RHINO Installation Instructions for PSB24-BFM20S Buffer Module

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

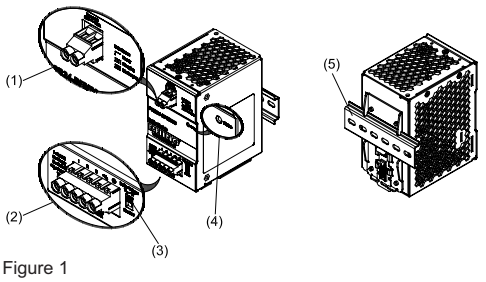


Figure 1

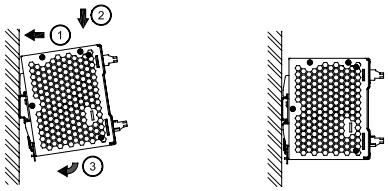


Figure 2

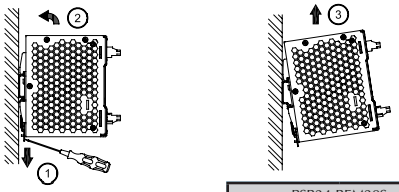


Figure 3

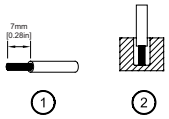
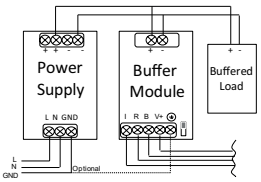


Figure 4

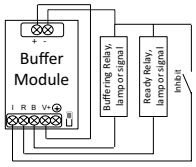
PSB24-BFM20S	
AWG (mm²)	ADC Ferrule p/n
24 (0.25)	N/A
22 (0.50)	BM-00601
20 (0.75)	BM-00602
18 (1.0)	BM-00503
16 (1.5)	BM-00504
14 (2.5)	BM-00506
12 (4.0)	BM-00508
10 (6.0)	BM-00610

Typical Application Notes

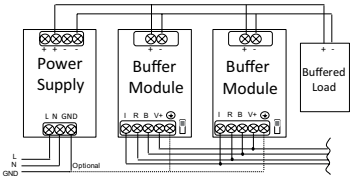
5.1 General connection / wiring diagram



5.4 General signals wiring



5.2 Parallelling of buffer units



5.3 Decoupling of buffered branches

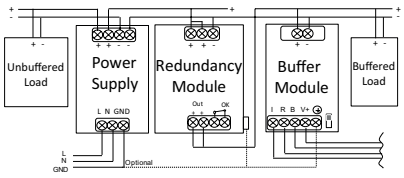


Figure 5

Power Derating Curve for Buffer Module

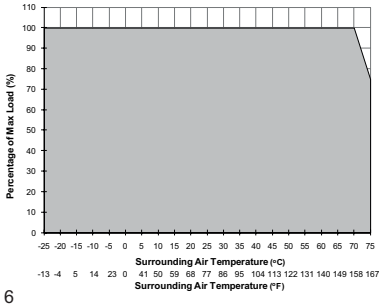


Figure 6

1. Safety instructions

- Switch main power off before connecting or disconnecting the device to prevent danger of explosion.
- To guarantee sufficient convection cooling, please keep a distance of 50 mm (1.97 in) above and below the device as well as lateral distance of 20 mm (0.79 in) to other units.
- Please note, that the enclosure of the device can become very hot depending on on the ambient temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
- Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The supply of the unit shall comply with any isolated secondary circuit according to UL508, Clause 32
- The unit must be installed in an IP54 enclosure or cabinet in the final installation. The enclosure or cabinet must comply with EN60079-0 or EN60079-15.
- Warning: Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2.
- Warning: Explosion Hazard - Do not disconnect equipment or adjust switch unless the power has been switched off or the area is known to be non-hazardous.
- **CAUTION**: "For use in a controlled environment"

2. Device description (Fig. 1)

(1) Input / Output terminal block connector
(2) Signal terminal block connector
(3) Select switch (operation mode)
(4) LED display status
(5) 35mm DIN rail mounting (DIN rail sold separately)

3. Mounting (Fig. 2)

The unit can be mounted on 35 mm DIN rail in accordance with EN60715.
The device should be installed with input / output terminal block at the top.

Each device is delivered ready to install.
Snap onto the DIN rail as shown in Fig. 2:
1. Tilt the unit slightly upwards and put it onto the DIN rail.
2. Push downwards until stopped.
3. Press against the bottom front side for locking.
4. Tug on the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, pull or slide down the latch as shown in Fig. 3. Then, slide the unit in the opposite direction, release the latch and pull out the unit from the rail.

