

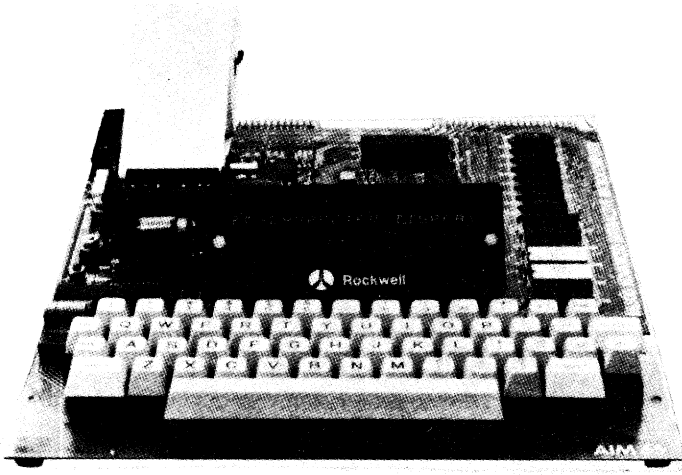
ACORN DOCUMENTATION

355	System 1 User manual (Includes 6502 CPU technical manual)	5.00
356	Acorn System 2 and Cassette Operating System manual	5.00
357	Acorn Disk Manual for Drive, DOS & controller card	3.50
358	Acorn 6502 Assembler/Disassembler/Editor user manual	5.00
359	Acorn 6809 user manual	5.00
360	Acorn BASIC manual	17.50
361	Acorn Atom manual	8.00
362	Technical manual on Acorn 8K RAM card	1.00
363	Technical manual on Acorn VDU card	1.00
364	Technical manual on Acorn FDC card (Section out of DOS manual)	1.00
365	Technical manual on Acorn VIB card	1.00
366	Technical manual on Acorn Eprom programmer card	1.00
367	Technical manual on Acorn Analog card	1.00
368	Technical manual on Acorn Laboratory Interface	1.00
369	Acorn Atom PAL encoder board manual	1.00
370	ONLI extension to BASIC user manual	3.00
371	Econet User Manual	3.00
372	Econet Technical Manual	3.00
373	FLEX user manual	30.00
374	Acorn 32K DRAM card technical manual	1.00
375	Acorn In-circuit Emulator technical manual	1.00
376	Atom disk manual	5.00

ROCKWELL DOCUMENTATION

300	R6500 Programming manual	4.00
305	R6500 Hardware manual	4.00
310	AIM 65 User handbook	11.00
315	AIM 65 Circuit diagram	1.00
316	AIM 65 Monitor listing	3.00
320	Items 300-316 together	19.50
325	AIM 65 BASIC manual	6.00
326	Items 320,325 together	25.00
Items 300, 305 and 325 include the appropriate quick reference card.		
330	Terminal Interface Monitor manual	2.50
335	Micropower Data Catalogue	9.00
340	Microprocessor Systems Engineering	12.00
345	6502 Software Design Manual	8.00
350	AIM 65 PL/65 User manual	9.00
352	AIM 65 Laboratory Practice Leo J Scanlon. First class teaching aid for AIM 65	9.00
327	AIM 65 Forth Manual	11.00
328	AIM 65 Pascal Manual	11.00

ROCKWELL AIM 65



Since its introduction in 1978, the Rockwell AIM 65 "Advanced Interactive Microcomputer" has remained successful and unchallenged in its particular niche in the micro spectrum. Its unique combination of full size keyboard, built-in single line display and built-in printer have earned it many friends, especially in Education and Industry. Educationalists like the relatively low cost of providing a complete computer to a student, including permanent print-out copy for notes, and avoiding the need for a bulky tv monitor. The well written documentation and the built-in machine code features have also proved factors in the choice of AIM 65 for computer laboratories. Industrial users comment favourably on the compact solution to those computing problems where user guidance, keyboard entries and hard copy have to be provided on desk or bench.

Control Universal have had several interesting special purpose projects based on AIM 65s, including foreign exchange calculators for a bank, automatic hearing testers and scorers for exhibition dart matches.

The general specification of the Rockwell AIM 65 is as follows:-

6502 - based microcomputer, crystal controlled at 1MHz.

On-board sockets provide space for 4K NMOS RAM in 2114 type ICs, plus five sockets for 4k 24 pin ROMs. As supplied, the E and F sockets are fitted with the 8k monitor. The D socket is used for the two pass assembler ROM, or for a PROM version of a BASIC user program, or any other convenient use. BASIC, Forth or PL/65 are designed to occupy the B and C sockets, while Pascal requires these sockets plus three off-board sockets in an extension board such as CU-EM.

The facilities offered by the 8k monitor include initialisation at power-on to provide a prompt in the display awaiting a command from

the keyboard. At this point the user may enter BASIC or Assembler by pressing 5 or N, or may examine memory (M), enter the text editor (E), dump or load memory to or from tape or other defined medium (D, L), examine cpu registers (R), change A, X, Y registers, stack pointer or address pointer (A, X, Y, S, *).

A dual interface to cassette tape with motor control allows tape to tape assembly. The hardware designer can benefit from the use made of 6502, 6520, 6532, and 6522 devices, and can use the spare 6522 exactly as required. All the connections from the tape interface, the spare 6522 and the cpu itself are brought out to 44 way connectors at the rear of the board.

The printer is fully controlled under software, and prints 20 columns wide onto thermal paper. The display is made up of "starburst" 16 segment red LED displays to give a 20 character single line display which scrolls in use for convenient viewing.

code	description	price
100	AIM 65 with 1k RAM	289.00
105	AIM 65 with 4k RAM	307.00
110	AIM 65 with 4k RAM, BASIC and two pass Assembler	328.00
120	AIM 65 two pass assembler ROM	24.00
125	AIM 65 BASIC in two ROMs with manual	43.00
155	AIM 65 PL/65 high level machine code programming language in two ROMs, with manual	57.00
160	AIM 65 Forth in two ROMs with manual	43.00
161	AIM 65 Pascal in five ROMs - needs extension card, eg CU-MEM, with manual	66.00
140	AIM 65 spare printer	35.00
141	AIM 65 spare display chip (4 characters)	10.00
145	AIM 65 spare keyboard with connector	30.00
150	AIM 65 spare red display filter	4.00
500	AIM 65 connector for expansion and application, 44 way	5.00
505	Box of 10 x 250ft thermal paper rolls, blue print	23.00
510	Box of 20 x 250ft thermal paper rolls, blue print	43.00
511	Box of 20 x 66ft thermal paper rolls, black print	16.00

See under "Documentation" for prices of Rockwell manuals bought separately.

See under "Expanding the AIM 65" for details of Control Universal boards and disk systems for providing extensions to the AIM 65 such as video, PROM programming, more i/o channels, analog, disk storage, etc.

See under "Microflex Modules" for details of Rockwell's own range of AIM 65 extension cards.

See under "Enclosures" for the choice of cabinets for AIM 65.

