IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx IBE 13.0019X	Issue No: 2	Certificate history:
Status:	**Current**	Page 1 of 4	Issue No. 2 (2015-09-07)
Date of Issue:	**2015-09-07**		Issue No. 1 (2014-03-28)
			Issue No. 0 (2013-07-18)

Applicant: **PHOENIX CONTACT GmbH & Co. KG**
Flachsmarktstraße 8
32825 Blomberg
Germany

Electrical Apparatus: **Radio Transceiver type RAD-2400-IFS(-PT), RAD-868-IFS and module RAD-485-IFS with I/O modules RAD-****-IFS(-PT)**

Optional accessory:

Type of Protection: **type of protection "n"**

Marking:

Ex nA nC IIC T4 Gc
Ex nA IIC T4 Gc

Approved for issue on behalf of the IECEx Certification Body: Prof. Dr. Tammo Redeker

Position: Head of Certification Body

Signature:
(for printed version)

Date: 2015-09-07

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

IBExU Institut für Sicherheitstechnik GmbH
Certification Body
Fuchsmühlenweg 7
09599 Freiberg
Germany

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Manufacturer:	**PHOENIX CONTACT GmbH & Co. KG** Flachsmarktstraße 8 32825 Blomberg **Germany**	
Additional Manufacturing location(s):		

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-15 : 2010 Edition:4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

DE/IBE/ExTR13.0020/00 DE/IBE/ExTR13.0020/01 DE/IBE/ExTR13.0020/02

Quality Assessment Report:

NL/DEK/QAR11.0009/03

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The modules RAD-2400-IFS(-PT), RAD-868-IFS and RAD-RS485-IFS together with the I/O – Modules is used for the acquisition of analogue or digital signals and for the output of analogue or digital signals to suitable devices. The radio transceiver is available with screw connectors or with spring cage connectors. The version having spring cage connectors has the addition –PT in its name.
The I/O modules are combinable in different combinations with the radio transceiver and are mounted on 35 mm top hat rails according to IEC60715. They are connected among each other via the mounting rail bus connector type ME17,5 TBUS 1,5/5-ST-3,81 GN. The supply and the data exchange is done via these connectors.

The Radio transceiver RAD-868-IFS is carried out with screw connectors.

See attachement for technical data.

Type Designation code

I/O module designation	**I/O module function**
RAD-DAIO6-IFS(-PT)	2 x DI/DO and 1x AI/AO
RAD-AI4-IFS(-PT)	4 x Analog In
RAD-AO4-IFS(-PT)	4 x Analog Out
RAD-DI4-IFS(-PT)	4 x Digital In
RAD-DI8-IFS	8 x Digital In
RAD-DOR4-IFS(-PT)	4 x Digital Out (Relay)
RAD-DO8-IFS	8 x Digital Out
RAD-PT100-4-IFS	4 x Analog In (PT100 signals)

CONDITIONS OF CERTIFICATION: YES as shown below:

In Zone 2 install the device in suitable approved housing with the minimum of IP54 – protection that meets the requirements of IEC 60079-15. Observe the requirements of IEC 60079-14.

In potentially explosive areas, terminals may only be snapped on or off the DIN rail connector and wires may only be connected or disconnected when the power is switched off.

The accessible switches may only be operated when the power is switched off.

The device must be stopped and immediately removed from the Ex area if it is damaged, was subject to an impermissible load, stored incorrectly or if it malfunctions.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

new types RAD-868-IFS and module RAD-RS485-IFS added

Annex:

Annex2IBE130019X02.pdf

Technical data of Radio Transceiver RAD-2400-IFS(-PT) and RAD-868-IFS with I/O modules RAD-****-IFS(-PT)

General data

Ambient temperature range	T_a	-40 °C to +70 °C
Degree of protection		IP20 acc. to IEC 60529
Power supply circuit	Terminals 1.1 and 1.2 at RAD-2400-IFS I/O modules are supplied by TBus	
rated voltage	U_N	19.2 ... 30.5 V DC
current	I_N	up to 6 A (depending on the number and kind of modules)
max. number of I/O modules		32
transient voltage protection		Yes

RAD-2400-IFS(-PT)

Radio interface	
Direction	Bidirectional
Frequency	2.400 GHz
Frequency range	2.4002 ... 2.4785 GHz
Channel distance	1.3 MHz
Number of channel groups	8
Number of channels per group	55
Data transfer rate	max. 500 kBit/s
Max. transmitted power	100 mW (adjustable)
Safety	128-Bit data encryption
RS-232 Interface	
Data rate	max. 115.2 kBit/s
Type of connector	pluggable Combicon (3-pol.)
RS-485 Interface	
Data rate	max. 1500 kBit/s
Type of connection	pluggable Combicon (3-pol.)
Termination resistor	150 Ω resp.. 390 Ω (DIP – Dipswitch)
RSSI - Output	
Output voltage	0 ... 3V pluggable Combicon (3-pol.)
RF-Link Relay - output	
Contacts	Change over contact
Contactmaterial	PdRu, gold plated
Max voltage	30 V AC / 60V DC
Max continuous current	0,5 A
Endurance	5 x 10^5 operations at 0.5 A current and 30 V
Type of connector	pluggable Combicon (3-pol.)

