

PSI-REP-RS485W2 - Repeater



2313096

<https://www.phoenixcontact.com/us/products/2313096>

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Modular repeater for electrical isolation and range increase in RS-485 2-wire bus systems up to 500 kbps, 4-way isolation, rail-mountable, supply 24 V DC

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.

Your advantages

- Data rates of up to 500 kbps (adjustable via DIP switches)
- High-quality 4-way isolation between all interfaces
- Bit oversampling for reliable detection of sporadic disturbances
- Bit retiming for unrestricted cascading of devices
- Integrated, connectable termination resistors
- Can be combined with PSI-MOS FO converters in a modular way thanks to DIN rail connectors
- Approved for use in zone 2



Commercial data

| | |
|------------------------|---------------|
| Item number | 2313096 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN11 |
| Product key | DNC122 |
| GTIN | 4046356098816 |

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| | |
|--------------------------------------|----------|
| Weight per piece (including packing) | 258 g |
| Weight per piece (excluding packing) | 240.8 g |
| Customs tariff number | 85176200 |
| Country of origin | DE |

Technical data

Notes

Note on application

| | |
|---------------------|-------------------------|
| Note on application | Only for industrial use |
|---------------------|-------------------------|

Utilization restriction

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

Product properties

| | |
|--------------|--|
| Product type | Interface converter |
| MTTF | 1439 Years (SN 29500 standard, temperature 25°C, operating cycle 21%) |
| | 717 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%) |
| | 305 Years (SN 29500 standard, temperature 40°C, operating cycle 100%) |
| MTBF | 1247 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day)) |
| | 261 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day)) |

Electrical properties

| | |
|---|---|
| Electrical isolation | VCC // TBUS // RS-485 (A) // RS-485 (B) |
| Maximum power dissipation for nominal condition | 1.8 W |
| Test voltage data interface/power supply | 1.5 kV _{rms} (50 Hz, 1 min.) |
| Test voltage data interfaces | 1.5 kV |

Supply

| | |
|-----------------------------|--|
| Supply voltage range | 18 V DC ... 30 V DC (via pluggable COMBICON screw terminal block) |
| Nominal supply voltage | 24 V DC |
| Typical current consumption | 75 mA (24 V DC ...) |
| Max. current consumption | ≤ 2 A (For operation in a joining station, via the DIN rail connector) |

Connection data

Supply

| | |
|-------------------|-------------------|
| Stripping length | 7.00 mm |
| Tightening torque | 0.6 Nm ... 0.8 Nm |

Interfaces

| | |
|------------------------|-------------|
| Bit distortion, input | max. ± 35 % |
| Bit distortion, output | < 6.25 % |
| Bit delay | < 1 bit |
| Signal | Modbus |

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| | |
|---|---|
| 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 | |
| Transmission speed | 4.8/9.6/19.2/38.4/57.6/75/93.75/115.2/136/187.5/375/500 kbps (Can be set manually) |
| Connection method | Pluggable screw connection |
| Transmission length | ≤ 1200 m (depends on transmission speed, bus system and cable type) |
| Termination resistor | 390 Ω (Can be connected to port A and B) 150 Ω 390 Ω |
| Single conductor/terminal point, rigid | 0.2 mm ² ... 2.5 mm ² |
| Single-wire/terminal point, flexible | 0.2 mm ² ... 2.5 mm ² |
| Max. AWG conductor cross-section, flexible | 12 |
| Min. AWG conductor cross-section, flexible | 24 |
| Single-wire/terminal point, rigid AWG max. | 12 |
| Single-wire/terminal point, rigid 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 2 bits |

Dimensions

| | |
|---------------------|--------|
| Dimensional drawing | |
| Width | 35 mm |
| Height | 99 mm |
| Depth | 105 mm |

Material specifications

| | |
|--------------------|-----------------|
| Color (Housing) | gray (RAL 7042) |
| Material (Housing) | PA 6.6-FR |

Mechanical tests

| | |
|--|--|
| Free fall in accordance with IEC 60068-2-32 | Free fall: 1 m |
| Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6 | : 5g, 10...150 Hz, 2.5 h, in XYZ direction |
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27 | : 15g, 11 ms period, half-sine shock pulse |

Environmental and real-life conditions

Ambient conditions

| | |
|----------------------|------|
| Degree of protection | IP20 |
|----------------------|------|

