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Tektronix®
COMMITTED TO EXCELLENCE

COMMITTED TO EXCELLENCE

Our ongoing commitment to excellence has established Tektronix as a world leader in the computer graphics industry. And the Information Display Division maintains that position by continuing to develop the technologies to meet our customer's varying needs.

Committed to excellence means providing graphics solutions to the problem of communicating technical information, whether it is for design or analysis or presentation. To answer the specialized needs of technical professionals, we have developed a family of compatible graphics peripherals—monochrome and color, ranging from high performance to low cost—and application systems products.

But our commitment doesn't end with selling the hardware and software that has become the industry standard. Or with providing systems solutions for new applications. It extends to enhance, upgrade and protect your installation. And it extends to support your investment—when you buy a Tektronix product, you are also investing in the people and services behind the product.

Our staff of customer service representatives are your initial contact with the company. Then trained sales engineers give you service advice and after-sale support. Finally, a worldwide network of service centers provides calibration, maintenance and repair services. You can depend on Tektronix for the technical expertise and prompt response that establish our service policies as the most valued in the industry.

Our service programs are flexible enough to fit your needs and guarantee your maximum uptime. Long-term support programs ensure years of service after a product is out of production. In addition, training classes are offered in product theory, operation, maintainence and repair at our main plant in Beaverton, Oregon, and at various locations throughout the world. Audio and video training tapes are also available.

At Tektronix, committed to excellence means providing the finest service available for the most reliable line of graphics tools in the business.

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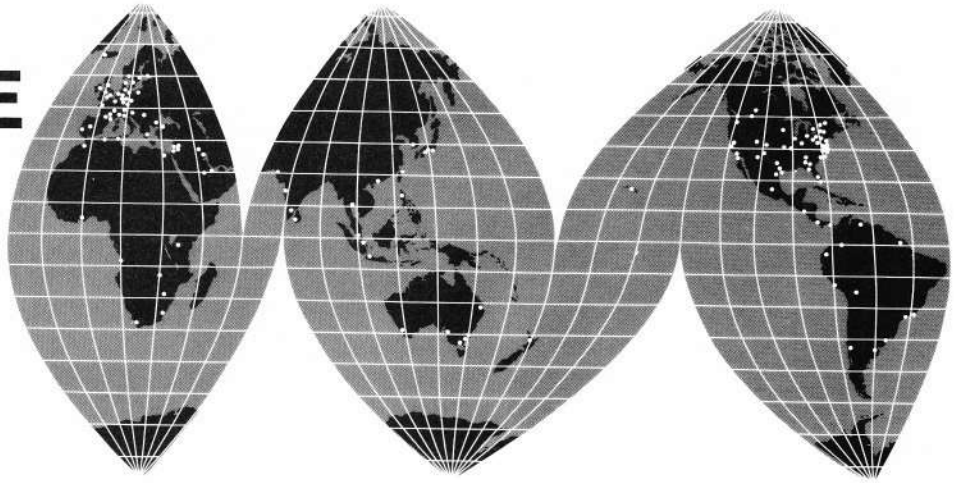
YOUR WORLDWIDE SERVICE NETWORK



WORLDWIDE SERVICE NETWORK

We offer a worldwide service network with the technical back-up and total company resources to keep your Tektronix products and software running as reliably as the day they're installed. Local accessibility is offered by 85 Service Centers and Tektronix supported service technicians in over 60 countries. Some 700 people around the world are dedicated to servicing Tektronix computer graphic products exclusively.

With Tektronix you are assured of priority service whenever you have a problem. If the problem is related to our hardware or to our operating software, we repair it on the spot or make arrangements for quick remedies from our back-up support. And if the problem is elsewhere, we cooperate fully with other vendors until your entire system is restored to normal operation.

Tektronix products are serviced in all countries where they're locally sold. Conditions within a country may limit the type of service available; therefore, some of the programs discussed here are not available in all countries. Specific country service capability and particulars can be obtained from your local Tektronix Sales or Distributor's Office.

Tek has built its reputation on high quality, highly reliable products and has supported those products with a dedicated Service organization for over 35 years. We know that reliability and fast, fixed-the-first-time service is important to you. Tek is here to maintain the full investment value of your computer graphic products.

SELF-MAINTENANCE SUPPORT SERVICES

Tek knows that many OEMs and large customers provide maintenance themselves on their Tek computer graphic peripherals and the Tektronix products in their systems. Tek is committed to support these customers in maintaining their Tek computer graphic products. We offer a variety of support activities to back-up our customer's efforts. Some of the support services are: parts, module repair and return; provisioning; service training; service publications; accessories, supplies and test equipment; and maintenance and software services.

MAINTENANCE AGREEMENT SERVICES

A Tektronix Maintenance Agreement provides a planned program of regular service that protects the continuity of your product's operation--and paves the way for the fastest, most effective response to unplanned downtime. A Maintenance Agreement assures you of priority service, be it an emergency situation or otherwise.

Tailor the Maintenance Agreement to your particular needs. The basic plan includes coverage of all failures, as well as scheduled maintenance to maximize uptime--this includes all labor, travel, and parts. You select the level of service response time, after-hours support, or whatever you might require. Your cost depends on the system covered and the level of service selected.

Coverage is renewable, so you can extend product maintenance far beyond warranty. Some products have "Warranty-Plus" service plans orderable with the product to extend the service available under the warranty period. Quantity discounts are also available.

PER-CALL MAINTENANCE SERVICES

You may decide that a Maintenance Agreement isn't for you. You can depend on our Time and Material service for standard on-site work.

Services are performed at current labor rates and travel charges. Repair services are warranted for 90 days. Firm quotations are available for a nominal fee.

The quality of service work in per-call situations is the same as under a maintenance agreement. You can always depend on quality work from Tektronix.

TECHNICAL ASSISTANCE SERVICES

TAS (Tektronix Technical Assistance Services) supplement your own resources and provide short-term consultative assistance to aid your Tektronix software implementation, training and problem solving. TAS exists to help you gain maximum benefit from your Tektronix products.

TAS is a general program making Tektronix' System Analyst resources available at your site and is available for Tektronix hardware and licensed software products. Your requirements will be defined and agreed upon before action is taken or cost is incurred. Most cases will be satisfied on a "time and materials" basis. Tektronix will make every effort to respond in a timely and efficient manner to help you more quickly achieve or increase productive capability.

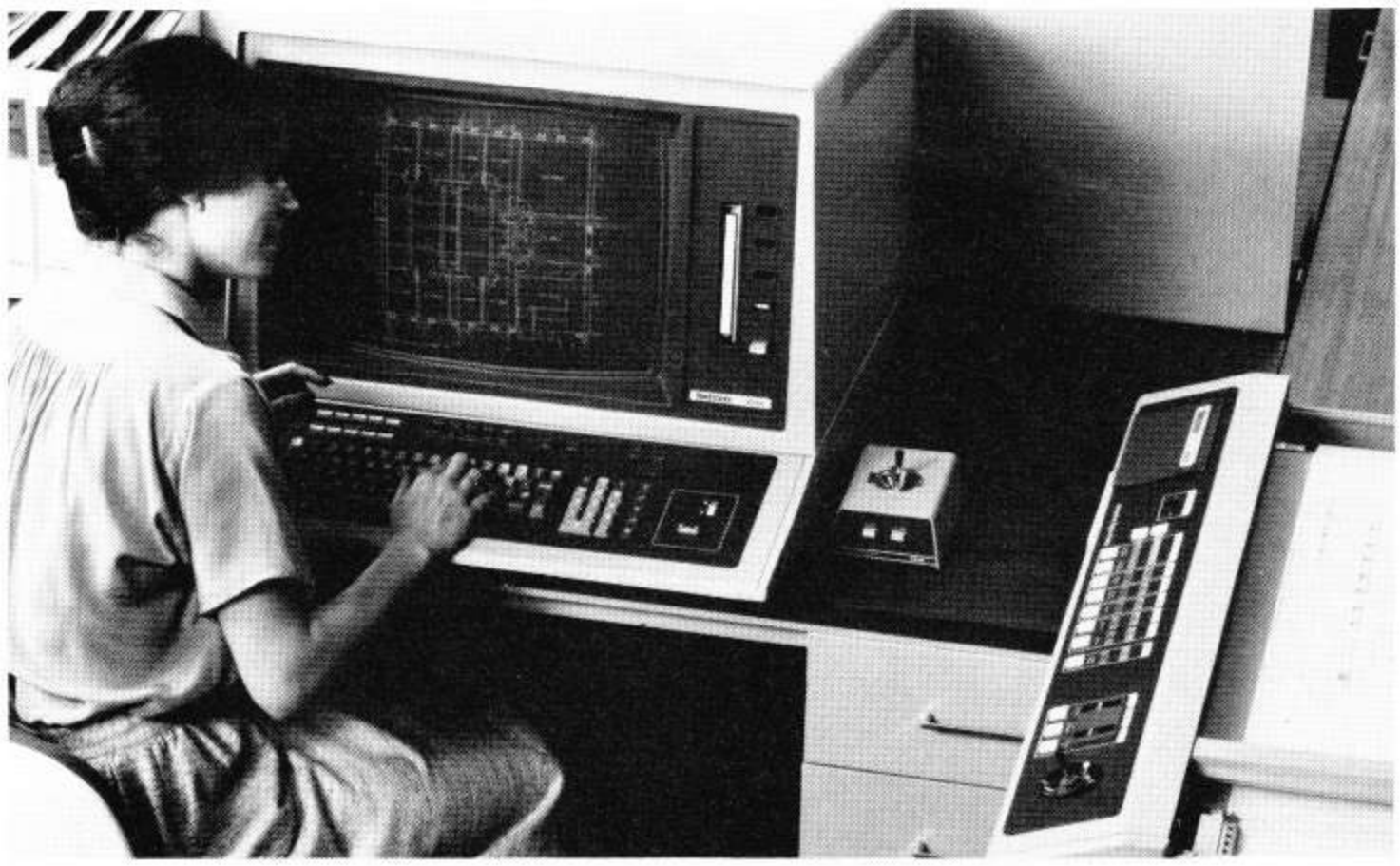
SOFTWARE SUBSCRIPTION SERVICES

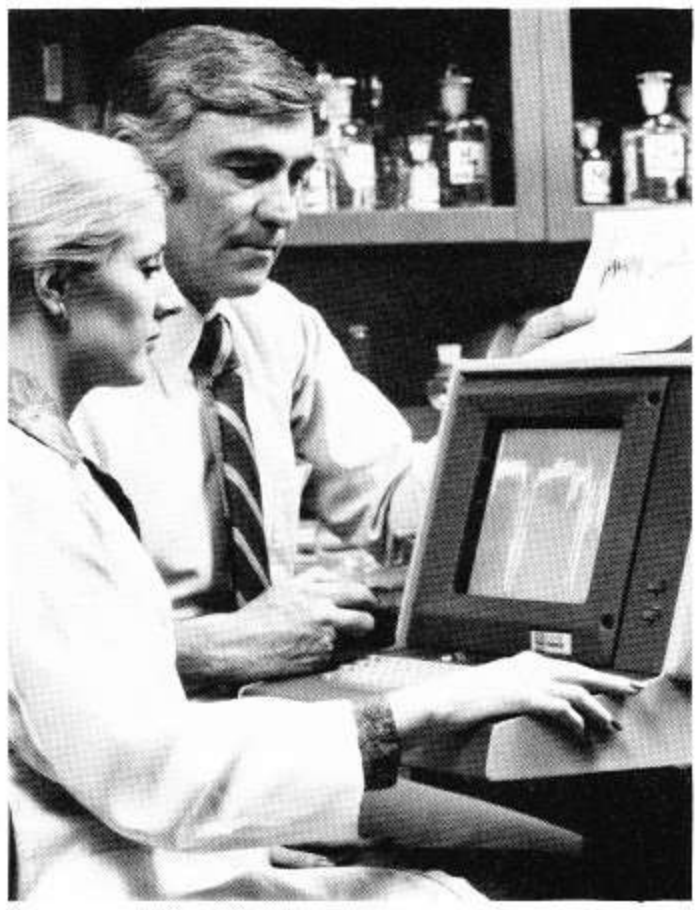
The Tektronix SSS (Software Subscription Service) provides subscribers with current releases of Tektronix licensed software products, and updates to software documentation.

With SSS, Tektronix provides updated products on the same media as the original products. Updated products are available as required to maintain a currently released version. SSS coverage includes licensed PLOT 10 and PLOT 50 software products.

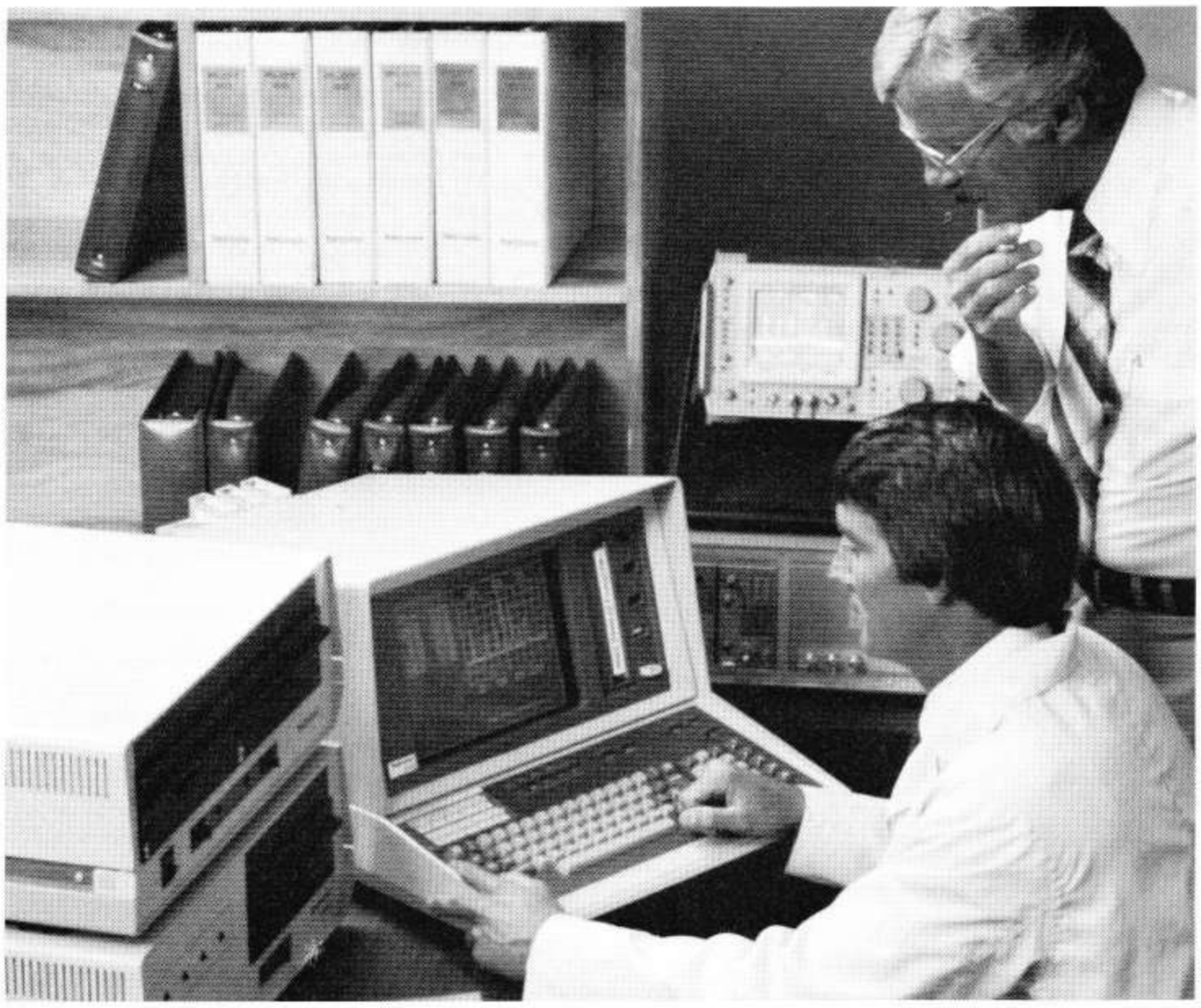
Software products updates are supplemented by documentation changes to software reference manuals.

During the three-month period of Warranty or a SSS, Software Performance Reports may be submitted to Tektronix. When your diagnosis indicates a software defect, complete a Software Performance Report and send it to Tektronix. Tektronix will respond via code correction, bypass procedure, or include the correction in the next update of the product.



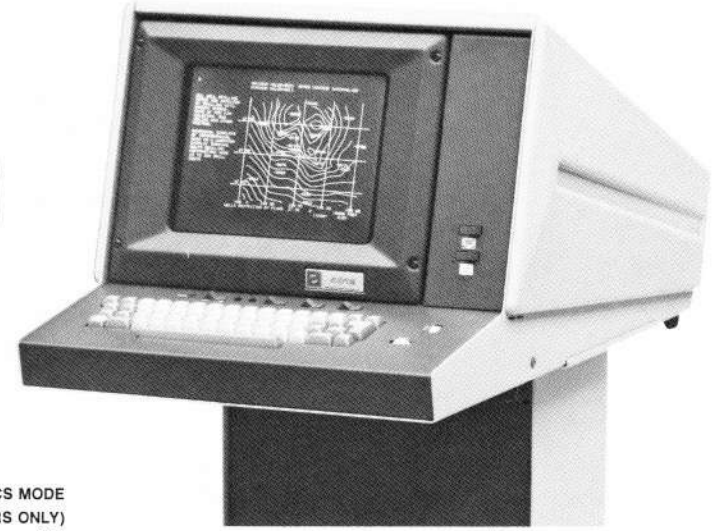


Terminals & Desktop Computers



4006-1

4012



4006-1 Computer Display Terminal

Low Cost

Flicker-Free High Resolution

Graphic and Alphanumerics

The 4006-1 Computer Display Terminal makes interactive, high-resolution flicker-free graphics affordable to cost-conscious disciplines and departments. Priced competitively with many alphanumeric (only) terminals, the 4006-1 makes graphic capability practical for the stock room, the classroom and the conference room as well as for other graphic applications.

The 4006-1 connects readily to most mainframes, thanks to its RS-232C interface. A screen capacity of 2590 alphanumeric characters in addition to its graphics capability allows the 4006-1 to operate in association with existing alphanumeric terminals to interpret statistical data and transform it into meaningful charts, tables, graphs and diagrams.

The 4006-1 is shipped with a Standard Data Communication Interface conforming to EIA RS-232C, asynchronous full duplex only. Option 01 is a full- or half-duplex interface.

PLOT 10 Software packages designed to be used with the 4006-1 Computer Display Terminal include: Terminal Control System, Advanced Graphing-II, Easy Graphing, Interactive Graphics Library, Preview Routines for CalComp Plotters, Minicomputer Software, Character Generation System, and the Interactive Graphing Package.

CHARACTERISTICS

DISPLAY

Medium — Direct view bistable storage CRT.

Dimensions — 190 mm x 142 mm (7.5 in x 5.6 in).

ALPHANUMERIC MODE

Format — 35 lines; 74 character/line; 2590 characters full screen.

Character Set — 63 characters (TTY ANSI Code).

Character Generation — 5 x 7 dot matrix.

Cursor — 8 x 8 dot matrix.

GRAPHICS MODE (VECTORS ONLY)

Vector Drawing Time — 3.6 ms ± 0.2 ms.

Graphics Matrix — 1024 X x 1024 Y addressable points; 1024 X x 780 Y viewable points.

Baud Rate (Transmit and Receive) — 75 to 4800 baud.

ORDERING INFORMATION

4006-1 Computer Display Terminal.

Option 01 — Optional Data Communications Interface.

INTERNATIONAL POWER CORD AND PLUG OPTIONS (4006-1 & 4012)

Option A1 — Universal Euro, 220 V/16 A, 50 Hz.
Option A2 — UK, 240 V/13 A, 50 Hz.
Option A3 — Australian, 240 V/10 A, 50 Hz.
Option A4 — North American, 240 V/15 A, 60 Hz.

4012 Computer Display Terminal

High-Resolution, Flicker-Free Graphics

Full Upper and Lower Case ASCII Character Set

Conventional Bus Structure for Peripheral Add-On

The 4012 Computer Display Terminal combines the world's leading graphics with complete alphanumerics. Alphanumerics can tabulate computer data, but graphics can amplify that data into usable, immediately meaningful information. High-resolution graphic presentations and the full ASCII alphanumerics, upper and lower case, are available.

The flicker-free screen provides up to 1024 X x 780 Y displayed graphic points or as many as 2590 alphanumeric characters per display. The TTY-style keyboard simplifies input while the thumbwheel controlled crosshair cursor enhances graphic interactivity. Using thumbwheel control, the operator can direct the X-Y cursor to make additions or deletions of data on the display screen.

PLOT 10 Software packages designed to be used with the 4012 Computer Display Terminal include: Terminal Control System, Advanced Graphing-II, Preview Routines for CalComp Plotters, Minicomputer Software, Character Generation System, APL Graph-II, the Interactive Graphing Package, Easy Graphing, and the new Interactive Graphic Library (IGL).

Basic Data Communication Interface included with the 4012 is EIA RS-232C compatible (full duplex only). The Optional Data Communication Interface (EIA RS-232A or C) includes convenient switch-selectable functions, independent transmit and receive baud rates, and full- and half-duplex operation.

CHARACTERISTICS

DISPLAY

Medium — Direct view bistable storage CRT.

Dimensions — 203 mm x 152 mm (8 in x 6 in).

ALPHANUMERIC MODE

Format — 74 characters per line; 35 lines per display; 2590 characters per display.

Alphanumeric Cursor — Pulsating 7 x 9 dot matrix.

Character Set — 94 characters (Full ASCII).

Character Size — 85 x 105 mils.

Character Generation — 7 x 9 dot matrix (with MOS ROM.)

Character Generation Rate — 1,000 characters/s.

GRAPHIC MODE (VECTORS ONLY)

Vector Drawing Time — 2.6 ms.

Graphic Matrix — 1024 X x 1024 Y addressable points; 1024 X x 780 Y viewable points.

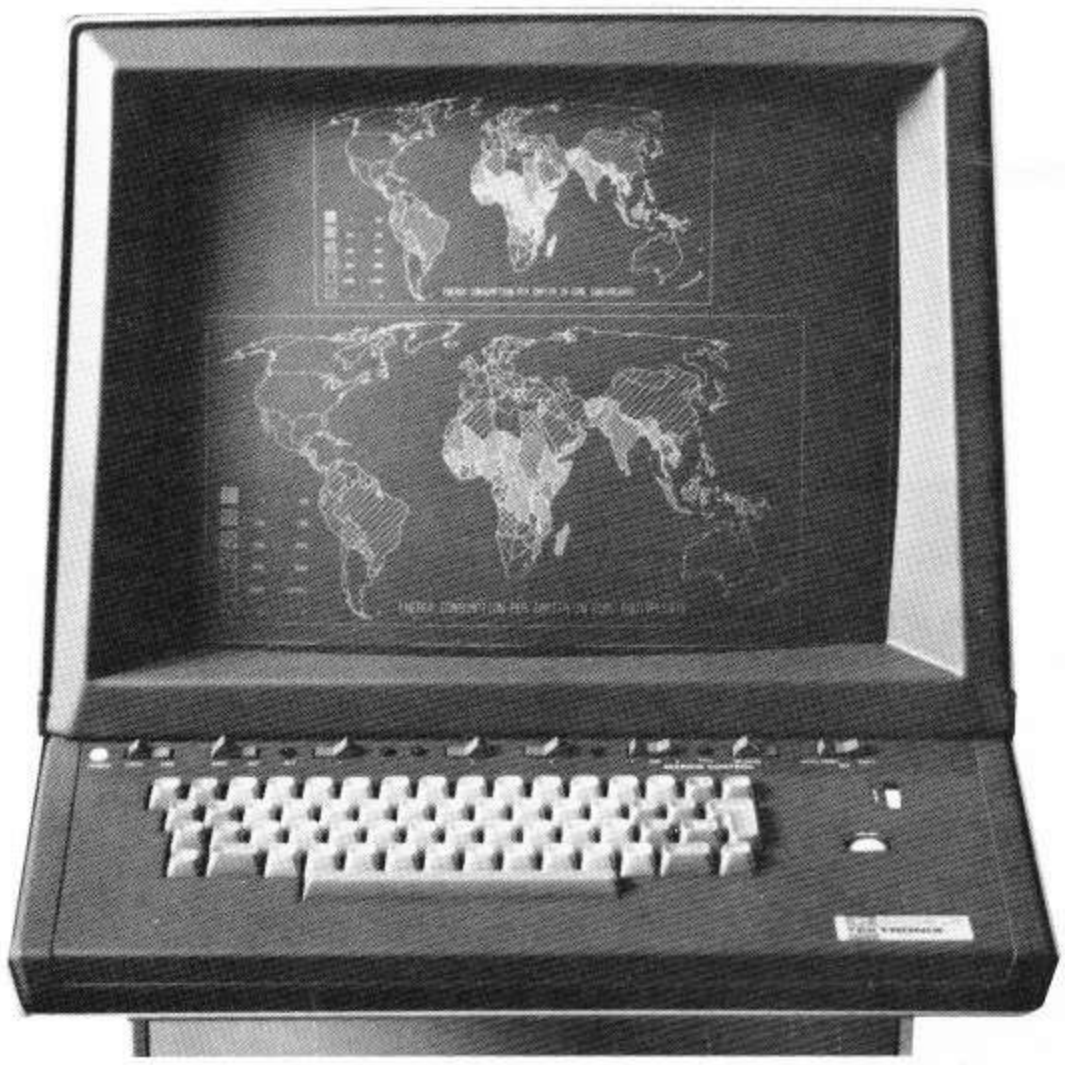
Cursor — Thumbwheel controlled cross-hair Graphics Matrix; 3 through 1023 X; 0 through 780 Y.

ORDERING INFORMATION

4012 Computer Display Terminal.

Option 01 — Optional Data Communications Interface.
Option 02 — DEC PDP-11 W/KL-115 Controller.
Option 04 — Data General NOVA Interface.
Option 06 — HP 2100-Series (HP 12531 Card) Interface.
Option 16 — DEC PDP-11 W/DL-11 Controller.
Option 30 — Minibus Extender.
Option 36 — Dual Interface Capability.

OEM terms are available on these products.



4014-1 Computer Display Terminal

483 mm (19 in) Direct-View Storage Display

Selectable Formats in Alphanumeric and Graphic Modes

High-Resolution, Interactive Graphics Capability

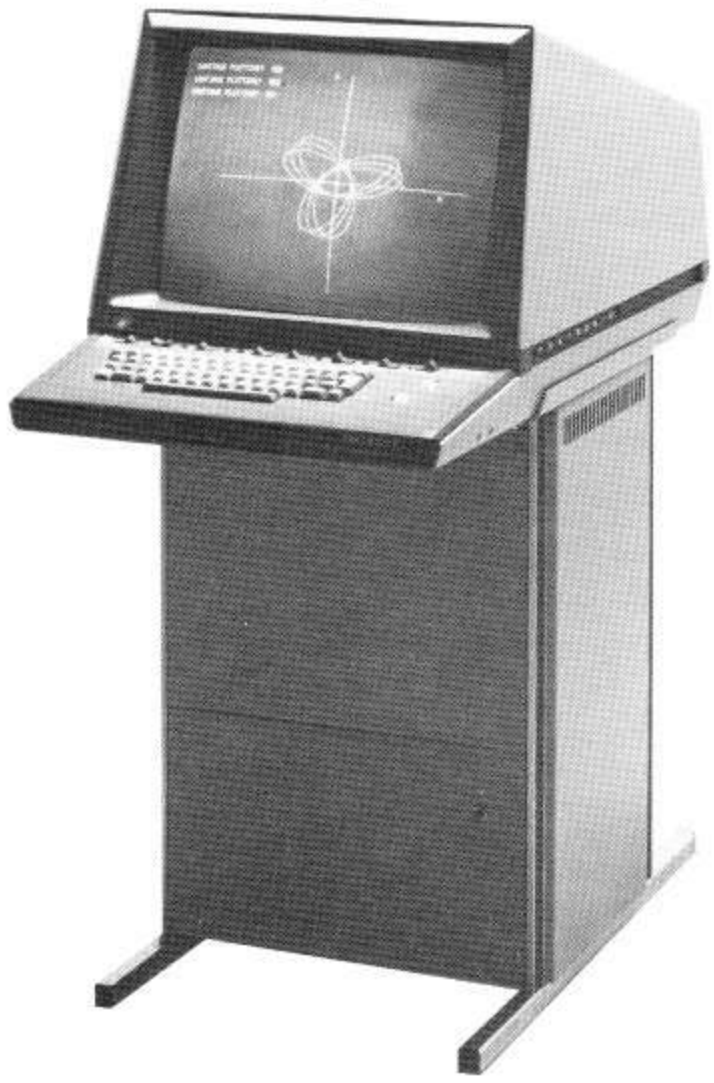
Plug-In Intelligence Options

The most effective way to display a large data base is high resolution, big screen graphics. The 19-inch, flicker-free 4014-1 Computer Display Terminal offers a multitude of capabilities for mapping, design, manufacturing, medicine, energy exploration and many other diverse applications.

The 4014-1 offers 4096 X x 3120 Y displayable points with the Standard Enhanced Graphics Module. Its 12 million point capability is more than sufficient to solve most complex mapping and design tasks. Full 94-character ASCII includes four program-selectable alphanumeric formats that display up to 8512 characters at once.

Firmware options provide up to 26 k of graphics memory for local symbols, stroke-drawn characters, overlays, or background graphics, all of which can be redisplayed on command from the host or keyboard. Reduce data transmission as you redraw portions of your graphics from local memory. Circles and arcs are generated by a single command. Add local scaling, rotation, and clipping of graphics. Buffer communications between the host and keyboard. Reduce CPU connect-time through local control of graphic tablets, plotters, and tape and disk storage. A variety of optional intelligence is available to help you keep up with new methods in mapping, process layout, financial graphing and much more.

Tektronix PLOT 10, a versatile modular software product, provides a library of proven graphics packages for all levels of users. PLOT 10 Software includes: IGL (Interactive Graphics Library), a system of I/O device drives, primary commands and advanced feature support for device independent applications: TCS (Terminal Control System) for linking to existing applications, PLOT 10 Easy Graphing II for rapid generation business or scientific graphs and much more.



Interactive previewing on the 4014-1 can considerably reduce time involvement in plotter trial-and-error graphic development. As a cartographer's tool, for instance, the 4014-1 will draw precise maps of cities states, and land formations, and isolate and enlarge those areas you choose.

CHARACTERISTICS

DISPLAY

Medium — Direct view bistable storage CRT.

Dimensions — 483 mm (19 in) diagonal.

Display Area — 381 x 279 mm (15 x 11 in).

ALPHANUMERIC MODE

Character Set — Full ASCII (94 printing characters).

Character Formats — Four, program-selectable
74 char/line by 35 lines;
81 char/line by 38 lines;
121 char/line by 58 lines;
133 char/line by 64 lines.

Alphanumeric Cursor — 7 x 9 dot pulsating.

KEYBOARD

Normal Keyboard — Typewriter paired upper and lower case with auto repeating keys.

GRAPHICS MODE

Vector Drawing Time — 127 m/s (5,000 in/s).

Addressable Points — 4096 X x 4096 Y (12 bits).

Viewable Points — 4096 X x 3120 Y.

INTERACTIVE GRAPHIC MODE

Addressable Points — 3 X through 1024 X; 0 Y through 780 Y.

Crosshair Cursor — Thumbwheel controlled.

COMPUTER INTERFACES

Basic Data Communication Interface — EIA RS-232C compatible, full duplex.

AC POWER

Line Voltage — 110/220 V ac (high, med, low).

Line Frequency — 48 to 440 Hz.

Power — 350 W.

PHYSICAL CHARACTERISTICS

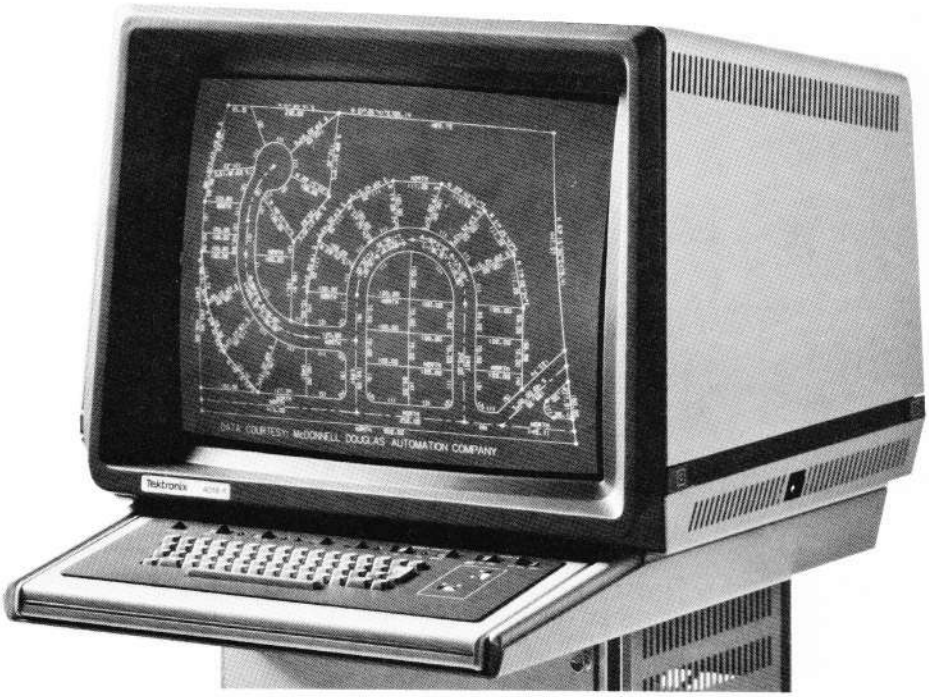
Dimensions	mm	in
Width	508	20.0
Height	1105	43.5
Depth	825	32.5
Weight	**kg**	**lb**
Net	68.0	150.0

ORDERING INFORMATION

4014-1 Computer Display Terminal.

Option 01 — Optional Data Communications Interface.
Option 02 — DEC PDP-11 w/KL-11 Teletype Control Interface.
Option 04 — Data General NOVA Interface.
Option 05 — Peripheral Control Inerface.
Option 06 — HP 2100 Series (HP 12531 Card) Interface.
Option 16 — DEC PDP-11, -11/05 w/DL-11 Control (M7800) Interface.
Option 17 — DEC PDP-8/E (M8650 Card) Interface.
Option 23 — Correspondence Code Interface +2 k Output Buffer.
Option 27 — Additional 32 k of Graphics Memory (Option 40).
Option 31 — Display Multiplexer.
Option 36 — Dual Interface Capability.
Option 40 — Programmable Keyboard (Req. Option 27).
Option 41 — Expanded Symbol/Character Package.
Option 48 — 220 V, 50 Hz.

OEM terms available on this product.



4016-1 Computer Display Terminal

636 mm (25 in) Direct-View Storage Display

High-Resolution, Flicker-Free Graphics

Selectable Formats in Graphic and Alphanumeric Modes

Plug-In Intelligence Options

The 4016-1 features a high-resolution, 25-inch display screen that allows designers of electronic circuit boards, utility networks, automotive components, schematic diagrams, street maps or similar applications to work with fine detail while maintaining the total picture perspective.

Using a DVST (Direct View Storage Tube) display, 4016-1 graphic lines are sharp, stable and flicker-free, simplifying the study of fine details. Its 4096 X by 3120 Y viewable points, and finely etched 10-mil wide vectors are uniquely suited to display highly complex graphics. Thumbwheel-controlled crosshair cursor makes it easy to interactively manipulate the display.

Over 15,000 Displayable Characters

Besides enabling display of more high density graphic information than any other terminal available, the 4016-1 provides high density alphanumerics for applications, from graphic labeling to newspaper page layout. Over 15,000 characters may be displayed simultaneously and may be formatted as 179 alphanumeric characters per line, like a line printer, or in two 85 character columns, like an open book.

Three other larger character formats are standard with the 4016-1, the largest of which is suitable for group viewing.

Complete Tektronix 4014-1 Compatibility

The 4016-1 is compatible with 4014-1 application software, communication support, and other Tektronix peripheral devices. The 4016-1 is supported by the family of PLOT 10 Software products.

Plug-in Intelligence

Using the modular 4010 bus structure, add-on low-cost options include up to 26 k of usable graphics display memory, scaling, relative graphics, clipping, circular arc generation, rotation by one degree increments, user definable stroke characters, programmable keyboard, GPIB interfacing to the intelligent 4924 Digital Cartridge Tape Drive, 4907 File Manager, and 4662 and 4663 Interactive Digital Plotters, plus the 4953 or 4954 Graphics Tablet.

Commands also allow a user to digitize data with distance, time, or gradient filtering; edit graphics from a host computer, local 4907, 4924 storage device or Option 40 programmable keys, and implement off-line plotting by accessing data via local storage devices.

Added Enhancements

The 4016-1 includes a convenient detachable keyboard and detachable display.

Other standard enhancements include hardware generated solid, dashed, and dotted lines; point plotting with software controllable point sizes and incremental "relative graphics" plotting.

CHARACTERISTICS

DISPLAY

Medium — Direct view bistable storage CRT.

Written Image — Bright green on green background.

Dimensions — 636 mm (25 in) diagonal.

Display Area — 454 x 340 mm (18 x 13.5 in).

ALPHANUMERIC MODE

Character Set — Full ASCII (94 printing characters).

Standard Character Formats
74 char/line by 35 lines;
81 char/line by 38 lines;
133 char/line by 64 lines;
179 char/line by 86 lines.

Optional Character Formats
74 char/line by 35 lines;
81 char/line by 38 lines;
121 char/line by 58 lines;
133 char/line by 64 lines.

Alphanumeric Cursor — 7 x 9 dot pulsating.

KEYBOARD

Normal Keyboard — Typewriter paired upper and lower case with auto repeating keys.

GRAPHICS MODE

Drawing Time/Resolution Vector Drawing Time — 200 m/s (8,000 in/s).

Addressable Points — 4096 X x 4096 Y (12 bits).

Viewable Points — 4096 X x 3120 Y.

Vector Formats — Five (straight, dotted and dashed lines).

INTERACTIVE GRAPHIC MODE

Addressable Points — 0 X through 1023 X; 0 Y through 780 Y.

Crosshair Cursor — Thumbwheel controlled.

COMPUTER INTERFACES

Basic Data Communications Interface — EIA RS-232C compatible, full duplex.

AC POWER

Line Voltage — 110/220 V ac (high, med, low).

Line Frequency — 48 to 66 Hz.

Power — 450 W.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	680	27.0
Height	1278	50.7
Depth	756	30.0
Weight	**kg**	**lb**
Net	113.0	250.0

ORDERING INFORMATION

4016-1 Computer Display Terminal.

Option 01 — Optional Data Communications Interface.
Option 02 — DEC PDP-11 w/KL-11 Control Interface.
Option 04 — Data General NOVA Interface.
Option 05 — Peripheral Control Interface.
Option 06 — HP 2100 Series (HP 1231 Card) Interface.
Option 16 — DEC PDP-11, -11/05 Control (M7800) Interface.
Option 17 — DEC PDP 8/E (M8650 Card) Interface.
Option 23 — Corres Code Interface + 2 k Output Buffer.
Option 27 — Additional 32 k of Graphics Memory (Option 40).
Option 31 — Display Multiplexer.
Option 32 — 4014 Character Set.
Option 35 — Dual Interface Capability.
Option 40 — Programmable Keyboard (req. Option 27).
Option 41 — Expanded Symbol/Character Package.
Option 48 — 220 V, 50 Hz.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.

OEM terms available on this product.

4025A

4027A

4025A Computer Display Terminal and 4027A Color Graphics Terminal

From Alphanumerics to Color Graphics

Forms Ruling Option Available

PLOT 10 Compatible

ASCII Character Set and Finger Tip Editing

Fully Supported Color Capability (4027A)

Dynamic Displays Easily Created

The 4025A and 4027A provide a marriage of alphanumerics and graphics. You can create and store multiple graphs in memory, create multiple graphs per page, and scroll graphics along with alphanumeric information. The 4025A is monochrome, the 4027A adds full color. Colors, selected with the Lightness, Saturation and Hue controls, are chosen from a 64 color palette with up to eight colors simultaneously displayed.

Forms mode and ruling can duplicate essentially any form. Visual attributes include 4025A enhanced, blinking, inverted and underlined fields and 4027A color enhancements. Logical attributes include protected fields, alphanumeric unprotected or numeric only.

Local capabilities of the 4027A include colored vectors, characters, symbols, and polygon fill with a second color to border the polygon. User may select up to 120 different patterns or color combinations. These firmware initiated capabilities make minimal demands on host computer communications.

The PLOT 10 Easy Graphing Software package lets you interactively create bar charts with multiple shadings, histograms, log plots, pie charts and period axes, all with a wide variety of labeling options. The 4027A uses color-enchanced PLOT-10 to construct line graphs with special symbols and dashed lines, legends, titles, and grids, and up to six curves or colored bar charts.

For ease of data entry and editing, the display screen can be divided into two separate display areas, each with independent scrolling. Use the monitor area to communicate with the host and the workspace area for the form or graphic display. Hard copy output is standard.

The keyboard is a standard office typewriter configuration. Predefined editing keys simplify insertion, deletion and input of lines and characters. User-definable function keys, plus nearly all other keys on the keyboard, can be redefined to generate a command or character string at the touch of a finger.

A 16 k display memory is standard expandable to 32 k, allowing buffering and scrolling of many pages. Graphic capability of 32 k memory is added to the 4025A with Option 26. The 4027A comes standard with 48 k graphics, and increases to 192 k with Option 29.

Graphic input capability, standard with the 4027A and optional with the 4025A, consists of a key controlled graphic crosshair cursor. Coordinates are reported back to the host; the color of the designated coordinate being reported by the 4027A.

The RGB and video signal output allows connection of the 4027A to external video displays for group viewing and presentations.

CHARACTERISTICS (4025A)

The following characteristics are common to the 4025A and the 4027A, except those noted under the 4027A.

DATA TRANSMISSION

Data Rate — 9600 baud.
Communications Interface — RS-232C, full duplex standard (Option 01 for half and full duplex).

DISPLAY

Medium — Raster scan, 525 standard with 480 displayed and 640 addressable points.
Type — Dot Matrix (each character position has 14 rows of 8 dots each).
Resolution — 26 to 28 addressable points/cm.
Line Types — Dashed, points, solid. PLOT 10 compatible.
CRT Refresh Rate — Dot and Frame: 30/s. Field: 60/s.
Memory — Display: 16 kbytes standard. Graphic: 32 kbytes (optional).
Dimensions — (7 x 9 inch), 12 inch diagonal.
Cursor Types — Alphanumerics: Wide underscore. Graphic: Full screen crosshair (optional).

KEYBOARD

Normal Keyboard — 86 typewriter (4 lighted).
Programmable Keys — 81.
Cursor Position — Key control.
Scrolling — Key control.
Numeric Pad — Key control.
Terminal Functions — Key control.

ALPHANUMERIC MODE

Standard Displayable Character Set — 128 (full ASCII); optional character sets available.
Character/Line — 80.
Line/Display (Rows) — 34.
Characters Full Screen — 2,720.
User-Definable Character Sets — Up to 31 fonts.

AC POWER

Ranges — 90 to 136 V ac, 3 A maximum.
Power Consumption — 48 to 63 Hz, 295 W maximum at 125 V ac.

CHARACTERISTICS (4027A)

The following characteristics are unique to the 4027A, other characteristics are common with the 4025A.

DISPLAY

Medium — Shadow mask.
Memory — Display: 16 kbytes standard. Graphic: 48 kbytes standard, or 192 kbytes (optional).
Dimensions — 191 mm x 254 mm (7.5 x 10 inch), 13 inch diagonal.
Cursor Types — Graphic: Full screen crosshair standard.
Colors — 64 palette, eight displayable at once, 120 user-definable patterns .
Line Types — Dashed, points, solid (one of eight colors with), PLOT 10 compatible.

AC POWER

Ranges — 90 to 132 V ac, 6 A maximum.
Power Consumption — 48 to 63 Hz, 550 W maximum at 125 V ac.

PHYSICAL CHARACTERISTICS

	4025A		4027A	
Dimensions	**mm**	**in**	**mm**	**in**
Width	445	17.5	584	23.0
Height	317	12.5	482	19.0
Depth	540	21.2	584	23.0
Weight	**kg**	**lb**	**kg**	**lb**
Net	27.2	60.0	45.3	100.0

ORDERING INFORMATION

4025A Computer Display Terminal.
4027A Color Graphics Terminal.
Option 01 — Half/Full Duplex Interface.
Option 02 — Current Loop Interface.
Option 03 — RS-232C Peripheral Interface*1.
Option 04 — GPIB Peripheral Interface*1.
Option 4A — United Kingdom Keyboard.
Option 4B — French Keyboard.
Option 4C — Swedish Keyboard.
Option 22 — 32 Kbytes of Display Memory.
Option 26 — 32 Kbytes of Graphics Memory (4025A only).
Option 29 — 192 Kbytes of Graphics Memory (4027A only).
Option 31 — Character Set Expansion and ROMs.
Option 36 — Peripheral ROM.
Option 38 — Keyboard Graphic Input Interface*2.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro, 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.

*1 *Requires Option 36.*
*2 *4025A only — requires Option 26.*

OEM terms available on these products.

4051 Desktop Computer

GPIB
IEEE-488

The 4051 is designed to support other products that comply with IEEE Standard 488-1978.

Powerful, Easy-to-Use Desktop Computing with Extended BASIC

High Resolution Graphics and Alphanumerics

Desktop computing for a whole spectrum of problem solving, data analysis, and decision making applications. The 4051 is stand-alone computing power that is approachable, affordable, and able to grow as your applications grow. It includes integrated computing peripherals, and a GPIB interface.

Friendly Graphics

Commands like Draw and Rotate built into the 4051 give you full graphics flexibility while working in your units, not machine or raster units.

The magnetic cartridge tape drive is built into the 4051 hardware and language. File management commands like Find, Old, Read, and Write, retrieve or store programs and data. A comfortable typewriter keyboard is integrated into the system with a 36-character buffer that eliminates lost entries.

Extended BASIC language provides both power for the sophisticated programmer and simplicity for the beginner. Input and output can be as simple at Input or Print or can have FORTRAN-like power with Print, Delete and Image commands.

Data Communications Interface (Option 01) permits data exchange with a host computer. Option 01 also enables the 4051 to emulate a terminal with direct host-to-terminal data transfer. Terminal modes provide local intelligence and direct data transfer between the built-in cartridge tape drive and host computer.

The GPIB is built-in and easy to program with the 4051 BASIC I/O commands. As the industry's choice for connecting instrumentation it is our choice for the 4051 and its many available peripherals.

ROM Packs

A variety of Read Only Memory (ROM) Packs are available to perform utility functions. The Editor ROM allows general editing of data files (including BASIC, FORTRAN or COBOL programs). The Signal Processing ROM's provide common functions such as integration, minimum/maximum functions and FFT. The GPIB Enhancement ROM improves the 4050 Series as an instrument controller. The 4051R12 substantially increases the graphics capabilities of the 4051.

CHARACTERISTICS

DATA TRANSMISSION

Data Communications Interface (Option 01) — Full or half duplex.

Data Type — Asynchronous.

Data Rate — Up to 2400 baud.

Printer Interface (Option 10) — EIA RS-232 and RS-244A compatible up to 2400 baud.

GPIB Conformance — IEEE Standard 488-1978 (byte serial, bit parallel).

DISPLAY

CRT Type — Direct view storage.

Graphic Resolution — 1024 x 780 displayable points.

Dimensions — 192 x 162 mm (7.5 x 5.5 in).

Character Set — Full ASCII upper/lower case. (Also includes Scandinavian, German, Central European, Spanish, special graphic symbols.)

Character Format — 72 character/line, 35 lines.

KEYBOARD

Normal Keyboard — 128 upper and lower case (full ASCII) with auto repeat.

User Definable Function Keys — Ten-shiftable to 20. Keys for single-step program execution, auto numbering, rewinding tape, autoload/execute first program.

Calculator Key Pad — Five math functions.

Numeric Keys — Ten.

CENTRAL PROCESSING UNIT

Type — LSI 8-bit microprocessor.

Standard Memory Workspace — 16 kbytes (32 k with Option 22).

Programming Language — BASIC with extensions.

Dynamic Range — $\pm 10^{-308}$ to $\pm 10^{308}$.

Numeric Accuracy — 14 decimal digits (12 displayed).

TAPE DRIVE

Cartridge — Magnetic.

Type — 300A, 300XL, and 600A Certified Data Cartridges from Tektronix.

Rewind Speed — 90 ips.

Search/Read Speed — 30 ips.

Structure — 256 bytes w/header.

AC POWER

Voltage Ranges (±10%) — 100, 110, 120 V ac; or 200, 220, 240 V ac.

Line Frequency — 48 to 66 Hz.

Power — 200 W max.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	465	18.3
Height	345	13.6
Depth	826	32.5
Weight	**kg**	**lb**
Net	29.5	65.0

Operating Temperature — 10°C to 40°C.