See under "Power supplies" for the choice of power supplies for AIM 65.

EXTENDING THE ROCKWELL AIM 65

The virtues of the AIM 65 are detailed in the previous section, and indeed it does fulfil many roles extremely well. However, in some circumstances, more features are required than are provided in the standard unit. We offer two ranges of extensions to the AIM 65, namely the CUBIT range made by Control Universal, and the Microflex range made by Rockwell themselves. Microflex has the advantage of being made by the same manufacturer as the AIM 65, but the British made CUBIT system of extension offers good value for money, and a wider range as a result of being compatible throughout both the CUBIT and Acorn ranges of units.

The CUBIT range is described below, in this section. Microflex has the whole of the next section to itself.

1. CUBIT See Page 2.1

CUBIT is an interface unit which extends the AIM 65 in four ways:-

4k RAM memory extension, which can be mapped at 0, 1, 8, 9, A, B, C, or D. As an AIM 65 extension it would normally be mapped at 1, ie from hex 1000 to 1FFF. This provides a contiguous memory expansion from the 4k RAM on board the AIM 65, and makes the system ready for further memory extensions, which are usually in 8k blocks.

4k ROM/PROM extension. A socket is provided for a 4k or 2k ROM or PROM, which can be mapped at 8, 9, A, B, C, D, E or F. This is particularly convenient for mounting the DOS (disk operating system) PROM, in which case it is mapped at 8, ie hex 8000 to 8FFF.

Additional VIA 6522 chip. This provides a further 20 i/o lines and two timers. It can be mapped at 9000, 9400, 9800 or 9C00.

Data Highway Connector. The AIM 65 does have an expansion connector, but the configuration of the CUBIT Data Highway Connector is to the Acorn bus standard. This makes it compatible with the entire range of Acorn and Control Universal products, and also allows ribbon cable connection, which is not possible with the 44 way AIM connector.

2. MORE MEMORY

Using the Acorn Eurocard data bus extension on the CUBIT, further memory can be added by plugging directly onto the 64 way ribbon cable. The choice of memory cards includes the following:

Acorn 8k RAM + 8k ROM card. Code 730. £87 with 8k RAM memory. Uses 2114L RAM chips. Can take two 4k ROMs. Decoded in 8k blocks. See page 3.5

Acorn 32k DRAM card. Code 690. £149. No ROM slots. Decoded in 8k blocks. Uses sixteen 16k bit 5v only DRAM chips type 4816. See page 3.6

CU-MEM Universal Memory Carrier. Code 535. £70 without memory devices. £104 with 16k NMOS RAM (code 536). £132 with 16k CMOS memory (code 537). Arranged in two banks of four 28 pin sockets, which can accept NMOS or CMOS RAM, ROM or PROM, in 2k, 4k or 8k devices, as 24 or 28 pin packages. Complete with self charging battery back-up circuit for non-volatile RAM. See page 2.7

CUDRAM 64k Dynamic RAM Card. Code 670. £99. 4K ROM slot. Decoded in 4k blocks. See page 2.9

3. RACK EXTENSION

A 64 way ribbon cable can be plugged into the Data Highway Connector of the CUBIT. The other end can be plugged on the back of a standard Control Universal backplane, modified for AIM 65 use. See page 2.13. Note that the AIM version carries a suffix A, eg. 954A is a 14 way buffered backplane modified for AIM 65 use. Racks and subracks can be found on page 2.14, and enclosures in their own section.

4. DISK EXTENSION

A disk facility is probably the greatest increase in convenience that can be achieved with any computer. Loading a 4k bytes disk file takes only about a second, and disk based two pass machine code assembly becomes very straightforward and quick. All of the AIM 65 facilities remain valid with the Control Universal disk extension, but in addition, the user gains access to the range of Acorn software, including their assembler, BASIC, Word Processor, and many others.

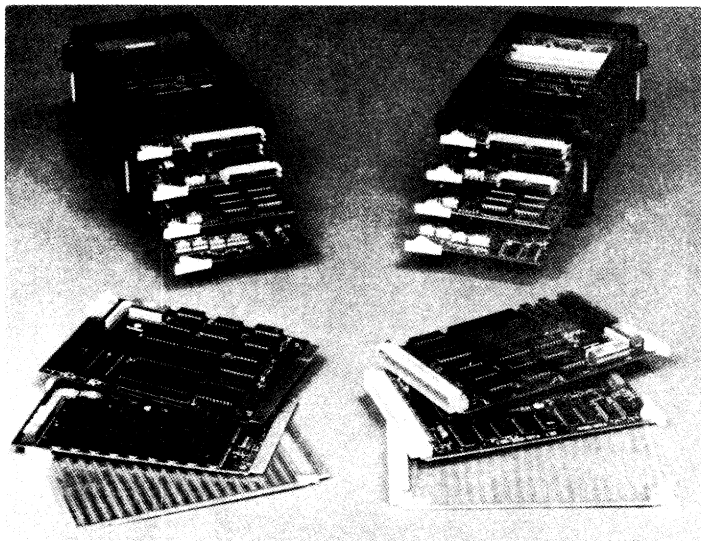
The minimum items required to add a disk facility to an AIM 65 are as follows:

1209	Replacement PROM for AIM65 ROM Z22, which adds DOS vectors	£10
1216	Disk Operating System (DOS) in EPROM, at hex 8000, mounted in the ROM socket on CUBIT, with documentation and utilities disk	£45
600	CUBIT 4k Interface unit	£70
615	CUBIT 64 way interface cable	£25
765	Floppy disk controller	£134
770	Floppy disk drive (approx 100 KBytes storage)	£165
775	Floppy disk connection cable	£15

TOTAL £464

- 1140 SINGLE DISK ENCLOSED MINIMUM SYSTEM D1
Includes parts shown above, mounted in a 245mm (8" internal capacity) caseframe with 12v 1.5a power supply. It relies on the availability of 750mA at 5v from the user's AIM power supply. One further card, eg memory, video etc, can be accommodated in the rack. £550
- 1141 As 1140 above, but without the provision of the CUBIT card £480
- 1150 SINGLE DISK ENCLOSED 19" RACK SYSTEM WITH POWER SUPPLY RD1
This is similar to the D1 system above, but has a full 19" caseframe with 16.8" internal capacity, and provided with 8 Eurosockets and associated card guides, and a disk module mounted on module guides. Of the eight sockets, one is used for the floppy disk card, and the other seven are completely free for user determination. The power supply is 3a at 5v, plus 1.5a at 12v. £679
- 1151 As 1150 above but without CUBIT £609
- 1160 DOUBLE DISK DOUBLE HEIGHT 19" RACK SYSTEM WITH POWER SUPPLY RD2
This is similar to the RD1 system above, but the power supply is increased to 5a, 5a plus 1.5a 12v, the lower half of the rack is provided with 14 Eurosockets and associated card guides, and the upper half is provided with two disk drives. £999
- 1161 As 1160, but without CUBIT £929

ROCKWELL MICROFLEX MODULES



Microflex 65 is the name given to the range of Eurocard modules made by Rockwell to be both an extension to the AIM 65 and a stand alone modular Eurocard rack mounted computer. The 64 line bus offers memory addressing up to 128k bytes, and allows any card in any slot. A range of cages (4, 8 and 16 way) permit a variety of packaging configurations.

