

# PSM-ME-RS485/RS485-P Repeater

 [perle.com/products/serial-extendrs/psm-me-rs485-repeater.shtml](https://perle.com/products/serial-extendrs/psm-me-rs485-repeater.shtml)

## RS485 to RS485 Repeater

- Amplify RS485 signals up to 1.2km [4000 feet]
- Add 32 nodes to an RS-485 data circuit
- Transmission speeds up to 1.5 Mbps
- 3-way isolation between all interfaces

Boost, or amplify, RS-485 signals to cover longer distances with the PSM-ME-RS485 Repeater. By using differential voltage lines for data and control signals RS-485 repeaters overcome the limitations of standard serial ports. This allows you to add 4,000 feet (1.2 km) and 32 nodes to an RS-485 data circuit. In addition, 3-way isolation protects devices from transient surges and ground loops on the data line.



The PSM-ME-RS485 repeater was developed for the high requirements of fieldbus systems. The device can be powered by wall-mount AC or snapped onto standard DIN rails and supplied with 24 V DC or AC.

The PSM-ME-RS485 repeater can be used in all common 2-wire bus systems: Modbus, RACKBUS (Endress & Hauser), SUBCONET-K (Moeller), UNI-TELWAY (Telemecanique), DANBUS (Danfoss), RS-BUS (Landis & Staefa), NET 2000 (B&R), INSUM (ABB), J-BUS (Merlin Gerin), ET-WAY (Jetter), S-BUS (SAIA) and around 60 more company-specific bus systems.

For potential separation and range increase in RS-485 2-wire bus systems, the PSM-ME-RS485 repeater is the optimal solution.

## RS485 Repeater Features

- Supports all popular 10/11-bit UART data formats
- Automatic transmit/receive changeover
- Transmission speeds of 1.2 kbps up to 1.5 Mbps
- Integrated, connectable termination resistors
- High-quality 3-way isolation between all interfaces
- Integrated surge protection with transient discharge to the DIN rail
- Supply voltage of 24 V DC or AC to suit the control cabinet
- Plug-in screw connection terminal blocks
- Space-saving slim 22.5 mm device
- Shipbuilding approval per DNV



## PSM-ME-RS485/RS485-P Technical Specifications

### Serial interface

<b>Interface 1</b>	RS-485 interface, in acc. with EIA/TIA-485, DIN 66259-4/RS-485 2-wire
Operating mode	Semi-duplex
Connection method	Pluggable screw connection
File format/coding	UART (11/10 bit switchable; NRZ)
Data direction switching	Automatic control, min. station response time 1 bits
Transmission medium	2-wire twisted pair, shielded
Transmission length	≤ 1200 m (depends on transmission speed, bus system and cable type)
Cascadability	9 (4,8 ... 93,75 kbps)
	8 (115.2 kbps)
	7 (136 kbps)
	6 (187.5 kbps)
	5 (375 ... 1500 kbps)
Termination resistor	390 Ω 180 Ω 390 Ω (Can be connected)
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12
Protocols supported	transparent protocol

Serial transmission speed	1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 75 / 93.75 / 115.2 / 136 / 187.5 / 375 / 500 / 1500 kbps
<b>Interface 2</b>	RS-485 interface, in acc. with EIA/TIA-485, DIN 66259-4/RS-485 2-wire
Operating mode	Semi-duplex
File format/coding	UART (11/10 bit switchable; NRZ)
Data direction switching	Automatic control, min. station response time 1 bits
Transmission medium	2-wire twisted pair, shielded
Transmission length	≤ 1200 m (depends on transmission speed, bus system and cable type)
Cascadability	9 (4,8 ... 93,75 kbps)
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12
Protocols supported	transparent protocol
Serial transmission speed	1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 75 / 93.75 / 115.2 / 136 / 187.5 / 375 / 500 / 1500 kbps

#### **Ambient Conditions**

Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Altitude	5000 m (For restrictions see manufacturer's declaration)
Degree of protection	IP20
Noise immunity	EN 50 082-2

