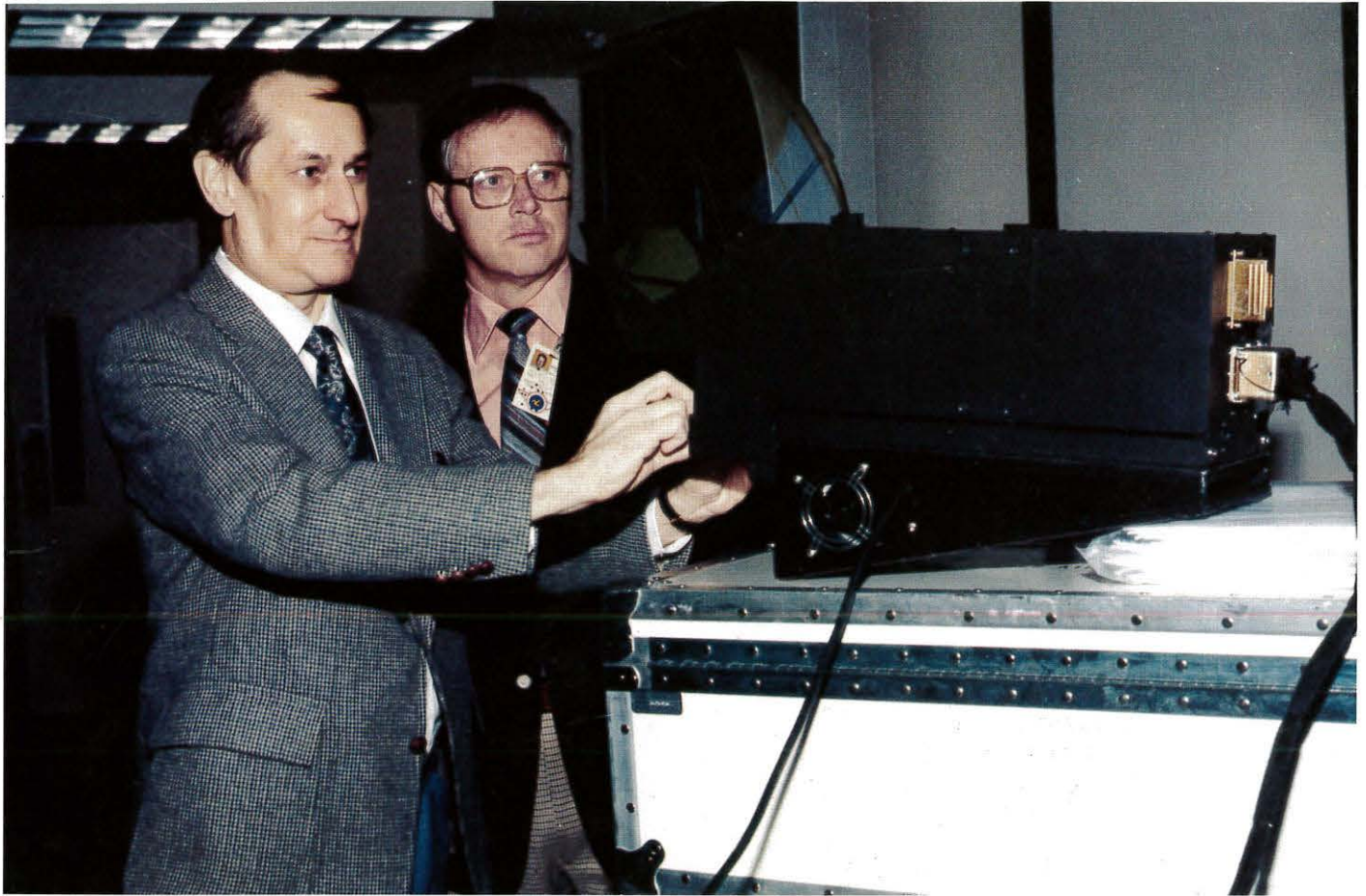


Information Display

The Official Journal of the Society For Information Display

MAY, 1982



Making Navy pilots' jobs easier is the function of this Head-Up Display (HUD), a newly designed unit incorporating diffractive optics rather than the conventional refractive optical system used in other HUDs.

Shown here is George Tsaparas of the U.S. Naval Air Systems Command adjusting the controls on this new HUD, while SID Northeast Director Bill Mulley of the Naval Air Development Center, Warminster, PA, looks on. Inside on pages 3 and 4 is a brief discussion of the

advantages of the diffractive optic HUD, with illustrations indicating what a fighter pilot sees when he looks at targets through such a display.

The new wide-angle display (30° horizontal by 22° vertical) was developed by Hughes Aircraft Company under the management of Marty Weirauch for the Navy's F-18 aircraft. With this HUD being integrated into the McDonnell Douglas F-18 simulator in St. Louis, pilots and engineers are checking it out.

FRONT COVER MATERIAL WELCOMED: Every month **Information Display** usually features one or more active members of SID and the products with which they are most closely associated. Please send a glossy print and appropriate captions so that you, too, can be on our front cover. Send your material to Ted Lucas, Editor, P.O. Box 852, Cedar Glen, CA 92321, or to our National Office Manager, Bettye Burdett, for Information Display, 654 North Sepulveda Blvd., Los Angeles, CA 90049. Next deadline for material from you is August 10 for the September/October issue. If you miss that, try for the November issue. **NOTE:** We also welcome feature articles on interesting projects.

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NADC — Advanced Integrated Display System (AIDS)/F-18 Diffractive Optic Head-Up Display

by William Mulley, Project Director

Naval Air Development Center
Aircraft and Crew Systems Technology
Directorate Warminster, PA 18974

In a military aircraft such as the F-18, the Head-Up Display (HUD) is an electro-optical instrument that displays both flight and weapon delivery information to the operator of a high-performance aircraft. The image is superimposed on the outside world and does not require refocusing to see both at the same time. This information is used in modes such as takeoff, navigation, weapons delivery, terrain following, approach, and landing.

In the early days of the development of this device, the Naval Air Development Center (NADC) played a significant role. Considerable effort in HUD displays during the late 50s and early 60s was directed by the Airborne Instrumentation Laboratory (AIL) of the Center under the capable direction of the late Louis Guarino. This program revolutionized the entire concept of cockpit instrumentation. Its thrust was to contend with the growing pilot workload and to simplify the presentation of increased information.

The early use of the HUD was for weapon delivery. This was typified by the Naval A-7, A-4 and F-14. Today on the F-18 and AV-8B the HUD is designated the primary flight display and if the HUD is not operational and performing normally, these aircraft are grounded.

In commercial aviation, the HUD is operational in new Douglas DC-9-80 stretched aircraft, and is being considered in Boeing 767 aircraft and other new airliners. HUDs are also being retrofitted into existing 727, 737, and 707 cockpits. The NASA shuttle is also considering the addition of a HUD.

A milestone was achieved during late 1981 in the development of a diffractive optics HUD by Hughes Aircraft under the sponsorship of the Naval Air Systems Command (NASC)/NADC AIDS program. The improved capability of the new diffractive HUD over the conventional refractive type presently in aircraft use are:

1. Increased field of view (FOV)
2. Improved HUD viewability
3. More reliable operation
4. Lower life cycle cost

In the realm of display performance, a diffractive HUD permits the following:

1. Extended off boresight coverage (30°H x 22°V) enhancing acquisition, target designation, and attack and landing modes
2. Simultaneous air-to-air and air-to-ground coverage without switching or adjustment
3. Reduced pilot's head movements
4. Reduced display clutter
5. Additional peripheral symbology
6. Minimum visual obstruction in the central field
7. Higher combiner see-through (85%)
8. Reduced maintenance requirements as a result of anticipated longer CRT life and lower HVPS failures

The HUD is currently being evaluated in the Manual Air Combat Simulator (MACS), McDonnell Douglas, St. Louis. It is planned that the HUD will be installed in an F/A-18 aircraft for preliminary flight test during 1982.

