

ALTAIR 8800 USERS!

Did you know...

- That all our modules are 100% compatible with the Altair 8800 computer, NO modifications necessary!
- That our 4KRA Static Read/Write Memory module doesn't have to lose it's data when you pull the plug!
- That our 3P+S Input/Output module will fully interface two TV Typewriters with keyboards and a modem or teletype at the same time!
- That we make the most powerful alphanumeric Video Display module anywhere!
- That our software is FREE, or close to it!
- That all our modules are truly high quality, computer grade, but that our prices are the lowest in the industry!
- That we have already shipped hundreds of modules on time, and we will continue to deliver what we promise, FAST!

CHECK THE SPECS:

4KRA Static Read/Write Memory

This 4096 word STATIC memory provides faster, more reliable and less expensive operation than any currently available dynamic memory system. The 4KRA permits Altair 8800 operation at absolute top speed continuously. All RAM's (Random Access Memories) used in the 4KRA are 91L02A's by Advanced Micro Devices, the best commercial memory IC on the market today. 91L02A's require typically 1/3 the power of standard 2102 or 8101 type RAM's and each one is manufactured to military specification MIL STD-883 for extremely high reliability. These memories can be operated from a battery backup supply in case of power failure with very low standby power consumption. (Ask for our technical bulletin TB-101 on power down operation.) In short we have done everything we could to make the best 4K memory module in the computer field, and because we buy in large quantity, we can make it for a very reasonable price. Available now.

2KRO Erasable Reprogrammable Read Only Memory Module

With this module the Altair 8800 can use 1702A or 5203 type Erasable Reprogrammable ROM's. The 2KRO accepts up to eight of these IC's for a capacity of 2048 eight bit words. Once programmed this module will hold its data indefinitely whether or not power is on. This feature is extremely useful when developing software. All necessary bus interfacing logic and regulated supplies are provided but NOT the EPROM IC's. Both 1702A and 5203 PROM's are available from other advertisers in this magazine for well under \$25. Available now.

3P+S Input/Output Module

Just one 3P+S card will fulfill the Input/Output needs of most 8800 users. There are two 8-bit parallel input and output ports with full handshaking logic. There is also a serial I/O using a UART with both teletype current loop and EIA RS-232 standard interfaces provided. The serial data rate can be set under software control between 35 and 9600 Baud. You can use your old model 19 TTY! This module gives you all the electronics you need to interface most peripheral devices with the Altair 8800, it's really the most useful and versatile I/O we've seen for any computer. Available now.

MB-1 Mother Board

Don't worry any more about wiring hundreds of wires in your Altair to expand the mainframe. Our single piece 1/8-inch thick, rugged mother board can be installed as one single replacement for either three or four 88EC Expander cards, so you don't have to replace your already installed 88EC card if you don't want to. The MB-1 has very heavy power and ground busses and comes with a piece of flat ribbon cable for connection to the front panel board of the 8800. Available now.

VDM-1 Video Display Module

This module is the first real computer terminal display in kit form. Under software control the VDM-1 displays sixteen 64 character lines to any standard video monitor. Characters are produced in a 7x9 dot matrix, with a full 128 character set, upper and lower case plus control characters. Data is accessed by the VDM as a block from any 1K segment within the 65K address range of the 8800 computer. Multiple cursors are completely controlled by software and the display can begin anywhere on the screen (this is great for many video games). When the last line is filled the display scrolls up a line. Powerful editing capabilities are provided with the FREE software package included in every VDM-1 kit. Available in September '75.

SOFTWARE

Our Assembler, Text Editor and System Executive is being shipped now. This software package gives you very powerful Assembly Language capability in the Altair 8800. The Executive and Editor allow you to call programs by name (including BASIC) and then add, delete, change, or list programs by line number. The Assembler provides a formatted symbolic mnemonic listing as well as octal or binary object code from Assembly Language programs written using the Editor. The Assembler also gives valuable error messages to help in debugging those inevitable errors. The Assembler, Editor, Executive Package No. 1 will be available in read only memory along with an expanded Executive and a powerful Interpretive Simulator by October or November of 1975.

We are working on two BASIC Language packages which should be ready by October. One will be a basic BASIC needing about 8K of memory as a minimum and the other will be an Extended version with additional string manipulation, matrix operations and double precision arithmetic capabilities requiring about 12K. Both these packages will be available in Read Only Memory for a reasonable price.

Item	PRICE LIST		
	Kit	Assembled	Delivery
2KRO EPROM module	\$ 50.	\$ 75.	2 weeks ARO
3P+S I/O module	125.	165.	3 weeks ARO
4KRA-2 RAM module w/2048 8-bit words	135.	185.	2 weeks ARO
4KRA-4 w/4096 8-bit words of RAM	215.	280.	2 weeks ARO
RAM only, AMD 91L02A 500n sec low power	8/\$40	—	2 weeks ARO
MB-1 Mother Board	35.	—	2 weeks ARO
VDM-1 Video Display module	160.	225.	Sept. 29, '75 then 3 weeks ARO

Send for our FREE flyer for more complete specifications and for pricing on additional items.

TERMS: All items postpaid if full payment accompanies order. COD orders must include 25% deposit. MasterCharge gladly accepted, but please send us an order with your signature on it.

DISCOUNTS: Orders over \$375 may subtract 5%; orders over \$600 may subtract 10%.

 **Processor Technology**
2465 Fourth Street
Berkeley, Ca. 94710 (415) 549-0857

8800 HARDWARE!

We have Altair compatible plug-in peripherals!

BUILD A SMART TERMINAL INTO YOUR ALTAIR!

Your Altair already has the intelligence, we provide the display module. This module is not a limited "TV Typewriter" but an ultra-high speed computer terminal built into your computer. The VDM-1 generates sixteen 64 character lines from data stored in the 1K byte on-card memory. Alphanumeric data is shown in a 7x9 dot matrix format with a full 128 upper and lower case ASCII character set. The VDM-1 features EIA video output for any standard video monitor, multiple programmable cursors, automatic text scrolling and powerful text editing software included FREE! Available now.

!! MASS STORAGE !!

We have always wanted a low cost, reliable, fast access storage device using standard Phillips cassettes (we bet you have too), so we got to work and designed one here it is! With the CDS-VIII Cassette Data System you have computer controlled access to 128K bytes of data within 20 seconds when using C-30 cassettes. We provide read/write electronics and transport controller, Altair interface, a case and power supply, and one or two multiple motor cassette transports plus FREE driving software! Yes, up to two cassette drives! Two drives provide much more powerful file handling and copying capabilities as well as, of course, twice the storage capacity. Data can be written and/or read asynchronously at any transfer rate up to 150 bytes/sec; at this rate 8K BASIC can be loaded in about 50 seconds! We have also included provision for use of any read/write electronic plug-in section so that tapes using HIT, Computer Hobbyist or Digital Group formats may be read at lower data rates. Available in November 1975.

4KRA Static Read/Write Memory

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PRICE LIST effective Oct. 1, 1975

Item	Kit	Assembled	Delivery
2KRO EPROM module	\$ 50.	\$ 75.	3 weeks max.
3P+S I/O module	125.	165.	3 weeks max.
4KRA-2 RAM module w/ 2048 8-bit words	WRITE FOR DETAILS		
4KRA-4 RAM module w/ 4096 8-bit words	WRITE FOR DETAILS		
RAM only, AMD 91L02A 500 nsec. LOW POWER	8/\$40.	—	3 weeks max.
CDS-VIII-1 Cassette Data System w/one transport	WRITE FOR DETAILS		
CDS-VIII-2 w/two transports	WRITE FOR DETAILS		
MB-1 Mother board, bus terminator, card cage	70.	—	3 weeks max.
VDM-1 Video Display module	160.	225.	3 weeks max.

TERMS: All items postpaid if full payment accompanies order. COD orders must include 25% deposit. MasterCharge gladly accepted, but please send us an order with your signature on it.

DISCOUNTS: Orders over \$375 may subtract 5%; orders over \$600 may subtract 10%.



Processor Technology
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(415) 549-0857

8800 SOFTWARE!

WE HAVE ALTAIR COMPATIBLE 8080 SOFTWARE AND FIRMWARE MODULES!

If you haven't used our Assembly Language Operating System you have been missing a wonderful experience. We have found the ALOS Resident Editor and Assembler to be an extremely useful and powerful program development tool. We are so sure you will be turned on with our Software Package No. 1 that we are practically giving a listing away for a mere \$3.00US. Yes, this is a source listing as well as a hexadecimal printout.

The Assembly Language Operating System gives you the ability to write programs in 8080 Assembly Language with labels, expressions and comments. The programs can then be edited by line number, a powerful feature that makes corrections and additions very easy. The program can be named as a file and stored at a user selected memory location while another file is being worked on. Files can be listed by line number using the LIST command before being assembled. The Assembler converts the Assembly Language mnemonic codes and labels to hexadecimal op-codes at any address selected by the user to run at any address (the run address may be different from the location in memory where the program is placed). Assembly can be performed with or without error messages being printed. After assembly the program can be run using the EXECUTE command or dumped onto cassette or paper tape using the DUMP command.

Paper tapes or cassettes of the program listing will not be available to individuals but we have already sent paper tapes to several computer clubs around the country. We suggest you contact one of the clubs if you want a copy of the tape or need assistance. We will be happy to send tape copies to any bona fide "amateur" computer club or society, so if you are a member of such a group, please let us know of your group's existence by sending us a copy of its latest newsletter.

In addition we have a manual describing the use of the ALO System from the ground up. This will include a complete description with examples of every command, instructions on the use of all internal routines by other programs and an overview of efficient file generation and handling.

An even more wonderful version of the ALOS is available in firmware as part of an 8K PROM module. The expanded version allows dynamic Input/Output allocation, file area management by the executive, octal and/or hex data entry, loaders for both 8800 BASIC and Intel Hex Format tapes, and many other capabilities not included in the original Package No. 1. The basic Resident Executive-Editor-Assembler occupies about 4K of the 8K maximum capacity. So why the 8K?? Because we are leaving space for future expansion. The first expansion is a powerful Simulator that adds-on to the basic ALOS package.

SIMULATOR?? Yes, an Interpretive Simulator which runs 8080 programs on the same 8080 that contains the Simulator! Not just traps and breakpoints but simulated I/O, registers, flags, program counter and stack pointer. Any of these can be modified at all times; plus a single step mode that displays all the registers, pointers, flags, etc., after execution of each instruction. This Simulator is the most powerful debugging tool for the 8080 that we know of. Just think, you will hardly ever again have to touch the front panel switches.


Both versions of our ALOS require 2K bytes of RAM for system internal storage and symbol tables. In addition at least 4K more is needed to hold user files, although greater capabilities are achieved with 8K or 12K of user space.

PTCOS!

What is PTCOS you may ask?? It stands for Processor Technology Cassette Operating System and it means a real Operating System program based around our CDS-VIII dual Cassette Data transport System. When operating under this program you have true file handling power to create, delete, edit, relocate, and copy all kinds of files (e.g. BASIC and programs written in BASIC). PTCOS can handle multiple I/O devices using a special type of file and suitable small driving routines. At last an integrated system concept for the 8800 is a reality! PTCOS is devilishly similar in its basic operation to an FDOS and is upward compatible with future software developments from Processor Technology.

PRICE LIST effective OCT. 1, 1975

	KIT ASSEMBLED DELIVERY		
Software package No. 1 Assembly Language Operating System	\$3.00	—	3 weeks max.
PTCOS: Processor Technology Cassette Operating System	WRITE		December '75
ALS-8 PROM Firm- ware module expanded version of SP No. 1	\$275.	\$325.	3 weeks
SIM-1 PROM Firm- ware add-on to ALS-8: Simulator section	\$95.	\$110.	3 weeks

 **Processor Technology**
2465 Fourth Street
Berkeley, Ca. 94710

(415) 549-0857

NEW! ... VDM-1

features-

- ultra high speed intelligent display***
- generates 16, 64 character lines of alpha-numeric data***
- displays upper and lower case characters***
- full 128 ascii characters***
- single printed circuit card***
- standard video output***

- \$160.00 -

SPECIAL FREE OFFER!

Scientific Notation Software Package with Formatted Output

The floating point math package features 12 decimal digits with exponents from +127 to -127; handles assigned and unassigned humbers. With it is a 5 function calculator package: + - X \div & sq. root. It includes 3 storage and 3 operating memories and will handle chain and column calculations.

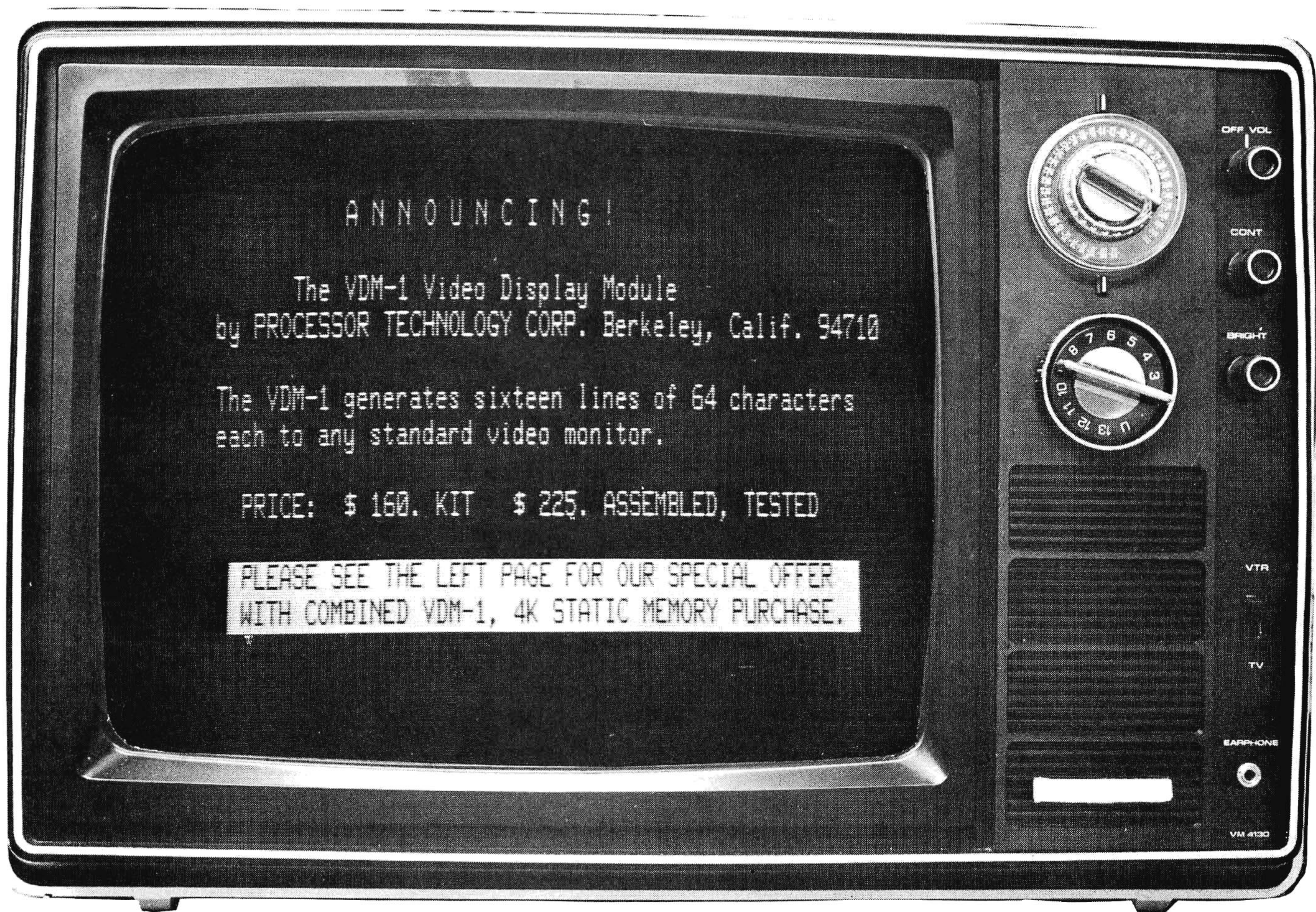
With the purchase of (1) VDM-1 and (1) 4KRA-4 Memory:

Just \$299.00 (Offer expires 2-1-76)

from-

Processor Technology

VIDEO DISPLAY MODULE

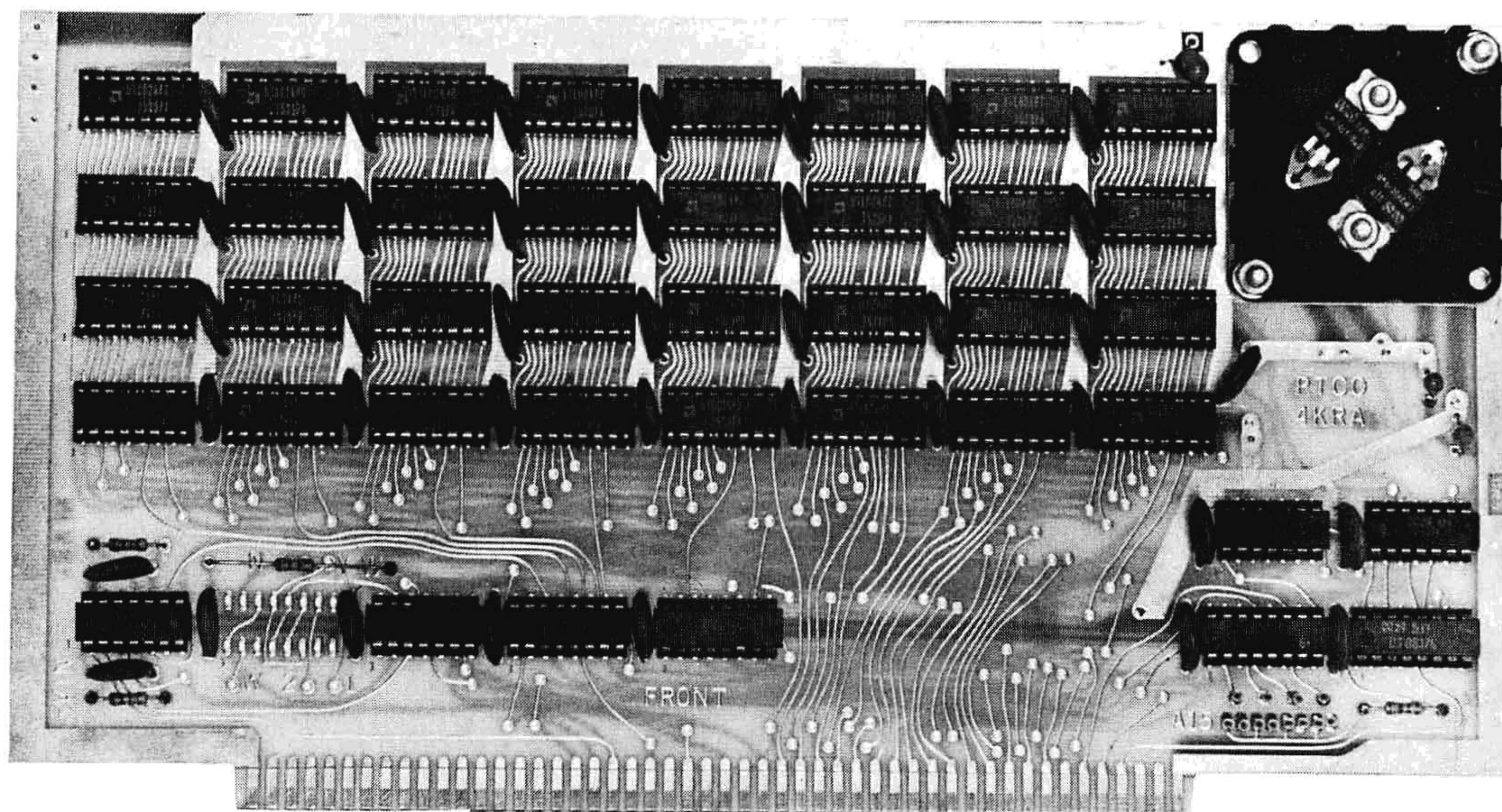


Corporation



**2465 Fourth Street
Berkeley, Ca. 94710**

4KRA LOW POWER MEMORIES AT A NEW LOW PRICE!



Want Details?

The Processor Technology 4KRA-4 is the fastest, most reliable and yet, least expensive read/write memory module on the market today. The 4KRA-4 is the only memory available of any kind that can be powered by two "D" size batteries for up to ten (10) hours. (Ask for our TB-101 technical bulletin on back-up battery operation of the 4KRA-4).

Don't be misled by "undirected" statements on the subject of memory power consumption. All RAM's used in the 4KRA-4 consume typically 1/3 the power of 8101 or 2102 type memories. Under absolute worst case conditions our RAM's require only 30% more power than the "typical" consumption of any 4K dynamic memory. Remember that dynamic memories use three power supplies, but static memories only one.

It's time to clear the air of any confusion anyone might have about memory speed. In any 8080 system, all memories with access times between 50 and 520 nano-seconds are the same speed! Access time alone is not a valid indicator of speed unless it is greater than 550 nanoseconds, thereby requiring slow-down "wait" states. However, two other factors affect overall system speed.

1) Dynamic memories must refresh themselves periodically, slowing down the micro processor. In a well designed dynamic memory system refresh slows the processor by a few percent. Static memories do not require any refreshing. When our 4KRA-4 memories are used in the Altair 8800 the "wait" light goes out, indicating maximum speed operation.

