

EVERYDAY **NOVEMBER 1988**
ELECTRONICS

INCORPORATING ELECTRONICS MONTHLY

£1.30

MICRO ALARM

REAR SCREEN ONE-SHOT

SEA SYNTHESISER

I.R. OBJECT COUNTER



**City and
Guilds**

**Introducing
DIGITAL
ELECTRONICS Part 2**

The Magazine for Electronic & Computer Projects



No. 1 LIST BAKERS DOZEN PACKS

All packs are £1 each, if you order 12 then you are entitled to another free. Please state which one you want. Note the figure on the extreme left of the pack ref number and the next figure is the quantity of items in the pack, finally a short description.

- BD1 5 13A junction boxes for adding extra points to your ring main circuit.
- BD2 5 13A spurs provide a fused outlet to a ring main where devices such as a clock must not be switched off.
- BD7 4 In flex switches with neon on/off lights, saves leaving things switched on.
- BD9 2 6V 1A mains transformers upright mounting with fixed clamps.
- BD11 1 6 1/2in speaker cabinet ideal for extensions, takes our speaker. Ref BD137.
- BD13 12 30 watt reed switches, it's surprising what you can make with these—burglar alarms, secret switches, relay, etc., etc.
- BD22 2 25 watt loudspeaker two unit crossovers.
- BD29 1 B.O.A.C. stereo unit is wonderful value.
- BD30 2 Nicad constant current chargers adapt to charge almost any nicad battery.
- BD32 2 Humidity switches, as the air becomes damper the membrane stretches and operates a microswitch.
- BD34 48 2 meter length of connecting wire all colour coded.
- BD42 5 13A rocker switch three tags so on/off, or change over with centre off.
- BD45 1 24hr time switch, ex-Electricity Board, automatically adjust for lengthening and shortening day. original cost £40 each.
- BD49 10 Neon valves, with series resistor, these make good night lights.
- BD56 1 Mini uniselector, one use is for an electric jigsaw puzzle, we give circuit diagram for this. One pulse into motor, moves switch through one pole.
- BD59 2 Flat solenoids—you could make your multi-tester read AC amps with this.
- BD67 1 Suck or blow operated pressure switch, or it can be operated by any low pressure variation such as water level in water tanks.
- BD91 2 Mains operated motors with gearbox. Final speed 16 rpm, 2 watt rated.
- BD103A 1 6V 750mA power supply, nicely cased with mains input and 6V output leads.
- BD120 2 Stripper boards, each contains a 400V 2A bridge rectifier and 14 other diodes and rectifiers as well as dozens of condensers, etc.
- BD122 10m Twin screened flex with white pvc cover.
- BD128 10 Very fine drills for pcb boards etc. Normal cost about 80p each.
- BD132 2 Plastic boxes approx 3in cube with square hole through top so ideal for interrupted beam switch.
- BD134 10 Motors for model aeroplanes, spin to start so needs no switch.
- BD139 6 Microphone inserts—magnetic 400 ohm also act as speakers.
- BD148 4 Reed relay kits, you get 16 reed switches and 4 coil sets with notes on making c/o relays and other gadgets.
- BD149 6 Safety cover for 13A sockets—prevent those inquisitive little fingers getting nasty shocks.
- BD180 6 Neon indicators in panel mounting holders with lens.
- BD193 6 5 amp 3 pin flush mounting sockets make a low cost disco panel.
- BD196 1 in flex simmerstat—keeps your soldering iron etc. always at the ready.
- BD199 1 Mains solenoid, very powerful, has 1in pull or could push if modified.
- BD201 8 Keyboard switches—made for computers but have many other applications.
- BD210 4 Transistors type 2N3055, probably the most useful power transistor.
- BD211 1 Electric clock, mains operated, put this in a box and you need never be late.
- BD221 5 12V alarms, make a noise about as loud as a car horn. Slightly soiled but OK.
- BD242 2 6in x 4in speakers, 4 ohm made from Radiomobile so very good quality.
- BD246 2 Tacho generators, generate one volt per 100 revs.
- BD252 1 Panostat, controls output of boiling ring from simmer up boil.
- BD259 50 Leads with push-on 1/4in tags—a must for hook-ups—mains connections etc.
- BD263 2 Oblong push switches for bell or chimes, these can mains up to 5 amps so could be foot switch if fitted into patress.
- BD268 1 Mini 1 watt amp for record player. Will also change speed of record player motor.
- BD275 1 Guitar mic—clip-on type suits most amps.
- BD283 3 Mild steel boxes approx 3in x 3in x 1in deep—standard electrical.
- BD293 50 Mixed silicon diodes.
- BD296 3 Car plugs with lead, fit into lighter socket.
- BD305 1 Tubular dynamic mic with optional table rest.

