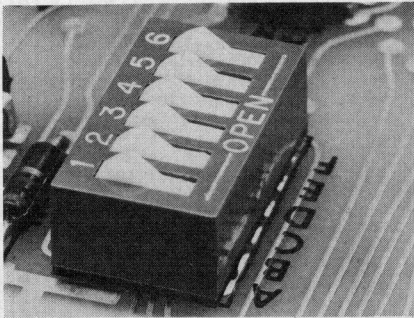


edited by
Demetrios A. Michalopoulos
Associate Professor of Computer Sciences
California State University at Fullerton

NEW PRODUCTS



Six-position switch built into circuit board of new floppy disk drive from CalComp enables instant selection of hard or soft sectoring, gating of "write protect" or "ready" with select, stepper motor power control, and separation of data and clock. Model 142M drive is priced at \$625.

CalComp introduces "switch select" in new multifunction floppy drive

California Computer Products, Inc., has announced a new multifunctional floppy disk drive with a six-position switch enabling instant user selection of six built-in operational modes. These include hard or soft sectoring, gating of "write protect" or "ready" with select, stepper motor power control, and separation of data and clock. Functions are selected through small rocker switches built into the drive's printed circuit board.

Enabling use of either IBM 3740 or user-selected formats, according to CalComp, the 142M performs as a single density (243K bytes) or double density drive (650K bytes) — with no requirement for additional control logic.

Incorporating LSI technology, the new drive is a 6400-bit-per-inch, 48-tracks-per-inch unit with 6 msec track-to-track access time. Transfer rate is 500,000 bits per second.

Other features include a range of power choices, a signal line terminator connector in the drive, and an auxiliary power connector on the circuit board to allow ribbon cable interface to the controller.

PCS introduces program development systems for microcomputer users

Micropac program development systems (MPDS) help reduce the time and cost required to design, program, and install a microcomputer system, according to the manufacturer, Process Computer Systems. By using relative, rather than absolute, addressing of program segments, only the small portion of the program directly affected by a software change need be re-assembled instead of the entire program, PCS states.

Three different hardware configurations, supported by firmware and software, are being offered by the company. All hardware options are based on stand-alone microcomputer modules with peripheral interfaces and firmware drivers. However, a minimum development system may be upgraded for higher performance.

Each package includes programs for both absolute and relocatable macro-

assembly, relocatable linking and loading, editing, tracing, and EROM programming. Debug sequences are also run in either absolute or relocatable mode. A hexadecimal format verifying and loading program is included and drivers are provided in ROM for all peripheral devices. With the up/down loader, software being developed in the MPDS may be down loaded serially to the Supercap or other 180 systems to exercise the software.

The minimum system, MPDS-1, sells for \$4900. MPDS-2, also available for \$4900, is designed as a TI-733 terminal installation with dual cassette read/record, and the higher-speed hard-copy printer. MPDS-2 provides a faster data-handling interface than MPDS-1, and is more appropriate for increased development activity and longer programs, according to PCS.

MPDS-3, at \$12,000, is a floppy disk-based system having dual disks, a line printer, a CRT terminal, and PROM programmer.

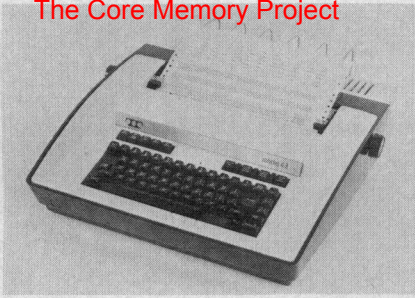
Reader Service Number 11



New microcomputer program development system from Process Computer Systems includes a PROM programmer, dual floppy disk system, high-speed line printer, CRT terminal, and interface modules plus software for \$12,000. Two lower-cost options are available for \$4900.

Reader Service Number 10

<http://www.thecorememory.com>



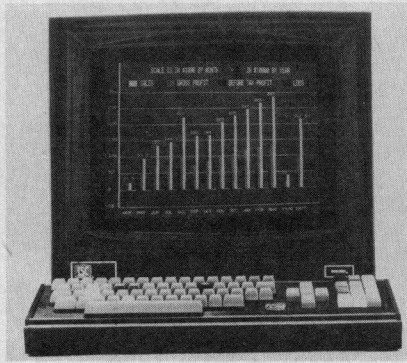
Teletype announces Model 43 teleprinter

The Teletype 43 teleprinter delivers true 30 cps throughput, up/low printing, and 132-column format capability on 11-inch wide fanfold paper. It features a 9-wire matrix impact printhead mechanism that permits lower-case characters to show true descenders.

