

KEITHLEY

2657A

The Keithley 2657A is a high-power, high-voltage System SourceMeter (SMU) instrument designed for characterizing and testing high-voltage electronics and power semiconductors. Operating up to 3000 V and delivering up to 180 W of power, it features dual 18-bit 1 MHz digitizing A/D converters for high-speed, simultaneous voltage and current measurements.

SPECIFICATIONS

General

Interfaces	GPIB, LAN (LXI Class C), USB 2.0, TSP-Link, Digital I/O (14-pin), Safety Interlock
Display	Dual-line Vacuum Fluorescent Display (VFD)
Warm-up Time	2 hours to rated accuracy

Physical

Power Supply	100 V to 240 V AC, 50 Hz to 60 Hz, 350 VA maximum
Operating Temperature	0 °C to 50 °C °C
Dimensions (W×H×D)	213 mm × 89 mm × 512 mm mm
Weight	9.9 kg kg
Rack Unit Height	2U

Core Signal and Electrical Performance

Maximum Output Voltage	3000 V
Maximum Output Current	120 mA
Maximum Output Power	180 W
Voltage Source Ranges	200 V, 500 V, 1500 V, 3000 V
Voltage Measure Ranges	200 V, 500 V, 1500 V, 3000 V
Current Source Ranges	1 nA, 10 nA, 100 nA, 1 µA, 10 µA, 100 µA, 1 mA, 10 mA, 120 mA
Current Measure Ranges	1 nA, 10 nA, 100 nA, 1 µA, 10 µA, 100 µA, 1 mA, 10 mA, 120 mA
Current Measurement Resolution	1 fA (on 1 nA range)
Voltage Measurement Resolution	100 µV (on 200 V range)
Sensing Modes	2-wire, 4-wire (remote sense), and Active Guarding

Measurement Capabilities and Timing

A/D Converter Resolution	Dual 18-bit
Maximum Sampling Rate	1 MHz (1 µs per point)
Buffer Reading Capacity	More than 140,000 readings

Connectivity, Ports, and Interfaces

Primary RF Connector Type	High Voltage Triaxial (3-lug) on rear panel
Safety Interlock	3-pin rear panel terminal connector
TSP-Link Interface	Dual RJ-45 connectors for master/slave expansion
Digital I/O Port	14-pin female D-sub connector with 7 configurable digital I/O lines

User Interface and Software Control

Programming Language Compatibility	TSP (Test Script Processor), SCPI command emulation
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Environmental and Compliance Standards

Storage Temperature Range	-25 °C to 65 °C
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Physical and Mechanical Attributes

Cooling Method	Forced air cooling (internal fan)
Form Factor	Benchtop or Rackmount (2U height, half-rack width)

Electrical Safety & Isolation

Maximum Common Mode Voltage	250 V DC (LO to chassis ground)
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Guard

Guard Offset Voltage	< 100 µV
Maximum Guard Current	100 µA (limited by internal 100 kΩ resistor)

Environmental

Operating Humidity	5% to 60% RH, non-condensing (up to 35°C; derated by 3% RH/°C from 35°C to 50°C)
Storage Humidity	5% to 90% RH, non-condensing (0°C to 50°C)
Maximum Altitude	2000 m (6562 ft) above sea level
Vibration	MIL-PRF-28800F Class 3 Random

Compliance

Safety Compliance	UL 61010-1:2004, CAN/CSA-C22.2 No. 61010-1-04, EN 61010-1:2001
EMC Compliance	Conforms to European Union Directive 2004/108/EEC, EN 61326-1:2006

Source Specifications

Voltage Source Programming Resolution	5 mV to 80 mV (range dependent)
Current Source Programming Resolution	20 fA to 2 µA (range dependent)
Voltage Source Accuracy	±(0.03% + 50 mV to 750 mV) (range dependent)
Current Source Accuracy	±(0.03% to 0.15% + offset) (range dependent)
Source D/A Converter Resolution	18-bit
Voltage Compliance Limit Range	30 V to 3030 V
Current Compliance Limit Range	1 nA to 120 mA

Measurement Specifications

Voltage Measurement Accuracy	±(0.02% + 50 mV to 700 mV) (range dependent)
Current Measurement Accuracy	±(0.025% to 0.15% + offset) (range dependent)
Measurement ADC Types	22-bit integrating ADC and 18-bit digitizing ADC
Maximum Remote Sense Lead Drop	3 V (maximum drop between force and sense leads)

Protection

Overvoltage Protection	Programmable from 30 V to 3000 V
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Connections

Output Connectors	Rear panel: High-voltage triaxial (3-lug) for Output and Sense
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Interfaces

TSP-Link Node Limit	Up to 32 nodes
LXI Compliance	LXI Core 2011 (Version 1.4)

Software & Control

SCPI Emulation	Not supported
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TECHNOLOGY

Source Measure Unit (SMU)

APPLICATIONS

High-voltage power semiconductor testing, material characterization, and high-voltage transient analysis

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