

Safety Instructions

iTHERM TM111, iTHERM TM131

EAC: 1Ex d IIC T6...T1 Gb X

Ga/Gb Ex d IIC T6...T1 X

Ex tb IIIC 85°C...450°C Db X

Ex ta/tb IIIC 85°C...450°C Da/Db X



iTHERM TM111, iTHERM TM131

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Associated documentation

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

Associated documentation for iTHERM TM111

- Operating instructions: BA01915T/09
- Technical information: TI01445T/09

Associated documentation for iTHERM TM131

- Operating instructions: BA01915T/09
- Technical information: TI01373T/09

Supplementary documentation

Explosion-protection brochure: CP00021Z/11

The Explosion-protection brochure is available: In the download area of the Endress+Hauser website: www.endress.com → Download → Advanced → Documentation code: CP00021Z

Certificates**EAC certificate of conformity according to TR CU 012/2011**

The thermometers meet the fundamental health and safety requirements for the design and construction of devices and protective systems intended for use in potentially explosive atmospheres.

Certification body:

НАННО "ІСВЭ"

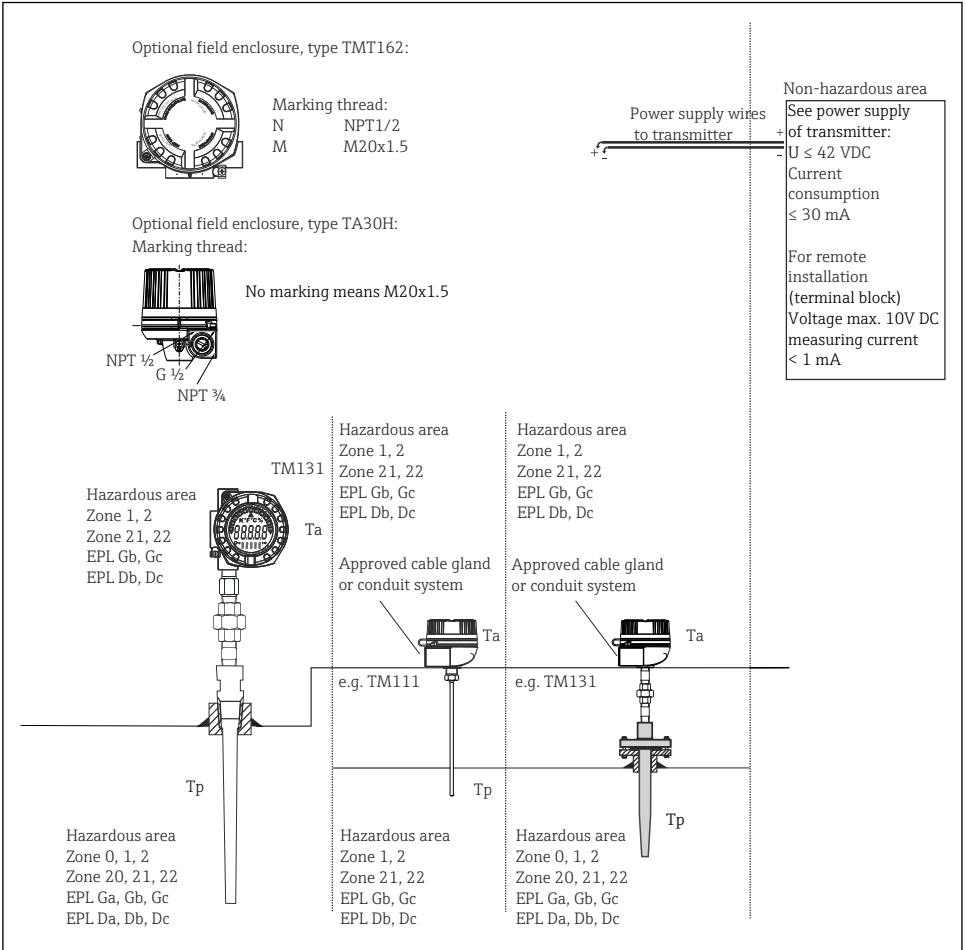
Certificate number:

EAЭC RU C-DE.AA87.B.00767/21

Affixing the certificate number certifies conformity with the following standards:

- GOST 31610.0-2014 (IEC 60079-0:2011)
- GOST IEC 60079-1-2011
- GOST 31610.26-2012 / IEC 60079-26:2006
- GOST IEC 60079-31-2013