ORDERING INFORMATION

4051 Desktop Computer.
Option 01 — Data Communications Interface.
Option 10 — Printer Interface.
Option 22 — 32 Kbytes Total Memory.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

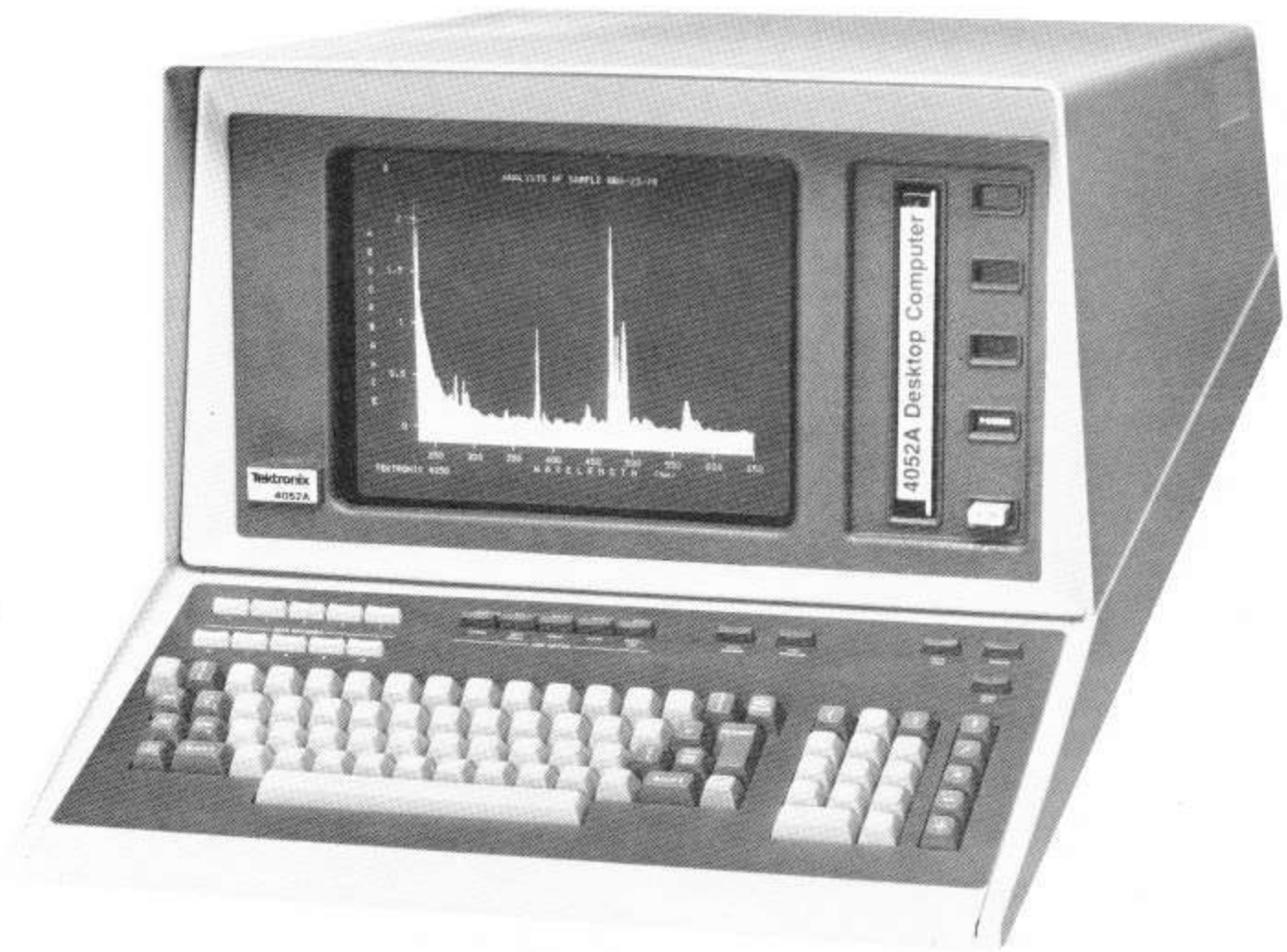
Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

ROM PACKS FOR THE 4051

4051R06 Editor ROM Pack.
4051R07 Signal Processing ROM Pack #1.
4051R08 Signal Processing ROM Pack #2.
4051R10 Advanced File Manager ROM Pack (for 4909).
4051R12 Graphics Enhancement ROM Pack.
4051R14 GPIB Enhancement ROM Pack.

Tektronix offers users training classes on the 4050 Series Desktop Computers. For further information, contact the Customer Training Registrar at (503) 685-3808.

OEM terms are available on this product.



4052A Desktop Computer

GPIB
IEEE-488

The 4052A is designed to support other products that comply with IEEE Standard 488-1978.

Fast Processing

High Level BASIC

Extended Memory File Manager (Option)

The 4052A Desktop Computer provides computation and communications for a whole spectrum of problem solving, data analysis, and decision making applications. It offers high performance stand-alone computing power, flexible data communications, and easy-to-learn, extended BASIC. These features, combined with high resolution graphics, make the 4052A an excellent choice for scientific and statistical research, forecasting, data acquisition, and analysis.

For rapid calculation, the 4052A has a fast processor with microcode floating point. Fast processing coupled with simultaneous display of text and graphics meets the needs of most application requirements.

A magnetic cartridge tape drive is built-in, allowing both ASCII and binary programs or data to be easily stored and retrieved using simple file management commands in BASIC.

An optional extended memory file manager allows very high speed access to an additional 256 k or 512 k memory. The file manager permits heavily used programs and data files to be read, updated, and written very quickly.

New extended BASIC provides the simplicity desired by the beginner and the flexibility and power required by the experienced programmer.

Device independent keywords such as Input and Print make programming input and output operations easy. Fast matrix functions such as multiply, inverse, transpose, identity and determinants are built into BASIC.

Friendly Graphics

Commands like Move, Draw and Rotate in BASIC allow graphic displays to be created on the 4052A using user defined units, not machine or raster units.

ROM Packs

A variety of Read Only Memory (ROM) Packs are available to perform utility functions. The Editor ROM allows general editing of data files (including BASIC, FORTRAN or COBOL programs). The Signal Processing ROM's provide common functions such as integration, minimum/maximum functions and FFT. The GPIB Enhancement ROM improves the 4050 Series as an instrument controller. The 4052R12 substantially increases the graphics capabilities of the 4052A.

CHARACTERISTICS

DATA TRANSMISSION

Data Type — Asynchronous.
Data Rate — Up to 9600 baud.
Data Communications Interface (Option 01) — Full or half duplex.
Printer Interface (Option 10) — EIA RS-232 or RS-244A compatible.
GPIB Conformance — IEEE Standard 488-1978 (byte serial, bit parallel).

DISPLAY

CRT Type — Direct view storage.
Dimensions — 192 mm x 141 mm (7.5 in x 5.5 in) 282 mm (11 in) diagonal.
Graphic Resolution — 1024 x 780 viewable points; 1024 x 1024 addressable points.
Character Set — Full ASCII (German, Swedish, Danish/Norwegian, British, Spanish, Graphic and Business font selectable under program control).
Character Format — 72 character/line, 35 lines.

KEYBOARD

Normal Keyboard — 128 ASCII, upper/lower case (full ASCII) with auto repeat.
User Definable Function Keys — Ten-shiftable to 20. Keys for single-step program execution auto-numbering, rewinding tape, autoload/execute first program.
Calculator Key Pad — Five math functions.
Numeric Keys — Ten.

CENTRAL PROCESSING UNIT

Type — LSI, bipolar, 16 bit.
Standard Memory Workspace — 32 kbytes total (64 k with Option 24).
Programming Language — High level BASIC with extensions.
Dynamic Range — $\pm 10^{-308}$ to $\pm 10^{308}$.
Numeric Accuracy — 14 decimal digits (12 displayed).

TAPE DRIVE

Cartridge — Magnetic.
Type — 300A, 300XL, and 600A Certified Data Cartridge from Tektronix. 300 k, 450 k, or 600 kbytes.
Rewind Speed — 90 ips.
Search/Read Speed — 30 ips.
Structure — 256 bytes w/header.

AC POWER

Voltage Ranges (±10%) — 100, 110, 120 V ac or 200, 220, 240 V ac.
Line Frequency — 48 to 66 Hz.
Power — 300 W maximum.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	465	18.3
Height	345	13.6
Depth	826	32.5
Weight	**kg**	**lb**
Net	30.8	68.0

Operating Temperature — 10°C to 40°C.

ORDERING INFORMATION

4052A Desktop Computer.
Option 01 — Data Communications Interface.
Option 02 — Four Slot ROM Backpack.
Option 03 — Four Slot Data Communications Interface.
Option 10 — RS-232 Printer Interface.
Option 24 — 64 Kbytes Total Memory.
Option 27 — 256 Kbytes Extended Memory File Manager.
Option 28 — 512 Kbytes Extended Memory File Manager.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

ROM PACKS FOR THE 4052A/4054A

4052R06 Editor ROM Pack.
4052R07 Signal Processing ROM Pack #1.
4052R08 Signal Processing ROM Pack #2.
4052R09 Real-Time Clock ROM Pack.
4052R10 Advanced File Manager ROM Pack (for 4909).
4052R11 Character and Symbol ROM Pack.
4052R12 Graphics Enhancement ROM Pack.
4052R14 GPIB Enhancement ROM Pack.

Tektronix offers user training classes on the 4050 Series desktop computer. For further information, contact the Customer Training Registrar at (503) 685-3808.

OEM terms available on this product.

4054A Desktop Computer

GPIB
IEEE-488

The 4054A is designed to support other products that comply with IEEE Standard 488-1978.

19 Inch, High Resolution Display

Dynamic Graphics (Option)

Extended Memory File Manager (Option)

Color Enhanced Graphics (Option)

Unequalled graphics and powerful, fast computations, the 4054A is the only integrated desktop computer that combines easy-to-learn, extended BASIC with the unique features of a large-screen, high resolution display. For rapid calculation, the 4054A has a fast processor with microcoded floating point.

The 4054A has a long list of proven peripheral products. GPIB (General Purpose Interface Bus) and RS-232C interfacing coupled with easy-to-program BASIC I/O commands allow considerable versatility in designing your own system.

An optional extended memory file manager allows very high speed access to an additional 256 k or 512 k memory. The file manager permits heavily used programs and data files to be read, updated and written very quickly.

The 4054A features software compatibility with the rest of the 4050 Series of desktop computers. Programs developed on the 4051 and 4052A will operate on the 4054A, giving its users access to a wealth of PLOT 50 Software, already written and debugged, thus reducing program development costs often associated with new systems.

The Dynamic Graphics Option adds increased interactivity to the graphics of the 4054A and brings the user closer to the solution by providing the graphic power to work directly with the graphic elements of the design problem. Complicated displays can be constructed quickly and easily with movable user-defined objects.

Superior Graphic and Alphanumeric Display

With 4096 X and 3120 Y resolution — 12 million displayable points the 4054A has all the graphics capability you will need for even the most complex display. With stroke-generated characters programmable in four sizes and eight fonts, the 4054A has the tools to alphanumerically dress up your output to suit any professional requirement. The large screen permits previewing of 132 column line printer output.

For your graphing needs there are 36 distinct dot-dash patterns, selectable under program control, providing for maximum effect of represented data. For interaction the 4054A has a thumbwheel driven, true crosshair cursor. All of these features are implemented using the extended BASIC of the 4054A.

New powerful extended BASIC provides the simplicity desired for the beginner together with the flexibility and power required by the experienced programmer. Device independent keywords make program and data input/output operations easy. Fast, built-in BASIC functions such as SINE, LOG, SQR, etc., plus a complete set of matrix functions provide powerful computation at your fingertips.

CHARACTERISTICS

DATA TRANSMISSION

Data Communications Interface (Option 01) — Full or half duplex.
Data Type — Asynchronous.
Data Rate — Up to 9600 baud.
Printer Interface (Option 10) — EIA RS-232 or RS-244 Compatible up to 9600 baud.
GPIB Conformance — IEEE Standard 488-1978, (byte serial, bit parallel).
Processor — LSI bipolar 16 bit.
Memory Workspace — 32 kbytes or 64 k with Option 24.
Dynamic Range — $\pm 10^{-308}$ to $\pm 10^{308}$.
Numeric Accuracy — 14 decimal digits (12 displayed).
Programming Language — High level BASIC with extensions.

DISPLAY

CRT Type — Direct view storage.
Graphic Resolution — 4096 x 3120 viewable points; 4096 x 4096 addressable points.
Dimensions — 385 mm x 282 mm (15 in x 11 in); 482 mm (19 in) diagonal.
Visibility — Flicker-free.
Alphanumeric — Up to 132 character/line, 64 lines, four sizes.
Special fonts — Selectable under program control-Swedish, German, British, Spanish, Danish/Norwegian, Graphic and Business.
Graphics — Vector drawing time — 15 k cm/s.
Addressable Resolution — 4096 X x 3120 Y Dot-dashed vectors, programmable in 36 visibly distinct patterns.

KEYBOARD

Normal Keyboard — 128 characters (full ASCII) upper and lower case with auto repeat.
User Definable Function Keys — Ten-shiftable to 20.
Numeric Function Keys — Ten.
Line/Character Editor Keys — Five.
Cursor Position Control — Thumbwheels.
Cursor Type — Cross-hair.

TAPE DRIVE

Cartridge — Magnetic.
Type — 300A, 300XL, and 600A Certified Data Cartridges from Tektronix. 300 k, 450 k, or 600 kbytes.
Rewind Speed — 90 ips.
Search/Read Speed — 30 ips.
Structure — 256 bytes w/header.

AC POWER

Voltage Ranges — 100, 110, 120 V ac or 220, 240 V ac.
Line Frequency — 48 to 66 Hz.
Power — 360 W maximum.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	674	26.3
Height	513	20.0
Depth	840	32.7
Weight	**kg**	**lb**
Net	65.8	145.0

Operating Temperature Range — 10°C to 40°C.

ORDERING INFORMATION

4054A Desktop Computer.
Option 01 — Data Communication Interface.
Option 02 — Four Slot ROM Backpack.
Option 03 — Data Communications Interface, Four Slot.
Option 10 — RS-232 Printer Interface.
Option 24 — 64 Kbytes Total Memory.
Option 27 — 256 Kbytes Extended Memory File Manager.
Option 28 — 512 Kbytes Extended Memory File Manager.
Option 30 — Dynamic Graphics.
Option 31 — Color Enhanced Dynamic Graphics.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

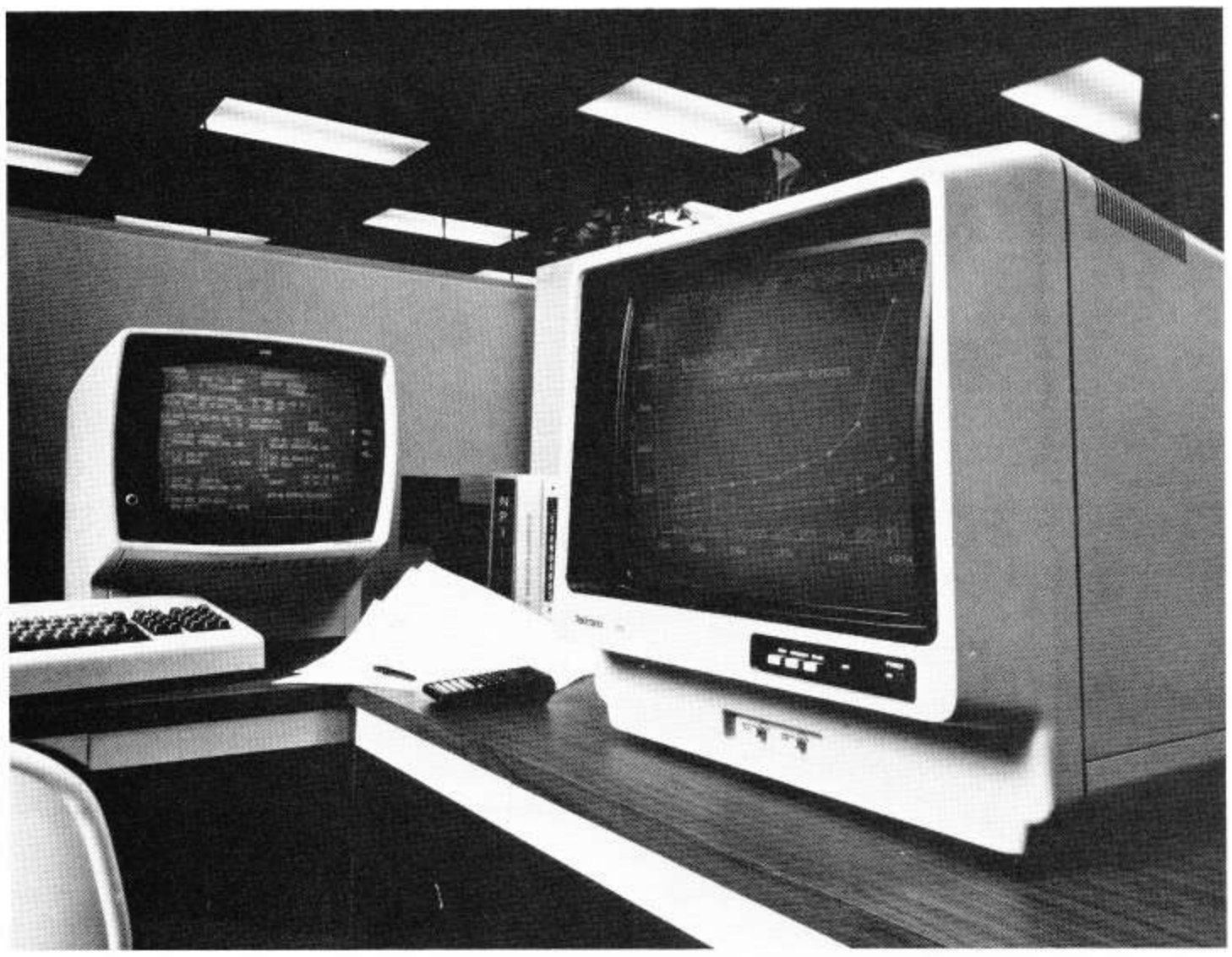
Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

ROM PACKS FOR THE 4052A/4054A

4052R06 Editor ROM Pack.
4052R07 Signal Processing ROM Pack #1.
4052R08 Signal Processing ROM Pack #2.
4052R09 Real-Time Clock ROM Pack.
4052R10 Advanced File Manager ROM Pack (for 4909).
4052R11 Character and Symbol ROM Pack.
4052R12 Graphics Enhancement ROM Pack.
4052R14 GPIB Enhancement ROM Pack.

Tektronix offers user training classes in the 4050 Series Desktop computers. For further information, contact the Customer Training Registrar at (503) 685-3808.

OEM terms available on this product.



618 Storage Display Monitor

High Resolution Graphics

Combined Stored and Write Thru Mode

19 Inch Diagonal CRT

Simultaneous Stored Graphics and Refresh Information

An extra feature on the 618 is the Write Thru Mode — a technique by which refreshed data appears on the screen at the same time as stored graphics. The stored portion of the screen presents high resolution, high density graphic and alphanumeric information, while the refresh portion of the display adds the benefits of selective erase, interactivity, and dynamic motion, without any loss of resolution.

High Speed Interactive Graphics adds a New Dimension to the IBM 3277 Display Station. The Tektronix 618 Storage Display Monitor can be used with an IBM 3277 Model 2 Display Station that is equipped with a 3277 Graphics Attachment. The Graphics Attachment (RPQ 7H0284 from IBM) allows the 618 Monitor to add a wide range of graphic capabilities to the station. A dual display station is thus configured with the IBM monitor displaying alphanumeric data and the 618 displaying graphic information and special symbols.

Software support for the Graphics Attachment includes basic routines for drawing lines, placing text, and coordinate transformation. Advanced routines for geometric structures and 3-dimensional displays are also provided.

The 618 offers the benefits of low-cost, high-resolution graphics on a storage screen with excellent interactivity. Two line widths can be selected by software.

The 618 features a 19-inch diagonal CRT driven as an X-Y directed beam display, using analog inputs. The display is horizontally oriented, with the X-axis as the long axis.

Ask your Tektronix representative about the 614 and 616 storage monitors. These new additions to the 618 family provide productivity enhancements to CAD workstations. The 614 incorporates color-enhanced-refresh in a 19 inch display format, and the 616 offers the higher information density possible with a large 25 inch screen. Both are plug-to-plug compatible with the Tektronix 618.

CHARACTERISTICS

DISPLAY

CRT Type — Direct view storage.

Dimensions — 48 cm (19 in) diagonal.

Display Area — 267 x 356 mm (10.5 x 14 in).

Stored Writing Speed — 150 m/s.

Refreshed Writing Speed — 500 m/s.

Write-Thru Contrast Ration — 4:1. (Written to background.)

Maximum Z-Axis Repetition Rate — 1 MHz.

Stored Luminance — 17 cd/m² (5 fL).

Resolution — Center Screen: 16 lines/cm (40 lines/in). Screen Edges: 14 lines/cm (35 lines/in).

Positional Accuracy — ±1.25. (Percent of long axis.)

Stored Dot Writing Time — 5 μs or less.

Settling Time — 5 μs +5 μs/cm to within one spot diameter.

Viewing Time — ≈2 min until hold mode; ≈30 min until AUTO ERASE.

Erase Cycle Time — 1.5 s, ±20%.

AC POWER

Line Voltage Ranges — 90 to 110 V ac, 108 to 132 V ac, 198 to 242 V ac, 216 to 264 V ac (jumper selectable).

Line Frequency — 48 to 66 Hz.

Power — 220 W maximum at 115 V ac, 60 Hz.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	572	22.5
Height	533	21.0
Depth	647	25.5
Weight ≈	**kg**	**lb**
Net	46.0	100.0
Shipping	55.0	120.0

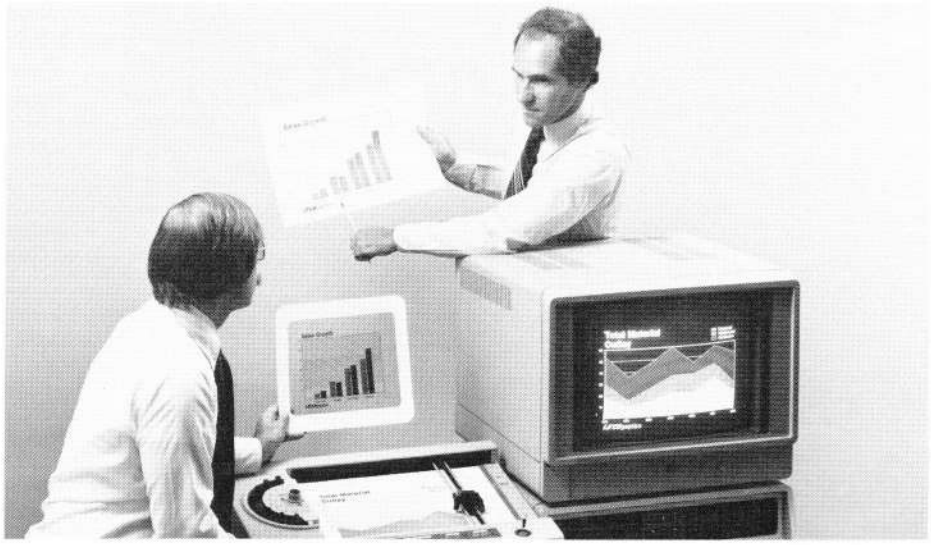
ORDERING INFORMATION

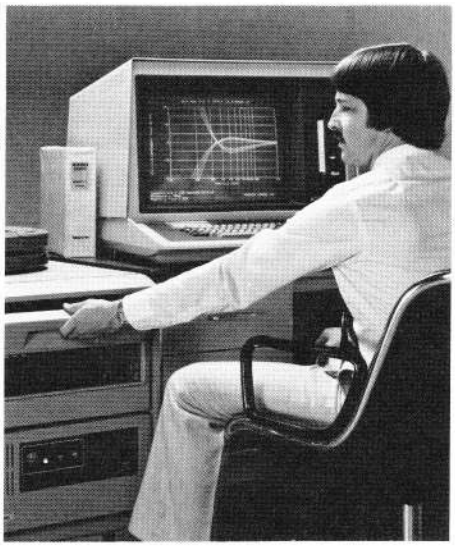
618 Storage Display Monitor.

Option 30 — Interconnecting Cable, (618 to IBM 3277 for use with IBM Graphics Attachment, IBM RPQ 7H0284).

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.





Peripherals

NEW 4925 Dual Flexible Disk

5 1/4-Inch Half-Height Drives

650 Kbyte (Kilobyte) Formatted Capacity

Media Transportability From 4170 to 4110 Series Terminals

Configurable with 5 1/4-Inch Winchester Hard Disk

Easy Integration Through a Standard Interface

The 4925 is a flexible disk drive that supports compatibility between the 4170 Local Graphics Processing Unit and the 4110 Series terminals by providing a means of media interchangeability. The 4925 enables the 4110 Series terminals to accept files generated on the 5 1/4-inch flexible disks of the 4170.

Proven, Reliable Technology

The 4925 has dual half-height drives stacked on top of each other to minimize space requirements while providing as much capacity as possible. The drives are the same as those that are standard to the 4170. Each 500 kbyte double-sided disk has a formatted capacity of 327 kbytes, or more than 650 kbytes in total. At 48 tracks per inch, the 4925 conforms to the most commonly accepted media standard. Dual half-height drives also provide back-up to each other. In case of failure of one drive, the other remains functional.

Configuration Flexibility

The disk drives in the 4925 may be configured with other Tektronix 5 1/4-inch storage devices. Since two-wide packaging is used across several Tektronix products, these flexible disk drives can be housed in the same cabinet as the 4926 10 Mbyte (Megabyte) hard disk. The resulting configuration is the 4926 Option 25. It provides packaging economies and built-in back-up media for the hard disk so important files can be removed.

Interfacing Uses a New Tektronix Standard

Directly connecting to the intelligent Mass Storage Interface of the terminal makes interfacing simple. The MSIB (Mass Storage Interface Bus) is the Tektronix implementation of the popular SCSI (Small Computer Systems Interface) specification (described in ANSI X3T9.2/82.2). Since the bus allows multiple mass storage devices, the 4925 can easily be added to a system. If another device, such as the 4926, is already configured, the 4925 uses the same interface with no additional cost. The MSIB allows seven controller slots, so even more devices can be added as application needs expand, subject to terminal operating system limits on device addressability.

CHARACTERISTICS

Capacity — Unformatted: 1 Mbyte (500 kbytes each). Formatted: 654 kbytes (327 kbytes each).

Access Times — Average: 93 ms. Track to Track: 6 ms.

Recording Surfaces — Two/drive (double-sided).

Recording Format — Double density (5876 bits/in).

Track Density — 48/in.

Data Transfer Rate — 10.2 kbytes/s max burst rate.

Error Rates — Recoverable (soft): 1 in 10^9 bits. Nonrecoverable (hard): 1 in 10^{12} bits.

Interfacing — MSIB which is the Tektronix implementation of the SCSI described in ANSI document X3T9.2/82.2.

AC POWER

Power Requirements — 100 to 125 V ac at 2 A; 180 to 240 V ac at 1 A; 50 to 60 Hz.

Power Consumption — 140 W max.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	368	14.5
Height	128	5.0
Depth	433	17.1
Weight	**kg**	**lb**
Net	6.4	14.0

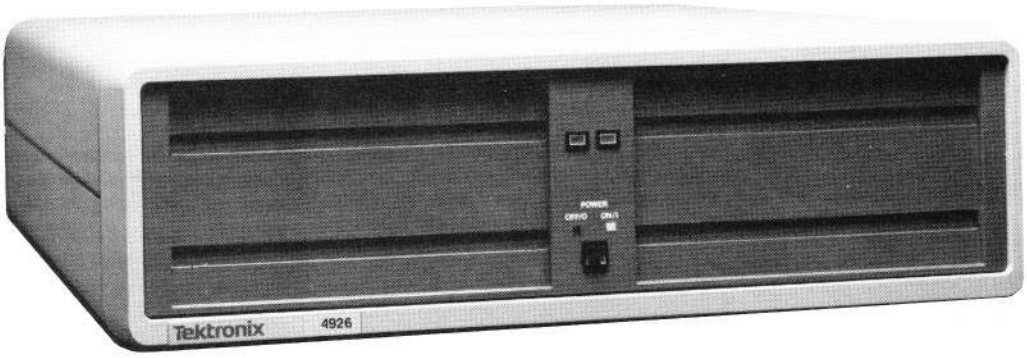
ORDERING INFORMATION

4925 Dual 5 1/4-Inch Flexible Disk Drive.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

4926 Option 25 Adds Dual 5 1/4-Inch Flexible Disks to 4926 Hard Disk. Also Field Installable (Kit Number 4926F25).



NEW 4926 10 Megabyte Hard Disk

Complements 4110 Series Terminals with Local Programmability

Easy Interfacing

Easy Operation

5 1/4-inch Winchester Technology

10 Megabyte Increments

The 4926 is a 10 Mbyte (Megabyte) hard disk drive that provides mass storage for 4110 Series terminals with local programmability. It gives users of 4110 Series terminals direct local access to large capacity mass storage, increasing applications flexibility and efficiency. The 4926 may also be configured with two optional flexible disks providing even more storage or removable media for backup.

Easy Interfacing

Direct connection to the MSIB (Mass Storage Interface Bus) in the terminal makes interfacing simple; the MSIB conforms to the commonly-used SCSI (Small Computer Systems Interface) specification (described in ANSI document X3T9.2/82.2). The MSIB also allows the user to connect multiple mass storage controllers so that additional drives can be easily configured as application requirements grow. The terminal firmware drives the disk controller. The operating system (CP/M-86 for the 4110 Series) has commands for file generation, labeling, copying, reading and writing functions.

Proven Winchester Technology

Sealed drive heads and media improve reliability and environmental protection, and reduce maintenance. Winchester technology also allows high capacity that lowers the cost per Mbyte to the user and provides the level of local data storage that interactive graphics requires. Fast access time further improves overall system effectiveness.

Expandability

From a base of 10 Mbytes (formatted), additional 10 Mbyte increments can be readily added. Each 4926 cabinet can house two drives, and the second drive requires no change in the unit's power supply, controller, or interface hardware.

The level of terminal operating system in use will define the limit to the number of drives addressable.

CHARACTERISTICS

PERFORMANCE CHARACTERISTICS

Capacity — Unformatted: 12.76 Mbytes. Formatted: 10.0 Mbytes.

Access Times — Track-to-Track: 3 ms. Average Access Time: 85 ms.

Average Latency — 8.3 ms.

Data Transfer Rate — 100 kbyte/s max burst rate.

Error Rates — Recoverable (soft): 1 in 10^{10} bits. Non-recoverable (hard): 1 in 10^{12} bits.

Interfacing — MSIB (Mass Storage Interface Bus which is the Tektronix implementation of the SCSI (Small Computer Systems Interface) described in ANSI document X3T9.2/82.2.

AC POWER

Power Requirements — 100 to 125 V ac at 2 A; 180 to 240 V ac at 1 A; 50 or 60 Hz.

Power Consumption — 140 W max.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	368	14.5
Height	128	5.0
Depth	433	17.1
Weight	**kg**	**lb**
Net	6.4	14.0

ORDERING INFORMATION

4926 10 Mbyte Hard Disk.

Option 25 — Dual 5 1/4 in Flexible Disk; also Field Installable (Kit Number 4926F25).

Option 26 — Additional 10 Mbyte Hard Disk Drive; also Field Installable (Kit Number 4926F26).

Option 49 — Rental Tag.

INTERNATIONAL POWER CORDS AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.

Option A2 — UK 240 V/13 A, 50 Hz.

Option A3 — Austrailian 240 V/10 A, 50 Hz.

Option A4 — North American 240 V/15 A, 60 Hz.

Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on this product.

4907 Option 31

4923

4924

4907 File Manager

4050 Series Compatible

Built-in ROMs

The 4907 File Manager is a direct-access, flexible-disk device with a double density read/write feature. Its advanced multiple-level, file-by-name system includes a directory that maintains the user files, passwords and available space. Several drives may be connected to the 4907 for additional storage capacity.

Built-in ROMs and special 4050 Series ROM Packs contain the 4907 operating system software. No 4050 Series memory is required to support the operating system. The 4907 can also be used with some of the 4010 Series of graphic terminals.

CHARACTERISTICS

User-Available Storage Per Disk — 630 kbytes (kilobytes).

Tracks Per Disk — 77 max.

Sectors Per Track — 32.

Bytes Per Sector — 256.

Rotational Speed — 360 rpm.

Average Access Time — 340 ms.

Transfer Time — 4.2 ms/sector.

AC POWER

Line Voltage — 100 to 240 V ac.

Line Frequency — 50 to 60 Hz.

Power — 200 W at 120 V ac, 60 Hz max.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	520	20.3
Height	195	7.7
Depth	640	25.7
Weight	**kg**	**lb**
Net	27.5	60.0

ORDERING INFORMATION

4907 File Manager.

Option 30 — Two Disk Drives Total.

Option 31 — Three Disk Drives Total.

Option 40 — 4052/4052A or 4054/4054A Compatible.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro, 220 V/16 A, 50 Hz.

Option A2 — UK, 240 V/13 A, 50 Hz.

Option A3 — Australian, 240 V/10 A, 50 Hz.

Option A4 — North American, 240 V/15 A, 60 Hz.

Option A5 — Switzerland 220 V/10 A, 50 Hz.

4923/4924 Tape Recorder/Drive

RS-232C Compatible (4923)

Easy-to-Use Data Storage/Retrieval

The 4923 Digital Cartridge Tape Recorder provides reliable, easy-to-use data storage and retrieval for the Tektronix 4006 and 4010 Series terminals. The 4924 Digital Cartridge Tape Drive supports the Tek 4050 Series Desktop Computers. Up to 15 tape drives can be mutiplexed to a 4050 acting as a controller on the GPIB. A single 4924 drive allows concurrent handling of merge operations, and input/output transactions.

CHARACTERISTICS

Cartridge Type — 300A, 300XL, 600A Certified Data Cartridges from Tektronix.

Usable Tape Length — 300, 450, 600 ft.

Storage Capacity — Up to 400 kbytes, nominal for 4923. Up to 600 kbytes, nominal for 4924.

Characters/Record — 128 eight-bit bytes for 4923. 128/256 eight-bit bytes for 4924.

Recording Density — 1600 bpi.

Data Transfer Rate — Standard, 9600 baud; Option 01, 110 to 9600 baud (4923 only).

Data Format — 8-bit binary or 8-bit ASCII.

Number of Data Tracks — Two.

Recording Format — NRZ two-track, self-clocking.

Read/Write Speed — 762 mm/s (30 ips).

Skip Forward/Reverse — 762 mm/s (30 ips).

Fast Forward/Rewind — 2.286 m/s (90 ips).

System Error Rate — One in 10^7 for 4923. One in 10^7 or less for 4924.

Start Time Read/Write — 25 ms.

Start Time Fast Forward/Rewind — 75 ms.

AC POWER

Line Voltage Range — 100 to 240 V ac (jumper selectable).

Line Frequency — 50 to 60 Hz.

Power — 62 W at 115 V ac.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	220	8.7
Height	152	6.0
Depth	438	17.2
Weight	**kg**	**lb**
Net	7.7	17.0

ORDERING INFORMATION

4923 Digital Cartridge Tape Recorder.

Option 01 — Full Duplex (RS-232C).

4924 Digital Cartridge Tape Drive.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro, 220 V/16 A, 50 Hz.

Option A2 — UK, 240 V/13 A, 50 Hz.

Option A3 — Australian, 240 V/10 A, 50 Hz.

Option A4 — North American, 240 V/15 A, 60 Hz.

4909 Multi-User File Management System

Shared Access up to 10 Users

Public and Private File Workspaces for Operational Flexibility/File Protection

32 or 96 Mbyte (Megabyte) Drive Capacity

Expandable up to 8 Drives (768 Mbytes)

Indexed and Dynamically Allocated Files

Variable Length Records

Time of Day Clock with Battery Backup

The 4909 Multi-User File Management System is a high performance mass storage system based on a controller that provides advanced file management between up to ten desktop computers and large capacity hard-disk drives. Flexible file management and a multiple level library structure provides multiple file access levels, indexed (keyed) file support, directly addressable bytes within records, expandable records and files, and enhanced data storage and retrieval. Permitting host interfacing flexibility, plug-in options include additional disk drives for expanded capacity.

Mass Storage Expandability

The 4909 offers 32 Megabytes of data storage capacity as standard. Optionally, 96 Mbytes of storage capacity are available. Each drive comes with a 16 Mbyte removable disk cartridge allowing data transportability and fast backup. For increased capacity, additional disk drives can be added by acquiring the 4909AC Auxiliary Cabinet. This cabinet will hold one or two additional disk drives of either 32 or 96 Mbyte capacity. Interconnection with the 4909 is by a plug-in disk interface that can support two hard disk drives. A maximum of four disk interface plug-ins can be used on the 4909, supplying a maximum of 768 Mbytes of online mass storage capacity.

File Security

Several levels of file security are provided by the 4909. The removable disk cartridge allows large collections of files to be completely removed from the 4909 and placed in a physically secure place. For archival storage, the removable cartridge is highly effective.

Multi-User Access

The cost effectiveness and contribution to productivity of a mass storage system is enhanced when two or more users are allowed to share information simultaneously. The 4909 allows the sharing and updating of files by up to ten users. Private file access is permitted after users supply a User-ID and password. Access is permitted to a private file workspace if the user entry matches a pre-defined User-ID list maintained by the 4909.

Indexed Files

For users requiring faster, more flexible access to record information stored in files, the 4909 provides indexed or keyed files. Each record can be stored and retrieved on the basis of an alphanumeric key. The key used might be an employee's name or a product reference number. With indexed files, information can be better organized, and quickly retrieved.

Variable Length Records

Variable length records are supported by the 4909 to provide additional flexibility in creating and updating files. This allows records to change in accordance with user requirements.

ROM Pack Operation

Access to the 4909 from the 4050 Series of desktop computers will be via GPIB interfacing used in conjunction with a ROM pack to provide file management operation. ROM packs for the 4050 Series include the 4051R10 for use with the 4051, and the 4052R10 for use with the 4052/4052A or 4054/4054A.

GPIB Extender

A plug-in GPIB extender provides a cost-effective way to connect to remotely located, 4050 Series desktop computers or any IEEE Standard 488 compatible instruments, allowing communication over distances of up to 500 m (1650 ft).

CHARACTERISTICS

Capacity Per Drive — 32 or 96 Mbytes (16 removable).

Disk Data Transfer Rate*1 — 1.2 Mbytes/s.

GPIB Data Transfer Rate*1 — 240 kbytes/s max burst.

Average Access Time — 30 ms.

Average Latency Time — 8.33 ms.

Recoverable Error Rate — Two in 10^{10} bits.

Number of Tracks/Inch — 384.

**1 Actual transfer rates are application and computer dependent.*

AC POWER

Line Voltage and Frequencies — 120 V ac at 60 Hz, 240 V ac at 50 Hz, 100 V ac at 50 Hz or 60 Hz.

Power — 1150 W max at 120 V ac, 60 Hz.

PHYSICAL CHARACTERISTICS

	Dimensions				Weight
	Width	Height	Depth		Net
mm	565	760	850	kg	137
in	22.2	30.0	33.5	lb	302.0

ORDERING INFORMATION

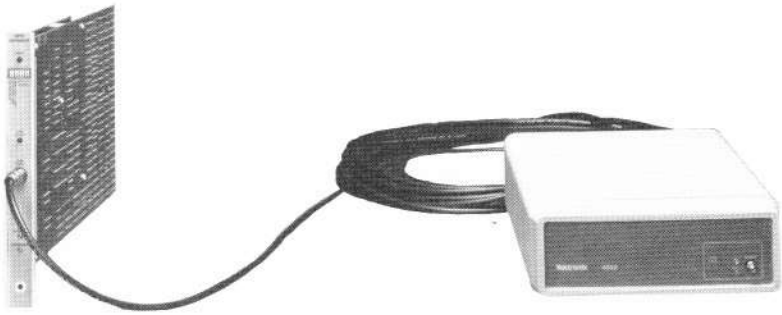
4909 Multi-User File System.

OPTIONS/FIELD UPGRADES

Option 33 — 96 Mbytes Disk.
4909AC — Auxiliary Cabinet.
4909F01 — GPIB Interface.
4909F02 — GPIB Extender.
4909F03 — Disk Interface.
4909F10 — Controller Expansion.
4051R10 — ROM pack for 4051.
4052R10 — ROM pack for 4052/4052A or 4054/4054A.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.



4932 GPIB Extender

Up to 500 m GPIB Extension

User Transparent Operation

4909 Plug-in Option

The 4932 is a general purpose interface bus extender that provides a cost-effective way to interconnect IEEE Standard 488 compatible instruments, and allows GPIB communication over distances of up to 500 meters (1650 feet). The 4932 extends the range of standard length GPIB cables by using a 75 Ω RG 6/U coaxial "link" cable and operates transparently to the user.

Two versions of this Tektronix product are available: the 4932, a self-powered unit, and the 4909F02 Plug-in Interface. The 4932 converts parallel GPIB data to serial form, appending various control signals and then transmitting the data to the remote end over the coaxial "link" cable. The 4909F02 was primarily designed for use with the Tektronix 4909 Multi-User File Management System. It plugs directly into the system bus and provides a coaxial "link" cable connector for use with a remote 4932. At the remote end, a 4932 GPIB Extender converts the data back to a parallel, GPIB compatible format.

CHARACTERISTICS

PERFORMANCE CHARACTERISTICS

Data Transfer Rates — Distance up to 300 m: 20 kbyte/s. Distance 300 to 500 m: 5 kbyte/s. SRQ Propagation Delay (300 m): 23 μs max.

AC POWER (4932 ONLY)

Line Voltage Ranges — 100, 120 V ac at 0.2 A; 220, 240 V ac at 0.1 A.

Line Frequency Range — 48 to 400 Hz.

PHYSICAL CHARACTERISTICS

	4932		4909F02	
Dimensions	mm	in	mm	in
Width	238	9.4	31	1.2
Height	89	3.5	259	10.2
Depth	285	11.3	409	16.1
Weight ≈	kg	lb	kg	lb
Net	2.7	6.3	0.9	2.0

ORDERING INFORMATION

4932 GPIB Extender.
4909F02 GPIB Extender.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on these products.

4611

4631

4611 Hard Copy Unit

Low Copy Cost

High Contrast, Permanent Images

Electrostatic Process

Storage Tube Compatible

The 4611 provides low cost, high quality copies of complex graphics and alphanumerics from storage tube displays at the press of a button. The 4611 is based on electrostatic (charge transfer) technology, and uses electrographic paper for high contrast, permanent copies at an economical per-copy cost.

The 4611's high addressability and dot overlap result in uniquely dark, smooth lines for optimum copy quality. The dry toning system employed by the 4611 is cleaner, more convenient and more consistent than liquid toning systems. Images are permanently fused and made from inert, safe ingredients. Typical user applications include quick preview copies before final plotting, copies of intermediate steps during interactive work sessions, and final output copies for reports, presentations, and file records.

Compact and lightweight, the 4611 can be easily moved from desk to desk. It also can be multiplexed to copy up to four teminals and/or display monitors. Warm up lights and paper-out indicators are provided.

The 4611 is compatible with the Tektronix 4010 Series of Computer Display Terminals, the (4114, 4114A, 4116A, 4025, and the 4025A) Terminals, the 4050 Series of Graphic Computing Systems, and the 4081 Interactive Graphics Terminal. The 4611 is also compatible with Tektronix 11 and 19 inch computer display modules.

CHARACTERISTICS

Warm-up Time — Two minutes.
Copy Time — 24 s (vertical format).
Paper Type — Electrographic (dielectric).
Image Size — Vertical Format: 190 x 147 mm (7.5 x 5.8 in). Landscape Format (Option 01): 190 x 254 mm (7.5 x 10 in). Option 31: 190 x 226 mm (7.5 x 8.9 in).
Addressability — Vertical: 171 dots/in. Horizontal: 256 dots/in.
Toner — Dry magnetic.

AC POWER

Voltage Range — 90 to 128 V ac and 180 to 250 V ac. (High range requires Options A1, A2, A3 or A4).
Line Frequency — 48 to 62 Hz.
Power — Warm-up: 300 W nom, 370 W max. Operating: 215 W nom, 290 W max. Idle: 120 W nom, 185 W max.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	425	16.7
Height	181	7.1
Depth	625	20.6
Weight	**kg**	**lb**
Net	20.0	45.0

ORDERING INFORMATION

4611 Hard Copy Unit.
Option 01 — Landscape Image Format.
Option 02 — Four-Channel Multiplexer.
Option 31 — Compatible with 4025 and 4025A Terminals. (Not required if Option 01 is ordered.)

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

4631 Hard Copy Unit

High Image Quality, Copies in Seconds

Fiber Optic Process

Storage Tube Compatible

The 4631 Hard Copy Unit provides superior quality copies of any graphic and alphanumeric information displayed on a storage tube display. The 4631's fiber optic process uses Dry Silver paper for the fine detail and photographic quality image needed when copying complex graphics and alphanumerics. It requires no toners or chemical additives of any kind. Copies can be made in either vertical or horizontal format. A special "slow scanning" mode allows images on the horizontal format to be made at even higher resolution and image quality.

The 4631 can be multiplexed to copy up to four storage tube terminals and/or display monitors. It is compatible with the Tektronix 4010 Series of Computer Display Terminals, the 4114A and 4116A Terminal, the 4025 and 4025A Terminal,the 4050 Series of Graphic Computing Systems, and the 4081 Interactive Graphics Terminal. The 4631 is also compatible with Tektronix 11 and 19 inch computer display modules.

CHARACTERISTICS

Warmup Time — Ten minutes.
Normal Scan — 18 s first copy; 9 s subsequent.
Slow Scan — 36 s first copy; 16 s subsequent.
Paper Size — 216 x 277 mm (8.5 x 11 in).
Paper Type — Std Dry Silver (500 ft roll).
Addressability, Normal Scan — Vertical: 79 dots/cm (200/in). Horizontal: 67 dots/cm (170/in).
Slow Scan — Vertical: 118 dots/cm (300/in). Horizontal: 134 dots/cm (340/in).
Image Size — Vertical Format: 180 x 137 mm (7.1 x 5.4 in). Horizontal Format: 225 x 170 mm (8.85 x 6.7 in). Option 31: 163 x 190 mm (6.4 x 7.5 in).

AC POWER

Voltage Range, Standard — 104 to 126 V ac.
Strappable Low Range — 90 to 110 V ac.
Strappable High Range — 108 to 132 V ac.
Power, Warmup — 620 W nom; 750 W on high range.
Power, Copy Process — 200 W nom; 240 W on high range.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	406	16.0
Height	295	11.6
Depth	648	25.5
Weight	**kg**	**lb**
Net	29.5	65.0

ORDERING INFORMATION

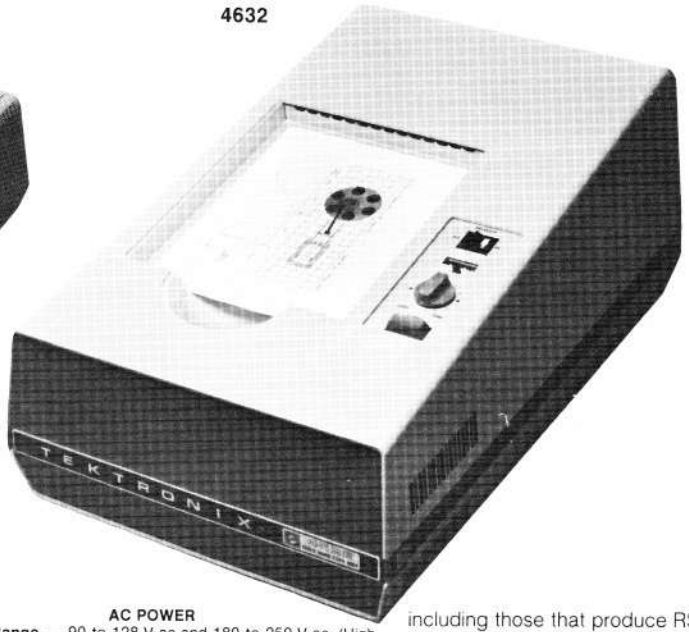
4631 Hard Copy Unit.
Option 01 — Copy Counter.
Option 02 — Four Channel Multiplexer.
Option 31 — Compatible with Tektronix 4025 and 4025A Terminals.
Option 48 — 220 V ac, 50 Hz Operation.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A 50 Hz.
Option A2 — UK 240 V/13 A 50 Hz.
Option A3 — Australian 240 V/10 A 50 Hz.
Option A4 — North American 240 V/15 A 60 Hz.
Option A5 — Switzerland, 220 V/10 A, 50 Hz.

4612

4632



4612 Video Hard Copy Unit

Low Copy Cost

High Contrast, Black and White Images

Electrostatic Process

Video Source Compatible

Hard copy units such as the 4612 provide quick and convenient copies of complex information that has been displayed on a screen. These devices are essential to the use of graphic terminals, desktop computing systems, and video image processing systems. To fulfill a variety of user needs, graphic and alphanumeric information is permanently recorded on paper at the press of a button. These needs include quick preview copies before final plotting, copies of intermediate steps during interactive work sessions, and final output copies for reports, presentations, and file records.

The 4612 provides permanent black-and-white copies of graphic and alphanumeric information from raster scan terminals and other video signal sources. Based on electrostatic technology, the 4612 uses electrographic paper for high contrast copies at an economical copy cost. The 4612 is compatible with the Tektronix 4025A terminal, the 4112A Option 11 terminal, and with a wide variety of raster scan terminals and video signal sources including DEC VT100 Series terminals, DEC MINC Systems and those sources that produce RS-170, RS-330 or RS-375A type signals.

The 4612 is compact and lightweight, and can easily be moved from desk to desk. Its unique dry toning process is convenient, non-messy and superior to liquid toner systems. Images are permanently fused and made from inert, safe ingredients. Warm-up lights and paper-out indicators are provided. All copies are vertically oriented. The 4612 can be multiplexed to copy up to four terminals and/or display monitors with Option 02.

The standard 4612 unit is prepared for use with 525 line, 60 Hz sources. Adjustment for 625 line, 50 Hz is provided as an option.

CHARACTERISTICS

Warm-up Time — Two min.
Copy Time — 24 s.
Paper Type — Electrographic (dielectric).
Image Size — 7.5 x 5.8 std (525 line, 60 Hz signals).
Addressability — 256 dots/in horizontal, 171 dots/in vertical.
Toner — Dry magnetic.

