

KEYSIGHT TECHNOLOGIES (AGILENT HP)

DSO5054A

The Keysight Technologies (formerly Agilent) DSO5054A is a 500 MHz, 4-channel digital storage oscilloscope from the 5000 Series. Powered by proprietary third-generation MegaZoom III technology, it delivers high-performance deep memory (1 Mpts), a fast real-time sample rate of 4 GSa/s, and a responsive display system offering up to 100,000 waveforms per second update rate, avoiding the typical trade-offs found in traditional bench scopes.

SPECIFICATIONS

General

Interfaces	USB (2 host, 1 device), LAN (100 MBit), GPIB, LXI Class C
Display	6.3-inch color LCD, VGA (640 x 480) resolution with 256 levels of intensity grading
Built-in Help Languages	English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Simplified Chinese, Spanish, Traditional Chinese

Physical

Power Supply	100 - 240 V AC $\pm 10\%$ (auto-ranging), 47 - 440 Hz, up to 120 W maximum
Operating Temperature	0 °C to +55 °C °C
Dimensions (W×H×D)	354 mm × 188 mm × 174 mm mm
Weight	4.1 kg

Key Performance Specifications

Analog Bandwidth	500 MHz
Number of Analog Channels	4
Maximum Real-Time Sample Rate	4 GSa/s (2 GSa/s with all channels active)
Maximum Memory Depth	8 Mpts
Waveform Update Rate	Up to 100,000 waveforms per second

Vertical System (Analog Channels)

Analog Bandwidth (-3 dB)	500 MHz
Calculated Rise Time (10% to 90%)	700 ps
Input Coupling	AC, DC, GND
Input Impedance	1 M Ω $\pm$ 1% (13 pF) or 50 Ω $\pm$ 1% selectable
Input Sensitivity Range (1 M Ω)	2 mV/div to 5 V/div
Input Sensitivity Range (50 Ω)	2 mV/div to 1 V/div
Vertical Resolution	8 bits
Maximum Input Voltage (1 M Ω)	CAT I 300 Vrms, 400 Vpk
Maximum Input Voltage (50 Ω)	5 Vrms
DC Vertical Accuracy	$\pm$ 2% of full scale
Hardware Bandwidth Limiters	20 MHz selectable

Horizontal System (Acquisition)

Timebase Range	500 ps/div to 50 s/div
Timebase Accuracy	$\pm$ 15 ppm
Channel-to-Channel Deskew Range	$\pm$ 100 ns

Trigger System

Trigger Sources	Ch 1, Ch 2, Ch 3, Ch 4, Line, External
Trigger Modes	Auto, Normal, Single
Trigger Coupling	AC, DC, LF reject, HF reject, noise reject
Trigger Level Range (Internal)	$\pm$ 6 divisions from center screen
Trigger Level Range (External)	$\pm$ 8 V
Trigger Holdoff Range	60 ns to 10 s
Edge Triggering	Rising, falling, alternating
Pulse Width Triggering	Positive or negative pulse width (<, >, =), 15 ns to 10 s
Video/TV Triggering	NTSC, PAL, SECAM, 480p, 576p, 720p, 1080i, 1080p
Serial Triggering Options	I2C, SPI, CAN, LIN, UART/RS-232 (with optional licenses)
Trigger Sensitivity (Internal)	< 10 MHz: 0.5 div or 5 mV; 10 MHz to max bandwidth: 1 div or 10 mV
Trigger Sensitivity (External)	DC to 100 MHz: 100 mV; 100 MHz to max bandwidth: 200 mV

Signal Acquisition Modes

Real-Time Acquisition Mode	Yes
Peak Detect Mode	250 ps (at 4 GSa/s), 500 ps (at 2 GSa/s)
Averaging Mode	Selectable from 2 to 65,536
High-Resolution Mode	Up to 12 bits of resolution (at timebases $\geq$ 10 μ s/div)
Roll Mode	Yes (500 ms/div to 50 s/div)

Waveform Measurements and Analysis

Automatic Voltage Measurements	Peak-to-peak, Maximum, Minimum, Amplitude, Top, Base, Overshoot, Preshoot, Average, RMS
Automatic Time Measurements	Period, Frequency, Rise time, Fall time, +Width, -Width, Duty cycle
Automatic Frequency/Phase Measurements	Frequency, Phase, Delay
Cursor Measurements	Amplitude (Y), Time (X)
Waveform Math Operators	Addition, Subtraction, Multiplication, FFT
FFT Windows	Hanning, Flat Top, Rectangular

Display and User Interface

Display Type	6.3-inch color LCD
Display Resolution	QVGA (320 x 240)
Display Intensity Grading	256 levels
Waveform Display Formats	YT, XY
Graticule Types	8 x 10 divisions

Connectivity and I/O Interfaces

USB Host Ports	1 host port (front panel)
USB Device Port	1 device port (rear panel)
LAN Interface	100 MBit LAN
LXI Compliance	LXI Class C
GPIB Interface	Optional
External Trigger Input	Yes
VGA Video Output	15-pin D-sub (XGA display out)

Power Requirements

AC Input Voltage Range	100 V to 240 V AC
Power Consumption	120 W maximum

Physical Characteristics

Height	188 mm
Width	354 mm
Depth	174 mm

Environmental Specifications

Non-Operating Temperature	-40 °C to +70 °C
Operating Humidity	95% RH at 40 °C
Operating Altitude	Up to 4,600 m (15,000 ft)
Non-Operating Altitude	Up to 15,300 m (50,000 ft)

Vertical System

Channel-to-Channel Isolation	> 40 dB from DC to 500 MHz
Input Capacitance (1 M Ω)	11 pF
Dynamic Range	± 8 divisions from screen center
Probe Interface	AutoProbe
Offset Range (1 M)	± 2 V (2 mV to 200 mV/div), ± 50 V (>200 mV to 5 V/div), ± 100 V (>5 V to 10 V/div)
Offset Range (50.)	± 2 V (2 mV to 200 mV/div), ± 50 V (>200 mV to 5 V/div)

Measurements

Built-in Hardware Frequency Counter	5-digit resolution (max frequency equal to oscilloscope analog bandwidth)
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Environmental

Acoustic Noise	30 dBA (typical) at operator position
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Accessories

Standard Included Probes	One 10073D 10:1 passive probe per channel
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Acquisition System

Segmented Memory	Standard, max 1000 segments
Segmented Memory Re-arm Time	< 8 μ s
High-Resolution Mode Vertical Resolution	Up to 12 bits of resolution (at ≥ 10 μ s/div)

Measurements & Analysis

Measurement Statistics	Displays min, max, mean, standard deviation, and count for up to 4 simultaneous measurements
Mask Testing	Optional (Option LMT), up to 100,000 tests/second pass/fail rate
Built-in Hardware Counter Resolution	5 digits (up to 500 MHz)

Storage & Connectivity

Internal Storage (Setups/Waveforms)	10 internal setups and waveforms
Supported File Formats (USB)	BMP, PNG, CSV, ASCII XY, Binary, Setup (.set)

Environmental & Standards

Electromagnetic Compatibility (EMC)	IEC 61326-1, EN 61326-1, CISPR 11/EN 55011 Group 1 Class A, ICES-001, AS/NZS CISPR 11
Safety Standards	UL 61010-1:2004, CAN/CSA-C22.2 No. 61010-1:2004, EN 61010-1:2001
Vibration Standard	MIL-PRF-28800F Class 3 random vibration
Shock Standard	MIL-PRF-28800F Class 3 (functional, 30 g, half-sine, 11 ms duration)

TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

Electronic hardware debugging, troubleshooting, and analog circuit design

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