

RAD-DAIO6-IFS - I/O extension module



2901533

<https://www.phoenixcontact.com/gb/products/2901533>

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Radioline - I/O extension module, 2 digital inputs and outputs (0 ... 250 V AC/DC) and 1 analog input (0/4 ... 20 mA) and output (0/4 ... 20 mA, 0 ... 10 V)

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)
- Digital wide-range inputs/outputs (0 ...250 V AC/DC)
- Approved for use in zone 2

Commercial data

| | |
|--------------------------------------|---------------------|
| Item number | 2901533 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DNC61D |
| Product key | DNC61D |
| Catalog page | Page 380 (C-6-2019) |
| GTIN | 4046356610216 |
| Weight per piece (including packing) | 233.3 g |
| Weight per piece (excluding packing) | 230 g |
| Customs tariff number | 85177900 |
| Country of origin | DE |

RAD-DAIO6-IFS - I/O extension module



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Set consists of

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

2709561

<https://www.phoenixcontact.com/gb/products/2709561>

DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.



Technical data

Product properties

| | |
|--------------|---|
| Product type | Extension module |
| MTTF | 889 Years (SN 29500 standard, temperature 25°C, operating cycle 21%) |
| | 391 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%) |
| | 151 Years (SN 29500 standard, temperature 40°C, operating cycle 100%) |

Insulation characteristics

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

Electrical properties

| | |
|---|--|
| Electrical isolation | 300 V (Rated insulation voltage (in each case between the digital inputs // digital outputs // TBUS supply, reinforced insulation in accordance with EN/IEC 61010)) |
| | 50 V (Rated insulation voltage (in each case between the analog inputs / analog outputs / TBUS supply, reinforced insulation in accordance with EN/IEC 61010)) |
| | 300 V (Rated insulation voltage (in each case between the digital inputs and outputs // analog inputs and outputs, reinforced insulation in accordance with EN/IEC 61010)) |
| | 300 V (Rated insulation voltage (to adjacent devices, basic insulation in accordance with EN/IEC 61010)) |
| Test voltage for digital I/Os | 2.5 kV AC (50 Hz, 1 min.) |
| Test voltage for analog I/Os | 1.5 kV AC (50 Hz, 1 min.) |
| Maximum power dissipation for nominal condition | 2.28 W |
| Transient surge protection | Yes |

Supply

| | |
|--------------------------|--|
| Supply voltage range | 19.2 V DC ... 30.5 V DC (DIN rail connector) |
| Max. current consumption | ≤ 95 mA (At 24 V DC, at 25°C) |

Input data

Digital

| | |
|--------------------------|--------|
| Max. current consumption | < 1 mA |
|--------------------------|--------|

Analog

| | |
|--------------------------------|--|
| Description of the input | Analog input |
| Number of inputs | 1 |
| Current input signal | 0 mA ... 20 mA (can be set via DIP switches) |
| | 4 mA ... 20 mA (can be set via DIP switches) |
| Max. current input signal | 22 mA |
| Input resistance current input | < 70 Ω |

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| | |
|----------------------------------|---|
| Resolution | 16 bit |
| Precision | ≤ 0.02 % (at 25 °C) |
| Protective circuit | Short-circuit and overload protection |
| Temperature coefficient, typical | typ. 0.0025 %/K (at -40 °C ... +70 °C) |
| Supply voltage | 12 V DC (U_{ANA} via terminal block PWR1, +I1, for passive sensors, 25 mA) |

Digital

| | |
|----------------------------|--|
| Description of the input | Digital input |
| Number of inputs | 2 |
| Voltage input signal | 0 V AC/DC ... 250 V AC/DC |
| Switching level "0" signal | 0 V AC/DC ... 4 V AC/DC (Low-voltage input) 0 V AC/DC ... 20 V AC/DC (High-voltage input) |
| Switching level "1" signal | 10 V AC/DC ... 50 V AC/DC (Low-voltage input) 50 V AC/DC ... 250 V AC/DC (High-voltage input) |
| Input frequency | ≤ 2 Hz |

Output data

Digital

| | |
|---|--|
| Output name | Relay output |
| Number of outputs | 2 |
| Contact switching type | Changeover contact |
| Contact material | AgSnO ₂ |
| Maximum switching voltage | 250 V AC/DC |
| Min. switching current | ≥ 10 mA |
| Max. switching current | 2 A (250 V AC) 0.168 A (250 V DC) 2 A (24 V DC) |
| Mechanical service life | 1x 10 ⁷ cycles |
| Electrical service life | 2x 10 ⁵ cycles (At 2 A, 250 V AC, cosφ 0.4) 2x 10 ⁵ cycles (At 1 A, 24 V DC, L/R = 48 ms) |
| Maximum switching frequency | 2 Hz |
| Behavior of the outputs (adjustable via DIP switch) | Hold / Reset |