5. Connection (Fig. 4)

The terminal block connectors allow easy and fast wiring. The terminal block is IP20 compliant thus provides the user safety and protection from electrical shock hazards.
You can use flexible (stranded wire) or solid wire with the following cross sections:

TABLE 1

Refer to Fig. 1:	Stranded / Solid		Torque	
	(mm²)	(AWG)	Nm	lb in
(1)	3.3-5.3	12-10	0.72	6.3
(2)	0.21-5.3	24-10	0.72	6.3

To secure reliable and shock proof connections, the stripping length should be 7 mm [0.28 in] (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).
In accordance to EN 60950 / UL 60950, flexible wires require ferrules.
Use appropriate copper wire that is designed to sustain operating temperature of at least
1. At least 60°C / 75°C (140°F / 167°F) or more to fulfill UL requirments.
2. At least 90°C [194°F] for Canada.

6. Typical Application (Fig. 5)

5.1. General connection / wiring diagram
5.2. Paralleling of buffer units
5.3. Decoupling of buffered branches
5.4. General signals wiring

Risk of electrical shock, fire, personal injury or death.
(1) Turn power off before working on the device.
(2) Make sure the wiring is correct by following all local and national codes.
(3) Do not modify or repair the unit.
(4) Use caution to prevent any foreign objects from entering into the housing.
(5) Do not use in wet locations.
(6) Do not use the unit in area where moisture or condensation can be expected.

6. Connectable Power Supplies

The buffer module is recommended to be connected with the following power supplies
:

PSB24-060	PSB24-120	PSB24-240	PSB24-480
PSB24-060S-3	PSB24-120S-3	PSB24-240S-3	PSB24-480S-3
PSB24-060S	PSB24-120S	PSB24-240S	PSB24-480S
PSB24-060-P	PSB24-060S-P		

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

Technical Data For PSB24-BFM20S

Input (DC)	
Nominal input voltage	24 VDC
Voltage range	22.8-28.8 VDC
Maximum input voltage	35 VDC
Maximum signal input (inhibit)	35V / 10mA
Input current	Charging mode: < 0.6A [25°C (77°F)]; Discharging mode: 20A max
Inrush current max. (cold start)	< 20A [25°C (77°F)]
Buffer time	250 ms min @ 20A load; 5 sec min @ 1A load
Output (DC)	
Nominal output voltage	24 VDC typ. (depends on V_{in})
Adjustment range of the voltage	22-28 VDC (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	Max 20A
Connection in parallel	Yes
Connection in series	No
Derating	> 70°C (5% / °C)
Residual ripple (20MHz) (at nominal voltage)	< 200mVpp (Buffering mode at V_{in} nom. I_O max)
Maximum signal output	35V / 10mA
Protective device	TVS for signals
Short circuit	No damage
General Data	
Type of housing	Aluminum (Al5052)
Signals	Green LED Off = Unit is discharged or V_{in} < 22 VDC; Green LED On = Unit is fully charged Green LED Flashes Slowly (1Hz) = Unit is charging; Green LED Flashes Quickly (10Hz) = Unit is discharging
MTBF	> 800,000 hrs.as per Telcordia @ 25°C (77°F) ambient and stand by mode (buffer module in ready state)
Dimensions (L x W x H)	121 mm x 70 mm x 120.1 mm [4.76 in x 2.76 in x 4.73 in]
Weight	0.76 kg [1.68 lb]
Connection method	Screw connection
Wire size / torque	See Table 1
Stripping length	7 mm [0.28 in]
Ambient Operating temperature	-25°C to +75°C [-25°F to +167°F], (Refer to Fig. 6)
Storage temperature	-25°C to +85°C [-25°F to +176°F]
Humidity at +25°C [77°F], no condensation	<95 % RH non-condensing per IEC 68-2-2, 68-2-3, protection from moisture & condensation
Vibration (non-operating)	10 to 500Hz, 30m/s² (3G peak); displacement of 0.35mm; 60 min per axis for all X, Y, Z directions Refer to IEC60068-2-6. Note: all figures quoted are amplitudes (peak values)
Shock (in all directions)	30G (300m/s²) in all directions according to IEC60068-2-27
Pollution degree	2
Altitude (operating)	2500 Meters
Certification and Standards	
Electrical equipments of machines	IEC60204-1
Electronic equipment for use in electrical power installations	EN 62477-1 / IEC62103
Safety entry low voltage	PELV (EN 60204), SELV (EN 60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No.60950-1 (file no. E198298), CB test certificate and report to IEC60950-1, and CE
Industrial control equipment	UL/C-UL 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)
Protection against electric shock	DIN 57100-410
CE	In conformance with EMC directive 2014/30/EU and low voltage directive 2014/35/EU
Component power supply for general use	EN61204-3
ITE	EN55032, EN61000-3-2, EN61000-3-3, EN55024
Industrial	EN55011
Limitation of mains harmonic currents	EN61000-3-2
RoHS	Yes
	3PET c UL E197592 US LISTED Ind. Cont. Eq. · c UL us E198298 · 249074 · 249074 Class I, Div. 2 Group A, B, C, D, T4 c US
Safety and Protection	
Isolation voltage: Input & Output / GND Signal / GND	 1.5kVac 1.5kVac
Polarity Protection	Yes
Protection degree	IP20
Safety class	Class I with GND connection