209	Art Gallery			£33	£38.78
05-50-5213	Composer Collection			£32	£37.60
05-95-5217	Dangerous Creatures			£22	£25.85
05-50-5219	Dinosaurs			£22	£25.85
05-50-0114	Encarta 98 (British edition)-Win 95			£31	£36.43
05-50-0115	Encarta 98 Deluxe (British edition)-Win 95			£49	£57.58
05-50-0117	World Atlas 98-Win 95			£31	£36.43
05-50-7103	Musical Instruments			£19	£22.33
05-95-7151	Oceans			£19	£22.33
<b>MULTIMEDIA GENERAL</b>					
<b>MICROSOFT</b>					
05-50-0122	Autoroute Express GB 98- Win 95			£39	£45.83
05-50-0121	Autoroute Express Europe 98-Win 95			£39	£45.83
05-95-5213	Bookshelf			£55	£64.63
05-95-7047	Cinemanía 97			£19	£22.33
05-50-7151	Wine Guide			£19	£22.33
<b>MULTIMEDIA GAMES</b>					
<b>MICROSOFT</b>					
05-50-0175	Chaos Island-Win 95			£19	£22.33
05-50-0131	Age of Empires-Win 95			£25	£29.38
05-50-0129	Close Combat 2-Win 95			£25	£29.38
05-50-0135	Flight Simulator 98-Win 95			£32	£37.60
05-50-0133	CART Precision Racing-Win 95			£25	£29.38



**MS Office 97**  
(Application)  
05-50-3117  
£319 £374.83 Inc.VAT

## Utilities

Part No	Description	ex VAT	inc VAT	ex VAT	inc VAT
<b>Dr. SOLOMON'S</b>		<b>3.5" FLOPPY</b>		<b>CD-ROM</b>	
01-93-9305	Anti-Virus Toolkit* - WIN 95	£65	£76.38		
01-93-9303	Anti-Virus Toolkit* - Windows	£68	£79.90		
01-93-9307	Anti-Virus Toolkit* - Windows NT	£69	£81.08		
<b>SPECIAL UTILITIES</b>					
<b>NORTON</b>					
01-95-9103	Anti-Virus - Windows	£88	£103.40		
05-95-9050	Anti-Virus Deluxe - WIN 95			£49	£57.58
01-95-0103	Utilities V8	£83	£97.53		
05-95-9060	Utilities - WIN 95			£48	£56.40

LICENSE PACKS AVAILABLE FOR THE ANTI-VIRUS TOOLKIT. PLEASE CALL.  
\*Version supplied has 4 quarterly up dates FREE OF CHARGE. Dr. Solomon's Anti-Virus toolkit will soon be shipping on CD. Latest version supplied when registered.

## Business Applications

Part No	Description	ex VAT	inc VAT	ex VAT	inc VAT
<b>MICROSOFT</b>					
		<b>3.5" FLOPPY</b>		<b>CD-ROM</b>	
05-50-9299	Home Essentials 98			£79	£92.83
01-50-3155	WORD 97 - WIN 95			£222	£260.85
01-50-3153	WORD V6		£263.20		
01-50-3175	Works for Windows 95	£224	£85.78		
01-50-3133	Office V4.2	£325	£381.88		
05-50-3113	Office V4.2			£325	£381.88
05-50-3117	Office 97 - WIN 95			£319	£374.83
05-50-3137	UPGRADE - Office Std - Office 97 (CCP)			£148	£173.90
05-50-3177	Office Professional 97 - WIN 95			£418	£491.15
05-50-3157	UPGRADE - Office Pro - Office Pro 97 (CCP)			£204	£239.70
05-50-1209	Money 98			£19	£22.33
01-50-3713	Excel V5	£224	£263.20		
05-50-3235	Excel 97 - WIN 95			£222	£260.85
01-50-3753	Access V2.2	£222	£260.85		
01-50-3197	Access 97 - WIN 95			£224	£263.20
01-50-3353	Powerpoint V4	£224	£263.20		
01-50-3357	Powerpoint 97 - WIN 95			£222	£260.85
01-50-9105	Publisher 97 - WIN 95			£66	£77.55
01-50-3151	Project V4.1 - WIN 95	£282	£331.35		
01-50-3333	Schedule+	£79	£92.83		
01-50-3335	Schedule+ V7 - WIN 95	£69	£81.08		
05-50-7155	FrontPage 97			£109	£128.08
01-50-9133	Visual Basic Pro V3	£189	£222.08		
05-50-9131	Visual Basic Std V5 - WIN 95			£69	£81.08
05-50-9113	Visual Basic Pro V4 - WIN 95			£319	£374.83
01-50-3775	Visual FoxPro Std V3 - WIN 95	£121	£142.18		
05-50-3313	Visual FoxPro Std V3 - WIN 95			£121	£142.18
<b>LOTUS</b>					
05-91-0107	Smartsuite 97 - WIN 95			£290	£340.75
01-91-0104	Smartsuite V4	£290	£340.75		
05-91-0103	Smartsuite V4			£290	£340.75
<b>COREL</b>					
05-95-0517	Quattro Pro V7 - WIN 95			£46	£54.05
05-95-6061	Wordperfect Suite 6.1 Win 3.1x			£159	£186.83
05-95-0505	Wordperfect Suite 7 - WIN 95			£155	£182.13

## Operating Systems

Part No	Description	ex VAT	inc VAT	ex VAT	inc VAT
<b>MICROSOFT</b>					
		<b>3.5" FLOPPY</b>		<b>CD-ROM</b>	
01-50-1957	Windows '95 Upgrade	£59	£69.33		
05-50-9509	Windows '95 Upgrade			£59	£69.33
05-50-9531	Windows '95 3 in 1 Upgrade			£65	£76.38
01-50-9503	Windows '95 - Full Version	£129	£151.58		
05-50-9507	Windows '95 V2 - Full Version			£99*	£116.33
01-50-0703	Windows 3.11	£65	£76.38		
05-50-1013	Windows NT Version 4 Workstation			£225	£264.38
05-50-1015	Windows NT 3.51 to Ver 4 Upgrade			£99	£116.33

\*Must be purchased with a new Harddrive or Motherboard & Harddrive. No MS Support.

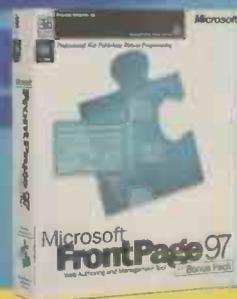
## Software support

Part No	Description	ex VAT	inc VAT
<b>ICL/MICROSOFT call support packs for selected Microsoft products</b>			
99-50-0201	2 call pack with 1m free MSN access	£45	£52.88
99-50-0501	5 call pack with 1m free MSN access	£105	£123.38
99-50-1001	10 call pack with 1m free MSN access	£190	£223.25
99-50-1012	10 call pack with 1yr MS Technet CD	£399	£468.83
99-50-2512	25 call pack with 1yr MS Technet CD	£699	£821.33

Applications covered include Win95, Win, DOS 5+, WinNT, Office4, Office Pro 95/97, Office SBE, Money, Autoroute E+, Project, Team Manager, Home Essentials, Product, PPK. Both new and old Software purchases.

### Microsoft on call

ICL On-Call for Microsoft users. New or existing users can buy a telephone support pack for all popular Microsoft applications.



## SMC :

## THE BEST FOR

# MONITORS



### *SMC, always looking forward....*

At SMC we constantly looking at the future.  
We look at what you want , and what we offer.  
We look at where to develop and improve.  
All this makes us one of the steadiest growing companies in the market.  
From that position, we can predict better things for the future.



## IN PERFECT SYNCH'



### iiyama Monitors

Part No	Model	Size	Dot Pitch	Max.Res	ex VAT	inc VAT
68-93-9153	MF-8515G	15"	.28mm	1280x1024	£189	£222.08
68-93-9171	MF-8617T	17"	.26mm	1280x1024	£399	£468.83
68-93-9175	MF-8617ES	17"	.26mm	1280x1024	£435	£511.13

The MF-8617ES has built-in stereo speakers

68-93-9173	MT-9017T	17"	.25mm grille	1600x1200	£439	£515.83
68-93-9211	MF-8221E	21"	.28mm	1600x1200	£925	£1086.88
68-93-9213	MT-9021T	21"	.30mm grille	1600x1200	£909	£1068.08
68-93-9721	MF-8721T	21"	.27mm	1800x1440	£925	£1086.88
68-93-9215	MT-9221	21"	.28mm grille	1800x1440	£950	£1116.25

All iiyama monitors now have a 3-year warranty, with the first year on-site.

We still offer Vision Care by iiyama, a 3-year on-site next day swap out contract (see below).

**IYAMA VISION CARE (Extended Warranty Options)**

68-93-9916	15"MF-8515F/G	£15	£17.63
68-93-9917	17"MF-8617E/ES & MT-9017E	£25	£29.38
68-93-9921	21"MF-8221T, MF-8721T & MT-9021T, MT-9221	£35	£41.13

All warranties are Upgrade 3 Year On-Site next day swap-out. Only available when purchasing an iiyama monitor.

Limited Offer -All 21" Monitors supplied by SMC come with a 3 Year on-site included.

# MONITORS



## Colour Monitors

No	Model	Size	Dot Pitch	Max. Res.	ex VAT	inc VAT
<b>14"</b>						
AOC						
68-90-1405	AOC4VLR	14"	.28mm	1024x768	£109	£128.08
LG (formerly Goldstar)						
68-26-1440	GS44i	14"	.28mm	1024x768	£118	£138.65
PHILIPS						
68-59-1405	104S	14"	.28mm	1024x768	£105	£123.38
68-59-1404	104B	14"	.28mm	1024x768	£119	£139.83
SAMSUNG						
68-95-1407	SM400b	14"	.28mm	1024x768	£115	£135.13
2 year on-site warranty.						
<b>15"</b>						
AOC						
68-90-1505	AOC5VLR	15"	.28mm	1280x1024	£139	£163.33
LG (formerly Goldstar)						
68-26-1505	GS1505DM	15"	.28mm	1024x768	£181	£212.68
68-26-1557	GS56i	15"	.28mm	1280x1024	£169	£198.58
PHILIPS						
68-59-1505	105S	15"	.28mm	1024x768	£149	£175.08
SAMSUNG						
68-95-1501	500s FST	15"	.28mm	30-54KHz	£175	£205.63
68-95-1507	500b FST	15"	.28mm	30-69KHz	£199	£233.83
3 year on-site warranty. 500s available with multimedia speakers. Please ask for details.						
SONY						
68-71-1515	CPD100SX	15"	.25 Grille	1024x768	£199	£233.83
68-71-1917	CPD100SFT	15"	.25 Grille	1280x1024	£229	£269.08
<b>17"</b>						
LG(formerly Goldstar)						
68-26-1777	GS77i	17"	.28mm	1280x1024	£279	£327.83
LG StudioWorks						
68-26-1778	781	17"	.26mm	1600x1280	£379	£445.33
PANASONIC						
68-57-1734	TX1734	17"	.27mm	1280x1024	£349	£410.08
SAMSUNG						
68-95-1703	700s FST	17"	.28mm	30-69KHz	£349	£410.08
68-95-1701	17GLsi	17"	.26mm	1600x1200	£414	£486.45
3 year on-site warranty. 700s available with multimedia speakers. Please ask for details.						
SONY						
68-71-1715	CPD200SX	17"	.25mm	1024x768	£365	£428.88
68-71-1717	CPD200SFT	17"	.25mm	1280x1024	£385	£452.38
68-71-1705	GDM17SE2T5	17"	.25mm	1280x1024	£575	£675.63
<b>20"</b>						
LG(formerly Goldstar)						
68-26-2020	GS20i	20"	.28mm	1600x1280	£659	£774.33
PHILIPS						
68-59-2004	200B	20"	.28mm	1280x1024	£669	£786.08
SONY						
68-71-2017	CPD300SFT5	20"	.30mm	1280x1024	£795	£934.13
<b>21"</b>						
PHILIPS						
68-59-2104	201B	21"	.27mm	1600x1200	£829	£974.08
All monitors are Energy Star compliant.						
SAMSUNG						
68-95-2101	21GLs	21"	.28mm	1600x1200	£889	£1044.58
3 year on-site warranty.						



