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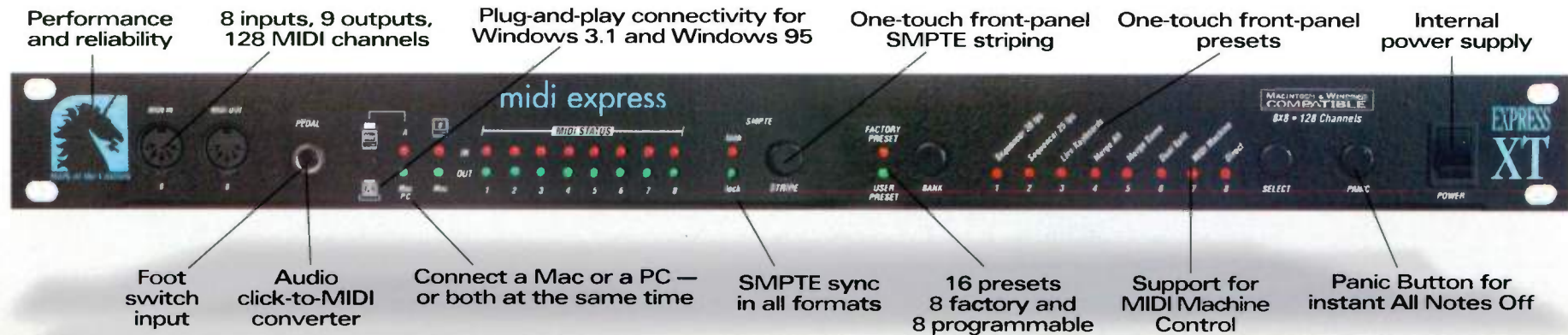
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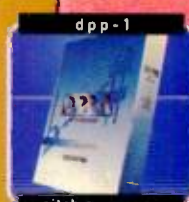
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Hailed by many as the operating system of the future, BeOS which runs on the BeBOX computer or a PowerPC equipped machine is a new multithreaded software system which offers Preemptive Multitasking and Symmetric Multiprocessing. BeOS has already excited developers and is capturing the imagination of a wide spectrum of computer users.





To you, it might simply be turning on a computer, but to me it's psychological warfare! You know what I'm talking about — that oddly malevolent Pentium PC which lurks in that dark, inexplicably cold, corner of my office, regarding me with its baleful beige monitor. Whenever it sees me coming, it hums *Carmina Burana*, the monitor rotates a full 360 degrees and the screensaver changes to a weirdly-lit scene depicting a close-up of a plate of mushy peas! I suppose its '666' serial number should have tipped me off...

Undaunted, I've done what anyone battling dark forces should do — I've enlisted expert help, not from an exorcist (though I haven't ruled that out yet), but from the SOS team of PC specialists, who have united to expose the truth about The Evil One (pause for distant roll of thunder). Starting this month (see the PC features beginning on pages 118, 156, 164, 180), the team will be putting the PC under such scrutiny that the Spanish Inquisition will seem like a lighthearted TV comedy sketch in comparison.

When it comes to music, I'm in no doubt the PC is here to stay. While Apple make wonderful computers that can usually be operated without recourse to brightly coloured, thermally insulated clothing of the quilted nylon variety, their marketing department has shot itself in the foot so many times now that they can probably see all the way to China whenever they look down. PCs, on the other hand, continue to grow faster, cheaper, and (more importantly for those of us making music) are better supported by serious software writers.

If this all sounds more upbeat than my previous mentions of the PC, it's because I recently managed to install a review copy of *Logic Audio*, plus a Yamaha SW60XG card, without irretrievably trashing my PC's operating system. You may remember that one of my few previous successes was *Cubase Score v3*, which also installed without any fuss. Prior to my last anti-PC tirade (which I still prefer to call illuminated realism!), I'd just finished completely failing to install a seemingly simple hardware MIDI interface while the tech support staff on the



other end of the phone tried to cheer me up by telling me that nobody else ever had problems with it, and that they couldn't think why it was giving me such a hard time. As it was a review item, I forwarded said interface to one of our PC gurus, who initially failed to get it to install

at all. After a long battle with the forces of The Dark One (and a number of calls to tech support, who told him that nobody else ever had problems with it, and they couldn't think why it was giving him a hard time), he got it running, only to find that the MIDI data didn't so much spring forth from the cable but rather dragged itself to the edge of the DIN plug, then trickled limply to the floor, about four bars behind where it should have landed! Apparently, this problem has also been resolved by placing a simple tick in a tightly sealed dialogue box discovered wrapped in three metres of sticky tape and jammed behind a little-used window in a long-since abandoned annexe of the driver software!

You might ask why, if I'm such a Mac supporter and if I can fob off all the PC-related reviews onto our PC guru team, do I bother messing with the PC at all? Good question, and the answer is in the cards. Not Tarot cards, but soundcards. You see, we are already seeing some fairly serious hardware finding its way onto inexpensive cards, with promises of greater things to come in the very near future. While there are some things you can only do properly in the studio, there's a lot you can achieve with a PC soundcard-based desktop music system that combines MIDI sequencing with built-in synths, direct-to-disk recording, sampling and sound processing. You only need a small audio mixer, a hi-fi system, and you're in business!

Paul White Editor



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Yamaha QY700

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### SOUND ON SOUND

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Financial Manager Patricia Urwin

Administration Lisa Thompson

Mail Order Sally Thompson

Photography Ewing-Reeson

DTP Bureau Sound Design

Colour Scanning CL Enterprises Ltd

Colour Origination Spectrum Repro Ltd

WYSIWIG

Printing Warners Midlands Plc

Newstrade Distribution Warners Group

Distribution Ltd, The Maltings, Manor Lane,

Bourne, Lincolnshire, PE10 9PH

Subscriptions

UK £35 Europe £55 World £65

Payable in sterling through U.K. bank.

ISSN 0951 - 6816



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# Crosstalk

Send your letters, queries, tips and comments to: The Editor, Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 8SQ.

Our email address is 100517,1113.

or from outside CompuServe, on 100517.1113@compuserve.com

## The Grand Old Juke of MIDI

For four years, I've successfully gigged an Atari ST, using it to play backing tracks as a working singer/musician, without any reliability problems. However, I am in the process of condensing my equipment — to give me less backache! — and have acquired a laptop PC, along with a recently-purchased Yamaha MU5 GM sound module. My MIDI Files will currently play back from the *Media Player* included with Windows 3.1. However, using *Notator* on the Atari, I am able to insert into each song the command to load the next song that I want to play. It's not ideal, but nonetheless has served me well enough.

What I'm looking for is a simple program to let me play back MIDI Files from the laptop. Ideally, I want to be able to set up a playlist, and start each song individually, rather than have songs play in sequence automatically. It would help if the program would store playlists so that different options could be kept ready to be called up. I am quite willing to use a DOS-based program, if no Windows software is available.

Steven Thomas  
County Durham

**Joe Ortiz of Heavenly Music replies:** *There are a couple of shareware MIDI karaoke programs that offer the MIDI File playback facilities you require, along with text display if your MIDI Files have text embedded in them: MIDI-oke (<http://www.ifam.pi.cnr.it/karaoke.htm>) and MDR's MIDI Songs Karaoke System (<http://www.pangeanet.it/~mdr/>). MSKS has a neat and colourful user interface, and although it is shareware, it comes across as a very professional piece of karaoke software for your multimedia PC. It includes synchronisation, a karaoke window, juke box, and comprehensive database. Other features include compatibility with Soft Karaoke (.KAR) and Tune 1000 formats. You can easily create Soft Karaoke files with any standard MIDI files (Type 1). MSKS also features a 16-channel MIDI mixer with volume faders, pan pot, chorus and reverb controls, +/-24 semitone transpose, tempo, and GM program change control, and you can save and re-load your preferred patches for each sequence. Virtual VU meters, with LED display for 16 MIDI channels, round off this most impressive offering, which is compatible with any soundcard or MIDI interface under*

*Windows 3.x and Windows 95.*

*SOS also found (at the Harmony Central web site, <http://www.harmony-central.com/software/>) a couple of other downloadable MIDI File players, including GSPlay 1.0, Playb, Plapak, and SoundWorx MidPlay 0.50, all for DOS, and MIDI Made Music 3.0 and MIDInight Express 1.3 for Windows. If you check the specs for many commercial sequencing programs, you may well find a 'jukebox' song playback facility — Cakewalk (Et Cetera Distribution, 01706 228039) comes immediately to mind. You already have your sound source sorted, but many soundcards also come equipped with basic file players — Roland's Easy Juke is one such example, and allows you to drag and drop files into a list which can then be saved for later recall. You can play one file at a time, one after another until it reaches the end, or play the list in random mode. The interface is very simple, with no file editing or saving options, but it works nicely as a no-frills player, with both Windows 3.x and Windows 95 compatibility. □*

## Four heads are better than one

Could you please advise me whether it is possible to buy or make a device so that I can run up to four pairs of headphones from the one socket on my cassette multitracker?

Dave Moores  
Wokingham

**Derek Johnson replies:** *It certainly is: what you need is a headphone distribution amplifier, and there's plenty of choice.*

*sets of headphones could be run off each channel (there are connections front and back for each channel). The HC6 costs £529, unfortunately, which may be a bit pricey for you, and is distributed by Shuttlesound (0181 646 7114). Other alternatives include the cheaper MTR HPA6, again a 6-channel device, priced at around £275 (MTR 01923 234050), the Symetrix SX204 compact, half-rack, 4-channel unit,*

*costing £311 (Fuzion 01932 882222), and Tascam's*

*MH40 MkII, another 4-channel unit for £339 (Tascam 01923 819630). Cheapest of the lot is the Mass Technology Mass 4 (Key Audio 01245 344001), a 4-channel device that fits in a half-rack space and costs £199. □*

*Almost at random, we've located five suitable products; a particularly nifty one comes from Rane. Their HC6 offers six stereo amplifiers with individual level controls, although each stage can run individual inputs, and two*



## Grace: a favour

I recently received a copy of your fine publication, *Sound on Sound*. I was pleased to find our products — microphone preamps — mentioned on pages 178-180 in the article about Kitaro's mountain recording facility [see *SOS* September 1996]. However, Lunatec manufactures mic preamps under the trade name of Grace Design. The preamps used by Kitaro are actually prototypes of what are now called the Grace Design Model 801. While we are flattered to be mentioned in your publication, it would be greatly appreciated if you could print a correction to clarify this.

Eben Grace

Grace Design, PO Box 204,  
Boulder CO 80306-0204, USA.  
Tel: 001 303 443 7454.  
Fax: 001 303 444 4634.

**Derek Johnson replies:** *We're more than happy to set the record straight, Eben. We also understand from your letter that Grace Design manufacture a 2-channel mic preamp, the Model 201, and that negotiations are currently under way for UK availability of your range — keep in touch, so we can inform our readership. We also look forward to seeing for ourselves the products that Kitaro is obviously so enthusiastic about. □*

## PETER GLEADALL

In our July 1996 issue, in the course of a profile of programmer Steve McNichol, we stated that Steve was the programmer for the Pet Shop Boys/Tina Turner collaboration *Confidential*. As set out in the credit to this track, the programmer for the track was in fact Peter Gleadall. We apologise for any confusion that has arisen.



# Actual Size



# Actual Price

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# ALESIS



# Crosstalk

## On the right (8) track

I'm thinking of upgrading my home studio, but am a little confused about the options available. My current setup consists of an Atari 1040 running Steinberg's *Cubase*, a Spirit Folio RacPac mixer, and a Tascam 424 multitrack, for vocals and acoustic instruments, with one track used for tape sync, but I would like to move up to 8-track. There seem to be some good dealer packages that offer an Alesis ADAT and mixer combination, but would I have to use one of the ADAT tape tracks for sync'ing my sequencer? I also like the idea of hard disk recording, and have a leaning towards the all-in-one package offered by Roland's VS880. If I were to choose this option, would I be able to use the RacPac as a sub-mixer to feed live instruments into the VS880 during recording and mixdown? Are there any analogue recorders worth considering in the same price range as the other options I mentioned?

With new products coming on the market at an increasing rate, I'm afraid of making a choice I might later regret, and would be grateful for any advice you are able to give.

Richard Sopp  
London

**Derek Johnson replies:** *You're quite right, Richard: the market is packed with choice, and it is hard to make a decision. Let's deal with your queries one at a time.*

*There is no need to lose a tape track for synchronisation with the ADAT — timing information can be extracted from its digital stream, but you'll have to spend a bit more money to take advantage of this. JL Cooper's Datasync 2 (£275) and Steinberg's own ACI ADAT-to-computer interface (£349) are*



*examples of devices which synchronise MIDI hardware to the ADAT via MIDI Time Code. If you want to be a bit more fancy (and spend more money), check out JL Cooper's DataMaster SMPTE/MTC synchroniser, for £599, or the CuePoint (reviewed SOS June '95), which for £725 offers complete remote control of any MIDI Machine Controllable devices; the latter choice requires the optional DataCARD for ADAT control. JL Cooper products are distributed by Sound Technology (01462 480000) and Steinberg by Harman Audio (0181 207 5050).*

*If you don't want to spend any money on additional hardware (fair enough!), then as you've rightly surmised, one track could be used as a traditional sync track, and this would still leave you with four more tracks than you have now!*

*To answer your question about the RacPac, you could certainly use it as a sub-mixer — the VS880's mixer controls can be used for tape tracks or external audio, although some functions are not easily accessible unless you're using a mixer map in your sequencer. The world seems to be moving inexorably towards digital as an affordable multitrack medium, but there is still some choice on the analogue front, especially second-hand. Analogue offers certain advantages over*

*digital — including its sound, according to certain purists. Analogue tape is still a competitively-priced recording medium, and the recorders themselves offer a reasonable amount of user serviceability and a virtual lack of irretrievable crashes. Still available are Fostex's quarter-inch R8 open-reel 8-track, which lists at somewhere around £2000 including VAT, but can be found for*

*less than half that on the second-hand market, and Tascam's half-inch 8-track, the TSR8, retailing for £2300 including VAT. Again, examples of the TSR8 are available second-hand, and from some dealers, for rather less than that.*

*I'll just digress onto the subject of backing up: once you've filled a reel of quarter-inch tape, you simply buy another one. With hard disk recording, once your hard drive is full — unless it's a removable device — you'll need some method of archiving your work to free up the drive for further recording. If you don't foresee needing to remix or otherwise access your work at a later date, no problem. Otherwise, you'll need to factor this additional cost into the equation, although removable drives such as the Iomega Zip and Jaz drives are very economical on a price-per-megabyte basis, and appear to be fast enough for recording with the VS880. The benefits — digital audio quality, digital bouncing, no wow and flutter, and so on — have to be weighed against the expense and time required for backing up: but nobody said that recording was a cheap pastime!*

*You're doing the right thing in considering all your options first. No current machine should lock you into a dead end — a hard disk recorder should carry on recording for as long as you can supply some form of hard disk for it to record onto. Hard disks are getting bigger and cheaper, which is encouraging, and there should always be some way of connecting a drive to a given buss, whether it be SCSI, IDE or some new interface yet to come. The one untried parameter of current digital recording media is longevity: Alesis' ADAT is still relatively young, and the affordable hard disk systems introduced by the likes of Fostex and Roland are only a year or two old. The evidence so far is positive, especially if you count the more upmarket digital systems that were used professionally for years before the semi-pro recorders were introduced — but only time will tell if tapes or disks recorded in this first wave of genuinely accessible digital will be retrievable in 20 or more years time. ☐*







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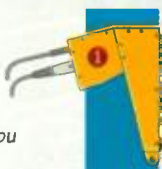
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# MACKIE

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I'm about to buy a MIDI data recorder, primarily for the on-stage playing of music files. I'm a subscriber, so I know you've reviewed a number of these (including the Viscount units). But:

- Are there any other current models?
- Which is the most reliable? People still seem to be using their Yamaha MDF2s.
- Which is the most powerful in terms of storage capacity?
- Are any controllable via a foot controller? For example, can you select songs in this way?
- Do any *not* read DOS disks?

Steve Wilson  
via the internet

I have a Boss DR5 drum machine which I use to create backing tracks for demos, and to supply drum and bass parts for rehearsals and small gigs. The unit's 20-song capacity is OK most of the time, but I'd like to download my songs for safekeeping and to free up space for new ones. The manual mentions that the DR5's memory can be downloaded over MIDI to an external sequencer. Are there any other options, or could I perhaps use a PC with MIDI interface?

Paul Solman  
London

**Derek Johnson replies:** *Steve's letter obviously points the way for Paul, but there are some further issues to deal with. Basically, MIDI data filers are an excellent idea, especially for MIDI musicians who don't necessarily want computers, but would like to store banks of patches on floppy disk, or who want to use MIDI Files on stage. Some readers do use computers as a live tool, but in general, they're not best served by the rigours of the road.*

*The main datafiler units available on the market now are the Yamaha MDF2 (still going*



*strong at £299, reviewed SOS June 1992) and two units from Viscount — the RD800 (£499, reviewed SOS February 1995) and the MF01 (£699, reviewed SOS January 1996). The MDF2 and RD800 allow you to record any kind of MIDI file or SysEx data, and play back MIDI Files, while the MF01 also includes a built-in General MIDI sound source and effects. Contact Yamaha on 01908 369269 for details of the MDF2; Viscount products are available from a variety of sources, but a good starting point is Turnkey on 0171 379 5148.*

*As for reliability, we've certainly heard no negative reports on any MIDI disk drives, and since they're basically built for the gigging musician, it's probably safe to assume a certain ruggedness. In fact, we know of some people who bravely soldier on with Yamaha's aged MDF1, in spite of this particular drive using the all-but-obsolete QuickDisk format. Although some older units may eventually develop drive problems and need replacing (disks are a mechanical and magnetic medium, after all), there are some good alternatives on the second-hand market — notably Alesis'*

*Datadisk, Elka's CR99, and Viscount's own RD70. The capacity of any given drive is limited by the disks it uses; for example, the MDF2 uses double-density, double-sided disks only, while Viscount's RD800 and MF01 can also accommodate high-density disks, with double the capacity (about 1.2Mb) of DD disks. The RD800 is also equipped with 1Mb of Flash RAM (expandable to 4Mb), for non-volatile storage of songs within the unit. When it comes to numbers of songs, there is a theoretical limit (99 songs, for example, on the Yamaha and Viscount units) that probably won't be reached unless your song files are ridiculously short.*

*All drives of this kind use a DOS-compatible format, and will read MIDI Files from DOS-format floppy disks. You may have to make sure that your file player will accept the file format on your disks: the MDF2 will only read Type 0 (all MIDI channels on one track), while the Viscounts will also read multi-track Type 1 files. Most software will give you the option to save in either format, and most MIDI File libraries can provide a choice. The MDF2, RD800 and MF01 all offer a footswitch socket, but for start/stop control only, although all three offer pretty good facilities for arranging which songs play back in what order.*

*Now for the second part of Paul Solman's query: if a MIDI data filer is not for you, a number of shareware options are available for PC users. A quick trawl on the Internet led us to Harmony Central, a great site which is discussed in more detail in this issue's 'Surfin Safari' feature, where we found MIDI Data Filer 3.2 for DOS and Win SysEx 3.0 and Wsysyex for Windows, all of which offer SysEx saving functions for PC users. The URL you want is <http://www.harmony-central.com/Software/>. And of course, a SysEx librarian is found amongst the feature lists of many software sequencing packages. □*







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# Crosstalk

## Duplex complex

I have a question regarding the SoundBlaster AWE32's support of full duplex operation — ie. simultaneous record and playback. Brian Heywood, in a Crosstalk reply some months ago, suggests that this is the case, but that the required drivers were not, at the time, available. What is the current state of affairs? Does the AWE32 support full duplex, and if so, where can I get the drivers?

Before I go, here's a couple of tips that might be useful to some readers: the AWE32 manual I have has a rather major spelling mistake regarding a particular SYNTHUSR.SBK file, which should read SYNTHUSR.SBK. A small error, but if you want user-defined patches, you have to use the correct name, or the Control Panel won't pick up the file. If you're using Cakewalk (Pro or Apprentice) and wish to have separate user banks defined in the AWE Control Panel,

the Bank Select Method in Cakewalk must be set at Controller 0 and 32 — normal Bank Select methods don't appear to work. And finally, if you're using Windows 95, the files SYNTHGM.SBK, SYNTHGS.SBK and SYNTHMT.SBK have to be moved from /SB16/SFBANK to /WINDOWS/System. Andy O'Donnell  
Preston

**Derek Johnson replies:** *Thanks for the tips. Andy, which we present as submitted. Anybody else have any tips they'd like to share? Regarding the AWE32 full duplex conundrum, we contacted Creative Labs, and they inform us that the full duplex driver is available for downloading from their web pages (<http://www.crea.com/>) or bulletin board (01734 344080) The file name (on the web site at least) to look out for is *shw95up.exe*. □*

## Chips with everything

In a reader's letter way back in November 1995's issue, I remember reading that a company called OnChip is currently making Curtis chips. No address or phone number was given. I have heard that these sought-after chips are now in production, so presumably this confirms it?  
Ingar Onsanger  
Norway

**Derek Johnson replies:** *We were also intrigued by this rumour, and got in touch with OnChip Systems (1190 Coleman Avenue, San Jose, CA 95110/1190, USA. Tel: 001 408 988 5400. Fax: 001 408 988 5488) to see what was going on — thanks to Michelle Bailey at OnChip for all the help. The situation is this: Doug Curtis — the man behind the chips — is still with OnChip, and the company has all the rights to the legendary Curtis Electro Music chips used on so many classic synths. Trouble is, demand for chips in numbers that were economic to manufacture flagged somewhat in the early '80s, when synth manufacturers decided that we all wanted digital instruments. CEM chips are not OnChip's core business, although as a result of manufacturing surpluses, they still have limited stocks of a variety of chips. Once these stocks are depleted, that will be it, although OnChip might be persuaded to tool up to make more if the demand was there — say, an order for several thousand units! We obtained a list of currently-available chips, and*

*prices are a flat US\$15 apiece for less than 100 chips, plus US\$20 postage outside the USA. Be aware that you may be liable for tax and duty if you decide to make an order. Contact OnChip for further details. There are stocks of the following devices:*

- CEM3320 voltage controlled filter.
- CEM3340 voltage controlled oscillator.
- CEM3350 dual voltage controlled state variable filter.
- CEM3360 dual voltage controlled amplifier.
- CEM3365 dual voltage controlled amplifier.
- CEM3371 microprocessor controlled waveforms generator.
- CEM3372 microprocessor controlled signal processor.
- CEM3374 dual voltage controlled oscillator.
- CEM3378 voltage controlled signal processor.
- CEM3379 voltage controlled signal processor.
- CPA381 (CEM3381) dual low noise voltage controlled amplifier.
- CPA382 (CEM3382) dual low noise voltage controlled amplifier.
- CEM3387 low noise voltage controlled signal processor.
- CEM3389 voltage controlled signal processor.
- CEM3391 microprocessor controllable dual waveform converter.
- PD508 (CEM5508) octal sample & hold.
- CEM5510 fast octal sample & hold. □

## SPIRIT DEALER LIST

ABERDEEN	RnB Music	01224-210 121
ALTRINGHAM	Concert Systems	0161-927 7700
BAUNET	Digital Village	0181-440 3440
BARNSTAPLE	Soundpad	01271-23686
BELFAST	Marcus Music	01232-322871
BIRMINGHAM	Musical Exchanges	0121-236 7544
BIRMINGHAM	Q Music	0121-643 4655
BIRMINGHAM	London Microphone Centre (LMC)	0121 359 4535
BOURNEMOUTH	Eddie Moor's Music Ltd	01202-395135
BRIGHTON	Rainbow Sound	01273-624048
BRISTOL	X Music	0117-9734 734
BURNLEY	Dawsons Music	01282-425829
CAMBRIDGE	Music Village	01223-316091
CARDIFF	Gamlins Music Centre	01222-220828
CARLSLE	AVI	01228-45999
CHESTER	Dawsons Music	01244-348606
COLCHESTER	Axe Music	01206-765 652
CORK	Russells Music	00353-21 273 912
COVENTRY	Musical Exchanges	01203-635766
DERBY	Play It Again Sam	01332 348156
DONCASTER	Electro Music Services (EMS)	01302-369999
DOUGLAS	Ken Mitchell Music	01624-611919
DUBLIN	Control Techniques Ireland (CTI)	003531-4545400
DUNDEE	Sound Control	01382-225619
DUNFERMLINE	Sound Control	01383-732273
EASTBOURNE	Bronners Ltd	01323-639335
EDINBURGH	Sound Control	0131-557 3986
EDINBURGH	The Warehouse	0131-555 6900
FAREHAM	The Audio Connection	01329-235566
GLASGOW	The Warehouse	0141-990 1757
GLASGOW	Sound Control	0141-204 0322
GUILDFORD	Andertons Music Co.	01483-38212
HEYWOOD	Wigam Acoustics Ltd.	01706-368766
HIGH WYCOMBE	Percy Priors	01494-528733
INVERNESS	The Music Station	01463-255523
KINGSTON	Earth Music	0181-546 9877
KIRKCALDY	Sound Control	01592-260293
LEEDS	Carlbro Academy of Sound	0113-2405077
LEICESTER	Carlbro Academy of Sound	0116-2624183
LONDON	Turnkey	0171-379 5148
LONDON	London Microphone Centre (LMC)	0181-743 4680
LONDON	The Synthesizer Company (TSC)	0171-258 3454
LONDON	Gradav Theatre Services	0181-886 1300
LONDON	Raper and Wayman	0181-800 8288
LONDON	HBB Communications Ltd	0181-962 5000
LONDON	Studio Spares	0171-482 1692
LONDON	Music Lab	0171-388 5392
LONDON/COONEY	DM Music	01727-821 242
MANCHESTER	A1 Music Centre	0161-236 0340
MANCHESTER	Sound Control	0161-877 6262
MANFIELD	Carlbro Academy of Sound	01623-651633
NEWCASTLE-UPON-TYNE	Sound Control	0191-232 4175
NORTHAMPTON	Willow Communications	01604-21525
NORWICH	Carlbro Academy of Sound	01603-666891
NOTTINGHAM	Carlbro Academy of Sound	0115-9581888
PETERBOROUGH	B&H Sound Services	01733 223 535
PETERBOROUGH	The Live Music Shop	01733 555505
PORTSMOUTH	Nevada Music	01705-660036
PRESTON	A1 Music Centre	01772-204567
RINGWOOD	The M Corporation (TMC)	01425-470007
RINGWOOD	ARS Theatre & Lighting Supplies	01425-480 698
ROMFORD	Music Village (Chadwell Heath)	0181-598 9506
SHEFFIELD	Carlbro Academy of Sound	0114-2640000
SHEPPERTON	Marquee Audio	01932-566777
SOUTHEND-ON-SEA	Honky Tonk	01702-619615
SPEKE	Ad Lib	0151-486 2214
STHELENS	Dawsons Music	01744-730424
ST. HELIER	East Coast Music (ECM)	01534-80575
STOCKPORT	Axis Audio Systems	0161-474 7626
STOCKPORT	A1 Music Centre	0161-429 8777
STOCKPORT	Dawsons Music	0161-477 1210
STOKE-ON-TRENT	Carlbro Academy of Sound	01782-205100
STOKE-ON-TRENT	Music Control	01270-883779
SWANSEA	The Music Station	01792-775751
TUNBRIDGE WELLS	JB's Music Stores	01892 515 007
WAKEFIELD	KGM Studio Specialties	01924-371766
WARRINGTON	Dawsons Music	01925-632591
WASHINGTON	Varipts	0191-416 2385
WIGAN	Dawsons Music	01942-244680
WIMBORNE	Whitwans	01962 865 253



FOLIO  
Notepad

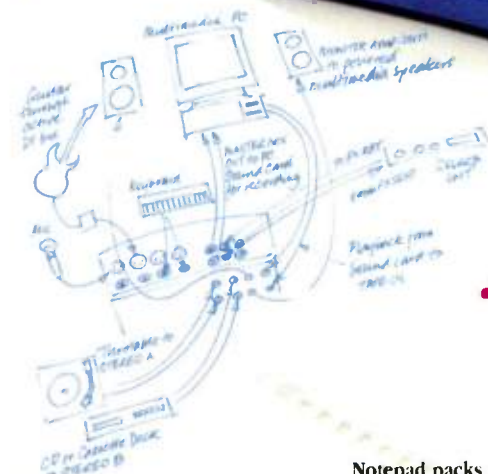
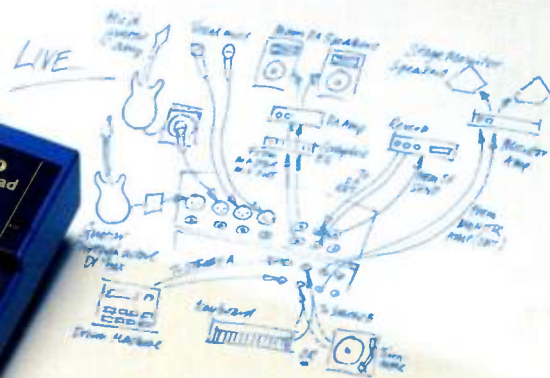
SPIRIT

# IT'S NOT THE SIZE IT'S WHAT YOU CAN DO WITH IT

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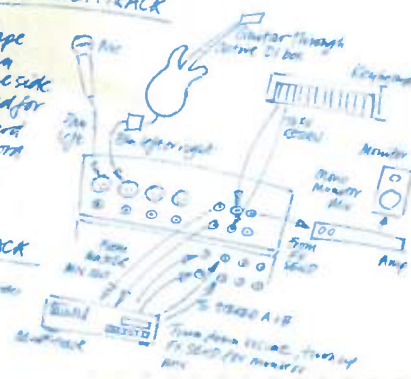
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**SPIRIT**

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Address: .....

What will you use Notepad for?

What magazines do you read?.....

Please send me a FREE copy of the Folio Applications Guide written by pro-audio journalist Paul White on how to get the best from your mixer

<http://www.spirit-by-soundcraft.co.uk>

Spirit by Soundcraft™, Harman International Industries Ltd., Cranborne House, Cranborne Industrial Estate, Cranborne Rd, Potters Bar, Herts EN6 3JN, England. Tel: +44 (0)1707 665000. Fax: +44 (0)1707 665461.



# shape of things to come

by Derek Johnson & Debbie Poyser

## And the tape

Despite the growing popularity of MIDI + Audio sequencers and digital recorders, there's still a market for the affordable, easy-to-use Portastudio. Tascam have been making Portastudios since the late '70s, when they launched the 144. The personal cassette multitracker format, which subsequently became so popular, has revolutionised the music-making process for thousands of musicians since then.

Though they're now producing a Minidisc Portastudio, the 564, Tascam haven't abandoned the humble analogue cassette, and they're proving it by launching a new 4-track cassette Portastudio, the 414. The new machine is the successor to the Porta 07, which was Tascam's most successful 4-track of recent years. The major improvement featured on the 414 is the introduction of simultaneous recording on all four tracks, and full Mic/Line input capability on all four channels. There's also 2-band high/Low EQ and two effects sends per channel, plus two stereo effects returns. The main features of the 414 are:

## goes on...

- 4-track simultaneous recording.
- Four Mic/Line inputs with dedicated trim control.
- 2-band EQ on each channel.
- Two effects sends, one switchable to Tape Cue, and two stereo returns.
- Stereo Sub input for easy integration of an external mixer, or any other stereo line source.
- +/-12% pitch control.
- Discrete sync output for improved timecode reliability.
- Monitor L/R outputs, plus Main L/R outputs.
- Hands-free punch in/out using an optional footswitch.

The 414 is set to retail for £349. Look out for a review in SOS soon.

**A** TEAC UK Ltd, 5 Marlin House,  
The Craxley Centre, Watford,  
Herts WD1 8YA.  
**T** 01923 225235.  
**F** 01923 236290.



## LA Story

The newest addition to LA Audio's range of well-specified signal processors is the distinctly competitively-priced GCX2 dual-channel compressor/noise gate. For just £189, the GCX2 offers two linkable channels of soft-knee compression with fully-variable threshold, ratio and gain controls, plus two program-dependent, automatic-setup

attack and release modes, and side-chain access. The gates have variable threshold and release controls, and side-chain access. Balanced ins and outs are available on both XLR and jack sockets, and the GCX2 will handle both -10dBv and +4dBu operating levels.

**A** SCV London, 6-24 Southgate  
Road, London N1 3JJ.  
**T** 0171 923 1892.  
**F** 0171 241 3644.

Sound Technology had a handful of interesting tidbits to show at the recent British Music Fair. On the Alesis front, they launched the NanoCompressor RMS/peak stereo compressor/limiter, which joins the NanoVerb at the budget end of the studio processing market. The £149 NanoCompressor comes in the same 1/3-rack case as the NanoVerb, and is a full-featured, stereo compressor/limiter offering dynamics processing tools such as selectable RMS or peak compression curves. It also offers side-chain access.

Staying with Sound Technology for the moment, we also hear that they've

## Nano, Nano

added the BBE range of Sonic Maximizers and instrument preamps, and the Leo Fender-founded G&L guitar range, to their distribution portfolio.

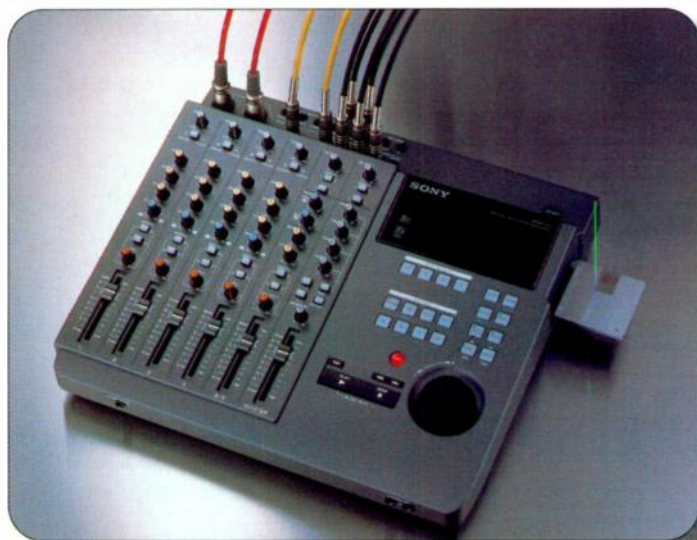
**A** Sound Technology plc,  
Letchworth Point, Letchworth,  
Herts SG6 1ND.  
**T** 01462 480000.  
**F** 01462 480800.  
**W** <http://www.soundtech.co.uk>

## And Sony makes three

Hot on the heels of Minidisc-based cassette multitracks from Tascam and Yamaha comes the MDMX4 from Sony. In common with the Yamaha and Tascam models, the MDMX4 uses MD-DATA discs for mono, 2- or 4-track recording (although ordinary MD blanks can be used to record in stereo). A variety of editing and control functions are available — including the ability to do a stereo mix to disk after recording all four tracks, +/-8% pitch control, and a

jog/shuttle wheel. Auto punch-in/out is featured, and full MIDI support is provided, including MIDI Machine Control and MIDI Time Code. The mixer features 10 inputs and four sub-groups, with XLR connectors on channels 1 and 2, 3-band EQ, and two aux sends. The MDMX4 is also provided with a large display. Pricing is expected to be in the sub-£1000 region, which places it nicely in the middle when compared to Yamaha's MD4 and Tascam's forthcoming 564 Minidisc multitrackers — how's that for consumer choice?

**A** Sony Broadcast & Professional  
UK, The Heights, Brooklands,  
Weybridge, Surrey KT13 0XW.  
**T** 01932 816253.  
**F** 01932 817013.





# Kawai

get serious with new  
additive synth



Rumours of a serious new synth from Kawai have been circulating over the last few months, with concrete evidence appearing on Kawai US's website recently. Finally, we've seen it: the K5000W was

demo'd, with almost-finished software, during September's British Music Fair. Kawai watchers out there may recall that Kawai were alone during the '80s in producing a dedicated additive synthesis-based keyboard, the K5 (though expensive workstations occasionally offered additive synthesis, and Casio's small FZ family of samplers featured a simple implementation). No other manufacturers took the hint, Kawai stopped making the instrument, and the world of synths gained another small cult.

The new K5000 series builds on the technology introduced by the K5, and takes it several stages further. We saw the

K5000W workstation demo'd, but the sequencer-less K5000S and rackmounting K5000R share the same basic spec: 128 harmonics, individual envelopes, 128-band formant filters, 24db/octave resonant filter, 64-note polyphony, and 50 effects. A PCM-based bank of General MIDI sounds is provided, and can be freely mixed with additive-based patches.

The 'W' model workstation (£1599) also includes a 40-track, 50,000 note sequencer, DD/HD disk drive, auto phrase generator, 32 MIDI tracks and two MIDI Ins. The £1299 S-model synth, as mentioned above, lacks a sequencer, but adds an arpeggiator and a range of real-time control knobs; the rackmount version (price TBA) packages the synth into two units of rack space, without the knobs and sequencer. The K5000W was looking extremely imposing at the BMF, with an attractive brushed-silver finish and large informative display, and sounded impressive — we heard digital precision with a gritty analogue-like warmth, and a great potential for creating complex evolving tones. Watch this space for a review.

**A** Kawai Europe Centre, Europark  
Fichtenhain A15, D-47807 Krefeld Germany.  
**T** 00 49 2151 37300.  
**W** <http://www.kawaius.com>

## Gold card from Creative Labs

The latest generation of Creative Labs PC soundcards has just been announced: the AWE64 Gold is particularly interesting in that, alongside 1Mb of ROM-based sounds from the AWE32, it offers a 4Mb RAM-based wavetable synth, 2Mb waveguide modelling synth (an accessible physical modelling-like synthesis), an on-board Emu-design 3D sound system, RAM sockets for SoundFont II sample playback (up to 12Mb can be added), and S/PDIF digital I/O. The card has a full MIDI spec, and the actual circuit board has been designed to offer low-noise operation, so the original AWE32 sound bank should sound even better. A CD-ROM of sounds and samples is provided, and you can create your own SoundFonts with the included Vienna sample-editing software.

**A** Creative Labs, Unit 2,  
The Pavilions, Ruscombe  
Business Park,  
Ruscombe RG10 9NN.  
**T** 01245 265265.  
**F** 01734 828270.  
**W** <http://www.creal.com/>

## All about EVE

Peter Gabriel's *Xplora 1* interactive CD-ROM was one of the first popular music multimedia products ever to be released, and apparently remains the biggest selling to date. Now Gabriel believes he's gone several steps further, with the launch of a new CD-ROM, *EVE* (Evolutionary Virtual Environment). *EVE* is being described as "a spectacular combination of groundbreaking technology, stunning visuals, specially-commissioned art and previously unreleased Gabriel songs." More than 22,000 visuals were used to create 160 screens, with 80 minutes of video and 45 minutes of music. The user of the CD-ROM is given a task which, when completed, sends them on a journey exploring the "relationship between man, woman and nature". Along the way, s/he encounters and accesses information from a range of experts, including artists, philosophers and scientists. As the journey progresses, musical samples are collected, with which the



user can eventually construct 'musical toys', which will allow him or her to mix and record personal versions of tracks and create interactive videos for three of the songs. These personal mixes and videos can be posted to and downloaded from the Real World website.

The producers estimate that there is around 60 hours of play in *EVE*, so if you're a Gabriel fan with a CD-ROM drive and 60 hours to spare, get on down to your local retailer, where *Eve* will be available, with both Mac and Windows 95 compatibility, for just £39.99.

*SOS* can be reached on  
CompuServe; our email  
address is 100517,1113.

Our full Internet address is  
100517.1113@compuserve.com.



## Silk cuts from Kitaro

Electronic music fans the world over know the name of Kitaro, the multi-talented guitar and keyboard instrumentalist who's released a total of 28 albums in the course of his 20-year career and has sold in excess of 12 million records worldwide (and if you don't, you obviously missed the September '96 issue of *SOS*, which features an interview with him). Now his record label of the past three years, Domo is about to embark on a back-catalogue re-issue campaign that will cover virtually all his recordings. Almost all of the re-issues will feature new artwork and will be 20-bit digitally remastered. The re-issue sequence begins with some of Kitaro's earliest works, *Silk Road Volume 1* and *Silk Road Volume 2*; these will be followed by *Silk Road Suite*. Also due for re-release is the previously rare title *World of Music*, which has never before been released outside Japan.

If you're already drooling in anticipation, how about this: all the titles in the re-issue campaign will be available on mid-price CD, so no inflated import-style prices.



## Rogers' winning formula



British company Rogers, well known for their hi-fi speakers, recently released Project D, a monitor system aimed specifically at project studios, multimedia, and commercial installations.

Rogers went for a big splash, launching Project D at the Brands Hatch motor racing course, and explaining that the new speakers were inspired by the £3/4 million Lancia Supercar.

The Project D monitors, according

to Rogers, are "super-efficient, easily driven and very loud"; they feature a two-way design, with heavily-engineered drivers. A double-edge wound voice-coil, on everybody's favourite, a kapton former, is attached to a low-frequency cone consisting of ultra-light, high-definition materials. Power handling is estimated at 125W, and the acoustically-optimised cabinets utilise aluminium and carbon fibre in their construction. There are no parallel surfaces inside the cabinets, and they have an airtight seal to ensure "tight and powerful" bass. On the outside, Project Ds (costing £399 per pair) can come in any one of nine colours and finishes. Now, where did I put those go-faster stripes...

**A** Rogers Sales & Marketing Centre, Unit 13, Bath House Road, Beddington Lane, Croydon, Surrey CR0 4TD.

**T** 0181 683 2101.

**F** 0181 684 6469.



The first Spirit Notepad (reviewed in *SOS* last month) to be bought in Scotland has gone to Glasgow's Riverside Studios; recent clients include Teenage Fanclub, Alex Chilton and Q-Tex. Riverside owner Duncan Cameron comments: "When you're working on pre-production — recording a band live in rehearsal — the Notepad is really handy. All you need is a DAT recorder, some mics and the Notepad. It's a great wee tool."

**T** Spirit by Soundcraft 01707 665000.

JL Cooper synchronisation and MIDI control products, distributed in the UK by Sound Technology, are to be CE approved, some with immediate effect. Units now certified include the PPS2 synchroniser, the Datasync 2 ADAT sync box, and the CS10 Control Station, which provides a well-specified hardware control surface for Pro Tools, SADIE, Soundscape, Sonic Solutions and other digital audio workstations.

**T** Sound Technology 01462 480000.

Sennheiser UK is now an official distributor for the Cable Source range of high-quality professional audio cables. The range, which includes XLR, MIDI, and Jack-Jack, is designed and manufactured by Canford Audio, who offer a 10-year guarantee on Cable Source products.

**T** Sennheiser 01494 551551.

This year's Huddersfield Contemporary Music Festival has as its star attraction a Stockhausen series; the man himself will be in attendance, and taking part in five concerts. A varied concert schedule is joined by a series of workshops, which will include interactive computer music and global percussion. The dates for your diary are November 20 to December 1. A ticket offering admission to all events costs £175 (£120 concessions), against £301 for individual event tickets, and a Stockhausen "weekend saver" is available for £75 (£45).

**T** Box Office 01484 430528.

**W** <http://www.hud.ac.uk/events/hcmf/welcome.html>

*SOS* can be reached on CompuServe; our email address is 100517,1113.

Our full Internet address is 100517.1113@compuserve.com.



# DigiTech VOCAL POWER

Backing vocals without the dropped notes; without the tantrums; always in time (and always on time) and truly affordable - for musicians and bands of all levels. DigiTech have brought harmonisation a long way since the early 'Pinky & Perky' sounding units on the market a few years ago. Now any act can benefit from classy, complex harmonies of stunning realism and accuracy, giving the sound width without the usual associated wagebill. However, impressive specifications only tell half the story. For only £9.95 (inc. P&P) our demo CD and Video will reveal the Vocalist's amazing musicality.



#### 2-5 PART HARMONIES

triggered by one voice  
Uses Live and Studio



#### LUSH VOCAL THICKENING

Add 4-voice detuning to give your lead vocal that big double-tracking sound for live or recorded use



#### PITCH CORRECTION

Save an otherwise great recorded vocal take by fixing a bad note



#### GENDER BENDER™

Apply male or female tonalities to your harmonies. Make your voice sound skinny or fat, more human!



#### SEQUENCE YOUR HARMONIES

If you are using virtual tracks, you can build your harmonies and edit them like any other sequence data.



#### BIG, BRIGHT DISPLAY

Easy to read, easy to edit. Soft keys let you zoom in on editing parameters quickly and simply.



#### BUILT IN KEYBOARD

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**NEW**

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#### 100 HARMONY PRESETS

50 Presets and 50 User Presets with up to 8 variations on each.



#### FOOTSWITCH

Optional FS-300 For live use - programs up/down/bypass.

## STUDIO VOCALIST



The Ultimate Vocal Production tool. Total programmability and a host of features such as individual voice outputs and "Gender Bender" technology. The Studio Vocalist boasts full bandwidth to capture more of the voice's natural overtones.

- Natural harmonies & pitch correction
- Full frequency response (20Hz - 20kHz)
- Separate outs for each voice
- XLR & 1/4" jack ins & outs

- Gender Bender™ technology
- 48v phantom power
- Effects loop
- Optional digital I/O

## MIDI VOCALIST



The simple-to-use and affordable MIDI Vocalist has been designed for musicians who want instant vocal harmonies without programming. Perfect to use with pre-programmed MIDI files.

- 4 voice detune for vocal thickening
- Vocoder mode for triggering harmonies via MIDI notes
- Chordal mode for automatic vocal harmonies

- Scalic mode for dynamic harmony motion
- Front panel XLR/mic. connection
- 1/4" line level input
- Bypass activation (external f/switch)



*Jon Anderson of YES:*  
"The Studio Vocalist has enabled YES to perform multi-part vocals in live performance as well as adding a creative edge in the studio."



*Warren Cuccurullo and Nick Rhodes of Duran Duran:*  
"We used the Studio Vocalist intensely on our TV Mania project 'Bored with Prozac and the internet.'"

### STANDARD MIDI FILES: THE REVOLUTION

Standard MIDI files (SMF) discs contain MIDI data for complete backing tracks of popular songs when used with MIDI sound sources such as synthesizers and drum machines.

The Tune-1000 and Heavenly Music ranges of Standard MIDI Files pre-programmed harmonies, fully compatible (via Vocoder mode) with the DigiTech Vocalist range.

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## Honey, I shrunk the synth!

In this issue, we're reviewing Midiman's ultra-compact GM module, the MIDI GMan; Yamaha have also noted a gap in the market for a sub-£200 module, and have announced the MU10XG. The new module takes the sounds of Yamaha's DB50XG PC daughter board (which works with PC soundcards to provide Yamaha XG sounds inside a PC) and packages them in a videocassette-sized module

complete with a Mac or PC serial computer interface. The result is Yamaha's most affordable sound module yet, at just £199. Let's take a look at what you get for your money:

- 676 XG (extended General MIDI) voices, plus 21 drum kits.
- 66 effects types.
- Mac or PC interface.
- Maximum 16-part multitimbrality and 32-note polyphony.
- An audio input which allows

you to add effects to an external signal such as a mic or guitar.

The MU10XG's sounds can be edited via MIDI, and the module comes with a Shareware version of Yamaha's *XGEdit* editing program. Purchasers also net a free, fully-working copy of Steinberg's *Cubasis* sequencer for PC or Mac, serial MIDI drivers for PC, serial cables and a power supply.

**A** Yamaha Kemble Music (UK),  
Sherbourne Drive, Tilbrook,  
Milton Keynes MK7 8BL.

**T** 01908 366700.

**F** 01908 368872.

**W** <http://www.yamaha.co.uk/>



## Music, non-pop

Everyone who regularly records vocals needs a pop shield to tame the plosive sounds ('p's and 'b's) which can really spoil a take, but it can be a bit hard persuading yourself to shell out sixty quid or more, which is what commercial ones can cost, for such a small item. You can rig up your own, using nylon stockings and bent wire coat-hangers, but if you'd like something a little sexier for your studio, you might want to check out a new model from Raper & Wayman. The Pop/Stopper is, they claim, durable and easily adjustable. It also comes in a variety of colours, so you can co-ordinate with your decor, and costs just £34.95.

**A** Raper & Wayman, Unit 3,  
Crusader Industrial Estate,  
167 Hermitage Road,  
Haringey, London N4 1LZ.

**T** 0181 800 8288.

**F** 0181 809 1515.

## caught in the net

### HARMONY CENTRAL

We made a brief mention of the Harmony Central web site in last month's Crosstalk, but unfortunately missed out a very important dash from the address. The correct one follows.

**W** <http://www.harmony-central.com/Software/Dos>

### HINTON INSTRUMENTS

The Hinton Instruments web site mentioned in last month's Surfin' Safari feature is moving. The new site also hosts the EMS web pages (<http://www.hinton.demon.co.uk/ems.html>) which contains a complete record of EMS products (including rare prototypes and previously unseen pictures) plus a detailed modifications page for VCS3/Synthi A owners.

**W** <http://www.hinton.demon.co.uk/>

### C-THRU MUSIC

C-Thru Music are the company behind the Notetracker, a nifty chord and harmony 'slide rule' that utilises the novel 'Melodic Table' layout of notes. This system is built up of a repeating pattern of musical intervals upon which the shape of any musical form — intervals, chords, scales or modes, for example — can be mapped, independent of key and without

the compromises found on a traditional piano or synth keyboard. C-Thru's new web site offers plenty of information on the system, plus a downloadable, but partially disabled, version of their new *NoteCalc* software, a 'multimedia' version of the NoteTracker. You can enable your copy by paying a small fee.

**W** <http://www.c-thru-music.co.uk>

### OPTIFILE

Mixing desk automation specialists Optifile have a web site. Head on over to:

**W** <http://www.optifile.com>

### RONI MUSIC

Roni Music, developers of the excellent *Sweet 16* MIDI sequencing software for the Atari ST and PC clones, now have an Internet presence. From here, you can download free copies of either version of the software, which is distributed in the UK by Hands On MIDI Software (Tel: 01705 783100).

**W** <http://home1.swipnet.se/~w-11396>

### DANCE MUSIC RESOURCE

The Dance Music Resource Pages is a new Internet site, run by Music Data Services, that aims to provide a weekly listing of new

UK and import dance releases. Both fans and DJs should find the site of interest when assessing the 200+ white labels, limited promos and mainstream tracks released every week. Details provided on the site include: artist; title; names of remixers; label; country of origin; catalogue number; UK distributor; and confirmed release date. Information is checked with labels, importers and distributors, and updated daily. UK dance radio listings and a guide to over 350 other dance Internet sites are also included. And if you haven't got Internet access, the new release listing is available as a fax service or a newsletter; call 0171 607 1737.

**W** <http://www.ndirect.co.uk/dance/music.htm>

### RE-PRO

Re-Pro, the producers' and engineers' organisation, is now running a web page, accessible via that of the APRS. From September, a section of the site has been dedicated to providing information about royalty distribution and copyright management for coming digital music distribution systems. The site offers an on-line form which can be used by any visitor to register a broad range of information about new and old sound recordings. The aim is to build a definitive database of recordings to aid copyright tracking and royalty collection.

**W** <http://www.aprs.co.uk/repro/>



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Iomega products are available from Dixons, PC World, Virgin Megastores, Byte, Watford Electronics, Evesham Micros, and other leading computer outlets.



# Korg korner

**K**org's stand at August's British Music Fair featured a couple of surprises, not least of which was an early UK showing of the 168RC digital mixer, which forms part of the Soundlink Digital Recording System, joining the forthcoming DRS 12/12 digital multi-channel PCI audio card, and the new RM8 reference monitors and RMA240 monitor amp.

The 168RC, which was first shown at this year's NAMM and Frankfurt music fairs, is a 16:8:2 desk, with two ADAT optical inputs, two internal effects processors and full automation. The 12/12 PCI card comes packaged with OSC's *Deck II* audio software; the 12 ins and outs come configured as two analogue channels, an S/PDIF channel, and eight channels of ADAT optical inputs and outputs.

Designed to provide "accurate, low-distortion sonic reproduction with low levels of listening fatigue", the RM8 monitors house



Ian Boddy, interviewed in *SOS* November 1993, and to be heard *Sounding Off* in last month's issue, recorded his latest CD under unusual circumstances: he played a gruelling improvised 8-hour set at the First Newcastle International Comic Art Festival back in June, and a 72-minute extract from the event, which was recorded straight to DAT, has now been released as *Continuum*, on Boddy's Something Else Records (catalogue number SER011).

Joemeek Ltd have appointed Sound Valley Distribution Ltd as exclusive UK distributors for the Joemeek professional audio range. Currently available are the Stereo Compressor, Tube Channel, Studio Channel and Pro Channel, with a host of releases due for the new year.

**A** Sound Valley Distribution Ltd,  
The Briars, North Road, Amersham,  
Bucks HP6 5NA.

**T** 01494 434738.

**F** 01494 727896.

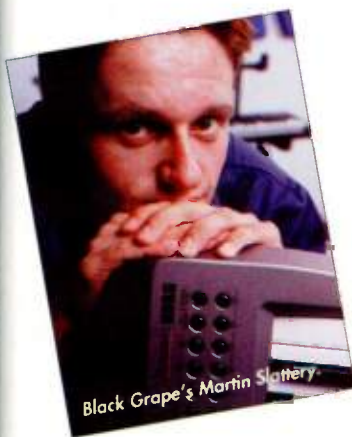
**W** <http://www.netlob.co.uk/joemeek/>

It's all change for the Andy Pickford/Paul Nagle concert scheduled for the Sherwood Suite in Mansfield's Leisure Centre on November 30: it's now taking place on January 18, 1997. Contact Julian Blackmore on 01623 657907, or Midas Records, on 01332 349429, for booking information.

Audio retailers Academy of Sound are moving house. With immediate effect, they can now be found at Greenwood House, Unity Road, Lowmoor Industrial Estate, Kirkby in Ashfield, Nottinghamshire NG17 7LE.

**T** 01623 721888.

**F** 01623 756606.



7-inch woofers and 1-inch tweeters, and are magnetically shielded to allow them to be mounted next to video or computer monitors. The RMA240 amp offers 120W per channel into 80Ω, and can be bridged. Both XLR and balanced jack connectors are provided.



## Cedar take the hiss

**H**HB Communications have announced the new Cedar DH2 de-hisser, a stand-alone processor based on Cedar's respected PC-based audio restoration processing hard/software suite. A replacement for the earlier DH1, which can be upgraded to DH2 status, the new processor offers sophisticated stereo hiss removal using simple controls: level, attenuation and brightness are controlled with help from a large LCD. The processing takes place in real time, with, claim the manufacturers, no adverse effect on the original signal.

**A** HHB Communications Ltd, 73-75 Scrubs Lane,  
London NW10 6QU.

**T** 0181 962 5000.

**F** 0181 962 5050.

**E** [sales@hbb.co.uk](mailto:sales@hbb.co.uk)

Korg have also released a range of new program disks for their Trinity series of workstations: TFD11 Contemporary Mix and TFD12 Dance Mix are collections of sounds for standard Trinity models; TFD13 Analogue & Vintage and TFD14 Modern Tools are for the Trinity Plus with solo board; TFD 1S Mega Pianos, TFD 2S Orchestral Elements and TFD 5S Dance Waves and Drums are seven-disk sets for PBS (Playback Sampler) equipped Trinities.

Korg continue to gather celebrity endorsements for both the Trinity and the Prophecy:

Black Grape's keyboardist Martin Slattery is a confirmed Prophecy and Trinity owner, using them live and in the studio. Martin also plays sax with Black Grape, and could be spotted on the Korg stand with sax/flutes man Andy Ross, putting the eminently affordable range of Jupiter brass and woodwind instruments, distributed by Korg in the UK, through its paces.

**A** Korg UK, 9 Newmarket  
Court, Kingston, Milton Keynes  
MK10 0AU.

**T** 01908 857100.

**F** 01908 857199.





OK for writing letters



BRILLIANT | FOR | WRITING | NOTES

**P**ractical, sure. Musical, er...well.

For all its qualities, the QWERTY keyboard is not exactly a source of inspiration when creating music.

The new Yamaha QY700 on the other hand is designed from scratch to deliver instant and intuitive access to one of the most powerful composition engines ever devised.

A high resolution, 110,000 note professional multitrack sequencer forms its heart with 32 instrument and 16 accompaniment tracks. And an ear boggling 3,876 preset phrases, covering all styles of music, take the grind out of writing backings.

**QY700**

Non-destructive "Groove Quantizing" templates let you change the feel of the song without losing the original data.

While the 32 part multitimbral XG tone generator offers 480

editable voices and 11 complete drum kits. There are three on board effects processors

too with 11 reverb, 11 chorus and 42 variation effects including delay, modulation, distortion and EQ.

But thanks to the QY700's brilliant interface, this massive power is at all times under control. Your control.

With a suggested selling price of just £999 you'll want to know more, so call 01908 369269 today for a free brochure.

High resolution (1/480 quarter-notes)... 110,000 event battery backed sequencer memory... 48 track, 64 note polyphonic sequencer... MIDI in \*2, MIDI out \*2... 32 part multi-timbral sound generator... Full voice editing - Resonant filters - LFO and Mono mode... 3 independent effects processors... Database of 3876 phrases let you create 16 track loops (up to 256 bars in length) then apply 100 editable groove templates... MTC synchronisation... DD/HD floppy disk... Footswitch control..

**YAMAHA**

Yamaha-Kemble Music (UK) Ltd. Pro Music Division



## soundcard corner

Leading PC soundcard producers Turtle Beach are re-launching their acclaimed Tahiti high-spec digital audio card. Tahiti, priced at £329, is recommended for use with various PC audio packages, including *Software Audio Workshop* (SAW), *SAW Plus*, *Cakewalk Pro Audio*, *Cubasis Audio*, and *Cubase Audio*. It provides two tracks of 16-bit, CD-quality hard disk recording, the Hurricane high-speed architecture designed specially for serious audio applications, and a WaveBlaster-compatible connector which allows it to support daughter boards such as the Yamaha DB50XG synth board. Distributors Et Cetera also have available optional multi-card drivers which allow up to four Tahiti cards to work in one PC (as long as you have the necessary IRQs and memory, of course). A multi-card setup such as this would

compressor, limiter, peak limiter and echo effects.

There are too many features for us to list here — contact Et Cetera for more details. SAW v6 costs £399.

**A** Et Cetera Distribution, Valley House, 2 Bradwood Court, St Crispin Way, Haslingden, Lancs BB4 4PW.

**T** 01706 228039.

**F** 01706 222989.

PC users might recall reading about the Terratec Maestro 32/96 soundcard in the PC Notes column of the last (October '96) issue of *SOS*. Now Terratec have released another soundcard, the AudioSystem EWS 64, which features 64-note polyphony, PCM-based sounds, up to 64Mb of Akai-compatible sample RAM, and up to 64 stereo channels of digital audio (dependent on computer

speed). Other features include:

- Three stereo analogue inputs: Line In 1 offers SoundBlaster compatibility, in 8 or 16-bit stereo, with a 5-48kHz sample rate. Line In 2 is for pro-audio applications, with 18-bit stereo functionality and 44.1/48kHz sample rates. A mic in with stereo preamp completes the line-up.
- Two stereo analogue outputs at line level.

- One S/PDIF digital input and two S/PDIF digital outputs. 44.1 and 48kHz stereo (at up to 20-bit on breakout box).
- Two MIDI Ins and two Outs (on breakout box).
- Digital effects processor offering reverb, chorus, multi-band EQ, and room simulation, plus real-time audio rendering for 3D positioning of sounds.
- Waveblaster-compatible connector for daughter boards.
- 5Mb sample RAM as standard.

The new card will ship with software drivers and a bundle of Steinberg software for Windows 95 and 3.11. The projected price for this powerful package is under £600.

**A** Digital Media Ltd, Adelaide House, 383-385 Liverpool Road, Islington, London N1 1NP.

**T** 0171 607 2727.

**F** 0171 607 2727.

provide multiple audio ins and outs for packages such as SAW and SAW Plus.

- SAW itself has also been upgraded, and is now standing at v6. This latest generation of *Software Audio Workshop* has been completely rebuilt, using the SAW Plus architecture, and now offers up to four mono or stereo tracks of simultaneous live playback (depending on computer speed) with any Windows-compatible soundcard. It also provides:
  - Automatic live blending of different file formats (mono, stereo, 8-bit, 16-bit and so on).
  - Real-time sample-rate conversion.
  - Support for user-assignable multiple soundcard outputs.
  - Per-track control over level, mute, solo, pan, effects patching and output assignment.
  - Software processing tools including 7-band para-graphic EQ, noise gate,



Turtle Beach Tahiti.

## Taking MIDI into space

A new "digital art company", Infusion Systems of Vancouver, Canada, has launched an alternative performance/controller interface that allows almost any surface or space to be used to interact



easily fits in your hand, and costs US\$595. Sensors are extra, of course, and range from US\$19 to US\$277 (for the Touchglove).

with MIDI-equipped hardware. The I-Cube System is a 32-channel analogue sensor to MIDI translator, using a Mac (running Opcode's *Max* software) or PC clone computer (or a preset MIDI map when used as a stand-alone unit). Infusion Systems stock 18 different types of sensor, including distance, body heat, illumination, inclination, touch, and G-force — and that's not forgetting the Touchglove, which is shown to good effect as a rhythm programming tool on IS's promo video. In addition, three different actuators can switch motors, lights and other electrical appliances. The I-Cube Digitizer

The system has been designed for a wide range of creative and artistic possibilities, from interactive sculpture and installations to purely musical endeavours and dance: you could even completely customise your own MIDI controller. As of press time, European distribution hadn't been finalised, but we'll let you know as soon as we have confirmation.

**A** Infusion Systems, 1320 East Georgia Street, Vancouver, BC, Canada, V5L 2A8.

**T** 001 604 253 0747.

**F** 001 604 253 0747.

**E** info@infusionsystems.com

**W** http://www.

infusionsystems.com

## Steinberg go virtually vintage

Steinberg are now shipping the *Red Valve-It* software plug-in for Digidesign TDM systems. The new plug-in is "the world's first virtual tube-amp and speaker cabinet." Steinberg say they've spent years researching and developing the digital emulation of the tube-amp sound embodied in the *Red Valve-It*, which, they claim, delivers "the authentic warmth and richness of vintage tube gear." A preamp with various different tube sound characteristics and speaker emulations is featured in *Red Valve-It*, so that the user can produce sounds ranging from jazz and blues to rock distortion. The amplifier section comprises three elements: a drive section, a 3-band EQ, and a gate, and two different tube models are also implemented. To complete the sound, the virtual speaker

within *Red Valve-It* offers both combo and stack characteristics.

*Red Valve-It* works in real time, with 24-bit processing, and is accessible from within TDM sequencer environments. Steinberg's suggested applications include guitar recording directly into a TDM system, processing of pre-recorded material for an "authentic tube sound", and adding a "miked" effect to recordings. As always, *SOS* will check out its effectiveness as soon as possible. Watch this space!

**A** Harman Audio, Borehamwood Industrial Park, Rowley Lane, Borehamwood, Herts, WD6 5PZ.

**T** 0181 207 5050.

**F** 0181 207 4572.



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# Waves power

Plug-in specialists Waves have announced a new product and an upgrade. The new software is *PS22 StereoMaker*, a TDM/Sound Designer II system plug-in designed to create a wide stereo image from mono sources, and enhance the spread of existing stereo. It can be used on single tracks of a mix, or for stereo enhancement of full mixes or old recordings. *PS22* is designed to avoid problems common with previous 'stereoisation' processes, and is claimed to have virtually no unpleasant 'phasiness', very low coloration, high tonal accuracy, and good mono compatibility.

Waves have upgraded *WaveConvert*, the batch file multimedia

mastering application for both Mac or Windows platforms, which converts Mac and PC audio files between sample rates, word lengths, and file types, while retaining good sound quality, according to the developers. New features in v1.6 for the Mac/Power Mac include platform conversion of audio within QuickTime movies without leaving QuickTime, and re-processing filters for *RealAudio* encoding. Version 1.3 for Windows now offers AIFF file format support, an unlimited number of files in a Job list, special dithering for speech files, and improved file naming conventions and audio quality, plus other new features. Waves suggest that *WaveConvert* is suitable for CD mastering, multimedia audio file conversion, audio data compression, mix enhancements, and *RealAudio* file preparation.

**A** Natural Audio Ltd, Suite 6, The Kinetic Centre, Theobald Street, Borehamwood, Herts WD6 4SE.

**T** 0181 207 1717.

**F** 0181 207 2727.

**E** 100565.3561@compuserve.com



HHB's range of blank CDR disks has been joined by the CDR74P printable disk; a special matt printable coating enables the application of custom graphics and labelling directly onto the disk, using either a laser or inkjet printer.

**T** 0181 962 5000.

The Drake Music Project, which helps disabled people to make music using modern technology, has received a Marantz CP430 portable stereo cassette recorder from distributor SCV London. The donation has gone down extremely well with both staff and musicians involved in the project, who would like to thank SCV's Sally Haseman for arranging it.

**T** Drake Music Project  
0181 297 2686.

**T** SCV 0171 923 1892.



The Museum of Synthesizer Technology, which houses one of the largest collections of classic synths in Europe, has opened a studio. The main area is based around a Mackie 32•8 mixer, and analogue gear includes a Roland 700 modular synth with sequencer, ARP 2500, Polyfusion modular, Moog 55 and Moog 3C, Oberheim Matrix 12, EMS VCS3 and Roland TR909. Master keyboards and Kenton Pro 4 MIDI-CV interfaces are also available. Prices range from £120 for a 10-hour use of one recording area and the museum, to £225 for 10 hours use of all three studio areas and the museum. A 20% discount is available for bookings of 10 days or more.

**T** 01279 771619.



## Fostex's digital discount

**S**ound On Sound were fortunate enough to be the sole representatives of the UK music press at the launch of Fostex's new DMT8VL, a sub-£1000 version of the successful 16-bit, 44.1kHz DMT8 digital 8-track recorder.

The compromises for the new unit are few: the DMT8VL can only record two tracks at once (against the original DMT8's four), and the mixer section offers a simplified 2-band EQ. One or two features actually offer an improvement over the original model: for example, the supplied 540Mb hard drive can now be more easily replaced by the user, and a 3.5-inch expansion bay is provided for imminent EIDE and SCSI interface options.

The original DMT8 (reviewed in December 1995's *SOS*) has had its price reduced to £1199 (from £1499), and the Fostex D5 DAT machine follows suit, dropping to £899 (from £999). If you need any further enticement to go down the Fostex digital path, a limited offer supplies the DMT8 and D5 as a package for just £1899 — that's a 25% reduction on the full retail price.

**A** SCV London, 6-24 Southgate Road, London N1 3JJ.

**T** 0171 923 1892.

**F** 0171 241 3644.



The flood of sonic fodder for dance bods continues unabated with the release of two new dance-flavoured sound sets for Roland synths from Sounds OK. The first, simply entitled 'Dance', is compatible with the Roland JD800 and JD990 and features 64 new patches. Sounds OK say that the sounds featured are ideal for all types of dance, from ambient to more aggressive styles, and are the cream of over 200 sounds initially programmed for this project. 'Dance' is available on ROM data card for £55 and on RAM for £65.

'Dance Culture', for the Roland JV1080/XP50/XP80, features 128 new sounds and 31 new Performances. Again, Sounds OK reckon it's suitable for all kinds of dance music, featuring euro-style and growling basses, rave organs, string and synth pads, trance sounds, and leads. Most patches have been programmed to make use of touch-sensitivity, mod wheel or aftertouch for added expression. Again, the sounds come on a RAM card for the JV1080 at £65, or on a disk for the XP50/80 at £39.

Sounds OK's 'Analog and Digital



## Sounds OK's new dance steps

Culture' sound set, for the same Roland synths as 'Dance Culture', spreads its sonic net rather wider, featuring Moog basses, analogue pads, voices and choirs, leads, moving Wavestation sounds, D50-type sounds, and more. In all, there are 128 Programs and 31 Performances, all programmed to fit in with most styles of music, with prices identical to the 'Dance Culture' prices,



above.

Note that you'll need to add £2 postage and packing to any sound set order.

**A** Sounds OK, 10 Frimley Grove Gardens, Frimley, Camberley, Surrey GU16 5JX.

**T** 01276 682313.

**F** 01276 682717.

## education corner



### SAE STAFF CHANGE

The School of Audio Engineering's London branch has recently appointed two new staff: Christian de Haas (aka Fuzzy Roadstone) as manager, and Cath Wooder as assistant manager.

Fuzzy first joined SAE in Amsterdam, and has been at the London branch since 1994. Cath Wooder is a past student of SAE's Sidney outpost, and joined London as Head of Administrations in 1993.

**A** School of Audio Engineering, United House, North Road, London N7 9DP.

**T** 0171 609 2653.

**F** 0171 609 6944.



### ONE-TO-ONE TUITION

After Dark Productions is offering budding musicians the opportunity of tuition in songwriting, keyboards, drum programming and sampling, at "cheap rates". All tuition is on a one-to-one basis, so you can learn at your own pace; the company also offers a "cheap demo service", where you can demo your song with the help of pro musicians.

**T** 0171 381 2902.

### GOING DOWN TO LIVERPOOL TO LEARN SOMETHING

Liverpool's Institute of Performing Arts opened recently, with five recording studios equipped by Marquee Audio. Mixers installed in

the three most recently-completed studios include a top-line Amek Galileo in the main control suite, a Soundcraft DC2020LCR for the surround sound suite, and two

Yamaha O2Rs for the digital suite. Producer George Martin has already praised the studios, and conducted the first Masterclass there shortly after opening. The complex also features 20 PC and Mac-based MIDI workstations, 30 rehearsal studios, two auditoria, a separate transfer suite, and three- and two-machine video editing suites.

**T** Marquee Audio 01932 566777.

**A** Liverpool Institute of Performing Arts, Mount Street, Liverpool L1 9HF.

**T** 0151 330 3000.

**W** <http://www.lipa.ac.uk/>



### TYRELL TRAINING

The Tyrell Corporation are to offer a range of training courses at their new West End premises, starting in November. Products covered include *SoftImage* 3D animation software, Media 100 video editing systems, and Sonic Solutions and Pro Tools audio workstations. The training programmes are typically 3-5 days long, with each attendee working on a dedicated workstation and classes restricted to five students per tutor. A range of courses are available, from introductory to advanced.

**A** Tyrell Corporation, 49-50 Great Marlborough Street, London W1V 1DG.

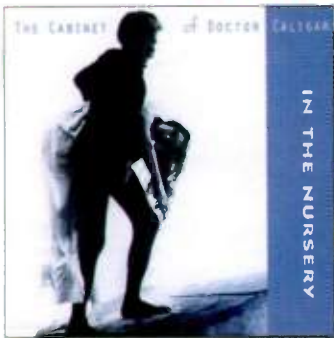
**T** 0171 287 1515.

**F** 0171 287 1464.



shape of things  
to come

# ITN News



Regular *SOS* contributor Nigel Humberstone and his twin brother Klive, collectively known as In The Nursery, have released their soundtrack score to the German expressionist cinema classic *The Cabinet of Doctor Caligari* on CD. The soundtrack was originally specially

commissioned by the Metro Cinema in Derby, and the film is now on a small UK tour. ITN will be presenting their score at selected 'live performance' screenings of *Caligari* at film theatres, with venues including: Showroom, Sheffield (November 2); Plaza 2, Leicester Square, London (November 4); Filmhouse, Edinburgh (November 6); and Cornerhouse, Manchester (November 14). The CD is out now on ITN Corporation, as part of the occasional Optical Music series (catalogue number CORP 015), distributed by PHD.

## Midiman: Perfectly PC

Midiman's £89 EQ Man is a stereo 7-band equaliser, based around a two thirds-size ISA PC card (it fits into any 8-bit PC card slot), with Windows software control. EQ Man will integrate with your existing software, and EQ presets can even be sequenced or triggered via MIDI.

Multiple EQ Man cards can be installed, if you've got the slots.

Midiman have also announced a collaboration with the authors of *Samplitude* software, which has resulted in the release of *Midiman Samplitude*, a special version that will come bundled with Midiman products such as the DMan Digital Audio Card,

and the Video Studio VITC-to-MTC PC card.

The DMan card (£249) is a 16-bit ISA card that offers stereo line ins and outs, full duplex operation for simultaneous stereo recording and playback, Windows Plug-and-Play compatibility, auxiliary stereo inputs, high-impedance mic input, and MIDI interface and cable.

When bundled with *Midiman Samplitude*, it becomes the £279 DMan Digital Studio package.

**A** Midiman UK, Hubberts Bridge House, Hubberts Bridge, Boston, Lincs PE20 3QU.

**T** 01205 290680.

**F** 01205 290671.

**E** midiman@midiform.com

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Take 8 bus consoles - hundreds are bought each year on recommendation. Bearing in mind the sums involved it's hard to believe that the opportunity to properly compare the various brands for EQ and noise has not previously been offered.

We've taken the same innovative approach to demonstrating all our products from CD Rom samples to analog synthesizers.

Most dealers will tell you which products best suit your needs. Only one can show you.



One side of the switcher-equipped recording room.



Compare 6 mics by recording simultaneously to ADAT.



Pro-Tools III and Soundcraft DC2020 in Studio 1.



Huge range across Mac, PC and Acorn platforms.

\* The leading manufacturer of this equipment tells us that the Turnkey systems are the largest ever supplied worldwide.





# THE SOUND RETURNS!

Original model shown - new version will also feature LCD screen, alpha dial and four soft buttons.



In synthesis there's no bigger name than Moog, and no-one's products have a bigger reputation. As their products went out of fashion with the digital fad in the early eighties, so the company disappeared - but now they are back with a vengeance, bringing you the classic synth sound, with all the advantages of modern MIDI control and top build quality. The MiniMoog is back!

3 VCO's, each with a choice of six waveforms, combined with the juiciest of filters give you the fattest sounds around. All the rest of the MiniMoog's original functions are still there for super flexible sound creation. All controls send out MIDI continuous controller data, so any edits you make can be recorded into your sequencer and played back. There's even an external input for processing any other sounds with the Mini's comprehensive synthesis.

Like the original, the new model will be built from real wood, finished in either birch, or for a small premium, walnut. For the die hard purists amongst you, you can even order the Mini to the exact original spec with no MIDI!

If you just have to have the ultimate in control, also available are fully customisable modular systems, starting from only £3695 - try buying an original Moog Modular for that!

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Truverb Q-sound ToolBelt

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- 4 band EQ, 8 Auxillaries
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usual ID functions and a full function infra red remote control. Sony's exclusive Super Bit Mapping process can also be switched in, cramming the sound of 20 bits into 16! Initial stocks are limited - get your order in now!

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**Focusrite**



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Focusrite have long represented the pinnacle of audio achievement, but sadly their products have always been out of reach for most of us. Now, specifically with the high quality project studio in mind, they have designed the Green range of processors. The first 3 products are the Dual Mic Pre, the Focus 4 band EQ with filters, and the Voicebox - this combines a mic/instrument preamp, compressor, de-esser and parametric EQ in a single unit - the ultimate signal path for digital recording! All 3 are on permanent demo at Turnkey.

**SONY**

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MULTI FX PROCESSOR**



Sony's HR-MP5 uses the chipset as their pro studio effects series, costing over £1,000 each - the quality of effects is absolutely superb. A wide range of effects include sparkling reverbs, breathtaking modulations and delays, 2 EQ sections,

**RRP £500**  
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as well as unique wah/filter type effects. True stereo operation, a huge display and an intuitive operating system make this a highly desirable unit even at the RRP - our exclusive deal makes it irresistible!

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The standard budget compressor - RMS/peak detection, soft/hard knee + gate

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### Q2

The ultimate in FX programmability - up to 8 effects blocks arrangible in any order + ADAT digi I/O

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### ADAT XT



Alesis pioneered low cost digital multitrack recording with the introduction of the ADAT, and changed the face of home and professional recording. The new XT version is totally compatible with the old machines, but has numerous improvements.



The design features a die-cast chassis and has a completely redesigned transport, which rewinds and fast-forwards four times as quickly as the old machines. Also BRC style editing can be performed from the front panel with two machines, and an all new display further simplifies operation.

Turnkey are probably the most experienced suppliers of ADAT's, which coupled with our unbeatable pricing makes us the first choice for the new XT.

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- 28 Inputs at Mixdown.
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- 4 True Subgroups.
- 3 Band EQ with Mid Sweep.



This excellent member of the Folio range is a sure-fire winner combining superb sound quality with a fantastic list of features : 3 Band EQ with Mid sweep, 6 auxiliary sends, high-pass filters, rackmountable (includes swivelling connector field) up to 28 inputs on mix-down, 4 true sub-groups plus separate mix bus, insert points and direct outs on every channel.

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### Yamaha 02R Digital Console



The fully digital 40 input 8 bus console with total automation and moving faders. 4 band parametric eq and dynamics for every input and 2 comprehensive on-board fx processors with a range of reverbs, delays and other standard fx. Optional interface cards allow full digital connection of ADAT, T-DIF and AES/EBU formats for integration of MTR and hard disk systems.

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### SPIRIT Folio Lite



- Up to 16 inputs to mix.
- 2 Aux sends, 1 switchable pre/post
- 4 mic amps with phantom power



Soundcraft's Spirit Folio must have more features per square inch than any other mixer. Ideal for any small recording setup, it has up to 16 inputs including 4 mono mic/line channels (with phantom power), 4 stereo channels and 2 returns, 2 band EQ and 2 aux. sends - 1 switchable pre or post fade. If you need to rack it, optional ears are available.

Mega deal only at Turnkey!

RRP £312  
**£POA**  
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# Technics

## TECHNICS SX-WSA1 keyboard workstation



We're famous for bringing you quality products at a huge discount - but this one takes some beating! Launched last year, the Technics WSA1 was hailed as a breakthrough instrument, bringing the latest physical modelling technology to the market with 64 note polyphony, when other manufacturers were and still are offering only 1 or 2 notes.

Now as the UK's leading hi-tech music store, our tremendous purchasing power allows us to offer you these superb instruments at discounts of well over 70%!

The WSA1 produces it's sounds by feeding a PCM waveform driver into a custom DSP modelling resonator, and unlike other systems offering just 1 or

# DEAL OF THE YEAR! WSA

2 models, the WSA1 has a whole host of them including string, cylinder, cone flare, plate and membrane, and there are two per tone (up to 4 tones per note). Parameters like fit, mute and position allow incredible modelling flexibility. Sound is then fed through a digital resonant filter stage, and amplitude envelope. To top the whole lot off, there are three FX busses with 55 different algorithms, and digital EQ.

MIDI files only) which handles 10 songs, 16 tracks and 47,000 notes with full graphic note editing - probably the best workstation on the market.

Amongst other features are 32 part multitimbrality (2 sets of MIDI in , out and thru), 4 individual outputs expandable to 8 plus SPDIF digital out (only £168) an optional dance expansion board and a full General MIDI sound set.

Ease of use and programmability is also unparalleled for a modelling system, the huge backlit display gives graphic representations of all editing parameters, whilst the array of modulation wheels and trackball type devices give unrivalled realtime control, and also offer a simple approach to new sound creation.

Once in a lifetime opportunity to own a true quality instrument at a giveaway price.

Buy now whilst stocks last!

### TECHNICS SX-WSA1R Rack module



The keyboard version has a disk drive and sequencer (disk drive on rack plays files sounds and plays standard

*"The quality, scope and inventiveness of the programming are extremely impressive" - Keyboard Review*

*"The sequencer is outstanding" - Future Music*

*"All the hype was justified" - Future Music*

*"A very comprehensive keyboard. Is there a catch? Not in my book." - Making Music*

*"A ground breaking sophisticated instrument" - Making Music*

*"The drums are excellent" - Sound on Sound*

*"Technics have obviously put a lot of tender loving care into the WSA1 sounds" - Sound on Sound*

RRP £2199  
**£569**  
SX-WSA1R

RRP £2499  
**£699**  
SX-WSA1

## S4 Plus



Unbelievable clearance deal on this top of the range synth brings you a huge range of features and serious performance at a bargain price. The Alesis S4 Plus Piano features: 64 note polyphony, 16 part multitimbrality, a huge range of up to the minute sounds and large area of the ROM given over to top quality piano samples, the ability to download samples onto PCMCIA RAM cards, 4 simultaneous multi effects processors based on the Quadraverb 2, huge screen for easy editing and packaged in a 1u rack unit, with plenty of knobs and buttons for editing. Under half price! Limited quantity available - first come, first served!

- 4 Simultaneous FX Processors
- 64 Note Polyphonic
- Massive LCD Display
- Under Half Price!

RRP £995  
**£499**  
EXCLUSIVE DEAL



## MIDI Bundles

While stocks last we are offering Apple's Powerful Performa CPU with a MIDI sequencer of your choice - Steinberg Cubase, E-Magic Logic or Opcode Vision. Comes with 1-in, 3-out MIDI interface.

BUNDLE PRICE  
**£1299**  
INCLUDING SOFTWARE

- Performa 630 MIDI Package:
- Performa 630 #1350CD civ kbd.
  - 14" Colour Display
  - MIDI Sequencer + Interface
  - ClarisWorks Software
- \* CPU Apple's B stock - full warranty



## Reno Portable CD-Rom Drive



Are you making full use of your sampler? There are now a huge range of CD ROM discs stacked full of library available for virtually any sampler on the market. Each disc can hold up to 650 meg (the equivalent of about 500 HD floppies) and what's more, all the patch data has already been programmed!

The Reno CD ROM drive works with nearly all samplers (please check compatibility when ordering) as well as Mac and PC. Most CD ROM drives can play audio CD's, but require special software on a computer to do so. The Reno though has integral buttons for playback and track search etc, and can even be run off batteries for use as a portable CD player (headphones included). We have managed to secure a quantity of these at a huge discount - order now whilst stocks last!

RRP £429  
**£149**  
INC. PHONES & CARRY CASE



EMU

## EMU EIV - The Ultimate Sampler!

Our superb product knowledge and backup service has meant that Turnkey have been chosen by E-mu as the UK's exclusive dealer for the E-IV. If you are in the market for a sampler, or indeed any kind of sound module, you owe it to yourself to have a serious look at the EIV - it's the choice of professionals worldwide.

Standard features include 128 note polyphony, RAM expandable to 128 meg, supreme ease of use, with an icon based O/S & Proteus style multitimbral operation. Synthesis is unrivalled with over 20 different types of filters (up to 6 poles and with morphing), 100's of modulation routings and details like multiple LFO waveforms, and a huge range of DSP processes such as time stretch and sample rate conversion. There are 8 balanced +4dB analog outputs, AES/EBU & SPDIF digital I/O, dual SCSI ports via which it reads Akai and Roland libraries transparently (no need for convert load procedures), and a PC QWERTY keyboard port for titling and easier navigation. Impeccable audio performance can be taken for granted with 128x oversampling sigma/delta ADC's, and 18 bit DACS. A huge library of EMU's own sounds is already available on CD-ROM - we have the lot at Turnkey!

As if all that wasn't enough, there are now a whole range of new features and options:

### V2 Operating System

New features include: SoundSprt - uses buffering to allow sounds to be loaded and played within 1 second over SCSI! • 16 track sequencer • Roland library support • 4 new morphing filters • Time correction DSP adjustable by tempo • Steinberg Recycle support • omega JAZ drive support • 12dB output boost • Trigger sampling via MIDI note (All this now comes as standard with the EIV and is also available to existing users for £69 including 2 CD-ROMS.)



### FX Board

Whereas most MIDI instruments use onboard fx for live performance or to improve their grey sounding presets, the EIV FX hardware option is a high quality 24 bit dual stereo fx card, designed for use in a studio environment. Algorithms include reverb, delay, chorus, flange and other ambient fx. Two fx can be stored with every preset and re-sampled internally for further processing of samples. It's fair to say that the EMU engineers are Lexicon fans! (£329)

### 8 Output Board

This hardware option provides an additional 8 balanced outputs bringing the total to an incredible 16! (£799)



DEAL 1: E-IV + 32 Meg

DEAL 2: E-IV 64 Meg, 16 outputs, fx board, JAZ drive, 4x speed CD-ROM drive, QWERTY keyboard & 16 CD-ROM library

DEAL 3: 'Hire to Buy' on a trial basis.

DEAL 1  
£3499  
CALL FOR DEMONSTRATION  
turnkey  
PROFESSIONAL  
Tel 0171 240 4036

DEAL 2  
£5999  
CALL FOR DEMONSTRATION  
turnkey  
PROFESSIONAL  
Tel 0171 240 4036



## JV1080 Super JV Module

In the same way as the S1000 became the industry standard sampler, Roland's JV1080 has become the industry standard synth module. It's not hard to see the reason why - straightforward operation combined with top flight sound quality and a huge range of useable sounds.

But expandability of the machine is where it really comes into it's own. There are over 10 different expansion boards which can be fitted (up to 4 at once), each one with as much ROM as the original machine, covering sounds from Vintage to Orchestral and Dance to World.

At Turnkey we have the full range in stock, as well as an unbeatable price on the machine itself. Check one out today!

RRP £1499  
POA  
NEW BOXED

RRP £1468  
£1299  
WITH ANY EXPANSION BOARD

## Red

Although Waldorf are not associated with Focusrite in any way, we cannot deny that this Wave is red.



## Waldorf Wave

We now offer a new custom range of Wave synthesizers with 76-note keyboards in four colour options - standard blue, red (as shown), Sahara and black. Totally unique sound.

EXCLUSIVE FROM  
£6299  
CALL FOR DETAILS  
turnkey  
PROFESSIONAL  
Tel 0171 240 4036



## ZIP

## Removable disk drives



## JAZ



## EZ-135

There was a time when hard disks were a luxury for sampler owners, but with the advent of the ultra cheap Iomega Zip and Jaz drives, and the soon to be released Syquest EZ 135 drive, this has become a thing of the past. For under £200 the Zip drive stores 100Mb (94Mb formatted) on each cartridge and the EZ drive 135Mb (124Mb formatted). If you want greater capacity the Jaz's 1GbYTE will suit any large fx library and is ideal for many dedicated hard disk audio systems like the Emu Darwin or Akai DR series.

ZIP  
RRP £219  
£159  
INC DISK & SCSI CABLE

JAZ  
RRP £649  
£469  
INC DISK & SCSI CABLE

EZ-135  
RRP £219  
£139  
INC DISK & SCSI CABLE





# ROLAND VS-880 DIGITAL WORKSTATION



It's an 8 track recorder, each with an additional 8 virtual tracks, giving up to 64 in total! Variable levels of data compression can be applied to give unheard of amounts of recording time on a single hard drive (the VS880 supports an internal IDE but we recommend an external SCSI drive such as the lomega Jaz, for better performance and value.)

Mixing is all digital for superb quality, and is also fully automatable. Built in MIDI synchronisation allows quick and easy setup with any sequencer. An additional fx board can also be added which gives two simultaneous effects busses, featuring RSS and SE70 type effects. Want to know more? Call us or come down for a demo today!



**BUNDLE PRICE**  
**£1599**  
INC 1 GIG INT. DRIVE

**BUNDLE PRICE**  
**£1749**  
INC 1 GIG JAZ DRIVE

**BUNDLE PRICE**  
**£1999**  
INC 1 GIG, JAZ & FX BOARD



## MC-303 Groovebox

**NEW PRODUCT**  
**£549**  
NEW BOXED

**NEW PRODUCT**  
**£649**  
WITH MK149 CONTROLLER KEYBOARD

The enduring popularity of the TB303, MC202 and TR909 has just refused to go away but increasing rarity has meant that secondhand prices have been driven up to ridiculous levels. Roland, the creators of these machines, now bring you the MC303 Groovebox which combines all their classic drum machine sounds, a step time / real time sequencer, 303 'acid' bass sounds complete with front panel filter controls and a whole host of other useable sounds (it's 16 part multi-timbral!). This box is an all in one dance music solution, and believe us, it sounds the business! Initial supplies will be very limited, order now to avoid disappointment!



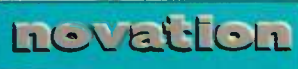
## PULSE



Waldorf quality at a previously unheard of price! Their first venture into the burgeoning monosynth market has been universally acclaimed, and rightfully so. The Pulse's three oscillators provide some of the fattest sounds around, and it's modulation matrix allows a far higher degree of programming complexity than anything else in its range. Add to that the fact that editing any parameter sends out a MIDI controller and you have a fantastic all round performer. On demo and in stock now.

**NEW PRODUCT**  
**£599**  
NEW BOXED

## DrumStation



**RRP £449**  
**£429**  
NEW PRODUCT

Someone had to build this eventually! Despite being discontinued for at least 10 years, Roland's TR-808 and TR-909 drum machines have remained indispensable popular classics ever since. Now, Novation bring you those classic sounds with the original editing parameters, and in the convenience of a 1U rack, with MIDI, and 8 outputs. Initial supplies will be limited and demand, high. We have been guaranteed a significant quantity of the first stock available. Call for further details.

## CS1x



Here's another fantastic addition to this year's slew of equipment specifically designed for dance music. Not only does it look great, it

sounds great too! As well as 480 XG format voices and 11 different drum kits, the CS1x also has 128 special performance sounds especially designed for dance and techno music. Front panel knobs allow instant access to crucial editing parameters like the filter, and 2 are assignable to anything you like. Round this off with top quality effects and an arpeggiator, and you have what has to be the best value keyboard of the year!

**RRP £599**  
**£599**  
NEW PRODUCT



# EUROPE'S LOWEST PRICES GUARANTEED\*

## Sound Modules

**E-MU ORBIT DANCE PLANET**  
INC. FREE CABLES

Emu have taken their wealth of experience in making modules such as the Proteus, Vintage Keys and Morphous, combined it with the filters from the incredible Emulator 4, and with their usual innovation, come up with the Orbit - especially built for dance music.

The Orbit is stacked full of classic drum sounds, pulsating basses, ambient pads, as well as a huge variety of hits and effects. The inclusion of the F4's 16 different types of 4 pole filters mean that this module has more powerful filtering than any other synth. Finally the BOTS MOOD includes a wide selection of loops and grooves, which can have their pitch changed without tempo change and vice-versa, and even their sounds too!

The Orbit is already on demo at Turnkey - audition one today!

**NEW PRODUCT**  
**£799**  
NEW BOXED

**F.A.T. FREEBASS FB-363**  
TB303 CLONE

Superb first product from new manufacturer Freeform Analog Technologies. The only authentic sounding TB303 clone, with MIDI I/O rack with 1 knob per function, all the sound controls of the 303 are duplicated. Cutoff, Resonance, Envelope Mod, Accent, Tune and Decay Waveform is continuously variable from square wave to sawtooth, and an auto tune button is included to retune the oscillator. Filter cutoff CV controllable (converter box available only £69.4 bought with FB363). The ultimate analog bass machine - the incredible price means this will fly out of the door!

**NEW PRODUCT**  
**£199**  
NEW BOXED

**NOVATION BASS STATION**  
BUDGET MONO SYNTHS

If you need to get into analog synths on a budget, then the Bass Station rack or keyboard is for you. But this is no mere toy! Two oscillators, pulse width modulation, two LFO's and knobs that send out MIDI information make this a versatile sound creation tool, capable of a wide range of bass sounds and effects. The ideal addition to any MIDI setup!

**NEW ONLY**  
**£329**  
NEW BOXED

## The UK 4 track Centre

**THE TURNKEY 4 TRACK**

Our famous 4 track pack includes everything you need to start making music. Headphones, microphone with cable, chrome tapes, cables, head-cleaning kit and the best book we've yet seen on multitrack recording, taking you through basic track laying, reword etc... with sections of everything from mic placement to synchronisation and MIDI! We've obtained some great 4 track pricing AND for a limited period we will give you the 4 track pack (normal price £59.95) absolutely free with the units featured herein.

**PORTA 03 Mk2**  
INC 4 TRACK PACK  
only £199

New version of a classic portastudio. Improved styling and metering (!)

**RRP £239**  
**£199**  
NEW BOXED

**YAMAHA MT50 Multi-tracker**  
INC 4 TRACK PACK

High Speed, record on all 4 tracks simultaneously, dbx noise reduction, 2 band EQ on each track, as well as auxiliary send/return.

**RRP £389**  
**£299**  
NEW BOXED

**FOSTEX XR7 Personal Studio**  
INC 4 TRACK PACK

The XR7 breaks new ground in price and performance - 6 inputs (2 mics), 2 separate aux sends, low/hw sweep mid EQ. Records up to 4 tracks at once - double speed transport, Dolby C.

**RRP £499**  
**£449**  
NEW BOXED

**FOSTEX XR-3 Multi-tracker**  
INC 4 TRACK PACK

High speed machine at £249! New auto-stop facility and built in mic - ideal for 4 track recording on the move.

**NEW PRODUCT**  
**£249**  
NEW BOXED

**ACCESS PROGRAMMER**

FOR MATRIX 1000 OR MICROWAVE

There's no doubt that the Oberheim Matrix 1000 and Waldorf MicroWave deliver powerful analog sounds. However, when it comes to programming your own sounds, top producers have tended to go for older synths like the Minimoog and Super Jupiter, because their knobs and sliders make for easy creation of new sounds. The Access Programmer gives you the best of both worlds - now you can freely experiment with your modern analog synth using the same intuitive front panel, and better still, record every tweak of a parameter into your sequencer.

**SCOOP EXCLUSIVE**  
**£369**  
NEW BOXED

**E-mu PROTEUS FX**  
THE WEST END'S EXCLUSIVE EMU CENTRE

8 Meg of superb ROM samples from the E-IV library including orchestral sounds and the Performance Grand Piano 2 independent fx units built in, 16 part multi-ambulatory and 32 note polyphony in a full size I/O rack.

**RRP £599**  
**£399**  
NEW BOXED

**E-mu CLASSIC KEYS**  
THE WEST END'S EXCLUSIVE EMU CENTRE

8 Meg of Vintage Keys samples, 2 independent stereo effects units, 32 note poly, what more can be said. Ideal for anyone needing great vintage sounds without the hassle of an analog synth. Satisfaction guaranteed, unbeatable price.

**RRP £649**  
**£399**  
NEW BOXED

**KURZWEIL MicroPiano**  
SPECIAL PURCHASE

The MicroPiano is the most highly regarded piano module on the market, featuring Kurzweil's breathtakingly realistic true stereo samples - 32 note polyphony means you won't suffer from note-stealing and the wide range of other keyboard sounds and strings make it useful in many other situations. Built in effects including very high quality reverb mean there's no need to use up another effects unit. Strictly limited quantities at this price mean that stocks won't last long. Order today - you won't be disappointed!

**RRP £899**  
**£369**  
NEW BOXED

**WALDORF MICROWAVE**  
TURKEY FACTORY DIRECT EXCLUSIVE

The Waldorf MicroWave has genuine analog synthesis including resonant filters - It has 16 oscillators, 8 part multi-ambulatory and 4 individual outputs. Sweep through up to 48 different waves, controlled by LFOs, envelopes etc. Devastating bass, totally unique timbres!

Also available on a trial basis, please enquire - once you've tried this, you won't want to go back!

**SPECIAL**  
**£1199**  
NEW BOXED

**WALDORF PULSE**

ALL NEW ANALOG MONO SYNTH

Waldorf quality at a previously unheard of price! Their first venture into the burgeoning monosynth market has been universally acclaimed, and rightly so. The Pulse's three oscillators provide some of the finest sounds around, and its modulation matrix allows a far higher degree of programming complexity than anything else in its range. Add to that the fact that editing any parameter sends out a MIDI controller and you have a fantastic all round performer.

**NEW PRODUCT**  
**£599**  
NEW BOXED

**WALDORF PULSE PLUS**

The Pulse Plus has all the features of the Pulse but with audio input, CV and gate control. You can even play your guitar through it!

**NEW PRODUCT**  
**£699**  
NEW BOXED

**OBERHEIM MATRIX 1000 EXCLUSIVE**

Now almost 10 years old, and still sounding as fresh as the day it was released. The Matrix 1000 is essentially a Matrix-6 in a rack - 6 note polyphonic, 2 oscillators per voice, true analog VCF filters with 8 modes, "Matrix" modulation with 20 sources and 32 destinations, raw gutsy analog sounds. Why 1000? The 1000 presets were generated by Matrix owners worldwide in response to a competition to find the best analog sounds on the planet. You're sure to find the perfect patch for virtually any application.

Group mode allows chaining of up to 6 units to create a true multi-voice synth. Fully editable via MIDI, Mac, PC or Atari editor (available for only £49).

**FACTORY DIRECT**  
**RRP £899**  
**£369**  
NEW BOXED

**NOVATION DRUM STATION**  
BUILT AT LAST!

Someone had to build this eventually! Despite being discontinued for at least 10 years, Roland's TR-808 and TR-909 drum machines have remained indispensable popular classics ever since. Now, Novation bring you those classic sounds with the original editing parameters, and in the convenience of a I/O rack, with MIDI, and 8 outputs. Initial supplies will be limited and demand high. We have been guaranteed a significant quantity of the first stock available. Call for further details.

**RRP £449**  
**£419**  
NEW BOXED

**HAMMOND XM1 & XM1**  
ORGAN MODULE

Amazing sounding all new organ module with remote drawer controller. Based on the guts of the (8000 XB), there is nothing as realistic as this on the market. Built in Leslie simulator and overdrive, up to 3 registrations simultaneously, variable release envelopes, percussion and too many more features to list here. Exclusively supplied by CXK.

**EXCLUSIVE**  
**£1085**  
NEW BOXED

**NEW, USED & EX DEMO**

Access MATRIX Prog	£369	ObiYamh Matrix1000	£699
Access MicroWave Prog	£399	Oberheim OBPOD2	£799.95
Alta! SGO1K	£299	Pennyl Spectrums Orgn	£99
Alta! SGO1P	£299	Pennyl Spectrums Syn	£259
Alta! SGO1V	£299	Pennyl Spectrums SCS299	£299
Alta! SGO1K	£249	Roland JV1080	£949
Alta! DPS	£299	Roland MDC1	£349
Alta! SR16	£158	Roland MDC24	£499
Boss DRS	£249	Roland MK570	£649
Boss DM60	£249	Roland MOC1	£699
Dream GPOK 1	£69	Roland MS1	£229
Emu CLASSIC KEYS	£699	Roland MSE1	£249
Emu MICROWAVE	£899	Roland MSV1	£349
Emu Orbit	£379	Roland PMS1	£699
Emu Proteus	£648	Roland PS5	£299
Emu Proteus	£158	Roland SCS25T	£345
Emu Proteus FX	£1139	Roland SC88VL	£649
Emu UltraProteus	£1139	Studio Elec SE1	£1536.33
Emu UltraProteus	£1139	Technics SKV5A1R	£1199
Kawai GP88s LX	£129	Waldorf-MicroWave1000	£999
Korg 650W	£349	Waldorf PULSE	£599
Korg X500	£399	Yamaha MU5	£199
Kurzweil K2000KB	£1889	Yamaha MU50	£299
Kurzweil KMP1	£699	Yamaha MU80	£449
Marion PRO SYNTH	£699	Yamaha QP225	£549
Novation BassStation	£289	Yamaha QY3	£149
Novation Drumtrax	£449	Yamaha SU10	£299

**YAMAHA VL70M**  
VIRTUAL ACOUSTIC MONO SYNTH

Physical Modelling Synthesis for the rest of us - Yamaha ground-breaking new unit. Physical modelling takes a completely different approach to sound reproduction than any previous method - extremely powerful DSP chips simulate in real time characteristics of real instruments such as tubular length, damping, absorption, lipbow pressure, throat characteristics, tonguing and many others. The sound can then be passed through a powerful multi-mode filter section with resonance, harmonic enhancer, impulse response, resonator and live-band fully parametric EQ with key-scaling abilities. Finally, a 32 bit effects section provides up to 3 simultaneous effects processors capable of flanging, pitch-bending, reverb, delay, distortion etc.

Initial supplies will be limited on the exciting piece of technology - get your order in now to avoid disappointment.

**NEW PRODUCT**  
**£499**  
NEW BOXED

**Keyboards**

**ROLAND**  
PC 200-II keyboard

IDEAL ENTRY-LEVEL MIDI CONTROLLER KEYBOARD

Compact touch sensitive master keyboard offering full control over pitch bend and mod, dual slider assignable to reverb, pan or any controller, sustain pedal input, transposes over 2 octave ranges, send patch & bank change messages. Check out our unique package prices with these modules:

PRO2 PLUS PROTEUS FX	£649
PRO2 PLUS AXI	£399
PC200	£149

**EVOLUTION MK140 KEYBOARD**

IDEAL ENTRY-LEVEL MIDI CONTROLLER KEYBOARD

Compact touch sensitive master keyboard offering full control over pitch bend and mod, wheel assignable to reverb, pan or any controller, sustain pedal input, transposes over 2 octave ranges, send patch & bank change messages. Check out our unique package prices with these modules:

PRO2 PLUS PROTEUS FX	£649
PRO2 PLUS AXI	£399
PC200	£149

Protus FX + MK149 ..... £629  
MGS64 + MK149 ..... £529  
MU50 + MK149 ..... £469  
SC7 + MK149 ..... £249

## NEW, USED & EX DEMO

Fostex 310S	£799	Tascam 2424MK2	£399
Fostex DM7B	£1199	Tascam 464	£699
Fostex XR3	£225	Tascam 4080/401	£899
Fostex XDR	£299	Tascam Porta 83	£165
Fostex XDR1	£359	Tascam Porta 87	£299
Roland VS9F1	£148	Yamaha MT6X	£379
Tascam 424	£379	Yamaha MT50	£279
Tascam 424 mt2	£399	Yamaha MT6X	£699

**TASCAM 424 Mk 2 Portastudio**  
INC 4 TRACK PACK

A brand new version of the best selling 424 from Tascam, inventors of the portastudio. Features include 3 band EQ with a mid sweep, records on all 4 tracks at once, 2 independent auxiliary sends (1 switchable pre/post fade). Logic controlled 2 speed transport with built-in memory location points, DBX noise reduction, initial supplies tested.

**NEW PRODUCT**  
**£499**  
NEW BOXED

**FOSTEX DMT-8 digital multitracker**  
INC 4 TRACK PACK

The personal digital multi-track is here at last, and at a price you won't believe! 8 separate tracks of CD quality audio recorded to half-height hard-disk (up to 12 minutes). Record up to 4 tracks simultaneously, jog-shuttle, sync to MIDI without losing a track. The 8 channel mixer accepts up to 4 mics, 2 band EQ and 2 aux sends. Separate outputs and SPDIF optical outputs. Unbelievable discount.

**RRP £1499**  
**£1099**  
INC. FREE 1 GIG DRIVE

**FOSTEX XR5 Personal Studio**  
INC 4 TRACK PACK

Scanning new double speed performance - 6 inputs (2 mics), 2 separate aux sends, low/hw sweep mid EQ. Records up to 4 tracks at once - double speed transport, Dolby C.

**RRP £420**  
**£335**  
NEW BOXED

**TASCAM Porta07 Portastudio**  
INC 4 TRACK PACK

A fantastic new machine from the makers of the Portastudio. Double speed, EQ on each channel, built-in dbx, 4 channel metering system.

**RRP £399**  
**£339**  
NEW BOXED

## Sampling

**TIME & SPACE**

THE BEST EVER DR. RHYTHM!

We have two Time & Space jobsites in store, each fully loaded with the current top 100 CDs. There are chances to cover everything from straight instrumental sounds through sound effects, to loops and breaks. We carry virtually the full range in stock and can also supply most samples in CD-ROM format for direct loading into your sampler. Come and check out the latest sounds today.

**EMU E64**  
WITH 8 MEG A HARDWARE

£4 note polyphonic. Uses the same operating system as the E-IV (new version includes around 15 different filter types), 16 part multi-ambulatory, 8 balanced outputs, SIMM memory, 2 SCSI ports, AES/EBU and SPDIF digital I/Os.

**RRP £3297**  
**£2348**  
NEW BOXED

**EMU E-IV DEALS**  
SUPER SAMPLER

EXCLUSIVE UK DEALER

Our superb product knowledge and backup service have led Turnkey to be chosen by Emu as the UK's exclusive E-IV dealer. As if this 128 polyphonic sampler wasn't great enough already, version 2.0 software and a range of new extras have transformed the product. Version 2.0 features include 4 new editable 6 pole filter types (now 20), direct reading of Roland library as well as S1000, and the incredible SoundSprite technology from the E4K, allowing virtually instantaneous loading of sounds from disk. Also new are the FX board (RRP £235), giving 2 simultaneous top quality FX processors in the E-IV, and the 8 output board (RRP £279) giving an extra 8 balanced analog outputs, bringing the total to an incredible 16!

Our bulk purchasing allows us to bring you these incredible deals -

**RRP £699**  
**£3699**  
NEW BOXED

**OUR E-IV PACKAGE:**

E-IV 64 Meg, 16 outputs, built-in effects, Jaz drive, Apple CD400 4x speed, CD-ROM drive and 16 CD-ROM library.

**RRP £699**  
**£6399**  
NEW BOXED

## NEW, USED & EX DEMO

**ROLAND S760**  
WITH FREE CD-ROM DRIVE & DISK

MEGADEAL! Incredible new low price from Turnkey including from SCSI CD-ROM drive and disk. Everything you need to get started with plenty of usable library. Also available packaged with OPI video/digital board at £1599, or with OPI plus DA400 8-output converter for £1899.

**RRP £1899**  
**£1299**  
NEW BOXED

**EMU ESI-32 + SCSI**  
VERSION 2.0 SOFTWARE

Featuring 32 note polyphony, 49 polyphonic, G-chip resonant filters, huge quality library (Alta! and Emalt! compatible). Time-stretch, doppler FX, parametric EQ, exciter etc... All Emu samplers come with free access to our enormous sample library (we have all the EII library on CD-ROM) and excellent tech support (many staff are owners).

