

Radioline wireless system



Easy startup with I/O mapping

Radioline is the transmission system from Phoenix Contact for extended systems and networks with up to 250 stations.

Radioline transmits I/O signals as well as serial data.

With a slight turn of the thumbwheel, you can distribute and multiply I/O signals freely in your network.

The range* depends on the wireless system selected:

- 2.4 GHz - up to 5 km
- 868 MHz - up to 20 km
- 900 MHz - up to 32 km

Network applications

- I/O data mode: simple I/O signal distribution in the network
- PLC/Modbus RTU mode: I/O integration into the control level using the Modbus protocol
- PLC/Modbus RTU dual mode: I/O integration into the control level using the Modbus protocol. Parallel connection of additional Modbus/RTU slaves
- Serial data mode: networking of controllers and serial I/O devices, simple RS-232/RS-485 cable replacement

Radioline NEMA 4X

- For outdoor installation
- 2 digital inputs, 2 relay outputs, 1 analog input (cannot be extended)
- Interoperable with RAD-900-IFS

Notes:

*The range may be considerably above or below that stated. It is dependent on the environment, antenna technology, transmission power, and the product used.

The latest country registrations for the relevant product can be found on the Internet at phoenixcontact.com.



2.4 GHz wireless transceiver, for worldwide use



Wireless path	
Direction	
Frequency range	
Data rate (adjustable)	
Number of channels	
Security	
Connection method	
Serial port	
Connection method	
Serial transmission speed	
Termination resistor (switchable via DIP switches)	
Analog output	
Signal range	
Digital output	
Contact type	
Switching voltage	
Switching current	
General data	
Supply voltage	
Current consumption	
Degree of protection	
Ambient temperature range	
Permissible humidity (operation)	
Dimensions	W / H / D
Screw connection rigid / flexible / AWG	
EMC note	
Conformance/approvals	
ATEX	
IECEX	
UL, USA/Canada	

Description	
Wireless module , can be extended with I/O extension modules	
- With Japan approval (no ATEX, IECEX or UL approval)	
- For use in North America	
- For use in Australia	
Wireless module	
- For use in North America	

CONFSTICK , configuration memory for the safe parallel operation of several wireless paths or networks	
	RF band 1
	RF band 3
	RF band 5
	RF band 7
Memory stick , for saving custom configuration data	
USB cable , for diagnostics and extended configuration	

Technical data

Bi-directional	
2.4002 GHz ... 2.4785 GHz	
16 kbps / 125 kbps / 250 kbps	
8 x 55	
128-bit data encryption	
RSMA (female)	
RS-232	RS-485
COMBICON plug-in screw terminal block	
COMBICON plug-in screw terminal block	
0.3 ... 115.2 kbps	0.3 ... 187.5 kbps
-	390 Ω / 150 Ω / 390 Ω
RSSI voltage output	
0 V ... 3 V	
RF link relay output	
PDT	
30 V AC/DC / 60 V DC	
500 mA (30 V AC/DC)	
19.2 V DC ... 30.5 V DC	
≤ 65 mA (at 24 V DC, at 25°C, stand-alone)	
IP20	
-40°C ... 70°C (>55°C derating)	
-40 °F ... 158 °F (>131°F derating)	
20% ... 85%	
17.5 / 116 / 114.5 mm	
0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 - 14	
Class A product, see page 527	
Ex II 3 G Ex nA nC IIC T4 Gc	
Ex nA nC IIC T4 Gc	
UL 508 Listed	
Class I, Div. 2, Groups A, B, C, D T4A	
Class I, Zone 2, IIC T4	

Ordering data

Type	Order No.	Pcs./Pkt.
RAD-2400-IFS	2901541	1
RAD-2400-IFS-JP	2702863	1

Accessories

RAD-CONF-RF3	2902814	1
RAD-CONF-RF5	2902815	1
RAD-CONF-RF7	2902816	1
RAD-MEMORY	2902828	1
RAD-CABLE-USB	2903447	1

new



868 MHz wireless transceiver, for license-free use in Europe



900 MHz wireless transceiver, for license-free use in America and Australia



900 MHz wireless transceiver, for outdoor installation (NEMA 4X)

Ex:

Ex:

Ex:

