

# VIPA Networking Solutions

PBR | 920-1BB10 | Manual

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PROFIBUS Repeater B1



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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
- general control and automation tasks
- 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 fulfills 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.

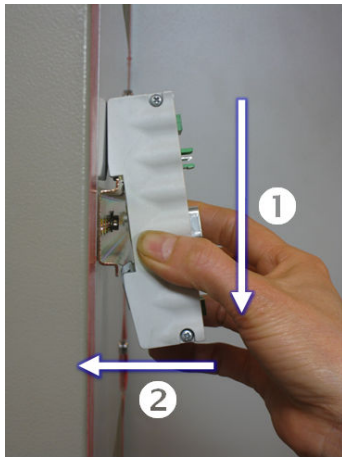
### 3.2 Position

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

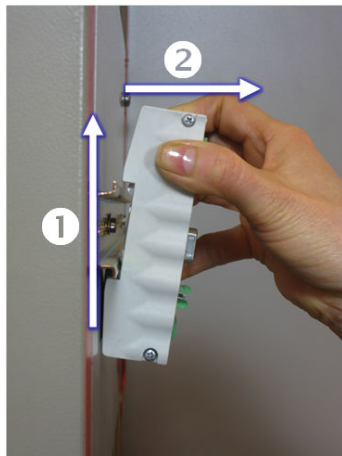
The B1 has to be mounted on a 35 mm DIN rail with a minimum width of 60 mm.

#### 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:

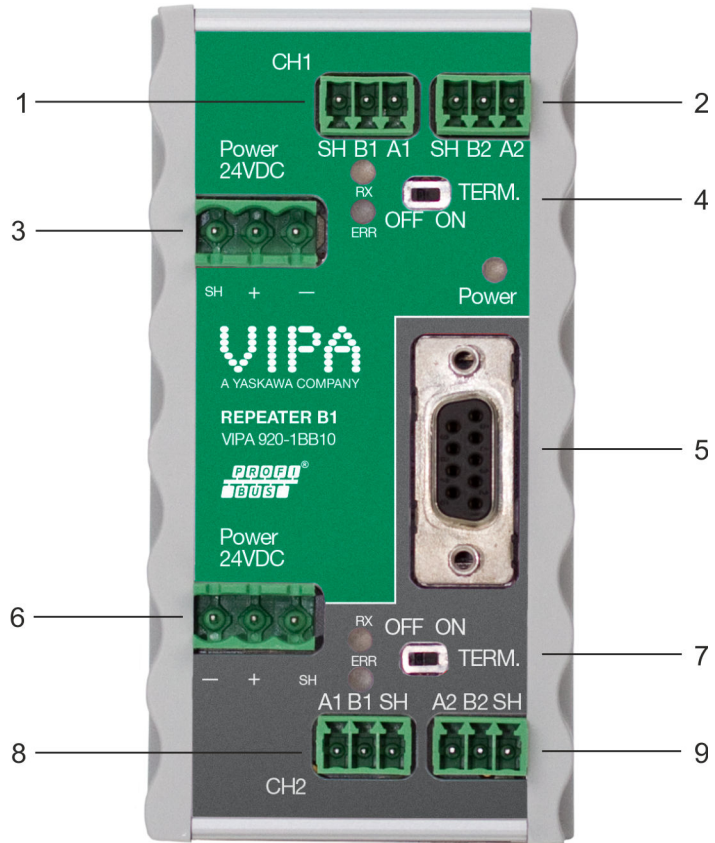
Pin	Wiring
+	Positive voltage
-	0V
SH	Shield

#### 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.

PROFIBUS

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

<b>Order no.</b>	<b>920-1BB10</b>	
<b>Dimensions and weight</b>		
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	
<b>Ambient conditions</b>		
Operating temperature	-20 ... +60 °C	
Isolation class	IP 20 (DIN 40 050)	
<b>Protocol specifications</b>		
Supported Protocols	DP-V0, DP- V1, DP-V2, FDL, MPI, FMS, PROFIsafe, PROFIdrive 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	
<b>PROFIBUS cable specifications</b>		
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 <sup>2</sup>	
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	
<b>Power supply specifications</b>		
Nominal supply voltage	19 to 28 V DC	
Current consumption	65 mA at 24 V DC	
Power dissipation	max. 2W	
Redundancy	Yes (Power 1 OR Power 2)	

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<b>Order no.</b>	<b>920-1BB10</b>
Power LED	Power 1 OR Power 2
Reverse polarity protection	Yes
Wire diameter	< 2.5 mm <sup>2</sup>