



# 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 11.0002X</b>	Page 1 of 4	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 4	Issue 3 (2019-09-13)
Date of Issue:	2023-03-27		Issue 2 (2017-02-17)
Applicant:	<b>Thermo Electric Instrumentation B.V.</b> Coenecoop 71-73 2741 PH Waddinxveen <b>Netherlands</b>		Issue 1 (2014-07-08)
Equipment:	<b>Temperature Sensor Assembly Type XPS1, Type XPS2, Type XPS3 and Type XPS4</b>		
Optional accessory:			
Type of Protection:	<b>Ex d, e, i</b>		
Marking:	XPS1: Ex eb IIC T6...T1 Gb XPS2: Ex ia IIC T6...T1 Gb or Ex ib IIC T6...T1 Gb XPS3: Ex db IIC T6...T1 Gb XPS4: Ex ec IIC T6...T1 Gc		

Approved for issue on behalf of the IECEx  
Certification Body:

**R. Schuller**

Position:

**Certification Manager**

Signature:  
(for printed version)

Date:  
(for printed version)

2023-03-27

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**DEKRA Certification B.V.**  
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**Netherlands**





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Manufacturer: **Thermo Electric Instrumentation B.V.**  
Coenecoop 71-73  
2741 PH Waddinxveen  
**Netherlands**

Manufacturing locations: **Thermo Electric Instrumentation B.V.**  
Coenecoop 71-73  
2741 PH Waddinxveen  
**Netherlands**

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 60079-1:2014-06](#) Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

[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/ExTR11.0008/04](#)

Quality Assessment Report:

[NL/DEK/QAR11.0017/08](#)



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

Temperature Sensor Assembly, Type XPS1, Type XPS2, Type XPS3 and Type XPS4 for temperature measurement, in different versions, consists of one or more inserts, a junction box or a connection head provided with terminals and optional extension parts.

Types XPS2, XPS3 and XPS4 may be provided with one or more temperature transmitters.

The insert consists of a metal sheathed mineral insulated cable available in various diameters and lengths, provided with one or two thermocouple or RTD temperature sensing elements.

The tip of the mineral insulated cable is closed by welding.

The other side of the mineral insulated cable is either

- provided with a potted transition part and a cable, available with various insulating materials, with or without braiding or
- provided with a potted end, lead wires and optionally a terminal block.

The inserts with the transition part and cable are available for Types XPS1, XPS2 and XPS4

For more detailed information see Annex 1.

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

See Annex 1.



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

- Assessed per IEC 60079-0 Ed.7, IEC 60079-7 Ed.5.1

- Change of Ex i parameters for XPS2

- Editorial changes and updates

**Annex:**

[226097600-Annex1 to ExTR11.0008.04.pdf](#)

## **Description**

Temperature Sensor Assembly, Type XPS1, Type XPS2, Type XPS3 and Type XPS4 for temperature measurement, in different versions, consists of one or more inserts, a junction box or a connection head provided with terminals and optional extension parts.

Types XPS2, XPS3 and XPS4 may be provided with one or more temperature transmitters.

The insert consists of a metal sheathed mineral insulated cable available in various diameters and lengths, provided with one or two thermocouple or RTD temperature sensing elements.

The tip of the mineral insulated cable is closed by welding.

The other side of the mineral insulated cable is either

- provided with a potted transition part and a cable, available with various insulating materials, with or without braiding or
- provided with a potted end, lead wires and optionally a terminal block.

The inserts with the transition part and cable are available for Types XPS1, XPS2 and XPS4

### Type of protection and EPL

Type XPS1: Ex eb IIC Gb

Type XPS2: Ex ia IIC or Ex ib IIC Gb

Type XPS3: Ex db IIC Gb

Type XPS4: Ex ec IIC Gc

The Connection heads, Type XE-DANA are certified per FTZÚ 03ATEX0073 U to an older edition of the standards: EN 60079-0:2012 and EN 60079-7:2015, respectively based on IEC 60079-0:2011 and IEC 60079-7:2015.

No applicable Technical Differences with IEC 60079-0:2017 and IEC 60079-7:2017 are found as shown in the ExTR.

The Terminal blocks. Type XE... are certified per FTZÚ 04 ATEX 0003U to an older edition of the standards: EN 60079-0:2012 and EN 60079-7:2015, respectively based on IEC 60079-0:2011 and IEC 60079-7:2015.

No applicable Technical Differences with IEC 60079-0:2017 and IEC 60079-7:2017 are found as shown in the ExTR.

The Connection box used in XPS2 (Ex ia/Ex ib) Type 26.\*\*\*\*\* is certified per IECEx PTB 08.0003U to an older edition of the standards: IEC 60079-0:2011 and IEC 60079-7:2015.

No applicable Technical Differences with IEC 60079-0:2017 and IEC 60079-7:2017 are found as shown in the ExTR.

The Ex d and Ex e adapter used in XPS3 (Ex db) is ATEX certified per ISSeP 06ATEX042 U according to older editions of the standards: IEC 60079-0:2004, IEC 60079-1:2003 and IEC 60079-7:2001.

No applicable Technical Differences with IEC 60079-0:2017, IEC 60079-1:2014 and IEC 60079-7:2017 are found as shown in the ExTR.

The Cable gland Type 501/421 or 501/423 is certified per IECEx BAS 06.0013X to an older edition of the standards: IEC 60079-0:2011 and IEC 60079-7:2015.

No applicable Technical Differences with IEC 60079-0:2017 and IEC 60079-7:2017 are found as shown in the ExTR.

### Thermal data

For Type XPS1 the maximum ambient temperature ( $T_{amax}$ ) is +80 °C.

For Type XPS2 the ambient temperature range is -40 °C to +75 °C.

