

# RAD-DAIO6-IFS - I/O extension module



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
GTIN	4046356610216
Weight per piece (including packing)	200.91 g
Weight per piece (excluding packing)	140.13 g
Customs tariff number	85177900
Country of origin	DE

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## Set consists of

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

2713645

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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
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### 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 bus connector)
Max. current consumption	≤ 95 mA (At 24 V DC, at 25°C)

### Input data

#### Digital

Max. current consumption	< 1 mA
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#### Analog

Description of the input	Analog input
Number of inputs	1

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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
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 <sub>2</sub>
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 <sup>7</sup> cycles
Electrical service life	2x 10 <sup>5</sup> cycles (At 2 A, 250 V AC, cosφ 0.4) 2x 10 <sup>5</sup> 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

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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 <sub>F</sub> -in. ... 7 lb <sub>F</sub> -in.
Connection method	Screw connection
Stripping length	7 mm
Conductor cross-section, rigid min.	0.2 mm <sup>2</sup>
Conductor cross-section, rigid max.	2.5 mm <sup>2</sup>
Conductor cross-section flexible min.	0.2 mm <sup>2</sup>
Conductor cross-section flexible max.	2.5 mm <sup>2</sup>
Conductor cross-section AWG min.	24
Conductor cross-section AWG max.	14
Tightening torque	0.5 Nm ... 0.6 Nm
	5 lb <sub>F</sub> -in. ... 7 lb <sub>F</sub> -in.

## Signaling

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

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
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### 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

### 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

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Identification	ISA-S71.04-1985 G3 Harsh Group A
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## EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
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## 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

Mounting type	DIN rail mounting
Mounting position	any
Useable DIN rail type	DIN rail: 35 mm

# RAD-DAIO6-IFS - I/O extension module

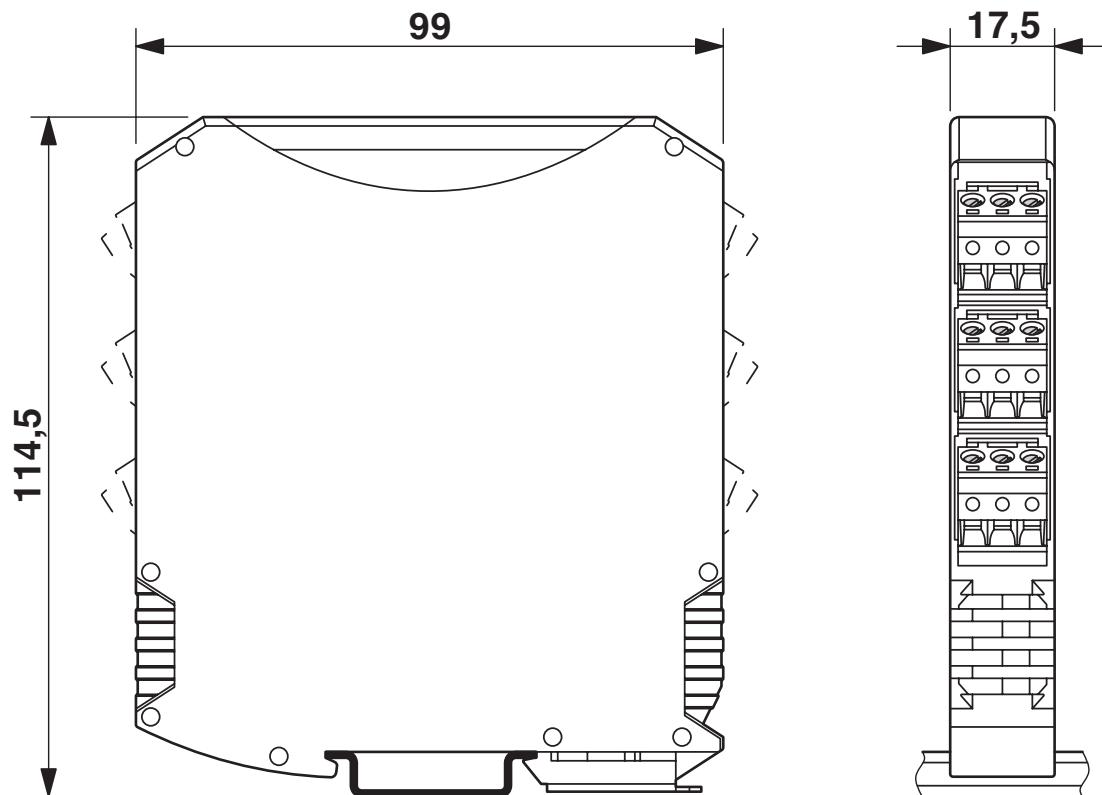
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## Drawings