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| | |
|---|--|
| Ambient temperature (operation) | -20 °C ... 60 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Altitude | ≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation) |
| | ≤ 2000 m (Hazardous locations) |
| Permissible humidity (operation) | 10 % ... 95 % (non-condensing) |

Approvals

CE

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

ATEX

| | |
|----------------|---|
| Identification | ⊕ II 3 G Ex ec IIC T5 Gc |
| Certificate | UL 21 ATEX 2550X |
| Note | Please follow the special installation instructions in the documentation! |

IECEX

| | |
|----------------|--------------------|
| Identification | Ex ec IIC T5 Gc |
| Certificate | IECEX ULD 21.0013X |

UL, USA/Canada

| | |
|----------------|------------------------------------|
| Identification | Class I, Zone 2, AEx ec IIC T5 Gc |
| | Ex ec IIC T5 Gc X |
| | Class I, Div. 2, Groups A, B, C, D |

Corrosive gas test

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

EMC data

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

Noise emission

| | |
|-----------------------|----------|
| Standards/regulations | EN 55011 |
|-----------------------|----------|

Electrostatic discharge

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

Electrostatic discharge

| | |
|-------------------|-------------|
| Contact discharge | ± 6 kV |
| Discharge in air | ± 8 kV |
| Comments | Criterion B |

Electromagnetic HF field

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

Electromagnetic HF field

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| | |
|-----------------|------------------|
| Frequency range | 80 MHz ... 3 GHz |
| Field intensity | 10 V/m |
| Comments | Criterion A |

Fast transients (burst)

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

Fast transients (burst)

| | |
|----------|-------------|
| Input | ± 2 kV |
| Signal | ± 2 kV |
| Comments | Criterion B |

Surge current load (surge)

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

Surge current load (surge)

| | |
|----------|-------------|
| Input | ± 0.5 kV |
| Signal | ± 1 kV |
| Comments | Criterion B |

Conducted interference

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

Conducted interference

| | |
|----------|-------------|
| 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. |

Standards and regulations

| | |
|---|--------------------|
| Free from substances that could impair the application of coating | VDMA 24364:2018-05 |
| Standards/regulations | EN 62368 |

Mounting

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

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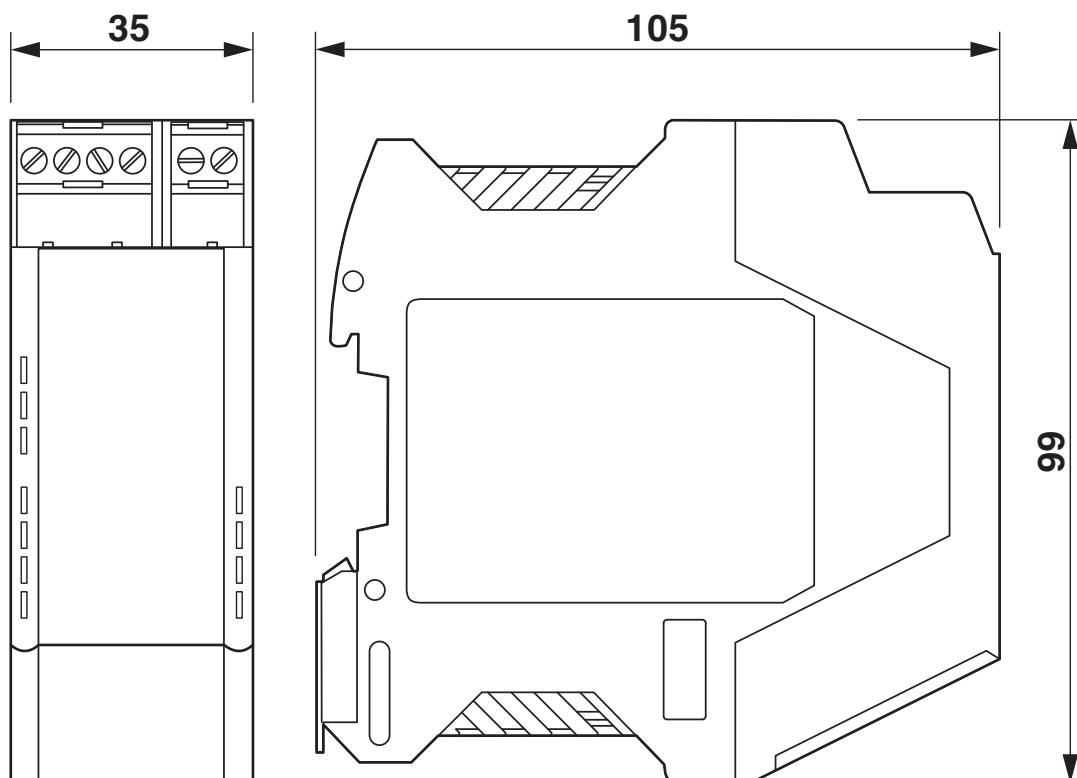


