PRINTOUT

JOSEPH B. SIDOWSKI
University of South Florida, Tampa, Florida 33620

PRODUCTS

Interface Products

A wide range of interface and logic module products for the DEC LSI-11 microprocessor has been introduced by MDB Systems, Inc. Present company products for the LSI-11 MPU include the general purpose interface, general purpose direct memory module, and universal dual and quad wire-wrap modules. Peripheral controllers are available for line printers, card readers, and paper tape equipment, as well as for asynchronous and synchronous single line adapters. A programmable real-time clock is also available.

MDB Systems, Inc.
1995 North Batavia
Orange, CA 92665

Microprocessor Power Supplies

Standard Power Inc. of Santa Ana, CA is marketing microprocessor power supplies. The SMA series open-frame power supplies are compatible with the 6800, 8080, 9080, PACE, SC/MP, and F8 microprocessor families. Outputs of 2, 9, and 12 V dc interface directly with individual microprocessors. Inputs are 115/230 V ac, 47-440 Hz. Prices start at \$69.

Timer-Counter

IMC's \$79 single timer-counter features six full decades, LED, presetable, reversible, built-in digital comparator, zero detection, count hold, display hold, and leading zero blanking. Options include up/down timer, frequency counter, clocks, split timers, and many others.

International Microtronics Corp.
4016 East Tennessee St.
Tucson, AZ 85714

Alphanumeric Printer Kit

Southwest Technical's Model PR-40 alphanumeric printer kit is a 5 by 7 dot matrix impact printer which produces a 64-character uppercase ASCII set with 40 characters per line. Print rate is 75 lines per minute on standard rolls of adding machine paper. One complete line is printed at a time from an internal 40-character line buffer memory. Printing takes place either on receipt of a carriage return command or automatically

whenever the line buffer memory is filled. The unit is available in kit form only. Price: \$250.

Southwest Technical Products Corp.
210 West Rhapsody
San Antonio, TX 78216

Video Player

Originally intended to sell for over \$1,500, these video player units are no longer in production and now sell for \$99. A limited supply of program cassettes is available from a domestic source. Large quantities may be obtained from an overseas supplier. The video players include fine spot scanner, photo multiplier, optics, video amplifiers, chroma-circuits, stereo audio pre-amp, and film transport assembly. The player can be used with any standard TV set. It comes with a crystal-controlled oscillator for picture carrier on Channel 3, plus an FM audio carrier output. External sound and picture are available through your TV by connecting a standard CCTV camera and audio input. With the exception of the flying spot CRT and photo multiplier, the system is all solid state. It is contained in a walnut case with a protective cover.

Leasametric
822 Airport Blvd.
Burlingame, CA 94010

Music Synthesizer Kit

The number 4700/S synthesizer kit is priced at \$499 and weighs 40 lb. The module complement includes: keyboard with glide, two road module cases, two balanced modulator/BCAs, stereo mixer, reverb, three 4270 BCOs, 4730 BCF, two envelope generators, three watt blocks, controlled oscillator/noise source, and a 12-event sequencer.

PAIA Electronics
Sept. 9-P
1020 West Wilshire Blvd.
Oklahoma City, OK 73116

Paper Tape Readers

The photoelectric punched paper tape reader (TR-4) is designed for low-speed, low-cost applications. The size of the unit is 3 in. by 3 in. Drive circuitry is self-contained.

Sylvan Hills Laboratory, Inc.
 #1 Sylvan Way
 Box 239
 Strafford, MO 65757

The new OP-80A high-speed paper tape reader has no moving parts and will read punch tape as fast as you can pull it through (0-5,000 cps). The unit includes a precision optical sensor array, high-speed data buffers, and all required handshake logic. It will interface directly with an 8-bit microprocessor I/O port, or can be connected to load programs through the TTY I/O port directly without software modifications.

