

TEKTRONIX RE4012



The computer terminal designed for
rugged military environments



The right-tool-for-the-job philosophy is a good one. That's why the TEKTRONIX RE4012 Computer Display Terminal makes sense in military system applications. Here are sound reasons why the RE4012 is the right tool for your job:

GRAPHICS

Instead of just showing line after line of alphanumeric for area, height, speed, barometric pressure and other factors, the RE4012, alone, can also present the subject graphically. A picture is worth a thousand words to the operator—especially if he must provide a fast and accurate analysis. With pictures of coordinates, weather fronts, graphs and maps, he'll be able to understand and interpret much faster than with alphanumeric alone. And in most military applications speed and accuracy can mean the difference between winning and losing.

REFRESHED MODE

Stored and continually refreshed information can be displayed simultaneously on the RE4012 using the optional "write-thru" capability. Images can be superimposed, moved, enlarged, rotated and deleted from any desired data base image. And up to 40 charac-

ters can be displayed in this mode with negligible flicker.

ALPHANUMERICS

The RE4012 offers complete alphanumeric through the use of a full 128 character ASCII keyboard. There are 74 characters to each of 35 lines for a total of 2590 characters shown on the display.

RESOLUTION

Clarity is built into the RE4012. The 11-inch display (measured diagonally) features 1024 x 1024 addressable point locations and 780 x 1024 viewable point locations.

CONSTRUCTION

The RE4012 is built tough on the inside as well as the outside, but it still weighs in at only 80 lbs., and it's small enough to fit through a 25-inch hatch. It is also built for operator safety, having met the requirements of MIL-S-901C. Plus it has been designed with the same quality that has made Tektronix world famous for its graphic and alphanumeric equipment.

APPLICATIONS

The RE4012 opens up possibilities for both new and refined activities of a military nature including aircraft and vessel surveillance, weather monitoring, air traffic control, navigation and much more. Not only does the RE4012 offer to expand these operations but

promises to do it at a lower cost than some alphanumeric-only terminals. The following examples show how the RE4012 can dovetail with your application requirements.

At Sea

As an on-board navigation aid the RE4012 can provide graphic representation of sea-bottom topography based on sonar pulses.

Weather

The RE4012 can also display graphically isobars, cyclone headings, storm front and cold front locations, wind speeds and temperature. And with the addition of the TEKTRONIX 4631 Hard Copy Unit can be invaluable in providing dry 8½ x 11 inch paper copies of navigation, weather forecasting, fuel use and ETA projections.

Air Traffic Control

Designed for use with a typical radar screen, the RE4012 display can show and continually update the elapsed time, heading, speed and altitude of any aircraft.

Tracking

By superimposing a "refreshed" symbol representing an aircraft on a "stored" map (the optional write-thru mode), the RE4012 can graphically display the direction and location of an aircraft. In addition, these characteristics and more can be displayed algebraically and continuously updated. This technique may be applied to the trajectory parameters of artillery projectiles, missiles, spacecraft and satellites as well as aircraft.

Converting Raw Data To Graphics

The RE4012 is designed to convert raw alphanumeric data into X-Y coordinates for maps, charts, plots and diagrams. And that makes for easier interpretation and communication in all applications. But the real significance of the RE4012 graphics capability is that important data processing can now be tackled in rugged military environments.

Topography

Topography can be studied in detail with the window feature. By using the cross-hair cursor to frame a specific area of a large scale map that area may be enlarged to any scale desired.

DESIGNED ESPECIALLY FOR RUGGED ENVIRONMENTS

The tough-built RE4012 offers its alphanumeric and graphic talents in flying weather stations, airborne command posts and mobile computer systems. On land, sea and air this terminal helps any system visibly sharpen its reflexes as well as extend the use of existing technology.

