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Data Sheet

August 31, 2026

KEYSIGHT / AGILENT

Keysight (Agilent) 54542A Monochrome Digitizing Oscilloscope, 4-Channel, 2 GSa/s

Agilent 54542A 500 MHz 2 GSa/s 4 Channel Oscilloscope The Agilent/HP 54542A is a 4-channel digitizing oscilloscope with 500 MHz bandwidth and 2 GSa/s real-time sampling on all four channels simultaneously. OEM 54520/22/40/42 datasheet materials list 32768-point realtime memory, 501-point repetitive memory, 8-bit resolution (10 bits with averaging via HP-IB), and 1 mV/div to 5 V/div sensitivity. High-speed single-shot capture on four channels, general 500 MHz lab debug, and automated measurements over HP-IB. The Agilent/HP 54542A is a 4-channel digitizing oscilloscope with 500 MHz bandwidth and 2 GSa/s real-time sampling on all four channels simultaneously. OEM 54520/22/40/42 datasheet materials list 32768-point realtime memory, 501-point repetitive memory, 8-bit resolution (10 bits with averaging via HP-IB), and 1 mV/div to 5 V/div sensitivity. High-speed single-shot capture on four channels, general 500 MHz lab debug, and automated measurements over HP-IB. 2 GSa/s simultaneous on all four channels Maximum Sample Rate: 2 GSa/s on all 4 channels



MODEL

**Keysight / Agilent
54542A**

CALIBRATION

**Available on
request**

CONDITION

Used

STATUS

In stock

RFQ / SKU

54542A

LISTING

<https://aumictechlabs.com/products/54542a-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 • 811210 • 541380

This unit

The Keysight (Agilent) 54542A is a 4-channel monochrome digitizing oscilloscope delivering 500 MHz analog bandwidth with 2 GSa/s simultaneous sampling per channel. Built for signal acquisition in analog and digital design, R&D, and manufacturing test environments, this instrument captures elusive signal activity through advanced logic triggering sensitive to glitches as narrow as 1 ns. The 54542A combines 32K points of acquisition memory per channel with 1 ns peak detect capability, enabling precise characterization of fast transients and anomalies.

Technical Specifications
Bandwidth: 500 MHz
Channels: 4 analog channels
Sampling Rate: 2 GSa/s per channel (simultaneous)
Acquisition Memory: 32K points per channel
Peak Detect Resolution: 1 ns
Vertical Sensitivity: 1 mV to 5 V/div ($\pm 1.25\%$ accuracy)
Timebase Range: 500 ps to 5 s/div
Display: Monochrome CRT
Waveform Storage: 4 non-volatile, 2 pixel volatile, and segmentable memory
Sequential Single Shot Acquisition: Captures successive single-shot events without dead time, storing up to 400 Kbytes total waveform data

Key Features
Advanced Triggering: Logic triggering with glitch detection down to 1 ns
FFT Capability: Built-in Fast Fourier Transform for spectral analysis
Automatic Measurements: 23 waveform parameter tests with user-defined pass/fail limits
Mask Testing: Template-based pass/fail testing; supports ANSI, CCITT, and ISDN telecom standards (Option 001)
Setup Storage: 9 non-volatile memory locations for instrument configurations
Data Output: Internal 3.5", 1.44 MB MS-DOS compatible floppy disk drive for setup, waveform, and screen image storage (TIFF, PCX, EPS formats); supports software upgrades

Typical Applications
Analog and digital circuit design validation, R&D signal characterization, manufacturing test and quality assurance, transient capture, and high-speed protocol analysis.

Compatibility & Integration
Programmability: Full HP-IB (IEEE 488) remote control and automation
Standard Probes: Four HP 10441A 10:1, 1 M Ω probes
Optional Probes: HP 1145A two-channel active probe (750 MHz bandwidth, 2 pF input capacitance); HP 1144A active probe (800 MHz bandwidth, 2 pF input capacitance)
Software: Compatible with software revisions 3.10 and T3.33

54542A Characteristics / Specifications

PARAMETER	VALUE
Analog Channels	4 simultaneous
Maximum Sample Rate	2 GSa/s on all 4 channels
Repetitive Bandwidth	500 MHz (rise time ≤ 700 ps)
Real Time Bandwidth	500 MHz
Record Length Real Time	32768 points maximum
Record Length Repetitive	501 points
Vertical Resolution	8 bits; 10 bits via HP-IB with averaging
Vertical Sensitivity	1 mV/div to 5 V/div
DC Gain Accuracy	plus/minus 1.25 percent of full scale
Input Impedance	1 MOhm plus/minus 1 percent or 50 ohm plus/minus 1 percent
Input Capacitance	7 pF nominal
Input Coupling	AC DC
Maximum Input 1 MOhm	plus/minus 250 V (dc+ac) ac less than 10 kHz
Maximum Input 50 Ohm	5 V rms
Offset Range 1 To 50 mV/div	plus/minus 2 V
Offset Range Above 1.25 V/div	plus/minus 250 V
Time Base Range	500 ps/div to 5 s/div
Time Base Resolution	10 ps
Front Panel Setups Nonvolatile	9
FFT Frequency Range	DC to 1 GHz
FFT Min Frequency Resolution	3.9 MHz at max sample rate / 512 pts
Waveform Store	4 nonvolatile plus 2 pixel volatile
Related Lower Rate Sibling	54540A
Bandwidth	500 MHz (rise time ≤ 700 ps)
Rise Time	≤ 700 ps)

54542A Specifications

PARAMETER	VALUE
Agilent 54542A 500 MHz 2 GSa/s 4 Channel Oscilloscope	Overview
Applications	High-speed single-shot capture on four channels, general 500 MHz lab debug, and automated measurements over HP-IB.
Key Features	2 GSa/s simultaneous on all four channels
FFT and advanced triggering feature set	1 MOhm or 50 ohm inputs
Technical Specifications	Analog Channels: 4 simultaneous
Notes	Values from Agilent/HP 54542A datasheet (54520/22/40/42 family). Confirm firmware options and probe calibration on the installed unit.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications	
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Related Lower Rate Sibling	54540A
Notes	
Values from Agilent/HP 54542A datasheet (54520/22/40/42 family). Confirm firmware options and probe calibration on the installed unit.	

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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NIST-traceable calibration · SAM registered ·
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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.