

MICROCOMPUTER DIGEST

Volume 3, Number 2

August, 1976

NEW 6500 CPU FAMILY

MOS Technology is introducing five new microprocessors and three new I/O products this summer.

The MCS6506 is a 28-lead microprocessor with both $\phi 1$ (out) and $\phi 2$ (out) made available and with on-the-chip clock. The MCS6512, MCS6513, MCS6514, MCS6515 are the counterparts, functionally, to the MCS6502, MCS6053, MCS6504, MCS6505 with the difference being a two phase clock input on the new products. (cont'd on page 2)

6100 TUTORIAL SYSTEM

Intercept Jr., a new system developed by Intersil, Inc., is a low cost tutorial system utilizing Intersil's IM6100 CMOS microprocessor and its related family of CMOS devices.

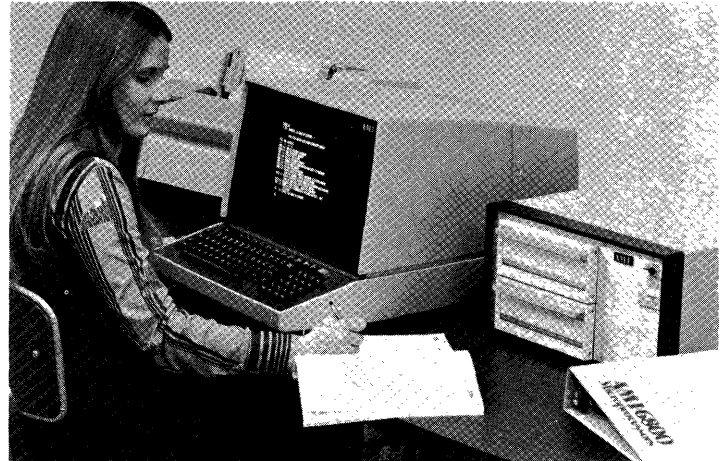
The basic Intercept Jr. module provides an operating all-CMOS microcomputer on a 10" x 11" double-sided PC board. It features a multi-function keyboard, two four-digit LED displays, a resident microinterpreter, and is battery powered. (cont'd on page 2)

MIL SPEC INTEL 3000

The Intel Series 3000 family of bipolar computing elements is now available from stock in three full military temperature series: standard full military temperature range; MIL-STD-883, Level B; and MIL-STD-883, Level C.

The new standard military, series 100% tested to many of the MIL-STD-883 requirements, is ideal for many severe-environment industrial applications. The Level B and Level C series conform exactly to MIL-STD-883, Level B and MIL-STD-883, Level C respectively. (cont'd on page 4)

AMI 6800 μ C DEVELOPMENT CENTER



American Microsystems Inc. has introduced the AMI 6800 Microcomputer Development Center (MDC), a single configuration for hardware and software design and development of microcomputer systems but also operable as a general purpose data processing system, or an intelligent communications terminal. The system includes a special-purpose CRT terminal that incorporates an extensive complement of AMI 6800 microcircuitry, and a dual drive floppy disc subsystem with more than 500K bytes of on-line data storage.

For hardware development, the MDC offers remote front panel and ROM simulator functions, a modular bus-oriented PC card cage supported by general purpose breadboard cards, extender cards, EPROM programming capability, and MDC self-testing firmware. With its hardware flexibility, the MDC development center can also be used as an incoming parts tester.

A complete repertoire of software development programs including FDOS-II disc operating and file management system, text editor, (cont'd on page 2)



2589 SCOTT BLVD., SANTA CLARA, CA 95050 • (408) 247-8940

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AMI 6800 μ C DEVELOPMENT CENTER

(from page 1)

symbolic assembler, extensive debugger, trace program self-test programs, and COM telecommunications package, are available for software development. Sample tests have shown the MDC to be up to 80 times faster than paper tape based development systems.

The AMI 6800 has conventional minicomputer-like front panel operations designed into the CRT terminal. The terminal has the full 256-character encoded ASCII keyboard. Control keys include such functions as reset, load, execute, continue, single step, examine, modify, automatic loading bootstrap, set breakpoint, set monitor, and halt. A separate auxiliary 20-key edit keyboard permits cursor control and editing functions.

A 16-position card cage and power supply are contained in the CRT chassis. Standard card modules include: MPU card; EPROM/ROM telecommunications card; debug card; peripheral interface card; EPROM programmer card; and CRT driver and dynamic RAM cards. The dual drive IBM-compatible floppy disc system is housed separately, and an optional matrix printer can be used to produce hard-copy.

The price of the AMI 6800 MDC microcomputer development center, which also functions as a general purpose data processing system with 16K bytes of memory and as intelligent communications terminal, is \$10,500.

NEW 6500 CPU FAMILY

(from page 1)

According to MOS Technology, the new line of microprocessors is especially suited to multi-processor systems where maximum control of timing relationships is of paramount importance as well as utilization of memory sharing.

