edited by
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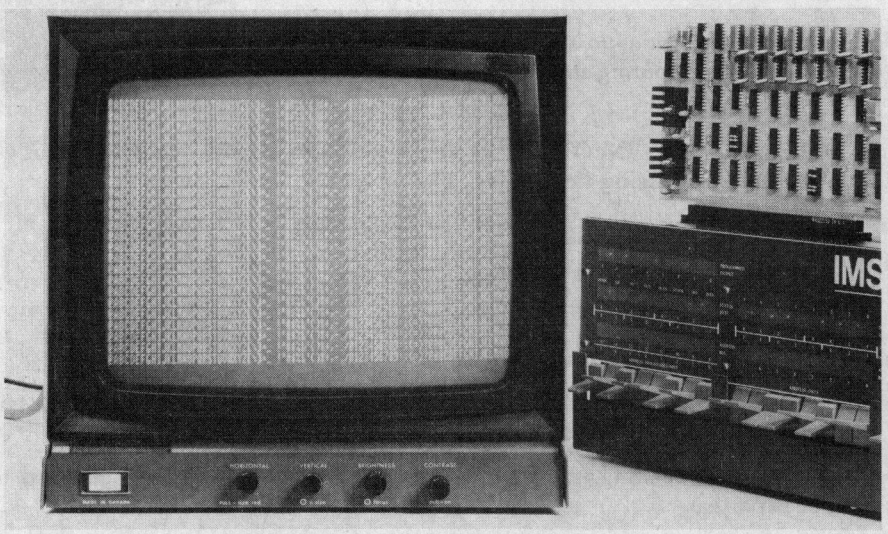
NEW PRODUCTS



The ALT-2480 (top right) is an S-100 bus compatible member of Matrox Electronic System's video RAM family of TV CRT controllers. On the input side the ALT-2480 looks like a 4096 x 8 static RAM with an access time of 500 μsec. The output is a video signal providing a display of 24 lines by 80 upper and lower case characters. A jumper option on the card allows operation with two pages of 40 characters per line. The 40-character-per-line option allows use of a low bandwidth monitor. Any character may be displayed as normal, reverse video, or blinking. Other options include American (60 Hz) or European (50 Hz) standard field rates. The ALT-2480 is priced at $295 FOB Montreal; delivery is 2-4 weeks.

Reader Service Number 13

Shugart announces double-sided floppy disk drive

Shugart's new SA850/851 double-sided floppy stores up to four times the data of a standard floppy drive—or 1600K bytes unformatted and 1200K bytes formatted.

The SA850/851 is available with single density (FM encoding) and double density (M^2FM) capability as standard features. The new unit is the same size as Shugart's standard SA800 floppy (4.62" high x 9.50" wide by 14.25" deep); a 8.55"-wide version, SA850/851R, is available to allow side-by-side mounting in a 19" RETMA rack.

The SA850/851 is plug compatible with the company's SA800/801 standard drive and is media interchangeable with the IBM 3740, S/32 single-sided floppy drives, as well as the recently announced IBM Series/1 (Model 4964) and 3600 series two-sided drives which utilize double-sided IBM diskette 2 media or its equivalent. According to Shugart, the SA850/851 drives read and write data on any industry standard diskette.

The drive offers access time of 3 msec track-to-track, utilizing Shugart's proprietary Fasflex actuator which features a flexible metal band for low-friction head movement. A new head carriage assembly allows loading of the two read/write heads simultaneously on both sides of the diskette.

Price on the new drive will be about 25% more than the standard Shugart SA800/801 floppy drive, or about $750 in single quantity.

Reader Service Number 14

Expanded NCR computer series offers choice of processing

NCR Corporation recently introduced three new computer systems in the 8000 series. By the end of the year, NCR states, the 8000 family of computers will include a dozen models providing a broad choice of processor types, performance, and processing modes.

The new N-8450 uses a multiple-mode processor derived from NCR's Criterion-type architecture and provides an upward migration path for current Century users.

The new V-8450, using the same basic multiple-mode processor, offers the medium-sized computer user the advantages of operating in a virtual storage mode, according to NCR.

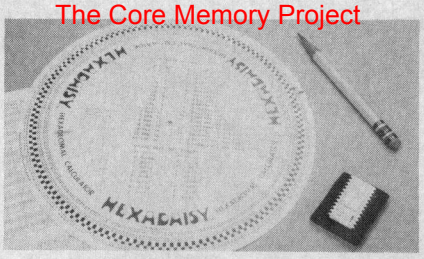
The new V-8560, the most powerful of the new computers, employs Criterion architecture and NCR's virtual resources executive (VRX) operating system. It fits midway between the company's first two Criterion models, the V-8550 and V-8570, which were introduced last year.

