

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



2901538

<https://www.phoenixcontact.com/in/products/2901538>

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Radioline - I/O extension module, 4 analog current or voltage outputs (0/4 mA ... 20 mA, 0 V ... 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)
- Approved for use in zone 2

## Commercial Data

Item number	2901538
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	DNC
Product Key	DNC61D
Catalog Page	Page 383 (C-6-2019)
GTIN	4046356609166
Weight per Piece (including packing)	205.8 g
Weight per Piece (excluding packing)	174.4 g
Customs tariff number	85177900
Country of origin	DE

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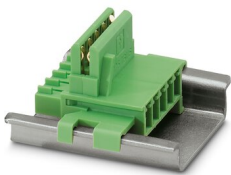
## Set consists of

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

2709561

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

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



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## Technical Data

### 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 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

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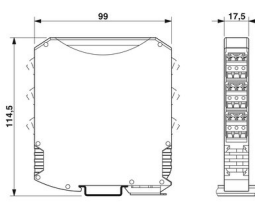
## Connection data

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

## Signaling

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

## Dimensions

Dimensional drawing	
Width	17.5 mm
Height	113 mm
Depth	114.5 mm

## Material specifications

Color	green
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

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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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### UKCA

Certificate	UKCA-compliant
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### ATEX

Identification	<input type="checkbox"/> 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

### 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 IIC T4 Gc
Certificate	2022122310115625

### KC approval for South Korea

Certificate	R-R-PCK-2901538
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### KC-s

Certificate	KTL 20-KA4BO-0148X
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### Corrosive gas test

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

Noise immunity	EN 61000-6-2
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 61000-6-4

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



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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

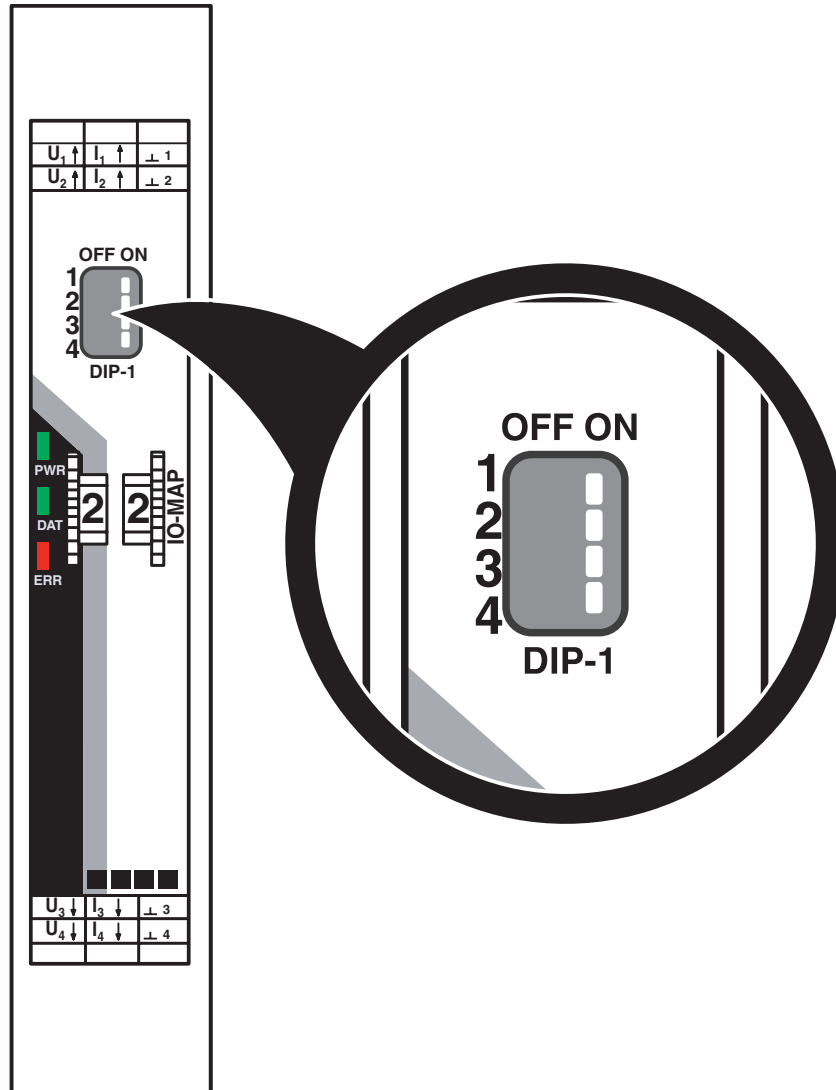
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## Drawings

