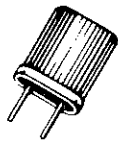


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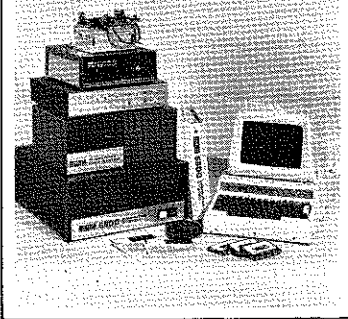
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age power supply drives this new computer system. It has an SS-50 motherboard that contains 15 50-pin and eight 30-pin gold-plated connectors. Built around a 6800 CPU, it can accommodate up to four 2708 PROMs and three independent programmable software timers. It comes with up to 16K of software-addressable static RAM board organized into four separately controlled 4K blocks. DIP switches are provided to permit use of existing SWTP and MSI software. Output is video, and the system uses the GMXBUG 3K ROM monitor that contains standard utility functions and routines that facilitate software development. Address: Gimix Inc., 1337 West 37 Pl., Chicago, IL 60609 (Tel: 312-927-5510).

Multiple A/D Conversion. The AIM161 features 16 100-microsecond conversion-time 8-bit analog inputs. It has a three-state output and requires one 8-bit computer output port for control and one 8-bit input port for data. Interfaces are available for PET, KIM, and TRS-80 microcomputers, with others soon to be available for other computers. The A/D converter can be provided with a number of peripherals. These data-acquisition modules (DAMs) are available for \$159 each. Address: Connecticut Microcomputer, 150 Pocomo Rd., Brookfield, CT 06804 (Tel: 203-775-9659).

Video Monitor. The Video-100 is a solid-state video black-and-white monitor using a 12" CRT. Video bandwidth is 12 MHz, and resolution is 650 lines minimum in the central portion of the CRT and 550 lines minimum beyond the central 80% of the screen. Video input is 0.5 volt composite sync at 75 ohms. The monitor is 11 1/2" high, 16 1/4" wide, and 1 1/2" deep. It weighs 14 lb, and is equipped with all conventional controls. \$149. Address: Leedex Corp., Elk Grove Village, IL 60007 (Tel: 312-364-1180).

Graphics Board. The CGS-808 is a color graphics board for the S-100 bus, or it can stand alone. It contains its own on-board microprocessor, requires no memory space, and eliminates the need for software driver routines. It generates an 8-color display with 12 different programmable and software-selectable modes simultaneously. The alphanumeric mode has an internal character generator to display 32 characters on 16 lines, with two colors per character and inverse video. There is room for an EPROM for custom characters or graphic symbols. Up to 128 different 8-x-12-dot characters can be displayed. Two semigraphic modes have display densities of 64 x 32 and 64 x 48 elements in 8 colors. Eight different graphic modes up to 256 x 192 in two colors are available. Output is composite video at 75 ohms. R-Y, B-Y and Y signals are available for connection to a color monitor. The board comes with software. Address: Biotech Electronics, Box 485, Ben Lomond, CA 95005 (Tel: 408-338-2686).

Selectric Interface. The MP-WP Selectric Interface allows the connection of an unmodified IBM Model-50 Selectric typewriter to an SS-50 bus. Interfacing is made through a cable assembly that plugs into a connector provided on the typewriter. No solenoids or typewriter modifications are required. The typewriter is used as input and output. In-

terface and cable, fully assembled, are \$59.95, postpaid in USA. Address: Southwest Technical Products, 219 W. Rhapsody, San Antonio, TX 78216 (Tel: 512-344-0241).

Multi-System. The Cluster-One is a time-sharing disk system that uses an 8K PET as a host, and is capable of talking to as many as 30 independent and different microcomputers at the same time. Its disk storage features over 630K bytes single-sided and over 1.2 megabytes double-sided. As opposed to conventional time-sharing systems, Cluster-One allows each user to take full advantage of his own computer, so there is little degradation when the system is heavily used. Address: Nestar Systems Inc., 430 Sherman Ave., Palo Alto, CA 94306 (Tel: 415-327-0125).

Winchester Technology. Several readers have asked about the origin of the word "Winchester" when used to describe a particular disk drive. Apparently, early in the development of high-speed hard-disk system, the head was allowed to "float" 31 microinches above the magnetic surface on a cushion of air produced by the disk motion. When the disk stopped, the air cushion vanished, and the head landed on the disk, often causing damage and loss of data.

In 1973, a new design, using a trimaran head structure, allowed the head to float only 19 microinches above the disk, with the entire structure (including hard disk) enclosed in a hermetically sealed package to avoid the possibility of external contamination (dust, grease, etc.). The head loading is so light that it actually rests on the disk when it is motionless and it takes off and lands in an area of the disk reserved for that purpose.

