

# THE MICRO-COMPUTER CATALOGUE

March, 1981

**VISCOUNT** PMC 80

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**SYSTEM 80**

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# 16K RAM Model R PERSONAL COMPUTER



*that is easy to operate by the  
whole family*

## THE EDUCATIONAL COMPUTER

- Learn to programme a computer
- Learn to operate a computer
- For the home owner
- For students
- For hobbyists

**\$895** (inc. tax)

## A quality computer at a price you can afford

Great for learning to programme and operate a computer, with all kinds of features built in for students, hobbyist, the professionals, small business and homeowners. It has a powerful 8080A intel microprocessor brain. 16k dynamic RAM, 2k ROM, real time clock, a high speed cassette deck that operates at 1500 Baud; loads and reads five times faster than most compacts, it has a full 53 typewriter layout keyboard. The graphics are eight monochrome shades with 77 x 112 resolution, text display is 12 lines of 17 characters, it also has sound, includes an AC adapter, power cord, R.F. modulator, TV switch box and connector cable. It is FCC, CSA approved and UL listed. All this built into an attractive black console plastic case. Comes in sturdy shipping carton that measures 46cm long by 27cm wide and 10cm deep. Weights 7 kg.

### AN INCOMPARABLE SCHOOL TEACHER

Prepare yourself for the future! You can learn to operate and programme a computer for job opportunities in the computer revolution. Our Level II Basic is a version of Microsoft® and is equivalent to all level II programmes currently available. This Basic includes a super set of operations with floating point arithmetic and integer and string arrays, direct memory access, peek and poke, direct statement execution, two character variable names, user definition functions, multi-statement lines, editing, scrolling, file management and more! 8080A machine language and editor programmes are available.

Since the computer can talk, play music and perform in shades it is a phenomenal teacher. You can now use the TV to educate not frustrate your family. You will eliminate TV boredom with programmes that challenge, stimulate and entertain you.

Create your own programmes or select from over 30 programmes offered.

It is a brilliant music teacher. You can practice on the piano keyboard overlay, select key and tempo, write a tune and record. It has a great monochrome art programme, you can improve your memory, maths, spelling, vocabulary and sharpen your strategy skills. It is a great tutor for your kids.

### IT ALSO PLAYS GAMES

A total entertainment centre with shade, sound, and music. There are Chess, Backgammon, Star Track, Black Jack, Volleyball, Touchdown, Hangman, Showdown, Computer Maze, Breakthrough and more! Challenge the computer or another opponent. Each game brings the family and friends together for hours of quality fun.

### SERVICE AND WARRANTY

If the unit fails because of factory defect within 90 days of purchase, it will be repaired at no charge for labour and parts—you just send the unit freight prepaid to Viscount Electronics, 306-308 Church Street, Palmerston North, and it will be sent back to your promptly freight prepaid!

INTERACT Model R monochrome computer package with 16k RAM, 2k ROM, 8080A microprocessor, shade facility, sound, full 53 keyboard, high speed cassette deck, power cord, AC adaptor, connector cord rack, tape storage tray, connector cable, R.F. modulator with TV switchbox, owner's manual, and Level II basic tape with full documentation. Plus two eight axis action controllers with pot knob, firebutton and lever. Plus three \$13.90 tape programmes, plus diagnostic programme tape, diagnostic instruction manual, service, manual, cassette head alignment tape, schematics.

Everything you need to learn to operate, programme and service your computer.

(You save \$68.45) **\$895** (inc. tax)

Complete \$895 package plus the Thorn 1210 TV ..... \$1199  
(You save \$92.45)

INTERACT Model R monochrome computer with 16k RAM, 2k ROM, 8080A microprocessor, shade facility, sound, full 53 keyboard, high speed cassette deck, power cord, AC adaptor, connector cord rack, tape storage unit, connection cable, R.F. modulator with TV switchbox, owner's manual and Level II basic tape with full documentation. .... \$795

THORN 12" Monochrome T.V. Ideal for Interact ..... \$329

Sole New Zealand Distributors:

## VISCOUNT ELECTRONICS

306 - 308 Church Street — Palmerston North

P.O. Box 513

Telephone 86-696

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## INTERACT ACCESSORIES AND SOFTWARE

<b>ACTION CONTROLLER</b> (two) with pot knob, firebutton and lever—8 axis .....	<b>\$70.75</b>
<b>RS232 INTERFACE</b> and printer software .....	<b>\$255.00</b>
<b>SERVICE MANUAL</b> .....	<b>\$20.50</b>

### SOFTWARE

<b>LEVEL II BASIC TAPE</b> with full documentation .....	<b>\$53.80</b>
<b>EZEDIT</b> . Programme editor to simplify Level II programme entry and editing with substitutions, resequencing, automatic line numbering, and more .....	<b>\$21.60</b>
<b>ALIGNMENT TAPE</b> . For aligning cassette tape deck heads .....	<b>\$13.90</b>
<b>DIAGNOSTIC TAPE</b> . Tests RAM, ROM, keyboard controllers, cassette, colour and sound circuitry .....	<b>\$21.60</b>
<b>EDU-BASIC</b> . Integer Basic programming language and guide .....	<b>\$13.90</b>
* <b>ADD 'EM UP</b> . Fascinating brain teaser, great addition drill .....	<b>\$13.90</b>
* <b>BACKGAMMON</b> . Play this ancient game of strategy, luck and skill against the computer .....	<b>\$21.60</b>
<b>BIORHYTHM</b> . Chart your intellectual, physical, and emotional life cycles for daily reference .....	<b>\$13.90</b>
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<b>CHECKBOOK BALANCER</b> . Balances your checking records, saves uncleared entries on tape for future input .....	<b>\$13.90</b>
* <b>COMPUTE-A-COLOUR</b> . Create original art on your colour TV .....	<b>\$13.90</b>
* <b>COMPUTER MAZE</b> . Escape from the maze before your opponent, and watch out for the cat .....	<b>\$13.90</b>
* <b>CONCENTRATION</b> . Test your memory by matching hidden patterns .....	<b>\$13.90</b>
* <b>DOGFIGHT</b> . You're an ace combat pilot in this action game .....	<b>\$13.90</b>

\* NOTE: Action controllers required

<b>FINANCIAL LIBRARY I</b> . Level II Basic programmes to help you manage your stock portfolio. Reports dollar and percent gain/losses, P/E ratios, yields, more .....	<b>\$13.90</b>
<b>FINANCIAL LIBRARY II</b> . Level II Basic programmes to help you evaluate borrowing alternatives, figure your net worth, evaluate savings plans, analyse and forecast trends .....	<b>\$13.90</b>
* <b>FOOTBALL</b> . Run, pass, and punt the ball to lead your team down the field to victory in this exciting, two-player action game .....	<b>\$21.60</b>
* <b>HANGMAN</b> . Computerised version of the traditional game to teach spelling and vocabulary .....	<b>\$13.90</b>
* <b>KNOCKDOWN</b> . Children have fun while learning addition with a dice game .....	<b>\$13.90</b>
<b>MESSAGE CENTRE</b> . Create, edit and save colourful messages with sound effects for continuous replay on your television set .....	<b>\$13.90</b>
* <b>MICROCHESS</b> . Chess against the computer .....	<b>\$21.60</b>
<b>MUSIC MAESTRO</b> . Compose and play back tunes, transpose keys, set time signatures—a great way to learn music .....	<b>\$21.60</b>
* <b>REGATTA</b> . Sail your yacht through gates to beat your opponent and the clock .....	<b>\$13.90</b>
* <b>REVERSI</b> . Surround your opponent's pieces to control the board in this version of the Japanese strategy game Gomoku .....	<b>\$21.60</b>
* <b>SHOWDOWN</b> . The excitement of the OK Corral in a six-shooter gunfight game .....	<b>\$13.90</b>
<b>STAR TRACK</b> . Battle Klingons with phasers and photon torpedoes to save the universe .....	<b>\$21.60</b>
* <b>TRAILBLAZERS</b> . Blaze a trail to surround your opponent .....	<b>\$13.90</b>
* <b>TOUCHDOWN</b> . Solve math problems to move down the field and outscore your opponent .....	<b>\$13.90</b>
* <b>VIDEO CHESS</b> . Use your TV as a board to play an opponent. Save games on tape for later replay and analysis .....	<b>\$21.60</b>
* <b>VOLLEYBALL</b> . Serve, volley and spike the ball to win the match .....	<b>\$13.90</b>
<b>8080A MONITOR PROGRAMME</b> . Unleash the full power of your Interact computer with the 8080A machine language programme. Gain access to over 10k RAM for user programmes complete with tape instructions including simple programme listings and memory map .....	<b>\$39.90</b>

(Prices subject to change without notice)

## QUESTIONS MOST FREQUENTLY ASKED ABOUT THE INTERACT COMPUTER

**What is the weight and overall dimension of the Interact computer?**  
Weight, 7 kgs; width, 27cm; length, 46cm; height, 10cm.

**What is the possibility of future 32k RAM expansion?**  
32k of RAM is possible, and is under development and could be available this year.

**Is the Interact Basic compatible with TRS-80 Basic or any other Basic?**  
Most "Basic" programmes can be typed into the Interact. Some changes may be necessary to make the programme run on the Interact.

**Does it require an expansion interface to operate with a printer or disk drive?**  
An interface is necessary to run a printer or disk drive. An RS232 serial interface is available for \$255.

