# TEK 400 MHz DUAL BEAM OSCILLOSCOPES

## 7844
## R7844

**400 MHz Bandwidth**

**0.9 ns Risetime**

**Dual Beam**

**Full Vertical Crossover Switching**

**8 x 10 cm Display**

**CRT Readout**

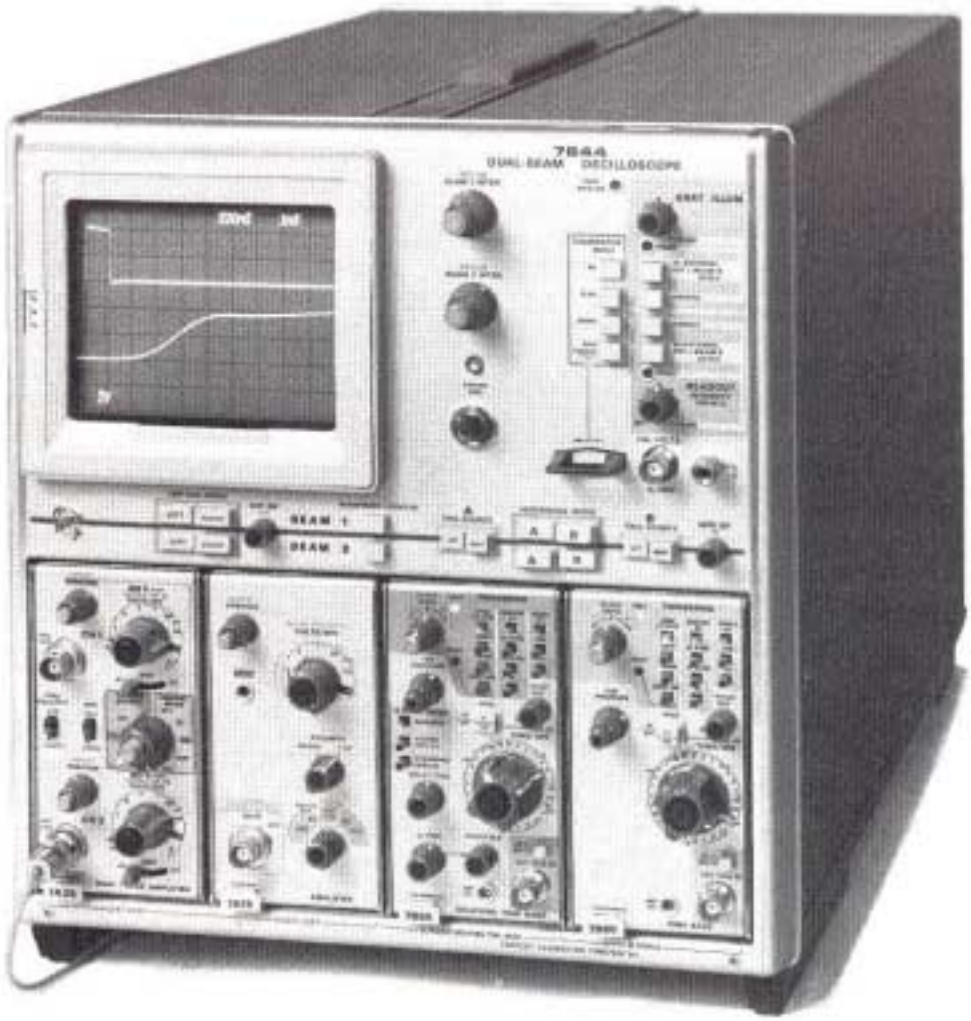
**1 ns/div Max Calibrated Sweep**

### APPLICATIONS

**Radar/Lidar**

**Destructive Testing**

**SCR Switching**




The 7844 and 7 inch rackmount R7844 are wide bandwidth, dual-beam oscilloscopes designed primarily for fast, single-shot events. Unique features such as pulsed graticule and pulsed crt readout allow you to photograph vertical and horizontal scale factors, test date, test number, and other pertinent data before or after an event. Vertical signal crossover switching permits you to view a single event from a single probe at two sweep speeds.

#### VERTICAL SYSTEM

**Channels** — Two left-hand plug-in compartments; compatible with all 7000 Series Plug-ins. Bandwidth determined by mainframe and plug-in unit.

**Display Logic** —

| | Beam 1 | Beam 2 |
|---|---|---|
| Vertical Compartment Controlling Beam | Left | Left |
| | Left | Right |
| | Right | Left |
| | Right | Right |

**Vertical Crossover** — Permits viewing the same signal on two time bases.

**Vertical Trace Separation** — Beam 1 can be positioned ±4 cm with respect to Beam 2.

**Delay Line** — Permits viewing leading edge of displayed waveform when using 7B80 and 7B90 Series Time Bases; not compatible with 7B50 Series.

#### HORIZONTAL SYSTEM

**Channels** — Two right-hand plug-in compartments; compatible with time bases of the 7B80 and 7B90 Series. 7000 Series Vertical Amplifiers and specialized plug-ins may also be used. 7B53AN11 requires modification for use in the 7844.

