

Tektronix 4050 Series

Desktop Computers



**A family of easy-to-use
desktop computers.
Designed for stand-alone
computing power and
interactive graphics.**

The 4050 Series. A choice of graphic and computing performance.

The 4050 Series consists of three powerful stand-alone desktop computers designed for high performance and productivity with the added dimension of interactive graphics. All in an efficient, easy-to-use form.

Productive. Computer graphics offers highly productive ways to create, analyze, and communicate ideas. Our minds naturally reason in visual images, but it took the exclusive Tektronix display technology to deliver the precise, graphic detail that makes desktop computing such a powerful tool.

Power, precision, and ease of use were designed into the 4050 Series: sharp, high resolution graphic displays. Easy-to-use typewriter keyboards. Built-in five function calculator key pads. And ten user-programmable function keys to direct a broad range of computer operations.

Easy to use. Inside, an efficient system architecture provides streamlined computer performance and interactive graphics right at your fingertips. You are not hampered by complex operating procedures or strange computer languages. Quite the contrary: the entire line of 4050 Series of desktop computers brings a new level of productivity to your way of working.

Interactive software. We took enhanced BASIC and added some practical, graphic commands to

make it all the more interactive. This graphically enhanced BASIC offers the first time user simplified programming and the experienced user program-

ming speed and problem-solving flexibility.

We've also developed an extensive library of applications software. It contains volumes of detailed packages, all fully

documented and modular so they are easy to use.

A choice of graphic and computing performance. These are powerful, stand-alone

desktop computers. They possess the memory, speed and performance to execute your complex programs. And they are compatible with a wide variety of plug-in firmware,

interface options and peripheral products which open the door to highly flexible systems expansion.



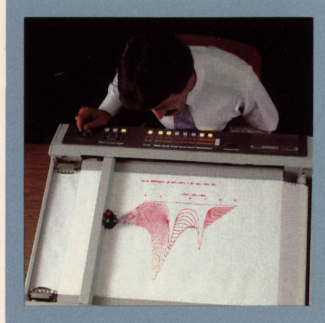
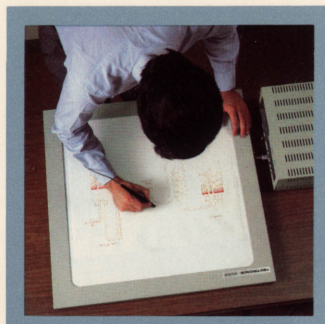
The design-size desktop computer. The Tektronix 4054.

High resolution 19" display. Bigger is better when it comes to the 19" display screen of the 4054 desktop computer. Now you can work with whole graphic objects as complex as your application demands. Not just fragments.

Refresh capability. With the Dynamic Graphics option it is easy to create, position, and assemble complex graphic displays. You can manipulate a portion of a display without disturbing any other sections. Refreshed objects are easily moved around on the screen. You can literally build a design component by component.

Enhanced graphics. Several graphic and alphanumeric enhancements are built into the 4054. Four character sizes provide flexibility in organizing titles, text, and tables. Eight language and character fonts are available for specialized work. The full screen crosshair cursor makes drawing complex objects easy and precise. Hardware dot-dash vectors provide distinct line differentiation in dimensional graphic objects and allow you to create unique shaded patterns.

Powerful computation. The 16-bit CPU controls full data arrays and floating point operations with 14 digit accuracy. Character string manipulations and transcendental functions (sine, cosine and exponentials) execute extremely fast. Special built-in matrix functions place powerful mathematical capabilities right at your fingertips.



Simplified graphic data input (top). The 4956 Graphic Tablet inputs graphic data to the 4054 directly from engineering and scientific drawings, from schematics or layouts via a digitizing pen (shown above) or cursor.

Fast graphic and alphanumeric output (bottom). The intelligent 4663 Interactive Digital Plotter draws high quality 17" x 22" copies in multiple colors. Its buffered input lets you continue to work while it plots.

The 4054 is also big on memory. Standard 32K bytes of RAM are expandable to meet your application requirements. A built-in tape cartridge drive accepts interchangeable 3M® DC 300A tape cartridges for a reliable 300K bytes of storage. Storage of data and programs can be extended even further with the optional File Manager. I/O operations are fast and easy under program or keyboard control.

Expandable. The 4054 is easy to expand. You can

plug in ROM packs to add several powerful functions. For example, a File Manager ROM Pack provides all controller and intelligence operations for interfacing to the 4907 File Manager with 1.89 megabytes of storage. There's also an Editor ROM Pack for editing magnetic tape files and a number of signal processing ROM packs for sophisticated signal and data analysis.

You can increase 4054 utility by using it as an intelligent terminal to support a remote data base. Or interface it with peripherals as a powerful stand-alone system. A GPIB (IEEE-488) interface is standard, RS-232-C is available as an option.

- 1. Tektronix exclusive Direct View Storage Tube (DVST) technology** delivers unsurpassed graphic resolution and stability on the large 19" screen.
- 2. 300K byte data tape cartridges** offer fast, error-free program and data loading. Cartridges and contents are interchangeable with any 4050 system.
- 3. Ten user definable keys** (shiftable to 20) simplify operation and increase interaction.
- 4. The full 128 character ASCII keyboard** provides fast, easy input in both upper and lower case. Return key operates automatic return.
- 5. Five function calculator key pad** allows direct entry of arithmetic and scientific calculations.
- 6. Built-in thumbwheels** quickly and precisely position a full screen crosshair cursor.



