

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

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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

### Why buy this product

- Multipoint multiplexer for I/O signals
- Up to 99 bus stations in the network
- Quick and easy startup without programming
- Can be combined with Radioline wireless modules
- Modular extension with up to 32 I/O extension modules supported
- Extended temperature range, -40 °C ... +70 °C
- Approved for use in zone 2



### Key Commercial Data

|                                      |   |
|--------------------------------------|---|
| Packing unit                         | 1 STK   |
| GTIN                                 | <br>4 055626 007373 |
| GTIN                                 | 4055626007373   |
| Weight per Piece (excluding packing) | 200.000 g   |
| Custom tariff number                 | 85176200  |
| Country of origin                    | Germany   |

### Technical data

#### Note

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

#### Ambient conditions

|                                 |                                     |
|---------------------------------|-------------------------------------|
| Degree of protection            | IP20                                |
| Ambient temperature (operation) | -40 °C ... 70 °C (>55°C derating)   |
|                                 | -40 °F ... 158 °F (>131°F derating) |

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## Technical data

### Ambient conditions

|  |  |
|--|--|
| 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

|  |  |
|--|--|
| Operating mode                         | I/O data (Default setting, configuration via thumbwheel)   |
|  | Modbus RTU Slave (Default setting, configuration via thumbwheel)   |
| Overvoltage category                   | II   |
| 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                                   | 1233 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))    |
|  | 514 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day)) |
|  | 212 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                     |
| Max. current consumption   | ≤ 65 mA (at 24 V DC, at 25 °C, stand-alone) |
| Transient surge protection | Yes   |

### Serial interface

|                       |  |
|-----------------------|--|
| Interface 1           | RS-485   |
| Connection method     | COMBICON plug-in screw terminal block            |
| Connection technology | 2-wire   |
| Transmission length   | ≤ 1200 m   |
| Termination resistor  | 390 Ω (switchable via DIP switches)              |
|                       | 150 Ω (switchable via DIP switches)              |
|                       | 390 Ω (switchable via DIP switches)              |
| Transmission speed    | 0.3 ... 115.2 kbps (Default setting: 19.2/8/E/1) |
| Interface 2           | Configuration interface                          |
| Connection method     | S-PORT (socket)                                  |

### RF link relay output

|                   |                   |
|-------------------|-------------------|
| Number of outputs | 1                 |
| Contact type      | PDT               |
| Contact material  | PdRu, gold-plated |

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## Technical data

### RF link relay output

|                           |  |
|---------------------------|--|
| Maximum switching voltage | 30 V AC/DC   |
|                           | 60 V DC  |
| Max. switching current    | 500 mA (30 V AC/DC)  |
| Electrical service life   | 5 x 10 <sup>5</sup> switching cycles with 0.5 A at 30 V DC |

### 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)     |
|                | Green LED (receive data, RX)       |
|                | Green LED (transmit data, TX)      |

### Standards and Regulations

|  |  |
|--|--|
| Electromagnetic compatibility          | Conformance with EMC Directive 2014/30/EU              |
| Flammability rating according to UL 94 | V0   |
| Shock                                  | 16g, 11 ms   |
| Vibration (operation)                  | in accordance with IEC 60068-2-6: 5g, 10 Hz ... 150 Hz |
| Conformance                            | CE-compliant   |
| ATEX                                   | # II 3 G Ex nA nC IIC T4 Gc                            |
| IECEX                                  | Ex nA nC 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                                |
| Noxious gas test                       | ISA-S71.04-1985 G3 Harsh Group A                       |

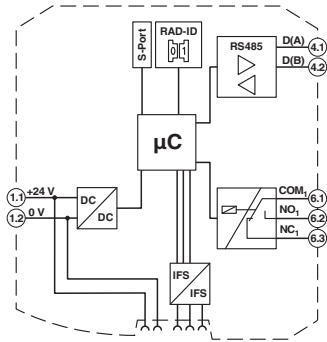
### Environmental Product Compliance

|            |   |
|------------|---|
| China RoHS | Environmentally Friendly Use Period = 50  |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