Subsequently, the HUD will be returned to the Crew Station Evaluation Facility (CREST) at NADC for a Human Factors evaluation to develop advanced HUD concepts.

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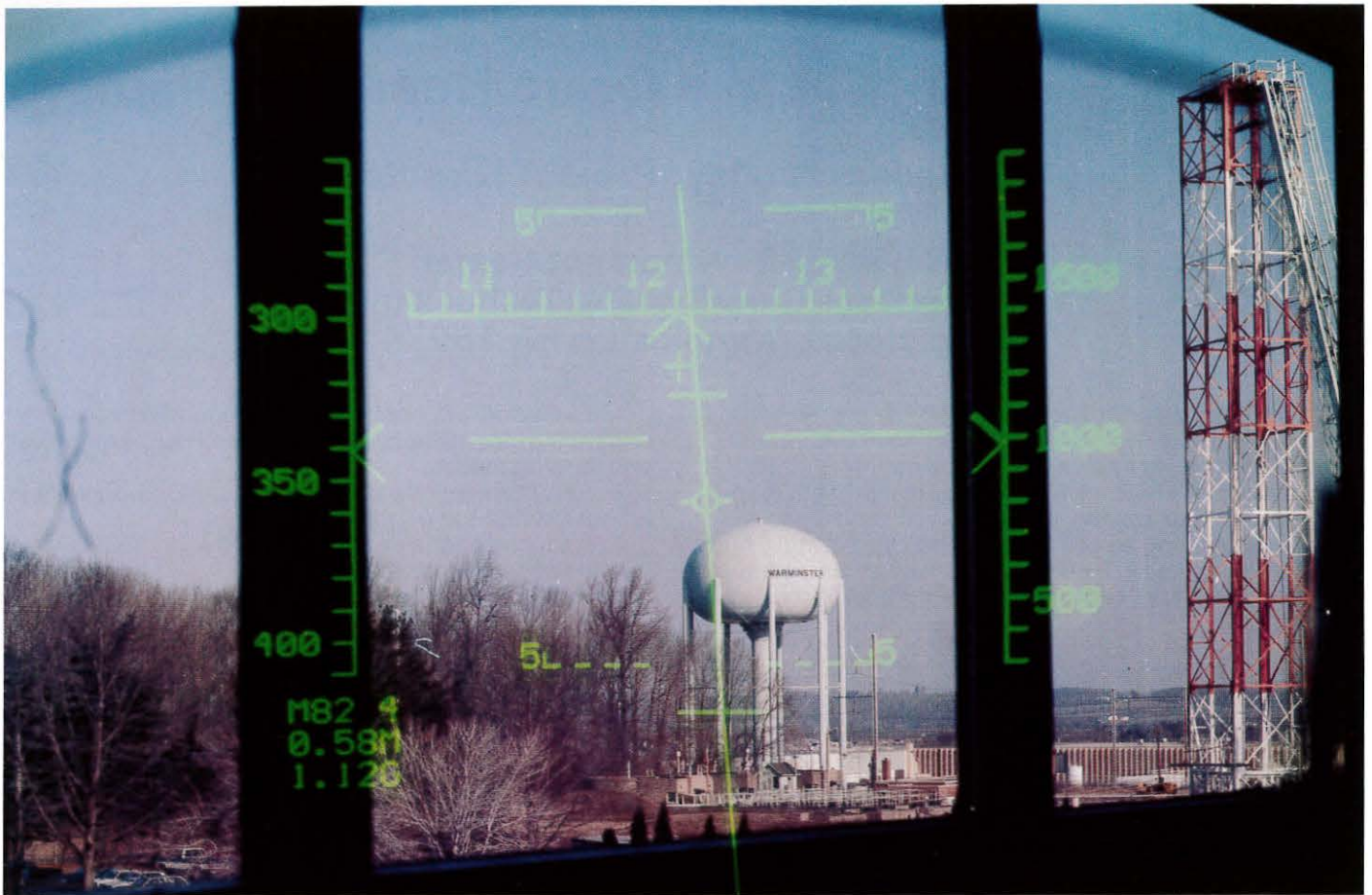


Figure 1. Air-to-ground weapons delivery mode stroke symbology reflecting from the diffractive combiner.

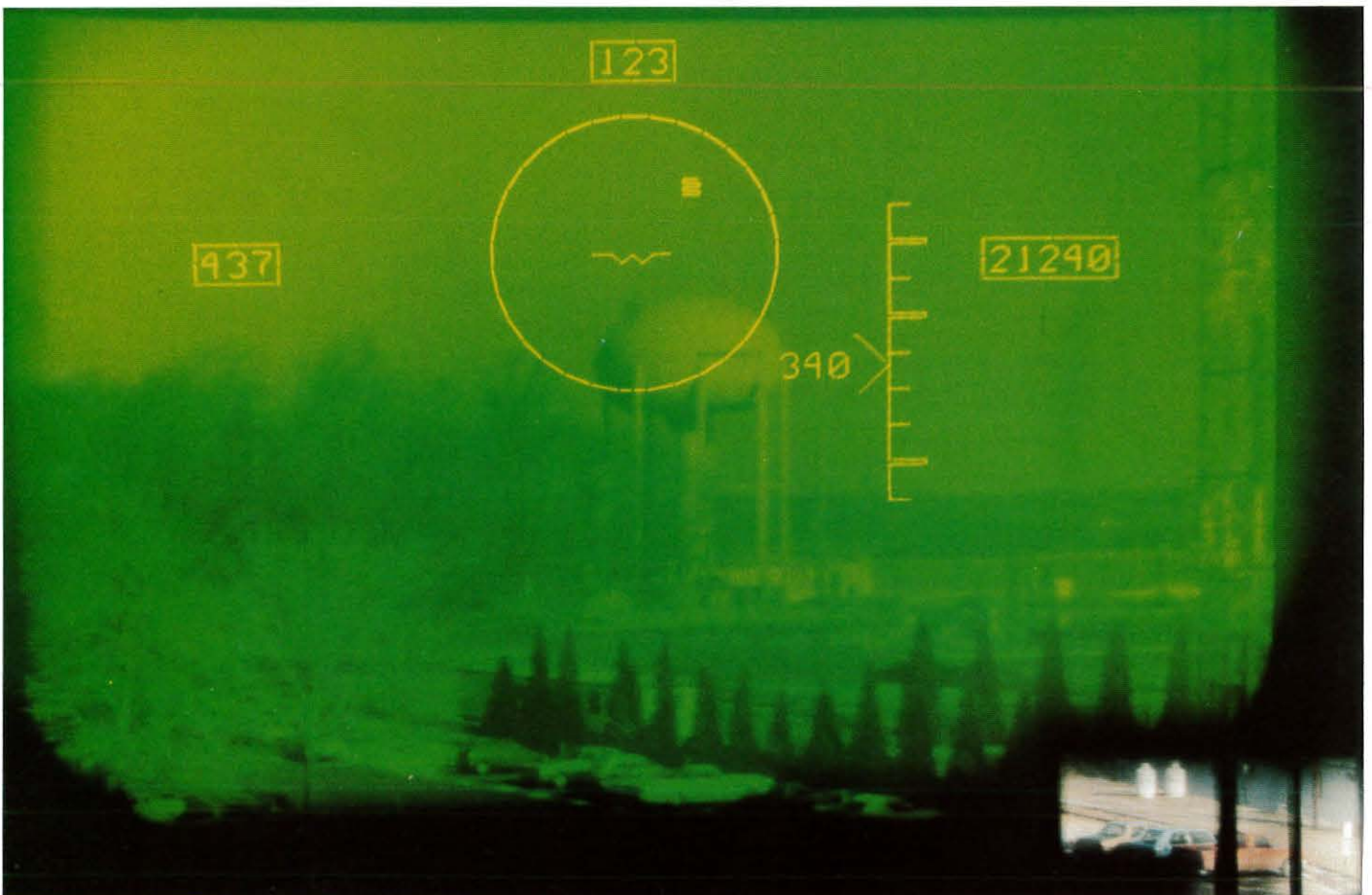


Figure 2. Air-to-air weapons delivery mode stroke symbology superimposed over 875 TV line raster.