Analog

| | |
|----------------------------|----------------------------------|
| Output name | Analog output |
| Number of outputs | 1 |
| 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 |

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| | |
|----------------------------------|--|
| 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 |

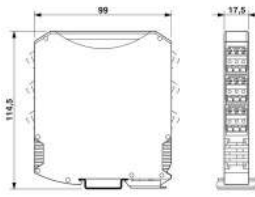
Connection data

| | |
|---------------------------------------|--|
| 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 mm ² |
| Conductor cross section, rigid max. | 2.5 mm ² |
| 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. | 14 |

Signaling

| | |
|----------------|------------------------------------|
| Status display | Green LED (supply voltage, PWR) |
| | Green LED (bus communication, DAT) |
| | Red LED (periphery error, ERR) |
| | Yellow LED (digital input, DI1) |
| | Yellow LED (digital input, DI2) |
| | Yellow LED (digital output, DO1) |
| | Yellow LED (digital output, DO2) |

Dimensions

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

Material specifications

| | |
|--|-----------|
| Material | PA 6.6-FR |
| Flammability rating according to UL 94 | V0 |
| Material | PA 6.6-FR |

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 |
|-------------|--------------|

UKCA

| | |
|-------------|----------------|
| Certificate | UKCA-compliant |
|-------------|----------------|

ATEX

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

IECEX

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

EAC Ex

| | |
|----------------|-------------------------|
| Identification | 2Ex nA nC IIC T4 Gc X |
| Certificate | RU C-DE.HB49.B.00033/20 |

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 nC IIC T4 Gc |
| Certificate | 2022122310115625 |

KC approval for South Korea

| | |
|-------------|-----------------|
| Certificate | R-R-PCK-2901533 |
|-------------|-----------------|

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Corrosive gas test

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

EMC data

| | |
|-------------------------------|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
|-------------------------------|---|

Standards and regulations

| | |
|--------------------------|--------------------------|
| Standard designation | EMC Directive 2014/30/EU |
| Standards/specifications | EN 61000-6-2 |
| Standard designation | EMC Directive 2014/30/EU |
| Standards/specifications | EN 61000-6-4 |
| Standard designation | Ex Directive (ATEX) |
| Standards/specifications | EN 60079-0 |
| Standard designation | Ex Directive (ATEX) |
| Standards/specifications | EN 60079-15 |

Mounting

| | |
|-----------------------|--|
| Assembly instructions | on standard DIN rail NS 35 in accordance with EN 60715 |
| Mounting position | any |

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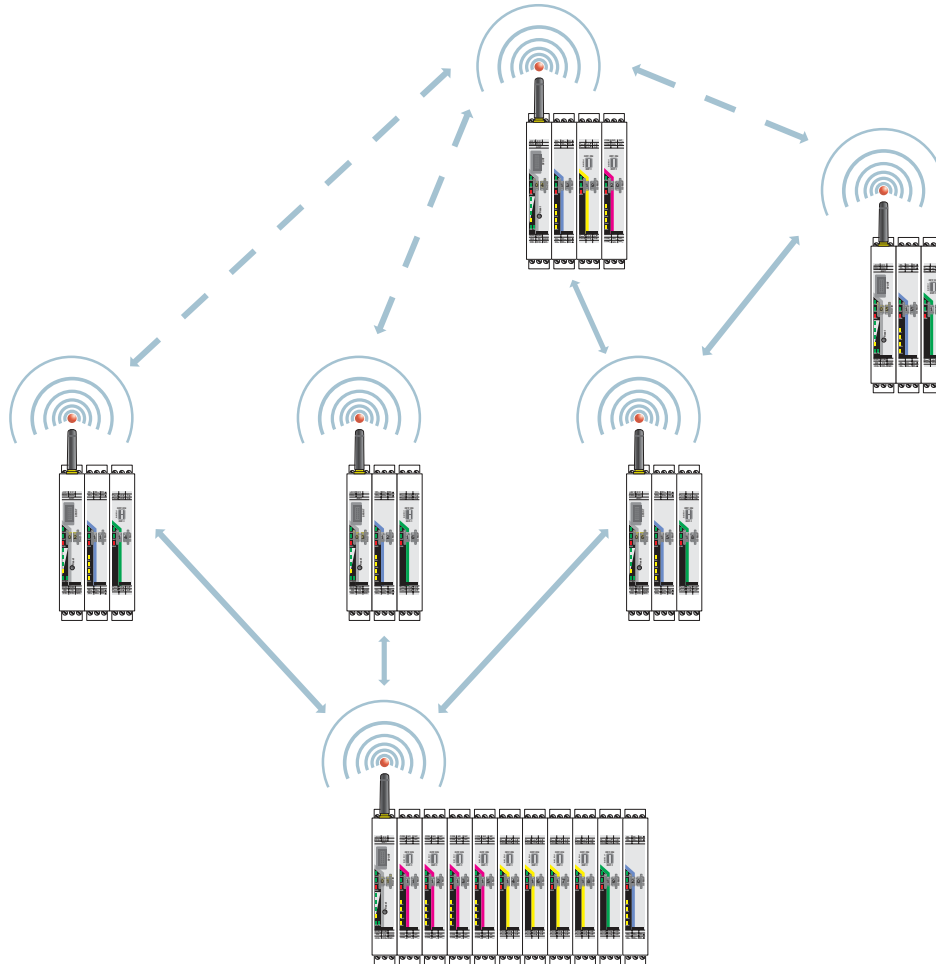


