

**Single-Beam Storage Oscilloscope.****Compatible with 15 plug-ins.****Bistable Split-screen Display.****Stored Writing Speed: Standard Instrument**

- 20 divs/ms (normal).
- 50 divs/ms (enhanced).

**Option 03**

- 200 divs/ms (normal).
- 800 divs/ms (enhanced).

**Stored view time up to 10 hours at reduced intensity.****DC to 2 MHz.****Sampling to 1 GHz (with 5S14N).****Rear Panel Signal Outputs (optional).**

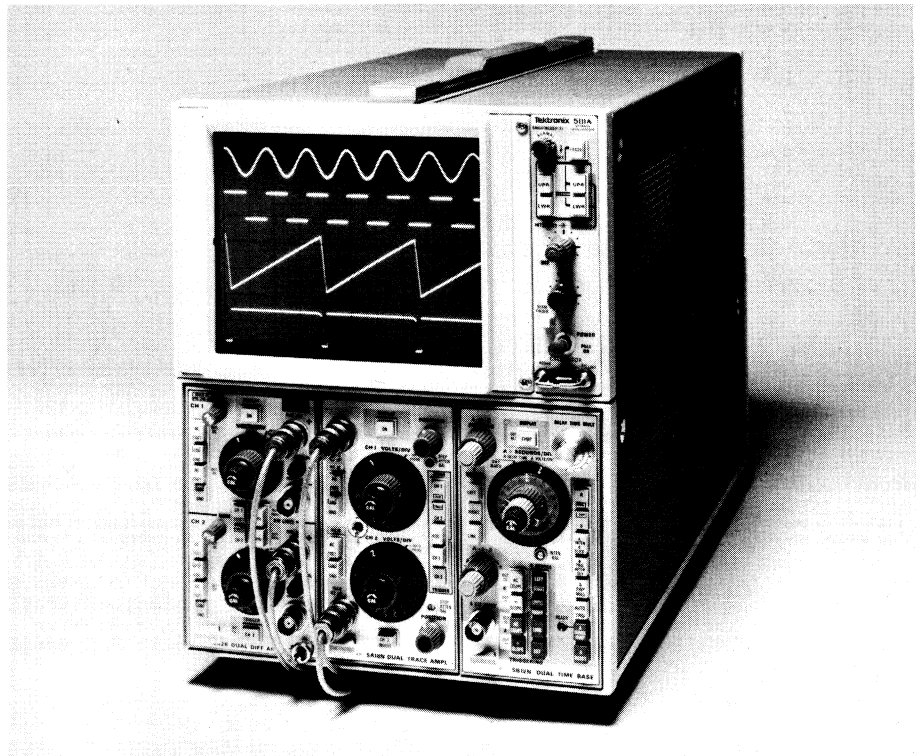
The 5111A is most useful for acquiring transient and slowly occurring events, such as biomedical stimulus-response signals or transducer-derived signals from mechanical devices.

**Real Time Bandwidth to 2MHz** provides acquisition capability for the majority of signals found in biomedical, mechanical and low frequency electronic applications.

**Bistable Storage** provides long-term retention of the display (up to 10 hours). Also, new information can be added without erasing the existing display. This feature is useful for monitoring long-term changes, such as thermal drift in semiconductors or changes in transducer output.

**Split Screen** storage gives you a choice of full-screen storage or storage on the upper or lower halves only. Either half can be selectively erased by operating front panel push buttons. The split screen feature is useful for comparison studies. For example, a reference waveform can be stored

# SINGLE BEAM BISTABLE STORAGE OSCILLOSCOPE



on the top half while the bottom half is being used for displaying possible matching waveforms.

**Plug-in Flexibility** enables you to configure the 5111A to suit your present needs while making it easy (and cost-effective) to reconfigure as your needs change.

For example:

**One to Eight Trace Displays at 1 mV/div** are useful for displaying time-related and non-time related signals on the large, easy-to-read CRT for analysis or storage.

**One to Four Trace Differential Input Displays at 50  $\mu$ V/div** accept low level signals from strain gage transducers, signals elevated from ground and signals masked in common-mode noise.