Technical data	
Bi-directional	
869.4 MHz ... 869.65 MHz	
1.2 kbps / 9.6 kbps / 19.2 kbps / 60 kbps / 120 kbps	
14	
128-bit data encryption	
RSMA (female)	RSMA (female)
RS-232	RS-485
COMBICON plug-in screw terminal block	COMBICON plug-in screw terminal block
0.3 ... 115.2 kbps	0.3 ... 115.2 kbps
-	390 Ω / 150 Ω / 390 Ω
RSSI voltage output	
0 V ... 3 V	
RF link relay output	
PDT	
30 V AC / 60 V DC	
500 mA	
19.2 V DC ... 30.5 V DC	
≤ 65 mA (at 24 V DC, at 25°C, stand-alone)	
IP20	
-40°C ... 70°C	
-40 °F ... 158 °F	
20% ... 85%	
17.5 / 116 / 114.5 mm	
0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 - 14	
Class A product, see page 527	
II 3 G Ex nA nC IIC T4 Gc	
Ex nA nC IIC T4 Gc	
-	

Technical data	
RAD-900-IFS	RAD-900-IFS-AU
Bi-directional	Bi-directional
902 MHz ... 928 MHz	915 MHz ... 928 MHz
16 kbps / 125 kbps / 250 kbps / 500 kbps	16 kbps / 125 kbps / 250 kbps
-	-
128-bit data encryption	128-bit data encryption
RSMA (female)	RSMA (female)
RS-232	RS-485
COMBICON plug-in screw terminal block	COMBICON plug-in screw terminal block
0.3 ... 115.2 kbps	0.3 ... 115.2 kbps
-	390 Ω / 150 Ω / 390 Ω
RSSI voltage output	
0 V ... 3 V	
RF link relay output	
PDT	
30 V AC/DC	
500 mA	
10.8 V DC ... 30.5 V DC	
328 mA (@24 V DC)	
IP20	
-40°C ... 70°C	
-40 °F ... 158 °F	
20% ... 85%	
35 / 116 / 114.5 mm	
0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 - 14	
-	
-	
Class I, Div. 2, Groups A, B, C, D	

Technical data	
Bi-directional	
902 MHz ... 928 MHz	
16 kbps / 125 kbps / 250 kbps / 500 kbps	
-	
128-bit data encryption	
N (female)	
-	
-	
RSSI voltage output	
0 V ... 3 V	
RF link relay output	
PDT	
30 V AC/DC	
500 mA	
10.8 V DC ... 30.5 V DC / 100 V AC ... 240 V AC	
110 mA (120 V AC) / 368 mA (10.8 V DC)	
NEMA 4	
-40°C ... 70°C (DC)	
-40°C ... 65°C (AC)	
20% ... 85%	
220 / 90 / 120 mm	
0.14 ... 2.5 mm ² / 0.14 ... 2.5 mm ² / 26 - 14	
-	
-	
ANSI/ISA/CSA 22.2 61010-2-201, UL 50E Type 4	
Class I, Div. 2, Groups A, B, C, D T4	
Class I, Zone 2, IIC T4	

Ordering data		
Type	Order No.	Pcs./Pkt.
RAD-868-IFS	2904909	1

Ordering data		
Type	Order No.	Pcs./Pkt.
RAD-900-IFS	2901540	1
RAD-900-IFS-AU	2702878	1

Ordering data		
Type	Order No.	Pcs./Pkt.
RAD-900-DAI06	2702877	1

Accessories		
Type	Order No.	Pcs./Pkt.
RAD-868-CONF-RF1	2702197	1
RAD-MEMORY	2902828	1
RAD-CABLE-USB	2903447	1

Accessories		
Type	Order No.	Pcs./Pkt.
RAD-900-CONF-RF1	2702122	1
RAD-MEMORY	2902828	1
RAD-CABLE-USB	2903447	1

Accessories		
Type	Order No.	Pcs./Pkt.

Radioline – I/O mapping now in wired format too

The popular, straightforward method of distributing I/O information using white thumbwheels on the front of the equipment is now also available for RS-485 networks.

Addressing the RS-485 front module is quick and easy too – all it takes is a turn of the yellow thumbwheel. This enhances the Radioline system's flexibility, allowing it to be used for solutions in even more applications.