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KAISER ELECTRONICS

New CP/M-Based Desktop Computer

Digital Microsystems, Oakland, CA, recently introduced a low-cost CP/M-based desktop computer that functions as a stand-alone system or can be integrated into the company's HiNet™ local area network.

Called "the Fox", the new DSC-3/F system brings together in one portable, 30-pound unit the DSC-3 (Z-80A) processor, a nine-inch-diagonal CRT, two 5¼-inch single- or double-density, double-sided floppies (formatted capacity of 307.2 KB/drive), the network interface, four RS-232C serial ports, and two eight-bit bidirectional parallel ports with status lines. The system, which provides 64 KB of RAM and 1 KB of ROM, has an access speed of 250 nsec, with no wait states.

To help users put the Fox to immediate work, DMS includes application software for payroll, general ledger, accounts receivable and accounts payable with the system. DMS also offers Wordstar or Select for word processing, Selector V or dBMS II for data base management, and Microplan for financial budgets and finance. Programming languages include BASIC, COBOL, PL/1, FORTRAN, and PASCAL.

According to Patricia Torode, vice president of marketing at DMS, "The Fox provides business, scientific, and industrial users with an easy-to-use, low-cost, single-user computer. When a multi-user system is required, the Fox can serve as a work station or the master station in our HiNet local area network."

For ease of use, the Fox provides 12 programmable function keys which will allow users to reduce repetitive word processing sequences or log-in and password procedures to single keystrokes. Programmable CRT control codes ensure compatibility with software drivers a user may already have, thus allowing the Fox to emulate any other terminal.



The Fox, from Digital Microsystems, can function as a stand-alone computer or can be integrated into the company's HiNet™ local area network. The system includes application software for payroll, general ledger, accounts receivable, and accounts payable. DMS also offers a variety of software for word processing, data base management, budgeting, and finance.

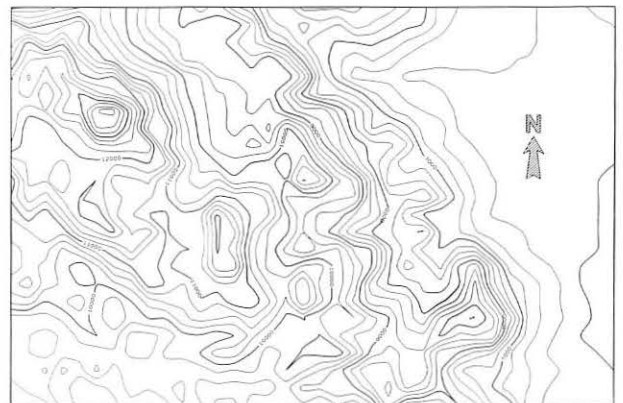
Digital Microsystems, an Oakland-based member of the Extel Group, is a manufacturer of mini- and microcomputer products and local area networks designed for both business and technical applications. HiNet, the company's high-speed local area network, can support up to 32 users and address as many as 255. HiNet has been installed in more than 500 locations worldwide.



Small Systems Engineering's HardBox™, Soft Box™, and Petspeed compiler are said to give Commodore PET and CBM computers sophisticated features including CP/M and multi-user capability, for business and educational applications. This firm in Brisbane, CA, is a joint venture of VSI International in that city and of Small Systems Engineering, Ltd., Britain.

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Pikes Peak Region of Colorado



Contour interval 250 feet
Latitude from 38 deg 42 min N to 38 deg 54 min N
Longitude from 104 deg 48 min E to 105 deg 5 min E

Pikes Peak region of Colorado as rendered by a new 3D contouring system from Precision Visuals, Inc., Boulder, CO. The package, said to be ideal for modeling geophysical data, contains features such as major and minor contour lines, curve smoothing, annotation, and the elimination of crowded lines. This contouring system is being licensed for all computer systems that run PVI's DI-3000, a device-independent graphics package used with IBM, H-P, DEC/VAX and PDP, CDC, Prime, Harris and other computers.

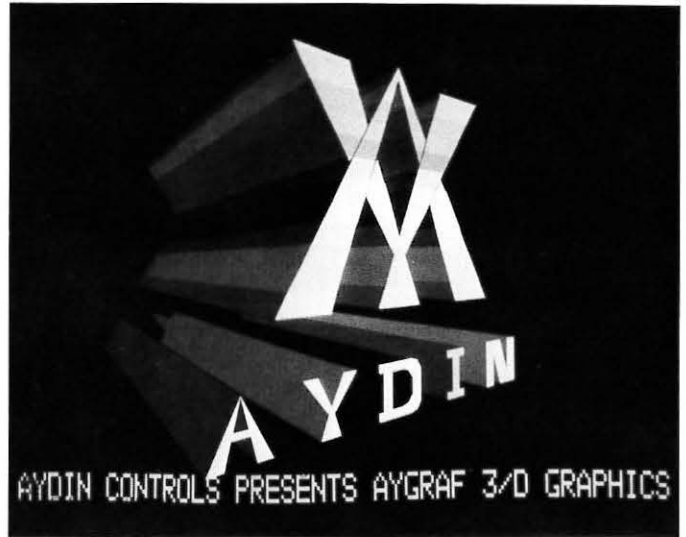
Three-Dimensional Graphics Instruction Set

Aydin Controls, Fort Washington, PA, has recently announced availability of a powerful three-dimensional graphics instruction set for its 5216 display computer. This graphics package, a member of the AYGRAF family of firmware, is said to be one of the most advanced user-oriented computer graphics software presently available.

It may be used as either a standalone system or tied into a host computer. The local intelligence enables the user to operate the 5216 display computer by receiving instructions and programs from a 5116 edit, display, and store graphic objects in the hierarchical, three-dimensional data base. The 3D system is user programmable with FORTH or 8086 assembly language.

This AYGRAF/3D package provides the user with 64 fundamental instructions which fall into three categories: graphic commands for a world coordinate system; data base management based on a tree-structured hierarchy; and interactive commands that provide user programming and picking functions.

The 3-D instruction set enables the user to scale, rotate, translate, window, create perspective drawings, display basic primitives (surface, prisms, spheres, vectors, and text), detect (pick) logical entities, and support hue intensity saturation color schemes (RGB or specified pixel value also available).



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Tektronix Research in Color Monitors

Tektronix is actively engaged in production of electronic display equipment for both television and computer graphics. Recently the distinction between these applications has been blurred. Television is using computer techniques to create special effects, and computer systems are using television-like display equipment to produce visible images. In both television and computer graphics applications there are situations where a high quality monitor is useful to show minute details. In fact, many times a high performance picture monitor is needed as a tool to search for flaws in the image which might be related to defects in the incoming video signal.

In the picture above, Joe Hallett (L) and John Horn of Tektronix are checking out the quality of images displayed on the new Tektronix 690SR color monitor at one of Tek's computer research facilities. Joe is a long-time SID member, recently moved to Oregon from the Boston area where he was a charter member of the New England Chapter. Joe is 690SR product manager, and John was responsible for its engineering development.

The Tektronix 690SR was developed to satisfy discriminating users and is finding applications in television production studios, laboratories, and CAD/CAM applications.

Major improvements are taking place in the shadow-

mask color CRT under the influence of emerging requirements for computer graphics displays where the image is normally viewed at arm's length rather than in the "across the room" style of entertainment TV. A new crop of high resolution CRTs with ultra-fine color screens permit color pictures of impressive quality to be displayed. New techniques in smoothing of raster color images, and advances in television color signal processing and transmission standards all combine to suggest a healthy future for better quality pictures regardless of their source.