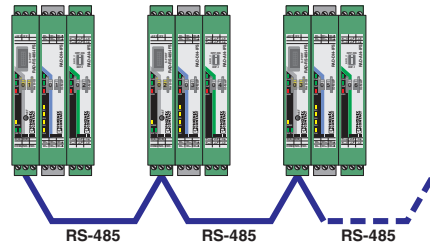
## Drawings

# Communication module - RAD-RS485-IFS - 2702184

Block diagram

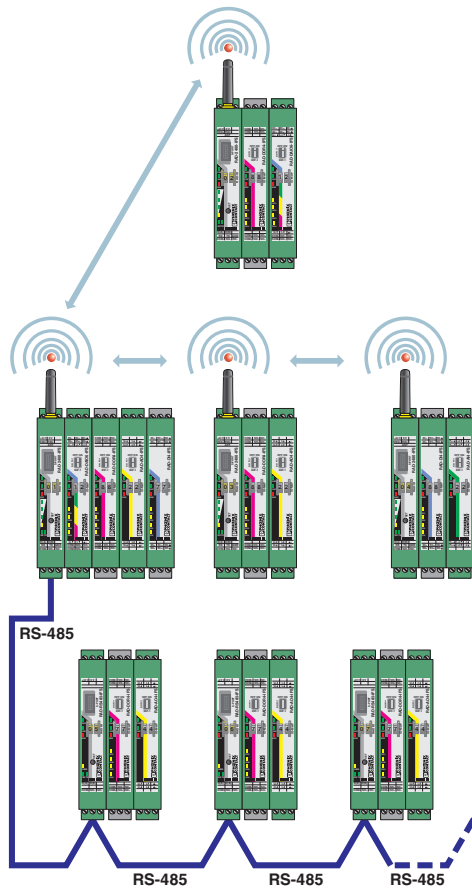


Functional drawing



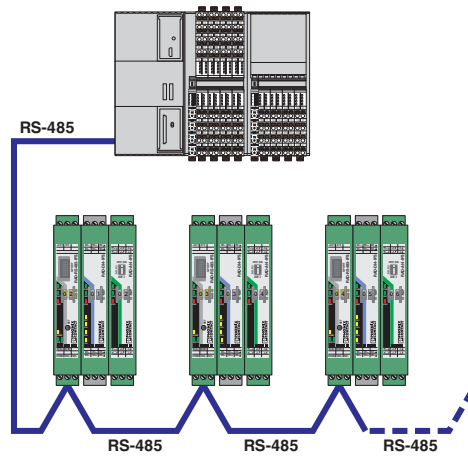
I/O-to-I/O, only RS-485

Functional drawing



I/O-to-I/O, wireless, and RS-485

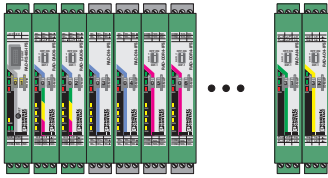
Functional drawing



Modbus/RTU slave

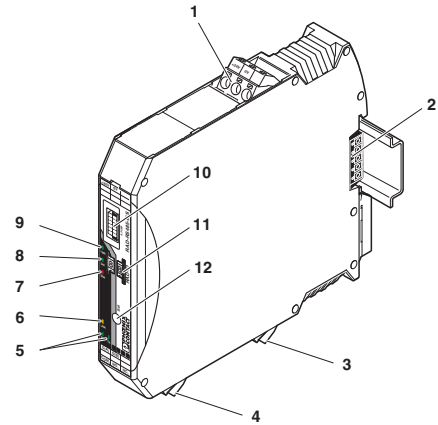
# Communication module - RAD-RS485-IFS - 2702184