### Schematic diagram



DIP switches

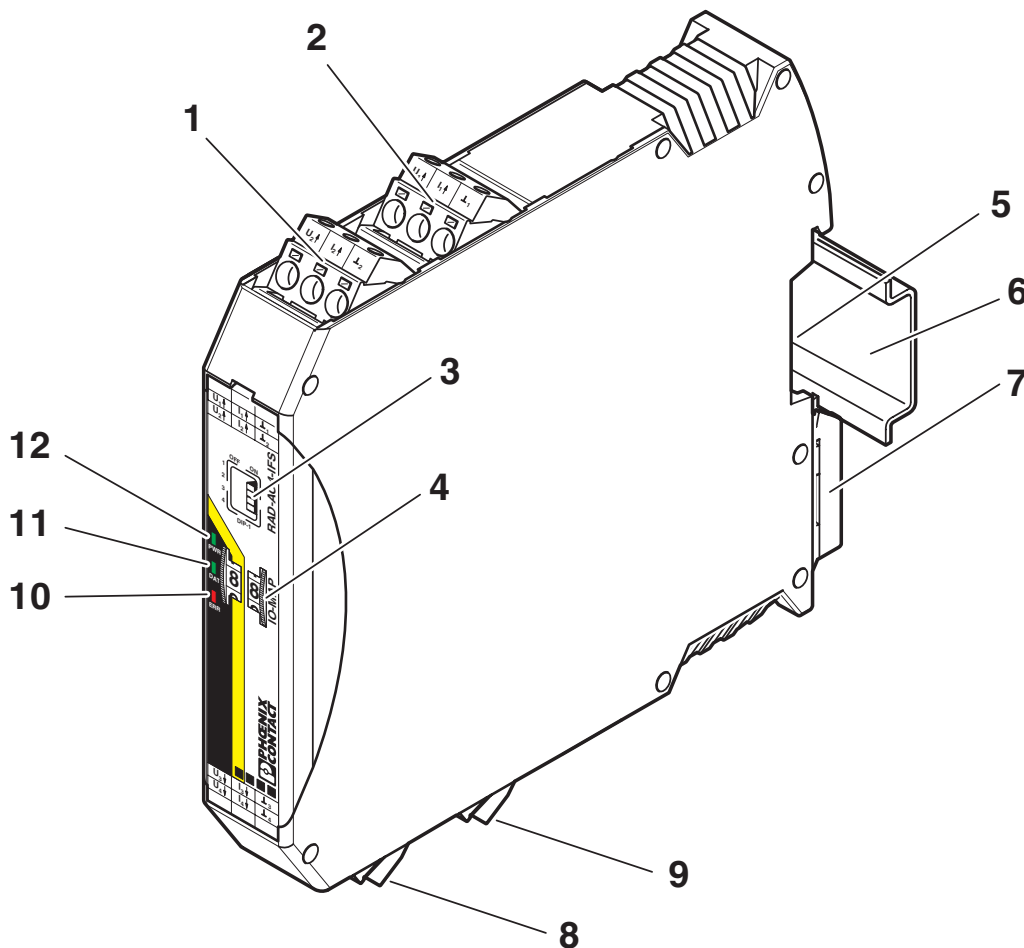
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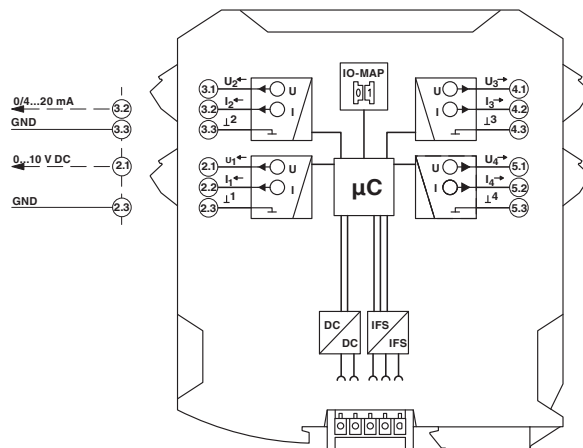
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Schematic diagram