2) Long cycle times can slow the system down during critical operations such as Direct Memory Access. DMA is used by most disk memories and by such devices as a soon to be announced color graphics generator. Most dynamic memories now on the market have a 1500 nanosecond cycle time, about three times that of our 4KRA-4. This longer cycle time can slow down the DMA device by at least 33%!

Most important, our 4KRA-4 Static Memories work, and keep on working! Processor Technology has four 8800 computers, each using at least 32K Bytes of 4KRA-4 memory. We use these machines heavily for program development and product testing. We have yet to lose a single bit in normal operation! Reports from our customers confirm our experience and indicate that we have one of the lowest failure rates in the industry.

Frankly, we have done everything we could to make the best read/write memory around, because, after all, memory is the most important part of any computer.

SPECIFICATIONS: 4KRA-4

Maximum capacity: 4096 eight bit bytes

Operating mode: Static

Access time: 520 nano-seconds, worst case maximum

Cycle time: 520 nano-seconds maximum, read or write

Bus Pinout: Plug-in compatible with Altair 8800 Bus

Edge contacts: Gold plated, 100 pins (dual 50) on .125" centers

Power requirements, operating: +7.5 to +10VDC at 1.0A maximum (0°C), 0.8A typical at 25°C.

standby: +1.6 to +2.5VDC at 0.5A maximum worst case, 0.4A typical

Dimensions: 5.3" x 10.0" (13.46cm x 25.4cm)

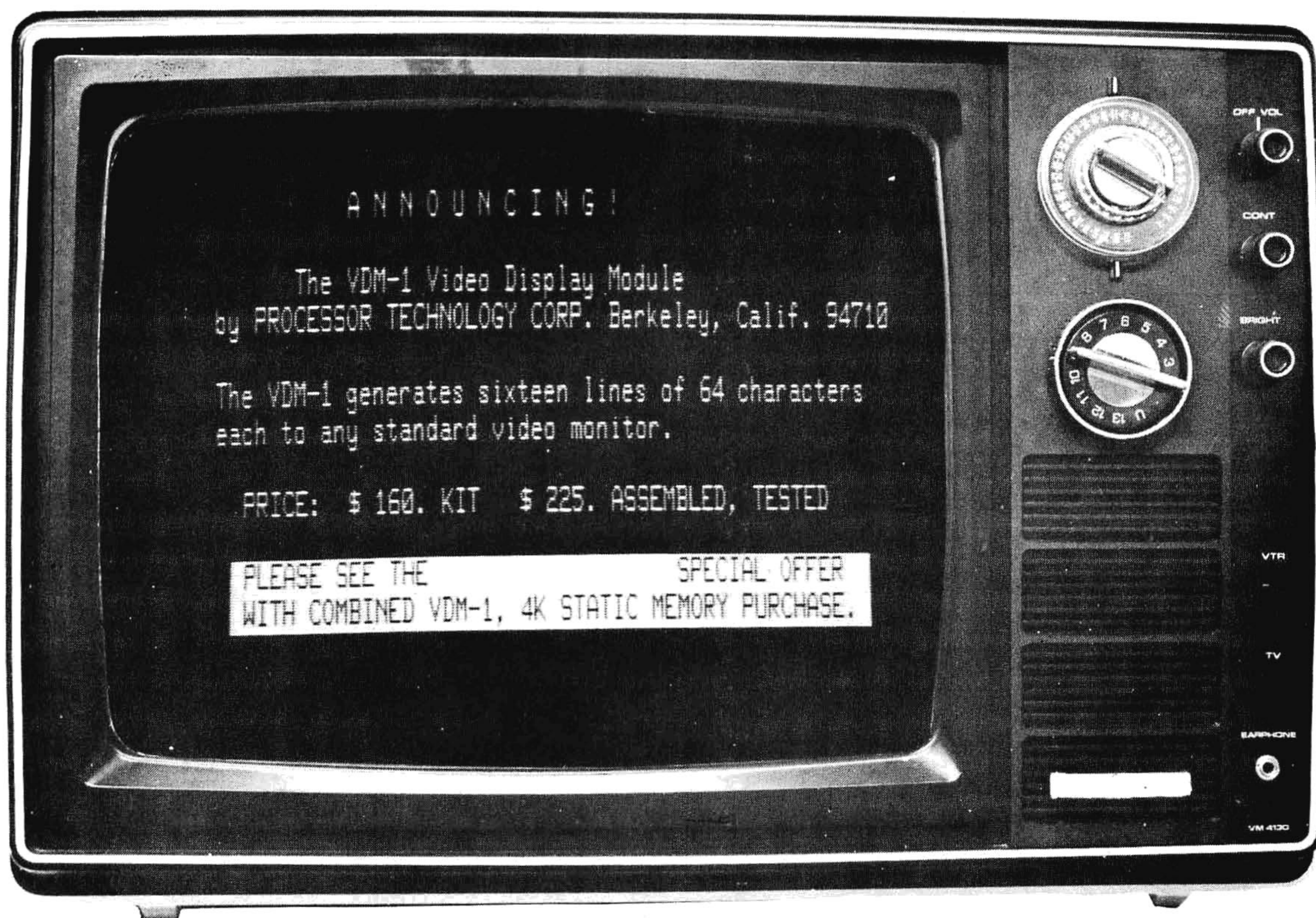
\$139

KIT FORM

\$195

ASSEMBLED

VDM-1 VIDEO DISPLAY MODULE



Please don't think of the VDM-1 as an ordinary TV typewriter! The VDM-1 is an intelligent display whose capabilities are limited only by your imagination! All cursor and display formations are fully programmable — there are very few hardware limitations inherent in the design.

The VDM-1 can be used as a terminal when running BASIC or our Resident Assembler using the FREE software drivers included with every kit.

The VDM-1 contains 1024 bytes of low power high speed RAM memory which can be directly accessed by the

computer as any 1K segment within its normal 65K address range. The VDM-1 is a single pc card and is plug-in compatible with the Altair 8800 bus. Multiple cursors are possible, each fully programmable. The display can be black on white, white on black, or both simultaneously. Output is standard EIA video with a signal bandwidth of 7 Mhz, compatible with any video TV monitor. The VDM-1 is so fast, efficient, and powerful we think it will soon become the standard against which other displays must be compared.

SPECIAL FREE OFFER!

Scientific Notation Software Package with Formatted Output

The floating point math package features 12 decimal digits with exponents from +127 to -127; handles assigned and unassigned numbers. With it is a 5 function calculator package: + - X & sq. root. It includes 3 storage and 3 operating memories and will handle chain and column calculations.

With the purchase of

(1) VDM-1 and (1) 4KRA-4 Memory:

\$299⁰⁰ (Offer Expires April 1, 1976)

**Please write for details
on these and other Altair
bus compatible modules**

**Processor
Technology**

2465 Fourth Street Berkeley CA 94710 (415) 549 0857

Watch Your With Help, Of Course, From Line of Compatible Plug-in

Altair Grow! Processor Technology's Growing Hardware and Software.

All our products are compatible with the 8800 — they just plug in to become an integral part of your system.

Each card can be used in the widest range of applications, giving maximum versatility to your Altair.

Our "no compromise" philosophy assures you the highest possible quality. We use a conservative thermal design to provide for long life and reliable operation. We've also put hysteresis bus receivers on noise prone high-speed inputs, giving you maximum noise immunity. And, finally, we cover it with a full six-month warranty.

Video Display Module

Your Altair already has the intelligence, so let us provide the display module. This is **not** a limited "TV Typewriter", but an ultra-high speed computer terminal built into your computer. The **VDM-1** generates sixteen 64-character lines from data stored in the 1K Byte on-card memory. Alpha-numeric data is shown in a 7 x 9 dot matrix with a full 128 **upper and lower case** ASCII character set. The VDM-1 features EIA Video output for any standard video monitor. (Your TV set can be easily modified at your local television repair shop.) Multiple programmable cursors, automatic text scrolling and powerful text editing software are included **free**. Kit Price, \$160.

A Versatile I/O Card

Just one **3P+S** card will fulfill the Input/Output needs of most 8800 users. There are two 8-bit parallel input and output ports with full handshaking logic. There is also a serial I/O using a UART with both teletype current loop and EIA RS-232 standard interfaces provided. The serial data rate can be set under software control between 35 and 9600 Baud. You can use your models 15, 28 or 33 TTY! This module gives you all the electronics you need to interface most peripheral devices with the 8800. And, should you decide to buy a 3P+S, we'll be happy to advise you on the best way to implement your system with our module. Kit Price, \$125.

FOCAL!

Get a full 8080 implementation of 8K FOCAL* (including the game of Lunar Lander). It's now at your local Processor Technology dealer. Object tape is available for the copying charge only; complementary source listing available with minimum purchase. (*® Digital Equipment Corp.)

An EPROM Module

Read Only Memories do not lose their stored data when power is removed. Thus, they have an advantage when used in stored program applications. Some ROM's, called EPROM's, are both erasable and reprogrammable. Our **2KRO** module will accept up to eight EPROM's, providing the user with up to 2048 eight bit words of non-volatile storage for monitor, executive, loader, and other programs. (We recommend the use of 1702A and MM5203 EPROM types. They are not included, but are readily available for reasonable prices on the industrial and surplus markets.) Kit Price, \$50.

Low Power, Plus!

The **4KRA** is a 4096 word read/write static memory module. It provides **faster, less expensive, lower power, and more reliable operation** than any comparable memory module sold today. The static memories don't need refreshing, so the result is faster speed in actual operation. Lower power does **not** mean decreased reliability. All RAM's used in the 4KRA are 91L02A's by Advanced Micro Devices. These RAM's typically require one-third the power of standard 2102 or 8101 types, and, even under worst case conditions, draw only 30% more than any currently available dynamic memory. Each RAM is manufactured to military specification. Since our module draws so little standby current, **memory can be maintained using a battery back-up**, in case of power failure, allowing long term retention of data. Kit Price, \$139.

Software

Our Assembly Language Listing (Package #1) is \$3, and includes the source listing with hexadecimal object code. Each command is described and six pages of sample use are included. Paper tapes of this system are available from many Computer Clubs throughout the country.

Turn-On-The-Switch Power

With our ALS-8, the full power of your computer is available at the instant you turn the switch. It provides 6K of PROM's, pre-programmed with an **expanded** version of our Software Package #1, including advanced file management capabilities. Files can be appended together, re-numbered, moved, or taken apart... all the features you'd expect from a company willing to practically give away Software #1. We include a manual which explains the use of the program (with examples), each routine of the system, and how to call these routines from other programs you've written. You won't be locked into a ROM version — you'll be able to customize your ALS-8 to your individual needs. The ALS-8 Firmware includes a module with all components capable of holding 8K of "turn-on-the-switch" program, so it will be upward compatible with future software developments. And, two of these are up and running now. Kit Price, \$250.

An Interpretive Simulator...

Our SIM-1 Expansion Firmware runs 8080 programs, in an interpretive mode, on the same 8080 that contains the Simulator. This isn't just a de-bug program, because the program actually "thinks" it's an 8080! A complete brochure explaining all its capabilities is available from Processor Technology. Price, \$95.

And, A Text Editor!

Every ALS-8 includes the edit command. This command, combined with our **Expansion Firmware #2** (Text Editor) and the VDM, adds the world of text editing to your system. Single characters, entire lines, portions of lines can be inserted, deleted, moved and, ultimately, printed out. The addition of Firmware #2 to your ALS-8 will give you text editing capability equivalent to systems selling for \$30,000 just a few short years ago. It's been running at Processor Technology since January, and it's ready for shipment **now**. Price, \$95.

Write us for complete specifications on these and other compatible plug-in products: Our single-piece Mother Boards will give you 16-card capacity in one installation. A Wire Wrap Board, to help you do your own wire wrap prototyping, creating custom interfaces. An Extender Board, which allows accessibility in servicing any 8800 compatible module.

All items postpaid if full payment accompanies order. COD orders must include 25% deposit. Master Charge (minimum \$25) accepted, but please send an order with your signature on it. Discounts on orders over \$375.



Processor Technology

6200-B Hollis Street
Emeryville, CA 94608

The Enlightened Altair.

Your Altair already has the intelligence, so let our **VDM-1 Display Module** make the best of its capacity to communicate. This is **not** a limited "TV Typewriter." The VDM-1 is an **ultra-high speed output device, built right into your 8800 system.**

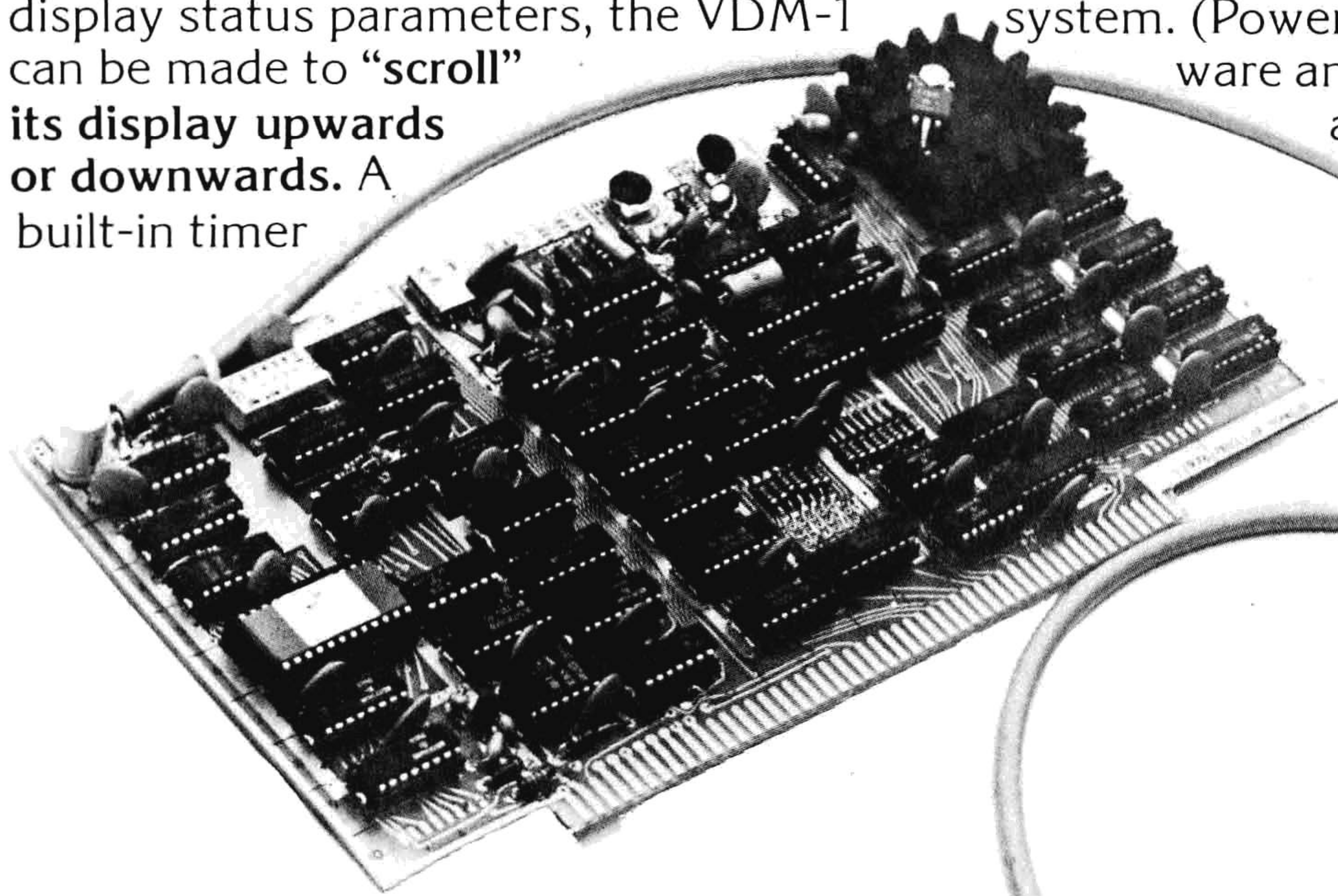
The VDM-1 generates **sixteen 64-character** lines in a large easy-to-read font with both **upper and lower case letters.** It contains 1K (1024) bytes of random access memory, to which the processor can read or write, just as though the memory were an integral part of the system. As the information is written in, contents of the on-card memory are displayed instantly without interrupting the operation of the processor.

Once the processor provides the display status parameters, the VDM-1 can be made to **"scroll"** its display upwards or downwards. A built-in timer

allows scrolling at about 4 lines per second, eliminating complicated timing program routines. At top speed, the display scrolls through a dump of 65K of memory in two minutes; that's about 1000 lines per minute!

Multiple programmable cursor circuitry is built in. All 1024 cursors can be displayed at one time or begin anywhere in the display. Thus, the VDM-1 can display white-on-black or black-on-white—perfect for many video games! The VDM-1 also features EIA Video output for any standard video monitor, or a television repair shop can easily modify your own TV set.

The VDM-1 comes with **free terminal mode software**, designed for teletype replacement when used with BASIC or our own Resident Assembly system. (Powerful text editing software and various game packages are also available from Processor Technology Corp.)



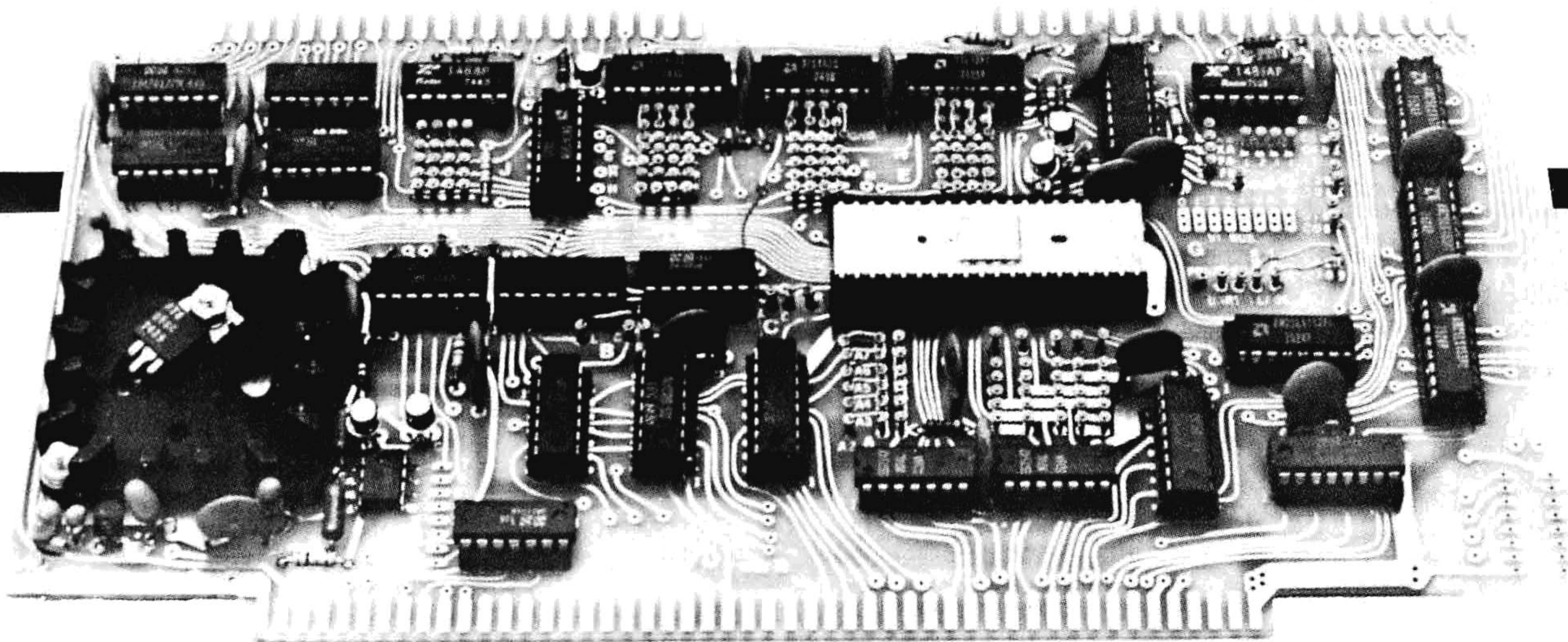
Our detailed VDM-1 Owner's Manual is available for \$4.00, refundable with purchase of the VDM-1.

Kit Prices, \$179, premium grade, low profile IC sockets included.