AC POWER

Voltage Range — 90 to 128 V ac and 180 to 250 V ac. (High range requires Options A1, A2, A3 or A4.)
Warm-up — 300 W nom, 370 W max.
Copy Process — 215 W nom, 290 W max.
Idle — 120 W nom, 185 W max.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	425	16.7
Height	181	7.1
Depth	525	20.6
Weight ≈	**kg**	**lb**
Net	20.0	45.0

ORDERING INFORMATION

4612 Video Hard Copy Unit.
Option 02 — Four-Channel Multiplexer.
Option 03 — Setup for 625/50 Hz Scanning Std.
Option 08 — Setup for DEC VT100 Series Terminals.
Option 15 — Video Input 15-pin Connector.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

4632 Video Hard Copy Unit

High Image Quality

Gray Scale Capability

Copies in Seconds

Video Source Compatible

The 4632 provides permanent copies of graphic and alphanumeric information from raster scan terminals and other video signal sources. All copies are horizontally oriented. Eight distinct shades of gray can be copied with a special gray scale enhancement option. The standard 4632 can clearly show six different shades of gray, for polygon fill-in, bar charts, and many other applications.

With Option 02, the 4632 can be multiplexed to copy up to four raster scan terminals, and can accept remote copy signals. The 4632 is compatible with the Tektronix 4020 Series, 4112, 4112A, 4113, 4113A terminals and with a wide variety of raster scan terminals and video signal sources, including those that produce RS-170, RS-330, RS-375A, RS-343A and RS-412A type signals. The 4632 is also compatible with VT100 Series terminals, the HP 2640 Series, the AT&T Gemini 100 Systems, and an optional RGB mixer provides 4632 compatibility with many color displays such as the IBM 3279.

The standard 4632 is prepared for use with 525 line, 60 Hz sources. Many other adjustments are provided as options, including adjustments for 625 line, 50 Hz and for high resolution 1029 line, 60 Hz.

CHARACTERISTICS

Warmup Time — Ten minutes.
Copy Time — 18 s first copy; 9 s subsequent copies.
Paper Size — 216 x 277 mm (8.5 x 11 in).
Paper Type — Std Dry Silver (500 ft roll).
Addressability — Incoming signal dependent.
Image Size — 203 x 152 mm (8 x 6 in).
Gray Levels — Six min (8 w/Option 06).

AC POWER

Voltage Range, Standard — 104 to 126 V ac.
Strappable Low Range — 90 to 110 V ac.
Strappable High Range — 108 to 132 V ac.
Warmup — 620 W nom, 750 W max.
Copy Process — 200 W nom; 240 W max.
Idle — 120 W nom, 185 W max.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	406	16.0
Height	295	11.6
Depth	648	25.5
Weight ≈	**kg**	**lb**
Net	29.5	65.0

ORDERING INFORMATION

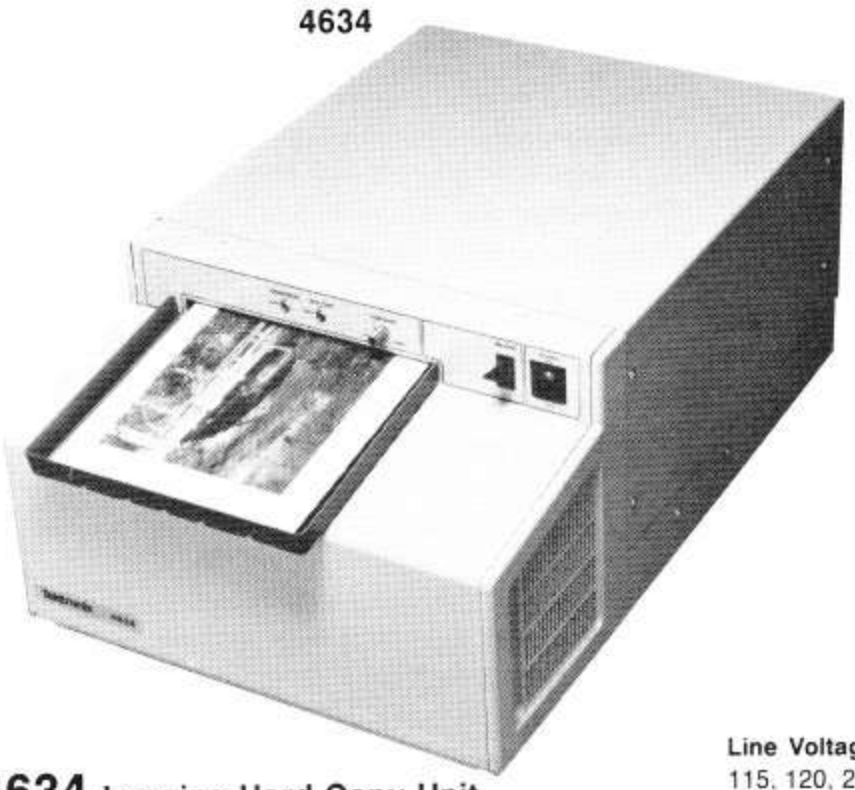
4632 Video Hard Copy Unit.
Option 01 — Copy Counter.
Option 02 — Four Channel Multiplexer.
Option 03 — Setup for 625 Line/50 Hz.
Option 04 — Setup for 1029 Line/60 Hz.
Option 05 — Setup for Tektronix 4023 Terminal.
Option 06 — Enhanced Gray Scale.
Option 07 — Compatible with HP 2640 Series Terminals.
Option 08 — Compatible with DEC MINC Systems.
Option 09 — Setup for AT&T GEMINI 100 Systems.
016-0596-00 — RGB Mixer.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on these products.

4634



4643

4634 Imaging Hard Copy Unit

Excellent Gray Scale and Resolution

The 4634 Imaging Hard Copy Unit records images of photographic quality from most TV video sources, both analog and digital.

The 4634 can be quickly adjusted to accommodate a wide variety of line rates, for both 50 Hz and 60 Hz systems.

It uses a fiber-optic CRT and thermal processor to produce a finished image with excellent resolution and gray scale in less than half a minute. Per copy cost for large, file-sized images is low. An optional RGB mixer provides 4634 compatibility with many color displays such as the IBM 3279.

Video information is input through rear panel connectors. In most cases a simple BNC connector is all that's required.

The 4634 is available as either a rackmount or benchtop model.

CHARACTERISTICS

Recording Medium — Dry Silver Paper; Tektronix' High Performance (7772) Paper or switch selectable to Tektronix' Standard (7770) Paper.

Paper Packaging — Rolls of paper encased in light-sealed cylindrical cassettes.

Paper Dimensions — 216 mm x 152 m (8.5 in x 500 ft).

Shelf Life of Tektronix Paper — 12 months at 20°C with 50% relative humidity.

Recording Technique — Raster scan video with fiber optic CRT. Spot size ≤0.15 mm (0.006 in) at 10 V grid drive.

Developing Technique — Heat via internal processor.

Warmup Time — 20 min.

Copy Time — 26 s.

Exposure Time (11 in Copy) — 8.5 s.

Copy Repetition Rate — ≈12 s.

Copy Length Range — 178 to 279 mm (7.0 to 11.0 in) in 19 mm (3/4 in) increments.

Horizontal Image Size Range — 127 to 203 mm (5 to 8 in) for 60 Hz field rate; 152 to 203 mm (6 to 8 in) for 50 Hz field rate.

Vertical Image Size Range — Adjusts for correct aspect ratio.

Gray Shades — 12 w/Tektronix High Performance (7772) Paper; Six w/Tektronix Standard (7770) Paper.

Resolution — At least 4.92 lines/mm (125 lines/in) w/Tektronix High Performance (7772) Paper; at least 3.94 lines/mm (100 line s/in) w/Tektronix Standard (7770) Paper.

AC POWER

Line Voltage Range (±10%) — Jumper selectable for 100, 115, 120, 200, 220, 230 and 240 V ac.

Line Frequency — 48 to 62 Hz.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	425	16.7
Height	266	10.5
Depth	686	27.0
Weight ≈	**kg**	**lb**
Net	30.5	67.0

ORDERING INFORMATION

4634 Imaging Hard Copy Unit.
Option 30 — Delete Rackmount Hardware.
Option 45 — End-User Set-up.
016-0596-00 — RGB Mixer

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.

4643 Printer

Crisp, Matrix Quality Printing

Easy to Use

International Characters

High Reliability

A low cost alternative to conventional line printing, the Tektronix 4643 Printer provides fast, high-quality, impact printing while requiring no preventive maintenance and infrequent servicing.

Fast but not expensive, the 4643 Printer uses bidirectional operation to print 340 characters per second, printing full 132 character lines. Speeds of 125 lines per minute are nominal.

The 4643 provides three type faces: standard, condensed, and expanded. All three can be program selected, allowing users to mix the various fonts for greater reading impact.

Compatibility

The standard Tektronix 4643 can be interfaced with most standard RS-232 data processing instruments and systems. Option 01 provides a parallel interface. The 4643 is compatible with the following Tektronix products: 4010 and 4110 Series terminals, 4020 Series terminals, and 4050 Series Desktop Graphic Computing systems; the 8001 and 8002A Microprocessor Labs and 8550 Microcomputer Development Lab; and the S-3250, S-3270, and S-3280 Semiconductor Test Systems.

CHARACTERISTICS

Printing Speed — 340 characters/s.

Character Density — Condensed: 219 characters/line. Standard: 132 characters/line. Expanded: 72 characters/line.

Throughput Rate — 132 Columns Wide: 125 lines/min. 72 Columns Wide: 200 lines/min. 40 Columns Wide: 300 lines/min.

Paper Slew Rate — 254 mm/s (10 in/s) min.

Character Set — 128 (96 ASCII plus 32 international).

Vertical (Line) Spacing — 2.4 lines/cm (6 lines/in).

Horizontal (Standard Character) Spacing — 3.9 characters/cm (10 or 5 characters/in).

Printing Matrix — 7 x 7 half-dot matrix.

Paper Type — Continuous fanfold, edge perforated.

Paper Width — 76.2 to 406.4 mm (3 to 16 in) at 0.7 mm (0.028 in) maximum thickness.

Ribbon Type — Fabric, continuous loop cassette.

Ribbon Life — Five million characters.

AC POWER

Line Voltage — 90 to 136 V ac or 187 to 257 V ac.

Line Frequency — 50 or 60 Hz.

Power, Idle — 150 W max.

Power, Printing — 275 W max.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	671	26.4
Height	213	8.4
Depth	594	23.8
Weight	**kg**	**lb**
Net	30.0	67.0

ORDERING INFORMATION

4643 Printer **(2400 Baud Standard).**
Option 01 — Parallel Interface.
Option 02 — Customer Specifies Baud Rate 110, 150, 300, 600, 1200, 4800, 9600. Use Option 61 to Indicate Choice.
Option 03 — 8550 Series Microcomputer Development Lab compatibility.
Option 61 — Required with Option 02. Select 110, 150, 300, 600, 1200, 4800, or 9600.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro, 220 V/16 A, 50 Hz.
Option A2 — UK, 240 V/13 A, 50 Hz.
Option A3 — Australian, 240 V/10 A, 50 Hz.
Option A4 — North American, 240 V/15 A, 60 Hz.
Option A5 — Swiss 220 V/10 A, 50 Hz.

OEM terms available on the 4634.

4662 Option 31

4662

Intelligent B-size (A3) Plotter

Multi-color Capability

Built-in RS-232 and GPIB Interface

The 4662 is the first plotter with built-in processing power. It has the capability to operate independently, without bogging down computational operations. Input data is internally buffered so you can optimize data transfer from your host processor, or move on to your next computation while the 4662 is plotting. Incorporating state-of-the-art technology, it provides an accuracy and repeatability that no other plotter can approach for the price.

When turned on, the 4662 automatically adjusts for its nominal plot size regardless of how the last plot was set up. To set a different plotting area or adjust to a new paper size, you simply use the SET control buttons on the front panel to define the area. The 4662 plots on paper, vellum, mylar, acetate-film and preprinted forms.

The 4662's digital stepping motors and internal vector generator operate at high speed, with microprocessor-controlled acceleration and deceleration.

Excellent Repeatability

There is no servo hysteresis and no drift as in potentiometric feedback systems. There are no slidewires to clean, no moving electrical contacts, and no servo adjustments to be made.

Up to four 4662s can be configured in series, and up to fifteen 4662s can be used with one GPIB device like the Tektronix 4050 Series of desktop graphic computers. Each plotter can perform its own job simultaneously while the host processor turns to other tasks. A simple, unique code activates each plotter.

4662 Option 31

Intelligent B-Size (A3) Plotter

8-pen Turret Version

Compatible in RS-232C ASCII Environments

Supported by PLOT 10 and PLOT 50 Software

The 4662 Option 31 adds the convenience of an automatic 8-pen turret to the built-in processing and feature-packed performance of the world's most versatile small plotter. With the Option 31, you can insert any eight pens and program the 4662 to make the selection for you. Mix and match hard-nib, fiber-tip and wet-ink pens. Include fine line widths for the most precise plots, or for drawing several plots on a single page. Work with nine available colors to add greater clarity and appeal to presentations and camera-ready plots.

Retrofit your present 4662 with the Option 31 turret. It can be installed quickly by any Tektronix service engineer. Updating existing programs to include programmed pen selection requires the addition of just a few lines of code.

Operating Modes

The 4662 Option 31 has two input modes in RS-232C: Alphanumeric (Alpha) and Graphic Plot (Graphic). The 4662 Option 31 also has Graphic input (GIN) to the host. A GPIB interface is also standard.

CHARACTERISTICS

Plotting Area — X-axis, >381 mm (15 in); Y-axis, >254 mm (10 in).

Repeatability — ±0.06 mm (±0.0025 in); Option 31 - ±0.06 mm w/same pen, ±0.25 mm w/pen exchanged.

Time to Maximum Velocity — ≈120 ms.

Resolution — 0.127 mm (0.005 in).

Plotting Rate — 406 to 559 mm/s (16 to 22 ips) vector dependent.

Plotting Rate, Option 31 — User programmable from 10 to 570 mm/s in 10 mm/s increments.

Point Plotting Rate — Ten points/s max.

Character Set — Full ASCII.

Pen Control — Software or front panel Pen button; manually disabled.

Writing Method — Fiber-tipped pen, nylon tipped pen, or wet ink drafting pens.

Paper Size — 279 x 432 mm (11 x 17 in) max.

Paper Retainer — Electrostatic holddown.

Drive Characteristics — Two four-phase stepping motors, each operating a pulley/cable system to propel the pen in that motor's respective axis.

AC POWER

Voltage Ranges — 105, 116, 210, 232 ±14% V ac.

Line Frequency — 48 to 66 Hz.

Power — 60 W typical, 90 W max.

PHYSICAL CHARACTERISTICS

	4662		4662 Option 31	
Dimensions	**mm**	**in**	**mm**	**in**
Width	517	20.4	654	25.7
Height	203	8.0	203	8.0
Depth	495	19.5	495	19.5
Weight	**kg**	**lb**	**kg**	**lb**
Net	13.8	30.0	16.0	35.0
Shipping	20.8	46.0	21.0	46.0

ORDERING INFORMATION

4662 Interactive Digital Plotter.

Option 01 — GPIB I/F Cable instead of RS-232C I/F Cable.
Option 20 — 8 k Buffer.
Option 31 — Eight Pen Turret.
4662A01 — PLOT 10 Utility Routines Software.
021-0339-00 — Option 31 Field Retrofit Kit for Std 4662.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on these products.

4663

GPIB
IEEE-488

The 4663 is designed to support other products which comply with IEEE Standard 488-1978.

Intelligent C-size Plotter

Dual Programmable Pen Control

Nine Character Fonts

RS-232 and GPIB Product

The 4663 is the first high speed, C-size plotter with built-in processing power and 5.5 k buffer memory to free the host from many routine computations. This intelligent plotter saves time without sacrificing flexibility.

The 4663 can handle either European A-2 drafting size or American C-size paper, mylar or acetate. Fiber tip, hard-nib, or wet ink pens give you crisp, clean camera-ready copies or overhead transparencies.

A sprocket feed paper advance (Option 36) is available for roll stock, with form feed remotely or locally programmable. This option allows the 4663 to operate unattended with a variety of form sizes.

The plotter features dual programmable pen control with interchangeable multicolor pens and is capable of producing dotted or dashed lines from local firmware. A built-in joystick allows easy manual positioning of the pen carriage crosshairs for digitizing or page scaling adjustments.

Unique Parameter Entry Device

This front panel device lets you quickly identify or select operating parameters without resorting to binary switches, straps, status display devices, and volumes of operator manuals. It allows you to quickly program baud rate, pen type, acceleration, plotting speed, aspect ratio, page size and many other parameters.

Excellent Penmanship

Nine character fonts come standard with the 4663, including the full ASCII character set. All characters can be scaled, slanted, rotated and may be centered when used as pilot symbols.

Local Functions

Various graphic functions are implemented via firmware. Page scaling, windowing, viewporting and clipping are typical.

Hardware loop through RS-232C interface is standard and optional GPIB is available. The 4663 is designed to support other GPIB products that comply with IEEE Standard 488-1978.

The Tektronix 4932 GPIB Extender provides a cost-effective way to interconnect remotely located GPIB instruments, allowing communication at distances of up to 500 meters (1650 feet). See page 16 for additional information.

CHARACTERISTICS

Maximum Plotting Area — X-axis, 569 mm (22.4 in) Y-axis, 432 mm (17 in).

Repeatability — ±0.064 mm (±0.0025 in).

Resolution — ±0.025 mm (±0.001 in).

Maximum Plotting Speed — 406 to 559 mm (16 to 22 ips) vector dependent.

Point Plotting Rate — Ten points/s max.

Character Generator — 95 ASCII, 15 x 7 matrix, seven special fonts standard.

Paper Size — 420 x 594 mm (European A2), 17 x 22 in (US C-size).

Paper Retention — Electrostatic hold down.

Media Types — Paper, mylar or acetate.

Drive Characteristics — Microprocessor controlled stepping motors controlling cable system connected to pen arm.

Baud Rate — 110 to 9600 baud.

Standard Interface — RS-232C, full duplex, loop-through.

AC POWER

Voltage Ranges — 90 to 132 V ac and 180 to 250 V ac.

Line Frequency — 48 to 440 Hz.

Power — 180 W typical.

4663S

Intelligent C-Size Plotter

RS-232 and GPIB Product

High Performance Features

As the first interactive digital plotter to combine large plotter capabilities with C-size workstation convenience, the 4663S typically does most of the work relegated to the largest flatbeds and drums at a tremendous savings in time and cost.

Using its dual-programmable pens, unique push-button parameter entry card, and the other high-performance features, you can enjoy easy command over many of the most sophisticated plotting tasks.

Features

In addition to the capabilities of the 4663, the 4663S offers the following high performance features as standard:

Integral GPIB and RS-232 Interface

This interface provides flexible plotter configurability with a variety of host computers, terminals and displays.

Circular Interpolation and Programmable Macros

These features allow the precise drafting of circles and arcs, and for quick drafting of stored graphics and symbols.

Added Default Parameters

These parameters permit as many as four groups of set-up instructions to be entered in plotter memory, with single-key recall.

Downloadable Math and Character Sets

These sets permit alphanumeric versatility with reduced host dependency.

PHYSICAL CHARACTERISTIC (4663/4663S)

Dimensions	mm	in
Width	995	37.6
Height	173	6.8
Depth	752	29.6
Weight	**kg**	**lb**
Net	386.0	85.0
Shipping	454.0	100.0

ORDERING INFORMATION

4663 Interactive Digital Plotter.
4663S Interactive Digital Plotter.
Option 04 — GPIB only (deletes RS-232C for 4663).
Option 36 — Paper Advance.
4663A01 — PLOT 10 Utility Routines Software.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 230 V/10 A, 50 Hz.

4952 Joystick

Proportional Cursor Speed Control

The 4952 Joystick is available for Tektronix graphic systems users who need increased interactivity. Activated by the Pointer command, this sensitive fingertip cursor control allows quick, precise positioning of the cursor, making it easy to develop accurate graphics.

The 4952 is simplicity itself
Just move the center lever in the direction you want to move the cursor. Speed is controlled by the angle and distance of the lever from the center position. When you want to stop the cursor, simply release the lever to its neutral vertical position.

The 4952 is compatible with all of the Tektronix 4010 Family Terminals, 4081 Interactive Graphic Systems and 4050 Series Desktop Computers.

CHARACTERISTICS

Control Actuation — Spring return to center.
Time Drift (Within 30-second Period) — Adjustable to <1 part in 1024.
Cursor Control Accuracy — 0.1%.
Resolution (X and Y) — 1 part in 1024.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	124	4.9
Height	60	2.3
Height with lever	30	1.2
Depth	173	6.8
Weight	**kg**	**lb**
Net	0.9	2.0

ORDERING INFORMATION

4952 Joystick (4014/4015).
Option 01 — Joystick (for 4010, 4012, and 4013).
Option 02 — Joystick (for 4050 Series).

4953/4954/4956 Graphic Tablets

Pen or Cursor Inputs

Worst Case Spec

With the 4953/54/56 Graphic Tablets, you can choose one of two input device options: a pen for best convenience, or a push-button cursor where exacting accuracy is required. You can input points or vectors to digitize or display maps, graphic drawings, schematics and other designs.

From precision mapping to exacting parts outlines, Tektronix Graphic Tablets satisfy a wide range of user needs. You can select options from a written "menu" placed on a Graphic Tablet. You can store graphic input on peripheral disc or recorder devices, recall it later, and make quick, dry-process copies on a Tektronix hard copy unit.

Tektronix offers all of the peripheral equipment needed with your computer to configure a truly interactive graphics system. Take your pick of the 279 by 279 mm (11 by 11 in) 4953 model, the drawing board-sized 1016 by 762 mm (40 by 30 in) 4954 model, or the 4956 in two sizes; the standard 510 by 510 mm (20 by 20 in) or the Option 33 version, 910 by 1220 mm (36 by 48 in). The latter version is large enough to accommodate E-size engineering drawings. The 4956 is an IEEE-488 device that connects to the 4050 Series Desktop Computers.

The 4954F32 Pedestal is a roll-around stand that allows the 4954 to be raised or lowered or tilted at any angle from vertical to horizontal.

PHYSICAL CHARACTERISTICS

	TABLET						CONTROLLER					
	Dimensions				Weights		Dimensions				Weights	
		Width	Height	Depth		Net		Width	Height	Depth		Net
4953	mm	390	31.7	390	kg	2.4	mm	213	95	282	kg	2.7
	in	15.4	1.2	15.4	lb	5.2	in	8.4	3.7	11.1	lb	6.0
4954	mm	1143	51	946	kg	23.4	mm	213	95	282	kg	2.7
	in	45.0	2.0	37.2	lb	52.0	in	8.4	3.7	11.1	lb	6.0
4956	mm	708	38	711	kg	10.1	mm	343	124	381	kg	6.2
	in	27.9	1.5	28.0	lb	22.5	in	13.5	4.9	15.0	lb	13.7
4956 Opt 33	mm	1416	50.8	1111	kg	32.4	mm	343	124	381	kg	6.2
	in	55.7	2.0	43.7	lb	72.0	in	13.5	4.9	15.0	lb	13.7

4953 CHARACTERISTICS

Size — 279 x 279 mm (11 x 11 in).
Active Writing Area — 260 x 260 mm (10.24 x 10.24 in).
Resolution — 0.25 mm (0.01 in) min (10 bits).
Accuracy — ±0.975 mm (±0.030 in) over entire surface.
Repeatability — One point.
Operating Modes — Single or multiple point entry using either optical cursor or pen.

AC POWER

Line Voltage — 94 to 126 V ac or 187 to 264 V ac.
Line Frequency — 48 to 440 Hz.
Power — 30 W max.

ORDERING INFORMATION

4953 Graphic Tablet, 279x279 mm (11x11 in).
Option 48 — 220 V ac, 50 Hz Power.

4954 CHARACTERISTICS

Size — 762 x 1016 mm (30 x 40 in).
Active Writing Area — 780 x 975 mm (30.7 x 38.4 in).
Resolution — 0.25 mm (0.01 in) min (12 bits).
Accuracy — ±2.5 mm (±0.10 in) over entire surface.
Repeatability — ±1 point.
Operating Modes — Single or multiple point entry using either optical cursor or pen.

AC POWER

Line Voltage — 94 to 126 V ac or 187 to 264 V ac.
Line Frequency — 48 to 440 Hz.
Power — 30 W max.

ORDERING INFORMATION

4954 Graphic Tablet, 762x1016 mm (30x40 in).
Option 48 — 220 V ac, 50 Hz Power.
4954F32 Pedestal (for 4954 or 4956 Option 33).

4956 CHARACTERISTICS

Size — 510 x 510 mm (20 x 20 in); Option 33, 910 x 1220 mm (36 x 48 in).
Resolution — 0.127 mm (0.005 in).
Accuracy — ±0.1 mm (0.004 in) ±1 LSB.
Repeatability — ±1/2 LSB.
Repetition Rate — Up to 30 CPS.
Operating Modes — Point, Stream, Switch Stream, Incremental.

AC POWER

Line Voltage — 100, 115, or 230.
Line Frequency — 48 to 66 Hz.
Power — 75 W max.

ORDERING INFORMATION

4956 Graphic Tablet, 510x510 mm (20x20 in).
Option 33 — Graphic Tablet, 910 x 1220 mm (36 x 48 in).
Option 48 — 220 V ac, 50 Hz Power.
4954F32 Pedestal (for 4954 or 4956 Option 33).

INTRODUCTION

Now you can rely on Tektronix as your single supply source for all media, pens and ink for your Tektronix copiers, plotters, printers and storage devices. By using Tektronix-brand supplies, you can be assured of getting the best output quality of your Tek peripherals.

For further information, or to order any of the Tektronix-brand supplies listed below, call your local Tektronix Field Office.

INK-JET SUPPLIES

4691 Ink Cartridges
200 ml Each

Cyan	016-0713-00
Black	016-0714-00
Yellow	016-0715-00
Magenta	016-0716-00

4691 Ink Jet Copy Paper
500 Sheets Per Package

216 x 279 mm (8.5 x 11 in) A Size	016-0712-00
279 x 432 mm (11 x 17 in) B Size	016-0711-00
297 x 210 mm (only for use with 4691 Option 01) A4 Size	016-0709-00
297 x 420 mm (only for use with 4691 Option 01) A3 Size	016-0710-00

4691 Transparency Film*1
100 Sheets Per Package

A Size	016-0765-00
A4 Size	016-0766-00

4691 Drum Adaptors

Package of 3	118-2593-00

4695 Ink Cartridge Packages
2.5 cc Cartridges 16 Each

Yellow	016-0734-00
Magenta	016-0735-00
Cyan	016-0736-00
Black	016-0737-00

4695 Ink Jet Copy Paper
6 Rolls Per Box 50 m Each

Roll Paper	016-0743-00

4695 Ink Jet Copy Paper
500 Sheets Per Package

A Size	016-0739-00
A4 Size	016-0740-00

4695 Transparency Film*1
100 Sheets Per Package

Liquids

Maintenance Liquid (200 cc)	016-0732-00
Print Head Protect Liquid (10 cc)	016-0733-00

PLOTTER PENS

4663, 4662 Option 31

Presentation Pack	020-0888-00

4663, 4662 Option 31 Paper Pens
Regular Width
Individual Colors Available in 3-Pen Packs.

Black	016-0414-00
Brown	016-0414-01
Red	016-0414-02
Orange	016-0414-03
Yellow	016-0414-04
Green	016-0414-05
Blue	016-0414-06
Purple	016-0414-07
Magenta	016-0414-08
9-Pen Multicolor Pack	016-0414-09

4663, 4662 Option 31 Paper Pens
Fine Line
Individual Colors Available in 3-Pen Packs

Black	016-0725-00
Brown*1	016-0725-01
Red	016-0725-02
Orange*1	016-0725-03
Yellow*1	016-0725-04
Green	016-0725-05
Blue	016-0725-06
Purple*1	016-0725-07
Magenta*1	016-0725-08
9-Pen Multicolor Pack*1	016-0725-09

4663, 4662 Option 31 Transparency Pens
Individual Colors Available in 3-Pen Packs

Black	016-0469-00
Brown	016-0469-01
Red	016-0469-02
Orange	016-0469-03
Yellow	016-0469-04
Green	016-0469-05
Blue	016-0469-06
Purple	016-0469-07
Magenta	016-0469-08
9-Pen Multicolor Pack	016-0469-09

4663, 4662 Option 31 Wet Ink Pens

0.3 mm (0.01 in) Dia Tip Pen Body	016-0444-01
0.5 mm (0.02 in) Dia Tip Pen Body	016-0442-01
0.8 mm (0.03 in) Dia Tip Pen Body	016-0443-01

Replacement Tips

0.3 mm (0.01 in) Dia Tip	214-2706-00
0.5 mm (0.02 in) Dia Tip	214-2706-01
0.8 mm (0.03 in) India Tip	214-2706-02

4662 Standard 1-Pen Unit Paper Pens
Individual Colors Available in 3-Pen Packages

Red	016-0589-00
Green	016-0589-01
Black	016-0589-02
Blue	016-0589-03

4662 (Standard 1-Pen Unit) Transparency Pens
Individual Colors are Available in 3-Pen Packages

Black	016-0648-00
Brown	016-0648-01
Red	016-0648-02
Orange	016-0648-03
Yellow	016-0648-04
Green	016-0648-05
Blue	016-0648-06
Purple	016-0648-07
Magneta	016-0648-08

4662 (Standard 1-Pen Unit) Wet Ink Pens

0.35 mm(0.014 in)Dia Tip Pen Body	016-0448-00
0.46 mm(0.018 in)Dia Tip Pen Body	016-0449-00
0.56 mm(0.022 in)Dia Tip Pen Body	016-0450-00

Replacement Tips

0.35 mm (0.014 in) Dia Tip	016-0445-00
0.46 mm (0.018 in) Dia Tip	016-0446-00
0.56 mm (0.022 in) Dia Tip	016-0447-00

Wet Ink Pen Accessories

Replaceable Wet Ink Pens Parts Kit	006-2968-01
Extra Ink Single Cartridge	016-0649-00

Inks for Polyester Film (3/4 oz Squeeze Bottle)

Brown	016-0423-00
Green	016-0424-00
Blue	016-0425-00
Red	016-0426-00
Black	016-0427-00

Inks for Paper (3/4 oz Squeeze Bottle)

Black	016-0428-00

Wet Ink Cleaning and Maintenance Systems

Ultrasonic Cleaning Tank	002-1555-00
Cleaning Fluid with Strainer 5.2 oz	002-0920-01
Pressure/Suction Cleaning Bulb	002-1560-00
Magnifying Instrument	002-1558-00
Pen Storage Humidifier	002-1559-00

*1 *New item, available soon.*

PLOTTING MEDIA

4662 Plotter Paper
Blank White Paper
280 x 432 mm (11 x 17 in) 100 Each
B-Size 006-2410-00

Printed Paper
Standard Media
10 x 10 cm (11 x 16.5 in) Grid 100 Each
Linear Paper 006-1698-00

10 x 10 cm (11 x 16.5 in) 100 Each
Linear Paper 006-1699-00

10 x 3 Cycle (11 x 16.5 in) 100 Each
Semi-log Paper 006-1700-00

10 x 2 Cycle (11 x 16.5 in) 100 Each
Semi-log Paper 006-1701-00

2 x 3 Cycle (11 x 16.5 in) 100 Each
Full-log Paper 006-1702-00

4662 A-Size Plotter Film
Quick Dry Plotter Film
8.5 x 11 in 50 Sheet Package 006-5939-00

4663 C-Size Polyester Film
Antistatic Polyester Film
17 x 22 in, 100 Sheets 006-2835-00

4663 C-Size Plotting Paper
Translucent Bond
18 in x 200 ft (2 Each) C-Size After Tear Off
Blank Roll Paper 006-2837-00

Translucent Bond
18 in x 200 ft (2 Each)
Metric Size A2 After Tear Off
Blank Roll Paper 006-3473-00

Translucent Bond
432 x 559 mm (17 x 22 in), 100 Each
Blank Sheet 006-3150-00

Vellum, 100% Rag Content
432 x 559 mm (17 x 22 in) 100 Each
Blank Sheet 006-2836-00

COPIER PAPER

4631, 4632 and 4635
Tektronix Standard Dry Silver Paper
216 mm x 152 m (8.5 in x 500 ft)
Single Roll 006-1603-00
4 Roll Carton 006-1603-01

4633A, 4634 and 4635
Tektronix High Performance Dry Silver Paper
216 mm x 152 m (8.5 in x 500 ft)
Single Roll 006-2432-00
4 Roll Carton 006-2432-01

4611/4612 Dielectric Hard Copy Paper
216 mm x 152 m (8.5 in x 500 ft)
2 Roll Package 006-2838-00

4611/4612 Tektronix Dry Copy Toner
4.9 oz Bottle 006-2990-00

PRINTER PAPER AND RIBBONS

4641 Printer Ribbon
Box of 12 119-0820-00

4642 Printer
Paper-Tab Stock, Fan Fold,
270 mm x 279 mm, (10.6 x 11 in)
2500 Sheets/Carton 002-0262-01

Paper Roll Box of 12 002-1084-01

Ribbons Package of 4 002-1451-01

4643 Printer Ribbon
Cassette 118-1314-00

MAGNETIC MEDIA

4110 Series 8 inch Flexible Magnetic disk
512 Kbytes Formatted Capacity
Box of 10 119-1376-01

4170, 4925 and 4926 Option 25 Flexible 5 1/4 inch Disk
650 Kbytes Formatted Capacity
Box of 10 119-1583-01

4905 Options 31 & 32 Flexible 8 inch Magnetic Disk
315 Kbytes Formatted Capacity
Package of 10 119-0848-01

4907 Flexible 8 inch Magnetic Disk
630 Kbytes Formatted Capacity
Package of 10 119-1011-01

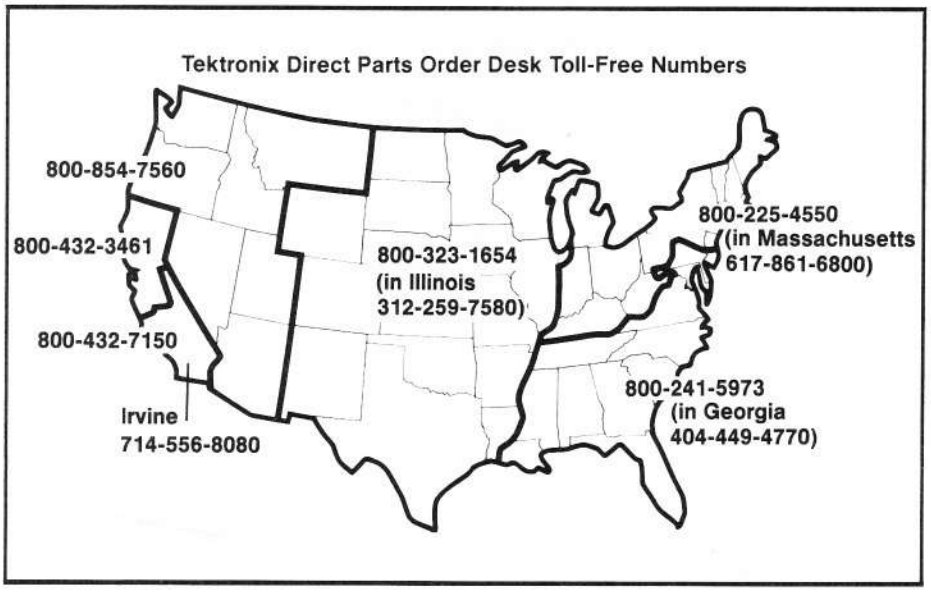
4905 Options 33 and 34
Hard Disk Pack Formatted Capacity
5 Mbyte 119-0855-00

4909 Disk Cartridge
13 Mbyte Formatted Capacity 119-1462-00

4050 Series, 4923 and 4924
Certified Data Cartridge
300 ft Each Cartridge 119-0680-00
Package of 5 119-0680-01

Certified Data Cartridge
450 ft Each Cartridge 119-1439-00

Certified Data Cartridge (4050 Series Only.)
600 ft Each Cartridge 119-1463-00



Tek's Expanded Spectrum

Tektronix
COMMITTED TO EXCELLENCE

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The Expanded Spectrum

A series of new Tek product concepts and recent capability breakthroughs enhance the practicality, productivity and value of computer graphics in many environments. For the first time, a broad range of compatible color and monochrome products in both raster and DVST technologies permits the optimum match of graphics tools to the task—from text editing to the most demanding CAD/CAM applications.

We count these as our most important new achievements:

The first true 1,024 line 60 Hz non-interlaced color graphics terminal.

New standards of combined color graphics and alphanumerics capabilities.

A high performance ink jet copier.

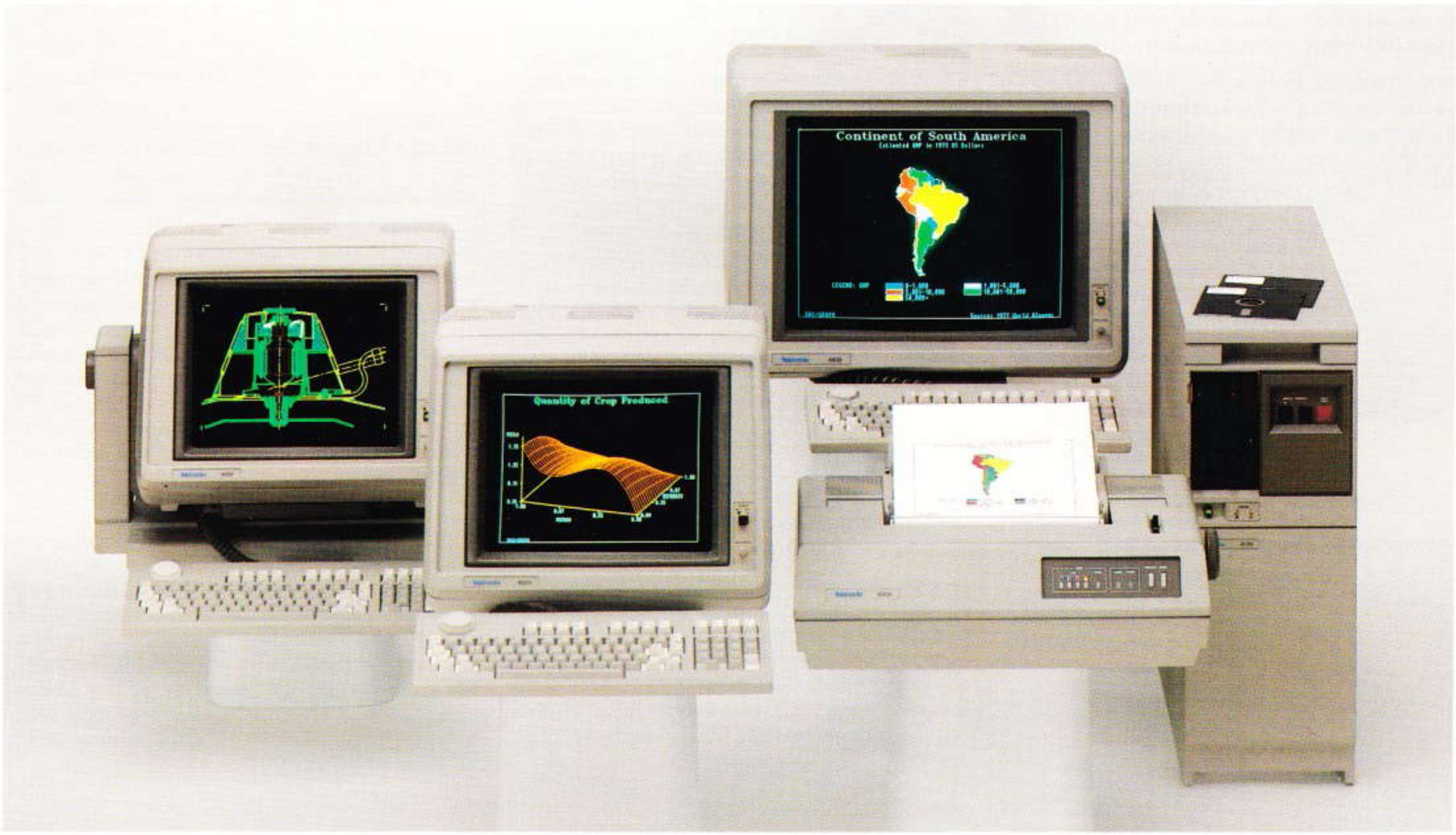
The first low-cost color copier to put quality color graphics output within reach of every technical professional.

Local graphics processing to give users optimum benefit from both host communications and off-line computing.

Proven applications packages to assist graphics users looking for systems solutions.

Other new products this year are designed to make Tektronix more immediately compatible with IBM, DEC and other environments.

And we've combined engineering advances and manufacturing efficiencies to reach new cost/performance ratios.



Advanced Features

Tektronix has an ongoing commitment to customers, offering them not only the highest quality but the most technologically advanced products. This year we have expanded our line of color raster display terminals to include a sophisticated high-end color graphics terminal, the 4115B. And we've added a new family of low cost yet high performance terminals — the 4105, 4107 and 4109. This new family uses the latest technology to combine VT100 text editing with Tektronix color graphics. Our goal is to make available to the widest audience possible the distinct advantages of color graphics.

The new 4105, 4107, 4109 and 4115B Color Display Terminals yield increasing degrees of resolution and graphics sophistication

There is now a Tektronix color graphics terminal to fit virtually any application need or budget. And all of the new 4100 Series terminals are fully compatible with Tektronix 4010 Series and the upgraded 4110A Series terminals, as well as with an extensive library of Tektronix and third-party software.

A new local graphics processing unit, the 4170, brings local intelligence and graphics processing to the 4100 Series terminals, giving them independence from the host computer and cutting communication costs and response times.

Extended-capability features found in many of the new terminals include local picture segments, 2-dimensional image transformation, true zoom and pan, multiple viewports, multiple bit planes, overlays and autoconvergence.

Local picture segments

A local picture segment is a user-defined picture or set of symbols stored in local memory as a unique graphic element. A single command to the host can recall and redraw a picture segment without transmitting the entire sequence of graphics data that originally went into composing the picture. The result—a significant decrease in host-terminal traffic and response time. This local picture segment capability is found in the 4107, 4109 and 4115B terminals, each with increasing amounts of local random access memory (RAM).

2-Dimensional image transformation

The local 2-D image transformation capability allows a local picture segment displayed on a 4110 Series terminal to be rotated, translated (shifted in position), and scaled (expanded or contracted) with a single command.

True zoom and pan

The local picture segment capability makes possible another important graphics feature in some 4100 and 4110 Series terminals: true zoom and pan. True zoom allows the user to isolate and magnify any section of the device coordinate space.

Unlike pixel replication, which simply enlarges the picture without providing additional detail, true zoom significantly increases resolution. The terminal actually recomputes the coordinate information of the designated area in order to display details that were not visible in the "panoramic" view.

Multiple viewports

The 4115B joins the existing 4110 Series terminals in offering multiple viewports. On command from the host, the 4115B display can be split into a number of viewports (a defined area in raster memory), each corresponding to a defined "window" in the device coordinate space. Up to 64 viewports can be displayed simultaneously. Multiple viewports enable the user to display several views of related information on the screen at the same time for comparison and reference.

Multiple bit planes

A bit plane is a defined area of raster memory space, with each binary bit of memory corresponding to a pixel on the display. The more bit planes, the greater a terminal's ability to display color combinations and to create separate "surfaces" on the terminal screen.

The 4115B is capable of displaying 256 colors at one time from a palette of 16 million colors; the 4109, 16 colors from a palette of 4096; the 4107, 16 colors from a palette of 64; and the 4105, 8 colors from a palette of 64. Many applications require such color variety to generate real images, to smooth diagonals while maintaining clarity and to show subtle, qualitative changes.

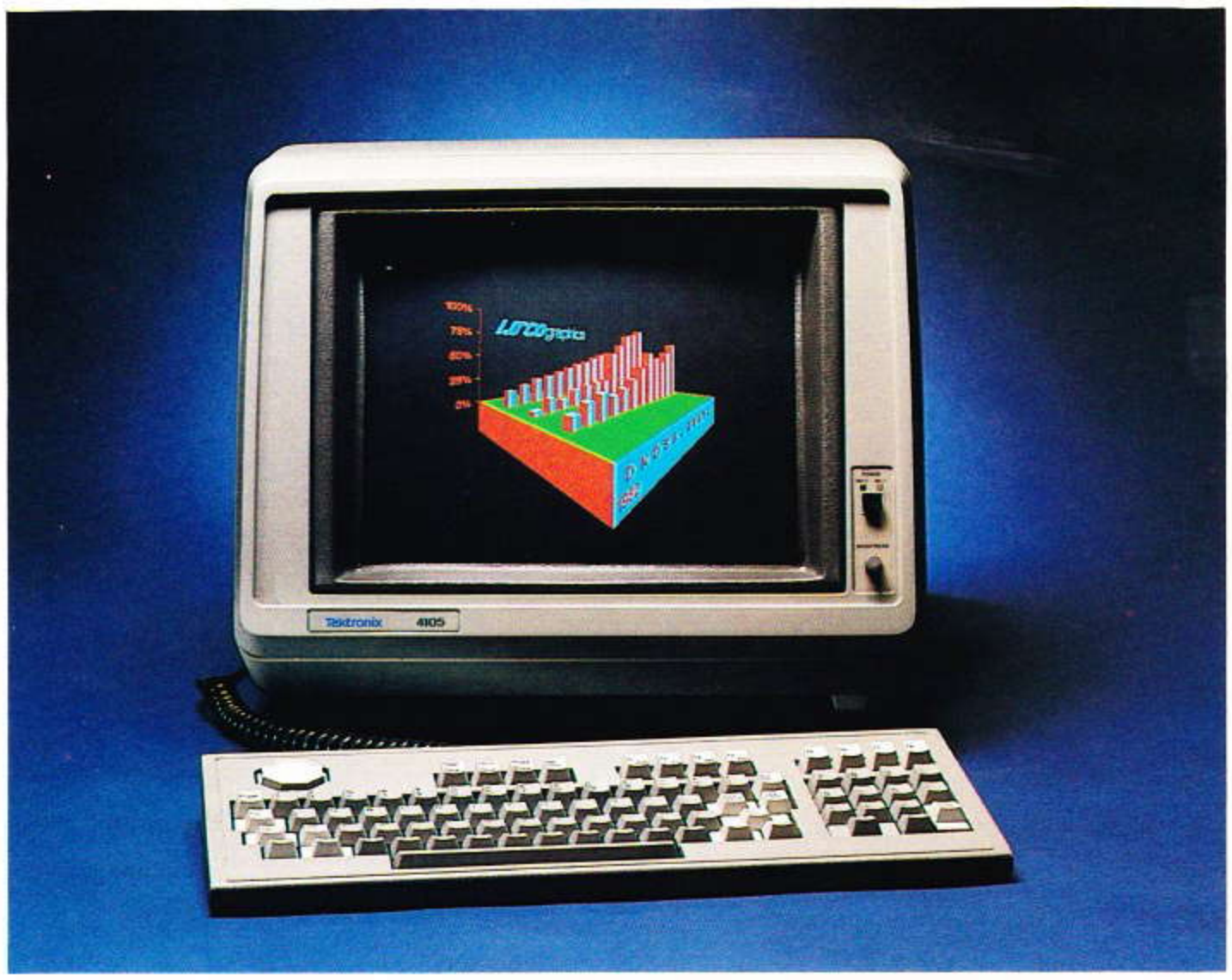
Overlays

The eight bit planes in the 4115B allows the user to create up to eight separate "surfaces" or distinct display areas. The user can draw a different picture on each surface, then overlay the surfaces to create new views of related information.

Autoconvergence

The 4115B contains a first-of-its-kind convergence feature that automatically corrects the natural drift occurring in the convergence of the color raster writing beams. Convergence is controlled to within 0.2 mm over the entire display area, resulting in sharper characters, lines and colors. Technical skills are not required to maintain optimum convergence.

Product overviews and specification data follow. In many cases, factors such as ergonomics and display quality are best seen to be fully appreciated. We invite you to ask your local Tektronix Sales Engineer for a demonstration. Or, simply indicate your interests on the enclosed reply card.



NEW 4105

Computer Display Terminal

Low-cost, High-quality Color Graphics and Alphanumerics

Supported by a Push-button Color Copier and a Local Graphics Processing Module

Compatible With Tek 4010, 4100 and 4110 Series Terminals

Operates in IBM SNA Environments with the 4970 Cluster Controller

The Tek 4105 is a Color Raster Display Terminal Designed to Bring Color Graphics and Alphanumeric Capabilities Within Easy Reach of Every Technical Professional

Excellent display quality and ergonomic design facilitate easy creation and editing of color graphics and color text. Flicker-free 60 Hz noninterlaced refresh rate; precision in-line gun with fixed convergence, and antiglare etched screen combine to optimize the clarity and brightness of the terminal's 480 x 360 displayable matrix.

Windowing

Resolution is enhanced by an addressable display matrix of 4096 x 4096 points. This allows the 4105 to accept data files displayed on terminals such as Tektronix high resolution 4114A or 4115B. The user can "window in" on any portion of the matrix, and by retransmitting the data from the host, display the selected window with significantly greater detail.

In the graphics mode, the user can access up to eight colors selected from a palette of 64. Colors may be changed locally by using the friendly color user interface. Text may also be specified in as many as eight colors; up to 16 colors may be on-screen simultaneously when both the graphics and alphanumerics planes are displayed. Text editing is in compliance with ANSI X3.64 standards for screen editors.

The alphanumerics surface can be used to display host communications without interfering with the graphics on-screen.

Ergonomic Design

The 4105 features a low-profile, detached DIN standard keyboard with complete ASCII characters. Integral to the keyboard is an innovative Joydisk for positioning the crosshair cursor or scrolling text in the dialog area. The 4105 can be mounted on an adjustable stand that allows it to be easily tilted up or down, swiveled left or right, lowered or elevated, or moved forward and back.

The 4105 will accept existing programs written for Tek 4010 Series terminals. Programs written for the 4105 are upwardly compatible with the other 4100 desktop terminals and with the 4110 Series terminals. The 4105 is compatible with the Tektronix PLOT 10 Interactive Graphics Library (IGL) and PLOT 10 Easy Graphing II.

A number of plug-compatible peripheral devices further extend the value and versatility of the 4105. These include the 4695 Color Graphics Copier (for high-quality color hard copy), the 4170 Local Graphics Processor (for off-line use of the 4105) and the 4970 Cluster Controller (for operation in synchronous IBM SNA environments).

