

Safety Instructions

iTEMP TMT142B

Temperature transmitter

0 Ex ia IIC T6...T4 Ga X

Ex ia IIIC T85°C...T110°C Db X

1Ex db IIC T6...T4 Gb X

Ex tb IIC T110°C Db X



iTEMP TMT142B

Temperature transmitter

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About this document

The document number of these Safety Instructions (XA) must match the information on the nameplate.

Associated documentation

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

www.endress.com/<product code>, e.g. TMT142B

Supplementary documentation

Explosion protection brochure: CP00021Z

The explosion protection brochure is available on the Internet:

www.endress.com/Downloads

Certificates and declarations**EAC certificate**

The device 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: ТОО/Ж ШС "Т-Стандарт"
- Certificate number: EAЭC KZ 7500525.01.01.01840

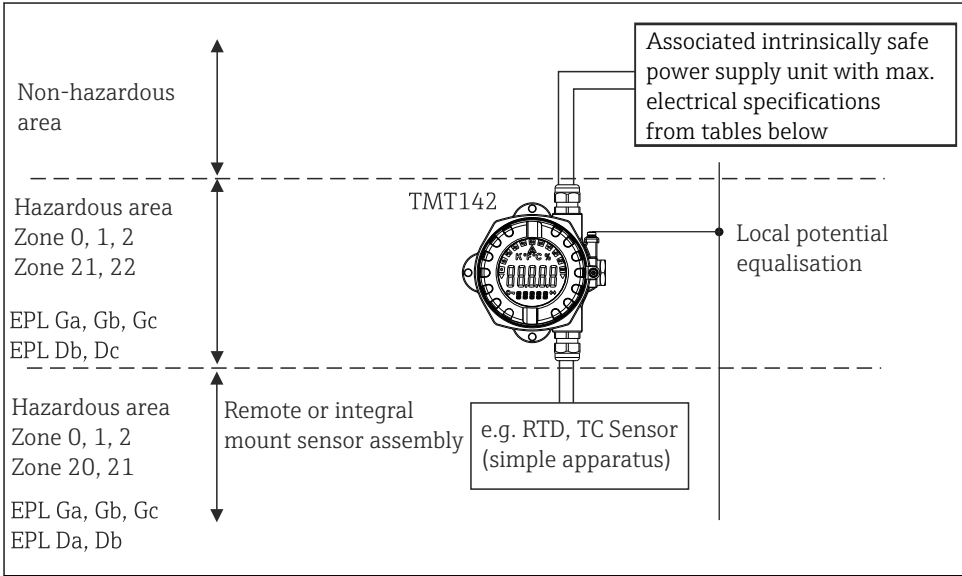
Affixing the certificate number certifies conformity with the following standards:

- GOST 31610.0-2019 (IEC 60079-0:2017)
- GOST IEC 60079-1-2013
- GOST 31610.11-2014 (IEC 60079-11:2011)
- GOST IEC 60079-31-2013

Manufacturer address

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

Safety instructions: Ex ia



Safety instructions: 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).
- Connect the device using suitable cable and wire entries of protection type "Intrinsic safety (Ex i)".
- The type of protection changes as follows when the devices are connected to certified intrinsically safe circuits of Category ib: Ex ib IIC. When connecting an intrinsically safe ib circuit, do not operate the sensor at Zone 0.
- Continuous duty temperature of the cable $T_a + 5\text{ K}$.
- To maintain the ingress protection of the housing IP66/67 install the housing cover and cable glands correctly.
- Close unused entry glands with sealing plugs.
- The pertinent guidelines must be observed when intrinsically safe circuits are connected together acc. IEC/EN 60079-14 (Proof of Intrinsic Safety).
- The electrical apparatus must be integrated into the local potential equalization.
- When connecting two independent sensors make sure that the potential equalisation cables are at the same potential.

Safety instructions: Zone 0

- Only operate devices in potentially explosive vapour/air mixtures under atmospheric conditions:
 - $-50\text{ °C} \leq T_a \leq +60\text{ °C}$
 - $0.8\text{ bar} \leq p \leq 1.1\text{ bar}$
- If no potentially explosive mixtures are present, or if additional protective measures have been taken, according to EN 1127-1, the transmitters may be operated under other atmospheric conditions in accordance with the manufacturer's specifications.
- Associated apparatus with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.

Safety instructions: Specific conditions of use

- Unit is may not be used when hybrid mixtures (gas, dust, air) are present.
- The temperature transmitter 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.
- Use for integral temperature sensors only approved sensors certified for category 1D or 2D marked not less than II1/2D Ex ia IIIC T110 °C Da/Db or II2D Ex ia IIIC T110 °C Db for use in Zone 20 or Zone 21.
- Use for remote temperature sensors only approved sensors certified for category 2D marked not less than II2D Ex ia IIIC T110 °C Db for use in Zone 21.

