

## Chapter News

(ED. NOTE: Thanks to efforts by Vern Fowler and Chapter Chairmen, Chapter News is coming in more promptly. We'd like an occasional picture of an interesting meeting and display — lots of SID members are expert with a camera.)

DELAWARE VALLEY CHAPTER on January 29 enjoyed a discussion and demonstration of liquid crystal displays by Dr. Derick Jones, vice president of research and development, Electronic Display Systems, Inc., Hatfield, PA. A subsidiary of Diehl GmbH, Nuremberg, EDS makes component displays for the LCD industry, specializing in dichroic applications for avionic and automotive displays.

LOS ANGELES CHAPTER on January 21, a voice recognition module for computer data entry was discussed and demonstrated by Sam S. Viglione, Director of Voice Recognition Systems for Interstate Electronics Corporation. This is a low cost, high performance speech recognition system with a vocabulary of up to 100 words or phrases. This proved to be a very interesting and stimulating evening, according to Gordon Kramer, Program Chairman.

MIDWEST CHAPTER on December 8 held a joint meeting with SPSE, Chicago Chapter. Featured speaker was Joseph Novak, Novacolor, Inc., and his topic was "An Overview of Digital Image Processing." This talk covered the basic technology, processes, and equipment used in electronic digital image processing. Methods were described for contrast modifications, color correction, re-touching, sharpening blurred pictures, pseudocolor, photo-composition, and minimizing film grain.

NEW ENGLAND CHAPTER on December 11 was edified by a discussion "Interactive Graphic Applications", presented by David Luther, Imlac Corp., Needham, MA, at the Imlac facility.

SAN DIEGO CHAPTER on November 18 enjoyed a multimedia presentation on Hughes Aircraft Company, Carlsbad facility, by Don McCullough. According to George Urangst, Chapter Treasurer: "The presentation was extremely interesting and thorough in showing Hughes products, progressive research, and breadth of technical expertise in display technology."

INFORMATION DISPLAY  
FEBRUARY 1981  
SOCIETY FOR INFORMATION DISPLAY  
654 NORTH SEPULVEDA BOULEVARD  
LOS ANGELES, CALIFORNIA 90049



JOSEPH MARKIN  
2309 SHERMAN AVE.  
EVANSTON, IL 60201

Non-Profit Organization  
U.S. Postage Paid  
Permit No. 29744  
Los Angeles, Ca.

M-33

# Information Display

The Official Journal of the Society For Information Display

FEBRUARY 1981

A display simulation facility is one of the major resources of the Beam, Plasma and Display Division of the US Army's Electronics Research and Development Command's Electronics Technology and Devices Laboratory at Fort Monmouth, NJ. A portion of that display facility is shown here with SID member Bob Miller at the console.

The facility provides scientists and engineers of the Division's Display Devices and Technology Branch a means for comparing and evaluating various types of displays, display device technologies, and display formats;

and for demonstrations to systems designers and users. Evaluation is performed through presentation of user scenarios to determine, on both operational and human factors bases, the display requirements needed for a particular application and which display is best suited to meet that need.

A Data General Nova II computer has been programmed to drive several different types of displays simultaneously with the same information and to interact with the user through touch panels in front of the displays. Types of



displays which can currently be demonstrated include a 512 x 512/60 lpi plasma matrix, a 256 x 512/60 lpi plasma matrix, a 240 x 320/68 lpi electroluminescent (EL), a high resolution shadow-mask color CRT, a standard (home TV) shadow-mask color CRT, and a 3-color beam penetration stroke-written CRT. Samples of 7-segment EL, large screen TV, and EL TV can also be demonstrated. Lighting conditions can be controlled to observe the effects of ambient lighting conditions varying from dark-

ness to the equivalent of bright sunlight. Additional features of the facility include various storage media; the ability to digitize map and pictorial data, and to provide high quality video tape recordings of demonstrations of display technology. (Many thanks to Irv Reingold, Director, Beam, Plasma & Display Division at Fort Monmouth, for this excellent cover story. Irv, as you know, is chairman of the SID Honors and Awards Committee.)

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, June Friend, for **Information Display**, 654 North Sepulveda Blvd., Los Angeles, CA 90049. Next deadline for material from you is March 10. If you miss that, try for the April issue, NOTE: We also welcome feature articles on interesting projects.

**OFFICERS**

President . . . . . T. DuPuis  
 Vice President . . . . . V.J. Fowler  
 Secretary . . . . . G.F. Carroll  
 Treasurer . . . . . I.F. Chang

**DIRECTORS**

Central . . . . . V.A. Born  
 Midwest . . . . . J. Markin  
 Northeast . . . . . P. Pleshko  
 . . . . . W.G. Mulley  
 . . . . . G.R. Spencer  
 Western . . . . . H.P. Sherman  
 . . . . . L.E. Tannas, Jr.  
 . . . . . R.E. Thoman  
 Japan . . . . . M. Ashikawa  
 Past President . . . . . B.J. Lechner

**COMMITTEE CHAIRMEN**

Academic . . . . . H.G. Slottow  
 AFIPS Representative . . . . . C.P. Crocetti  
 Archives/Historian . . . . . J.A. Clifton  
 Bylaws . . . . . R.C. Klein  
 Symposium Advisory Committee . . . . . J.A. van Raalte  
 Symposium Consultant . . . . . L. Winner  
 Definitions & Standards . . . . . N.W. Patrick  
 Honors & Awards . . . . . I. Reingold  
 Membership . . . . . L.M. Seeberger  
 Nominations . . . . . B.J. Lechner  
 Publications . . . . . T.V. Curran  
 Information Display Editor . . . . . T. Lucas  
 Proceedings Editor . . . . . S. Sherr

**CHAPTER OFFICERS**

<i>Chapter</i>	<i>Chairman</i>
Bay Area . . . . .	G. Carroll
Del. Valley . . . . .	C. Halstead
Japan . . . . .	I. Ohishi
Los Angeles . . . . .	T. Lim
Mid-Atlantic . . . . .	J. Stapleton
Midwest . . . . .	W. Martin
Minn./St. Paul . . . . .	R. Jamieson
New England . . . . .	T. Cheek
San Diego . . . . .	J. Lipscombe

**SOCIETY FOR INFORMATION DISPLAY**

654 No. Sepulveda Blvd., Los Angeles, Calif. 90049  
 (213) 472-3550

*June Friend, National Office Manager*

**Sustaining Members**

**ASEA, DPET, YLDK**  
 S-721 83 Vasteras, Sweden  
**AUDIOTRONICS VIDEO DISPLAY DIVISION**  
 8299 Central Ave., N.E., Spring Lake Park, MN 55432  
**AYDIN CONTROLS**  
 414 Commerce Drive, Fort Washington, PA 19034  
**BALL ELECTRONIC DISPLAY DIVISION**  
 4501 Ball Road, N.E., Circle Pines, MN 55014  
**BENDIX CORPORATION**  
 Flight Systems Division, Teterboro, NJ 07608  
**BIDCO, INC.**  
 CRT Display Electronics,  
 18 Milford Dr., Plainview, NY 11803  
**BURROUGHS OEM CORPORATION**  
 Plainfield Plant, Plainfield, NJ 07061  
**CARDION ELECTRONICS**  
 A Division of General Signal Corporation  
 Long Island Expressway, Woodbury, NY 11797  
**CELCO**  
 (Constantine Engineering Labs. Co.)  
 70 Constantine Drive, Mahwah, NJ 07430  
**CHERRY ELECTRICAL PRODUCTS CORP.**  
 3600 Sunset Ave., Waukegan, IL 60085  
**CLIFTON PRECISION/SPECIAL DEVICES**  
 5100 State Road, Draxel Hill, PA 19026  
**CLINTON ELECTRONICS CORPORATION**  
 6701 Clinton Road, Loves Park, IL 61111  
**CONRAC CORPORATION**  
 3 Landmark Square, Stamford, CT 06901  
**DALE ELECTRONICS**  
 P.O. Box 609, Columbus, NE 68601

**DIEHL RESEARCH CENTER**  
**DIEHL CORPORATION**  
 65 Commerce Road, Stamford, CT 06902  
**DISPLAY COMPONENTS, INC.**  
 550 Newtown Road, MA 02460  
**DuMONT DIVISION, Division of Thomson-CSF Component Co.**  
 750 Bloomfield Avenue, Clifton, NJ 07015  
**ELECTRONIC DISPLAY SYSTEMS, INC.**  
 2321 Topaz Drive, P.O. Box 280, Hatfield, PA 19440  
**FORD AEROSPACE AND COMMUNICATIONS CORP.**  
 WDL Division, Palo Alto, CA 94302  
**GENERAL ATRONICS CORP.**  
 Subsidiary of Magnavox Govt. & Industrial Electronics Co.  
 1200 E. Mermaid Lane, Philadelphia, PA 19118  
**GENERAL ELECTRIC COMPANY**  
 Aerospace Control Systems Department  
 P.O. Box 5000, Binghamton, NY 13902  
**GTE LABORATORIES, INC.**  
 40 Sylvan Road, Waltham, MA 02254  
**GEROME MANUFACTURING CO., INC.**  
 P.O. Box 1089, Oliver Road, Uniontown, PA 15401  
**GML INFORMATION SERVICES**  
 594 Marrett Road, Lexington, MA 02173  
**HARTMAN SYSTEMS**  
 Division of A-T-O Inc.,  
 360 Wolf Hill Road, Huntington Station, NY 11746  
**HAZELTINE CORPORATION**  
 Greenlawn, NY 11740  
**HUGHES AIRCRAFT COMPANY**  
 Culver City, CA 90230  
**HYCOM, INCORPORATED**  
 16841 Armstrong Ave., Irvine, CA 92714  
**IBM CORPORATION**  
 Armonk, NY 10504  
**IMARO, INC.**  
 West Royalty Industrial Park,  
 Charlottetown, P.R.I., Canada C1E 1B0  
**INDUSTRIAL ELECTRONIC ENGINEERS, INC.**  
 7740 Lemona Ave., Van Nuys, CA 91405  
**INFORMATION CONTROL CORPORATION**  
 9610 Bellanca Ave., Los Angeles, CA 90045  
**INTERSTATE ELECTRONICS CORPORATION**  
 Display Product Operations  
 1001 E. Ball Road, Anaheim, CA 92803  
**ISE ELECTRONICS CORPORATION**  
 P.O. Box 46, Ise, Mie, Japan  
**MITSUBISHI ELECTRONICS AMERICA, INC.**  
 2200 W. Artesia, Compton, CA 90220  
**OPTICAL COATING LABORATORY, INC.**  
 P.O. Box 1599, Santa Rosa, CA 95402  
**ORWIN ASSOCIATES, INC.**  
 88 Seabro Avenue, Amityville, New York 11701  
**PHOTO RESEARCH DIVISION**  
 Kollmorgen Corporation  
 3000 N. Hollywood Way, Burbank, CA 91505  
**PHOTONICS TECHNOLOGY**  
 P.O. Box 432, Luckey, OH 43443  
**PTK CORPORATION**  
 1173 Los Olivos Ave., Los Osos, CA 93402  
**RANK ELECTRONIC TUBES**  
**RANK PRECISION INDUSTRIES LIMITED**  
 Sidcup By-Pass, Sidcup, Kent, England  
**RAYTHEON COMPANY**  
 Industrial Components Operation  
 465 Centre Street, Quincy, MA 02169  
**SAI TECHNOLOGY COMPANY**  
 4060 Sorrento Valley Blvd., San Diego, CA 92121  
**SANDERS ASSOCIATES, INC.**  
 D.W. Highway South, Nashua, NH 03061  
**SCHOTT OPTICAL GLASS, INC.**  
 400 York Ave., Duryea, PA 18642  
**SGL HOMALITE**  
 A Division of SGL Industries,  
 11 Brookside Drive, Wilmington, DE 19804  
**SIEMENS AG**  
 Components Group,  
 73 Balanstr. D8000, Munich, West Germany  
**SINGER-LIBRASCOPE**  
 Aerospace & Marine Systems Group,  
 833 Sonora Avenue, Glendale, CA 91201  
**SMITH ENGINEERING**  
 3232 Nebraska Ave., Santa Monica, CA 90404  
**SONY CORPORATION**  
 7-35 Kitashinagawa 6-chome Shinagawa-ku Tokyo, 141 Japan  
**SYNTRONIC INSTRUMENTS, INC.**  
 100 Industrial Road, Addison, IL 60101  
**TEK RONIX, INC.**  
 Information Display Products,  
 P.O. Box 500, Beaverton, OR 97007  
**TEXAS INSTRUMENTS, INCORPORATED**  
 P.O. Box 225936, MS 147, Dallas, TX 75265  
**THOMAS ELECTRONICS, INC.**  
 100 Riverview Drive, Wayne, NJ 07470  
**THORN-BRIMAR LTD.**  
 Greenside Way, Chadderton Industrial Estate,  
 Middleton, Manchester M24 1SN, England  
**TRANS COM**  
 Unit of Sundstrand Corporation  
 3100 Pullman St., Costa Mesa, CA 92626  
**XEROX CORPORATION**  
 Palo Alto Research Center, Palo Alto, CA 94304  
**ZENITH RADIO CORPORATION**  
 1000 Milwaukee Ave., Glenview, IL 60025

