

KEITHLEY

2425

The Keithley 2425 is a 100W, 3A SourceMeter Unit (SMU) designed for high-power precision electronic testing, providing four-quadrant voltage and current sourcing and measurement in a compact half-rack instrument.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488), RS-232, Digital I/O
Display	12-character alphanumeric vacuum fluorescent (VFD), 2 lines

Physical

Power Supply	100 V to 240 V AC, 50 Hz/60 Hz, 250 VA maximum
Operating Temperature	0°C to 50°C °C
Dimensions (W×H×D)	213 mm × 89 mm × 370 mm mm
Weight	4.1 kg kg

Voltage Source Specifications

Voltage Source Ranges	200 mV, 2 V, 20 V, 100 V
Voltage Source 200mV Range Resolution	5 μ V
Voltage Source 2V Range Resolution	50 μ V
Voltage Source 20V Range Resolution	500 μ V
Voltage Source 100V Range Resolution	5 mV
Voltage Source 200mV Range Accuracy	$\pm(0.02\%$ of rdg + 600 μ V)
Voltage Source 2V Range Accuracy	$\pm(0.02\%$ of rdg + 600 μ V)
Voltage Source 20V Range Accuracy	$\pm(0.02\%$ of rdg + 2.4 mV)
Voltage Source 100V Range Accuracy	$\pm(0.02\%$ of rdg + 12 mV)
Voltage Limit Compliance Range	200 mV to 105 V

Current Source Specifications

Current Source Ranges	10 μ A, 100 μ A, 1 mA, 10 mA, 100 mA, 1 A, 3 A
Current Source 10 μ A Range Resolution	500 pA
Current Source 100 μ A Range Resolution	5 nA
Current Source 1mA Range Resolution	50 nA
Current Source 10mA Range Resolution	500 nA
Current Source 100mA Range Resolution	5 μ A
Current Source 1A Range Resolution	50 μ A
Current Source 3A Range Resolution	150 μ A
Current Source 10 μ A Range Accuracy	$\pm(0.033\%$ of rdg + 6 nA)
Current Source 100 μ A Range Accuracy	$\pm(0.033\%$ of rdg + 60 nA)
Current Source 1mA Range Accuracy	$\pm(0.033\%$ of rdg + 600 nA)
Current Source 10mA Range Accuracy	$\pm(0.033\%$ of rdg + 6 μ A)
Current Source 100mA Range Accuracy	$\pm(0.033\%$ of rdg + 60 μ A)
Current Source 1A Range Accuracy	$\pm(0.067\%$ of rdg + 900 μ A)
Current Source 3A Range Accuracy	$\pm(0.067\%$ of rdg + 2.7 mA)
Current Limit Compliance Range	10 μ A to 3.15 A

Voltage Measurement Specifications

Voltage Measure Ranges	200 mV, 2 V, 20 V, 100 V
Voltage Measure 200mV Range Resolution	1 μ V
Voltage Measure 2V Range Resolution	10 μ V
Voltage Measure 20V Range Resolution	100 μ V
Voltage Measure 100V Range Resolution	1 mV
Voltage Measure 200mV Range Accuracy	$\pm(0.012\%$ of rdg + 300 μ V)
Voltage Measure 2V Range Accuracy	$\pm(0.012\%$ of rdg + 300 μ V)
Voltage Measure 20V Range Accuracy	$\pm(0.015\%$ of rdg + 1.5 mV)
Voltage Measure 100V Range Accuracy	$\pm(0.015\%$ of rdg + 10 mV)
Voltage Measure Input Impedance	>10 G Ω

