

# RAD-2400-IFS-JP - Wireless module



2702863

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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

## Product description

Radioline is the new wireless system for large systems. Special features include extremely easy assignment of inputs and outputs by simply turning the thumbwheel - without any programming. Radioline transmits I/O signals (I/O mode) or serial data (serial mode) and is therefore very versatile. Alternatively, I/O signals can now also be connected to controllers directly using the Modbus protocol (PLC/Modbus RTU mode). In addition, you can implement various network structures: from a simple point-to-point connection to complex mesh networks. Thanks to the latest Trusted Wireless technology, Radioline is the ideal choice for industrial use.

## Your advantages

- Approval for Japan
- License-free 2.4 GHz frequency band
- Range of several kilometers thanks to adjustable data rates for the wireless interface
- Quick and easy startup without programming
- High degree of reliability due to Trusted Wireless technology (AES encryption, frequency hopping method, and coexistence management)
- Mesh networks of up to 250 devices
- Integrated RS-232/RS-485 interface
- Modular extension with up to 32 I/O extension modules supported
- Extended temperature range of -40 °C ... +70 °C



## Commercial data

Item number	2702863
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DNC614
GTIN	4055626369853

# RAD-2400-IFS-JP - Wireless module



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Weight per piece (including packing)	206.3 g
Weight per piece (excluding packing)	197.5 g
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

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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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#### Trade restriction

CE note	The products are offered exclusively for export outside the EU and the European Economic Area.
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### Product properties

Product type	Wireless module
Application	I/O
	RS-232
	RS-485
Operating mode	I/O data (Default setting, configuration via thumbwheel)
	Serial data (Activation and configuration via PSI-CONF software)
	PLC/Modbus RTU mode (Activation and configuration via PSI-CONF software)
	PLC / Modbus RTU dual mode (Activation and configuration via PSI-CONF software)
MTTF	778 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	358 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	142 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)

#### Insulation characteristics

Overvoltage category	II
Degree of pollution	2

### Electrical properties

Maximum power dissipation for nominal condition	1.56 W
Transient surge protection	yes

#### System limits

Designation	Wireless module
Number of supported devices	≤ 250 (Addressing via PSI-CONF software)
	≤ 99 (Addressing via thumbwheel)
Number of possible extension modules	≤ 32 (per wireless module)

#### System limits

Designation	Wireless network
Number of supported devices	≤ 99 (I/O extension modules per wireless network, serial interfaces deactivated)
	0 (no I/O extension modules can be used)

# RAD-2400-IFS-JP - Wireless module



2702863

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	≤ 99 (I/O extension modules per wireless network, access to extension modules via Modbus RTU protocol)
Supply	
Supply voltage	24 V DC
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)
	≤ 6 A (at 24 V DC, with DIN rail connector at full capacity)

## Output data

### Digital

Output name	RF link relay output
Number of outputs	1
Contact switching type	Changeover contact
Contact material	PdRu, gold-plated
Maximum switching voltage	30 V AC/DC
	60 V DC
Max. switching current	500 mA (30 V AC/DC)
	300 mA (60 V DC)
Electrical service life	5x 10 <sup>5</sup> switching cycles with 0.5 A at 30 V DC

### Analog

Output name	RSSI voltage output
Number of outputs	1
Voltage output signal	0 V ... 3 V

## Connection data

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

## Interfaces

### Wireless

Range	≤ 5 km (The range may be considerably above or below that stated, and depends on the environment, antenna technology, and the product used)
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### Serial: RS-232

Data rate	300 bps / 600 bps / 1.2 kbps / 2.4 kbps / 4.8 kbps / 9.6 kbps / 19.2 kbps / 38.4 kbps / 57.6 kbps / 93.75 kbps / 115.2 kbps
Connection method	COMBICON plug-in screw terminal block

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Connection technology	3-conductor
Transmission length	≤ 15 m

## Serial: RS-485

Data rate	300 bps / 600 bps / 1.2 kbps / 2.4 kbps / 4.8 kbps / 9.6 kbps / 19.2 kbps / 38.4 kbps / 57.6 kbps / 93.75 kbps / 115.2 kbps / 187.5 kbps
Connection method	COMBICON plug-in screw terminal block
Connection technology	2-conductor
Transmission length	≤ 1200 m
Termination resistor	390 Ω (switchable via DIP switches)
	150 Ω (switchable via DIP switches)
	390 Ω (switchable via DIP switches)

