



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEx DEK 16.0029X** Page 1 of 4 Certificate history:
Status: **Current** Issue No: 3 Issue 2 (2019-03-27)
Date of Issue: 2019-12-04 Issue 1 (2018-04-05)
Issue 0 (2017-11-01)
Applicant: **PRelectronics A/S**
Lerbakken 10
8410 Rønede
Denmark
Equipment: **2-wire TC Temperature Transmitter, Type 5434... , 2-wire universal Temperature Transmitter, Type 5431... and 6431... , 2-wire HART Temperature Transmitter, Type 5435....., 5437.... and Type 6437....**
Optional accessory:
Type of Protection: **Ex ia, ic, nA, ec**
Marking: For Type 5431D..., 5434D..., 5435D..., 5437D..., 6431D... and Type 6437D...:
Ex ia IIC T6 ...T4 Ga
Ex ib [ia Ga] IIC T6...T4 Gb
Ex ia IIIC Da
Ex ia I Ma
For Type 5431A..., 5434A..., 5435A..., 5437A..., 6431A... and Type 6437A...:
Ex nA IIC T6...T4 Gc
Ex ec IIC T6...T4 Gc
Ex ic IIC T6...T4 Gc
Ex ic IIIC Dc

Approved for issue on behalf of the IECEx
Certification Body:

R. Schuller

Position:

Certification Manager

Signature:
(for printed version)

Date:

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Certificate issued by:

DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
Netherlands





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Date of issue: 2019-12-04

Issue No: 3

Manufacturer: **PRelectronics A/S**
Lerbakken 10
8410 Rønne
Denmark

Additional
manufacturing
locations:

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 equipment 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 Explosive atmospheres - Part 0: General requirements
Edition:6.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
Edition:4

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with 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:

[NL/DEK/ExTR16.0035/03](#)

Quality Assessment Report:

[NL/DEK/QAR13.0017/04](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

2-Wire temperature Transmitters, Series 543..... and Series 643....., are used to convert temperature measurement signals from one or two temperature sensors or mV signals, into a 4 ... 20 mA current signal with digital communication (HART).

An extra connection 'TEST' enables connection of an external intrinsically safe current meter, to measure the 4..20 mA loop supply.

The dedicated extension port (8-pin-header hidden under a small plastic lid on the 543..... and the front connectors on the 643.....) is meant to connect future extension modules of PRelectronics A/S in series with the 4..20mA loop supply.

The Transmitters Type 543..... are suitable for mounting in an enclosure form B according to DIN 43729 or equivalent. The Transmitters, type 643....., are suitable for rail mounting.

For use in an explosive gas atmosphere (EPL Ga and EPL Gb), in type of protection intrinsic safety:
the transmitter series 543..... shall be installed in an enclosure providing a degree of protection of at least IP20 in accordance with IEC 60529, which is suitable for the application and correctly installed. The rail mounted modules already provide IP20 themselves.

For use in an explosive dust atmosphere (EPL Da), in type of protection intrinsic safety:
the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP5X according to IEC 60529, and that is suitable for the application and correctly installed.

For use in mines susceptible to firedamp (EPL Ma), in type of protection intrinsic safety:
the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP54 according to IEC 60529, and that is suitable for the application and correctly installed.
For EPL Ma, aluminium enclosures are not allowed.

For use in an explosive gas (EPL Gc) and dust atmosphere (EPL Dc), in type of protection intrinsic safety or non-sparking: the transmitter shall be installed in an enclosure providing a degree of protection of at least IP54 in accordance with IEC 60079-0, which is suitable for the application and correctly installed.

The surface temperature of that enclosure, for a dust layer with a maximum thickness of 5 mm, is not more than the ambient temperature +20 K.

For Thermal data, Electrical data and Type designation, see annex to this certificate.

SPECIFIC CONDITIONS OF USE: YES as shown below:

If the enclosure is made of non-metallic materials, or if it is made of metal having a paint layer thicker than 0.2 mm (group IIC), or 2 mm (group IIB, IIA, I), or any thickness (group III), electrostatic charges shall be avoided.

Additionally, for Ex nA, Ex ec or Ex ic, the transmitter shall be installed in an enclosure providing a degree of protection of not less than IP54 in accordance with IEC 60079-0, which is suitable for the application and correctly installed, e.g. in an enclosure that is in type of protection Ex n or Ex e.

Additionally, for Ex nA or Ex ec, the area inside the enclosure shall be pollution degree 2 or better, as defined in IEC 60664-1.

For EPL Ga, if the enclosure is made of aluminum, it must be installed such that ignition sources due to impact and friction sparks are excluded.

For EPL Da, the surface temperature of the enclosure, for a dust layer with a maximum thickness of 5 mm, is the ambient temperature +20 K.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
minor constructional change

Annex:

[224143900- Annex1.pdf](#)

Annex 1 to Certificate of Conformity IECEx DEK 16.0029 X

Thermal and Electrical data

For type of protection Ex ia and Ex ib

Supply / output circuit (for type 543.....: terminals 1 and 2, inclusive the 'Test' connection, for type 643.....: terminals 11..14 and 21..24):
in type of protection intrinsic safety Ex ia IIC, Ex ib IIC, Ex ia IIIC and Ex ia I, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 30 \text{ V}$; $I_i = 120 \text{ mA}$; $C_i = 1.0 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$. For P_i , see the below table.