The first such drives of this type from IBM were dual 30-megabyte configurations and called "30-30" systems—thus the name "Winchester." Now, even though the drive capacity has been raised to 70 megabytes, the name persists.

PET Disk. The PEDISK provides both a floppy disk and an S100 expansion chassis in one unit. The expansion feature allows extra I/O, memory, printer, telephone interface, modems, etc. to the PET, while the floppy disk portion allows up to four full-size disk drives (1 megabyte capacity). Prices range from \$799.95 up. Address: CGRS Microtech, Box 368, Southampton, PA 18966 (Tel: 215-757-0284).

SS-50 Video. The Electric Window, a memory-resident and programmable video board that can display up to 80 characters on 24 lines, is now available for 6800 system using the SS-50 bus. It has two character generators—one standard and the other for special characters (APL for example). It also features dual intensity, scrolling, descenders, on lower-case letters, programmable display positioning, and programmable interlaced or non-interlaced scan. \$249.95. Address: Percom Data Co. Inc., 211 N. Kirby, Garland, TX 75042 (Tel: 214-272-3421).

Correction. The price of the Pascal Microengine described in our column of August 1979 should have been \$2995, and the correct company address is Computer Interface Technology, 201 W. Dyer Road, Unit C, Santa Ana, CA 92707. ◇

Software Sources

By Leslie Solomon
Technical Director

6800 File Management. INDEX (Interrupt Driven EXecutive) operates fast because it services I/O by interrupts rather than polling. I/O devices and other system peripherals are treated as disk files so new devices can be added without modifying the operating system. Besides the 19 built-in commands, INDEX can be expanded by adding utility commands and driver routines. These reside on the diskette and are loaded into memory only when needed. Files can be assigned an activity value as a parameter of file name and both ASCII and binary. Disk files are automatically created, allocated and de-allocated. Files are referenced by names and parame-

ters are added for name extension, drive number, directory level and include a file protection flag. You can also copy files, and any standard ASCII terminal is supported. There are more than 60 system entry points for program linkage, and up to 16 simultaneous active data control blocks are accommodated. Versions are available for PerCom LFD-400, SWTP MF-68, Smoke Signal BFD-68 disk systems and for the Motorola EXORciser development system. INDEX comes on two diskettes with user manual for \$99.95. Percom Data Company, 318 Barnes, Garland, TX 75042 (Tel: 214-272-3421).

Apple/8080. The Apple-80 software (on cassette) enables any Apple II computer to emulate an 8080. Running on any 16K or more Apple, the software provides single-step, trace and run modes. It also runs 8080 object code and all 8080 registers are displayed on the screen. Trace speed is dynamically variable and can be controlled by pad-die-O. The 8080 I/O ports are arranged in a table for ease of assignment. Up to 8 non-destructive breakpoints may be used for easy debugging. Eight 8080 interrupts are available and the 6502 subroutines can be called to enable use of the conventional Apple monitor. The Apple-80 cassette contains two programs. The first is a BASIC program that forms the Apple-80 manual. The second program is the Apple-80 itself. This machine-language program enables the Apple (6502) to emulate the 8080. An 8080 time-of-day clock program is also included for study. \$20 plus \$1.50 shipping and handling. California resi-

dents please add 6% sales tax. Dann McCreary, Box 16435-Y, San Diego, CA 92116.

CP/M Software. An extensive 8080/280 disk software line in four formats has just been made available. These include North Star Double Density, Processor Technology Helios II, MITS Altair hard sector and Ohio Scientific C-3 disk systems. Formats previously implemented and still supported include North Star Single Density Micropolis, iCom, SD Systems, Dynabyte DB 8/2 and 8" IBM. Other formats are available on request. A new addition will be available for the Heath H8/H17 system. Running on CP/M, all software is \$145 and includes text editor, assembler, debugger and various other system utilities. Other packages such as FORTRAN, BASIC, COBOL, and CBASIC-2 are available as are payroll, general ledger, accounts payable and receivable, word processing and mail list packages. Lifeboat Associates, 2248 Broadway, New York, NY 10024.

LABEL-BASIC. Designed for the 6800, this language acts as a pre-processor to translate programs written in LABEL-BASIC into programs using a BASIC interpreter or compiler. As an extension of BASIC, it also provides the capability of descriptive line labels and variable names. Because line numbers can be matched, programs built from LABEL-BASIC subroutines can be appended to the main program. This procedure is similar to loading FORTRAN subroutines from a library, although using an editor at source

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