4054 Graphic enhancements and Dynamic Graphics option.

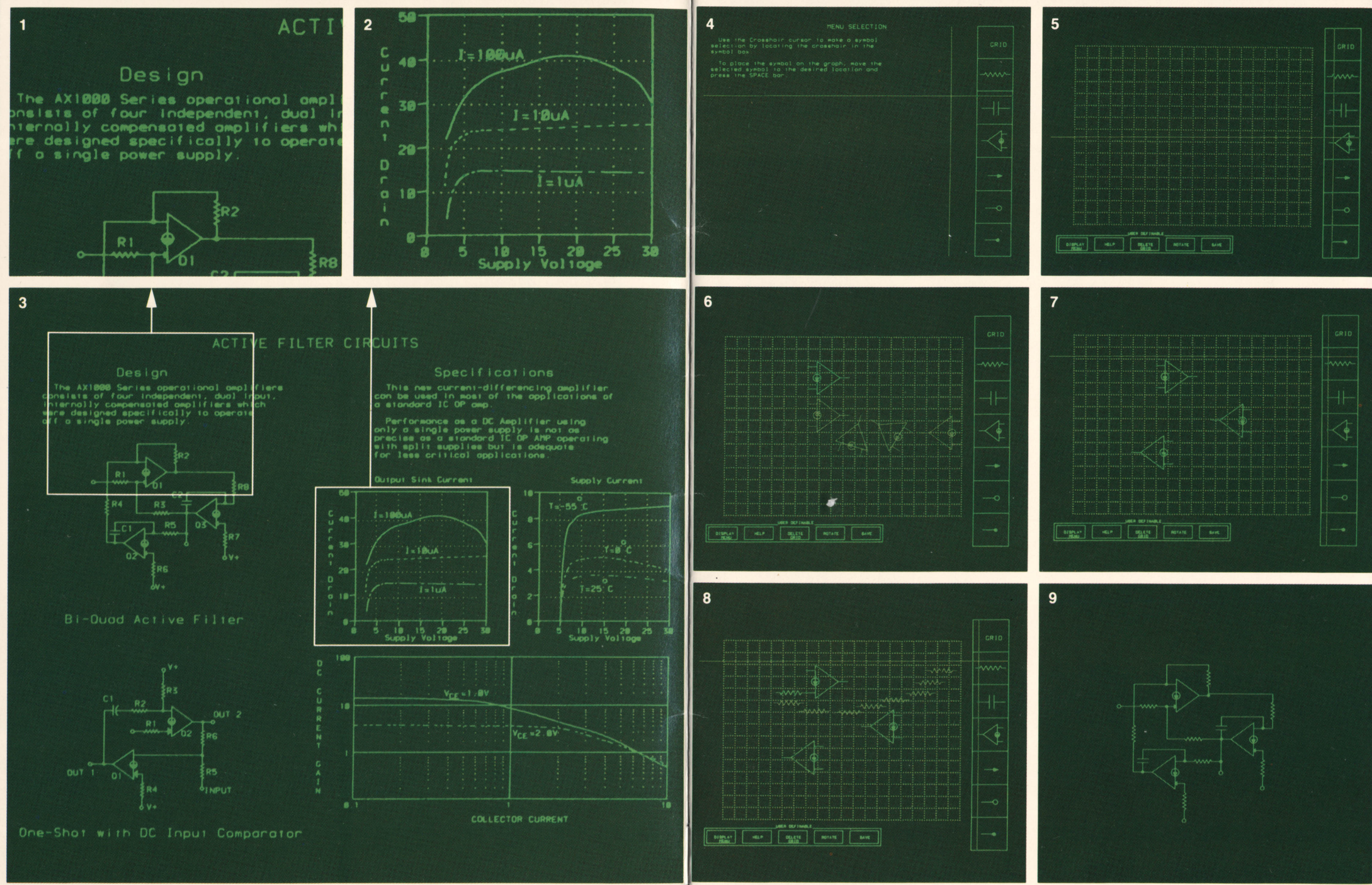
Unsurpassed detail built in. The 4054's 13 million addressable points make even the most complex graphics easy to view. Smooth curves look smoother on the 4054's 19" high resolution screen.

Enhanced effectiveness. Graphic output is more effective when descriptive titles, labels, and text are easy to read. You have your choice of eight character fonts and four program selectable character sizes for up to 133 characters per line.

Increased flexibility and speed. Differentiate as many lines as there are programmable dot-dash vectors—256! This powerful tool lets you emphasize differences and similarities, show hidden lines, shade in a wide variety of patterns. All vectors, regardless of length, are drawn at the same fast rate, 15kcm/second.

Dynamic Graphics option for advanced interactivity. Optional high-speed microprocessor and 32K bytes of memory are dedicated solely to displaying refreshed graphic objects (vectors, shapes, or text) with the same graphic precision you get from our display technology.

The Dynamic Graphics option provides up to a hundred-fold increase in graphic displaying speed as compared to software-generated graphics.



Graphic Enhancements

1. Stroked characters in four sizes distinguish headings, text, and labels, and make them easy to read.
2. Hardware dot-dash lines and point-to-point vectors provide high information density for complex graphs.

3. The 4054's 19" screen and high-resolution graphics permit text, diagrams, and graphs to be displayed together. Present information precisely as you want it, when you need it.

Dynamic Graphics

4. Program and symbol menus can appear and disappear as required. Here, a symbol menu guides construction of a circuit schematic.
5. A grid appears in refresh to help align the circuit elements. The desired element is selected from the symbol menu with the crosshair cursor.

6. The element is defined by the cursor and moved to the desired position using the thumbwheels, and fixed. Elements in refresh can be easily rotated to the required orientation.
7. Three images of the first element have been fixed as part of the schematic. The next element is being selected with the crosshair cursor.

8. The resistors are moved to position and fixed. As many copies of a symbol can be added to the schematic as required.
9. The circuit schematic is completed. The menu, grid, and cursor used in the construction process are no longer displayed.

Commonly-used symbols can be placed in Dynamic Graphics memory, called up as often as needed, positioned, and added to a design. Complex graphic objects can be quickly and easily assembled from user-defined components.

