

Safety Instructions

iTEMP TMT71, TMT72

Temperature transmitters

EAC: 1Ex db IIC T6...T4 Gb X
Ex tb IIIC T85°C...T105°C Db X
0Ex ia IIC T6...T4 Ga X



iTEMP TMT71, TMT72

Temperature transmitters

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Associated documentation

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

TMT71

- Operating instructions: BA01927T/09
- Brief operating instructions: KA01414T/09
- Technical information: TI01393T/09

TMT72

- Operating instructions: BA01854T/09
- Brief operating instructions: KA01414T/09
- Technical information: TI01392T/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 temperature transmitters 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 "ЦСВЭ"

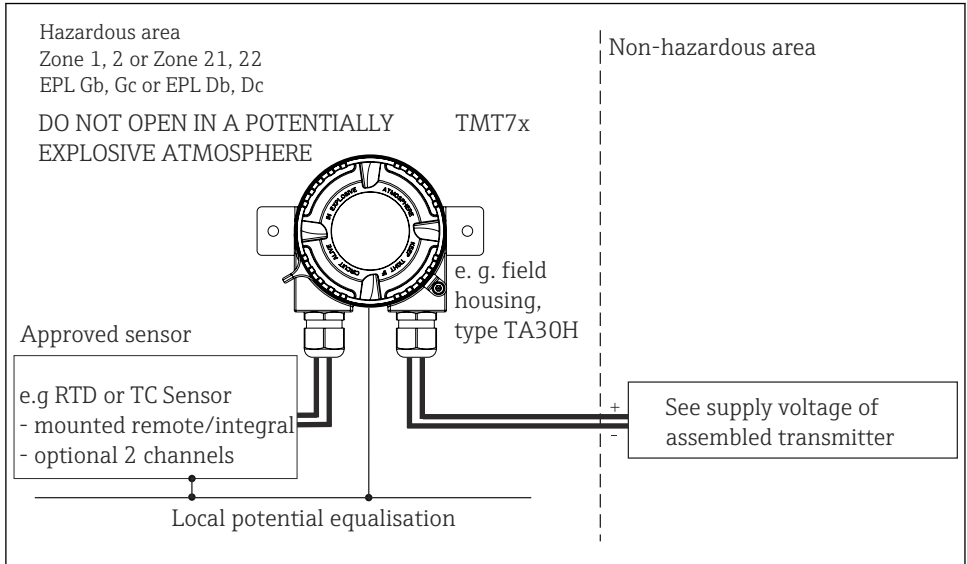
Certificate number:

EAЭС RU C-DE.AA87.B.00686/21

Affixing the certificate number certifies conformity with the following standards:

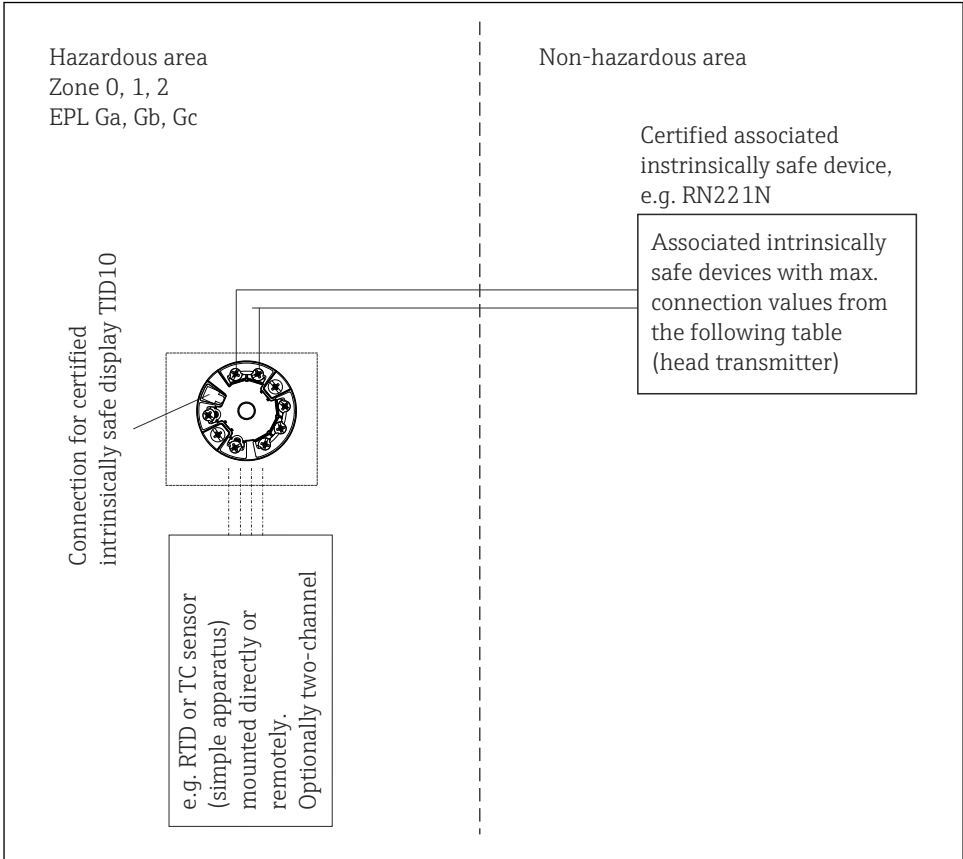
- GOST 31610.0-2014 (IEC 60079-0:2011)
- GOST IEC 60079-1-2013
- GOST IEC 60079-31-2013
- GOST 31610.11-2014 (IEC 60079-11:2011)