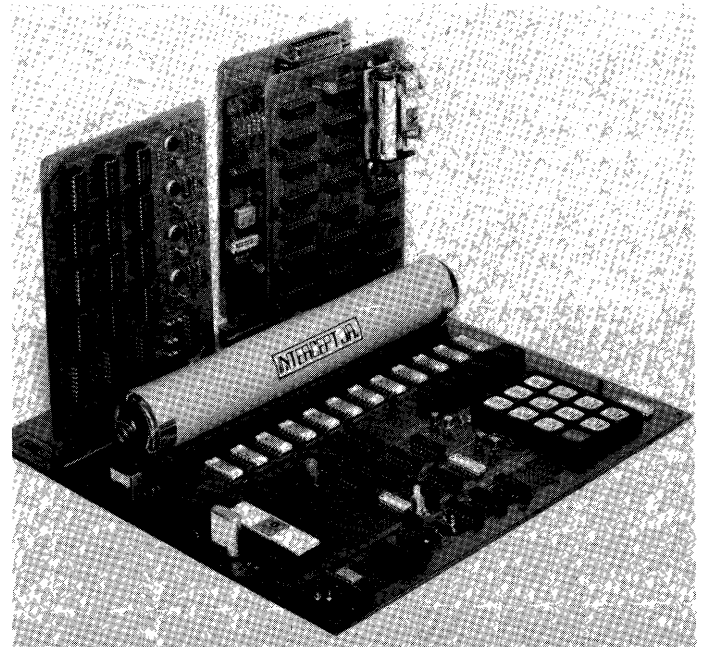
The new microprocessors are available for sampling and 1-99 pricing for the 40-lead MCS6512 and 28-lead MCS6506 with on-board clock is \$20; and \$18 for the 28-lead MCS-6513, MCS6514, and MCS6515.

Available shortly, the MCS6520 is a direct replacement for the MC6820, Motorola's PIA. As such, it will contain the same powerful features: data direction registers, control

registers, dual 8-bit peripheral ports, handshake capability, etc. The MCS6522 is essentially the same as the MCS6502 with the additions of latching on the peripheral data ports, a register for serial capability and two programmable interval timers. Termed the "Versatile Interface Adapter" or VIA, this product will find use in nearly all microcomputer systems requiring special timing functions and/or serial stream data flow.

The MCS6532 is similar to MOS's MCS6530 "Combo" chip except that MOS has deleted the ROM and doubled the RAM size to 128 x 8. The chip has essentially the same I/O and Timer features with 16-bit bidirectional peripheral data pins and a programmable interval timer. The chip is designed for those applications where more RAM than the 64 bytes of the 6530 is needed.

6100 TUTORIAL SYSTEM

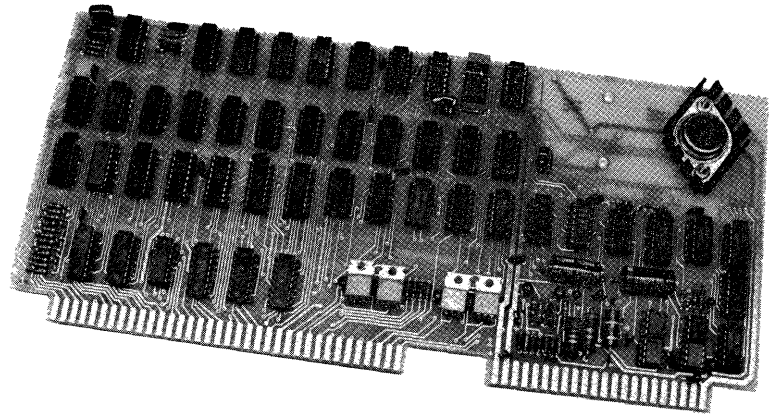
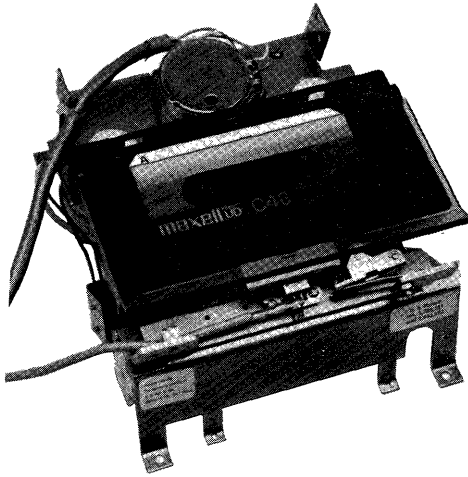


A non-volatile CMOS RAM module provides convenient memory extension in the form of twelve IM6518 1024 x 1 CMOS RAMs.

A power-strobed PROM module supplies up to 2K words of user program, on a 4½" x 6½" PC board. A serial I/O module with both RS232 and 20mA current loop interfaces is also available.

The system comes fully assembled and factory tested, complete with batteries and full documentation. Terminals are provided that enables the system to run from an

1,000,000 BYTES ON-LINE!



The Digital Group Cassette Storage System

The Digital Group Cassette Storage System gives you total magnetic tape data storage and retrieval for your microprocessor, capable of operating 1 to 4 computer-controlled Phi-Deck cassette transports. Within seconds (20 at most), your system zips to any of over one-quarter million 8-bit bytes per drive. And that really puts it all on-line!

The Digital Group Cassette Storage System is ideal for:

- Large data files — names, accounts, etc.
- Indexed computer-controlled program files
- Sorts
- Inexpensive mass storage
- Work files
- Indexed random retrieval
- Multi-pass compilers
- System residence

In addition, with a Digital Group System and a Phi-Deck transport, your total load procedure is reduced to a single action — turning on power. Everything else is automatic! Your Digital Group System is completely ready for use in a very few seconds. And you avoid a large investment in single-use PROM memory.