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Drawings

Application drawing



Wireless module in I/O data mode

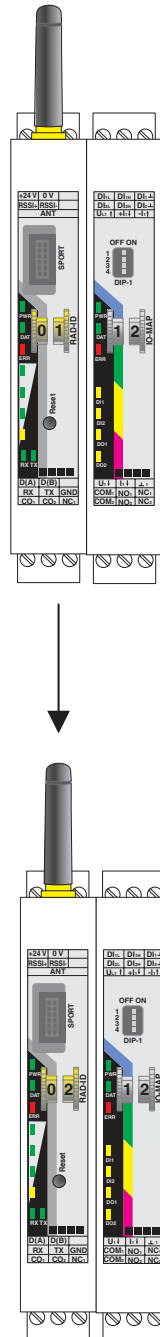
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Functional drawing



RAD-DAIO6-IFS assignment: analog/digital inputs and outputs

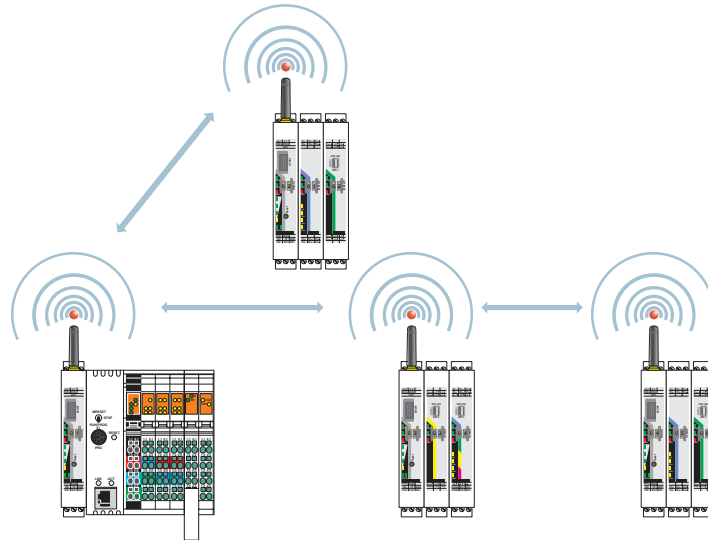
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Application drawing