**What resolution graphics does it have?**  
Resolution is 112 pixels horizontally by 77 pixels vertically.

**Is ROM expandable?**  
There is a socket available in the Interact for an additional 2k ROM.

**Any I/O channels?**  
There are no user accessible I/O channels.

**Can it be used on a black/white TV?**  
Yes it can be used on a black/white TV

**Is Level II Basic an extended floating point Basic?**  
Yes. Level II Basic is an adaptation of Micro Soft Basic Version 4.7. Basic has trig functions, multi-statement lines and graphics commands.

**What is the TV requirements?**  
Any standard black/white or colour receiver that accepts channel 3 will work.

**What about modems? What hardware is needed?**  
As RS232 serial interface is needed to operate a modem. Some sort of "terminal" software would also be needed. Characters are transmitted using ASCII code format.

**What does the 2K ROM contain?**  
ROM contains routines for scanning the keyboard, generating video characters, operating the cassette deck, etc. This is the operating system of the computer.

**Is this a colour computer?**

The manual refers to this computer as having colour. That is correct. In the USA this computer can connect to a USA colour TV set and have eight colours available. The manufacturer does not intend, though, to make a PAL version available which is essential for the computer to operate in colour on a New Zealand colour TV set. But don't be disappointed! All the programmes will run on a NZ TV set, but in monochrome where the colours come out in shades of grey.

**How extensive is the shade?**

Eight shades are available. Four shades can be used on the screen at one time.

**Does the video "Memory Mapped" mean that you can plot figures at specific places on the screen?**

The video screen is memory mapped. Storing data in specific memory locations will cause the data to appear on the screen.

**Does this computer have a full set of graphic characters and alphabets?**

All numbers and letters are available through the keyboard. The user would have to create his own graphic symbols.

**Does the computer really have 16k of available RAM?**

When the computer is initially turned on, the user RAM is 16k. Any pre-recorded programme loaded into the computer will begin to use up a portion of this RAM.

**How do you get Basic into the machine?**

Basic is loaded from a cassette into the user RAM area.

**How much memory is left after Basic is loaded?**

4.7k is left for user programmes and data.

**Can I save my programmes on cassette?**

Yes, programmes can be saved on a cassette.

**Can I programme in machine language and make a cassette of same?**

You will need a "Monitor" tape to do this. The cost is \$39.90.

**What is the character format of the system?**

The format is 17 characters per line by 11 lines.

**Does the Basic have a "poke" statement?**

Yes, however to use it you must "poke 19215,25" first.

**Does the Basic have a "USR" statement?**

Yes the Basic has a "USR" statement.



# The SYSTEM 80 16K



- Z-80 microprocessor
- Takes two cassette players—one is built in!
- RF output direct to TV set (video output as well)
- 12K Tandy compatible BASIC
- 16 lines of 64 or 32 characters
- 128 x 48 graphics matrix
- Expansion with S-100 system
- Backup service

**\$1199**

To complement this 'hardware', the SYSTEM 80 has a powerful resident EXTENDED BASIC Interpreter which is compatible with that of Tandy TRS-80 Level-II BASIC. This, of course, means that you can use the multitude of programmes that have been written for the TRS-80 Computer since it was first released several years ago. So now you have a state-of-the-art Computer with the software ready and waiting.

We said earlier that the SYSTEM-80 was expandable. This is vital if you are to use your computer and treat it as an investment for years to come. Rather than follow an obscure expansion system, we have chosen the world standard S-100 Bus system for the SYSTEM-80. There is an edge connector on the back panel of the computer to which the S-100 expansion Unit will attach when it is released, probably late 1980. This expander Unit will provide the S-100 sockets to allow you to plug in any of the multitude of S-100 cards which are available from over 200 manufacturers around the world. The sort of things you might want to add to your SYSTEM-80 could be:

The design philosophy of the SYSTEM 80 Computer is for a general purpose computer system which features maximum expansion capability and versatility whilst retaining the lowest possible price.

The main unit contains a Z-80 Central Processor Unit, a keyboard, cassette interface with its own built-in cassette recorder, a video interface with a video modulator so that you can use a video monitor or your own standard TV set.

This hardware configuration is very powerful as it means that the complete working computer system is contained in one box. The only other item required is a standard TV set or a Video Monitor.

- Memory cards—to expand your system up to 48K user RAM.
- Disk Controllers—you can use the Micropolis Meta-floppy drives to give your system a capacity of up to 1260K (that's over 1.2 Megabyte) on-line storage.
- Device controllers—to turn on and off the equipment in your home or office.
- Music Synthesisers—you can compose music even if you can't play an instrument.
- Voice Synthesisers—talking computers are now a reality!
- Real-time Clocks—so that your SYSTEM-80 knows what time it is!



Let us now take a closer look at the 'Level II' BASIC in the SYSTEM-80. This BASIC can be divided into eight sections:

1. ACTIVE COMMANDS
2. TEXT EDITING
3. BASIC STATEMENTS
4. ARRAYS
5. STRINGS
6. ARITHMETIC FUNCTIONS
7. GRAPHICS
8. SPECIAL FEATURES

In the SYSTEM-80 Computer there are four different operating levels:

1. Active command level: In this level, the computer responds to commands as soon as they are entered (by pressing the new line key). Whenever the > signs are on the display, the user is in the active command level.

2. The Programme Execution Level: This level is entered by typing RUN, causing the BASIC programme in the memory to be executed. On entering this level all variables are set to null (empty) before execution starts.

3. Text Editing Level: This level allows the user to modify, add or delete characters and lines of the Basic Programme source resident in the memory. The most significant feature of this level is that the user can change any portion of a line without having to re-type the entire line.

4. Monitor Level: This level permits the user to load machine-language programmes into the memory. This may be a machine language executable programmes or even data files. Such 'object' files can also be accessed by BASIC programmes.

The SYSTEM-80 computer accepts variable names which can be longer than two characters, however, only the first two characters will be recognised as the variable name by the computer. Variables must start with a letter and the second character may be a letter or a digit. Therefore variables may be from AA to ZZ and A0 to Z9. Please note however that when using long variable names you must ensure that they do not contain 'reserved words'. These reserved words are ones like 'GOTO', 'PRINT', 'RUN' etc.

There are four kinds of variables: Integer, Single precision floating point, Double precision floating point, String.

These are distinguished by appending one of the following special characters, respectively: %, !, #, \$.

The following operators are used by the SYSTEM-80

+	Addition
-	Subtraction
*	Multiplication
/	Division
ESC	Exponentiation
<	Less than
>	Greater than
<=	Not equal
>=	Less than or equal to
=	Greater than or equal to
=	Equal to

In addition the SYSTEM-80 recognises three logical operators:

AND, OR, NOT

and string operators for comparing the precedence of strings.

#### 1. ACTIVE COMMANDS

1. AUTO Automatic line numbering.
2. CLEAR Resets Variables to zero and sets aside string space.
3. CLOAD Loads a programme of specified filename from specified tape unit.
4. CLOAD? Verifies that the loaded programme is correct.
5. CONT Continue execution after stopping.
6. CSAVE Saves BASIC programme to tape.
7. DELETE Deletes line or lines specified from programme.
8. EDIT Puts SYSTEM-80 in EDIT mode to correct part of a line.
9. LIST Lists the programme lines specified.
10. NEW Clears the current programme from memory.
11. RUN Starts programme execution.
12. SYSTEM Puts SYSTEM-80 in Monitor mode.
13. TROFF Turns off the trace diagnostic.
14. TRON Turns on the trace diagnostic.
15. LPRINT Prints a file to the printer.
16. LLIST Lists the programme to the printer.

#### 2. TEXT EDITING:

By typing in EDIT 100, for example, the computer will prepare to edit line 100. You can:

1. Insert text
2. Delete from end of line
3. Delete from cursor to end of line and insert text.
4. Add to end of line
5. List line
6. Quit and restart edit
7. Change characters

#### 3. BASIC STATEMENTS:

1. PRINT
2. PRINT@
3. PRINT USING
4. INPUT
5. DATA
6. READ
7. RESTORE
8. PRINT#
9. INPUT#
10. DEFINT
11. DEFSGN
12. DEFDBL
13. DEFSTR
14. CLEAR
15. DIM
16. LET
17. END
18. STOP
19. GOTO
20. GOSUB
21. RETURN
22. ON GOTO
23. ON GOSUB
24. FOR TO STEP
25. NEXT
26. RUN
27. ON ERROR GOTO
28. ERROR
29. RESUME
30. REM
31. IF
32. THEN
33. ELSE

#### 4. ARRAYS:

The SYSTEM-80 Computer is capable of accepting both numeric and string arrays. An array is simply a list or table of data which is set out in the memory of the computer for easy access to programmes. The dimension of an array is simply the number of ways it is expanded from a single value. Thus a table of data with eight columns and eight rows is a two dimensional array containing sixty-four separate variables. In the computer these are represented with subscripts: e.g. A(1,1), A(1,2), A(1,3), ..... A(8,8). These arrays are set up in the computer using the DIM statement.