CHARACTERISTICS

DATA TRANSMISSION

Data Rate — Up to 38.4 kbaud.

Communications Interface — RS-232C.

DISPLAY

Medium — Shadow-mask color raster.

Size — 330 mm (13 in) diagonal.

Refresh Rate — 60 Hz, noninterlaced.

KEYBOARD

Standard Keyboard — Detached, complete ASCII characters, 14-key numeric keypad.

User Definable and Programmable Function Keys — Eight.

Programmable Keys — 82.

Graphic Cursor Control — Joydisk.

GRAPHICS MODE

Addressability — 4096 x 4096 points.

Resolution — 480 x 360 pixels.

Line Types — Solid, seven dashed types.

Graphic Command Syntax — PLOT 10 compatible.

Graphics Primitives — Vectors, polygons, text.

Colors — Eight (independent of alphanumeric colors).

ALPHANUMERIC MODE

Primary Character Set — 94 (full ASCII).

Alternate Character Set — 94 (International, VT-100, rulings and mathematics).

Character Format — 5 x 9 dot matrix in 6 x 12 dot character cell.

AC POWER

Line Voltage — 87 to 128 V ac or 174 to 250 V ac.

Line Frequency — 48 to 66 Hz.

Power — 200 W max at 125 V.

PHYSICAL CHARACTERISTICS

Dimensions	Module		Keyboard	
	mm	in	mm	in
Width	419	16.5	423	16.6
Height	353	13.9	41	1.6
Depth	495	19.5	180	7.0
Depth (with Cables)	572	22.5		
Weights	**kg**	**lb**	**kg**	**lb**
Net	20.0	44.0	11.0	5.0

ORDERING INFORMATION

4105 Computer Display Terminal

Option 4A — United Kingdom Keyboard
Option 4B — French Keyboard
Option 4C — Swedish Keyboard
Option 4F — Danish/Norwegian Keyboard
Option 4G — German Keyboard
Option 4K — Japanese (Katakana) Keyboard
Option N2 — Two-year Service Plan Extension

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

COMPANION PRODUCTS

Adjustable Display Stand (ADS01).
4695 Color Graphics Copier.
4170 Local Graphics Processing Unit.
4970 Cluster Controller.

OEM terms available on this product.

NEW 4107

Computer Display Terminal

Low-Cost, High-Performance Color Graphics and Alphanumerics

Supported by a Push-button Color Copier and Local Graphics Processing Module

Compatible with Tek 4010, 4100, and 4110 Series Terminals

Operates in IBM SNA Environments with the 4970 Cluster Controller

The Tek 4107 is a Color Raster Terminal That Rivals Much More Costly Displays in Resolution, Reliability, Alphanumerics Capability, and Local Graphics Manipulation

Excellent display quality and friendly input interface facilitate easy creation and editing of color graphics and color text. Flicker-free 60 Hz noninterlaced refresh rate and shadow mask color CRT combine to optimize the clarity and brightness of the terminal's 640 x 480 displayable matrix.

The resolution is enhanced by an addressable display matrix of 4096 x 4096 points. To view a section in greater detail, the user zooms in on a portion of the display and the 4107 recomputes the coordinate information to display the designated section. Rather than "pixel replication" that simply enlarges the picture without providing additional detail, this true zoom significantly increases resolution.

Up to 128 k of RAM Permits Picture Elements to be Locally Stored, Then Redrawn and Manipulated as Necessary

Users can develop symbols and picture segments pertinent to the application, and recall them saving transmission and CPU time, thus improving interactivity.

The user can select up to 16 colors on the graphics plane from a total palette of 64 colors. Colors can be changed locally by using the friendly interface to the color map. Text may also be specified in as many as eight colors. Text editing is in compliance with ANSI X3.64 standards for screen editors.

Alphanumeric information is displayed on a separate surface that can be used to display host communications without interfering with the graphics on-screen.

Ergonomic Features

Designed for comfort and convenience, the 4107 has a low profile, standard DIN detached keyboard with complete ASCII characters. Integral to the keyboard is an innovative Joydisk for positioning the crosshair cursor or scrolling text in the dialog area. In addition, the 4107 can be mounted on an adjustable stand that allows the terminal to be easily tilted up or down, swiveled left or right, lowered or elevated, or moved forward and back. The 4107 will accept existing programs written for Tek 4010 Series terminals and is upwardly compatible with programs for 4100 and 4110 Series terminals. It is compatible with the Tektronix PLOT 10 IGL (Interactive Graphics Library) and with PLOT 10 Easy Graphing II. The 4107 allows for a smooth transition to higher-end terminals as application needs change.

A Number of Plug-compatible Peripheral Devices Further Extend the Value and Versatility of the 4107

These include the 4695 Color Graphics Copier (for high-quality color hard copy), the 4170 Local Graphics Processor (for off-line use of the 4107) and the 4970 Cluster Controller (for operation in synchronous IBM SNA environments).

CHARACTERISTICS

DATA TRANSMISSION

Data Rate — 38.4 kbaud.

Communications Interface — RS-232C.

DISPLAY

Medium — Shadow mask color raster.

Size — 330 mm (13 in) diagonal.

Refresh Rate — 60 Hz, noninterlaced.

KEYBOARD

Standard Keyboard — Detached, complete ASCII characters, 14-key numeric keypad.

User Definable and Programmable Function Keys — Eight.

Programmable Keys — 82.

Graphic Cursor Control — Joydisk.

GRAPHICS MODE

Addressability — 4096 x 4096 points.

Resolution — 640 x 480 pixels.

Line Types — Solid, seven dashed types.

Graphic Command Syntax — PLOT 10 compatible.

Colors — 16.

Palette Selection — 64.

ALPHANUMERIC MODE

Primary Character Set — 94 (full ASCII).

Alternate Character Set — 94 (International, VT-100, rulings and mathematics).

Character Format — 7 x 9 matrix in 8 x 14 dot character cell.

AC POWER

Line Voltage — 87 to 128 V ac or 174 to 250 V ac.

Line Frequency — 48 to 66 Hz.

Power — 200 W max at 125 V.

PHYSICAL CHARACTERISTICS

Dimensions	Module		Keyboard	
	mm	in	mm	in
Width	419	16.5	423	16.6
Height	353	13.9	41	1.6
Depth	495	19.5	180	7.0
Depth (With Cables)	572	22.5		
Weights	**kg**	**lb**	**kg**	**lb**
Net	20.0	44.0	2.3	5.0

ORDERING INFORMATION

4107 Computer Display Terminal.

Option 4A — United Kingdom Keyboard.
Option 4B — French Keyboard.
Option 4C — Swedish Keyboard.
Option 4F — Danish/Norwegian Keyboard.
Option 4G — German Keyboard.
Option 4K — Japanese (Katakana) Keyboard.
Option N2 — Two-year Service Plan Extension.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

COMPANION PRODUCTS

Adjustable Display Stand (ADS01)
4695 Color Graphics Copier.
4170 Local Graphics Processing Unit.
4970 Cluster Controller.

OEM terms available on this product.

NEW 4109

Computer Display Terminal

Low-cost, High-performance Color Graphics and Alphanumerics on a 19 Inch Display

Select from a Palette of 4096 Colors

Supported by a Push-button Color Copier and a Local Graphics Processing Module

Compatible with Tek 4010, 4100 and 4110 Series Terminals

Operates in IBM SNA Environments with the 4970 Cluster Controller

The Tek 4109 Computer Display Terminal is a Color Raster Terminal That Rivals Much More Costly Displays in Resolution, Reliability, Alphanumerics Capability and Local Graphics Manipulation

Excellent display quality and friendly input interface facilitate easy creation and editing of color graphics and color text. Flicker-free 60 Hz noninterlaced refresh rate and shadow mask color CRT combine to optimize the clarity and brightness of the terminal's 640 x 480 displayable matrix.

Effective 4109 resolution is considerably enhanced by an addressable display matrix of 4096 x 4096 points. To view a section in greater detail, the user zooms in on a portion of the display and the 4109 recomputes the coordinate information to display the designated section. Rather than "pixel replication" that simply enlarges the picture without providing additional detail, this true zoom significantly increases resolution.

Up to 256 k of RAM Permits Picture Elements to be Locally Stored, Then Redrawn and Manipulated as Necessary

Users can develop symbols and picture segments pertinent to the application, and recall them, saving transmission and CPU time, thus improving interactivity.

The user can select up to 16 colors on the graphics plane from a palette of 4096 colors. Colors can be changed locally by using the friendly interface to the color map. Text may also be specified in as many as eight colors. Text editing is in compliance with ANSI X3.64 standards for screen editors. The 4109 can display ASCII complete upper- and lower-case alphanumerics, as well as alternate character fonts.

Alphanumeric information is displayed on a separate surface that can be used to display host communications without interfering with the graphics on-screen.

Ergonomic Features

Designed throughout for comfort and convenience, the 4109 has a low profile, standard DIN detached keyboard with complete ASCII characters. Integral to the keyboard is an innovative Joydisk for positioning the crosshair cursor or scrolling text in the dialog area.

The 4109 will accept existing programs written for Tek 4010 and 4100 Series terminals, and is upwardly compatible with 4110 Series terminals. It is compatible with the Tektronix PLOT 10 IGL (Interactive Graphics Library) and PLOT 10 Easy Graphing II. The 4109 allows for a smooth transition to higher-end terminals as application needs change.

A Number of Plug-compatible Peripheral Devices Further Extend the Value and Versatility of the 4109

These include the 4695 Color Graphics Copier (for high quality color hard copy), the 4170 Local Graphics Processor (for off-line use of the 4109) and the 4970 Cluster Controller (for operation in synchronous IBM SNA environments).

CHARACTERISTICS

DATA TRANSMISSION

Data Rate — 38.4 kbaud.

Communications Interface — RS-232C.

DISPLAY

Medium — Shadow mask color raster.

Size — 483 mm (19 in) diagonal.

Refresh Rate — 60 Hz, noninterlaced.

KEYBOARD

Normal Keyboard — Detached, complete ASCII characters, 14-key numeric keypad.

User Definable and Programmable Function Keys — Eight.

Programmable Keys — 82.

Graphic Cursor Control — Joydisk.

GRAPHICS MODE

Addressability — 4096 x 4096 points.

Resolution — 640 x 480 pixels.

Line Types — Solid, seven dashed types.

Graphic Command Syntax — PLOT 10 compatible.

Colors — 16.

Palette Selection — 4096.

ALPHANUMERIC MODE

Primary Character Set — 94 (full ASCII).

Alternate Character Set — 94 (International, VT-100, rulings and mathematics).

Character Format — 7 x 9 matrix in 8 x 14 dot character cell.

AC POWER

Line Voltage — 87 to 128 V ac or 174 to 250 V ac.

Line Frequency — 48 to 66 Hz.

Power — 200 W max at 125 V.

PHYSICAL CHARACTERISTICS

Dimensions≈	Module		Keyboard	
	mm	in	mm	in
Width	559	22.0	423	16.6
Height	425	16.8	41	1.6
Depth	572	22.5	180	7.0
Weight≈	**kg**	**lb**	**kg**	**lb**
Net	31.8	70.0	2.3	5.0

ORDERING INFORMATION

4109 Computer Display Terminal.

Option 4A — United Kingdom Keyboard.
Option 4B — French Keyboard.
Option 4C — Swedish Keyboard.
Option 4F — Danish/Norwegian Keyboard.
Option 4G — German Keyboard.
Option 4K — Japanese (Katakana) Keyboard.
Option N2 — Two-year Service Plan Extension.

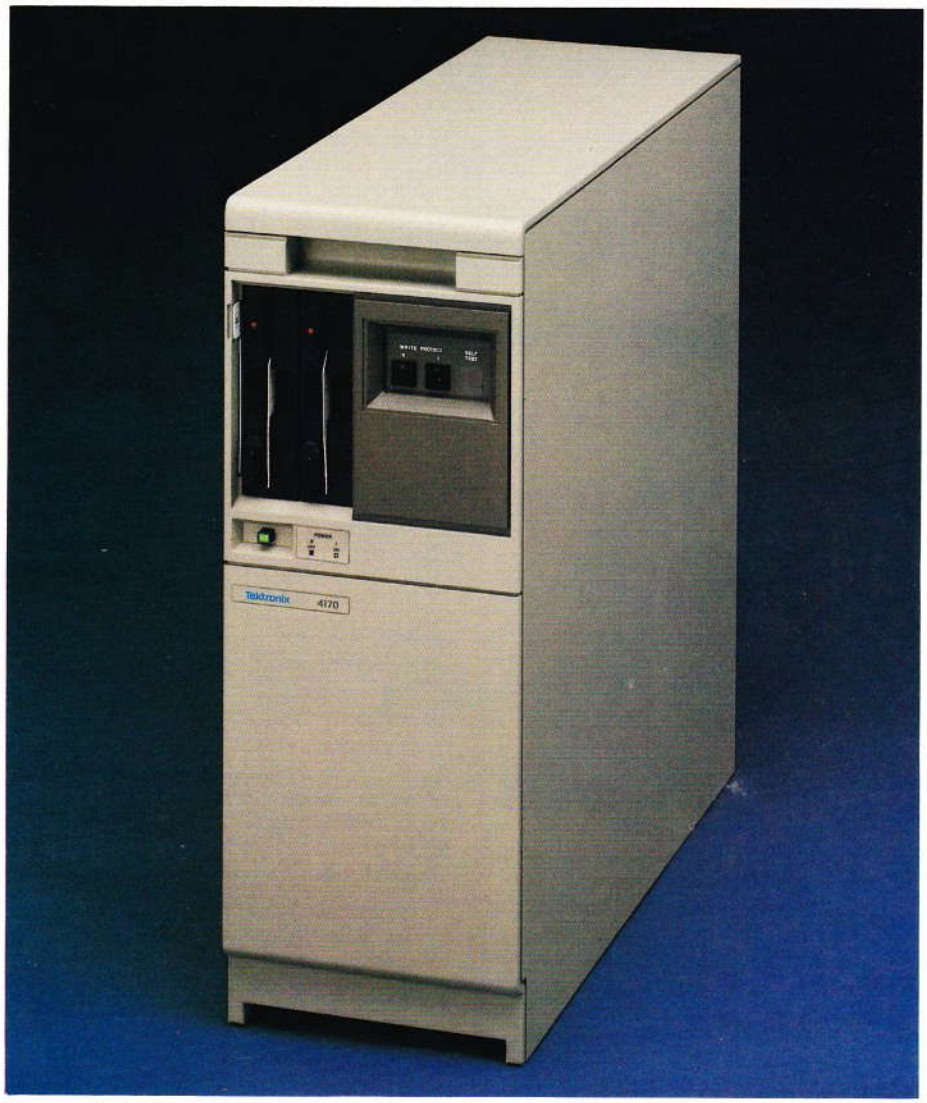
INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

COMPANION PRODUCTS

4695 Color Graphics Copier.
4170 Local Graphics Processing Unit.
4970 Cluster Controller.

OEM terms available on this product.



NEW 4170

Local Graphics Processing Unit

Provides Local Intelligence and Graphics Processing to 4100 Series Desktop Terminals

Upward-Compatible with 4110 Series Terminals

The Tektronix 4170 is a Local Graphics Processing Unit that Provides the 4105, 4107, and 4109 Computer Display Terminals with Standalone Power Specialized for Graphics Tasks

It offers all the elements necessary to locally write, edit, compile, link, debug, and run programs; to control 4105, 4107, or 4109 terminals; and to control peripherals connected to the system.

The 4170 consists of a standalone microprocessor, local mass storage and local memory on an industry standard CP/M-86 operating system, FORTRAN-86 compiler, four serial I/O ports, and Tektronix graphics software support.

Dual Microprocessors Speed Local Processing

The 4170 is powered by the 16-bit Intel 8086 and the 8087 Numeric Co-processor which speeds floating point operations. The chips provide powerful throughput and 20-bit addressability.

The 4170 comes standard with 256 kbytes of error checking and correcting memory. The 4170's total capacity is 896 kbytes. This provides host independence and more programming workspace in error free local memory.

The 4170 has two 5¼ inch disk drives as standard, allowing work to be easily backed up, system programs and user files maintained separately, and programs changed when necessary. Each formatted diskette can hold 327 kbytes of data. Ten Mbytes of Winchester hard disk storage is optionally available for larger mass storage requirements.

The 4170 allows the user to locally perform pre- and post-processing of graphics information, calling upon the host only when intensive processing is needed. The result is greater host efficiency; the ability to support more terminals and; most importantly, greater individual user productivity in a time sharing environment.

Self-diagnostics make system adjustments quick to identify and repairs readily verified.

CHARACTERISTICS

PROCESSORS

Intel 8086 MPU.

Intel 8087 Numeric Co-Processor.

MEMORY

Port A 375 ns ≤ memory cycle of Port B <1.2 μs.

Standard — 256 k Error Checking and Correcting.

Option 30 — 512 k Error Checking and Correcting.

Option 31 — 768 k Error Checking and Correcting.

Option 32 — 896 k Error Checking and Correcting.

DISK STORAGE

Standard — Two each 5¼ in Floppy Disk Drives, 327 k formatted capacity per diskette, IBM P.C. compatible, 125 kbits/s transfer rate.

Option 03 — 5¼ in Winchester Disk Drive, 10 Mbytes formatted capacity, 5 Mbits/s transfer rate.

COMMUNICATIONS INTERFACE

Standard — Host Port RS-232C DTE, Terminal Port RS-232C DCE, two Peripheral Ports RS-232C DCE.

Option 10 — Three additional RS-232 Ports, all RS-232 Ports are capable of 300, 600, 1200, 2400, 4800, 9600, 19.2 kbaud.

COLOR COPIER INTERFACE

Option 09 — 4690 Series Color Copier Interface.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	224	8.8
Height	597	23.5
Depth	622	24.5
Depth (with cables)	673	26.5
Weight	**kg**	**lb**
Net	22.2	49.0

ORDERING INFORMATION

4170 Local Graphics Processing Unit.

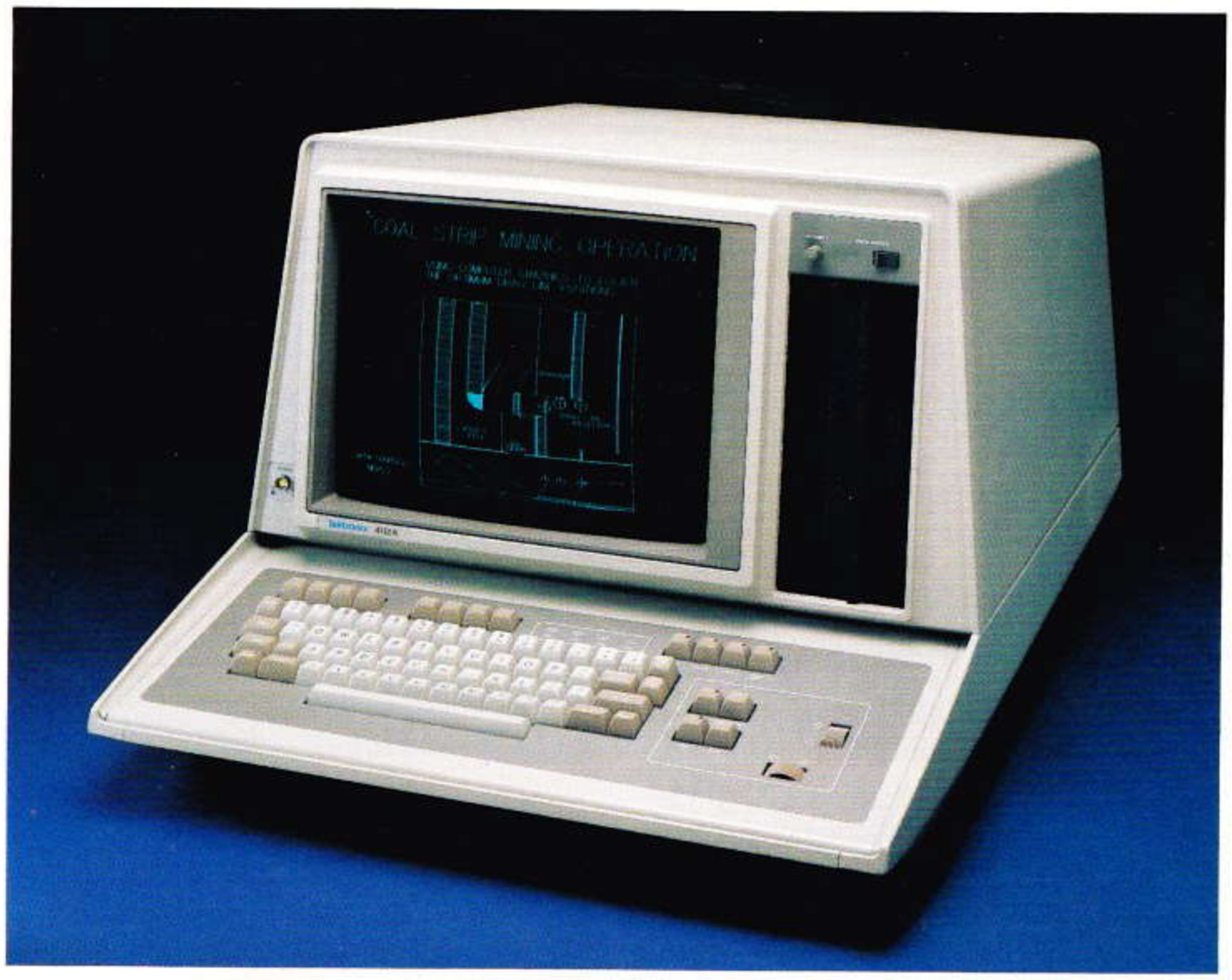
Option 03* — Hard Disk.
Option 09* — Parallel Interface (for Copiers and Plotters).
Option 10* — Additional Three-Port Peripheral Interface.
Option 30* — Additional 256 K RAM.
Option 31* — Additional 512 K RAM.
Option 32* — Additional 640 K RAM.
Option 44 — Disk Interface Flexible Disk.
Option 45* — Disk Interface Hard and/or Flexible Disk.

** Also available as a Field Upgrade.*

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on this product.



NEW 4112A

Computer Display Terminal

Raster Scan Display with Local Picture Segments

2-D Transforms, True Zoom and Pan up to Three Memory Planes

Compatible with Tektronix 4010, 4100 and 4110 Series Terminals

The 4112A Computer Display Terminal was Designed to Satisfy a Broad Range of Evolving Graphic Needs, from Basic Line Graphs to High Density Design.
It provides access to an unusually wide assortment of graphics capabilities, and its powerful local intelligence keeps user interactivity high ... host dependency low. The upgraded "A" Series provides for our new Local Programmability capability. Earlier 4112 terminals can easily be field upgraded to 4112A.

The 4112A offers a bright, flicker-free 15-inch (diagonal) raster scan display. Eight user definable programmable function keys are provided.

The 4112A is compatible with the popular Tektronix 4010, 4100 and 4110 Series of Computer Display Terminals.
Programs developed for the 4012 or 4014, for example, may require only minor software revisions to run on the 4112A. Updating existing programs for 4112A features is a simple process using the modular device drivers and advanced feature support of the Tektronix PLOT 10 Interactive Graphics Library (IGL).

Local picture segments. A local picture segment is a group of graphic primitives that describes a portion of a picture. These primitives are retained in the terminal's memory to be redrawn and manipulated at any time. Schematic components, symbols, titles and text can be defined as segments, for example, then stored in local memory and redrawn when needed, with minimal computer time and communications traffic required. Local segments may also be rotated, scaled or moved around the screen, by a simple command from the host processor (2-D Transforms).

Zoom and pan. An addressable display space of 4096 x 4096 points is accessible locally by simple, key-actuated zoom and pan or via the host. The thumbwheel controls are used to pan the display with a rectangular cursor and to set the viewport dimensions of the magnified image.

Multiple display memory planes. Two additional memory planes may be added to the 4112A, via Option 20, to provide as many as three display surfaces. This optional capability enables a number of effects, including overlays of text and/or graphic information plus gray scale.

Definable dialog area. At any time, the user can specify the size and position of the region where communications between terminal and host are displayed. This dialog area is scrollable by the thumbwheels, allowing for easy recall of previous communications.

CHARACTERISTICS

DATA TRANSMISSION

Data Rate — 9600 baud.

Block Mode — Option 01.

Communications Interface — EIA RS-232C, compatible, full or half duplex.

DISPLAY

Medium — Raster scan CRT.

Dimensions — 220 x 254 mm (8.6 x 11.5 in) 381 mm (19 in) diagonal.

Scan Type — 50 or 60 Hz, noninterlaced.

Phosphor — White WW (P4).

MEMORY

Standard Display Memory — 72 kbytes.

Standard Graphics Memory — 32 kbytes (expandable to 672 kbytes).

KEYBOARD

Normal Keyboard — 72 typewriter paired, upper and lower case, programmable and autorepeating (seven lighted).

User-Definable Programmable Function Keys — Eight, four terminal control, four special function.

ALPHANUMERIC MODE

Character Set — 94 (full ASCII) or 128 in snoopy mode.

Character Format — 80 columns, 34 rows, 7 x 9 dot matrix.

GRAPHICS MODE

Resolution — 640 horizontal x 480 vertical pixels.

Addressability — 4096 x 4096 points.

Command Syntax — PLOT 10 compatible.

Line Types — Solid, dashed, erase.

Graphic Primitives — Vectors, polygons, text.

AC POWER

90 to 132 V ac, 6.25A max, 48 to 62 Hz or 180 to 250 V ac, 3A max, 48 to 62 Hz.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	404	15.9
Height	546	21.5
Depth	825	48.0
Weight	**kg**	**lb**
Net	46.3	102.0

ORDERING INFORMATION

4112A Computer Display Terminal.
Option 01 — Extended Communications.
Option 02 — Current-Loop Interface.
Option 04 — Special Keyboards.
Option 10 — Three-Port Peripheral Interface.
Option 11 — External Video Output.
Option 13 — 11 x 11 in Graphic Tablet with pen.
Option 14 — 30 x 40 in Graphic Tablet with pen.
Option 20 — (2) Display Memory Planes.
Option 24 — Additional 32 Kbytes of RAM.
Option 25 — Additional 64 Kbytes of RAM.
Option 26 — Additional 96 Kbytes of RAM.
Option 27 — Additional 128 Kbytes of RAM.
Option 28 — Additional 256 Kbytes of RAM.
Option 29 — Additional 512 Kbytes of RAM.
Option 42 — Single Flexible Disk.

INTERNATIONAL POWER CORD AND PLUG OPTIONS
Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.

OEM terms available on this product.

NEW 4113A/4113A30

Computer Display Terminal

Raster Scan Color Display

Local Picture Segments

2-D Transforms, True Zoom and Pan

Compatible with Tektronix 4010, 4100 and 4110 Series Terminals

The 4113A Computer Display Terminal continues the evolution of the 4110 Series of intelligent display terminals.
It supports additional color raster features while maintaining compatibility with the 4112A and the 4114A. The upgraded "A" Series provides for our new Local Programmability capability. Earlier 4113 terminals can easily be field upgraded to 4113A.

The 4113A features true zoom and pan, and multiple viewports. In addition, three memory planes display any eight colors at one time (or 16 colors via Option 21).

Local picture segments. A local picture segment is a group of graphic primitives that describe a portion of a picture. Schematic components, symbols, titles, and text can be defined as segments, then stored in local memory and redrawn in a specified color as needed, with minimal host time. Local segments may also be scaled, rotated, or moved around the screen, by a single command from the host (2-D Transforms).

Zoom and pan. An addressable 4096 x 4096 display space is accessible by key-actuated zoom and pan or via the host. Thumbwheel controls pan the display with a rectangular cursor and set dimensions of the magnified image.

Multiple display memory planes. Besides being used to specify colors, the memory (bit) planes provide for overlaying text and/or graphic information, useful in the preparation of multilayer pictures.

NEW 4113A30 Workstation

Computer display terminal operators can improve their performance with the efficiency, convenience, and comfort of the 4113A30 modular workstation.

The pedestal module contains the power supply, circuit board cage and also houses one or two optional flexible disk drives for convenient local storage. Supporting the display at eye level, the optional table module can be installed on the left or the right side of the pedestal. The keyboard for the 4113A30 can be detached from the table module for positioning in the lap, on the pedestal, or underneath the display screen.

CHARACTERISTICS

DATA TRANSMISSION

Data Rate — 9600 baud.

Block Mode — Option 01.

Communications Interface — RS-232C.

DISPLAY

Medium — Shadow-mask color raster tube.

Size — 483 mm (19 in) diagonal.

Refresh Rate — 50 or 60 Hz, noninterlaced.

MEMORY

Standard — 88 kbytes ROM, 32 kbytes RAM expandable to 800 k.

KEYBOARD

Normal Keyboard — 72 typewriter paired upper and lower case, programmable, auto repeating (seven lighted).

User Definable Programmable Function Keys — Eight.

Terminal Control Keys — Four.

Zoom and Pan Keys — Four.

Graphic Cursor Control — Thumbwheels.

GRAPHICS MODE

Addressability — 4096 x 4096 points.

Resolution — 640 x 480 pixels.

Line Types — Solid, dashed.

Graphic Command Syntax — PLOT 10 compatible.

Graphics Primitives — Vectors, panels, text.

Colors (Three-Bit Plane) — Eight.

Colors (Four-Bit Plane) — 16.

Palette Selection — 4096.

ALPHANUMERIC MODE

Character Set — 94 (full ASCII).

Character Format — 80 columns, 34 rows, 7 x 9 matrix in 8 x 14 (pixel) area.

AC POWER

90 to 132 V ac, 10 A max or 198 to 250 V ac, 5 A max; 50 or 60 Hz.

PHYSICAL CHARACTERISTICS (4113A)

Dimensions	mm	in
Width	584	23.0
Height	1350	53.0
Depth	787	31.0
Weight	**kg**	**lb**
Net	125.0	275.0

PHYSICAL CHARACTERISTICS (4113A30)

Monitor Height — 425 mm (16.75 in).
Width — 584 mm (23 in).
Depth — 582 mm (22.9 in).

Pedestal Height — 743 to 762 mm (29 to 30 in).
Width — 565 mm (22.25 in).
Depth — 851 mm (33.5 in).

Keyboard Height — 38 to 70 mm (1.5 to 2.75 in).
Width — 508 mm (20 in).
Depth — 229 mm (9 in).

Table Height — 673 to 692 mm (26.5 to 27.2 in).
Width — 1219 mm (48 in).
Depth — 762 mm (30 in).

Total Weight — 166.1 kg (296.5 lb).

ORDERING INFORMATION

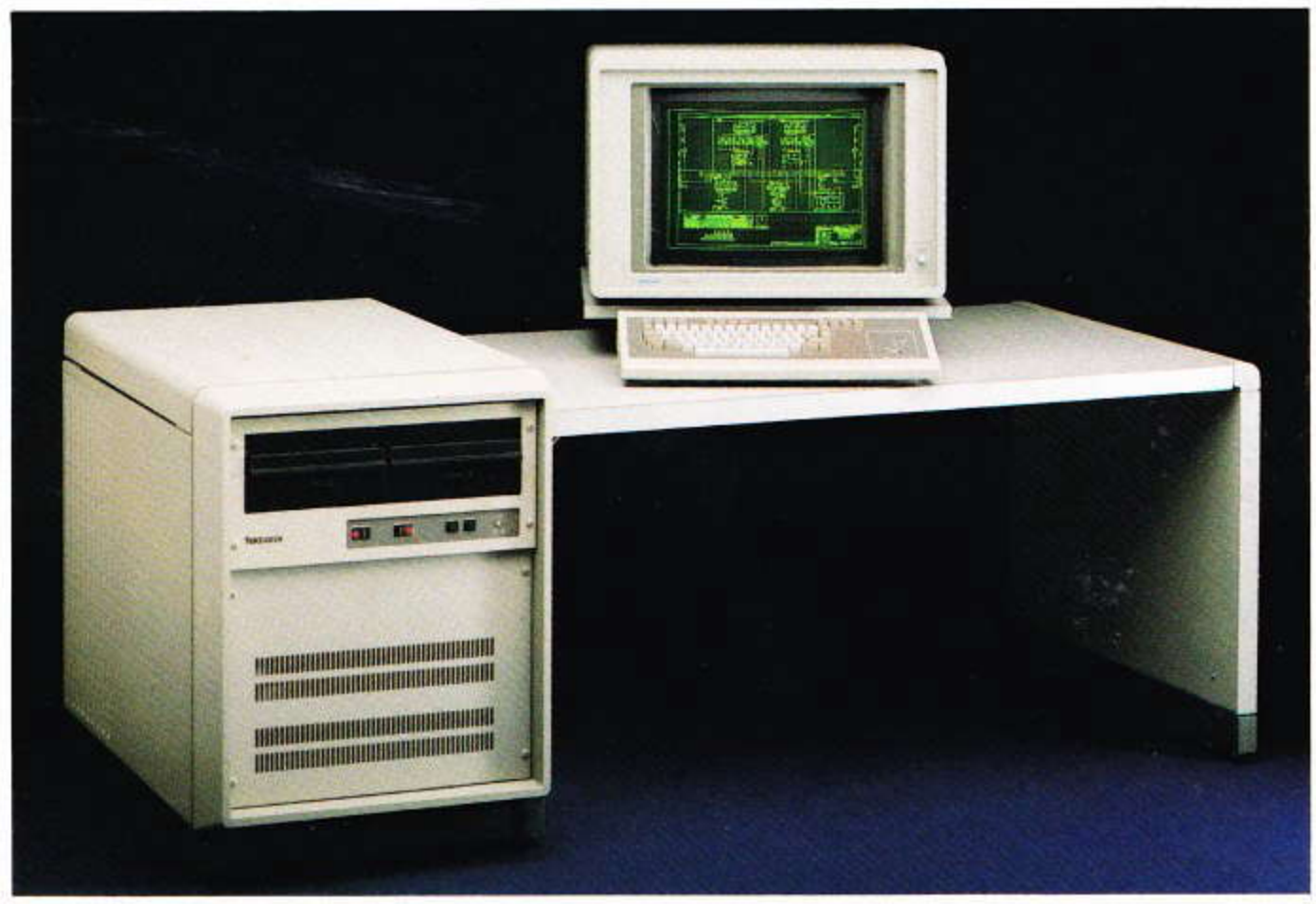
4113A Computer Display Terminal.
4113A30 Computer Display Terminal Workstation.

Option 01 — Extended Communications.
Option 02 — Current Loop Interface.
Option 04 — Special Keyboards.
Option 09 — Color Hard Copy I/F.
Option 10 — Three-Port Peripheral Interface.
Option 12 — External Video Output.
Option 13 — 11 x 11 Inch Graphic Tablet w/Pen.
Option 14 — 30 x 40 Inch Graphic Tablet w/Pen.
Option 21 — Display Memory Plane.
Option 24 — Adds 32 Kbytes of RAM.
Option 25 — Adds 64 Kbytes of RAM.
Option 26 — Adds 96 Kbytes of RAM.
Option 27 — Adds 128 Kbytes of RAM.
Option 28 — Adds 256 Kbytes of RAM.
Option 29 — Adds 512 Kbytes of RAM.
Option 32 — Table Module (4113A30 only).
Option 42 — Single Flexible Disk and Disk Controller.
Option 43 — Dual Flexible Disk and Disk Controller.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on this product.



NEW 4114A/4114A30

Computer Display Terminal

Direct View Storage Tube with Local Picture Segments

2-D Transforms, Refresh Support and Fast Redraw

Compatible with Tektronix 4010, 4100 and 4110 Series Terminals

The 4114A Computer Display Terminal satisfies the needs of graphics users for faster, more versatile throughput in high density graphics applications.
Its local intelligence and expandable memory can significantly reduce the delays and costs associated with over-dependence on a host computer. The 4114A has a resolution high enough for the most complex engineering and scientific graphics. The upgraded "A" Series provides for our new Local Programmability capability. Earlier 4114 terminals can easily be field upgraded to 4114A.

Direct local access to all 4114A features under program control is provided by the addition of either the 4110P01 or 4110P02 local programmability products.

The 4114A is compatible with Tektronix 4010, 4100 and 4110 Series Computer Display Terminals.
Using the modular device drivers and advanced feature support of Tektronix PLOT 10 Interactive Graphics Library (IGL) makes updating existing programs a simple process.

The 4114A supports local picture segments which are a group of graphic primitives describing a portion of a picture, retained as a unit in local memory to be redrawn or manipulated at any time. Schematic components, symbols, titles, and text can be defined as segments, then stored and recalled easily. Local segments can be rotated, scaled or moved around the screen, with only a simple command from the host or a local program.

Refresh Support

Local generation of more than 1500 cm or approximately 3000 short vectors of flicker-free refresh. Option 31 provides color enhanced (amber) refresh for easy recognition of refresh information.

NEW 4114A30 Workstation

Computer display terminal operators can improve their performance with the efficiency, convenience and comfort of the 4114A30, modular workstation.

The pedestal module contains the power supply and circuit board cage, and also houses one or two optional flexible disk drives for convenient local storage. Supporting the display at eye level the table module can be installed on the left or the right side of the pedestal. The keyboard for the 4114A30 can be detached from the table module for positioning in the lap, on the pedestal, or underneath the display screen.

CHARACTERISTICS

DATA TRANSMISSION

Data Rate — 50 to 19,200 b/s.
Data Type — 7-bit asynchronous serial ASCII, plus parity bit.
Block Mode — Option 01 Extended Communications.
Communications Interface — RS-232C.

DISPLAY

Medium — Direct view storage tube; 4096 x 4096 addressable points; 4096 x 3120 displayable points; enhanced refresh; fast redraw.
Dimensions — 368 mm x 277 mm (14.5 in x 10.9 in); 483 mm (19 in) diagonal.

MEMORY

Standard — 56 kbytes ROM and 32 kbytes RAM (expandable to 800 k).

KEYBOARD

Normal Keyboard — 72 typewriter paired, upper and lower case, programmable and auto repeating, (five lighted). User Definable Programmable Function.
User Definable Programmable Function Keys — Eight.
Graphic Cursor Control — Thumbwheels.
Alpha Cursor Position — Key control.
Scrolling — Thumbwheels.

GRAPHICS MODE

Addressability — 4096 x 4096.
Line Types — Solid dashed, defocused.
Drawing Speed (Storage) — 134 m/s.
Drawing Speed (Refresh) — 537 m/s.
Graphic Command Syntax — Tektronix PLOT 10 compatible.

ALPHANUMERIC MODE

Standard Displayable Character Set — 94 characters (full ASCII).

AC POWER

90 to 132 V ac, 11 A max or 180 to 250 V ac, 5.5 A max, 48 to 62 Hz.

PHYSICAL CHARACTERISTICS (4114A)

Dimensions	mm	in
Width	597	23.5
Height	1290	51.0
Depth	813	32.0
Weight	**kg**	**lb**
Net	107.5	237.0

PHYSICAL CHARACTERISTICS (4114A30)

Monitor Height — 425 mm (16.8 in). Width: 584 mm (23.0 in). Depth: 582 mm (22.9 in).
Pedestal Height — 743 to 762 mm (29 to 30 in). Width: 565 mm (22.3 in). Depth: 851 mm (33.5 in).
Keyboard Height — 38 to 70 mm (1.5 to 2.8 in). Width: 508 mm (20.0 in). Depth: 229 mm (9.0 in).
Table Height — 673 to 692 mm (26.5 to 27.2 in). Width: 1219 mm (48.0 in). Depth: 762 mm (30.0 in).
Total Weight — 165.9 kg (365.7 lb).

ORDERING INFORMATION

4114A Computer Display Terminal.
4114A30 Computer Display Terminal Workstation.
Option 01 — Extended Communications.
Option 02 — Current Loop Interface.
Option 04 — Special Keyboards.
Option 10 — Three - Port Peripheral Interface.
Option 13 — 11 x 11 in Graphic Tablet w/Pen.
Option 14 — 30 x 40 in Graphic Tablet w/Pen.
Option 24 — Adds 32 Kbytes of RAM.
Option 25 — Adds 64 Kbytes of RAM.
Option 26 — Adds 96 Kbytes of RAM.
Option 27 — Adds 128 Kbytes of RAM.
Option 28 — Adds 256 Kbytes of RAM.
Option 29 — Adds 512 Kbytes of RAM.
Option 31 — Color Enhanced Refresh.
Option 32 — Table Module (4114A30 only).
Option 40 — Ten-Slot Peripheral Bus Extender; Nominal line voltage.
Option 41 — Ten-Slot Peripheral Bus Extender; 90-110 line voltage.
Option 42 — Single Flexible Disk and Disk Controller.
Option 43 — Dual Flexible Disk and Disk Controller.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on this product.

NEW 4115B/M4115B

Computer Display Terminal

High-Performance Color With Unparalleled Resolution and Speed

Up to 256 Colors Displayed from a Palette of 16 Million Colors.

Autoconvergence

Up to Eight Work Surfaces

Local True Zoom and Pan

Compatibility with 4010, 4100, and 4110 Series Hardware and Software

The Tektronix 4115B is a High Resolution Computer Display Terminal that Combines High-Performance Graphics with Unmatched Display Quality

The display controller redraws a high density mechanical drawing or typical gate array design in less than a second. With its 32-bit coordinate space and 256 simultaneously displayable colors, the 4115B extends the leading edge of graphics display. The 4115B also offers all the powerful local graphics functions of the Tektronix 4110 Series—including local picture segments and true zoom and pan.

Unsurpassed Display Resolution

The 4115B's 483 mm (19 in) raster scan display achieves unparalleled line quality with resolution of 1280 x 1024 pixels. The resolution is further refined by a precise contrast ratio, by low reflection maintained via a multilayer filter, and by exact control of display convergence. A 60 Hz noninterlaced refresh rate also assists display clarity and productivity by greatly reducing flicker and resultant eye fatigue.

An 8086 CPU and 8087 Co-Processor Teams up with a Bipolar Bit Slice Graphics Processor to Yield Singularly Fast Response Times

50,000 vectors can be drawn in less than a second. Panel fill occurs at a rate of 10,000 rectangles per second. Large rectangular areas may be color filled at a rate of 125 million pixels per second.

4110 Series/PLOT 10 Compatible

The 4115B is fully supported by the Tektronix PLOT 10 IGL (Interactive Graphics Library) and is designed for ease of integration with other 4110 Series terminals and with software available from other sources.

The 4115B Option 09 provides plug-compatibility with the Tektronix 4691 Color Graphics Copier. 150 dots per inch resolution is attained with this high performance, ink-jet device.

The 4115B can be configured either as a pedestal unit with detached low profile keyboard or in separate display, processing, and keyboard modules (M4115B) for flexibility in configuring workstations. Local memory can be expanded to 800 kbytes of RAM. Mass storage is available in combinations of single or dual flexible and Winchester disk drives.

CHARACTERISTICS

DATA TRANSMISSION

Data Rate — 19.2 kbaud.

Communications Interface — RS-232C.

MEMORY

Standard — 288 kbytes, expandable to 800 kbytes.

DISPLAY

Medium — Color raster.

Size — 483 mm (19 in) diagonal.

Refresh Rate — 60 Hz, noninterlaced.

Convergence — Automatic

KEYBOARD

Normal Keyboard — 72 typewriter paired upper and lower case, programmable and autorepeating.

User Definable Programmable Function Keys — Eight.

Terminal Control Keys — Four.

Zoom and Pan Keys — Four.

Graphic Cursor Control — Thumbwheels.

GRAPHICS MODE

Addressability — Four billion x four billion.

Resolution — 1280 x 1024 pixels.

Graphic Command Syntax — PLOT 10 compatible, 4010 and 4110 Series compatible.

Colors — 16 standard, expandable to 256.

Palette Selection — 16 million.

ALPHANUMERIC MODE

Character Set — 94 (full ASCII).

Character Format — 80 columns, 34 rows and 160 columns, 64 rows.

AC POWER

Line Voltage — 115 V, 230 V RMS.

Line Frequency — 48 Hz to 66 Hz.

Power — 1400 W.

PHYSICAL CHARACTERISTICS

Dimensions	Module		Pedestal	
	mm	in	mm	in
Width	406	16.0	610	24.0
Height	622	24.5	876	34.5
Depth	762	30.0	787	31.0
Weight	**kg**	**lb**	**kg**	**lb**
Net	65.0	140.0	75.0	165.0

PHYSICAL CHARACTERISTICS

Dimensions	Display		Keyboard	
	mm	in	mm	in
Width	584	23.0	508	20.0
Height	406	16.0	43	1.7
Depth	559	22.0	203	8.0
Weight	**kg**	**lb**	**kg**	**lb**
Net	55.0	120.0	2.5	5.0

ORDERING INFORMATION

4115B Computer Display Terminal.
M4115B Computer Display Terminal Workstation.

Option 01 — Extended Communications Interface.
Option 02 — Current Loop Interface.
Option 2A — Additional 256 Kbytes RAM with ECC.
Option 2B — Additional 512 Kbytes RAM with ECC.
Option 3A — DMA Interface for DEC VAX Computers; Requires Option 3B or Modified Cable.
Option 3B — 30 ft Cable for Option 3A; Must be Ordered Separately.
Option 4A — United Kingdom Keyboard.
Option 4C — Swedish Keyboard.
Option 4F — Danish/Norwegian Keyboard.
Option 4K — Japanese (Katakana) Keyboard.
Option 09 — 4690 Series Color Copier Interface.
Option 10 — Three-port Peripheral Interface.
Option 13 — Graphic Tablet, 11 x 11 in, with Controller.
Option 14 — Graphic Tablet, 30 x 40 in, with Controller.
Option 22 — Additional Two Planes Display Memory.
Option 23 — Additional Four Planes Display Memory.
Option 31 — Autoconverged Display.
Option 42 — Single Flexible Disk with Controller.
Option 43 — Dual Flexible Disk with Controller.
Option 45 — Mass Storage Interface.
Option 49 — Rental Identification Tag.
Option 52 — Specify Voltage and Frequency.

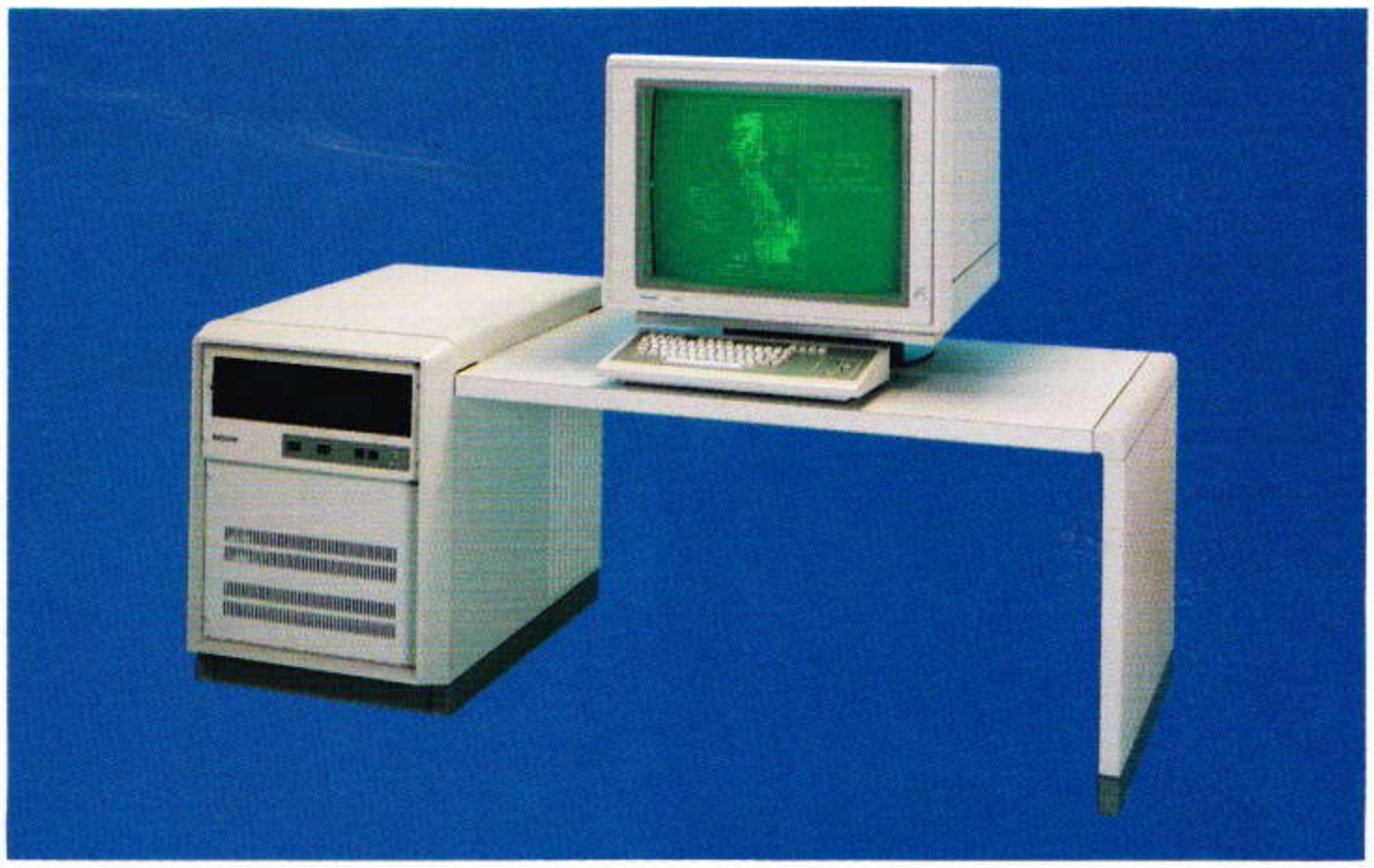
INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

COMPANION PRODUCTS

4691 Color Graphics Copier.
4634 Hard Copy Unit.
4662 and 4663 Digital Plotters.
4926 10 MB Hard Disk.

OEM terms available on this product.