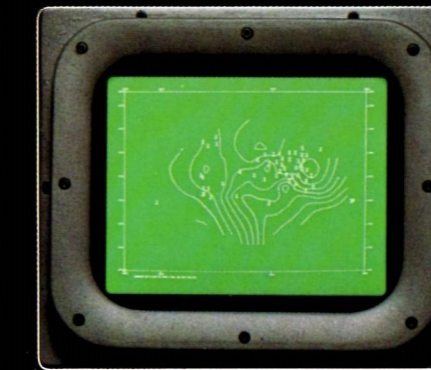
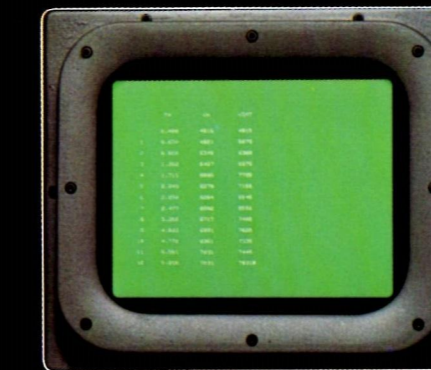
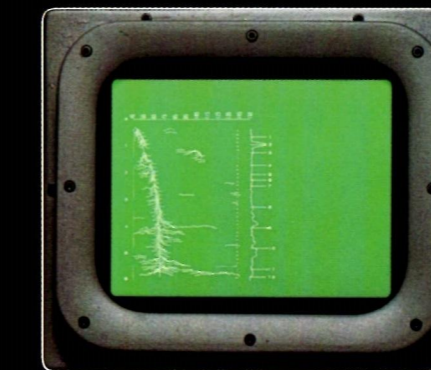
THE COST: NO MORE THAN ALPHANUMERICS ALONE

The RE4012 price is actually less than most ruggedized computer display terminals that offer only alphanumeric. Tektronix makes low-cost possible by the same dedication to simplified circuitry and advanced production technology that have made our oscilloscopes world-famous for over a quarter century.

Existing systems are easily updated, due to the RE4012's flexible interfacing and minimal software requirement for converting existing data bases to RE4012 graphics.

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Alphanumerics and graphics in a low-cost, ruggedized computer display terminal.



RE4012: the top of a very tough line.

Single-unit construction, modular functional assemblies, and no-stress CRT mount simplify RE4012 maintenance and assure operator safety. Automatic origin shifting, discrete connectors on the circuit cards, ceramic IC's and heavy-duty components throughout maximize CRT life and overall reliability. "Whisper" fans assure quiet operation.

The RE4012 has its tough outer shell, but under the surface it's still a sophisticated terminal with versatile interfacing available to readily adapt it to most computer systems. And wherever duty takes it, maintenance and service are nearby. Tektronix has field offices throughout all major U.S. and world-wide markets, with computer display terminal specialists standing by to help.

Tektronix has long been a respected supplier to commercial and government projects. Talk with your Tektronix sales representative: the RE4012 is available now, and its applications can open new horizons in rugged environments.

PRODUCT DATA

OPERATIONAL CHARACTERISTICS:

Alphanumeric Mode:

Display Medium:
Direct View Storage CRT.

Display Size:

11-inch diagonal.
approx. 7.9x6.0 in.; 20x15.2 cm.

Character Generator:

7x9 dot matrix (ROM).
Approx. 1,000 characters/sec.
Approx. 0.087x0.106 in.; .22x.27 cm
Full ASCII, 94 printing characters (upper and lower case).

Format:

74 characters per line.
35 lines per display.
2,590 characters per display.

Cursor:

Pulsating 7x9 dot matrix.

Alphanumeric Speed:

Approx. 10,000 WPM (Avg. 6 characters per word).

Graphic Display Mode:

Vector Drawing Time:

2.6 ms for standard terminal.
With fast-graph option, variable depending on vector length.

Graphic Matrix:

1024X x 1024Y addressable points. 1024X x 780Y viewable points: 100 per in., 39.4 per cm.

Graphics Input Mode:

Thumb-wheel controlled cross-hair cursor 4 through 1023X, 0 through 780Y.

Length error:

<1%.

Usable Storage Time:

Approx. 15 minutes in view status and 1 hour in hold status without permanent damage to the storage target.

Line Straightness:

0.5% deviation from mean.

Line Voltage Ranges:

110 V AC	220 V AC
Low	
110V ± 10%	220V ± 10%
Medium	
115V ± 10%	220V ± 10%
High	
120V ± 10%	230V ± 10%
	240V ± 10%

Input power:

135W typical with standard terminal configuration. Line frequency 48-66 Hz.

ENVIRONMENTAL CHARACTERISTICS:

Temperature:

Operating: -15° to +55°C
Non-operating: -55° to +75°C
As per Procedure 1, Method 501, 502, Mil-Std-810B

Entire CRT assembly unplugs and is replaceable as a single unit . . . in about a minute.