## ViewSonic Monitors

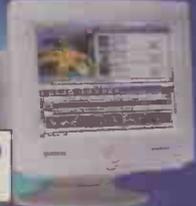
Part No	Model	Size	Dot Pitch	Max. Res.	ex VAT	inc VAT
The Economy Series						
68-99-1114	E641	14"	.28mm	800x600	£119	£139.83
68-99-1115	E655	15"	.28mm	1024x768	£179	£210.33
68-99-1117	E771	17"	.27mm	1024x768	£325	£381.88
The Graphics Series						
68-99-3315	15G5	15"	.27mm	1024x768	£189	£222.08
68-99-3515	15G6	15"	.27mm	1024x768	£219	£257.33
68-99-3317	17G6	17"	.27mm	1024x768	£389	£457.08
68-99-3517	G773	17"	.26mm	1024x768	£409	£480.58
68-99-3717	GT775	17"	.25mm grille	1280x1024	£429	£504.08
The Professional Series						
68-99-5117	P775	17"	.25mm	1280x1024	£419	£492.33
68-99-5121	P810	21"	.25mm	1600x1280	£889	£1044.58
68-99-5321	PT813	21"	.28mm	1600x1200	£915	£1075.13
All ViewSonic Monitors are supplied with a 3 Year Express Exchange Warranty.						

## MultiMedia Monitors (with speakers)

Part No	Model	Size	Dot Pitch	Max. Res.	ex VAT	inc VAT
<b>14"</b>						
LG StudioWorks (including built-in Stereo Speakers)						
68-26-1444	44M	14"	.28mm	1024x768	£139	£163.33
Built-in Stereo amplified speakers						
<b>15"</b>						
LG StudioWorks						
68-26-1556	56M	15"	.28mm	1280x1024	£179	£210.33
Built-in Stereo amplified speakers						
PHILIPS						
68-59-1513	105BR	15"	.28mm	1280x1024	£189	£222.08
P'n'P with Built-in Stereo amplified speakers and Microphone						
<b>17"</b>						
LG StudioWorks						
68-26-1783	78M	17"	.26mm	1600x1280	£389	£457.08
Built-in Stereo amplified speakers						
PHILIPS						
68-59-1713	107B	17"	.28mm	1280x1024	£349	£410.08
Inc. CustoMax software and Built-in Stereo sound						
68-59-1703	107BR	17"	.26mm	1280x1024	£395	£464.13
Built-in Stereo amplified speakers and Microphone						
<b>21"</b>						
PHILIPS						
68-59-2113	201BR	21"	.26mm	1600 x 1200	£1419	£1667.33
Built-in Stereo amplified speakers and Microphone						
68-59-2103	201BR	21"	.26mm	1600 x 1200	£1579	£1855.33
Advanced Colour, Built-in Stereo amplified speakers and Microphone						
All monitors are Energy Star compliant.						



**GoldStar**  
Technology with the human touch



**SAMSUNG**

SALES HOTLINE **01753 550333**

SMC Computers Plc. 253-257 Farnham Road.  
Slough. Berkshire. SL2 1HA

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To ensure that you have the best choice available, we have compiled a short-list showing the top selling products from our catalogue.

You will find the products listed below complete with part number and page number, as an easy reference, should you wish to purchase any of the items in our easy to select guide.

Remember: SMC GUARANTEES PEACE OF MIND - OR WE'LL TAKE IT BACK.

## STORAGE PRODUCTS

### Hard Drives EIDE/Ultra IDE

1. 30-86-6400 WD 36400AU 6.4Gb Page 17
2. 30-64-4320 Quantum ST4320AT 4.3Gb Page 17
3. 30-24-3017 Fujitsu MPA3017AT 1.7Gb Page 17

### Hard Drives SCSI/Ultra SCSI

1. 35-30-2107 IBM 46H6125 2.1Gb Page 19
2. 35-64-4500 Quantum XP34550S 4.5Gb Page 19
3. 35-70-9107 Seagate ST19101W 9.1Gb Page 19

### Tape Drives TRAVAN/Parallel Port

1. 48-13-0800 Seagate TST8000R 4.0Gb Page 15
2. 48-10-2505 Colorado HPC5Gb 5.0Gb Page 15
3. 48-10-2000 Colorado/HP 3000 3.2Gb Page 15

### Tape Drives DAT

1. 48-28-2050 Surestore 5000 4.0Gb Page 14
2. 42-84-2005 Wangdat 3200 4.0Gb Page 15
3. 48-28-2069 Surestore DAT8e 8.0Gb Page 14

**IBM 46H6125**  
35-64-4500  
PAGE 19



**Epson ES600**  
99-93-5160  
PAGE 34



## PRINTERS. SCANNERS & CAMERAS

### Injet Printers

1. 99-93-5160 Epson ES600 1440Dpi Page 34
2. 99-28-5067 HP Deskjet 670C 600Dpi Page 34
3. 99-91-6550 Canon BJC5500 360Dpi Page 34

### Laser Printers

1. 99-28-7610 HP Laserjet 6L 600Dpi Page 34
2. 99-90-0073 Brother HL730 300Dpi Page 34
3. 99-28-7451 HP Laserjet 4V 600Dpi Page 34

### Scanners

1. 97-28-0055 HP ScanJet 5P 300Dpi Page 36
2. 97-93-0507 Epson GTX5500 600Dpi Page 36
3. 97-93-0955 Epson GT19500 600Dpi Page 36

### Cameras

1. 98-93-0500 Epson PCS500 640x480 Page 37
2. 98-28-5340 HP PhotoSmart 640x480 Page 37
3. 98-91-0420 Olympus C-420L 640x480 Page 37

## MULTIMEDIA & CD-ROM

### ATAPI CD-ROM

1. 51-62-2400 Pioneer DR-A24x 24x Page 26
2. 51-57-0585 Panasonic CR-585 24x Page 26
3. 51-75-6202 Toshiba XM6202B 32x Page 26

### SCSI CD-ROM

1. 51-75-5701 Toshiba XM5701B 12x Page 27
2. 51-62-2415 Pioneer DR-U24x 24x Page 27
3. 51-93-3200 Plextor PX32Tsi 32x Page 27

### CD-ROM WRITERS/RE-WRITERS

1. 52-28-7100 HP Surestore 7100i 2/6x Page 28
2. 52-28-7109 HP Surestore 7100e 2/6x Page 28
3. 52-95-2600 Traxdata CDR2604EL 2/6x Page 28

### SOUND CARDS/KITS

1. 53-15-6425 Creative AWE64 Value Page 22
2. 53-15-6445 Creative AWE64 Gold Page 22
3. 59-15-2464 Creative SBAWE64 Discovery Page 23

**Creative SBAWE64 Discovery**  
59-15-2464  
PAGE 23



**USR Sportster Flash**  
91-79-2896  
PAGE 31



## MODEMS & MONITORS

### EXTERNAL MODEMS

1. 91-79-2896 USR Sportster Flash 56 Page 31
2. 91-79-3356 USR Winmodem PC 33.6 Page 31
3. 91-91-5666 Pace 56k Voice Modem 56 Page 31

### INTERNAL MODEMS

1. 91-79-3392 USR Winmodem 33.6 Page 31
2. 91-91-5662 Pace 56k Voice Modem 56 Page 31
3. 91-97-2259 Motorola Voicesurfer 56 Page 31

### ISDN MODEMS

1. 91-79-4906 USR Courier-I 128 Page 31

### MONITORS

1. 68-59-1403 Philips 14C 14" Page 41
2. 68-93-9153 Iiyama MF-8515G 15" Page 40
3. 68-71-1515 Sony CPD100SX 15" Page 41
1. 68-26-1557 LG G556i 15" Page 41
2. 68-93-9171 Iiyama MF-8617T 17" Page 40
3. 68-26-1783 LG Studioworks 78M 17" Page 41
3. 68-71-2017 Sony CPD300SFT5 20" Page 41
3. 68-91-9211 Iiyama MF-8221E 21" Page 40

# SYSTEM CASES & PERIPHERALS



**SMC**  
COMPUTERS



## Keyboards

Part No	Make & Model	ex VAT	inc VAT
<b>GENERIC KEYBOARDS</b>			
82-50-3505	For Windows 95 - 105 key, 5-pin AT	£10	£11.75
82-50-3509	For Windows 95 - 105 key, 6-pin Din (PS/2)	£12	£14.10
<b>MICROSOFT KEYBOARDS</b>			
82-50-0001	Natural Keyboard v1. - 105 key, 5-pin AT & 6-pin Din	£49	£57.58
<b>CHERRY KEYBOARDS</b>			
82-91-3595	Cherry G81-3000 Lamb - 105 key, 5-pin AT, soft touch	£25	£29.38
82-91-3597	Cherry G80-3000HFM - AT, 102 key, 5-pin AT, click	£39	£45.83
82-91-3599	Cherry G80-3000HPM- PS/2, 105 key, 6-pin Din, click	£43	£50.53



## Logitech Mice

Part No	Make & Model	ex VAT	inc VAT
<b>LOGITECH MICE</b>			
82-97-1511	Pilot Mouse, New shape - 9-pin serial, 3 buttons	£15	£17.63
82-97-1513	Pilot Mouse, New shape - 6-pin DIN, 3 buttons	£15	£17.63
82-97-0035	Pilot Mouse + - 9-pin serial & PS/2, 3 buttons/Wheel	£19	£22.33
82-97-1315	Trackman Portable - 9-pin serial, 3 buttons, 200dpi	£30	£35.25
82-97-1395	Trackman Marble - 3 buttons, marble infra-red tech	£42	£49.35
82-97-0021	Mouseman - 9-pin serial & PS/2, 4 buttons	£25	£29.38
82-97-0022	Mouseman + - 9-pin serial & PS/2, 4 buttons/Wheel	£28	£32.90