Dimensional drawing



Slim design

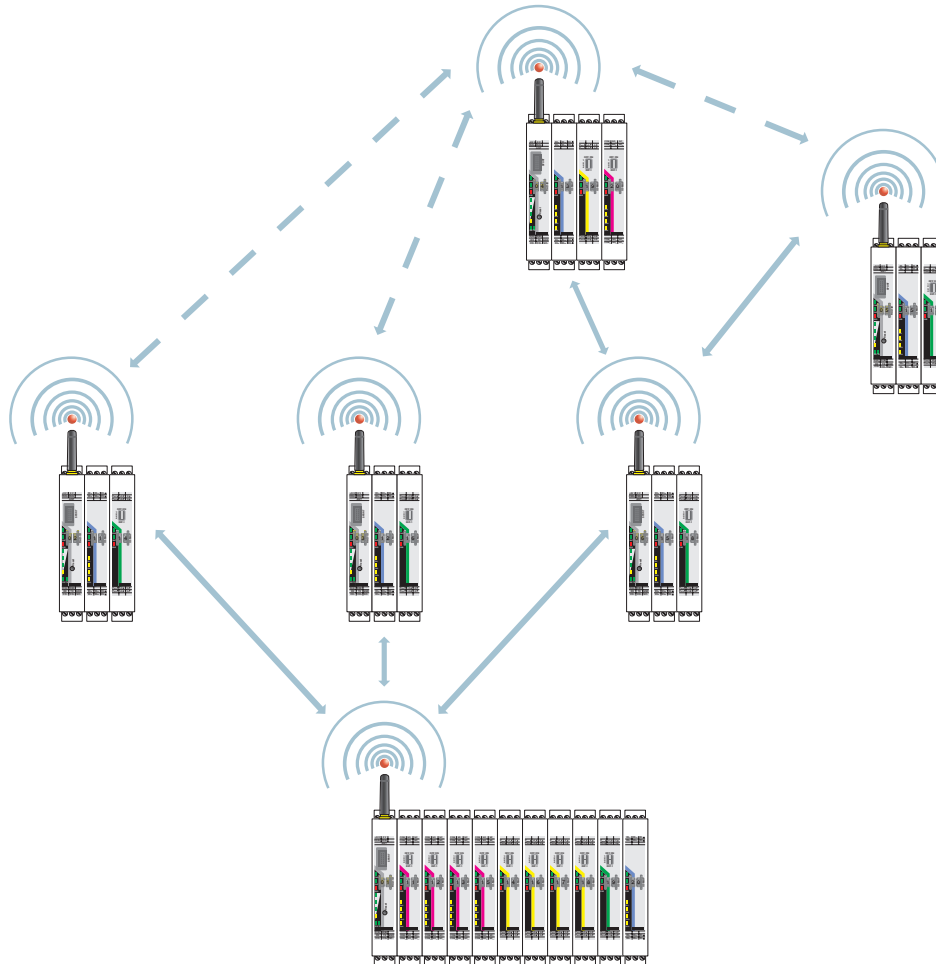
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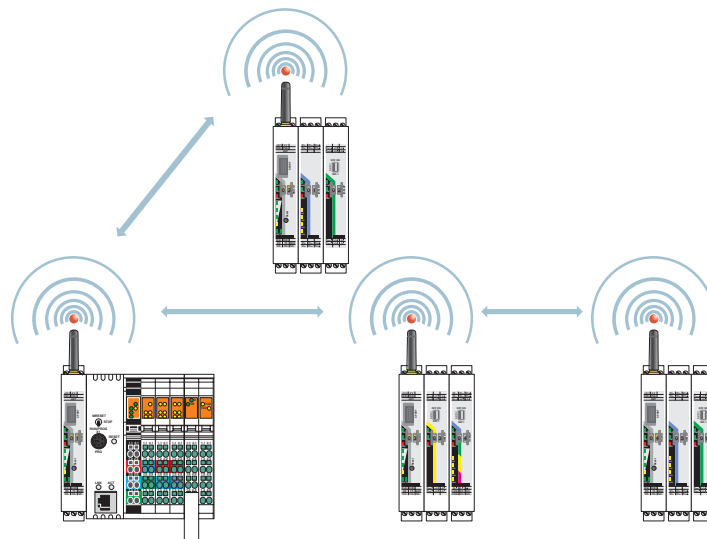
<https://www.phoenixcontact.com/gb/products/2901533>

