RHINO PSH-xx-480 Power Supplies
Installation Instructions

READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

Safety Instructions and Warnings

- Do not open the device!
- Before any installation or maintenance, ensure that the main switch is switched off and prevented from being switched on again.
- The device must be installed and put into service by qualified personnel only.
- Never work on the device if power is applied.
- Risk of electric arcs and electrical shock, which can cause death, severe personal injury or substantial property damage.
- The unit must be connected to the mains supply in compliance with national regulations (e.g., VDE0100 and EN50178). All wire strands must be fastened in the terminal blocks. (Potential danger of contact with the case.)
- All input and output wires must be properly rated for the power supply and must be connected with the correct polarity (Fig. 3).
- The Power Supply wiring must be sufficiently fused.
- Sufficient cooling must be ensured (Fig. 2).
- Do not introduce any objects into the device.
- The output voltage adjustment potentiometer may only be actuated using an insulated screwdriver.
- Keep away from fire and water.
- The internal fuse is not accessible. If this internal fuse has blown, the power supply has an internal defect and, for safety reasons, must be replaced.
- This device is designed for use in a clean, dry environment.
- The device must be mounted in an enclosure in the end application and must not be accessible in operation.

Installation Instructions

- The device can be mounted onto 35mm DIN rails, compliant with the specifications of DIN EN 50022. Observe the requirements for ventilation space above and below the device (Fig. 2).
- The standard mounting orientation is with input terminals at the bottom.
- Alternative side-mounting for flat panels: The case offers the potentially useful feature to fix the DIN-rail clip to the side wall to mount inside flat panels.

Recycling

- The device contains elements that are suitable for recycling, and components that need special disposal. You are therefore requested to make sure that the device will be recycled at the end of its service life.

Notes for Technical Specifications Table:

1. Output voltage can be adjusted as indicated. However, output power has to be maintained at nominal value. This means the output nominal current has to be reduced in accordance with the increase of output voltage.
2. In case of an internal error, a second voltage regulation loop keeps the output voltage at a safe level, and the power supply turns off and restarts after 10 seconds.
3. When external voltage is supplied above set output voltage and below OVP threshold, the power supply will function normally without switch off or destruction, even if external voltage is applied continuously.
4. In case of overload or short circuit, the unit switches the output voltage off after 4 seconds and tries to restart every 10 seconds.

