# RAD-AO4-IFS - I/O extension module

2901538

https://www.phoenixcontact.com/us/products/2901538

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CRA-READY



Radioline - I/O extension module, 4 analog current or voltage outputs (0/4 mA ... 20 mA, 0 V ... 10 V). Product is being prepared for compliance with the Cyber Resilience Act (CRA).

## Your advantages

- Easy startup via thumbwheel
- Channel-to-channel electrical isolation
- Extended temperature range of -40 °C … +70 °C
- Easy module replacement even during operation (hot swap)
- Approved for use in zone 2

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 2901538 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN26 |
| Product key | DNC61D |
| GTIN | 4046356609166 |

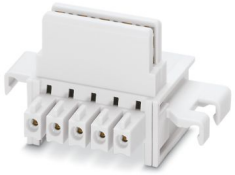
| | |
|---|---|
| Weight per piece (including packing) | 175 g |
| Weight per piece (excluding packing) | 123.91 g |
| Customs tariff number | 85177900 |
| Country of origin | DE |

## Set consists of

### ME 17,5 TBUS 1,5/ 5-ST-3,81 KMGY - DIN rail bus connector

2713645

https://www.phoenixcontact.com/us/products/2713645



DIN rail bus connector, color: light gray, nominal current: 8 A (parallel contacts), rated voltage (III/2): 125 V, number of positions: 5, product range: TBUS5-17,5.., pitch: 3.81 mm, mounting: DIN rail mounting, locking: without, mounting method: without, type of packaging: packed in cardboard, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

## Technical data

### Notes

Note on application

| | |
|---|---|
| Note on application | Only for industrial use |
| Note on application | As things stand now, we are preparing the product so that, as of December 11, 2027, it will comply with the requirements of the EU Cyber Resilience Act (CRA) based on the information currently available regarding the CRA. |

### Product properties

| | |
|---|---|
| Product type | Extension module |
| MTTF | 999 Years (SN 29500 standard, temperature 25°C, operating cycle 21%) |
| | 404 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%) |
| | 156 Years (SN 29500 standard, temperature 40°C, operating cycle 100%) |

Insulation characteristics

| | |
|---|---|
| Overvoltage category | II |
| Degree of pollution | 2 |

### Electrical properties

| | |
|---|---|
| Rated insulation voltage | 60 V (In accordance with EN/IEC 60079-7) |
| Electrical isolation | 50 V (Rated insulation voltage (in each case between the analog outputs / TBUS supply, reinforced insulation in accordance with EN 61010)) |
| | 300 V (Rated insulation voltage (to adjacent devices, basic insulation in accordance with EN/IEC 61010)) |
| Test voltage for analog I/Os | 1.5 kV AC (50 Hz, 1 min.) |
| Maximum power dissipation for nominal condition | 2.76 W |
| Transient surge protection | yes |

Supply

| | |
|---|---|
| Supply voltage range | 19.2 V DC ... 30.5 V DC (DIN rail bus connector) |
| Max. current consumption | ≤ 115 mA (At 24 V DC, at 25°C) |

### Output data

Analog

| | |
|---|---|
| Output name | Analog outputs |
| Number of outputs | 4 |
| Voltage output signal | 0 V ... 10 V |
| Max. voltage output signal | ~ 10.83 V |
| Current output signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA |

| | |
|---|---|
| Max. current output signal | ~ 21.67 mA |
| Load | ≥ 10 kΩ |
| | ≤ 500 Ω |
| Resolution | 16 bit |
| Precision | ≤ 0.02 % (at 25 °C) |
| | typ. 0.5 % (Voltage output) |
| Temperature coefficient, typical | typ. 0.0025 %/K (at -40 °C ... +70 °C) |
| Protective circuit | Transient protection of outputs |