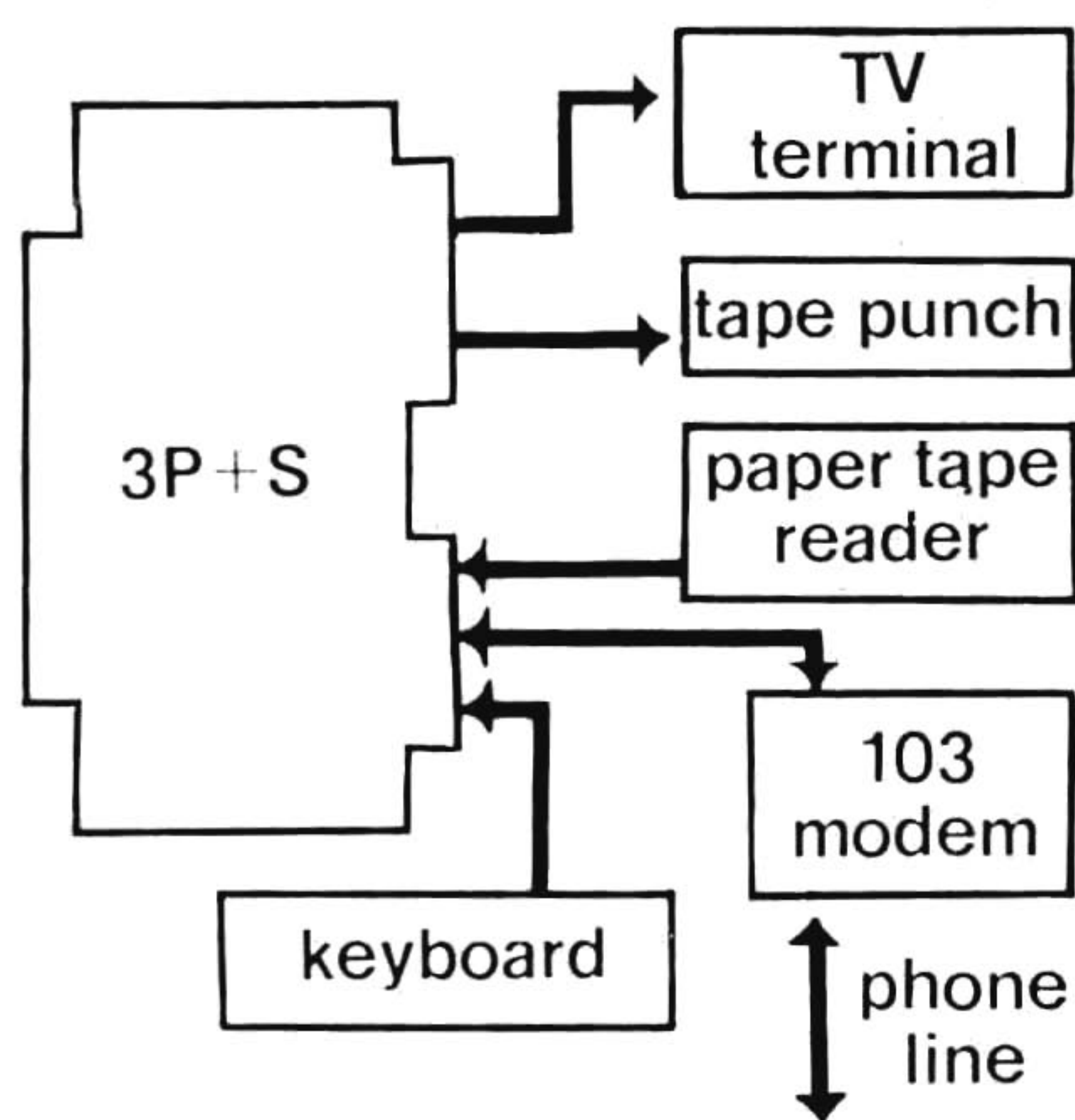
Write Us, for details on our other compatible 8800 plug-in modules.

**Processor
Technology**
6200-Y Hollis Street
Emeryville, CA 94608

Freedom To The Altair!



Often, the most difficult and expensive aspect of bringing up a working system is getting the data in and out of your computer to peripheral devices. The **3P + S I/O Module** offers a practical and simple solution. And, **this single, versatile card could very well handle all the input/output needs of your 8800 system.**



The 3P + S has two 8-bit parallel I/O ports, with full handshaking logic, plus a serial I/O port with a data range that can be set anywhere between 35 and 9600 Baud. Shown on the left is just one demonstration of the total flexibility of the 3P+S.

One parallel output port can be used to set up control conditions for both parallel and serial ports, as well as for setting the serial I/O baud rate under program control. One parallel input port is available for polling the Input Data flags and External Device flags, and for checking the serial I/O error flags.

Addressing of the module is selectable to any of 64 four-address segments within the range of 256 I/O addresses. Add another dimension of flexibility by using either the UART and control port, or the two parallel ports, to occupy the lower two relative addresses.

The 3P + S is the only module that will allow 1.5 stop bits, required by the old (and less expensive!) model teletypes such as the 15, 28, or 33 TTY's.

Our **59-page descriptive 3P + S Owner's Manual**, with detailed schematics and applications, is available for \$4.00 (fully refundable upon purchase of a 3P + S).

Kit Prices, with premium grade, low profile IC sockets, \$135; without IC sockets, \$125.

Write Us, for details on our other compatible 8800 plug-in modules.

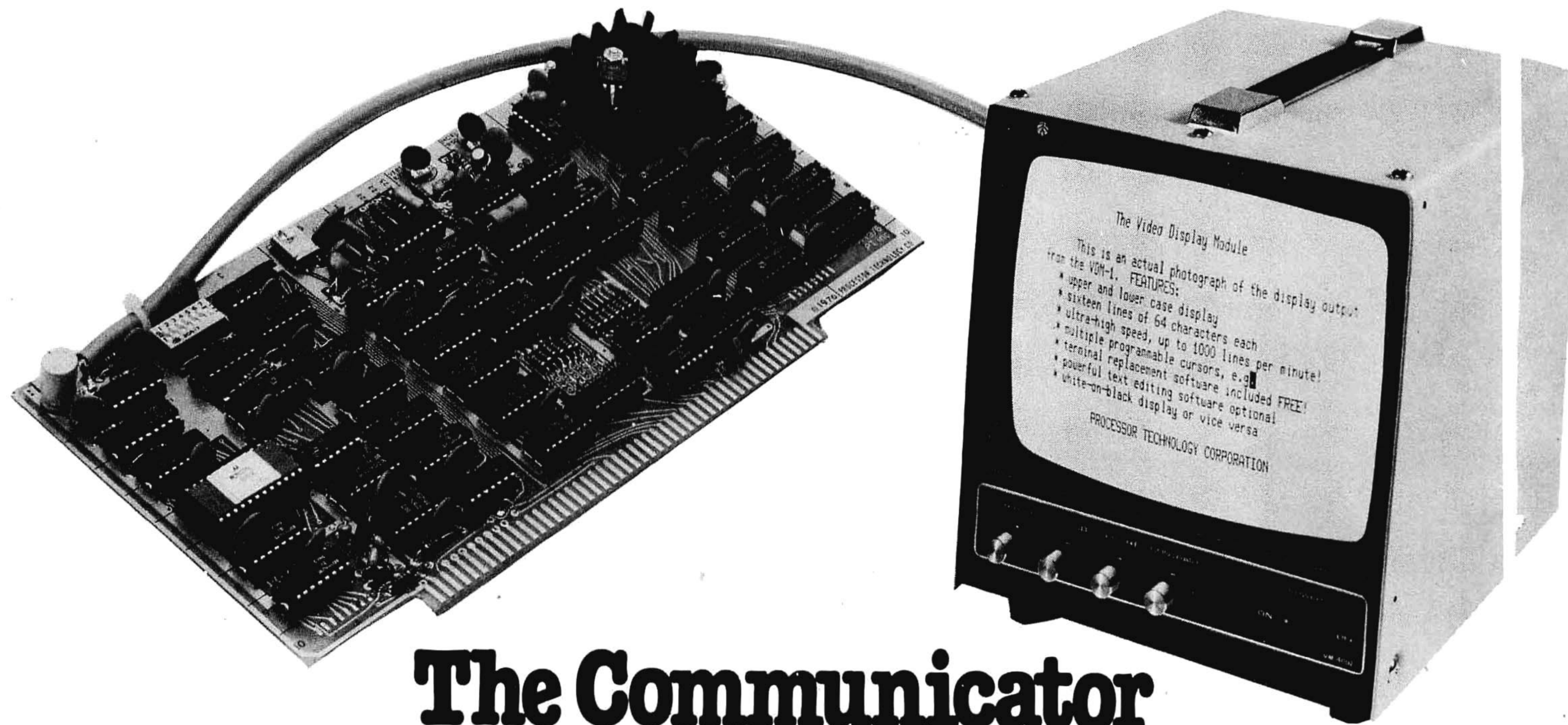
Processor Technology

6200-Y Hollis Street
Emeryville, CA 94608

The 8080 Expansion Principle.

Let Processor Technology expand your Altair or IMSAI system—with innovative, excellent quality and reliable plug-in modules

[At most agreeable prices, too!]



The Communicator

Your Altair already has the intelligence, so let our **VDM-1 Display Module** make the best of its capacity to communicate. This is **not** a limited "TV Typewriter." The VDM-1 is an **ultra-high speed output device, built right into your 8800 system.**

The VDM-1 generates **sixteen 64-character** lines in a large easy-to-read font with both **upper and lower case letters.** It contains 1K (1024) bytes of random access memory, to which the processor can read or write, just as though the memory were an integral part of the system. As the information is written in, contents of the on-card memory are displayed instantly without interrupting the operation of the processor.

Once the processor provides the display status parameters, the VDM-1 can be made to **"scroll" its display upwards or downwards.** A built-in timer allows scrolling at about 4 lines per second, eliminating complicated timing program routines. At top speed, the display scrolls through a

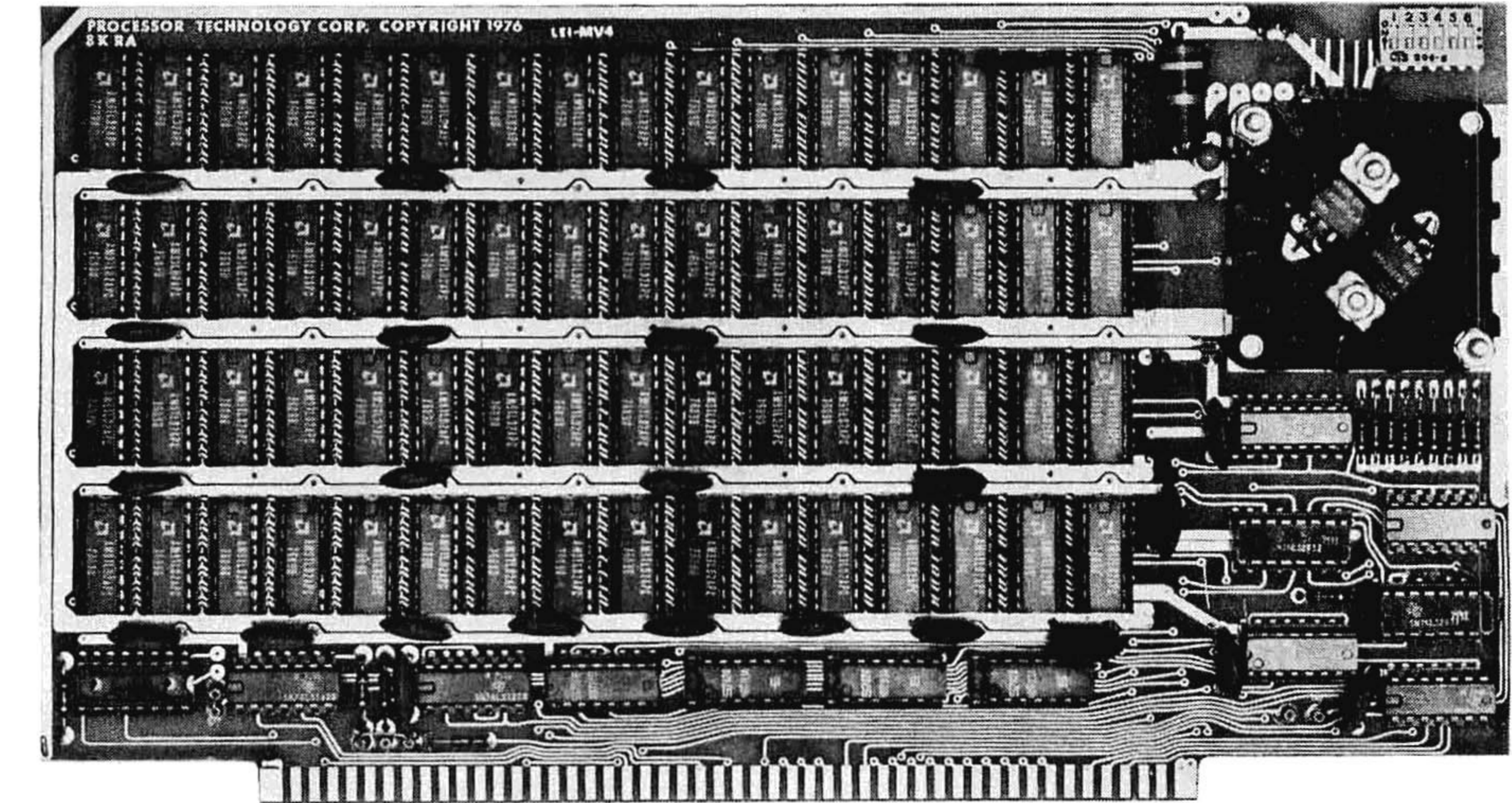
dump of 65K of memory in two minutes; that's about 1000 lines per minute!

Multiple programmable cursor circuitry is built in. All 1024 cursors can be displayed at one time or begin anywhere in the display. Thus, the VDM-1 can display white-on-black or black-on-white—perfect for many video games! The VDM-1 also features EIA Video output for any standard video monitor, or a television repair shop can easily modify your own TV set.

The VDM-1 comes with **free terminal mode software**, designed for teletype replacement when used with BASIC or our own Resident Assembly system. (Powerful text editing software and various game packages are also available from Processor Technology Corp.)

Our detailed VDM-1 Owner's Manual is available for \$4.00, refundable with purchase of the VDM-1.

Kit Prices, \$179 (premium grade, low profile IC sockets included).



Sharpen your Memory!

Processor Technology's new **8KRA Static Memory Module** will add double-capacity, lower power, and greater efficiency to your Altair or IMSAI system. We've actually improved on our already popular 4KRA board, by doubling the capacity (**8192 eight-bit bytes!**) and lowering the power-per-bit.

The 8KRA uses full speed, low power static RAM's—our prime supplier is AMD (91L02A's). These RAM's are manufactured to stringent military specification, MIL STD-883A, to insure reliability. **The 8KRA uses less power-per-bit than any other true static memory module**—requirements so low, that two "D" flashlight cells will retain data for 4-5 hours. (Recharging circuitry for Ni-Cad cells

and battery connectors are on the card.) Also, unlike dynamic memories, static memories do not require periodic refreshing, allowing them to run at the processor's **maximum speed.**

The 8KRA occupies any 8K segment at 1K intervals within the 8080 addressing range (for example, from 3K to 11K, not just 0-8K). Card address is selected by a DIP switch, located conveniently at the top of the card. Each of the 76 Integrated Circuits has its own **premium grade, low-profile IC socket.** We've included this special feature to increase reliability, and to make assembly, testing and repairs many times easier.

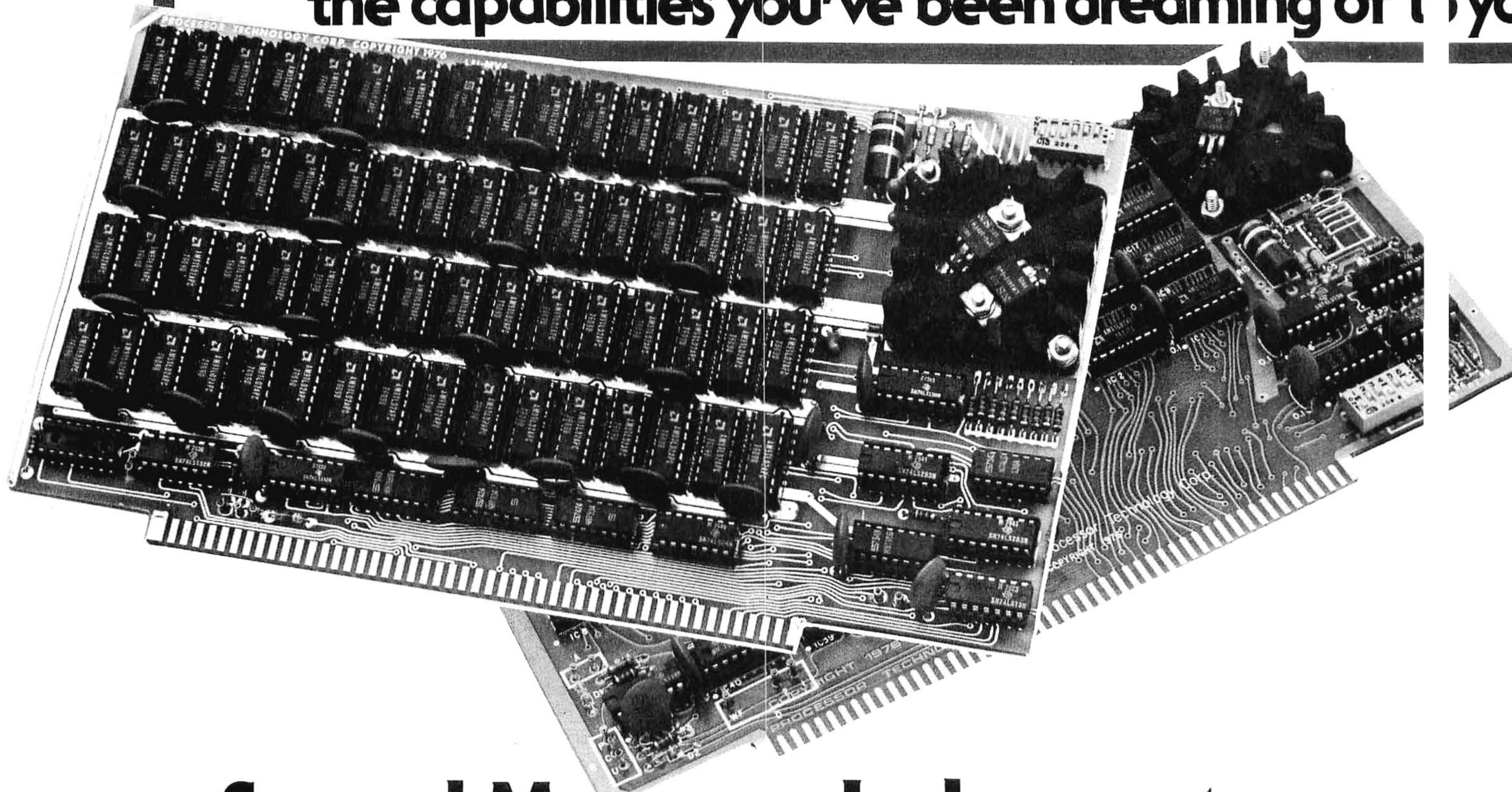
8KRA 8192-word Static Memory Module **\$295** (all sockets included)
4KRA 4096-word Static Memory Module **\$154**

Processor Technology manufactures a full line of plug-in modules compatible with the Altair and IMSAI minicomputers. **Write us now**—we have a lot to tell you!

Processor Technology
6200-L Hollis Street
Emeryville, CA 94608

The Great 8080 Evolution

With 8080 plug-in modules and software from Processor Technology, you can now afford to add the capabilities you've been dreaming of to your Altair or IMSAI minicomputer system.



Sound Memory Judgment

Processor Technology now offers two options in low-power, fast static memory. Our read/write static memory modules—the **4KRA (4096 words)** and the **double-density 8KRA (8192 words)**—are **more reliable, less expensive, and require less power** than any other available modules of comparable capacity.

Both memories use the same **low-power** static RAM's (our prime supplier is AMD). All RAM's are manufactured to exacting military specification MIL STD-883C. The **2102A-4** RAM's used by our competitors are **not low power**—their data sheets show they use more than double the power (worst case) of ours. Both of our modules will retain data when powered by two "D" flashlight cells.

(Connectors for battery power and re-charging are built in.)

The 8KRA has an exclusive address offset switch. This allows it to recognize any 8K address segment at 1K intervals, such as from 2K to 10K.

Each integrated circuit has its own premium grade, low profile IC socket (optional in the 4KRA). IC sockets make assembly, testing and repair many times easier. You'll quickly grow to appreciate them.

4KRA (without sockets or DIP switch)
4096-word Static Memory Module **\$139**

4KRA (all sockets and switch incl) **\$154**

8KRA 8192-word Static Memory Module
(all sockets included) **\$295**

Accessible Software!

We firmly believe that good software should be easily obtainable for the hobbyist. You shouldn't have to resort to searching or copying source listings, just because some software can cost you as much as your entire minicomputer system. **Processor Technology now offers four well-tested software packages.** Their prices are within reach, and more are on the way!

