

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



2744429

<https://www.phoenixcontact.com/in/products/2744429>

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Repeater, for potential separation and range increase in RS-485 2-wire bus systems, 3-way isolation, rail-mountable

## Product Description

The performance and availability of bus systems can be significantly increased by using repeaters. In addition to electrical isolation, bus segmentation with repeaters makes it possible to multiply the permissible coverage of the network and to extend the number of devices. The **PSM-ME-RS485/RS485-P** compact repeater is for universal use in RS-485 2-wire bus systems. The device supports bus systems that rely on the UART/NRZ data format with a character length of 10 or 11 bits.

## Your advantages

- Mounting on standard EN DIN rails
- Transmission speeds of up to 1.5 Mbps
- High-quality 3-way isolation between all interfaces
- Space-saving slim 22.5 mm device
- Integrated, connectable termination resistors
- All connections can be plugged in using a COMBICON screw terminal block
- Shipbuilding approval in accordance with DNV GL

## Commercial Data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2744429             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales Key                            | DNC                 |
| Product Key                          | DNC111              |
| Catalog Page                         | Page 423 (C-6-2019) |
| GTIN                                 | 4017918171797       |
| Weight per Piece (including packing) | 199.2 g             |
| Weight per Piece (excluding packing) | 188.8 g             |
| Customs tariff number                | 85176200            |
| Country of origin                    | DE                  |

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## Technical Data

### Notes

#### Utilization restriction

|          |   |
|----------|---|
| EMC note | EMC: class A product, see manufacturer's declaration in the download area |
|----------|---|

#### Utilization restriction

|            |   |
|------------|---|
| CCCex note | Use in potentially explosive areas is not permitted in China. |
|------------|---|

### Product properties

|              |   |
|--------------|---|
| Product type | Interface converter   |
| MTTF         | 1808 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)   |
|              | 796 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%) |
|              | 334 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)   |

#### Insulation characteristics

|                  |   |
|------------------|---|
| Pollution degree | 2 |
|------------------|---|

### Electrical properties

|   |                                       |
|---|---------------------------------------|
| Electrical isolation                            | VCC // RS-485 (A) // RS-485 (B)       |
| Maximum power dissipation for nominal condition | 2.16 W                                |
| Test voltage data interface/power supply        | 1.5 kV <sub>rms</sub> (50 Hz, 1 min.) |

#### Supply

|                             |   |
|-----------------------------|---|
| Supply voltage range        | 18 V AC/DC ... 30 V AC/DC (via pluggable COMBICON screw terminal block) |
| Nominal supply voltage      | 24 V AC/DC  |
| Typical current consumption | 90 mA (24 V DC)   |
| Max. current consumption    | 100 mA  |

### Connection data

#### Supply

|   |   |
|---|---|
| Conductor cross section, flexible       | 0.20 mm <sup>2</sup> ... 2.50 mm <sup>2</sup> |
| Conductor cross section, rigid          | 0.20 mm <sup>2</sup> ... 2.50 mm <sup>2</sup> |
| Conductor cross section, flexible [AWG] | 24 ... 12                                     |
| Conductor cross section AWG             | 24 ... 12                                     |
| Tightening torque                       | 0.56 Nm ... 0.79 Nm                           |

### Interfaces

|                        |             |
|------------------------|-------------|
| Bit distortion         | < 1.5 %     |
| Bit distortion, input  | max. ± 35 % |
| Bit distortion, output | < 3.6 %     |

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|                       |                              |
|-----------------------|------------------------------|
| Bit delay             | < 200 ns                     |
| Signal                | Modbus                       |
| Transmission channels | 2 (1/1), TD, RD, half duplex |

Data: RS-485 interface, in acc. with EIA/TIA-485, DIN 66259-4/RS-485 2-wire

|  |   |
|--|---|
| 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 |
| Connection method                          | Pluggable screw connection  |
| 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 max.      | 2.5 mm <sup>2</sup>   |
| Conductor cross section flexible min.      | 0.2 mm <sup>2</sup>   |
| Max. AWG conductor cross section, flexible | 12  |
| Min. AWG conductor cross section, flexible | 24  |
| Transmission medium                        | 2-wire twisted pair, shielded   |
| File format/coding                         | UART (11/10 bit switchable; NRZ)  |
| Data direction switching                   | Automatic control, min. station response time 1 bits  |
| Protocols supported                        | transparent protocol  |