The V-8560 features an 84-nsec processor, emitter-coupled logic, 384K to 1.5M bytes of main memory, and up to five I/O trunks. The monthly rental for a V-8560 processor with 384K of memory is $6330. Its purchase price is $237,050. The N-8560 system, with 192K of memory for non-VRX applications, rents for $5030 monthly and has a purchase price of $195,200. Both systems will be available for customer delivery in the fourth quarter of this year.

The V-8450 includes a 112-nsec processor and from 384K to 1M byte of memory. Monthly rentals begin at $4075 and purchase prices start at $142,250 for a processor with a 384K memory. Customer deliveries will begin in the third quarter of 1978.

Monthly rentals for the N-8450 begin at $2475 and purchase prices start at $90,900 for a processor with a 128K main memory. Memory is expandable to 1M byte and processor cycle time is 112 nsec. Customer deliveries will begin in the fourth quarter of this year.

Reader Service Number 15

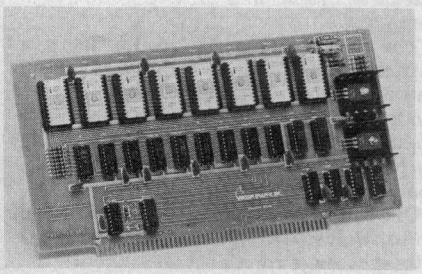


Hexadaisy calculates the offset for relative addressing as used by the 6800, Z80, 6502, SC/MP and F8 microprocessors, adds and subtracts hexadecimal numbers, calculates two's complements and converts decimal to hexadecimal numbers and back. All results within the range of 0 to 255 (decimal) can be read directly while larger numbers are calculated two hexadecimal digits at a time. Made from plastic in the form of a circular slide rule, it is available for $3.95 (ppd) from E. & L. Pfeiffer, Computer Products.

Reader Service Number 16

Vector Graphic's 8080-based Vector 1 microcomputer is available in kit or assembled form. Features include a custom cabinet, 18-slot motherboard S-100 bus with six connectors, power supply, card supports and guides for six cards, PROM/RAM board with 1K of RAM and room for 2K of ROM, and a 512-byte monitor for use with Tarbell cassette and Altair, IMSAI, or Polymorphic I/O boards. The Vector 1 requires I/O board and terminal or video board, keyboard, and monitor. Kit price is $619; assembled price, $849.

Reader Service Number 17



Vector Graphic's PROM/RAM board has 1K of RAM for stack storage and room for 2K of 1702A-type PROMs to store programs. A jump-on-reset feature means that a PROM program can be executed at any location in memory without interfering with any other portion of memory. The board is solder masked on both sides, has its own regulators, and is S-100 bus compatible. The kit, without 1702A PROMs, is $89.

Reader Service Number 18

Intellec 888 system operates as a software development center for three microcomputer system families. It includes a 1M-byte diskette unit (left), interactive CRT console, and Intellec MDS 800 microcomputer development system with 64K bytes of RAM memory. A resident PL/M compiler and other system software support programming of 8080 and 8085-based microcomputer systems and an optional macro assembler supports the new 8048, 8748, and 8035 single-chip microcomputer systems.

Intel introduces three-family microcomputer development system

The Intellec 888 system, an enhanced version of the MDS 800, is the most powerful microcomputer development center announced to date by Intel Corporation's Microcomputer Systems Division. It has two to four times the on-line storage capacity of previous systems, supports fully modular programming in both assembly language and PL/M, and covers the software development requirements of three Intel-originated microcomputer families and the firm's OEM computer family.

The basic system contains all software and hardware resources required to develop software in assembly language or PL/M-80 high-level compiler language for the new 8085 microcomputer system, the 8080 system, and the SBC 80 family of OEM computer systems. According to Intel, it can also be used to develop software in assembly language for the new 8048, 8748, and 8035 single-chip microcomputer systems. This requires only the addition of an optional macro assembler to the resident system software.

The 888 package includes a 1M byte diskette system expandable to 2M with the addition of a second drive unit, a complete Intellec MDS 800 system with full RAM memory storage of 64K bytes, an interactive CRT display console, resident PL/M compiler, and a diskette operating system that includes a macro assembler and all other software development packages for the above families. An optional macro assembler for the MCS-48 family, based on the three single-chip microcomputer systems, is also available.

Since the new system is based on the standard Intellec MDS 800 system, it is completely compatible with Intellec ICE (in-circuit emulation) modules and peripherals. These optional units allow the system to be used for microcomputer system prototyping, software/hardware integration and debugging, field testing, production testing, and system documentation, as well as for software development, Intel states.