Software Package #1

Resident Assembler/Editor/Monitor

SW#1 is very easy to use, even if you have little or no software background. It gives you power to develop and debug small to medium programs in 8080 assembly language. It allows program entry and editing by line number. Up to six program files may be stored at once in memory. This sort of Assembly Language programming should be used with any high speed, real time, or complex I/O applications. (Recommended total memory: 8192 bytes or more.) **Source Listing: \$5.00—Paper Tape: \$9.50.**

Software Package #2

BASIC

This conversational language is most useful in scientific, educational and recreational applications. Commands and statements are close to normal English. The floating-point calculations in our 5K BASIC are considerably faster than most other 8080 versions. (Any BASIC language is, however, best used in programs with fairly low speed requirements.) Ours is the only BASIC available that can store several programs in memory at once. Its formatted output provides for easier financial calculations, with multiple statements per line, and assembly language routine calling capability. (Recommended total memory: 8192 bytes or more, from address zero.) **Source Listing only: \$5.00.**

FOCAL

(®) Digital Equipment Corporation)

This is a math oriented language designed for scientific and educational applications. All programs written in standard DEC FOCAL for the PDP-8 will run on 8080 based machines, using our version of FOCAL. (Recommended total memory: 8192 bytes or more.) **Source Listing: \$5.00—Paper Tape: \$9.50.**

Math Pack

Scientific Notation Calculator Program

Our Math Pack will provide basic math functions in a small memory system. In essence, it's a calculator that will add, subtract, multiply, divide and square root. You are allowed four variables, and you can set the decimal point (fixed or floating) between 0 and 12. Utilize either Algebraic or Reverse Polish logic—or mix them! (Program Requirements: 4096 total bytes, starting at address zero; 1300 bytes reserved for program space.) **Source Listing and Paper Tape (combination only): \$9.50.**

Processor Technology manufactures a full line of plug-in modules compatible with the Altair and IMSAI minicomputers. **Write us now** for our free brochure or the location of your nearest PTCO dealer.

Processor Technology
6200-L Hollis Street
Emeryville, CA 94608

Give Us a Closer Look.

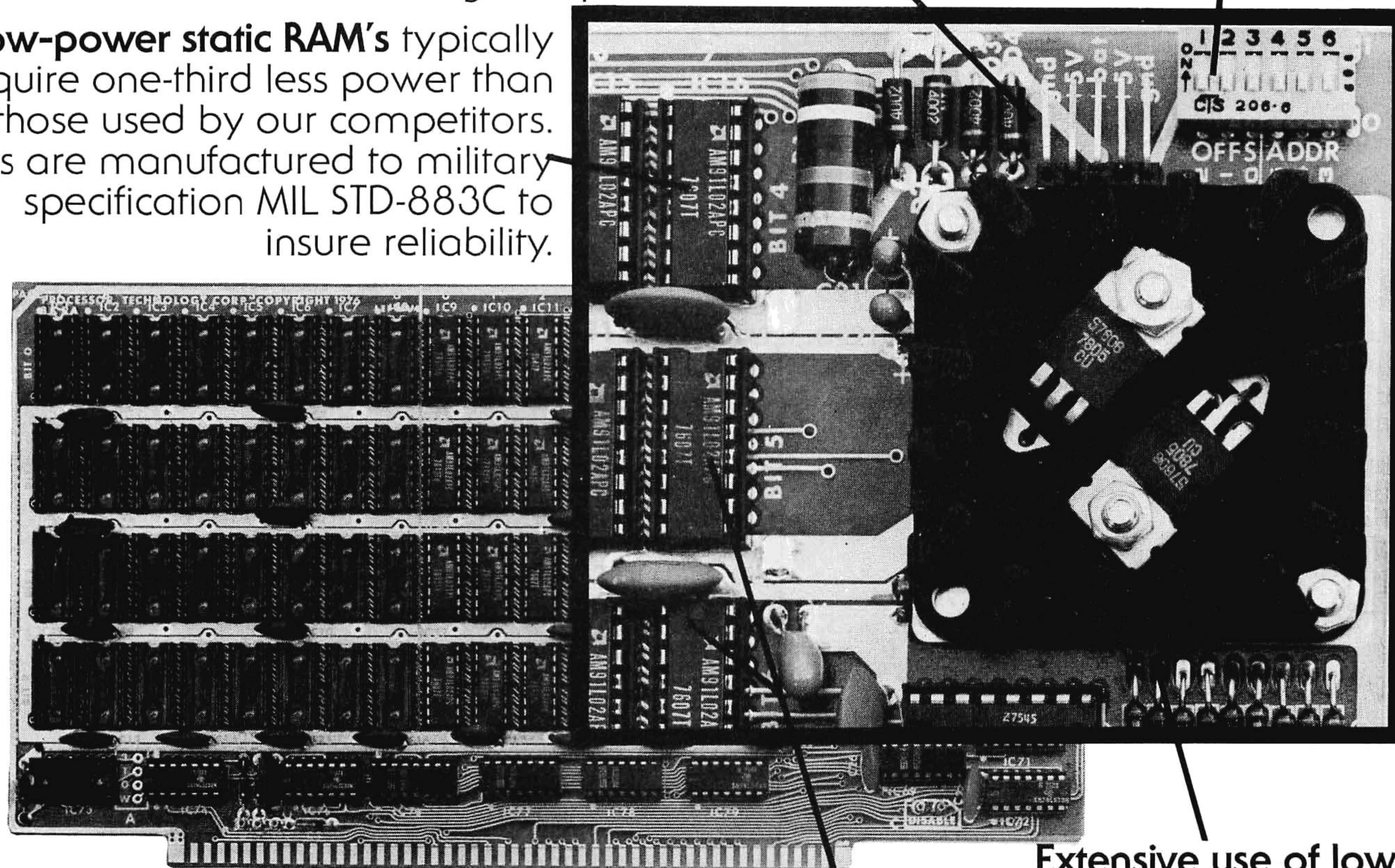
**A Discriminating Inspection of Our 8080-Compatible Products Should Convince you.
Processor Technology Offers Something Different.**

Focus on Our Fine Memory.

Battery-standby power connector built onto the card. Our low-power RAM's will retain data when powered by two "D" flashlight cells. Thus, memory storage can be protected against power failure.

Low-power static RAM's typically require one-third less power than those used by our competitors. Ours are manufactured to military specification MIL STD-883C to insure reliability.

Exclusive KSET™ switch lets you set the starting address of your 8KRA to any 1K boundary, such as at 0, 1, 2, 3K...



Extensive use of low-power Schottky and Schmitt hysteresis technologies provide maximum noise immunity.

A premium grade, low-profile socket for every IC (76 of them) to facilitate assembly and repair.

You know best what the addition of **8192 bytes of memory** in a single slot will mean to your own 8080 system. So, we've pinpointed those extra features that distinguish our **8KRA Static Memory** from others now on the market. We feel they are noteworthy differences. Once you've made your own comparisons, you'll think so, too.

Kit Prices:	
8KRA Static Memory Module (8192-words; all sockets included)	\$295
4KRA Static Memory Module (4096-words; all sockets included)	\$154
4KRA (without sockets)	\$139

The Truth About Our Software

We admit it. Our software offers are a come-on. They're great deals. And it's all because we want you to get to know us, along with our growing line of products designed for the computer enthusiast.

Both these software packages use the memory capacity of our 8KRA module very nicely. We're practically giving the software away at these prices. And we're happy to do so, even if it's just to make friends. You don't have to buy a thing from us to take advantage of our software – but we bet it won't be long before you'll want our hardware, too.

Software #1

We call this package our **Resident Assembler/Editor/Monitor**. It's a cumbersome name, but that's because it has so many functions. For starters, it enables you to:

- (1) label points in the source code,
- (2) write and edit programs, using line numbers as in BASIC,
- (3) perform relative arithmetic with labels,
- (4) equate values to labels,
- (5) have your own powerful Resident Assembler right on the memory bus,
- (6) add a custom command of your own design,
- (7) and, now you can afford a source listing!

Source Listing: \$5.00
Punched Paper Tape: \$9.50

Software #2

Originally, we started working on a standard 4K version of BASIC. However, we finally ended up expanding our package to 5K as we realized its greater potential. Just a few of the unusual things our **5K BASIC** can do:

(1) **Multiple Programs:** Keep two or more programs in memory at the same time—and switch back and forth between them.

(2) **Formatted Output:** Financial printouts line up the decimal points, and dollars and cents, directly over each other.

(3) **Machine Language Interface:** Easily pass parameters to and from assembly language routines using "CALL" statements.

Take a look at our source listing. You'll see how our software people have handled data in some unusual, nifty ways.

Source Listing: \$5.00
Punched Paper Tape: \$9.50

Write Us Now,
for our free brochure of 8080-compatible plug-in modules, and for the dealer nearest you.

Processor Technology
6200-S Hollis Street
Emeryville, CA 94608

How Far Can You Go On The 8080 Bus?

Find out—by adding 8080 compatible products from Processor Technology.

3P+S Input/Output Module

Our 3P+S is a simple inexpensive answer to handling a variety of peripheral devices. It has **two 8-bit parallel I/O ports**, with full handshaking logic. Plus, it has a **serial I/O port**, with a data rate range from 35 to 9600 Baud. Simultaneously handle a paper tape reader, a keyboard, a TV terminal, a tape punch, **and** a telephone coupler! Available with premium grade low-profile IC sockets, **\$149**. Owner's Manual, **\$4.95***.

ALS-8 Assembly Language Operating System

Just turn on the switch, and instantly you have the power to **write, edit, assemble, de-bug, and run your own programs**. The **ALS-8** is the most **useful** software development tool available today. Optional firmware includes **SIM-1**, an interpretive simulator, that simulates programs without running them in real time. Thus, errors encountered during testing do not endanger your entire system. The **TXT-2** firmware adds the dimension of text editing. Insert, delete, move entire lines or single characters, and much more! **ALS-8** (assembled only), **\$425**. **SIM-1**, **\$95**. **TXT-2**, **\$95**.

VDM-1 Video Display Module

If you're setting up just the system you really want, don't fall short by limiting its communicating ability. The **VDM-1** is an **ultra-high speed** video output device. Its **16 display lines** have **64 characters each, upper and lower case**. 1024 bytes of random access memory are on the card. It scrolls up or down, **even to 2000 lines per minute!** Any combination of the 1024 cursors can be displayed as black-on-white or vice versa. **Free terminal mode software is included**, along with premium grade, low-profile IC sockets. **\$199**. Owner's Manual, **\$4.95***.

8KRA Static Memory Module

We now offer a low-power static memory module, with a **full 8192 bytes of memory**.

It has an exclusive KSET™ address selection DIP switch, so you can conveniently set address boundaries in increments of 1K. **Our low-power RAM's typically require one-third less power** than those commonly used by our competitors. They'll even retain memory for 4-5 hours when powered by two "D" flashlight cells. **On-board recharging circuitry and battery connectors** make it possible to protect your data against sudden power loss. Each RAM has its own IC socket, too, for easier assembly and repair. **\$295**. Owner's Manual, **\$4.95***.

2KRO EPROM Module

The **2KRO Read Only Memory** will accept up to eight 1702A or 5203 EPROM's (not included), providing 2048 eight-bit words of non-volatile storage for monitor, executive, loader and other programs. Programming services available from your dealer or write us for details. **\$65**. Owner's Manual, **\$4.95***.

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MB-1 MotherBoard

Our single piece **Mother Board** for the Altair 8800 gives you 16-card capacity in one single installation. Available with 12 (**MB-12**) or 16 (**MB-1**) slots. **\$70**. (Discontinued; limited to stock on hand.)

Wire Wrap Board

Do your own wire wrap prototyping with the **WWB Wire Wrap Board**. Up to 62 16-pin sockets or various combinations of 14, 16, 24 and 40-pin sockets. **\$40**.

EXB Extender Board

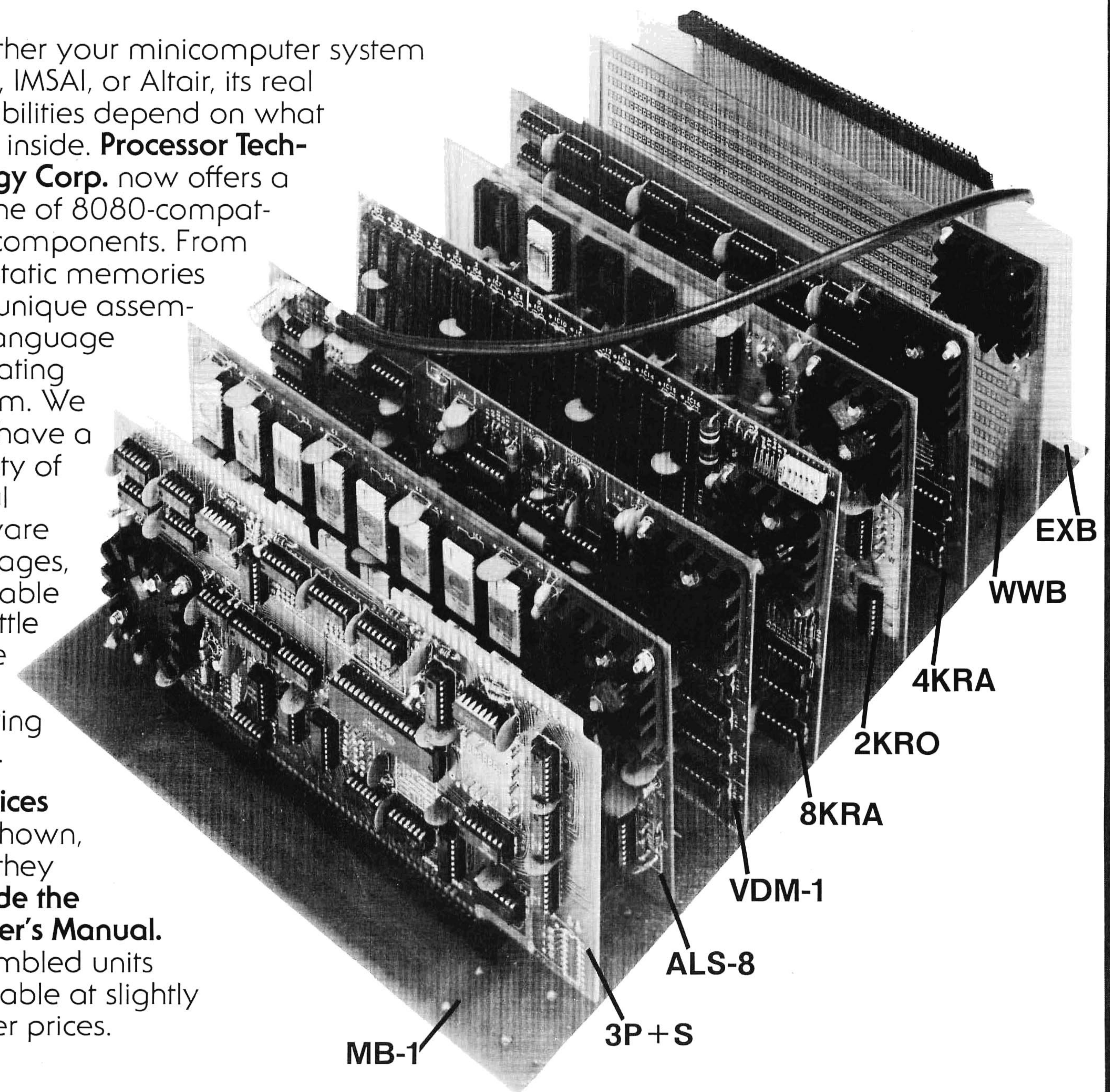
The **EXB Extender Board** allows accessibility in servicing any 8080-compatible module. **\$35**.

*Fully descriptive Owner's Manual available separately. Price refundable with purchase of kit.

Whether your minicomputer system is Sol, IMSAI, or Altair, its real capabilities depend on what goes inside. **Processor Technology Corp.** now offers a full line of 8080-compatible components. From fine static memories to a unique assembly language operating system. We also have a variety of useful software packages, available for little more than copying costs.

Kit Prices are shown, and they include the **Owner's Manual**. Assembled units available at slightly higher prices.

Write Us for further details on all our 8080-compatible products, and for the dealer nearest you.



Processor Technology
6200-V Hollis Street
Emeryville, CA 94608

Make a Giant of Your Minicomputer

3P+S Input/Output Module

Our 3P+S is a simple inexpensive answer to handling a variety of peripheral devices. It has **two 8-bit parallel I/O ports**, with full handshaking logic. Plus, it has a **serial I/O port**, with a data rate range from 35 to 9600 Baud. Simultaneously handle a paper tape reader, a keyboard, a TV terminal, a tape punch, **and** a telephone coupler! Available with premium grade low-profile IC sockets, **\$149**. Owner's Manual, **\$4.95***

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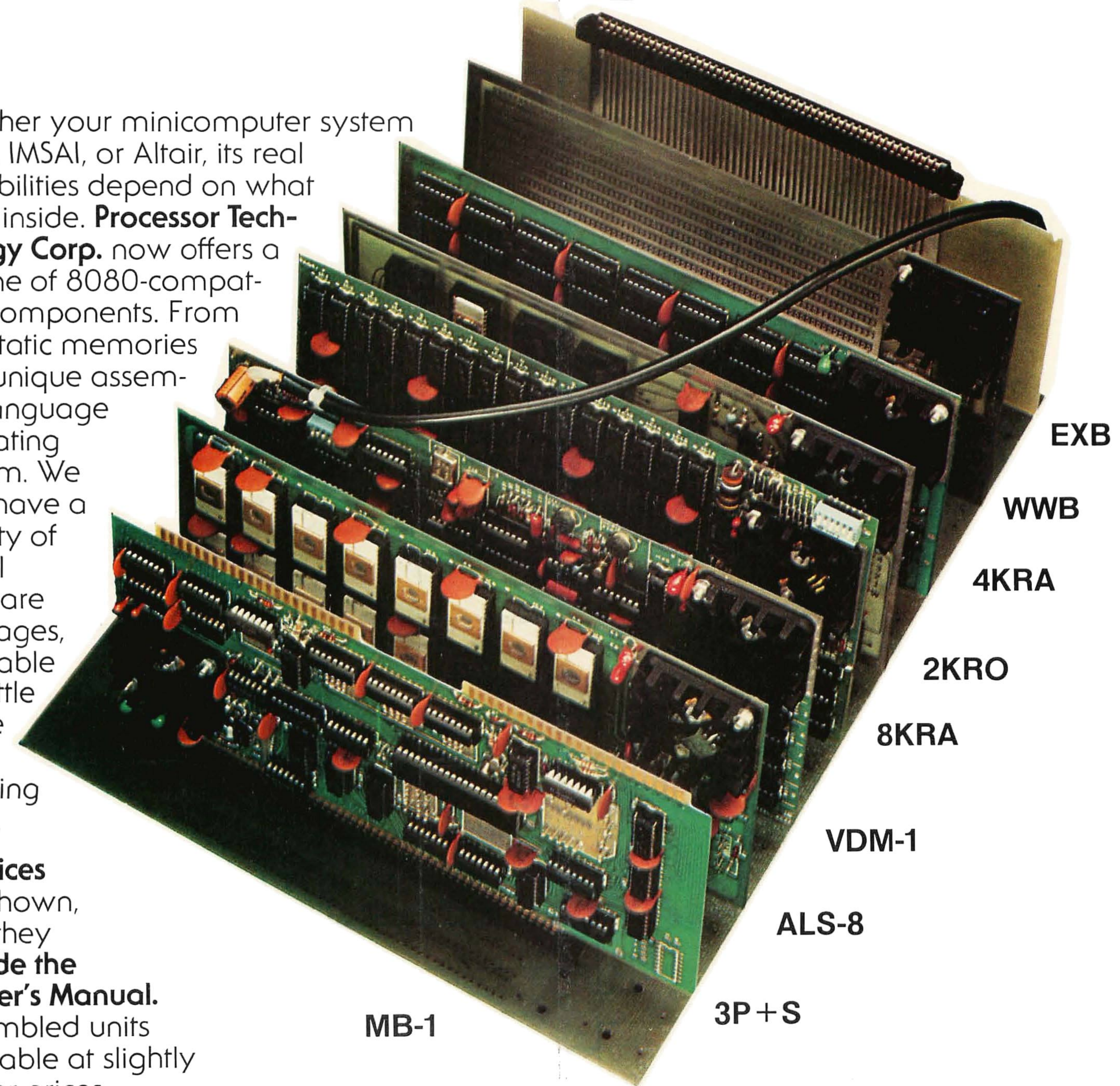
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Kit Prices are shown, and they **include the Owner's Manual**. Assembled units available at slightly higher prices.



6200-G Hollis Street
Emeryville, CA 94608



The first complete small computer.

As you thumb through this magazine, you'll see a lot of ads for small computers. For \$600 you can find a pretty good box with a power supply, four slot mother board, CPU module, and all the expected lights and switches.

But you know what? It won't work.

That's because in order to make the computer go you have to buy memory—normally both read-write (RAM) and read-only (PROM), interfaces to the outside world (parallel, serial, and cassette), keyboard, video display module, and software.

Add this all up and it's going to cost you at least \$1,400 for a complete system.

Got the picture?

Now listen to this. The remarkable new Sol-20 Terminal Computer will give you all of the above...plus more!...as *standard equipment* for just \$995, in kit form. This is because the Sol-20—like no other small computer—was designed from the ground up to be complete.

Here's what the Sol-20 includes as standard equipment:

- 8080 microprocessor.
- Video display circuitry.
- 1024 words of static, low-power RAM.
- 512 words of preprogrammed PROM.
- Custom 85-key solid-state keyboard.
- Audio cassette tape interface.
- Both parallel and serial interfaces and connectors.
- Power supply.
- A beautiful case with solid walnut sides.
- Software that includes a preprogrammed PROM personality module and a cassette with BASIC-5 language plus two sophisticated computer video games.
- Full expansion capability with all S-100 bus (Altair/IMSAI/PTC bus) products.

It's a handsome terminal or computer that will even look good in your living room or office. Small systems start at just \$475.

Full expansion capability

The Sol-20 system can be tailored to your applications using the complete line of peripheral products from Processor Technology. These include the video monitor, audio cassette and digital tape systems, dual floppy disc system, memories, and interfaces...plus all other peripherals compatible with the S-100 bus.

