RHINO PSB Series Power Supply Accessories

Buffer Module

The RHINO PSB24-BFM20S buffer module is a cost effective alternative to battery-based backup systems. Utilizing electrolytic capacitors the buffer module is maintenance free and will
maintain the output voltage of a 24 VDC power supply system for 250 msec minimum with a 20A load and 5 sec minimum with a 1A load. A switch is provided to select the voltage level to start buffering. An inhibit input is available for remote shutdown as well as output signals for remote stand-by and buffering mode indication. The module is housed in a corrosion-resistant aluminum chassis with IP20 terminals and conformal coated circuit board for protection against demanding environments.

Features

- Corrosion-resistant aluminum housing
- Long minimum buffering time of 250 ms @ 24V/20A
- Units can be connected in parallel to increase buffering time
- Less than 30 second charging time locations
- P20 wiring terminals
- Overvoltage / Overcurrent / Short Circuit protections
- 3-year warranty

Buffer Module	
Part Number	***PSB24-BFM20S***
Price	$173.00
Drawing Link	PDF
Weight kg [lb]	0.76 [1.68]
Buffer Module Input Specifications	
Nominal Input Voltage	24 VDC
Voltage Range	22.8 to 28.8 VDC [35 VDC Max]
Input Current	Charging mode: < 0.6A; Discharging mode: 20A Max
Input Power	2.5W average
Maximum Signal Input (Inhibit)	35V/10mA
Max Inrush Current	<20A
Charging Time	<30sec
Buffer Module Output Specifications	
Nominal Output Voltage	24 VDC typ. [depends on V_{in}]
Adjustment Range Of The Voltage	22 to 28VDC Switch = "Fix 22V" - Buffering starts if terminal voltage falls below 22V Factory Setting, Switch = "V_{in} - 1V" - Buffering starts if terminal voltage is decreased by >1V
Maximum Output Voltage	35 VDC
Output Current	20A max
Buffering Time	250 ms Min @ 24V/20A Load, 5sec Min @ 24V/1A Load [Refer to Fig.1]
Maximum Signal Output	35V/10 mA
Signals	Inhibit Signal [I] - "Low" = shuts down buffer module Ready Signal [R] - "High" = buffer module is fully charged or in standby mode Buffering Signal [B] - "High" = Buffer module is discharging or in buffering mode Supply Voltage (+Vs) - Common +Vs, 35V Max
Noise and Ripple (20MHz)	<200mVpp @ 25 °C [77 °F] during buffering mode
Parallel Connection	Yes [requires PSB60-REM redundancy module]
Series Connection	No
Protective Device	Transient voltage suppressor [TVS] for signals

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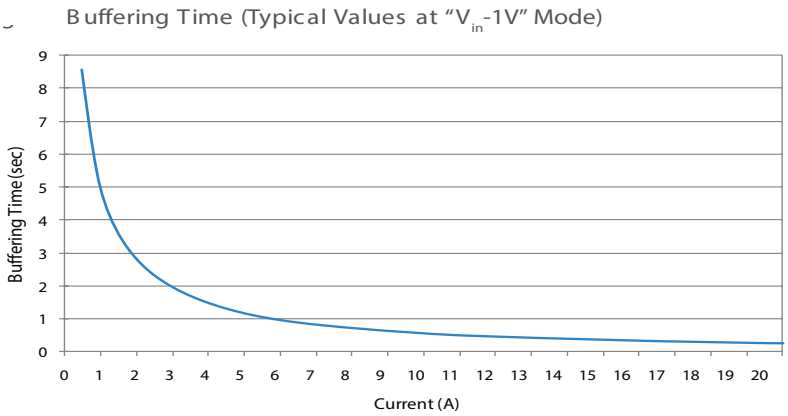
Figure 1



Mechanical Specifications	
Case Cover	Aluminum
LED Indicators	Green LED Off - Unit is discharged or Vin <22VDC Green LED On - Unit is fully charged
Cooling System	Convection
Terminal	Input / Output - M3 x 2 pins [Rated 300V/30A] Signal - M3 x 5 pins [Rated 300V/30A]
Wire	Input / Output - AWG 12–10 [0.08–0.10in]; Torque: 0.72 Nm [6.3 lb-in] Signal - AWG 24–10 [0.02–0.10in]; Torque: 0.72 Nm [6.3 lb-in]
Environmental Specifications	
Operating Temperature	-25 to +75 °C [-13 to +167 °F]
Storage Temperature	-25 to +85 °C [-13 to +185 °F]
Power De-rating	>70 °C [158 °F] de-rate power by 5%/°C
Operating Humidity	<95% RH [Non-Condensing]
Operating Altitude	2,500 Meters
Shock Test (Non-Operating)	IEC60068-2-27, 30G [300 m/S²] for a duration of 18 ms
Vibration (Non-Operating)	IEC60068-2-6, 10 Hz to 500 Hz @ 30m/S2 [3G peak]; 60 min per axis for all X, Y, Z direction
Pollution Degree	2
Protection Specifications	
Overvoltage	32V ± 10%
Overload / Overcurrent	30A Max
Short Circuit	No damage
Penetration Protection	>3.5mm [eg. screws, small parts]
Reverse Polarity Protection	Yes
Degree of Protection	IP20
Protection Against Shock	Class I with GND connection

