

# EQUINOX 100™

personal computer kit



**EQUINOX 100**

**THE FRONTRUNNER**





**WIRING CHANNEL\***, cord wrap\* and detachable line cord help keep your system neat.

**RESET SWITCH** is located to avoid accidental bumps. Automatic reset when the power is turned on.

**INTEGRATED CPU/FRONT-PANEL** combines on a single board a high-performance 8080A CPU with one of the most powerful front panels available on any computer. This board plugs directly into the bus-board, and the complete front panel module slides in for easy assembly.

**COOLING FAN** with finger guard is standard.

**20-SLOT S-100 BUS-BOARD** is fully shielded and actively terminated to eliminate noise and crosstalk. Exquisite quality and design... plus extras like reserve space for peripheral power regulators.

**HANDSOMELY MODERN CASE** of rugged aluminum construction is accented with black vinyl trim and smoked plexiglass. Equinox 100 will enhance your home or office.

**SWING-OPEN TOP\*** and sliding bottom panels provide easy access.

**TILT-UP STAND\*** lifts the front panel to a convenient angle for use.

**KEY-OPERATED POWER SWITCH** helps prevent accidental loss of program or data. Stops unauthorized use of system.

**GOLD-CONTACT KEYBOARD** puts reliable programming and debugging at your fingertips, even without peripherals... run, halt, single-step, Slow-Step or alter your programs right here!

**BIG LED DIGITS** display the contents of any CPU register, I/O device or memory location in concise octal format. Monitor any part of your program when halted... or as you step through your program!

**8080A CPU** is compatible with an enormous choice of peripheral components and software, including BASIC. All 8 internal registers can be accessed directly from the front panel!

**CARRYING HANDLE\*** allows easy mobility.

**CONSTANT VOLTAGE POWER SUPPLY** delivers over 20 amps despite AC line surges and brownouts to prevent crashed programs. Plenty of power for your future boards and peripherals. Plug-together design eliminates soldering and exposed connections.

# Years in front in design, function and front-panel capability

## *The personal computer.*

*Just a few years ago it was science fiction. Today, over 25,000 American households have constructed and operate personal computer systems.*

*This high-speed revolution in the American lifestyle was sparked by the 1975 introduction of a fully functional computer mainframe, in kit form, for under \$600. The concept captured the imaginations of electronics hobbyists and computer professionals.*

*Soon, the pioneering Altair 8800\*\* was engulfed in The Personal Computer Movement it created. Derivative models, after-market components, plug-in peripherals, software and even a number of personal computing magazines suddenly appeared ... along with an increasingly diverse population of system builders.*

*Applications also became more diverse. From teaching logic to balancing checkbooks. From staging video games to keeping inventory. From waking the kids to guarding the gates.*

*The introduction of the Equinox 100 system in 1977 is the next big step in the evolution of the personal computer.*

*More than a collection of general improvements in component quality and organization, Equinox 100 takes dramatic leaps forward in making the personal computer a permanent, active, useful feature of the American home and office.*

*Equinox 100 has been designed in every physical and functional way to be easily built, easily operated and increasingly utilized by someone exactly like you.*

*It's not just a good computer kit. It produces a fine computer.*

## FRONT PANEL CAPABILITY

The Equinox 100 is based on the 8080A Central Processing Unit and S-100 bus-board system, making the system compatible with the greatest number of input/output devices, software and circuit boards available for personal computer systems.

But the Equinox 100 uses these popular components in far more effective ways.

The single greatest advantage of the Equinox 100 design is the combining of two major elements, the CPU Board and the Front Panel Board, into a single, intelligent, highly accessible and marvelously functional unit. This integration allows most CPU functions to be accomplished with a blend of hardware and software intelligence, opening a whole spectrum of new front panel capabilities.

You can enter and read out on your front panel in non-ambiguous octal LED digits, instead of flashing binary lights.

You can manipulate the contents of all CPU registers, input/output devices and memory locations directly on a front panel keyboard.

And, for the first time, you can perform these operations as the Equinox 100 runs in single-step or Slow-Step™ from 1 to 64K steps per minute.

