

RHINO PSB 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 24VDC 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 shut-down 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

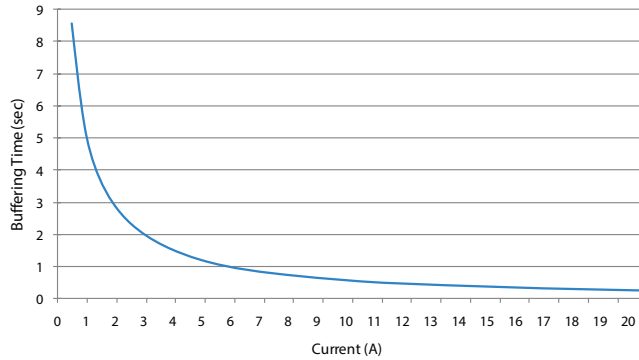
- Corrosion-resistant aluminum housing
- Long minimum buffering time of 250ms @ 24V/20A
- Units can be connected in parallel to increase buffering time
- Less than 30 second charging time
- Approved for use in Class I Division 2 hazardous locations
- IP20 wiring terminals
- Overvoltage / Overcurrent / Short Circuit protections
- Three year warranty



| Buffer Module | |
|--|---|
| Part No. | PSB24-BFM20S |
| Price | \$149.00 |
| Weight | 0.76 kg [1.68 lb] |
| Buffer Module Input Specifications | |
| Nominal Input Voltage | 24VDC |
| Voltage Range | 22.8 to 28.8 VDC (35VDC Max) |
| Input Current | Charging mode: < 0.6 A; Discharging mode: 20A Max |
| Input Power | 2.5 W average |
| Maximum Signal Input (Inhibit) | 35V / 10mA |
| Max Inrush Current | <20A |
| Charging Time | <30sec |
| Buffer Module Output Specifications | |
| Nominal Output Voltage | 24VDC 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 | 35VDC |
| Output Current | 20A max |
| Buffering Time | 250ms Min @ 24V / 20A Load, 5sec Min @ 24V / 1A Load (Refer to Fig. 1) |
| Maximum Signal Output | 35V / 10mA |
| 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 (+ V_s) - Common + V_s , 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 1 Buffering Time (Typical Values at “V_{in}-1V” Mode)



| Buffer Module 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 [0.08-0.10 in]; Torque: 0.72 Nm [6.3 lb-in] Signal - AWG 24-10 [0.02-0.10 in]; Torque: 0.72 Nm [6.3 lb-in] |
| Buffer Module Environmental Specifications | |
| Operating Temperature | -25°C to +75°C [-13°F to +167°F] |
| Storage Temperature | -25°C to +85°C [-13°F 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 (300m/S ²) for a duration of 18ms |
| Vibration (Non-Operating) | IEC60068-2-6, 10 Hz to 500 Hz @ 30m/S ² (3G peak); 60min per axis for all X, Y, Z direction |
| Pollution Degree | 2 |
| Buffer Module 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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| Buffer Module Reliability Specifications | |
|---|--|
| MTBF (at V_{in}-1V Mode) | >2,800,000 hrs. as per Telcordia SR-332 at Standby Mode (Buffer Module in Ready State) |
| Expected Capacitor Life | 10 years (Standby mode @ 40°C) |
| Buffer Module 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 |
| Buffer Module 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 |

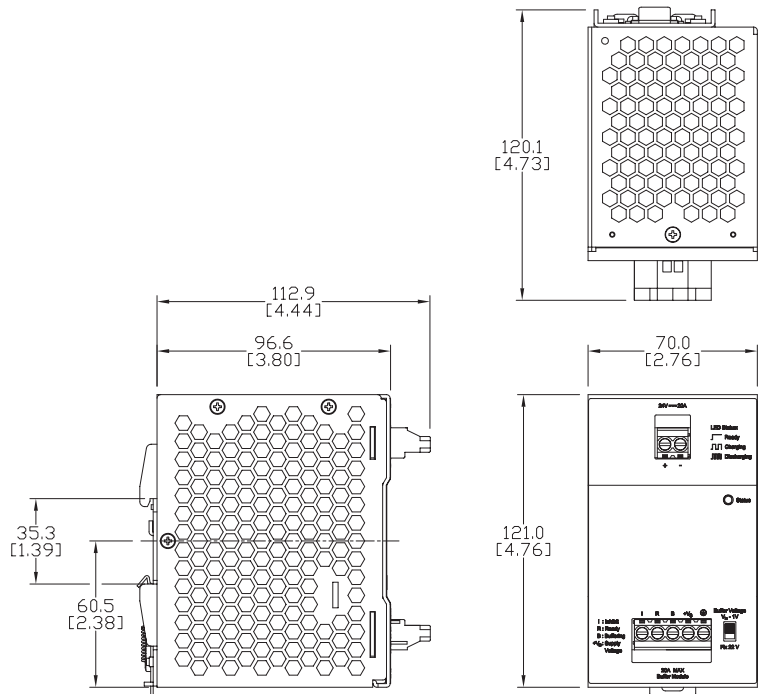
Note: Product intended to be used as Apparatus with AC-DC Power Supply, EMC compliance to be verified in correspondence to the connected units.