Sensor circuit (for type 543.....: terminals 3..9, for type 643.....: terminals 41..44 and 51..54):
in type of protection intrinsic safety Ex ia IIC, Ex ia IIIC and Ex ia I, with the following maximum values:
 $U_o = 7.2 \text{ V}$; $I_o = 12.9 \text{ mA}$; $P_o = 23.3 \text{ mW}$; $C_o = 13.5 \text{ }\mu\text{F}$; $L_o = 200 \text{ mH}$.

or

Sensor circuit (CH1 terminals 3 to 4,5,6 or CH2 terminals 3 to 7,8,9) for 543... and (CH1 terminals 41...44 or CH2 terminals 51...54) for 643... in type of protection intrinsic safety Ex ia IIC, Ex ia IIIC and Ex ia I, with the following maximum values:

$U_o = 7.2 \text{ V}$; $I_o = 7.3 \text{ mA}$; $P_o = 13.2 \text{ mW}$; $C_o = 13.5 \text{ }\mu\text{F}$; $L_o = 667 \text{ mH}$.

The sensor circuit is infallibly isolated from the supply / output circuit.

The two channels of model type 643.3.. are infallibly isolated from each other.

The relation between P_i , temperature class, model type and maximum ambient temperature is as follows:

| P_i per channel | Temperature class | Maximum ambient temperature | |
|----------------------|-------------------|-----------------------------|-------------|
| | | Single and dual input | Two channel |
| 900 mW | T6 | +50 °C | +45 °C |
| | T5 | +65 °C | +60 °C |
| | T4 | +85 °C | +85 °C |
| 750 mW | T6 | +55 °C | +50 °C |
| | T5 | +70 °C | +65 °C |
| | T4 | +85 °C | +85 °C |
| 610 mW | T6 | +60 °C | +55 °C |
| | T5 | +75 °C | +70 °C |
| | T4 | +85 °C | +85 °C |

The minimum ambient temperature is – 50 °C.

Annex 1 to Certificate of Conformity IECEx DEK 16.0029 X

For type of protection Ex nA, Ex ec or Ex ic:

Supply / output circuit (for type 543.....: terminals 1 and 2, inclusive the 'Test' connection, for type 643.....: terminals 11..14 and 21..24):

the relation between type of protection, temperature class and ambient temperature range, is listed in the table below:

| Supply / output circuit | | | Temperature class | Maximum ambient temperature | |
|-------------------------|---------------------------------------|--|-------------------|-----------------------------|-------------|
| Ex nA & Ex ec | Ex ic Li = 0 µH Ci = 1.0 nF | Ex ic Ui= 48 VDC, Li = 0 µH Ci = 1.0 nF | | Single and dual input | Two channel |
| Vmax= 37 VDC | Ui= 37 VDC | Pi= 851 mW per channel | T4 | +85 °C | +85 °C |
| | | | T5 | +70 °C | +65 °C |
| | | | T6 | +55 °C | +50 °C |
| Vmax= 30 VDC | Ui= 30 VDC | Pi= 700 mW per channel | T4 | +85 °C | +85 °C |
| | | | T5 | +75 °C | +70 °C |
| | | | T6 | +60 °C | +55 °C |

The minimum ambient temperature is – 50 °C.

Sensor circuit (for type 543.....: terminals 3..9, for type 643.....: terminals 41..44 and 51..54):
in type of protection intrinsic safety Ex ic IIC, Ex ic IIIC, with the following maximum values:

$U_o = 7.2 \text{ V}$; $I_o = 12.9 \text{ mA}$; $P_o = 23.3 \text{ mW}$; $C_o = 13.5 \text{ µF}$; $L_o = 200 \text{ mH}$.

or

Sensor circuit (CH1 terminals 3 to 4,5,6 or CH2 terminals 3 to 7,8,9) for 543... and (CH1 terminals 41...44 or CH2 terminals 51...54) for 643... in type of protection intrinsic safety Ex ic IIC and Ex ic IIIC, with the following maximum values:

$U_o = 7.2 \text{ V}$; $I_o = 7.3 \text{ mA}$; $P_o = 13.2 \text{ mW}$; $C_o = 13.5 \text{ µF}$; $L_o = 667 \text{ mH}$.

Type designation

5434abd - 2-wire TC temperature transmitter

5431abd - 2-wire universal temperature transmitter

5435abcd - 2-wire HART® temperature transmitter

5437abcd - 2-wire HART® temperature transmitter

6431abcd - 2-wire universal temperature transmitter

6437abcd - 2-wire HART® temperature transmitter

a: A = Zone 2 / Zone 22 approved ; D = Zone 0 / Zone 20 approved

b: 1 = single input (4Wire); 2 = dual input (7Wire); 3 = two channel

c: S = SIL approved; “ “ = Not SIL approval

d: M = Marine approved; “ “ = Not marine approved