NEW 4116A/4116A30

Computer Display Terminal

Ultra-High Resolution Capability

Local Picture Segments

2-D Transforms

Refresh Support and Fast Redraw

Compatible with the Tektronix 4010, 4100 and 4110 Series Terminals

The 4116A is a Computer Display Terminal with High Resolution Capabilities

The 25 inch diagonal display is uniquely suited for displaying highly complex graphics due to its 4096 x 3120 viewable resolution and finely etched 10 mil-wide vectors. By using a DVST (Direct View Bistable Storage Tube) Display, lines are sharp, continuous, stable and flicker-free, making it easy to study the finer details of a map or design. The thumbwheel controlled crosshair cursor also makes it easy to interact precisely with the detail displayed on this size CRT.

Local intelligence and expandable memory significantly reduce the delays and costs that result from dependence on a host computer. The 4116A is compatible with the Tektronix 4010, 4100 and 4110 Series of Computer Display Terminals, as well as with graphics software in the Tektronix PLOT 10 IGL (Interactive Graphics Library).

Over 15,000 characters may be displayed simultaneously and may be formatted in 179 alphanumeric characters per line page (like a line printer), or as two 85-character per line pages (like an open book). Three other larger character formats are standard with the 4116A, the largest of which is suitable for group viewing.

Local Picture Segments

Using the 4116A's "local segments" capability, a group of graphic primitives describing a portion or segment of a picture may be retained as a unit in local memory to be quickly redrawn or manipulated at any time.

Definable Refresh Dialog Area

The dialog area lets the user define the size and location of a scrollable dialog area—all in refresh. This area can be redefined and repositioned at any time, assuring that the host terminal data traffic need never clutter the graphics workspace.

NEW 4116A30 Workstation

The 4116A can be configured either as a pedestal unit with detached low profile keyboard or in separate display, processing, and keyboard modules for flexibility in configuring workstations (4116A30).

CHARACTERISTICS

DATA TRANSMISSION

Data Rate — 19.2 kbaud.

Block Mode — Optional.

Communications Interface — RS-232C full or half duplex.

MEMORY

Standard — 32 kbytes of RAM, 56 kbytes of ROM.

DISPLAY

Medium — Direct view storage tube.

Size — 635 mm (25 in) diagonal.

KEYBOARD

Normal Keyboard — 72 typewriter paired upper and lower case, programmable and autorepeating (five lighted).

User Definable Programmable Function Keys — Eight.

Terminal Control Keys — Four.

Graphic Cursor Control — Thumbwheel.

GRAPHICS MODE

Addressability — 4096 x 4096 points.

Resolution — 4096 x 3120.

Line Types — Solid, dashed, defocused.

Graphic Command Syntax — PLOT 10 compatible.

Graphics Primitives — Vectors, user-defined text, etc.

Drawing Speed — Storage: 134 m/s; Refresh: 537 m/s.

ALPHANUMERIC MODE

Character Set — 94 (full ASCII). 128 displayable in "snoopy" mode.

Character Format — Stroke.

AC POWER

Line Frequency — 48 to 62 Hz, 180 to 260 V ac, 6.5 A max, or 48 to 62 Hz, 90 to 132 V ac 13 A max.

PHYSICAL CHARACTERISTICS

Dimensions	4116A		4116A30	
	mm	in	mm	in
Width	698	27.5	698	27.5
Height	1400	55.0	1295	51.0
Depth	813	32.0	85	33.5
Weights	**kg**	**lb**	**kg**	**lb**
Net	130.6	288.0	185.0	407.0

ORDERING INFORMATION

4116A Computer Display Terminal.

4116A30 Computer Display Terminal Workstation.

Option 01 — Extended Communications.
Option 02 — Current-Loop Interface.
Option 4A — United Kingdom Keyboard.
Option 4C — Swedish Keyboard.
Option 4E — APL Keyboard.
Option 4F — Danish/Norwegian Keyboard.
Option 10 — Three-Port Peripheral Interface.
Option 13 — 11 x 11 in Graphic Tablet with Pen.
Option 14 — 30 x 40 in Graphic Tablet with Pen.
Option 24 — Additional 32 Kbytes of RAM.
Option 25 — Additional 64 Kbytes of RAM.
Option 26 — Additional 96 Kbytes of RAM.
Option 27 — Additional 128 Kbytes of RAM.
Option 28 — Additional 256 Kbytes of RAM.
Option 29 — Additional 512 Kbytes of RAM.
Option 32 — Table Module (4116A30 only).
Option 40 — Ten-Slot Peripheral Bus Extender, Nominal Line Voltage.
Option 41 — Ten-Slot Peripheral Bus Extender, 90-110 V Line Voltage.
Option 42 — Single Flexible Disk and Disk Controller.
Option 43 — Dual Flexible Disk and Disk Controller.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

NEW 4691 Color Graphics Copier

High-Image Quality and Excellent Color Saturation

Adjustable for A and B Size

Landscape and Portrait Formats

Clear Transparency Capability

Four-Way Multiplexer Option

125 Color Shades from Local Programmability and PLOT 10 Easy Graphing II

The 4691 Color Graphics Copier Provides High-Performance Color Copying from the 4113A/4113A30, 4115B/M4115B Computer Display Terminals and Other Raster Data Sources

Copies are easily made in A size (8.5 x 11 in) or B size (11 x 17 in), and their metric equivalents, in approximately two to three and a half minutes. The high-performance drop-on-demand ink-jet technology provides addressability of six dots per mm (150 dots per inch) in both horizontal and vertical directions. This allows up to 1560 x 2460 points in a B size image, and up to 1560 x 1200 points in an A size image. True black is obtained by using a separate black ink supply, superior to that obtained from mixed pigments. With the optional transparency adaptor kits, (Options 03/04), vivid overhead transparencies can be produced.

Copies are generated by program command, or by pushing a button on the Tektronix 4113A or 4115B terminal keyboard. Image orientation and multiple copies of the same image can be requested under program control.

Flexible Configuration

The 4691 uses a Centronics-type parallel interface, with modifications from the basic standard to support color, four-channel multiplexing and faster data transfer. With four-channel multiplexing (Option 02), the 4691 can serve up to four data sources at once.

With Option 09, the 4691 is compatible with the Tektronix 4113A and 4115B Computer Display Terminals. And as a special feature, the 4691 copies 125 callable shades under PLOT 10 Easy Graphing II and Local Programmability.

When supported by a host driving routine and rasterizing software, the 4691 is compatible with many systems offering a Centronics-style parallel output port.

CHARACTERISTICS

Addressability — Vertical and Horizontal: 6 dots/mm (150 dots/in).

Copy Time — 2.0 to 3.5 min depending on format.

Page and Image Format — B and A, or A3 and A4 Output Sizes. Landscape and Portrait Format selectable under program control.

Image Sizes — Variable depending on page size and image source.

Colors — Eight (magenta, yellow, cyan, red, green, blue, black, white).

Media Types — Paper sheet, overhead transparency.

Compatibility — 4113A/4113A30 Option 09 and 4115B/M4115B Option 09. Order 4110F09 and level three firmware to upgrade an existing 4113 for compatibility.

Interface — Eight bit parallel.

Data Rate — Up to 400 kbytes/s (burst mode).

AC POWER

Line Voltage — 90 to 110 V ac, 105 to 129 V ac, 180 to 220 V ac, or 211 to 258 V ac, all at 48 to 62 Hz.
Input Power — 500 W operating.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	608	23.9
Height	346	13.6
Depth	821	32.3
Weight	**kg**	**lb**
Net	60.0	132.0

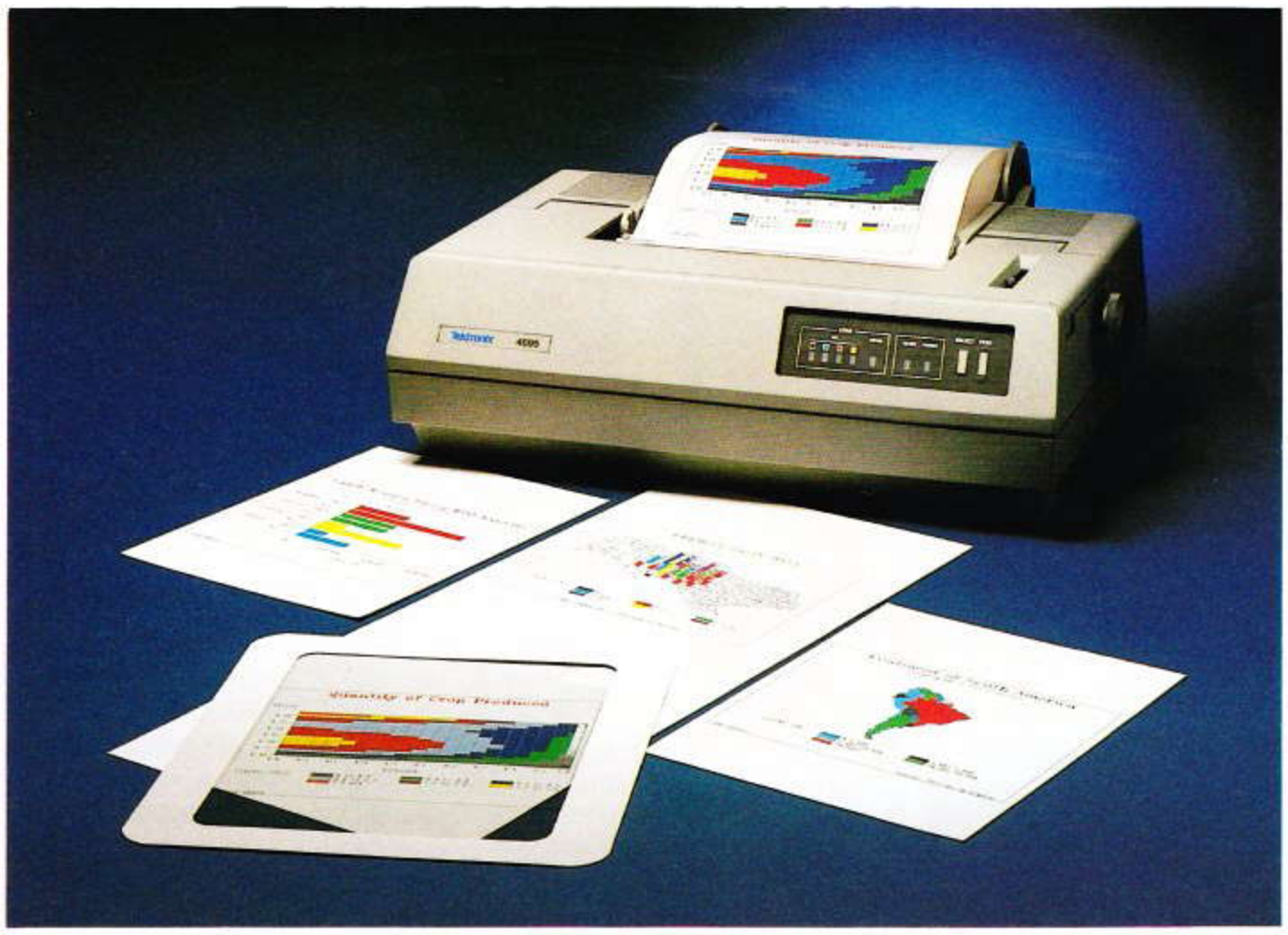
ORDERING INFORMATION

4691 Color Graphics Copier.
Option 01 — Setup for A3 Size Output.
Option 02 — Four Channel Multiplexer.
Option 03 — Transparency Adaptor Kit, A size.
Option 04 — Transparency Adaptor Kit, A4 size.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on this product.



NEW 4695 Color Graphics Copier

Unprecedented Image Quality in its Price Range

Clear Transparency Capability

Quiet, 20 Character-Per-Second Printing

Small, Compact Package

Choice of Roll or Sheet Paper

The 4695 Color Graphics Copier Provides Low-cost, High-Performance Color Copying from the 4105/4107/4109 Computer Display Terminals and Other Raster Data Sources

The 4695's unique implementation of drop-on-demand ink-jet technology provides addressability of 4.8 dots per mm (120 dots per inch) in both horizontal and vertical directions. This allows up to 1280 x 960 points per A size (8 1/2 x 11 in) image.

A Multi-purpose Output Device

In addition to providing high quality color graphics copies, the 4695 can function as a bi-directional, dot matrix printer with a print speed of 20 characters per second. A specially formulated clear transparency media can be used with the 4695 to develop striking, full color presentations. Paper is fed automatically from a roll or precut sheets are fed manually.

Companion Copier for the 4100 Color Terminal Family

The 4695 is plug-compatible with the 4105, 4107, and 4109 Computer Display Terminals. Copiers are generated either by program command, or by pushing a button on the terminal keyboard. Copies from the 4105 are 8 x 6 in (vertically oriented) while copies from the 4107 and 4109 are 10.7 x 8 in (horizontally oriented).

As a special feature, the 4695 can copy from the terminal graphics area while the dialog area continues to communicate with the host. The 4695 also copies up to 125 half-toned shades from the 4100 Family display.

A Copier for Other Data Soures

The 4695's interface is modeled after the Centronics-style parallel interface, with modifications to support color. Detailed interface specifications and functional descriptions of driving routines are available from Tektronix.

CHARACTERISTICS

Addressability — Horizontal and Vertical: 4.8 dots/mm (120 dots/in).

Copy Time — 4105: 2 to 3.5 min. 4107/4109: 3 to 5.25 min.

Printing Speed — 20 characters/s.

Character Set — Full ASCII including control characters.

Printing Matrix — 12 x 16 dot matrix.

Page and Image Format — A (8 1/2 x 11 in) and A4 (297 x 210 mm). Landscape/Portrait format selectable under program control.

Image Size — 4105 Copy: 8 x 6 in portrait format; 4107, 4109 Copy: 10.6 x 8 in landscape format.

Colors — Eight (magenta, yellow, cyan, red, green, blue, black, white).

Media Types — Paper sheet, paper roll, overhead transparency.

Interface — Eight bit parallel.

AC POWER

Line Voltage — 47 to 63 Hz, 99 to 132 V ac, 198 to 264 V ac.

Input Power — 120 W or less.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	500	19.7
Height	151	5.9
Depth	336	13.2
Weight	**kg**	**lb**
Net	11.0	24.2

ORDERING INFORMATION

4695 Color Graphics Copier.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

OEM terms available on this product.

SOLUTION VENDOR PROGRAM

CAD/Electrical Engineering

CAD/Mechanical Engineering

Finite Element Analysis and Modeling

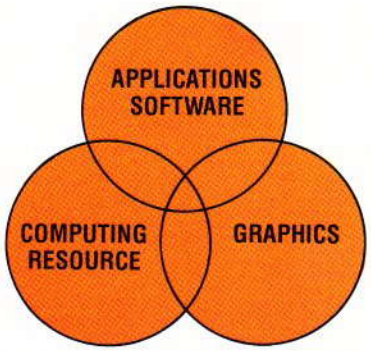
CAD/CAM

Technical Data Analysis and Presentation

Data Presentation

Application Development Software

SOLUTION VENDORS



As the importance of computer graphics grows so does the number of users interested in prepackaged applications software designed to solve their specific problems. Technological breakthroughs have given users the hardware tools that lead to even greater expectations of what graphics can do—but they need the software tools too.

There has always been a synergistic relationship between Tektronix graphics hardware and innovative graphics software products. In fact, standards have grown up around that synergy. But we recognize that users' needs are constantly changing. So Tektronix is helping customers locate the software solutions they're looking for, whether a package to design gate arrays or to lay out office space.

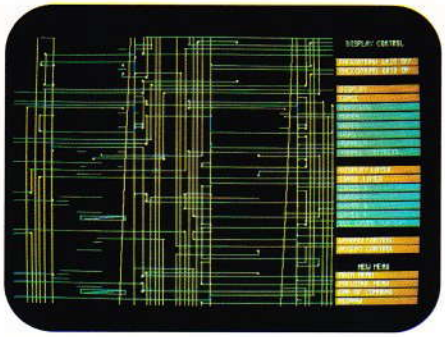
This expanded market effort is called the Solution Vendor Program. Currently we are focusing on engineering and scientific applications and have identified a number of CAD, CAM, mapping, and technical data analysis solutions and some application development software tools. The packages are designed for host computers coupled with Tektronix terminals standalone, locally programmable devices, as well as for Tektronix desktop products.

Since we've built a reputation on high engineering standards and commitment to our customers, the software vendors we choose must have proven themselves in the marketplace:

- They each have an existing customer base.
- Their software supports Tektronix graphics products.
- Their organization is capable of responding to customer inquiries.
- The software product is available unbundled.

These selection criteria assure us that solutions for specific applications problems are as close as the Tektronix **Solution Vendor Register.** This publication briefly describes accepted software offerings from third party vendors. A synopsis follows.

CAD/ELECTRICAL ENGINEERING

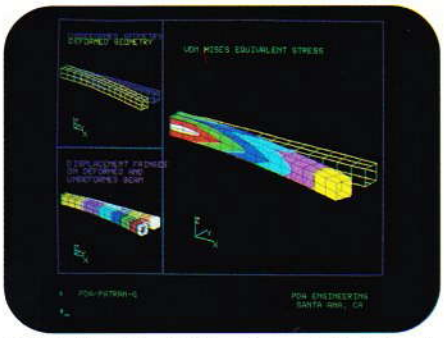


Gate Array Integrated Circuit Layout

MERLYN-G is an integrated set of layout tools that allow the user to personalize VLSI gate arrays to implement various circuit designs. This flexible set of tools is independent of the chip manufacturer or style of gate array. It functions equally well for vendor design of new chip floorplans or end-user layout of existing chips. Inputs to **MERLYN-G** consist of a gate array reference data base (from the gate array vendor) and user defined circuit specifications. The design specifications are typically the result of an interactive process of designing and simulating the circuit until the desired logic is obtained. **MERLYN-G** uses the resulting circuit networks as its primary input.

VR Information Systems, Inc.
A Tektronix Company
5818 Balsones Drive
Austin, TX 78731
512/458-8131

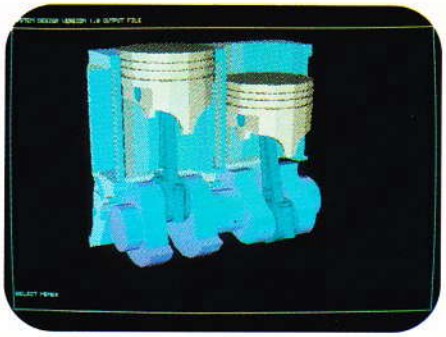
CAD/MECHANICAL ENGINEERING



Solids Modeling/Finite Element Modeling/ Post Processing

PDA/PATRAN-G is an interactive graphics system for the designer analyst. A radical departure from existing approaches, **PATRAN-G** allows the creation of a continuous solid geometric model independent of the analysis model. This allows the **PATRAN-G** user to develop multiple analysis models using a single geometric model, permitting optimization of the model for each type of analysis. Extensive construction, viewing, and editing features provide a friendly interface for design analysis modeling and subsequent evaluation of results. Additional features of **PATRAN-G** include digitizer support, incremental plotter interfacing, command file input, instant replay files, CAD/CAM interfaces via **IGES**, interfaces to **NASTRAN, ANSYS, EASE2, SAP,** and other engineering analysis programs.

PDA Engineering
1560 Brookhollow Drive
Santa Ana, California 92705
714/556-2800



SDRC I-DEAS (Integrated Design Engineering Analysis Software) is an integrated, interactive engineering package that enables mechanical engineers to evaluate design data — from an initial rough idea to a detailed analysis of the entire product system. Data developed early in the conceptualization stage can be accessed throughout the design process by use of the various software modules including: solid modeling, finite element modeling, finite element analysis, system dynamic analysis, modal analysis, mechanism analysis, beam analysis and fatigue analysis.

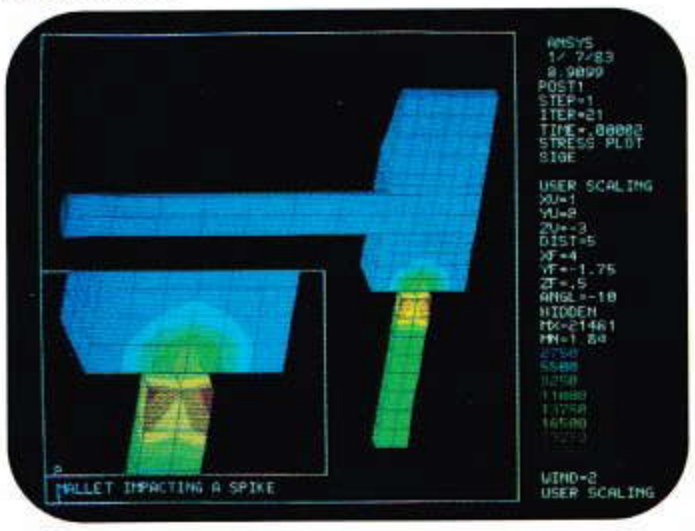
SDRC GEOMOD software is an interactive, three-dimensional, solid modeling tool allowing engineers to construct realistic geometric models and assemble them into complete structural systems. This unique system assembly feature allows the user to analyze the total system for interference, inertia property calculations, packaging and kinematics — all within the computer.

SDRC SUPERTAB software is an interactive preprocessing and postprocessing finite element modeling program freeing designers and analysts from routine demands of model preparation and interpretation of results. Time-saving features include an inherent analysis capability within **SUPERTAB** software. Designers can now perform static and dynamic analysis with direct access to the data base, without leaving the program.

Other software programs from GE-CAE International include **SDRC SYSTAN** used in combining component models to mathematically predict overall system performance. **SDRC SUPERB** software is a general-purpose finite element program for static and dynamic structural analysis and heat conduction analysis. **SDRC FRAME** software is a family of interactive beam analysis programs. **SDRC MODAL-PLUS** software is used to collect, analyze and display data from controlled-excitation tests.

General Electric CAE International, Inc.
300 Technecenter Drive
Milford, Ohio 45150
513/576-2400

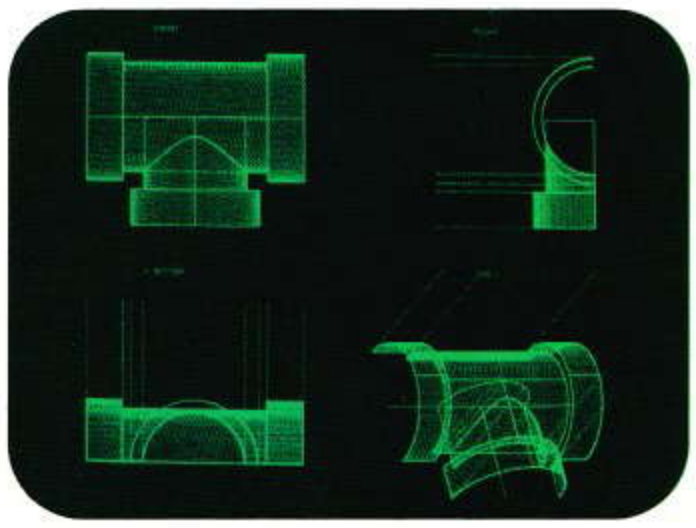
FINITE ELEMENT ANALYSIS AND MODELING



ANSYS is a large scale, general purpose analysis system employing finite element techniques to solve several types of engineering analysis problems. Capabilities include structural and heat transfer analysis using both linear and nonlinear techniques. **ANSYS** also supports static analysis, model analysis, spectrum analysis, harmonic analysis, transient dynamic analysis, and heat transfer analysis among others. Preprocessing is available for model development and review, while postprocessing permits the display of results through contour plots, time-history plots, maximum stress scans, and stress envelopes. **ANSYS** can be run in either interactive or batch modes.

Swanson Analysis Systems, Inc.
Johnson Road
P.O. Box 65
Houston, PA 15342
412/746-3304

CAD/CAM

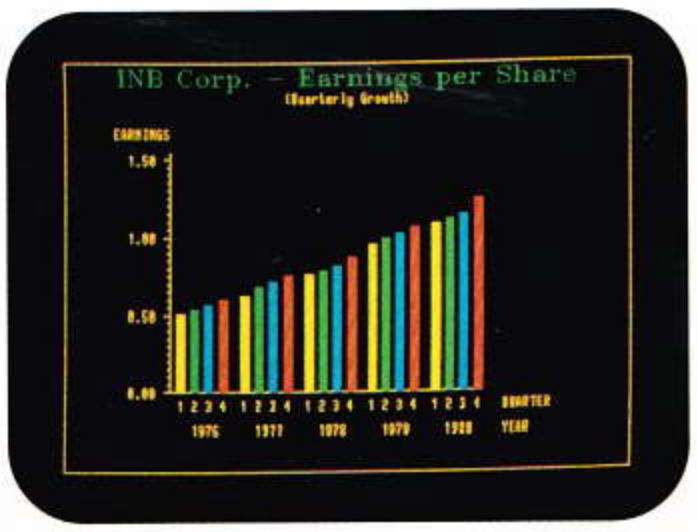


Computer Aided Design, Drafting, and Manufacturing

ANVIL-4000 is a comprehensive CAD/CAM package that integrates engineering design, manufacturing control, and information management tools into a single software system with full interactive graphics capabilities. It supports the entire product development and manufacturing process, from concept and design through production planning and control. The system is intended to function as a comprehensive tool set adaptable over a broad array of applications, including: electronic and mechanical design and drafting; finite element modeling; 2-D nesting; comprehensive N/C tape generation; and management information systems.

Manufacturing and Consulting Services, Inc.
17942 Cowan
Irvine, CA 92714
714/660-1170

TECHNICAL DATA ANALYSIS AND PRESENTATION



Data Analysis And Display

SAS/GRAPH, used in business and research for presentation and information graphics applications, provides device-intelligent color graphics to users. **SAS/GRAPH** can be used in batch and interactively under OS/MVS, VM/CMS, and DOS/VSE to produce charts, plots, and maps, using a variety of colors and patterns. Several font styles can be used for titles, footnotes, and notes. More than 12 procedures are available for plotting; displaying bar, pie, star, and block charts; projecting statistical data to choropleth, surface, prism, and block maps; making slides; and replaying stored results for management presentations. Map coordinates for US states and counties and for Canadian provinces are provided. World map data sets are available for an additional charge.

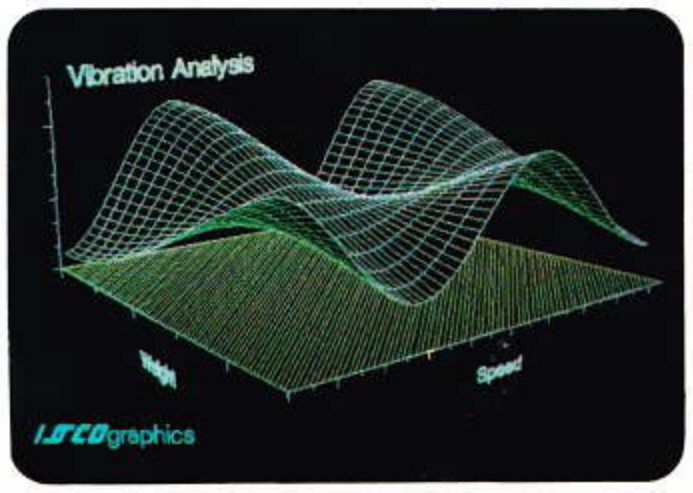
SAS Institute, Inc.
P.O. Box 8000
Cary, NC 27511
919/467-8000

Data Presentation

TELL-A-GRAF is an English language, conversational program that produces quality graphs for immediate publication or presentation. Output may be produced on a variety of media including paper, overhead transparencies, 35 mm slides, or CRT screens. **TELL-A-GRAF** generates a variety of graph types; line, bar, and pie; as well as text pages. It uses the same data format for each type of graph, so you may easily experiment until you find the chart desired. **TELL-A-GRAF** has built-in designs for producing standard graphs and numerous enhancement options for generating intricately tailored charts.

Integrated Software Systems Corporation (ISSCO)
10505 Sorrento Valley Road
San Diego, CA 92121
619/452-0170

APPLICATION DEVELOPMENT SOFTWARE



General Purpose Plotting

DISSPLA is a high-level subroutine plotting package that provides a production tool for both business and scientific programmers. **DISSPLA** can be added to application programs to generate business and management charts, engineering and scientific graphs, reports, maps, contours, and 3-D designs. **DISSPLA** is device and machine independent; designed for the mainframe and minicomputer environment. It supports a variety of devices, including CRT's, printers, plotters, and COM units.

Integrated Software Systems Corporation (ISSCO)
10505 Sorrento Valley Road
San Diego, CA 92121
619/452-0170

CONTACT INFORMATION

For a complete and updated list of vendors call 800/547-1512 or return the reply card to receive a copy of the **Tektronix Solution Vendor Register.**

As a customer service, Tektronix publishes listings of software from Solution Vendors. The information included in each listing has been provided by the vendor and has not been verified independently by Tektronix. Tektronix expressly disclaims warranty or any obligation of support for non-Tektronix products. Tektronix is not responsible for any error or omissions in the above information.

NEW 4970/4970P01/ 4970P02 Cluster Controller

IBM SNA/SDLC Compatibility

The 4970 Cluster Controller with 4970P01 or 4970P02 Software Provides 3270 Type Data Communications

4970P02 Provides 3270 Full Screen Emulation

The 4970 Cluster Controller and companion software allow Tektronix graphics terminal users to access SNA, multihost environments.

Communicating to the host like an IBM 3274 or 3276 Terminal Controller, the 4970 accepts asynchronous data (at rates up to 19.2 kbps) from as many as four Tek asynchronous ASCII terminals and converges it to a single synchronous EBCDIC data stream transmitted at data rates up to 9,600 bps. With 4970P02 software Tek terminals can be used in 3270 full screen alphanumeric applications.

Increased Communications Efficiency

The 4970 reduces transmission line and port costs, since the 4970 system allows Tek graphics terminals to operate in a polled environment. Higher data rates (up to 9,600 bps) improve system response to the user.

Error Free Graphics

Network (SNA) error recovery is automatic, and since SDLC provides error checking, data integrity is assured at the link level.

4970 Key Features

Microprocessor Driven with Intel 8086

128 kbyte RAM Memory for Program Storage and Buffers. Communications Parameters Stored in Battery-Powered CMOS Memory.

All Electrical Components have Tektronix' Reliability and Service--MTBF (Mean Time Between Failures) is 7000 Hours.

Communication Between the 4970 and Connected Terminals is Asynchronous ASCII, with Either DC1/DC3 or DTR/CTS Flagging.

Power Up and Extended Self-Test Programs Assure Positive Problem Determination.

The 4970 Cluster Controller and terminals are installed and supported as though they were 3270 devices. Sysgen is the same for the 4970 and the SNA Physical Unit 2. There is no need for teleprocessing software modifications.

CHARACTERISTICS

HOST INTERFACE

Mode — Synchronous.

Baud Rate — 300 bps to 9.6 kbps through synchronous modems or in direct connect mode using 4970 clock.

Code — EBCDIC.

Link Protocol — SDLC.

Network Compatibility — SNA Physical Unit (PU) type 2; the 4970 looks like an IBM 3274 or 3276 to the host.

Communication Media Supported — Leased line/dial-up.

TERMINAL SUPPORT

Mode — Asynchronous.

Baud Rate — Selectable; 300, 1200, 2400, 4800, 9600 bps and 19.2 kbps.

Code — ASCII.

Flagging — DC1/DC3 or CTS/DTR.

SELF-TEST CAPABILITY

Power-up — Self-test routine.

User-Initiated — Extended self-test including DCE and DTE loopback for fault isolation.

Stress Test — Maximum/minimum voltage.

DC 100 TAPE DRIVE

For protocol program loading and creating back-up tapes.

COMMUNICATIONS PARAMETERS

Method of Entry — Password-protected monitor port in back panel.

Parameter Volatility — Battery-maintained CMOS maintains parameters through power-downs or outages.

User-Selectable Parameters — Controller address (from C1 to C9), terminal baud rate, echo, flagging mode, end-of-message (EOM) character, message size, controller S/N (for dial-up connection).

FRONT PANEL INDICATORS

Port Status — One LED for each terminal.

Host Status — One LED each for: Carrier Detect (CD), T-Data, R-Data, Error.

Ac Power — On/off.

AC POWER

Power Requirements — 130 W max.

Line Frequency — 48-62 Hz.

Voltage Fuse — Low Range: 90 - 125 V ac, 2.5 A fast blow fuse. High Range: 175 - 250 V ac, 1.5 A fast blow fuse.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	406	16.0
Height	133	5.3
Depth	483	19.0
Weight ≈	**kg**	**lb**
Net	8.6	19.0

ORDERING INFORMATION

4970 Cluster Controller.

4970P01 SNA/SDLC/3270 Controller Software.

4970P02 3270 Emulation SNA/SDLC Controller Software.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1 BEAVERTON, OR

POSTAGE WILL BE PAID BY ADDRESSEE

Tektronix, Inc.
Attn: Fulfillment
P.O. Box 1700
Beaverton, Oregon 97075

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Tektronix, Inc.
Attn: Fulfillment
P.O. Box 1700
Beaverton, Oregon 97075

I'd like to know more about Tektronix Computer Graphics!

Please call me at ( ) _____ **Ext** _____

I'd like to discuss _____

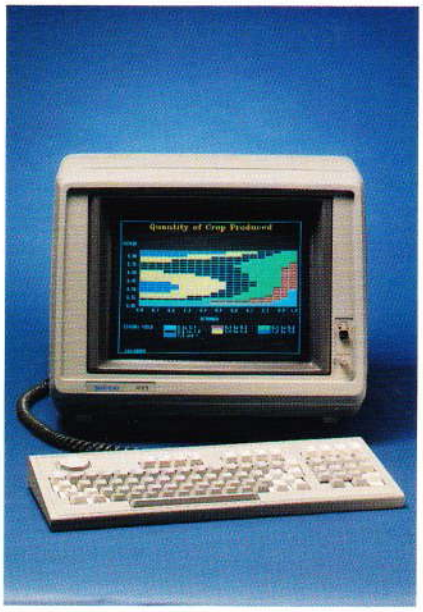
Name Title

Company

Address

City State Zip

D697-5-WX



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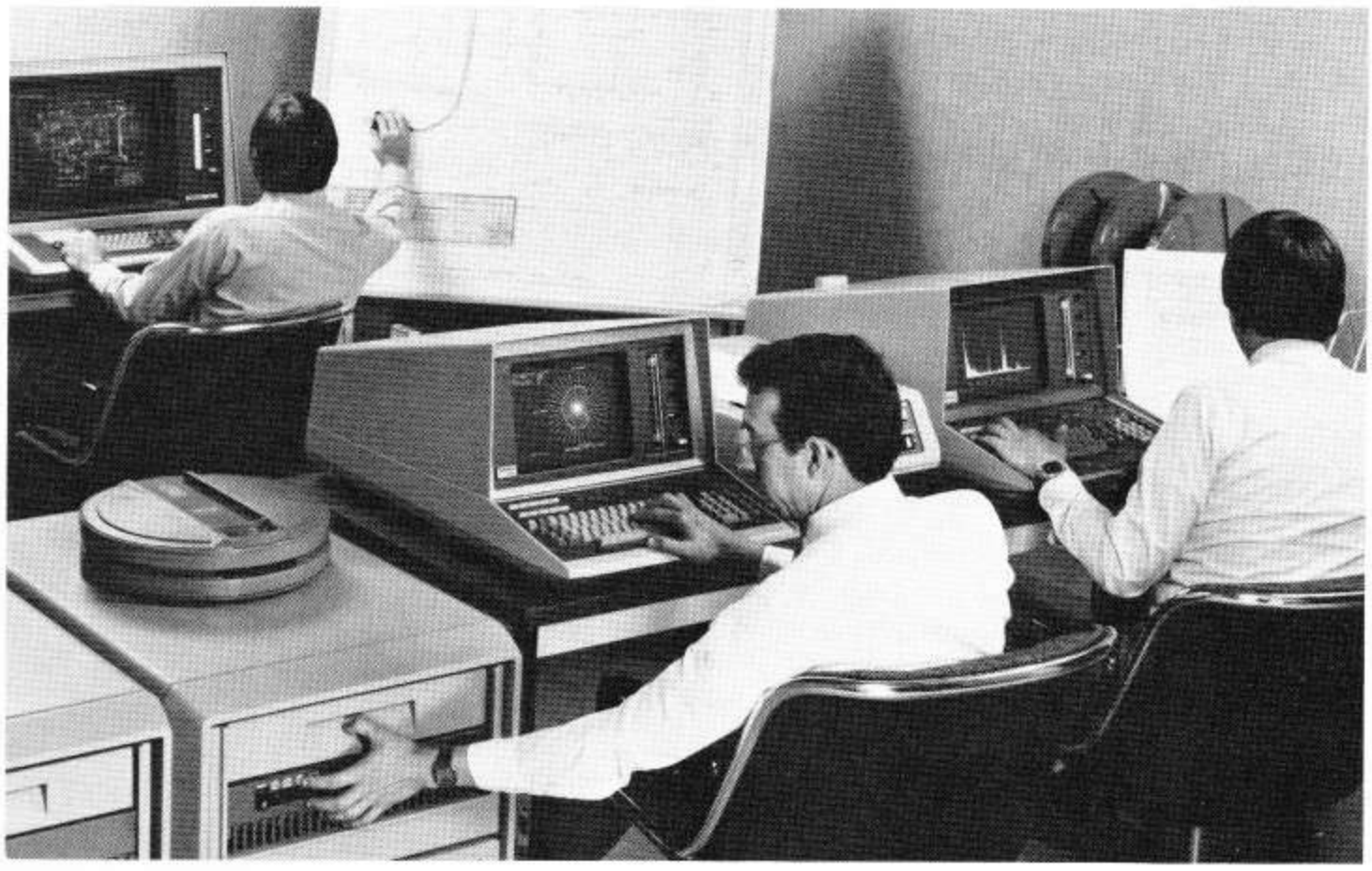
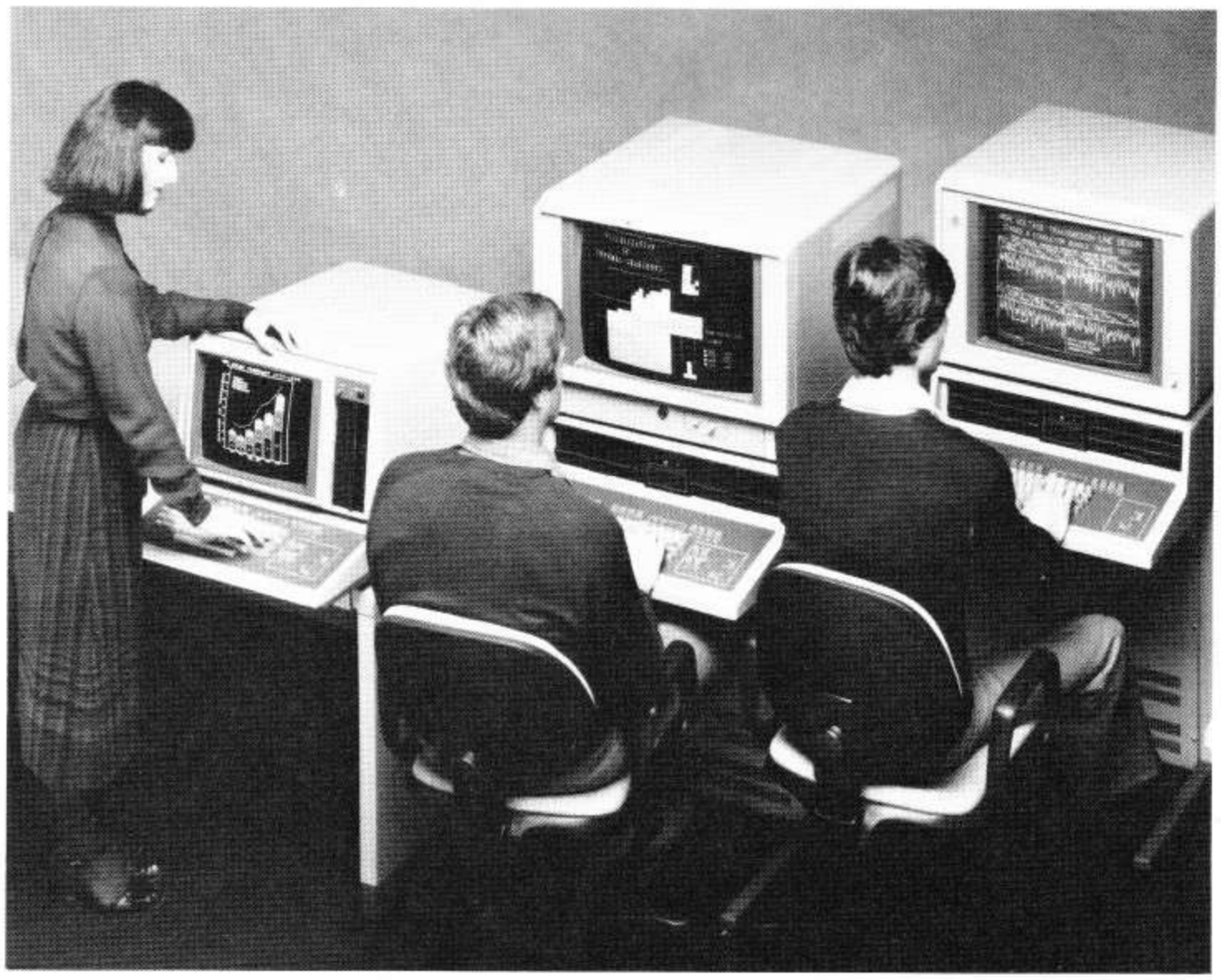




Graphics Software

PLOT 50 2-D Drafting is a state-of-the art automated drafting system providing significant productivity gains in creating and maintaining engineering drawings. Two-Dimensional (2-D) Drafting is designed to comply with current U.S. and International standards and takes advantage of the optional Color Enhanced Dynamic Graphics to present the best in Desktop Drafting.

INTERACTIVITY IS KEY

Only Tektronix offers the 4054A Desktop Computer with a 19-inch high-resolution screen and Color Enhanced Dynamic Graphics for easy viewing. With dynamic graphics, the user can move text and symbols anywhere in the drawing in realtime. 2-D Drafting prompts casual users and incorporates many defaults to speed productivity for more frequent users. Concise, easy to understand messages appear on-screen to prompt you and to display selectable options within functions.

The Tektronix 4054A Desktop Computer has a proprietary display capability to provide unmatched line resolution for creating quality drawings and is one of the highest performance desktop computers available.

2-D Drafting is built around the dynamic graphics capability of the 4054A so you can profit from both stored and refresh images. Messages, the cursor and symbols are displayed as refresh images and the cursor, text and symbols can be moved in realtime.

Users need not be skilled in computer programming to use the power of this software package. The basic procedure is to select a function from the tablet menu and respond to simple prompts and questions relative to that function.

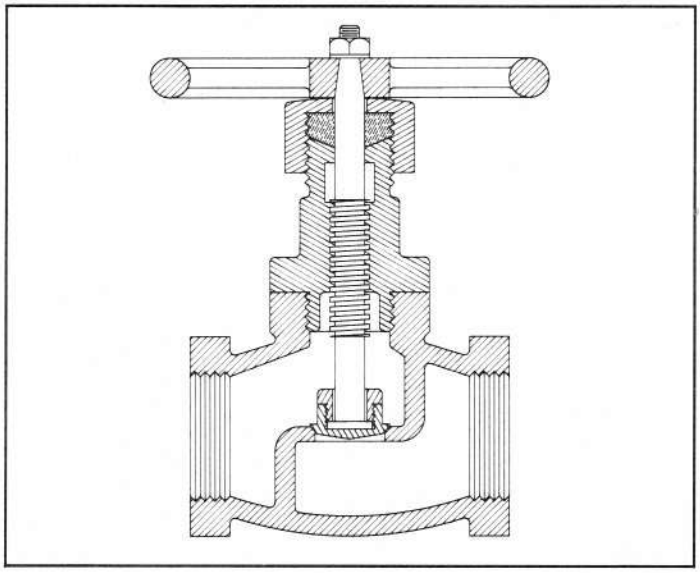
2-D Drafting includes a rich feature set for a broad range of drawing tasks. Your drawings can be in either **English** or **Metric** units and sizes. U.S. and International standards, including ANSI Y-14, have been incorporated. A user-definable snap-to **Grid** and **Cursor** is available. Five **Dash Types** are available: solid, short dash, long dash, center line and phantom. You can choose from up to eight **Plotter Pens.** Multiple methods of entering geometry are included.

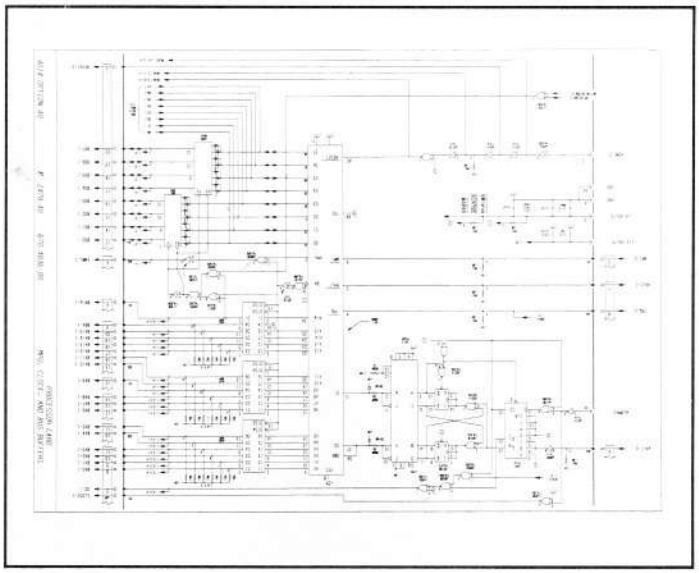
Following Autoload, the system displays a master menu listing five major options: the Tutorial, Draft Mode, Plot Utilities, File Utilities, and End Session.

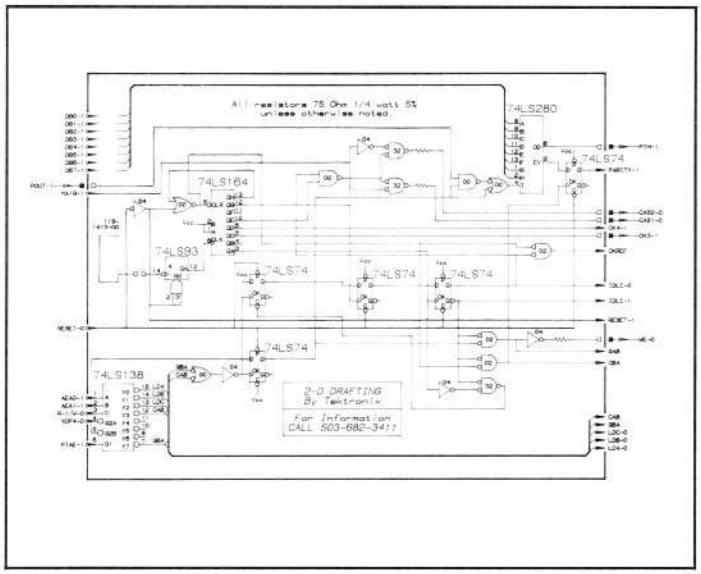
The **Tutorial** presents over 90 pages of information on the major functions in the package and how to use them. **Draft Mode** is the major portion of the software in which drawing creation and editing occur. The **Plot Utilities** allow you to plot any portion of your drawing on Tektronix or other selected plotters. The **File Utilities** provide general operations including renaming files and archiving your work.

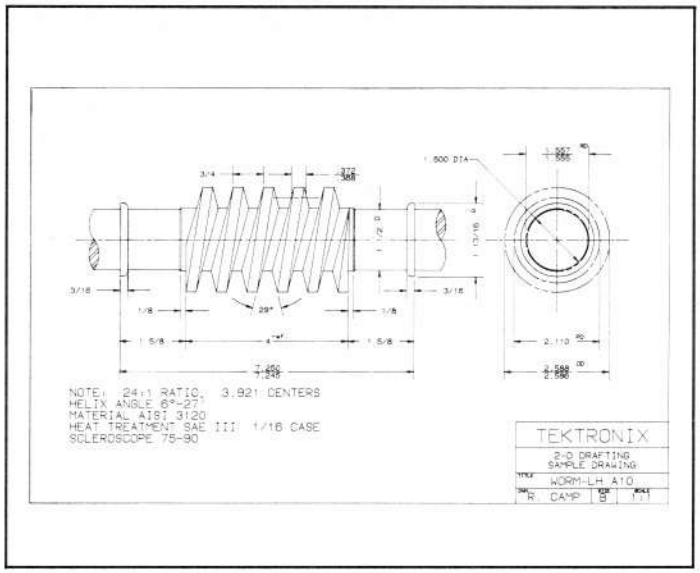
In addition to the Tutorial, **Help** functions have been incorporated directly into the package, and the software is supported by extensive reference materials in the 2-D Drafting User Manual.

