

KEYSIGHT TECHNOLOGIES (AGILENT HP)

E9301A

The Keysight (Agilent) E9301A is an E-series average power sensor designed for measuring RF and microwave power across a wide dynamic range, regardless of signal modulation. Operating from 10 MHz to 6 GHz, it utilizes a patented diode-attenuator-diode topology to ensure high measurement accuracy, low standing-wave-ratio (SWR), and low harmonic generation. Calibration factors, linearity, and temperature compensation data are stored internally in its EEPROM, simplifying setup when used with compatible Keysight/Agilent EPM, EPM-P, and P-series power meters.

SPECIFICATIONS

General

Interfaces	Proprietary power sensor cable interface
Recommended Calibration Cycle	1 year

Physical

Power Supply	Powered from host power meter
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	38 mm × 30 mm × 150 mm mm
Weight	0.18 kg kg

RF Performance

Frequency Range	10 MHz to 6 GHz
Power Measurement Range	-60 dBm to +20 dBm
Dynamic Range	80 dB
Maximum Continuous Power (CW)	+25 dBm (average)
Maximum Peak Power	+33 dBm (< 10 μs duration)
RF Input Connector	Type-N (male)
Nominal Impedance	50 Ω
SWR (10 MHz to 30 MHz)	1.15
SWR (30 MHz to 2 GHz)	1.13
SWR (2 GHz to 6 GHz)	1.19

Measurement Accuracy & Linearity

Measurement Topology	Patented diode-attenuator-diode
Measurement Paths	Dual-path (Low power: -60 to -10 dBm; High power: -10 to +20 dBm) with fast automatic switching
EEPROM Storage	Calibration factors, linearity, and temperature compensation data stored in internal EEPROM
Modulation Independence	Bandwidth independent; measures average power of all modulation formats

Speed & Sampling

Measurement Speed	Up to 400 readings per second (with Agilent E4416A)
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System Compatibility

Compatible Power Meters	Agilent EPM (E4418, E4419), EPM-P (E4416A), and P-series power meters
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Environmental

Storage Temperature Range	-55 to +75 °C
Operating Humidity	Up to 95% RH at 40 °C (non-condensing)
Operating Altitude	Up to 4,600 m (15,000 ft)
Storage Altitude	Up to 15,240 m (50,000 ft)
Vibration Standard	MIL-PRF-28800F Class 3
Shock Standard	MIL-PRF-28800F Class 3

Accuracy

Power Linearity (15 to 35 °C)	±3.0%
Power Linearity (0 to 55 °C)	±4.0%
Calibration Factor Uncertainty (10 to 30 MHz)	±1.8% (15 to 35 °C)
Calibration Factor Uncertainty (30 to 500 MHz)	±1.6% (15 to 35 °C)
Calibration Factor Uncertainty (500 MHz to 1.2 GHz)	±1.8% (15 to 35 °C)
Calibration Factor Uncertainty (1.2 to 6 GHz)	±1.7% (1.2 to 2 GHz), ±1.8% (2 to 6 GHz)

Connectivity

Compatible Sensor Cables	E9288A (1.5 m), E9288B (3 m), E9288C (10 m)
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Accuracy & Performance

Zero Set (Path A)	±115 pW
Zero Set (Path B)	±300 nW
Zero Drift (Path A)	±50 pW
Zero Drift (Path B)	±100 nW
Measurement Noise (Path A)	±110 pW
Measurement Noise (Path B)	< 110 nW

Compliance

EMC Standards	IEC 61326-1 / EN 61326-1, CISPR 11 / EN 55011
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TECHNOLOGY

Diode-attenuator-diode average power sensor

APPLICATIONS

RF and microwave average power measurements for all modulation formats