MAJOR STORAGE SYSTEM COMPONENTS

1. Controlling and Formatting Interface — single card for 1 to 4 drives
2. Software Operating System
3. Computer-controlled Cassette Drive(s)

Selected Specifications

Data Rate: 800 bytes per second, 8K loads in 10 seconds
Media: High-quality standard audio cassettes
Search Speed: 100 inches per second
Tape Speed: 5 inches per second

Power Requirements: +12V to +20V at .7A peak and +5V at 1A plus 60ma per drive

Port Requirements: One 8-bit parallel input port plus two 8-bit parallel output ports

Cassette Drive is an enhanced Phi-Deck with a digital head, cast head bar, stronger capstan, and four-foot cabling.

SOFTWARE OPERATING SYSTEM

8080 based — 650 bytes

Error Detection: CRC

Retries after soft errors

Automatically bypasses hard errors

Block size = 1 to 256 bytes or multiple of 256 bytes

Functions supplied:

- Record multiple blocks
- Record 1 block
- Read 1 block
- CRC check
- Fast reverse
- Fast forward
- Search for block

For more information, drop us a line or call . . . but by all means, get on our mailing list.

Prices: Interface — full kit PHI-F \$135 ppd
Each Drive — assem. PHI-1 \$115 ppd



THE DIGITAL GROUP INC

P.O. BOX 6528
DENVER, CO 80206
(303)861-1686

external 5 or 10 V power source.

The Intercept Jr. module costs \$281; the RAM module costs \$145; the PROM module is \$74.65; and the I/O module is \$81.70. All modules are in stock for immediate delivery.

MIL SPEC INTEL 3000

(from page 1)

Specifications for all three series are guaranteed over a supply voltage range of $V_{CC} = 5V \pm 10\%$, as well as over the $-55^{\circ}C$ to $+125^{\circ}C$ range.

The series consists of a family of Schottky bipolar, microprogrammable devices used by systems manufacturers to build very high performance central processing element the 2-bit slice CPU operating at a typical microinstruction cycle time of 60 ns can be used in parallel arrays to process data with any desired word length.

Intel guarantees a minimum cycle time of 95 ns for this device in the three military series. The guarantee allows a typical 16-bit CPU to operate at an overall cycle time of less than 190 ns, with allowances for system overhead delays and worst case operating conditions.

Devices provided in the three military series include, MD3001 Microprogram Control Unit, MD3002 Central Processing Element, MD3003 Look-Ahead Carry Generator, MD3212 Multi-Mode Latch/Buffer, MD3214 Interrupt Control Unit, MD3216 Parallel Bi-Directional Bus Driver, MD3604 and MD3624 4096-bit Schottky bipolar PROMs.

The series is available this month from distributor stock.

Development support products available with the MC3000 series include the Intellec MDS-800 Microcomputer Development System, ICE-30 In-Circuit Emulator, bipolar ROM simulator, universal PROM programmer, and other MDS-800 peripherals. Software includes the CROMIS Cross Microassembler, ICE-30, ROM-SIM and Intellec resident package.

TECHNOLOGY

MOTOROLA REDESIGNS 6800

Motorola is redesigning the M6800 microprocessor family by adding depletion loads to increase speed and reduce the 6800 CPU size to 160 mils. Officials fully expect the new MC6800D to function over the full military temperature range. Clock specs

are also being relaxed.

Motorola also noted that monolithic Schottky driver is scheduled for sampling in July. The MC6875 will replace hybrid or multi-package methods currently incorporated but at a price less than \$2.50. The chip uses an inexpensive 3.580 MHz crystal as its timing source.

Other depletion-mode parts to be available soon include the 6800's 128 x 8 static RAM 1K x 8 ROM, and PIA.

BIPOLAR AMD 2900 KIT

A bipolar microprocessor kit to demonstrate microprogramming techniques and allow evaluation of the Am 2900 microprocessor family is now available from Advanced Micro Devices.

The kit allows the designer to write and execute 32-bit microinstructions in a high-performance pipelined control unit. The microinstructions control an Am2901, including the "A" and "B" addresses, the instruction, the carry-in and the data-in. Other bits control shift logic to allow logical and arithmetic shifts and rotates. Still other bits in the microinstruction control the selection of the next microinstruction addresses, utilizing the Am2909 sequencer. Sixteen functions are built in.

In addition to demonstrating the technique of microprogramming with the Am2900 family, the kit may also be driven in real time by a pulse generator.

The Am2900K1 includes 40 ICs, LEDs, switches, resistors, decoupling capacitors, PC board and a manual covering the theory, assembly instructions, testing and experiments. Besides the assembling, all that is needed is a 5V supply.

The kit is priced at \$289 and is currently available from AMD distributors.

NEW F-8 PRICES

The Micro Systems Division of Fairchild Camera and Instrument Corporation has announced new prices of \$9.95 for its F8 microprocessor CPU and PSU circuits.

Fairchild is also introducing two upgraded versions of the PSU circuit, which provides the user with 2K of on-chip memory, twice the storage capacity of the standard PSU.

The new PSU circuits are the 3856, which provides 2 I/O ports for address lines, and is suited for general purpose applications; and the 3857, which is designed with memory

(cont'd on next page)

interface outputs for memory intensive systems. Both the 3856 and 3857 contain local interrupt control and a timer. Pricing is \$14.95 for 100-piece quantities.