Most other packs still available and you can choose any as your free one.

VERY POWERFUL 12 VOLT MOTORS—1/2RD HORSEPOWER Made to drive the Sinclair C5 electric car but equally adaptable to power a go-cart, a mower, a rail car, model railway, etc. Brand new. Price £15.00 plus £2.00 postage. Our ref 158.

OVER 400 GIFTS YOU CAN CHOOSE FROM

There is a total of over 400 packs in our Baker's Dozen range and you become entitled to a free gift with each dozen packs.

A classified list of these packs and our latest 'News Letter' will be enclosed with your goods, and you will automatically receive our next news letter.



NEWLY ADVERTISED ITEMS

FET CAPACITOR MICROPHONE Eagle CL200 Electret type microphone. An FET amplifier is built in for obtaining an output equivalent to a high class dynamic microphone while retaining the characteristics of a capacitor microphone. External influence by magnetic and electrostatic noise is minimised since no magnets or coils are used. The small size of this microphone and the low power supply needed for its operation makes this microphone a very versatile unit. Electrical specifications are as follows: Output impedance: 500ohms±30% at 1kHz Sensitivity: -65dB±3dB (0dB=1V/uabar at 1000Hz). Frequency response: 50-8000Hz. Price £1 each. Order Ref. B0646.

SUB-MIN TOGGLE SWITCH Body size 8mm x 4mm x 7mm SBDT with chrome dolly fixing nuts. 4 for £1. Order Ref. B0649.

EX GPD MULTI-RANGE TEST METER 12/C1 Complete in real leather case with carrying handle—this is a 20,000 OPU instrument, with 19 ranges including AC and DC volts—dc current 5mA to 1A, 40hms ranges up to 20meg— the low ohms range is particularly useful, you will be able to read right down to one ohm and below. This meter also has provision for reading dc current 0.5 amp and 0.25 amp. Meter size 6" long x 3" wide x 2" deep. Leather case has compartment for test leads, prods, and croc clips all of which are included. Can be used in the case. Not new but are in first class condition—tested and guaranteed. Price is £7.00. Order ref 7P5.

RE-CHARGEABLE NICADS 'D' SIZE These are tagged for easy joining together but tags, being spot welded, are easy to remove. Virtually unused, tested and guaranteed. £2.00 ref 2P141 or 6 wired together for £10.00 ref 10P47.

8 TRACK CASSETTE DECK Complete with cassette holder. In fact, if you have any 8 track cassettes, then with the addition of 2 speakers this unit would play them. As 8 track cassettes are no longer made the units have become surplus, however, they do contain lots of useful parts: motor, tape head and drive, pulley wheels, etc. and a stereo amplifier. Mains operated. Brand new in makers packing. Only £3.00 each plus £1.00 additional postage. Order ref 3P46.

TWIN CASSETTE & STEREO RADIO—Covers long, medium and FM bands. Twin cassettes allow copying, editing, recording, playback, etc. A beautifully made portable unit which normally retails at about £60. Our price only £30, plus £3 insured delivery.

STEREO SPEAKERS Each 10 watts 8 ohm and twin speakers mounted in Walnut-finish cabinets, size 16" high x 10" wide x 6" deep. Front is black Oacron and the finish is very pleasing. Price £7.00 per pair. Extra postage and packing £3.00.