Function elements

Circuit diagram



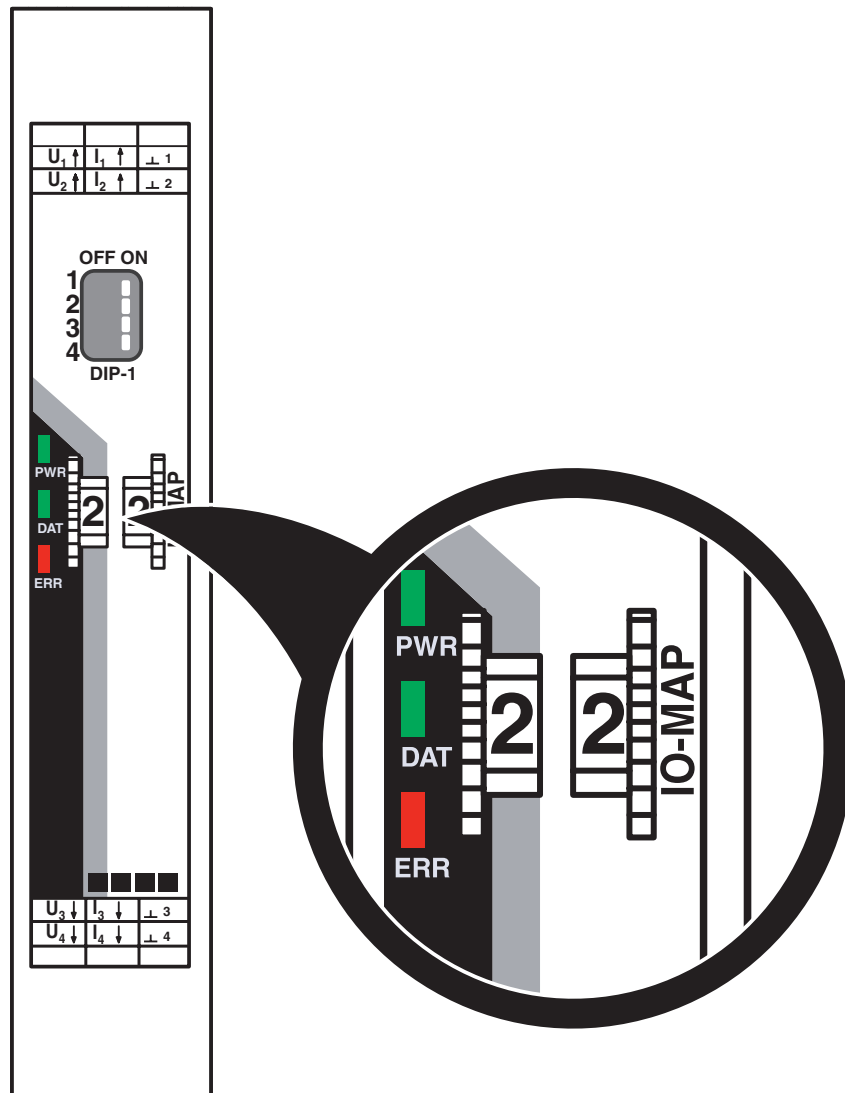


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Schematic diagram



Thumbwheel



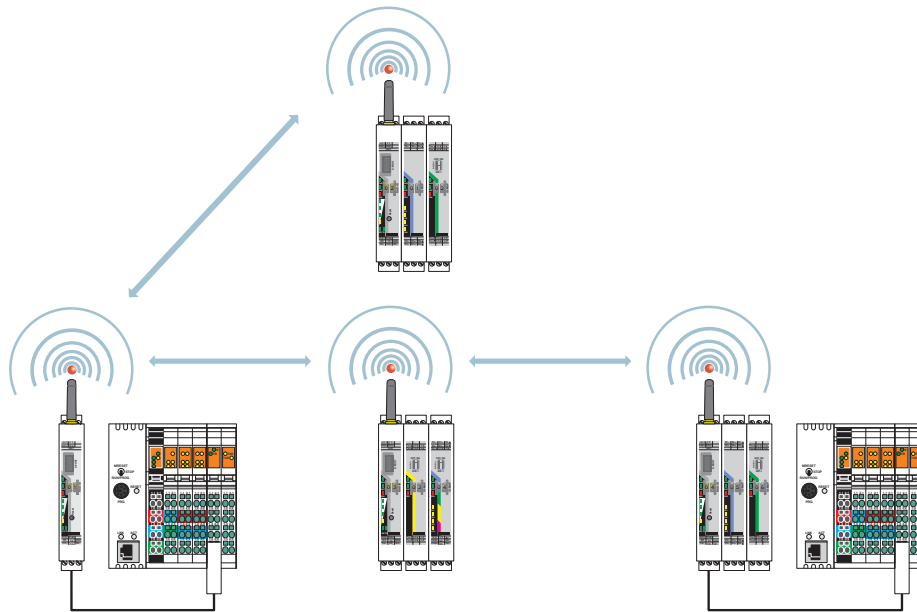