## Mice

Part No	Make & Model	ex VAT	inc VAT
<b>GENERIC MICE</b>			
82-53-3153	Mouse - 9 pin serial, 2 buttons	£10	£11.75
<b>MICROSOFT MICE</b>			
82-50-3192	Microsoft Home - 9 pin serial, 2 buttons	£18	£21.15
82-50-0002	Microsoft V.2 - 9 pin serial & PS/2	£27	£31.73
82-50-0605	Microsoft Intellimouse - 9 pin serial & PS/2	£39	£45.83



## ACME PC Cases (CE Approved)

Part No	Make & Model	ex VAT	inc VAT
<b>PC-AT Cases</b>			
70-97-3012	Standard Desktop, 230w PSU, 3x 3.5", 2x 5.25" bays	£59	£69.33
70-97-3712	Mini/Midi Tower, 230w PSU, 4x 3.5", 3x 5.25" bays	£65	£76.38
70-97-3912	Full Tower, 230w PSU, 4x 3.5", 6x 5.25" bays	£89	£104.58
<b>PC-ATX Cases</b>			
70-97-3330	ATX - Desktop, 200w PSU, 3x 3.5", 2x 5.25" bays	£89	£104.58
70-97-3790	ATX - Mini Tower, 200w PSU, 4x 3.5", 2x 5.25" bays	£79	£92.83
70-97-3730	ATX - Midi Tower, 200w PSU, 4x 3.5", 3x 5.25" bays	£99	£116.33
70-97-3930	ATX - Full Tower, 230w PSU, 4x 3.5", 6x 5.25" bays	£115	£135.13

Please note that the above pictures are for the ACME range of cases, which has been chosen for its high quality finish, styling and reliability.

## PC Cases (CE Approved)

Part No	Make & Model	ex VAT	inc VAT
<b>PC-AT Cases</b>			
70-97-0300	Super-Slimline Desktop, 100w PSU, 2x 3.5" bays*	£55	£64.63
70-97-0500	Slimline Desktop, 200w PSU, 2x 3.5", 2x 5.25" bays*	£49	£57.58
70-97-1000	Standard Desktop, 200w PSU, 1x 3.5", 3x 5.25" bays	£39	£45.83
70-97-1510	Mini Tower, 200w PSU, 3x 3.5", 2x 5.25" bays	£39	£45.83
70-97-1730	Midi Tower, 200w PSU, 5x 3.5", 3x 5.25" bays	£45	£52.88
70-97-1910	Full Tower, 200w PSU, 3x 3.5", 6 x 5.25" bays	£59	£69.33

Cases marked with "\*" are suitable for ISA Motherboards only. All cases supplied with Power supply units, Power Cables, Screws and motherboard mounts.



Why not take a look at our examples of the SMC range of Personal System Options over the page. And don't forget our free no obligation quote form on the back cover.

SALES  
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E&OE. A Full list of SMC Terms & Conditions is available on request

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# Infinite CHOICE

## 5 Year Warranty...

## Lifetime Peace of Mind

### Infinite WIZARD

#### OPTIONS

##### MODEMS

A full range of 28Kbps, 33.6Kbps and 56Kbps Voice/Fax and data modems available.



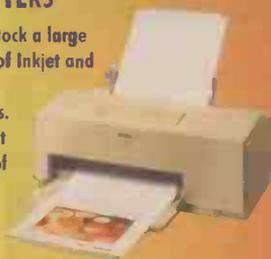
##### MULTIMEDIA

A huge range Sound Cards and Multimedia Kits, also CD-ROM drives.



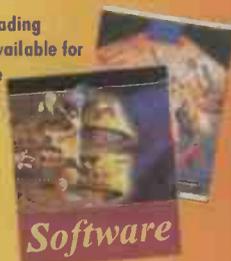
##### PRINTERS

From stock a large range of Inkjet and Laser printers. For that touch of colour.



##### SOFTWARE

A range of leading software is available for that complete multimedia experience..



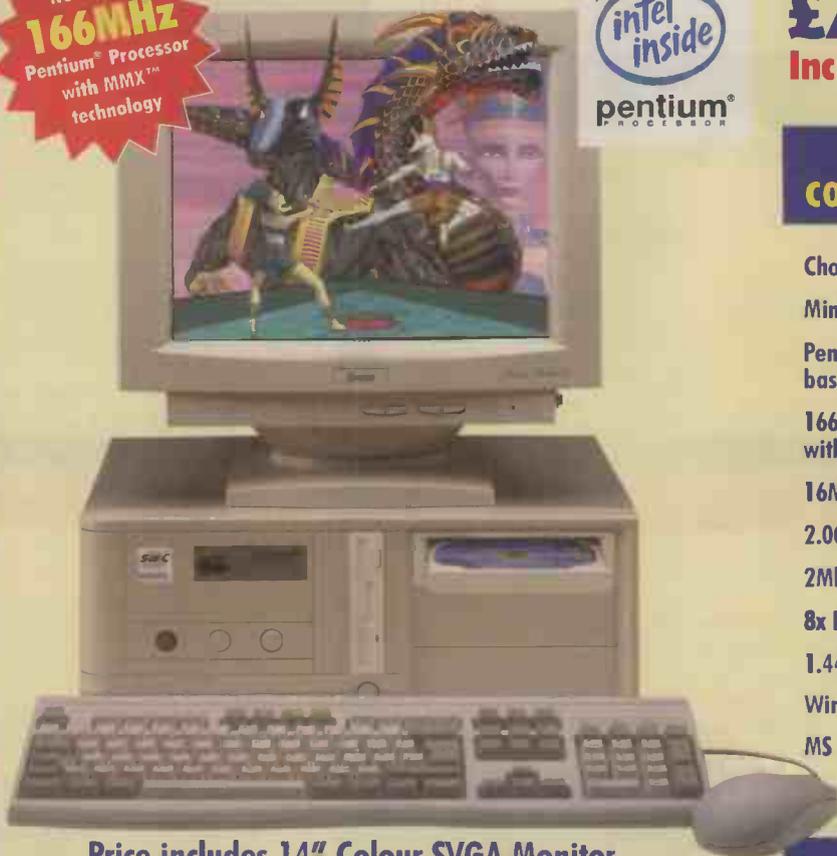
##### MONITORS

A huge range of monitor options, 14" to 21" including, with built-in speakers.



An ideal base unit to start from, with infinite choices and possibilities on which to build. In either desktop or mini tower case, you decide on your processor and memory configuration, and with a 2Gb hard drive and fast CD-ROM already installed you have a fully upgradeable system. This unit can be added to with sound card, network card or many other components, just contact our sales department.

**NOW WITH  
166MHz  
Pentium® Processor  
with MMX™  
technology**



Prices from  
**£709** Ex VAT  
Inc VAT **£833.08**

#### SYSTEM CONFIGURATION

- Choice of Case
- Mini Tower/Desktop
- Pentium® Processor based AT Motherboard
- 166Mhz Pentium® Processor with MMX™ Technology
- 16Mb EDO Memory
- 2.0Gb UIDE Hard drive
- 2Mb Matrox Graphics
- 8x EIDE CD-ROM
- 1.44Mb Floppy Drive
- Win'95 Keyboard
- MS Serial Mouse

Price includes 14" Colour SVGA Monitor.

#### SOFTWARE INCLUDED

- Windows '95
- Disney's Toy Story
- Moto Racer
- Kai's Power Goo SE.

#### JUST A FEW PRICE OPTIONS

##### System Processor Options - Please add VAT

Processor	166MHz	200MHz	233MHz
Price	£709	£773	£839

The Intel Inside® logo and Pentium® are registered trademarks and MMX™ is a trademark of Intel Corporation.

## SYSTEMS FOR THE NEW MILLENNIUM

For a **FREE** no obligation quote see our easy to use form on the **BACK COVER**



# PERSONAL SYSTEMS

## SYSTEMS FOR THE NEW MILLENNIUM

Personal quotations for... Customised machines



### Infinite COMMUNICATOR

The ATX motherboard and case design has been developed with ease of use and expandability and improved reliability in mind. The motherboard has been arranged such that full size cards can be used in all slots, with the processor and SIMM sockets repositioned to allow easy access for upgrading. The power unit has been placed to allow cool air to blow over the processor to cater for the faster and hotter chips being developed. This all adds up to a system that has been designed to make best use of today's and tomorrows technologies - a machine designed to last.

#### SYSTEM CONFIGURATION

- ATX Midi Case
- Pentium® Processor based ATX Motherboard
- 166Mhz Pentium® Processor with MMX™ Technology
- Heat Sink with Fan
- 32Mb EDO Memory
- 2.0Gb UIDE Hard drive
- 2Mb Matrox Graphics
- 16x EIDE CD-ROM
- 1.44Mb Floppy Drive
- Win'95 PS/2 Keyboard
- MS PS/2 Mouse
- 33.6Kbps Fax Modem

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- 30-Day Internet Trials
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Price includes 14" Colour SVGA Monitor.

#### JUST A FEW PRICE OPTIONS

System Processor Options - Please add VAT			
Processor	166MHz	200MHz	233MHz
Price	£888	£952	£1018

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Prices from  
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#### System Processor Options - Please add VAT

Processor	233MHz	266MHz	300MHz
Price	£1211	£1315	£1561

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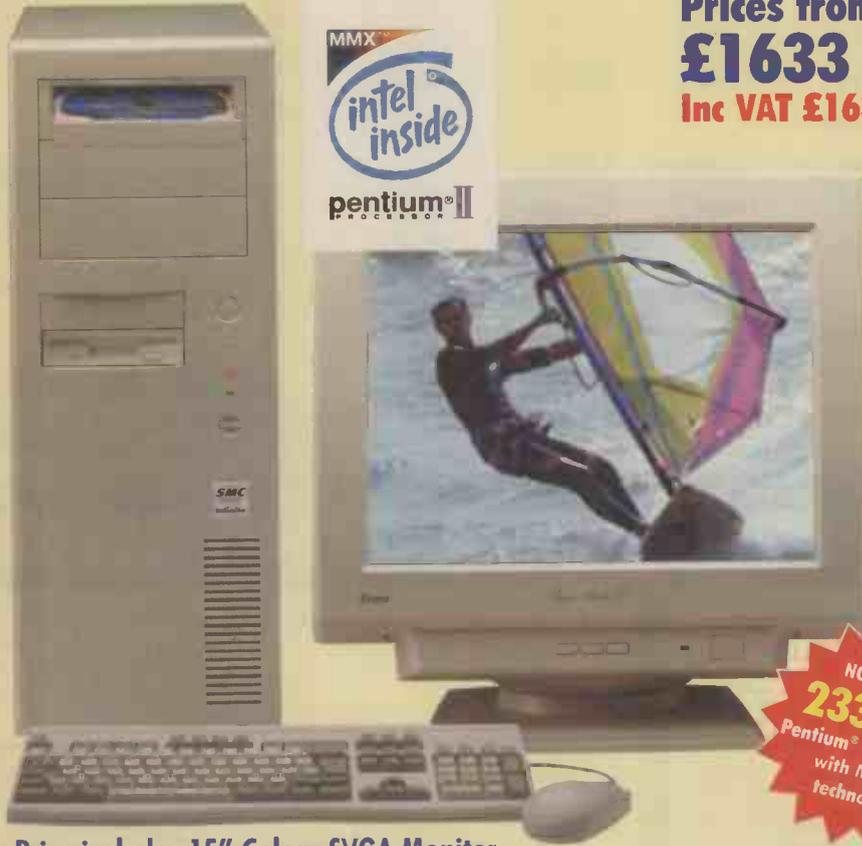
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Price includes 15" Colour SVGA Monitor.