Reader Service Number 19

MSI announces portable data entry terminal

The MSI/77, a handheld data entry terminal which can be programmed, uses disposable batteries, and continuously retains its memory has been introduced by MSI Data Corporation.

Power is provided by four standard AA penlight-type batteries which provide up to 64 hours of key entry operation. Battery usage is maximized by built-in power conservation features such as automatic power shutoff after 30 seconds without a key entry, and data is protected by a dual battery system. For use with nickel-cadmium batteries, battery recharger kit is available as an option.

Data is entered on the MSI/77's standard 10-key touchpad and is stored in the unit's memory.

Data is transmitted via a press-on acoustic coupler that fits over the mouthpiece of any telephone handset. The entire contents of the MSI/77 can be transmitted in one to three minutes, depending on the version used.

The MSI/77 will be produced in a 4K version priced at $990 and an 8K version at $1190, with volume pricing available. Deliveries will begin on October 1 and January 1, respectively.

Reader Service Number 20

Naked Mini-4 family of minicomputers announced

Computer Automation's new line of Naked Mini-4 computers includes three processors with compatible hardware and interchangeable software.

At the low end of the new family is the LSI 4/10, a 16-bit minicomputer that incorporates two custom N-channel MOS chips, 4K words of RAM memory, and four input/output channels on a half-size circuit card. On-board battery backup is an available option.

The LSI 4/10 single-unit price is $645; a packaged version including chassis, operator's console, and power supply sells for $995.

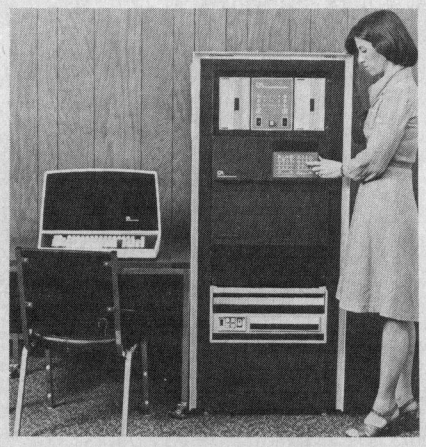
The LSI 4/30 is typically priced at $3495 for 16K words of memory, chassis, power supply, and console. It represents the new mid-range performance minicomputer and offers significant price/performance improvements over the predecessor LSI-2 and LSI-3 series, according to the company.

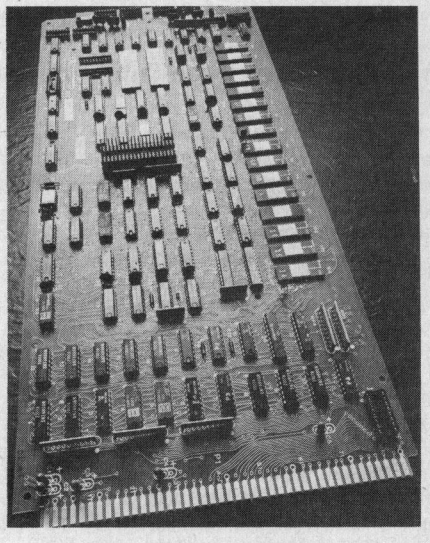
The LSI 4/90, top-performing member of the new family, offers twice the speed of the 4/30. With 64K words of 550-nsec RAM memory, chassis, operator's console, and power supply, a typical configuration will sell for $9950.

According to the company, the family's newly designed architecture features additional registers, more powerful instructions, and faster execution times than its predecessor line. Existing software has been completely rewritten to take advantage of increased hardware capability.

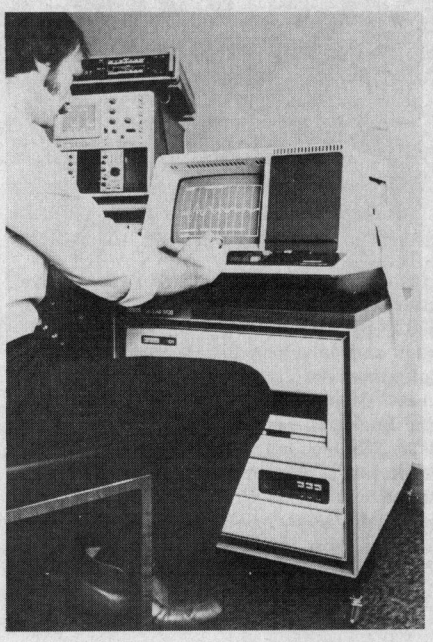
Computer Automation is also expanding its line of peripheral products, headed by a CRT terminal now available for a unit price of $1900, discountable to $1330 in quantities of 100. A software and documentation package containing diagnostics and a user's manual is available for $50.

