

KEITHLEY

617

The Keithley 617 is a high-performance programmable electrometer designed for highly sensitive measurements of voltage, current, resistance, and charge. Featuring a 4½-digit LED display, an integrated isolated 100V voltage source, and standard IEEE-488 (GPIB) connectivity, the Keithley 617 delivers the exceptional input impedance and low input bias current required for sensitive research and calibration environments.

SPECIFICATIONS

General

Interfaces	IEEE-488 (GPIB)
Display	4½-digit LED with 2-digit exponent
Warm-up Time	1 hour to rated accuracy
Standard Accessories	Model 6011 triaxial input cable

Physical

Power Supply	90–125 V AC / 180–250 V AC, 50–60 Hz, 35 VA max
Operating Temperature	0°C to 50°C °C
Dimensions (W×H×D)	216 mm × 127 mm × 359 mm mm
Weight	2.9 kg kg

General Measurement Capabilities

Measurement Functions	DC Voltage, DC Current, Resistance (constant-current and constant-voltage), Charge
Display Type	LED, 4½-digit mantissa plus 2-digit exponent
Ranging Modes	Automatic and Manual
Data Store Buffer	100 readings
Calibration	Digital calibration from front panel or IEEE-488 bus
Zero Correct	Front panel zero correct control
Baseline Suppression	One-button suppression from front panel or IEEE-488 bus
Triggering	One-shot front panel or bus control

DC Voltage Measurements (Voltmeter)

Voltage Measurement Range	200 mV to 200 V
200mV Range Resolution	10 μ V
2V Range Resolution	100 μ V
20V Range Resolution	1 mV
200V Range Resolution	10 mV
Input Impedance	>200 T Ω
Input Bias Current	<5 fA at 23°C
Common Mode Rejection Ratio (CMRR)	>120 dB
Normal Mode Rejection Ratio (NMRR)	>60 dB at 50 Hz or 60 Hz

DC Current Measurements (Ammeter)

Current Measurement Range	2 pA to 20 mA
2pA Range Resolution	100 aA
20pA Range Resolution	1 fA
200pA Range Resolution	10 fA
2nA Range Resolution	100 fA
20nA Range Resolution	1 pA
200nA Range Resolution	10 pA
2 μ A Range Resolution	100 pA
20 μ A Range Resolution	1 nA
200 μ A Range Resolution	10 nA
2mA Range Resolution	100 nA
20mA Range Resolution	1 μ A
Input Voltage Burden	<1 mV (<3 mV on 20 mA range)

Resistance Measurements (Ohmmeter)

Resistance Measurement Range	2 k Ω to 200 G Ω (up to 10^{16} Ω with V-source)
2k Ω Range Resolution	100 m Ω
20k Ω Range Resolution	1 Ω
200k Ω Range Resolution	10 Ω
2M Ω Range Resolution	100 Ω
20M Ω Range Resolution	1 k Ω
200M Ω Range Resolution	10 k Ω
2G Ω Range Resolution	100 k Ω
20G Ω Range Resolution	1 M Ω
200G Ω Range Resolution	10 M Ω
Maximum Open Circuit Voltage	250 V DC
Resistance Measurement Methods	Constant current and constant voltage

Charge Measurements (Coulombmeter)

Charge Measurement Range	200 pC to 20 nC
200pC Range Resolution	10 fC
2nC Range Resolution	100 fC
20nC Range Resolution	1 pC

Internal Voltage Source (V-Source)

V-Source Output Voltage Range	-102 V to +102 V
V-Source Output Resolution	5 mV steps on 10V range, 50 mV steps on 100V range
V-Source Configuration	Isolated from electrometer section

Analog & Auxiliary Outputs

Analog Outputs	Preamplifier output and 2V full range output on rear panel
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System Interfaces & Connectivity

Guard Configuration	Selectable driven cable guard
Input Connector Type	2-slot female triaxial