**WEST END EXCLUSIVE**  
**RRP £1100**  
**£949**  
NEW BOXED

New bundled with SCSI interface, CD-ROM drive, ESI-32 and SPU with RAM for the incredible price of only

**£1199**

**NEW, USED & EX DEMO**

Alta! EX2000	£189	Emu E4 Keyboard	£399
Alta! EX6006	£129	Emu E64	£199
Alta! EX4008	£99	Emu E832	£99
Alta! EX4001	£99	Emu E832 SCSI	£99
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# LA Audio Classic

## Single-channel Preamp/Compressor/EQ

**LA Audio have taken the best bits from their mic preamps, compressors and equalisers to create a dedicated, single channel mic/line processor.**

**PAUL WHITE patches it in.**

The idea of a single-channel, 'does everything' preamp and processor makes a lot of sense: for high-quality recording, you can process a mic or line input and feed it directly into your multitrack, bypassing your mixer altogether. You could even take a line signal off tape and process it for a bit of extra sweetening. In the September 1995 issue of *SOS*, we reviewed the Joe Meek Voice Channel, which provides just these kinds of facilities, and now we have an LA Audio unit of a similar kind to look at.

The rather elegant Classic Channel starts out with a transformer-balanced mic preamp, then follows it up with a 4-band equaliser configured as high, low and two sweep mids. This is a sweetening equaliser, and as such seems rather more subtle than some 'channel' EQs, which I've often found to be quite heavy handed. The Classic's compressor is based on the original Classic Compressor circuit (reviewed in *Recording Musician* August 1992) and is designed around an FET gain element, to produce a very tube-like character. Having used a Classic Compressor before, I find it suits vocals and acoustic guitars particularly well, but it sounds pretty good on just about anything. The user has full control over compression threshold, attack, release and ratio, as well as output gain, and to add to

the flexibility of this unit, a switchable, fixed-frequency de-essing filter is built in, to tame unruly vocal 's' sounds. Finally, the output stage is also transformer balanced, which not only delivers a warm sound, but also neatly eliminates ground loop problems.

### A CLOSER LOOK

The mic amp offers a variable 20dB to 60dB of gain, and is fitted with a 20dB pad, phase reverse, and switchable phantom power, just as you'd expect from the front end of a serious mixing channel strip. An insert point is available directly after the EQ section for adding more processing, if needed, and if you're using a line-level input, a front-panel button switches to the Line jack input.

The EQ section comprises a variable-frequency high-pass filter, and a switchable 12kHz low-pass filter preceding the 4-band section. Though the high and low filters in the 4-band section don't have variable frequencies, they can be switched to operate at 12kHz or 6kHz, and 120Hz or 80Hz respectively. Both mid-range EQ sections have fixed 'Q' but variable frequency and gain settings, and a +/-15dB range is available on all sections. Separate bypass switches, fitted with status LEDs, are provided for the 4-band EQ and the high-pass/low-pass filter section.

Directly below the EQ section is the compressor, which has a variable 'knee' characteristic; it has a soft-knee character for unobtrusive compression at low ratio settings, and a harder knee at high ratio settings. Fully variable control over threshold, attack and release is provided, but unusually, the ratio control is switchable in six steps from 1.5:1 to 20:1, rather than being completely variable. Again, the bypass button has its own status LED, and a separate button introduces a fixed sibilance filter into the side-chain for de-essing. Side-chain access is provided on the rear panel, as is a Link input and Master/Slave

**pros & cons**

**LA AUDIO CLASSIC CHANNEL £817**

**pros**

- Transformers and FETs contribute to a warm, vintage sound, but with the low-noise performance of a modern design.
- Easy to operate.
- Smart styling.

**cons**

- De-esser can turn violent in inexperienced hands.

**summary**

A convenient and well-designed processor that combines a pleasing tonal warmth with effective compression and EQ. Ideal for high-quality vocal or instrumental recording as long as you only need a single channel.

**SOUND ON SOUND**

switch, which allows two Classic Channels to be linked for stereo operation. A separate knob controls the output gain of the unit, with moving coil meters being used to monitor the output level and the amount of gain reduction taking place.

### IN USE

The Classic is completely silent during power-up, as the power supply controls a relay which mutes output until the circuitry has stabilised. When the unit is connected, and up and running, it's simply a matter of adjusting the mic or line input gain to get a healthy level without lighting the input clip LED, and then setting the EQ and compressor controls. Because piling on a lot of EQ gain could cause clipping at the compressor input, a further clip LED is provided in the compressor section.

I found that the Classic's equaliser has a broad, warm character, and though there's plenty of cut or boost range, it seems to





# Channel

have been designed to have a very 'rounded' musical feel, rather than focus and precision — probably a result of the Qs chosen for the mid-band controls. The high- and low-pass filters are also very effective, especially when used in combination with the main EQ.

In common with the Classic Compressor, the compressor section on this unit has to be set up quite carefully. Initially, you can end up with quite audible output pumping, but a little experimentation produces an appropriate setting quite easily, and the overkill pumping sound can be used to great effect on rock vocals. As you'd imagine, the higher the ratio setting, the more obvious you can make the compression. As I think I said about the Classic Compressor, this isn't a box you buy for benign gain control anyway — you buy it because you want to hear the compression! Providing you don't over-compress, the processed sounds remains bright and lively, though you do have to choose sensible attack and release times.

The de-esser setting suffers from the usual single-band de-esser problem — as soon as a sibilant sound comes along, the gain of the whole signal takes a dip, but if you set it up so that it doesn't intrude too harshly, it works well enough. Not having a variable de-essing frequency doesn't seem to cause too much of a problem, but you really need to be careful not to overdo the settings, otherwise the compressor will pump like mad. Then again, you might like the sound of a madly-pumping compressor, especially if you're trying to recreate a 1967 Who sound!

## SUMMARY

I think LA Audio have pitched this product about right. Using transformer circuitry certainly helps get the desired 'classic' sound, and it also means that the input stage of the mic preamp is very quiet. The EQ has a nice warmth to it, the compressor has plenty of attitude, and the styling is a nice combination of clean-cut modern lines, over-sized knobs,

## ATTACK & RELEASE

If you're not sure what to do with the Attack and Release controls on a compressor, set them to their centre positions and don't twiddle them again until you've set up the compressor's threshold for the

desired amount of gain reduction. As a rule, longer attacks allow more of the natural transient of the signal through, and longer release times reduce the amount of audible 'pumping'.

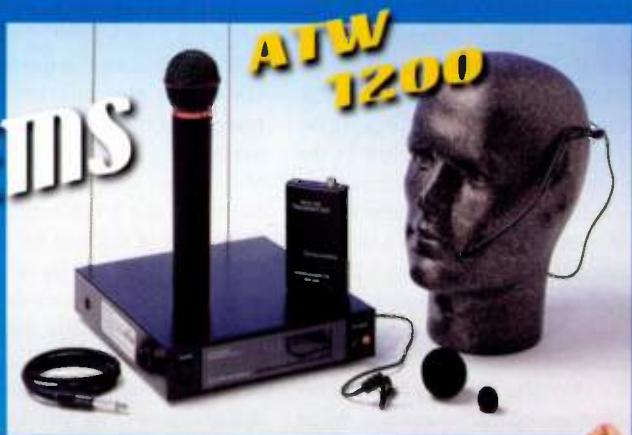
and illuminated moving coil meters.

With awareness of good sound quality continuing to increase, using processors like this one to pipe vocals directly to the input of a multitrack recorder certainly helps, and if you're working with digital tape or a hard-disk system, you'll probably appreciate the tonal warmth that FETs and transformers inject into the proceedings. I like very much what LA Audio are doing with their range, both in terms of styling, and in the facilities they're including, and from what I've seen of this newest family member, it deserves to do well. **SOS**

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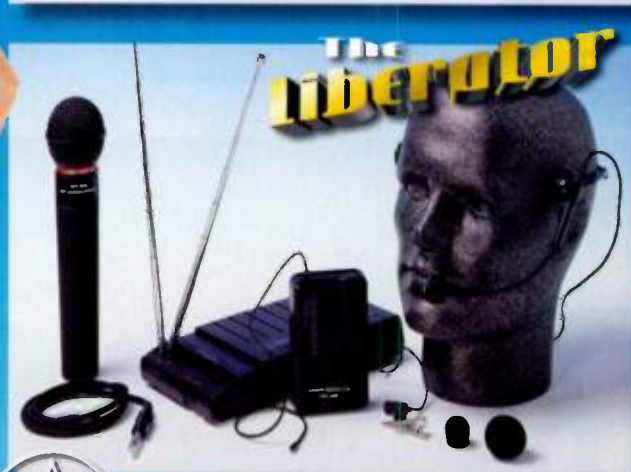
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# Midiman MIDI GMan

## General MIDI Sound Module

*Could this be the most diminutive General MIDI module on the market?*

**DEREK JOHNSON** finds out whether small is beautiful...

**S**mall is something that Midiman do well: small mixers, small MIDI interfaces, and now a small GM module. At about 5.5 inches square, the MIDI GMan could be the most compact sound module on the market today. It's also the cheapest, at under £200, and features creditable 32-note polyphony, and a Mac MIDI interface.

### TINY TUNES

As befits its size, the GMan features a pretty stripped-down user interface. The front panel, such as it is, provides mic and stereo mix inputs (the latter is on a mini jack, and is ideal for mixing in the output of a PC soundcard), and a PC/Mac switch. The Mac position turns the GMan into a 1-in/1-out Mac MIDI interface, and the PC position is for the rest of us, who access the GMan via its MIDI sockets. A power LED indicates that the GMan is working, although there is no power switch.

At the rear is the aforementioned Mac interface port (plus a through connection, so a printer or modem can remain connected to your Mac), MIDI In and Out (no Thru), 9V power input, and audio outs — the main quarter-inch L/R jacks are joined by a stereo mini-jack, for headphones, or for adding multimedia speakers. Level-control pots, for L/R outputs and mic input, stick out of the top of the unit, rather unusually.

All that's left to mention about the package is the manual: for such a simple unit, a basic manual would have been fine, yet Midiman have shown real thoughtfulness by explaining everything you'd realistically need to know. All they've left out is detailed MIDI SysEx information, though enough MIDI spec is provided to let you know which functions are controllable. The obligatory MIDI implementation chart reveals that Control Changes can be used to manipulate reverb and chorus, mono/poly mode (per channel), volume, pan, modulation, pitch bend and sustain (but any changes are reset on power-down). For more in-depth information, you'll need the detailed MIDI spec, which you can buy from Midiman for around £10.

### SOUND STUFF

Being General MIDI, the GMan comes equipped with 128 GM patches, plus seven drum kits. Midiman have generously gone one step further, however, by providing 62 'variations' — accessible via Bank Select commands — that make the GMan compatible with MIDI Files using Roland's GS enhanced General MIDI standard.

From a quality point of view, the GMan sounds are a mixed bag. This is a super-budget machine, after all, aimed at the desktop music market. In this context it performs well — it's several cuts above most PC soundcards. Many PC users would opt for an internal GM daughter board, but the audio output of this type of device is only as good as the outputs of the soundcard it's piggybacked to. The MIDI GMan has its own audio circuitry, which is much better than the average budget soundcard. When cranked, I found it a little noisy, but this was at painful monitoring levels.

Many GMan sounds are quite pleasing, particularly synth pads and textures. Acoustic pianos, while a little artificial, are perfectly playable, and mix well in a track. Electric pianos, acoustic guitars, and some basses and drum kits are also good. The only drawback with the drum kits is a lack of variety in the basic samples, with many sounds doing double duty across all kits. There is evidence of doubling up of wave sets on the main patches too, with not quite enough multisamples in many

**pros & cons**

**MIDIMAN MIDI GMAN £199**

**pros**

- Compact.
- Cheap.
- 32-note polyphony.
- Easy to use.

**cons**

- No display.
- No MIDI Thru.
- No dedicated PC interface.

**summary**

If you're strapped for cash, the MIDI GMan is as cheap as it gets when it comes to stand-alone GM modules. And remember: all Midiman products have a lifetime guarantee.

**SOUND ON SOUND**

cases. But few sounds are totally unusable, and a professional MIDI File plays back perfectly well with the GMan. Broadly speaking, pop music (and possibly games soundtracks!) are best served by the GMan, since the strings and wind patches are too limited for realistic orchestral simulations.

### VERDICT

I have one or two reservations about the GMan: firstly, considering the large percentage of PCs being used for music, the lack of a dedicated PC — or switchable Mac/PC — interface, is rather strange. Secondly, the level controls sticking out of the top of the unit will restrict where you'll be able to put the GMan, since anything above the module will reduce access to these. Finally, there's no display, though many owners will, of course, use MIDI controllers to alter volume remotely, and to access other MIDI-only functions.

But these are relatively minor criticisms of a sub-£200 sound module that offers GM/GS compatibility, 32-note polyphony, stereo and mic inputs, and a Mac MIDI interface. The GMan provides easy access to General MIDI/GS compatibility in a compact, low-priced package, and if that's what you want, it's well worth a look.

SOS



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# Mass Technology

## Studio Power Amplifier

**PAUL WHITE tests a new British power amplifier to see if it sounds as good as it looks.**

**D**esigned and built in the UK, and distributed by Key Audio, Mass amplifiers are available in sizes ranging from 35W per channel up to 250W per channel, and Mass also build a studio headphone amp, just to complete the range. All the amplifiers in the range are fanless, to eliminate mechanical noise, and a novel approach to heatsinking by the manufacturers also means the amplifiers can be both compact and cool running.

### POWER STATION

The model under review is the 2U-high Mass 500, delivering up to 250W per channel into 4Ω, or 180W per channel into 8Ω. It can also be run in bridged mono mode. A chrome-plated front panel, complete with back-lit input level meters, gives the whole package a pleasantly retro feel.

A look at the sides of the case reveals what the new Mass approach to heatsinking is. Instead of finned heatsinks, this design uses cast aluminium fingers, which stick out from either side of the main case like heated hair curlers. This approach is said to be more effective in dissipating heat, because turbulence is caused between the fingers, helping to lift the heat away from the surface. A similar approach is being

taken by the manufacturers of high-power microprocessor chips — which adds weight to Mass's position! Certainly those castings must have cost a fortune to tool up, and I'm sure the designers wouldn't have gone to this expense if there wasn't a tangible benefit.

### FACILITIES

The amp's circuitry is based on triple-diffused, bi-polar output devices of a similar type to those used in leading US-designed power amplifiers, but the front end and pre-driver stages employ surface-mount technology, which is unusual for power amplifiers. Though it doesn't use a fully symmetrical topology, the circuit delivers a THD (Total Harmonic Distortion) of better than 0.05%, and has an audio bandwidth of 20Hz to over 30kHz, flat within 3dB. I understand that many listening tests were also conducted during the design of this amplifier, so even though the technical specification is respectable, a lot of emphasis was also placed on a good subjective sound.

Protection against short circuit or thermal overload is built in, as is protection against DC (Direct Current) offsets and RF (Radio Frequencies) at the output, but the designers have also taken the unusual step of including soft clipping, which comes in 3dB before maximum power, to help protect connected loudspeakers from damage. Though this increases the amount of distortion when the amplifiers are run flat out, it is more benign than hard clipping, both artistically and in terms of speaker punishment.

Power comes from a single toroidal

**pros & cons**

**MASS 500 £399**

**pros**

- Wonderful styling.
- Smooth, powerful performance.
- Competitively priced.
- Fanless cooling system.

**cons**

- The manual is rather short on technical specifications and gives no clues as to the use of the send sockets, or how to use the amplifier in bridged mode.

**summary**

A very attractive combination of good audio performance, stunning looks, and keen pricing.

**SOUND ON SOUND**

transformer feeding two separate power supplies, the idea being to minimise inter-channel modulation of the audio via the power supply rails. Because a great many studios are run by semi-professionals, the amplifier has been fitted with Neutrik Combi input sockets, which can accept both balanced and unbalanced jacks, as well as balanced XLRs, and a further pair of the same type of sockets are provided as sends, for applications where two or more amplifiers need to be chained from the same input source.

Power comes in via a standard IEC mains connector, and the speaker outputs are on chunky terminals that also accept banana plugs. The amplifier is fitted with separate, 41-step detented volume controls for the two channels, and warning LEDs show the power, thermal overload, and clip status of





# 500

each channel. A couple of rack handles and a centrally-mounted mains switch complete the picture, and an electronic delay circuit mutes the speaker outputs during power-up, to prevent thumps.

## MASS INTO ENERGY

Most power amplifiers live up to their published specifications when tested into resistive loads, but the real proof of a good design is how it shapes up to the complex impedance load of a real loudspeaker. For this test, I used a pair of ATC SCM20s, which are extremely revealing, and provided source material from a familiar DAT machine and CD player.

On powering up the amplifier, the first thing you notice is the deeply sexy red backlight used for the VU meters. You don't notice the switch-on thump because there isn't one — the auto-muting circuit

“The amplifier delivered a subjectively vice-free performance that was both smooth and detailed, with plenty of depth.”

means that power-up is completely silent. Even with the relatively inefficient ATCs I used during the test, there was plenty of power on hand, and the amplifier delivered a subjectively vice-free performance that was both smooth and detailed, with plenty of depth. Even with the clip LEDs flashing,

the soft clip circuitry keeps the sound relatively smooth, though it's probably best not to get the clip LEDs flashing too frequently, as some sound degradation is inevitable. What impresses me more, though, is how well this amplifier behaves at very low power levels — something that can't be said of all high-power designs. Indeed, with a CD player plugged directly into the input jacks, you could have a hell of a hi-fi system, as well as a studio monitoring setup.

## SUMMARY

Given its sub-£400 selling price, this amplifier performs well in a studio monitoring role — and it looks absolutely wonderful. The lack of fan cooling doesn't seem to cause any problems, and at modest listening levels, the heatsinks actually stay

quite cool. You have to run the amp quite hard to get them to warm up, and even then, with typical program material running into clipping just on the peaks, it still seems to be merely ticking over.

Judged purely on performance, the Mass 500 is one good power amplifier amongst many very worthy rivals, but the keen price and stunning cosmetics make it stand out from the pack. I'm tempted to get one for my hi-fi system, let alone the studio!

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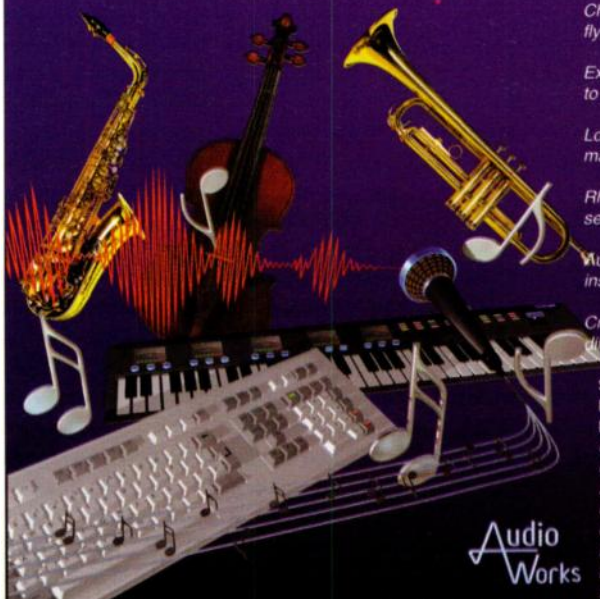
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# SPL Charisma

## 8-Channel Valve Signal Processor

*More and more people are choosing digital recording systems, which is creating a spin-off market for valve processors designed to lend a more comfortable warmth to the resulting recordings. HUGH ROBJOHNS looks at an SPL unit being touted as the ideal partner for eight tracks of digital.*

The Charisma is the latest product from innovative German company SPL (whose Tube Vitalizer enhancer we looked at in our last issue). Essentially, it's an 8-channel signal processor which uses valves to add a controllable 'warmth' or 'fatness' — in other words, it should add a little 'charisma' to your sound! It can also provide a degree of clipping protection for digital systems through the inherent soft saturation characteristics of valves — not dissimilar to analogue tape saturation.

Intended for use with digital multitrack systems such as the DA88 or the ADAT, or even DAWs (Digital Audio Workstations) like Digidesign's Pro Tools or Session 8, the Charisma operates with

balanced pro-level inputs and outputs and has eight completely independent channels.

### RACKING IT UP

The Charisma is packaged in a standard 2U-high, 19-inch rackmount case with a substantial front plate. The latter is well up to the job of supporting the unit, although I feel some rear support would be a good idea in a mobile flightcase. The finish is a distinctive brushed gold colour, with simple black control knobs and markings.

Obviously, valves get pretty hot, and convection cooling is encouraged through slots on the sides and lid. The well-written manual recommends keeping the unit away from power amplifiers or any device which

operation. Nominal input and output levels are +6dBu.

### SETTING IT UP

The front panel of the Charisma has a power switch over on the right-hand side, and eight columns of neatly-arranged controls. Each channel has just three rotary controls, plus a push button and a couple of LED indicators.

The top knob is labelled Drive, and it determines the signal level feeding the valve processing stage. Calibrated from minus infinity to +24dBu, its unity gain position is marked on the dial, with a gentle detented action as the knob is rotated. Increasing the control above the zero mark introduces the characteristic 'valve sound', whilst also increasing the output level, more or less in proportion.



itself gets hot or generates strong magnetic fields. It also suggests keeping the Charisma separated from digital equipment, to avoid interference from clock signals or MIDI data. However, the unit is well screened and CE marked, and I experienced no trouble with interference at all.

Mains power is supplied through a normal IEC socket with a voltage-selector switch and an earth-lift facility separating chassis and signal grounds (to break hum loops). There are no externally-accessible fuses, but seven internal ones (none of which are labelled as to their function or value on the PCB!).

Audio connections are on rear-panel Neutrik stereo jacks, wired for balanced operation (tip hot). A nice touch is that the rear-panel graphics label the socketry twice — allowing it to be read when leaning over the unit from the front as well as directly from the rear! Input and output balancing is implemented through the excellent SSM 2141/2142 chips, providing superb performance regardless of whether your system is wired for balanced or unbalanced

Adjacent to the Drive control are a pair of LEDs labelled Max and Process. The Process lamp blinks when the signal reaches a point where the valve is actively changing the sound quality. The Max indicator illuminates when the valve has reached saturation, and any further advance of the Drive control introduces overdrive distortion.

The bottom control knob is labelled Output, and again has a detented action and is calibrated from minus infinity to zero. This knob is provided to compensate for the level increase caused by the action of the Drive control. Next to the Output knob is a button which provides a complete channel bypass.

The 'fun-knob' is in the middle, and is intriguingly labelled Charisma. Calibrated from soft to hard, this control effectively alters the biasing point of the valve governing the sound quality in a very audible way. At the soft end of the range, the effect is not dissimilar to gentle compression, but with an added richness caused by the inherent harmonic distortion. This can appear to either dull the sound slightly or lend it a lovely

### pros & cons

#### SPL CHARISMA £1409

##### pros

- Classy sound.
- Very easy to use.

##### cons

- Input rather insensitive and can be very difficult to use with some low-output equipment.
- Very difficult to match channels for stereo tracks.

##### summary

The Charisma provides a good way of enhancing the quality of a wide range of source material, often making EQ redundant and helping things to shine through a mix. An ideal partner for 8-track tape and disk-based systems.

**SOUND ON SOUND**



warmth, very much depending on the nature of the sound source itself. The hard end of the range is more like the effect of a limiter, and tends to lend a more punchy, dynamic characteristic to the sound.

### LAPPING IT UP

Used with a certain amount of discretion, the Charisma enhances almost anything you care to feed through it — I suppose the best description of the effect is that it adds 'class'. All you have to do is juggle the Drive and Charisma controls for the desired effect, adjusting the Output merely to set the send level to the recorder or the rest of the signal chain.

Soft Charisma settings tend to be quite subtle, and affect the signal over a wide dynamic range. However, this is certainly not the case at the hard end, where there is a more obvious processing threshold. In both cases, though, the strength of the Charisma is that, through altering the dynamic and harmonic content of the audio signal, it tends to make things sound louder, fuller and richer, even if the input and output peak levels are carefully matched.

I found the Charisma to be particularly effective on drums (real, synthesized, or sampled) when used at the hard end of the scale, where it added a very analogue tape-like quality which required far less EQ than

## OPENING IT UP

Gaining access to the insides of the Charisma involves removing 12 short self-tapping screws from the steel lid. A single mother board carries the encapsulated mains transformer and power supply circuitry on the right-hand side, and in a neat row across the centre of this high-quality PCB are eight E83CC valves. Immediately in front of these are eight vertically-mounted daughter boards carrying the front panel controls and most of the electronics for each channel. The rear-panel connectors all mount directly to the mother board.

The E83CC is effectively an upgraded version of the better-known ECC83 double-triode valve, with higher gain, improved high-frequency capabilities and more effective internal screening.

Specifications are pretty good, with a flat frequency response from 20Hz to 50kHz, and excellent common mode rejection figures (courtesy of those SSM devices). A-weighted signal-to-noise is quoted at better than -80dBu and distortion at 0.4%. This last figure is pretty poor in comparison with decent modern amplifiers, but remember: it is this very distortion that creates the sound quality you would be buying this unit for!

usual to make 'right' within a mix. On acoustic guitar (especially with a pick) and DI'd bass, it can add a very pleasant thickening or warmth, and I found this helped weak and thin-sounding instruments to edge their way to the front of the mix, without resorting to pushing the faders up. I also found that I needed much less reverb on instruments after they had been 'Charisma'd', which also helped to tighten up mixes.

The same effects were evident with vocals — particularly male vocals — and with careful adjustment, the Charisma can make cheap electret microphones sound really quite acceptable! With extreme settings, it can even turn weedy synth organ presets into ballsy pseudo-Hammonds (but you still can't beat a real Tonewheel and Leslie combo...).

To sum up, the Charisma is well built,

ideally suited to adding a classy analogue quality to your ADAT or Session 8 recordings, excellent at enhancing a wide variety of sound sources, and very easy to use. I liked it a lot, but don't take my word for it: check it out for yourself — you won't regret it!



Hugh Robjohns is a lecturer at the Centre for Broadcast Skills Training at BBC Wood Norton. The views expressed in this article are the author's own and are not necessarily those of his employer.

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# Spirit Absolute Zero

## Nearfield Monitors

*Spirit's new baby monitors incorporate some of the design principles used in pro monitors costing many times the price. But have too many corners been cut to keep the price so low? PAUL WHITE finds out.*

**H**ow do you build a cheap monitor that sounds brilliant, delivers plenty of bottom end, goes as loud as you like, and produces an accurate representation of what's fed into it? If you know the answer, you know a lot more than the people who actually build loudspeakers, because using existing technology, low cost invariably means compromise in some areas. The trick is to keep the consequences of compromise to a minimum. Another neat trick is to have a parent company that owns at least two of the world's foremost loudspeaker driver manufacturers!

### DESIGN

Spirit's previous Absolute 2s (see *SOS* March 1995) have done very well as

project studio monitors for the budget conscious, but now the company have decided to add to the range by bringing out a smaller, cheaper model. The Absolute Zero is no bookshelf speaker, though: its twin drivers still manage to cover the 55Hz-18kHz part of the audio spectrum, while delivering a respectable level from amplifiers rated at up to 95W per channel.

There are two slightly unusual features of this monitor: the rear bass port (which saves front-panel space and reduces mid-range coloration), and the acoustic waveguide tweeter baffle, the latter being designed to control the listening angle so that the tweeter doesn't have a wider dispersion than the bass driver at the crossover point. The design of this waveguide also sets the driver back from the baffle, allowing it to be time-aligned with the bass driver. This waveguide approach isn't new, of course — Genelec, for example, have been using waveguide technology for a long time.

The tweeter is a 25mm, 'catenary' profile soft-dome unit. 'Catenary' describes the mathematical curve which results when you hold a piece of string at the ends and allow it to sag in the middle. Arches built using this curve are very strong, because forces are distributed directly along the curve, so that the material is compressed rather than being subjected to shearing or

### pros & cons

#### SPIRIT ABSOLUTE ZEROS £206

##### pros

- Very affordable.
- Overall accurate sound, despite small flaws in the fine detail.

##### cons

- Slight upper-mid edginess, but nothing to worry about at the price.

##### summary

A nicely-conceived budget monitor priced to appeal to a lot of home studio owners.

**SOUND ON SOUND**

bending. In the context of a tweeter, this obviously helps to avoid dome deformation when the tweeter is driven hard.

At the bass end, there's a 170mm driver with a 30mm voice coil and a soft roll surround. The cone is made of paper, with a metallic red paint finish and a reassuringly heavy magnetic structure. Conventional porting technology is used to tune the cabinet, which itself is built from laminated particle-board with rounded front edges to help reduce cabinet-edge diffraction. This method of cabinet construction is quite cost-effective and is used in many consumer speaker systems.

A much under-rated component in any speaker system is the crossover: Spirit have chosen a fourth-order, Linkwitz-Riley response because of its sharp roll-off





characteristic and lack of phase shift at the crossover point. Because the crossover operates at 2.5kHz, many critical mid-band musical and vocal sounds overlap the crossover point, where they are likely to illuminate any shortcomings in the design. Connections to the crossover are via a rear-panel terminal strip fitted with gold-plated binding posts that will accept either bare wires or banana plugs.

### PERFORMANCE

Accepting the limited bass response of this type of design, the Absolute Zeros actually hold up very well, delivering a generally well-balanced, detailed sound, marred only by a hint of harshness, which seems to be concentrated around or just above the crossover point. Given the price of these speakers, this coloration isn't very serious.

At the bass end, the sound lacks a little punch at very low listening levels, but delivers a more satisfying kick when the speakers are asked to work a little harder. You don't get the same depth as from full-range monitors, but then most domestic studios perform so unpredictably with full-range speakers that you're probably better off using a smaller monitor. A modest power amplifier delivers adequate level for near-field work — the sensitivity is quoted as being 89dB/2.83V/m when operating into 'half space'. This simply means when the backs of the speakers are close to a wall, in order to exploit any low-frequency reflections and increase the SPL at the bass end.

Stereo imaging is generally good, and you can move around

*“The Absolute Zeros actually hold up very well, delivering a generally well-balanced, detailed sound.”*

the listening area without the sound changing too much. Moving too much to one side of the 'sweet spot' causes a drop in level, as you'd expect, but the overall sound character remains pretty even. On balance, the Absolute Zeros paint a pretty accurate picture of what's going on in your music — and after all, that's a monitor's job.

### VERDICT

By adopting consumer hi-fi construction techniques, and by sourcing drivers from within the Harman parent company, Spirit have managed to produce a very creditable-sounding monitor right at the bottom end of the project studio monitor price range. While there may be small flaws in the overall detail of the sound, when compared with top-end monitors the 'broad strokes' representation of the source material is actually pretty good, with only the edginess in the upper mid, which I mentioned previously, detracting from an otherwise smooth performance. If these speakers had cost three or four hundred pounds, I think I'd have been justified in being a little more critical, but at only slightly over £200, they look imposing and represent very good value. **SOS**

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Francis Buckley EQ Magazine July 1996

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Paul White SOS July 1996



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# Audio Technica

## Studio Condenser Mic

*A well-respected studio favourite for several years, Audio Technica's cardioid AT4033 has now been slightly updated. PAUL WHITE reassures himself that the warm 4033 sound remains unchanged...*

**A**udio Technica's original 4033 cardioid condenser has been around for some years now (check out the review in the April 1992 issue of *SOS*) and has become something of a modern studio classic, but now the company has updated this mic by redesigning the internal electronics and changing the capsule suspension system to reduce handling and stand-borne noise still further. To indicate the differences, the redesigned 4033 has now gained a letter 'a' on the end of its name.

Part of the key to the original 4033's success was its affordability, and that in turn was made possible by using a fixed-pattern, cardioid back-electret capsule rather than a multi-pattern, dual-element capacitor capsule. In terms of performance, the back-electret capsule seems every bit as

capable as a conventional capacitor capsule, and certainly hasn't adversely affected the mic's success — over the years, the 4033's silky, detailed, warm sound has won it a lot of users.

### APPEARANCE & FEATURES

Packaged in a similar way to other large-diaphragm mics, the AT4033a is transformerless and features a capsule built around a two-micron, gold-deposited diaphragm that has been processed to artificially age it, the idea being to ensure long-term performance stability. Even without the use of the 10dB pad (see below), the capsule and preamp circuitry can handle levels up to a punishing 145dB without incurring more than 1% Total Harmonic Distortion (THD), and the new low-noise circuitry is fully symmetrical, providing very low distortion figures and a fast transient response. Not only does the circuitry have a low noise figure, it also provides a high output, making this a very sensitive microphone within its class: at just over 25mV/Pa, the mic is up to twice as sensitive as some ostensibly similar models, and the 17dB noise performance is creditable.

A high-pass, 80Hz, 12dB/octave filter can be activated with a recessed switch on the mic body, and there's also a 10dB pad which may be required to prevent console overload when operating at very high SPLs.

### pros & cons

#### AUDIO TECHNICA AT4033a

£652/£695

#### pros

- Flattering on vocals and many acoustic instruments.
- Sensibly priced.
- Good technical spec including low noise, high sensitivity and tolerance to high SPLs.

#### cons

- The shockmount is rather expensive.

#### summary

Audio Technica have made genuine technical improvements to this well-loved microphone without disturbing its fundamental tonal character.

**SOUND ON SOUND**

The entire casework is finished in non-reflective black and the capsule is protected by a dual-layer grille. A thin layer of acoustic foam is positioned between the grille and the capsule.

Because of the large, open-basket construction, the off-axis response of this microphone is particularly impressive — at

“It's nice to see a company making genuine improvements to a best-seller without changing what made it so successful in the first place.”

90 degrees off-axis, the frequency response is almost identical to that on-axis, but 6dB lower in level. The provided response plot shows the mic to be nominally flat from 30Hz to 20kHz, and though there are some slight undulations in the curve, there's no more than a couple of dBs of lift above 10kHz.





# AT4033a

Two versions of the mic are available, but the only difference is in the mounting hardware provided — the AT4033a/SC includes a basic stand clip, while the more costly AT4033a/SM comes with a heavy-duty shockmount system. The package comes in a practical, rigid vinyl carry case with foam lining.

## IMPRESSIONS

Though the technical improvements to the original design may make a slight difference in marginal operating conditions, I don't think existing AT4033 owners need worry about selling their mics and trading up. Comparing the two models side by side, the mixer mic amp noise swamped any differences that might have been audible in the background noise level. I feel it's more important to confirm that in redesigning the electronics, Audio Technica haven't compromised the mellifluous tonality of the original — so many so-called improvements seem to throw out the baby with the bath

water. Fortunately, I couldn't detect any tonal change at all in a side-by-side comparison.

For those who haven't heard a 4033, both it and the newer 4033a produce a warm, flattering sound which somehow combines the solidarity of a really good dynamic mic with the transparency and detail of a top-end capacitor model. There's a flattering fullness to the sound, which goes some way towards emulating the sound of a tube mic, although it falls just short of the real thing — tube mics often sound a little compressed, for some reason. However, if you make use of a tube mic preamp, or pass the signal through a channel with a tube processor in circuit, you can get very close indeed to vintage perfection.

All large-diaphragm mics have their own character, and the AT4033a is certainly no exception. Put it next to an accurate reference mic such as the Earthworks OM1 (reviewed elsewhere in this issue) or one of the Sennheiser MKH-series mics, and there's an obvious difference. It's always hard to

describe mic characteristics in mere words, but the 4033a sounds both warm and intimate, yet there's plenty of space and air around the sound. It doesn't quite have the throatiness of a tube mic, but it certainly leans in that direction. Even though there are cheaper large-diaphragm cardioid condenser and back-electret mics, the 4033, and now the 4033a, remain my favourites within their price range. It's nice to see a company making genuine improvements to a best-seller without changing the fundamental character that made it so successful in the first place. **SOS**

**E** AT4033a/SC (mic including stand clip) £651.95;  
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# Theremins

► company's range. In its most affordable form, the Etherwave is a kit, but it can be bought ready-assembled and calibrated for a small premium. The kit consists of a ready-built circuit board, a wooden case, a collection of knobs and wires, and the two antennae. The instructions are completely clear and detailed — right down to finishing the case — so construction should be straightforward.

We checked out a fully-assembled instrument, courtesy of UK distributors 2nd Gear, and to be honest, it initially didn't impress, at least as far as looks were concerned. However, being essentially a kit, the plain plywood box could be finished in any manner you like: stain and varnish for that homegrown real wood feel, add several coats of black lacquer, or a custom psychedelic design — the choice is yours. The Etherwave is

also designed to be attached to a mic stand, and once you've mounted it and adjusted it to a comfortable height, it really starts to look the part.

The Etherwave is much simpler to describe, physically, than the sort of instrument we usually review in *SOS*. There are just four knobs, labelled Pitch, Volume, Waveform and Brightness, a single switch (for power) and a single socket — the audio out. An LED informs you that the instrument is switched on, and power comes from an external supply which jacks into the rear. This unfortunately utilises a DIN connector not totally dissimilar to a MIDI jack. I'm sure that no-one is going to make the obvious mistake of trying to plug in a MIDI lead — and the warning label at the rear should warn off the totally dim — but why cause the ambiguity in the first place, when another choice of connector would have avoided the problem?

Even owners of the pre-assembled Etherwave will have to insert the two antennae before their theremin can be used: the single upright antenna at the right controls pitch, while the loop to the left controls volume.

The first step is obviously to plug in the power supply, and insert an audio lead. The level on your mixer needs to be turned down, then the Etherwave can be switched on. The precaution of turning the mixer level down is especially relevant here, since the theremin can produce an alarming noise on power-up or power-down. Place the Etherwave in a location such that no walls, objects or other people are within about four feet of the instrument, as it may not produce

any sound at all otherwise.

As you move towards the Etherwave, a low-pitched sound will become audible, which gets higher as you get closer. Moving the right hand towards the vertical pitch antenna causes the pitch to rise, while moving the left hand towards the horizontal loop antenna will make the instrument's volume decrease. It takes a little practice to find the best location for playing: the manual recommends standing left of centre of the instrument, with your right shoulder about 24 inches from the pitch antenna. However, there are no fixed rules, only guidelines, and it's necessary to adjust the controls as you like to suit your playing style.

Actually producing sensible sounds — tunes or controlled swoops — is tricky. Anyone who has seen virtuoso Clara Rockmore, who appeared the excellent documentary, *Theremin: An Electronic Odyssey*, broadcast on Channel 4 in November

1993, will probably follow

her lead and attempt to develop a range of hand and finger movements.

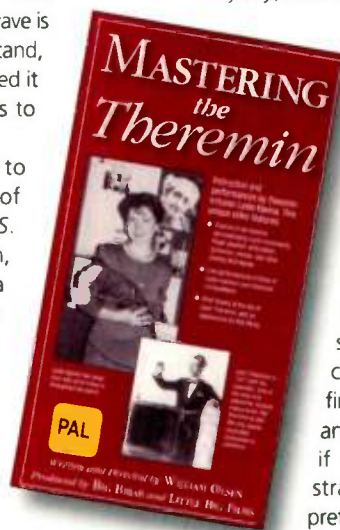
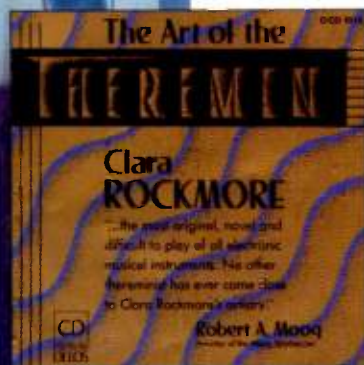
Help is provided with your Etherwave in the form of a Big Briar training video, featuring Leon Theremin's great-niece Lydia Kavina.

The *Mastering the Theremin* video is short, but excellent: in six lessons, Kavina provides crucial exercises for developing finger position, hand technique, articulation and expression. Even if all you want to do is make strange whooshing noises and pretend you're on the soundtrack to *The Lost Weekend*, getting a

grasp of technique is essential. If your ambitions are more advanced, you'll watch these lessons over and over.

The Etherwave package also includes a Clara Rockmore CD, *The Art of the Theremin*, which is a collection of light classics. While the music may be of limited interest, the performance is amazing: Rockmore — who collaborated with Theremin in the 20s — displays astonishing control and technique. An informative booklet offers background on the instrument, its inventor and the performer.

Sonically, the Etherwave produces a sound typical of theremins, as evidenced by movie soundtracks: gutsy lows through to ethereal highs can be, well, plucked out of thin air. Bob Moog is on record (via an FAQ list on Justin Barile's excellent Theremin home page) as saying that the typical sound of a classic theremin, as designed by Theremin himself, is actually a modified rectangular waveform, rather than the sine or square wave utilised by some designs. Moog's instruments all aim at accurately replicating that sound with modern components, although: "our Etherwave Theremin has two continuous rotary controls that adjust the instrument's sound. They're called



## THEREMINS ON THE NET

The rabid theremin underground has generated an illicit trade in photocopies of published theremin circuits, patents, antique magazine and newspaper reports, and tips for building one's own. This type of thing is handled perfectly by the Internet, and as revealed in last month's 'Surfin' Safari' music web site feature, there is a good central web site dedicated to the theremin. Here you can find details on all commercially available instruments. In ready-built or kit form, and data on how to build your own from scratch. Here are a few other notable sites for you to check out, and between them they'll provide plenty of links to other sites.

<http://www.Nashville.Net/~theremin/>  
(the new URL for the theremin home page mentioned in 'Surfin' Safari').

<http://www.he.tdi.com/~Internet/tecl/teci.html>  
(Theremin Enthusiasts Club International home page).

<http://capella.dur.ac.uk/Jon/ThereminUK.html>  
(UK theremin-constructors home page)

<http://www.ccsi.com/~bobs/>  
(Bob Sexton's theremin home page — historic percussion also featured here!).



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# Theremins

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## LONGWAVE INSTRUMENTS POCKET THEREMIN

Longwave Instruments is a British company run by enthusiasts Barry Wooding and Jake Rothman, who introduced a range of theremins a couple of years ago. The Pocket Theremin we're looking at must be one of the smallest, cheapest theremins you can get without building one yourself, and is a very simple device: it really *will* fit in your pocket, and offers control over pitch only, something which is common to many budget or DIY designs. It's powered by a 9V battery, uses a mini-jack for its audio out, and powers up with a toggle switch: note that there is no indication of whether the unit is on or not, which may be problematic for some. A large level-control knob sticks out of the side, but there is no equally large pitch control: the latter is provided, but via a small and fiddly pot on the back. This has no definite end stops, so if you adjust too far, you start at the beginning again. A built-in speaker lets you use the Pocket Theremin anywhere, and although this speaker *does* work, it's much better if you plug the Pocket into some form of amplification — the sound quality is



much better, and the pitch range actually increases. One definitely missing feature was a manual: none came with the review Pocket, although one is apparently in preparation.

Longwave report that unpredictable but interesting sounds emanate from the Pocket Theremin even with drained or flat batteries (Duracell batteries are best, by the way, since these retain a residual current for longer.) I didn't have time to try this, since I was keen on getting the Pocket to produce just an ordinary theremin sound. You could use an external PSU to power the Pocket, as long as it's equipped with a PP3-type connector, but the package isn't really designed for this; in fact, even getting the battery to fit in the compartment can take a bit of shoving. In all, the Pocket Theremin is tidy, but definitely homebrew, though in Longwave's defence, they are building to a price — less than £100 — using off-the-shelf components. One thing worth noting is that once a lead is inserted into the audio out socket, the Pocket becomes physically rather unstable. A bit of gaffa tape or a user mod involving velcro may be in order if you're to be able to play it without having to manually hold it up.

Not having a volume control almost precludes the playing of tunes and accurate articulation with this little unit, and the actual 'playing' area is so small that moving your hand away from the Pocket essentially mutes it; a little practice, using finger movements and moving your hand outside the pitch field, should allow you to exercise some control over the result. Etheric, spooky effects can be produced with ease, and tunes can be coaxed from the unit with practice.

There's not much more to be said about the Pocket Theremin. It certainly works, and it ▶

## pros & cons

### LONGWAVE POCKET THEREMIN £99

#### pros

- Compact.
- Cheap.

#### cons

- No volume control.
- Awkward to use.

#### summary

If you're interested in exploring the theremin concept or want to have some fun without committing yourself financially too heavily, the Pocket is ideal. It's rather too small and makes too many operational compromises for serious use, however.

**SOUND ON SOUND**

## TEACH YOURSELF THEREMIN

While the world isn't exactly flooded with 'teach-yourself-theremin' material, Lydia Kavina's video is not the only course available: such is the interest in the instrument that American thereminist Bob Sexton has written a book describing a playing system that he's developed over the years. *Method for the Theremin Book 1: Basics*, published by Tactus Books, boils down Sexton's system, which he claims offers many advantages over the traditional method. Beta-testers who checked out the book before publication had the following to say about the method described in the book: "easier to judge distance to the pitch antenna"; "allows a much more steady pitch hand"; "more comfort and better hand control". Bob summarises the system

as follows:

- Gravity is used to stabilise the playing arc of the forearm rather than being a factor to be constantly overcome by the use of more muscles, motion and energy than necessary.
- Some ideas in the book are transferable to other systems of theremin playing.
- The system was found to work on a Theremax (a kit produced by American instrument kit company PAIA) as well as on the Etherwave.
- A person of any size can use the system.

The book costs US\$20, plus shipping; that's US\$4 in the States and Canada or US\$10 air mail to the UK. Make sure you send a cheque in US dollars, drawn on an American bank. Contact The Tactus Press, PO Box 9704, Austin, TX 78766-9704 USA for more information.



## 2 NEW MiniDisc PORTASTUDIOS



Yamaha & Tascam, the inventor of the cassette Portastudio, have now taken the concept onto the MD (MiniDisc) format. With the triple advantages of digital multitrack recording on cheap and very small, portable media, these two 4-track machines are set to become the new face of entry level recording.

Both units allow up to 37 minutes of 4-track recording per disc (more than a C60 cassette), and provide comprehensive mixing and MIDI features. Are the basics - Tascam 564: 8-inputs, 3-band sweep EQ, Shuttle search, Bounce Forward, MTC out & MIDI Clock. Yamaha MD4: 4-inputs, 3-band EQ, MTC out, Quick Locate, flexible editing, clear LED control display. Only the Tascam has a digital out. Official costs are £1099 for the Tascam 564 and £899 for the Yamaha MD4.



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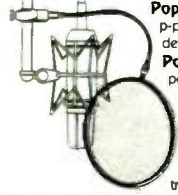
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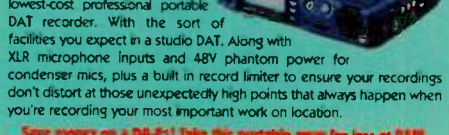
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The Roland VS880 has a digital mixer with automation • The Fostex DMT8 has a friendly and familiar analogue mixer • The Roland needs a 2.5" hard drive at extra cost • The Fostex comes with a 540Mb hard drive as standard (and this drive CAN be upgraded).

• Both units have digital ins & outs, but only the Fostex allows direct input to/from its hard drive • The Roland uses data compression to squeeze audio onto its hard drive (this adversely affects its sound quality) • The Fostex DMT8 does not use data compression.

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Based on the legendary MD2 Dynamics Package for tc's flagship M5000 Digital Mainframe, the Finaliser will let you do things you didn't think were possible to your final mix. And for only £1995. Stunning.

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Folio-SX is less than £599 at R&W

## BEST FOSTEX VALUE AT R&W

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For £1499 inc. VAT, the D80 comes with one 850Mb (18 minute) hard disk to get you going. At R&W we'll either give you another hard disk FREE or else sell the D80 to you for much less than the list price (Ssshhh!). The choice is yours.

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Audio-wise it's a killer - Ghost features Soundcraft's new ultra-low noise mic amp with a whopping +60dBu input sensitivity, and of course legendary Soundcraft 4-band EQ with 2 fully parametric mids is included as standard. There are also 6 mono and 2 stereo aux sends, 4 stereo returns and Mix B path on every channel (giving 56 possible inputs on the 24 channel version). A really superb build quality completes the picture.



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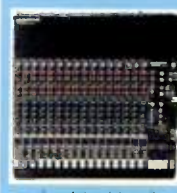
## MACKIE 8-BUS MAGIC

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# Theremins

## MIDI? MAYBE

One of the first questions many of you will be asking of this instrument is whether it's possible to add any kind of MIDI functionality. The answer is, guardedly, yes. Big Briar have been working on a MIDI interface for their theremins for some time; an Etherwave will need to be equipped with a so-called 'turbo' board in order to work with the forthcoming theremin-to-MIDI interface. This adds a secondary, continuous pitch output that allows the MIDI interface to more accurately track the theremin.

This continuous output is independent of the main output, and would also be useful for performers who want to monitor the pitch while playing. Contact 2nd Gear for details.

Longwave Instruments, on the other hand, are already building their MIDI interface: the £500 MCV1a will interface with any theremin, including the modified Etherwave, and offers eight octaves of pitch tracking. The MCV1a also features CV and Gate outputs, for interfacing with analogue synth gear. A scaled-down version — the MC1a, which lacks just the CV/Gate facilities — will soon be available for £299.

► produces the trademark sound. As an affordable introduction to the wacky world of aerophonic music, it takes some beating. If you've always hankered after the sound, don't want the trouble of building one from scratch, and aren't really sure if it's for you, the Pocket Theremin is a very good way to test the water without unburdening your wallet too much.

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**A** Longwave Instruments, Ashley Lane, Hordle, Lymington, Hants SO41 0GB.  
**T** 01425 610849.  
**E** 101364.522@compuserve.com

## CONCLUSION

Reviewers never really have enough time to get the most out of a new piece of equipment, and this is acutely true of a theremin. Imagine, as a keyboard player, being handed a Stradivarius and being told to summarise its design, performance and sound in a week or so. This is the situation with the theremin: before reviewing it, one actually has to learn to play it, which is no mean task. A week, usually enough to get to grips with the average workstation synth, doesn't quite seem enough. However, I had enough time with these instruments to know that I want to explore the possibilities offered by Professor Theremin's invention further. I've discovered a wealth of help and information on the Internet (see box for more details), and now is a better time than any in history to be interested in theremins: at no point since the instrument's invention over 70 years ago has there been this much choice, and if you want to test the water, you don't have to build one first — at least, not from scratch! This was certainly the way of the enthusiast until the last few years.

The two instruments we've looked at here aren't really equivalent in terms of facilities, so this review shouldn't be seen as a head to head, with the reviewer coming down on the side of one or the other. But both the Etherwave and the Pocket Theremin are genuine theremins, one priced to let you test the water, and the other designed for the musician who knows what they want.

SOS

## ALTERNATIVE MODELS

Both Longwave and Big Briar produce other theremins. Longwave's Elysian offers the "original RCA Theremin sound", for £645; this is available as a kit for £350. Big Briar's larger concert models aren't stocked by UK distributor 2nd Gear, but the company will bring one over for you if you're really keen: note that shipping and import duty add considerably to the cost.

Tony Henk (The Theremin Consultancy Co, 10 Aston Way, Epsom, Surrey. Tel: 01372 741181) is a builder of serious custom concert theremins, although he is planning a commercial model for release at around £600 in the near future.

Tony Bassett (Arch 7, Stables Market, Camden Lock, London NW1 8AH. Tel: 0171 284 3483) is planning a line of theremins, with the first instrument costing under £50.

Noted electronic music kit company PAIA Electronics (3200 Teakwood Lane, Edmon, OK 73013, Tel: (001) 405 340 6300, or on the net, <http://www.pala.com>) have recently introduced the Theremax, a US\$88.75 kit (plus US\$77.25 for the lectern case kit). This is getting a good response in its latest version, and UK orders can be handled, with around \$50 on top for secure shipping.

# Panasonic SV-3800

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# Grand in a Box

## YAMAHA P50m PIANO TONE GENERATOR

*Almost a decade since the release of their classic EMT10, Yamaha have returned to the piano module market, spinning off some of the technology used in their top-end digital pianos and packaging it in an inexpensive half-rack expander format. DAVE CROMBIE tickles the virtual ivories...*

more happening product than the old EMT10, but it's nevertheless worth mentioning that anyone wanting a low-cost (and really very good) piano module could pick up a second-hand EMT10 for around £100, and have a pretty authentic piano sound to play with, as well as a range of other preset sounds, including an excellent (although now dated and over-used) Choir patch.

On the face of it, the P50m is a simple device, half-rack in width and 1U high. It can be rackmounted using Yamaha's RK101 rack tray kit, although its dimensions are also suitable for free-standing use (the top panel even has the list of preset programmes printed on it). The controls are all mounted along the front panel, with LEDs indicating switch status. A 3-digit numeric display shows data levels, which are set using a stepped rotary dial, and a 3-band graphic EQ (low, mid and high) can be brought in to adjust the overall tone. The P50m can also be tuned from its front panel, and the output can be transposed up or down 12 semitones. However, the front panel does not provide access to all controls — despite having an onboard chorus unit and reverb (which are used to enhance certain presets), the P50m has no front-panel controls that let you alter the chorus parameters; you have to resort to MIDI commands. Talking of MIDI, the P50m works neatly within XG or GM setups so that the piano tracks of a sequence will be played only by the P50m.

Naturally for a piano module, the P50m is touch-sensitive, and a Touch control utility is provided to enable the P50m to be matched to your keyboard and/or playing style, offering eight velocity curves to choose from when setting up the unit. These vary from 'Easy1', which enables a loud volume to be achieved from a relatively soft touch, to 'Hard 2' which produces a loud volume only from a strong, fast touch. The two 'Cross' curves produce a compressed response, so that the output spans a narrow dynamic range.

### THE SOUNDS

The P50m has 28 programs, accessible via MIDI and the data dial. Some of the voices feature stretch tuning — a slight sharpening of notes in the

**W**hen it comes to reproducing piano sounds in the studio, there's nothing like the real thing, but unfortunately, a real piano isn't a practical option for most people, especially those working in a MIDI environment. Many people think that they can get by using a synth preset or a sampler for their piano sounds, but there are good reasons for getting a dedicated module to handle your piano duties. Firstly, consider the problem of polyphony: you need at least 24 voices to get a realistic piano sound that really plays like a piano. You might have a killer set of Steinway nine-footer samples, but try mapping them across your keyboard and playing them with an 8-voice sampler: a sustained arpeggiated run up the keyboard will have those notes dropping like flies. And if you have a dedicated piano module, you free up all those sampler voices for other purposes. The second reason is that nine times out of 10, a dedicated device simply does the job better. This, of course, is where the likes of the P50m come in.

### INTRODUCING THE P50m

The P50m is apparently the first piano module to be produced by the professional MI division of Yamaha. The company's EMT10, the piano module by which all other piano modules have been judged, was released many years ago by the home keyboard division of Yamaha, and utilised AWM (advanced wave memory) technology from their Clavinova range [*the EMT10 was reviewed way back in SOS October 1988 — Ed*]. The P50m is not related to the EMT10, although it is the same size, and uses AWM2 technology. In fact, the P50m shares many of its raw waveforms with Yamaha's more high-end P-series digital pianos, such as the P150 (reviewed in *SOS* June '96). As a result, the P50m is a much

**pros & cons**

**YAMAHA P50m £349**

**pros**

- Good range of piano sounds (and some particularly fine electric piano sounds).
- MIDI access to many preset parameters.
- Excellent dynamic range.
- Good value.
- Easy-to-use, nicely-produced manual.

**cons**

- Acoustic piano sounds a little lifeless, especially in the lower mid and lower region.
- 16 voices can be a bit limiting.

**summary**

A very worthwhile successor to the EMT10. Perhaps a little too clinical in overall sound quality, but if you use a weighted keyboard and a little imagination, you might just fool yourself you were playing an acoustic instrument.

**SOUND ON SOUND**



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# Yamaha P50m

## BRIEF SPECIFICATION

Tone Generation:	AWM2 (Advanced Wave Memory 2)
Polyphony:	32-note (16 for layered voices)
Presets:	28
Effects:	Reverb, Chorus, 3-band Graphic
Touch	
Sensitivity Curves:	8 Types
Display:	3 x 8-segment LEDs
Ports:	MIDI In/Out; DC In; Outputs R, L/Mono Jacks
Power supply:	PA3B AC adaptor
Dimensions:	220 x 210 x 44 mm
Weight:	1.2kg

## P50m PROGRAMS IN FULL

NO.	VOICE NAME	STEREO/MONO	POLYPHONY
01	Bright Piano	Stereo	16
02	Bright Piano	Stereo	16
03	Bright Piano	Mono	32
04	Bright Piano	Mono	32
05	Dark Piano	Stereo	16
06	Grand Piano	Stereo	16
07	Grand Piano	Stereo	16
08	Grand Piano	Mono	32
09	Grand Piano	Mono	32
10	Dance	Stereo	16
11	Honky Tonk	Stereo	16
12	Hybrid Piano	Mono	16
13	CP80	Mono	32
14	CP80	Mono	32
15	CP80 with Chorus	Mono	32
16	DX EP	Mono	32
17	DX Pad	Mono	32
18	DX EP with Chorus	Mono	32
19	Roads	Mono	32
20	Roads with Chorus	Mono	32
21	Soft Roads	Mono	32
22	Hard Roads	Mono	32
23	Dyno	Mono	32
24	Resonant Dyno	Mono	32
25	Dyno with Chorus	Mono	32
26	Wurlli	Mono	32
27	Clavi	Mono	32
28	Clavi with Wah	Mono	32

▶ upper register, which is designed to give a lift to the overall sound. The sounds are typically 32-note polyphonic, but some layer voices, which reduces the maximum number of notes that can sound to 16. I feel this isn't quite enough, but if you remain aware of the programs that layer in this way, you can probably work around this limitation. Should you want to seriously increase your polyphony, two P50ms can be linked to provide up to 64 simultaneously-sounding notes.

Sounds can be modified from the front-panel controls: a Tone control can cut or boost the overall brightness of a voice, and the Reverb Send button enables you to program the mix of the reverb. When these two parameters are altered for a sound, their new values are stored, even after powering down. Each of the 28 presets has its own brightness and reverb setting. It's all very well being able to change the tone of the piano sound, and add reverb and maybe chorus, but acoustic pianos are about a lot more than tone. The beauty of the acoustic piano's sound lies within the rich harmonic structure of the instrument, and this structure is constantly changing throughout the duration of each note. Recreating this electronically is damn difficult, and doing so for £349... well, you can't expect a Bösendorfer, but with the P50m you certainly get

your money's worth. A full list of sounds is given in the 'Programs' box, but some are worthy of special mention. '05 Dark Piano' is a warm-sounding preset, and is very pleasing in the upper registers, without being too strident. The Grand Pianos (06-09) are especially good in the upper top registers, with the transients (the sound of the hammer striking the string) accurately recreated, although the non-pitch related elements of the sound do actually vary in pitch depending on which note is played. The bass end is pretty good, if lacking in animation.

'10 Dance' brings us up to date — it's a very usable hard contemporary percussive sound, rich in harmonics. Programs 19-22 provide an excellent collection of Rhodes Piano-like sounds, with just the right amount of distortion, and '26 Wurlli' achieves a spot-on rendition of a classic Wurlitzer, without the crackles and smoke. The Clavi sounds (27 and 28), though found within the factory presets of virtually every synthesizer, are also extremely good.

On the whole, the sounds are extremely well balanced, and have the air of quality you would expect from a Yamaha product. But perhaps they

## FURTHER READING

Dave Cromble is the author of *Piano — Evolution, Design & Performance*, a lavishly illustrated and detailed history of the development of the pianoforte from its earliest roots to the Grands and uprights of today. The book is available from the SOS Bookshop, priced £19.95, plus £3.95 UK postage, £7.50 for Europe and £14.50 for the rest of the world.

**A** Sound On Sound, Media House,  
Trafalgar Way, Bar Hill, Cambridge CB3 8SQ.  
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**F** 01954 789895.

are a little too clean — even the distortion is clean. The acoustic pianos, for example, do not live and breathe like the genuine article, and there's no natural movement to the sound — a problem especially noticeable in the mid to lower registers. Maybe that's why Yamaha added chorus and reverb, but I believe the fundamentals should be right first.

## CONCLUSIONS

This piano module is nicely designed, very simple to use, with clear control surfaces, and a good wide range of piano sounds. Although, with the Clavi, there is a nod in the direction of those modules that try to 'do-em-all' — i.e. those that include harpsichords, vibraphones, celestes, chimes, glockenspiels and so on, mercifully Yamaha have restricted this unit to acoustic and electric piano sounds. The latter are excellent, but the acoustic pianos, always a problem, do leave a little to be desired, and tend to lack life. Having said that, the P50m does represent excellent value for money, and can be favourably compared to the likes of the Emu Proformance Plus, the Kurzweil MicroPiano and the Voce Electric Piano Module (although this only has electric piano sounds). I think that the P50m will work best in live applications, where the environmental factors generally enhance the naturalness of the sound. The unit seems to record well, especially in ensemble pieces, but I don't think the P50m could be considered as a replacement for the acoustic instrument in classical solo applications — but then that's not what it's designed for. The acoustic piano is probably the greatest instrument in the world, and a £20,000-plus masterpiece, the result of 300 years of mechanical design, is not going to be replaced by a £349 black box! Nevertheless, the P50m is a very handy piece of kit to have around, especially in a MIDI studio, and is well worth its price.

**E** £349 inc VAT.  
**A** Yamaha Kemble Music (UK),  
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# Euro Star?

BEHRINGER  
EURORACK MX1602  
COMPACT MIXER

*Yet another ultra-compact mixer emerges from R&D, to fierce competition from similar models by other manufacturers.*

**DAVID MELLOR** *does a spot of channel-hopping...*

**T**he MX1602 from Behringer may be tiny (you could almost lose it under a copy of *Sound On Sound!*), but it's not a toy. It is a serious and well thought-out tool for the professional live or recording engineer, as well as the home recording enthusiast. Since this is the first compact mixer I have reviewed for *Sound on Sound*, I'd like to take this opportunity to say thank you to all the manufacturers who compete in this section of the market. I have two Soundcraft Spirit Folios and they've done some excellent work for me. I recently set up one in St Paul's Cathedral to record a choir conducted by Sir Yehudi Menuhin while the other was busy downstairs in the crypt as part of a PA system for Prince Philip! The Folios performed excellently, but I wouldn't have

hesitated to use a couple of MX1602s, had they been available at the time, or indeed a number of other models of compact mixer that have come onto the market since the Folio.

## EURO VISION

The MX1602 Eurorack is, as the name suggests, a 16-input console mixing into a stereo output. If I had been in charge of the naming committee, however, I would have called it the MX1202, since it only has 12 proper channels — the other four inputs come from the auxiliary returns. Having said that, 12 channels in such a small unit is still pretty good going.

The Eurorack is powered by an external power supply, which I normally hate, but since there are good technical reasons why mixing consoles nearly always have external supplies, and at least the connector screws in firmly, I won't list it among my cons (although some manufacturers seem to be able to build mixers that work perfectly well with internal power supplies).

The first four channels of the MX1602 are mono, with mic or line inputs. A wide range of gain is available, from -10dB to +50dB, and the common -10dBV and +4dBu positions are clearly

## pros & cons

**BEHRINGER EURORACK  
MX1602 £229**

### pros

- Seems chunky and robust.
- Sounds good.
- Good range of facilities for its size and price.
- Switchable PFL/Solo.

### cons

- A handle would have been nice.
- The '2TK to Mix' button should be coloured bright red, since it is so dangerous if used incorrectly!
- Unoriginal styling.

### summary

A neat little mixer capable of professional performance.

**SOUND ON SOUND**



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# Behringer MX1602

► marked. The mic inputs are nice and quiet, the spec approaching the theoretical minimum amount of noise (although the gain setting at which the measurement was taken isn't quoted). The remaining eight channels are grouped into four stereo pairs, this time without mic inputs. I like the fact that it is possible to plug into the left input only of a stereo channel and, with the exception of the gain control which is switched +4dBu/-10dBV, it will work and behave exactly like a mono channel: stereo channels usually have reduced facilities, but not here.

The EQ, as you might expect, is basic high and low, with no mid-frequency control. Of course, it's always preferable to have more control over EQ, but when you have just two bands available, it's amazing how possible it is to become more self-disciplined and pay much more attention to the mic position or the sound coming from the instrument itself, rather than trying to 'tweak' it on the console. Judging the quality of an EQ section is always best done subjectively rather than from the specifications, but for the record, the specs say that the EQs are both +/-15dB, shelving at 80Hz and 12kHz, with a Q fixed at an equivalent bandwidth of two octaves. Since the first two mixing consoles I used professionally were both Neves, I'm afraid I'm hard to please in the EQ department, but I did find that the MX1602's EQ was very good at

adding sparkle at the HF end and removing 'boom' at the bottom end, and I would rate the EQ as slightly better, for many purposes, than the high and low sections of the Spirit Folio.

## RETURN TO SENDER

Moving down to the auxiliary sends, Aux 1 is individually switchable on each channel between pre and post fade. On some consoles, pre/post switching is global, which keeps the cost of the console down but isn't ideal operationally. Aux 2 here is fixed as post fade. There's a lot of gain available from the aux sends — up to 15dB, in fact — which, as the manual points out, is useful for creating a very 'wet' reverb balance, which is often difficult to achieve with a post-fade aux. Another point made in the manual is that the pan controls conform to the 'constant power' law. This means that when you have created a stereo mix you can change pan positions without any of the levels changing. This is in contrast to the 'constant voltage' law, which ensures that if the mix will at some later stage be summed into mono, the level of a signal in the mono mix won't then change as the pan control is moved. Constant power is not a 'goodness factor' of any kind: it's just a choice the designer has made, and I would say that it is exactly the right one, and better than the compromise between the two laws that is also commonly found.

The faders on the MX1602 are made by

Panasonic, who know a thing or two about electronic design at all levels, from domestic to top broadcast spec. Behringer claim that they are particularly smooth at low levels, and they certainly are smooth in the sense that you can make very precise changes in level even when the fader is close to its lowest position. Smoothness in the sense that you can easily pull the faders slowly down without jerking is unfortunately still unattainable at this price point. The solo/PFL button is latching and has an adjacent LED which also operates as a multi-point peak indicator.

Over on the right-hand side of the mixer, we find globally-switchable 48V phantom power, recessed 12-segment LED bargraph meters and status indicators, master faders, and a few other goodies that deserve explanation. One of the most interesting features of the MX1602 is that it offers a choice between PFL and Solo modes. PFL is where you hear one individual channel at the level set by the gain control when you press the PFL/Solo button. Solo is where the channel is heard alone, but with its fader and pan positions intact. Both methods have their uses, and it's good to see the choice on such a small mixer. The manual, by the way, says that Solo is short for 'Solo in Place', which doesn't conform to general usage. Solo in Place usually means that channels not solo'd are killed at source, thus affecting the main outputs as well as the monitors, and has certain advantages on a large console. Here, pressing Solo doesn't affect the main outputs, nor does it kill the aux sends of the other channels. For most of the potential applications of a small console such as the MX1602, this is preferable.

The last (but not least) control is the 'Ctrl Room & Phones' knob. Couldn't they just call it the monitor level control, which is what it is? I personally prefer a headphone output with its own level control, that can be used at the same time as the main monitor output, but since on this console the headphone output comes from the same socket as the left monitor output, this isn't possible. Although it's always preferable to have insert points on each channel, at this size and price you wouldn't expect it. There are, however, two insert points on the main output, to which you would probably connect a compressor or equaliser to process the entire mix.

## VERDICT

Providing you find all the inputs, outputs, knobs and buttons you need on this console, you really can't go wrong with the MX1602. As I said, it's definitely a professional tool rather than a toy, but I did enjoy playing with it!

SOS

### BONUS!

Part of good low-cost mixer design is the provision of extra 'bonus' facilities that are easy to understand and use. The MX1602 has two stereo auxiliary returns, both of which will work in mono, panned centre, if only the left input is connected. These days, having just one type of digital reverb in a mix is often not considered sufficient, and if you have two effects units, this mixer can handle them with ease. As an alternative to using one of these sets of stereo inputs as a second auxiliary return, you can use them as a 2-track return that is not routed to the mix, to check the output of your stereo recorder. Be careful here, because if you're recording and you do accidentally route the outputs of the stereo machine to the mix, you'll get horrendous 'howl-round' within the console. On my Spirit Folios, which have a similar feature, I've marked the corresponding button 'Do not press!' in large letters, to remind myself how dangerous it is when doing a live recording.

£ E229 including VAT.  
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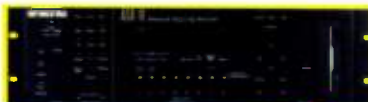
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- 8 Compressor/Limiters
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 Patented Waveform modeled synthesis, separate subwoofer output level etc.

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- Mackie SR24 + Fostex D80 + Looms £2350
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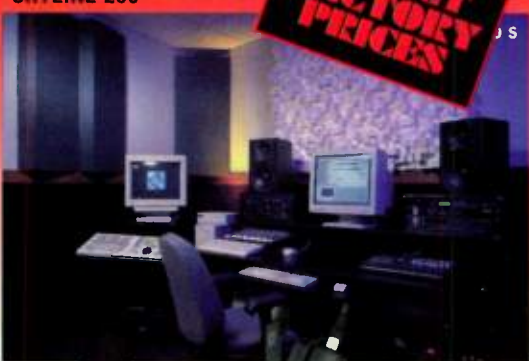
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*Mackie's founder, Greg Mackie, with designer Cal Perkins.*

*Within just a few years, the Mackie brand has come from almost nowhere to a prominent position in the project studio mixer market. Now the company are looking to the future and deciding where they can next apply the Mackie philosophy. PAUL WHITE takes a busman's holiday to Seattle and looks behind the scenes in R&D...*

# The Mackie Touch

GREG MACKIE & CAL PERKINS • MACKIE DESIGNS

To the majority of *SOS* readers, Mackie need little introduction — they're the company which reinvented the mini-mixer, transforming it from a niche product to a mainstream audio commodity. Today, Seattle-based Mackie are one of the manufacturing success stories of Washington state, and judging by the massive new premises already under construction at the time of my visit, they have no plans to slow down. Indeed, the next year will see massive diversification for Mackie. Playing a significant part in the company's future will be designer Cal Perkins, who might best be described as Mackie's 'fifth Beatle'.

## CAL TECH

Cal Perkins has made a major contribution to Mackie's designs since the company started. However, he's only recently joined the team full time, so I asked him to bring me up to speed on some of his background before getting down to discussing new products.

"I started out doing sound contracting and live sound recording for Swanson Sound Service in the late '50s and early '60s. Cal Poly was foolish enough to give me a BSc and let me do a year of post-grad work in analogue design. During that time, I got a gig designing a low-frequency enclosure to go with JBL horns, which later became JBL's Pro Series of loudspeaker enclosures. After

college I joined their Pro Sound division. Marantz eventually lured me away with some high-end design work during the '70s. Greg Mackie had interviewed me for a job with his company Tapco, but I wanted to live in Portland. I helped start a manufacturing division for North West, building the Anchor power monitors, and developed the first low-distortion, constant-directivity horn in 1977, which the Eagles used on tour.

"After four or five years, I moved to Biamp, managing their engineering department. I'd also done design work for Yamaha, and because of my transducer experience, ended up doing a lot of work on their PA speakers. Yamaha's management migrated to Fender, so I went to head up their Pro Sound division. We looked for a manufacturing partner, which turned out to be Ramsa — part of Panasonic/Matshusita. CBS then sold Fender, so I stayed on for a while, then rejoined JBL and became technical director of UREI. I eventually did the electronic design for the JBL Eon system.

"All that time, Greg Mackie and I have stayed pretty close, and about six or seven years ago, he asked me to help design a mic preamp and an EQ for his new mixers which could be built

inexpensively without sacrificing performance. Now I'm with Mackie full-time, and my first design job was to get the CRI604-VLZ mixer into production."

## MIXER MATTERS

Perhaps this would be a good time to explain the VLZ concept.

**Cal Perkins:** "Basically, VLZ is shorthand for design techniques we discovered which dramatically reduce noise in a mixer circuit. Those techniques had eluded the entire industry up to that point — including our own team! What we found is that the thermal circuit noise is a function of the equivalent input noise voltage and current of the individual amplifier stages and the termination resistors. Noise is a function of absolute temperature; if you have molecular motion in a conductor, you have a certain amount of energy present. If you want low-noise voltage, then the impedances have to be fairly low. The



industry was using high values for summing resistors and high values in the post-fader buffer, and using bi-FETs, which have very high-noise voltages. The noise level presented to the mixing buss was typically 20dB higher than you could achieve by using bi-polar parts coupled with good design techniques. VLZ exploits that differential. The impedances are way down, both in the build-out resistance in the mix buss and around the pan pot."

**I would imagine that a limit is set by how much output current your mix amp can develop. Is this the case?**

**Cal Perkins:** "Exactly, and most ICs are limited to around 30mA peak. You have to walk that fine line so the resistors are as low as possible before the op-amp runs out of current capability and has a hissy fit! This radically reduces both mix-buss noise and crosstalk, which is important when you're working with closely-spaced circuit-board tracks. The other big problem with this approach is that circuit-board design becomes non-trivial. Even with an eighth of an inch wider ground track, if you're pumping a lot of current into it, you can get a lot of common-mode impedance coupling between stages, so the ground impedance has to be made as low as possible, by using heavier copper. You also have to know where your current is coming from, because you don't want current from channel A flowing through channel B. The board layout is really important."

**I understand you've changed the mic preamp design on your new 40-channel live sound console.**

**Cal Perkins:** "Originally, we could handle up to about a +12dBu level, with about 8dB of gain, but what Greg found out in his own home studio was that a close-miked kick drum would cause him to pull the faders down below unity because of the very hot signal level. Traditionally, you'd switch

in a pad, but a pad degrades the signal-to-noise ratio, so we changed a few things around, and the preamp will now accept +22dBu at unity gain. We're doing some things that I've never seen done before: essentially, the whole preamp is DC coupled — everything on a master current source, so everything moves together. More importantly, the design also holds the equivalent input noise [EIN] over about a 30dB trim range. With less stout mic amps, as soon as you go away from maximum gain, your equivalent input noise degenerates.

"Rupert Neve pointed this out a few years back. He said that a lot of mic preamps have an impressive spec at their full gain setting, but perform poorly at real-life gain settings. So the mic preamp we have now holds an EIN of -126dB with only 20dB of throughput gain. That means the noise floor is -106dB, which is 10dB better than even our previous design. Over a 40dB range, the EIN degenerates only from -129dB to -126dB. At this point, you have to look at which other parts of the circuitry are adding noise, such as the phase splitter. In the VLZ, the phase splitter is fully differential; in a cheaper design, where you just run the signal through an inverter, the delay is different depending on whether the phase invert is switched in or out.

"The other thing we've done is to use a differential mix buss, which yields a substantial increase in performance. If you have enough headroom in the first place in the channel strip, where your noise is extremely low, there are two ways to do it. You can come off the pan pot with a fully differential drive, but we still come off with a single-ended drive and the mix buss itself is differential. Essentially, each pan pot has two build-out resistors, where one is for the ground and one is for the pot wiper. The practical advantage is that if you have a nearby bundle of wires from the lighting



Mackie's current premises.

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*An overview of the interior of Mackie's current facility.*

- ▶ console, it is far less susceptible to interference than a conventional design. You can make the desk quiet using a single-ended summing buss, but you don't get the protection against external interference. We believe customers really notice these 'designing for the real world' touches, and that may explain why we're able to compete so well against big companies who believe bench measurements are the supreme test."

## LISTENING WITHOUT PREJUDICE

The Acoustic Team is also responsible for the new studio monitors, which are a radical department for Mackie, and I imagine this is a bit different for you too, with your live sound background.

Cal Perkins: "I haven't spent much time in studios, though I've done quite a lot of live classical recording. But being a loudspeaker freak, I have strong beliefs about what makes an accurate monitor. That being said, Greg and I were able to hire Mats Jarlstrom, a young guy who we thought was years ahead of the pack from his work on active speakers. We've gotten a big kick from watching really high-level mix engineers listen to prototypes utilising his ideas — truly incredulous looks on their faces, with some even asking where we were hiding the subwoofer!

"We decided that active speakers were the way to go because we can eliminate a bunch of uncontrollables that can mess things up — even with the best components. You can do things like use active feedback to cancel out the voice coil resistance, to change the Q and improve the damping, include a limiter to prevent the customer from breaking the speaker, and optimising the amp size.

"One thing we wanted was an extended bass that was very tight and well-controlled. With a reasonable box size, you can go a couple of ways.

You can port the box, but the vent size is usually much smaller than the diaphragm area (because of the space constraints) so the vent velocity is extremely high, you get power compression, and it blows air in your face when you're mixing! You hear the vent noise and the frequency still doesn't go very low.

"If you want to go low and tune the box down, you're going to need a reasonable-sized vent, and the way to get that is to use a drone cone, or passive radiator. Mackie uses two 6.5-inch passive radiators, which is a little more area than the driven cone and with the same peak displacement. Once we had that, we put it in a well-braced three-quarter-inch MDF box, totally filled with acoustic foam to make it acoustically inert. This converts most of the higher frequencies from the back of the cone to heat; in fact, if you measure the output from the passive radiators, it rolls off at 6dB per octave above 80Hz. This breaks up a lot of the resonances in the box that would be in the male vocal region for a box of this size.

"The amplifiers are bi-polar designs with no current limiting or fancy protection to compromise the performance. We call it a Fast Recovery design, and it uses the same symmetrical, differential topology as our stand-alone power amplifiers. There are stacked power supplies where the pre-drivers are on higher power rails along with the front end; you can end up with much less than one-tenth of a percent open-loop distortion on a design like this, so you don't need much negative feedback to correct it. This allows you to set the amplifier roll-off outside the audio spectrum and the feedback is always in the correct phase.



*Mackie's High Speed Surface Mount Line, incorporating a Panasonic Chip Shooter that places approximately 30,000 parts per hour.*

"One thing that's rarely understood in the context of Transient Intermodulation Distortion, or TIM, is that if the large signal bandwidth is smaller than the small signal bandwidth you get lower TIM. The open-loop output impedance stays relatively constant with frequency, so if there is any transient overloading inside the amplifier loop, the speaker doesn't let go instantly. A radical ▶



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► change in output impedance equates to rate-of-change of damping factor, which is something that the industry doesn't want to talk about.

"The crossover is analogue and uses two separate filters: the woofer uses current feedback, where we synthesize a negative output impedance, and we also do some band shaping. The box itself is a 6th-order system, which is flat to 40Hz, 3dB down at 37Hz, then it rolls off really fast. If you listen to impulse responses, the system gives a good account of itself — it's critically damped, which makes it sound very tight."

**How did you arrive at the choice of drivers?**

**Cal Perkins:** "If you're going to get a lot of bass, you need to move a lot of air, so you have to specify a transducer with a lot of peak swing. We went to an OEM [Original Equipment Manufacturer] vendor knowing what we wanted in terms of the magnetic structure, moving mass, compliance and so on. There's also a little art in choosing the cone material because of the damping and the higher-frequency breakup modes of the cone. This

determines a lot of what you hear in the upper-mid range, and comes down to personal taste. Our woofer works up past 4kHz and the crossover is set at around 2.5kHz. If you get off-axis, the power response is still good. Again, it's the slope of the crossover and the frequencies at which the two filters are sitting that determines how well the thing comes together.

"The top end is handled by an aluminium-domed tweeter which works as a pure piston up to 22kHz, and there's a gentle roll-off above that built into the amp. We mounted the tweeter in a very shallow exponential flare which acts as a waveguide or constant-directivity horn, and because this increases the dispersion at higher frequencies, you'll find that at the top end, the on-axis response is down about 4dB, measured with a B&K test mic. The reason is that in a flat baffle, tweeters will tend to beam at higher frequencies, which concentrates all the energy into a narrower angle, whereas in a constant-directivity system, the dispersion is maintained up to a much higher frequency. This means that the top-end response is headed off at 6dB per octave above the tweeter's mass break point, so you have to compensate for this in the active filtering. Again, this is something you don't have control of with a passive system, but by appropriate filter design, we've managed to achieve a wide, flat response, both on and off axis. A benefit of this is that you get a very wide sweet spot and, at the same time, very precise stereo imaging. And, ironically, getting all

these things to happen actually reduces the cost of manufacturing. Frankly, we expect a lot of initial scepticism from consumers who have been trained to equate high price with performance. Hopefully, whatever credibility Mackie gained by bursting that assumption in small mixers will transfer to some degree."

**What's the maximum SPL you can expect from this system?**

**Cal Perkins:** "Realistically, we can achieve 105dB with programme material, if you put a sound level meter out there. We've decided to publish two sets of figures: one is calculated the same way as everybody else, for comparison purposes; the other is the way I honestly think it should be done. For example, if you take a speaker capable of 90dB/W@1m and you have a 100W amplifier, you'd get 110dB if there was no power compression, but if you're really honest and include, say, 2dB of power compression, the power supply sag, the voltage drop in the main feed, the real figure is likely to be 4 or 5dB less than claimed."

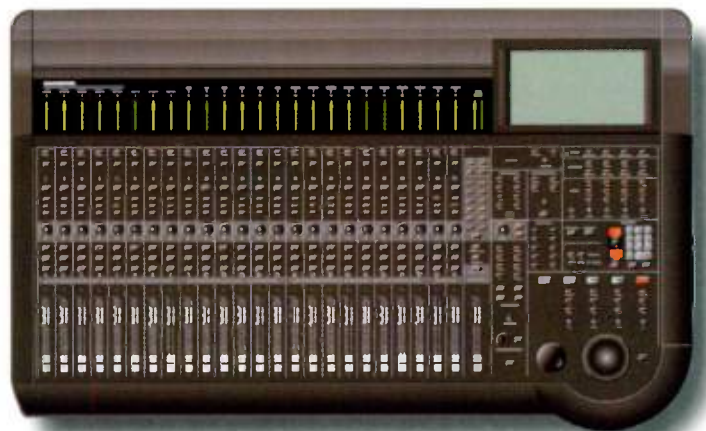
## DIGITAL DIRECTIONS

**So far, the only digital product you've formally announced is the Pro Tools interface. Can you give us an overview of where this product line is going?**

**Greg Mackie:** "Basically, the interface you've seen is an analogue control surface designed to work with our upcoming digital mixers. A digital mixer can be controlled by a mouse, by a small

## Greg Mackie:

"We probably spend most of our time making our products intuitive."



*An artist's impression of Mackie's digital console — subject to change without notice!*

control surface like the Pro Tools interface, or by a large-scale control surface. If you need to stay in the middle of two speakers, you really need a small controller. The mixer itself will be a separate box to the control surface, and the good thing about that is that it keeps the analogue and digital circuitry separate.

"On the bigger digital console, we had one design proposal that had all the audio jacks on the control surface, but one of the problems there is that you end up with a huge console. We're trying to keep the size down, and by putting the jacks on the ►



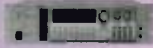
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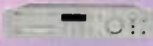
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*Greg Mackie, somewhere in Mackie's underground R&D bunker...*

**important aspect of a full-scale digital mixer design is the user interface. Most designers have settled on providing a full set of faders, plus a single set of channel controls that can be assigned to any channel as required. What can you add to this to make life easier for the user?**

**Greg Mackie:** "Our background is in making analogue consoles, so we tend to think that way. People who use analogue consoles have got used to a certain control format, and that format has been developed over many years for a reason — by now it's nearly perfected. In general, people who come from a digital engineering background don't understand why analogue mixers are laid out the way they are or how a person works at the control surface, so what happens is that a lot of the systems tend to be pretty hard to use. We probably spend most of our time making our products intuitive. If a product is hard to use, the salesman doesn't want to sell it, because he can't use it himself! If the person who walks up to your product can't understand what's going on, there's going to be more sales resistance. The more money and time we put into making the product more understandable, the better off everybody is."

**What I feel is missing from most of the current digital mixers is the global overview you get from an analogue mixer's control surface: you have to interrogate every channel to see where the controls are set, or you can**

**only see one control at a time — like all the Aux 1 sends. Do you have any ideas for improving on this?**

**Greg Mackie:** "On our smaller console, we have a system where you can query the mixer, so that if you check Aux 1, all the channels using it will light up. The level is less important at this stage. We also have a row of what we call 'V-pots' (one per channel), which change their role depending on what you're doing. These have LEDs around them so you can see what your Aux 1 level is, or whatever. It's still not as easy as having a discrete knob for each function, but it's a lot easier than what we see out on the market now. There's also a case for reducing the knob count on a large console, because a human being can't scan a large number of knobs very easily. What we're trying to develop is a system where if you're not using something, it's not seen — it goes away. For example, with the V-pots, if you're not using that control, the LEDs associated with it are turned off, so that you're not looking at a panel full of lights. On a conventional analogue console, you always see everything, even if the control is turned down, or if the pan is set central. If we work it right, I think there's an advantage in simplifying things to a certain extent."

**Do you think there's a place for external VDU monitors for when you need more information?**

**Greg Mackie:** "Absolutely, and that's part of the modular idea, where you can have software upgrades so that you can see, for example, your channel assigns all the way across. If there are certain things you want to look at all the time, all

**Greg Mackie:** "In general, people who come from a digital engineering background don't understand why analogue mixers are laid out the way they are, so a lot of the systems tend to be pretty hard to use."

you need is a bit of extra software and you can do it. We will have a smaller LCD screen on the console itself, but obviously you can get more on a large colour monitor. Depending on what you want to do with the console, you can choose your work surface. For a little workstation, perhaps you don't need very much, but for an album project, you'd probably need the full-scale console." ▶



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SX is a powerful, multipurpose mixer with DAT quality sound, housed in a freestanding frame with carry handle. It has 20 inputs (including 4 stereo channels) as standard – enough for most live and recording situations.

**FACT:** SX's 12 mono inputs have UltraMic™ preamps. 60dB of gain range and +22dBu of headroom, allows *any* mic or line device to be plugged in.

**FACT:** SX is a 4-bus mixer. In addition to the mix outs, two sub-buses allow you to record groups of instruments to multitrack, send them to additional speakers, or sub-group to mix. SX also has a dedicated Mono Out.

**FACT:** SX's 8 Direct Outs are switchable pre/post fader so they are equally useful when recording in the studio or at a gig.

**FACT:** 100mm faders throughout give you more resolution and finer control over your mix than the 60mm faders found on many more expensive mixers.

**FACT:** SX's 3-band EQ with swept mid is a real "British EQ". Custom-designed controls at carefully chosen frequencies produce a warm, natural sound. A steep 18dB Octave High Pass Filter effectively reduces low end muddiness.

**FACT:** Of the 3 Auxiliary Sends, 2 can be pre- or post-fader. This makes SX equally suited to "monitor heavy" live performances or "effects heavy" mixes.

**FACT:** Unlike many small-mixer rotary controls, SX's have been custom-designed to give an even spread and consistent control around their sweeps.

**FACT:** By using the latest surface-mount technology, SX fits all these features into a rugged, compact frame which can be optionally rack-mounted into a 10U space in a matter of minutes.

**FACT:** SX meets stringent EC RFI requirements so that RF emissions  are minimal.

*IT'S SAD that some mixer manufacturers resort to hype and long, technical sounding names to describe features that every self-respecting company has used for ages but doesn't shout about. This junk-food mentality only makes it harder for you to decide what's good and what isn't.*

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▶ **MARKET PRESSURE**

**It's no secret that a lot of mixer manufacturers are working on affordable digital consoles, and the Yamaha 02R has put more pressure on everybody to get something to market. What's a realistic estimate of when we'll see something from you?**

**Greg Mackie:** "Very fast — we hope to have something by the end of the year. Mackie is going to be noticeably diversified by January NAMM. But it's my belief that analogue has still got a long time to go, and there's something about having an analogue desk in front of you, where you can reach out and just grab a knob. It's too convenient to dismiss, and it'll remain the preferred way to work for very many people. It's like the watches we're all wearing now — these are all analogue watches. Digital displays came and went. There will be some people who want analogue mixers with groups and faders, and others who want to go the digital way. The younger generation are used to computers, used to working with a mouse, and I think they'll be much more inclined to use digital desks than the older people, who might tend to cling to the analogue approach."

**With Yamaha's 02R being so successful and so affordable, what do you feel your ideas bring to the party?**

**Greg Mackie:** "The 02R is a real interesting product. They did a nice job and a lot of people like it. I think the usability is the weakest point, and tracking with it is difficult. You also have to buy optional I/O modules to make it a tracking console. It's fine for post-pro, but we're not seeing albums

getting cut on it. We feel that by making our console easier to use and by providing more controls than the competition, we'll get fewer phone calls. We've also had the benefit of being able to look at what other companies have done — Yamaha got some things right and some things less right. In other words, we had the advantage of not being first.

"We're going to try to build the digital multitrack interfaces in there as standard, because the ADAT and DA88 are the standards. It depends on cost, and if we can't build it in as standard, we'll make

**Cal Perkins:** "Our goal is to be able to do an A/B comparison with an analogue desk and not be able to tell the difference."

sure that it isn't too expensive to add as an option."

**From what I saw in your digital division, you're also including dynamics processing for compression and gating. Will you be including effects too?**

**Greg Mackie:** "We have effects, and the company has already developed a very nice-sounding reverb which we're being told matches the best out there. We have the basic algorithms, and it's not inconceivable that we'll bring out a stand-alone reverb/effects processor at some time. It's also planned to make the mixer expandable by adding cards, and we'd like to work with other companies with a view to them providing third-party cards. That way we could offer their algorithms bearing their brand name."

**A concern with all-digital consoles is that there's a finite processing delay before an input signal appears at the output. What have you managed to get this down to?**

**Cal Perkins:** "I think it's less than 3ms or so, it's not very much at all. A lot depends on the filter implementation, and we're not using up processing time trying to eliminate the phase shifts that occur in analogue EQs, as some digital designers do. Essentially, we have a digital emulation of an analogue EQ. We developed an FIR [Finite Impulse Response] crossover filter at JBL which was perfect and had no phase shift, but the delay was so long that you couldn't use it for live sound applications! Our goal is to be able to do an A/B comparison with an analogue desk and not be able to tell the difference. Is it as quiet as the analogue desk; does it do any strange things at low signal levels? From a corporate viewpoint, we're not going to do it before we succeed at that. We find existing digital consoles to be ▶

**POWER POINTS**

**What can we expect next now that the Mackie product line has started to diversify?**

**Cal Perkins:** "We've got a whole line of power amps coming out — the first one was introduced at Summer NAMM [the National Association of Music Merchants exhibition]. It's got a lot of useful features, like variable constant-directivity horn frequency compensation. There's also a variable low-cut filter, because customers told us that existing fixed low-cut filters always seem to be at the wrong place. For sub-woofers you want to set it low, whereas for monitoring you might want it up at 100Hz.

"Another innovation we're quite proud of is a cooling system designed to maintain an even temperature gradient across the heatsinks, and the

variable speed fan linked to programme-material level."

**One thing I expected to see was powered mixers. Surely these are inevitable?**

**Cal Perkins:** "They're on their way, in various sizes and configurations, the smallest being an AV product designed for users who don't know too much about amps or watts. The power amps are all FRC (Fast Recovery Circuit) designs. Our thinking is that a powered mixer is about convenience, so it would be nice to be able to pick it up in one hand."

**Could you use switch-mode power supplies to keep the weight down?**

**Cal Perkins:** "It would be possible, but there would be a longer development cycle and it would be difficult to meet the European regulations for power-

line quality. If the proposed constraints are actually applied, it's going to be interesting to see what the economic implications are. If there aren't any clauses relaxing the conditions, then just about anything made with a toroidal transformer in it is going to be illegal because of the power factor! That means going to power-factor correction, and those companies who don't do their own magnetics in house will probably find it quadruples the price of the power supply. I think we will have switched-mode power supplies eventually, but it won't be straight away, and the CE regulations will make it tougher."

**Greg Mackie:** "We might be able to put digital reverb in the smallest powered mixer. We try to do what other people say can't be done — that's what's fun around here."



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► unacceptably noisy. For example, when you allow the same amount of headroom as you would on an analogue mixer, you find they're around 15dB noisier. If we came out with an analogue console that noisy, we'd be laughed at! You can make existing digital mixers work, but you can't afford to leave yourself much headroom. Our aim is to allow you to operate at zero level with 20dB or so of headroom above that. We don't want you to get to the middle of a song and get something clipping because the level has come up a bit."

**Greg Mackie:** "Digital has given us a superior storage medium in the form of the Compact Disc, but these use up all the available headroom. In real life, sound systems aren't run at maximum level all the time — 16-bit digital's Achilles heel. At lower levels, there are artifacts which some people get very emotional about, while other people can't hear them.

A 96dB dynamic range is wonderful, but during mixdown, most of your faders will be set a lot lower than that, which means that you need a huge dynamic range to keep out of trouble."

## Greg Mackie:

"It's not inconceivable that we'll bring out a stand-alone reverb/effects processor at some time."

### A BIT SECRET

That implies using a high bit resolution. What resolution will your system be? 20-bit?

**Greg Mackie:** "We don't want to say right now; we have to have some secrets. Let's just say that it will be sufficient."

You've already announced your intention to diversify your product range. What else can we expect from you in the near future?

**Greg Mackie:** "We won't get involved in a market area unless we believe we have something substantially better to bring to it. We feel that way about nearfield speakers, and about a number of digital products. I can assure you that we won't ever build guitars, for example, or anything that is a 'me too' product.

"As the company grows, we discover more technologies that we can utilise in our products. The areas that we can get into are probably obvious to our competitors: there aren't really any secrets out there. There are opportunities in broadcast, and by getting into power amps and speakers, we're better positioned for the conference market. It makes us a more valuable brand name for a contractor to specify and promote than if we just made mixers."

With so many tapeless recording systems coming onto the market, I would imagine that, ultimately, it would make sense to integrate the recording hardware with the mixer, so that propagation delays could be cancelled out automatically, by reading data off the disk slightly early. Is this an area you see yourself getting into?

**Greg Mackie:** "We're working on that right now!"

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# The Black Adder

*Eight true stereo simultaneous effects for £300? In the battle to squeeze the best possible performance from budget digital processors, this charming new multi-effects unit has some serious power nestling in its coils. PAUL FARRER 'snakes' a look at the Addverb 3 and jumps out of his skin with delight...*

## PEAVEY ADDVERB 3 DIGITAL STEREO EFFECTS PROCESSOR

There's no doubt that there's currently serious competition amongst rival manufacturers of effects processors for the biggest slice of the sub-£300 market place. Digital effects processors are becoming cheaper, cleaner, and more comprehensive than we could ever have dreamed possible 10 or even five years ago. Nowadays, they form a major part of nearly every studio, and the increase in quality has been matched by their decrease in price, meaning that they now often represent great value for money.

### MEET THE ADDVERB

Physically, the Addverb 3 is of rugged 1U rackmounting construction, with three chunky, user-friendly rubber-coated data entry knobs. The input and output levels can be set from two smaller, but equally grippable, controllers, and along with the On/Off switch, there are a further six buttons which handle the rest of the editing and storing functions. There is a wonderfully clear and backlit 16-character, one-line LCD display and a single, dual-colour LED which meters the input level. The single LED approach is common practice among budget effect units, and seems to work well enough, but it's worth keeping an eye on, as the LED itself is not as large as it might be, and unwanted peaking may go unnoticed if the unit is confined to a rack full of other, more 'flashy', pieces of equipment.

The effects engine offers healthy 44.1kHz 16-bit A/D and 18-bit D/A conversion, with a frequency

response of 20Hz to 16.5kHz. The signal-to-noise ratio is greater than 89dB and the unit has a total harmonic distortion of less than 0.05% at 1kHz. Turning to the rear of the Addverb, there's a 16.5V A/C socket running to a large (and somewhat clumsy) external power supply. The rest of the back panel is taken up with left and right true stereo quarter-inch jack sockets for both audio input and output, and two MIDI sockets (MIDI In and MIDI Out/Thru).

### FOR ADDED EFFECT

The Addverb 3's effects are split into two banks, each with 128 presets (a preset being defined as a named setting consisting of up to eight simultaneous effects). Both banks ('A' and 'B') come ready-loaded with exactly the same programs, the difference being that bank A contains all the user-writable presets, and gives you a respectable 128 locations in which to name (six characters maximum) and store your favourite tweaked and edited effects. Loading up a preset is both quick and easy; the Programme/Preset knob allows you to Scroll through the presets numerically until you find the one you want, and then you just hit the Load button. The screen (although small) never seems cluttered, and a helpful reminder to hit the Load button flashes after a few seconds if you have located the preset, but not actually loaded it up yet. Once loaded, the presets are easily editable, using the two Parameter Select and Parameter Adjust data wheels. These are consistent throughout — in any screen one wheel moves the flashing cursor to a parameter or value, and the other adjusts that value up or down accordingly. After a short while, it's hard to imagine an easier way of moving about internally and scrolling through potentially large amounts of data. As user interfaces go, this is as good as any I've seen, and once you've mastered the basic discipline of the dual-parameter knobs, nearly all operational functions are extremely easy.

### IN USE

As with all outboard gear, it's vitally important to set the input and output levels carefully. This is not as easy as it might be given the 'fiddly' single LED, but once set up, the unit didn't give any real problems with extraneous noise or hum. Realising that high-quality reverb takes up a lot of memory space, Peavey have configured the Addverb 3 to work in two main ways. Firstly, the so-called multi-effects chain allows up to eight independent effects (such as Chorus, Delay, Autopan, etc) to be chained



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**pros & cons**

**PEAVEY ADDVERB 3 £300**

**pros**

- Fantastic value for money.
- Good range of usable effects.
- Excellent editing facilities.
- Good MIDI spec.

**cons**

- Not all reverbs as clean or exciting as they could be.
- 'Cheesy'-sounding compressor.

**summary**

A great all-rounder, perfect for weird and harsh effects as well as more tasteful reverbs and delays.

**SOUND ON SOUND**

▶ together and work as one preset. The other working mode clears the decks of all effects other than an Ultra Reverb, which, as its name suggests, is a reverb of a much higher quality than the other effects. This open-ended approach is particularly useful for a 'purer' reverb sound that works well on vocals, pianos and acoustic guitars. The Ultra Reverb can be any one of eight different types ranging from hall, to room and gated reverbs. There are also plenty of other relevant edit options, including pre-delay, low-pass filters, room size and damping.

The hall and chamber reverbs that appear in the effects chain mode are all respectable enough (if sometimes a little on the dull side) and the spring and plate settings also give you loads of options with regards to room size, pre-delay and frequency damping. With these 'slimmer' reverbs, there are times when the effect regeneration is quite noticeable, but by and large, the reverbs provided here are tasteful enough, and for most of the time, eminently usable.

For my money, however, one of the strongest elements of the Addverb 3 is its multi-effect presets. Often shamelessly over the top and 'in yer face', some of these programmes are triumphantly nasty. There is nothing even remotely subtle or sensitive about preset B15 'Flang!' or A114 'Tooned', but for a big brash effect ideal for the next techno-hippy album, they are both real winners. Preset A115 'Talkbox' is another good example: instant Pink Floyd-ability that doubles up very neatly as a sort of pseudo-vocoder if you add the pitch-shifting parameter. Peavey have really gone for gold in providing a selection of great effects that continually inspire and surprise. They also seem to have adopted a real 'plug-in and play' approach to this module too, something that guitar players in particular will appreciate. There are a large number of presets specifically designed with guitarists in mind, one of the best examples being preset A122 'Liquid', a gloriously mellow chorused delay setting. The overdrive and distortion effects are a worthwhile and welcome inclusion, if a little two-dimensional and cloudy at times, but in all honesty, guitarists will have more than enough to keep them happy with the excellent flange, wah-wah and 'classic' sweepable-mid EQ features.

The Leslie, Exciter and Drum Room presets are all as usable as they are well programmed, and although many of these effects are good enough to use straight away, it's worth taking the time to get to know your way around the comprehensive edit pages.

## EDITING

The first of the edit screens displays a string of the different effects used in that particular preset. Using reasonably logical abbreviations (DS for distortion, DL for Delay, SS for speaker simulator and so on), you can see up to five effects at a time before the screen scrolls across to reveal any others. The signal routing between the different effects in the multi-effect chain is intelligently thought out, allowing individual effects to be

'routed' in series or parallel, and their mix levels to be easily adjusted. Adding or deleting an effect from the chain is easy enough, and from this page it's a simple procedure moving up through the edit parameters for each effect. There are a good number of edit algorithms for each, but never enough to encourage you to spend too long tinkering needlessly.

The Addverb offers three types of delay: Mono, True Stereo and Tapped (ie. creating a stereo delay from a mono source). All three of these have the ability to sync to MIDI Clock messages sent from a sequencer. In mono or tapped mode, the delay time will go as high as 724ms, and with a true stereo delay, this time is roughly halved to 361ms. All of these delay types have adjustable feedback algorithms, as well as an interesting tape simulator effect, which uses a low-pass filter within the feedback circuits to create a slightly warmer room sound.

One further incentive that Peavey have thrown into the bargain is a highly comprehensive MIDI-controllable dump facility. This allows not only single presets or entire banks to be backed up to a MIDI sequencer or librarian, but also gives you the usual programme change and MIDI mapping options, should you need them.

## ADDING IT UP

Peavey can feel rightly proud of the Addverb 3. The sheer number of usable effect types (see separate box for full list) is astonishing considering the unit's relatively low cost. Although the built-in noise gate and compressors work well enough, they are unlikely to woo as many potential customers as the other generally excellent effects, such as the stereo simulator, parametric EQ, pitch-shifter or envelope filters. The Addverb is amazingly easy to use, and unlike other machines that require a few hours of serious programming before they sound half-decent, Peavey seem to have done most of the work for us, and all credit to them. If, however, you are a stickler for in-depth tweaking, there is still more than enough to keep you happy for quite a while. The target market for this kind of processor is unlikely to be considering something like a top-flight Lexicon as an alternative, and such comparisons would be unfair, but in terms of sound quality, the Addverb 3 compares favourably with other units well above its price range. At this price, it will undoubtedly be a winner with studios working to a tight budget, but with its flexibility and ease of use, I can also see a number of 'pro' outfits snapping these units up like hot cakes. For almost any studio, the Addverb 3 represents a user-friendly and versatile effects processor that you'd be foolish to miss.

SOS

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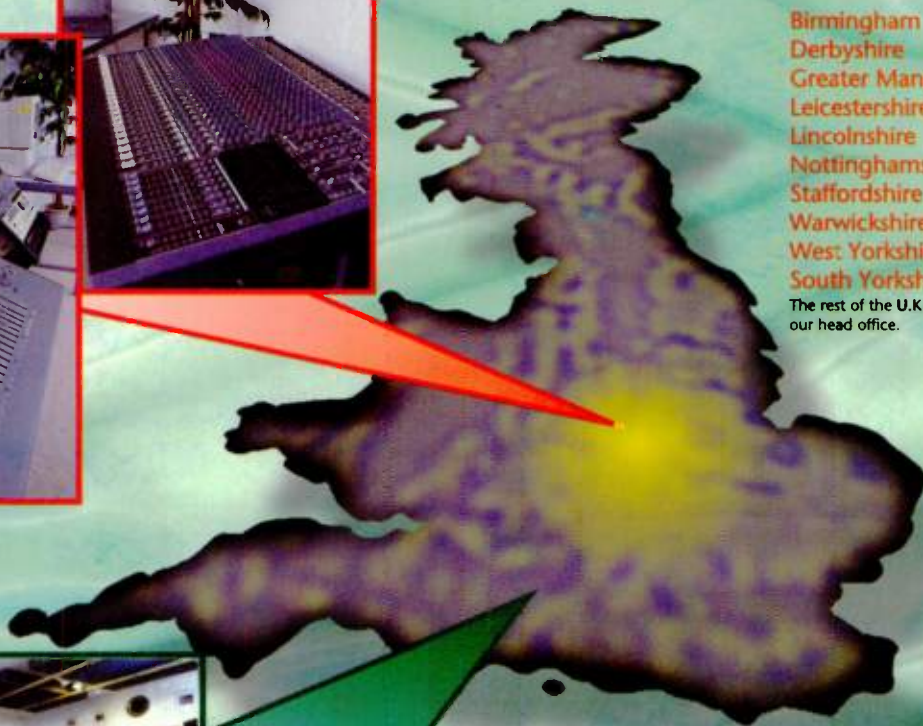
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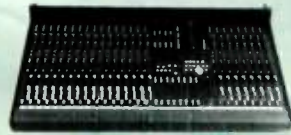
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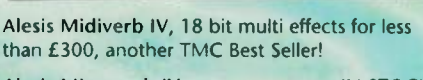


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**Most of the major music software manufacturers now recognise the PC as a serious music platform and are ensuring that the PC versions of their sequencing software don't miss out on any important features. PAUL WHITE gives an overview of the latest Logic Audio for Windows '95 and compares it with the Mac version.**

It's less than a year since I checked out the Apple Mac version of Emagic's popular sequencing program, *Logic Audio 2.5* (see SOS February '96), so I had some idea of what to expect from the PC equivalent now available. Even so, there are differences between the two versions, and it's those that I'd like to concentrate on, rather than going over the more well-known MIDI features of the program. Some Mac/PC disparities are understandable, given the differences between the PC and Mac computing

limited results with a SoundBlaster card, if you're prepared to work around its shortcomings. Those seeking higher quality can use a Digidesign Audiomedia III card, with either the Wavedriver that comes with the card, or Digidesign's DAE driver, which comes packaged with *Logic Audio*. I was told that running under DAE may be unreliable, possibly because of bugs in DAE itself, but as I'll explain later, DAE actually seemed to work well for me. Wavedriver, on the other hand, produced horrendous timing problems that I could find no way to resolve. In terms of other hardware suitability, the *Logic Audio* manual suggests that compatibility with the Yamaha CBX series of external boxes will be forthcoming, but as yet it is not supported.

