New Products

Avionics Computer

Honeywell has developed the HDC-601, a general purpose avionics computer, which utilizes plated-wire memory and is software and I/O compatible with the commercial and ruggedized versions of the H-316 and DDP-516.

Initial applications include delivery to the Honeywell Systems and Research Center in Minneapolis for use in an Air Force reconnaissance and target locator program, and with the Florida division's advanced development program of a Gimbaled Electrostatic Aircraft Navigation System (GEANS) for the Air Force. The HDC-601 is designed to meet a wide variety of manned aircraft assignments such as general-purpose aircraft, avionics navigation, fire control, reconnaissance, and electronic countermeasure applications.

The 601 has add, multiply and divide times of 2.0, 9.0 and 19.0 microseconds, respectively. It offers memory options of non-destructive-read-out (NDRO) Honeywell plated wire or standard military core. Processor and I/O logic construction is of TTL discrete and MSI circuits on modular plug-in boards that are easily accessible for removal or replacement.

Approximately 800 Model 516's are in the military and government inventory, thus enabling immediate development of software for the HDC-601. All DDP-516 software is available and usable on the HDC-601.

CIRCLE 17 ON READER SERVICE CARD

Communications Processing Systems

Computer Communications, Inc. has announced the CC-70 Computer Communicator, the first member of a new family of communications processing systems specifically designed and built for communications applications. The CC-70 is a "front-end" processing system which directs interfaces, multiplexes and controls multiple communications lines for a central computer.

The CC-70 is modular in its line handling capability. In its minimal configuration it will handle up to 120 full-duplex communications lines. With expansion modules, this can be increased to a maximum of 960 full-duplex lines. The CC-70 can average a throughput of 10,000 characters per second and can accommodate peak loadings of 20,000 characters per second. Polling of terminals on multi-drop lines and auto-answer for terminals communicating through the dial network is provided. Complete operating software for all configurations of CCI terminals and ASCII teletype units is provided with the CC-70. CCI will tailor the operating software to accommodate other terminals on a special bid basis. A macro-assembler which executes on an IBM System/360, a linking-loader, and other utility programs are provided with the CC-70. Standard CCI channel interfaces to the IBM System/360 and 1130 computers, the XDS Sigma series, and the CDC 3000 and 6000 series are available for attaching the CC-70 to a central computer. Deliveries of the CC-70 are scheduled to begin in September 1970.

CIRCLE 14 ON READER SERVICE CARD
Computer Terminal

Electronic Arrays, Inc. Systems Division recently demonstrated their CT-100 Computer Terminal. This unit provides capabilities for entry and printout of fixed and variable alphanumeric data and/or query/responses with simultaneous printout of the alphanumeric data. The terminal communicates with the distant computer in ASCII code and format and is applicable to all computer systems designed to service remote teletypewriters.

The unit contains a 12 pushbutton keyboard, a reader for plastic punched cards, a strip printer, and an acoustic coupler. Optional devices include a 54-key block alphanumeric keyboard, a 55-key full ASCII keyboard, and a cassette tape recorder.

CIRCLE 16 ONREADERSERVICE CARD

Data Communications System

Memorex Corporation has announced the 1200 Communications System, specifically designed to attach to the IBM System 360 and 370. The 1200 Communications System consists of the new 1270 Terminal Control Unit and the 1240 Communication Terminal.

The 1240 Terminal is a high speed printing terminal, which operates at up to 60 characters-per-second. The terminal features selectable speeds of 10, 15, 30, or 60 characters per second, 94 printable graphics, 120-character writing line; removable tractor feed, which provides a full range of forms handling capability and an innovative printing mechanism. The 1270 Terminal Control Unit is a modularly expandable device, which is plug-for-plug compatible with the IBM 2701, 2702 and 2703 transmission control units and completely compatible with standard IBM communications software. The Memorex 1270 offers higher communications speed and other performance improvements over IBM communications devices. Deliveries of the 1200 Systems are scheduled to begin during the first quarter of 1971.

CIRCLE 11 ONREADERSERVICE CARD

Data Multiplexer

Computer Transmission Corporation has announced a new product line—MULTITRAN distribution systems. The main building block of these systems is the MULTITRAN, a device designed to eliminate the need for large numbers of low-speed data sets and lines in local or inter-city data distribution. MULTITRAN interfaces directly with the telephone company's 300 series high-speed data sets, which operate at 19.2, 40.8, 50 or 230.4 kilobits per second and other higher speeds.

Several CTC technological innovations have given MULTITRAN the unique capability of intermixing a wide variety of high and low speed terminal equipments. Even small computers can be multiplexed and put on-line with the main CPU. MULTITRAN therefore eliminates the present requirement for two data sets and one line per terminal. All the terminals in a remote installation can be multiplexed together and put on-line over a single communication link, thus drastically reducing the number of necessary data sets and lines.