The Sol-20 greatly simplifies the computer-buying process. It's a splendid package that will excite both present and prospective computer owners.

Our brochure tells all. Write for it today.

Processor Technology, 6200 Hollis Street, Emeryville, CA 94608.
(415) 652-8080.



The Sol-20 expandable system.

**Processor
Technology**
Corporation

Processor Technology

HARDWARE AND SOFTWARE

Now available from the following dealers

California

Applied Computer
Technology
2465 Fourth Street
Berkeley, CA 94610

The Byte Shop
1514 University Ave.
Berkeley, CA 94703

The Byte Shop
2559 South Bascom Ave.
Campbell, CA 95008

The Byte Shop
2227 El Camino Real
Palo Alto, CA 94306

The Byte Shop
509 Francisco Blvd.
San Rafael, CA 94901

The Byte Shop
2989 North Main St.
Walnut Creek, CA 94596

The Computer Store
of San Francisco
1093 Mission Street
San Francisco, CA

Florida

Microcomputer
Systems Inc.
144 So. Dale Mabry Hy.
Tampa, FL 33609

Illinois

The Chicago
Computer Store
517 Talcott Road
Park Ridge, IL 60068

itty bitty
machine co., inc.
1316 Chicago Ave.
Evanston, IL 60201

Indiana

The Data Domain
111 South College Ave.
Bloomington, IN 47401

New Jersey

Hoboken Computer
Works
56 Second St.
Hoboken, NJ 07030

New York

Audio Design
Electronics
487 Broadway, Ste. 512
New York, NY 10013

The Computer Corner
200 Hamilton Ave.
White Plains, NY 10601

The Computer Mart
of Long Island, Inc.
2072 Front Street
East Meadow, L.I.,
NY 11554

The Computer Mart
of New York, Inc.
314 Fifth Ave.
New York, NY 10001

Synchro Sound
Enterprises
193-25 Jamaica Ave.
Hollis, NY 11423

Oregon

The Real Oregon
Computer Co.
205 West 10th Ave.
Eugene, OR 97401

Rhode Island

Computer Power, Inc.
M24 Airport Mall
1800 Post Road
Warwick, RI 02886

Washington

The Retail
Computer Store
410 N.E. 72nd
Seattle, WA 98115

Wisconsin

The Milwaukee
Computer Store
6916 West North Ave.
Milwaukee, WI 53213

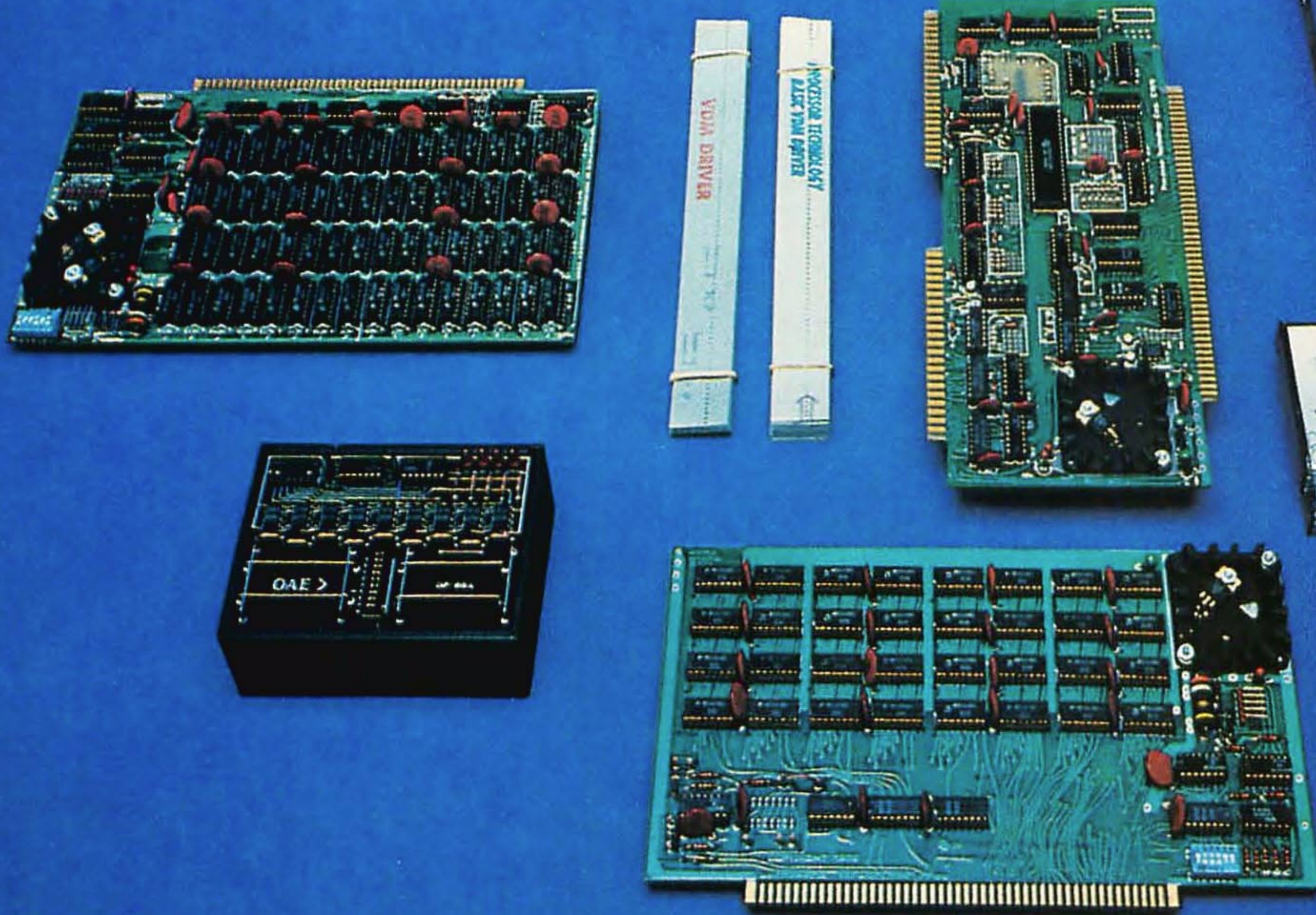
Processor Technology Corp. dealerships are available
only to qualified retail computer firms.



Introducing Sol Systems

**A complete computer/terminal
concept with all the
standard features, software
and peripheral gear you
want in your
personal computer.**





Sol Systems put it all together. One source for hardware and software. One source for engineered compatibility of computer and peripherals. That's the Sol plan.

Though the microprocessor made the powerful small computer possible, a lot of folks found out early efforts in the marketplace were selling the sizzle a lot more than the steak. After an initial investment of several hundred dollars, you ended up with some nice parts, but no memory of any kind, no I/O devices or interfaces, no display, print-out or software.

The Sol plan ends all that. Processor Technology takes the position that it's far better to be right than first. So let's get down to the Sol no tricks plan.

For \$995 in kit form, the first complete small computer

Standard is a basic word at Processor Technology. The Sol-20 has more standard features than any other small computer we know of. Here's what you get.

8080 microprocessor* 1024 character video display circuitry* 1024 words of static low-power RAM* 1024 words of preprogrammed PROM* a custom, almost sensual 85-key solid-state keyboard* audio cassette interface capable of controlling two recorders at 1200 baud* both parallel and serial standardized interface connectors* a complete power supply* a beautiful case with solid walnut sides* software which includes a preprogrammed Prom personality module and a cassette with Basic-5 language plus two sophisticated computer video games* the ability to work with all S-100 bus (Altair 8800/IMSAI/PTC) products.

There are no surprises. Everything you need to make it work is here. In kit form, nominal assembly time from our fully documented instructions is four to seven evenings.

Or start with the Sol-PC for just \$475

You can begin your Sol system with the all on one board Sol-PC kit. It has all the

memory and interface electronics including video display, keyboard interface, audio cassette interface, all necessary software and the ability to accept the full Processor Technology line of memory and interface modules. Use the Sol-PC as the basis of a microcomputer, low cost CRT terminal or editing terminal

And these specs are standard

Display: 16 lines of 64 characters per line. Character set: 96 printable ASCII upper and lower case characters plus 32 selectable control characters.

Display position: Continuously adjustable horizontally and vertically.

Cursor: Selectable blinking. Solid video inversion. Programmable positioning standard.

Serial interface: RS-232 and 20-mA current loop, 75 to 9600 baud, asynchronous.

Parallel interface: Eight data bits for input and output; output bus is tristate for bidirectional interfaces; levels are standard TTL.

Keyboard interface: Seven-level ASCII encoded, TTL levels.

Microprocessor: 8080, 8080A, or 9080A.

On-card memory: 1024 bytes PROM (expandable to 2048 bytes), 2048 bytes RAM.

External Memory: Expandable to 65,536 bytes total ROM, PROM, and RAM.

Video signal output: 1.0 to 2.5 volts peak-to-peak. Nominal bandwidth is 7 MHz.

Power required ($\pm 5\%$): +5 volts at 2.5 amperes, +12 volts at 150 mA, and -12 volts at 200 mA.

The Sol plan, completely expandable.

By filling the basic main frame with tailor made Processor Technology plug-in PC boards, you can really expand the computing power and flexibility of your Sol-20 Personal Computer.

New items are being announced frequently, but right now, here are some of the

things you can add to your Sol-20. The ALS-8 Firmware module is an assembly language operating system to give you the power to develop and run programs. Use it to quickly write, edit, assemble, de-bug and run your own programs. Some say it's the most useful software development on the market today, but modesty prohibits.

And when it comes to add-on memory boards, you've come to the right place. We've probably got more than anyone else. Choose from 2K ROM or 4, 8 or 16K RAM (read all about the 16KRA board on the last page of this ad). The PT 2KRO will accept up to eight 1702A or 5203Q erasable, reprogrammable memories (EPROM's) with the ability to store in a non-volatile fashion up to 2048 eight-bit words.

Our read/write memories are the industry standards for high reliability. We know, because we have literally scores of customer letters saying "Your memory modules work and keep on working."

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Five reasons why it's so good

1. Strings are not limited to a length of 256 characters and can extend to the bounds of memory.
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The real meaning of life we'll leave to you but it's fun to watch.

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Sol Systems Price List

(prices are net, effective Dec. 1, 1976)

SOFTWARE

ITEM with manual	Source	CUTS cassette	Paper tape
BASIC 5 software #2	yes	**	\$19.50
8K BASIC	no	\$29.00	\$37.00
New 8080 Focal	no	\$14.50	N/A
TREK 80 video game	no	\$ 9.50	\$14.50
GAMEPAC 1 video games	no	\$ 9.50	\$14.50
MATHPACK video calculator	yes	\$14.50	\$19.50
ASSEMBLER software #1	yes	\$14.50	\$19.50

**CUTS cassette of BASIC 5 is included FREE with all orders for Sol units or CUTS cassette interfaces. Additional cassettes available for \$14.50.

Sol system owners be sure to note Sol system on your order. These special versions use less code and provide easier loading along with more convenient operation. SOLOS, SOLED and CONSOL all have provision for the special versions.

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Sol Terminal Computers

Kit Price

SOL-PC SINGLE BOARD TERMINAL
COMPUTER™ **\$475.***

SOL-10 TERMINAL COMPUTER™
Sol-PC with case, power supply
and 70 key solid state keyboard. **\$795.***

SOL-20 TERMINAL COMPUTER™
all features of Sol-10 with larger
power supply, 85 key solid state
keyboard, fan, and five slot
expansion backplane. **\$995.***

*Sol prices include CONSOL
Personality Module. If SOLED Intelligent
Editing Terminal Module or SOLOS Stand-
alone Operating System Module is desired
instead, add \$100. If ordered separately,
personality modules are \$150 each.

Memory Modules

Kit Asmbld.

ALS-8 PROM Resident Assembly Language Operating System	—	\$425
SIM-1 Interpretive Simulator add-on option for ALS-8	—	\$ 95
TXT-2 Text Editing add-on option for ALS-8	—	\$ 95
2KRO Erasable PROM module	\$ 65	\$ 89
4KRA 4096-word Low Power Static RAM	\$159	\$195
8KRA 8192-word Low Power Static RAM	\$295	\$375
16KRA 16384-word Dynamic RAM	—	\$529

Interface modules

3P+S Parallel, Serial I/O module	\$149	\$199
CUTS Computer Users Tape System cassette interface	\$ 87	\$119
VDM-1 Video Display Module	\$199	\$295

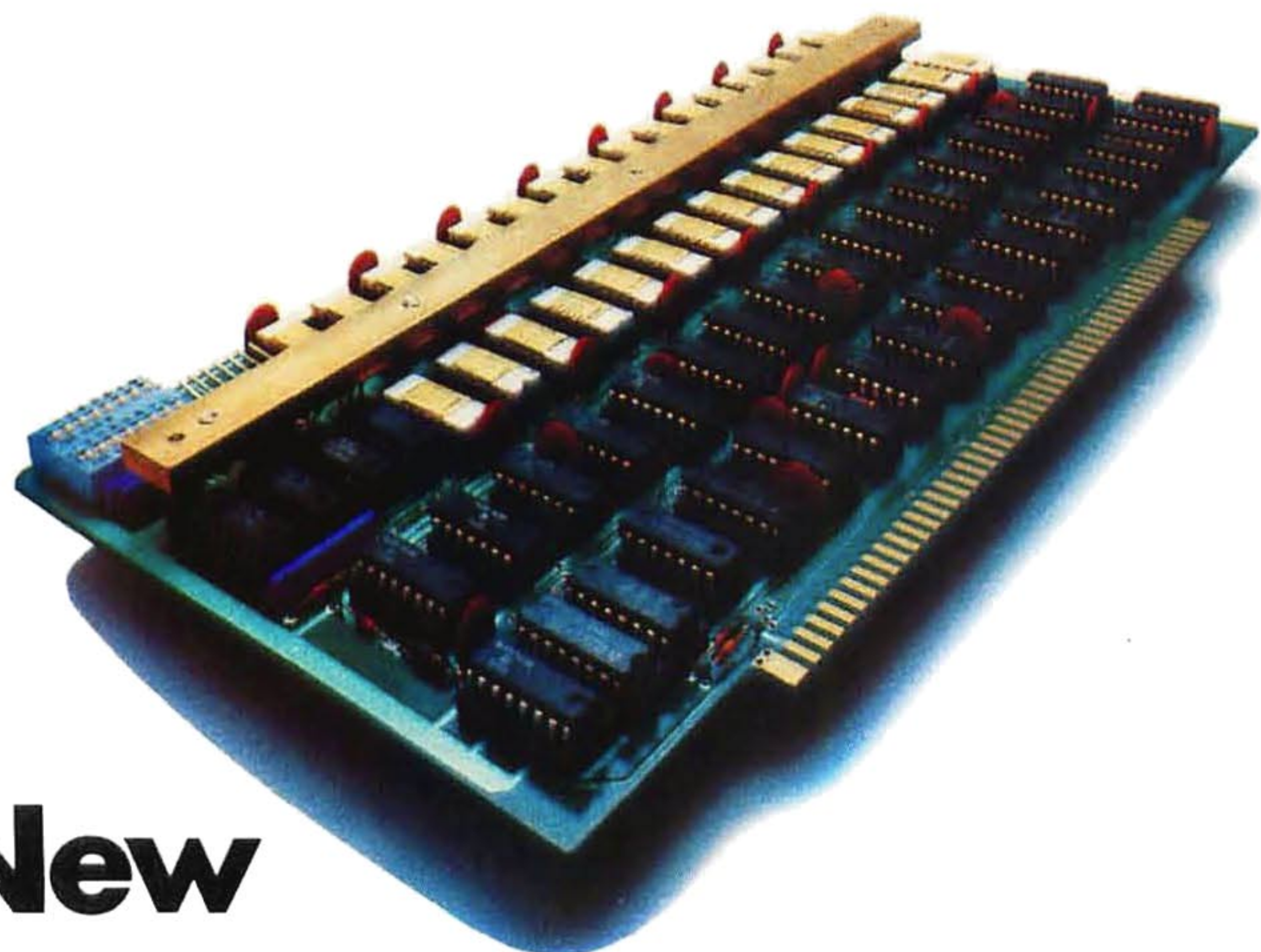
Mass Storage Systems

Helios II Disk System™ includes dual PerSci 270 floppy disk drive, cab- inet, fan, S-100 bus compatible controller, power supply, sys- tem diskette with complete PTDOS software	\$1895	\$2295
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Misc.

EXB Extender Board	\$ 35	\$ 45
WWB Wire Wrap Board	\$ 40	—

Prices, specifications and delivery
subject to change without notice. Please allow
up to two weeks for clearance of personal
checks. Mastercharge accepted. All orders
amounting to less than \$30 must include \$3
for handling.



New 16K RAM, fully assembled, \$529

More bits per buck than ever before on a fully burned in and tested board unconditionally guaranteed for one year.

Processor Technology made the first 4K static RAM modules for the home computer market. Now in a price performance breakthrough we offer you a 16,384 byte dynamic memory module assembled, tested and burned in. Not a kit—and at \$529 who'd want to build it from scratch?

Processor Technology gives you the features to make 4K dynamic RAMS work for you.

- Invisible refresh, no waiting while CPU is running.
- High speed 400 μ sec access time worst case Z-80 and 8080 compatible.

- Versatile addressing, each 4096 byte segment is individually addressed to any of the sixteen available 4K segments.
- Low power—typically 5 watts when running—the same as most 4K memory modules.
- BATTERY BACKUP capability built-in for standby operation.
- IMPORTANT NOTICE—No 16K memory module available is fully, truly static. 4200/4402 type "static" RAM's have high level, high current clocks with high transient power levels. Any RAM with 12 volt 30 mA clock pulses should not be called "STATIC" just because each memory cell is a flip-flop.

Specifications

Access Time	400 nsec max
Cycle Time	500 nsec max
Rams Used	Intel 2104 or Mostek 4096 types
Capacity	16384 8-bit bytes
Memory Protect	standard on card
Addressing	each 4096 byte page addressable
Operating Power	+7.5 to 10 VDC at 0.4 A typical +15 to +18 V at 10 mA typical -15 to -18 VDC at 20 mA max

The new Processor Technology 16K board is available for immediate delivery. See your nearest dealer listed below or contact us directly. Address Processor Technology, 6200 Hollis Street, Emeryville CA 94608, Phone 415/652-8080.

Processor Technology Dealers

CALIFORNIA

The Byte Shop
1514 University Ave.
Berkeley CA 94703
The Byte Shop
2559 South Bascom Ave.
Campbell CA 95008
The Computer Mart
624 West Katella #10
Orange CA 92667
The Byte Shop
2227 El Camino Real
Palo Alto CA 94306
The Computer Center
8205 Ronson Road
San Diego CA 92111
The Computer Store
of San Francisco
1093 Mission Street
San Francisco CA 94103

The Byte Shop

509 Francisco Blvd.
San Rafael CA 94901
The Byte Shop
3400 El Camino Real
Santa Clara CA 95051
The Byte Shop
2989 North Main St.
Walnut Creek CA 94596

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Microcomputer
Systems Inc.
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Tampa FL 33609

GEORGIA

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5091-B Buford Hwy.
Atlanta GA 30340

ILLINOIS

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itty bitty
machine co., inc.
1316 Chicago Ave.
Evanston IL 60201
The Chicago
Computer Store
517 Talcott Road
Park Ridge IL 60068
INDIANA
The Data Domain
111 South College Ave.
Bloomington IN 47401

MICHIGAN

The Computer Store
of Ann Arbor
310 East Washington
Ann Arbor MI 48104

NEW JERSEY

The Computer Mart
of New Jersey
151 Kline Boulevard
Colonia NJ 07067
Hoboken Computer Works
56 Second Street
Hoboken NJ 07030

NEW YORK

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New York NY 10013
The Computer Corner
200 Hamilton Ave.
White Plains NY 10601
The Computer Mart
of Long Island
2072 Front Street
East Meadow, L.I. NY 11554

The Computer Mart

of New York
314 Fifth Ave.
New York NY 10001
Synchro Sound Enterprises
193-25 Jamaica Ave.
Hollis NY 11423

OREGON

The Real Oregon
Computer Co.
205 West 10th Ave
Eugene OR 97401

RHODE ISLAND

Computer Power, Inc.
M24 Airport Mall
1800 Post Road
Warwick RI 02886

TEXAS

The Micro Store
634 South Central
Expressway
Richardson TX 75080

WASHINGTON

The Retail Computer Store
410 N.E. 72nd
Seattle WA 98115

WISCONSIN

The Milwaukee Computer Store
6919 W. North Ave.
Milwaukee WI 53213

CANADA

The Computer Place
186 Queen St. West
Toronto, Ontario M5V 1Z1

Trintronics
160 Elgin St.
Ottawa, Ontario

**Processor
Technology**
Corporation

Sol Systems put it all together. One source for hardware and software. One source for engineered compatibility of computer and peripherals. That's the Sol plan.

Though the microprocessor made the powerful small computer possible, a lot of folks found out early efforts in the marketplace were selling the sizzle a lot more than the steak. After an initial investment of several hundred dollars, you ended up with some nice parts, but no memory of any kind, no I/O devices or interfaces, no display, print-out or software.

The Sol plan ends all that. Processor Technology takes the position that it's far better to be right than first. So let's get down to the Sol no tricks plan.

