PROCENTEC

Repeater B1

Installation manual

Content

1.   Introduction

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 ProfiHub; 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 ProfiTrace or other 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.

2.   Installation instructions

Location
The 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 to +60 $^\circ$ Celsius.

Position
The 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.

Mounting and dismounting
The B1 has to be mounted on a 35 mm DIN-rail with a minimum width of 60 mm. Fig. 1 and Fig. 2 illustrate how to mount and dismount the B1 on and from the DIN-rail.
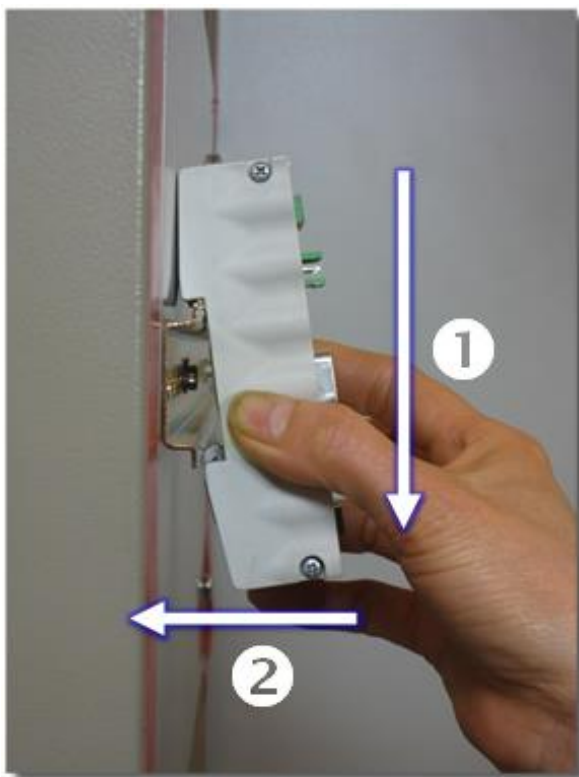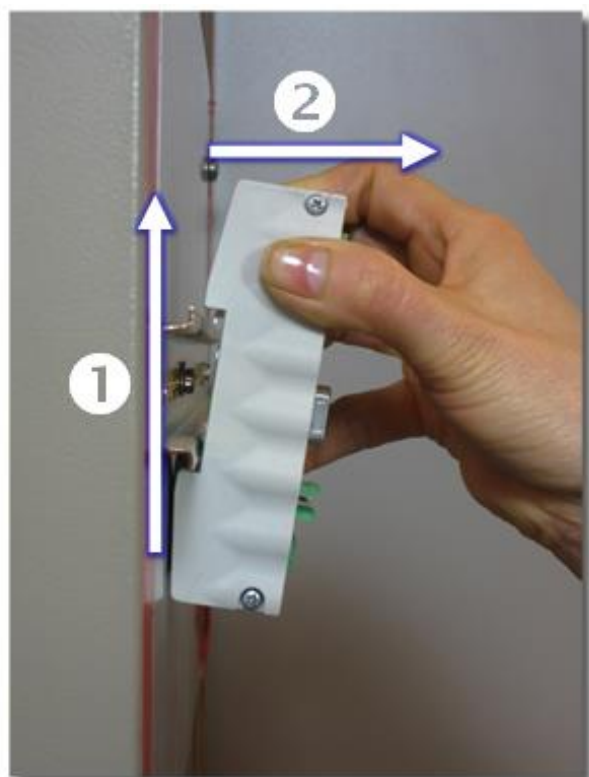

Fig. 1 Mounting; pull-down and push

Fig. 2 Dismounting; Push-up and pull

3. Power supply

Parameters
The power supply has to comply with
the following specifications:
Voltage: **19 to 28 Vdc**
Current: **Min. 65 mA**

Wiring
The leads of both power connectors have
to be wired as follows:
"+" = Positive Voltage
"-" = 0 V
SH = Earth

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. Fig. 3 illustrates the location of the power supply connectors.