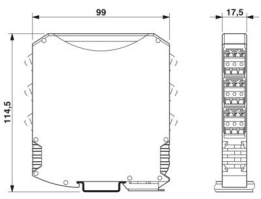
## Connection data

| | |
|---|---|
| Tightening torque | 0.5 Nm ... 0.6 Nm |
| | 5 $lb_f$-in. ... 7 $lb_f$-in. |
| Connection method | Screw connection |
| Stripping length | 7 mm |
| Conductor cross-section, rigid min. | 0.2 mm² |
| Conductor cross-section, rigid max. | 2.5 mm² |
| Conductor cross-section flexible min. | 0.2 mm² |
| Conductor cross-section flexible max. | 2.5 mm² |
| Conductor cross-section AWG min. | 24 |
| Conductor cross-section AWG max. | 14 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |
| | 5 $lb_f$-in. ... 7 $lb_f$-in. |

## Signaling

| | |
|---|---|
| Status display | LED supply voltage, PWR (green) |
| | Green LED (bus communication, DAT) |
| | LED periphery error, ERR (red) |

## Dimensions

| | |
|---|---|
| Dimensional drawing |  |
| Width | 17.5 mm |
| Height | 113 mm |
| Depth | 114.5 mm |

## Material specifications

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

| | |
|---|---|
| Flammability rating according to UL 94 | V0 |

## Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -40 °C ... 70 °C (>55°C derating, see technical documentation) |
| | -40 °F ... 158 °F (>131°F derating, see technical documentation) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| | -40 °F ... 185 °F |
| Altitude | 2000 m |
| Permissible humidity (operation) | 20 % ... 85 % |
| Permissible humidity (storage/transport) | 20 % ... 85 % |
| Shock | 16g, 11 ms |
| Vibration (operation) | in accordance with IEC 60068-2-6: 5g, 10 Hz ... 150 Hz |

## Approvals

CE

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

ATEX

| | |
|---|---|
| Identification | Ⓔx II 3 G Ex ec IIC T4 Gc |
| Certificate | IBExU 15 ATEX B008 X |
| Note | Please follow the special installation instructions in the documentation! |

IECEx

| | |
|---|---|
| Identification | Ex ec IIC T4 Gc |
| Certificate | IECEx IBE 13.0019X |

UL, USA/Canada

| | |
|---|---|
| Identification | 508 Listed |
| | Class I, Div. 2, Groups A, B, C, D T4A |
| | Class I, Zone 2, IIC T4 |

CCC / China-Ex

| | |
|---|---|
| Identification | Ex ec IIC T4 Gc |
| Certificate | 2022122310115625 |

KC approval for South Korea

| | |
|---|---|
| Certificate | R-R-PCK-2901538 |

KC-s

| | |
|---|---|
| Certificate | KTL 20-KA4BO-0148X |

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 61000-6-2 |

Noise emission

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

## Standards and regulations

EMC

| | |
|---|---|
| Standard designation | EMC – Immunity for industrial areas |
| Standards/specifications | EN 61000-6-2 |

EMC

| | |
|---|---|
| Standard designation | EMC interference emissions for industrial environments |
| Standards/specifications | EN 61000-6-4 |

Explosive atmospheres

| | |
|---|---|
| Standard designation | Ex areas, essential requirements |
| Standards/specifications | EN 60079-0 |

