

KEYSIGHT TECHNOLOGIES (AGILENT HP)

DSO7104A

The Keysight (formerly Agilent) InfiniiVision DSO7104A is a 1 GHz, 4-channel digital storage oscilloscope featuring a large 12.1-inch XGA display, always-on MegaZoom III deep memory, and an industry-leading uncompromised update rate of up to 100,000 waveforms per second. Designed for capturing subtle signal details and infrequent events, it offers complete connectivity including USB, LAN, and LXI compliance in a compact physical footprint.

SPECIFICATIONS

General

Interfaces	3 x USB 2.0 host ports, 1 x USB 2.0 device port, LAN (10/100Base-T, LXI Class C), VGA out; GPIB (optional)
Display	12.1-inch diagonal XGA color TFT LCD, 1024 x 768 pixels, 256 intensity levels
Standard Warranty	3 years

Physical

Power Supply	100 - 240 V AC, 50/60 Hz / 100 - 120 V AC, 400 Hz, automatic selection, 120 W maximum
Operating Temperature	0 to +50 °C °C
Dimensions (W×H×D)	381 mm × 324 mm × 165 mm mm
Weight	5.9 kg kg

Vertical System

Number of Analog Channels	4
Analog Bandwidth (-3 dB)	1 GHz
Calculated Rise Time (10% to 90%)	350 ps
Input Impedance	1 M Ω $\pm$ 1% (14 pF) or 50 Ω $\pm$ 1.5% (selectable)
Input Coupling	AC, DC
Vertical Resolution	8 bits
Vertical Sensitivity Range (1 M Ω)	2 mV/div to 5 V/div
Vertical Sensitivity Range (50 Ω)	2 mV/div to 1 V/div
Maximum Input Voltage (1 M Ω)	300 Vrms CAT I, 150 Vrms CAT II
Maximum Input Voltage (50 Ω)	5 Vrms
DC Vertical Gain Accuracy	$\pm$ 2.0% of full scale
Hardware Bandwidth Limit Filters	20 MHz
Channel-to-Channel Isolation	40 dB (DC to 1 GHz)
Offset Range (1 M Ω)	$\pm$ 5 V (2 mV to 200 mV/div), $\pm$ 100 V (206 mV to 5 V/div)
Offset Range (50 Ω)	$\pm$ 5 V (2 mV to 200 mV/div), $\pm$ 50 V (206 mV to 1 V/div)
Dynamic Range	$\pm$ 8 divisions from screen center
Common Mode Rejection Ratio	20 dB at 50 MHz (with 50 Ω inputs)

Horizontal System

Timebase Range	500 ps/div to 50 s/div
Timebase Accuracy	$\pm$ 15 ppm
Horizontal Modes	Main, Zoom, Roll, XY
Channel-to-Channel Deskew	$\pm$ 100 ns
Timebase Delay Range (Pre-trigger)	Greater of 1 screen width or 250 μ s (fast timebases) or 10,000 divisions (slow timebases)
Timebase Delay Range (Post-trigger)	1 s to 10,000 s (depending on sweep speed)

Acquisition System

Maximum Real-time Sample Rate	4 GSa/s (half-channel interleaved), 2 GSa/s (all channels)
Maximum Memory Depth	8 Mpts (standard, MegaZoom III)
Acquisition Modes	Normal, Peak Detect, Averaging, High Resolution, Segmented
Peak Detection Resolution	250 ps (half-channel), 500 ps (all channels)
Maximum Waveform Update Rate	100,000 waveforms/s
Segmented Memory Capacity	Up to 2,000 segments (configuration dependent)

Trigger System

Trigger Sources	Channel 1, Channel 2, Channel 3, Channel 4, Line, External
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, or either edge on any source
Pulse Width Triggering	Pulse width <, >, =, or ≠ a specific time (2 ns to 10 s)
Video/TV Triggering	NTSC, PAL, SECAM, HDTV (480i, 480p, 576i, 576p, 720p, 1080i, 1080p)
Serial Protocol Triggering Options	I ² C, SPI, CAN, LIN, FlexRay, RS-232/UART
External Trigger Input Range	±8 V (1 M Ω), ±5 V (50 Ω)
External Trigger Input Impedance	1 M Ω ± 1% 14 pF or 50 Ω (selectable)
Trigger Jitter	15 ps rms (typical)
External Trigger Bandwidth	DC to 1 GHz
Trigger Sensitivity (Internal)	< 10 mV/div: greater of 1 div or 5 mV; ≥ 10 mV/div: 0.6 div
External Trigger Sensitivity	DC to 1 GHz: 250 mV (high sensitivity range) or 1.0 V (normal range)

Waveform Measurements & 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, Delay, Phase
Waveform Math Functions	Addition, Subtraction, Multiplication, FFT
FFT Window Functions	Hanning, Flat Top, Rectangular, Blackman-Harris
Cursor Measurements	Manual, Track, and Auto-measure cursors
Hardware-accelerated Mask Testing	Supported (option LMT or N5455A)

Display & User Interface

Display Type	Color TFT LCD
Display Size	12.1 inches (307 mm) diagonal
Display Resolution	1024 × 768 pixels (XGA)
Intensity Graduation Levels	256 levels

Connectivity & Interfaces

USB Host Ports	3 x USB 2.0 (one front, two rear)
USB Device Port	1 x USB 2.0 high-speed device port (rear)
LAN Interface (LXI)	10/100Base-T, LXI Class C compliant
VGA Video Output	15-pin D-sub female connector (rear)
Trigger Out / Aux Output	BNC connector (rear), 0 to 5 V into 1 M Ω , 0 to 2.5 V into 50 Ω
Probe Calibrator Output (Probe Comp)	Front panel terminals, ~1.2 kHz, ~2.5 Vpp

Power & Environmental

AC Input Voltage Range	100 V to 240 V AC
Line Frequency Range	50/60 Hz (100-240 V), 400 Hz (100-120 V)
Power Consumption	120 W maximum
Storage Temperature Range	-40 °C to +70 °C
Operating Humidity	95% RH at 40 °C (non-condensing)
Operating Altitude	Up to 4,600 m (15,000 ft)
Electromagnetic Compatibility (EMC)	IEC 61326-1, EN 61326-1, CISPR 11 Class A
Safety Standards	UL61010-1, CSA22.2 No. 61010-1, EN61010-1

Physical Characteristics

Height	324 mm
Width	381 mm
Depth	165 mm
Weight (Net)	5.9 kg
Kensington Lock Slot	Standard rear panel slot

Input Channels

Input Capacitance	14 pF (at 1 M Ω)
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Frequency Counter

Built-in Frequency Counter	5-digit, max frequency equivalent to oscilloscope bandwidth
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User Interface & Help

Operating System	Windows CE
Built-in Help Languages	11 languages (English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Simplified Chinese, Spanish, Traditional Chinese)

Connectivity & I/O

10 MHz Reference Input	BNC, 0.5 Vpp to 5 Vpp, 10 MHz
10 MHz Reference Output	BNC, 1.5 Vpp into 50 Ω , 10 MHz
Probe Interface Type	Agilent AutoProbe interface

Accessories

Standard Included Probes	Four 10073D 10:1 passive probes (500 MHz)
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Connectivity

Web Server	Built-in web browser remote control
GPIO Interface	Standard

Data Storage

Internal Non-volatile Memory	10 setups and 10 waveforms
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Software & Control

Supported Drivers

IVI-COM, LabVIEW, MATLAB

TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

Electronic design, debug, and characterization

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