The front panel can also be controlled by your programs for direct data display and input. Asking for data, for instance. Or performing as a digital clock.

Thus, Equinox 100's unique front panel intelligence gives its owner complete programming and de-bugging capability ... even before peripherals are added to the system. Equinox offers, quite simply, one of the most powerful front panels on any computer in the world.



## MORE INSIDE

Equinox 100 comes equipped with one of the most reliable computer power supplies available today: the famous Parasitic Engineering constant voltage power supply in a specially designed 20-amp version. This deluxe power supply guards against program crashes due to AC line surges and brownouts as low as 90 VAC, while providing ample power for up to 19 additional circuit boards which can be accommodated by the 20-slot bus.

The power supply plugs together to eliminate soldering and exposed wiring. The Equinox S-100 type bus-board is double-sided and solder masked, fully shielded and actively terminated to squelch noise and crosstalk. Reserve space is provided for user installation of power regulators for peripherals. All card guides and two gold-plated 100-pin edge connectors are included. This standard edge connector is widely available (but check our special price for a complete set purchased with your Equinox 100).

With components like these, Equinox 100 isn't just putting up a big front. It's years in front in quality and total capability, as well.

## WELL-DRESSED

Equinox 100 was conceived, from the very beginning, to be a convenient and well-integrated tool for the home environment. That's why special care went into the outward appearance of the system.

The Equinox 100 enclosure is a sleekly proportioned aluminum case accented with black vinyl trim and smoked plexiglas, handsome enough to rival the most expensive stereo components. A key-operated power switch guards against accidental shutoff and unauthorized use in the home or office. A tilt-up stand\*, carrying handle\*, detachable line cord and cord storage\* add convenience and portability.

Equinox 100 was designed to be displayed prominently.

## AND EASY TO MAKE

Particular emphasis has been placed on making Equinox 100 highly tolerant of home building in kit form. While no computer system is child's play, Equinox 100 reduces performance-critical building operations to an absolute minimum.

For example, the front panel plugs into the bus-board with no complex cables, the power supply plugs together without soldering.

And with the ability to test the completed assembly directly from the front panel, the Equinox 100 kit offers a high probability of successful completion.

The building manual and supporting documentation provided with the Equinox 100 kit are clear, extraordinarily detailed and fully illustrated...we believe the best ever provided with any computer kit.

And we encourage you to call us toll-free at 800-648-5311 should any questions or problems develop during the building of your Equinox 100. We're glad to help.

\*Optional equipment at added cost \*\*Altair is a trademark of MITS Inc.

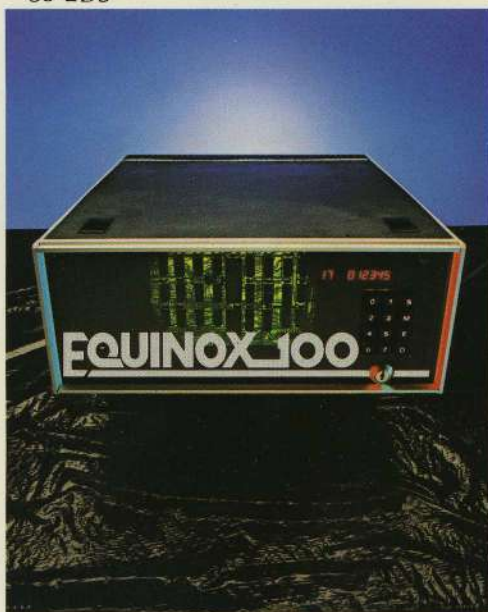


# EQUINOX 100 SPECIFICATIONS

COMPONENT	TYPE	REMARKS
MICROPROCESSOR	8080A	2 MHz clock rate
USER PROGRAM ADDRESS SPACE	65,024 bytes	
BUS	S-100 compatible 20-slot	Fully shielded and actively terminated; all card guides included
POWER SUPPLY	Constant Voltage	INPUT RANGE: 90-140 VAC/60 Hz. OUTPUTS: +9V at 20 amps ± 16V at 6 amp total
VENTILATION	Forced air	
FRONT PANEL DISPLAY	Octal digit LED	10 seven-segment digits
FRONT PANEL KEYBOARD	12-key pushbutton	Gold cross-point type 0-7 plus S, M, E and D
DIMENSIONS	7" H x 17" W x 20" D	
WEIGHT	35 LBS	

