

Wireless module - RAD-2400-IFS - 2901541

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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 worldwide use

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

- ✓ 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 2.0 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, -40 °C ... +70 °C
- ✓ Approved for use in zone 2
- ✓ International approvals



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 610193
GTIN	4046356610193
Weight per Piece (excluding packing)	197.500 g
Custom tariff number	85176200
Country of origin	Germany

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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	116 mm
Depth	114.5 mm

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
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

Set consists of	2709561 ME 17,5 TBUS 1,5/ 5-ST-3,81 GN
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)
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	778 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	358 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))
	142 Years (Telcordia standard, temperature 40 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Wireless licences	Australia (RCM)
	Bahrain
	Belgium
	Bulgaria
	Denmark

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Technical data

General

	Germany
	Estonia
	France
	Finland
	Greece
	Great Britain
	Italy
	Ireland
	Iceland
	Canada (IC, RSS 210, ID: 4720B-RAD2400A)
	Croatia
	Liechtenstein
	Luxembourg
	Latvia
	Lithuania
	Malta
	Morocco (ANRT, ID: MR 10464 ANRT 2015)
	Mexico (IFT, ID: RCPPHRA17-1112)
	Netherlands
	Norway
	Austria
	Poland
	Portugal
	Romania
	Russia
	Sweden
	Switzerland
	Slovakia
	Slovenia
	Singapore
	Spain
	South Africa
	South Korea (KC, ID: MSIP-CRI-PCK-2901541)
	Taiwan (NCC, ID: CCAJ18LP1990T7)
	Thailand
	Czech Republic
	Turkey
	Hungary
	USA (FCC, Part 15.247, ID: YG3RAD2400A)
	Ukraine

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Technical data

General

	United Arab Emirates (TRA, ID: ER0126713)
	Cyprus (rep.)
	India (WPC, ID: NER-ETA/314)
	Brazil (ANATEL, ID: 06279-19-06497)
	Vietnam (ICT, ID: B1317250719AE01A2)
Export note	*The range may be considerably above or below that stated. It is dependent on the environment, antenna technology, transmission power, and the product used.

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)
	≤ 6 A (at 24 V DC, with DIN rail connector at full capacity)
Transient surge protection	Yes

Wireless interface

Antenna connection	RSMA (female)
Direction	Bi-directional
Frequency	2400 MHz
Frequency range	2.4002 GHz ... 2.4785 GHz
Number of channel groups	8
Number of channels per group	55
Channel distance	1.3 MHz
Data rate	16 kbps (adjustable)
	125 kbps (Default setting, adjustable)
	250 kbps (adjustable)
Receiver sensitivity	-106 dBm (16 kbps)
	-96 dBm (125 kbps)
	-93 dBm (250 kbps)
Transmit capacity, minimum	0 dBm
Transmit capacity, maximum	≤ 20 dBm (Outside of Europe, adjustable via software)
	≤ 19 dBm (Europe, can be set via software, depends on the data rate)
	18 dBm (Default setting, adjustable)
Range	± 5 km (The range may be considerably above or below that stated, and depends on the environment, antenna technology, and the product used)
Security	128-bit data encryption

Serial interface

Interface 1	RS-232
Connection method	COMBICON plug-in screw terminal block
Connection technology	3-wire
Transmission length	≤ 15 m

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Serial interface

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
Interface 2	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)
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
Interface 3	Configuration interface
Connection method	S-PORT (socket)

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)
Designation	Wireless network
I/O data mode	≤ 99 (I/O extension modules per wireless network, serial interfaces deactivated)
Serial data mode	0 (no I/O extension modules can be used)
PLC/Modbus RTU mode	≤ 99 (I/O extension modules per wireless network, access to extension modules via Modbus RTU protocol)

RSSI output

Number of outputs	1
Voltage output signal	0 V ... 3 V

RF link relay output

Number of outputs	1
Contact type	PDT
Contact material	PdRu, gold-plated
Maximum switching voltage	30 V AC/DC
	60 V DC
Max. switching current	500 mA (30 V AC/DC)
Electrical service life	5x 10 ⁵ switching cycles with 0.5 A at 30 V DC

Connection data

Connection method	Screw connection
Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²

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Connection data

Conductor cross section flexible max.	2.5 mm ²
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)
	3x green, 1x yellow LED (LED bar graph receive quality, RSSI)
	Green LED (receive data, RX)
	Green LED (transmit data, TX)

Conformance/approvals

Designation	CE
Identification	CE-compliant
Additional text	RED 2014/53/EU
Designation	FCC
Additional text	FCC directive, part 15.247
Designation	ISC
Additional text	ISC directive RSS 210
Designation	IFT
Certificate	IFT RCPHRA17-1112
Designation	NCC
Certificate	CCAJ18LP1990T7
Designation	ATEX
Identification	# II 3 G Ex nA nC IIC T4 Gc
Certificate	IBExU 15 ATEX B008 X
Additional text	Please follow the special installation instructions in the documentation!
Designation	IECEX
Identification	Ex nA nC IIC T4 Gc
Certificate	IECEX IBE 13.0019X
Designation	EAC Ex
Identification	2Ex nA nC IIC T4 Gc X
Certificate	TC RU C-DE.AB72.B.01483
Designation	UL, USA/Canada
Identification	508 Listed
	Class I, Div. 2, Groups A, B, C, D T4A
	Class I, Zone 2, IIC T4
Designation	Corrosive gas test