Power and Environmental Specifications

Power Consumption	35 VA maximum
Line Voltage Selection	90–125 V AC or 180–250 V AC (rear panel switch)
Line Frequency	50 Hz to 60 Hz
Operating Humidity Range	<70% relative humidity up to 35°C
Storage Temperature Range	-25°C to 65°C

Voltage Source

Voltage Source Max Current	2 mA (short circuit protected)
Voltage Source Accuracy (10V Range)	$\pm(0.15\% + 10 \text{ mV})$
Voltage Source Accuracy (100V Range)	$\pm(0.15\% + 100 \text{ mV})$
Voltage Source Temperature Coefficient	$\pm(0.005\% + 100 \text{ }\mu\text{V})/^{\circ}\text{C}$ on 10V range, $\pm(0.005\% + 1 \text{ mV})/^{\circ}\text{C}$ on 100V range
Voltage Source Output Resistance	$< 0.1 \text{ }\Omega$

Protection

Overload Protection (Volts)	250 V peak, DC to 60 Hz continuous
Overload Protection (Amps)	100 V peak on 2 pA to 200 nA ranges, 250 V peak on 2 μA to 2 mA ranges
Overload Protection (Ohms)	250 V peak, DC to 60 Hz continuous
Overload Protection (Coulombs)	100 V peak, DC to 60 Hz continuous

Outputs

Preamplifier Output Voltage	1 V for full scale input (inverting)
Preamplifier Output Impedance	1 k Ω
2V Analog Output Voltage	2 V for full scale display (non-inverting)
2V Analog Output Impedance	10 k Ω

Interfaces

GPIO Interface Functions	SH1, AH1, T5, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0, E1
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Performance

Maximum Reading Rate	18 readings per second (via GPIO)
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Voltage Measurement

Voltage Measurement Accuracy (200mV Range)	$\pm(0.15\%$ of reading + 4 counts), 1 year (18°C-28°C)
Voltage Measurement Accuracy (2V to 200V Ranges)	$\pm(0.05\%$ of reading + 1 count), 1 year (18°C-28°C)
Input Capacitance	< 20 pF

Current Measurement

Current Measurement Accuracy (2pA Range)	$\pm(1.6\%$ of reading + 6 counts), 1 year (18°C-28°C)
Current Measurement Accuracy (2nA to 200nA Ranges)	$\pm(0.25\%$ of reading + 5 counts), 1 year (18°C-28°C)
Current Measurement Accuracy (2 μ A to 20mA Ranges)	$\pm(0.15\%$ of reading + 5 counts), 1 year (18°C-28°C)

Resistance Measurement

Resistance Measurement Accuracy (2k Ω Range)	$\pm(0.2\%$ of reading + 4 counts), 1 year (18°C-28°C)
Resistance Measurement Accuracy (20k Ω to 20M Ω Ranges)	$\pm(0.2\%$ of reading + 1 count), 1 year (18°C-28°C)
Resistance Measurement Accuracy (20G Ω Range)	$\pm(1.5\%$ of reading + 1 count)
Resistance Measurement Accuracy (200G Ω Range)	$\pm(2.0\%$ of reading + 1 count)

Charge Measurement

Charge Measurement Accuracy (200pC Range)	$\pm(0.4\%$ of reading + 4 counts), 1 year (18°C-28°C)
Charge Measurement Accuracy (2nC to 20nC Ranges)	$\pm(0.4\%$ of reading + 1 count), 1 year (18°C-28°C)

Rear Panel Connections

GPIB Address Configuration	Selectable via rear panel DIP switches
External Trigger Input	BNC connector, TTL-compatible, active low
Meter Complete Output	BNC connector, TTL-compatible, active low pulse
Voltage Source Output Connector	Safety BNC (red)

TECHNOLOGY

Solid-State Electrometer

APPLICATIONS

Low-level current, high resistance, voltage, and charge measurements

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.