



7854

**GPIB
 IEEE-488**

The 7854 is designed to support other products that comply with IEEE Standard 488-1975.

TYPICAL APPLICATIONS

- Power-Supply Switching
- Semiconductor Testing
- Fiber Optic Testing

BENEFITS

- Wide Selection of Plug-ins and Sampling Heads
- Real time Analog and Digitizing Oscilloscope in a Single Mainframe
- Stored or Down-loaded Programmability
- On-board Calculations

FEATURES

- Waveform Parameters at the Touch of a Key
- DC to 400-MHz Real-Time Bandwidth at 10 mV/Div
- Calibrated Sweep Rates to 500 ps/Div
- Stores Repetitive Waveforms Up to 14 GHz With Sampling Plug-ins
- Signal Averaging
- Resolution Up to 0.01 Div on Stored Data (10-Bits)
- Choose 128, 256, 512, 1024 Points/Waveform
- Keystroke Programming

See 7000-Series Reference section for available Application Notes.

The 7854 Waveform-Processing Oscilloscope combines the features of a high-performance real-time oscilloscope with digital storage and waveform processing. When integrated with any of a wide variety of 7000-Series plug-ins, it becomes

a powerful measurement system. The 7854 offers programmable measurement routines, GPIB interface for mass data and program storage, plus simultaneous display of real-time and stored waveforms. The 7854's on-board memory stores up to 40 waveforms and 2000 keystrokes.

Mainframe and calculator/keyboard functions provide cursor control and waveform parameter information at the touch of a button, e.g., maximum, minimum, peak-to-peak, risetime. Additional calculator/keyboard features enable arithmetic manipulation of waveforms such as differential, integral, log, and absolute value.

Signal averaging recovers signals buried in random noise and improves measurement accuracy. One or two cursors are selectable for voltage and time measurements. One cursor provides voltage measurements referenced to ground and time measurements referenced to time zero. Two cursors enable Δ time and Δ voltage measurements. Cursors may also be used to bracket an area of interest for measurement.

The 7854's keystroke programming (simply storing a series of keystrokes to be executed) assures repeatable measurement results and lowers the skill level needed to operate the system. Measurement loops save time, log results, and make pass/fail decisions. Full subroutine and conditional branching capabilities are provided.

TekMAP Software Support

The TekMAP (Tektronix Measurement Application Programs) software supports

the Tektronix 7000-Series GPIB Programmable Digitizers in automated engineering or research and manufacturing environments.

CHARACTERISTICS

VERTICAL REAL-TIME SYSTEM

Input—Two plug-in compartments; compatible with 7000-Series plug-ins.

Modes—Left, Alt, Add, Chop, Right.

Mainframe Bandwidth—400 MHz with 7A29 or 7A19 Amplifier plug-ins.

Mainframe Step Response—0.9 ns or less with 7A29 or 7A19 Amplifier plug-ins.

Chopped Mode—Chop rate is \approx 1 MHz.

Trace Separation Range—In dual-sweep modes, B trace can be positioned 4 div above or below the A trace.

CRT AND DISPLAY FEATURES

CRT Display Modes—Scope (conventional display); Stored (digital data display); Both (stored display plus real-time waveforms); Program Entry (user program text display).

HORIZONTAL REAL-TIME SYSTEM

Input—Two plug-in compartments; compatible with 7000-Series plug-ins.

Modes of Operation—A, Alt, Chop, B.

Fastest Calibrated Sweep Rate—0.5 ns/div.

Chopped Mode—Rep rate is \approx 200 kHz.

X-Y Mode—Phase shift between vertical and horizontal channels is within 2° from dc to 35 kHz without phase correction (dc to 1 MHz with phase correction, B horizontal only, Option 02).

DIGITAL STORAGE

Equivalent-Time Bandwidth—400 MHz. See 7000-Series system bandwidth specifications.

Accuracy—Refer to plug-in specifications.