Simplified design. You can work interactively with selected parts of a graphic display without affecting the rest of the display. Refreshed objects are easily moved around on the screen under thumbwheel or program control. You can perform rubberbanding, free movement, and dragging functions without backtracking erasures and line-by-line reconstructions. There is no sacrifice in computing performance, because the 4054 processor is not interrupted by the Dynamic Graphics option.

Added BASIC commands. The Dynamic Graphics option provides 13 new commands for added flexibility and interactivity. Object display commands simplify the creation, manipulation and display of user-defined objects. FIX allows you to store an image on-screen at its current position. Use BLINK to alternate between visible and invisible modes with specified on and off times.

The high-performance desktop computer. The Tektronix 4052.

Powerful processor.

The 4052 desktop computer is optimized for fast processing and high volume data manipulation. So it is well suited for statistical and research data acquisition and analysis.

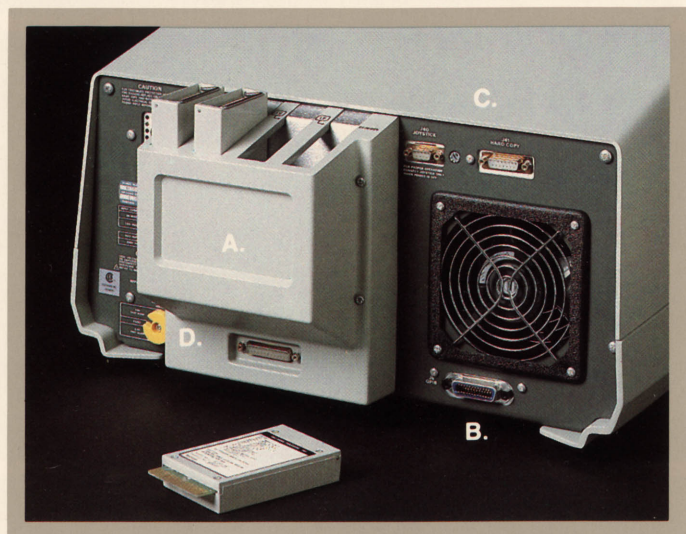
It employs the same powerful 16-bit processor and efficient systems architecture as the 4054. The expandable memory, 32K standard, provides ample working storage for high volume data reduction.

Reliable tape cartridges accept up to 300K bytes of data or programs. Cartridges are interchangeable and compatible with any other 4050 system.

Fast, accurate analysis. The 4052 performs full array arithmetic and floating point operations with 14 digit accuracy. And it executes transcendental functions with great speed. Most importantly, it is as convenient and personally manageable as only a desktop computer can be.

Designed for efficiency. A full scale typewriter keyboard offers fast, easy typing. Choose from a total of eight character fonts including a special business font which provides slashless zero, dollar sign, and pound sterling sign.

Other built-in capabilities include: a calculator key pad with five functions to help speed numeric input, and special user programmable keys for fingertip control of I/O operations or for calling commonly used routines.



A. ROM pack backpack

The backpack accepts plug-in ROM packs that add powerful firmware functions to the 4052 desktop computer. A standard two-slot and optional four-slot backpack (shown above) are available. Matrix functions and a binary program loader are built in.

B. Interface connectors

These interfaces conform to RS-232-C and GPIB (IEEE-488) formats. Choose from our plug compatible family of high performance input and output devices.

C. Special interface connectors

Two special function interface connectors provide direct access to the 4631 Hard Copy Unit and the 4952 Joystick.

D. Data Communication interface

Optional asynchronous interface allows the 4052 to act as an intelligent terminal by connecting, via a modem, to a remote mainframe. Data communications rate is program selectable up to 9600 baud.

1. 11" Direct View Storage Tube (DVST) technology produces easy viewing graphics in fine detail. Straight point-to-point vectors with no display flicker.

2. Interchangeable 300K byte data cartridges can be categorized, labeled and stored to build your library of programs.

3. Ten user definable keys provide you with the capability to program a variety of keyed tasks or routines. Designate up to 20 functions by combining with the shift key.

4. Five edit keys offer direct-to-screen data, word or statement manipulation. No software modifications are necessary.

5. MAKE COPY key, when using Tektronix 4631 Hard Copy Unit, provides clean, dry 8½" x 11" copies of your displays.

6. Sloped and contoured keyboard feels natural and is easy to use. Operates in upper and lower case.

7. Five function calculator key pad offers accurate, fast input of numeric data and computations.



The cost-effective desktop computer. The Tektronix 4051.

Proven reliability.

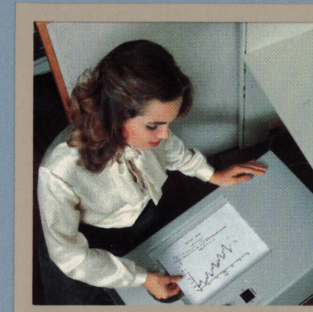
The 4051 started the world thinking about desktop convenience and powerful computer graphics. Today, this proven computer continues to provide productive solutions for a modest price.

Its 8-bit microprocessor and read/write memory (expandable internally to 32K bytes) are well-suited for general applications. It delivers precise, stable graphics, using Tektronix exclusive display technology. You enjoy easy, direct interaction with the display screen via the full type-writer keyboard and built-in calculator. Your work progresses without interruption. All input and output operations are as simple as pressing the appropriate key, because I/O commands are device independent.

Software flexibility.

Our graphic-enhanced BASIC allows non-programmers to use the full capabilities of the 4051 while maintaining familiar high-level instructions for the use of advanced programmers.

To complement your programming skills, the PLOT 50 library of applications software is available to all users. It contains easy-to-follow packages, including business management graphics with



Fast, inexpensive hard copy output (top). The 4631 Hard Copy Unit produces 8½" x 11" exact copies directly from the 4051 display screen.

