

CERTIFICATE

(1) Type Examination

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

(3) Type Examination Certificate Number: **DEKRA 18ATEX0135 X** Issue Number: **1**

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

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

(6) Address: **Lerbakken 10, 8410 Rønede, 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., 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 Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in confidential test report no. NL/DEK/ExTR16.0035/03.

(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**

**EN 60079-7 : 2015 + A1:2018
EN 60079-15 : 2010**

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 3 G Ex nA IIC T6...T4 Gc
II 3 G Ex ec IIC T6...T4 Gc
II 3 G Ex ic IIC T6...T4 Gc
II 3 D Ex ic IIIC Dc**

Date of certification: 4 December 2019

DEKRA Certification B.V.

Richard Schuller
Certification Manager



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(13) **SCHEDULE**

(14) **to Type Examination Certificate DEKRA 18ATEX0135 X**

Issue No. 1

(15) **Description**

Temperature Transmitters, Type 543A..... and Type 643A....., 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).

The dedicated extension port 'EXT' (8-pin-header hidden under a small plastic lid on the 543A.... and the front connector and contact pads on the 643A....) may only be connected to equipment that is predefined by PRelectronics A/S.

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

Electrical data

Supply / output circuit (for type 543.... terminals 1, 2; and for type 643... terminals 11, 12 and 21, 22): in type of protection Ex nA, Ex ec or Ex ic. See below table for the maximum values.

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

Supply / output circuit			Temperature class	Maximum ambient temperature	
Ex nA & Ex ec	Ex ic	Ex ic		Single and dual input	Two channel
	$L_i = 0 \mu\text{H}$ $C_i = 1.0 \text{ nF}$	$U_i = 48 \text{ VDC}$ $L_i = 0 \mu\text{H}$ $C_i = 1.0 \text{ nF}$			
$V_{\text{max}} = 37 \text{ VDC}$	$U_i = 37 \text{ VDC}$	$P_i = 851 \text{ mW}$ per channel	T4	+85 °C	+85 °C
			T5	+70 °C	+65 °C
			T6	+55 °C	+50 °C
$V_{\text{max}} = 30 \text{ VDC}$	$V_i = 30 \text{ VDC}$	$P_i = 700 \text{ mW}$ 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:

$U_o = 7,2 \text{ V}$; $I_o = 12,9 \text{ mA}$; $P_o = 23,3 \text{ mW}$; $C_o = 13,5 \mu\text{F}$; $L_o = 200 \text{ mH}$

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:

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

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

The two channels of model type 643.A3.. are infallibly isolated from each other.

(13) **SCHEDULE**

(14) **to Type Examination Certificate DEKRA 18ATEX0135 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
- 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

Installation instructions

The instructions provided with the product shall be followed in detail to assure safe operation.

(16) **Report Number**

No. NL/DEK/ExTR16.0035/03.

(17) **Specific conditions of use**

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.

The transmitter shall be installed in an enclosure providing a degree of protection of not less than IP54 in accordance with EN 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 EN 60664-1.

For EPL Dc, 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/ExTR16.0035/03.

(20) **Certificate history**

- Issue 0 - 223223600 initial certificate
- Issue 1 - 223223600 minor constructional changes and addition to entity parameters