Acquisition Channels—One or two simultaneous channels (Plug-in Chop mode not valid).

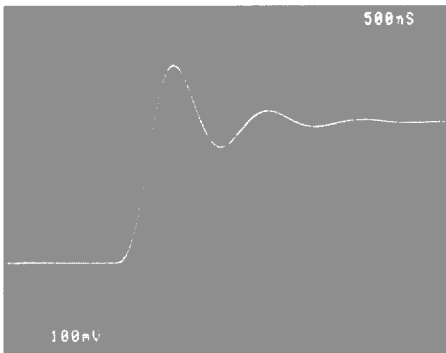
Acquisition Window— \pm 5 div from center screen both vertical and horizontal.

Resolution—Vertical: 0.01 div. Horizontal: Selectable points/waveform on remote keyboard.

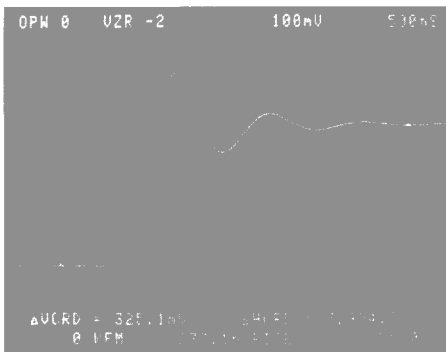
Horizontal Resolution (divs)	Points/Waveform
0.01	1024
0.02	512
0.04	256
0.08	128

PLUG-IN COMPATIBILITY

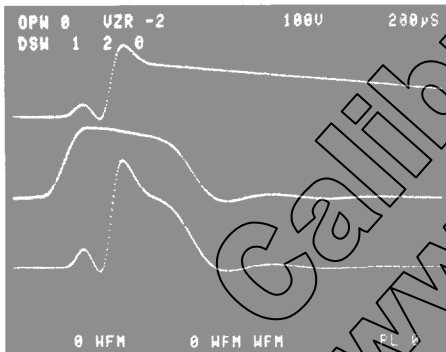
All 7000-Series plug-ins are compatible in the standard oscilloscope display mode. The 7L5 and 7L18 Spectrum Analyzers require factory modification for optimum use with digital-storage operation. The 7D01 and 7D02 are not compatible in Stored mode.



Conventional Scope: In the SCOPE mode, the 7854 provides a complete plug-in scope giving standard displays like other Tektronix high-performance scopes.



Storage Scope: Rise time is calculated by pushing a single key. Time and voltage differences between cursors are shown on the line above rise time.



Multiple Storage and Calculation: Volts, current, and power are all shown on the display. Power is a simple two- or three-keystroke calculation.

OUTPUTS/INPUTS

+ **Sawtooth**—Positive going with baseline at 0 V \pm 1 V into 1 M Ω . Voltage is 1 V/div (\pm 10%) into 1 M Ω , 50 mV/div (\pm 15%) into 50 Ω . Output R is \approx 950 Ω .

+ **Gate**—Positive pulse of the same duration and coincident with sweep. Output voltage is 10 V (\pm 10%) into 1 M Ω , 0.5 V (\pm 10%) into 50 Ω . Output R is \approx 950 Ω . Source is selectable from A gate, B gate, or Delayed gate.

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000 L22 SWL
001 AOP
002 4 HFH
>003 IFYX 22 LEL GOTO
004 CLX 3 LFH
005 IFYX 22 LEL GOTO
006 SWH STOP
007
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Waveform Processing: Keystroke Programming enables the user to design measurement routines tailored to individual tests or experiments.

Vertical Signal Out—Selected by A Trigger Source switch. Output voltage is 0.5 V/div into 1 M Ω , 25 mV/div into 50 Ω . Output R is \approx 950 Ω . Bandwidth depends upon vertical plug-in.

Remote Single-Sweep Reset—Rear-panel BNC, ground closure activated.