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Conformance/approvals

Identification	ISA-S71.04-1985 G3 Harsh Group A
Designation	ANATEL
Certificate	06279-19-06497

Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN 60079-0
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN-60079-15
Standard designation	RED directive 2014/53/EU
Standards/regulations	EN 300328
	EN 61000-6-4
	EN 61000-6-2
	EN 50371
	EN 60950-1
	EN 61000-4-2
Contact discharge	± 6 kV (Test Level 3)
Indirect discharge	± 6 kV
Standards/regulations	EN 61000-4-3
Frequency range	26 MHz ... 3 GHz (Test Level 3)
Standards/regulations	EN 61000-4-4
Comments	Criterion B
Standards/regulations	EN 61000-4-5
Signal	± 1 kV (asymmetrical)
Standards/regulations	EN 61000-4-6
Frequency range	0.15 MHz ... 80 MHz
Flammability rating according to UL 94	V0
Interface description	Trusted Wireless
Channel distance	1.3 MHz
Security	128-bit data encryption
Shock	16g, 11 ms
Vibration (operation)	in accordance with IEC 60068-2-6: 5g, 10 Hz ... 150 Hz

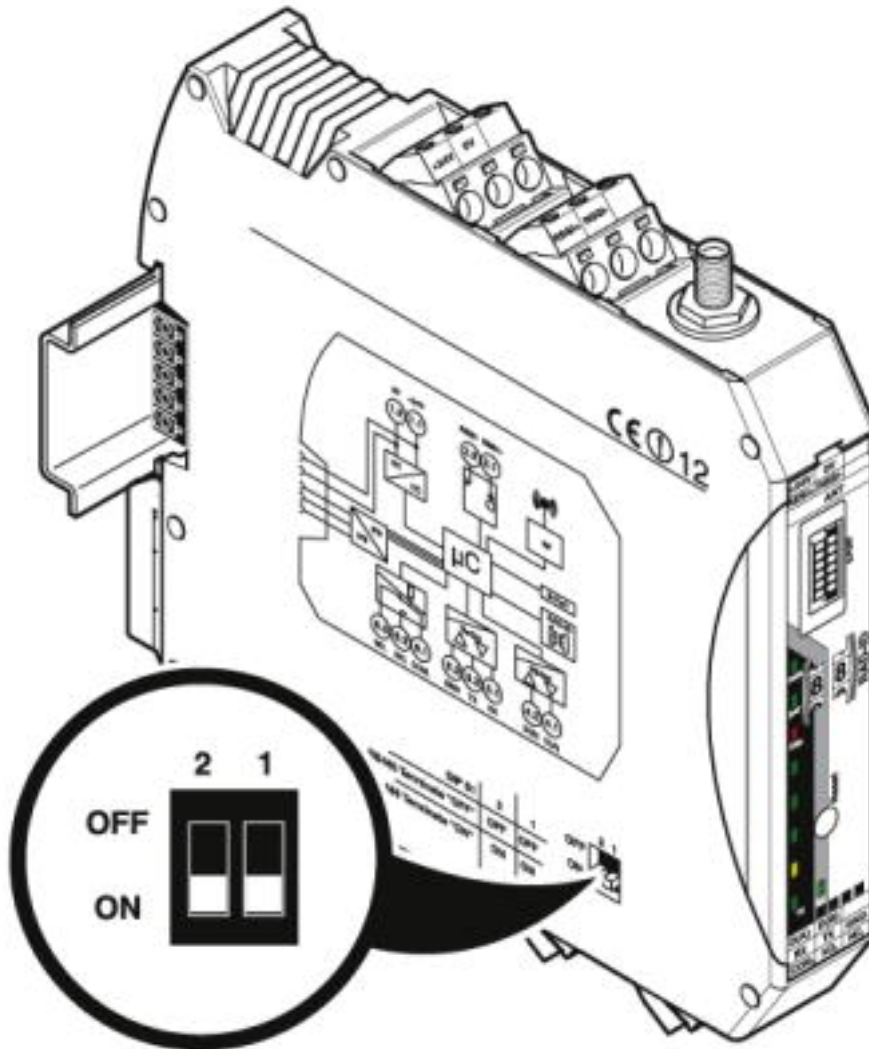
Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