Reader Service Number 21





Above: LSI 4/90, the top performer in Computer Automation's new Naked Mini-4 family, shown with programmer's console, floppy disk, medium capacity disk, and the company's new CRT terminal. Below: LSI 4/10, the smallest member, offers 4K of RAM memory, four input/output channels, and a custom MOS processor, all packaged on a half-size board.



New DECLAB-11/03 IB system for laboratory applications from Digital Equipment Corporation includes a PDP-11/03 microcomputer, dual floppy disk drive, standard bus for connection of up to 15 laboratory instruments, and either the VT55 graphic video display (shown above) or LA36 teleprinter terminal. With RT-11 real-time software, Fortran IV, and a scientific subroutine package for data analysis, systems are priced at $14,000 with the LA36 and $15,000 with the VT55 terminal. Deliveries are scheduled for August.

Reader Service Number 23

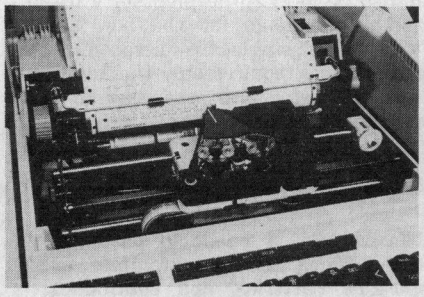
Needle printer can serve as terminal or TWX

Siemens' new PT 80 printer terminal is a small, medium-speed needle printer which can also serve as an input/output terminal.

It consists of a keyboard, printing mechanism, power electronics, interface adapter, power supply, control panel, and central device controller. All of the modules are housed in a desk model that is 8.2" high, 20.8" wide, and 21.6" deep—about as big as an office electric typewriter. A tape reader, tape punch, or magnetic type cartridge unit can be attached to the cover. The answerback unit is contained within the PT 80 cover.

Because the PT 80 uses a USASCII code, it can be used for installations with TWX communications supplementing or replacing 5-bit code Telex communications.

Speed of the printer is up to 90 cps. The characters are presented in a 12 x 9 dot matrix, and 80 characters per line can be printed on the 9.9" wide margin-perforated fan-fold paper.



Shown above, a closeup of the printing head of the Siemens PT 80. The unit features fast carriage return and line feed time for a maximum operating speed of 90 cps, according to Siemens.

Reader Service Number 22

National develops add-in memory products for HP's 21 MX computers

National Semiconductor has developed a series of add-in double-density memory storage cards for use with the Hewlett-Packard 21MX and 21MXE family of computers.

The NS-21 memory boards have a capacity of 16,000 words of 17 bits each and are compatible with the HP system models 2105, 2108, 2112, and 2113. They are used with a control card manufactured by National, or with the HP21 MX series control card.

One control card can communicate with up to twelve 16K NS21 storage cards for a total storage capability of 192K words. The 16K version of the NS21 replaces two single-density 8K cards.

The NS-21 is also available in a depopulated 8K version. A single 8K card may be used with a 16K card system, or a maximum of sixteen 8K cards may be controlled together by one card, yielding up to 128K words of memory.

The 16K by 17-bit version of the NS21 memory storage card sells for $995. Both versions are available for immediate delivery.

Reader Service Number 24

Wang's new "deskette" computer brings direct-access processing to small user

Wang Laboratories has introduced a "deskette" computer, the PCS II, that brings direct access computing to small users. In a move that Wang said doubled the performance range of its current Series 2200 small-business computer line, the company also announced two larger computers, the WCS/25 and the WCS/40, and new interactive terminals, printers, IBM-compatible diskettes, multiplexers, and communications controllers.

The PCS II makes use of minidiskette storage devices initially conceived by Wang and developed by an independent disk manufacturer, Shugart Associates. The minidiskettes are roughly one fourth the physical size of floppy disk drives and are orders of magnitude faster for data access than the serial-access cassette or cartridge tapes used on earlier desktop systems, Wang states.

A self-contained unit, the PCS II includes a large 1024-character CRT screen; a typewriter-like keyboard with separate numeric keypad and 32 special function keys for data entry and control; a high-speed processor with two memories (8K bytes of user-available memory expandable to 32K bytes, and 42.5K bytes reserved for the 2200 operating system and Basic language interpreter), and either one or two minidiskettes, each of which store 89.6K bytes of information. The basic unit sells for $6200.