For \$995 in kit form, the first complete small computer

Standard is a basic word at Processor Technology. The Sol-20 has more standard features than any other small computer we know of. Here's what you get.

8080 microprocessor* 1024 character video display circuitry* 1024 words of static low-power RAM* 1024 words of preprogrammed PROM* a custom, almost sensual 85-key solid-state keyboard* audio cassette interface capable of controlling two recorders at 1200 baud* both parallel and serial standardized interface connectors* a complete power supply* a beautiful case with solid walnut sides* software which includes a preprogrammed Prom personality module and a cassette with Basic-5 language plus two sophisticated computer video games* the ability to work with all S-100 bus (Altair 8800/IMSAI/PTC) products.

There are no surprises. Everything you need to make it work is here. In kit form, nominal assembly time from our fully documented instructions is four to seven evenings.

Or start with the Sol-PC for just \$475

You can begin your Sol system with the all on one board Sol-PC kit. It has all the

memory and interface electronics including video display, keyboard interface, audio cassette interface, all necessary software and the ability to accept the full Processor Technology line of memory and interface modules. Use the Sol-PC as the basis of a microcomputer, low cost CRT terminal or editing terminal

And these specs are standard

Display: 16 lines of 64 characters per line.

Character set: 96 printable ASCII upper and lower case characters plus 32 selectable control characters.

Display position: Continuously adjustable horizontally and vertically.

Cursor: Selectable blinking. Solid video inversion. Programmable positioning standard.

Serial interface: RS-232 and 20-mA current loop, 75 to 9600 baud, asynchronous.

Parallel interface: Eight data bits for input and output; output bus is tristate for bidirectional interfaces; levels are standard TTL.

Keyboard interface: Seven-level ASCII encoded, TTL levels.

Microprocessor: 8080, 8080A, or 9080A.

On-card memory: 1024 bytes PROM (expandable to 2048 bytes), 2048 bytes RAM.

External Memory: Expandable to 65,536 bytes total ROM, PROM, and RAM.

Video signal output: 1.0 to 2.5 volts peak-to-peak. Nominal bandwidth is 7 MHz.

Power required ($\pm 5\%$): +5 volts at 2.5 amperes, +12 volts at 150 mA, and -12 volts at 200 mA.

The Sol plan, completely expandable.

By filling the basic main frame with tailor made Processor Technology plug-in PC boards, you can really expand the computing power and flexibility of your Sol-20 Personal Computer.

New items are being announced frequently, but right now, here are some of the

things you can add to your Sol-20. The ALS-8 Firmware module is an assembly language operating system to give you the power to develop and run programs. Use it to quickly write, edit, assemble, de-bug and run your own programs. Some say it's the most useful software development on the market today, but modesty prohibits.

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ALS 8	no	\$35.00	\$45.00

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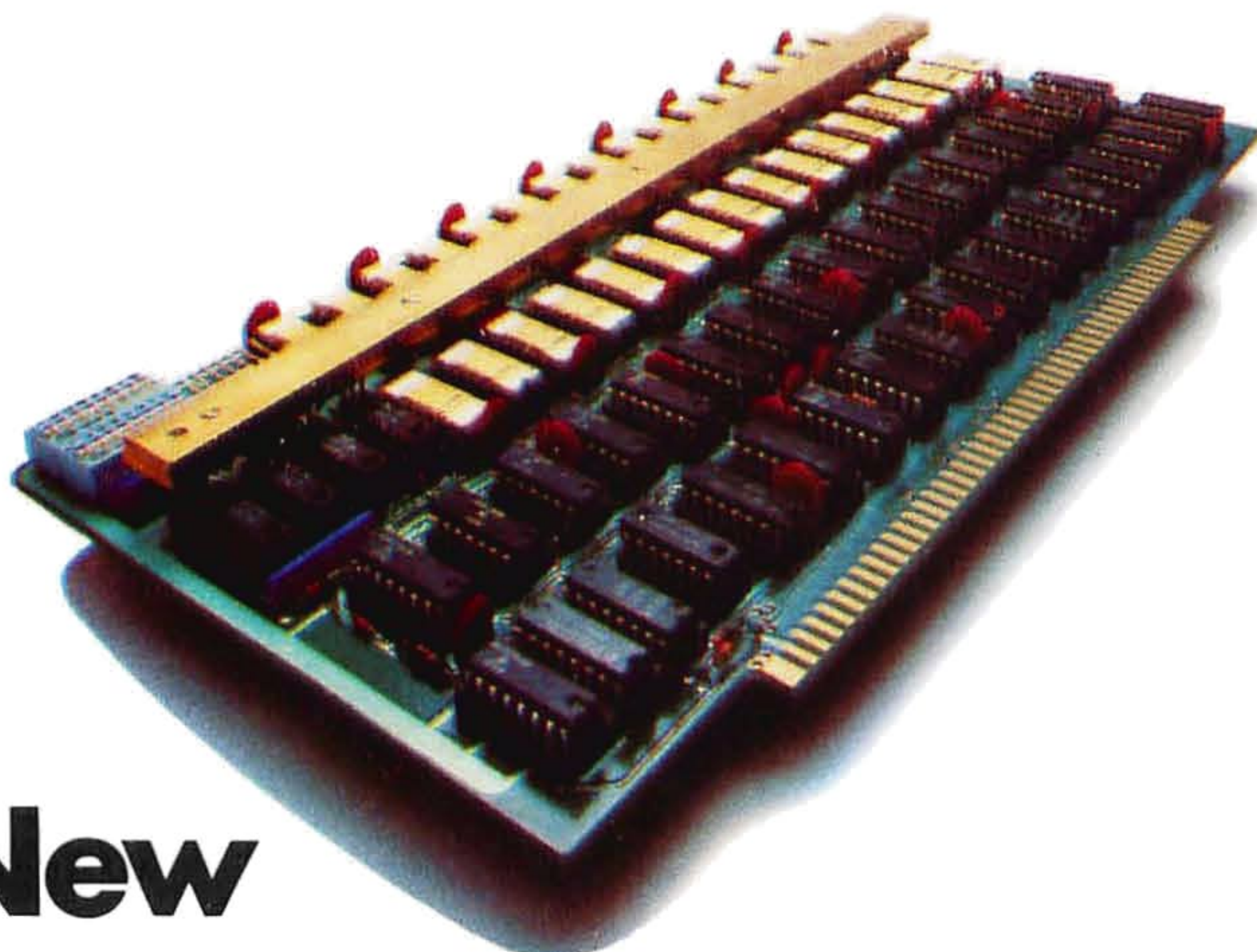
Memory Modules	Kit	Asmbld.
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Memory Protect	standard on card
Addressing	each 4096 byte page addressable
Operating Power	+7.5 to 10 VDC at 0.4 A typical +15 to +18 V at 100 mA typical -15 to -18 VDC at 20 mA max

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Campbell CA 95008

The Computer Mart
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Orange CA 92667

The Byte Shop
2227 El Camino Real
Palo Alto CA 94306

The Computer Center
8205 Ronson Road
San Diego CA 92111

The Computer Store
of San Francisco
1093 Mission Street
San Francisco CA 94103

The Byte Shop
509 Francisco Blvd.
San Rafael CA 94901

The Byte Shop
3400 El Camino Real
Santa Clara CA 95051

The Byte Shop
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Walnut Creek CA 94596

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Atlanta GA 30340

ILLINOIS

The Numbers Racket
518 East Green Street
Champaign IL 61820

itty bitty
machine co., inc.
1316 Chicago Ave.
Evanston IL 60201

The Chicago
Computer Store
517 Talcott Road
Park Ridge IL 60068

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The Data Domain
111 South College Ave.
Bloomington IN 47401

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Hoboken Computer Works
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Hoboken NJ 07030

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White Plains NY 10601

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East Meadow, L.I. NY 11554

The Computer Mart
of New York
314 Fifth Ave.
New York NY 10001

Synchro Sound Enterprises
193-25 Jamaica Ave.
Hollis NY 11423

OREGON

The Real Oregon
Computer Co.
205 West 10th Ave
Eugene OR 97401

RHODE ISLAND

Computer Power, Inc.
M24 Airport Mall
1800 Post Road
Warwick RI 02886

TEXAS

The Micro Store
634 South Central
Expressway
Richardson TX 75080

WASHINGTON

The Retail Computer Store
410 N.E. 72nd
Seattle WA 98115

WISCONSIN

The Milwaukee Computer Store
6919 W. North Ave.
Milwaukee WI 53213

CANADA

The Computer Place
186 Queen St. West
Toronto, Ontario M5V 1Z1

Trintronics

160 Elgin St.
Ottawa, Ontario

**Processor
Technology**
Corporation



The Small Computer

Twenty-five years ago a computer as powerful as the new Processor Technology Sol-20 priced out at a cool million.

Now for only \$995 in kit form or \$1495 fully assembled and tested you can have your own small computer with perhaps even more power. It comes in a package about the size of a typewriter. And there's nothing like it on the market today. Not from IBM, Burroughs, DEC, HP or anybody else!

It fills a new role

If you're an engineer, scientist or businessman, the Sol-20 can help you solve many or all of your design problems, help you quantify research, and handle the books too. For not much more than the price of a good calculator, you can have high level computer power.

Use it in the office, lab, plant or home

Sol-20 is a smart terminal for distributed processing. Sol-20 is a stand alone computer for data collection, handling and analysis. Sol-20 is a text editor. In fact, Sol-20 is the key element of a full fledged computer system including hardware, software and peripheral gear. It's a computer system with a keyboard, extra memory, I/O interfaces, factory backup, service notes, users group.

It's a computer you can take home after hours to play or create sophisticated games, do your personal books and taxes, and a whole host of other tasks.

Those of you who are familiar with small computers will recognize what an advance the Sol-20 is.

Sol-20 offers all these features as standard:

8080 microprocessor — 1024 character video display circuitry — control PROM memory — 1024 words of static low-power RAM — 1024 words of preprogrammed PROM — built-in cassette interface capable of controlling two recorders at 1200 bits per second — both parallel and serial standardized interface connectors — a complete power supply including ultra quiet fan — a beautiful case with solid walnut sides — software which includes a preprogrammed PROM personality module and a data cassette with BASIC-5 language plus two sophisticated computer video games — the ability to work with all S-100 bus products.

Full expansion capability

Tailor the Sol-20 system to your applications with our complete line of peripheral products. These include the video monitor, audio cassette and digital tape systems, dual floppy disc system, expansion memories, and interfaces.

Write for our new 22 page catalog.

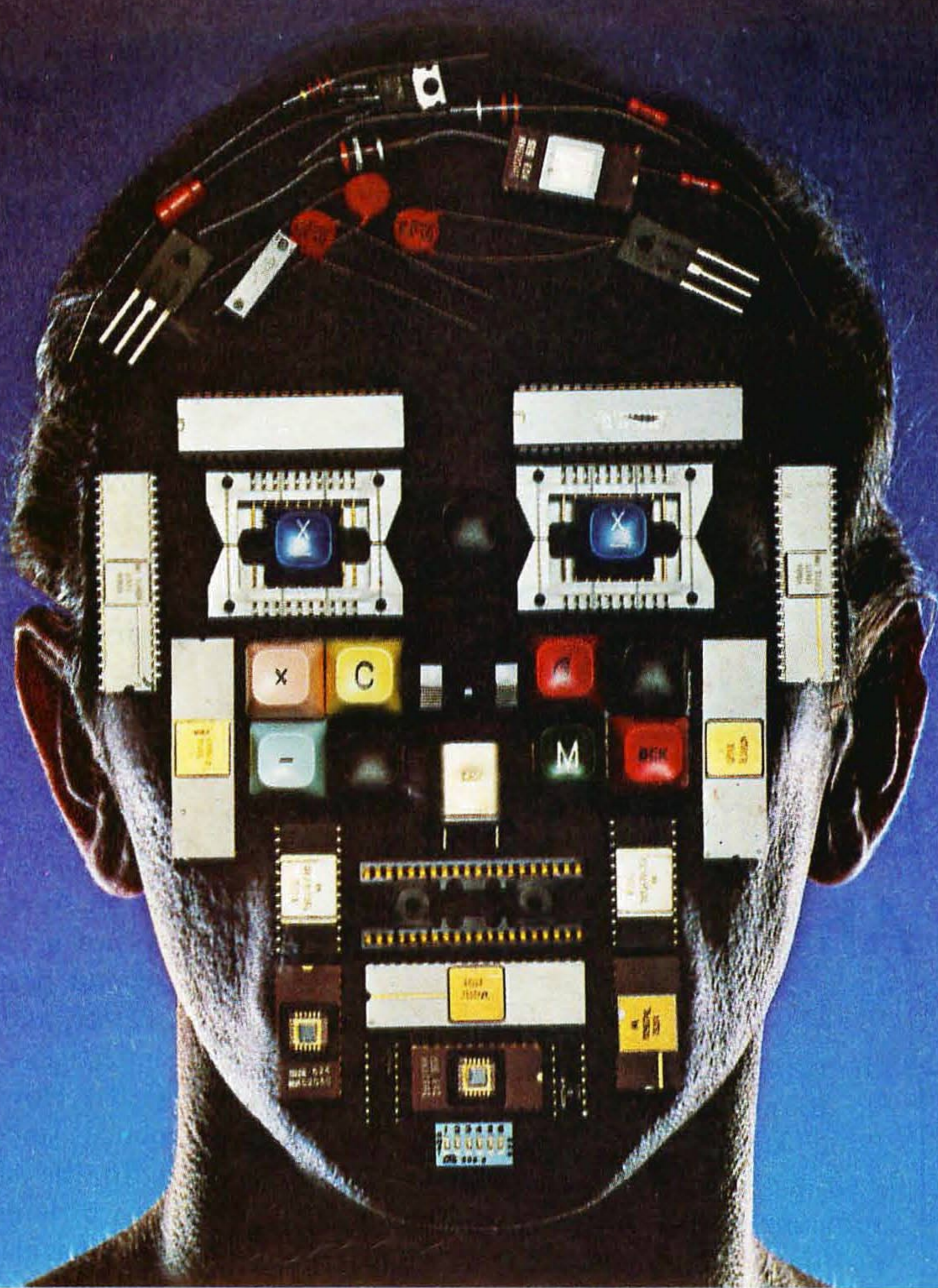
Get all the details.

Processor Technology, Box B, 6200 Hollis St.,
Emeryville, CA 94608. (415) 652-8080.



"A mess of parts doth not a computer make"

ANON



Undoubtedly ANON was talking about some of today's PC computers. Exciting as they may be, most of them give you a few surprises you really don't need.

For example you have the board all wired, and suddenly it occurs to you, "Where's the TV interface?"

Surprise! (The TV interface is extra and costs \$200 plus.)

"And the keyboard interface — where's that?"

Surprise! (Add another \$185 extra.)

"How about an audio cassette interface so you can store and enter low cost programs and large amounts of data?"

Surprise! (Add \$175 more.)

"And what about software?"

Surprise! (Each program will cost you \$20 plus.)

See what we mean?

The new Sol PC Terminal Computer. It's a complete kit, hardware, software and no surprises for \$475.

It's the first small computer conceived as part of a total system.

Not only do you get everything you need, but our systems approach is more economical, too. The \$475 kit (fully as-

sembled and tested, \$745) includes all of the following as standard features:

Video display interface.

Keyboard interface.

Audio cassette interface.

8080 microprocessor.

512 eight bit bytes of PROM on

a plug-in personality module.

2048 eight-bit words of RAM.

A 1024 character video display generator.

Serial and parallel interfaces for connection to external devices and an edge connector for memory expansion.

Optional extras include a power supply, video monitor, ASCII keyboard, walnut case, floppy disk system, high speed paper tape reader, PROM programmer, and color graphics interface. We also have a library of low cost software that's the best and most extensive in the industry.

In short, you get a complete, powerful, small computer and smart terminal that's fully expandable to a larger Sol system, as your requirements grow.

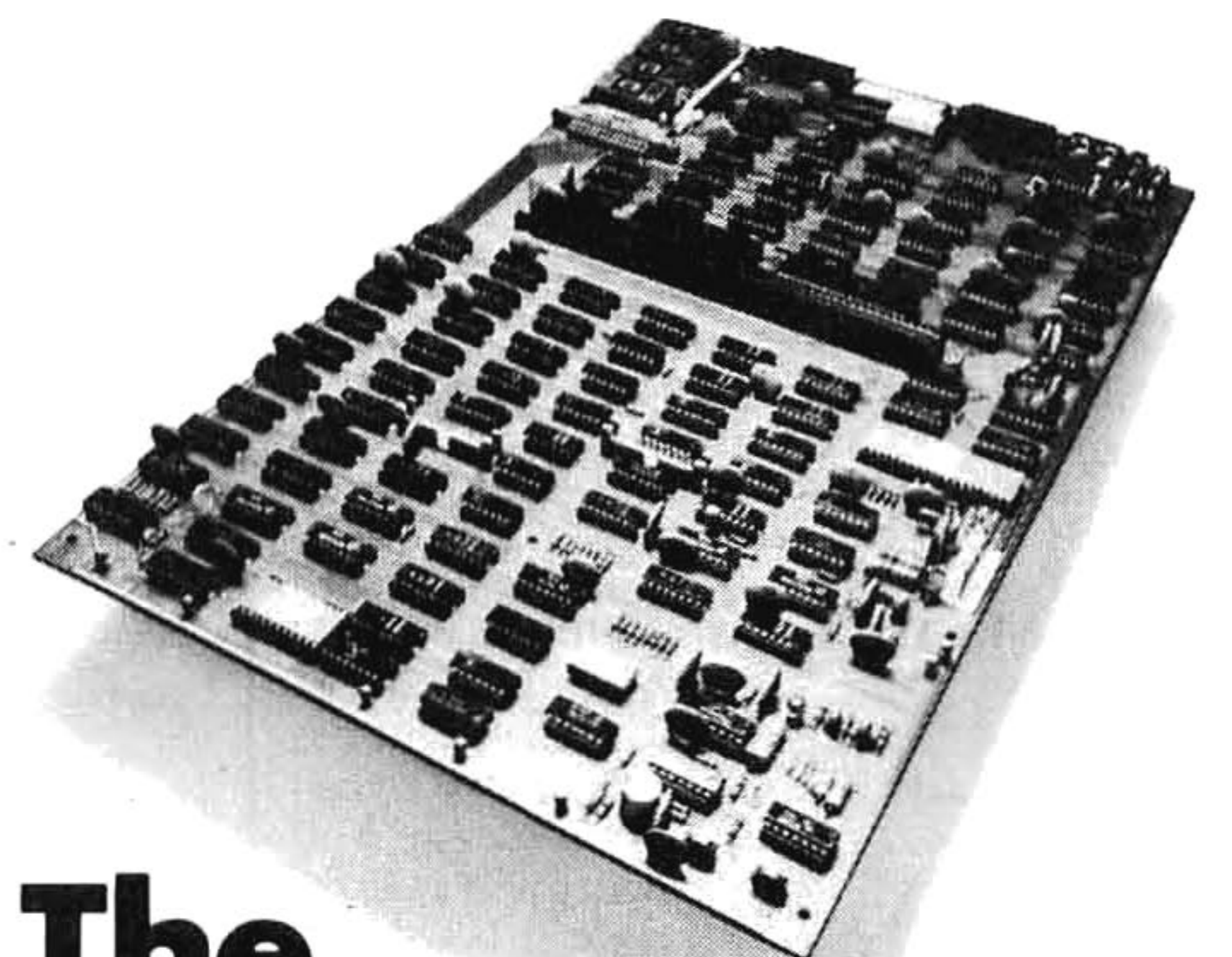
Surprises are great at Christmas-time. But when you're opening the box

of your new computer kit, you want everything you need to be there.

And with Sol, it is.

To order or to get more information write Processor Technology, 6200 Hollis St., Box B, Emeryville, CA 94608. (415) 652-8080.

Processor Technology
Corporation



The Sol PC Terminal Computer

Subsystem "B" makes the computer you already have work almost as well as a new Sol-20.

Add it now, and for a limited time we'll throw in a new module with 2048 bytes of preprogrammed PROM or ROM and 1024 bytes of RAM memory free!

Processor Technology's Subsystem "B" puts together the major system elements you need to get your Altair or IMSAI up and running.

You get both RAM and PROM memory, parallel, serial, cassette and video display interfaces, and software. Software includes a bootstrap loader program so you can load any Processor Technology CUTS ("Byte/Kansas City") 1200 BAUD cassette tapes. Standardized subroutines in ROM, similar to those in a Sol personality module, are used by many Processor Technology software packages to improve program efficiency. You'll find you rarely need to touch your front panel switches. With our Subsystem "B" you are up and running as soon as you turn on the power.

Three subsystems are available, depending on your memory requirements. Each Subsystem "B" includes five S-100 bus compatible modules as listed below. Each is dependent upon our new GPM module (GPM = General Purpose Memory) which provides 1024 bytes of low power static RAM and 2048 bytes of preprogrammed ROM or EPROM as well as space for up to 8192 bytes more of ROM or 2708 type EPROM. The GPM module accepts the new ROM version of our well known ALS-8 Editor/Assembler software package.

With Subsystem "B" you have guaranteed compatibility with all Processor Technology software and hardware products.