Drawings

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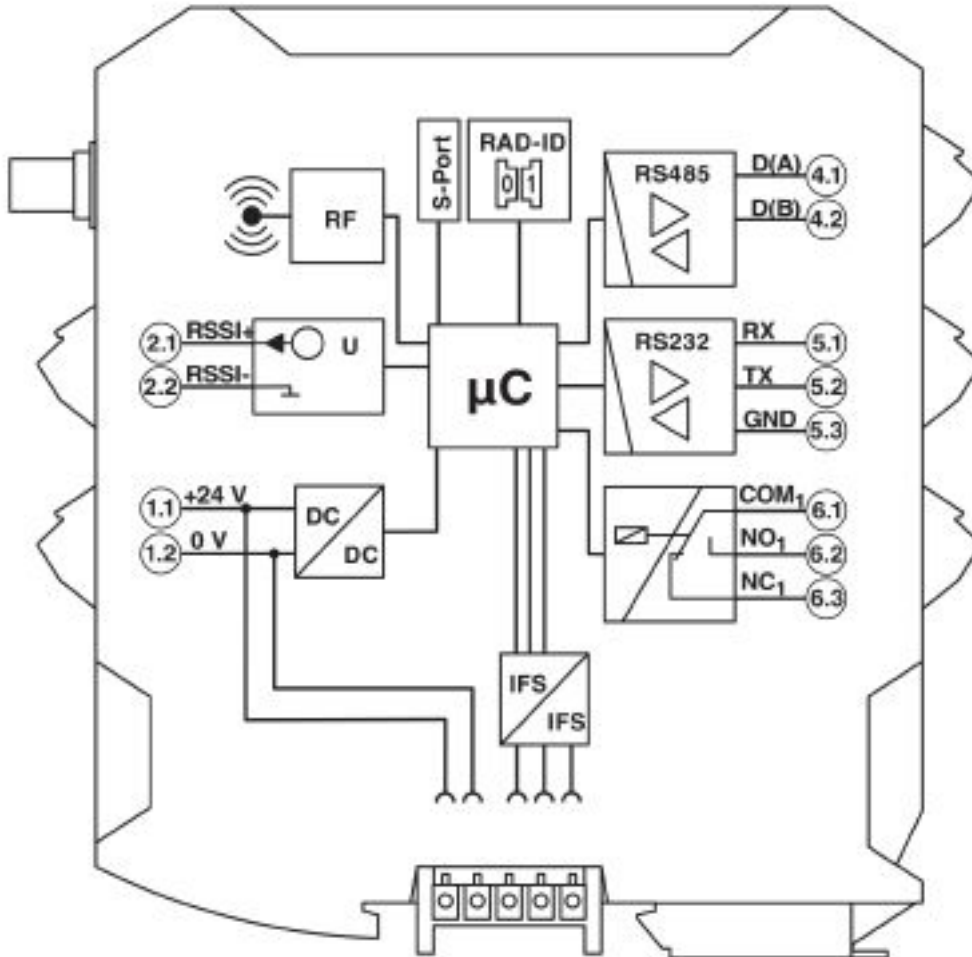
Schematic diagram



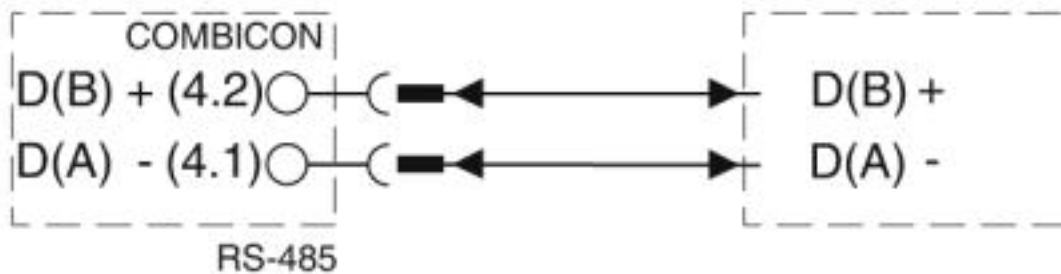
DIP switches

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Circuit diagram



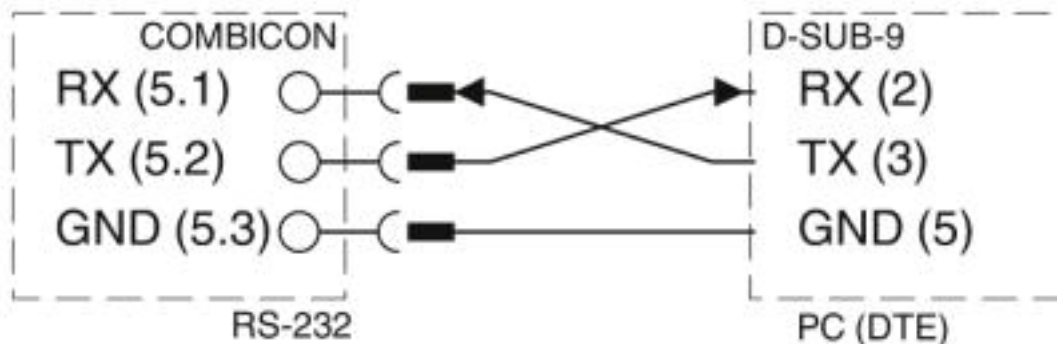
Connection diagram



RS-485 connection

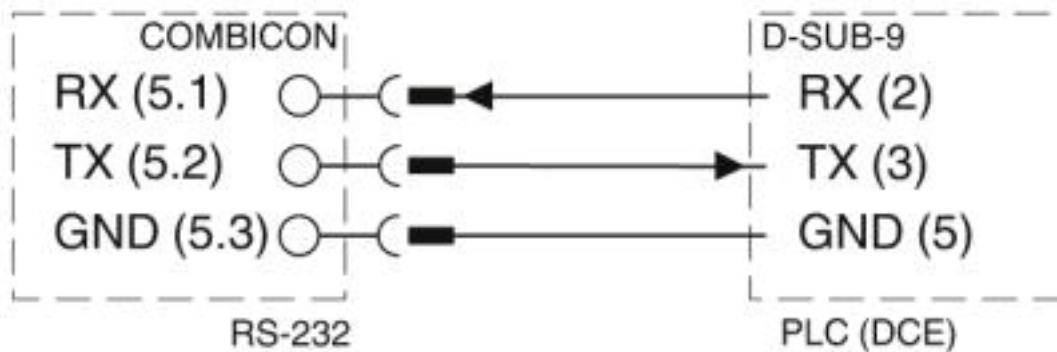
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Connection diagram