**Composition And Markup Terminals:  
 Graphic Displays For The Printing Industry**

By David H. Goodstein, Director  
 Inter/Consult  
 234 Lakeview Ave.  
 Cambridge, MA 02138

One of the best-established and least visible applications of computer graphics is in CAM terminal systems, those that are utilized in typesetting applications. These systems have been actively marketed to newspapers and commercial typesetting organizations since 1972. The driving force in development of products in this market has been the tremendous saving available to newspapers which have used CAM technology for composition of complex display material.

Various implementations of CAMs have included vector, dither raster, storage tube gas plasma, and raster display technologies. Most recently, cost and performance considerations have favored raster displays for new applications. The speed of interaction, display capacity, and quality of character display all vary according to the display technology used.

These characteristics are summarized as follows:

	Speed	Screen Capacity	Cost	Display Quality
Vector	excellent	poor	high	poor
Gas plasma	poor	good	moderate	moderate
Storage tube	poor	excellent	high	excellent
Raster	good	excellent	low	good

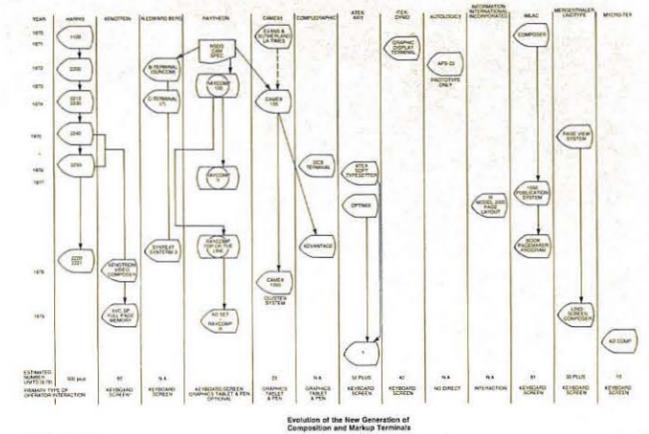
Of these technologies, only raster and storage tube have adequate density to support display of photographic material, a feature which will be integrated into CAM terminals in the next 2-5 years.

CAMs come in two distinct varieties, passive and interactive. Passive CAMs are also known as soft typesetters. Soft typesetters are products made possible by the digital photosetter technology of the 1970s. If you divert the signals to a specialized VDT instead of the CRT in the digitized device, you get a visible representation of exactly what the type would have looked like had it been set on paper or film. This includes, in some cases, the representation of the characters in their actual typeforms (on phototypesetter-linked Softypers). If you do not have a digital typesetter, you must "simulate" the size and style of the typeform.

The problem is what to do with the image once it is on the screen. You cannot interact with it directly; the operator must have a second screen that is a normal text-processing terminal. Here corrections to text or typesetter command codes are entered. The entire file of these codes that define the desired output, be it advertisement, tabular material, or book or magazine page must go back through the output processing to reappear on the Softype screen in its revised format.

Moreover, those Softypers which operate signals in this way utilize the logic of the typesetter while they are doing it. In effect, the typesetter is shut off while the codes are running. The real problem with these kinds of devices is not what they do as much as what they don't. Not only don't they eliminate the need for highly skilled markup personnel, they add their own complexities to markup and command/parameter input. They don't let you correct your mistakes directly. They don't save any substantial amounts of time, only the cost of film and processor chemicals you would have used to set and proof on photo material. Consider how much film one needs to save to justify even a reasonable amount of capital investment in such a device.

Information Display 2-81/3



A number of manufacturers offered these kinds of devices over the last 5 years. In most cases it was an exercise in the "It's possible, so why not do it and see if anyone wants it" — a strange kind of product planning. Softypers are (or were) available from ITEK, Autologic, Atex, Compugraphic, AKI, and Mergenthaler. While some of these had some degree of interaction with the large screen, they were all at a low enough level of interaction to consider them separately from devices of the direct-interaction type.

AKI's Optimix was a slightly different and more successful-2-screen device. It allowed some interactions on the display screen, but required the markup commands to be inputs by the operator. At present, the future of this product is uncertain. We note in passing that there were plans for a single-terminal version of the Optimix to produce a more viable interactive product.

The other interesting project in this area is the development of interactive capability for the Atex Softyper. This improvement has been rumored in the industry for some months. No prototype nor announcements have been seen yet, but a terminal with the best of both worlds, offering real type representation, would certainly be a desirable product.

Without interactive capability, however, the Softypers are really only proofing devices, unable to offer the kind of spectacular economic benefits to users how being provided by interactive CAMs.

**Interactive CAMs**

Let's take a look at how a small advertisement is processed through a Camex, Harris, Xenotron, Raytheon, or Compugraphic terminal to see what really happens and find out where the savings are really made.

<b>ADVERTISERS' INDEX</b>	
American Shielding Corp. . . . .	19
(Rohr Advertising)	
Keltron Corp. . . . .	7
(Appleton-Kingston, Inc.)	
Magnetic Radiation . . . . .	15
(Harrison Advertising, Inc.)	
PTK Corporation . . . . .	5
Special Purpose Technology Corp. . . . .	11
Syntronic Instruments, Inc. . . . .	17
(Scholz Moody Advertising, Inc.)	



At left, a CAM utilizing the latest combination of hardware and software fills the need for visual editing and modification. Instead of the traditional light pen or keyboard, this unit utilizes a modified 30-06 Winchester as its editing device. This increases the marksmanship of the operator while editing type for output.

### Step 1: Getting Text In

All the different devices in this group have keyboards which could be used for direct input. I prefer to think of these as control consoles rather than keyboards. It seems like poor economics to use a \$30,000-plus device as a counting keyboard. The value of having the keyboard will be seen in a moment.

Present configurations of CAM allow input from: (1) punched paper tape; (2) floppy or mini-floppy disc/prepared offline and hand-carried to the terminal; or (3) online from a system of some kind.

Paper tape is a bit messy, but for most installations it requires no investment since the terminals are already in production use or in a nearby closet where it was hoped they would stay. Floppy and mini-floppy discs are a neater medium, and point to an obvious interface to word-processing and distributed keystroke capture. Text can be input on an inexpensive terminal by operators with only secretarial skills. The online connection is the most sophisticated as well as the most expensive.

Nevertheless, folks who spent uncounted dollars and endless sleepless nights getting the paper tape out of their operations will probably not want to go backward now.

Whatever way text gets to the CAM, the thing to remember is that it is RAW. i.e. without command codes. NO MORE MARKUP. A reduction of as much as 50% in the number of keystrokes to be input in the composition of a display advertisement. Savings before you even start.

### Block Definition And Editing

Text that is to be composed into a specified format usually makes its first appearance on the CAM in a default point size and font, with the text quadded left for ease of reading. The terminal operator must specify quad code and font for each block, if the system does not allow these to be input in the text stream.

Block structure is the key to all CAM operations and is essentially the same in all of them. A block is a group of characters of any length which share all typesetting parameters. These blocks will be evident from the mechanical layout that accompanies the ad to the screen. Depending on the device, blocks may or may not be defined prior to initial text capture. If not, they now need to be defined, usually by associating a quad code with the start of end character of the block.

At this time, text may also be edited for corrections. All interactive CAM systems allow insertion, deletion, or moving of text with varying levels of sophistication. The better the text editing, the better the operator can deal with problems in the text part of the ad. The operator should never have to send an ad back to another work station once it has reached the CAM.

### Composing The Blocks

When all blocks have been defined and all necessary corrections have been made, the operator is ready to work with each one individually. A block will be identified. Keys will be pressed or positions on a command grid will be selected with pressure from a pen.

Text will get larger or smaller right on the screen according to the commands that the operator gives. The set width and interline leading will also be determined. Each change will be immediately reflected in the appearance of the text on the screen.

Hyphenation and justification will change with changes to point size and set width. All systems allow the operator to intervene directly to give discretionary line endings. This is necessary since hyphenation in most cases is logical. This is due to the demands that a dictionary would place on the computers in the CAM system.

