

KEYSIGHT TECHNOLOGIES (AGILENT HP)

B2912A

The Keysight B2912A is a high-performance 2-channel Precision Source Measure Unit (SMU) capable of sourcing and measuring both voltage and current. It delivers a wide measurement range with high resolution down to 10 fA and 100 nV, alongside high-speed digitizing capabilities, a graphical user interface, and standard PC connectivity interfaces.

SPECIFICATIONS

General

Interfaces	GPIB, LAN (LXI Class C compliant), USB 2.0 (Host and Device), Digital I/O (9-pin D-sub)
Display	4.3 inch Color TFT LCD with 480 x 272 resolution
Calibration Interval	1 year

Physical

Power Supply	100 V to 240 V AC ($\pm 10\%$), 50 Hz / 60 Hz, 250 VA maximum
Operating Temperature	0 °C to 55 °C °C
Dimensions (W×H×D)	213 mm W x 88 mm H x 348 mm D (without bumpers and handle) mm
Weight	6.4 kg kg

Key Specifications & Channel Configuration

Number of Channels	2
Maximum Voltage Range	± 210 V
Maximum Current Range	± 3 A DC, ± 10.5 A pulsed
Maximum Output Power per Channel	31.8 W
Measurement Resolution (Voltage)	100 nV
Measurement Resolution (Current)	10 fA
Source Resolution (Voltage)	100 nV
Source Resolution (Current)	10 fA
Guarding Configuration	Active Guard (via triaxial connectors)
Supported Operation Modes	Voltage Source, Current Source, Voltage Measure, Current Measure, Resistance Measure

Voltage Source Specifications

Voltage Ranges	200 mV, 2 V, 20 V, 200 V
Voltage Programming Resolution	100 nV (at 200 mV range)
Voltage Limit (Compliance) Range	200 mV to 210 V
Overvoltage Protection (OVP)	Programmable

Current Source Specifications

Current Ranges	10 nA, 100 nA, 1 μ A, 10 μ A, 100 μ A, 1 mA, 10 mA, 100 mA, 1 A, 1.5 A, 3 A (DC), 10.5 A (pulsed)
Current Programming Resolution	10 fA (at 10 nA range)
Current Limit (Compliance) Range	10 nA to 10.5 A
Overcurrent Protection (OCP)	Programmable

Voltage Measurement Specifications

Voltage Measurement Ranges	200 mV, 2 V, 20 V, 200 V
Voltage Measurement Resolution	100 nV
Input Impedance	>90 G Ω (at 200 mV and 2 V ranges)

Current Measurement Specifications

Current Measurement Ranges	10 nA, 100 nA, 1 μ A, 10 μ A, 100 μ A, 1 mA, 10 mA, 100 mA, 1 A, 1.5 A, 3 A (DC), 10.5 A (pulsed)
Current Measurement Resolution	10 fA

Pulse and Waveform Generator Specifications

Minimum Pulse Width	50 μ s
Maximum Pulse Width	99.999 s
Pulse Width Resolution	1 μ s
Maximum Number of Arbitrary Steps	100,000 points

Digitizing and Triggering Capabilities

Maximum Sampling Rate	100,000 samples/second
Minimum Sampling Interval	10 μ s
Data Buffer Size	100,000 readings per channel
Trigger Inputs	Digital I/O
Trigger Outputs	Digital I/O

Connectivity, Interfaces, and Integration

GPIO Port	Yes (IEEE-488.2)
LAN Interface	Yes (10Base-T/100Base-TX)
LXI Compliance Class	LXI Class C
USB Ports	USB 2.0 Host (front) & USB 2.0 Device (rear)
Digital I/O Interface	25-pin D-sub
Interlock Connector	Yes (rear panel)
BNC/Triaxial Connections	Triaxial outputs (rear panel)
Active Guard Terminals	Yes

User Interface and Display

Display Type	4.3 inch Color TFT
Display Resolution	480 x 272 pixels
Number of Display Channels Shown	2
Front Panel Controls	Rotary knob, numeric keypad, function keys
Graphical Plotting Support	Yes (Graph View, Roll View)

Software and Programming

Programming Language Support	SCPI, Keithley 2400 Emulation
Emulation Modes	Keithley 2400
Companion Software Support	Keysight EasyEXPERT group+, BenchVue

Safety, Environmental, and Compliance

Storage Temperature Range	-30 °C to 70 °C
Operating Humidity Range	30% to 80% RH (non-condensing)
Maximum Common Mode Voltage	250 V AC/DC (Isolation)
Warm-up Time	40 minutes

Physical and Power Specifications

Power Supply Voltage Range	100 V to 240 V AC ($\pm 10\%$)
Maximum Power Consumption	250 VA
Cooling Fan Type	Internal forced-air cooling
Rack Mount Compatibility	Yes (2U half-rack)

Physical Specifications

Power Supply Frequency Range	50 Hz to 60 Hz ($\pm 10\%$)
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Accuracy

Basic Voltage Source Accuracy	0.015%
Basic Current Source Accuracy	0.03%
Basic Voltage Measurement Accuracy	0.012%
Basic Current Measurement Accuracy	0.02%

Performance

Sense Connection Modes	2-wire (local) or 4-wire (remote) sensing
Maximum Force-Sense Voltage Drop	3 V (maximum voltage drop in lead resistance)
Sweep Modes	Linear, Logarithmic, List

Environmental

Operating Altitude	Up to 2,000 m
Storage Altitude	Up to 4,600 m
Pollution Degree	Pollution Degree 2

Compliance

EMC Compliance	EN61326-1, EN55011 Group 1 Class A, ICES-001 Group 1 Class A
Safety Compliance	IEC61010-1, EN61010-1, UL61010-1, CAN/CSA-C22.2 No. 61010-1

Display

Display Size	4.3 inches
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Source

Source Modes	DC, Pulse, Sweep, Pulsed Sweep
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Guarding

Maximum Guard Offset Voltage	±3 mV
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Measurement

Maximum Sense Lead Resistance	10 Ω
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Triggering

Trigger Sources	Immediate, Timer, Manual, Bus (GPIB, LAN, USB), External (Digital I/O)
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Interfaces

USB Host Port Type	USB 2.0 Type-A (front panel)
USB Device Port Type	USB 2.0 Type-B (rear panel)
LAN Port Standard	10BASE-T / 100BASE-TX (RJ-45)
GPIB Port Standard	IEEE-488.2
Digital I/O Connector Type	9-pin D-sub
Interlock Connector Type	3-pin terminal block

TECHNOLOGY

Source Measure Unit (SMU)

APPLICATIONS

Semiconductor testing, device characterization, materials research, and electronic component evaluation

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