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Technical Specifications

		PSH-24-480	PSH-48-480
Input (AC)			
Nominal Input Voltage		100–240 VAC	
Nominal Input Current		5.8–2.5 A	
Operational Input Voltage Range		85–264 VAC	
Input Voltage Frequency Range		45–65 Hz	
Inrush Current (115/230 VAC)		15/30 A	
Standby Power Consumption		4.8/3.8 W (115/230 VAC)	
Active Power Factor Correction (PFC)		0.99/0.97 (115/230 VAC)	
Harmonic limits – acc. EN 61000-3-2		Class A, D	
Circuit Breaker Rating / Characteristic		6-16 A /B, C (IEC); 20 A /B, C (USA)	
Output (DC)			
Max. Output Power		480W	
Output Voltage		24V	48V
Max. Output Current / Max. Output Current 4s ("Boost power" which facilitates the activation of stepper motors, solenoids or actuators)		20A	10A
Output Voltage Adjustment Range		23.5–28 V	47.5–56 V
Typical Efficiency (230 VAC)		95%	95%
Regulation	Input Variation Load Variation	0.1 % max. (10–90 %) 0.5 % max.	
Output Power Derating - Temperature		2%/K above 60°C, refer to Fig. 5	
Output Power Derating - Input Voltage		3%/V below 90 VAC, refer to Fig. 4	
Hold-up time		20 ms min.	
Start-up time		2s max.	
Ripple and Noise (20MHz bandwidth) (Note 1)		100 mVp-p max.	200 mVp-p max.
Output Overvoltage Protection (OVP) (Note 2)		32–35V	56–60V
Power Back Immunity (Note 3)		< OVP level	
Operation	Nominal Operation Peak Power Operation Constant Current (CC)	100% of Iout nominal 105–150% of Iout nominal 155% of Iout nominal	
Duty Cycle (for peak and cc mode) (Note 4) Threshold CC or Peak Operation Timer Normal Operation / Off Period		 > 105 % 4s max. (switch off) < 10s typ (automatic restart after switch off or peak and cc operation timer reset)	
Short Circuit Protection		Switch off after 4s delay, automatic restart (Note 4)	
DC OK Signal	Threshold for Vout	ON: > 22.5 V typ. OFF: < 21.5 V typ.	ON: > 45V typ. OFF: < 43V typ.
	DC ON	Relay contact closed, max. 1A, < 100mOhm, also indicated by green LED	
	DC OFF	Relay contact open, max 30V	
General Data			
Weight		1018g [35.91 oz]	
Leakage Current (max.)		2.3 mA	
Network Configuration		TN-S, TN-C, TT, IT	
Enclosure Material (Chassis/Cover)		Aluminum / Stainless Steel	
Cooling		Convection cooling, no internal fan	
Over Temperature Protection		Switch off at over temperature	
Isolation Voltage		Input/Output 4250VDC Input/Chassis 1500VDC Output/Chassis 750VDC	
Creepage Clearance		Input/Output 8mm Input/Chassis 4mm Output/Chassis 1.5 mm	
Remote On/Off		The unit can be controlled by external relay contact or open collector signal.	
Contact Rating		Open: 15V; leakage current max 100µA Close: 0.3 V; max drop at 15mA	
Safety / Environmental			
Surrounding Ambient Temperature Range		-40°C to +70°C [-40°F to +158°F]	
Temperature Coefficient		0.02 %/K	
Humidity		5–95%, non-condensing	
Storage Temperature		-40°C to +85°C [-40°F to +185°F]	
Maximum Altitude		2000m	
Safety Standards		Information technology equipment IEC/EN 60950-1, UL 60950-1 CSA 22.2 No 60950-1-03, File E198298 Safety low voltage switchgear and controlgear UL 508, File E197592 Process Control Equipment Haz Loc, File E502478 ATEX Ⓔx II 3 G Ex ec nC IIC T4 Gcw	
MTBF (acc. to IEC 61709 at 25°C)		> 1,000,000 hrs	
Protection Class		Class I	
Degree of Protection		IP20	
Electromagnetic compatibility (EMC)			
Emissions		EN 61000-6-3, EN 61204-3	
Conducted RI Suppression On Input		EN 55032, EN 55011 class B,	
Radiated RI Suppression		EN 55032, EN 55011 class B,	
Immunity		EN 61000-6-2, EN 61204-3	
Railway Applications Signaling Apparatus		EN 50121-4	
Railway Applications Rolling Stock Apparatus		EN 50121-3-2	
Electrostatic Discharge (ESD)		IEC/EN 61000-4-2 4 kV/8 kV , criteria A	
Radiated RF Field Immunity		IEC/EN 61000-4-3 10 V/m , criteria A	
Electrical Fast Transient / Burst Immunity		IEC/EN 61000-4-4 2 kV , criteria B	
Surge Immunity		IEC/EN 61000-4-5 1 kV/2 kV , criteria B	
Immunity To Conducted RF Disturbances		IEC/EN 61000-4-6 10 V , criteria A	
Power Frequency Field Immunity		IEC/EN 61000-4-8 30 A/m , criteria A	
Mains Voltage Dips And Interruptions		IEC/EN 61000-4-11 criteria B/C	
Voltage Sag Immunity		SEMI F47 230VAC, criteria B/C	
Environment			
Railway Applications Shock and Vibration		According EN 61373	
Vibration Acc. IEC 60068-2-6-3		3 axis, 2 g sine sweep, 10–55 Hz, 11 oct/min	
Shock Acc. IEC 60068-2-27		3 axis, 25 g half sine, 11ms	
Approvals		CE CB Scheme c UL us UL508 c TÜV us UL60950-1 Ex	

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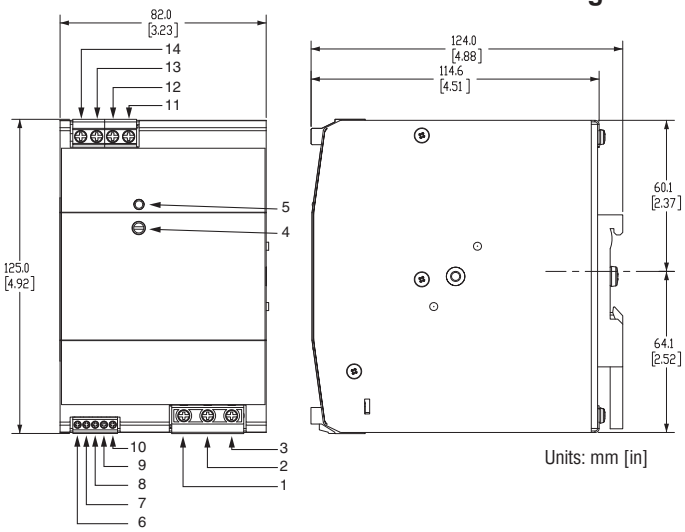
Fig. 1

