

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



2901533

<https://www.phoenixcontact.com/pc/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
Product Key	DNC61D
Catalog Page	Page 380 (C-6-2019)
GTIN	4046356610216
Weight per Piece (including packing)	239.1 g
Weight per Piece (excluding packing)	230 g
Customs tariff number	85177900
Country of origin	DE

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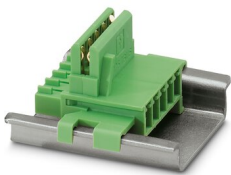
## Set consists of

### DIN rail bus connectors

DIN rail bus connectors - ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - 2709561

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

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



## Technical Data

### Notes

#### Utilization restriction

CCCex note	Use in potentially explosive areas is not permitted in China.
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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 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 (For passive sensors (via terminal PWR1, +I1))

## Digital

Description of the input	Digital input
Number of inputs	2
Min. voltage input signal	0 V AC/DC
Max. voltage input signal	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 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 (per channel)
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
Switching capacity	120 W (24 V DC)
	120 W (30 V DC)
	20 W (48 V DC)
	18 W (60 V DC)
	22 W (110 V DC)
	40 W (220 V DC)
	42 W (250 V DC)
	1250 VA
Behavior of the outputs (adjustable via DIP switch)	Hold / Reset

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## Analog

Output name	Analog output
Number of outputs	1
Voltage output signal	0 V ... 10 V
Max. voltage output signal	approx. 10.83 V
Current output signal	0 mA ... 20 mA 4 mA ... 20 mA
Max. current output signal	approx. 21.67 mA
Load	$\geq 10 \text{ k}\Omega$ $\leq 500 \Omega$
Resolution	16 bit
Precision	$\leq 0.02 \%$ (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

Connection method	Screw connection
Stripping length	7 mm
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid 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

## LED 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	
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Width	17.5 mm
Height	113 mm
Depth	114.5 mm

## Material specifications

Material	PA 6.6-FR (Housing)
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) -40 °F ... 158 °F (>131°F derating)
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

## Approval data

### CE

Certificate	CE-compliant
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### EAC

Identification	EAC
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### ATEX

Identification	<input type="checkbox"/> II 3 G Ex nA nC IIC T4 Gc
Certificate	IBExU 15 ATEX B008 X
Note	Please follow the special installation instructions in the documentation!

### IECEX

Identification	Ex nA 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

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## 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
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## EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
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## Standards and regulations

Standards/specifications	EN 61000-6-2
Standards/specifications	EN 61000-6-4
Standards/specifications	EN 60079-0
Standards/specifications	EN-60079-15

