



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

Certificate No.:	IECEx TUN 24.0002X	Page 1 of 4	Certificate history:
Status:	Current	Issue No: 0	
Date of Issue:	2024-07-10		
Applicant:	WIKA Alexander Wiegand SE & Co. KG 63911 Klingenberg Alexander-Wiegand-Straße 30 Germany		
Equipment:	Thermometer type a-bcd*-*...*		
Optional accessory:	See "Marking" for details		
Type of Protection:	Intrinsic safety		
Marking:	Thermometer a-bcd*-*...*	Ex ia IIC T6...T1 Ga or Ex ia IIC + CH4 T6...T1 Ga Ex ia IIC T6...T1 Ga/Gb or Ex ia IIC + CH4 T6...T1 Ga/Gb Ex ia IIC T6...T1 Gb or Ex ia IIC + CH4 T6...T1 Gb Ex ib IIC T6...T1 Gb or Ex ib IIC + CH4 T6...T1 Gb Ex ic IIC T6...T1 Gc or Ex ic IIC + CH4 T6...T1 Gc Ex ia IIIC T ₂₀₀ X °C Da or Ex ia IIIC TX °C Da/Db or Ex ia IIIC TX °C Db or Ex ib IIIC TX °C Db	

Approved for issue on behalf of the IECEx
Certification Body:

Christian Roder

Position:

Head of IECEx Certification Body

Signature:
(for printed version)

Date:
(for printed version)

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Certificate issued by:

TÜV NORD CERT GmbH
Hanover Office
Am TÜV 1, 30519 Hannover
Germany





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Manufacturer: **WIKA Alexander Wiegand SE & Co. KG**
63911 Klingenberg
Alexander-Wiegand-Straße 30
Germany

Manufacturing
locations:

WIKA Alexander Wiegand SE & Co. KG
63911 Klingenberg
Alexander-Wiegand-Straße 30
Germany

WIKA Instruments India Pvt. Ltd.
Plot No. 40, GAT No. 94+ 100
High Cliff Industrial Estate Village –
Kesnand Wagholi
Pune 412207
India

WIKA Polska SGF
Kawka 6
87-800 Włocławek
Poland

See following pages for more 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 60079-11:2023](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:7.0

[IEC 60079-26:2021](#) Explosive atmospheres - Part 26: Equipment with Separation Elements or combined Levels of Protection
Edition:4.0

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:

[DE/TUN/ExTR24.0003/00](#)

Quality Assessment Reports:

[DE/BVS/QAR07.0010/19](#)

[NO/PRE/QAR16.0013/03](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The thermometer a-bcd*-...* consists of a welded tubing or a mineral-sheathed cable or a ceramic insulated thermo wire. In case of a TR the sensor is encapsulated by a sleeve. The temperature sensor inside is optionally embedded in a compound. As compound may be used a ceramic powder, a heat resistant casting compound, a cement compound or a thermal conductance paste. For connection purpose the thermometer may be equipped with a plug or a free connecting cable. Other components like an enclosure used as a connection head or a thermowell may be used. A certified transmitter resp. a certified current loop indicator may be placed inside the enclosure.

Type code, electrical and thermal data refer to the Attachment to IECEx TUN 24.0002X issue No.0 for details.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The single wires and the free cable ends have to be complied with the requirements of IEC 60079-14.
2. The ambient temperature range depending on temperature class resp. surface temperature is to be taken from the operating instructions.
3. Metallic process connection parts have to be included in the local potential equalization.
4. A heat input (e.g. heat return from the process or radiant heat from the environment) which exceeds the permissible ambient temperature of the housing is not permissible and must be prevented either by suitable thermal insulation or by an appropriately long neck tube or by suitable on-site measures. The heat input must be determined by calculation or by measurement by the user.

The process temperature range of cable sensors is limited by the maximum temperature endurance of the cable insulation material.

5. The medium tangent materials of the thermometers have to be resistant to the media.

The operator is responsible for selecting the materials.