Oliver Audio Engineering
 1143 North Poinsettia Dr.
 Los Angeles, CA 90046

Teletype Parts

Teletype parts are available from Typetronics, Box 8873, Fort Lauderdale, FL 33310.

Microprocessor Familiarizer

The 6502 familiarizer is a microcomputer with a keyboard and display, all on a single printed circuit board, eliminating the need for a teletype or any other expensive terminal. It is designed to give the beginner hands-on experience with a microprocessor. Two instruction manuals are included. A monitor program included in PROM memory enables you to load, run, debug, and modify programs easily, using the onboard keyboard and hexadecimal display. Breakpoints can be entered anywhere in your program and can be used to display the internal registers or to branch to a separate routine that you have loaded.

EBKA Industries
 6920 Melrose Lane
 Oklahoma City, OK 73127

Microcomputer

EPA has announced a complete microcomputer system, the Expanded-68, based on the Motorola/AMI/Hitachi 6800 Microprocessor chip set. Designed for system prototype development use, the Expanded-68 comes with 8K memory, power supply, 16-digit keyboard, teletype adaptor, hexadecimal LED display, expansion cabinet, application manual, and programming manual.

Electronic Products Associates, Inc.
 1157 Vega St.
 San Diego, CA 92110

Printer

The MP-40 is a low-cost impact printer designed for the small microsystem market. The number of moving parts has been minimized to increase reliability and to

reduce maintenance time. It generates 5 by 7 dot matrix characters at a throughput rate of 75 lines per minute with a maximum print line capacity of 40 columns.

MPI

P.O. Box 22101
 Salt Lake City, UT 84122

PDP-11 Disk Memory System

The new series M 3000 disk memory system is comprised of a moving head, rotating mass memory, controller, and all necessary cables for connection to the UNIBUS of the DEC PDP-11 computer family. This disk memory system offers complete software, hardware, and media compatibility with the PDP-11.

Computer Labs Inc.
 505 Edwardia Dr.
 Greensboro, NC 27409

Interfaces

A complete interface for a CRT graphics display or X-Y plotter provides eight channels of software control A/D conversion. One or two channels of analog output are available with 10-bit resolution, 6 bits of latched digital output, and eight analog comparators.

The same company markets a video-terminal interface which connects to a standard TV monitor or modified receiver to display 16 lines of 64 or 32 characters in a 7 by 9 matrix. Character set includes 128 upper- and lowercase ASCII characters and 64 graphic characters for plotting a 48 by 64 array.

Polymorphic Systems
 737 South Kellog
 Goleta, CA 93017

Microcomputer System

MOS Technology Inc. markets the KIM-1 microcomputer system. The unit includes a single module, full documentation, and all monitor and operating programs stored in ROM. KIM-1 is not a kit. The system is completely assembled, fully tested, and warranted against all defects. Price is \$245.

MOS Technology
 Valley Forge Corporate Center
 950 Rittenhouse Rd.
 Norristown, PA 19401

Computer Terminal

ACT-1 is a computer terminal that sells for \$525 complete with a high-resolution 9-in. monitor; the cost is \$400 without the monitor. The terminal features 64 characters by 16 lines, autoscrolling, and underline cursor, data rates of 110-9,600 Baud, and teletype compatible serial I/O.

Micro-Term Inc.
P.O. Box 9387
St. Louis, MO 63117

Oscilloscope with Bioamplifier and Stimulator

The Model 76755 oscilloscope with bioamplifier and stimulator is priced at \$995. The unit combines the three functions into one compact package that can be used alone or with a compatible Datagraph Recording System. The circuitry is completely solid state. The scope uses P7 phosphor and has a dc to 50-kHz bandwidth. A scope sensitivity of 50 mV/cm is extended to 10 micro V/cm by incorporating the bioamplifier. The unit has a low noise (3.5 mV) differential pre-amplifier. The wide range square-wave stimulator has a selection of amplitude, duration, and frequency. Impulses from the stimulator can be varied in amplitude from 0 to 100 V, frequency from 1 to 1,000 Hz, and in duration from .04 msec to 50 msec.

