

RHINO Installation Instructions for PSB48-480S Power Supply



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

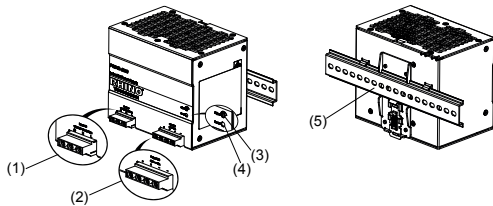


Figure 1

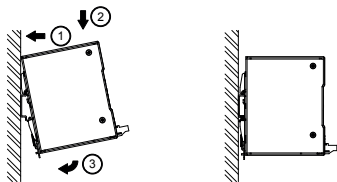


Figure 2

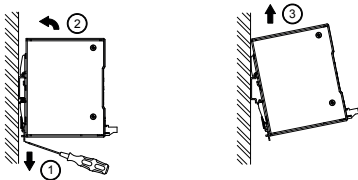


Figure 3

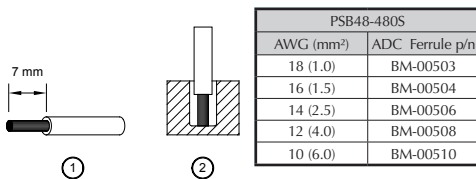


Figure 4

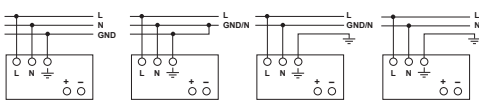


Figure 5

Power Derating Curve for PSU in Vertical Mounting

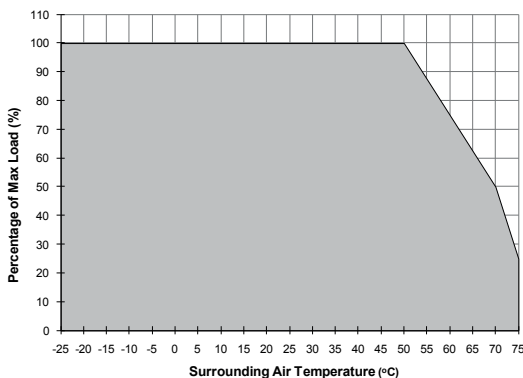


Figure 6

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 50mm [1.97 in] above and below the device as well as a lateral distance of 20mm [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:
 - free of conductive contaminants.
 - a condensation free environment
 - free of corrosive gases and
 - indoor location
- 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 bottom.

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 wire with cross sections:

Table 1:

Refer to Fig. 1:	Stranded / Solid		Torque	
	(mm ²)	(AWG)	(N•m)	(lb•in)
(1)	0.82 - 5.3	18 - 10	0.45	3.96
(2)	1.3 - 5.3	16 - 10	0.45	3.96

To secure reliable and shock proof connections, the stripping length should be 7 mm [0.28 in] (see Fig. 4 (1)). Please ensure that the wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).

Caution: Must tighten wire to Terminal Block before plugging into the terminal block connection

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 requirements.
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 device has an internal fuse. 16A power circuit breakers are

recommended as supplementary protection. The unit shall be installed with branch circuit protective device 20A (UL489 Listed).



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 48 VDC connection. The output provides 48 VDC. The output voltage can be adjusted from 48 to 56 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 57 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] (Vertical) the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature. At 70°C [158°F] to 75°C [167°F] (Vertical) the output capacity has to be reduced by 5% per degree Celsius increase in temperature. If the output capacity is not reduced when $T_{Amb} > 50°C$ [122°F] (Vertical) device will switch 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.

Technical Data For PSB48-480S

Input (AC)	
Nominal input voltage and frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 6A @ 100VAC
Inrush current limitation. I _{2t} (+25 °C) typ.	< 35A @ 115VAC & 230VAC
Mains buffering at nominal load (typ.)	> 20ms @ 115VAC & 230VAC
Turn-on time	< 1.5 sec.
Internal fuse	T 8 AH / 250VAC (non-replaceable)
Recommended backup circuit breaker	16A
Power circuit-breaker characteristic	B
Leakage current	< 3 mA @ 240VAC
Output (DC)	
Nominal output voltage U _N / tolerance	48VDC ± 1 %
Adjustment range of the voltage	48-56 VDC (maximum power ≤ 480W)
Nominal current	10A
Derating	> 50°C (2.5% / °C), > 70°C to 75°C (5% / °C) in Vertical
Startup with capacitive loads	Max. 10,000 µF
Max. power dissipation idling / nominal load approx.	59.0W
Efficiency	> 91.0% @ 115Vac, > 92.0% @ 230Vac
Residual ripple/ peak switching (20 MHz) (at nominal values)	< 100 mVpp / < 200 mVpp
Parallel operation	PSB60-REM20S or PSB60-REM40S or with ORing Diode
General Data	
Type of housing	Aluminum
Signals	Green LED DC OK
MTBF	> 500,000 hrs.
Dimensions (L x W x H)	121mm x 144mm x 118.6mm [4.76 in x 5.67 in x 4.67 in]
Weight	1.371 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/s ²) in all directions according to IEC60068-2-27
Vibration (Non-operating)	10 to 500Hz @ 30m/s ² (3G peak), displacement of 0.35mm, 60 min per axis for all X, Y, Z direction, in accordance with IEC 60068-2-6
Environmental Air	No corrosive gases permitted
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 50178 / 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. 197592), 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
    	
Safety and Protection	
Transient surge voltage protection	VARISTOR
Current limitation at short-circuits approx.	I _{surge} = 150 % of P _{o max} typically
Surge voltage protection against internal surge voltages	Yes
Isolation voltage:	
Input/output (type test/routine test)	4.0 kVAC / 3.0 kVAC
Input/GND (type test/routine test)	1.5 kVAC / 1.5 kVAC
Output/GND (type test/routine test)	2.121 kVDC / 0.707 kVDC
Protection degree	IP20
Safety class	Class I with GND connection