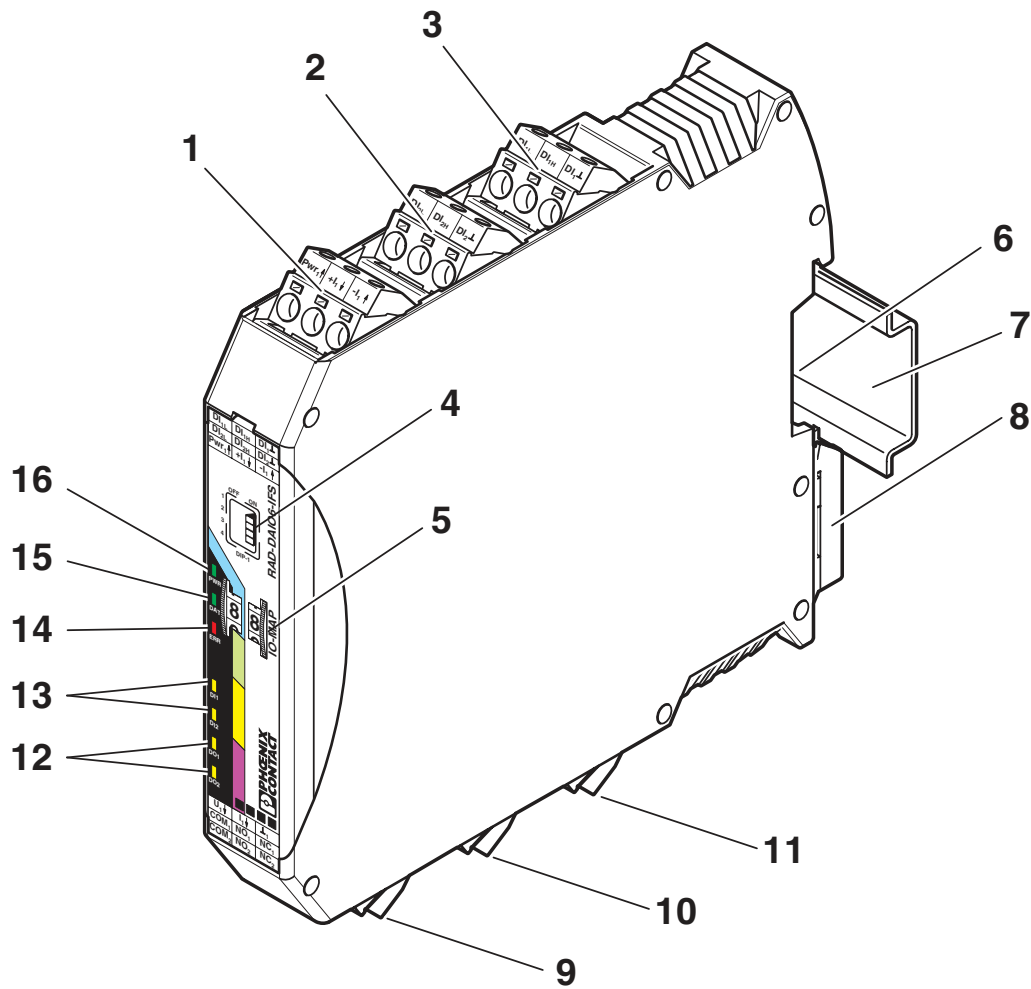
Wireless module in PLC/Modbus RTU mode

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Schematic diagram



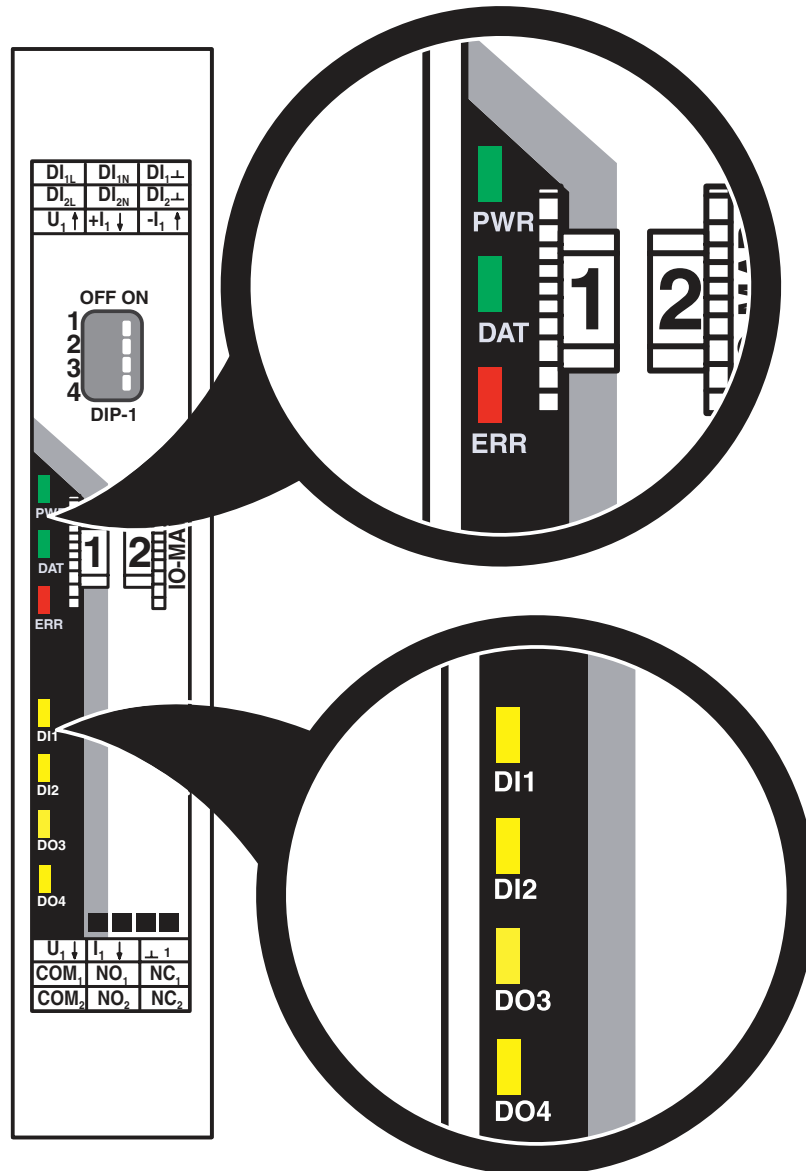
