

## I/O extension module - RAD-AO4-IFS - 2901538

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Analog I/O extension module with 4 analog current/voltage outputs (0/4 mA ... 20 mA, 0...10 V), with screw connection, incl. DIN rail connector

### Product Features

- Channel-to-channel electrical isolation
- Extended temperature range, -40°C ... +70°C
- Easy module replacement even during operation (hot swap)
- Suitable for ATEX zone 2
- Easy startup via thumbwheel



### Key Commercial Data

Packing unit	1 pc
Weight per Piece (excluding packing)	220.0 g
Country of origin	Germany

### Technical data

#### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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#### Dimensions

Width	17.5 mm
Height	99 mm
Depth	114.5 mm

#### Ambient conditions

Degree of protection	IP20
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## I/O extension module - RAD-AO4-IFS - 2901538

### Technical data

#### Ambient conditions

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
Permissible humidity (operation)	20 % ... 85 %
Permissible humidity (storage/transport)	20 % ... 85 %
Altitude	2000 m
Vibration (operation)	in accordance with IEC 60068-2-6: 5g, 10 Hz ... 150 Hz
Shock	16g, 11 ms

#### General

Overvoltage category	II
Mounting position	any
Assembly instructions	on standard DIN rail NS 35 in accordance with EN 60715
Degree of pollution	2
Housing material	PA 6.6-FR
Flammability rating according to UL 94	V0
MTTF	999 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	404 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))
	156 Years (Telcordia standard, temperature 40 °C, operating cycle 100 % (7 days a week, 24 hours a day))

#### 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)
Transient surge protection	Yes

#### Analog outputs

Number of outputs	4
Voltage output signal	0 V ... 10 V
Max. voltage output signal	approx. 10.83 V
Load	≥ 10 kΩ
Precision	typ. 0.5 % (Voltage output)
Current output signal	0 mA ... 20 mA
	4 mA ... 20 mA
Max. current output signal	approx. 21.67 mA
Load	≤ 500 Ω
Precision	≤ 0.02 % (at 25 °C)

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### Technical data

#### Analog outputs

Resolution	16 bit
Temperature coefficient, typical	0.0025 %/K (at -40 °C ... +70 °C)
Behavior of the outputs (adjustable via DIP switch)	Hold / Reset
Protective circuit	Transient protection of outputs

#### Electrical isolation

Analog I/O	50 V (Rated insulation voltage (in each case between the TBUS analog outputs / supply, reinforced insulation according to EN 61010))
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#### Test voltage

Analog I/O	1.5 kV AC (50 Hz, 1 min.)
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#### Connection data

Connection method	Screw connection
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
Stripping length	7 mm
Tightening torque	0.6 Nm
Screw thread	M3

#### Status indicator

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

#### Approvals and conformance

Conformance	CE-compliant
IECEX	Ex nA IIC T4 Gc
UL, USA / Canada	UL 508 Listed
Standard designation	EMC Directive 2004/108/EC
Standards/regulations	EN 61000-6-2
Standard designation	EMC Directive 2004/108/EC
Standards/regulations	EN 61000-6-4
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN 60079-0
Standard designation	Ex Directive (ATEX)

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## Technical data

### Approvals and conformance

Standards/regulations	EN-60079-15
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### Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Standard designation	EMC Directive 2004/108/EC
Standards/regulations	EN 61000-6-2
Standard designation	EMC Directive 2004/108/EC
Standards/regulations	EN 61000-6-4
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN 60079-0
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN-60079-15
Shock	16g, 11 ms
Noise emission	EN 61000-6-4
Noise immunity	EN 61000-6-2
Flammability rating according to UL 94	V0
Vibration (operation)	in accordance with IEC 60068-2-6: 5g, 10 Hz ... 150 Hz
Conformance	CE-compliant
ATEX	# II 3 G Ex nA IIC T4 Gc
IECEX	Ex nA IIC T4 Gc
UL, USA / Canada	UL 508 Listed
	Class I, Div. 2, Groups A, B, C, D T4A
	Class I, Zone 2, IIC T4

