

Repeater - PSI-REP-RS485W2



2313096

<https://www.phoenixcontact.com/pc/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
Product Key	DNC122
Catalog Page	Page 423 (C-6-2019)
GTIN	4046356098816
Weight per Piece (including packing)	260.1 g
Weight per Piece (excluding packing)	240.8 g
Customs tariff number	85176200
Country of origin	DE

Technical Data

Notes

Utilization restriction

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

CCCex note	Use in potentially explosive areas is not permitted in China.
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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 (in acc. with UL)
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 mm
Tightening torque	0.6 Nm ... 0.8 Nm

Interfaces

Bit distortion, input	max. ± 35 %
Bit distortion, output	< 6.25 %
Bit delay	< 1 bit

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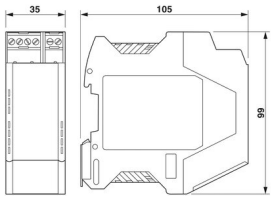
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Signal	Modbus
Transmission channels	2 (1/1), TD, RD, half duplex

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

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
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section solid min.	0.2 mm ²
Max. AWG conductor cross section, flexible	12
Min. AWG conductor cross section, flexible	24
Single-wire/terminal point, solid AWG max.	12
Single-wire/terminal point, solid 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	gray
Material	PA 6.6-FR (Housing)

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-20 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

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Altitude	≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation)
	≤ 2000 m (Hazardous locations)
Permissible humidity (operation)	10 % ... 95 % (non-condensing)

Approval data

CE

Certificate	CE-compliant
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ATEX

Identification	<input type="checkbox"/> 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 21.00013X

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
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EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 55011
Noise immunity	EN 61000-4-2

Electrostatic discharge

Standards/regulations	EN 61000-4-2
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Electrostatic discharge

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

Electromagnetic HF field

Standards/regulations	EN 61000-4-3
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Electromagnetic HF field

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

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Fast transients (burst)

Standards/regulations	EN 61000-4-4
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Fast transients (burst)

Input	± 2 kV
Signal	± 2 kV
Comments	Criterion B

Surge current load (surge)

Standards/regulations	EN 61000-4-5
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Surge current load (surge)

Input	± 0.5 kV
Signal	± 1 kV
Comments	Criterion B

Conducted interference

Standards/regulations	EN 61000-4-6
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Conducted interference

Comments	Criterion A
Voltage	10 V

Emitted interference

Standards/regulations	EN 55011
Comments	Class A, industrial applications
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	in accordance with VW-AUDI-Seat central standard P-VW 3.10.7 57 65 0
Standards/regulations	EN 62368

Mounting

Mounting type	DIN rail mounting
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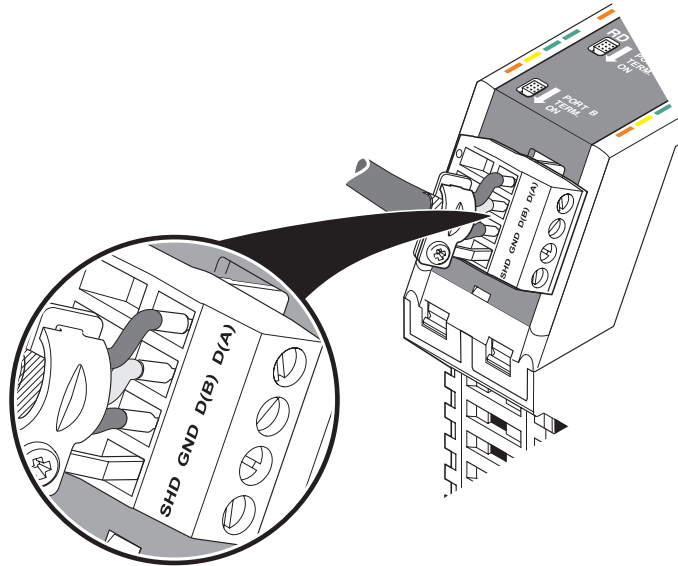
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Drawings

