

PS 9000 2U Series

1000 W to 3000 W



Programmable
DC Power
Supplies

INTEPRO
SYSTEMS

THE POWER TEST EXPERTS

PS 9000 2U Series

1000 W to 3000 W



Product Overview



PS 9000 2U

The microprocessor controlled laboratory power supplies of series PS 9000 2U offers many functions and features in their standard version, making the use of this equipment remarkably easy and most effective. All this comes in a flat design with only 3.0" of height.

The clearly arranged control panel features two rotary knobs, six pushbuttons and two LEDs. Together with an illuminated, blue LC display for all values and status it simplifies the use of the device.

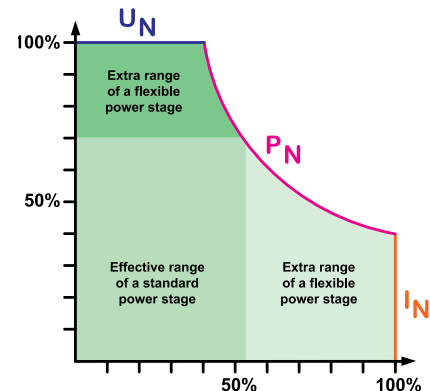
Power

All models feature a flexible Auto-Ranging output stage which provides higher output current at reduced voltages so the source maintains maximum output power across a wide range of voltage operation.

Traditional DC sources offer a square operation curve meaning the source maintains maximum rated current at less than full scale voltage. A traditional 3kW DC source with a voltage range of 600V provides 5A. At 250V the source still offers 5A so only 625W is actually delivered to the unit under test.

Auto-Ranging addresses this issue by automatically increasing the output current at reduced voltages. Take the PS 9750-12 which is 3kW as an example. At 600V the source offers 5A. At 250V the source provides 12A which means the source maintains a 3kW output rating.

Auto-Range is especially useful when testing products that require varied input voltages while maintaining regulated output power. This feature often results in a single chassis solutions versus buying multiple sources to address low and high voltage / current requirements.



DC Output

DC output voltages between 0...40 V and 0...750 V, output currents between 0...4 A and 0...120 A and output power ratings of 0...1000W, 1500W and 3000W are available.

Each power source includes a chassis controller so and to 10 units can be configured in parallel for higher power configurations. The architecture allows several units to operate interdependently or as one high power system.

Current, voltage and power can thus be adjusted continuously between 0% and 100%, no matter if manually or remotely controlled (analog or digital).

The DC output is located on the rear panel of the devices.

Featured Benefits

- *Wide input range 100...264 V*
- *High efficiency up to 93%*
- *Flexible, power regulated output stage*
- *Various protection circuits (OVP, OCP, OPP, OTP)*
- *Control panel with pushbuttons and blue LCD for actual values, set values, status and alarms*
- *Remote sensing*
- *Galvanically isolated, analog interface with:*
- *U / I / P programmable via 0...10 V or 0...5 V*
- *U / I monitoring via 0...10 V or 0...5 V*
- *Temperature controlled fans for cooling*
- *Standard USB and Ethernet port*
- *Standard EMC according to EN 55022 Class B*
- *SCPI command language supported*

Protective Features

For protection of the equipment connected, it is possible to set an overvoltage protection threshold (OVP), as well as one for overcurrent (OCP) and overpower (OPP).

As soon as one of these thresholds is reached for any reason, the DC output will be immediately shut off and a status signal will be generated on the display and via the interfaces.

There is furthermore an overtemperature protection, which will shut off the DC output if the device overheats.

Remote Sensing

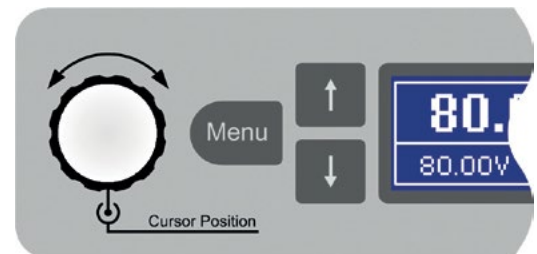
Remote sensing can be done via a dedicated input which is directly connected to the load equipment, in order to compensate voltage drops along the load cables up to a certain degree. The power supply detects automatically whether the sensing input is connected and will stabilise the voltage directly at the load.

The connection for the remote sensing is located on the rear of the device.