UNUSUAL MAINS MOTOR Quite small, measures only 2" x 2" x 1" approx., but is surprisingly powerful. It revs at 3,000rpm and is reversible. It has good length 1/8" diameter spindle. Price £1.00. Our order ref B0640.

LASER TUBE

Made by Philips Electrical. New and unused. This is helium-neon and has a typical power rating of 1.6mW. It emits random polarised light and is completely safe provided you do not look directly into the beam when eye damage could result. **DON'T MISS THIS SPECIAL BARGAIN!** Price £29.95 plus £3 insured delivery.

POWER SUPPLY KIT for our laser gives 8kV striking and 1.25 running at 5mA. price £13 (plus £2 post unless ordered with tube).

PAPST AXIAL FAN—MANUFACTURERS REF NO. TYP4580N

This is mains operated. 15 watt rating and in a metal frame with metal blades so OK in high temperatures. Body size approx. 4 3/4" square x 1 3/8" thick. £6.00 each, plus £1.00 postage. Our ref 6P6.

VERY POWERFUL MAGNETS Although only less than 1" long and not much thicker than a pencil these are very difficult to pull apart. Could be used to operate embedded reed switches, etc. Price 50p each, 2 for £1.00. Ref B0642.

FLIP-OVER DIGITAL CLOCK Quite an eyecatcher, this is mains operated. The figures flip-over per minute and per hour and give a larger than usual visual display. Supplied complete with front and perspex panels to glue together to make its case. £2.00 each. Our ref 2P265.

STABILISED 15V 2A PSU kit which mounts on SRB panel. Mains operated. Ideal to drive monitor, etc. Price only £6. Our ref. 6P7.

SMOOTHING CAPACITOR 230uF 63V 10A at 50 deg. C. Can type with mounting bracket. Price £2. Our Ref. 2P206.

SMOOTHING CAPACITOR 220uF 63V 5.8A at 50 deg. C. Can type with mounting bracket. Price £1. Our Ref. B0644.

10A 100V BRIDGE RECTIFIER ASSEMBLY comprising 4 diodes mounted on two 4in x 3in sinks with bottom insulators. Price £2. Our Ref. 2P207.

DO YOU WANT TO MEASURE AC AMPS? We have found a few more of the 50Hz 0-40A AC 2 1/2in diameter panel meters, made for RAF equipment these are very reliable and robust. Price £5 each. Our Ref. 5P105.

20A DOUBLE POLE RELAY WITH 12V COIL complete with mounting brackets, made by the Japanese Omron Company. Price £2 each. Our Ref. 2P173A.

TORROIDAL MAINS TRANSFORMER with twin outputs. 6.3V 2A and 12V 600mA, so ideal for FDD power supply. Price £5. Our Ref. 5P122.

DOUBLE MICRO CASSETTE DECK made by the Japanese ABS company. This takes two micro cassettes and is complete with motors, solenoids to select the deck to use and record and playback heads. Price £10. Our Ref. 10P49.

QUICK FIX MAINS CONNECTOR A must for your workshop. Saves putting on plugs as you just push the wires under the spring clips. Automatically off when lid is up. Price £7.50. Our Ref. 7P51.

BT HANDSET with curly lead terminating with flat BT plug. Colour cream. Price £5. Our Ref. 5P123.

SUB-MIN TOGGLE SWITCH—Body size 8mm x 4mm x 7mm SBDT with chrome dolly fixing nuts. 4 for £1. Order Ref. B0649.

MINIATURE DRIVER TRANSFORMER—Reference LT44. Impedance ratio 20k ohm to 1k ohm centre tapped. Size approx. 19.5mm x 2 for £1. Order Ref. B0653.

2764 EPROM 65K bits. BBC micro compatible. £3 each. Order Ref. 3P48.

PIEZO SOUNDER. Reference PKM11 3-30V operation, 90dB output. 2 for £1. Order Ref. B0647.