Temperature tables

The ambient temperature range is depending on temperature class and maximum temperature of the enclosure $T_{xx}\text{°C}$, applicable to the maximum dust layer thickness of 5 mm, listed in the following table:

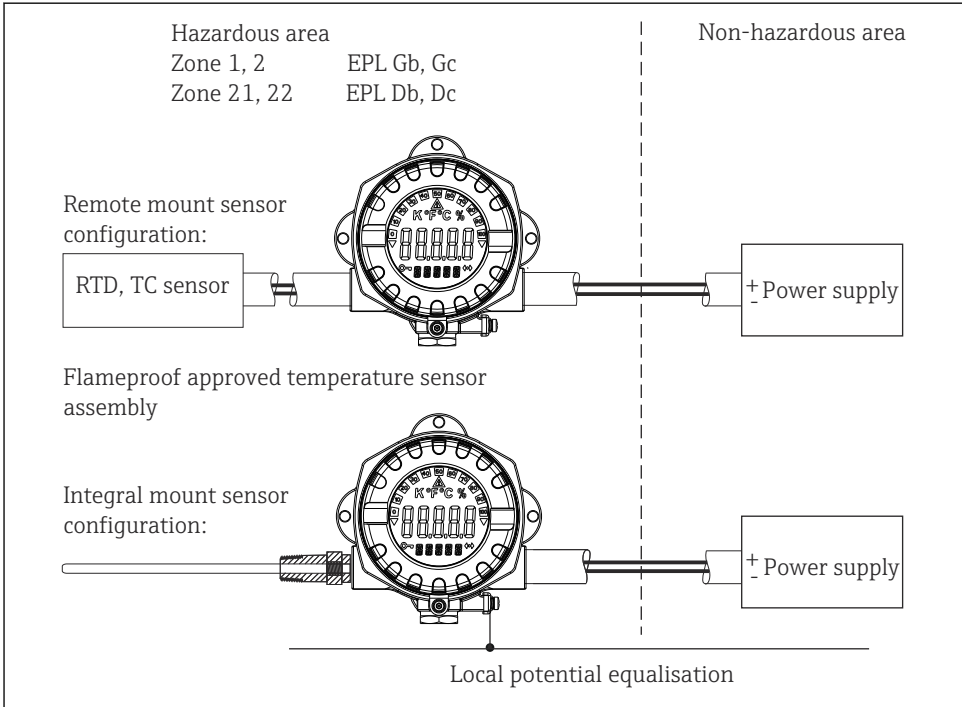
Type	Temperature class	Ambient temperature	
		Zone 1 EPL Gb	Zone 0 EPL Ga
iTEMP TMT142B	T6	$-50\text{ °C} \leq T_a \leq +55\text{ °C}$	$-50\text{ °C} \leq T_a \leq +40\text{ °C}$
	T5	$-50\text{ °C} \leq T_a \leq +70\text{ °C}$	$-50\text{ °C} \leq T_a \leq +50\text{ °C}$
	T4	$-50\text{ °C} \leq T_a \leq +85\text{ °C}$	$-50\text{ °C} \leq T_a \leq +60\text{ °C}$

Type	Maximum surface temperature	Ambient temperature Zone 21 EPL Db
iTEMP TMT142B	T85 °C	$-40\text{ °C} \leq T_a \leq +55\text{ °C}$
	T100 °C	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
	T110 °C	$-40\text{ °C} \leq T_a \leq +85\text{ °C}$

Electrical connection data

Type	Electrical data	
iTEMP TMT142B	Supply (terminals + and -):	$U_i \leq 30 V_{DC}$ $I_i \leq 300 \text{ mA}$ $P_i \leq 1000 \text{ mW}$ $C_i \leq 5 \text{ nF}$ $L_i = 0$
	Sensor circuit (terminals 1 to 4):	$U_o \leq 4.3 V_{DC}$ $I_o \leq 4.8 \text{ mA}$ $P_o \leq 5.2 \text{ mW}$
	Maximum connection values:	$L_o = 40 \text{ mH}$ $C_o = 10.4 \mu\text{F}$ $L_o = 150 \text{ mH}$ $C_o = 160 \mu\text{F}$ $L_o = 300 \text{ mH}$ $C_o = 1000 \mu\text{F}$

Safety instructions: Ex db



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Safety instructions: 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 housing of field transmitter must be connected to the potential matching line.
- Only the approved wire entries as specified in paragraph 10.3 of IEC60079-14, 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 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 remote or integral mounted temperature sensor must comply with the requirements according to IEC 60079-1.
- The flameproof joints are not intended to be repaired.