For the review, I used a Pentium 90/16 fitted with a 1Gb hard drive and running Windows 95; though the *Logic 2.5* sequencer (without audio) will also run under Windows 3.0 or 3.1, *Logic Audio 2.5* requires Windows 95. On the soundcard front, I had a Creative Labs AWE32 (to provide the MIDI interface) and an Audiomedia III card fitted. Though it is possible, in theory, to use an AWE32 card for audio, its restricted duplex abilities, when it comes to simultaneous record and playback, mean that you need a special software

# Logic Dictates

## EMAGIC LOGIC AUDIO 2.5 FOR WINDOWS 95

engines, though there are other features which seem to have been omitted or changed on the PC version for no obvious reason.

*Logic Audio 2.5* combines MIDI sequencing with score editing and printing, plus up to eight tracks of direct-to-disk multitrack recording, though the number of tracks you can run at one time will depend on the speed and type of PC you have, and on the audio card/interface you choose. For reliable 8-track recording, you should use a Pentium 90 or faster, with at least 16Mb of RAM, and you'll need plenty of disk space, as audio takes up around 5Mb per minute for each track recorded. Emagic claim that the system will run on faster 486 machines at a pinch, but the number of audio tracks will be reduced, and you should only do this if you're desperate.

Hard drives should have an average access time of 18ms or less, and a sustainable data transfer rate of 800K/sec. For reliable operation with more than four tracks, a drive with a mean access time of 10ms or better is recommended, as is a data transfer rate rather greater than 1Mb/sec.

One benefit of using *Logic Audio 2.5* for the PC, other than the relatively low cost of this computer platform, is the choice of affordable audio/sound cards with which the program can be run. At the time of writing, the Turtle Beach Tahiti card is apparently suitable for use with 2.5, and DAL's Card D is also said to be fine, though you can also get

driver if you want to record and play at the same time. Apparently, beta versions of drivers are available on the Internet, but these only allow you to record in 8-bit mode if you need to monitor previously-recorded audio tracks. You could, I suppose, turn off the audio track playback and record your new audio in 16-bit mode while monitoring only the MIDI tracks, but this would be rather restrictive. I'm told that there may be newer drivers in the pipeline that attempt to provide simultaneous 16-bit playback and recording. Unfortunately, *Logic Audio* can't run with Digidesign's Session 8 hardware, so at the moment, there's no multi-output hardware option available, leaving PC users in roughly the same position as Power Mac users running with the Mac's built-in AV audio interface.

### OVERVIEW

For those who haven't seen *Logic* before, its main arrange page owes a lot to Steinberg's *Cubase* — but then much the same can be said of most long-standing MIDI sequencing software. The main differences are *Logic's* ability to loop sequences, and its Environment page, which stores details of your instruments, their patch names, and their MIDI connections. Though you can do a lot of clever things in the Environment, by using virtual cables and creating MIDI faders, virtual delay lines, arpeggiators, and so on, its most practical benefit is that when you want to pick a sound for a track,

### pros & cons

#### LOGIC AUDIO 2.5 PC £399

##### pros

- Supports a number of audio interfaces at different price points.
- High-quality digital audio processing using the Digital Factory.
- Good manual.
- Fast, stable, and full of practical features.

##### cons

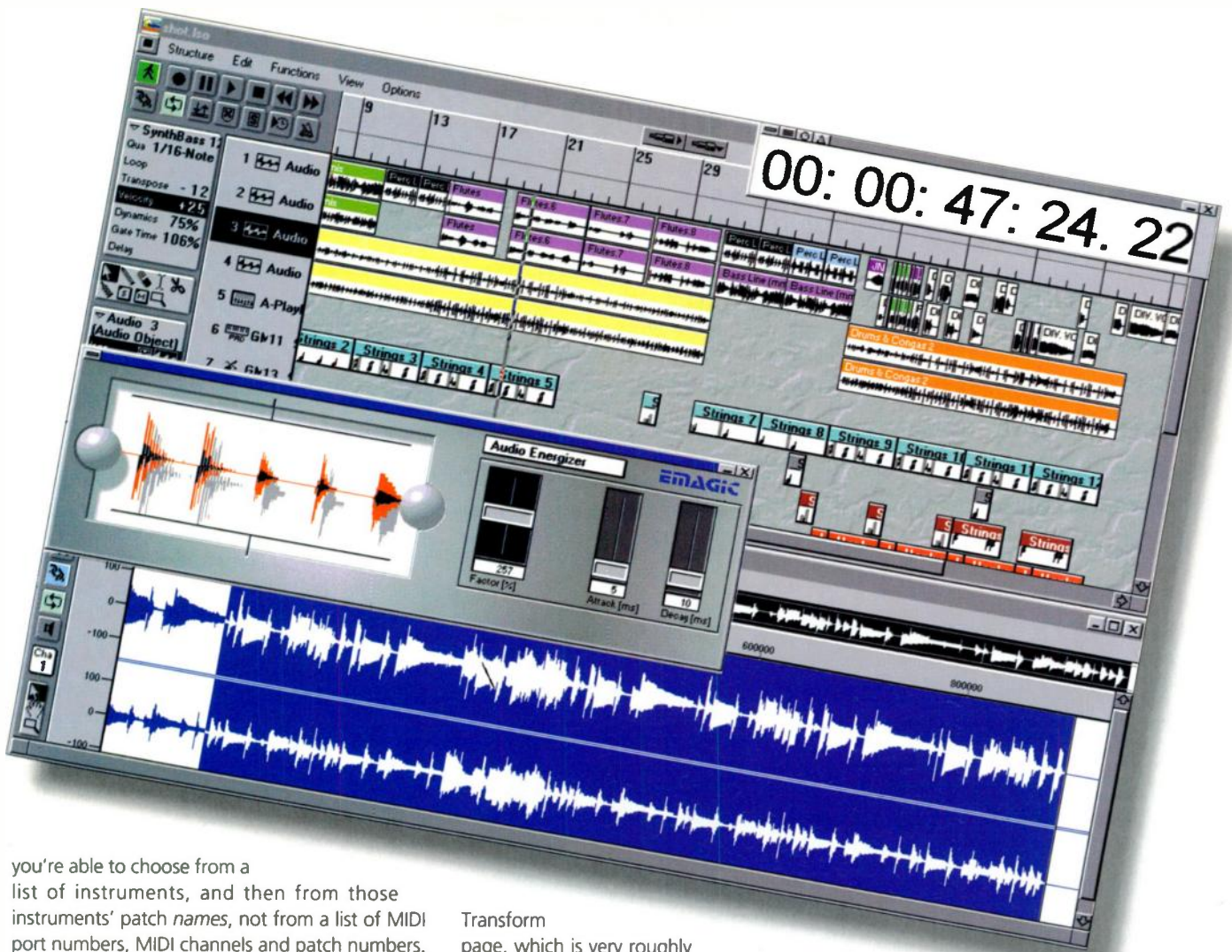
- The current choice of interface cards effectively limits the system to just two audio ins and outs.
- Some of the Mac niceties have been dropped to get the program running on the PC.

##### summary

*Logic Audio* on the PC is a very capable, solid package, but you can't afford to be too casual about your choice of audio soundcard if you're to avoid problems.

**SOUND ON SOUND**





you're able to choose from a list of instruments, and then from those instruments' patch names, not from a list of MIDI port numbers, MIDI channels and patch numbers.

Logic Audio PC allows you to address internal synth soundcards as virtual MIDI ports, but the way in which this is achieved isn't as intuitive as I feel it could have been. I expected the driver to come up as a virtual port in the ports column of an instrument's MIDI address, but this didn't seem to happen, so I had to use a bit of virtual wire to connect my virtual instrument to the virtual port, on the Environment page.

Logic/Logic Audio employs a multi-window approach; not only can you have lots of different windows open at once, you can also have several copies of the same window open, but set to different zoom resolutions or looking at different parts of the song. Windows can be linked so that changes in one are reflected in the others, and a Catch mode button makes it easy for the window display to jump to whatever part of the song is currently playing.

The main edit windows show the recorded part as a musical score, as a 'piano roll' matrix, or as a MIDI event list, and there are further windows, including Hyper Edit and Hyper Draw, for editing controller information. Both MIDI and audio mixes may be automated for level and pan — plus controller information, in the case of MIDI — and full sync is provided via MTC or MIDI clock, with comprehensive (and largely automatic) tempo-mapping facilities. Tempo changes can be entered numerically or graphically, and a random tempo function can be used to humanise compositions that have had the life quantised out of them! Logic has a particularly powerful set of intelligent quantise options, and the more adventurous can visit the

Transform page, which is very roughly equivalent to Cubase's Logical Edit.

Because multiple open windows can get very untidy, it is possible to create Screensets of your commonly-used screen configurations, selectable via the computer's numeric keys. Even so, the screen soon gets busy, so if you can stand working with smaller windows, it's worth changing your screen resolution so you can cram more on. A 17-inch monitor (or larger) is highly recommended.

Logic Audio makes extensive use of colour, allowing you to create some kind of visual order out of the sequences in the arrange page; as with older versions, you can also create 'folders' of numbers of tracks, to help simplify editing and to make the screen clearer. At one extreme, you can ignore folders altogether, while at the other, you can stuff an entire song into a folder if you like. In practice, it can help to create folders for verses, choruses, intros, links and so on, which makes it very easy to drag them around to try out different arrangements.

## INSTALLING

Installing Logic Audio 2.5 is very straightforward. Once you've started the installer program, you're prompted to change disks when necessary, and that's all there is to it. A hardware key is used to copy-protect the program, and this plugs into one of the 'com' ports on the back of the PC. A short adaptor cable is provided, enabling either the 9-pin or 25-pin port to be used.

A number of MIDI interfaces are supported, from the AWE32's single MIDI port to multi-port external boxes such as MOTU's MIDI Time Piece. ►

Logic Audio 2.5 for PC main Arrange page, with the Digital Factory's Audio Energizer and a waveform display at the bottom of the screen.



# Logic Audio 2.5 for Windows 95

- ▶ Some interfaces have separate ports for SMPTE sync'ing the computer to a tape machine, though if you have a system that will work with MTC (MIDI Time Code), you don't really need to worry about a separate SMPTE port. There are many interfaces that will do the job, but I'd recommend you check with Emagic's tech support before buying one, if you don't have one already, just to make sure there are no compatibility problems.

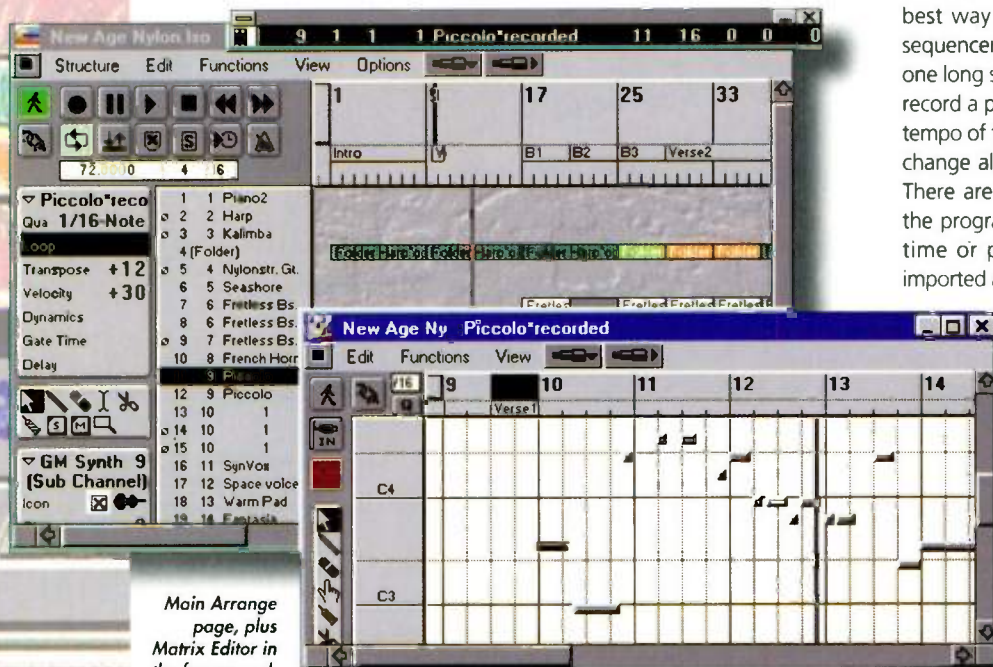
There are performance limitations when using internal cards with analogue I/Os, because the analogue audio circuitry is inside the computer's case, and some crosstalk between the analogue and digital circuitry inside the computer is inevitable. Typically, a good internal card might

manage an 85dB signal-to-noise ratio, while an external converter (for example, feeding the digital input of an Audiomedia III card from a DAT machine or external converter box), could push that figure much closer to the theoretical maximum of 96dB for a 16-bit linear system.

## TEST DRIVE

For newcomers to *Logic*, the best way to get started is to load the demo songs which come as part of the support software, along with a number of useful mixer maps, GM (General MIDI) instrument Environment objects, and so on. Though unlikely to ever make the charts, the demo songs do include both MIDI and audio data, which you can play around with before recording your own. Perhaps the best way to regard the audio part of an audio sequencer is as a sampler capable of playing back one long sample at a time on each track. Once you record a piece of audio, you can't go changing the tempo of the song, because the audio tempo won't change along with the tempo of the MIDI tracks. There are tools within the Digital Factory part of the program that enable audio to be stretched in time or pitch if you have to make a piece of imported audio fit, but it's far easier to get the MIDI tempo correct before you start recording audio.

Before using *Logic Audio 2.5* for the first time, it may be necessary to calibrate the Playback Driver to compensate for the different timing characteristics of different audio cards. A simple procedure is described in the manual, which involves recording a MIDI click-track onto an audio track, then adjusting the driver settings until there is no delay between the recorded click and



Main Arrange page, plus Matrix Editor in the foreground.

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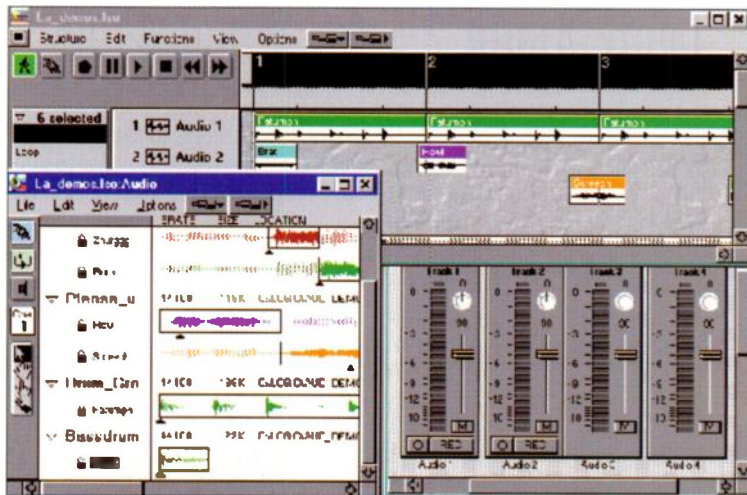


the original MIDI click. You also need to set an audio path, so that *Logic Audio* knows in which folder and on which hard drive to store your recordings.

This part of the procedure initially caused problems for me, as I opted to work with the Wavedriver rather than DAE, and found that the timing between the audio and the MIDI click was not only around one eighth of a bar out of sync, it also wandered. No amount of adjusting the delay offset in the Audio Extensions box would fix this. DAE also started badly, until I tried pressing the Recalibrate Inputs button in the Hardware Setup box, accessed from the Audio window Options menu. Once this is done, the program comes up with a 'whinge' box when you start recording, to inform you that some audio/MIDI sync problem has occurred. Dismiss this, by clicking on Continue, and all seems to be well. I managed to record eight test tracks of quantised drums, and they all played back tightly, exhibiting that reassuring flanging sound that indicates the timing is acceptably precise.

In common with other PC programs, *Logic Audio* 2.5 uses the .WAV file format, though stereo .WAV files are automatically converted to two mono files when imported, which means that you need twice as much disk space as required for the original file. Once the files are opened in *Logic Audio*, the program recognises that the files are halves of a stereo pair and ensures that they are treated identically, even though they're assigned to two tracks rather than one. To record a stereo file, all you need do is set an odd-numbered Audio Input object to 'Stereo' and the input to the right of it is linked.

Most editing is non-destructive. If you trim down a recording to play only a short segment of what was recorded, the rest of the material is still there — the selected region is like a small window onto a bigger picture. There's also a Strip Silence feature, which acts almost like a noise gate to



Audio window, including the Audio Object level controls (right) and audio tracks on the Arrange page.

separate a piece of audio into regions based on signal level. For example, you could feed in a drum recording, then juggle the threshold so that the individual beats were separated into individual regions. This operation is non-destructive, and is great for creating new or modified rhythm parts.

Destructive editing operations are those that actually alter the data in the soundfile in some way. A number of such functions are available, including the ability to normalise, change gain, erase, fade-in/out, or even reverse sections.

Audio regions appear in the Arrange window alongside MIDI sequences, and, with some exceptions, can be treated in similar ways, as regards cutting, moving and copying. As on the Mac version of *Logic Audio*, audio regions can be looped to provide continuous playback.

A much appreciated 2.5 feature is the ability to force MIDI tempo to automatically adapt to the length of an audio sequence, so that both MIDI and audio bars are precisely the same length. This can save a vast amount of trial and error when you've started with a chunk of audio and you're trying to make the song tempo fit.

Audio tracks may be automated by recording the virtual control movements in real time, and ▶



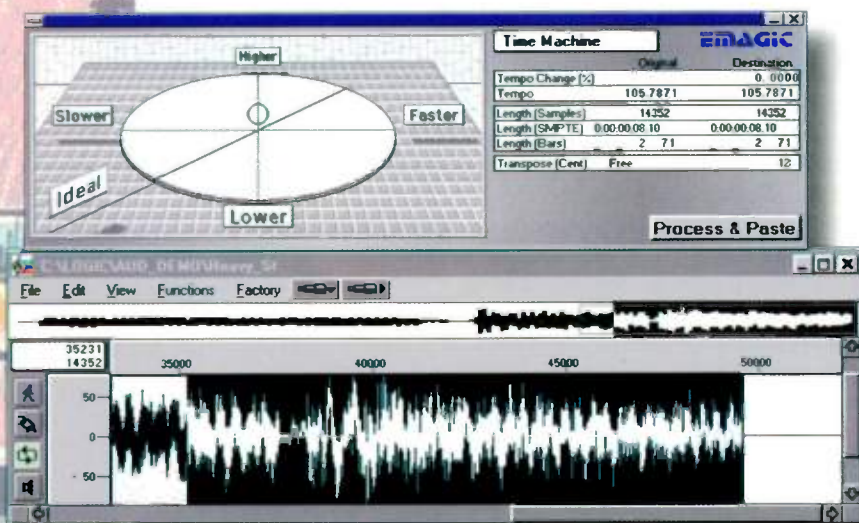
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# Logic Audio 2.5 for Windows 95

- ▶ Audiomedia III users have access to EQ, but only if running under DAE. While switching between DAE and Wavedriver, I noticed a couple of quirks that other users may have experienced. Aside from the fact that I couldn't get Wavedriver to sync on my particular system, I was also unable to monitor any input levels at all unless I went into record. (With DAE, you monitor the input as soon as the Audio Input object is switched to Record Ready mode.) What's more, inputs 1 and 2 seemed to be



The Digital Factory, showing the familiar ball and circle Time Machine interface.

## IT SHOOTS, IT SCORES!

The scoring facilities of any major sequencing package could probably fill a whole book in their own right, and *Logic Audio* is no exception. Though a manual performance will nearly always require some editing to get the printed music looking exactly as you'd like it, *Logic Audio* has a very powerful score edit section, which includes the ability to drag notes to new positions on the staff and hear the change in pitch as you do so.

For those needing to print out professional-looking scores, *Logic Audio* supports multiple staves, the clef and size may be adjusted, and there's provision to add lyrics, guitar chord symbols, dynamics, slurs and all that Latin graffiti that is *de rigueur* for 'serious' music. The line and page format may be adjusted, and details such as note stem directions, transposition for different classes of instrument, and score styles are all catered for. Printing to an inkjet or laser printer produces a near publishing-quality page.

interchanged whenever I switched between Wavedriver and DAE. These oddities are probably associated with the card and its drivers rather than with *Logic Audio*, but I felt it worth mentioning in case anyone else has come across the same situation. Something that almost certainly is *Logic Audio*'s problem, however, is that when setting up the parameters for the Audio Inputs, you'll often find that the items you want are greyed out, which normally implies that you can't select them. However, they work perfectly well if you just go ahead and select them anyway, so there's obviously some little display management bug hiding somewhere in there.

Hyper Draw, a graphical automation feature originally introduced in *Logic*, may be used to automate tracks by creating envelopes, rather like the ones used in Pro Tools or Digidesign's *Session*, where the user inputs level or pan data at any desired point by clicking with the mouse, and the computer 'joins the dots', using straight lines. The main difference between how this is done for audio and MIDI data is that with audio tracks, the controller data is recorded on a 'control' track adjacent to the audio, not directly into the audio sequence box itself.

## FUN FACTORY

The Digital Factory is where *Logic Audio* keeps its bag of audio processing tricks, many of which are destructive — in the nicest possible sense of the word.

The Digital Factory is actually a suite of sub-programs comprising the Time Machine, Groove Machine, Audio Energiser, Sample Rate Converter,

Silencer, Audio to MIDI Groove Template, Audio to Score, and the Quantize Engine. Audio to Score and Audio to Groove are non-destructive, as they effectively 'read' the audio file and then produce MIDI information from it, but all the other processes create new audio data files. Though the treatments are undertaken off-line, the majority of the Factory processes can run in the background. Considering the complexity of some of these Digital Factory processes, they actually work very quickly.

- The **Time Machine** makes it possible to change the pitch and/or length of an audio file, so you can pitch-shift without changing tempo, tempo-shift without changing pitch, or apply a little of both. All such algorithms have side effects, and the Time Machine is no exception, but you have far greater range and flexibility than you'd expect from the pitch-shifter in an effects box, and the side-effects are far less noticeable. With care, modest amounts of shift can be applied with virtually no audible side-effects, and even drastically-altered sounds often remain usable. The shift range is +100%/-40%; dropping a drum track by 30% resulted in a surprisingly natural sound.

- The **Quantize Engine** is the sort of thing we'd have written April Fool pieces about five years ago. It's a process for quantising an audio recording, which uses time-shifting algorithms to move events around within an audio region. If you don't expect the impossible, it really works well, not just on percussion, but also on musical material. Just how artifact-free the result is depends on the amount of movement required to get the music in time, and on the nature of the material being processed. Different algorithms can be selected to optimise the process for various types of material. The Groove Machine is very similar, but it allows you to add a degree of swing or groove to the audio, rather than using rigid quantisation. A neat graphical interface lets you define the groove points before processing.

- The **Audio Energiser** dramatically increases the average signal level of a chunk of audio by applying a clever peak-limiting algorithm and normalising the signal at the same time. It's not always ideal on mixes, but is great on rock guitar and useful on vocals.

- The **Silencer** combines single-ended noise reduction with digital spike removal. In most cases, these processes will be used to minimise tape hiss or other forms of background noise, as well as to reduce the effect of pops or glitches — a problem encountered on occasion by most people using digital recorders. The spike reduction process can be used in a couple of different ways. In Rebuild mode, spikes are identified, then removed, leaving a gap to be filled by electronic guesswork. In Filtering mode, the spikes are left intact, but momentary filtering is applied to reduce their audibility. Emagic don't claim that the Silencer is a professional de-clicker, but even so, it copes well in identifying and disguising the type of digital spikes that occasionally afflict DAT tapes.

- The **Sample Rate Converter** does just as it says on the packet — if you have a fixed 48kHz



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# Logic Audio 2.5 for Windows 95

## MAGIC WISHES

It's no secret that *Logic/Logic Audio* (on the Mac) is the sequencer I feel most comfortable with, but there are a few little niggles that I hope Emagic will note and, hopefully, act upon. One is the dreaded error message which seems to come up whenever you try to move a note in the Matrix editor. Pressing either Adapt or Cancel makes it go away, but why does it have to come up at all when you're clearly not committing the crime it accuses you of? What's more, they've managed to build it into this PC version tool

Niggle two is the way in which the transport buttons on the Arrange page work. To save screen space, I'll often use these instead of opening a floating transport window, but of course, whenever you press a button, you reselect the Arrange page, which immediately covers the window you were working on. Sound Technology have pointed out, though, that if you want to have just the transport buttons showing, you can customise the transport window.

Niggle three relates to *Logic Audio*, and concerns the fact that you have to visit the Environment page every time you want to put the Audio Input objects into Record Ready or Record Safe mode. Surely a little button in the Arrange page parameters box would save all this hopping about?

My fourth niggle is that whenever I create a loop, I always seem to move the song start position box by accident. Most of the time you don't need to move this at all, so why not give it a nice little padlock icon and a key command to nail it down?

The final niggle — for now — relates to audio file handling. I'd quite like a dialogue box to come up every time I create a new song, asking me if I'd like the audio files to be saved in a separate folder with the song's name attached to it. Most of the time I don't share files between songs, and keeping everything separate would save a lot of confusion. Audio files would also carry the song name. This can be done by setting up a new audio path every time you start a song, but some kind of automated system would be nicer.

► DAT machine, you can convert a file to 44.1kHz, for example. The dialogue box allows any source and destination sample rates to be set up, so it's very flexible.

- **Audio to MIDI Groove Template** works by reading the groove from a rhythmic piece of audio, then creating a groove template which allows you to give your MIDI sequences the same feel. There are various parameters to adjust, so that you capture only the beats you intend to, and if the source rhythm doesn't have beats at every required quantise point, you can insert your own points manually.

- **Audio to Score Streamer** is designed to read timing and pitch information from a monophonic audio file, so that either a score or MIDI data can be extracted, which mimics the same musical information. MIDI files created in this way will include any pitch-bend data needed to follow bends, as well as note and velocity information, but polyphonic signals merely confuse the system, resulting in an output of garbage. Various parameters are available to help optimise the process for different voice and instrument characteristics.

## MAC VS PC

*Logic Audio* on the Mac is well established, but the PC version has a limited history. From what I've seen, Emagic have come up with a very thorough translation of the original program, with only a few cosmetic and feature changes differentiating the Mac and PC versions. The whole display looks slightly chunkier on the PC, possibly because of the font used, and one or two icons, such as the zoom buttons, are in slightly different places, but on the whole, you can move from one platform to the other without too much difficulty.

On the Mac version, you can set up your own choice of which edit window opens when you double-click on a sequence, and I usually opt for the Matrix (piano roll) editor. However, this option is absent from the PC version, though you can use the Screensets function to save a screen setup with an open Matrix edit window, if you need to get to it with a single button press. Alternatively, you can double-click on any note in the Score window, or take the long route and open the Matrix window from a menu.

Once you're in the Matrix window, another change is evident: on the Mac version, all the little bars representing notes are coloured according to velocity, with blues and greens being quiet and reds being loud. On the PC version, however, the bars are grey, just like older versions of *Logic* for the Mac. 'Touch Tracks' has also gone in the PC version. On the Mac version, sequences or folders could be assigned to keys on the keyboard, allowing arrangements to be improvised in real time, based on ready-recorded sections. Apparently this omission isn't due to any musical prejudice, but rather to the way the PC operating system works. Emagic are hoping to find a workaround that will allow them to include this feature in later versions.

When using the audio side of the program, I

found no real problems other than the ones mentioned earlier in this review. Though the PC version is supposed to be fast, I found that the audio recording and playback mode took a second or two to start or stop, something I hadn't noticed so much on my old Mac Quadra. A read-me file that covers known problems with specific soundcards is included with the program.

On my Pentium 90, *Logic Audio* runs very quickly indeed, though there are little niggles associated with how the PC does business, and rather larger ones with how some soundcards and drivers behave. What's more, in the Matrix Edit page, whenever you drag a note by its corner to lengthen it, the PC insists on trying to redraw the screen, at around 10 redraws per second, for as long as you're editing the note. The result is rather like a strobe-induced migraine. On the whole, though, the PC version is pretty smooth, the screen redraws are fast, and I didn't make it crash even once.

## SUMMARY

Though *Logic Audio* is a complex program, its pertinent points can be learned very quickly, and the supplied manual is pretty thorough and well indexed. A large monitor makes life a lot easier, though one thing the PC guys do miss out on is the Mac's ability to have two monitors configured as one large, virtual screen. The Screensets feature is invaluable, and as with the Mac version, individual Screensets can be locked so that you don't change them inadvertently. You can configure almost any key commands to a combination of keys of your choice, and there's also the option to control key transport and record functions directly from a MIDI keyboard.

The Digital Factory is by no means unique — most serious Audio + MIDI packages include a digital processing section — but what's on offer is very well implemented and covers the kind of processes that normal people are actually likely to use. The pitch-shifting algorithms are particularly good, while audio quantise is great fun for mangling samples or pieces of live playing. The Audio Energizer and Silencer facilities are also very effective in reducing the level of clicks and hiss in a recording.

Considering that not every piece of software translates to the PC as painlessly as we might wish, Emagic have done an excellent job, though the Mac version will continue to lead until somebody comes out with a suitable multi-channel audio interface for the PC that *Logic Audio* can run with. **SOS**

**E** *Logic Audio 2.5* for PC, £399; *Logic v2*, £299 (*Logic 2.5* coming soon); upgrade from *Logic v2* to *Logic Audio 2.5*, £199; from *MicroLogic*, £249. Prices inc VAT.

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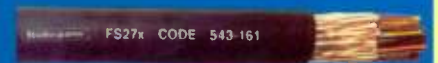
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SOUND on SOUND



*A synth's filter plays a major part in defining its sound, and creates the particular character of the best-loved vintage analogue models. Courtesy of its different filter cartridges, the ATC1 aims to be able to change its sound to suit your needs. PAUL NAGLE plugs in.*

Regular *SOS* readers may recall my first impressions of the Studio Electronics Analog Tone Chameleon — or ATC1 — which were recorded in a preview of a pre-production model in September's *SOS*. Since then, this colourful synth has had a software overhaul and now boasts the option of a 1U rackmounting filter bank, which can switch between up to four of its plug-in filter cartridges. By the time this issue hits the streets, the ATC1 will also be properly on the market, which makes it time for the full *SOS* appraisal, though one or two software odds and ends were still being tied up as this review was completed.

To recap briefly for a moment, for anyone who didn't catch the preview: the ATC1 is a monophonic synthesizer module, filling two rack spaces and possessing a single knob which performs all editing functions. It has a standard quarter-inch mono output, an external input to the filter, CV/Gate in/out, the obligatory MIDI In and Out (but no Thru), and stores 512 patches. Fifty pastel-coloured membrane switches access sound parameters, and with two VCOs (Voltage



# A Synth of a Diff

## STUDIO ELECTRONICS ATC1 ANALOG TONE CHAMELEON

Controlled Oscillators), two LFOs (Low Frequency Oscillators) three ADSR (Attack, Decay, Sustain, Release) envelopes, and a goodly range of modulation routings, you might assume this is just another analogue synth. But Studio Electronics, aware of the element which contributes most to the sound quality of such an instrument, have created plug-in filter cartridges, which emulate the characteristics of various classic synthesizers.

### FILTER BANK

My initial reaction to the ATC1's filter cartridge system was based on two pre-production cartridges, which I had difficulty telling apart. Happily, there are no such ambiguities with the finished versions, and I can report that each one exhibits the expected, wildly different characteristics, transforming the synth significantly.

For the review, a prototype model of the filter bank was supplied, its only control being a simple four-way switch to activate the desired module. I'm assured that the final product will feature a software-controllable selector which will allow each patch to be associated with the correct slot — an excellent idea. Connected by a short cable (let's hope it's longer on the real thing), the filter bank takes its power from the ATC1 itself. There are no wall warts to contend with, just a proper internal power supply. I'm tempted to forgive the positioning of the on/off switch at the rear of the synth, because I suspect that few people switch on each component of their studio separately, and also because any ATC1 user with a couple of cartridges and no filter bank would

need access to the rear anyway (you can still plug one filter cartridge at a time directly into the ATC1 rear panel, if you don't have a filter bank, though you have to power-down to swap cartridges). With no cartridges present, the four gaping holes in the filter bank would have a tendency to collect dirt and foreign objects. This needs to be addressed when the design is finalised.

Once I'd extracted various stray bits of polystyrene packaging and filled the filter with cartridges, I quickly became hooked, jumping between the various filters. The Oberheim filter has a small switch to select low-pass or high-pass modes, but as the prototype filter bank makes this inaccessible, two identical cartridges were supplied for review, each set differently.

The first ATC1 filter modules are:

- MINI: classic 24dB Minimoog filter.
- 303: the techno-classic TB303 filter.
- SEM: Oberheim's 12dB Synthesizer Expander Module filter.
- 2600: ARP 2600 filter (this didn't arrive in time for the review, alas).

The ATC1 is supplied with the Moog filter as standard — a sensible choice, since this is as warm, smooth and versatile as Desmond Lynam himself. I had no trouble programming some of the classic solo and bass Moog patches I remember from my Minimoog, and that modern synth manufacturers still strive to emulate.

The 303 filter was a revelation to me. I used to consider the 303 as more of a sequencer than a sound source but if my Basslines had sounded

**pros & cons**

**STUDIO ELECTRONICS ATC1 £800**

**pros**

- Excellent analogue sounds.
- 512 user patches.
- Plug-in filter system.
- CV/Gate and external input to filter included.

**cons**

- Data knob not ideal for single increment editing.

**summary**

A monosynth that not only sounds superb but can grow with you. If you feel in danger of getting bored, plugging in a new filter transforms the character of existing patches, whilst providing inspiration for new ones. If you are still looking for that elusive Moog or ARP synth, consider this an excellent alternative.

**SOUND ON SOUND**





# erent Colour

this good, I'd still have them today! There's no loss of bass presence when the resonance is fully whacked up, and the filter is punchy, a little dirty, and ideal for that squelchy bottom end. Using a single oscillator with either square or sawtooth waves, it is possible to come very close to the sound of the original Bassline, although the ATC 1 can also do things the 303 never dreamed of.

Politest of all is the Oberheim filter, which has the additional feature of a high-pass switch. I found that this one worked best for delicate solo voices, bubbly effects, or sequence parts, and reminded me of some of the Korg and Yamaha monosynths I've owned. Of the three, this is probably my least favourite, but the high-pass setting adds the kind of thin, nasal twangs to your sound palette that no other cartridge can yet reproduce. It's just a shame that the alternative filter characteristic can't be switched in software.

Routing a suitably-amplified external signal to the filter input was pretty rewarding, though there is no onboard mixer for this, and you need to provide a MIDI trigger to activate VCA and VCF envelopes before getting any output. I tried several of my other synths through the different filters, with worthwhile results, getting a great effect using an LFO square wave to add MIDI-synchronised filter chops to some string pads.

## ARCHITECTURE

To examine the ATC1's synthesis capabilities more closely, it has two Voltage Controlled Oscillators: each feature any combination of triangle, sawtooth and variable square waves. They are blended, along with a noise source, in a small mixer section.

An extensive modulation matrix (see box) provides access to almost everything you'd reasonably want to control, although some of the routings restrict you to a single target. For example, if you wanted to control the pulse width by the modulation wheel, you could only do this for a single oscillator. In practice, though, you soon begin to concentrate on the many things you can do, rather than the few you can't. A great bonus is the freely-assignable third envelope, which can control a wide variety of targets, including resonance and the level of cross modulation.

Two Low Frequency Oscillators each offer six waveforms — triangle, square, sawtooth, reverse sawtooth, noise, and random. As if that wasn't enough, LFO2 can synchronise with MIDI clock — just the thing for those funky sample-and-hold filter burbles. Clock intervals can be saved in each patch, ranging from whole notes through to sixteenths, including triplets. I'd like to have been able to control the phase of the LFO waveform to help align it against a rhythm track — maybe in a future update?

Cross-modulation provides some of the wilder sounds of the ATC1. Its function is to modulate the frequency of the filter or Oscillator 1 using Oscillator 2. To add further spice, Oscillator 2 has four modes:

- Normal operation: keyboard controls oscillator pitch.
- Hard synchronisation: to Oscillator 1.
- Keyboard control off.
- Keyboard control off, with sync to Oscillator 1.

The three envelopes are of the ADSR variety so

## IN THE PIPELINE

As this review was being finished, genial Studio Electronics developer Tim Caswell was working on an ARP 2600 filter cartridge, and tying up the ATC1's CV/Gate software (I suggested that a 'gate detect' mode would be useful for Moog owners, so that the ATC1 could automatically cope with S-Triggers). He was very receptive to my suggestion of allowing *all* front-panel parameter changes to have an associated MIDI Controller, and promised that the finished manual would include the system exclusive codes required to initiate a remote patch dump. Encouragingly, he also agreed to consider new features, such as multiple targets for modulators, in future software upgrades. He wouldn't reveal which filter would come next after the ARP is finished, and he was probably bemused by my suggestions to recreate the Korg MS20 or design something new, such as a 48dB filter. Whatever comes next, it looks like an interesting future for the ATC1.

Coming down to earth for a moment, today's buyer needs to insist on the very latest ROM version to ensure that the ATC1's CV/Gate mode functions correctly.



# Studio Electronics ATC1

## ATC1 FEATURES

- Monophonic analogue synthesizer module.
- 512 user-programmable patches.
- Two Voltage Controlled Oscillators.
- Plug-in filter modules.
- Most parameter edits transmit and receive MIDI controllers.
- External input to filter CV/Gate in and out.
- Three ADSR envelopes.
- Two Low Frequency Oscillators.
- Single or multiple triggering (low or last note priority).
- Portamento or auto-portamento (glide up to or down from note).

beloved of traditional synthesists. Envelope 3 is freely assignable, so a number of interesting uses spring to mind: delay or contoured vibrato is easily created, as are dramatic swirls of resonance, perhaps while Envelope 1 sweeps the cut-off frequency in the opposite direction. By assigning Envelope 3 to the pitch of Oscillator 2, then hard-syncing to Oscillator 1, you can create some incredible grungy sounds; modulate the envelope amount with velocity to vary the dirtiness, for some powerful Jan Hammer-type solos. Envelopes 1 and 3 may both be inverted, and this compensates, in part, for the fact that all modulation amounts are positive. You can't, for example, use negative filter/keyboard tracking to make a patch get progressively more mellow going up the scale.



## IN USE

Listening to 512 patches is quite time-consuming, especially when you multiply that number by the three filters I had to try. Classic analogue sounds are spread liberally amongst lesser patches, each of which took on a different persona as I cheerfully flicked from filter to filter. Strange noises, superb basses, and sweet solo voices were in great abundance but it wasn't long before I'd wiped dozens of them, to be replaced with my own versions. The ATC1 uses standard MIDI Bank Select protocol to access sounds beyond program location 128, and having so many locations available means that you can keep lots of interim versions without even the hassle of thinking of names for them. Interestingly, sounds do not cut off when program changes are received, so it is possible to switch seamlessly between patches that are subtle variations of each other — maybe having different envelope times or using different LFO waves.

Accessing parameters is simplicity itself. A push of each membrane switch reveals the current value of that parameter, displayed on the 3-character LED, which then becomes 'live' for editing via the continuous knob. Some functions have shared switches and require two or three pushes to access, but this is still more convenient than most multi-function knobs, whose position never represents all the shared settings. Most parameter edits are sent and received as MIDI control changes

— whoopee!

Whilst being no replacement for dedicated controls, the ATC1's editing knob is comfortable, easy to use, and renders filter sweeps smooth and zipper-free. It isn't the perfect tool for setting small increments, and suffers from a common problem of continuous dials: 'backstroke', where the value you set can sometimes decrement unexpectedly. Apart from this, though, it's a pretty good compromise and does reduce the number of moving parts, whilst keeping the cost down. The 3-character display performs an adequate task of showing you what's going on, although some of its abbreviations are rather cryptic and occasionally inconsistent (Envelope 1 Amount is referred to both as E1A and EA1). I'd have liked the LFO waves to be named, rather than being simply numbered from 1 to 6, but this is one area where my ears came to the rescue long before I needed to reach for the manual. Speaking of which, the manual is currently quite slender but still manages to be pretty useful, even hinting at some features that are not yet implemented, such as a TB303 accent mode. There are, however, some important omissions, including a System Exclusive section, details on how to use the CV/Gate, and guidelines for using the filter input.

## CONCLUSION

The Tone Chameleon combines raw analogue power with almost unparalleled flexibility. The filter bank is a convenient way of transforming the synth, but also acts as a kind of lure, tempting you to buy more cartridges.

During my time with the synth, I managed to crash it twice. Each time, the display reverted to the ATC startup message and my edits were lost. Another small annoyance was the synth's insistence on reverting to program 1 at each power-up — not too friendly if you can't remember that number of the last patch you were working on. These things aside, having used the ATC1 for some time now, I'm not sure that I want to be without it. I'd probably be content with just a couple of cartridges initially, safe in the knowledge that I could choose a different filter at a later date. In these times of synthesizers for the masses, it's rare to be given the power to tailor your instrument at such a fundamental level.

SOS

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- **AFTERTOUCH:** As modulation wheel.
- **LFO1 & 2:** Osc 1 Freq, Osc 2 Freq, Osc 1&2 Freq, VCF freq, VCF resonance, Osc 1 level, Osc 2 level, Osc 1 pulse width, Osc 2 pulse width, Cross Mod amount, Noise level, Volume.
- **CROSS MOD:** Cutoff freq, Osc 1 freq or both.
- **ENVELOPE 3:** Osc 1 freq, Osc 2 freq, Osc 1&2 Freq, Osc 1 level, Osc 2 level, Osc 1 pulse width, Osc 2 pulse width, Cross Mod level, Noise level, Resonance (Env 1 is hard-wired to the cutoff frequency), LFO 1 rate, LFO 2 rate, LFO 1 depth, LFO 2 depth.
- **BENDER:** Pitch, Filter or both.

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**P**roducer, composer and arranger David Lord is one of the most successful people working in the UK music industry. The long list of famous artists and bands he's worked with — including Peter Gabriel, Peter Hammill, Jean-Michel Jarre, John Renbourn, Tori Amos, Tears For Fears, Icicle Works, The Pretenders, and Echo and the Bunnymen — testifies to this. Given his impressive pedigree, and given that he has been at the heart of some of the most important

amazing array of studio gear, and using the other room as his recording area. Lord, greying hair, stocky and a twinkle in his eyes, appears eminently at home amidst all the technology. He swings around in his swivel chair and takes his unorthodox musical life story from the top.

"I trained at the Royal Academy of Music as a classical composer. After I finished, I received many commissions — works for the London Symphony Orchestra, Julian Bream, and singer Janet Baker, for example. I was never really an avant-garde composer; my work tends to be more lyrical and melodic. I actually wrote quite a lot of children's music. I moved to Bath around 1970, bought a TEAC 4-track tape recorder with some money I'd made writing an ident tune for the BBC's school programs, and started doing demos for friends in my bedroom. During the '70s, this became a large part of my work, and I recorded The Korgis, Tears For Fears and John Renbourn in this way. By the end

# David

*After much high-profile production work in the 1980s, David Lord retreated from the stress of the pop world to concentrate on chosen projects which would exercise his considerable composing and arranging talents. PAUL TINGEN runs him to earth at Terra Incognita studios, for a long-overdue update.*

# Lord

## ENIGMA VARIATIONS

developments in British music, it's a little odd that Lord is also one of its most elusive figures. He rarely gives interviews, and these days spends most of his time out of the limelight, working in the appropriately-named Terra Incognita studio on TV soundtracks, or non-mainstream recording and production jobs. Moreover, his career to date has followed a complicated zig-zag pattern, from respected classical composer, by way of folk music home recordist, commercial rock studio owner, record company boss and producer, to his current work. Small wonder that he's a bit of an enigma to most.

### PRIVATE LIVES

Terra Incognita is located right in the middle of Bath, and is the private reincarnation of Bath's most successful commercial studio of the '80s, Crescent. The large entrance hall contains comfy sofas, TV, loads of music and technology magazines, and a wall full of bizarre postcards from friends. Stairs at the back lead to Lord's control room. Elsewhere in the building, singer/songwriter Peter Hammill has converted the former SSL control room into his own private recording facility, with two Yamaha Promix 01 digital mixers and three Alesis ADAT digital multitracks, whilst Lord has taken up residence in the two former Crescent live rooms, filling one with three ADAT XT digital recorders, plus an

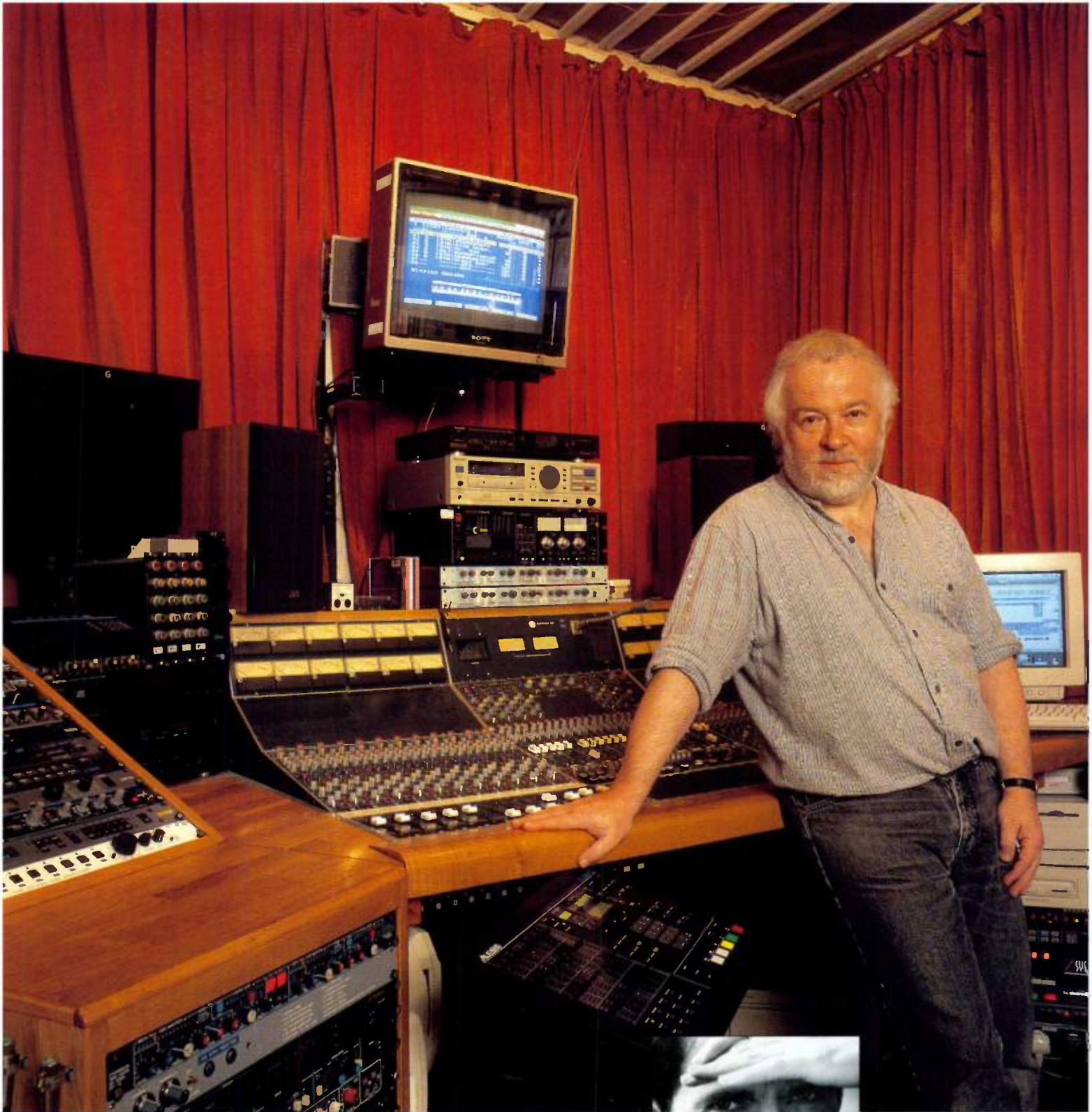
of the '70s, I had moved into these premises and begun Crescent Studios, Bath's first commercial recording studio. It grew from an 8-track to a 48-track facility during the '80s and was a centre for the local music scene. I also set up Crescent Records. We released about 12 records, mainly folk music, which were all very well received."

### SAMPLING PIONEER

Crescent turned into one of the UK's most successful and popular studios, with many big-name artists passing through. Lord himself, meanwhile, built up a formidable reputation as a producer and engineer of high-quality music, with his productions of XTC's *The Big Express*, two albums for Icehouse — *Measure for Measure* and *Man of Colours* — and, most famously, Peter Gabriel's fourth album. Featuring perennial Gabriel live favourites such as 'Lay Your Hands On Me', 'San Jacinto', and 'Rhythm of The Heat', many regard the album as Gabriel's best, and in the clarity of sounds and arrangements and the confident execution of what could have been nothing more than interesting but off-the-wall ideas, Lord's guiding hand shines through. Lord remembers the making of that album as "very stressful at times, because we had lots of technical problems with the equipment. But it was also very rewarding. Peter hadn't completed any songs when we started, and so spent a lot of time putting bits and pieces of the music together."

During the making of *Peter Gabriel IV*, Lord was at the heart of another piece of music industry





*David Lord, above, and Peter Gabriel, left, whose fourth album was produced by Lord.*

history: he and Gabriel were pioneering the early use of sampling with Gabriel's brand new Fairlight, the first one in the UK. Lord explains that his most abiding memories from his sessions with Gabriel centre around the work they did with the Fairlight: "Peter was becoming interested in ethnic stuff, and had masses of ethnic music on cassettes, recorded from TV, radio, and wherever else he could lay his hands on it. Many of these became samples that we used on the album. Peter and I became the test-bed for the Fairlight, and we actually produced a lot of the original Fairlight sample library, recording many sounds with a friend of mine, Stuart Gordon." By the late '80s, however, Lord's enthusiasm for working as a rock music producer had faded. When Bath city council

then decided to build a road right next to Crescent Studios, and finding affordable new premises proved rather difficult, Lord decided to throw in the towel and closed the studio: "I battled with the council for two years and eventually got compensation. Soon after the studio closed, Peter Hammill moved in and built his own studio in the former control room. Crescent closing was a turning point for me. I realised that I didn't want to carry on producing rock bands, because of the stress factors involved: the internal dynamics of the band, the battles







David's comprehensively-equipped Terra Incognita control room. The three ADAT XT's used for the bulk of the recording work can be seen to the far left, on top of the tall shelf unit. The BRC remote sits by the mixing desk for easy access. The Mac computer, to the right of the desk, runs Cubase Score software, and the display to the centre of the photo helps David to get the best out of his Roland S760 sampler — when he's not using the screen for his picture work. David's favourite signal processor, the TC Electronic M5000, lives in the rack under the main work surface, to the right.

## David Lord

called *Violet 19*, that will be released this Autumn on his own label, Tolemac. The latter record is unusual, because it's the first time I've written all the music for a project for many years."

For both *Violet 19* and *Heart Land*, Lord had to resurrect the production and project-management skills that he'd honed to perfection with major bands and artists during the '80s, and the result is impressive in the case of the one album that yours truly has heard, *Heart Land*. Although one over-the-top writer called it "the most important album to be released this decade", the music, co-written by Lord and flautist Wheater, will not be to everyone's taste, a slightly awkward and self-conscious mixture of new age, rock, opera, world and orchestral music. But throughout in this eclectic and, in places, frankly bizarre mixture, there's a clarity of thought and sound in production and arrangements that is reminiscent of Lord's best work of the '80s. The orchestral arrangements, 95% samples played and programmed by Lord, are especially impressive and uncannily realistic. It appears that

► between band and record company — in short, lots of politics. I enjoyed the years that I did, but I really felt like I was getting too old. I wanted a bit more life, really." (laughs)

### ORCHESTRAL MANOEUVRES IN MIDI

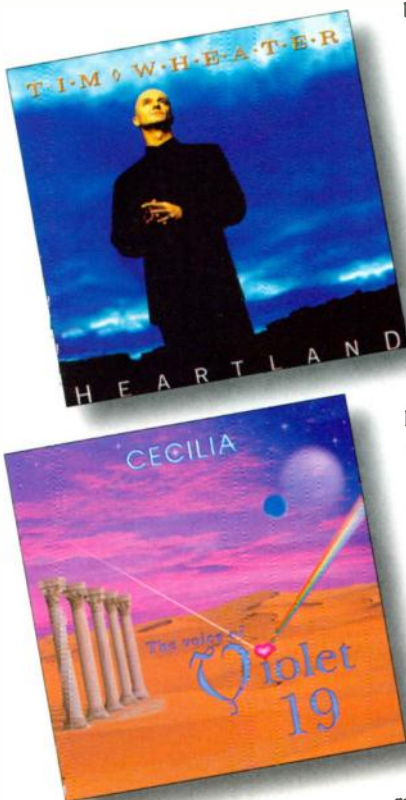
As a result of his decision, David Lord's high-profile presence in the British music industry gradually lessened. Today, even though he occasionally still gets major offers (he was offered the chance to produce The Stranglers's new album recently, for example), Lord basically just does "whatever takes my fancy really. I'll only say yes to a production project if I think I'm really the right person for it. During the last few years, I've mainly done television and radio work, usually orchestrating things for people I work with, like Stuart Gordon, who does a lot of local TV work, and David Ferguson, with whom I worked on the music for two series of *Cracker*. David and I have also just finished the music for an eight-part, eight-hour BBC documentary about the history of American art, called *American Visions*, which is yet to be broadcast. Recently I've done some major production jobs again — funnily enough, both of the new age type: Tim Wheater's album *Heart Land*, which was released on Jerry Moss's new label, Almo Records, and an album for new age author Stuart Wilde,

'canned orchestra' is one of Lord's specialities: he also did some excellent sampled orchestral arrangements for Peter Hammill's 1992 album *Fireships*, as well as tracks for Tori Amos ('China') and The Pretenders ('Stand By You').

It's clear that Lord's experiences as a classical composer, engineer, producer and sampling pioneer have combined to produce a truly unique set of skills and know-how in this area. The obvious question to ask is "how do you do it?" Lord laughs shyly: "I don't know whether there are any tricks. I just do it and don't analyse what I do. I've seen articles in *SOS* where people talk about how they do it, and I think the main difference with my way of working is that I don't work very strictly to a click. I find that it starts to sound much too unreal when everything is bang on the beat. Obviously, if you're writing to picture it has to be roughly to a click, but in terms of the actual playing and phrasing I bend things around quite a lot. I play everything in manually and then don't quantise things. Even if there are phrases that are doubled vertically over various instruments, I'll play the phrase in separately for every instrument, unless it's a tight rhythmic thing, when I may copy it across. But even then I'll later put some human imperfections in."

### SEEMINGLY PERVERSE

Lord's immense experience in both writing for and recording classical orchestras, and as a sample pioneer, combine perfectly when he's faced with the





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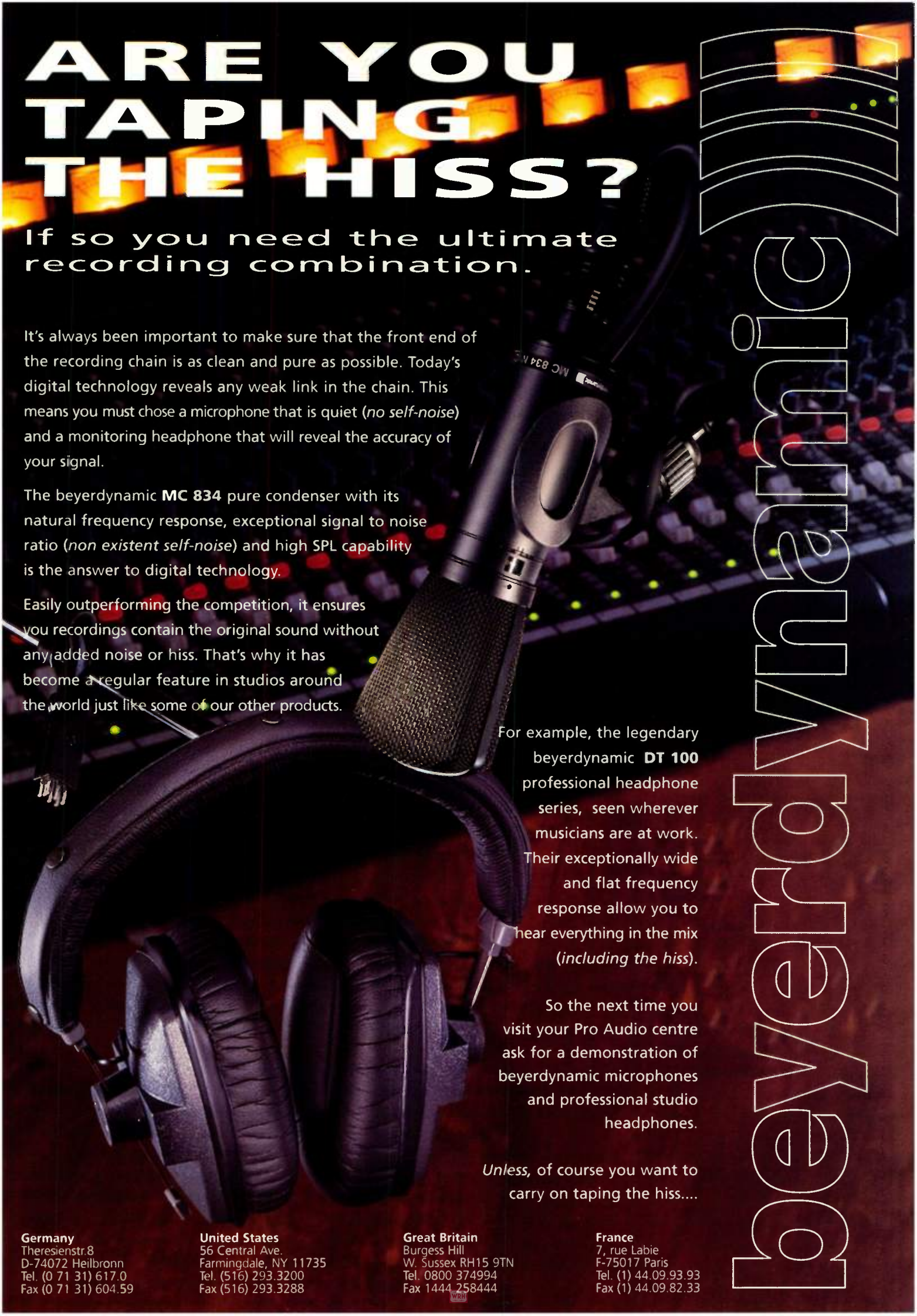
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# David Lord

► task of creating orchestral parts, even though he admits that he has a few options that the average person tinkering with a sampler and a sequencer in a bedroom doesn't have. He has, of course, built up an immense library of sampled sounds over the last 16 years, and he has the opportunity to record live orchestras when the budget allows it. Interestingly, and seemingly perversely, he will even add samples to the real thing, to make it sound even *more* real. Lord elaborates on his attitude to samples: "The



Peter Hammill's *Fireships*.

sound quality of samples and the editing facilities available have obviously improved enormously since the early '80s. I never edit my samples very much; I prefer to just try and record them well. I actually did a lot of my sampling during the mid-'80s, when the Prophet 2000 arrived. It was only 12-bit, but it sounded good. I still use many of these samples, and prefer them to the Akai. There's a nice graininess, a slightly unreal quality to them. My favourite modern sampler is arguably the Roland S760, which also has an excellent library.

"But I don't actually use sample libraries very much, with the exception of the Miroslav

Vituous library. I draw on the hundreds of samples I've made over the years. The most common way of trying to make your MIDI orchestra sounds as real as possible is, of course, by mapping things out via MIDI, which can give you a pretty good simulation of an orchestra, and then add a few real instruments to make it come alive. I followed that procedure with Peter Hammill's album *Fireships*, which had a rather small, almost 'quartet-ish' string sound, with Stuart Gordon playing many of the top lines. But what I've also found is that when I add some sampled strings behind a live orchestra recording I've made, it will make it sound more real. This is because the samples I add are generally recorded extremely well, and often in superior acoustics than where I've recorded the real orchestra. Or sometimes I'll simply need to beef the sound up, like when I've recorded a string section in my live room here, which holds, at most, 25 players."

Another advantage Lord has over the average bedroom MIDI recordist is the quality and extent of his gear. He has the best and the latest — so equipment problems, one presumes, are clearly the last thing to come between him and first-class recordings. It comes as a bit of a surprise, then, especially for such a mild-mannered man, to hear him sounding off rather strongly about some of the boxes he has at his

disposal. Before we get into that, though, here's an overview of his basic tools.

Lord's current main sample sources are the aforementioned Roland S760 (with 32Mb of memory and the video card option) and an Akai S3200XL (also with 32Mb). He's also the proud owner of an Emu Proformance 1 piano module, and Proteus 1 and 2/XR synth modules, Roland D110 and D550 sound modules, and, for storage purposes, Ricoh 650Mb optical and Syquest 44 and CD-ROM drives. His section of Terra Incognita also houses Roland Pad 80 Octapad MIDI drum pads, an Oberheim Matrix 1000 synth module, a Yamaha TX816 rack, and Korg Wavestation SR and Kawai K4r synths.

## ANNOYING

All this is played via a Kawai M8000 MIDI master keyboard, and is recorded by a PowerMac 7100 (with 48Mb of RAM), which runs Steinberg's *Cubase Score*. A Lexicon MRC MIDI controller, Opcode Studio 4 MIDI interface/processor and a Sycologic MIDI patchbay are attached, whilst the BRC (Big Remote Control) for Lord's three ADAT XT recorders functions as a time code generator. It's the *Cubase Score* software and the ADATs that receive some severe flak. Lord: "I use *Cubase*

"What I've found is that when I add some sampled strings behind a live orchestra recording I've made, it will make it sound more real."



Another view of the control room, showing David's Kawai M8000 master keyboard, with his Emu Proformance 1 piano module perched on top. The rack to the right houses synth modules, including his Proteus 1 and 2XR. Next to that rack is the Akai S3200XL, which shares sampling duties with the Roland S760.

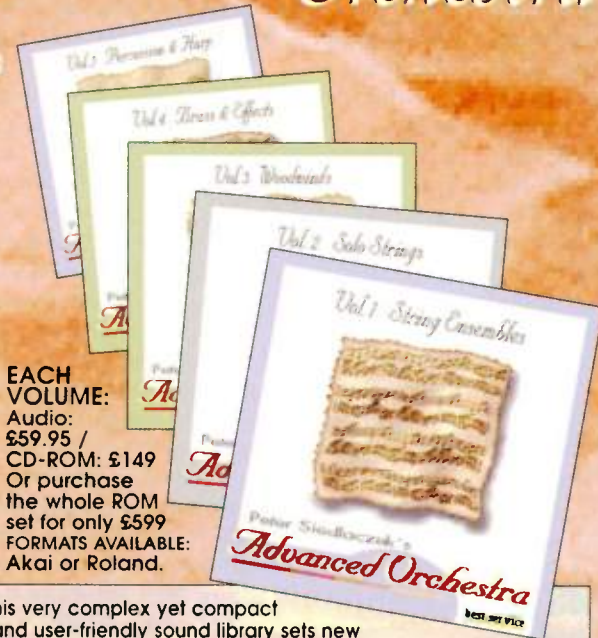
*Score* with some frustration. I always thought it was a really good program, but it runs a lot slower on the Mac than on my Atari. The Atari was very quick, but the Mac version takes too long to redraw the screen. When you switch it to black and white, ►



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FORMATS AVAILABLE:  
Akai or Roland.

This very complex yet compact and user-friendly sound library sets new standards for symphonic samples. It consists of 5 CD-ROMs or audio CDs and contains 5455 samples of all instrument groups of a large symphony orchestra. Besides sustained notes on 2 dynamic levels and staccatos, you will also find a series of new and very useful samples which have never been released before.

Numerous characteristics distinguish this library from others:

- A variety of important and frequently used phrasings and articulations which cannot be satisfactorily imitated with "normal" samples, for example half or whole tone trills, various grace notes, runs, arpeggios, tremolos, crescendi, glissandi and other events playable in any key or pitch.
- A collection of unconventional, interesting sounds played on classical instruments: scratches, whistles, thumps, buzzes and other effects, which can be technically modified in many ways, adding a new colour to your music.
- All of the staccato notes and some other events are sampled twice. If a quick repetition of the same note is needed, you can use them alternately, with a more natural result
- Alternative 22kHz mono versions of samples are also provided to aid quick exploration of new musical layouts.

The strength of this sound material lies not only in its use in classical "real sounding" or "natural" structures and arrangements - the complex phrasings and articulations especially, such as runs, trills or glissandi, are eminently suitable for all types of distortion and unorthodox treatment. Your imagination is therefore free for experimentation.

A short sketch demonstrating the potential of this library - titles "A Day in a Philharmonic Hall" - can be heard on the first disc. It consists (with the exception of the drum loop) solely of samples from this library. For those with little experience of acoustic instruments, the accompanying booklet presents definitions of terms, as well as some comments and tips on classical instruments and orchestration.

Using this library, you can now arrange complex and amazingly realistic-sounding structures - more realistic than ever before. Now you are the conductor!

### Vol 1 - String Ensembles

INSTRUMENTS: 14 Violins, 10 Violas, 8 Celli, 6 Basses.

### Vol 2 - Solo Strings

INSTRUMENTS: Violin, Viola, Cello.

\*\* Due to the limited storage capacity of a single audio CD, the solo clarinet samples can be found on Vol 4 - "Brass & Effects", and not on Vol.3- "Woodwinds"

### Vol 3 - Woodwinds

INSTRUMENTS: 3 Flutes, Solo Flute, Alto flute, Piccolo flute, Oboe, English horn, 3 Clarinets\*\*, Bass clarinet, Bassoon, Contrabassoon.

### Vol 4 - Brass & Effects

INSTRUMENTS: 3 Trumpets, Solo trumpet, Piccolo trumpet, 3 Trombones, Solo trombone, 4 French horns, Solo French horn, Tuba, Clarinet\*\*, and unconventional sounds.

### Vol 5 - Percussion & Harp

INSTRUMENTS: Cymbals 'a due', Cymbal 24", Cymbal 18", Timpani, Gran cassa (Bass drum), Snare drum, Large tam-tam (gong), Thai gongs (tuned), Chinese opera gongs, Triangles, Vibraphone, Marimba, Xylophone, Orchestra bells (glockenspiel), Tubular bells, Harp.

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### Total Control



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classic analogue drumboxes including Roland, Korg, Elka, Farfisa, Hammond, Casio, Univox, Wersi and many more... All loops are tuned exactly and grouped in tempos of 80 to 160 bpm. Double Audio CD: £59.95. CD-ROM (Akai/Emu, Roland, Samplecell): £99.00

### XXL Most Wanted



The Orient offers a massive range of beautiful instruments and percussion that can be used in

many styles of music, and this new library captures just about all of them from Tunisia, Iran, Iraq and Turkey! Hot off the press, this double CD contains phrases, individual notes and hits of instruments, percussion, turkish orchestras, moving atmospheres and oriental choirs. Call for more details!! Double Audio CD: £59.95

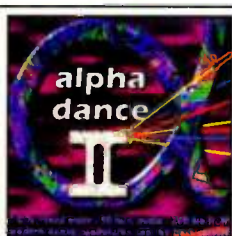
### Ali-ba-ba



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Drumloops. House, Jungle, Rap, Hip-Hop. All of the loops are tuned accurately on beats per minute and arranged in tempo groups from 80 - 180 bpm. In addition, there are over 100 current Dance Sounds: House Organs, Jungle Bases, etc etc... You can't live without it!!! Audio CD: £59.95, Akai CD-ROM: £99.00

### XX-Large Extreme



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organs, Strings, Sequencer lines, Combination Pads, Attack Banks, Vocals, Acoustic Percussion Loops & Drumloops, Rave Bases (multisampled, with short demos), Dirty Loops, Lead & Hook Synths, Transformer sounds, Synth Drums. The CD-ROM section has everything mapped, in key-groups, ready looped, ready for takeoff. 2 CD set including 300Mb Akai CD-ROM: £59.95

### Alpha Dance II



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sounds. Awesome vocal power. Truly an absolute masterpiece.

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(Sound on Sound magazine).

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# David Lord

► it's as fast as the Atari, but then you wonder where the progress is. I keep hanging in there for the next update, but I'm now considering switching to *Logic*, and leaving Steinberg after all these years. I can't wait any longer for them to get it together. I didn't like *Logic* in the past, but it now runs faster than *Cubase* and is a lot better. I must say that I also find this the trouble with magazines like *SOS*: they don't really give you enough information. They write that *Cubase* is now PowerMac native, so you think it's going to run faster, but it doesn't."

If you think Lord's being a bit hard on *Cubase*, wait till you've read what he has to say about the ADAT. Despite the fact that he announces himself

"I find it amazing that despite all the beta-testing they do, manufacturers still bring products onto the market with basic things not sorted out."

as "quite a fan of the ADAT" and "one of the first in the country to get one," he then voices six major complaints about Alesis's supposedly improved XT version: "I recently changed to the version 2, and find it amazing that despite all the beta-testing they do, these manufacturers still bring products onto the market with basic things not sorted out. For example, when you format tapes from the remote, rather than the individual machines, you can't leave them running, because when they come to the end of the tapes they don't stop automatically, and so wear out heads and tapes. There were also a lot of mechanical problems. All three XT machines I had have been replaced, none of the original ones worked properly, and I'm still having problems with the ones I have now. I had two tapes

completely mangled during a recording session in Winchester. They still do these annoying things like shooting off at random and not locking up sometimes.

"The new ones also don't have external meter sockets. I was hoping to put the machines in another room and have just the remote here, but I can't do that now. During my first mobile session with them, I found this bizarre thing where when you first switch them on you can't get any sound out of them, unless your signal is above a certain level. It's a bit like a noise gate. If you're doing quiet recordings on location, you have to get someone to make a noise that comes halfway up the meters, and then the machine finally kicks into action and works OK for the rest of the session. But if you turn the machine off, you have to get someone to clap their hands again or something every time you select a new pair of channels. That's hardly the forefront of technology. I also wish they had a really beefy transport. At the moment, it's just a video transport really, that wears out quickly. And I do a huge amount of work on them.

"To be fair to Alesis, many of these problems seem to have been sorted out in the latest software upgrade."

## PRaise

Despite all these problems, Lord still believes in the ADAT as a medium, because it has "revolutionised" his way of working. Until recently, he had a KW Electronics desk with automation, which he has now swapped for a Trident Series 65 Mk3, with 28 inputs and no automation. Since having his ADATs, he says he no longer uses automation: "I think automation degrades the signal path a bit, and with the ADATs I can mix to two tracks of one of them. So my mix is always in sync, and I can remix, and drop in and out any section I'm not pleased with. That's almost the whole reason I have the ADATs.

## STRING SECRETS

Since Lord doesn't like to use a click track when recording orchestral parts, the obvious question is how he manages to keep time. Lord: "I'll usually start with playing as much of the orchestral arrangement as I'm able to, as a one-pass guide keyboard part, either with piano or with string sounds. I'll play that guide loosely to a click, and will try to do a real performance. After that, I'll gradually replace that piano guide with the different orchestral instruments, cellos here and violas there, and so on. If there is a very rhythmic part, like a snare drum, for example, I'll often play that in first and then play the other parts to that, rather than play them to the click. Although I think sequencers are great for people with minimal keyboard skills, when I see people at their computer screens for hours on end tinkering with things and trying to get them perfect, I just find playing things into the sequencer quicker. And playing gives a natural effect that the randomising and humanising features of sequencers can't approach.

"I also play around with the master tempo track a lot. If it's a very loose piece that has to be flexible and expressive, I would probably try to get that looseness into the master track, so that the click retains some relevance and I can keep on referring to it. Fiddling with the master track is ideal, for example, when you find out during recording that singers need a bit more time to breathe between two phrases. I'll just give them a little *ritardando* via the master track. The other thing I try to do to get more expression is record the parts I play in with the MIDI volume pedal, so that all phrasing is input at the same time as the swelling and dying away. I hate stuff where everything is bang in time and exactly at the same velocity and levels. A real orchestra doesn't sound like that. On the other hand, I will move a string part slightly forward in the sequencer if the sound I use is particularly sluggish. Or I may use a string sound with more attack on it and play it very quietly and see how much I can get away with."

It's not the only 'trick' that Lord uses to get his sampled strings sounding as natural as possible. If you've ever found yourself struggling to get a realistic string section, you're not alone: "Trying to get the strings right does tend to take up the bulk of the time. They're the hardest to get right with samples. I've been asked to do rather a lot of string arrangements more recently, I suppose because I'm quite good at getting a big Hollywood sound out of canned strings. Another thing I often do is multi-layer strings. I'll use Roland S760 strings, some of the Miroslav Vitous library string sounds, and some of my own samples, and layer them, even within one part. And when a piece grows in intensity and the strings start playing louder, I may switch to different samples. The problem with sampled strings is that they will start sounding a bit samey after a while, and this technique helps to bring more variation and life into the sound. Finally, the different ways in which strings can be phrased, depending on various bowing techniques, I'll simulate by making notes overlap when I want things to sound more *legato*."



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- Use as tube DI for synthesizer, electric bass and guitar
- Bypass console for optimum clarity
- Stereo recording direct to DAT
- Adds tube warmth to any microphone
- Great for mastering/mixdown



Terra Incognita's recording room, where David's Trident Series 65 mixing desk is awaiting installation in the control room.

Because I record my own stuff, I tend to record everything with the effects and at the levels I want it in the mix anyway, so mixing is usually just a matter of pushing up some faders and balancing a whole lot of stereo pairs. The stereo pairs are submixes of things I recorded on other ADAT cassettes. I don't hear any degradation in sound when I copy digitally, so I'll also happily do a mix on two tracks, copy that across to another cassette, and then do another mix on the original two tracks, and crossfade between the two mixes. That way I still have 11 stereo pairs to mix from."

On a still more positive note, Lord records almost everything via his Rupert Neve-designed Amek 9098 mic input modules ("very popular"), a Mackie 1604 mixer ("excellent") travels with him on location for extra mic inputs and monitoring, and he monitors at Terra Incognita with Genelec S30 three-way monitors and ATC SM10 monitors with a REL 'Stadium' sub-woofer system, which he's a great fan of. His most lavish praise, however, is reserved for the TC Electronic M5000 digital audio mainframe: "It gets used all the time as my

main reverb. I also use it for processing signals and finished mixes. I do a lot of pre-mastering for people, and the M5000 is ideal for multi-band EQ, compression, phase correction, levels, left and right swapping, and so on. It's an extremely good digital toolbox. It makes things sound really good and everybody likes their mixes once they've been through one of its programs."

Lord also raves about the joys of his ancient Decca stereo passive EQ and two Decca/Perry compressors, all from the early '70s, and his Z-systems Z8-8 'digital de-tangler' ("it's a digital switcher and patchbay, 8-in, 8-out, that keeps everything buffered and at a professional level. It works very well and I'm very happy with it"). Yet, despite all his pertinent and clearly argued opinions, Lord muses a little later, with typical self-deprecation: "I think I'm a really awkward person to interview. I'm a typical Libra; I can always see both sides of an argument. So I don't think that what I do or have to say is of interest to people." Any reader who has come this far is certain to disagree with him, at least on the last count.

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# Surfin' Safari

## Music & Audio Sites On The Internet

**PART 2: DEBBIE POYSER  
& DEREK JOHNSON** fold  
up the cybermap, put  
the virtual surfboards  
back into storage, and  
conclude their  
musician's guide to the  
Internet.

**A**s promised at the end of last month's trawl across the 'net in search of promising music links, we're taking a curtain call with a list of record label and audio industry organisation web sites, plus more brief reviews of pages we thought were useful, fun, or useful *and* fun. If you're not yet part of the 'Internet Community', as they say, but would like to be, *SOS* ran a lengthy feature, 'Surfing the Internet', written by Stephen Bennett, in our November 1994 issue. This explained a lot of Internet jargon, discussed newsgroups and ftp (file transfer protocol, which is one of the methods of obtaining software from the Internet) and listed the kind of hardware and software required to get online. Things have moved on a bit since the feature was written, but it still makes good friendly basic reading.

### HARMONY CENTRAL

<http://harmony-central.mit.edu/>

This site has won a raft of awards, and it's easy to see why when you visit it. It's a beautifully-presented and also well-organised resource for musicians. News and new product information is provided, as are areas for guitar and bass-related

current and past units, and the chance to post your own opinions. There's also a Bands Page, where you can find out about getting your music on the net, pick up some hints on generating publicity, and investigate copyright and trademarking your band name (though this is a US site, so not all the information may be relevant to British musicians). The Recording and Audio FAQs are a bit of a mixed bag, with some good (the mic FAQs) and some less useful (the 4-track info). Needless to say, there are links here too, including one to a site for a rather nice-looking CD-ROM magazine called *Control*, which coyly withholds information while trying to get you to subscribe to it! One section which is of interest, if not a lot of use to UK surfers, is the used and new gear price lists, and there's also a classified ads section, where you can become mildly annoyed at the cheapness of some of the gear, and mildly surprised that TB303 Basslines fetch silly money (US\$1100) even in the USA.

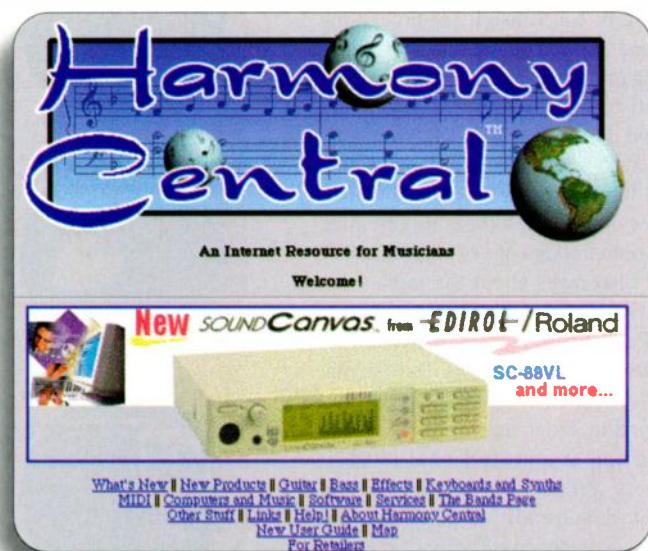
### SONICSTATE

<http://www.sonicstate.com>

Billed as 'the Music & Pro Audio Theme park', and co-run by avid *SOS* reader Nick Batt, SonicState features three different areas: Babylon is for music chat and gossip with an informal tone, the daily Burning Question (when we were there, it was 'Would you pay 80 million dollars for REM?'), and demo downloads. Anyone with the right computer setup can listen to demos selected by SonicState, but if you want your demo featured on the site, it'll cost you £50. There's also a set of music links in this area.

Synthsite is an online synth reference, featuring spec and user comments on a wide range of equipment; this is sub-divided by manufacturer and then models, and is quite comprehensive. Also check out the huge mic database, with spec on over 400 mics. There's a Computer Corner, with news content, and Tweak of the Week, where people are asked to post their top studio tips. The archive for past tips reveals that this isn't too well supported, so if you have wisdom to impart, chip in and post some! Interviews with industry professionals are also featured.

The Yellow-ish pages feature listings of all kinds, including record labels, with A&R names and who they've signed, which could be handy. The site tries to cover US and European (non-UK) labels too, but there are very few of these. In all, though, it's a good site, and seems popular: SonicState claim 24,000 visitors a week.



equipment, effects, keyboards and synths, MIDI, computers and music, and software. The MIDI section offers explanatory articles on MIDI, plus instructions on how to build your own PC MIDI interface, and tools for writing MIDI applications. The Effects section features FAQs and links, and a large effects database, with user comments on many



## ELECTRONIC MUSIC FOUNDATION

<http://www.emf.org>

Anyone into electronic music of the avant-garde, serious kind will want to check out EMF's well-organised and interesting site. "founded in 1994 to disseminate information and materials related to the history and development of electronic music." As well as featuring electronic musical instruments and a photo archive, EMF also offer sales of relevant music you might find hard to track down through conventional channels, on CD. Artists featured include Karlheinz Stockhausen, Pierre Schaeffer, John Cage, Berio, Morton Subotnick, and John Chowning. EMF also offer electronic music compilations, and though the site is American, you can order from Europe. A worldwide events calendar, divided into different territories, helps you to keep track of what's happening on the global electronic music scene, and the site also provides links to other related pages.

## DOTMUSIC

<http://www.dotmusic.com>

This is the web site of the commercial music industry's Bible, *Music Week*. It features much of what's in *MW*, including up-to-date charts in various categories (namely UK singles, albums, indie albums, dance, R&B and club charts). Many tracks in the individual charts have a commentary you can access for some background information on the entries, and chart analyses are also available. Airplay charts show what's getting heavy rotation



on major radio stations. Other sections of this good-looking site provide industry news, including the *Record Mirror* music news, again reflecting much of what you get in the real magazine, which makes it a bit of a deal. The Talent section has a wide range of artist profiles, plus a Talent Index of around 100 of *MW*'s favourite bands and artists, where they talk about their current projects. If you're not content with reading about the music at Dotmusic, you can also buy it from them, using a virtual shopping-basket system, and even place pre-orders for forthcoming releases. To top it all off, you can register to receive *Music Week* charts by email, free for three months.

## RECORD LABELS

Needless to say, this list doesn't cover every label, but during our search, we found a couple of sites that were very useful for label links, and which may well reward return visits as the lists grow. One such was

figure out where to look.

- 4AD  
<http://www.iuma.com/4AD/>
- A&M  
<http://amrecords.com/>
- ARISTA  
<http://www.aristarec.com/>



You get more than three wishes with Atlantic's genie...

American cable radio station WCXS 94.5 ([http://www.axsamer.org/wcx/s/record\\_companies.html](http://www.axsamer.org/wcx/s/record_companies.html)), which features one of the largest lists of record company links on the worldwide web — over 1000 links and counting. They're not just American labels, either: there's a fair proportion of European sites, though the emphasis overall definitely seems to be on smaller, independent labels. This is a great way for musicians and bands to discover and suss out the stance of literally hundreds of labels, or for anyone to track down obscure recordings. WCXS have future plans to go on the air via the Internet, using RealAudio. We also found a pretty exhaustive listing of label links within the web site of search engine Yahoo (at [http://www.yahoo.com/Business\\_and\\_Economy/Companies/Music/labels](http://www.yahoo.com/Business_and_Economy/Companies/Music/labels)). The complete list takes a while to load, so you may want to look at one alphabetical section at a time. Some of the links aren't quite up to date, but there are often enough clues to let you

- ATLANTIC  
<http://www.atlantic-records.com/>
- BARCLAY  
<http://www.barclay.fr/>
- BEGGARS BANQUET  
<http://www.beggars.com/>
- BEYOND  
<http://www.obsolete.com/beyond/>
- BIG LIFE  
<http://www.biglife.co.uk/>
- CHERRY RED  
<http://www.demon.co.uk/cherryred>
- CHINA  
<http://www.china.co.uk/china/>
- CHRYSALIS  
<http://filament.illumin.co.uk/chrysalis/>
- CREATION  
<http://www.creation.co.uk/>
- DECONSTRUCTION  
<http://www.deconstruction.co.uk/>
- DEF JAM  
<http://www.defjam.com/defjam/defhome.html>
- ECM RECORDS  
<http://www.ecmrecords.com/>
- EMI USA  
<http://www.emirecords.com/>
- GEFLEN  
<http://geffen.com/>

- GO! DISCS  
<http://www.godiscs.co.uk/>
- HYPERIUM  
<http://www.netville.de/music/labels/hyperium/hyperiumstart.html>
- IRS  
<http://rocktropolis.com/IRS/>
- ISLAND  
<http://www.island.co.uk/>
- MCA  
<http://www.mcamei.com/>
- MUTE  
<http://cache3.www.gold.net.com/>
- NETWORK  
<http://www.network.com/>
- ONE LITTLE INDIAN  
<http://www.indian.co.uk/>
- PARLOPHONE  
<http://www.parlophone.co.uk/>
- POLYDOR  
<http://www.polygram.com/polydor/>
- POLYGRAM  
<http://www.polygram.com/polygram/>
- PLAY IT AGAIN SAM  
<http://www2.dds.nl/~pias/index.html>
- PRIVATE MUSIC  
<http://www.private-music.com/>
- RHINO  
<http://pathfinder.com/rhino/>
- RCA VICTOR  
<http://www.rcavictor.com/>
- REPRISE  
<http://www.repriserec.com/>
- SONY  
<http://mac.music.sony.com>
- SUB POP  
<http://www.subpop.com/>
- WARNER BROTHERS RECORDS  
<http://www.wbr.com/>
- WARP



Check out the home of British hardcore techno.

- <http://www.warp-net.com/>
- WAXTRAX  
<http://www.waxtrax.com/waxtrax.html>
- VIRGIN  
<http://www.virginrecords.com/or>
- <http://www.vmg.co.uk/>

## STUDIOBASE

<http://www.demon.co.uk/studiobase/studios/>

StudioBase is a straightforward and well-organised online database of music industry services. The listings available cover studios, producers, engineers and remixers, hire and pro audio outlets, rehearsal facilities, studio design/construction specialists, and record companies. The alphabetical



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PMA5  
JV1080  
JV1080 Boards  
MDC-1  
MVS-1  
MOC-1  
MGS-64  
SC88 VL8H  
Alesis QS8  
Alesis QS8  
Akai S001 Vintage Module

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## Akai CD3000i+

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## Novation DrumStation

Generate TR808 and TR909 drum sounds with original sounds editing

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This is THE dance machine! 448 classic analogue sounds from TR808, Juno, Jupiter etc. Plus 12 drum kits featuring TR808 & TR909 sounds, preset dance patterns, arpeggiator, 28 note polyphonic, digital real-time phase sequencer. 8 track sequencer.

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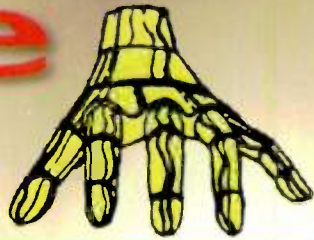
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Edison - Stereo Image Processor  
Ultra Curve - 64bit Dual D.S.P  
Multicom - Quad Compressor/Limiter  
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New Zoom 1204 in stock. RRP £199

### Zoom 1202

- 32 preset patches • 41 1/2 sampling rate
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- 160 presets for stereo compressors with 16 preset eq's
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- 16 bit reverb

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Key: Ch = Chadwell · B = Barnet · C = Cambridge

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Allen Heath Saber 12, 16, bass, 6 inputs, 4 band EQ, 12 sweetens, fully...	£4495	Ch
Stannard System 1000 (all in 1)	£299	Ch
Secs 12/2/2	£445	Ch
Carillon DMX16-2	£399	Ch
Fruties 8/2	£495	Ch
EV 8042	£199	Ch
Secs 12/2/2	£599	Ch

### Keyboards

Allen X7000	£299	Ch
Emerson SD1	£599	Ch
Roland XP10	£399	Ch
Roland 2010 B PG600	£695	Ch
Roland 7015	£599	Ch
Kump DV8000	£299	Ch
Yamaha SY35	£399	Ch
Kump Keyboard	£499	Ch
Kump Poly 800	£1495	Ch
Canon CZ3000	£199	Ch
Yamaha PSS51	£99	Ch

### Modules

Yamaha TX802	£199	Ch
Roland MN 30	£599	Ch
Roland SV50	£495	Ch
Emerson SQR1	£349	Ch
Evolution EVS1	£199	Ch
Karad K10	£299	Ch
Roland MDC1	£349	Ch
Roland MT100	£199	Ch
Roland D110	£249	Ch
Roland D110	£249	Ch
Roland S710 Sampler	£449	Ch
Roland CP800	£199	Ch
Yamaha TL100	£199	Ch
Allen S1000 Playback	£675	Ch
Emerson Performance	£2495	Ch
Karad K10	£199	Ch
Roland EM101	£399	Ch

### Drum Machines / Sequencers

Yamaha DR21	£799	Ch
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### Recording

EMI Sonic Masterizer	£99	Ch
Scm 117/136	£399	Ch
Alar MG14D (12 track)	£1299	Ch
Alar MG141	£495	Ch
Fruties F104 (400 sampler)	£1995	Ch
Neve Microverb 3	£99	Ch
Neve M1	£495	Ch
Neve 160	£299	Ch

## PC Music

Want to do sequencing/hard disk recording on your PC? Music Village can supply you with a complete software/hardware package to enable you to sequence and digitally record. Contact our dedicated PC experts for latest music systems and unparalleled technical knowledge. We are stockists of all Tascam, Beach soundboards such as Tascam, Tascam and TBS2000. Whatever your system requirements are, call: **Neil** at Chadwell Heath or **Duncan** at Cambridge

## MV EXCLUSIVE

## Phonic MM122

Phonic MM122... (text partially obscured)

**only £225**

## Phonic PCL3200

Phonic PCL3200... (text partially obscured)

**only £169**

## Power Amps

Omniphonic Footprint	RRP £279	£255	Ch
Samson Servo 150	£225	£225	Ch
Samson Servo 240	£250	£250	Ch
Samson Servo 500	£300	£300	Ch
Allen RA100	£300	£300	Ch
Yamaha P1500	£449	£449	Ch
Yamaha P2500	£699	£699	Ch
Yamaha P3500	£999	£999	Ch

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C Audio - Very special deals on these superb British made Amps.

Sample package deal: Footprint & Soundcraft Absolute 2's - **Only £499**

**K-ROK Exclusive deal - Limited quantity at only £299 per pair**

## Monitors

Unbeatable Deals on monitors and monitoring systems by Yamaha, Alessis, Soundcraft, Tannoy, KFK, Phonic etc. **New package deal:**

Pair of K-ROKs PLUS Samson Servo 150 Amp **only £459**



# Music & Audio Sites On The Internet

► directory of producers includes telephone numbers for managers where relevant, and email addresses for individual producers/engineers, where available. There's also a pretty long management companies list, which could be useful, although it doesn't tell you who the various companies already manage. You do get contact names, however. The record label list, again, is quite lengthy, with addresses, but it would have been nice to see more links to label web sites. Finally, there's a page of useful links, sponsored by hire company FX Rentals, to equipment manufacturers and industry associations.

## MIDI MANUFACTURERS ASSOCIATION

<http://home.earthlink.net/~mma/>

The homepage of the American MIDI Manufacturers Association is an active and vibrant site which reflects the MMA's status as the prime US source for information on MIDI. If you're not sure what the MMA does, here's the place to find out: amongst other activities, they publish the official MIDI specification, and for those people who regularly ring *SOS* to find out where they can buy it, the answer is here. The MMA will take European orders, but they also provide the address for a German outlet if you'd rather buy within Europe (the full spec runs to 300 pages and weighs around two pounds!).

Also featured on the site are various articles on aspects of MIDI, including Copyright and MIDI files, and MIDI Show Control. A 'White Papers & Editorial' area presents discussion documents aimed at promoting consensus in the development of MIDI, and these make interesting reading if you follow such putative developments as XMIDI and MIDI2. When we visited the site, it was also possible to read an interview with the MMA's Chief Executive Officer, Tom White, in which he discusses the future of MIDI. In short, this is an absorbing site which renders its potentially less-than-exciting subject, MIDI, very approachable.

## PAiA ELECTRONICS

<http://www.qns.com/paia/>

American company PAiA have been going for years (they were founded in 1967 to produce low-cost, high-quality, user-assembled kits for electronic devices). If you're into DIY (and cheap) gear, this is a great site to check out, being well presented and featuring details of all PAiA's current kits. These include a make-it-yourself, rackmounting MIDI analogue synth, the FatMan,



## THE ONES THAT GOT AWAY

It was bound to happen... one or two hi-tech music companies who slipped through the net and were not included in our bumper listing of audio manufacturers' and distributors' web sites last month have been in touch.

- Canada's QSound Labs, developers of 3D sound processing hard and software, can be found at: <http://www.qsound.ca>

- Live sound equipment specialists Rane have their virtual HQ at:

<http://www.rane.com/>

- Visit Creative Labs, leading PC soundcard manufacturers, at:

<http://www.creat.com/> or

<http://www.ctsg.creat.com/>

- If you're interested in console automation, pop into Optifile's cyber space at: <http://www.optifile.com>

- International studio educators, School of Audio Engineering, can be found on the 'net; their web site will enable multimedia production students to link up and work with each other on set projects <http://www.saecollege.edu.au>

- That other venerable audio education institution, the Gateway School of Recording and Music Technology, is also net-wise, with plenty of on-line information at: [http://www.king.ac.uk/~xe\\_s516/gateway.html](http://www.king.ac.uk/~xe_s516/gateway.html)



Creative Labs: mixing art and science.

which has two oscillators, a VCF, two EGs and a VCA, and costs just US\$170, including a front panel. PAiA also have an inexpensive theremin kit, a self-assembly MS stereo mic, a tube mic preamp kit, and lots of guitar project kits; many of them were actually designed by occasional *SOS* contributor Craig Anderton. Again, though PAiA are a US company, they appear perfectly able to cope with overseas orders, and postage costs don't seem unreasonable, especially bearing in mind that the FatMan kit, for example, costs the equivalent of only about £113 in Sterling.

## ASSOCIATION OF PROFESSIONAL RECORDING SERVICES

<http://www.aprs.co.uk/>

The UK-based APRS maintains this comprehensive site, which features listings of UK studios, producers and engineers, manufacturers and distributors of equipment, and educational establishments, all of which are APRS members. The list of manufacturers and distributors, with contact information, is particularly useful, covering the majority of brands available in Britain, though it would be nice to see more links featured — perhaps this will be improved in the future. Accessing the Producer & Engineer list links you to the Re-Pro website (<http://www.aprs.co.uk/repro/>), the home page of the organisation which used to be called the Producers' Guild, and is sometimes referred to as the producers' trade union. Here, there's a full listing of members and associate members, with biogs, and information on how to join Re-Pro if you think you might be eligible.

## DIGITAL DOMAIN

<http://www.digido.com>

This is the site of an American digital mastering and CD production company, who also design ►

## AUDIO INDUSTRY ORGANISATIONS

- AES (AUDIO ENGINEERING SOCIETY)

<http://www.aes.org/>

- APRS (ASSOCIATION OF PROFESSIONAL RECORDING SERVICES)

<http://www.aprs.co.uk/>

- MCPS (MECHANICAL COPYRIGHT PROTECTION SOCIETY)

<http://www.mcps.co.uk/>

- PRS (PERFORMING RIGHT SOCIETY)

<http://www.prs.co.uk>

- MU (MUSICIANS' UNION)

<http://www.musiciansunion.org.uk>

- RE-PRO

<http://www.aprs.co.uk/repro/>

- PLASA (PROFESSIONAL LIGHTING & SOUND ASSOCIATION)

<http://www.pavilion.co.uk/plasa/>

- IBC (INTERNATIONAL BROADCAST CONVENTION)

<http://www.ibc.org.uk>

- EBU (EUROPEAN BROADCASTING UNION)

<http://www.ebu.ch/>

- NAB (NATIONAL ASSOCIATION OF BROADCASTERS)

<http://www.nab.org/>

- SMPTE (SOCIETY OF MOTION PICTURE & TELEVISION ENGINEERS)

<http://www.smpete.org>



# Music & Audio Sites On The Internet



ADVANCED MEDIA PRODUCTS

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**THE AUDIO CONNECTION**  
Fareham, Hampshire Tel: 01329 235566

**AXIS AUDIO SYSTEMS**  
Stockport Tel: 0161 474 7626

**CANFORD AUDIO**  
Washington, Tyne & Wear Tel: 0191 417 0057

**COURTFIELD AUDIO**  
Ashford, Kent Tel: 01233 630220

**DIGITAL VILLAGE**  
Barnet, Herts Tel: 0181 440 3440

**EDDIE MOORS MUSIC**  
Bournemouth Tel: 01202 395135

**THE GUITAR & AMP CENTRE**  
Brighton Tel: 01273 676835

**HONKY TONK MUSIC**  
Southend Tel: 01702 619615

**THE M CORPORATION**  
Ringwood, Hampshire Tel: 01425 470007

**MUSICAL EXCHANGES**  
Birmingham Tel: 0121 236 7544

**MUSIC VILLAGE**  
Chadwell Heath, Essex Tel: 0181 598 9506

**PROFESSIONAL MUSIC TECHNOLOGY**  
Oxford Tel: 01865 725221

**PROFESSIONAL MUSIC TECHNOLOGY**  
Romford, Essex Tel: 01708 746091

**PROFESSIONAL MUSIC TECHNOLOGY**  
Southend Tel: 01702 436501

**PROJECT MUSIC**  
Hounslow, Middlesex Tel: 0181 570 4444

**PROTAPE**  
London W1 Tel: 0171 323 0277

**SOUND BUSINESS**  
Woodford Green, Essex Tel: 0181 559 0373

**SOUND CONTROL**  
Dundee Tel: 01382 225619

**SOUND CONTROL**  
Dunfermline Tel: 01383 733353

**SOUND CONTROL**  
Edinburgh Tel: 0131 557 3986

**SOUND CONTROL**  
Glasgow Tel: 0141 204 0322

**SOUND CONTROL**  
Kirkcaldy Tel: 01592 260293

**SOUND CONTROL**  
Manchester Tel: 0161 877 6262

**SOUND CONTROL**  
Newcastle Tel: 0191 232 4175

**SOUND DIVISION**  
London N1 Tel: 0171 609 3999



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► and sell their own hardware, including A-D/D-A converters and digital format converters. However, it's far from being just a company ad, offering much useful information "designed to help audio engineers and musicians make better CDs and CD-ROMs". This includes essays like 'What is a Mastering Engineer?', 'The Philosophy of Mastering', 'Analogue or Digital Tape', and 'What processes should I use (or avoid) before sending my tape for mastering?' The truly wonderful people who run this site also explain concepts like jitter and dither, discuss audio level practices, and provide a glossary of digital audio terms. As well as all the help they give you with audio, Digital Domain also offer a helping hand with CD artwork design: in the brilliant Graphic Designer section, they provide a CD logo you can download, as well as *Quark Xpress* files of the correct spec for CD booklets and labels, also downloadable — excellent if you're producing your own CD and plan on doing the design work on computer yourself. They plan to post more free info on both design (use of pictures, effective booklet artwork) and audio (Red, Orange and Yellow book standards demystified).

Digital Domain are not simply useful: they're also funny. Visit the Rest stop for audio, music and computer-related humour, and check out the mad 'Shave Bob' contest...

## SYNTHFOOL

<http://www.synthfool.com>

Synthfool is Kevin Lightner, who used to be a technician (service person) at Roland US in the '80s, and is also a real modular and old synth buff. He's a bit of an anorak, but he knows it, which possibly makes him not an anorak after all... His site is unashamedly devoted to analogue synths, with lots of graphics in areas such as 'A Peek Inside Synth Modules' (Compare Seven Different VCO Designs — oo-er missus...), Brochures, Front Panels, Patch Sheets, and Schematics. Be warned that the pictures are high resolution and can take a long time to load. A section called 'Price Lists of the Past' makes fun reading, but of possibly more use is the selection of Roland Service bulletins Mr Fool has thoughtfully added to the site. These relate to older gear — so if you have an SH101 with a bender problem, a TR909 with a MIDI problem, or a Juno 1 with a memory problem, for example, you can check out what Roland told their own service personnel. Lightner himself still restores and repairs synths (we hear that it was he who fixed up many of the vintage instruments in the UK's own Synthesizer Museum), and has an impressive list of his clients on the site, including Hans Zimmer, for whom he built a massive modular system that covered the walls of Zimmer's studio. Bet you can't *not* click on the link that says 'and of course, never click here...'



## SEEK AND YE SHALL FIND... MAYBE

A newish search engine to try while you're browsing the 'net is *HotBot* (at <http://www.hotbot.com/>), which offers a simple, unfussy front end, reasonably quick searches, and up-to-date links. The same search terms will often yield different results when entered into different search engines, so it's worth jumping around if you're not finding exactly what you're looking for. As well as *HotBot*, try *Alta Vista* (<http://www.altavista.digital.com/>), *Yahoo* (<http://www.yahoo.com/>) and *Lycos* (<http://www.lycos.com/>), which we also mentioned last month.



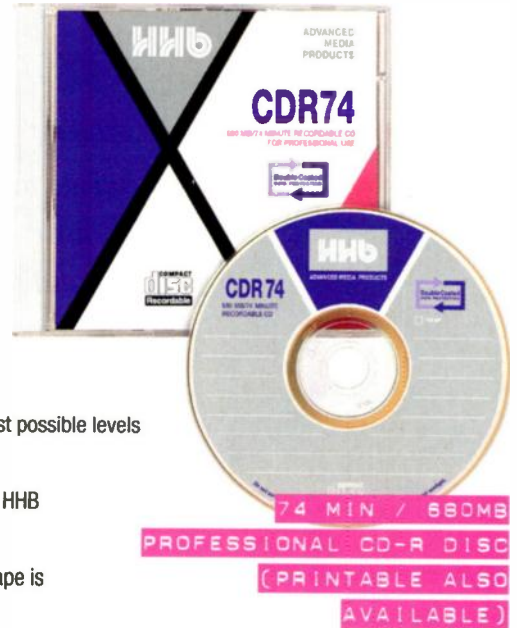
Kevin Lightner plays the Fool...



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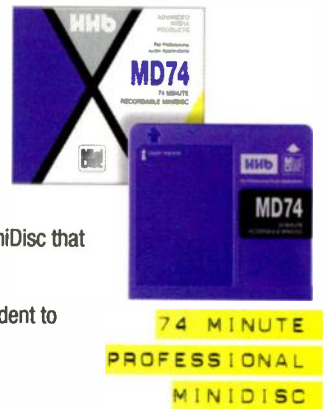
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# All Tooled Up

## PC HARD DISK RECORDING REQUIREMENTS

*The PC-owning community now seems to be split into two camps — those who already record onto hard disk, and those who would like to, but have yet to work out what equipment they really need. MARTIN WALKER guides you past the pitfalls and perils.*

**F**irst things first — don't expect to turn to the end of this feature and find a shopping list. There are now so many hard disk recording packages that it is impossible to define a perfect system that will suit everyone. What this feature *will* do is provide enough background for you to make your own informed decision, as well as pointing out freely-available utilities that allow you to check the performance of a particular hard disk recording system with an existing computer setup.

Music retailers (and the SOS offices) are besieged with phone calls from people either asking for advice on what equipment they really need, or help with problems that they encounter after buying equipment that they *thought* they really needed. The fundamental problem here is that rarely does a package get assembled by one person, either a specialist music dealer or computer retailer. Normally, either the computer has already been set up and the software added at a later date, or all the facilities are added piecemeal over

a number of months, or even years. In essence, hard disk recording simply requires a computer with a hard disk and a soundcard. However, in order to get these running side by side and in harmony, many other considerations also need to be taken into account: not just the soundcard, but the MIDI and audio drivers provided by its manufacturer, the facilities and speed of the PC and its hard disk, the way the operating system is set up, and the capabilities and requirements of the software package.

### BUT THAT'S WHAT IT SAID ON THE BOX!

In the past, many software manufacturers have been rather optimistic when specifying minimum requirements for PCs used with their package. These people would recommend a couple of tin cans and a long piece of string as the minimum requirement for a communications system, and this is partly why many people have come a cropper — they end up installing software on a machine that is not quite up to the task of running it. But probably the biggest single reason why so many people have problems is simply that the PC was never designed for hard disk recording, and particularly not with the Windows 95 operating system. Best results are often achieved by switching off some of the custom settings which normally improve performance in most other types of software, such as word processing and graphics packages. Such software tends to be optimised for quick bursts of disk activity followed by lots of computation, whereas hard disk recording requires a machine to be set up so that it performs best when continuously writing to the hard disk. Disk caches, for example, normally store the most recently accessed data in case it is requested again (giving a very rapid retrieval), but with hard disk recording, this never happens — the data is continuously being written to and then read from the hard disk, so the cache settings need to be switched off.

Ultimately, performance of any hard disk recording system is determined by the weakest link in the chain. In an ideal world, the maxim

### THRIVING DRIVES: DRIVE INTERFACE STANDARDS

There are now three main standards for PC hard disks — IDE, EIDE, and SCSI. The SCSI (Small Computer Serial Interface) standard appeared in 1981, and started life in high-end applications. It uses an interface which can address up to seven simultaneous devices, such as hard disks, CD-ROM drives, and scanners, all from a single PC interface card. Although SCSI is a high-performance interface (particularly in its latest incarnations, SCSI2 and SCSI3), it still costs more than its rivals, but has the big advantage of allowing both Macs and PCs to use the same devices. When early PCs arrived on the scene, IDE (Integrated Drive Electronics) was a cheaper alternative. By including the controller

circuitry on the hard disk itself, no separate card is required, which keeps the overall cost down. Until recently, the disadvantage of this system was a slightly lower top speed compared to SCSI devices, and a top limit of about 500Mb for hard disk devices, but also a limitation of a maximum of two devices per PC. In 1993, Enhanced IDE (EIDE) arrived, which improved performance, allowed multi-Gigabyte disk capacities and upped the possible number of devices to four. Nowadays PC SCSI cards are getting cheaper, and EIDE drives have closed the performance gap. SCSI drives are more universal, and if you need more storage, you can hook up an external drive, even if your PC is already full to overflowing.