6. For EPL Ga/Gb and EPL Da/Db applications the thermometers shall be mounted in a way that allows an installation that results in a sufficiently tight joint (IP66 or IP67) or a flameproof joint according to IEC 60079-1 between one hazardous area to the other.

7. The thermometers has to be installed and used in such a way, that electrostatic charging from operation, maintenance and cleaning is excluded.

For the uses in potentially explosive dust atmospheres process-related electrostatic charges, e.g. due to passing media have to be excluded.

8. Any ignition hazards caused by impact or friction has to be excluded.

9. At risks by pendulum or vibration the respective parts have to be secured effectively against these dangers.

10. For the types with diameter < 3 mm or „grounded measuring points“ the intrinsically safe supply is connected to the earth potential for safety reasons. Potential equalization has to exist in the entire area of the installation of the intrinsically safe circuit.

For EPL Ga/Gb application: In case of a 1 mm > wall thickness ≥ 0.2 mm, the device may not be exposed to environmental conditions which may negatively affect the partition wall. A thermowell with a suitable minimum wall thickness can be used alternatively.

For EPL Da/Db application: The device may not be exposed to environmental conditions which may negatively affect the partition wall. A thermowell with a suitable minimum wall thickness can be used alternatively.

11. The used transmitters/digital displays shall be provided with their own IECEx Certificate of Conformity. The installation conditions, the electrical connection values, the temperature classes resp. the maximum surface temperatures of devices for the use in explosive dust atmospheres and the permissible ambient temperature shall be taken from the corresponding IECEx Certificate of Conformity and shall be considered.

12. For the use of enclosures they shall either be provided with their own IECEx Certificate of Conformity or they shall comply to the minimum requirements:

IP-protection: At least IP20 for gas uses resp. IP 6X for dust uses applies for all enclosures. Light metal enclosures, however, shall comply with clause 8.3 and 8.4 of IEC 60079-0. Non-metallic enclosures or powder-coated enclosures shall also comply with 7.4 of IEC 60079-0 or have an corresponding warning marking.

13. For applications that require devices of EPL Gb, devices of EPL Ga may also be used. If a device of EPL Ga is used in an application requiring EPL Gb it may not be re-used in an application requiring EPL Ga.

For applications that require devices of EPL Gc, devices of EPL Ga or Gb may also be used. If a device of EPL Ga or Gb is used in an application requiring EPL Gc it may not be re-used in an application requiring EPL Ga or Gb.

For applications that require devices of EPL Db, devices of EPL Da may also be used. If a device of EPL Da is used in an application requiring EPL Db it may not be re-used in an application requiring EPL Da.



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Additional manufacturing locations:

WIKA Instruments Ltd.
3103 Parsons Road
Edmonton AB T6N 1C8
Canada

WIKA Instrumentation Suzhou Co., Ltd.
81, Ta Yuan Road, SND
Suzhou 215011
China

Annex:

[Attachment to IECEx TUN 24.0002X Issue 00.pdf](#)

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Description:

The thermometer a-bcd*-*...* consists of a welded tubing or a mineral-sheathed cable or a ceramic insulated thermo wire. In case of a TR the sensor is encapsulated by a sleeve. The temperature sensor inside is optionally embedded in a compound. As compound may be used a ceramic powder, a heat resistant casting compound, a cement compound or a thermal conductance paste. For connection purpose the thermometer may be equipped with a plug or a free connecting cable. Other components like an enclosure used as a connection head or a thermowell may be used. A certified transmitter resp. a certified current loop indicator may be placed inside the enclosure.