166 RM65-1000E Microflex single board computer £121

Integrates a 6502 CPU, 2k bytes of static RAM, 16K bytes ROM capacity, 6522 VIA onto a Eurocard. Selectable memory map compatibility with AIM 65 allows programs developed on AIM 65 to be installed on this SBC.

165 RM65-3108E Microflex 8k static RAM card £171

Carries 8k bytes RAM in 2114 devices, in two 4k blocks. Starting addresses of each block is selectable by switch, and a further switch allocates the block to one of two 64k banks, allowing the CPU to select from 128k bytes.

171 RM65-3132E Microflex 32k bytes dynamic RAM £171

Arranged in eight 4k blocks which can be selected in 4k blocks, and assigned to one of two 64k banks. The entire module can be write protected by a switch. Refreshing is automatic and transparent to the CPU

170 RM65-3216 Microflex 16k PROM/ROM module £58

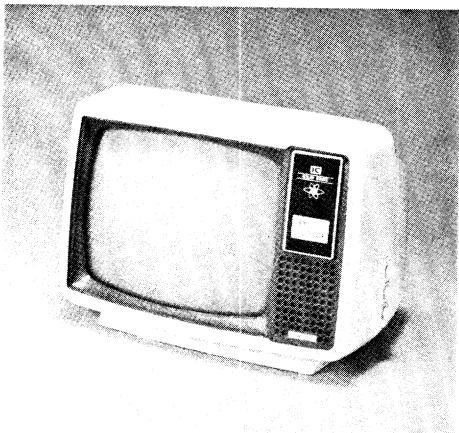
Eight 24 pin sockets each allowing a ROM or PROM of up to 8k bytes. Switches allow independent setting of the start addresses of 4k memory blocks. Choice of 2, 4 or 8k byte memory device is by jumper.

167 RM65-5101 Microflex Floppy Disk Controller £246

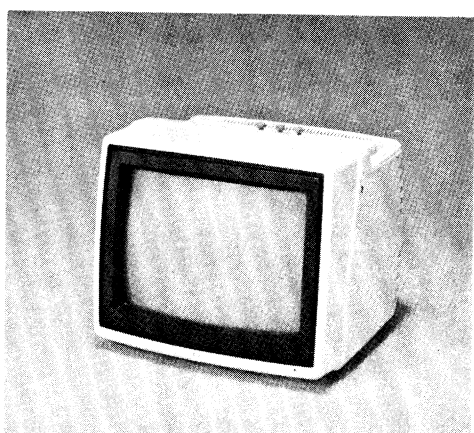
Controls up to four 8" or 5.25" drives, single or double sided, soft sectored. Single or double density may be selected under software control. Price includes ROM firmware for Disk, File and Directory functions.

- 168 RM65-5102E Microflex CRT controller (VDU card) £118
Monochrome output to monitor or tv (via on board RF modulator). 5x7 matrix in a 7x10 field provides alphanumeric and symbols from on-board character generator.
- 172 RM65-5222E Microflex General Purpose I/O and Timer (GPIO) £118
Provides two 6522 VIA devices offering a total of 40 i/o lines plus 4 timers. Can be assigned to one or both of the two 64k memory banks
- 200 RM65-5451E Asynchronous Communications Interface Adaptor (ACIA) £136
Interfaces two independent asynchronous serial i/o channels onto the bus, each of which may operate as a data terminal or data set, selectable by jumpers. Both RS232C and 20mA TTY current loop are provided on channel 1; RS232C on channel 2. Uses 6551 ACIA device.
- 185 RM65-7004E Microflex 4 slot card cage £86
182 RM65-7004NE Microflex 4 slot pcb only £12
186 RM65-7008E Microflex 8 slot card cage £142
183 RM65-7008NE Microflex 8 slot pcb only £19
187 RM65-7016E Microflex 16 slot card cage £216
184 RM65-7016NE Microflex 16 slot pcb only £34
Cages have integral card guides. Allows extension to AIM 65 through a buffer module (code 180). May be mounted in a variety of orientations. Accepts axial module cooling fan. Screw terminals provided for power connection.
- 175 RM65-7101 Single Card Adaptor for AIM 65 to one Microflex module £36
One end plugs directly onto the AIM 65 expansion connector, and the other onto the Microflex module to be used.
- 173 RM65-7102E IEEE 488 Bus Controller Module £177
ROM resident firmware implements all the bus functions specified in the IEEE 488, 1978. A TI TMS 9914 GPIB adaptor interfaces the 16 bit GPIB to the 8 bit Microflex bus. Address, data and control lines are buffered.
- 180 RM65-7104E Adaptor/Buffer Module for AIM 65 to multiple modules £52
Consists of an adaptor, two cables and buffer module that connects an AIM 65 to the expansion cages. The adaptor plugs onto the AIM expansion connector.
- 190 RM65-7201E Design Prototyping module £25
Plain card with pre-routed power and return lines, and connector pattern, with holes for wire-wrapping prototype circuits.
- 195 RM65-7211E Extender Module £27
Allows a module to be accessible by an engineer while remaining plugged in to the bus.
- 191 RM65-7116E Microflex Cable Driver Module £68
As code 180, allows AIM 65 to be connected to multiple Microflex modules, but in this case the cage may be up to 6 feet away, where the standard unit is limited to 16 inches.

VIDEO DISPLAY UNITS

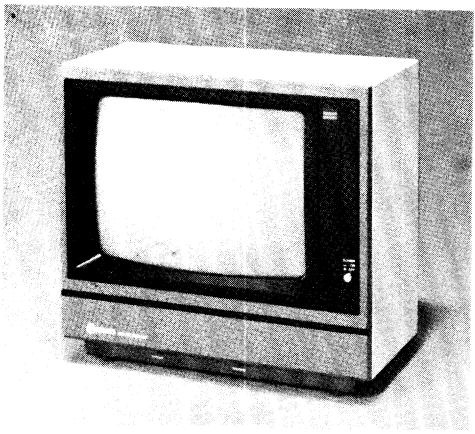


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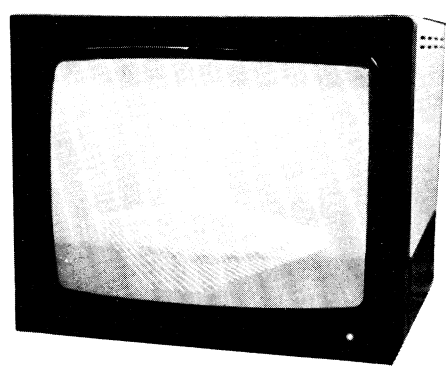