The terminal is operator selectable to send or receive at 10 or 30 cps in either half- or full-duplex mode with even parity detection on or off. The receiving 43 teleprinter will automatically carriage return and line feed without requiring fill characters by the sender.

According to Teletype Corp., true throughput speed is achieved without interruption due to the terminal's receive buffer and printer's catch-up speed capability. The 43 teleprinter is comprised of five pluggable major components with built-in test capability.

Reader Service Number 12



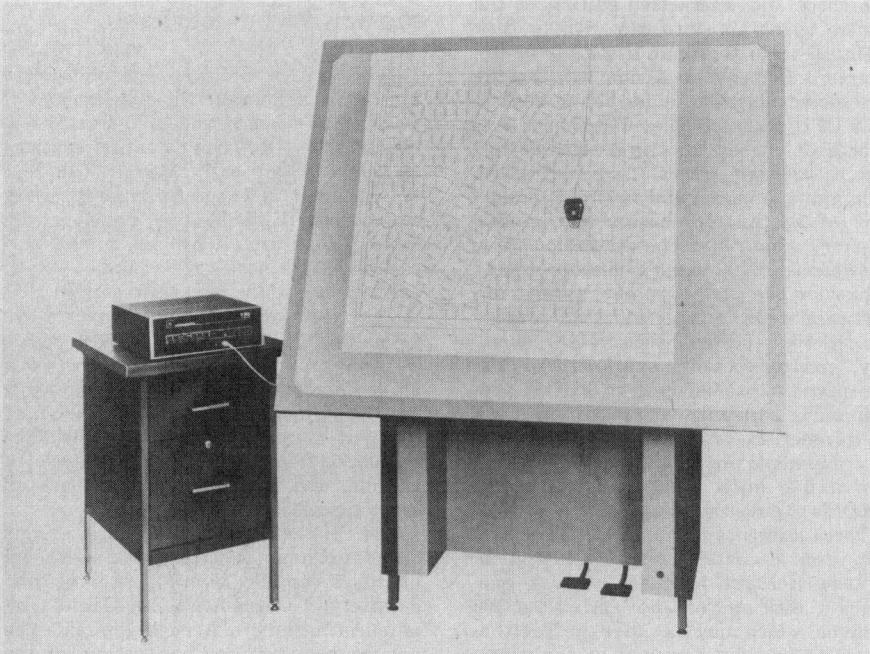
Color terminals offered at black and white prices

An Atlanta-based computer firm has introduced a color CRT terminal, the Intecolor 8001, at a price comparable to most black and white terminals, according to its manufacturer, Intelligent Systems Corp.

The intelligent terminal, based on the 8080 microprocessor, has a 120-square-inch, eight-color screen. It accommodates 25 lines of 80 characters per line and also comes with 25 options including up to 64K additional memory, page roll, background color, light pens, graphics, 48 lines with 80 characters per line, and up to 64 special graphics characters.

The standard one-unit price is \$2295 but the firm is now offering the Intecolor 8001 CRT for \$1495 on a cash basis or for orders of 100 or more units.

Reader Service Number 13



A new 42" x 60" digitizer—the largest available from Summagraphics—offers an accuracy of $\pm 0.004 \pm 1\text{LSB}$. The Model ID-60, part of the company's microprocessor-based intelligent digitizer series, offers firmware features for calculating area and perimeter, scaling, and skew correction. The list price for the ID-60 is \$6000.

Reader Service Number 14

Sperry Univac announces new Series 90 entry-level system

Sperry Univac's new entry-level system for the Series 90 family of computers features integrated hardware and modular software for both new users and those who wish to upgrade their present systems. Prospective users have the option of configuring their 90/25 as a cardless system by utilizing the company's new diskette subsystem.

The 90/25 processor is directed by micro-programmed instructions and is designed to perform random, sequential batch, communications, scientific, or inquiry/response information processing. Minimum storage of 65,536 bytes can be expanded to 98,304 bytes or 131,072 bytes.

Also announced with the 90/25 were four new peripheral devices: the 0719 300-cpm card reader, the 0778 300-lpm printer, the 8413 diskette subsystem, and the 8415 disk subsystem.

The 8413 diskette provides cardless computing for the 90/25 and uses IBM-compatible diskettes. The floppy disks have a data capacity of 242,944 bytes. This cardless capability will also be made available for the Sperry Univac 90/30 computer system. The device is capable of reading 128-byte records at a rate of 1500 records/min. and writing at 850 records/min.