Display & Controls

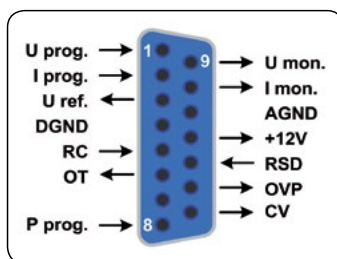
All important information is clearly visualised on a dot matrix display.

With this, information about the actual output values and set values of voltage and current, the actual control state (CV, CC, CP) and other statuses, as well as alarms and settings of the setup menu are clearly displayed.



In order to ease adjusting of values by the rotary knobs, pushing them can switch between decimal positions of a value. All these features contribute to an operator friendliness.

With a panel lock feature, the whole panel can be locked in order to protect the equipment and the loads from unintentional misuse.



Analog Interface

There is a galvanically isolated analog interface terminal, located on the rear of the device. It offers analog inputs to set voltage, current and power from 0...100% through control voltages of 0 V...10 V or 0 V...5 V.

To monitor the output voltage and current, there are analog outputs with voltage ranges of 0 V...10 V or 0 V...5 V. Also, several inputs and outputs are available for controlling and monitoring the device status.

Digital Interfaces

All models features two galvanically isolated, digital interfaces by default. It is 1x USB and 1x Ethernet. Both can be used to control and monitor the devices with SCPI language commands or Modbus protocol.

Options

- *GPIB*

Technical Data	Series PS 9000 2U	
Input AC		
- Voltage	100...264 V, 1ph+N (Models 1000W, 1500 W), 180...264 V, 1ph+N (Models 3000 W), 180...265 V, 2ph+N (Models 3000W)	
- Frequency	45...65 Hz	
- Power factor	>0.99	
Output: Voltage DC		
- Accuracy	<0.1%	
- Load regulation 0-100% load	<0.05%	
- Line regulation $\pm 10\% \Delta U_{AC}$	<0.02%	
- Regulation 10-100% load	<2 ms	
- Rise time 10-90%	Max. 30 ms	
Output: Current		
- Accuracy	<0.2%	
- Load regulation 0-100% ΔU_{DC}	<0.15%	
- Line regulation $\pm 10\% \Delta U_{AC}$	<0.05%	
Output power		
- Accuracy	<1%	
Overvoltage category	2	
Protection	OTP, OVP, OCP, OPP, PF	
Isolation		
- Input to enclosure	2500 V DC	
- Input to output	2500 V DC	
- Output to enclosure (PE)	Negative: max. 400 V DC, positive: max. 400 V DC + output voltage	
Pollution degree	2	
Protection class	1	
Analog interface	Built in, 15-pole D-Sub, female	
- Input range	0...5 V or 0...10 V (switchable)	
- Accuracy U / I	0...10 V: <0.2%	0...5 V: <0.4%
- Programming resolution	See table below	
Series operation	Possible (with max. potential of all negative outputs 400 V DC against PE)	
- Master-Slave	No	
Parallel operation	Possible, via Share Bus operation or via analog interface	
- Master-Slave	Restricted	
Standards	EN 60950, EN 61326, EN 55022 Class B	
Cooling	Fan(s)	
Operation temperature	0...50 °C	
Storage temperature	-20...70 °C	
Humidity	<80%	
Operation altitude	<2000 m	
	1000 W / 1500 W	3000 W
Weight ⁽¹⁾	25.4lbs / 11.5kg	32.4lbs / 14.7kg
Dimensions (W H D) ⁽²⁾	19" 2 HE/2U 460 mm	19" 2 HE/2U 460 mm

(1 Standard version, models with options may vary

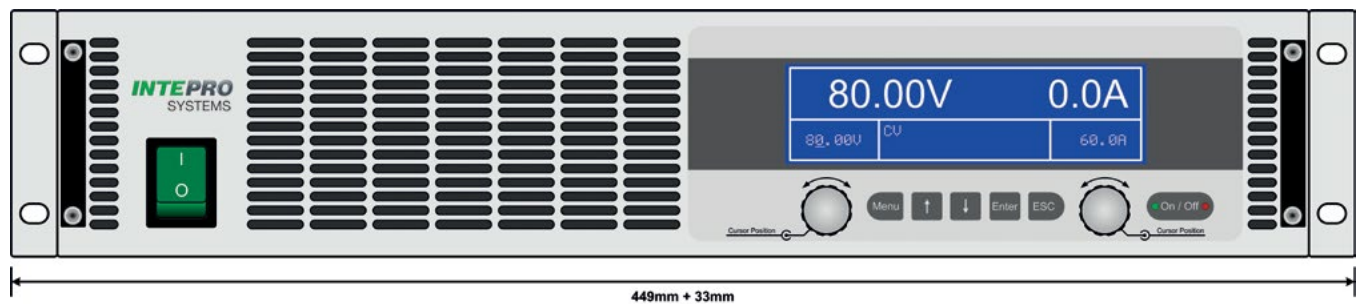
(2 Enclosure of the standard version and not overall size, versions with options may vary

