RHINO Installation Instructions for PSFA☐-060-U Power Supply

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

1. Safety instructions

- To ensure sufficient convection cooling, always maintain a distance of ≥ 50mm [1.97in] from all surfaces while the device is in operation.
- The device is not recommended to be placed on low thermal conductive surface, for example, plastics.
- Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Do not touch the device while it is in operation or immediately after power is turned OFF. Risk of burning!
- Do not touch the terminals while power is being supplied. Risk of electric shock.
- Prevent any foreign metal, particles or conductors to enter the device through the openings during installation. It can cause electric shock, safety hazard, fire, product failure
- Battery need to be protected from short circuit while installation & servicing. Danger of explosion.
- Signal connector should not interact with AC Input.
- Warning: The power supply must be mounted by metal screws onto a grounded metal surface. When connecting the device, secure Earth connection before connecting L and N. When disconnecting the device, remove L and N connections before removing the GND connection.

2. Device Descriptions (Fig. 1)

(1) Input connector (2) Output connector (3) DC voltage adjustment potentiometer
(4) DC OK control LED (Green) (5) Signal connector

3. Installation of the Device (Fig. 2)

A. Mounting holes for power supply assembly onto mounting surface. Power supply shall be mounted on minimum of 2 mounting holes using M3 screws only. The screw penetration into chassis must be 3.5-4mm. (0.14-0.16lb)
B. This surface belongs to customer's end system or panel where the power supply is mounted.
C. Connector

4. Connection

Connector	Specifications				PSFA12-060-U	PSFA24-060-U
Terminal Block Connector	DECA	Input (CN1)	Stranded or Solid Wire Size	mm²	0.32-3.3	0.21-3.3
				AWG	22-12	24-12
			Torque	Kgf.cm	8.0	8.0
				lb in	7.0	7.0
		Output & Signal (CN2)	Stranded or Solid Wire Size	mm²	0.32-1.3	0.21-1.3
				AWG	22-16	24-16
			Torque	Kgf.cm	2.3	2.3
				lb in	2.0	2.0

To secure reliable and shock proof connections, the stripping length should be 4-5mm (see Fig. 3). Please ensure that the wires are fully inserted into the connecting terminals as shown in Fig. 3. All wire strands must be fully inserted into the terminals with the screws securely fastened in order to ensure safety and maximum contact.

5. Installation of Mounting Accessories (Fig. 5)

- Only use M3 screw 3.5-4mm through the base or side mounting holes.This is to keep a safety distance between the screw and internal components.
- Recommended mounting tightening torque: 0.3-0.7 Nm(2.6-6.2 in-lb)

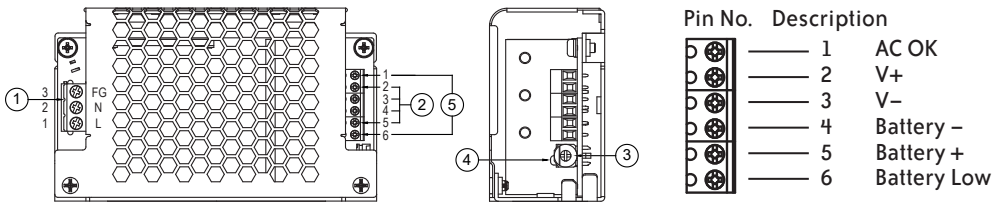
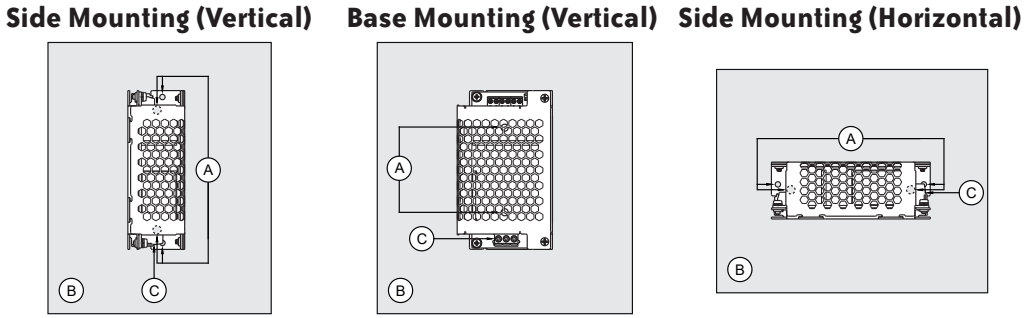