Data: RS-485 interface, in acc. with EIA/TIA-485, DIN 66259-4/RS-485 2-wire

|                                       |   |
|---------------------------------------|---|
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| Conductor cross section flexible max. | 2.5 mm <sup>2</sup>   |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup>   |
| Conductor cross section AWG max.      | 12  |
| Conductor cross section AWG min.      | 24  |
| Transmission medium                   | 2-wire twisted pair, shielded   |
| File format/coding                    | UART (11/10 bit switchable; NRZ)  |
| Data direction switching              | Automatic control, min. station response time 1 bits  |
| Protocols supported                   | transparent protocol  |

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## Dimensions

|                     |          |
|---------------------|----------|
| Dimensional drawing |          |
| Width               | 22.5 mm  |
| Height              | 99 mm    |
| Depth               | 114.5 mm |

## Material specifications

|                  |           |
|------------------|-----------|
| Material Housing | PA 6.6-FR |
|------------------|-----------|

## Environmental and real-life conditions

### Ambient conditions

|   |  |
|---|--|
| Degree of protection                    | IP20   |
| Ambient temperature (operation)         | -40 °C ... 70 °C   |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C   |
| Altitude                                | ≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation) |
| Permissible humidity (operation)        | 10 % ... 95 % (non-condensing)   |

## Approvals

### CE

|             |              |
|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

### EAC

|                |     |
|----------------|-----|
| Identification | EAC |
|----------------|-----|

### ATEX

|                |   |
|----------------|---|
| Identification | □ II 3 G Ex nA IIC T4 Gc  |
| Certificate    | IBExU16ATEXB004 X   |
| Note           | Please follow the special installation instructions in the documentation! |

### IECEX

|                |                    |
|----------------|--------------------|
| Identification | Ex nA IIC T4 Gc    |
| Certificate    | IECEX IBE 15.0034X |

### UL, USA/Canada

|                |                                    |
|----------------|------------------------------------|
| Identification | 508 Recognized                     |
|                | 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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## KC approval for South Korea

|             |                       |
|-------------|-----------------------|
| Certificate | KCC-REI-PCK-FL2744429 |
|-------------|-----------------------|

## Corrosive gas test

|                |                                  |
|----------------|----------------------------------|
| Identification | ISA-S71.04-1985 G3 Harsh Group A |
|----------------|----------------------------------|

## Shipbuilding

|                |        |
|----------------|--------|
| Identification | DNV GL |
|----------------|--------|

## DNV GL data

|             |   |
|-------------|---|
| Temperature | B   |
| Humidity    | A   |
| Vibration   | A   |
| EMC         | B   |
| Enclosure   | Required protection according to the Rules shall be provided upon installation on board |

## EMC data

|                               |   |
|-------------------------------|---|
| Noise immunity                | EN 61000-6-2:2005                         |
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Noise emission                | EN 61000-6-4                              |

## Electrostatic discharge

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-2 |
|-----------------------|--------------|

## Electrostatic discharge

|                    |                       |
|--------------------|-----------------------|
| Contact discharge  | ± 6 kV (Test Level 3) |
| Discharge in air   | ± 8 kV (Test Level 3) |
| Indirect discharge | ± 6 kV (Test Level 3) |
| Comments           | Criterion B           |

## Electromagnetic HF field

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-3 |
|-----------------------|--------------|

## Electromagnetic HF field

|                 |                                 |
|-----------------|---------------------------------|
| Frequency range | 26 MHz ... 3 GHz (Test Level 3) |
| Field intensity | 10 V/m                          |
| Comments        | Criterion A                     |

## Fast transients (burst)

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-4 |
|-----------------------|--------------|

## Fast transients (burst)

|          |                       |
|----------|-----------------------|
| Input    | ± 4 kV (Test Level 3) |
| Signal   | ± 2 kV (Test Level 3) |
| Comments | Criterion B           |

## Surge current load (surge)

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|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-5 |
|-----------------------|--------------|

