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Wireless module - RAD-2400-IFS - 2901541

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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

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.

Product Features

- ☑ License-free 2.4 GHz frequency band
- ☑ Extended temperature range, -40°C ... +70°C
- ☑ Range of several kilometers thanks to adjustable data rates for the wireless interface (16 ... 500 kbps)
- ☑ Integrated RS-232/RS-485 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)
- ☑ Suitable for ATEX zone 2
- ☑ Mesh networks of up to 250 devices

Key Commercial Data

Packing unit	1 pc
Weight per Piece (excluding packing)	220.0 g
Custom tariff number	85176200
Country of origin	Germany

Technical data

Note

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Technical data

Note

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

Dimensions

Width	17.5 mm
Height	99 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

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)
Overvoltage category	II
Assembly instructions	on standard DIN rail NS 35 in accordance with EN 60715
Pollution degree	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
	Belgium
	Bulgaria
	Denmark
	Germany

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General

	Estonia
	France
	Finland
	Greece
	Great Britain
	Italy
	Ireland
	Iceland
	Canada
	Croatia
	Liechtenstein
	Luxembourg
	Latvia
	Lithuania
	Malta
	Morocco
	Netherlands
	Norway (The device may not be operated within 20 km of Ny Ålesund town center.)
	Austria
	Poland
	Portugal
	Romania
	Russia
	Sweden
	Switzerland
	Slovakia
	Slovenia
	Singapore
	Spain
	South Africa
	Thailand
	Czech Republic
	Turkey (The device may only be operated with Phoenix Contact antennas in accordance with the "Short Range Radio Devices (SRD) Regulations" Gazette No. 26464 dated March 16, 2007.)
	Hungary
	USA

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General

	Ukraine
	United Arab Emirates
	Cyprus (rep.)
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 (@ 24 V DC, @ 25°C, stand-alone)
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
	3-conductor
Transmission length	≤ 15 m
Transmission speed	0,3 ... 115,2 kbit/s

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Serial interface

Interface 2	RS-485
Connection method	COMBICON plug-in screw terminal block
	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 ... 187,5 kbit/s
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	5×10^5 cycles with 0.5 A @ 30 V DC

Connection data

Connection method	Screw connection
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	2.5 mm²

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Connection data

Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
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)
	3 x green, 1 x yellow LED (LED bar graph receive quality, RSSI)
	Green LED (receive data, RX)
	Green LED (transmit data, TX)

Approvals and conformance

Conformance	CE compliance (R&TTE directive 1999/5/EC)
IECEx	Ex nA nC IIC T4 Gc
UL, USA / Canada	UL 508 Listed
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN 60079-0
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN-60079-15
Standard designation	R&TTE Directive 1999/5/EC
Standards/regulations	EN 300328
	EN 61000-6-4
	EN 61000-6-2
	EN 50371
	EN 60950-1

Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2004/108/EC (valid until 19.04.2016) / 2014/30/EU (valid from 20.04.2016)
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN 60079-0
Standard designation	Ex Directive (ATEX)
Standards/regulations	EN-60079-15
Standard designation	R&TTE Directive 1999/5/EC

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Standards and Regulations

Standards/regulations	EN 300328
	EN 61000-6-4
	EN 61000-6-2
	EN 50371
	EN 60950-1
Shock	16g, 11 ms
Flammability rating according to UL 94	V0
Interface description	Trusted Wireless
Channel distance	1.3 MHz
Security	128-bit data encryption
Vibration (operation)	in accordance with IEC 60068-2-6: 5g, 10 Hz ... 150 Hz
Conformance	CE compliance (R&TTE directive 1999/5/EC)
	FCC Directive, Part 15.247
	ISC Directive RSS 210
ATEX	# II 3 G Ex nA nC IIC T4 Gc X
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

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	19179290

ETIM

ETIM 3.0	EC001423
ETIM 4.0	EC000310
ETIM 5.0	EC000310

UNSPSC

UNSPSC 6.01	30211506

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Classifications

UNSPSC

UNSPSC 7.0901	43223108
UNSPSC 11	39121008
UNSPSC 12.01	43223108
UNSPSC 13.2	43223108

Approvals

Approvals

Approvals

UL Listed / cUL Listed / EAC / EAC / cULus Listed

Ex Approvals

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

Approvals submitted

Approval details

UL Listed

cUL Listed

EAC

EAC

cULus Listed

Drawings

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Connection diagram
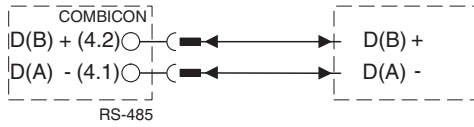
RS-485 connection

