



- **BRIGHT FLICKER-FREE VIEWING**
- **LOW COST**
- **STORAGE ECONOMY**
- **HARD COPY COMPATIBILITY**

The 613 Storage Display is a bright, low cost, large screen data storage and display unit. Use includes any environment where a substantial amount of data is stored and presented in a single display.

### Applications Versatility

The 613 Storage Display provides digital and analog displays in business, education, banking, electronic data processing, medicine, and process control.

Use of a newly-designed storage cathode-ray tube provides a bright trace for easy viewing of high density alphanumeric and graphic displays in high ambient light conditions. The 613 Storage Display provides high information density without flicker.

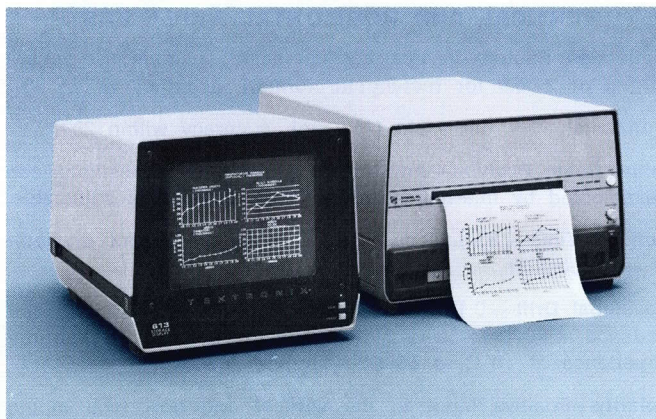
Permanent hard copies of the displayed information are available by using the fully compatible 4610 Hard Copy Unit, which provides full screen copies in eighteen seconds. Storage technology eliminates expensive components required in refreshed information display.

### Multiplexing Option

A 4610 Hard Copy Unit, Option 1 is available. This is a multiplex unit that allows from one to four 613's to operate into a single 4610 Hard Copy Unit thereby reducing copy costs.

### Operating Functions

613 operating functions are View, Erase, Non-Store and Cursor. View and Erase are under manual or programmable control. Non-Store and Cursor are under programmable control only.



The 613 Storage Display is fully compatible with the 4610 Hard Copy Unit.





Remote programming of the 613 is achieved by grounding the appropriate program lines of a program connector on the rear panel.

The Erase function, when initiated, removes all previously stored data from the display area and returns the CRT to a "ready-to-write" mode. Within ninety seconds after the display is written, the 613 will automatically switch to a "Hold" mode, storing data on the CRT at a low brightness to extend the storage time. Pressing the VIEW switch while in the "Hold" mode returns the display to the "View" mode for at least 60, but not more than 90 seconds. The "View" mode may be programmed for continuous viewing.

In the "Non-Store" mode the display remains on the screen as long as it is refreshed.

The Intensity, Focus and Power switch controls are located on the rear panel. The View and Erase switches are located on the front panel. X, Y, and Z BNC connectors are available on the rear panel.

### CRT DISPLAY & STORAGE

**Cathode-Ray Tube**—11-inch flat faced storage tube.

**Display Size**—Vertically: 15 cm. Horizontally: 20 cm.

**Resolution**—200 vertical x 266 horizontal stored line pairs.

**Display Linearity**—Full Scale—spot will settle within 1.5% proper position along center axes for voltage applied.

**Incremental**—less than 15% difference between any 2 cm deflection, at any position in the display.

**Viewing Time**—Nominally 15 minutes. Longer viewing may require more than one erasure.

**Dot Writing Time**—5  $\mu$ s or less is required to write (store) one bit of information.

**Erase Time**—800 ms or less.

### VERTICAL AND HORIZONTAL AMPLIFIERS

**Deflection Factor**—Horizontal: 1 V/20 cm rectangular format, accuracy within 2%. Vertical: 1 V/15 cm, within 2%. Either input driven differential or single ended.

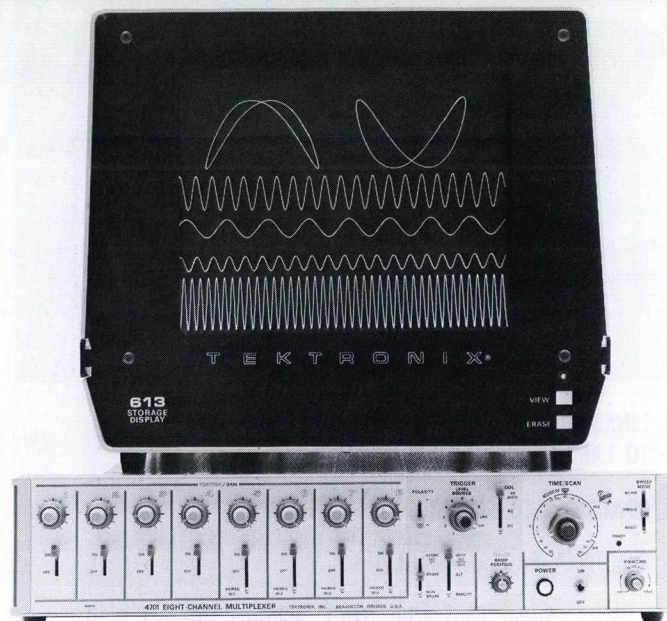
**Initial Beam Position**—Any one of 9 initial beam positions may be selected by two internal connectors. Each position is adjustable  $\pm 10\%$  of full scale vertically and horizontally.

**Settling Time**—14.0  $\mu$ s/cm + 6  $\mu$ sec/cm up to 2 cm to within 1 spot diameter of final position.

**Polarity**—Positive input to the vertical moves beam up; positive input to the horizontal moves beam to the right.

**Input R and C**—20 k minimum. Shunted by less than 60 pF.

**Maximum Input Voltage**— $\pm 18$  V DC plus peak AC.



Bright, easily-viewed traces from as many as eight sources can be portrayed on the 613 Storage Display when used with the 4701 Eight-Channel Multiplexer.

### Z AXIS

**Input**—At least +1 V turns beam on; +0.5 V or less turns beam off.

**Input R and C**—10 k shunted by  $\approx 50$  pF.

### OTHER CHARACTERISTICS

**Remote Control**—All 613 operating modes can be controlled by applying appropriate ground closures to the remote program connector. All control signal inputs are TTL compatible (2 TTL per input). Modes which may be controlled remotely are: Erase, View, Non-Store and Cursor.

**Power Requirements**—90 VAC to 132 VAC or 180 VAC to 264 VAC, 48-66 Hz. 180 watts maximum, 115 VAC, 60 Hz.

### Dimensions and Weights

Height	28.19 cm	11.100 in.
Width	33.65 cm	13.250 in.
Depth	53.34 cm	21.000 in.
Weight	$\approx 19.5$ kg	$\approx 43$ lbs.

### ORDER INFORMATION

**613 STORAGE DISPLAY** ..... \$2200  
Horizontal Display format

**613-1 STORAGE DISPLAY** ..... \$2200  
Vertical display format

### Optional Accessories

An optional EMI Filter is available for use in high electrical noise environments. Order TEKTRONIX part number 337-1743-00.

U.S. Sales Prices FOB Beaverton, Oregon  
Please refer to General Information page