

PSM-ME-RS485/RS485-P Repeater

 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

Interface 1	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 ²
Conductor cross section flexible max.	2.5 mm ²
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
Interface 2	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 ²
Conductor cross section flexible max.	2.5 mm ²
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

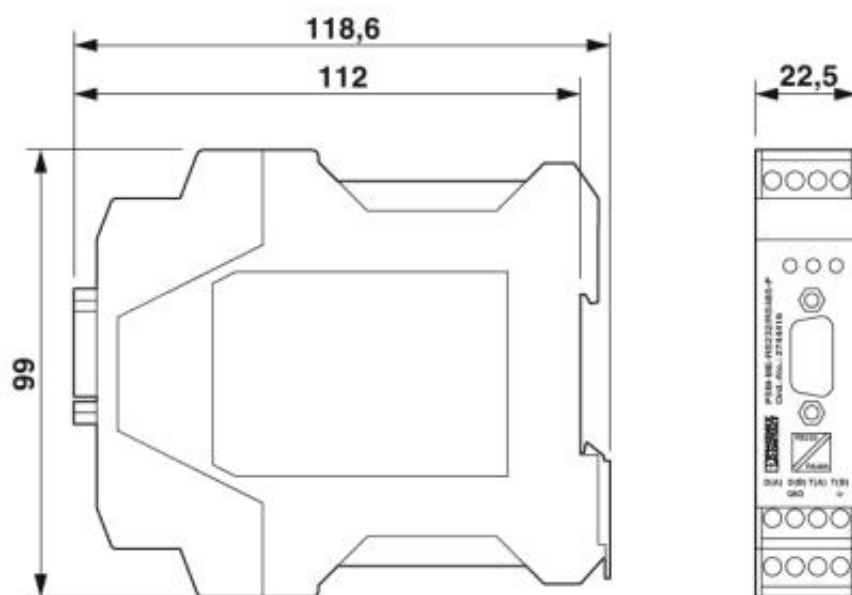
Electrical isolation	VCC // RS-485 (A) // RS-485 (B)
Test voltage data interface/power supply	1.5 kVrms (50 Hz, 1 min.)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Net weight	188.8 g
Housing material	PA 6.6-FR
Color	green
MTTF	1808 Years (SN 29500 standard, temperature 25°C, 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. $\pm$ 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 ²
Conductor cross section flexible min.	0.20 mm ²
Conductor cross section solid max.	2.50 mm ²
Conductor cross section solid min.	0.20 mm ²
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

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 ± 6 kV (Test Level 3), Indirect discharge ± 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 ± 1 kV (Data line, asymmetrical)
	EN 55011
	EN 61000-4-6: Frequency range 0.15 MHz ... 80 MHz

Conformance CE-compliant

A TEX II 3 G Ex nA II C 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

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

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

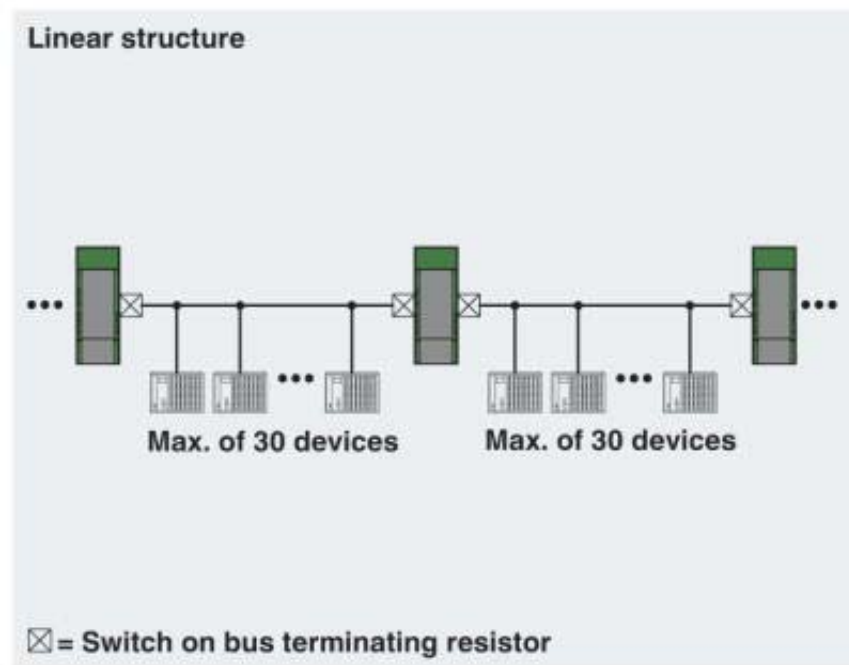
PSM-ME-RS485/RS485-P Repeater Applications

- 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

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



Block diagram

Plug-in screw terminal block