RS-232 connection

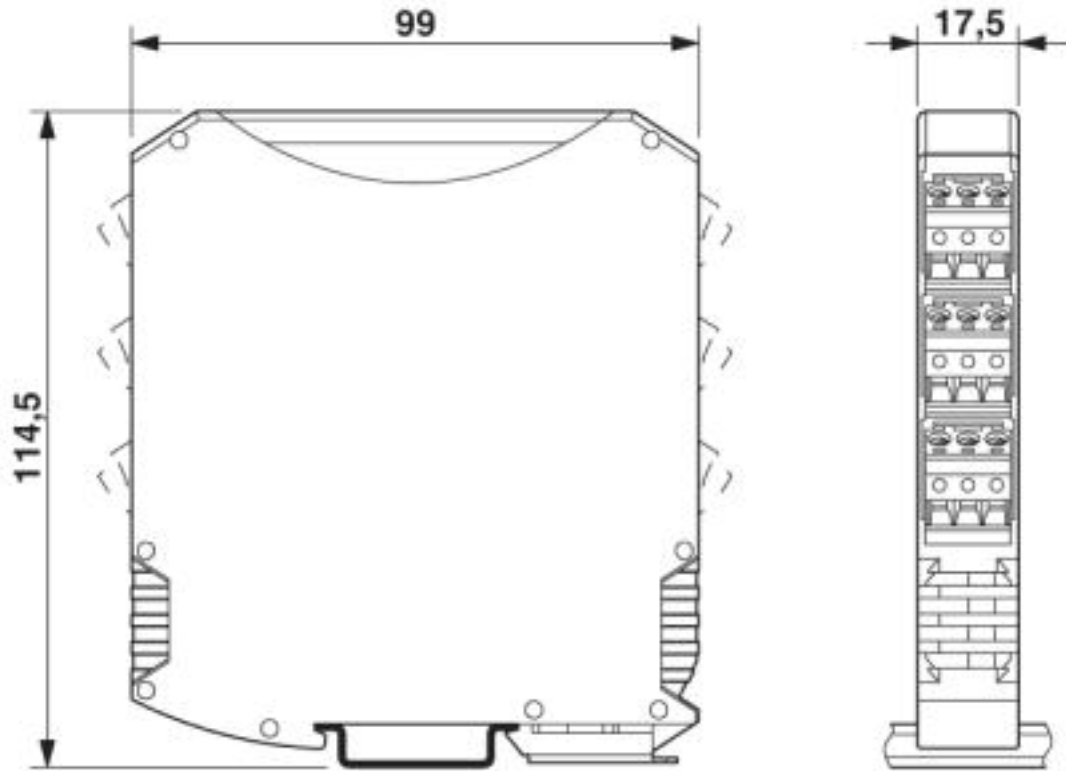
Connection diagram



RS-232 connection

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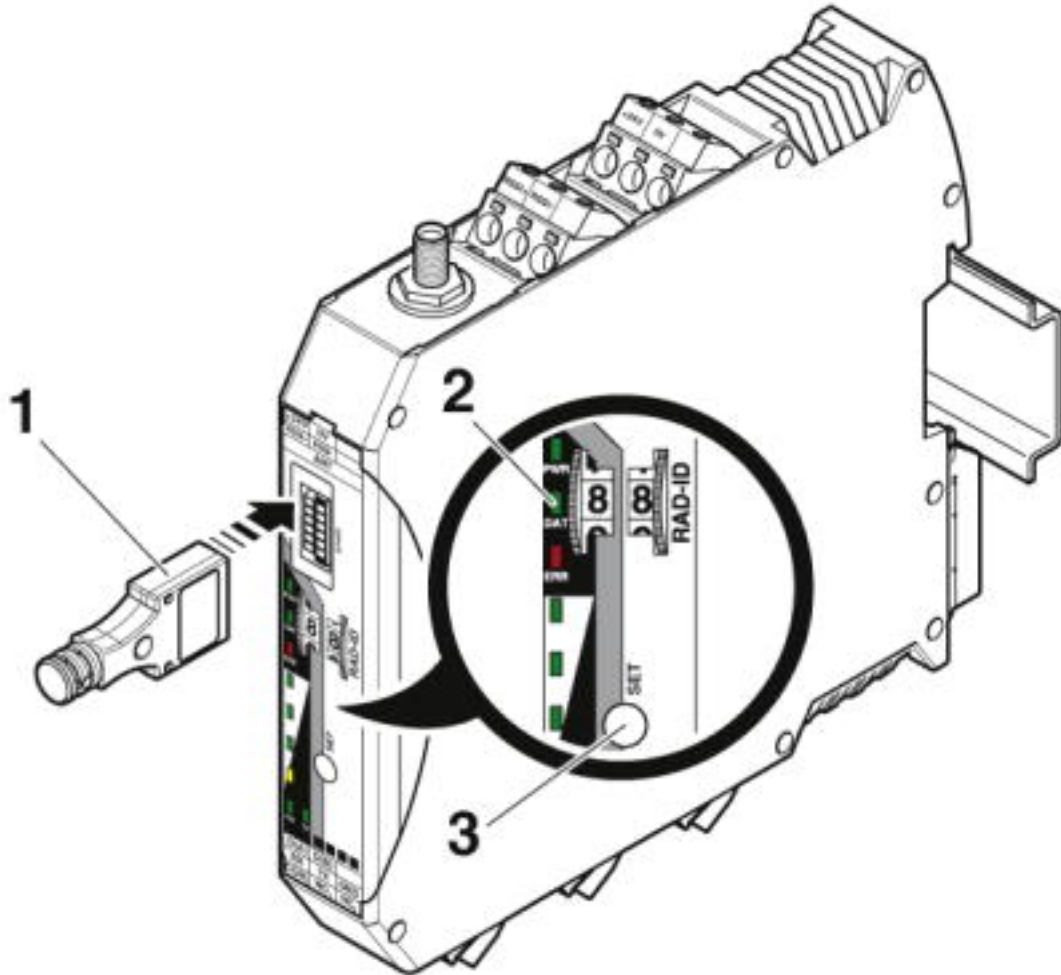
Dimensional drawing



