

RHINO PSP SERIES DC - DC CONVERTERS



INSTALLATION INSTRUCTIONS PSP Series DC - DC Converters

Input Specifications						
Part Number	Input Voltage Range	Input Current Max @ V_{in} ($I_{out} = 0\% / 100\%$)	Power Consumption @ V_{in} ($I_{out} = 0\% / 100\%$)	Startup Voltage	Undervoltage Shut-down	Efficiency (Typical)
PSP24-DC12-1	9.5 to 18.0 VDC	80mA / 2.5A @12VDC	0.96W / 30W @12VDC, typical	8.4 VDC	7.6 VDC	86%
PSP05-DC24-5	18 to 75 VDC	80mA / 1.3A @24VDC, 60mA / 0.7A @48VDC	1.92W / 31.2W @24VDC, 2.88W / 33.6W @48VDC, typical	17.2 VDC	15.7 VDC	
PSP12-DC24-2						
PSP24-DC24-1						
PSP12-DC24-5						
PSP24-DC24-2	31mA / 2.9A @24VDC, 19mA / 1.4A @48VDC	0.74W / 69.5W @24VDC, 0.89W / 68.8W @48VDC, typical				
PSP24-DC24-2	45mA / 3.1A @24VDC, 25mA / 1.54A @48VDC	1.08W / 74.4W @24VDC, 1.2W / 74.0W @48VDC, typical				

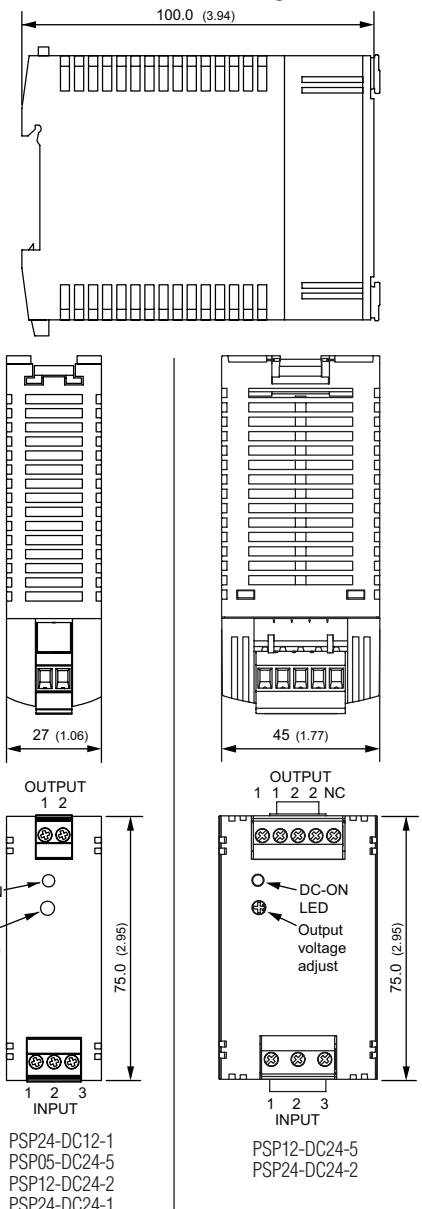
Output Specifications							
Part Number	Output Voltage	Output Voltage Adj. Range	Output Current (max.)	Ripple/Noise	Output Voltage Regulation*	Overvoltage Protection, Trigger Point	Short Circuit Protection
PSP24-DC12-1	24 VDC	24.0 - 28.0 VDC	1 A	<50mV peak to peak (20MHz bandwidth)	$\pm 0.5\%$ max	<42 V	Current limited at 110% typical (constant current, automatic recovery)
PSP05-DC24-5	5 VDC	5.0 - 5.25 VDC	5 A			<6.5 V	
PSP12-DC24-2	12 VDC	12.0 - 15.0 VDC	2 A			<24 V	
PSP24-DC24-1	24 VDC	24.0 - 28.0 VDC	1 A			<42 V	
PSP12-DC24-5	12 VDC	12.0 - 15.0 VDC	5 A			<24 V	
PSP24-DC24-2	24 VDC	24.0 - 28.0 VDC	2.5 A			<42 V	