#### 5. STRINGS:

The SYSTEM-80 uses two kinds of strings:  
1. Constants—these are always represented within quotes inside the programme; e.g. "yes"  
2. Variables—e.g. AS  
As you can see, a string is simply a 'string of characters'; they can, of course, be letters, numbers, or special punctuation and mathematical characters. The computer can add, divide, compare and create strings as you desire. The functions it uses are:

1. ACS
2. CHRS
3. LEFTS
4. RIGHTS
5. LEN
6. MIDS
7. STRS
8. STRINGS
9. VAL

#### 6. ARITHMETIC FUNCTIONS:

The SYSTEM-80 features sixteen built-in arithmetic functions:

1. ABS
2. ATN
3. CDBL
4. CINT
5. COS
6. CSNG
7. EXP
8. FIX
9. INT
10. LOG
11. RANDOM
12. RND
13. SGN
14. SIN
15. SQR
16. TAN

#### 7. GRAPHICS:

The graphics of the SYSTEM-80 are arranged as 48 lines of 128 columns. The graphics commands available are as follows:

1. SET
2. RESET
3. CLS
4. POINT

#### 8. SPECIAL FEATURES:

The following special features are implemented in the SYSTEM-80:

1. INP This command will input the 8-bit byte from the port specified.
2. OUT This command outputs a byte to the port specified.
3. PEEK This command returns the decimal value of the memory location specified.
4. POKE This command lets you insert a value into the specified location in memory.

#### 9. ERROR CODES:

To assist in trapping errors in your programmes, the SYSTEM-80 has twenty two error codes:

Error Code	Abbreviation	Error
1	NF	NEXT without FOR
2	SN	Syntax error
3	RG	RETURN without GOSUB
4	OD	Out of data
5	FC	Illegal function call
6	OV	Overflow
7	OM	Out of memory
8	UL	Undefined line
9	BS	Subscript out of range
10	DD	Redimensioned array
11	/O	Division by 0
12	ID	Illegal direct command
13	TM	Type Mismatch
14	OS	Out of string space
15	LS	String too long
16	ST	String formula too complex
17	CN	Can't continue
18	NR	No resume
19	RW	RESUME without error
20	UE	Unprintable error
21	MO	Missing operand
22	FD	Bad file data

**SYSTEM-80 16k Computer ..... \$1199 (inc. tax)**

**Video Monitor ..... \$371 (inc. tax)**

**THORN 12" Monochrome TV Set. Ideal for System-80 ..... \$329 (Inc. tax)**

(Prices subject to change without notice)

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- Personal Computing
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## SYSTEM 80 AND PERIPHERALS

- System 80, 16k Microcomputer with inbuilt cassette, demonstration programme, cords to TV set, monitor to a user's own cassette. .... **\$1199.00**
- Leedex Video 12" Monitor for System 80. .... **\$371.00**
- Lower Case Modification Kit—A software callable routine. The System 80 can use Electric Pencil and Scriptsit word processing programmes. .... **\$155.75** — Installed. .... **\$170.75**
- 50/40 Unit Adaptor—A low cost adaptor. Lets the user plug some Radio Shack peripherals into the System 80. .... **\$75.95**
- Syspand—An adaptor unit (with a printer interface) that allows Radio Shack peripherals to be connected to the System 80. .... **\$235.00**
- Exatron Digital Tape Unit with 10 wafers, including ESF machine language monitor and wafer data I/O organiser and a 2-for-1 bus extender. .... **\$535.00**
- Epson MX 80 Dot Matrix Tractor Feed Printer, 80 character per seconds, bidirectional with logical seeking function. 40-132 character per line. .... **\$1213.08**  
Complete with Cable to Syspand Unit. .... **\$1278**
- Parallel Printer Interface and Cable. .... **\$175.00**

- Electric Pencil Processing Package, Exatron version. .... **\$179.00**
- Scriptsit—Word Processing Package, Exatron version. .... **\$166.50**
- System 80 Dust Covers. .... **\$11.25**
- System 80 Soundbox and Demonstration programme. .... **\$36.65**
- Easy to Learn Basic Book. .... **\$14.78**
- System 80 Technical Manual. .... **\$19.95**

### A TOP WORD PROCESSING PACKAGE

- System 80, 16k Microcomputer. .... **\$119.00**
- Monitor. .... **\$371.00**
- Lower Case Modification Kit (installed). .... **\$170.75**
- Syspand Interface Unit. .... **\$235.00**
- Exatron Digital Tape Unit. .... **\$535.00**
- MX-80 Printer and Cable. .... **\$1278.00**
- Electric Pencil—Word processing programme. .... **\$179.00**

**\$3967.75**

## The amazing expandable TRS-80 Model I



- ★ Completely Wired and Ready to Operate
- ★ Easy-to-Learn BASIC Computer Language
- ★ Begin with the Minimum System—Expandable at Any Time

Tandy/Radio Shack's TRS-80 has become the leader in today's micro-computer market. Thousands of satisfied customers have applied the TRS-80 to their own needs—whether its balancing cheque books, inventory control or education. Designed and manufactured in the USA by Tandy, TRS-80 is 100% wired and tested so you can put it to work immediately! It's ideal for finances, education, accounting, laboratory—even games at home. Choose the basic Level I 4K system and expand it as your needs increase, or start with a more powerful system. Expansion is easy due to TRS-80's modular design, so there's no problem when you want to add a printer, extra memory or any of the other TRS-80 accessories. All systems include a 12" video monitor. Realistic battery AC cassette recorder. 232 page user's manual and a 2-game cassette.

TRS-80 Model I 16K Level II BASIC computer system with numeric keyboard

**\$1995**

## TRS-80 Model III



### Model III

- Level I or Model III BASIC in ROM
- Memory—4 to 48K
- Cassette—1500 and 500 Baud
- Parallel Printer Port
- Expansion—RS-232, Up to 4 5 1/4" Disk Drives, (175K Each)
- Processor—Z80; 1.8 MHz
- 64x16 Screen

**\$5590**

### MODEL I AND III COMPUTER SYSTEMS

- 264-1006 MODEL I LEVEL II 16k Keyboard only. .... **\$1445.00**
- 264-1056 MODEL I LEVEL III 16k System. .... **\$1995.00**
- 264-1062 MODEL III LEVEL 16k System (no cassette). .... **\$2695.00**
- 264-1063 MODEL III LEVEL III 32k Disks, RS232. .... **\$5590.00**

### MODEL I AND III COMPONENTS

- 260-1102 16k RAM MEMORY EXPANSION. .... **\$195.00**
- 264-1206 CTR-80A DIGITAL CASSETTE RECORDER. .... **\$166.00**
- DISTBOX DISTRIBUTION BOX 3-way plus switch and filter. .... **\$75.00**

### MODEL I OPTIONS AND ACCESSORIES

- 26-0500 CARRYING CASE. .... **\$395.00**
- 26-1210 NETWORK I (Requires 32k, Level II, 1 disk). .... **\$995.00**
- 26-1301 MODEL I SYSTEM DESK. .... **\$350.00**
- 26-1303 AUXILIARY FAN KIT. .... **\$75.00**
- 26-1411 PRINTER INTERFACE CABLE (for Model I no exp. int). .... **\$175.00**
- 26-501 SYSTEM COVER. .... **\$19.95**
- 26-502 2-PACK DISK DRIVE COVERS. .... **\$15.95**
- 260-1104 UPPER/LOWER CASE MOD KIT. .... **\$198.00**
- 260-1145 RS 232 C SERIAL COMMUNICATIONS HARDWARE. .... **\$198.00**
- 260-1146 RS 232 C COMMUNICATIONS SOFTWARE. .... **\$75.00**
- 264-1140 EXPANSION INTERFACE without RAM. .... **\$795.00**
- 264-1141 EXPANSION INTERFACE with 16k RAM. .... **\$990.00**
- 264-1142 EXPANSION INTERFACE with 32k RAM. .... **\$1185.00**
- 264-1160 MASTER DRIVE (Drive 0). .... **\$995.00**
- 264-1161 SLAVE DRIVE (Drive 1, 2, 3). .... **\$995.00**

### MODEL I MANUALS

- 26-2016 LEVEL I USER'S MANUAL. .... **\$10.00**
- 26-2103 TRS-80 TECHNICAL MANUAL. .... **\$15.00**
- 26-2104 DOS/DISK BASIC MANUAL. .... **\$12.00**

### MODEL III OPTIONS AND ACCESSORIES

- 26-0506 SYSTEM COVER. .... **\$15.95**
- 26-1148 RS232 SERIAL INTERFACE KIT. .... **\$225.00**
- 26-1305 SYSTEM DESK. .... **\$295.00**
- 26-1306 DISK BAY for above. .... **\$50.00**
- 264-1162 DISK DRIVE No. 1 (internal). .... **\$2000.00**
- 264-1163 DISK DRIVE No. 2 (internal). .... **\$895.00**
- 264-1164 DISK DRIVE No. 3 (external). .... **\$995.00**

### MODEL III MANUALS

- 26-2107 GETTING STARTED WITH BASIC. .... **\$12.00**
- 26-2111 DOS REFERENCE MANUAL. .... **\$12.00**
- 26-2112 BASIC REFERENCE MANUAL. .... **\$12.00**



## Sharp Pocket Computer

... greatest breakthrough yet



- ★ Programs in BASIC
- ★ "QWERTY" Alphabetic Keyboard
- ★ 1.9K Random Access Memory
- ★ Long Battery Life

