

KEYSIGHT TECHNOLOGIES (AGILENT HP)

MSO7054A

The Keysight (Agilent) InfiniiVision MSO7054A is a high-performance 500 MHz mixed signal oscilloscope featuring 4 analog channels and 16 digital timing channels. Designed with the MegaZoom III deep memory architecture, it delivers a standard 8 Mpts record length and an uncompromised waveform update rate of up to 100,000 waveforms per second, all displayed on a spacious 12.1-inch XGA LCD display. This oscilloscope provides exceptional signal visibility and comprehensive analytical tools for complex embedded system debugging.

SPECIFICATIONS

General

Interfaces	USB Host (2 front, 1 rear), USB Device (1 rear), LAN (10/100Base-T), XGA video output
Display	12.1-inch diagonal liquid crystal display (LCD) with XGA (1024 x 768) resolution, 256 intensity levels
Built-in Help Languages	English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Simplified Chinese, Spanish, Traditional Chinese

Physical

Power Supply	100-240 V AC, 50/60 Hz; 100-120 V AC, 400 Hz; 120 W maximum power consumption
Operating Temperature	0 °C to +55 °C °C
Dimensions (W×H×D)	454 mm × 298 mm × 220 mm mm
Weight	5.9 kg kg

Analog Vertical System

Analog Input Channels	4
Analog Bandwidth (-3 dB)	500 MHz
Calculated Rise Time (10% to 90%)	700 ps
Input Coupling	AC, DC
Input Impedance	1 MΩ ± 1% 15 pF, 50 Ω ± 1.5%
Input Sensitivity Range	1 mV/div to 5 V/div (1 MΩ), 1 mV/div to 1 V/div (50 Ω)
Vertical Resolution	8 bits
Max Input Voltage (1 MΩ)	CAT I 300 Vrms, 400 Vpk; CAT II 150 Vrms
Max Input Voltage (50 Ω)	5 Vrms
DC Gain Accuracy	±2.0% of full scale
Offset Range	±5 V (1 mV/div to 200 mV/div), ±50 V (200 mV/div to 5 V/div) for 1 MΩ

Digital Vertical System

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

Horizontal System

Maximum Real-time Sample Rate (Analog)	4 GSa/s (half-channel interleaved), 2 GSa/s (all channels)
Maximum Sample Rate (Digital)	2 GSa/s (1 pod), 1 GSa/s (2 pods)
Maximum Record Length (Analog Channels)	8 Mpts (half-channel interleaved), 4 Mpts (all channels)
Maximum Record Length (Digital Channels)	8 Mpts (1 pod), 4 Mpts (2 pods)
Time Base Range	500 ps/div to 50 s/div
Time Base Accuracy	15 ppm (0.0015%)
Channel-to-Channel Deskew Range	± 100 ns

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
Trigger Sensitivity	0.5 div or 2 mV (DC to 100 MHz), 1.0 div or 4 mV (100 MHz to 500 MHz)
Edge Triggering	Rising, falling, alternating, or either edge on any channel
Pulse Width Triggering	Trigger on pulse width $<$, $>$, $=$, or $\neq$ a specific time (15 ns to 10 s)
Logic Triggering	Trigger on AND, OR, NAND, NOR, or state pattern across analog and digital channels
Auxiliary Trigger Input Impedance	$1\text{ M}\Omega \pm 3\%$ (~ 8 pF)
Auxiliary Trigger Max Input Voltage	CAT I 300 Vrms, CAT II 100 Vrms, 400 Vpk (at $1\text{ M}\Omega$)

Acquisition Modes

Sample Mode	Normal Mode = Acquire sample values only
Peak Detect Mode	Capture glitches as narrow as 250 ps (analog channels)
Averaging Mode	Selectable from 2, 4, 8, 16, ... up to 65536 averages
High Resolution Mode	Real-time boxcar averaging reduces random noise and increases resolution up to 12 bits
Segmented Memory Mode	Up to 2000 segments

