

KEYSIGHT TECHNOLOGIES (AGILENT HP)

34420A

The Keysight (Agilent/HP) 34420A is a high-performance 7 1/2-digit nanoVolt/micro-Ohm meter engineered for highly sensitive, low-level measurements. Delivering exceptional noise performance of 1.3 nVrms / 8 nVpp and extremely fine resolution down to 100 pV and 100 nOhm, it is optimized for demanding metrology, dry circuit testing, and high-precision temperature measurements using direct SPRT, RTD, thermistor, and thermocouple sensors.

SPECIFICATIONS

General

Interfaces	RS-232, GPIB
Display	7 1/2 Digits
Included Input Cable	Keysight 34102A Low-Thermal Input Cable

Physical

Power Supply	100V / 120V / 220V / 240V $\pm 10\%$, 45-66 Hz and 360-440 Hz, 25 VA max
Operating Temperature	0 to 55 °C
Dimensions (W×H×D)	254.4 × 103.6 × 374 (with bumpers) / 212.8 × 88.5 × 348.3 (without bumpers) mm

Measurement Characteristics

Resolution (Digits)	7 1/2 digits
Measurement Modes	DC Voltage, Resistance, Temperature

DC Voltage Specifications

Maximum Resolution	100 pV
RMS Noise	1.3 nVrms
Peak-to-Peak Noise	8 nVpp
Accuracy (24-Hour)	2 ppm (basic DCV)

Resistance Specifications

Measurement Configuration	3 built-in resistance functions (including low power, dry circuit testing)
Dry Circuit Test Voltage Limit	20 mV
Maximum Test Current (Resistance)	10 mA (on 1 Ω range)
Offset-Compensated Ohms	Supported (removes thermal EMF errors)

Temperature Specifications

Supported Sensor Types	SPRT, RTD, Thermistor, Thermocouple
Supported Thermocouple Types	B, E, J, K, N, R, S, T

Math and Filtering

Math Functions	Scaling, Statistics
Filtering	Selectable analog and digital filtering
Analog Output	Chart recorder analog output

Input / Output and Connectivity

Input Terminals	Shielded, copper pin connector
Built-in Scanners	Built-in low noise 2-channel scanners
Command Language Compatibility	SCPI, Keithley 181

Measurement Capabilities

Voltage Ranges	1 mV to 100 V
Resistance Ranges	1 Ω to 1 M Ω

Inputs & Protection

Input Resistance (1 mV to 10 V ranges)	> 10 G Ω
Input Resistance (100 V range)	10 M Ω $\pm$ 1%
Maximum Input Voltage	150 V peak to any terminal

Performance

Maximum Reading Rate	250 readings/second (at 4.5 digits)
Integration Times (NPLC)	0.02, 0.2, 1, 10, 100, 200 NPLC
Common Mode Rejection Ratio (CMRR)	140 dB (DC, 1 k Ω unbalance)
Normal Mode Rejection Ratio (NMRR)	60 dB (at 50/60 Hz $\pm$ 0.1%, $\geq$ 1 NPLC)

Environmental

Storage Temperature	-40°C to 75°C
Operating Humidity	< 95% RH up to 40°C

Inputs

Input Channels	2 (CH1 and CH2) with built-in low-thermal scanner
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TECHNOLOGY

Digital Multimeter (DMM) / Nanovoltmeter

APPLICATIONS

Low-level voltage measurement, precision resistance testing, dry circuit testing, thermometry (SPRT, RTD, Thermocouple)

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