

KEYSIGHT TECHNOLOGIES (AGILENT HP)

DSO6014A

The Keysight Technologies (formerly Agilent) DSO6014A is a 100 MHz, 4-channel digital storage oscilloscope from the InfiniiVision 6000 Series. Powered by proprietary MegaZoom III technology, it offers an uncompromised waveform update rate of up to 100,000 waveforms/sec and a deep standard memory of 8 Mpts. Equipped with a 6.3-inch color display, advanced triggering options (including analog HDTV, I2C, SPI, CAN, LIN, and USB), and standard connectivity including LAN, USB, GPIB, and XGA video output, the DSO6014A provides outstanding viewing, triggering, and measuring capabilities.

SPECIFICATIONS

General

Interfaces	LAN (10/100Base-T, LXI Class C), USB 2.0 (2x Host, 1x Device), GPIB, XGA Video Output
Display	6.3-inch (160 mm) diagonal color TFT LCD, 640 x 480 VGA resolution, 256 levels of intensity grading
Calibration Interval	1 year
Acoustic Noise	39 dBA at 1 meter

Physical

Power Supply	100 to 240 VAC ($\pm 10\%$), 50/60 Hz, or 100 to 120 VAC, 400 Hz; 120 W maximum
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	354 mm x 188 mm x 282 mm mm
Weight	4.9 kg kg

Vertical System

Number of Analog Channels	4
Analog Bandwidth (-3 dB)	100 MHz
Calculated Rise Time (10% to 90%)	3.5 ns
Input Coupling	AC, DC
Input Impedance	1 M Ω $\pm$ 1% 14 pF, or 50 Ω $\pm$ 1.5%
Input Sensitivity Range	2 mV/div to 5 V/div (1 M Ω), 2 mV/div to 1 V/div (50 Ω)
Vertical Resolution	8 bits
Maximum Input Voltage	CAT I 300 Vrms, 400 Vpk (1 M Ω); 5 Vrms (50 Ω)
DC Gain Accuracy	$\pm$ 2.0% of full scale
DC Offset Accuracy	$\pm$ (1.5% of setting + 0.1 div + 2 mV) for 2 mV/div to 200 mV/div; $\pm$ (1.5% of setting + 0.1 div + 20 mV) for >200 mV/div to 5 V/div
Offset Range	$\pm$ 2 V (2 mV/div to 100 mV/div), $\pm$ 50 V (102 mV/div to 5 V/div) at 1 M Ω
Channel-to-Channel Isolation	$\geq$ 40 dB from DC to 100 MHz
Hardware Bandwidth Limits	20 MHz (selectable)

Horizontal System

Timebase Range	5 ns/div to 50 s/div
Timebase Accuracy	$\pm$ 15 ppm (0.0015%)
Horizontal Delay Range	Pre-trigger: Greater of 1 screen width or 2.5 s; Post-trigger: 1 s to 500 s
Channel-to-Channel Deskew Range	$\pm$ 100 ns
Horizontal Modes	Main, Zoom, Roll, XY

Acquisition System

Maximum Real-Time Sample Rate (Single Channel)	2 GSa/s (interleaved), 1 GSa/s (each channel)
Maximum Memory Depth (Standard)	8 Mpts (interleaved), 4 Mpts (each channel)
Acquisition Modes	Normal, Peak Detect, Averaging, High Resolution
Peak Detect Resolution	500 ps (interleaved), 1 ns (each channel)
Averaging Factors	Selectable from 2 to 16384
High-Resolution Mode Resolution	Up to 12 bits of vertical resolution (at $\geq$ 10 μ s/div)
Waveform Update Rate	Up to 100,000 waveforms/sec

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
Trigger Sensitivity	< 10 mV/div: greater of 1 div or 5 mV; $\geq$ 10 mV/div: 0.6 div
Edge Triggering	Rising, Falling, Alternating
Pulse Width Triggering	Trigger on pulse width >, <, within, or outside range of 15 ns to 10 s
Pattern/State Triggering	Pattern of High, Low, Don't Care on any analog channel
Video/TV Triggering	NTSC, PAL, SECAM, HDTV (480p, 576p, 720p, 1080i, 1080p)
Runt Triggering	Not supported
Setup/Hold Triggering	Not supported
Serial Bus Triggering Options	I2C, SPI, CAN, LIN, USB (low/full speed)

