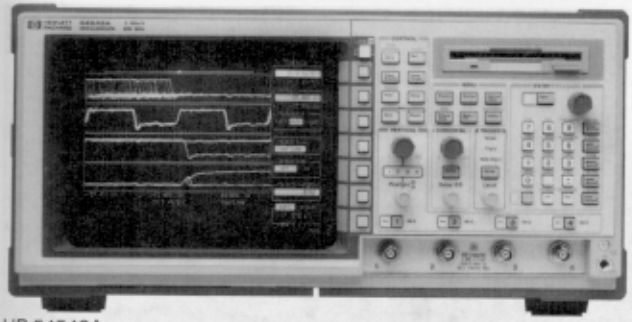

HP 54542A

DESIGNED FOR HP-IB SYSTEMS

HP Instrument Drivers

HP 54520A, 54522A, 54540A, 54542A
HP 54520C, 54522C, 54540C, 54542C
Digitizing Oscilloscopes

It's your choice! This series of eight Hewlett-Packard portable oscilloscopes lets you choose the channel count and sample-rate performance that you need. Now, you can also choose between models with monochrome-CRT or color flat-panel displays. Each scope includes a rich feature set that helps remove the stress and strain from your testing. The HP 54522A/C and 54542A/C have two and four channels, respectively. Both offer 500-MHz bandwidth and 2-GSa/s sample rate. These are the specifications that you need for testing today's high-speed designs.

However, if you need less single-shot bandwidth, the two-channel HP 54520A/C and four-channel HP 54540A/C offer the same 500-MHz repetitive (equivalent time) bandwidth, but offer lower sample rates. All eight oscilloscopes have dedicated knobs for vertical, time base, and trigger. These familiar controls are coupled with 32K of memory per channel and an extensive problem-solving feature set that is ideally suited to your everyday bench use.

Feature Rich

This new series of HP scopes has all of the features that you would expect in a scope plus more. Use sequential single-shot when you need to capture successive single-shot events without capturing the dead time in between. It is a great tool for applications such as pulsed laser research, high-energy physics, and pulse echo. Use glitch trigger to find the causes of anomalies in circuit operation. Trigger on hard-to-see narrow glitches down to 1 ns wide. Use FFT's to get a second perspective of your test waveform. This feature is good for identifying signals, determining signal fidelity, or to analyze high-speed transients in the frequency domain.

Generate and store your own template masks; then compare test waveforms to the stored template for pass-fail testing. Or set your own limits on any of the 23 automatic waveform parameter tests. Incoming waveforms are measured with up to three tests at a time and passed or failed according to your limits. Waveforms can be saved and time-stamped upon failure of either waveform compare or limit test. Up to 665 failures of 500 points each can be stored in multiple memory and sent to a printer, plotter, or a computer via HP-IB.

Use peak detect to improve your confidence when using the scope at lower sweep speeds. Scopes without peak detect can miss narrow events at slow sweep speeds. Peak detect allows you to see any event as narrow as 1 ns wide.

All eight scopes have an internal 3½-inch, 1.44 MB, MS-DOS® compatible disk drive which can be used to download software upgrades to the instrument's flash ROMs. The disk can also store waveforms, instrument setups, and screen images in standard formats such as TIFF and PCX. Other features included are: advanced logic triggering, push-button automatic setup, hardcopy output, full HP-IB programmability, pretrigger viewing, TV triggering, voltage and time markers, pan and zoom, user-controlled sample rate *independent of sweep speed,* user-controlled record length, fast update rate, fast overdrive recovery, and more.

HP 54520A, 54522A, 54540A, 54542A
Specifications and Characteristics

Acquisition System

Maximum sample rate (Real time mode)	HP 54520A/C: 1 GSa/s (1 channel on) 500 MSa/s (2 channels on) HP 54522A/C: 2 GSa/s (all channels) HP 54540A/C: 2 GSa/s (1 channel on) 1 GSa/s (2 channels on) 500 MSa/s (3 or 4 channels on) HP 54542A/C: 2 GSa/s (all channels)
(Repetitive mode)	1GSa/s all models
Record length	32,768 pts. (real time) 501 pts. (repetitive)
Resolution	8 bits (10 bits via HP-IB with averaging)
Peak detect	Captures and displays events as narrow as 1 ns in real-time mode at sample rates of 250 MSa/s or less, sequential single shot turned off.

Vertical

Repetitive bandwidth **Real-time bandwidth**	500 MHz (equivalent time) HP 54520A/C: 250 MHz (1 channel on) 125 MHz (2 channels on) HP 54522A/C: 500 MHz (all channels) HP 54540A/C: 500 MHz (1 channel on) 250 MHz (2 channels on) 125 MHz (3 or 4 channels on) HP 54542A/C: 500 MHz (all channels)
Number of channels (all are simultaneous acquisition)	HP 54540A/C, 54542A/C: 4 HP 54520A/C, 54522A/C: 2
Sensitivity[1]	1 mV/div to 5 V/div
DC gain accuracy	±1.25% of full scale
Input impedance	R: 1 MΩ, ±1% or 50 Ω, ±1% C: 7 pF nominal
Input coupling	ac, dc
Maximum input	1 MΩ: ±250 V (dc + ac) [ac<10 kHz] 50 Ω: 5 V rms
Switchable bandwidth Limits (−3 dB freq. typical)	ac-coupled: 10 Hz LF Reject: 400 Hz Bandwidth Limit: 30 MHz
Channel-to-channel isolation	(With channels at equal sensitivity) dc to 50 MHz: 50 dB; 50 MHz to 500 MHz: 40 dB

Offset range	**Vertical sensitivity**	**Available offset**
	1 mV to 50 mV/div	±2 V
	>50 mV to 250 mV/div	±10 V
	>250 mV to 1.25 V/div	±50 V
	>1.25 V/div to 5 V/div	±250 V

Offset accuracy	±(1.25% of channel offset + 2% of full scale)
Voltage measurement accuracy	
Dual cursor:	±[(1.25%) (full scale) + (0.032) (V/div)]
Single cursor:	±[(1.25%) (full scale) + (offset accuracy) + (0.016)(V/div)]

Key Literature

Eight Portable Oscilloscopes: A Choice of Performance, p/n 5963-7246E.

HP 54520 and 54540 Series Portable Oscilloscopes Technical Data, p/n 5963-7245EUS (US version), 5963-7245E (Universal version).