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Application drawing



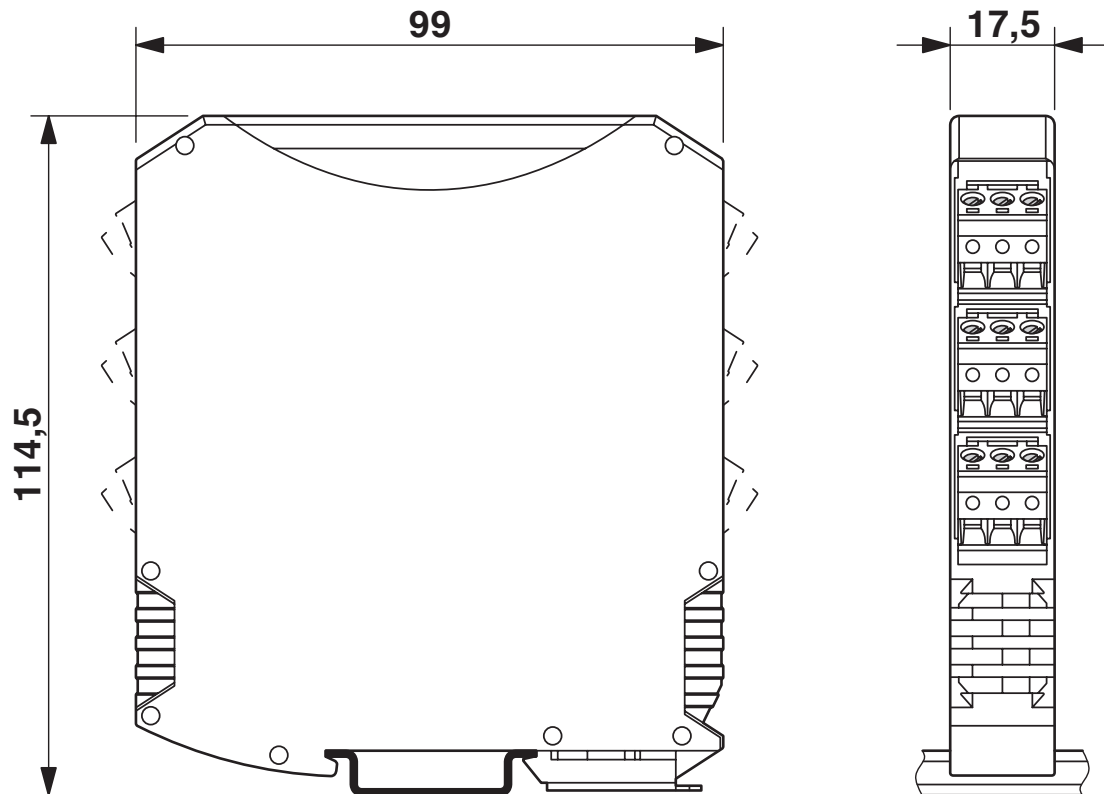
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Dimensional drawing



