KEITHLEY

2303

The Keithley 2303 is a 45W High-Speed Battery Simulating DC Power Supply designed for testing battery-operated, wireless communication devices. It is optimized to provide outstanding voltage stability during fast pulse load changes, such as those found in cellular devices. It features precision readback of load currents (including short pulses), is capable of sinking current to simulate a discharged battery, and offers a continuous output of 15V at 3A or 9V at 5A.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488)
Display	Dual-line Vacuum Fluorescent Display (VFD)
Standard Warranty	1 year

Physical

Power Supply	100V / 120V / 220V / 240V AC (switch-selectable), 50/60 Hz, 150 VA max
Operating Temperature	0 to 50 °C °C
Dimensions (W×H×D)	213 mm × 89 mm × 411 mm mm
Weight	5.4 kg kg

DC Output Specifications

Output Voltage Range	0 to 15 V DC
Output Current Range	0 to 3 A DC
Maximum Output Power	45 W
Sinking Current Range	0 to 2 A DC
Voltage Programming Accuracy	±(0.05% + 10 mV)
Voltage Programming Resolution	5 mV
Current Limit Programming Range	0 to 3.1 A
Current Limit Programming Accuracy	±(0.16% + 5 mA)
Current Limit Programming Resolution	1.25 mA
Voltage Line Regulation	±(0.01% + 2 mV)
Voltage Load Regulation	±(0.01% + 2 mV)
Current Line Regulation	±(0.01% + 1 mA)
Current Load Regulation	±(0.01% + 1 mA)
Output Ripple and Noise (Peak-to-Peak)	<3 mV p-p (20 Hz to 20 MHz)
Output Ripple and Noise (RMS)	<1 mV RMS (20 Hz to 20 MHz)

Transient Response

Transient Voltage Recovery Time	<40 µs
Transient Voltage Recovery Level	to within 50 mV of original level
Transient Voltage Drop	<75 mV
Bandwidth Selection	High and Low settings

Current Measurement (Readback)

Current Readback Ranges	5 A, 5 mA, 500 µA
Current Readback Accuracy (5A Range)	±(0.2% + 400 µA)
Current Readback Accuracy (5mA Range)	±(0.2% + 1 µA)
Current Readback Accuracy (500µA Range)	±(0.2% + 100 nA)
Current Readback Resolution (5mA Range)	0.1 µA
Current Readback Resolution (500µA Range)	10 nA
DC Current Sensitivity	10 nA
Pulse Current Measurement Modes	Pulse Peak, Average, and Baseline
Pulse Current Trigger Level Range	5 mA to 5 A (in 5 mA steps)
Pulse Current Integration Time Range	33.3 µs to 833 ms

Current Measurement (Readback

Current Readback Resolution (5A Range)	100 µA

Voltage Measurement (Readback)

Voltage Readback Range	0 to 15 V DC
Voltage Readback Accuracy	±(0.05% + 3 mV)
Voltage Readback Resolution	1 mV
Remote Sense Voltage Range	Up to 15 V DC
Maximum Remote Sense Line Drop Compensation	1 V per lead

Digital and Control Interfaces

GPIB Interface	IEEE-488.2 conforming
Programming Language	SCPI (Standard Commands for Programmable Instruments)
Trigger Delay Range	0 to 100 ms

Protection and Safety

Overvoltage Protection (OVP) Range	0 to 15 V (limit settings)
Output Enable/Disable Control	Yes, front panel button and SCPI controllable

Power Requirements

Input AC Voltage Range	100V / 120V / 220V / 240V AC (switch-selectable)
Input Frequency Range	50 Hz / 60 Hz
Maximum Power Consumption	150 VA

Physical Specifications

Width	213 mm (8.4 in)
Height	89 mm (3.5 in)
Depth	411 mm (16.2 in)
Net Weight	3.2 kg (7.1 lbs)
Shipping Weight	5.4 kg (12 lbs)
Cooling Method	Forced air (internal fan)
Rack Mounting Configurations	Single or dual rack mount (2U high, half-rack width)

Environmental and Compliance

Storage Temperature Range	-20 °C to 70 °C
Operating Humidity Range	0% to 70% RH, non-condensing (up to 35 °C)
Recommended Calibration Cycle	1 year

Performance & Accuracy

Pulse Current Measurement Accuracy (5A Range, >1ms)	±(0.2% + 10mA)
Temperature Coefficient (Voltage Programming)	±(0.005% + 2mV)/°C
Temperature Coefficient (Voltage Readback)	±(0.005% + 2mV)/°C
Temperature Coefficient (Current Limit Programming)	±(0.05% + 1mA)/°C
Temperature Coefficient (Current Readback, 5A Range)	±(0.05% + 1mA)/°C
Temperature Coefficient (Current Readback, 5mA Range)	±(0.05% + 1µA)/°C
Output Impedance	0.01 Ω (typical at DC)
Overvoltage Protection Accuracy	±(0.5% + 200mV)
Overvoltage Protection Response Time	<150 µs (typical)

Remote Sensing

Maximum Sense Lead Resistance	0.5 Ω (per lead for rated accuracy)

Inputs & Outputs

Output Connector	8-pin rear-panel quick-disconnect screw terminal block
Trigger Link Connector	8-pin micro-DIN

Power & Safety

Isolation Voltage (Output to Chassis)	150 VDC maximum
Warm-up Time	1 hour
Mains Fuse (100V/120V)	2.0 A, 250 V, slow-blow (5x20 mm)
Mains Fuse (220V/240V)	1.0 A, 250 V, slow-blow (5x20 mm)

Environmental

Maximum Operating Altitude	2000 m

Output Specifications

Number of Channels	1

Measurement

A/D Converter Resolution	16-bit

Compliance

Safety Compliance	Conforms to European Union Directive 73/23/EEC (EN 61010-1)
EMC Compliance	Conforms to European Union Directive 89/336/EEC (EN 55011, EN 50082-1)

TECHNOLOGY

Battery Simulating DC Power Supply

APPLICATIONS

Battery simulation and power consumption testing for wireless and portable battery-powered devices