Explosive atmospheres

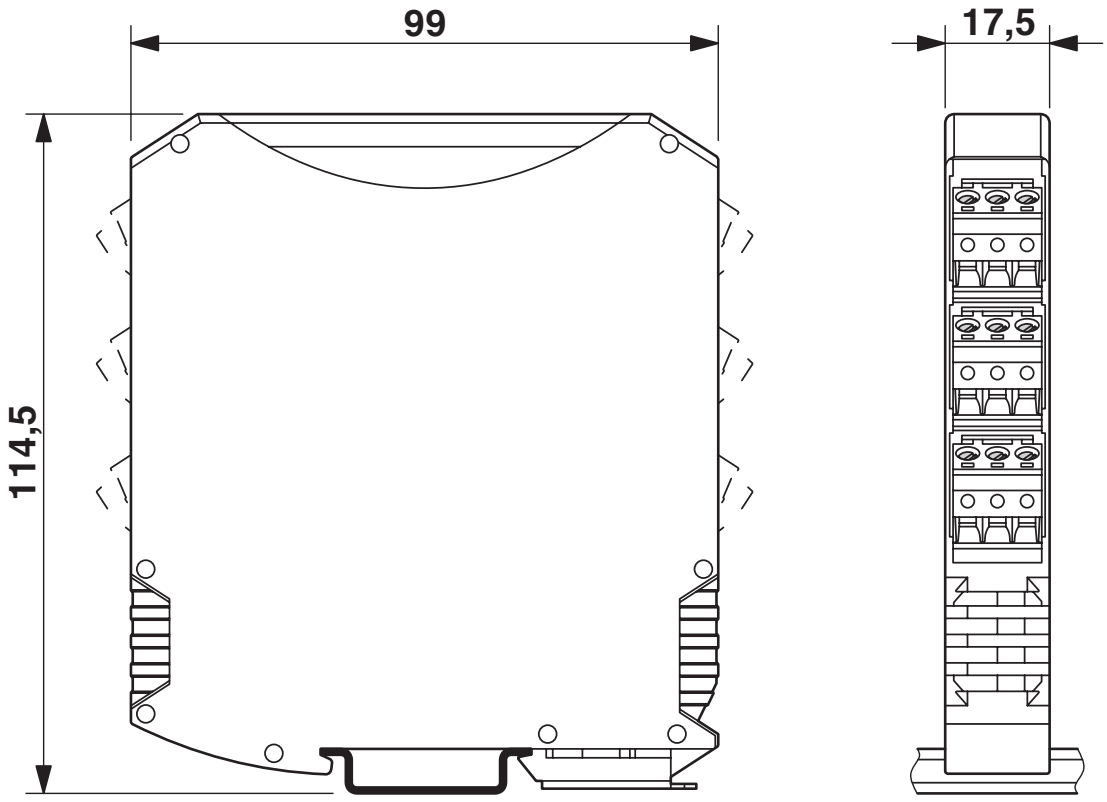
| | |
|---|---|
| Standard designation | Ex areas, type of protection n |
| Standards/specifications | EN 60079-15 |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly note | on standard DIN rail NS 35 in accordance with EN 60715 |
| Mounting position | any |
| Useable DIN rail type | DIN rail: 35 mm |