The 8415 disk drive is a split-spindle, fixed/removable device that permits on- and off-line storage. The 8415 provides 24.8M bytes of fixed storage and 8.3M bytes of removable storage for a total of 33.1M bytes.

The software for the 90/25 is Sperry Univac's Operating System/3. OS/3 can support up to seven jobs running concurrently within three levels of priority.

For communication capabilities, the 90/25 uses ICAM (integrated communications access method), a system that includes MCP (message control program) which queues messages for delivery to user programs on demand. The IMS/90 information management system is available on the 90/25 to provide data file inquiry and update capability. Transition aids are available to users of competing systems who would like to retain their current procedures and file access methods.

The new 90/25 in its minimum configuration consisting of 65,536 bytes of main storage 33.1M bytes of disk storage, a 300-lpm printer, a 300-cpm card reader, and a 75-160 CPM optional card punch will rent (including maintenance) for about \$3600 per month. An extended term lease is offered at about \$3200 per month. Purchase price is \$134,500.

The cardless version of the 90/25, which substitutes the diskette subsystem for the reader and punch, will rent at about \$3500 per month and can be leased for about \$3100 per month. Purchase price is \$129,850.

First customer deliveries of the 90/25 will occur in the third quarter of 1977 with the diskette subsystem available in the fourth quarter.

Reader Service Number 15

New voice response system announced by Micom

A new microcomputer-controlled voice response system which provides multiline voice response output for any minicomputer has been announced by Micom Systems, Inc.

The Micom 310 interfaces to Touch-Tone telephones, encoding the incoming signals to ASCII data characters for serial transmission to the host computer port.

Its natural-sounding synthetic voice is based on an analysis of real speech. Outputs are highly-compressed digital codes which operate in conjunction with a voice synthesizer to produce speech, under control of a Micom 40 Series communications processor.

Both asynchronous and synchronous protocols may be used to communicate with the 310. Standard ASCII data characters are used to control all functions, including the interface to each Touch-Tone data set.

According to Micom, the 310 is modularly constructed for cost-effective single or multichannel configurations with plug-in voice channel modules, one per card. Vocabulary may be stored in PROM or down-line loaded from the computer to provide virtually unlimited vocabulary and system flexibility. The system may be local to host computer or may act as remote data/voice concentrator in a large data communications network. Redundant common logic and power supplies are provided for maximum reliability.

Prices start at \$500 with delivery of 90 days.

Reader Service Number 16

Analog I/O card set for 16-bit microprocessors

Designed for the National IMP-16 microprocessor, Ad Engineering Company's HMBL/06 analog input and analog output system provides 32 data acquisition input channels, as well as 32 digital-to-analog converter channels at the output. Each channel is addressable.

The card set consists of four 8½" x 11" printed circuit cards which plug directly into a standard IMP-16P cage. The card set can be further divided into the data acquisition-control board and the digital-to-analog converter output boards. The HMBL/06-1 provides 32 multiplexed analog input channels and the control circuits for the 32 analog output channels. The HMBL/06-2 board has 11 digital-to-analog converters with a set of latches for each output channel. The entire system has a resolution of 12 bits. Three HMBL/06-2 boards and one HMBL/06-1 board make up a complete set. The card set is expandable to any multiple of 32 channels and adaptable to most microprocessors.

In unit quantities, the HMBL/06-1 is \$1160 and the HMBL/06-2 is \$1350.

Reader Service Number 17



New development lab works with established microprocessors and will adapt to future ones, according to its manufacturer, Tektronix. Shown above are the 8002 lab (center), disk drive (right), and the CT-8100 video terminal (left) — one of several peripherals available. A companion model, the 8001, with in-circuit emulation only, has a ROM operating system rather than disk.

Tektronix offers general-purpose tools for microprocessor system development

Tektronix' new 8001 and 8002 microprocessor development labs are designed for use with several of today's most common microprocessor types. Initially the labs will support system development using the Z-80, 8080, and 6800 microprocessors. According to the company, support for additional devices—including new microprocessors as they are developed—will follow.

The 8002 serves as a tool to facilitate developing control software for microprocessor-based systems and for integrating the software with the hardware prototype. The specific functions covered are entry and interactive editing of the control program into the 8002's disk memory via a terminal; assembly of the source code into object code; running the assembled program under debug control on a CPU designed to emulate the microprocessor chosen for the design; correction of program errors discovered in the debugging process; and in-circuit emulation of the microprocessor and control memory via an in-circuit emulation cable between the 8002 and the microprocessor socket on the prototype hardware to aid software/hardware integration and provide an orderly section-by-section (I/O, memory, microprocessor) check-out of the prototype. Optional built-in PROM programming capability eliminates the need to transfer the program to another piece of equipment; provision is made for programming both 1702 and 2704/2708 PROMs to cover most usage.