Fairchild has also announced new pricing on four other microprocessor peripheral circuits. Prices in 100-piece quantities are \$6.45 for 3861 parallel I/O circuits; \$7.45 for 3852 dynamic memory interface; \$7.45 for 3853 static memory interface; and \$5.95 for the 38.54 direct memory interface.

Prices are effective September 1, 1976 for the devices in plastic dips.

MICROCOMPUTER BASED PRODUCTS

6800 CARD FOR ALTAIR/IMSAI

MRS' new AM6800 is a single board, pin-compatible card for an Altair 8000 or IMSAI 8080. No modifications are required and the system will not interfere with the normal execution of 8080 programs. The AM6800 gains control via software command. Control can be returned by either the front panel stop switch or through software.

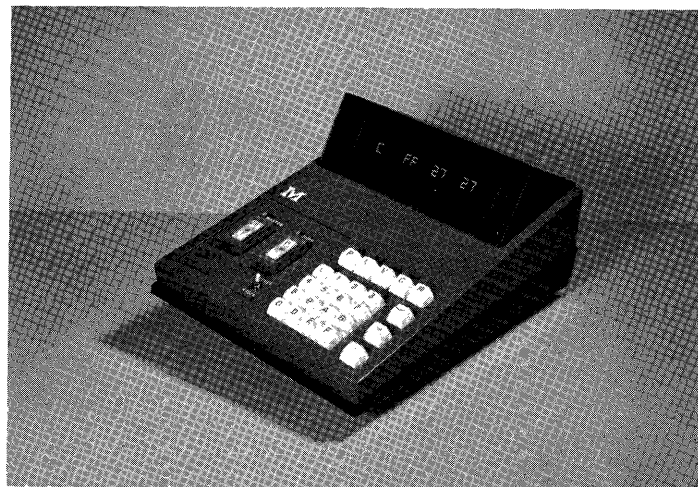
The AM6800 will operate with either fast or slow, static or dynamic memories. 6800 MPU status signals are brought out on unused bus lines (jumper option), i.e. $\phi 1$ & $\phi 2$ clocks, VMA and R/W lines for system development. The 8080 processor card remains in the computer to handle all front panel controls. All data and address lines are three-state buffered.

The board is available in kit form for \$130 and \$180 fully assembled and tested. Delivery is 30 days ARO.

μ C PROM PROGRAMMER

International Microsystems, Inc. series 1000 microcomputer controlled PROM Programmer offers fully interactive operation in any of three programming modes---keyboard entry, terminal control, or remote computer control.

A 32K buffer RAM memory permits fast, reliable data transfer and allows the user to edit the data in RAM from the keyboard of the PROM Programmer prior to the actual programming operation. A 14-digit hexadecimal display gives 4 digits each of address, copy PROM data, and master PROM data, plus a 20 digit entry and error code. The hex keyboard permits the user to list copy, program verify, or transfer to remote



computer control.

The unit is designed for portability and is offered in a sturdy, modern case. An RS-232 and TTY interface is standard and includes the feature of selectable baud rate. PROM personality modules are available for all standard MOS and fusible-link PROMs.

Delivery is 3 weeks ARO. Cost is \$1295 for the Programmer and \$250-\$295 each for the PROM modules.

BASIC INTELLIGENCE UNIT

Applied Computer Systems has introduced the Basic Intelligence Unit (BIU) to add intelligence to terminals through standard RS232 communications interfaces.

The BIU is an LSI microcomputer based system with 8K of RAM memory field expandable to 64K. Optionally, up to six IBM compatible diskette drives may be used to provide over three million words of storage at the terminal. The BIU has programmable communication rates from 110 to 9600 baud for either synchronous or asynchronous operation.

Prices start at \$8500 for a typical configuration with delivery 30 to 60 days ARO. Lease rates are available and distributor inquiries are welcome.

8080 DEBUG AID

Tranti Systems, Inc. has added a \$1000 de-debug option to its new μ scope to enable the user to step through a program either manually or automatically and display all necessary information. When the user hits a trap, the μ scope will display the next instruction to be executed in assembly language and will show you the status of the 8080's internal registers as well as the current status of the stack.

SECOND GENERATION 8800

MITs, Inc., has announced that its newest mainframe, the Altair 8800b, is now in production. Basically a second generation design of the Altair 8800, the Altair 8800b is built around the new 8080A microprocessor. Like the original Altair, the Altair 8800b is an open-ended machine compatible with all existing Altair 8800 hardware and software.

Included in the Altair 8800b is a complete redesigned front panel, new CPU board, power supply, and 18 slot mother board. In addition to the 8080A microprocessor the Altair 8800b CPU includes an 8224 clock generator and 8216 bus drivers. Clock pulse widths and phasing as well as frequency are crystal controlled.



The front panel is interfaced to the CPU via two, 34 conductor ribbon cable assemblies. These cables connect the front panel interface board which buffers all lines to and from the 8800b bus.

The new Altair 8800b power supply is rated at +8 V and 18 A, +18 V at 2 A, and -18 V at 2 A. It can operate at 110 volt or 220 volt (50/60 Hz). The primary is tapped for either high or low line operation.

MIT's plug-in compatible boards for the Altair 8800b now include: 4K static memory, 4K dynamic memory, 16K static memory, multi-port serial interface, multi-port parallel interface, audio cassette record interface, vectored interrupt, real time clock, PROM board, multiplexer, A/D converter, extender card, disc controller, and line printer interface.