## Serial: Configuration interface

Connection method	S-PORT (socket)
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## Wireless

Interface description	Trusted Wireless
Direction	Bi-directional
Frequency	2400 MHz
Frequency range	2.4002 GHz ... 2.4785 GHz
Channel distance	1.3 MHz
Number of channel groups	8
Number of channels per group	55
Transmit capacity, minimum	0 dBm
Transmit capacity, maximum	≤ 20 dBm
Data rate	16 kbps (adjustable)
	125 kbps (Default setting, adjustable)
	250 kbps (adjustable)
Minimum receiver sensitivity	-106 dBm (16 kbps)
	-96 dBm (125 kbps)
	-93 dBm (250 kbps)
Antenna connection method	RSMA (female)
Security	128-bit data encryption

## Functions

Wireless licenses	Japan
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## Wireless

Frequency band	2.4 GHz
Wireless standard	Trusted Wireless

## Signaling

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

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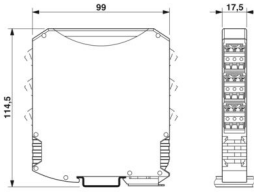


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	3x green, 1x yellow LED (LED bar graph receive quality, RSSI)
	Green LED (receive data, RX)
	Green LED (transmit data, TX)

## Dimensions

Dimensional drawing	
Width	17.5 mm
Height	116 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

### Wireless approval Japan, MIC

Identification	Japan MIC (RF) ID:202-LSE100
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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 RED Directive 2014/53/EU
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## Mounting

Mounting type	DIN rail mounting
Assembly note	on standard DIN rail NS 35 in accordance with EN 60715

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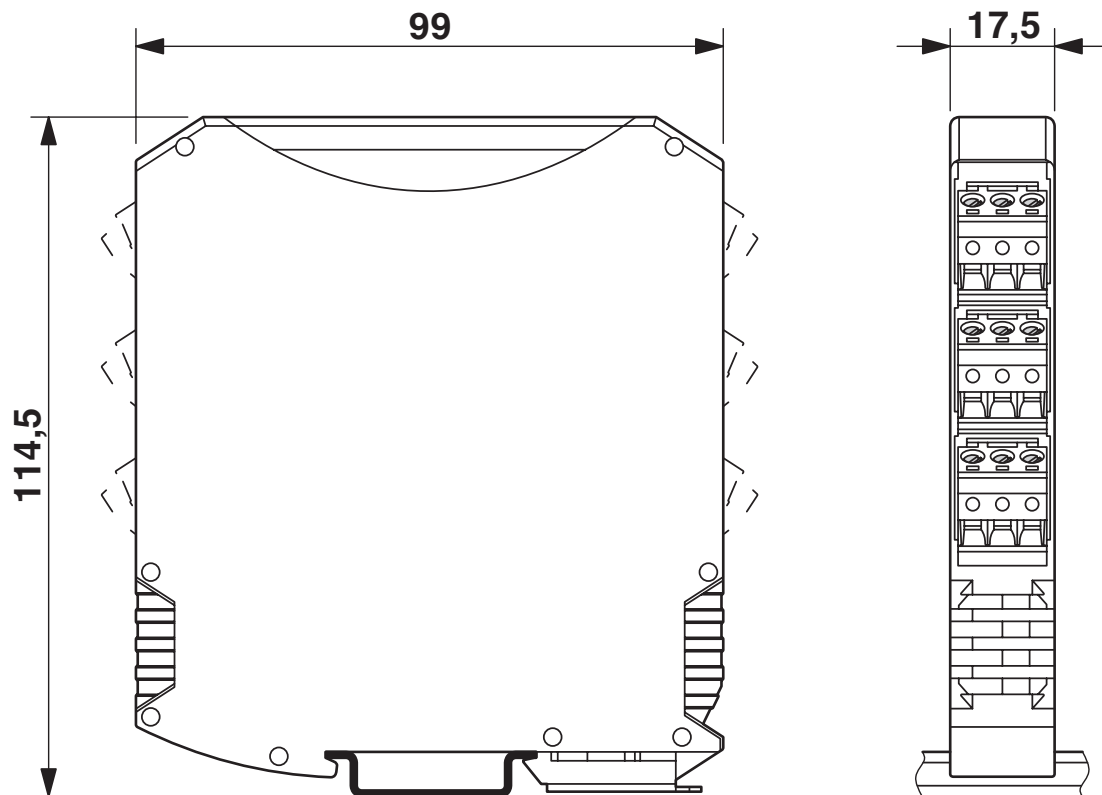
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## Drawings