Lafayette Instrument Company
P.O. Box 1279
Sagamore Parkway
Lafayette, IN 47902

Combination Centrifuge

Fisher Scientific has announced a combination centrifuge with a dual-purpose head which allows for micro-hematocrit determinations, serum separation chemistries, and urine sediment preparations. Price \$330.

Fisher Scientific Company
1259 North Wood Street
Chicago, IL 60622

Biofeedback

Coulbourn Instruments recently introduced the Autoclinic 2001, a portable biofeedback instrument. This multidimensional instrument features all forms of feedback: threshold, pulse, continuous proportional, in both the auditory and visual modes. In one package, biopotentials of EMG, three bands of EEG, and GSR are available for feedback, measurement, and recording. While the meter provides continuous recording, a built-in histogram recorder acquires data over quarters of the session. Microvolt-seconds, accumulative tenths of seconds above threshold, or number of threshold accessions are selectively recorded, displayed in four counters, and stored through the end of the session. Introductory price offer of \$1,786 was valid through December, 1976. The regular price is \$2,995.

Coulbourn Instruments, Inc.
Box 2551
Lehigh Valley, PA 18001

Memory Unit

The TEAM 8000 stores characters from either a terminal keyboard or data received from a remote source, replacing paper or magtape for data transmission. This unit has an EIA in the RS232C I/O connection for interface to any CRT, printer, or peripheral advice. Memory is fully editable. Price: \$1,495.

Tele-Terminals, Inc.
6325 Welcome Avenue North
Brooklyn Park, MN 55429

Graphics Joysticks

The Joy-A and Joy-B allow the operator to quickly and accurately position a cursor on a CRT, Joy-B incorporates a user controlled switch at the end of the stick to provide status information; the user simply presses the switch when the cursor is positioned at the desired location. These units provide minicomputer interrupts at a 100-Hz rate and interface with NOVA and ECLIPSE, or PDP-11 computers.

Megatek Corporation
1055 Shafter St.
San Diego, CA 92106

Video/Analog Converter

The Model 6280 can convert a single input composite video signal into three separate analog outputs of video alone (0-10 V), vertical ramp, and horizontal ramp (both ± 10 V). This module allows standard composite video to be monitored on conventional XY analog displays and can also implement a video/microprocessor interface. Price: \$265.

Optical Electronics, Inc.
Box 11140
Tucson, AZ 85734

Bidirectional Line Printer

The IMP-1 is a 5 by 7 dot matrix impact printer with a 40-column multicopy output. The printer, complete with drive electronics, internal power supply, character decoding, and software driver PROMs interfaces directly with the 6800 and 8080 microprocessors. The printer is capable of verse up to 80 characters per second bidirectionally.

Electronic Product Associates Inc.
1157 Vega Street
San Diego, CA 92110

Used Minicomputers

The following companies deal in used minicomputers:

American Used Computer, P.O. Box 68, Kenmore Station, Boston, MA 02215 (products include almost everything—IBM 370s, minis, and peripherals); JM Associates, 80 Emerald Ave., Westmont, NJ 08108 (Data General machines and peripherals); MiniComputer Exchange, 154 San Lazaro, Sunnyvale, CA 94086 (DEC, Data General, Hewlett-Packard, and peripherals); Newman Computer Exchange, 3960 Varsity Drive, Ann Arbor, MI 48104 (DEC, Data General, Westinghouse, and peripherals). Used computers are also advertised occasionally in *Computerworld*, *Electronic News*, and some of the many microcomputer publications now on the market.

Minicomputer Accessories

A catalogue listing a complete line of minicomputer supplies, accessories, etc., may be obtained from MiniComputer Accessories, 1015 Corporation Way, Box 10056, Palo Alto, CA 94303.