Peripherals include the Altair Floppy Disc, Altair Line Printer, teletypewriters, and the soon-to-be announced Altair CRT terminal.

Introductory prices for the Altair 8800b are \$840 for a kit with complete assembly instructions, and \$1100 for an assembled unit. Complete documentation, membership in the Altair Users Club, subscription to "Computer Notes", access to the Altair Software Library, and a copy of Charles J. Sippl's Microcomputer Dictionary are included.

MDS CONSOLE/PRINTER

Intel Corp. has announced that an interactive display console and high-speed line printer are now available for the Intellec MDS Microcomputer Development System.

The MDS CRT unit can be used for local or remote communications. It includes a quiet detachable keyboard that is TTY compatible, RS232C communications interface, 6.5" x 8.4" CRT display, standard ASCII 64-character alphanumeric character generator, refresh memory, and power supplies.

The screen displays up to 2,000 5x7 dot characters on 25 lines of 80 characters. Cursor functions can be programmed to facilitate interactive communications with the development system. Transmission rates are 300, 1200, 2400 and 9600 baud. Odd, even, mark and space parity checks are provided.

Basic operating modes include: full duplex asynchronous communications; character by character transmission; control mode with an escape sequence for unique CRT functions; and erase to end of line, to end of memory, and to clear the screen.

The MDS-PRN Printer is also a self-contained unit. It prints 5x7-dot characters with an impact printing mechanism that provides an original and up to four carbon copies. For quieter operation, the motor turns on and off automatically as a standard feature.

Characters are received in parallel at rates to 75,000 CPS by a line buffer and printed at a rate of 55 LPS. Data is printed in 132-character lines at 165 CPS and in 80-character lines at 100 CPS.

The printer uses fanfold paper. Optional accessories include a metal stand and paper takeup tray.

The display console costs \$2,240 and the printer \$3,200 in quantities of 1 to 9. Delivery is in 30 days.

MICROCOMPUTER CONCEPTS, INC.

Custom hardware and software development for
PACE, IMP 16, SCAMP, 6800

10683 Cranks Rd.
Culver City, California

(213) 836-2271
90230

MEMORIES AND PERIPHERALS

MICROCOMPUTER POWER SUPPLY



A new line of microcomputer power supplies from Dynamic Instrument are designed for both wall plug-in and desk top configurations that keep the power supply external to the customer's product enclosure.

Model M12-250 and M9-100 power supplies are housed in wall plugs only slightly larger than a conventional wall plug. Model M5-1212 is a desk-top configuration.

Applications range from TV "Pong" games, familiarization kits, to microcomputers designed for the hobby market. All Dynamic supplies are designed for UL and CSA listing.

The most versatile power supply, Model No. M5-1212 produces simultaneous outputs of +5VDC at 500 mA, +12VDC at 150 mA, and -12VDC at 150mA. Line regulation is 3%, load regulation, 2%. Ripple and noise are 3.5 mV RMS, 10mV peak-to-peak. Temperature range is 0° to 40° C.

FRUGAL FLOPPY KIT

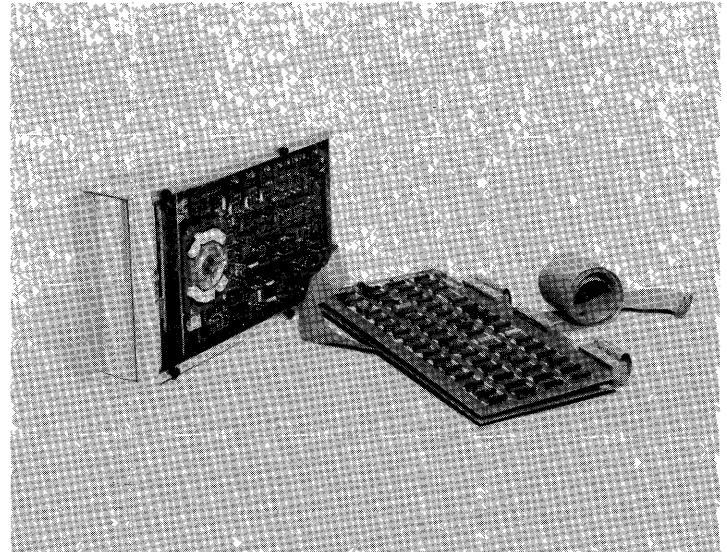
A low cost, high performance floppy disc sub-system, specifically designed for OEM or hobbyist microprocessor based systems, has been introduced by iCOM Inc.

Model FF-36, referred to as the Frugal Floppy™, employs the same elements as iCOM's field-proven FD360 system. However, by eliminating expensive cabinetry, power supply and system assembly labor, iCOM can offer the FF36 for \$996 in small OEM quantities.

Basically, the FF-36 contains a Model CF360 controller formatter, a floppy disc drive with daisy chain capability, and all

required connectors and cables. The unit can be supplied as a single (FF-36-1) or dual (FF-36-2) drive system.

iCOM's IBM compatible CF360 controller/formatter, provides auto track and sector seek/verify, full sector I/O buffers and auto CRC generation & checking. The controller can handle up to 4 drives with no changes in hardware or software.



Available as an option, is iCOM's powerful FDOS-II software package, designed for any 8080 or 6800 based system. The FDOS-II software, which features named variable length file create, open & close, multiple merge & delete can be used either in development systems or application packages.