Dimensions

mm [inches]

PSB24-BFM20S

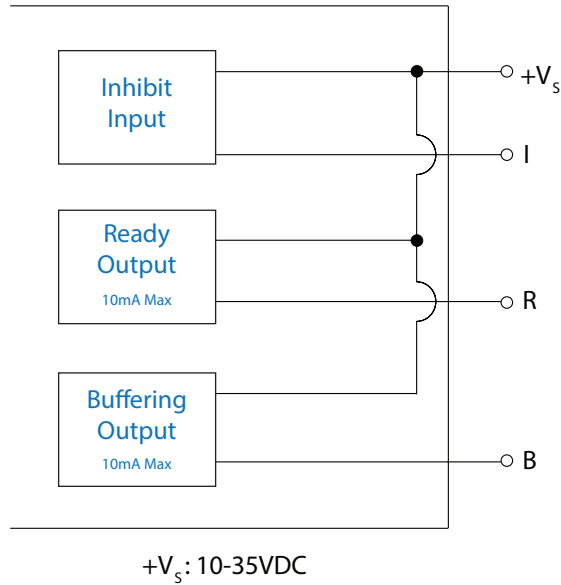
| Wiring Connection | | | |
|-------------------|---------|--------|------------------|
| Input | | Output | |
| + | DC+ | R | Ready |
| - | DC- | B | Buffering |
| I | Inhibit | +Vs | + Voltage Supply |
| | | ⏏ | Ground |



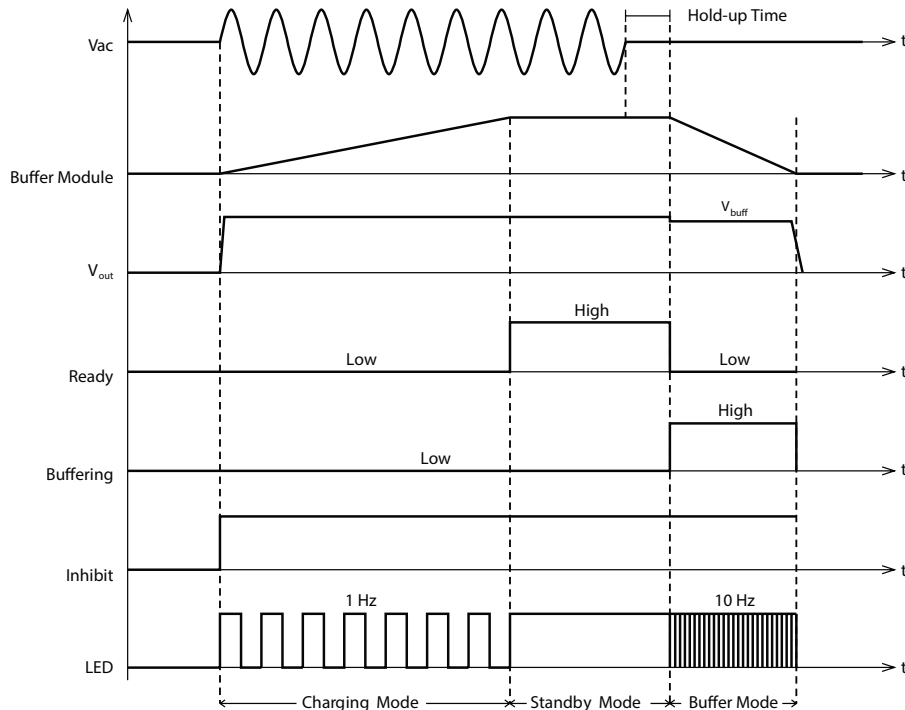
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| Buffering, Ready and Inhibit Signal | |
|-------------------------------------|---|
| Buffering Output Signal (B) | "High" = PSB24-BFM20S is discharging or in Buffering Mode |
| Ready Output Signal (R) | "High" = PSB-BFM20S is fully charged or in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

I/O (input/output) Example



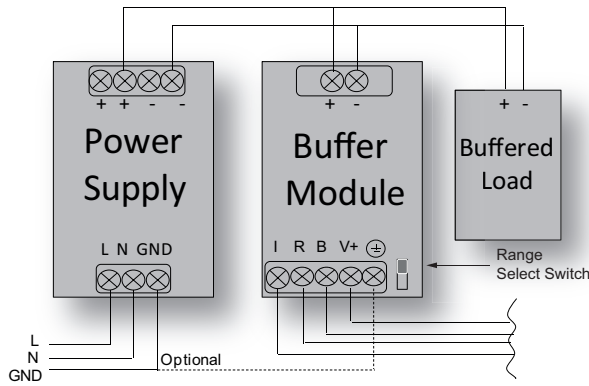
Buffer Module Operations



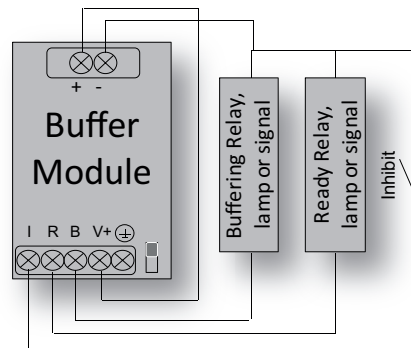
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Buffer Module Wiring

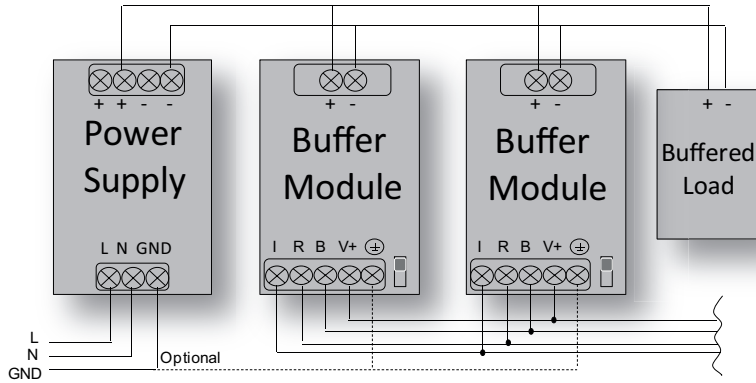
General connection / wiring diagram



General signals wiring



Paralleling of buffer units



Decoupling of buffered branches