Functional drawing

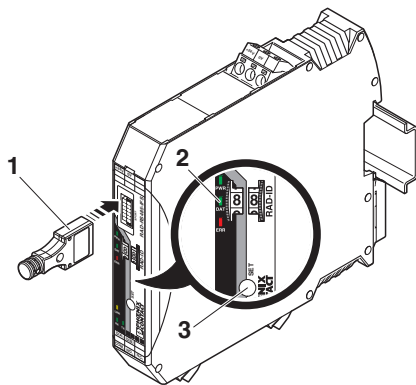


Radioline connection station with up to 32 I/O extension modules

Schematic diagram

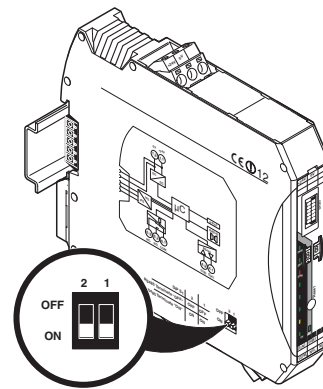


Schematic diagram



Configuration with memory stick

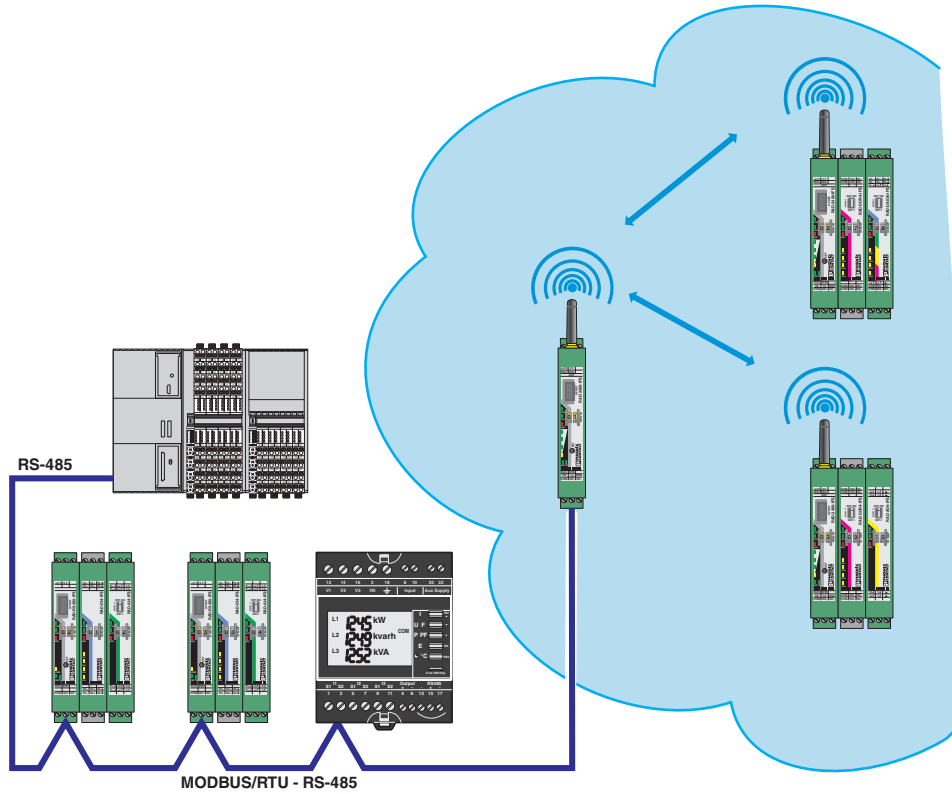
Schematic diagram



DIP switches

# Communication module - RAD-RS485-IFS - 2702184

Functional drawing



Radioline wireless system and RS-485 stations at a Modbus master (I/O-to-serial)

## Articles in set

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.