Type code:

a **bcd*** - ***...***

Example

TR10-C - **AIB*** ***...***

TR = Resistance sensor

TC = Thermocouple element

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a: Name of product / Model designation

Model group	General description	Name of product / Model designation
1	Measuring inserts or modules without connection head or enclosure. Wall thickness 1 mm > t ≥ 0.2 mm	TR10-A, TR10-K, TR10-1, TR12-A, TR12-M, TR11-A TC10-A, TC10-K, TC10-1, TC12-A, TC12-M
2.1	Assembly including measuring insert with connection head or enclosure, without protection tube, for direct mounting into the process or surface or ambient measurement. Wall thickness 1 mm > t ≥ 0.2 mm	TR10-D, TR10-H, TR10-J, TR55, TR60, TR95 TC10-D, TC10-H, TC55, TC95
2.2	Assembly including measuring insert with connection head or enclosure, with protection tube straight or tapered. Minimum wall thickness 1 mm.	TR10-0, TR10-2, TR10-B, TR10-C, TR10-F, TR11-C, TR12-B, TR81, TR95 TC10-0, TC10-2, TC10-B, TC10-C, TC10-F, TC12-B, TC81, TC95
2.3	Assembly including measuring insert with connection head or enclosure, with thermowell straight or tapered. Minimum wall thickness 2.75 mm.	TR10-0, TR10-2, TR10-B, TR12-B TC10-0, TC10-2, TC10-B, TC12-B
3.1	Cable probe or assembly with or without connection head or enclosure, without thermowell or protection tube. For direct mounting into the process or surface measurement. Wall thickness 1 mm > t ≥ 0.2 mm	TR15, TR40, TR41, TR50, TR53 TC15, TC40, TC50, TC53, TC59-*, TC90, TC52
3.2	Cable probe or assembly with or without connection head or enclosure, without thermowell or protection tube. For direct mounting into the process or surface measurement. Wall thickness 0.19 mm > t ≥ 0.05 mm. Not suitable for zone separation.	TR40, TR50, TR95, TR58 TC40, TC50, TC95
4.1	Sanitary application assembly with connection head, with or without protection tube. Minimum wall thickness 1 mm.	TR22-A
4.2	Sanitary application assembly with connection head, with or without protection tube. Wall thickness 1 mm > t ≥ 0.2 mm	TR22-A, TR22-B, TR25
4.3	Sanitary application assembly with connection head and protection tube. Wall thickness 0.1 mm. Not suitable for zone separation.	TR20

Note: For detailed specifications of the assembly, refer to the purchase order documents (these are not relevant for explosion protection).

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Description of protection tubes and thermowells:

Applicable to model group	General description	Exemplary models
2.2, 4.1, 4.2, 4.3	Protection tube straight or tapered. Minimum wall thickness 1 mm.	TW22, TW35, TW40, TW45
2.3	Thermowell straight or tapered. Minimum wall thickness 2.75 mm.	TW10, TW15, TW20, TW25, TW30, TW50, TW55, TW60

b: Approval

A, B, C, D, E, F, G, H, J, K, L, M, O, P, Q, R, S, T, U, V, W, X, Y = ATEX
I = IECEx and ATEX

c: Type of protection

I = Ex i

d: Zones / EPLs

A = Zone 0 (EPL Ga)
B = Zone 0/Zone 1 (EPL Ga/Gb)
C = Zone 1 (EPL Gb)
D = Zone 2 (EPL Gc)
M = Zone 0 (EPL Ga inclusive Methane)
E = Zone 20 (EPL Da) and Zone 0 (EPL Ga)
F = Zone 20/Zone 21 (EPL Da/Db) and Zone 0/Zone 1 (EPL Ga/Gb)
G = Zone 21 (EPL Db) and Zone 1 (EPL Gb)

Marking:

Thermometer a-bcd*-***	Ex ia IIC T6...T1 Ga or Ex ia IIC + CH4 T6...T1 Ga
	Ex ia IIC T6...T1 Ga/Gb or Ex ia IIC + CH4 T6...T1 Ga/Gb
	Ex ia IIC T6...T1 Gb or Ex ia IIC + CH4 T6...T1 Gb
	Ex ib IIC T6...T1 Gb or Ex ib IIC + CH4 T6...T1 Gb
	Ex ic IIC T6...T1 Gc or Ex ic IIC + CH4 T6...T1 Gc
	Ex ia IIIC T ₂₀₀ X °C Da or
	Ex ia IIIC TX °C Da/Db or
	Ex ia IIIC TX °C Db or
	Ex ib IIIC TX °C Db