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Drawings

Dimensional drawing



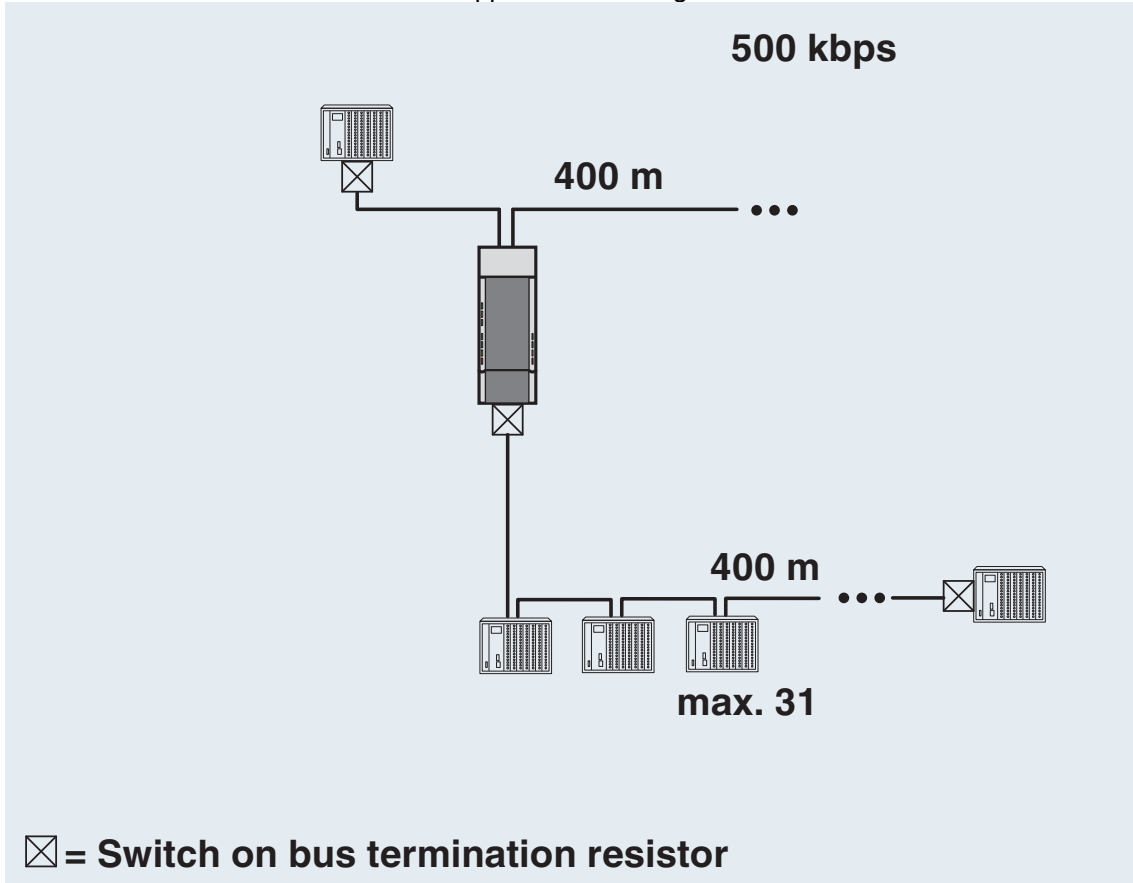
Housing dimensions

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