

KEYSIGHT TECHNOLOGIES (AGILENT HP)

DSO7104B

The Keysight InfiniiVision DSO7104B is a high-performance 1 GHz, 4-analog-channel Digital Storage Oscilloscope (DSO) engineered with a deep MegaZoom III memory architecture. It features a 12.1-inch XGA display, hardware-accelerated serial bus decoding, and a rapid waveform update rate of up to 100,000 waveforms per second, providing exceptional signal visibility and debugging capabilities in a compact 6.5-inch deep form factor.

SPECIFICATIONS

General

Interfaces	USB 2.0 High-speed host (2 ports), USB 2.0 High-speed device, LAN (10/100Base-T), XGA video output, GPIB (optional via N2650A module)
Display	12.1-inch diagonal color TFT LCD, XGA (1024 x 768) resolution, 256-level intensity gradation
Built-in Help Languages	11 languages (English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Simplified Chinese, Spanish, Traditional Chinese)

Physical

Power Supply	100-120 V (50/60/400 Hz), 100-240 V (50/60 Hz) auto-ranging; 120 W maximum power consumption
Operating Temperature	0 to +50 °C °C
Dimensions (W×H×D)	45.4 cm x 29.8 cm x 22.0 cm mm
Weight	5.9 kg kg

Vertical System

Analog Bandwidth (-3 dB)	1 GHz
Number of Channels	4 analog channels
Calculated Rise Time (10% to 90%)	350 ps
Input Coupling	AC, DC
Input Impedance	Selectable 1 M Ω $\pm$ 1% (14 pF) or 50 Ω $\pm$ 1.5%
Vertical Resolution	8 bits (A/D Converter)
Vertical Sensitivity Range	2 mV/div to 5 V/div (1 M Ω), 2 mV/div to 1 V/div (50 Ω)
DC Vertical Gain Accuracy	$\pm$ 2.0% of full scale
Maximum Input Voltage (1 M Ω)	CAT I 300 Vrms, 400 Vpk; CAT II 150 Vrms
Maximum Input Voltage (50 Ω)	5 Vrms
Hardware Bandwidth Limiters	20 MHz (selectable)
Channel-to-Channel Isolation	> 100:1 from DC to 1 GHz
Dynamic Range	$\pm$ 8 div from screen center
Vertical Offset Range (1 M Ω)	$\pm$ 2 V (2 mV/div to 100 mV/div), $\pm$ 5 V (102 mV/div to 200 mV/div), $\pm$ 50 V (202 mV/div to 5 V/div)
Vertical Offset Range (50 Ω)	$\pm$ 2 V (2 mV/div to 100 mV/div), $\pm$ 5 V (102 mV/div to 200 mV/div), $\pm$ 10 V (202 mV/div to 1 V/div)

Horizontal System & Acquisition

Maximum Real-time Sample Rate (Single-Channel)	4 GSa/s
Maximum Real-time Sample Rate (Multi-Channel)	2 GSa/s (when all channels are active)
Maximum Record Length (Memory Depth)	8 Mpts (single-channel), 4 Mpts (multi-channel)
Time Base Range	500 ps/div to 50 s/div
Time Base Accuracy	$\pm$ 15 ppm (0.0015%)
Channel-to-Channel Deskew Range	$\pm$ 100 ns
Segmented Memory	Standard (up to 2000 segments)

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 Holdoff Range	60 ns to 10 s
Standard Trigger Types	Edge, Pulse Width, Pattern, TV/Video
Advanced and Protocol Triggers	I2C, SPI, CAN, LIN, USB, FlexRay, I2S, MIL-STD 1553, RS-232/UART
External Trigger Input Impedance	1 M Ω $\pm$ 3% (14 pF)
External Trigger Max Input Voltage	CAT I 300 Vrms, 400 Vpk; CAT II 150 Vrms
Trigger Sensitivity (Internal)	< 10 mV/div: greater of 1 div or 5 mV; $\geq$ 10 mV/div: 0.6 div (DC to 1 GHz)
External Trigger Sensitivity	Range 1.0 V: 40 mV (DC to 100 MHz), 120 mV (100 MHz to 1 GHz); Range 8.0 V: 320 mV (DC to 100 MHz), 960 mV (100 MHz to 1 GHz)
Trigger Level Range (Internal)	$\pm$ 6 div from center screen
Trigger Level Range (External)	$\pm$ 1 V (1.0 V range), $\pm$ 8 V (8.0 V range)

Acquisition Modes & Signal Processing

Acquisition Modes	Normal, Peak Detect, Averaging, High Resolution, Segmented Memory
Peak Detect Performance	Captures glitches as narrow as 250 ps
Averaging Settings	Selectable from 2, 4, 8, 16 to 16,384
Waveform Update Rate	Up to 100,000 waveforms/sec
Waveform Math Operators	Add, Subtract, Multiply, FFT
FFT Window Types	Hanning, Flat Top, Rectangular, Blackman-Harris

Measurements & Analysis

Automatic Voltage Measurements	Peak-to-Peak, Max, Min, Amplitude, Top, Base, Overshoot, Preshoot, Average, RMS
Automatic Time Measurements	Period, Frequency, Rise Time, Fall Time, +Width, -Width, Duty Cycle
Cursor Measurements	Manual, Track, and Auto-measure types (ΔV , ΔT , $1/\Delta T$)
Measurement Statistics	Mean, Min, Max, Standard Deviation, Count
Built-in Analysis Tools	Segmented Memory, Mask Testing, Search & Navigate, Lister

Display & User Interface

Display Graticule Styles	8 x 10 grid
Waveform Persistence Settings	Off, Infinite, Variable persistence (100 ms to 60 s)

Input/Output Interfaces

Calibration Output	Amplitude $\sim$ 2.5 V, Frequency $\sim$ 1.2 kHz
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Power & Environmental

Storage Temperature Range	-40 to +70 °C
Operating Humidity Range	Up to 95% RH at +40 °C
Operating Altitude	Up to 4,000 m (13,123 ft)
Electromagnetic Compatibility (EMC)	IEC 61326-1, EN 61326-1
Safety Certifications	UL61010-1, CSA22.2 No. 61010-1, EN61010-1

Analysis Tools

Hardware Mask Testing	Optional (up to 280,000 tests/sec)
Search and Navigate	Standard (search for Edge, Pulse Width, Rise/Fall Time, Runt, Pattern, State)

Inputs & Outputs

Video Output Port	D-Sub 15-pin XGA out on rear panel
USB Ports	3 × USB 2.0 host (1 front, 2 rear), 1 × USB 2.0 device (rear)
GPIO Interface	Optional (via N5427A GPIO attachment module)

Environmental

Vibration and Shock	Meets MIL-PRF-28800F Class 3 random vibration
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Accessories

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

LXI Compliance	LXI Class C
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Measurement System

Built-in Frequency Counter	3-digit resolution (max frequency equal to analog bandwidth)
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Storage & File System

Supported Save File Formats	CSV, ASCII XY, BMP, PNG, Binary (.bin), Setup (.set)
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General Features

Real-time Clock	Built-in, battery-backed (for file timestamping)
Security Lock	Kensington style lock slot on rear panel

Environmental & Physical

Cooling Clearance	100 mm (4 inches) minimum on left, right, and rear
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TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

High-Speed Electronic Design, Debugging, and Serial Bus Analysis

