

Safety Instructions

iTHERM TMS12

MultiSens Linear

Modular TC and RTD multipoint with primary thermowell
(with diagnostic chamber)

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



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About this document

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

The document translated into EU languages is available:

- In the download area of the Endress+Hauser website: www.endress.com -> Downloads -> Manuals and Datasheets -> Type: Ex Safety Instruction (XA) -> Text Search: ...
- In the Device Viewer: www.endress.com -> Product tools -> Access device specific information -> Check device features



If not yet available, the document can be ordered.

Associated documentation

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

Associated documentation for iTHERM TMS12

- Operating instructions: BA01881T
- Technical information: TI01399T

Supplementary documentation

Explosion protection brochure: CP00021Z

The Explosion-protection brochure is available:

- In the download area of the Endress+Hauser website: www.endress.com -> Downloads -> Brochures and Catalogs -> Text Search: CP00021Z
- On the CD for devices with CD-based documentation

Manufacturer's certificates**IECEX certificate**

Certificate number: IECEX CES 13.0026X

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

- IEC 60079-0: 2017
- IEC 60079-1: 2014
- IEC 60079-26: 2014
- IEC 60079-31: 2013

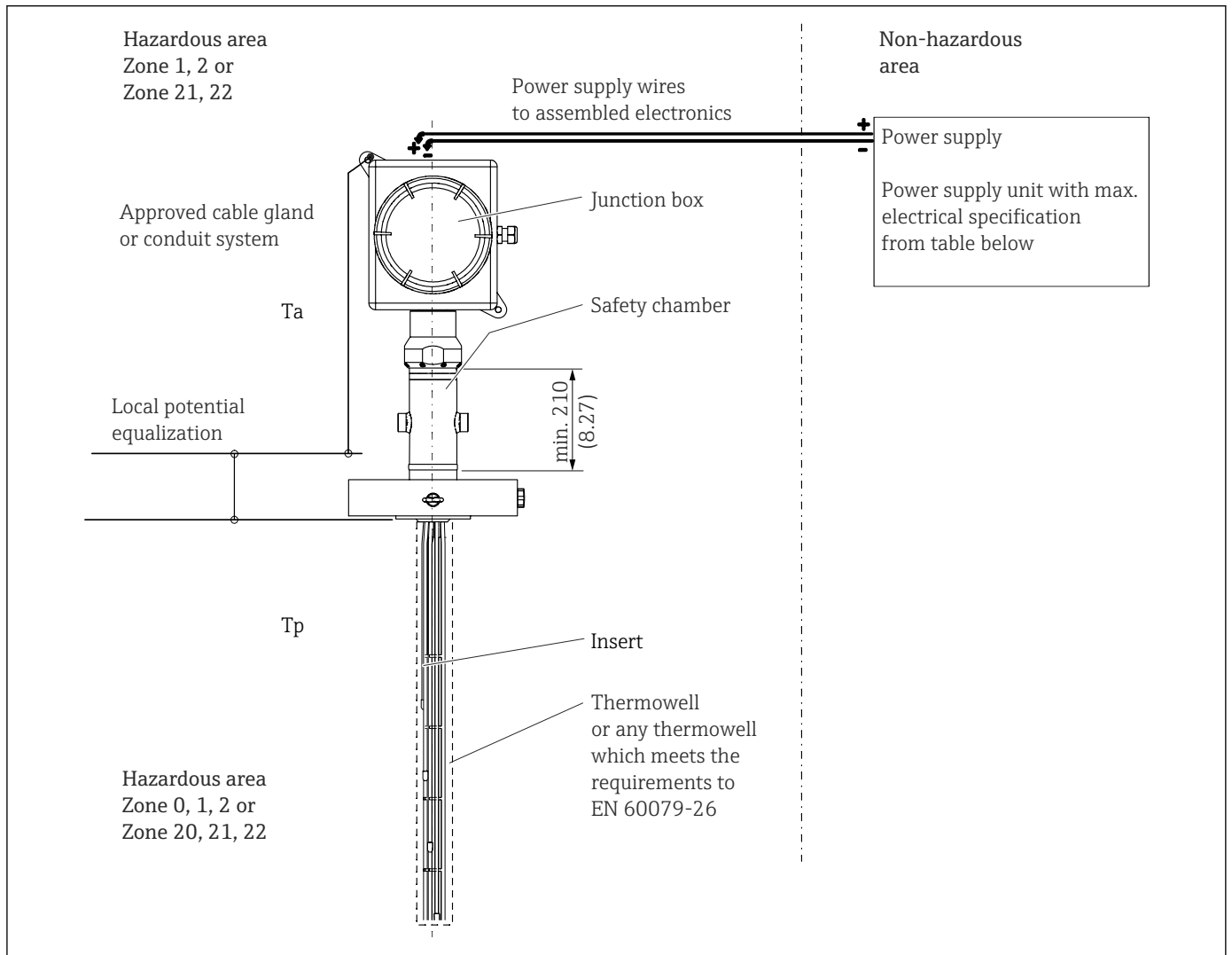
ATEX certificate

Certificate number: CESI 13 ATEX 042X

Manufacturer address

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

Safety instructions



A0048689

**Safety instruction for
flameproof: Installation**

- 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 device must be connected to the local potential equalization.
- Only the approved wire entries as specified in paragraph 10 of EN/IEC 60079-14, paragraph 16 of EN/IEC 60079-0, paragraph 13 of EN/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 unused entry glands with approved sealing plugs that correspond to the type of protection.
- For operating the transmitter 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 $T_a +5\text{ K}$ 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 and maintained 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.
- Multipoint sensors shall be mechanically protected by thermowell.
- The thermowell must be in compliance with EN/IEC 60079-26.
- Pay attention to the maximum process conditions according to the manufacturer's operating Instructions.
- Observe the safety instructions for the used transmitters.

- Install the device to exclude any mechanical damage or friction. The device Connection Head enclosures, when made in Aluminum light alloy, shall be mounted in a way to avoid an ignition hazard due to impact or friction. Pay particular attention to flow conditions and tank fittings.
- Respecting the minimum safety distance between the connection head and the process connection of 210 mm to limit the effect of heat conduction through the thermometer body (as shown in the picture).