Safety instructions



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Safety instructions: 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. GOST 30852.13 (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 GOST 30852.13 (IEC 60079-14), paragraph 16 of GOST 31610.0 (IEC 60079-0), paragraph 13 of GOST IEC 60079-1 (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 not be exceeded.
- For operating the thermometer housing at an ambient temperature under -20 °C appropriate cables and cable entries permitted for this application must be used.
- For ambient temperatures higher than $+70\text{ °C}$ use suitable heat-resisting cables or wires, cable entries and sealing facilities which can be applied for temperatures $+5\text{ K}$ above ambient temperature.
- 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 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. GOST 30852.13 (IEC 60079-14)).
- Seal the cable entries tight with certified cable 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.
- For ambient temperatures higher than $+70\text{ °C}$ use suitable heat-resisting cables or wires, cable entries and sealing facilities which can be applied for temperatures $+5\text{ K}$ above ambient temperature.

⚠ WARNING**Explosive atmosphere**

- ▶ In an explosive atmosphere, do not open the device when voltage is supplied (ensure that the IP6X housing protection is maintained during operation).

**Safety
instructions:
Partition wall**

- The provided thermowells are out of materials AISI316/W.1.4401, AISI316L/W.1.4404, AISI 316Ti/1.4571, Hastelloy® C-276, Alloy 600 or AISI446/W.1.4762.
- Install the thermometer in a partition wall which is in compliance with GOST 31610.26/IEC 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/W.1.4401, AISI316L/W.1.4404, AISI 316Ti/1.4571...).

**Safety
instructions:
Specific
conditions of use**

- The flameproof joints are not intended to be repaired.
- Sensors of TM111 with a diameter smaller than 6 mm shall be protected by a thermowell.
- Following sensor options shall be protected by a thermowell:

TM111-a b c d e f....**f Sensor Type; Measuring range; Material:**

D 1xPT100 TF StrongSens; -50 to +500 °C; 316L

E 1xPT100 TF QuickSens; -50 to +200 °C; 316L

F 1xPT100 TF QuickSens; -50 to +400 °C; 316L

- TMT131 temperature sensors shall always be protected by a thermowell.
- 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 to +150 °C for following option:

TM131-a b c....**c Thermometer Design:****M** Nipple-union connection NPT½"**N** Nipple-union-nipple connection NPT½"

- Install only head transmitters not exceeding a maximum power dissipation of 2.2W with a temperature input rating not exceeding 10 V_{DC} and 1 mA.
- 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 ¹⁾	Temperature class/Maximum surface temperature	Ambient temperature range	Process temperature range Insert diameter 3 mm, 6 mm dual	Process temperature range Insert diameter 6 mm		
TM111 TM131	Terminal block (1A) ²⁾	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 (0A) or Transmitter TMT71 (2C) TMT72 (3A) TMT82 (3C, 3D,) ³⁾ TMT84 (5A) TMT85 (4A) TMT180 (2A, 2B)	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		
		TM131	Transmitter TMT162 (2D, 2E, 2F, 2G, 4B, 4C, 5B, 5C)	T6/T85 °C	-40 to +55 °C	-50 to +55 °C	-50 to +68 °C
				T5/T100 °C	-40 to +70 °C	-50 to +70 °C	-50 to +83 °C
T4/T135 °C	-40 to +80 °C			-50 to +105 °C	-50 to +118 °C		
T3/T200 °C	-40 to +80 °C			-50 to +170 °C	-50 to +183 °C		
T2/T300 °C	-40 to +80 °C			-50 to +265 °C	-50 to +278 °C		
T1/T450 °C	-40 to +80 °C			-50 to +415 °C	-50 to +428 °C		

1) TM111 suffix code h, TM131 suffix code l.

2) in an enclosure with a blind cover; TM111 suffix code i / TM131 suffix code m = A1, D1, H1, H3.

3) Ambient temperature -52 °C for TMT82 head transmitter with 1 Ex d IIC T6...T1 Gb X and Ex tb IIIC 85°C...450°C Db X without display and in stainless steel housing (suffix code m = H1)

**Electrical
connection data**

Type	Electrical data
TM111 TM131	$U_b \leq 42 V_{DC}$ Current consumption $\leq 30 \text{ mA}$ Remote installation: Voltage max. $10 V_{DC}$ Measuring current $I < 1 \text{ mA}$

Type of protection (EAC)	Type
Ga/Gb Ex d IIC T6...T1 X	TM131
1Ex d IIC T6...T1 Gb X	TM111
Ex ta/tb IIIC 85°C...450°C Da/Db X	TM131
Ex tb IIIC 85°C...450°C Db X	TM111



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