## Classifications

### eCl@ss

eCl@ss 4.0	27230207
eCl@ss 4.1	27230207
eCl@ss 5.0	27230207
eCl@ss 5.1	27242208
eCl@ss 6.0	27242208
eCl@ss 7.0	27242208
eCl@ss 8.0	27242601

### ETIM

ETIM 3.0	EC001423
ETIM 4.0	EC000310

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## Classifications

### ETIM

ETIM 5.0	EC001596
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### UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	43223108
UNSPSC 11	39121008
UNSPSC 12.01	43223108
UNSPSC 13.2	43223108

## Approvals

### Approvals

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#### Approvals

UL Listed / cUL Listed / EAC / cULus Listed

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#### Ex Approvals

ATEX / IECEx / UL Listed / cUL Listed / cULus Listed

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#### Approvals submitted

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### Approval details

UL Listed
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cUL Listed
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EAC
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cULus Listed
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## I/O extension module - RAD-AO4-IFS - 2901538

### Accessories

#### Accessories

#### Communication module

Communication module - RAD-RS485-IFS - 2702184



Multipoint multiplexer for RS-485 bus system, can be extended with I/O extension modules. Can be used as Modbus RTU bus coupler or combined with Radioline wireless system, screw connection. Up to 99 stations, including DIN rail connector

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### DIN rail connector

Electronic housing - ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - 2709561



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

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### Extension module

I/O extension module - RAD-AI4-IFS - 2901537



Analog extension module with 4 analog current inputs (0/4 mA ... 20 mA), with screw connection, incl. DIN rail connector

I/O extension module - RAD-PT100-4-IFS - 2904035



Temperature I/O extension module with 4 PT 100 inputs (-50...+250 °C), with screw connection, including DIN rail connector

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### Trusted Wireless device

## I/O extension module - RAD-AO4-IFS - 2901538

### Accessories

#### Wireless module - RAD-2400-IFS - 2901541



2400 MHz wireless transceiver with RS-232, RS-485 2-wire interface, expandable with I/O extension modules, with screw connection, antenna connection:RSMA (female), including DIN rail connector, without antenna

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#### Wireless module - RAD-868-IFS - 2904909



868 MHz wireless transceiver with RS-232, RS-485 2-wire interface, expandable with I/O extension modules, with screw connection, antenna connection: RSMA (female), including DIN rail connector, without antenna.

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#### Wireless module - RAD-900-IFS - 2901540



Bidirectional, Radioline 900 MHz transceiver for wireless transmission of serial and I/O data

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### Required add-on products

#### Wireless module - RAD-2400-IFS - 2901541



2400 MHz wireless transceiver with RS-232, RS-485 2-wire interface, expandable with I/O extension modules, with screw connection, antenna connection:RSMA (female), including DIN rail connector, without antenna

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#### Wireless module - RAD-900-IFS - 2901540



Bidirectional, Radioline 900 MHz transceiver for wireless transmission of serial and I/O data

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## I/O extension module - RAD-AO4-IFS - 2901538

### Accessories

#### Wireless module - RAD-868-IFS - 2904909



868 MHz wireless transceiver with RS-232, RS-485 2-wire interface, expandable with I/O extension modules, with screw connection, antenna connection: RSMA (female), including DIN rail connector, without antenna.

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#### Communication module - RAD-RS485-IFS - 2702184



Multipoint multiplexer for RS-485 bus system, can be extended with I/O extension modules. Can be used as Modbus RTU bus coupler or combined with Radioline wireless system, screw connection. Up to 99 stations, including DIN rail connector

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### Additional products

#### I/O extension module - RAD-AI4-IFS - 2901537



Analog extension module with 4 analog current inputs (0/4 mA ... 20 mA), with screw connection, incl. DIN rail connector

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#### I/O extension module - RAD-PT100-4-IFS - 2904035



Temperature I/O extension module with 4 PT 100 inputs (-50...+250 °C), with screw connection, including DIN rail connector

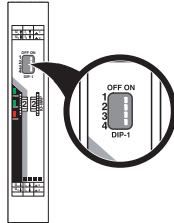
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### Drawings