Application drawing



Wireless module in I/O data mode

Application drawing



Wireless module in PLC/Modbus RTU mode

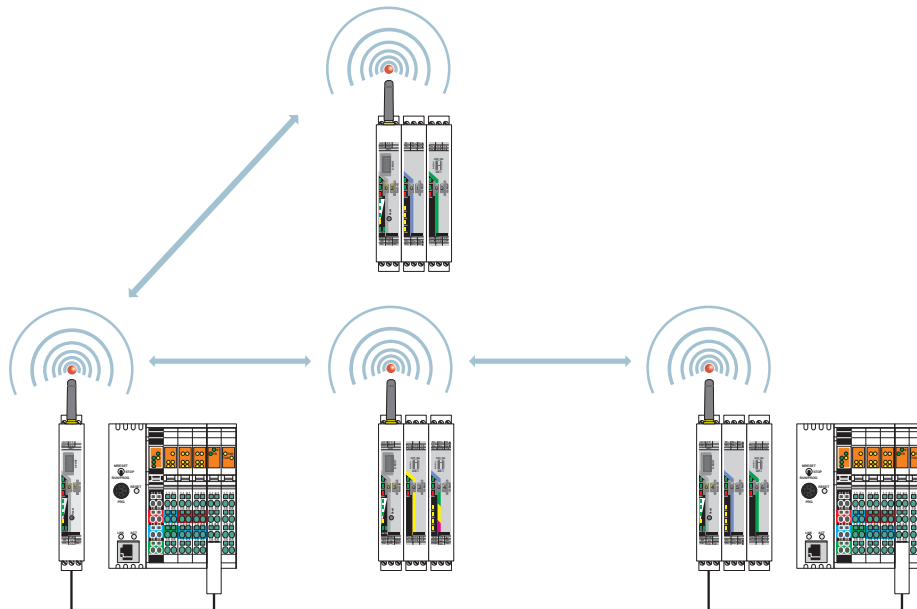
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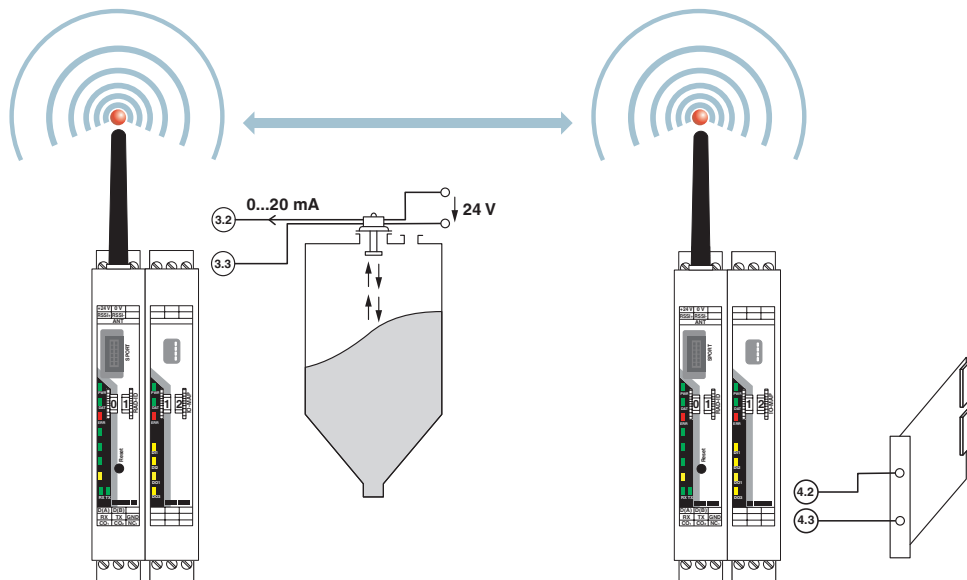
<https://www.phoenixcontact.com/gb/products/2901533>