Figure 1 - Device Descriptions



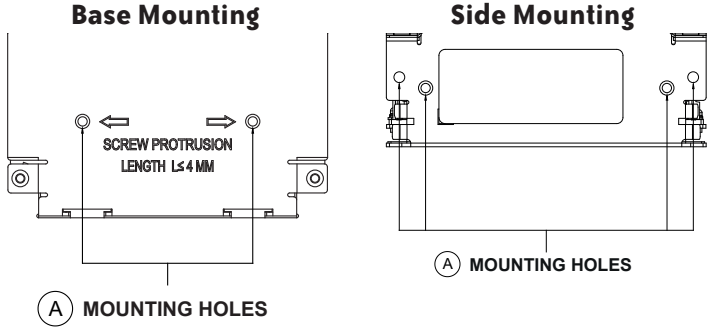


Figure 2 - Mounting

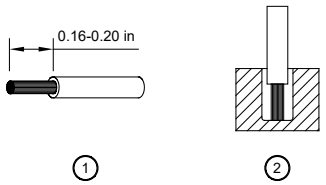


Figure 3 - Stripped Wire

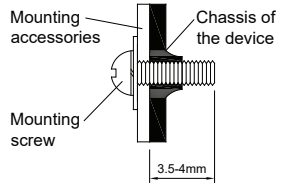


Figure 4 - Mounting Screw

Technical Data For PSFA□-060-U

Specifications		PSFA12-060-U		PSFA24-060-U	
		V+	B+	V+	B+
Input (AC)					
Input Voltage range		90-264 VAC			
Frequency		47-63Hz			
Nominal Current		< 1.2A @ 115Vac, < 0.8A @ 230Vac			
Inrush Current Limitation. I2t (+25 °C) typ		< 25A @ 115Vac & 230Vac			
Leakage current		< 0.75mApk @ 264Vac			
Recommend circuit breaker (Characteristic B)		10A			
Output (DC)					
Nominal output voltage / Adjustment Range		13.8Vdc / 13.52-14.00V	13.6Vdc	27.6Vdc / 27.04-28.00V	27.4Vdc
Output Power		60W (max)			
Output Current	Normal Mode	3.5A (0-4.3A)	0.8A (0-0.8A)	1.4A (0-2.15A)	0.75A (0-0.75A)
	Buffering Mode	-	0-4.3A	-	0-2.15A
PARD (20MHz)	V+	< 100 mVpp			
Start-up Time	V+	< 3,000ms @ 115Vac (100% load), < 1,500ms @ 230Vac (100% load)			
Hold-up Time	V+	> 10ms @ 115Vac (100% load)			
Rise Time	V+	< 50ms @nominal input			
Efficiency		> 85.0% @ 115Vac / > 86.0% @ 230Vac		> 88.0% @ 115Vac / > 89.0% @ 230Vac	
Line Regulation	V+	< 0.5% (90-264Vac @ 100% load)			
Load Regulation	V+	< 1.0% (90-264Vac @ 0-100% load)			
Voltage Drop Between V+ and B+	Normal Mode	0.2Vdc typ.			
	Buffering Mode	0.4Vdc typ.			
Battery Input / Output Characteristics					
Nominal Battery Voltage (Batteries not included with power supply)		12Vdc SLA Sealed lead acid battery		24Vdc SLA Sealed lead acid battery 2 x 12Vdc SLA Sealed lead acid battery	
Battery Voltage range	Continuously Operating	11.0 to 13.8Vdc (nominal at 12V)		22.0 to 27.6Vdc (nominal at 24V)	
	Maximum Allowed Voltage	16Vdc Max		32Vdc Max	
	Battery Low Voltage 1)	11.5Vdc.typ.		22.5Vdc.typ.	
	Minimum Voltage 2)	10.0Vdc ± 0.5Vdc		18.0Vdc ± 0.5Vdc	
Battery Capacity		3.2AH - 15AH		3.2AH – 7AH	
Charging Time 3)		< 9hrs ± 1hr for battery 12V/7AH		< 10hrs ± 1hr for battery 24V/7AH	
Buffering Time		Approx.1hrs 30mins for battery 12V/7AH		Approx.3hrs for battery 24V/7AH	
Recommended External Fuse for Battery		Automotive 20A / 80V, FK3 type from Littelfuse, or similar in the battery B+ path. The battery fuse protects the wires between the battery and the unit.			
Battery Charging (Normal Mode)		CC-CV mode (constant current-constant voltage)			
End-of-charge Voltage		The unit always charges battery to a fixed voltage value			