Schematic diagram



Connecting the cables

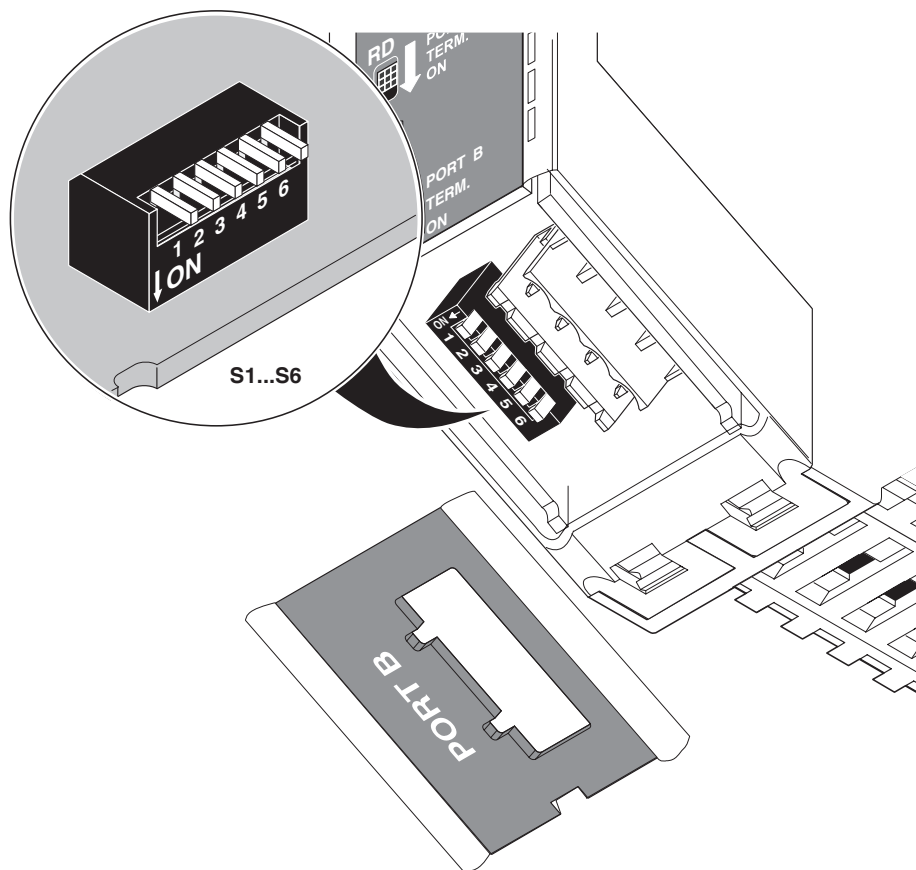
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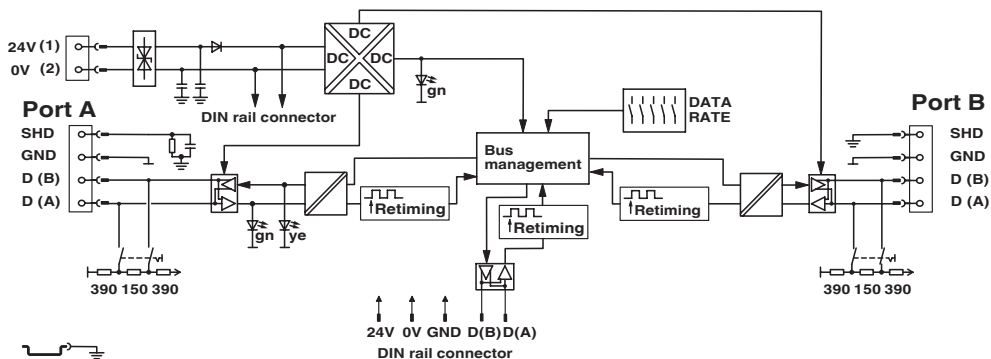
<https://www.phoenixcontact.com/pc/products/2313096>