Safety instructions: Specific conditions of use

WARNING

Potentially explosive atmospheres

- ▶ Do not open the electrical connection of the supply circuit when energized if there is a potentially explosive atmosphere.
- Use for remote temperature sensors only approved sensors certified for category 2G marked not less than II2G Ex d IIC T6...T4 Gb for use in Zone 1.
- Use for integral temperature sensors only approved sensors certified for category 1G or 2G marked not less than II1/2G Ex d IIC T6...T4 Ga/Gb or II2G Ex d IIC T6...T4 Gb for use in Zone 0 resp. Zone 1.
- The temperature class specified for the certified temperature sensor shall be taken into account.
- The temperature transmitter 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.

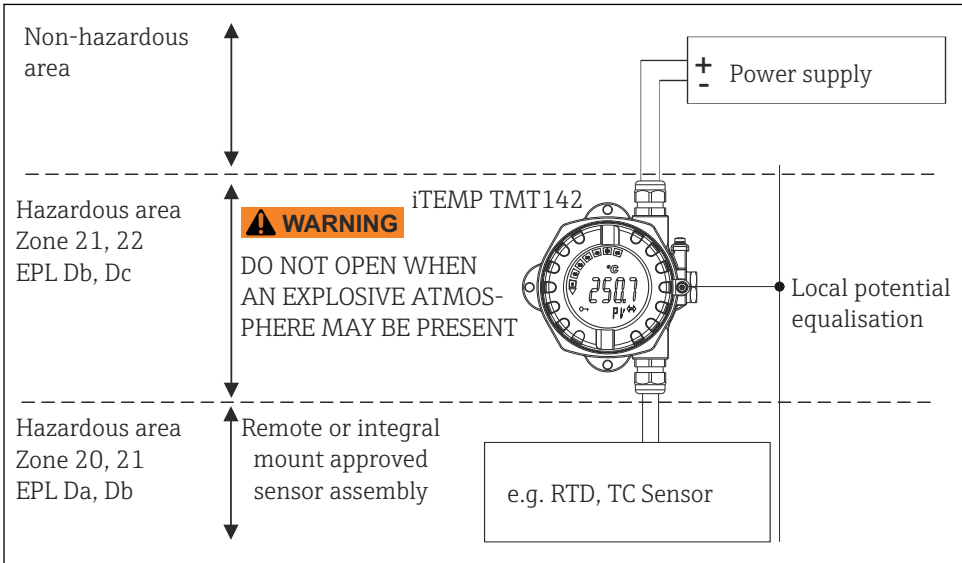
Temperature tables

Type	Temperature class	Ambient temperature
iTEMP TMT142	T6	$-40\text{ °C} \leq T_a \leq +55\text{ °C}$
	T5	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
	T4	$-40\text{ °C} \leq T_a \leq +80\text{ °C}$

Electrical connection data

Type	Electrical data
iTEMP TMT142B	$U \leq 40\text{ V}_{DC}$ $P \leq 3\text{ W}$

Safety instructions: Ex tb



Safety instructions: Installation

WARNING

Explosive atmosphere

- ▶ In an explosive atmosphere, do not open the device when voltage is supplied (ensure that the IP66/67 housing protection is maintained during operation).

- 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 entries to option code glands are suitable ATEX/IECEX certified cable glands with a temperature range of -20 to $+95$ °C.
- For operating the transmitter housing at an ambient temperature under -20 °C appropriate cables and cable entries permitted for this application must be used.
- The housing of the field transmitter must be connected to the potential matching line.
- For ambient temperatures higher than $+70$ °C, use suitable heat-resisting cables or wires, cable entries and sealing facilities for application temperature $+5$ K above surrounding.
- For integral temperature sensors use only approved sensors certified for category 1D or 2D marked not less than II1/2D Ex ta/Ex tb IIIC T110 °C Da/Db or II2D Ex tb IIIC T110 °C Db for use in Zone 20 or Zone 21.
- For remote temperature sensors use only approved sensors certified for category 2D marked not less than II2D Ex tb IIIC T110 °C Db for use in Zone 21.
- The maximum surface temperature specified for the certified temperature sensor shall be taken into account.

Temperature tables

Type	Maximum surface temperature	Ambient temperature
iTEMP TMT142	$+110$ °C ($+230$ °F)	-40 °C \leq Ta \leq $+80$ °C

Electrical connection data

Typ	Electrical data
iTEMP TMT142	$U \leq 40$ V _{DC} $P \leq 3$ W



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