Function elements

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Schematic diagram



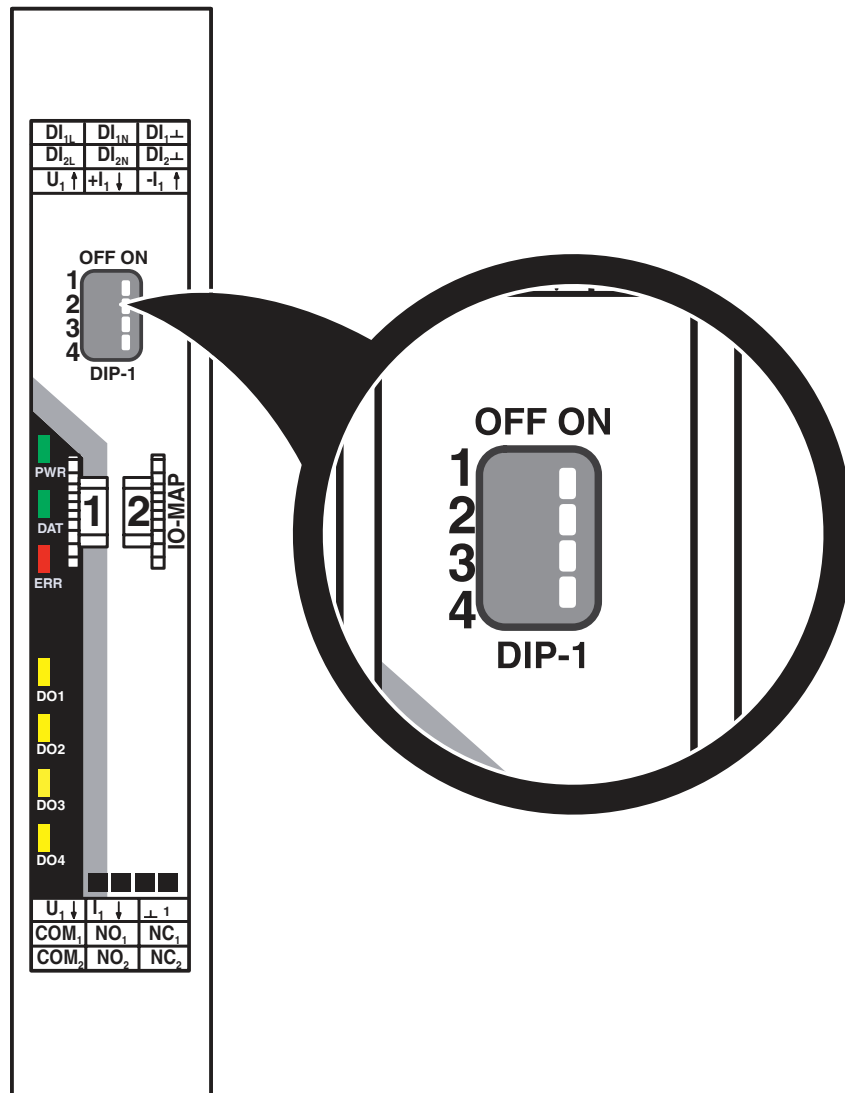
LED indicators