#### JUST A FEW PRICE OPTIONS

##### System Processor Options - Please add VAT

Processor	233MHz	266MHz	300MHz
Price	£1390	£1494	£1740

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#### SYSTEM CONFIGURATION

- ATX Midi Case
- Pentium® II Processor based ATX Motherboard (LX)
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- Heat Sink with Fan
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- 4Mb AGP Graphics Card
- 24x ATAPI CD-ROM
- 1.44Mb Floppy Drive
- Win'95 PS/2 Keyboard
- MS PS/2 Mouse
- 33.6Kbps Fax Modem

#### SOFTWARE INCLUDED

- MicroGrafx:
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  - Simply 3D V:2
- Serif Page Plus V:4.0
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<b>Processor</b>	<b>Pentium® Processor with MMX™ technology</b>			<input type="checkbox"/> 166Mhz	<input type="checkbox"/> 200Mhz	<input type="checkbox"/> 233Mhz
	<b>Pentium® II Processor</b>			<input type="checkbox"/> 233Mhz	<input type="checkbox"/> 266Mhz	<input type="checkbox"/> 300Mhz
<b>Memory Size</b>	<input type="checkbox"/> 8Mb	<input type="checkbox"/> 16Mb	<input type="checkbox"/> 32Mb	<input type="checkbox"/> 64Mb	<input type="checkbox"/> 128Mb	
<b>Memory Type</b>	<input type="checkbox"/> Non-Parity	<input type="checkbox"/> Parity	<input type="checkbox"/> EDO	<input type="checkbox"/> SDRAM		
<b>Hard Drive</b>	<b>EIDE</b>		<input type="checkbox"/> 2.0Gb	<input type="checkbox"/> 2.5Gb	<input type="checkbox"/> 3.0Gb	<input type="checkbox"/> 4.3Gb
	<b>SCSI</b>		<input type="checkbox"/> 2.0Gb	<input type="checkbox"/> 4.3Gb	<input type="checkbox"/> 9.0Gb	
<b>CD-ROM Drive</b>	<b>EIDE (Standard)</b>		<input type="checkbox"/> 8 Speed	<input type="checkbox"/> 16 Speed	<input type="checkbox"/> 24 Speed	<b>SCSI</b> <input type="checkbox"/> 12 Speed
<b>Floppy Drive</b>	<input checked="" type="checkbox"/> 3.5" (fitted as standard)					
<b>Graphics Card</b>	<input type="checkbox"/> 1Mb	<input type="checkbox"/> 2Mb	<input type="checkbox"/> 4Mb	<input type="checkbox"/> 8Mb		
	<input type="checkbox"/> DRAM	<input type="checkbox"/> EDO RAM	<input type="checkbox"/> VRAM	<input type="checkbox"/> SGRAM	<input type="checkbox"/> WRAM	<input type="checkbox"/> Other
<b>Sound Card</b>	<input type="checkbox"/> SB16 Value	<input type="checkbox"/> AWE64 Value	<input type="checkbox"/> AWE64 Gold			
<b>Speakers</b>	<input type="checkbox"/> 10 Watt		<b>Additional</b>	<input type="checkbox"/> Sub Woofer	<input type="checkbox"/> Other	
<b>Modem</b>	<input type="checkbox"/> 28.8Kb/s	<input type="checkbox"/> 33.6Kb/s	<input type="checkbox"/> 56Kb/s	<b>Fixture</b>	<input type="checkbox"/> Internal	<input type="checkbox"/> External
<b>Monitor</b>	<input type="checkbox"/> 14"	<input type="checkbox"/> 15"	<input type="checkbox"/> 17"	<input type="checkbox"/> 20"	<input type="checkbox"/> 21"	<input type="checkbox"/> Other
<b>Keyboard</b>	<input type="checkbox"/> Windows '95 (105 key)			<input type="checkbox"/> Cherry (105 key)		
<b>Op. System</b>	<input type="checkbox"/> Windows 95 on CD Rom (standard)		<input type="checkbox"/> Dos 6.22 & Windows 3.11			
<b>Printer</b>	<input type="checkbox"/> Mono	<input type="checkbox"/> Colour	<input type="checkbox"/> Inkjet	<input type="checkbox"/> Dot Matrix	<input type="checkbox"/> Laser	
<b>Other Options</b>	<input type="text"/>					

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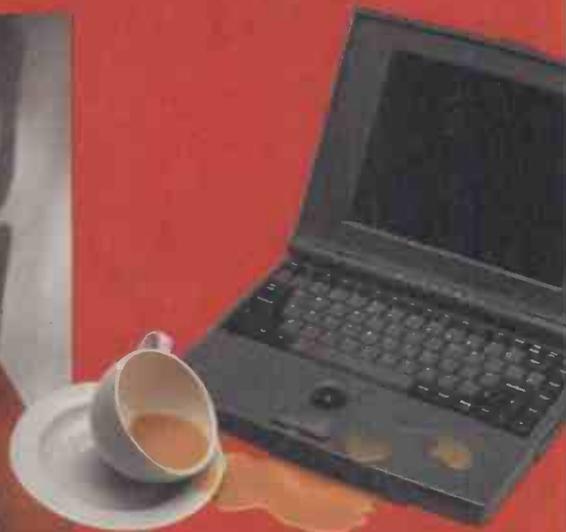
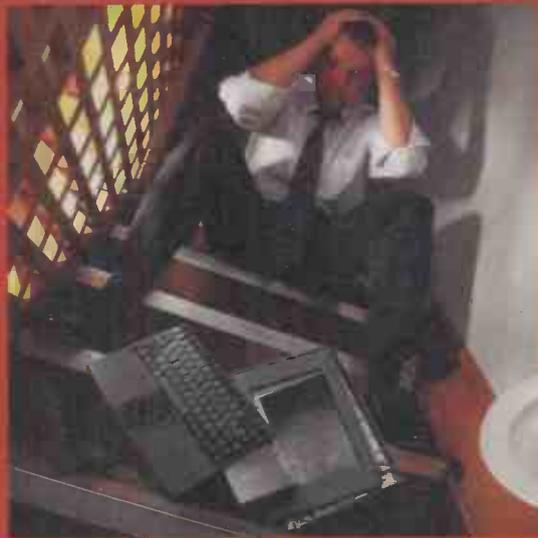
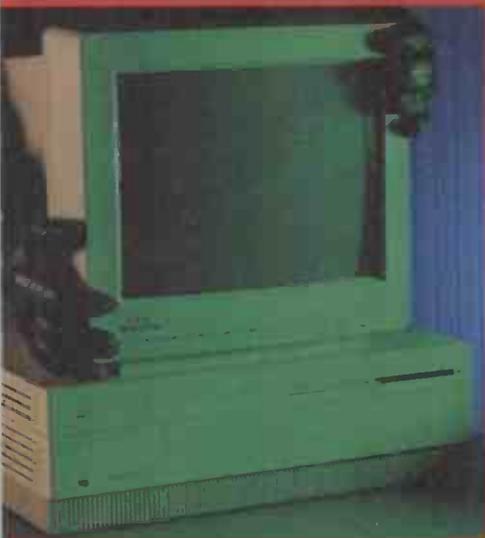
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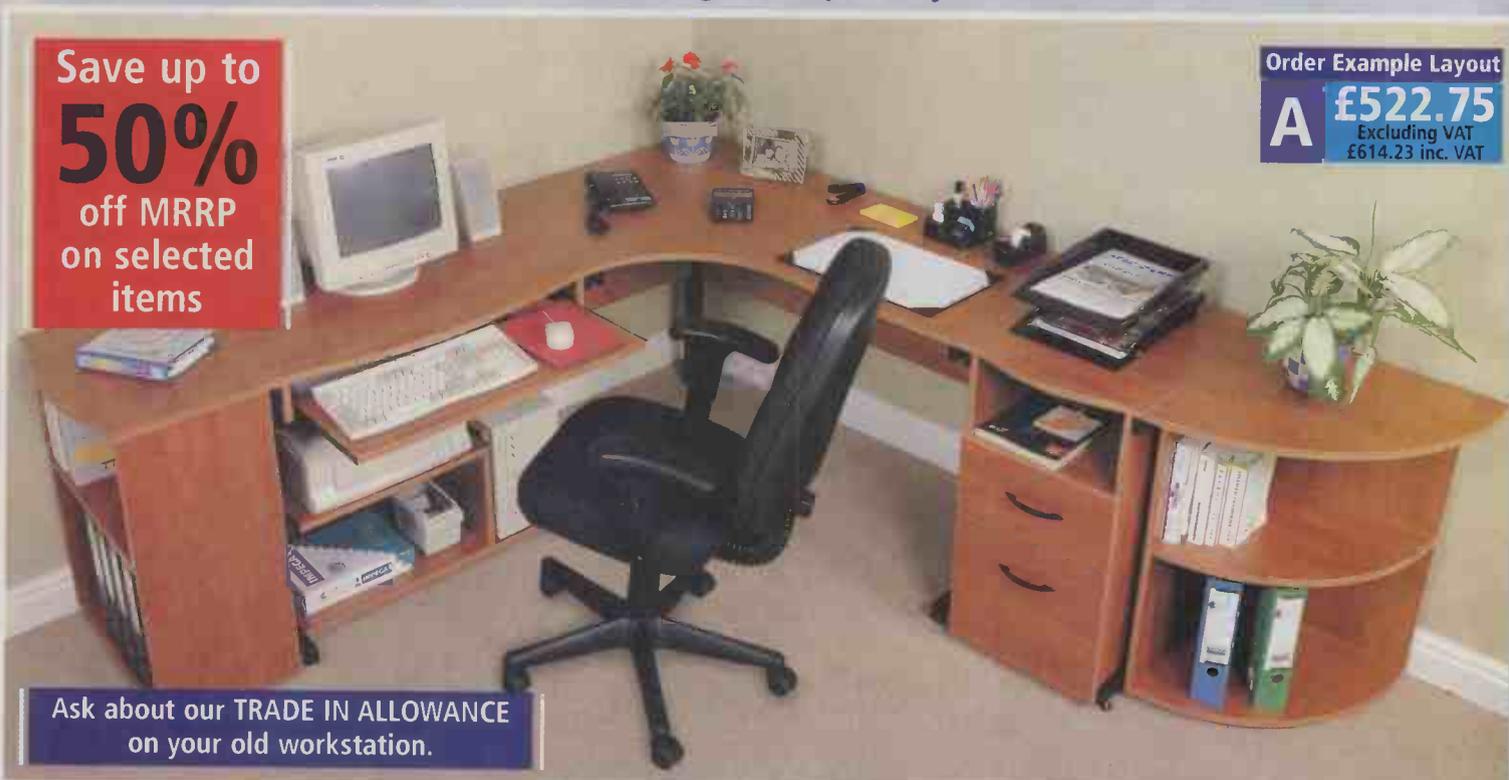
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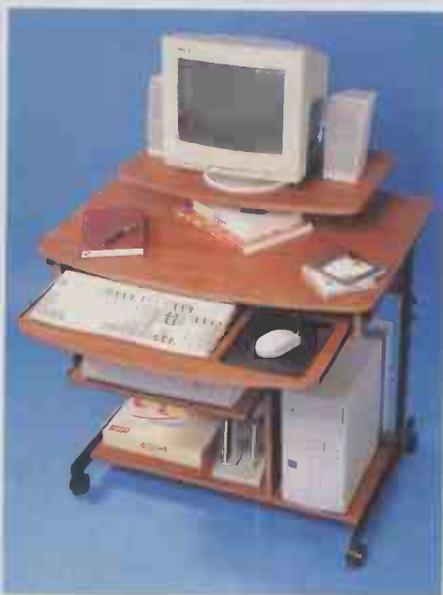
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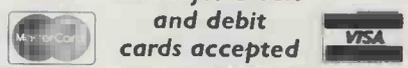
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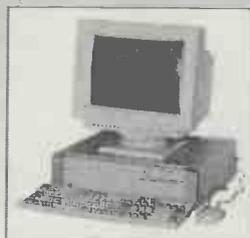
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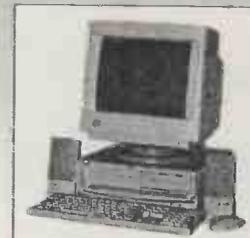
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**Arity/Prolog 32**