Three elements make up the basic system: a main chassis housing CPU, memory, control, and interface cards; a two-spindle disk drive; and an interactive terminal which may be either the Tektronix CT-8100 video terminal or the user's own RS-232C compatible terminal. TTY terminal, paper tape reader/punch, modem, and printers can be added.

According to Tektronix, the flexibility needed to accommodate a number of microprocessor types is achieved through a master/slave architecture. A master CPU controls all operations via a disk

operating system (TEKDOS). Up to three slave CPU cards for emulating different microprocessor types can be plugged in at one time.

Price for the basic 8002 configured to support two microprocessors of the user's choice and including the disk drive is about \$10,800 plus \$550 for each additional microprocessor type to be emulated. Price of the Tektronix CT-8100 video terminal and other peripherals is additional. Prices for the 8001, with in-circuit emulation only, begin at \$7950. Delivery of the 8002 is eight weeks after receipt of order; the 8001 will be available in late summer.

Reader Service Number 18

Computer music is real with the new SB1 music board

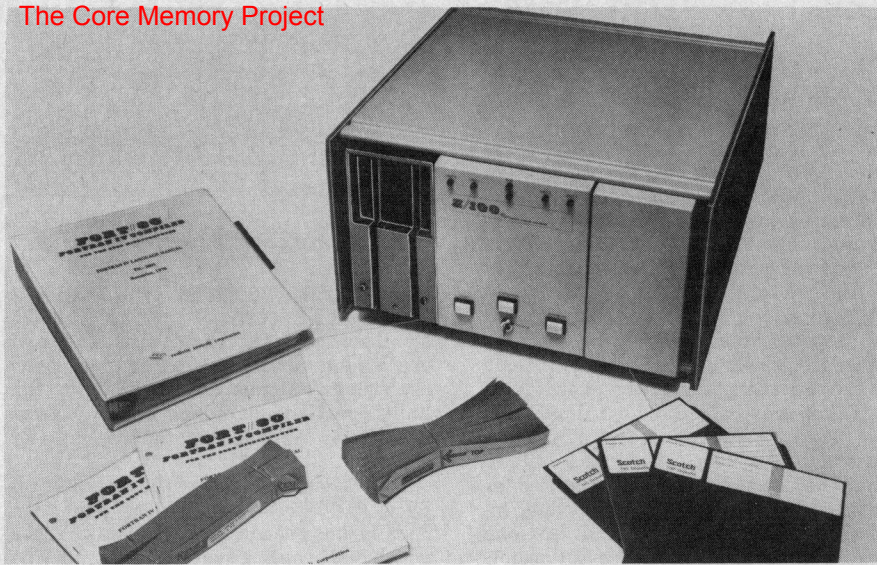
Cybercom, a division of Solid State Music, has announced the development of a new music board and high-level music language for S-100 bus computer systems including Altair and IMSAI. The SB1 music board incorporates a proprietary synthesizer IC, SSM-2000, developed by Solid State Music. A two-pin connector in the card plugs into a regular audio system.

According to the manufacturer, the SB1 music board can generate complex wave forms because attack and sustain reside in hardware, not software as in previous alphanumeric systems. A new language developed for the system allows the user to input music notes via keyboard. The envelope, frequency (tone), 16 levels of volume, and nine octave levels are all software selectable.

The SB1 can generate realistic sounds of most instruments, and with additional boards, it can play a variety of notes from a variety of instruments creating a symphonic atmosphere. Accuracy is said to be better than ½% for one octave of the tempered scale.

Prices for the SB1 are \$250 in kit form and \$300 fully assembled and tested. All kits include full documentation and assembly instructions. Software is also included.

Reader Service Number 19



Realistic Controls Corporation announces portable microcomputer systems

Realistic Controls Corporation has announced a new line of table-top microcomputer systems, the Z/100 Series, dubbed "the personal Fortran machines." According to RCC, the three machines in the Z/100 series are the first low-priced portable 8080-based microcomputer systems to be offered complete with a file management system and Fortran IV compiler.