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Schematic diagram



DIP switches

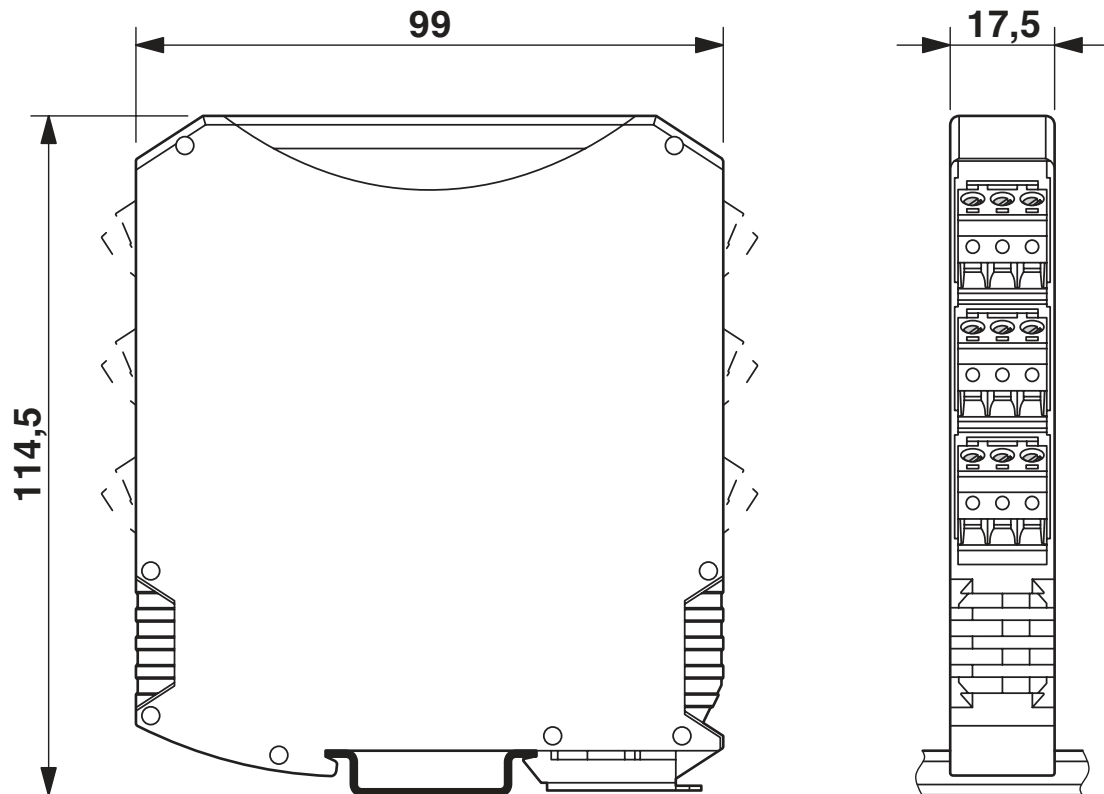
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Dimensional drawing