757

- | | | |
|-----|---|------|
| 755 | 12" medium resolution low cost green screen monitor | £99 |
| 757 | 12" high resolution green screen with anti-glare filter 18MHz | £139 |



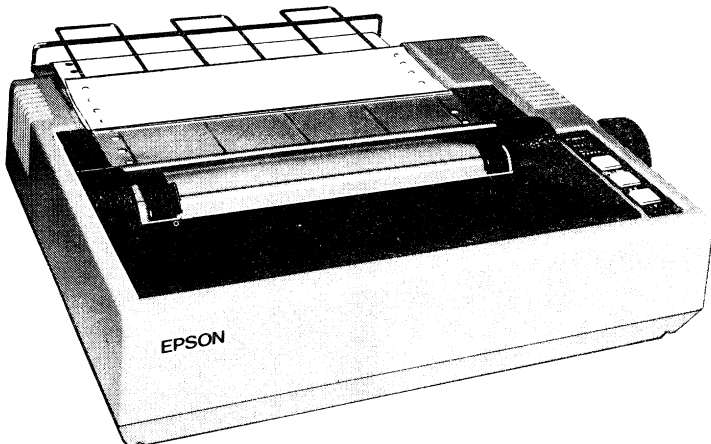
760



761/762

- | | | |
|-----|---|------|
| 760 | Standard resolution colour monitor - 400 dots/line, TTL input | £295 |
| 761 | Medium resolution colour monitor - 600 dots/line, TTL input | £395 |
| 762 | High resolution colour monitor - 800 dots/line, TTL input | £495 |

EPSON MX RANGE OF MATRIX PRINTERS



This is claimed to be the worlds most successful range of computer printers, and certainly its adoption with only a change of badge as the printer for the IBM, Sharp, PET and HP microcomputers lends weight to the idea.

482 Epson MX 80 F/T type I £395

This version has a 9x9 dot matrix which allows true d-scenders, operates at 80 ch/s, programmable font variation to give 40, 66, 80 and 132 characters per line, plus emphasised and enlarged characters. The unit comes with a tractor feed mechanism which be easily detached and then cut sheets of paper used as in an ordinary typewriter. The rubber plattern helps to reduce the printing noise, and improves the standard of printing. "Chunky" graphics are also standard on this version.

480 Epson MX 80 F/T type II £425

This is broadly similar to the MX 80 F/T model I, but has high resolution graphics capability with individual dot addressability.

245 Epson MX 82 £415

Again similar to MX 80 types above, but with true 1:1 ratio screen dump. ie a circle is printed as a true circle. The high resolution graphics give 1152 dots to the line. This version does not have friction feed.

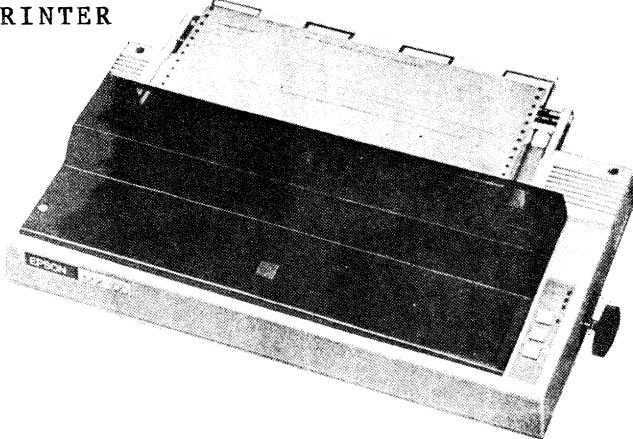
246 Epson MX 82 F/T £455

As the Epson MX 82 above but with the choice of demountable tractor drive or friction feed.

483	RS232 interface for MX 80 range	£45
484	Universal IEEE to Centronics interface	£69
250	RS232 interface with 2k FIFO (required for hi-res graphics)	£79
251	RS232 interface with 2k FIFO and "x" on "x" off	£105
487	Spare cartridge ribbon for MX 80 series	£9
488	Printer cable Acorn to Centronics	£15

EPSON MX 100 PRINTER

NEW TYPE III
CHEAPER AND BETTER!

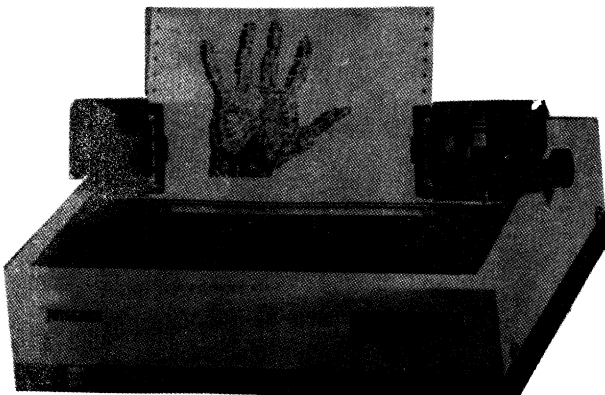


What could be better than increased performance coupled with lower price? MX 100/3 is upgraded from 80 to 100 characters/sec, and has had more programmable features added that includes subscripts and superscripts, improved graphics, auto underlining and enhanced aesthetics. At the same time the price has been decreased from £575 to £495, to what must be one of the best buys around in matrix printers.

100 ch/s	15" wide carriage	Bit Image Printing
32 Print Fonts	96 ascii Characters	8 international character sets
Correspondance Quality Printing		True descenders on lower case

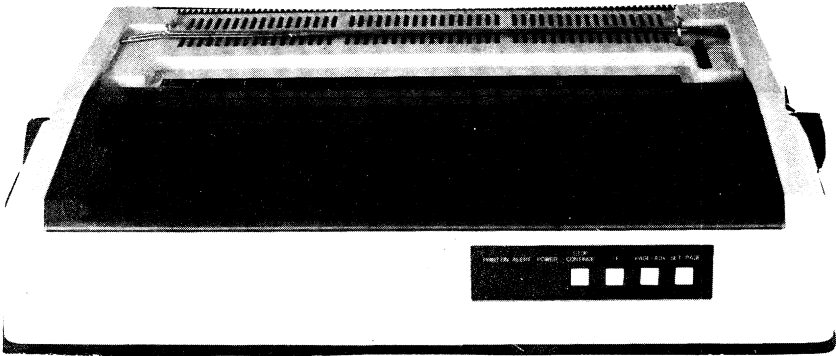
247 Epson MX 100/3	£495
248 Epson MX 100 spare cartridge ribbon	£11

INTEGREX CX 80 COLOUR PRINTER



This printer produces text and graphics in 7 colours by single, double and treble printing using a three colour ribbon (magenta, yellow and cyan). Each printer dot is individually addressable for high resolution colour graphics. The text format is 5x7 matrix for the 96 standard ASCII characters, 6x7 matrix for 64 PET graphics characters, plus 15 user programmable characters.