All three models in the new family are built around an 8080 CPU and include 3K of PROM and a minimum of 33K bytes of RAM, expandable to 64K. The systems include an IBM-compatible dual diskette drive, offering 512K bytes of on-line storage. A second dual drive can be mounted in the table-top cabinet for a system total of 1M byte of on-line storage. The diskette drives feature voice coil positioning and motorized loading and unloading of diskettes.

The systems are available with a monitor, a complete file management system and FORT/80, RCC's 8080 resident Fortran IV compiler. FORT/80 is a subset of ANSI Fortran IV, producing directly executable optimized 8080 machine code. FORT/80 (including IBM-format floating point) requires 11K of memory. It includes a number of powerful language extensions including program control over interrupts and 8080 flags, direct Fortran addressing of 8080 ports, and the ability to link in-line machine code into a Fortran program.

The Z/100-1 is a timesharing replacement system. Priced at \$7995, it includes 36K bytes of RAM, dual diskette drive, and two EIA RS-232-C serial communication channels.

The Z/100-2, priced at \$8995, includes 34K bytes of RAM, dual diskette drive, and a 60-cps bidirectional line printer and keyboard.

The top-of-the-line Z/100-3, priced at \$9795, includes 33K bytes of RAM, dual diskette drive, a keyboard/1920 character CRT display, and an RS-232-C serial communication channel.

communications channel. An optional 300-lpm printer, either 80-column friction feed or 132-column tractor feed, is supported by this configuration.

The Fortran compiler, FORT/80, is available with any of the configurations, priced at \$750. Delivery is 30 days ARO.

Reader Service Number 20

Z80-based single board computer offers 16K bytes of RAM

A new stand-alone microcomputer designed around the Z80 microprocessor family has been introduced by Mostek. According to the company, the software development board (SDB-80) offers more on-board firmware and RAM memory than previously offered single-board microcomputers. It may also be purchased less firmware for OEM applications, with sockets provided for user-programmed ROM or PROM memories.

For software development, the SDB-80 may be purchased with a complete package of system firmware in five 2K x 8 ROM memories located on the board. This 10K-byte firmware package enables the user to generate, edit, assemble, execute, and debug Z80 programs. According to Mostek, locating the development software in ROM permits the entire RAM space to be available for the user's programs and also provides instant access to these development aids.

In addition to the system firmware, the package includes interface cables for both EIA/RS-232 terminals and Model 33 Teletypes, a complete set of documentation, and either 4K or 16K bytes of RAM memory.

This total package is priced at \$1195 with 4K bytes of RAM or \$1395 with 16K bytes of RAM; the OEM version without firmware is \$995. A set of optional add-on circuit boards is available for system expansion.

Reader Service Number 21

New minicomputer announced by NCR

A new general-purpose minicomputer, which can be used either as a free-standing interactive multiprogramming system or as a communications-oriented processor, has been announced by NCR.

In addition to offering up to 80M bytes of disk storage, the 8250 has a Cobol-oriented interactive multiprogramming operating system. Operating software features include the ability to execute remote batch communication applications concurrently with interactive or batch applications, according to NCR.

The new system can use the library of application programs developed for the 8200 and also programs developed for NCR Century series mainframe computers. It will also be compatible with future releases in the larger NCR Criterion computer family so that an 8250 user will be able to migrate upward to almost any level of performance, NCR states.

The new processor is a 16-bit, general-purpose minicomputer which utilizes standard 19-inch rack-mounted plug-in circuit boards. Its MOS memory can be expanded from 48K to 128K bytes in 16K increments and the processor includes automatic battery protection of the memory. Data is transferred directly between memory and disk units, thus freeing the processor for other input/output tasks.

In addition to housing the processor and memory, the vertical cabinet can also contain either one or two disk storage units providing up to 19.6M bytes of storage. One or two magnetic tape cassette handlers can also be housed in the single cabinet.

Heading an 8250's list of options are additional disk units which can provide up to 80M bytes of storage. Other options include line printers with speeds ranging from 55 to 600 lpm, a combination of up to seven visual display terminals or matrix printers, up to two punched card readers, a single or dual-drive flexible diskette unit, and an 800- or 1600-bpi magnetic tape handler.

The system's operating software permits several applications operating at the same time to share common sections of coding from a single pool. Other software features include conversational question-and-answer procedures, three levels of security for each terminal, changes in object code which reduce memory requirements and increase processing speeds, and an NCR Cobol 74 compiler.

The basic 8250 system includes a 48K processor, visual display terminal, matrix printer, integrated 9.8M-byte disk unit, and magnetic tape cassette unit.

The basic system is priced at \$42,420, with a monthly rental of \$1205 under a five-year agreement.