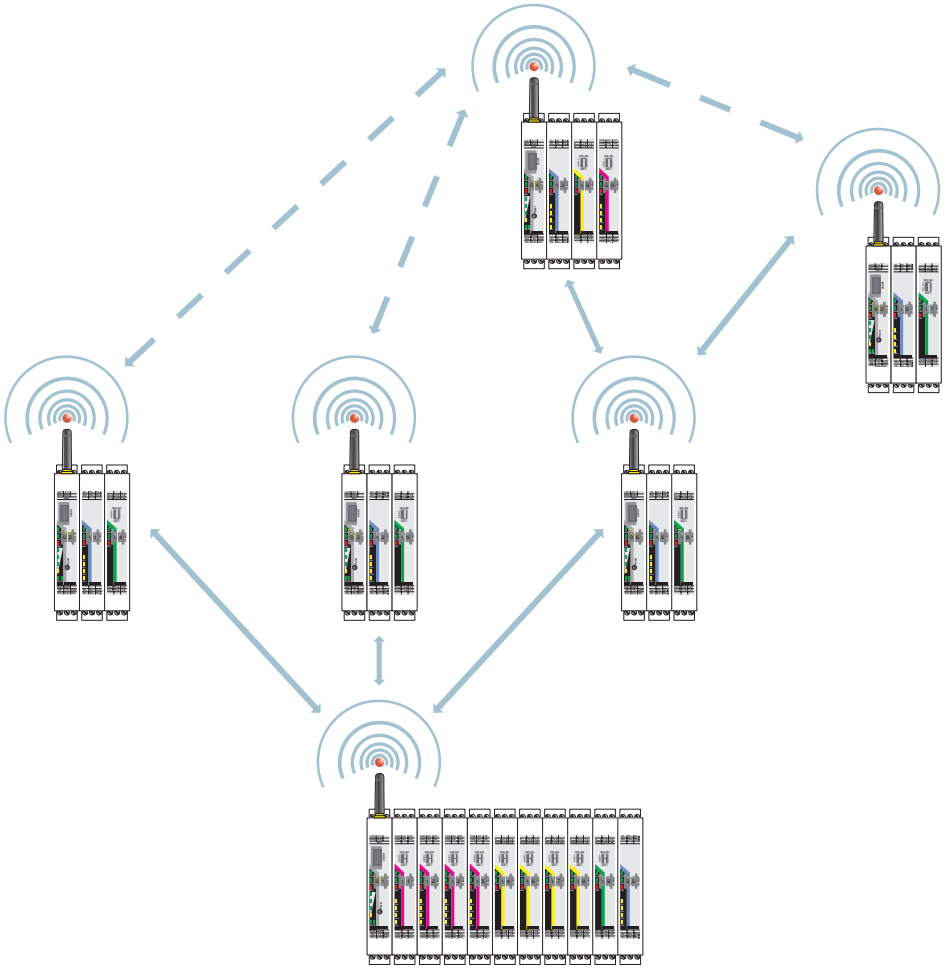
## Drawings

Dimensional drawing



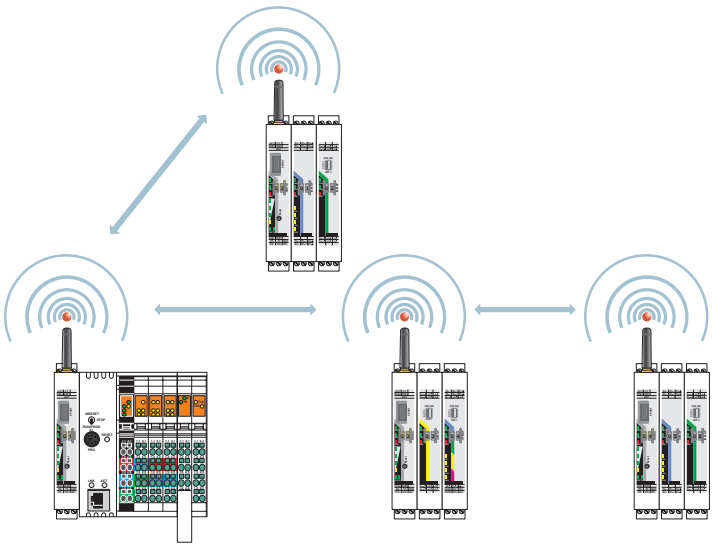

Slim design

Application drawing