Safety
instructions:
Flameproof




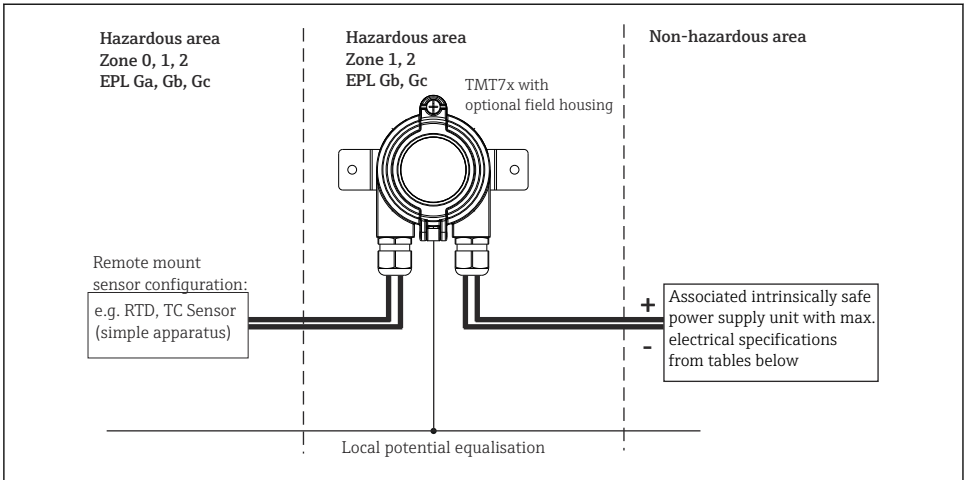
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Safety instructions:
Intrinsic safety

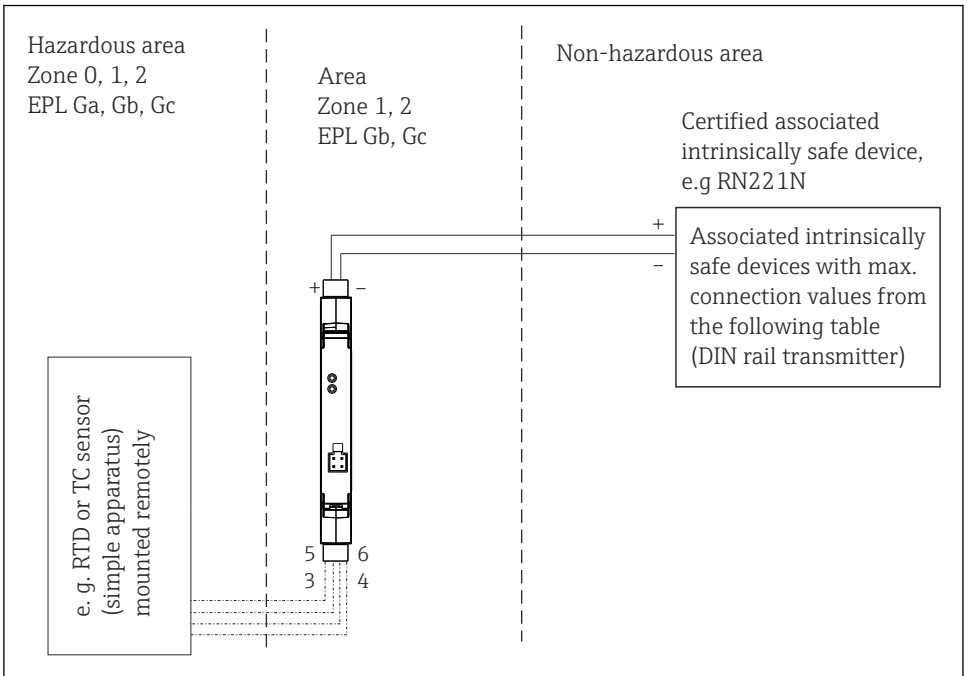


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 1 *Installation of the head transmitter*



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Safety instructions: General

- 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)).

Safety instructions: Installation

Type of protection flameproof

- The housing of the field transmitter must be connected to the potential matching line.
- Only the approved wire entries as specified in paragraph 10.3 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 unused entry glands with approved sealing plugs that correspond to the type of protection.
- For operating the field transmitter housing at an ambient temperature under $-20\text{ }^{\circ}\text{C}$, appropriate cables, cable entries and sealing facilities 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 GOST IEC 60079-1 (IEC 60079-1).
- Use for integral temperature sensors only approved sensors certified and marked not less than Ex d IIC T6...T4 Gb for use in Zone 1.
- Use for integral temperature sensors only approved sensors certified and marked not less than Ex d IIC T6...T4 Ga/Gb or 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 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.
- The flameproof joints are not intended to be repaired.