Application drawing



Branch/bus segmentation

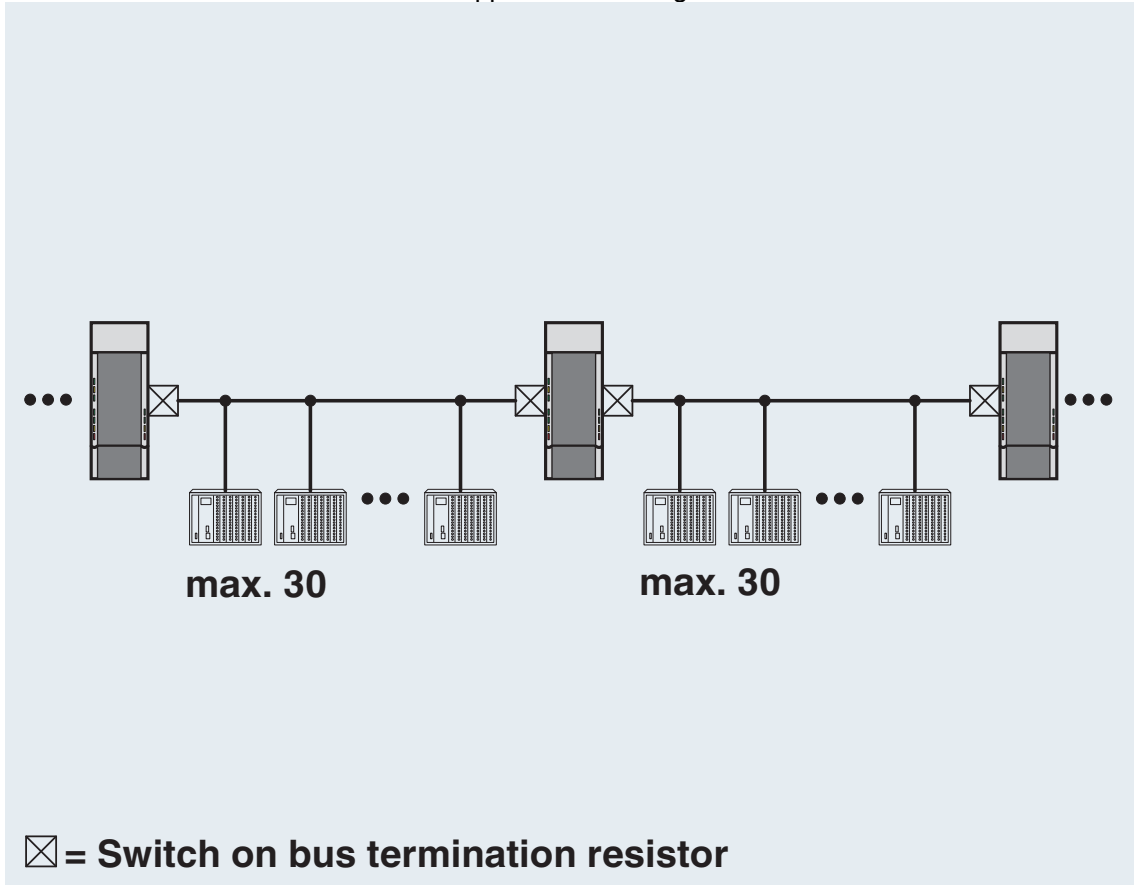
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Application drawing



