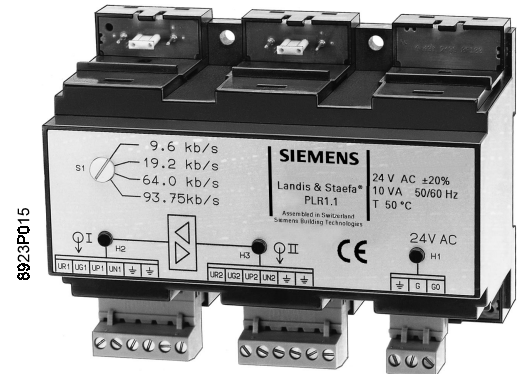


UNIGYR[®]

PROFIBUS Repeater

PLR1.1



PROFIBUS repeater designed for the compensation of line losses and for signal quality refreshing in extensive and/or widespread PROFIBUS networks.

Use

The PROFIBUS repeater is used in UNIGYR communication networks for:

- The extension of PROFIBUS sections having the standard length of 1200 m
- Interfacing secondary branches, e.g. in networks having a star- or treelike structure

Note

The repeater is also suitable for use in other bus networks that comply with the PROFIBUS standard to DIN 19245, part 1.

Functions

- Adjustable rate of transmission
- Remote supply for another PROFIBUS repeater (standby power supply in the event the AC 24 V operating voltage at a PROFIBUS repeater fails)

Type summary

PROFIBUS repeater

PLR1.1

Accessories

Terminal covers, if required, are to be ordered as separate items:

Terminal covers (short)

4 111 2183 0

Terminal covers (long, two of)

ARG81.1

Equipment combinations

Type of equipment

Type reference

Data sheet

PROFIBUS terminator

PUR1.1U

8023

Communication set

PAK1.1...

8271

PC communication card

PLU1...

8555

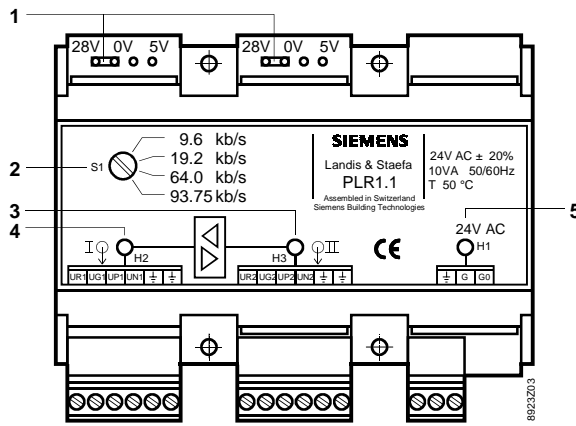
Technical design

Transmission characteristics	<p>The PROFIBUS repeater is a bidirectional line amplifier whose transmission facility is automatically controlled by the protocol.</p> <p>When the bus is idle, both bus interfaces are switched to the receiving mode.</p> <p>For applications other than PROFIBUS, the rate of transmission can be changed.</p>
Redundant power supply	<p>To ensure entire bus sections will not be isolated should the AC 24 V operating voltage fail, the electronics' DC voltage supply is redundant; this means there is standby power available. For this purpose, the power supply section of the PROFIBUS repeater is sized such that it can power a second repeater across the maximum line length, in addition to its own power requirements.</p> <p>The second pair of wires of the PROFIBUS wiring is used to interconnect the supply lines of all repeaters on the DC voltage side, that is, they are switched in parallel. One wire, "UG", also serves for potential equalization between the individual partners connected to the bus and as a ground wire for the power supply to the repeater. The other wire, "UR", carries the positive potential of the repeater's power supply.</p>
Remote supply voltages	<p>The remote supply voltage can be selected: DC 28 V, DC 5 V, or 0 V. DC 28 V is used for PROFIBUS applications with UNIGYR, DC 5 V conforms to the PROFIBUS standard, and the 0 V-position is for use in cases where no remote supply is required.</p>

Mechanical design

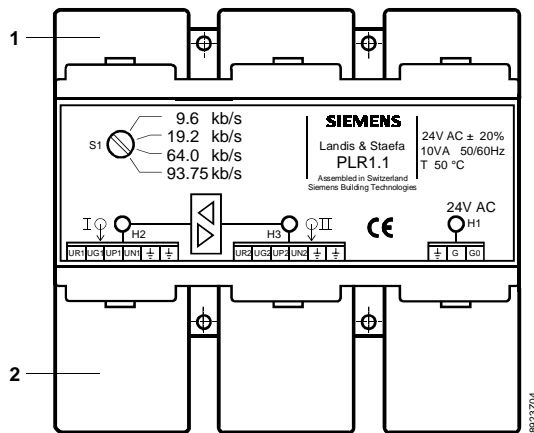
Casing	<p>The PROFIBUS repeater is accommodated in a casing designed for installation in compliance with DIN 43880. It can be snapped on standard mounting rails or screwed on a wall.</p>
Front	<p>The unit front carries the type plate with the connection diagram, the selector for the rate of transmission (Baud rate), and the signal lamps for operating voltage and bus operation.</p>
Screw terminals	<p>The screw type terminal bases are plugged in and can be removed so that a PROFIBUS looped via the connection terminals will not be disrupted should it be necessary to replace the repeater when doing service work.</p>
Shorting plugs for remote power supply	<p>On the printed circuit board at the top of the unit there are eight pins with shorting plugs for the two sections of the bus. This facility is used to select the remote supply voltage for another PROFIBUS repeater: DC 28 V, DC 5 V, or 0 V. For details, refer to "Technical design". The unit is supplied with the shorting plugs set for DC 28 V PROFIBUS applications of the repeater.</p>
Terminal covers	<p>When mounting the repeater outside the control panel or when using it without the protective casing, there are terminal covers available which must be ordered separately. There is a short version for protecting the pins at the top and a long version for the connection terminals at the bottom of the unit.</p>