Slim design

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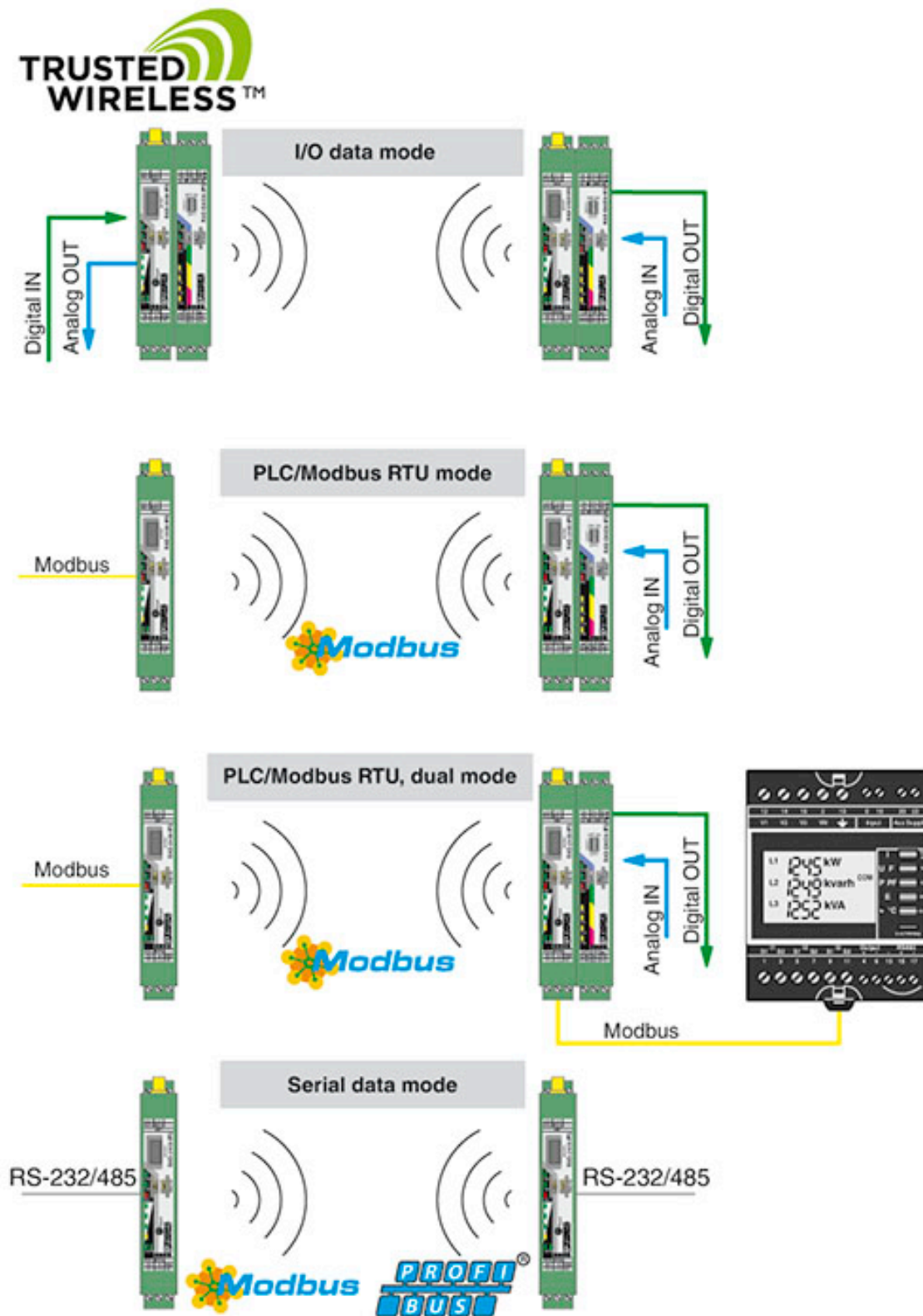
Schematic diagram