Slim design

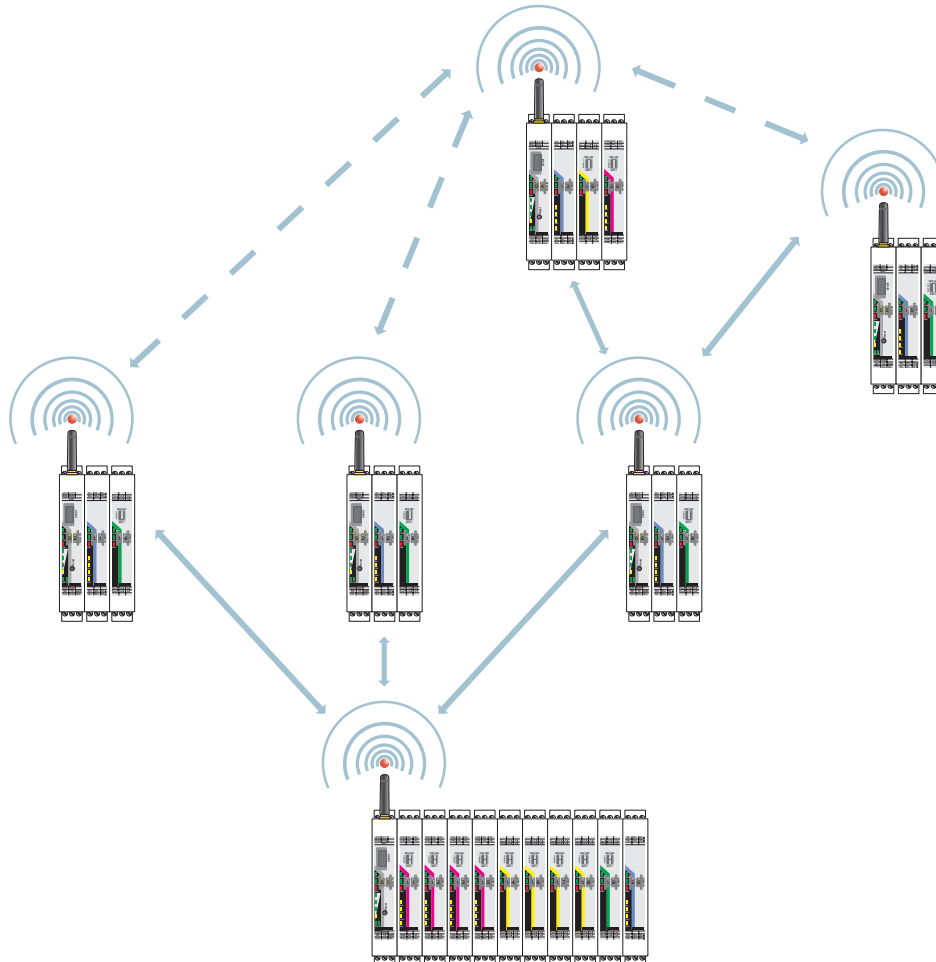
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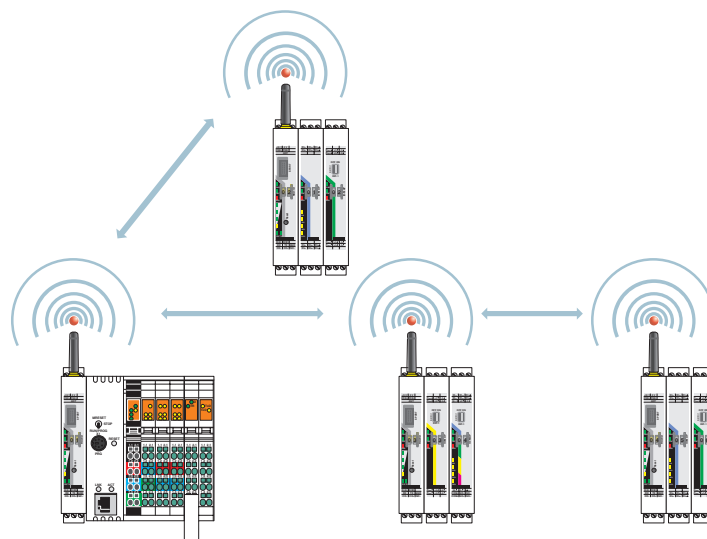
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Application drawing