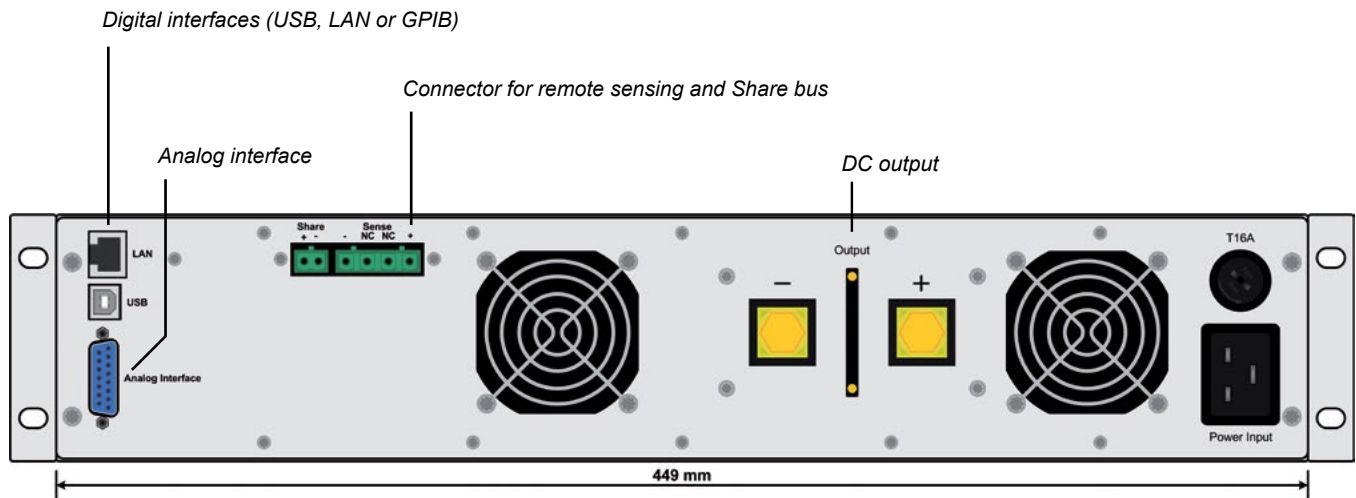
Model	Voltage	Current	Power	Efficiency	Ripple U max. ⁽²⁾	Ripple I max. ⁽²⁾	Programming ⁽¹⁾	
							U (typ.)	I (typ.)
PS 9040-40 2U	0...40 V	0...40 A	0...1000 W	≤92%	114 mV _{pp} / 8 mV _{RMS}	53 mA _{pp} / 3.7 mA _{RMS}	0.8 mV	0.8 mA
PS 9080-40 2U	0...80 V	0...40 A	0...1000 W	≤92%	114 mV _{pp} / 8 mV _{RMS}	53 mA _{pp} / 3.7 mA _{RMS}	1.5 mV	0.8 mA
PS 9200-15 2U	0...200 V	0...15 A	0...1000 W	≤93%	164 mV _{pp} / 34 mV _{RMS}	11 mA _{pp} / 2.2 mA _{RMS}	4 mV	0.3 mA
PS 9360-10 2U	0...360 V	0...10 A	0...1000 W	≤93%	210 mV _{pp} / 59 mV _{RMS}	5.5 mA _{pp} / 1.6 mA _{RMS}	7 mV	0.2 mA
PS 9500-06 2U	0...500 V	0...6 A	0...1000 W	≤93%	190 mV _{pp} / 48 mV _{RMS}	1.9 mA _{pp} / 0.5 mA _{RMS}	10 mV	0.1 mA
PS 9750-04 2U	0...750 V	0...4 A	0...1000 W	≤93%	212 mV _{pp} / 60 mV _{RMS}	1 mA _{pp} / 0.3 mA _{RMS}	15 mV	0.1 mA
PS 9040-60 2U	0...40 V	0...60 A	0...1500 W	≤92%	114 mV _{pp} / 8 mV _{RMS}	79 mA _{pp} / 5.6 mA _{RMS}	0.8 mV	1.1 mA
PS 9080-60 2U	0...80 V	0...60 A	0...1500 W	≤92%	114 mV _{pp} / 8 mV _{RMS}	79 mA _{pp} / 5.6 mA _{RMS}	1.5 mV	1.1 mA
PS 9200-25 2U	0...200 V	0...25 A	0...1500 W	≤93%	164 mV _{pp} / 34 mV _{RMS}	16 mA _{pp} / 3.3 mA _{RMS}	4 mV	0.5 mA
PS 9360-15 2U	0...360 V	0...15 A	0...1500 W	≤93%	210 mV _{pp} / 59 mV _{RMS}	8.3 mA _{pp} / 2.4 mA _{RMS}	7 mV	0.3 mA
PS 9500-10 2U	0...500 V	0...10 A	0...1500 W	≤93%	190 mV _{pp} / 48 mV _{RMS}	2.8 mA _{pp} / 0.7 mA _{RMS}	10 mV	0.2 mA
PS 9750-06 2U	0...750 V	0...6 A	0...1500 W	≤93%	212 mV _{pp} / 60 mV _{RMS}	1.5 mA _{pp} / 0.5 mA _{RMS}	15 mV	0.1 mA
PS 9040-120 2U	0...40 V	0...120 A	0...3000 W	≤92%	114 mV _{pp} / 8 mV _{RMS}	158 mA _{pp} / 11 mA _{RMS}	0.8 mV	2.3 mA
PS 9080-120 2U	0...80 V	0...120 A	0...3000 W	≤92%	114 mV _{pp} / 8 mV _{RMS}	158 mA _{pp} / 11 mA _{RMS}	1.5 mV	2.3 mA
PS 9200-50 2U	0...200 V	0...50 A	0...3000 W	≤93%	164 mV _{pp} / 34 mV _{RMS}	32 mA _{pp} / 6.5 mA _{RMS}	4 mV	1 mA
PS 9360-30 2U	0...360 V	0...30 A	0...3000 W	≤93%	210 mV _{pp} / 59 mV _{RMS}	17 mA _{pp} / 5 mA _{RMS}	7 mV	0.6 mA
PS 9500-20 2U	0...500 V	0...20 A	0...3000 W	≤93%	190 mV _{pp} / 48 mV _{RMS}	6 mA _{pp} / 1.5 mA _{RMS}	10 mV	0.4 mA
PS 9750-12 2U	0...750 V	0...12 A	0...3000 W	≤93%	212 mV _{pp} / 60 mV _{RMS}	3 mA _{pp} / 0.9 mA _{RMS}	15 mV	0.2 mA