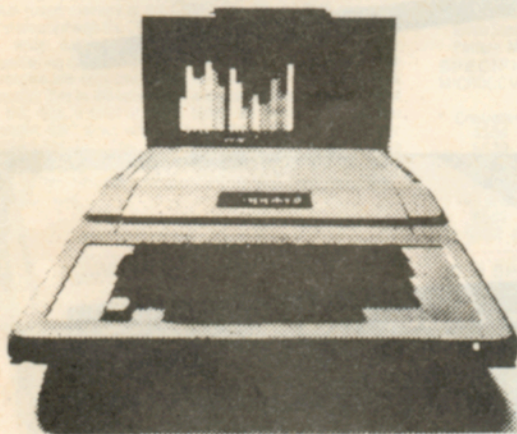
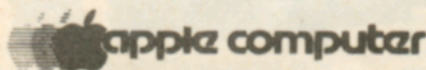
Only **\$395** cash or terms

Cassette interface \$36  
Cassette Interface and  
Line Printer

**\$295**

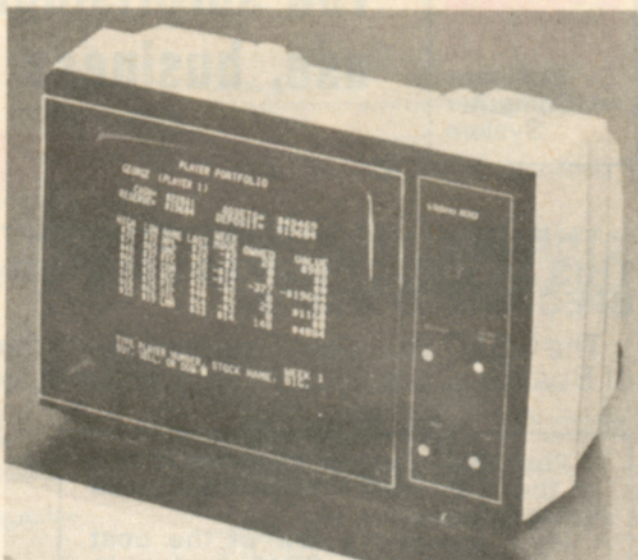
Sharp Pocket Computer brings yesterday's science fiction to life at an amazingly low price! Today's advanced technology can always be within your reach to give you the answers you need for fast decision-making! It's easy to load with ready-to-run software from cassette tape (interface and recorder optional), or program it yourself in easy-to-learn BASIC. 24-character liquid crystal readout displays one line at a time. Automatic statement compaction squeezes every ounce of memory space. Computer features power-off retention of programs and data. Powerful resident BASIC language includes multiple statements, math functions, editing, strings, arrays and much more. You'll constantly find new uses for the pocket computer as you make it a part of your lifestyle! Carrying case and batteries included.

## APPLE COMPUTER



16k RAM ..... **\$2617**  
32k RAM ..... **\$2917**  
48k RAM ..... **\$3217**

## video 100 12" black and white video monitor



• Ideal for home, personal, and business computer systems

• 12" diagonal video monitor

• Video band width of 12 MHz

• Lightweight cabinet with built-in handle

• Solid state circuitry for stable and sharp picture

Price **\$359**

The Video 100 is available for all your personal and business computer monitor needs. Its full compatibility enables it to plug into a wide range of computer systems, such as RADIO SHACK, ATARI, APPLE, OHIO SCIENTIFIC, MICRO-TERM, and EXIDY to name a few. The reliable performance of the 12" Black and White Monitor features a band width of 12MHz and 80 characters per line. The solid state circuitry assures a stable, trouble-free, sharp picture. Its compact and lightweight design, complete with molded-in handle allows for easy handling. The front panel controls include power, contrast, horizontal and vertical holds. Adjustments for height, vertical linearity and width control are located on a rear pane.

### SPECIFICATIONS

Input signal	Video 1Vp-p ±20% Composite video, sync negative UHF coaxial connector
Input impedance	75 Ohm ±5%
Picture tube	12" 90 degree deflection
Scan standard	525-60 fields/sec or 625-50 fields/sec Horizontal 15750 Hz ±200 Hz
Resolution	Horizontal - More than 700 lines at center Vertical - More than 350 lines at center
Deflection linearity	Less than 10% (with refer to EIA ball chart and dot pattern)
Video bandwidth	12 MHz ±6 db
Video gain	30 db at 100KHz
High voltage	11KV nominal at 100uA beam current
Power source	120VAC nominal (Range: 105VAC to 132VAC) 60Hz-50Hz, 35 W max
Power regulation	12V ±2% 105VAC to 132VAC
Ambient temperature	10 C to 55 C (Operation) -30 C to 65 C (Storage)
Humidity	10 to 95% non-condensing
Cabinet dimension (mm)	11.375" high 16.250" wide 11.250" deep (exclude video input connector)
Weight	6.5 KG (14.3 lbs) net

## EXIDY SORCERER

The EXIDY SORCERER computer combines a powerful Z-80 micro-processor with the ease of plug-in ROM PAC software to create a versatile and flexible system.

The SORCERER is expandable to 48K RAM memory and is ideal for small business use. Three memory capacity options make it possible for you to select the SORCERER which is best for you. Select 16K, 32K, or 48K RAM memory in your basic unit, then simply add on as desired, or choose the options which best suit your needs.

The full ASCII upper and lower case set is standard, plus full graphics set and 128 user defined characters. SORCERER's characters and graphics are displayed in an 8x8 dot matrix with a graphics resolution of 240 X 512. Included with the unit are a video cable, two cassette cables and instruction manual.



16k RAM ..... **\$2537.00**  
32k RAM ..... **\$2724.80**  
48k RAM ..... **\$2833.00**

WORD PROCESSING PACKAGE ..... **\$339**  
TECHNICAL MANUAL ..... **\$25.50**





# The surprisingly affordable, simple to use, business and professional **MICRO COMPUTER SYSTEM**

**THE CBM™ INCORPORATED WITH THE FLOPPY DISK AND PRINTER MAKES THIS AN IDEAL BUSINESS SYSTEM FOR BUSINESS, PROFESSIONAL AND SPECIALIZED FIELDS.**

The CBM™ Business System as a management tool, delivers information to all levels of Business, previously attainable only with equipment many times more expensive.

The CBM™ Business System is one of the most cost efficient business tools today.

Here are just a few of the cost saving uses of the CBM™ system in large companies, the professional office, or small business: Accounts payable, Accounts receivable, General ledger, Payroll, Stock control, Purchasing, Forecasting, Customer records, Mailing lists and as a Word Processor, etc. etc . . .

## **CBM COMPUTER** (right)

The CBM computer is a fully integrated CPU with built-in CRT, 16K or 32K RAM memory, 14K ROM (operating system resident in the computer), typewriter-style keyboard, and a 10-key pad for rapid numeric entry. I/O supported through an IEEE-488 interface, direct memory location address (PEEK and POKE), resident high level BASIC language, and machine language accessibility are just a few of the features that make the CBM a working tool.

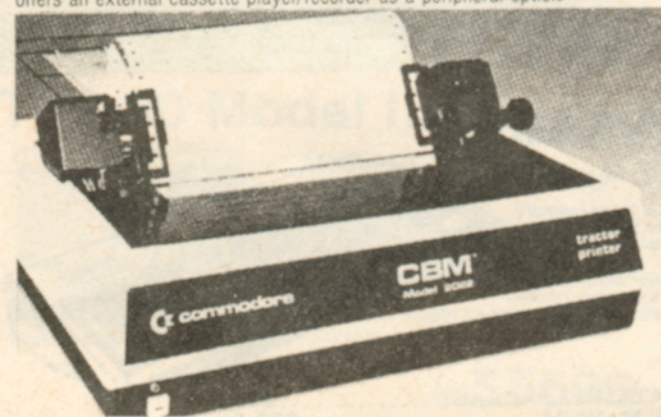
The high resolution green screen (especially designed to prevent eye fatigue) displays 8 x 8 dot matrix characters in a 40 characters x 25 line format, either normal or reverse.

Attractively styled in a rugged case, the CBM complements your office decor. All in a package 16.5" wide, 18.5" deep, 14" high, and only 44 pounds.

## **CBM DUAL DRIVE FLOPPY DISK** (right)

The CBM Dual Drive Floppy information storage is an intelligent peripheral and requires no space in the computer's RAM memory. Large storage capacity 340K bytes, and excellent file management enhance the computing power of the CBM series. The Dual Floppy is reliable, portable, and uses industry-standard 5 1/4" diskettes. Significant features like an error detector light and an in-use light, along with an operating system used with the CBM that enables a program to read or write data in the background while transferring data to the CBM, make the Dual Drive Floppy convenient for your instant storage and retrieval requirements.

If your particular application requires cassette tape, Commodore offers an external cassette player/recorder as a peripheral option.



## **TRACTOR FEED PRINTER** (left)

The Tractor Feed Printer adds versatility and convenience to your CBM system. The tractor feed printer accepts mailing lists, prints cheques, invoices, and standard or customized business forms. Plus, it will print not only alpha and numeric characters, but also all of the graphic characters in both normal or reverse, so you can add emphasis to parts of your printout. Varying character size allows you to create headlines and titles. And programmable line spacing means a perfect match-up on your customized forms. You can set left and right margins, page length, justification, and decimal position as well. And, the only connections required are an AC power cord and a CBM connecting cable.

A Friction Feed Printer, which can handle single sheets, as well as perform the functions that the Tractor Feed Printer does, is also available.





### CBM COMPUTERS

The CBM computer is a fully integrated CPU with built-in CRT, 16K or 32K RAM memory, 14K ROM (operating system resident in the computer), typewriter-style keyboard and a 10-key pad for rapid numeric entry. I/O supported through an IEEE-488 interface, direct memory location address (PEEK and POKE), resident high level BASIC language, and machine language accessibility are just a few of the features that make the CBM a working tool.