## Surge current load (surge)

|          |                                  |
|----------|----------------------------------|
| Input    | ± 0.5 kV (DC supply)             |
| Signal   | ± 2 kV (Data line, asymmetrical) |
| Comments | Criterion B                      |

## Conducted interference

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-6 |
|-----------------------|--------------|

## Conducted interference

|                 |                     |
|-----------------|---------------------|
| Frequency range | 0.15 MHz ... 80 MHz |
| Comments        | Criterion A         |
| Voltage         | 10 V                |

## Emitted interference

|                       |                                  |
|-----------------------|----------------------------------|
| Standards/regulations | EN 55011                         |
| Comments              | Class A, industrial applications |

## Criteria

|             |  |
|-------------|--|
| Criterion A | Normal operating behavior within the specified limits.                               |
| Criterion B | Temporary impairment to operational behavior that is corrected by the device itself. |

## Mounting

|               |                   |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
|---------------|-------------------|

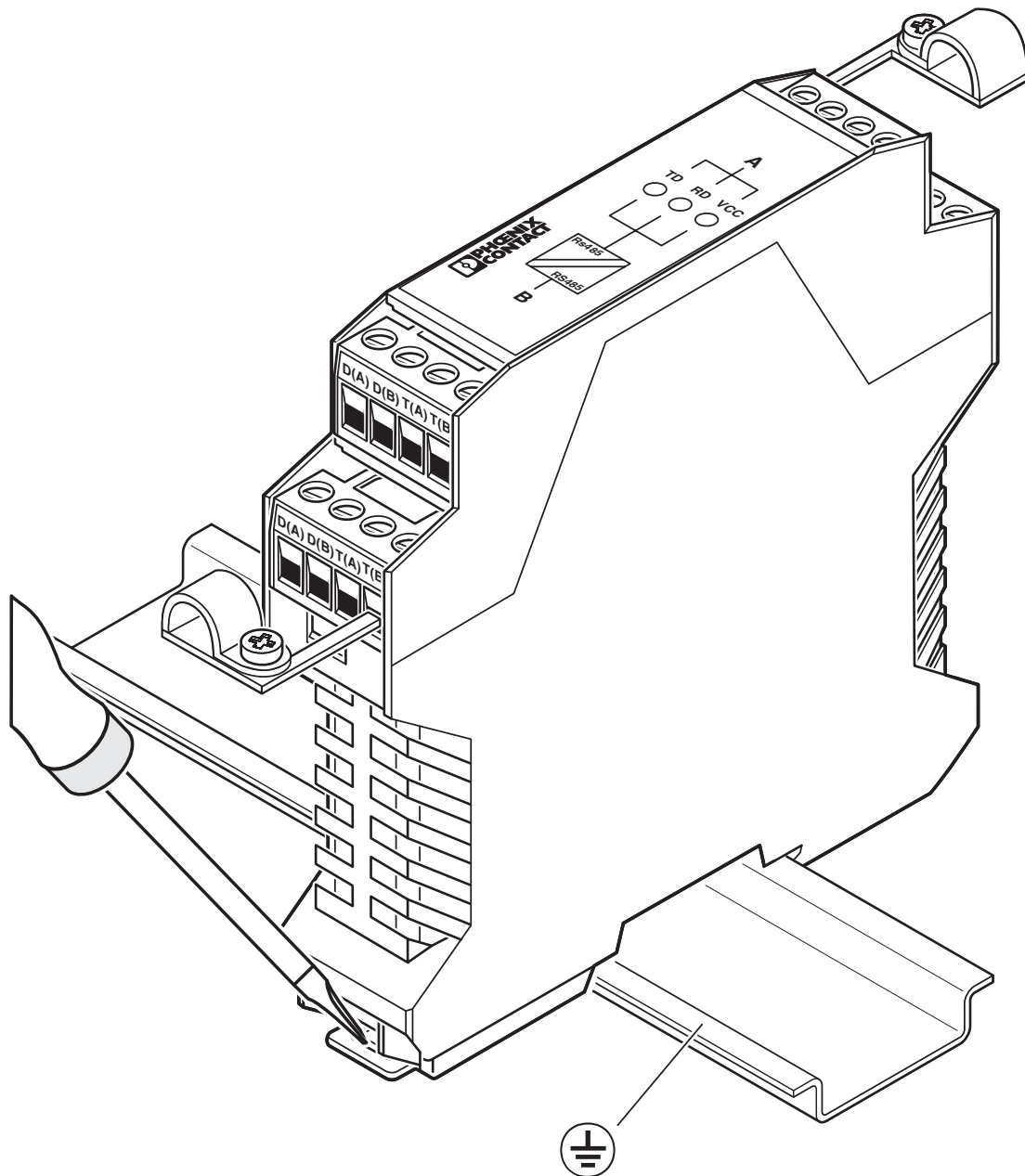
# PSM-ME-RS485/RS485-P - Repeater

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## Drawings

Schematic diagram



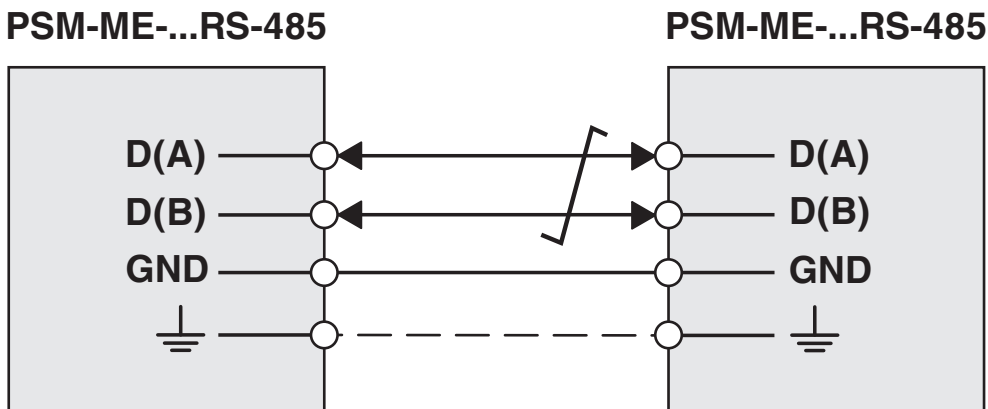
Removal

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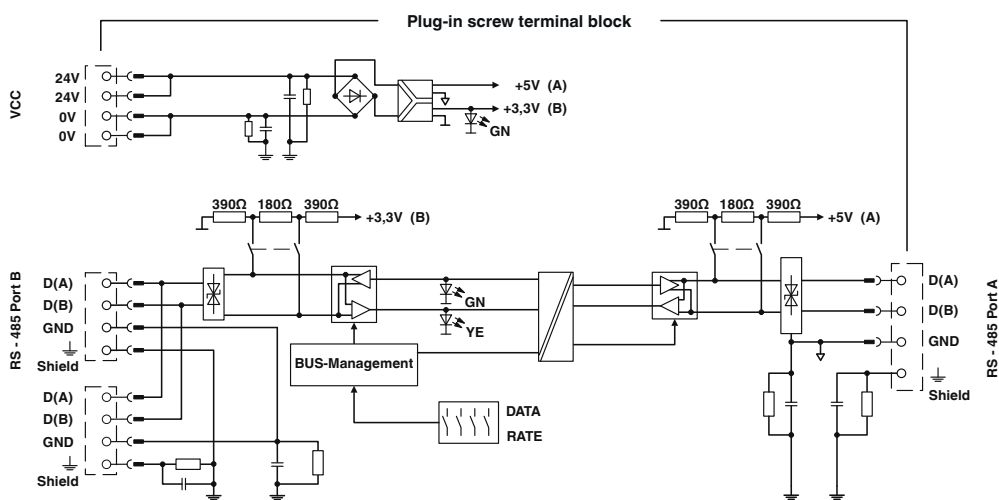
<https://www.phoenixcontact.com/in/products/2744429>