240 Integrex colour printer	£875
241 Integrex spare colour ribbon	£15



This one of the most competitively priced daisy wheel printers on the market, and yet offers a wide range of sophisticated features. It is provided with a standard 2K print buffer, and internal software which achieves compatibility with word processing and wordstar programs.

Facilities include:-

- shadow overprinting
- bold overprinting
- automatic underlining
- proportional spacing
- half line feed for superscripts and subscripts
- variable character pitch and variable line feed pitch
- vertical and horizontal tabs
- programmable form length
- software controlled red/black ribbon (model 55 only)
- high-resolution graphics
- bi-directional printing with high speed vertical and horizontal movement when not printing, and short line logic seeking

The standard models have a rubber plattern and are designed to be used with single sheets of paper like an ordinary typewriter, although motorised paper advance makes paper loading exceptionally quick and easy. Alternatively, a tractor option is available which handles standard computer paper with holes along the edge. There is also an automatic loader for single sheets of cut paper, called a sheet feeder.

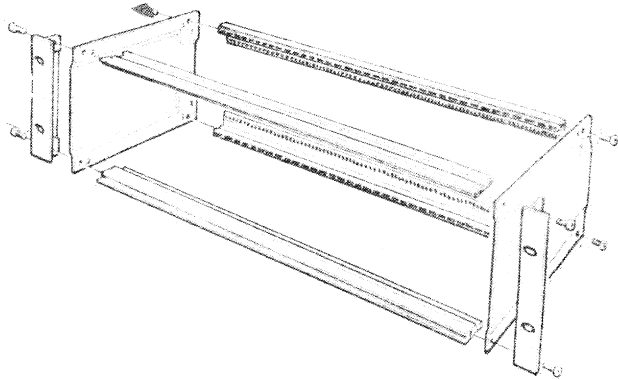
493	TEC Starwriter model 40 (40 c/s)	parallel Centronics interface	£1199
494	TEC Starwriter model 40 (40 c/s)	serial RS232 interface	£1199
256	TEC Starwriter model 55 (55 c/s)	serial RS232 interface	£1499
255	TEC Starwriter model 55 (55 c/s)	parallel Centronics interface	£1499
497	Tractor feed mechanism for standard computer paper		£140
498	BDT cut sheet automatic feeder		£750
499	Multistrike carbon ribbon for all TEC models above	each	£4
503	Multistrike carbon ribbon for all TEC models above	box of six	£18
504	Spare daisy wheel - 12 character per inch printing		£10
506	Spare daisy wheel - 10 character per inch printing		£10

RACKING SYSTEMS AND ENCLOSURES

CUBE and Acorn systems are standardised on the Eurocard arrangement of printed circuit cards, and on the Vero KM6 rack system in particular, using a 1" pitch between cards. In this section, the parts that make up racking systems are described and listed. Note that front panels appear on page 3.15.

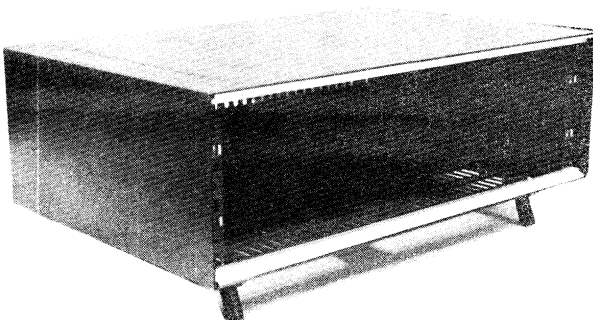
Cards are accommodated by identical top and bottom card guides which snap into the rails of the subrack. Disk modules use four identical module guides (two top and two bottom). The same arrangement using the same guides is true both of the subrack unit which fits into the Eurorack enclosures, and of the caseframe unit.

SUBRACKS FOR EUROCARDS



2960	Eurorack - metal work only, packed flat	24.00
700	Eurorack with buffered backplane and eight sockets, guides for eight cards and one disk module assembled and tested	72.00
705	Eurorack with buffered backplane and 14 sockets, with card guides, assembled and tested	98.00
710	Rack assembled, with module guides for two disk units	30.00

ENCLOSURES FOR EURORACKS

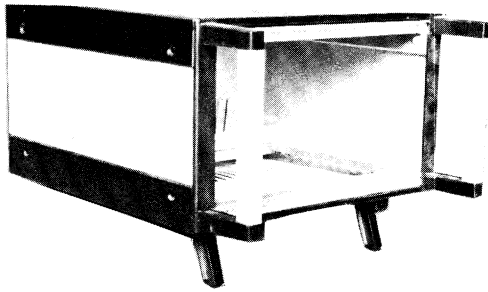


These enclosures are designed to take subracks as shown on Page 2.14

415	Enclosure for one Eurorack. 15cm high x 37cm deep x 49cm wide	42.00
420	Enclosure for two Euroracks (total height 6U, ie 30cm. 32cm deep, 49cm wide)	60.00

CASEFRAME

(Supplied in flat pack without backplane or card or module guides)



Integrated card frame and enclosure used by us for Eurocard systems. They are constructed from aluminium and black vinyl covered steel. Our backplanes are on a 1" pitch, so the maximum number of cards that can be accommodated in the three sizes are 8, 12 and 16, but the maximum number of slots on a backplane is 14. There is space available for other equipment (eg. a power supply) behind the backplane. This space is shown below as the usable depth, less the 200 mm approx required by the Eurocards and backplane.

2260 Small	8.4" usable width, 240mm usable depth	43.00
2262 Medium	12" usable width, 240mm usable depth	46.00
2261 Large	(std 19"). 16.8" width, 360mm depth	49.00
2380	Card guide (use two per card) each	0.30
2600	Module guide (use 4 for disk module) each	0.30

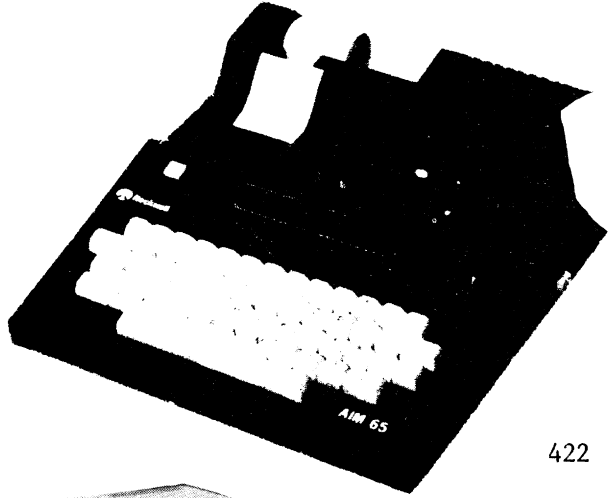
CASEFRAMES WITH BACKPLANES

Fully assembled and tested with card guides fitted, plus module guides where appropriate.