According to Wang, with the addition of the new Option 62B binarysynchronous and asynchronous communications controller, the PCS II converts into a powerful intelligent terminal with total-business computing capability supported by data base, data entry, and utility software products. This version is priced at $8200.

The PCS II can be expanded through the addition of a dual minidiskette or attachment of any of ten types of printers ranging in speed from 15 cps to 600 lpm; plotting devices; instrumentation interfaces or a larger, 1920-character display screen. A fully equipped PCS II, including a high-speed printer, can be purchased for about $9100.

Eight software packages include Easyform, a new forms management system for typical office environments; Lifeline, a system for independent life insurance agents; PBS, a patient-billing and third-party insurance claims processing system for physicians and dentists; Time/Check, an automated time and recordkeeping system for professional organizations; Wang/Cash, an accounting client write-up system; MPS, a management planning system that performs graphics, modeling, and forecasting; Mortgage Management, an in-bank system; and Auto/Mate II, for auto dealerships. On a seven-year write-off basis, software costs range from $74 per month for the smallest system to about $214 per month for the largest, Wang spokesman claim.

In its basic configuration, the new WCS/25 system includes a Series 2200 processor with 24K bytes of user memory; two diskette storage devices; a 120-CPS printer; a model 2236 MXC microprocessor-based controller, and three Model 2236 interactive terminals.

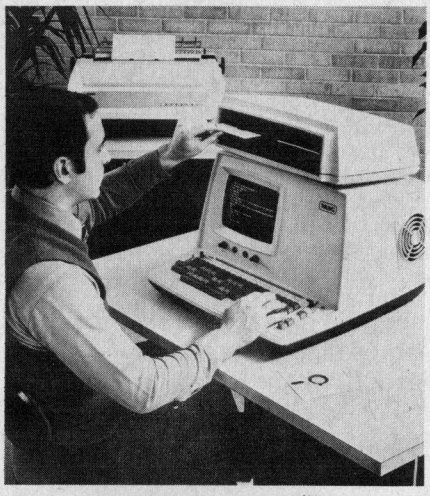
A third 262K-byte diskette and one additional interactive terminal can be added to that system. Other expansion options include IBM 3740 diskette compatibility, the use of additional printers, telecommunications controllers, and other peripherals and software packages available for use with Wang's earlier, single diskette-based WCS/20.

A "programmerless" language provided as a standard part of the WCS/25 enables users to electronically generate, store, recall, sort, update, and print the majority of forms which are now being manually processed in typical office environments, Wang states.

Prices for WCS/25 systems range from $26,750 to $40,000. Deliveries are 90 days ARO, beginning this June.

The WCS/40 represents the high end of Wang Laboratories' WCS product line and an extension of the forms processing market served by the WCS/25. A multiterminal, multiprogramming WCS/40 system with 32K of memory; three interactive terminals; a 230-1pm printer, a single 262K-byte diskette and a 10M-byte disk drive is priced at $48,950. System prices range upward to $80,000.

Typical prices for Wang's new peripherals are: Model 2236 interactive terminal, $2400; Model 2236 MXC controller, $1500; Model 2261W 230-1pm printer, $7000; Model 2263 400-1pm and 600-1pm printers, $14,500 and $16,000, respectively; Model 2271 15-cps printer, $2600; Model 2281 40-cps printer, $3600; and Model 2228B and Option 62B communications controllers, $2000 each.



Wang Laboratories' new PCS-II uses minidiskette random-access devices built into a desktop computer. Two minidiskettes store up to 180,000 bytes of information.

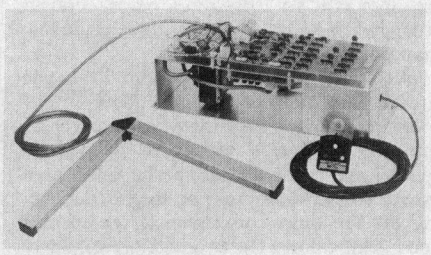
Reader Service Number 25

Sonic digitizer package features binary output and temperature compensation

Two new Graf/Pen sonic digitizer packages for original equipment manufacturers, Model GP-211 and Model NT-211, have been announced by Science Accessories Corporation.

The GP-211 employs two sensors mounted on an aluminum L-frame which can vary in length up to 60 inches. The sensor assembly can be moved from tablet to CRT, projection screen, map table, or blackboard without recalibration or realignment. The NT-211, like other models in the recently introduced series, employs two solid-state point sensors or ears mounted at the ends of a single bar to allow the digitization of any flat surface up to 36" x 48" without tablet restrictions.