## STICK OR TWIST? — BUYING A NEW MACHINE VS UPGRADING

If your PC is not up to the rigours of hard disk recording, you have two choices — either you sell it and buy a new and more highly-specified machine, or you attempt to upgrade the one you have. Since any PC that you buy seemingly becomes obsolete within two years, the march of time always means that you either have a PC that is just right or already obsolete. In the six or so years that I have been using PCs, I have so far got through three, and my current machine is now struggling and due for an upgrade. Buying a new machine would seem to be the easier route, albeit a more expensive one — but many

people 'bottle out' of attempting to upgrade their existing machines for fear of the whole process being too 'techie'. If you are the sort that loves to jump in with both feet, then by all means order some parts, plug them in, and hope it works. If it does, you are off to a flying start without spending too much money. But, in strict accordance with Sod's law, there will be occasions when things will simply refuse to work, and when this happens, your problems may be considerable, as your newly-cannibalised machine will not be under guarantee by anyone. I have had problems like this in the past, and consequently, I would not advise

this approach if you are at all prone to gloom and despair!

However, I upgraded my last machine using a third, compromise route, which has proved extremely successful. If you look in the *Yellow Pages* for your area, you will find that most towns have a local computer specialist retailer who makes up PCs from components to supply the small business community. Although their prices are unlikely to be as keen as the cheapest mail-order 'box-shifters', I have found it well worth paying a little bit more to gain the services of a local supplier and, consequently, a local guarantee. My current machine still

uses the monitor, keyboard, memory, and mouse from its previous incarnation. All other parts have been upgraded, and my local supplier (take a bow, Solutions of Cheltenham!) also offered a good trade-in price for the parts that they removed. I simply chose a new motherboard, processor, and hard disk from their comprehensive list and delivered my machine to them. When I returned two days later, my ailing 386SX25 had been reincarnated as a 486DX33 machine in a smart new case. I have only had a problem with this machine on one occasion, and after a quick telephone call and a personal visit totalling one hour, the faulty part had been swapped. Now that's what I call service!

'the faster the better' always applies, but in the real world, there are various measures you can take which will ensure that whatever PC you have, it is optimised as far as possible for hard disk recording. This may, in the case of a lower-powered machine, make the difference between being able to record a couple of audio tracks alongside MIDI data, and not being able to record audio at all. In the case of higher-spec machines, a simple tweak of the appropriate computer parameters may often achieve playback of an extra channel of audio if the timing is currently borderline. For these reasons, whatever the power of your PC, it is well worth spending some time optimising your machine so you can realise its maximum potential.

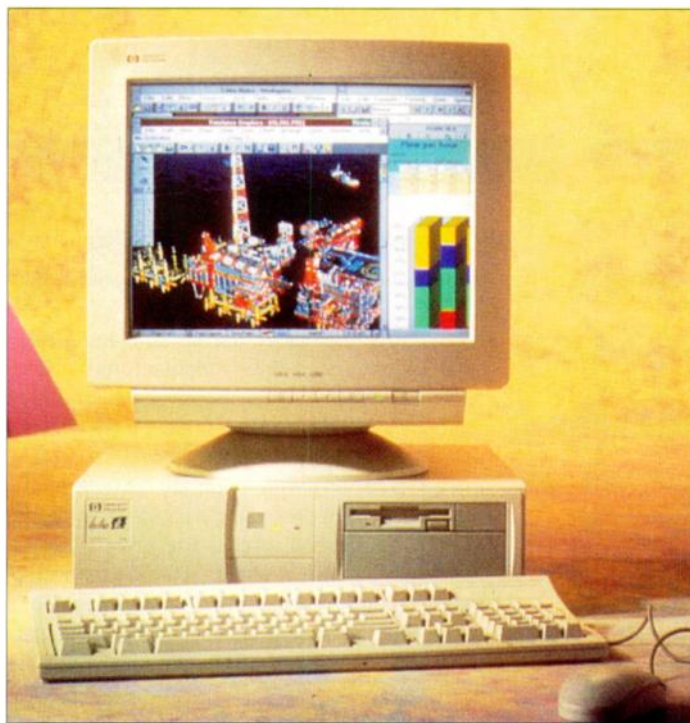
### PROCESSORS

Hard disk recording tends to fall into one of two categories — the first and easier route (albeit more expensive initially) is to use a stand-alone package such as Soundscape, which contains all of the hardware necessary for hard disk recording, including the hard disk, in a separate unit. The PC acts as the front end, and is in control, but the bulk of the processing horsepower resides within the Soundscape box, with the result that a relatively low-spec PC can be used as the front end, as the demands on it are not too great.

The second course is to use the PC's integral hard disk in conjunction with a more highly specified soundcard, and control hard disk recording entirely from the PC, using internal software such as *Cubase Audio* or *Logic Audio*. This approach requires a much more powerful PC, since everything is being done by the computer — nowadays PCs with Pentium processors reign supreme in this field. There are still plenty of perfectly usable PCs with 486 processors in use, and for stand-alone recording systems like Soundscape, such machines are perfectly adequate. However, Windows 95 is now a year old, and manufacturers are all moving over to this operating system despite their initial reluctance. I personally share Janet Cook's view (see page 176) that Windows 95 is the way forward for the PC, and despite Windows 3.1 proving to be easier to use for hard disk recording in many cases, I think most future software

packages will eventually turn up in a '95-only' 32-bit version. Even if you are perfectly happy with your current setup, I think there will come a time when Windows 3.1 software will no longer be supported, so an upgrade to Windows 95 is a question of When rather than If.

A fast 486 processor will run Windows 95 happily enough (most music software manufacturers now specify a minimum of a 66MHz 486DX2) but 16Mb of memory is a must. You can try to run with 8Mb,



*Plenty of bells and whistles — but how big an engine do you need?*

but you will not be a happy person for long! Upgrading memory from 8Mb to 16Mb with a 486 motherboard is likely to cost double the equivalent upgrade with a Pentium motherboard, since SIMMs (Single In-line Memory Modules) have now changed from 30-pin devices to a cheaper 72-pin version, and this is standard on machines with Pentium processors. If you have a 486 machine with 8Mb, think long and hard before you spend any more money on it (but see the 'Stick Or Twist?' box above for a suggested easier upgrade path).



# PC Hard Disk Recording Requirements

## HARD DISKS

There are two basic sets of choices to make before buying a hard disk for audio recording — whether you buy internal or external drives, and whether they are fixed or removable. The difference in price between an internal and external drive for a particular capacity will be about £75 (for the case and power supply of the external drive). The advantage of a removable drive, particularly the latest 1Gb devices such as Iomega's Jaz, is that each project can be completed on a different cartridge, allowing quick changes without having to back up an entire CD's-worth of audio material and then reload another project from a different DAT tape (all often in real time — ie. an hour's music takes an hour to back up). You can cart an external drive around to other studios if need be, but DATs are far more portable for this purpose if you only need to load the data in once. The main things to watch out for when shopping for a new

## FURTHER SOURCES OF INFORMATION

The Internet is an ideal place to search for further information on hard disk recording and its inherent problems. Most manufacturers now maintain a site, and many of these offer text files detailing common user problems that you may or may not have. A further advantage is that these manufacturers have been able to collate reports from users who have discovered their own solutions to particular problems. It is good to see that manufacturers view user feedback as a valuable source of further information to them. The only disadvantage is that the potential number of problems is enormous (since each PC is different), so trying out all of the published 'tweaks' can take a considerable amount of time. However, they do only need to be made once, and the potential improvements may be well worth the effort, especially if they manage to squeeze an extra track of hard disk audio out of your system. See the separate 'Internet Info' box (below left) for some handy web site addresses.

fast as a dragster, but it's capable of slogging on for hours carrying many tracks of audio without ever stalling or forgetting to pick up a new signal! The access time is also crucial, since during simultaneous recording and playback on a multitrack system, the hard disk will have to keep shooting off to read data from different parts of the disk for each playback channel, as well as jumping back to write new chunks of recorded data. Each time a new area is accessed, it takes a finite time for the drive to hurl itself to the appropriate place before starting to read or write.

Emagic helpfully specify a minimum specification for a drive used with *Logic Audio* — a 1Mb per second transfer rate and an access time of 10 milliseconds. Along with a minimum 90MHz Pentium processor and 16Mb of memory, this will ensure a good performance. The company claim to have undertaken extensive PC testing to ensure that these figures are realistic, so that you can have confidence that such a system will not fall over. Other software manufacturers such as Steinberg (*Cubase Audio*) and IQS (*SAWSAW Plus*) make utilities freely available which you can run on an existing machine to obtain a readout of the approximate number of simultaneous tracks possible on your machine. In fact, these programs will give you a fair idea of how your PC will perform with any hard disk recording package (see the screen dumps above left and on page 122).

## SOUNDCARDS

Most software will work with any 16-bit soundcard, as long as it uses a Windows Multimedia driver. In the past, several software manufacturers have squeezed more performance out of their packages by writing custom-tweaked MIDI or audio drivers for popular devices. For instance, Steinberg supplied the initial versions of *Cubase for Windows* with their own MPU401 driver. This talked to the MIDI interface directly, without adding any overhead by using the

Drive	Soundcard	48 KHz - 44 KHz	32 KHz - 32 KHz	22 KHz - 22 KHz	11 KHz	
C:\	Galaxy Wave Play Back	2	2	3	4	8
		1	1	1	2	5
						Mono
						Stereo
C:\	UltraSound Waveform Output	1	2	2	4	8
		1	1	1	2	5
						Mono
						Stereo

**Cubase Performance Utility — time for an upgrade on this machine!**

hard drive are sustained transfer rate and access speed. Commonly, drive manufacturers quote speed using burst access rates. These rates are the disk equivalent of speeds quoted for dragsters, and are a fine guide to performance if the drive is intended for use with 'ordinary' software, ie. business or word processing packages, which, as already mentioned, access the drive in short read/write bursts. For audio recording purposes, the sustained transfer rate is more important, which could be likened to the kind of rate you get from a double-decker bus — the bus is not as

## INTERNET INFO — SOME USEFUL URLS

Here's a list of some Internet sites which I have found useful, and which you might like to check out. This list is not intended to be a definitive resource, obviously! For a more complete attempt at gathering together sites of interest to musicians, check out Derek Johnson and Debbie Poyser's 'Surfin' Safari' articles in this and last month's *SOS*.

- CREATIVE LABS UK (SoundBlaster)  
<http://www.creative-labs.co.uk>
- DAL (Card D Plus)  
<http://www.digitalaudio.com>
- DIGIDESIGN  
<http://www.digidesign.com>
- EMAGIC USA (*Logic Audio*)  
<http://www.emagicusa.com>

- HARMAN (*Cubase Audio*)  
<http://www.harman.co.uk>
- IOMEGA (Jaz Drive)  
<http://www.iomega.com>
- IQS (*SAW*)  
<http://www.iqsoft.com>
- STEINBERG US  
<http://www.steinberg-us.com>
- TURTLE BEACH (Soundcards)  
<http://www.tbeach.com>



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## CRUNCHY NUT DRUM LOOPS

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A superbly-played collection of grooves from drummer Jim Carmichael (Freak Power, K-Creative etc.) Played with vibe in mind, these loops are encrusted with funky substance and fortified with extra compression to start your day in the positive way. *"Damn fine drum loops played by the future of Brit funk."* (Future Music, UK) *"A must for funkateer samplers... these 'monsters' deserve to find their way into your sample collection"* (The Mix, UK, June '96)



## JUNGLE WARFARE

Audio CD: £59.95

If you need Jungle this is unmissable. • Loops • Rolls & fills • Perc Kits • Pads & Chords • Bass • FX • Vocals. *"Excellent fidelity, balance & punch, & variation in feel & sound... there's no serious competition. Rated 5 stars out of 5"* (Sound on Sound, UK). *"Kicking grooves... a wide range of styles... highly useful... AS UP-FRONT AS YOU CAN GET."* (The Mix, UK). *"Jungle Warfare gives you just about everything you need to survive in the remix rain forest."* (KEYBOARD USA)



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Fields Of Motion utilises raw and organic sources for the creation of rhythms and soundscapes which will appeal to everyone looking for a creative edge. Loops are accompanied by the individual components allowing infinite variation, plus lots of exciting single hits and ambiances. All material is 100% original, gathered from unlikely sources such as theme parks, factories and industrial sites. Fields of Motion is for the kind of samplers that hunger for inspiration to take their music into the 21st century.



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• **INTERFACE DANCE.** This fantastic all-round dance collection is proving to be a big hit! Extremely well-organised, it encompasses Nu-NRG/Euro, Techno/Industrial, House/Garage, R&B/HipHop, Jungle and Hardcore. Drum Loops, Hits, Synth & Bass multisamples, Vocal Shouts/ad-libs & FX, TB303 basslines, Horn hits & stabs, Piano, Sax & Hammond, Guitar riffs, N/C Raggga vocals and more... *"An essential for any dance musician"* (Future Music, UK).  
• **INTERFACE GUITAR (NEW!).** The same superb production & organisation as I.D. - a first class professional library of guitar riffs and single samples. The many classic guitars featured, and performances of the highest calibre, make this unmissable.



# PC Hard Disk Recording Requirements

## Disk Read Test Results



Total Bytes Read = 5013504

Total Time In Milliseconds = 4393

Actual Transfer Rate = 1141 KBytes/Sec

Values Needed For Solid 44.1K Stereo MultiTracks

500 - 1000 KBytes/Sec = 1 To 2 Tracks

1100 - 1900 KBytes/Sec = 3 Tracks

2000 - 4000 KBytes/Sec = 4 Tracks

OK

**SAW HDspeed utility — try before you buy.**

- ▶ Windows 3.1 interface, and was thus more efficient and less prone to clogging when dealing with vast amounts of controller or SysEx information. Nowadays, each hardware manufacturer provides a set of drivers that hook onto Windows in a standard way, so that every software package can access them all.

One factor that many people find out the hard way is that only a few soundcards are capable of recording and playing back simultaneously. This is known as Full Duplex operation, and is vital if you need to hear previously-recorded tracks whilst you record additional ones. The default for many lower-priced cards is Half Duplex, which translates as 'capable of *either* recording or playback, but not both at once'. If your card is one of these, you can still work around the limitation if you play back MIDI sequenced tracks as well; these will help to keep your recording 'in sync'. Subsequent playback will mix all previously-recorded tracks down to a single stereo output. Alternatively, you can use multiple soundcards, playing back tracks on one whilst recording on another. The main disadvantage with this method is that you have to go through the initial procedure of setting up several soundcards in one PC — which is never an easy thing to do!

Sometimes, new drivers are issued that add Full Duplex operation to an existing card. Creative Labs have recently issued Full Duplex drivers that work with the SoundBlaster 16 and AWE32 range, but these do have the limitation of 8-bit playback whilst recording with 16-bit resolution. A selection of soundcards are recommended by most software manufacturers as giving good quality audio

performance. These include the SoundBlaster 16 and AWE32 in its several incarnations, a selection of Turtle Beach cards including the Tahiti, Multisound and TBS2000, and more upmarket devices such as Digidesign's Audiomedia III and Session 8 (both with Wavedriver), and DAL's CardD Plus. Until most people hear the audio quality of these latter cards, it is difficult to justify their much greater cost, but if you have ever heard the buzzes and hiss that can occur when you use a budget card (partly resulting from interference with the rest of the PC circuitry), I suspect that you would not want to master an entire album using such cards.

## WINDOWS 95 USER TIPS

Finally, here are a couple of tweaks for Windows 95 users that may help to optimise a hard disk recording system. There are a host of suggestions that may or may not help if you get clicks, pops, and hiccups on record or playback, but the following two are recommended by almost all manufacturers, and should therefore be the first port of call.

“Many software manufacturers would recommend a couple of tin cans and a long piece of string as the minimum requirement for a communications system.”

## • READ AHEAD OPTIMISATION

This is a mechanism used by Windows to speed up disk access by reading data from disk in larger chunks than are actually asked for, to anticipate the next access. Depending on your system, you may get improvements by selecting a different setting, or even by turning the read ahead

## BASIC REQUIREMENTS FOR HARD DISK RECORDING — SUMMARY

	ABSOLUTE MINIMUM	SENSIBLE MINIMUM	RECOMMENDED
PROCESSOR:	486DX2 66MHz	Pentium 90MHz	Pentium 120MHz
RAM:	8Mb	16Mb	16-32Mb
HARD DISK SIZE:	500Mb	1Gb	1-2Gb separate
SUSTAINED DATA TRANSFER RATE:	1Mb/second	1-3Mb/second	3-8Mb/second
AUDIO DRIVERS:	Half Duplex	Full Duplex	Full Duplex Mono
LIKELY NUMBER OF TRACKS:	1-2	4-8	8 or more

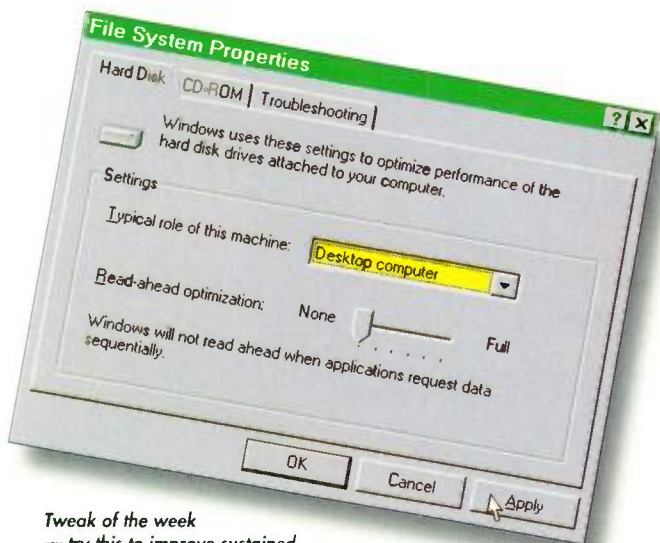


# MASS TECHNOLOGY



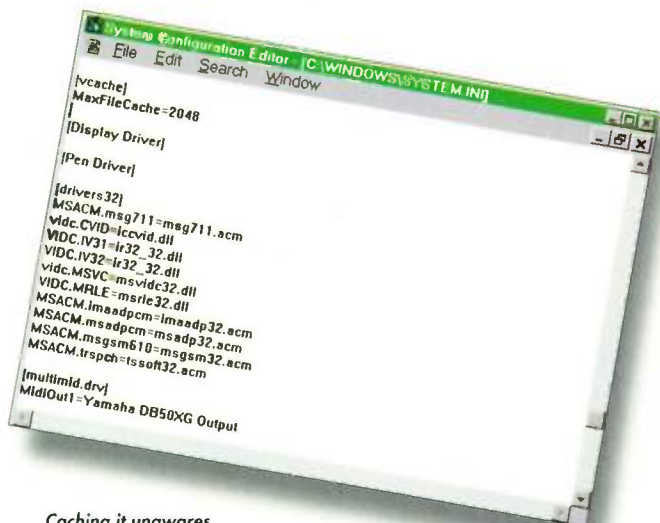
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The MASS Technology range is designed to match most popular studio monitor speakers and will easily interface with all leading mixing consoles and includes both XLR and 1/4" Jack/Phono connections. Our amplifiers have special 'Pin-Fin' heatsinks which efficiently dissipate heat, this means that (apart from the MASS 1000) our amplifiers are 'Fan free' - this eliminates the noise and interference which can occur on some fan cooled amplifiers. Manufactured with full chrome front panels and "classic look" VU's on the larger models, our amplifiers look great and sound even better!



**Tweak of the week**  
— try this to improve sustained hard disk recording speeds.

mechanism off altogether. From within the Windows 95 Control Panel menu, select System. Click on the Performance tab and then on File System. Now drag the slider to a new position. I tried settings of 0, 16, and 32K on my system, as well as the default setting of 64K. Running *HDspeed* after each change showed a 48% variation in read speed, but in my case, the best result was using the default setting of 64K (see the above screen grab).



**Caching it unawares**  
— stopping excessive hard drive accesses.

#### • SETTING A CACHE LIMIT

The second tweak involves manually adding an entry to the SYSTEM.INI file under the already existing entry [vcache]. Windows has a cache system that holds recently-used data in case it is needed again within a short period of time. Unfortunately, as more disk accesses are made, this cache becomes larger, and eventually program data has to be temporarily saved out to disk to make room for the ever-growing cache. To stop this interfering with the continuous disk access required for hard disk recording, try the following. Using a text editor such as *Sysedit* (provided with Windows), load up SYSTEM.INI and add a new line immediately beneath [vcache] which reads 'maxfilecache=2048'. This ensures that the cache will never grow bigger than 2Mb, and will thus not generate more disk activity than is needed (see the SYSTEM.INI screen grab above). Good luck!

SO5

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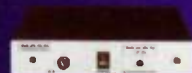
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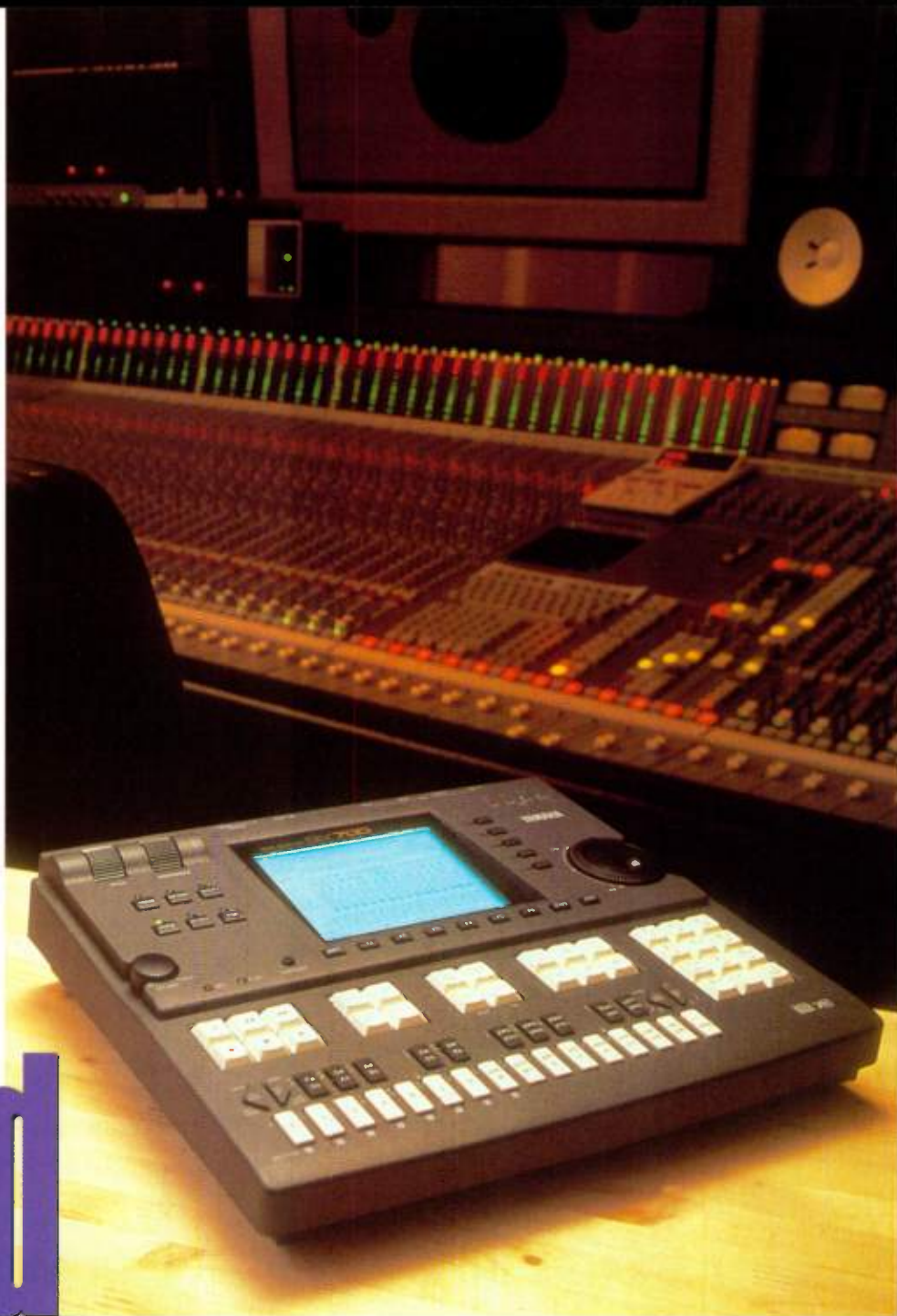
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*PAUL WIFFEN, a ferocious advocate of hardware sequencers for many years, takes a look at Yamaha's new flagship sequencer and finds himself reminiscing about the way things were (and could be again).*



# Hard

YAMAHA QY700 MUSIC SEQUENCER

# Wired

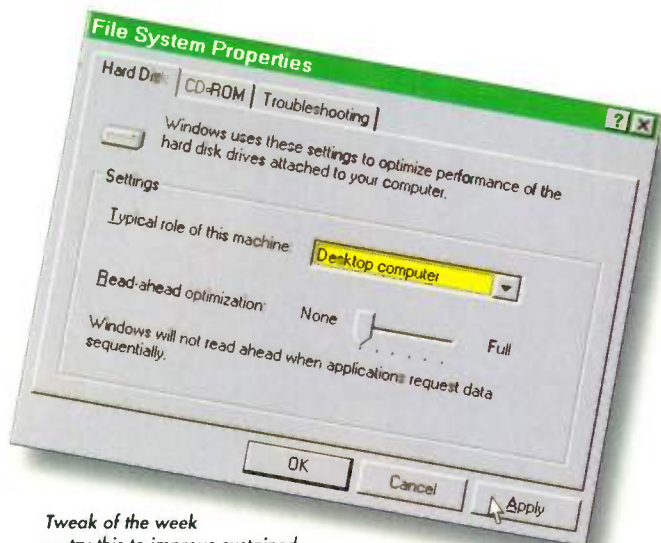
Taking the new Yamaha QY700 out of its box, I experienced a strong sense of *déjà vu*. Fortunately for a cynical realist like myself, this was no suitable subject for a Mulder/Scully investigation but a simple case of mistaken identity. Over 10 years ago, a pair of Yamaha products entered my life and changed the way I thought about music recording forever: the TX816, a 3U

rackmount module containing the equivalent of eight DX7 synths, and its companion product, the QX1 sequencer. The latter was a similar size and weight to the QY700 and also featured typewriter-style keys labelled with musical notes and expression marks like 'ff' and 'mp'. Small wonder, then, that it rang all sorts of bells in my head. I had used the QX1 throughout the mid-'80s on many of my most important sessions as a programmer, until Roland's MC500 came along and halved the weight I had to carry to each session. These were the halcyon days of MIDI sequencing, when nobody expected you to use a computer, when you were judged solely on the musical results you produced and not whether you arrived on a session with the right brand of word processor.

Of course, things have come a long way in 10 years. Software companies like Steinberg and Emagic have spent tens of thousands of man-hours creating sequencing packages which allow you to edit MIDI data (and latterly, digital audio) on large monitor screens in half a dozen ways,

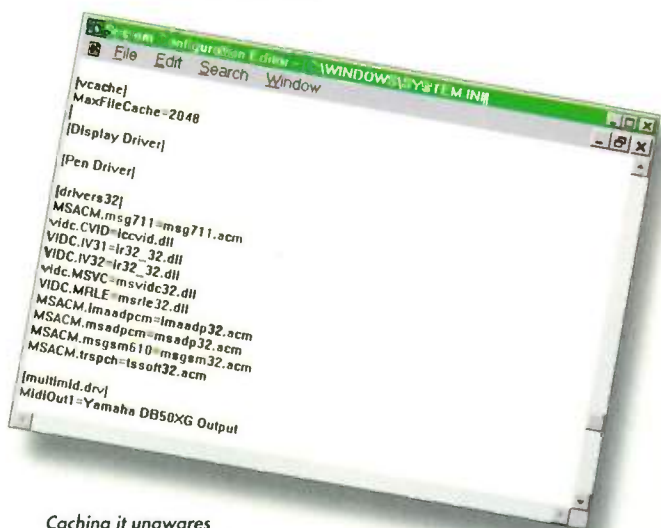


# MASS TECHNOLOGY



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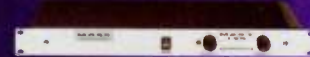
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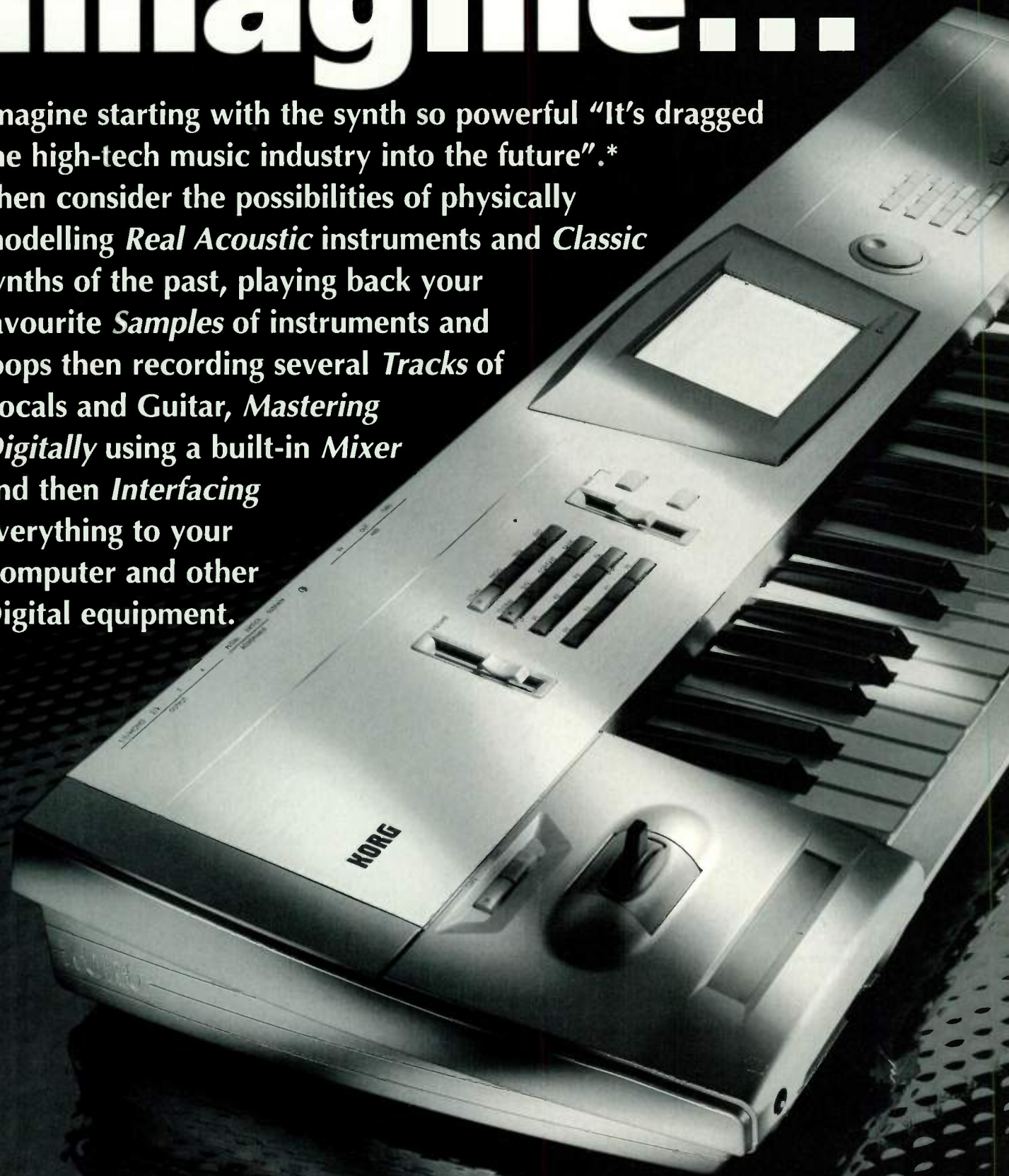
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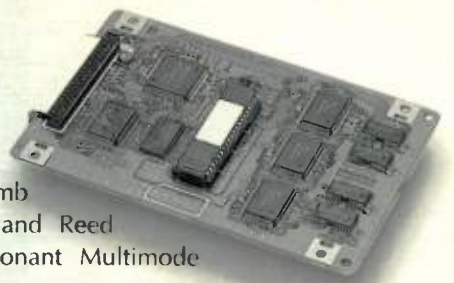
You have just imagined your options with the Korg Trinity.

\* As predicted by Sound on Sound Magazine, Jan. 1996.



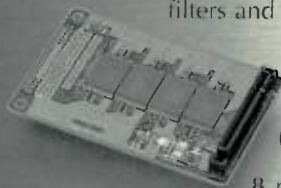
## Solo TRI Option

This is a complete Prophecy sound engine. Analogue, Ring, Cross, Sync, VPM and Comb synthesis plus Picked, Horn and Reed physical modelling. Two Resonant Multimode filters and 7 extra effects.



## PBS TRI Option (Playback sampler)

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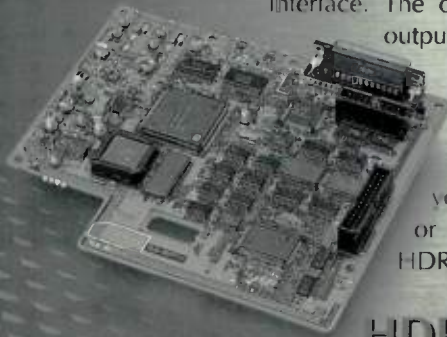
## Digital I/O TRI Option

This enables you to connect Trinity digitally to any device with an ADAT Format digital interface. The option features an ADAT Digital output and a Wordclock input.



## SCSI TRI Option

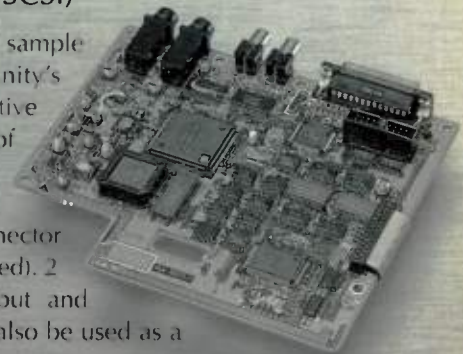
This board adds a SCSI port to the Trinity enabling you to connect the Trinity to an external hard drive or CD ROM drive. (This option is included in the HDR TRI Option.)



## HDR TRI Option

(Hard Disk Recorder with SCSI)

16 bit Hard Disk Recorder @ 48K sample rate. Synchronised to the Trinity's internal Sequencer. Non-destructive editing and automated control of Volume, Panning, EQs and effects sends. 2 track record and 4 track playback. SCSI connector for external hard drive (not supplied). 2 analogue inputs and SPDIF input and output. The SPDIF interface can also be used as a Backup Utility.



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Trinity ProX 88 note weighted action

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*PAUL WIFFEN, a ferocious advocate of hardware sequencers for many years, takes a look at Yamaha's new flagship sequencer and finds himself reminiscing about the way things were (and could be again).*



# Hard

YAMAHA QY700 MUSIC SEQUENCER

# Wired

Taking the new Yamaha QY700 out of its box, I experienced a strong sense of *déjà vu*. Fortunately for a cynical realist like myself, this was no suitable subject for a Mulder/Scully investigation but a simple case of mistaken identity. Over 10 years ago, a pair of Yamaha products entered my life and changed the way I thought about music recording forever: the TX816, a 3U

rackmount module containing the equivalent of eight DX7 synths, and its companion product, the QX1 sequencer. The latter was a similar size and weight to the QY700 and also featured typewriter-style keys labelled with musical notes and expression marks like 'ff' and 'mp'. Small wonder, then, that it rang all sorts of bells in my head. I had used the QX1 throughout the mid-'80s on many of my most important sessions as a programmer, until Roland's MC500 came along and halved the weight I had to carry to each session. These were the halcyon days of MIDI sequencing, when nobody expected you to use a computer, when you were judged solely on the musical results you produced and not whether you arrived on a session with the right brand of word processor.

Of course, things have come a long way in 10 years. Software companies like Steinberg and Emagic have spent tens of thousands of man-hours creating sequencing packages which allow you to edit MIDI data (and latterly, digital audio) on large monitor screens in half a dozen ways,



with all sorts of cycle modes for recording and overdubbing. Few people, it seems, notice the timing problems which can occur when using mass-market computers designed for DTP and business software for a timing-critical operation like replaying large amounts of MIDI data, especially with operating systems that prioritise screen redraws and system calls over the transmission of MIDI events. Occasionally, a courageous software programmer breaks cover to admit the problem (usually on the Internet, which his lords and masters haven't learned to use yet) but the normal response whenever you raise this problem is "buy a faster computer"!

As a result of the spread of this mindset, hardware sequencers have been in decline throughout the past decade, despite Roland and Yamaha continuing to produce cheaper and cheaper models offering more and more features. What has kept alive the hardware sequencer is the live performance MIDI File Player market. But unfortunately, as this market becomes ever more indistinguishable from karaoke, hardware sequencers have grown more and more simplistic, especially from the user's point of view. The addition of General MIDI sound capabilities within the units themselves may have made them more useful to cabaret/Top 40 musicians as well as ideal for MIDI karaoke, but it has done nothing to endear them to producers of original music or professional players.

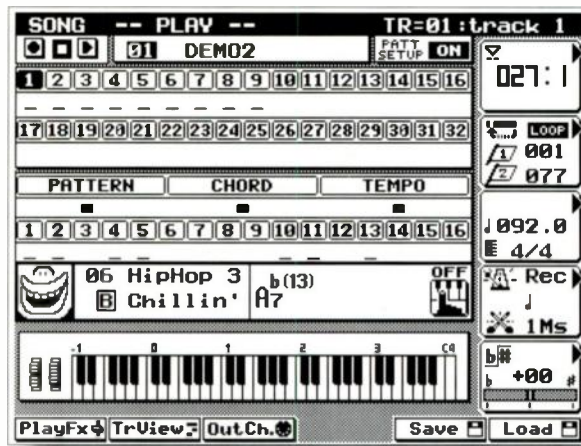
## ONE STEP BEYOND

A few years back, Yamaha discovered a new twist to the hardware sequencer in a neat little unit called the QY10. This allowed anyone with musical aspirations to create songs and try out arrangements on the move. By appealing to those whose primary criterion was portability, the QY beat the computer-based systems hands down. Suddenly Yamaha had a big hit on their hands and followed it up with increasingly larger units with more features, patterns, etc (and not surprisingly, bigger model numbers and price tags).

So you might be forgiven for deducing from the model number that the QY700 is a super-deluxe, portable Walkman-style arranger. Well, it might be if you are a Gladiator who works out three times a day and can carry around its 10lb+ weight, together with a car battery to provide power (no battery compartment, you see). But to dismiss the QY700 as just another model in a successful series would be to miss the most exciting side of the machine. In fact, I would like to suggest that Yamaha change the model number to 'QX700' to highlight its true pedigree and position it as the pinnacle of hardware sequencer design (or as Saddam Hussein might put it, 'the mother of all hardware sequencers').

## EYE-CATCHING

Yamaha have played a trump card which might, just might, grab the attention of the majority of musicians who buy with their eyes not their ears — namely the largest, brightest display screen I have ever seen on a musical instrument. In fact, I am pretty sure that it's the same blue screen Yamaha use on their highly desirable 02R digital mixer (because the screen dumps in this article are



The QY700's main page: yes, this is what you see on that display screen...

produced by the same method of downloading via MIDI to a Macintosh). It can be read under the most difficult of conditions and is large enough to feature the kind of editing displays normally found only on computer sequencers. This backlighting is almost certainly why the QY700 can't be used on batteries, as the current drawn would probably see off half a dozen Duracells in under five minutes. Nevertheless, the size and clarity of display makes the sacrifice of portability worthwhile. Certainly, with a display like this on the unit, no producer or engineer is going to make sarcastic comments about you being behind the times because you don't use a computer to sequence on (as happened to me many times in the late '80s).

What this fantastic display means is that there is finally a hardware sequencer available which can depict the contents of your sequences as events in a piano-roll display, as a list of events with more than one or two visible simultaneously, and can even display an overview of tracks and the places where data is recorded on them in the manner of *Cubase* or *Logic* (although the closest comparison is the *Passport Master Tracks* main window, in that it shows complete bars with contents rather than smaller (or longer) subsections). The QY700's main Song Playback window looks a little like *Creator/Notator* turned on its side (more like Steinberg's *Pro 16/24* actually, for those with long memories).

So does this spell the end for computer-based sequencers? Hardly! First of all, the QY700 can't access the Internet, run games software or act as a fax machine, so most musicians will probably ▶

**pros & cons**

**YAMAHA QY700 £999**

**pros**

- Rock-solid 480ppqn timing.
- Non-volatile memory.
- Biggest, brightest ever display on hardware sequencer.
- 110,000-note, 20-song memory (avoids onstage loading).
- Arrange window, piano roll and list editors.
- GM-compatibility with XG flexibility.
- Excellent reverb, chorus and third effects.

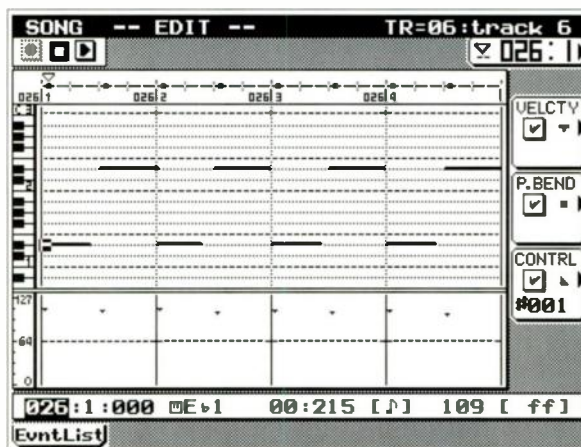
**cons**

- Inability to switch between edit screens during playback.
- Limited to two MIDI Outs.
- No Score Edit screen.

**summary**

Offering 32-part multitimbral sounds and three built-in effects, the QY700 is simply the best hardware sequencer ever made.

**SOUND ON SOUND**



The Piano Roll editor.



# Yamaha QY700

► reject it out of hand. But getting off my soapbox for a moment, there are several aspects of this machine which aficionados of computer-based systems will spot straight away (I don't necessarily consider these to be valid criticisms of the QY700, merely things it doesn't do). You have to decide for yourself whether you need these features or not.

## WHERE AM I?

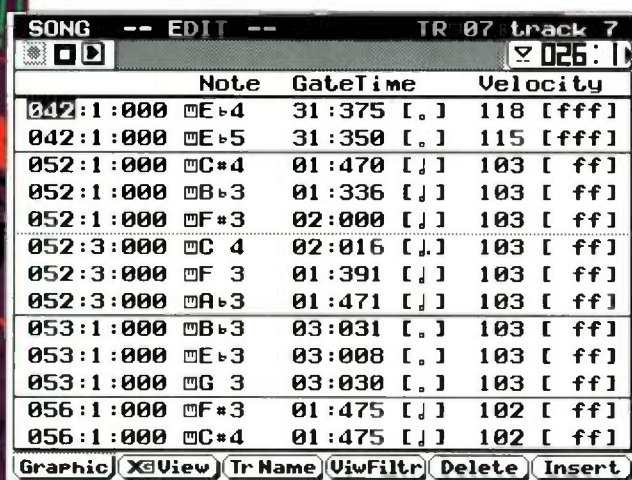
The most immediate thing you miss from recent software-based sequencers is a moving 'now' line in any of the edit or playback screens, continuously updating you on the position you have reached in the song. Of course, *Creator*, *Notator* and *Pro 24* users will not miss this, because they have never had it, but I find it unlikely that the users of

without it for so long) found myself disorientated for a while. It may be true that you don't miss what you have never had, but it is also the case that once you have grown used to a feature it is dashed difficult to manage without it.

So how good is the QY700's timing? The answer, you'll be pleased to hear, is 'too good for these ears to fault!' Whilst I would not claim to have the most sensitive ears to timing problems, I can certainly hear a difference between the solidity of the QY700 and that of most sequencing packages on the market. In fact, there was only one moment in the whole time I spent with the QY700 where I noticed something flaky, and that was a Phil Collins-style drum fill in one of the demo sequences provided on disk. On investigation, this turned out to be human frailty because it was programmed like this. In fact, the QY700's 1/480th of a quarter-note resolution had perfectly captured the inexactness of the original playing, and I was easily able to tighten this up with the Quantisation Strength parameter (see later).

Once used to the lack of a 'now' line, the experienced user of modern sequencing software will soon notice another difference. Whilst the QY700 is running, you cannot change edit screens, or even the track you are editing, using the Mode keys. To do this, you must first stop the transport, change screen or track and then press Play again. This may also be to conserve the integrity of the MIDI timing, as screen redraws and track selection can lead to timing errors on software-based systems (some more than others). Whatever the reason, I feel it may prove another major turn-off for those used to zipping around their software sequencer, tweaking a note on one track, opening an editor on another, all without the playback being interrupted (I remember this was what I found so impressive about *Cubase* when I first saw it demonstrated in an Anaheim hotel suite).

Those with a traditional musical education, perhaps attracted to the QY700 by the numerous keys labelled with musical notes, Italian



SONG -- EDIT --	TR 07 track 7	
Note	GateTime	Velocity
042:1:000	E♭4 31:375 [.]	118 [fff]
042:1:000	E♭5 31:350 [.]	115 [fff]
052:1:000	C#4 01:470 [.]	103 [ff]
052:1:000	B♭3 01:336 [.]	103 [ff]
052:1:000	F#3 02:000 [.]	103 [ff]
052:3:000	C 4 02:016 [.]	103 [ff]
052:3:000	F 3 01:391 [.]	103 [ff]
052:3:000	A♭3 01:471 [.]	103 [ff]
053:1:000	B♭3 03:031 [.]	103 [ff]
053:1:000	E♭3 03:008 [.]	103 [ff]
053:1:000	G 3 03:030 [.]	103 [ff]
056:1:000	F#3 01:475 [.]	102 [ff]
056:1:000	C#4 01:475 [.]	102 [ff]

Graphic X View Tr Name VwFiltr Delete Insert

### The Event List editor.

*Cubase*, *Logic* and other modern sequencers will be prepared to be weaned away from this reassuring line which shows you exactly where you are in the song/track. It is particularly useful when in piano roll-style edit to help you identify offending notes quickly and with confidence. Similarly, in the QY700's event list editor, the notes neither scroll through nor are highlighted as they pass.

Now it may be that these very features are what place the extra burden on computer-based systems. I have noticed that the playback timing of several Mac and PC sequencers goes awry when the screen needs constant redraws or re-listings. It may be that Yamaha found that the timing of the QY700 was affected by such features and wisely chose to omit them. Or it may just be that because a hardware sequencer has never had a moving 'now' line before, they didn't put one on the QY700 (although it seems odd to have taken so much other inspiration from software-based machines and not to have borrowed that concept as well).

Whatever the reason behind this omission, I think it will cause most people with any experience of '90s computer-based sequencer packages to balk at the first fence. It is so much a part of modern sequencing that even I (who managed

“...there is no doubt in my mind that the QY700 is the best hardware sequencer ever made.”

abbreviations for MIDI velocity (*ppp*, *mf*, etc), might well expect there to be a screen which shows you musical notation, another standard feature in all but the cheapest of sequencing software. Sadly, this is not the case. The reason for this is more obvious; whilst the resolution of the QY700's screen is great for rectilinear objects (bars representing phrases and note lengths or



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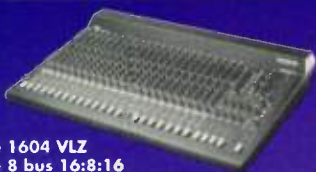
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Yamaha Pro-Mix01  
Yamaha 02R



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Mackie 8 bus 16:8:16  
Mackie 8 bus 24:8:24  
Mackie 8 Bus 32:8:32  
Mackie sidecar  
Soundcraft Ghost



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Mackie SR24-4 24:4  
Mackie SR32-4 32:4  
Mackie SR 40:8:3

Behringer MX8000 Eurodesk  
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Digitech Vocalist 2  
Digitech Studio vocalist  
Digitech TSR-6  
Digitech Studio Quad



Behringer Dualflex 11  
Behringer Ultraflex 11  
Behringer Bassflex  
Behringer Edison

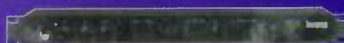


Aphex 106 easy rider 4 channel compressor  
Aphex 107 Tubessence Mic Preamp  
Aphex 107

Behringer MX1200 Autocom  
Behringer SR1000 2 channel de-noiser  
Behringer SNR2000 multiband de-noiser  
Behringer Multicom 4 channel gate  
Behringer XR2000 intelligate  
Behringer Autoquad 4xgate  
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Behringer Suppressor  
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Mutronics mutator  
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Lexicon PCM90  
LA Audio 4C quad compressor  
LA Audio 4G



Alesis midiverb 4  
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Alesis Quadverb 2



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Roland VS880  
Soundscape for PC 55HDR1  
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Akai DR4  
Akai DR8  
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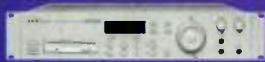


Marantz CDR CD recorder CDR 615  
Yamaha DC-R recorder

Fostex D5  
Panasonic SV380  
Panasonic SV4100  
Tascam DA20  
Tascam DA30 Mk11

## SAMPLERS

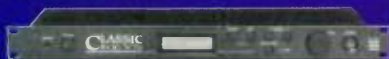
Emu E5132  
Emu E64  
EMU E 64  
Kurzweil K2000  
Kurzweil K2500  
Kurzweil K2500X  
Kurzweil PC88 master keyboard



Akai S2000  
Akai S3000XL  
Akai S3200 XL

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Korg Trinity



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Emu Proteus/2  
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# Yamaha QY700

► sometimes get on a software program whenever it is busy doing something else) but it can slow down your working to have to keep stopping the sequencer to change tracks or edit screen and then restarting.

## MICROKEYBOARD

Obviously, you can use a MIDI keyboard connected to either of the QY700's two MIDI Ins to input MIDI notes, controller information and so forth, but Yamaha haven't assumed that you will always have something suitable to hand when inspiration strikes. That's why they've included what they refer to as the Microkeyboard — over two octaves (E-F) worth of rubber pads laid out and coloured exactly like the notes on a musical keyboard. Whilst these are not velocity sensitive (remember, the secondary function of the numerical keypad allows you to set dynamics

QY700. If you had told me that pitch/mod wheels placed like this could have been so comfortable and easy to use, I would have been sceptical, but they really are. In fact, they out-perform many of the new-fangled controllers which are cropping up on the latest generation of synthesizers.

The rubber keys are also used for step-time input of notes in conjunction with the third function of the numerical keyboard, note length (illustrated with normal and triplet versions of demi-semi-quavers through to minims and whole notes). Within minutes, the whole Yamaha step-programming technique which I used all those years ago had come flooding back (it's like riding a bike: you never forget!).

Of course, it is completely impractical for live polyphonic playing, but the solution to this on an unaccompanied QY700 is at hand in the secondary

function of the Microkeyboard, that of inputting chord root and types. The lower octave covers from E up to D# while the upper one lets you decide chord type from Major (M) and Minor (m) through simple 7ths and then add flattened or sharpened 5ths, 9ths and 13ths. These are used in conjunction with a special Chord Track, which draws its inspiration from the auto-accompaniment school of keyboards. Before you sneer and dismiss this facility (as I was inclined to do), remember that as well as using the 3,876 phrases provided, you can enter 99 phrases of your own for each style you create. So you can impose your own musical personality on the auto-accompaniment section, rather than

*Amp Simulator effect setup.*

simply adopting the Yamaha programmers' styles (excellent though they are!).

The auto-accompaniment section also lets you increase the number of tracks the sequencer can generate from 32 to 48 as you create patterns from phrases which can cope with all manner of chord changes, even holding over pedal bass notes other than the chord's root note. In fact, the only criticism I have of this aspect of the machine is that the supplied demos occasionally display music theory inconsistencies like EM7 over A<sub>b</sub> (surprising when the keys on the keyboard can input either G# or A<sub>b</sub>). Surely it wouldn't be too difficult for the software to know that in E it is always G#?

Once you have created or selected the phrases for your 16 auto-accompaniment channels, all you have to do is record the Chord Track; this controls the transpositions and changes to the phrases, so that you don't end up with harmonic inconsistencies between your 32 recorded tracks and your 16 auto-accompaniment parts. You can then link all your patterns together into a song, complete with the ability to name sections for easy identification within the song structure.

As far as recording the 32 normal sequencer tracks is concerned, there are four recording modes

## QY700 FX FOUNDRY

### REVERB TYPES

- Hall 1 & 2
- Room 1-3
- Stage 1 & 2
- Plate
- Delay L,C,R
- Delay L,R
- Echo
- Crossdelay
- ER1 & 2
- Gate Rev
- Revers Gate
- Karaoke 1-3
- Thru
- Chorus 1-4
- Celeste 1-4
- Flanger 1-3

### CHORUS TYPES

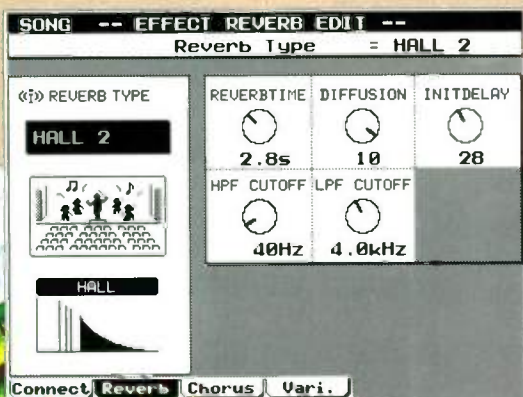
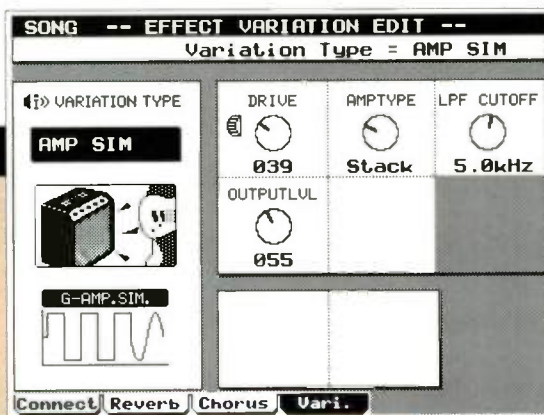
- Chorus 1-4
- Celeste 1-4
- Flanger 1-3

### THIRD PROCESSOR

### EFFECTS

- Hall 1 & 2

- Symphonic
- Rotary Spker
- Tremolo
- Auto Pan
- Phaser 1 & 2
- Distortion
- Overdrive
- Amp Sim
- 3-band EQ
- 2-band EQ
- Auto Wah



*Reverb setup.*

jam using the QY700's Microkeyboard. All the old 'hammer-on' style of playing, which you can only do on monophonic keyboards, came back and I was suddenly having more fun than anyone has a right to whilst engaged in the deadly serious work of reviewing.

All this was helped by the thoughtful provision of pitch and mod wheels on the back edge of the



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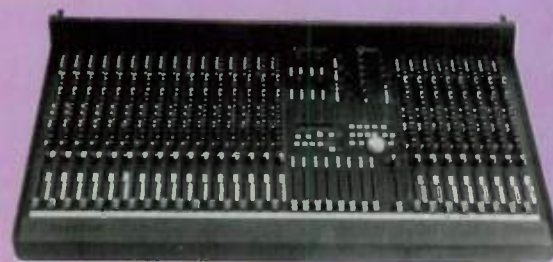
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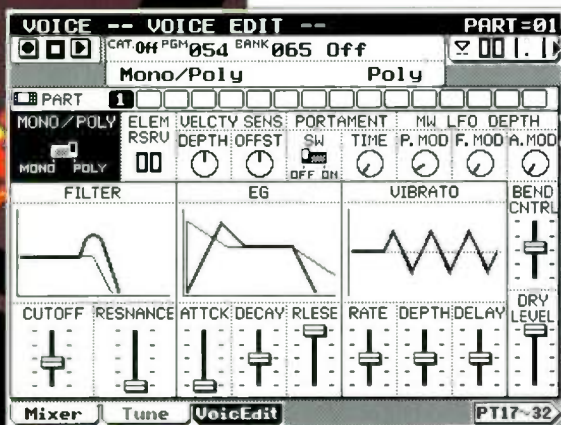
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# Yamaha QY700

► available: Replace, Overdub, Punch and Step. These terms are self-explanatory and allow as much variety in recording practice as any software-based sequencer I have come across. There is also a Tempo Track, which allows changes in BPM (beats per minute) to be recorded from numerical input or the data dial. This actually means that you can record smooth *accelerandi* and *decelerandi*, something I have always struggled to create with *Cubase*. Each bar (or 'meter', as Yamaha call it) can have its own time signature. Quantisation features not only allow you to select the musical interval around which the quantisation is based (from 16th-triplet up to quarter-note) but also the Strength of the quantisation as a percentage (ie. how much the notes are moved towards the quantisation positions). 100% means all notes are moved onto the quantisation values, while 50% means that they will be moved halfway between their original positions. Whereas a lot of these features are fairly standard on many software sequencers, this is the fullest implementation of such editing capabilities I have ever come across on a hardware sequencer.

The Voice Edit screen.



## QY700 AS SOUND MODULE

We have only alluded so far to the fact that the QY700 Music Sequencer, despite its name, is also a GM/XG voice module. This side of the machine expands on the QY concept, allowing you to put together musical ideas even when you don't have the rest of your MIDI gear available.

By now most of us are familiar with the limitations

of General MIDI (GM). Yamaha's own system, XG MIDI, is designed to expand the flexibility and expressiveness of General MIDI by offering increased voicing and extra parameter control. Whilst retaining backwards compatibility with GM (so you can play all MIDI Files on the QY700), it means you can achieve greater musicality in sequences with XG compatible modules. On the QY700, this extra subtlety of tone colour and control is available via the internal Tone Generator. Whilst we do not have the space here for a full review of the features and capabilities of XG, Yamaha supplied me with several pairs of comparative musical sequences, in both GM and XG formats, and the difference between the two was substantial. The XG versions had so much more life and feeling than their GM counterparts.

Such enhanced control is available on the QY700 via Voice Mode. This lets you access four different screens: Mixer, Tune, Voice Edit and Drum Setup Edit. Mixer lets you select the bank and program of the 32 available parts, their volume, pan, reverb, chorus and third effect amounts. Tune gives you tune and transpose amounts. Voice Edit is the most complex screen, packing a huge number of parameters into the screen, complete with envelope, filter and vibrato graphics to help you understand the way changes affect the voice. Parameters available include mono/poly switch, reserved polyphony, velocity sensitivity, portamento, LFO-pitch/filter/amp, filter cutoff and resonance, envelope attack/decay/release, vibrato rate/depth/delay, and pitch-bend amount.

Drum Setup Edit comes a close second to Voice Edit for packing a lot into one screen, allowing you to separately set the amount of reverb, chorus and third effect for each drum, as well as assigning its pan, level, pitch, key assignment, filter cutoff and resonance, envelope attack and decays 1 and

# BLACK

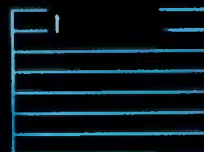
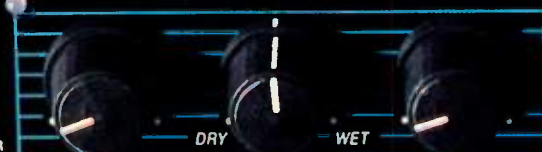
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A similar degree of complexity is available in the programming of the QY700's three onboard effects. With 11 reverb types, 11 chorus types and over 40 varied effects in the third unit (see sidebar), there is a huge amount of 'fairy dust' available in the QY700. Each effect has its own set of parameters, sometimes as many as seven or eight. Describing them all here would be impossible (even the manual doesn't attempt to do that!), but they are all of excellent sound quality and variability.

To round everything off, there is a full complement of what Yamaha refer to as Job functions for each Mode and utility function. These cover all manner of copy, shift and shortcuts, as well as more esoteric parameters like Time Stretch (adjusting phrases so they take more or less time to play back). All in all, there must be almost as many man-years of software in the QY700 as in the average computer-based software sequencer.

### JUDGEMENT DAY

Offering 32-part multitimbral synthesis and three built-in effects, the QY700 packs an awful lot into its confines (far more than the 'dumb' QX1 which I remember so fondly), and is truly worthy of the title 'music sequencer'. The only thing it could perhaps have borrowed from its splendid ancestor is the eight MIDI Outs. The QY700 only has two, with no way to expand on that. It can generate up to 48 channels of MIDI data (when using patterns and sequencer tracks) but 16 of those have to utilise the internal sounds. This means it will never replace those computer setups with eight or more MIDI Outs, which are becoming more common. In these days when almost every synth you buy can respond on all 16 MIDI channels, it means that you have to spend a lot of time switching channels off

on your target synths if you don't want to end up with parts being duplicated on different machines.

There is no doubt in my mind that the QY700 is the best hardware sequencer ever made. However, previous hardware sequencers are not the principal competition it faces. Musicians have to be wooed back from the seductive world of cheap and flexible computer-based sequencing. Maybe the lack of a 'now' line and real-time moving from edit screen to edit screen could be remedied in a software update, but the biggest hurdle the QY700 has to overcome is the refusal of most musicians to prioritise their audible needs over the safety net of visual feedback and more general computing. In the splendid 320x240 display, Yamaha have given it the best possible chance. But what would really help would be if those comparing it to their software sequencer would close their eyes momentarily and listen. The playback timing of the QY700 is superior to the majority of software-based systems, and wasn't that what this used to be all about?

There will always be a demand for reliable sequencing for live performance usage and with its fabulous display, non-volatile RAM and butch power supply, the QY700 will prove ideal for this. But this is a niche market at best, as is that for MIDI File Players. What Yamaha really need is for musicians to open their ears and listen to the timing accuracy. Then they may actually break the software stranglehold on sequencing. **SOS**

“...there must be almost as many man-years of software in the QY700 as in the average computer-based software sequencer.”

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# Green Machine

## FOCUSRITE GREEN VOICEBOX VOICE PROCESSOR

*Many a budding engineer aspires to Focusrite equipment, but until recently, its cost has made it the exclusive province of the professional. The Green range aims to change all that, while still retaining the legendary Focusrite quality. PAUL WHITE gives it the green light.*

black crackle paint, for all I know. The double 'f' Focusrite emblem is embossed on the covers, and the ends of the cases are curiously rounded. The green front panels appear to be mounted behind the black sculpted front covers, so that the control knobs and buttons peep through. All the knobs have a conical profile and a tactile, rubbery feel, and the buttons are made of a similar material.

To cut component costs, Focusrite have dispensed with transformer coupling and replaced it with a properly-designed, electronically-balanced alternative. To cut manufacturing costs, the PCBs make extensive use of surface-mount components, enabling much of the manufacturing process to be automated, without sacrificing the benefits of Focusrite's original circuit topology.

**T**he Focusrite Red range of signal processors will be familiar to just about anyone who has worked in top-name studios, but few project studio owners are able to afford the premium prices that go with them. From their massively engineered, red-anodised front panels to the design excellence of their hand-built circuits, these units ooze quality from every pore and socket — but if you can't afford one, you can't afford one, no matter how good it is.

### COLOUR BOX

Aptly named the Voicebox, the first unit we have for review from the Green range combines a mic preamp, a compressor, a de-esser, an expander, and an equaliser, in a single-channel package which occupies one unit of rack space. Like all the other voice channels and voice processors that have recently appeared on the market (two of which, the LA Audio Classic Channel and the TL Audio VP2051, are also reviewed in this issue), its aim in life is to enable you to record high-quality vocal sounds onto tape, without having to go via a mixer. No valves or 'vintage' gimmicks are employed in the Voicebox — just really good circuit design. For example, although there are three stages of dynamic processing, the signal only passes through a single, class-A VCA. Two further VCAs are used in the side-chain circuit, but the audio path is short and sweet. A further special chip is used in the expander side-chain, due to the fact that expander thresholds are invariably much lower than compressor thresholds.

As you'd expect, no external power supply is required for the Voicebox, and the XLR inputs and output are fully balanced and grounded in accordance with the current AES (Audio Engineering Society) recommendations. Two rear-panel jacks provide the options of remote muting and stereo linking of two units.

Recognising that there are lots of quality-conscious project studio owners who would like to own Focusrite equipment if it could be offered at a more affordable price, Focusrite went back to the drawing board and came up with the Green range. Obviously, green anodising isn't significantly cheaper than red anodising, so more had to change than simply the colour — and as you can see from the photograph, it has. Focusrite wanted their new range to make a visual as well as an aural statement — which is why the front panels of the new units look as though they've been partly assimilated by the Borg! Non-*Star Trek Next Generation* fans can pretend they look like an aerial view of a golf course with Trident nosecones poking out of the bunkers.

It appears that the front panels and cases of the new range are all cast in one piece, though there could be an invisible join somewhere under the

### DESIGN FOCUS

At the start of the signal path is a very low-noise mic amp, providing from 10dB to 60dB of gain, with switchable phantom power, a phase switch,

### pros & cons

#### FOCUSRITE GREEN VOICEBOX £398

##### pros

- Supremely transparent sound.
- Predictable, intuitive operation.
- Easy to spot in your rack!

##### cons

- No line input.
- I still can't afford one — I'll have to wait for the new Puce range!

##### summary

Though not cheap, the Greens, including the excellent Voicebox, allow project studio owners to buy into Focusrite quality for considerably less than the cost of the Red range.

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## Focusrite Green Voicebox



► a mute button, and a switchable 75kHz high-pass filter. Each of the buttons has an integral status LED, and a 5-section LED level meter peeps through its own front-panel slot above the mic amp section. If an external mute control is applied to the unit, the red mute LED comes on.

Also sharing the mic amp is the NR (Noise Reduction) control, which sets the expander threshold. The expander, which operates with a 2.1 ratio, has a strangely-calibrated knob, in that it shows the worst-case noise level below 0dB on the meter; in other words, it shows how much residual noise you might expect to have left when the expander is operating. Though the Voicebox itself is about as quiet as theory allows it to be, the use of compression will reduce the signal-to-noise ratio of the input signal by the same number of dBs as the amount of gain reduction being applied. Careful use of an expander can minimise this, by applying 'soft gating' during pauses.

As compressors go, this one has very few controls — just three knobs and three buttons. According to the graphs in the manual, the compressor has a conventional hard-knee characteristic, with user control over the Threshold, Ratio and Makeup gain being provided. The attack and release times are pre-optimised for vocal use, but there's an auto-release function which can be switched in to deal with material that has unusual characteristics. This works by progressively slowing the release time if the input exceeds the threshold either by a large amount or for a long duration. Because compression reduces the level of signals exceeding the threshold level, a make-up gain control is necessary to restore the peak level. The remaining buttons bypass the compressor section and switch the level meter to read gain reduction.

Following the compressor is a de-esser, and though the controls and side chain for this are quite separate from the compressor, the same VCA is used to restrain the signal gain. In effect, a de-esser is a compressor that is particularly sensitive to high-frequency sibilance, of the kind produced by some vocalists when singing 's' and 't' sounds. When these sounds are detected, the de-esser pulls down the gain, to make the sibilant sounds less noticeable. A conventional Threshold control sets the level above which sibilant frequencies are treated, and a Bandwidth control determines which area of the audio spectrum is reduced in level. Simpler de-essers compress the entire audio spectrum, which can lead to unnatural gain-pumping effects. The de-esser's Bandwidth filter is simple to use, but is actually quite complicated in terms of design. A 3rd-order filter sets the low-pass point, with a 1st-order filter looking after the high-pass point; as the bandwidth is increased, the lower limit slides down the audio spectrum as far as 1kHz. At minimum bandwidth, the filtering applies only above 10kHz. A 2nd-order,

fixed-frequency filter operating at 1kHz is used in the side-chain circuit to ensure that low frequencies do not trigger the de-essing process.

Next in line is the equaliser, configured as three bands with variable frequencies. The low and high sections are shelving, while the mid-range can be swept between 300Hz and 3.3kHz. Though this isn't a true parametric EQ, the bandwidth can be set to normal or Notch — the Notch setting has a very high Q, specifically for attenuating awkward spot frequencies. All three sections provide up to 18dB of cut or boost, though it is unlikely that much boost would be used in the Notch position, other than to identify problem areas or to create special effects.

Finally, there's an output level control, which has an associated overload LED to warn of impending clipping. A recessed yellow LED indicates that the unit is powered up.

### SOUNDS TRANSPARENT

It would be difficult for the Voicebox to sound as distinctive as it looks, but it definitely rises to the challenge. However, while other vintage-style processors try to be distinctive by what they *do* to the sound, the Voicebox is characterised more by what it *doesn't* do. You might think that the signal path on your mixer is clean and transparent, but next to the Voicebox, most mixers start to show their weaknesses. For starters, the Voicebox has loads of headroom and a very fast transient response, so everything comes out sounding smooth and natural. Abrasive sounds usually occur when circuitry can't respond fast enough to the input signal, or can't accommodate its peaks, but there's none of that here. The mic preamp behaves perfectly in every way and the expander proves to be so transparent that it's hard to tell it's on at all. The only thing you notice is the silence between sounds.

Checking out the compressor was also a revelation — vocal levels are controlled more positively than on just about any compressor I've tried, other than possibly a top-end Aphex, yet there's little subjective evidence of processing, even at very high levels of gain reduction. What's more, the compressor doesn't seem to push the louder sounds away, as some compressors tend to do — even the most uneven performance is levelled surprisingly naturally.

The de-esser, too, manages to clean up normal amounts of sibilance without causing the sound to dip or lurch — no doubt the clever filter arrangement is behind this. If you really over-process, you can hear the sound becoming just slightly dull whenever the de-esser is triggered, but when set up properly, it's wonderfully transparent.

Focusrite have a strong name in the EQ business, so I was expecting great things from the Green EQ section — and it didn't let me down. EQs normally come as 'gentle and musical' or

"On voices, the EQ is simply stunning in its ability to create the desired tonality while leaving the voice sounding perfectly natural."



'firm and ruthless', but Focusrite have managed to create an EQ that really digs into a sound and changes it, yet without making it unnatural. Even when you crank on 10dB of top end, the sound just gets crisper. It's the same at the bass end — you can add as much warmth and punch as you like, but there's no lack of clarity or loss of mid-range definition. On voices, the EQ is simply stunning in its ability to create the desired tonality while leaving the voice sounding perfectly natural. It might sound like magic, but again, it's down to well-engineered circuit design and an appropriate choice of filter characteristics. When you boost top end using a cheap EQ and the sound becomes harsh, it's not the extra top that makes the sound rough — it's the circuit's inability to remain 'linear'.

### GOING GREEN

The Voicebox may be part of Focusrite's affordable range, but it is still quite expensive by comparison with other 'voice channel'-type products. However, I think its performance justifies the price premium, and while there is an attraction in using tubes, FETs or photocells to recreate vintage effects, there are occasions when you want to feel that there is nothing at all between you and the original sound.

It's very difficult to set up the Voicebox to sound bad. (Indeed, to be cynical for a moment, part of the reason for the popularity of Focusrite gear may

be that producers and engineers know that they can get great sounds without having to be all that precise when setting up.) It's as though the technology is on your side for a change! In fact, the only minor disappointment is that there's no line input on the Voicebox — it would be nice to be able to use the compressor or EQ when mixing, as well as when recording. In theory, you could use the mic input with the pad switched in, but a dedicated line input would have been more flexible.

It would be possible to run tests on this unit to verify its audio bandwidth, its headroom, its phase response and its transient response, but all too often manufacturers manage to come up with an impressive technical specification while still failing to deliver in the 'ears' department. Here, the impressive spec is just a starting point — the equipment is designed first and foremost to satisfy the ears, and it doesn't disappoint.



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# THE GLOBAL SOUND BANK

A SMALL SELECTION OF OUR SAMPLE CDS - SEE 100'S MORE BEST SELLERS IN OUR NEW FREE COLOUR CATALOGUE

## ▼ A.M.G. (England)



**KILLER VOCALS 2**  
**BLACK II BLACK**  
 AVAILABLE NOW! Another 2-CD package of vocals from McIntosh & Charles to follow-up the hugely popular Killer Vocals Volume 1 - this time a massive collection of almost

2000 vocal samples. CD 1 (1287 samples) features hooks in a similar vein to volume 1. CD2 (which is again completely license-free) runs for almost an hour, includes 689 samples and features 'Aahh' notes and chords this time, and is accompanied by a selection of license-free hooks too. SO DON'T MISS PART TWO OF THE BIGGEST AND BEST VOCAL COLLECTION EVER RELEASED! Audio CD: £59.95

## ▼ Spectrasonics (USA)



**LIQUID GROOVES**  
 Grooves that have existed only in your imagination.

Fluid rhythms forged by a synthesis of propelling live drum grooves and unusual organic percussion loops performed by some of L.A.'s most creative session players. Unique sonic textures! State-of-the-art instruments such as Korg Wavedrum™. The full-blown CD-ROM version (organised to make mixing & matching effortless) includes a wider selection of grooves & killer Wavedrum™ single hits. The liquid concept is two-fold: Sparse "hand-played" grooves that feel great, combined with focus on uncharted sonic territory. Another inspiring & unique library from Eric Persing to reinforce Spectrasonics' reputation as second to none. Audio CD: £59.95. CD-ROM: £149

## ▼ East West (USA)



**SMOOV GROOVES**  
 From the rhythm section of PRINCE and the 'NEW POWER GENERATION' (Michael Bland & Sonny Thompson), SMOOV GROOVES is the sequel to the critically acclaimed Funky Ass Loops CD and contains all the

loops you need to lay down everything from slow grooves to 70's funk (the tempos range from 60 - 108 BPM). First you get a full mix of each loop, followed by the drums, bass, guitar, percussion, keys, etc. SMOOV GROOVES is without doubt the finest collection of smooth laidback grooves and 70's funk available anywhere for your price!!! - and it comes to you from one of the world's funkiest rhythm sections. Audio CD: £59.95. CD-ROM: £149

## ▼ Ilio Entertainments (USA)



**DOUBLE PLATINUM DRUMS**  
 Multi-Platinum record winners, producer John Boylan and drummer Michael Botts have put together one of the smartest, most tightly assembled collections of live

drum loops to date. Phenomenally well-recorded and mixed in true stereo with the same high quality you expect from platinum records. These acoustic kits are played with raw, rockin' energy and plenty of feel. Loops & Hits, Dry, Room, Intro, fills & ends for assembling complete tracks! Audio CD 2-disc set: £79.95. CD-ROM 2-disc set for Akai, Roland or SampleCell: £199.00



**PASCAL'S BONGO MASSIVE**  
 Rhythm of Life Vol. 4 is a 2-CD set from Pascal Benadjajoud, the top percussionist whose credits include Stereo MCs, Bob Marley, Lisa B. Gypsy Kings etc. Also well known on

the UK club scene, he's worked with top UK DJs like Paul Oakenfold & Daney Rampling, often adding live percussion to their mixes. Features lush (ish) grooves with various mixes accompanied by solo patterns and hits. Lots of tight, inspirational performances to explore. All in all this is another high quality and useful collection from AMG that's sure to become another classic. Audio CD: £59.95



**BURNING GROOVES**  
 Devoted to raw, aggressive, in-your-face energy! Blazing, all-original live drum grooves by Abe Laboriel Jr. (drummer for Seal) with extreme remixes by producer Eric Persing (who brought you Bass Legends & Distorted Reality). Unrelenting alternative, power

funk, progressive soul, rock'n'roll and grungehead loops in a wide variety of tempos put this collection in a class by itself. Each groove has a unique mix (edge, ambient, distorted, lo-fi, etc) and some have Hi-Fi and Lo-Fi re-mixes. Grooves also played without kick/snare for flexibility in customizing loops. CD-ROM version includes the Audio CD for instant auditioning, plus the incredible SMOOKIN' KITS drum library. Attitude! Audio CD: £59.95. CD-ROM (includes the audio CD): £149.00



**SAMPLE MATERIAL**  
 Sample Material is a sonic collage from the sound libraries of visionary New York producer Bill Laswell and the 'Material' cadre containing

Loops, Textures, Riffs, and Single Sounds, Atmospheric Ambiences, TranceScapes, Ethnic Loops & Riffs, Metafied Grooves & Kaos. A Sampling Product covering the broadest spectrum of musical genres. Ammunition for all Sonic Wizards who want to create music with no boundaries. REVIEW: "World grooves, basses and guitar loops, clavinetts, synth effects, kicks, snares and ambient washes to back any atmospheric composition... It's all here to some degree... Good sounds" (Future Music, UK). Audio CD £59.95. AKAI CD-ROM £149.00



**SYNCLAVER LIBRARY (AUDIO)**  
 The five-CD-ROM Synclavier Library from Ilio (USA) has been compiled into two audio

CDs containing over 2000 samples. VOLUME 1: "ESSENTIAL" covers Electric and Acoustic Guitars, Electric Pianos, Synths, and Drums & Percussion. VOLUME 2: "ORCHESTRAL" covers Strings, Harp, Brass and Woodwinds, Grand Piano, Orchestral Percussion including Timpani, Bells, Chimes, Gongals and more! Accompanying manual gives loop points for every sample so it's extremely easy to loop samples quickly and effectively. Each CD: £69.95



**HOT & SWEATY HOUSE CUTS**  
 This new dance sample CD produced by top US DJ Papa Large is in the Megabass

"REMIX" mould but with a strong emphasis on house and a very commercial edge. Papa Large has been on the underground club scene for more than a decade and built up a huge sample library that he's now made available for the first time. His CD features hard, banging' drum and percussion loops, rolls, synth FX and sequences, guitar, organs, vocal hooks, stabs, hits, FX, and more, and runs for 73 minutes. Miss it at your peril! Audio CD: £59.95



**SUPREME BEATS**  
 The most comprehensive library of percussion grooves & instruments ever developed, featuring percussionists from all over the world. This highly acclaimed library is now available on 2 CD-ROMs:

1. **AFRICAN CONTEMPORARY, & 2. WORLD/DANCE.** "A feast of human feel, energy & emotion... a knockout... Supreme Beats is a winner. 20 stars out of 20." (Keyboard, USA). African/Contemporary CD-ROM: £149.00. World/Dance CD-ROM: £149.00. Audio CDs 1 to 4 (boxed set): £199.00. Audio CD 5 (NEW!): £59.95. (CD-ROM versions include all the sounds from Vols 1-5 audio CDs).



**ON A JAZZ TIP**  
 This is Hip Hop in Full Swing! This superb release from Swedish developer Sounds Good features stomping

grooves, licks and loops, played in pre-determined keys and tempos to be used inter-actively. Includes Bass, Guitar, Keys, Horns, Drums and Percussion, Jazz pads, riffs and chords. Perfect for all HipHop, Rap, Soul, TrippHop, Acid Jazz and Funky flavors. "On a Jazz Tip" is ideal for any music project that needs a sting, swing or that Jazz Thing. Produced and played by musicians who love and respect music. Audio CD: £59.95



**LOOPZILLA 2**  
 Features over 2 hours of HipHop, R&B, and Funk samples, on 2 CDs. The very latest grooves and construction

kits for making funky, soulful music in the R&B and Hip Hop traditions. Reflecting the growth of these styles, Loopzilla 2 combines the best elements of programmed grooves & live playing with new melodic & hook elements destined to be the hallmark of new trends. Breakbeats, Guitar, Bass, Analog & Digital Synth loops, Horn Hits, Silky Vocal Harmonies & Pop Hooks combined in Slow Jams, R & B & Hip Hop from the Atlanta, Miami, New York, Oakland and "So Cal" schools of Hip Hop, Funk and R&B. Audio 2-CD set: £69.95



**KICKIN LUNATIC BEATS VOLUME 2**  
 By Keith LeBlanc. A major departure from his original CD. Largely recorded and

mixed at Adrian Sherwood's On-U Sound Studios. A huge selection of extreme drum beats (many presented with a selection of alternative dubs) radically different from those on any other sample CD. Also a selection of beats that Keith has collected over the years, a very weird FX section, and some specially recorded hits. This is an awesome drum CD, perhaps closer to Gota Yashiki in style than any of AMG's other releases. A unique sample collection that could only be Keith LeBlanc. Audio CD: £59.95. (CD-ROM coming soon).



**HEART OF AFRICA VOLUME 2**  
 Following the success of Heart of Asia, the equally unique sequel is a smash hit.

The library comes in two parts. Volume 2 (shown) features all-new tribal phrases, vocals, performances and effects, mostly recorded at a huge tribal competition in Kenya. This material is very primitive & really enhances the volume 1 samples. "Heart of Africa" is heartily recommended to anyone seeking beautifully recorded authentic ethnic sounds & rhythms, and complements "Heart of Asia" perfectly. Volume 2 audio CD: £59.95. CD-ROM: £149. [Volume 1 audio 2-CD set: £79.95. CD-ROM: £199.00]



**NEW WORLD ORDER 1 & 2**  
 Journey # 1: Fantastic Collection of Ethnic & Percussion loops. Tribal Rhythms, Ritual, Djembe, Talking Drums, Calypso, Reggae, Haitian Voodoo,

Afro-Cuban, Latin Funk, Tabla Loops, Indian Ensemble, Rhythms from Japan, Ireland, Texas & New Orleans. Journey # 2: Extensive performances on a multitude of acoustic instruments from all over the World. Loads of seldom heard Folk/Historical Instruments, plus vocals. Loops, Riffs, Slides, Chords, Scales etc. All sounds are original recordings. Audio CDs: £59.95 each. CD-ROM (Akai): £149 each.



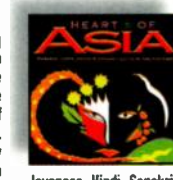
**DRUM DOCTOR 2**  
 With over 1500 new samples, Ross Garfield (known as the "Drum Doctor") has raised the standard even higher for this sequel to "The best drums on Earth". It features even better

samples, more takes per instrument, 5 dynamic levels and more performance patches. Like vol.1, it includes General MIDI Kits, High and Low Memory Configurations, Dynamic Articulations, Creative Filtering etc. The finest instruments from the 100 drum kit studio collection of Ross Garfield - Drum Doctor for the world's top studio drummers. When the stars need great drums for a session - they call the Drum Doctor! Audio CD: £69.95. CD-ROM: £199.



**ABRACATABLA**  
 By Talvin Singh, a leading exponent of ethnic fusion (works with top acts like Massive Attack, Bomb The Bass). Huge selection of mostly ethnic percussion.

Highly contemporary ensemble grooves with extremely intricate, tight performances, broken into various mixes/combinations/sounds. Also solo patterns complete with very comprehensive sets of single hits. "They don't come much more talented than Talvin Singh... these loops could add extra sparkle, spice and class to any music... Took three years to complete... This is one inspirational CD" (Future Music, UK). Audio CD: £59.95



**HEART OF ASIA**  
 This product got a 5 star review in every magazine in UK, US & Germany! The most comprehensive collection of Asian instruments & phrases. This remarkable 2-disc set includes

over 16h of exotic Chinese, Malay, Nepalese, Tibetan Javanese, Hindi, Sanskrit, Mandarin, Thai & Indian samples, including instruments, phrases, opera divas, chants, speech, gamelan orchestra, monks. Perfect for your next film score, album or remix project. "A treasure chest of lovingly sampled performances." (Keyboard, USA). "The range and subtlety is faultless. You won't find a better collection of ethnic sounds anywhere else." (Future Music, UK) Audio 2-CD set: £79.95. CD-ROM 2CD set: £299.00



**METHODS OF MAYHEM**  
 Brutal & sweet sampling for Industrial/ Intelligent Techno, Goth Techno or anything in need of an Experimental

Edge. Uniquely twisted, bizarre and savage stuff. Drum-, Bass-, Synth-, FX-, Vocoder-, Feedback- & Noise-loops. Grinding Guitar Riffs & Feedback. An Analog Heavan with Synth FXs, Sweeps, Zaps, Bases, Drun & Perc Sounds etc. All programmed on vintage equipment and treated without any mercy. Creepy & Cheesy Sound FX, Music FX & Voices. Over 1000 samples. A unique collection. Loops are in set tempos that match other Sounds Good titles. Audio CD: £59.95



**ULTRA FREAKIN' BASS**  
 The long-awaited sequel to "Will Lee Bass". This new 2-

CD set has 5 all-new basses performed by Will Lee from his personal collection, including his most-requested Sadovsky 4-string. All basses are sampled chromatically from C1 to D4 with multiple dynamics & playing styles. Also a huge collection of BASS LOOPS recorded at multiple tempos & keys & styles. This package from Sampleheads in the USA is a superbly crafted sampling resource! Audio 2-CD set: £79.95. CD-ROM: £199.00



**BLACK II BLACK VOLUMES 1 & 2**  
 By Steve McIntosh & Joe Charles. One of the biggest & best sets of kickin' R+B

samples around. All the loops, Vocals, Brass Lines, & Drum hits were specially recorded. Features: Reggae, Ragga, Swing, Jazz house, Euro house, Mad house, Slo jamz, Rap, Guitar Licks, Bass lines, Garage, and Disco. "Monstrously funky, soulful rhythm loops... highly recommended for teachers of contemporary arranging" (Keyboard, USA). "Swingin' funky loops... a very good example of how to construct a sample CD... useful, well recorded and organised." (Future music, UK). ☆☆☆☆ (Sound on Sound). 2 Audio CDs: £59.95 each, or 2 Akai CD-ROMs: £149 each



**DISTORTED REALITY**  
 And now for something completely different... Cutting Edge Textures, FX and Loops from the labs of top Hollywood sound designers and techno-heads.

From 3-dimensional atmos transformed via Harmonic Sound Morphing, to incendiary fuzz mutations, Trance-inducing ambiances, loops, enormous modular drones and astonishing timbral contortions - an essential resource for the producer, composer, or sound designer in search of the magic noise. "If you're making any kind of edge music, this is a library YOU MUST HEAR... gorgeous curtains of sound... will get your listeners' blood pumping... For the progressively minded this disc is a feast. 5 stars out of 5 in every category" (Keyboard, USA). A spine-tingling sample collection, and about as unique as you can get. Audio CD: £59.95. CD-ROM: £149.00



**SAMPLING SOUND SYSTEM**  
 A new series of smaller multi-format libraries from Sounds Good in Sweden. Each disc in the series is mixed-mode Audio / PC WAV / Mac AIFF. £19.95 each, with Akai CD-ROM versions at £39.95 each. Titles include Drum Tools (Laidback, Brushed, & Popped), Country, Roots Reggae, G-Soul, House, and more! Loops are in set tempos that match other Sounds Good titles!

Call for more details and ask for our free multimedia product catalogue!



**SYMPHONIC ADVENTURES**  
 This versatile orchestral phrase/sting library is perfect for film composers or for any music that needs powerful

stings, effects, phrases, suspense, moods, etc. A huge set of immaculately performed and recorded stereo samples. A top-class orchestra and a famous composer, dedicated almost entirely to the darker side of the orchestra. "Intelligent arrangements and orchestrations give this CD an utterly convincing big-budget movie feel. The depth of instrumental emotion is astounding. Made to measure for Batman 4 or the next Predator movie. Highly respectable and awe-inspiring." (Sound on Sound, UK). Audio CD: £69.95. CD-ROM: £199



**E-Lab (Sweden)**

**X-STATIC GOLDMINE 4**  
 E-LAB have done it again! Over 1500 Ambient and Chill Out Loops & Samples from the dark side of the Moon. TRIPHOP & CHILL-OUT LOOPS, SPEEDY JUNGLE BEATS & SMOOKIN BASS BOOSTERS, ETHNIC CHANTS & BUBBLE BATH DIGGERDROPS, WET CHILL OUT CHORDS & XPERI-MENTAL SYNTH VIBES, ANALOGUE SEQ FX & EMO-STATE VECTOR LOOPS, PSYCHADELIC DELAYS & DUB-ECHOES, AMBIENT BIRDS & JUNGLE WEATHER, SPOOK FX AND LOTS MORE! "I will say this just once: GO OUT & BUY THIS ONE!" (Musiker Magazine, Sweden). Audio CD: £59.95

**U.S.B. (France)**

**PITBULL JUNGLE LOOPS**  
 New from Universal Sound Bank in France, a huge collection of original Drum 'n' Bass, Hardcore and Intelligent. Enormous and Extreme loops for producers of Jungle. Also individual drum samples for customizing loops and adding fills etc. Loops grouped by tempo, in increments of 5 BPM from 150 BPM to 170 BPM, for easy mixing & matching. The CD-ROM version comes with the Audio CD version for easy auditioning and includes Temp'n Key™ programs that give you all the loops at 26 different tempos. The only Jungle library available on CD-ROM. Audio CD: £59.95. CD-ROM: £149.00

**X-FILES OF HOUSE**  
 Hot new CD from E-LAB - a new goldmine of Deep & Progressive House loops & samples. To give you an idea, the loops and samples are in the style and mood of Armand van Helden, Todd Terry, or Deep Dish. These loops & samples will make your Hair Stand Out - pure joy. You won't be able to stop moving your feet when you hear this one. All samples provided with variations so you can create your own deep house tune instantly - perfect for injecting the New York club sound into your music - the sound of people like "Masters at Work". OVER 1000 PHAT LOOPS AND SAMPLES. Audio CD: £59.95

**DEF HOUSE**  
 A fresh new collection of House, Tribal and Garage loops from Universal Sound Bank in France. Over 1000 loops and samples including loops in up to 31 tempos, from 110 to 140 BPM. Also features a host of bass and percussion sounds to complete the bottom end of your track. The sounds are bang up to date - exactly what's needed to create dance music that will keep the party moving! Available NOW in four formats. Audio CD: £59.95, or choose a CD-ROM for Akai, Roland, or Ensoniq samplers - £149.00.

**STRICTLY 12inch**  
 Important new CD from E-Lab. Features Dance/Remix/House LOOPS & DRUMS. WHAT VINYLISTICS IS FOR HIPHOP, THIS CD IS FOR DANCE. The idea is similar: Loops, with variations, together with separate hits. A Remix CD for anyone in the need for good stamping House & Garage Loops - very much "DJ sounding", & produced by a Remix/DJ team. If you want the sound of the dancefloor - get this one. All Loops have been tested for reaction on the floor! Audio CD: £59.95

**MEDITERRANEAN INSTRUMENTS**  
 Another new release from USB in France, drawing upon the rich and emotive tradition of Greek and Turkish folk instruments - Bouzouki, Electric Bouzouki, Baglamas, Izouras, Oud, Saz & Jubus. Includes phrases and sets of multisamples. Very professionally recorded and organised. Also percussion loops. This collection is truly a unique source of inspiration. Audio CD: £59.95. CD-ROM 2-disc set: £199.00

**WC Music (Canada)**

**RIDDIM ON FIRE**  
 WC Music Research have done it again! Features: •200 Acoustic Drum and Remix Loops. •250 Electric Bass Loops. •200 Dancehall Loops. •75 Bass and Drum Loops combined. •Drums, Bass, Vocal Hooks •200 MIDI Files. •200 DNA Grooves in Cakewalk, Cubase, Logic, Performer and Vision formats. Recorded in Jamaica to get that round nasty bass and the raw, pulsating riddim. This CD is destined to uphold the great tradition of Reggae Drum/Splash, only now you're getting the other half of the riddim twins!! A masterpiece! Release scheduled for late 1996. Audio CD: £59.95

**Invision (USA)**

**PERCUSSION SLAM**  
 Hot new disc from Invision (USA), comes with loops, samples and standard MIDI-files. Multiple layers of percussion instruments were played live and the MIDI-files were created directly from the loops. Killer material for Dance, Pop, Latin, R&B, HipHop, etc. Enhanced construction kit format includes: multiple tempos of each groove, alternate instrument mixes, fills, MIDI-files & samples. Gives you the power to quickly create and modify tracks. Performed by Rafael Padilla and meticulously recorded at Mama Jo's Studios. Audio CD: £59.95 Akai CD-ROM: £149.00

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**Come and see us at The Show!**

Time+Space have an absolutely massive stand at the National Music Show this year: **STAND No. C125 (NEXT TO AKAI)**

We'll be selling our FULL RANGE of titles. Come and see our live demonstrations, try out the sample-CD jukeboxes, pick up loads of very special show-only bargains and generally get better acquainted with the Time+Space team!

**national music show**  
 Friday 29th November  
 Saturday 30th November  
 Sunday 1st December

**Major Web Site Update**

In case you hadn't noticed, the Time+Space internet site has been totally revamped and updated and will now be updated WEEKLY with all the latest news.

There are also plenty of free demo samples to download! The address is: <http://www.timespace.com>

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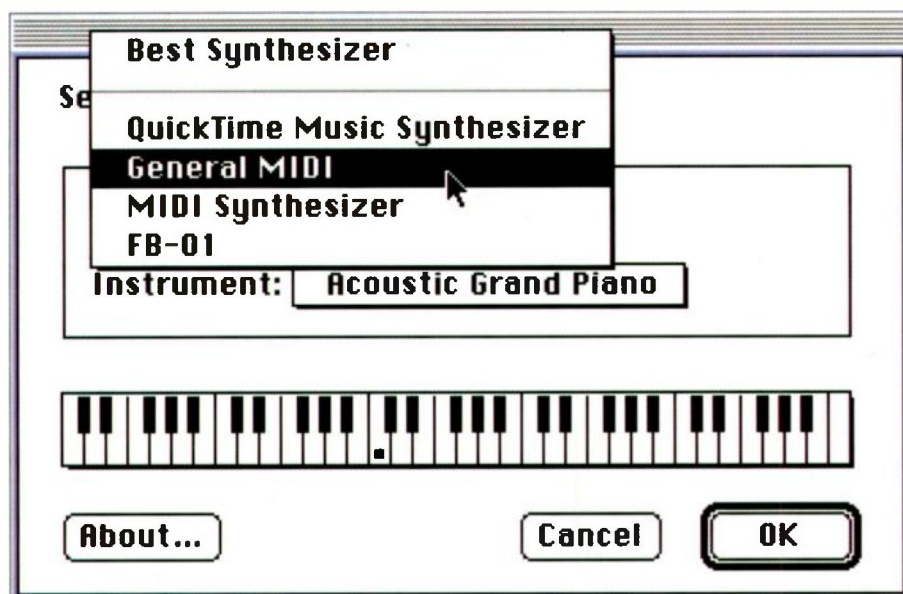
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# Apple NOTES



The QuickTime Music Architecture instrument settings.

► Studio 5LX compatibility was left after last month's testing). I didn't have time to download the latest version of FreeMIDI (1.2.7), but my existing FreeMIDI 1.2.4 was not recognised.

Some of the other goodies that I got from the QTMA web site included experimental 'plug-in synthesizer' extensions, which can be used to provide a 'proxy' for an external MIDI synthesizer inside QTMA.

The reader also commented on the large difference in the perceived quality between the QT Musical Instruments and an external MIDI module. Even with the improved sample rate (44.1kHz) of the latest QTMA samples and the fast processing offered by the latest PowerPC chips, the external MIDI module still wins. The dedicated hardware in MIDI equipment still seems to have a considerable edge over the general purpose processors found in computers. My examination of the internal construction of the Yamaha VL70m during my recent review is one such example (see *SOS* October 1996). The four Yamaha YSS217B custom PLCCs used in the previous generation VL1m physical modelling synth module had been replaced by a single one plus three associated RAM chips in the VL70m, but in each case, all the processing power was dedicated to producing monophonic sounds! The wait for physical modelling plug-in synthesizers for QTMA may be a long one! Unfortunately, the wait for .KAR (karaoke) file compatibility in QT is already over...

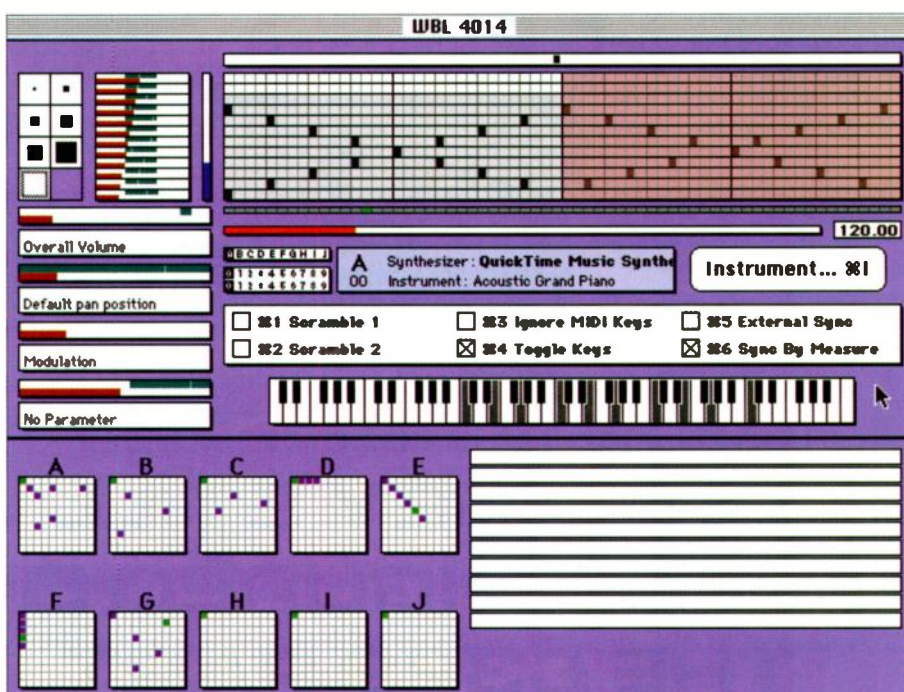
## HOW IT WORKS: WBL 4014

One of the example programs available at the QTMA WWW site (also as source code!) is derived from software written by QuickTime

Music Architecture guru David Van Brink for the electronic performance ensemble Weird Blinking Lights, apparently back in November 1994. The WBL 4014 is a single screen pattern-based arpeggiator, which offers LFO-driven parameter changes and lots of pattern storage — well suited to dance, trance, techno, and even drum'n'bass styles of music.

The lack of any instructions may cause some head-scratching at first, so here's some pointers.

- Select the notes to be arpeggiated on the



The WBL 4014 is a single screen, pattern-based arpeggiator.

## ON THE NET

### THE QUICKTIME SOURCE:

<http://www.quicktime.apple.com/>

### QUICKTIME FAQS:

<http://www.QuickTimeFAQ.org/>

### QTMA PAGES:

<http://www.srm.com/qtma/index.html>

### QUICKTIME WEBMASTERS' PAGE:

<http://17.254.3.126/dev/devweb.html>

### APPLE DEVELOPER PAGES:

<http://www.devworld.apple.com>

### OMS 2.2:

<http://www.opcode.com/>

### FREEMIDI 1.2.7:

<http://www.motu.com/>

on-screen keyboard by shift-clicking with the mouse. These notes will be reflected by greyed rows in the main grid — click to set a note, and click again to clear it.

- Store patterns in the letter grids by shift-clicking.
- Recall letter grid patterns by pressing the relevant key on the qwerty keyboard, and select the number in the grid by using the cursor keys.
- The lower red line in the parameter boxes represents the LFO speed; the upper grey line is the controlled parameter; and the lighter line represents the current LFO value. This makes cyclic changes to volume, pan, pitch, and many other parameters easy to set up.
- The vertical blue slider is the master volume.
- The long horizontal slider controls the tempo.

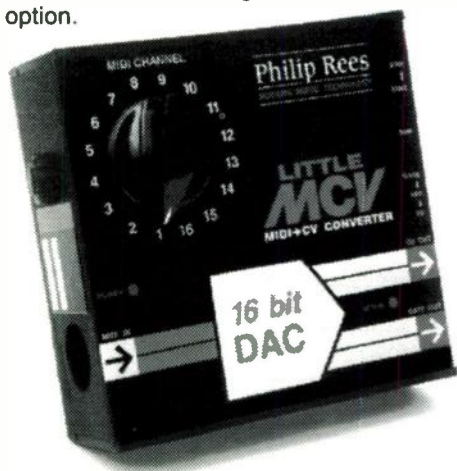


## Great high-resolution MIDI to CV converter now costs even less

Functional simplicity rules! Now there is no need to squander your money on over-complicated products with irrelevant features that you'll never use.

The **Little MCV** lets your MIDI system control your analogue synths with their great sounds and friendly knobs. Your synthesizer just needs to be blessed with input ports for the VCO pitch CV and the gate or trigger signal.

This versatile interface unit can generate control voltages for the 'one volt per octave' (logarithmic) or the so-called 'volts per hertz' (linear) systems. Both systems are included as standard - there are no additional charges for the linear option.



The gate output can be set to five volts positive, ten volts positive or S-trig. The default gate mode is multi retriggering for legato playing, but you can change this via the legato MIDI message. The default note priority is last note, but this can be switched to highest note mode

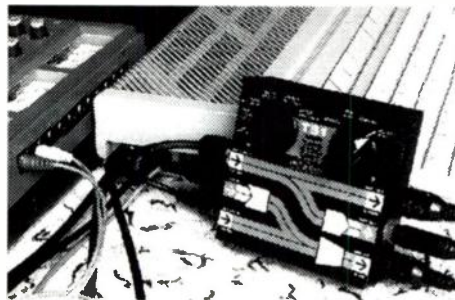
High resolution sixteen-bit conversion allows accurate pitch across the full 128 note MIDI range with smooth modulation, pitchbend and portamento. The CV output also has a wide bipolar voltage swing and tuning and trim presets are provided.

The MIDI sustain commands are comprehensively implemented. MIDI reception can be set to any channel, using the straightforward front panel rotary control.

The sturdy ABS enclosure is just 109mm x 109mm x 40mm. There are MIDI IN, CV OUT and GATE OUT sockets. The mains power supply is built-in and the integral mains lead comes with a plug. The superb **Little MCV** utterly surpasses all competition at its stunning new low price.

**Little MCV MIDI to CV Converter.. £75.95**

## Talented tape sync unit



You can use the **TS1** to sync your MIDI sequencer to any decent tape machine. When you start, stop or shuttle your tape back and fore, **TS1** tells your sequencer to play in time, just as if your MIDI voices were extra tracks on the tape.

The **TS1** can generate and recognise the usual four SMPTE formats. The **TS1** will convert SMPTE to MIDI Time Code (MTC). Alternatively, you can use the **TS1** by way of Song Position Pointer/SRT format.

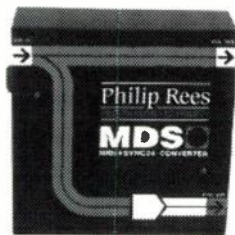
The **TS1** merges MIDI data received with its own sync data. You won't need to swap around the MIDI wiring, as **TS1** has four MIDI ports and automatic signal routing.

The **TS1** has a built-in mains power supply. **TS1 MIDI Tape Sync Unit ..... £99.00**

## MIDI to DIN Sync box

When connected up via **MDS**, slave devices equipped with Sync24 ("DIN Sync") inputs should start, play in time, and stop automatically by remote control from your MIDI master equipment.

The unit is compact and contains an integral mains power supply.



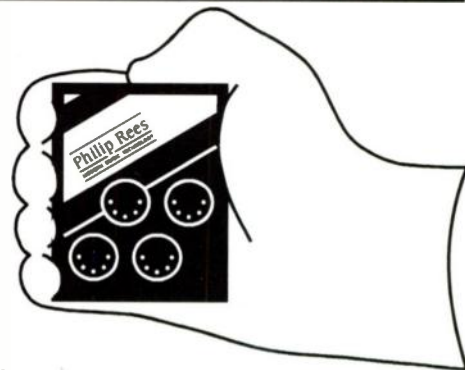
**MDS MIDI to Sync24 Converter.. £69.95**

## Simple MIDI selectors

These handy low cost switch-in-a-box gadgets solve many MIDI routing problems and avoid the inconvenience of recabling.



**2S MIDI Selector ..... £11.95**  
**5S MIDI Selector ..... £29.95**  
**3B MIDI Selector ..... £29.95**  
**9S MIDI Selector ..... £39.95**



## Functional Simplicity

### Smarter merge units

You can't combine MIDI signals by joining wires together, so you may need a merge unit - we make the best! The **2M** merges two sources, while the **3M** merges three.



These units both have built-in mains power supplies. They can handle all types of MIDI data, including Time Code and SysEx. Many automatic features enhance performance and convenience.

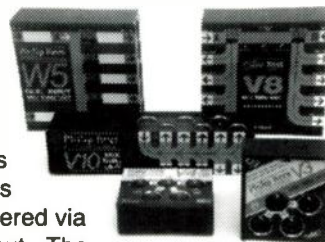
**2M MIDI Merge Unit ..... £69.95**  
**3M MIDI Merge Unit ..... £99.00**

### Low cost thru units

Some MIDI gear may lack thru sockets. Chains of more than three MIDI devices can suffer from data corruption. You can solve these problems at low cost with Philip Rees' MIDI thru units.

The **V3** is a battery powered 1-into-3 thru box.

The **V4** has four outputs and is powered via its MIDI input. The **V8**, which has two inputs and eight outputs, requires an external power source. The **V10** is a mains-powered 1-into-10 unit. The mains-powered **W5** has independent source selection for each of its 5 outputs.



**V3 MIDI Thru Unit ..... £11.95**  
**V4 MIDI Thru Unit ..... £19.95**  
**V8 MIDI Thru Unit ..... £27.95**  
**V10 MIDI Thru Unit ..... £39.95**  
**W5 Dual Input Thru Unit ..... £55.95**

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- ▶ The 'scramble' keys alter the order of playback of the arpeggiated notes.
- I couldn't figure out the purpose of the matrix of different sizes of black boxes...

## APPLE NEWS IN BRIEF

### • NOT A WRITE-OFF

Whilst IBM PC compatible owners have been writing off Apple with considerable glee recently, there have been one or two reassuring figures beginning to appear. For example, Apple did not make the huge loss that was predicted for the third quarter — at just over £321 million, it was a quarter of what many analysts expected. But perhaps more interestingly to Apple Notes readers, Apple continue to sell more multimedia computers than any other manufacturer: in the last year they sold nearly 20% of all the multimedia-equipped computers.

