

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 GRM
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
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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: 5 g, 10 Hz - 150 Hz
Shock	16 g, 11 ms

General

Surge voltage category	II
Assembly instructions	on standard DIN rail NS 35 in accordance with EN 60715
Pollution degree	2
Housing material	PA 6.6-FR
Inflammability class 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	Belgium
	Bulgaria
	Denmark
	Germany
	Estonia
	France
	Finland
	Greece

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Technical data

General

	Great Britain
	Italy
	Ireland
	Iceland
	Liechtenstein
	Luxembourg
	Latvia
	Lithuania
	Malta
	The Netherlands
	Norway (The device may not be operated within 20 km of Ny Ålesund town center.)
	Austria
	Poland
	Poland
	Romania
	Russia
	Sweden
	Switzerland
	Slovakia
	Slovenia
	Spain
	Czech Republic
	Turkey (The device may only be operated with Phoenix Contact antennae (see "Wireless accessories" data sheet, Doc. No. 101580) in accordance with the "Short Range Radio Devices (SRD) Regulations" Gazette No. 26464 dated March 16, 2007.)
	Hungary
	Cyprus (rep.)
	Singapore
	Ukraine
Export note	The latest country registrations for the relevant product can be found on the Internet at phoenixcontact.com.

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

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Technical data

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)
Transmission power	≤ 100 mW (Default setting, adjustable)
Security	128-bit data encryption
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)

Serial interface

Interface 1	RS-232
Connection method	COMBICON plug-in screw terminal block
	3-conductor
Transmission speed	0,3 ... 115,2 kbit/s
Interface 2	RS-485
Connection method	COMBICON plug-in screw terminal block
	2-wire
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 (female connector)

System limits

Designation	Wireless module
Number of supported devices	≤ 250 (Addressing via PSI-CONF software)
	≤ 99 (Addressing via thumbwheel)

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System limits

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
	60 V DC
Max. switching current	500 mA
Electrical service life	5 x 10 ⁵ cycles with 0.5 A @ 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 stranded min.	0.2 mm ²
Conductor cross section stranded max.	2.5 mm ²
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil 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 (RS-232/485 receive data, RX)
	Green LED (RS-232/485 transmit data, TX)

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Approvals and conformance

Conformance	CE compliance (R&TTE directive 1999/5/EC)
ATEX	# II 3 G Ex nA nC IIC T4 Gc X
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

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	27242208

ETIM

ETIM 3.0	EC001423
ETIM 4.0	EC000310
ETIM 5.0	EC000310

UNSPSC

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

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Approvals

Approvals

Approvals

UL Listed / cUL Listed / cULus Listed

Ex Approvals

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

Approvals submitted

Approval details

UL Listed 

cUL Listed 

cULus Listed 

Accessories

Accessories

Antenna

Antenna - RAD-ISM-2400-ANT-OMNI-2-1-RSMA - 2701362



Omnidirectional antenna, 2.4 GHz, 2 dBi, linear vertical, 1.5 m cable, RSMA (male), IP65, 50 Ω impedance

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Antenna - RAD-ISM-2400-ANT-VAN-3-0-RSMA - 2701358



Omnidirectional antenna with protection against vandalism, 2.4 GHz, 3 dBi gain, IP55 degree of protection, 1.5 m cable length, RSMA connection (male), h/v 360°/85° apex angle. Appropriate mounting material is available for wall mounting.

Antenna - RAD-ISM-2400-ANT-OMNI-6-0 - 2885919



Omnidirectional antenna, 2.4 GHz, 6 dBi, linear vertical, N (female), IP55, 50 Ohm impedance

Antenna - RAD-2400-ANT-OMNI-6-0-SW - 2903219



Omnidirectional antenna, 2.4 GHz, 6 dBi, linear vertical, opening angle h/v 360°/20°, N (female), IP65, salt water resistant

Antenna - ANT-DIR-2459-01 - 2701186



Panel antenna, 2.4/5 GHz, 9 dBi, linear vertical, N (female), IP67, incl. mounting bracket and mast clips for 25 - 85 mm diameter, stainless steel

Antenna - RAD-ISM-2400-ANT-PAN- 8-0 - 2867610



Panel antenna, degree of protection IP55, 8 dBi gain, linear vertical, SMA (female), impedance 50 ohms, apex angle h/v 75°/70°

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Accessories

Antenna - RAD-ISM-2400-ANT-PAR-19-0 - 2867885



Parabolic antenna, IP65 degree of protection, 19 dBi gain, linear vertical, N (female) connection, impedance 50 Ω , apex angle h/v 17°/11°