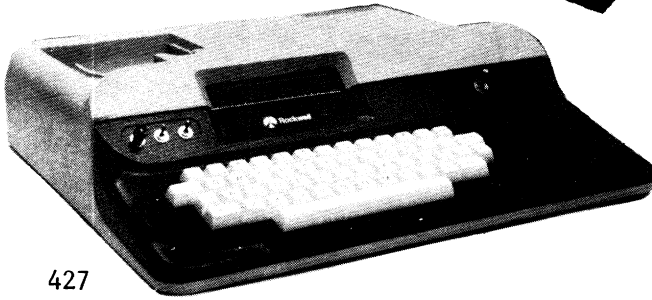
417	19" caseframe, 8 skt backplane, space for disk unit	99.00
418	19" caseframe, 14 socket backplane.	129.00
419	12" caseframe, 6 card slots, one disk module slot (This is the case used on System 10)	80.00

CASEFRAMES WITH BACKPLANE AND POWER SUPPLY

380	19" caseframe, 8 skt backplane, space for disk unit with CUPS-3 power supply (5v, 5A; 25v, 0.5A; 12v, 2A) fitted & tested	187.00
381	19" caseframe, 14 socket backplane with CUPS-3 power supply (5v, 5A; 25v, 0.5A; 12v, 2A) fitted & tested	217.00
382	12" caseframe, 6 card slots, one disk module slot with CUPS-3 power supply (5v, 5A; 25v, 0.5A; 12v, 2A) fitted & tested (Same unit as supplied with the System 10)	168.00



422

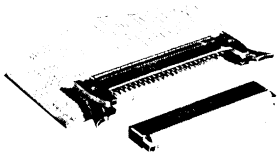


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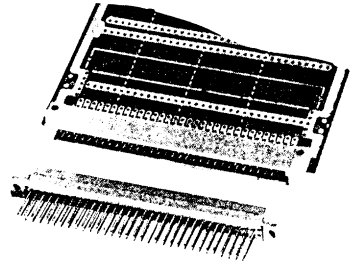
- 422 Injection moulded enclosure with aluminium chassis, very dark brown in colour, 33cm wide, 40cm deep, 10cm high. Designed to take a purpose built power supply (code 439), but without space for CUBIT 80.00
- 427 Foam moulded enclosure with steel chassis. 47cm wide, 46 cm deep, 12cm high. Room for CUPS-2 power supply. CUBIT can be accommodated with a the removal of a small amount of the material under the paper tray (invisible from outside) or by using the AIM 65 COMPATIBILITY module (section 20). Chocolate/cream. 65.00

CONNECTORS, SWITCHES AND CRYSTALS

latching plug pcb right angle male for ribbon

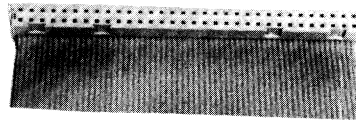


DIN 41612 right angle male pcb mounting



ribbon cable socket with strain relief clip

DIN 41612 wire wrap tail socket



pcb pin side and end butting 0.1" spacing gold plated

16 position rotary switch

DIN 41612 socket for ribbon

2324	DIN plug right angle male pcb mounting	1.50
2325	DIN plug right angle male pcb mounting 64 way (rows a + b)	2.50
3370	DIN socket 64 way straight pcb tails	3.30
3371	DIN socket 64 way straight wire wrap tails	3.60
3350	DIN socket for ribbon cable 64 way idc	4.50
2362	Plug right angle male pcb mounting for ribbon sockets 20 way	2.40
2363	Plug right angle male pcb mounting for ribbon sockets 26 way	2.60
2364	Plug right angle male pcb mounting for ribbon sockets 40 way	3.60
3342	Socket for ribbon cable, with strain relief, 20 way	2.00
3343	Socket for ribbon cable, with strain relief, 26 way	2.60
3344	Socket for ribbon cable, with strain relief, 34 way	3.40
3345	Socket for ribbon cable, with strain relief, 40 way	3.70
2913	PCB pin for 0.1" spacing, side & end buttable, 50 way strip	1.60
3408	Rotary switch, 16 position binary encoded	3.00
2220	Crystal 1 MHz	2.50
2221	Crystal 4 MHz	2.20
2222	Crystal 6 MHz	2.10
2223	Crystal 14 MHz	2.10

INTEGRATED CIRCUITS

NOTE - SAME SERVICE AS RS, BUT CHEAPER!

PRICES OF MANY IC's ARE FALLING. PLEASE RING US FOR THE LATEST PRICE.

Code	Device	Type	1 - 4	5 - 9	10 - 24	25 - 99	100 up
1000	Microprocessor 1MHz	6502	3.90	3.75	3.50	3.30	3.10
1001	Microprocessor 6502 1MHz		4.90	4.75	4.40	4.20	3.90
1005	P.I.A. 16 ch i/o	6520/6821	2.00	1.80	1.60	1.40	1.20
1010	V.I.A. i/o + timers	6522	3.40	3.20	3.00	2.90	2.80
1015	R.I.O.T ram:i/o:timer	6532	4.50	4.25	4.00	3.90	3.80
1020	RAM low power 450ns	2114L	1.60	1.50	1.40	1.30	1.10
1025	EPROM 4k x 8	2716	3.00	2.90	2.75	2.55	2.35
1030	EPROM 4k x 8	2532	5.00	4.50	4.00	3.50	3.25
1031	EPROM 4k x 8	2732	5.00	4.50	4.00	3.50	3.25
1036	Dynamic RAM 5v only	4816	4.20	3.80	3.30	2.90	2.40
1037	Dynamic RAM 5v 64kbit	4864	7.00	6.00	5.50	4.90	4.40
1040	RAM 2k x 8 450ns	4802/2016	6.00	5.50	5.00	4.75	4.50
1045	CMOS RAM 2k x 8 450ns	5516	10.00	9.00	8.00	7.50	7.00
1055	Microprocessor 1 MHz	6809	17.00	14.00	12.00	10.50	9.50
1060	Microprocessor 1 MHz	6802	8.00	7.00	6.00	5.40	4.50
2478	GRT Controller chip	6845	15.00	13.00	11.50	10.00	9.00
2477	Buffer 8304/8208		3.00	2.80	2.50	2.30	2.10
2479	Buffer	81LS95	4.00	3.80	3.50	3.20	3.00
2480	Timer chip	555	0.50	0.45	0.38	0.33	0.27
2482	Analog/digital	ADC0816CCN	40.00	35.00	30.00	25.00	20.00
2481	Analog/digital	ADC0817CCN	20.00	17.00	15.00	13.00	12.50
2483	Digital/analog	ZN425E	6.00	5.00	4.25	3.75	3.50
2489	Floppy Disk Controller	8271	38.00	35.00	33.00	31.50	30.75
2490	Graphics Processor	EF9366C	70.00	62.00	56.00	50.00	44.00
4000	TTL	74LS00	0.50	0.40	0.35	0.30	0.25
4002	TTL	74LS02	0.50	0.40	0.35	0.30	0.25
4003	TTL	74LS03	0.50	0.40	0.35	0.30	0.25
4004	TTL	74LS04	0.50	0.40	0.35	0.30	0.25
4005	TTL	74LS05	0.50	0.40	0.35	0.30	0.25
4014	TTL	74LS14	1.00	0.90	0.70	0.60	0.50
4032	TTL	74LS32	0.50	0.45	0.35	0.30	0.25
4042	TTL	74LS42	1.00	0.90	0.70	0.60	0.50
4074	TTL	74LS74	0.50	0.45	0.35	0.30	0.25
4130	TTL	74LS30	0.50	0.45	0.35	0.30	0.25
4133	TTL	74LS133	1.00	0.90	0.70	0.60	0.50
4136	TTL	74LS136	1.00	0.90	0.70	0.60	0.50
4139	TTL	74LS139	1.00	0.90	0.70	0.60	0.50
4156	TTL	74LS156	1.50	1.20	1.00	0.80	0.60
4166	TTL	74LS166	2.70	2.40	2.10	1.80	1.50
4244	TTL	74LS244	1.50	1.20	1.00	0.80	0.60
4245	TTL	74LS245	2.70	2.40	2.10	1.80	1.50
4373	TTL	74LS373	2.70	2.40	2.10	1.80	1.50
4374	TTL	74LS374	2.70	2.40	2.10	1.80	1.50