Configuration via CONFSTICK

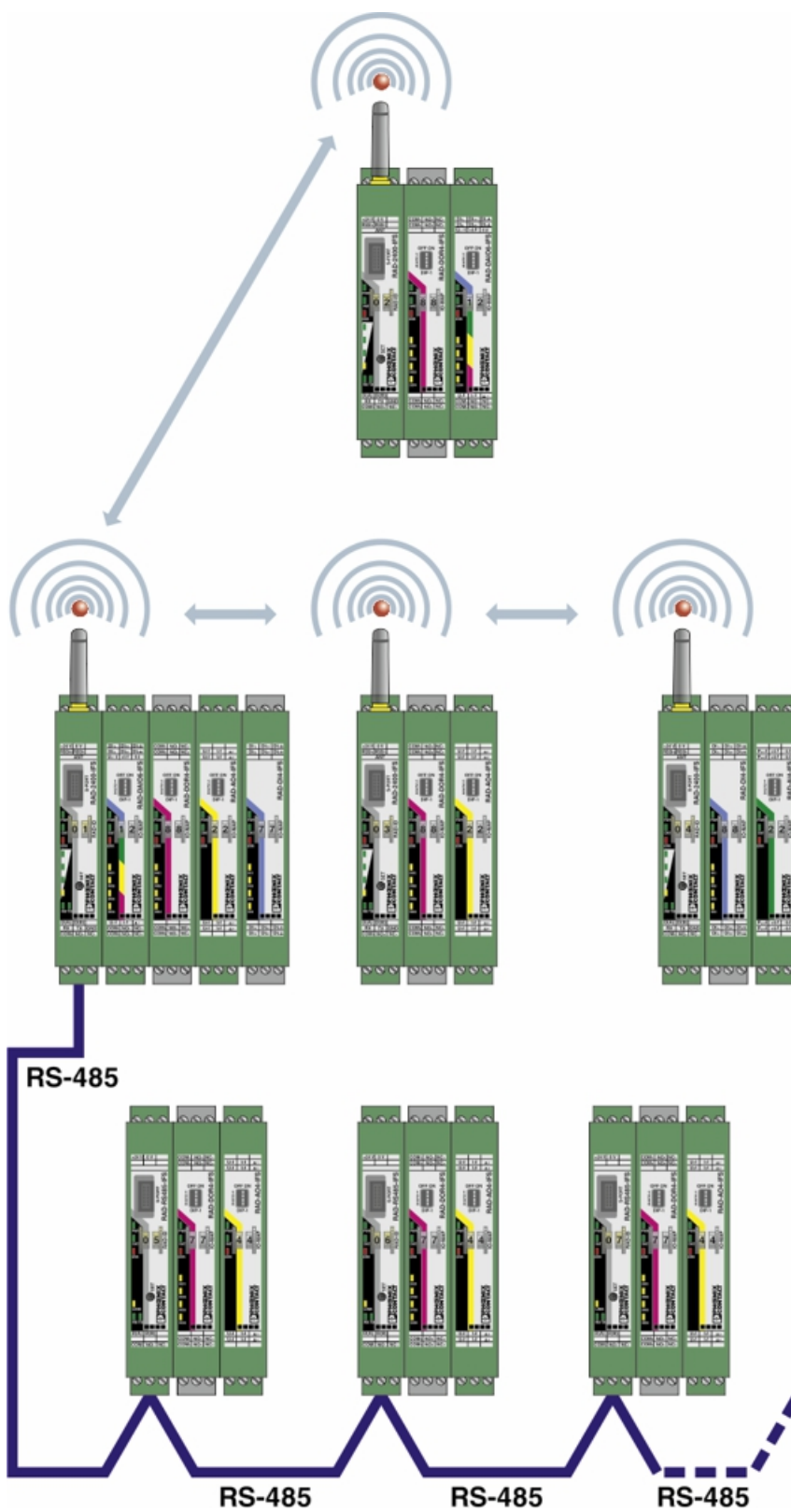
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Application drawing



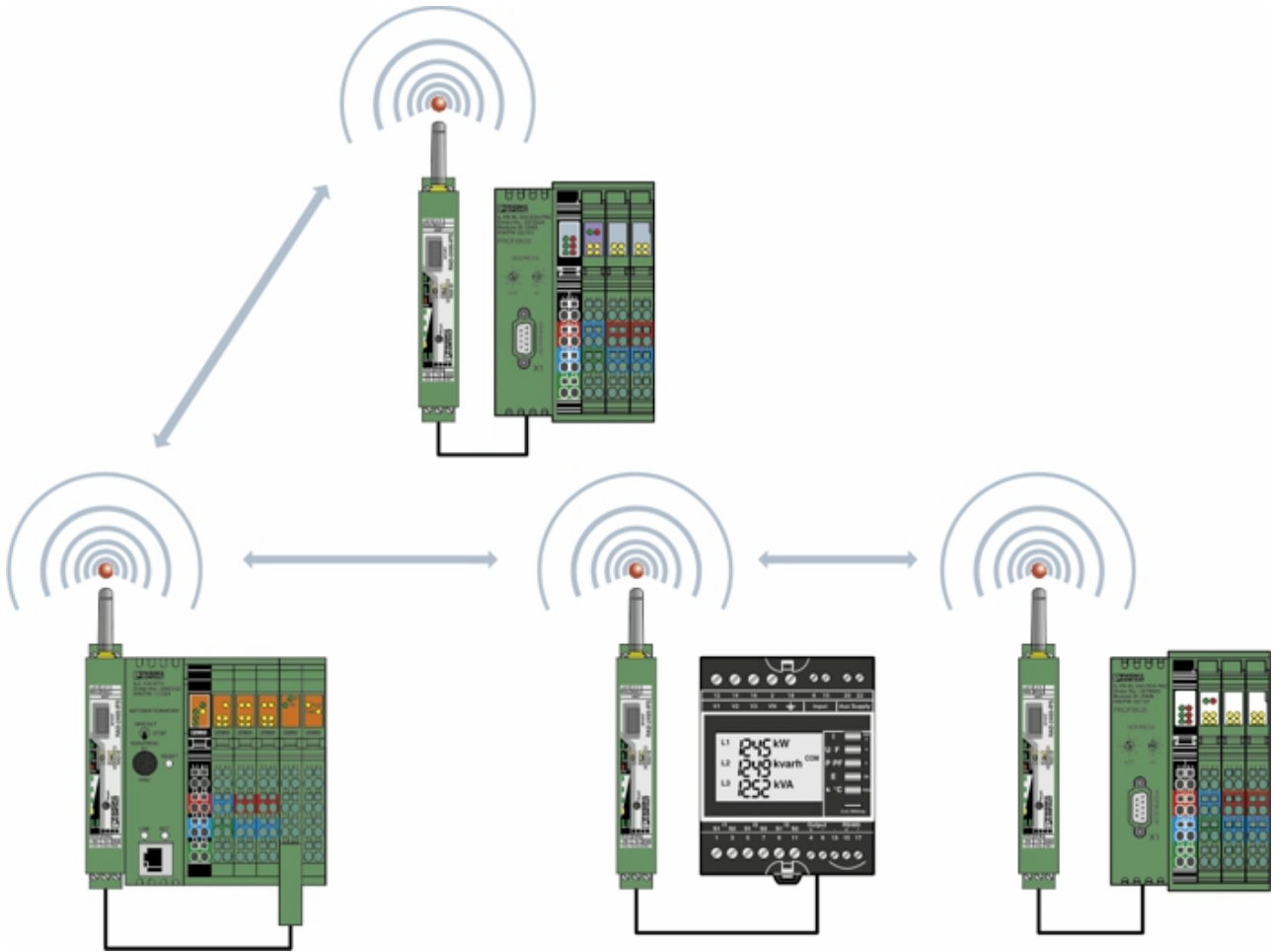
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Functional drawing