Outputs of both models are in binary form, and the systems incorporate compensation to correct for the minor differences in the speed of sound which occur with air temperature variations. The GP series of Graf/Pen sonic digitizers operates with Cartesian coordinates; the NT series operates with triangular coordinates which can easily be converted into conventional orthogonal (X, Y) coordinates. A supersonic impulse is transmitted from the point to be located and is received at the two sensors. The length of time required for the sonic pulse to travel to the sensors is a measure of the distance of the point from the sensors. Both the GP-211 and NT-211 have the ability of generating 140 points per second and 100 points per inch or 10 points per millimeter.



The Model GP-211 Graf/Pen sonic digitizer introduced by Science Accessories Corporation is an OEM package providing outputs in binary form and compensation for temperature fluctuation. Stylus or cursor, electronics package, and two sensors on a sensor L-frame are provided; OEM's must supply interfacing, power supply, and additional outputs as required.

Supplied with both digitizers are a stylus or cursor and an electronics package consisting of a logic board, pulse generator, and temperature compensation board. The GP-211 has two sensors mounted in an aluminum L-frame; the NT-211 has two point sensors mounted on a standard 10.24-inch sensor bar. An optional benchtop case, power supply, and display may be furnished. Single unit price for either unit is $1475.

Reader Service Number 26

TI's hexidecimal calculator converts to decimal, octal

A new handheld calculator from Texas Instruments does arithmetic in three different number bases (hexidecimal, decimal, and octal) and performs conversions to and from those bases.

Called the TI programmer, its typical applications include converting memory addresses to decimal form, adding relative addresses to a base address to find specific computer memory locations, and determining if there is enough space in the computer's memory to hold a new block of data. The arithmetic and logical functions of the calculator can also emulate internal computer operations, TI states.

The calculator's parentheses keys help evaluate complex expressions without requiring the user to store or write down intermediate results. According to TI, up to four operations can be pending at any one time, and these can be a mixture of arithmetic or logical operations in any combination of the three number bases.

The TI programmer represents negative numbers with a two's complement code in both the hexadecimal and octal bases. A one's complement key on the calculator also facilitates working with computers which use that type of arithmetic.

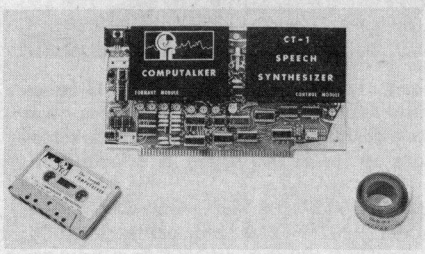
The calculator can perform bit-by-bit logical operations on numbers in hexadecimal or octal. Included are AND, OR, Exclusive OR, and SHIFT operations. A constant mode can be used for all kinds of repeated arithmetic and logical operations. Memory features include store, recall, and sum.

Other features include an eight-digit LED display, rechargeable battery, vinyl carrying case, and AC adapter/charger.

The calculator is being test marketed initially on a direct-mail basis from Texas Instruments. It sells for $49.95.

Reader Service Number 28

Computalker offers new speech synthesizer board



Computalker Consultants has announced the CT-1 speech synthesizer, a microcomputer plug-in board which optimizes the trade-off between low-data-rate speech and directly digitized speech. According to Computalker, low-data-rate speech relies on canned definitions for the sound of each phoneme, which produces mechanical sounding speech. Digitized speech, while remaining faithful to the original sound, requires 10K to 20K bytes per second of storage and is inflexible to phonetic manipulation.

With the Computalker Model CT-1, the sounds are defined in real time under software control. Parameters which represent the phonetic structure of human speech are transmitted to the CT-1 at a rate of 500 to 900 bytes per second, depending on the data compression techniques used. This allows the production of highly intelligible and quite natural sounding speech output, the company states. Speaker characteristics and language or dialect variations are retained in the output.

The CT-1 can also be operated in a low-data-rate mode using phoneme definitions contained in the CSR1 synthesis-by-rule software package. Using the speech synthesis system in this way, the software driver can be modified to keep output up to date with advances in rule-governed speech.

The factory-assembled and tested board, 5-1/4" x 10", occupies a single slot on the S-100 bus. It requires a block of 16 output locations, one byte (8 bits) each, relocatable to any hex boundary via an on-board selector switch. Power requirements are +8 V unregulated (or +5 V reg.) at 170 mA typical, 250 mA maximum, and ±16 V unregulated (or ±12 V reg.) at 85 mA typical.

The CT-1 speech synthesizer is priced at $395 in unit quantity; the CSR1 synthesis-by-rule software is $35. Delivery is from stock to 45 days ARO.