EPROM PROGRAMMING AND ERASURE EQUIPMENT

EP4000 EMULATING PROGRAMMER



FEATURES:

PROGRAMS TRIPLE RAIL PROMS - 2704, 2708, 2716

PROGRAMS SINGLE RAIL PROMS - 2508, 2758, 2516, 2716, 2532, 2732

PROGRAMS BIPOLAR PROMS VIA BP4 SLAVE UNIT

PROGRAM SEQUENCE - SELF CHECK / BLANK CHECK / PROGRAM / VERIFY

NO PERSONALITY MODULES REQUIRED TO SELECT PROM TYPE - JUST SET SWITCH SAFE TO LOAD AND REMOVE EPROMS WHILE SYSTEM SWITCHED ON BUT NOT PROGRAMMING
4K INTERNAL RAM EMULATION OF PROM VIA INTERFACE CABLE

CONNECT TO YOUR COMPUTER VIA TTL OR RS232 SERIAL PORT, 20mA CURRENT LOOP, BIDIRECTIONAL HANDSHAKE STROBED OR PARALLEL PORT.

OUTPUT TO TV MONITOR (1v STANDARD) OR TO TV VIA BUILT-IN UHF MODULATOR

DIRECT CASSETTE INTERFACE TO STANDARD AUDIO CASSETTE

BUILT-IN LED DISPLAY OF HEX STATUS ADDRESS AND DATA

EXTRA 1K RAM FOR BLOCK MOVING

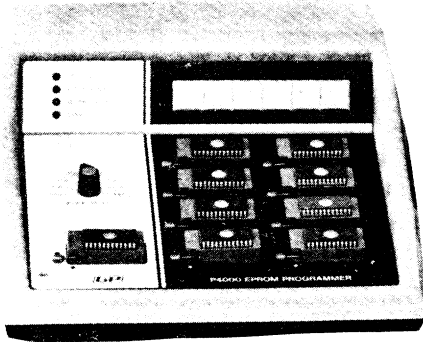
SPARE INTERNAL 4K EPROM SOCKET FOR CUSTOMER PROGRAMS

BUILT-IN FIRMWARE FOR COMPREHENSIVE RANGE OF DATA MANIPULATION

1210 EP4000 EPROM Emulator/Programmer

£545

P4000 PRODUCTION PROGRAMMER



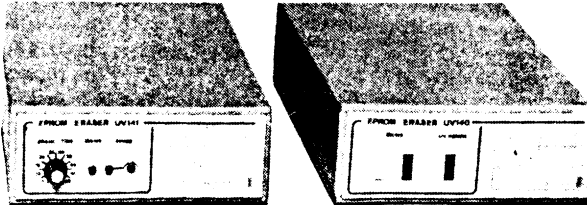
FEATURES:

PROGRAMS UP TO EIGHT EPROMS SIMULTANEOUSLY FROM MASTER COPY
PROGRAMS TRIPLE RAIL PROMS - 2704, 2708, 2716
PROGRAMS SINGLE RAIL PROMS - 2508, 2758, 2516, 2716, 2532, 2732
PROGRAM SEQUENCE - SELF CHECK / BLANK CHECK / PROGRAM / VERIFY
NO PERSONALITY MODULES REQUIRED TO SELECT PROM TYPE - JUST SET SWITCH
SAFE TO LOAD AND REMOVE EPROMS WHILE SYSTEM SWITCHED ON BUT NOT PROGRAMMING
MASTER SOCKET COMPLETELY ISOLATED FROM PROGRAMMING VOLTAGES
INDEPENDENT BLANK AND VERIFY CHECKS OF ALL EIGHT SOCKETS
STATUS INDICATIONS FOR ALL FUNCTIONS
SOUNDER INDICATES CORRECT KEY ENTRIES AND END OF PROGRAMMING RUN

1201 P4000 EPROM Production Programmer

545.00

EPROM ERASERS



1220 EPROM Eraser with timer, takes fourteen EPROMs

78.00

1230 EPROM Eraser without timer, takes fourteen EPROMs

68.00

MEDIA

DISKETTES AND DISKETTE ACCESSORIES

515	Box of 10 single sided 5.25",35/40 tracks, reinforced centre	22.00
520	Individual single sided disk, same spec as 515.	3.00
516	Box of 10 double sided 5.25" disks, 4 track, reinforced centre	33.00
521	Individual double sided disk, same specification as 516	4.00
519	Head cleaning disk, 5.25" single sided	16.00
521	Head cleaning disk, 5.25" double sided	16.00
508	Head alignment disk, 5.25"	27.00
509	Disk mailing packs - corrugated paper post protection - 10 pcs	12.00
516	Locking storage case for 40 5.25" diskettes	21.00
517	Locking storage case for 80 5.25" diskettes	32.00
518	Mini disk file - stores 50 5.25" disks - hinge lid - patent lift device permits labels on five adjacent disks to be seen at once	52.00

COMPUTER STATIONERY AND STATIONERY ACCESSORIES

260	Plain single part fanfold stationery, 11" x 8.5" wide (approx A4) 60 gsm. 2000 sheets boxed	25.00
261	Music ruled single part fanfold stationery, 11" x 8.5" wide (approx A4) 60 gsm. 2000 sheets boxed	25.00
262	Plain double part fanfold stationery, 11" x 8.5" wide (approx A4) 60 gsm. 1000 sheets boxed. Uses one-time carbon	25.00
263	Music ruled double part fanfold stationery, 11" x 8.5" wide (approx A4) 60 gsm. 1000 sheets boxed. Uses one-time carbon	25.00
264	Plain triple part fanfold stationery, 11" x 8.5" wide (approx A4) 60 gsm. 700 sheets boxed. Uses one-time carbon	25.00
265	Music ruled triple part fanfold stationery, 11" x 8.5" wide (approx A4) 60 gsm. 700 sheets boxed. Uses one-time carbon	25.00

SELF ADHESIVE COMPUTER LABELS 3 1/2" X 1 7/16", 12" PAGE THROW, 1 1/2" VERTICAL PITCH, 1/4" HORIZONTAL GAP BETWEEN LABELS, BROWN SHINEY KRAFT BACKING - EASY PEEL.

