

VIPA Networking Solutions

PBR | 920-1BB10 | Manual

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PROFIBUS Repeater B1

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1 General

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1.2 About this manual**Objective and contents**

This manual describes the PROFIBUS Repeater 920-1BB10 from VIPA. It contains a description of the construction, project implementation and usage.

Product	Order number	as of state: HW
PBR-B1	920-1BB10	01

Target audience

The manual is targeted at users who have a background in automation technology.

1.3 Safety information

Applications conforming with specifications

The system is constructed and produced for:

- communication and process control
- industrial applications
- operation within the environmental conditions specified in the technical data
- installation into a cubicle



DANGER!

This device is not certified for applications in

- in explosive environments (EX-zone)

Documentation

The manual must be available to all personnel in the

- project design department
- installation department
- commissioning
- operation



CAUTION!

The following conditions must be met before using or commissioning the components described in this manual:

- Hardware modifications to the process control system should only be carried out when the system has been disconnected from power!
- Installation and hardware modifications only by properly trained personnel.
- The national rules and regulations of the respective country must be satisfied (installation, safety, EMC ...)

Disposal

National rules and regulations apply to the disposal of the unit!

2 Product description

The compact PROFIBUS DP Repeater B1 offers an economic alternative and tackles the technological limitations of the existing repeaters. This first-class network component fulfils the electrical, mechanical and diagnostic requirements of the demanding modern industry.



- The advanced 12 Mbps core of the B1 is identical to the MultiRepeaters; it can be cascaded unlimitedly and is equipped with the latest isolated RS 485 interface. The data is constantly monitored for glitches which are digitally filtered out. Every channel has on-board switchable termination and can drive 31 devices.
- The removable screw terminals of the PROFIBUS interface are pinned-out in a way that reversal mounting does not impact existing wiring. A DB9 connector is provided for maintenance/ engineering tools.
- The power supply is redundant which makes it suitable for applications in which high availability is required and consumes relatively low power which helps the environment.

3 Installation instruction

3.1 Location

The Repeater B1 can be installed everywhere in a non-hazardous area that complies with IP 20 (DIN 40 050) and the specified temperature range of -20 ... +60° Celsius.

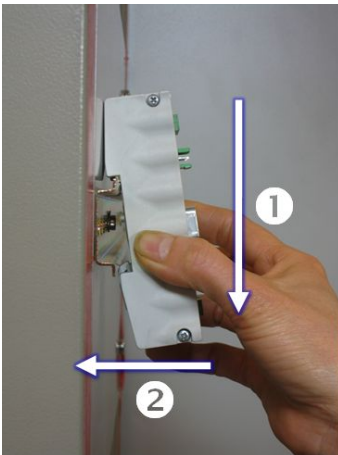
3.2 Position

The Repeater B1 can be installed in every position, but it is recommended to install it with Channel 2 pointing down. In this position it is easier to read the status display and to perform measurements on the DB9 connector.

3.3 Mounting and dismounting

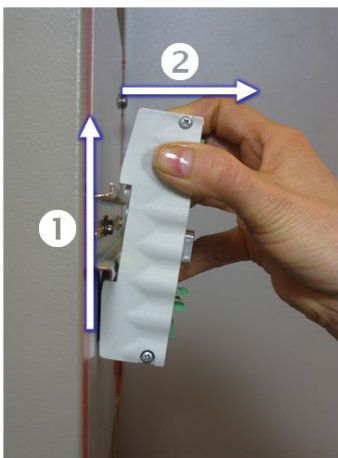
The B1 has to be mounted on a 35 mm DIN rail with a minimum width of 60 mm.

Mounting



→ Pull-down the B1 and push it on the DIN rail.

Dismounting



→ Push-up the B1 and pull it of the DIN rail.

3.4 Power supply

Parameters

The power supply has to comply with the following specifications:

Voltage: 19 to 28 V DC

Current: min. 65 mA

Wiring

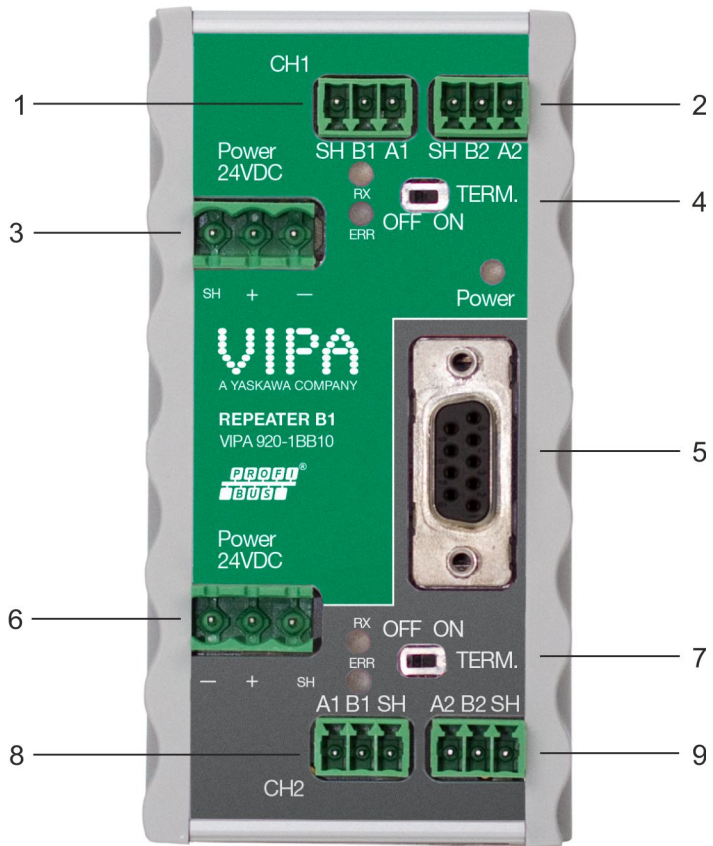
The leads of both power connectors have to be wired as follows:

Pin	Wiring
+	Positive voltage
-	0V
SH	Shield

Redundancy

Both power connectors are linked 1-on-1 to the internal power supply of the B1. If 1 power supply would fail, the other takes over without delay time. When redundancy is not required, it is sufficient to use 1 power connector. When the B1 is flipped 180°, the connectors can be used without alteration.

3.5 PROFIBUS



- 1 IN 1
- 2 OUT 1
- 3 Power 1
- 4 Termination 1
- 5 Piggy back connector for channel 2
- 6 Power 2
- 7 Termination 2
- 8 IN 2
- 9 OUT 2

Connectors

- Each channel has 2 connectors (IN and OUT). They are both linked 1-on-1 when the termination is OFF.
- When a channel of the repeater is NOT the last device on the segment, it doesn't matter which connector is utilized.
- When the termination is ON the OUT connector is NOT connected.
- When the B1 is flipped 180°, the wired connectors can be used without alteration.

Pin layout

Pin	Wiring
A1/2	Green wire
B1/2	Red wire
SH	Cable shielding

Termination

Each channel has its own termination which can be switched ON/OFF.

Piggy back connector

The piggy back connector is 1-on-1 with channel 2.

Ground Clip



It is recommended to use the supplied ground clip to attach the cable shield to the screw connector, for easier shield connection and better strain relief.

Diagnostic LEDs

	OFF	Blinking	ON
POWER	Power is OFF or an internal failure	Power supply not stable or an internal failure	Power supply OK
RX	No communication detected (this channel)	1 or more devices communicating (this channel)	1 or more devices communicating (this channel)
ERR	No problem has been detected	Communication problem (this channel)	Communication problem (this channel)

4 Technical data

Order no.	920-1BB10	
Dimensions and weight		
Dimensions L x W x H (mm)	106 x 55 x 33 mm (without plugs) 106 x 55 x 55 mm (with plugs)	
Weight	ca. 125 g	
Ambient conditions		
Operating temperature	-20 ... +60 °C	
Isolation class	IP 20 (DIN 40 050)	
Protocol specifications		
Supported Protocols	DP-V0, DP- V1, DP-V2, FDL, MPI, FMS, PROFIsafe, PROFI-drive and any other FDL based protocol..	
Transmission speed	9.6 kbps to 12 Mbps (including 45.45 kbps)	
Transmission speed detection	Auto detect	
Transmission speed detection time	< 10 s	
Data delay time	At Baudrate:	
	9.6 kbps - 3 Mbps	1.7 Tbit
	6 Mbps	2.5 Tbit
	12 Mbps	3.5 Tbit
Delay time jitter	Max. ¼ bit time	
PROFIBUS cable specifications		
Cable lengths	1200 m at 9.6 kbps to 93.75 kbps 1000 m at 187.5 kbps 400 m at 500 kbps 200 m at 1.5 Mbps 100 m at 3 Mbps to 12 Mbps	
Wire diameter	< 2.5 mm ²	
Wire type	Stranded or Solid core	
Number of devices	Max. 31 per channel (including MultiRepeaters, OLMs, PCs, etc.)	
Termination	Integrated and switchable. Powered according to IEC 61158 (390/220/390 Ohm)	
Cascading depth	No limits	
Power supply specifications		
Nominal supply voltage	19 to 28 V DC	
Current consumption	65 mA at 24 V DC	
Power dissipation	max. 2W	

Order no.	920-1BB10
Redundancy	Yes (Power 1 OR Power 2)
Power LED	Power 1 OR Power 2
Reverse polarity protection	Yes
Wire diameter	< 2.5 mm ²