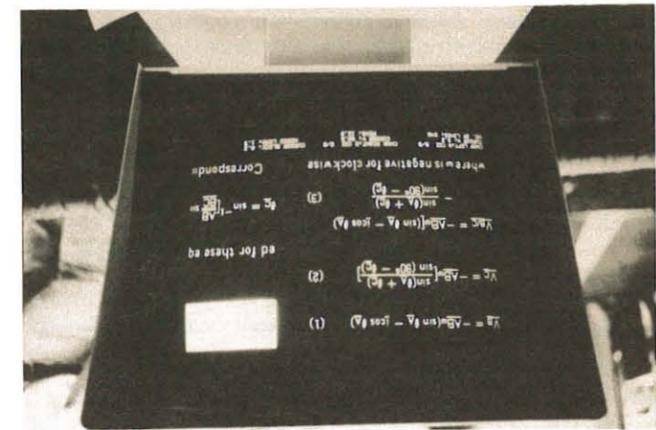
### Storage And Output

When all blocks have been positioned and sized to the satisfaction of the operator, the finished copy or advertisement is ready to be output onto the phototypesetter unit. Before that is done, the finished ad is always saved on the interim storage device of the CAM. Hard or floppy discs are usually available at least for interim storage. Problems with the typesetter or corrections from the customer can be made most simply if the finished ad can be recalled to the screen by the operator.

### One-Piece Output, Simple Corrections

This is the step where perhaps the greatest, or at least the most visible, savings are realized. THE OUTPUT FROM A CAM IS ALL IN ONE PIECE. No cutting or pasting of little pieces of photo paper. The end of boring, nit-picking hours of ad assembly. The worst you'll need to do at this point is to add the graphics into the white space already allocated for them.

Corrections and author's alterations can be made directly on the finished image of the ad recalled on the CAM screen. The ad can then be re-output in its entirety. Turnaround time on corrections is faster, and cut-and-paste even of corrections can be eliminated. Substantial savings are also realized in the cost of photopaper and chemicals.



### Does It Pay?

Apparently, the evidence is that, even before the dizzying drop in CAM prices, several hundred installations in various parts of the world provided cost justification for Harris and Raytheon terminals. Prices between \$25,000 and \$30,000 don't change the nature of the beast, but they make it possible for many more people to think about owning one.

You don't have to be a big shop to justify it either. One of my favorite installations is a type atelier near Dusseldorf, West Germany. The shop is run by the owner and one primarily doing intricate catalog typesetting on an ACM 9000. When asked why he had purchased a CAM terminal for such a small operation, he replied, "It's cheaper than a third person, and it's never sick." This gives a hint of what the cost justifications can be.

### CAM CHARACTERISTICS

Source: Inter/Consult

MANUFACTURER MODEL	DISPLAY TECHNOLOGY	SCREEN CAPACITY (Onscreen Characters Simultaneously)	DISPLAY FONTS	INTERACTION TECHNIQUE	COST	CONFIGURATION
Autologic	Storage	20,000	Unlimited	N/A	\$ 22K	Integral to Typesetter
Bedford Computer	Raster	16,000	3	Keyboard	\$150K	Integral to System
Camex 1351	Vector	18,000	1	Digitizing Tablet	\$ 50K	Stand-Alone
Compugraphic Advantage	Vector	15,000	1	Digitizing Tablet	\$ 35K	Stand-Alone
Harris 2220	Diddle Raster	6,000	1	Keyboard	\$ 25K	Stand-Alone
Hastech Page Pro	Raster	N/A	1	Keyboard/Tablet	\$250K	Integral to System
Itek Graphic Display Terminal	Plasma	N/A	2	N/A	\$100K	Integral to System
IMLAC Composer 1550	Vector	22 Lines of Text	1	Keyboard	\$ 70K	Integral to System
Mergenthaler Linoscreen Composer	Raster	16,000	4	Keyboard/Tablet	\$ 31K	Stand-Alone
Micro-Tek Adcomposer	Raster	14,000	6	Keyboard/Tablet	\$ 25K	Stand-Alone
Raytheon Adset and Raycomp 100	Raster	21,000	4	Keyboard/Tablet	\$65-\$200K	Cluster (2-4)
Xenotron Video Composer	Raster	24,000	2	Keyboard/Tablet	\$ 31K	Stand-Alone

# PTK lights CRT's

## HIGH VOLTAGE FOR CRT APPLICATIONS

**COMMERCIAL**  
2 to 30kV, 3 to 30 watts, high voltage power supplies. Custom flyback transformers.

**MILITARY**  
Mil grade units for ground, ship and aircraft.

**L.V. / H.V. COMBO'S**  
High voltage power supplies combined with a multiple output low voltage switcher.

**SPECIALS**  
Miniature and sub-miniature high voltage power supplies to 20kV. Ultra stable or ultra low ripple designs.

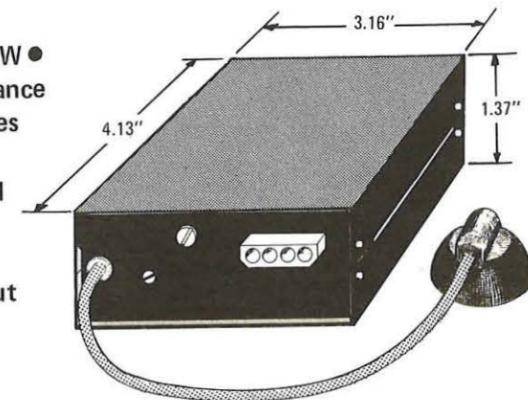
**LCM H.V. CONNECTOR & LEAD ASSEMBLIES.**  
Compatible with Amp LGH types.

For technical assistance or pricing call Wayne Hamari toll free (outside California) 1-800-235-4148

### ULC Series

#### MAJOR FEATURES:

- Low Cost • 2 to 22kV at 10W • Excellent Transient Performance
- Focus and G1 Bias Voltages to ±1kV • Standard Input +26V ±10% • Demonstrated MTBF > 100,000 hours • UL Recognized for Medical Applications • Input, Output Mounting and Connector Options available • 3 YEAR WARRANTY



PTK Corporation 1173 Los Olivos Avenue, Los Osos, CA 93402 (805) 528 5858

**SID CALENDAR**  
**FEBRUARY TO SEPTEMBER 1981**

1981		
February	9	National Ballot Mailed
April	1	Proceedings, Volume 22, No. 2, 1981, Mailed
	6	National Ballot Return Deadline
	20	Quarterly Rebates Mailed
	20	Executive Committee Meeting
	27	National Board Meeting, New York, NY
April	27-	SID 1981 International Symposium
May	1	Hyatt Hotel, New York, NY
July	1	Proceedings, Volume 22, No. 3, 1981. Mailed
	20	Quarterly Chapter Rebates Mailed
September	16-18	Eurodisplay 81 — The First European Display Research Conference, Munich, Germany

**OTHER EVENTS**

1981		
February	9-13	SPIE Technical Symposium, North Hollywood, CA
	23-26	Computer Science Conference, St. Louis, MO
March	23-25	Office Automation Conference, Houston, TX
	24-27	Printemps Informatique (DEP exhibition), Paris, France
May	4-7	National Computer Conference, Chicago, IL
	4-7	Personal Computing Festival, Chicago, IL
June	17-19	International Conference on Optical Radiation Measurements of Fluorescent and Retroreflective Materials, Minneapolis, MN
August	17-22	5th International Congress of Cybernetics and Systems, Mexico City



The Energy Communications Service printer provides periodic and demand reports of energy load status (left); the Energy Communications Console is the control center from which energy usage can be modified (center); the Dimension PBX console is used to control the communications for the facility (right).

**Energy Reduction Aided by  
New Bell Communications System**

If your energy bill currently exceeds \$200,000 a year, you may be a candidate for a new Bell energy system that can cut your costs by 5 to 15 percent.

The new energy system doesn't operate independently, according to Marshall Dann, a product manager for Northwestern Bell, Omaha, Nebraska. It works with a Bell System Dimension<sup>®</sup> communications system, an electronic PBX.

"With this system," says Dann, "we've gone from managing phones to allowing managers to control another business problem—rising energy costs."

The Energy Communications Service, as it's called, enables hotels, hospitals, colleges, governmental agencies, industries and businesses to control energy consumption in three ways. First, it enables plant engineers to control individual energy devices (air conditioners, hot water heaters, lighting, air handling units, etc.) to shut on and off on a programmed time-of-day schedule.

Second, it permits automatic programmed cycling of equipment so not all devices are working at any given time. "When you cycle," Dann says, "you're controlling the 'on' time of individual loads, thus reducing energy consumption."

Finally, the energy service can continuously monitor electrical demand of the entire system and "shed" (or turn off) lower priority equipment as the system approaches a predetermined energy peak. As usage drops down, the devices are automatically turned back on in reverse order. Controlling the "peak demand" usage can account for substantial dollar savings, Dann says.

How does the service work? It's made possible through a special software program within the Dimension, Dann says. The program enables messages to be stored in the Dimension and relayed to special energy control units, which actually turn the energy devices off or on.

Customers can monitor energy usage from the console. Whenever they want to make a change in the system, they merely "key" in information on the console keyboard. Hard copy "status" reports are printed out by a nearby printer at scheduled intervals or as required.

Dann points out that the energy package is available with the Dimension 600 and 2000. The energy package for hotels has been available since late 1979, while the package for hospitals and other customers will be generally available in Spring 1981.

Dann is quick to say that it isn't for everybody. "We make a thorough energy study to determine the costs/savings relationship before we propose it to a customer. This would involve a professional energy consultant going to the customer's location and identifying the physical equipment and layout." (See accompanying captions.)

Nevertheless, all types of groups could benefit from it, he says, "...particularly where you have large buildings. Hospitals, hotels, office buildings, government and education are prime candidates."

Although the service was just introduced, it's already in use in several hotels across the country and will soon be installed in three hospitals.



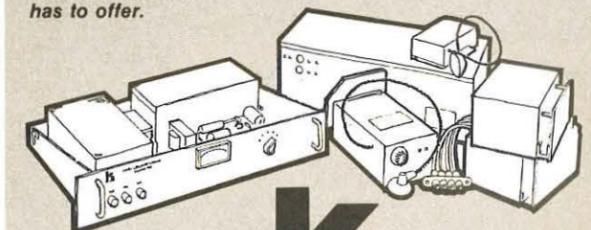
Dr. B.K. Lunde (left), a physicist with Northwestern Bell, discusses with a plant engineer at an industrial facility the advantages of the new Energy Communications Service. Lunde is an energy consultant for Northwestern Bell, based in Des Moines, IA, and serving clients in a 5-state region. Part of her job is to assist engineers and architects to incorporate this energy-saving service with their future building plans.

**Custom HVPS?  
Check Keltron.**

- High Voltage Power Supplies to your specs at in-stock prices
- Highest reliability—tightest regulation
- Consistent delivery schedules

No need to compromise because you find a catalog item that's "close." Nor any need to build your own. Keltron builds it *your way*, and bills it like a catalog unit. We've been doing it that way since 1963 with our own field-proven designs, and with the finest balance in the business between performance and cost. Send us your specs—we can prove it to you quickly.