**One or Two High Sensitivity Differential Displays at 10  $\mu$ V/div** enable direct acquisition of electrophysiological responses from laboratory specimens with maximum rejection of common-mode noise.

**Single Time Base** with single sweep feature allows for capturing up to eight transient or repetitive signals at a single selectable sweep rate.

**Dual Sweep, Delaying Sweep** time base lets you see signals at two different sweep rates at the same time. It provides up to many thousand times of time magnification of selected portions of the input signals.

**Plus** you can turn your 5111A into a digitizing scope with the 5D10 Waveform Digitizer; into a DC to 1 GHz sampler with the 5S14N; into a low frequency spectrum analyzer with the 5L4N, and into a semiconductor curve tracer with the 5CT1N.

**Tektronix**  
COMMITTED TO EXCELLENCE

### Option 03, Fast Writing Speed

**CRT** increases the stored writing speed from 20 divs/ms to 200 divs/ms (normal) and from 50 divs/ms to 800 divs/ms (enhanced) with a slight decrease in stored brightness. Option 03 is useful for capturing neuron spikes from biological specimens, working with ultrasonics and for storing fast rise signals from transducers. Option 03 can capture single-shot rise times of about 10  $\mu$ sec.

### Option 07, Rear Panel Signals

**Out** provides CRT-related signals for driving monitors, digital counters, F.M. tape recorders, etc. For example, use a high sensitivity differential amplifier, such as the 5A22N, to precondition microvolt signals, display them and have them available at the rear panel at 0.5 V/CRT div to drive your external device.

Option 07 provides four outputs; One from each vertical compartment, one from the horizontal compartment (normally a sweep signal) plus a TTL compatible gate.

## SPECIFICATIONS

### Vertical Characteristics:

**Channels**—Left and center plug-in compartments compatible with all 5100 Series Plug-ins.

**Deflection Factor**—Determined by plug-in.

**Bandwidth**—2 MHz, determined by plug-in.

**Chopped Mode**—The mainframe vertical amplifier will chop between left and center plug-in compartments, and/or between two or more amplifier channels. The total time segment per channel is  $\approx 5 \mu$ s, consisting of  $\approx 4 \mu$ s displayed,  $\approx 1 \mu$ s blanked. Chop or alternate mode is selected at the time base unit.

**Alternate Mode**—Each amplifier plug-in is swept twice before switching to the next. A single-trace amplifier is swept twice and each channel of a dual-trace amplifier is swept once before switching to the second amplifier.

### Horizontal Characteristics:

**Channel**—Right-hand plug-in compartment compatible with all 5100 Series plug-ins.

**Fastest Calibrated Sweep Rate**—0.1  $\mu$ s/div (X10 mag) with 5B10N or 5B12N.

**X-Y Mode**—Phase shift within 1° from dc to 100 KHz.

**External Intensity Input**—+5 V turns beam on from off condition. -5 V turns beam off from on condition. Frequency range dc to 1 MHz. Input R and C is  $\approx 10 \text{ k}\Omega$  paralleled by 40 pF. Max input  $\pm 5 \text{ V}$  (dc + peak ac).

### Display:

**Medium**—Direct view, split-screen bistable storage CRT.

**Dimensions**—165 mm (6.5 in) diagonal.

**Display Area**—10.2 by 12.7 mm (4 by 5 in).

**Phosphor Type**—Similar to P1.

**Graticule**—8 x 10 grid at 1/2 in. (1.27 cm) per div.

**Accelerating Potential**—3.5 kV.

### Storage Characteristics:

**Standard Writing Speed (Center 6 x 8 div)**—20 div/ms.

**Writing Speed, Enhanced Mode (Center 6 x 8 div)**—50 div/ms.

**Option 03 Writing Speed (Center 6 x 8 div)**—200 div/ms.

**Option 03 Writing Speed, Enhanced Mode (Center 6 x 8 div)**—800 div/ms.

**Storage View Time**—At least 1 hr at normal intensity; up to 10 hr at reduced intensity, after which time it may be increased to original level.