FF-36-1 is priced at \$995 in small OEM quantities or \$1195 for a single unit. Delivery is two to three weeks.

SECOND CORE MEMORY

The second core memory designed for micro-computer application has been introduced by Ampex Corp. The MCM-4300 provides a non-volatile storage of 2048, 1024, 512, or 256 four-bit data words. Applicable to read/modify/write applications, the memory modules provide data access in 450 ns.

Each module includes timing and control, data and address registers, decoding and drive circuits and a TTL-negative-true interface.

The memory is priced at \$99.95 in OEM quantities.

Have you sent in your renewal to MICROCOMPUTER DIGEST? Be sure to do so today. You'll not want to miss a single issue.

PEOPLE, LITERATURE AND EVENTS

MINI/MICRO CONFERENCE

A current total of 22 sessions consisting of approximately 90 speakers has been announced by Robert J. Frankenberg (Hewlett-Packard), Conference Program Chairman. The 1976 Mini/Micro Computer Conference and Exposition will be held in Brooks Hall, San Francisco CA this October 19-21.

In addition to the scheduled sessions, a special "Paper Day" has been set for Thursday, October 21. The special session will consist of individual papers that are not necessarily related, and not included in the scheduled sessions.

Sessions of particular interest to micro-computer enthusiasts include:

- o LSI Memory---Addresses the effect semiconductor memory technology is having on user software design decisions and overall system costs.
- o Interfacing the Analog World---Discusses the challenges offered by both mini and microcomputers.
- o Microcomputer & Microcontroller Industrial Applications---Papers in this session describe how microcomputers can provide efficient solutions to unique, but low volume industrial problems.
- o Memory Peripherals---Addresses the advances of mass memory peripherals, issues which users face, and the influence on future system designs.
- o Military Microcomputer Applications---An all-day session on military applications of microcomputers focusing on the special nature of military requirements, standardization and procurement.
- o OEM peripherals in End-User Systems---Explores the trials and tribulations of using peripherals supplied by outside manufacturers from both the suppliers and user's viewpoint.
- o Microcomputers---A tutorial session designed to acquaint managers and neophyte designers with the microcomputer revolution.
- o Microcomputer Development Tools---An all-day, two-part session covering both hardware and software development tools.

- o Microcomputer Applications---Explores the problems involved in applying microcomputers to totally new application areas for computer technology.
- o The Computer Hobbyist---This session will address the needs, contributions made, and problems encountered by micro-computer hobbyists.
- o Microcomputer Selection Criteria---Guidelines for the potential user facing the decision of whether to build a special system from chips or use a packaged microcomputer.

The sessions will run from 9:30 A.M. until 4:00 P.M. throughout the three day conference.

Other members of the Conference Program Committee in addition to Frankenberg are Dr. L.A. Lotito (Varian Data/Machines), Phil Davey (Basic Four Corp.), Justin Rattner (Intel Corp.), and Manuel Lemas (Microcomputer Associates).

The conference is expected to draw 8-10,000 attendees to both the sessions and over 78 exhibits.

COMPCON 76 FALL

The 13th IEEE Computer Society International Conference, COMPCON 76 Fall, will be held at the Mayflower Hotel, Washington, D.C., Sept. 7-10. Two pre-conference tutorials, "Designing with Microprocessors: A "hands-on workshop" and Structured Programming," will be held September 7th at 9 a.m.

Advance registration fees for the conference are \$65 for non-members and \$50 for members. Advance registration fees for the tutorial on structured programming are \$65 for non-members and \$50 for members. Advance registration fees for Designing with Microprocessors: A "hands-on workshop" are \$75 for non-members and \$60 for members.

PEOPLE ON THE MOVE

DENNIS R. BARNHART has been appointed director of Consumer Product Systems for the Microelectronic Device Division of Rockwell International Corporation.

GEORGE J. FLYNN has been appointed manager of distribution at NEC Microcomputers Inc., based here. He will be responsible for the sale of NEC's LSI memories and uCOM-8 family of 8080A microprocessor chips, support chips, related software and development aids through the firm's 45 franchised distributors in North America.

EDUCATIONAugust

- 10 F8/Macrologic Seminar Free Seattle
WA Elmar Electronics
- 16-18 DISE Workshop on Microprocessors
and Education Ft. Collins CO
University of Maryland
- 16-20 SC/MP Applications \$395 Miami FL
National Semiconductor
- 17 F8 Microprocessor Seminars Free
Los Angeles CA Mostek Corp.
- 18 F8 Microprocessor Seminars Free
Tucson AZ Mostek Corp.
- 19 F8/Macrologic Seminar Free Palo
Alto CA Elmar Electronics
- 19 F8 Microprocessor Seminars Free
Albuquerque NM Mostek Corp.
- 23-27 Advanced Programming \$395 Miami
FL National Semiconductor
- 28-29 Personal Computing 76 Consumer Trade
Fair \$7.50 Atlantic City NJ