Surgical Lighting

The MicroLuminator is for surgical procedures requiring cool, high-intensity illumination. The fan-cooled light source projects through an optical quality lucite rod which captures and transmits over 95% of the incident light. A convex lens ground onto the end of the lucite rod focuses the light into the high-intensity 10-deg-angle beam. Over 10,000 fc of illumination are provided in a 2-in. diam circle at close range. Fingertip positioning is possible because the light source is mounted onto a balanced 38-in. extension arm. The unit may be rotated, extended, compressed, elevated, or depressed in the position.

Circon Corp.
749 Ward Drive
Santa Barbara, CA 93111

Blood Withdrawal

Cormed offers a battery-operated, pocket-size, microflow blood withdrawal system. The unit allows continuous blood withdrawal at rates as low as 1.20 ml/h. Flow rate is variable and may be set.

Cormed Inc.
3 North Main St.
Department 143 H
Middleport, NY 14105

PDP-8 Memories

Two independent add-on memory manufacturers have recently reduced their prices for PDP-8 memories. Both WE Computer Extension Systems (Houston, TX) and Monolithic Systems Corp. (Englewood, CO) offer 4K and 8K MOS boards that plug into the 8/A, E, F, or M Omnibus Chassis. A 4K board sells for about \$400 from the independents; an 8K board sells for about

\$700. This compares to DEC prices of \$1,230 for a 4K MOS board and \$1,500 for 8K core.

Fast Fourier Transform

The Plessey FFT modules are based on the company's 16-bit MIPROC microcomputer. Data input for the SPM-01 and -02 models may be in either analog or digital format at inputs up to 50 kHz. Modules perform either forward or inverse fast Fourier transforms, and output the transform data in analog or digital form as either real, imaginary, alternate real and imaginary, or as a computer power spectrum. Price for the SPM-01 with a transform characteristic of 1,024 complex points in 600 msec is \$5,000. The 250-msec STM-01 has a price of \$6,000.

Plessey Microsystems
Irvine, CA 92664

Used Computer Equipment

DEC PDP-8I DECTAPE System with 4K memory TC01 controller and two TU55 DECTAPES, ASR33 Teletype, and a dual bay cabinet are priced at \$5,000. Additional 4K memory costs \$750. A DEC PDP-8L or PDP-8I with 4K memory and an ASR33 Teletype is priced at \$2,000. A DEC LT33 10CPS keyboard printer, with 8-channel tape reader punch is \$950. A Diablo 31 disk drive is priced at \$1,900. A Varian 620 minicomputer with 8K memory is \$1,500. A DCC D-116 cpu (a NOVA look-alike) with real-time clock, automatic power monitor restart, automatic loader, and teletype interface is priced at \$2,150 for 4K and \$3,700 for 16K. An Infoton Vista Basic 16 by 80 display with keyboard is \$900. A Bendix Logiport 2 portable CRT with keyboard and carrying case, weighing 25 lb, with 16 by 80 display positions, is priced at \$1,250.

Newman Computer Exchange
1250 North Main St.
Ann Arbor, MI 48104

Graphics Terminal

The AG-60 graphics terminal provides a choice of two keyboard input devices, touch panel, or sonic pen. Ten control functions are included in the standard package. The 12-in. diagonal plasma display allows you to write or erase any point on the screen. Prices start at \$5,000.

Applications Group, Inc.
P.O. Box 444 B
Maumee, OH 43537

Touch Input Systems

Comprising a matrix of IR light beams projected directly above the working surface, the touch input system is activated by interrupting an X and a Y beam, using any stylus opaque to IR, such as a finger or pencil.

The system produces the coordinates of the broken beams as binary X and Y data. Operation is completely digital, and requires no programmed tracking or A-D conversion. The systems can be used with computer-generated displays, film projection or other systems.