Schematic diagram



DIP switches

Block diagram



Basic circuit diagram

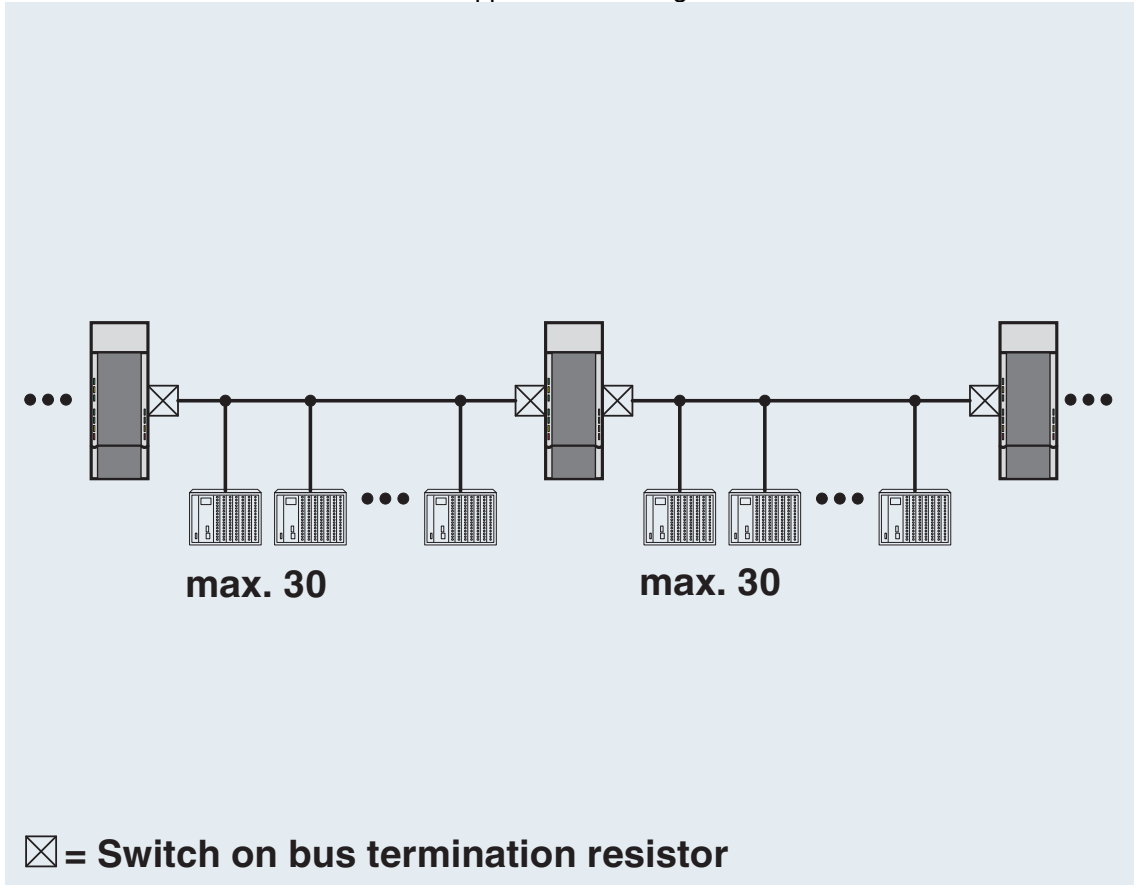
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Application drawing



Line structure

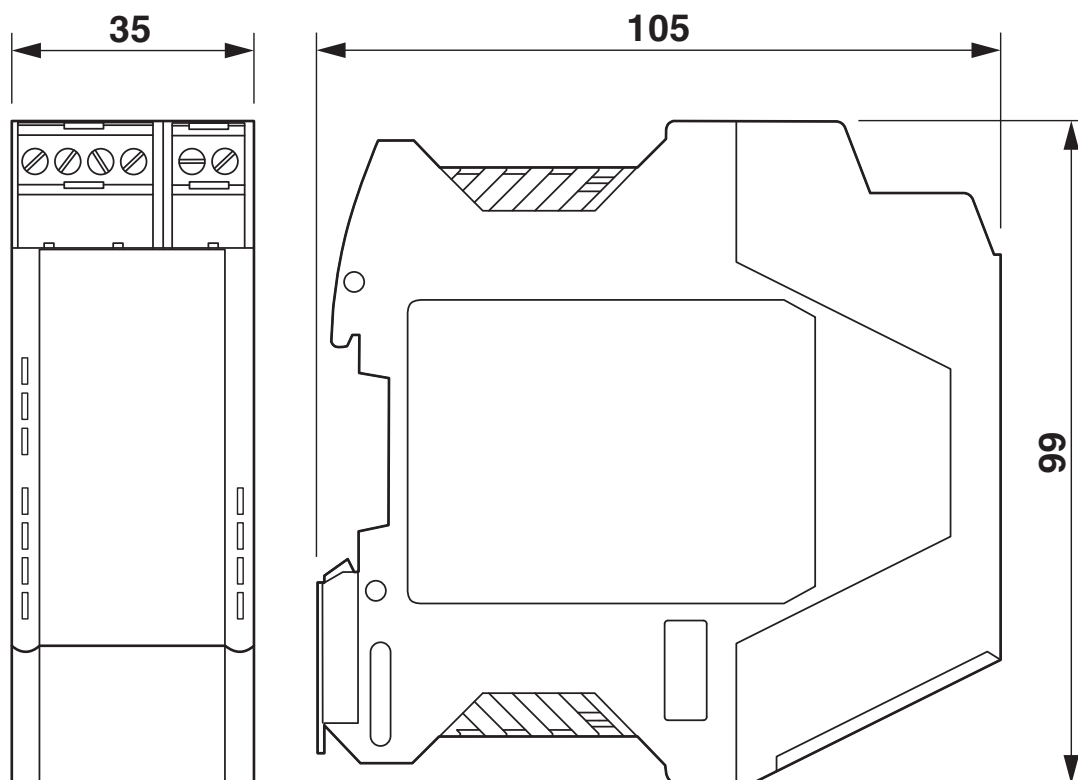
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Dimensional drawing