Powerful 32-bit Prolog Compiler

Arity/Prolog32 for Win32 provides a complete Prolog programming environment in which you can write, debug, and run Prolog programs in the Windows 95 and NT environments.

Arity/Prolog32 for Win32 is a powerful, highly optimised, and extended version of the logic programming language Prolog with a complete compiler and interpreter written in Prolog, C, and assembler and is a superset of Clocksin and Mellish Prolog.

**Driver::Works**

Write Device Drivers in C++

Driver::Works is a next-generation environment for device driver development based on a powerful and flexible C++ class library coupled with a powerful code generation wizard.

**Visible Analyst**

Advanced CASE Tool

Visible Analyst is an integrated CASE toolkit that provides graphical analysis & design, data, process & object modeling capabilities, powerful repository and integration with other tools and databases in one easy-to-use package on networked Windows capable PC's. Visible Analyst generates SQL DDL, DDS and shell code for both C and COBOL.

**JAVA**

Jamba 1.1	£127
Java Workshop 2.0	£99
JBuilder Standard	£82
JBuilder Professional	£390
JBuilder Client/Server	£1681
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Parts for Java	£70
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SuperCode Java/ActiveX	£169
SuperCode Database	£455
Visual Café for Java Web Edition	£68
Visual Café for Java Professional	£197
Visual Café for Java Database	£348
Visual J++ Professional 1.1	£70
VisualAge for Java Professional	£66
VisualAge for Java Enterprise	£1250



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## Direct Buyers' World

The place in *PCW* where you can compare prices on a wide range of hardware and software. The card insert at page 332 marks the start of the section.

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ATT	0181 520 1007	716	Sterling Management	01483 301 331	714
Byte Computer Superstore	0121 766 5559	394-7	Tech Direct (insert)	0181 286 2222	589-620
Choice Peripherals (insert)	01909 530 242	444-76	Technomatic (insert)	0990 559944	541-588
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Dan Technology	0113 259 1200	333-7	Universal Control Systems	01902 28688	382-3
Electrone	01494 511999	722	Watford Electronics (insert)	01582 745555	477-540
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Gultronics	0171 436 3131	351			
Linear Computers	0800 622094	346-7			
Mertec	0181 667 0990	379-381			
Micro Direct	0161 2484848	705			
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Protek	0500 127 498	358			
Richnight	0800 318298	363-5			
Roldec Systems	01902 456464	353-7			

# INPUT DEVICES AND PC ADD-ONS

## NEW range to meet all your needs!

### ELECTRONE

*Point of Sale*

Improve productivity and efficiency and increase operator comfort and accuracy at the point of sale with Electrone's unique range of PC enhancement and computer add-on products.



#### ACK 710 KEYBOARD

Featuring built-in magnetic card reader, spill resistant design and compact size, the 710 fits right between standard keyboards and till keyboards, offering many of the benefits of each.

#### PRECISECASH KEYBOARD

The POS keyboard with QWERTY keys, 77 programmable keys, full QWERTY typing area, magnetic card reader and barcode port. The complete POS keyboard.



#### 8001 KEYBOARD

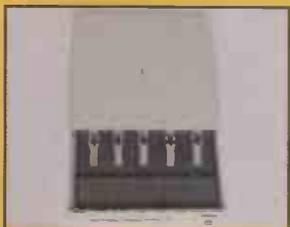
Our most compact POS keyboard, the 8001 packs 105 programmable keys into the smallest footprint. Magnetic card reader option and serial interface option.



#### BARCODE READERS

Our range includes the latest scanners and laser guns, all with built-in decoder and interface options. Choose from PC keyboard wedge, serial and DEC keyboard wedge.

**NEW Product** — CF-3CD portable data capture and CCD scanner in one unit!



#### CASH DRAWER

Our intelligent cash drawer includes as standard serial and parallel interfaces, each with pass-through option with choice of activation codes. The drawer also features a security keylock and front slot for non-cash transactions.



#### RECEIPT PRINTERS

The compact, stylish receipt and ticket printers offer a choice of 24, 40 and 42 column printing with impact or thermal print mechanisms. All models have built-in power supply option and interface choice.



#### CUSTOMER DISPLAYS

Our pole display range includes backlit LCD panels with 2 lines of 20 characters and 1 line of 16 characters. Models feature choice of pole height, tilt and swivel display units and serial or parallel interface.

**Electrone Limited**  
Unit 1 Central Park, Bellfield Road  
High Wycombe, Bucks HP13 5HG  
Fax 01494 511888  
Email: [electrone.com](mailto:electrone.com)  
Web: [www/electrone.com](http://www/electrone.com)

### ELECTRONE

*General*

Because we specialise in input and associated devices our expertise is unrivalled — and, if we don't stock exactly what you need, we'll supply a custom product quickly and at a low cost you'll find hard to believe.

#### 9001 KEYBOARD

The 9001 squeezes 86 keys into the smallest footprint with full travel tactile keys, 17mm key spacing and embedded numeric pad. They don't come much smaller than this!

#### MINIKB

Occupying less space than an A4 sheet, the MINIKB has 85 full size tactile click keyswitches. Full typing area, function key row and cursor controls. Optional number pad available.

#### MCK142 PRO

All the keys you'll ever need! Two sets of function keys, enhanced style 102 layout and 24 user-programmable function keys. A great keyboard for terminal emulation.

#### MICROPADS

Keypads for all applications: numeric pads for notebooks, keyboard replacements, function keypads — we can customise the standard models or make complete custom designs to match your needs exactly.

#### TRACKBALLS

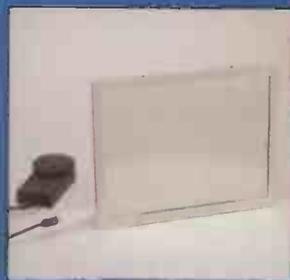
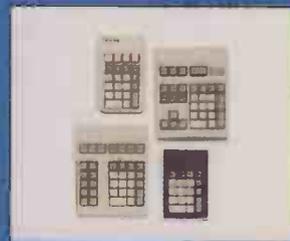
Our new trackball range features the new infrared Star Track for remote control of presentation, demonstration and any other mouse applications. Two desktop models offer the choice of thumb or finger operations with two enclosure styles. All trackballs can directly replace a serial mouse.

#### TOUCH SCREENS

Our new touch screen panel clips directly to your existing monitor and, through the supplied serial interface and software, can emulate a mouse for instant touch control of your applications — or use it as a development tool for your own touch screen programmes. Fits 14" and 15" screens. Bonded touch monitors also available.

#### KEYPORT

The latest Keyports now include a full PC keyboard wedge interface — just plug into the keyboard port, with or without your keyboard attached, and you're ready to programme your own layout. Software to download programme and design overlay included.



### ELECTRONE

**PRODUCT HOTLINE**  
**01494 511999**  
**CALL FOR OUR LATEST**  
**PRODUCT DIRECTORY**

Most products are available from stock for same day shipping. Continuous development means products may vary from illustrations. Call to discuss your custom requirements. All products subject to availability. All trademarks acknowledged.

# ChipChat



■ If you tried to solve our January-issue crossword, you will have noticed that the clues did not match the grid. And, to boot, the solutions were not even the answers for the December-issue crossword, but a repeat of November's! We're sorry about the muddle and hope it didn't spoil your enjoyment of the January issue. The correct crossword, with matching solutions, has been printed in this month's issue (p327), along with the solution for December's crossword.

■ In last month's *Long Term Test* review of the Pilot 5000 we regrettably could not supply the author's full name. It was Aiden Harding.

*We apologise to readers for any confusion caused by these errors.*

## Chipleads from abroad

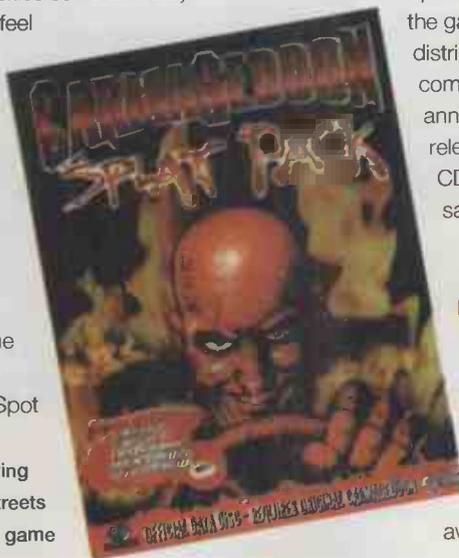
■ **How to put the skids under the kids**  
The president of George Washington University, Dr Stephen Trachtenberg, who was in Christchurch, New Zealand, this month, dismissed the theory that technology would replace the need for university campuses. "Nature makes young people especially obnoxious at about 17 years of age. Their parents want them out of the house and universities serve a role by not making the parents feel guilty," he said.