### • SPEED CATCH

Be careful when you compare prices of MacOS computers with IBM PC compatibles. The current release of up to 200MHz Pentium Pro equipped PCs may appear to look similarly specified to the 200 or 225MHz PowerPC MacOS machines, but the Pentium Pro chip is optimised for the workstation-orientated Windows NT operating system, and so the performance using Windows 95 is not as sparkling as you might expect.

### • RAM TRACKING

The price of RAM memory has fallen apparently inexorably over the last few months. As I write, I've just bought a 16Mb SIMM for under £100. But there are many cynics who believe that this low price cannot be sustained, so this could be a good time to start monitoring the prices. One excellent way to do this is to visit the WWW Ram Tracker page:

<http://home1.gte.net/mongo1/ramtracker.html>

One reason might be the strong hints that MacOS 8 (aka Copland) will need at least 20Mb of RAM.

### • WEB WOOF

Okay, so I've mentioned OpenDoc before, but I can't remember talking about Cyberdog, which started out as an intelligent agent and appears to have morphed into a complete Internet tool. Brave readers can now test it out via

## TIP OF THE MONTH

Last month I committed myself to describing what a minimal setup for a MacOS computer should look like. It turns out that this is not that straightforward, and so the next few months worth of 'tips' will be occupied with attempting to describe something approaching the bare minimum.

— it makes sense to keep them all in one place. The Extensions Manager (EM) is a piece of Apple software, which comes with System 7 and allows you to easily manage files like extensions and control panels. EM produces new folders inside the System Folder where it puts the files that you don't want to use: these are called by the same name as the real folder, but with '(disabled)' added.

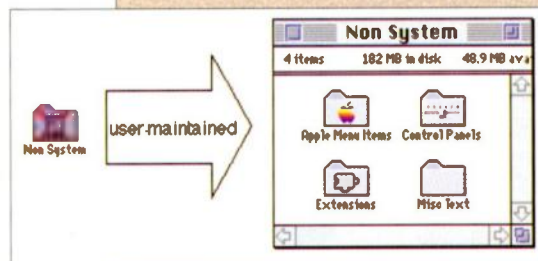


Firstly, some ground rules. Since most MacOS computers used for MIDI are stand-alone, I will assume that AppleTalk (LocalTalk) style networking is not used. In fact, mixing networking and MIDI on the same serial ports is probably not a good idea — it causes me lots of problems whenever I try it.

The first stage is to try and sort out the huge number of files, which may well be infesting the System Folder without really needing to be there. Any computer other than a new one with a freshly installed system seems to accumulate 'not so useful' files — sometimes user-installed, sometimes automatically installed by upgrades (especially System upgrades).

I use two approaches to maintaining the

Our first target is the Apple Menu Items folder, which is where you put anything (a file or an alias) that you want to appear in the Apple Menu on the top left of the screen. The typical contents of this folder include the Puzzle, Key Caps, and Stickies — none of which is exactly essential to the working of a MacOS computer, especially if you want to maximise your processing power for making music. Just about the only things you actually need here are the Chooser, the Scrapbook, and an alias to the Control Panels folder. Everything else goes in the Non-System folder, preferably in an Apple Menu Items folder inside it.



contents of the System Folder: Extensions Manager and a Non-System Folder. The Non-System Folder is a folder where I keep all the extensions, control panels, and other files which I definitely don't need or use, but which I may need sometime in the future



Do any of these contribute to your music making?

order from a specialist supplier, but these days two sources stand out: ftp using the Internet, and magazine cover-mounted CD-ROMs.

Personally I subscribe to one of the compilation CDs, *BBS In A Box*, from the Arizona Mac User's Group, because it saves all the hassle of loitering in the newsagent, reading through the Mac mags to see if they have what you want on the CD! My favourite MacOS source is ExMicro:

<http://www.innotts.co.uk/exmicro/>

<http://www.cyberdog.apple.com/beta/index.html>

It requires OpenDoc to run, so you will need to download that too, but it makes an ideal opportunity to see how the 'documents' of the future might be put together — and that includes music.

### • SOFTWARE WHERE?

In the past, readers have asked where to get hold of MacOS freeware and shareware. Not so long ago, the answer might have been via mail



# now you can have a DP, too

## DP/2 Features

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(balanced TRS)
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- 600 Presets

## DP/4+ Features

- 4 24-Bit ESP Chips
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(balanced TRS)

## Process up to 4 Signals

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## have a DP/2!

With the resounding success of the DP/4+, you're probably wondering, "why doesn't ENSONIQ make a smaller DP for the home studio user (*like me*) on a budget?"

Well, enough of you asked, and we're happy to oblige - with the DP/2. A two-processor version of the DP/4+, for about half the price. (*Now you're talking!*)

The DP/2 can process one true stereo or two discrete mono sources, through two of the same custom DSP chips we use in its big brother. It offers the same unequalled range and quality of algorithms as the DP/4+, plus new combinations designed specifically for the home/project studio. And we've built them into a whopping 600 Presets, ready for any challenge.

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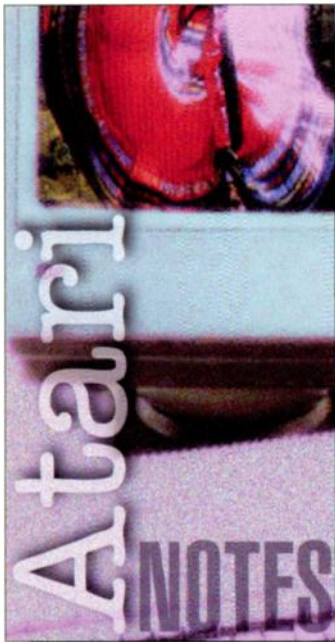
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Chelmsford, Essex CM1 3AG





**OFIR GAL and DEREK JOHNSON round up more Atari software and hardware news, and discover a new on-line Atari magazine.**

**N**ew from Digital Media (0171 607 2727) is the UK version of *Sound Studio* for the Falcon, which has already featured in this column.

*Sound Studio*, which is available in four 'flavours', allows the editing of digital audio, and features DSP effects including real-time crossfading, reverb, delay, EQ, and compression. The 'light' version, which retails at £149, supports 2-track recording and playback. The next version up, *Sound Studio 2+*, can play up to eight tracks simultaneously, but you can only work with two at a time. This version, priced at £449, also includes all the DSP effects found on the more expensive versions. *Sound Studio 4.0* (£599) adds the ability to work on four tracks simultaneously, plus Akai DR4 management, while the

top-of-the-range 8.0 version (£799) supports eight tracks and provides for control of the Akai DR8. Both the 4.0 and 8.0 versions allow you to edit waveforms directly on the Akai recorders; they also include basic mixing facilities. More powerful mixing options are expected to appear in a later upgrade.

Also new from Digital Media is a new M-JPEG card that allows you to record video direct to disk at 384 x 288 resolution and 25 frames per second, in full 24-bit colour. The accompanying software allows you to edit the video and record it back to a VHS video recorder. Compatible with *Sound Studio*, the hardware offers some integration between video and audio — unfortunately, though, full details were not available at the time of writing. The package retails at £699.

### CD SOLUTIONS

System Solutions (0181 693 3355) have a few new CD-ROMs available, including the *Ultimate Cubase* CD-ROM, priced at £69.95. They also stock a Falcon-dedicated title, *Bird of Prey*, which is a collection of shareware utilities and applications, and is designed to complement other Falcon CDs. It retails at £24.95. Aimed at designers and DTP enthusiasts, the *Art Nouveau* CD-ROM (priced at £39.95) contains over 400 graphic files, in several formats. Finally, the Xware *DTP Graphics* disk set, which costs £79.95, is a collection of three CDs, containing hundreds of high quality clip-art files covering a wide variety of subjects. If you want to burn your own CDs at 4x speed, System Solutions also offer a package which includes the drive and required software for £1126.

### ATARI ON-LINE

Since there are now no Atari magazines available at your local newsagent, it's been left to enterprising individuals to fill the gap. It was mentioned in last month's Atari Notes that a new, subscription-only magazine — *Atari Computing* — has just been launched, and now there's an on-line Atari magazine too.

*AtariPhile* (<http://walusoft.co/fff>), currently at issue three, is run by the people behind the Falcon FacTT File, a Falcon/TT users group, although the magazine covers all aspects of the Atari platform, so it's worth a look whether you're an ST, TT or Falcon user. Music coverage is slim at present, but there are plans, from

issue four, to maintain regular music coverage. The magazine is also available from <ftp.metkonect/pub/atari/atariophile/> and on 42 BBS (01256 895106). Non-modem owners will be relieved to know that they aren't being left out of the fun, since *AtariPhile* is also available on floppy disk. Try Goodman's PD library (01782 335650), Floppyshop PD library (01224 312756) or the FaST Club (0115 945 5250). Alternatively, send a formatted double-density floppy disk, two first-class stamps, and a self-addressed envelope (for each issue) to Colin Fisher-McAlum, 11 Pound Meadow, Whitchurch, Hants RG28 7LG, and you'll get a copy by return. Make sure you put enough stamps on the package to cover delivery, since underpaid packages will be refused. Non-UK residents should send International Reply Coupons (IRCs).

Contents for issue 3 of *AtariPhile* include reviews of the *Afterburner 040* accelerator for Falcon and *NVDI 4.0*, features on alternative file selectors and 'point of view' raytracing, plus an introduction to *Atari Computing*.

**Computer Direct**  
Canada's Atari Specialists!

If buying software on-line is attractive to you, check out <http://www.worldgate.com/compdirect/products/>, where Computer Direct ("Canada's Atari specialists") have assembled a large collection of software of all types for the ST and Falcon, including an extensive music and audio section. Secure credit card transactions aren't available yet, but if you email them your requirements, they'll hold your order until you fax or mail your credit card details.

### SUNRISE AUDIO NEWS

Sunrise Audio Systems — formerly known as Sunrise Electronics — are shortly to release some new Falcon-based products. The SA600 Falcon audio interface offers eight analogue outputs, while the SA800 is an 8-in/8-out interface, which is now fully tested with Steinberg's *Cubase Audio v2.06* for Falcon, and allows simultaneous 8-track recording. The Sunrise Audio Workstation is a 2U rackmounting Falcon-based package containing the CPU, SA800, four extra MIDI ports, *Cubase Audio v2.06*, S/PDIF interface, 16Mb of RAM, monitor, keyboard and mouse. The basic model (retailing for just over £2900 including VAT) includes a 1.2Gb AV hard drive, while a version equipped with a CD writer and software offers a 2Gb drive, and retails for just under £4000, including VAT. Sunrise Audio Systems can be reached at The Cottage, Brook Lane, Rixton, Warrington, Cheshire WA3 6DT. Tel/Fax: 01925 815828.



Now you don't even have to go down to the newsagent to get the latest Atari news: *AtariPhile* is just at the end of your phone line.



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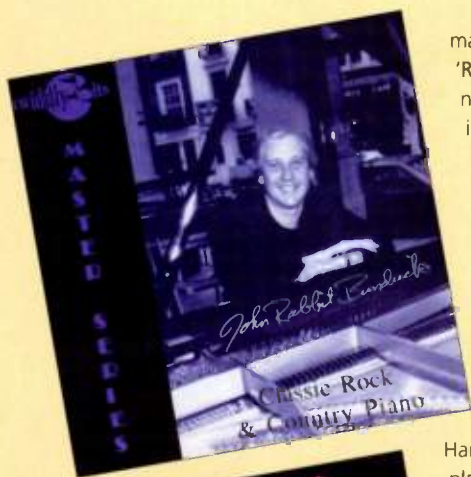


# brief encounters

## CONCISE REVIEWS OF ESSENTIAL ACCESSORIES

### TWIDDLY BITS *FUNK AND CLASSIC ROCK & COUNTRY PIANO MIDI FILE DISKS*

Like the other disks in the Twiddly Bits series, these two volumes are packed with short musical phrases designed to be pasted into your own compositions. In the case of the *Funk* disk, riffs and phrases are featured on bass, brass, saxophone, clav, electric piano, guitar, drums and percussion. The non-keyboard instrument parts have been played in live, using various MIDI controllers, and often include a lot of bend information, which makes them sound very authentic even on a budget General MIDI sound module. Because the files are in MIDI format, they can be changed in pitch or tempo, or you can edit them to create new phrases.



Regular *SOS* readers may remember John 'Rabbit' Bundrick's name from a recent interview we did with him (see *SOS* November 1995). John has played with innumerable top-end bands, including Free and The Who, and though most people know him for his

Hammond organ playing, he's also a fine pianist, as the *Classic Rock & Country Piano* collection, the latest in the Twiddly Bits Master Series, aptly demonstrates. From boogie to country, there's something here to augment most musical styles. The booklet notes give all the

necessary key and bar-  
duration information, and though trying

out all the different riffs, licks, endings and phrases can be time consuming, it's usually well worth the effort.

The new disks are available, like the rest of the Twiddly Bits range, for both Mac and PC, with Type 0 and Type 1 MIDI file formats offered. Atari computers can load the PC disks directly.

**E** Twiddly Bits Volume 6, *Funk*, £19.95;  
*Classic Rock & Country Piano*, £24.95.

Add £2 per disk for postage & packing.

**A** Keyfax Software UK, PO Box 4408, Henley on Thames, Oxon RG9 1FS.

**T** 01734 471382.

**F** 01734 471382.

**E** 100705.3565@compuserve.com

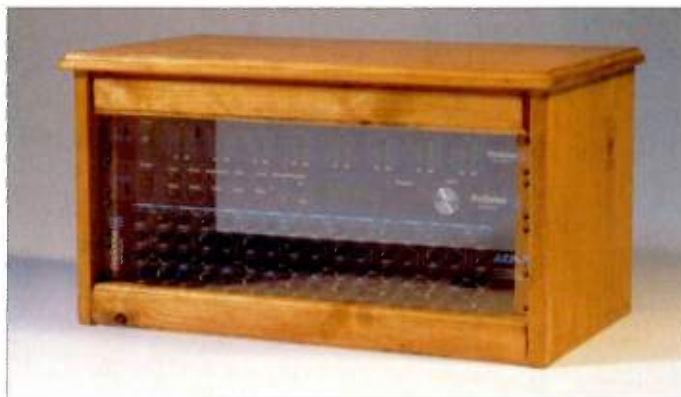
**W** <http://www.gmedia.net/keyfax>

### THE SES STUDIORACK

I'd be the first to admit that off-the-shelf studio furniture can get rather boring — in fact, I built most of my own from recycled pine, lovingly drilled the woodworm holes, then applied a finishing coat of antique Briwax, working it into the grain with fine wire wool, before buffing the finished article to a rich satin sheen with an old Motorhead t-shirt. Aside from the fact that genuine Victorian 19-inch equipment racks are stunningly rare, making such things is very satisfying, but then I appreciate that not everybody shares this view.

For the benefit of those who don't consider spending their weekends in DIY shops the epitome of fun, help is at hand. No, I'm not offering to build your studio for you, but John Lancaster is — or at least some bits of it. And the catch? Oh yes, he wants you to pay him.

The sample sent for our appraisal is a standard 19-inch rack built entirely from pine — even the side-rail supports are wood with threaded metal bushes fitted.



Construction is simple but solid, with no fancy joints, and the finish, in this case, is an antique-style varnish rather than wax. A single blanking panel comes with the rack and there's a full set of mounting bolts. Two standard depths of rack are available, both featuring open backs and cable cutouts in the base, and the top panel has a moulded edge to give it a period

feel. However, I'm told the company will build racks to any height, and if you want the wood left unfinished so that you can wax it yourself, I guess they could be talked into doing that too.

While this rack will fool nobody on the *Antiques Roadshow*, it does have a certain lived-in look — not so much distressed as mildly apprehensive. Once the gear is bolted in place (the rack comes ready assembled), it looks fine and would fit in nicely with a country-style stripped-pine decor, but even knowing the cost of wood and how long it would take me to build something like this from scratch, I still can't help but feel the price is a little on the high side. This may be because the sample rack is quite small, and it's possible that a taller rack would cost rather less per unit of space. All the same, if the writing career ever takes a turn for the worse, at least I've identified another possible way to make a living!

To sum up, the StudioRack rack is an attractive alternative to metal

or laminate, with the advantage that it can be built to size. It's a nice idea, and if the price were to be pared down a little, one that could catch on.

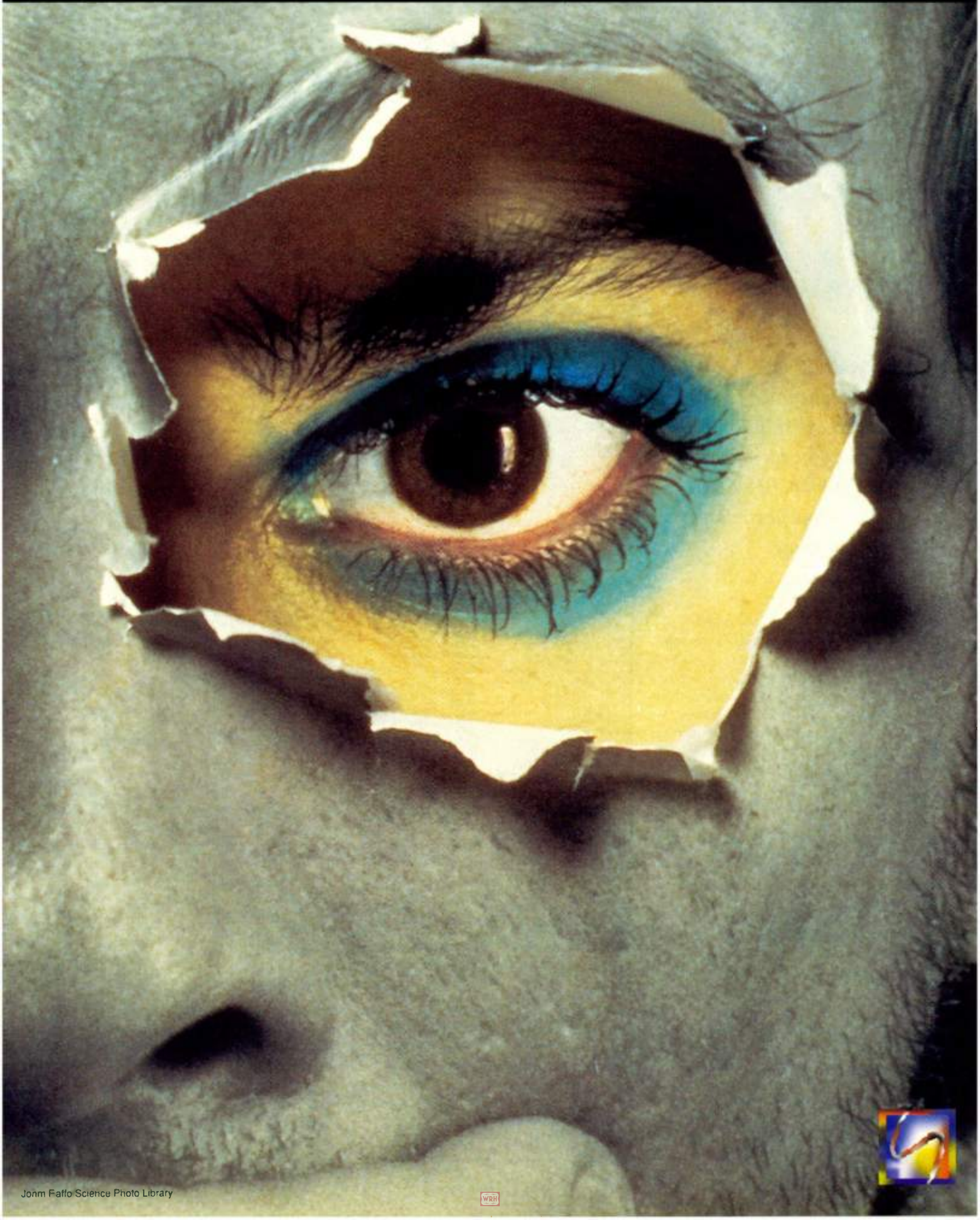
**E** 4U 440mm rack £82, inc fixing bolts and 1U blanking panel.

**A** SES, Tobinal Cottage, Pont-Shan, Narberth, Pembrokeshire SA67 8HD.

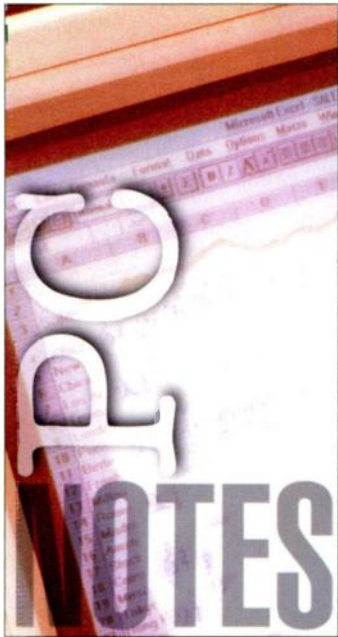
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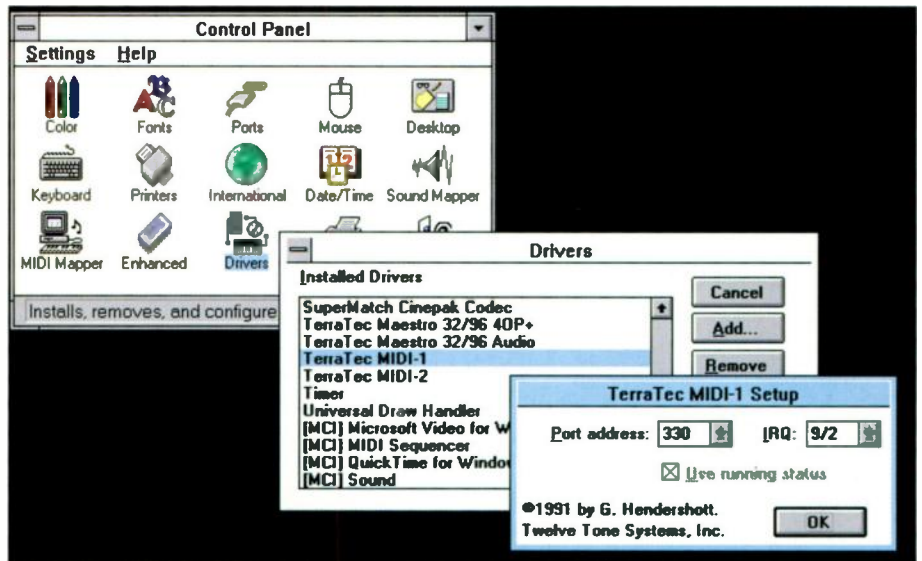




**When your PC soundcard ceases to function, the newly connected external controller very often gets the blame — wrongly. BRIAN HEYWOOD identifies some possible alternative causes.**

One of the most common PC soundcard problems rears its ugly head when you try to connect an external controller, say a keyboard, to the external MIDI port. Most soundcards on the market were developed for the games market and are thus modelled on the Creative Labs SoundBlaster. They use a special cable connected to the joystick port to get MIDI into (and out of) the PC. So it's not surprising that when you get the bits and connect them to an otherwise functioning soundcard, the new kit tends to get the blame if the system doesn't work as planned. However, it is fairly unlikely that the external MIDI equipment is playing any part in the problem of getting MIDI into your Windows (3.1 or 95) system — there are a number of more likely causes.

Getting back to basics, for Windows to 'see' any MIDI device (either for input or output), you need to have a MIDI device driver installed. This software is almost invariably supplied on the software installation disks that come with the MPC soundcard or MIDI interface. What this device driver software does is provide a connection between the generalised Windows MIDI software interface and the hardware of your soundcard.



To check the current version and settings of your device drivers in Windows 3.1 (see next page), use the Drivers icon in the Control Panel and then the Setup button on the MIDI driver(s).

### ERR, EXCUSE ME...

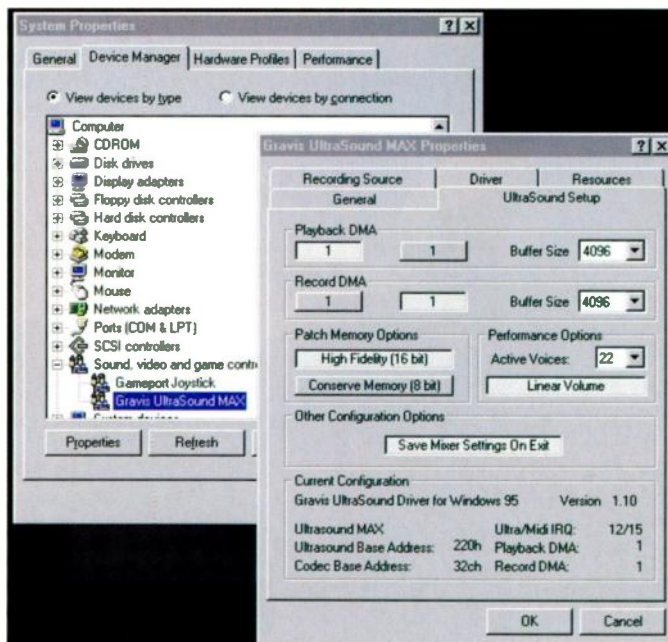
This software has to be provided by the card manufacturer, as it is specific to the soundcard's hardware and can cause problems if it is not particularly well written. Even if the software is OK, you still come unstuck if the device driver is not set up properly. For instance, your

An interrupt handler is simply a small piece of software that is run by the operating system whenever a byte of MIDI data is received by the interface card. The handler will only run if the hardware on the interface can send an interrupt to the computer's processor using an IRQ (Interrupt ReQuest) line, basically an electrical

signal that connects straight to the PC's brain (ie. the CPU or processor). If this line is not configured properly, the PC has no way of knowing that MIDI data has arrived and thus won't read the data into memory.

### ON ROUTE

Of course, there may be other reasons why your external MIDI controller isn't working: the MIDI cable might be broken or incorrectly wired, the game port on your soundcard might not be compatible with the *de facto* SoundBlaster standard, or the MIDI



If you're using Windows 95, go to the System Properties dialogue to check that your soundcard's MIDI interface is set up correctly. See overleaf for more on this.

device driver supplied with the card may even have a bug in it. So you should check the following things to try and track down the problem...

device driver supplied with the card may even have a bug in it. So you should check the following things to try and track down the problem...

- Check that the controller is sending valid MIDI data: find a friend or relation who has a MIDI keyboard, plug the keyboard into the



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## BRIGHT IDEA FOR MIDI MUSICIANS

The MIDI BrightEye, from UK-based RTPS Systems Ltd is one of those simple ideas that can prove extremely useful for both studio and live use. They currently manufacture two kinds of BrightEye in both 'genders' (ie. plug and socket). There's a plastic version, which is designed for domestic and light commercial usage, and is available for under £3 from Studio Spares [CAT # 401-740] on 0171 482 1692, or Maplin Electronics [CAT #BH32K] on 01702 554161. The Pro version, in a rugged metal case, is designed for use 'on the road' or in a toolkit where a plastic-cased version would not survive the rough treatment! The Pro retails for around £10 including VAT. For more details about the range, phone 01869 278470 or email [midi\\_for\\_humans@aspects.com](mailto:midi_for_humans@aspects.com).

- ▶ MIDI In socket and play something. Alternatively, you could visit your local music shop with the MIDI keyboard under your arm and say that you'd like to try out some MIDI sound modules. If all else fails, purchase a BrightEye MIDI tester plug, which has an LED that flashes when plugged into a MIDI Out socket that is sending MIDI data (see the 'Bright Idea for MIDI Musicians' box, above).
- Check the lead connecting the MIDI keyboard to your PC. If you are using a MIDI lead, connect it between two MIDI devices known to be working or test the continuity between pins

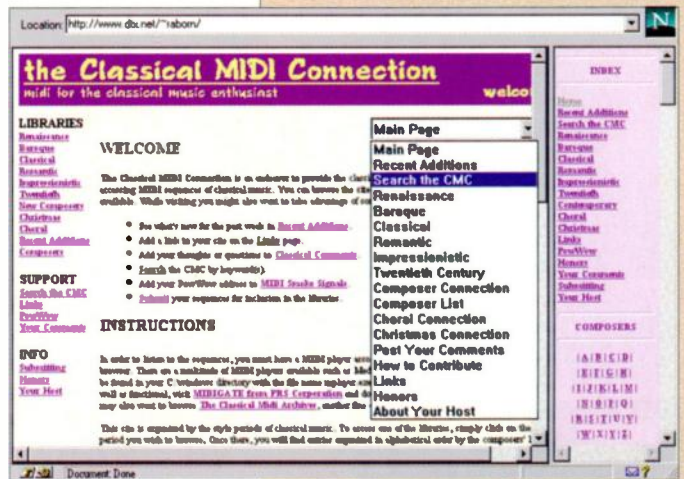
4 and 5 on each plug (ie. 4 -> 4 and 5 -> 5).

Pins 4 and 5 are the second from each end — looking at the end of the plug with the index 'bump' at the bottom, the pin numbering goes in the order 1-4-2-5-3 from left to right. If you are using a converter lead that plugs into your soundcard's game port, then you could try using the

same lead on another PC. Unfortunately, there is no simple way of checking this type of cable, and they are quite often the cause of this kind of problem. Yamaha sell this kind of PC cable for £15, so if you suspect that this may be the cause of the problem and you have no other way of testing it, it may be worth calling their Multimedia division (01908 366700) for a replacement.

- Check that you have the most up-to-date MIDI drivers loaded — contact the soundcard supplier or distributor; they should be able to supply a free update if one is available. You can check the current version and settings of the device driver by looking at the Drivers icon in the Windows 3.1 Control Panel or the Device Manager tab on the Windows 95 System Properties dialogue. You need to open the 'Sound, video and game controllers' branch, then click on the Properties button of the

## CYBERSPACE CORNER



*The Classical MIDI Connection is a collection of classical pieces in MIDI format — useful for study purposes.*

There are not many legal MIDI files on the web, especially since the big publishers and the royalty collection agencies started to realise the potential income they were losing through the presence of pirate (and often exceedingly naff) versions of their copyright material on the net. However, there is some legitimate MIDI file material available as demos and educational resources that can either be used to check out your soundcard or as inspiration for your own work. Some sites I've come across are...

- The Classical MIDI Connection  
<http://www.dtx.net/~rabor/>
- Key West Productions  
[http://kwest.net/multi-media/sound/midi/Sequences/General\\_Midi/](http://kwest.net/multi-media/sound/midi/Sequences/General_Midi/)
- Music Sales  
<http://www.musicsales.co.uk/>

soundcard device in Windows 95.

- Check that there are no clashes with other system resources. With Windows 95, you will need to do this manually (unless you have a 'Plug and Play' soundcard) by trawling through the Device Manager pages for other devices on the system. If there are no clashes, you will need to check that the settings match those made with the physical jumpers on the card. Most cards should come with a DOS-based diagnostic program for checking that the card hardware is working and interfaced properly with your PC.

If you've run through all the above checks and you're still having no joy, then you may have a soundcard that is inherently incompatible with your particular model of PC. If this is the case, you should be able to return it to the original vendor as being 'not of satisfactory quality' and be eligible for either a refund or a suitable replacement under the Sale and Supply of Goods Act 1994.

## FREEWAY SG01

Murray Fleming ([flemingm@sulphur.win-uk.net](mailto:flemingm@sulphur.win-uk.net)) emailed me recently when he noticed a letter in *SOS* complaining about the poor editing facilities on the Akai SG01v synthesiser module. He has developed a freeware Windows editor for the SG01 range, which can be found on his World Wide Web Site:

<http://www.ibmpcug.co.uk/~sulphur/sg01edit/>

So far only the SG01v is supported, but Murray says that other modules in the range will be added soon (whenever Akai get round to sending the information!). Nice one Murray!



*Murray Fleming's freeware editor for the Akai SG01v module is available from an Internet connection near you.*



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# The Soundcard Studio

## PC DESKTOP MUSIC SYSTEMS & HOW TO CONNECT THEM

A 'traditional' modern project music studio is a complex and costly affair, comprising MIDI sequencers, sound modules, keyboards, outboard effects, multitrack recorders, mixers, miles of cable — you're an SOS reader, you know the story. But while some studio owners have been extending their garages so they can fit in yet another rack of processors and some bigger monitors, a quiet revolution has been taking place

*PAUL WHITE looks at the components of a PC-based desktop music system, and suggests some helpful ways of using such setups in conjunction with more 'traditional' studio equipment.*

on the desktop studio front. Most of you will at least have heard of the MIDI + Audio sequencers that run on an Apple Macintosh or IBM-compatible PC, but of the users I've spoken to, most use such programs within the context of a more orthodox recording setup and tend to drive external sound modules or samplers. On the other hand, we all know about soundcards. Cheap, compact and now capable of supporting basic direct-to-disk audio recording and playback, they're the things you plug into PCs to make games sound marginally less dull — but they can't be taken seriously if your aim is producing professional-sounding music recordings.

A couple of years ago, this last (admittedly facetious) statement might have gone unchallenged, at least as far as affordable hardware was concerned, but over the past few months, some very serious musical hardware has turned up on PC soundcards, much of it derived from existing keyboard instruments, or sound modules costing three or four times as much. The humble AWE32 SoundBlaster and its contemporaries offer a lot of possibilities, considering their very low price, but if you're prepared to spend between £150 and £250 on a wavetable-based synth card, you can now expect quality that rivals that of a stand-alone synth. What's more, because PC cards are purely software-driven, you often find a surprising amount of useful support software bundled with the card, including sequencers, editor/librarians, MIDI song files, mixer maps for the most commonly

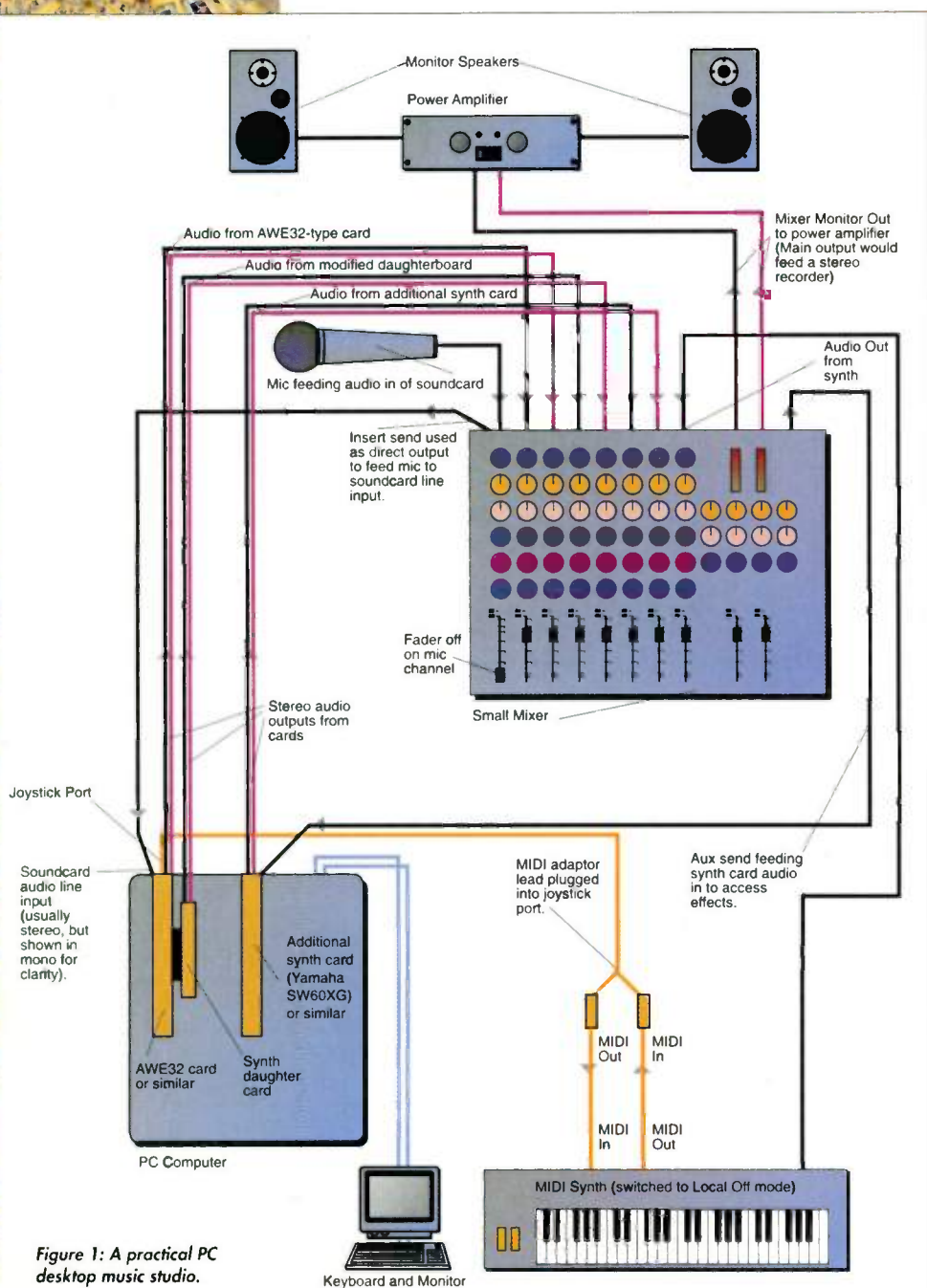






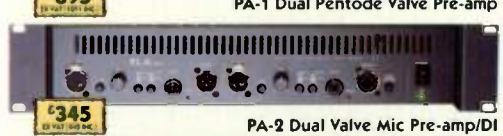


Figure 1: A practical PC desktop music studio.



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**Chris Porter** (Producer - Take That) - "I bought one of the first EQ-1s and I've enjoyed using it immensely. It gives a unique quality to the vocals in particular - Take That's 'Back For Good' is a typical example of the EQ-1 adding depth and presence to a vocal track."

**Tom Lord-Alge** (Dual Grammy Award Winning Engineer) - "The Indigo 2011 EQ has given me the ability to EQ with clarity, rather than just tone. I find it to be very musical. Any problem sound I have come across, I patch in the 2011 and it allows me to add depth and clarity."

**Stephen Croes** (Producer, Arranger, Engineer) - Fleetwood Music, Kenny Loggins, Jennifer Warnes - "The Indigo 2011 EQ and 2021 Compressor are exceptional - both reliable and flexible. I can stomp or be subtle, hype the sound or just dial it in. There are real tools for any level of music production."



**TL Audio**



## PC DESKTOP MUSIC SYSTEMS & HOW TO CONNECT THEM

► used sequencers and even Karaoke software. Sadly, there's little sign of any on-line psychiatric support, which is probably the only thing that could benefit those unfortunate souls who believe that booting up the MIDI Karaoke bar constitutes a good idea!

Because PCs have a number of expansion slots, it's quite possible to use two or more soundcards in the same machine, though installing PC hardware isn't always the painless procedure it ought to be, as will be explained in a future *SOS* article. If you're using Windows 95, then choosing a 'Plug and Play'-compatible card should help simplify things. However, unlike typical all-in-one MIDI + Audio multimedia cards, some dedicated synth cards (such as the Yamaha SW60XG) install in the PC's short slots, and require no fiddling about with IRQs or DMAs. If you are as yet blissfully ignorant of these seemingly-innocuous initials, know now that they can strike terror into the hearts of even seasoned PC veterans, but again, we have plans to demystify the subject (or at least let you know why you have every right to remain mystified!) in a forthcoming detailed article. For a quick explanation, check out the feature starting on page 164.

Suffice it to say that even a modest card can provide you with a very nice GM synth, complete with effects — and possibly a sing-along Karaoke mic input with reverb! What's more, cards have their own stereo output jacks, their sounds and effects can normally be edited via software, and they don't need a physical MIDI interface to drive them (most cards come up in your sequencer as a 'virtual' MIDI port). For more on soundcards, see Brian Heywood's detailed article on the subject starting on page 180 of this issue.

### MAKING CONNECTIONS

The main reason for this appetite-whetting preamble is to show you that while a cheap soundcard plugged into a pair of tiny powered AV monitors isn't going to threaten the

### CARD CONFLICTS: PROBLEMS INSTALLING A SECOND CARD

If you install a second card that requires MIDI, such as Yamaha's SW60XG, you may need to change the MIDI port address the new card will use, because if you already have a card installed in the PC, the chances are that it will already have hogged the Internal MIDI port on the PC that the new card is expected to work on. Sorting this out is a matter of moving plastic jumper plugs on the card to an unused MIDI port number, and then entering the same number in the software driver's settings dialogue box. If this seems confusing, don't panic, just stay tuned — this kind of potential complication will be covered in detail in a future *SOS* article.

soundcards and daughter boards. While there's usually an option to daisy-chain the audio ins and outs of various soundcards to enable you to mix everything to stereo, the quality penalty is significant (see the separate 'Board Room' box for more on this). By keeping your outputs separate, you can patch into an external mixer, which is obviously far more flexible.

Even if you only have two sets of stereo outputs to play with, a separate mixer will allow you to create up to four separate groups of sounds (by using MIDI panning to move sounds hard left or right) after which you can independently EQ and effect each group of sounds as required. Monitoring can be via a proper system or hi-fi, rather than cheap, powered desktop speakers, and the improved audio quality of an external mixer means you can end up with a very respectable-sounding mix, especially if you master to something like DAT or DCC rather than analogue cassette.

There are other reasons for using an external mixer. Although soundcards often come with mic or line inputs that allow you to record your own .WAV audio files, the signal path through these is usually pretty grotty (as are the mics that interface with them). What's more, as well as being built to a price, budget soundcards have to work inside the PC, where there's potential for high-gain mic inputs to pick up lots of interference from the various data busses. A far better option is to use an external mixer to bring the output from a decent mic up to line level, then feed this into the soundcard's line-level input. Not only does this give you the chance to use a studio-quality mic, it will also improve the signal-to-noise ratio of the recording by amplifying the signal within the mixer rather than within the soundcard.

Even using a budget 'something into two' general-purpose mixer, you can use one channel as a mic preamp simply by turning the channel fader right down and using the channel insert send to feed your soundcard. The mic gain is set using the channel gain trim, and the signal level can be monitored using whatever facilities are provided with the soundcard. Figure 1 shows how a typical multi-card PC system might be connected.

If you have a mixer with no insert points, you

### LOOK, NO HARDWARE: SOFTWARE SYNTHESIS

Software-based synthesis (which uses the computer's own processing power rather than hardware to create sounds) is becoming more practical now that high-powered computers are relatively cheap. Obviously, these packages use up some of the computer's processing power and memory, and depending on how sophisticated (and well-

written) the software is, this amount can be anything from just a few percent up to nearly the entire processing power of the system, with consequent limitations on what you can run alongside the software synth.

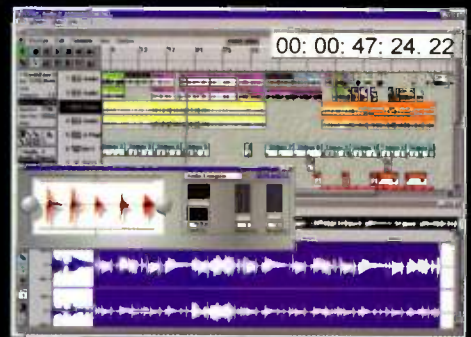
At the budget end of the market, software synths can rival cheap soundcards for sound quality, and they tend to be

GM-compatible, but their main application is in the games market. My recommendation would be to stick with hardware cards wherever possible, unless you come across a software synthesis package offering you creative potential that doesn't exist elsewhere in your system. Then again, the future could change all this!

conventional studio, for very little additional expense, the more serious PC-based user can gain access to some pretty impressive music power. What's more, it's often possible to mix and process the sounds in a far more comprehensive way than you might imagine. For example, there may be several separate stereo outputs, that can be conventionally mixed, coming from different



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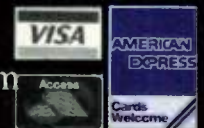
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## PC DESKTOP MUSIC SYSTEMS & HOW TO CONNECT THEM

► can instead use the pre-fade aux send on the mic channel to send the mic signal to the correspondingly-numbered aux send output, then use *this* to feed the soundcard input. For example, you could feed your mic into channel 1, then route this to the aux 1 output by turning up the aux 1 send on channel 1 only. The level fader on channel 1 should be off, and the level sent to the soundcard will then be controlled by the aux 1 master output level knob. You can still connect outboard effects to the mixer in the conventional way, via post-fade aux sends and effects return channels.

Some soundcards allow you to feed in an external audio signal, to which the card's own internal effects may be added — very useful if you can't afford a separate effects processor. In this case, you can connect the audio input of the card to a post-fade effects send and treat it much like an external effects unit, the main difference being that the effect comes back mixed with anything else that's coming out of the soundcard, rather than separately, as would be the case with an outboard effects box. The software supplied with your card should be used to set the dry/effects mix to 100% effects, and the effects sends should be turned right down on the mixer channels the card is plugged into, otherwise you'll be sending the effected output back into the card again, and feedback will result.

How flexible this approach is depends on the type of soundcard you have. I've a sneaking suspicion that audio inputs are provided mainly to satisfy the Far Eastern market who demand that the cards double as MIDI Karaoke systems! Even so, it's a very welcome facility to have thrown in at no extra cost.

### AND THERE'S MIDI

A basic PC MIDI music system will generally make use of the MIDI interface provided by the soundcard; the standard way of working is to use a MIDI adaptor cable that plugs into the card's joystick port. Alternatively, you can buy a hardware adaptor that looks like a long multi-pin plug with

MIDI sockets built into it. These often allow you to leave your joystick connected via a Joystick Thru socket, but I'm informed that some MIDI programs get upset if a joystick is left connected, so if in doubt, unplug it.

The limitation of a simple '1-in, 1-out' MIDI interface is that you can only drive 16 external MIDI channels. With today's synth modules, that usually means a single multitimbral instrument, but remember that internal soundcards, other than daughter boards, use virtual MIDI ports. This is obviously good news if you're on a budget, as you can use your internal soundcard sounds at the same time as your external MIDI module, and you still only need one MIDI port.

If you need more ports to handle additional external synths, then you can buy so-called multi-port MIDI interfaces, either as cards or external hardware boxes, offering two, four or eight sets of MIDI outputs. These should not be confused with simple multi-output Thru boxes, where each MIDI Out carries the same information — a multi-port interface's outputs are quite independent, and tend to be identified by number or by letter. For example, port A would carry MIDI channels 1A to 16A, while port B would carry channels 1B to 16B, and so on. An 8-output multi-port interface provides 128 separately-addressable MIDI channels, which is sufficient for all but the most gear-intensive setups.

A 'dumb' MIDI master keyboard can simply be connected to the MIDI In, while a MIDI synth would need to be set to Local Off, so that the synth section could be driven from the MIDI Out port of the computer (Figure 1 shows the latter option).

### SUMMARY

A PC-based MIDI/WAV audio studio has the advantages of being inexpensive, compact and (once set up) convenient. With the addition of an external hardware mixer, a monitoring system, and possibly some outboard signal processing, you have the basis of a serious desktop music recording system, and as soundcards continue to become more powerful and better specified, you can upgrade your system a piece at a time without having to sell up and start from scratch. Those interested in direct-to-disk recording will find that some of the mid-priced cards, such as those built by Turtle Beach, are well worth investigating. Alternatively, a separate audio card, such as Digidesign's Audiomedia III, is capable of excellent results, and has the advantage that it keeps your audio and synth signals separate, rather than mixing them as a budget 'all-in-one' card would.

I think the 'traditional' studio will be with us for very many years to come, but as the capabilities of PC-based systems continue to increase, the boundaries between the two types are bound to become blurred. By choosing your cards carefully, and by incorporating a small mixer plus a modest amount of external signal processing, you can build a serious desktop studio for less than you might once have paid for a stereo sampler.

SOS

### BOARD ROOM: DAUGHTER BOARDS

If you're stuck for space in your PC, you can piggy-back a 'daughter board', such as Yamaha's DB50XG, onto any of the more common soundcards that come fitted with a suitable expansion connector. I only mention this specific card because I have one strapped to my AWE32, where it responds to any MIDI data sent to the AWE32's external MIDI output. However, if you're already using the external MIDI output for something else, you'll have two instruments playing at once, unless you switch one of them off. A disadvantage of such

daughter boards is that their high-quality audio output is fed through the audio stage of the main soundcard, in order to mix it with any sounds you may be using from the soundcard's other synths or audio playback system. The usual outcome is a noticeable loss of sound quality (especially increased noise), and of course the fact that the signal from the daughter board emerges at the main soundcard's output means that you can't separately process the daughter board's signal.

If you're handy with a soldering iron, it's usually

possible to intercept the daughter board's output and feed it directly to the outside world via fixed audio cables or mini-jacks fixed to a spare card slot cover (once again, a forthcoming feature will explain how to carry out this operation on Yamaha's DB50XG daughter board). Because of the large number of high-quality soundcards appearing on the market, it isn't possible for us to provide mod details for all of them, but it's worth contacting the manufacturer's own tech support people first, then scouring on-line Internet resources if that doesn't bring a result.



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Until recently, if you wanted to use a computer for sophisticated music or graphics creation, an Apple Macintosh was your only real choice. The Atari ST has done sterling work for musicians in the past, but even its most ardent supporters will acknowledge that it is rather underpowered for today's music requirements. Though affordable and very popular in the business world, the other alternative, the IBM-compatible PC, was seen as a dreary office machine that was fine for accounts, stock checks and word processing, but a complete non-starter

mutter that they 'never could get their heads around computers.' I'm sure that this mental block stems from a basic lack of familiarity with the way that computers operate. If you, too, feel intimidated by the prospect of using a PC for music, this article is for you.

Admittedly, a lot of effort is necessary. It takes time to learn a sophisticated music package such as *Cubase* or *Logic* in depth, and you also have to familiarise yourself with the peculiarities of the PC, but you don't have to learn everything at once — most high-quality software is designed so that you can make a start almost immediately. Much of the fine detail is optional, and will fall into place once you've mastered the basics.

As you read this article, you will encounter unfamiliar terms, but don't fret — that's what

# The PC in Pieces

**JANET HARNIMAN COOK** quite literally takes the lid off the PC, and explains why she feels it's the best bet for the future of music.

for more glamorous, creative activities.

Thanks to the endeavours of music software writers, and to some extent, to the introduction of the Windows 95 operating system, this is no longer true. Today's Pentium processor-based PCs can take on Apple Macs at their own game, and although the cutting edge of MIDI and digital audio editing still remains with the more expensive Power Macs, the gap is closing rapidly. Visitors to my own studio are usually impressed by the speed and versatility of the PC recording system I use, but often, when I suggest that they might try a PC for their own music, I see their eyes glaze over and hear them

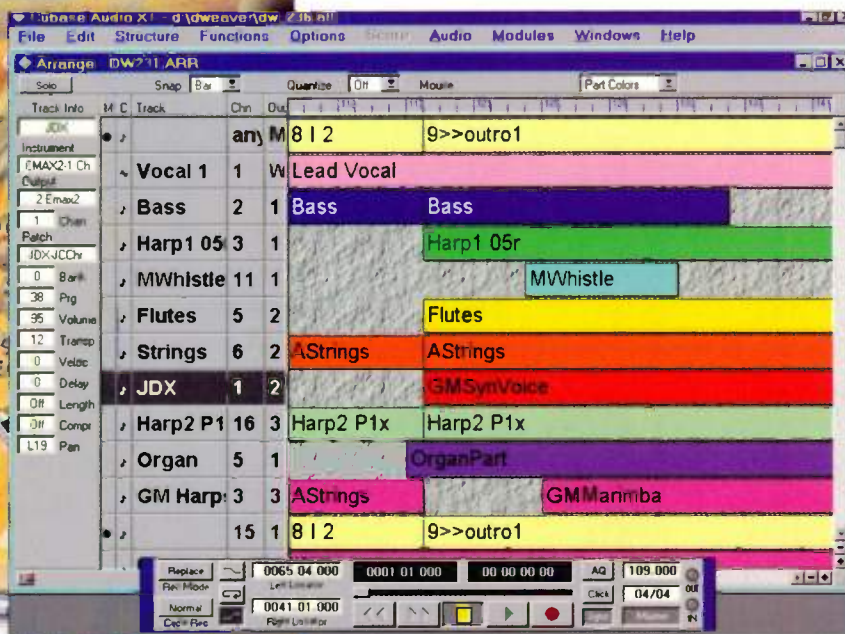
## PC ANATOMY EXPLAINED

the dedicated Glossary is for, which you'll find elsewhere in this piece. To aid spatial orientation as you read, check out Figure 1 on page 166.

### HARDWARE & SOFTWARE

Like all computers, the PC consists of two main elements: hardware and software. Hardware describes the physical components of the computer, while software is program data. The two main types of software you'll have to deal with as a musician are the PC's own operating system (the most recent is Windows 95), and the music package you wish to run on the PC. If you've already worked with an Atari program that has a PC counterpart, such as *Cubase*, you should find the transition relatively simple. The external PC hardware consists of output and input devices — monitors, printers and MIDI Out ports are output devices, while the keyboard, mouse, joystick and MIDI input port are all data input devices.

To learn more, we need to take off the lid, as a significant amount of PC hardware expansion is done by plugging in cards on the inside rather than wiring up boxes on the outside. When the cover is removed from the PC [only after unplugging it from the mains, please! — electrically-aware Ed], you will see the various components of the internal PC hardware beneath the assorted power leads and ribbon connector cables. These are the Mother board, the Drives, the Cards and the power supply.



Cubase Audio XT: an example of a MIDI + Audio application running under Windows 95.



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# PC Anatomy Explained

## ▶ THE MOTHER BOARD

The Pentium mother board illustrated is a standard item with an onboard I/O controller and an Intel 82430 VX version 3 chipset (dated 04-15-96) with 256-kilobyte (K) Pipeline burst cache. The mother board contains the main Processor Chip (or CPU), as well as the BIOS chipset, the ISA and PCI buss slots, the memory slots and the Drive and Port connectors. You don't need to be intimately familiar with all these details, but you do need to know about the slots where cards (of which more later) and memory chips are plugged in.

### • THE PROCESSOR CHIP

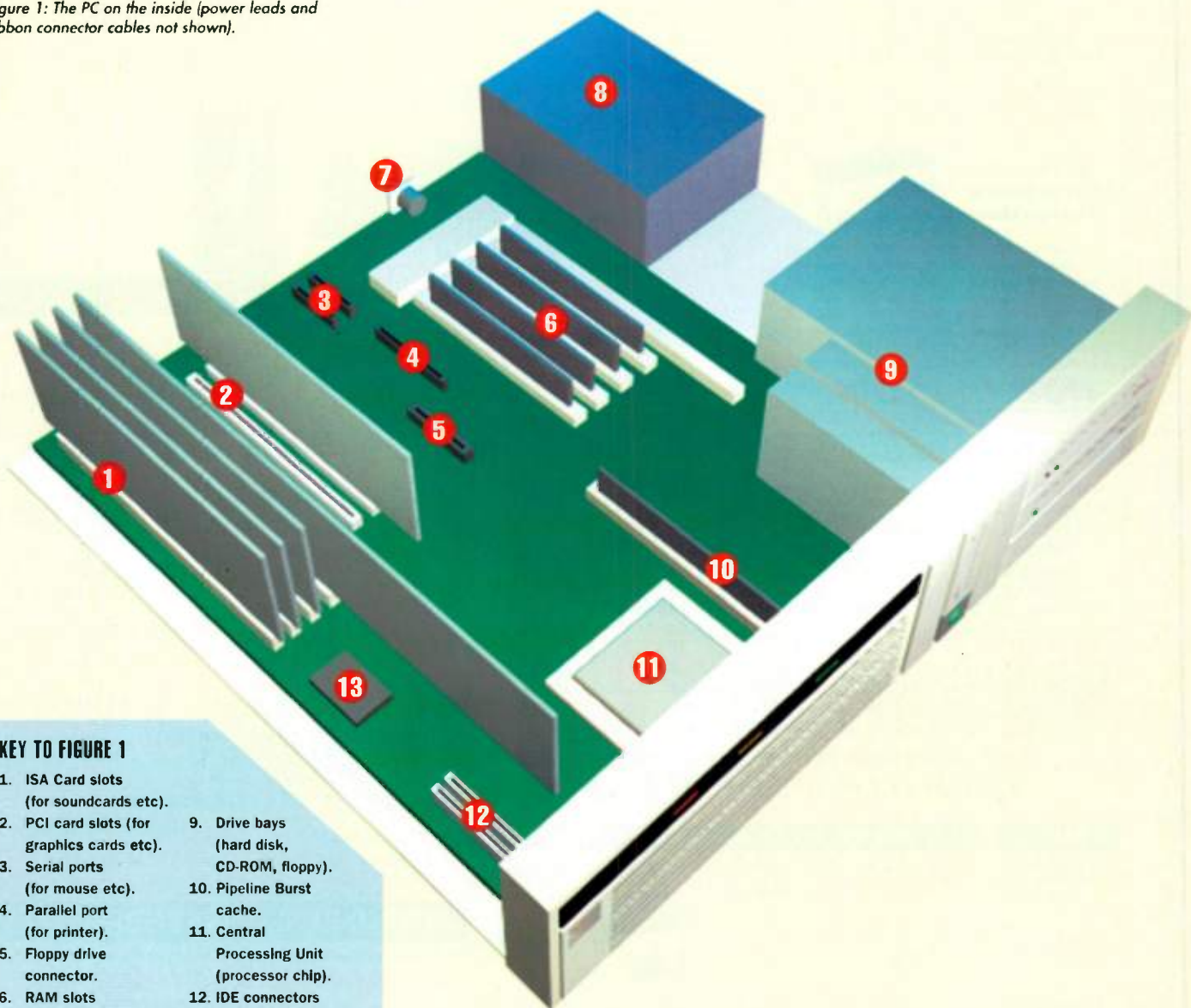
When you look at the mother board, you can't actually see the processor chip, as it is hidden

beneath the fan-mounted heat sink. The processor chip is the heart of the PC — it is this component that performs the required mathematical operations on the data presented to it, under instruction from the software being run. The processor's speed and architecture are the main factors that determine PC performance: for example, to run modern MIDI sequencing and hard disk audio applications, a Pentium 90 or higher-speed processor chip is the preferred option, with the 486 DX50 scraping by as an entry-level machine. However, for MIDI-only applications, a 486 is fine.

### • MEMORY

RAM (Random Access Memory) is the computer's main dynamic memory, and comes as small boards

Figure 1: The PC on the inside (power leads and ribbon connector cables not shown).



### KEY TO FIGURE 1

- |   |   |
|---|---|
| 1. ISA Card slots (for soundcards etc).     | 9. Drive bays (hard disk, CD-ROM, floppy).    |
| 2. PCI card slots (for graphics cards etc). | 10. Pipeline Burst cache.                     |
| 3. Serial ports (for mouse etc).            | 11. Central Processing Unit (processor chip). |
| 4. Parallel port (for printer).             | 12. IDE connectors (hard drives, CD-ROMs).    |
| 5. Floppy drive connector.                  | 13. BIOS chip.                                |
| 6. RAM slots (SIMM & DIMM).                 |   |
| 7. Keyboard connector.                      |   |
| 8. Power supply.                            |   |

Original image by Michael Shackleton.



called SIMMs or Sticks, that are plugged into the RAM slots on the mother board. RAM is chip-based and very fast. But it is also volatile, in so far as data is only retained when the computer is switched on. If the power fails, or if the program currently running crashes, any data stored only in RAM will be lost. The purpose of RAM is twofold: firstly, it holds a copy of the currently-active software, usually loaded from the hard disk drive attached to the computer, and secondly, it provides an area for the computer to store numbers as it goes about the business of performing calculations on the input data. Because modern software packages often occupy a lot of memory, and because Windows 95 itself takes up a lot of space, you need a lot of RAM. Too little RAM may result in your software being slow or crashing — or it may not run at all. To comfortably run MIDI + Audio sequencing and digital audio recording applications, 20 Megabytes (Mb) of RAM is adequate, with 16Mb an absolute minimum. This time last year, 16Mb of RAM would have cost you around £400 plus VAT, but thanks to the world slump in RAM prices, you can now expect to buy the same quantity for around £80. Because of the limited number of RAM slots in a computer, it pays to buy the biggest RAM chips or SIMMs (Single In-line Memory

## SAVE OR SUFFER

It can be heart-breaking to lose valuable work, yet all computers crash from time to time, and when they do, all unsaved work is lost. If you are very unlucky, your hard drive could crash (it happened to me...), and sometimes even file recovery programs such as Norton Utilities can't save you! It makes

sense to save changes to your work regularly, and valuable files should be backed up, either on floppy or on another hard drive. Make sure to give each revision its own file name, so you can refer back to each stage of your work as it develops. Archiving audio files to DAT is slow, so unless you have plenty of spare time, the best alternative is to back up to a second drive, ideally with removable media.

Modules) you can afford, so always go for 16Mb SIMMs or greater — but check with your supplier first to confirm what type, speed and capacity will fit in your particular machine.

The mother board may also contain a slot for Secondary Cache memory. Cache memory is ultra-fast RAM that sits between the PC's processor chip and the main RAM, acting as a temporary holding area for data subject to repeated access by the processor chip. The variety found on the VX3 mother board is the exotically-named Pipeline Burst cache, and its job is to make processing even faster. Cache memory is also found on hard drives and printers.

### • BIOS

The mother board also holds the dedicated read-only memory chips containing the BIOS (Basic In Out System). This is the first tier of the PC

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### SOUND FORGE XP

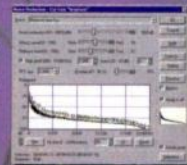
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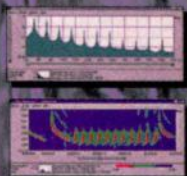
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# PC Anatomy Explained

- ▶ operating system, and loads automatically when the PC is powered up, enabling the computer to check and configure the internal and external hardware. All computers need a BIOS of some kind, otherwise the processor chip would power up with no idea what it was supposed to do!

## THE DRIVES

As we have seen, RAM is a fast but finite area of memory that forgets everything it knows as soon as the computer is shut down. More permanent

removed and overwritten, and stored data remains intact indefinitely when the power is turned off. Hard disks have the largest maximum storage capacity of all the media listed here — up to around 9 Gigabytes (Gb) per drive, although drive sizes of between 1 and 2Gb are more common. The combination of high capacity and fast access times makes a hard drive a suitable medium for audio and video data storage, as well as more conventional computer applications.

Some hard drives have a removable cartridge and are ideal for archiving audio, including the newer models in the SyQuest range and the Iomega 1Gb Jaz and 100Mb Zip drives. For the storage of smaller program files or data files, the familiar floppy disk is convenient, as it is easily removable and very portable, but its capacity is starting to look rather limited as modern software continues to get bigger. The standard PC High Density (HD) floppy drive has a capacity of 1.44Mb; mine is mainly used for program installation and small file backup.

Optical drives use removable media, the most familiar being the CD-ROM. These are read-only devices, with relatively slow access times, but they are cheap to manufacture, as they are internally identical to audio CDs, and they have a large storage capacity of around 680Mb (which is why a lot of large

commercial software packages now come on CD-ROM, rather than on multiple floppy disks). Furthermore, because you can't record new data on a CD-ROM, or change what's already there, the risk of accidentally corrupting files is eliminated.

Finally, it's worth mentioning that Compact Disk Recorders (CD-Rs) are starting to find their way into music studio PCs, both for making one-off CDs and for creating a permanent record of valuable data. They are already widely used by



SAW Plus, the popular PC multitracker.

storage is provided by magnetic disk drives, which hold programs and files that are not currently active. When you want to stop working on a MIDI sequence or word processing document, the result is always stored on a drive. When you resume work, the file is loaded back into RAM, and you can continue from the point where you left off.

The primary backup storage device on the PC is the hard disk drive, which provides fast data transfer to and from RAM. Old data can be

## SYSTEM MAINTENANCE

Computers are exceptionally busy devices and a little time devoted to PC housekeeping will ensure that your system is kept tuned to deliver optimum performance.

For example, in the course of everyday working, the files on your hard disk can become fragmented or sometimes even damaged. Damaged files do not run correctly (if they load at all), whereas when a file becomes badly fragmented, its parts become widely scattered across the sectors of your hard disk, making everything slow down, or occasionally crash. Fragmentation is particularly bad news for direct-to-disk audio applications, where getting data on and off disk extremely quickly is the name of the game. Fortunately, Windows 95 contains two accessory programs to remedy both of these situations. *Scandisk* will repair minor file damage and *Defrag* will

gather the pieces of the fragmented files, then rewrite them back to the hard drive in a more contiguous form.

Hard drives containing audio files should be defragmented after every editing session. In fact, there's a good deal to be said for using a completely separate disk for audio use rather than trying to record onto the same internal drive that contains your operating system and program files. It is also a good idea to periodically use Windows 95's *Explorer* (or *File Manager*) to check for undiscarded temporary files. These are to be discovered in your Root C:\, DOS and applications directories. Temporary files tend to use odd characters in their file name, such as the tilde (~), the hash (#) or dollar (\$) — for example '~\_file01.doc' — and can gobble up large chunks of hard drive space. A recent crash while running the

*Cubase Audio* performance checker left me with a 382Mb temporary file! Many applications requisition hard drive space to use as a temporary file buffer, and this is normally erased when you quit, but if the PC crashes, or you power down without first quitting the application and closing Windows, the temporary files may be left unerased on your hard drive.

Two Windows 95 programs are worth recommending. The first, the *Undelete Wizard*, has saved me several times after accidentally erasing the wrong files, although it doesn't work if you have defragmented the hard drive since losing your files. The other, *Norton Utilities for Windows 95*, is an essential collection of file and disk salvage tools, which will repair certain types of disk corruption, and allow you to evaluate your system performance, or defragment your hard drive using a dedicated Norton utility. It will also enable you to create an emergency disk, which will help in the event of a serious system crash.

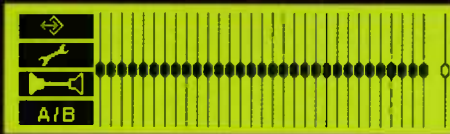


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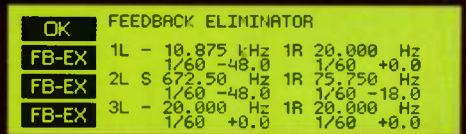
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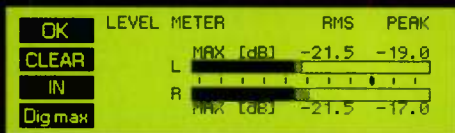
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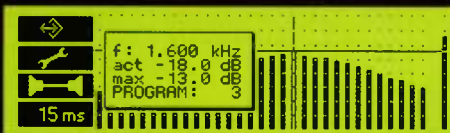
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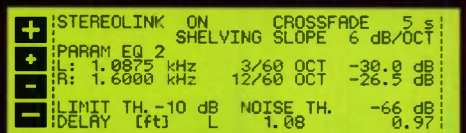
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# PC Anatomy Explained

► business for archiving or multimedia purposes, and their continually-falling price makes them particularly attractive to small studio operators, especially as PC software has now become available to allow full Red Book audio CD mastering.

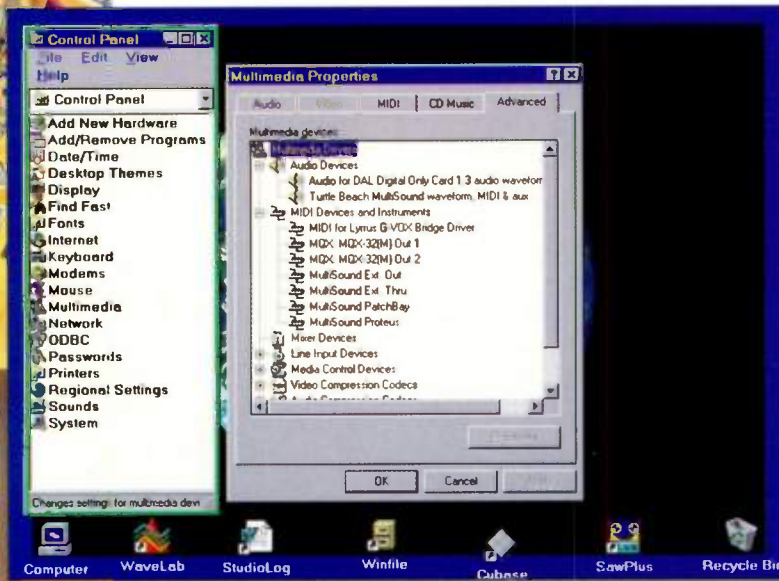
## CARDS

One of the great things about PCs is that you can plug so-called cards into the buss slots on the motherboard to make your PC perform a variety

slots, you can either invest in a Tree Card or an external ISA card bay, but as we shall see, PC architecture imposes a practical limit on how many cards can be run at once. Every PC needs a video card to run its monitor (unlike modern Apple Macs, where video is accommodated on the mother board), but obviously, the cards of primary importance to musicians are those that handle audio and MIDI — soundcards.

A soundcard samples incoming analogue audio signals and converts them to the digital format used by the PC. It also converts PC digital audio data back to analogue sound when you play back your work, thus enabling the PC to record and play back audio. The soundcard may also include an onboard synth and a MIDI interface. Most audio/MIDI/synth soundcards (see below) plug into the PC's longer ISA slots, while dedicated synth cards, such as Yamaha's SW60XG, can make use of the shorter PCI slots.

If you have a soundcard with a digital input connector (such as DAL's CardD or Digidesign's Audiomediam III card, which has both analogue and digital inputs and outputs), you can transfer digital audio direct to your soundcard via the S/PDIF digital connectors of your DAT or CD player, or from a digital desk like the Yamaha O2R. Some cards (such as Digidesign's Samplecell or Turtle Beach's Maui) even have built-in samplers. These devices allow you to store samples in RAM plugged into the card itself, then trigger these samples multitimbrally via MIDI, just as you would with a stand-alone sampler. One of the great advantages of card-based instruments over their external



The Windows 95 Multimedia Drivers list.

of specialised tasks (the buss, by the way, is simply an arrangement of parallel electrical tracks that connects the cards to the processor chip or the computer's RAM). Most Pentium mother boards only have three or four ISA buss slots, and a similar number of PCI buss slots. If you need more ISA

## EXTERNAL HARDWARE

### • SOUNDCARDS

If you want to record and play back audio simultaneously, your soundcard really should be DSP-based so it can handle the large degree of number-crunching involved. Examples of DSP-based soundcards include Turtle Beach's Tahiti, Digidesign's Audiomediam III and the DAL CardD. It is also a good idea to use a separate MIDI card.

### • MONITORS

While the quality of some 14-inch monitors is very good, I recommend a 17-inch screen if you intend to run long

sessions — it's much easier on the eyes.

### • KEYBOARD

Also worth getting is a Windows 95 keyboard with special shortcut keys. Key Two opens the Windows 95 Start menu (see the picture in this box) and the third duplicates the right mouse button functions.

### • MOUSE & TRACKBALLS

The power-user alternative to a mouse is a trackball. Trackballs range in price from £20 to £80, and some people feel they considerably speed up screen navigation — although others hate them! Mice and trackballs are typically

opto-mechanical, and regular cleaning is necessary to prevent grime from the mouse mat gumming up their works. It

is easy to flip out the ball from a mouse and degunge the internal rollers with a cotton bud dipped in Isopropanol.

The Windows 95 Start menu, showing menu tree and the desktop.





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# PC Anatomy Explained

▶ counterparts is cost, though you also save on wiring and economise on desk space.

For MIDI and 2-in, 2-out audio recording, at least one soundcard is required, though for more sophisticated applications, there may be separate cards to handle MIDI interfacing, analogue/digital conversion, and digital audio. There may also be a SCSI (Small Computer System Interface) card for recordable CD drives or any other external SCSI devices, such as additional hard drives.

## PORTS

Ports are simply connectors for getting data into or out of the PC, and are used by mice, dongles, printers, joysticks, MIDI devices and so on. Connectors for the keyboard and the external

needs to talk to the processor. Once a program is loaded, the processor sits and twiddles its electronic thumbs until its attention is demanded by an interrupt request, which will be sent whenever you move a mouse, tap a key or send in a bit of MIDI data from a music keyboard. Although computers can produce the illusion of being able to deal with several things simultaneously, this is solely because of the speed at which tasks are handled — in fact, they can only carry out one operation at a time, and this includes dealing with interrupt requests. Devices are therefore given different interrupt numbers so that they can form orderly queues when they all clamour for attention at the same time. Think of it like the ticket machine at the deli counter in the supermarket, where you're given a numbered ticket, and then have to wait until your number is called.

One problem with the IRQ system is that the number of IRQs is limited to 16 (numbered 0-15). What's more, the majority are taken up with the basic PC hardware, leaving only four or five available for other devices such as soundcards. You can view the IRQ list in Windows 95 by clicking with the right mouse button on the My Computer icon on the desktop. Click on Properties/Device Manager, and then highlight Computer from the list. Click once again using the right mouse button to select Computer Properties/View Resources By IRQ (as shown, left). If you do run out of IRQs, it is possible to have two devices sharing the same interrupt, providing they are not active at the same time, though Windows 95 might issue dire warnings if you decide to do this (which you'll have to be brave enough to ignore). I run my digital card on IRQ 7, which is also assigned to the printer port, and it's fine as long as I don't try to use both at once. Windows 95 includes a system known as 'Plug and Play', ▶



The IRQ list, located under Computer Properties in Windows 95.

serial and parallel ports are located on the mother board (older PCs, for example, those running the Vesa Local Bus, will have their drive and port connectors on a separate In/Out — or I/O — card). The second serial port may also be used to carry MIDI data; on my studio PC, it is currently used to receive the MIDI output from a GVox MIDI guitar pickup, though in the past, it acted as the MIDI Out port to a Korg OSR/W. The MIDI interface on a typical soundcard requires an inexpensive adaptor to be plugged into the joystick port, though some cards are turning up with proper 5-pin MIDI connectors fitted.

## IRQ

IRQs, or Interrupt Requests, are one area of PC lore that gives the machine its reputation for complexity, but every computer has to have an interrupt system to operate — such systems regulate the flow of data between the processor chip and peripheral devices such as cards, ports, drives, mice, keyboards, and anything else that

## PC VS MAC (PART 742): COMPONENT COSTS AND LOCAL REPAIRS

PC hardware is generally cheaper than its Mac equivalent, and is also much more widely available. PC development has adopted an open system approach: the component parts of the PC, with the exception of the processor chip, are manufactured by a wide range of companies competing worldwide, which results in cheap parts and fast new product development. This year has seen the cost of RAM plummet dramatically, while a 4x speed CD-ROM priced about £150 a year ago now costs around £45! The disadvantage is that differing manufacturing standards may create incompatibility problems between hardware that ought to work together, but falls to do so in practice.

PC repairs can be easier and cheaper too. Over 95% of computers are PCs, and most towns have PC repair shops where work can be carried out with minimum cost and delay. Compare that with Mac repairs, where you may have to ship your machine to the regional Apple centre to be repaired using proprietary Apple parts, at proprietary Apple prices!



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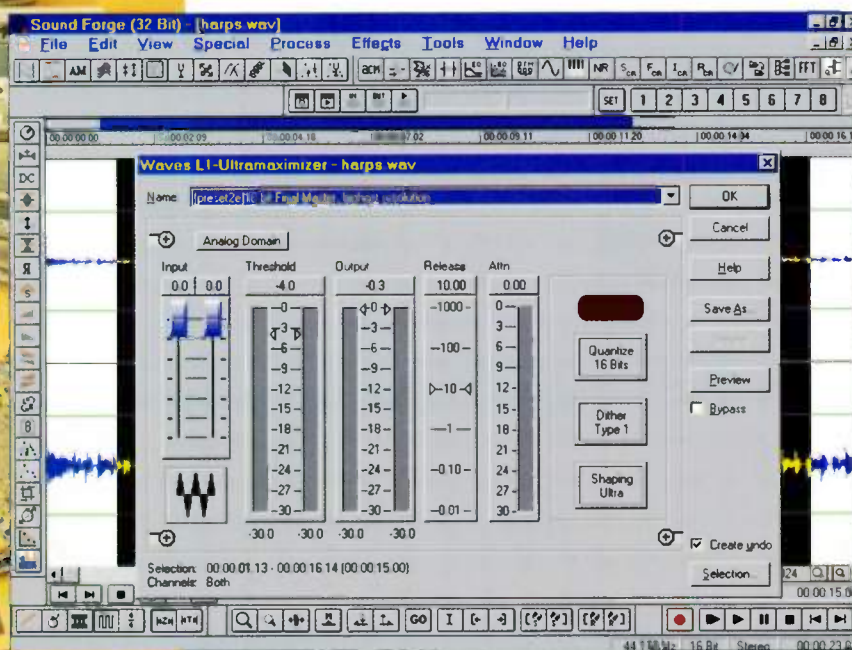
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# PC Anatomy Explained



Audio processing in Windows 95 — the Waves L1 plug-in under Sound Forge.

Explained' box in Brian Heywood's dedicated article on soundcards, which starts on page 180 — Ed).

## OPERATING SYSTEMS

Once the BIOS is on line, the main operating system, which is stored on your hard drive, boots. 'Boot' is a computer term derived from the paradox about a person trying to lift themselves by their own bootstraps, but as far as the user is concerned, it means the operating system loads up ready for use.

Although several PC operating systems are available, the most widely used is Microsoft's Windows 95, and now, a year from its introduction, this is settling down nicely. After running it for six months, I'm a fan and find it more robust, faster and easier to use than Windows 3.1. Many MIDI sequencers and audio editors are being released in native Windows 95 versions, and

► which is designed to handle the assigning of IRQ numbers to Plug and Play-compatible hardware automatically. Non-'Plug and Play' hardware still needs to be configured by hand, which involves checking to see which IRQs and DMAs are free, then fiddling with hardware switch jumpers on the cards to switch the boards to a setting that is still free. See the 'Plug & Pray' sidebar for more details [and for more information on DMAs, or Direct Memory Access addresses, see the 'PC Concepts

indeed, some of the newest applications will *only* run under Windows 95, such as the excellent Steinberg *WaveLab* audio editor (reviewed *SOS* August '96) or Emagic's *Logic Audio* (see review starting page 90 this issue). Windows 3.1 is still popular, especially on older, slower systems, and I have a certain amount of sympathy with the 'if it ain't broke, why fix it' brigade, but I think the writing's on the wall for pre-Windows 95 systems. And with RAM prices now so low, the whinges

## BUST THAT PC JARGON! GLOSSARY

### • APPLICATION

Typically a suite of programs designed to perform a specific task, such as MIDI sequencing or word processing. Commonly called the program or the software.

### • BIOS

Basic In Out System — the first level of PC Operating System that checks and configures hardware.

### • BUSS

Collection of parallel conductive tracks (or Lines) on the mother board that connect hardware like the processor chip and RAM.

### • CACHE

Fast chip memory that enhances performance by acting as a temporary holding area for data which is subject to repeated access by the processor chip.

### • CD-R

Recordable CD media or the CD Recorder itself.

### • DEFRAG

System software in Windows 95 used to optimise files on hard disk.

### • DIMM

Dual In-line Memory Module.

### • DOS (OR MS-DOS)

Microsoft Disk Operating System.

### • DRIVE

Device used by PC to store programs and files. Examples include hard drive, CD-ROM, and floppy drive.

### • DVD

Digital Video Disk: a development of CD-ROM technology. DVD-ROM and recordable DVD are planned.

### • EDO

Extended Data Out. Newer, faster slightly smart RAM.

### • EIDE

Enhanced Integrated Drive Electronics.

### • IRQ

Interrupt Re-Quest. For extra information on these, see the 'PC Concepts Explained' box in Brian Heywood's article on soundcards, which starts on page 180.

### • ISA

Industry Standard Architecture card slots on the PC mother board.

### • MODEM

Device used by a computer to connect to telephone system in order to gain access to the Internet,

and send and receive faxes and email.

### • MOTHER BOARD

The main PC circuit board.

### • OPERATING SYSTEM

The suite of programs that manage PC performance — most obviously Windows 95.

### • PARALLEL PORT

PC port usually used by printer.

### • PCI

Peripheral Component Interconnect — a 32-bit PC data buss.

### • PORT

Sockets on PC used to connect external hardware, such as mouse or printer.

### • PROCESSOR CHIP

The PC's Central Processing Unit — Pentium or 486.

### • PROGRAM

Instruction sets written in computer code and used to make the computer perform a specific task.

### • RAM

Random Access Memory.

### • RED BOOK

Industry audio CD standard.

### • REUSABLE MEDIA

Disk capable of being overwritten (Write Many/Read Many), unlike Write Once/Read Many (WORM) media — for example, CD-R.

### • ROM

Read Only Memory.

### • SCANDISK

System software in Windows 95 used to repair corrupt files.

### • SCSI

Small Computer Serial Interface.

### • SIMMS

Single In-Line Memory Module.

### • S/PDIF

Sony/ Philips Digital InterFace — data format used for transfer of digital audio information between devices.

### • VLB

Vesa Local Buss standard (now superseded by faster PCI buss).

### • VOLATILE MEMORY

Memory that loses its data on power down (such as RAM).

### • VRAM

Type of high-performance RAM used on some video cards.



about how much RAM Windows 95 gobbles up are far less of an issue.

Windows 95 presents a colourful, graphical environment in which you can run your applications and manage the files in your PC. The desktop contains a suite of accessories programs including a text editor/reader, a bitmap image viewer and disk tools, together with MIDI, audio and PC video players. The appearance of the Windows 95 desktop can be tweaked and customised to your personal taste; click on the desktop with the right mouse button and go to Display Properties/Appearance, where you can adjust colour, layout and system fonts. From Background you may choose your favourite bitmap image as your desktop 'wallpaper'. Windows 95 also has good on-line Help — a feature shared by nearly all Windows programs (one curious exception being Emagic *Logic*, which still relies on old-fashioned paper). On-line help, although very useful, rarely contains the detail found in the application's manual. Unfortunately, the current trend in software marketing has been to scrap the printed manual in favour of an electronic version on the program CD-ROM. When I recently bought the otherwise amazing Adobe *Photoshop* v3.05, I discovered that the printed manual is only available as an optional accessory costing over £30!

## PLUG AND PRAY?

In theory, Windows 95 will spot new Plug and Play-compatible hardware and automatically configure it to available IRQ and memory address settings in accordance with its needs. Due to a variety of reasons (from bad drivers to plain old Sod's law), this doesn't always happen in practice! Windows 95 contains some diagnostics and a troubleshooting wizard, but it is sometimes horribly circuitous and can be guilty of not

providing precise details. Quite often, if you have a conflict, it will tell you that it can't provide details because you have a conflict. That's a bit like going to the doctor to be told he can't diagnose your illness because you are sick — hence the term Plug and Pray, that's become so popular lately! Most Plug and Play-compatible music hardware installs OK, but if you do have problems, the relevant company helpline is often a good place to start — depending on the company, of course!

## CONCLUSION

The PC is now a powerful, affordable and effective platform for MIDI and digital audio applications. It isn't without its complications and frustrations, but now that the leading music software companies are making real efforts to provide stable, easy-to-install packages, life is a lot simpler than it was even a few months ago. If you go the PC route, you take advantage of the economies of scale that go with a mass-produced, mass-supported machine. As more people become PC owners for this reason, the user base should continue to expand and take manufacturer support with it. In the long term, this should increase competition and, in turn, drive prices down still further, which can only be to the benefit of all of us.

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# Card Times

## ALL ABOUT SOUND CARDS

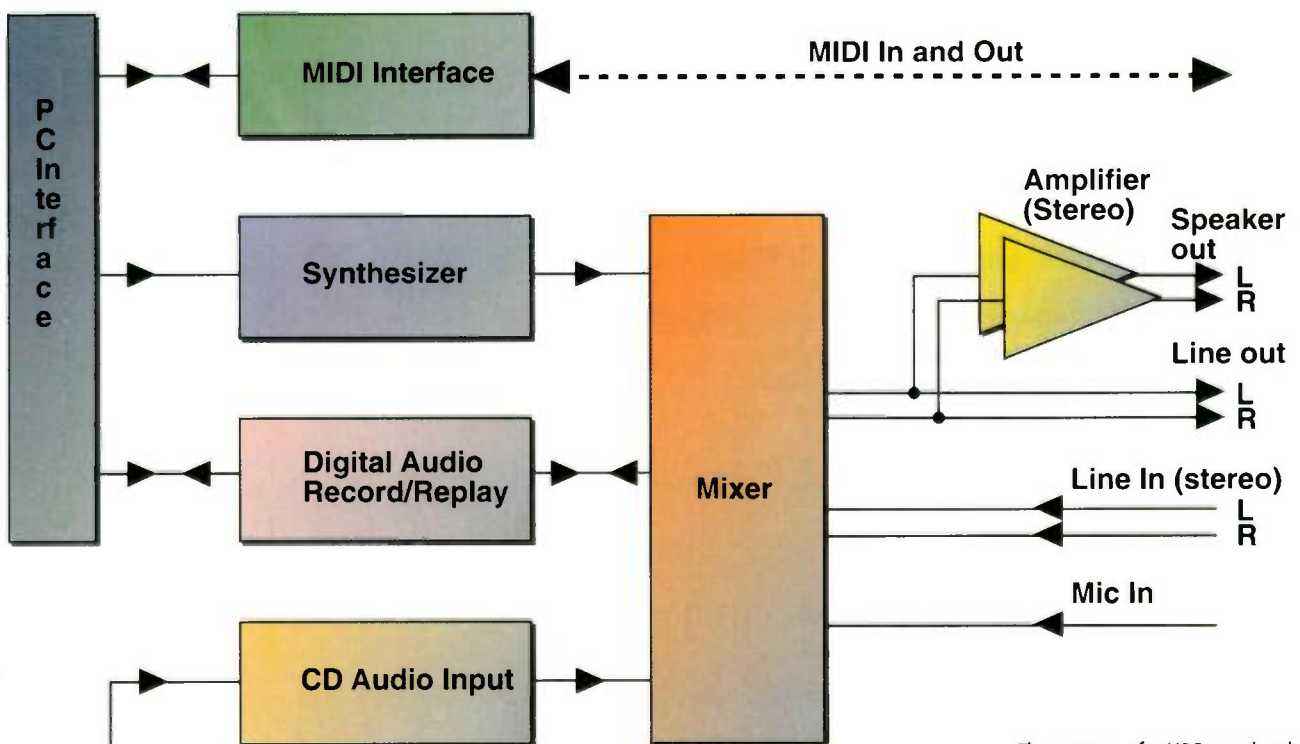
*One of the PC's plus points is its adaptability to a variety of tasks depending on the extra hardware installed in it — and the soundcard used can make or break it as a musical tool. In this two-part series, BRIAN HEYWOOD takes a look at the various types of soundcard available.*

Computers derived from the IBM-compatible PC standard are the world's most popular desktop fixtures, and the main reason for this popularity is the relatively low cost of PC hardware and software, as Janet Cook and Paul White have already discussed elsewhere in *SOS* this month. Another PC plus is

the ability to accommodate extra hardware to perform specialised tasks — in the case of musicians, adding MIDI and/or audio capability is a matter of buying the right kind of soundcard. However, this presents the musical PC user with a problem: picking out the 'right' soundcard from a large number of alternatives. (Another difficulty associated with soundcards is what to do if you are unlucky enough to have hardware compatibility problems, which, as Paul White has already explained, will be dealt with in a forthcoming issue of *SOS*). The purpose of this article is to simplify the process of choosing a soundcard by explaining the different types available (an overview of the actual soundcards currently on the market is also in the pipeline). But first, as they say...

### A LITTLE HISTORY

The idea of having slots for I/O (Input/Output) cards was not new when the IBM PC was



*The anatomy of a MPC soundcard.*



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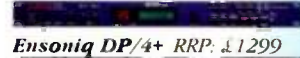
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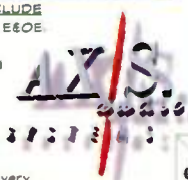
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# ALL ABOUT SOUND CARDS

► designed at the beginning of the '80s: the Apple II had offered expansion slots in 1977. Almost as long as there have been PCs, there have been PC-compatible cards available for the computer musician, the most significant of which were the

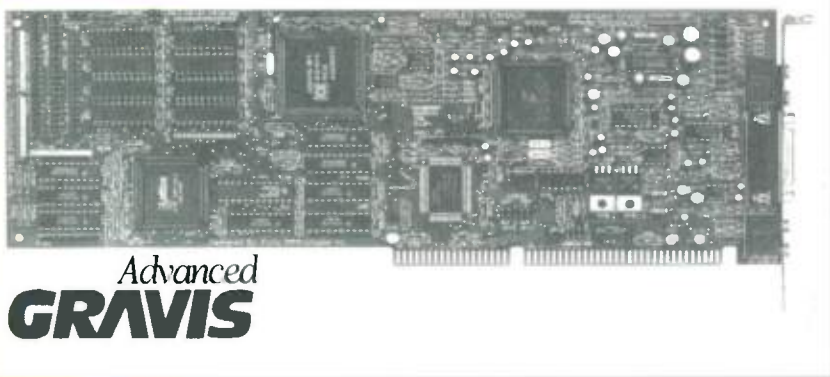
capabilities into its operating system, but brought down the prices of suitable hardware to within the reach of impoverished musician types. The main technical upshot of Windows 3.1 and the Multimedia PC (MPC) standard was that the external hardware no longer had to be compatible with the ageing Roland MPU401 standard (for MIDI), or the rather limited SoundBlaster audio specification. This resulted in an explosion in the number of competing products attempting to fulfil PC audio needs. A wealth of confusing, conflicting hardware is now available, accompanied, naturally, by a host of puzzled buyers wondering what choice to make.

The functions of a modern PC audio card can be divided into three broad categories; MIDI control, sound synthesis and digital audio replay (more on the last of these next month). A soundcard will offer at least one of these facilities, and possibly all

three, along with some 'glue' electronics, such as a simple onboard mixer for combining the various audio signals, or a SMPTE/EBU timecode input for synchronisation.

## MIDI INTERFACES

The simplest and oldest type of PC music card is the dedicated MIDI interface. This type of card is technically not a lot different from a serial interface: it provides a way for the PC to exchange MIDI messages with external keyboards, sound



*The Gravis UltraSound is a good example of an MPC Soundcard that can be used for music applications.*

MPU401 series of MIDI interfaces from Roland, which allowed the PC to act as the heart of a MIDI system. The ability to record and play back audio on a PC took a little longer to develop, and didn't really take off until a small Singapore firm called Creative Labs released a games soundcard called the GameBlaster, which later grew into the SoundBlaster.

However, it was the introduction of Windows 3.1 which really revolutionised PC music-making. This not only integrated the PC's music and sound

## SOME PC CONCEPTS EXPLAINED IN BRIEF

### • I/O (INPUT/OUTPUT) ADDRESSES

PCs which are based on Intel processor chips (the x86 family and Pentiums) access their internal memory (RAM) and external devices (disk drives, MIDI ports, and so on) in different ways. This shouldn't have caused a problem, but unfortunately, when the PC was originally designed, IBM cut a few corners, and thus the amount of memory allowed for external peripherals is quite limited. Since the more recent ISA buss had to be compatible with the original PC buss when it was developed, this design flaw is still with us to this day. Most PC cards give you a number of choices for their I/O memory address, so this feature is only a mild irritant. Only change the I/O address from the default if you have to.

### • IRQ (INTERRUPT REQUEST) LINES

The Interrupt lines allow PC hardware to alert the processor chip that a high-priority event has occurred and needs attention. This means that unpredictable events — like MIDI bytes from a live performance — can be read

by the PC without tying it up completely. These interrupt lines are a far more precious resource than the I/O addresses, because the PC only has 16 of them. Theoretically, the IRQs can be shared between a number of soundcards, but in practice, this almost never happens.

### • DMA (DIRECT MEMORY ACCESS)

Though mentioned by Janet Cook in her feature on PC anatomy starting on page 164 this month, Direct Memory Access deserves further explanation. When large amounts of data need to be shifted around — say when the PC is playing a sound file — a soundcard can take control of the PC's data buss and transfer the data directly to or from memory without getting the main processor involved — hence direct memory access.

### • DSP (DIGITAL SIGNAL PROCESSOR)

This is a computer processor specifically designed to handle the type of maths required for processing sampled analogue signals. Originally

developed for radar and radio signal processing, DSPs have been applied with great effect to digital audio signals. In fact, you find some sort of DSP in all digital effects units. The addition of a DSP to a soundcard can greatly enhance its performance — but only if the software you are using supports the DSP!

### • MIDI VS DIGITAL AUDIO

This is bit of an old chestnut, but is worth explaining one more time. MIDI actually doesn't have much to do with sound. What the MIDI protocol does is describe a performance: what notes you hit, the amount of pitch bend or volume level to be applied at a given moment, and so on. This information can then be used to create music with a MIDI-compatible sound module, but MIDI doesn't directly define the timbre of the produced sound itself. This means that the MIDI data for a given song is very compact compared to the same song stored as digital audio data — usually by a ratio of more than 100 to one.

### • THE MIDI BOTTLENECK

The relative compactness of MIDI data over digital audio mentioned above means that MIDI information can be transferred in real time over a comparatively slow data link. MIDI data is transmitted at 31,250 bits per second, or around 1,000 MIDI note messages per second (in a worst-case scenario). To put this in perspective, it would take just under an hour to transmit one minute of CD-quality audio over a MIDI link.

### • MIDI LATENCY

In live and sequenced performances, the speed at which MIDI data is transmitted is less important than the amount of time it takes the computer (or sound module) to recognise and respond to the information. This time period is called the latency, and depends to a large extent on the power of your PC or the DSP in your sound module. If the latency is constant, it won't affect matters very much, but a variable latency will cause timing inaccuracies in the playback of a recorded MIDI track. Basically, the faster a PC is, the smaller its latency will be.



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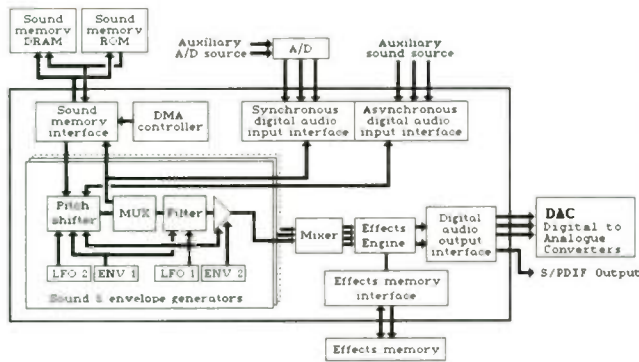
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# ALL ABOUT SOUND CARDS



Emu Synth on AWE 32 (plus auxiliary circuitry)

*The Emu synth on the AWE32 shows that it is possible to include advanced synthesis on a games card — but unfortunately, the analogue circuitry used around the synth leaves something to be desired where music production is concerned.*

▶ boards, lighting controllers, and various audio-visual devices. This interface-only type of card places the least stress on your PC, as processing a MIDI data stream — even from a multi-port interface — is quite tame compared to shifting around digital audio data.

The Roland MPU401 has always been the de facto standard for MIDI cards due to historical reasons. Compatibility with this standard is only really important if you want to run software that

directly accesses the MIDI hardware — for instance DOS-based games or MIDI software. There are a small number of Windows-based applications that need to directly control a MIDI interface, due to performance considerations, but these are pretty few and far between. In general, MIDI cards perform better than serial or parallel port MIDI interfaces, since the PC's processor can more directly access the hardware.

## CARDS WITH SYNTHS

Another important feature of PC soundcards is onboard synthesizers. These come in a variety of flavours, and you have to be careful to ensure that you get what you expect — both in terms of quality and facilities. All MPC soundcards include a synth, as it is part of the MPC specification, but the quality can vary greatly. There are a variety of available sound-producing technologies, ranging from extremely basic FM sounds to sophisticated sample-based systems. Set out below are the basic technologies, so that you can get a feel for what's on offer and decode jargon-ridden sales blurb.

### • OPL3 (FM) SYNTHESIS

This is the oldest — and perhaps still the most common — form of synth available on PC soundcards. The OPL2 and 3 chipsets were originally developed by Yamaha for use in arcade games machines, but were adopted by early PC games cards developers as an easy way of getting music into a PC. The sounds are extremely basic, and don't compare well with even the cheapest home keyboard available in your local High Street electrical store. If a soundcard doesn't define its method of synthesis, it probably uses these chips, which are still standard in the PC-based games world. There's not a lot you can do with these onboard synths, except make music that sounds like it has been created on a Stylophone.

The latest OPL development is the OPL4 chipset, which combines the earlier FM technology with Yamaha's AWM (Advanced Wave Modulation) techniques to give the advantages of sample replay technology (see below). OPL4 gives backwards compatibility with the earlier FM sounds, and could be a good choice if you want to be able to test your sound files on older soundcards — say for multimedia soundtrack composition. Sometimes, more advanced cards aimed at the games market — like the Creative Labs AWE32 and the Turtle Beach TBS2000 — will incorporate the OPL3 chipset for the same reason.

### • WAVETABLE SYNTHESIS

This technology gives much better results than FM-based OPL synthesis, as it uses samples of real instruments to produce its sounds. The idea is that you store a number of samples in memory on the soundcard itself, and a very simple DSP plays back the data when the PC's main processor demands it. The audio data can be stored in either Read Only Memory (ROM) or Random Access

## FURTHER READING

For more information on PCs and soundcards, check out the following books, all of which are available from the SOS Bookshop. See the Mall Order pages at the back of this month's issue for further details.

- *The Complete SoundBlaster* by Howard Massey (order code B313, £10.95).
- *Multimedia On The PC* by Ian R Sinclair (order code B272, £11.95).
- *PC Music Handbook* by Brian Heywood and Roger Evan (order code B332, £10.95).



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# ALL ABOUT SOUND CARDS

- ▶ Memory (RAM). ROM-based cards have fixed instrument lists (usually based on the General MIDI sound specification) while RAM-based cards need to have the sounds downloaded to them by the computer before they can be used. Some cards, like the AWE32, have both ROM and RAM wavetables, which gives you the best of both worlds.

The audio quality of these cards depends on a number of factors. The first is the quality of the samples — or the amount of memory available to

allowing longer or more complex multisamples to be used. RAM-based soundcards suffer the slight disadvantage of a short delay whenever a sample needs to be downloaded, but this can be handled by the Windows operating system.

The other big advantage of a RAM-based wavetable card is that you can edit or replace the basic samples that you use, allowing you to customise the sounds. ROM-based cards have a fixed sound set, and since they are usually GM-compatible, they all sound more or less the same.

This is great if you are playing back a commercial MIDI file or a multimedia presentation, but it can get pretty limiting if you are trying to be creative. A RAM-based card will be supplied with a sample/program editor and Bank Manager utility that will allow you to create your own distinctive sounds when used in conjunction with a recording facility on your soundcard. Essentially, you can look at a RAM-based wavetable card as a sampler inside your PC, with all the benefits that implies.

## • 'PURE' SYNTH CARDS

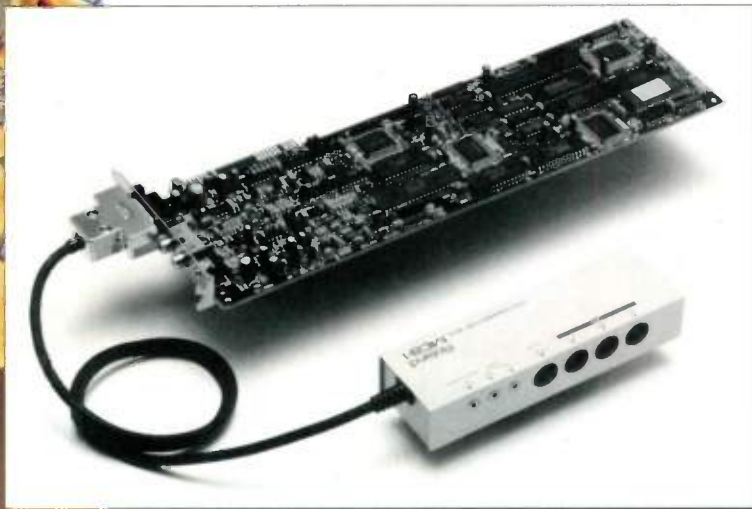
Roland's LAPC1 (pictured left) is an example of this type of card — it's essentially a complete Roland MT32 synth on a PC expansion card. Unlike the wavetable cards mentioned above, the soundcard synthesizes its

sounds from scratch, rather than simply replaying a sample. The advantage of this is that you can be even more creative, not being limited by the sounds you can record, or the finite nature of a sample. Just as with a stand-alone synth, you can create evolving pads, lead sounds and creative effects by programming the sound generator. I know of no new cards currently available that give you this type of synth, but you may pick up a second-hand LAPC1 if you shop around.

“You can look at a RAM-based wavetable card as a sampler inside your PC.”

## • VIRTUAL ACOUSTICS

While 'pure' synth cards like the LAPC1 are not currently in fashion, synthesizer technology is moving on with the development of new products based on the Virtual Acoustics (VA) algorithms developed at Stanford University. Yamaha have been especially active in this field, producing stand-alone synths like the VL1 and now the new VL70m (reviewed in last month's SOS). VA (sometimes ▶



Roland's LAPC1 (pictured here with an MCB1 MIDI connector box) — a complete MT32 synth module in PC card format.

them. ROM-based cards tend to have memory capacities ranging from 1Mb to 4Mb of sample data, with the lower end of the range sounding pretty awful, even when compared to quite modest home keyboards. The cards that have more memory produce better sounds, which can be of comparable quality to stand-alone boxes such as the Roland Sound Canvas or Yamaha MU80. Some cards even have effects such as reverb and chorus, which sweeten their sounds considerably.

RAM-based wavetable soundcards use exactly the same technology as the ROM-based cards, but the sample data needs to be downloaded from the PC's hard disk before the card can make any sound. This gives RAM-based cards some significant advantages over their ROM-based siblings. For a start, sample memory on a RAM-based card can be used much more efficiently, since you only need to download the sounds you are going to use. With a ROM-based card, you need to have *all* the sounds — for example 128 GM instruments plus 47 drums — available at all times, even though you are unlikely to use more than 16 instruments at once. For a 4Mb ROM-based soundcard, this works out at an average of just under 23K per instrument, or 250 milliseconds per sample at CD quality (44.1 kHz, 16-bit stereo samples). Doing the same sum for a RAM-based card with 1Mb of memory, you could get almost three times the previous figures,



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*The Alesis QS line gets a flagship, with a weighted keyboard, controller features, and an extended sound set. Helmsman MARTIN RUSS finds out whether she's seaworthy...*

# Q the Music

## pros & cons

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- Some very classy sounds.
- 64-note polyphony.
- Quadraverb 2-class effects processing.
- Auxiliary outputs for effects-free audio.
- PCMCIA card sample and sound expansion sockets.
- Computer interface built in.

#### cons

- Tiny (2-row x 16-character) display.
- Buttons have no tactile or audible feedback.
- Fixed resonance filter.
- No internal user sample RAM storage.
- Limited master keyboard facilities.
- Heavy.

#### summary

Yet another high-specification S+S synthesizer, but with a simple user interface, reasonably well-produced set of samples, and some inventively-programmed sounds. It also has slightly better drum sound flexibility, and a better effects processor, than much of the competition.

**SOUND ON SOUND**

## ALESIS QS8 MASTER CONTROLLER/SYNTHESIZER

Alesis produce a deceptively small product line catalogue. Inside it, however, you can read about the ADAT 8-track digital audio recorder plus associated accessories; the X2 24-track recording console, the 'verb series of effects processors (Quadra, Midi, Micro and Nano); power amplifiers and speakers; a drum module and drum machine; and some synthesizers too. All in all, a remarkably broad range of hi-tech audio gear, in keeping with Alesis' long-held ambition to produce the complete project studio.

The two latest additions to the Alesis ranks are the QS7 and QS8. They are identical in all respects except for one: the QS8, reviewed here, has an 88-note (A-C) weighted piano-style keyboard, whereas the QS7 has 76 (E-G) synth-style lightweight keys. The combination of these longer keyboards (most synthesizers only provide 5-octave, 61-note (C-C) keyboards), in tandem with some limited master keyboard functions, seems intended to provide rather more than the average synthesizer — but does it deliver?

### ARCHITECTURE

The QS series of synthesizers follow up the original QuadraSynth and its current successor, the

QuadraSynth Plus Piano. The QS6 (reviewed in January 1996's *SOS*), QS7 and QS8 share the same synthesis technology — the now-conventional 'Sample plus Synthesis' (S+S): audio samples are replayed via a filtering and enveloping synthesis processing stage, followed by up to four effects processors. In the case of the QS-series.

The whole of the sound-generation chain is digital. Each of the three parts of the S+S sound generator (Sample, Filter and Amplifier) has a separate LFO and EG, and this forms the basic sound source for a single note. The QS8's custom chips provide enough processing power to give 64 of these basic sets, so the instrument is 64-note polyphonic.

Because the sounds produced are often layered together, Alesis call the basic sound element a Layer; a Program can consist of up to four Layers, plus one Effects setting. There are 512 preset Programs (four banks of 128 sounds) and 128 user Program memories. Programs are restricted to receiving and transmitting on just one MIDI channel, but Mixes allow the settings for up to 16 Programs (plus just one shared Effects setting) to be stored, and these are used for multitimbral, multi-MIDI-channel operation. The QS8 has 400 preset Mixes





and 100 user Mix memories. This type of architectural structure is used in many synthesizers, because it provides a convenient and familiar method of dealing with the fine detail of individual layered sounds, whilst still allowing rapid selection of complete sets or mixes of sounds.

