

RAD-2400-IFS - Wireless module



2901541

<https://www.phoenixcontact.com/us/products/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 of -40 °C ... +70 °C
- Approved for use in zone 2
- International approvals

Commercial data

Item number	2901541
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN26
Product key	DNC614
Catalog page	Page 376 (C-6-2019)
GTIN	4046356610193
Weight per piece (including packing)	206.6 g
Weight per piece (excluding packing)	193.6 g
Customs tariff number	85176200
Country of origin	DE

RAD-2400-IFS - Wireless module



2901541

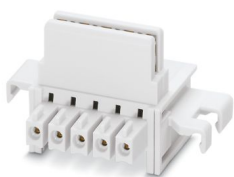
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Set consists of

ME 17,5 TBUS 1,5/ 5-ST-3,81 KMGY - DIN rail bus connectors

2713645

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DIN rail connector, color: light grey, nominal current: 8 A (parallel contacts), rated voltage (III/2): 125 V, number of positions: 5, pitch: 3.81 mm, mounting: DIN rail mounting, locking: without, mounting: without, type of packaging: packed in cardboard, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

Technical data

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	733 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	340 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	135 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)

Insulation characteristics

Overvoltage category	II
Degree of pollution	2

Electrical properties

Rated insulation voltage	60 V (In accordance with EN/IEC 60079-7)
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)
	≤ 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)

RAD-2400-IFS - Wireless module



2901541

<https://www.phoenixcontact.com/us/products/2901541>

≤ 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 ⁵ 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 ²
Conductor cross section, rigid max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
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
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
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RAD-2400-IFS - Wireless module



2901541

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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 (100 mW, outside of Europe, adjustable via software) ≤ 19 dBm (Europe, can be set via software, depends on the data rate) 18 dBm (Default setting, adjustable)
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	Europe, USA, Canada, additional countries in the e-shop
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Wireless

Frequency band	2.4 GHz
Wireless standard	Trusted Wireless

Signaling

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)
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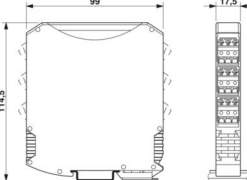
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2901541

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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

CE

Certificate	CE-compliant
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UKCA

Certificate	UKCA-compliant
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ATEX

Identification	Ⓔ II 3 G Ex ec nC IIC T4 Gc
Certificate	IBExU 15 ATEX B008 X
Note	Please follow the special installation instructions in the documentation!

RAD-2400-IFS - Wireless module



2901541

<https://www.phoenixcontact.com/us/products/2901541>

IECEEx

Identification	Ex ec nC IIC T4 Gc
Certificate	IECEEx IBE 13.0019X

EAC Ex

Identification	2Ex nA nC IIC T4 Gc X
Certificate	RU C-DE.HB49.B.00033/20

UL, USA/Canada

Identification	508 Listed
	Class I, Div. 2, Groups A, B, C, D T4A
	Class I, Zone 2, IIC T4

CCC / China-Ex

Identification	Ex ec nC IIC T4 Gc
Certificate	2022122310115624

Wireless approval, Europe

Note	RED 2014/53/EU
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Wireless approval USA, FCC

Certificate	YG3RAD2400A
Note	FCC directive, part 15.247

Wireless approval for Argentina, RAMATEL

Certificate	C-27397
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Wireless approval Australia, RCM

Certificate	-
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Wireless approval Brazil, ANATEL

Certificate	06279-19-06497
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Wireless approval India, WPC

Certificate	NER-ETA/314
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Wireless approval Canada, IC

Certificate	4720B-RAD2400A
Note	ISC directive RSS 210

Wireless approval Morocco, ANRT

Certificate	MR 10464 ANRT 2015
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Wireless approval Mexico, IFT

Certificate	IFT RCPHRA17-1112
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KC approval for South Korea

Certificate	MSIP-CRI-PCK-2901541
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KC-s

RAD-2400-IFS - Wireless module



2901541

<https://www.phoenixcontact.com/us/products/2901541>

Certificate	KTL 20-KA4BO-0146X
Wireless approval Taiwan, NCC	
Certificate	CCAJ18LP1990T7
Wireless approval United Arab Emirates, TRA	
Certificate	ER0126713
Corrosive gas test	
Identification	ISA-S71.04-1985 G3 Harsh Group A

EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrostatic discharge	
Standards/regulations	EN 61000-4-2
Electrostatic discharge	
Contact discharge	± 6 kV (Test Level 3)
Discharge in air	± 8 kV (Test Level 3)
Indirect discharge	± 6 kV
Comments	Criterion B
Electromagnetic HF field	
Standards/regulations	EN 61000-4-3
Electromagnetic HF field	
Frequency range	26 MHz ... 3 GHz (Test Level 3)
Field intensity	10 V/m
Comments	Criterion A
Fast transients (burst)	
Standards/regulations	EN 61000-4-4
Fast transients (burst)	
Input	± 2 kV (Test Level 3)
Signal	± 2 kV
Comments	Criterion B
Surge current load (surge)	
Standards/regulations	EN 61000-4-5
Surge current load (surge)	
Input	± 0.5 kV (symmetrical) ± 1 kV (asymmetrical)
Signal	± 1 kV (asymmetrical)
Comments	Criterion B
Conducted interference	
Standards/regulations	EN 61000-4-6

RAD-2400-IFS - Wireless module



2901541

<https://www.phoenixcontact.com/us/products/2901541>

Conducted interference

Frequency range	0.15 MHz ... 80 MHz
Comments	Criterion A
Voltage	10 V

Emitted interference

Emitted radio interference in acc. with EN 55011	EN 55016-2-3 Class A industrial applications
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Criteria

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

Standards and regulations

Standard designation	Ex Directive (ATEX)
Standards/specifications	EN 60079-0
Standard designation	Ex Directive (ATEX)
Standards/specifications	EN 60079-15
Standards/specifications	EN 300328
	EN 61000-6-4
	EN 61000-6-2
	EN 50371
	EN 60950-1

Mounting

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

RAD-2400-IFS - Wireless module



2901541

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Classifications

ECLASS

ECLASS-11.0	19170501
ECLASS-12.0	19170501
ECLASS-13.0	19170501

ETIM

ETIM 8.0	EC001134
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UNSPSC

UNSPSC 21.0	43222604
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RAD-2400-IFS - Wireless module



2901541

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Environmental product compliance

China RoHS	Environmentally Friendly Use Period = 50 years For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"
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