Connection diagram



RS-485 interface

Circuit diagram



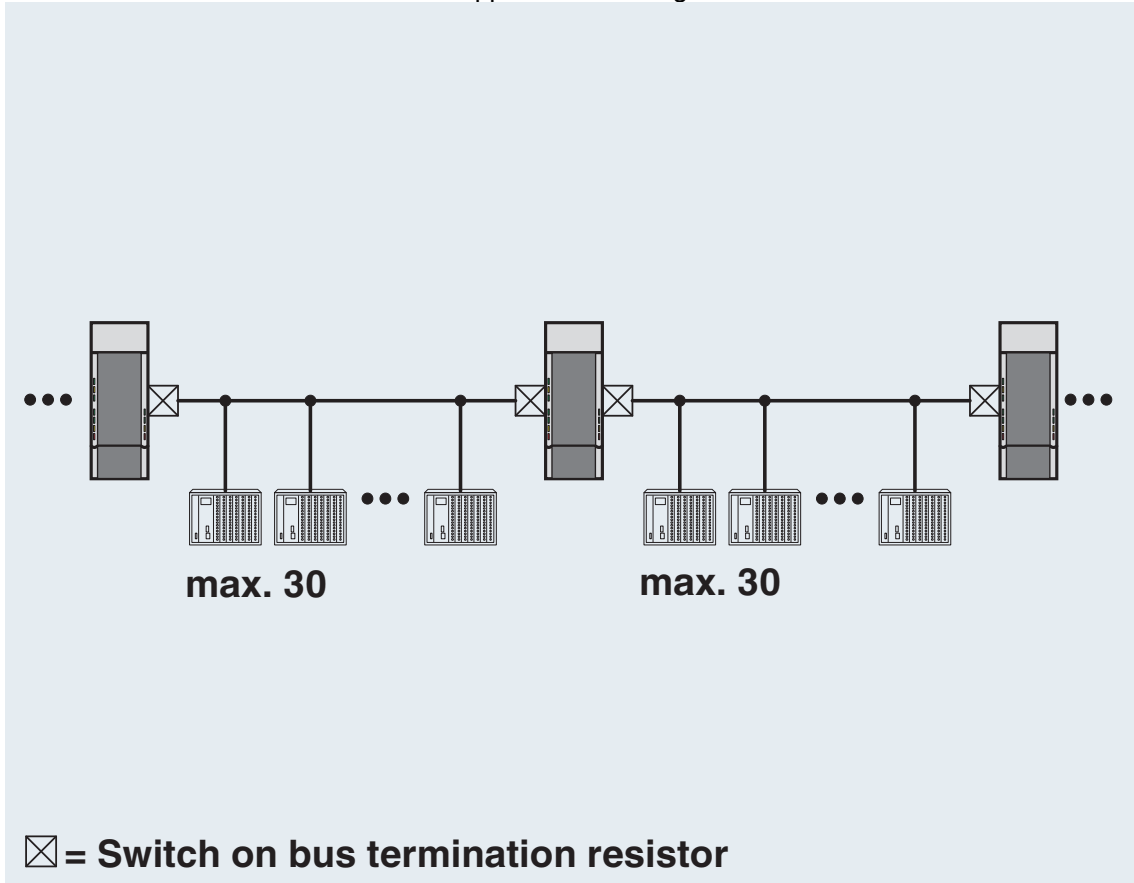


# PSM-ME-RS485/RS485-P - Repeater

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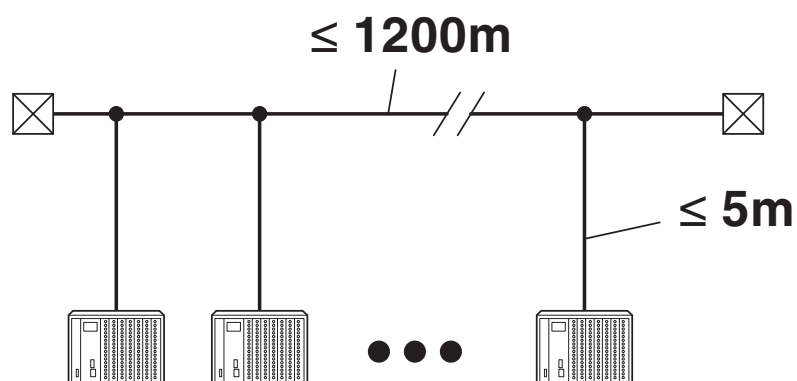
<https://www.phoenixcontact.com/in/products/2744429>