4. PROFIBUS

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 "A1/2": Green wire
Pin "B1/2": Red wire
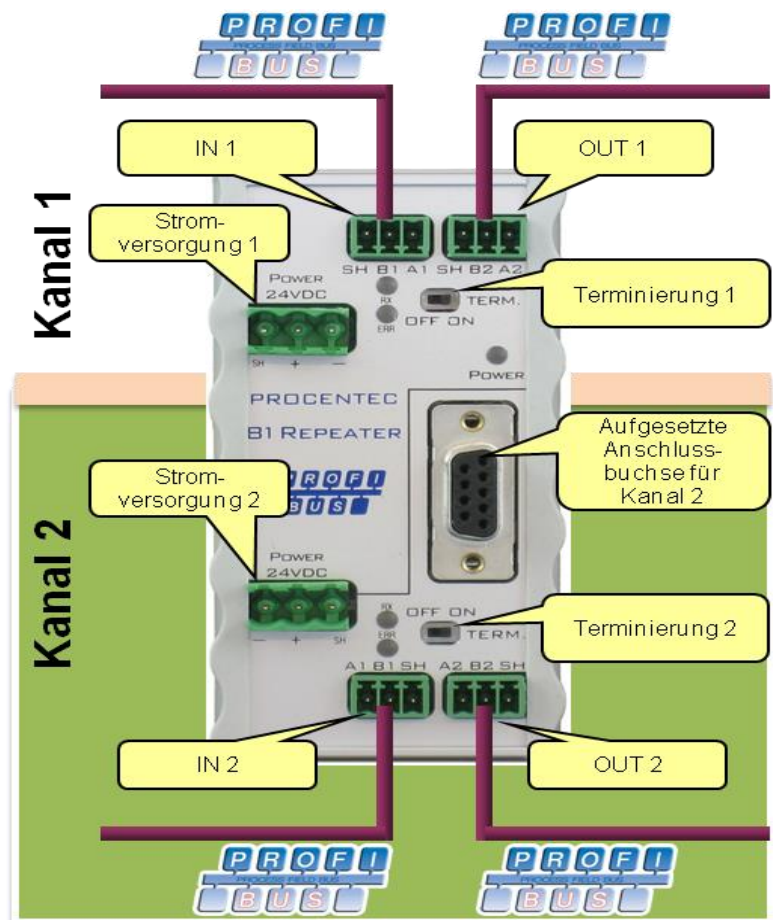Pin "SH": Cable shielding

Termination

Fig. 3 Structurs of the B1

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.

Fig. 4 Using the Ground Clip

Ground Clip

It is recommended to use the supplied GC-01 ground clip to attach the cable shield to the screw connector, as shown in fig. 4, for easier shield connection and better strain relief.
The Ground Clip GC-01 can be ordered separately per 25pcs with order code: **101-00201B**.

Diagnose-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).

Technical Data Compact PROFIBUS DP Repeater B1	
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	Approximately 125 g

Ambient conditions	
Operating temperature **Isolation class**	-20 to +60º Celsius IP 20 (DIN 40 050)

Protocol specifications	
Supported Protocols	DP-V0, DP- V1, DP-V2, FDL, MPI, FMS, PROFIsafe, PROFIdrive and any other FDL based protocol.
Transmission speed **Transmission speed detection** **Transmission speed detection time**	9,6 kbps to 12 Mbps (including 45,45 kbps) Auto detect < 10 s
Data delay time	1,5 TBit at 9,6 kbps to 3 Mbps 2,5 TBit at 6 Mbps 3,5 TBit at 12 Mbps
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 **Wire type**	< 2,5 mm^2 Stranded or Solid core
Number of devices	Max. 31 per channel (including ProfiHubs, OLMs, PCs, etc.)
Termination	Integrated and switchable. Powered according to IEC 61158 (390/220/390 Ohms)
Cascading depth	No limits

Power supply specifications	
Nominal supply voltage **Current consumption** **Power dissipation**	19 to 28 Vdc 65 mA at 24 Vdc Max. 2 W
Redundancy	Yes (Power 1 <u>OR</u> Power 2)

Power LED	Power 1 <u>OR</u> Power 2
Reverse polarity protection	Yes
Wire diameter	< 2,5 mm^2

5.   Other PROCENTEC products

PROFINET Cable Tester

- Suitable for 4- and 8-wire PROFINET and regular Ethernet cables
- Suitable for straight and 90°, metal or plastic PROFINET plugs
- Tests cable shielding
- Detects short circuits, wire breaks, swaps, miswiring and split pairs
- Large LCD clearly indicates the test results
- 150 hours on one 9 V battery
- Operating temperature: 0 to 50 °C
- Just 1-key-press to start continuous testing
- It can also test telephone and coax cable

Compact PROFIBUS Repeater

- Single channel PROFIBUS repeater
- Transparent
- Increased signal strength
- 12 Mbps
- Auto baudrate detection
- Redundant power supply
- Digital glitch filtering
- No limit in cascading
- Integrated switchable termination
- Diagnostic LEDs
- DB9 connector for measurements
- **IP 20 with DIN-rail mounting**

ProfiHub B5+R

- 6 galvanicly isolated channels
- Configurable grounding system
- Redundant power supply
- Bus redundancy option
- Star, tree and bus structured networks
- Alarm contact
- Monitoring port per channel
- IP20
- Certifications: UL Listed, DNV, FCC, CE

www.procentec.com/products/profihub

ProfiHub A5

- 5 Isolated channels
- Transparent
- Increased signal strength
- 31 devices per channel
- 12 Mbps
- 1200 m spur line length
- No address required
- Integrated switchable termination
- IP 65 classification

The productname (for example ProfiHub A5) has its own style: 1B Productname. The properties of this style are the same as those of the style '1 Paragraph' with the distinction that the productname will not appear in the content.