Dimensional drawing



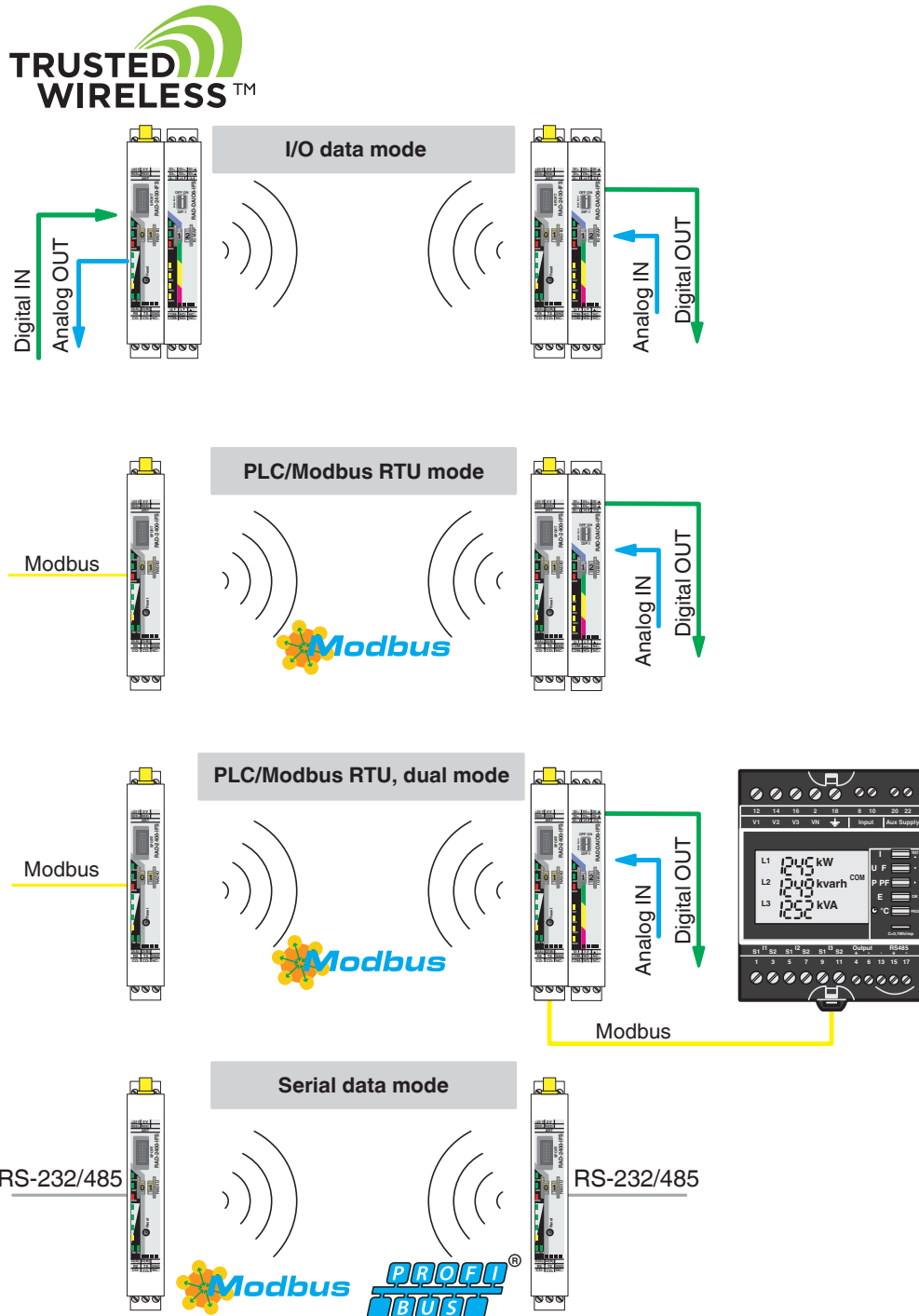
Slim design

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## Application drawing



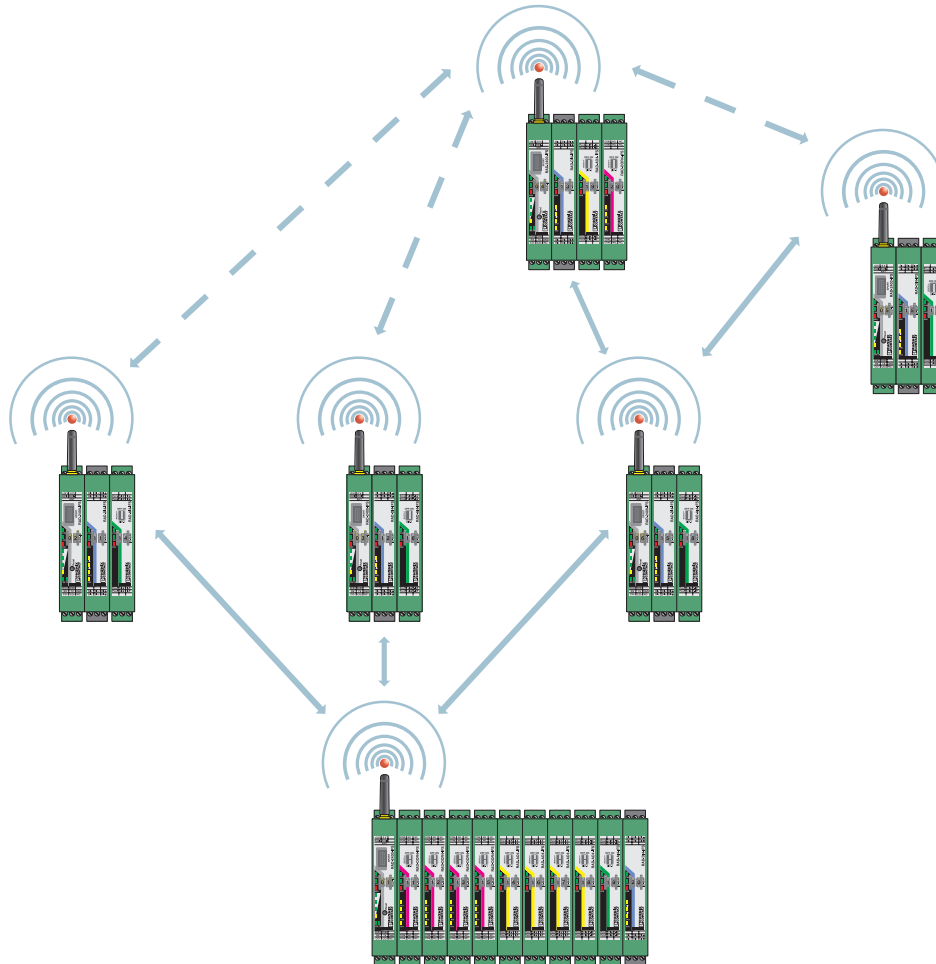