List of components used:

Manufacturer	Product and Type	Certificate	Standards
WIKA Alexander Wiegand SE & Co. KG	Empty housing series 1/4000, 5/6000 and 7/8000	IECEx TUN 18.0010U	IEC 60079-0:2017 IEC 60079-7:2015 IEC 60079-31:2013
WIKA Alexander Wiegand SE & Co. KG	Empty housing series SA*EX-1-***-** and SA*EX-3-***-** (PI housing)	IECEx BVS 23.0020U	IEC 60079-0:2017 IEC 60079-1:2014 IEC 60079-7:2017 IEC 60079-31:2022

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Electrical data:

Without built-in transmitter or digital display:

Supply	In type of protection "Intrinsic Safety" Ex ia IIC resp. IIIC resp. Ex ib IIC resp. IIIC resp. Ex ic IIC resp. IIIC Only for the connections to certified intrinsically safe circuits. Maximum values:	
	Gas application	Dust application
U_i	30 V d.c.	30 V d.c.
I_i	550 mA) ¹	250 mA) ¹
P_i	1.5 W) ¹	750/650/550 mW) ¹
Effective internal capacitance C_i	200 pF/m x L^*	200 pF/m x L^*
Effective internal inductance L_i	1 μ H/m x L^*	1 μ H/m x L^*
	L^* : Maximum length of the connected cable $I_i = 100$ mA: 3555 m $I_i = 550$ mA: 117.5 m	L^* : Maximum length of the connected cable $I_i = 250$ mA: 2275 m
Maximum self-heating at the tip of the probe or thermowell	$P_i \times R_{th}$) ² R_{th} = according to table 1 below	$P_i \times R_{th}$) ² R_{th} = according to table 2 below

)¹ Sum of all possible intrinsically safe circuits in a single measuring element with multiple sensors.

)² $P_i = P_o$ of the associated device

Table 1: Thermal resistance [R_{th} in K/W] for gas application:

Diameter of the sensor or thermowell	2mm....<3mm	3mm ...<6mm	6mm ...8mm	3mm ⁽¹⁾ ...6mm	0.5mm ...<1.5mm	1.5mm ...<3mm	3mm ...<6mm	6mm ...12mm
Sensor type	TR	TR	TR	TR	TC	TC	TC	TC
Model groups								
1; 2.1; 3.1; 3.2 and 4.2	247	180	90	225	105	60	20	5
2.2 and 4.1	138	65	47	/	/	/	11	2.5
2.3	50	23	18	/	/	/	4	1
4.3	247	/	/	/	/	/	/	/
Sensor fitted in a blind hole (minimum wall thickness 2.75 mm)	50	23	18	/	22	13	4	1

(1) Tip sensitive
P17-F-610

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Table 2: Thermal resistance [R_{th} in K/W] for dust application:

Diameter of the sensor or thermowell	2mm.... <3mm	3mm ... <6mm	6mm ... 8mm	3mm ⁽²⁾ ... 6mm	0.5mm ... <1.5mm	1.5mm ... <3mm	3mm ... <6mm	6mm ... 12mm
Sensor type	TR	TR	TR	TR	TC	TC	TC	TC
Model groups								
1; 2.1; 3.1; 3.2 and 4.2	265	280	150	265	189	108	36	9
2.2 and 4.1	148	115	90	/	/	/	20	5
2.3	53	49	30	/	/	/	8	2
4.3	265	/	/	/	/	/	/	/
Sensor fitted in a blind hole (minimum wall thickness 2.75 mm)	53	49	30	/	40	24	8	2