## Mounting

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



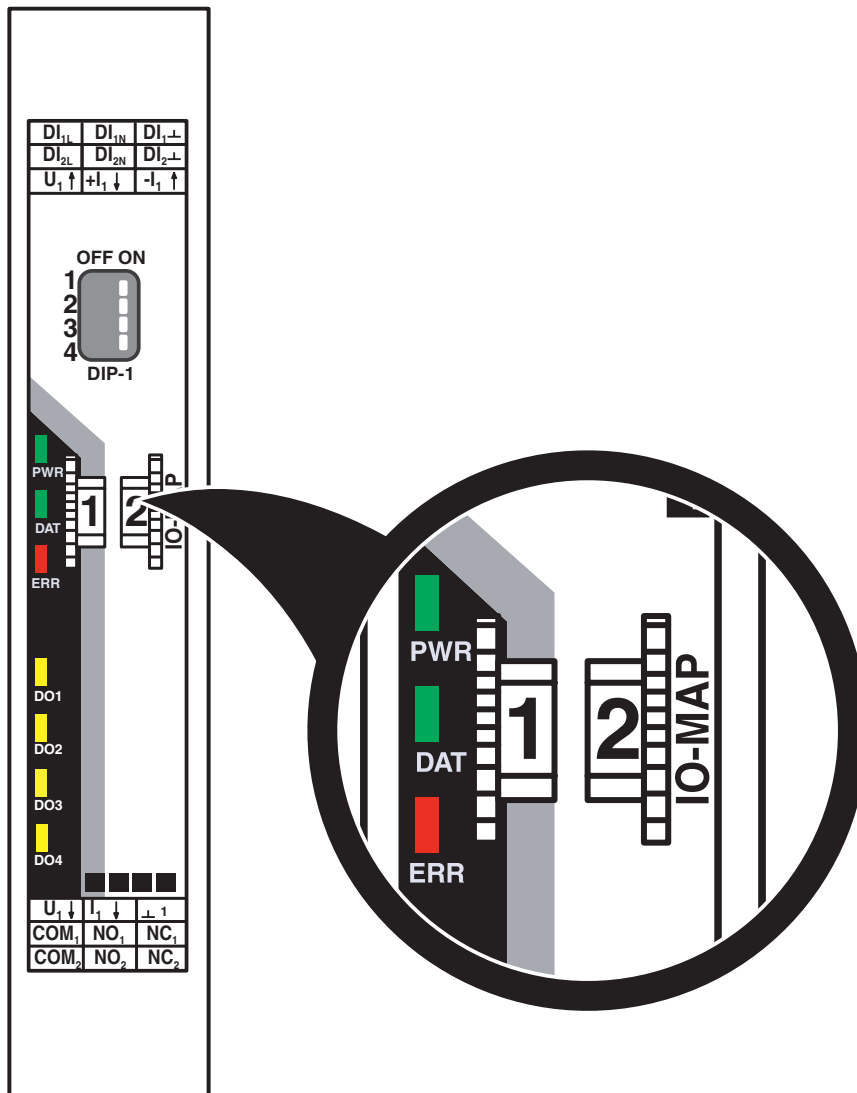


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Schematic diagram



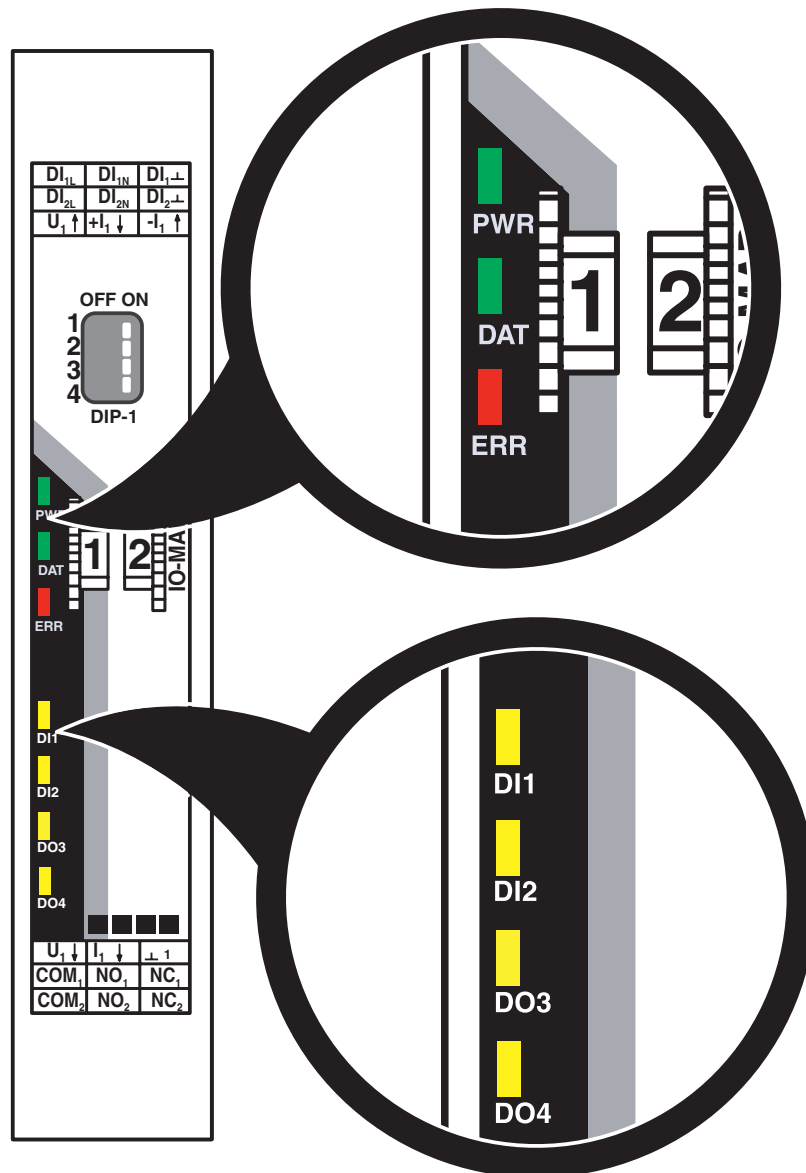
Thumbwheel

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Schematic diagram



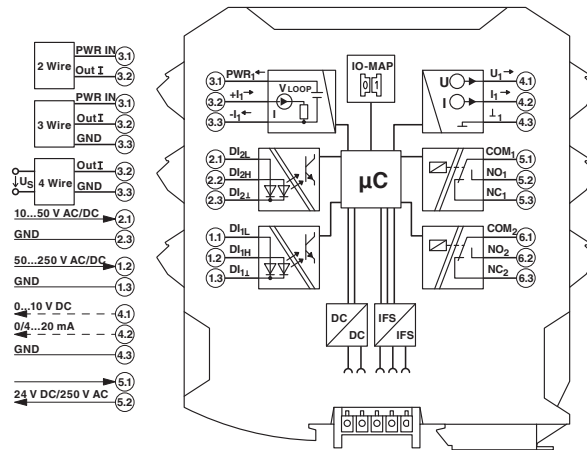
