

# RHINO Installation Instructions for PSR-24-240-3 Power Supply



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

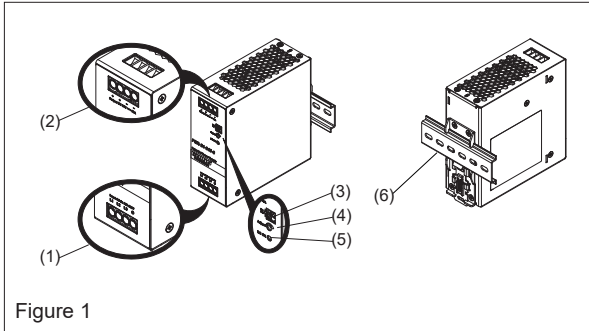


Figure 1

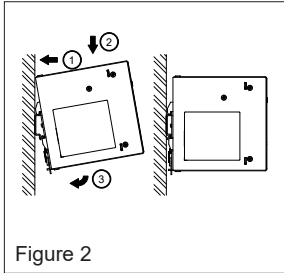


Figure 2

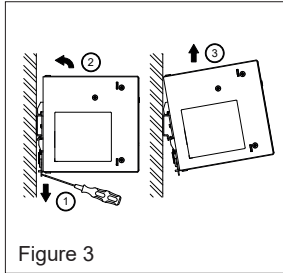


Figure 3

	DC OK LED	DC OK Contact
Normal mode	ON	Closed
Overload (hiccup mode)	OFF	Open
Output short circuit	OFF	Open
Temperature shut down	OFF	Open
No input power	OFF	Open

Figure 4

PSR-24-240-3	
AWG	ADC Ferrule p/n
20	V30AE000038
18	V30AE000045
16	V30AE000048
14	V30AE000052
12	V30AE000055
10	V30AE000058

Figure 5

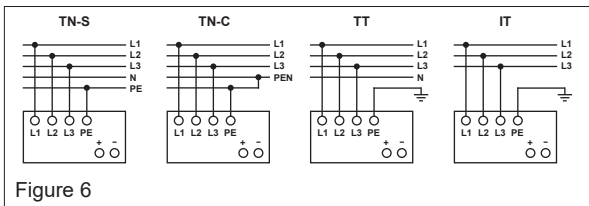


Figure 6

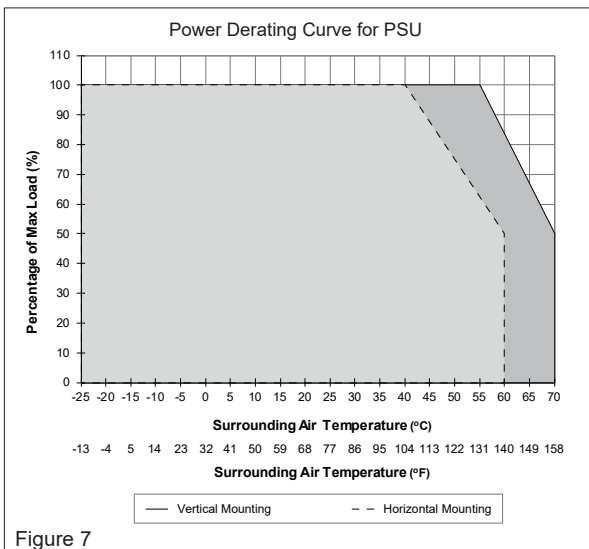


Figure 7

## 1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
  - If the unit is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
  - To guarantee sufficient convection cooling, please refer to the following instructions to ensure sufficient clearance around the device.
    - Vertical Mounting: 80 mm [3.15 in] above and 40 mm [1.57 in] below the device as well as a lateral distance of 5 mm [0.20 in] to other units. In case the adjacent device is a heat source (50% load of 240W), the lateral distance will be 25 mm [0.98 in].
    - Horizontal Mounting: 80 mm [3.15 in] above and 40 mm [1.57 in] below the device as well as a lateral distance of 40 mm [1.57 in] to other units.
  - The external enclosure where the unit will be installed shall meet the requirements for mechanical, electrical and fire enclosure.
  - Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Risk of burns!
- ⚠ CAUTION: Hot surface**
- The main power must be turned off before connecting or disconnecting wires to the terminals!
  - Do not introduce any objects into the unit!
  - Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
  - The power supplies are built in units and must be installed in a cabinet or room (condensation free environment and indoor location) that is relatively free of conductive contaminants.
  - The power supply is approved for the connection to 3-phase TN, TT and IT power grids (star networks) with a phase-to-phase voltage of 480 VAC (max. 500 VAC).
  - CAUTION:** "For use in a controlled environment".