See what Keltron has to offer.



**KELTRON CORPORATION**  
High Voltage Division

225 Crescent Street, Waltham, MA 02154 • (617) 894-8700

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 June Friend 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.

**BAY AREA CHAPTER**

Dennert, W. Edward M-MA  
\*2283 Charlotte Dr., Idaho Falls, ID 83401  
(208) 529-9818  
EG&G Idaho Inc., Box 1625 CSC-F1,  
Idaho Falls, ID 83415 (208) 526-9241

**DELAWARE VALLEY CHAPTER**

Weisenbloom, Victor M-DV  
\*651 Maple Hill Drive, Blue Bell, PA 19422  
Division President  
Aydin Controls, 401 Commerce Drive,  
Ft. Wash, PA 19034 (215) 542-7800 Ext. 213

**EUROPEAN CHAPTER**

Burgesson, Jack Ernest M-EUR  
\*7 Olympic Avenue, Cheltenham,  
Victoria 3192, Australia (03) 93-1683

Meier, Felix M-EUR  
31 Roggenfar, Eglisau, Switzerland 8193  
(01) 867-3723  
\*Eng. Mgr.  
Autophon AG, Fiegelwattstr 1-15, Solothurn,  
Switzerland 4500 (065) 241-717 Ext. 818

**JAPAN CHAPTER**

Ikoma, Toshiaki M-JP  
6-4-16, Honkomagome, Bunkyo, Tokyo 113  
(03) 945-5360  
\*Associate Professor  
Inst. of Industrial Science,  
Univ. of Tokyo,  
7-22-1, Roppongi, Minatoku, Tokyo 106  
(03) 402-6231 Ext. 353

Kazuhiko, Kasano M-SU-JP  
1398-143 Hioka-cho, Matsusaka, Mie  
Japan 515 (0598) 58-1733  
\*Manager of Display System  
Ise Electronics Corp., 700 Ueno-cho,  
Ise, Mie Japan 516-11 (0596) 39-1111

Kentaro Kiyozumi M-SU-JP  
65-8 Asahigaokadai-Sakuragicho,  
Ise, Mie Japan 516  
(0596) 25-1250  
Managing Director  
Ise Electronics Corp., 700 Ueno-cho  
Ise, Mie Japan 516-11  
(0596) 39-1111

Sukigara, Mitsunori M-JP  
4-30-21 Shimoigusa, Suginami-ku  
Tokyo, Japan 167 (03) 394-3280  
\*Associate Professor  
Inst. Ind. Sci., Univ. of Tokyo  
7-22-1 Roppongi, Minato-ku, Tokyo Japan  
106 (03) 402-6231 Ext. 416

Tadashi, Nakamura M-SU-JP  
1267-1 Kusube-cho, Ise, Mie Japan 516  
(0596) 22-3366  
\*Chairman of the Board  
Ise Electronics Corp., 700 Ueno-cho,  
Ise, Mie Japan 516-11 (0596) 39-1111

**LOS ANGELES CHAPTER**

Aarons, Donald M-SU-LA  
4101 Chestnut Ave., Long Beach, CA 90807  
(213) 426-5051  
\*Display Products  
Mitsubishi Electronics, 2200 W. Artesia Blvd.  
Compton, CA 90220 (213) 979-6055

Clark, Douglas L. M-SU-LA  
280 S. Euclid Ave. #220, Pasadena,  
CA 91101  
\*Division President  
Conrac Corp., Systems-West Div.  
1600 S. Mountain Ave., Duarte, CA 91010  
(213) 359-9141 Ext. 401

Fochtman, R.J. M-SU-LA  
18551 Tango, Anaheim, CA 92807  
(714) 779-6454  
\*Vice President, GM, Industrial Electronics  
Mitsubishi Electronics America,  
2200 W. Artesia, Compton, CA 90220  
(213) 979-6055 Ext. 268

Gumpertz, Donald G. M-LA  
\*President & Chairman  
I.E.E., 7740 Lemona Avenue, Van Nuys,  
CA 91405 (213) 787-0311 Ext. 300

Steinbeck, Jay M-LA  
14745 Keswick, Van Nuys, CA 91405  
\*President  
Major Electronics, 14745 Keswick  
Van Nuys, CA 91405

Van, Lee M-SU-LA  
\*24012 Oro Grande, Mission Viejo, CA 90241  
(714) 586-4107  
Management Information Systems  
Mitsubishi Electronics America, 2200 Artesia  
Compton, CA 90220 (213) 687-6246 Ext. 275

Yamamoto, Ted M-SU-LA  
13921 S. Normandie Ave., Gardena, CA  
(213) 324-5883  
\*CRT Display Engineer  
Mitsubishi Electronics America, Inc., 2200  
West Artesia, Compton, CA 90220  
(213) 979-6055

**MID-ATLANTIC CHAPTER**

Bidner, Harvey M-SU-MA  
(516) 433-5606  
\*President  
Bidco, Inc., 18 Millford Dr., Plainview, NY  
11803 (516) 938-7738

Brunner, John E. (Dr.) M-MA  
\*P.O. Box 15, Metuchen, NJ 08840  
(609) 448-7204  
Senior Scientist  
U.S. Environmental Protection Agency  
Edison, NJ 08817, (201) 321-6634

Day, Richard G. M-MA  
343 Glen Ave., Scotia, NY 12302  
\*Technical Relations Coordinator  
AEG-Telefunken, 1 River Rd., Bldg. 36-444  
Schenectady, NY 12345 (518) 385-7124

Hahn, Peter V. M-SU-LA  
22 Norchester Dr., Princeton, Jct. NJ 08550  
(609) 799-6266  
\*Video Display Products-Oper.  
Mitsubishi Electronics America, 100 Wade  
Ave.,  
S. Plainfield, NJ 07080 (201) 753-1600

Konnerth, Karl L. M-MA  
Quincy Rd., Rd. 1, Box 91, Putnam Valley,  
NY 10579 (914) 528-8321  
\*Mgr. Display Systems  
IBM Research Center, P.O. Box 218  
Yorktown Hgts. NY 10598 (914) 945-2326

**MIDWEST CHAPTER**

Davidson, Stuart P. M-MW  
\*1257 West Sixth Ave., Columbus, OH 43212  
(614) 486-4127  
Producer  
Warner Amex Cable Communications  
1201 Olentangy River Road, Columbus, OH  
43212 (614) 297-2000

Hale, Chris R. M-MW  
4733 Barnhart Ave., Dayton, OH 45432  
(513) 256-8787  
\*Research Psychologist  
Systems Research Laboratories, Inc.  
2800 Indian Ripple Rd., Dayton, OH 45440  
(513) 258-3960

Sadowski, James M. ST-MW  
\*1225 Knapp Street, Menomonie, WI 54751  
UW-Stout Univ., Menomonie, WI 54751

Stearns, Howard F. M-MW  
\*1260 Kentshire Drive, Centerville, OH 45459  
(513) 433-3382  
Eng'g. Pgm. Manager  
Materials Lab AFVAL/MLTE, Wright-  
Patterson AFB, OH 45433 (513) 255-2644

**MINNEAPOLIS/ST. PAUL CHAPTER**

Brekke, Douglas L. ST-M/SP  
\*P.O. Box 640, Big Timber, Montana 59011  
(406) 932-2155  
Student  
Montana State University, 1304 S. Willson,  
Bozeman, Montana, 59715 (406) 586-7730

**NEW ENGLAND CHAPTER**

Bernstein, William M-SU-NE  
43 Brentwood Rd., Chelmsford, MA 01824  
(617) 256-6976  
\*V.P. & G.M. Info Products Div.,  
Sanders Associates Inc., D.W. Highway South  
Nashua, NH 03061 (603) 885-3077

LaBrecque, John T. M-SU-NE  
\*22 Dublin Ave., Nashua, NH 03063  
(603) 882-7862  
Sanders Assoc. Inc., D.W. Highway South  
NHQ 1-319 Nashua, NH 03061  
(603) 885-4321

Tamucci, Joseph A. M-NE  
\*Dept. Manager  
Mystech Associates Inc., P.O. Box 220  
Mystic, Conn. 06355 (203) 536-2663

**SOUTHWEST CHAPTER**

Durrett, H. John M-SW  
106 Chaparral Rd., San Marcos, TX 78666  
(512) 392-7204  
\*Director, Center for Automated Systems in  
Education  
Southwest Texas State University, San  
Marcos, TX 78666 (512) 245-2526

**WASHINGTON DC CHAPTER**

McMahan, Thomas L. M-WDC  
211 Summerglenn Drive, Asheville, NC 28806  
(704) 667-4548  
\*Manager, Manufacturing Services  
Eaton/Cutler-Hammer, Route 1, Box 1A  
Arden, NC 28704 (704) 684-9861 Ext. 244

**Call For Nominations Of Candidates For The 1982 SID Honors And Awards**

The SID Honors and Awards Committee is soliciting your help in nominating qualified candidates for Fellow, for the Frances Rice Darne Memorial Award, and for Special Recognition Awards. General qualifications based on the SID Bylaw requirements for honors and awards are given below.

(1) FELLOW

The grade of Fellow is one of unusual professional distinction conferred by the Board of Directors, acting on the recommendation of the Honors and Awards Committee, upon a *SID member* of outstanding qualifications and experience as a scientist or engineer in the field of Information Display. The candidate shall have made a widely recognized and significant contribution to the advancement of the field. The nomination must be supported and signed by at least five members in good standing.

**1982 Guidelines For SID Honors And Awards Nominations**

Nominations for SID Honors and Awards should be concise, but they *must* include the following information, preferably in the order given below.

- (1) Name, Present Occupation, Business and Home Address, and SID Membership Grade (Member or Fellow) of Nominee.
- (2) Award being recommended: (a) Fellow\*, (b) Francis Rice Darne Memorial Award, (c) Special Recognition. \*Fellow nominations must be supported and signed by at least five SID members.
- (3) Proposed Citation — this should not exceed thirty words.
- (4) Name, Address, Telephone Number, and SID Membership Grade of Nominator.
- (5) Education and Professional History of Candidate—Include college and/or university degrees, positions and responsibilities of each professional employment.
- (6) Professional Awards and Other Professional Society Affiliations and Grades of Membership.

(2) FRANCES RICE DARNE MEMORIAL AWARD

The Frances Rice Darne Memorial Award is awarded periodically, but not more than once each year, to a *Society member* for an outstanding technical achievement (as opposed to teaching, publication, or service) in, or contribution to, the display field. The award is made by the Board of Directors acting on the recommendation of the Honors and Awards Committee.