Housing dimensions

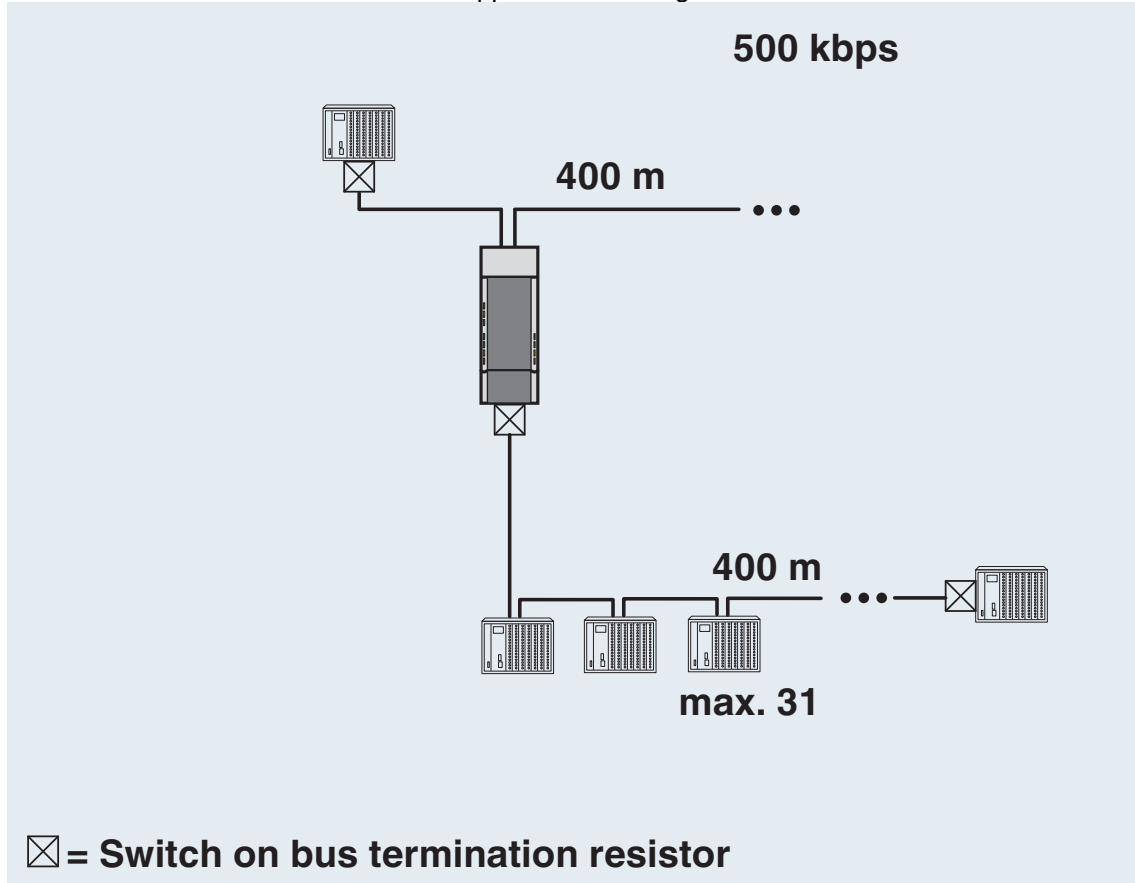
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Application drawing