A typical expanded configuration — including a 128K processor, 40M bytes of disk storage and four visual display units — costs \$110,670 or rents for \$3098 a month under a five-year agreement.

Reader Service Number 22

Honeywell extends Series 60 computer line

Honeywell has expanded its Series 60 medium-scale Level 64 computer systems with three new models and enhancements for two previously available models, bringing to five the total number of systems marketed within that class. They will be available in mid-1977, except for certain 64/60 configurations which will be available in early 1978.

The Level 64 systems use 4K MOS main memory as well as high-speed control memory, duplicate arithmetic, and logic circuitry. Firmware provides system verification, protection, diagnostic, and recovery features. It also controls dispatching and synchronization of programs. The integrated unit record processor, acting as a diagnostic processor, provides automatic localization of system faults.

All Level 64 models offer a 195-instruction repertoire, supported by eight base registers, 16 general-purpose registers (including eight index), and three special-purpose and four optional scientific registers. Automatic memory management permits software routines to be executed as fully relocatable segments and provides extensive protection of code and data segments, Honeywell said.

The systems were especially designed to permit Series 200/2000 and Series 100 computer users to take advantage of Series 60 hardware technology with little or no reprogramming. Integrated firmware allows direct execution of the Series 200/2000 or Series 100 programs and processing of data files.

The new Model 64/30 provides main memory of from 64K to 384K bytes and supports three peripheral processors: a mass storage processor capable of controlling up to eight 100M-byte disks; a magnetic tape processor with up to eight tape units; and a unit record processor that provides control for up to five unit record devices, a console, and a communications controller. The communications controller can support up to 14 communications lines with a maximum of 16 terminals per line. The console includes a keyboard, printer, and optional display unit.

Three I/O channels are available, each with a maximum transfer rate of 1250K bytes per second. Total system throughput is 4M bytes per second. Cycle time for the 64/30 memory subsystem is 1.0 μ sec for four bytes.

A typical configuration of 128K bytes of main memory, 300M bytes of disk storage, four 120K-byte magnetic tape units, a 1200-lpm belt printer, 600-cpm card reader, and console can be leased for \$9765 on a five-year contract or purchased for \$448,935.

The Model 64/50, with from 96K to 512K bytes of main memory, can support double the mass storage and magnetic tape capacity that is available on the 64/30 and also can support two unit record processors.

A typical configuration of 256K bytes of main memory, 500M-bytes of disk storage, six 200K-byte magnetic tape drives, printer, card reader, and console

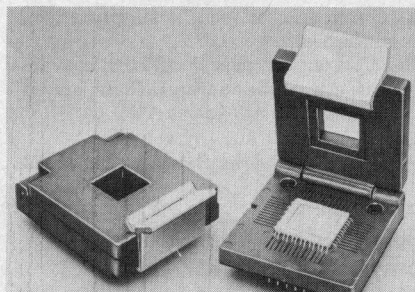
can be leased for \$14,923 on a five-year contract or purchased for \$675,475.

At the top of the Level 64 class, the Model 64/60 offers greater expansion capabilities. Main memory extends from 192K to 768K bytes. The system can include up to three mass storage processors with a maximum of 24 100M-byte disks as well as two magnetic tape processors with up to 16 tape units.

A typical configuration can be leased for \$18,478 on a five-year contract or purchased for \$848,495. It would include 384K bytes of main memory, 600M bytes of disk storage, six 200K-byte magnetic tape units, printer, card reader, and console.

Enhancements Honeywell announced for the Models 64/20 and 64/40 include increased memory and communications capacities and improved processor performance for the 64/40.

Reader Service Number 23



New Robinson-Nugent socket tests leadless IC's without soldering them to motherboard.

Test socket allows testing of leadless IC's

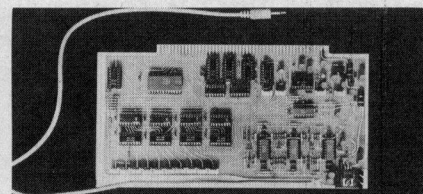
Robinson-Nugent has developed a new family of test sockets for burn-in and testing of LSI IC's for hybrid and other high-density circuits. These new R-N test sockets permit testing of individual IC's packaged in leadless ceramic substrates — without soldering them to a motherboard.

The leadless IC is simply placed in the socket opening and the lid is closed, locking the socket assembly tight. This makes zero force connections between IC contacts and solid pins which come out of the bottom of the socket.

