CERTIFICATE

(1) EU-Type Examination

(2) **Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **DEKRA 16ATEX0047 X** Issue Number: **1**

(4) Product: **2-wire TC Temperature Transmitter, Type 5434D... , 2-wire universal Temperature Transmitter, Type 5431D... and 6431D... , and 2-wire HART Temperature Transmitter, Type 5435D...., 5437D.... and Type 6437D....**

(5) Manufacturer: **PRelectronics A/S**

(6) Address: **Lerbakken 10, 8410 Rønde, Denmark**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential test report number NL/DEK/ExTR16.0035/01.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2012 + A11 : 2013 **EN 60079-11 : 2012**

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

II 1 G Ex ia IIC T6 ...T4 Ga
II 2(1) G Ex ib [ia Ga] IIC T6...T4 Gb
II 1 D Ex ia IIIC Da
I M1 Ex ia I Ma

Date of certification: 5 April 2018

DEKRA Certification B.V.

R. Schuller
Certification Manager

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(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 16ATEX0047 X** Issue No. **1**

(15) **Description**

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

The Transmitters, type 543D....., are suitable for mounting in an enclosure form B according to DIN 43729 or equivalent. The Transmitters, type 643D....., 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 type 543D....., shall be installed in an enclosure providing a degree of protection of at least IP20 in accordance with EN 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 EN 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

Supply / output circuit (for type 543D.....: terminals 1 and 2, inclusive the 'Test' connection, for type 643D.....: 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 V; I_i = 120 mA; C_i = 1,0 nF; L_i = 0 µH. For P_i, see the below table.

Sensor circuit (for type 543D.....: terminals 3 to 9, for type 643D.....: 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 V; I_o = 12,9 mA; P_o = 23,3 mW; C_o = 13,5 µF; L_o = 200 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 °C.

(13) # SCHEDULE

(14) **to EU-Type Examination Certificate DEKRA 16ATEX0047 X** Issue No. **1**

Nomenclature

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

(16) **Report Number**

No. NL/DEK/ExTR16.0035/01.

(17) **Specific conditions of use**

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.

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 "T" of the enclosure, for a dust layer with a maximum thickness of 5 mm, is the ambient temperature +20 K.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/DEK/ExTR16.0035/01.

(20) **Certificate history**

Issue 0	-	219200600	initial certificate
Issue 1	-	222530100	addition of type 643.....

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 V; I_i = 120 mA; C_i = 1.0 nF; L_i = 0 µH. 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 V; I_o = 12.9 mA; P_o = 23.3 mW; C_o = 13.5 µF; L_o = 200 mH.

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

The relation between Pi, 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 °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
Vmax= 37 Vdc	U_i = 37 V; C_i = 1.0 nF; L_i = 0 µH, or U_i = 48 V; P_i = 851 mW; C_i = 1.0 nF; L_i = 0 µH.	T4: 85 ºC T5: 70 ºC T6: 55 ºC
Vmax= 30 Vdc	U_i = 30 V; C_i = 1.0 nF; L_i = 0 µH.	T4: 85 ºC T5: 75 ºC T6: 60 ºC

The minimum ambient temperature is – 50 °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 V; I_o = 12.9 mA; P_o = 23.3 mW; C_o = 13.5 µF; L_o = 200 mH.

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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
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