Application drawing



Wireless module in PLC/Modbus RTU dual mode

Application drawing



Application example: Level measurement

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## Functional drawing



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

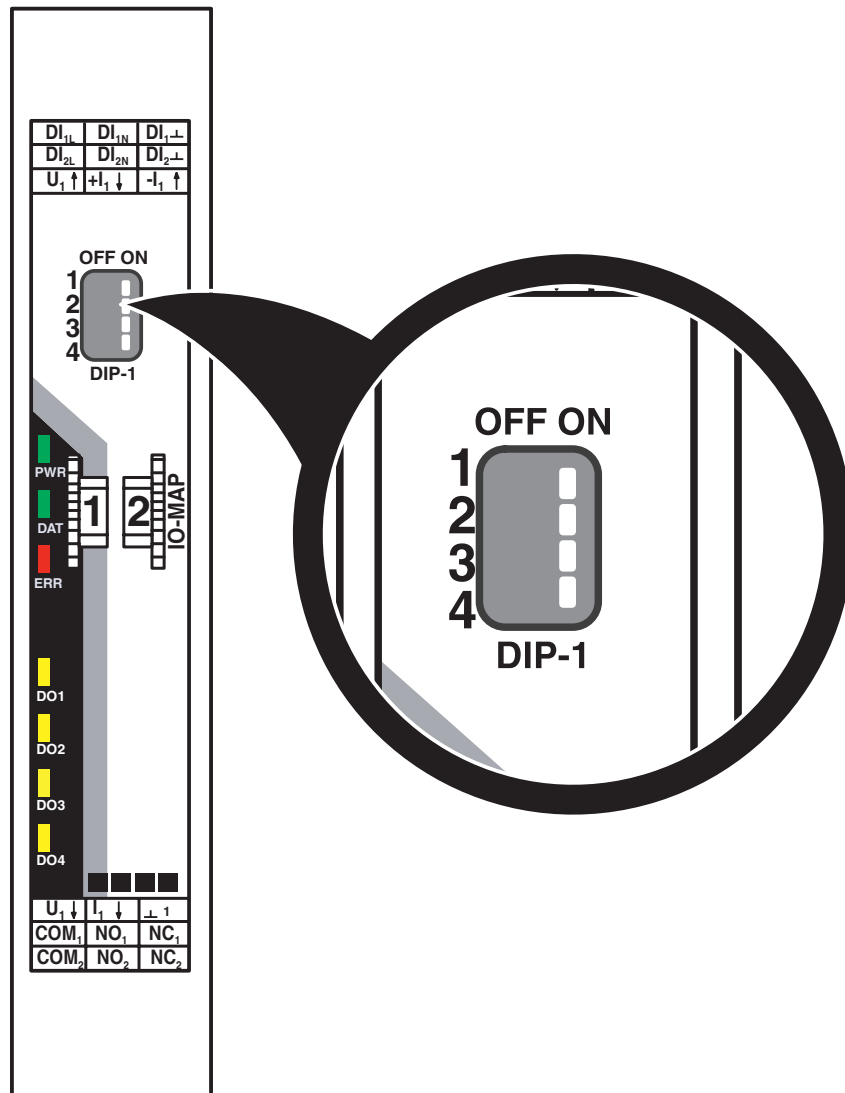


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Schematic diagram



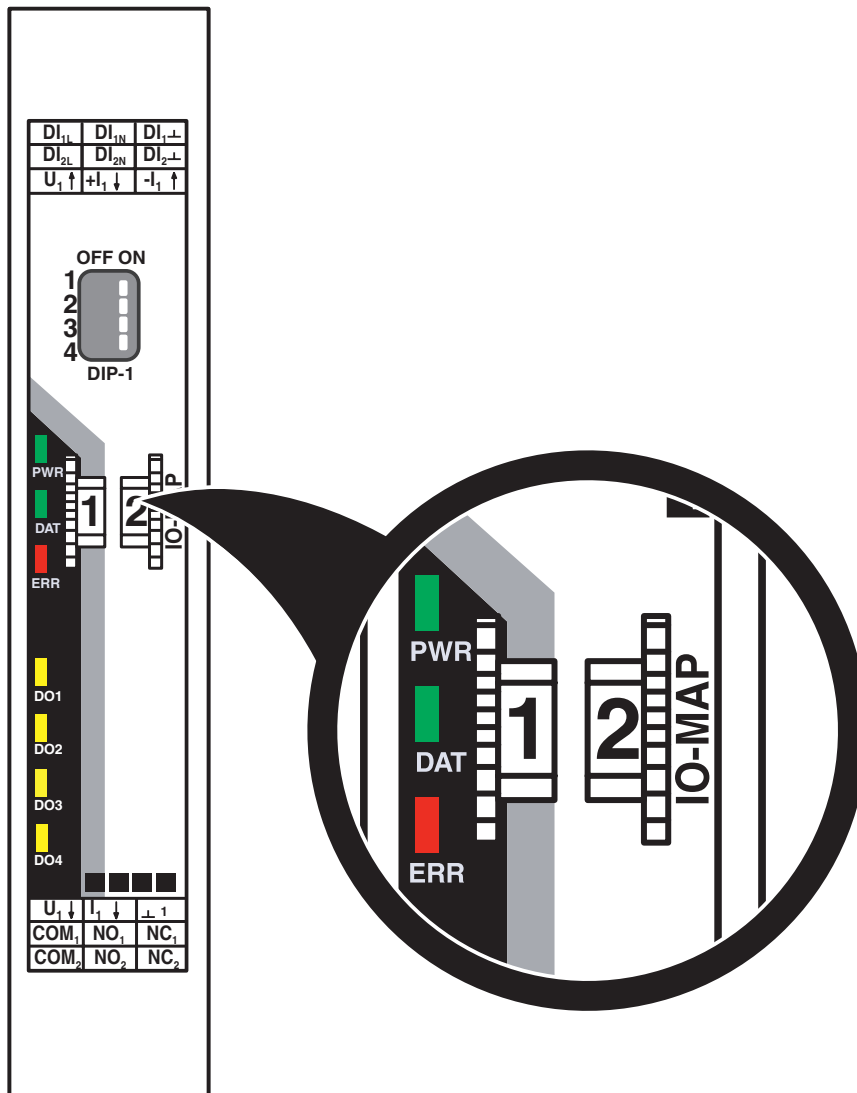
DIP switches

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Schematic diagram



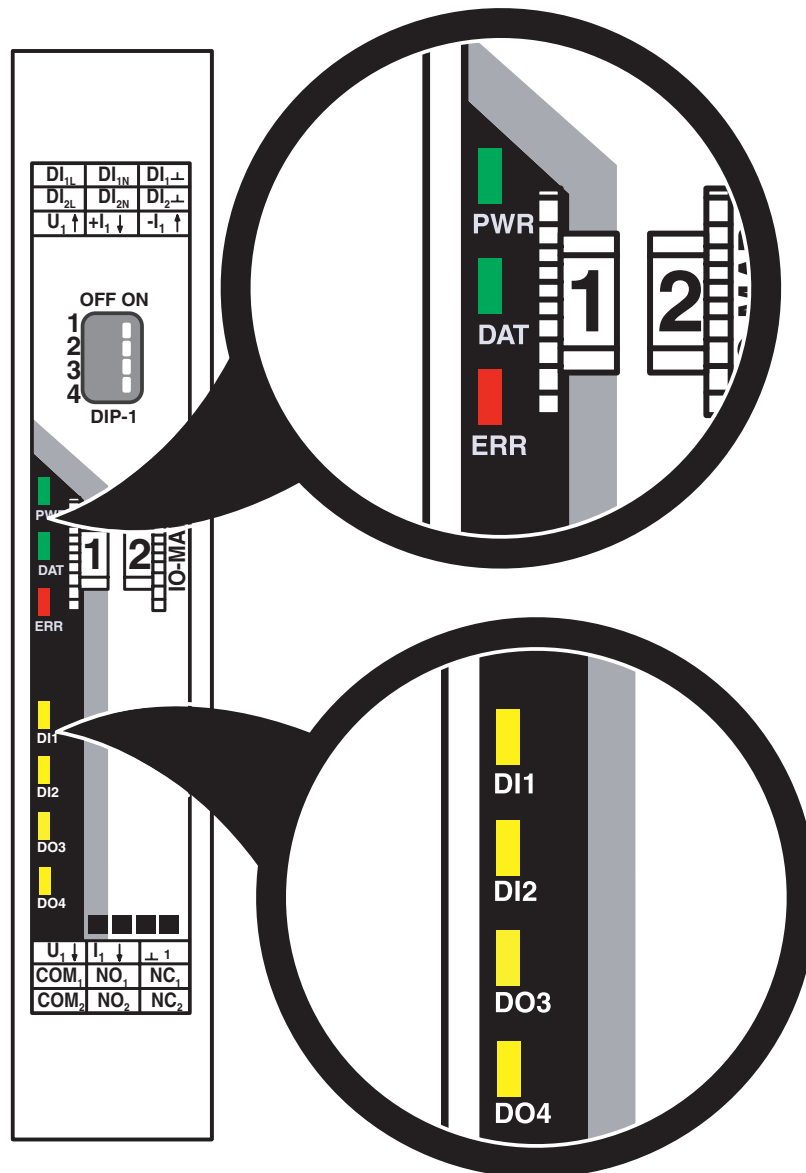