## General

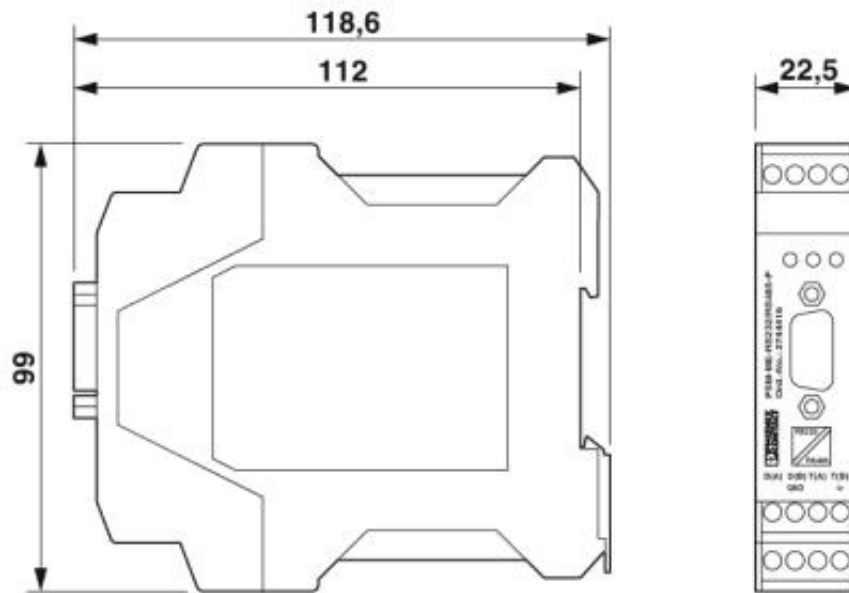
Electrical isolation	VCC // RS-485 (A) // RS-485 (B)
Test voltage data interface/power supply	1.5 kVrms (50 Hz, 1 min.)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Net weight	188.8 g
Housing material	PA 6.6-FR
Color	green
MTTF	1808 Years (SN 29500 standard, temperature 25°C, operating cycle 21 % (5 days a week, 8 hours a day)) 796 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day)) 334 Years (SN 29500 standard, temperature 40°C, operating cycle 100 % (7 days a week, 24 hours a day))
Conformance	CE-compliant
ATEX	II 3 G Ex nA IIC T4 Gc (Please follow the special installation instructions in the documentation!)
UL, USA/Canada	508 recognized
Noise emission	EN 50 081-1
Transmission channels	2 (1/1), TD, RD, half duplex
Bit delay	< 200 ns
Bit distortion	< 1.5 %
Test voltage data interfaces	1.5 kV AC
Test voltage data interface/power supply	1.5 kV AC
Degree of pollution	2
IECEX	Ex nA IIC T4 Gc
Bit distortion, input	max. ± 35 %
Bit distortion, output	< 3.6 %

## Power supply

Nominal supply voltage	24 V AC/DC
Supply voltage range	18 V AC/DC ... 30 V AC/DC (via pluggable COMBICON screw terminal block)
Typical current consumption	90 mA (24 V DC)
Max. current consumption	100 mA
Conductor cross section flexible max.	2.50 mm <sup>2</sup>
Conductor cross section flexible min.	0.20 mm <sup>2</sup>
Conductor cross section solid max.	2.50 mm <sup>2</sup>
Conductor cross section solid min.	0.20 mm <sup>2</sup>
Max. AWG conductor cross section, flexible	12
Min. AWG conductor cross section, flexible	24
Conductor cross section AWG max.	12
Conductor cross section AWG min.	24

## Dimensions

Width	22.5 mm
Height	99 mm
Depth	114.5 mm



### Environmental Product Compliance

China RoHS	Environmentally Friendly Use Period = 50
Reach and RoHS Compliant	<a href="#">Reach and RoHS Compliant</a>

### Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Free fall	In acc. with IEC 60068-2-32 Result: 1 m
Vibration resistance	In acc. with EN 60068-2-6/IEC 60068-2-6 Result: 5g, 10...150 Hz, 2.5 h, in XYZ direction
EMC Immunity	EN 61000-4-2: Contact discharge $\pm 6$ kV (Test Level 3), Indirect discharge $\pm 6$ kV (Test Level 3) EN 61000-4-3: Frequency range 26 MHz ... 3 GHz (Test Level 3) EN 61000-4-4: Criterion B EN 61000-4-5: Signal $\pm 1$ kV (Data line, asymmetrical) EN 55011 EN 61000-4-6: Frequency range 0.15 MHz ... 80 MHz
Conformance	CE-compliant
ATEX	II 3 G Ex nA IIC T4 Gc
UL, USA/Canada	508 recognized
Noise emission	EN 50 081-1
Noise immunity	EN 50 082-2