Branch/bus segmentation

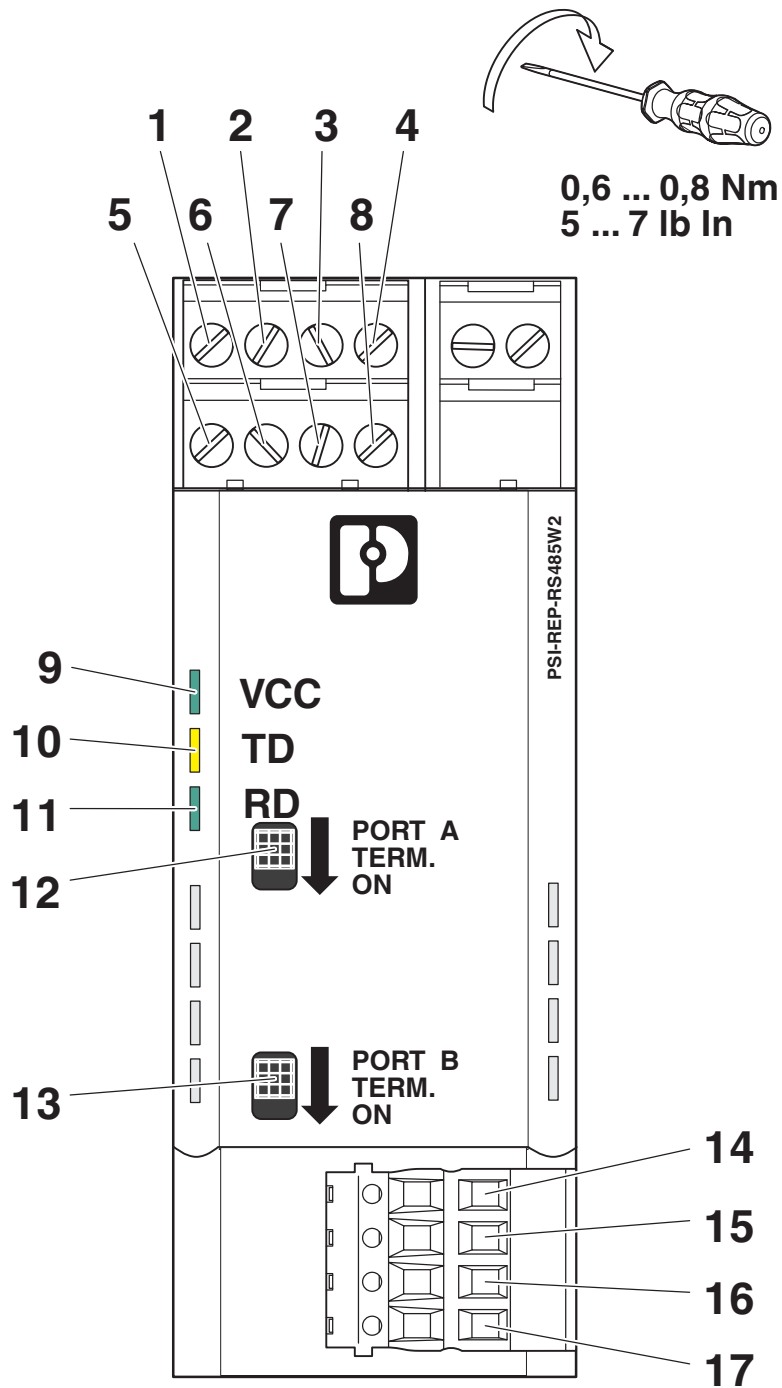
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Schematic diagram