September

- 1 F8/Macrologic Seminar Free Denver
CO Elmar Electronics
- 2 F8 Microprocessors Seminar Free
Louisville KT Mostek Corp.
- 7-10 CompCon '76 Washington D.C. IEEE
- 12-17 Microprocessors & Minicomputers,
Interfacing & Applications
Blacksburg VA Virginia Polytechnic
& State University
- 13-17 Microprocessor Fundamentals \$395
Santa Clara CA National Semicon-
ductor
- 15 F8 Microprocessor Seminar Free
Kansas City MS Mostek Corp.
- 16 F8 Microprocessor Seminar Free
St. Louis MS Mostek Corp.
- 18-19 Hands-On Microcomputer Course
\$700 Palo Alto CA M&E Associates
- 20-24 SC/MP Applications \$395 Santa
Clara CA National Semiconductor
- 21-24 Western Electric Show & Convention
Los Angeles CA IEEE
- 25-26 Hands-On Microcomputer Course \$700
Palo Alto CA M&E Associates

- 27- 1 IMP/PACE Applications \$395 Santa
Clara CA National Semiconductor
- 27- 1 Microprocessor Fundamentals \$395
Miami FL National Semiconductor
- 28 2650 Microprocessor Design Free
Seattle WA Elmar Electronics
- 28 F8 Microprocessor Seminar Free
Baltimore MD Mostek Corp.
- 29 2650 Microprocessor Design Free
Denver CO Elmar Electronics
- 29 F8 Microprocessor Seminar Free
Richmond VA Mostek Corp.
- 30 F8 Microprocessor Seminar Free
Lynchburg VA Mostek Corp.
- 30 2650 Microprocessor Design Free
Palo Alto CA Elmar Electronics

SPONSORING ORGANIZATIONS AND CONTACTS:

Elmar Electronics, 2288 Charleston Rd.
Mt. View, CA 94040 (415) 961-3611

IEEE, 345 East 47th Street, New York, NY
10017

M&E Associates, 10439 N. Stelling Rd.,
Cupertino, CA 95014

Mostek Corporation, 1215 W. Crosby Rd.,
Carrollton, TX 75006, (214) 242-0444

National Semiconductor Corp., 2900 Semi-
conductor Dr., Santa Clara, CA 95051
(408) 732-5000

University of Maryland, Dept. of Computer
Science, College Park, MD 20742 ATTN: Dr.
Yaohan Chu, Program Chairman

Virginia Polytechnic Institute and State
University, Contact: Harold Walsh, American
Chemical Society, 1155 16th Street N.W.,
Washington D.C. 20036

**FINANCIAL
EARNINGS**

<u>Adv. Memory Systems</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
June 25			
Share Earning	.30	.26	15.4%
Earning	787K	665K	18.3%
Sales	9712K	8020K	21.1%
9 Mths			
Share Earning	1.27	.56	126.8%
Earning	3,304K	1,410K	134.3%
Sales	29,268K	23,204K	26.1%

<u>Adv. Micro Devices</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
June 27			
Share Earning	.31	.06	416.7%
Earning	849K	160K	430.6%
Sales	13,196K	7,039K	87.5%
<u>Amer. Microsystems</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
July 3			
Share Earning	-----	.10	-----
Earning	-5,298K	223K	-2,475.8%
Sales	17,341K	16,157K	7.3%
6 Mths			
Share Earning	-----	.19	-----
Earning	-9,149K	415K	-2,304.6%
Sales	32,035K	31,359K	2.2%
<u>Electronic Arrays</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
June 30			
Share Earning	.08	.03	166.7%
Earning	145K	61K	137.7%
Sales	5,049K	3,717K	35.8%
<u>Fairchild</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
July 4			
Share Earning	.52	.60	-13.3%
Earning	2,858K	3,287K	-13.1%
Sales	113,287K	70,868K	59.9%
6 Mths			
Share Earning	.56	1.67	-66.5%
Earning	3,055K	9,191K	-66.8%
Sales	209,903K	142,596K	47.2%
<u>Gen. Instruments</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
May 30			
Share Earning	.39	.10	290%
Earning	3,216,408	1,091,101	194.8%
Sales	107,198,283	86,449,599	24.0%
<u>Intersil Inc.</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
July 3			
Share Earning	-----	.08	-----
Earning	-704K	239K	-394.6%
Sales	9,095K	6,770K	34.3%
6 Mths			
Share Earning	-----	-----	-----
Earning	-649K	-451K	-243.9%
Sales	16,633K	12,063K	37.9%
<u>Mostek Corp.</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
July 2			
Share Earning	.21	-----	-----
Earning	901,249K	-981,333K	191.8%
Sales	13,493,818	9,036,250	49.3%

<u>Motorola Inc.</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
6 Mths			
Share Earning	.35	-----	-----
Earning	1,481,539	639,829	131.6%
Sales	26,667,549	23,999,145	11.1%

<u>Motorola Inc.</u>	<u>1976</u>	<u>1975</u>	<u>%</u>
June 30			
Share Earning	.78	.42	85.7
Earning	22,174K	11,730K	89.0%
Sales	383,545K	344,844K	11.2%
6 Mths			
Share Earning	1.38	.69	98%
Earning	39,072K	19,360K	101.8%
Sales	730,541K	648,725K	12.6%

COMPANY ADDRESSES FOR THIS ISSUE

Advanced Micro Devices, Inc., 901 Thompson Place, Sunnyvale CA, 94086 (408) 732-2400

American Microsystems Inc., 3800 Homestead Road, Santa Clara, CA 95051, (408) 246-0330