NZ News Online

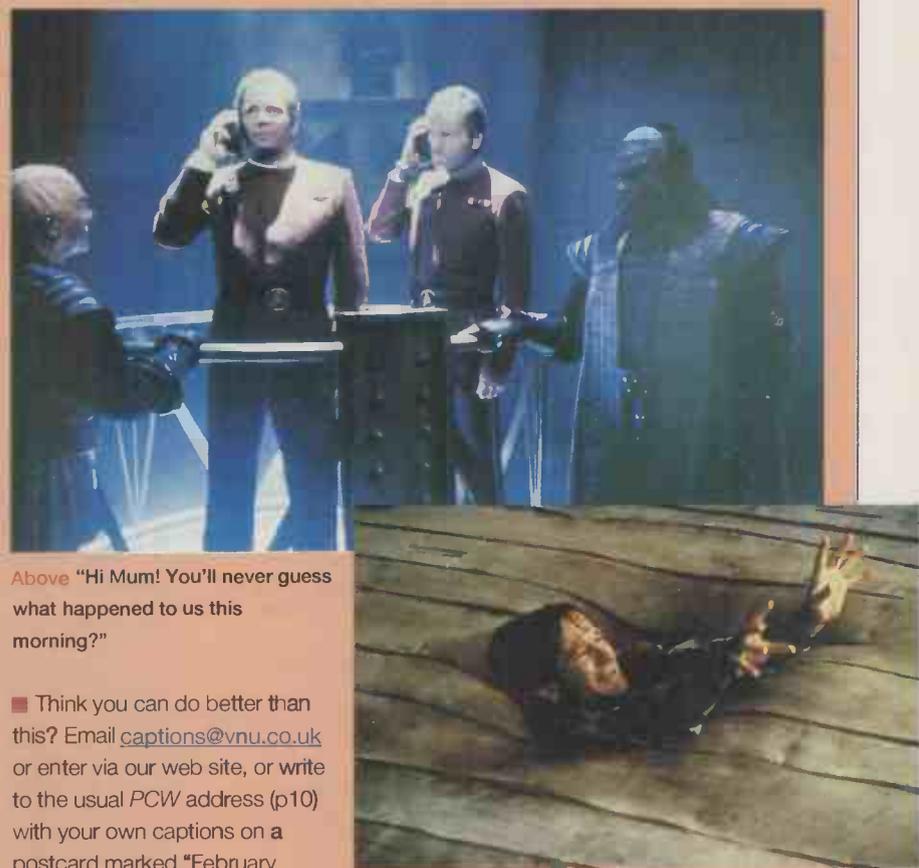
### ■ Brazilians go nuts

The Brazilian government last week ordered all copies of videogame Carmageddon off the shelves, claiming that the game had led drivers to acts of violence. GameSpot

**Right Shock! Horror! Driving madness hits Brazilian streets with the release of a new game**



## Caption competition



Above "Hi Mum! You'll never guess what happened to us this morning?"

■ Think you can do better than this? Email [captions@vnu.co.uk](mailto:captions@vnu.co.uk) or enter via our web site, or write to the usual PCW address (p10) with your own captions on a postcard marked "February Caption Compo" before 15th January.

We'll print the funniest entry and the winner will receive a £20 book token.

Congratulations to Tony Gilbert, who won December's caption competition (above) with this: "O'Kai kids, which one of you dropped Power Goo on the floor?"

reports that Brasoft, the game's Brazilian distributor, will not only comply but has announced that it will release an educational CD-ROM about driver safety.

Wired, 4th Dec '97

### ■ Coffee and Danish

Journalists are not renowned as "morning people" and it was with some awe that one group,

on a trip to the US, met a certain Unisys manager from Denmark. She rises every morning at 5am to spend quality time with her young son, and made some highly amusing but derisory comments about the nocturnal habits of those journalists present.

Inevitably, the only person to be late on the trip was our Danish colleague. Concerned chums let the telephone ring for minutes and even knocked on her door, but, no response.

Finally, the hotel manager was persuaded to use his pass key and found her, sleeping like a baby, right next to a ringing telephone and a blaring clock radio.

Which proves the old saw: Early to bed, Early to rise, Makes you healthy, wealthy... and late.

# For business and home think Viglen.

For over twenty two years, Viglen have been manufacturing quality products and providing unequalled support and service to our customers. With such a pedigree, it's no wonder we have become one of the top PC manufacturers in Britain.

With one of the most modern automated factories in the UK, we can provide an entire range of built-to-order systems including PCs, notebooks, and file servers. These pages show systems with pre-configured specifications, but we will be happy to adapt them to meet any particular requirements you may have.

Whether you are buying for business or home, Viglen has the system you want – and for less than you might think.

## Why great minds choose Viglen

### GREAT PRODUCTS

Viglen PCs consistently win top industry awards and are in the highest league for winning the most awards and acclaims.

### GREAT RELIABILITY

Viglen PCs are acclaimed for having some of the best reliability figures in the industry and have topped the charts year after year.

### GREAT QUALITY

The quality of our systems is second to none, a record recognised in review after review. Add to this our BS EN ISO 9002: 1994 quality accreditation and it means that every PC that leaves our factory is manufactured to the highest possible quality standards.

### GREAT SUPPORT

Viglen's technical support is renowned for being one of the best in the industry. With our "customer first" philosophy, when you buy a Viglen PC we ensure your satisfaction is at the top of our priorities.

### GREAT WARRANTY

Every Viglen PC is backed by our 12 month parts and labour warranty, including collection and return to you at our expense (mainland UK only). And we also offer a complete range of low-cost on-site packages for up to 5 years and a 4-hour response premium on-site option for mission critical systems (such as File servers).

### GREAT DELIVERY

Viglen has one of the most modern build-to-order PC manufacturing plants in the UK and so even the most complicated custom configuration can be shipped within 10 working days. What's more, standard Business and Personal systems can be delivered within 3 working days from clearance of payment.

### GREAT UPGRADES

Viglen is not only the best choice today, but for tomorrow too. Should you need to upgrade your PC in the future we offer a full upgrade service which is competitively priced.

### GREAT VALUE

Our Business and Personal systems combine the highest quality with best possible value to bring you a range of systems to suit your exact needs.

## Easy to Order

### PHONE, POST, FAX OR E-MAIL

If you require any help or advice on choosing a system to suit your requirements please do not hesitate to call our Sales Department. To help us identify your requirements quickly, please state the product code (where applicable), description and price of items required. Then, when you have decided on your system please fax or phone your order. Please allow 7-10 working days for delivery, except for Viglen special configuration models which we will do our utmost to despatch within 3 working days from clearance of payment.

ALL MAJOR CREDIT CARDS

**BY PHONE** – Credit Card, Switch, Connect or American Express Card holders, can order by telephone. Just call 0990 944 944 and quote your credit card number and expiry date.

**BY POST OR FAX** – You can place your order with our Sales Department by post or fax to the address or number shown below. We will require a cheque for the full amount by return post. Major credit card holders may authorise payment by quoting the credit card number and expiry date.

**BY E-MAIL** – e-mail: [sales@viglen.co.uk](mailto:sales@viglen.co.uk)

Official orders from educational establishments, government departments and PLCs accepted



Very competitive Lease Rental Arrangements are available for bona fide businesses, educational and government establishments.

Easy2own Monthly payment scheme is available to private purchasers subject to status. Typical example of payment calculation of PC costing £999 inc delivery and VAT. 10% deposit of £99.90 required followed by 36 monthly payments of £31.90 (APR = 17.9%). For finance over £1500 inc VAT, APR drops to 14.9%.

### BUY NOW PAY LATER

Options available. Please call.

Additional payment protection insurance is available. Viglen is a licensed credit broker.

EDI Purchase orders via electronic data interchange accepted using INS Tradanet service. Public sector customers may also purchase all Viglen systems through The Stationery Office by calling 01603 694153 and GCat on 0870 6041000, for further details.

Viglen systems are exclusively distributed in Eire by Lendac Data Systems, Unit 6 IDA Enterprise Centre, Pearse St., Dublin 2, Ireland. Tel No: Dublin 6776133 Fax No: Dublin 6710135. Prices in Eire differ from those quoted in this advertisement.

### 3 DAY DELIVERY

We will do our utmost to ship the systems shown with the 3 day logo within 3 working days from clearance of payment. **3 day**

## See, Touch and Feel our products...

web <http://www.viglen.co.uk>

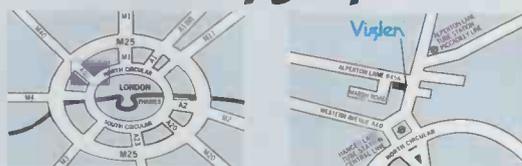
Come and visit us in our showroom.

Viglen Limited, Viglen House, Alperton Lane, Alperton, Middlesex HA0 1DX.

Tel 0990 944 944

Calls charged at national rate

Fax 0181 758 7080



Showroom open Monday – Friday 9.00 – 5.30 Saturday 9.00 – 5.00  
Showroom closed Public and Bank Holidays

PHONE OR WRITE NOW FOR YOUR FREE INFORMATION PACK

Name \_\_\_\_\_

Address \_\_\_\_\_

Postcode \_\_\_\_\_

Telephone \_\_\_\_\_

I am interested in PCs for  Business  Home  Networking

Return to: Viglen Limited, Viglen House, Alperton Lane, Alperton, Middlesex HA0 1DX