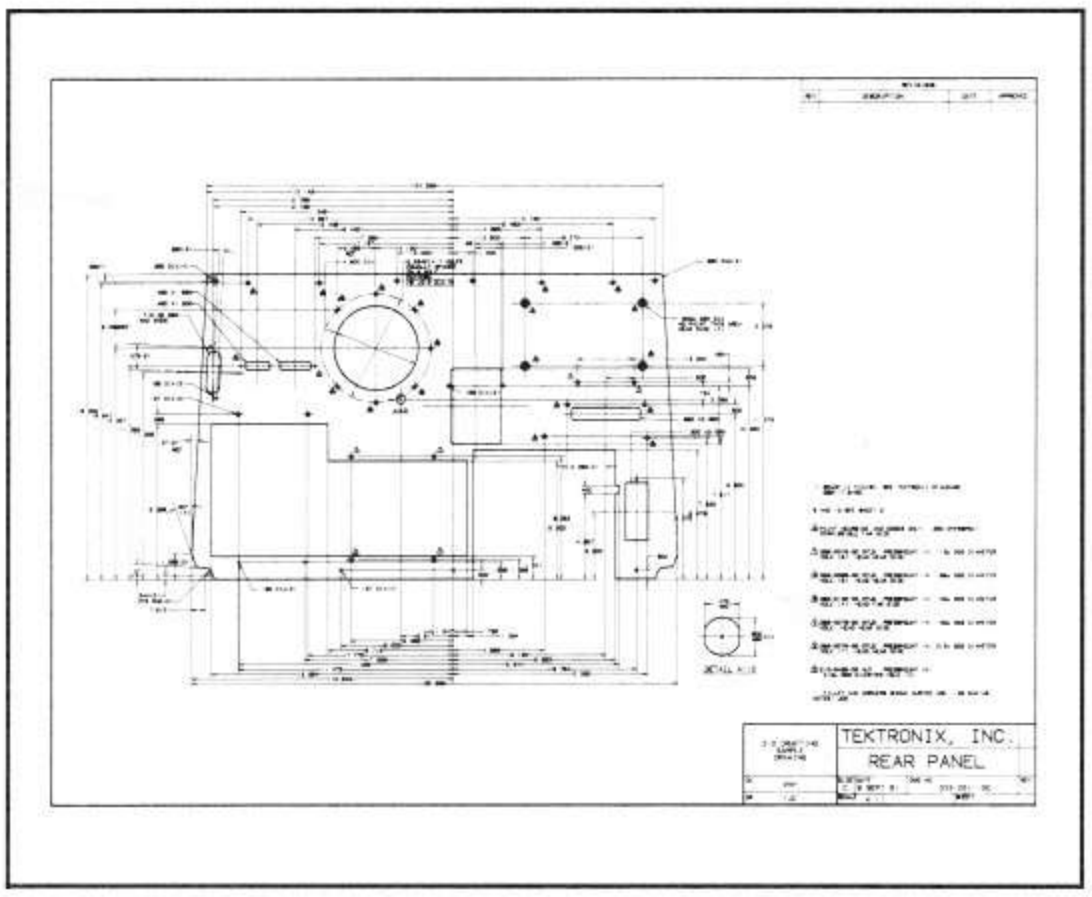
Single-user and multi-user systems are available.

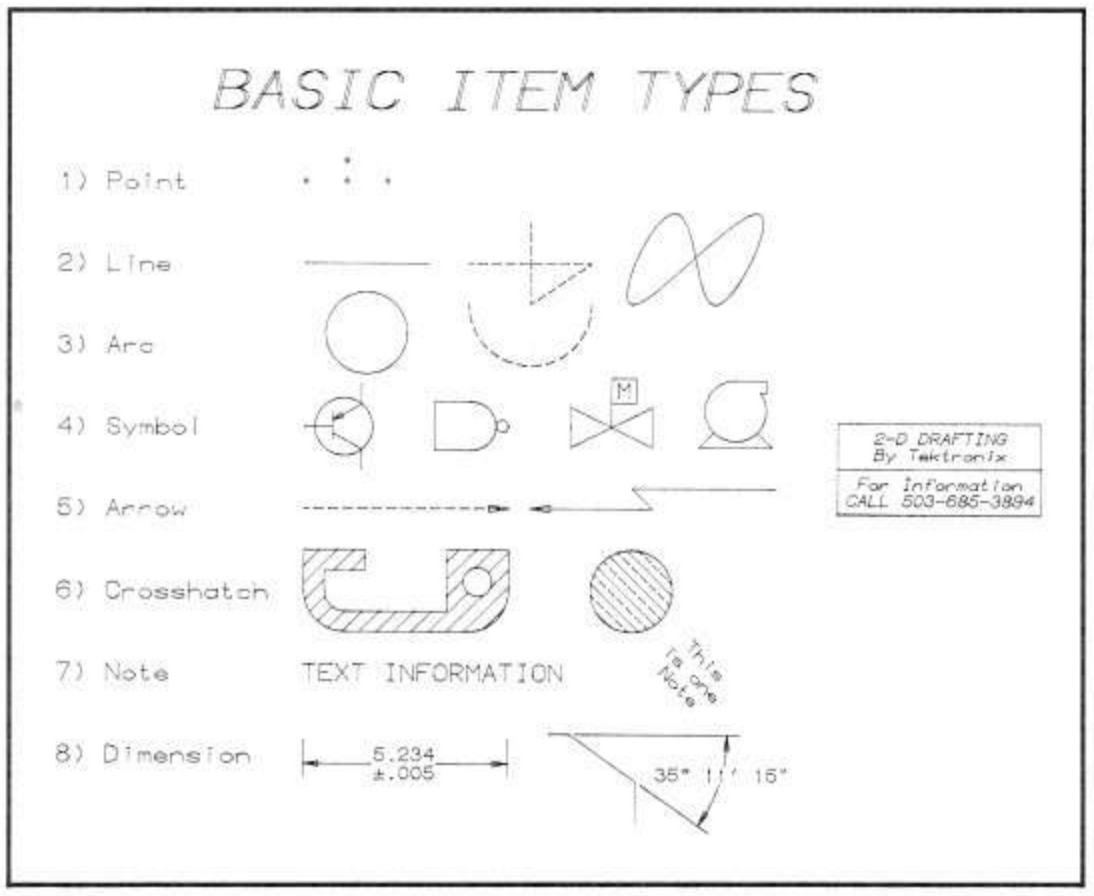


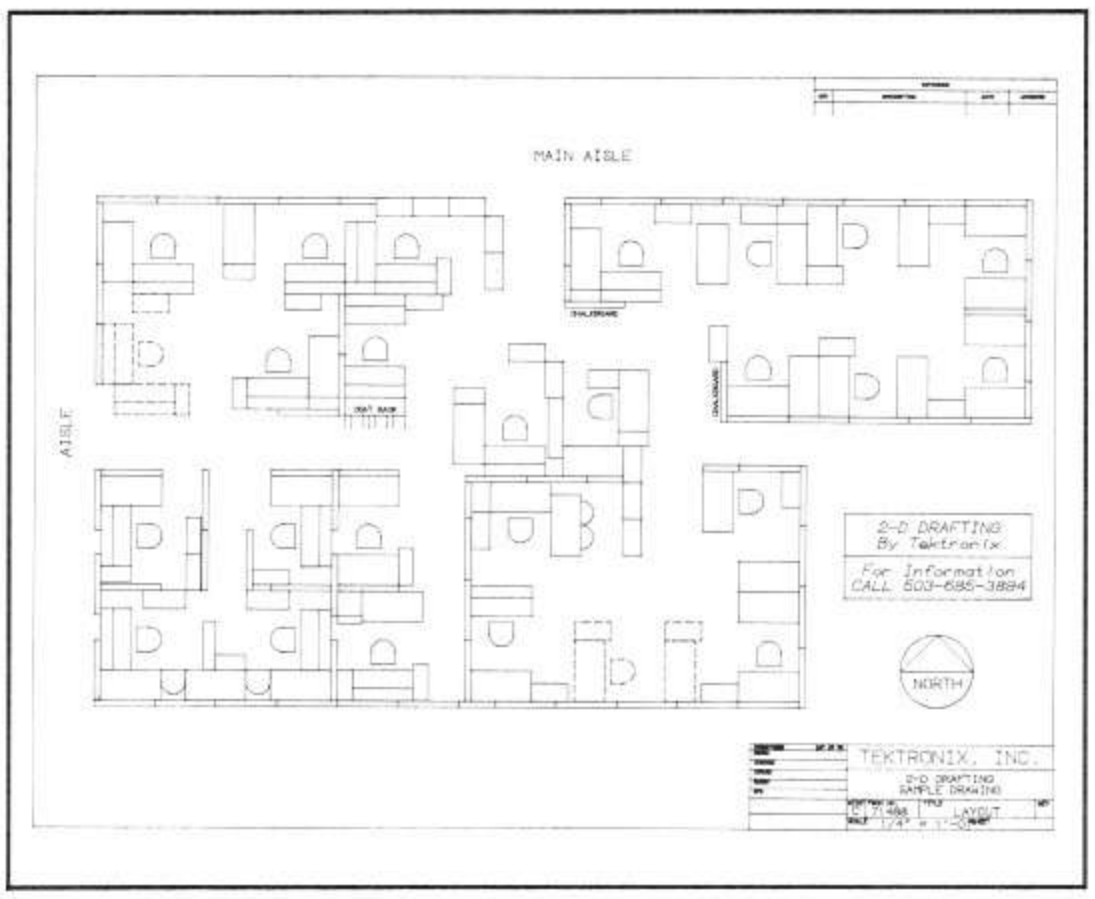


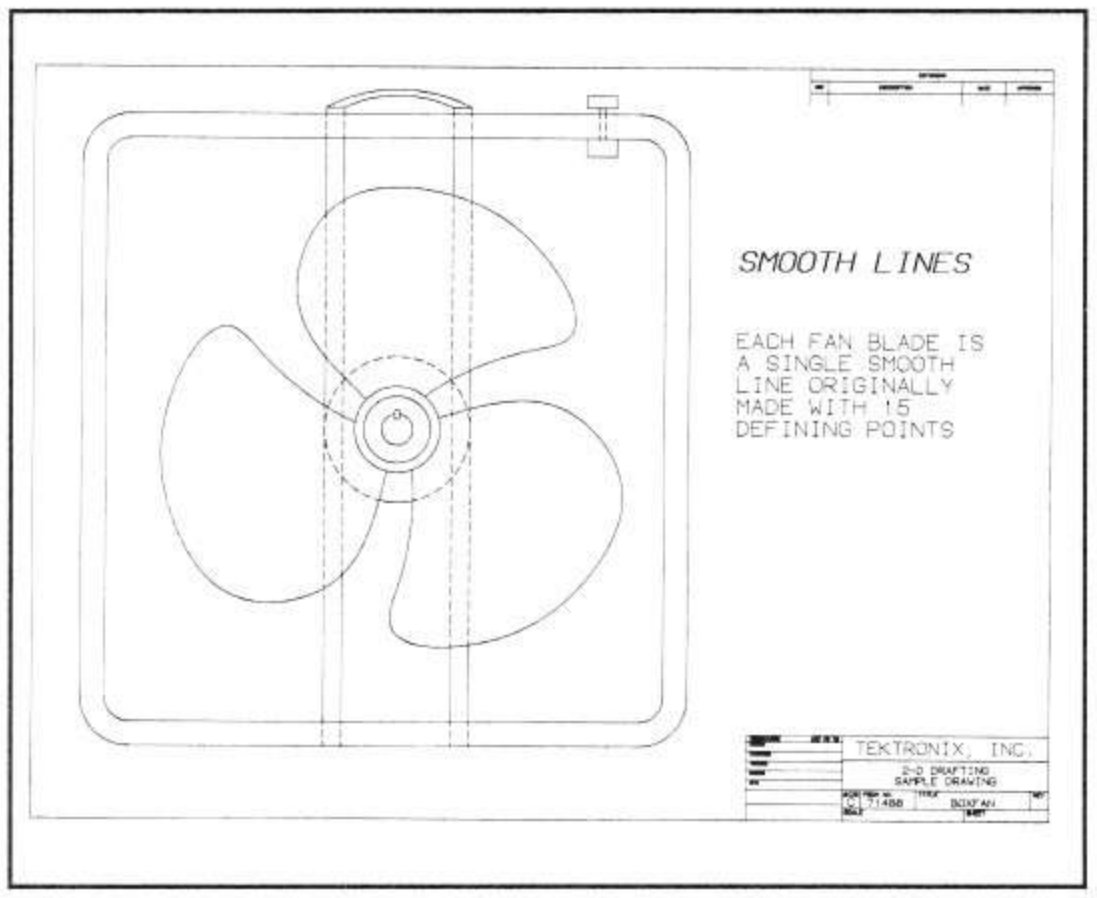





TEKTRONIX, INC.
REAR PANEL


BASIC ITEM TYPES
1) Point
2) Line
3) Arc
4) Symbol
5) Arrow
6) Crosshatch
7) Note
TEXT INFORMATION
This is a Note
8) Dimension
5.234
±.005
35° 11' 15"
2-D DRAFTING
By Tektronix
For Information
CALL 503-685-3894


MAIN AISLE
AISLE
2-D DRAFTING
By Tektronix
For Information
CALL 503-685-3894
NORTH
TEKTRONIX, INC.
2-D DRAFTING
SAMPLE DRAWING
LAYOUT


SMOOTH LINES
EACH FAN BLADE IS
A SINGLE SMOOTH
LINE ORIGINALLY
MADE WITH 15
DEFINING POINTS
TEKTRONIX, INC.
2-D DRAFTING
SAMPLE DRAWING
BOXFAN

PLOT 10

Graphics Software Library

PLOT 10 provides tools for easy use of the graphic and alphanumeric capabilities of Tektronix terminals including the 4110 and 4010 Series terminals, 4006-1, 4025A and 4027A Color Display.

PLOT 10 is the world's leading commercial graphics library. Versatile, modular, and fully documented, it lets you start with only the code you need to do your job, then expand with modules and utilities to develop more sophisticated or specialized applications. PLOT 10 builds to high-level, "cookbook" solutions such as English-like commands for business applications and other non-programmer environments.

PLOT 10 Includes the Following Packages

Terminal Control System (TCS)

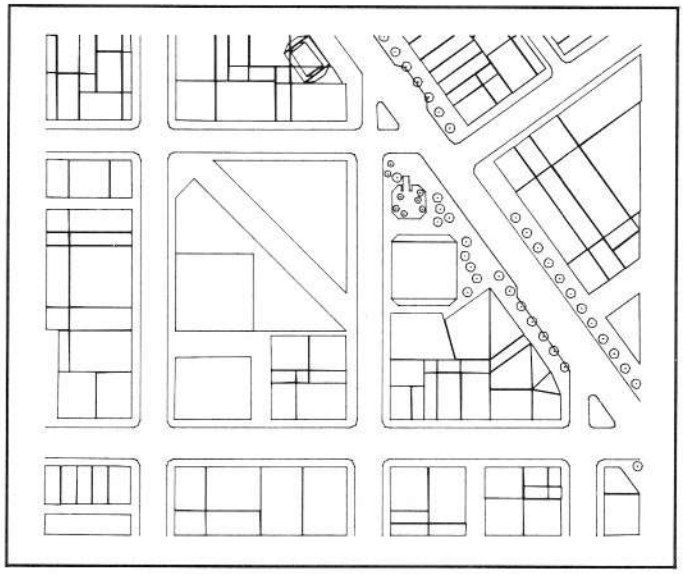
A composite of FORTRAN IV subroutines, TCS contains the basic building blocks for all graphic operations. Anything that can be displayed graphically can be managed by TCS. Its proven uses range from simple business graphs and forecast diagrams to contour maps of electron densities, interactive design of electrical circuit boards, and complex architectural renderings. Several sets of graphs and data can be displayed on-screen at once by using the system's windowing functions, or graphs can be superimposed in the same screen area. It permits modular as well as system independent programming, and supports such basic graphic functions as windowing, clipping and rotation for DVST terminals and 4660 Series plotters.

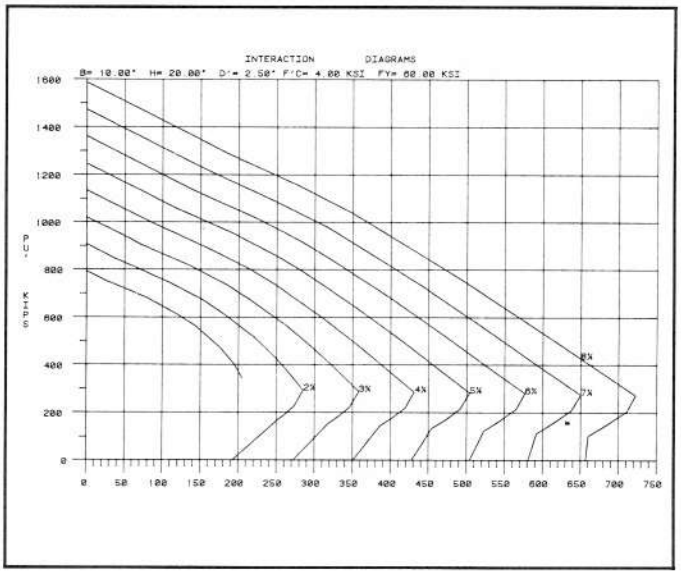
Plotter Utility Routines

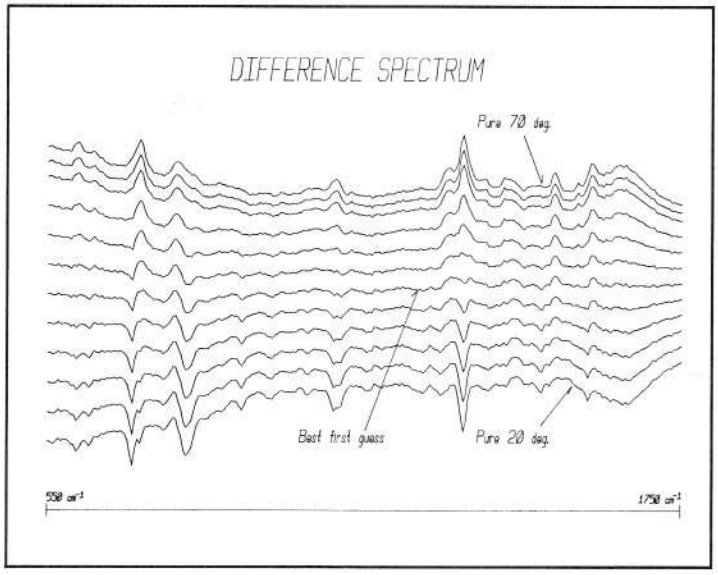
These routines link your data base, terminal, TCS and Tektronix 4660 Series plotters to enable easy, powerful command of multicolored graphs, charts, maps and renderings. Digitizing is just as versatile by using the built-in joystick.

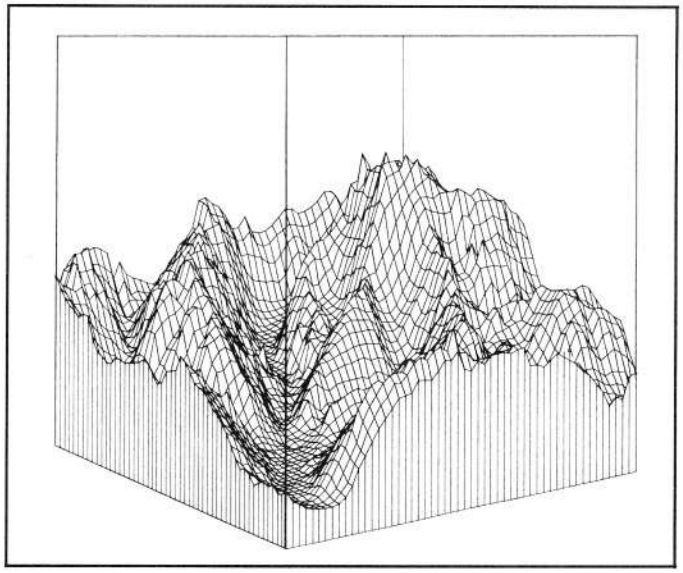
Advanced Graphing II Package

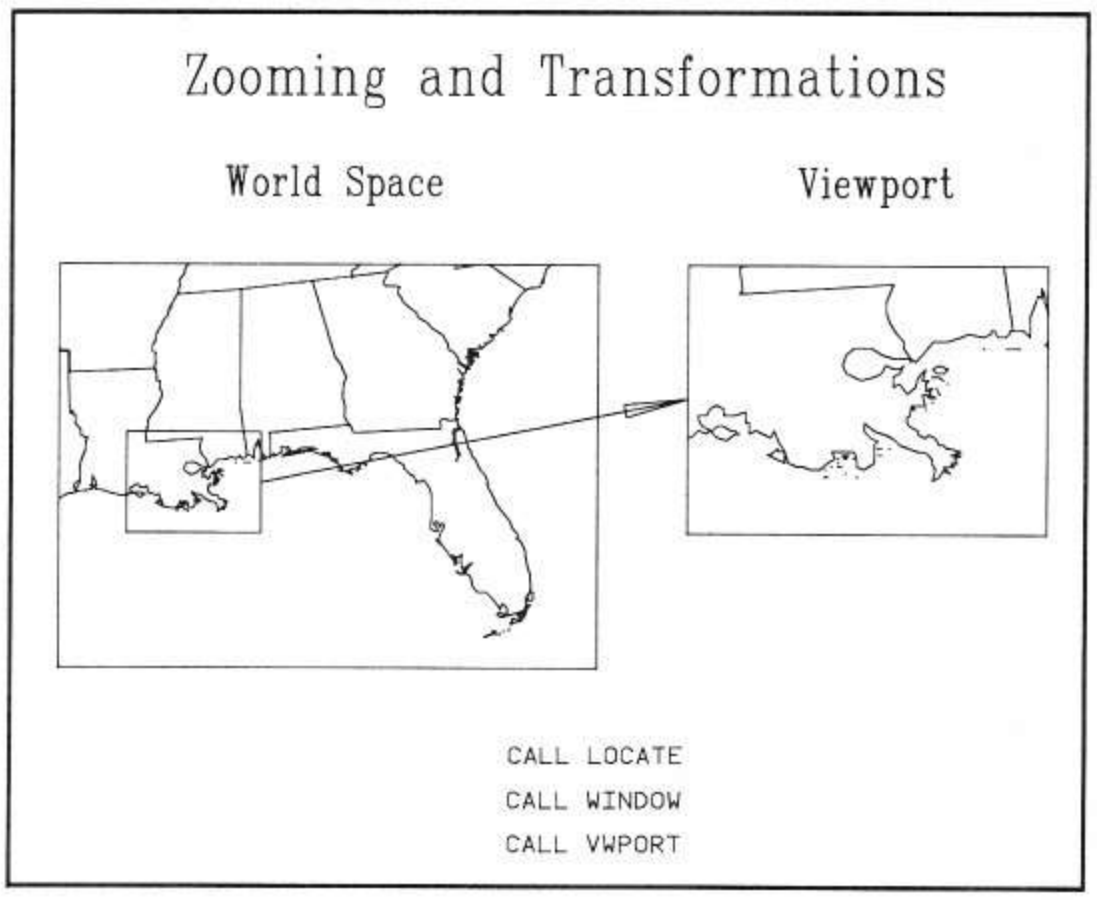
Versatile Terminal Control System software to graph your data using a powerful set of FORTRAN IV subroutines. AG-II combines simplicity of use with highly flexible subroutines to let a programmer tailor the size, shape and format of graphs, by specifying more than 40 graphic elements. AG-II is as much a boon to the new user as to the expert. By using the system's built-in default determinations, you can supply as few as two subroutine calls to produce a full-screen graph properly scaled and annotated.

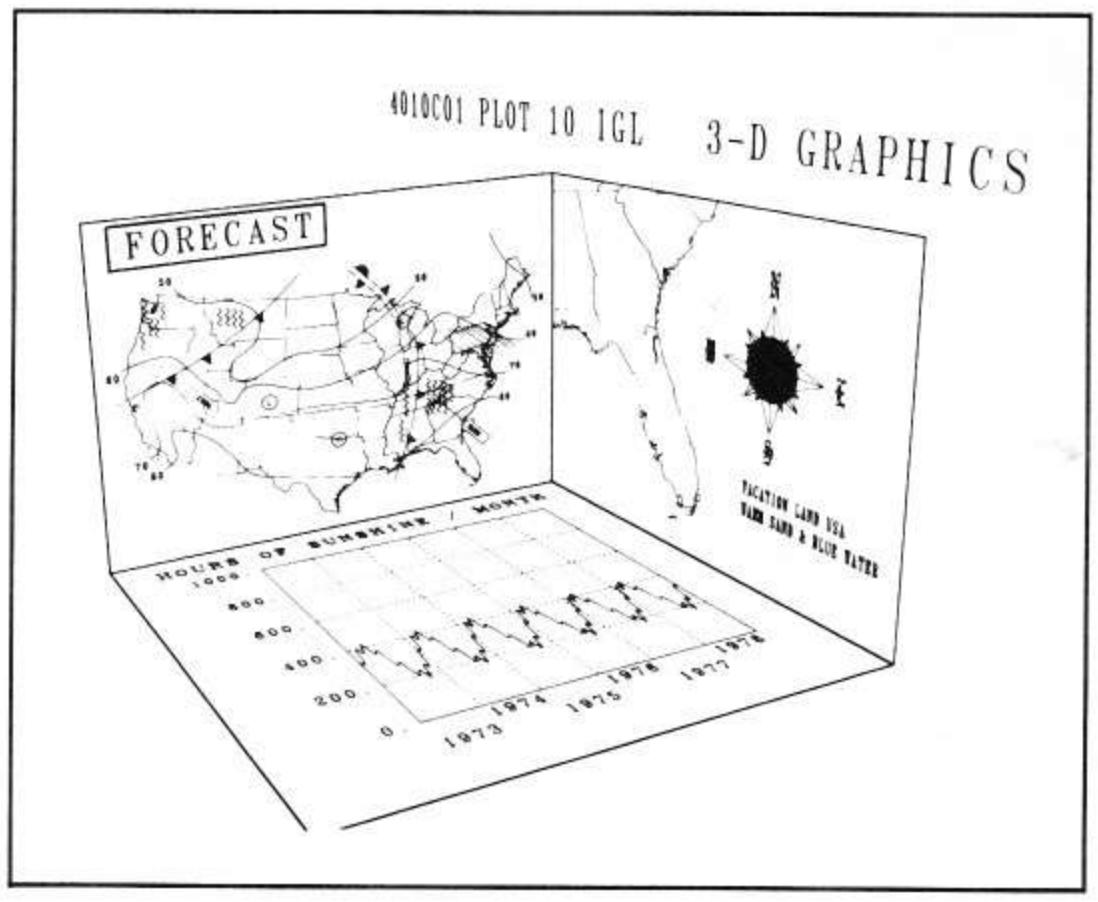


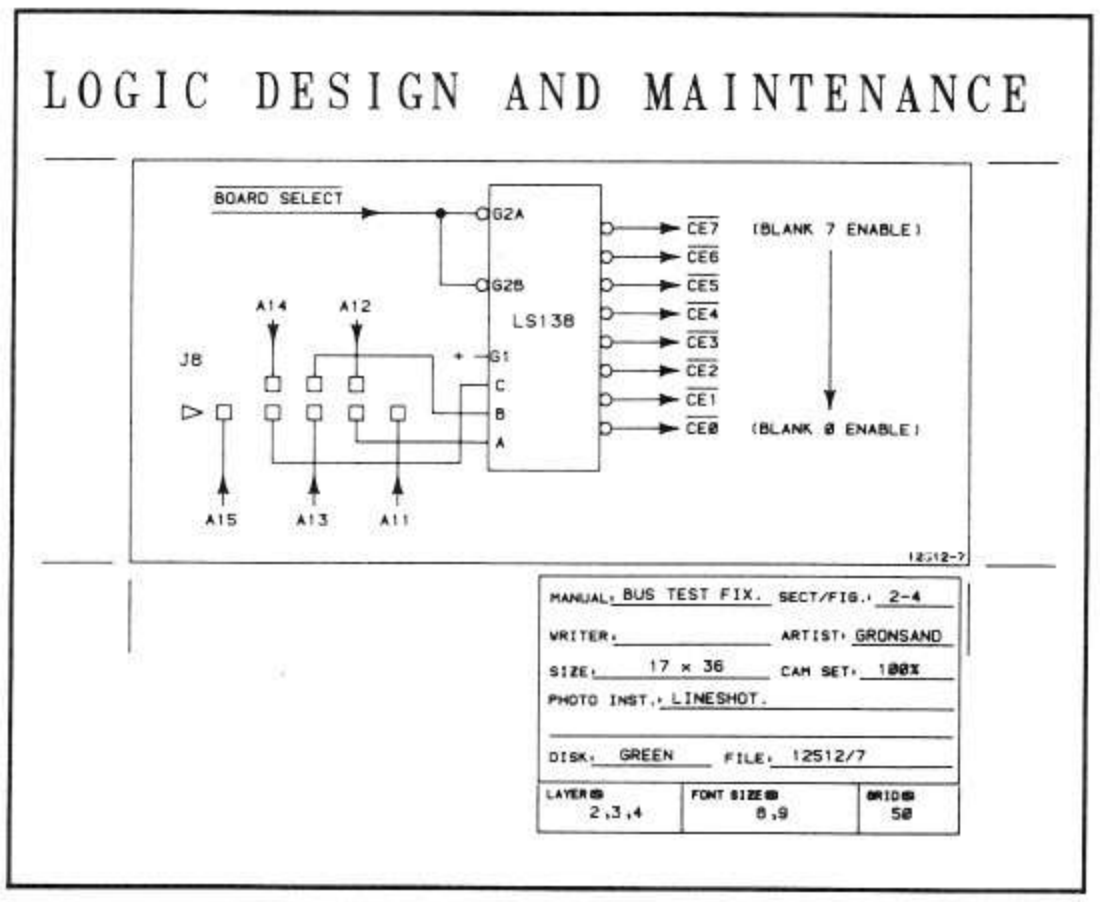












Easy Graphing II

A straight forward English language command structure that gives the non-programmer wide-ranging command of graphics in business and engineering decision-making tasks. For those with programming experience, commands are provided to call user-written subroutines for customized graphical displays or for unique data handling requirements. The standard PLOT 10 Easy Graphing II package offers support for up to six curves or shaded bar charts, line graphs with special symbols and dashed lines, legends, titles, grids, hard copy, plotter control, and much more.

Interactive Graphics Library

IGL is a uniquely modular system of I/O, device drivers, primary commands and advanced feature support that lets the user move at will among any Tektronix display devices or technology. The structure of PLOT 10 Interactive Graphics Library follows the concepts suggested in the ACM/SIGGRAPH study on a core standard for computer graphics. Advanced options such as Line Smoothing, Color Panel Support, Graphics Text Composer, Segments and 3-D graphics may be added. Device drivers are included in PLOT 10 IGL for 4010, 4020, and 4100 Series terminals and 4660 Series plotters. A model device driver is also included for adaptation to non-Tek displays.

Subsets of PLOT 10 IGL features may be generated from our standard configurations to better match specific application requirements. Host computer and display device independance attributes of PLOT 10 IGL make it an excellent choice for long lived graphics applications.

Local or Host

PLOT 10 TCS, PLOT 10 Easy Graphing II and PLOT 10 IGL are available in FORTRAN source form for host mainframe computers or in object code form to run on 4100 Series terminals code with CP/M-86.

ORDERING INFORMATION

"A" Series, Matching Software for DVST Terminals.

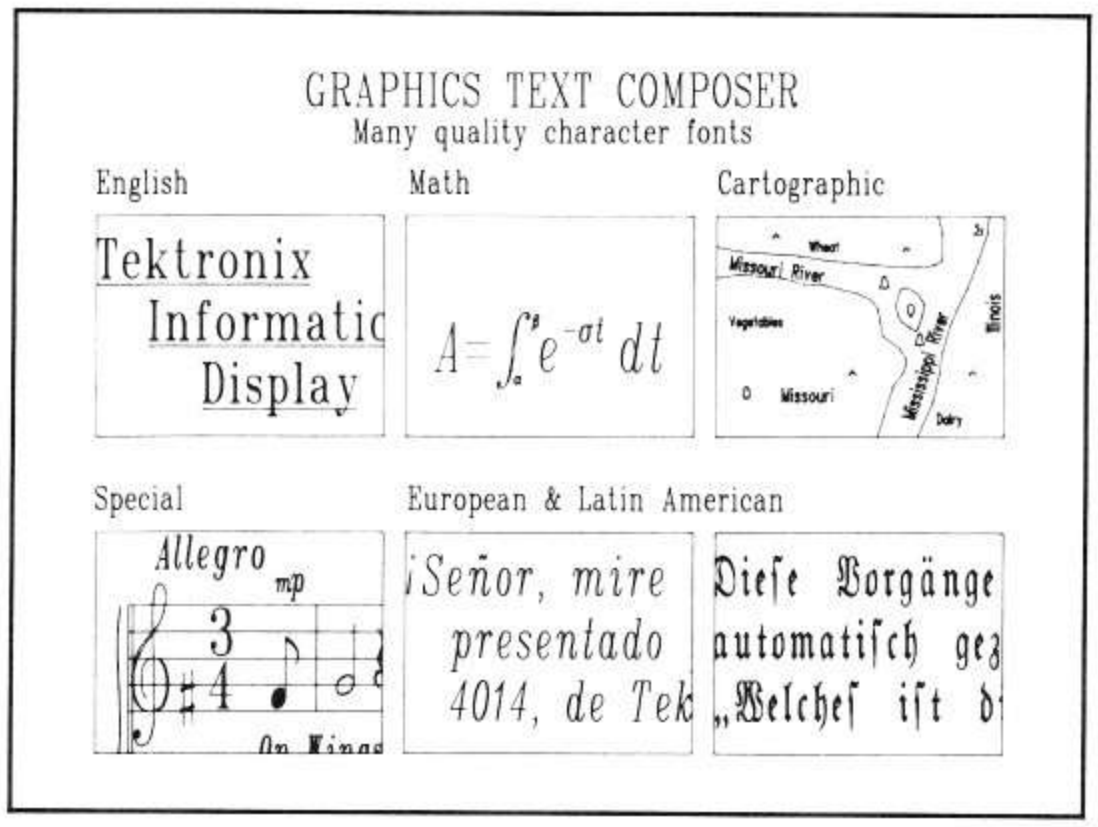
4010A01 — PLOT 10 Terminal Control System.
4010A02 — PLOT 10 Advanced Graphing II.
4010A04 — PLOT 10 Preview Routines for CalComp Plotters.
4010A05 — PLOT 10 Character Generation System.
4010A06 — PLOT 10 Graphic Tablet Utility Routines.
4010A10 — PLOT 10 Terminal Control System, Implementation for IBM with TSO.
4014A14 — PLOT 10 Intelligent Graphics Enhancement Routines.
4010A15 — PLOT 10 TCS/IGL Bridge.
4662A01 — PLOT 10 Utility Routines.
4663A01 — PLOT 10 Utility Routines.

"B" Series, Office Machine Simplicity for Producing the Most Popular Formats in Graphing.

4010B06 — PLOT 10 Easy Graphing II.

"C" Series, The Graphic Standard in Device Independence.

4010C01 — PLOT 10 Interactive Graphics Library.
4010C02 — PLOT 10 Preview Routines.



Tektronix offers user training classes on PLOT 10 IGL. For further information, contact the Customer Training Registrar at (503) 685-3808.

Graphics Software Library
PLOT 50 software supports the 4050 Series Desktop Computers. The PLOT 50 software provides flexible, interactive programs that aid the user in scientific, engineering and management applications through easy-to-use high quality graphics.

Tektronix has developed an extensive library of software to assist users with their multiple applications.

MicroPERT 2 - Project Management

This (tape or disk based) software package represents an innovative approach to understanding changes in complex projects. PERT and CPM (Critical Path Method) techniques are employed as well as many options for graphic reports, responsibility coding and resource utilization and management.

Project managers can obtain faster turn-around when making project changes and graphically understanding the results of those changes.

Interactive digitizing
This sophisticated software package is intended for users in "production" digitizing environments. Users can quickly create and edit digitized files for analysis and processing. The software is tablet menu driven with assisting prompts on-screen to guide users through basic operations.

Users can quickly manipulate objects (points, polygons, lines, text, symbols) and modify objects (insert, move, delete). Flexible routines exist for users to attach a rich amount of attribute data to digitized objects. Symbol creation, reference grids, user-defined object names and attributes, length, area, and centroid calculations are but a few of the many features available.

Picture Composition and Document Preparation
Picture Composition allows the user to create simple or complex illustrations without being a programming expert. The Document Preparation Software is a powerful text formatting package, especially useful for creating and editing large, technical documents. Together, Picture Composition and Document Preparation provide unusual power for creating technical documents, including composition and graphics.

Statistics
The Tektronix statistics library contains the very latest and the traditional methods employed for Tests and Distributions, Analysis of Variance, Multiple Regressions, and Nonlinear Estimations. This well-rounded portfolio includes a special user interface and exploratory graphs to aid in faster analysis and understanding. The Statistics Software in available in separate volumes or at discount as a Library.

Technical Data Representation
To assist managers in creating presentation quality graphs, a number of various software packages are available. Easy Graphing provides simple methods of constructing line, pie, and bar charts. Presentation Aids assists users in creating management style graphs directly on overhead projector film (included with the software package).

Other PLOT 50 Software
Other software support in the PLOT 50 Library includes:
- Modeling and Reporting
- Math I & II
- Electrical Engineering
- Graph Plot
- Utilities
- Business Planning & Analysis I & II

At the heart of the software library is Tektronix graphics; more kinds of interactive graphics and more meaningful graphics than any competitive software on the market. Access to information is of little value if the keys to understanding and communicating are not there, too. PLOT 50 supports the unequalled graphics capability of the 4050 Series.

The displays are not only sharper — they're more complete, too, with features like automatically labeled data points. Or the capability to easily transform the same data into different kinds of graphs.

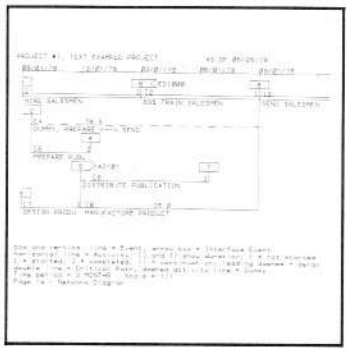
PLOT 50 Software can perform routines many times faster than competitive packages — and offers many capabilities simply unavailable elsewhere.

Most PLOT 50 Software is compatible with the entire 4050 Series, so you can change computers or exchange data quickly and easily.

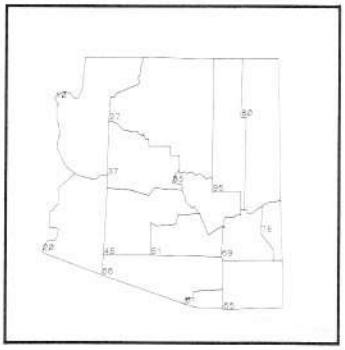
Most importantly, PLOT 50 packs tremendous power into the fewest possible keystrokes. Combined with the processing speed for the 4052A, PLOT 50 lets you sit down at the computer, load the program, and proceed to the solution. Even complete newcomers to computers can put most volumes to use in only a few hours! With PLOT 50's multiple menus, help files and tutorials, continual prompting and graphic output, even operators unskilled in the application itself can perform many common tasks.

Common Data Exchange Formats
Tektronix has made data sharing across programs very easy. Standard File Format (SFF) allow sharing of numeric data across programs and the Graphic Model Exchange Format (GMX) allows sharing of graphic data across program. These common exchange formats represent significant productivity gains for desktop computing graphics users.

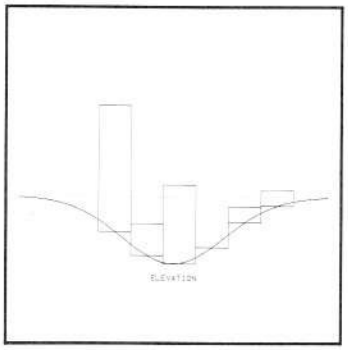
The Technical Assistance Services (TAS) and Software Subscription Services support PLOT 10 and PLOT 50 Software. These services are available thoughout the U.S. and many countries around the world.



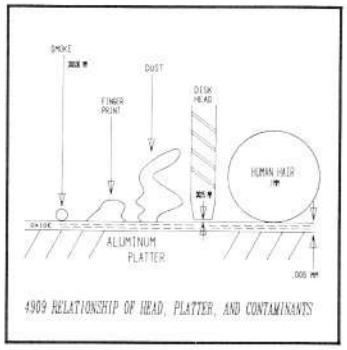
Project Management



Digitizing



Statistics



Picture Composition

NEW Local Programmability

For 4110 Series

Standalone Intelligence for 4110 Series Terminals

Local Access to Graphics Manipulation Capabilities

CP/M-86

Fortran-86

Local IGL

The 4110 Series Local Programmability gives 4110 Series terminals independence from the host processor by equipping them with local intelligence and processing power. Local Programmability supplies the elements needed to locally develop and run programs; to access all the graphic and alphanumeric features resident in the 4110A Series firmware; and to control peripherals connected to the terminal.

The package consists of a disk-based CP/M-86 operating system, FORTRAN-86 compiler or ASM-86 macro assembler, utility programs and a library of DTI (Direct Terminal Interface) subroutines. Optionally, a local version of Tektronix' PLOT 10 IGL (Interactive Graphics Library is also available.

Distributed Processing for Graphics Applications

Local Programmability has the capability to run entire programs locally. Since some applications may require the computational capabilities or data base management of a mainframe computer, the terminal also can be used on a standalone basis for the pre-and post-processing of graphics information.

By promoting more efficient use of the host system, Local Programmability cuts costly host-connect and host CPU time. The host is freed to do the processing for which it is best suited, while terminal-based processing yields faster response time and increased user productivity. Distributed processing also frees the host to support more terminals.

Even if a host computer is unavailable, Local Programmability enables the terminal to be used as a standalone unit to run or develop programs. Many applications in mapping, CAD/CAM, data analysis and graphing can be written and run locally on a 4110A Series terminal without host support.

Local Access to Terminal-Resident Graphics Functions

The DTI is a library of FORTRAN-callable subroutines that correspond directly to each of the terminal's functions. DTI affords a quick and efficient path to the terminal's firmware while occupying a minimum of memory (5 to 25 kbytes). Object code for the entire DTI library requires only 60 kbytes of disk space, freeing mass storage for other system and application programs.

The DTI enables the FORTRAN programmer to exercise all 4110A Series features by calling the appropriate DTI subroutines. While each 4110A Series terminal provides capabilities unique to its display type such as color raster, monochrome raster or DVST, significant graphics features common to all include local picture segments and a scrollable dialog area.

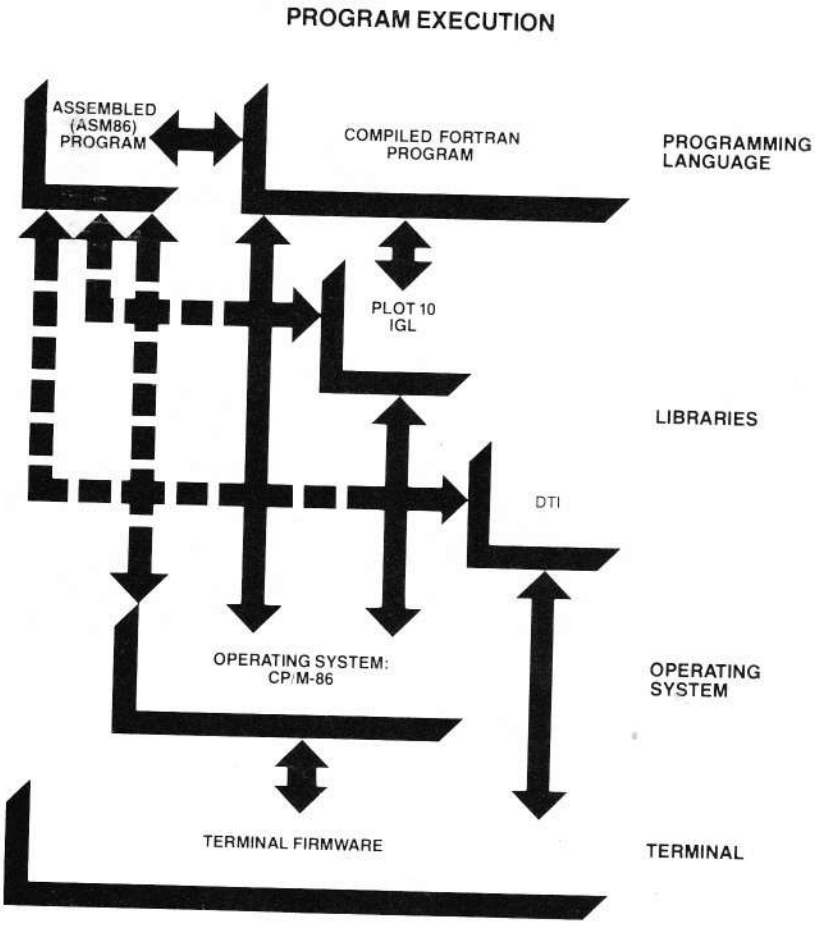
Local IGL

A local version of Tektronix' PLOT 10 IGL (Interactive Graphics Library) is available to 4110A Series terminals via Local Programmability. Existing host programs that call IGL routines can be run locally on 4110A Series terminals. The user simply downloads the program source file to the terminal, compiles the program and links it with the Local IGL.

Local IGL also allows software designers to develop application programs on a 4110A terminal, which can be run with other Tektronix terminals (such as the 4010 or 4020 Series). After an application is written on a 4110A Series terminal, it is uploaded to the host, compiled and linked to the host-resident IGL, which contains the 4010/4020 terminal device drivers.

Local IGL provides the flexibility to choose where to run an application without modifying the application program i.e. most efficiently on the host, the terminal or a combination of the two.

Based on SIGGRAPH's proposed core system of computer graphics standards, Local IGL consists of a Primary Command Set, which contains the fundamental routines needed to do graphics. Other modules include advanced features such as Two-Dimensional Graphic Text Composition and Emulation and Three-Dimensional Graphics.



Relationship of Local Programmability Software

FORTRAN-86 Program Development

FORTRAN-86 is the best available local version of FORTRAN, the most commonly used and popular programming language for graphics. Programs may also be developed using a standard assembler (ASM-86) or a macro assembler (ASM-86).

FORTRAN-86 is a superset of the FORTRAN 77 subset defined by the ANSI (American National Standards Institute). Most existing FORTRAN programs can be compiled and run under FORTRAN-86 with little or no modification, thus preserving the user's software investment.

FORTRAN-86 takes advantage of the 8087 numeric co-processor, which performs floating point operations. By complementing the terminal's 8086 CPU, the 8087 yields execution speeds which exceed those of many minicomputers and much faster than possible with the 8086 alone.

CP/M-86 For System Growth, Software Compatibility

The industry-standard CP/M-86 operating system gives the Local Programmability unit extreme latitude in system growth and extreme breadth in Tektronix and third-party software.

CP/M-86 is designed for single-user, single-task environments, but Tek's unique implementation of CP/M-86 allows it to reside as a single-task system within a multi-tasking environment, sharing the 8086 with standard terminal firmware functions. CP/M-86 allows the user to create and manipulate files, manage disk storage, control peripherals and execute programs. It also gives the user access to a broad range of existent CP/M-86-based software.

Standard CP/M-86 utilities are supplemented by Tektronix-developed programs, including BATCH, HOST and SPOOL. BATCH allows unattended execution of complex sequences. HOST allows the user to transmit a file from the terminal to the host system (uploading) or receive data from the host and write it to a file on the terminal (downloading). SPOOL maximizes terminal operations by simultaneously allowing files to be sent to a host or peripheral while the terminal performs other functions.

Series-Wide Compatibility

Local Programmability will run on all 4110A Series terminals, the 4115B terminal, and on earlier 4110 Series terminals that have been field-upgraded to "A" version status. The recommended system configuration includes a minimum of 256 kbytes of RAM. The user can expand local memory up to a total of 672 kbytes on the 4113A, 800 kbytes on a 4114A, 4116A, or 4115B and up to 500 kbytes on the 4112A.

For program development the terminal needs two functional disk drives. This functionality can be provided by selecting either one flexible disk drive with "M-Disk" capability (for 4112A); two flexible disk drives; or one flexible disk drive and one Winchester disk drive. Each eight inch flexible disk provides up to 494 kbytes of file storage. The Winchester drive contains a nonremovable hard disk that is five to fourteen inches in diameter and stores up to 10 Mbytes of data.

Optimization of Terminal-Resident Graphics Capabilities

Local Programmability provides all the elements necessary to fully develop and run programs on 4110A Series terminals.

PLOT 10 IGL offers a rich set of graphics tools, while the DTI gives the user control of the terminal's firmware. Local Programmability has been specifically designed to fully optimize the graphics capabilities of the 4110A Series Computer Display Terminals.

CHARACTERISTICS

GENERAL INFORMATION

Memory Requirements — 256 kbytes.

Equipment Requirements — 4110A Series Computer Display Terminal. Dual disk functionality provided by Dual Floppy Disk Drives; Floppy Disk and Winchester Drive; Dual Winchester Drives; Single Floppy Drive and M-Drive Program. Program execution requires at least a single disk drive and sufficient memory to run the program.