Front view

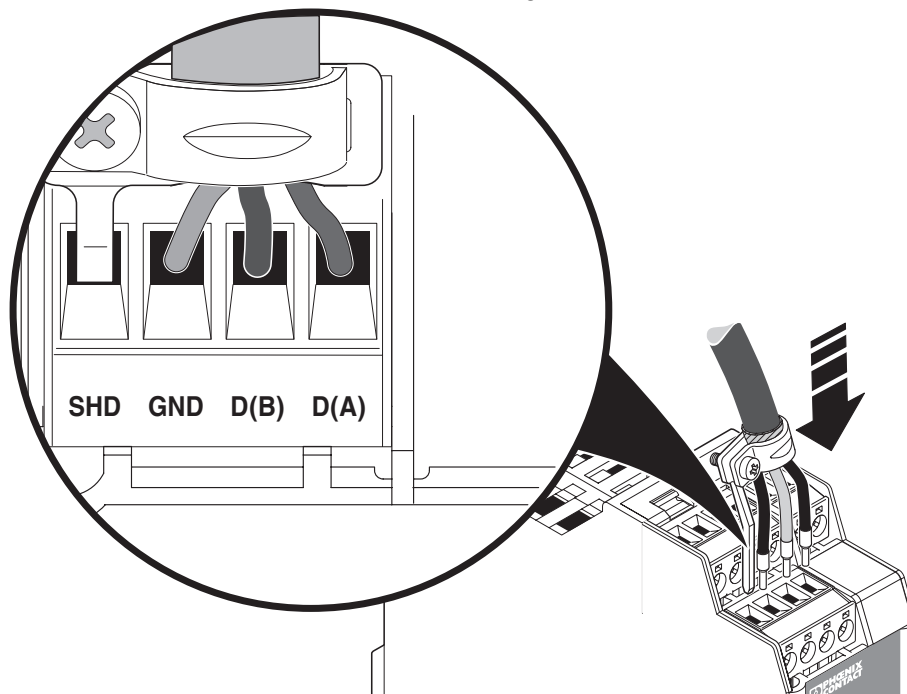
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Schematic diagram



Connecting the cables

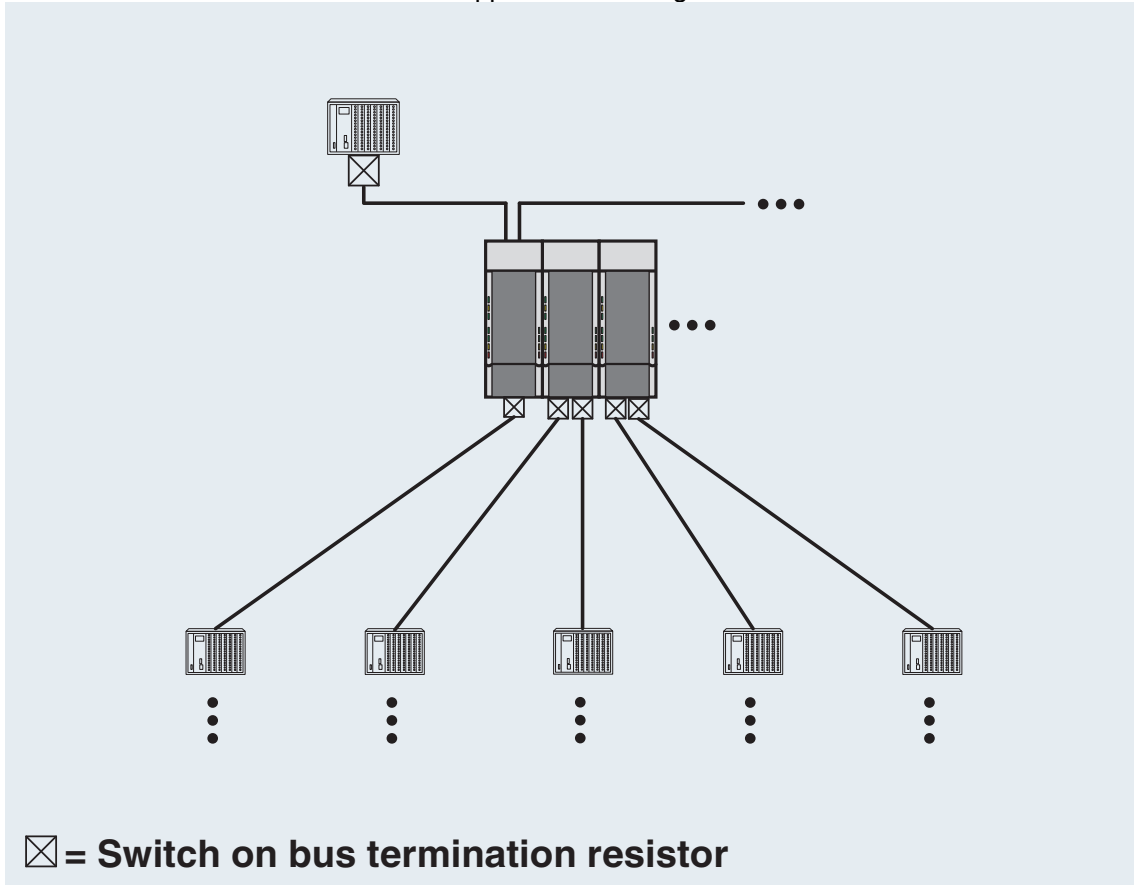
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Application drawing