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Reliability Specifications	
MTBF (at V_{in}-1V Mode)	>2,800,000h as per Telcordia SR-332 at Standby Mode [Buffer Module in Ready State]
Expected Capacitor Life	10 years [Standby mode @ 40 °C]
Safety Standards / Directives	
Electronic Equipment in Power Installations	EN50718 / IEC62103
Electrical Safety (Information Technology Equipment)	UR/cUR recognized to UL60950-1 and CSA C22.2 No. 60950-1 File no. E198298, CB scheme to IEC60950-1
Industrial Control Equipment	UL/cUL 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 (> +70 °C derating)], File No. 249074
CE	in conformance with EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC
Materials and Parts	RoHS Directive 2011/65/EU Compliant
Galvanic Isolation	Input & Output to Ground - 1.5 KVAC Signal to Ground - 1.5 KVAC
EMC Specifications	
EMC / Emissions	CISPR32, EN55032, EN55011
Component Power Supply for General Use	EN61204-3
Immunity	EN55024, EN61000-6-2
Electrostatic Discharge	EN61000-4-2
Radiated Field	EN61000-4-3
Fast Transient / Burst	EN61000-4-4
Surge	IEC61000-4-5
Conducted	EN61000-4-6
Power Frequency Magnetic Fields	EN61000-4-8
Voltage Dips	EN61000-4-11
Low Energy Pulse Test (Ring Wave)	EN61000-4-12

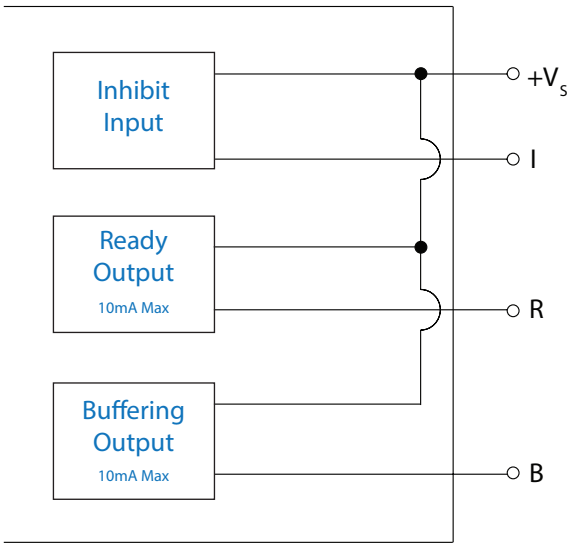
Note: Product intended to be used as Apparatus with AC-DC Power Supply, EMC compliance to be verified in correspondence to the connected units.

PSB24-BFM20S

Wiring Connection			
Input		***Output***	
+	DC+	R	Ready
-	DC+	B	Buffering
I	Inhibit	+Vs	+ Voltage Supply
		⏚	Ground

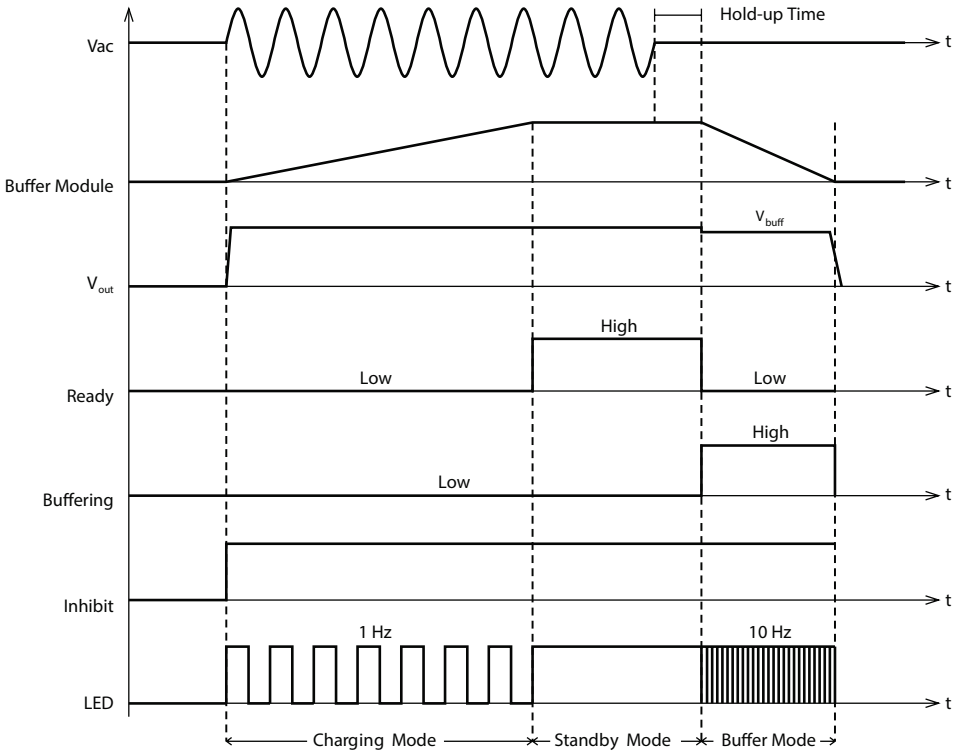
Buffering, Ready, and Inhibit Signal	
Buffering Output Signal (B)	"High" = PSB24-BFM20S is discharging or in Buffering Mode
Ready Output Signal (R)	"High" = PSB24-BFM20S is fully charged or in Standby Mode
Inhibit Input Signal (I)	"Low" = Shuts down Buffer Module
Signal Voltage	+VS: 10–35 VDC
Maximum Signal Current	10 mA
Isolation (Signal to Power)	1.5 KVAC