(1) Programmable resolution without device error

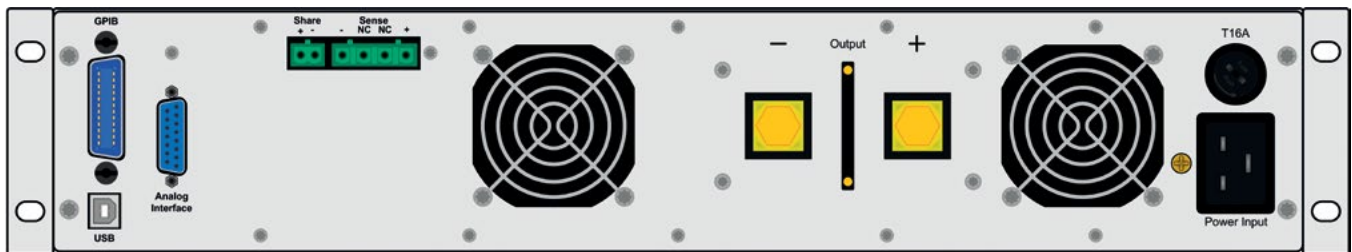
(2) RMS value: measures at LF with BWL 300 kHz, PP value: measured at HF with BWL 20MHz

(3) Article number of the standard version, models with option 3W installed have different article numbers





Rear view of base model



Rear view with option 3W

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