Carroll Manufacturing
1212 Hagan St.
Champaign, IL 61820

Random-Access Alphanumeric Display

Complete interface, drive, and refresh electronics on the DE/200 random-access alphanumeric display peripheral offer universal compatability with bus-oriented microcomputer system. Each of 20 character positions in the 6.6-in. line is directly addressable. Display changes on the "Micro-Display" as ordered by the microprocessor are instantaneous, with no line shift effect. Characters are readable at up to 20 ft under ambient light conditions. Character design is 14-segment starburst; color is blue-green, filterable to blue, green, or yellow. There are six power connections.

Digital Electronics Corporation
2126 Sixth St.
Berkeley, CA 94710

Digital Data Recorder

The Model CC-7 digital data recorder is for computer or teletype use, with any baud rate up to 4,800. The unit has no voice capability—no modem. Two channels: clock and data; or, two data channels providing four tracks on the cassette. Two inputs will accept TTY, TTL, or RS232 digital. The recorder is compatible with any computer or terminal with a serial input-output. Model CC-7 is priced at \$149.95; Model CC-7A is \$169.95.

National Multiplex Corp.
3474 Rand Ave.
Box 228
South Plainfield, NJ 07080

Microcomputer Real-Time Clock

CL2400 real-time clock can be set and read by BASIC. It is ALTAIR and IMSAI compatible and uses 24-h clock, software timer, and event timer. The kit is priced at \$98. The assembled unit is \$135.

Comptek
P.O. Box 516
La Canada, CA 91011

Papertape Reader

Advertised as the smallest papertape reader, this unit contains stepping motor, driver electronics, buffer amplifier for all eight channels, precision phototransistor

array and handshake logic. Speed may be varied from 1 to 20 cps by front-panel control or pulsed at 0-30 cps by a microprocessor. Only 1.5 in. is required behind the panel. Price: \$299.50.

Sylvan Hills Laboratory, Inc.
#1 Sylvan Way
Box 239
Strafford, MO 65757

Video Terminal

The Info-Tech Model 76 terminal provides 32 characters per line. The Model 66D provides 64 characters per line. The 53G ASR-33 keyboard format generates 102 ASCII characters. Video consists of the 5 by 7 dot matrix. The Model 66C is priced at \$400; the 66D is \$475.

Info-Tech Inc.
20 Worthington Dr.
St. Louis, MO 63043

Printers

Swiss-made 388 series Precisa pressure-printing OEM units handle up to 16 columns in two colors on standard 2.25-in. wide paper rolls. The simplified design permits printing of 5 million lines without servicing. Printing speed is 3 lines per second, with a motor starting and stopping for each print cycle.

Masterdigital Corp.
457 Promontory Drive West
Newport Beach, CA 92660

Dumb Terminal

The ADM-3 is said to be the first full-sized video-display terminal kit for the computer hobbyist. Its full 24-line 12-in. screen can display 1,920 characters at 80 per line. The standard set is 64 ASCII characters generated in a 5 by 7 dot matrix displayed as uppercase, plus punctuation and control. Price: \$875.

Lear Siegler Inc.
714 North Brookhurst St.
Anaheim, CA 92803

Voice Readout System

The Model 1700 Voice Readout System consists of one circuit board with a vocabulary of 1-16 words stored in ROM. The unit reads these words out in any designated pattern to present a desired voice message output. Standard words include the numbers 0 through 9, plus, minus, times, divide, and equal. Other customer-specified words can be programmed for a one-time charge. Price: \$500.

Masters Specialties Co.
1640 Monrovia
Costa Mesa, CA 92627

Electronics and Supplies

The following companies supply a variety of electronic products and parts.