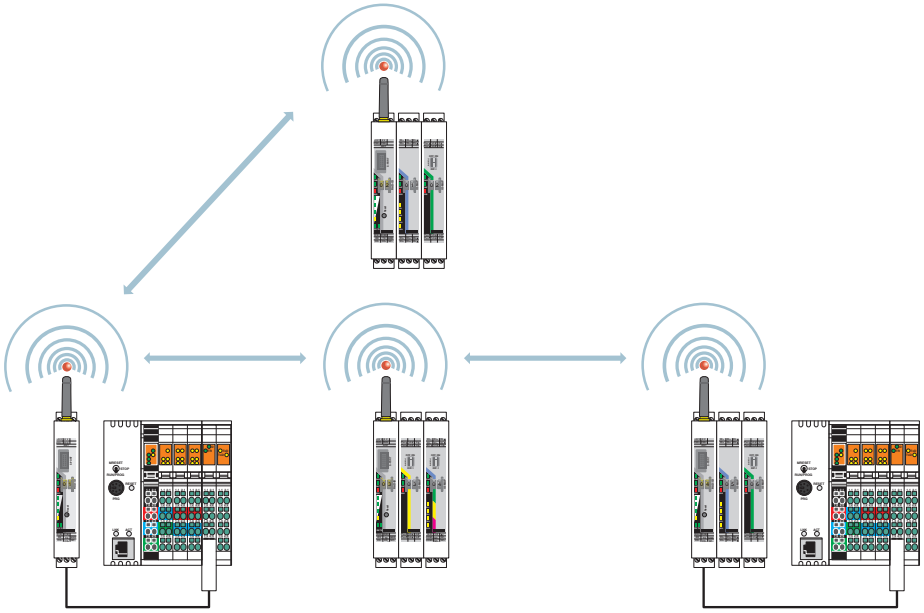
Wireless module in I/O data mode

Application drawing



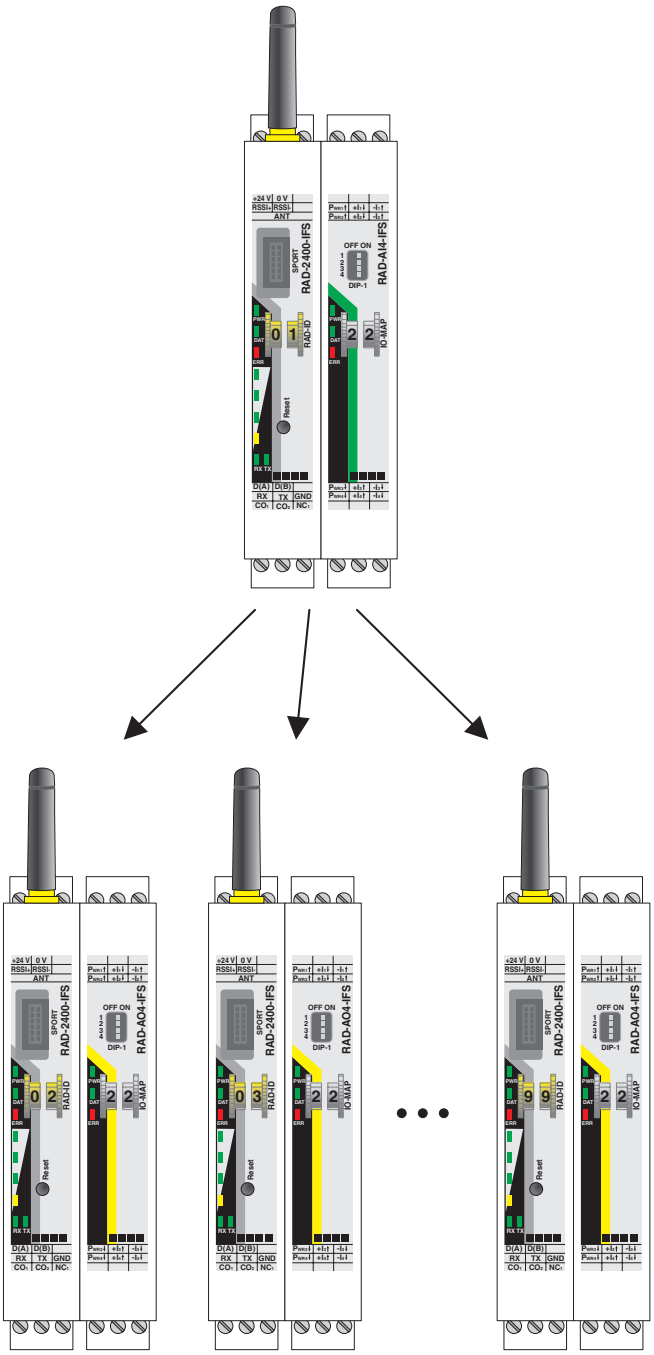
