

KEYSIGHT TECHNOLOGIES (AGILENT HP)

54616B

The Keysight (Agilent/HP) 54616B is a 500 MHz analog bandwidth digital oscilloscope that delivers a real-time sampling rate of up to 2 GSa/s. Combining a fast display update rate of 500,000 points per second with 1 ns peak detection, the monochrome 54616B is engineered for viewing fast, low-duty-cycle events and high-frequency waveforms. It supports optional expansion modules for FFT, remote programming, and waveform storage.

SPECIFICATIONS

General

Interfaces	Optional HP-IB (GPIB), RS-232, or Centronics parallel via expansion modules
Display	7-inch monochrome green phosphor CRT raster display
Expansion Options	FFT, waveform storage, and remote control available via optional modules
Recommended Calibration Interval	1 year

Physical

Power Supply	100-240 VAC ($\pm 10\%$), 45-440 Hz, 220 VA maximum
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	322 mm × 172 mm × 317 mm mm
Weight	6.2 kg

Vertical System

Number of Channels	2
Analog Bandwidth (-3 dB)	500 MHz
Calculated Rise Time	< 700 ps (10% to 90%)
Vertical Resolution	8 bits
Input Impedance	1 M Ω (approx. 13 pF) or 50 Ω (selectable)
Input Coupling	AC, DC, GND
Input Sensitivity Range	2 mV/div to 5 V/div (1 M Ω), 2 mV/div to 1 V/div (50 Ω)
Maximum Input Voltage	400 V (DC + peak AC) at 1 M Ω , 5 Vrms at 50 Ω
DC Gain Accuracy	$\pm 1.5\%$ of full scale
Hardware Bandwidth Limits	20 MHz (selectable)
Vertical Offset Range	± 2 V (2 mV/div to 200 mV/div), ± 40 V (500 mV/div to 5 V/div)
Probe Attenuation Support	1:1, 10:1, 100:1
AC Coupling Low-Frequency Limit	< 10 Hz

Horizontal System

Maximum Real-Time Sampling Rate	2 GSa/s (single-channel active), 1 GSa/s (dual-channel active)
Maximum Record Length	5,000 points per channel
Time Base Range	1 ns/div to 5 s/div
Time Base Accuracy	±0.005%
Delay Jitter	0.001% (10 ppm)

Trigger System

Trigger Sources	Channel 1, Channel 2, Line, External
Trigger Modes	Auto, Auto Level, Normal, Single
Trigger Coupling	AC, DC, LF Reject, HF Reject, Noise Reject
External Trigger Input Impedance	1 MΩ (approx. 13 pF)

Acquisition System

Peak Detection Mode Min Pulse Width	1 ns
Acquisition Modes	Real-time, Random Repetitive, Peak Detect, Average
Max Sample Rate (Dual-Channel)	1 GSa/s per channel
Max Record Length (Dual-Channel)	5000 points per channel

Environmental Specifications

Storage Temperature Range	-40 to +70 °C
Operating Altitude	Up to 4,600 m
Storage Altitude	Up to 15,240 m
Humidity	95% RH at 40 °C

Trigger

Internal Trigger Sensitivity	DC to 100 MHz: 0.35 div or 3.5 mV; 100 MHz to 500 MHz: 1.0 div or 10 mV
External Trigger Sensitivity	DC to 100 MHz: 40 mV; 100 MHz to 500 MHz: 100 mV
Internal Trigger Level Range	±12 divisions from screen center
External Trigger Level Range	±4 V
Trigger Holdoff Range	200 ns to 13 s

Performance

Channel-to-Channel Isolation	DC to 100 MHz: > 40 dB; 100 MHz to 500 MHz: > 30 dB
Built-in Waveform Math	Addition (Ch 1 + Ch 2), Subtraction (Ch 1 - Ch 2)

Measurements

Automatic Measurements	Vp-p, Vmax, Vmin, Vtop, Vbase, Vamp, Vavg, Vrms, Period, Frequency, +Width, -Width, Duty Cycle, Rise time, Fall time
Cursor Measurements	Voltage difference (dV), Time difference (dT), Frequency (1/dT)

Memory

Setup Storage	16 nonvolatile front-panel setups
Waveform Storage	4 nonvolatile waveform memories

Display

Display Graticule	8 × 10 divisions
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Compliance & Safety

Safety Standards	IEC 1010-1 / EN 61010-1, UL 3111-1, CSA C22.2 No. 1010.1
EMC Standards	CISPR 11 Class A, EN 50082-1

TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

High-speed electronic circuit design, debugging, and troubleshooting

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