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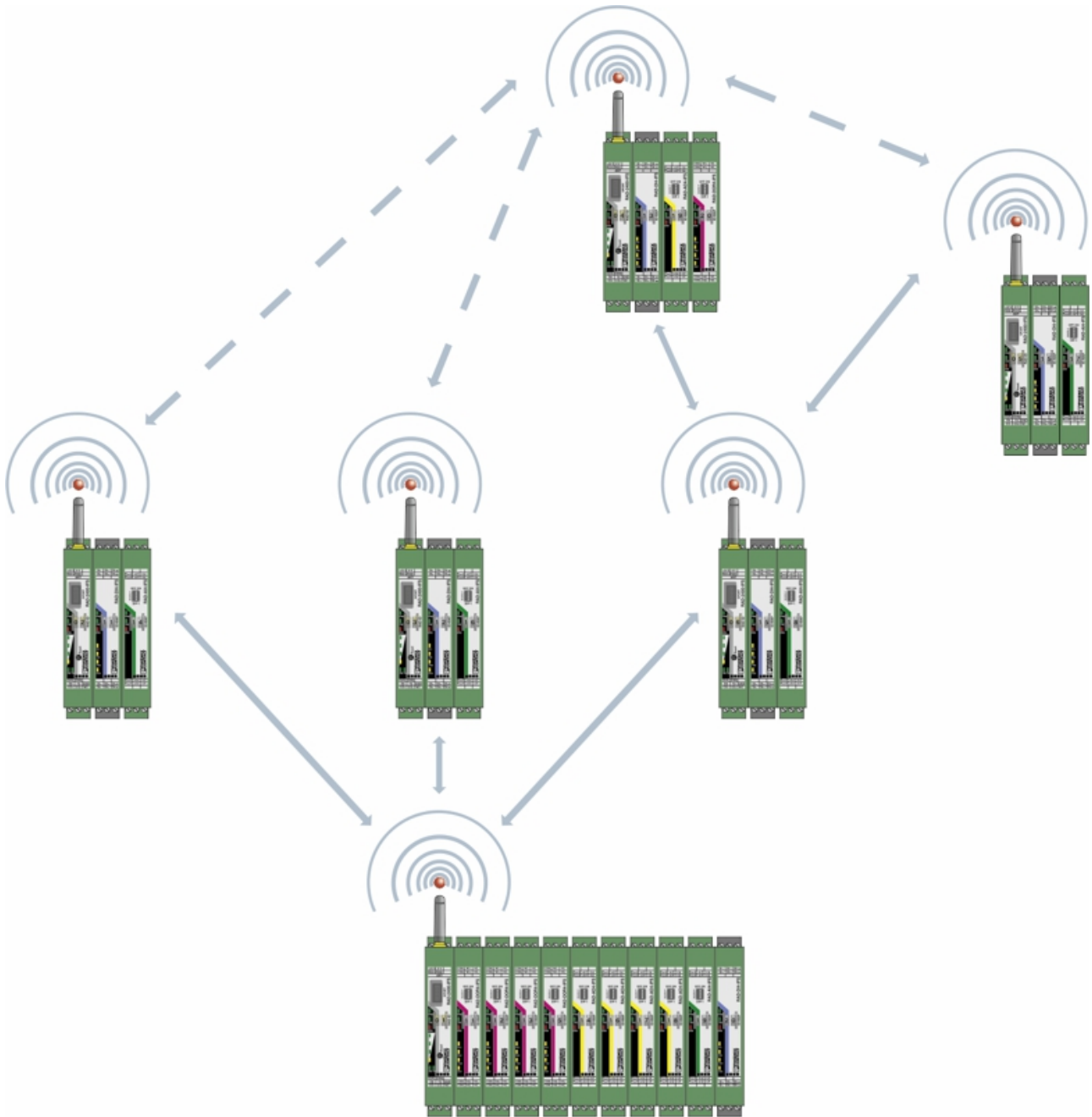
Application drawing