Eltron
P.O. Box 2542
Sunnyvale, CA 94087

James
1021 Howard St.
San Carlos, CA 94070

Delta Electronics
P.O. Box 2
Amesbury, MA 01913

Quest Electronics
P.O. Box 44330C
Santa Clara, CA 95054

Bonanza Electronics
P.O. Box 24767
Dallas, TX 75224

Electronic Distributors Inc.
1-4900 Elstron
Chicago, IL 60630

Kopp Electronics
1650 William St.
Buffalo, NY 14206

Altaj
P.O. Box 38544
Dallas, TX 75238

New-Tone Electronics
P.O. Box 1738A
Bloomfield, NJ 07003

Solid State Sales
P.O. Box 74A
Summerville, MA 02143

Edlie Electronics
2700-HP Hempstead Turnpike
Levittown, NY 11756

Ace Electronic Parts
5400 Mitchelldale
Houston, TX 77092

Bullet Electronics
P.O. Box 19442-P
Dallas, TX 75219

International Electronics Unlimited
P.O. Box 3036-P
Monterey, CA 93940

PolyPaks
P.O. Box 942
East Lynnfield, MA 01940

Microcomputer Supplies

The number of stores and companies selling microcomputers and microcomputer supplies and equipment has accelerated at a very rapid rate. Some of the outlets are listed below.

Apple Computer Co.
770 Welch Rd.
Palo Alto, CA 94304

Advanced Micro-Computer Products
P.O. Box 17329
Irvine, CA 92713

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

A-VID Electronics Co.
1655 E. 28th St.
Long Beach, CA 90806

L. D. Bewan Co.
1562 Devonshire Ave.
Westlake Village, CA 91361

Byte Shop of San Jose
155 Blossom Hill Rd.
San Jose, CA 95123

Comptek
P.O. Box 516
La Canada, CA 91011

Computer Enterprises
P.O. Box 71
Fayetteville, NY 13066

Computer Mart
625 W. Katella F10
Orange, CA 92667

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

Computer Room
S.E. Corner Juniper & Sansom
Philadelphia, PA 19107

Computer Store
820 Broadway
Santa Monica, CA 90401

Computer Store, Inc.
120 Cambridge St.
Burlington, MA 01803

Computer Systems Unlimited
18886 Hesperian Blvd.
Hayward, CA 94541

Computer Warehouse Store
Dept. 1
584 Commonwealth Ave.
Boston, MA 02215

Continental Specialties Corp.
44 Kendall St.
Box 1942
New Haven, CT 06511

Cromemco
2432 Charleton Rd.
Mt. View, CA 94043

Data Bus
354 Springfield St.
Claremont, CA 91711

Data Domain
111 S. College Ave.
Bloomington, IN 47401

Digital Equipment Corp.
One Iron Way
Marlborough, MA 01752

The Digital Group
P.O. Box 6528
Denver, CO 80206

Dutronics
P.O. Box 9168
Stockton, CA 95208

Electronic Control Technology
P.O. Box 6
Union, NY 07083

E. & L. Instruments, Inc.
61 First St.
Derby, CT 06418

HAL Communications Corp.
Box 365
Urbana, IL 61801

IMS Associates Inc.
14680 Wicks Blvd.
San Leandro, CA 94577

INTEL
3065 Bowers Ave.
Santa Clara, CA 95051

Intensil, Inc.
10900 N. Tontaw Ave.
Cupertino, CA 95014

Itty Bitty Machine Co.
1316 Chicago Ave.
Evanston, IL 60201

Kathryn Atwood Enterprises
P.O. Box 5203
Orange, CA 95667

Kentucky Fried Computers
2465 Fourth St.
Berkeley, CA 94710

Lectro-Media/Philadelphia Heritage
22 New Market, 2nd & Pine
Philadelphia, PA 19147