Current Measurement Specifications

Current Measure Ranges	10 μ A, 100 μ A, 1 mA, 10 mA, 100 mA, 1 A, 3 A
Current Measure 10 μ A Range Resolution	100 pA
Current Measure 100 μ A Range Resolution	1 nA
Current Measure 1mA Range Resolution	10 nA
Current Measure 10mA Range Resolution	100 nA
Current Measure 100mA Range Resolution	1 μ A
Current Measure 1A Range Resolution	10 μ A
Current Measure 3A Range Resolution	100 μ A
Current Measure 10 μ A Range Accuracy	$\pm(0.027\%$ of rdg + 700 pA)
Current Measure 100 μ A Range Accuracy	$\pm(0.025\%$ of rdg + 6 nA)
Current Measure 1mA Range Accuracy	$\pm(0.027\%$ of rdg + 60 nA)
Current Measure 10mA Range Accuracy	$\pm(0.025\%$ of rdg + 600 nA)
Current Measure 100mA Range Accuracy	$\pm(0.027\%$ of rdg + 6 μ A)
Current Measure 1A Range Accuracy	$\pm(0.05\%$ of rdg + 600 μ A)
Current Measure 3A Range Accuracy	$\pm(0.05\%$ of rdg + 1.8 mA)

Operating Ranges & Power Envelope

Maximum Output Power	100 W (source), 40 W (sink)
Quadrant Operation Limits	4-Quadrant (source or sink capability)
Maximum Common Mode Voltage	250 V DC
Guard Output Resistance	<0.1 Ω
Guard Offset Voltage	<150 μ V

System Speed & Memory

Reading Buffer Capacity	5,000 readings
Maximum Pass/Fail Test Rate	500 μ s per test (2,000 tests/s)

Connectivity & Interfaces

GPIO Interface	IEEE-488.1 and IEEE-488.2 compliant
RS-232 Interface	DB-9 male, 3-wire or 5-wire
Digital I/O Port	4-bit output, 1-bit input, DB-9 female component handler interface
Sensing Configuration	2-wire local sense or 4-wire remote sense
Output Connection Type	Front-panel safety banana jacks, rear-panel screw terminal barrier strip
Trigger Link Port	8-pin micro-DIN

Software & Programming

Programming Languages / Command Sets	SCPI (Standard Commands for Programmable Instruments)
Driver Support	LabVIEW, LabWindows/CVI, IVI-C

Power & Environmental

AC Input Voltage Range	100 V to 240 V AC (±10%)
AC Input Frequency Range	50 Hz / 60 Hz
Storage Temperature Range	-40°C to 70°C
Operating Humidity Range	Maximum 70% RH at 35°C (non-condensing)
Cooling Mechanism	Forced air cooling (internal fan)

Physical & Safety Specs

Calibration Interval	1 Year
Overvoltage Protection	2V, 20V, 40V, 60V, 80V, 100V, NONE

Resistance Measurement

Resistance Measure Ranges	2.0 Ω to 20 MΩ
Max Lead Resistance (4-wire)	10% of range per lead (20 Ω to 200 Ω ranges), 1 kΩ per lead (2 kΩ to 20 MΩ ranges)

Performance & Speed

Measurement Speed (0.01 PLC)	1750 readings/s (to memory)
Measurement Speed (0.1 PLC)	740 readings/s (to memory)
Measurement Speed (1.0 PLC)	44 readings/s (to memory)
NMRR	>60 dB (at 50 Hz or 60 Hz with 1 PLC or greater)
CMRR	120 dB (at DC, 50 Hz, or 60 Hz)

Sweep Capabilities

Sweep Types	Linear, Log, Custom, Source Memory
Source Memory List Size	100 points

General & Environmental

Warm-up Time	1 hour
Maximum Altitude	2000 m
Power Consumption	250 VA

Guard Specifications

Maximum Guard Output Current	2 mA
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Sensing Specifications

Maximum Remote Sense Lead Drop	3 V (maximum voltage difference between Source and Sense HI or LO)
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Interfaces

Digital I/O Lines	4
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Memory & Storage

Saved Setups Capacity	3 user-defined setups
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Programming & Control

SCPI Version Compliance	SCPI-1996.0
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Physical Specifications

Rackmount Dimensions	2U height, half-rack width
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Performance

Transient Response Time	< 250 μ s (to recover to within 0.1% after 50% load change)
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