

# Safety Instructions

## TR/TC6x

RTD / TC Thermometer

ATEX: II1/2G Ex db IIC T6...T1 Ga/Gb  
II2G Ex db IIC T6...T1 Gb  
II1/2D Ex ta/tb IIIC T85 °C...T450 °C Da/Db  
II2D Ex tb IIIC T85 °C...T450 °C Db  
IECEX: Ex db IIC T6...T1 Ga/Gb  
Ex db IIC T6...T1 Gb  
Ex ta/tb IIIC T85 °C...T450 °C Da/Db  
Ex tb IIIC T85 °C...T450 °C Db





# TR/TC6x

RTD / TC Thermometer

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**Associated documentation**

This document is an integral part of the following Operating Instructions:

Technical Information:

- TI01029T/09/EN (TR/TC61)
- TI00024T/09/EN (TR/TC62)
- TI01030T/09/EN (TR/TC63)
- TI01031T/09/EN (TR/TC65)
- TI01032T/09/EN (TR/TC66)

**Translation**

This document has been translated into several languages. Legally determined is solely the English source text.

**Supplementary documentation**

Explosion-protection brochure: CPO0021Z/11

The Explosion-protection brochure is available: In the download area of the Endress+Hauser website: [www.endress.com](http://www.endress.com) → Download → Advanced → Documentation code: CPO0021Z

**Certificates****ATEX/IECEX Declaration of Conformity****IECEX Certificate**

Certificate number: KEM 09.0033 X

Affixing the certificate number certifies conformity with the following standards (depending on the device version).

- IEC 60079-0: 2011
- IEC 60079-1: 2014
- IEC 60079-26: 2014
- IEC 60079-31: 2013

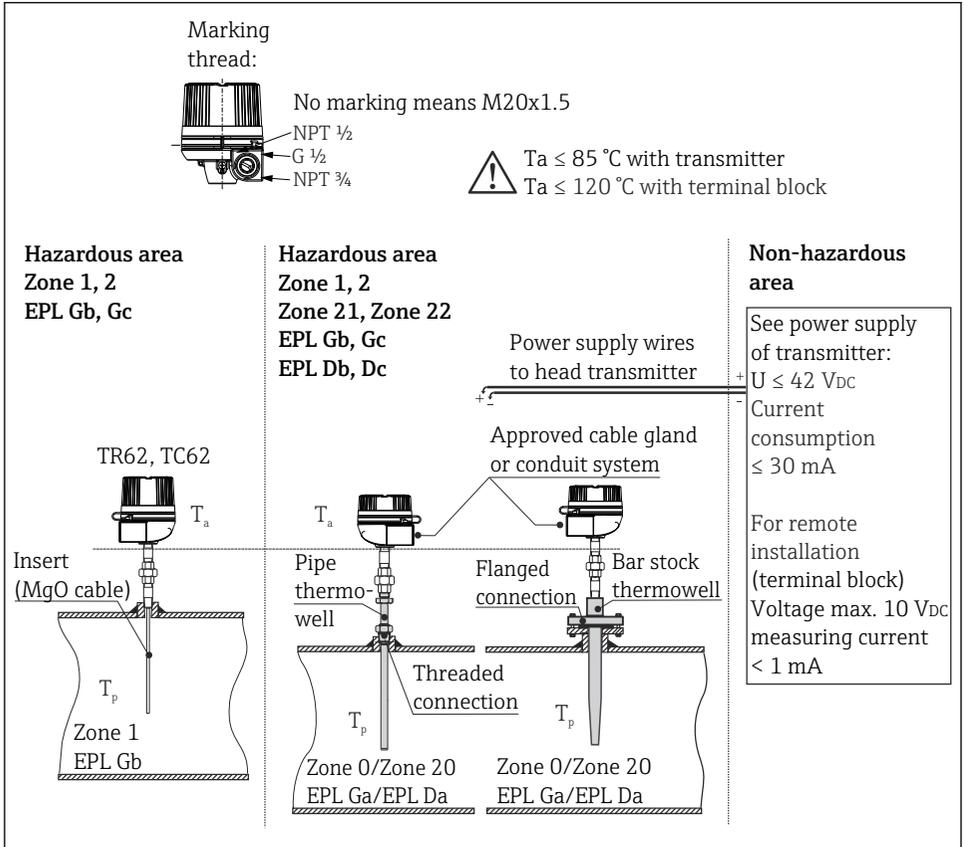
**ATEX Certificate**

Certificate number: KEMA 09ATEX0091 X

Affixing the certificate number certifies conformity with the following standards (depending on the device version).