I/O (input/output) Example



$+V_S$: 10-35VDC

Buffer Module Operations



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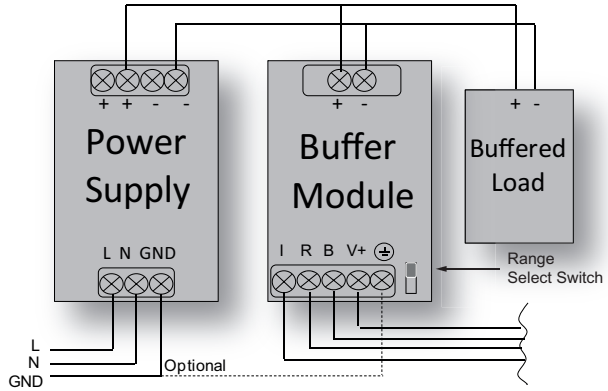
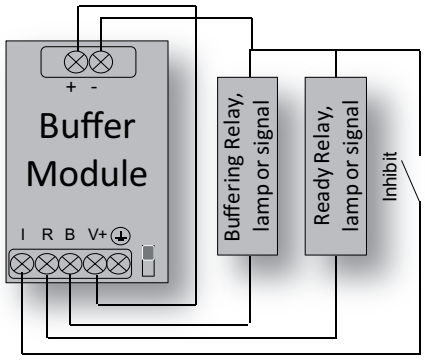
Buffer Module Wiring

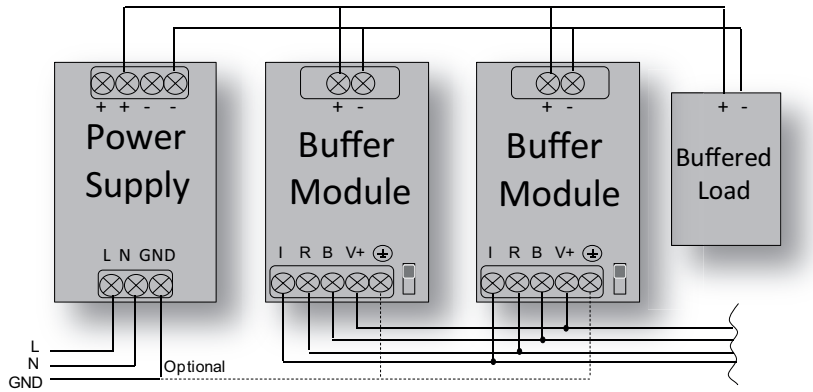
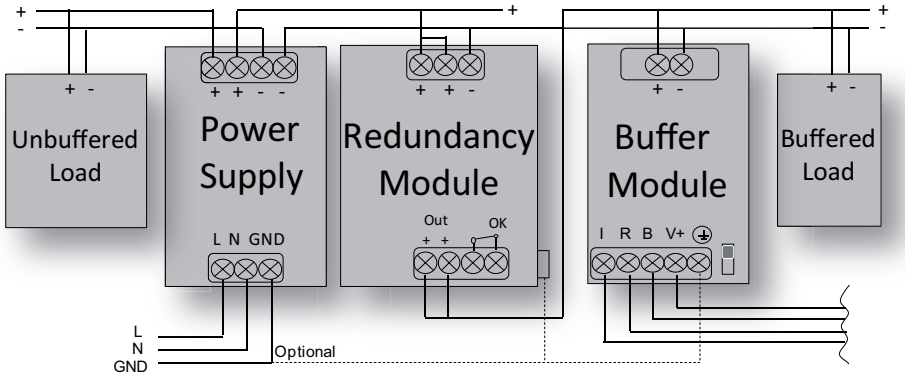
General connection / wiring diagram



General signals wiring



Parallelling of buffer units



Decoupling of buffered branches