



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

Certificate No.:	<b>IECEX DEK 16.0029X</b>	Page 1 of 4	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 5	Issue 4 (2021-06-30)
Date of Issue:	2022-02-23		Issue 3 (2019-12-04)
Applicant:	<b>PRElectronics A/S</b> Lerbakken 10 8410 Rønne Denmark		Issue 2 (2019-03-27)
Equipment:	<b>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.....</b>		
Optional accessory:			
Type of Protection:	<b>Ex ia, ic, nA, ec</b>		
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 Db 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:  
(for printed version)

2022-02-23

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**DEKRA Certification B.V.**  
Meander 1051  
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Netherlands





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Date of issue: 2022-02-23

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Manufacturer: **PRElectronics A/S**  
Lerbakken 10  
8410 Rønede  
Denmark

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 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

[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/ExTR16.0035/06](#)

Quality Assessment Report:

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



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## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The 2-Wire Temperature Transmitters, type 543..... and type 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).

The 2-Wire Temperature Transmitters, type 643... and type 5825-3.... are the DIN Rail mounted versions. They have the same electronics, same thermal and electrical data and the same safety instructions.

The transmitter, type 5825-3..., is just a 'dummy' version, meant to support a second license certificate.

Note that type 543.A... and 543.D..., respectively type 5825-3.A... , 5825-3.D...and type 5825-3.N... are identical, only the label differs.

An extra connection 'TEST', next to terminal 1 of the 543.... resp. on terminal 1 and 2 of the 5825-3....., resp. on terminals 13, 14 and 23, 24 of type 643...., enables connection of an external intrinsically safe current meter, to measure the supply current. Intrinsic safety parameters of the supply circuit also apply for the 'TEST' connection.

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

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 Thermal data, Electrical data and Type designation, see Annex 1 to NL/DEK/ExTR16.0035/06.

## SPECIFIC CONDITIONS OF USE: YES as shown below:

For ambient temperature range see Annex 1 to NL/DEK/ExTR16.0035/06.

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Ga or Ma, and if the enclosure is made of aluminium, it must be installed such, that ignition sources due to impact and friction sparks are excluded.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Ga or Gc and applied in type of protection Ex ia or Ex ic, the transmitter shall be mounted in enclosure that provides a degree of protection of at least IP20 according to IEC 60529, and that is suitable for the application and correctly installed.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Db or Dc and applied in type of protection Ex ia or Ex ic, the transmitter shall be mounted in enclosure that provides a degree of protection of at least IP5X according to IEC 60079-0, and that is suitable for the application and correctly installed.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Ma, the transmitter shall be mounted in 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.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex nA or Ex ec, the transmitter shall be mounted in enclosure that provides a degree of protection of at least IP54 according to IEC 60079-0, and that is suitable for the application and correctly installed.



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

**Annex:**

[226161700-ExTR16.0035.06-Annex1.pdf](#)

## Annex 1 to NL/DEK/ExTR16.0035/06

### Description

The 2-Wire Temperature Transmitters, type 543..... and type 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).

The 2-Wire Temperature Transmitters, type 643... and type 5825-3.... are the DIN Rail mounted versions. They have the same electronics, same thermal and electrical data and the same safety instructions. The transmitter, type 5825-3..., is just a 'dummy' version, meant to support a second license certificate.

Note that type 543.A... and 543.D..., respectively type 5825-3.A... , 5825-3.D...and type 5825-3.N... are identical, only the label differs.

An extra connection 'TEST', next to terminal 1 of the 543.... resp. on terminal 1 and 2 of the 5825-3....., resp. on terminals 13, 14 and 23, 24 of type 643..., enables connection of an external intrinsically safe current meter, to measure the supply current. Intrinsic safety parameters of the supply circuit also apply for the 'TEST' connection.

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

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.

### Nomenclature

#### For the head mounted transmitters, type 543...

5434abd - 2-wire TC temperature transmitter  
5431abd - 2-wire universal temperature transmitter  
5435abcd - 2-wire HART® temperature transmitter  
5437abcd - 2-wire HART® temperature transmitter

a: A = Zone 2 / Div2 approved  
D = Zone 0 / Div 1 approved

b: 1 = single input (4Wire)  
2 = dual input (7Wire)