Subsystem Model	B70	B110	B190
Total memory provided (bytes)	7168	11264	19456
Display I/O	VDM-1	VDM-1	VDM-1
Parallel, Serial I/O	3P+S	3P+S	3P+S
Tape Cassette I/O	CUTS	CUTS	CUTS
Memory	4KRA	8KRA	16KRA
Price	\$594	\$730	\$964

NOTE: The GPM module with both RAM and PROM is included FREE in all the above subsystems. The GPM kit is \$129 if purchased separately.

The ALS-8/ROM chip set is \$159. SIM-1 & TXT-2/ROM add-on set is \$60 and requires both GPM and ALS-8/ROM.

I want Subsystem "B" to get my Altair or IMSAI up and running.

☐ Enclosed is a check for \$_____.
California residents add 6% sales tax.
No shipping charge.

☐ Mastercharge # _____
(include Interbank No. and
expiration date)

☐ Send more information

I want:

☐ B70 at \$594

☐ B110 at \$730

☐ B190 at \$964

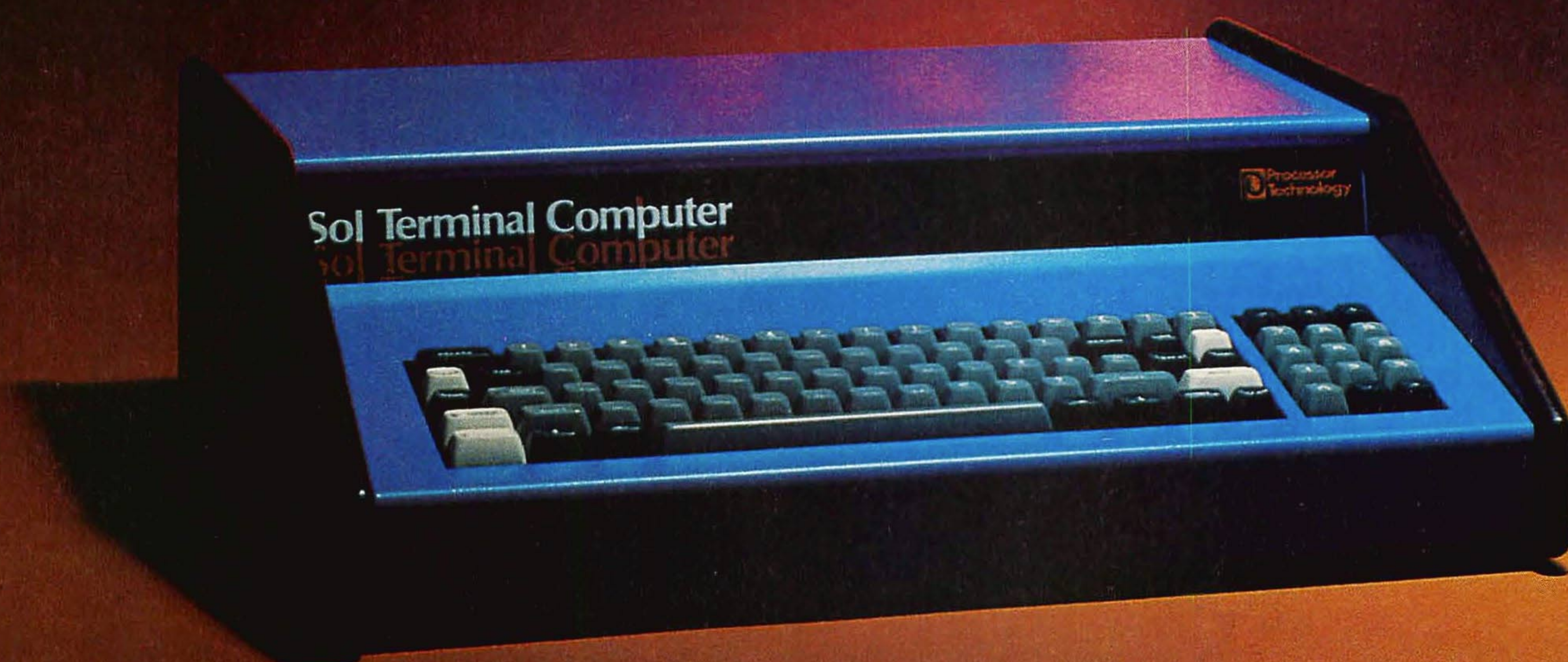
Name _____

Address _____

City _____ State _____ Zip _____



6200 Hollis Street, Box B
Emeryville, CA 94608 (415) 652-8080



One Sol-20 equals three computers.

To do real work with any computer, big or small, it takes a complete system. That's one of the nice things about the Sol-20. It was built from the ground-up as the heart of three fixed price computer systems with all the peripheral gear and software included to get you up and on the air.

Sol System I costs just \$1649 in kit form or \$2129 fully burned in and tested. Here's what you get: a Sol-20 with the SOLOS personality module for stand alone computer power, an 8192 word memory, a 12" TV/video monitor, a cassette recorder with BASIC software tape and all necessary cables.

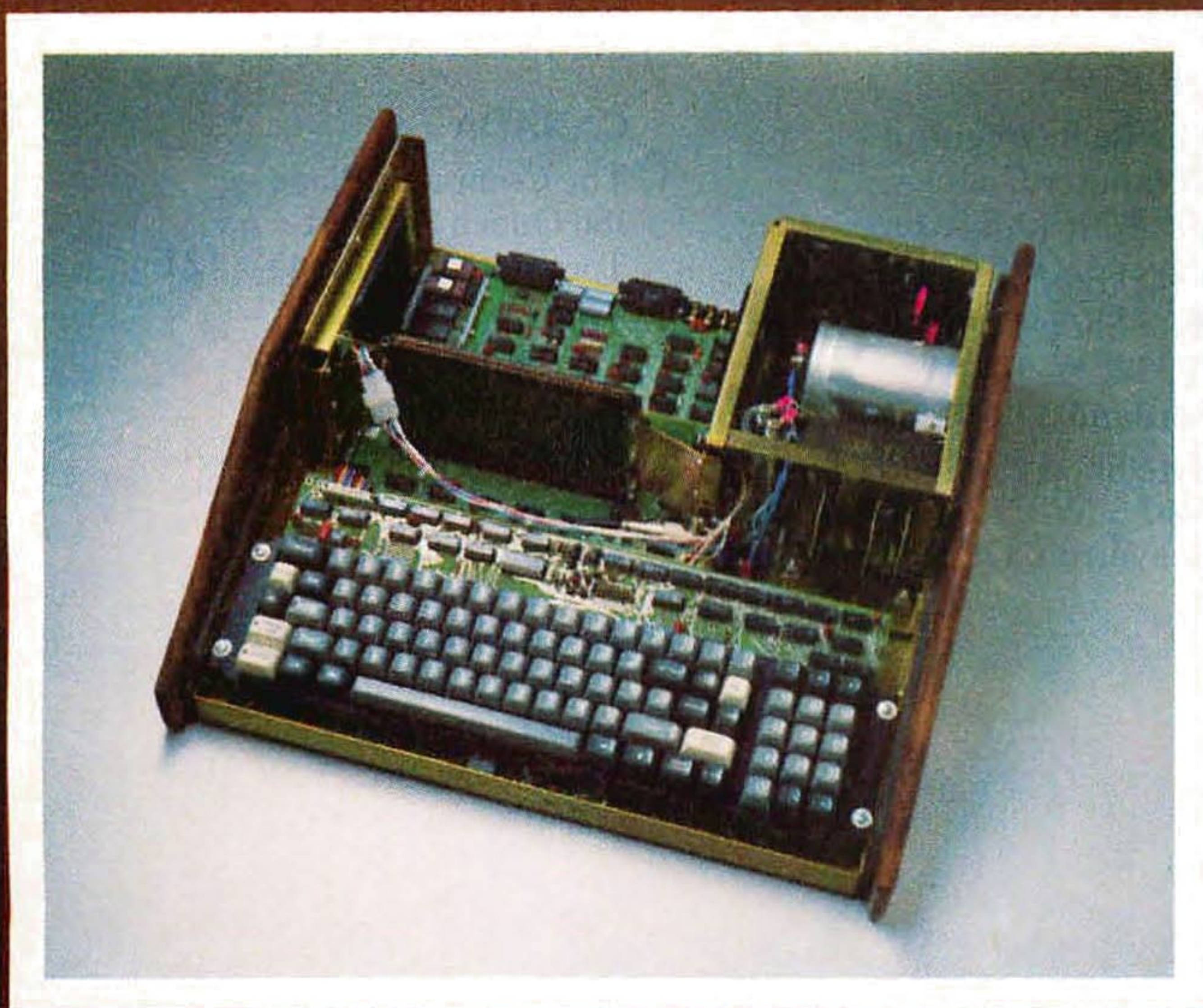
Sol System II has the same equipment plus a larger



capacity 16,384 word memory. It sells for \$1883 in kit form; \$2283 fully assembled.

For even more demanding tasks, Sol System III features Sol-20/SOLOS, a 32,768 word memory, the video monitor, Helios II Disk Memory System and DISK BASIC Diskette. Price, \$4237 in kit form, \$5037 fully assembled and tested.

And remember, though we call these small or personal computer systems, they have more power per dollar than anything ever offered. They provide performance comparable with mini-computer systems priced thousands of dollars more.



The functional beauty of Sol Computer Systems is more than skin deep. A look inside reveals a simple elegance of design and sturdy construction.

The Small Computer Catalog for the rest of the real computer system story.

Visit your local computer store for a copy of our fully illustrated 22 page catalog. Or you may write or call us if more convenient. Please address Processor Technology, Box B, 6200 Hollis Street, Emeryville, CA 94608. (415) 652-8080.

**Processor
Technology**
Corporation

See Sol Systems at your dealer

ARIZONA

Byte Shop Tempe
813 N. Scottsdale Rd.
Tempe, AZ 85281

Byte Shop Phoenix
12654 N. 28th Dr.
Phoenix, AZ 85029

Byte Shop Tucson
2612 E. Broadway
Tucson, AZ 85716

CALIFORNIA

Bits 'N Bytes
679 S. State College Blvd.
Fullerton, CA 92631

The Byte Shop
1514 University Ave.
Berkeley, CA 94703

The Byte Shop
2626 Union Ave.
Campbell, CA 95124

Byte Shop Computer Store
6041 Greenback Lane
Citrus Heights, CA 95610

Computer Center
1913 Harbor Blvd.
Costa Mesa, CA 92627

The Byte Shop
16508 Hawthorne Blvd.
Lawndale, CA 90260

The Byte Shop
1063 El Camino Real
Mountain View, CA 94040

The Computer Mart
624 West Katella #10
Orange, CA 92667

The Byte Shop
2227 El Camino Real
Palo Alto, CA 94306

Byte Shop
496 South Lake Ave.
Pasadena, CA 91101

The Computer Store
of San Francisco
1093 Mission Street
San Francisco, CA 94103

Byte Shop
321 Pacific Ave.
San Francisco, CA 94111

The Computer Room
124H Blossom Hill Rd.
San Jose, CA 95123

The Byte Shop
509 Francisco Blvd.
San Rafael, CA 94901

The Byte Shop
3400 El Camino Real
Santa Clara, CA 95051

The Byte Shop
2989 North Main St.
Walnut Creek, CA 94596

Byte Shop
14300 Beach Blvd.
Westminster, CA 92683

Recreational
Computer Centers
1324 South Mary Ave.
Sunnyvale, CA 94087

Byte Shop of Tarzana
18424 Ventura Blvd.
Tarzana, CA 91356

Digital-Deli
80 West El Camino Real
Mountain View, CA 94040

COLORADO

Byte Shop
2040 30th St.
Boulder, CO 80301

FLORIDA

Byte Shop of Miami
7825 Bird Road
Miami, FL 33155

Microcomputer Systems Inc.
144 So. Dale Mabry Hwy.
Tampa, FL 33609

Sunny Computer Stores
University Shopping Center
1238A S. Dixie Hwy.
Coral Gables, FL 33146

Delta Electronics
2000 U.S. Highway 441 East
Leesburg, FL 32748

GEORGIA

Atlanta Computer Mart
5091-B Buford Hwy.
Atlanta, GA 30340

ILLINOIS

The Numbers Racket
518 East Green St.
Champaign, IL 61820
itty bitty machine co.
1316 Chicago Ave.
Evanston, IL 60201

itty bitty machine co.
42 West Roosevelt
Lombard, IL 60148

INDIANA

The Data Domain
406 So. College Ave.
Bloomington, IN 47401

The Data Domain
219 West Columbia
West Lafayette, IN 47905

The Data Domain
7027 N. Michigan Rd.
Indianapolis, IN 46268

The Byte Shop
5947 East 82nd St.
Indianapolis, IN 46250

KENTUCKY

The Data Domain
3028 Hunsinger Lane
Louisville, KY 40220

MICHIGAN

The Computer Store
of Ann Arbor
310 East Washington
Ann Arbor, MI 48104

General Computer Store
2011 Livernois
Troy, MI 48084

Computer Mart of Royal Oak
1800 W. 14 Mile Rd.
Royal Oak, MI 48073

NEW JERSEY

The Computer Mart
of New Jersey
501 Route 27
Iselin, NJ 08830

Hoboken Computer Works
No. 20 Hudson Place
Hoboken, NJ 07030

NEW YORK

Audio Design Electronics
487 Broadway, Ste. 512
New York, NY 10013

The Computer Corner
200 Hamilton Ave.
White Plains, NY 10601

The Computer Mart
of Long Island
2072 Front Street
East Meadow, L.I. NY 11554

The Computer Mart
of New York
314 Fifth Ave.
New York, NY 10001

Synchro Sound Enterprises
193-25 Jamaica Ave.
Hollis, NY 11423

The Computer Shoppe
444 Middle Country Rd.
Middle Island, NY 11953

OREGON

The Real Oregon
Computer Co.
205 West 10th Ave.
Eugene, OR 97401

Byte Shop Computer Store
2033 S. W. 4th Ave.
Portland, OR 97201

Byte Shop Computer Store
3482 S. W. Cedar Hills Blvd.
Beaverton, OR 97005

OKLAHOMA

High Technology
1020 West Wilshire Blvd.
Oklahoma City, OK 73116

RHODE ISLAND

Computer Power, Inc.
M24 Airport Mall
1800 Post Rd.
Warwick, RI 02886

SOUTH CAROLINA

Byte Shop
2018 Green Street
Columbia, SC 29205

TENNESSEE

Microproducts & Systems
2307 E. Center St.
Kingsport, TN 37664

TEXAS

The Micro Store
634 So. Central Expressway
Richardson, TX 75080

Computertex
2300 Richmond Ave.
Houston, TX 77098

Interactive Computers
7646 Dashwood Rd.
Houston, TX 77036

Byte Shop
3211 Fondren
Houston, TX 77063

WASHINGTON

Byte Shop Computer Store
14701 N.E. 20th Ave.
Bellevue, WA 98007
The Retail Computer Store
410 N.E. 72nd
Seattle, WA 98115

WASHINGTON, D.C. Area

Media Reactions Inc.
11303 South Shore Dr.
Reston, VA 22090

WISCONSIN

The Milwaukee
Computer Store
6916 W. North Ave.
Milwaukee, WI 53213

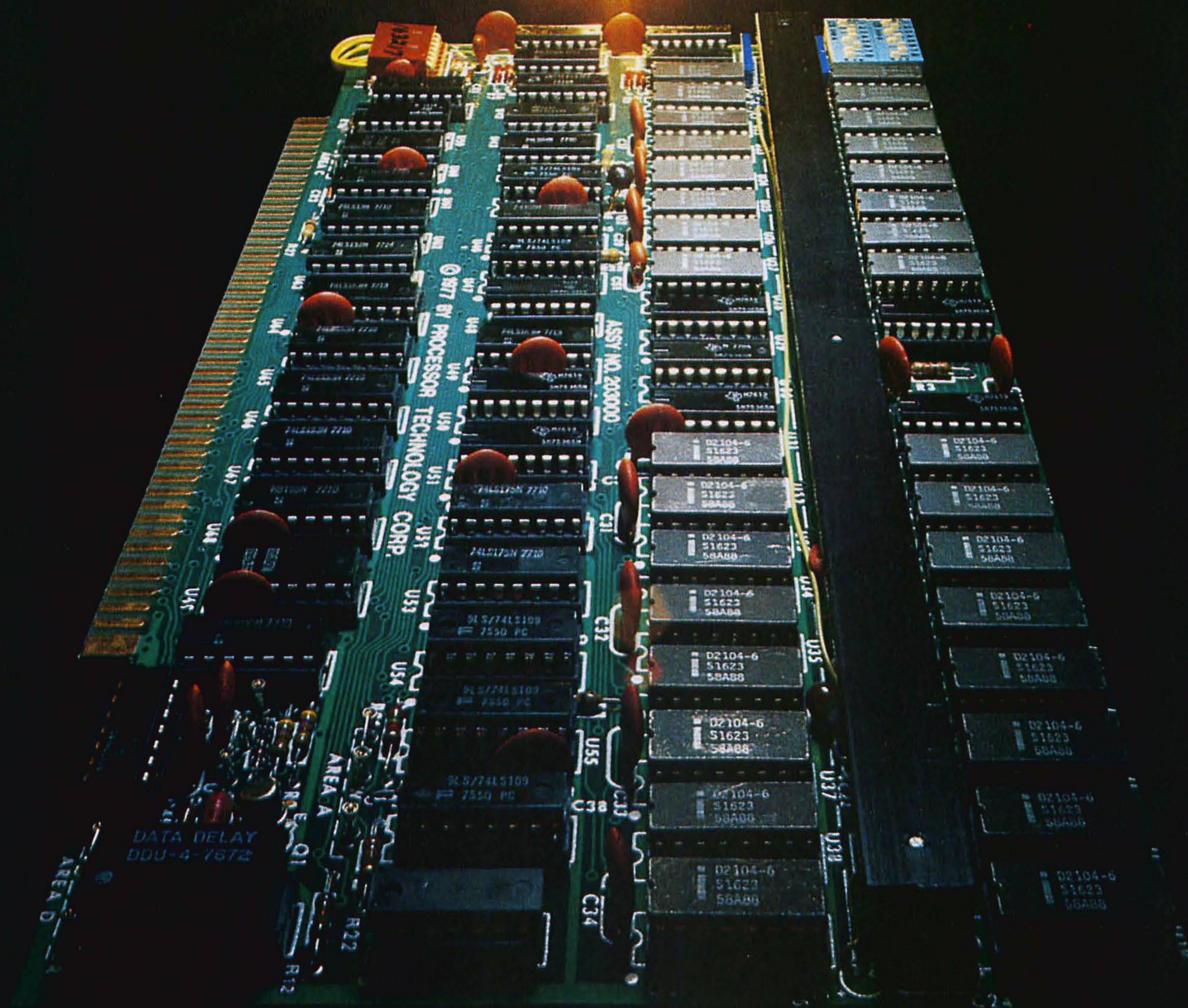
CANADA

The Computer Place
186 Queen St. West
Toronto, Ontario M5V 1Z1

Trintronics
160 Elgin St.
Place Bell Canada
Ottawa, Ontario K2P 2C4
First Canadian
Computer Store Ltd.
44 Eglinton Ave. West
Toronto, Ontario M4R 1A1
Pacific Computer Store
4509-11 Rupert St.
Vancouver, B.C. V5R 2J4



Processor Technology, 6200B Hollis Street, Emeryville, CA 94608, Phone (415) 652-8080



The end of Kit-Kits.

The end of bad solder joints, heat damaged components and sick IC's. Introducing the Semikit. Item 1, a 16KRA Memory Board, \$369.

Let's face it. Loading and soldering PC Boards is not much fun for the kit builder. Even more important, it's the place where most of the trouble gets introduced. The real fun and education comes in running and testing boards.

Now the Semikit with fully tested IC's.

At the price of a kit, Processor Technology Corporation introduces the Semikit. It's a fully stuffed, assembled and wave soldered PC Board loaded with IC's that have gone through Q.C. and final checkout (a first in the industry).

We leave you the fun of testing with our fully documented set of instructions. We do the production tasks of loading, wave soldering and inspecting the boards. You do the more interesting and time consuming chore of testing and burning-in the boards.

The result is one sweet deal

for both of us. You get a board where the primary causes of damage (poor solder joints, excess solder and bad IC's) are virtually eliminated. You get a board of highest professional quality. And we get the business!

The 16KRA Memory Board's at your dealer now.

Your Processor Technology dealer has the first Semikit, a 16KRA Memory Board, in stock and ready to go right now. You can take it home tonight for \$369 as a Semikit or for \$399 fully assembled, tested and burned-in.

You'll have a 16,384 byte memory with a better price performance ratio than anything on the market today. Now you can afford to add quality, high density memory to your system for remarkably little. And you can add enough to solve complex computing problems right in the main frame.

The memory features invisible

refresh. There's no waiting while the CPU is running. Worst case access time is 400 nsec. Each 4,096 word block is independently addressable for maximum system flexibility. Power is typically 5 watts, the same as most single 4K memory modules. Back-up power connection is built-in.

Other Semi's are coming your way.

The 16KRA Memory is Processor's first step in adding more fun, capability and reliability to your computer system at lower cost. Other modules are on the way to your dealer now. Come on down today.

Or you may contact us directly. Please address Processor Technology Corporation, Box B, 7100 Johnson Industrial Drive, Pleasanton, California 94566. Phone (415) 829-2600.

Processor Technology



Subsystem B

Each board is a standout. Together, they're a powerhouse.

In the beginning there were boards, thousands of them.