PCW02.98

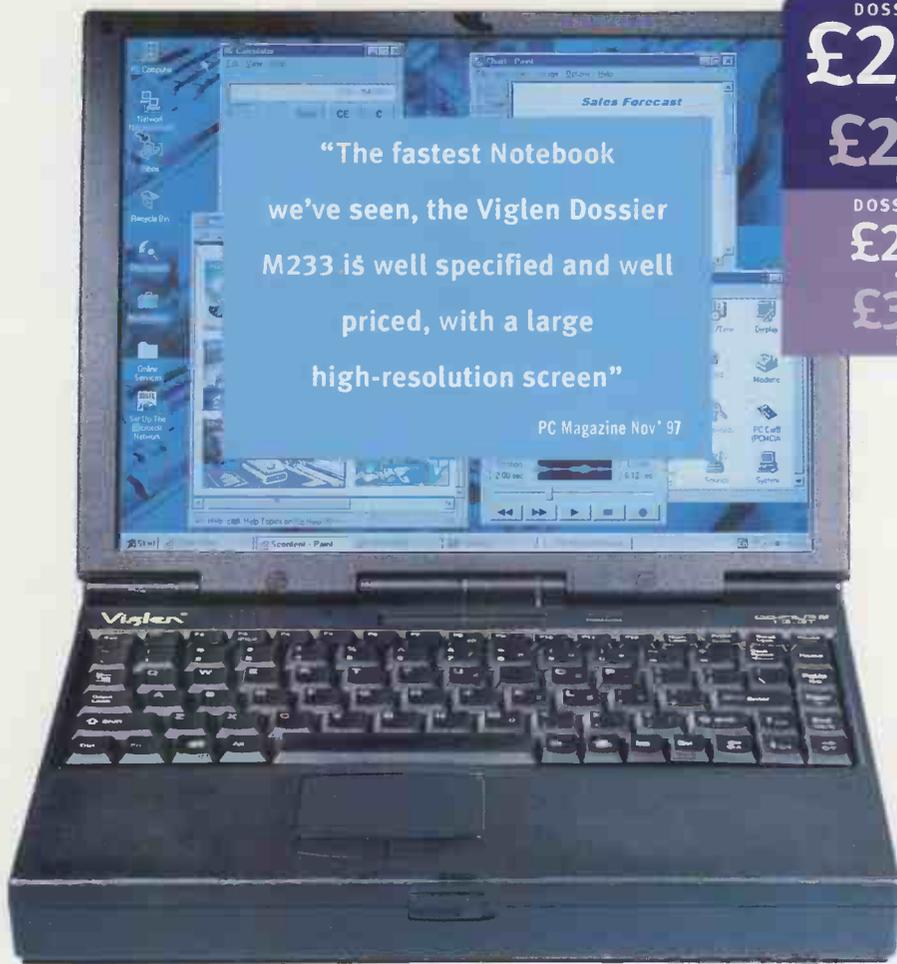
# Viglen

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# Priced to make the fastest Notebook go even faster.



"The fastest Notebook we've seen, the Viglen Dossier M233 is well specified and well priced, with a large high-resolution screen"

PC Magazine Nov '97

DOSSIER M200es  
**£2199<sup>00</sup>**  
 exc. del. & VAT

DOSSIER M233hs  
**£2699<sup>00</sup>**  
 exc. del. & VAT

**£3188<sup>95</sup>**  
 inc. del. & VAT

# Viglen

It's no wonder that PC Magazine was so quick to praise the new Viglen Dossier M. As well as taking the fastest mobile Pentium® processors with MMX™ Technology around, it has many features which you won't find in other notebooks – or even some desktop systems.

### The New Dossier M Series featuring the revolutionary new Intel Mobile Module

#### Dossier® M200es

- ◆ Intel 200MHz Pentium® Processor with MMX™ technology ◆ 12.1" TFT display ◆ 32MB SDRAM (144MB Max) ◆ 512K L2 Cache ◆ 2.1GB removable Hard Drive ◆ Modular Bays accepts 20xCD ROM or 3.5" floppy (both supplied) or optional 2nd battery ◆ 128 bit graphics accelerator with 2MB Ram ◆ Zoom Video support ◆ 2 Type II or one type III PC card slots ◆ Cardbus Ready ◆ Fast IR port ◆ Built in stereo speakers with 3D surround sound ◆ Built in microphone ◆ Smart Lithium Battery up to 6.5 hours fully on ◆ 2.91kg ◆ Touchpad ◆ Microsoft® Windows 95 ◆ Microsoft® Office 97 ◆ Deluxe carrying case

#### Dossier® M233hs

- Same as the M200es but with the following:
- ◆ Intel 233MHz Pentium® Processor with MMX™ technology ◆ 13.3" TFT display ◆ 3GB removable Hard Drive

Featuring the revolutionary new Intel Mobile Module (MMO), the M series will be simple to upgrade when even faster processors become available in the future. Yet even with such processing power, the cutting-edge technology of the design means that the battery will last for over 6.5 hours\*. Moreover, the large 13.3" TFT screen (model 233hs), 20x speed CD-ROM, 3D surround sound and 128-bit graphics provide multimedia capabilities which are way ahead of other notebooks.

To make the Dossier M go even faster, we have selected two special models and packed in even more features. But high speed doesn't have to mean a high price. The M series starts from just £1979.00 exc VAT (£2325.00 inc VAT) for a 166MHz version.

\*Battery life of 7 hours for a 200MHz Pentium® version (6.5 hours for the 233MHz) without power management, using optional second battery.

For more information or to place your order

Tel 0990 944 944

9am - 6pm Weekdays 9am - 5pm Saturday 10am - 2pm Sundays. Calls charged at National Rate

fax 0181 758 7080

COMPUTERS ◆ NETWORKS ◆ SOLUTIONS

Viglen Limited, Viglen House, Alperton Lane, Alperton, Middlesex HA0 1DX web <http://www.viglen.co.uk>

PCW FEB 1998

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Great  
Minds  
Think  
Viglen

Our business systems are configured to provide the essential tools for business by combining performance and value in an easy to use package with a choice of processor to suit your individual requirements and budget. Our entry system is supplied with Microsoft® Works for Windows® 95 to provide the basic needs of word processing, spreadsheets and presentations. Our higher specification systems include Microsoft® Office 97 and Microsoft's Office Pro 97 for the more demanding business applications.

**EASY OWN**  
From **£26.79**  
per month  
(APR 17.9%)



**EASY OWN**  
From **£47.42**  
per month  
(APR 17.9%)



**Go Large**  
Upgrade to 64MB RAM and 4.3GB Hard Drive  
ONLY **£69** + VAT  
**£116.33** inc VAT



**A Business PC**

The Business PC provides performance and features suitable to most business applications.

- Executive case • 16MB EDO RAM • 256K Cache • 2.5GB Hard Drive • 24 Speed CD ROM • 1MB Fast PCI Graphics • Sound
- 3.5" floppy drive • 2 serial, 1 parallel and 2 PS/2 ports • 14" Colour Monitor\* with built-in speakers • Keyboard • Microsoft® Mouse • Microsoft® Windows® 95 • Microsoft® Works®

**B Business PC Ultimate**

The Business PC Ultimate provides more power and storage capacity to satisfy the most demanding business or corporate user.

- Desktop case • 32MB EDO RAM • 512K Cache • 3.5GB Hard Drive • LS-120, 3.5" 120MB floppy drive • 24 Speed CD ROM
- 33.6kpbs voice/fax modem with internet access • 2MB Fast PCI Graphics • Sound • 2 serial, 1 parallel, 2 PS/2 and 2 USB ports
- 15" Colour Monitor\* with built-in speakers • Keyboard • Microsoft® Intellimouse • Microsoft® Windows® 95 • Choice of either Microsoft® Office 97 (CD with manual) or Microsoft® Office 97 SBE. Upgrade to Microsoft® Office Pro for £80 inc VAT.

		Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy2Own
Pentium® Processor with	166MHz	£699.00	£838.95	SYBB16M2	£26.79
MMX™ Technology	200MHz	£799.00	£956.45	SYBB20M2	£30.54
	233MHz	£849.00	£1015.20	SYBB23M2	£32.41

		Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy2Own
Pentium® II Processor	233MHz	£1249.00	£1485.20	SYHA2321	£47.42
	266MHz	£1449.00	£1720.20	SYHA2621	£52.91
	300MHz	£1599.00	£1896.45	SYHA3021	£58.37

Our personal systems have been designed specifically for Home and Small Office use by providing a range of multimedia systems, with a host of processor options, from an entry level to the most powerful and fully configured system possible. Look out for some of the latest and most Advanced Multimedia technology in the more enhanced configurations, which are marked with the symbol.

**EASY OWN**  
From **£30.54**  
per month  
(APR 17.9%)



**Go Large**  
Upgrade to 32MB RAM and 15" Monitor for only **£99** + VAT  
**£116.33** inc VAT



**EASY OWN**  
From **£49.30**  
per month  
(APR 17.9%)



**Free 32MB**  
Order the Ultimate PC now and we will upgrade the RAM to 64MB (32MB extra FREE)



**1 Home Value PC**

The Home Value system is a fully configured multimedia and Internet ready PC with an abundance of software packages to get you started.

- Desktop Case • 16MB RAM • 512K Cache • 2.5GB hard Drive • 2MB Graphics Card • 24 Speed CD ROM • 3.5" Floppy Drive
- Multimedia Sound • 2 serial, 1 parallel, 1 games, 2 PS/2 and 2 USB ports • 33.6kpbs voice/fax modem with Internet Access
- 14" Colour Monitor\* with built in stereo speakers • Keyboard • Microsoft® Intellimouse • Microsoft® Windows® 95 • Software Bundle A (see software packages).

**2 Ultimate PC Plus**

The Ultimate system provides additional enhancements to the Home Value PC by providing a much higher specification but still remaining as one of the best value multimedia systems available.

- Desktop Case • 32MB SDRAM • 512K Cache • 5GB Hard Drive • 4MB ATI 3D Xpert@Work AGP2X Graphics card
- 24 Speed CD ROM • 3.5" Floppy Drive • 3D Sound with wavelable • 2 serial, 1 parallel, 1 games, 2 PS/2 and 2 USB port
- 33.6kpbs voice/fax modem with Internet Access • 15" Colour Monitor\* with built in stereo speakers • Yamaha stereo speakers (with subwoofer) • Keyboard • Microsoft® Intellimouse • Microsoft® Windows® 95 • Software Bundle B (see software packages)

Internet Ready • MMX™ Technology Software • 24X CD ROM

Internet Ready • 24X CD ROM • 3D Sound with wavelable • 3D graphics • MMX™ Technology Software • 3D Games • AGP2X

		Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy 2 Own
Pentium® Processor with	166MHz	£799.00	£956.45	SYHM16M2	£30.54
MMX™ Technology	200MHz	£899.00	£1073.95	SYHM20M2	£34.29
Pentium® II Processor	233MHz	£949.00	£1132.70	SYHM23M2	£36.17

		Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy 2 Own
Pentium® II Processor	233MHz	£1299.00	£1543.95	SYHU2322	£49.30
	266MHz	£1529.00	£1814.20	SYHU2622	£55.84
	300MHz	£1699.00	£2013.95	SYHU3022	£61.98

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## Easy2Lease

Business rates available on selected machines starting from as little as

**£10.42**

per week  
PLEASE RING FOR DETAILS



Viglen is one of the longest established and most respected British computer companies with a reputation for the highest quality, support and reliability. With our renowned commitment to bringing the latest leading edge technology to market as early as possible, we have now produced several multimedia PCs that will suit every person, from the budget conscious to the most demanding, all with the same Viglen pedigree. Look out for the latest Advanced Multimedia technology products marked by the symbol  as these represent the absolute leading edge which you may not find elsewhere. We have also identified some very special bundle upgrades for those seeking additional value.