Star structure

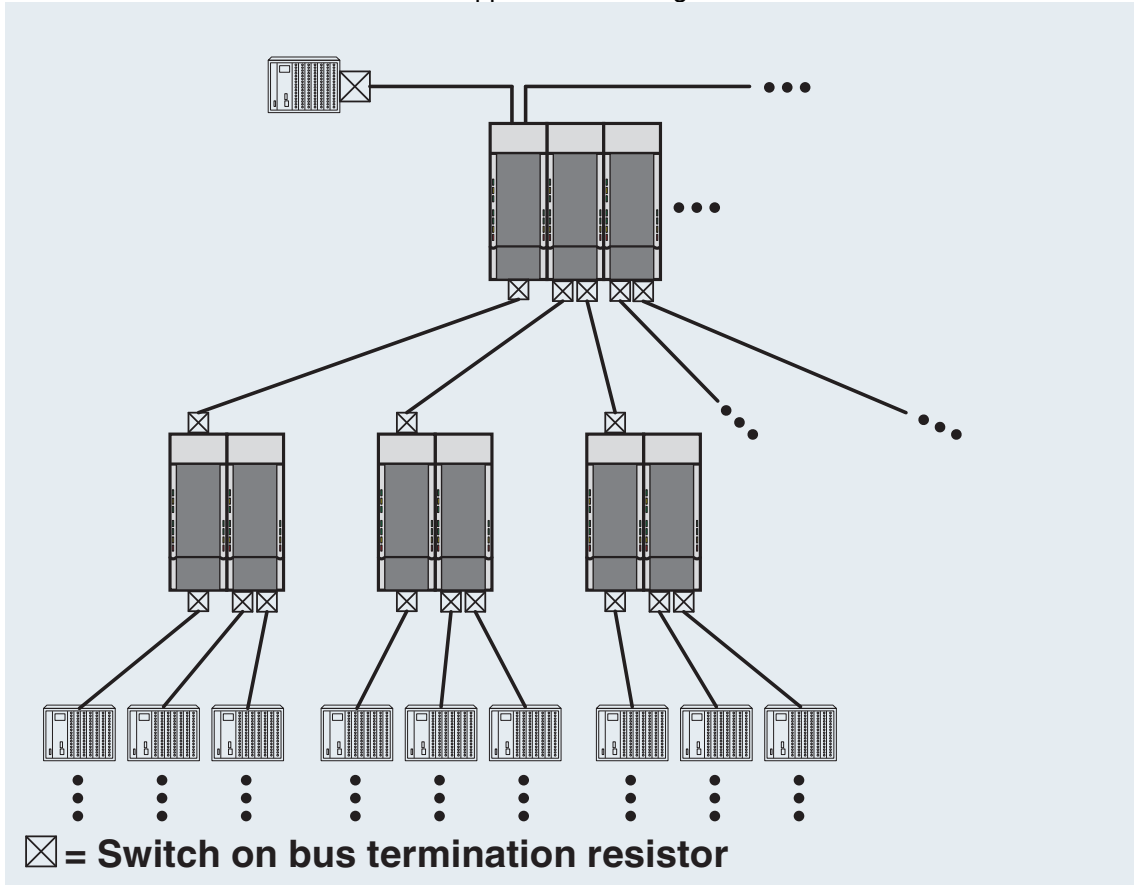
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Application drawing



Tree structure

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Approvals



EAC

Approval ID: TR TS_D_01871-19



UL Listed

Approval ID: FILE E 238705



cUL Listed

Approval ID: FILE E 238705



ATEX

Approval ID: PxCIF06ATEX2708863X



cUL Listed

Approval ID: FILE E 199827



UL Listed

Approval ID: FILE E 199827



IECEX

Approval ID: IECEX ULD 21.0013X



ATEX

Approval ID: UL 21 ATEX 2550X

cULus Listed

cULus Listed

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Classifications

ECLASS

ECLASS-9.0	19179290
ECLASS-10.0.1	19179290
ECLASS-11.0	19179090

ETIM

ETIM 8.0	EC002608
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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