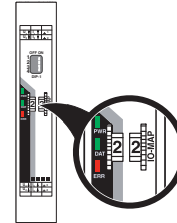
# I/O extension module - RAD-AO4-IFS - 2901538

Schematic diagram



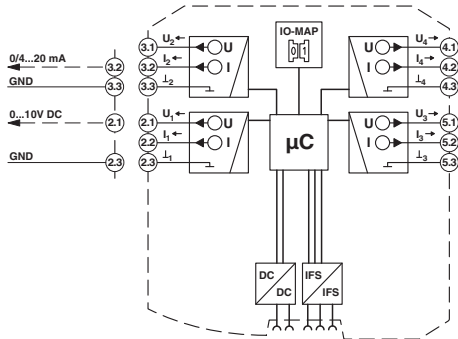
DIP switches

Schematic diagram

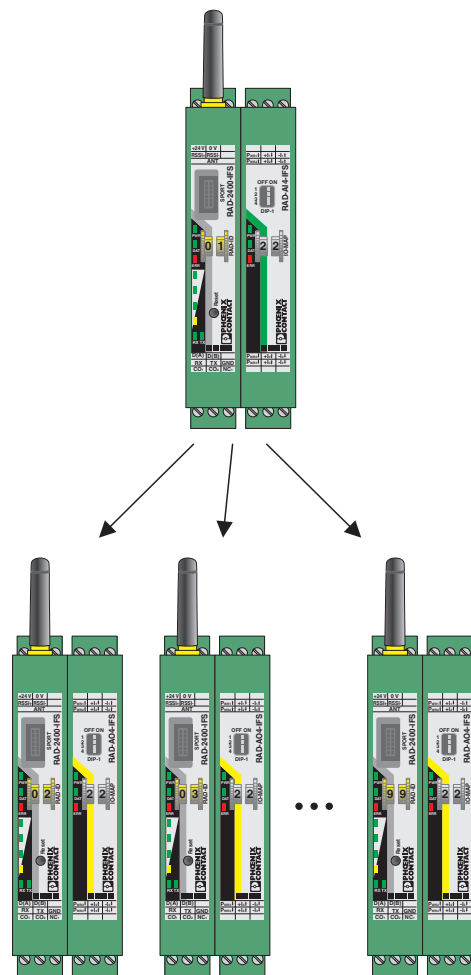


Thumb wheel

Block diagram



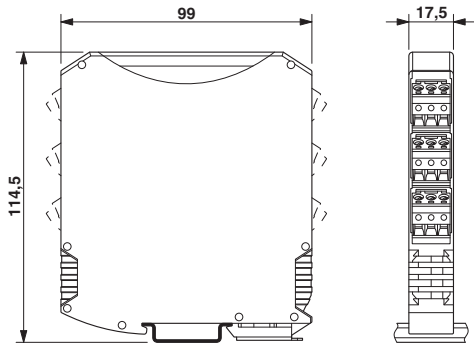
Functional drawing



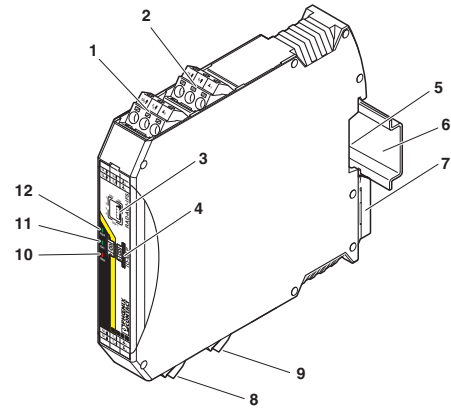
Assignment of analog inputs and analog outputs