Operating modes

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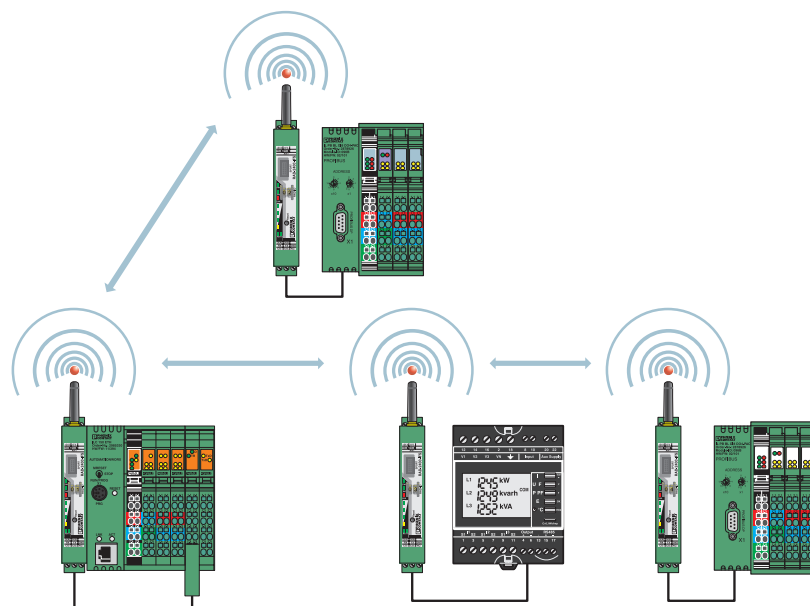
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Application drawing