## Classifications

eCI@ss

|            |          |
|------------|----------|
| eCI@ss 5.1 | 27242208 |
| eCI@ss 6.0 | 27242208 |
| eCI@ss 8.0 | 19179290 |
| eCI@ss 9.0 | 19179290 |

# Communication module - RAD-RS485-IFS - 2702184

## Classifications

### ETIM

|          |          |
|----------|----------|
| ETIM 5.0 | EC000310 |
| ETIM 6.0 | EC000310 |

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 13.2 | 43222604 |
|-------------|----------|

## Approvals

### Approvals

#### Approvals

UL Listed / cUL Listed / cULus Listed

#### Ex Approvals

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

### Approval details

|           |  |   |               |
|-----------|--|---|---------------|
| UL Listed |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 238705 |
|-----------|--|---|---------------|

|            |  |   |               |
|------------|--|---|---------------|
| cUL Listed |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 238705 |
|------------|--|---|---------------|

|              |  |  |  |
|--------------|--|--|--|
| cULus Listed |  |  |  |
|--------------|--|--|--|

## Accessories

### Accessories

#### Configuration memory

Configuration memory - RAD-MEMORY - 2902828



Radioline - memory stick for saving custom configuration data

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

### Accessories

#### Extension module

I/O extension module - RAD-DAIO6-IFS - 2901533



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)

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I/O extension module - RAD-DI4-IFS - 2901535



Radioline - I/O extension module, 4 digital inputs (0 ... 250 V AC/DC)

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I/O extension module - RAD-DOR4-IFS - 2901536



Radioline - I/O extension module, 4 digital relay outputs (5 A, 250 V AC/24 V DC)

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I/O extension module - RAD-DI8-IFS - 2901539



Radioline - I/O extension module, 8 digital inputs (0 ... 30.5 V DC) or 2 pulse inputs up to 100 Hz

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I/O extension module - RAD-DO8-IFS - 2902811



Radioline - I/O extension module, 8 digital transistor outputs (30.5 V DC/200 mA)

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

### Accessories

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



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

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



Radioline - I/O extension module, 4 analog current or voltage outputs (0/4 mA ... 20 mA, 0 V ... 10 V)

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



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

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### PCB plug

Printed-circuit board connector - TVFKC 1,5/ 3-ST - 1713842



PCB connector, nominal current: 10 A, rated voltage (III/2): 320 V, number of positions: 3, pitch: 5 mm, connection method: Push-in spring connection, color: green, contact surface: Tin

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### Power supply

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983



Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A

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### Programming cable

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

### Accessories

Cable for programming - RAD-CABLE-USB - 2903447



Radioline - USB data cable for communication between the PC and Radioline devices, energy supply for diagnostics and configuration via the USB port of the PC, cable length: 2 m / 6.5 ft

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### Shield connection clamp

Shield connection terminal block - SKS 8-SNS35 - 3062786



Shield connection terminal block, for applying the shield to busbars

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### Surge protection for information technology

Surge protection device - TTC-6P-3-HF-F-M-12DC-PT-I - 2906796



Surge protection, consisting of protective plug and base element, with integrated status indicator and knife disconnection for three signal wires with common reference potential. For HF applications and telecommunications interfaces without supply voltage. Indirect grounding via gas-filled surge arrester.

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### Trusted Wireless device

Wireless module - RAD-2400-IFS - 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 - RAD-868-IFS - 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

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

### Accessories

#### Wireless module - RAD-900-IFS - 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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### Additional products

#### I/O extension module - RAD-DAIO6-IFS - 2901533



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)

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#### I/O extension module - RAD-DI4-IFS - 2901535



Radioline - I/O extension module, 4 digital inputs (0 ... 250 V AC/DC)

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#### I/O extension module - RAD-DOR4-IFS - 2901536



Radioline - I/O extension module, 4 digital relay outputs (5 A, 250 V AC/24 V DC)

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#### I/O extension module - RAD-DI8-IFS - 2901539



Radioline - I/O extension module, 8 digital inputs (0 ... 30.5 V DC) or 2 pulse inputs up to 100 Hz

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

### Accessories

I/O extension module - RAD-DO8-IFS - 2902811



Radioline - I/O extension module, 8 digital transistor outputs (30.5 V DC/200 mA)

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



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

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



Radioline - I/O extension module, 4 analog current or voltage outputs (0/4 mA ... 20 mA, 0 V ... 10 V)

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



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

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