TTL Output—Rear-panel BNC. TTL output under remote-keyboard control (SWH and SWL).

External Z-Axis Input—2 V p-p for full intensity range from dc to 1 MHz. Positive signal blanks the trace. Maximum input voltage is 15 V (dc plus peak ac).

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

GPIS Interface Subsets Implemented—SH1, AH1, T5, L3, SRI, RLC, DC1, DT1, PP0, C0.

CALIBRATOR

Voltage Output—Square wave, positive going from ground. Ranges are 40 mV, 0.4 V, and 4 V into 100 k Ω ; 4 mV, 40 mV, and 0.4 V into 50 Ω . Amplitude accuracy is within 1%; rep rate is 1 kHz within 0.25%.

Current Output—40 mA available through Calibrator output with optional BNC-to-current-loop adaptor.

POWER REQUIREMENTS

Line-Voltage Ranges—90 to 132 V. 180 to 250 V.

Line Frequency—48 to 440 Hz.

Maximum Power Consumption—230 W.

PHYSICAL CHARACTERISTICS

Dimensions	Mainframe		Waveform Calculator	
	mm	in.	mm	in.
Width	305	12.0	277	10.9
Height	348	13.7	69	2.7
Depth	627	24.7	165	6.5
Cord Length				
\pm 76 mm			1420	56.0
Weight \approx	kg	lb	kg	lb
Net	20.4	45.0		
Shipping	28.2	62.0		

**ORDERING INFORMATION
 (PLUG-INS NOT INCLUDED)**

7854 Oscilloscope, Including Waveform Calculator \$15,275
 Includes: Power cord (161-0066-00); BNC-to-BNC cable (012-0208-00); instruction manual (070-2873-00).

OPTIONS

Option 02—X-Y Phase Correction. +\$260
Option 03—EMC Modification. +\$395
Option 78—BE (P11) Phosphor. +\$100

CONVERSION KIT

4K Expanded Memory—Order 040-0941-00 \$330

TKMAP SOFTWARE

For more information on utility and application software, see the Test and Measurement Software Section or consult your local sales or applications engineer.

S42P101 7854 IBM PC Software \$450
 Includes: Software operator manual.

S42H202 7854 HP Series 200 Software \$950
 Includes: Software operator manual.

S42T202 7854 IBM PC TAMS Software \$495
 Includes: Software operator manual.

OPTIONS

Option 01—5¼ inch media. NC
Option 02—3½ inch media. NC

INTERNATIONAL POWER PLUG OPTIONS

Option A1—Universal Euro 220 V, 50 Hz.
Option A2—UK 240 V, 50 Hz.
Option A3—Australian 240 V, 50 Hz.
Option A4—North American 240 V, 60 Hz.
Option A5—Switzerland 220 V, 50 Hz.

OPTIONAL ACCESSORIES

Recommended Plug-Ins—See Plug-ins section, page 277.

Recommended Probes—See Signal Acquisition section.

Recommended Camera—See Instrumentation Documentation Devices section.

Recommended Cart—K213. A keyboard tray for the 7854 and a storage area for plug-ins are available as Options 10 and 12, respectively, Option 22 for both. See Cart section. \$625

Recommended Plotter—HC100 Color Pen Plotter. \$825

TECHNICAL ASSISTANCE SERVICES

When you need technical assistance to supplement your own resources, Tektronix can arrange the services of an application engineer skilled in meeting your needs. For more information, see the Tektronix Solutions/New products section or consult your local sales engineer.

TRAINING

Tektronix offers service training classes on the 7854 Waveform Processing Oscilloscope. For further training information, contact your local Sales Office and request a copy of the Tektronix Service Training Catalog.

Tektronix Instrument Group Customer Training offers operation and application training to help you get full value out of your instrumentation investment. Information is in Customer Training section. For further information, or to enroll, call us at 1-800-835-9433, ext. 430. In Oregon, call 1-629-1017 (collect).