The 690SR uses a 19V delta gun CRT — still considered to provide the best overall picture quality — with an advanced convergence system which is said to be both highly accurate and easy to adjust.

Since many different scan formats are currently being used in computer graphics and television research, one version of the 690SR has been designed to operate at any horizontal scan rate over a 15 to 37.5 kHz range with relatively minor adjustments. This new color monitor will operate at any vertical rate from 40 to 90 Hz without adjustment.

The Tektronix 690SR is available with various interface options which permit RGB video or encoded NTSC or PAL television signals to be displayed. Phosphor options that are appropriate to the application are also available.

Industrial Robots Improve Production Accuracy, Lower Costs

Increasingly practical for assembly jobs, industrial robots handle production tasks with uniform and accurate results, fewer errors and less waste - often at lower cost than human operators. The latest developments in robots utilize advanced computer technology to offer increased versatility, performing a variety of assembly operations with the same high degree of accuracy as single-function robots.

Among this new breed of multi-use industrial robots is the Accumotion Series II table model, manufactured and programmed by Accuratio Systems, Inc., Jeffersonville, IN. Drawing on more than 8 years of robotics experience, the firm has developed a table design that offers stability and greater accuracy than free-arm models. Controlled by a microcomputer, this precision system provides accurate motion control from one through five axes. The Accumotion Series II model is capable of straight-line speed up to 1400 inches per minute, with an "X" axis up to 8 feet long and a "Y" axis up to 4 feet.

Powered by fast-reacting 1 hp servos, the drive features 2-inch Thompson rods and 1½ inch ball screws on the major X and Y axes. The Accumotion table is available in 32 sizes and combinations to meet various production requirements.

The Accumotion Series II's microcomputer controls allow the unit to perform a variety of tasks, with an intermix of parts, on a single line. A 5-inch CRT lets the user monitor every phase of the program. These controls let the Accumotion Series II unit "remember" its position; if interrupted during its cycle, the robot can continue where it left off, rather than recycling from the beginning of its program. One portable programming device can service an entire line of Accumotion tables. And it's said to be easy to reprogram to perform new functions; model changeover is simpler, with no need for retooling and no extensive downtime.

The manufacturer describes this robot as adaptable to a wide range of such production applications as: pour-in-place gaskets and other open-pour molding techniques, adhesive application, trimming and deflashing of molded parts, routing and cutting wood parts,

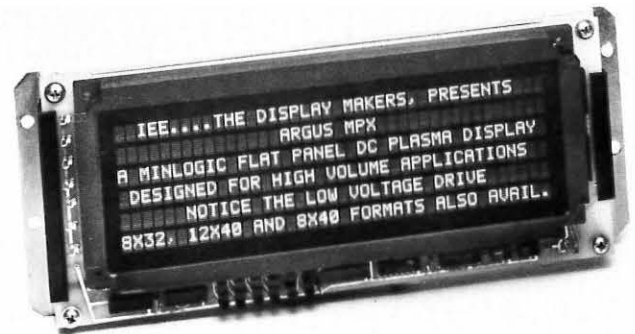


Accumotion Series II with speed of 1400 inches per minute and "X" axis up to 8 feet long and "Y" axis up to 4 feet, by Accuratio Systems, Inc.

testing electronic circuit boards, handling foundry ingots, gluing, drilling and welding - or virtually any combination of these and other tasks. The precision computer controls are said to help eliminate costly and time-consuming steps such as die-cutting, glueing and material handling, while at the same time reducing waste caused by underfilling or overfilling. The high degree of accuracy in amount and placement saves on material, repair, and cleanup, as well as manpower costs, according to Accuratio Systems.



These Serif machines from Wordtronix Inc., Minneapolis, MN, were expressly designed for office use as unimposing typing machines on which a secretary or typist can immediately gain the productivity advantages of modern word processors. To appeal to first-time users, all typing functions are exactly the same as typewriter operations. All word processing functions use techniques either thoroughly familiar to a typist, or are organized so that a typical office secretary can use the machine without assistance from others and without formal training. The unit is designed to be unpacked, set up, and operated by a secretary to perform normal typing duties within one-half hour.



Low Voltage Multi-Line DC Plasma Display

The Industrial Products Division of Industrial Electronic Engineers, Inc., Van Nuys, CA, recently announced a major advance in multi-line DC plasma displays operating at low voltages from +5VDC and 12VDC. On-board power conversion circuitry eliminates the need for the customer to supply high voltages. ARGUS MPX model number O3422-02-240N is a 6-line x 40 character per line flat panel alphanumeric display module designed for high volume applications.



MP/M 8-16, CompuPro's proprietary operating system, enables as many as eight users to simultaneously run 8-bit and 16-bit applications programs. Users have 62 kB of program space available to them, compared to 48 kB allowed under MP/M



Version 2. Based on CompuPro's 8085/8088 processor, system is downward compatible with 8080 software and upward compatible with 8086/8088 software.

Multi-User Operating System From CompuPro Runs 8-Bit/16-Bit Programs Simultaneously

A high speed multi-user operating system that allows simultaneous running of both 8-bit and 16-bit applications programs while providing 30 percent more available program area was recently introduced by CompuPro, Oakland, CA, manufacturer of microcomputer systems and components.

A proprietary implementation of Digital Research Corporation's MP/M 86® operating system, MP/M 8-16 utilizes CompuPro's 8085/8088 CPU card and features 62 k bytes of user program space for 8-bit CP/M® 2.2 compatible software. This compares to the standard 48 k bytes allowed under MP/M® 2.

The new operating system is designed to perform both single-user and multi-user functions while running any combination of CP/M 2.2 or CP/M 86® compatible applications software for as many as eight users, according to Mark Garetz, general manager at CompuPro. "This gives users the best of both worlds," he says.

"MP/M 8-16 is the first commercially available multi-user operating system that allows both 8-bit CP/M 2.2 and 16-bit CP/M 86 applications programs to be run simultaneously," Garetz says. "Users who have a substantial library of applications software will now be able to protect their investment and meet future requirements for the more powerful 16-bit programs."

For creating or running 16-bit CP/M 86 compatible software, standard 8-bit programs such as editors and database managers can be used to supplement future applications programs. All source and data files created under MP/M 8-16 are also compatible with CP/M 2.2 and CP/M 86.

In addition, 8086 software development is provided through a wide range of cross assemblers and 8080/Z-80 to 8086 translators. These include Sorcim's ACT cross assembler and TRANS 86 translator, as well as XLT 86 from Digital Research.

System throughput is increased by the use of CompuPro's interrupt-driven DMA floppy disk and hard disk controllers, and by an optional M-DRIVE™ memory disk. The WARP DRIVE disk allows main system random access memory to emulate a disk drive, thus increasing throughput by as much as a factor of 30.

A further enhancement to throughput is provided by CompuPro's MPX-1, a DMA channel controller board. Featuring an 8085 CPU and 16 k bytes of local memory, the MPX-1 directly accesses all I/O devices and relieves the system's 8085 and 8088 of most of the I/O tasks required.

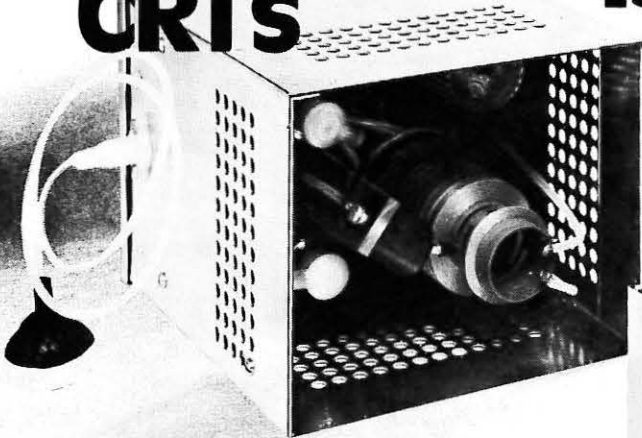
CompuPro's 8085/8088 CPU board incorporates an 8088 microprocessor that interfaces with memory and I/O over an 8-bit bus and has full 16-bit internal architecture, and an 8085 8-bit microprocessor that can run existing software. The board is downward compatible with the current library of 8080 software and upward compatible with 8086/8088 software.

