RHINO Installation Instructions for PSB24-480S Power Supply

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

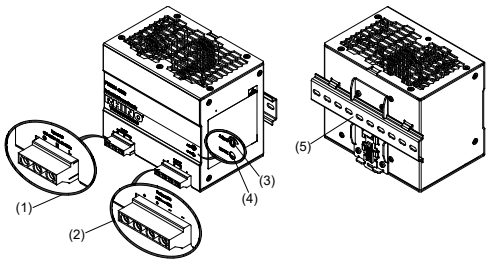


Figure 1

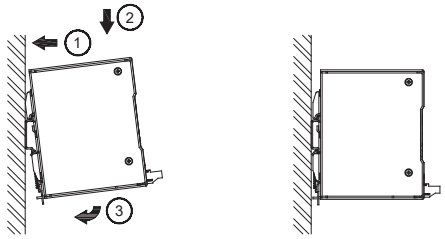


Figure 2

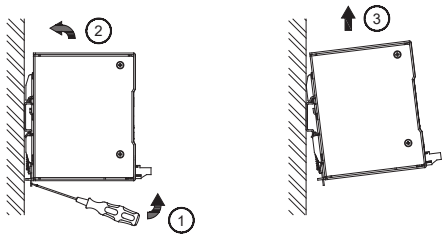
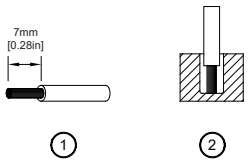


Figure 3



PSB24-480S	
AWG (mm²)	ADC Ferrule p/n
18 (1.0)	BM-00503
16 (1.5)	BM-00504
14 (2.5)	BM-00506
12 (4.0)	BM-00508
10 (6.0)	BM-00610

Figure 4

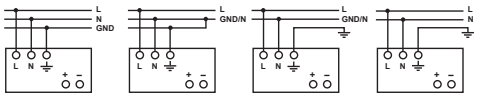


Figure 5

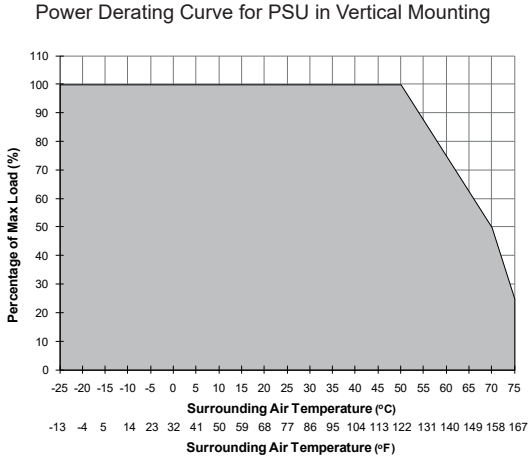


Figure 6

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- To guarantee sufficient convection cooling, keep a distance of 50 mm [1.97in] above and below the device as well as a lateral distance of 20 mm [0.79 in] to other units.
- Please 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!
- Only plug in and unplug connectors when power is turned off!
- 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 supplies must be installed in an IP54 enclosure or cabinet in the final installation. The enclosure or cabinet must comply with EN60079-0 or EN60079-15.
- Warning: Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2.
- Warning: Explosion Hazard - Do not disconnect equipment or adjust potentiometer unless the power has been switched off or the area is known to be non-hazardous.
- **CAUTION:** "For use in a controlled environment".

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35 mm DIN rail in accordance with EN60715.
The device should be installed with input terminal block at the left side.
Each device is delivered ready to install.
Snap onto the DIN rail as shown in Fig. 2:
1. Tilt the unit slightly upwards and put it onto the DIN rail.
2. Push downwards until stopped.
3. Press against the bottom front side for locking.
4. Tug on the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, pull or slide down the latch as shown in Fig. 3. Then, slide the power supply unit (PSU) up, release the latch and pull out the PSU from the rail.

5. 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:	Standard / Solid		Torque	
	(mm²)	(AWG)	(Nm)	(lb in)
(1)	0.82 - 5.3	18-10	0.45	3.91
(2)	3.3 - 5.3	12-10		

To secure reliable and shock proof connections, the stripping length should be 7 mm [0.28 in] (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).
In accordance to EN60950 / UL60950 and EN62368 / UL62368, flexible cables require ferrules.
Use appropriate copper wire that is designed to sustain operating temperature of :
1. At least 60°C / 75°C (140°F / 167°F) or more to fulfill UL requirments.
2. At least 75°C (167°F) for ambient not exceeding 60°C (140°F), and 90°C (194°F) for ambient exceeding 60°C (140°F) for Canada.

5.1. Input connection (Fig. 1 (1), Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. The unit is protected with internal fuse (not replaceable) at L pin and it has 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 8A B- or 4A C- characteristic breaker should be used.

The internal fuse must not be replaced by the user.

