RHINO SELECT PSFA Series Power Supplies With Integrated UPS

Overview

RHINO SELECT PSFA series open frame power supplies come with integrated DC UPS function. The PSFA models will switch to battery operation (batteries not included) without interruption to prevent end-product downtime for the customer in the event of power disruption or unexpected loss of AC input power. Consequently, the PSFA series can increase operational reliability of a critical operation. Convection cooling is applied for the single phase design with wide operating temperature range from -20°C to +70°C. Diagnostic monitoring signals for AC OK and Battery Low status will alert the user of any failure through TTL open collector. Metal chassis with case cover is available for different installation preferences.

Features

- Universal AC input voltage range
- Zero switch over time from loss of AC to battery operation
- Protection against reverse polarity battery connection
- Built-in diagnostic monitoring for AC OK and Battery Low status
- Overvoltage / Overcurrent / Over Temperature / Short circuit Protections
- Built-in over current and short circuit protection in buffering (battery discharging) mode operation
- 3-year warranty

PSFA Series Specifications

Part Number	Price	Output Voltage	Maximum Output Power	Drawing Link
PSFA12-060-U	$35.50	13.8 V	60W	PDF
PSFA24-060-U	$35.50	27.6 V	60W	PDF

RHINO SELECT PSFA Series Technical Specifications

Technical Specifications					
Specifications		**PSFA12-060-U**		**PSFA24-060-U**	
		V+	**B+**	**V+**	**B+**
Input (AC)					
Input Voltage Range		90-264 VAC			
Frequency		47-63 Hz			
Nominal Current		< 1.2 A @ 115VAC, <0.8 A @ 230VAC			
Inrush Current Limitation I2t (+25 °C) typ		< 25A @ 115VAC & 230VAC			
Leakage Current	***IEC/EN 60950-1***	< 0.5 mA / 1.0 mA @264VAC		TN/TT system / IT system	
	IEC/EN 62368-1	< 1.0 mA / 2.0 mA @264VAC		TN/TT system / IT system	
Recommend Circuit Breaker (Characteristic B)		10A			
Output (DC)					
Nominal Output Voltage / Adjustment Range		13.8 VDC / 13.52 - 14.00 V	13.6 VDC	27.6 VDC / 27.04 - 28.00 V	27.4 VDC
Output Power		60W max			
Output Current	***Normal Mode***	3.5 A [0 - 4.3 A]	0.8 A [0 - 0.8 A]	1.4 A [0 - 2.15 A]	0.75 A [0-75 A]
	Buffering Mode	–	0 - 4.3 A	–	0.215 A
PARD (20MHz)	***V+***	< 100mVpp			
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***	0.2 V typ.			
	Buffering Mode	0.4 V typ.			
General Data					
Case Chassis / Cover		SECC			
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-Pin [Rated 300V/16A]			
	Output with Signal	Terminal block 6-Pin [Rated 300V/8A]			
Wire Size / Torque	***Input***	AWG 22-12 / 7.0 lbf-in		AWG 24-12 / 7.0 lbf-in	
	Output with Signal	AWG 22-16 / 2.0 lbf-in		AWG 24-16/ 2.0 lbf-in	
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			

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RHINO SELECT PSFA Series Technical Specifications

Technical Specifications (continued)				
Specifications	PSFA12-060-U		PSFA24-060-U	
	V+	B+	V+	B+
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	Conform to IEC 61000-4-11			
Galvanic Isolation	Input to Output : 3.0K VAC, Input to Ground : 1.5KVac, Output to Ground : 0.5K VAC			
RoHS Compliant	Yes			
Operating Temperature	-20 to 70°C [-4 to 158°F]			
Storage Temperature	-40 to 85°C [-40 to 185°F]			
Humidity at +25 °C, no condensation	5 to 95% RH [Non-Condensing]			
Approvals	SIQ Bauart: EN 62368-1, UL 62368-1 and CSA C22.2 No. 62368-1; File No. E508040 CB scheme: IEC 62368-1 CE [In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU]			

PSFA Series Battery Input / Output Characteristics					
Specifications		PSFA12-060-U		PSFA24-060-U	
		V+ [4]	B+	V+	B+
Nominal Battery Voltage (Battery not included with Power Supply)		12VDC SLA Sealed lead acid battery		24VDC SLA Sealed lead acid battery 2x12 VDC SLA Sealed lead acid battery	
Battery Voltage Range	Continuously Operating	11.0 - 13.8 VDC [nominal at 12V]		22.0 - 27.6 VDC [nominal at 24V]	
	Maximum Allowed Voltage	16VDC maximum		32VDC maximum	
	Battery Low Voltage [1]	11.5 VDC typ		22.5 VDC typ	
	Minimum Voltage [2]	10.0 VDC +/- 0.5 VDC		18.0 VDC +/- 0.5 VDC	
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.1hr 30mins for battery 12V/7AH		Approx.3hrs for battery 24V/7AH	
Recommended Extended Fuse for Battery		Automotive 20A / 80V, FK3 type from Littelfuse, or similar in the battery B+ path. The battery fuse protects the wires between thebattery and the unit.			
Battery Charging (Normal Mode)		CC-CV mode [constant current-constant voltage]			
End-Of-Change 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.
4. V+ and V- terminals are for power supply voltage output.

Wiring Diagram