

# RHINO PSP SERIES DC - DC CONVERTERS



## INSTALLATION INSTRUCTIONS PSP Series DC - DC Converters

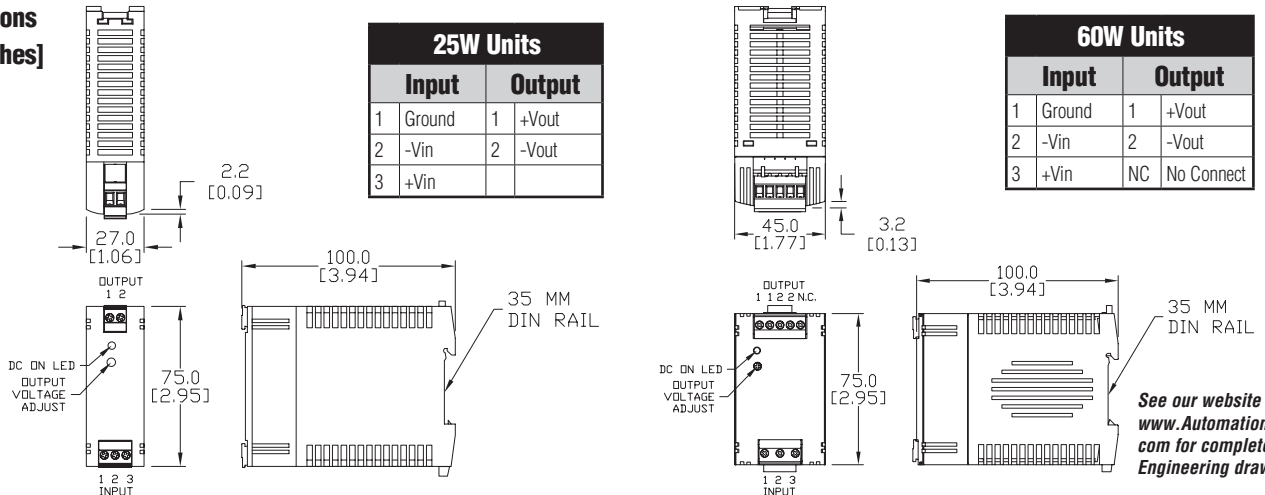
PSP Series DC-DC Converters					
Part Number	Input Voltage Range	Input Current Max. @ Vin, (Iout = 0% / 100%)	Output Voltage	Output Current Max	Output Power
PSP24-DC12-1	9.5 - 18.0 VDC	80mA / 2.5 A @ 12VDC	24VDC	1A	25W
PSP05-DC24-5	18.0 - 75.0 VDC	80mA / 1.3 A @ 24VDC 60mA / 0.7 A @ 48VDC	5VDC	5A	
PSP12-DC24-2			12VDC	2A	
PSP24-DC24-1			24VDC	1A	
PSP12-DC24-5	18.0 - 75.0 VDC	31mA / 2.9 A @ 24VDC 19mA / 1.4 A @ 48VDC	12VDC	5A	60W
PSP24-DC24-2			24VDC	2.5 A	

General Specifications	
Startup Voltage / Undervoltage Shut-down	17.2 VDC / 15.7 VDC (PSP24-DC12-1: 8.4 VDC / 7.6 VDC)
Efficiency (Typical)	86%
Output Voltage Adjustable Range	5VDC model: 5.0 - 5.25 VDC 12VDC models: 12.0 - 15.0 VDC 24VDC models: 24.0 - 28.0 VDC
Overvoltage Protection, Trigger Point	5VDC model: <6.5 V 12VDC models: <24V 24VDC models: <42V
Output Voltage Regulation*	0.5% max
Ripple/Noise (20MHz bandwidth)	<50mV (pk-pk)
Temperature: Operating Storage (non-operating) Derating	-25°C to 70°C max (-13°F to 158°F max) -25°C to 85°C max, (-13°F to 185°F max) 1.5%/K above 50°C (122°F) for 25W models; 2%/K above 40°C (104°F) for 60W models
Humidity (Non-condensing)	95 % relative humidity max.
Temperature Coefficient	0.02 %/K
Switching Frequency	55 - 180 kHz depending on load (frequency modulation)
Isolation Voltage (1 min.) - Input/Output	1500 VDC
Safety Standards	IEC 60950-1, EN 60950-1 (output SELV), UL 60950-1, EN 60204, CSA 22.2 60950-1-07, EN50178, UL 508
Electromagnetic Compatibility (EMC)	Emissions: EN 61000-6-3; Immunity EN 61000-6-2
Parallel Operation	No parallel operation
Safety Class	Degree of protection class 1
Environmental Air	No corrosive gases permitted
Enclosure Rating	IP 20 (IEC 60529)
Enclosure Material	Plastic FR2010-110C (UL 94V-0 rated)
Mounting	DIN rails per EN 50022-35x15/7.5 (snap-on with self-locking spring); bracket for wall/chassis mount included
Wiring	12-24 AWG (3.16-0.21 mm <sup>2</sup> )
Connections	Screw type plug-in connector (standard), Recommended tightening torque 0.5-0.7 Nm (4.5-6.2 in-lb)
Recommended Circuit Breaker	6-16A, characteristic C
Short Circuit Protection	Current limited at 110% typical
MTBF (IEC 61709 @ 25°C)	>2.5 million hours
Agency Approvals	UL/cUL 508 listed, File E197592; CSA File 229285; CE; Reach; RoHS

