

KEYSIGHT TECHNOLOGIES (AGILENT HP)

MSO6102A

The Keysight (formerly Agilent) MSO6102A is a 100 MHz, 2-channel mixed-signal oscilloscope (MSO) from the InfiniiVision 6000 Series. Combining 2 analog channels with 16 time-correlated digital channels, the MSO6102A features MegaZoom III deep memory technology and a high-definition XGA color display with 256 intensity levels. It delivers an uncompromised update rate of up to 100,000 waveforms per second, making it ideal for viewing rare anomalies and complex mixed-signal designs.

SPECIFICATIONS

General

Interfaces	LAN, USB 2.0 Host (front/rear), USB 2.0 Device, GPIB, XGA Video Output
Display	6.3-inch VGA color LCD (640 × 480) with 256 levels of intensity
Real-Time Clock	Built-in; dates and times waveforms

Physical

Power Supply	100 - 240 V AC (±10%), 50/60 Hz, 120 W maximum power consumption
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	354 mm × 188 mm × 282 mm (with handle and feet extended) mm
Weight	4.9 kg kg

Analog Vertical System

Analog Input Channels	2
Analog Bandwidth (-3 dB)	100 MHz
Calculated Rise Time (10% to 90%)	3.5 ns
Input Coupling	AC, DC
Input Impedance	1 MΩ ±1% (14 pF), 50 Ω ±1.5% (selectable)
Input Sensitivity Range (1 MΩ)	2 mV/div to 5 V/div
Input Sensitivity Range (50 Ω)	2 mV/div to 1 V/div
Vertical Resolution	8 bits
Max Input Voltage (1 MΩ)	CAT I 300 Vrms, CAT II 100 Vrms, ±400 Vpk
Max Input Voltage (50 Ω)	5 Vrms
DC Gain Accuracy	±2.0% of full scale
Channel-to-Channel Isolation	≥ 40 dB from DC to 100 MHz
Offset Range	±5 V (< 200 mV/div), ±100 V (≥ 200 mV/div)

Digital Vertical System

Digital Channels	16 channels (D0 to D15)
Threshold Grouping	Pod 1 (D0 - D7), Pod 2 (D8 - D15)
Threshold Selections	TTL (+1.4 V), CMOS (+2.5 V), ECL (-1.3 V), User-defined
Threshold Voltage Range	± 8.0 V in 10 mV steps
Threshold Accuracy	$\pm(100$ mV + 3% of threshold setting)
Input Impedance (Digital Probe)	100 k Ω $\pm 2\%$ (~ 8 pF) with standard probe
Max Input Voltage (Digital Probe)	± 40 V peak
Minimum Voltage Swing	500 mVpp
Minimum Detectable Pulse Width	5 ns
Maximum Toggle Rate	250 MHz

Horizontal System

Maximum Real-time Sample Rate (Analog)	2 GSa/s (half-channel interleaved), 1 GSa/s (all channels)
Maximum Sample Rate (Digital)	2 GSa/s (half-pod interleaved), 1 GSa/s (all pods)
Maximum Record Length (Analog)	8 Mpts (half-channel interleaved), 4 Mpts (all channels)
Maximum Record Length (Digital)	8 Mpts (half-pod interleaved), 4 Mpts (all pods)
Time Base Range	5 ns/div to 50 s/div
Channel-to-Channel Deskew Range	± 100 ns
Time Base Accuracy	15 ppm (0.0015%)

Trigger System

Trigger Modes	Normal, Auto, Single, Force
Trigger Coupling	AC, DC, LF Reject, HF Reject, Noise Reject
Trigger Holdoff Range	60 ns to 10 s
Edge Triggering	Rising, falling, alternating, or either edge on any channel
Pulse Width Triggering	Positive/negative pulse width from 2 ns to 10 s

Acquisition Modes

Sample Mode	Real-time sampling
Peak Detect Mode	Captures high-frequency glitches down to 2 ns
Averaging Mode	Selectable from 2, 4, 8, 16, 32, 64, 128, 256, 512, to 16384
High Resolution Mode	Real-time boxcar averaging reduces random noise, extending vertical resolution to 12 bits
Segmented Memory Mode	Optional (Option SGM), records up to 1000 segments
Roll Mode	Activates at slow sweep speeds from 50 ms/div to 50 s/div

Waveform Analysis & Measurements

Automatic Voltage Measurements	Peak-to-peak, Max, Min, Amplitude, Top, Base, Overshoot, Preshoot, Average, RMS
Automatic Time/Frequency Measurements	Period, Frequency, Rise Time, Fall Time, +Width, -Width, Duty Cycle
Waveform Math	Addition, Subtraction, Multiplication, FFT

Display & User Interface

Waveform Update Rate	100,000 waveforms/sec
Graticules	8 x 10 grid divisions

Connectivity and Interfaces

USB Host Ports	1 x Front Panel (USB 2.0)
USB Device Port	1 x Rear Panel (USB 2.0) for PC control & printing
LAN Port (Ethernet)	10/100Base-TX, LXI Class C compliant

Environmental & Compliance

Operating Altitude	Up to 4,600 m (15,000 ft)
Non-Operating Altitude	Up to 15,300 m (50,000 ft)
Operating Humidity Range	95% relative humidity at 40 °C (non-condensing)
Safety Certifications	UL 61010-1, CAN/CSA-C22.2 No. 61010-1, EN 61010-1

Physical Characteristics

Weight (Shipping)	11.5 kg (25.4 lbs)
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Accessories

Standard Probes Included	2 x 10074C (10:1, 150 MHz) passive probes, 16-channel digital probe kit (54620-68701)
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Trigger

Internal Trigger Level Range	±6 div from center of screen
External Trigger Level Range	±1.0 V or ±8.0 V (selectable, 1 MΩ)
External Trigger Input Impedance	1 MΩ ± 1% in parallel with ~14 pF, or 50 Ω

Digital Channels

Digital Channel Dynamic Range	±10 V about threshold
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Environmental

Storage Temperature Range	-40 °C to +70 °C
Operating Vibration	0.21 g rms, 5 Hz to 500 Hz
Non-Operating Vibration	2.09 g rms, 5 Hz to 500 Hz
Shock Resistance	30 g, half-sine, 11 ms duration
Acoustic Noise	40 dBA nominal

Compliance

Electromagnetic Compatibility (EMC)	IEC 61326-1, EN 61326-1, CISPR 11 Group 1 Class A
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Vertical System

Analog Bandwidth Limit	20 MHz (selectable)
Probe Interface	Agilent AutoProbe

Frequency Counter

Frequency Counter Resolution	5 digits
Frequency Counter Range	0.5 Hz to 100 MHz

Storage

Supported File Formats	CSV, BMP, PNG, ASCII XY, binary, Trace, Setup
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TECHNOLOGY

Mixed Signal Oscilloscope (MSO)

APPLICATIONS

Mixed-signal design troubleshooting, embedded system debugging, serial bus analysis

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