## FRONT PANEL FUNCTIONS

HALT, RUN & RESET  
EXAMINE & DEPOSIT  
all CPU registers (individual or pairs)  
all memory locations  
all I/O devices



## FRONT PANEL FUNCTIONS

SINGLE STEP &  
PROGRAMMABLE SLOW-STEP™  
WHILE MONITORING  
any CPU register (individual or pairs)  
any memory location  
any I/O device

Range: 1-64,000/min.

## STANDARD FEATURES INCLUDED

Fan with fingerguard  
2 100-pin edge connectors  
19 pairs of card guides  
Power keyswitch with 2 keys  
Detachable line cord  
High performance CPU/front-panel board with all features and performance detailed above  
20-slot fully shielded and actively terminated bus-board  
Constant voltage 20-amp power supply  
All-aluminum cabinet with sliding top and bottom and smoked plexiglass front

## OPTIONS AVAILABLE

Swing-open top for cabinet  
Wiring channel  
Tilt-up stand  
Carrying handle  
Cord storage  
Complete edge connector set  
4K memory board  
8K memory board  
General purpose/cassette I/O board

Specifications subject to change without notice.

## FOR ADDITIONAL INFORMATION AND ORDERING

Write: Equinox Division  
Parasitic Engineering  
P.O. Box 6314  
Albany, California 94706  
Call: 800-648-5311

# EQUINOX 100

## personal computer kit

A product of Parasitic Engineering

SEE EQUINOX 100 IN PERSON AT YOUR NEAREST PERSONAL COMPUTER STORE



# THE EQUINOX SYSTEM<sup>TM</sup>

When you put it together, it's really together.





Some people build personal computers for the love of building. And the systems they buy are usually more fun to build than to operate.

The Equinox System™, on the other hand, is designed for people who build for the love of computing. When you put it together, it's really together. Ready to work for, and with, you in the development of your own professional, intellectual, business and even social interests.

The Equinox System™ goes together easily with construction aids like parts legends and solder masks. The Equinox System™ fits together perfectly, and will continue to be a perfect fit with future hardware and software. And it's all S-100 compatible, so you'll be able to work together with the largest group of peripherals, software, suppliers and system users in personal computing.

Mainframes, interfacing, memory, software—The Equinox System™ has it all together now.

Really together.

## THE MAINFRAMES

The Equinox System™ offers an important choice in mainframes.

The Equinox 100™ mainframe integrates the popular 8080A CPU into a powerful front panel programming center. For users who prefer another CPU, however, we also offer the Equibox™—a fully engineered cabinet, power supply and S-100 busboard system ready for installation of your choice of CPU.

It would be difficult to forego the speed and convenience of the Equinox 100™ front panel, however. It allows you to work in concise octal digits on a 12-key keyboard and digital LED display. It allows you to monitor and/or alter the contents of any CPU register or register pair, I/O device or memory location. And the Equinox 100™ front panel will perform these operations while fully halted, single-stepping, or Slow-Stepping™ at a programmable rate!

It is, quite simply, one of the most powerful, intelligent and wonderfully convenient front panels in the world. And comparisons of The Equinox System™ mainframes don't stop at the front panel.

Both Equinox 100™ and Equibox™ compare directly to full-scale and mini computers in reliability of operation. Both Equinox 100™ and Equibox™ are equipped with massive 26-amp Constant Voltage (ferroresonant) power supplies to protect your programs from in-home appli-

ance loads, system loads, and even area-wide line voltage drops as low as 90 VAC.

And the exclusive Noiseguard™ system on our 20-slot busboard produces signals that are "textbook clean," eliminating a major source of data errors and interfacing problems that plague most other personal computer systems. Plus, there are dozens of other features to make your mainframe more convenient: carrying handle and tilt-up stand, key-operated power switch for system security, spare power regulators for your small peripherals, and more.

It's no wonder that Equinox™ mainframes have been acclaimed as a major advance in personal computers. Equinox 100™ or Equibox™—each has the features you want all together in one elegant package.