J & N BULL ELECTRICAL

Dept. E.E., 250 PORTLAND ROAD, HOVE,

BRIGHTON, SUSSEX BN3 5QT

MAIL ORDER TERMS: Cash, PO or cheque with order. Orders under £20 add £1.50 service charge. Monthly account orders accepted from schools and public companies. Access and B/card orders accepted. Brighton (0273) 734648 or 203500

POPULAR ITEMS

Some of the many items described in our current list which you will receive if you request it

3 1/2in FDD CHINON 80 track 500k. Shugart compatible interface. Standard connections, interchangeable with most other 3 1/2in and 5 1/4in drives. Brand new. £28.50 plus £3 insured post.

3in FDD HITACHI HFD305SXA Shugart compatible interface. 500k on 3in disc. Recommended for many Amstrads but interchangeable with most drives. £29.50 plus £3 insured post.

FDD CASE AND POWER SUPPLY KIT for the 3in or 3 1/2in. £11.00. Ref 11P2 for the Chinon, 11P3 for the Hitachi.

9in MONITOR made for ICL, uses Phillips black and white tube. Brand new and complete but uncased. £16.00 plus £5.00 post.

ACORN COMPUTER DATA RECORDER REF ALF03 Made for the Electron or BBC computers but suitable for most others. Complete with mains adaptor, leads and handbook. £10.00. Ref 10P44.

POWERFUL IONISER Uses mains transformer. Generates approx. 10 times more ions than the normal diode/cap ladder circuits. Complete kit £11.50 plus £3.00 post.

3 INCH FDD HITACHI REF. HFD 305SXA. Ideal replacement or second drive in most computers, especially Amstrad 6128, etc. Price £30 plus £3 post.

FREE POWER! Can be yours if you use our solar cells—sturdily made modules with new system bubble magnifiers to concentrate the light and so eliminate the need for actual sunshine—they work just as well in bright light. Voltage input is .45—you join in series to get desired voltage—and in parallel for more amps. **Module A** gives 100mA, Price £1, Our ref. B0631. **Module C** gives 400mA, Price £2, Our ref. 2P199. **Module D** gives 700mA, Price £3, Our ref. 3P42.

SOLAR POWERED NI-CAD CHARGER 4 Ni-Cad batteries AA (HP7) charged in eight hours or two in only 4 hours. It is a complete, boxed ready to use unit. Price £6. Our ref. 6P3.

50V 20A TRANSFORMER 'C' Core construction so quite easy to adapt for other outputs—tapped mains input. Only £25 but very heavy so please add £5 if not collecting. Order Ref. 25P4.

15A PANEL METER These have been stripped from Government surplus battery charger units made originally for army use. Unused, tested but of course rather old, diameter 2in can be surface or flush mounted. £3 each. Our Ref. 3P40.

SWITCH AC LOADS WITH YOUR COMPUTER This is easy and reliable if you use our solid state relay. This has no moving parts, has high input resistance and acts as a noise barrier and provides 4kW isolation between logic terminals. The turn-on voltage is not critical, anything between 3 and 30V, internal resistance is about 1K ohm. AC loads up to 10A can be switched. Price is £2 each. Ref. 2P183.

METAL PROJECT BOX Ideal size for battery charger, power supply etc., sprayed grey, size 8in x 4 1/4in x 4in high, ends are louvred for ventilation other sides are flat and undrilled. Order Ref. 2P191. Price £1.

BIG SMOOTHING CAPACITOR. Sprague powercity 39,000uF at 50V. £3. Our ref. 3P41.

4-CORE FLEX CABLE. Cores separately insulated and grey PVC covered overall. Each copper core size 7/0.2mm. Ideal for long telephone runs or similar applications even at mains voltage. 20 metres £2. Our ref. 2P196 or 100 metres coil £8. Order ref. 8P19.

6-CORE FLEX CABLE. Description same as the 4-core above. Price 15 metres for £2. Our Ref. 2P197 or 100 metres Ref. Our ref. 9P1.

