

KEYSIGHT TECHNOLOGIES (AGILENT HP)

54120B

The Keysight (formerly Agilent / HP) 54120B is a high-performance digitizing oscilloscope mainframe designed for high-speed digital, telecommunications, microwave, and time-domain reflectometry (TDR) measurements. Used in conjunction with HP 54120-series sampling test sets, it offers exceptional stability, precise 12-bit vertical resolution, and fully programmable control via HP-IB.

SPECIFICATIONS

General

Interfaces	HP-IB (IEEE-488)
Display	9-inch color CRT

Physical

Power Supply	115 / 230 V AC (-25% to +15%), 48 to 66 Hz, 200 VA max
Operating Temperature	15°C to 35°C (for full accuracy); 0°C to 55°C (operating limit) °C
Dimensions (W×H×D)	425.4 mm × 194.3 mm × 563.9 mm mm

System Performance & Architecture

Compatible Test Sets	HP 54121A (20 GHz), HP 54122A (12.4 GHz), HP 54123A (34 GHz), HP 54124A (50 GHz)
Vertical Resolution	12 bits (up to 14 bits with averaging)
Maximum Number of Channels	4 channels (test-set dependent)
Waveform Record Length	501 points or 1024 points (user selectable)

Horizontal System & Timebase

Mainframe Time Base Range	10 ps/div to 1 s/div
Time Base Resolution	10 fs (via averaging/interpolation)
System Jitter (RMS)	< 2.5 ps RMS + 5 ppm of delay

Acquisition Modes & Processing

Acquisition Modes	Equivalent time sampling, averaging, persistence
Number of Averages	1 to 2048 (selectable in binary steps)
Waveform Math Functions	Addition, subtraction, multiplication, division, integration, differentiation

Measurement & Display Capabilities

Automatic Parametric Measurements	Rise time, fall time, frequency, period, positive width, negative width, duty cycle, preshoot, overshoot, Vp-p, Vmax, Vmin, Vtop, Vbase, Vrms, Vmean
Cursor Types	Dual voltage and time cursors with continuous delta readouts

Environmental & Safety

Storage Temperature Range	-40°C to +75°C
Operating Humidity	Up to 95% relative humidity at 40°C
Operating Altitude	Up to 4,600 m (15,000 ft)
Calibration Interval	1 year

System Architecture

CPU	Motorola 68000
Floating Point Coprocessor	Motorola 68881

Storage

Non-Volatile Waveform Memories	4
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Triggering

Direct Trigger Frequency Range	DC to 2.5 GHz
Direct Trigger Input Impedance	50 Ω (nominal)
Direct Trigger Maximum Input Voltage	± 5 V (DC + peak AC)
Direct Trigger Sensitivity (DC to 100 MHz)	40 mV p-p
Direct Trigger Sensitivity (100 MHz to 2.0 GHz)	100 mV p-p
Direct Trigger Sensitivity (2.0 GHz to 2.5 GHz)	200 mV p-p

Timebase

Option 001 External Reference Input Frequency	1, 2, 5, or 10 MHz
Option 001 External Reference Input Impedance	50 Ω
Internal Timebase Reference Output Frequency	10 MHz

Connectivity & Output

Hardcopy Print Support	HP-GL plotters, HP ThinkJet, QuietJet, and LaserJet printers
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General & Environmental

Cooling	Forced air by rear-panel fan
Electromagnetic Interference Compliance	FTZ 526/1969, VDE 0871 Level B

Connectivity

External Monitor Outputs	4 BNC female connectors (Red, Green, Blue, Sync)
IEEE-488 (HP-IB) Interface Codes	SH1, AH1, T5, TE0, L3, LE0, SR1, RL1, PP1, DC1, DT1, C0, E2

Acquisition

Maximum Sampling Rate	100 kHz
A/D Converter Resolution	12 bits

Power

Line Voltage Range	90 to 132 V AC / 198 to 264 V AC
Line Frequency Range	48 to 66 Hz
Maximum Power Consumption	200 VA

TECHNOLOGY

Sampling Oscilloscope

APPLICATIONS

High-speed digital design, time-domain reflectometry (TDR), microwave circuit characterization, and high-speed telecom analysis

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