

KEYSIGHT TECHNOLOGIES (AGILENT HP)

34461A

The Keysight 34461A is a 6.5 digit Truevolt digital multimeter (DMM), designed as the direct replacement for the industry-standard Keysight/Agilent 34401A. It offers enhanced usability with a 4.3-inch color graphical display, built-in trend/histogram charts, and advanced Truevolt technology for superior measurement accuracy and reduced noise.

SPECIFICATIONS

General

Interfaces	USB 2.0 (Host and Device), LAN (LXI Core), GPIB (optional)
Display	4.3-inch color TFT-LCD, 480 x 272 resolution, supporting trend charts, histograms, and bar charts
Real-Time Clock	Yes (with battery backup)
SCPI Version	1999.0

Physical

Power Supply	100 V / 120 V / 220 V / 240 V ($\pm 10\%$), 50 Hz / 60 Hz / 400 Hz ($\pm 10\%$), 55 VA maximum
Operating Temperature	0 °C to 55 °C °C
Dimensions (W×H×D)	261.2 mm × 103.8 mm × 303.2 mm (with bumpers and handle) mm
Weight	3.76 kg kg

Measurement Specifications

Display Resolution	6.5 digits
DC Voltage Ranges	100 mV, 1 V, 10 V, 100 V, 1000 V
DC Voltage Best 1-Year Accuracy	0.0035% of reading + 0.0005% of range
AC Voltage Ranges	100 mV, 1 V, 10 V, 100 V, 750 V
AC Voltage Frequency Range	3 Hz to 300 kHz
AC Voltage Best 1-Year Accuracy	0.06% of reading + 0.03% of range (at 10 Hz - 20 kHz)
DC Current Ranges	100 μ A, 1 mA, 10 mA, 100 mA, 1 A, 3 A, 10 A
DC Current Best 1-Year Accuracy	0.05% of reading + 0.005% of range (on 100 mA range)
AC Current Ranges	100 μ A, 1 mA, 10 mA, 100 mA, 1 A, 3 A, 10 A
AC Current Frequency Range	3 Hz to 10 kHz
AC Current Best 1-Year Accuracy	0.10% of reading + 0.04% of range
Resistance Ranges	100 Ω , 1 k Ω , 10 k Ω , 100 k Ω , 1 M Ω , 10 M Ω , 100 M Ω (2-wire and 4-wire)
Resistance Best 1-Year Accuracy	0.010% of reading + 0.001% of range (on 10 k Ω range)
Diode Test Threshold / Source Current	5.0 V maximum test voltage, 1 mA source current
Continuity Threshold	1 Ω to 1000 Ω (adjustable)
Frequency and Period Range	3 Hz to 300 kHz (Period: 333 ms to 3.3 μ s)
Frequency Best 1-Year Accuracy	0.01% of reading
Supported Temperature Sensors	RTD (PT100), Thermistor (2.2 k Ω , 5 k Ω , 10 k Ω)

System Performance & Digitizing

Maximum Reading Rate (to Internal Memory)	1,000 readings/s
Maximum Reading Rate (to Bus)	1,000 readings/s
Internal Memory Capacity (Readings)	10,000 readings
Aperture / Integration Time Range	0.02 NPLC, 0.2 NPLC, 1 NPLC, 10 NPLC, 100 NPLC

Input & Noise Characteristics

DC Voltage Input Impedance	10 M Ω $\pm$ 1% (all ranges) or > 10 G Ω (100 mV, 1 V, 10 V ranges)
Input Bias Current	< 30 pA at 25 $^{\circ}$ C
Maximum Input Voltage (Terminal to Terminal)	1000 V (HI to LO)
Maximum Input Voltage (Terminal to Earth)	500 Vpk (LO to Earth)
DC Common Mode Rejection Ratio (CMRR)	140 dB (for 1 k Ω LO lead unbalance)
AC Common Mode Rejection Ratio (CMRR)	70 dB (at 50/60 Hz, for 1 k Ω LO lead unbalance)
Normal Mode Rejection Ratio (NMRR)	60 dB (at 50/60 Hz, for 1 NPLC or greater)
AC Crest Factor Limit	3:1 at full scale

Triggering & Mathematical Functions

Trigger Sources	Internal, External, Manual, Software
Trigger Delay Range	0 s to 3600 s
Pre-trigger Capability	Up to 10,000 readings
External Trigger Input Level / Pulse Width	TTL-compatible, minimum 1 μ s pulse width
Voltmeter Complete (VM Comp) Output	TTL-compatible, $\approx$ 2 μ s pulse width
Math Functions	Null, Min/Max/Average, Standard Deviation, Limit Test, dB, dBm

Connectivity & System Interfaces

USB Port (Host/Device)	USB 2.0 (Host on front panel, Device on rear panel)
LAN Interface / LXI Compliance	LAN (10/100 Base-T, LXI Core 2011 compliant)
GPIO Interface (Standard/Optional)	Optional (via option 3446GPBU)
Command Emulation Modes	Keysight 34401A SCPI
SCPI Language Compatibility	Standard SCPI-1999

Physical & Environmental Specifications

Storage Temperature Range	-40 °C to 70 °C
Operating Humidity Limit	Up to 80% RH at 40 °C (non-condensing)
Maximum Operating Altitude	3,000 meters (approx. 10,000 feet)
Warm-up Time	60 minutes

Compliance & Safety

Standard Calibration Interval	1 year
Electromagnetic Compatibility (EMC) Standards	EN 61326-1, IEC 61326-1, ICES-001
Standard Warranty Period	3 years

Measurement Ranges

Capacitance Ranges	1 nF, 10 nF, 100 nF, 1 μ F, 10 μ F, 100 μ F
Maximum Diode Test Voltage	5 V
Continuity Test Current	1 mA

Measurement Accuracy

Capacitance Best 1-Year Accuracy	1.0% of reading + 0.3% of range
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AC Measurement

AC Low-Frequency Filter Settings	3 Hz, 20 Hz, 200 Hz
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Measurement Options

Resistance Measurement Configuration	2-wire and 4-wire
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Power

AC Line Frequency Range	45 Hz to 66 Hz, 360 Hz to 440 Hz
Power Consumption	75 VA maximum

Safety & Compliance

Safety Category Rating	CAT I 1000 V, CAT II 300 V
Pollution Degree	Pollution Degree 2

Math & Analytics

Statistical Calculations	Min, Max, Average, Standard Deviation, Peak-to-Peak
Limits Testing	Pass/Fail limits with high/low visual indicators

Display Options

Histogram Display Mode	Supported
Trend Chart Display Mode	Supported

Display

Display Size	4.3 in (109 mm) diagonal
Display Resolution (Pixels)	480 × 272

Environmental

Acoustic Noise	35 dBA (nominal)
Vibration & Shock	MIL-PRF-28800F, Class 3

Storage

Instrument State Storage	Supports saving any number of states to internal flash or external USB drive
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Triggering

Voltmeter Complete Pulse Width	≈ 2 μs
External Trigger Latency	< 15 μs
External Trigger Jitter	< 1 μs

Performance

Max Reading Rate to USB Flash Drive	80 readings/s
4-Wire Resistance Max Lead Resistance	10% of range per lead (100 Ω, 1 kΩ ranges), 1 kΩ per lead (other ranges)

TECHNOLOGY

Truevolt technology

APPLICATIONS

Precision DC/AC voltage and current measurements, 2/4-wire resistance, temperature, and frequency testing