(3) SPECIAL RECOGNITION AWARDS

Special citation awards are given to members of the technical and scientific community, not necessarily SID members, for distinguished and valued contributions to the Information Display field. These awards may be made for contributions in one or more of the following categories:

- a. Outstanding technical accomplishments.
- b. Outstanding contributions to the literature.
- c. Outstanding service to the Society.

Nominations should comply with the 1982 Guidelines for SID Honors and Awards Nominations, and they should be submitted to the Honors and Awards Committee Chairman at any time during the year, but no later than June 30, 1981.

(7) Specific statement by the nominator concerning the most significant achievement or achievements or outstanding technical leadership which qualifies the candidate for the award. This is the most important consideration for the awards committee, and it should be specific (citing references when necessary) and concise.

(8) Supportive material: Cite specific evidence such as patents, publications, SID activities, other technical and/or professional society activities, evidence of outstanding leadership, etc. *Please be specific and concise.* Cite material that directly supports the citation and statement in (7) above. Limit the evidence to the most important patents, publications, or service — do not generalize.

(9) References: Fellow nomination *must* be supported by the references indicated in (2) above. Supportive letters of reference will strengthen the nomination for any award.

Send the complete nomination—including all the above material—to the Honors and Awards Chairman by June 30, 1981.

I. Reingold, Chairman  
SID Honors and Awards Committee  
USA Electronics Technology  
& Devices Laboratory, ERADCOM  
DELET-B  
For—Monmouth, NJ 07703  
Phone: 201-544-5740

## Tektronix Introduces Two Electrostatic Hard Copy Units

For users needing quick and inexpensive computer graphics hard copies, Tektronix, Inc., Beaverton, OR, has introduced the 4611 and 4612 electrostatic hard copy units. The 4611 for storage tube copies and the 4612 for raster scan video signal copies are available for \$4,400 each and are said to provide high quality, high contrast black and white images. Original Equipment Manufacturer (OEM) prices and discounts are available.

The copy devices are small and lightweight, nearly identical to one another in appearance, and use a dry carbon toner. Dry toner is easy to use, neat, and inert. Its use eliminates seepage problems which occur with liquid toner systems and produces an image with consistent blackness and density.

The 4611 and 4612 provide true archival copies as a result of the good storage qualities of dielectric paper, according to Tektronix. The paper has the look and feel of plain bond, permitting pen or pencil notations on the copy. Paper loading is quick and simple, and each roll provides about 540 hard copies. The cost per sheet is approximately 2¢, making total cost per copy, including toner, about 3¢. Both hard copy units produce 8½ x 11" copies, with the image size occupying an approximate 7½ x 5¾" area.

The good image quality provided by the 4611 and 4612 is said to be the result of a combination of factors. A total of 256 dot placements per inch horizontally and 171 placements vertically combine with a high degree of dot overlap to create a smooth, aesthetically pleasing image. Each dot overlaps its neighbor by more than two-thirds horizontally and nearly half vertically, producing a more uniform and black line. See figure indicating dot overlapping.

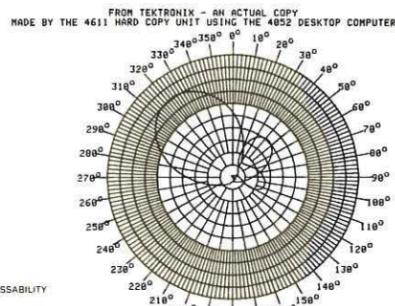
High addressability is provided by a precision shaft encoder on the printing mechanism, which translates a mechanical position of the belt and writing styli into an electronic signal. The controlling electronics section uses this signal to determine where to deposit the electrostatic charge on the paper.

The charge on the paper attracts the dry toner, which contains carbon particles and wax. As the paper passes through the copier, a hot metal band melts the toner, making the image permanent on the paper.

The 4611 and 4612 broaden and enhance the Tektronix line of hard copy devices. The inherently low copy cost associated with electrostatic technology, plus the low unit price of the 4611 and 4612, make them appropriate companions for the increasing numbers of low cost



The Tektronix 4611 electrostatic hard copy unit is designed to produce economical, high quality copies from storage tube displays. It uses a neat single-component dry toner to create permanent images on electrostatic paper for truly archival copies. The unit price is \$4,400, and total cost per copy is about 3¢.



terminals and desktop computers now offered, the manufacturer declares.

The 4611 and 4612 are considered to be especially suitable in environments where cost is an important consideration; for example, where economical working copies are used to preview images before final copies are made. For applications requiring photographic quality or true continuous gray shades, Tektronix offers the 4631 and 4632 hard copy units. The 4631 produces hard copies from storage tube displays, and the 4632 copies raster scan video sources. Both products utilize fiber optic technology to produce the highest quality copies for dense and complex graphic displays. For imaging and patterning applications, the Tektronix 4634 imaging hard copy unit provides high resolution copy with multiple shades of gray.

### Tektronix Hard Copy Product Line Overview

#### 4611 Hard Copy Unit

The 4611 is designed to provide economical, high quality black and white images of information displayed on storage tube screens. Based on electrostatic technology, the unit utilizes dielectric paper for high-contrast, truly archival copies. The 4611 is especially suitable in applications where economical copy is preferred — for file copies, for working copies, or for previewing before committing to camera or plotter illustrations.

#### 4612 Hard Copy Unit

The 4612 is said to provide high-contrast, high quality images of displays from raster scan terminals and other video sources. The 4612 is an electrostatic copier and uses dielectric paper for archivable, economical, black and white copies. The 4612 is well-suited to supply file copies, working copies, or preview copies — or for any application requiring high quality economical copies.

#### 4631 Hard Copy Unit

The 4631 copies displays from the Tektronix line of storage tube products, including the 4010 series of computer display terminals, the 4081 interactive graphics terminal, the 4050 series of graphic computing systems, and the 11- and 19-inch display modules. The 4631 provides photographic quality images and is the primary hard copy device for complex displays.

#### 4632 Hard Copy Unit

The 4632 produces hard copies of most raster scan video sources. It is designed to produce high quality hard copies from video displays of sketches, alphanumerics and complex graphics. With Option 6, it can copy eight levels of gray scale, making the 4632 well suited to differentiate color graphics and graphics shading in applications of research, process control, remote sensing (surveillance, surface monitoring), training, and business graphics.

#### 4633A Continuous Recorder

The 4633A has been developed to answer the continuous recorder needs of major OEMs in the M-mode

ultrasound and well-log market. Specifically, the device records real-time data, either continuously or one page at a time, from systems that provide a Z-axis input simultaneously with a horizontal ramp signal.

#### 4634 Imaging Hard Copy Unit

The 4634 is designed to record high quality continuous tone images from raster scan video sources. The device is intended to serve those customers who require high resolution copy with multiple levels of gray scale, and it is suitable for purposes related to research (imaging and pattern recognition), remote sensing, electron microscopy, video disks, training, process control, and fingerprint identification.

#### 4662 Interactive Digital Plotter

The 4662 is an intelligent B-size (A3) plotter with multiple pen types, colors, and output media. Input data is internally buffered for efficient data transfer from a central processing unit. The internal memory capacity permits the CPU to perform other computations while the plotter draws from the buffer. The 4662 is appropriate for applications in engineering, research, mapping, numerical control, instruction, and business graphics.

#### 4663 Interactive Digital Plotter

The 4663 is an intelligent C-size (A2) plotter. The 4663 is a powerful firmware based product with a parameter entry card that replaces rear panel straps, switches and jumper cables. Using dual programmable pen control, the 4663 can utilize felt tip, wet ink, or ball point pens for plotting engineering research, mapping, numerical control, instruction, and business graphics materials.



For high quality, economical copies from raster scan or video signal sources, Tektronix has recently introduced the 4612 electrostatic hard copy unit. Priced at \$4,400, the 4612 produces copies for a total copy cost of about 3¢. The unit uses a dry carbon toner to create permanent black and white images on electrostatic paper for truly archival copies.



PLOT 50: Software is designed for use with Tektronix 4050 series desktop computers. The programs are said to be powerful, easy-to-use, and to apply high quality graphics to analyze and represent data. Included in the PLOT 50 Library are graphing, drawing, document preparation, statistics, planning, management, and digitizing programs.

# CATHODE RAY TUBES

WE OFFER YOU TECHNICAL ABILITY FOR ANY SPECIAL CRT AND DISPLAY SYSTEM

**CRT**  
FIBER OPTIC FACE  
BACK PORTED  
MONOSCOPES  
HIGH RESOLUTION  
CUSTOM GEOMETRIES  
PHOSPHOR SCREENS  
ELECTRON OPTICS.

**SYSTEMS**  
FLYING SPOT SCANNERS,  
MONITORS, INTELLIGENT  
TERMINALS

DESIGN — DEVELOPMENT —  
PRODUCTION — TUBES AND  
SYSTEMS.

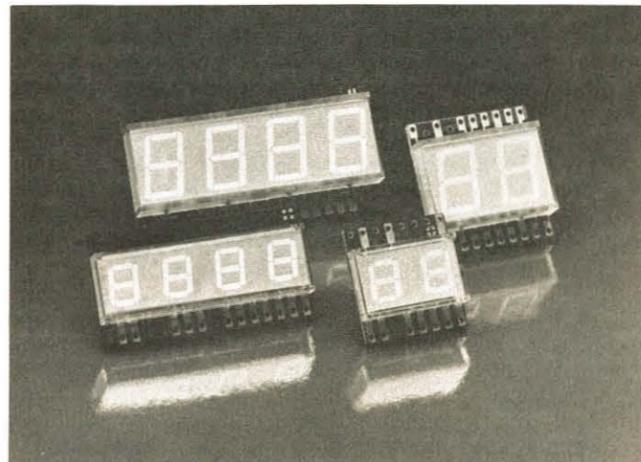


M. SADOWSKY

S. CARLISLE

## SPECIAL PURPOSE TECHNOLOGY CORP.

15818 ARMINTA STREET, VAN NUYS, CALIFORNIA 91406  
TELEPHONE: (213) 989-4610



**LED STICK DISPLAYS:** High performance 0.3" stick displays (foreground), now available from General Instruments, Palo Alto, CA, complement 0.5 inch displays (background) introduced earlier this year. Displays achieve twice the light intensity performance per dollar over standard stick products.

### Flat-Panel Video LED Display

Optotek Limited, Ottawa, Ontario, recently announced that the company has been awarded a contract to develop video resolution LED flat-panel displays suitable for aircraft cockpit applications.

The contract is jointly sponsored by the United States Air Force Flight Dynamics Laboratory, Wright Patterson Air Force Base, and the Canadian Department of Industry Trade and Commerce.