The device supports three functions:

Supplementing a wireless system

A Radioline wireless system on an existing master can be expanded to include new RS-485 stations. RS-485 and wireless modules form a combined system.

Operation in a purely RS-485 network

In an RS-485 network with up to 99 Radioline stations, you can now distribute I/O signals between the stations. This is done without the need for software configuration by simply turning the thumbwheel.

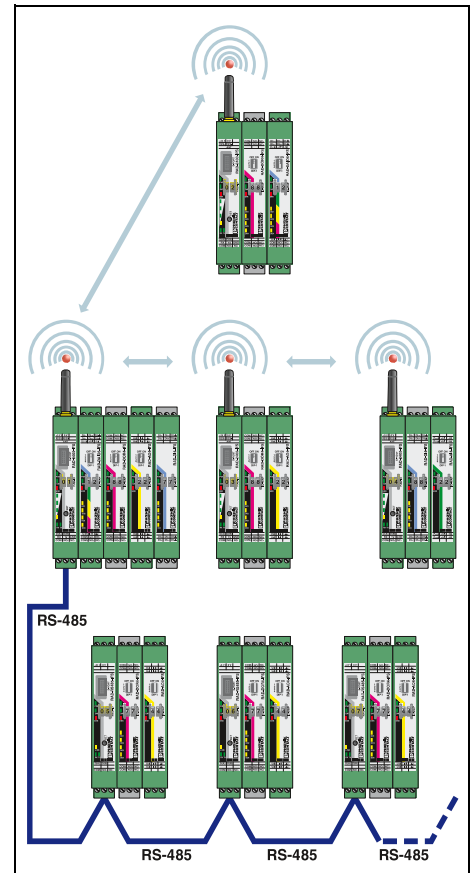
Stand-alone operation as a Modbus slave

The new Radioline RS-485 stations can also be operated on any Modbus/RTU master.

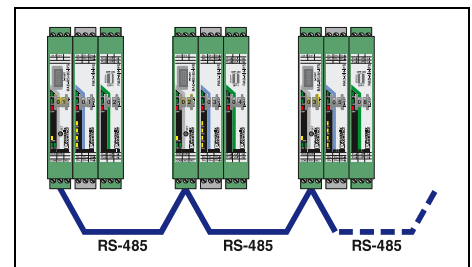
Alternative transmission media

To increase the range, it is of course possible to replace the RS-485 line with alternative transmission media.

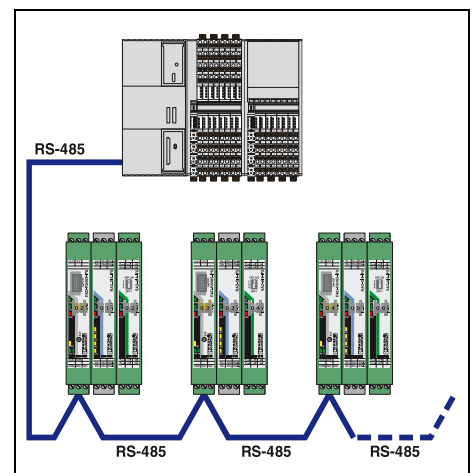
Phoenix Contact offers a range of converters for fiber optic cables, SHDSL, wireless or Ethernet technology.



I/O to I/O in a combined system



I/O to I/O via RS-485



I/O to serial (Modbus/RTU slave)

Multipoint multiplexer

Your advantages

- Up to 99 bus stations in the network
- Modular extension with up to 32 I/O extension modules supported
- Quick and easy startup without programming
- Can be combined with Radioline wireless modules



RS-485 serial interface



Serial port	
Connection method	
Serial transmission speed	
Termination resistor (switchable via DIP switches)	
Digital output	
Contact type	
Switching voltage	
Switching current	
General data	
Supply voltage	
Current consumption	
Degree of protection	
Ambient temperature range	
Permissible humidity (operation)	
Dimensions	W / H / D
Screw connection rigid / flexible / AWG	
EMC note	
Conformance/approvals	
ATEX	
IECEX	
UL, USA/Canada	