Wireless module in PLC/Modbus RTU mode

Application drawing



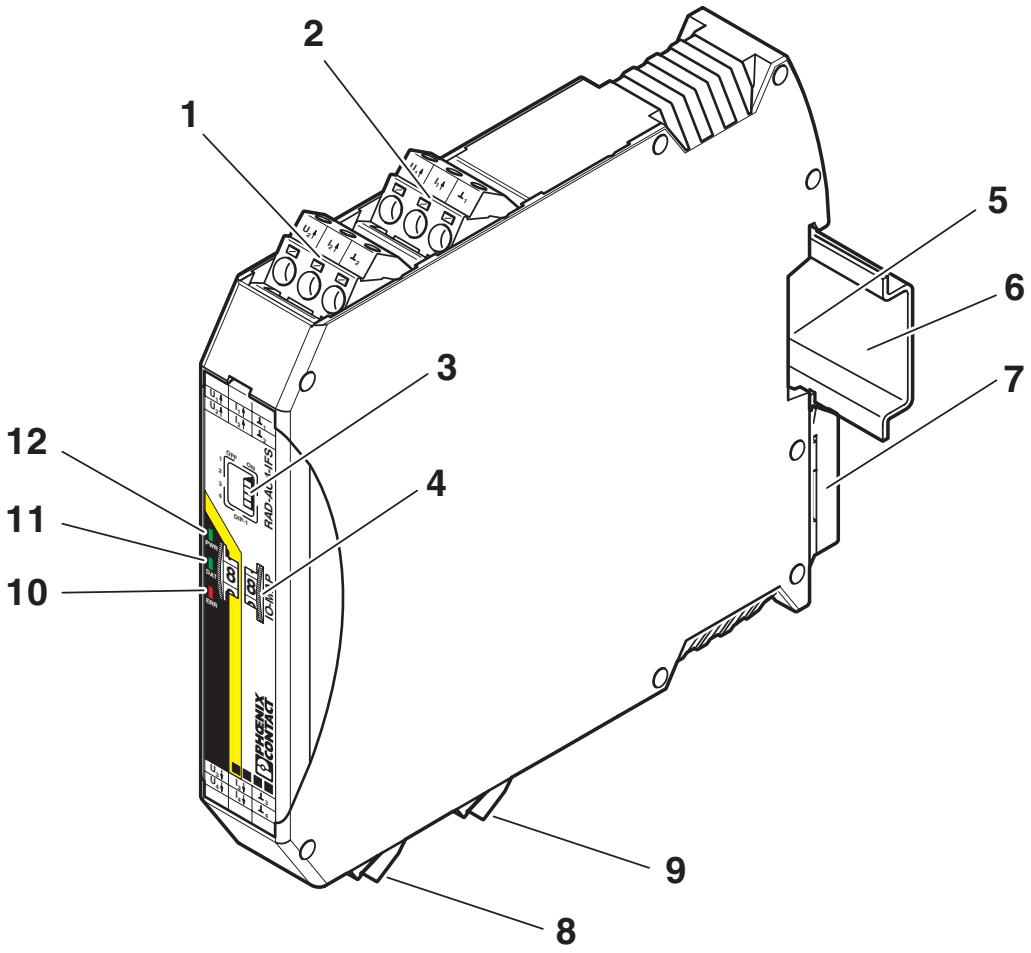
Wireless module in PLC/Modbus RTU dual mode