ORDERING INFORMATION

4110P01 Fortran, CP/M-86 and DTI (The CP/M-86 Operating System includes a Digital Research ASM-86)

4110P02 Assemblers (Intel ASM-86 and Digital Research ASM-86 CP/M-86 and DTI)

4110P11 Intel Fortran-86 only. (Requires 4110P01 or 4110P02 to run)

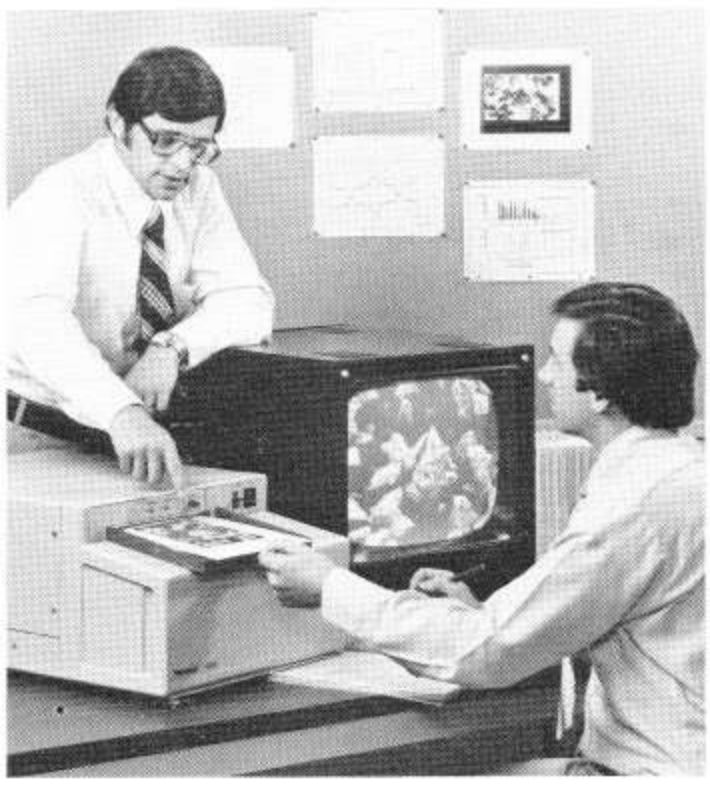
4110P12 Intel ASM-86 only. (Requires 4110P01 or 4110P02 to run)

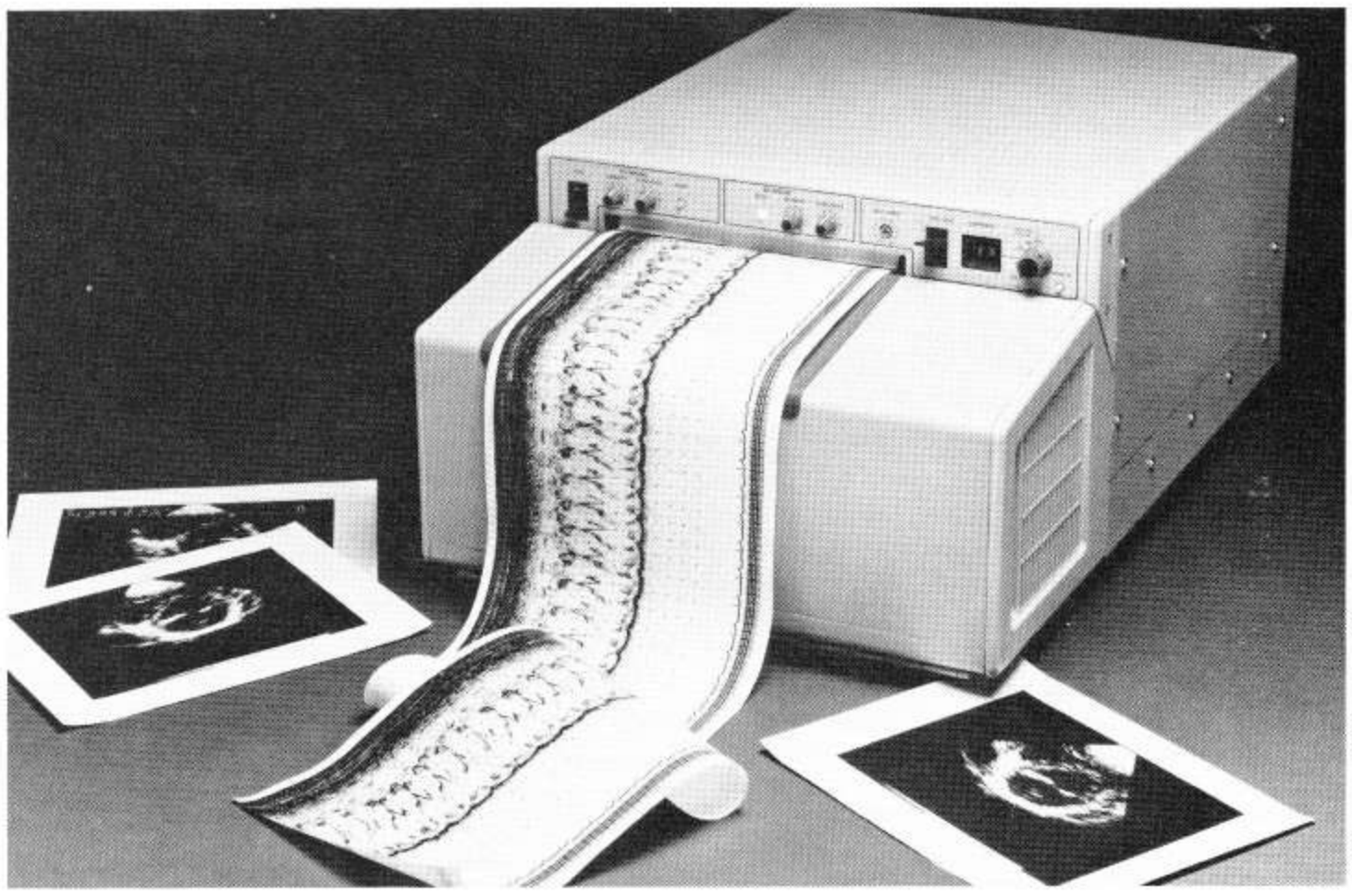
4100P70 PLOT 10 Interactive Graphics Library

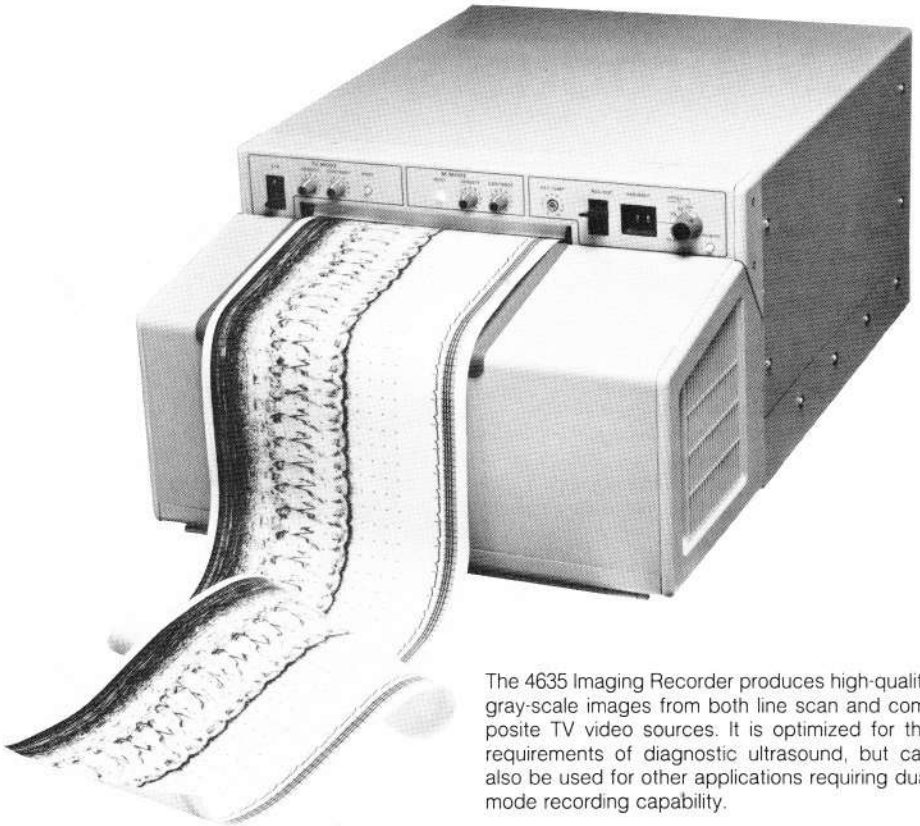
Option 10 — 2-D Graphics and Text Fonts.

Tektronix offers user-training classes on Local Programmability. For further information, contact the Customer Training Registrar at (503) 685-3808.

OEM Products







4635 Imaging Recorder

Combined Line Scan/TV Imager

Superior Image Quality

Excellent Gray Scale and Resolution

Choice of Two Recording Media

Significant Savings in Paper Costs

Designed for Heavy Workload

Available Only to Qualified OEMs

The 4635 Imaging Recorder produces high-quality gray-scale images from both line scan and composite TV video sources. It is optimized for the requirements of diagnostic ultrasound, but can also be used for other applications requiring dual mode recording capability.

The 4635 records on two types of photographic Dry Silver Paper: a High-Performance Paper for applications demanding extended gray scale and a lower cost standard paper for limited gray-scale needs. The 4635 can withstand heavy usage demands, processing a minimum of 50 rolls of paper (25,000 feet) between planned maintenance.

Images produced by the 4635 are exposed using a CRT with a fiber-optic faceplate. Tiny fiber-optic filaments in the faceplate transmit the light output of the CRT to the paper.

Following exposure the paper is advanced through a thermal processor, where the latent image is developed. The fully processed image then exits the recorder through a front-panel opening.

The 4635's combination of superior imaging capability, rugged design, and low cost operation make it the standard for quality and value among imaging recorders.

CHARACTERISTICS

Recording Technique — Exposing photographic Dry Silver Paper with light output from a fiber-optic (CRT) cathode ray tube .

Developing Technique — Heating the Dry Silver Paper in an internal processor.

IMAGE SIZE

Line Scan — Width is adjustable from 100 mm to 200 mm.

TV, Horizontal — 60 Hz: 125 mm to 210 mm. 50 Hz: 150 mm to 210 mm.

TV, Vertical — Adjustable to provide correct aspect ratio.

IMAGE FORMATS

Line Scan — Successive lines written across width of paper, perpendicular to path of exiting paper, continuous recording.

Raster Scan TV — Raster lines written in direction of paper path. OEM can select either cut TV page or TV frame insertion into continuous line scan recording.

IMAGE

Density Range — Min 0.2. max 1.4 for High Performance Paper, 1.2 for Standard Paper.

Shades of Gray — TV Page: 12 levels for High Performance Paper, 8 levels for Standard Paper. Line Scan: 8 levels for High Performance Paper, 6 levels for Standard Paper.

Resolution — Four cycles per mm in line scan. Two cycles per mm in TV page.

RECORDING MEDIA

Material — Tektronix High Performance Dry Silver Paper or Tektronix Standard Dry Silver Paper.

Paper Packaging — Rolls of paper encased in light-sealed cylindrical cassettes.

Paper Roll Dimensions — 152 m (500 ft) long, 216 mm (8.5 in) wide.

Shelf Life (unexposed) — Up to 14 months at 70°F (21°C) at 50% relative humidity; up to 6 months at 100°F (38°C) with small variation in sensitivity. Shelf life is extended if paper is refrigerated.

PAPER SPEEDS

Lines Scan — 10 mm/s to 100 mm/s.
TV Page — 35 mm/s.

CONTINUOUS LINE SCAN OPERATION X-AXIS

Slew Rate Range — 50 to 500 ms.

Retrace Time — 30 ms or less.

Repetition Rate — 750 Hz to 3 kHz.

Amplitude — 6 V ±0.5 V.

Offset — Some portion must be at zero volts.

CONTINUOUS LINE SCAN OPERATION Z-AXIS

Amplitude — 5 V ±1 V for entire modulation range.

Offset — ±1 V dc.

RASTER SCAN TV OPERATION

Line Rate — 15.4 kHz to 16.0 kHz.

Field Rate — 50 to 60 Hz.

POWER SPECIFICATIONS

Voltage Ranges (±10%) — 100, 115, 120, 200, 220, and 230 or 240 V ac

Line Frequency — 48 to 62 Hz.

Power Consumption — 800 W max peak power demand.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	425	16.8
Height	266	10.5
Depth	667	26.3
Weight ≈	**kg**	**lb**
Net	34.0	75.0

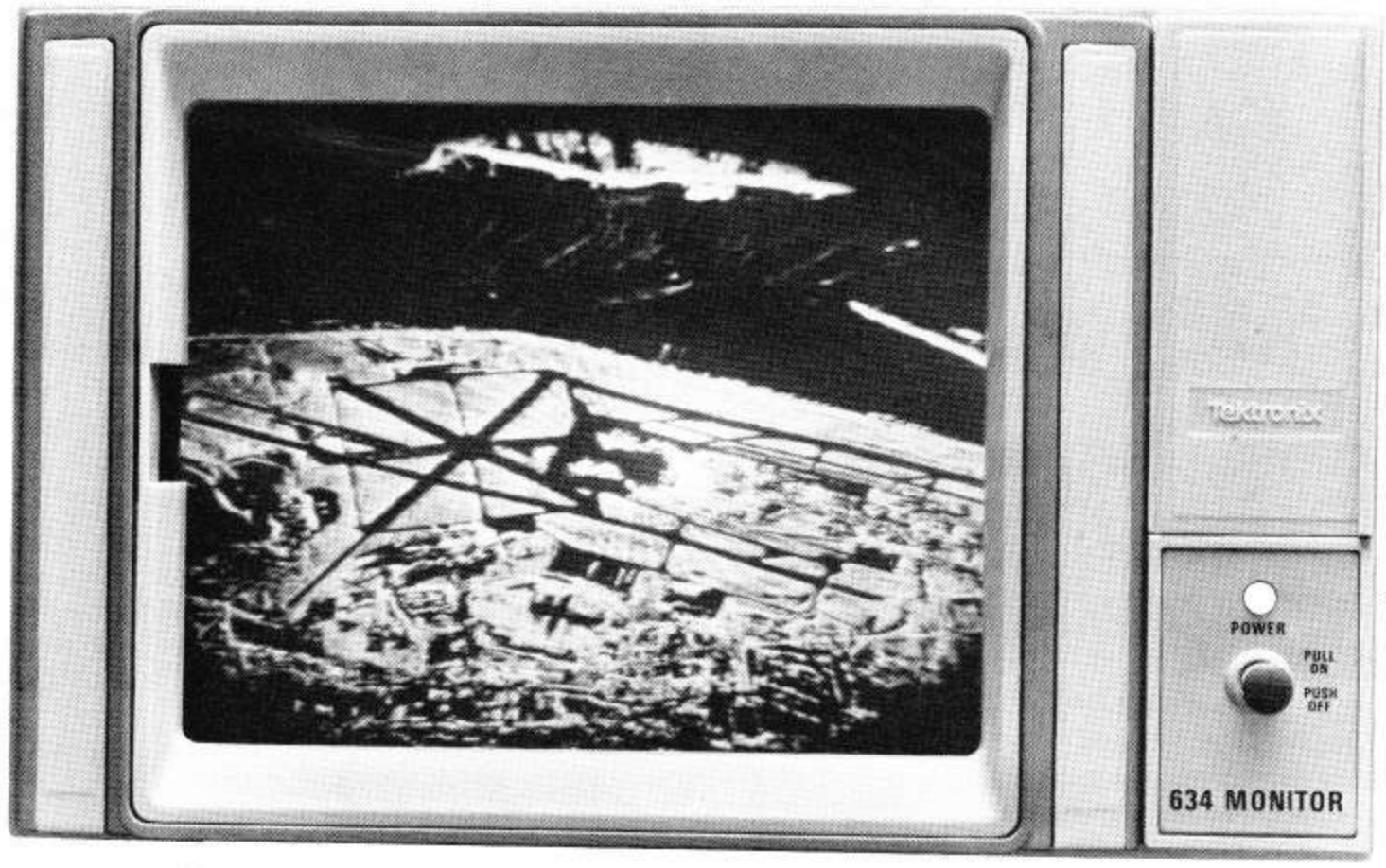
ORDERING INFORMATION

4635 Imaging Recorder

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.
Option A2 — UK 240 V/13 A, 50 Hz.
Option A3 — Australian 240 V/10 A, 50 Hz.
Option A4 — North American 240 V/15 A, 60 Hz.
Option A5 — Switzerland 220 V/10 A, 50 Hz.

SPECIAL PRICING, TERMS AND CONDITIONS ARE AVAILABLE TO QUALIFIED OEMS. CONTACT YOUR LOCAL TEKTRONIX REPRESENTATIVE FOR COMPLETE INFORMATION.



634 Monitor

Extremely High Resolution, Low Distortion Display for Demanding Applications

The 634 Video Display monitor delivers extremely high quality video images for both viewing and photography. Applications include: medical diagnostic imaging, military infrared imaging, and automated test systems.

Tektronix' distortion requirements surpass normal standards. With the 634, you'll have less than 1/2 percent distortion inside a 90 mm circular area; less than one percent for the rest of the screen. The 634 has a flat faceplate that preserves geometric accuracy in viewing and photographic applications. Dynamic focusing assures crisp images, even in the corners.

Resolution on video displays can be separated into two catagories: vertical and horizontal. Vertical resolution is limited by the video line rate used. At the RS-170 rate of 525/60, approximately 480 lines are visible. Option 15 extends the 634 line rate to 1083/60, and improves the vertical resolution. Determined by spot size and video bandwidth, horizontal resolution typically exceeds 1400 lines per screen height at center screen. Option 14 increases video bandwidth to 20 MHz.

Excellent Gray Scale and Brightness Uniformity

The 634's CRT is designed to faithfully display gray scale images. This CRT utilizes an advanced gun design for excellent brightness uniformity (variation is less than ±10 percent across the screen).

The 634 may be operated on either ac or dc power. Ac power is standard; Option 20 configures the unit for dc power.

CHARACTERISTICS

DISPLAY

Type — Raster scan, monochrome CRT.

Dimensions — 90 mm x 120 mm (3.5 in x 4.7 in), 15 cm (5.9 in) diagonal.

Aspect Ratio — 4 x 3.

Resolution — Measured using the shrinking raster method (no interlace) center screen at 100 cd/m², (30 fL): 1400 lines nominal (1100 lines worst case) or 800 lines nominal (650 lines worst case) with Option 01.

Position Accuracy — ≤0.5% within 90 mm circle (≤1% with Option 01); ≤1% outside 90 mm circle (≤2% with Option 01).

Brightness — 515 cd/m² (150 fL) max.

Brightness Uniformity (Using J16 Photometer) — Better than ±10% over the scan area.

Phosphor Type — WB (P45).

LINE/FIELD RATE

Standard — 525/60 and 625/50.

Option 15 — 1083/60, adjustable down to 675/60.

VIDEO INPUT

Signal — Composite video with negative sync; RS-170 compatible.

Signal Level — 0.35 V p-p to 2.0 V p-p.

Maximum Safe Input — 5.0 V p-p.

Bandwidth — 1 Hz to 10 MHz (20 MHz with Option 14).

Impedance — 75 Ω loop through; switchable 75 Ω termination.

Return Loss — 46 dB to 5 MHz with or without internal 75 Ω termination and power on.

Dc Restoration — Referenced to back porch or sync tip.

External Sync — Switchable.

SAFETY

Department of D.H.H.S. (BRH Rule 1020 10 (C) (1) standard. UL 544 Listing (Option 06) and UL 544 Component Recognition (Option 09). C.S.A. certified.

AC POWER

Voltage Ranges (±10%) — 100, 110, 120, 200, 220, and 240 V ac.

Line Frequency — 48 to 440 Hz.

Power — 50 W at 120 V ac, 60 Hz.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	214	8.4
Height	133	5.2
Height (Option 06)	160	6.3
Depth	423	16.7
Depth (Option 20)	367	14.4
Weight	**kg**	**lb**
Net	6.3	13.8
Net (Option 20)	4.6	10.1

ORDERING INFORMATION

634 Monitor
(without handle, feet and covers).

Option 01 — Resolution of 800 Lines Nom, 650 Lines Worst Case. Position Accuracy — 1% in 90 mm Circle, 2% Rest of Screen.

Option 06 — UL 544 Listing (covers, handle and feet included; not available with Option 20).

Option 09 — UL 544 Component Recognition.

Option 13 — Video Reverse.

Option 14 — 20 MHz Video Amplifier.

Option 15 — High Line Rate. Factory Calibrated at 1083/60. User Changeable to Rates Between 675/60 and 1083/60 with Supplied Parts Kit.

Option 16 — Provides a 25 Pin Connector for Video Input, External Sync, TTL Z-axis Blanking, and External Brightness, Contrast, and Focus Controls (which are removed from the front and shipped separately).

Also Provides for a Video Reverse Input when Option 13 is Included.

Option 20 — Dc Supply — +23 V, −22 V, +9 V (unregulated).

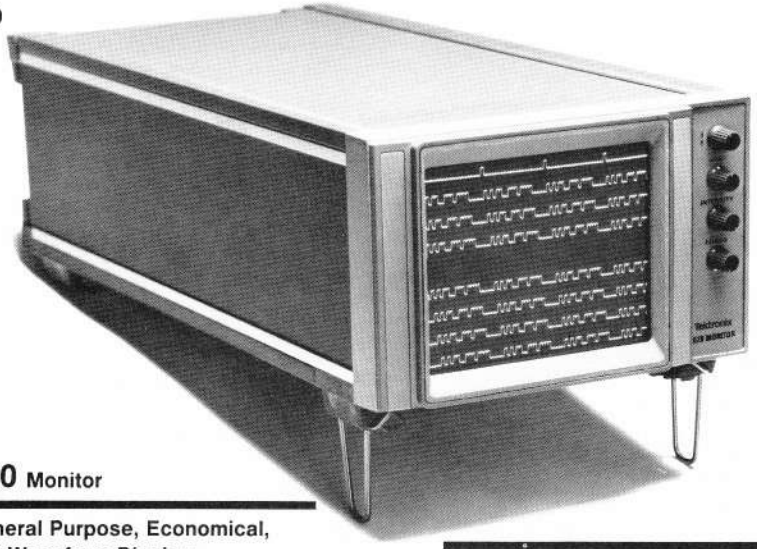
016-0402-00*1 — Rackmount Kit (one 634 and one empty cabinet side by side; not compatible with Option 20).

016-0403-00*1 — Rackmount Kit (two 634s side by side in 19 in rack; not compatible with Option 20).

*1 *OEM pricing not available on rackmount kits. Quantity discount information is available on request.*

SPECIAL PRICING, TERMS AND CONDITIONS ARE AVAILABLE TO QUALIFIED OEMS. CONTACT YOUR LOCAL TEKTRONIX REPRESENTATIVE FOR COMPLETE INFORMATION.

620



620 Monitor

General Purpose, Economical, X-Y Waveform Display

The 620 has Built-in Reliability
With fewer parts and lower power, display and system reliability are improved, and service costs are lower.

Package the 620 the Way You Want It
A wide variety of packaging options are available for easy integration into your system.

CHARACTERISTICS

DISPLAY

Type — Flat-faced rectangular CRT.

Dimensions — 100 x 120 mm (3.9 x 4.7 in).

Phosphor — GH (P31) is standard.

Spot Size — 0.38 mm (15 mils) at 0.5 μA.

Linearity — The voltage required to produce a 25-mm deflection from any point on the CRT will not vary more than 5%.

Usable Brightness — Up to 100 cd/m² (30 fL).

VERTICAL AND HORIZONTAL AMPLIFIERS

Bandwidth — Dc to 2 MHz.

Settling Time — 1 μs from any point on the CRT within 0.5 mm of final position.

Deflection Factor — Adjustable, ≤0.9 V to ≥1.5 V per 100 mm (vertical), ≤0.8 V to ≥1.2 V per 100 mm (horizontal).

Input R and C — 1 MΩ shunted by <47 pF.

X-Y Phase Difference — 1° max, dc to 500 Hz.

Max Input Voltage — ±25 V (dc plus peak ac).

Recommended Source Impedance — ≤10 kΩ.

Z-AXIS AMPLIFIER

Bandwidth — Dc to ≥5 MHz.

Input Sensitivity Range — Not adjustable. 1.0 V will produce maximum brightness with Intensity Control set at mid-range.

AC POWER

Voltage Ranges (±10%) — 100, 110, 120, 200, 220 and 240 V ac.

Line Frequency — 48 to 440 Hz.

Power — 22 W at 120 V ac.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Height (without feet)	133	5.2
Width	214	8.4
Depth	500	19.7
Weight (without handle, feet, and covers)	**kg**	**lb**
Net	5.3	11.7
Shipping	6.9	15.2

ORDERING INFORMATION

620 Monitor
(without handle, feet or covers).

Option 01 — Internal Graticule (8 x 10 div at 12.2 mm/div).
Option 06 — UL 544 Listed (includes handle, feet, and covers).
Option 09 — UL Component Recognition (not compatible with Option 06).
Option 10 — Remote 25-pin Program Connector, X, Y, Z-axes, Single-ended Inputs Only (not available with Option 31).
Option 20 — Delete ac power. External dc Power Required (17 to 26 V, at 0.9 A), (not available with Option 06 or 31).
Option 23 — Handle, Feet and Covers, (not available with Options 06, 28, or 31).
Option 25 — TTL Blanking.
Option 28 — With Covers Only — No Trim Strips (not available with Options 06, 23, or 31).
Option 31 — Delete all Rear Panel BNCs, dc Power Connector and ac Power Supply and Switch. Provision for External dc Power (+17 V unregulated) is Provided. (not compatible with Options 06, 10, 20, 23 and 28). Can be Used with 016-0409-00 or 016-0410-00 Packaging.

RACKMOUNT KITS

016-0404-00 — To Rackmount One 620 in a 19 in Rack. Includes Frame, Covers and Rack Slides (Not Available with Options 06, 23, or 28).
016-0405-00 — To Rackmount Two 620s Side by Side in a 19 in Rack. Includes Covers and Rack Slides (not available with Options 06, 23, 28, and 31).

MODULAR CABINETS

016-0409-00 — Vertical Package Consists of Empty Compartment, Connecting Hardware, Handle, Feet and Covers.
016-0410-00 — Horizontal Package Consists of Empty Compartment, Connecting Hardware, Handle, Feet and Covers.

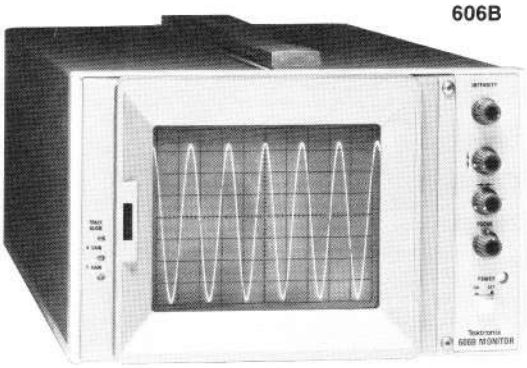
606B Monitor

Very High-Resolution X-Y Display for Applications Requiring the Most Critically Sharp Photographs and Displays

The 606B offers image stability, gray-scale performance, and uniform brightness, critical to the quality of measurement or the accuracy of a medical diagnosis.

Uniform resolution and variable spot size are also provided by the 606B. The 606B's metal bezel is a solid mount for heavy cameras and prevents light leaks or distortion.

606B



CHARACTERISTICS

DISPLAY

Type — Flat-faced rectangular CRT.

Dimensions — 80 x 100 mm (3.2 x 3.9 in).

Display Linearity — 1% of full scale along major axes.

Spot Size — 0.079 mm (3.1 mils) or less.

Spot Growth — Not >20% at constant intensity within the quality area (70 x 90 mm).

Brightness Uniformity — <10% variation within quality area (70 x 90 mm).

Phosphor — GH (P31) is standard.

VERTICAL AND HORIZONTAL AMPLIFIERS

Risetime — 116 ns or less.

Settling Time — <500 ns with deflection-input attenuation in 1X position.

Bandwidth — Dc to at least 3 MHz (−3 dB).
Input — Differential; BNC connectors.

Deflection Factor (Vertical and Horizontal) — Adjustable, 0.5 to 2.5 V for 80 mm deflection.

Input Impedance — 1 MΩ or 50 Ω ±1%, paralleled by <47 pF; internally selectable.

X-Y Phase Difference — Not more than 1° to at least 500 kHz.

Max Input Voltage — 1 MΩ Z_{in}: ±100 V (dc peak ac); 50 Ω Z_{in}: ±5 V (dc peak ac).

Z-AXIS AMPLIFIER

Input — Differential; BNC connectors.

Bandwidth — Dc to 5 MHz (−3 dB).

Risetime — ≤35 ns.

Sensitivity Range — Adjustable from 0-1 V to 0-5 V for full intensity control.

AC POWER

Voltage Ranges (±10%) — 100, 110, 120, 200, 220, and 240 V ac.

Line Frequency — 48 to 440 Hz.

Power — 50 W nom; 75 W max at 120 V ac.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Height	133	5.2
Width	213	8.4
Depth	519	20.4
Weight ≈	**kg**	**lb**
Net	7.9	17.5
Shipping	10.3	22.7

ORDERING INFORMATION

606B Monitor
(without handle, feet or covers).

Option 06 — UL 544 Listing (includes handle, feet, and covers).
Option 07 — Front-Panel Controls Changed to Screwdriver Adjustments.
Option 09 — UL 544 Component Recognized.
Option 28 — With covers (not available with Option 06).
(Rackmount Kits — Same as 608 and 624 on next page).

SPECIAL PRICING, TERMS AND CONDITIONS ARE AVAILABLE TO QUALIFIED OEMS. CONTACT YOUR LOCAL TEKTRONIX REPRESENTATIVE FOR COMPLETE INFORMATION.

608 and 624 Monitors

High Resolution with Ambient-Light Viewing

Expansion-Mesh-Halo Suppression

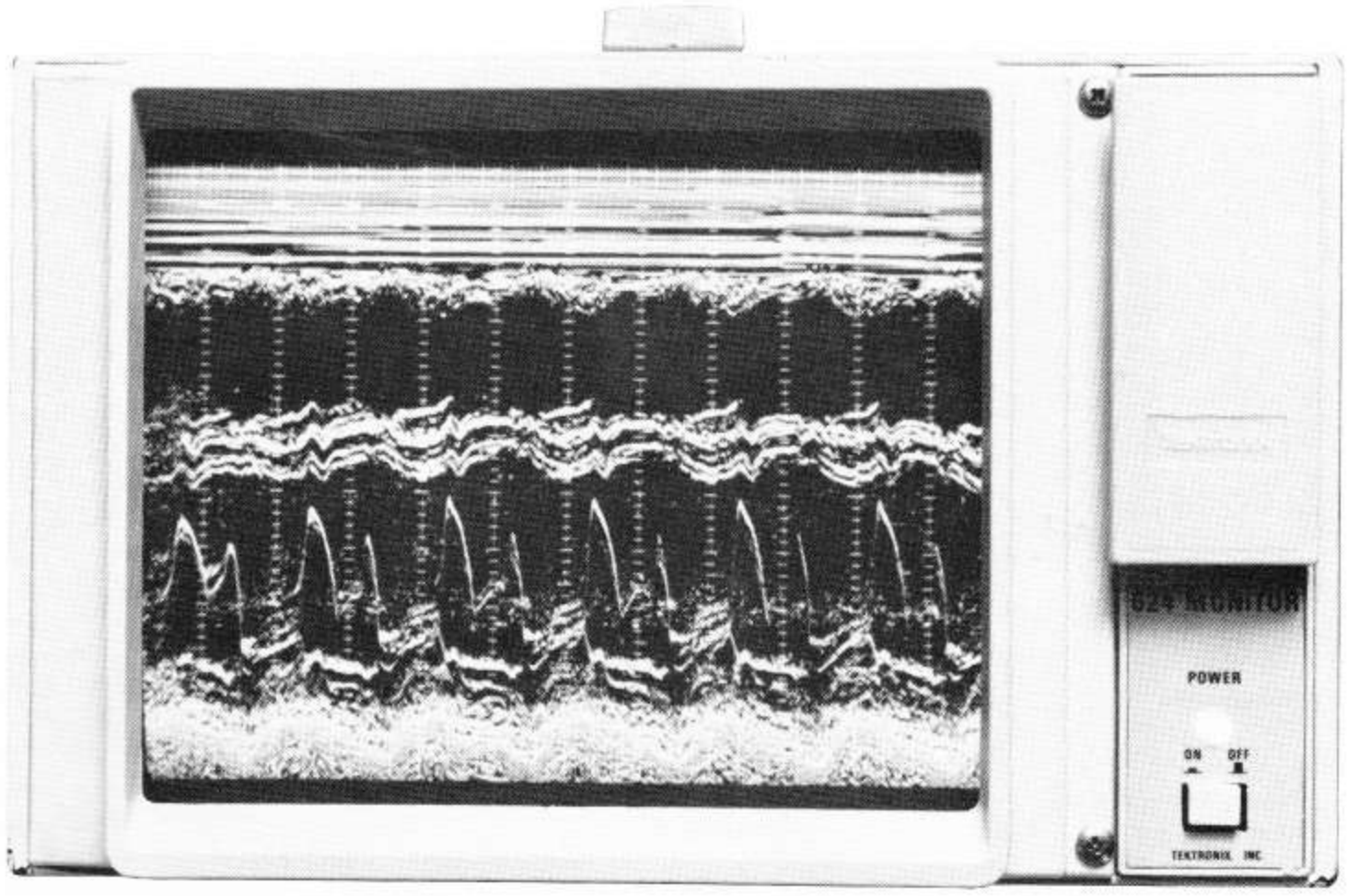
Excellent Gray Scale, High Brightness Display

The 608 is Tektronix' finest directed-beam viewing monitor. It is extremely well suited for high-performance display applications such as medical and military imaging and electronic instrumentation. The 608's high usable brightness, small spot size, and large screen give excellent direct-viewing capability. When such clarity or brightness is not required, the comparable 624 is recommended. Both the 608 and 624 produce detailed displays that are easy to read in high ambient light and produce quality photographs.

Special CRT design suppresses expansion-mesh halo, which ordinarily causes lower contrast and a "washed out" appearance that interferes with high-brightness gray-scale displays. Expansion-mesh-halo suppression results in a more readable display with subtle and accurate gray-scale images and detailed waveforms. In addition, imaging is critically sharp from corner to corner, particularly on the 608, which uses dynamic focusing.

The wide deflection factor facilitates integration with a broad range of designs. An optional metal bezel lets you use heavy cameras, including those with motorized roll-film backs, without causing distortion, defocus, or light leaks.

In addition, optional full-differential inputs help reject unwanted common-mode signals such as ground noise and power-supply hum. Plus, the 608 can be ordered with gamma-correction for photographic applications. This option produces linear light-output changes with a linear change of Z-axis input, typically within 20 percent.



CHARACTERISTICS

DISPLAY

Type — Flat-faced, electrostatic CRT.

Dimensions — 98 x 122 mm (3.9 x 4.8 in).

Phosphor — GH (P31) is standard.

Spot Size

608 — 0.25 mm (10 mils) at 170 cd/m² (50 fL); max brightness ~240 cd/m² (75 fL).

624 — 0.3 mm (12 mils) at 170 cd/m² (50 fL).

VERTICAL AND HORIZONTAL AMPLIFIERS

Bandwidth

608 — Dc to at least 5 MHz.

624 — Dc to at least 3 MHz.

Deflection Factor — Adjustable 50 mV/div to 0.25 V/div. Option 22 (5X attenuator) extends deflection factor to 1.25 V/div.

Input R and C

608 — 1 MΩ paralleled by <60 pF.

624 — 1 MΩ paralleled by <47 pF.

X-Y Phase Difference

608 — One degree max to at least 1.5 MHz.

624 — One degree max to at least 1.0 MHz.

Maximum Input Voltage — ±100 V (dc plus peak ac).

Linear Common-Mode Signal Range (with Option 21) — ±3 V. (Option 22 extends range to ±15 V.)

Recommended Source Impedance — ≤10 kΩ.

Z-AXIS AMPLIFIER

Z-Axis amplifier permits intensity modulation of the writing beam.

Bandwidth

608 — Dc to 10 MHz over usable range.

624 — Dc to 5 MHz over usable range.

Sensitivity range is adjustable from 0 to +1 V to 0 to +5 V for full-intensity control.

Input R and C

608 — 1 MΩ ±1% and <60 pF.

624 — 1 MΩ ±1% and <47 pF.

Linear Common-Mode Signal Range (with Option 21) — ±5 V.

AC POWER

Voltage Ranges (±10%) — 100, 110, 120, 200, 220, and 240 V ac.

Line Frequency — 48 to 440 Hz.

Power — 61 W max at nominal line voltage.

PHYSICAL CHARACTERISTICS

	Option 23		Rackmount	
Dimensions	**mm**	**in**	**mm**	**in**
Width	213	8.4	213	8.4
Height	169	6.6	133	5.2
Depth	518	2.4	483	19.0
Weight ≈	**kg**	**lb**		
Net	8.0	17.6		
Shipping	10.4	23.0		

ORDERING INFORMATION

608 or 624 Monitor
(without handle, feet, or covers).

Option 01 — Internal Graticule.

Option 09 — UL 544 Component Recognition.

Option 10 — 25-pin Remote Program Connector X, Y, and Z, Single-ended Inputs.

Option 20 — Without ac Supply (±18 V Unregulated dc Supply Required) (624 only).

Option 21 — Full Differential Inputs (X,Y,Z).

Option 22 — Extended Gain Range 5X Attenuator.

Option 23 — Handle, Feet, and Covers (Not Available with Option 28).

Option 24 — Linearized Z-Axis (Gamma Correction) (608 only).

Option 25 — TTL Blanking.

Option 28 — Covers Only (Not Available with Option 23).

Option 29 — Metal Bezel.

RACKMOUNT KIT

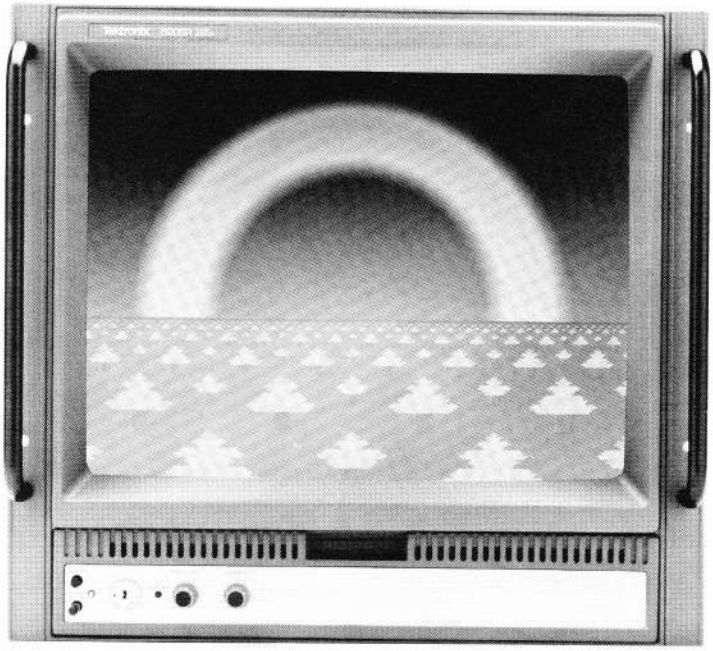
040-0600-00 — 19 Inch Rackmount for Two Monitors.

040-0601-00 — 19 Inch Rackmount for One Monitor.

040-0602-00 — Rackmount to Cabinet Conversion Kit for One Monitor.

040-0624-01 — Rackmount to Mount One Monitor with a TM 503 Power Supply.

SPECIAL PRICING, TERMS AND CONDITIONS ARE AVAILABLE TO QUALIFY OEMS. CONTACT YOUR LOCAL TEKTRONIX REPRESENTATIVE FOR COMPLETE INFORMATION.



690SR Color Display Monitor

High Resolution, 19 inch, RGB Color Display

Delta Gun, Dot Shadow Mask CRT

Variable Scan Rates

Adjustable Picture Size and Aspect Ratio

Precise Color Convergence

Plug-in Interface Modules

Stabilized Color Balance

Rugged Construction

Recommended for Computer Graphics or Imaging

The 690SR Family of high performance color display monitors, is designed to produce state-of-the-art displays in television or raster scanned computer graphics or imaging applications. Precise, versatile electronics supporting a high resolution, delta gun, dot shadow mask CRT makes this monitor the ideal choice for research and development or systems applications.

A plug-in interface module, the 69M41, provides high impedance or 75 Ω (loop through) inputs for R, G, and B video, and sync inputs. An internal jumper programs the interface module to receive sync information from the G video channel if desired. Interface modules to decode standard composite television signals are also available; type 69M00 or 69M01 for NTSC, and type 69M10 for PAL systems.

The 690SR Option 48 mainframe may be ordered calibrated to operate at any horizontal scan frequency between 15 kHz and 37.4 kHz (this corresponds to active line display times from 60 μs to 20 μs); no additional calibration is required for vertical scan frequencies between 44 Hz and 90 Hz. These scan frequency ranges easily accommodate 512 line non-interlaced and 1024 line 2:1 interlaced formats.

The 690SR Option 40 (an extra cost option) may be recalibrated in the field to any of the Option 48's rates. Ordering Option 42 combines the changeable rate mainframe and the 69M41 RGB interface. This combination is particularly beneficial in research and development applications, allowing a monitor to be moved from one system to another, or to be reconfigured as the system is developed. The same excellent specifications are guaranteed at any rate within these ranges. The 690SR also allows versatility in display size; both horizontal and vertical size may be adjusted from the front panel without significant loss of geometry or convergence performance.

High resolution CRTs (0.31 mm dot pitch) are available with either standard or long persistence phosphors. The long persistence phosphors may be needed for flicker reduction in interlaced scan format systems. Two medium resolution (0.43 mm dot pitch) CRT's are also available. The medium resolution CRTs have tightly controlled phosphor colorimetry which conforms to either current US practice or European (EBU) PAL specifications.

The 690SR utilizes a full dynamic convergence system which allows better control of the electron beam spot size, especially in the corners of the display. No tools are required for convergence adjustment. Knobs are provided on all controls, in a unique system (patents pending) which essentially eliminates the usual interactions and allows efficient setup of convergence, even by unskilled operators. Convergence error is specified not to exceed 0.5 mm anywhere on the screen.

CHARACTERISTICS

Screen Size — 485 mm (19 in) CRT.

Height — 279 mm (11 in).

Width — 373 mm (14.7 in).

Aspect Ratio — Adjustable.

Contrast — Factory adjusted to 30 fL; adjustable preset from 10 to 50 fL; max control range 6 to 60 fL.

Light output levels are approximately 50% lower when Option 26, long persistence phosphor, is installed.

Geometric Distortion — ±1% within circle bounded by screen height; ±1.5% elsewhere.

Incremental Linearity Error — ±0.07 inch over a nom 1 inch distance anywhere on screen.

Picture-Size Regulation — Less than 1% of screen height variation with light output change from 0 to 40 fL.

SYNC AND TIMING CHARACTERISTICS

Input — Internal and external sync; jumper selectable.

Sync Polarity — Jumper selectable.

Horizontal Timing — RS-170, RS-330 or RS-343A sync; vertical serrated pulses and/or equalizers may be omitted; front porch not required (Block sync).

Blanking — Vertical ≤600 μs; Horizontal ≤6.75 μs.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	485	19.0
Height	444	17.5
Depth	579	22.8
Weight	**kg**	**lb**
Net	49.9	110.0
Shipping Domestic	72.6	160.0

ORDERING INFORMATION

690SR Color Display Monitor.

Option 40 — Mainframe only, Multirate Calibration Capability.

Option 42 — 69M41 RGB Interface Installed, Miltirate Calibration Capability.

Option 48 — Mainframe only, Single Rate Calibration Capability.

69M00 NTSC Decoder.

69M01 NTSC Comb Decoder.

69M10 PAL Decoder.

69M41 RGB Interface.

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz.

Option A2 — UK 240 V/13 A, 50 Hz.

Option A3 — Australian 240 V/10 A, 50 Hz.

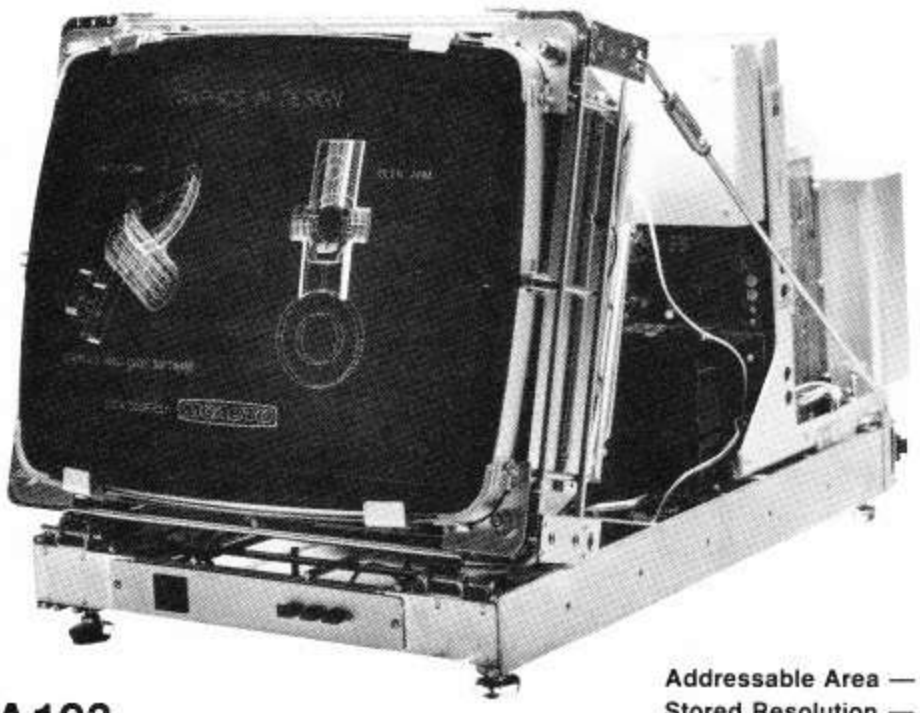
Option A4 — North American 240 V/15 A, 60 Hz.

Option A5 — Switzerland 220 V/10 A, 50 Hz.

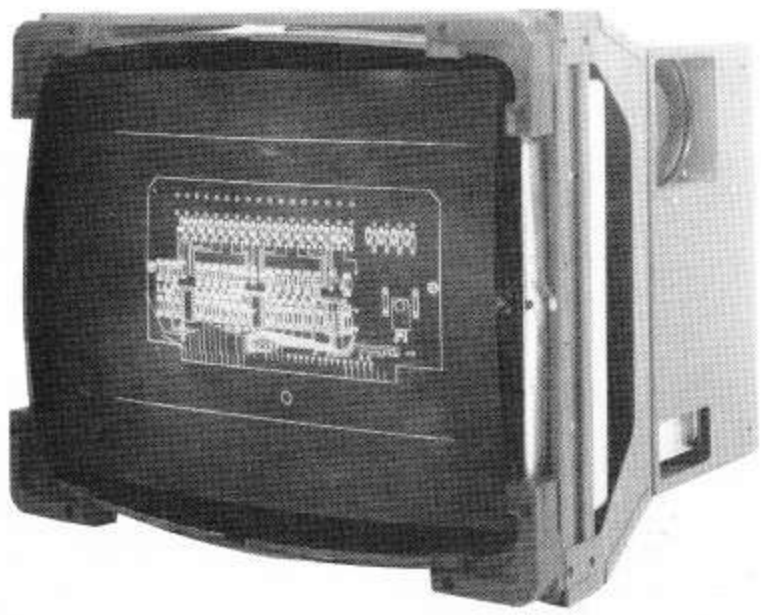
Rackmount Information — Rear surface of monitor 559 mm (22 in) behind rackmounting surface.

SPECIAL PRICING, TERMS AND CONDITIONS ARE AVAILABLE TO QUALIFIED OEMS. CONTACT YOUR LOCAL TEKTRONIX REPRESENTATIVE FOR COMPLETE INFORMATION.

GMA103



GMA125



GMA103

Graphic and Alphanumeric Display

Storage and Color Enhanced Refresh

Modular Construction, 19-inch, High Performance Display

The GMA103 is a high performance member of the GMA display product family. Its storage mode provides high resolution, high density graphics at a low cost. Color and refresh add increased viewability, selective erase, interactivity, and dynamic motion with the same high resolution. GMA Family features include modular construction, a blending of storage and refresh technology, and interface/packaging options to configure a display for user applications.

Quick differentiation of working and stored information. By placing finalized data in store (green display) while retaining working data in refresh (yellow-orange display), you can achieve high density, graphics while using your computer to address other tasks. Working files are easily distinguished from fixed or stored files.

Modular Construction

The CRT, low voltage power supply and printed circuit board modules are arranged on a unique high-strength wireform chassis. This construction not only supports different performance, interface, and packaging options but permits easy removal of modules for field service.

Operations

All display functions are completely programmable and designed to interface to TTL logic. The GMA103 is completely compatible with other members of the GMA family. If refresh is already being used in a GMA family display, no new signals are required to support color refresh.

A CRT anti-burn circuit is provided to protect against burning the CRT phosphor in the event that X and Y deflection is not commanded to move or is lost with the writing beam on. In addition, the screen is automatically erased after 30 minutes from the last Z-Axis or G-Busy pulse or View initiate.

CHARACTERISTICS

DISPLAY

CRT Type — Directed beam, direct view storage CRT.

Dimensions — 48 cm (19 in) diagonal.

Addressable Area — 267 x 356 mm (10.5 x 14 in).

Stored Resolution — 16 lines/cm (40 lines/in) center screen; 14 lines/cm (35 lines/in) at screen periphery.

Stored Dot Writing Time — 5 μs or less.

Stored Vector Writing Rate — 150 m/s (5900 in/s).

Vector Writing Rate — Refresh: 1200 m/s (47,240 in/s), (write-thru and nonstore); 40 vector meters (1575 vector in) max at 30 frames/s.

Viewing Time — At least 15 minutes at specified resolution.

Erase Time — 1.5 s ±20%.

DEFLECTION AMPLIFIERS

X-Y Input — Differential analog.

Origin (X=0, Y=0 Volts) — Center screen.

Input Sensitivity — Long Axis: 10 V p-p full screen ±2.5%. Short Axis: 7.5 V p-p full screen ±2.5% of long axis.

Maximum Input Voltage — ±6.5 V (dc + peak ac).

Input Impedance — 10 kΩ ±10%, paralleled by <100 pF.

Slew Rate (nonlinear operation) — 5000 m/s.

Settling Time (nonlinear operation) — 1 μs + 2 μs/cm to within one spot diameter for vector lengths >1 cm; 3 μs to within one spot diameter for vector lengths of 1 cm or less.

Positional Accuracy — All points within the CRT addressable area are addressable with an accuracy of ±1.25% of the long axis dimension.

Z-AXIS

Input Requirements — TTL compatible. LO True. (Strap selectable to HI True).

Risetime — 70 ns, limited to 1 MHz continuous repetition rate.

Input Impedance — 50 Ω (Strap selectable to 75 or 93 Ω).

Status Signal — D Busy, SLU (HCU available when an appropriate hard copy device is connected).

AC POWER

Voltage Range — 90 to 110, 108 to 132, 198 to 242 or 216 to 264 V ac (jumper selectable).

Line Frequency — 48 to 66 Hz.

Power — 315 W max at 115 V ac.

PHYSICAL CHARACTERISTICS*1

Dimensions	mm	in
Width	487	19.2
Height	461	18.2
Depth	705	27.8
Weight	**kg**	**lb**
Net	45.0	100.0
Shipping	56.7	125.0

*1 *Horizontal Format (no tilt).*

ORDERING INFORMATION

GMA103 Computer Display Module.

Option 33 — Front Panel Pushbuttons.
Option 34 — Analog Rear Connector.
Option 35 — Digital Rear Connector.
Option 43 — High Speed Vector/Dot Character Generator.