CIRCLE 15 ONREADERSERVICE CARD

Digital Printer

The Friden Division of The Singer Company is now making available a low-cost digital printer. The 147 Digital Printer has been reliability-tested through use as a sub-system in the Division's own Electronic Printing Calculators. The printer now is available on an OEM basis for data logging, automation monitoring, point of sale terminals, and other applications requiring permanently printed records.

The machine prints 46 characters per second with a standard capacity of 20 characters per line. This capacity can be increased with optional modifications to 28 characters per line. A 30-character wheel is presently available, and a 40-character wheel will soon be offered. The unit prints 1-1/2 standard 20-character lines per second. All required driver circuits are contained on one printed circuit board attached to the printer. The unit weighs 11 pounds, is 11-3/4 inches wide, 7-5/8 inches high, and 8-3/4 inches deep. Standard units are individually priced at $450, and quantity OEM discounts are available. Delivery is immediate.

CIRCLE 12 ONREADERSERVICE CARD

Data Transmission Devices

Large Corporation has announced twelve new data transmission devices for industrial use in process and supervisory control systems, and industrial protective security with advanced voice-grade telemetry and remote control equipment. The devices sample 16 data inputs and feature high reliability and low cost through the use of MOS/LSI technology. The DATA COMMUNICATOR devices are designed specifically for data acquisition, status monitoring, and supervisory control. They can be used with both analog and digital data systems, manual and computer-based control systems, and addressable remote controls and data displays, as well as many other industrial applications.

Special features, available at no extra cost,
include double scan comparison, flashing signals, input memory, parity checking, time slot operation, and operation in all standard communications modes including FSK, AM, and DC; with EIA RS-232-B and universal input/output interfaces. They operate in full duplex, half duplex, or simplex configurations, and party line operation is possible with up to 64 stations. The DATA COMMUNI-

CATOR modules feature a new advanced-grade digital code. The LARSE CODE com-

bines the best features of synchronous and stop-start codes. This efficient code has a high ratio of data bits to the total number of bits transmitted and provides high data reliability. All models will soon be available off the shelf from Larse Corporation. Cost will be $300 to $700 depending upon the model, with substantial OEM discounts available.

**CIRCLE 7 ON READER SERVICE CARD**

**LARGE-SCALE COMPUTER**

Computer Operations Inc. has announced the first of a new generation of large-scale computer systems, designated the GEMINI Generation. GEMINI Systems are multipro-

cessing systems which incorporate a single, large, homogeneous memory subsystem which is shared by three to six independent processors. Communication, peripheral and central processors are all duplicated in the maximum configuration. While physical memory capacity is presently limited to 16 million bytes, 30-bit byte addressing allows user programs and microprograms to directly reference more than one billion bytes of virtual memory.

Hardware is constructed from MSI and LSI circuits together with laminated multilayer printed circuit boards. Although this technol-

ogy has been utilized in aerospace computer systems developed in the last several years, GEMINI Systems are the first large scale commercial systems to utilize it throughout. At speeds exceeding 2 million instructions per second, GEMINI central processors em-

ploy independent functional units operating in a "two-dimensional pipeline." Memory performance is achieved with the aid of a high speed LSI buffer which can deliver 64 bytes every 160 nanoseconds.

Software includes an Operational Control Program (OCP) which combines the functions of supervisor, data base management, communications, job control language, text editor, compiler, assembler, loader and debugger in one large bundle. One of the more interesting functions performed by the OCP is the realtime multiplexing of System/360 program execution with GEMINI program execution in a manner transparent to both Sys-

tern/360 and GEMINI users. Presently all standard IBM System/360 peripheral devices are supported by the OCP and can be utilized in GEMINI systems. Initial shipments of GEMI-

NI systems will begin in the fourth quarter of 1971.

**CIRCLE 1 ON READER SERVICE CARD**

**Mini-Computer Tape Systems**

The Peripheral Equipment Division of DATUM, Inc. has announced availability of a series of Magnetic Tape Input/Output Sys-

tems. Designated Model 5091, the series comprises complete systems consisting of a controller, as many as four, nine-channel, 800 bpi magnetic tape recorders, intercon-

necting cables and connectors. Designed for use with a variety of mini and mid-com-

puters the Model 5091 system features include: IBM/360-compatible nine-channel format, read-after-write parity check, gener-

ation of VRC, LRC and CRC, check of VRC and LRC, and compatibility with computer manufactur-

ers' software.