Expanded data storage (bottom). If you need additional storage for large data base development, the 4907 File Manager provides up to 1.89 megabytes of flexible disc storage including all controller functions. Its intelligence also provides directory and file management activities.

modeling and reporting features; business planning and analysis; and easy graphing programs. All designed to reduce your program development time and costs.

Versatility. When we made the 4051 cost-effective, we didn't limit its capabilities. There's a wide selection of plug-compatible, powerful ROM packs and interface options to extend the 4051's

operational capabilities. For example, the Editor ROM Pack provides fast, simple ways to modify programs directly. And the Matrix ROM Pack allows matrix computations at speeds ten times faster than BASIC.

No matter what your application, Tektronix has the right peripheral for the job. They are all RS-232-C or GPIB (IEEE-488) plug-compatible with your 4051 desktop computer.

1. Tektronix Direct View Storage Tube delivers high quality graphics and finely detailed displays for easy viewing.

2. 3M® DC300A tape cartridges are interchangeable with any 4050 series computer. They offer reliable data storage up to 300K bytes. Easy to access with BASIC commands or through keyboard.

3. Line editor keys provide direct interaction for fast, easy program development. No need to use BASIC.

4. STEP PROGRAM key is useful for debugging programs. It allows you to execute one program line at a time.

5. AUTO LOAD key transfers the first program file from tape cartridge to computer memory for immediate execution.

6. MAKE COPY key directs the 4631 Hard Copy Unit to produce dry, sharp 8½" x 11" paper copies in just 18 seconds.

7. Built-in five function calculator key pad offers fast numeric input and easy computations.



4050 Series peripherals

1. 4641 Matrix Printer.

High quality impact printer produces 132 character/line tabular printouts.

2. 4956 Graphic Tablet.

Choice of 20" x 20" or 36" x 48" (on stand) formats. Digitizes any two dimensional image (maps, schematics, and photographs) without calculations or tedious keyboard entry.

3. 4907 File Manager.

Offers up to 630K bytes on each of three disc drives.

4. 4631 Hard Copy Unit.

Delivers 8½" x 11" copies of display in 18 seconds, and additional copies every ten seconds.

5. 4662 Interactive Digital Plotter. This intelligent B-size (A3) plotter produces precise graphic and alphanumeric, 11" x 17" plots on paper or film in up to nine colors.

6. 4642 Matrix Printer.

80 column impact printer produces 8½" x 11" tear-off pages, special formats or multi-part forms.

7. 4051E01 ROM Pack Expander Unit. Accepts eight ROM packs at once.

8. 4952 Joystick. Positions graphic cursor with fingertip control. Accurate to 0.1%.

9. Plug-in ROM Packs. A selection of add-on firmware modules providing powerful interface functions and intelligent peripheral control.

10. 4663 Interactive Digital Plotter. Intelligent, C-size (A2) plotter produces 17" x 22" plots on paper or film. Features include: multiple parameter entry cards, paper advance.

11. 4924 Digital Tape Cartridge Drive. Provides up to 300K bytes of auxiliary storage. Intelligent for off-line data collection.



4050 Series flexibility.
Graphic input, output and display.



Flexible graphic input (top left). Capture data as fast as you can trace with digitizing pen or cursor. Build precise graphics directly on the display using the optional joystick or built-in thumbwheels on the 4054.

Precise graphic display (bottom left). 4054 display (shown) has up to 13 million addressable points. Exclusive display technology allows you to combine graphics and alphanumeric data with unparalleled precision and detail.

Flexible data output (right). On-screen graphics can be reproduced on film acetate for overhead projection (top) or binder size paper copies or multi-color plots for a flip chart set (bottom).

Desktop versatility.

The 4050 Series of desktop computers pack considerable capability and productivity into a relatively small package.

The 4050 Series can replace manual data preparation simply and effectively. You can display and manipulate complex problems with precision; enter data easily and get output in ready-to-use forms with no wasted effort.

Graphic input. Traditionally, acquiring raw graphic data has been a slow, tedious process. Now, with Tektronix graphic tablets, capturing data from layouts, blueprints, schematics and even rough drawings is as easy and fast as tracing the object with a digitizing pen or cursor. No more point-by-point tracing of data. No more time consuming calculations. The digitizer speeds data immediately onto tape storage for later display and processing.

Or, you can build precise personalized graphics directly on the display by designating and connecting vector end points. Just position the display cursor at the desired coordinates by using the optional joystick or built-in thumbwheels.

Tablet or direct, you get fast graphic input conveniently displayed.

Graphic display. The beauty of computer graphics is instant feedback. You can experiment more freely. Errors are easier to spot and correct. This continuing visual feedback is one of the most productive ways to design, analyze and solve problems.

The 4050 Series was designed to handle complex graphic problems with ease. You can pack a lot of information onto one of our high density displays. For example, there are up to 13 million addressable points on the 4054 display. Displays are sharp and clear due to the high resolution possible only with our unique DVST technology. ASCII stroke generated characters are available for you to create, edit and place alphanumeric data on the display screen wherever you like.

You can combine alphanumerics and graphics with a precision and detail not possible with raster scan or refresh based systems. Best of all, you'll find our display easy on the eyes even over prolonged viewing.

Graphic output. When it comes to output, our plotters, copiers, and printers offer you a choice of outputs to best satisfy your needs.

Your graphics can be produced in sizes up to 17" x 22". You can highlight plotter output in up to nine colors.

You can even get output on transparent film for overhead projection or as multi-layered transparencies for schematics.

Alphanumeric output is available as 80 and 132 character/line printouts in fanfold, tear off, or multi-part forms.