Line structure

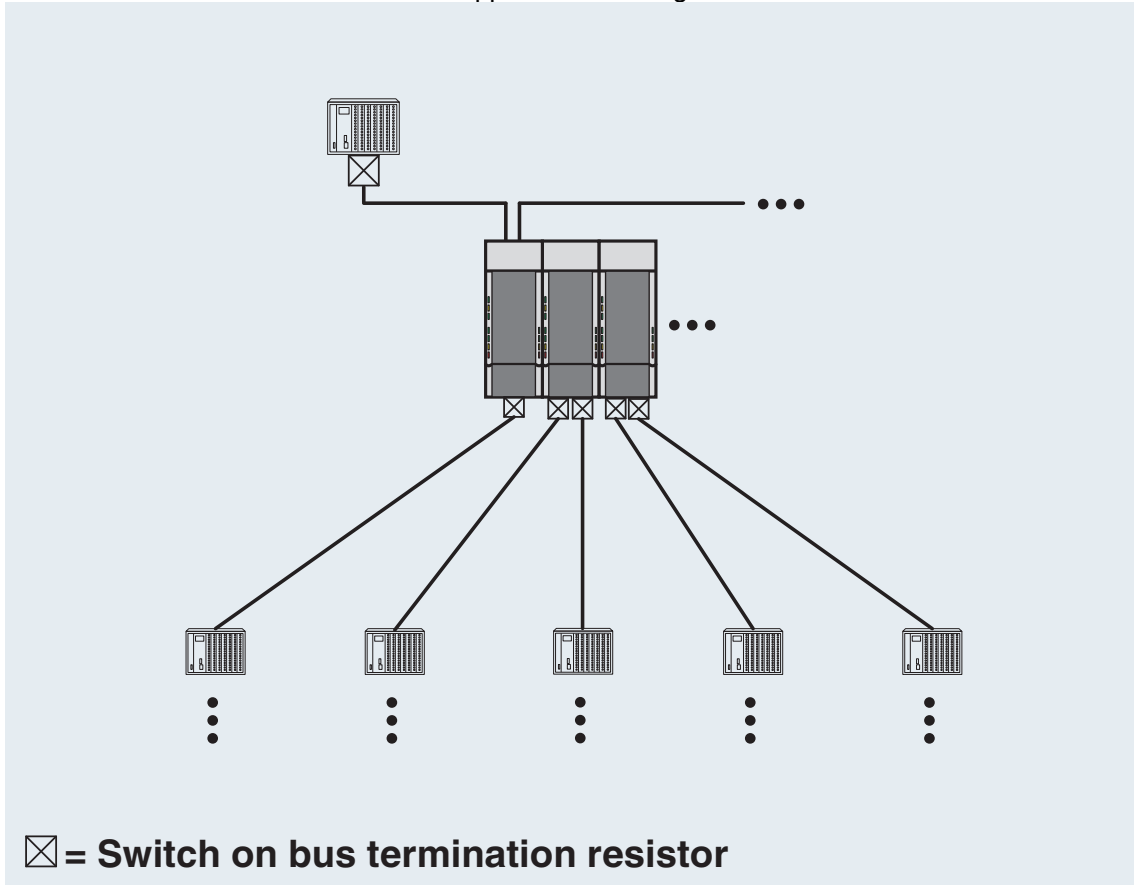
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Application drawing



Star structure

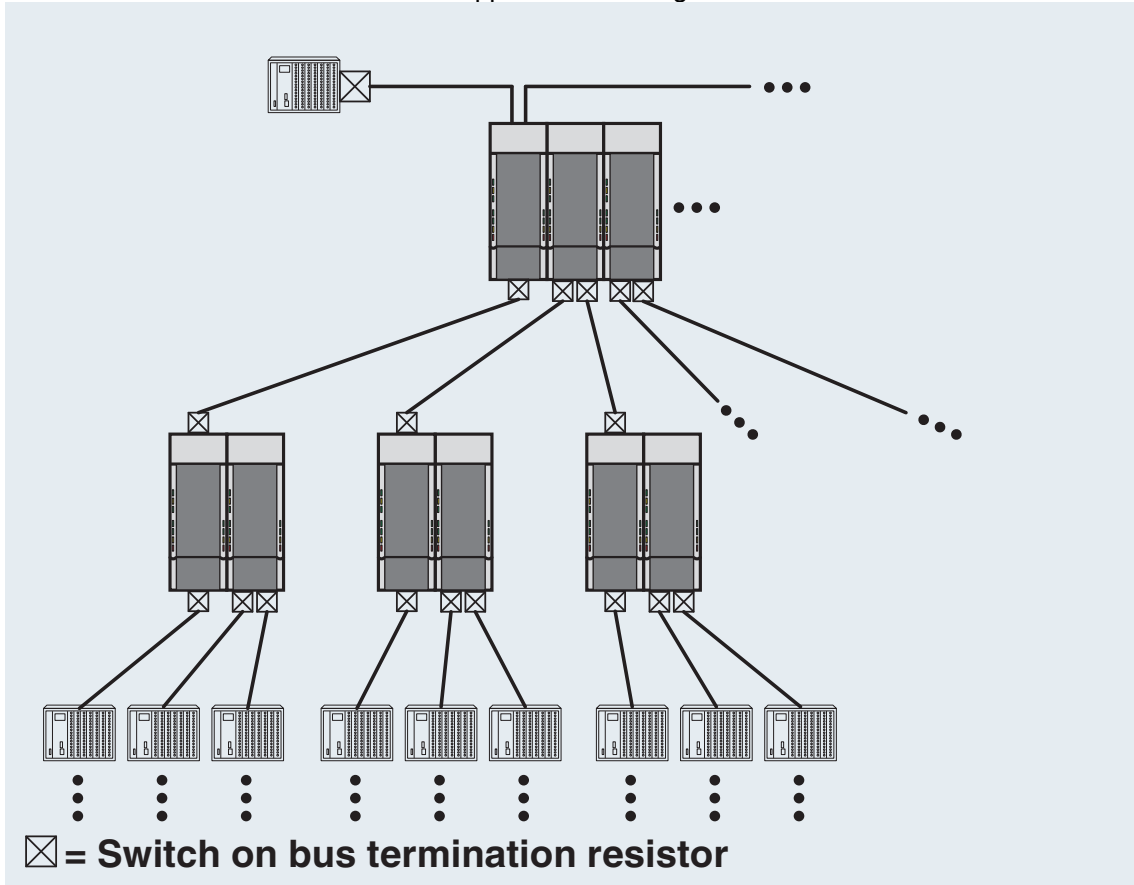
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Application drawing