## 2. Device description (Fig. 1)

- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC OK relay contact
- (4) DC voltage adjustment potentiometer
- (5) DC OK LED (green)
- (6) 35mm DIN rail mounting (DIN rail sold separately)

## 3. Mounting and dismounting (Fig. 2, Fig. 3)

The power supply unit can be mounted on 35 mm DIN rails in accordance with EN 60715. For Vertical Mounting, the device should be installed with input terminal block on the bottom. For Horizontal Mounting, the device should be installed with input terminal block on the left side.

Each device is delivered ready to install.

- Tilt the unit slightly upwards and put it onto the DIN rail. Snap on the DIN rail as shown in Fig. 2.
- Push downwards until stopped.
- Press against the bottom front side for locking.
- Shake the unit slightly to ensure that it is secured.
- To uninstall, pull or slide down the latch as shown in Fig. 3. Then, slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

## 4. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with the following cross sections:

Table 1 Refer to Fig. 1:	Standard / Solid		Torque		Stripping Length	
	(mm <sup>2</sup> )	(AWG)	(Nm)	(lb in)	(mm)	(in)
(1)	0.82-5.3	18-10	0.54	4.7	8	0.31
(2)	1.3-5.3	16-10	0.54	4.7	8	0.31
(3)	0.52-1.3	20-16	-	-	8	0.31

Please ensure that the wires are fully inserted into the connecting terminals as shown in Fig. 5. In accordance to IEC/EN/UL 62368-1 and IEC/EN/UL 61010-2-201, flexible cables require ferrules. Use appropriate copper wire that is designed to sustain operating temperature of:

- At least 75°C (167°F) for < 40°C (104°F).
- At least 90°C (194°F) for < 70°C (158°F).

### 4.1. Input connection (Fig. 1, Fig. 6)

Use L1, L2, L3 and PE connections of input terminal connector (see Fig. 1 (1)) to establish the 3 x 380-500 VAC connection. Fig. 6 shows the connection to the various network types.

In the event of a phase failure, unrestricted operation is possible with nominal capacity.

The unit is protected with internal fuse (not replaceable) at L1, L2 and L3 pins, which have been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or, utilized, a minimum value of 4A B- or C- should be used.



The internal fuse must not be replaced by the user.

### 4.2. Output Connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 24 VDC connection. The output provides 24 VDC. The output voltage can be adjusted from 24 to 28 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (5)). The device has a short circuit and overload protection and an overvoltage protection limited to < 35 VDC.

### 4.3. Output characteristic curve





The device functions normal under operating line and load conditions. In the event of an over load ( $I_O = 105-150\%$ ) the output voltage will start to droop and bounce until over load has been removed. If the loads are in short circuit, the secondary voltage will bounce and recover once the short circuit has been removed.

### 4.4. Indicators and relay contacts (Fig. 4)

### 4.5. Thermal behavior (Fig. 7)

If the output capacity is beyond what is recommended in Fig. 7, the device will run into thermal protection by switching off i.e. device will go in bouncing mode and will recover when ambient temperature is lowered or load is reduced as far as necessary to keep device in working condition.