**Fastest Calibrated Sweep Rate** — 1 ns/div.

**X-Y Mode** — Phase shift is within 3° from dc to 50 kHz.

**Bandwidth** — Dc to at least 1 MHz.

**Horizontal Separation** — Beam 1 can be positioned at least 0.25 cm to the right and at least 0.25 cm to the left of Beam 2 with a total 2 cm range.

**Display Logic** —

| Beam 1 | Beam 2 |
|---|---|
| A Horizontal | A Horizontal |
| A Horizontal | B Horizontal |
| B Horizontal | A Horizontal |
| B Horizontal | B Horizontal |

#### CRT AND DISPLAY FEATURES

**CRT** — Dual beam, full overlap, 8 x 10 cm graticule with variable illumination. CRT readout intensity is adjustable with front-panel control. Accelerating potential is 24 kV with P31 phosphor standard.

**Option 78, P11 Phosphor.**

**Autofocus** — Reduces the need for additional manual focusing with changes in intensity after focus control has been set.

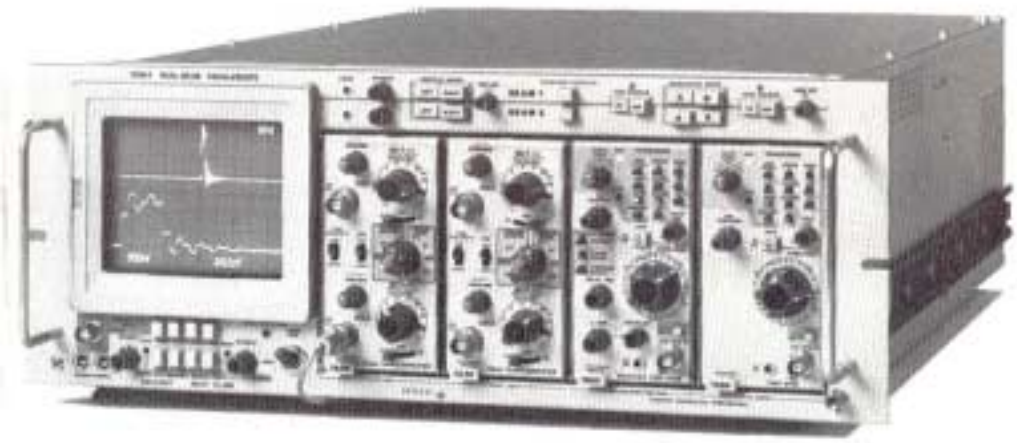
**Beam Finder (Beam 1 and Beam 2, Independent Controls)** — Limits display within graticule area and intensifies beam.

**External Z-Axis Input (Beam 1 and Beam 2)** — 2 V p-p for full intensity range. A positive signal blanks the trace. Max input voltage is 15 V (dc + peak ac) and p-p ac. Input is dc coupled.

### Typical Photographic Writing Speed (Using Polaroid Type 612 20,000 ASA Film without Film Fogging)

In typical camera applications, P31 Phosphor has about one-half the writing speed of P11 Phosphor. Writing speed can be increased by using controlled film fogging with a writing speed enhancer.

The photographic writing speed enhancer, Option 22, provides a preset automatic method of film fogging for the 7844. Option 22 is recommended for writing speed enhancement when a camera with a writing speed enhancer is not available.



### PULSED READOUT AND GRATICULE ILLUMINATION

Provides a means of pulsing the graticule lights or CRT readout at a preset level, coincident with a single-shot event in one exposure. The graticule lights or CRT readout can be pulsed by the event, an external ground closure, or front-panel pushbutton.

### CALIBRATOR

**Calibrator** — Rectangular positive-going waveform from ground, 1 kHz (±0.25%).

**Voltage Ranges** — 4 mV, 40 mV, 0.4 V, 4 V (±1%) into an open circuit; 0.4 mV, 4 mV, 40 mV, 0.4 V (±1%) into 50 Ω.

**Current Output** — 40 mA (±1%) rectangular waveshape, front panel current loop 7844, optional current loop adapter (012-0341-00) required for R7844.

### OUTPUTS/INPUTS

**A and B + Sawtooth** — Sawtooth starts 1 V or less from ground (into 1 MΩ). Output voltage is 50 mV/div (±15%) into 50 Ω, 1 V/div (±10%) into 1 MΩ. Output R is ≈ 950 Ω.

**A and B + Gate** — Positive-going rectangular waveform derived from Main or Delayed Gate. Output voltage 0.5 V (±10%) into 50 Ω, 10 V (±10%) into 1 MΩ. Rise time is 5 ns or less into 50 Ω. Output R is ≈ 950 Ω.

**Single-sweep Ready Indicator** — +5 V, rear panel BNC output, for single-sweep ready indication.

**External Single-sweep Reset** — Ground closure, rear panel BNC, provides input to reset sweeps.

**Camera Power** — Three-prong connector to the left of the CRT provides power, ground, and remote single-sweep reset access for C-50 Series Cameras.