Connection diagram
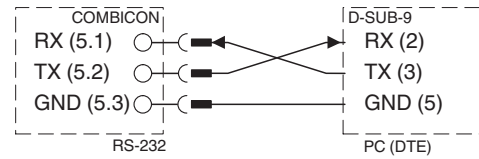
RS-232 connection

Connection diagram
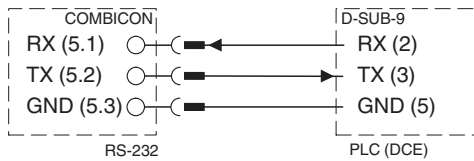
RS-232 connection

Application drawing
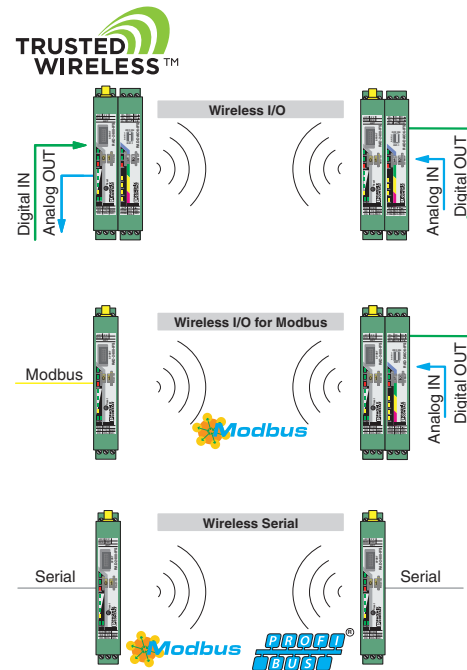
Trusted Wireless

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Block diagram
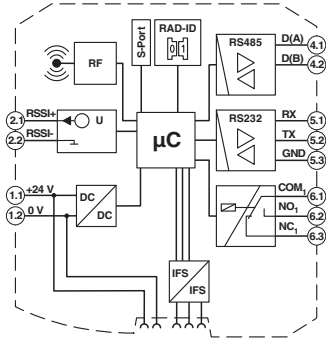
Functional drawing
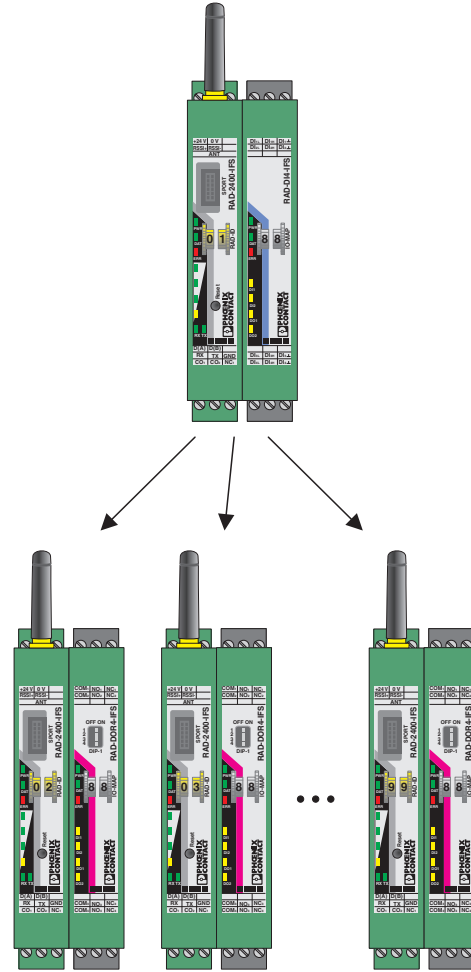
Assignment of digital inputs and digital outputs

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Functional drawing

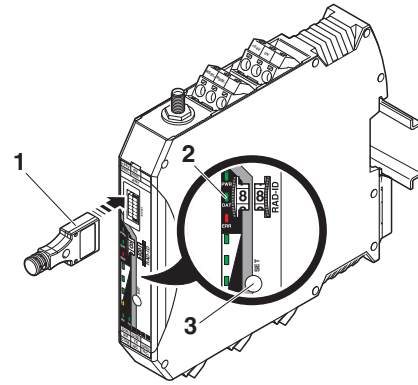Functional drawing
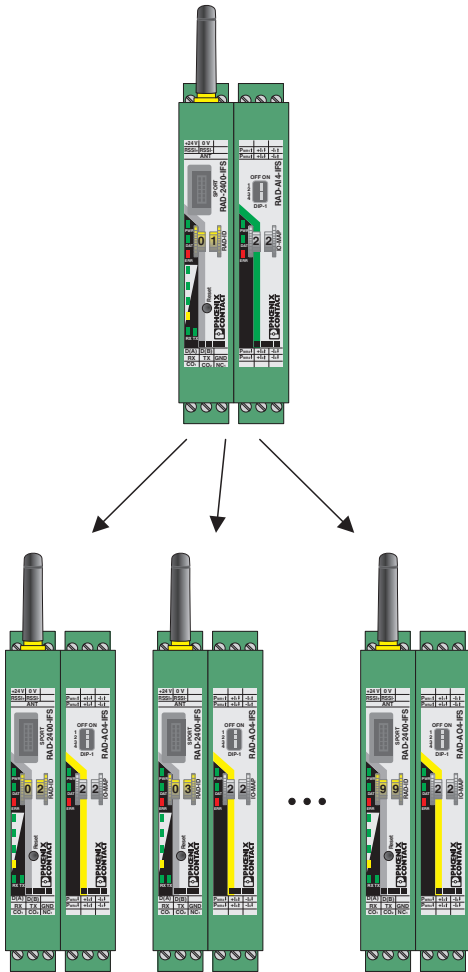
Assignment of analog inputs and analog outputs