Functional drawing



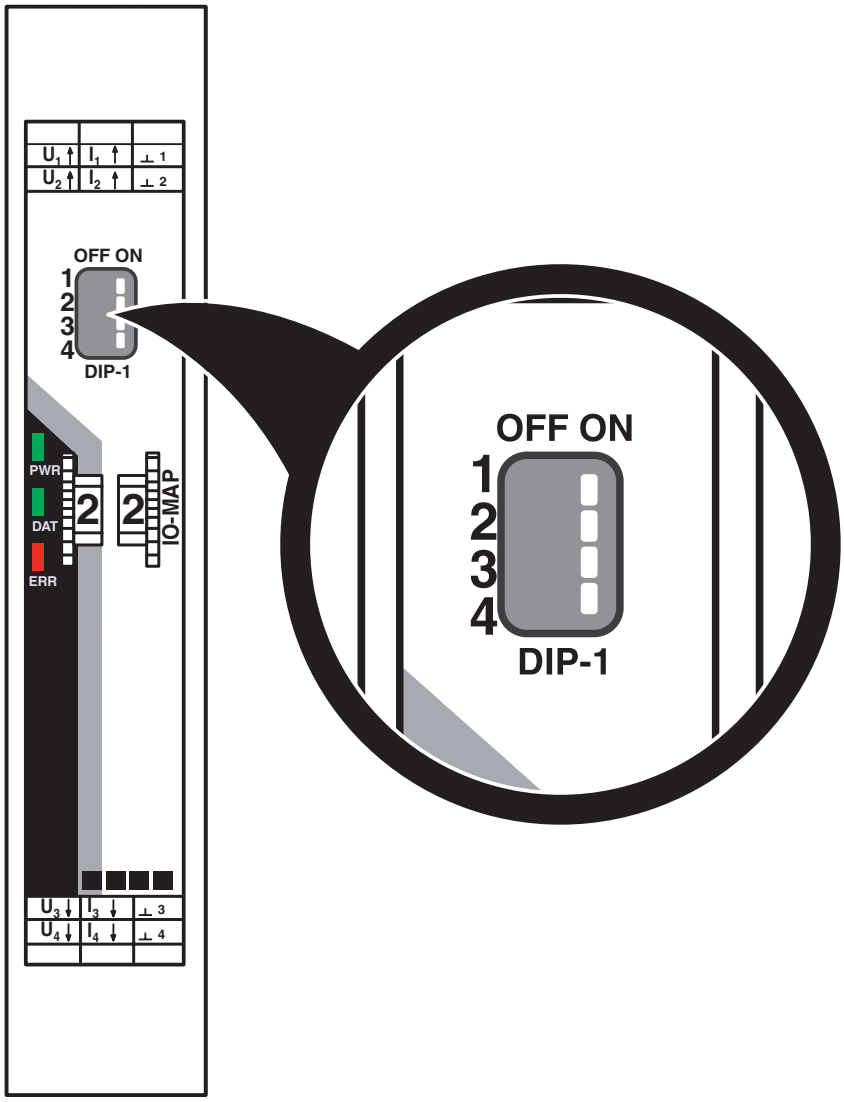

Assignment of analog inputs and analog outputs

Schematic diagram



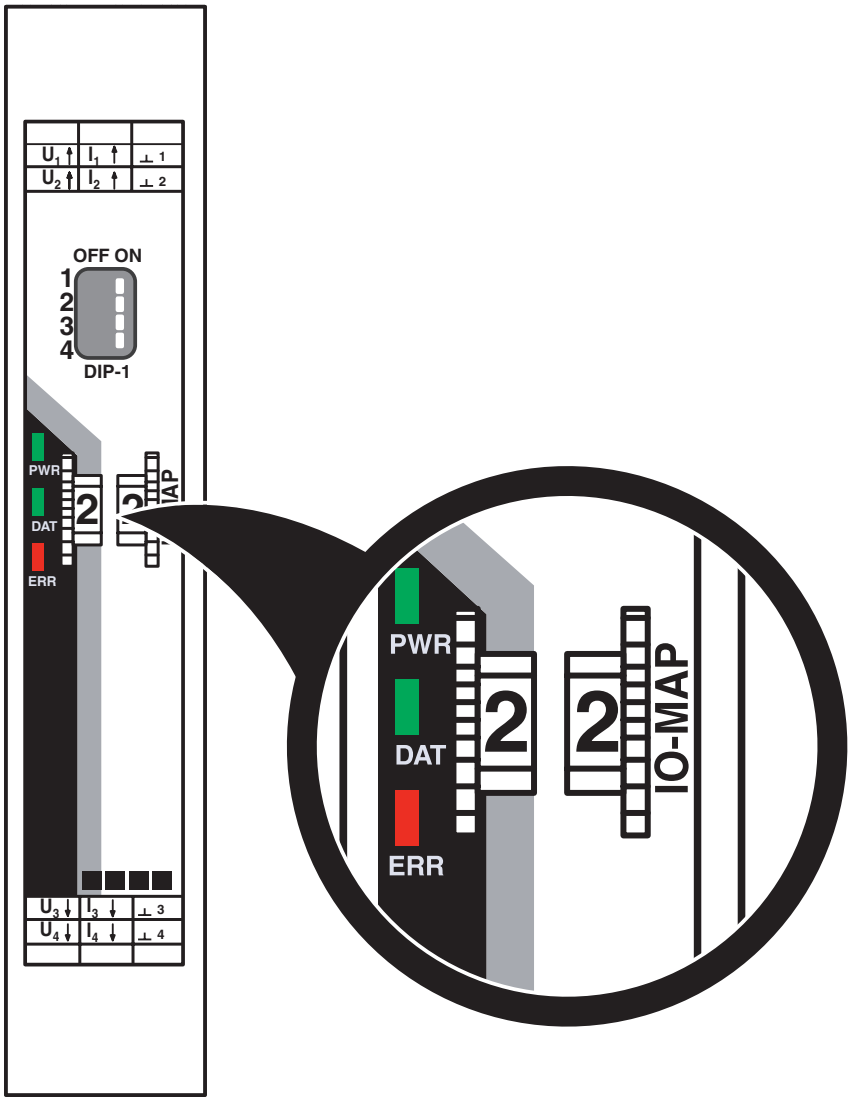

Function elements

Schematic diagram



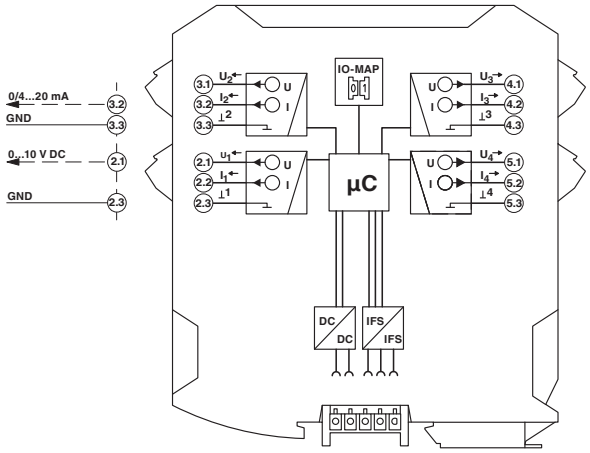

DIP switches

Schematic diagram




Thumbwheel

## Circuit diagram




Basic circuit diagram

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2901538

**UL Listed**
Approval ID: E238705

**cUL Listed**
Approval ID: E238705

**KC**
Approval ID: R-R-PCK-2901538

**cUL Listed**
Approval ID: E196811

**UL Listed**
Approval ID: E196811

**ATEX**
Approval ID: IBExU15ATEXB008 X

**KC-s**
Approval ID: 20-KA4BO-0148X

**IECEx**
Approval ID: IECEx IBE 13.0019X

**CCC**
Approval ID: 2022122310115625

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27242601 |
| ECLASS-15.0 | 27242601 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC001596 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 32151602 |

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 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 | a615c633-202d-48ff-a597-87e0ec513a15 |


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