Thumbwheel

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Schematic diagram



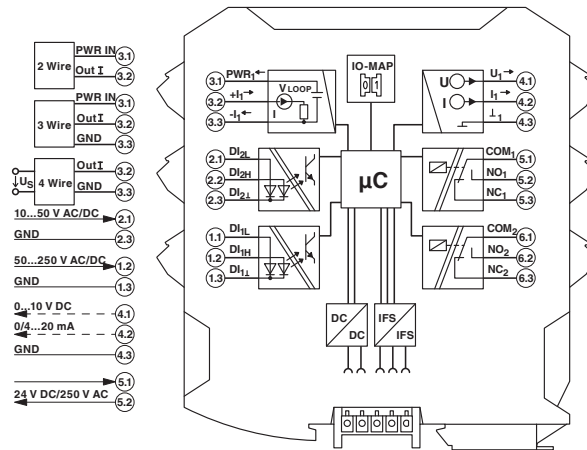
LED indicators

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Circuit diagram



Basic circuit diagram

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## Approvals


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 **UL Listed**  
Approval ID: E238705


 **cUL Listed**  
Approval ID: E238705


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

 **cUL Listed**  
Approval ID: E196811

 **UL Listed**  
Approval ID: E196811

 **ATEX**  
Approval ID: IBExU15ATEXB008 X

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

 **CCC**  
Approval ID: 2022122310115625

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## Classifications

### ECLASS

ECLASS-13.0	27242602
ECLASS-15.0	27242602

### ETIM

ETIM 9.0	EC001597
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### UNSPSC

UNSPSC 21.0	32151602
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## 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	86507bc8-14a1-4496-9fe1-04df08b198dc