LED indicators

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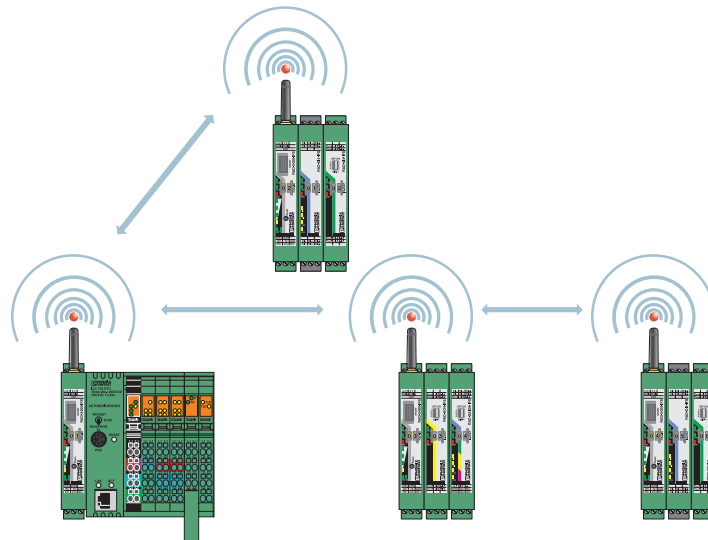
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Circuit diagram



Application drawing



Wireless module in PLC/Modbus RTU mode

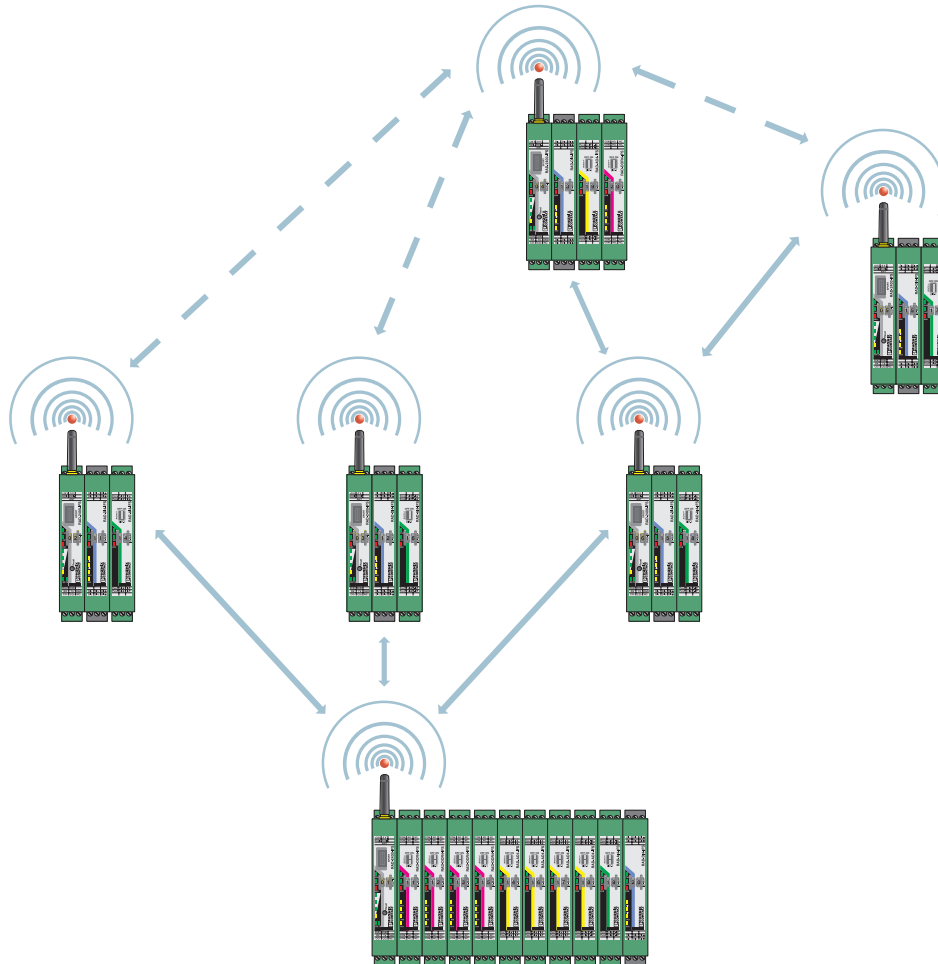
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Application drawing