Technical data

RS-485
COMBICON plug-in screw terminal block
0.3 ... 115.2 kbps (default setting: 19.2/8/E/1)
390 Ω / 150 Ω / 390 Ω
Link relay output
PDT
30 V AC/DC / 60 V DC
500 mA (30 V AC/DC)
19.2 V DC ... 30.5 V DC
≤ 65 mA (at 24 V DC, at 25°C, stand-alone)
IP20
-40°C ... 70°C (>55°C derating)
-40 °F ... 158 °F (>131°F derating)
20% ... 85%
17.5 / 113 / 114.5 mm
0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 - 14
Class A product, see page 527
Ex II 3 G Ex nA nC IIC T4 Gc
Ex nA nC IIC T4 Gc
UL 508 Listed
Class I, Div. 2, Groups A, B, C, D T4A
Class I, Zone 2, IIC T4

Ordering data

Description
Multipoint multiplexer

Type	Order No.	Pcs./Pkt.
RAD-RS485-IFS	2702184	1

Accessories

Shield connection terminal block , with snap-on foot, for mounting on NS 35... DIN rail, for shield support on busbars	Ø 3-8 mm
Plug-in terminal , for connecting the incoming and outgoing bus line	
USB cable , for diagnostics and extended configuration	

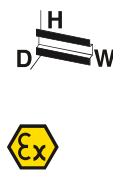
SKS 8-SNS35	3062786	10
TVFKC 1,5/ 3-ST	1713842	50
RAD-CABLE-USB	2903447	1

I/O extension modules

- Easy I/O mapping via thumbwheel
- Digital wide-range inputs (0 ... 250 V AC/DC)
- 0 ... 100 Hz digital pulse inputs
- Relay or transistor outputs
- Easy module replacement even during operation (hot swap)
- Extended temperature range (-40°C ... +70°C)



2 digital inputs/outputs and 1 analog input/output



4 digital inputs



	Technical data		Technical data	
Analog input				
Number of inputs	1		-	
Resolution	16 bit		-	
Signal range (configurable using the DIP switch)	0 mA ... 20 mA / 4 mA ... 20 mA		-	
Accuracy	≤ 0.02% (at 25°C)		-	
Supply voltage	≥ 12 V DC (for passive sensors (via terminal PWR1, +I1))		-	
Digital input				
Number of inputs	2		4	
Switching level	1 signal ("H")	10 V AC/DC ... 50 V AC/DC (low-voltage input) 50 V AC/DC ... 250 V AC/DC (high-voltage input)	10 V AC/DC ... 50 V AC/DC (low-voltage input) 50 V AC/DC ... 250 V AC/DC (high-voltage input)	
Switching level	0 signal ("L")	0 V AC/DC ... 4 V AC/DC (low-voltage input) 0 V AC/DC ... 20 V AC/DC (high-voltage input)	0 V AC/DC ... 4 V AC/DC (low-voltage input) 0 V AC/DC ... 20 V AC/DC (high-voltage input)	
Input frequency	≤ 2 Hz		≤ 2 Hz	
Pulse input				
Number of inputs	-		-	
Signal range	-		-	
Input frequency	-		-	
Pulse length	-		-	
Analog output				
Number of outputs	1		-	
Signal range	0 mA ... 20 mA	0 V ... 10 V	-	
Accuracy	4 mA ... 20 mA	≤ 0.02% (at 25°C)	typ. 0.5%	-
Load R _B	≤ 500 Ω	≥ 10 kΩ	-	
Digital output				
Contact type	2 x Relay output		-	
Switching voltage	250 V AC 24 V DC		-	
Switching current	min./max.	≥ 10 mA / 2 A (per channel)	-	
Switching frequency	2 Hz		-	
General data				
Supply voltage	19.2 V DC ... 30.5 V DC (DIN rail connector)		19.2 V DC ... 30.5 V DC (DIN rail connector)	
Current consumption	≤ 95 mA (at 24 V DC, at 25°C)		≤ 11 mA (at 24 V DC, at 25°C)	
Degree of protection	IP20		IP20	
Ambient temperature range	-40°C ... 70°C		-40°C ... 70°C	
Dimensions	W / H / D	17.5 / 113 / 114.5 mm	17.5 / 113 / 114.5 mm	
EMC note	Class A product, see page 527		Class A product, see page 527	
Conformance/approvals				
ATEX	Ex II 3 G Ex nA nC IIC T4 Gc		Ex II 3 G Ex nA IIC T4 Gc	
IECEX	Ex nA nC IIC T4 Gc		Ex nA 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		UL 508 Listed Class I, Div. 2, Groups A, B, C, D T4A Class I, Zone 2, IIC T4	