Tree structure

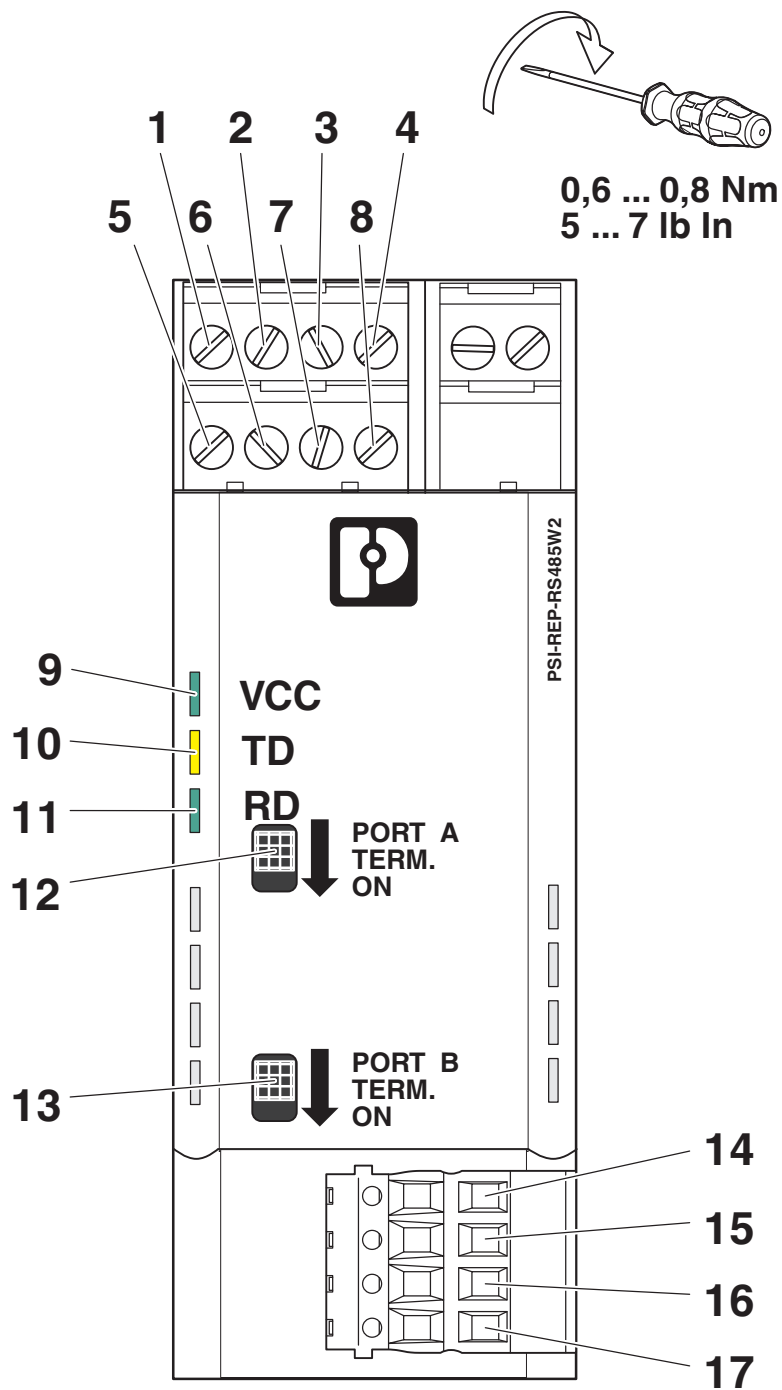
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Schematic diagram