Lillipute Computer Mart
4446 Oakton
Skokie, IL 60076

Marsh Data System
5405 B Southern Comfort Blvd.
Tampa, FL 33614

Microcomputer Software Depository
2361 E. Foothill Blvd.
Pasadena, CA 91107

Micro Store
634 S. Central Expy.
Richardson, TX 75080

Micro-Term Inc.
P.O. Box 9387
St. Louis, MO 63117

Mikra-D
30 Main St.
Ashland, MA 01721

MITs, Inc.
2450 Alamo S.E.
Albuquerque, NM 81706

North Star Computers, Inc.
2465 Fourth St.
Berkeley, CA 94710

Ohio Scientific Instrument
11679 Hayden St.
Hiram, OH 44234

Philadelphia Heritage
P.O. Box 1770
Philadelphia, PA 19105

Polymorphic Systems
737 S. Kellogg Ave.
Goleta, CA 93017

Processor Applications, Ltd.
2801 E. Valley View Ave.
West Covina, CA 91792

Quay Corp.
P.O. Box 386
Freehold, NY 07728

Rainbow Enterprise
10723 White Oak Ave.
Granada Hills, CA 91346

Rondure Co.
1224 Security Drive
Dallas, TX 75247

S. D. Sales
P.O. Box 28810 E
Dallas, TX 75228

Southwest Technical Products Corp.
Box 32040
San Antonio, TX 78284

Sphere Corp.
940 N. 400 East
North Salt Lake, UT 94054

Sunshine Computer Co.
9 Palomino Lane
Carson, CA 90745

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

Tarbell Electronics
144 Miraleste Dr. #106
Miraleste, CA 90732

Technical Design Labs., Inc.
342 Columbia Ave.
Trenton, NJ 08629

Tempress Microelectronics
Dept. 65
980 University Ave.
Los Gatos, CA 95030

Tychon, Inc.
P.O. Box 242
Blacksburg, VA 24060

Vector Graphics, Inc.
P.O. Box 4784
Thousand Oaks, CA 91359

Veras Systems
Box 74 E
Somerville, MA 02143

Warner & Swasey Co.
Computer Division
7413 Washington Ave. South
Edina, MA 55435

Zilog, Inc.
170 State St.
Suite 260 A
Los Altos, CA 94022

BRIEFS

Teletype Successor

Teletype's first 30 character per second terminal is under development and some models are being tested. The Model 43 is a replacement for the 10 character per second Model 33, but it is quieter and has better styling. However, its price will be in the same ball park as the Model 33. Approximately 600,000 Model 33s have been produced.

PDP-8

DEC has split the PDP-11 and PDP-8 marketing groups and consolidated all the PDP-8 groups. There are over 30,000 PDP-8s installed. Even with the price breakthroughs of the 11/03 (LSI-11 boxed version), the PDP-8 is faster, has proven reliability and more expansion capability, and it is easy to program. The 8/A was introduced in 1974 and has a 4K RAM and sells for approximately \$2,495. The 8/E, 8/F, and 8/M have a different processor and are in the \$5,000 range.

Metric Standard

A source book on metrication, recently published by the Institute of Electrical and Electronics Engineers (IEEE), is expected to receive approval as an American National Standard. The book includes listing of basic units, supplementary units, and units derived therefrom. Guidance is provided on application of prefixes, other units in use with metric units (including units accepted for limited use and units to be abandoned) and unit selection. A section on style and usage covers the writing of unit symbols and names, pronunciation, and recommendations for numbers. Extensive guidance is provided on conversion of linear dimensions. An extensive table of conversion factors is included. Copies of the IEEE Standard 268-1976 are obtainable for \$4 from IEEE, 345 East 47th St., New York, NY 10017.

Computer Music

The September, 1976 issue of *Popular Electronics* has an article on computer music beginning on p. 116. Anyone interested in tone generation using an 8080 microprocessor will find the article helpful. Other sounds easily generated by a computer are also noted.