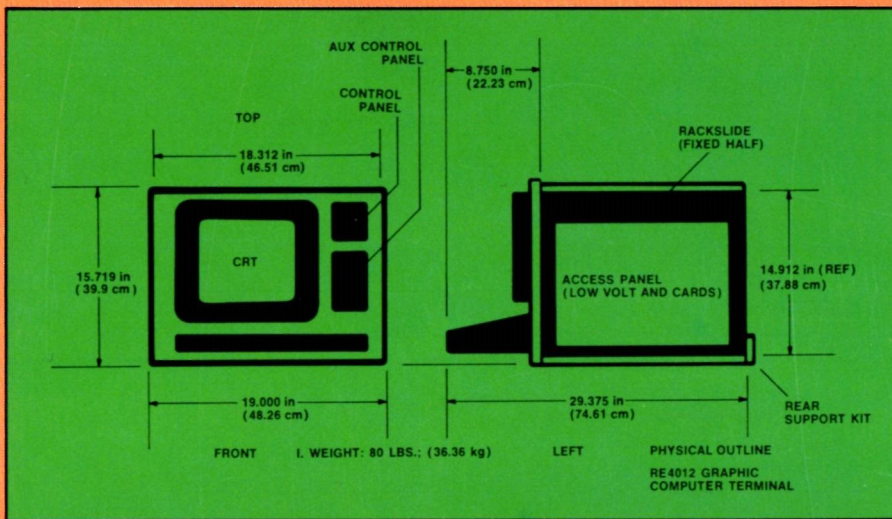
Complete keyboard, including 128-character ASCII, character repeat enabled simply by holding a key down.



Convenient front panel controls include fuse diagnostic light, variable brightness control for "write-through" mode, and control for hard copy scan brightness.

Plug-in maintenance. Entire terminal logic is contained on four cards for rapid serviceability.

Integral thumb-wheel controls, on the keyboard, offer true convenience of graphic input, facilitates "menu-picking" and sequential alteration of data base.



Humidity:

To 95%.
 Procedure IV, Method 507, as per
 Mil-Std-810B.

Altitude:

Operating: To 15,000 ft., 4,572 m.
 Non-operating: To 50,000 ft.,
 15,240 m.
 As per Procedure IV, Method 506,
 Mil-Std-810B.

Vibration (non-operating):

5 to 25 Hz—.025 in., 63.5 mm.
 25 to 55 Hz—.020 in., 50.8 mm.
 18 minutes each axis.
 10 minutes dwell at resonance.

Shock (non-operating):

to 30 g's 1/2 sine, 11 ms duration, 6
 axis, 18 shocks minimum.
 As per Procedure 1, Method 416.1,
 Mil-Std-810B.

Bench Handling:

4-inch (10 cm) drop—all edges.
 As per Procedure V. Method
 516.1, Mil-Std-810B.

Transportation:

Meets National Safe Transit
 Committee type of test when
 packaged as shipped by factory.

Personnel Safety:

Shock test, as per Mil-Std.-901C
 Grade B.

Fungus:

Certified non-nutrient materials.

Salt Atmosphere:

Materials and finishes.
 As per Mil-Std-810B
 Procedure 1, Method 509.

Drip-Proof:

8-minute spray @ 4.33 gal/hr (16.4
 liter/hr) with nozzle 3 ft. (.9 m)
 above surfaces.
 Equipment rotated 15° from
 horizontal in 4 directions.

Dust Atmosphere:

Withstands normal dusty environ-
 ments with proper filter main-
 tenance.

EMI:

CE-01, CE-03, CS-01, CS-02,
 CS-06, RE-02 (limited to
 1 GHz), (T) RE-04, RS-01,
 and RS-03 (limited to 1 GHz).

DC Magnetic Field:

20 Oersteds.

Reliability:

Level B, Mil-Std-781.

Weight:

Approx. 80 lbs., 36.4 kg.
 exclusive of rack tracks.

Shipping Weight:

Approx. 120 lbs., 54.5 kg.

Dimensions:

Height: 15.7 in., 40.00 cm.
 Width: 19 in., 48.3 cm.
 Length: 29.4 in., 74.6 cm.

Miscellaneous:

- Ceramic IC's.
- Metal Can Transistors.
- Coated Circuit Cards.
- Plug-in Circuit Cards with
 Discrete Connectors.
- Structurally Rugged.
- Special CRT Mounting.
- Board Retainers.
- Large Component Clamps.
- Cable Tie-Downs.
- Modular Functional Components.

Standard Accessories:

- General Purpose Asynchronous—
 Serial Interface (installed).
- Rackmount Adapter Kit, rear

support.
 Chassis Track (Pr).
 Manual.

Options:

- Parallel Interface (NTDS Fast).
- Fast Graph.
- Display Multiplexer.
- 360-440 Hz Operation.
- No keyboard (read only).
- Minibus Extender.

Optional Accessories:

Manuals:

- Parallel Interface (NTDS Fast).
- RE4012 Maintenance/Operator.
- Display Multiplexer.
- Fast Graph.
- General Purpose Asynchronous—
 Serial Interface.

Maintenance Aids:

- 72-pin Card Extender.

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