⁽²⁾ Tip sensitive
P17-F-610

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With built-in certified transmitter or digital display:

Supply	In type of protection “Intrinsic Safety” Ex ia IIC resp. IIIC resp. Ex ib IIC resp. IIIC resp. Ex ic IIC resp. IIIC Only for the connections to certified intrinsically safe circuits. Maximum values:	
	Gas application	Dust application
<u>Transmitters/digital displays:</u>		
U _i	The used transmitters/digital displays shall be provided with their own IECEx Certificate of Conformity. The installation conditions, the electrical connection values, the temperature classes resp. the maximum surface temperatures of devices for the uses in explosive dust atmospheres and the permissible ambient temperature shall be taken from the corresponding IECEx Certificate of Conformity and shall be considered.	
I _i		
P _i		
Effective internal capacitance C _i		
Effective internal inductance L _i		
<u>Probe with resp. without thermowell:</u>		
U _i	30 V d.c.	30 V d.c.
I _i	550 mA) ¹	250 mA) ¹
P _i	1.5 W) ¹	750/650/550 mW) ¹
Effective internal capacitance C _i	200 pF/m x L*	200 pF/m x L*
Effective internal inductance L _i	1 µH/m x L*	1 µH/m x L*
	L*: Maximum length of the connected cable I _i = 100 mA: 3555 m I _i = 550 mA: 117.5 m	L*: Maximum length of the connected cable I _i = 250 mA: 2275 m
Maximum self-heating at the tip of the probe or thermowell	P _{o;transmitter/digital display} x R _{th} R _{th} = according to table 1 above	P _{o;transmitter/digital display} x R _{th} R _{th} = according to table 2 above

¹ Sum of all possible intrinsically safe circuits in a single measuring element with multiple sensors.

² P_i of the probe or thermowell = P_o of the built-in transmitter/display.

With built-in certified transmitter or digital display according to the FISCO model:

The used transmitter/digital display for operating conditions according to the FISCO model are considered as FISCO field devices. The requirements according to IEC 60079-11 and the conditions for connection of the approval for FISCO apply. The electrical data defined above have to be observed.

Assembly of multipoint thermometers from individual sheathed elements:

For the individual ungrounded sheathed element, the values mentioned above apply.

For operationally grounded multipoint thermometers, the sum of all the sensors must comply with the above-mentioned values.

Application in methane atmospheres:

Owing to the higher minimum ignition energy of methane, the instruments can also be used where methane causes a potentially explosive atmosphere. The instrument can be optionally marked with IIC + CH4.

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Thermal data:

For applications that require EPL Ga, Ga/Gb, Gb or Gc equipment:

If the thermometers are operated in potentially explosive gas atmospheres for Ex ia Ga; Ex ia Ga/Gb; Ex ia Gb; Ex ib Gb or Ex ic Gc applications, the permissible ambient temperature range resp. the permissible process temperature range depending on the temperature class is to be taken from the following tables:

Without built-in transmitter or digital display:

Temperature class	Ambient temperature range (at connection head)	Process temperature range (at the tip of the probe or thermowell)*
T1	-40 °C ... +80 °C -60 °C ... +80 °C	-270 °C ... +(440 °C - $P_i \times R_{th}$)
T2		-270 °C ... +(290 °C - $P_i \times R_{th}$)
T3		-270 °C ... +(195 °C - $P_i \times R_{th}$)
T4		-270 °C ... +(130 °C - $P_i \times R_{th}$)
T5		-270 °C ... +(95 °C - $P_i \times R_{th}$)
T6		-270 °C ... +(80 °C - $P_i \times R_{th}$)

R_{th} = according to table 1 above

*: The process temperature range of cable type sensors (e. g. models TR41) is limited by the maximum temperature rating of the cable insulation material.

Minimum temperature -40 °C is restricted for standard models.

Minimum temperature ranges -60 °C is restricted for special models. Models are manufactured with special components, i.e. suitable casting compound, enclosures and cable glands for extended temperature ranges.

