

PROCEN TEC



Installation Manual (English)

Compact Repeater B1

Transparent PROFIBUS DP single channel repeater

- Single channel PROFIBUS repeater
- Transparent
- Max. 12 Mbps
- Auto baudrate detection
- Redundant power supply
- Digital glitch filtering
- No limit in cascading
- On-board switchable termination
- Diagnostic LEDs
- DB9 connector for measurements
- IP 20 with DIN-rail mounting

PROCEN TEC
Turfschipper 41
2292 JC WATERINGEN
The Netherlands

Tel.: +31-(0)174-671800
Fax: +31-(0)174-671801
Email: info@procentec.com
Web: www.procentec.com

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 as 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.

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 ° 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.

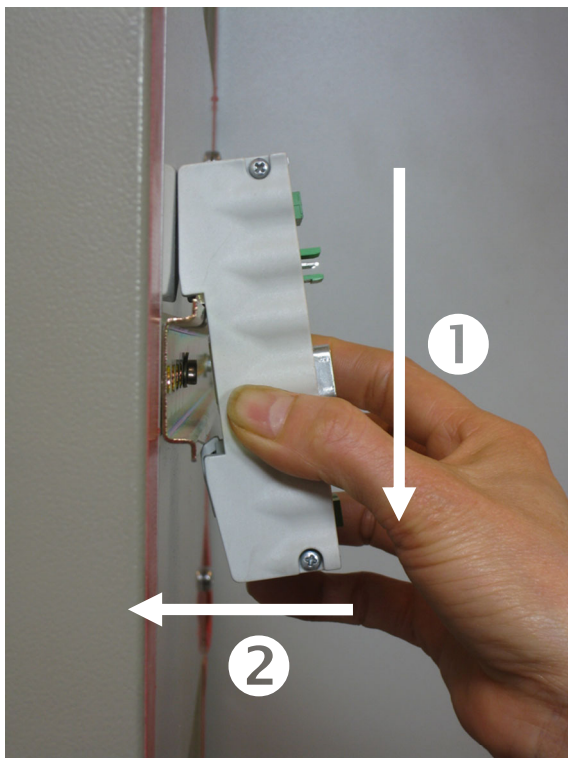


Fig. 1 Mounting; pull-down and push

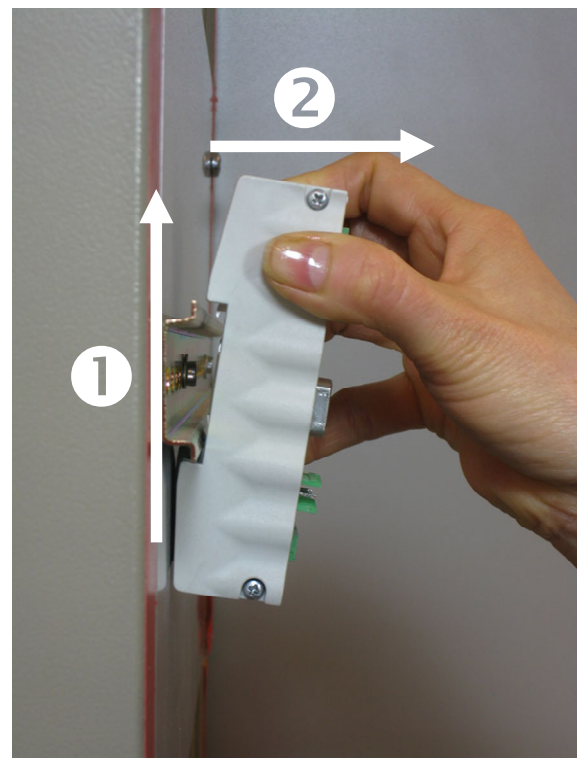


Fig. 2 Dismounting; Push-up and pull

Power supply

Parameters

The power supply has to comply with the following specifications:

Voltage: **19 to 28 Vdc**

Current: **Min. 65 mA**

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.

Wiring

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

“+” = Positive Voltage

“-” = 0 V

SH = Earth

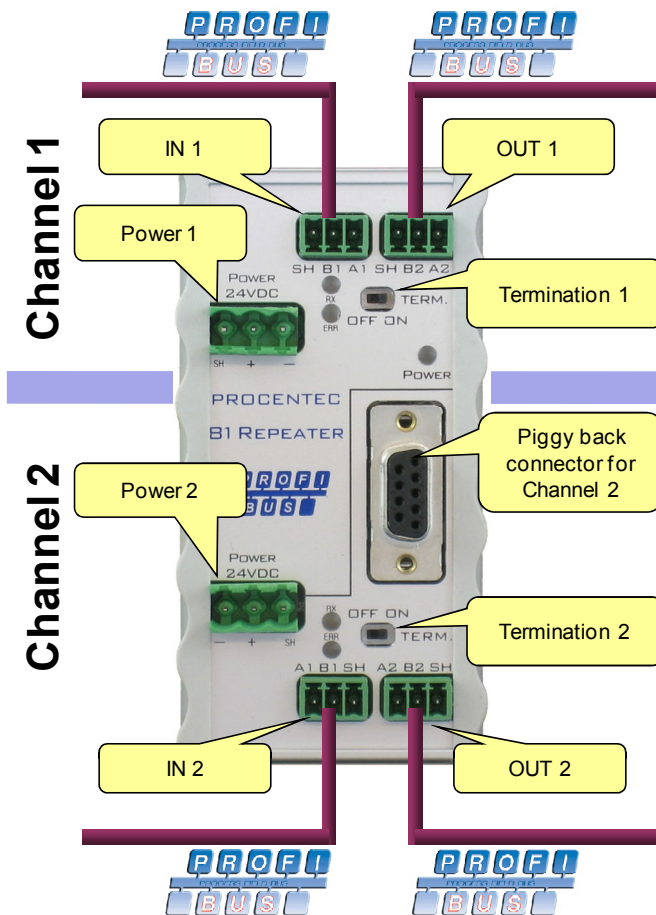


Fig. 3 Structure of the B1

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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

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.

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).

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	-20 to +60° Celsius
Isolation class	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	9,6 kbps to 12 Mbps (including 45,45 kbps)
Transmission speed detection	Auto detect
Transmission speed detection time	< 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	< 2,5 mm ²
Wire type	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	19 to 28 Vdc
Current consumption	65 mA at 24 Vdc
Power dissipation	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