For Type XPS3 the maximum ambient temperature ( $T_{amax}$ ) is +80 °C except for T6  
the maximum ambient temperature ( $T_{amax}$ ) is +70 °C for T6

For Type XPS4 the maximum ambient temperature ( $T_{amax}$ ) is +75 °C.

For Types XPS1, XPS3 and XPS4 the ambient temperature range of the assembly, the service temperature range of the connection head and connection box, the transition parts and the cables, depend on the material of the cable insulation as listed in the table below

Cable insulation	Ambient temperature range and service temperature range of the connection head and the connection box	Service temperature range of the transition part	Service temperature range of the cables
Silicon	-25 °C to $T_{amax}$	-25 °C to 80 °C	-25 °C to 160 °C
Teflon	-40 °C to $T_{amax}$	-40 °C to 80 °C	-40 °C to 180 °C

For Types XPS2 and XPS4, the ambient temperature range may also depend on the transmitter specifications.

- The highest minimum ambient temperature as mentioned above and as mentioned on the transmitter, is decisive.
- The maximum ambient temperature of the assembly is +75 °C or the maximum ambient temperature as mentioned on the transmitter - 10 K, whichever is the smaller.

The maximum surface temperature due to process conditions ( $T_p$ ) is the maximum surface temperature of any part of the assembly in contact with the explosive atmosphere.

The temperature class and the maximum surface temperature of the Types XPS1 and XPS3 depend on  $T_p$  as listed in the table below

$T_p$ [°C]	Temperature class of the assembly	Max. surface temperature of the assembly [°C]
80	T6	85
95	T5	100
130	T4	135
195	T3	200
295	T2	300
445	T1	450
> 445	-	$T_p + 5$

The temperature class and the maximum surface temperature of Types XPS2 and XPS4 depend on  $T_p$  and the temperature class of the transmitters used, as listed in the table below

$T_p$ [°C]	Temperature class of the transmitter	Temperature class of the assembly	Max. surface temperature of the assembly [°C]
≤ 75	T6	T6	85
≤ 90	T6 or T5	T5	100
≤ 125	T6 to T4	T4	135
≤ 190	T6 to T3	T3	200
≤ 290	T6 to T2	T2	300
≤ 440	T6 to T1	T1	450
> 440	T6 to T1	-	$T_p + 10$

## Electrical data

### Type XPS1

- Thermocouple circuit and RTD circuit, per temperature sensing element: 5 Vdc, 10 mA

### Type XPS2

- Insert data:  
Output circuits in type of protection intrinsic safety Ex ia IIC, only to be connected to a certified intrinsically safe circuit, with the following maximum values for each insert:  
 $U_i = 14 \text{ V}$ ,  $I_i = 1.2 \text{ A}$ ,  $P_i = 140 \text{ mW}$ ,  $C_i = 60 \text{ nF}$ ,  $L_i = 0 \text{ mH}$
- Transmitter data:  $U_i = 45 \text{ Vdc max.}$ ,  $I_i = 1.2 \text{ A max.}$ ,  $P_i = 2.25 \text{ W max.}$   
In type of protection intrinsic safety Ex ia IIC or Ex ib IIC, only to be connected to a certified intrinsically safe circuit, with the maximum values according to the data listed in the certificate of the transmitter.  
The sensor input parameters of the transmitter shall comply with the parameters of the inserts.

### Type XPS3

- Insert data:  
Thermocouple circuit and RTD circuit, per temperature sensing element: 5 Vdc, 10 mA
- Transmitter data:  
max. 45 Vdc, max 50 mA, max 1.9 W  
The sensor input parameters of the transmitter shall not exceed 5 Vdc, 10 mA.

### Type XPS4

- Insert data:  
Thermocouple circuit and RTD circuit, per temperature sensing element: 5 Vdc, 10 mA
- Transmitter data:  
max. 45 Vdc, max 50 mA, max 2.25 W  
The sensor input parameters of the transmitter shall not exceed 5 Vdc, 10 mA.

### **Specific condition of use**

Ambient temperature range as specified above.

For Types XPS1 and XPS4, when the process temperature range exceeds the service temperature range of the transition part, the connection head, the connection box and the cable as listed above, it shall be verified by on-site temperature measurements, taking the worst case conditions into account, that the service temperature of these parts does not exceed the range as listed above.

The measurement report with the conclusions shall be filed together with the certificate to prove that this condition is met.

For Type XPS2, when the process temperature range exceeds the specified ambient temperature range, it shall be verified by on-site temperature measurements, taking the worst case conditions into account, that the service temperature of the connection head and the connection box does not exceed the ambient temperature range.

The measurement report with the conclusions shall be filed together with the certificate to prove that this condition is met.

For Type XPS3, when the process temperature range exceeds the service temperature range of the connection head, the connection box and the cable as listed above, it shall be verified by on-site temperature measurements, taking the worst case conditions into account, that the service temperature of these parts does not exceed the range as listed above.

The measurement report with the conclusions shall be filed together with the certificate to prove that this condition is met.

For Types XPS2, XPS3 and XPS4, the electrical data are as specified above.

For Types XPS1, XPS3 and XPS4, inserts with a diameter smaller than 3 mm shall be protected against mechanical danger.

Types XPS1 and XPS4 with connection head and extension part shall have a degree of protection of at least IP54, provided by the user with a thermowell or equivalent component at the process side of the assembly.

For Type XPS2, from a safety point of view,

- the thermocouple inserts with a nominal tip diameter less than 3.0 mm,
- all inserts with a grounded thermocouple and
- the RTD inserts with a nominal tip diameter less than 4.8 mm shall be considered to be connected to the ground.

For Type XPS3, for information about the dimensions of the flameproof joints contact the manufacturer.