Wireless module in I/O data mode

Application drawing



Serial data mode

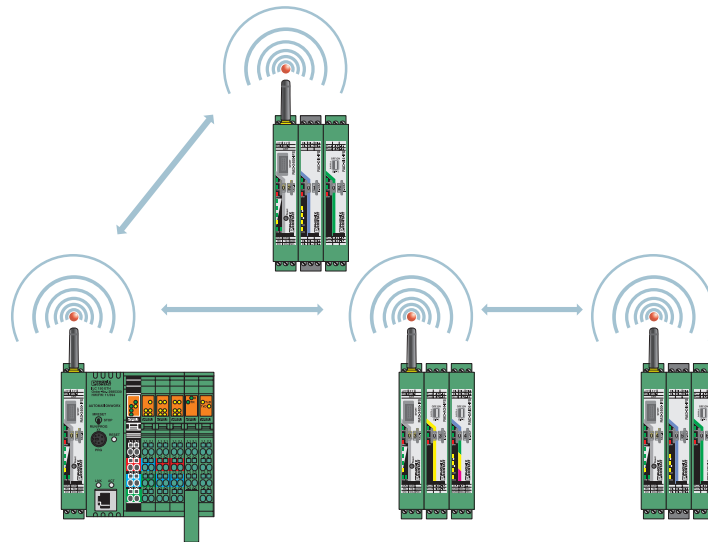
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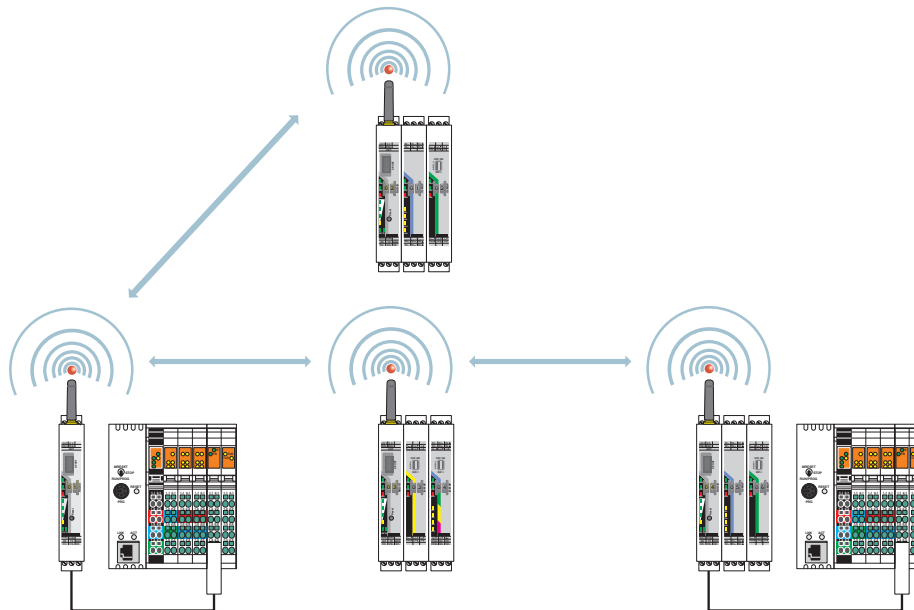
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Application drawing