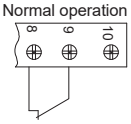


Units: mm [in]

Identification of Features (Fig.1)	
1	Input Terminal **L**
2	Input Terminal **N**
3	Input Terminal **GND**
4	Output Voltage adjustment potentiometer
5	DC ON LED
6/7	DC OK Contact
8–10	Remote On/Off
11	Output Connection Terminal **–**
12	Output Connection Terminal **–**
13	Output Connection Terminal **+**
14	Output Connection Terminal **+**

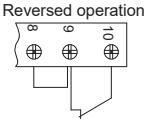
Remote On/Off

Normal operation



ON = open
OFF = closed

Reversed operation



ON = closed
OFF = open

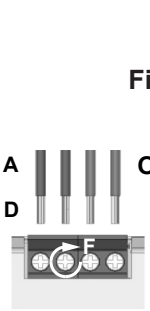


Fig. 2

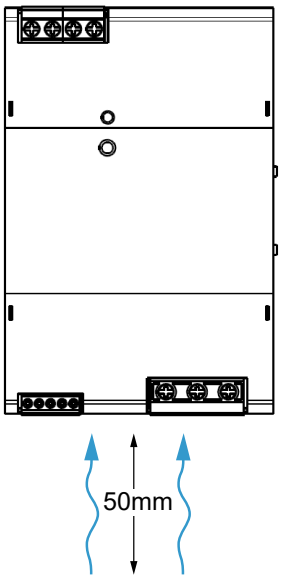
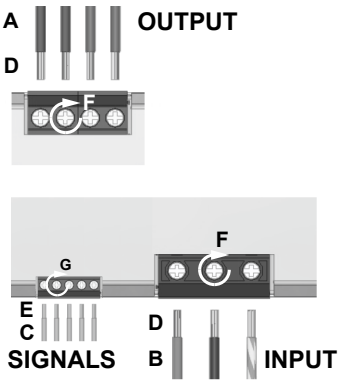


Fig. 3



Wiring Specifications (see Fig. 3)		
A	Wire Size, Output	12–10 AWG
B	Wire Size, Input	18–10 AWG
C	Wire Size, Signal	30–16 AWG
D	Strip Length, Input/Output	10mm [0.39 in]
E	Strip Length, Signal	5mm [0.20 in]
F	Tightening Torque, Input/Output	0.7 N·m [6.2 lb·in]
G	Tightening Torque, Signal	0.2 N·m [1.8 lb·in]

Fig. 4

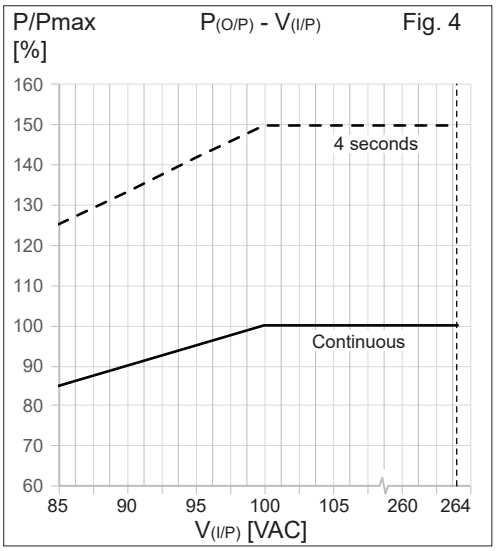
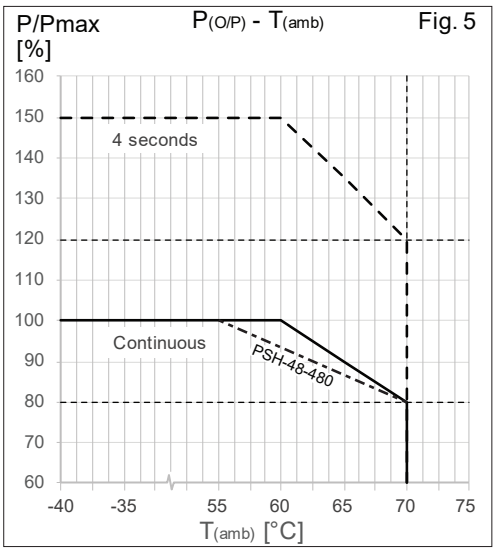


Fig. 5



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