Reader Service Number 27

Cassette system for PDP-11 introduced by Datum

Datum, Inc., has announced the Delta 111 cassette I/O system for users of DEC PDP-11 computers. According to Datum, the unit performs the functions of the DEC PC-11 high-speed paper-tape punch and reader and is compatible with existing PDP-11 software.

Delta 111 functions allow bi-directional searching and rewind. Control and status registers are the same as those of the PC-11, with the addition of ready status, tape rewinding, beginning of tape, end of tape, and on-line.

Data transfer rates are as high as 2600 bytes per second, with maximum storage capacity of over 300,000 bytes per cassette. Interface is accomplished via a unibus extender connector at the back of the unit. Stand-alone drivers and diagnostic software are included to allow the unit to be used as an operational peripheral. Price per single unit is $3650.

Reader Service Number 29

New Literature

POWER SUPPLIES. Elasco offers a 12-page Power Supply Catalog describing both its off-the-shelf items (ranging from 3.6 to 300 volts and from 5 to 150 watts) and its customizing capability. Available from parent company: Sigma Instruments Inc., 170 Pearl St., Braintree, MA 02184.

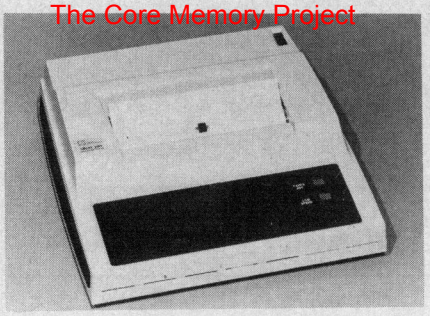
RIGID AND FLEXIBLE CIRCUIT BOARDS. A 4-page brochure describing the company's capability in the manufacture of die-stamped and etched rigid and flexible circuit boards is available from GTI Corporation, Dytronics Division, P.O. Box 217, Leesburg, IN 46538.

WIRE AND CABLE CATALOG. Dekoron offers a comprehensive loose-leaf catalog on its wire and cable for the power industry, emphasizing its instrument wire for nuclear and fossil fuel power generating plants. Write to Dekoron Division, Samuel Moore and Company, Aurora, OH 44202.

PULSE DISTORTION AND EFFECTIVE SHIELDING IN NOISY ENVIRONMENT. The U.S. Department of Commerce has released a 67-page report dealing with these two basic problems found in the use of coaxial and other metallic cables in digital systems. Titled *Conventional and Optical Transmission Lines for Digital Systems in a Noisy Environment,* it is available for $4.50 from the National Technical Information Service, Springfield, VA 22191, accession number PB 265-799/AS.

ANALYSES RELIABILITY OF CABLE AND SATELLITE SYSTEMS. Also available from the U.S. Department of Commerce is a 32-page report providing detailed information about the reliability of the services and facilities associated with submarine cable and communication satellite systems. OT Contractor Report 77-5 is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for $1.40, stock number 003-000-00510-1.

STRAIN GAGES. A 20-page product brochure #100-1 for the user of strain gages in stress analysis is available from BLH Electronics, 42 Fourth Ave., Waltham, MA 02154.



"Silent 700" receive-only data terminal announced by TI

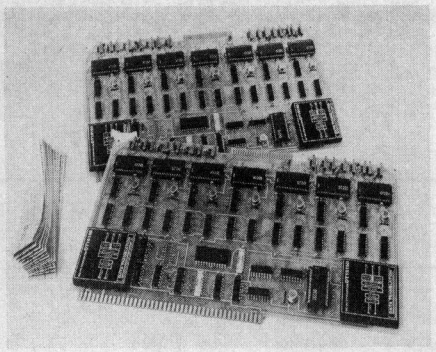
Texas Instrument's new receive-only data terminal, designed to interface with most mini/microcomputer systems, incorporates the same printing mechanism as the earlier Model 745 portable terminal in the company's "Silent 700" series. It uses only two mechanical movements in gaining simple, quiet, and reliable operation, TI states.

The new Model 743 RO terminal features microprocessor-controlled, buffered 300-baud thermal printing to gain true 30-cps throughput, EIA RS232C and TTY current loop interfaces, and paper advance and keyboard switches for 110- and 300-baud transmissions.

The price for the 743 is $1195 U.S. domestic, quantity one, with OEM and end-user discounts available. Delivery is 30 days ARO.

Reader Service Number 30

8-channel analog output system board plugs into Intel SBC-80



An eight-channel D/A converter system, designed to be compatible with the Intel SBC-80 microcomputer series, has been announced by Data Translation, Inc. Two single-board models are available in the analog output series — a 12-bit model, the DT1842; and an 8-bit model, the DT1843. The Intel microcomputer together with the analog output system board form a complete eight-channel analog output system for computerized control and readout applications in industrial and laboratory processes, according to the company.