The QS8 has two main operating modes:

- Program Mode is where you can layer sounds together, to provide thicker, richer textures or more complex composite sounds.
- Mix Mode allows Programs to be assigned to the keyboard as splits, layers, or as MIDI channels to control external expander modules. Up to 16 channels of MIDI information can be produced by the QS8, or alternatively (and unusually!), a monophonic sound using 16 four-layer programs could be defined.

Editing is accomplished in one of four editing modes:

- Program Edit Mode allows the detailed editing of individual sounds or layers.
- Mix Edit Mode controls the assignment of up to 16 programs to MIDI channels, plus the selection of one effects setting.
- Effects Edit Mode allows you to configure the four effects processing sections, plus the parameters within each effects section.
- Global Edit Mode provides control for 'instrument-wide' settings like display contrast, master tuning, Controller assignment, and so on.

There are two additional modes which allow you to compare an edited voice with the unchanged original, and store edited Layers, Programs, effects or Mixes.

### USER INTERFACE

The front panel has a backlit LCD display at its centre, with Mode buttons on either side, and a set of Program-selection buttons on the right. The left-hand side of the front panel hosts the pitch bend and modulation wheels, plus the volume control slider, and four additional sliders which can be programmed as parameter or MIDI controllers. The Program-selection buttons use an unusual scheme for selecting Programs or Mixes: the upper row selects the tens digit (from 0 to 12) whilst the lower row selects the units digit (0 to 9). The upper row of buttons are marked with the group names for General MIDI instruments: Piano, Chromatic, Organ, Guitar, and so on — which

allows very quick choice of Program. But the same buttons are re-used in the editing modes: the first four upper buttons select the Layer in Program Edit mode, and the four effects sends in Effects Edit mode, while the remaining buttons select editing parameter pages. Separate buttons for changing values (the rightmost slider also acts as a value-change controller), bank and page are also provided.

The user interface is based around the Mode buttons and software pages, with one parameter per page. To edit a setting, you select the appropriate mode and page, and then use the value buttons or slider to change the setting, with the store mode used to make the change permanent. Despite the small size of the display, it all works very well. You can change between modes and pages very quickly and easily, and the multiple buttons are labelled in rows of blue or white to indicate their function. In fact, the display's only limitation is that it can only show one parameter at once — the size does not seem as important because real buttons are used to select the mode and pages, rather than the more common arrangement of soft buttons driven by a larger display. The one niggle I have with the user interface is the buttons themselves: although large and well labelled, they have no tactile or audible click for feedback, so you only know if you've pressed one when the display changes. I would have preferred a more tangible acknowledgement.

### MASTER

There seem to be two types of master keyboard. The first is the sophisticated central controller which is intended to replace all your keyboards and be connected to expander modules to produce the sounds. With lots of performance controllers, dedicated sequencer/drum machine and song position controls, MDR (MIDI data recorder) storage facilities and MIDI processing, these are large and complex pieces of equipment which can be a formidable learning exercise.

The second category encompasses performance-oriented keyboards which also provide just enough



additional facilities to enable the user to control all their expander modules from one keyboard. This typically means that they include multi-channel layering of sounds with setup information like

## QS8 VERSUS QUADRASYNTH?

- Live changes to four parameters at once, which was definitely one of the neatest features of the QuadraSynth, lives on in the QS8 in the four slider controllers — but normal editing is restricted to one parameter at a time.

- The QS8 has 16Mb of onboard sample ROM instead of 24Mb. However, the difference appears to be mostly accounted for by the QuadraSynth Plus Piano's 8Mb grand piano sample, now available as a separate PCMCIA card.

- The QS8's combination of an aluminium extrusion and weighted, hammer-action keys makes it much heavier and more solid-feeling than the lighter and more flexible ABS plastic casing of the QuadraSynth.



# Alesis QS8

## SPECIFICATIONS

- 88-note weighted hammer-action keyboard, velocity and monophonic pressure/aftertouch-sensitive.
- Two Type 1 PCMCIA RAM/ROM card expansion slots.
- 64-note polyphony.
- 16-part multitimbrality.
- Four-part multi-effects.
- Up to 40 individually-editable drum sounds.
- 16Mb of 44.1kHz, 16-bit internal ROM samples.
- 649 samples.
- 44 drum loops.
- 80 drum/percussion samples.
- Up to 16Mb of extra sample storage on card.
- 512 preset Programs.
- 128 user Program memories.
- 400 preset Mixes.
- 100 user Mix memories.
- Up to 1408 additional Programs on cards.
- Up to 1100 additional Mixes on cards.
- Poly portamento.
- General MIDI compatibility mode.

▶ program changes, volume and pan. Complete setups of keyboard layering, splitting and initialisation information can be saved and recalled, but the more specialised and complex 'master keyboard' features are omitted.

The QS8 is a good example of the second category. It allows complete setups of its own sound-producing facilities, plus external ones and an effects selection, to be saved as a Mix.

## SOUNDS

The QS8's synthesis technique has good sample resources, limited sample processing and a fixed resonance filter, but good modulation facilities, and integrated effects which can be controlled using most MIDI Controllers — except (unfortunately) the keyboard velocity.

Onboard the synth are 17 groups of 44.1kHz, 16-bit samples, arranged in more or less the same groupings as the GM instrument groups: Piano (50 samples); Chromatic (21 samples); Organ (25 samples); Guitar (28 samples); Bass (34 samples); String (15 samples); Brass (9 samples); Woodwind (19 samples); Synth (51 samples); Wave (69 samples); Noise (14 samples); Voice (9 samples); Ethnic (16 samples); Drums (82 samples); Percussion (62 samples); Sound FX (73 samples); Rhythm (90 samples).

The review of the QS6 in the January 1996

If you want just sample replay, here are the sounds to try out to impress your friends when you audition the QS8:

### • PROGRAMS:

GenMIDI: 97 Soundtrack  
Preset1: 111 Discotron (do not play DGCD FCD...!)  
Preset2: 114 JungleGruv  
Preset2: 113 Robotechno  
Preset3: 107 Trilogy Ld  
Preset3: 84 Applewine  
User: 59 Waterfalls

### • MIXES:

User: 56 String Tek  
Preset1: 81 MovingMarb  
Preset2: 71 6Str&Flute  
Preset2: 90 Arkham2000  
Preset2: 94 Algorhythm

Don't forget to try altering the four controller sliders: B, C and D are assigned to the effects-processing section by default.

## EFFECTS

From the people who invented the Quadraverb, you'd expect that the QS8's effects processing would be slightly more than just an afterthought tagged onto its synthesizer section. And you'd be right. The Quadraverb 2 effects processor section provides four inputs to some of the most complicated DSP processing I've seen on any S+S synthesizer — and there are two auxiliary outputs on the rear panel of the QS8 for additional audio processing.

The effects processor provides multiple effects units in five configurations. There are four types of effects processor available: Pitch, Delay, Reverb, and Misc. These give the usual chorus, flanging, detune, mono and stereo delays, reverbs, gated reverbs, reverse reverb, EQ and overdrive effects. Learning to program these effects properly is a major task on its own!

Although the effects can be modulated with independent LFOs, as you might expect, they can also be modulated with the keyboard's aftertouch pressure, mod and pitchbend wheels, pedals and controller sliders — but you may hear some zipper noise on some settings. Even so, this is one of the best integrated effects sections on any S+S synthesizer I have yet seen.

## EXTRAS

The QS8 has an 88-note, weighted, 'hammer-action' keyboard. I'm biased towards the lighter synthesizer/organ style keys for synthesizer work, but I actually prefer a 'proper' action for just piano and other percussive keyboard sounds. Keyboards are such a personal thing that you really need to try one out, and no amount of subjective waffle or opinion from me is going to alter that. Having said that, I rather liked the feel of this one.

It seems that no hi-tech instrument is complete these days without the obligatory built-in computer interface for MacOS and IBM PC-compatibles. The QS8 has complied with this



The QS8's display, with Edit and Play Mode buttons to either side.

## INSIDE

Alesis have a reputation for adopting new technology early. The internal construction of the QS8 is an interesting set of contrasts. The three large Alesis custom PLCC chips inside the review model all had 1992 copyright dates, whilst the eight ROM chips and the Operating System EPROM were all dated 1996. The main processor was a Hitachi H8/510. The PCB features almost entirely very current surface-mount technology, and was designed to a high standard, with only one correction: a small wire from the ADAT interface area to one of the custom chips. The dating confirms that the QS8 (and presumably the QS7 and QS6) are indeed a reworking of the QuadraSynth technology.

issue of SOS details some of the sources of these 649 samples: it reads like a 'who's who' of past classic instruments and drum machines. However, quite a few of the samples are resonant or high-pass filtered sounds designed to try and make up for the lack of a resonant filter.

The QS8's separate Drum mode changes the structure of a Program, away from the keyboard-wide, polyphonic bias designed for instrumental sounds, to one suitable for more note-specific, monophonic drum sounds. Unusually, it provides the same sort of detailed envelope and LFO modulation that you might associate with monotimbral instrument sounds, but for up to 40 different drum sounds (assuming you use all four Layers in a Program for drums) with each individual drum sound being assignable to between one and three keys on the keyboard. The drum samples include some of the full 649-instrument sample set, but with additional single drum samples, with 44 complete drum loops also being included to liven up the drumkits.





The ADAT digital connections.

trend, and so has the usual selector switch and Mac-style mini-DIN socket.

Something that very few instruments have, however, is ADAT connections, in the form of a clock input and digital optical output. Since Alesis make the ADAT too, the QS8's output can be digital from the moment your fingers hit the keys to the moment the punter plays the resulting masterwork on his CD player. Someday all instruments will be made this way, but at the moment the QS8 is an exception.

### MANUAL

The A4-sized, 140-page 'reference' manual is low on tables of specifications, but high on 'how to' and tips. Unlike many manuals, it opens with a clear overview of exactly how the QS8 produces sounds, so that the user can start with a mental picture of how everything works together. It then covers first usage of the synth, which is quite unusual and very welcome — not all users of hi-tech gear want to find out how their new purchase works by trial and error. The one-page index looks very sparse at first — until you notice that the preceding three pages are a parameter-by-parameter index as well. No MIDI System Exclusive details were provided in the supplied documentation.

There's also a CD-ROM which contains a mix of Alesis and third-party software programs, QS sounds and samples, and MIDI File sequences, mostly in both IBM PC-compatible and MacOS formats. Notable amongst the goodies on this disk is *Sound Bridge*, a utility program which allows custom samples to be compiled from a number of sources and then downloaded to a QS8 PCMCIA Flash RAM card. AIFF, Digidesign *Sound Designer I* and *II*, and *SampleCell I* and *II* formats are all catered for. To ensure that the CD-ROM is as up-to-date as possible, Alesis apparently only press 100 or so CD-ROMs at a time: the review QS8 came with a piece of paper which you return with the warranty card in order to get the current CD-ROM.

### CONCLUSION

Sounds sell S+S synthesizers. The General MIDI sounds are often a good place to start when auditioning an instrument — the aim of the programmers is to try and make them

as similar as possible in timbre and response to all the other GM modules, and this makes it easy to compare a synth's sonic potential with others you've heard. The QS8 had one of the nicer-sounding sets of instrumental GM sounds I've yet heard, with a smoothness that you don't often get from the pervading GM gritty blandness. The sound effects are less wonderful, with 126:Applause being little more than coloured noise, and the synthesized 125:Helicopter sounding rather more like a steam train to my ears. Then again, who uses these doldrums of the GM spec anyway?

The non-GM sounds are more immediately impressive. They have the crystal-clear, bright sound that is associated with high-quality effects where no corners have been cut to save money. The Alesis sample designers have chosen carefully, so there are a lot of separate samples squeezed into the 16Mb of ROM. With 64-note polyphony and four layers to play with, the sounds are just as complex, detailed and expensive-sounding as you might expect.

But, as I've said many times before, the problem with S+S synthesizers is that they often can't allow you to make any meaningful edits to their raw samples — they just replay them. The QS8 is no exception — although you can load in your own customised audio samples if you fit a PCMCIA card. But then you need to prepare the sounds in advance, so you might as well be using a sampler. (which probably has sample manipulation facilities like looping, start points, and reverse playback). Having said all that, many people are looking for instant high-quality sounds, and so for them, the QS8, which is a very competent instrument, may well fit the bill exactly.

SOS

- E** QS8 £1699; QS7 £1299.  
Blank Flash RAM memory cards: 2Mb £159; 4Mb £259; 8Mb £399. Prices include VAT.
- A** Sound Technology, 17 Letchworth Point, Letchworth, Hertfordshire SG6 1ND.
- T** 01462 480000.
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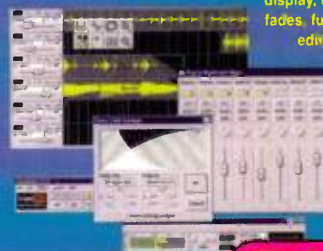


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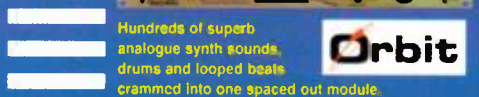


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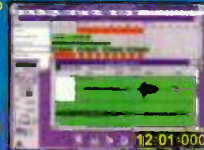


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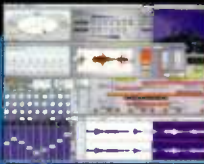


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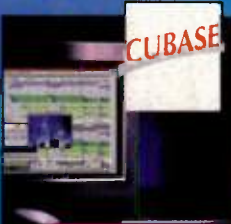


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David Lowe  
in his home studio,  
with Alesis X2  
desk to the left.

employed for just one technical function, which left little room for creativity. I almost became, in effect, a human mic stand!

"I realised that I needed to put the creative element back into my life, and shortly afterwards, in the early '80s, I went to a music fair and saw a Juno 6. That was it: I had to have one — you already know how I paid for it! I was sharing a flat with a mate, and he didn't see me for about a year — I just disappeared into my room and played. I

# At home with...

TV music composer David Lowe tells PAUL WHITE how a British Airways World commercial took him halfway around the world — and back...

## David Lowe

David Lowe has managed to do what so many of the readers of this magazine dream of: he has a string of successful TV commercials and theme tunes behind him, the most prestigious probably being one of the British Airways World commercials, and he's currently working on a world music-influenced album for a major record company. The majority of the work is done at David's home studio, though he has made several visits to exotic locations to collect world sounds first-hand.

### BEGINNINGS

David's musical story begins with piano lessons at school — which were discontinued when it was discovered that he was learning the pieces by ear, rather than reading the notes! Later in life, after hearing a Tomita album for the first time, he developed a keen interest in the synthesizer. A failed romance eventually allowed him to afford his own: he sold the engagement ring and spent the money on a Roland Juno 6!

"I never thought about music as a career, but I would hang around Musical Exchanges in Birmingham on a Saturday afternoon, trying out any keyboards that happened to be switched on. I never really thought of buying one at that time. Instead, I took up a career in broadcasting, starting with local radio, but in my spare time I'd experiment by putting sound effects together on tape. The next move was to become a sound recordist with a film company. It was good training, but suddenly I found that after doing a job where I had a chance to do everything, I was

was like a hermit, in my bedroom with the headphones on.

"Eventually the synth was joined by a drum machine and a Portastudio — all this was pre-MIDI, of course. I wrote and recorded a few songs with different singers, then a friend at Pebble Mill said they were looking for a new signature tune for the local TV news programme, *Midlands Today*. Obviously, I was keen to have a go, so I took the keyboard into Pebble Mill and borrowed one of their little studios with a couple of stereo open-reel machines in it, and recorded my ideas using basic sound-on-sound techniques. They liked what I'd done and used it. This led to another commission for a theme for BBC Wales."

### WRITING FOR TV

**Were there any special disciplines to writing a signature tune for TV?**

"I knew it had to be 15 seconds long or whatever, but I literally went in there, had an idea, and stuck it down. I found I had this knack of knowing what was required — I'd have it in my head almost straight away. Perhaps this was something to do with the fact that I was still working in television. However, I wasn't asked to do anything else for a couple of years, then out of the blue, another job came up for BBC Wales, which turned into a network TV programme.

"I was quite careful not to give up my broadcast work, but I did go freelance, to give myself more flexibility when music commissions came along. This went on for three or four years; work came in entirely by word of mouth, and I even got a



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## David Lowe

► commercial for Timotei shampoo. By this time, I'd upgraded the studio, but I didn't go out and buy new equipment just because it got good reviews — I used to wait until I'd run the old stuff into the ground and completely worn it out.

"Most of my work was instrumental, and the introduction of MIDI meant that I could sequence the end result directly to DAT. I used to do some collaborative writing with a guy called Robin George up in Wolverhampton, and he had an Akai ASQ10 which I got to know really well. When it was time to buy my own, it made sense to get the same model, because I knew it so well."

### Were you ever tempted by software sequencers?

"No. I've seen loads of them, and I've played with one or two, but I always found them too distracting. I don't find I need to do a lot of editing, though I have to admit that some editing procedures are slow on the ASQ, especially when you've played something non-quantised and want to adjust the timing to get it

spot-on. There's a lot of scrolling involved, but other than that it's pretty quick.

"I really love the simplicity of the ASQ. With computers, there's so much you can do that it would be too tempting to keep fiddling with things. It's the same when you write a letter on a word processor — you keep adjusting the style and the layout. With the ASQ, because there's not a lot to look at in terms of visual information, I find that I can concentrate much more on the sound, which, of course, is the most important thing.

"The first real multitrack I had was an Akai 12-track, which I plugged into a small DDA mixer, and I mixed onto a Casio portable DAT machine. I bought the Casio around 1989 and it's still going strong — it's never been serviced, but I've never had any trouble with it. I only cleaned the heads for the first time last year! I also discovered the joys of sampling, when I bought an early keyboard sampler which was later augmented by an Akai S900. I'm currently using an Akai S3000 — I've found that just about all the sounds I need could come from a sampler, which makes having racks of synth modules rather less important."

### FLYING HIGH

### Was there one big career break for you, and if so, what was it?

"I was getting better work all the time, and it got to the point where I had a decent showreel, but I was still relying on word of mouth to get work. Then I

started collaborating with a guy called Julian Ronnie, who did a lot of theatre work as a Musical Director. We did several TV signature tunes, but Julian felt that there was a lot more work to be had if we were prepared to go out and look for it. He took my showreel and went out to find new work.

"Julian knocked on the doors of all the ad agencies, including Saatchi and Saatchi, where he spoke to a producer working on a new British Airways commercial. They said they'd already decided to use the Flower Duet from *Lakme*, by Delibes, but there was also interest in doing a world music version, based on the same melody. If we could come up with something, they'd consider it, so we decided to give it a go.

"For the demo, we sampled part of the opera off a CD, and Julian had a copy of David Fanshawe's *Spirit of African Sanctus*, from which we found two or three samples, including one of children singing, that were roughly in the right key and at the right tempo to work with the opera. After these were arranged, we added a percussion part using sampled tablas, and that was literally it, apart from a bass pizzicato string part which came from a Roland synth. We didn't want to take it too far because it was only a demo — and we were bound not to get the job anyway!

"Julian took it in, and they liked it, but they wanted us to develop the idea further. This led to quite a different version with more ethnic material added, and again they said they liked it and they'd be in touch. About three months went by, then while I was doing a sound recording job in

"I tend to find a basic loop, write a percussion part over it, then often I'll remove the original loop or use it low in the mix."

Germany, Julian phoned to say that we had the BA job and had to be in Los Angeles on the following Monday to record the final version! I managed to get somebody to cover for me in Germany, then I flew straight up to Manchester where my wife, Helena, met me with all my disks. At that point we discovered that the version they wanted us to recreate was the original demo, not the reworked version, so there was a panic to find the disk with the original version on it. I couldn't find it — the disk had crashed or something — and the main percussion part was quite complicated because it was played spontaneously and would be very hard to recreate. I spent all night trying to redo the percussion part — I didn't feel it was quite as good as the original, but hoped we could busk it.

"We assumed that as this was a British Airways ►





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# At home with...

## David Lowe

► commercial, we'd at least get first class flights to LA, but it turned out that we were booked in economy! Anyway, we flew off to LA with all our disks and samples, and hired an ASQ10 and three S1000 samplers to do the job. We'd got two singers from the Manchester Northern Music College to recreate the original operatic parts, and we managed to get clearance on the extracts we'd taken from *African Sanctus*, which meant that we could use our original samples.

“As an alternative to layering, I like to write two different but complementary pad parts using two different pad sounds.”

“We got to this really expensive studio, set up the gear, and with about an hour before the agency people were due to turn up, I put the sequence disk into the ASQ10 and the original version of the theme appeared! I don't know why it read on this machine, when mine had come up with ‘No file found’, but we made about eight backups straight away! After a couple of goes at the mix, we couldn't get the ending

to sound quite right — the agency wanted it to sound as much like the demo as possible — so they told us to go and book into a studio in LA, something like the one I used at home, then work on it for a day or two.

“I won't say we got the *Yellow Pages* out because that sounds unprofessional — but yes, we got the *Yellow Pages* out and found a studio just around the corner from where we were staying. It turned out that they had a Neve desk with flying fader automation, two digital multitracks — the works. Madonna had just finished recording next door! We booked in, even though it wasn't quite like home.

“To recreate the overall feel! and sound of the demo, we went to a local music store and bought an Alesis compressor and a Quadraverb. These

we took back to the studio, and we asked the woman who was engineering to put the whole mix through them. Of course she nearly had a fit — she thought we were completely mad, and then I kept asking her to put more reverb on. She was pulling her hair out, giving me all kinds of technical reasons why I couldn't have any more reverb, and there I was shouting at her to turn it up. It was like *Star Trek*, when the crystals won't stand it but Scotty has to turn up the power anyway! Anyway, we finished the track and the agency seemed very happy with it, so we went home to open the champagne.

“Then we got a phone call to tell us that our track still wasn't quite working with the video, but if we could make it work, there was a chance that it would still be used. We were tearing our hair out by then, so we went to a local studio to do yet another version of it. By that time, it was getting very close to the deadline. We played the track down the phone to the producer — but it still wasn't quite right with the video. Then, in a flash of inspiration, we took the track, put it in the sampler, sliced it up, then played it back in a different arrangement. It was the sort of thing you'd normally do in a hard disk editor, but we did it in the sampler. It just clicked into place and it worked perfectly, so we phoned up the producer, played it down the phone, counted him in to start the video — and he was finally happy with it. Then he handed the phone around so everyone could listen, and told us to get the finished version down there as soon as possible.

“However, this time I wasn't quite satisfied with it, and I asked if we had time to have one more go at it. They needed it by Monday to send it to the 55 different countries where it would be used, and the Sunday night before, we were back in my home studio where it all started, trying to recreate this thing from scratch — then we noticed little glitches at the sample edits between sections! The only way around it was to use the, by now, seriously clapped-out Akai 12-track — it was so bad that you had to hold a pencil up against the heads while it was recording or playing to keep it working. I didn't even bother with the sequencer at this point, as I knew the track so well — I just threw it onto the multitrack in about an hour, with me playing the samples where they were supposed to happen and Julian underneath the tape machine holding a pencil in the works. But we did it. At about six on Monday morning, we jumped into the car and drove the tape down to London to get it there by nine in time for the deadline. Because we'd done it on the spur of the moment, it sounded brilliant and they were really happy with it.

“That was a real turning point, and from then on, I didn't have to do any more sound work, because there was enough music work coming in.”

David's main keyboard is a Korg M1, above which is his Akai ASQ10 sequencer. The tall rack at the back of the room houses his ADATs, DAT machines, synth modules, including a Roland MKS50, and effects, including a Lexicon LXP15 and Alesis Quadraverb.







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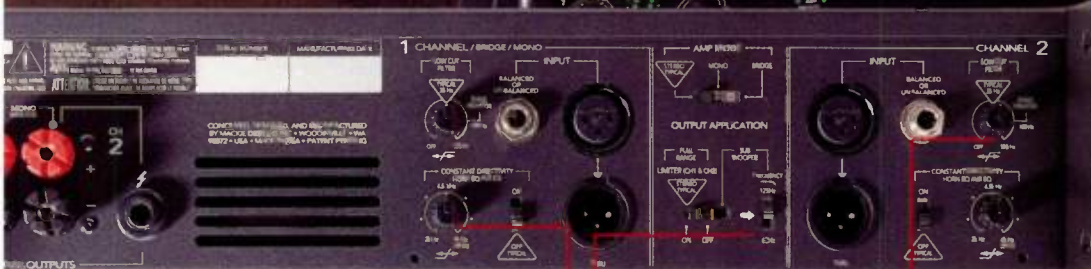
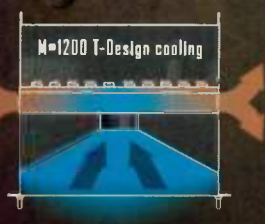
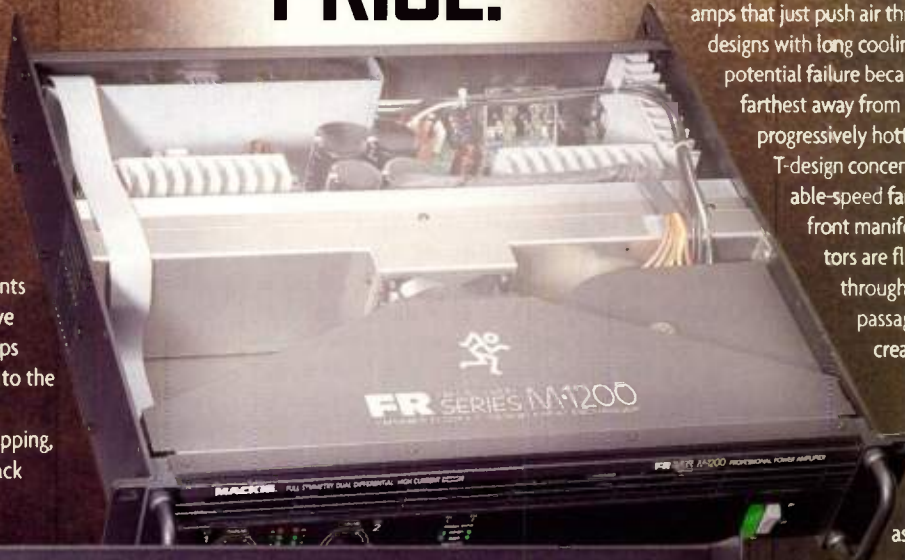
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► **PERSONAL STUDIO**

Perhaps this would be a good time to jump forward to the studio setup you have now, and your reasons for choosing your current equipment.

"I now use two ADATs, because of compatibility with other musicians, though in broadcast, a lot of people use Tascam DA88s, so in some ways I could have gone for those. It's very useful that you can send tapes to people, so that they can add vocals, then send them back. I do quite a lot of work with vocals now, and in Malvern, where I live, there are some superb local singers and musicians, who I use regularly. Julian, who lives in London, also has an ADAT, so when we're working together, it really helps to be compatible.

"For reverb, I have a Lexicon LXP15, but I still use my Quadraverb, which is permanently set to the 'String Dreams' patch. The only fairly exotic synth I have is an UltraProteus, because most of the sounds still come from the sampler. I've got a good collection of sample CD-ROMs — *Distorted Reality* has got some excellent rich pad sounds on it. I'll often write something using one of the synths, then replace all the sounds with samples when I come to mix. One piece of gear that's been really useful is the Iomega Zip drive, which I use to organise my samples.

"My desk is an Alesis X2, and I have a bit of a love/hate relationship with it. I love the sound of it, especially the parametric EQ, but it's had several niggly reliability problems, and when something like this does go wrong, you need to be able to get an engineer to come and fix it — it isn't practical to unplug it and bring the whole studio to a standstill while you ship it back for service, which is what I had to do."

**TOMORROW THE WORLD**

We should finish up with a few words about your current album project which, again, seems to have a 'world' theme. After making your living in theme tunes and commercials, have you found it very different working on 'stand-alone' music?

"Having the chance to make an album is absolutely fantastic, and in some ways I find it easier than writing to picture, because I'm not limited in the amount of time I can spend, or tied to creating a particular mood. Having said that, after doing so much picture work, this album is almost like the music to a film in my head."

Do you have a particular approach to writing?

"I'll often start with a rhythm, but I may just tinkle on the piano in the house and come up with a melody first. Sometimes I'll come up with the chordal structure first and then weave a melody into that, whereas with TV work, I usually come

up with the tune in my head before I start work on it. With the album, I've been starting more with melodies.

"I like really good pad sounds, and that's what attracted me to synths in the first place. I don't tend to do a lot of programming on modern synths, so the sampler is my main source of sound textures. I'll often layer two or more sounds to create something new, but I rarely edit synth patches. The other thing I like to do, as an alternative to layering, is to write two different but complementary pad parts using two different pad sounds.

"As I mentioned earlier, I have a favourite Quadraverb patch which finds its way onto nearly

"My secret is to make the ethnic samples sound like studio performances."

everything. I like really big, ambient reverbs, and although I'm not using anything very special to achieve the results, people are very happy with the sound. Then again, if I did buy something like one of the big Lexicons, I'd probably discover a fantastic new sound that would inspire me in a different direction."

How would you describe the style of the album?

"It's very hard to categorise, although I guess it will appeal to the Sacred Spirit or Deep Forest type of listener. I've been working with world music for several years, but it's only now that it seems to have become popular commercially. I've carried on using a lot of ethnic material in my TV work, especially in wildlife programmes.

"I've been working on the album for a couple of years on and off, and I've especially enjoyed combining English lyrics with ethnic vocals and different instruments. My secret is to make the ethnic samples sound like studio performances — to make them as real as possible. The album is called *DreamCatcher* and is due out in March, with a single in January. It doesn't concentrate on any specific strand of ethnicity: it's more a combination of sounds that you wouldn't normally expect to hear together — like blues harmonica and pigmy voices, for example!

"There are several rhythmic parts on the album, and I quite like analogue drum sounds. I tend to find a basic loop, write a percussion part over it, add to it, then often I'll remove the original loop or just use it low down in the mix. I have a D4 which I use for some drum sounds or for writing, but again, most percussion comes from the sampler."

What's the long-term plan, other than to finish this album and make lots of money?

"Do another one!"

**TV TIMING**

How do you handle sync for TV work?

"When I'm writing for TV, the company send me a VHS cassette with timecode on one audio channel and dialogue on the other. I mix onto DAT and provide a SMPTE start time, and if there's a piece that fades in, I'll include a count-in before it, so that they can get everything in sync. I don't use a timecode DAT — there are no sync drift problems as long as the start times are synchronised."



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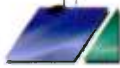
# Soundscape



oundscape SSHDR1 Multi-track Hard Disk Recorder is a high quality 16 bit digital audio system, which can be used for both pre and post-production work and can be used for recording and composing with MIDI, in a broadcast studio environment for radio program or jingle arrangement, and also for theatre productions and movie or TV soundtrack recording

and editing.

Each rack mounted unit has 2 track recording and 8 track playback through 4 outputs (configured as 2 stereo pairs), from 64 virtual tracks. As the system is modular, up to 16 rack units can be used together, synchronised with sample rate accuracy, providing a maximum of 32 inputs, 64 outputs and 128 tracks. This is a standard feature and does not require other software as with other systems.



## Hardware Specifications

- 2U 19" rackmounted unit
- Physical Tracks: 8 Expandable to 128 tracks
- Sampling rate 22.05/32/44.056/44.1/47.952/48KHz
- Data Format: 16 Bit Linear
- Signal Processing: 24 bit internal
- Data Storage: IDE hard disk, fitted in the rack unit (not supplied as standard)
- 2nd Internal IDE Drive can be fitted allowing a maximum of over 10hrs recording time
- A/D conversion: 16 bit sigma-delta 64 x oversampled
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- Synchronisation: Master or Slave, MTC, Midi song pos. pointer + clock
- Analogue in: 2 x RCA, unbalanced
- Digital in: 1 x RCA, S/PDIF format (2 channels)
- Digital out: 2 x RCA, S/PDIF format (4 channels)
- (pro-audio option available with XLR in/out and AES/EBU in/out)
- MIDI in/out/thru
- Backup medium: DAT recorder or via the PC to a SCSI backup device or logical PC drive

# Soundscape



## Software Specifications



- Microsoft Windows 95™ and Windows 3.1™ compatible
- Using the virtual tracks, up to 64 audio takes can be recorded at the same timing position in an arrangement, allowing for instance, a sub mix of multiple backing vocal harmonies, instrument solos or sound effects to be selected on any physical track later.
- Arrangements are created in the arrange window which display PARTS of a soundtrack and play the actual recorded audio TAKES on disk. A TAKE can be used in different ways by any number of PARTS which can play all or any section of the TAKE, eg. a chorus vocal can be recorded just once, but used four times within an arrangement. These PARTS build up the song or soundtrack, and can be edited in a non-destructive way at waveform level, or 'zoomed out' without reference to the waveform, using a 'snap' to bars/beats/16ths etc
- Move /Copy /Solo /Repeat /Delete/Cut/Glue edit functions
- Solo and Multi-track scrubbing
- 999 named markers (insert 'on the fly')
- Realtime fade In/Out (8 curves)
- Automated Punch In/Out
- Volume contouring
- Powerful noise gate
- 'Trim and Slip' editing tools
- Normalise process to 0dB
- Stereo link tool for stereo editing
- Nudge edit
- 9 customisable Tool pages
- Zoom in/out history (8 levels)
- Volume and Pan controls (automated via MIDI)
- Assignable fader grouping
- Merge (stereo digital mixdown)
- Reverse, Phase Invert
- Compute Tempo
- Insert Left/Right Locators
- Time axis display in SMPTE or measure
- Arrangements are saved in separate arrange files on the host PC

## Dawsons Package

oundscape SSHDR1 8 Track System complete with 2.5 Gigabyte Hard Drive (over 6 hrs recording time), Time Stretch/Compression, Pitch Shifting and Sample Rate Conversion plus Time & Space Soundcube™ sound library



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## Dawsons Design Service

Dawsons can supply 8, 16 up to 128 track systems. Pro systems with balanced in/out are available. Also call for the latest info on compatible drives and compatibility with Emagic Logic Audio

## Audio Libraries in .wav

Because Soundscape uses .wav files, vast libraries are available. In addition to the Soundcube™, Creative Essential CDs are available from £19.99 with a range of 30 different CDs with samples in .wav, .aiff (Mac) and audio all on the one disk



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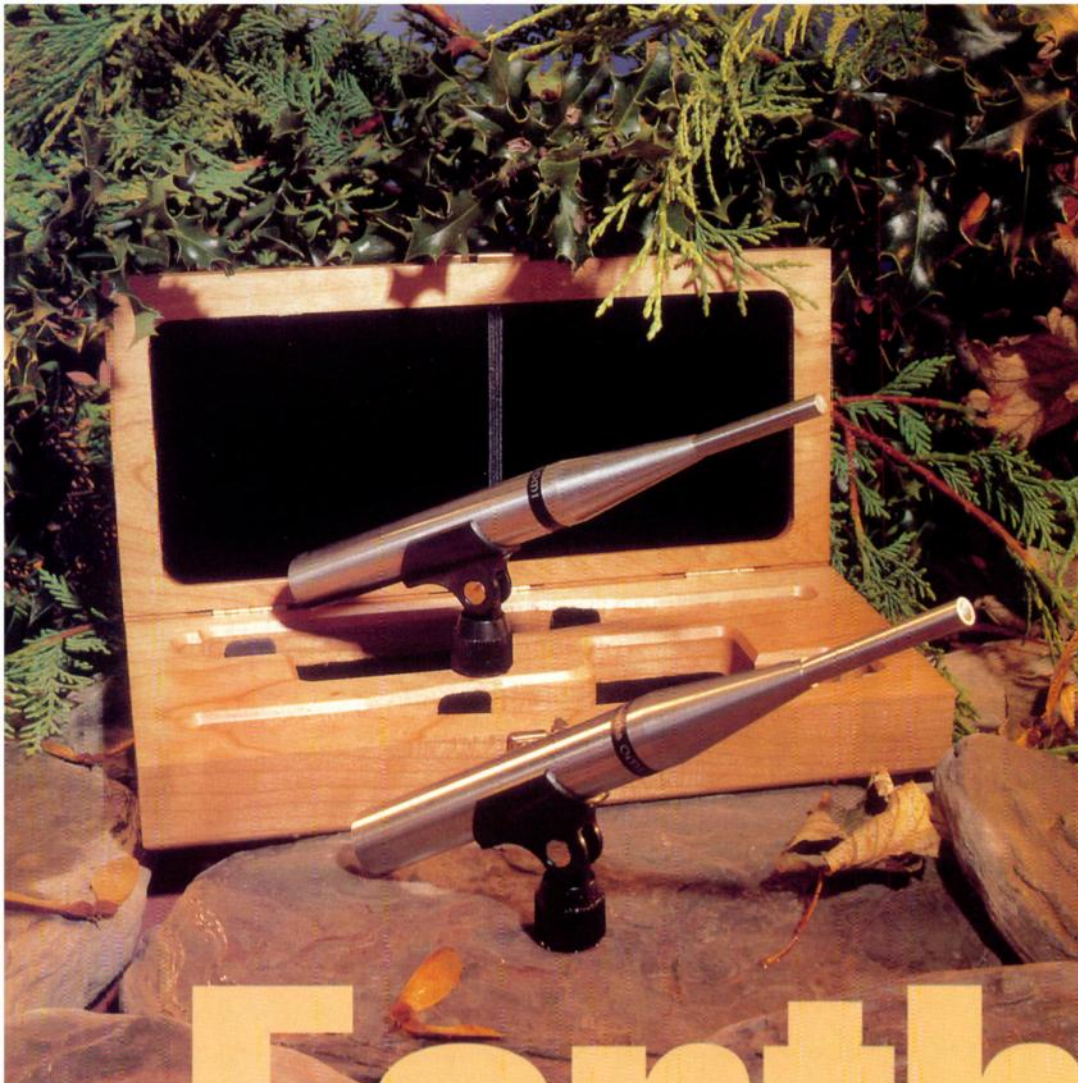
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# Earth

## EARTHWORKS OM1 OMNIDIRECTIONAL MICROPHONE

# Tones

would comprise a minute, infinitely-light diaphragm suspended freely in space. Stick the diaphragm in a housing of any kind and you're partially masking the sound you're trying to capture. That's why traditional studio mics with housings like flower pots have omni response plots that show significant changes in frequency response as the sound source moves off axis. If the mic were a true omni, there wouldn't be any axis! However, we need omni mics and it would be defeatist to allow a little thing like the immutable laws of physics to prevent us from achieving at least a favourable compromise.

### THE OM1

All this preamble is by way of explaining why the Earthworks OM1 looks like a stainless steel electric toothbrush that's lost its head. You

*PAUL WHITE tries out an intriguingly-styled US-built mic and discovers that tonal honesty can occasionally be a very good studio policy.*

**pros & cons**

**EARTHWORKS OM1 £499**

**pros**

- Surprisingly affordable.
- Natural, detailed sound, but without seeming clinical.
- Very versatile.

**cons**

- Slightly less than optimum noise and sensitivity figures.

**summary**

If you don't have an accurate omni mic already, and if you don't have an infinite budget, this is definitely a model to consider very seriously. Buy two if you can afford to, because they make a great stereo pair.

**SOUND ON SOUND**

Omni-pattern microphones have the overwhelming advantage of a noticeably more open, natural sound than cardioid models of similar quality, not to mention a total lack of proximity effect (the tendency to an increase in bass when a mic is used very close to a sound source), but they have one major disadvantage: they're quite impossible to build — or at least, a *perfect* omni mic is impossible to build, because the laws of physics conspire to make it that way. Heisenberg's uncertainty principle makes it clear that in trying to measure something, we invariably change the thing being measured, and the smaller the thing we're trying to measure, the more we change it. Microphones measure small things — they average the sound energy carried by multitudes of air molecules — but to measure what the air molecules are up to, some of their energy has to be used to move a diaphragm, and if we take energy from the air, we're changing the very sound we're trying to measure.

The other problem is the physical size of the microphone: a theoretically perfect omni mic

can't have a point source (or should that be point destination?) diaphragm, but you *can* have a very small one. Similarly, you can't just hang the capsule in space, because of local gravitational conditions, but you *can* put it at the end of a thin probe designed to interfere with the soundfield as little as possible. Some people have commented that the Earthworks OM1 looks rather similar to a B&K reference microphone, but this isn't because they've deliberately copied B&K. To make the most accurate omni possible, you *have* to take the 'probe' approach.

Earthworks currently have three mics in their range, the OM1 being the least expensive and designed to work with transformerless consoles equipped with standard phantom power. A different model is available for those using transformer-coupled consoles or mic preamps. Looking more closely at the OM1, the body appears to be machined from stainless steel, with a balanced XLR connector at the thick end, and a



very fine grille over the tip of the probe end. Because the grille is so fine, it's essential not to get the mesh blocked by dirt, yet according to the designers, whenever they first show the mic to somebody, their first instinct is to touch the end. They claim to have a team of psychologists working on this problem, but I suspect this is merely an attempt at levity! This suspicion is reinforced in the manual, when the user is advised not to stir drinks with the OM1.

No pad or roll-off switches are provided on this mic, and the only support is a standard mic stand clip. For serious use, I'd be inclined to get hold of a shock mount, especially considering the extended low-frequency response of this mic. A nice touch is the box the mic comes in; for review, we had a stereo pair which came in a box machined from a solid block of wood with foam linings in the base of the cutouts. The hinged lid closes with a positive catch mechanism, and the whole package looks very expensive.

This mic has a massive tolerance to loud noises, topping out at 146dB, but correspondingly, its sensitivity and noise figures are slightly down on what you might consider to be typical figures for a top-end microphone. Its sensitivity, of 8mV/Pa, is around a third of what you might expect from a typical quality studio mic, and the noise figure, of 27dB A-weighted, is a tad on the high side, but these apparent disadvantages are offset to some extent by the fact that the mic can be used very close to the sound source with no proximity effect. Indeed, in typical studio applications, neither noise nor sensitivity presented any problems whatsoever.

#### ON TEST

Tested side by side with a large-diaphragm capacitor mic, the OM1 sounds obviously more accurate and detailed, with a much snappier transient response, but it doesn't seem to have that cold, clinical feel that many small-diaphragm mics have. Used with a pop shield, the OM1 makes a great vocal mic, though some singers will obviously prefer the flattery of a specific large-diaphragm model. If the transient response of the OM1 is too revealing, however, vocalists can always sing side-on to the mic to tame the top-end response a little.

Where this mic really excels, though, is on acoustic instruments: several users have reported excellent results on pianos and drum overheads. I found the mic superb for recording acoustic guitar and percussion, and even though omni invariably pick up more room sound, you only have to move a little closer to the source to compensate for this. What's more, the microphone position for the

#### FREQUENCY FIGURES

The design brief for this mic was for accuracy: it has an on-axis response of 9Hz-30kHz (+1dB/-3dB), which, off-axis, rolls off gently above 10kHz. Even the 'probe' approach (see main text) causes some high-frequency shadowing, and any diaphragm not infinitely narrow will show a roll-off in high-frequency response off-axis, because the same sound will arrive at different sides of the diaphragm at slightly different times. Having said that, in terms of what is physically possible, the OM1 is extremely well specified.

OM1 seems less critical than it does using many cardioid mics.

#### SUMMARY

What I haven't mentioned yet is the surprisingly low cost of this microphone, given its very high standard of performance. You could easily pay two or three times the cost of this mic without getting better results, and indeed, you can buy an Earthworks model costing twice as much as the OM1, which offers a wider frequency response and a slightly better spec. For general recording work, however, where you want to capture a sound as realistically as possible, the OM1 is an excellent performer. I'd read a lot of testimonials for this mic before conducting this review, but I have to say that they were borne out in practice.

While not everyone needs an accurate mic all the time, I feel that the excellent transient response of this model, combined with the omni's characteristic lack of proximity effect, makes it a very valuable addition to any well-stocked microphone locker. If you can run to it, get a stereo pair, because that means you can work in stereo for jobs such as drum overheads, pianos, acoustic guitars, percussion, vocal ensembles, and so. Despite its rather clinical appearance, this is a very musician-friendly mic, which looks sleek enough to impress clients. Its only shortfall is that it may be a little noisy and a little insensitive for long-distance work, but for the majority of real-world tasks, it comes about as close to the ideal as physics will allow it to!

SOS

**E** OM1 £499.37; TC30K (for use with transformer-coupled consoles or mic preamps) £540.50; TC40K (with extended frequency response) £989.35. Prices inc VAT.

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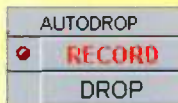
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Last month, I explained just some of the ways in which you could use a multi-port MIDI interface, like the Opcode Studio 5LX, to make working with MIDI equipment easier. This month, I'll describe yet more applications for these useful devices.

### MASTER KEYBOARDS

I currently use a Yamaha SY99 as my main master keyboard, but sometimes I want to change it to

greyed-out sources to 'Master No Clock' in Figure 1? They are 'reminders' for the other sources I have available for my master keyboard. If I want to use a Wind Controller instead of the SY99, I go to the Virtual Controllers window and select the WT11. Without using a Virtual Controller, I would instead have to go to each patch that used the SY99 as the master keyboard and edit it, which could be a long and very tedious task. As it is, I have a very quick and simple method of selecting sources for the master keyboard. Not content with just one Virtual Controller, I also have several different 'versions' of my SY99. The basic one produces no MIDI Clocks, so is very useful when I don't want to clog up the MIDI bandwidth with unnecessary timing information (I can't be bothered to turn it off on the SY99 — it takes rather too many button-presses). By replacing my use of the

# Going back to your Routes

USING THE OPCODE STUDIO 5LX MULTI-PORT MIDI INTERFACE & PATCHBAY

*Multi-port MIDI interface/patchbays can seem like an expensive indulgence for the average studio. But, as MARTIN RUSS explains in the concluding part of this two-part feature, they can really help you to get the best use from the MIDI gear you already own.*



something else — like another keyboard with different facilities, or a wind controller. To achieve this painlessly, I have my Studio 5LX set up so that I need only make one change, and I don't even need to touch my patches! This trick is achieved by using a Virtual Controller, which is a neat way of mapping real MIDI sources to ones which exist only inside the software in the Studio 5LX and the Macintosh. Notice the two other

SY99 output with a Virtual Controller, I can have an SY99 master keyboard that does not produce clocks — and I've only got one thing (the filter in the Virtual Controller patch) to change if I need to change the allowed MIDI messages — like Active Sensing, or extra Controllers, for example.

Another 'virtual' version of the SY99 only

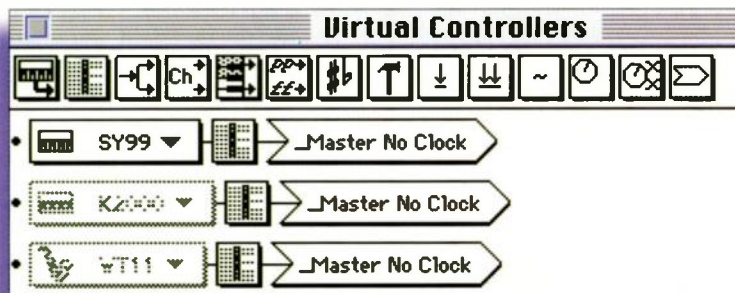


Figure 1: A Virtual Controller patch like this makes it easy to painlessly switch between different master controllers, in this case the Yamaha SY99 and Kurzweil K2000 keyboards, or the Yamaha WT11 wind controller.



Figure 2: The Studio 5LX's filter block (between the SY99 and Master MIDI Clock) filters out everything coming from the SY99 other than MIDI clocks and related messages, in this Virtual Controller.

produces MIDI Clocks and related messages (Start, Stop, and so on). The filter block removes everything else (see Figure 2). Once again, because all the filtering is in the Virtual Controller instead of the individual patches, you only need to edit this one filter to change the filtering for all the patches which use this controller.



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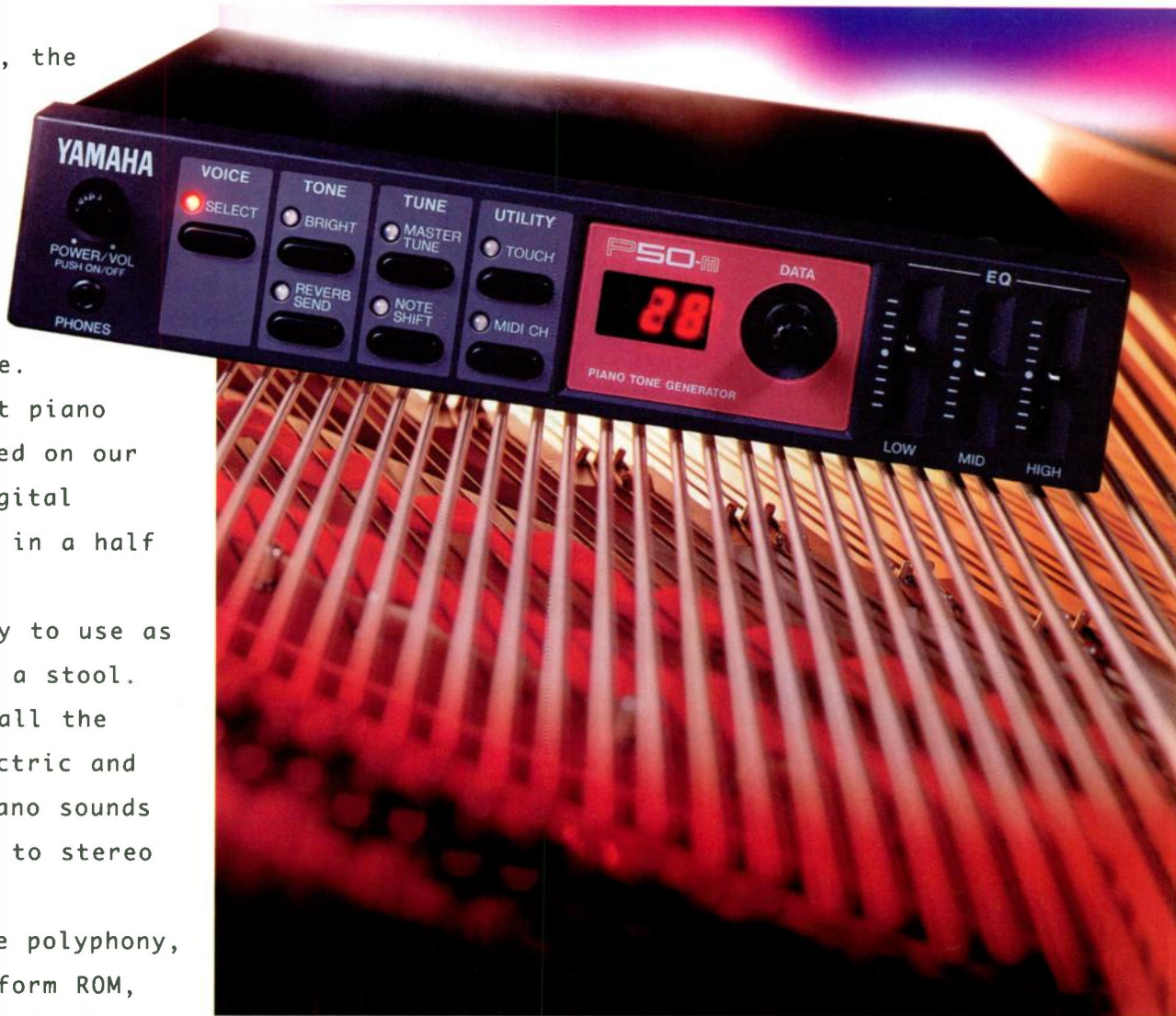
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# Using Opcode Studio 5LX

## UPGRADE UPDATE

Once I had been using my upgraded Studio 5LX for a while, I noticed that I was getting more 'over-run' errors than before. These errors occur when there are communication problems between the Macintosh and the Studio 5LX. I quizzed Opcode about this and got several answers, in ascending levels of complexity. Here's some of what they said:

Opcode's Greg Thomas advised checking that 'Local Control' was off on my master keyboard, and looking at the routings in Studio 5 patches for feedback loops. He also suggested a 'hard reset': hold down both the black front-panel buttons, and power up the Studio 5LX. If you use a PowerBook or PowerMac, you need to connect to just the Modem port, not the Printer port. The Mac IIx and Quadra 950 models might also need the 'Studio 5LX-to-Mac' speed slowing down.

Jarrell Irvin, the author of the Studio 5LX firmware, also responded, with more detail on the slowing-down theme. Apparently, the enhancements to the LX improve its MIDI throughput and accuracy of the transmission delay calculations. In other words, the new ROMs are 'more efficient' — which can mean that you need to slow down the 'Studio 5LX-to-Mac' speed so that the Mac can respond properly. Jarrell pointed out that even SysEx information only produces one set of MIDI data, and that where you need the speed is in the 'Mac-to-Studio 5LX' direction — which is normally eight sets of MIDI data.

Opcode's fast response was thorough and helpful, and simply slightly reducing speed, as suggested, solved my problem — no more 'over-run' error messages.

But one of the 'other' versions of the SY99 produces just a MIDI clock, and this patch is called 'Master MIDI Clock'. Although the clocks usually come from my SY99 (which acts as the master keyboard most of the time), I could change the source of the clocks merely by editing this one patch. Of course, when I use the WT11 wind controller as the 'master keyboard', I may still need to have the SY99 as the source of the timing, since the WT11 obviously can't do this — and in this case I would change only the source for my 'Master No Clock' Virtual Instrument. If I was changing real MIDI cables at this point, I would have to wire up the WT11 as the 'keyboard' input, and somehow merge the SY99 MIDI clocks with it. I'd have to rewire the cables without getting lost and having to start all over again, whereas with the MIDI patchbay/interface and a few Virtual Controllers, it takes just a couple of double-clicks to completely alter the MIDI topology of my studio.

Virtual Instruments are also the key to producing simple patches like the one I explained last month, where the master keyboard was connected to all my Emu devices. Without the underlying Virtual Instrument, the patch would have to explicitly connect the master keyboard to all the Emu instruments, and if either the master keyboard changed, or a new Emu instrument was purchased, every patch containing either of these devices would have to be changed.

## THROWING A CURVE

Master keyboards are a good idea because they let you use a keyboard whose action suits you, but the response of many synth expander modules to velocity is variable enough to cause some problems. This 'velocity curve' problem has afflicted MIDI from the very beginning: the original DX7, for example, did not like to output velocities much above 110. Sophisticated patchbays allow you to sort out this problem either at source or at

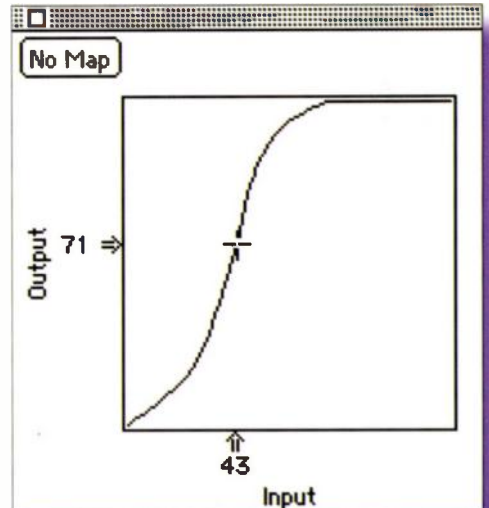


Figure 3: The easy-play velocity curve expands the effect of low and middle range velocities, and compresses high values.

destination. I have experimented with Virtual Controller keyboards, where the synth module's output is modified to give alternate 'velocity curves', but I find that I prefer to make the changes at the input to the expander modules which have the wrong 'feel': here's how.

The Studio 5LX provides a neat 'input/output' map which shows velocity curves in a graphical form. One useful curve expands velocities from the middle of the velocity range and compresses the extremes, which makes playing some dynamic synth sounds much easier. As I mentioned, velocity curves are best changed at the input to the specific item which requires the change — so my easy-play 'Piano' velocity curve (see Figure 3) is often used before piano-like modules to reduce the amount of pressure which a soft-fingered player like me has to use!

## GETTING THRU

Tying up a master keyboard as the input to a sequencer is fine until you want to do some accompaniment. Playing on the master keyboard usually results in all the 'Thru'd' instruments playing your melody line, which is often exactly what you don't want. For this occasion, I have a

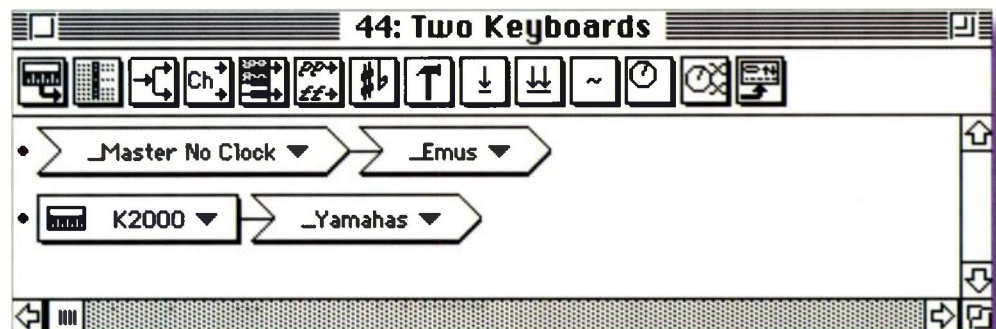


Figure 4: My 'Two-Keyboard' patch, which adds a second keyboard for accompaniment while the usual master keyboard is being used as the input for a sequencer.



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# Using Opcode Studio 5LX

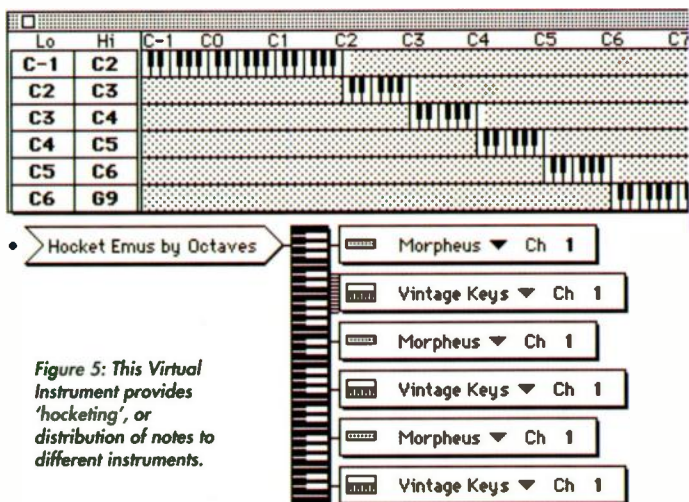


Figure 5: This Virtual Instrument provides 'hocketing', or distribution of notes to different instruments.

- ▶ 'Two Keyboard' patch (see Figure 4), which leaves the master keyboard alone, but adds a second keyboard for the solo or melody playing.

When performing live, it is possible to extend this idea so that all the MIDI instruments for all the performers are routed through the patchbay — as long as someone stays in sole charge of patchbay patch changes! More creative uses for patchbays which feature processing capabilities are limited only by the available facilities and — as they say — your imagination. For example, it is possible to use multiple keyboard splits inside the Studio 5LX, where groups of notes are assigned to different instruments. Or a Virtual Instrument could provide 'hocketing' — the distribution of notes to different instruments (see Figure 5). Although you could set up this sort of patch on the two instruments themselves, it is much easier to do it inside the patchbay, and much faster and easier to edit it.

## ATARI ST INTEGRATION

When I took my Studio 5 to MCMXCIX to have it upgraded to the LX version, I had a chat with a fellow musician who had recently moved from Atari to Macintosh. He commented on the poor resale value of Atari computers, at which point I said that he should keep the Atari, and use it in his MIDI system. He replied that he now had a Mac and did not need the Atari any longer. So I asked him if he'd ever read the June 1993 issue of *Sound On Sound*...

The Atari Notes column in that issue of SOS advises you *not* to sell your old Atari, but to use it with whatever you buy to replace it. Your ST/TT/STE is not going to make you very much money when (and if) you can sell it, so why not keep it, and continue using some of the music software?

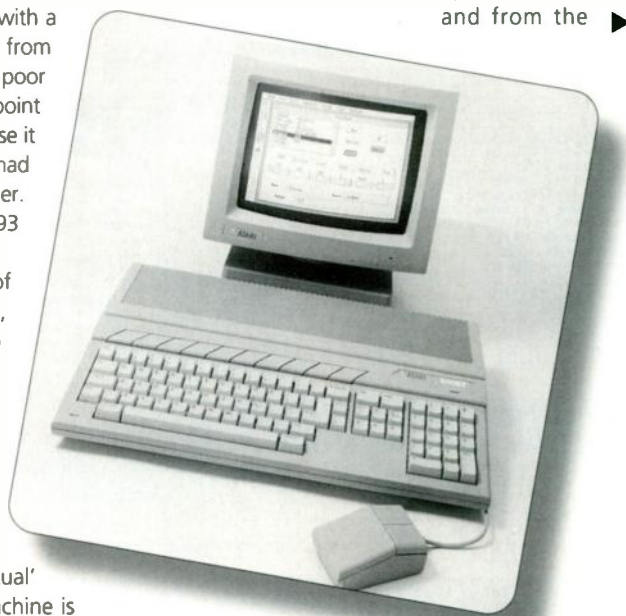
Although I only have one Atari physically connected to my MIDI system, these are treated as several different 'virtual' Ataris, depending on what tasks the machine is

“Opcode's news-sheet regularly features patches from people who are using the Studio 5LX to automate complete keyboard rigs for tours, or complex tasks in studios.”



Figure 6: Three Ataris for the price of one! Again, the MIDI message filter block helps to prevent problems with extra data getting into the network from the Atari.

asked to do (see Figure 6). The first thing to do when integrating an Atari is define a new device on the Studio 5LX. Since Atari don't normally figure in Macintosh MIDI equipment lists, you simply choose 'Other' for manufacturer, and 'Other' for the model type. I select all the options so that everything gets passed to and from the





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# FATAR STUDIO SERIES

MASTER KEYBOARDS



# Using Opcode Studio 5LX

► Atari (see Figure 7). Once set up, the way in which the Atari is used depends on the patches in which it appears. Message filtering can help to prevent unexpected problems which can be caused if extra data gets into the rest of the MIDI system from the Atari.

One of the patches that I use the Atari ST with provides 'jittered' MIDI clocks from a small utility program I wrote several years ago: the idea was to humanise sequenced phrases and drum patterns by not always having the same gap between successive MIDI clocks. It works very nicely, and everything else 'syncs' to it, although if you record something while using it, the tempo maps in a sequencer can look a little unusual. Of course this kind of randomisation now comes as

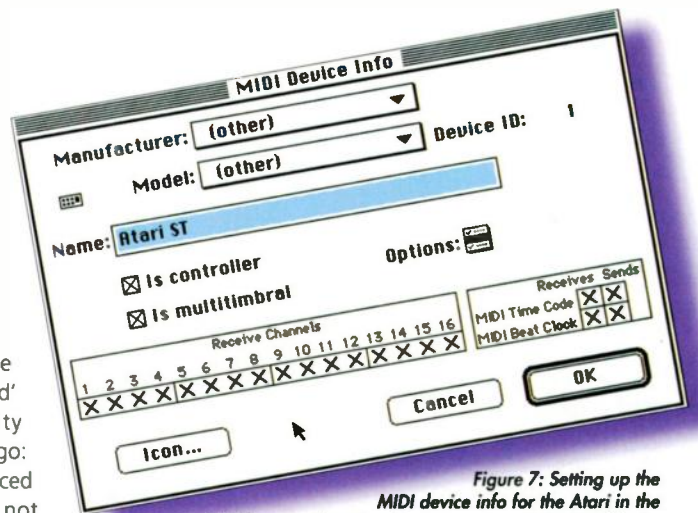


Figure 7: Setting up the MIDI device info for the Atari in the Studio 5LX. Since there's no preset name for Atari in the MIDI equipment list, I simply chose 'other' for both manufacturer and model type.

standard with most modern sequencer packages, but it serves to illustrate the point — that the Atari still plays a valuable part in my setup.

Another Atari ST patch is optimised for sound editing on my Yamaha FB01, a useful device which is not supported in my favourite editor/librarian software. The patch allows me to

## BEATING DRUMS

The problem with drum sounds is that they are often available as part of the same multitimbral MIDI expander as the instrumental sounds. Coping with this can be confusing, as can trying to remember which channel the percussion is on. Roland and GM-compatible equipment may use MIDI Channel 10 as standard for drums and percussion, but some other manufacturers use channel 16, and some use any channel they like!

I often use a Virtual Instrument for drum sounds, and I have all my drum sounds mapped to note numbers which remain the same, wherever possible. Depending on how much control I need over the drum sounds, I either assign all the drums to the same channel, or use separate channels for each drum sound source. If you put all your drum sound sources on the same channel, they become a single destination

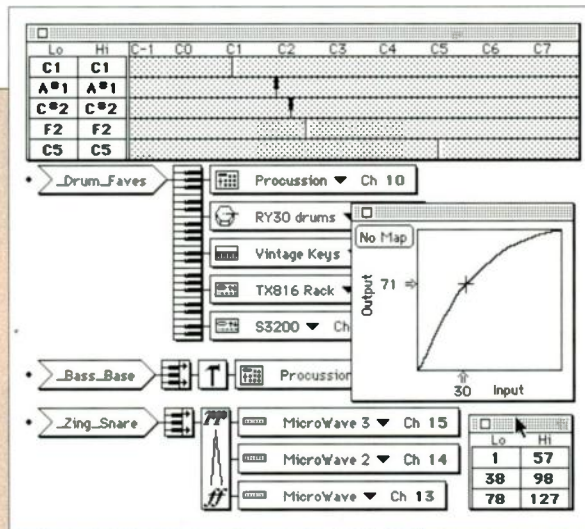


Figure 2a: The flexibility of the Studio 5LX's MIDI processing means that you can do quite radical things with drums. The DrumFaves virtual instrument assigns single notes to a selection of drum sound sources. Bass Base assigns a range of notes to the Procussion, and compresses the velocity to provide a more even drum volume. The Zing Snare sound is made up of three MicroWave sounds which are velocity-faded together.

“Having a graphical display of your patch routings may seem like overkill at

first, but it makes the complex possibilities much clearer.”

use the ST to edit FB01 patches, via MIDI SysEx messages, whilst also merging in the SY99 keyboard so that I can play edited sounds (see Figure 8 on following page). In this patch, 'Atari SysEx' is connected to a 'device' called FB01, even though in my case the FB01 is not physically connected directly to the Studio 5LX port, but is connected via a Yamaha TG77 FM expander module instead.

Normally, the only device that you would see in a Source pop-up menu would be the one which is directly connected to the port — the TG77, in this case. But since it is unlikely that a single TG77 would be able to use all 16 MIDI channels and still have a usable amount of polyphony, you can hang a second

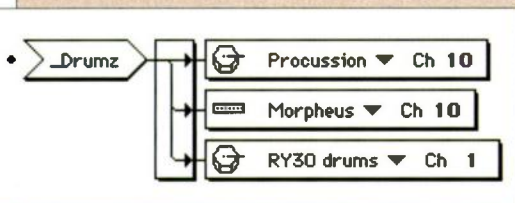


Figure 1a: Drums as a single destination. I'm too lazy to try and map all 128 possible MIDI note numbers to drum sounds, so I map my favourites to a fixed mapping and then mix the results. With three different kits, this gives rapid timbral changes via my mixer.

and, of course, they'll all play at the same time. When I do this, I can use my mixer to select the mix of drums I want (see Figure 1a).

For multiple channels of drums, I can clone my sequencer drum track and then send the drum notes separately to all the sources of drum sounds I have. The drum hits are still made up from several separate drum sounds, but I can then delete the ones I don't like on an 'individual note event in a

track' basis... This gives a dynamic mix of drum sounds which suits my ad-hoc working methods beautifully. Using a 'subtractive' method like this avoids the complication of having hundreds of separate defined drum sounds made from combinations of individual instruments.

These slightly unorthodox methods enable me to add and take away percussion sounds quickly, and mean that all my drum patterns use the same note numbers. The mapping I use is based on GM drums, but with differences due to the way in which I've gradually built up my percussion sound sources over the years.



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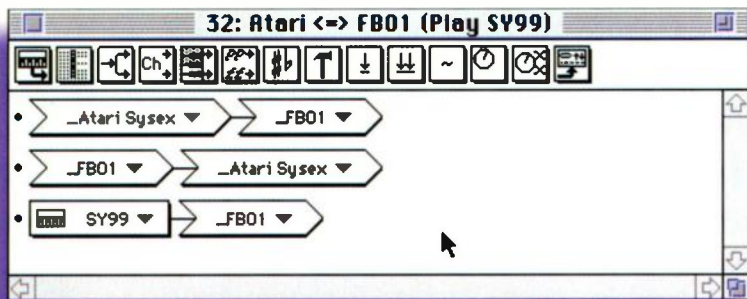
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# Using Opcode Studio 5LX



**Figure 8:** SysEx editing of the FB01. This patch allows the Atari ST to edit FB01 patches, while also merging in the SY99 keyboard so that I can play edited sounds. (PS: I know I should have used the 'Master No Clock' Virtual Controller here, but I'm not perfect!)

▶ device on there and feed it with a different MIDI channel (see Figure 9 below). The FB01 is connected to the Thru port of the TG77 and is set to an unused channel (if the TG77 were set to receive on the same channel as the FB01, any note messages would be played by both the TG77 and the FB01!). Although this is perfectly OK for providing extra polyphony and sounds, it complicates any editing of the FB01 using SysEx messages, since the Out of the FB01 needs to be connected back into the Studio 5LX.



**Figure 9:** The Virtual Instrument for the FB01 uses one of the unused channels of the TG77.

One apparent catch with this setup is that there's no obvious way to name that second device. However, it can be done. You simply use a Virtual Instrument, so that you can give it a meaningful name — like FB01.

## LIMITATIONS

Although this approach works fine for sending SysEx and other MIDI information from the Out of the Atari ST to the In of the FB01, it does fail when it comes to connecting the Out of the FB01 to the In of the Atari ST — so I have a little MIDI switch box that swaps between the FB01 and the TG77 output. The effort of switching whenever I edit the FB01 is very minor compared to the cost of an extra Studio 5LX! I have defined a Virtual Controller for the FB01 channel, to remind me that when I'm using the FB01 with SysEx messages, I need to switch to the FB01's MIDI Out port instead of the TG77's. The end result is a device called FB01, which can be used almost as if it was one of the devices connected directly to a port, even though it isn't!

**MENU TIP:** When naming a virtual object, I place an underline character (a shifted 'minus' key) at the beginning of the name. This is so that when you display a menu, all the virtual objects will be listed together near the bottom of the list. Using the alphabetical sorting of names like this can be very helpful with long lists of equipment, especially if you use lots of virtual Instruments and Controllers.

Another SysEx patch to the Atari ST is used when

a 'direct' connection is required between the ST and another device. This time, the SY99 is connected directly to the Atari via the Studio 5LX port; no switching is needed, and I can edit samples on the Atari ST and download them to the SY99's user sample RAM. The Atari ST is just another way of editing the SY99 patch or sample data, and the fact that I use a Mac connected to the same patchbay makes no difference. This really is using computers as musical tools rather than the focus of everything, which can only be good for the music.

Why do I still use the Atari ST for samples? It turns out that acquiring sound patches via SysEx dumps from a BBS or the Internet has one major shortcoming: they're almost always in the wrong format for the generic editor/librarian that you use. In such circumstances, I reach for the excellent *Chameleon* on the Atari first, because it is very adept at ignoring 'foreign' headers and looking for just the System Exclusive information. After that, I use a home-written *ST MIDI Toolkit* utility, which will quite happily squirt complete nonsense as a MIDI SysEx dump if you ask it to. This is another useful way of extracting usable SysEx out of someone else's format. I don't know why every editor/librarian program insists on adding their own header around the basic SysEx information, but they do, and I often need to try and undo it.

## AND FINALLY...

Opcode's news-sheet regularly features patches from people who are using the Studio 5LX to automate complete keyboard rigs for tours, or complex tasks in studios, and more. Having a graphical display of your patch routings may seem like overkill at first, but it makes the complex possibilities much clearer — imagine trying to work out how a Virtual Controller is set up from just a few LEDs!

Although the applications I've featured in this article have used the Opcode Studio 5LX, many of the same techniques are applicable to other multi-port MIDI interfaces. Opcode's own Studio 4 shares many of the features of the 5LX, and Mark of the Unicorn's MIDI Time Piece also has comprehensive routing and patching capabilities. Whichever MIDI patchbay you have, take another close look at your user manual and start making the most of it. If you don't have a MIDI patchbay at all yet, perhaps you can now see the sense in buying one!

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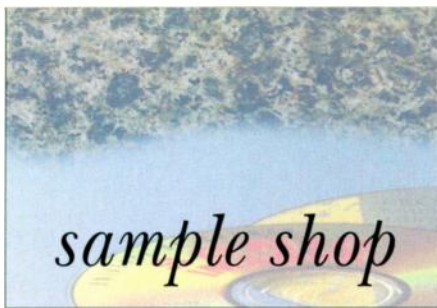


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▶ instantly recognisable as being designed for a dance context. The chords, where played, are clearly indicated on the sleeve notes. Despite the concise description, there's a lot of material on this disc and it's also very usable. The number 4 springs unbidden to mind.

#### REGGAE CONNECTION ●●●●

This CD features a complete build-your-own reggae kit, including programmed drum loops, live drum loops, synth bass riffs, concisely multisampled notes from individual basses, live bass playing, brass riffs and stabs, bags of guitar riffs, organ riffs, organ chords, piano, string multisamples, steel drum notes and rolls, plus a bagful of individual drum and percussion samples. Though I've never thought of reggae as something you would normally build from a kit, here are all the tools you need, should you contemplate doing so. The range of examples and samples is copious, and the asking price of the disc is probably worth it for the individual drum and percussion samples alone. If reggae is your thing, you'll probably agree it's well worth a 4. *Paul White*

£ The Creative Essentials range costs £19.95 per disc inc VAT & UK p&p.

### KEITH LE BLANC'S KICKIN' LUNATIC BEATS 2 (AUDIO CD)

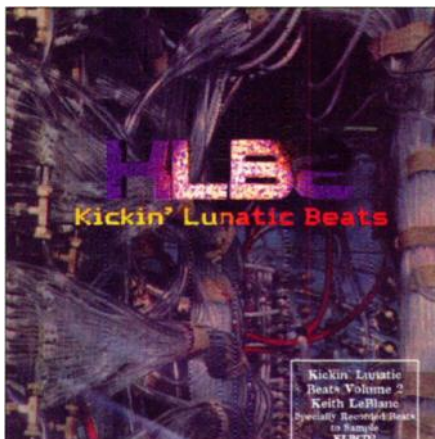


The Human Drum Machine is back. *KLB2* is the second release featuring ex-Tackhead techno-drummer Keith Le Blanc. On his last five-star release he gave us a pretty straightforward illustration of what he was capable of on the skins, but rather held back on the electronic side of things. Will he deliver this time?

The format is simple enough: each of 71 stereo tracks offers loop sets (usually one tempo set per track — occasionally more). These contain, in various permutations, live drumming, studio and synth effects, percussion, and samples. Favourite effects include long, high-regeneration flanges and harmoniser sweeps, long and gated reverbs, and dubby filtered echoes. One theme that runs through pretty much all of the work is the juxtaposition and synthesis of excellent live drumming on a real kit with wild electronics. It would take the entire Sample Shop to describe every pattern in detail. Nor can I easily group them together and generalise — the patterns and treatments are far too diverse for that. The best I can do is describe in detail a representative selection of tracks to give a flavour of what *KLB2* is about.

Track 1 sets the scene. A simple but super-

tight live drum pattern with an intricate hi-hat pattern (a KLB trademark) is laced with underplayed percussion and wild delay/harmonising. The same 4-bar pattern is next presented with even more on top, then finally bone dry. Track 13 is a classic illustration of man and machine in harmony, which is the greatest of Keith's many



strengths. (Am I a fan or what?) It opens with a great splashy simple-kit beat, which is soon seamlessly joined by sampled drum loops. Track 18 is one of several sets featuring that unmistakable OTT 'rrrrrrr' noise that permeated much of Tackhead's work. ('rrrrr' = very rapid repetition of a hard sound, such as a rimshot or synth blip). Track 21 is the exception that proves the rule. KLB plays over the top of the familiar 'You've Got The Power' loop to no great effect. Everyone's allowed one mistake!

Track 25 has drums over tabla and duggis, probably courtesy Talvin Singh, who's credited on the sleeve. Somehow the two combine uneasily. Loops are supplied solo and together. Track 27:1 is hard as nails: clap and driller noise, kick pattern, stereo echoed hats, then a magnificent composite featuring the detuned harmoniser delay highlighted on track 58 (see below), creating a manic, spacious ambience over busy percussion. Track 30: 1 offers a hip hop live beat, with bongos and some extra

percussion, while 2 is a slow live beat with a distinctive percussion loop. Three is a clean and clever live beat, and 4 is the same, with a completely mad and distracting, yet wholly appropriate, rhythmic resonant chord effect on top. Track 37: 1 is a straight 4/4 beat on a live kit with a shaker and tight filter-swept percussion overlay; 2 offers the same drum beat with long, flanged reverb atmosphere. Delightful dry, echo-generated drop snares stand apart from the prevailing ambience.

Track 58 shows you what you can do when you detune a tempo-matched harmoniser/delay's regeneration loop — in this case, from top to bottom. Keith plays a live kit over a rolling half-speed drum loop, while a clave is fed into the effect every three bars, creating a massive dub ambience. Track 61 features a flashy bit of drumming from KLB, with show-off kick drum work and good fills. Tracks 62 through 64 contain 'Mutator Beats', around 20 shortish loops including percussion and phased hi-hats. Tracks 66 through 68 feature the Oberheim DMX doing things no self-respecting drum machine should be asked to. So *that's* where the Tackhead signature sound originated? (Listen to 'Drills'.)

The Hits and Bits sections include weird and sci-fi dialogue, various harsh noises, and a wealth of found and played drum hits. The fidelity on the played hits (and also the played patterns) is excellent throughout. One very minor quibble: the sleeve notes are woefully scant regarding the drum hits.

To sum up, the loop tracks never settle down to a routine: there are always challenging twists and turns to the sound, feel and approach. Many have a unique character, yet leave enough space for your creativity. If I have a criticism, it is this: there are very few big fills and/or intros to go with the many excellent grooves on offer. There is, however, plenty of variation, with some loops being around eight bars in length. With a little imagination, you can do much with these. Take any of the hip-hop live ones and pitch it up for a Jungle backbeat no-one else has got (yet). Take one of the eccentric time signature patterns and write an atmosphere piece around it. This set challenges you *not* to come up with formula music. KLB's mind and talent give you a head start in avoiding the mediocre — don't waste it! *Wilf Smarties*

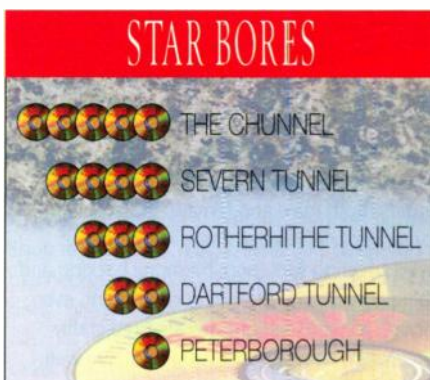
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**A**udio professional Paul Lehman called the *Peak* digital editing package for the Mac "powerful, fast, and very thorough... exciting, innovative... up to date", in his September 1996 review for *SOS*. Now we've no less than three copies of this £399 program to give away, courtesy of distributors Natural Audio (0181 207 1717).

*Peak* runs on any 68030, 68040 or Power PC Mac with System 7.1 or later, and offers fast, non-destructive editing of digital audio and sample files. It reads both the popular AIFF and *Sound Designer* formats, and SMIDI compatibility enables it to accept sample files from, and transfer them to, SCSI-equipped samplers.

As well as the editing features you'd expect, such as cut and paste, crossfading and looping, *Peak* offers well-implemented audio scrubbing, and the Loop Surfer automatic loop generation process. DSP functions available include click repair, reversing, sample-rate conversion, phase inversion, normalising, strip silence, mix, and modulate, plus more unusual processes for the sound designer in search of something different. *Peak* can also host software plug-ins, so you can add extra functionality from third-party developers such as leading plug-in producers Waves; the

### the small print

1. Only one entry per person is permitted.
2. Employees of Sound On Sound Ltd, Natural Audio, BIAS, and their immediate families, are ineligible for entry.
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## questions

### 1. What does DSP stand for?

- a Digital Software Preparation
- b Digital Signal Processing
- c Dynamic Sample Port
- d Debbie's Silly Proverbs

### 2. Which of the following file formats does *Peak* not support?

- a JPEG
- b AIFF
- c *Sound Designer*
- d Crystal hanging

### 3. Which of the following DSP functions is available within *Peak*?

- a Click repair
- b Sample rate conversion
- c Normalising
- d Basting

### 4. The Loop Surfer is:

- a A technologically advanced washing powder
- b An Internet sample search engine
- c An interactive macrame training CD-ROM
- d An automatic loop generation process

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# Performing Arts

## ENSONIQ MR76 PERFORMANCE/COMPOSITION KEYBOARD

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**JULIAN COLBECK**  
*applauds the result.*

### BRIEF SPECIFICATION

- Polyphony: 64-voice.
- Sounds: approximately 1200 (including drum sounds).
- Keyboard: 76-note, weighted action, velocity and release velocity sensitive, with channel pressure.
- Disk Drive: DD/HD.
- Sequencer: 16-track
- Effects: 40

**G**enerally speaking, the module version of a synth comes *after* the keyboard. Why Ensoniq have chosen to reverse the plot is anyone's guess but here, not more than six months after the launch of 'Mr Rack' (the Ensoniq MR Rack), reviewed by my good self back in *SOS* April 1996, come two spanking new keyboard versions — the weighted-action MR76 that I'm staring at presently, and the synth-action, 61-note MR61.

### DIFFERENT STROKES

These keyboards and the aforementioned module do share the same basic voice architecture, and many of the same sounds. However, and not a little confusingly to the hard-pressed pundit, they're completely different animals, with their own structure and vastly different applications — so sending you back to the April '96 review could be more confusing than beneficial.

Ensoniq's current synth technology uses a bank of instrument samples, digitised analogue waveforms, inharmonic sound bites, and Ensoniq's 'moving picture show' Transwaves, which can all be processed by analogue-style filters and envelope generators, and coated with high-gloss effects. Within this fairly classic S+S system, the standard element is a Sound. On the MR Rack, Sounds reside within Parts, which are assembled into multitimbral Performances. With some relatively minor extensions thereof, on the MR keyboard you'll only be dealing with Sounds. There are no Parts, and Performances — well, they mean something entirely different! It must have been tempting simply to slap a nice weighted keyboard onto the innards of the MR Rack and dot the

control panel with a few gratuitous knobs and sliders; Ensoniq are to be congratulated on clearly having given the question of a 'performance' keyboard, and what such a beast might be in need of, serious thought.

The workstation has become a tired old nag, and this is the first one I've seen in over a year that leads me to think there's life in the concept yet. Aside from the instrument's fundamental friendliness (until you open the huge manual, that is, whereupon everything that seemed intuitive and clear a moment ago suddenly fogs into a panicky blur), two features will propel the MR76 into and out of the stores: the Idea Pad, and the built-in Drum Machine (see 'Good Ideas' box). In tandem, these compositional aids will inspire you to work, and then let you remember what the hell it was you played. The Idea Pad is like having a Dictaphone plugged into your brain. It's brilliant.

### TOUCHY FEELY

The MR76 is a bulky, imposing instrument. I'm not too sure if the screen is the same size as the MR Rack's, but viewable at a magnified scale, or whether it is genuinely larger. You can't view a colossal amount of data with it, but the screen is twice the size of a normal 2-line x 20-character LCD.

The panel hosts numerous sections for different functions, clearly marked, and dead easy to find your way around. (Just don't open the manual, for heaven's sake.) There's a disk drive to the left, above the pitch and mod wheels, and at the back, tucked beneath a ledge that makes them all but impossible to locate and insert things into, lie the MIDI ports, audio outs and pedal inputs.

When an instrument is billed as a performance



keyboard, the keyboard and its action are extremely important. The MR76 has 76 keys, sufficient for most people these days, and a keyboard action that is genuinely weighted, with quite a deep travel. I'm put in mind of the Fatar keyboard on Viscount's FK1000 digital piano — both have somewhat sharp edges that I hope will wear down and soften in time.

The response seemed hard going at first, so I reset the velocity curve parameter to Table 1, for "someone with a light touch", as Ensoniq say. Some adjustments needed here, I think. I've battered a fair few Rhodes to death in my time, and Table 1 is still hard work. Table 4 requires a truncheon. There are also two fixed velocity curves, handy for playing vintage synth parts (no velocity at all in them these days) or possibly drum programming. The keyboard also responds to release velocity, and to Channel Pressure, with Soft, Medium, Firm, or Hard response.

### SOUND STUFF

On power-up, you'll be confronted by a screen that shows the current sound bank and sound. Using the data wheel to spin through the banks, you'll see that, as on the MR Rack, the memory is divided into ROM and RAM banks, the latter delineated Flash RAM (whose contents will be retained on power-down) to differentiate it from the DRAM, which temporarily houses the various forms of sequence data.

There are hundreds of sounds to choose from, but Ensoniq's SoundFinder utility allows you to type in the name of the sound you're looking for (using letter-assigned keys on the keyboard) and the sound will magically appear as soon as SoundFinder recognises the first few letters. In a further attempt to streamline the nightmarish process of auditioning so many sounds, Ensoniq also allow you to spin through to sound categories — bass, vocal, synth lead, and so on — and then quickly step through all sounds thus categorised. GM (General MIDI) is also offered as a separate bank. It's a great system.

In this brief examination, I'm not going to dwell on sounds (check out the MR Rack review), but this is a highly cosmopolitan collection, with depth and substance, aided by some wonderful natural effects. Some of the one-shot drum sounds, of which there are 468 resident, could have come off a top-quality sample CD. Perhaps they have.

The MR76 is a keyboard to play and compose on. A degree of sound editing is offered on board — low-pass filters (not resonant) with dedicated velocity-dependent ADSR, amplifier ADSR, and LFO (syncable) — but for proper programming you will need a module for MOTU's *Unisyn* Editor (Mac or PC). More details on this in the MR Rack review.

### RECORDING ANGEL

The MR76's 16-track sequencer is very approachable, with sufficient dedicated buttons to be manual-proof for all but the most sophisticated of manoeuvres. Hit a track button, it lights up, press record, rewind, play, change sounds..... this is all good stuff. Better still, there are tools for assembling songs in computer-like cut-and-paste

## GOOD IDEAS

In keeping with its Performance/Composition name tag, the MR76 is a bit of an action man, and no more dramatically so than with the Idea Pad in tow. The Idea Pad is permanently in record mode. Everything you play is automatically recorded whether you like it or not. Cleverly, it listens for 'silence', so deciding that a new idea must be coming up. It also records sound and rhythm changes, fills, and tempo adjustments.

While your MR76 is on, the Idea Pad fills up with ideas. You can go back and listen to early ones ("Idea 15 of 46..." says the display) and even send wondrous nuggets over to the 16-track sequencer, for development and (by saving the sequence to disk) permanent storage. Although the manual manages 14 pages of verbiage about the Idea Pad, its power is in its simplicity.

The same goes for the Drum Machine. Everybody needs drum patterns. In real life, your choices are to program them yourself, hire a drummer, buy lots of yummy but expensive sample CDs, or purchase a collection of MIDI drum patterns played by real drummers. Ensoniq's solution is a sort of mix of the last two. Resident in the machine are 90 1- and 2-bar patterns, each with eight variations. Extra patterns are stored on a free floppy.

The patterns, say Ensoniq, have all been played by top-notch drummers using drum pads. And they're pretty good. Not only are stock ballads, latin, pop, and rock beats on offer, there are also jungle, world, ambient and hip hop patterns, and a delightful example called 'Oddmeter (5/4)' that is pure Vinnie Colaiuta on Sting's 'Seven Days'. Nice one.

Tempo is variable, of course (via data entry or a tap-tempo button), but so is the kit for each rhythm and, indeed, the drum or percussion sounds within the kit. Effects currently applied can also be specified per keyboard zone, as can volume and pan. I suspect that most people will simply want to trawl the patterns, and occasionally substitute new kits, but it's nice to know that the editing power is here if you need it.

Ensoniq are particularly big on drums. Aside from featuring the incredibly friendly and useful Drum Machine, the MR76 allows you to use any sound as a drum sound when constructing a new kit. And while GM mapping is supported, both the Ensoniq map, and programs that place a single drum sound across all keys, are extremely handy when constructing a more considered drum environment. As with the Idea Pad, Drum Machine patterns can be spun over to the sequencer for further elaboration and floppy storage.

style, since you can save parts of a song as individual 'sequences', then copy, mix, and match them to form a song. Effects can be routed per track, a sensible implementation.

An FX/Mixdown strip alongside the main sequencer controls lets you mute or solo tracks, and alter pan, volume, reverb and chorus levels, as the sequence plays. I particularly like the vocal "One, Two, Three, Four" count-in. For techie types, the sequencer's resolution is a feel-preserving 384 ppqn.

The sequencer has plenty of edit parameters, and a list of quantise options. You can even store sound edits within a sequence. Step entry is supported, though it wasn't operational on the review model. GM Standard MIDI Files can also be loaded, from MS-DOS format disks.

Though the sequencer is bliss to operate, you may occasionally need to use the MR76 as a multitimbral expander, and provided you remain in Select Song mode (keep the Select Song button alight), you'll easily be able to access sounds multitimbrally. Otherwise, the MR76 will respond on a single (base) MIDI channel.

### RESOUNDING SUCCESS?

In a relatively brief time, I've grown quite fond of the MR76. It sounds great, and it's not a hassle to use. For live performance, perhaps greater emphasis could have been given to big multitimbral patches (even though these can get you into trouble, live), but as a composition tool the MR76 is in a league of its own at the moment.

SO

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info

### pros & cons

#### ENSONIQ MR76 £1999

##### pros

- Deliciously intuitive.
- Creamy effects.
- Idea Pad a stroke of genius.
- Musician-friendly sequencer.
- Expansion boards available for new samples and loops.
- Multiple modulators available for the effects (key velocity, pressure, wheels, controllers, etc).

##### cons

- Keyboard response may need tweaking.
- Need to go outside the synth for full editing.
- Paucity of dedicated multitimbral memories.

##### summary

Ensoniq have come on in leaps and bounds. From a company that's always had great ideas, but hasn't always executed them in the most friendly or (sometimes) reliable manner, the MR76 is the model of manageability — lively and exciting, but dead practical. Without doubt, their best yet.

**SOUND ON SOUND**





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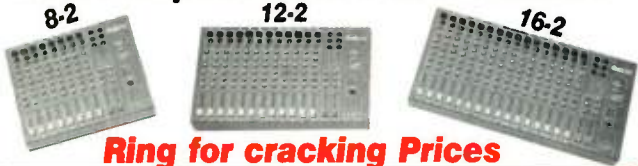
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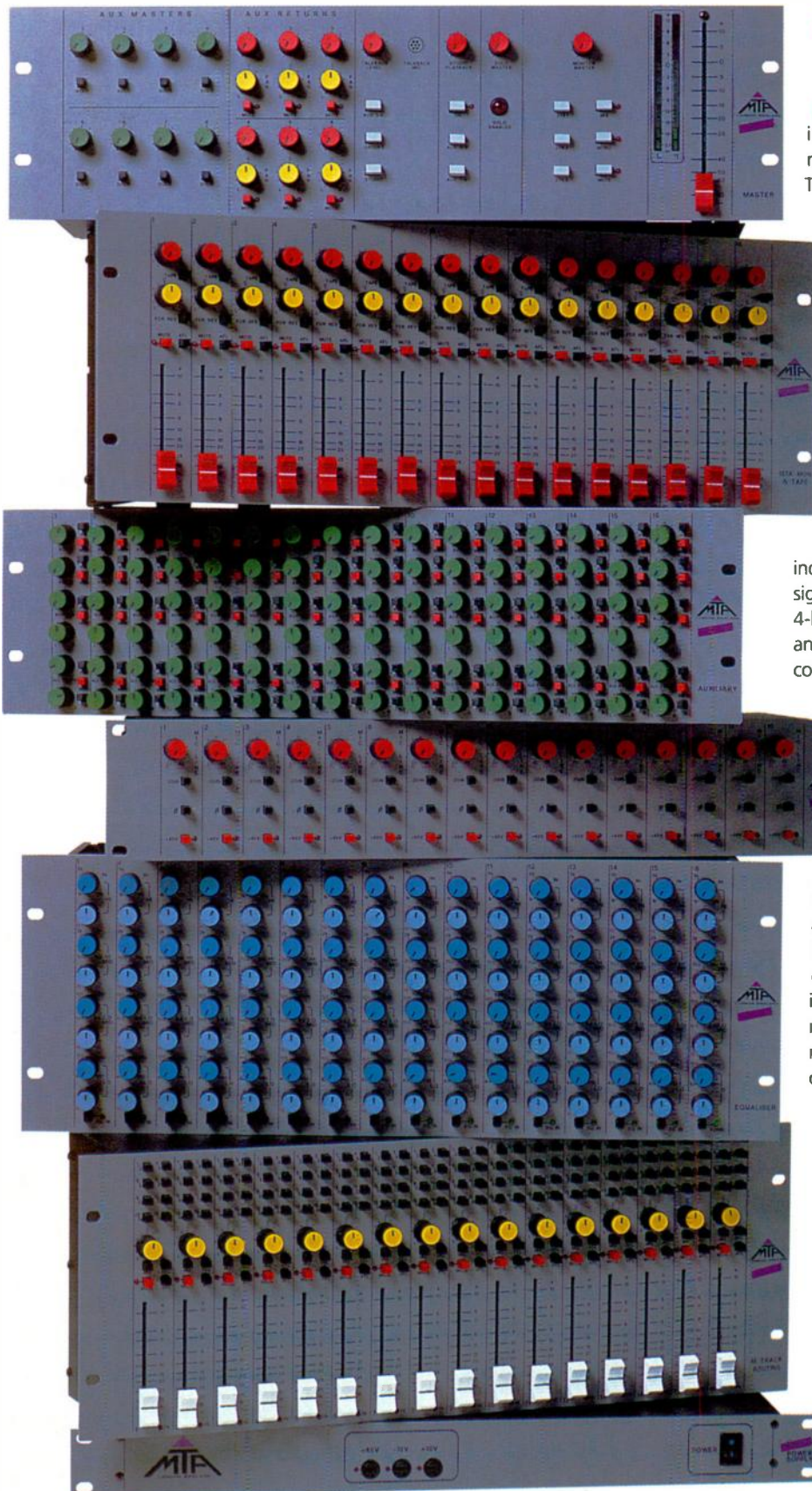
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# Pick & Mix

## MTA INTERMIX MODULAR MIXING SYSTEM



**M**alcolm Toft Associates (MTA) is a relatively young company formed only a few years ago, yet it has an impressive pedigree in the mixing console business, which goes back much further. Malcolm Toft was the man behind Trident — a company he sold in 1988 — which was possibly best known for its large multitrack consoles, such as the Series 80, an enormously popular desk in its day.

Malcolm is still designing and building large multitrack consoles at MTA, but the subject of this review is on a rather different scale and, as far as I am aware, is unique in the console market.

### THE INTERMIX

The Intermix is a modular 16-channel multitrack mixing console. Big deal — most of us have seen modular mixers before. In this case, though, the modules are not individual channel strips, but 16 channels worth of signal processing — 16 channels of mic amps, 16 4-band EQs, 16 channels of 8-output aux sends, and so on. The Intermix module design allows the construction of up to 48-channel desks, and MTA's literature suggests a number of standard configurations, from a simple 16:2 mixer, up to a 48:16:2 with EQ and aux sends in both channel and monitor paths. The possibilities are extensive, and the modules' design lends itself to all manner of configurations.

All the Intermix modules are rackmounting units, and each module is only about three inches deep, so table-top mounting is quite feasible. MTA are planning a conventional console case to house the units in the future. Power is supplied by a separate mains unit, capable of driving up to three modules (possibly more, depending on their current demands) and almost all the audio connections are electronically balanced on standard jacks (XLRs for the microphone inputs). They're also paralleled on multi-pin ribbon cable connectors for fuss-free module linking. The circuit design of each module is directly derived from MTA's flagship 980 console. The only differences are in the provision of each section's inputs and outputs, and the fact that the mix busses are unbalanced, to keep the costs down.

The Intermix concept is rather novel — even elegant — and should appeal to a very wide range of potential users. The beauty of the system is that each module can be used as a stand-alone device, or to



enhance an existing console — by replacing the mic amps, or providing more powerful EQ, for example. They can also be combined to construct a console to meet virtually any requirements, either in terms of facilities, or layout, or even as money becomes available to extend the desk! The quality and flexibility of the design would make the Intermix worthy of consideration for just about any application: studio or location recording, mobile setups, front-of-house band rigs, monitor desks, theatre sound — the list is almost endless.

To appreciate the scope of the system, perhaps we should investigate each module individually.

### THE POWER UNIT

Power supplies are not the most enthralling part of a mixing desk, but they are a vital component and I feel obliged to give you a brief description of the Intermix PSU, for completeness, if nothing else! It's housed in a 1U-high box with a mains on/off switch and three fuses on the front panel. Each fuse has an associated LED to confirm the presence of the power rails (plus and minus 18V, and a 48V phantom supply).

The rear panel features a standard IEC mains connector, a small (quiet) fan, binding posts for chassis and audio earths, and three 16-way multi-pin connectors that provide power for the audio modules via ribbon cables fitted with IDC connectors.

### MIC/LINE MODULE

The 16-channel mic/line input processor occupies a 3U chassis, is clearly laid out, and is gloriously simple. A rotary gain control covers the range 20 to 65dB for the microphone input, and 0 to +40dB for the line input. A push button introduces a 20dB pad for both inputs, and other buttons provide a phase-reverse facility and phantom power (a red LED indicates when it's active).

You may be wondering how to select between mic and line inputs. Well, the input connector for each channel is a Neutrik combi-jack — an XLR socket (the mic input) with a jack socket (for line-level inputs) built into its centre. It's physically impossible to connect both inputs at once, so there's no need for a selector switch. As mentioned earlier, both inputs are electronically balanced.

The output for each channel is on a jack socket, also electronically balanced and operating at the professional +4dBu level. The output circuitry is 'ground sensing', and if it detects an unbalanced destination, it increases the output level on the active wire to compensate.

At the bottom of the rear panel are two multi-pin IDC connectors — a small power socket, and a large output connector. The latter provides a very convenient means of linking all 16 channel outputs directly to another Intermix module, and is wired in parallel with the main output sockets for each channel. Although it's perfectly possible to use the separate balanced outputs from each channel as direct recording feeds, whilst using the Intermix connector to pass the channel signals to another module, care should be taken to avoid loading the outputs unduly.

The quoted specifications for this module are all very respectable, with distortion better than

*We've all heard of modular mixing desks — but perhaps not where all the modules are rackmounting and can be mixed and matched to form a custom console, or used alone. HUGH ROBJOHNS makes all the right connections.*

0.05%, headroom of 20dB or more, noise around -80dBu for the line input and -128dBu for the mic, and a frequency response completely flat between 20Hz and 20kHz. More importantly, it actually sounds good too! The mic inputs are pretty quiet, and certainly much quieter than those of some well known 'state-of-the-art' desks I can think of. They also sound very clean and natural, having no discernible character of their own: they simply amplify the mic signal to line level, with minimal effect on the original quality — which is exactly what I want from my mic amps! There might be one or two better-sounding mic-amps around, in top-flight boxes costing not much more than this module. But they only have two channels, whereas this has 16, so on a cost-per-input basis, this module is excellent value for money, as well as being very hard to fault on sonic quality.

The line inputs are as up to the task as the mic inputs, with gain range and impedance perfectly suited for DI-ing keyboards and guitars (although some guitar pickups might prefer a higher impedance than is provided by the Intermix).

### EQUALISER

The equaliser module is amongst the largest in the collection, occupying four units of rack space — but it does have more knobs to accommodate!

Connections to and from this module are via two rows of balanced jack sockets, plus a pair of inter-module IDC multi-pin connectors (wired in parallel with the jacks). The output jack sockets may be used as direct feeds if required, but the inputs should not be used at the same time as the Interlink connections, because of unpredictable loading conditions, which could damage the modules or connected equipment. Module power is provided through a third IDC connector, and this may be 'daisy-chained' with those of other modules (up to the maximum current capability of the PSU).

Each of the 16 channels has four independent, sweepable, overlapping bands. Each band has one control to select the centre frequency, and one to set the required cut or boost (up to 15dB). There's a bypass switch for the entire equaliser at the bottom of each channel strip. For the record, the four bands cover the following ranges: 40-650Hz; 150Hz-2kHz; 700Hz-10kHz; and 1-15kHz. As you can see, the bands overlap nicely and seem to work well together. I was able to achieve all the creative and corrective equalisation effects I needed with no trouble at all, often with very small amounts of boost or cut in each section. The four sections are truly independent of each other, and I couldn't detect any interaction between adjacent bands with moderate gain settings.

Some (all?) equaliser designs have a distinct

**pros & cons**

### MTA INTERMIX SYSTEM

**pros**

- Good sound quality.
- Easy interconnectivity.
- Flexible design.

**cons**

- Build quality not as solid as it could be.
- Faders a bit of a let-down.
- Disappointing master module.

**summary**

Innovative and surprisingly flexible modular design, with excellent sound quality and a high standard of facilities. Useful as stand-alone units, to create a bespoke console, or to enhance an existing one.

**SOUND ON SOUND**



# MTA Intermix

► character: the Intermix EQ sounds very 'musical', working well with everything I pushed through it. It was usually very easy to find settings which enhanced each instrument and pulled out the qualities I was seeking, without damaging or distorting other parts of the spectrum.

## CHANNEL FADERS & ROUTING

The track routing and panning module takes up another four units of rack space, and provides precisely those functions — plus a fader for each channel (always a handy thing to have!). Routing

## CHANNEL MONITOR & TAPE RETURNS

This 4U-high module provides a means of listening to the group sends or pluggable tape track returns at the press of a button, for each of the 16 tracks. It also provides 16 60mm group faders, a monitoring level control for each group or return (on a rotary knob), an associated pan pot which feeds the stereo mix buss, a mute button (and LED), and an AFL button. There's also a fader reverse button which swaps the signal paths of the rotary control and the fader.

The busy rear panel hosts three rows of 16 balanced jacks, providing group insert points (the group side of the Tape/Group button), tape returns and group outputs. Below these are IDC connectors catering for power, pre and post auxiliary take-off points, and interlink module inputs and outputs. Further IDC connectors provide input and output links to an optional second EQ module, the stereo mix, group, PFL and AFL busses connector, and a final connector to a metering module (available shortly).

A nice design feature is dedicated connections for an equaliser module, providing EQ in the monitor path. Similarly, the module provides feeds for connecting an auxiliary module, allowing effects and cues to be derived from the groups and/or tape returns.

Like the routing module, this unit is let down by the faders, but is otherwise a well designed and flexible part of the Intermix system, whose inclusion allows quite sophisticated multitrack mixers to be created

## AUXILIARY SENDS

The 3U auxiliary sends module provides 16 channels worth of eight sends each. Auxes 1&2 are mono, with pre/post selection, mute buttons and independent rotary level controls. Auxes 3&4 are a stereo pair, again with pre/post and mute buttons, level control and a pan pot. Auxes 5&6 and 7&8 are stereo pairs with the same facilities, but these share one set of controls and an extra button to determine which pair is in use.

On the rear panel, two rows of 16 (unbalanced) jack sockets provide the pre- and post-fade inputs for each channel. A third row of sockets provides the eight auxiliary outputs. The usual IDC sockets for power, pre and post inputs, auxiliary sends and the auxiliary mix busses complete the line-up. The latter allows multiple auxiliary modules to be linked together: one module might provide aux sends from the channel routing unit, whilst a second does the same for the monitor section.

## MASTER CONTROL UNIT

The master control unit is really dedicated to the complete Intermix system: I can't imagine any stand-alone applications for it, although I'm sure ►

4-band Equaliser module.

is provided for 16 groups (assigned in stereo pairs by eight buttons at the top of the strip).

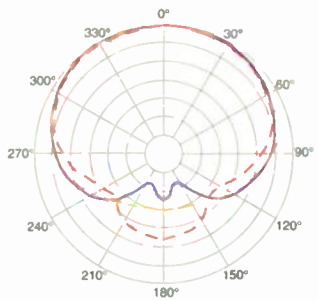
A pan pot separates the group routing buttons from a block of four buttons which provide routing to a master stereo mix buss, AFL, PFL and mute (the latter with an LED indicator). At the bottom of the strip is a short-throw (60mm) channel fader, calibrated with the usual 10dB of gain in hand, and a peak overload LED. The AFL signal is derived post-pan pot, so it provides 'in-place' monitoring.

Rear-panel connections are plentiful, with three rows of 16 jack sockets catering for balanced inputs to each channel strip, post-fader direct outputs from each channel, and all 16 group outputs. At the bottom of the rear panel are six IDC connectors in various sizes: a power connector; a pair of 'interlink' input and output connectors; another pair, each carrying eight of the 16 channels of pre- and post-fader sends (intended to feed an auxiliary sends module); and a connector carrying the stereo mix and group busses, together with the PFL/AFL signals. This is intended for connection to a master monitor and output module.

This unit is most likely to be used as part of the complete Intermix mixer, rather than alone, though there are a number of applications where a 16-input, 16-output selectable matrix could be useful. The tech specs match those of the other modules, but I have to say that I don't like the faders very much. Being short throw (their size is limited by rack space), it's difficult to mix with any degree of accuracy or finesse, and the fader action is far too light. I'd like to see a module with decent 100mm faders, possibly as a table-top box with an umbilical to a faderless version of the routing module.