Shock	In acc. with EN 60068-2-27/IEC 60068-2-27 Result: 25g, 11 ms period, half-sine shock pulse
Connection in acc. with standard	CUL
IECEX	Ex nA IIC T4 Gc
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D
	Class I, Zone 2, AEx nA IIC T4
	Class I, Zone 2, Ex nA IIC T4 Gc X

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### Approvals

UL Recognized  
 cUL Recognized  
 DNV  
 EAC  
 KC  
 cULus Recognized  
 UL Listed  
 cUL Listed  
 IECEX  
 ATEX  
 cULus Listed

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### Commercial data

Packing unit	1
Weight per piece	202.0 g
Country of origin	Germany

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### PSM-ME-RS485/RS485-P Repeater Applications

- Electrical isolation and bus segmentation
- Increasing system availability
- Increasing the range
- Increasing the transmission speed
- Extending the number of devices
- Creation of mixed and network structures

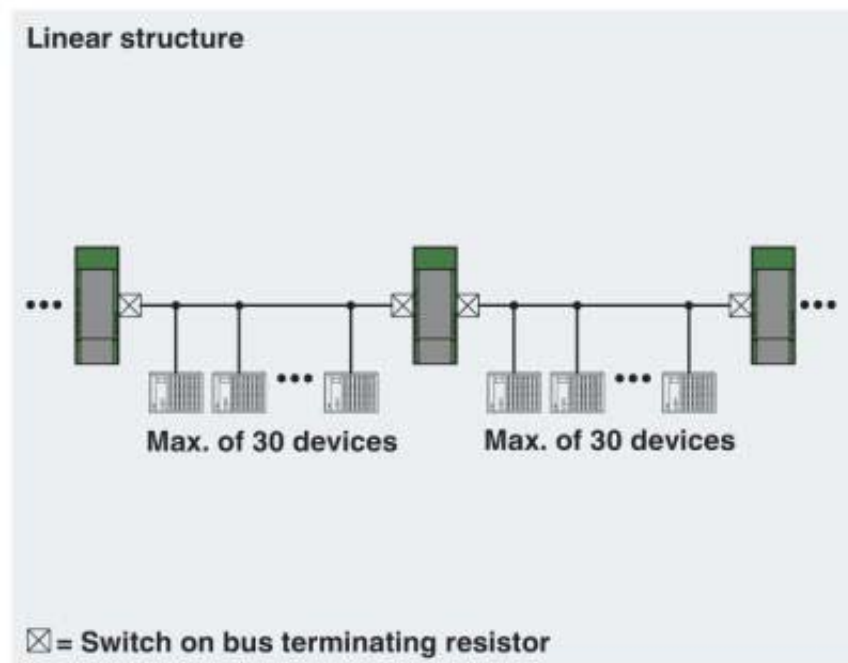
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### Linear Network Diagram

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The PSM-ME-RS485 repeater can be used to create network structures that are tailored to the relevant application. The limits set by the RS-485 standard are therefore extended. The standard defines the following basic specifications:

- Up to 32 devices per potential segment
- Only line structures
- Maximum bus cable length: 1200 m
- Maximum branch line length without termination resistor: 5 m, depending on the transmission speed
- Bus cable termination at the start and end of the bus cable



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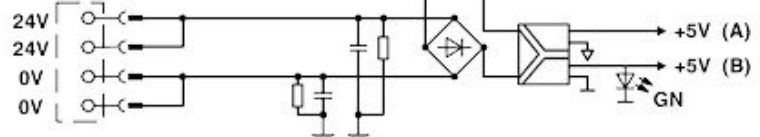
### Block diagram

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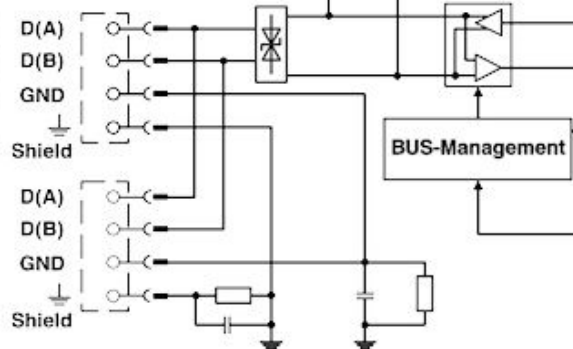


Plug-in screw terminal block

VCC



RS - 458 Port B



BUS-Management

DATA RATE

RS - 458 Port A