**Erase Time**— $\approx 250$  ms.

### Other Characteristics:

**Ambient Temperature**—Performance characteristics valid from 0°C + 50°C.

**Line Voltage Ranges**—100, 110, 120, 200, 220 and 240 V ac  $\pm 10\%$  (except that max input should not exceed 250 V ac). Internally selected with quick change jumpers. Line frequency range, 48 to 440 Hz.

**Power Consumption**—110 W max.

**Calibrator**—Voltage output 400 mV within 1%. Frequency is 2 times line frequency.

**Beam Finder**—Positions beam on screen regardless of vertical and horizontal position control settings.

### Dimensions and Weight:

#### Cabinet Model:

Height 302 mm (11.9 in.)

Width 213 mm (8.4 in.)

Depth 487 mm (19.2 in.)

#### Rackmount:

Height 133 mm (5.25 in.)

Width 427 mm (16.8 in.)\*

Depth 487 mm (19.2 in.)

\*Fits standard 19 in. rack, slide-out tracks included.

**Weight, Standard**—10.2 kg (22.5 lb.)

**Weight, Rackmount**—10.7 kg (23.6 lb.)

### Ordering Information:

5111A Storage Oscilloscope

R5111A Storage Oscilloscope,  
Rackmount

Option 02: Protective Front Panel Cover  
(Not available for rackmount)

Option 03: Fast Writing Speed CRT

Option 07: Rear Panel Signal Outputs.

### Conversion Kits

Cabinet-to-Rackmount Conversion Kit,  
Order 040-0583-02

Rackmount-to-Cabinet Conversion Kit,  
Order 040-0584-03

Protective Panel Cover Kit,  
Order 040-0620-00

Rear Panel Signal Outputs Conversion  
Kit (Option 07) Order 40-0915-01

### International Power Cord and Plug Options:

A1—Universal Euro 220 V, 16 A, 50 Hz

A2—United Kingdom 240 V, 13 A,  
50 Hz

A3—Australian 240 V, 10 A, 50 Hz

A4—North American 240 V, 15 A,  
60 Hz

A5—Swiss 220 V, 10 A, 50 Hz

### For further information, contact:

#### U.S.A., Asia, Australia, Central & South America, Japan

Tektronix, Inc.

P.O. Box 4828

Portland, OR 97208

For additional literature, or the  
address and phone number of the  
Tektronix Sales Office nearest you,  
contact:

Phone: 800/547-1512

Oregon only: 800/452-1877

Telex: 910-467-8708

TLX: 15-1754

Cable: TEKTRONIX

#### Europe, Africa, Middle East

Tektronix Europe B.V.

European Headquarters

Postbox 827

1180 AV Amstelveen

The Netherlands

Phone: (20) 471146

Telex: 18312 - 18328

#### Canada

Tektronix Canada Inc.

P.O. Box 6500


Barrie, Ontario L4M 4V3

Phone: 705/737-2700

#### Tektronix sales and service offices

##### around the world:

Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Denmark, East Africa, Ecuador, Egypt, El Salvador, Federal Republic of Germany, Finland, France, Greece, Hong Kong, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Japan, Jordan, Korea, Kuwait, Lebanon, Malaysia, Mexico, Morocco, The Netherlands, New Zealand, Norway, Pakistan, Panama, Peru, Philippines, Portugal, Republic of South Africa, Saudi Arabia, Singapore, Spain, Sri Lanka, Sudan, Surinam, Sweden, Switzerland, Syria, Taiwan, Thailand, Turkey, Tunisia, United Kingdom, Uruguay, Venezuela, Zambia, Zimbabwe.

Copyright © 1982, Tektronix, Inc. All rights reserved. Printed in U.S.A. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. TEKTRONIX, TEK, SCOPE-MOBILE, TELE-EQUIPMENT, and  are registered trademarks. For further information, contact: Tektronix, Inc., P.O. Box 500, Beaverton, OR 97077. Phone: (503) 644-0161; TWX 910-467-8708; Cable: TEKTRONIX. Subsidiaries and distributors worldwide.

**Tektronix**  
COMMITTED TO EXCELLENCE