The high resolution green screen (especially designed to prevent eye fatigue) displays 8 x 8 dot matrix characters in a 40 characters x 25 line format, either normal or reverse.



### DUAL DRIVE FLOPPY DISK

The Dual Drive Floppy is the latest in Mini Disk technology with large storage capability and excellent file management. As the Commodore disk is an "intelligent" peripheral, it uses none of the RAM (user) memory of the CBM™. The Floppy Disk operating system used with the CBM™ computer enables a program to read or write data in the background while simultaneously transferring data over the IEEE to the CBM™. The Floppy Disk is a reliable low cost unit, and is convenient for high speed data transfer. Due to the latest technological advances incorporated in this disk, a total of 340K bytes are available in the two standard 5 1/4" disks, without the problems of double tracking or double density. This is achieved by the use of two microprocessors and memory L.C.s built into the disk unit. Only two connections are necessary — an A/C cord and CBM™ interface cord.



### TRACTOR FEED PRINTER

The Tractor Feed Printer is a high specification printer that can print onto paper (multiple copies) all the CBM™ characters—letters (upper and lower case), numbers and graphics available in the CBM™. The tractor feed capability has the advantage of accepting mailing labels, using standard preprinted forms (customized), cheque printing for salaries, payables, etc. Again, the only connections required are an A/C cord and CBM™ connecting cord. The CBM™ is programmable, allowing the printer to format print for: width, decimal position, leading and trailing zero's, left margin justified, lines per page, etc. It accepts 8 1/2" paper giving up to four copies. Bidirectional printing enables increased speed of printing.

## SPECIFICATIONS

### DIMENSIONS

- 16 1/2" wide by 18 1/2" deep, 14" overall height
- Weight 44 lbs

### MEMORY

- Random Access Memory 16 or 32K bytes
- Read Only Memory (operating system resident in the computer): 14K bytes
- 8K + — Basic interpreter
- 4K — Operating system
- 1K — Machine language monitor

### VIDEO DISPLAY UNIT

- 9" monochrome CRT
- 1000 character display, 40 x 25
- 8 x 8 dot matrix for characters
- 64 standard ASCII characters 64 graphic characters

### KEYBOARD

- Business or Number Pad Version
- Screen Control: home, clear, up, down, left and right
- Editing: Character insertion and deletion

### FLOPPY DISK COMMAND SET (SUMMARY)

- File Operation:
  - Open/Close
  - Load/Save
  - Load Dirs
- 2040 Command Set
- Sequential File Management—
- Initialize, New, Verify, Duplicate, Rename, Copy, Scratch
- Direct Access Utility—
  - Block—Read/Write Provides direct read or write of any block
  - Block—Execute User defined DOS functions can reside on diskette for execution by the 2040
  - Buffer—Pointer Used to access specific fields of data within a block
  - Block—Allocate/Free Used to manage direct access blocks
  - User Permits custom expansion of the DOS commands
  - Memory Read/Write Use to read or write disk memory
  - Memory Execute User defined DOS functions can be executed directly by the 2040

### ADDITIONAL FEATURES

- Error/Status information can be read from an error channel
- Pattern Matching available on key operations

### SPECIFICATIONS:

#### MICROCOMPUTER SYSTEM DEVICES

- Controller
  - 6504 microprocessor
  - 6530 I/O, RAM, and 1K ROM software
  - 6316 2K ROM for encoding and decoding disk data
  - 6522 I/O and interval timers
- File interface
  - 6502 microprocessor
  - (2) 6532 RAM, I/O, interval timers

### 2022 SPECIFICATIONS:

#### MICROCOMPUTER SYSTEM DEVICES

- 6504 Microprocessor
- 6532 I/O, RAM, interval timer (2)
- 6332 4K x 8 ROM

#### PRINTER MECHANISM

- Manufactured by Epson, Model 3110
- Tractor feed/Programmable spacing (6, 8 Lines Per Inch)
- Epson DH-70 print head
- Dot matrix—7 x 6—80 columns per line
- Impact print—original plus 3 copies
- Print rate is 70 LPM: 150 CPS (burst speed)
- Forms: Uses standard 80 column forms (tears down to 8 1/2 x 11)
- Variable form handling up to 10 inches

#### PACKAGING

- 18 gauge all steel cabinet
- Dimensions width—17.0, depth—14.0, height—8.15
- Forms enter from rear or bottom of cabinet

#### POWER

- 100 or less watts typical
- 120, 220 or 240 volts
- 50 or 60 Hz

#### DATA INTERFACE

- IEEE-488
- Standard 24-pin stacking connector
- Device #4-7 by jumper option
- Listener only
- Recognizes secondary addressing

#### CHARACTER SET

- Upper case ASCII
- Lower case ASCII
- CBM™ graphics

### OPERATING SYSTEM

- The operating system will support multiple languages (Basic resident)
- Machine language accessibility
- File management in operating system
- Random number generation or pseudo random sequence

### INPUT/OUTPUT

- I/O supported through IEEE-488 instrument interface for multiple intelligent peripherals. Memory mapped I/O user port
- All I/O automatically managed by operating system software
- Single character I/O with GET command

### BASIC INTERPRETER

- Expanded 8K BASIC
- Strings, integers and multiple dimension arrays
- High precision (9 significant digits)
- Direct memory access through Peek and Poke commands
- Additional sockets are provided on board for 8K ROM expansion
- ROMs for assembler or disk O.S. may be inserted

- (2) 6332 4K ROM each (total 8K disk operating system)
- Shared RAM
- (8) 6114 1K x 4 bit static RAM (total 4K bytes)

### DISK DRIVES

- (2) Shugart Associates SA390 drives
- Standard minifloppy (5 1/4" disk)
- Activity LED's light when a file is open on that drive

### POWER REQUIREMENTS

- 50 watts @ 120, 220 or 240 volts 50 or 60 Hz
- Line frequency independent
- Other line voltage options to be announced

### PACKAGING

- 18 gauge all steel cabinet
- Dimensions: width—15", depth—14.35", height—6.5"
- Cover hinges from base for servicing

### DISKETTE ORGANIZATION

- Drive will format any soft sectored mini floppy diskette
- 35 concentric tracks
- Constant density recording on each track
- Varying number of sectors per track—
  - innermost: 17
  - outermost: 21
- 176,640 bytes on a single side
- Track 18 used for directory
- 170,180 bytes for user storage
- Soft-sectored
- Diskettes for dual side recording may be used

### DATA INTERFACE

- IEEE-488
- Standard 24-pin stacking connector
- Device #8-15 by jumper option
- Full listener—talker
- Recognizes secondary addressing

### CONTROL CHARACTERS

- Enhance printing (doubles size)
- Enable automatic line count and paging
- Page eject
- Print reverse field
- Overprint a line
- Switch to graphics character set
- Switch to lower case character set
- Print programmable character

### IEEE SECONDARY ADDRESS COMMANDS

- Print data exactly as received
- Accept characters as a format
- Edit data to format
- Alter number of lines per page
- Enable diagnostic messages to print
- Accept data for programmable character
- Programmable line spacing (permits continuous vertical printing)

### DATA FORMATTING CAPABILITY

- Field width and decimal position specified
- Leading or trailing sign
- Fixed or floating dollar sign
- Forced leading zeroes
- Literal characters always printed
- Alpha fields left justified

### DIAGNOSTIC MESSAGES

- Can be turned on when desired
- Print on paper
- Describe problems with format and data

### 2023 SPECIFICATIONS:

- Has all of the above features except
- Friction feed rather than tractor feed
- Fixed line spacing rather than programmable
- Dimensions: width—17.0, depth—14.0, height—8.15



# EXATRON

## Digital Tape Stringy Floppy Storage Systems

Exatron is a California based corporation that has been in business since 1974. As well as the Stringy Floppy, Exatron designs, manufactures and sells state-of-the-art electro-mechanical equipment for a variety of commercial and industrial applications. Exatron is an established supplier of automatic test equipment to manufacturers, and large OEM users, of integrated circuits worldwide.

The software in every ESF adds a parity bit to every byte saved on tape, and a checksum to the end of every file. These are checked both after recording data and upon replay, any detected error is indicated by a message on the video display. This system of automatic error checking gives confidence in any data saved, also each wafer is rated for at least 2,000 complete passes past the record/replay head.

- ▶ Assembled and tested
- ▶ All operating software in ROM
- ▶ Fully automatic operation
- ▶ Professional quality
- ▶ No Expansion Interface required
- ▶ Large Owners Association
- ▶ High speed operation
- ▶ Extremely reliable
- ▶ No technical knowledge needed

### WHAT IS IT?

The Exatron Stringy Floppy (ESF) is an extremely fast, reliable, economical alternative to cassette or floppy disk storage of computer programs or data.