Plasma Graphics

Plasma displays are not new but this year Magnavox is marketing the Orion-60 plasma display at a cost of \$5,995. The Orion-60 is designed for on-line operation with the HP2100 series, DG NOVA, DEC PDP-11, CDC 6X00 and 7341, and IBM 360/370. Like its predecessor, the Model 12,000, it also has a touch input option and rear-port entry connection that permits

attachments of microfiche projection units. The touch panel mounts over and borders the display area. The Orion-60 is compact with all control logic and vector generators on one processor board. The microprocessor supervises the internal function and output control and communicates with the panel and memories. The screen size is 2,040 characters, each character formed by a 7 by 9 dot format and an 8 by 16 matrix.

Coulbourn Instruments

Coulbourn Instruments, Inc. (Box 2551, Lehigh Valley, PA 18001) recently issued a new price list covering the company's line of items on modular animal environments, shockers, solid state support, blank module panels, solid modules, peripheral devices, expandables, and self-contained units.

3D Eyetracker

The binocular 3D eyetracker records continuously, in real time, the point in 3-dimensional space on which each eye is focused and fixating. The eyetracker is an outgrowth of the Stanford Research Institute "Purkinje-image eye tracker" which measures horizontal and vertical translation and rotational motions of the eye. The new instrument measures the accommodative state of the eye as well. Quoted price for the binocular unit is \$82,000; \$41,000 is noted for a single eye model.

CCD Television Camera

Fairchild Camera and Instrument Corp. (Electro-Optical Systems, Imaging Systems Division, Syosset, NY) is marketing a miniature charge-coupled device television camera. The unit uses CCD sensors instead of Vidicon tubes and weighs only 12 oz. The unit is advertised as being more sensitive and more efficient than other cameras and operates on only 4W at 12V and can be run from batteries. Advertised price is \$4,500.

Speech Spectrograph Display

The Model SSD-1 displays a 3-dimensional pattern (time, frequency, and intensity) of a person's speech on a TV monitor in real time. As a person speaks, the display appears on the monitor screen from left to right. The scan shows different articulation of vowel, diphthong, and consonant sounds as distinct patterns of frequency and intensity vs time. The unit is being marketed by the Center for Communications Research, Rochester, NY. It is priced at \$10,000.

OCR Wand

The Model KT3 is a hand-operated OCR wand and microprocessor consisting of a small character reading electronic camera, or wand, that develops a train of electrical output pulses as it moves across the printed

or typed characters. The wand reads typed, printed human readable data.

Key Tronic Corp.
Bldg. 14
Spokane Industrial Park
Spokane, WA 99216

Educational Microcomputer

The MMD-1 microcomputer is an educational microcomputer system based on the 8-bit 8080A microprocessor. It includes all the hardware, firmware, and instructions for learning basic microcomputer programming and interfacing. Features include: the 8080A microprocessor set including read/write and read/only memory; direct keyboard entry of data and instruction, and instruction in machine language; light-emitting diode status and data indicators; an integral solderless breadboarding and interfacing socket with direct buffered access to the microprocessor set; and self-contained power supply. Cost: \$500.

E & L Instruments Inc.
61 First Street
Derby, CT 06418

Data Collector

The Datamyte 900 is a data collector that can be used to collect observational data speedily and accurately. The unit is portable and has a rechargeable battery which permits 8 h of data collecting. Data is entered, with or without time, by depressing keys numbered 0-9. Data entries record instantly in a solid state memory, in a computer format. Recorded data are transmitted to the computer by connecting the Datamyte 900 to the computer terminal, by way of a simple connecting cable. Data is processed by calling up the appropriate previously written computer program. The unit has 14 character keys; 10 numerical (0-9), and four alpha (C, F, H, *) keys. Various models accept and store 16,000, 20,000, 24,000, 28,000, or 32,000 characters. A switch-selectable built-in timer "beeps" in an earphone every .5, 1.0, 1.5, 2, 3, 4, 5, 10, 16, 32 min for use in fixed intervals sampling. Prices for the various models range from \$2,490 to \$3,440. The units can be rented for \$250 to \$344 per month.

Electro-General Corporation
14960 Minnetonka Industrial Rd.
Minnetonka, MN 55343