5.2. 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 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 35 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of a short circuit or over load the output voltage and current collapses ($I_{O/L}$ or $I_{S/C}$ is > I_{surge} (150%)). The secondary voltage is reduced and cycles on and off until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures above 50°C [122°F] in Vertical, the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature., and at 70°C [104°F] to 75°C [167] in Vertical, the output capacity has to be reduced by 5% per degree Celcius increase in temperature. If the output capacity is not reduced when T_{Amb} > 50°C [122°F] device will run into thermal protection by switching off i.e. device will cycle on and off and will recover when ambient temperature is lowered or load is reduced as far as necessary to keep device in working condition.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

Technical Data For PSB24-480S

Input (AC)	
Nominal input voltage and frequency	100-240VAC / 50-60 Hz
Voltage range	85-264VAC
Frequency	47-63Hz
Nominal current	6A max @ 100VAC
Inrush current limitation. I2t (+25 °C) typ.	< 35A @ 115VAC & 230VAC
Mains buffering at nominal load (typ.)	> 20ms @ 115VAC & 230VAC
Turn-on time	< 1.0 sec.
Internal fuse	T 8 AH / 250 VAC (non-replaceable)
Leakage current	< 3 mA @ 240 VAC
Output (DC)	
Nominal output voltage U_N / tolerance	24VDC ± 2 %
Adjustment range of the voltage	24-28 VDC (maximum power ≤ 480W)
Nominal current	20A
Derating	Vertical: > 50°C [122°F] (2.5 % / °C), > 70°C to 75°C [122°F to 167°F] (5 % / °C)
Startup with capacitive loads	Max. 10,000 µF
Max. power dissipation idling / nominal load approx.	59.0W
Efficiency	> 89.0% @ 115 VAC & 230 VAC
Residual ripple/ peak switching (20 MHz) (at nominal values)	< 50 mVpp / < 150 mVpp
Parallel operation	PSB60-REM40S or with ORing Diode
General Data	
Type of housing	Aluminum (Al5052)
Signals	Green LED DC OK
MTBF	> 500,000 hrs.
Dimensions (L x W x H)	121 mm x 144 mm x 118.6 mm [4.76 in x 5.67 in x 4.67 in]
Weight	1.37 kg [3.02 lb]
Connection method	Screw connection
Wire size / torque	See Table 1
Stripping length	7 mm [0.28 in]
Ambient Operating temperature	-25°C to +75°C [-13°F to 167°F] (Refer to Fig. 6)
Storage temperature	-25°C to +85°C [-13°F to 185°F]
Humidity at +25°C, no condensation	<95 % RH
Shock	30G (300m/s²) in all directions according to IEC60068-2-27
Vibration (Non-operating)	10 to 500Hz @ 30m/s² (3G peak), displacement of 0.35mm, 60 min per axis for all X, Y, Z direction, in accordance with IEC 60068-2-6
Pollution degree	2
Climatic class	3K3 according to EN 60721
Certification and Standards	
Electrical Equipment of machines	IEC60204-1 (over voltage category III)
Electronic equipment for use in electrical power installations	EN 62477-1 / IEC62103
Safety entry low voltage	PELV (EN 60204), SELV (EN 60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (file no. E198298), CB scheme to IEC60950-1, UL/C-UL recognized to UL62368-1 and CSA C22.2 No. 62368-1 (file no. E508040), CB scheme to IEC62368-1
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (file no. E197592), CSA to CSA C22.2 No. 107.1-01 (file no. 249074)
Hazardous Location	cCSAus to CSA C22.2 No. 213-M1987, ANSI / ISA 12.12.01:2007 [Class I, Division 2, Group A,B,C,D T4, Ta = -25°C to +75°C (Vertical: > +50°C derating)], (file no. 249074)
Protection against electric shock	DIN 57100-410
CE	In conformance with EMC directive 2014/30/EU and low voltage directive 2014/35/EU
Component power supply for general use	EN61204-3
ITE	EN55032, EN61000-3-2, EN61000-3-3, EN55024
Industrial	EN55011
Limitation of mains harmonic currents	EN61000-3-2
RoHS	Yes
CE · 3PET c UL E197592 US LISTED Ind. Cont. Eq. · c UL us E198298 E508040 · CSA 249074 · 249074 CSA Class I, Div. 2 Group A, B, C, D, T4 c US	
Safety and Protection	
Transient surge voltage protection	VARISTOR
Current limitation at short-circuits approx.	Isurge = 150 % of P_{Omax} typically
Surge voltage protection against internal surge voltages	Yes
Isolation voltage: Input/output (type test/routine test) Input/GND (type test/routine test) Output/GND (type test/routine test)	 4.0 kVAC / 3.0 kVAC 1.5 kVAC / 1.5 kVAC 2.121 kVDC / 0.707 kVDC
Protection degree	IP20
Safety class	Class I with GND connection