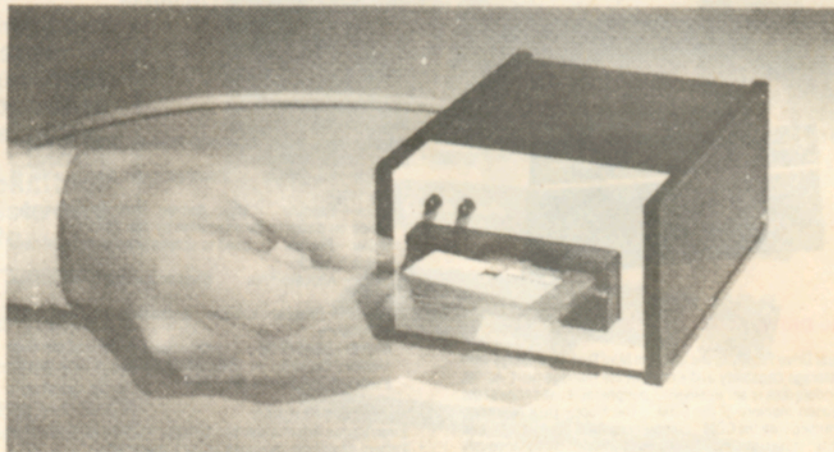
Totally self-contained, the ESF has no buttons, switches, knobs or levers to adjust or forget. All of ESF's operations are under the computer's control.

### HOW DOES IT WORK?

The ESF uses a miniature tape cartridge (called a 'wafer') as the data storage medium, about the size of a business card and 3/16th of an inch thick. The tape used inside the wafer is a special Mylar based Chrome Dioxide type, specially developed for digital applications. Wafers are available in several lengths, 5 feet being the smallest and capable of holding up to 4 thousand bytes of information—the 75-foot wafer is the largest available and can hold up to 64 thousand bytes of data.

The wafers contain a single reel of the special tape connected as a continuous loop, the ends being spliced together with a piece of reflective tape. In operation the ESF drive unit pulls the tape from the center of the reel inside the wafer, causing the entire reel to rotate. Thus, the tape automatically winds itself around the outside of the reel at the same rate as which it is pulled from the center. This process is similar to that found in an 8-track cartridge.

The ESF transport mechanism is very simple, consisting of a precision die-cast aluminum block—with a capstan, drive motor and magnetic record/replay head mounted on it. The wafer loads into a slot in the casting (it will only fit the correct way) and the tape is driven at a single point by the capstan, past the record/replay head.



TRS-80 Model

### HOW DO YOU USE IT?

Once connected to your computer the ESF operating system needs to be activated—simple. Just type 'SYSTEM'(enter), and in response to the ? prompt type '12345' (enter). Your TRS-80 will instantly display the ESF sign on message 'EXATRON STRINGY FLOPPY VERSION 4.1', and from this point onwards you will have the extra commands '@LOAD', '@SAVE' and '@NEW' recognized by your TRS-80.

The ESF's operating system is built into the electronics of the unit, in much the same way that BASIC is built into the computer, so it is always available—the SYSTEM command is to let your computer know that the ESF has been connected. If you normally reserve some memory for subroutines then the ESF software will relocate itself under your selected top of memory. The ESF uses only 4 bytes of your available RAM, these bytes are used to 'point' to the 2048 bytes of software in the ESF unit itself.

### WHAT'S THE CATCH?

Well, the only catch that most people find is that they have to actually pay Exatron for their unit! Even this is no big deal.

Starter Kits are available with the Exatron Stringy Floppy, a supply of wafers, a bus extender and a selection of useful programs—for

TRS-80 Model .....\$535  
System 80 Model .....\$610

#### OTHER VERSIONS AVAILABLE

RS 232 Model .....\$675  
Apple Model .....\$595  
CBM Model .....\$595  
OSI Model .....\$595  
Wafers..... All \$4.50 each

The Apple, CBM and OSI models are in the process of production and are expected to be released in the U.S.A. sometime between April and July 1981, and will be available in New Zealand very shortly afterwards.

The above prices include sales tax.

Prices subject to change without notice

Sole N.Z. distributors

## VISCOUNT ELECTRONICS

306-308 Church Street — Palmerston North  
P.O. Box 513 Telephone 86-696

## exatron



# EXATRON

## Digital Tape Stringy Floppy Storage Systems

Computer Type	Catalogue Number	Price (Inc. tax)	Quantity Required
TRS-80	A	\$535	.....
System 80	B	\$610	.....
RS 232	C	\$675	.....
Apple	D	\$595	.....
Pet	E	\$595	.....
Ohio Scientific	F	\$595	.....

All Wafers \$4.50 each  
in 5, 10, 20, 35, 50, 75 foot lengths

## SOFTWARE

GENERAL PROGRAMMES			
Cat. No.	Name of Programme with Supplier/Author	Price	Qty Rqd
<b>BUSINESS</b>			
125	FILE MANAGEMENT SYSTEM—ESF/M.N. Kidder	\$32.00	.....
138	FMS FILE FORMATTER—ESF/M.N. Kidder	\$13.25	.....
146	CHECKBOOK GENIE—ESF/M.N. Kidder	\$49.50	.....
147	SMALL BUSINESS BOOKKEEPING—DHU-GLAS/R. Robitaille	\$41.25	.....
401	DEBTORS SYSTEM—VIS/Tinycomp	\$375.00	.....
<b>LANGUAGES</b>			
127	ESF FORTH—ESF/Vern Tallman	\$75.00	.....
	PROG. WAFER, MANUAL, Z-80—Assembler Listing Each	\$24.75	.....
144	SLIC, A STRUCTURED LANGUAGE—RTG Data Systems	\$82.50	.....
<b>TUTORIALS</b>			
123	TYPING TUTOR—Microsoft	\$24.75	.....
130	LEVEL III DEMO. PROGRAMME—ESF/Bill Burnham	\$16.50	.....
135	MORSE CODE TRAINER—Discovery Bay Software	\$16.50	.....
150	VISUAL INSTRUCTIONAL COMPUTER—Carta Associates	\$32.00	.....
<b>UTILITIES</b>			
104	ESF-80 MONITOR—ESF/Vern Tallman	\$16.50	.....
106	PATCH TO RS EDTASM—ESF/David Purdie	\$16.50	.....
107	ELECTRIC PENCIL FOR ESF—Shrayer/Hassell	\$179.00	.....
108	PATCH FOR ELECTRIC PENCIL—ESF/Hassell	\$16.50	.....
112	LEVEL III BASIC—Microsoft	\$81.75	.....
120	EDITOR ASSEMBLER PLUS—Microsoft	\$49.50	.....
129	THINK BIG PLUS BULLETIN BOARD—ESF/Bill Burnham	\$16.50	.....
133	PATCHWORD FOR SCRIPSIT—Discovery Bay/Phil Pilgrim	\$16.50	.....
136	R.S. U/L CONVERSION PATCH—ESF/M.N. Kidder	\$6.50	.....
137	PATCH TO ED ASSEM. PLUS—ESF/Bob Zinn	\$16.50	.....
139	DISASSEMBLER 1.2—Misosys/Roy Soltoff	\$24.75	.....
145	HEX-DEX /w BABY SITTER—ESF/Bill Burnham	\$13.25	.....
148	BASIC AUTO-RUN—ESF/Ray Czajka	\$13.25	.....
149	TELEPHONE DIALER—Blechman Enterprises	\$16.50	.....
169	EXTENDED BASIC 1.4—ESF/Tom Wheeler	\$41.25	.....
170	DATA I/O AUTOLOAD—ESF/M.N. Kidder	\$8.25	.....
<b>GAMES</b>			
132	AIR DEFENSE COMMAND—ESF/Bill Burnham	\$16.50	.....
151	ANDROID NIM W/SOUND—80 US/Leo Christopherson	\$24.75	.....
152	BEEWARY W/SOUND—80 US/Leo Christopherson	\$24.75	.....
153	CONCENTRATION—80 US/Richard Taylor	\$16.50	.....
154	CRIBBAGE—ESF/Jim Howell	\$16.50	.....
155	GALACTIC EMPIRE—DHU-GLAS/Doug Carlston	\$24.75	.....
156	GALACTIC TRADER—DHU-GLAS/Doug Carlston	\$24.75	.....
157	GALACTIC REVOLUTION—DHU-GLAS/Doug Carlston	\$24.75	.....
158	GALACTIC TRILOGY—DHU-GLAS/Doug Carlston	\$68.00	.....
134	GOMOKU—Discovery Bay Software	\$16.50	.....
159	LYING CHIMPS—80 US/Roy Groth	\$16.50	.....
160	OWL TREE—80 US/James Talley	\$16.50	.....
161	'ROUND THE HORN—DHU-GLAS/George Blank	\$16.50	.....
162	SCRAMBLE—80 US/Richard Taylor	\$16.50	.....
163	SNAKE EGGS W/SOUND—80 US/Leo Christopherson	\$24.75	.....
164	TAIPAN—DHU-GLAS/Art Canfil	\$16.50	.....
165	THE GREAT RACE—80 US/Scott Carpenter	\$16.50	.....
166	TRS-80 OPERA—80 US/Richard Taylor	\$16.50	.....
167	WORD CHALLENGER—80 US/Richard Taylor	\$16.50	.....