- EN 60079-0: 2012+A11
- EN 60079-1: 2014
- EN 60079-26: 2015
- EN 60079-31 : 2014

## Safety instructions



A0045320

### Safety instructions: Installation

#### Installation of protection flameproof

- Comply with the installation and safety instructions in the Operating Instructions.
- Install the device according to the manufacturer's instructions and any other valid standards and regulations (e.g. IEC 60079-14).
- The housing of the thermometer must be connected to the potential matching line.
- Only the approved wire entries as specified in paragraph 10 of IEC 60079-14, paragraph 16 of IEC 60079-0, paragraph 13 of IEC 60079-1 must be used.
- For connection through a conduit entry approved for this purpose the associated sealing facility shall be mounted directly to the housing.

- Seal the cable entries with certified cable glands and or blanking elements which have at least type of protection Ex db and Ex tb suitable for Group IIC and IIIC (degree of protection IP6X).
- The maximum specified ambient temperature  $T_a$  at terminal head may not be exceeded.
- If this equipment is used above  $+65^{\circ}\text{C}$ , the cables and cable gland shall be suitable at least max.  $T_a +12\text{K}$ .
- During operation, the cover must be screwed all the way in and the cover's safety catch must be fastened.
- The thermometer must be installed so, that even in the event of rare incidents, an ignition source due to impact or friction between the enclosure and iron/steel is excluded.

**⚠ WARNING**

**Explosive atmosphere**

- ▶ Do not open the electrical connection of the power supply circuit under voltage in an explosive atmosphere.

**Safety  
instructions:  
Installation**

**Installation of dust ignition protection**

- Comply with the installation and safety instructions in the Operating Instructions.
- Install the device according to the manufacturer's instructions and any other valid standards and regulations (e.g. IEC 60079-14).
- Seal the cable entries tight with certified cables which have at least type of protection Ex tb suitable for Group IIIC (degree of protection IP6X)
- The housing of the thermometer must be connected to the potential matching line.
- If this equipment is used above  $+65^{\circ}\text{C}$ , the cables and cable gland shall be suitable at least max.  $T_a +12\text{K}$ .

**⚠ WARNING**

**Explosive atmosphere**

- ▶ In an explosive atmosphere, do not open the device when voltage is supplied (ensure that the IP 66/68 housing protection is maintained during operation).

**Safety instructions:  
Partition wall**

- The provided thermowells are out of materials AISI316/1.4401, AISI316L/1.4404, 1.4435, AISI A105/1.0460, AISI 446/1.4749, Alloy 600/2.4816, AISI 316Ti/W1.4571, Hastelloy® C- 276/2.4819 or Alloy 400/2.4360 and have a minimum thickness of at least 1 mm.
- Install the thermometer in a partition wall which is in compliance with IEC/EN 60079-26 in reference to its ultimate application.
- Use only thermowells out of materials complying with IEC/EN 60079-0 chapter 8.3 (e.g. AISI316/.1.4401, AISI316L/.1.4404, AISI 316Ti/1.4571...)