1) The voltage level of battery to enable "Battery Low" function.

2) Minimum battery voltage required for power supply to detect battery in order to begin charging. Battery must be connected to power supply, with the correct polarity, across B+ and B- terminals; and, with input and output loads disconnected.

3) Charging time depends on the state/condition of battery discharge; and will depend on the amount of buffering/discharging time, and load current that battery was discharged at.

Technical Data For PSFA□-060-U

Specifications		PSFA12-060-U		PSFA24-060-U	
		V+	B+	V+	B+
General Data					
Case Chassis / Cover		SECC			
Dimensions (L x W x D)		103.4 x 62 x 37 mm [4.07 x 2.44 x 1.46 inch]			
Weight		0.25 kg [0.56 lb]			
MTBF		> 700,000 hrs. as per Telcordia SR-332, I/P: 115Vac & 230Vac, Ta: 25°C, O/P: 13.8V/4.3A for 13V model and 27.6V/2.15A for 27V model			
Noise		Sound Pressure Level (SPL) < 25dBA			
Cooling		Convection			
Input / Output Terminal	Input	Terminal block 3 Pins (Rated 300V/16A)			
	Output with Signal	Terminal block 6 Pins (Rated 300V/8A)			
Wire size / torque	Input	AWG 22-12		AWG 24-12	
	Output with Signal	AWG 22-16		AWG 24-16	
Shock Test	Non-Operating	IEC 60068-2-27, Half Sine Wave: 50G for a duration of 11ms; 3 times per direction, 9 times in total			
	Operating	IEC 60068-2-27, Half Sine Wave: 10G for a duration of 11ms; 1 time in X axis			
Vibration	Non-Operating	IEC 60068-2-6, Random: 5-500Hz; 2.09Grms; 20 min per axis for all X, Y, Z directions			
	Operating	IEC 60068-2-6, Sine Wave: 10-500Hz; 2G peak; displacement of 0.35mm; 60 min per axis for all X, Y, Z directions			
Safety / Environmental					
EMC / Emissions		CISPR 32, EN 55032, FCC Title 47: Class B GB9254.1			
Immunity		EN 55024, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-12			
Voltage dips		Confrom to IEC 61000-4-11			
Galvanic isolation		Input to Output : 3.0KVac, Input to Ground : 1.5KVac, Output to Ground : 0.5KVac			
Approvals		SIQ Bauart: EN 62368-1, UL 62368-1 and CSA C22.2 No. 62368-1 (File No. E508040) CCC, GB9254, GB 17625.1 and GB 4943.1 CB scheme: IEC 62368-1 CE (In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU)			
		CE c UL us E508040 RoHS 2002/95/EC			
RoHS Compliant		Yes			
Operating temperature		-20°C to +70°C			
Storage temperature		-40°C to +85°C			
Humidity at +25 °C, no condensation		5 to 95% RH (Non-Condensing)			