Ampex Corp., Box 33, Marina del Rey, CA 90291, (213) 821-8933

Applied Computer Systems, 248 Sobrante Way, Sunnyvale, CA 94086, (408) 733-3733

Dynamic Instrument Corp., 933 L.I. Motor Parkway, Hauppauge, NY 11787

Fairchild Systems Technology Div., 1725 Technology Dr., San Jose, CA 95110, (415) 962-3047

iCOM, 6741 Variel Avenue, Canoga Park, CA 91303, (213) 348-1391

Intel Corporation, 3065 Bowers Ave., Santa Clara, CA 95051, (408) 246-7501

International Microsystems, Inc., 122 Hutton Street, Gaithersburg, MD 20760, (301) 840-1078

Intersil, 10900 N. Tantau, Cupertino, CA 95014, (408) 257-5450

Microcomputer Associates Inc., 2589 Scott Blvd., Santa Clara, CA 95050, (408) 247-8940

Microlog, P.O. Box 116, Gullford, CT 06437

Mits Inc., 6328 Linn N.E., Albuquerque, NM 87108, (505) 265-7553

MOS Technology, Inc., Valley Forge Corporate Center, 950 Rittenhouse Road, Norristown, PA 19401 (215) 666-7950

Motorola Semiconductor, P.O. Box 2953, Phoenix, AZ 85062, (602) 244-4826

MRS, P.O. Box 1220, Hawthorne, CA 90250

Tranti Systems Inc., 1 Cheimsford Rd., North Billerica, MA 01862, (617) 667-8321



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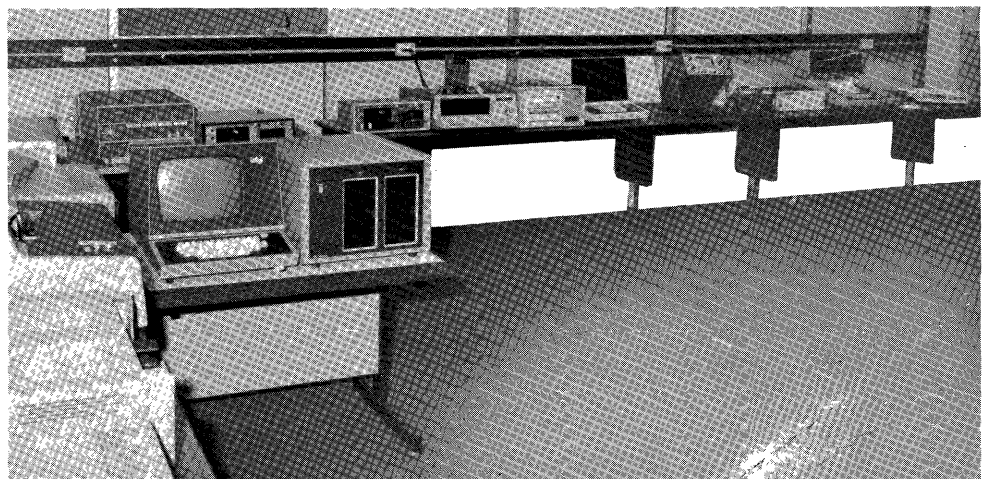
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Mini/Micro

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October 19-20-21, 1976

Brooks Hall/Civic Auditorium, San Francisco

A Major Computer Conference in a Major Computer Market

THE CONFERENCE PROGRAM:

Minicomputers and microcomputers--low cost and versatile--are putting convenient and effective computer power at our fingertips in a vast array of products that will affect every facet of our lives, making minis and micros the fastest growing segment of today's and tomorrow's data processing industry. Designed into systems ranging from traffic lights and numerical control, to paint mixers and kitchen appliances, they offer a new versatility and striking competitive advantages in the end products. We'll examine these aspects--and much more--in the conference rooms at the 1976 MINI/MICRO COMPUTER CONFERENCE & EXPOSITION.

Approximately twenty sessions consisting of eighty papers covering both application and design topics are planned.

Some session titles (and organizers) to date would include:

1. Distributed Processing with Minis.
(Dan Zatyko - General Automation)
2. Military Applications for Microcomputers.
(Joe Genna - Delco Electronics)
3. The Effect of LSI Technology on Memory Systems.
(Dan Bowers - Bowers Engineering)
4. Interfacing the Analog World to Minis/Micros.
(Larry Brown² - Caltex)
5. Integrating OEM Peripherals into Computer Systems for End-use.
(Martin Himmelfarb - Digital Design)
6. Microcomputer Software and Hardware Development Aids.
(Dave Millet - NEC Microcomputers)

7. History to Current Development of Memory Peripherals for Mini and Micro Computers.
(Bill Frank - Cal Comp)

8. The Make or Buy Decision.

(Robert Van Naarden - DEC)

9. Microcomputer Applications; Logic Replacement; Minicomputer Replacement, New Products.

(Jerry Ogdin - Microcomputer Techniques)

10. Industrial Applications for Microcomputers and Microcontrollers.

(Ian Ebel - Control Logic)

- 11.-20. Being organized.

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The exposition floor space in both the Civic Auditorium and Brooks Hall will feature a full spectrum of product displays by leading computer suppliers. Minicomputer and microcomputer systems and sub-systems will be available for "hands-on" demonstration, along with a wide array of computer peripheral devices, software aids and information. This 1976 MINI/MICRO COMPUTER EXPOSITION is expected to be the largest such event in the greater San Francisco area in almost ten years.

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To: MINI/MICRO COMPUTER CONFERENCE AND EXPOSITION
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