RHINO PSB Series Power Supply Accessories

Redundancy Module Overview

The RHINO PSB60-REM series redundancy modules are used with two RHINO PSB series power supplies in parallel to create redundancy to help prevent costly downtime due to power supply failure. The redundancy module decouples the outputs of the two connected power supplies so that in case of failure, one power supply cannot overload the other. The modules can handle power supply voltages from 22 to 60VDC and provides alarm relay contacts for remote monitoring.

Features

- Provides redundancy and parallel operation of two RHINO PSB power supplies
- Wide input and output range 22–60 VDC
- Input voltage OK LED and relay alarm indication
- Corrosion resistant aluminum housing
- Approved for use in Class I, Division 2 hazardous locations
- 3-year warranty

Redundancy Modules Selection Chart		
Part Number	***PSB60-REM20S***	***PSB60-REM40S***
Price	$55.00	$67.00
Weight kg [lb]	0.375 [0.83]	0.515 [1.14]
Redundancy Module Input Specifications		
Nominal Input Voltage	24/48 VDC	
Voltage Range	22–60 VDC	
Nominal Current	20A max	40A max
Input Voltage Alarm/Relay Contacts	24V system: both Vin1 & Vin2 >18V ± 5% or < 30V max. relay contacts 48V system: both Vin1 & Vin2 >36V ± 5% or <60V max. relay contacts	
Input Voltage LED Operation	The LED will turn on when the Vin1 & Vin2 >18V± 5% (for 24V systems) or >36V ± 5% (for 48V system) and not more than 30V (for 24V systems) or not more than 60V (for 48V systems), the relay contacts will be closed. If Vin1 & Vin2 is under or over this range, the LED will turn off	
Redundancy Module Output Specifications		
Nominal Output Voltage UN / Tolerance	Vin-0.65V [Typ]	
Nominal Current	20A max	40A max
Derating above +50°C	>50 °C [2.5% / K]	
Short Circuit / Over Load Limit	<25A	<50A
Efficiency	>97% typical	

Note: The overload condition must be controlled by the power supply units in parallel; The limit of input current should not be more than 25A (for 20A module) or not more than 50A (for 40A module)

Redundancy Module Certification / Standards	
Electrical Equipment of Machines	IEC60204-1 [over voltage category III]
Electrical Safety (IT equipment)	UR/cUR recognized to UL60950-1 File no. E198298, CB test certificate and report to IEC60950-1 and CE
Industrial Control Equipment	UL/cUL recognized to UL508 and CSA C22.2 No. 107.1-01File no. E197592
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 = -40 to +80°C (> +50°C derating)], File no. 249074
Electronic Equipment For Use in Electrical Power Installations	EN50178 / IEC62103
Safety Entry Low Voltage	PELV [EN60204], SELV [EN60950]
RoHS Compliant	Yes, RoHS directive, WEEE directive
Protection Against Electric Shock	DIN 57100-410

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Specifications (continued)	
Isolation Voltage: ***Input / PE*** ***Output / PE***	 1.5 KVAC / 1.5 KVAC 1.5 KVAC / 1.5 KVAC
Degree of Protection	IP20
Class of Protection	Class II with PE connection
MTBF	>800,000h per BELL CORE STD or IEC61709
Type of Housing	Aluminum [AL1100F]
Environmental Specifications	
Humidity at +25°C, no condensation	<95% RH
Vibration	10 Hz to 500 Hz @ 30 m/S2 [3G peak]; displacement of 0.35mm; 60 min per axis for all X, Y, Z direction. Refer to IEC 60068-2-6. Note: all figures quoted are amplitudes [peak values]
Shock (in all directions)	IEC60068-2-27, 30G [300m/s2] for duration 18 ms 1 Shock in 2 directions tested with fixture with EUT mounted on DIN rail in vertical and horizontal position
Pollution Degree	2 according to EN50178
Climatic Class	3K3 according to EN60721

Additional Data

Part Number	*Wire Size / Torque**		*Terminal Block Type*	*Ambient Operating Temperature***	*Storage Temperature*	*Drawing Link*
	Input	*Output*				
PSB60-REM20S	3.3–5.3 mm² [AWG 12–10] / 0.72 Nm [6.3 lb-in]	3.3–5.3 mm² [AWG 12–10] / 0.72 Nm [6.3 lb-in]	Fixed screw terminals	-25 to +80 °C [-13 to +176 °F]	-25 to +85 °C [-13 to +185 °F]	PDF
PSB60-REM40S						PDF