Serial data mode

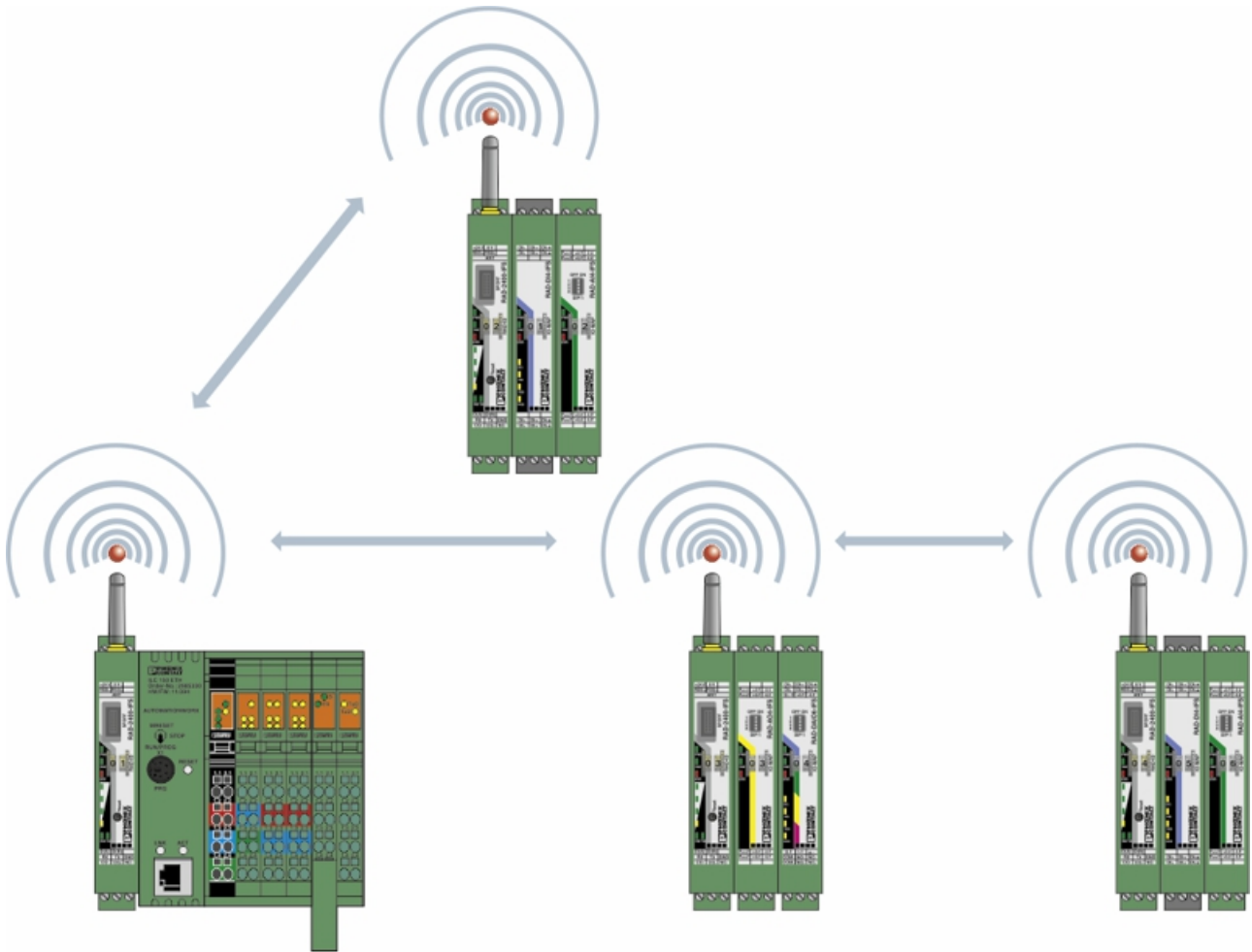
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Application drawing



Wireless module - RAD-2400-IFS - 2901541

Application drawing



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Articles in set

DIN rail bus connectors - 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

eCl@ss

eCl@ss 10.0.1	19179290
eCl@ss 4.0	27230200
eCl@ss 4.1	27230200
eCl@ss 5.0	27242200
eCl@ss 5.1	27242200
eCl@ss 6.0	19179200
eCl@ss 7.0	19179290
eCl@ss 8.0	19179290
eCl@ss 9.0	19179290

ETIM

ETIM 3.0	EC001423
ETIM 4.0	EC000310
ETIM 5.0	EC000310
ETIM 6.0	EC000310
ETIM 7.0	EC000310

UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	43223108
UNSPSC 11	39121008
UNSPSC 12.01	43223108
UNSPSC 13.2	43222604

Approvals

Approvals

Approvals

NCC / UL Listed / cUL Listed / KC / NOM / cULus Listed

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Approvals

Ex Approvals

IECEx / ATEX / UL Listed / cUL Listed / EAC Ex / cULus Listed

Approval details


NCC	CCAJ18LP1990T7
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UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 238705
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cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 238705
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KC		http://eng.kcc.go.kr/user/ehpMain.do	MSIP-CRI- PCK-2901541
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NOM	RCPHRA17-1112
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cULus Listed	
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