Objective of the effort is the development of green-emitting LED arrays of resolution 128 lines-per-inch. The arrays will be fabricated as 1" x 1" modules capable of abutment on all four sides. These building blocks, incorporating integral decode drive electronics, will be capable of assembly into a flat-panel screen of any required size without loss of inter-element resolution.

In order to produce video imagery of the requisite quality the display will be designed to generate seven shades of gray. Advanced monolithic construction techniques developed by Optotek under the auspices of a recent Canadian Department of Defence contract will be applied to the fabrication of the video display.

An important feature of the development, according to Dr. David I. Kennedy, president, will be the demonstration of satisfactory legibility under the high ambient illumination conditions experienced in the military aircraft cockpit.

The present program evolved from a preceding contract sponsored by the above agencies entitled the Multimode Matrix Display Program. As a principal subcontractor on this earlier program, Optotek was responsible for the development of vector-graphic LED arrays of resolution 64 lines-per-inch. A 4-inch by 3-inch prototype display was produced comprising 50,000 LED elements. This demonstration model convincingly demonstrated the potential of LED arrays as replacements for conventional mechanical instruments and cathode ray tubes in the aircraft cockpit. The new program extends the existing technology to more comprehensively address both industrial and military applications. The availability of a video-graphic display of this type will, for the first time, make an LED flat-panel CRT replacement a reality, according to Kennedy.

In related programs Optotek has developed green-emitting LED arrays exhibiting the necessary sunlight visibility performance and has demonstrated that the technology can also be applied to multi-color displays.

### High Performance 0.3-Inch Multi-Digit Stick Display Available From General Instrument

PALO ALTO, CA, November 4, 1980—General Instrument, Optoelectronics Division, Palo Alto, CA has recently introduced a high performance multi-digit 0.3-inch LED, stick display, said to offer an unparalleled combination of performance and price and to be pin-compatible with standard red sticks from National Semiconductor.

Designated the MMN30000 series, the new stick uses gallium arsenide phosphide on gallium phosphide substrate LED dice and is a complement to the MMN50000 series 0.5-inch displays introduced by General Instrument last September. This high performance technology is claimed by the maker to achieve approximately twice the light intensity performance per dollar over standard stick products and yet remain price competitive.

The MMN30000 series is available initially in two- and four-digit packages which are end stackable. With sufficient quantity, however, General Instrument will consider customizing the product to meet specific buyer needs.

Available in orange, yellow, red, and green, the new stick displays are all pre-matched for brightness and hue. Special lens color options are available to tailor the display to a particular application. According to General Instrument, the product is sunlight viewable under normal conditions.

The MMN30000 stick series is said to feature easy readability and an aesthetically pleasing font. In addition, the MMN30000 series has been designed and tested for use in rugged environments, including automobile displays. The product is rated at a storage and operating temperature range of -40°C to +85°C.

With its availability in multiplexed or direct drive configurations and its color and package options, it may be used in a broad range of applications, including test and measurements; point-of-sale; television; industrial control and consumer products, such as TV channel indicators, scales, games, automobiles, comfort control centers, and taxi meters. to name just a few.

According to Alex Findlay, General Instrument's product marketing manager, the significance of the product is its luminous intensity per dollar, plus the fact that it offers an effectively unlimited lifetime of 100,000 hours to half its original intensity, allowing significant savings in the long term. In addition, Findlay said, it is also possible to reduce the number of drive circuits required for additional cost savings.



ZENITH DATA SYSTEMS, Glenview, IL, has announced its first 8-inch, dual-sided, dual-density floppy disk system, the Z-47. Designed for use with the ZDS Z-89 microcomputer system (left), the Z-47 can provide up to 2½ million bytes of data and program storage when used with the ZDS microcomputer built-in 5.25-inch disk drive. The system is said to allow operating system and program disks to be run at the same time for faster, more efficient data access, providing greater flexibility for a wide variety of business and professional applications.

Other advantages claimed for the new Z-47 are: average data access in 191 milliseconds; new software capabilities, including both CP/M\* and HDOS; easy data transfer between 8-inch and built-in 5.25-inch disks.



Dataproducts' new 1500 line-per-minute band printer, the BP-1500, is the first in a family of high speed printers designed to provide excellent print quality and high reliability at heavy duty cycles.

### Dataproducts Introduces High-Speed BP-1500 Band Printer

Dataproducts Corporation, Woodland Hills, CA, said to be the largest independent printer manufacturer, recently announced its 1500 line-per-minute BP-1500. The unit is the first in a new family of high-speed band printers designed to complement the firm's highly successful B-Series, claimed by the maker as a standard for the medium-speed computer printer marketplace.

"At 1500 lines per minute, the BP-1500 prints an average page in 1.5 seconds," says Robert J. Pieper, vice president-marketing. "This speed makes the printer an ideal match for the medium and large system builders seeking high volume output devices for use in EDP centers, remote batch terminal applications, or large distributed processing modules," he continued.

The BP-1500 is built to provide excellent print quality and high reliability at the heavy duty cycles typically found on systems using high-speed printers, Pieper explains. Using an interchangeable steel band, the BP-1500 prints 1500 lines per minute with a 48-character set, and 1200 lines per minute with a 64-character set.

The speed of the unit is complemented by an easy-to-use design allowing rapid band, paper, and ribbon changes for minimum off-line time.

The printer utilizes the diagnostic and status indicators pioneered on the B-Series. These indicators minimize downtime by providing detailed status on the condition of the microprocessor and system interlocks which control the total printer operation.

The conveniently located touch-sensitive control panel includes a built-in self-test unit which features a switch selectable 80- or 132-column multiple pattern program.

Built-in sensors indicating paper-out, as well as paper and ribbon motion, are included to prevent loss of data and provide for unattended operation.

Self-contained hammer flight timing circuitry further simplifies maintenance and lowers the necessary skill level of technicians needed to service the unit, according to Pieper. Standard features such as adjustable forms thickness control, paper puller, four forms tractors, single cycle print control and universal power supply further enhance printer operation and flexibility," he states.

Other significant features such as power stacker, quietized cabinet, forms-length select switch, 12-channel paper tape and direct access vertical format units are available as options.

Dataproducts is currently demonstrating the BP-1500, and has initial units available in the first quarter of 1981.

### Dataproducts BP-1500 Band Printer Performance Specifications

<b>OPERATION</b>	
Print Speed:	
Character Set —	48 64 96
Speed (LPM) —	1500 1200 900
Paper slew speed:	50 inches per second
Single line advance:	14 milliseconds
Interface:	Dataproducts parallel with full line buffer. Long line, optional.
Hammer system:	132 Mark V hammers; 136, optional
<b>FORMS HANDLING</b>	
Copies:	Original plus 5
Forms size:	Fan-fold, edge perforated continuous forms from 88.9 mm (3.5 in.) to 476 mm (18.75 in.) wide
Format control:	Fixed 11 in. or 12 in. forms length, standard Forms length switch, optional 12-channel tape or 12-channel direct access VFU, optional
Character spacing:	10 CPI
Line spacing:	6 or 8 lines/in.—switch selectable
<b>ELECTRICAL</b>	
Voltage:	100, 120, 127, 200, 220, 230, 240 (+10% -15%)
Frequency:	47 to 63 Hz
Power Requirements:	1100 watts maximum
<b>FEATURES</b>	
Standard:	Self test — operator selectable, 80 or 132 columns Diagnostic status display Scopeless hammer flight timing Adjustable forms thickness control Print density control Long life towel ribbon Paper puller Single cycle control Universal power supply Variety of character sets Ribbon motion sensor Paper out sensor Paper motion sensor Casters Four forms tractors
Optional	12-channel paper tape and direct access VFU's Forms length select switch Power stacker Quietized cabinet (60-62 dbA) Special interfaces Cover lift on paper fault Static eliminator Line counter Time meter Hammer verify Special paint
<b>DIMENSIONS</b>	
Height:	124.5 cm (49 in.)
Width:	90.1 cm (35.5 in.)
Depth:	74.9 cm (29.5 in.) with paper puller removed. Attaching puller adds 22.9 cm (9 in.)
Weight:	200 kg (440 lbs.)

## Calma Introduces CAD Industry's First Voice Control Unit

Calma, Sunnyvale, CA, a leading CAD/CAM innovator, recently introduced the industry's only voice control unit, in a first application with Calma's vector memory display (VMD) operation. This addition to GDSII — Calma's integrated circuit product line — is said to make it the fastest, most versatile CAD/CAM system available.

The unique voice control unit features a headset and lightweight microphone attachment. GDSII operators can perform all VMD functions — including continuous pan, zoom, multiple view, and composite image — with voice only and without using keyboard, pen or menu.

The unit allows voice control of all GDSII commands and can be trained in any language. Its short learning time means the system can be on-line in a few hours.

"Calma's GDSII VMD is so fast, voice input was the only way we could keep up with it. By adding voice, we now have the means of controlling the VMD smoothly while adding flexibility of command input," says Calma IC product manager Susan Schedler.

Calma's voice control unit holds over 50 words on the board at one time and can be fully uploaded and downloaded. The system will accept single-word commands or phrases up to one second long and has a 99.8 percent accuracy rate on input.

These capabilities are said to give the Calma system a command input significantly faster than conventional

systems. Voice also decreases operator eye movement and virtually eliminates interruptions in VMD pan and zoom. Demonstrations show substantial productivity increases IC design and redesign.

Calma's recently improved GDSII VMD now features a 1/60th of a second picture repaint, continuous pan and zoom, split imaging and tracking. Because of the VMD's local processing capability, the main CPU is freed from the burden of continuously refreshing the screen.



Memory Display via Voice Control — Calma, Santa Clara, CA, recently unveiled the CAD/CAM industry's only voice control unit in a first application with this company's vector memory display (VMD) operation. The operator voice unit makes GDSII — Calma's integrated circuit product line — the fastest, most versatile CAD/CAM system available, according to Lynette DeNike. Using the lightweight headset and microphone attachment, this operator can perform all VMD functions — including continuous pan, zoom, multiple view, and composite image — by voice command.

## Xerox Offers Composing System For Publishing

A computer software package that eliminates conventional composition operations in publishing has been announced by the Printing Systems Division of Xerox Corporation, El Segundo, CA.

The Xerox Integrated Composition System (XICS) will be used in conjunction with the Xerox 9700 electronic printing system. XICS, which can be used with most central computers, accepts text from any terminal or word processor and formats it into complete pages for printing on the Xerox 9700. The formatting includes all composition and page makeup.

XICS consists of programs like edit and update; publication masterfile management; and composition and pagination.

The software will include modifications for specific industries. In the insurance field, for example, all standard policy pages can be stored electronically in magnetic media according to the policy type and the state where the policy is issued. In turn, the software will put the appropriate pages together and collate them before printing on the 9700.

XICS can also be used to produce documents at several locations. For example, a computer in New York could transmit finished pages to a host computer in Los Angeles, Chicago, and Houston for local 9700 printing to avoid distribution costs and delays.