Coaxial adapter

Adapter - RAD-ADP-N/F-N/F - 2867843



Adapter, N (female) -> N (female); insertion attenuation < 0.3 dB at 2.4 GHz

Adapter - RAD-ADP-RSMA/F-SMA/F - 2884538



Adapter, RSMA (male) -> SMA (female); insertion loss < 0.3 dB at 2.4 GHz

Adapter - RAD-ADP-RSMA/M-RSMA/F-90 - 2904790



Adapter, RSMA (male) -> RSMA (female) 90°; Insertion loss < 0.3 dB at 2.4 GHz

Coaxial cable

Antenna cable - RAD-PIG-EF316-N-RSMA - 2701402



Adapter cable, pigtail 50 cm, N (female) -> RSMA (male), insertion loss 0.75 dB at 2.4 GHz; 1.25 dB at 5 GHz, impedance 50 Ω ;

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Accessories

Antenna cable - RAD-PIG-RSMA/N-0.5 - 2903263



Antenna cable, 0.5 m in length; N (male) -> RSMA (male), impedance 50 ohms

Antenna cable - RAD-PIG-RSMA/N-1 - 2903264



Antenna cable, 1 m in length; N (male) -> RSMA (male), impedance 50 ohms

Antenna cable - RAD-PIG-RSMA/N-2 - 2903265



Antenna cable, 2 m in length; N (male) -> RSMA (male), impedance 50 ohms

Antenna cable - RAD-PIG-RSMA/N-3 - 2903266



Antenna cable, 3 m in length; N (male) -> RSMA (male), impedance 50 ohms

Antenna cable - RAD-PIG-EF316-N-SMA - 2867694



Adapter cable, pigtail 30 cm N (female) -> SMA (male), insertion attenuation 1.5 dB at 2.4 GHz; impedance 50 ohms;

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Accessories

Antenna cable - RAD-PIG-EF316-SMA-SMA - 2885618



Adapter cable, pigtail 50 cm SMA (male) -> SMA (male), insertion attenuation 1.5 dB at 2.4 GHz; impedance 50 ohms;

Adapter cable - RAD-PIG-RSMA-N-EX/ATEX - 2904788



Barrier for antenna installation in Ex areas Zone 1 and 2; 76 cm pigtail; Type N (female) to RSMA (male)

Antenna cable - RAD-CAB-EF393- 3M - 2867649



Antenna cable, 3 m in length; N (male) -> N (male), attenuation approx. 0.45 dB/m at 2.4 GHz; impedance 50 ohms

Antenna cable - RAD-CAB-EF393- 5M - 2867652



Antenna cable, 5 m in length; N (male) -> N (male), attenuation approx. 0.45 dB/m at 2.4 GHz; impedance 50 ohms

Antenna cable - RAD-CAB-EF393-10M - 2867665



Antenna cable, 10 m in length; N (male) -> N (male), attenuation approx. 0.45 dB/m at 2.4 GHz; impedance 50 ohms

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Accessories

Antenna cable - RAD-CAB-EF393-15M - 2885634



Antenna extension cable, 15 m long; N (male) -> N (male), attenuation approx. 0.45 dB/m@2.4 GHz; impedance 50 Ω

Configuration memory

Configuration memory - RAD-CONF-RF3 - 2902814



CONFSTICK for easy and secure network addressing for the 2.4 GHz Radioline wireless module (RAD-2400-IFS), unique network ID, RF band 3

Configuration memory - RAD-CONF-RF5 - 2902815



CONFSTICK for easy and secure network addressing for the 2.4 GHz Radioline wireless module (RAD-2400-IFS), unique network ID, RF band 5

Configuration memory - RAD-CONF-RF7 - 2902816



CONFSTICK for easy and secure network addressing for the 2.4 GHz Radioline wireless module (RAD-2400-IFS), unique network ID, RF band 7

Configuration memory - RAD-MEMORY - 2902828



Memory stick for saving individual configuration data for the Radioline wireless module

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Accessories

Control box

Control box - FL RUGGED BOX - 2701204



Control box for rugged construction of wireless systems for industrial applications, IP65, 25 x 18 x 13 cm, polycarbonate material, gray, drilled, including DIN rail, plugs, and screw connections, without devices

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.

Extension module

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



Analog/digital I/O extension module with 2 digital inputs/outputs (0...250 V AC/DC) and 1 analog input (0/4...20 mA) and output (0/4 ... 20 mA, 0...10 V), with screw connection, incl. DIN rail connector

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



Digital I/O extension module with 4 digital inputs (0...250 V AC/DC), with screw connection, incl. DIN rail connector

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Accessories

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



Digital I/O extension module with 4 digital relay outputs (6 A, 250 V AC/ 24 V DC), with screw connection, incl. DIN rail connector

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



Digital I/O extension module with 8 digital inputs (0 ... 30.5 V DC) or 2 pulse inputs (0 ... 100 Hz), with screw connection, including DIN rail connector