Wireless module in PLC/Modbus RTU mode

Application drawing

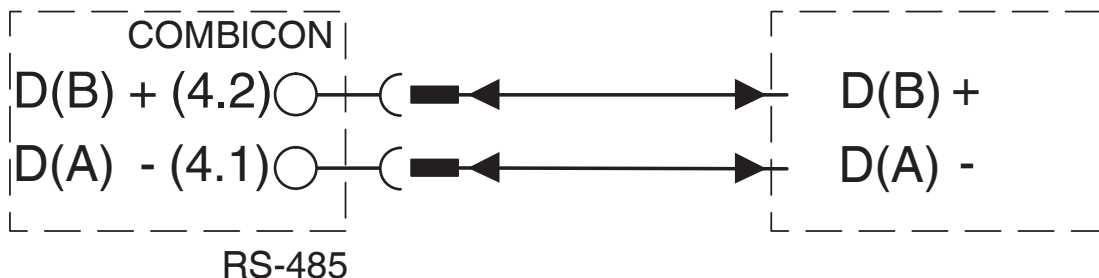


PLC / Modbus/RTU dual mode

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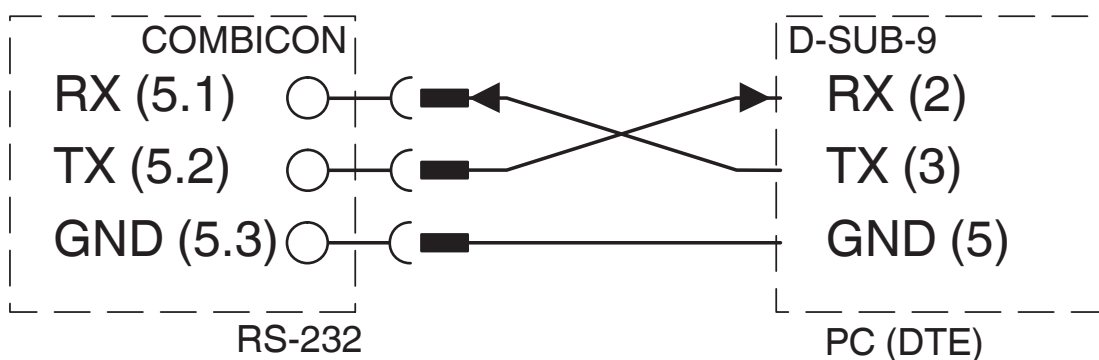
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Connection diagram