- Any damaged parts may **only** be replaced or repaired by the manufacturer, unless of express authorization of itself. It is forbidden to machine further the junction box.
- As a general rule, whichever operations and maintenance on the electrical or mechanical parts or on the system, must be preceded from the interruption of the electrical supply system.

NOTICE**Explosive atmosphere**

- ▶ Do not open the electrical connection of the power supply circuit under voltage in an explosive atmosphere. Do only use approved spare parts which are properly marked with the same type of protection and approval number as TMS12.

Safety instructions for dust ignition:

- 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 glands (min. IP6X) IP6X according to IEC 60529.
- The provided cable glands according to option code are suitable ATEX/IECEx Ex-certified cable glands with a temperature range of -50 to +110 °C.
- The device must be connected to the local potential equalization.
- For ambient temperatures higher than +70 °C, use suitable heat-resisting cables or wires, cable entries and sealing facilities for Ta +5 K above surrounding.
- Respecting the minimum safety distance between the connection head and the process connection of 210 mm to limit the effect of heat conduction through the thermometer body (as shown in the picture).
- User must regularly clean enclosure external surface due to avoid formation and deposition of dust layers on the surface itself (the maximum allowed thickness of dust is equal to 5 mm).
- Degree of protection IP66 is guaranteed only if the cover is provided with an appropriate O-ring gasket; after each opening integrity of such gasket shall be verified.

⚠ 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).

Potential equalization

The device must be connected to the local potential equalization.

Safety instructions: Partition wall

Install the thermometer in a partition wall which is in compliance with EN/IEC 60079-26 in reference to its ultimate application.

Safety instructions: Specific conditions of use

- The thermometer must be installed and maintained 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.
- When installing and commissioning the device, make sure that an electrostatic charge of the connection cable is avoided.
- Only certified cable glands (or other accessories) in accordance to EN/IEC 60079-0 and EN/IEC 60079-1 shall be used. Cable entry system shall be in compliance with clause 10 of EN/IEC 60079-14 and/or other Local Regulations and Laws.
- As a rule of the thumb, the whole length of each thermoelement installed within the device shall be limited to 75 m for single thermocouple, to 37.5 m for double and to 25 m for triple ones.
- When install the device, all the accessories used (e.g. cable glands, etc.) shall be certified according to IEC/EN 60079-0, IEC/EN 60079-1, IEC/EN 60079-31 and additionally in some cases to IEC/EN 60079-7, providing a degree of protection at least equal to the junction box one. For the correct choice of the cable entry system, please refer to IEC/EN 60079-14 (latest revision) and/or to National Regulations and Laws.