Wireless module in I/O data mode

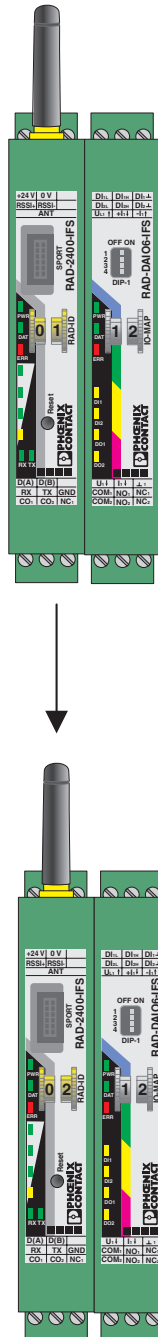
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Functional drawing



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

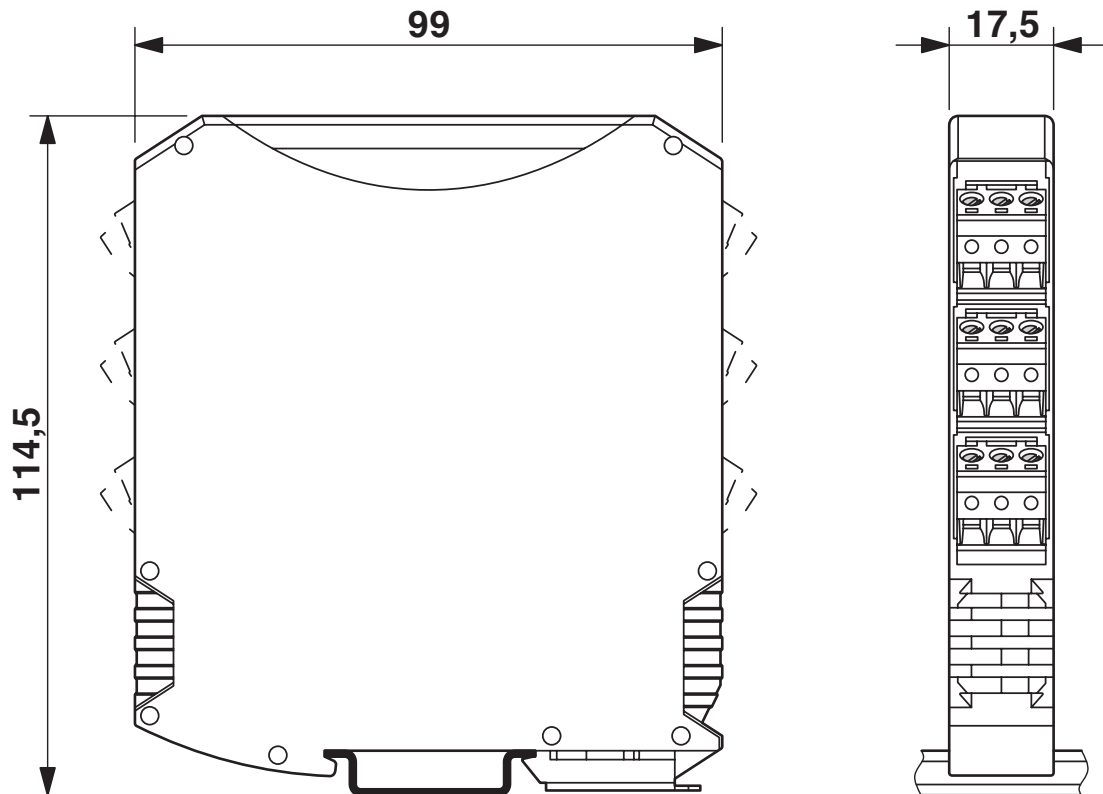
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Dimensional drawing