*Note: Input variation V_{in} min to V_{in} max and load variation 0 to 100%

Dimensions and Wiring

General Specifications		
Temperature	Operating: -25°C to 70°C max [-13°F to 158°F max], natural air convection cooling; Storage (non-operating): -25°C to 85°C max, [-13°F to 185°F max]	
Derating	1.5%/°C above 50°C [122°F]	
Humidity (Non-condensing)	95% relative humidity max.	
Temperature Coefficient	0.02%/°C	
Switching Frequency	55 – 180 kHz depending on load (frequency modulation)	
Isolation Voltage (1 min.) – Input/Output	1500 VDC	
Reliability, Calculated MTBF @ 25°C	>2.5 Million hours (according to IEC 61709)	
Safety Standards	IEC 60950-1, EN 60950-1 (output SELV), UL Std. 60950-1 (2nd Edition) +Am1.2011, CAN/CSA-C22.2 No. 60950-1-07 +Am1.2011, UL 508, EN 50178, EN 60204	
Electromagnetic Compatibility (EMC), Emissions	EN 61000-6-3; conducted RI suppression on input and radiated RI suppression, EN 55022 class B	
Electromagnetic Compatibility (EMC), Immunity	EN 61000-6-2; electrostatic discharge, EN 61000-4-2 (4kV/8kV); radiated RF field immunity, EN 61000-4-3 (10V/m); electrical fast transient/burst immunity, EN 61000-4-4 (Level 3); surge immunity, EN 61000-4-5 (Level 3); immunity to conducted RF disturbances, EN 61000-4-6 (10Vrms)	
Parallel Operation	No parallel operation	
Connections	Screw type plug-in connector (standard). Recommended tightening torque 0.5 to 0.7 Nm [4.5 to 6.2 lb.in]	
Wiring	0.21mm ² - 3.16mm ² [AWG 24 to AWG 12]	
Recommended Circuit Breaker	6–16A (Characteristic C)	
Enclosure Rating	IP 20 (IEC 60529)	
Enclosure Material	Plastic, UL 94V-0 rated	
Weight	PSP24-DC12-1	
	PSP05-DC24-5	140g [4.9 oz]
	PSP12-DC24-2	
	PSP24-DC24-1	
	PSP12-DC24-5	265g [9.4 oz]
Mounting	DIN rails per EN 50022-35x15/7.5 (snap-on with self-locking spring) bracket for wall/chassis mount included	
Agency Approvals	UL/cUL 508 Listed, File E197592, CE	

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



Input	Output
1 Ground	1 +Vout
2 -Vin	2 -Vout
3 +Vin	

PSP24-DC12-1
PSP05-DC24-5
PSP12-DC24-2
PSP24-DC24-1

PSP12-DC24-5
PSP24-DC24-2

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Safety Instructions:

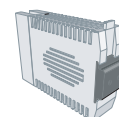
- Read these instructions carefully and completely before installation. These instructions cannot cover every possible installation, operation or maintenance situation. Further information can be obtained from the product datasheets, which can be downloaded from <http://www.automationdirect.com>.
- The mains supply voltage connection must be in accordance with IEC 62103, EN 50178 and IEC 60364, VDE 100.
- 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 must be in compliance with national regulations.
 - All strands of stranded wires 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.
- The correct mounting position for optimal cooling performance must be observed. Mount the converter horizontally on a flat vertical surface. It may not be mounted vertically, upside down or on a horizontal surface. **Do not cover any ventilation holes.** Allow a minimum free space of 50mm (2") above and below the converter for air convection. Observe power derating.
- The internal fuse is not accessible, as the user may not replace it. If this internal fuse has blown, the converter has an internal defect and, for safety reasons, must be replaced.
- **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.