Prices subject to change without notice

Sole N.Z. distributors

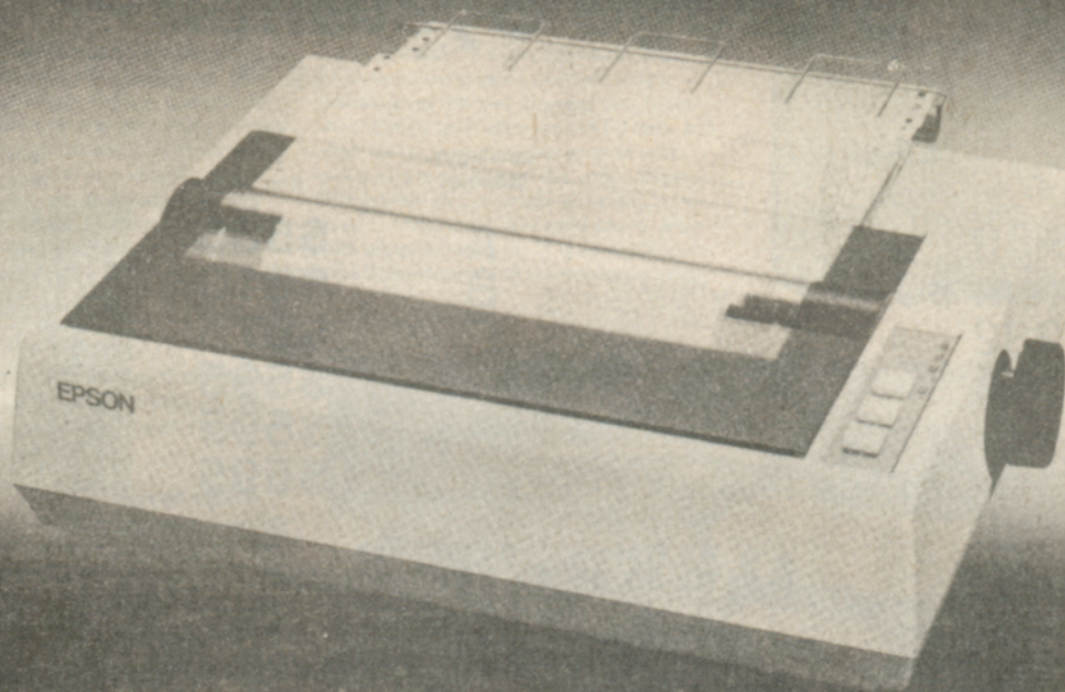
**VISCOUNT ELECTRONICS**

306-308 Church Street — Palmerston North  
P.O. Box 513 Telephone 86-696

**exatron**



# EPSON MX-80



## 80-Column Dot Matrix Printer.

**Price \$1213.08** inc. sales tax  
Price does not include cable or interface

The MX-80 is one of the most advanced 80-column dot matrix printers available to the peripheral market. That's easy to say—but we can prove it.

### **The world's first disposable print head.**

This is the feature that will rank as "most imitated" over the next few years.

The product of three long years of R&D, the MX-80 features many performance breakthroughs, including the world's first disposable print head. It's conservatively rated at a full 50 to 100 million characters, but service is as simple as changing a ribbon cartridge: Snap the head out. Throw it away. Snap in a new one. It's that easy. The only tool you need is at the end of your arm. Anyone in your office can do it. Think about service requirements. Mean Time To Repair. Down-time. This feature is a real *breakthrough*, and heralds an unprecedented level of serviceability and dependability for the office or home.

### **Correspondence quality printing.**

A lot of printers costing a lot more can't touch the MX-80's performance. It gives you a choice of 40, 80, 66 or 132 columns of printing in as many as four distinct printing density modes, a total of twelve different combinations which can

accommodate nearly any printing requirement. More than half of these utilize multi-strike and/or multi-pass techniques to generate "correspondence quality" printing. It's perfect for manuscripts, mailing labels, proposals, and nearly any other function where you need attractive, clean, clear, well-formed characters. So long as you're not trying to fool someone into thinking that you actually typed a document or letter, the MX-80 can handle nearly all of your text processing requirements.

### **A fully loaded printer at a bare bones price.**

It's quite a machine. Bidirectional printing. Logical seeking of shortest lines. 80 CPS. 64 graphics characters. Forms handling. The list of standard features goes on and on. The fact is that there are few printers that can compete with the MX-80 at ANY price. And none—ZERO—in its extraordinarily affordable price range. Total performance coupled with Epson's legendary quality and reliability. The Epson MX-80. It's the printer you've always wanted.



## Specifications

Print method	Serial impact dot matrix
Print Rate	80 CPS
Print Direction	Bidirectional
Number of Pins in Head	9
Matrix	9x9
Line Spacings	1/8", 1/6", 7/72", plus programmable
Throughput at 10 CPI	Logical seeking function— 105 LPM, 20 character line; 73 LPM, 40 character line; 46 LPM, 80 character line.

### PRINTING CHARACTERISTICS

Character Set	Full 96-character ASCII with descenders
Graphics Characters	64 block characters
Printing Modes	Standard. Double (advance paper 1/206th and repeat line). Emphasized (shift right and double strike). Double Emphasized (combination of above).

PRINTING SIZES	Characters	Max. Characters
Normal	10 per inch	80 per line
Normal Expanded	5	40
Compressed	16.5	132
Compressed Expanded	8.25	66

### FORMS HANDLING

Line Feed	Programmable length 1 to 85/72nds
Form Feed	Programmable length to 66 lines
Horizontal Tab	To 112 positions
Vertical Tab	To 64 positions

### MEDIA HANDLING

Paper Feed	Adjustable tractor-type pin feed
Paper Width Range	4" to 10"
Number of Parts	3
Paper Path	Rear

Specifications subject to change without notice.

### INTERFACES

Standard	Centronics-style 8-bit Parallel
Optional	RS232, IEEE488
Buffer Size	1 line

### SWITCHES/LIGHTS/DETECTORS

Indicators	Power Light; Printer Ready; Paper Out; On Line
Switches	Power On/Off; On Line; Form Feed; Line Feed
Detectors	Internal buzzer (bell) responds to Paper Out and error conditions with a periodic 3-second tone for 30 seconds.

### RELIABILITY

Print Head Life	50 to 100 x 10 <sup>6</sup> characters (Expectancy)
MCBF	5 million lines (Excluding Print Head)

### INKED RIBBON

Color	Black
Type	Cartridge
Life Expectancy	3 Million characters

### ENVIRONMENTAL CONDITIONS

Operating Temperature Range	41°F to 95°F
Operating Humidity	10 to 80% non-condensing

### POWER REQUIREMENT

Voltage	115V, 60Hz or 220-240V, 50 Hz
Current	<1 amp
Power Consumption	100 VA maximum

### SELF TEST MODE

Depressing Line Feed Switch while turning power ON engages self-test which prints all characters in ROM.

### PHYSICAL CHARACTERISTICS

Height	4.2"
Width	14.7"
Depth	12.0"
Weight	12 lbs.

## Epson MX-80 Print Sample

Shown are five of the twelve possible variations of print characters.

### 10 CPI Standard

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
1234567890!@#\$%^&'()\*+=<>?  
EPSON MAKES MORE PRINT MECHANISMS T  
Epson makes more print mechanisms t  
'1234567890!@#\$%^&'()\*+=<>?

### 10 CPI Emphasized

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
1234567890!@#\$%^&'()\*+=<>?  
EPSON MAKES MORE PRINT MECHANISMS T  
Epson makes more print mechanisms t  
'1234567890!@#\$%^&'()\*+=<>?

### 5 CPI Double Emphasized

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
1234567890!@#\$%^&'()\*+=<>?  
EPSON MAKES MORE PRINT MECHANISMS  
Epson makes more print mechanisms

### 8.25 CPI Double Emphasized

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
1234567890!@#\$%^&'()\*+=<>?  
EPSON MAKES MORE PRINT MECHANISMS  
Epson makes more print mechanisms

### 16.5 CPI Standard

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
1234567890!@#\$%^&'()\*+=<>?  
EPSON MAKES MORE PRINT MECHANISMS THAN ANYONE ELSE IN THE  
Epson makes more print mechanisms than anyone else in the  
'1234567890!@#\$%^&'()\*+=<>?