- The separation between Zone 0/20 and Zone 1/21 shall be in compliance with requirements of EN/IEC 60079-26.
- The device shall be connected to the same local potential equalization in at least one point (alternatively through the junction box or at process connection).
- The width of the flameproof joints is superior to those specified in tables of EN/IEC 60079-1 standard.
- Associated devices with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.
- The separation between Zone 0/20 and Zone 1/21 shall be in compliance with requirements of IEC/EN 60079-26.
- The device shall be connected to the same local potential equalization in at least one point (alternatively through the junction box or at process connection).
- The width of the flameproof joints is superior to those specified in tables of IEC/EN 60079-1 standard.
- For the use of the enclosures in environments with explosive atmosphere for the combustible dust presence, the following precautions must be taken: to avoid the accumulation of dust on the surfaces, the user must proceed with a regular cleaning of the enclosures.
- No battery is permitted within the device assemblies.
- The ambient temperature T_a at the process connection on the enclosure may not exceed 110 °C.

Temperature tables

Type	Assembled Transmitters	Temperature class	Electrical Data
TMS12	TMT18x, TMT8x, TMT11x, TMT12x TMT162, TMT142	T6/T85 °C	-50 °C ≤ T_a ≤ +65 °C
		T5/T100 °C	-50 °C ≤ T_a ≤ +80 °C
		T4/T135 °C	-50 °C ≤ T_a ≤ +85 °C
	without electronic (terminal block)	T6/T85 °C	-50 °C ≤ T_a ≤ +70 °C
		T5/T100 °C	-50 °C ≤ T_a ≤ +80 °C
		T4/T135 °C	-50 °C ≤ T_a ≤ +110 °C
		T3/T200 °C	-50 °C ≤ T_a ≤ +110 °C
		T2/T300 °C	-50 °C ≤ T_a ≤ +110 °C
		T1/T450 °C	-50 °C ≤ T_a ≤ +110 °C

For further information see document no. 10000012079, 10000012080 and 10000012081.

Type	Temperature class/ Maximum surface temperature	Process temperature range ¹⁾
TMS12	T6/T85 °C	-50 °C ≤ T_a ≤ +70 °C
	T5/T100 °C	-50 °C ≤ T_a ≤ +80 °C
	T4/T135 °C	-50 °C ≤ T_a ≤ +120 °C
	T3/T200 °C	-50 °C ≤ T_a ≤ +185 °C
	T2/T300 °C	-50 °C ≤ T_a ≤ +285 °C
	T1/T450 °C	-50 °C ≤ T_a ≤ +435 °C

1) Maximum process pressure see relevant Technical Information.

Ambient temperature:

Minimum ambient temperature is $T_a \geq -50$ °C (depending on enclosure and equipment used)

Permitted ambient temperatures (these conditions are valid for all possible thermometer configurations).

Electrical connection data

Type	Assembled Transmitters	Certificate		Electrical Data
		IECEX	ATEX	
TMS12	TMT182	X	X	$U_b \leq 42 V_{DC}$ Current consumption $\leq 30 \text{ mA}$ (see also transmitter ratings)
	TMT71, TMT72	X	X	
	TMT82	X	X	
	TMT84, TMT85	X	X	
	TMT111, TMT112		X	
	TMT121, TMT122, TMT1, TMT128		X	
	TMT181, TMT187, TMT188		X	
	TMT142	X	X	
	TMT162	X	X	
	without electronic (terminal block)	X	X	Remote installation: Measuring current $I \leq 1 \text{ mA}$

Category	Type of protection (ATEX/IECEX)	Type
II 1/2G	Ex db IIC T6...T1 Ga/Gb	TMS12
II2G	Ex db IIC T6...T1 Gb	
II1/2D	Ex ta/tb IIC T85 °C...T450 °C Da/Db	
II2D	Ex tb IIC T85 °C...T450 °C Db	

Connection head data (Housing must not be placed in zone 0).



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