**4050 Series versatility.
Flexible memory. Computational
power. Data sharing.**

Memory structure is a good measure. Standard RAM memory in each 4050 desktop computer is balanced against its intended application workload. In addition, we reserved room for considerable add-on read/write memory capability, allowing 4050 Series computers to be closely adapted to specific applications while retaining a good measure of cost-efficiency.

The built-in tape drive offers exceptional programming flexibility. Interchangeable tape cartridges provide unlimited space for storing data and developing programs. Tape memory is accessed by program control or by simple keystroke. Confidential data and programs can be stored under controlled security.

In applications where data are run through several program reductions, data stored on tape cartridges can be used selectively, simply by entering the cartridge containing the desired program into the cartridge drive on the front panel.

Tape cartridges and data formats are interchangeable and compatible on all 4050 Series desktop computers.

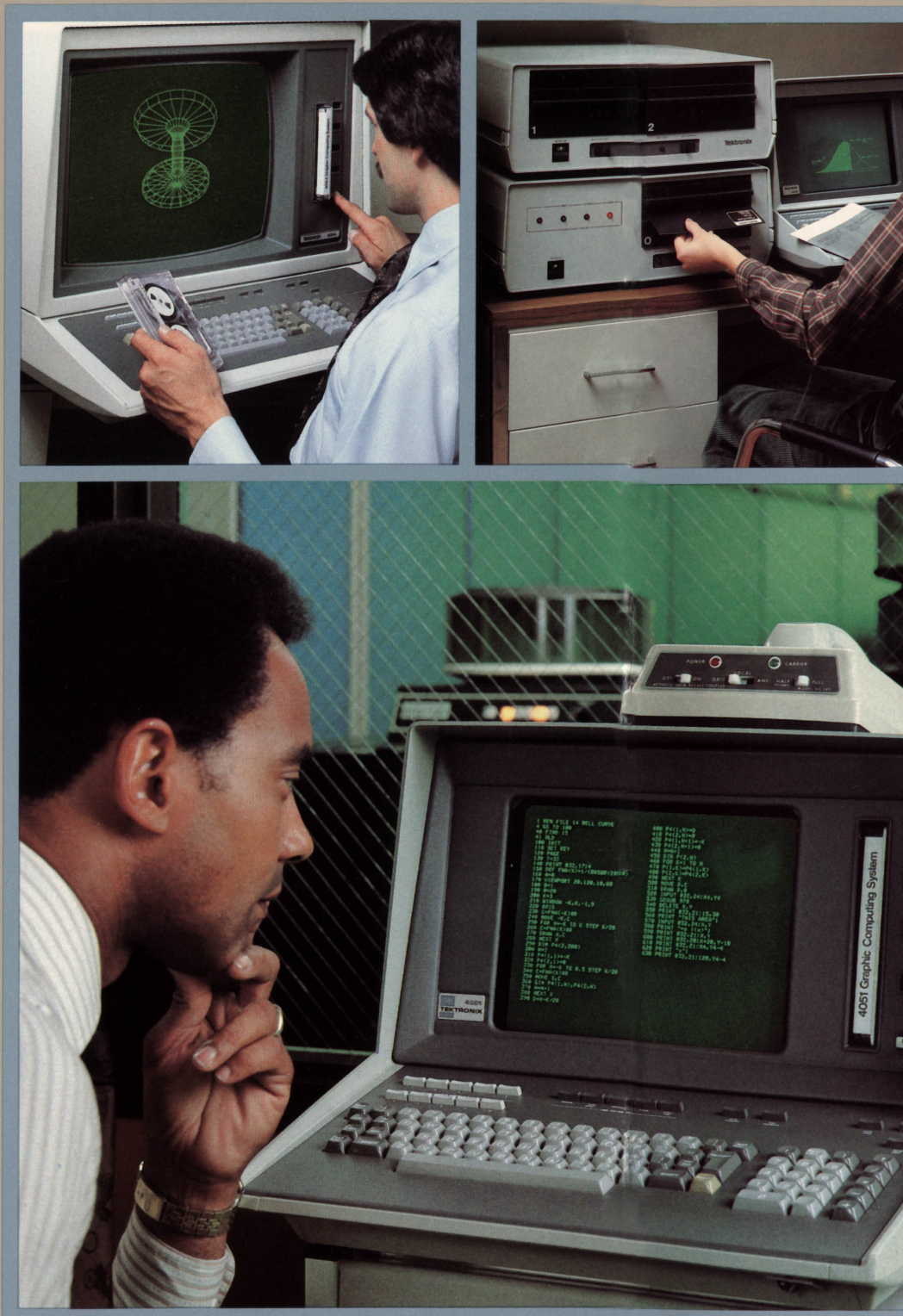
For larger program development, Tektronix offers a flexible disc system for fast on-line mass storage. The basic system provides 630K bytes of storage capability. Available options can deliver a total capacity of 1.89 megabytes. The system

also houses all controller and intelligence operations for plug-in convenience.

Computational speed. Many applications require exceptionally fast high-volume processing. Our bit slice, 16-bit processor is micro-coded for extremely fast, floating point operations with 14 digit accuracy. Transcendental functions like exponential and trigonometric operations work about 30 times faster than a standard 8-bit microprocessor. With this computational speed and accuracy, considerably more productive time is available for user interaction in creating, designing and analyzing graphic problems.

Intelligent data communications. Any 4050 Series system can optionally function to support remote mainframes as a terminal for on-line and batch processing, taped data storage, programmed input and output, and interactive communications in any language. You communicate to host computers and other terminals via a bit-serial interface option with selectable speeds from 110 to 9600 baud (2400 baud on 4051).

Our data communications interface options conform to RS-232 standards A, B, and C so your desktop computer is compatible with a wide variety of host computers.



Built-in tape drive (top left). Interchangeable tape cartridges provide unlimited space for storing data and programs. Allows confidential data to be stored under controlled security.