With built-in certified transmitter or digital display:

Temperature class	Ambient temperature range (at connection head)	Process temperature range (at the tip of the probe or thermowell)*
T1	-40 °C ... +80 °C -60 °C ... +80 °C May be limited by the built-in Transmitter or digital display	-270 °C ... +(440 °C - $P_{o,transmitter/digital display} \times R_{th}$)
T2		-270 °C ... +(290 °C - $P_{o,transmitter/digital display} \times R_{th}$)
T3		-270 °C ... +(195 °C - $P_{o,transmitter/digital display} \times R_{th}$)
T4		-270 °C ... +(130 °C - $P_{o,transmitter/digital display} \times R_{th}$)
T5		-270 °C ... +(95 °C - $P_{o,transmitter/digital display} \times R_{th}$)
T6		-270 °C ... +(80 °C - $P_{o,transmitter/digital display} \times R_{th}$)

R_{th} = according to table 1 above

*: The process temperature range of cable type sensors (e. g. models TR41) is limited by the maximum temperature rating of the cable insulation material.

Minimum temperature -40 °C is restricted for standard models.

Minimum temperature ranges -60 °C is restricted for special models. These models are manufactured with special components, i.e. suitable casting compound, enclosures and cable glands for extended temperature ranges.

Note: The permissible ambient temperature of the built-in Transmitter or digital display shall be taken from the corresponding IECEx Certificate of Conformity or related manual and shall be considered.

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For applications that require EPL Da, Da/Db or Db equipment:

If the thermometers are operated in potentially explosive dust atmospheres for Ex ia Da; Ex ia Da/Db; Ex ia Db or Ex ib Db applications, the permissible surface temperature depending on the input power is the maximum value from the ambient temperature and the process temperature and is to be taken from the following table.

Without built-in transmitter or digital display:

Permissible surface temperature	Power P_i	Ambient temperature range (at connection head)	Process temperature range (at the tip of the probe or thermowell)*
TX °C	750 mW	-40 °C ... +40 °C -60 °C ... +40 °C	-270 °C ... +(TX °C - $P_i \times R_{th}$)
TX °C	650 mW	-40 °C ... +70 °C -60 °C ... +70 °C	-270 °C ... +(TX °C - $P_i \times R_{th}$)
TX °C	550 mW	-40 °C ... +80 °C -60 °C ... +80 °C	-270 °C ... +(TX °C - $P_i \times R_{th}$)

R_{th} = according to table 2 above

*: The process temperature range of cable type sensors (e. g. models TR41) is limited by the maximum temperature rating of the cable insulation material.

Minimum temperature -40 °C is restricted for standard models.

Minimum temperature ranges -60 °C is restricted for special models. These models are manufactured with special components, i.e. suitable casting compound, enclosures and cable glands for extended temperature ranges.

TX °C $\leq 2/3 \times$ ignition temperature of a dust cloud

TX °C \leq Glow temperature of a 5 mm dust layer - 75 °C

With built-in certified transmitter or digital display:

Permissible surface temperature	Power P_i	Ambient temperature range (at connection head)	Process temperature range (at the tip of the probe or thermowell)*
TX °C	750 mW	-40 °C ... +40 °C -60 °C ... +40 °C	-270 °C ... +(TX °C - $P_{o,transmitter/digital display} \times R_{th}$)
TX °C	650 mW	-40 °C ... +70 °C -60 °C ... +70 °C	-270 °C ... +(TX °C - $P_{o,transmitter/digital display} \times R_{th}$)
TX °C	550 mW	-40 °C ... +80 °C -60 °C ... +80 °C May be limited by the built-in Transmitter or digital display	-270 °C ... +(TX °C - $P_{o,transmitter/digital display} \times R_{th}$)

R_{th} = according to table 2 above

*: The process temperature range of cable type sensors (e. g. models TR41) is limited by the maximum temperature rating of the cable insulation material.