# Technical Data For PSR-24-240-3

<b>Input (AC)</b>	
Nominal input voltage / frequency	3 x 380-500 VAC
Voltage range	3 x 320-575 VAC or 2 x 340-575 VAC
Frequency	47-63 Hz
Nominal current	< 0.75 A @ 3 x 400 VAC, < 0.65 A @ 3 x 500 VAC
Inrush current limitation (+25°C, cold start)	20 A typ. @ 3 x 400 VAC, 25 A typ. @ 3 x 500 VAC
Mains buffering at nominal load (typ.)	20 ms typ. @ 3 x 400 VAC 40 ms typ. @ 3 x 500 VAC
Turn-on time	1,000 ms typ. @ nominal input
Internal fuse	T 3.15 A
Leakage current	< 3.5 mA @ 3 x 500 VAC
<b>Output (DC)</b>	
Nominal output voltage $U_n$	24 VDC $\pm$ 2%
Adjustment range of the voltage	24-28 VDC
Nominal current	10 A
Derating: Input voltage Temperature	2-Phase: < 2 x 380 VAC de-rate power by 0.5% / V Vertical mounting: > 55°C [131°F] derate power by 3.33% / °C, Horizontal mounting: > 40°C [104°F] derate power by 2.5% / °C
Startup with capacitive loads	10,000 $\mu$ F typ.
Max. power dissipation: 0% load 100% load	< 2.7 W @ 3 x 400 VAC & 3 x 500 VAC < 26.5 W @ 3 x 400 VAC & 3 x 500 VAC
Efficiency	89.5% typ. @ 3 x 400 VAC & 3 x 500 VAC
PARD (20MHz) at 100% load	< 100 mVpp
Max. relay contact rating	30 V / 1 A
Parallel operation	PSB60-REM20S / PSB60-REM40S
<b>General Data</b>	
Type of housing	Aluminum
Signals	Green LED DC OK
MTBF	> 700,000 hrs. as per Telcordia SR-332 (I/P: 3 x 400 VAC & 3 x 500 VAC; O/P: 100% load; Ta: 25°C)
Dimensions (L x W x H)	124 x 50 x 125.3 mm [4.88 x 1.97 x 4.93 in]
Weight	0.84 kg [1.85 lb]
Connection method	Input & output terminal block connector: Screw connection DC OK relay contact: Push-in connection
Wire size / torque / stripping length	See Table 1
Operating temperature (surrounding air temperature)	Refer to Fig. 7 Vertical mounting: -25°C to +70°C [-13°F to +158°F] (-40°C [-40°F] Cold Start) Horizontal mounting: -25°C to +60°C [-13°F to 140°F] (-40°C [-40°F] Cold Start)
Storage temperature	-40°C to +85°C [-40°F to 185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration (operating)	IEC 60068-2-6, Sine Wave: 10-500 Hz; 3G peak; 60 min per axis for all X, Y, Z directions
Shock (non-operating)	IEC 60068-2-27, Half Sine Wave: 50 G for duration of 11 ms; 3 times per direction
Pollution degree	2
Altitude (operating)	IEC/EN 62477-1, EN 60204-1 and IEC 62103-1: Max. 2,500 Meters [8,200 ft.] for OVC III, Max. 6,000 Meters [19,600 ft.] for OVC II IEC/EN 62368-1, IEC/EN 61010-1 and IEC/EN 61010-2-201: Max. 5,000 Meters [16,400 ft.] for OVC II
<b>Certification and Standards</b>	
Electrical equipment of machines	EN/BS EN 60204-1 (over voltage category III)
Electronic equipment for use in electrical power installations	IEC/EN/BS EN 62477-1 / IEC 62103
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL 62368-1 and CSA C22.2 No. 62368-1 (File no. E197592) CB scheme to IEC 62368-1, IEC 61010-1, IEC 61010-2-201
Electrical Equipment for Measurement, Control and Laboratory Use	UL/C-UL listed to UL 61010-1, UL 61010-2-201 (File no. E508040)
Component power supply for general use	EN/BS EN 61204-3
Immunity	EN/BS EN 55035, EN/BS EN 61000-6-1 (EN 61000-4-2, 3, 4, 5, 6, 8, 11, 12)
Emission	EN/BS EN 55032, EN/BS EN 61000-6-3, EN/BS EN 61000-3-2 Class A, EN/BS EN 61000-3-3
   	
RoHS Compliant	Yes
<b>Safety and Protection</b>	
Transient surge voltage protection	VARISTOR
Surge voltage protection against internal surge voltages	Yes
Isolation voltage:	
Input / Output	4.0 kVAC
Input / PE	2.0 kVAC
Output / PE	1.5 kVAC
Output / DC OK	0.5 kVAC
DC OK / PE	1.5 kVAC
Protection degree	IP20
Safety class	Class I with GND connection