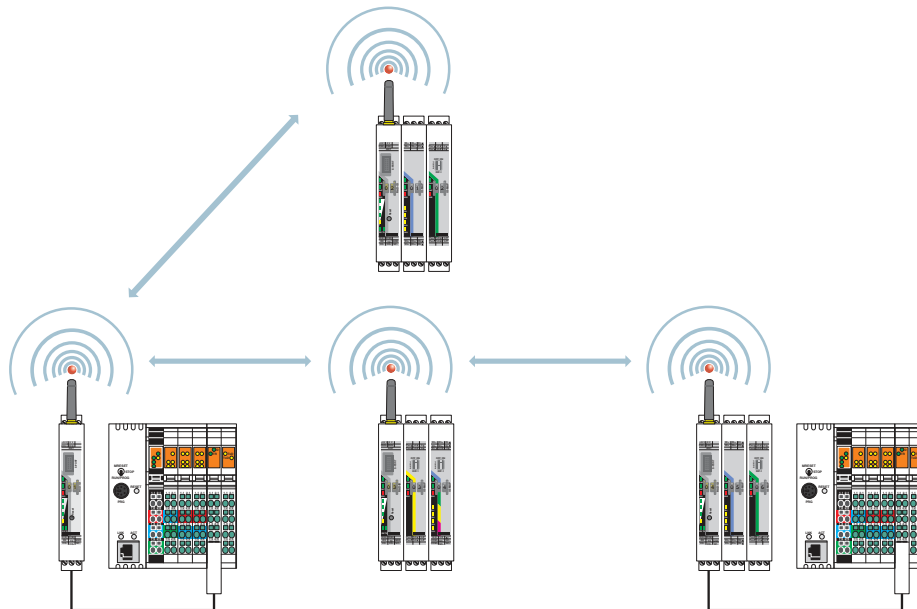
Slim design

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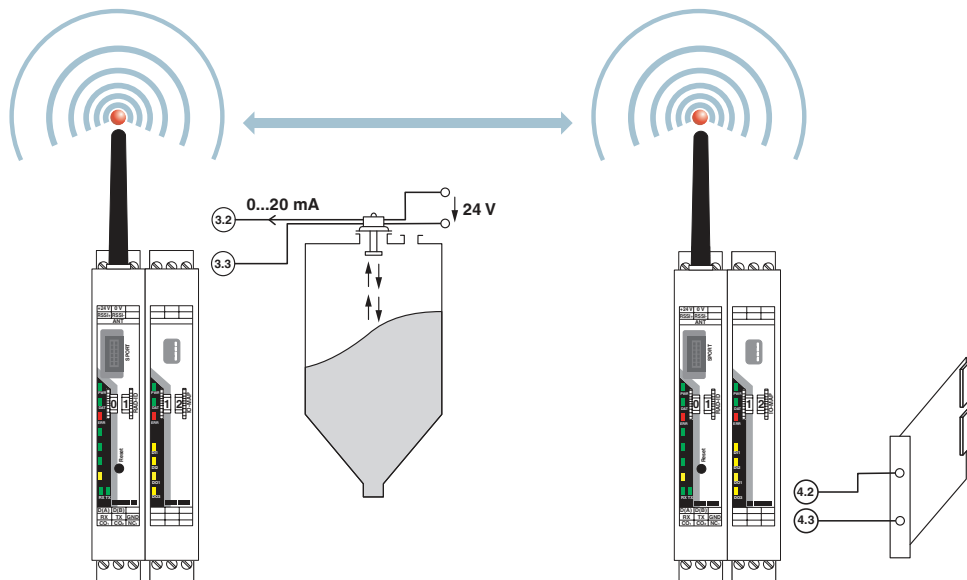
<https://www.phoenixcontact.com/gb/products/2901533>