Both processors run at 6 MHz, providing a 300 percent improvement in throughput over 2 MHz systems, and can accept clock speeds up to 8 MHz for future requirements. Upon receipt of a single input instruction, the on-board hardware switches between processors, thus offering real-time multi-user capability. The board accesses 16 megabytes of memory and fully conforms to all IEEE 696/S-100 bus specifications.



The 900 series computer from Durango Systems, Inc. San Jose, CA, is said to be the first fully-integrated desktop business computer to feature an integrated Winchester disk. This stand-alone computer can serve up to five users concurrently, and can also communicate with other computers, including large mainframes. The series consists of 900, which has a single mode printer, and the 900XR, which has a dual mode printer, and the 900XR, which has a dual mode printer that provides letter-quality printing on single sheets and envelopes.

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Information Display 5-82/11

Now Cash Registers Do More Than Hold Money

Casio, Inc., Fairfield, NJ, knows quite a bit about the silent revolution happening in the area of electronic cash registers. Gone are the days when the primary purpose of a cash register was to hold money. (A cigar box could do that.) Now they not only hold money but they store important data that help manage a business. They are more like computers than registers. And of course their displays are correspondingly important.

Some cash registers, like those in the Casio 7000SR/200SR series, have the ability to perform transactions in foreign currency. Exchange rates for four different countries can be preset into the register. After that, the change for foreign to domestic or domestic to foreign currency can be made at one touch. This is a handy feature to have, especially if you have a business in one of the states that share a common border with Canada or Mexico.

When cash registers first came into use they were universal in scope. Today, manufacturers have designed electronic cash registers (ECRs) with built-in application programs to adapt to any business. A simple operation can select the standard functions so that totalizers and key patterns fit the type of transaction at hand: general, department store, restaurant, bar, hotel, fast food service or drug store. Businesses can choose the system they want whether it be a stand alone, in-line or on-line system.

- **Stand alone system.** When used as a single unit, the register has the ability to totalize all pertinent sales data, accumulating it as programmed for sales control and management.

- **In-line system.** A system of "slave" registers can be set up in supermarkets and department stores as



Gone are the days when cash registers were primarily used to hold money. Today, the age of the systems electronic cash register has truly arrived. Units, such as the Casio 4830ER, not only hold money, but they actually help manage a business.

needed (up to 99 units) and attached by cable to a single "master" unit. This master accumulates all pertinent data from the slaves as well as sending them program data.

- **On-line system.** For operations with a number of outlets in different locations, public communications lines can be used to connect all outlet registers to a single master register. Control data then accumulates in the master for simple fast readouts. Programs can be sent to the slaves from the master as well.

Some electronic cash registers, such as those in Casio's 3800ER/3600ER and 4800ER/4600ER series, have up to 24 selectable functions for a business to choose from including: charge, credit, new balance, received on account, paid out, plus, tip, manual tax, minus, coupon, percent plus, percent minus, tax rate, bottle return, single item sale, void, refund, tax shift 1, tax shift 2, tax shift 1 sub-total, tax shift 2 sub-total, tax exemption 1, tax exemption 2, previous balance plus and previous balance minus. For every selectable key function mentioned, there's a business that needs it.

When it comes to ECR design, specialization is the key word. Casio cash registers have an arrangement key function program. High frequency transactions including price, department, price look ups, and function keys, can be programmed into the register (to a maximum of 11 keys) so that the transaction in its entirety can be done at the push of a single arrangement key. Casio is typical of a manufacturer that designs its ECRs to fit the need of the merchant whatever the business.

For many years cash registers have been able to indicate to the clerk how much change to give the customer. Now some ECRs even have an automatic coin dispenser that makes correct change every time. And, if there is a shortage of a certain coin, the dispenser automatically changes into smaller denominations.

Casio, Inc. has eight new electronic cash registers incorporating many of these outstanding features. Models 3604ER, 3804ER, and 204SR have 4 departments that can be expanded to 8 departments. Models 4612ER and 4812ER have 12 departments that can be expanded to 20 departments. Models 4630ER and 4830ER have 30 departments. Model 7100SR has 16 departments that can be expanded to 24 or 32 departments.

The age of the systems electronic cash register has truly arrived. Some registers have even been known to play music when the cash drawer opens. Now the question is: Can they do anything about people going on the "express check out line" with more than 10 items? Who knows, six months from now they might just do that.

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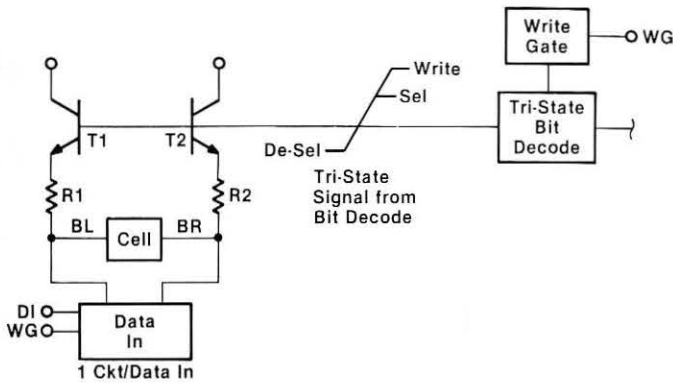
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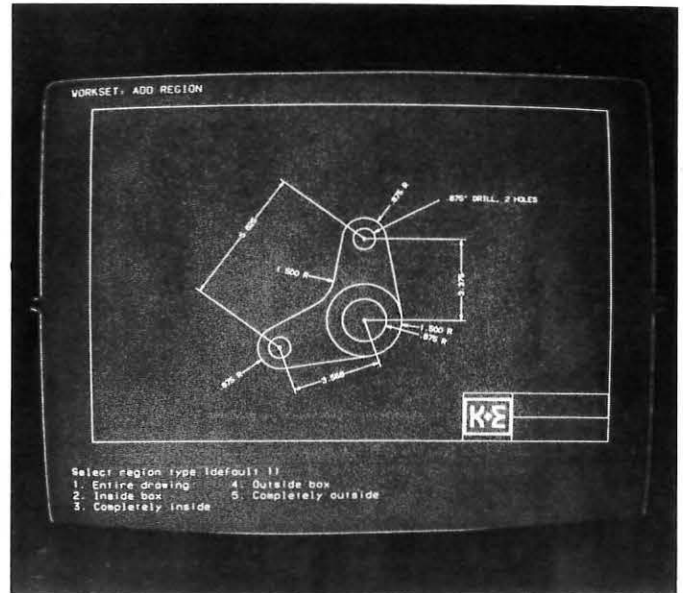
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Tri-State Bit Selection and Write



IBM East Fishkill engineers have recently described three circuit design techniques to improve the speed, power and density of VLSI bipolar random access memories. A significant improvement in power dissipation and density is expected through the use of the tri-state bit selection and write technique illustrated here in a circuit drawing. The write function and the bit decode circuitry are combined to give the decode driver both bit selection and writing capabilities.



The new computer-aided drafting system from Keuffel & Esser Company features a 19-inch direct-view storage display tube. Unlike a raster-type display, the K&E tube shows smooth arcs and curves with no jagged edges. Images are constant with no flicker making them easier on the eyes. The system also offers a two-color option so that certain elements of a drawing can be shown in an orange color which contrasts with the screen's overall green color. Keuffel & Esser, Morristown, NJ, is marketing this CAD system based on equipment made by Tektronix, Beaverton, OR.

