



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 DEK 16.0029X Issue No: 1 Certificate history:
Status: **Current** Issue No. 1 (2018-04-05)
Date of Issue: **2018-04-05** Issue No. 0 (2017-11-01)
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Applicant: **PRelectronics A/S**
Lerbakken 10
8410 Rønne
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:

2018-04-05

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](http://www.iecex.com).

Certificate issued by:

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





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

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 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 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15 : 2010 Edition:4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-7 : 2015 Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*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:

[NL/DEK/ExTR16.0035/01](#)

Quality Assessment Report:

[NL/DEK/QAR13.0017/03](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

General product information:

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 Gc, in type of protection intrinsic safety, the transmitter Type 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.

For use in an explosive dust atmosphere (EPL Da), and for use in mines susceptible to firedamp (EPL Ma): the transmitter shall be mounted in a enclosure that provides a degree of protection of at least IP6X according to IEC 60529, and that is suitable for the application and correctly installed.
For EPL Ma, aluminium enclosures are not allowed.
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.

Thermal and Electrical data

See annex

Type designation

See annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

For all potentially explosive atmospheres:
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.

In type of protection non sparking, Ex nA or Ex ec, 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, 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):

issue 0: initial certificate
issue 1: additional of series 643.....

Annex:

[222530100- Annex to IECEx CoC DEK16.0029X, issue 1.pdf](#)

Annex 1 to Certificate of Conformity IECEx DEK 16.0029 X, issue 1

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):
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 to 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:
 $U_o = 7.2 \text{ V}$; $I_o = 12.9 \text{ mA}$; $P_o = 23.3 \text{ mW}$; $C_o = 13.5 \text{ }\mu\text{F}$; $L_o = 200 \text{ mH}$.

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

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

P_i	Temperature class	Maximum ambient temperature
900 mW	T6	+50 °C
	T5	+65 °C
	T4	+85 °C
750 mW	T6	+55 °C
	T5	+70 °C
	T4	+85 °C
610 mW	T6	+60 °C
	T5	+75 °C
	T4	+85 °C

The minimum ambient temperature is $-50 \text{ }^\circ\text{C}$.

For type of protection Ex nA or 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):
the relation between type of protection, temperature class and ambient temperature range, is listed in the table below:

Ex nA / Ex ec	Ex ic	Maximum ambient temperature
$V_{\text{max}} = 37 \text{ Vdc}$	$U_i = 37 \text{ V}$; $C_i = 1.0 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$, or $U_i = 48 \text{ V}$; $P_i = 851 \text{ mW}$; $C_i = 1.0 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$.	T4: 85 °C T5: 70 °C T6: 55 °C
$V_{\text{max}} = 30 \text{ Vdc}$	$U_i = 30 \text{ V}$; $C_i = 1.0 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$.	T4: 85 °C T5: 75 °C T6: 60 °C

The minimum ambient temperature is $-50 \text{ }^\circ\text{C}$.

Sensor circuit (for type 543.....: terminals 3 to 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:
 $U_o = 7.2 \text{ V}$; $I_o = 12.9 \text{ mA}$; $P_o = 23.3 \text{ mW}$; $C_o = 13.5 \text{ }\mu\text{F}$; $L_o = 200 \text{ mH}$.

Annex 1 to Certificate of Conformity IECEx DEK 16.0029 X, issue 1

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
6431abd - 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)
c: S = SIL approved; “ “ = Not SIL approval
d: M = Marine approved; “ “ = Not marine approved