

# PROCENTEC



## 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

**PROCENTEC**  
Turfschipper 41  
2292 JC WATERINGEN  
The Netherlands

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

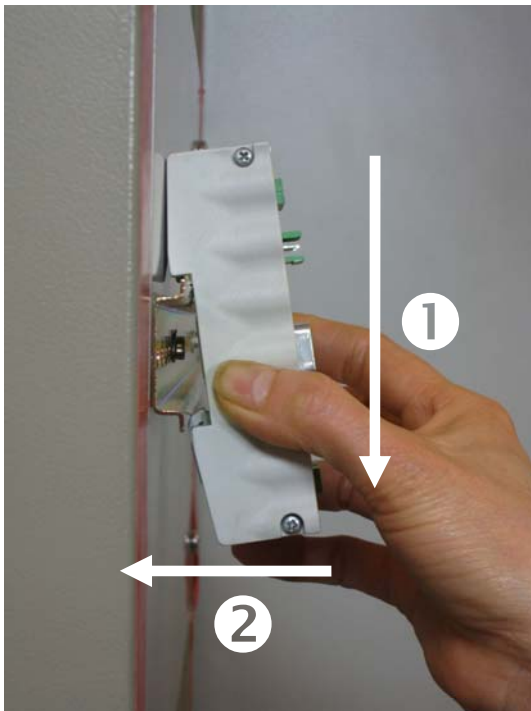


Fig. 1 Mounting; pull-down and push

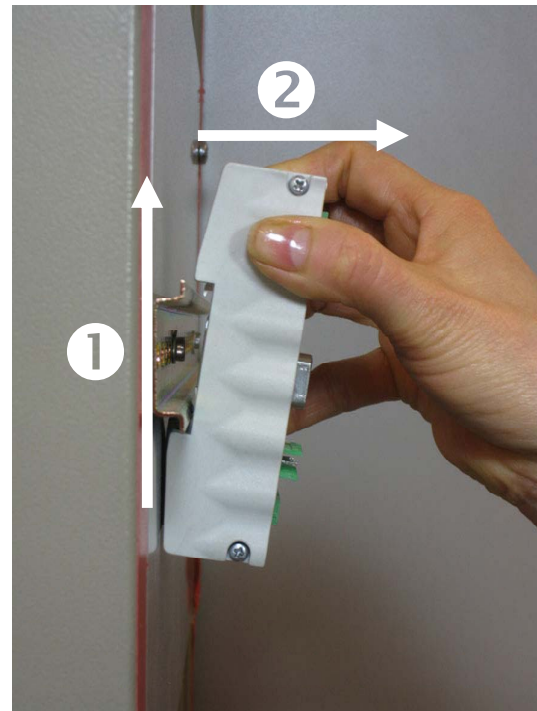


Fig. 2 Dismounting; Push-up and pull

## 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

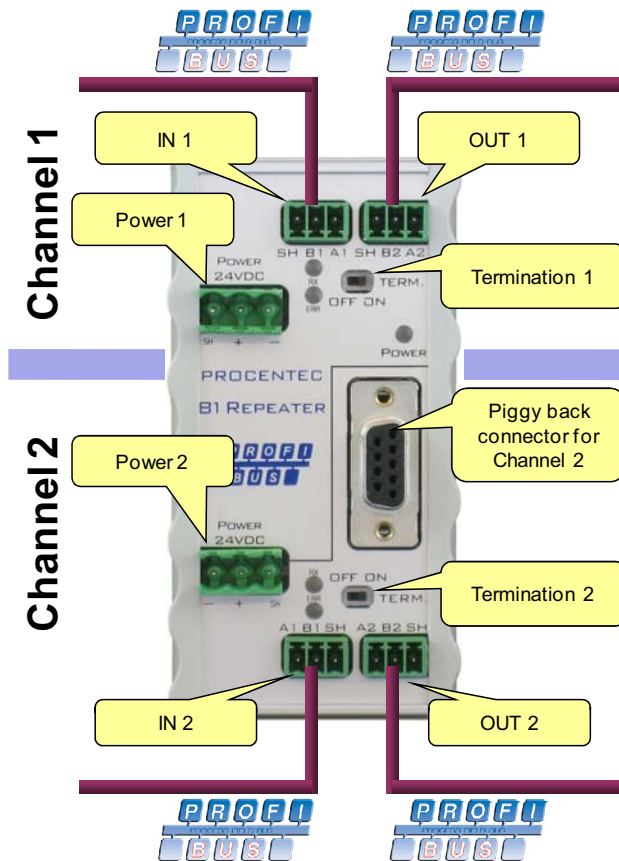


Fig. 3 Structure of the B1

## 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

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).

<b>Technical Data Compact PROFIBUS DP Repeater B1</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	Approximately 125 g
<b>Ambient conditions</b>	
Operating temperature	-20 to +60° Celsius
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	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
<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 ProfiHubs, OLMs, PCs, etc.)
Termination	Integrated and switchable. Powered according to IEC 61158 (390/220/390 Ohms)
Cascading depth	No limits
<b>Power supply specifications</b>	
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 <sup>2</sup>