Power supply unit

Power supply unit - QUINT4-SYS-PS/1AC/24DC/2.5/SC - 2904614

<https://www.phoenixcontact.com/pc/products/2904614>

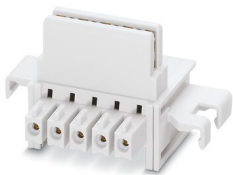


Primary-switched power supply unit, QUINT POWER, Screw connection, DIN rail mounting, input: 1-phase, output: 24 V DC / 2.5 A

DIN rail bus connectors

DIN rail bus connectors - ME 17,5 TBUS 1,5/ 5-ST-3,81 KMGY - 2713645

<https://www.phoenixcontact.com/pc/products/2713645>



DIN rail connector, color: light grey, nominal current: 8 A (parallel contacts), rated voltage (III/2): 125 V, number of positions: 5, pitch: 3.81 mm, mounting: DIN rail mounting, locking: without, mounting: without, type of packaging: packed in cardboard, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

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Shield connection clamp

Shield connection clamp - ME-SAS - 2853899

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

Shield connection clamp for terminal points starting from 2.5 mm²



Screwdriver

Screwdriver - SZF 1-0,6X3,5 - 1204517

<https://www.phoenixcontact.com/pc/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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Termination resistor

Termination resistor - PSI-TERMINATOR-PB-TBUS - 2702636

<https://www.phoenixcontact.com/pc/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

FO converters

FO converters - PSI-MOS-RS485W2/FO 660 E - 2708313

<https://www.phoenixcontact.com/pc/products/2708313>



FO converter with integrated optical diagnostics, alarm contact, for RS-485 2-wire bus systems (SUCONET K, Modbus ...) up to 500 kbps, NRZ coding, terminal device with one FO interface (FSMA), 660 nm, for polymer/PCF fiber cable

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FO converters

FO converters - PSI-MOS-RS485W2/FO 660 T - 2708300

<https://www.phoenixcontact.com/pc/products/2708300>



FO converter with integrated optical diagnostics, alarm contact, for RS-485 2-wire bus systems (SUCONET K, Modbus ...) up to 500 kbps, NRZ coding, T-coupler with two FO interfaces (FSMA), 660 nm, for polymer/PCF fiber cable

FO converters

FO converters - PSI-MOS-RS485W2/FO 850 E - 2708339

<https://www.phoenixcontact.com/pc/products/2708339>



FO converter with integrated optical diagnostics, alarm contact, for RS-485 2-wire bus systems (SUCONET K, Modbus ...) up to 500 kbps, NRZ coding, terminal device with one FO interface (BFOC), 850 nm, for PCF/fiberglass cable (multimode)

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FO converters

FO converters - PSI-MOS-RS485W2/FO 850 T - 2708326

<https://www.phoenixcontact.com/pc/products/2708326>



FO converter with integrated optical diagnostics, alarm contact, for RS-485 2-wire bus systems (SUCONET K, Modbus ...) up to 500 kbps, NRZ coding, T-coupler with two FO interfaces (BFOC), 850 nm, for PCF/fiberglass cable (multimode)

FO converters

FO converters - PSI-MOS-RS485W2/FO1300 E - 2708562

<https://www.phoenixcontact.com/pc/products/2708562>



FO converter with integrated optical diagnostics, alarm contact, for RS-485 2-wire bus systems (SUCONET K, MODBUS ...) up to 500 kbps, NRZ coding, termination device with an FO interface (SC-Duplex), 1300 nm, for fiberglass cable

Repeater - PSI-REP-RS485W2

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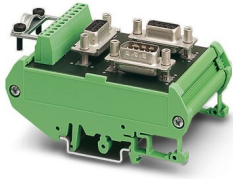


Connection distributor

Connection distributor - PSM PTK - 2760623

<https://www.phoenixcontact.com/pc/products/2760623>

Passive RS-485 T-distributor, fitted with one 9-pin D-SUB pin strip and two 9-pin D-SUB socket strips



Connection distributor

Connection distributor - PSM PTK-4 - 2799364

<https://www.phoenixcontact.com/pc/products/2799364>

Passive RS-485 T-distributor, fitted with one 9-pin D-SUB pin strip and five 9-pin D-SUB socket strips



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