

KEYSIGHT TECHNOLOGIES (AGILENT HP)

54853A

The Keysight Technologies (formerly Agilent) Infiniium 54853A is a high-performance 4-channel digital real-time oscilloscope. Delivering a 2.5 GHz analog bandwidth and a maximum sampling rate of 20 GSa/s on all channels simultaneously, it is engineered for characterization and debugging of high-speed digital designs. Its MegaZoom deep memory architecture and compatibility with the InfiniiMax active probing system make it a reliable choice for demanding physical-layer testing.

SPECIFICATIONS

General

Interfaces	LAN (10/100Base-T), GPIB (IEEE-488), USB 2.0, RS-232, Centronics Parallel, PS/2 mouse/keyboard
Display	10.4-inch active-matrix TFT-LCD, SVGA (800 × 600) resolution
Calibration Interval	1 year

Physical

Power Supply	100–240 VAC (±10%), 47–440 Hz, max 550 W
Operating Temperature	5°C to +40°C °C
Dimensions (W×H×D)	425 mm × 216 mm × 502 mm mm

Vertical System

Analog Bandwidth (-3 dB)	2.5 GHz
Calculated Rise Time (10% to 90%)	175 ps
Number of Input Channels	4
Input Impedance	50 Ω
Input Coupling	DC
Input Sensitivity Range	2 mV/div to 1 V/div
Vertical Resolution (ADC)	8 bits (up to 12 bits with averaging)
DC Gain Accuracy	±1.5% of full scale
Maximum Input Voltage	5 Vrms, ±5 V peak
Offset Range	±1.2 V (2 mV/div to 100 mV/div), ±5 V (102 mV/div to 1 V/div)
Input Connector	50 Ω BNC (with AutoProbe interface)
Channel-to-Channel Isolation	≥ 40 dB (DC to 1 GHz), ≥ 30 dB (1 to 2.5 GHz)
Offset Accuracy	±(1.5% of channel offset + 1% of full scale + 1 mV) for ≤ 100 mV/div; ±(1.5% of channel offset + 1% of full scale + 10 mV) for > 100 mV/div
Averaging Vertical Resolution	Up to 12 bits

Horizontal System

Maximum Real-Time Sampling Rate	20 GSa/s (on 4 channels simultaneously)
Maximum Record Length	Up to 1 Mpts MegaZoom deep memory at 20 GSa/s and 32 Mpts MegaZoom deep memory at 2 GSa/s and slower sample rates
Standard Record Length	262 kpts per channel
Time Base Range	5 ps/div to 20 s/div
Channel-to-Channel Deskew Range	$\pm 25 \mu\text{s}$

Trigger System

Trigger Sources	Channel 1, Channel 2, Channel 3, Channel 4, Auxiliary, Line
Trigger Modes	Auto, Triggered, Single
Trigger Holdoff Range	100 ns to 10 s
Edge Triggering	High and low speed, positive/negative slope on any channel or aux input
Pulse Width Triggering	Positive or negative pulse width from 600 ps to 10 s
Runt Triggering	Trigger on positive-going or negative-going runs down to 600 ps
Timeout Triggering	Trigger on presence or absence of signal change over designated period (600 ps to 10 s)
Transition Triggering	Trigger on rise/fall times faster or slower than selected thresholds
Pattern/State Triggering	AND, OR, NAND, NOR logic on all analog channels
Setup/Hold Triggering	Trigger on setup, hold, or setup/hold violations
Window Triggering	Trigger on entering or exiting defined voltage windows
External Trigger Input Impedance	50 Ω
Internal Trigger Level Range	± 8 divisions from center screen

Acquisition System

Averaging Factor Range	1 to 4096
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Waveform Measurements and Analysis

Automatic Voltage Measurements	Peak-to-peak, maximum, minimum, amplitude, top, base, overshoot, preshoot, average, RMS, cycle RMS
Automatic Time Measurements	Period, frequency, positive width, negative width, duty cycle, rise time, fall time, delay, phase, burst width
Basic Math Functions	Add, subtract, multiply, divide, integrate, differentiate, FFT
FFT Window Types	Hanning, Hamming, Flat-top, Rectangular, Blackman-Harris
Limit and Mask Testing	Standard mask testing with user-defined boundaries

Connectivity and Ports

External Video Output Port	VGA out (15-pin D-Sub)
Auxiliary Output	Trigger out
Reference Clock Input	10 MHz (BNC)
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Probe Calibration Output	DC calibration signal and ground post on front panel

Processor and Storage

Internal Operating System	Windows XP Professional
Processor Type	Intel Pentium 4
Removable Storage Options	Optional Removable Hard Disk Drive (Option 017), 3.5-inch Floppy Drive

Environmental Specifications

Storage Temperature Range	-40°C to +70°C
Operating Humidity Range	Up to 95% relative humidity (non-condensing) at +40°C
Operating Altitude	Up to 4,600 m (15,000 ft)
Cooling Method	Forced air cooling (internal fan)

Physical Characteristics

Form Factor	Benchtop (rackmount kit optional)
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Accessories

Recommended Active Probe	InfiniiMax 1131A (3.5 GHz)
Recommended Connectivity Kits	E2668A / E2669A InfiniiMax connectivity kits

Environmental

Operating Shock	15 g, 11 ms half-sine
Non-Operating Shock	50 g, 11 ms half-sine
Operating Vibration	Random, 5 to 500 Hz, 0.3 g (rms)
Non-Operating Vibration	Random, 5 to 500 Hz, 2.41 g (rms); Swept sine, 5 to 500 Hz, 0.75 g

Regulatory & Safety

Safety Standards	IEC 61010-1, CSA C22.2 No. 1010.1, UL 3111-1
Electromagnetic Compatibility	IEC 61326-1, EN 55011 Group 1 Class A

Connectivity

USB Ports	5 ports (1 front, 4 rear), USB 2.0 compliant
Mouse and Keyboard Ports	PS/2 standard ports

Power

Max Power Consumption	550 W
Mains Voltage Range	100 to 240 VAC (±10%)
Mains Frequency Range	47 to 63 Hz (100-240 VAC), 360 to 440 Hz (110-120 VAC)

Display & Controls

Display Resolution	640 × 480 pixels (VGA)
Display Size	10.4 in (264 mm) diagonal
Display Type	Active-matrix color TFT-LCD

Triggering

Trigger Sensitivity (Internal)	DC to 2.5 GHz: 1.2 div
Auxiliary Trigger Sensitivity	DC to 2.5 GHz: 300 mV (into 50 Ω)
Auxiliary Trigger Input Impedance	50 Ω

Storage & System

Hard Drive Capacity	40 GB (or greater, hardware revision dependent)
System RAM	512 MB / 1 GB (hardware revision dependent)

TECHNOLOGY

Digital Real-Time Oscilloscope

APPLICATIONS

High-speed digital design, serial bus characterization, jitter analysis, RF and telecom testing

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