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SID CALENDAR

MAY to OCTOBER 1982

1982		
May	9	Executive Committee Meeting
	10	National Board Meeting, San Diego, CA.
	10-14	SID 1982 International Symposium, Town and Country Hotel, San Diego, CA.
July	1	Proceedings, Volume 23, No. 2, 1982, Mailed
	20	Quarterly Chapter Rebates Mailed
October	19-21	1982 International Display Research Conference, Cherry Hills, NJ

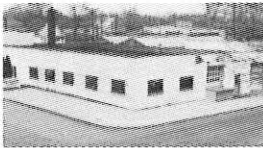
OTHER EVENTS

1982		
June	2-4	ACM/SIGMOD International Conference on Management of Data, Orlando FL
	7-10	National Computer Conference, Houston, TX
July	17	ACM/NBS Symposium: "Computing and Government", Gaithersburg, MD
	19-22	2nd International Conference on CAD/CAM, Manchester, England
	26-30	SIGGRAPH '82, John B. Hynes Veterans Auditorium, Boston
September	21-23	Electro-Optics/Laser Conference '82, Boston
	21-25	International Business Equipment Exhibition, Jakarta, Indonesia

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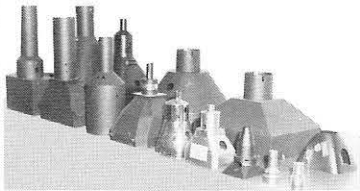
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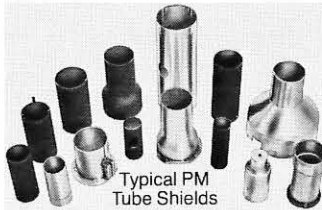
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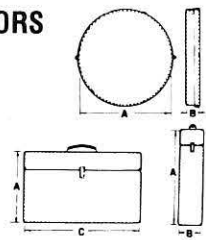
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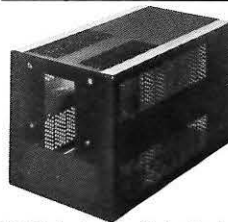
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GREETINGS TO NEW SID MEMBERS!

Each month you'll find a roster of new SID Members, listed by Chapters with the Chapters in alphabetical order. If your name — or a friend's — should have been listed and was inadvertently omitted, please let Bettye Burdett or your Editor know immediately. We'll make amends in the next issue. See the front cover for your choice of addresses to which to send vital data.

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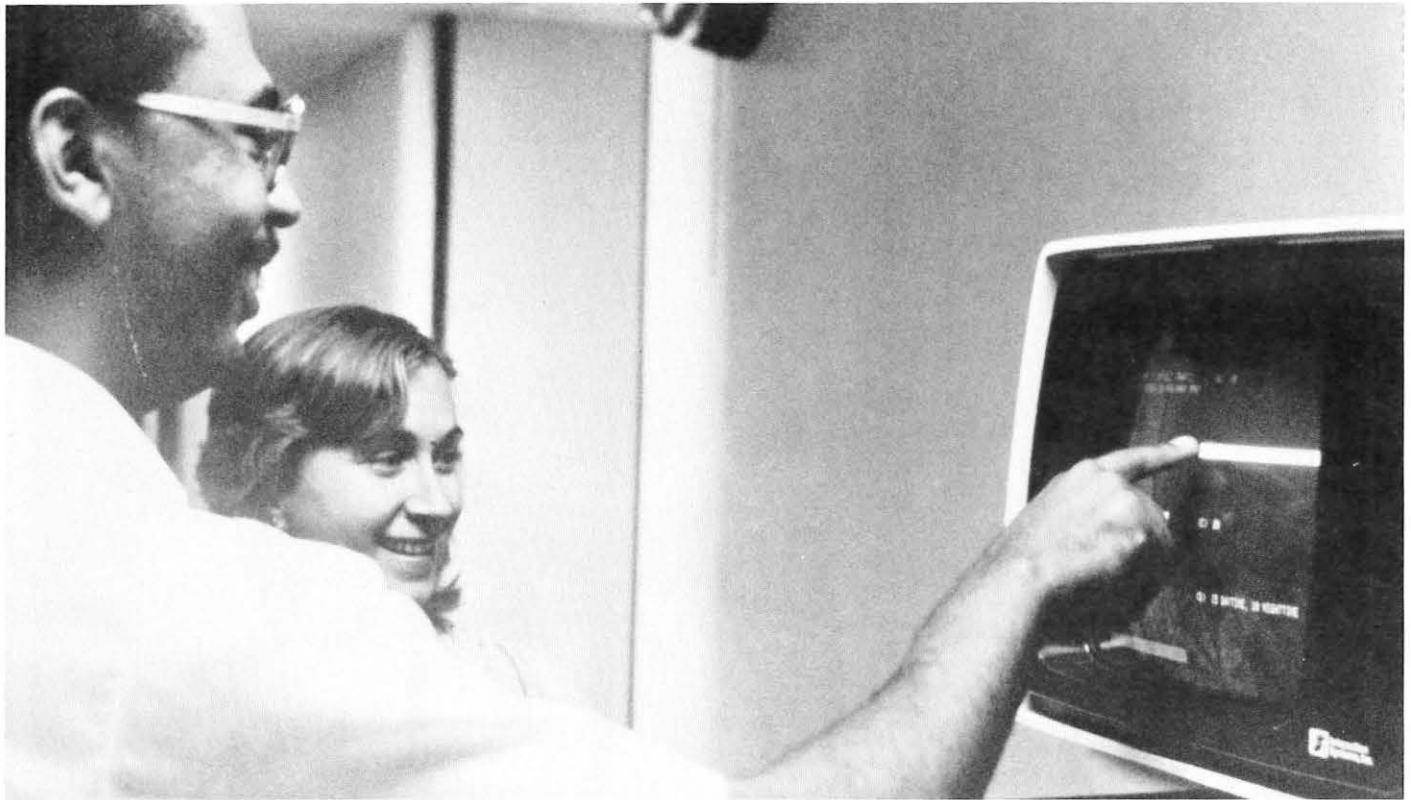
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Touch-Sensitive Safety Test Teaches Safety Rules to Employees of Dupont's Memphis Plant

DuPont's chemical and pigments plant in Memphis is using Interaction Systems, Inc.'s Model TT-100 touch-sensitive CRT display terminal as a training device for teaching employees about the plant's safety policies. The Model TT-100 touch-sensitive CRT display terminal is installed on a portable platform and is moved among various locations at the plant site to train as many employees as possible.

The data base made available at the touch-sensitive terminal contains 50 questions regarding safety measures and policies of the Memphis plant. When an employee operates the safety test by touching the touch-sensitive screen of the Model TT-100 display terminal, the computer responds by randomly selecting ten questions to create an individualized safety test for the employee to take.

To begin the safety test, the system instructs the employee to "TOUCH GO TO BEGIN TEST". When "GO" is touched, by the human finger, the first safety test question is displayed and four multiple-choice answers are listed under the question. The answers are labeled A, B, C and D.

When an answer is touched, the answer is highlighted by reverse video on the screen. The employee receives immediate visual feedback. If the correct answer is selected, the system displays, "You selected Answer B. You are right." If an incorrect answer is selected, the system displays, "You selected Answer C. You missed it!!"