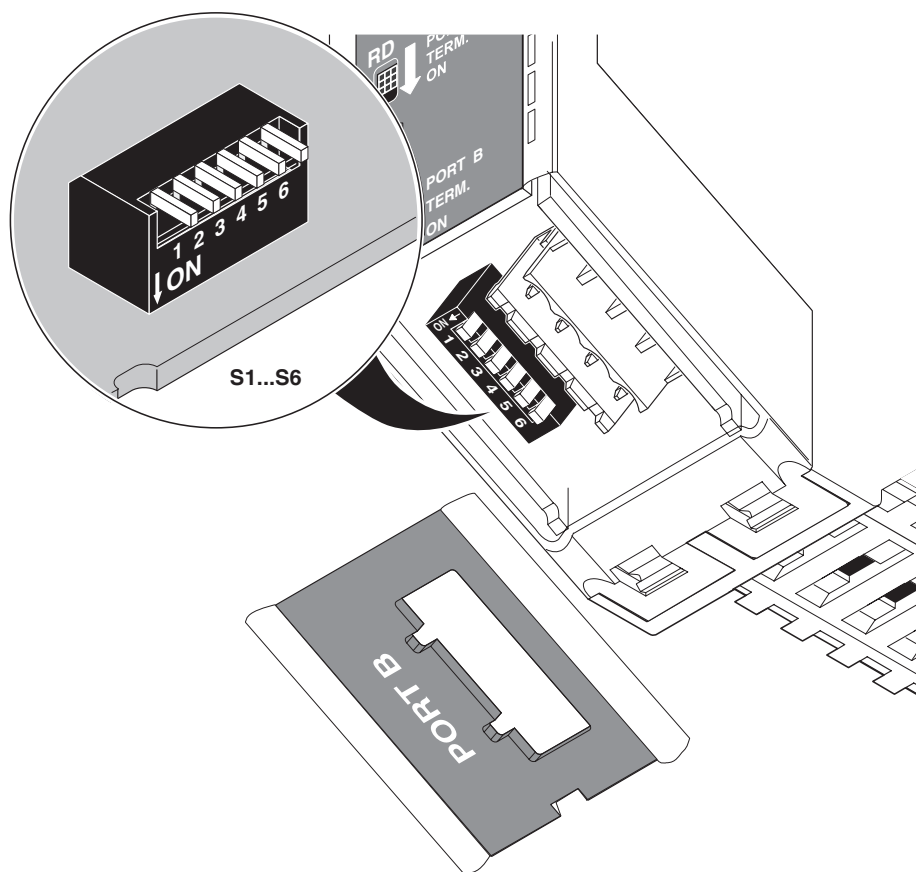
Front view

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Schematic diagram



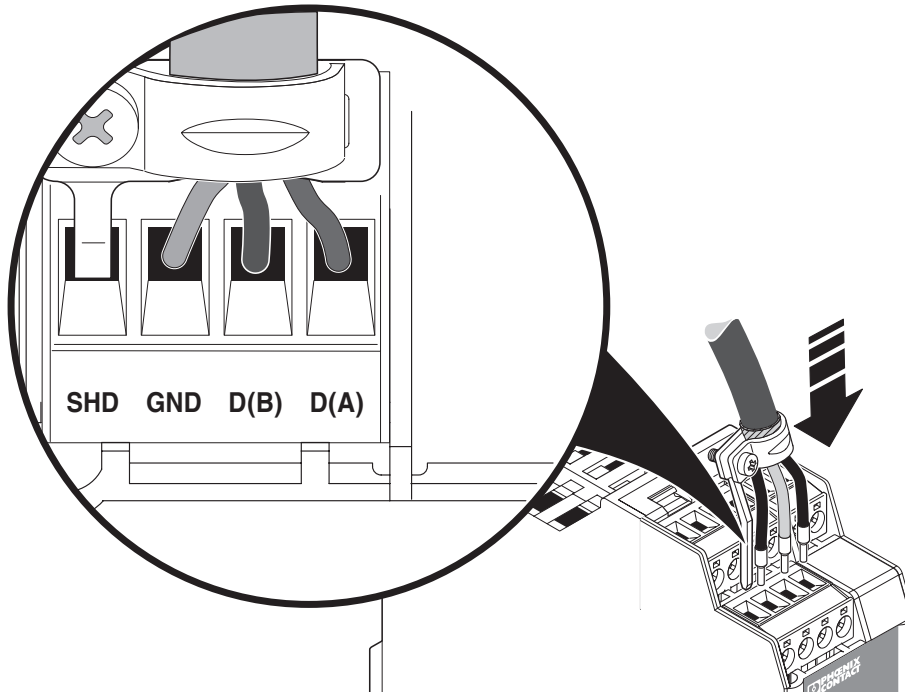
DIP switches

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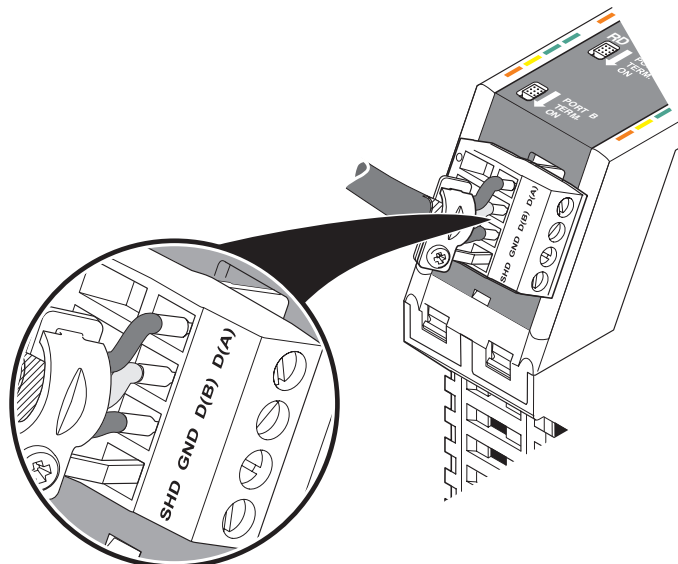
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Schematic diagram



Connecting the cables

Schematic diagram



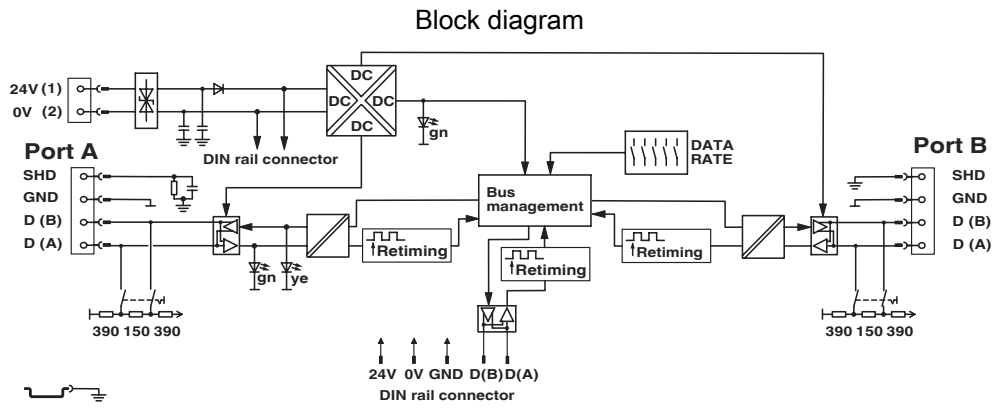
Connecting the cables

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Basic circuit diagram

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Approvals

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cULus Listed

Approval ID: E238705



cULus Recognized

Approval ID: E238705



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: E199827



IECEx

Approval ID: IECEx ULD 21.0013X



ATEX

Approval ID: UL 21 ATEX 2550X

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27242208 |
| ECLASS-15.0 | 27242208 |

UNSPSC

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

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Environmental product compliance

EU RoHS

| | |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 6(c), 7(a), 7(c)-I |

China RoHS

| | |
|--|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|-------------------------------------|--------------------------------------|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
| SCIP | 9ae6a00b-07c9-4c16-a83d-d5932c6a7119 |

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