Application drawing



Wireless module in PLC/Modbus RTU dual mode

Application drawing



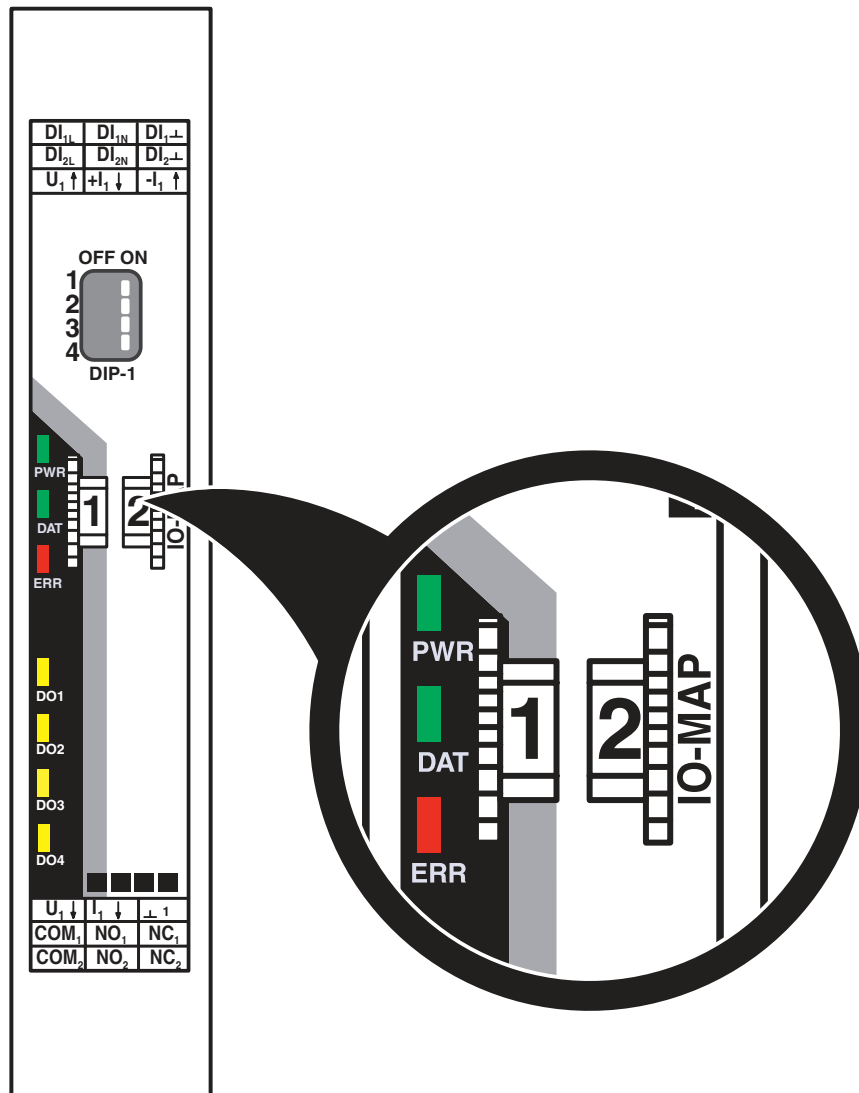
Application example: Level measurement

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Schematic diagram



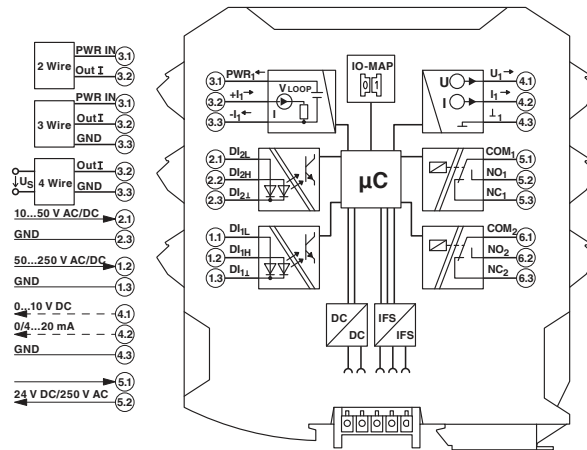
Thumbwheel

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Circuit diagram



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Approvals


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


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


 **KC**
Approval ID: R-R-PCK-2901533


 **EAC Ex**
Approval ID: RU*HB49.B00033/20


 **cUL Listed**
Approval ID: FILE E 196811

 **UL Listed**
Approval ID: FILE E 196811

 **ATEX**
Approval ID: IBEExU 15 ATEX B008 X

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

 **CCC**
Approval ID: 2022122310115625

 **ATEX**
Approval ID: IBEExU15ATEXB008 X

cULus Listed

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cULus Listed

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-11.0 | 27242602 |
| ECLASS-12.0 | 27242602 |
| ECLASS-13.0 | 27242602 |

ETIM

| | |
|----------|----------|
| ETIM 8.0 | EC001597 |
|----------|----------|

UNSPSC

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

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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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Mandatory accessories

RAD-2400-IFS - Wireless module

2901541

<https://www.phoenixcontact.com/gb/products/2901541>



Radioline - 2.4 GHz wireless transceiver with RS-232/RS-485 interface, can be extended with I/O modules, RSMA (female) antenna connection, point-to-point, star, and mesh networks up to 250 stations, range of up to 5 km (with a clear line of sight), for worldwide use

RAD-900-IFS - Wireless module

2901540

<https://www.phoenixcontact.com/gb/products/2901540>



Radioline - 900 MHz wireless transceiver with RS-232/485 interface, can be extended with I/O modules, RSMA (female) antenna connection, point-to-point, star, and mesh networks up to 250 stations, range of up to 32 km (line of sight), use in North America

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RAD-868-IFS - Wireless module

2904909

<https://www.phoenixcontact.com/gb/products/2904909>



Radioline - 868 MHz wireless transceiver with RS-232/RS-485 interface, can be extended with I/O modules, RSMA (female) antenna connection, point-to-point, star, and mesh networks up to 99 stations, range of up to 20 km (with a clear line of sight), for use in Europe

RAD-RS485-IFS - Communication module

2702184

<https://www.phoenixcontact.com/gb/products/2702184>



Radioline - RS-485 multipoint multiplexer, can be extended with I/O modules, can be used as Modbus/RTU bus coupler or can be combined with Radioline wireless system, up to 99 stations, range of up to 1.2 km on in-house copper cables

RAD-DAIO6-IFS - I/O extension module

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RAD-2400-IFS-JP - Wireless module

2702863

<https://www.phoenixcontact.com/gb/products/2702863>



Radioline - 2.4 GHz wireless transceiver with RS-232/RS-485 interface, can be extended with I/O modules, RSMA (female) antenna connection, point-to-point, star, and mesh networks up to 250 stations, range of up to 5 km (with a clear line of sight), for use in Japan

RAD-900-IFS-AU - Wireless module

2702878

<https://www.phoenixcontact.com/gb/products/2702878>



Radioline - 900 MHz wireless transceiver with RS-232/485 interface, can be extended with I/O modules, RSMA (female) antenna connection, point-to-point, star, and mesh networks up to 250 stations, range of up to 32 km (line of sight), for use in Australia.

Accessories

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

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DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.



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PHOENIX CONTACT Ltd
Halesfield 13, Telford
Shropshire, TF7 4PG
01952 681700
info@phoenixcontact.co.uk