271	Labels as above one wide, 8000 labels in a box	44.00
272	Labels as above two wide, 8000 labels in a box	44.00
273	Labels as above three wide, 12000 labels in a box	50.00

270	Thermal paper roll, blue print 8.5" x 300ft, 3/8" dia hole ea	8.00
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PAPER FOR ROCKWELL AIM 65

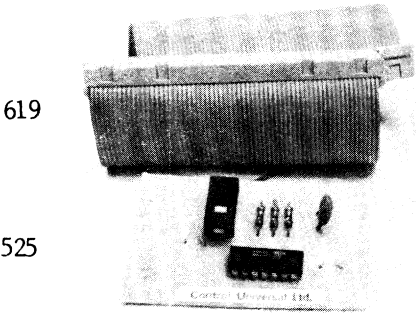
605	Box of 10 x 250ft thermal paper rolls, blue print	23.00
510	Box of 20 x 250ft thermal paper rolls, blue print	43.00
511	Box of 20 x 66ft thermal paper rolls, black print	16.00

BINDERS

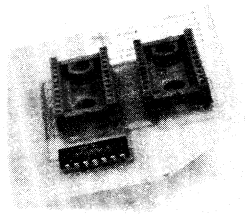
276	Binder for unburst fanfold stationery up to approx 1/2" pad	5.00
277	Ring binder for burst stationery up to approx 2 1/2" pad	5.00

THE ODD SPOT

MISCELLANEOUS ACCESSORIES



619



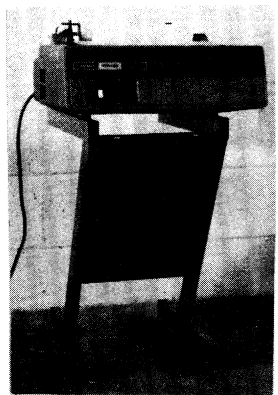
530

525

- 615 64 Way interface cable, DIN socket at each end, 50 cm long £19
- 619 64 Way interface cable, DIN socket at each end, 10 cm long £17
- 614 64 Way interface cable, DIN socket at one end, 50 cm long £12
- 617 64 Way interface cable, one DIN socket at one end, two DIN sockets
3cm apart at the other end, total length 50 cm £26
- 620 Spare DIN socket for 64 way ribbon cable £7

- 525 Vector-start module - redirects power-on vector to a variety of
optional changed addresses. Board 1" x 1.5", solders to data bus £10
- 530 PROM daughter module - wire wrap tails plug into 4k socket to allow
the use of two 2k devices in two 24 pin sockets. Board 2" x 3" £10

BARGAINS



- 491 TANDY LINEPRINTER 1 £199

Special purchase of six of these extremely robust units. Use teletype paper on roll with friction feed. Upper case only, complete with floor stand.

MORE BARGAINS

COMPAS DISK SYSTEM FOR AIM 65

Complete system with one disk drive, 16k RAM, Exorcisor type motherboard with 3 vacant slots, power supply and software for linked file assembly.

Cost over 1200.00 new, now offered in guaranteed working condition for 450.00

USED AIM 65 SYSTEMS

1K NMOS RAM + 1K BATTERY BACKED CMOS RAM

Plastic enclosure

Built-in power supply

Has non-standard keyboard fitted, but standard keyboard supplied for purchaser to fit.

Compare new price of AIM 65 and accessories:-

AIM 65	289.00
Enclosure	65.00
Power supply	50.00

total 404.00

Offered for 185.00 each

AIM 65 KEYBOARDS

Some are the old type, some are the new type but with scratched keys, although new. All are offered at 15.00 instead of the price for new units at 30.00

COMPUTERIST MEMORY PLUS

AIM 65 compatible memory extension, complete with connection cable to AIM 65 expansion connector. Has 8K RAM, VIA and on-board EPROM programmer. Was a total price of 220.00 with connector; now this last one is offered at 50.00

CHEAP VIDEO

Not terribly good black and white monitor, American standard, 12" screen, picture a bit wobbly, but very cheap at 35.00

LOCAL AREA NETWORKS

Control Universal are now setting up plans and completing designs to treat local area networks as a speciality. The general concept of the product range will be to offer an extremely low cost network system which is compatible with ALL computers. Arrangements already exist for linking ZX81, AIM 65, Atom, and BBC computers on to the same network. The data transmission rate will be deliberately slow - 9600 baud, which transfers approximately 1k bytes/sec. This is about one quarter of the speed of usual mini-floppy disk transfers, but in practice the 4 sec transfer time for the typical 4k file is of no consequence. The vital advantage of this relatively slow transmission rate is the avoidance of bandwidth problems, junction reflections and other negative aspects of high speed transmission.

Physically, the Piconet module will be like a standard CUBE/Acorn Eurocard, with the same connector, but shorter to allow its accommodation inside the enclosures of the host systems. It will therefore plug directly into a CUBE/Acorn rack, and will connect conveniently to an Atom. A range of COMPATIBILITY products (see section 20) will be available soon to allow other computers such as those mentioned above to be connected onto Piconet.

In addition, the development is in hand for a range of input/output modules capable of detecting both high voltage and low voltage signals, and switching currents of several amps both dc and ac, which will operate on the network so avoiding expensive wiring costs.

The master unit is intended to have the feature of offering disk storage to all computer in the network, and a printer interface with a 48k byte buffer, allowing the dumping of printer data at 1000 ch/s and then returning control to the computer while the printer works away at its own speed, usually in the range 40 - 100 ch/s

CUSTOM DESIGN SERVICE

Control Universal have devoted part of their business to a product design and manufacture service. This can take the form of designing a product unique to a customer, or agreeing with a customer with a quantity requirement the specification of a product which will fit the Control Universal sales range. In this case the design fee may be waived in consideration of a quantity order. An example of this kind of co-operation is the CUBAN analog interface, which is part of the CU range, but was produced at the instigation of MEDC, Paisley College.

In the case of products produced specifically for a client, the service can be for just an unenclosed computer unit, or for a full service of enclosure, software and packaging, in addition to the computer board. In cases requiring styling of an enclosure we rely on the co-operation with our industrial designers, Morgan Odell Partnership, London.

Project	Quantity	Computer	Software	Enclosure	Packaging
Dartmaster	200	*	*		
Log-on box	100	*	*	*	*
Foreign Exchange Calculator	24	*		*	
Audiometer	80	*		*	
Pharmacists Label Printer	600	*			

We welcome suggestions about special purpose projects from our prospective clients, and would suggest that our strengths are in speed of execution and economic performance, in addition to a breadth of services rarely found under one roof.