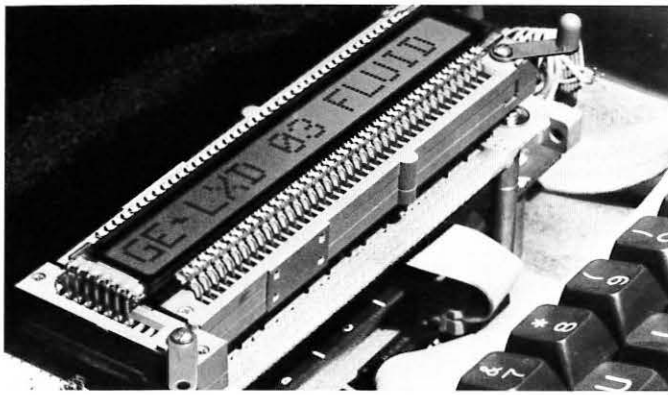
When the test is completed, the system tabulates the score and informs the employee of his or her percentage rank. For example, "You scored 90%", might be displayed on the screen. The program is designed to calculate scores in a competitive fashion. It selects 10 of the highest scores and enhances the training aspect of the

device by displaying the following message to the high scorer: "GOOD JOB. STANDBY TO PUT YOUR INITIALS UP IN LIGHTS!" The alphabet is displayed on the touch-sensitive screen, and the employee is instructed to touch the appropriate letters for incorporating his or her initials into the system. If the score was not high enough for the "TOP 10", the following message is displayed: "YOU SCORED 65%. NOT QUITE GOOD ENOUGH FOR TOP 10. YOU ARE STILL A WINNER IF YOU PUT SAFETY FIRST."

Rick Hinchman, engineer in the Research and Development Division of DuPont's Memphis plant, describes three objectives he had in mind when he elected to use the Model TT-100 touch-sensitive CRT display terminal as the human interface for this employee training system. Hinchman says, "I wanted to develop a means of capturing a person's attention regarding his or her personal levels of safety awareness. I wanted to create an informal and fun means of reviewing the rules as a supplement to scheduled training. I planned to be able to implement the design in such a way that any resulting innovation in safety training could be extended to other subject matter." He found that plant personnel are attracted by a novel, touch-sensitive CRT terminal, controlled by simply touching the screen.

Hinchman concluded in a formal report to plant management, "A key to the success of the safety training project was an advanced new computer terminal called a touch-sensitive display. There are no keyboards or other buttons to push. It allows both technical and non-technical personnel to run the computer with equal success."

Steven J. Puchkoff, vice president — marketing of Interaction Systems, Inc., Newtonville, MA, says "Using touch-sensitive CRT displays for adult training programs is a valuable application of this easy-to-use technology. People can interact with the educational database privately and at their own pace, by touching data on the screen. No familiarity with keyboards is needed. People can comfortably interact with the touch-sensitive safety test system and reinforce key safety principles."



Dot Matrix Liquid Crystal Displays from General Electric

Multiplexed liquid crystal dot matrix displays of numbers, letters, symbols and words are now available in several sizes from General Electric's Liquid Xtal Displays, Cleveland, OH.

GE 5x7 dot matrix displays provide high contrast readouts and are offered in four formats: 8 character, 16 character (as pictured), 20 character, 32 character (two 16 character lines), and 40 character (two 20 character lines). Character height is 3/10-inch on all formats, plus a 5/10-inch, 16 character single line LCD.

These displays for computers, peripheral equipment, office machines and other digital readout applications have viewing angles of up to 150 degrees and are easily readable in bright sunlight. Their low-voltage requirements are said to make them ideal for use where power is limited, or in portable instruments and meters. They are CMOS compatible.

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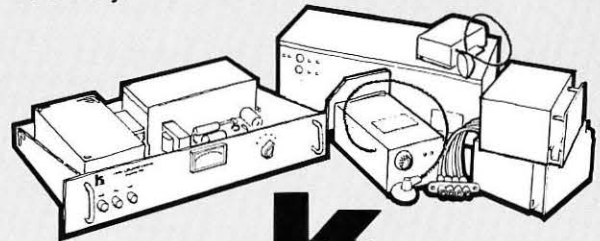
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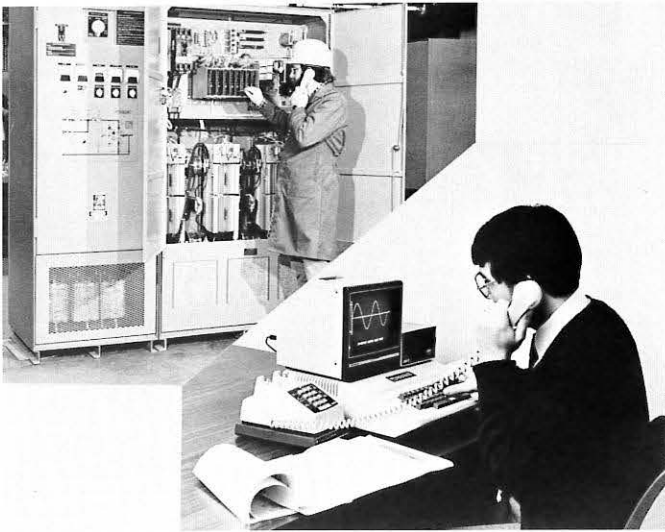
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Computer Aided Telephone Diagnostics (CATD™) from CYBEREX provide the on-site analytical skills of a CYBERSERVE service engineer in minutes. Using waveforms and other signals transmitted by CATD directly to the serviceman's CRT, he can diagnose a problem, advise corrective action, explain how to accomplish the repair and verify the results through CATD.

CYBEREX Introduces CATD™, UPS Service On Site In Minutes

CYBEREX, Inc., Mentor, OH, will exhibit an operating Computer Aided Telephone Diagnostics (CATD™) system, said to be a unique new service concept for UPS and other power conditioning equipment, at the National Computer Conference in Houston, June 7 to 10. The system links by telephone the customer's power conditioning equipment with CYBERSERVE, the CYBEREX worldwide service organization. CATD provides the benefits of the on-site analytical skills of a highly trained

service engineer within minutes of identified need, 24 hours per day, seven days a week, the manufacturer states.

CATD is said to be unlike any other diagnostic system in that it transmits waveforms and other signals directly from the customer's equipment via normal telephone circuits to CYBERSERVE. Computer equipment reconstructs the more traditional oscilloscope type waveforms for service engineers to analyze.

This combination of logic and analog waveforms displayed to the CYBERSERVE engineer permits him to solve as many as 90 percent of all service problems without the delays and expense of an actual visit to the facility, it is claimed.

Customers, for as little as the cost of one or two service calls on site, can have the assurance of quick access to highly trained analytical service skills. Power conditioning equipment users can now count on quick factory trained service whether they are across town from the factory or in the North Sea on an oil platform.

The CATD system consists of a microprocessor and modem which can be connected to the customer's power conditioning system as original equipment or added to any CYBEREX equipment already in service. This equipment is linked via telephone from anywhere in the world to a modem, microcomputer, and CRT analog and digital display at CYBERSERVE.

Customer's computer maintenance or electrical personnel talk by telephone to the CYBERSERVE engineer who is scanning data and waveforms that are reconstructed for him on a CRT monitor. From this data, he can make a diagnosis, advise corrective action, and explain in detail to customer personnel how to accomplish the repair. Replaced components can quickly be verified for correct operation by CATD also. In the rare event it is not possible to correct the malfunction without a personal visit, CYBERSERVE will dispatch a service engineer promptly.



International Applied Systems, Mountain View, CA, recently announced this new IAS 2100 CAD-Colorgraphics system, which includes the 2180 display station. A full color, high resolution monitor, keyboard, function keyboard or CADAM function keyboard, and lightpen comprise the basic display station. Options include input devices such as a digitizer and furnishings.



Phillips 3003 word processor includes a keyboard/display workstation with 15-inch screen central processor, a single 5¼-inch diskette for either program loading or up to 127 pages of storage, a 40 character-per-second "daisy-wheel" printer, text editing software with productivity features such as keystroke memory and graphics, and extensive ergonomics features for operator comfort. Phillips Information Systems is located in Dallas, TX.



Color is Here

In our 1980 ad we said "Color Is Coming . . ." now we can say Color Is Here.