\* Input variation  $V_{in}$  min to  $V_{in}$  max and load variation 0 to 100%

Note: All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

### Dimensions mm [inches]



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## Safety Instructions:

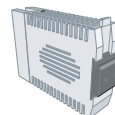
- Read these instructions carefully and completely before installation. These instructions cannot cover every possible installation, operation or maintenance situation. Further information can be obtained from the product datasheets, which can be downloaded, from the Internet at <http://www.automationdirect.com>.
- These converters are constructed in accordance with the safety requirements of IEC/EN60950-1, UL60950-1 and UL508. They are approved (UL and cUL) in accordance with UL508, and fulfill the requirements of the Low Voltage Directive (LVD).
- Before any installation, maintenance or modification work, be sure that the main switch is switched off and prevented from being switched on again. Non-observance, touching of any live components or improper handling of this power supply can result in death, severe personal injury or substantial property damage. Proper and safe operation is dependent on proper storage, handling, installation and operation.
- Compliance with the relevant national regulations (in the USA, Europe and other countries) is required. Before operation is started the following conditions must be met:
  - Connection to the source in compliance with national regulations.
  - Use of stranded wires, all strands must be fastened in the terminal blocks.
  - Input cables must be sufficiently fused.
  - Degree of protection I to IEC536. The non-fused protective earth connection must be connected to the FG terminal (Protection Class I).
  - All output wires must be rated for the power supply output current and must be connected with the correct polarity.
  - Sufficient cooling must be assured.
- **Never work on the DC/DC converter if power is connected!** There is risk of electric arcs and electrical shock, which can cause death, severe personal injury or substantial property damage.
- **Warning:** Hazardous voltages and components storing a very substantial amount of energy are present in this power supply during normal operating conditions. However, these are inaccessible. Improper handling may result in an electric shock or serious burns! **Do not open the converter until at least 5 minutes after it has been disconnected from the input source on all poles.**
- Allow only trained personnel to open the converter.
- Do not insert any objects into the converter. Actuate the output voltage adjustment potentiometer by using an insulated screwdriver only.
- Keep away from fire and water.

## Installation Instructions:

- This converter is designed for professional indoor systems. The converter must not be accessible while in operation. Allow installation and service by qualified personnel only.
- Do not operate without PE connection! To comply with EMC and safety standards (CE mark, approvals) the power supply is to be operated only if PE terminal is connected to the non-fused ground conductor.
- Mount unit for optimal cooling performance. **Do not cover any ventilation holes.** Please allow minimum free space of and 50mm (2") above and below the converter for air convection. Observe power derating.
- The internal fuse is not accessible, as it is not to be replaced by the user. If this internal fuse has blown, the converter most likely has an internal defect and, for safety reasons, must be discarded, or, if under warranty, returned.
- **Recycling:** The unit contains elements that are suitable for recycling, *and* components that need special disposal. Please make sure that the power supply is recycled in an environmentally friendly way at the end of its service life.
- **Warning:** To minimize the risk of potential safety problems, follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed and to verify that the equipment, installation and operation are in compliance with the latest revision of these codes.
- Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication to be suitable for your particular application, nor do we assume any responsibility for your product design, installation or operations.
- If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call us at 770-844-4200.
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### To Install

1. Read and follow Safety and Installation instructions.
2. Hook top of converter's DIN rail clip on DIN rail.
3. Push down tab on top of converter to open DIN rail clip.
4. Rotate converter into DIN rail and release tab.
5. Verify the DIN rail clip is securely fastened on DIN rail.
6. Connect wires as indicated on converter.



The unit can be mounted on a chassis or wall using the included mounting bracket.