# I/O extension module - RAD-AO4-IFS - 2901538

Dimensional drawing



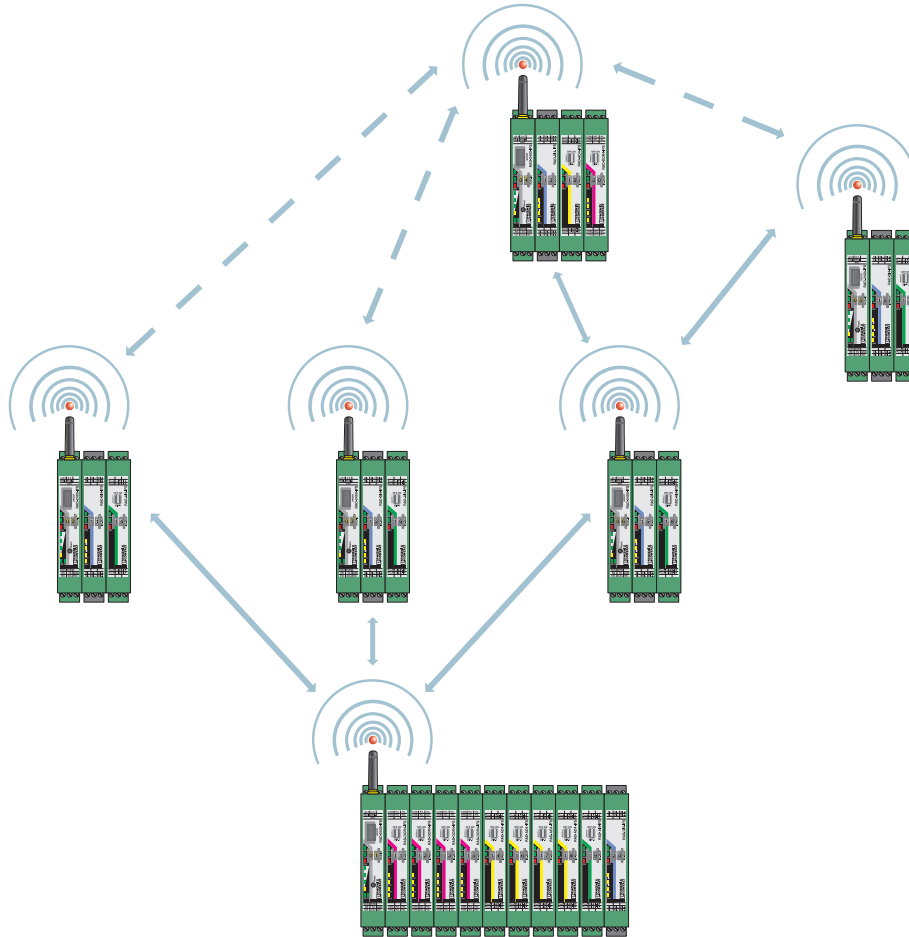
Schematic diagram



Function elements

# I/O extension module - RAD-AO4-IFS - 2901538

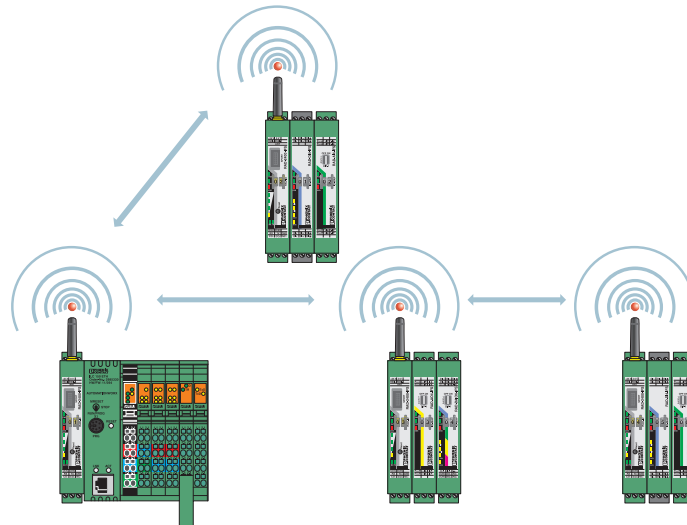
Application drawing



Wireless module in I/O data mode

## I/O extension module - RAD-AO4-IFS - 2901538

Application drawing



Wireless module in PLC/Modbus RTU mode