Front view



- 1 X1,X2, shorting plugs for selection of remote supply voltage
- 2 Selector S1 for adjustment of rate of transmission (Baud rate)
- 3 Signal lamp for data traffic on bus section 2
- 4 Signal lamp for data traffic on bus section 1
- 5 Signal lamp for AC 24 V operating voltage

With terminal covers fitted



- 1 Terminal covers (short)
- 2 Terminal covers (long)

Note

Terminal covers are to be ordered as separate items (refer to "Type summary").

Engineering notes




Data sheet 8023, "PROFIBUS", contains system-related engineering know-how and notes. It should be read before reading the following sections while paying special attention to the information relating to safety.

Correct use

Within the overall system, the PROFIBUS repeater must always be used on applications as described in the brief description on the front page and in the chapters "Use", "Engineering notes" and "Technical data" of the present data sheet. Also, the relevant chapters of data sheet 8241, "Universal Proccess Units PRU1..." should be observed.



The sections of this chapter identified by a warning sign contain additional requirements and restrictions relevant to safety. They must be observed to ensure the safety of persons and objects.

 Mounting location	If, in exceptional cases, the PROFIBUS repeater is not mounted in a control panel, or no protective casing is used, terminal covers must be fitted (refer to "Type summary").
Number of repeaters per segment	Between any two users in a PROFIBUS segment, that is, to the same PROFIBUS, a maximum of three repeaters may be connected. This applies to both unbranched and branched PROFIBUS structures (with T-branches).
Wiring	The connections for the two PROFIBUS segments are interchangeable. It is of no importance which line is connected to which repeater input. For the remote power supply of a PROFIBUS repeater, the connection of terminal G0 to the G0 supplies of other devices (process unit PRU1..., module supply block PTX1.01) is not mandatory, but to be recommended.
Documentation on PROFIBUS	For information on PROFIBUS and its wiring, please refer to the following pieces of documentation: <ul style="list-style-type: none"> – M8012, "Mounting and Installation Manual" – Data sheet 8023, "PROFIBUS" – Data sheet 8020, "UNIGYR System Documentation"

Fitting notes

The PROFIBUS repeater should be fitted in a location where it is easily accessible and easy to find.


The permissible ambient conditions with regard to temperature and humidity must be observed.

The unit is supplied with Mounting and Commissioning Instructions.

Commissioning notes

Wiring and power supply	Prior to commissioning the plant, the wiring of PROFIBUS and the AC 24 V power supply to the repeater must be checked.
Rate of transmission	When used as a PROFIBUS repeater, the rate of transmission must be set to 93.75 kbit/s (factory setting).
Remote power supply	For PROFIBUS applications, the shorting plug for the remote power supply must be set to DC 28 V (factory setting).
Instructions	For information on commissioning and the functional check, please refer to the instructions supplied with the unit.

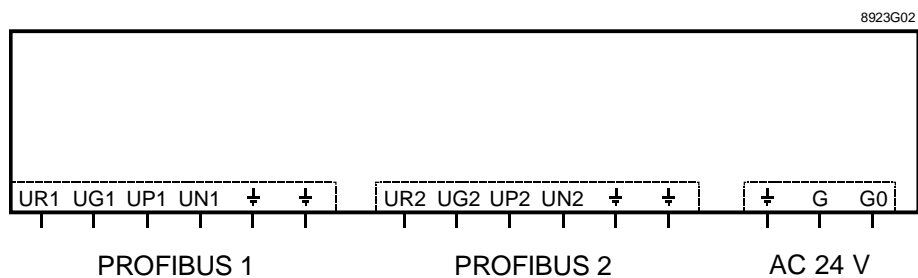
Technical data

 Power supply	Operating voltage Safety extra-low voltage "SELV" or protection by extra-low voltage "PELV" as per Frequency Power consumption	AC 24 V \pm 20% HD 384 50 Hz or 60 Hz 8 VA
Rate of transmission	Baud rate (adjustable) Factory setting	9.6 kbit/s, 19.2 kbit/s 64.0 kbit/s, 93.75 kbit/s 93.75 kbit/s
Remote power supply	Voltage (selectable) Factory setting	DC 28 V, DC 5 V, 0 V DC 28 V