"By automating the composition and production of reports and other business publications, XICS will dramatically change today's publishing industry," says Robert V. Adams, president, Xerox Printing Systems Division.

"In publishing right now, the author can make changes during late stages of production only at very high cost," stated Adams. "But with XICS, the author maintains control and can easily make changes at any stage."

The 9700 electronic printing system, introduced in 1977, accepts XICS formatted information in digital form from system tape or via direct channel on IBM computers. The information is stored in the system and printed only as needed, avoiding the expense of warehousing obsolete or unused business publications.

Besides a turnaround time of hours rather than days as in conventional publishing, XICS offers the flexibility of being able to make publication changes at any host computer input keyboard, it is claimed. The primary XICS markets are expected to be for those applications requiring formal, typeset publications such as proposals, training manuals, technical and sales literature, directories, and legal and legislative documents.



This ROHNAR 7450 is a stand-alone sector real time ultrasound unit. A full B-scan diagnostic system can be added after purchase, as the user's patient load increases, and as new applications for ultrasound are discovered. The maker is Rohe Scientific Corporation, North American Philips Company, Santa Ana, CA.

## New Security Monitoring System

A new desk-top central control security management system designed to provide sophisticated access control and security alarm monitoring capabilities at a price small businesses can afford has recently been introduced by Cardkey Systems, a VSI Company, Chatsworth, CA.

Called the Dimension 1000, the low cost, lightweight system offers the capacity to control, monitor and document the movement of up to 3000 cardholders at up to eight separate and remote cardreader locations. Additionally, the system can monitor up to 64 environmental and security alarms, including HVAC disruption, intrusion, smoke, heat, water, or other potentially dangerous conditions.

Said to be as easy to operate as an office calculator, Cardkey's new Dimension 1000 features simple keyboard programming. All operator commands are verified on a large 16-character LED display.

Card keys may be programmed for up to eight access levels and four time zones to control the time and place of authorized access. The system's anti-passback feature prevents the consecutive use of a card key at either an entry or exit location.

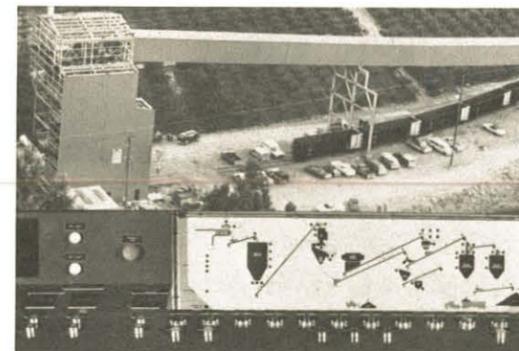
Validating card keys for an individual or a large group takes only seconds. Changing access parameters or voiding cards out of the system also can be accomplished just as quickly for individuals or groups, without ever recalling a single card key.



DIMENSION 1000 — A new desk-top central control security management system said to provide sophisticated access control and security alarm monitoring capabilities at a price small businesses can afford has just been introduced by Cardkey Systems, a VSI Company, Chatsworth, CA.

The Dimension 1000 includes a real-time calendar clock which constantly displays the date and time on the front of the console. As each system transaction occurs, a builtin 21-column printer records the card key number or alarm point (if activated), and the date and time of the occurrence for review and an audit trail of all monitored activities.

Weighing only 24 lb. Cardkey's Dimension 1000 is housed in a compact, fire retardant case meeting all Underwriter Laboratories requirements. The system operates on 115/230V — 50/60Hz.



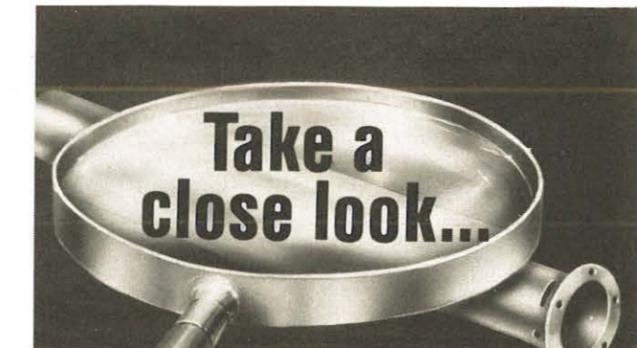
## Coal Handling Costs Slashed By New Electronic Control

RISE System, a new electronic bulk handling control system made by Rise America, Parlin, NJ, has just passed the 20,000th hour of continuous operation without a single failure after its initial shakedown tests.

When asked about RISE System 2, Stanley Jacobs, Chief Electrical Engineer of Colorado Westmorelands Orchard Valley Mine, where the first system is installed and operating, stated,

"Design objectives required RISE AMERICA to build in the capability for loading a 100-car unit train in 4 hours. However the system's typical loading time is 2 hours, and our best time is under 1-3/4. RISE AMERICA'S turnkey single source responsibility sure was a comfort during the critical start-up phase. NO coal handling system should be designed without a RISE system 2 control".

The system includes a central control console with lighted graphics to show fault locations. The distributed logic used handles hundreds of remote devices, then multiplexes signals on a 2-wire system to the master unit at the console.



**magnetic shielding  
requires precision  
manufacturing**

Over 20 years of experience in the design, production, quality control and inspection of magnetic shielding assures precision products that stand up to the closest check.

FREE—send for our new brochure on magnetic shielding alloys and photomultiplier tube shields. Whatever your application, let M.R.L. meet your needs.

**Magnetic RADIATION LABORATORIES, INC.**

92 N. Lively Blvd. • Elk Grove Village, Illinois 60007 • Area Code (312) 437-5200

## Versatec Printer/Plotters Make Hard Copies From Tektronix 4025 Terminals With New Hard Copy Controller

The new Versatec Model 240 hard copy controller, made in Santa Clara, CA, enables hard copy production from up to four Tektronix 4025 refresh raster computer display terminals using almost any Versatec printer/plotter.

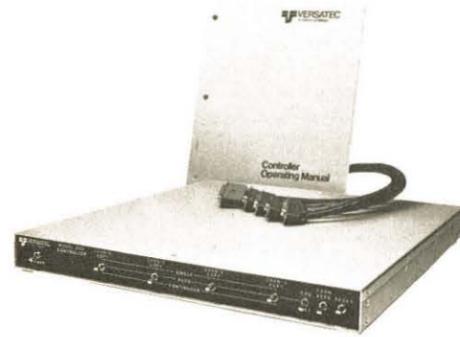
Generating both graphics and text data, the controller samples the maximum graphics area of 640 horizontal points by 462 vertical lines from the Tektronix 4025 memory, and expands three-to-one for hard copy production. Text in the form of 53-line pages also can be duplicated. When used with a 200 point per inch printer/plotter with 11-inch wide paper format, such as the V-80, final image size is 9.6 by 6.9 inches.

Copy requests can be made from the 4025 terminal or via the controller's copy request switch. In most cases, copies are generated within 10 seconds. The resulting copies are legally archivable. Cost per copy is approximately three cents.

A selectable priority system enables switching of the printer/plotter from computer-directed printing or plotting to hard copy output. The standard priority system allows the computer to complete a print line/plot scan or continue to end of page/plot. Computer-directed work also can be interrupted immediately via the controller hard copy switch or be continued until the computer has completed the entire job.

The Model 240 controller can be chained with other Versatec controllers to serve additional 4025 terminals, DVST (Direct View Storage Terminals), or video sources. Related products include the Model 210 video hard copy controller for hard copy reproduction from popular video terminals, the Model 230 hard copy controller for hard copy from Tektronix DVST, and the V-81 integrated hard copy system that copies both 4025 and DVST displays.

This new controller is carried in a desktop or rack-mountable enclosure. Height: 4-3/4 inches (4.4 cm). Depth: 17-5/8 inches (44.8 cm). Width: 17 inches (43.2 cm). Weight 25 pounds (11.33 Kg).



The new Versatec Model 240 Hard Copy Controller enables hard copy production from up to four Tektronix 4025 Computer Display Terminals using almost any Versatec printer/plotter/



Copy requests can be made from either the Tektronix 4025 terminal or via the new Versatec Model 240 controller's copy request switch. Copies are generated within ten seconds and are legally archivable.

## Video Terminal for Newspapers

New VT173/C video terminal for classified advertising entry and editing is one of two new terminals for newspaper applications from Digital Equipment Corporation, Merrimack, NH. The VT173/C contains an LSI-11/2 microcomputer and features split screen capability, variable scrolling and cursor speed, special keys for "customizing" by the user, and 12 keys specifically for ad preparation.



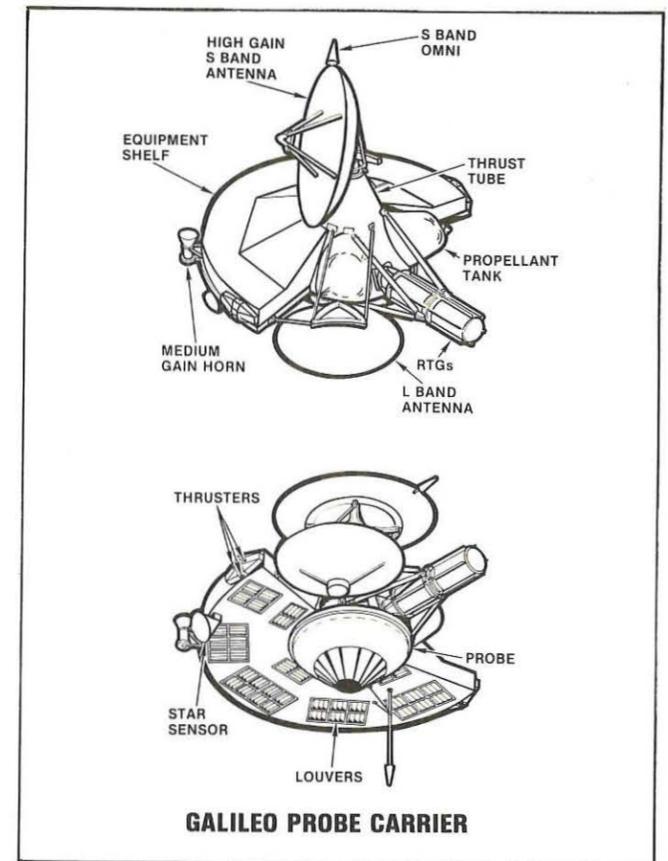
## High Energy Announces New Capacitor Line

High Energy Corporation of Parkesburg, PA, has announced development of a new line of high voltage ceramic capacitors for DC applications. The new line of epoxy-encapsulated ceramic capacitors is designed for use in high voltage DC power supplies, electrostatic copying machines, lightning arrestor systems, laser applications, and insect electrocution devices.