The system has eight completely independent D/A converter channels, all powered directly off the SBC-80 series +5V computer power through a regulated, low-noise converter. Each D/A converter is fully double buffered to avoid intermediate outputs in the two-word microcomputer transfer. A special feature, the option of 4 to 20 mA current loop outputs for all channels, eliminates the need for separate 4 to 20 mA current loop drivers.

The DT1842 and DT1843 are mechanically, electrically, and software compatible with the entire Intel SBC-80 series. Application software can be developed in the MDS-800 system and subsequently run with the SBC80 microcomputer for OEM applications.

The DT1842 offers full 12-bit resolution and accuracy, while the DT1843 gives 8-bit resolution and accuracy. Differential linearity is ± ½ LSB, gain and offset are adjustable to zero for each channel, settling time is 1 μsec to 0.2% and 3 μsec to 0.01% FSR. In addition to 4 to 20 mA outputs, pin strappable analog ranges of ±10 V and 0-10 V are available with line amplified buffered outputs for driving long cables.

The analog output system is packaged on the same 6.75" x 12" card as the SBC-80. Height of the card is 0.375" for accommodation in standard 0.5" spacing with the SBC-80 card cage. Price of the 12-bit DT1842 is $995 for eight channels, $695 for only four channels. The 8-bit DT1843 is priced at $795 for eight channels, and $495 for only four channels. The 4 to 20 mA output is $30 per D/A output. All models are available from stock.

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MICA-DIELECTRIC CAPACITORS. Cornell-Dubilier Electric offers a 3-page description sheet on its miniature capacitors designed for voltages of 500, 300, and 100 VDC and ideal for mini-space applications. Available from the company at 150 Avenue L, Newark, NJ 07101.

SELECTING CRT DISPLAYS. A product brochure describing seven CRT displays and describing selection considerations for display monitors is available from Tektronix Inc., P.O. Box 500, Beaverton, OR 97077.

CHIP MEMORIES. A 6-page benchmark study of static vs. dynamic chip memory. implemented to test the effect of the refresh cycle on the cpu performance of an IBM 370/158, is available from Electronic Memories & Magnetics Corporation, Computer Products Division, 3216 W. El Segundo Blvd., Hawthorne, CA 90250.

LINE SCAN RECORDER. Raytheon Company offers literature on its LSR-1811 line scan recorder for echo sounding, marine or land seismic profiling, and other dry paper display requirements. Write to the company's Ocean Systems Center, Submarine Signal Division, P.O. Box 360, Portsmouth, RI 02871.

SEMICONDUCTOR HANDBOOK. For a limited time, Radio Shack is offering free copies of their 128-page *Archer Semiconductor Reference Handbook*, which lists over 36,000 replacement transistors, diodes, and other interchangeable devices. Write to the company, on your organization stationery, Depart. SRH, 2617 W. Seventh St., Fort Worth, TX 76107.

ALPHANUMERIC DISPLAY TERMINALS. A 54-page report, *All About Alphanumeric Display Terminals*, provides detailed specifications on 220 terminals, offers practical guidelines for selecting a terminal, and presents the results of a user survey covering more than 18,000 installed terminals. Available for $12 from Datapro Research Corporation, 1805 Underwood Blvd., Delran, NJ 08075.

INFORMATION FLOW. The relationships among "office of the future" activities and equipment are diagrammed and discussed in a 12-page brochure called *A Better Way with Words* which traces information flow from the gathering of source information through storage and retrieval. Available from Burroughs Redactron Corporation, 100 Parkway Drive South, Hauppauge, NY 11787.

MICROPROCESSOR HARDWARE/SOFTWARE/SERVICES. A product brochure describing its line of hardware and software (some custom designed), peripherals, and consulting and educational services is available from Wintek Corporation, 902 N. 9th St., Lafayette, IN 47904.

MINIATURE DATA ACQUISITION MODULES. Six-page brochure from Datel Systems Inc. describes its two new miniature data acquisition modules: a 16-channel single ended and an 8-channel differential version. Three basic system operation modes (free running, sequential addressing; triggered sequential addressing; and random addressing) are discussed in the material available from the company at 1020 Turnpike St., Canton, MA 02121.

LIQUID CRYSTAL MATERIALS. Atomergic Chemetals Corporation has compiled a comprehensive list of data sheets describing Shiff bases, esters, nematic mixtures, smectic, cholesteryl, and miscellaneous chemicals exhibiting liquid crystal properties, which is available by writing to the company at 100 Fairchild Ave., Plainview, NY 11803.