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

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

### Annex 1 to NL/DEK/ExTR16.0035/06

Type	Ex Approvals	Input	SIL Approvals	Marine Approvals
5434	A: Zone 2 / Div 2 D: Zone 0 / Div 1	1: single input (4W)		M: Marine -: None
5431	A: Zone 2 / Div 2 D: Zone 0 / Div 1	1: single input (4W) 2: dual input (7W)		M: Marine -: None
5435	A: Zone 2 / Div 2 D: Zone 0 / Div 1	1: single input (4W)	S: SIL -: No SIL	M: Marine -: None
5437	A: Zone 2 / Div 2 D: Zone 0 / Div 1	1: single input (4W) 2: dual input (7W)	S: SIL -: No SIL	M: Marine -: None

For the rail mounted version, type 643... :

6431abcd - 2-wire universal temperature transmitter

6437abcd - 2-wire HART® temperature transmitter

- a: A = Zone 2 / Div2 approved  
D = Zone 0 / Div 1 approved
- b: 1 = single input  
2 = dual input  
3 = two channel
- c: S = SIL approved  
“ “ = Not SIL approval
- d: M = Marine approved  
“ “ = Not marine approved

Type	Ex Approvals	Input	SIL Approvals	Marine Approvals
6431	A: Zone 2 / Div 2 D: Zone 0 / Div 1	1: single input 2: dual input 3: two channel	S: SIL -: No SIL	M: Marine -: None
6437	A: Zone 2 / Div 2 D: Zone 0 / Div 1	1: single input 2: dual input 3: two channel	S: SIL -: No SIL	M: Marine -: None

For the rail mounted version, type 5825-3....

Enclosure	Name	Type no	Approvals	Input Wires
Rail mount	2-wire programmable transmitter	5825-34	A: Zone 2 / Div 2 D: Zone 0 / Div 1 N: Zone 2 / Div 2 and Zone 0 / Div 1	1: single input (4Wire)
Rail mount	2-wire programmable transmitter	5825-31	A: Zone 2 / Div 2 D: Zone 0 / Div 1 N: Zone 2 / Div 2 and Zone 0 / Div 1	1: single input (4Wire) 2: dual input (7Wire)

## Annex 1 to NL/DEK/ExTR16.0035/06

Rail mount	2-wire HART transmitter	5825-35	A: Zone 2 / Div 2 D: Zone 0 / Div 1 N: Zone 2 / Div 2 and Zone 0 / Div 1	1: single input (4Wire)
Rail mount	2-wire HART transmitter	5825-37	A: Zone 2 / Div 2 D: Zone 0 / Div 1 N: Zone 2 / Div 2 and Zone 0 / Div 1	1: single input (4Wire) 2: dual input (7Wire)

Example: 5825-34D1xy where x=" " or "S" and Y=" " or "M"

S= SIL approval and M=Marine approval

### Thermal and electrical data

For type of protection Ex ia and Ex ib

Supply / output circuit (for type 543.... terminals 1, 2; for type 5825-3.... terminals 3, 4, and for type 643... terminals 11, 12 and 21, 22):

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:

$U_i = 30 \text{ V}$ ;  $I_i = 120 \text{ mA}$ ;  $C_i = 1 \text{ nF}$ ;  $L_i = 0 \text{ }\mu\text{H}$ . For  $P_i$ , see the below table.

Sensor circuit (for type 543.... terminals 3..9, for type 5825-3... terminals 5..12, and 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... and (CH1 terminals 5...8 or CH2 terminals 9...12) for 5825-3... in type of protection intrinsic safet 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 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.

For EPL Db:

The surface temperature of the outer enclosure is +20 K above the ambient temperature, determined without a dust layer.

## Annex 1 to NL/DEK/ExTR16.0035/06

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

Supply / output circuit (for type 543.... terminals 1, 2; for type 5825-3.... terminals 3, 4, and for type 643... terminals 11, 12 and 21, 22):

the relation between type of protection, model type, 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 $L_i = 0 \mu\text{H}$ , $C_i = 1 \text{nF}$	Ex ic $U_i = 48 \text{VDC}$ , $L_i = 0 \mu\text{H}$ , $C_i = 1 \text{nF}$		Single and dual input	Two channel
$V_{\text{max}} = 37 \text{VDC}$	$U_i = 37 \text{VDC}$	$P_i = 851 \text{mW}$ 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.

For EPL Dc:

The surface temperature of the outer enclosure is +20 K above the ambient temperature, determined without a dust layer.

Sensor circuit (for type 543... terminals 3..9; for type 5825-3... terminals 5..12; and for type 643... terminals 41..44, 51..54) in type of protection intrinsic safety Ex ic IIC and Ex ic IIIC, with the following maximum values:

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

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... and (CH1 terminals 5...8 or CH2 terminals 9...12) for 5825-3... in type of protection intrinsic safety Ex ic IIC and Ex ic IIIC, with the following maximum values:

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