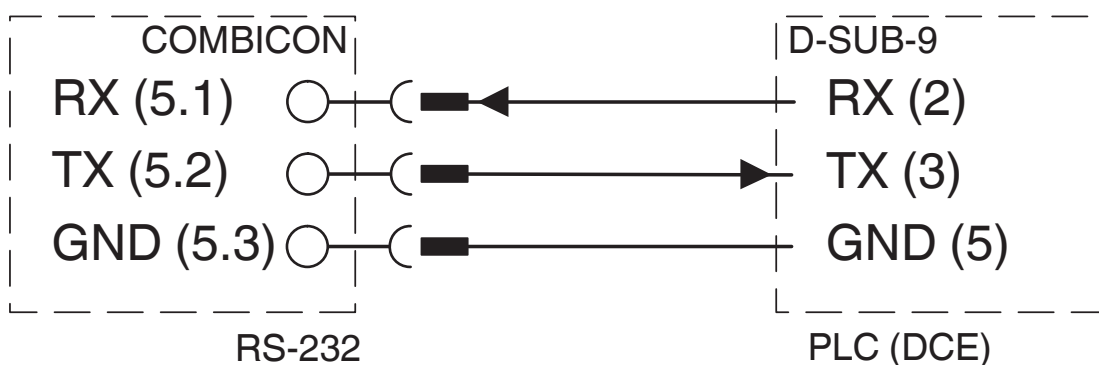
RS-485 connection

Connection diagram



RS-232 connection

Connection diagram



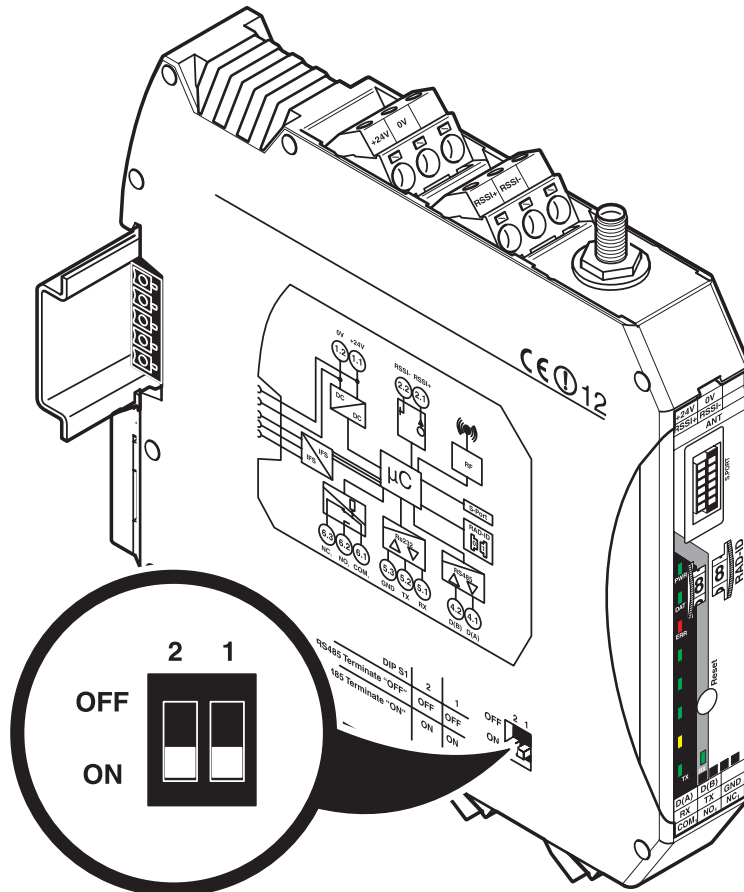
RS-232 connection

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## Schematic diagram



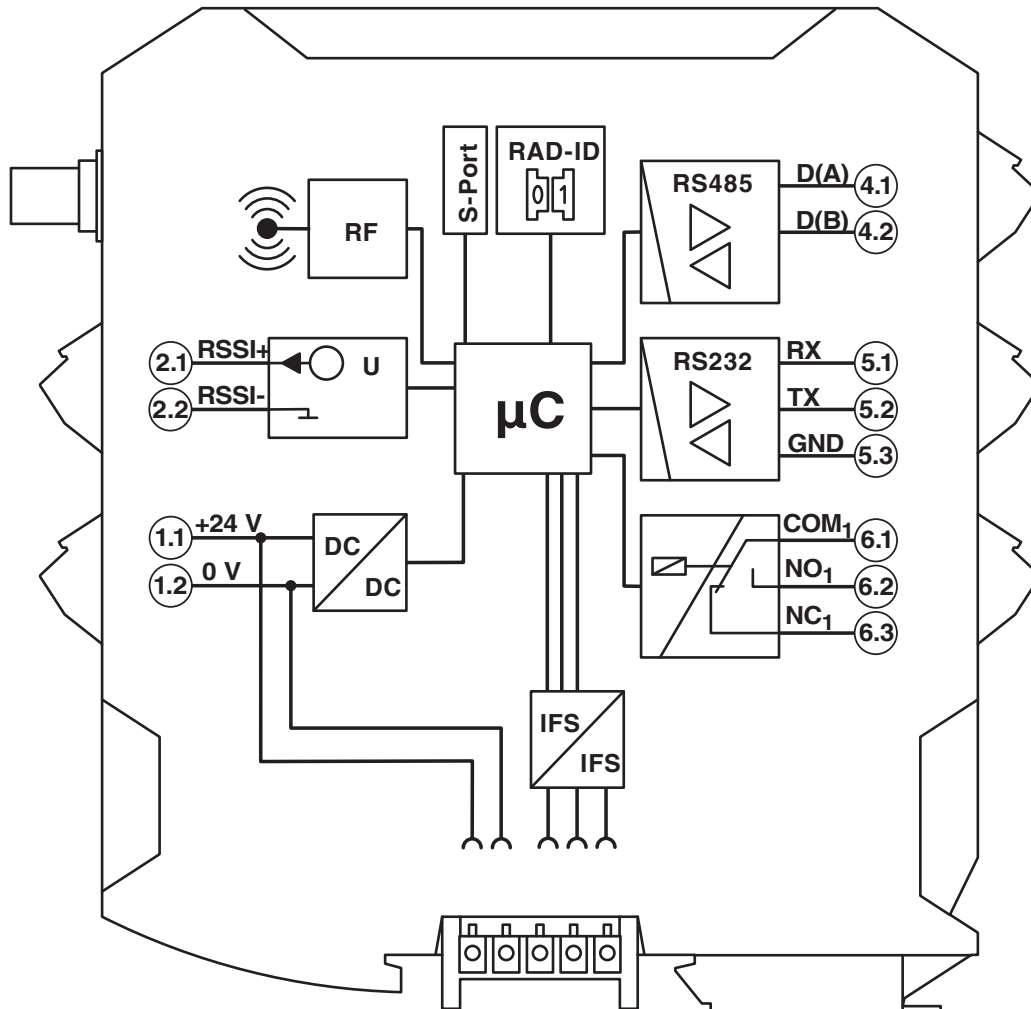
DIP switches

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Circuit diagram



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## Approvals

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**MIC**

Approval ID: 202-LSE100

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## Classifications

### ECLASS

ECLASS-13.0	19170501
ECLASS-15.0	19170501

### ETIM

ETIM 10.0	EC000816
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### UNSPSC

UNSPSC 21.0	43222600
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c), 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)
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