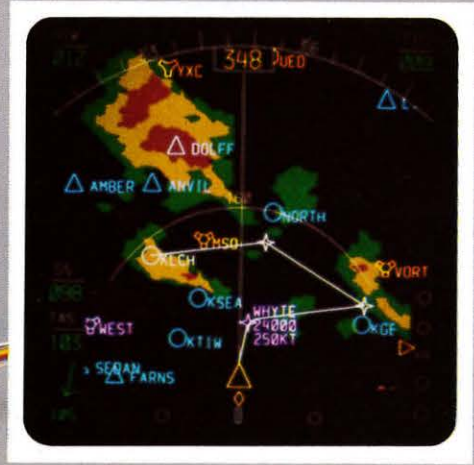
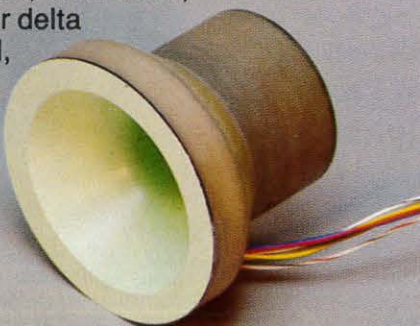
From concept . . . to reality in but a few years, full color avionics displays are now viable information sources in the modern aircraft cockpit. And they are here to stay, no question about it.

The team concept we spoke of a few years ago has worked . . . and worked very well to bring a variety of top quality dramatic full color displays into the cockpit when the market demanded them for military and commercial aviation. Syntronic's experienced yoke designers teamed up with Sperry's skilled display engineers and Matsushita's high resolution, shadow mask color CRT expertise and got the job done as represented by the stunning full color cockpit displays we show here.

High resolution, color purity and convergence, combined with faster speed for more display information all combine to make deflection yoke design a most challenging task. Syntronic now offers the yoke design capability and technical assistance needed for today's and tomorrow's top quality full color display.

Now let us team up with you to create the color display you need for avionics, color graphics, CAD/CAM, medical instruments, etc. Wherever delta or in-line color displays are needed, Syntronic stands ready to offer our skill, experience and production capability to turn concept into reality.

If you're thinking of color . . . team up with Syntronic, the leader in yoke design.



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Sidereal Corporation's new Micronet 8 six-port telecommunications terminal features a permanently-installed 5¼" hard disk with 2,000 400-word pages of storage. According to the manufacturer, the hard disk speeds message preparation and transmission, increases message storage and increases reliability. The new terminal also incorporates an 8-inch floppy disk, removable for filing, and can accommodate a second work station.

New Multiport Telecommunications Terminal Features Hard Disk For Greater Speed, Capacity, Reliability

Sidereal Corporation, Portland, OR, has unveiled a new addition to its line of multiport telecommunications terminals that provides up to five megabytes (2,000 400-word pages) of message storage on a permanently-installed 5¼-inch Winchester hard disk, it was announced recently by Dick Becher, vice president of marketing.

Designated the Micronet 8, the new terminal also includes a removable 8-inch floppy disk for 1.2 megabytes of additional storage.



New CELCO Deflection Yoke Provides High Resolution, Low Deflection Power to Flight Simulator Displays

Better flight simulator displays are said to be possible with the new CELCO CPH900 90° deflection yoke for 25" ultra-rectangular CRTs. The unique design of the CPH900 provides superior corner resolution for optimum display quality, according to the manufacturer, and excellent repeatability assures constant display accuracy. The high sensitivity of the CPH900 yoke requires up to 20% less power to drive the display, according to Mike Constantine, president of CELCO, which has plants in Upland, CA, and Mahwah, NJ.

"Besides being a much faster, more responsive and more reliable terminal, the Micronet 8 gives high traffic users 2½ times the amount of message storage previously available and permits additional operating features," Becher says. "Our engineers report reliability levels for the hard disk of 8,000 hours MTBF, achievable because the drive is permanently sealed against contamination and because the system has fewer moving parts than the traditional floppy disk drive. The hard disk spins 10 times faster than a floppy and, because it is always rotating, access to information is quicker."

The Micronet 8 features six ports which can be configured for any combination of Telex, TWX, leased lines or DDD (including some special IBM protocols). Fully concurrent, it can accommodate two work stations complete with keyboards, CRTs and printers: two operators can prepare, send and receive messages at the same time.

To take maximum advantage of the unique drive's capabilities, Sidereal has developed a system which provides simultaneous access to both disks. (One disk in use doesn't limit access to the other.) High speed direct memory access allows both disks to load directly into memory at up to 200K bytes per second without going through the central processing unit, leaving the CPU free to process information faster. The higher speed of the hard disk, combined with direct memory access, speeds transmission and provides operators with a faster, more responsive terminal when message traffic is heavy.

Due to their modular design, any previous model in the Micronet family of products can be upgraded to Micronet 8 specifications, allowing users to modify their existing terminals as communication needs and applications expand.

A manufacturer of electronic equipment for over a decade, Sidereal conceived the idea of consolidating multiple, dissimilar communications lines into a single, electronically-controlled terminal. They introduced the first multi-port telecommunications terminal in 1976. Today, over on-third of the Fortune 500 companies are said to use the firm's Micronet terminals, and more than 15% of all international message traffic is handled by Sidereal equipment.



IXO, Inc.'s telecomputing system is said to be the first low-cost hand-held system with the capability to remotely access and communicate with the host computer via plain English commands. The portable device makes it possible for anyone to perform remote data entry and retrieval with no prior computer knowledge or skill. It is completely self-contained, consisting of a full typewriter-style keyboard, LCD display, telephone modem and sophisticated security system, and plugs into any modular telephone jack. IXO is a new company in Culver City, CA, organized by former executives of firms making electronic games.



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Opening address by Dr. K. Miyaji, Conference Chairman, JAPAN DISPLAY '83, at the Conference Committee held on December 9, 1981 at the Hotel Pacific, Tokyo.

CHAPTER NEWS

BAY AREA CHAPTER is not only distinguished for members from all kinds of innovative companies but also your Editor can count on Chapter Chairman Mike Rehmus to send in news of technical meetings promptly. (We wish all Chapter Chairmen were as diligent.) On March 23, a good turnout of SID Members and guests enjoyed what Mike calls "a good overview of the tools in computer graphics available to the circuit design engineer." The featured speaker was Larry Yomada, manager of core graphics for CALMA. Ben Glick, product manager, provided a demonstration showing how integrated circuits are designed using the CALMA system.

DELAWARE VALLEY CHAPTER on April 2 met at the facility of Peirce-Phelps, Inc., Philadelphia. Topic was "Interactive Video Disk and Tele Conferencing", and the speakers were Bob Seidel of Peirce-Phelps and Andy Mougis of Sony Corporation. Thanks to Chapter Secretary Nathan Rubin for this report — he's another regular contributor.

READER COMMENTS REQUESTED

In the effort to broaden the scope of *Information Display*, we'd like suggestions from SID Members and other readers. Our Society has grown in membership as the entire field of information displays has expanded, with new technologies and the continuing acceleration in use of computer terminals, graphics such as CAD/ CAM, and robotics. One thought is to include more articles about software as applied to information displays because, so far, the emphasis in your Journal has been largely on hardware. Tom Curran, SID Publications Chairman, has suggested some stories about computer games. Any bright ideas from readers will be welcome.

We've been gratified recently because of receiving numerous good feature articles. In recent issues these articles have covered new developments described for the first time in print in *Information Display*. We'd like to continue to "scoop" much bigger electronic journals. With your help, it will keep on happening.

LOS ANGELES CHAPTER on April 28 saw a demonstration by Ron Clouthier, COMTAL Corporation, of the Vision ONE/20 twin display system. With both image analysis and manipulation capability, this system offers an image resolution of 512 x 512 x 8 with 15 images and 8 overlaid graphics immediately available. Thanks to Program Chairman Kevin Kilcoyne for this report.

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