KEITHLEY

2612B

The Keithley 2612B is a dual-channel System SourceMeter (SMU) instrument designed for high-throughput production testing and precise benchtop characterization. It integrates a stable DC power source, a true current source, a 6.5-digit multimeter, an electronic load, and a pulse generator into a single compact, half-rack 2U unit.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488.2), LAN (LXI Class C), USB 2.0 (Device), USB 2.0 (Host), RS-232, TSP-Link
Display	Dual-line vacuum fluorescent display (VFD)
Cooling	Forced air, temperature-controlled fans

Physical

Power Supply	100 V to 240 V AC (±10%), 50 Hz to 60 Hz, 240 VA maximum
Operating Temperature	0 °C to 50 °C °C
Dimensions (W×H×D)	213 mm × 89 mm × 460 mm mm
Weight	4.75 kg kg

Source Specifications

Number of Channels	2
Maximum Voltage Output	200 V
Maximum DC Current Output	1.5 A
Maximum Pulse Current Output	10 A
Maximum Source Power per Channel	30.3 W
Voltage Source Ranges	200 mV, 2 V, 20 V, 200 V
Current Source Ranges	100 nA, 1 µA, 10 µA, 100 µA, 1 mA, 10 mA, 100 mA, 1 A, 1.5 A, 10 A
Voltage Source Programming Resolution	5 µV (on 200 mV range)
Current Source Programming Resolution	2 pA (on 100 nA range)
Basic Voltage Source Accuracy	0.02%
Basic Current Source Accuracy	0.06%
Voltage Limit (Compliance) Range	20 mV to 210 V
Current Limit (Compliance) Range	10 nA to 1.575 A (up to 10.5 A for pulse)

Measurement Specifications

Voltage Measurement Ranges	200 mV, 2 V, 20 V, 200 V
Current Measurement Ranges	100 nA, 1 µA, 10 µA, 100 µA, 1 mA, 10 mA, 100 mA, 1 A, 1.5 A, 10 A
Voltage Measurement Resolution	100 nV (6.5-digit, on 200 mV range)
Current Measurement Resolution	100 fA (6.5-digit, on 100 nA range)
Basic Voltage Measurement Accuracy	0.015% (1-year)
Basic Current Measurement Accuracy	0.02%
Input Impedance (Voltage Meter)	>10 GΩ
Measurement Resolution	6.5 digits

Pulse Mode Specifications

Minimum Pulse Width	150 µs
Pulse Current Amplitude	Up to 10 A
Pulse Voltage Amplitude	Up to 200 V

System & Dynamic Performance

Maximum Sweep Rate	20,000 points per second
Maximum Reading Rate to Internal Memory	20,000 readings per second
Maximum Reading Rate to GPIB/USB/LAN	20,000 readings per second
High Capacitance Mode	Supported (up to 50 µF max load capacitance)

I/O and Connectivity

Rear Panel Terminals	Phoenix-type screw terminal connectors
Sensing Modes	2-wire local or 4-wire remote
Guard Terminals	Active Guard per channel
GPIB Interface	IEEE-488.2
USB Front Panel Port	USB 2.0 Host (Type A)
USB Rear Panel Port	USB 2.0 Device (Type B)
TSP-Link Interface	Proprietary expansion bus, 2 RJ-45 ports
Digital I/O Port	25-pin D-sub, 14 digital I/O lines
Interlock Connector	Rear-panel safety interlock

Software and Control

Command Set Compatibility	TSP (Test Script Processor), SCPI Emulation (Keithley 2400)
Scripting Language	Lua-based TSP scripting
Embedded Web Interface	LXI Web Console (Virtual Front Panel / TSP Express)
Software Drivers Supported	IVI-COM, IVI-C, LabVIEW, MATLAB

Power and Operating Environment

AC Line Voltage Range	100 V to 240 V AC (±10%)
AC Line Frequency	50 Hz or 60 Hz (auto-sensing)
Power Consumption	240 VA maximum
Operating Temperature Range	0 °C to 50 °C
Storage Temperature Range	-25 °C to 65 °C
Operating Humidity Range	0% to 60% RH, up to 35 °C (derate 3% RH/°C, 35 °C to 50 °C)
Altitude Limits	Maximum 2000 m (operating)
Warm-Up Period	2 hours (to specified accuracy)

Physical Characteristics

Form Factor	Bench or 2U rackmount (half-rack)
Rack Unit Height	2U
Chassis Width	213 mm
Chassis Height	89 mm
Chassis Depth	460 mm

Compliance & Certifications

Electromagnetic Compatibility	Conforms to European Union EMC Directive (EN 61326-1)
Safety Compliance	Conforms to European Union Low Voltage Directive (EN 61010-1)
Calibration Interval	1 year

System Specifications

Maximum Common Mode Voltage	250 V DC
TSP-Link Expansion Limit	Up to 32 nodes (up to 64 SMU channels)

Performance

Maximum Load Capacitance (Normal Mode)	10 nF
Source Overrange	101% of range
Measure Overrange	102% of range

Interfaces

Digital I/O Lines	14
Digital I/O Power Supply Output	5 V DC, 500 mA maximum

Dynamic Performance

Voltage Source Settling Time	< 50 µs (typical, to 0.1% of final value, 20V range)
Current Source Settling Time	< 80 µs (typical, to 0.1% of final value, 1mA range)

Measurement Speed

A/D Converter Integration Time Range	0.001 PLC to 25 PLC

Regulation

Voltage Source Line Regulation	0.01% of range
Voltage Source Load Regulation	0.01% of range + 100 µV (for any load change)
Current Source Line Regulation	0.01% of range
Current Source Load Regulation	0.01% of range + 100 pA (for any change in output voltage)

Noise Performance

Voltage Source Noise (0.1 Hz to 10 Hz)	< 15 µV p-p (typical, 200 mV range)
Current Source Noise (0.1 Hz to 10 Hz)	< 5 pA p-p (typical, 100 nA range)

Guard & Sensing

Maximum Guard Offset Voltage	150 µV
Maximum Voltage Between Guard and LO	3 V
Sense Input Impedance	> 10 GΩ
Maximum Sense Lead Resistance Voltage Drop	3 V per lead (for rated accuracy)

System Buffer

Memory Capacity	> 1,000,000 readings per channel

System Expansion

Maximum TSP-Link Cable Length	3 meters (9.8 ft)

TECHNOLOGY

Source Measure Unit (SMU)

APPLICATIONS

Semiconductor, optoelectronic, and electronic component characterization and production testing