In most cases, seven-channel tape units with 800/556, 800/200 or 556/200 bpi data densities can be substituted optionally. Stan-

dard Model 5091 systems use from one to four Peripheral Equipment Corporation (PEC) nine-channel, 800 bpi tape recorders. Standard tape speed is 25 ips, which pro-

duces an input/output rate of 20,000 char-


acters per second (800 bpi), with higher speed options available. DATUM input/output systems are currently available for the more common model computers, such as the Hewlett-Packard (HP 2114, HP 2115 and HP 2116), Digital Equipment Corporation (PDP-8, PDP-8/L, PDP-8/I, PDP-9, PDP-9/L, PDP-15), Variant Data Machines (6202), IBM (1130), Honeywell (124A, 316, 516), Xerox Data Systems (CE 16, CF 16), Microsystems (810), and Computer Automation (816).

**CIRCLE 8 ON READER SERVICE CARD**

**MODULAR MILITARY COMPUTER**

Hughes Aircraft Company has developed an advanced modular computer, designed to meet the requirements of military com-

mand and control applications. The com-

puter, designated H4400, features new levels of performance and maintainability. Modular construction allows it to expand economically with the requirements of individ-

ual systems, eliminating the need to re-

place computers to satisfy growth require-

ments. The expansion is accomplished by including up to eight processor modules, and a maximum of 16 memory modules per com-

puter. Such a system is capable of more than four million operations per second, and can store more than 8.5 million bits of informa-

tion. Further flexibility is achieved by exten-

sive performance options such as floating point arithmetic within each module.

The H4400 incorporates features which are becoming essential in military systems. These include: a self-contained diagnostic system to permit the computer to locate au-

tomatically a fault within itself and isolate it down to a single circuit card; automatic reas-

signment of a malfunctioning module's tasks to another module of the same type; exten-

sive use of medium and large scale inte-

grated circuits; and reduced program execu-

tion time by means of hardware-implemented special instructions which can replace high usage subroutines.

Module types include an arithmetic control processor, input-output processor, and a memory module. Versatility of the H4400 also is enhanced by its ability to incorporate spe-

cial purpose processor modules as an inte-

gral part of the computer. These are tailored to meet unique needs of a specific system, and have direct access to memory.

The instructions of the arithmetic control processor are controlled by a micro-

programmed read-only memory. A compre-

hensive software package also has been de-

veloped along with the computer's hardware. Most notable are a multiprocessor operating system and meta assembler which simplify programming for any H4400 configuration.

**CIRCLE 2 ON READER SERVICE CARD**

**MOS—LSI Memory**

Advanced Memory Systems has demonstrated a working, available-for-delivery MOS—LSI semiconductor memory designed for plug-in compatibility with IBM’s System/360 series, but adaptable to any large computer. The SSU (Semiconductor Storage Unit) bridges the price/performance gap between magnetic core storage and electromechanical rotating storage with a data transfer rate of up to 16-million bytes per second, and a storage capacity of up to 128-million bytes per System/360 selector channel.

The low cost of the system (less than 1¢ per bit in larger versions) is due to the fact that the SSU is built out of the lowest-cost form of semiconductor memory—MOS—LSI shift registers. Additional cost savings are realized because MOS memory requires an absolute minimum of electronic support. Another significant advantage over electromechanical storage is the absence of record gaps. All SSU storage is usable. For records in the 500-byte area, as much as 45% of a high-speed drum’s capacity is consumed in overhead. Because this overhead is pri-

marily record gaps, the SSU cuts the cost/ usable bit in half. Two other advantages of the SSU are reliability and low power con-

sumption.

Because the SSU is 40 times faster than drum it helps solve the CPU “wait” state problem—the amount of time a 360’s CPU sits idle while it waits for more data. As a result of increased processor utilization, users will find that they can run more jobs simultaneously. Timeshare users will be able to add more terminals to existing 360 timeshare systems or improve the response time of present terminals.

Smaller versions have been developed to satisfy requirements for smaller computing systems that do not need the large storage capacity of the SSU. Designated the Semi-

conductor Storage Unit Module (SSU/m), these auxiliary storage devices can upgrade existing systems and augment planned sys-

tems and are available in 1, 4, 1/2, 1 and 2 megabit capacities.

**CIRCLE 3 ON READER SERVICE CARD**
Multiprocessor Communications Adapter

Data General Corporation has announced a Multiprocessor Communications Adapter for its Nova and Supernova minicomputers. The new option provides a simple, economical means of connecting as many as 15 Nova and Supernova computers to form a multiprocessor system. The Multiprocessor Communications Adapter is mounted on a 15-inch square printed circuit board and plugs directly into one of the seven standard subassembly slots in the Nova or Supernova chassis. The price of a single Multiprocessor Communications Adapter is $2100.

