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Data Sheet

August 31, 2026

HP / AGILENT

HP / Agilent 54540A 4 Channel 500 MSa/s Monochrome Digitizing Oscilloscope

Agilent 54540A 500 MHz 4 Channel Oscilloscope The Agilent/HP 54540A is a 4-channel digitizing oscilloscope in the 54540/54542 family with 500 MHz bandwidth. OEM family datasheet materials list 32768-point realtime memory and multi-rate real-time sampling (1 GSa/s / 500 MSa/s / 250 MSa/s class depending on channel count mode), sharing vertical and timebase architecture with the 54542A. Four-channel 500 MHz lab and ATE debug where full 2 GSa/s-per-channel sampling of the 54542A is not required. Real Time Bandwidth Modes Class: 500 / 250 / 125 MHz class per channel-count mode on family sheet The Agilent/HP 54540A is a 4-channel digitizing oscilloscope in the 54540/54542 family with 500 MHz bandwidth. OEM family datasheet materials list 32768-point realtime memory and multi-rate real-time sampling (1 GSa/s / 500 MSa/s / 250 MSa/s class depending on channel count mode), sharing vertical and timebase architecture with the 54542A. Four-channel 500 MHz lab and ATE debug where full 2 GSa/s-per-channel sampling of the 54542A is not required. Real Time Bandwidth Modes Class: 500 / 250 / 125 MHz class per channel-count mode on family sheet



MODEL

**HP / Agilent
54540A**

CALIBRATION

**Available on
request**

CONDITION

Used

STATUS

In stock

RFQ / SKU

54540A

LISTING

<https://aumictechlabs.com/products/54540a-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 · 811210 · 541380

This unit

The HP/Agilent 54540A is a four-channel monochrome digitizing oscilloscope built for precision signal measurement across analog and digital design, R&D, and manufacturing test environments. With 500 MHz analog bandwidth across all channels and real-time sample rates scaling from 2 GSa/s (single channel) to 500 MSa/s (three or four channels), this instrument captures detailed waveforms with 32 Kpoints of memory per channel. The monochrome CRT display, integrated floppy disk drive, and comprehensive triggering and math functions make it suitable for complex signal analysis and repetitive testing.

Technical Specifications
Analog Bandwidth: 500 MHz (all 4 channels)
Real-Time Sample Rate: 2 GSa/s (1 channel), 1 GSa/s (2 channels), 500 MSa/s (3–4 channels)
Channels: 4 simultaneous acquisition
Acquisition Memory: 32,768 points per channel (real-time)
Real-Time Bandwidth: 250 MHz (2 channels), 125 MHz (3–4 channels)
Repetitive Bandwidth: 500 MHz equivalent time, ≤ 700 ps rise time
Vertical Sensitivity: 1 mV/Div to 5 V/Div
Input Impedance: 50 Ω or 1 M Ω
Resolution: 8-bit; 10-bit via HP-IB with averaging
Peak Detect: 1 ns glitch capture at ≤ 250 MSa/s (sequential single-shot off)

Key Features
Sequential single-shot acquisition storing up to 400 Kbytes per event without dead time
4 nonvolatile and 2 pixel-addressable waveform memory slots; segmentable architecture
Fast Fourier Transform (FFT) for frequency-domain analysis
Math operations: add, subtract, multiply, integrate, differentiate, invert, magnify
Automatic measurements: frequency, amplitude, Vp-p, Vdc, Vac RMS, period, pulse width, duty cycle, and threshold-based parameters
User-definable trigger thresholds from –25% to 125%
Auto setup for signal optimization

Typical Applications
Digital and analog circuit validation
Single-shot transient capture and waveform analysis
Manufacturing test and functional verification
Signal characterization in frequency and time domains

Compatibility & Integration
Built-in 3.5" DOS-compatible floppy drive for setup, waveform, and screen image storage (TIFF, PCX, EPS formats)
HP-IB and RS-232 interfaces for remote control and data transfer
Operating system software storage and upgrades via floppy disk

54540A Characteristics / Specifications

PARAMETER	VALUE
Analog Channels	4 simultaneous
Repetitive Bandwidth	500 MHz
Real Time Bandwidth Modes Class	500 / 250 / 125 MHz class per channel-count mode on family sheet
Maximum Sample Rate Modes Class	1 GSa/s / 500 MSa/s / 250 MSa/s class per family sheet
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
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
Rise Time Repetitive Class	<=700 ps
Related Full Rate Sibling	54542A 2 GSa/s on all channels
Product Family	54520/22/40/42
Waveform Store	4 nonvolatile plus 2 pixel volatile
Bandwidth	500 MHz
Rise Time	Repetitive Class: <=700 ps

54540A Specifications

PARAMETER	VALUE
Agilent 54540A 500 MHz 4 Channel Oscilloscope	Overview
Applications	Four-channel 500 MHz lab and ATE debug where full 2 GSa/s-per-channel sampling of the 54542A is not required.
Four simultaneous acquisition channels	500 MHz repetitive bandwidth
Technical Specifications	Analog Channels: 4 simultaneous

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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Maximum Input 1 MOhm	plus/minus 250 V (dc+ac) ac less than 10 kHz
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Waveform Store	4 nonvolatile plus 2 pixel volatile
Notes	
Family vertical/timebase numbers from Agilent/HP 54520/22/40/42 datasheet; channel-mode sample-rate splits from the same sheet's 54540A/C columns. Confirm exact realtime bandwidth versus active-channel mode 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 ·
30-day returns
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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.