Flexible disc system expands mass storage (top right). Basic system provides 630K bytes of storage capability. Available options can deliver a total capacity of 1.89 megabytes.



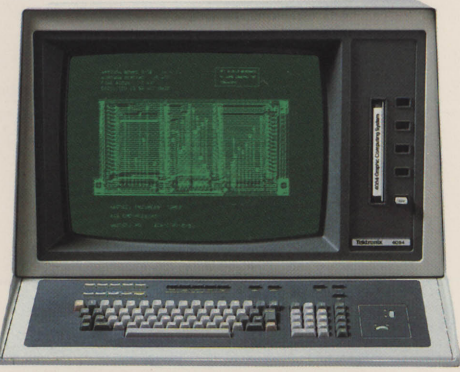
Data communications (bottom left). Bit-serial interface option with selectable speeds from 110 to 9600 baud (2400 baud on 4051) allows 4050 Series desktop computers to interact with remote mainframes and other terminals.



High volume processing (right). The 4052 and 4054 utilize a 16-bit processor micro-coded for extremely fast, accurate handling of full data array arithmetic.

Desktop Computers

Configuration Worksheet

Model	Features	Benefits	Options/ROMS	Peripherals	Software
<div>4051</div> <div></div>	<div>11" DVST display.</div> <div>Graphic enhanced BASIC.</div> <div>Terminal mode capability (option).</div> <div>Built-in tape drive.</div> <div>GPIB & RS-232-C compatible.</div> <div>Expandable Memory (option).</div>	<div>High resolution graphics.</div> <div>Simplified yet powerful programming.</div> <div>Access to large data base, processing power.</div> <div>Program and data storage.</div> <div>Plug-in interfacing to various input, output and storage devices.</div> <div>Matches memory needs, allows for growth.</div>	<div><input type="checkbox"/> Option 1 Data Communications Interface</div> <div><input type="checkbox"/> Option 10 Printer Interface</div> <div><input type="checkbox"/> Option 22 Optional Memory</div> <div><input type="checkbox"/> 4051RO1 Matrix Functions ROM Pack</div> <div><input type="checkbox"/> 4051RO5 Binary Program Loader ROM Pack</div> <div><input type="checkbox"/> 4051RO6 Editor ROM Pack</div> <div><input type="checkbox"/> 4051RO7 Signal Processing ROM Pack #1</div> <div><input type="checkbox"/> 4051RO8 Signal Processing ROM Pack #2</div> <div><input type="checkbox"/> 4051EO1 ROM Expander</div>	<div>Graphic Input</div> <div><input type="checkbox"/> 4956 Graphic Tablet</div> <div><input type="checkbox"/> Option 33</div> <div><input type="checkbox"/> Option 48</div> <div><input type="checkbox"/> Cursor</div> <div><input type="checkbox"/> 4952 Joystick</div> <div><input type="checkbox"/> Option 2 (required)</div> <div>Graphic Output</div> <div><input type="checkbox"/> 4662 Interactive Digital Plotter</div> <div><input type="checkbox"/> Option 1 (required)</div> <div><input type="checkbox"/> Option 48</div> <div><input type="checkbox"/> 4663 Interactive Digital Plotter</div> <div><input type="checkbox"/> Option 1 (required)</div> <div><input type="checkbox"/> Option 48</div> <div><input type="checkbox"/> 4631 Hard Copy Unit</div> <div><input type="checkbox"/> Option 1</div> <div><input type="checkbox"/> Option 2</div> <div><input type="checkbox"/> Option 48</div> <div>Alphanumeric Output</div> <div><input type="checkbox"/> 4641 Matrix Printer</div> <div><input type="checkbox"/> Option 2 (required for 4052, 4054)</div> <div><input type="checkbox"/> 4641-1</div> <div><input type="checkbox"/> 4642 Matrix Printer</div> <div><input type="checkbox"/> Option 1</div> <div><input type="checkbox"/> Printer Stand</div> <div><input type="checkbox"/> 4642-1</div> <div>Mass Storage</div> <div><input type="checkbox"/> 4907 File Manager</div> <div><input type="checkbox"/> Option 30</div> <div><input type="checkbox"/> Option 31</div> <div><input type="checkbox"/> Option 40 (required for 4052, 4054)</div> <div><input type="checkbox"/> Option 48</div> <div><input type="checkbox"/> 4924 Digital Cartridge Tape Drive</div> <div><input type="checkbox"/> Option 48</div>	<div><input type="checkbox"/> 4050A01 Statistics Volume 1</div> <div><input type="checkbox"/> 4050A02 Statistics Volume 2</div> <div><input type="checkbox"/> 4050A03 Statistics Volume 3</div> <div><input type="checkbox"/> 4050A04 Mathematics Volume 1</div> <div><input type="checkbox"/> 4050A05 Mathematics Volume 2</div> <div><input type="checkbox"/> 4050A06 Electrical Engineering Volume 1</div> <div><input type="checkbox"/> 4050A07 Graph Plot</div> <div><input type="checkbox"/> 4050A08 General Utilities Volume 1</div> <div><input type="checkbox"/> 4050A09 Business Planning and Analysis Volume 1</div> <div><input type="checkbox"/> 4050A10 Statistics Volume 4</div> <div><input type="checkbox"/> 4050A11/4050A12 Business Planning and Analysis Volume 2</div> <div><input type="checkbox"/> 4050A13 Statistics Library</div> <div><input type="checkbox"/> 4050A14 Mathematics Library</div> <div><input type="checkbox"/> 4050A15 Scientific Library</div> <div><input type="checkbox"/> 4050B01 Management and Reporting Software</div> <div><input type="checkbox"/> 4050D01 Easy Graphing</div>
<div>4052</div> <div></div>	<div>16 bit, bit-sliced processor.</div> <div>11" DVST display.</div> <div>Graphic enhanced BASIC.</div> <div>GPIB & RS-232-C compatible.</div> <div>Expandable Memory (option).</div> <div>Built-in tape drive.</div> <div>Eight character fonts.</div> <div>Terminal mode capability (option).</div>	<div>Faster processing, throughput.</div> <div>High resolution graphics.</div> <div>Simplified, yet powerful programming.</div> <div>Plug in interfacing to various input, output, and storage peripherals.</div> <div>Matches memory need, allows for growth.</div> <div>Program and data storage.</div> <div>Six language fonts, business, graphics.</div> <div>Access to large data base, processing power.</div>	<div><input type="checkbox"/> Option 1 Data Communications Interface</div> <div><input type="checkbox"/> Option 2 Four Slot ROM Backpack</div> <div><input type="checkbox"/> Option 3 Four Slot ROM Backpack (Option 1 built in)</div> <div><input type="checkbox"/> Option 10 Printer Interface</div> <div><input type="checkbox"/> Option 24 Optional Memory</div> <div><input type="checkbox"/> 4052RO6 Editor ROM Pack</div> <div><input type="checkbox"/> 4052RO7 Signal Processing ROM Pack #1</div> <div><input type="checkbox"/> 4052RO8 Signal Processing ROM Pack #2</div>		
<div>4054</div> <div></div>	<div>19" DVST display.</div> <div>Enhanced graphics (dot-dash vectors, multiple character sizes, eight character fonts).</div> <div>Dynamic Graphics (option).</div> <div>16 bit, bit-sliced processor.</div> <div>Graphic enhanced BASIC.</div> <div>Expandable memory (option).</div> <div>Built-in tape drive.</div> <div>GPIB & RS-232-C compatible.</div> <div>Terminal mode capability (option).</div> <div>Thumbwheel driven, crosshair cursor.</div>	<div>High resolution graphics—over 13 million addressable points.</div> <div>Improved graphic and alphanumeric displays.</div> <div>Increased graphics interactivity.</div> <div>Faster processing, throughput.</div> <div>Simplified yet powerful programming.</div> <div>Matches memory needs, allows for growth.</div> <div>Program and data storage.</div> <div>Plug-in interfacing to various input, output, and storage peripherals.</div> <div>Access to large data base, processing power.</div> <div>Increased interaction with display.</div>	<div><input type="checkbox"/> Option 1 Data Communications Interface</div> <div><input type="checkbox"/> Option 2 Four Slot ROM Backpack</div> <div><input type="checkbox"/> Option 3 Four Slot ROM Backpack (Option 1 built in)</div> <div><input type="checkbox"/> Option 10 Printer Interface</div> <div><input type="checkbox"/> Option 24 Optional Memory</div> <div><input type="checkbox"/> Option 30 Dynamic Graphics</div> <div><input type="checkbox"/> 4052RO6 Editor ROM Pack</div> <div><input type="checkbox"/> 4052RO7 Signal Processing ROM Pack #1</div> <div><input type="checkbox"/> 4052RO8 Signal Processing ROM Pack #2</div>		