## THE INTERFACING

Interfacing your input/output devices to your mainframe can be a frustrating, expensive and time-consuming process.

That's why The Equinox System™ offers all the interfacing you're likely to need in one low-cost kit.

The Equinox I/O Interface is a single board that plugs right into your Equinox 100™ bus. And you're ready to plug in 3 audio cassette units with individual motion control, a Teletype\* or RS-232 terminal, and any 8-bit parallel device. . . including graphics display, line printer or paper tape reader.

The Equinox I/O Interface has 1K bytes of RAM and ROM on board, preprogrammed with powerful Cassette Operating Executive (COPE) software. COPE handles dozens of interfacing and data handling tasks to increase the efficiency of your software. Your programs can store and retrieve cassette data with a simple CALL COPE instruction. Data is formatted, checked and transferred in blocks up to 64K bytes with a single READ or WRITE instruction. COPE can even bootstrap your programs.

# ALL TOGETHER NOW



# THE EQUINOX

# ALL TOGETHER NOW!

All Equinox software is designed to make full use of COPE capabilities. So loading your Equinox software is as simple as selecting an address and pressing RUN. Cassette data storage has never been more convenient.

The Equinox I/O Interface is programmed for the highly-reliable 300 baud Kansas City Standard for cassette data transfers. . .but can

be reprogrammed for faster rates in the future. Your TTY/RS-232 channel also features user-programmable rates up to 4800 baud. And you have access to all COPE routines.

There is no more cost-effective way to handle your

system interfacing. And the Equinox I/O Interface is even more attractively priced when purchased with a complete system.

## THE MEMORY

You can get your Equinox System™ together with more low-cost memory.

The Equinox System™ is the first system to offer the ECONORAM III™ 8K×8 memory board with the advanced

SynchroFresh™ natural-timing refreshing system.

Configured as two individually addressable 4K blocks, the ECONORAM III™ comes assembled, tested and guaranteed to work perfectly in your Equinox System™ for one full year. It is also available as a lower-cost kit.

For tight budgets, the K-Ration™ 4K×8 static memory kit is also available for your Equinox System™. This high-efficiency design is one of the most widely used, lowest power and lowest cost memories available for S-100 systems.

And the memory savings are even greater when you purchase your Equinox System™ all together!

## ELECTRONICS ENTERPRISES

6606 FIFTH STREET  
RIO LINDA, CALIF. 95673

## THE SOFTWARE

The Equinox System™ now includes two primary software packages: EQU/ATE for text-oriented programming, editing and assembly, and BASIC-EQ language for number-oriented programming.

Both of these powerful programming languages have been greatly enhanced by full integration with our COPE interfacing software.

EQU/ATE gives you the power of a fully programmable text language. Using EQU/ATE, you can create programs to edit copy, keep inventory, manipulate your files of addresses or recipes, and more.

EQU/ATE is also one of the most powerful editor/assemblers available. EQU/ATE writes, assembles and executes your programs. It is fully symbolic, accepts global symbols and assembles programs larger than available memory.

EQU/ATE is also an extraordinary text editor which works interactively with you to edit by character, string or line. It also offers full number editing of memory contents in octal, hex or decimal.

Yet, EQU/ATE is extremely compact, occupying only 4K of memory with 8K total memory required.

BASIC-EQ is a powerful, interactive, high-level programming language developed for math and science applications. Its primary use is in the manipulation of numbers, although it is capable of string oriented operation. Our version, BASIC-EQ, occupies 5K of memory.

Both BASIC-EQ and EQU/ATE are supplied on cassette, ready to load themselves into your Equinox System™. They are competitively priced. . .and are even more attractive when purchased together with your Equinox System™.