GMA125

Combined Storage and Write Thru

25 inch Diagonal CRT

Designed exclusively for systems builders, the 25 inch GMA125 is intended to satisfy display applications of the greatest size and complexity. Like other members of the GMA Series, the GMA125 provides low cost, high resolution, storage tube graphics and unique flexibility of performance, interfacing and packaging.

CHARACTERISTICS

DISPLAY

CRT Type — Directed beam, direct view storage CRT.

Dimensions — 60 cm (24 in) diagonal.

Quality Area — 490 x 362 mm (19.3 x 14.25 in).

Addressable Area — 457 x 343 mm (18 x 13.5 in).

Visual Resolution — 16 lines/cm (40 lines/in), center screen; 14 lines/cm (35 lines/in), at screen periphery.

Stored Dot Writing Time — 2 μs or less.

Vector Writing Rate — Stored: 200 m/s (7800 in/s). Refresh: 1500 m/s (59,055 in/s) write-thru and nonstore; 50 vector meters (1968 in) max at 30 frames/s.

Viewing Time (At Specified Resolution) — At least 15 min.

Erase Time — 1.0 s ±12%.

AC POWER

Voltage Ranges are 90 to 132 V ac and 180 to 250 V ac at 48 to 440 Hz. Power dissipation is 350 W max (420 W max for Option 36).

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	610	24.0
Height	478	18.8
Depth	531	20.9
Weight	**kg**	**lb**
Net	47.9	105.6
Shipping	66.0	145.5

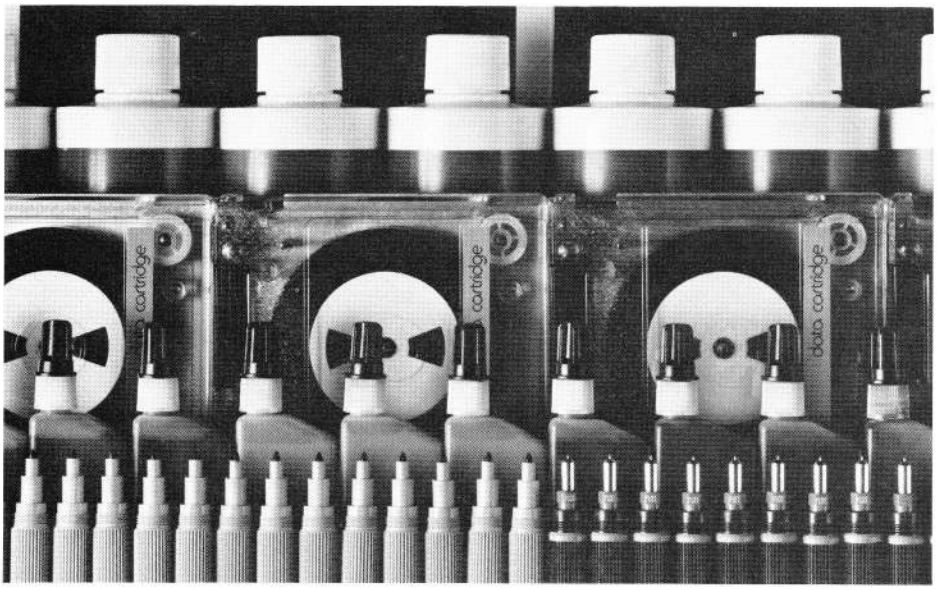
ORDERING INFORMATION

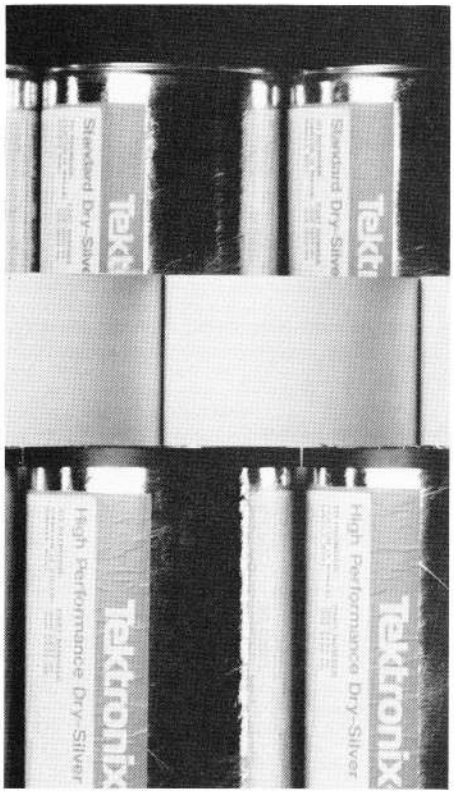
GMA125 Display Module.

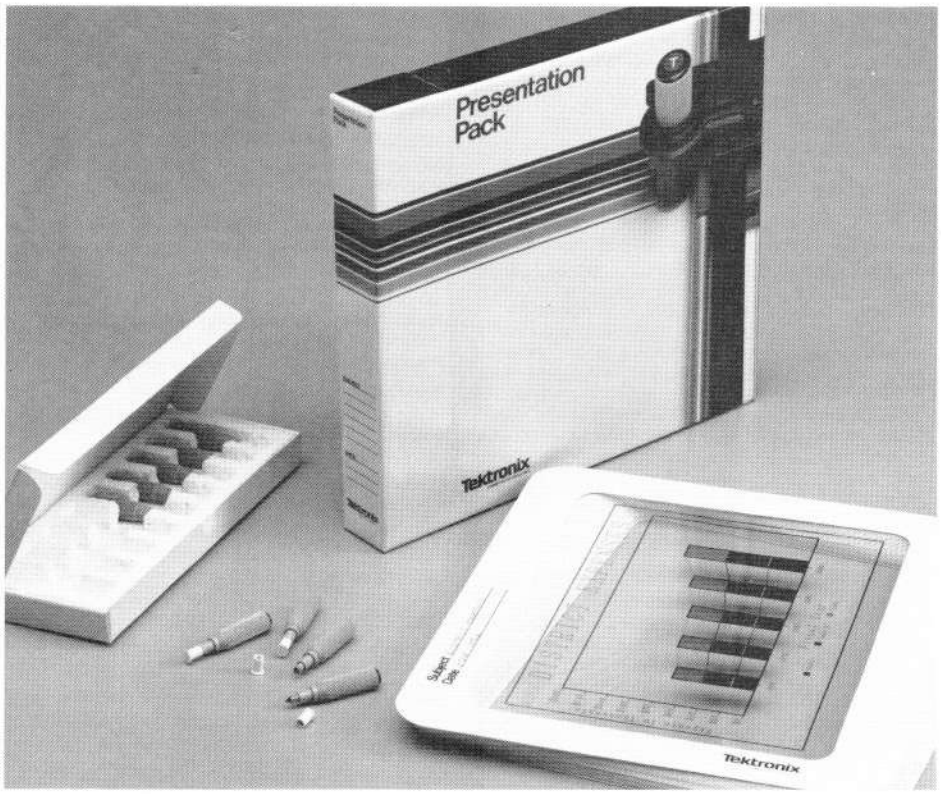
Option 30 — Non-Hard Copy Compatible.
Option 34 — Analog Rear Panel Connector.
Option 35 — Digital Rear Panel Connector.
Option 36 — Excess Current (+5 V Supply) and Fan.
Option 38 — Blue Glass CRT Filter.
Option 42 — High-Speed Vector Generator.
Option 43 — High-Speed Vector/Dot Generator.

SPECIAL PRICING, TERMS AND CONDITIONS ARE AVAILABLE TO QUALIFIED OEMS. CONTACT YOUR LOCAL TEKTRONIX REPRESENTATIVE FOR COMPLETE INFORMATION.

Accessories







Display Terminals & Monitors

4006-1

STANDARD ACCESSORIES

User's Manual 070-1891-00

OPTIONAL ACCESSORIES

Service Manual 070-1892-01
Viewing Hood 016-0346-00
Pedestal Kit 016-0364-00

4012

STANDARD ACCESSORIES

Data Communications Interface (RS-232) 021-0065-00
Data Communications Interface Instruction Manual 070-1458-00
Users Manual 070-1460-00

OPTIONAL ACCESSORIES

Viewing Hood 016-0304-00
Copy Holder (Below S/N BO50000) 016-0291-00
Copy Holder (Above S/N BO50000) 016-0291-01
Wheel Kit (Below S/N BO50699) 040-0653-02
Wheel Kit (Above S/N BO50700) 040-0694-02
Accessory Cover 200-1288-01
(Provides two access ports on the back of the pedestal for mounting dual interfaces or other hardware options.)
Service Manual 070-1461-01
4952 Adaptor Card (Adapts the Standard 4952 for use with 4012 Terminals) 018-0103-00
Logic Extender Card 067-0653-00
Extender, 72 Pin 067-0664-00
Blank Vector Board 018-0065-01
I/F Cable for Opt 01 Deluxe RS-232 I/F (16 ft) 012-0716-00
I/F Cable for Opt 01 Deluxe RS-232 I/F (50 ft) 012-0717-00
I/F Cable for Opt 02 TTY Port I/F (16 ft) 012-0293-00
I/F Cable for Opt 02 TTY Port I/F (50 ft) 012-0294-00
I/F Cable for Opt 16 TTY Port I/F (16 ft) 012-0429-00
I/F Cable for Opt 16 TTY Port I/F (50 ft) 012-0429-01
Display Multiplexer Cable for Opt 31 (20 ft) 012-0662-03
Discrete Plot (Card & Cable). Performs special Point Plot, Incremental Plot & Point Plot Mode 018-0091-00

4014-1

STANDARD ACCESSORIES

Data Communications Interface 021-0065-00
Data Communications Interface Instruction Manual 070-1458-00
User's Manual 070-1647-00

OPTIONAL ACCESSORIES

Desk Top Kit (Includes Remote Display Cable) 012-0511-00
Viewing Hood (S/N BO20000 & up) 016-0599-00
Wheel Kit 040-0714-00
Copy Holder 016-0291-01
Service Manual (S/N below BO50000) 070-1648-00
Service Manual (S/N BO50000 & up) 070-2303-00
Logic Extender Card 067-0653-00
Extender, 72 Pin 067-0664-00
Blank Vector Board 018-0065-01
I/F Cable for Opt 01 Deluxe RS-232 I/F (16 ft) 012-0716-00
I/F Cable for Opt 01 Deluxe RS-232 I/F (50 ft) 012-0717-00
I/F Cable for Opt 02 TTY Port I/F (16 ft) 012-0293-00
I/F Cable for Opt 02 TTY Port I/F (50 ft) 012-0294-00
I/F Cable for Opt 16 TTY Port I/F (16 ft) 012-0429-00
I/F Cable for Opt 16 TTY Port I/F (50 ft) 012-0429-01
Display Multiplexer Cable for Opt 31 (20 ft) 012-0662-03

4016-1

STANDARD ACCESSORIES

Data Communications Interface 021-0065-00
Data Communications Interface Instruction Manual 070-1458-00
User's Manual 070-2660-00
Wheel Kit 040-0714-00

OPTIONAL ACCESSORIES

Remote Display Cable Kit 020-0413-00
Service Manual 070-2661-00
Calibration Graticule (25 in) 067-0877-00
Logic Extender Card 067-0653-00
Extender, 72 Pin 067-0664-00
Blank Vector Board 018-0065-01
I/F Cable for Opt 01 Deluxe RS-232 I/F (16 ft) 012-0716-00
I/F Cable for Opt 01 Deluxe RS-232 I/F (50 ft) 012-0717-00
I/F Cable for Opt 02 TTY Port I/F (16 ft) 012-0293-00
I/F Cable for Opt 02 TTY Port I/F (50 ft) 012-0294-00
I/F Cable for Opt 16 TTY Port I/F (16 ft) 012-0429-00
I/F Cable for Opt 16 TTY Port I/F (50 ft) 012-0429-01
Display Multiplexer Cable (20 ft) 012-0662-03
(For 018-0067-02 Display Mux Card, Opt 31.)

618

STANDARD ACCESSORIES

Power Cable 161-0066-00
Instruction Manual 070-2767-00

OPTIONAL ACCESSORIES

Calibration Equipment
Cal Fixture, DVST Display Test Pattern Generator 067-0807-00
Documentation, Instruction Manual 070-2425-01
Calibration Fixture, CRT Scale 067-0818-00
Calibration Fixture, Flexible Extender 067-0817-00
Includes The Following Cables:
Electrical Cable Assembly (20 in) 175-2484-00
Electrical Cable Assembly (12 in) 175-2485-00
Electrical Cable Assembly (12 in) 175-2486-00
Electrical Cable Assembly (12 in) 175-2487-00

4105

STANDARD ACCESSORIES

Power Cord (8 ft) 161-0066-00
Host Port RS-232 Cable (12 ft) 012-0911-00
Keyboard Overlays (pkg of 6) 334-5164-00
Standard Keyboard 119-1592-00
Operator's Manual 070-4527-00
Programmer's Reference Manual 070-4526-00
Reference Guide 070-4528-00

OPTIONAL ACCESSORIES

Service Manual 070-4525-00
Adjustable Display Stand Provides Tilt, Swivel, Elevate and Glide Adjustments ADS01
RS-232 Loopback Connector 067-1042-00
Copier Port Loopback Connector 013-0214-00
Graticule 067-1150-00

4107

STANDARD ACCESSORIES

Power Cord (8 ft) 161-0066-00
Host Port RS-232 Cable (12 ft) 012-0911-00
Keyboard Overlays (pkg of 6) 334-5164-00
Standard Keyboard 119-1592-00
Operator's Manual ..... N/A*
Programmer's Reference Manual ..... N/A*
Reference Guide ..... N/A*

OPTIONAL ACCESSORIES

Service Manual ..... N/A*
Adjustable Display Stand Provides Tilt, Swivel, Elevate and Glide Adjustments ADS01
RS-232 Loopback Connector 067-1042-00
Copier Port Loopback Connector 013-0214-00
Graticule 067-1150-00

4109

STANDARD ACCESSORIES

Power Cord (8 ft) 161-0066-00
Host Port RS-232 Cable (12 ft) 012-0911-00
Keyboard Overlays (pkg of 6) 334-5164-00
Standard Keyboard 119-1592-00
Operator's Manual ..... N/A*
Programmer's Reference Manual ..... N/A*
Reference Guide ..... N/A*

OPTIONAL ACCESSORIES

Service Manual ..... N/A*
RS-232 Loopback Connector 067-1042-00
Copier Port Loopback Connector 013-0214-00
Graticule ..... N/A*

4112A

STANDARD ACCESSORIES

Power Cord (8 ft) 161-0123-00
Host-Port RS-232 Cable (12 ft) 012-0911-00
Re-Legendable Key Caps (pkg of 8) 366-1882-00
Function Key Overlays (pkg of 6) 334-3290-01
Operator's Manual 070-4511-00
Host Programmer's Manual 061-2565-01
4110A Series Command Reference Manual 061-2566-03
Introduction Brochure 070-4520-00
Firmware Instructions Version 5.1/1.3 Manual 070-4459-00

OPTIONAL ACCESSORIES

Service Manual Vol I 070-4517-00
Service Manual Vol II 071-4516-00
Low Voltage Power Supply Service Manual (620-0295-01) 070-3732-00
Cal Fixture Loopback Connector for Host-Port Test (RS-232) 067-1043-00
Cal Fixture, Current Loop Back Connector 067-1042-00
Cal Fixture, Extender Board 067-1005-00
Cal Fixture, Extender Cable 067-1053-00
Media, Flexible Disk (pkg of 10) 119-1376-01

Available soon

4113A/4113A30

STANDARD ACCESSORIES

Power Cord (8 ft)	161-0123-00
Host-Port RS-232 Cable (12 ft)	012-0911-00
4113A Pedestal to Display Power Cable	161-0145-00
4113A BNC Cables (3)	012-0074-00
Re-Legendable Key Caps (pkg of 8)	366-1882-00
Function Key Overlays (pkg of 6)	334-3290-01
Operator's Manual	070-4521-00
Host Programmer's Manual	061-2616-01
4110A Series Command Reference Manual	061-2566-03
Introduction Brochure	070-4519-00

OPTIONAL ACCESSORIES

Service Manual Vol I	070-4515-00
Service Manual Vol II	070-4514-00
Display Service Manual	070-4275-00
Cal Fixture Loopback Connector for Host-Port Test (RS-232)	067-1043-00
Cal Fixture, Current Loopback Connector	067-1042-00
Cal Fixture, Extender Board	067-1005-00
Cal Fixture, Extender Cable	067-1053-00
Media, Flexible Disk (pkg of 10)	119-1376-01

All standard and optional accessories for the 4113A30 are the same as those for the 4113A, except for the following:

4113A30

STANDARD ACCESSORIES

Display Swivel/Tilt Base	016-0467-01
Pedestal to Display Power Cable	161-0126-00
Display Power Control Cable	012-1021-00
3 BNC Cables (10 ft)	175-2753-00
4110A30 Series Desk Configuration Service Manual	070-4264-00

OPTIONAL ACCESSORIES

Display Stand	016-0717-01
Media, Flexible Disk (for Opt 42 or 43) (pkg of 10)	119-1376-01
Ergonomic Chair	016-0698-00

4114A/4114A30

STANDARD ACCESSORIES

Power Cord (8 ft)	161-0123-00
Pedestal to Display Power Cable (21 in)	161-0145-00
Host-Port RS-232 Cable (12 ft)	012-0911-00
Re-Legendable Key Caps (pkg of 8)	366-1882-00
Function Key Overlays (pkg of 6)	334-3290-01
4114A/4116A Operator's Manual	070-4522-00
4114A/4116A Host Programmer's Manual	061-2564-01
4110A Series Command Reference	061-2566-03
4114A/4116A Introduction Brochure	070-4518-00

OPTIONAL ACCESSORIES

4114A/4116A Service Manual Vol I	070-4513-00
4114A/4116A Service Manual Vol II	070-4512-00
Cal Fixture Loopback Connector for Host-Port Test (RS-232)	067-1043-00
Cal Fixture, Current Loop, Loopback Connector	067-1042-00
Cal Fixture, Extender Board	067-1005-00
Cal Fixture, Extender Cable	067-1053-00
Media, Flexible Disk (pkg of 10)	119-1376-01

All standard and optional accessories for the 4114A30 are the same as those for the 4114A, except for the following:

4114A30

STANDARD ACCESSORIES

Display Swivel/Tilt Base	016-0467-01
Pedestal to Display Power Cable	161-0126-00
4110A30 Series Desk Configuration Service Manual	070-4264-00

OPTIONAL ACCESSORIES

Ergonomic Chair	016-0698-00

4115B/M4115B

STANDARD ACCESSORIES

2 Power Cables (8 ft)	161-0123-00
Host Port RS-232 Cable (12 ft)	012-0911-00
4115B BNC Cables (3)	012-0074-00
4115B Display Assembly to Pedestal Cable	012-0525-00
Function Key Overlays (pkg of 6)	334-3290-02
Operator's Manual	070-4665-00
4110 Series Host Programmer's Manual	070-4664-00
4110 Series Command Reference Manual	070-3892-00
4110 Series Command Reference Guide	070-4715-00
Introduction Brochure	070-4663-00

OPTIONAL ACCESSORIES

DMA I/F Manual	070-4761-00
Service Manual Vol I	070-4666-00
Service Manual Vol II	070-4667-00
Display Service Manual	070-4668-00
Loopback Connector for Host-Port Test (RS-232)	067-1043-00
Current Loopback Connector	067-1042-00
411X Logic Extender Board	067-1005-00
Raster Bus Extender Board	067-1173-00
Display Module, Flexible Extender and Cable	067-1163-00
Media, Flexible Disk (pkg of 10)	119-1376-01
Calibration Graticule, Display	067-1142-00
Convergence Checker RCA Type 507R	067-1164-00

All standard and optional accessories for the M4115B are the same as those for the 4115B except for the following:

M4115B

STANDARD ACCESSORIES

BNC Cables (3)	175-2753-00
Display Assembly to Pedestal Cable (10 ft)	012-0387-00

OPTIONAL ACCESSORIES

Display Stand, (Tilts, Swivels, Stands on Floor)	016-0717-01
Ergonomic Chair	016-0698-00

4116A/4116A30

STANDARD ACCESSORIES

Power Cord (8 ft)	161-0123-00
Pedestal to Display Power Cable (21 in)	161-0145-00
Interconnect Cable Pedestal to Display	N/A*
Host Port RS-232 Cable (12 ft)	012-0911-00
Re-Legendable Key Caps (pkg of 8)	336-1882-00
Function Key Overlays (pkg of 6)	334-3290-01
4114A/4116A Operator's Manual	070-4522-00
4114A/4116A Host Programmer's Manual	061-2564-01
4110A Series Command Reference Manual	061-2566-03
4114A/4116A Introduction Brochure	070-4518-00

OPTIONAL ACCESSORIES

4114A/4116A Service Manual Vol I	070-4513-00
4114A/4116A Service Manual Vol II	070-4512-00
Cal Fixture Loopback Connector for Host-Port Test (RS-232)	067-1043-00
Cal Fixture Current Loop, Loopback Connector	067-1042-00
Cal Fixture Extender Board	067-1005-00
Cal Fixture Extender Cable	067-1053-00
Media, Flexible Disk	119-1376-01

**Available soon*

All standard and optional accessories for the 4116A30 are the same as those for the 4116A, except for the following:

4116A30

STANDARD ACCESSORIES

Display Swivel/Tilt Base	016-0467-01
Pedestal to Display Power Cable (10 ft)	161-0126-00
Pedestal to Display Interconnect Cable (10 ft)	012-1058-00
4110A30 Series Desk Configuration Service Manual	070-4264-00

OPTIONAL ACCESSORIES

Ergonomic Chair	016-0698-00

4025A

STANDARD ACCESSORIES

Keyboard Overlay (Blank)	334-3290-00
Blank Key Cap (1:2)	366-1748-00
Key Cap Cover (1:2)	200-2163-00
Blank Key Cap (1:1)	366-1749-00
Key Cap Cover (1:1)	200-2164-00
Power Cord	161-0066-00
Operator's Manual	070-4170-00
Reference Card	070-4174-00
Programmer's Reference Manual	070-4172-00

OPTIONAL ACCESSORIES

Service Manual Vol I	070-4167-00
Service Manual Vol II	070-4168-00

4027A

STANDARD ACCESSORIES

Keyboard Overlay (Blank)	334-3290-00
Blank Key Cap (1:2)	366-1748-00
Key Cap Cover (1:2)	200-2163-00
Blank Key Cap (1:1)	366-1749-00
Key Cap Cover (1:1)	200-2164-00
Power Cover	161-0066-00
Operator's Manual	070-4171-00
Programmer's Reference Card	070-4175-00
Programmer's Reference Manual	070-4173-00

OPTIONAL ACCESSORIES

Service Manual Vol I	070-4169-00
Service Manual Vol II	070-4176-00

Desktop Computers

4051

STANDARD ACCESSORIES

4050 Series Graphic System Operator's Manual	070-1940-02
4050 Series Graphic System Reference Manual	070-2056-01
Introduction to Programming in Basic Manual	070-2058-01
Introduction to Graphic Programming in Basic Manual	070-2059-01
Reference Guide to 4050 Series Basic	070-2142-02
System Software Tape	020-0160-04
System Software Back-up Tape	020-0161-04
Power Cord	161-0066-00
Blank User Definable Key Overlays (pkg of 10)	334-2630-02

OPTIONAL ACCESSORIES

Service Manual Vol I	070-2065-01
Service Manual Vol II	070-2286-02
GPIB Hardware Support Manual	070-2270-00
GPIB Application Support Manual	070-2307-00
GPIB Programming Guide	070-3985-00
Dust Cover	016-0376-00
Viewing Hood	016-0346-00
Pedestal Kit	016-0364-00
300A Certified Data Cartridge from Tektronix (box of 5, 300 ft ea)	119-0680-01
300XL Certified Data Cartridge from Tektronix (450 ft)	119-1439-00

General Purpose Binder (3 ring, 1 in)	016-0483-00
General Purpose Binder (3 ring, 2 in)	016-0367-00
General Purpose Binder W/Mag Tape Pockets (3 ring, 2 in)	016-0352-00
General Purpose Binder W/Mag Tape Pockets (3 ring, 3 in)	016-0353-00
Binder Overlay Insert (3 hole for above binders)	016-0369-00
Binder Flexible Disc Insert (3 hole for above binders)	016-0370-00
GPIB Cable (2 meter)	012-0630-01
GPIB Cable (4 meter)	012-0630-02
Double Shielded GPIB Cable (2 meter)	012-0630-03
Double Shielded GPIB Cable (4 meter)	012-0630-04
System Test Fixture	067-0746-00
System Test Fixture Manual	070-2304-00
Service ROM Pack Manual	070-2988-00
Tape Head Alignment Module	067-0969-00
Tape Head Alignment Module Manual	070-3385-00
Service ROM Pack	067-0972-00

4052A/4054A

STANDARD ACCESSORIES

Basic and GPIB Enhancements Reference	070-4383-00
4050 Series Graphic System Operator's Manual	070-1940-02
4050 Series Graphic System Reference Manual	070-2056-01
Introduction to Programming In Basic Manual	070-2058-01
Introduction to Graphic Programming in Basic Manual	070-2059-01
Firmware Instructions Version 5.1/1.3 Manual	070-4459-00
Reference Guide to 4050 Series Basic	070-2142-02
System Software Tape	020-0160-04
System Software Back-up Tape	020-0161-04
Power Cord	161-0066-00
Blank User Definable Key Overlays (pkg of 10)	334-2630-02

OPTIONAL ACCESSORIES

Parts And Schematics Service Manual	070-2829-01
4052A Viewing Hood	016-0346-00
4052A Dust Cover	016-0376-00
4052A Pedestal Kit	016-0364-00
4052/4052A, 4054/4054A Technical Data Service Manual	070-2840-03
4054/5054A Parts And Schematics Service Manual	070-2839-03
GPIB Hardware Support Manual	070-2270-00
GPIB Application Support Manual	070-2307-00
GPIB Programming Guide	070-3985-00
300A Certified Data Cartridge from Tektronix (box of 5, 300 ft ea)	119-0680-01
300XL Certified Data Cartridge from Tektronix (450 ft)	119-1439-00
General Purpose Binder (3 ring, 1 in)	016-0483-00
General Purpose Binder (3 ring, 2 in)	016-0367-00
General Purpose Binder W/Mag Tape Pockets (3 ring, 2 in)	016-0352-00
Binder Overlay Insert (3 hole for above binders)	016-0369-00
Binder Flexible Disk Insert (3 hole for above binders)	016-0378-00
GPIB Cable (2 meter)	012-0630-01
GPIB Cable (4 meter)	012-0630-02
Double Shielded GPIB Cable (2 meter)	012-0630-03
Double Shielded GPIB Cable (4 meter)	012-0630-04
System Test Fixture	067-0902-00
System Test Fixture Manual	061-2224-00
4054A Opt 30/31 Dynamics Graphics Service Manual	070-2601-02
4054A Opt 30/31 Dynamic Graphics Operator's Manual	070-2289-02
4054A Opt 30/31 Reference Guide	070-2586-01
Tape Head Alignment Module	067-0969-00
Tape Head Alignment Module Manual	070-3385-00
Diagnostic Service ROM Pack	067-0900-01
Diagnostic Service ROM Pack Manual	070-2750-00

Local Graphics Processing Unit

4170

STANDARD ACCESSORIES

Instruction Manual	070-4685-00
Software Overview Manual	070-4738-00
Cue Card	334-0083-00
Blank Diskettes (pkg of 10)	119-1583-00
System Software Diskettes (1 Set)	N/A*
Host Port RS-232 Cable (12 ft)	012-0911-00
Self-Test Adaptor	067-1043-00
Power Cable	N/A*
Auxiliary Cable	N/A*

OPTIONAL ACCESSORIES

Alignment Diskette	119-1692-00
Extender Board	067-1005-00

Peripherals

Plotters

4662

STANDARD ACCESSORIES

Power Cord	161-0066-00
RS-232 I/F Cable (15 ft) (Standard W/Basic Unit only)	012-0829-00
GPIB I/F Cable, 2 meter (STD W/Opt 01 only)	012-0630-03
Operator's Manual (Incl. Opt. 31)	070-4165-00
Programmer's Reference Manual	070-4164-00
Reference Card	070-2556-01
Digitizing Sight	214-2409-01
Paper, 10 x 10 to 1 in (100 sheets/pkg)	006-1698-00
Fiber Tip Pens for Paper, Red (pkg of 3)	016-0589-00
Fiber Tip Pens for Paper, Green (pkg of 3)	016-0589-01
Fiber Tip Pens for Paper, Black (pkg of 3)	016-0589-02
Fiber Tip Pens for paper, Blue (pkg of 3)	016-0589-03

4662 Option 31

STANDARD ACCESSORIES

Power Cord	161-0066-00
RS-232 Cable	012-0829-00
GPIB Cable (Std W/Opt 01)	012-0630-03
Operator's Manual	070-4165-00
Programmer's Reference Manual	070-4164-00
Reference Card	070-2556-01
Digitizing Sight	119-1432-01
Paper, Blank (100 sheets)	006-2410-00
9-Pen, Multi-color Packs for Paper	016-0414-09

4662 & 4662 Option 31

OPTIONAL ACCESSORIES

Pedestal	016-0629-00
Dust Cover (4662)	016-0345-00
Dust Cover (4662 Opt 31)	016-0462-00
Service Manual	070-1933-01
Paper, Blank, 11 x 16.5 in (4662 only) (100 sheets/pkg)	006-2410-00
Paper, Full Log, 2 x 3 cycle (11 x 16.5 in)	006-1702-00
Paper, Linear, 10 x 10/in (11 x 16.5 in)	006-1698-00
Paper, Linear, 10 x 10/cm (11 x 16.5 in)	006-1699-00
Paper, Semi-Log, 10 x 3 cycle, (11 x 16.5 in)	006-1700-00
Paper, Semi-Log, 10 x 2 cycle, (11 x 16.5 in)	006-1701-00
GPIB Cable (4 meter)	012-0630-02
Double Shielded GPIB Cable (2 meter)	012-0630-03
Double Shielded GPIB Cable (4 meter)	012-0630-04
Installation Guide (4662 Opt 31)	070-3767-00
"Quick Dry" Transparency Film (50 sheets/pkg) (8.5 in x 11 in)	006-5939-00
Presentation Pack for Option 31 (Contains Film, Pens, Frames, Pen Tray and Storage Box)	020-0888-00

Also see Pages 23 and 24 Supplies and Order Information for additional optional Accessories.

*Available soon

4663/4663S

STANDARD ACCESSORIES

Power Cord	161-0066-00
RS-232 15 ft I/F Cable (Std W/Basic Unit only)	012-0829-00
GPIB I/F Cable, 2 meter (6.5 ft) (Std W/Opt 01, 04)	012-0630-03
Operator's Manual	070-3807-00
Reference Guide	070-2828-01
Fiber Tip Pen, Black (pkg of 3)	016-0414-00
Fiber Tip Pen, Red (pkg of 3)	016-0414-02
Fiber Tip Pen Blue (pkg of 3)	016-0414-06
Fiber Tip Pen, Green (pkg of 3)	016-0414-05
Paper, Translucent White, No 1 Sulfite, 17 x 22 in (100 sheets/box)	006-3150-00
Paper, Blank Roll, 18 in x 200 ft, 2 rolls/box (shipped w/Opt 36 only) ("C" Size after Tear off)	006-2837-00

OPTIONAL ACCESSORIES

Service Manual Vol I	070-2669-00
Service Manual Vol II	070-3453-00
Paper, Blank Roll, (2 rolls/box) (C Size after tear off)	006-2837-00
Paper, Blank Roll, (2 rolls/box) (Metric Size A2 after tear off)	006-3473-00
Dust Cover, Soft Vinyl	200-2392-00
Vellum (100 percent rag), 17 x 22 in (100 sheets/box)	006-2836-00
Mylar, Antistat, 17 x 22 in (100 sheets/box)	006-2835-00
GPIB Cable, 4 meter (13 ft)	012-0630-04
Plotter Film, Preframed, (100 sheets)	006-3309-00
"Quick Dry" Transparency Film, 8.5 in x 11 in, (50 sheets/pkg.)	006-5939-00
Presentation Pack (Contains Film, Pens, Frames, Pen Tray and Storage Box)	020-0888-00

Also see Pages 23 and 24 Supplies and Ordering Information for additional optional Accessories.

Hard Copy Units

4611

STANDARD ACCESSORIES

Power Cord	161-0066-00
Hard Copy Cable, 15-pin (10 ft)	012-0547-00
Electrographic Paper, (2 rolls/case)	006-2838-00
Dry Copy Toner, (4.9 oz)	006-2990-00
Operator's Manual	070-3450-00

OPTIONAL ACCESSORIES

Service Manual	070-3449-00
Interconnect Cable, 15-pin (20 ft)	012-0548-00
Interconnect Cable, 15-pin (50 ft)	012-0549-00
Extender Cable (for servicing only)	175-3421-00
Dry Copy Toner, (4.9 oz)	006-2990-00

Paper & Toner

Electrographic Paper, (2 rolls/case)	006-2838-00
Dry Copy Toner, (4.9 oz)	006-2990-00

*Available soon

4612

STANDARD ACCESSORIES

Power Cord	161-0066-00
Electrographic Paper, (2 rolls/case)	006-2838-00
Dry Copy Toner, (4.9 oz)	006-2990-00
Operator's Manual	070-3452-00
Interconnect Cable, BNC (10 ft)	175-2753-00

OPTIONAL ACCESSORIES

Service Manual	070-3451-00
Interconnect Cable, BNC (10 ft)	175-2753-00
Interconnect Cable, BNC (25 ft)	012-0157-00
"T" Connector, BNC	103-0030-00
Interconnect Cable, 15-pin (10 ft)	012-0504-00
Interconnect Cable, 15-pin (20 ft)	012-0504-01
Interconnect Cable, 15-pin (50 ft)	012-0504-02
Extender Cable (For servicing only)	175-3421-00
Dry Copy Toner (4.9 oz)	006-2990-00
Remote Copy Button	016-0722-00
Remote Copy Button and 25 ft Cable	016-0722-01
Remote Copy Button and 50 ft Cable	016-0722-02
25 ft Cable for Remote Copy Button	012-0985-00
50 ft Cable for Remote Copy Button	012-0986-00

Paper & Toner

Electrographic Paper, (2 rolls/case)	006-2838-00
Dry Copy Toner, (4.9 oz)	006-2990-00

4631

STANDARD ACCESSORIES

User's Manual	070-1830-01
Interconnect Cable, 15-pin (10 ft)	012-0547-00
Standard Dry Silver Paper (500 ft roll)	006-1603-00

OPTIONAL ACCESSORIES

Interconnect Cable, 15-pin (20 ft)	012-0548-00
Interconnect Cable, 15-pin (50 ft)	012-0549-00
Service Manual	070-1831-02

Paper

Standard Dry Silver Paper (500 ft roll)	006-1603-00
Standard Dry Silver Paper, (4 rolls/carton)	006-1603-01

4632

STANDARD ACCESSORIES

User's Manual	070-1660-02
Standard Dry Silver Paper (500 ft roll)	006-1603-00
Terminator, BNC, 75 Ω	011-0102-00

The 4632 is not shipped with an interconnect cable; order the desired cable from the following optional accessories list.

OPTIONAL ACCESSORIES

Interconnect Cable, 15 pin, (10 ft)	012-0504-00
Interconnect Cable, 15 pin, (20 ft)	012-0504-01
Interconnect Cable, 15 pin, (50 ft)	012-0504-02
Interconnect Cable, BNC, 75 Ω, (25 ft)	012-0157-00
Service Manual	070-1686-04
Remote Copy Button	016-0722-00
Remote Copy Button and 25 ft Cable	016-0722-01
Remote Copy Button and 50 ft Cable	016-0722-02
25 ft Cable for Remote Copy Button	012-0985-00
50 ft Cable for Remote Copy Button	012-0986-00
RGB Video Mixer	016-0596-00

Paper

Standard Dry Silver Paper (500 ft roll)	006-1603-00
Standard Dry Silver Paper, (4 rolls/carton)	006-1603-01

4634

STANDARD ACCESSORIES

Instruction Manual (For 4634 OEM)	070-3636-00
Instruction Manual (For 4634 Opt. 45 End User Setup)	070-3636-00
High Performance Dry Silver Paper (500 ft roll)	006-2432-00
Terminator, 75 Ω	011-0131-00

The 4643 is not shipped with an interconnect cable; order the desired cable from the following optional accessories list.

OPTIONAL ACCESSORIES

Cable, BNC, 75 Ω (42 in)	012-0074-00
Board Extender	067-0687-01
Card Extender	067-0708-00
Interconnect Cable, 15 pin, (10 ft)	012-0504-00
Interconnect Cable, 15 pin, (20 ft)	012-0504-01
Interconnect Cable, 15 pin, (50 ft)	012-0504-02
RGB Video Mixer	016-0596-00

Paper

High Performance Dry Silver Paper (500 ft roll)	006-2432-00
High Performance Dry Silver Paper, (4 rolls/carton)	006-2432-01

Color Hard Copy Units

4691

STANDARD ACCESSORIES

Operator's Manual	070-4500-00
Operator's Guide	062-1508-00
Ink Jet Copy Paper (500 sheets) (B size and A3 size when Opt 01 is ordered)	016-0711-00
Ink Jet Cartridges, 200 ml Capacity Each:	
Cyan	016-0713-00
Black	016-0714-00
Yellow	016-0715-00
Magenta	016-0716-00
Interconnecting Cable 3 Meters (10 ft)	012-0518-00
Power Cable	161-0104-00
Paper Tray, "A" and "B" Size (Standard)	118-2557-00
Paper Tray, "A3" and "A4" Size (If Opt 1 is Ordered)	118-2556-00
Drum Adaptors (3/pkg)	118-2593-00

OPTIONAL ACCESSORIES

Service Manual	070-4498-00
Device Driver Development Guide	070-4547-00
Test Fixture (067-1158-00)	070-4662-00
Interconnect Cable, 9 meter (29.9 ft)	012-0527-00
Ink Jet Copy Paper, "A" Size, 216 x 279 mm (8.5 in x 11 in) (500 sheets/pkg)	016-0712-00
"B" Size, 279 x 432 mm (11 in x 17 in)	016-0711-00
"A4" Size, 297 x 210 mm (For use w/Opt 1 only)	016-0709-00
"A3" Size, 297 x 420 mm (For use w/Opt 1 only)	016-0710-00
Transparency Film, (100 sheets/pkg)	
"A" Size	016-0765-00*
"A4" Size	016-0766-00*
Transparency Kit (Field Retrofit)	
"A" Size	N/A*
"A4" Size	N/A*
Ink Jet Cartridges	see Standard Accessories
Drum Adaptors (3/pkg)	118-2593-00

4695

STANDARD ACCESSORIES

Ink Jet Copy Paper (1 roll)	016-0743-00
Ink Jet Cartridges, 2 ea:	
Yellow	016-0734-00
Magenta	016-0735-00
Cyan	016-0736-00
Black	016-0737-00
Interconnecting Cable	012-0555-00
Power Cable	161-0066-00
Operator's Manual	070-4646-00

OPTIONAL ACCESSORIES

Service Manual	070-4645-00
Ink Jet Paper, (6 rolls/pkg)	016-0743-00
Ink Jet Paper, (500 sheets/pkg)	
"A" Size: 8.5 in x 11.0 in (216 x 279 mm)	016-0739-00
"A4" Size: 297 mm x 210 mm)	016-0740-00
Transparency Film	N/A*
Ink Jet Cartridges (2.5 cc ea, 16/pkg)	
Yellow	016-0734-00
Magenta	016-0735-00
Cyan	016-0736-00
Black	016-0737-00
Maintenance Liquid	016-0732-00
Protect Liquid (Shipping Fluid)	016-0733-00
Lubricant (5 cc)	016-0742-00

Printer

4643

STANDARD ACCESSORIES

Operator's Manual	070-3870-01
Ribbon Cassette	118-1314-00

OPTIONAL ACCESSORIES

Service Manual	070-3870-01
Pedestal	118-1335-00

File Managers

4907

STANDARD ACCESSORIES

4051 File Manager ROM Pack	020-0279-00
Power Cord	161-0066-00
Installation Guide	070-2493-00
Operator's Manual	070-2380-02
Pocket Reference Card	070-2381-01
Double Shielded GPIB I/F Cable, 2 meter (6.5 ft)	012-0630-03
Cleaning Pads (box of 10)	006-2398-00
Label Set (0 to 9)	334-3340-00

OPTIONAL ACCESSORIES

4052A/4054A File Manager ROM Pack	020-0476-01
Flexible Disk (pkg of 10)	119-1011-01
Double Shielded GPIB I/F Cable, 4 meter (13 ft)	012-0630-04
Service Manual	070-2405-00
Service Manual/Shugart Flexible Disk Drive	070-2504-01
Alignment Disk	119-0896-00
Flexible Disk Pocket (for three ring binder.) (Holds one flexible disk.)	016-0370-00

4909

STANDARD ACCESSORIES

Cable, GPIB Interface, 4 meter (13 ft)	012-0630-04
System Operator's Manual	070-3994-00
Cartridge Disk, 16 Mbyte	119-1462-00
4909 Site Preparation Sheet	070-3997-00
Instruction Manual	070-3996-00

OPTIONAL ACCESSORIES

GPIB Interface Cable, 2 meter (6 ft)	012-0630-03
Service Manual	061-2573-00
Power Supply Module (620-0295-01)	
Service Manual	070-3732-00
GPIB Reference Manual (for programming W/O ROM Pack)	070-3993-00
Hard Disk Drive Service Manual	070-3999-00
Hard Disk Drive Service Manual	070-3999-00
Programmer's Reference Guide	070-3995-00
Coaxial Interface Cable (50 ft) RG 6/U (for 4909F02)	012-1051-00
Coaxial Interface Cable (200 ft) RG 6/U (for 4909F02)	012-1052-00

** Available Soon*

4909AC

STANDARD ACCESSORIES

Cartridge Disk, 16 MByte 119-1462-00

OPTIONAL ACCESSORIES

Same As 4909

Drivers

4923

STANDARD ACCESSORIES

Power Cord 161-0066-00
User's Manual 070-1908-01
Tape Cartridge ..... N/A

OPTIONAL ACCESSORIES

300A Certified Data Cartridge
from Tektronix (box of 5, 300 ft ea) 119-0680-01
300XL Certified Data Cartridge
from Tektronix 119-1439-00
Service Manual 070-1909-01

4924

STANDARD ACCESSORIES

Operator's Manual 070-2128-00
Power Cord 161-0066-00
GPIB I/F Cable, 2 meter (6.5 ft) 012-0630-01
Operator's Card 070-2302-00
Tape Cartridge ..... N/A

OPTIONAL ACCESSORIES

300A Certified Data Cartridge from
Tektronix (box of 5, 300 ft ea) 119-0680-01
300XL Certified Data Cartridge
from Tektronix 119-1439-00
GPIB I/F Cable, 3 meter (9.75 ft) 012-0630-01
GPIB I/F Cable, 4 meter (13 ft) 012-0630-02
Service Manual 070-2131-00

4925

STANDARD ACCESSORIES

Instruction Manual 070-4688-01
Power Cable 161-0066-00
MSIB Cable (Mass Storage
Interface Bus), 2 meter (6.5 ft) 012-0037-00

OPTIONAL ACCESSORIES

Remote Power Cable (BNC) ..... N/A*
Diskettes (pkg of 10) 119-1583-01

4926

STANDARD ACCESSORIES

Instruction Manual 070-4688-00
Power Cable 161-0066-00
MSIB Cable (Mass Storage
Interface Bus), 2 meter (6.5 ft) 012-0037-00

OPTIONAL ACCESSORIES

Remote Power Cable (BNC) 012-0476-00

GPIB Extenders

4932/4909F02

STANDARD ACCESSORIES

Instruction Manual 070-4324-00

OPTIONAL ACCESSORIES

Coaxial Interface Cable (50 ft) RG 6/U 012-1051-00
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Joystick

4952

STANDARD ACCESSORIES

Instruction Manual for 4010 Series 070-1826-01
Instruction Manual for Opt 02 070-2098-00

OPTIONAL ACCESSORIES

Adaptor Card 4012 Compatible 018-0103-00

Graphic Tablets

4953

STANDARD ACCESSORIES

Instruction Manual 070-1791-01
Reference Card 070-1787-00
Pen w/Inkless Filler 119-0621-00
Bias Magnet (11 x 11 in) 119-0686-00

OPTIONAL ACCESSORIES

Cursor (1 Button, Replaces the Pen) 119-0622-00
Pen Refill, Graphic Tablet, Blue Ink 016-0334-00
Pen Refill, Graphic Tablet, Non-Inking 016-0335-00
New Tablet Surface
(Plastic Replacement Only) 118-0049-00

4954

STANDARD ACCESSORIES

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Reference Card 070-1787-00
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Bias Magnet For 30 x 40 in 119-0687-00

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4956

STANDARD ACCESSORIES

Operator's Manual 070-2210-00
GPIB Cable, 2 meter (6.5 ft) 012-0630-01
PLOT 50, Graphics Tablet
Support Software Tape 020-0223-00
Bias Magnet 119-0895-00
Pen w/Inkless Filler 119-0621-00

OPTIONAL ACCESSORIES

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Cursor (4 Button Replaces the Pen) 119-0875-00
Pen Refill, Graphic Tablet, Blue Ink 016-0334-00
Pen Refill, Graphic Tablet, Non-Inking 016-0335-00
Service Manual 070-2211-00

Cluster Controller

4970

STANDARD ACCESSORIES

Power Cord 161-0066-00
RS-232 Modem I/F Cable (12 ft) 012-0911-00
DTE Loopback Test Adaptor 013-0211-00
DCE Loopback Test Adaptor 013-0212-00
Instruction Sheet 070-4448-00

OPTIONAL ACCESSORIES

Service Manual 070-4393-00
Blank DC 100 Tape Cartridge 119-1350-00

Displays

634

STANDARD ACCESSORIES

CRT Shield 337-2537-01
CRT Filter 378-0133-00
Instruction Manual 070-2561-00
Operator's Manual 070-2560-00

606B

STANDARD ACCESSORIES

25-Pin Connector 131-0570-00
25-Pin Connector Housing 200-0821-00
CRT Shield 337-1674-00
Power Cord 161-0123-00
Service Manual 070-2821-00
Operator's Manual 070-2820-00

620

STANDARD ACCESSORIES

CRT Graticule 331-0455-00
Instruction Manual 070-2650-00
Operator's Manual 070-2651-00

608

STANDARD ACCESSORIES

CRT Graticule 337-2126-02
Instruction Manual 070-2305-00
Operator's Manual 070-2306-00

624

STANDARD ACCESSORIES

CRT Graticule 337-2126-02
Instruction Manual 070-2531-00
Operator's Manual 070-2530-00

GMA103

STANDARD ACCESSORIES

Instruction Manual 070-3635-00

OPTIONAL ACCESSORIES

Screw Adjust Feet 020-0245-00
Breadboard Kit 020-0269-00

GMA125

STANDARD ACCESSORIES

Operator's Manual 070-2618-00

OPTIONAL ACCESSORIES

Breadboard Kit 020-0269-00

Color Display Monitor

690

STANDARD ACCESSORIES

Power cord (8 ft) 161-0104-00
Slide-Out Tracks (1 pair)
w/mounting hardware 351-0395-00
Front drawer keys (2) 214-3292-00

OPTIONAL ACCESSORIES

Rigid Module Extender
for circuit modules 067-0999-00
Minimum Load Unit for power supply 067-0998-00
Flexible Extender for interface
modules/decoders 067-1000-00
Linearity Graticule 11 x 15 lines 067-1034-00
Linearity Graticule (NTSC) 14 x 17 lines 067-1054-00
Linearity Graticule (PAL) 15 x 20 lines 067-1055-00

Recorder

4635

STANDARD ACCESSORIES

High Performance Dry Silver Paper
(500 ft roll) 006-2432-00

Paper

High Performance Dry Silver Paper
(500 ft roll) 006-2432-00
High Performance Dry Silver Paper
(4 rolls/carton) 006-2432-01

Standard Dry Silver Paper
1 Roll 006-1603-00
4 Roll Carton 006-1603-01

HARDWARE SUMMARY

Tektronix warrants to its customers the products it manufactures and sells will be free from defects in materials and workmanship for the periods set forth in the table below. If any such product proves defective during the applicable warranty period, Tektronix, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Tektronix will provide such service at Customer's site for certain categories of products, as indicated in the table below, if Customer's site is within the normal on-site service area. Tektronix will provide on-site service outside the normal on-site service area only upon prior agreement and subject to payment of all travel expenses by Customer. In all other cases, Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the service center is located. Customer shall be responsible for paying all shipping charges, duties and taxes, if the product is returned to any other location. The locations at which the services will be provided for different categories of products or product groups are set forth below.

This warranty shall not apply to any defect, failure, or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; or c) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

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PRODUCT CATEGORIES	WARRANTY PERIOD	SERVICE LOCATION
Computer Graphics Products: 4xxx Series except 4105, 4107, 4109 and Display Monitor: 618.	3 months from date of shipment; except 1 year from date of shipment for CRT.	Customer's site if within normal on-site service area.
Computer Graphics Terminals: 4105, 4107, 4109.	1 year from date of shipment.	Customer's site if within normal on-site service area.
Display Monitors: 606B, 608, 620, 624, 634.	3 months from date of shipment; except 1 year from date of shipment for CRT.	Service Center designated by Tektronix.
Accessories: (9-digit part numbered items).	3 months from date of shipment.	Service Center designated by Tektronix.
GMA Series and products listed above when purchased under OEM conditions.	3 months from date of shipment; except 1 year from date of shipment of CRT. Warranty to Tektronix' customer.	Service Center designated by Tektronix.

For further details regarding Tektronix warranties and service policies, please consult your local sales office. A complete statement of Tektronix' warranty for specific products will be supplied at the time of sales or upon request.

Tektronix, Inc.

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Telephone: (503) 627-7111

For additional literature or the address and phone number of the Tektronix Sales Office nearest you, phone: (800) 547-1512
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TEKTRONIX BEAV. Cable: TEKTRONIX

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Principal Plant: Tektronix Industrial Park,
Beaverton, Oregon

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