## Upgrades

Why not upgrade your chosen system with any of the following packages which have been specially put together to not only give extra value but also provide you with the latest and best technologies currently available. Please note that adding some of the bundle options will increase the delivery time of your PC as these may need factory installation. We would like to also point out that these bundles are only available as upgrades to new systems and must be ordered at the same time as the main system.

### SOFTWARE BONUS UPGRADES

All the configurations shown can be further upgraded to include one of the following professional integrated software applications from Microsoft at a very special bonus upgrade price.  
**Microsoft® Office 97 Bonus Upgrade** Price £161 ex VAT (£189.18 inc VAT) (CD version with manual).  
**Microsoft® Office Professional 97 Bonus Upgrade** Price £221 ex VAT (£259.68 inc VAT) (CD version with manual).  
**Microsoft® Office 97 SBE Bonus Upgrade** Price £161 ex VAT (£189.18 inc VAT) (CD version with manual).

### PRO GAMES BUNDLE

If you need the absolute best in 3D games technology, the 3DFX card is the one for you. This bundle includes 3DFX card along with some top games optimised for it as well as a Microsoft® SideWinder™ joystick and games pad. £139 ex VAT (£163.33 inc VAT)

### DVD UPGRADE

DVD is the future of CD technology. By buying a DVD ROM instead of a CD ROM you will not only be able to do everything that you can on a CD ROM but will also read DVD discs which are already becoming popular in the US. Furthermore, if you need to be able to play the latest DVD movies then you will need our DVD plus MPEG II card solution. Don't be left out of the DVD revolution.  
 Upgrade from a 24X CD ROM drive to a DVD ROM drive £79 ex VAT (£92.83 inc VAT)  
 Upgrade from a 24X CD ROM drive to a DVD ROM with an MPEG 2 card (for watching DVD movies) £179 ex VAT (£210.33 inc VAT)

### IMAGE BUNDLES

You can join the digital imaging age by using your PC not only to input photographic images and manipulating them to your hearts desires, but also printing them out on a photo real quality printer. Just imagine what you can do. It's ideal for web publishing too!

**Image Bundle 1** – Casio QV10A Camera & Epson 300 stylus photo real printer. £259 ex VAT. (£304.33 inc VAT).

**Image Bundle 2** – Casio QV100 & Epson 600 stylus photo real printer. £490 ex VAT. (£575.75 inc VAT).

**Image Bundle 3** – Casio QV100 & Epson photo printer. £610 ex VAT. (£716.75 inc VAT).

### MONITOR UPGRADE

You can upgrade the monitor in the specific configuration to a higher model by adding the following prices:

Upgrade from	Price inc VAT	*Monitor Viewing Area
14"	£76.38	14" = 13.2" viewable
14"	£270.25	15" = 14" viewable
15"	£199.75	17" = 15.3" viewable
17"	£70.50	17" Enhanced

### LCD SCREEN

The Viglen Envy 1714T uses a high contrast TFT screen and is the ultimate in flat screen technology. With a viewable diameter of 14.5", it is only slightly smaller than the viewing diameter of a 17" monitor, thus making it one of the most desirable products to own.  
 Upgrade from 15" monitor £1449 exc VAT (£1792.58 inc VAT)  
 Upgrade from 17" monitor £1229 ex VAT (£1444.08 inc VAT)

### PHOTO REAL PRINTERS

The following printers have been chosen as they offer the latest in colour printing by not only providing an excellent printout for normal use but also the ability to print photo real quality images.  
**Epson Stylus 300.** The affordable single cartridge colour printer ideal for the whole family. £110 ex VAT. (£129.25 inc VAT).  
**Epson Stylus 600.** High definition colour printer with an amazing 1440 dpi output for professional quality results. £175 ex VAT. (£205.63 inc VAT).  
**Epson Stylus Photo.** Dedicated photo printer, for use with digital cameras and scanners, producing prints equal to that of normal photographs. £310 ex VAT. (£364.25 inc VAT).  
 Includes FREE printer cable and FREE delivery if ordered and shipped with a Viglen PC.

### SCANNERS

**Photo Scanner Drive** Why not add this drive to your system and scan in your existing photographs (max size 5" x 7") in an easy and low cost way. £105 ex VAT (£123.38 inc VAT)  
**External A4 Colour Scanner** Easy to connect parallel port 24 bit colour scanner £90 ex VAT (£105.75 inc VAT)

### MAINTENANCE OPTIONS

Every Viglen PC comes with lifetime technical support and a 12 months parts and labour repair and return warranty (which is better than most of our competitors' so called on-site warranty). For an additional cost of only £45.00 inc VAT, you can convert this to our Premium service with a 12 month next business day on-site repair warranty. That's not all, as an option we can continue this service for up to five years.

DOWN  
£60.18  
per month  
APR 14.9%



**Business PC Professional**  
 Business PC Professional uses the latest and most powerful processor yet and comes with Microsoft Windows NT 4.0 WS to provide 32 bit performance and more for the next generation.

- Tower case • 64MB RAM • 512K CPU Cache • 7GB Hard Drive • LS-120, 3.5" 120MB floppy drive • 24 Speed CD
- 6Kbps voice/fax modem with Internet access • 3D graphics card with 4MB • Sound • 2 serial, 1 parallel, 2 PS/2 and
- 17" Colour Monitor\* with built-in speakers • Keyboard • Microsoft® Intellimouse • Microsoft® Windows® NT 4.0
- Microsoft® Office Pro 97

		Exc. Delivery & VAT	Inc. Delivery & VAT	Order code	Easy2Own
MMX™ II Processor	233MHz	£1649.00	£1955.20	SYBP2322	£60.18
	266MHz	£1849.00	£2190.20	SYBP2622	£67.41
	300MHz	£1999.00	£2366.45	SYBP3022	£72.83

## Awesome™ PC

Awesome PC is by far the most advanced of its kind. Its next generation AGP graphics card prepares this system for next year's 3D games whilst the 3DFX card provides the most powerful graphics engine for today's 3D games. The DVD not only allows you compatibility with CD ROMs of today but also takes DVD care of the future. The MPEG 2 system also allows you to play DVD movies while already creating a revolution in the US. In fact this system is so fully specified you could not think of any further upgrades that you may require except perhaps a camera, a colour photo real printer, an LCD display or maybe all three.

DOWN  
£74.64  
per month  
APR 14.9%



- Tower Case • 64MB SDRAM • 512K Cache • 8.4GB Hard Drive • 4MB ATI 3D Xpert@Work AGP2X Graphics card
- DX1 graphics accelerator card • DVD ROM • MPEG 2 Card • TV Tuner with teletext and video capture
- 120 3.5" 120MB Floppy Drive • 3D Sound with waveable • 2 serial, 1 parallel, 1 game, 2 PS/2 and 2 USB ports
- voice/fax modem with Internet Access • 17" Colour Monitor\* with built-in stereo speakers • Altec Lansing Dolby
- surround speakers with subwoofer • Keyboard • Microsoft® Intellimouse • Microsoft® SideWinder™ Joystick
- Microsoft® SideWinder™ games pad • Microsoft® Windows® 95 • Software Bundle C (see software packages). • Also as a
- After we are including a colour A4 external scanner

- DVD
- MPEG-2
- 8.4GB Hard Drive
- 64MB RAM
- AGP2X
- 3D Sound with waveable
- 3D FX graphics accelerator
- 3D FX graphics
- 120MB Floppy

		Exc. Delivery & VAT	Inc. Delivery & VAT	Order code	Easy 2 Own
MMX™ II Processor	233MHz	£2049.00	£2452.20	SYHA2322	£74.64
	266MHz	£2249.00	£2660.20	SYHA2622	£81.88
	300MHz	£2399.00	£2836.45	SYHA3022	£87.30

## Software Packages

The Viglen configurations shown are bundled with different software packages. Each package is outlined here to help you choose the configuration that's right for you.

### FAMILY BUNDLE A

- Microsoft® Works for Windows® 95. Five essential tools for easier everyday computing. Word processing, spreadsheets, database, graphics and Communications tools.
- Microsoft® Encarta® 97. The leading Interactive Multimedia Encyclopaedia bringing information to life.
- Microsoft® Money. Complete set of financial management tools for managing and planning your investments.
- Microsoft® Golf. The most true-to-life golf game you've ever played with realistic sound and graphics.
- Microsoft® Magic School Bus: Rain Forest. Jump aboard for an amazing interactive trip through a rainforest for a fun-packed science adventure.
- Microsoft® Gex. Slinger with Gex the lizard through 5 TV and movie worlds full of crazy over-the-top action.
- Microsoft® Windows Entertainment Puzzle Pack. Exciting puzzles and games to provide hours of intrigue for the family.
- CRT Easy Tutor. A comprehensive interactive tutorial guide to Windows 95.
- Five MMX Technology Enhanced CD Titles. Ultimate Human Body II, Timetables of Technology, The Third Dimension, International Space Station and POD.

### FAMILY BUNDLE B

- Same as Family Bundle A but with the following 3D technology games:  
**3D Graphic Technology Games: Wipeout.** Next generation racing game. **Mechwarrior 2.** Futuristic 3D vehicle combat simulation game. **Assault Rigs.** Cyberspace clash of the future.

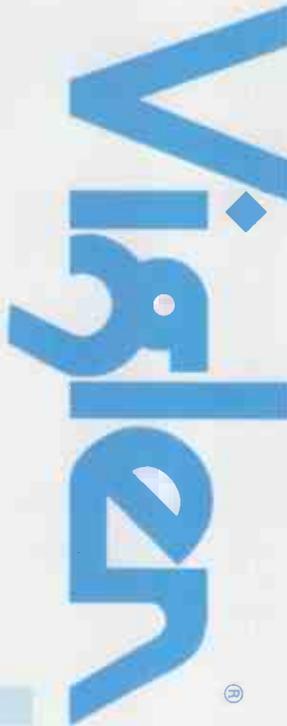
### FAMILY BUNDLE C

- Same as Family Bundle A but with the following:  
**Terracide Futuristic Combat game.** **MGI Videg Wave** Video editing software. **MGI Photo Suite** Image manipulator package  
**3D FX Games: F1 Formula One Racing Game.** **EP2000 Flight Simulator.** **MDK Futuristic 3D action game.**

K S O L U T I O N S



Great Minds Think Viglen



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# How to save money with an HP printer.



Incredible as it may seem, by chucking out your existing HP printers and starting again with brand new ECOSYS III printers from Kyocera, you'll spend less on your network printing.



The largest contributor to the total cost of ownership is the print cartridge and the big difference with ECOSYS printers is that we don't use them.

Our cartridge-free technology means that when you run out of toner, that's all you replace.

Which in turn means significant savings. According to our calculations, every single new printer on your network

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Are we talking rubbish, or can our cartridge-free printers really deliver what we claim? Check our calculations for yourself.

Call 0345 103 104 now for your free copy of our cost comparison disk.

It's an opportunity you really can't afford to throw away.



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