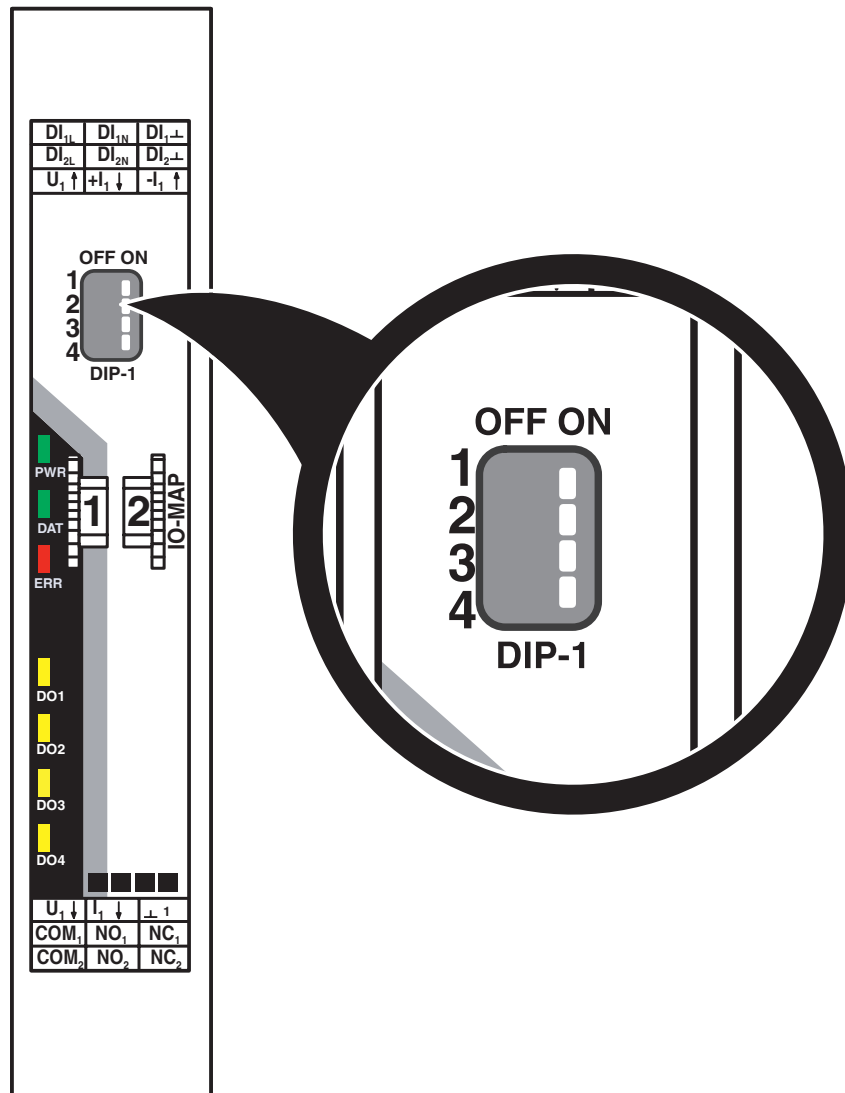


Slim design

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Schematic diagram



DIP switches

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## Approvals



**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



**IECEx**

Approval ID: IECEx IBE 13.0019X



**cUL Listed**

Approval ID: FILE E 196811



**UL Listed**

Approval ID: FILE E 196811



**ATEX**

Approval ID: IBExU 15 ATEX B008 X

**cULus Listed**

**cULus Listed**



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## Classifications

### ECLASS

ECLASS-9.0	27242602
ECLASS-10.0.1	27242602
ECLASS-11.0	27242602

### ETIM

ETIM 8.0	EC001597
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### UNSPSC

UNSPSC 21.0	32151600
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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

### Wireless module

Wireless module - RAD-2400-IFS - 2901541

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

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### Wireless module

Wireless module - RAD-900-IFS - 2901540

<https://www.phoenixcontact.com/pc/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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## Wireless module

Wireless module - RAD-868-IFS - 2904909

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

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## Communication module

Communication module - RAD-RS485-IFS - 2702184

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

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## Wireless module

Wireless module - RAD-2400-IFS-JP - 2702863

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

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## Wireless module

Wireless module - RAD-900-IFS-AU - 2702878

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

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## Accessories

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

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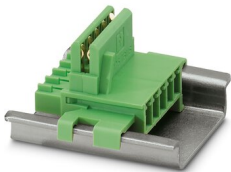
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## DIN rail bus connectors

DIN rail bus connectors - ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - 2709561

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

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



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## Multiplexer

Multiplexer - FB-MUX/HS/DAIO/PA - 1005329

<https://www.phoenixcontact.com/pc/products/1005329>

The FB-MUX/HS/DAIO/PA head station can be used with up to three, 6-channel Digital-Analog-Input-Output modules (RAD-DAIO6-IFS). This configuration can be used as a combination digital and analog I/O solution.



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## I/O extension module

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