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Data Sheet

August 14, 2026

HP / AGILENT

HP / Agilent 4194A Impedance/Gain-Phase Analyzer

HP Agilent 4194A Impedance Gain-Phase Analyzer The HP/Agilent 4194A combines wide-range impedance analysis and gain-phase network measurements with color graphics and Auto Sequence Programming. Keysight/HP published specifications list impedance 100 Hz to 40 MHz (10 kHz to 100 MHz with 41941A/B probe) at 0.17% basic accuracy class, and gain-phase 10 Hz to 100 MHz from -107 dBm to +15 dBm with 0.1 dB resolution. Component impedance characterization versus frequency/level/bias, amplifier and filter gain-phase response to 100 MHz, go/no-go ASP production testing, and probe-based impedance evaluation to 100 MHz with 41941A/B. The HP/Agilent 4194A combines wide-range impedance analysis and gain-phase network measurements with color graphics and Auto Sequence Programming. Keysight/HP published specifications list impedance 100 Hz to 40 MHz (10 kHz to 100 MHz with 41941A/B probe) at 0.17% basic accuracy class, and gain-phase 10 Hz to 100 MHz from -107 dBm to +15 dBm with 0.1 dB resolution. Component impedance characterization versus frequency/level/bias, amplifier and filter gain-phase response to 100 MHz, go/no-go ASP production testing, and probe-based impedance evaluation to 100 MHz with 41941A/B.



MODEL

HP / Agilent 4194A

CALIBRATION

Available on request

CONDITION

Used

STATUS

In stock

RFQ / SKU

4194A

LISTING

<https://aumictechlabs.com/products/4194a-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 • 811210 • 541380

This unit

The HP/Agilent 4194A Impedance/Gain-Phase Analyzer measures impedance, gain, and phase across a broad frequency spectrum from 100 Hz to 40 MHz using its internal bridge, or 10 kHz to 100 MHz with the optional 41941A/B Impedance Probe Kit. This instrument delivers impedance accuracy of 0.17% (internal bridge) or 1.5% (with probe kit) across a measurement range of 10 mΩ to 100 MΩ. Gain-phase measurements span 10 Hz to 100 MHz with amplitude resolution to 0.1 dB. The analyzer executes measurements in approximately 3.7–4.5 ms per point at frequencies ≥ 30 kHz, enabling rapid characterization in R&D, manufacturing, and quality control environments.

Technical Specifications
Impedance Measurement Frequency range: 100 Hz to 40 MHz (internal bridge); 10 kHz to 100 MHz (with 41941A/B probe kit) Measurement range: 10 mΩ to 100 MΩ (internal); 0.1 Ω to 1 MΩ (with probe kit) Accuracy: 0.17% (internal); 1.5% (probe kit) Resolution: 0.1 mΩ; 1.5–3% across 100 mΩ to 1 MΩ range Gain-Phase Measurement Frequency range: 10 Hz to 100 MHz Amplitude range: –107 dBm to +15 dBm Resolution: 0.1 dB Measurement Speed: 3.7–4.5 ms per point (≥ 30 kHz) Test Signal: 10 mV to 0.5 mV rms at ≥ 10 MHz DC Bias Internal source: ± 40 V External source: Up to ± 150 V / 0.5 A; 500 mA current capability

Key Features 7.5-inch color CRT display with graphical analysis Equivalent circuit analysis (approximate and simulate modes) Secondary parameter derivation and marker/cursor functions Auto Sequence Programming (ASP) for autonomous measurement control without external computer HP-IB (IEEE-488) remote programming High-accuracy calibration with error elimination for residual impedance and stray admittance Optional 19-inch rack mount kit (Option 909)

Typical Applications Component and circuit impedance characterization, gain-phase analysis across extended frequency ranges, DC bias-dependent measurements, and automated test sequences in production environments.

Compatibility & Integration Fully compatible with HP 41941A (1.5 m cable) and HP 41941B (3 m cable) Impedance Probe Kits for extended measurement capability. HP-IB interface enables integration with automated test systems.

4194A Characteristics / Specifications

PARAMETER	VALUE
Impedance Frequency Range 0 m Cable	100 Hz to 40 MHz
Impedance Frequency Range 1 m Cable	100 Hz to 15 MHz
Impedance Frequency Resolution	1 mHz
Impedance Basic Accuracy Class	0.17%
Impedance Magnitude Range Class	10 m Ω to 100 M Ω class (ZRX)
Gain Phase Frequency Range	10 Hz to 100 MHz
Gain Phase Level Range	-107 dBm to +15 dBm
Gain Phase Amplitude Resolution	0.1 dB
Gain Phase Basic Accuracy Class	0.1 dB, 0.5 degree
OSC Level Impedance Up To 10 MHz	10 mV to 1 Vrms open
OSC Level Impedance Above 10 MHz	10 mV to 0.5 Vrms open
DC Bias Internal	0 to ± 40 V, 10 mV resolution
Measurement Terminal Impedance	4-terminal pair
Impedance Parameters	ZYthetaRXGBLCDQParameter Combinations: 20 available
Probe Kit Frequency With 41941A B	10 kHz to 100 MHz
Probe Kit Impedance Range	100 m Ω to 1 M Ω
Probe Kit Basic Accuracy	$\pm 1.5\%$ to 3% (at or above 100 kHz class)
L Measurement Range Class	1 nH to 100 kHCMeasurement Range Class: 10 fF to 0.1 FDRange Class: 0.001 to 10
Programmability	Auto Sequence Programming ASP fully programmable

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

specifications list impedance 100 Hz to 40 MHz (10 kHz to 100 MHz with 41941A/B probe) at 0.17% basic accuracy class, and gain-phase 10 Hz to 100 MHz from -107 dBm to +15 dBm with 0.1 dB resolution.

Applications

Component impedance characterization versus frequency/level/bias, amplifier and filter gain-phase response to 100 MHz, go/no-go ASP production testing, and probe-based impedance evaluation to 100 MHz with 41941A/B.

Key Features

Integrated impedance and gain-phase analyzer in one instrument

Color graphic display with computation and marker analysis

Auto Sequence Programming stores front-panel keystroke sequences

4-terminal pair impedance with internal ±40 V DC bias

Optional 41941A/B impedance probe kits to 100 MHz

Technical Specifications

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DC Bias Internal	0 to ±40 V, 10 mV resolution
Measurement Terminal Impedance	4-terminal pair
Impedance Parameters	ZYthetaRXGBLCDQParameter Combinations: 20 available
Probe Kit Frequency With 41941A B	10 kHz to 100 MHz
Probe Kit Impedance Range	100 mΩ to 1 MΩ
Probe Kit Basic Accuracy	±1.5% to 3% (at or above 100 kHz class)
L Measurement Range Class	1 nH to 100 kHMeasurement Range Class: 10 fF to 0.1 FDRange Class: 0.001 to 10
Programmability	Auto Sequence Programming ASP fully programmable

Notes

Specifications from Keysight/HP 4194A product overview and impedance/gain-phase specification summaries. ExactZrange endpoints vary by parameter and fixture; use the operation manual tables for the installed options (350/375) and cable length.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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NIST-traceable calibration · SAM registered ·
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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.