Wireless module in I/O data mode

Application drawing



Wireless module in PLC/Modbus RTU mode

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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-2901538



**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



**KC-s**

Approval ID: 20-KA4BO-0148X

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## Classifications

### ECLASS

ECLASS-11.0	27242601
ECLASS-12.0	27242601
ECLASS-13.0	27242601

### ETIM

ETIM 8.0	EC001596
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### UNSPSC

UNSPSC 21.0	32151602
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## Environmental Product Compliance

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/in/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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### RAD-900-IFS - Wireless module

2901540

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

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

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## RAD-868-IFS - Wireless module

2904909

<https://www.phoenixcontact.com/in/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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## RAD-RS485-IFS - Communication module

2702184

<https://www.phoenixcontact.com/in/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-AO4-IFS - I/O extension module

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## RAD-2400-IFS-JP - Wireless module

2702863

<https://www.phoenixcontact.com/in/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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## RAD-900-IFS-AU - Wireless module

2702878

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

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

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## RAD-AI4-IFS - I/O extension module

2901537

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Radioline - I/O extension module, 4 analog current inputs (0/4 mA ... 20 mA)

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## RAD-PT100-4-IFS - I/O extension module

2904035

<https://www.phoenixcontact.com/in/products/2904035>



Radioline - I/O extension module, 4 Pt 100 inputs (-50°C ... +250°C / -58 °F ... 482 °F)

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

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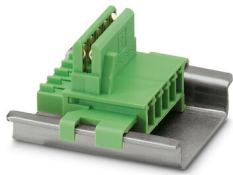
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## ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - DIN rail bus connectors

2709561

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

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## FB-MUX/HS/AIOTEMP/PA - Multiplexer

1005330

<https://www.phoenixcontact.com/in/products/1005330>



The FB-MUX/HS/AIOTEMP/PA head station can be used with up to three 4-channel analog input modules (RAD-AI4-IFS) or three 4-channel PT100 temperature sensing modules (RAD-PT100-4-IFS), and two 4-channel analog output modules (RAD-AO4-IFS). This configuration can be used as an analog input/output and temperature control solution.

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

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## RAD-AI4-IFS - I/O extension module

2901537

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Radioline - I/O extension module, 4 analog current inputs (0/4 mA ... 20 mA)

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## RAD-PT100-4-IFS - I/O extension module

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Radioline - I/O extension module, 4 Pt 100 inputs (-50°C ... +250°C / -58 °F ... 482 °F)

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