According to Robinson-Nugent, the sockets test hermetically sealed leadless IC's at temperatures up to 220 C. Beryllium copper contacts are mounted inside, beneath body surface to prevent damage during repeated use. Bottom hole in base speeds extraction without damage. They handle ceramic packages ranging in size from .250" x .250" to .700" x .700" and are available with from 18 to 64 contacts.

Prices for these new LCS Series test sockets in quantities of 100 are: 18 leads, \$6.12; 48 leads, \$16.11; and 64 leads, \$21.18. Delivery is in four weeks.

Reader Service Number 24



Speech synthesizer introduced

The Model 1000 speech synthesizer, Ai Cybernetic Systems' new peripheral for the small computer, is a hardwired analog of the human vocal tract. Various portions of the circuit simulate the vocal cords, the lungs, and the variable-frequency resonant cavity of the mouth, tongue, lips, and teeth.

All of the information necessary to produce the speech sounds of American English has been programmed into ROMs which reside on the synthesizer board. The unit accepts a string of ASCII characters (each character representing a particular phonetic sound or phoneme) in the same fashion as a printing peripheral. Because the synthesizer is primarily an analog circuit which is commanded digitally, new programming information is required only at the end of each completed phoneme. The maximum information transfer rate is about 50 bytes/sec (25 bytes/sec typical).

The Model 1000, priced at \$325, is directly compatible with the Altair/IMSAI bus structure. A demonstration cassette is available for \$5. A programming manual which includes interfacing information costs \$4.

Reader Service Number 25

Mostek announces emulator board for 3870 single-chip UP

Mostek Corporation has announced an EMU-70 emulator board to aid in developing and field testing systems which utilize the F8-compatible MK 3870 single-chip microcomputer.

According to Mostek, the emulator is electrically equivalent to the MK 3870 but is field programmable rather than mask programmable, enabling the user to obtain final software verification prior to ordering MK 3870. The EMU-70 performs all the functions of the MK 3870 providing 2K bytes of PROM, 64 bytes of scratchpad RAM, four 8-bit TTL-compatible latched I/O ports, a software-programmable timer, and vectored interrupts. Operation is 2 MHz from a single +5 V power supply.

Two 1Kx8-bit 2708 UV erasable PROMs provide non-volatile storage of the user's program. The PROMs are programmed using a PROM programmer and then installed on the emulator board. The prototype system can be converted to final production status by unplugging the emulator and plugging in the corresponding MK 3870.

Single quantity of the EMU-70 is \$200, less PROMs.

Reader Service Number 26

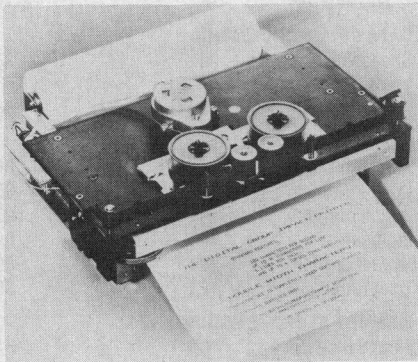
The Core Memory Project EPA offers Data-Catcher for Micro-68 line

Electronic Product Associates, Inc., has introduced the new Data-Catcher option for its Micro-68 line of 6800 microprocessor prototype development systems.

According to EPA, the Data-Catcher provides for single step operation of the Micro-68. It captures address and operand after the completion of each machine instruction and displays the data on an integral 6-digit hexdisplay for easy debugging of new programs.

The Data-Catcher is available from stock as an option to EPA's expanded 68 microcomputer system for \$140.

Reader Service Number 27



The Digital Group's new full-size impact matrix printer prints at 120 characters per second, 96 characters per line, and 12 characters per inch. Prices start at \$495 for printer and card kit for interfacing to 8-bit parallel ports.

Digital Group's impact printer is designed for hobbyist use

A full-size impact printer, designed for small business and hobbyist use with microcomputers, is being offered by the Digital Group.

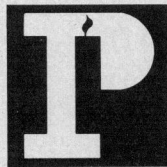
The unit prints 120 characters per second and makes up to four copies simultaneously. There are 96 characters per line, 12 characters per inch horizontal, and 6 lines per inch. The character set and pitch are variable under software control, allowing for double-width characters and different-width characters within the same line.

The printer has a 5-by-7-inch character matrix, and the ribbon has built-in re-inkers for a life of 10,000,000 characters. Paper can be either a standard 8½-inch roll, fanfold, or cut page.

The Digital Group printer interfaces to 8-bit parallel ports. Kit prices start at \$495 for the printer and interface card.

