KEYSIGHT TECHNOLOGIES (AGILENT HP)

41420A

The Keysight HP 41420A is a High Power Source/Monitor Unit (HPSMU) plug-in module designed for the HP 4142B Modular DC Source/Monitor. It is capable of forcing and measuring up to +/-200 V or +/-1 A with a maximum power output of 14 W. It features robust pulsed and constant measurement capabilities with advanced compliance limits.

SPECIFICATIONS

Physical

Operating Temperature	5 °C to 40 °C °C
Weight	2.2 kg kg
Mainframe Slots Occupied	2 slots

General

Module Type	High Power Source/Monitor Unit (HPSMU)
Compatible Mainframe	HP 4142B Modular DC Source/Monitor

Output Specifications

Maximum Output Voltage	+/-200 V
Maximum Output Current	+/-1 A
Maximum Output Power	14 W
Maximum Current (2 V range)	+/-1 A
Maximum Current (20 V range)	+/-1 A, +/-700 mA
Maximum Current (40 V range)	+/-350 mA
Maximum Current (100 V range)	+/-125 mA
Maximum Current (200 V range)	+/-50 mA
Maximum Voltage (1 nA to 100 mA current ranges)	10 nA to 100 mA current ranges
Maximum Voltage (1 A current range)	+/-200 V, +/-100 V, +/-40 V, +/-20 V, +/-14 V

Operating Modes & Advanced Features

Standard Operating Modes	V source / I monitor, I source / V monitor
Advanced Operating Modes	V source / V monitor, I source / I monitor (High speed spot, Analog search, Quasi-pulsed spot)
Compliance Limitations	Prevents damage by specifying I compliance for V source or V compliance for I source
Compliance Resolution	Same resolution as the output voltage or current

Pulse Parameters

Pulse Width Range	1 ms to 50 ms
Pulse Width Resolution	100 µs
Pulse Period Range	10 ms to 500 ms
Pulse Period Resolution	100 µs
Maximum Pulse Duty Cycle	50%
Pulse Measurement Range (2 V output range)	10 nA to 1 A
Pulse Measurement Range (20 V to 200 V output range)	100 µA to 1 A
Pulse Output Range (10 nA to 10 µA measurement range)	2 V
Pulse Output Range (100 µA to 1 A measurement range)	2 V to 200 V

Electrical Specifications

Voltage Source Ranges	±2 V, ±20 V, ±40 V, ±100 V, ±200 V
Current Source Ranges	±10 nA, ±100 nA, ±1 µA, ±10 µA, ±100 µA, ±1 mA, ±10 mA, ±100 mA, ±1 A
Voltage Measurement Ranges	±2 V, ±20 V, ±40 V, ±100 V, ±200 V
Current Measurement Ranges	±10 nA, ±100 nA, ±1 µA, ±10 µA, ±100 µA, ±1 mA, ±10 mA, ±100 mA, ±1 A

Resolution

Minimum Current Source Resolution	20 pA
Minimum Voltage Source Resolution	100 µV
Minimum Current Measurement Resolution	100 fA (using High-Resolution ADC)
Minimum Voltage Measurement Resolution	20 µV (using High-Resolution ADC)

Connectivity

Output Terminals	Dual triaxial connectors (Force and Sense)
Sensing Configuration	4-wire Kelvin connection

Performance

Basic Voltage Measurement Accuracy	±0.05%
Basic Current Measurement Accuracy	±0.2%
Integration Time Settings	Short / Medium / Long
Maximum Load Capacitance	1000 pF
Maximum Guard Capacitance	1000 pF

TECHNOLOGY

Modular Source/Monitor Unit (SMU)

APPLICATIONS

Semiconductor and electronic component DC parametric testing