## GET IT TOGETHER!

For more information and ordering:

BY MAIL

Send check or money order to Equinox Division, Parasitic Engineering, P.O. Box 6314, Albany, California 94706

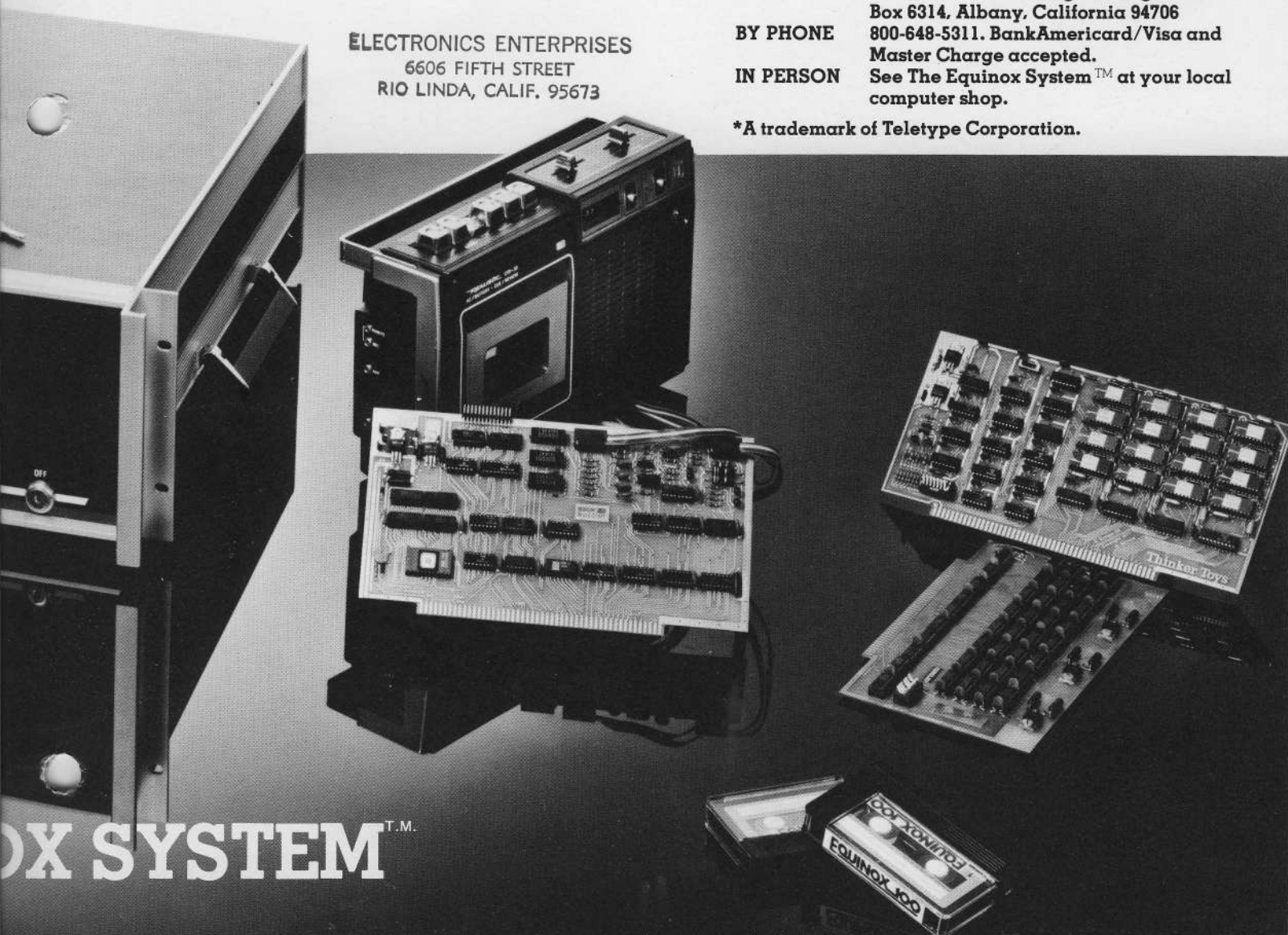
BY PHONE

800-648-5311. BankAmericard/Visa and Master Charge accepted.

IN PERSON

See The Equinox System™ at your local computer shop.

\*A trademark of Teletype Corporation.