Application drawing



Line structure

Application drawing

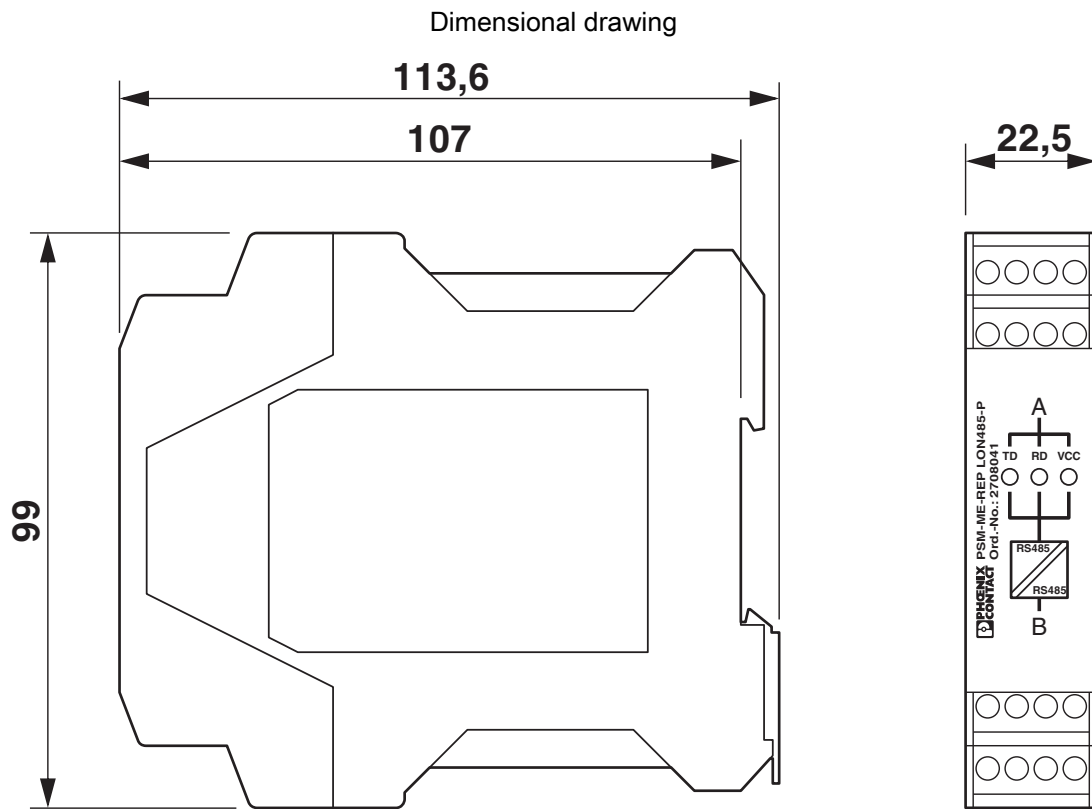


Cable lengths according to the RS-485 standard

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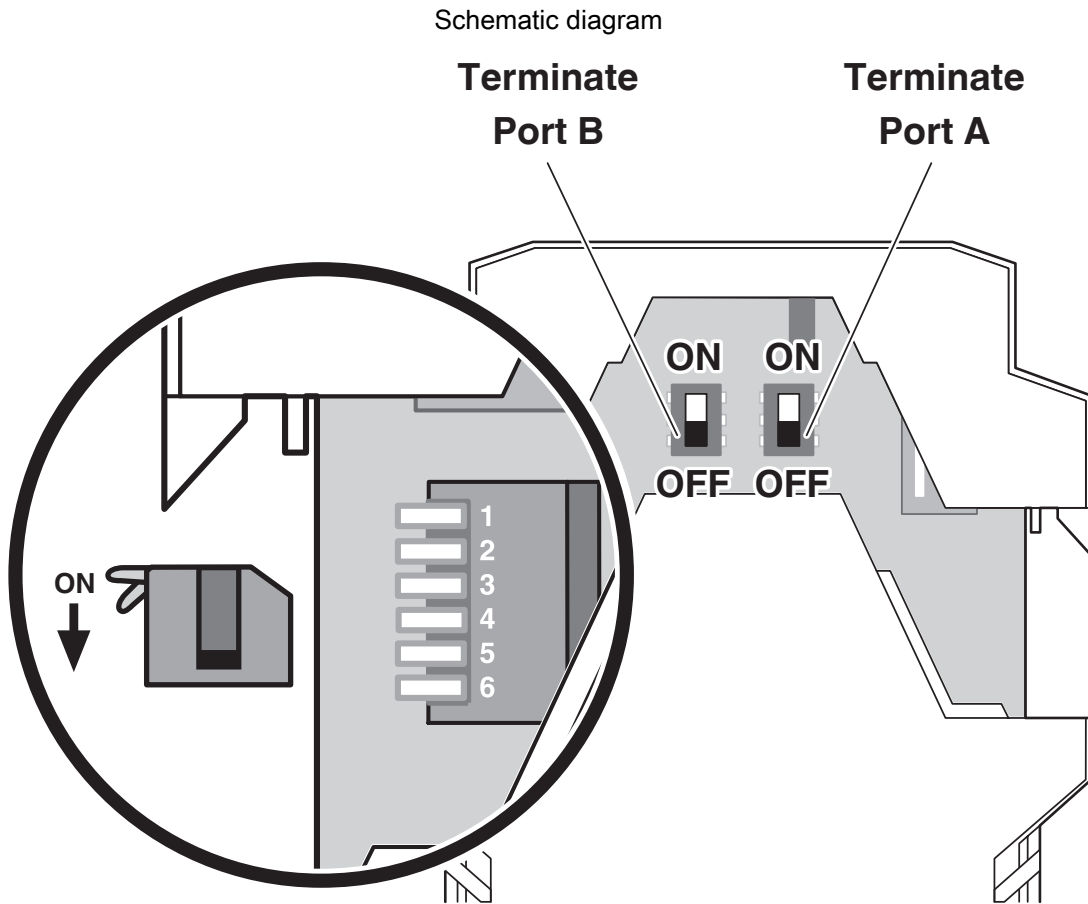
Slim design

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DIP switches

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## Approvals



**cUL Recognized**  
Approval ID: FILE E 238705



**UL Recognized**  
Approval ID: FILE E 238705



**DNV GL**  
Approval ID: TAA00001KR



**KC**  
Approval ID: KCC-REI-PCK-FL274442



**EAC**  
Approval ID: TR TS\_D\_01871-19



**cUL Recognized**  
Approval ID: FILE E 199827

|  | Nominal Voltage $U_N$ | Nominal Current $I_N$ | Cross Section AWG | Cross Section $\text{mm}^2$ |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | 24 V                  | 0.09 A                | -                 | -                           |



**IECEx**  
Approval ID: IECEx IBE 15.0034 X



**cUL Listed**  
Approval ID: FILE E 199827



**UL Listed**  
Approval ID: FILE E 199827



**ATEX**  
Approval ID: IBExU 16 ATEX B004 X

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 19179090 |
| ECLASS-12.0 | 19179090 |
| ECLASS-13.0 | 19179090 |

### ETIM

|          |          |
|----------|----------|
| ETIM 8.0 | EC002608 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 43222600 |
|-------------|----------|

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## Environmental Product Compliance

|            |  |
|------------|--|
| REACH SVHC | Lead 7439-92-1   |
| China RoHS | Environmentally Friendly Use Period = 50 years   |
|            | For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads" |

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## Accessories

### ME-SAS - Shield connection clamp

2853899

<https://www.phoenixcontact.com/in/products/2853899>

Shield connection clamp for terminal points starting from 2.5 mm<sup>2</sup>



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### SZF 1-0,6X3,5 - Screwdriver

1204517

<https://www.phoenixcontact.com/in/products/1204517>

Actuation tool, for ST terminal blocks, also suitable for use as a bladed screwdriver, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip



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## PSI-TERMINATOR-PB-TBUS - Termination resistor

2702636

<https://www.phoenixcontact.com/in/products/2702636>



Active termination resistor for PROFIBUS and RS-485 bus systems, redundant power supply, routing of the supply voltage via DIN rail connector, electrical isolation, switchable termination, integrated programming interface

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