KEITHLEY

619

The Keithley 619 is a highly versatile 5½-digit electrometer and digital multimeter (DMM) designed for sensitive voltage, current, and resistance measurements. Configurable as a single- or dual-channel instrument, it offers exceptional input impedance and low bias current, making it ideal for semiconductor characterization, research, and high-impedance material testing.

SPECIFICATIONS

General

Interfaces	Optional GPIB (IEEE-488) interface via Model 6193 plug-in card
Display	5½-digit LED display with exponent and function indicators

Physical

Power Supply	90-125 V or 180-250 V AC (rear-panel switch selectable), 50-60 Hz, 45 VA maximum
Operating Temperature	0°C to 50°C °C
Dimensions (W×H×D)	127 mm H × 216 mm W × 359 mm D (5.0 in × 8.5 in × 14.1 in) mm
Weight	4.1 kg kg

DC Voltage Measurements

DC Voltage Ranges	200 mV, 2 V, 20 V, 200 V
DC Voltage Resolution	1 µV on 200 mV range, 10 µV on 2 V range, 100 µV on 20 V range, 1 mV on 200 V range
Input Resistance	> 2 × 10^14 ohms in parallel with < 20 pF on 200 mV and 2 V ranges
Input Bias Current	< 400 fA (0.4 pA) at 23°C

DC Current (Picoammeter) Measurements

DC Current Ranges	2 nA, 20 nA, 200 nA, 2 µA, 20 µA, 200 µA, 2 mA
DC Current Resolution	10 fA on 2 nA range, 100 fA on 20 nA range
Input Voltage Burden	< 1 mV max (< 100 µV typical on lower ranges)

Resistance Measurements

Resistance Ranges	2 kOhm to 200 GOhm (extendable up to 2 TOhm in ratiometric mode)
Resistance Resolution	10 mOhm on 2 kOhm range

Input/Output and Connectivity

Input Connectors Type	Triaxial connectors (one per channel)
Analog Output Range	1 V for full-scale (100,000 counts) deflection

Measurement Dynamics and Noise Performance

Normal Mode Rejection Ratio (NMRR)	> 55 dB at 50 Hz or 60 Hz
Common Mode Rejection Ratio (CMRR)	> 100 dB at DC, 50 Hz or 60 Hz

General Specifications

Operating Humidity	0% to 70% relative humidity up to 35°C
Storage Temperature	-25°C to 65°C
Warm-up Time	1 hour to rated accuracy
Channel Configuration Options	Single channel (standard) or dual channel electrometer configuration
Model 6191 Option	Single-channel electrometer input plug-in card

Safety & Isolation

Maximum Common Mode Voltage	500V peak
Input LO to Chassis Isolation	>10^10 ohms in parallel with <1000 pF

Measurement Performance

A/D Converter Integration Time	33.3 ms at 60 Hz, 40 ms at 50 Hz
Input Guarding Mode	Switch-selectable triaxial guard (Input LO or Preamp Guard)

Power

Line Voltage Selections	100V, 120V, 220V, 240V (rear panel switchable, ±10%)

Protection

Maximum Input Overload (Voltage)	250V rms, 350V peak continuous
Maximum Input Overload (Current)	250V rms on 2 nA to 2 uA ranges; 100 mA on 20 uA to 2 mA ranges
Maximum Input Overload (Resistance)	250V rms continuous

Connectivity

GPIB Interface Functions	SH1, AH1, T5, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0 (with Option 6193)

Control

Zero Check Function	Front panel switchable
Ranging Modes	Manual or Auto-ranging

Display

Resolution Selection	4½-digit or 5½-digit (selectable via front panel or GPIB)

Performance

A/D Converter Type	Dual-slope integrating

Outputs

Analog Output Impedance	1 kΩ

Options

IEEE-488 Interface Option	Model 6193
Rack Mount Kit Accessory	Model 1019

TECHNOLOGY

Solid-state digital electrometer with dual-channel electrometer option

APPLICATIONS

High-impedance voltage measurement, picoampere current measurement, high-resistance testing, and material characterization