# EQUINOX SYSTEM™

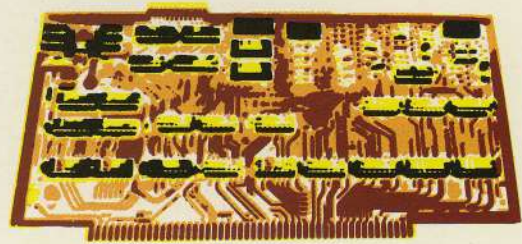


# EQUINOX 100™

COMPONENT	TYPE	REMARKS	STANDARD FEATURES INCLUDED
MICROPROCESSOR	8080A	2 MHz clock rate	Fan with fingerguard
USER PROGRAM ADDRESS SPACE	65,024 bytes		2 100-pin edge connectors
BUS	S-100 compatible 20-slot	Fully shielded and actively terminated; all card guides included	19 pairs of card guides
POWER SUPPLY	Constant Voltage	INPUT RANGE: 90-140 VAC/60 Hz. OUTPUTS: +9V at 20 amps ± 16V at 6 amp total	Power keyswitch with 2 keys Detachable line cord High performance CPU/front-panel board
VENTILATION	Forced air		20-slot fully shielded and actively terminated bus-board
FRONT PANEL DISPLAY	Octal digit LED	10 seven-segment digits	Constant voltage 26-amp power supply
FRONT PANEL KEYBOARD	12-key pushbutton	Gold cross-point type 0-7 plus S, M, E and D	All-aluminum cabinet with sliding top and bottom and smoked plexiglass front
DIMENSIONS	7" H × 17" W × 20" D		Wiring channel
WEIGHT	35 LBS		Tilt-up stand
FRONT PANEL FUNCTIONS	SINGLE STEP & PROGRAMMABLE SLOW-STEP™ WHILE MONITORING		Carrying handle
HALT, RUN & RESET	any CPU register (individual or pairs)		<b>OPTIONS AVAILABLE</b>
EXAMINE & DEPOSIT	any memory location		Swing-open top for cabinet
all CPU registers (individual or pairs)	any I/O device	Range: 1-64,000/min.	Complete edge connector set
all memory locations			Rack-mounts
all I/O devices			

## THE INTERFACING

CIRCUIT BOARD	5" × 10" Epoxy glass base, double-sided with plated-through holes
EDGE CONNECTOR	100-pin gold-plated S-100 bus compatible.
SOCKETS	Provided for every integrated circuit.
RELAYS	3-Gordos 7805 for cassette motion control. 1A/10W/200V max.
RANDOM ACCESS MEMORY	512 bytes total, 2112A type. Over 400 bytes available to user.
PROGRAMMABLE READ ONLY MEMORY	512 bytes, 6306-1 type. Committed to COPE software.
POWER CONSUMPTION	Typically less than 700 ma at +7.5 to 10 volts (900 ma max). Less than 40 ma at +16 to 20 volts Less than 60 ma at -16 to -20 volts



### INPUT/OUTPUT CHANNELS

No.	Type	Applications	Features
3	Audio Cassette	Mass Memory Program Storage	300 baud rate (Kansas City Standard) Individual programmable motion control. The Bootstrap Loader uses Ch. 1.
1	Serial Port	TTY/RS-232 device Teletype * ASCII Keyboard Video Terminal	TTY reader control. Programmable baud rate up to 4800 baud.
1	Parallel Port	Keyboard Paper Tape Reader Printer	8-bit parallel. 3 hand-shake data transfer signals. Data output latch. Tristate transceiver with external control for data input or output.

## THE MEMORY

	ECONORAM™ III 8K × 8	K-Ration™ 4K × 8
Capacity	8192 bytes	4096 bytes
Addressing	Two independent 4K blocks; locate either at any 4K boundary.	Locate at any 4K boundary.
Operating Mode	Dynamic with SynchroFresh™	Static
Cycle Time	370 ns.	450 ns.
Access Time	250 ns.	450 ns.
Power Requirements	260 ma typical 350 ma maximum at 7.5 to 10 V	700 ma typical 900 ma max. at 7.5 to 10 V
	80 ma typical 155 ma maximum at 14 to 20 V	
Circuit Boards	10" × 5" epoxy glass, double-sided with plated-through holes. Solder mask both sides. Parts placement legends..	