**Probe Power** — Two connectors provide correct operating voltages for two active probes.

### POWER REQUIREMENTS

**Line Voltage Ranges** — Selectable 115 V nominal (90-132 V), 230 V nominal (180-264 V).

**Line Frequency** — 48 to 440 Hz.

**Max Power Consumption** — 235 W, 2.9 A at 60 Hz 115 V line.

### INCLUDED ACCESSORIES

**R7844** — 1 rackmount hardware kit, 1 rackmount slide guide (351-0314-01).

**Dimensions and Weights** — See page 153.

**For Recommended Cameras** — See page 154.

**For Recommended Plug-ins** — See pages 152.

## ORDERING INFORMATION

**(Plug-ins not included)**

**7844 Oscilloscope**

**R7844 Oscilloscope**

### OPTIONS

**Option 03 Emc Modification**

**Option 22 Writing Speed Enhancer Modification**

**Option 78 P11 Phosphor**

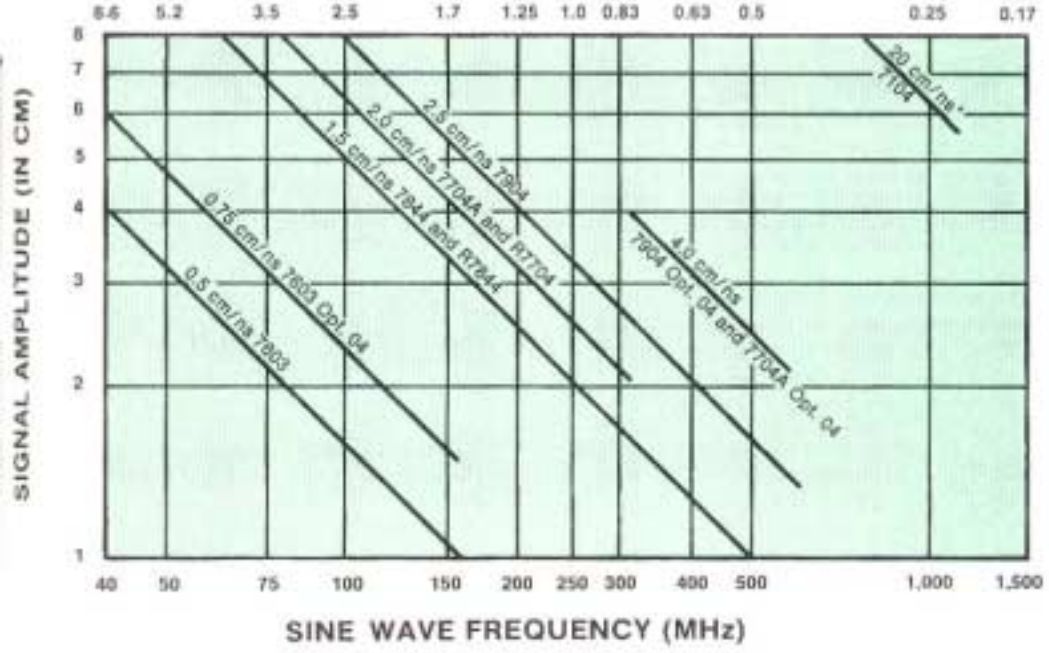
### INTERNATIONAL POWER CORD AND PLUG OPTIONS

**Option A1 Universal Euro 220 V/16A**

**Option A2 UK 240 V/13A**

**Option A3 Australian 240 V/10A**

**Option A4 North American 240 V/15A**




*Amplitude vs. speed and photographic writing speed comparison of 7000 Series Mainframes using optional P11 Phosphors, 20,000 ASA film and the C-51 (f/1.2, 1/0.5) Camera.*

### PHOTOGRAPHIC WRITING RATE

This graph shows the relative photographic writing speed of the 7000 Series Mainframes and the amplitude-speed relationship for each.

Vertical signal amplitude on the vertical scale is shown against maximum sinewave frequency (lower scale) and fastest rise time (upper scale). These speeds assume a small horizontal spot velocity compared to the maximum vertical velocity. The step ramp is assumed to be a linear ramp measured between 10% and 90% points.

To obtain these minimum photographic writing speeds, open the camera shutter before the sweep and leave open for 5 seconds after the sweep. Develop the film for 30 seconds at 25°C. View with front illumination. The limit of photographic writing speed will be a barely discernable trace in the center of the photographic image.

The standard P31 Phosphor has a spectral output that gives about one-half the photographic writing speed of the above optional P11 Phosphor. The visual output of the P31 Phosphor is, however, about six times greater than that of the optional P11.

*20 cm/ns is the specified photographic writing speed for the 7104 Mainframe. However, it is not correctly comparable to the other mainframes here because of relaxed phosphor, film and camera requirements. The microchannel plate CRT as well as the bright photographed image allow for these relaxed requirements. Standard P31 Phosphor is used and a C-53 (f/1.9, 1.0 B5 image) Camera.