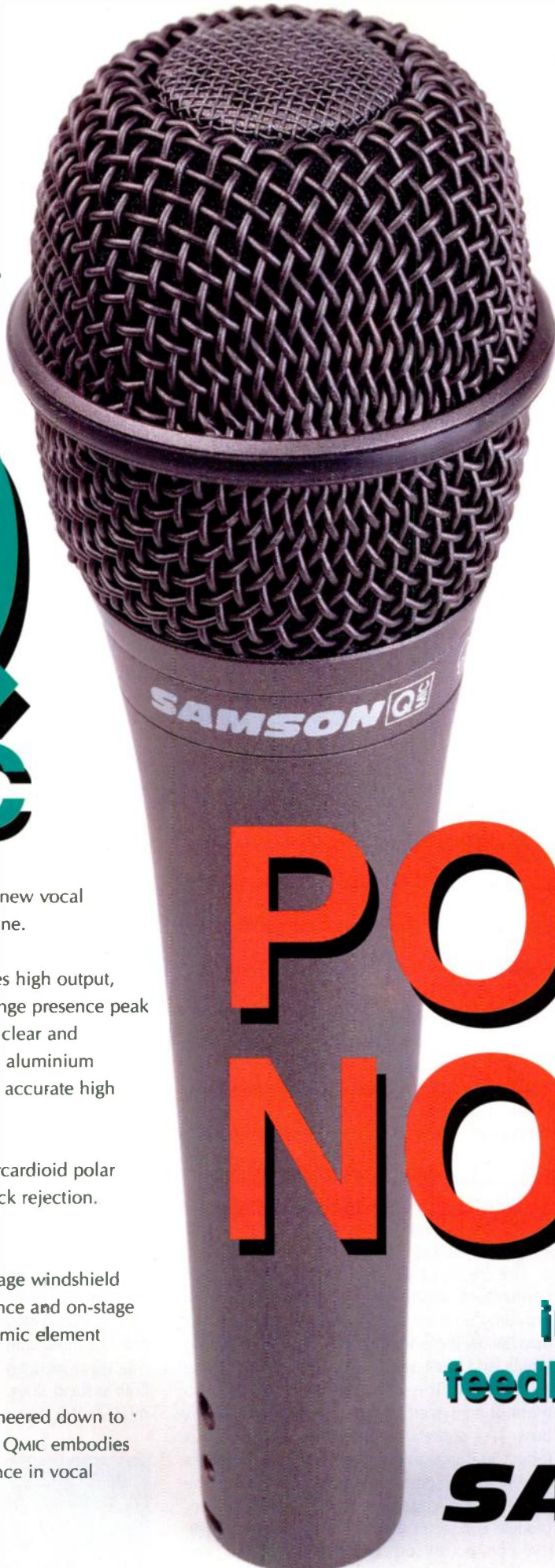
"The entire system is incredibly versatile and flexible, and the whole concept is absolutely excellent."





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# MTA Intermix

▶ someone will come up with one!

This module provides front-panel controls to tie up all the loose ends from the other modules, making a fully-functioning multitrack desk, albeit with relatively basic facilities. On the left are master output controls for the eight aux sends, each with an AFL button. Next to these are six 'aux' returns (a possibly confusing label — effects returns might have been better) with level controls, pan pots and mute buttons.

The central section contains a built-in electret mic with level control, for talkback. Push buttons

## IMPRESSIONS

My only criticism of the Intermix design actually applies to all of the Intermix modules. Their physical construction does not appear to be particularly rugged, and there are plenty of cheaper desks around that feel a lot more substantial than these modules. For example, the shafts of the control knobs are not supported through the front panel, so they tend to wobble about as they are rotated. Also, the front panels are not particularly thick and have no bracing across their width, so pressure around the centre causes flexing, which may stress the PCBs, increasing the likelihood of failure.

These points are clearly linked to the overall cost of the Intermix modules: in trying to keep the cost down, it's always difficult to strike a balance between the excellence of the electronics and the module's

physical attributes. MTA have decided to place greater emphasis on the parts that affect sound quality rather than the mechanical components — an approach which is certain to win favour with many users. At the end of the day, personal perceptions and the requirements of the working environment will define how suitable these modules will be.

Some desks are specifically designed to survive being stood on: this isn't one of them! On the other hand, some desks are made to look and feel extremely solid, belying the fact that their electronics sound dreadful: the Intermix is certainly not one of those!

Despite my slight misgivings over some of the mechanical aspects of these modules, my overall impression is that the good points far outweigh the bad. The sound quality of every module is beyond reproach, the facilities are generally well judged, module interconnection is child's play, the entire system is incredibly versatile and flexible, and the whole concept is absolutely excellent. The mic/line and EQ units would be very useful as part of a large keyboard system, at home or on the stage. Equally, they would be an excellent way of improving the capabilities of existing recording equipment. In the same way, the auxiliary and routing modules could be used to extend the facilities of mixing desks which might otherwise become redundant, perhaps adding multitrack capability, or matrix outputs for monitor mixer duties. To sum up, I'm convinced that these modules will prove to be very popular, both as stand-alone units and as elements of custom mixer configurations.

SOS

Mic/Line module.

send talkback to all the group outputs, aux 7&8 (nominally the headphone cue mix), or the studio loudspeakers. The control room loudspeakers are automatically dimmed whenever a talkback button is depressed.

Monitoring facilities include a dedicated Studio speaker section, with a volume control, an On button, and selection for auxiliaries 5&6 or 7&8. I would have liked another button here which mirrored the control room selector (or at least a 2-track replay machine) for instant playback to performers.

A Solo Master level control determines the monitoring volume of signals selected by the AFL or PFL buttons; an associated lamp shows that a solo selection has been made on the desk. To the right of this is the control room monitoring selector. Aside from the main monitoring level control, there are six buttons selecting between three 2-track recorder returns, the stereo mix buss, mono and mute. This seems a rather basic provision, and a Dim control might have been useful, as well as a second loudspeaker output.

The picture is completed by a 100mm fader controlling the main stereo output, plus an LED bargraph meter calibrated from -21 to +12dB.

The rear panel has an assortment of connectors, starting with four jack sockets, providing a stereo insert point for the main mix buss. Below these are the three 2-track monitoring inputs, and three pairs of XLR connectors provide outputs for the control room and studio monitoring systems, plus the main stereo mix buss. Jack sockets are provided for the six aux (effects) returns, as are two blocks of eight jacks for the auxiliary master inputs and outputs (the former being in parallel with the IDC auxiliary module connector at the bottom of the panel). IDC connectors are provided for power, the auxiliary mix busses (for talkback purposes), the auxiliary master outputs, and the group, stereo mix buss, AFL and PFL connector.

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It started when you chopped off all the  
fingers of those pony skin gloves  
Then you cut a hole out where the light  
used to shine  
Four years of pleasure equal measure  
So could you state  
You tried to reach in all sorts of ways  
The time...  
But it's starting to come to me  
Strange to come back to me  
Something you thought you'd play  
reliable confidant  
You say you had a hard time like give you  
meat or wine  
But miss you the days to treat me and to hold  
They're more to conscious to be soul  
You'd probably change pirate if you weren't  
so busy digging in the gold  
Now you would be the wanted you 'cos you  
almost lost to the ocean  
But you always stay as close as like the bird  
that's level ahead of the...  
In private she's a machine but in public  
she's a girl, a girl and a new girl  
Afraid someone will recognize the shame  
in her eyes  
You've still got your dignity and it's not  
disguise

“It is an unusual situation”, says Jon Jacobs about his working partnership co-engineering with Geoff Emerick. “On most of the projects I’m involved with I am the engineer and things go my way, but when I work with Geoff it’s often a different story. You see, he’s not always as in favour of the new technology as I am. We challenge each other, and you can be sure that we’ll come up with a different result than if he had done it his way on his own or if I had done it my way on my own.”

Geoff Emerick, of course, is the legendary engineer who worked on many of The Beatles’ most revolutionary recordings. An innovator of studio techniques that are often still applied today, he exerted a major influence on the career of Jon Jacobs when Jon worked as his assistant during the ‘80s. “Geoff taught me a lot about miking techniques, acquiring sounds, and so on”, he confirms. Now, after nearly a decade of pursuing separate projects, the two men are working together again, on recordings with the three ex-members of The Beatles (the new tracks for the *Anthology* project — see the feature in the December 1995 issue of *SOS* for the full story). Elvis Costello and, most recently, Paul McCartney.

gigs about a year ago. Elvis decided that perhaps it was time for the two men to work together again. So it was that they recently co-produced Elvis’ latest album, *All This Useless Beauty*, while Jon engineered and took care of matters technological. Lasting two and a half months, recording sessions began at the end of last summer at Windmill Lane Studios, Dublin, in a room equipped with a 72-input Neve V Series console with flying faders, and Studer A820 tape machines.

Costello had already rehearsed the songs with his band, and when the sessions were due to start, the entire ensemble was set up to record live in the same room. There were as few screens as possible, while for Elvis Costello a small self-contained booth with a roof was erected in the centre of the live area. Jacobs: “It is of paramount importance for an artist to feel comfortable. Most studios are just an austere environment in which the session has to forge its own personality, so if the attitude is good and the vibe is positive, it can make an incredible difference to the outcome.” Positioned about 15 feet in front of the drum kit, the makeshift booth enabled Elvis to see everybody, and there was also some degree of control over the sound spillage. Still, this in itself created problems. “We were often trying for live vocals, but there would sometimes be

# GaLLing

JON JACOBS • RECORDING ELVIS COSTELLO & THE ATTRACTIONS

**RICHARD BUSKIN talks to top engineer Jon Jacobs and learns about his partnership with legendary man-behind-the-board, Geoff Emerick, and the novel techniques they employed during the making of the latest album by Elvis Costello & The Attractions.**

Geoff and Jon have been on an equal footing while fulfilling different but complementary roles.

“Although Geoff was a great innovator during the early days of multitrack recording, a lot has changed since he started in the business, and he engineers from a very straightforward perspective”, Jacobs explains. “He’s only interested in the music, so I take care of a lot of the technical requirements. At the same time, Geoff oversees the sound and the overall balance, and while we often have different views on certain things, there’s absolutely no conflict of egos between the two of us. There’s always a way of finding the meeting between our points of view and we often suggest things to one another.”

## BACK TOGETHER

Back in the 1980s, John and Geoff teamed up with Elvis Costello for his *Imperial Bedroom* album. Then, after running into Emerick at one of his

a lot of spillage from the drums into the vocal mic. Then, if we wanted to patch bits later with dropped-in overdub vocals, we might lose some of the ambience. I got around this problem by recording an extra drum ambience track, and for this I used a mic positioned just outside the booth, with the same EQ as the vocal, in order to replace the kit ambience over any vocal drop-ins.”

## LIVE & DANGEROUS

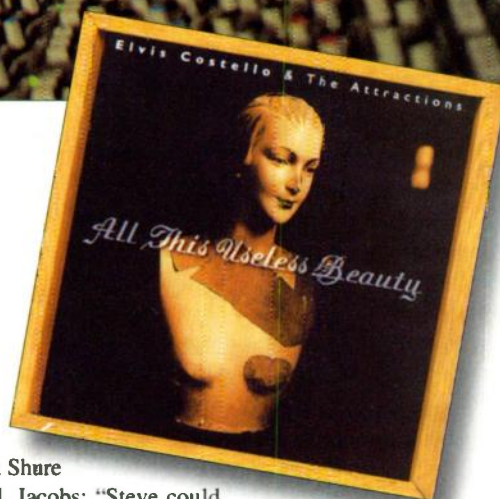
The main aim of the sessions was to keep everything as live as possible. “We recorded absolutely everything they played, because that band can switch ideas so quickly. The second they pick up their instruments you’ve got to be in ‘record’ on the multitrack, otherwise you could lose a one-off moment that they’d never be able to recapture.” Nevertheless, there would often be quite a few different versions of each song recorded, while numbers that did not appear to be coming together with the band setup were treated to a more piecemeal approach. Jacobs: “We’d set up a drum loop of Pete [Thomas] playing and then build everything on top of that with overdubs, sometimes replacing the loops with real drums once the song had taken shape.”

For the live setup, drummer Pete Thomas was positioned at about three metres from the right-hand wall of the main room, with glass screens around his





# eLvis



Ludwig kit. The bass drum was miked with an AKG D112 on the inside and a Sennheiser 421 on the outside. Jon has a personal preference for cutting a large hole in the front head of the bass drum. "I either like to have the head removed, or to take the front off it, otherwise you get a very choked bass drum sound. For some reason, a lot of people try to get the mic inside a small hole. To me, it seems that when you do that, the bottom end is cancelling out, because it's reflecting straight back off the front head. The low end seems to be phased out, leaving a limp sound with no middle punch. So I tend to cut a large hole so that I can move the mic about, and then send the assistant out to shift the up-front mic around until I get the sound that I'm after."

For overheads, Jon employed AKG 414s, Neumann U87s, and STC 4038 ribbon mics, as well as Sennheiser 421s on the toms, a Neumann 84 alternating with an AKG 451 on the hi-hat, and a pair of U87s or 451s for ambients. On 'It's Time', Thomas played a drum loop and a percussion loop to a click, and then these were sampled separately and mixed together inside the sampler. The result, referred to as the 'guide loop', would later be broken down into individual elements and placed on separate tracks.

Immediately in front of the control-room window, in an area of the live room screened off by glass panels, Steve Nieve was seated at a grand piano, with a Hammond organ on one side of him and a Vox Continental on the other. Two Leslie cabinets were used for this setup — one each for the

Hammond and the Vox — and sometimes even the piano was fed through one of them, via a Shure SM57. No DIs were used. Jacobs: "Steve could basically play live and use three different keyboards during one song. To my mind he is one of the best pop players of these instruments, and he hits the notes very, very hard indeed. In fact, he broke a string and we had to wait three days for a new one to be made and shipped out from England."

## THE MICS HE LIKES

"I miked the piano with two AKG 451s; their positioning largely depended on the dynamics and range of what Steve was playing. For instance, when there was a lot of arpeggio piano, I tended to place the mics so that they were about nine inches from the dampers, right up by the front end of the piano, and facing slightly outwards. The Hammond was miked with two Shure SM57s on the top with pop-shields, because I had to get very close to the Leslie in order to keep out as much spill as possible from the drum kit. I used dynamic mics, as I didn't want the speed of the Leslie horn to pop the microphones with wind when running fast — which would have been the case if I had used condensers — and I also had a 421 on the bottom." The piano, Hammond and Vox were the main keyboards for the album, but there was some use of a Roland Jupiter 8 and a Solina string machine.

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# RECORDING ELVIS COSTELLO



► keyboardist's booth, bass player Bruce Thomas was playing his Travis Bean through a Trace-Elliott amp. Again, very rarely was a DI used. Jacobs: "The amp just seemed to give it greater character and more warmth. I know that in most situations where you compare an amp with a DI you end up choosing the DI, because it's got greater definition and there's more that you can do with it afterwards. But we didn't want something that was too hi-fi, so I just worked hard on the amp sound to fit it in with what we were aiming for."

Elvis Costello, in his makeshift booth, was playing his Fender Jazzmaster and Telecaster, Les Paul and 12-string Epiphone guitars through amps placed in a booth in the far right-hand corner of the studio. These were a Vox AC30 and a Fender Bassman, each miked with a 421, a Neumann valve 67 and, in the case of the Bassman, a Neumann 89, while an 87 was used as a room mic. "Elvis has a

"Elvis and Geoff said that they didn't want to make an ordinary, nice, clean, polished-sounding album."

set of pedals, so he was either using one of the amps or both together, with one side wobbling by way of a tremulator. Quite often he would come in, listen to the playback and say, 'Yeah, it's very nearly great, but the track's not quite working. The problem is it's too ordinary. It sounds like a combo playing, and I'd like to take it away from that and go in another direction.' Sometimes they'd go back out and play it again — they'd maybe play ballads full-on, high tempo, almost like a punk track — while at other times they'd go for the loop idea, and we'd end up with what we called the 'loopy version' of this or that song."

Such was the case with 'It's Time', which was

released as a single in the UK, and which was initially recorded live before then being broken down into separate parts. Pete Thomas worked on some drum and percussion loops, Steve Nieve played a D50 pad, and then Elvis Costello recorded basic acoustic guitar and a DI'd Strat. Jacobs: "Pretty early in the proceedings, we'd also lay down a good vocal for most of the tracks. In fact, quite a lot of the vocals from the live takes got onto the album, and in some cases he would then have to patch some lines [at West Side Studios] in London a few months later.

"Ninety percent of the time I used a Neumann 87 — I also tried a new [reissued] 67 and a Neumann valve 47, but they didn't have the presence that we wanted — and a big reason for staying with the same mic throughout the album was the need to later drop parts into the live tracks. I didn't use any special mic amps, although I did actually try using a Prism. However, as soon as Elvis heard his voice in the headphones he said, 'I don't know what it is, but the vocal sounds really alien to — and separate from — the rest of the music.' So I used the desk mic amps on the Neve and he didn't have a problem."

## MIX MAGIC

On 'It's Time', drums were next to be overdubbed, utilising a very large room sound. To this end, while the kick, hi-hat and snare were on separate tracks, the whole of the kit was also recorded as a stereo pair through Urei 1176 compressors. Keyboards were also overdubbed, yet for all of this work, a notable feature about many of the tracks is that they never really existed in their proper form until the actual mix took place at West Side Studios in London. "Towards the end of the recording sessions in Dublin, we did the rough mixes very, very quickly and they had a certain magic", asserts Jon. "So on some of the finished tracks there are moments that we've edited in from these rough mixes, and this often made it very difficult to do a new mix. Elvis is extremely sensitive about the way vocals sit, and maybe the amount of EQ and compression that a mix from a particular day had. He will pick up on this and say that, for him, the

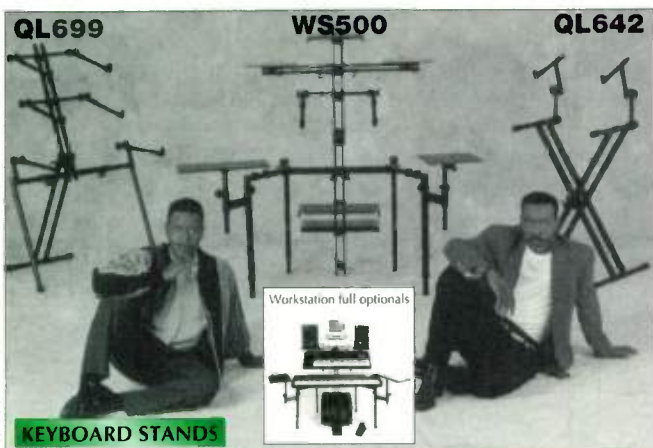
The track sheet for 'It's Time', from the new album.

WINDMILL LANE RECORDING STUDIOS				TITLE ITS TIME			
100 PRODUCE RD, PRODUCE CHURCH, DUBLIN 4, IRELAND TEL 353 1 8888887 FAX 353 1 4888332				ARTIST ELVIS COSTELLO			
SPREED 30	REEL NO	KEY	DATE 30 JAN 1985	PROG NO	LOCATE	CHE STANT	CHE SHP
EQ AES	CUE NO	TEMPO 104 BPM	MACHINE A 827				
ROLLY ND	TAKE NO	SAMPLE RATE	TAPE 499				
SPOOKY ORGAN	KICK	BODHMAN TRIFA PIANO	HI PIANO	SNARE	HI HAT	DRUMS (COMPRESSOR MIX)	
BASS AMP	LOOP MIX	D 50 CHORDS	VDR CONTINUT + CYMBALS	DI SPRAT GTR RIFFS	MARTIN ACC GTR	TOM FILL	
PIANO ORIGINAL PART	BRIDGE SOLINA LO	BRIDGE SOLINA HI	BASIC GTR VOX AC 30	BASIC GTR FENDER BASSMAN	LEAD VOYAL TRIO	HAMMOUD	ERU
	LOOP KICK	LOOP SN	METALLIC SHAKER	OTHER SHAKER	DEEP KICK	BEING BELL	
BREA LOOP	TRIC TO MIX 'CLOCK' IN LOOP		MB HARM ①	MB HARM ②	MB HARM ③	MB HARM ④	
	PERC SAMPLE REPLACES CUE IN LOOP	LEZ LIE GT 3/4					ERU



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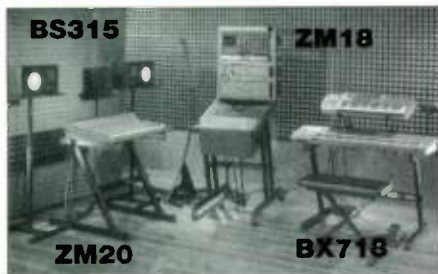


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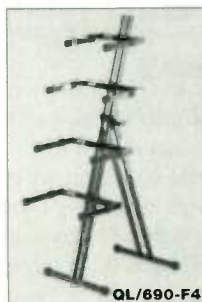
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# RECORDING ELVIS COSTELLO

► opening line of the third chorus isn't as commanding as it was on that moment of that mix from that day. It's extremely difficult to actually try to recreate that when you're in another studio and in a different situation. You can get close to it, but you can never get back exactly what you had."

The ever-mindful engineer therefore had an 'edit plan', a scribbled note detailing what came from where — which, in the case of a track such as 'It's Time', ran as follows: the intro and first verse were from the rough Dublin mix; the first chorus 'A' section was from the new mix at West Side; the 'B' section was lifted from the superior third chorus later in the song; the second verse was from the new mix; the second chorus 'A' section was also lifted from the third chorus; the 'B' section was from the new mix; the bridge was from the new mix; the third verse 'A' section was from the Dublin rough mix; and the 'B' section was from the new mix!

"It's a bit of a minefield", Jon now admits. "However, Elvis and Geoff said that they didn't want to make an ordinary, nice, clean, polished-sounding album. They wanted to push things to the limit. Quite often it would be a case of 'Let's compress the vocals. OK, they're really compressed. Well, now let's compress them again.' As a result, there were quite a lot of occasions where the lead vocals went through two sets of compression and were really screwed up and very loud above the rest of the track, and quite often I felt that the backing tracks were being sold short because of this. However, from an artistic standpoint that's what Elvis wanted from the album, and when I now listen to it, I can see why he approached it that way. It sounds great to me.

"For example, a track called 'Starting To Come To Me' would just have been an ordinary country & western-type song with interesting Elvis lyrics had we not mixed it in the way that we did, with a very squashed-up vocal that is right up front, almost as if someone is narrating. Elvis has a great amount of confidence in his voice, as well as in the lyrics that he writes, and this is what the kind of audience he's appealing to wants to hear."

'Shallow Grave', a very short, very live rock song written by Costello and Paul McCartney, went through four different versions before it was decided that a guitar solo from one of these had a "certain kind of magic to it" and should therefore be punched-in to one of the other takes. The only trouble was that it was in a completely different tempo. Jacobs: "We managed to fly it in from half-inch and it didn't fit at all, but what I then did was to fly each phrase in with a separate offset, and that remedied the problem."

## COMPLICATED COMPOSITE

Another track that led Jon into completely uncharted territory, with equally successful results, was the appropriately titled 'Complicated Shadows', which fused a studio recording with one deriving from a concert performance at the Beacon Theatre in New York. Elvis Costello had

always loved the take and somehow wanted to use it on record; now he had an inspiration... "He said, 'I know this is crazy and it won't work, but let's make it not work.' From Windmill Lane we had a great start to the song, up to the point where it really kicks into gear, and we then wanted to cut into the live material from New York. Obviously, because we needed to do vocal, guitar and keyboard overdubs, it would have been a real pain to leave that edit until the thing was mixed and then find that it didn't work. What we initially proposed to do, therefore, was edit the multitrack of the live show onto the studio version, but by this time everything had already been recorded, and so of course the tracks didn't match up. I mean, on the live version they had two snare mics, three kit mics and four tom mics, so what I had to do was make a copy of this tape and re-route the sounds of the drums, bass, guitars, and quite a few other things, to the tracks that would be relevant to our new studio recordings.

"Having done that, I had to also match up the levels, as well as trying to change the EQ and match the sound of, say, the snare as much as possible. One Friday night, after everyone else had left, I decided to tackle this job, and I can tell you it took quite a few hours, but I eventually got quite a good system going. I could play the tracks that I was copying to and listen to the studio drum sound, for example, and then, with the live tape playing, do a rehearsed drop-in and match it up as near as possible. That worked really well, and then when it kicked into the live section, I had the live ambience from the gig on a separate pair of tracks and that gave it this huge sound, while not really having the feel of an edit.

"Originally, when Elvis came up with the idea, I thought it was going to be a nightmare. You know, we'd have to treat the studio and live versions as two separate entities, doing all of the overdubs separately, mix them separately and then tear our hair out when it came to mixing them together. But, after mucking about on my own for a few hours with different levels going to different tracks — and also selecting which of four separate amp feeds from the live gig I was going to use on one track — it worked very well. If you listen to the track, I think you'll spot the edit, but you'll also hear how well it works.

"This kind of approach can make an engineer's life very interesting, but it also takes a certain calibre of artist and the right atmosphere to bring about that spark of inspiration and then achieve the best results. I feel it's of the utmost importance that a strong sense of comradeship and distinct lack of stress should characterise the session. At the same time, there must also be a degree of tension to drive things on, and by this I mean that when people realise they have to deliver here and now, they often manage to find the necessary energy within and rise to the occasion. That's what this work is really all about — it's about people, as well as that magic moment when everything just comes together."

SOS

But it's starting to come to me  
Starting to come to me

So you began by going the well-dressed  
man that everybody loves  
It started when you chopped off all the  
fingers of those pony skin gloves  
Then you cut a hole out where the light

"I feel it's of the utmost importance that a strong sense of comradeship and distinct lack of stress should characterise the session."

## JACOBS' LADDER: JON JACOBS' CAREER

Jon Jacobs acquired a job as tape op-cum-tea boy at the famous Central London AIR Studios complex in 1978. About a year later, while Geoff Emerick was working there, Jon struck up a friendship with him, and found himself being asked to assist on future sessions. A number of George Martin-produced albums followed, including several by Paul McCartney, and then, when Emerick moved to America, Jon became Martin's right hand man behind the console, progressing to the position of Chief Engineer at AIR. He stayed there for 10 years, before branching out on his own and going freelance, since when his credits have included Paul McCartney, Phil Collins, Mark Knopfler, The Pretenders, Yes, The Waterboys, and Heaven 17. He's also produced an Australian band, called The Slow Club, and undertaken a lot of co-production work with Graham Parker.



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**PAUL WHITE gives some foolproof step-by-step ideas for creating contemporary and vintage guitar sounds in the studio.**

An enormous range of sounds can be coaxed from the electric guitar, just by changing such variables as pickup type, amp type, mic type and miking method, and choice of recording preamp. Add EQ, compression and effects to the equation and the sonic possibilities become almost infinite. In this article, I've included a few suggestions as to how to replicate the sounds of various popular playing styles for your recordings, but the most individual element in the end result will still be the person playing the guitar. Experiment

attack of the notes come through, but they won't sound too bright. For a smooth sound, try the compressor after the EQ.

- Try to get as close as possible to the sound you want on the preamp or amp you're working with, then use the console EQ to fine-tune the sound.
- Finally, a spring reverb sound is more traditional than an electronic one in this application, but if you don't have a spring reverb, try a medium plate setting and roll off the top on the effects returns using your desk EQ to simulate a spring. If you're a real stickler for traditionalism, you'll want to use your reverb in mono!

### WILD IN THE COUNTRY

You don't have to be a Country and Western buff to need a country guitar sound — virtually all American west coast music, from Dylan to The Eagles, makes use of it. Country players generally go for a clean, single-coil sound with little in the

## PRODUCING & RECORDING ELECTRIC GUITAR STYLES

with the techniques discussed here, however, and you should be able to come very close to conjuring up any sound you like.

### JAZZ AGE

Jazz players traditionally go for a clean, warm sound, often played on semi-acoustic instruments, so to replicate this type of sound:

- Closely mic a clean amp, using a dynamic cardioid mic, or use a recording preamp with the overdrive either turned off, or turned down so far that all you hear is a hint of warmth when you play hard. Because you're using what is basically a clean sound, you can even manage by just using an active DI box straight into the console if you don't have a recording preamp, though my preference would be to mic up a small combo, because it really is hard to get that warm, loose bottom end when you DI.
- If you have a solid-body electric guitar, use the middle or neck pickup, and try cutting the mid-range a little to create more of an acoustic characteristic. However, you don't want the bright top of an acoustic, so be sparing with the treble and presence settings. Humbucker pickups will give a thicker, less top-py sound than most single-coil pickups.
- Compression can help even out the sound, and increasing the attack time slightly will let the

way of deep bass, and plenty of energy at the top end.

- Adding a little presence and just dropping the bass a touch will usually do the trick — and don't forget to use new strings!
- If you're miking an amp, set it to a clean sound but with the slightest hint of edge when you play hard. Valve amps are best for this.
- If you're DI'ing, either an active DI box or a recording preamp will work, but the preamp will give you far more flexibility of tone. Having said that, a good many electric guitars produce a superb clean sound via an active DI box.
- An aural exciter or a good parametric EQ will help you emphasize the top end more if you need it, and a compressor patched before the EQ is recommended if you want a snappy sound with plenty of sustain. As with the jazz setting, increase the compressor attack until your notes take on the right amount of bite, and use enough compression to let the notes hang on through the obligatory bends without becoming weedy.
- A fairly general reverb with a decay time of between two and three seconds will normally suffice, but once again, real authenticity would demand the use of a spring reverb or a short, single-repeat, 'slapback' echo using a delay time of around 80 to 100ms.

### FUNKY STRUMMER

Funk rhythm guitar is usually sharp and incisive, as a foil to the solid drums/bass rhythm section. Again, single-coil pickups are easiest to deal with, and Strat out-of-phase positions can work very

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## RECORDING ELECTRIC GUITAR STYLES

▶ well too. Older guitar processors, such as the original Rockman or Axxeman, which often sound too artificial for some musical styles, can sound wonderful for bright rhythm sounds.

- Because the sound is best kept clean and bright, an active DI box or a recording preamp will do the trick, but you can also mic an amp, providing that the speakers produce a sufficiently articulate tone. A model with 10-inch speakers may work better than one with 12-inch speakers for this application, and a capacitor mic will produce a brighter tone than a dynamic model.

- You shouldn't need to do too much with the EQ, but bringing up the 3-6kHz range will add edge, and if the guitar's tone is still too woolly, cut the mid-range a little. Compression before EQ will keep the sound solid, with plenty of attack.

- Funk lead for hacking out riffs must also have a bright, percussive edge, and combining heavy pre-EQ compression with a playing style that really 'digs in' can produce the guitar equivalent of slap bass. Remember to juggle the compressor attack time to give the right amount of bite — a release time of around half a second or a little less should work well.



The Sessionmaster JD10 DI Box/Preamp.

### KEEP IT CLEAN

There's a whole group of performers who've developed a relatively clean, sustained sound, ranging from Mark Knopfler and Chris Rea to Pink Floyd's Dave Gilmour on some of their less exuberant material. The majority of the sound comes from the players' fingers — indeed, the same is true of all successful guitar players — but you can get a good ball-park sound by following these guidelines:

- Use only a small amount of distortion, plus compression to get the required sustain.
- The brightness of the sound seems to come from the upper mid — remember that guitar amps

seldom produce frequencies much above 2-3kHz, and that's why the tone seems to sing rather than scratch. Humbucking guitars sometimes work better DI'd, but for the authentic tone, you need a Fender Strat or a similar instrument equipped with single-coil pickups.

- A nice 'open' reverb patch works better than a spring with most of these styles, and you need to pick with confidence to make the sound convincing.
- For a more Floyd-like sound, try a little extra overdrive, and experiment with phaser effects and echo, particularly in stereo, with a different delay time for each side, as well as reverb. Place a compressor before the EQ for a bright, wiry tone, or after the EQ for a smooth, sustained effect.

### INTO THE BLUES

Blues is nearly always most authentic when you mic up a small valve combo set so that the amount of distortion is controlled by the intensity of your picking. Some of the better recording preamps imitate this pretty well, but the purist will pick a real amp every time. Mic with a dynamic, close to the speaker grille, and use the internal spring reverb if available.

The actual blues tone can vary considerably — some blues relies on a bass-heavy sound with very



### ACOUSTIC ALCHEMY

A couple of years ago at a US trade show, I tried out a Rockman pedal that made an electric guitar sound like an acoustic, but to this day, I've not managed to track down a unit in the UK to try in greater depth. The key to how the pedal worked seemed to be in EQ — all the mid-range was scooped out of the sound, and the bottom end was fattened up until it was almost woolly. A tight bite at the top end created the 'zing' of the strings. Of course, if you want the effect of an acoustic guitar, you could just use an acoustic guitar, but if you don't have one, or would like to try to do it all with an electric guitar:

- Use single-coil pickups, preferably the middle pickup or the out-of-phase positions on a Strat.
- Record using a simple active DI box rather than miking an amp, and don't use a speaker simulator.
- Boost the bass at around 150Hz, cut the 500Hz to 1kHz mid-range right back, then add a bright peak at between 4 and 6kHz. A good parametric will really help in this situation, though a decent third-octave graphic will do

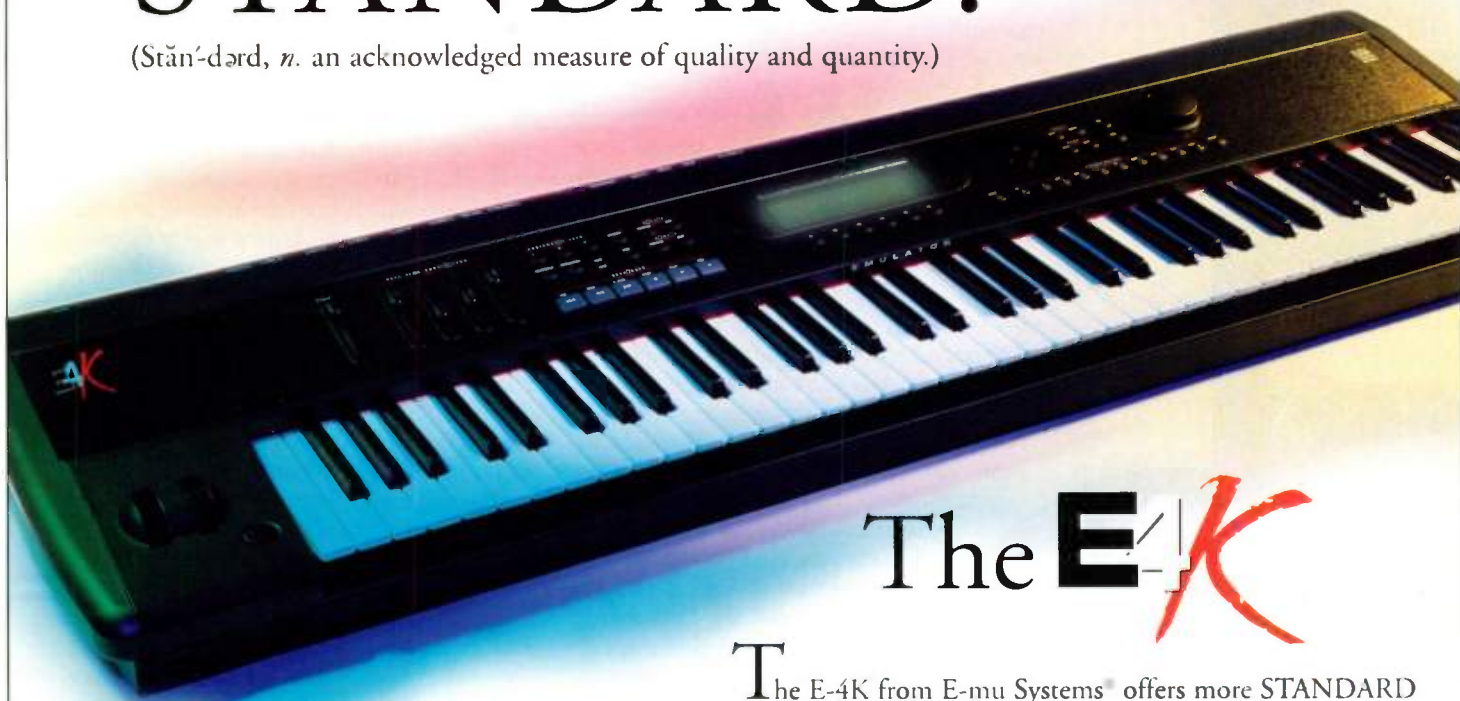
almost as well.

- Use an exciter to add even more edge, and finish off with gentle compression and a bright plate reverb setting. Place the EQ after the compressor for the brightest sound. If the instrument is to take a backing role, then you won't need as much bass boost. The final result won't sound exactly like an acoustic, but should get pretty close to the general character of one.



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# RECORDING ELECTRIC GUITAR STYLES

▶ little top, while other players explore opposite extremes using Telecasters or Strats. In my opinion, the key is in how the sound responds to playing, not necessarily the basic tone: compression is useful for squeezing more sustain out of a sound when you want to use only a modest amount of distortion.

- If you're using a recording preamp, teaming it with a compressor can really help, and though some players swear by putting the compressor before the preamp, the vagaries of impedance matching usually mean that you have to patch the compressor in after your preamp.
- Having preamp EQ before the compressor, and console EQ *after* it provides plenty of scope for tonal tailoring.
- Because blues relies on distortion, a preamp with a speaker simulation setting is mandatory.
- Spring reverb, or a short ambient setting, work for most styles, though if you're after a vintage John Mayall-era sound, you may want to experiment with longer reverbs or live room simulations.
  - Slide blues playing can be recorded in the same way, and here a compressor really helps if your guitar doesn't sustain too well. Use a guitar with a high action for slide playing, or you're likely to end up with a lot of string rattle on your recordings.

## MAXIMUM R&B

When it comes to R&B, The Rolling Stones are a good source of inspiration if you're not sure what you're after, and you could also check out ZZ Top and classic '60s and '70s tracks like Steppenwolf's 'Born to be Wild' or Free's 'Alright Now'.

- The key is to use an amp that is driven well into distortion, but not so far that you lose the basic character of the instrument. Small valve combos with underpowered speakers are often easiest to work with on the amp front, but playing your regular amp through a small speaker cab can sometimes produce good results. If you're using an open-backed combo, it is worth experimenting with simultaneously miking from in front and behind. Remember to try reversing the phase of the rear mic — in theory, this should be a requirement, but sometimes it actually sounds better out of phase! The rear mic will often add just the right amount of nasal 'honk' from the back of the speaker, plus a bit of cabinet resonance and rattle to convey a real sense of the amp and speaker being worked hard.
- As a rule, valve amps sound better than transistor amps for R&B, but there are exceptions. For my own setup, I use a Sansamp XXL pedal played through a small Fender valve amp, and the results are just right.
- Guitars with humbucking pickups usually produce the best R&B tones, but with R&B,

everything makes a difference — the amp design, the speakers, the type of mic and where you place it, the guitar, and most of all, how you play it. This means that you may have to experiment for a while to get just the sound you want, but once you hear it, you'll know!

- Compression and effects are optional — the essential tone comes from the amp and the guitar.

## FOR THOSE ABOUT TO ROCK...

Heavy rock was the forerunner of what we now call metal, and it was really an extension of R&B. Most of the sound came from tortured amplifiers rather than from pedals, but the level of distortion was usually such that you could still hear the character of the guitar coming through. Of course there were unique characters, such as Jimi Hendrix, who used a fuzz box and a wah wah pedal through a stack already driven to the brink of destruction, but even then, you could usually tell that he was playing a Strat.

- Experiment by setting up an R&B sound, then increasing the amount of overdrive.
- Though some effects units and preamps include built-in wah effects, there seems to be no real substitute for the original manually (or footually) operated pedal.
- Cabinet miking for this type of sound usually works best with a combination of a vocal-type dynamic up close, about three to four inches from the cone, plus a more accurate condenser or electret model at about four or five feet. The close mic gives the sound definition, while the ambient mic conveys a sense of scale, making it appear much bigger.

## MOSTLY METAL

Because metal sounds use so much overdrive, the character of the guitar and amp can become subverted, which is why most recording preamps make a better job of heavy metal than they do of blues.

- Humbucking pickups or high-power single-coil models are most responsive.
- Use an overdrive pedal plugged into an amp that's also set to overdrive, if it gives you what you want. The aim is to get a very responsive sound so that light picking and hammering produces the same level and intensity as a picked note. Of course, there's a fine line between that and a sound that feeds back by itself!
- As with my previous examples, a compressor patched after the preamp or in the insert point of the mic channel will help the notes sing out more. Try shortening the release time so that the sound just starts to pump — this should give the track more energy.

There's a difference between British and American metal sounds, in that British sounds tend to be thicker, and the mid-range is pulled back to give a more hollow or 'scooped-out' sound. UK engineers also tend to record using dynamic mics, while US producers often opt for the brighter tones of a capacitor model. One tip when setting up



Tech 21's Sansamp XXL Overdrive pedal.

## A GOOD SOAK

An alternative to miking an amp that I haven't discussed is to use a combined power soak and speaker simulator. My favourite is a passive Palmer model which simply connects to an amp in place of the regular speakers, but you can also get models from Groove Tubes, Rocktron and Marshall.



metal guitar sounds in the studio is to compare the sound you're hearing over the monitors with CDs of typical metal bands, not with the sound of your stack. You'll never get that deep punch in the guts a stage stack gives you — typical hi-fi speakers just can't reproduce it. Accurately double-tracked 'crunch' parts, panned left and right, can sound huge, however, more than compensating for the reduction in scale from the real thing.

### STRINGING OUT

All the sounds I've talked about here include many variables, the biggest being the way you play, so they're only intended to get you off to a good start, not to provide a finished sound on a plate. You'll also need to take care, when recording with a single-coil pickup guitar, that you don't get too much interference. Usually you can move the guitar around to find the position of least hum, but computer monitors can be very persistent and may have to be turned off. Even guitars with humbucking pickups can be noisy unless they are particularly well screened internally, so make sure that you're actually touching the strings or a screen-connected part of the guitar (bridge or control plate), thus adding your body to the screening, when assessing the amount of stray pickup you're getting.

Hopefully, by exploring these ideas, you'll



eventually come up with a sound you can call your own, and with a guitar, that's much easier to do than it is with a keyboard. Guitars may look low-tech, but you get all the benefits of physical modelling, without any of the technical hangups, just from a couple of pieces of wood and some wire!



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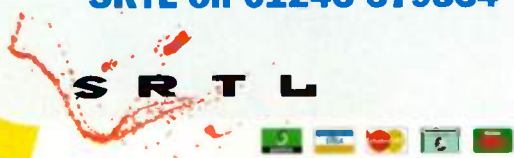
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'I've used a good quality DAT machine for years and am no stranger to the way digital tape can render analogue sound dry and antiseptic. But the Philips simply wouldn't entertain the possibility, giving a surprisingly warm and fulsome rendition. The bass was particularly well-rounded and lacked the sense of sterility so common with digital. There was no trace of hardness higher up the frequency range.' *Hi-Fi World*

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# Out of the Blue

*The TL Audio Indigo range keeps expanding, with cost-effective hybrid valve/solid-state processors emerging for every studio purpose. PAUL WHITE discovers that Indigo can be a very warm colour...*

## TL AUDIO INDIGO VP2051 VALVE VOICE PROCESSOR & PA2001 VALVE PREAMP

The success of TL Audio's valve signal processor range so far is a testimony to the fact that the vintage valve sound is in great demand: as the rest of the studio continues to go digital, for many people it becomes more important to find some way of injecting character back into their sound. There's nothing *wrong* with good digital equipment, any more than there's anything wrong with a plate of steamed vegetables, but both are improved by the addition of a few subtle spices. And in audio terms, subtle spicing is exactly what valve equipment provides.

The two newcomers to the TLA Indigo series are the VP2051 Valve Voice Processor and the PA2001 Valve Preamp (we reviewed TLA's Indigo EQs in August '96 and their Tube Compressor in September). I'll start with the PA2001.

### PA2001 VALVE PREAMP

Presented in a 1U, mains-powered package, and featuring switchable low-pass filter, phase invert and phantom power, the PA2001 is a straightforward four-channel mic amp. All its channels are identical, with XLR mic inputs and both balanced XLR and unbalanced jack outputs at +4dBu and -10dBv respectively.

Like most modern valve designs, the design of the PA2001 is hybrid, meaning that solid-state circuitry is used in some areas and valve circuitry in others. To maintain a very low noise floor, the

electronically-balanced XLR input feeds a solid-state gain stage. This is followed by a switchable high-pass filter operating at 90Hz (12dB/octave), and only then does the valve circuitry take over, with a dual triode being used in the second preamp stage.

The amount of valve coloration added to the input material depends on how hard the valve is driven: adjusting the input gain control varies the drive and hence the degree of 'character'. A simple LED system, the only metering available on this

*"The PA2001 would make a worthwhile purchase for any studio owner wanting to capture the valve mic sound from an existing mic collection."*

unit, monitors the output of the valve stage. Available headroom is indicated by the LED starting to illuminate when the signal exceeds the normal line level by 6dB. When only 10dB of headroom remains, the LED will be fully on. With most sound sources, the 'valve sound' starts to happen at around the point when the LED takes an interest in the proceedings. ▶





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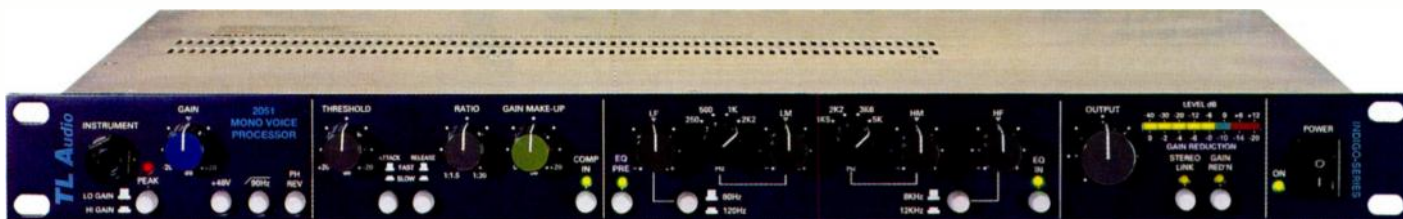
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# TL AUDIO INDIGO VP2051 & PA2001



► All that's left to mention about this simple unit is its output level control, which comes at the end of the preamp signal chain, directly before the output driver stages, and provides 60dB of mic gain.

## VP2051 VALVE VOICE PROCESSOR

All-in one vocal processors, or 'voice channels', have suddenly become very popular amongst manufacturers (the LA Audio Classic Channel and the Focusrite Green Voicebox are just two examples, both reviewed in this very issue), and it will be interesting to see if they become equally popular with the project studio owner. The idea is sensible enough: combine a mic preamp, EQ, and a compressor in a single unit, giving the user the option of a high-quality signal path to tape, bypassing the mixing console. Even when you're using a mixer, a unit of this type may be used as a conventional 'insert point' signal processor.

As far as I can tell, the mic amp section of the VP2051 is based on the same circuit as the PA2001. It features both mic and line-level inputs on separate, balanced XLRs, plus a further unbalanced line input on a rear-panel jack, and an unbalanced instrument input on a front-panel jack. A single gain control covers the range 0dB (line inputs) to +60dB (mic input), and the instrument-level jack also has a dual-position sensitivity switch, allowing it to make use of either the high mic-amp gain or the more modest line-amp gain. This is useful, as it allows such diverse instruments as active or passive electric guitars and basses, keyboards, or even high-impedance mics, to be accommodated. The sensitivity switch also functions as a mic/line selector for the rear-panel mic and line inputs. In line mode, the line input jack and line XLR are mixed, allowing simultaneous use.

The EQ section, which uses all-valve circuitry, is identical to that used in the TLA 2011 equaliser, and is configured rather like a console EQ, with high and low shelving sections, plus two mids with fixed Qs and switchable frequencies. Both the high and low shelving filters have switchable shelving frequencies (12kHz/8kHz and 120Hz/80Hz respectively), while each of the mid-range frequency switches has four positions. The lower mid can operate at 250Hz, 500Hz, 1kHz or 2.2kHz, while the upper mid overlaps this slightly by offering 1.5kHz, 2.2kHz,

3.6kHz or 5kHz. Cut or boost of up to 12dB is available in each section, and a bypass button takes the EQ out of circuit when not required. A pre/post switch means that the EQ can come either before or after the compressor in the signal path.

The compressor itself is a fairly simple affair, but no less flexible for that. It has an insert point, allowing an equaliser to be used in the side-chain for de-essing, switchable fast/slow attack and release times, and just three knobs: Threshold, Ratio and Gain Makeup. Like other TLA designs, the compressor has a soft-knee characteristic, with a ratio variable from a gentle 1.5:1 up to 30:1, which is as close to true limiting as makes no difference. The attack time is switchable between 0.5ms and 20ms, and release can be set at either 40ms or around two seconds. Some interaction is provided between the time constants (a fast release time will be lengthened if a slow attack setting is used), so the system isn't quite as rigid as it might appear.

“The Voice Processor provides a powerful, sweet-sounding audio toolbox that can be used to hone a single signal to perfection.”

Up to 20dB of makeup gain is available to compensate for level losses incurred in the compression process, and the compressor can be bypassed when not in use. A rear-panel Link socket allows the compressor sections of two VP2051s to be linked, for true stereo operation using the Stereo Link button on the slave unit. It is also possible to use two units to create ducking effects, where the level of the signal passing through one channel controls the level of another signal passing through the other channel.

To the far right of the unit is the output stage, comprising an output Level control, the compressor's Stereo Link button, and an 8-section bargraph meter that can be switched to read either gain reduction or output level. Both balanced XLR and unbalanced jack outputs are provided, operating at +4dBu and -10dBv respectively.

**pros & cons**

**TL AUDIO**  
**VP2051/PA2001 £704**

**pros**

- Convincing vintage tube sound.
- Good range of features.
- Well engineered and stylishly presented.
- All the modules in the Voice Processor stand up well as processors in their own right.

**cons**

- PA2001 would benefit from status LEDs on all buttons.

**summary**

TL Audio have created the right balance of sound, features and price. The VP2051, in particular, is a wonderful all-rounder that can be used to sweeten just about any mono signal, not just a microphone.

**SOUND ON SOUND**



## PERFORMANCE

As expected, both units' mic amps have identical specifications, showing a -127dBu Equivalent Input Noise when terminated with a 150Ω source, with gain set to maximum. In practice, the noise is comparable with what you'd expect from the input stage of any competently-designed, solid-state console. Both units also have a very wide frequency response, extending from 10Hz to 40kHz, and flat within 1dB.

Specs aside, what really counts with a valve unit is the subjective result, and in this area, both boxes stand up very well indeed. The mic preamp has a clean, transparent sound at normal gain settings, but as soon as you crank on enough gain to get the LED flashing, you can hear the change in timbre as the tube coloration starts to thicken the sound, making it more throaty and smoother round the edges — almost compressed. To my ears, both mic preamps perform identically.

The VP2051's compressor has the effect of bringing the sound closer to the listener without making it stifled or dull, as some compressors do. Even with fast attack and release settings, there's little sign of excessive pumping, even at high gain-reduction settings. The result, rather, is a full, produced sound with plenty of detail and intimacy. This is a very difficult compressor to abuse.

The EQ section of this unit is also very forgiving, in that you can be quite heavy-handed with it and still produce a musical result. Though not as flexible as a parametric EQ, it sounds noticeably nicer than most mid-price console EQs, filling out the bottom end without boominess, and adding 'air' at the top end without harshness. The switchable frequencies seem to work particularly well on vocals. Thin-sounding vocals can be underpinned in the lower mid-range without loss of clarity, while indistinct vocals can be given cut without introducing fatiguing aggression. Plug in a good capacitor mic, and you get very close to the sound you'd get by putting a valve mic through a separate valve compressor and valve EQ — very nice indeed.

With electric guitar, the compressor and EQ work very nicely to create a wide range of clean sounds, but it's surprising just how much difference placing the EQ before or after the compressor really makes. Because guitar sounds generally require a fair bit of upper-mid boost, putting the compressor first results in a bright, twangy country-style sound; putting the compressor *after* the EQ produces a much warmer sound, with plenty of sustain.

## SUMMARY

Both these units are excellent performers, with the facility to control the amount of valve coloration in the mic preamp stages adding greatly to their tonal flexibility. The PA2001 mic amp would make a worthwhile purchase for any studio owner wanting to capture the valve mic sound from an existing mic collection; the only compromises I feel have been made are the lack of more comprehensive level metering, and the absence of status LEDs for the switches, particularly the phantom power switch. The VP2051 Voice Processor provides a powerful, sweet-sounding audio toolbox that can be used to hone a single signal to perfection. Given that TLA valve gear is actually very sensibly priced, both these boxes offer a lot of quality for the money, and they're likely to remain useful for many years, no matter how far the digital revolution encroaches on the rest of the studio. SOS

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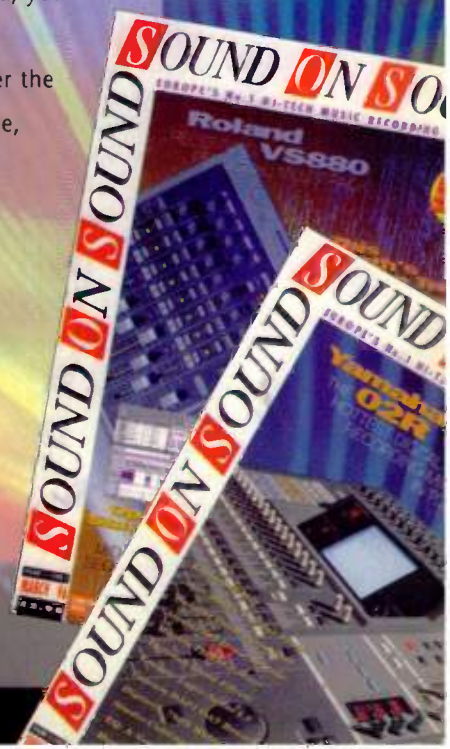
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## STUART ROBERTSON

**Recording Venue:** Home.

**Recording Equipment:** Fostex R8, Fostex 812 desk, Alesis 3630 compressor, Alesis Midiverb III and Microverb III, Tascam DA30 DAT, Behringer Ultraflex II, dbx de-esser, Akai S950.

Stuart is promoting himself as a solo artist and cites his influences as Tori Amos, Lisa Loeb, REM, Level 42, The B52s, and The Beatles. A fairly mixed bag you might think, but they are all in the pop/rock market. Stuart doesn't appear to be playing in a gigging band but has put together a CD containing six tracks, and I assume he wants record companies to hear them.

The first song centres on the voice, with a sparse backing of cabasa, acoustic guitar, and low synth drone surrounding it. As record companies are always interested in the voice, this seems a good ploy to me and doesn't waste anyone's time. As it happens, on first impressions, Stuart's lightweight voice is reminiscent of the vocalist from the Beautiful South — pleasant without reaching out and grabbing you. However, it's a voice that suits laid back material, and this is what he's concentrated on for much of the CD. Working to your strengths is a production philosophy that many fail to grasp until it's too late, writing material that is in the wrong key, or energetic when the voice is naturally relaxed. The second and third songs show that Stuart can write material that is just right for his voice, and he knows where to mix it — up front with lots of presence. I found myself

Stuart  
Robertson



Grip

warming to the vocal character. For example, the third song, 'Pretty Pictures', has a vocal take of a very high quality. I suspect that if the bongos had been tighter in the rhythm section, this would have been considered as the first track on the CD.

Most of the sounds on the CD are well recorded, and the acoustic guitar is worthy of note. The sound is full, as it needs to be (the backing often drops to acoustic guitar and voice), but it never gets out of hand in the bass end and has plenty of presence and punch. The latter I suspect is a result of the compression applied either during overdubbing or at the mix stage. Synthesised strings, where used are lush and warm, ably backing the vocal and sitting in the mix against the more percussive bongos and acoustic guitar. A full drum kit is used on one track only, and Stuart has achieved a natural, live room sound with a good kit balance.

Using a half speed or slowed down backing is not a new production ploy, but it seems to work well enough on the second song. Heavily treated vocals fit the bill here, but it all seems a bit experimental, a change for the sake of it where the others play safe. I'd have saved it until later. ▽

## SONTICHE

**Recording Venue:** Home.

**Recording Equipment:** Fostex R8, Studiomaster Proline mixer, Atari 1040F computer, XRI Systems XR300 synchroniser, Alesis Midiverb 2 effects and Micro Limiter, AKG C1000 and Shure SM58 microphones.

Winners of the Top Tape review in August 94, it's taken Mark Simpson and Martin McClatchey two years to complete their first CD album, *The Sleepwalker's Story*.

The attention to detail they displayed before in their demos has now been translated into a polished, professional product. Pivotal to the album are Mark's strong vocal performances, and this will

hopefully aid their search for a distributor, if that is indeed their intention.

Given the equipment used — Studiomaster Proline and minimal outboard — the quality of the recording is very high. I would put a lot of this down to the backing arrangements, which sound big. However, the instruments used are remarkably sparse. Often this is the result of a fat pad keyboard wash that is at the back of the mix. The harder sounds, like piano, drum machine, percussion, and heavily effected guitar, all punctuate the mix where necessary, leaving Mark's vocal to

float effortlessly across the top. Reverb is sometimes used heavily but is always appropriate. For example on the pedal steel solo of the ballad 'She gets lonely', the lazy attack of the instrument is a



perfect match for a large pre delayed plate reverb!

An obvious comparison could be made with smoothness and mood of the Christians as Sontiche teeter occasionally on the brink of MOR. Interesting use of heavily effected guitar textures in the style of Talk Talk drag them back from the edge of mellow. Excellent. ▽





## JULIAN BATCHELOR

**Recording Venue:** Apple Tree Studios, Oxford.  
**Recording Equipment:** Unknown.

Last reviewed in October 1995, Julian has returned to these pages for his yearly check up. Under his watchful production eye, the mixes of drum 'n' bass techno have been carried out by engineer Philip Goss at Apple Tree Studios, near Oxford, and there is a definite improvement here from the last demo.

Yet some things are still not quite right, like the choice of bass sound on the opening track, which is just a bit too raspy; a mimimalistic sine wave would have been good for the part. The mix of the echoed keys is also too high, because it draws the attention away from the all important drums in the mid frequency range. Lower in the mix, they would have added flavour and rhythm to the sound. 'Ondansetron' is the second composition, and this is much closer to the mark. The heavily phased

industrial sound (a drum and bass combination by the sound of it), which matches the bass drum over the break, is good. Its weight returns later and brings more of a techno



feel to a mix that sometimes slips into a fast House style shuffle.

The last track features the familiar old style Yamaha twanging bass sound and some good drum loops. Unfortunately, there is little in the way of actual breaks in the mix, so it's a relief when the sequenced high piano loop drops out. The ascending, moody strings which take over are well worth the wait, but I would still like to hear more space in some of these mixes. □

feedback. Live sound engineers often use a similar effect on rock vocals, and I think it works well.

**POLLY GABRIEL** has been playing and recording her songs since 1989, but the latest demos have had some help from producer John Anthony (who has



worked with Queen, Genesis, and Peter Hammill). The recording is as good as you'd expect from such a quality equipment list, and the production

ideas on the voice are interesting, if not always effective. For instance, on the first song, the vocals are dry and up front in the mix, taking full advantage of the bass proximity effect to bring out the low frequencies in the voice. This works well, but on the second song, the voice is over treated with harmoniser and a long pre delay reverb, which dates the production and also subdues the character of the enthusiastic vocals. In contrast, the heavy compression adds attack to the vocal energy. Polly's tape may interest record companies because of the vitality in the singing, but they will undoubtedly want to drag the production into the '90s. The best track is the first, where piano and dry vocal lend the sound a more timeless quality.

**STONE PREMONITIONS** is a selection of recordings made by Tim Jones with various musical friends in the North East. So it's quite fitting that the



tape begins with what appears to be a musical collage of voices and sound effects. This runs into 'Space Station', which is the sort of thing that could

have landed you a job with the BBC Radiophonic Workshop about 20 years ago. A heavily phased and delayed robotic voice creeps in over an atmospheric suspended synth chord to provide a little vignette before the 'Space Station' appears to self destruct — sounds like Tim had a lot of fun with that one! If the use of effects is anything to go by, then Hawkwind seem to have had a profound effect on Tim's production sense. Echo, heavy reverb, and modulation are used creatively to give the songs a psychedelic, trippy feel — something which has landed two of the bands he's worked with independent record deals

with — you've guessed it — a label set up by ex Hawkwind, Amon Duul and Groundhogs member Dave Anderson. Should do well in Germany.

The brainchild of Ian Matthews, **NOBODY** use spoken words with electronics, ambience, and breakbeats. This form of urban storytelling is delivered in a deadpan London accent, which lends the first story a slightly chilling feel and will lead to inevitable comparisons with Ian Dury. Yet this is within a modern musical context, and the story of the upbringing of a small time petty thief and his subsequent life works well against the dark backing of breakbeat and sine wave bass. Stereo panned synth loops and triggered gate effects add spice to the backing; the pitch dropped synth notes and chords are pretty atmospheric. The main thrust of the demo, however, is in the content of the 'Documentary House', which could easily be translated to the stage. 'Last cup of coffee' is perhaps the best example — the overheard conversation of a sleazeball saying goodbye to his girlfriend at Heathrow. 'Slow looping groove. Synths set on simmer'... indeed!

From Brazil, **FERNANDO MURA** has a distinguished musical pedigree, which has led to many performances worldwide. Although his main field is jazz and improvisation, he's currently studying as a postgraduate film and TV music student in Edinburgh. One wonders if he really needs any training, as his compositional skills are so good. Fernando handles the more grandiose textures of orchestrated synth arrangements or sparse ethnic tunes with ease. Sometimes the overall sound can get a little hard, but that is often the case where digitally sampled instruments are stacked up in an arrangement. I would suggest trying a little upper-mid cut between approximately 800Hz and 2kHz to smooth things out a little. For the more rock and jazz orientated material, this would not be necessary. □

## QUICKIES

**VOYD**, who formed while still music students, describe themselves as



'experimental dance/techno'. As the first track demonstrates, the music is well recorded and the sounds well chosen. Warm, fat bass sounds

combined with subtle use of modulation and echo underpin the frenetic drum loop, occasionally interspersed with extra percussion sounds and the almost obligatory 16th note hi-hat driving it all along. Nothing really experimental here, or in the tracks that follow, but there are some good quality mixes, and the stereo panning using effects and samples is good. I certainly liked the repetition on the vocal track on the second mix, which altered pitch and seemed to come up into the mix from nowhere — possibly taking an idea from drum 'n' bass mixes where the snare builds from nothing. The tracks are pretty accessible, verging nearer to Jean Michel Jarre than hardcore because of the use of hypnotic arpeggios.

Last reviewed in March 1996, **PULSE**'s guitars are a bit thin for me and the biog a bit long, but the rock vocals are strong. Gary Taylor's vocals still hit the mark, the letter is to the point, and the guitar sounds are improved. However, the guitars could still do with a bit of balls in the lower mids — I suggested a lift around 200Hz and I stick by that remark. There is no production as such — the sound of the demo is pretty much the band as it might sound at a gig with a decent PA system. For rock bands, this is not a bad approach to recording as the energy of the performance is retained. Some rough areas of the mix could be improved, but there's nothing here that a good bit of post-production couldn't solve. Some EQ cut at around 1kHz and stereo compression would smooth the sound out, controlling the dynamics without losing the performance energy. To improve the vocal mix, I'd suggest a little more reverb, or better still, some slapback delay using a setting of about 120-130ms with not much



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# MS-BOSS

## KORG MS20 MONOSYNTH

*Long before the M1, Korg tried to win the hearts of synth fans with the diminutive MS20. NORMAN FAY steps back in time.*

When you see a band or musician on the TV using synthesizers, if you're a bit sad, like me, then you probably can't help trying to work out just what kind of synths they're using. Most of the time it's not too easy — one grey oblong box looks much like another after all. There are, however, a few which always stick out a mile — the Minimoog, with its flip-up control panel, and the Jupiter 8, with its shiny metal wedge-shaped end panels, are examples which spring immediately to mind. Another is the diminutive and distinctly odd-looking Korg MS20.

I assume most SOS readers know what an MS20 looks like — a three octave keyboard with a steeply rising control panel behind it in an L-shaped black case. To the left of the panel are the various knobs, and to the right are some 35 cryptically-labelled sockets, of which more anon. Although the MS20 looks a bit weird, the design is actually quite practical if your studio is a bit lacking in space. The machine is tall and narrow, with all of the sockets on the front, allowing you to push

it right up against the wall. For live use, however, its shape is much less useful — you'd have to make a big square case to keep it in for one thing, and if you stand your MS20 on top of another keyboard and play it facing the audience, then they probably won't be able to see you!

In the past, Korg's instruments were notorious for adopting unusual solutions to the problems of synthesizer design — look at the Wavestation, for example — and the MS20 is no exception to this. Compare it to a 'classic' analogue monosynth, like a Minimoog or a Pro-One, and on the face of it, it seems to be quite similar. When it actually comes to using the thing, though, you'll find that whilst you can actually do all of the same things, it's always in a different, and not always immediately obvious, way. Here's where it gets a bit complicated...

### CHARACTERFUL FILTERS

As its signal sources, the MS20 has two VCOs and a noise generator. The VCO waveforms are very bright and clear sounding, and as an added bonus, the tuning — at least on mine — is exceptionally stable, a far cry from some analogue synths I've had the dubious pleasure of owning! VCO1 gives you triangle, sawtooth, variable pulse — no PWM, I'm afraid — or white noise waves, whilst VCO2 has sawtooth, square, fixed pulse, or ring modulated waves. That adds up to a fairly comprehensive selection, and it's possible to use both VCOs along with noise, if you so

desire. There's an external input to the filters on the patch panel, as well as a pair of outputs for pink and white noise. Both VCOs share a single pair of modulation depth knobs, one hard-wired to envelope 1 and one to the LFO. These modulation sources are overridden by a pair of sockets on the patch panel.

All of the above then goes through the VCFs — the MS20 has both high-pass and low-pass resonant filters, which is a great bonus in my view — and a VCA. Each of the VCFs has its own pair of modulation knobs, similar to those on the VCOs. The filters have a clean, bright quality that I personally find very pleasing. When reading up on the MS Series for this article, I grew tired of reading the same comments about the tone of the MS20 in general, and it's filters in particular, namely that it doesn't sound as "good", or as

*"... a distinctive and versatile little workhorse, which will provide you with loads of good sounds..."*

"powerful" as (can you guess?) the Moog filter — how predictable! What a dreary task playing the synthesizer would be if everything sounded the same. I think the MS20's filter is just as characterful, in its own way, as the Minimoog's. Furthermore, by using the high-pass filter in conjunction with the low-pass, a range of cutting lead sounds can be programmed, which will remain audible in even the muddiest mix without cluttering it up still further.

### MODULATING ENVELOPES

To modulate all of the above, you have access to two envelope generators and an LFO. Now the usual way a two-envelope analogue synth is laid out is to have a pair of ADSR type envelopes, with one hard-wired to the VCF and one to the VCA — nothing so obvious for the MS20, of course! Envelope 2 is the 'standard' one. As well as the usual knobs for attack, decay, sustain, and release, it has an additional one which holds the envelope open for up to 20 seconds — useful once in a very long while! Envelope 2 is hard-wired to both the VCA and the VCFs — even here there's a bit more to confuse the unwary synthesist. The signal envelope 2 sends to the VCFs has its sustain level set at zero volts regardless of the other parameters' settings. The practical effect of this is that if you programme a contour with the sustain set to full and turn the VCF









# KORG MS20 MONOSYNTH

▶ envelope depth control up, then nothing happens until you turn the sustain level down, and the further down you turn it, the more effect the whole envelope contour has — what were Korg thinking of? Thankfully, the control voltage sent to the VCA is more

you're using.

To the right of the panel, amongst the patchbay sockets, are a few more bits and pieces — another VCA, designed for controlling the level of CV signals; a sample and hold module; a noise generator with pink and white noise; and the external signal processor. The latter allows the user to take any sound, shape it using the processor's low and high cut filters, and extract CV and trigger signals from it. This, on my MS20, actually works very well — it even tracked an electric guitar reasonably well, although the use of a compressor is strongly recommended. A handy trick when using the processor is to feed the output signal through it, which gives you the opportunity to do some further tonal shaping, or to overload the processor's filters for a 'fatter' sound — if you must!

## PATCH WORK

Now we come to the part of the MS20 which sets it apart from most other monosynths — the patchbay. Don't think for a minute that you're getting a 'proper' modular synth here — the signal flow is fixed. Both VCOs go through the high-pass VCF, followed by the low-pass VCF, then the VCA, and there's nothing you can do about it. All of those jack sockets are purely to patch in the various modulation options. Now I'll have to be honest here, and say that if you're using an MS20 on its own, you don't really gain that much in what you can do. For example, on my Roland SH09, if I want to set up a delayed vibrato effect, I'll set the vibrato depth and rate controls to the settings I want, and then adjust the LFO delay slider until it sounds right — all very simple. Now here's what I have to do on the MS20. First patch the LFO out to the input of the

modulation VCA, then take the mod VCA's output to the mod input of the VCOs, then take the output of envelope 1 to the control input of the mod VCA. Only then can you twiddle the knobs until you hear the effect you want. A bit of a faff, and don't ask how to set up a random LFO effect — I only have so much space!

I shouldn't be too harsh on this aspect of the MS20. It's actually a lot of fun to play with if you know what you're doing. I'm glad it wasn't my first synth, mind — I rather doubt I'd have got very far with it! Where the patchbay comes in useful is when you use the MS20 with either another MS Series synth or a proper modular instrument. Bear in mind here that the MS20, like all of Korg's monosynths (except the Mono/Poly), uses

“The MS20 has another advantage over many other monosynths — almost all of its electronic components are easily available.”

conventional. Otherwise, you'd be hard pushed to get the damn thing to make any noise at all most of the time.

Envelope 1 is a simpler affair than 2, with knobs to control the attack and decay times, as well as one to delay the onset of the whole contour by up to 10 seconds. This envelope is hard-wired to the oscillators, for pitch sweeps, and can also be used to delay the onset of the LFO via the patchbay. The LFO is fairly standard, but for the fact that it has a variable waveform control, which either controls the width of the pulse wave, or the shape of the triangle/sawtooth wave, depending on which

“Best of all, it's common enough to be reasonably priced.”

Hz/volt control voltages instead of the more common octave/volt standard, and will thus be incompatible with most other old analogue synths. There are a couple of ways around this problem, though. You can use the external signal processor for a partial solution, or you can use the interface box Korg made specifically for this purpose, although you'll need good luck to find one!

## SOUNDS LIKE...

I'd better say a few words here about the MS20's sounds, although I'm starting to think that perhaps too much fuss is made these days about the different sounds various old synths can make. Surely it's the music that's most important? In any case, apart from a few really distinctive instruments, such as the Minimoog or the EMS synths, most, if not all, old analogue instruments sound very similar, and once they are recorded and mixed, I'd defy anyone to tell a Pro-One from an SH2, an ARP2600, or whatever. Heresy for the analogue nut perhaps, but I'll bet most readers agree with me. Anyway, the MS20, like most analogue synths, can produce most, if not all of the chunky bass and sequencer sounds you'd wish for, as well as the whole repertoire of bleeps and twiddly Tim Blake/Hawkwind sound effects. Where the MS20 scores is when you start using its high-pass VCF, which enables it to produce a range of beautiful, delicate, reedy leads — perhaps not the most fashionable of sounds, but I find them very

## MEET THE REST OF THE FAMILY...

Almost as common as the MS20 is its little brother, the MS10. In every way a cut-down version of the 20, it has only one VCO (although you do gain pulse width modulation), one envelope (given the unusual character of the 20's DAR envelope, this is not such a limitation as it might appear), no high-pass filter, a shorter keyboard, and a much sparser patch panel. It doesn't sound anywhere near as good as the MS20, but it is still quite characterful and seems to sell quite cheaply on the second-hand market.

The MS50, which is much rarer than the 20, is a keyboardless expander, with a whole bunch of handy synthesis functions spread across its front panel. It has a VCO, a low-pass VCF, a VCA, two envelope generators — one standard ADSR type, and one with hold, decay, attack, and release parameters as well as a trigger delay. There's also a good voltage controlled LFO, a little three into one mixer, a ring modulator, an octave divider, an 'integrator' (portamento — I think!), an inverter, and a cute little voltmeter. The MS50 is obviously an excellent companion to either an MS10 or 20, or, in fact, any

old synth — the VCO works with octave/volt as well as Hz/volt control signals. Unfortunately, it was rather expensive when it came out, so it sold poorly. Consequently today, it has a collector's value far in excess of its real worth as a musical instrument. What a shame.

The SQ10 is a 12-stage analogue sequencer — the old Tangerine Dream type, with rows of knobs. Undoubtedly lots of fun to play with, but unfortunately, the same comments about collectors value/musical value apply to this one too.

The VC10 is a real weirdo — a vocoder in the same 32-key casing as the MS10, with a goose-neck microphone sticking out of the top of it. I had a play on one a few years ago, but I must confess, I wasn't too impressed with it. If you find one cheaply enough though, do have a go.

There are also a few little 'widgets' in the MS Series:

- MS01, a modulation footpedal
- MS02, a useful little Hz/volt to oct/volt convertor
- MS03, a pitch to CV convertor, similar to that fitted to the MS20.



inspiring to play.

The MS20 has another advantage over many other monosynths — almost all of its electronic components are easily available. Whenever I've had an old synth in the past, I've always ordered the repair manual from the manufacturers — if they're still around — and checked on the availability of spare parts, so that in the event of problems I can get it fixed. I must confess that generally any instrument which uses 'hard to find' parts, such as the older SSM chips or Curtis chips, I'll sell pretty quickly, because I don't need the hassles of trying to obtain and paying inflated prices for rare, 'out of production' components. Where the MS20 scores is that most of its chips are standard, easy to find devices such as the 4558 and 071 op-amps. I can't stress how important this is for the user. As an example of how bad it can get, my Roland SH09 uses a special double transistor called a ua726. I tried to get one to keep as a spare, but I was unable to locate one anywhere. I have since found out that the 726 is available, but only as a military spec part costing over £100! This is by no means the highest price you'll encounter for rare electronic parts, either. There are a few

**“The VCO waveforms are very bright and clear sounding, and as an added bonus, the tuning — at least on mine — is exceptionally stable...”**

tricky parts for the MS20, but it's nowhere near the worst, so this machine at least can be bought with some confidence.

#### DISTINCT VERSATILITY

If I appear to be damning the MS20 with faint praise here, then I suppose it must be because it isn't, by any stretch of the imagination, a 'classic' instrument. Nonetheless, it is a distinctive and versatile little workhorse, which will provide you with loads of good sounds, and is unlikely to let you down. Best of all, it's common enough to be reasonably priced. You shouldn't have to pay more than £350 from a private seller, and a scan of the SOS classifieds over a two or three month period should turn one up, if you're interested.



# Blue Proudly Presents...



## The Syntecno TeeBee, TB303 reborn? Maybe.

A chunk of 'super-funky' technology  
Features Include:

- Monophonic bass synthesizer
- 4 Channel MIDI to CV converter
- Five rotary controls act as MIDI controllers.
- MTC to Roland Sync24 converter
- Simple real-time sequencer
- Auto-wah filter

## Mutator



The Mutator is a stereo analogue effects unit based on technology developed for synthesis in the late sixties. Quite unlike your standard reverb, delay, chorus and flanger type effects the effects achievable with the Mutator are unique and simply defy description.

### What People Say..

“...The thing about the Mutator is that it is actually alive.”

“..... I Can't stop playing with it.”

“.....The Mutator sits in my rack like an Arnie in a row of Shirley Temples, probably the most potent zU rack on the planet”

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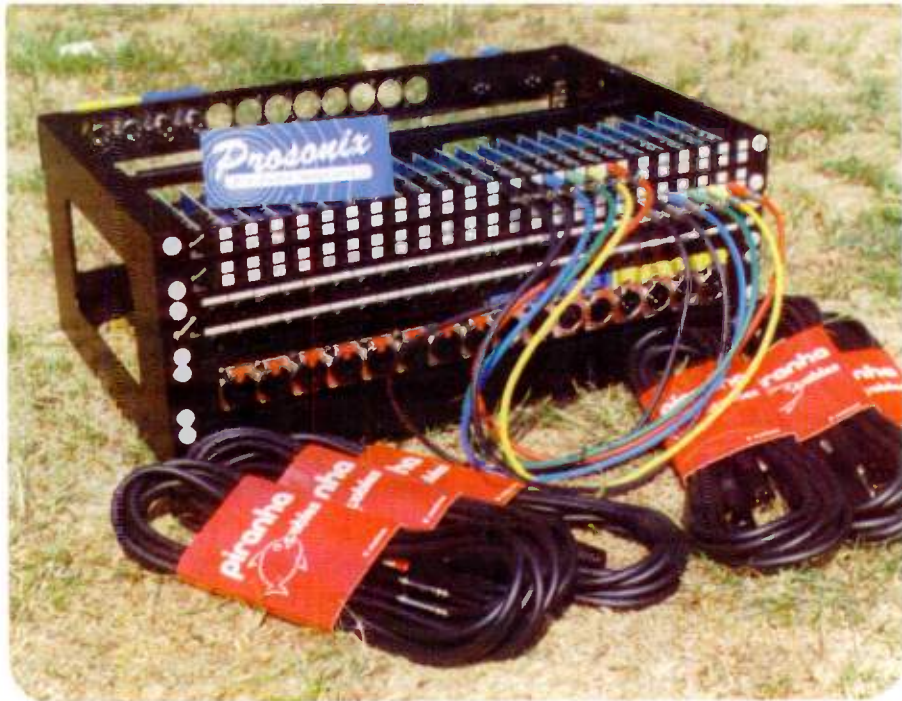
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Every home studio owner needs a patchbay, although not everybody realises it! Even if you only have a small recording setup, a patchbay can help you operate more smoothly, by bringing all your insert points, effects sends and returns, and processor inputs to a single convenient point. This puts an end to the hours of misery you can spend bent double over your synth modules struggling to reconnect them to effects units you can't reach — and if you suffer from those inexplicable cable tangles that make the corners of your studio look like they're full of black spaghetti, a patchbay can banish those too.

For the second of this month's great competitions (see page 224 for the other), SOS has teamed up with patchbay manufacturers Prosonix to offer a complete patchbay system from their new modular Connex range, with a selection of leads from high-quality cable manufacturers Piranha to connect everything together.

The complete system comprises the following, all housed in a 4U Prosonix modular rack (see main picture):

- 2 B48 half-U, 48-way patchbays (with professional bantam sockets)
- 1 modular tie bar for connecting the two B48s
- 1 J48 1U, 48-way patchbay (with standard quarter-inch jack sockets)
- 2 XLR patchbay panels (one loaded with Neutrik connectors)

### the small print

1. Only one entry per person is permitted.
2. Employees of Sound On Sound Ltd, Prosonix, Piranha Cables, and their immediate families, are ineligible to enter.
3. No cash alternative is available in lieu of the stated prizes.
4. The competition organisers reserve the right to change the specification of the prizes offered.
5. The judges' decision is final and legally binding, and no correspondence will be entered into.
6. No other correspondence is to be received with competition entries.
7. Please ensure that you give your DAYTIME telephone number on your entry form.
8. Prizes must be prepared to make themselves available at the event that the competition organisers wish to make a personal presentation.

# Prosonix Connex Rack & Patchbays *plus Piranha Cables*

- 2 blank rack panels
- 6 bantam patch leads (with high-quality Neutrik plugs)
- 4 Piranha mic leads (made from Piranha's usual high-quality, oxygen-free copper)
- 2 Piranha instrument leads

intensely to generate that most elusive of mental outpourings, the Witty Tiebreaker™. Should you require any help with the questions [unlikely — Ecf], check out Paul White's short review of the B48 bantam patchbay on the Brief Encounters page in SOS July 1996. Post your completed oeuvre to reach us no later than the closing date: **Friday, December 6th, 1996.**

Prizes kindly donated by Prosonix (01323 848808) and Piranha Cables (01435 868186).

To win all this gear — which is worth over £500 — you merely have to wrestle mentally with the fiendishly complex questions below (ha — fooled you) and come up with some answers, then cogitate

## questions

1. What professional connector format is employed by Prosonix on their B48 patchbay?

- a) Bantam
- b) Bantamad
- c) Bantam
- d) Bantus

2. Although Piranha manufacture high-quality audio cables, this is not immediately apparent from their company name. What actually is a piranha?

- a) A curved wooden effigy
- b) A small, carnivorous fish
- c) An elephant's foot hatstand
- d) An Aboriginal gathering

3. Which Prosonix product was featured in the Brief Encounters section of SOS July '96?

- a) The B48 patchbay
- b) The J48 patchbay
- c) The modular 4U rack
- d) A 1U blank rack panel

4. Which chemical element, essential for the continued existence of all life on Earth, is conspicuous by its absence from the copper used in Piranha cables?

- a) Cresosote
- b) Gray
- c) Very small rocks
- d) Oxygen

### TIE-BREAKER

Patchbays are an essential but functional part of the modern studio. If you had to market a new patchbay to capture the imagination of the studio-owning public, what would you call it? Please answer in no more than 30 words.

.....

.....

.....

.....

.....

Name .....

Address .....

Daytime tel. no .....

Post your entry to: **SOS Prosonix/Piranha Competition, Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 8SQ.**



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bag £175. ☎ 0181 4490217

**YAMAHA SY99** £795, Roland JX10 £485. Both mint condition. ☎ George 01642 829598 (North East)

**YAMAHA DX11** 2 ROMs Atari £250 ono, case, sounds. ☎ 01553 631253

**YAMAHA KEYBOARD** weighted action, full size piano/controller £900 ono. ☎ 0121 605 6082

**YAMAHA TG500** 64 note polyphonic, all the sounds of SY85 in a rackmount £500. ☎ Simon 0181 943 9863

**YAMAHA TG55** sound module, excellent clear sounds, 16 part multi-timbral, FX, 4 outputs, boxed, manual £250. ☎ Pete 0114 2678799 (evening), 0114 268 5050 day (Sheffield)

## RECORDING

**ACES 24-BUSS MIXER** 48 inputs, 5-band EQ, 5 Aux sends, LED and VU metering, modular, patchbay, top-class mixer £1200, consider p/x outboard gear, microphones, Fender/Gibson guitars etc. ☎ 01482 448767

**AKAI DR4d** 4-track hard disk recorder, MIDI interface and manual, hardly used £600. ☎ 0171 251 1920

**AKAI DR4d** with 540Mb internal drive, excellent DL4d remote, mint condition, only £1200. ☎ Joe 01558 668511 evenings

**AKAI DR8** MIDI, SMPTE £1900, Akai S3000XL 32Mb £1700, Akai S1000 8Mb £1200, Roland JD800 + flight £1200, Roland RBM, 5 cards £390, TX81X, TR505, LXP1. ☎ David 0151 709 8811

**ALESIS ADAT** fully serviced with MIDI Sync box £1500, Proteus 1 module £200, Behringer enhancer £90, SKB 12U 19" rack case £90. ☎ Ben 01603 624691 (Norwich)

**ALESIS MIDIVERB 4** absolute mint condition, 18-bit stereo digital effects. Big green LCD, light-up rubber buttons! Original box/instructions £199, Spirit Folio 12.2 £250. ☎ 01734 752036 (Reading)

**ALESIS ADAT** 479 hrs use, version 3.04, perfect £1500. ☎ 01874 638143

**ALESIS ADAT** version 4.03, 2 minutes record time only, absolutely A1 new with LRC and Ampex tape £1495 — no offers. ☎ Darius 0181 808 5103

**ALLEN & HEATH GS3** 16 mixing desk with MIDI muting separate psu, £1250, Sony DTC 55ES DAT recorder £350, Roland SRV2000 reverb £350, all boxed, manuals, good condition. ☎ 01746 862222

**AMS RMX16** £1400, large mixer stand £40, Rauch 100W 1U power amp £150, Fostex 8-2 line mixer £100. ☎ Neil 01273 494502

**AKAI DRX 2100** digital multi-effects/pitch transposer sampler, excellent condition £200. Roland D110 sound module, good condition £150. ☎ Steve 01803 311672 day/night

**BARGAIN: SECK** 12-8-2 mixer Mk2, phantom powered, formerly owned by Everything But The Girl, in vgc, only £300. ☎ Ian 0181 441 5250 can deliver

**BEHRINGER ULTRAFEX II** XCITER £170, Novation BassStation kbd £250 or both for £400. ☎ 01480 470179 (Cambridge)

**CASIO DAR 100** portable DAT recorder, rechargeable battery, £50 worth of tapes, excellent condition £220. ☎ Dave 01472 602 383 after 6 pm

**CROWN MT2400** power amp £550 ono, Korg DRM/DDD cards wanted. Fostex 450 mixing desk — XLRs, swept mids, direct outs etc £370 ono. Cubase Lite £35 (PC), Amiga sample disks (Techno FX etc) £2 each. ☎ 0121 622 2743

**DCC 170 PHILIPS** digital portable recorder/player, ideal for mastering, 18-bit, cost £245, sell £175 inc 9 tapes, accessories, boxed. Philips DCC optical cable £28. ☎ 01275 332997

**DIGITECH STUDIO VOCALIST**, new £725, Yamaha MT8X 8-track cassette recorder, as new, box, manual £675. ☎ 0181 808 1126 preferably mornings

**DIGITECH RP6** as new £250, Boss ME6

£150, McKinley 20W Amp only £45, CryBaby, hardly used, only £40. Reason: upgrading. Buyer collects or adds p&p. ☎ 0181 886 0688

**ENSONIQ DP4/+** £950, Mackie LM3204 £700, 2x PB80 Patchbays + 80 balanced patch leads £100, dbx 163X compressor £75, Alesis Microverb III £120. ☎ Ben 0973 330469

**ENSONIQ DP4** parallel effects processor £600, Cheetah MS6 rackmount analogue synth £180 ono. ☎ Mundo 01482 897307 anytime day or night

**FOSTEX E16** plus Allen & Heath GS3 MIDI mute desk, boxed £3000, might split, Shure SM57 (three) plus Audio Technica PRO9D. All boxed £250. Pro 1, tatty £250. ☎ 01633 880858

**FOSTEX M80** 8-track reel to reel, light home use, excellent sound quality, boxed £590. JL Cooper PPS100 MIDI synchroniser unit, as new £160. ☎ Darren 01923 243246, 0860 467230

**FOSTEX M80** with Fostex 4050 Autolocate-remote-SMPTE MIDI sync unit £200, Bit 99 Analogue MIDI synth £250, Roland A30 master keyboard £220. ☎ Nottingham 0115 9816464

**FOSTEX A8** 8-track reel to reel with Yamaha RM804 recording mixer £400. Yamaha M551 SMPTE/MIDI sync, vno £85. ☎ 0191 221 1696 (Tyne-side)

**FOSTEX DMT8** Digital Multitracker, as new, boxed with instructions £1050. ☎ Andy 0191 285 8293

**FOSTEX 280** 4-track £350, Fostex MTC1 sync and MIDI control for Fostex RB/280, Yamaha RX11 drum machine, 12 outs £70, all excellent condition, will swap. ☎ Kelly 0859 540246

**FOSTEX B16** plus 4050 autolocate/MIDI sync, good condition £1000, Atan Mega 4Mb plus hard disk, monitor and boxed Cubase £300 — offers. ☎ Felix 0171 286 2507

**FOSTEX 2016** 16 channel line mixer £130, Sansui MX12, 12 channel mixer £140, Alesis MEQ 230 £100 44MB Syquest rackmount drive with 14 cartridges £90. ☎ 01223 564577

**FOSTEX R8**, looms, demagnetiser, two new Ampex reels £700. Fostex 812 mixer £700, both excellent condition with manuals. ☎ Irene 0171 525 4326

**FOSTEX RB** vgc £750, Fostex MTC1 (syncs R8 to computer sequencer) £110, TEAC DAP20 pro DAT, virtually unused £525. ☎ 01603 617459 (evenings)

**FRANKENSTEIN** stereo enhancement system, professional studio quality processor, virtually unused, mint condition, boxed with manual, cost £586 new, bargain at £400. ☎ 0171 265 8131

**HOME STUDIO SALE** Behringer Composer — compressor, noisegate and limiter in one, Zioom 9120 multi-effect unit, both in perfect condition, also sound library on CD-ROMs, audio CDs and Zip 100 discs. ☎ 0171 720 3702

**MACKIE MS1202 UL2** five months old, £290. Also Roland JV30 £350, Roland R70 sequencer/drum machine £230, GMK49 £90. ☎ Derek 0976 236860

**MXR DIGITAL DELAY** rack mounting, immaculate, 2 outputs, beautiful chorus, flanging, ADT, long delays, very high quality, sought after unit £225. ☎ 01482 448767

**PHILIPS DCC 730** digital cassette recorder, 4 months old, hardly used, boxed with manuals and 5 tapes £190 — no offers. ☎ Adam 01993 850 755

**PHILIPS N4450** open reel 7-10.5" 4-track, auto reverse, 3 speeds, new heads, mint condition, can be seen working £250 ono. ☎ 0171 924 7154

**PHONIC PEQ3400** 2x15 band graphic equaliser as new, with manual £80, Novation BassStation (keyboard) also as new £235. ☎ 01933 678608

**19" RACK UNIT** Heavy duty, double depth, locking glass front door, locking metal back door, waist high, great looking condition £100. ☎ 01480 395465

**SECK 12/8/2 MKII** mixing desk (black), 24 inputs, routable aux returns, 2-track

input talkback, quiet, versatile recording desk, bargain £295. ☎ 01908 606936

**SONY DTC750** DAT machine with remote and manual, home use only, excellent condition £300. ☎ Graeme 0161 797 4305 (Manchester area)

**SONY DTC690** DAT (fully serviced) £350, JBL 4208 monitor speakers £255, Mackie 1202 mixer £200, Symetrix 511 noise reduction £125, Dynamix 16-2 mixer £200, 15" + Horn cab £50. ☎ 0115 9242088

**SONY TCD D3** DAT Walkman c/w Sony EXMS220 DAT, 2 battery packs, digital leads, phono leads and case. Mint condition at £375 ono. ☎ 01639 887025

**SOUNDCRAFT 8-TRACK** 1" tape machine, Studiomaster 16.8 2 desk, Bel 8-track noise reduction unit £1000, TEAC A3440 4-track, dbx 155 noise reduction unit £450. ☎ 01255 880480 (Essex)

**SOUNDCRAFT LIVE** 24-4-2 mixing desk, flight cased, 1 year old. Excellent condition £1600 ono. ☎ 01594 810025

**SOUNDCRAFT** hard disk recording with YLR option, book & software 1919 HD £1600. ☎ 01623 642089

**STUDIOMASTER MIXDOWN GOLD** 24.8 2, 6 Auxes, MIDI muting, nice EQ, boxed with manuals £895. ☎ 0181 883 6215

**STUDIOMASTER SESSIONMIX GOLD** 16.2 superb recording/live desk £425; Turtle Beach Tahiti sound card, best available, with latest drivers £195, SAW software, latest version, registered £200. ☎ Andy 0181 570 7425

**TASCAM PORTA 03** boxed, mint £150, Aria Pro II Cardinal series, rosewood finish, old style, beautiful sound £170. ☎ Martin 0181 446 7092

**TASCAM 464**, Alesis SR16 drum machine, both boxed. ☎ James 01691 565221 after 7pm

**TASCAM M2516** 16 channel, 8-buss pro mixer with MIDI muting, in perfect condition £1100, Fostex M80 8-track reel to reel recorder, comes with two tapes and demagnetiser £600; Behringer Composer £180, Zoom 9120 £180. ☎ 0171 720 3702

**TASCAM 238** 8-track rack mount cassette recorder, great condition, £550 ono. ☎ 01491 681510 evening, 01865 450656 work

**TASCAM 22-4** twin speed, 4-track reel to reel, RX9 4-track dbx, 6.4 2 Bandive studio mixer, Great British Spring reverb. Owned from new, working order, cost £2000+ — accept £1200. Jon Cooch, Blue Haze, Seatown Bridport, Dorset DT6 6JT.

**TASCAM 688** 8-track MIDI studio, excellent condition, home use only, just been serviced + three month guarantee, need quick sale £600 ono. ☎ Paul 0161 231 4853 (Manchester)

**YAMAHA MT1205** (4-track) £245, mint, boxed, manuals. Hardly used + very well kept, 40Hz-18kHz, dbx, 4-track simultaneous recording, Graphic EQ, twin speed. ☎ Dave 0191 372 2621 (Durham)

**YAMAHA MT2X** 4-track recorder, 6 inputs, FX return, high speed, great dbx NR. Well looked after and in perfect condition, boxed £220, includes YMC2 Sync to MIDI unit. ☎ Tom 01633 880946

**YAMAHA MT3X** with 6-channel mixer, 4-track recorder. Double speed recording, monitor out. Two aux send and rtns. Excellent condition, hardly used £350 ono. ☎ Richard 01908 567980

**YAMAHA MT5X** 6 channels, auto punch in/out, 2 auxes, stereo returns, plus Midiman Smart Sync, both as new condition, boxed with manuals £425, MS1 sampler £200. ☎ 0973 122572, Leeds

## SAMPLERS

**AKAI S01** upgraded to 2Mb, mint condition £500, instructions included. ☎ 0151 284 7119 Paul or Ian, Liverpool

**AKAI CD3000** 2 megs, 2 CDs £1000,



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**SYNTHESIZERS & KEYBOARDS**

<p><b>EMU SYSTEMS</b></p>  <p>Lowest prices on all EMU modules!!          Orbit The Dance Planet Call Now!!</p> <p><b>Hammond GM1000</b></p>  <p>Was £599          Now £379</p> <p>The GM1000 is GM compatible, has 365 sounds including 32 original Hammond drawbar settings. Featuring fast and slow Leslie effects The GM1000 is the affordable way to achieve The Hammond sound!!</p>	<p><b>Roland JV1080</b></p>  <p>Check our unbeatable expansion board deals!!</p> <p>Call us now for the best possible deal on The JV1080.</p> <p><b>Yamaha QY700</b></p>  <p>The world's smallest project studio in a box!!          Call for details.</p> <p><b>VL70M</b></p>  <p>Virtual Acoustics for under £500</p>	<p><b>Roland P55</b></p>  <p>32 dynamic piano and keyboard sounds including stage and concert grands, Rhodes and Roland electric pianos. RRP £495</p> <p><b>Waldorf Pulse</b></p>  <p>Call</p>	<p><b>Marantz PMD601 Exclusive</b></p>  <p>Features include XLR stereo balanced Mic in. 10 hour battery pack. Optical input. Coax digital in. Direct telephone connection. Mains Adaptor and leather case.</p> <p><b>DCC PRICE CRASH</b></p> <p>Pre featured portable DCC digital mastering recorder.          RRP £999 Now An Incredible £349</p> <p><b>Fostex P8 + 812 Package Deal</b></p>  <p>Package includes          Fostex R8 Eight track analog tape recorder. Fostex 812 12 Channel 8 buss recording console          MTC 1 Midi synchroniser.          This System allows the R8 direct synchronization with Cubase and other sequencer programs          Limited Stocks Only</p> <p><b>RRP £3636 NOW £1799 inc VAT</b></p>
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<p><b>BOSS DR5</b></p>  <p>We have just received a limited quantity of this amazing unit at the unbelievable price of only £250</p>	<p><b>ROLAND MC5011</b></p>  <p>SMI compatible          * Song - Huge Memory Step &amp; real time recording.          Super fast loading time.          The ultimate Dedicated sequencer.</p> <p><b>RRP £799 Now Only £399</b></p>	<p><b>NEW AND USED EQUIPMENT SALE.</b></p> <table border="1"> <tr> <th>KEYBOARDS</th> <th>£199</th> <th>£299</th> <th>£749</th> <th>£299</th> <th>£1099</th> <th>£349</th> <th>£1199</th> <th>£159</th> <th>£1499</th> <th>£899</th> <th>£699</th> <th>£399</th> <th>£699</th> <th>£499</th> <th>£299</th> <th>£279</th> <th>£199</th> <th>£699</th> <th>£299</th> <th>£799</th> <th>£1299</th> <th>£999</th> <th>£899</th> <th>£399</th> </tr> <tr> <td>Roland JX3P</td> <td>Ensoniq SQ1+</td> <td>Rhodes 660</td> <td>Yamaha V50</td> <td>Rhodes VK1000</td> <td>Tascam DA30</td> <td>Yamaha QY300</td> <td>Yamaha MT8X</td> <td>Kawai Q80</td> <td>Folio Rackpack</td> <td>Yamaha TG33</td> <td>Yamaha ML30</td> <td>Tascam Porta 07</td> <td>Yamaha MT50</td> <td>Yamaha QY700</td> <td>Tascam 488</td> <td>Yamaha TG33</td> <td>Yamaha ESJ 32</td> <td>Yamaha D50</td> <td>Yamaha D1RW</td> <td>Peavey DPM 3</td> <td>Yamaha DYN21</td> <td>Yamaha 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<td>Korg 01RW</td> <td>Yamaha QY300</td> <td>Tascam 464</td> <td>Yamaha QY700</td> <td>Yamaha MT8X</td> <td>Yamaha QY700</td> <td>Folio Rackpack</td> <td>Yamaha TG33</td> <td>Yamaha ML30</td> <td>Tascam Porta 07</td> <td>Yamaha MT50</td> <td>Yamaha QY700</td> <td>Tascam 488</td> <td>Yamaha TG33</td> <td>Yamaha ESJ 32</td> <td>Yamaha D50</td> <td>Yamaha D1RW</td> <td>Peavey DPM 3</td> <td>Yamaha DYN21</td> <td>Yamaha D1RW</td> <td>Yamaha D1RW</td> <td>Yamaha D1RW</td> <td>Yamaha D1RW</td> </tr> <tr> <td>Korg 01WFD</td> <td>Korg X5</td> <td>Tascam 464</td> <td>Korg X5</td> <td>Yamaha QY300</td> <td>Tascam 464</td> <td>Yamaha QY700</td> <td>Yamaha MT8X</td> <td>Yamaha QY700</td> <td>Folio Rackpack</td> <td>Yamaha TG33</td> <td>Yamaha ML30</td> <td>Tascam Porta 07</td> <td>Yamaha MT50</td> <td>Yamaha QY700</td> <td>Tascam 488</td> <td>Yamaha TG33</td> <td>Yamaha ESJ 32</td> <td>Yamaha D50</td> <td>Yamaha D1RW</td> <td>Peavey DPM 3</td> <td>Yamaha DYN21</td> <td>Yamaha D1RW</td> <td>Yamaha 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D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Orla C80 commander	Korg 05RW	SEQUENCERS	Korg 05RW	Yamaha QY300	Tascam 488	Kawai Q80	Yamaha MT8X	Yamaha QY700	Folio Rackpack	Yamaha TG33	Yamaha ML30	Tascam Porta 07	Yamaha MT50	Yamaha QY700	Tascam 488	Yamaha TG33	Yamaha ESJ 32	Yamaha D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Roland U20	Yamaha ML30	SAMPLERS	Yamaha ML30	Yamaha QY300	Tascam 488	Yamaha QY700	Yamaha MT8X	Yamaha QY700	Folio Rackpack	Yamaha TG33	Yamaha ML30	Tascam Porta 07	Yamaha MT50	Yamaha QY700	Tascam 488	Yamaha TG33	Yamaha ESJ 32	Yamaha D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha VL1	Emu Proteus1	SANSUI MR6	Yamaha V50	Yamaha QY300	Tascam 488	Yamaha QY700	Yamaha MT8X	Yamaha QY700	Folio Rackpack	Yamaha TG33	Yamaha ML30	Tascam Porta 07	Yamaha MT50	Yamaha QY700	Tascam 488	Yamaha TG33	Yamaha ESJ 32	Yamaha D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Roland XP50	Yamaha TG33	Tascam 464	Korg 01RW	Yamaha QY300	Tascam 464	Yamaha QY700	Yamaha MT8X	Yamaha QY700	Folio Rackpack	Yamaha TG33	Yamaha ML30	Tascam Porta 07	Yamaha MT50	Yamaha QY700	Tascam 488	Yamaha TG33	Yamaha ESJ 32	Yamaha D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha DX21	Kawai K4R	Tascam 464	Korg 01RW	Yamaha QY300	Tascam 464	Yamaha QY700	Yamaha MT8X	Yamaha QY700	Folio Rackpack	Yamaha TG33	Yamaha ML30	Tascam Porta 07	Yamaha MT50	Yamaha QY700	Tascam 488	Yamaha TG33	Yamaha ESJ 32	Yamaha D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Korg 01W Pro X	Emu Morphous	Tascam 464	Korg 01RW	Yamaha QY300	Tascam 464	Yamaha QY700	Yamaha MT8X	Yamaha QY700	Folio Rackpack	Yamaha TG33	Yamaha ML30	Tascam Porta 07	Yamaha MT50	Yamaha QY700	Tascam 488	Yamaha TG33	Yamaha ESJ 32	Yamaha D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Korg 01WFD	Korg X5	Tascam 464	Korg X5	Yamaha QY300	Tascam 464	Yamaha QY700	Yamaha MT8X	Yamaha QY700	Folio Rackpack	Yamaha TG33	Yamaha ML30	Tascam Porta 07	Yamaha MT50	Yamaha QY700	Tascam 488	Yamaha TG33	Yamaha ESJ 32	Yamaha D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha SY85	Korg X2	Tascam 464	Korg X2	Yamaha QY300	Tascam 464	Yamaha QY700	Yamaha MT8X	Yamaha QY700	Folio Rackpack	Yamaha TG33	Yamaha ML30	Tascam Porta 07	Yamaha MT50	Yamaha QY700	Tascam 488	Yamaha TG33	Yamaha ESJ 32	Yamaha D50	Yamaha D1RW	Peavey DPM 3	Yamaha DYN21	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW	Yamaha D1RW
KEYBOARDS	£199	£299	£749	£299	£1099	£349	£1199	£159	£1499	£899	£699	£399	£699	£499	£299	£279	£199	£699	£299	£799	£1299	£999	£899	£399																																																																																																																																																																																																																																													
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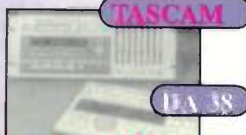
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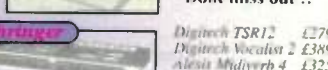
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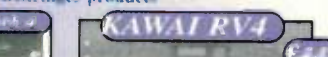
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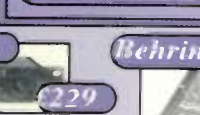
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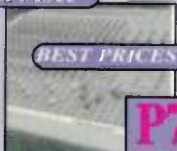
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**ROLAND S760** sampler, 10Mb RAM, plus 88Mb Syquest + 2 cartridges £1600; Quasimidi Technox £550;

Yamaha TG100 £190; Gem S3 Turbo workstation, flightcased £1400; Roland JX3P + PG200 £300. ☎ Ben 0973 330469.

**ROLAND MS1** sampler, sample CD, boxed as new £230. ☎ 01908 201980.

**ROLAND RGB to SCART** video lead, 2m suit sampler or hard disk recorder £25. ☎ 01753 675789.

**ROLAND S10** sampler, cased with disks £300; Korg Poly 61 £250; Roland SH101 £300; Roland TB303 £1500; Roland TR909 £1500; Teisco SX400 polysynth £250. ☎ Joe 01904 331582 evenings.

**ROLAND S50 V2**, flight case, col.our monitor, DT-100 Director-S software, over 200 disks, mint cond. Swap 088, OBXa Prophecy, Vintage Keys+ best cash offers W.H.Y? ☎ Plank! 0151 720 9151 24 hour (Manchester).

**ROLAND S50** sampling keyboard with TR808 disk £600; Yamaha QX1 hardware sequencer, 8 individual MIDI outputs £150. ☎ 01202 695869 (Dorset).

**YAMAHA SU10** sampler, as good as all the reviews say. Great possibilities, easy to use, absolute immaculate condition. Home use only £195. ☎ 01384 483990 evenings.

## COMPUTERS & SOFTWARE

**AMIGA 500** plus joystick, mouse, games £90; Atari STE 1Mb upgrade SIMMs £10. ☎ Dan 01273 697572.

**AMSTRAD PC** 8Mb, 250Mb HD, CDROM, P63 Processor plus loads of software £420. Still under guarantee. ☎ 01925 291805 GED or £480 inc Yamaha TBX3 module.

**ATARI STFM** upgraded to 4Mb, recently serviced. 5 month old Data Systems 14" HiRes mono monitor (suitable for Cubase etc). Mouse, various software £200. ☎ 0181 998 5325 (Ealing).

**ATARI ST** with XtraRAM Deluxe (1Mb) colour and mono monitors. Stereo Replay, Quartet, Midi Studio Master, plus more — 60+ mags, 100s of disks, serious programs and games. ☎ 01480 406415.

**ATARI FALCON** 14Mb RAM, 350Mb IDE H/D £799; Cubase Audio 16 £499; FDI Digital Interface £150; External SCSI 540Mb H/D £199; The lot for £1499. ☎ 01702 616961.

**ATARI 1040 STE** 2Mb, 14" HiRes monitor, Cubase, NVDI/TOS2 £350; Gastner 540Mb external hard drive £260; Translator DMA to SCSI lead + software £70; 2x1Mb SIMMs £20 each; 4x256K SIMMs £10 each. All as new, manuals. ☎ Dave 0181 902 9784 (N.W. London).

**ATARI ST** sequencing, complete setup, 1Mb memory, high resolution monitor, leads, mouse etc. Excellent condition, unmarked £210 ono. Also Yamaha SY22 vector synth — offers or swap ☎ 01884 257487.