Category of devices	Built-in equipment for electrical installations	DIN 43 880
IP protection	Degree of protection of housing With terminal covers fitted	IP20, EN 60 529 (IEC 529) IP 40, EN 60 529
Ambient conditions	Transportation Climatic conditions Temperature range Humidity Mechanical conditions Operation Climatic conditions Temperature range Humidity (non-condensing)	IEC 721-3-2 class 2K3 -25 °C... + 75 °C <95 % r.h. class 2M2 IEC 721-3-3 class 3K5 -5 °C... + 50 °C <95 % r.h.
CE conformance	In compliance with the directives of the European Union Electromagnetic compatibility	89/336/EEC
Electromagnetic compatibility	Emissions Immunity	EN 50 081-1 EN50 082-2
Connection terminals	For wires of	0.5 mm dia. min. to 2x1.5 mm ² max., or 1x2.5 mm ²
Weight	Excl. packing	0.21 kg

Connection diagrams

Connection terminals

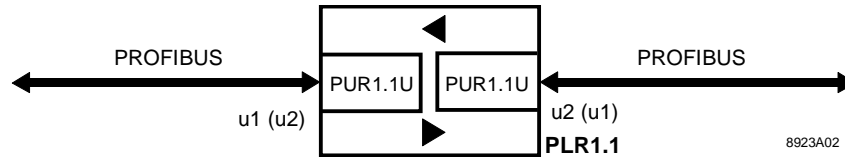


G	System potential
G0	System neutral
UG1,UG2	Potential equalization
UN1,UN2	Data line, negative
UP1,UP2	Data line, positive
UR1,UR2	Remote supply for PROFIBUS repeater
— —	Shield (auxiliary terminals, connected with each other)

Wiring diagrams

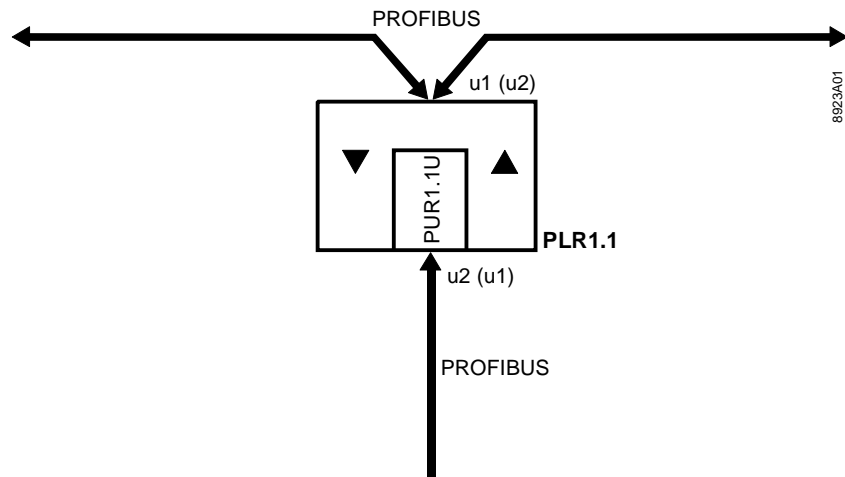
Line repeater

Use as a line repeater in sections exceeding 1200 m.



Decoupler

When using a T-branch, it is always necessary to fit a PROFIBUS repeater for decoupling. Looping of the PROFIBUS lines at both terminals (double T-branch) is permitted.

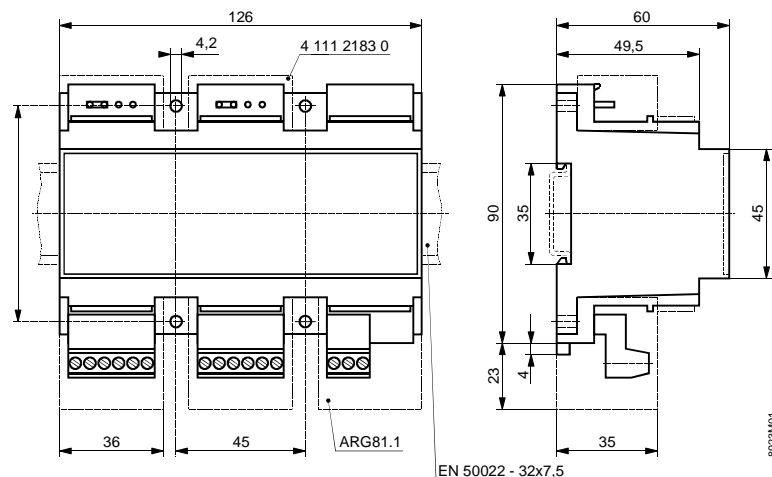


PLR1.1	PROFIBUS repeater
PUR1.1U	PROFIBUS terminator at the repeater's connection terminals
u1	Connection for PROFIBUS section 1
u2	Connection for PROFIBUS section 2

Note

For information on the maximum number of repeaters used with the same PROFIBUS, please refer to "Engineering notes".
The repeater connections u1 and u2 for the two PROFIBUS sections are interchangeable.

Dimensions



Dimensions in mm

© 1999 Siemens Building Technologies Ltd.