KEYSIGHT TECHNOLOGIES (AGILENT HP)

DSO5014A

The Keysight (Agilent) DSO5014A is a 5000 Series 4-channel digital storage oscilloscope offering 100 MHz bandwidth, a maximum real-time sample rate of 2 GSa/s, and a standard acquisition memory of 1 Mpts powered by third-generation MegaZoom III technology. Engineered to deliver fast update rates up to 100,000 waveforms/sec and a highly responsive analog-like display with 256 levels of intensity grading, it combines the capabilities of a deeper-memory lab scope with the footprint and price of a portable bench oscilloscope. It is standard-equipped with high-speed USB, LAN, GPIB interfaces, and LXI Class C compliance.

SPECIFICATIONS

General

Interfaces	Standard: 1x USB 2.0 high-speed device port, 2x USB 1.1 host ports. Optional: LAN, GPIB, XGA video output
Display	6.3-inch Color TFT LCD, VGA (640 x 480) resolution, with 256 levels of intensity grading
Display Resolution	640 × 480 VGA
Web Control Interface	Built-in web server provides remote front panel control
Calibration Cycle	1 year
Standard Warranty	3 years

Physical

Power Supply	100 - 240 VAC auto-ranging, 50/60 Hz (47 - 440 Hz at 100 - 120 VAC), 120 VA max
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	354 mm × 188 mm × 174 mm mm
Weight	4.1 kg kg

Vertical System

Analog Bandwidth (-3 dB)	100 MHz
Number of Input Channels	4
Calculated Rise Time (10% to 90%)	3.5 ns
Vertical Resolution (ADC)	8 bits
Input Impedance	1 MΩ ± 1% (13 pF) or 50 Ω ± 1.5% (selectable)
Input Coupling	AC, DC
Input Sensitivity Range	2 mV/div to 5 V/div (1 MΩ), 2 mV/div to 1 V/div (50 Ω)
DC Gain Accuracy	±2.0% full scale
Maximum Input Voltage	CAT I 300 Vrms, 400 Vpk (1 MΩ); 5 Vrms (50 Ω)
Offset Range	±2 V (2 mV/div to 100 mV/div), ±50 V (102 mV/div to 5 V/div) [1 MΩ]; ±2 V (2 mV/div to 100 mV/div), ±5 V (102 mV/div to 1 V/div) [50 Ω]
Hardware Bandwidth Limits	20 MHz selectable
High Resolution Mode	Up to 12 bits of resolution (at ≥ 10 µs/div)
Channel-to-Channel Isolation	> 40 dB from DC to 100 MHz

Horizontal System

Maximum Real-Time Sampling Rate	2 GSa/s (half-channel interleaved), 1 GSa/s (all channels)
Maximum Record Length	1 Mpts
Time Base Range	5 ns/div to 50 s/div
Time Base Accuracy	±15 ppm
Channel-to-Channel Deskew Range	±100 ns

Trigger System

Trigger Sources	Ch 1, Ch 2, Ch 3, Ch 4, Line, Aux
Trigger Modes	Auto, Normal, Single
Trigger Coupling	AC, DC, LF Reject, HF Reject, Noise Reject
Trigger Holdoff Range	60 ns to 10 s
Edge Triggering	Rising, falling, alternating, either edge on any channel or auxiliary input
Pulse Width Triggering	Positive/negative pulse width (15 ns to 10 s)
External Trigger Input Impedance	Auxiliary trigger (rear panel): 1 MΩ ± 3% (~14 pF)
Trigger Jitter	< 15 ps RMS
Trigger Sensitivity (Internal)	< 10 mV/div: greater of 1 div or 5 mV; ≥ 10 mV/div: 0.6 div
Trigger Sensitivity (External)	Auxiliary: DC to 100 MHz: 100 mV
Video/TV Trigger Formats	NTSC, PAL, SECAM, HDTV (480i, 480p, 720p, 1080i, 1080p)

Acquisition System

Acquisition Modes	Normal, Peak Detect, Averaging, High Resolution
Peak Detect Mode Min Pulse Width	500 ps
Averaging Factor Range	2, 4, 8, 16 ... to 16384 selectable
Maximum Waveform Capture Rate	Up to 100,000 waveforms/sec

Waveform Measurements and Analysis

Automatic Measurements	33 automatic measurements with statistics (including peak-to-peak, max, min, RMS, overshoot, frequency, period, rise/fall time, duty cycle)
Basic Math Functions	Add, Subtract, Multiply, FFT
FFT Window Types	Hanning, Flat Top, Rectangular

Connectivity and Ports

USB Host Ports	2 (1 on front panel, 1 on rear panel), Type A
USB Device Ports	1 (rear panel), Type B for remote control
LAN Port	10/100Base-T, RJ-45
GPIB Interface	IEEE-488 (rear panel)
LXI Compliance	LXI Class C compliant
Auxiliary Output	Trigger Out (rear panel)

Environmental Specifications

Storage Temperature Range	-40 to +70 °C
Operating Humidity Range	Up to 95% RH at +40 °C (non-condensing)
Operating Altitude	Up to 4,600 m (15,000 ft)

Compliance and Standards

Safety Certifications	UL61010-1, CSA C22.2, EN61010-1
Electromagnetic Compatibility (EMC)	IEC 61326-1, EN 61326-1, ICES-001

Math & Measurements

Built-in Frequency Counter	5-digit, operates on any trigger source up to the analog bandwidth

Inputs

Probe Interface	AutoProbe interface (supports active, differential, and current probes)

Standard Accessories

Standard Probes Shipped	Four 10074D 10:1 passive probes (150 MHz)

Software & Analysis

Serial Bus Trigger and Decode Options	I2C, SPI, CAN, LIN, RS-232/UART (option dependent)

Performance

Roll Mode Range	50 ms/div to 50 s/div
XY Mode	Yes
Vertical Vernier	Fully continuously variable

Inputs & Outputs

Input Protection (50 Ω)	5 Vrms
Input Protection (1 MΩ)	CAT I 300 Vrms, 400 Vpk

Power

Power Consumption (Max)	120 VA
AC Input Voltage	100 to 240 VAC, auto-ranging
AC Input Frequency	47 to 440 Hz

TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

Electronic Design, Troubleshooting, Embedded Systems Testing, and Education

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