RAD-868-IFS

Radio interface	
Direction	Bidirectional
Frequency	868 MHz
Frequency range	869.40 … 869.65 MHz
Data transfer rate	max. 120 kBit/s
Max. transmitted power	500 mW (adjustable)
Safety	128-Bit data encryption
RS-232 Interface	
Data rate	max. 115.2 kBit/s
Type of connector	pluggable Combicon (3-pol.)
RS-485 Interface	
Data rate	max. 1500 kBit/s
Type of connection	pluggable Combicon (3-pol.)
Termination resistor	150 Ω or 390 Ω (DIP – Dipswitch)
RSSI - Output	
Output voltage	0 … 3V pluggable Combicon (3-pol.)
RF-Link Relay - output	
Contacts	Change over contact
Contactmaterial	PdRu, gold plated
Max voltage	30 V AC / 60 V DC
Max continuous current	0,5 A
Endurance	5 x 10^5 operations at 0.5 A current and 30 V
Type of connector	pluggable Combicon (3-pol.)

RAD-DAIO6-IFS(-PT)

Analogue input	
Number	1
Range	0(4) … 20 mA (selectable via DIP – switch)
Max. input signal	30 mA
Input resistor	<70 Ω
Max. frequency	30 Hz
Accuracy	<0,1%
Supply voltage	12 V DC @ 25 mA
Digital input	
Number	2
Low voltage input	
high level voltage	>10 V … 50 V AC/DC
low level voltage	0 V <4 V AC/DC
High voltage input	
high level voltage	>50 V … 250 V AC/DC
low level voltage	0 V <20V AC/DC
Max. frequency	2 Hz
Analogue output	
Number	1
Current output	0(4) … 20 mA (selectable via DIP – switch)
Max. output current	21.7 mA
Max. load	500 Ω
Accuracy	<0,1%
Voltage output	0 … 10V
Max. output voltage	10.9 V
Load	10 kΩ
Accuracy	<0,5%
Digital Output (Relay output)	
Number	2
Kind of contact	PDT

Contact material	$AgSnO_2$
Min current	10 mA
Max. current	2 A
Max. number of operations	1 x 10^5 (at 5A, 250 VAC, ohmic load)
Switching capacity	48 W @ 24V DC, 42 W @ 250 V DC

RAD-AI4-IFS(-PT)

Analogue input	
Number	4
Range	0(4) ... 20 mA (selectable via DIP – switch)
Max. current	30 mA
Input resistance	<70 Ω
Max. frequency	30 Hz
Accuracy	<0,1 %
Supply voltage	12 V DC @ 25 mA

RAD-AO4-IFS(-PT)

Analogue output	
Number	4
Current output	
Range	0(4) ... 20 mA (Behavior selectable via DIP – switch)
Max. output current	21.7 mA
Max. load	500 Ω
Accuracy	<0,1 %
Voltage output	0 ... 10V
Max. voltage	10.9 V
Load	10 kΩ
Accuracy	<0.5%

RAD-DI4-IFS(-PT)

Digital input	
Number	4
Low voltage input	
voltage level for high	>10 V ... <50 V AC/DC
voltage level for low	>0 V <4V AC/DC
High voltage input	
voltage level for high	>50 V ... <250 V AC/DC
voltage level for low	>0 V <20 V AC/DC
Max Frequency	2 Hz

RAD-DI8-IFS

Digital input	
Number	8 (2 groups with each 4 inputs)
Low voltage input	
voltage level for high	>10 V ... <30.5 V DC
voltage level for low	>0 V <4 V DC
Max Frequency	10 Hz

RAD-DOR4-IFS(-PT)

Digital output (Relay output)	
Number	4
Kind of contact	PDT
Contact material	$AgSnO_2$
Min current	10 mA
Max. current	6 A
Max. number of operations	1 x 10^5 (at 5 A, 250 VAC, ohmic load)
Switching capacity	140 W @ 24 V DC, 42 W @ 250 V DC, 1500 V AC

RAD-DO8-IFS

Digital output (FET output)	
Number	8
Max. switching voltage	30.5 V
Max. switching current	200 mA/channel
Max. output frequency	10 Hz
Galvanically isolated	Yes, 2 groups with each 4 outputs

RAD-PT100-4-IFS

Analogue input	
Number	4
Range	-50 ... 250 °C
Sensor current	1 mA
Line resistance	<25 Ω
Accuracy	<0,1 %

RAD-RS485-IFS

Power Supply	
Max. current	45 mA (@ 24V and 25 °C)
RS-485 Interface	
Data rate	max. 1500 kBit/s
Type of connection	pluggable Combicon (3-pole)
Termination resistor	150 Ω or 390 Ω (DIP – Dipswitch)
RF-Link Relay - output	
Contacts	Change over contact
Contactmaterial	PdRu, gold plated
Max voltage	30 V AC / 60 V DC
Max continuous current	0,5 A
Endurance	5 x 10^5 operations at 0.5 A current and 30 V
Type of connector	pluggable Combicon (3-pol.)