

**Aumictech**

Test & measurement · bought, sold, repaired, calibrated

Data Sheet

August 31, 2026

HP / AGILENT

HP / Agilent 54642A 2-Channel, 500 MHz Oscilloscope

The Agilent 54642A is a 2-channel MegaZoom oscilloscope with 500 MHz bandwidth, 2 GSa/s interleaved maximum sample rate, and 8 MB interleaved MegaZoom deep memory (4 MB per channel). OEM 54600-series datasheets list approximately 700 ps calculated risetime, 1 ns peak detection, and the same high-definition deep-memory display architecture as 54641A. 500 MHz analog debug, long deep-memory captures at high sample rate, and serial protocol trigger work on two-channel designs. 500 MHz bandwidth with MegaZoom always on Channel Isolation DC to Max BW: greater than 40 dB Offset Range greater than 200 mV/div: +/-75 V Serial Triggers Standard: CAN, I2C, LIN, SPI, USB Specs from Agilent 54600-Series Oscilloscopes data sheet rows for 54642A. Interleaved sample rate and memory apply when a single channel is active.



MODEL

**HP / Agilent
54642A**

CALIBRATION

**Available on
request**

CONDITION

Used

STATUS

In stock

RFQ / SKU

54642A

LISTING

<https://aumictechlabs.com/products/54642a-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 · 811210 · 541380

This unit

The HP/Agilent 54642A is a 2-channel, 500 MHz digital oscilloscope engineered for detailed signal acquisition and analysis in high-speed applications. With 8 MB of MegaZoom deep memory, a 2 GSa/s sample rate, and advanced triggering capabilities spanning edge, pulse width,

video, pattern, and serial protocols (I²C, SPI, LIN, CAN, USB), this instrument delivers both capture depth and precision event isolation. The 6.3-inch color TFT display with 25 million vector/sec refresh rate renders waveforms with superior clarity, while integrated math functions FFT, arithmetic operations, and calculus - enable in-depth signal characterization without external analysis tools.

Technical Specifications
Bandwidth: 500 MHz
Channels: 2 analog
Sample Rate: Up to 2 GSa/s
Record Length: 4 Mpts or 8 Mpts
Deep Memory: 8 MB
MegaZoom standard
Vertical Resolution: 8 bits
Input Impedance: $1\text{ M}\Omega \pm 2\%$ || $13\text{ pF} \pm 2\text{ pF}$ (1 M Ω mode); 50 Ω mode available
Maximum Input Voltage: 300 Vrms CAT II
Display: 6.3-inch color TFT LCD
Vector Rate: 25 million vectors/sec

Key Features
MegaZoom deep memory technology maintains high sample rates across extended time windows
Advanced triggering: Edge, pulse width, video, pattern, delay, timeout, runt, and setup/hold modes
Serial and pulse triggering for I²C, SPI, LIN, CAN, and USB protocols
Waveform math: FFT, subtraction, multiplication, integration, and differentiation
Automatic measurements with integrated counter
One-button autoscale configuration
Optional enhanced shielding (003) for electromagnetically severe environments
GPIB and RS-232 remote control interfaces

Typical Applications
High-speed digital circuit characterization
Serial protocol analysis and validation
Transient and pulse behavior measurement
Frequency-domain signal analysis via FFT
Multi-channel signal correlation and math operations

Compatibility & Integration
Compatible with 54621D, 54622D, 54641D, and 54642D models. Standard floppy, RS-232, and parallel ports support legacy system integration.

54642A Characteristics / Specifications

PARAMETER	VALUE
Analog Channels	2 simultaneous
Bandwidth DC Coupled	dc to 500 MHz
Bandwidth AC Coupled	3.5 Hz to 500 MHz
Calculated Risetime	approximately 700 ps
Max Sample Rate Interleaved	2 GSa/s
Max Sample Rate Per Channel	1 GSa/s
Max Memory Depth Interleaved	8 MB
Max Memory Depth Per Channel	4 MB
Single Shot Bandwidth	500 MHz maximum
Vertical Resolution	8 bits
Peak Detection	1 ns at max sample rate
High Resolution Mode	12 bits when ≥ 100 us/div (average mode ave=1)
Vertical Range	2 mV/div to 5 V/div
Input Resistance	1 Mohm $\pm 1\%$, 50 ohm selectable
Input Capacitance	approximately 13 pF
Coupling	ac, dc
BW Limit	approximately 25 MHz selectable
Maximum Input CAT I	300 Vrms, 400 Vpk
Maximum Input 50 Ohm	5 Vrms
Channel Isolation DC to Max BW	greater than 40 dB
Offset Range less than 10 mV/div	± 5 V
Offset Range 10 to 200 mV/div	± 20 V
Offset Range greater than 200 mV/div	± 75 V
Averaging	selectable 2 to 16383
Serial Triggers Standard	CAN, I2C, LIN, SPI, USB

PARAMETER	VALUE
Bandwidth	DC Coupled: dc to 500 MHz

54642A Specifications

PARAMETER	VALUE
Agilent 54642A MegaZoom Oscilloscope	Overview
Applications	500 MHz analog debug, long deep-memory captures at high sample rate, and serial protocol trigger work on two-channel designs.
Key Features	500 MHz bandwidth with MegaZoom always on
Technical Specifications	Analog Channels: 2 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	
Specifications	
PARAMETER	VALUE
Analog Channels	2 simultaneous
Bandwidth DC Coupled	dc to 500 MHz
Bandwidth AC Coupled	3.5 Hz to 500 MHz
Calculated Risetime	approximately 700 ps
Max Sample Rate Interleaved	2 GSa/s
Max Sample Rate Per Channel	1 GSa/s
Max Memory Depth Interleaved	8 MB
Max Memory Depth Per Channel	4 MB
Single Shot Bandwidth	500 MHz maximum
Vertical Resolution	8 bits
Peak Detection	1 ns at max sample rate
High Resolution Mode	12 bits when >=100 us/div (average mode ave=1)
Vertical Range	2 mV/div to 5 V/div
Input Resistance	1 Mohm +/-1%, 50 ohm selectable
Input Capacitance	approximately 13 pF
Coupling	ac, dc
BW Limit	approximately 25 MHz selectable
Maximum Input CAT I	300 Vrms, 400 Vpk
Maximum Input 50 Ohm	5 Vrms
Channel Isolation DC to Max BW	greater than 40 dB
Offset Range less than 10 mV/div	+/-5 V
Offset Range 10 to 200 mV/div	+/-20 V
Offset Range greater than 200 mV/div	+/-75 V
Averaging	selectable 2 to 16383
Serial Triggers Standard	CAN, I2C, LIN, SPI, USB

Notes

Specs from Agilent 54600-Series Oscilloscopes data sheet rows for 54642A. Interleaved sample rate and memory apply when a single channel is active.

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

788 S 500 E, Pleasant Grove, UT 84062
sales@aumictech.com · +1 (484) 841-9341
<https://aumictechlabs.com>

NIST-traceable calibration · SAM registered ·
30-day returns
NAICS 423690 · 811210 · 541380
Generated August 31, 2026

Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.