Minimum temperature -40 °C Temperature range -40 °C is restricted for standard models.

Minimum temperature ranges -60 °C is restricted for special models. These models are manufactured with special components, i.e. suitable casting compound, enclosures and cable glands for extended temperature ranges.

Note: The permissible ambient temperature of the built-in Transmitter or digital display shall be taken from the corresponding IECEx Certificate of Conformity or related manual and shall be considered.

TX °C $\leq 2/3 \times$ ignition temperature of a dust cloud

TX °C \leq Glow temperature of a 5 mm dust layer - 75 °C

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Specific Conditions of Use

1. The single wires and the free cable ends have to be complied with the requirements of IEC 60079-14.
2. The ambient temperature range depending on temperature class resp. surface temperature is to be taken from the operating instructions.
3. Metallic process connection parts have to be included in the local potential equalization.
4. A heat input (e.g. heat return from the process or radiant heat from the environment) which exceeds the permissible ambient temperature of the housing is not permissible and must be prevented either by suitable thermal insulation or by an appropriately long neck tube or by suitable on-site measures. The heat input must be determined by calculation or by measurement by the user.
The process temperature range of cable sensors is limited by the maximum temperature endurance of the cable insulation material.
5. The medium tangent materials of the thermometers have to be resistant to the media.
The operator is responsible for selecting the materials.
6. For EPL Ga/Gb and EPL Da/Db applications the thermometers shall be mounted in a way that allows an installation that results in a sufficiently tight joint (IP66 or IP67) or a flameproof joint according to IEC 60079-1 between one hazardous area to the other.
7. The thermometers has to be installed and used in such a way, that electrostatic charging from operation, maintenance and cleaning is excluded.
For the uses in potentially explosive dust atmospheres process-related electrostatic charges, e.g. due to passing media have to be excluded.
8. Any ignition hazards caused by impact or friction has to be excluded.
9. At risks by pendulum or vibration the respective parts have to be secured effectively against these dangers.
10. For the types with diameter < 3 mm or „grounded measuring points“ the intrinsically safe supply is connected to the earth potential for safety reasons. Potential equalization has to exist in the entire area of the installation of the intrinsically safe circuit.
For EPL Ga/Gb application: In case of a 1 mm > wall thickness ≥ 0.2 mm, the device may not be exposed to environmental conditions which may negatively affect the partition wall. A thermowell with a suitable minimum wall thickness can be used alternatively.
For EPL Da/Db application: The device may not be exposed to environmental conditions which may negatively affect the partition wall. A thermowell with a suitable minimum wall thickness can be used alternatively.
11. The used transmitters/digital displays shall be provided with their own IECEx Certificate of Conformity.
The installation conditions, the electrical connection values, the temperature classes resp. the maximum surface temperatures of devices for the use in explosive dust atmospheres and the permissible ambient temperature shall be taken from the corresponding IECEx Certificate of Conformity and shall be considered.
12. For the use of enclosures they shall either be provided with their own IECEx Certificate of Conformity or they shall comply to the minimum requirements:
IP-protection: At least IP20 for gas uses resp. IP6X for dust uses applies for all enclosures. Light metal enclosures, however, shall comply with clause 8.3 and 8.4 of IEC 60079-0. Non-metallic enclosures or powder-coated enclosures shall also comply with 7.4 of IEC 60079-0 or have a corresponding warning marking.

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13. For applications that require devices of EPL Gb, devices of EPL Ga may also be used. If a device of EPL Ga is used in an application requiring EPL Gb it may not be re-used in an application requiring EPL Ga. For applications that require devices of EPL Gc, devices of EPL Ga or Gb may also be used. If a device of EPL Ga or Gb is used in an application requiring EPL Gc it may not be re-used in an application requiring EPL Ga or Gb.
- For applications that require devices of EPL Db, devices of EPL Da may also be used. If a device of EPL Da is used in an application requiring EPL Db it may not be re-used in an application requiring EPL Da.