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Data Sheet

August 13, 2026

KEYSIGHT / AGILENT / HP

Keysight / Agilent / HP 41420A Source / Monitor Module

HP 41420A High Power Source Monitor Unit for 4142B The HP 41420A is the two-slot High-Power SMU (HPSMU) plug-in for the 4142B modular DC source/monitor. It forces and measures up to plus/minus 200 V or plus/minus 1 A, 20 fA to 1 A measure class, 14 W maximum. Voltage ranges 2/20/40/100/200 V with corresponding current: 2 V and 20 V to 1 A (20 V also 700 mA class), 40 V 350 mA, 100 V 125 mA, 200 V 50 mA. Pulse width 1-50 ms (100 us resolution); period 10-500 ms; max duty 50 percent. V or I compliance with same resolution as the force function. Occupies two of eight 4142B slots. Sibling MPSMU 41421A is one slot, 100 V / 100 mA. The HP 41420A is the two-slot High-Power SMU (HPSMU) plug-in for the 4142B modular DC source/monitor. It forces and measures up to plus/minus 200 V or plus/minus 1 A, 20 fA to 1 A measure class, 14 W maximum. Voltage ranges 2/20/40/100/200 V with corresponding current: 2 V and 20 V to 1 A (20 V also 700 mA class), 40 V 350 mA, 100 V 125 mA, 200 V 50 mA. Pulse width 1-50 ms (100 us resolution); period 10-500 ms; max duty 50 percent. V or I compliance with same resolution as the force function. Occupies two of eight 4142B slots. Sibling MPSMU 41421A is one slot, 100 V / 100 mA. Semiconductor DC parametric force/measure



MODEL

Keysight / Agilent / HP 41420A

CALIBRATION

Available on request

CONDITION

Used

STATUS

In stock

RFQ / SKU

41420A

LISTING

<https://aumictechlabs.com/products/41420a-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 · 811210 · 541380

This unit

The Keysight 41420A is a high-power Source/Monitor Module (SMU) designed for semiconductor device testing within the 4142B Modular DC Source/Monitor Mainframe. This dual-slot module delivers precise voltage and current sourcing with simultaneous monitoring, supporting both DC and pulsed operation across demanding test applications. The 41420A sources ± 200 V or ± 1 A at maximum 14 W power, with measurement resolution down to 40 μ V and 20 fA. Its fast pulse capability (100 μ s minimum width) minimizes thermal drift effects, while Kelvin connections enable accurate low-resistance characterization. Compliance limiting and high measurement accuracy (0.05% voltage, 0.2% current) make it ideal for high-throughput DC semiconductor testers requiring reliable, repeatable performance.

Technical Specifications
Source Voltage Range: ± 200 V
Source Current Range: ± 1 A
Maximum Power: 14 W (DC or pulsed)
Voltage Measurement Resolution: 40 μ V
Current Measurement Resolution: 20 fA
Voltage Accuracy: Typically 0.05%
Current Accuracy: Typically 0.2%
Minimum Pulse Width: 100 μ s

Key Features
Dual-slot architecture optimized for high-power semiconductor characterization
Voltage sourcing with current monitoring or current sourcing with voltage monitoring
Fast pulsed testing capability to reduce thermal drift in high-current applications
Compliance limiting on output voltage and current
Kelvin connections for remote sensing and elimination of lead resistance effects
Triaxial and Kelvin triaxial cable support for low-leakage-current measurements

Typical Applications
High-power device characterization and parameter extraction
Power transistor and MOSFET testing
Diode and rectifier evaluation
Thermal transient analysis via pulsed operation
Low-resistance and leakage current measurement

Compatibility & Integration
The 41420A integrates into the Keysight 4142B mainframe via dedicated module slots. The 4142B provides HP-IB interface for system control and data transfer. The 41420A can be combined with other 4142B-compatible modules - such as the 41422A HCU (± 10 A) and 41423A HVU (± 1000 V) - to extend measurement range to 20 A and 2000 V.

41420A Characteristics / Specifications

PARAMETER	VALUE
Model	41420A
Manufacturer	Hewlett Packard / Agilent / Keysight
Instrument Type	High Power Source Monitor Unit
Series	4142B plugins
Alias	41420A; HPSMU
Parent Mainframe	HP 4142B modular DC source/monitor
Slots Occupied	2
Max Voltage	plus/minus 200 V
Max Current	plus/minus 1 A
Max Power	14 W
Measure Current Class	20 fA to 1 A
Range 2 V	plus/minus 1 A
Range 20 V	plus/minus 1 A / 700 mA class
Range 40 V	plus/minus 350 mA
Range 100 V	plus/minus 125 mA
Range 200 V	plus/minus 50 mA
Pulse Width	1 ms to 50 ms, 100 us resolution
Pulse Period	10 ms to 500 ms, 100 us resolution
Pulse Duty Max	50 percent
Compliance	V or I, same resolution as force
Related 41421A	MPSMU 1 slot 100 V 100 mA
Related 41422A	HCU 10 A
Related 41423A	HVU 1000 V
Related 41424A	VS/VMU
Related 41425A	analog feedback unit

PARAMETER	VALUE
Mainframe Slots	8
Common Mode Limit	plus/minus 42 V
Remote	GPIB on 4142B
Form	two-slot plug-in
Status	HP 4142B HPSMU
Kelvin	force/sense SMU
Duty	DC and pulsed within 14 W Notes Specs from HP 4142B technical data (41420A HPSMU 40 μ V-200 V, 20 fA-1 A, 2 slots, 14 W, pulse 1-50 ms). Confirm 4142B slot power budget versus other SMUs.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications	
Specifications	
PARAMETER	VALUE
Model	41420A
Manufacturer	Hewlett Packard / Agilent / Keysight
Instrument Type	High Power Source Monitor Unit
Specifications	
PARAMETER	VALUE
Series	4142B plugins
Alias	41420A; HPSMU
Parent Mainframe	HP 4142B modular DC source/monitor
Specifications	
PARAMETER	VALUE
Slots Occupied	2
Max Voltage	plus/minus 200 V
Max Current	plus/minus 1 A
Specifications	
PARAMETER	VALUE
Max Power	14 W
Measure Current Class	20 fA to 1 A
Range 2 V	plus/minus 1 A
Specifications	
PARAMETER	VALUE
Range 20 V	plus/minus 1 A / 700 mA class
Range 40 V	plus/minus 350 mA
Range 100 V	plus/minus 125 mA

Specifications

PARAMETER	VALUE
Range 200 V	plus/minus 50 mA
Pulse Width	1 ms to 50 ms, 100 us resolution
Pulse Period	10 ms to 500 ms, 100 us resolution

Specifications

PARAMETER	VALUE
Pulse Duty Max	50 percent
Compliance	V or I, same resolution as force
Related 41421A	MPSMU 1 slot 100 V 100 mA

Specifications

PARAMETER	VALUE
Related 41422A	HCU 10 A
Related 41423A	HVU 1000 V
Related 41424A	VS/VMU

Specifications

PARAMETER	VALUE
Related 41425A	analog feedback unit
Mainframe Slots	8
Common Mode Limit	plus/minus 42 V

Specifications

PARAMETER	VALUE
Remote	GPIB on 4142B
Form	two-slot plug-in
Status	HP 4142B HPSMU

Kelvin: force/sense SMU

Duty: DC and pulsed within 14 W

Notes

Specs from HP 4142B technical data (41420A HPSMU 40 uV-200 V, 20 fA-1 A, 2 slots, 14 W, pulse 1-50 ms).
Confirm 4142B slot power budget versus other SMUs.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.