<http://www.thecorememory.com>

Reader Service Number 28



New Literature

1977 CHIP CATALOG. Precision Monolithics Inc. offers brochure of all its chip products, listing complete 25°C specifications—guaranteed min/max wafer probe limits. Write to the company, c/o Jean Littrell, 1500 Space Park Dr., Santa Clara, CA 95050.

CERAMIC CHIP CAPACITORS. Twelve-page product brochure describing selection of monolithic ceramic chip capacitors and glass encapsulated ceramic capacitors is available from GTI Corporation, Capacitor Division, 11558 Sorrento Valley Rd., San Diego, CA 92121.

DATA COMMUNICATIONS EQUIPMENT. Twelve-panel folder from Spectron Corporation describes its family of equipment and systems that monitor, control, and test data communications systems. Included are diagnostic, modem-related, switching and patching equipment, and tech control centers. Available from the company, Church Road and Roland Ave., Mt. Laurel, NJ 08057.

MICROCOMPUTER. An eight-page brochure describing the Mini-Micro Designer MMD-1 education and development microcomputer, a low-cost software and systems development aid for the hobbyist and professional circuit designer, is available from E&L Instruments, 61 First St., Derby, CT 06418.

PLANAR INTERCONNECT SYSTEMS. Spectra-Strip is offering a six-page product brochure describing their round and flat conductor planar laminated and bonded cables and related connectors to terminate flat cables through standard interconnects and custom assemblies. Write to the Marketing Services Department of Spectra-Strip, P.O. Box 414, Garden Grove, CA 92642.

NUCLEAR INTERCONNECT PRODUCTS. A 16-page brochure on nuclear interconnect products offers details on modular plate and canister penetrations, as well as five other applications. Available from ITT Cannon Electric, 666 East Dyer Road, P.O. Box 929, Santa Ana, CA 92702.

MICROWAVE COMPONENTS HANDBOOK. Containing photographs, graphs, and tables, the 36-page Microwave Components Handbook available from Premier Microwave Corporation will be useful to electronic engineers, designers and specifiers for selecting standard microwave products and determining the parameters useful in designing systems using custom components. Write to the company c/o Mr. Jules Simmonds, 33 New Broad St., Port Chester, NY 10573.

SEMICONDUCTOR TESTERS. B&K Precision has announced availability of a six-page brochure describing its line of discrete semiconductor test instruments for laboratory, industry, maintenance, and service. Write to the company at 6460 W. Cortland Ave., Chicago, IL 60635.

DATA PROCESSING COSTS. A 16-page information portfolio describing 54 ways to cut data processing costs for forms, input, output, personnel, and equipment is available from Auerbach Publishers Inc., Philadelphia Operations Center, 6560 North Park Dr., Pennsauken, NJ 08109.

MEMORY MATRIX. A compact, space-saving, programmable read only memory matrix for switching, testing, and programming applications is described in a catalog available from the Sealectro Corporation, Programming Devices Division, Mamaroneck, NY 10543.

FLAT RIBBON CABLE PLUGS. Low-cost, reliable cable plugs from 14- to 40-pin/conductor sizes are described in four-page catalog from SAMTEC, Inc., 810 Progress Blvd., New Albany, IN 47150.

WIRE WRAPPING. Wire-wrapping tools, machines and associated products, including circuit boards, closures, and instrument cases, are described in 58-page catalog from O.K. Machine and Tool Corporation, 3455 Conner St., Bronx, NY 10475.

AMPLIFIERS. Hughes Electron Dynamics Division offers an eight-page brochure covering the full line of TWT and solid-state power amplifiers and including a selection chart giving availability of amplifiers at different power levels for various frequency ranges. Contact the division at 3100 West Lomita Blvd., Torrance, CA 90509.

DATA PROCESSING INSTRUMENTS. A six-page foldout catalog contains "a quick view" of the Meriam Instrument bellows and manometer data processing line of instrumentation, including primary elements such as orifice plates and flanges and laminar flow elements. Available from the company, 10920 Madison Ave., Cleveland, OH 44102.

ELECTRON BEAM RECORDER. A six-page brochure describing the Micrographics Electron Beam Recorder System and several of its film recording applications in the micrographics industry is available from Image Graphics, Inc., 1525 Kings Highway, Fairfield, CT 06430.

COMPUTER INTERFACE. A four-page bulletin #4836 describes Beckman Instruments new microprocessor-based Series 8000 ASCII Computer Interface and Centralized Control System. Available from the company's Process Instruments Division, 2500 Harbor Blvd., Fullerton, CA 92634.