***Stripping length 7mm [0.28in] or use suitable lug to crimp**
**** See output specifications for temperature derating**

PSB60-REM20S
PSB60-REM40S

Wiring Connection

Input		*Output*	
Vin1	Line 1	Vout+	Output +
Vin2	Line 2	Vout+	Output +
Com	Common	OK	Alarm Relay
		OK	Alarm Relay

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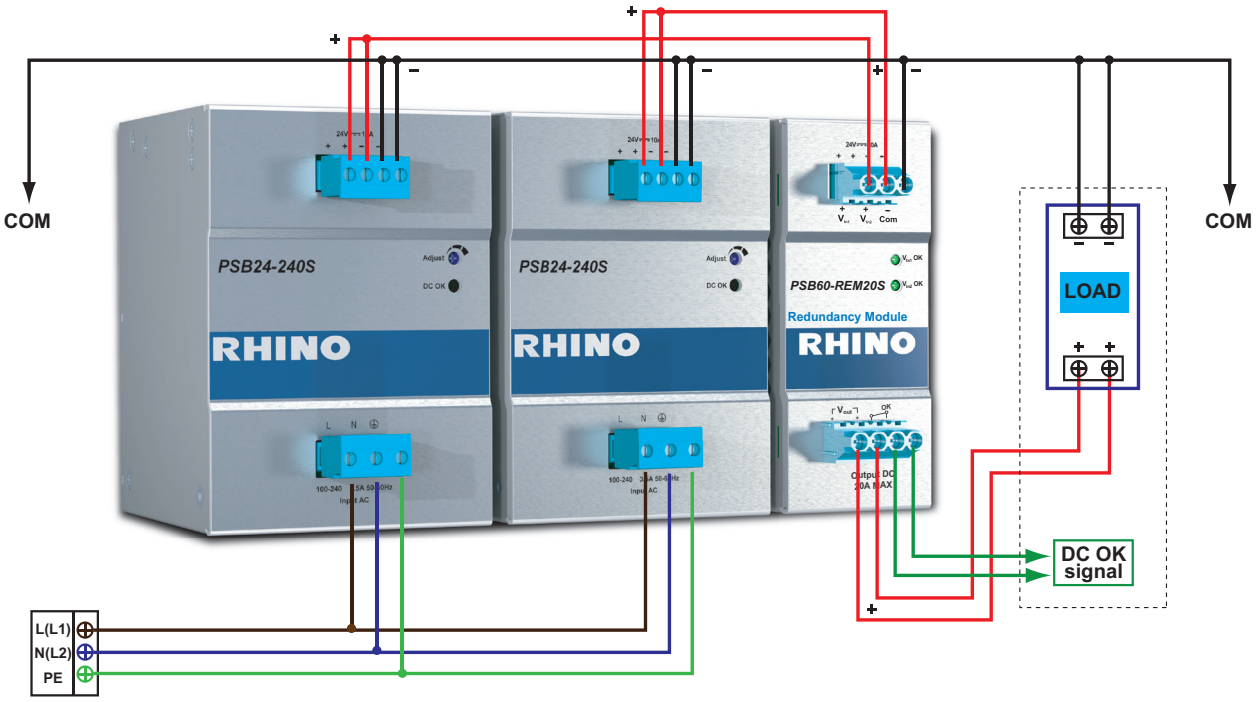
Redundancy Module Wiring



Parallel Operation

When 2 power supplies are connected in parallel, they can share the load if the following steps are taken.

Step 1: Measure the output voltages at no load from Vin1 to Com of power supply 1 and Vin2 to Com of power supply 2. If the voltages are not the same, follow Step 2. If they are the same, skip to Step 3.

Step 2: Adjust the output voltages, with the help of the adjustment pot on the power supply front panel marked as ADJUST, to the same level. For example, if power supply 1 is measuring 24.15 VDC and power supply 2 is measuring 24.25 VDC, adjust the output voltage of one to be the same as the other.

Step 3: Connect the power supply to the end system load and measure the output voltages from Vin1 to Com of power supply 1 and Vin2 to Com of power supply 2. Ensure that the output voltages are the same even after the 2 power supplies are connected to load. If not, adjust them with the adjustment pot available on the front panel. A tolerance of w ± 25 mV would be acceptable.

Note:
1) If the output voltage of any power supply is higher, it will take the initial load and share the maximum load.
2) If the output voltages are the same, then an equal load current sharing between the 2 power supplies can be achieved.