BULK-HEAD MOUNTING LOUDSPEAKER. Metal case with chrome grill front and with mounting lugs for screwing to ceiling. 8in. speaker. £10 each. Order ref. 10P43 add £2 post.

TWIN GANG TUNING CAPACITOR. Each section is .0005uF with trimmers and good length 1/4in spindle. Old but unuse3d and in very good condition. £1 each. Our ref. B0630.

13A PLUGS Good British make complete with fuse, parcel of 5 for £2. Order ref. 2P185.

13A ADAPTERS Takes 2 13A plugs, packet of 3 for £2. Order ref. 2P187.

20V-0-20V Mains transformers 2 1/2 amp (100 watt) loading, tapped primary. 200-245 upright mountings £4. Order ref. 4P24.

BURGLAR ALARM BELL—6" gong OK for outside use if protected from rain. 12V battery operated. Price £8. Ref. 8P2.

24 HOUR TIME SWITCH—16A changeover contacts, up to 6 on/off per day. Nicely cased, intended for wall mounting. Price £8. Ref. 8P6.

CAPACITOR BARGAIN—axial ended, 4700uF at 25V. Jap made, normally 50p each, you get 4 for £1. Our ref. 613.

PIEZO ELECTRIC FAN—An unusual fan, more like the one used by Madame Butterfly than the conventional type, it does not rotate. The air movement is caused by two vibrating arms. It is American made, mains operated, very economical and causes no interference, so is ideal for computer and instrument cooling. Price is only £1 each. Ref. B0598.

SPRING LOADED TEST PRODS—Heavy duty, made by the famous Bulgin company, very good quality. Price 4 for £1. Ref. B0587.

ASTEC P.S.U.—Switch mode type. Input set for +230V. Output 3.5 amps at +5V, 1.5 amps at +12V, and 3 amps at +5V. Should be OK for floppy disc drives. Regular price £30. Our price only £10. Ref. 10T34. Brand new and unused.

APPLIANCE THERMOSTATS—Spindle adjust type suitable for convec tor heaters or similar. Price 2 for £1. Ref. B0582.

3-CORE FLEX BARGAIN No. 1—Core size 5mm so ideal for long extension leads carrying up to 5 amps or short leads up to 10 amps. 15mm for £2. Ref. 2P189.

3-CORE FLEX BARGAIN No. 2—Core size 1.25mm so suitable for long extension leads carrying up to 13 amps, or short leads up to 25A. 10m for £2. Ref. 2P190.

ALPHA-NUMERIC KEYBOARD—This keyboard has 73 keys giving trouble free life and no contact bounce. The keys are arranged in two groups, the main area is a QWERTY array and on the right is a 15 key number pad, board size is approx. 13" x 4"—brand new but offered at only a fraction of its cost, namely £3, plus £1 post. Ref. 3P27.

WIRE BARGAIN—500 metres 0.7mm solid copper tinned and p.v.c. covered. Only £3 plus £1 post. Ref. 3P31—that's well under 1p per metre, and this wire is ideal for push on connections.

INTERRUPTED BEAM KIT—This kit enables you to make a switch that will trigger when a steady beam of infra-red or ordinary light is broken. Main components—relay, photo transistor, resistors and caps, etc. Circuit diagram but no case. Price £2. Ref. 2P15.

500V BRIDGE MEGGER—Made by famous Evershed and Vignoles Company. 500V Meggers are the only reliable instrument for measuring the state of electrical wiring installations, but the Bridge Megger has the additional feature of being able to measure low ohms so can be used for finding and localising faults. The instruments we have are complete in a leather carrying case and they have been re-calibrated and tested and are in perfect order. Price is £50 plus £6 insured delivery.

STEREO SPEAKERS Each 10 watts 8 ohm and twin speakers mounted in walnut finish cabinets, size 16in high x 10in wide x 6in deep. Front is black Oacron and the finish is very pleasing. Price £7 per pair. Extra postage and packing £3. Our Ref. 7P6.