Peripherals

Options/ROMS		Graphic Input	Graphic Output	Alphanumeric Output	Mass Storage
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Option 1 Data Communications Interface.
4051F01—Field installed.

Option 10 Printer Interface.
4051F10—Field installed.

4051R01 Matrix Functions ROM Pack.
Provides fast matrix manipulation: Multiply, Inverse, Transpose, Identity and Determinant functions.
Built-in on 4052 and 4054.

4051R05 Binary Program Loader ROM Pack.
Allows storage and retrieval of programs on

internal and external magnetic tape in binary format.
Built-in on 4052 and 4054.

4051R06 Editor ROM Pack.
Allows general ASCII file editing of data, text or programs off-line. Provides 29 commands like MOVE, INSERT, SEARCH and SORT.

4051R07 Signal Processing ROM Pack #1.
Seven new functions including integration, differentiations, fast graphing, locating minimum and maximum and more.

4051R08 Signal Processing ROM Pack #2 (FFT).
Eight new advanced operations that can be performed on one dimensional data arrays: convolution, correlation, Fast Fourier Transform, inverse functions and more.

4051E01 ROM Expander.
Permits connecting up to eight ROM Packs to the 4051. Maximum of two for 16 ROM pack capacity.

Option 1 Data Communications Interface.
4052F01—Field installed.

Option 2 Four Slot ROM Backpack.
4052F02—Field installed.

Option 3 Four Slot ROM Backpack. (Includes Option 1)
4052F03—Field installed.

Option 10 Printer Interface.
4052F10—Field installed.

4052R06 Editor ROM Pack.
Allows general ASCII file editing of data, text or programs off-line. Provides 29 commands like MOVE, INSERT, SEARCH and SORT.

4052R07. Signal Processing ROM Pack #1.
Seven new functions including integration, differentiations, fast graphing, locating minimum and maximum and more.

4052R08 Signal Processing ROM Pack #2 (FFT).
Eight new advanced operations that can be performed on one dimensional data arrays: convolution, correlation, Fast Fourier Transform, inverse functions and more.

Option 1 Data Communications Interface.
4052F01—Field installed.

Option 2 Four Slot ROM Backpack.
4052F02—Field installed.

Option 3 Four Slot ROM Backpack. (Includes Option 1)
4052F03—Field installed.

Option 10 Printer Interface.
4052F10—Field installed.

Option 30 Dynamic Graphics.
4054F30—Field installed.