Waveform Analysis & Measurements

Automatic Voltage Measurements	Peak-to-peak, Maximum, Minimum, Amplitude, Top, Base, Overshoot, Preshoot, Average, RMS
Automatic Time/Frequency Measurements	Period, Frequency, Rise time, Fall time, +Width, -Width, Duty cycle, Delay, Phase
Math Functions	Addition, subtraction, multiplication, FFT, differentiation, integration, square root
FFT Window Types	Hanning, Flat Top, Rectangular

Display & User Interface

Display Type	12.1-inch color TFT LCD
Display Size (Diagonal)	12.1 in (307 mm)
Display Resolution	1024 × 768 pixels (XGA)
Waveform Update Rate	Up to 100,000 waveforms/sec
Graticules	8 x 10 grid

Connectivity and Interfaces

USB Host Ports (Front/Rear)	1 front port, 1 rear port (USB 2.0 compatible)
USB Device Port	1 rear port (USB 2.0 High Speed)
LAN Port (Ethernet)	RJ-45 10/100Base-TX
External Video Output Port	XGA out (15-pin D-sub)
Auxiliary Output	BNC connector (triggers on trigger out, source out, or mask test)
LXI Compliance	LXI Class C

Environmental & Compliance

Operating Temperature Range	0 °C to +50 °C
Non-Operating Temperature Range	-40 °C to +70 °C
Operating Humidity Range	Up to 95% RH at +40 °C
Operating Altitude	Up to 4,600 m (15,000 ft)
Safety Certifications	UL61010-1, CAN/CSA-C22.2 No. 61010-1, EN61010-1

Physical Characteristics

Width	454 mm
Height	298 mm
Depth	220 mm
Weight (Net)	5.9 kg (13 lbs)

Vertical System - Analog Channels

Analog Bandwidth Limit	20 MHz (selectable)
Channel-to-Channel Isolation	≥ 100:1 from DC to 500 MHz

Interfaces & Connectivity

Optional GPIB Interface	Supported via optional N5428A module
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Power Requirements

AC Power Line Frequency Range	50/60/400 Hz (at 100 - 120 V), 50/60 Hz (at 100 - 240 V)
Power Consumption	120 W maximum

Environmental & Physical

Ventilation Clearance	100 mm (4 inches) on left, right, and rear sides
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Software & Options

Supported Serial Protocols (Optional)	I ² C, SPI, CAN, LIN, RS-232/UART, I ² S, MIL-STD 1553, FlexRay
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Acquisition

Glitch Capture	As narrow as 250 ps (using hardware peak detect)
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Triggering

Video/TV Triggering	NTSC, PAL, SECAM, HDTV (480i, 480p, 576i, 576p, 720p, 1080i, 1080p)
Pattern Triggering	Trigger on high, low, or don't care levels across all analog and digital channels
Sequence Triggering	Arm on event A, trigger on event B with delay or reset options

Standard Accessories

Standard Analog Probes Included	Four 10073C 10:1 passive probes (500 MHz)
Standard Digital Cable Kit Included	54620-68701 16-channel digital probe kit

Storage

Internal Non-volatile Storage	Stores up to 10 setups and 10 waveforms
File Export Formats	BMP, PNG, CSV, ASCII XY, BIN, Setup (.set), Waveform (.wfm)

Measurements & Analysis

Measurement Statistics	Mean, minimum, maximum, standard deviation, and count displayed for up to 4 measurements simultaneously
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Environmental & Standards

Environmental Vibration Resistance	Meets MIL-PRF-28800F Class 3 random vibration
Environmental Shock Resistance	Meets MIL-PRF-28800F Class 3 half-sine shock

TECHNOLOGY

Mixed Signal Oscilloscope

APPLICATIONS

Embedded systems debug, mixed-signal circuit design, digital design verification, and serial protocol analysis

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