# INSTANT SOFTWARE PRICE LIST (Prices subject to change without notice)

## TRS-80, SYSTEM 80 and PMC 80

Ref. No.	Description of Programme	Mod III Compt	Price	Qty. Reqd	Ref. No.	Description of Programme	Mod III Compt	Price	Qty. Reqd
0001R	Basic and Intermediate Lunar Lander	Yes	\$11.50		0126R	The Communicator	No	\$14.50	
0002R	Space Trek II	Yes	\$11.50		0127R	Surveyor's Apprentice	Yes	\$14.50	
0004R	Beginner's Backgammon/Keno	Yes	\$11.50		0129R	The Wordslinger	No	\$43.50	
0007R	Ham Package I	Yes	\$11.50		0130R	Terminal-80	No	\$28.95	
0008R	Electronics I	Yes	\$11.50		0131R	Sales Analysis	Yes	\$36.25	
0009R	Golf/Cross-Out	No	\$11.50		0132R	Energy Consumption	Yes	\$14.50	
0017R	Air Flight Simulation	Yes	\$14.50		0135R	Executive Expense Report Generator	Yes	\$14.50	
0019R	Business Package IV	Yes	\$14.50		0136R	Beginner's Russian	Yes	\$14.50	
0023R	Oil Tycoon	Yes	\$11.50		0137R	Everyday Russian	Yes	\$14.50	
0028R	Ramrom Patrol/Tie Fighter etc.	Yes	\$11.50		0139RD	Disk Scope		\$28.95	
0033R	Bowling	Yes	\$11.50		0140R	Oracle-80	Yes	\$108.50	
0034R	Space Trek IV	Yes	\$11.50		0141R	Battleground	Yes	\$14.50	
0036R	Compu Carols	No	\$14.50		0146RD	The Real Estate PKG		\$360.00	
0043R	Santa Paravia/Fiumaccio	Yes	\$21.60		0147RD	Check Management System		\$57.75	
0046R	Othello	Yes	\$14.50		0151RD	QSL Manager		\$28.95	
0047R	Who-Dun-It?	Yes	\$11.50		0152RD	Oracle-80		\$144.45	
0049R	Demo II	Yes	\$11.50		0156R	Money Madness	Yes	\$14.50	
0050R	Grade Book	Yes	\$14.50		0157R	IQ Test	No	\$14.50	
0051R	Ball Turret Gunner	No	\$14.50		0159R	Jet Fighter Pilot	Yes	\$21.60	
0052RD	Energy Audit		\$108.50		0171R	Flight Path	Yes	\$14.50	
0055R	Demo III	Yes	\$11.50		0172R	Kid's Gallery	Yes	\$14.50	
0056R	Bowling League Statistics System	Yes	\$36.25		0180RD	Disk Editor		\$57.75	
0057R	Chessmate-80	No	\$28.95		0184R	TRS-Tests	Yes	\$14.50	
0058R	Programmer's Converter	Yes	\$14.50		0198R	Vocabulary Builder	No	\$14.50	
0063R	Cards	Yes	\$11.50		0200R	Omniconverter	Yes	\$14.50	
0065R	Teacher	Yes	\$14.50		0203R	BPA - Basic Programming Assistant	No	\$21.60	
0066R	Mimic	No	\$11.50		0204R	Electronic Design Calculator	No	\$14.50	
0068R	Your Cribbage and Checkers Partner	Yes	\$14.50		0205RD	The Flying Circus		\$57.95	
0069R	Household Accountant	Yes	\$11.50		0211RD	Omni-Calculator		\$28.95	
0070R	Skirmish-80	Yes	\$14.50		0212RD	The Russian Disk		\$36.25	
0071RD	Geography Explorer USA		\$72.20		0213RD	The All Stars		\$49.95	
0072R	Financial Assistant	Yes	\$11.50		0214RD	Teacher's Aide		\$57.75	
0075RD	Accounts Receivable/Payable		\$289.00		0215R	Math Tutor II	Yes	\$14.50	
0076R	TRS-80 Utility II	Yes	\$14.50		0216R	Periodic Table of the Elements	Yes	\$14.50	
0077R	Enhanced BASIC	No	\$36.25		0218R	Dr Chips	Yes	\$14.50	
0078R	Life	Yes	\$14.50		0219R	House of Thirty Gables	No	\$14.50	
0081R	TRS-80 Utility I	No	\$14.50		0223R	Cosmic Patrol	Yes	\$21.60	
0082R	Daredevil	Yes	\$14.50		0224RD	Cosmic Patrol		\$28.95	
0084R	Music Master	Yes	\$11.50		0228R	Dynamic Device Drivers	No	\$28.95	
0089R	Energy Audit	Yes	\$72.20		0230R	TLDIS	No	\$21.60	
0092R	Archimedes' Apprentice	Yes	\$14.50		0231RD	DLDIS		\$28.95	
0095RD	Bowling League Secretary		\$72.20		0232R	The Disassembler	No	\$14.50	
0099R	Typing Teacher	Yes	\$14.50		0234RD	Chessmate-80		\$36.25	
0100R	Video Speed-Reading Trainer	Yes	\$14.50		0237R	Asteroid	Yes	\$28.95	
0102R	Climate Comp	Yes	\$28.95		0240R	Invaders	Yes	\$14.50	
0103R	Personal Bill Paying	Yes	\$11.50		0247RD	Asteroid		\$28.95	
0106R	Airmail Pilot	Yes	\$14.50		0250R	IRV	No	\$36.25	
0109R	Body Buddy	Yes	\$14.50		0252R	Amateur Radio Advanced Class Study Guide	Yes	\$21.60	
0111R	Wordwatch	Yes	\$11.50		0257R	Math Master	Yes	\$14.50	
0117R	Night Flight	Yes	\$14.50		0258RD	Find it Quick		\$72.20	
0118R	Mind Warp	Yes	\$14.50		0350RD	IRV		\$43.50	
0133RD	The One-D Mailing List		\$36.25		5000RD	Mail/List (Model I version)		\$143.00	
0124R	Winner's Delight	No	\$14.50		5001RD	Mail/List (Model II version)		\$288.00	
0125R	Investor's Paradise	Yes	\$14.50		5003R	Ultra-Mon		\$36.25	



## TRS-80, SYSTEM 80 and PMC 80

5005RD	Master Directory.....		\$43.50
5007RD	Dragon Quest.....	Yes	\$31.70
5501R	Adventureland.....	No	\$21.60
5504RD	Adventureland/Pirate's, etc (3 pack).....		\$57.75
5505R	Pirate's Adventure.....	No	\$21.60
5507R	Mission Impossible Adventure.....	No	\$21.60
5508R	Voodoo Castle.....	No	\$21.60
5510RD	Voodoo Castle/The Count/etc. (3 pack).....		\$57.75
5511R	The Count.....	No	\$21.60
5512R	Strange Odyssey.....	No	\$21.60
5513R	Mystery Fun House.....	No	\$21.60
5515RD	Mystery Fun House/etc. (3 pack).....		\$57.75
5516R	Pyramid of Doom.....	No	\$21.60
5517R	Ghost Town.....	No	\$21.60
5518RD	Star Trek 3.5.....		\$28.95
5519R	Star Trek 3.5.....	No	\$21.60
5520R	Slag.....	No	\$21.60
5522R	Kid Ventures.....	No	\$21.60
5523R	Galactic Empire.....	No	\$21.60
5524RD	Galactic Empire.....		\$28.95
5525RD	Galactic Trilogy.....		\$57.75
5526RD	Six Micro Stories.....		\$21.60
5527RD	Local Call for Death.....		\$28.95
5528RD	Two Heads of the Coin.....		\$28.95
5529R	Savage Island.....	Yes	\$21.60
5530RD	Savage Island.....		\$29.95

## HEATH

0087H	Mental Gymnastics.....		\$11.50
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- Microcomputing ● Creative Computing
- 80 Microcomputing
- Computing Today
- Compute

## PET

Ref. No.	Description of Programme	Price	Qty. Reqd
0005P	Personal Weight Control/Biorhythms.....	\$11.50	
0006P	Mortgage with Prepayment Option/Financier.....	\$11.50	
0014P	Casino I.....	\$11.50	
0015P	Casino II.....	\$11.50	
0022P	Checkers & Baccarat.....	\$11.50	
0026P	Down Jones.....	\$11.50	
0029P	Tangle/Supertrap.....	\$11.50	
0032P	Trek-X.....	\$11.50	
0035P	PET Demo I.....	\$11.50	
0038P	Qubic-4/Go-Moku.....	\$11.50	
0039P	Mimic.....	\$11.50	
0044P	Penny Arcade.....	\$11.50	
0045P	ArCADE II.....	\$11.50	
0048P	Accounting Assistant.....	\$11.50	
0054P	Ham Package I.....	\$11.50	
0062P	Baseball Manager.....	\$21.60	
0064P	Dungeon of Death.....	\$11.50	
0074P	ArCADE I.....	\$11.50	
0083P	Digital Clock.....	\$11.50	
0085P	Electronic Engineer's Assistant.....	\$14.50	
0091P	Hootedoodle.....	\$14.50	
0097P	Turf and Target.....	\$11.50	
0104P	Decorator's Assistant.....	\$11.50	
0105P	PET Utility I.....	\$14.50	
0110P	Chimera.....	\$11.50	
0112P	Code Name: Cipher.....	\$11.50	
0175P	Santa Paravia and Fiumaccio.....	\$21.60	

## APPLE

Ref. No.	Description of Programme	Price	Qty. Reqd
0018A	Golf.....	\$11.50	
0025A	Mimic.....	\$11.50	
0040A	Bowling/Trilogy.....	\$11.50	
0073A	Math Tutor I.....	\$11.50	
0079A	Oil Tycoon.....	\$14.50	
0080A	Sahara Warriors.....	\$11.50	
0088A	Accounting Assistant.....	\$11.50	
0094A	Mortgage w/Prepayment Option/Financier.....	\$11.50	
0096A	Space Wars.....	\$11.50	
0098A	Math Tutor II.....	\$11.50	
0148A	Air Flight Simulation.....	\$14.50	
0160AD	Math Fun.....	\$28.95	
0161A	Apple Fun.....	\$28.95	
0162AD	Finance and Investment.....	\$28.95	
0163AD	Paddle Fun.....	\$28.95	
0166A	Super Shooters.....	\$14.50	
0174A	Santa Paravia and Fiumaccio.....	\$14.50	
0229AD	Santa Paravia and Fiumaccio.....	\$21.60	
0235AD	Solar Energy for the Home.....	\$49.95	
0242AD	Astrology.....	\$28.95	
0271AD	Skybombers II.....	\$28.95	
5503AD	Adventureland/Pirate's etc. (3 pack).....	\$57.75	
5509AD	Voodoo Castle/The Count etc (3 pack).....	\$57.75	
5514AD	Mystery Fun House/Pyramid etc. (3 pack).....	\$57.75	
5521AD	Planetoid.....	\$28.95	
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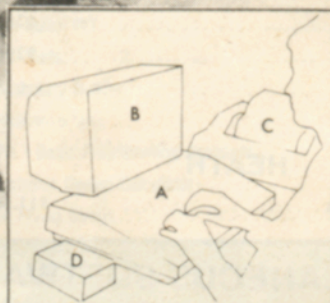
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