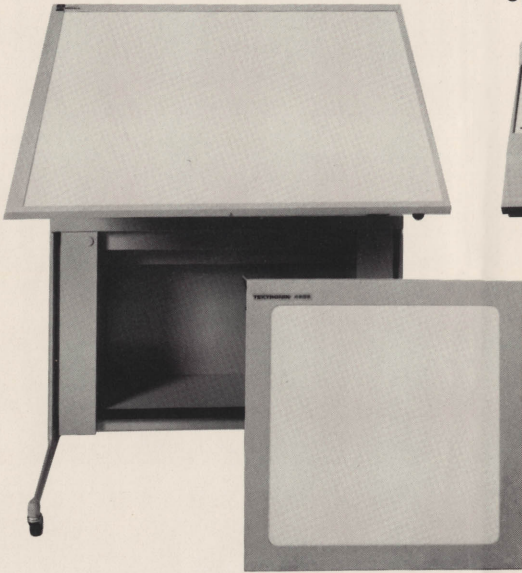
4052R06 Editor ROM Pack.
Allows general ASCII file editing of data, text or programs off-line. Provides 29 commands like MOVE, INSERT, SEARCH and SORT.

4052R07 Signal Processing ROM Pack #1.
Seven new functions including integration, differentiations, fast graphing, locating minimum and maximum and more.

4052R08 Signal Processing ROM Pack #2 (FFT).
Eight new advanced operations that can be performed on one dimensional data arrays: convolution, correlation, Fast Fourier Transform, inverse functions and more.

Digitizers

4956 Graphic Tablet.
Microprocessor based 510 mm x 510 mm (20" x 20") digitizer with resolution to ± 0.1 mm (0.005") and GPIB compatibility.
Option 33—910 mm x 1220 mm (36" x 48")
Option 48—220V, 50 Hz.
119-0875-00—Cursor.



Joystick

4952 Joystick. Provides graphic input and cursor positioning via a standard built-in interface.

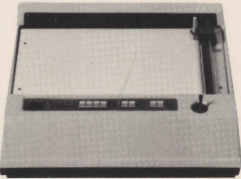
Option 2—Required for use with 4050 Series.



Plotters

4662 Interactive Digital Plotter. ("B" size). GPIB and RS-232-C compatible. Produces plots on paper or acetate up to 254 mm x 391 mm (10" x 15") with repeatability of ± 0.06 mm (± 0.0025 ").

Option 1—GPIB interface (required).
Option 48—220V, 50 Hz



Hard Copy

4631 Hard Copy Unit.
Produces demand hard copy of both alphanumerics and graphics from the CRT on 216 mm x 279 mm (8½" x 11") dry copies in 18 seconds or less.
Option 1—Copy counter.
Option 2—Four channel multiplexer.
Option 48—220V, 50 Hz.



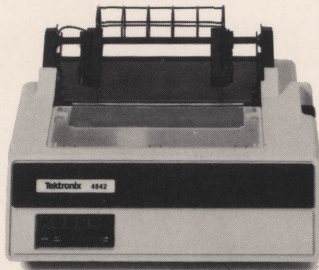
Printers

4641 Matrix Printer. Prints alphanumeric information on a variety of single or multipart forms up to 132 columns wide at 180 cps. Data rates are switch selectable from 300 to 9600 baud.
4641-1—220V, 50 Hz.
Option 02—required for use with 4052/4054.



4642 Matrix Printer. Prints at up to 60 cps on inexpensive roll paper. Regular and elongated characters are available in 80 and 132 columnar formats. Printer interface required.

Option 1—Rear feed tractor assembly.
016-0393-00—Printer stand.
4642-1—220V, 50 Hz.



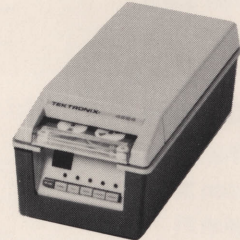
Disc

4907 File Manager.
An intelligent, GPIB compatible mass storage system that is directory and file oriented. Available with up to three double density floppy disc drives of 630K bytes each.
Option 30—2 drives.
Option 31—3 drives.
Option 40—4052/4054 Interface (required).
Option 48—220V, 50 Hz.



Tape

4924 Digital Cartridge Tape Drive GPIB compatible. Intelligent storage device for on-line or off-line data collecting and recording. Provides 300K bytes of auxiliary storage.
Option 48—220V, 50 Hz.



4050 Series software and support

Graphic-enhanced BASIC. With little or no experience, you can begin programming with familiar English words like MOVE, DRAW, GO TO, SAVE, and PRINT. Soon, with some practice and the easy-to-follow user's manuals, you'll be writing complex programs with speed and skill. Debugging your programs is just as easy with the extensive editing features on our 4050 Series desktop computers.

PLOT 50 library.

Because program development can be time consuming, we have assembled the PLOT 50 library of prepackaged application programs. You can select packages from our many volumes on statistics, mathematics, electrical engineering, general graphing and plotting, business planning, modeling and reporting, and many other general utility programs. You purchase only what you need.

All PLOT 50 programs operate on any of the 4050 Series computers. Programs you write in our graphic-enhanced BASIC are transferable from one system to any other in the Series.



Programs come to you on tape, fully documented, and detailed for direct use or easy adaptation to your application. Even user-key overlays are provided to simplify program operation.

User applications exchange. These useful programs were written by 4050 Series users for their specific applications. They constitute a diverse selection of applications programs that can possibly save you from reinventing an existing program. Programs are listed in a special software catalog and include electrical engineering, mechanical engineering, statistics, education, research, advanced graphic techniques, as well as several other application areas.

4050 Series users are encouraged to participate in this rapidly growing software exchange. A free

newsletter, TEKniques, is distributed by Tektronix to members to keep them abreast of new contributions, helpful programming tips, new PLOT 50 releases and other 4050 product additions.

Tektronix support services. Our team of hardware and software specialists are ready to answer questions and help you utilize your 4050 Series computer to its maximum potential. They are as close as our field service offices in all major U.S. cities and in many countries abroad. You can count on us for support and on our commitment to excellence.

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