RAD-DAIO6-IFS assignment: analog/digital inputs and outputs

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Functional drawing

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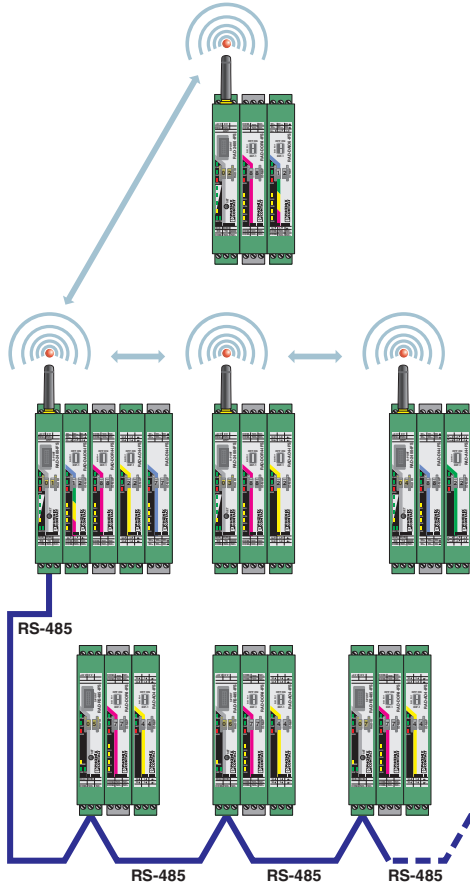
I/O-to-I/O, wireless, and RS-485

Configuration via CONFSTICK

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Schematic diagram
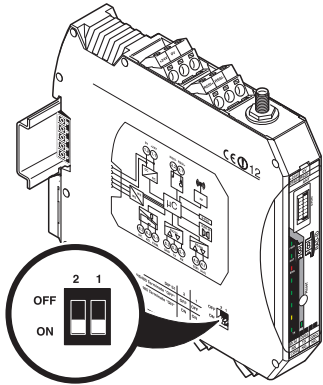
Dimensional drawing
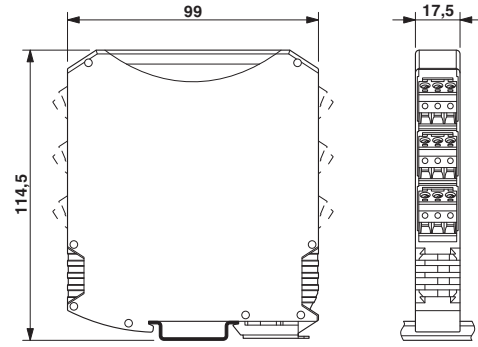
99

17,5

114,5

DIP switches

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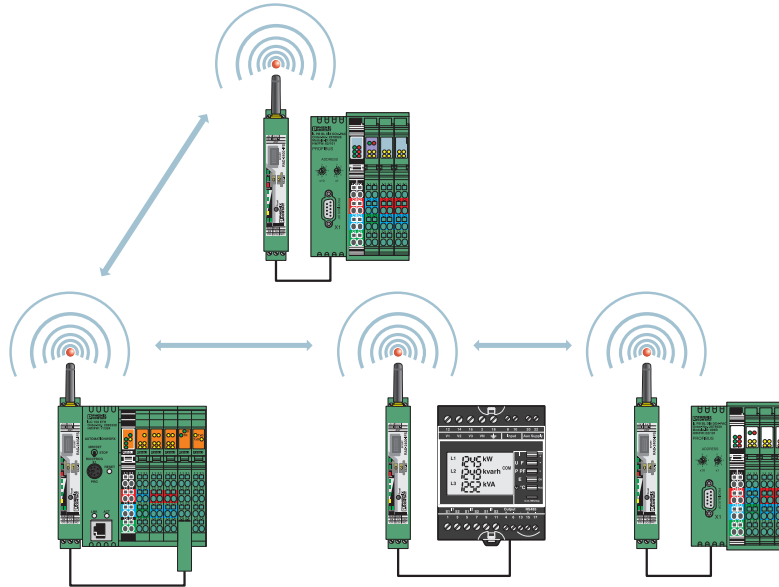# Wireless module - RAD-2400-IFS - 2901541