The Multiprocessor Adapter permits blocks of data to be transferred from one computer to another through the computer's data channel facilities. One adapter is connected to the I/O bus of each computer, and adapters are connected via a common communications bus. Each adapter includes an independent receiver and transmitter. A processor may establish a logical link between its adapter transmitter and any receiver it designates. The maximum bandwidth of the bus is 500KHz (1 million bits per second). Typical data rates for a single link are 100 KHz for Nova, 140 KHz for Supernova, and 250 KHz for Supernova with a high speed data channel option.

CIRCLE 5 ON READER SERVICE CARD

New Disc Drives

Varian Data Machines has expanded the family of rotating memories for its 620 computer product line with four additional units. The new units, with storage capacities ranging from 30,000 to 585,000 words, significantly lower the costs of automated data processing and provide economical bulk data storage for the 620 family computers. Any of the discs coupled with a 620/1 or 620/1 computer are complemented with Varian's disc operating system MOS (Master Operating System), to bring the features of a large disc system with batch processing to the small system user. All four units will be available with third quarter 1970 computer deliveries.

The Model 38A, fixed head disc, priced at $6,800, includes controller and provides storage expansion of 30,000 words. The new disc drive gives rapid access with its head-pair-track construction and transfers data at a 73.3 KHz word rate in an automatic block transfer mode using a 620 Direct Memory Access. The 16 track device has a 1,775 r.p.m. spindle rotation for an average latency time of 17 milliseconds. It utilizes flying head construction with electronic switching for high reliability. Increased capacities to 61,000 and 123,000 words are provided by Models 38B and 38C, respectively. Access time and transfer rates are the same as those of Model 38A. There are 32 track and 64 track versions, which are priced at $7,600 and $10,000 respectively. A higher capacity model is available using a disk pack compatible with the IBM 2315. Both units feature file protection.

CIRCLE 9 ON READER SERVICE CARD

Plated-Wire Memories

Memory Systems, Inc. has introduced the System/300, a generic family of very high speed plated wire memories, designed and configured for control and main memory applications. The memories can accommodate ruggedized and militarized environments by the replacement of the semiconductors with industrial or military equivalent parts and appropriate repackaging.

A typical small-computer configuration consists of two 12" x 15" circuit boards containing 4K 20-bit words. The memory is NDRO, has a 300 nanosecond read or write cycle, and consumes less than 40 watts. The memory has standard TTL interface logic and does not require special interfaces or power. Prices are less than 5¢/bit for OEM quantities and deliveries are currently 60 days ARO for this configuration.

CIRCLE 4 ON READER SERVICE CARD

Read-Only Memory

Memory Technology Inc. has announced a new, 90 nanosecond access time read-only memory system with capacities up to 10,240 bits and word lengths up to 80 bits per word. It features a non-volatile form of storage that is mechanically alterable. Individual bits, words, or the entire memory contents can be modified.

The basic NANOROM 90 consists of a complete memory system: decoding, driving, storage, sensing, timing and control. All packaged on a single printed circuit board assembly. Additionally, options are available for data, register, word lengths of 40, 20, or 10 bits per word, line driver outputs, and complement address inputs.

CIRCLE 10 ON READER SERVICE CARD

Universal Disc Controller

Magnafile, Inc. has announced the availability of its Universal Disc Controller. The universal controller is designed especially for the mini and small computer in conjunction with the Magnafile line of disc memory systems.

The Magnafile Universal Disc Controller may be connected directly to the computer and is capable of handling up to four disc memory systems. The controller allows existing computer installations to extend their data base thus providing greater operating flexibility and memory systems ranging in size from 250,000 to 10,000,000 bits. Delivery of the new controller is within 60 days after receipt of order and is priced at under $4,000.

CIRCLE 13 ON READER SERVICE CARD

User Wired ROMS

DATAPAC, Inc. has announced a Read Only Memory (ROM) that can be wired and altered by designers or users of minicomputers and custom peripheral controllers. Each bit consists of a small ferrite-core transformer. Drive lines of small gauge wires run through some of the cores and around others. Words are constructed as desired by the pattern in which the drive lines are programmed. Sense windings are wrapped on the base of the "U-Core" array. When a current pulse is sent through any drive line, a signal pulse is generated in each sense winding associate with the transformer through which that drive line passes. No signal is generated by those transformers bypassed by that drive line. Signal pulses translate as "1's" in binary code, while non-pluses register as "0's". When a word change is desired, it is easily accomplished by clipping a drive line at its terminals and weaving in a new drive line according to the desired word. The entire operation takes only minutes, and it is easily done in the field. A simple little wire dispenser is used to route the new drive line through and around the "U-Core" transformers.

CIRCLE 8 ON READER SERVICE CARD