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Analog/digital I/O module	RAD-DAIO6-IFS	2901533	1			
Digital input module				RAD-DI4-IFS	2901535	1
Digital relay output module						
Digital/pulse input module						
Digital transistor output module						

Description	Accessories			Accessories		
	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Analog/digital I/O module	RAD-DAIO6-IFS	2901533	1			
Digital relay output module				RAD-DOR4-IFS	2901536	1
Digital input module						
Digital transistor output module						
Digital/pulse input module						

I/O extension modules

- Easy I/O mapping via thumbwheel
- Analog inputs (0/4 ... 20 mA)
- Temperature inputs for Pt 100 sensors
- Analog outputs (0/4 ... 20 mA or 0 ... 10 V)
- Easy module replacement even during operation (hot swap)
- Extended temperature range (-40°C ... +70°C)



4 analog current inputs



Technical data	
Analog input	
Number of inputs	4
Resolution	16 bit
Signal range (configurable using the DIP switch)	0 mA ... 20 mA / 4 mA ... 20 mA
Accuracy	≤ 0.02% (at 25°C)
Supply voltage	≥ 12 V DC (for passive sensors (via terminal PWR1, +I1))
Analog input	
Description of the input	-
Number of inputs	-
Temperature measuring range	-
Analog output	
Number of outputs	-
Signal range	-
Accuracy	-
Load R_B	-
General data	
Supply voltage	19.2 V DC ... 30.5 V DC (DIN rail connector)
Current consumption	≤ 120 mA (at 24 V DC, at 25°C)
Degree of protection	IP20
Ambient temperature range	-40°C ... 70°C
Dimensions	17.5 / 113 / 114.5 mm
EMC note	Class A product, see page 527
Conformance/approvals	
ATEX	Ex II 3 G Ex nA IIC T4 Gc
IECEX	Ex nA 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

Ordering data			
Description	Type	Order No.	Pcs./Pkt.
Analog input module	RAD-AI4-IFS	2901537	1
Temperature input module			
Analog output module			

Accessories			
Description	Type	Order No.	Pcs./Pkt.
Analog output module	RAD-AO4-IFS	2901538	1
Analog input module			
Temperature input module			



4 temperature inputs



4 analog current/voltage outputs



Technical data	
-	
-	
-	
-	
-	
-	
Pt 100 input	
4	
-50°C ... 250°C	
-	
-	
-	
-	
19.2 V DC ... 30.5 V DC (DIN rail connector)	
≤ 38 mA (at 24 V DC, at 25°C)	
IP20	
-40°C ... 70°C	
17.5 / 113 / 114.5 mm	
Class A product, see page 527	
Ex II 3 G Ex nA IIC T4 Gc	
Ex nA IIC T4 Gc	
UL 508 Listed	
Class I, Div. 2, Groups A, B, C, D T4A	
Class I, Zone 2, IIC T4	

Technical data	
-	
-	
-	
-	
-	
-	
4	
0 mA ... 20 mA	
4 mA ... 20 mA	
0 V ... 10 V	
≤ 0.02% (at 25°C)	
typ. 0.5%	
≤ 500 Ω	
≥ 10 kΩ	
19.2 V DC ... 30.5 V DC (DIN rail connector)	
≤ 115 mA (at 24 V DC, at 25°C)	
IP20	
-40°C ... 70°C	
17.5 / 113 / 114.5 mm	
Class A product, see page 527	
Ex II 3 G Ex nA IIC T4 Gc	
Ex nA IIC T4 Gc	
UL 508 Listed	
Class I, Div. 2, Groups A, B, C, D T4A	
Class I, Zone 2, IIC T4	

Ordering data		
Type	Order No.	Pcs./Pkt.
RAD-PT100-4-IFS	2904035	1

Ordering data		
Type	Order No.	Pcs./Pkt.
RAD-AO4-IFS	2901538	1

Accessories		
RAD-AO4-IFS	2901538	1

Accessories		
RAD-AI4-IFS	2901537	1
RAD-PT100-4-IFS	2904035	1