Capacitance values ranging from 16,000 PF at 6 KVDC to 2,700 PF at 40 KVDC are available for operation over the temperature range of -55°C to +85°C. The capacitors feature eight different case sizes along with two terminal styles. Backed by High Energy's in-house powder capability and ceramic capacitor experience, the EPSL series has been designed with reliability, flexibility and performance in mind, according to this manufacturer.

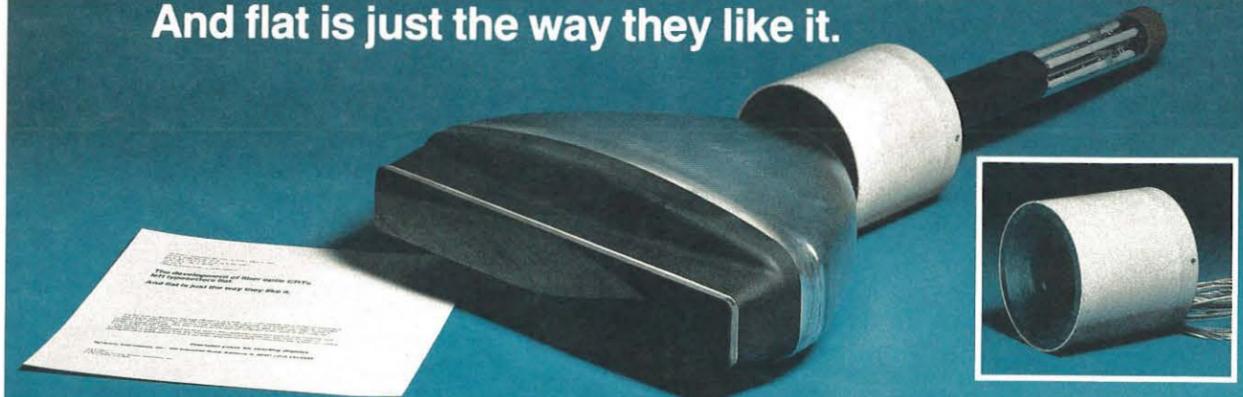
16/Information Display 2-81

**JUPITER PROBE** — The Galileo Probe Carrier will transport atmospheric entry probe to the planet Jupiter later in the decade as part of National Aeronautics & Space Administration's planetary exploration program. The carrier, with the conically shaped entry probe attached to its underside, is shown in this artist's concept. NASA recently selected Hughes Aircraft Company's Space and Communications Group for negotiation of a contract to develop the carrier. Hughes has been under contract for two years for separate development of the probe. The carrier will receive scientific data transmitted by the probe during its descent into the Jovian atmosphere in 1987 and relay the data in real time over 560 million miles of space to NASA's Deep Space Network. The probe's scientific instruments are expected to yield new insights into the evolution of the sun's planets, including the earth.



The development of fiber optic CRTs left typesetters flat.

And flat is just the way they like it.



The flat front surface and the high efficiency of a fiber optic CRT means many things to typesetters. This means direct contact with the film or paper to be exposed. This means no costly lens system between CRT and paper. This means high speed and high quality type production. This means a smaller physical package. This also means an exceptional deflection yoke, such as the Syntronic C11955 yoke shown above.

Our precision yokes developed for fiber optic CRTs represent excellent linearity and minimum spot growth center to edge. Our yokes also represent experienced engineering with over 10 years of phototypesetting applications. Contact our sales engineering staff for component and system information.

**syntronic**

Precision yokes for exacting displays

Syntronic Instruments, Inc., 100 Industrial Road, Addison, IL 60101 (312) 543-6444

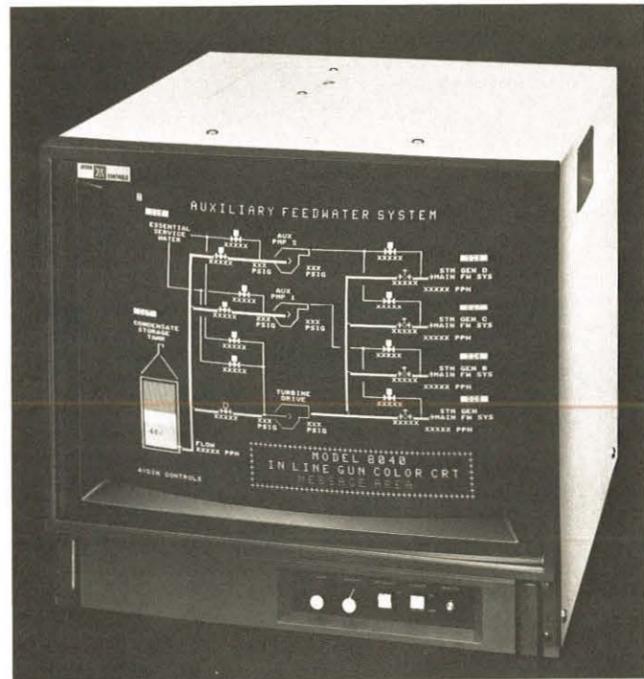
## Award To Sam Christaldi

On Friday, November 21, 1980, the Radio Club of America, (the oldest radio club in the United States) awarded CELCO's Dr. Peter Samuel Christaldi the Allen B. Dumont Award for Dr. Christaldi's outstanding contributions to radio, TV, and the science of electron beam control.

Sam Christaldi, Ph.D. is CELCO's (Constantine Engineering Laboratories Company) Director of Research since 1963 and recently has taken over the position and responsibilities of CELCO's retired Engineering Sales Manager and long-term employee, Edson Ryder.

Doc Christaldi's work includes CRT deflection component design and research for CRT display systems and electron beam control applications at CELCO.

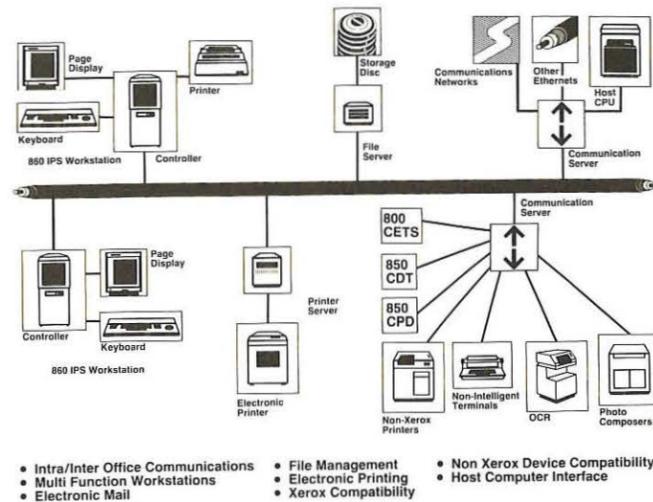
Doc is a graduate of Rensselaer Polytechnic Institute where he earned his Ph.D. in Physics in 1938.



### Aydin Controls Announces A New 19" Color Monitor

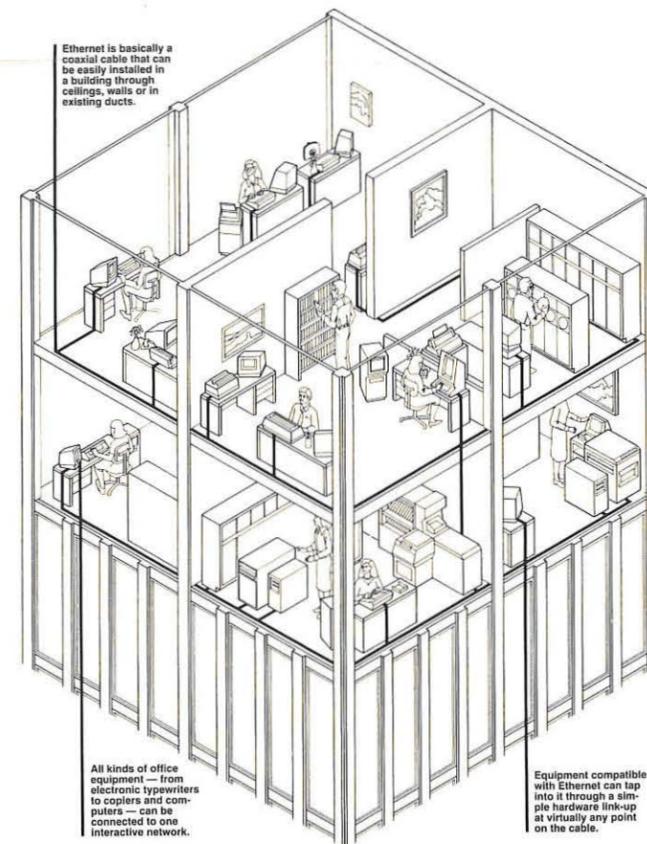
FORT WASHINGTON, PA., December 1, 1980 — Aydin Controls, Fort Washington, PA, expands its existing CRT product line with the addition of the Model 8040, a 19 inch high resolution color monitor. The Model 8040 employs a precision in-line gun with a high resolution 0.31 mm black matrix shadow mask. As a result, this monitor is said to achieve less than 0.75 mm misconvergence in the center of the tube without the aid of any dynamic convergence circuits.

The 8040 will operate at horizontal line rates of 15.5 to 23.5 kHz with less than 9 us retrace time. The video amplifier operates at 25 MHz, supporting resolutions of 900 pixels per line. Options include long persistence phosphor tubes, neutral density filters, and rack mounting equipment.



**SYSTEM ELEMENTS** — Newly announced Xerox 8000 network system includes electronic office file, laser printer and communications units. It links different types of office equipment—including competitive equipment—into a single integrated network. All elements, including previously announced Xerox 860 workstation, are connected to Ethernet local area communications network (heavy line—center).

**INTEGRATED OFFICE** — Many types of office equipment can be linked into a single, integrated system through newly announced Xerox 8000 network system. Ethernet local area network cable (heavy line) connects system elements and lets users create, process, file, print and distribute information electronically.



When time counts, call American for complete consulting service in Electromagnetic Shielding. With up to date resources and completely equipped laboratory, American's experts specialize in design and manufacturing problems, both experimental and prototypes, and cost reduction analysis. We also invite your participation in our regularly scheduled seminars.

#### Typical Types

Cathode Ray Tube Shields  
Fiber Optic Tube Shields

Photomultiplier Tube Shields  
Transformer Shields

Power Supply Shields  
Bubble Memory Shields

#### Typical Applications

Computer Terminals  
Graphic Displays

Medical Equipment  
Navigation & Guidance

Memory Systems  
Audio Equipment

Air Traffic Control Systems  
Radar and Sonar Equipt.

Contact Mr. John L. Coddington for further information  
Telephone: (317) 297-1030 Days (317) 241-7105 Evenings



## American Shielding Corp.

P.O. Box 24004 1936 Cunningham Road Indianapolis, Indiana 46224