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



Digital I/O extension module with 8 digital transistor outputs (30.5 V DC/200 mA), with screw connection, including DIN rail connector

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-AO4-IFS - 2901538



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

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Accessories

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

Mounting material

Weather protection tape - RAD-TAPE-SV-19-3 - 2903182



Vulcanizing sealing tape for external protection of adapters, cable connections, etc. against the effects of weather, roll length: 3 m

Mounting material - FL RUGGED BOX POLE SET - 2701205



Set for mast mounting of the FL RUGGED BOX housing, incl. screw clamps for masts up to 89 mm #

Power supply

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



DIN rail power supply unit, primary-switched mode, slim design, output: 24 V DC / 1.5 A

Programming cable

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Accessories

Cable for programming - RAD-CABLE-USB - 2903447



USB data cable (USB-A on IFS plug) for communicating between PCs and PHOENIX CONTACT devices with an IFS data port, e.g., RAD-2400-IFS. Power supply for diagnostics and configuration via the USB port of the PC. Cable length: 2 m.

Solar set

Solar system - RAD-SOL-SET-24-100 - 2885472



24 V / 100 Wp solar system for worldwide use. Consisting of a solar panel, prewired control cabinet with charge controller, solar batteries, fuses, surge protection and assembly material (including mast clips).

Solar system - RAD-SOL-SET-24-200 - 2917722



24 V / 200 Wp solar system for worldwide use. Consisting of a solar panel, prewired control cabinet with charge controller, solar battery, fuses, surge protection and assembly material (including mast clips).

Surge protection for transceiver systems

Surge protection device - CN-LAMBDA/4-5.9-BB - 2838490



Attachment plug with Lambda/4 technology as surge protection for coaxial signal interfaces. Connection: N connectors socket-socket

Additional products

Wireless module - RAD-2400-IFS - 2901541

Accessories

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



Analog/digital I/O extension module with 2 digital inputs/outputs (0...250 V AC/DC) and 1 analog input (0/4...20 mA) and output (0/4 ... 20 mA, 0...10 V), with screw connection, incl. DIN rail connector

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



Digital I/O extension module with 4 digital inputs (0...250 V AC/DC), with screw connection, incl. DIN rail connector

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



Digital I/O extension module with 4 digital relay outputs (6 A, 250 V AC/ 24 V DC), with screw connection, incl. DIN rail connector

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



Digital I/O extension module with 8 digital inputs (0 ... 30.5 V DC) or 2 pulse inputs (0 ... 100 Hz), with screw connection, including DIN rail connector

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



Digital I/O extension module with 8 digital transistor outputs (30.5 V DC/200 mA), with screw connection, including DIN rail connector

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Accessories

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-AO4-IFS - 2901538



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

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

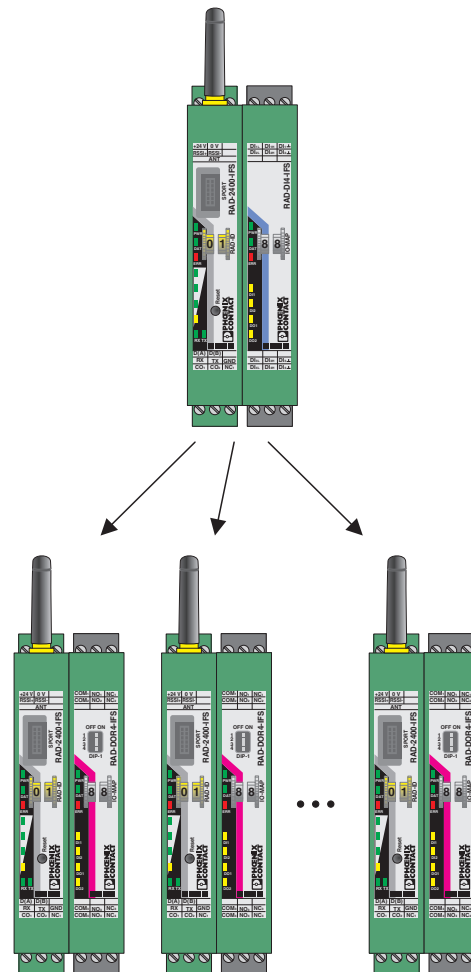
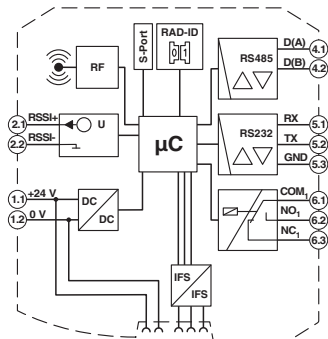


Temperature I/O extension module with 4 PT 100 inputs (-50...+250 °C), with screw connection, including DIN rail connector

Drawings

Block diagram

Functional drawing



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Functional drawing



Dimensioned drawing