**Safety instructions:  
Specific conditions of use**

- The flameproof joints are not intended to be repaired.
- Sensors of TX6x with diameter smaller than 6mm are to be mechanically protected by thermowell.
- Following Sensor options of TR62 do not require a mechanical protection by a thermowell:  
TR62-abcdefghi  
a = Approval: F, R  
e = Insert diameter; Material: 3 (6mm)  
h = RTD; wire; meas. range; class: validity: A, B, C, F, G, 2, 3, 6 or 7
- It shall be verified, taking into account the worst case process and ambient temperatures,
  - that the temperature of the enclosure at the process connection point does not exceed the ambient temperature range of the assembly and
  - the temperature of the optionally used RBFF1NS union does not exceed the service temperature range of -50 °C to +150 °C for following option:  
Neck length N; Material; Fitting:  
D 104 mm; 316; NU 1/2"NPT F  
E 156 mm; 316; NUN 1/2"NPT M  
H 104 mm; A105; NU 1/2"NPT F
- Install only head transmitters not exceeding a maximum power dissipation of 2.2W with a temperature input rating not exceeding 10Vdc and 1mA.
- For assure that the temperature assembly has a degree of protection of IP6X the user shall provide a thermowell or equivalent component at the process side.

**Thermal data**

The relation between the type, electrical connection, temperature class, maximum surface temperature, ambient temperature range and process temperature range is shown in the following table.

Type	Electrical connection	Temperature class	Maximum surface temperature	Ambient temperature range	Process temperature range	
					Insert diameter	
					3 mm, 6 mm dual	6 mm
Tx6x	Terminal block <sup>1)</sup> (C)	T6	T85 °C	-50 to +70 °C	-50 to +55 °C	-50 to +68 °C
		T5	T100 °C	-50 to +80 °C	-50 to +70 °C	-50 to +83 °C
		T4	T135 °C	-50 to +120 °C	-50 to +105 °C	-50 to +118 °C
		T3	T200 °C	-50 to +120 °C	-50 to +170 °C	-50 to +183 °C
		T2	T300 °C	-50 to +120 °C	-50 to +265 °C	-50 to +278 °C
		T1	T450 °C	-50 to +120 °C	-50 to +415 °C	-50 to +428 °C
	Flying leads (F) or Transmitter TMT71(A) TMT72 (E) TMT82 (K, L, M, N) TMT84 (B) TMT85 (D) TMT180 (2, 3, 4, 5) TMT181 (G) TMT182 (H, J, K, O)	T6	T85 °C	-40 to +65 °C	-50 to +55 °C	-50 to +68 °C
		T5	T100 °C	-40 to +80 °C	-50 to +70 °C	-50 to +83 °C
		T4	T135 °C	-40 to +85 °C	-50 to +105 °C	-50 to +118 °C
		T3	T200 °C	-40 to +85 °C	-50 to +170 °C	-50 to +183 °C
		T2	T300 °C	-40 to +85 °C	-50 to +265 °C	-50 to +278 °C
		T1	T450 °C	-40 to +85 °C	-50 to +415 °C	-50 to +428 °C

1) in an enclosure with a blind cover;

**Electrical connection data**

Type	Electrical data
TR61, TR62, TR63, TR65, TR66	$U_b \leq 42 V_{DC}$ Current consumption $\leq 30$ mA Remote installation: Voltage max. $10 V_{DC}$ Measuring current $I < 1$ mA
TC61, TC62, TC63, TC65, TC66	

Category	Type of protection (ATEX)	Type
II1/2G	Ex db IIC T6...T1 Ga/Gb	TR61, TR63, TR66, TC61, TC63, TC66
II2G	Ex db IIC T6...T1 Gb	TR61, TR62, TR63, TR65, TR66 TC61, TC62, TC63, TC65, TC66
II1/2D	Ex ta/tb IIIC T85 °C...T450 °C Da/Db	TR61, TR63, TR66, TC61, TC63, TC66
II2D	Ex tb IIIC T85 °C...T450 °C Db	TR61, TR63, TR65, TR66 TC61, TC63, TC65, TC66

Type of protection (IEC)	Type
Ex db IIC T6...T1 Ga/Gb	TR61, TR63, TR66, TC61, TC63, TC66
Ex db IIC T6...T1 Gb	TR61, TR62, TR63, TR65, TR66 TC61, TC62, TC63, TC65, TC66
Ex ta/tb IIIC T85 °C...T450 °C Da/Db	TR61, TR63, TR66, TC61, TC63, TC66
Ex tb IIIC T85 °C...T450 °C Db	TR61, TR63, TR65, TR66 TC61, TC63, TC65, TC66







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