

# Safety Instructions

## iTHERM TM111, iTHERM TM131

ATEX, IECEx: Ex db IIC T6 Ga/Gb  
Ex db IIC T6 Gb  
Ex ta/tb IIIC Txxx °C Da/Db  
Ex tb IIIC Txxx °C Db



# iTHERM TM111, iTHERM TM131

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**Associated documentation**

All documentation is available on the Internet:  
[www.endress.com/Deviceviewer](http://www.endress.com/Deviceviewer)  
(enter the serial number from the nameplate).



If not yet available, a translation into EU languages can be ordered.

To commission the device, please observe the Operating Instructions pertaining to the device:

[www.endress.com/<product code>](http://www.endress.com/<product code>), e.g. TM131

**Supplementary documentation**

Explosion protection brochure: CP00021Z

The explosion protection brochure is available on the Internet:  
[www.endress.com/Downloads](http://www.endress.com/Downloads)

**Manufacturer's certificates****IECEX certificate**

Certificate number: IECEX DEK 18.0056X

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: DEKRA 18ATEX0103 X

**EU Declaration of Conformity**

Declaration number: EC\_00740

The EU Declaration of Conformity is available on the Internet:  
[www.endress.com/Downloads](http://www.endress.com/Downloads)

**UKCA certificate**

Certificate number: CML 21UKEX11237X

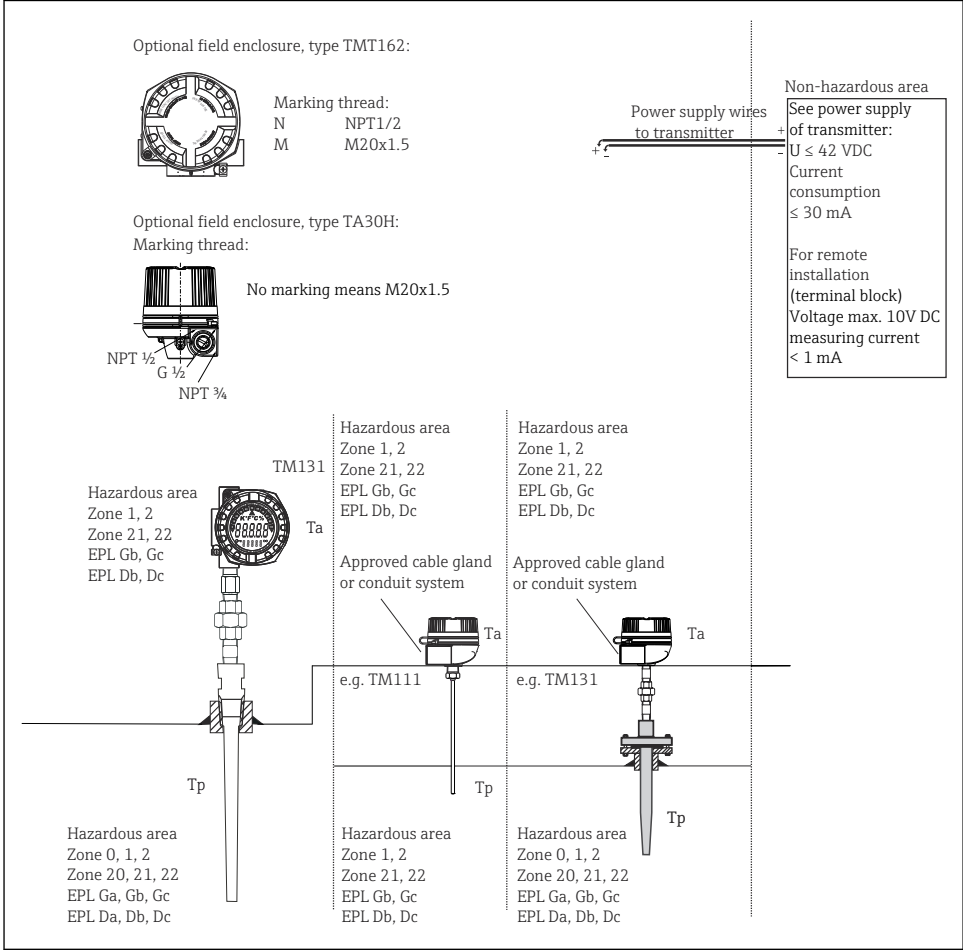
**UKCA Declaration of Conformity**

Declaration number: UK\_00425

**Manufacturer address**

Endress+Hauser Wetzer GmbH + Co. KG  
Obere Wank 1  
87484 Nesselwang, Germany

# 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. EN/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/EN 60079-14, paragraph 16 of IEC/EN 60079-0, paragraph 13 of IEC/EN 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 Ta at terminal head not be exceeded.
- For operating the thermometer housing at an ambient temperature under  $-20\text{ }^{\circ}\text{C}$  appropriate cables and cable entries permitted for this application must be used.
- For ambient temperatures higher than  $+70\text{ }^{\circ}\text{C}$ , use suitable heat-resisting cables or wires, cable entries and sealing facilities for Ta  $+5\text{ K}$  above surrounding.
- 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. EN/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  $+70\text{ }^{\circ}\text{C}$ , use suitable heat-resisting cables or wires, cable entries and sealing facilities for Ta  $+5\text{ K}$  above surrounding.

**⚠ 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 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/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.
- TM111 temperature sensors with a diameter smaller than 6 mm shall be protected by a thermowell.
- TM111 temperature sensors with suffix code f = D, E or F shall be protected by a thermowell.
- 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<sub>DC</sub> 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.

**Temperature  
tables**

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 <sup>1)</sup>	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) <sup>2)</sup>	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, 3F) TMT84 (5A) TMT85 (4A) TMT180 (2A, 2B) TMT131 (2H, 2I) TMT86 (6B, 6C)	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) TMT142 (7A)	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.

## 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 $I < 1 \text{ mA}$

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Category	Type of protection (ATEX/IECEX)	Type
II1/2G	Ex db IIC T6...T1 Ga/Gb	TM131
II2G	Ex db IIC T6...T1 Gb	TM111
II1/2D	Ex ta/tb IIIC T85 °C...T450 °C Da/Db	TM131
II2D	Ex tb IIIC T85 °C...T450 °C Db	TM111











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[www.addresses.endress.com](http://www.addresses.endress.com)

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