**ATARI 4MB** 1Mb ext drive, 40Mb hard drive, SM125 B/W, 8833 colour monitor, MIDITrack seq, EZ Score writer, regd with manuals plus W/Ps etc, some games £370. ☎ 0181 289 5874.

**ATARI 1040STE** with 2Mb greyscale monitor, Steinberg Pro24, mouse, joystick, games, rarely used — pristine condition £220 ono. ☎ Dave 01734 790122 (Wokingham).

**ATARI MEGA 4 ST** with SM144 14" mono monitor, 500Mb hard drive, Digidesign Sound Tools system, boxed, manuals. Excellent condition, genuine reason for sale £775 ono. ☎ Matt 01629 636572 evenings.

**ATARI 1040STE** with Hi-Res mono monitor £200; Amiga A1200 10Mb RAM; MPX1200 25MHz co-processor including Bars & Pipes Professional, 80Mb IDE hard drive, colour monitor & software £500. ☎ Ben 0973 330469.

**ATARI MIDIPORT** expander, gives 32 MIDI channels, comes with Cubase drivers, £20 (includes postage and free MIDI tester). ☎ 0141 638 6687.

**BAND IN A BOX** v6 PC £35; Music Quest Midi Engine Note 1 PC interface £45, Opcode Translator II (Mac) £40;

Cakewalk v5 £20. All unused. ☎ Steve 01733 62517.

**CARD D** Digital soundcard for PC — enables direct digital recording and mastering £295. Digicon SCMS stripper £75. Cambridge Audio digital to analogue converter £100. ☎ Phil 01923 236502.

**CUBASE PC v3.1** Audio upgrade, upgrades from v1.2 up to Audio £35. SAW v5.1 and FX Rack £50ish. PC clearout!!! Cakewalk Pro Audio £50ish. ☎ Paul 01302 876718 (6pm).

**CUBASE v3** (Atari), NVDI/TOS2 includes dongle and manuals £240; Steinberg SMP11 pro MIDI/SMPTE interface, includes software £400; Steinberg ACI ADAT Sync Box £250;

Wanted: PC music/editing software. ☎ Dave 0181 902 9784 (N.W. London).

**CUBASE SCORE II** for Mac, all manuals and master disk with two installs, latest update. Can be re-registered with Steinberg £250. ☎ 0181 800 2221.

**CUBASIS** PC version of Cubase. As new, unwanted gift. £115 ☎ Dave 01933 270 930.

**DIGIDESIGN SAMPLECELL II** card for NuBus Apple Macintosh, 8Mb RAM plus 3 CD-ROMs. Perfect condition, with software £599. ☎ 01494 671681 (West London).

**DIGIDESIGN HARD DISK** recording system, including computer £595; DAC R4000II 99Mb Syquest drive with 6 cards £295. ☎ Chris 01563 533965 (Glasgow area).

**EMAGIC LOGIC AUDIO v2.5** (Mac), new, £295 ono. ☎ 0181 348 8093.

**OPCODE STUDIO 4** interface £310; Galaxy Plus editors £175; Folio RAT PAC Mixer £650; Roland Octapad II £350; SoundEdit 16Mac £150; Band In A Box £50. All ono. ☎ Steve 0181 3010777.

**PRO TOOLS III** £4250; 882 I/O £550; Lexicon Nuverb with TDM board £1100; 2Gb AV-Drive £400, all perfect 9 months old. ☎ Andy 0121 605 6082.

**QUADRA 800** 24Mb RAM, 21" screen, loads of extras £1400 ono. ☎ Andy 0121 605 6082.

## SEQUENCERS

**AKAI ASQ10** professional sequencer, excellent for home or live use, with manuals, bargain at £400; Emu Proteus 1 £250; Roland RS drum machine £170. ☎ Eddie 0181 643 6401.

**ALESIS MMT8** stand-alone sequencer, as used by Orbital etc. Good condition £90. ☎ Mark 0114 2678109.

**ROLAND MC60 MKII** as new, boxed with manuals, immaculate condition £400 ono. ☎ Mike 01367 240799.

**ROLAND MV30** workstation, 16 channels, slider controls, pan/volume, 126 editable sounds on board, MIDI in/out/thru, 2 PCM card slots, tape sync, excellent condition, manuals, box £300 ono. ☎ 01908 322690.

**ROLAND MSQ700** sequencer, also acts as MIDI to DIN sync converter, needs slight attention, hence bargain £40. ☎ 01904 793464 Joe.

**YAMAHA QY20** workstation, MIDI sequencer + sound module c/w extra manuals, boxed, as new £250 (battery inc). ☎ 01279 332997 or 0468 647432 (mobile).

## DRUM MACHINES

**AKAI XE8** drum expander, 1 card, manual £90 ono. ☎ 01553 631253.

**DR660** immaculate, boxed, manual, PSU, great sounds. 808/909 just the best 255 editable sounds, rev/chorus, delay/flanger FX, £180 student. ☎ Darren, Room 0006, Broad Hall Ktch 36, Bishops Rise, Hatfield AL10 9BT.

**EMU SP12 TURBO** sampling drum machine, 8 assignable outputs, excellent real-time editing, manuals, external disk drive with library, classic hip-hop machine £700. ☎ Ian 01432 266752 (Hereford).

**MXR DRUM COMPUTER**, individual outputs and faders £60; Elka Capri 101

organ with rhythms £60. ☎ 0171 221 4223 Milo.

**ROLAND R5** drum machine, mint condition, boxed with manuals and PSU, home use only, many editable features £100. ☎ 01803 855713.

**ROLAND TR808** and manual, excellent condition £395. Drawmer 221 compressor £150. ☎ Roger 01223 511651 (Camps).

**SEQUENTIAL DRUMTRAX** individual outputs, tunable/velocity sensitive sounds, excellent condition with manuals, very funky sounds £175. ☎ Ian 01432 266752 (Hereford).

## MISCELLANEOUS

**AMPEX 456** unopened reel of 1 inch tape £30. ☎ 01323 640067.

**ANATEK POCKET FILTER** mint condition £30. ☎ 01535 645233.

**BOSE PA 802s**, stands, controller. Carver 1200 AMP (600 watts) per channel. Soundcraft Spirit Folio mixer. Shure Mics. Boom stands. All cables. Everything you need (full test certificate) £3200. ☎ 01535 645233.

**CHROMATIC HARMONICA** "The Larry Adler". Perfect condition, cased, unwanted gift £60. ☎ Steve 0171 511 1901.

**HH 100W** instrument amplifier plus two 2x12 cabinets £150. ☎ 01594 643418 (West Glos).

**KENTON PRO 2** excellent condition with manual £120; SH101 Mod grip (red) £80; Roland M64C £50. ☎ 0141 638 6687.

**NOTATOR LOGIC PC USER** Professional musician/user interested in contacting other users with experience of program (changed from Notator SL), Ashted, Surrey area. ☎ David 01372 275293.

**SCMS STRIPPER** by Digicon + optical cable £75. EVS1 synth module, boxed as new £75. ☎ Paul 01253 358524.

**SOUNDCRAFT SPIRIT FOLIO 12.2** rack mount £200; Ramsa AZ00E speakers £495 the pair. Beyer handheld radio mic £200; Shure lapel radio mic £190. ☎ Martin 015242 41619.

**VALHALLA ROM** Top 49 ROM for D5, D10, D20, £20; Kawai K4 MasterRAM collection, Vol 1 disk for Atari ST in original package £10; Korg P3 Piano, boxed, unwanted £80. ☎ 0115 972 8799.

**VIOLECTRA ELECTRIC VIOLIN** five string, as used by Jean-Luc Ponty, amazing sound. Sea-blue sunburst body, absolutely as new. High quality blue bow included £1800. ☎ 01233 838875.

## PERSONNEL

**ATMOSPHERIC** melodic and well produced instrumental tracks wanted for commercial release and possible TV projects. All tapes listened to, SAE for return: Dream Machine, PO Box 84, Waterlooville, Hants PO8 0FX.

**CHRISTIAN ENGINEER/PROGRAMMER** wanted for new digital recording studio in Bristol, dealing with both live and sequenced material. Experience not necessary. ☎ Dave or Patrick 0117 9246790.

**DAZED SAX** and clarinet fancies Jazz/Blues vehicle, got jams and gigs etc. Beds/Bucks. ☎ Dave 01234 711468.

**ENHANCER/PROGRAMMER** seeks studio work in UK. HND in Music Technology and electronics. FX treatments a speciality. Experience of hard disk recording and MIDI, very committed, very hard working. ☎ 01488 658338.

**ESI-32 SYNTH SOUNDS** volume 1. 8Mb library of analogue and digital waveforms, 100+ presets, pads, basses and drums £30. ☎ Roy, Mon-Fri, 8-11pm. Sat — Sun anytime 01843 845057.

**MALE VOCALIST** available for pop/dance projects, influences D:ream, Secret Life, Tyrell Corp, EB7G. ☎ Roger 01782 412275 (Stoke on Trent).

**PERCUSSIONIST** with analogue drums and trigger pads available for gigs and sessions. Also knowledgeable about Cubase, synth editing, and video production. ☎ Steve 0171 511 1901.

**SUCCESSFUL DANCE LABEL** with international distribution seeks trance, techno, house and left-field tracks. Demo + info to: Truly Tasty, 20 Pennies Court, Aberdeen AB11 6NZ.

**TALENTED PROGRAMMER** into Drexyia, electro, hard funk, acid house, looking to work with others — I have studio. Need help on arrangements, must be ambitious and already making trax. ☎ 0113 2637898.

**THE BEST SEMI-SKILLED SOUND ENGINEER** in town, from SAE, is looking for studio work, full or part-time in London area. ☎ Steve 0956 101242 or 0181 368 5939.

## WANTED

**ANALOGUE GEAR** required — TR606, TR707, TR727 £75 each; SH101, MC202, Wasp £150 each; TR808 £300; TB303 £425; OSCar, Jupiter 6 £500; TR909, Jupiter 8 £600. ☎ Kevin 01353 663613 evenings/weekends.

**BOSS SE70** cash waiting; Juno 60; SH101; SH09 for sale. ☎ Paul 0151 492 1100.

**CASIO DA7** DAT machine, must be in perfect working order, willing to pay up to £300. ☎ 0115 985 6877.

**CASIO RZ1** drum machine, preferably with manual; Boss SE50/SE70 effects; Zoom 1202 effects, cash waiting. ☎ Rob 0113 230 4792 (Leeds).

**16/24 CHANNEL MIXING DESK** preferably in-line with MIDI mouting; £800 cash waiting. ☎ 01908 606939.

**CUBASE AUDIO 16 FALCON** willing to pay £360; any other software for Atari Falcon considered. ☎ 0115 985 6877 with details.

**DIGIDESIGN AUDIOMEDIA II** or Session 8 system for Mac. Also wanted: 17" colour monitor and Apple CD-ROM player. Cash waiting for best offer. ☎ Andy 01633 613342.

**DR.T's KCS LEVEL II v3**. 5 for Amiga 1200, original with manuals preferred, but photocopy OK if at night price. For sale: Yamaha YS100; Korg Poly 800 immaculate — offers? ☎ 0181 312 4188.

**EMAX I/II WANTED**, must be in good condition, will pay £450 for Emax 1 or £650 for Emax II. ☎ 01274 564301.

**EMS SYNTH** wanted. ☎ 01726 66715.

**JD800 SOUND CARDS** or Atari disks. ☎ 0171 625 4398.

**KORG 800DV** must be good condition, cash waiting. ☎ 01274 878626.

**KORG i3** keyboard — no silly prices please — cash waiting. ☎ 01726 824354.

**KURZWEIL MICRO PIANO** must be in good condition with manuals. Cash waiting for best offer. ☎ Andy 01633 613342.

**MIDI IMPLEMENTATION DATA** for Alesis SR16 wanted. ☎ 01902 663191.

**MONO SYNTH** or modular synth wanted, would consider kit-built, even if not completed or faulty, also Roland TR606 drum machine or similar. ☎ 01726 66715.

**RACKMOUNT MIXER** wanted, eg. Tascam MM1; Soundcraft RackPack etc. ☎ 01482 448767.

**REMOTE FOR TASCAM MS-16** wanted. ☎ 01600 713403.

**ROLAND SDE2000** will pay £200, also Roland SDE3000 will pay £200, cash waiting. ☎ Ian 01322 409106 (Dartford).

**WANTED:** Roland SH101, SH09 and Roland TB303. Also Deep Bass Nine. ☎ 01444 871260 after 7pm. Before 7pm, please leave message.

**STUDIO EQUIPMENT** Roland MC202; SH101; TB303; TR909; JD800; J106; Akai sampler; Emu; Korg; Sequential; Moog instruments. Anything considered. Cash waiting. NO dealers/inflated prices. ☎ 01252 735025.



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Manzer PMD121 £511.13	Tascam 112MK2 £599
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Digitech RPS £299	Marshall 2408 £169
Egyptian Las Paul £1499	Richardson £1179
Fender SR12 Cab £149	Richardson 360 £269
Fender Jnr Strat £199	Roland G10P £699
Fender USA Strat £799	Roland GP100 £799
Fender USA Strat £599	Squire LSG 15W AMP £799
Gibson ES335 £1499	Squire Pro-Bass £199
Gibson LP Classic £149	Squire Strat £1129
Gibson LP EB £1099	Traut Road 1212 Combo £449
Gibson LP Semi £1899	Yamaha diversity sys £99

### P. A.

#### ELECTRO VOICE

300 watts

The latest incarnation of the classic 300 watt PA range, the EVO300 RMS power handling in an available compact design. 1 x 12" woofer plus wide dispersion horn. Makes an ideal portable system. Limited stocks available (bundled with Powermaster £2149).

RRP £1,099  
**£POA**  
NEW BOXED

### SPIRIT

Powerstation PA mixer

RRP £1,299  
**£849**

Another winner from Soundcraft, their first entry into the powered mixer market is sure to be a success. Based around the well-known Folio 12, and also featuring a 2x300w amplifier, dual 7 band graphic and a built-in Lexicon ALEX! Check out these amazing package deals:

Powerstation + 2 x JBL HR825 £1599  
Powerstation + 2 x Peavey H552 £1549  
Powerstation + 2 x Electrovoice S200X £1949  
Powerstation + 2 x JBL P130 £1849  
Powerstation + 2 x Bose 902 £2149  
Add 4 SM58A + stands, spillover stands and cables for £499

**0171 - 497 5737**

### NEW, USED & EX DEMO

RRP £1,189  
**£1189**  
NEW BOXED

RRP £1,099  
**£1589**  
NEW BOXED

### FOLIO SX

Multitrack recording

BRAND NEW DESIGN

RRP £599  
**£599**  
NEW BOXED

Brand new mixer from the superb Soundcraft Spirit range - call for details.

### SEE THE REST OF OUR AD ON PAGES 28 - 36

**D. J.**

**KAM GM50**  
Sampling D2 mixer

SPECIAL OFFER

End of line clearance deal brings you this digital sampling mixer at an unbelievable price. Features include 2 line inputs, 2 phone inputs, 16LR mix stage with auto-ducking, 16LR mix stage with auto-ducking, 16LR mix stage with auto-ducking, 16LR mix stage with auto-ducking. Main channel features 110 mix, 16LR mix stage with auto-ducking, 16LR mix stage with auto-ducking. Order by 10 LED meters. Starter pack with 2x KAM DDX38 direct drive disks, stereo effects and more. £449

RRP £1,229  
**£99**  
NEW BOXED

### Multitracks

#### EMU

INC. 1616

RRP £3,199  
**£3199**  
INC. 1616 HD

8-track 16-bit/19.2kHz random access recorder (the features logarithmic MIDI Machine Control and MIDI Time Code SPOIF as standard as well as 4 in, 0 out balanced connectors. Options include ADAT digital interface, SCSI port for computer hook-up, sync card for additional units, 4 extra analog ins etc.

### SONY

PRO 8 TRK DIGITAL

The definitive computer in 8 track digital recording. The Sony PCM80 is based on Tascam's DAWB but has the added advantages of balanced XLR connectors and AES/EBU. Buying power makes our offer cheaper than the DAWB. Limited quantities only available at this price. Buy now before stocks are exhausted!

RRP £3,299  
**£3299**  
NEW BOXED

**XRI SYSTEMS**  
XR300 EXCLUSIVE

Living the symphony of digital in your studio, we've made it happen. You see, this industry standard unit is an unheard-of price. Features include true SMPTE at all standard rates, MIDI clocks, 16 Sampling Pointers or 16LR compatibility with all MIDI sequencers. Large LCD is backlit. Merged MIDI into, Straight forward operating system. Full 19" rack unit.

RRP £209  
**£159**  
NEW BOXED

### AKAI

INC 1616

RRP £3,699  
**£3699**  
INC. 1616 HD

First there was the DR4, then the DR8, and now Akai bring you 16 tracks of non-mono/mixing hard disk recording in a single box! 8 inputs and 16 individual outputs are provided making it perfectly suited for full blown multitrack recording. Amongst the options available is a video output board of all the tracks, which makes editing a breeze. Buy now from Turnkey and we will include a free 1 gig hard disk!

### UNDER HALF PRICE

RRP £779  
**£249**  
NEW BOXED

This has to be the best value mixer on the market! Based on DC1000 it is a fully MIDI controllable instrument mixer with 8 stereo inputs, 2 aux sends, 2 band EQ, 4 stereo ins and level. An additional 2 stereo ins with summing and a master interlocking input give a maximum of 22 inputs. The stereo mix is incredible value for money, but the MixTab also gives hardwire control of any function of the mixer via MIDI. The MixTab can store up to 100 snapshots of all the parameters of the mixer, and multi-color LEDs allow setting of all the hard-ware controls to the current position. MIDI output from the system can be recorded into any sequencer giving totally automatic mixing and recall - come back to exactly the same mix weeks later! Cubase and Logic maps also available. Under half price (Total RRP £779). Very limited quantities - last units ever!

### TECHNICS

SL 1200 MK2 £1219

MEGA DEAL

RRP £529  
**£349**  
INC CART

Still the club standard after many years, SL1200s are still going strong. This incredibly low price includes a free Stanton cartridge. Package deals available with many more great offers to inquire.

### DIGITAL

LARGE STOCK

RRP £2195  
**£2195**  
NEW BOXED

We will not be beaten on price and service. Alesis, PreSonus, Tascam, Sony and Akai all in stock and on demonstration.

### YAMAHA MD4 MIDIDISC

4 MIXER INPUTS & 2 SUB INPUTS

RRP £899  
**£899**  
INC. FREE 4 TRACK PACK

Whilst good results can be got from a modern 4 track cassette there's no comparison between that and Yamaha's new digital multitrack. The MD4 combines the clarity of digital recording with the convenience of almost immediate access to any part of the song (no rewind or fast-forward) if you're tired computer based hard-disk recording and found it too complex, you'll be delighted by the straight-forward controls of the MD4. It's really just like using a tape recorder, but without the limitations.

### Mics

RRP £399  
**£299**  
NEW BOXED

**AKG C3000**  
Large Diaphragm Condenser

RRP £399  
**£299**  
NEW BOXED

The C3000 uses all of AKG's experience in building large diaphragm mics such as the C12 and C414, but by using modern manufacturing techniques, and only offering low impedance (cardioid and hyper-cardioid), the price has been kept to a minimum. Its open sound and superb frequency response make it ideal for vocals, as well as capturing grand on a variety of other instruments.

### ATM4033

EXCLUSIVE TASCAM PARTNER

RRP £779  
**£499**  
NEW BOXED

For the first time ever, Tascam has teamed up with AKG to bring you the ATM4033. This was one of the secrets of the Audio Technica ATM4033. For the first time ever, it offered superb sound quality - sparkling mids and economic pricing, and all the usual features you would expect from the best of them. Now Tascam have secured a quantity of 14 units at a price that is an unbelievable price, which you includes the studio microphone. If you're in the market for a serious microphone, you won't afford to pass this one by! This price is available on current stocks only.

### SHURE

EUROPE'S LOWEST PRICE

RRP £169  
**£99**  
NEW BOXED

Shure's SP58 has been the industry standard microphone for as many years as it can remember, and now today it's still a great buy. Robust enough to withstand countless live gigs, versatile enough for a wide range of studio uses, the yardstick by which all other mics are judged. Now at an unrepeatable price.

### NEW, USED & EX DEMO

Fostex 3805 £799	Tascam GMH2 £399
Fostex DM18 £1199	Tascam 464 £699
Fostex XR3 £225	Tascam 48MKII £899
Fostex XR5 £299	Tascam Porta-03 £165
Fostex XR7 £150	Tascam Porta-07 £289
Roland VS4F1 £340	Yamaha MTX4 £379
Tascam 424 £379	Yamaha MT50 £379
Tascam 424 mk2 £399	Yamaha MTBX £699

RRP £899  
**£899**  
INC. FREE 4 TRACK PACK

### NEW, USED & EX DEMO

AKG B 45 £52.88	AKG C407B £775
AKG C 407P £1175	AKG C407P £1175
AKG C12VR £3523.83	AKG C408B £1163.33
AKG C3000 £249	AKG C408PP £158.63
AKG C401B £78.36	AKG C409B £135.13
AKG C401PP £111.63	AKG C409PP £158.63
AKG C402B £92.83	AKG C410B £175
AKG C402PP £116.33	AKG C410PP £223.83

### NEW, USED & EX DEMO

AKG C414BULS £1115	£880.08
AKG C747 £445.33	AKG WMS100PT £938.83
AKG C911 £175	AKG WMS100TB £938.83
AKG D112 £217.38	AKG WMS100TQ £938.83
AKG D130 £133.95	AKG WMS100TP £938.83
AKG D3700 £123.33	AKG WMS100TP £938.83
AKG D705 £57.58	AKG WMS50 £149
AKG SE300B £175	AKG WMS55 £198.33
AKG WMS100TCY £880.08	AKG WMS5H £457.08
AKG WMS100HTV £880.08	AKG WMS5P £453.575
AKG WMS100HTV £880.08	Audiotech AT4033 £399

### TURKEY SPECIAL

RRP £699  
**£499**  
NEW BOXED

RRP £529  
**£349**  
INC CART

### INDUSTRY STANDARD

RRP £169  
**£99**  
NEW BOXED

Audiotech ATM11 £79	Audiotech UEM B1 £5
Audiotech ProHEB £112.92	Behringer M88TG £351.33
Audiotech M81000 £35	Behringer MC740 £1173.83
AUDIX C1 £29	Behringer MC814 £283.33
AUDIX CD74 £19	Behringer S1584 £169
AUDIX OH2 £99	DB tech VDI receiver £149
AUDIX SCX 1 £129	Groove MD1 £99
AUDIX ST 2 £86	Groove MD2 £169
AUDIX UD360 £39	Groove MD3 £169
	NADY 201 £149



# Anatek Pocket Products to

At *SOS*, we have regularly found ourselves referring readers to one or other of the Anatek Pocket range of MIDI accessories to solve their all too common MIDI interconnection and transmission problems. Trouble was, Pocket Products were previously hard to find... until now!

## POCKET SYNC

- 'Smart' FSK Tape-to-MIDI synchroniser • Starts anywhere in song • MIDI In to Out merging • Automatic read/write switching • 'Jam Sync' protects against tape dropouts • Records tempo changes • MIDI and FSK status LEDs

POCKET SYNC is the way to expand the capabilities of any multitrack studio. No longer is it necessary to allocate more than one tape track for sequenced parts. Now, shuttling to different points in the song is quick and effortless. POCKET SYNC writes a special FSK sync tone on one track of tape that is converted to MIDI Clock and Song Position Pointer on playback. Merging of data from the MIDI input to the output allows new sequencer tracks to be added while remaining synchronised to tape.

Automatic switching between write (recording FSK) and read (playback FSK) cuts down on confusing switches and buttons. Tape oxide dropouts are no longer a problem with POCKET SYNC's variable dropout protection. The sequencer can continue playing over a dropout for a short time, even if FSK code is completely lost!

Order Code: PP003

£69 inc VAT.

Postage: UK £2.50 Europe £4.95 ROW £8.95

## POCKET MAC

- Economical Macintosh MIDI interface • No external power supply required • 1 MIDI In, 2 MIDI Outs • LEDs indicate MIDI In/Out data • Uses serial or modem port • High speed CMOS design • Improves signal to minimise data errors.

POCKET MAC opens up a whole new world of MIDI programs for the Macintosh computer user. With many Macintosh programs simultaneously supporting both the serial port and the modem port, one POCKET MAC could be connected to each allowing access to twice as many MIDI devices.

Order Code: PP004

£39 inc VAT.

Postage: UK £2.50 Europe £4.95 ROW £8.95

## POCKET CURVE

- Modifies MIDI velocity response • Controls keyboard sensitivity • 6 tapered curves • 6 velocity increase curves • 6 velocity decrease curves • 6 constant levels • Special DX7 velocity curve

POCKET CURVE is a necessity for master keyboards that require velocity scaling control. With it, a keyboard's response to harder or softer playing styles can be modified to suit the player and their MIDI setup. DX7 owners can especially benefit from POCKET CURVE! A special curve is available to boost the DX7's low velocity output, so that missing dynamic potential can be recovered. Use POCKET CURVE to allow a lighter touch during performance on a heavily weighted keyboard controller. For ease of programming, a quick reference to the many curve possibilities is permanently printed on the sides of the unit.

Order Code: PP005

£69 inc VAT.

Postage: UK £2.50 Europe £4.95 ROW £8.95

## LONG DISTANCE MIDI

- Enables extra-long MIDI cable runs • Easy to connect to existing 3 conductor wiring • 4,000 feet capability • Balanced XLR connectors • Dual transceivers allow 2-way MIDI communication • Handy data input and output LEDs confirm presence of MIDI signal

The problem with MIDI is that you are likely to encounter data errors when running more than 50 feet of MIDI cable. These can be embarrassing errors such as hung notes, mysterious program changes or worse in the middle of a performance.

The cost-effective solution is MIDIMATCH by Anatek. Two identical units convert MIDI data to balanced signals that can be transmitted through up to 4,000 feet of

- Remaps MIDI controllers • Maps Pitch Bend to Aftertouch • 'Set and forget' programming • Supports 15 controllers • Allows unconventional routings • Updates older keyboards.

POCKET MAPPER allows modulation routings to be customised to suit a particular need. Controller data such as Pitch Bend, Aftertouch, Breath Control and others is received and can be retransmitted as a different controller. For instance, DX7 Breath Control modulation can be rerouted to MIDI Volume to modulate synths that do not accept Breath Control. POCKET MAPPER is the most convenient and cost effective way of rerouting MIDI modulation. Now, MIDI wind instruments can remap mouthpiece Breath Control to Aftertouch quickly and easily.

Order Code: PP006

£69 inc VAT.

Postage: UK £2.50 Europe £4.95 ROW £8.95

## POCKET MERGE

- Merges 2 MIDI signals into 1 • Handles System Exclusive • Merges on all 16 MIDI channels • Merges Clock and MIDI Time Code • Merges all controllers • Handles large volumes of data • Stackable for 3 or more inputs

POCKET MERGE is an essential tool for sequencing or live use. Operating as a 2-In, 1-Out MIDI Merger, several Pocket Merges can be stacked to merge more than 2 inputs. Now any controller can be a 'master'. In live setups, POCKET MERGE allows any two controllers (keyboard, drum pads, guitar synth, etc) to share a sampler or sound module. Use one keyboard as a master, while using a favourite pitch bender from another, or combine two keyboards for a multi-tiered, organ-style controller. In the studio, POCKET MERGE is a must for sample dump editors, allowing a keyboard and a computer to be connected to the sampler at the same time. POCKET MERGE handles data very quickly, making buffer overflows a thing of the past.

Order Code: PP007

£59 inc VAT.

Postage: UK £2.50 Europe £4.95 ROW £8.95

## POCKET FILTER

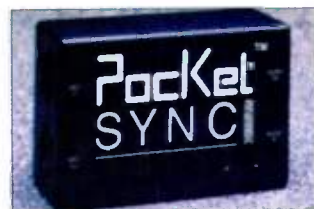
- Filter on all MIDI channels • Filter controllers, System Exclusive and real-time data • Combine data types/channels • DIP switch selectable filtering • Select channel from any keyboard • Filter all data on selected channels

POCKET FILTER is a vital tool for problematic setups. With MIDI data becoming increasingly complex, POCKET FILTER can unclog the MIDI data stream, sending only the most useful info. Use it to remove unwanted clock messages or System Exclusive data or memory-intensive aftertouch and controller information. POCKET FILTER frees-up unused MIDI Channels from multitimbral synths, making them available for other modules. In addition, it can be used to channelise older synths that only receive in Omni mode.

Order Code: PP008

£69 inc VAT.

Postage: UK £2.50 Europe £4.95 ROW £8.95





# solve your MIDI headaches!



## USE YOUR YAMAHA BREATH CONTROLLER WITH NEARLY ANY MIDI SYNTH!

Anatek's WIND MACHINE and your Yamaha BCI or BC2 Breath Controller (not provided) will add woodwind-like expression to keyboard performances. Brass patches can punctuate or pad according to your whim, not to some pre-programmed attack setting. Sax solos will turn heads with their authenticity. And layered string sounds can fade in precisely where they're needed, while your hands and feet are free to control wheels and pedals. (Will not work with Yamaha WX7/11.)

Compatible with everything, WIND MACHINE interfaces to Korg, Roland, Yamaha, Ensoniq and the rest! No longer are you forced to use your Yamaha breath controller with only one brand of MIDI synth. Any MIDI keyboard that will respond to MIDI Volume, Aftertouch, Modulation, Breath Control, Pitch Bend, Expression, Foot Controller, or Pan can be controlled via your breath controller and WIND MACHINE.

Blowing into a mouthpiece is the most natural way to enhance keyboard performance. Wind instruments have been designed around this principle for centuries. Alone, keyboard Aftertouch isn't as effective because when you release the keys, the effect goes away. Modulation and Pitch wheels alone aren't as effective because they don't allow you to play chords. But when combined with WIND MACHINE, all of these can be used to create vastly improved expression capability.

A flexible input/output configuration means that WIND MACHINE can fit seamlessly into any setup. The simplest way is to use it to send control signals to the MIDI In of a keyboard synthesizer. If the MIDI setup involves a master keyboard and external modules, WIND MACHINE can combine incoming signals from the master with its control signals and then pass them on to a sequencer or sound modules. WIND MACHINE can transmit the most popular



control parameters to keep it simple. Most MIDI keyboards respond to Modulation, Aftertouch or Volume so you won't have any problem finding one compatible with your synth. Any one of the 16 MIDI channels can be selected as well. All control parameters are set by switches on the lid that retain settings even when power is disconnected.

Order Code: PP002 **£85 inc VAT.**  
Postage: UK £2.50 Europe £4.95 ROW £8.95

### POCKET PEDAL

- Sends on multiple MIDI channels • Supports 1 continuous controller • Supports 1 momentary footswitch • Sends pitch-bend, modulation, portamento time, and MIDI Volume • Sends sustain, portamento on/off, sustenuto, and start/stop • Auto pedal/footswitch calibration • Forward/Reverse pedal operation • 3 mode pitch-bend operation • Combine data types

POCKET PEDAL is an indispensable controller for the performing musician. Use it with an ordinary volume pedal and footswitch to send MIDI volume, modulation, and sustain controls on all 16 MIDI channels simultaneously. For owners of multi-effects processors, POCKET PEDAL provides a convenient cost-effective way of providing dynamic control over effects parameters. It is also a handy controller for automated mixdowns, converting any resistive input into MIDI Controller messages for VCAs. Connect a photocell to POCKET PEDAL and control MIDI parameters with a light source!

Order Code: PP009 **£69 inc VAT.**  
Postage: UK £2.50 Europe £4.95 ROW £8.95

### POWER PACK

- 'Phantom' powers all Pocket Products • Functions in-line with MIDI signal • Powered by most AC adaptors • Automatic polarity switching • Fully regulated supply • Passes all MIDI data • Alleviates hook-up problems • Boosts MIDI signal

POWER PACK provides power to Pocket Products in instances where upstream devices from other manufacturers have neglected to meet MIDI specifications, or in any instance where power is unavailable. POWER PACK can be placed anywhere in the MIDI chain and accepts power from a standard AC adaptor (not included). It provides additional power when more than 4 Pocket Products are used in a row or allows POCKET PEDAL and POCKET FILTER to retain their channel settings when the master device is turned off. What's more, POWER PACK can be used to boost the MIDI signal and extend the maximum distance between two devices.

Order Code: PP012 **£29 inc VAT.**  
Postage: UK £2.50 Europe £4.95 ROW £8.95

### POCKET SPLIT

- 8-Zone Keyboard Splitter • Range from 1 to 127 notes • Fixed boundaries • MIDI Channel/Zone assignment • Footswitch controllable • Floating split point

POCKET SPLIT is an 8-zone keyboard splitter. Each zone has its own MIDI Channel, and has a range of 1 to 127 keys wide. Zone boundaries can be set for hard or soft (overlap or splits). Use POCKET SPLIT to maximise the performance of your master keyboard, or create interesting performance possibilities with your guitar controller. An added feature is an 'intelligent' 2-way floating split that automatically tracks the keyboard player's left and right hands. Now any MIDI device can have the features of a sophisticated MIDI controller at a fraction of the cost!

Order Code: PP013 **£69 inc VAT.**  
Postage: UK £2.50 Europe £4.95 ROW £8.95

### POCKET TRANSPOSE

- In-line 16 Channel transposer • +/- 5 Octave transpose range • Switch between normal and transposed modes • Separate intervals for each channel • Transpose key signature and octave simultaneously • All non-transposed MIDI data is passed • Harmonisation mode • Footswitch controllable.

POCKET TRANSPOSE is a performance-orientated transposer that supports separate transpose intervals for each MIDI channel. Although many keyboards have a transpose function, it's usually too cumbersome for live use. POCKET TRANSPOSE makes transposing easy. Intervals can be set while playing, and the user can select the normal or the transposed setting from a footswitch. Guitar synth players can use the POCKET TRANSPOSE to set intervals on 6 separate MIDI channels, or use it to transpose all strings by a certain amount. POCKET TRANSPOSE provides an easy way to try different arrangements without altering sequencer data. You can even set it so that the drum machine channel remains intact.

Order Code: PP011 **£69 inc VAT.**  
Postage: UK £2.50 Europe £4.95 ROW £8.95

### POCKET CHANNEL

- Remaps Receive channel • Remaps Transmit channel • Sends multiple MIDI channels • Velocity-switch mode • Footswitch controllable

POCKET CHANNEL takes data from any MIDI channel and remaps it on to one, several, or all 16 MIDI channels. Up to 16 different channel assignments are possible. A unique velocity-switch feature allows automatic switching between two different sound modules depending on the key velocity. Use POCKET CHANNEL to organise channel assignments for a multitimbral sound module, or send a controller's output to two or more MIDI channels. With POCKET CHANNEL, for example, two drum machines or two samplers can share the same note assignments and be set to two separate MIDI channels.

Order Code: PP014 **£69 inc VAT.**  
Postage: UK £2.50 Europe £4.95 ROW £8.95

### POCKET THRU

- 1-In, 3-Out MIDI Thru box • High-speed CMOS design • Very low power requirements • Buffered outputs clean up data • Handles all MIDI data • Stackable for more outputs

POCKET THRU is an essential building block for any MIDI setup and an excellent companion product for all Pocket Products. POCKET THRU provides 3 buffered outputs from a single MIDI input. Use POCKET THRU to minimise MIDI delays, or expand the outputs of a POCKET MERGE unit. POCKET THRU also allows POCKET FILTER to be placed anywhere in the MIDI chain, when using it to channelise older synths. Up to 4 POCKET THRU's can be combined to provide a total of 9 outputs.

Order Code: PP010 **£35 inc VAT.**  
Postage: UK £2.50 Europe £4.95 ROW £8.95

ABOUT POCKET PRODUCTS

Pocket Products are handy MIDI accessories designed to solve the problems arising from incompatibilities between MIDI products from different manufacturers. Compact and sturdy, Pocket Products can be placed anywhere in the MIDI signal chain.

## HOW TO ORDER

Join the group of satisfied customers worldwide who have found the solution to their MIDI problems with Pocket Products from Anatek, now available direct from SOS.

To order, just fill out the Order Coupon at the back of the Mail Order section (remember to add postage for each product) or simply call our Mail Order hotline on 01954 789888.

**DON'T DELAY ORDER TODAY!**

Please allow up to 28 days delivery on Pocket Products.

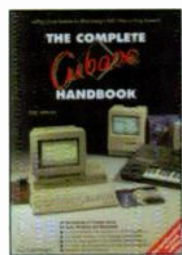
**ORDER NOW!**  
WHILE STOCKS LAST  
See last page of Mail Order



# SOS Book Shop

## BEST SELLERS

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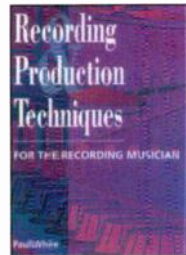


#### HANDBOOK 2nd Edition

by *Udo Wepers*  
After a short break, the definitive Steinberg Cubase Handbook is back in print. This new edition is once again filled with real world applications and down to earth explanations of how to use all the powerful features offered by Cubase in all its many forms. The book is now relevant to all three platforms (Atari, Mac and PC), and the main attraction of the revised text is its focus on Cubase Score. The Complete Cubase Handbook is a not-to-be-missed purchase for users of Steinberg's highly popular software.

**CODE B195 £29.95**  
Postage: UK £9.95, Europe £7.50, R.O.W. £14.50

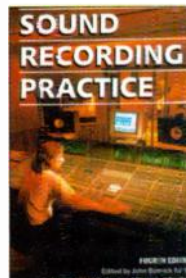
### RECORDING & PRODUCTION TECHNIQUES



by *Paul White*. This highly informative book by SOS's own Editor demystifies the techniques used by professionals in the recording of contemporary music. It reveals how to make full creative use of all manner of studio effects and signal processors. These techniques can be utilised both in the home and commercial studio. The book concludes with an invaluable section on master tape formats and an overview of the various processes and vinyl records.

**CODE B200 £11.95**  
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

### SOUND RECORDING PRACTICE (4th Edition)



by *John Borwick*  
This now classic text reaches its Fourth Edition, and has been enlarged and revised to cover up to date developments in the recording industry. The contents of this 600+ page is too diverse to summarise in such a short space. Suffice to say that every serious recordist, whether amateur, semi-pro or professional should have a copy of this book.

**CODE B107 £19.99**  
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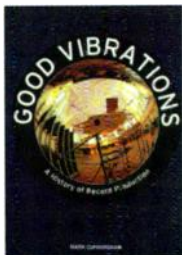
## RECOMMENDED READING

### INTRODUCING DIGITAL AUDIO

2ND EDITION by *Ian R Sinclair*  
Explains digital audio - CD, DAT and sampling - non-mathematically. The updated 2nd edition adds information on oversampling and bitstream techniques, plus a glossary of technical terms.

**CODE B274 £7.95**  
Postage: UK £1.50, Europe £4.50, R.O.W. £6.50

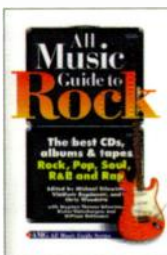
### GOOD VIBRATIONS



by *Mark Cunningham*  
**Good Vibrations** - A History of Record Production features a foreword by BRIT award-winning Best Producer of 1996, Brian Eno. The book chronicles the development of recording techniques and music technology, from the invention of sound-on-sound (multitrack) tape recording in 1949, to the current dramatic advances in digital technology. Also highlights the changing role of the producer and engineer, with quotes from George Martin, Brian Wilson, Tony Visconti, Trevor Horn, Hugh Padgham and Pete Waterman. Recordings discussed in detail include The Beach Boys' *Pet Sounds*, The Beatles' *Sgt Pepper's Lonely Hearts Club Band*, Pink Floyd's *Dark Side Of The Moon*, Queen's *Bohemian Rhapsody*, David Bowie's *Heroes*, and U2's *Zooropa*. Includes around 100 photos and illustrations, many previously unseen, plus extensive reference section.

**CODE B331 £9.99**  
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

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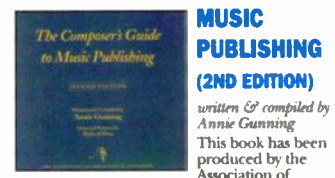
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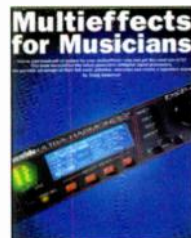
written & compiled by *Annie Gunning*  
This book has been produced by the Association of Professional Composers and examines the business of musical copyright and music publishing from the composer's point of view. It aims to educate composers of all kinds of music in the operation of the music publishing business to help them obtain, negotiate and benefit from publishing agreements and avoid expensive mistakes. Apart from publishing, the book also covers copyright legislation, performing and mechanical rights, the royalty administration societies, music in film, broadcasting, theatre and ballet and commissioning agreements. There is also advice for composers setting up their own publishing companies. An exhaustive and useful book.

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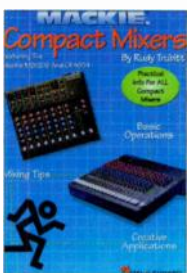


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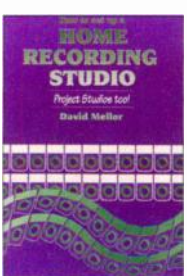


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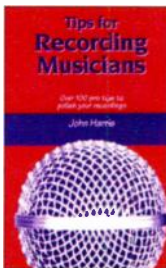
by Peter Melan & Larry Wichman (Revised and Updated)

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Alan Parsons, Bill Foster & Chris Hollebone

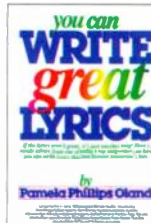
The definitive guide to the creation and management of audio master tapes. With 'Master Tapes' literally flying around the

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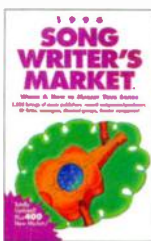
by Randy Poe

This book demystifies music publishing, explaining what it means to a songwriter. Learn what your publishing options are, from a single song contract to a staff writer to a self-publishing operation. By the

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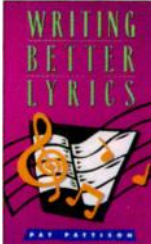
1996

To get your songs published and produced, you must know who the music industry's players are and how to approach them. This directory identifies those seeking the work of songwriters. Lists 2500 lyric and music markets, clubs, associations, contests, workshops and

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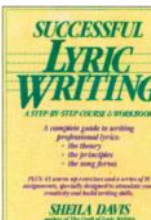


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If you're just starting out as a songwriter or haven't progressed very far, perhaps you have questions about the art and business of songwriting that you can't find answers for. Chances are, they're covered in this book. Over 200 of the questions songwriters most often ask are answered in this book. There are 11 chapters, covering subjects such as lyrics, theory, song structure, collaboration, demos, publishing and the music business. Some answers - such as "What makes a professional-sounding demo?" are actually mini-articles - and an index allows you to target subjects without wading through the text. A friendly, informative read.  
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Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

## MIDI INFORMATION

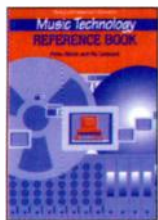
### HANDBOOK OF MIDI SEQUENCING

*by Dave Clackett*  
Hands On MIDI Software's Dave Clackett has boiled his knowledge into a collection of tips for getting the best out of hardware or software sequencers. Dave covers the hardware and software you need to get sequencing, and introduces the basics of sequencing and notation, with particular emphasis placed on using General MIDI/GX/XG sound sources.  
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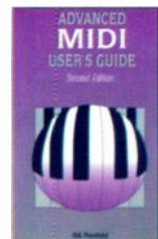
**MUSIC TECHNOLOGY REFERENCE BOOK**



by Peter Buick & Vic Lennard  
Written by Peter Buick and Vic Lennard (author of SOS's Atari Notes column), this book offers information at your fingertips and is an indispensable reference source for the musician or sound professional in the recording, broadcast, live, video, computer, multimedia, post production and theatre industries. It includes comprehensive MIDI spec, General MIDI, MTC, MSC, and SysEx information. It also includes charts, check lists, useful hints, tips, and ideas, plus a glossary, list of contacts and a comprehensive index. It is also organised into convenient sections. 150 Pages.

**CODE B305 £12.95**  
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

**ADVANCED MIDI USER'S GUIDE (2nd Edition)**



by R A Penfold  
Most MIDI users do no more than scratch the surface of MIDI's potentialities. But dare to dig a bit deeper and you'll find a whole new world of creative possibilities.

With the Advanced MIDI User's Guide, you'll learn how to optimise your MIDI system to get the best results from your particular setup, and you'll find out how to use gadgets like switches and mergers to enhance your system. If you want to incorporate a multitrack tape recorder into your MIDI system there's a section on synchronisers, SMPTE and MIDI time code, and retro freaks will learn how to hook up that dusty old analogue synth to their MIDI systems.

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**MAKING THE MOST OF MIDI**



By Paul Overaa  
This is a MIDI book unlike any other. It explains the fundamentals of MIDI and MIDI sequencing for the beginner, and it goes much further, dealing with issues that will be of help to more established users. Advice on MIDI fault finding, help for musicians using sequencers with live bands, MIDI messages and MIDI files, plus programming material. So if you are a keen first time user or a MIDI veteran, there will be something in this book to interest you.

**CODE B321 £14.95**  
Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

**A BEGINNERS GUIDE TO MIDI**



by RA Penfold  
The title says it all: all aspects of MIDI are explained, and many common beginner's problems are discussed.

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Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

**MIDI FOR THE PROFESSIONAL**

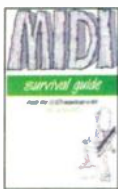


by Paul D Lehman and Tim Tully  
Co-written by SOS contributor Paul D Lehman, this substantial, exhaustive work covers pretty well any aspect of MIDI that you could think of. As an overview of what MIDI is and does in 1994, this

239 page book couldn't be better.

**CODE B227 £11.95**  
Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

**MIDI SURVIVAL GUIDE**



by Vic Lennard  
Whether you're a beginner or a seasoned pro, the 'MIDI Survival Guide' shows you the way. No maths, no MIDI theory - just practical advice on starting up, setting up and ending up with a working MIDI system. Contains over 40 cabling diagrams, and how to: connect synths, sound modules, sequencers, drum machines and multitracks; how to budget and buy secondhand; using switch, thru and merger boxes; transfer songs between different sequencers, get the best out of general MIDI, and understand MIDI implementation charts.

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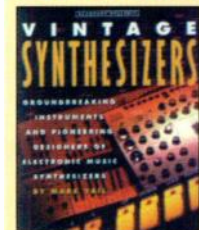
**PRACTICAL MIDI HANDBOOK (3rd Edition)**

by R A Penfold  
This book is completely updated, and features a section on General MIDI. It provides a "straightforward, non-mathematical introduction to MIDI", and features a full glossary of MIDI terms.

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**SYNTHESIZERS**

**VINTAGE SYNTHESIZERS**



By Mark Vail  
This well-illustrated, 300 page book covers synth history, interviews with designers and overviews of important instruments. Mark Vail's book could be the most entertaining and useful synth book yet - check out the definitive history of the Minimoog, complete with pre-production designers' sketches. While not strictly a buyers' guide, there is a comprehensive section to sourcing, valuing, upgrading and servicing classic instruments.

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**KEYFAX 2**

by Julian Colbeck  
1989 version of Keyfax provides individual summaries and specifications of the last of the great mono synths, digital pianos, and classic polysynths like the Roland JX10 and Prophet VS - forerunner of the SY22 and Wave Station. Early Keyboard and rack-mount samplers are covered in this indispensable guide. Still a great buy.

**CODE B096 ONLY £5.99**  
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

**THE MUSEUM OF SYNTHESIZER TECHNOLOGY**



by Martin J Newcomb  
If you liked our feature on the opening of the Museum of Synthesizer Technology in October, but haven't got the time or the cash to visit in person, then the next best thing has to be the museum's guide book. This 118 book is printed on glossy

paper and contains full-colour pictures of a large selection of exhibits from the museum, together with some descriptive text and company backgrounders. The text reads a little like a fanzine, but the hardcore synth fanatic will want this book for the pictures. In these pages you will glimpse instruments that you are unlikely ever to experience in the flesh: an exceedingly large Roland System 100 modular set-up, an EMS Synthi 100, an ARP 2500, a large Emu modular and what must be the comprehensive collection of Moog equipment anywhere.

**CODE B291 £12.95**  
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

**KEYFAX 5**



by Julian Colbeck  
The latest instalment of the intrepid Keyfax series offers potted specifications and concise mini-overviews of digital pianos, home keyboards, General MIDI modules, stage organs and computer sound cards. Look out for company

backgrounders, contact details and cross-references to earlier Keyfaxes.

**CODE B231 £12.95**  
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

**THE A-Z OF ANALOGUE SYNTHS PART ONE: A-M**



by Peter Forrest  
The author has aimed to make his book a complete rundown of all the major analogue synths and keyboards ever made, and on the evidence of this first volume, he seems to have succeeded. The book is useful and detailed, and shows evidence of

the massive amount of research and effort put in by Peter. He gives pocket company histories and detailed data on the instruments produced - but note that a few entries for a few particularly obscure instruments and companies are limited due to lack of data. The book also provides a comprehensive overview of the qualities of various instruments; charts and tables assess second hand values and maintenance levels necessary to keep a given instrument playable as well as such intangibles as sound quality, collectability and user interface. The A-Z of Analogue Part One, which is limited to 8000 copies worldwide, also features 96 colour pictures of classic instruments.

**CODE B294 £14.00**  
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

**DRUM MACHINES**

**DRUM PROGRAMMING — A Complete Guide to Program and Think Like a Drummer**



By Ray F Badness  
Coming from a publisher that has a good range of real drum texts, we'd expect this book to be a little different. And it is: it gives plenty of insights into how real drummers approach their job, and there are plenty of example patterns to help translate these

ideas to a drum machine.

**CODE B235 £6.95**  
Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

**DRUM MACHINE RHYTHM DICTIONARY**

By Sandy Feldstein  
For use with Roland drum machines or any grid-based pattern system. First 75 pages on programming huge range of rhythms in rock, latin, jazz and funk styles. Remainder analyses styles and patterns of world's top drummers - Phil Collins, Billy Cobham, Steve Gadd, Stewart Copeland, etc. Highly recommended.

**CODE B110 £16.95**  
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

**RHYTHMICAL GROOVES & PATTERNS**

By Siegfried Hoffman  
Looks at how drummers compose rhythm patterns to add emotion, swing or groove. Contains examples for you to programme into your drum machine or sequencer.

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**260 DRUM MACHINE PATTERNS**

By Rene-Pierre Bardet  
Even more drum pattern styles (paso doble, charleston, etc)

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**DRUM MACHINE PATTERNS**

By Rene-Pierre Bardet  
200 drum patterns and breaks presented in one-measure grid notation. Funk, R'n'B, ballad, pop, reggae, afro-cuban and many other styles.

**CODE B018 £7.95**  
Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

**PLAYING TECHNIQUES**

**ROCK IN SEQUENCE**



by William Lloyd & Paul Terry  
The latest book from the authors of Music In Sequence and Classics In Sequence is now available: Rock In Sequence offers detailed scores of 17 rock and pop hits from the '50s to the present day, alongside a collection of helpful sequencing tips. Songs are included from the likes of the Beatles, Led Zeppelin, Abba, Eurythmics, Blur and more. Rock In Sequence 112 pages.

**CODE B320 £14.95**  
Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

**CLASSICS IN SEQUENCE**

by William Lloyd & Paul Terry  
Takes concepts behind Music In Sequence and applies them to all-time favourite classical music scores. Authors show how to make fresh, exciting interpretations of classic scores. Info on reverb and effects, interpreting scores, editing synth voices. Highly creative - an ideal workbook for the music classroom. Covers Medieval, Renaissance dance music, Bach's Toccata in D minor; Vivaldi, Purcell, Handel; opera excerpts from Rossini, Verdi, Borodin; Mozart, Schubert, Tchaikovsky, music from Carmina Burana; Debussy, Satie, Steve Reich's Piano Phase and more. Highly recommended.

**CODE B193 £12.95**  
Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

**MUSIC IN SEQUENCE**

by William Lloyd & Paul Terry  
Still one of our best-selling books. Easy to follow, practical guide to making real use of your sequencer, written by people who really understand music and how to create it using today's technology. This brilliant, unique book carries the SOS seal of approval.

**CODE B155 £12.95**  
Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

**1000 KEYBOARD TIPS**



by J Dreksler & Q Harle  
The hi-tech musician's guide to the basics of music, scales, chords and harmonies. 256 pages covering chord relationships, improvisation, suggested drum machine patterns, plus comprehensive chord table. Too good

to miss!

**CODE B113 £13.95**  
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

**SOLID GROOVES**

By Dieter Peterreit & Herb Quick  
128 pages dealing with both bass and drums, the 'heart' of the pop group, together. Although written primarily for drummers and bass players, anyone interested in understanding rhythmical music in popular styles will find this book invaluable.

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## COMPUTERS & MUSIC

### THE COMPLETE SOUND BLASTER



**by Howard Massey**  
Explains in simple, non-technical terms: how to install the Sound Blaster hardware and software for use in both the DOS and Windows environments, the two sound processes used by the card, MIDI, the Sound Blaster's MIDI

capabilities, and the many different applications for the Sound Blaster, including the various software utilities provided with the card, and many of the third party support products that enhance its operation.

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### MULTIMEDIA ON THE PC



**By Ian R Sinclair**  
If you want to know what multimedia is and what it can offer you, then this is the book for you. Much of the information is general enough for everybody, but as the title suggests, the book is aimed at PC users.

The book explains the installation and use of a CD ROM drive and a sound card and covers all key concepts behind multimedia. As an added incentive, if you buy this book, you can send away for a free copy of *Picturebook*, a multimedia authoring package.

**CODE B272 £11.95**  
Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

### PC MUSIC HANDBOOK 2nd Edition



**by Brian Heywood & Roger Evan**  
This book will show you how to turn your PC into a creative music making machine. It explains how you can create very sophisticated music on your PC by running sequencing software, how to create your own sounds with a soundcard, how to use your PC as a sound librarian, or a sample editor, or even use it as a hard disk recorder or a sound sampler. All these things are possible with today's sophisticated PC.

The use of sound in multimedia applications is also covered, and there is a chapter on PC hardware with advice on which type of PC is best for your particular needs.

There's advice too on getting connected to the Internet, where you can contact other PC music aficionados world wide!

**CODE B332 £10.95**  
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**By R A Penfold**  
2nd edition. Covers hardware and software applications. Excellent glossary of jargon, and now bang up to date.

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### SEQUENCER SECRETS



**Ian Waugh**  
Ian's book aims to "go beyond the manual" in telling you how to get the best from your sequencer. The book features 29 hands-on sequencing projects and is suitable for use with all software sequencers. The book hopes to help you optimise your MIDI system and use your sequencer to create all sorts of useful effects. A troubleshooting section helps you track down stuck notes, double notes and so on.

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### MUSICAL APPLICATIONS OF THE ATARI ST'S



**By R A Penfold**  
Includes a general introduction to MIDI, a handful of MIDI add-on circuits (Thru box, MIDI switcher and so on), plus a collection of programs, in Fast BASIC, that allows you to use the ST's internal sound generator and create little MIDI applications.

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### MULTIMEDIA ON YOUR PC

**by Francis Botto**  
A practical guide to multimedia specifically on the PC. Botto's book is once aimed at users, educators and developers, and comprehensively discusses the hardware required to take advantage of multimedia in a PC environment as well as the hardware and software necessary in a multimedia authoring situation. The book provides with comprehensive appendices covering a glossary and comprehensive product and manufacturer lists.

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**by Duncan R Fry**  
This is a hands on, friendly introduction to all aspects of mixing live. It hails from Australia, and is an SOS Bookshop exclusive. The author is an experienced live sound engineer and has packed his book with loads of information, diagrams and hints to take you from basic principles through to trouble shooting when things go wrong.

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The book provides both useful background to speakers and enclosures in general, plus practical information on crossovers and full details on constructing the so-called 'Kapellmeister' design of speakers.

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### THE FOCAL GUIDE TO SAFETY IN LIVE PERFORMANCE

**Edited by George Thompson**  
This book provides an authoritative look at safety matters for workers in the live entertainment industry. It is edited by the Standards Officer of PLASA (Professional Lighting and Sound Association), and provides good solid information in an easily digestible, well-illustrated form. Topics covered include audience and crowd control, fire safety precautions and engineering, electrical safety, laser safety, sound levels and noise control and much more.

**CODE B271 £19.95**  
Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

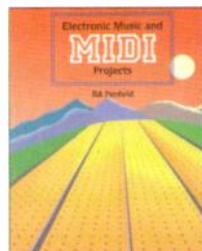
### PUBLIC ADDRESS LOUDSPEAKER SYSTEMS

**by V Capel**  
All aspects of PA speaker systems are covered in this book, including low-impedance matching, 100V systems, transmission lines and how to install inductive hearing aid loops. At the heart of the book is the Line-Source Ceiling Array, a system that is claimed to improve clarity, even coverage and reduce feedback. Full step-by-step construction and installation details are given.

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#### ELECTRONIC MUSIC AND MIDI PROJECTS



**by RA Penfold**  
Want a MIDI THRU box, patchbay or switcher? Well they're all here. And you don't need a degree in electronics either. All the projects are explained in detail, with full

instructions on assembly. So if you're into MIDI and you want to expand your system without taking out a second mortgage, fear not. Here's the book to help you build up your MIDI system without laying out thousands on hardware.

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**by R A Penfold**  
A two part book, with the first section looking at the basic principles involved including converting an audio signal into digital form and then converting it back to an analogue signal. The second part contains some circuits - for the moderately experienced only.

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**By R A Penfold**  
Much useful background to amplifier design, speaker matching and more is included in the first couple of chapters, while the last section contains a selection of high power amp circuits plus suitable PSU circuits. Copper track patterns are also provided to allow you to make your own PCBs. While the circuits aren't too difficult as such, those with limited constructional experience should note that due to the high supply currents and voltages involved, even minor mistakes could be extremely dangerous.

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### ELECTRONIC PROJECTS FOR MUSICIANS

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### MIDI PROJECTS

**by R A Penfold**  
A comprehensive collection of simple MIDI projects, including CV and gate converters and a MIDI Thru box. A lot of the book is taken up with interface various obsolete computers to MIDI (Spectrum, CPC464, Commodore 64, BBC B, ZX81 and so on), but the general information is basically sound. Could prove a boon to musicians who are really broke!

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**by R A Penfold**  
Another selection of musical effects, with more of a guitar angle. Projects include distortion, sustain, parametric EQ, graphic EQ, treble and bass booster, envelope modifier, wah wah effects and more.

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### ELECTRONIC PROJECTS FOR VIDEO ENTHUSIASTS

**by R A Penfold**  
Projects for the video and camcorder user, including dynamic noise limiter, automatic audio fader, video faders, video wipe and video crispener.

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Postage: UK £1.50, Europe £6.95, R.O.W. £9.50

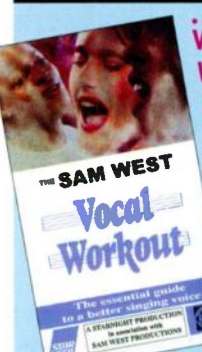
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### NEW VOICE TRAINING NEW



**VOCAL WORKOUT Video**  
**by Sam West**  
Singers of varying abilities will find this video a great aid in assisting their vocal efforts. It begins by explaining the principles of voice production. Breath control exercises plus general vocal techniques are all explained and visually demonstrated. All the exercises are written out in an accompanying booklet, with piano accompaniment.

**VIDEO CODE V067 £22.95**  
Running time approx 59 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

### VOICE BUILDING Cassette/CD

**by Sam West**  
Although geared towards singers of varying abilities, voices and styles, the contents of this recording are often challenging even to the professional singer! The video (code V067) goes into more technical detail, whereas the CD or Cassette concentrate on more intensive practising. First of all the exercises are sung, in various keys and then with musical accompaniment and melody line, so you can concentrate more on your voice while practising (karaoke style).



Vocal exercises can be boring, but this studio recording has been produced and presented to a very high standard, with interesting musical accompaniments to the exercises.  
**CASSETTE CODE MC001 £6.95**  
**CD CODE CD037 £9.95**  
Postage: UK £1.50, Europe £3.95, R.O.W. £5.50



**OVERNIGHT DELIVERY OPTION: ONLY £5.00! See Order Form for details**

**ROLAND MS-1 VIDEO**

**MANUAL**



This video manual has been produced by Roland Corporation US, and has been designed to provide the user with tuition, and examples of how to apply your new found knowledge in various applications. There is also a comprehensive "Tips & Tricks" section to give you that extra edge!

**CODE V047 £24.99**  
 Running time: 50 minutes (approx)  
 Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ROLAND GP100**

Presented once again by Nick Cooper, this video manual for the Roland GP100 covers every aspect in detail with many practical demonstrations. Everything you need to know is covered; topics include: an explanation of COSM, layout, typical setups, initialisation, global settings, use of the tuner, selection and editing of patches, and use of the FX loop and harmoniser.

**CODE V062 £19.99**  
 Running Time: 15 Minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ROLAND TDE-7K DRUM SYSTEM**



Roland's TDE-7K Compact Drum System Comprises the TD-7 Percussion Sound Module, MDY-7 Cymbal Pad Holder, FD-7 Hi-Hat Control Pedal, MDS-7 Drum System Stand, PD-7 Drum Pads & KD-7 Kick trigger. You may have a different configuration to what is shown in the video,

but no matter! Roland Product Specialist Gary O'Toole shows you how the complete kit is put together. Gary concentrates on the TD-7 in detail, showing how the parameters are set up, and giving demonstrations of how the sounds are derived and altered. Good use is made of the visual side in this video with multi-camera shots, a 'birds eye' view of the entire kit shows Gary's playing abilities to the full. As you would expect from a production aided by Roland UK & USA, this video shows you everything you need to know.

**CODE V045 £19.99**  
 Running time: 45 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**YAMAHA PSR6000 ELECTRONIC KEYBOARD VIDEO MANUAL**



Yamaha's PSR6000 is a home keyboard with a difference, and offers many professional features plus excellent sound quality. Tim Walter starts at the beginning and makes the instrument look easy and fun. His enthusiasm is catching, and yes, the PSR6000 is a very capable instrument. The tape runs to 75

minutes, which makes for excellent value.  
**CODE V029 £19.99**  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ROLAND GR-1 GUITAR SYNTH**

These two video manuals have been produced to help the user get the most out of Roland's sophisticated GR-1 guitar synth, the first covering all the basics from mounting the pickup and getting tuned up to selecting sounds and using the on-board sequencer. Each step is patiently explained and demonstrated by Roland's guitar synth specialist, Jay Stapley.

The Advanced tape takes the mystery out of sound editing, custom tuning, advanced sequencer applications, external sequencer hookups, using other MIDI sound modules, indeed virtually everything the GR-1 is capable of doing. If you own a GR-1 or are thinking of buying one, do yourself a favour and order these indispensable videos.

**CODE V014 ONLY £29.99 FOR 2 VIDEOS**  
 Total Running time: 4 hours. Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**STEINBERG CUBASE**

This manual is presented by Chris West, Steinberg expert. It's very much a practical, 'get up and running' video, showing the novice user exactly how to install and begin using Cubase, whether they're running the program on an ST, Mac or PC computer — there's even a basic background on using the computers themselves! All of Cubase's controls are shown, explained and demonstrated in depth. Once you're familiar with the basic controls, Chris takes you slowly through recording your first session, followed by overviews of the various edit screens. It's rather like having an expert tutorial that you can run again and again in the comfort of your home, until you can use Cubase like a true pro.

Topics covered include; the main screen, customising names and outputs, copying and pasting between arrangements, MIDI filter, cycle mode recording, the tool box, all edit screens.

**CODE V011 £29.99**  
 Run time: 1hour 30 minutes. Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**KORG AX30G TONEWORKS VIDEO MANUAL**



The Toneworks series of guitar processors from Korg gets a real work out on this 55 minute tape. Korg's guitar demonstrator Steve Fairclough whizzes through the G1, G2, G3 and the flagship AX30G and provides clear explanations of how each unit works. And to

put the units into context, there's lots of footage of Steve showing off the sonic capabilities of each processor (not to mention his prowess as a guitarist).

**ORDER CODE V028 £19.99**  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**BAND IN A BOX 6.0 BASICS FOR WINDOWS**

Designed to get the new user, and those less familiar with Band In A Box, up and running quickly and easily. Experienced users can also benefit from the in-depth tutorials which cover Basic MIDI, MIDI Connections, Custom Patch Maps, Screen Layout, Juke Box, Printing, Recording & Editing Melodies, Importing & Editing Styles, Drum Editor, Masks, Assigning Instruments.

**CODE V031 £34.99**  
 Running time: 88minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**3 CAKEWALK 3.0 VIDEO MANUALS**

**CAKEWALK 3.0 For Windows**

A collection of three videos on the Cakewalk Professional system for Windows, covering just about everything you would need to know to become totally proficient with Cakewalk. If you own Cakewalk Home Studio — no problem! The videos cover everything Cakewalk Home Studio is capable of and more...

**BASICS**

Basic MIDI, Step & Realtime Recording, Playback Features (on the fly), Editing Features, Graphic Views, The Inspector Menu, Menu Overview, The Control Bar.

**CODE V032 £34.99**  
 Running time: 120 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**BEYOND BASICS**

This video explains Customising Cakewalk, Extract Merge, more graphic Views, Advanced Editing, the Settings Menu, Synchronisation, Embedding Wav Files and more...

**CODE V033 £34.99**  
 Running time: 113 mins  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**CAL**

Programming Fundamentals, Creating a Program, Creating a CAL Program, How to use CAL Programs, CAL Examples, Automating Tasks, Tips on working with CAL, Creating Computer Music, Troubleshooting.

**CODE V034 £34.99**  
 Running time 90 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**SOS Videos**

**JUST ARRIVED!**

**MACKIE 8-BUS VIDEO MANUAL**



Almost 60 minutes of fun-packed, detailed explanation of the various features of Mackie's popular range of 8 buss mixing consoles (16•8, 24•8, 32•8, 24•E) and how best to utilise them. Onscreen numbers allow quick searching to desired topics.

**CODE V068 £9.95**  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ROLAND G800**



Presented by Roland UK's product demonstrator Sara Reybould, this video covers every essential feature and function of the Roland G800. Sara provides the user with a wealth of knowledge on this sophisticated instrument, with recourse to many practical examples and close-up shots of the LCD screen. The video was produced

in association with Roland USA and Roland UK to ensure that the content is accurate and informative.

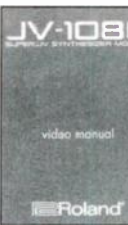
**CODE V060 £19.99**  
 Running Time 92 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ROLAND GR09**

Presented by Roland UK product demonstrator Nick Cooper, this application-based tutorial video for the Roland GR09, produced in association with Roland USA, covers every function completely. Covered topics include; the GK2A Synthesizer Driver, pickup sensitivity, use of the tuner, what a patch consists of, use of the pedals, patch edit 1 & 2 (including layering and detune, chromatic function, reverb & chorus, edit target, pitch shift), the use of external midi devices, saving to an external sequencer & more.

**CODE V061 £19.99**  
 Running Time 57 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ROLAND JV-1080 VIDEO MANUAL**



Roland's amazing JV-1080 synthesizer module is covered in detail in this informative video. Presented by Tim Walter the video guides you through the basics, and leads you painlessly onto the advanced features. The video even shows you how to

fit the expansion boards & gives demonstrations of some of the wonderful sounds they contain. Once again this video has been produced in association with Roland UK & USA to ensure that everything it contains is accurate, and relevant to the new and more experienced users alike.

**CODE V046 £19.99**  
 Running time: 80 minutes Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ROLAND XP-50**

This XP-50 video owners manual is produced by Roland Corporation US and covers all the major features of the instrument in detail. This is an application based video that provides many examples of how your new found knowledge can be applied. Just a few of the 30 separate topic areas covered are: Effects, Choosing Sounds, Loading a Song, Loop Recording, Copying a Track to Pattern, Making an RPS Set, Track Editing, Multitrack Recording, Patch Editing, Creating Splits & Layers in a Patch.

**CODE V063 £24.99**  
 Running time: 63 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**WINDOWS 95: WHAT WILL YOU LEARN TODAY?**

This video is aimed at new Windows 95 users and goes from basic to in-depth advice, covering topics such as minimum hardware requirements and common problems, and providing useful tips and tuition. The video also features Labyrinth's Video Index System to help the user locate particular topics, by means of on-screen timecode and an index booklet. The video is written by computer journalist Ian Waugh.

**CODE V065 £19.99**  
 Running time: 74 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**EVERYTHING YOU WANTED TO KNOW ABOUT PCs BUT WERE AFRAID TO ASK!**



Written by Ian Waugh this video has been produced in response to the number of potential PC buyers and existing new users who do not fully understand the jargon and basic operating procedures associated with PCs.

It covers everything from 'What is a PC' to the 'Internet'. There is even a Windows tutorial, and a DOS basics section. (Over 120 different sections.) It includes a booklet listing all the main and sub sections along with their respective TimeCode number for easy access when used as a reference tool.

**CODE V048 £19.99**  
 Running time 91 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**KORG PROPHECY VIDEO MANUAL**

Written by Phil MacDonald Korg's new Prophecy Synthesizer now has its own video manual!

The video covers all the major features over 6 sections, with lots of examples of the amazing effects that are available using the 'log' and 'mod' wheels. The video's visual interest is maintained by the extensive use of Chroma Key and multi camera effects. This is a video that is ideal for new owners, and those who want to know more about the Prophecy before they make a purchase.

**CODE V049 £14.99**  
 Running time: 36 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**MACKIE ULTRA MIX VIDEO GUIDE**

This highly informative video for the Ultramix automation system, clearly demonstrates how to set up and use Ultramix's many time-saving features to get the best from your system. The cost of the video may be redeemed against the purchase price of an Ultramix system, making the video a good way to try before you buy!

**CODE V066 £9.99**  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**BOSS ME-8**

Nick Cooper (Roland UK product demonstrator) explains every single feature and function of the ME-8 in detail. The unit is clearly explained in a logical sequence with examples given of how the functions effect the available sounds, a perfect aid to new users of the ME-8 and those who would like to get that little bit more from it. Just some of the main points covered are: What is a Patch?, Selecting a Patch, Copying a Patch, Edit Mode, Using The Effects, Control Effects, The Tempo Function, Manual Mode, and lots more.

**CODE V064 £19.99**  
 Running time: 72minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95



# SOS Videos

## EMAGIC NOTATOR VIDEO TRAINING MANUAL



This video manual is detailed and helpful, and is presented in a most friendly and approachable manner by session musician Tim Walter, whose tone throughout the video encourages and inspires confidence. If you are new to Notator and are still in awe of its power, an introduction and 28 tutorials take the user from the absolute basics - including plugging in the dongle - to working with Unitor and SMPTE, and synchronising to video. As well as actual recording of MIDI data and sequencing, comprehensive coverage is given to using the score layout and printing facilities that are so much a part of Notator. Topics covered include: sequencing page, score editing, lyrics and text, graphic arranger mode, hyper edit, the printer page, using the part box.

**CODE V012** **ONLY £19.99**  
 Running time: 2 hours 20 minutes Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## KORG X3

This video offers an easy way in to this powerful workstation. It starts from absolute basics, including audio connections and volume levels, and the clear and helpful script covers all basic facilities of the X3. The video features a sophisticated use of picture in picture, with the X3's display cut into the main image to show you clearly what Phil is actually doing, and main points are reinforced with on screen text and graphics. The main section headings are:

- X3 Audio Connections • Getting Around the X3
- Factory Disk • Disk Drive Modes
- Selecting Sounds • Global Modes • Sequencer Mode • Quick Sound Editing
- Playing MIDI Files on the X3 • Using the X3 with an external sequencer

Note that these are loose headings, with each section also containing information on connected subjects in varying amounts of detail. A lot of ground is covered, and we can recommend the tape to any X3 owner.

**CODE V018** **£19.99**  
 Running time: 55 minutes Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## HOW TO GET A RECORD DEAL

The facts you need from the people who know. How To Get A Record Deal contains vital information and insight that you will not find anywhere else, from artists and executives who have made it and know what it takes.

On this video music industry pros give you the straight facts on how to break into this extremely competitive business. Because sometimes the difference between success and failure is information.

Presented by the National Academy Of Songwriters

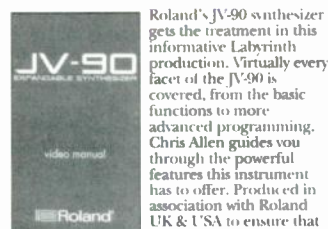
**CODE V003** **£14.95**  
 Running time: 1 hour 7 minutes  
 Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## BOSS DR-5 DRUM MACHINE

Presented by Nick Cooper (Roland UK Product Specialist) this video covers all the functions of the DR-5 in a clear and concise manner. Produced in association with Roland UK & USA. By using the information gathered from Roland 'helplines', particular attention has been paid to the areas that many users find most difficult in. This makes it of interest to beginners and experienced users alike. Nick imparts the information with ease and a professional manner, making it enjoyable and entertaining.

**CODE V043** **£19.99**  
 Running time: 57 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## ROLAND JV-90 SYNTH



Roland's JV-90 synthesizer gets the treatment in this informative Labrynth production. Virtually every facet of the JV-90 is covered, from the basic functions to more advanced programming. Chris Allen guides you through the powerful features this instrument has to offer. Produced in association with Roland UK & USA to ensure that everything it contains is accurate, and relevant to new and more experienced users alike.

**CODE V044** **£19.99**  
 Running time: 70 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## ANALOGUE HEAVEN



Remember our feature on the opening day of the Museum of Synthesizer Technology which we ran back in October 1994? Wish you'd actually been able to attend? Well, now you can have the next best thing: the museum has released a fascinating 50 minute promo video that features footage shot on the day as well as a lightning tour of the facility. The program is hosted by SOS contributor Julian Colbeck. The tape opens with synth pioneer Bob Moog making the inaugural speech and officially opening the museum, followed by a nostalgic run through one of his old modular systems. Analogue Heaven makes diverting viewing for anyone interested in vintage synths, represents good value, and offers the perfect companion to the Museum's guide book, also available from SOS Bookshop.

**CODE V026** **£12.95**  
 Running time: 50 minutes Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## MASTER TRACKS PRO 4/5



**BASICS FOR WINDOWS & MACINTOSH**

All the basic functions of Master Tracks, from installing the software to advanced editing. Everything you need to know to get you started and beyond in easy to understand step-by-step instructions.

Basic MIDI, Track Editor Window, MIDI Settings, Screen Layout, Conductor Window, Transport Controls Window, Inserting Measures, Step & Real Time Recording, Event List Editor, Piano Roll Editor, Quantising, and much more.

**CODE V041** **£34.99**  
 Running time: 105 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ORDER YOUR VIDEO NOW!**  
**01954 789888**

## PERFORMER 5.0 BASICS

**FOR MACINTOSH**

Expert tuition covering the basics and more for Performer 5.0. This video will provide you with all that you need to know, covering all the major topics: Basic MIDI, Tracks Window, Multitimbral Operation, Patch Changes, Time Signature & Meter, Real & Step Time Recording, Event List/Graphic & Notation Views, Regional Editing, Quantisation, Transposing, Copy/Cut/Paste/Merge & Erase, Loop Recording, Track Palette, Device Groups, Counter Window, and much more.

**CODE V042** **£34.99**  
 Running time: 87 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

### KORG X5 SYNTH

**X5**  
MUSIC SYNTHESIZER

Korg's new X5 synthesizer, reviewed in SOS' January 1995 issue, now has its own video manual. Presented by Tim Walter in an entertaining and lighthearted manner, and explains all basic aspects of Korg's highly affordable instrument in very clear terms. If you're in any way daunted by your new purchase, or want to get a feel for the instrument before laying out your cash, this is the video for you.

**CODE V027** **£19.99**  
 Running time: 55 minutes  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## YAMAHA QY20 MUSIC SEQUENCER VIDEO MANUAL

**YAMAHA QY20**  
MUSIC SEQUENCER VIDEO MANUAL

by Tom Robinson

Yamaha's popular QY20 portable sequencer/ sound source is a deceptively simple device to use; if you think you might like some insight into getting that little bit extra out of the device, then look no further. Produced in co-operation with Yamaha, the video features mobile musician Tom Robinson showing you how to get the best from this portable marvel. Tom, who has used the QY20 extensively as a writing tool on the road, says: "I never leave home without it".

**CODE V016** **£19.99**  
 Running time: 90 minutes Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## HOW TO GET THE MOST OUT OF HOME RECORDING 3 TOP CLASS VIDEOS

**A superbly presented set of videos which no home recordist should be without. Have you got your set yet?!**

### LEVEL ONE

This well presented video explains how to set up and operate a simple cassette-based multitrack home studio. It clarifies all the basic terminology and demonstrates the recording of a song from beginning to end, covering how to record guitars, keyboards, vocals and drum machines; which microphones to choose; how to patch in effects units and use them well; what makes a good arrangement; what makes a good mix; plus what to master on to and why.

*Full of professional tips and clear examples, this superb video offers the musician with no recording experience a fast route to successful operation of a simple home studio.*

**CODE V005** **£24.95**  
 Running time: 1 hour 10 minutes  
 Format: VHS (PAL) HiFi Stereo  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

### LEVEL TWO

This is, in our opinion, the best ever guide to the equipment and skills needed to produce high quality results from a home studio.

Full of clear examples and graphic information, the video majors on effects and how to use them well. It also covers the do's and don'ts of track bouncing;

microphones and mic techniques for different applications; getting the most out of multi effects units; plus an analysis of guitar effects with top session guitarist Milton MacDonald and an enlightening interview with ace producer Alan Parsons.

*Writer/presenter Julian Colbeck packs the programme with professional tips, allowing musicians of all kinds to get the most out of their home studio.*

**CODE V006** **£24.95**  
 Running time: 1 hour 45 minutes  
 Format: VHS (PAL) HiFi Stereo  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

### LEVEL THREE

This video is packed with information and professional tips on advanced MIDI applications in the home studio, including interfacing with sequencers, which sync code is best for which application and why. Hit producer Martyn Phillips (Erasure, London Beat) discusses modern recording techniques, and top programmer Paul Wiffen examines the opportunities and benefits offered by hard disk recording. It offers practical advice on sampling - how to save time and tracks; plus professional tips on advanced arranging and mixing techniques, including spectrum mixing.

**CODE V007** **£24.95**  
 Running time: 1 hour 30 minutes  
 Format: VHS (PAL) HiFi Stereo  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

## GETTING THE MOST OUT OF THE KORG M1

Written and presented by Julian Colbeck

The Korg M1 is a classic instrument. The range and quality of its sounds has made it one of the most successful synthesizers of all time. But because the M1 is so immediate, it's too easy just to scratch the surface, leaving many of its exciting capabilities undiscovered. This highly informative video enables M1 owners to unleash the full creative potential of this enormously powerful workstation. With plenty of musical examples, tips and inside information, the video offers clear, concise explanations of the instruments features and operating procedures, helping you to greatly expand your dexterity and creativity across the whole range of this world-beating instrument.

Comes with a FREE exclusive custom library of fabulous new M1 sounds on Atari format floppy disk (100 Programs, 100 Combinations) created by ABWH/Yes programmer Chris Macleod.

**CODE V002** **£24.95**  
 Running time: 1 hour 10 minutes Format: VHS (PAL)  
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95



**OVERNIGHT DELIVERY OPTION: ONLY £5.00! See Order Form for details**

**4 FINALE 3.0 VIDEO MANUALS**

**FOR WINDOWS & MACINTOSH**

Four superb videos covering the Windows Version and four for the Macintosh version. From Basics through to the most Advanced topics in Power User, these detailed videos will guide you through Finale, giving you the knowledge you need to become a Finale expert with ease.



**BASICS**

MIDI setup, Tool Palette, Default File, Customising Templates, Drawing Slurs & Expressions, Key & Time Signatures, Metatools, Music Spacing & Allotments, Printing, Measure & Page Layout, and much more.

**CODE V037 £34.99**  
Running time 123 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**BEYOND BASICS**

Custom Instrument Library, Font Size, Pickup Measures, Measure Number Enclosures, Chord (midi & manual input), Finale Chords, Guitar Fret Boards, Mirroring, Mass edit Menus, Transposing, Alternate Notation, Moving Layers, and much more.

**CODE V038 £34.99**  
Running time 92 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ADVANCED**

Clef Changes, Text Blocks, Tempo Tool, Multi-measure Rests, MIDI Tool, Making an Ossia, Optimising Staves, Custom Score Layout, Page Tool, Multiple Windows, Tiling Pages, and much more...

**CODE V039 £34.99**  
Running time 75 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**POWER USER**

More Options Menu, MIDI Tool, Optimising Staves, Using Clip Files, Grouping Staves, Using a Macro Program, Shape Designer, Importing MIDI Files, Multiple Windows, Short Cuts, Hints & Tips, Advanced MIDI Topics, Tiling Pages, and much more...

**CODE V040 £34.99**  
Running time 108 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**THE EMAGIC LOGIC**

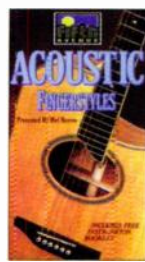
**TUTORIAL VIDEO VOLUME 1**

Produced by Emagic themselves, this video once again sees Tim Walter (featured on the excellent Notator video) in the tutor's chair. There are plans for a series of videos which become ever more detailed and informative, but for now Volume 1 takes you through the first steps of getting the software up and running, and covers virtually all the controls you'll need. This video is valid for all versions of Logic, whether being run on an ST, Mac or PC. Presentation is rather intriguing, with a mobile camera that helps to hold the interest more than the average training video and some interesting graphics that aid comprehension and help to quickly find specific tutorials and bits inside tutorials. Contents as follows:

- Tutorial 1: The Arrange window and basic sequencing
- Tutorial 2: Playback parameters & Toolbox
- Tutorial 3: Controlling MIDI data flow
- Tutorial 4: Manipulating sequence data
- Tutorial 5: Moving around in Logic
- Tutorial 6: Windows and key commands
- Tutorial 7: More sequencing
- Tutorial 8: Score
- Tutorial 9: Looking at the Event List
- Tutorial 10: Editing the Event List
- Tutorial 11: Using the Environment
- Tutorial 12: The best of the rest (HyperEdit, Matrix Editor, Cycle Mode and more)

**CODE V023 £29.99**  
Total running time 70 minutes Format: VHS (PAL)  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ACOUSTIC FINGERSTYLES**



Presented by Mel Reeves  
In this video there are 5 major instrumental studies to work through including country, classical and blues. Each style is broken down into small sections allowing you to learn more quickly and efficiently. Each piece is demanding, but great fun to play. The final section looks at styles and techniques used by players such as R.E.M., The Eagles, Sheryl Crow and Paul Simon, and provides an insight into creating new and interesting fingerstyles of your own.

**CODE V059 £12.99**  
Running time approx 90 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ACOUSTIC BLUES GUITAR**

Presented by Mel Reeves  
Whether you can already play fingerstyle guitar, or are simply familiar with basic chords, this programme will show you all of the necessary techniques to play great blues guitar. All of the technical aspects are explained in the clearest possible way before getting down to the real business of learning 5 real blues that are great to listen to and terrific to play.

**CODE V058 £12.99**  
Running time approx 67 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**PLAY KEYBOARDS NOW! MELODIES**

Presented by Mel Reeves  
This programme will not only teach you note reading, rhythm, rests, ties and how to move up and down the keyboard with ease, but will also teach you 6 complete melodies familiar to lovers of rock, pop and classical music.  
In addition, there is a further look at improvising, making use of melody and scales combined.

Clear computer graphics and the booklet enclosed will mean you won't miss a thing.  
**CODE V057 £12.99**  
Running time approx 55 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**YAMAHA QY300 VIDEO MANUAL**



Complete overview of Yamaha's new QY300 sequencer/sound source. Presented by Joe Ortiz of Heavenly Music, the video offers a hands-on tutorial on what is potentially a very powerful piece of hardware. Starts off with a runthrough of QY300 features, followed by a clear, step-by-step tutorial that introduces you to creating your own sequences and styles. As a bonus, the video comes with a free disk loaded with 6 new QY300 styles and 6 demo sequences.

**CODE V025 £19.99**  
Running time 69 minutes Format VHS (PAL)  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**ENCORE 3.0 FOR WINDOWS**

The basics of Encore for Windows is covered, with in-depth tuition over 85 minutes. Everything you need to get up & running is here. Basic MIDI, Score Layout, Accidentals, Key Signatures, Note Editing, Step Time Entry, Adding Staves, Click Setup, Record Setup, Linear View, Quantisation, Editing, Printing, Staff Position & Spacing, and much more...

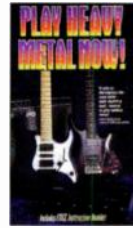
**CODE V036 £34.99**  
Running time 83 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

**CUBASE 2.6 BASICS FOR WINDOWS**

Practical guide to Cubase for Windows covers all the basic functions, ideal for the new user and those who need added insight into this complex system.  
Contents: Basic MIDI, Value Selection, Arrangements, Arrange Window, Transport Functions, The Inspector, The Toolbox, Quantisation, Grid Editor, Step Recording, and much more.

**CODE V035 £34.99**  
Running time 45 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

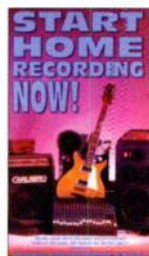
**PLAY HEAVY METAL NOW!**



A concise, easy to follow video guide to real heavy metal playing for guitarists of all levels. A guide to hard rock/heavy metal techniques for guitarists of all levels. The programme covers RHYTHM, SOLOING, and TECHNIQUE. All of the techniques, solos, etc are clearly demonstrated. No need to read music. Free booklet contains tab, chord and scale diagrams.

**CODE V052 £12.99**  
Running time approx 65 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

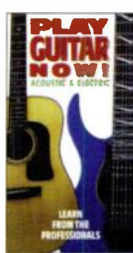
**START HOME RECORDING NOW!**



This is the ideal volume one guide to the use of home recording equipment. From the set up of basic 4-track cassette machines to sub-mixing, Mel Reeves uses straight-forward language to talk to fellow musicians about the methods used to get the sounds in their heads onto tape. Includes free instruction booklet.

**CODE V055 £12.99**  
Running time approx 55 minutes  
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

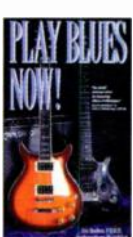
**PLAY GUITAR NOW!**



**ACOUSTIC & ELECTRIC**  
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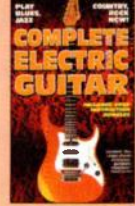
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music. This collection will be particularly interesting to Roland G-800  
and Roland E-96 users as the lyrics will display on the LCD screen of  
they keyboard. In addition, software programs such as the Tune  
1000 "Soft Concert" or Cakewalk Professional packages will also  
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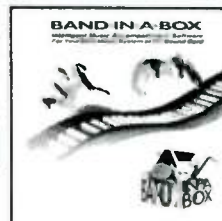
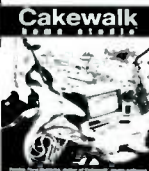
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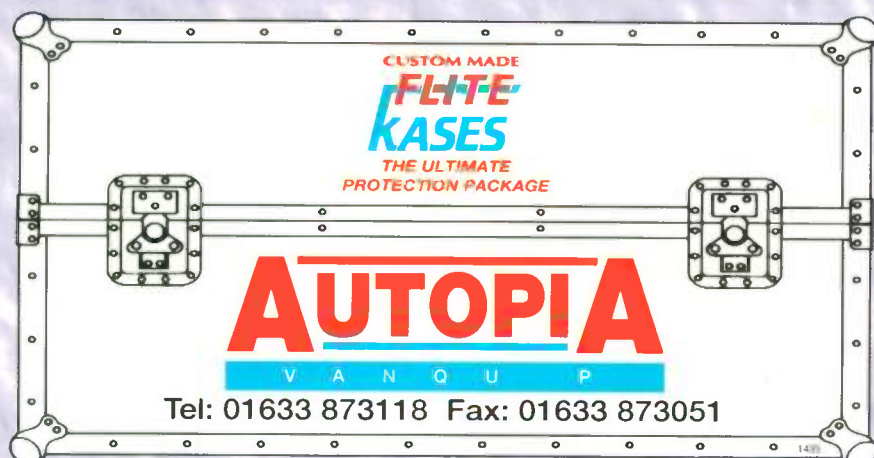
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**Manager speak  
with forked  
tongue, says  
Rehearsal  
Studio co-owner  
NICHOLEE SMITH.**

**W**ithin the music business, there necessarily exists the beast called manager. Left to peaceful slumber, manager is happy to lie dormant, waiting for one of the flock he has gathered unto himself (by means of seriously binding contract) to do something. The definition of 'flock', as used above, is construed as 'the band', who at all times heretofore shall be known as 'the band!' The definition of 'to do something', for the purposes of all involved parties hereunder, is, or may pertain to, any activity which may bring about or

increase the chance of possible fame via leafleting, poster, gigging, radio interviews or sessions, phoning venues, or publicising 'the band'. You'll know the manager is awake when crusty red eyes are seen rolling side to side, seconds before the slug-like creature leaps to his feet, waving aforementioned contract whilst reminding

aforementioned band of their obligations to abovementioned slimeball!

Strangely, the band is urged to sit back whilst the manager works. Not that he's been napping — he's been mustering all his strength for this moment, when without his guidance, your talent (which he first recognised, and which is why he signed you) is nothing.

Musicians beware! One band was encouraged to take out a bank loan with the manager as guarantor, so that they could put out some product, strictly on the understanding that he would get the gigs to bring in the cash to repay the money. They were told to stop getting their own work, as it would look better if he did it.

Their mistake was to listen. They went on rehearsing, while staying in touch with him. No work came in via the manager, and the loan was due. Their salvation was that as they had also kept the bank informed, they were liable for only a part of the loan. The fault lay with the manager, and his total lack of action.

At our rehearsal studio, we get to hear who's

been picked up by management. Musicians are always chuffed when somebody's handling their talent; it's a mark of achievement, and shows they're going somewhere.

From us, they go on to recording studios, or out gigging, before coming back to re-work their set. For most bands, this is the straightforward pattern of things. That's because the majority of them are; happily, manager-free zones. What managers will say is that they're so 'original', but that they'll do zip without the right type of guidance.

How often we've seen the scenario repeated with bands. They come in and practice on a regular basis, the manager squirms his way in, says his piece, fills the space between a musician's ears with garbage, and off they all trot in a neat line. They turn up eventually, having had a small taste of success, only to then have the rug pulled out from under them at an early stage. They listened too closely to the manager's hypnotic tones and lost the power of their own minds and wills. They prostituted themselves playing whatever music the old slug wanted them to, in the manner he wanted it played. The most recent one is, "Be more punk, guys. It's the latest. It's really you... Trust me! I KNOW."

Believe me, musicians, if the manager could do what you do, he'd be doing it, not trying to gain status unbecoming him by leeching off you. Managers are too busy listening to A&R departments, trying to take shortcuts straight to record company cash and deals, before their charges are seriously road-hardened enough to be fruitful in the long term. The bands need time to become practised in their art, sharpen up their skills, learn the art of communication on stage. And managers would be better off concentrating on this kind of thing, getting the gigs and publicity sorted, while leaving the playing for the players to sort out.

The latest band to meet their doom under the (mis)guidance of such management types is drifting back to our rehearsal facility, player by player. They didn't survive. They hadn't heeded our warnings to beware, to follow their own instincts regarding their music and direction. They used to make their own sound. They were one of the better bands. Now they've split.

SOS

*If you'd like to air your views in this column, please send your ideas to: Sounding Off, Sound On Sound, Media House, Burrell Road, St Ives, Cambs PE17 4LE. Any comments on the contents of previous columns are also welcome, and should be sent to the Editor at the same address.*



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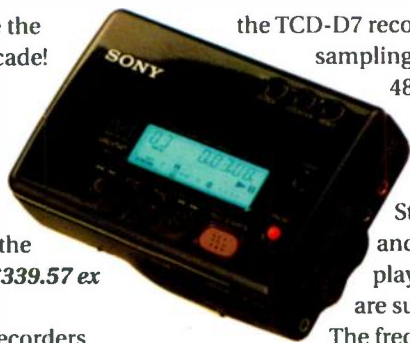
**This must** be the DAT deal of the decade!

Following extensive negotiations with the manufacturer, Music Lab has a limited quantity of Sony TCD-D7 portable DAT recorders for sale at the unprecedented price of **£339.57 ex vat (£399 incl vat)**.

These wonderful little recorders have been Music Lab's best selling DAT machine for more than two years, with literally thousands sold at £449 incl vat. They were remarkable value at that price and have proven to be extremely reliable. At £339.57, it is unlikely that you will ever find a less expensive digital audio recorder.

The TCD-D7 may be cheap but it's still a thoroughbred Sony, with all the quality and design expertise that implies.

With remote digital I/O, as well as a dual sensitivity mic/line input,



the TCD-D7 records at the sampling rates

48kHz, 44.1kHz and 32kHz. Standard and long play modes are supported.

The frequency response in standard play, 48kHz is 20Hz - 22kHz, which comfortably exceeds the performance of CD.

Although the TCD-D7 is small enough to be operated comfortably with one hand, it has a generous LCD which shows audio and battery levels, start IDs and time, as well as a variety of status messages.

The Sony TCD-D7 is housed in an attractive metal casing and is also

supplied with a leatherette travelling bag.

If you are in the market for a portable DAT machine, grab your credit card and pick up the phone while stocks last!

The hot selling Sony studio DAT recorder at the moment is definitely the new DTC-A6. Why? Well for one thing, at £552 ex vat (£649 incl vat), it is the first low cost machine Sony has made in the professional line.

Recommended by Sony for CD mastering, the DTC-A6 records at 44.1kHz analogue as well as 48kHz and 32kHz. It has coaxial input and optical digital I/O.



Also included are rack mount kit, large illuminated display, extensive start ID functions and an infra-red wireless remote.

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**SRV330 reverb and SDE330 delay**



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• Apple Power Mac 8200CD/100 8/1.2 CD (Total RAM 24 MB) • Apple Mac 1705 multiscan display • Apple Mac keyboard • Digidesign PCI ProTools Project Core System • Digidesign 882 I/O PCI interface • Kingston RAM16-DIMM 16Mb • Seagate Barracuda 2Gb ex HD £5,900 Ex VAT

**Package Three: Digidesign Pro Tools III Core System and Apple 8200 CD**



Digidesign's award winning Pro Tools III system with 16 tracks of recording, editing and mixing. Eight channel I/O. TDM compatible. Includes system installation on site by an engineer

• Apple Power Mac 8200CD/100 8/1.2 CD (Total RAM 24 MB) • Apple Mac 1705 display • Apple Mac keyboard • Digidesign PCI ProTools 111 Core System • Digidesign 882 I/O PCI interface • Kingston RAM16-DIMM 16Mb • Seagate Barracuda 2Gb ex HD £9,999 Ex VAT



**Package Four: Digidesign Pro Tools III Core System and Apple 7600/132 CD**

The already powerful 7600 now has a clock speed of 132Mhz, making it a superb choice for the delivery of real-time digital audio. Video in. Package price includes system installation on site by an engineer.

• Apple Power Mac 7600CD/132 8/1.2 CD (Total RAM 24 MB) • Apple Mac 1705 multiscan display • Apple Mac keyboard • Digidesign PCI ProTools 111 Core system • Digidesign 882 I/O PCI interface • Kingston RAM16-DIMM 16Mb • Seagate Barracuda 2Gb ex HD £11,100 Ex VAT

- Systems also available based on the new Power Mac 8500/180 and 9500/200 machines.
- Buy a Pro Tools system from Music Lab, get £1,000 of TDM Plug-Ins for 1 week trial!
- Music Lab also hires fully configured Pro Tools III and Power Mac systems

## CD-R proves a best seller



**The hot** selling Pioneer PDR-05 Compact Disc Recorder literally makes standard CDs at the push of a button. It can also record one track at a time, for programme editing.

Unbelievably, the price of the Pioneer PDR-05 is just £1021.27 ex vat (£1200 incl vat). You can spend more money on a reference quality CD player!

Actually, the PDR-05 is also an exceptional CD player in its own right and won the HiFi Choice Editor's Award for Outstanding Product of the Year.

The PDR-05 accepts a digital or analogue source. When sources like DAT or MiniDisc are fed via the optical digital input, recording is automatically started and stopped in sync with the source. A built in sample rate converter, allows readings made at 48kHz or 32kHz to be transferred in the digital domain to the 44.1kHz CD format.

The 74 min discs cost £8.50 ex vat (£9.99 incl vat). Bulk orders qualify for additional discount.

This unit is now available for a try before you buy test drive.

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OUTBOARD		OUTBOARD		HARD DISK RECORDING		MIDI MODULES		CASSETTE DECKS		AMPLIFIERS		MULTITRACKERS	
<b>Alesis</b>		<b>Joemeek</b>		<b>Akai</b>		<b>Akai</b>		<b>Denon</b>		<b>Alesis</b>		<b>Fostex</b>	
3630	191 225	Compressor	1249 1468	DR4vr	935 1099	SG01v	254 299	DRM540	135 159	RA100	297 349	XR5	322 379
Nanoverb	143 169	Pro Channel	254 299	DR8	2382 2799	SG01k	254 299	DRM640	169 199	<b>C-Audio</b>		380S	680 799
Microverb 4	194 229	Tube Channel	1499 1761	DR16	3403 3999	<b>Alesis</b>		DRS810	254 299	ST400	595 699	<b>Tascam</b>	
Midiverb 4	280 329	Voice Channel	500 588	DR16/2Gb	3931 4620	S4 Plus	680 799	DRW580	170 199	ST600	850 999	424	467 549
Quadraverb 2	594 699	<b>Lexicon</b>		<b>Fostex</b>		QS6	807 949	DRW760	212 249	RA2001	881 1036	464	680 799
MEQ230	228 269	Alex	331 389	DM80	1275 1499	<b>EMU</b>		<b>Marantz</b>		RA3001	1139 1339	03	169 199
<b>AMS</b>		Reflex	399 469	DMT8	1275 1499	Classic Keys	475 559	PMD201	275 323	<b>Denon</b>		<b>Yamaha</b>	
SDMX 6.5/6.5	5780 6791	LXP15II	833 979	<b>Digidesign</b>		Proteus Ultra	1105 1299	PMD222	355 417	PMA250 Mk3	136 159	MD4	765 899
SDMX13/13	6280 7379	PCM80	1799 2114	AudioMedia 3	598 703	Proteus FX	509 595	CP430	425 499	PMA350 II	195 230		
RMX16	4920 5781	PCM90	2198 2583	P/Tools 3 PCI	6069 7131	Morpheus	846 995	PMD502	375 440	PMA450SE	237 279		
<b>ART</b>		<b>Neve</b>		P/Tools 3 N/B	5308 6238	Orbit	739 868	PMD510	599 703	<b>Mackie</b>			
FXR	169 199	33609C	1866 2192	P/Tools Project	1899 2231	<b>Novation</b>		<b>Sony</b>		M-1200	510 599		
FXR Elite 2	237 279	<b>SPL</b>		Session 8 PC	1519 1784	Drum Station	382 449	WMD6C	254 299	<b>Mass</b>			
Tube MP	142 167	Stereo Vitalizer	369 433	888 I/O	2279 2677	Bas Station	297 349	<b>Tascam</b>		Mass 150	234 275		
Dual MP	331 389	Classic Vitalizer	549 645	882 I/O	759 891	<b>Roland</b>		102 Mk II	211 249	Mass 250	297 348		
<b>Behringer</b>		Optimizer	899 1056	<b>EMU</b>		MC303	480 565	202 Mk II	297 349	Mass 500	339 399		
Autoquad	339 399	EQ Magix	899 1056	Darwin	2552 2999	JV1080	1017 1195	302	424 499	<b>Samson</b>			
Composer	254 299	Tube Vitalizer	1999 2348	Darwin + 1GB	2892 3399	<b>Waldorf</b>		112 Mk II	509 599	Servo 150	195 229		
Intelligate	255 299	De-esser	399 468	<b>Roland</b>		Pulse	510 599			Servo 240	254 299		
Multigate	254 299	<b>TL Audio</b>		VS880	1275 1499	<b>Yamaha</b>				Servo 500	339 399		
Multicom	254 299	CL-EQ1	699 821	<b>Soundscape</b>		MU5	211 249						
Parametric	212 250	CL-EQ2	1295 1521	SSHDR1	2212 2600	MU50	382 449						
Combinator	1265 1487	C1	995 1169			MU80	509 599						
Dualflex II	126 149	PA1	895 1051										
Ultraflex	211 249	PA2	395 464										
Ultra-curve	552 648	V2	395 464										
<b>BSS</b>		C-2021	599 704										
DPR402	794 934	EQ-2011	599 704										
DPR901	794 934	PA-2001	599 704										
DPR404	795 934	O-2031	599 704										
DPR502	725 851	VP-2051	599 704										
DPR504	725 851	<b>Roland</b>											
DPR901	795 934	RV70	339 399										
FDS301	415 487	SDE330	637 856										
FDS318	755 887	SRV330	637 856										
FDS360	590 693	SDX330	680 799										
<b>Dbx</b>		SSS10	1871 2199										
1066	449 528	<b>Sony</b>											
160A	428 504	HRMP5	339 399										
166A	467 549	DPSV77	1195 1404										
<b>Digitech</b>		<b>Symetrix</b>											
Studio 400	680 799	501	312 366										
Studio Quad	425 499	528E	560 658										
Studio Twin	212 249	601	1870 2197										
Midi Vocalist	382 449	602	1870 2197										
Vocalist II	468 549	<b>TC Electronic</b>											
Studio Vocalist	851 999	M2000	1394 1639										
<b>Drawmer</b>		M5000 5ADF	2975 3495										
DS201XLR	345 405	<b>Yamaha</b>											
DS404	525 616	GQ2015A	271 319										
DL441	525 616	Q2031B	501 589										
DL241XLR	425 499	GQ1031C	271 319										
DL231	475 558	GC2020C	305 359										
LX20	194 229	PRO R3	898 1056										
1960	995 1169	SPX1000	1178 1385										
1961	995 1169	SPX990	723 850										
<b>Ensoniq</b>		<b>DIGITAL MULTI</b>											
DP2	424 499	<b>Alesis</b>											
DP4+	978 1150	ADAT XT	2297 2699										
<b>Focusrite</b>		BRC	1105 1298										
Green 1	698 821	All	807 948										
Green 2	798 938	A12	1020 1198										
Green 3	848 997	<b>Sony</b>											
Red 1	1925 2261	PCM800	3310 3889										
Red 2	1995 2344	<b>Tascam</b>											
Red 3	2195 2579	DA38	2552 2999										
Red 4	1995 2344	DA88	3743 4399										
Red 6	1425 1674												
Red 7	1495 1756												

The prices above are provided for guidance and comparison. Music Lab is pleased to offer concessionary discounts wherever possible. In particular, special discounts are often available to educational and government establishments, musicians and recording studios, record companies and broadcast organisations. Further discounts are also available on packages and complete systems. Full quotations available on request. Music Lab can quote for virtually any type or brand of audio equipment.

## Used & Ex Hire

Alesis ADAT Sys4	£1450 inc VAT	Yamaha MT8X	£800 inc VAT	Fostex B16	£1650 inc VAT
Alesis ADAT XT	£1950 inc VAT	Topaz Meterbridge	£575 inc VAT	Fostex R8	£900 inc VAT
BRC Ex-Demo	£999 inc VAT	Alesis Monitor 2	£575 inc VAT	Mackie CR1604	£600 inc VAT
Yamaha REV 5	£700 inc VAT	Aphex Tubessence	£400 inc VAT	Sony TCDD7 DAT	£300 inc VAT
Roland SRC-2	£1450 inc VAT	Joemeek Compressor	£900 inc VAT	Apple 7500 PPC	£1400 inc VAT
Vintage Keys Demo	£599 inc VAT	Roland MS1 Sampler	£290 inc VAT	BSS DPR502	£600 inc VAT
Roland MDC1	£400 inc VAT	Sony DTC60es DAT	£550 inc VAT	Apple HD System	£2500 inc VAT
Genelec 1032A	£2400 inc VAT	Sony DTC A8 DAT	£700 inc VAT	Alesis Quad 2	£525 inc VAT
Klark Teknik DN716	£675 inc VAT	Sony DTC670 DAT	£350 inc VAT	Valley People 610	£600 inc VAT
Yamaha REV 7	£600 inc VAT	Sony DTC690 DAT	£400 inc VAT	Alesis Midiverb 4	£200 inc VAT
S/tracs Solo Midi24	£3,600 inc VAT	Behringer Multiflex	£150 inc VAT	Soundcraft Folio 4	£950 inc VAT
Soundcraft Live 24	£1450 inc VAT	Eventide H3000SE	£1850 inc VAT	Yamaha EMP700	£350 inc VAT

## Winter rental deals

For a limited period, Music Lab is offering extra special deals, on key hire items. All this and the famous Music Lab 'four day week' means you can afford the equipment you need today.

- Alesis ADAT XT £25 per day
- Outboard 50% off\*
- Pultec EQs £25 per day

Also new in hire:  
Marantz CD-R CD recorders  
MOTU MIDI Timepiece AV  
Joemeek outboard  
Mutator analogue filter  
Digidesign Pro Tools III system  
Akai DR-16 HD recorder  
Valve mic preamps  
and lots more...  
New hire rate card available on request

Order your Xmas party PA equipment now to avoid disappointment!

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-  **RECORDING ARTIST**  
Record high quality demos to CD
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