That's how we started in the business. Making memories and interfaces for other people's computers...and making them better.

Now that our own Sol has become the number one small computer, you might think we're putting less emphasis on our board business.

Not so.

We're just doing more creative things with them.

One neat package gets your computer on the air.

For example, we've built Subsystem B, which ties together five Processor Technology modules into a completely integrated system that makes other S-100 Bus computers work almost as well as our Sol.

Subsystem B includes a memory module, three input/output modules, a general purpose memory, and appropriate software.

A specialized software program called CUTER knits together your computer and its peripherals to create an integrated, smoothly working system.

It's the fastest, cleanest way to get on line, and it costs less than if you bought each module separately.

You get your choice of two low power, reliable memory modules in 8K or 16K capacity.

Our VDM-1 video display module (still \$199 in kit) is the industry standard display device with over 6,000 in use.

Our CUTS high speed, low cost (\$110 in kit) audio cassette interface is the most reliable on the market and is supported by our broad line of cassette

software including Extended BASIC, FORTRAN*, PILOT*, FOCAL and numerous others.

And our 3P+S input/output module offers a low cost way to handle virtually all the I/O needs of any S-100 Bus compatible computer system. There are close to 10,000 in the field. Price is just \$149 in kit.

Yes, we may have become the maker of the Number 1 small computer — the Sol. But we haven't neglected the quality of our board business. We can't afford to... because we use many of them in our own computers.

For our most recent literature and price list see your dealer or write Processor Technology Corporation, Box B, 7100 Johnson Industrial Drive, Pleasanton, CA 94566. (415) 829-2600.

Processor Technology

*Available soon.

See it at your Sol dealer..

ARIZONA

Byte Shop Tempe
813 N. Scottsdale Rd.
Tempe, AZ 85281
(602) 894-1129

Byte Shop Phoenix
12654 N. 28th Dr.
Phoenix, AZ 85029
(602) 942-7300

Byte Shop Tucson
2612 E. Broadway
Tucson, AZ 85716
(602) 327-4579

CALIFORNIA

The Byte Shop
1514 University Ave.
Berkeley, CA 94703
(415) 845-6366

The Byte Shop
6041 Greenback Lane
Citrus Heights, CA 95610
(916) 961-2983

Computer Center
1913 Harbor Blvd.
Costa Mesa, CA 92627
(714) 646-0221

The Byte Shop
1122 "B" Street
Hayward, CA 94541
(415) 537-2983

The Byte Shop
16508 Hawthorne Blvd.
Lawndale, CA 90260
(213) 371-2421

The Computer Mart
633-B West Katella
Orange, CA 92667
(714) 633-1222

Byte Shop
496 South Lake Ave.
Pasadena, CA 91101
(213) 684-3311

Micro-Computer
Application Systems
2322 Capitol Avenue
Sacramento, CA 95816
(916) 443-4944

Byte Shop
321 Pacific Ave.
San Francisco, CA 94111
(415) 421-8686

The Byte Shop
2626 Union Avenue
San Jose, CA 95124
(408) 377-4685

The Byte Shop
509 Francisco Blvd.
San Rafael, CA 94901
(415) 457-9311

Byte Shop of Tarzana
18423 Ventura Blvd.
Tarzana, CA 91356
(213) 343-3919

The Byte Shop
2989 North Main St.
Walnut Creek, CA 94596
(415) 933-6252

COLORADO

Byte Shop
3101 Walnut St.
Boulder, CO 80301
(303) 449-6233

FLORIDA

Byte Shop of
Fort Lauderdale
1044 East Oakland Park
Blvd.
Ft. Lauderdale, FL 33334
(305) 561-2983

Byte Shop of Miami
7825 Bird Road
Miami, FL 33155
(305) 264-2983

Microcomputer
Systems Inc.
144 So. Dale Mabry Hwy.
Tampa, FL 33609
(813) 879-4301

GEORGIA

Atlanta Computer Mart
5091-B Buford Hwy.
Atlanta, GA 30340
(404) 455-0647

ILLINOIS

Champaign Computer
Company
318 N. Neil Street
Champaign, IL 61820
(217) 359-5883

The Numbers Racket
623½ South Wright St.
Champaign, IL 61820
(217) 352-5435

itty bitty machine co.
1322 Chicago Ave.
Evanston, IL 60201
(312) 328-6800

itty bitty machine co.
42 West Roosevelt
Lombard, IL 60148
(312) 620-5808

INDIANA

The Data Domain
406 So. College Ave.
Bloomington, IN 47401
(812) 334-3607

The Data Domain
7027 N. Michigan Rd.
Indianapolis, IN 46268
(317) 251-3139

IOWA

The Computer Store
of Davenport
4128 Brady Street
Davenport, IA 52806
(319) 386-3330

KENTUCKY

The Data Domain
3028 Hunsinger Lane
Louisville, KY 40220
(502) 456-5242

MICHIGAN

The Computer Store
of Ann Arbor
310 East Washington
Ann Arbor, MI 48104
(313) 995-7616

General Computer Store
2011 Livernois
Troy, MI 48084
(313) 362-0022

MINNESOTA

Computer Depot, Inc.
3515 W. 70th St.
Minneapolis, MN 55435
(612) 927-5601

NEW JERSEY

Hoboken Computer Works
No. 20 Hudson Place
Hoboken, NJ 07030
(201) 420-1644

The Computer Mart
of New Jersey
501 Route 27
Iselin, NJ 08830
(201) 283-0600

NEW YORK

The Computer Mart
of New York
118 Madison Ave.
New York, NY 10001
(212) 686-7923

The Computer Corner
200 Hamilton Ave.
White Plains, NY 10601
(914) 949-3282

NORTH CAROLINA

ROMs 'N' RAMs
Crabtree Valley Mall
Raleigh, NC 27604
(919) 781-0003

OHIO

Byte Shop
2432 Chester Lane
Columbus, OH 43321
(614) 486-7761

Computer Mart of Dayton
2665 S. Dixie Ave.
Dayton, OH 45409
(513) 296-1248

OREGON

Byte Shop Computer Store
3482 SW Cedar Hills Blvd.
Beaverton, OR 97005
(503) 644-2686

The Real Oregon
Computer Co.
205 West 10th Ave.
Eugene, OR 97401
(503) 484-1040

Byte Shop Computer Store
2033 SW 4th Ave.
Portland, OR 97201
(503) 223-3496

RHODE ISLAND

Computer Power, Inc.
M24 Airport Mall
1800 Post Rd.
Warwick, RI 02886
(401) 738-4477

SOUTH CAROLINA

Byte Shop
2018 Green St.
Columbia, SC 29205
(803) 771-7824

TENNESSEE

Microproducts & Systems
2307 E. Center Street
Kingsport, TN 37664
(615) 245-8081

TEXAS

Computer Port
926 N. Collins
Arlington, TX 76011
(817) 469-1502

Computertex
2300 Richmond Ave.
Houston, TX 77006
(713) 526-3456

Interactive Computers
7646½ Dashwood Rd.
Houston, TX 77036
(713) 772-5257

Neighborhood Computer
Store
#20 Terrace
Shopping Center
4902 - 34th Street
Lubbock, TX 79410
(806) 797-1468

The Micro Store
634 So. Central
Expressway
Richardson, TX 75080
(214) 231-1096

VIRGINIA

The Computer Systems
Store
1984 Chain Bridge Rd.
McLean, VA 22101
(703) 821-8333

The Home Computer Center
2927 Virginia Beach Blvd.
Virginia Beach, VA 23452
(804) 340-1977

WASHINGTON

Byte Shop Computer Store
14701 N.E. 20th Ave.
Bellevue, WA 98007
(206) 746-0651

The Retail Computer Store
410 N.E. 72nd
Seattle, WA 98115
(206) 524-4101

WISCONSIN

The Madison Computer
Store
1863 Monroe Street
Madison, WI 53711
(608) 255-5552

The Milwaukee
Computer Store
6916 W. North Ave.
Milwaukee, WI 53213
(414) 259-9140

WASHINGTON D.C.

Georgetown
Computer Store
3286 M Street NW
Washington, D.C. 20004
(203) 362-2127

CANADA

Trintronics
160 Elgin St.
Place Bell Canada
Ottawa, Ontario K2P 2C4
(613) 236-7767

Computer Mart Ltd.
1543 Bayview Ave.
Toronto, Ontario M1K 4K4
(416) 484-9708

First Canadian
Computer Store Ltd.
44 Eglinton Ave. West
Toronto, Ontario M4R 1A1
(416) 482-8080

The Computer Place
186 Queen St. West
Toronto, Ontario M5V 1Z1
(416) 598-0262

Basic Computer Group Ltd.
1548 East 8th Ave.
Vancouver, B.C. V6J 4R8
(604) 736-7474

Pacific Computer Store
4509 Rupert St.
Vancouver, B.C. V5R 2J4
(604) 438-3282

Circle 89 on inquiry card.



Seven points to consider before you buy your small computer.

In this magazine, alone, there are probably a dozen ads for small computers. New companies are breaking ground like spring flowers.

How, then, do you determine which computer offers the features you need most...at the price you can afford?

We'd like to propose seven basic questions to help you make an intelligent decision.

1. How complete is the computer system?

Many buyers of small computers are in for a rude awakening when they have to spend additional money for interfaces.

The Sol-20 Terminal Computer was the first *complete* small computer system. Everything you need to make it work is included in the basic package.

2. Is powerful system software available?

It won't do if your system is "tongue-tied."

Processor Technology Corporation has devoted more effort to the development of software than any other small computer maker. Our latest offering is the first fully implemented disk operating system for a small computer: PTDOS. It contains over 40 major commands, several languages and numerous utilities. Our high level languages include Extended BASIC, Assembler, FORTRAN*, FOCAL and PILOT*.

3. Is the system easy to expand?

More and more computer owners are expanding their small computers to handle business and other specialized requirements.

The largest Sol system can handle 64K bytes of RAM memory and operate with a three megabyte on-line disk memory. Sol systems use the S-100 Bus. So you can use a wide variety of hardware.

*Available soon.

4. Is the computer well-engineered?

Our Sol systems are the most conservatively rated and ruggedly built in the industry, period. In addition we designed them with you, the user, in mind; Sols are easy to build and a joy to operate.

5. Does it have proven reliability?

What is the track record? There are over 5,000 Sol systems in the field. Our track record for reliable performance is unparalleled in the small computer field.

6. Does it have good factory support?

A computer is a complex piece of hardware. So you want to be sure it is backed up with complete manuals, drawings and a factory support team that cares.

Processor Technology offers the most extensive documentation of any small computer manufacturer. And we maintain a patient, competent telephone staff to answer your questions.

7. Are maintenance and service people accessible?

Where are they located?

Processor Technology has maintenance and service people in over 50 cities around the U.S.

As you continue turning the pages, see how we stack up to the other computers in this magazine. If we've succeeded in whetting your appetite, see your Sol dealer or write for information on the complete family of Sol computers.

Processor Technology Corporation, Box B,
7100 Johnson Industrial Drive, Pleasanton, CA 94566.
(415) 829-2600.

Processor Technology



The answer is a Sol System.

It's the serious solution to the small computer question.

Sol Systems are the key to effective, economical small computer power. Sol Systems give you the force of a powerful general purpose computer, the problem solving capability of high level languages and the operational simplicity of everyday office equipment.

From the ground up, Sol Systems were designed to do a complete job without adding a load of costly extras. In fact, when you compare the "everything included" price of a quality, field proven Sol System with anything else on the market, you'll be happily surprised to find out how little the extra performance and convenience costs.

For example, complete Sol Systems with 16,384 bytes of RAM memory start at less than \$2500*. Expanded systems with 49,152 bytes of RAM memory, 1.5 million bytes of on-line disk memory, disk operating system and Extended Disk BASIC cost less than \$8000*. Both systems are fully assembled, burned-in, tested and ready to go.

Sol Compatibility

Sol Systems feature the S-100 bus for pin-to-pin compatibility with a wide variety of add-on devices such as voice input and computer graphics. Standard Sol parallel and serial interfaces will drive most standard printers, modems and other peripherals.

A word about languages

No system is complete without software, and at Processor Technology we have tailored a group of high level languages, an assembler and other packages to suit the wide capabilities of our hardware.

Take a look at our exclusive Extended BASIC as an example. In cassette form, this BASIC features string and advanced

*U.S. prices only.

file handling, special screen commands, timed input, complete matrix, logarithmic and trigonometric functions, exponential numbers, 8 digit precision and square root. The language handles serial access files, provides tape rewind and offers cursor control for graphics capability.

The disk version has all the number crunching talents of the cassette BASIC plus instant access to data and programs on floppy disks. It includes random as well as sequential files and a unique ability to update sequential data in place.

Processor Technology FORTRAN is similar to FORTRAN IV and has a full set of extensions designed for the "stand alone" computer environment. Thousands of special application programs available through books and periodicals have already been written in this well established language.

Processor Technology PILOT is an excellent language for teachers. It is a string-oriented language designed expressly for interactive applications such as programmed instruction, drill and testing.

No wonder we call it the serious solution to the small computer question.

It's the small computer system to do the general ledger and

the payroll. Solve engineering and scientific problems. Use it for word processing. Program it for computer aided instruction. Use it anywhere you want versatile computer power!

Sold and serviced only by the best dealers.

Sol Systems are sold and serviced by an outstanding group of conveniently located computer stores throughout the United States and Canada. They are also available in Australia, Europe, the United Kingdom, Central America, South America, Japan and Singapore.

For more information contact your nearest dealer listed on the following page. Or write Department B, Processor Technology Corporation, 7100 Johnson Industrial Drive, Pleasanton, CA 94566. Phone (415) 829-2600.

Circle 305 on inquiry card.

Processor Technology

We're looking for an endangered species.

We're looking for the rare bird who doesn't have his or her head in the sand. We're looking for a few free spirits to help us build Sol small computer systems in one of America's loveliest areas, the Amador Valley, about 30 minutes southeast of San Francisco.

Only three years old, Processor Technology Corporation is a pioneer in the microcomputer business. We build the best small computer systems there are and will continue to do so. Our plan calls for new and even better systems.

We need a few really good people to help us meet the plan. We're building a tight-knit group of original thinkers who can help us develop new hardware and software and bring these products to market. Our thinkers better be doers, too. Our doers have complete project responsibility from definition to pilot production.

We have, of course, most of the usual benefits. We're working on the unusual. Even more important than the benefits is the opportunity for

you to be you and to see the tangible results of your efforts.

The future of computing is personal computing, and we hope it's your future, too.

Right now we have openings for:

Engineers for Design, Project Leadership, and Product Test

Technicians for R & D, Marketing Support, and Production

Senior Technical Writer/Editor

For immediate and confidential consideration, stop by, phone or send your resume to our Personnel Department. We interview and receive calls between 1 and 5 PM daily.

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Sol.[®] The small computer that won't fence you in.

A lot of semantic nonsense is being tossed around by some of the makers of so-called "personal" computers. To hear them tell it, an investment of a few hundred dollars will give you a computer to run your small business, do a great amount of financial planning, analyze a host of data in the engineering or scientific lab and when day is done play games by the hour.

Well, the games part is true. The rest of the claims should be taken with a grain of salt. All of the personal computers will help you learn about computers and how they work in general and the kinds of things they can do for you. Only a few have the capacity to grow and handle meaningful work in a very real sense. And they don't come for peanuts.

Remember, there's no free lunch.

So before you buy any personal computer, consider Sol,[®] the small computer. Consider it because it costs more at the start so in the end it costs less. Consider it because it can grow with the complexity of the tasks you ask it to perform and grow with your ability to use it. No, it's not cheap. But it's not a delusion either.

From the very beginning, Sol small computer systems were designed to be at the very top of the microcomputer spectrum. We designed them so you wouldn't have to add costly extras to do many jobs. We designed them so you could add quality peripherals and more memory to take care of more complex tasks. We designed them

to use the best fully supported disk operating system on the market today, PTDOS, which we also designed. We designed them to use our Helios II mass memory. And for Sol small computer systems we designed new and adapted existing software to give you the choice of the best on the market today.

Build computer power with our software.

No system is complete without software, and at Processor Technology we have tailored a group of high level languages, and assembler and other packages to suit the wide capabilities of our hardware.

Take a look at our exclusive Extended BASIC as an example. In cassette form, this BASIC features string and advanced file handling, special screen commands, timed input, complete matrix, logarithmic and trigonometric functions, 8 digit precision and square root. The language handles serial access files, provides tape rewind and offers cursor control for graphics capability.

The disk version has all the number crunching talents of the cassette BASIC plus instant access to data and programs on floppy disks. It includes random as well as sequential files and a unique ability to update sequential data in place.

Processor Technology FORTRAN is similar to FORTRAN IV and has a full set of extensions designed for the "stand alone" computer environment. Thousands of special application programs available through books and periodicals have

already been written in this well established language.

Processor Technology PILOT is an excellent language for teachers. It is a string-oriented language designed expressly for interactive applications such as programmed instruction, drill and testing.

No wonder we call it the serious solution to the small computer question.

It's the small computer system to do the general ledger and the payroll. Solve engineering and scientific problems. Use it for word processing. Program it for computer aided instruction. Use it anywhere you want versatile computer power!

Sold and serviced only by the best dealers.

Sol Systems are sold and serviced by an outstanding group of conveniently located computer stores throughout the United States and Canada. They are also available in Australia, Europe, the United Kingdom, Central America, South America, Japan and Singapore.

For more information contact your nearest dealer listed on page 123. Or write Department B, Processor Technology Corporation, 7100 Johnson Industrial Drive, Pleasanton, CA 94566. Phone (415) 829-2600.

In sum, all small computers are not created equal and Sol users know it to their everlasting satisfaction.

Circle 305 on inquiry card.

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Sol.[®] The small computer that won't fence you in.

A lot of semantic nonsense is being tossed around by some of the makers of so-called "personal" computers. To hear them tell it, an investment of a few hundred dollars will give you a computer to run your small business, do financial planning, analyze data in the engineering or scientific lab — and when day is done play games by the hour.

Well, the game part is true. The rest of the claims should be taken with a grain of salt. Only a few personal computers have the capacity to grow and handle meaningful work in a very real sense. And they don't come for peanuts.

Remember, there's no free lunch.

So before you buy any personal computer, consider Sol.[®] It costs more at the start but less in the end. It can grow with your ability to use it. Sol is not cheap. But it's not a delusion either.

Sol small computers are at the very top of the microcomputer

spectrum. They stand up to the capabilities of mini systems costing four times as much.

No wonder we call it the serious solution to the small computer question.

Sol is the small computer system to do the general ledger and the payroll. Solve engineering and scientific problems. Use it for word processing. Program it for computer aided instruction. Use it anywhere you want versatile computer power!

Build computer power with our software.

At Processor Technology we've tailored a group of high-level languages, an assembler and other packages to suit the wide capabilities of our hardware.

Our exclusive Extended BASIC is a fine example. This BASIC features complete matrix functions. It comes on cassette or in a disk version which has random as well as sequential files.

Processor Technology FORTRAN is similar to FORTRAN IV and

has a full set of extensions designed for the "stand alone" computer environment.

Our PILOT is an excellent text oriented language for teachers.

Sold and serviced only by the best dealers.

Sol Systems are sold and serviced by an outstanding group of conveniently located computer stores throughout the U.S. and Canada.

For more information contact your nearest dealer in the adjacent list. Or write Department B, Processor Technology, 7100 Johnson Industrial Drive, Pleasanton, CA 94566. Phone (415) 829-2600.

In sum, all small computers are not created equal and Sol users know it to their everlasting satisfaction.

Processor Technology



Introducing the Monday Machine.

For under \$10,000 we give you Sol[®], the small computer system for electronic typing and general purpose data processing, to brighten your Monday and speed the workload all the way through Friday.

Are you looking for a way to handle your typing load faster and far more efficiently? Are you looking for an easy to use electronic typing system that you or your secretary can learn in a matter of hours? And are you looking for a general purpose data processing system capable of doing other tasks around the office such as mailing lists, general ledger, accounts payable/receivable and payroll?

Then you're looking for the Sol "Monday Machine."

It's simply the best small computer system!

You can store, edit and print out text as long as 110 pages. You get 750,000 bytes of memory on diskette. Plus a letter quality SolPrinter that runs at

480 w.p.m. And a video monitor.

For the past few months, we've been selling our Sol Systems to selected businesses prior to formal introduction. One of our customers, a legal firm, uses their Sol System to type wills and contracts. Precedents and standard paragraphs are stored on diskettes for easy access.

The staff of this law firm was trained to use the Sol System on a Saturday. By the next Friday, no one could figure out how the workload was handled without it. The secretarial staff told us our keyboard has a nicer feel than that of the well-known maker of typewriters and computers. When they aren't using the Sol System for word processing, they do the legal accounting and update the work-in-progress report.

Processor Technology knows computers and knows programs.

In the past two years, more than 10,000 Sol computers have been installed.

We're easily one of the most successful pioneers in the small computer field because our systems are sophisticated yet easy to use.

More information or a demonstration

Arrange for a demonstration now. Dial the toll free number below to find your local dealer. Or send in the coupon.

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☐ Please send more information on your electronic typing and general purpose data processing system.

☐ Please arrange a demonstration too.

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City/State/Zip _____

TOLL-FREE DEALER LOCATOR HOTLINE (800) 227-1241. In CA (800) 972-5951.

Dealerships available in selected areas.