Measurements and Waveform Analysis

Automatic Voltage Measurements	Peak-to-Peak, Maximum, Minimum, Amplitude, Top, Base, Overshoot, Preshoot, Average, RMS
Automatic Time Measurements	Frequency, Period, Rise Time, Fall Time, Positive Width, Negative Width, Duty Cycle
Automatic Mixed/Phase Measurements	Delay, Phase
Measurement Statistics	Mean, Min, Max, Standard Deviation, Count
Waveform Math Operations	Addition, Subtraction, Multiplication, FFT
FFT Window Functions	Hanning, Flat Top, Rectangular
FFT Vertical Scale Options	dBV, Vrms
Pass/Fail Mask Testing	Supported via optional N5455A software license

Connectivity and Ports

USB Host Ports	1 port (front), USB 2.0 High-speed
USB Device Port	1 port (rear), USBTMC compliant for PC control
LAN Port (LXI Class)	10/100Base-T LAN, LXI Class C compliant
GPIB Interface	IEEE 488.2 interface standard
External Trigger Input	BNC on rear panel
Trigger Out/Auxiliary Output	BNC on rear panel
Calibration Output Signal	Probe compensation: ~ 3 V into ≥ 100 k Ω , ~ 1.2 kHz
Video Output Port (VGA)	15-pin D-sub XGA output on rear panel

Power Specifications

Line Voltage Range	100 V to 240 V AC ($\pm 10\%$)
Line Frequency Range	50/60 Hz (100 to 240 VAC), 400 Hz (100 to 120 VAC)
Power Consumption	120 W maximum
Battery Operation Support	Not supported on 4-channel models

Environmental and Standards

Storage Temperature Range	-40 °C to +70 °C
Operating Humidity Range	Up to 95% RH (non-condensing) at 40 °C
Operating Altitude	Up to 4,600 meters (15,000 feet)
Electromagnetic Compatibility (EMC)	IEC 61326-1, EN 61326-1, CISPR 11/EN 55011 Class A
Safety Standards	UL61010-1, CAN/CSA-C22.2 No. 61010-1, EN 61010-1

Physical Characteristics

Kensington Lock Slot	Integrated on rear panel
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Ordering Information and Upgrades

Battery Powered BAT Option	Not supported on 4-channel models
SEC Secure Environment Mode	Option SEC
CAN/LIN Automotive Option	Option AMS (CAN/LIN automotive triggering and decode)
I2C and SPI Serial Data Decode	Option LSS (I2C and SPI triggering and decode)
FPGA Dynamic Probe Option	Option FPG (for Altera FPGAs)

Accessories

Standard Included Probes	Four 10074D 10:1 passive probes (150 MHz bandwidth)
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Software & Options

Option SGM	Segmented memory acquisition
Option LMT	Mask limit testing
Option 232	RS-232/UART serial triggering and decode
Option SND	I2S serial triggering and decode
Option FRS	FlexRay triggering and decode
Option 553	MIL-STD-1553 serial triggering and decode

Data Storage & Export

Waveform Export Formats	CSV, ASCII XY, BIN, PNG, BMP
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Display & Interface

Intensity Levels	256 levels of intensity-graded display
Probe Sensing Interface	AutoProbe interface with smart probe support
Built-in Help Languages	11 languages

Display

Display Resolution	320 x 240 pixels (QVGA)
Display Size	6.3 inches (160 mm) diagonal

Trigger

Trigger Level Range (Internal)	+/-6 divisions from center of screen
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Interfaces

USB Port Speed	USB 2.0 High Speed compliant
VGA Output Resolution	640 x 480 pixels (VGA)
Web Server Capability	Built-in Virtual Front Panel, Web Monitor, and FTP server

Inputs & Outputs

AutoProbe Interface Support	Yes, compatible with Agilent active probes
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Power

Battery Life (Option BAT)	Up to 2 hours of continuous operation
Battery Recharge Time (Option BAT)	Approximately 4 hours

Safety & Compliance

Pollution Degree	Pollution Degree 2
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Environmental

Vibration Resistance	MIL-PRF-28800F, Class 3 random vibration
Shock Resistance	MIL-PRF-28800F, Class 3

TECHNOLOGY

MegaZoom III

APPLICATIONS

General-purpose electronic design, manufacturing, and educational debugging

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