Application drawing
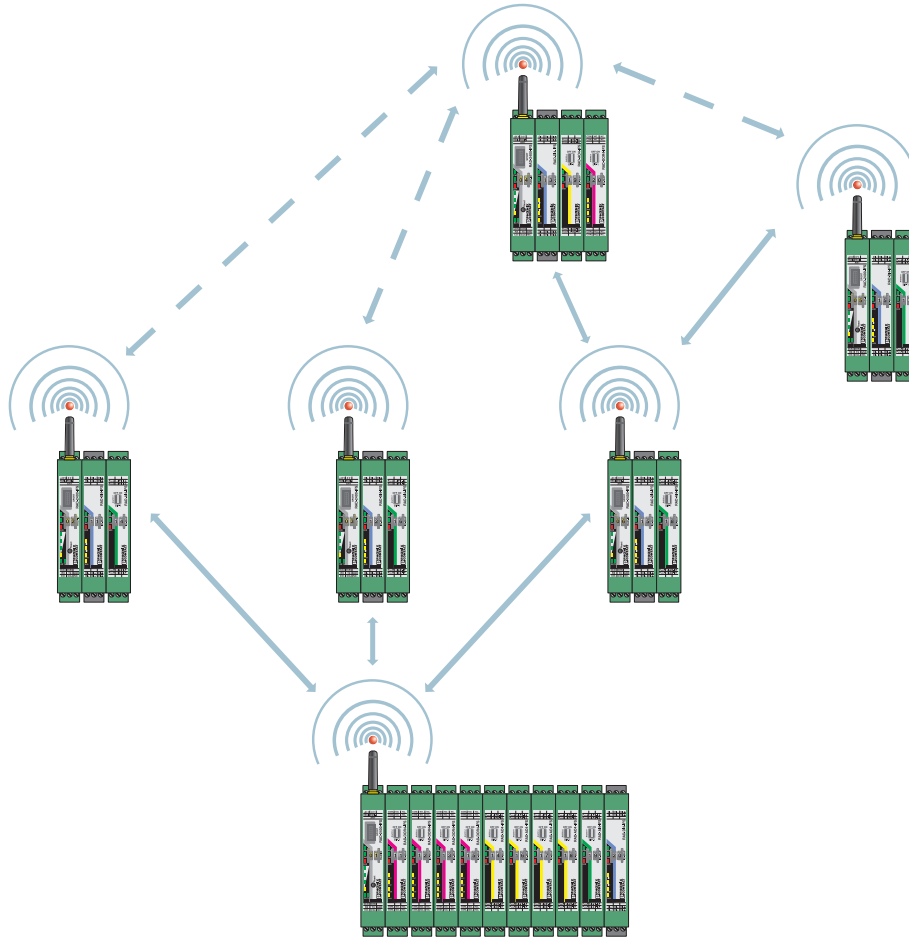
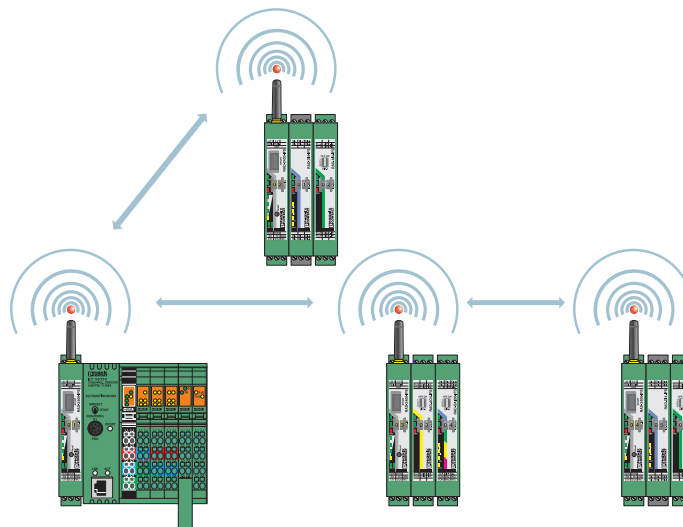Wireless module in I/O data mode

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Application drawing

Serial data mode

Application drawing

Wireless module in PLC/Modbus RTU mode