WARNING

Explosive atmosphere

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

Dust ignition protection

- Seal the cable entries tight with certified cable glands (min. IP6X) IP6X according to IEC/EN 60529.
- The provided cable glands according to option code are suitable ATEX/IECEX Ex-certified cable glands with a temperature range of -20 °C...+95 °C.
- For operating the transmitter housing at an ambient temperature under -20 °C, appropriate cables, cable entries and sealing facilities 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 Ta +5K above surrounding.
- Use for integral temperature sensors only approved sensors certified and marked not less than Ex ta/Ex tb IIC T135 °C Da/Db or Ex tb IIC T135 °C Db for use in Zone 21 (EPL Db).
- Use for remote temperature sensors only approved sensors certified and marked not less than Ex tb IIC T135 °C Db for use in Zone 21 (EPL Db).
- The maximum surface temperature specified for the certified temperature sensor shall be taken into account.

WARNING

Explosive atmosphere

- ▶ Do not open the device when voltage is supplied (ensure that the IP 66/67 housing protection is maintained during operation).

Type of protection intrinsic safety

- When installing the device, the IP20 protection rating of the housing must be maintained in accordance with EN/IEC 60529.
- When connecting the measuring device with a certified circuit of category "ib" into an IIB hazardous area, the ignition class changes to: Ex ib IIC or Ex ib IIB.
- The use of the CDI interface for configuration in hazardous areas is not permitted.

Safety instructions: Installation intrinsic safety

Head transmitter

- The device (terminal head) must be connected to the potential compensation cable.
- The certified display, type TID10, may only be installed in Zone 1/EPL Gb or Zone 2/EPL Gc.
- The permitted ambient temperatures for display type TID10 must be observed.

DIN rail transmitter

On installation please make sure that the spacing between the intrinsically safe and non-intrinsically safe circuits is at least 50 mm.

Field mount housing

- The housing of the field transmitter must be connected to the potential matching line.
- The circuits of the installed head transmitter are insulated from its housing in accordance with GOST 31610.11 (IEC 60079-11) chapter 6.3.13.

Zone 0

(These instructions are only valid if the device is installed directly in Zone 0 (Category 1)/EPL Ga.)

- Explosive steam/air mixtures may only occur 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 explosive mixtures are present, or if additional measures have been taken in accordance with EN 1127-1, the devices may also be operated outside the atmospheric conditions in accordance with the manufacturer's specifications.
- The ambient temperature restrictions outlined in EN 1127-1 6.4.2 must be observed (see table).
- The power circuit to be supplied must comply with Ex ia IIC type of protection (GOST 30852.13 (IEC 60079-14) 12.3).
- The measuring devices may be used only in media to which the process-wetted materials have a sufficient level of resistance.
- When operating the complete device in Zone 0/EPL Ga, the compatibility of the device materials with the media must be guaranteed. (Housing: polycarbonate (PC), potting: silicone).
- The installation of display TID10 in Zone 0/EPL Ga is not permitted.
- The temperature transmitter must be mounted in such a way that electrostatic charging cannot occur, for example by installing in a grounded metallic head or grounded housing.

Specific conditions of use

- In hazardous areas it is not permitted to use the CDI interface of TMT7x for configuration.
- The head- and DIN rail-transmitter must be protected against electrostatic charge/discharge.

Temperature tables

Intrinsic safety:

Type (order option)	Temperature class	Ambient temperature EPL Gb/Zone 1	Ambient temperature EPL Ga/Zone 0
TMT7x-xxx1xxxx Head transmitter without display	T6	$-50\text{ °C} \leq T_a \leq +55\text{ °C}$	$-50\text{ °C} \leq T_a \leq +40\text{ °C}$
	T5	$-50\text{ °C} \leq T_a \leq +70\text{ °C}$	$-50\text{ °C} \leq T_a \leq +60\text{ °C}$
	T4	$-50\text{ °C} \leq T_a \leq +85\text{ °C}$	$-50\text{ °C} \leq T_a \leq +60\text{ °C}$
TMT7x-xxx1xxxx Head transmitter with display (TID10)	T6	$-40\text{ °C} \leq T_a \leq +55\text{ °C}$	
	T5	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$	
	T4	$-40\text{ °C} \leq T_a \leq +85\text{ °C}$	
TMT7x-xxx1xxxx Field housing without display	T6	$-50\text{ °C} \leq T_a \leq +55\text{ °C}$	
	T5	$-50\text{ °C} \leq T_a \leq +70\text{ °C}$	
	T4	$-50\text{ °C} \leq T_a \leq +85\text{ °C}$	
TMT7x-xxx1xxxx Field housing with display (TID10)	T6	$-40\text{ °C} \leq T_a \leq +55\text{ °C}$	
	T5	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$	
	T4	$-40\text{ °C} \leq T_a \leq +85\text{ °C}$	
TMT7x-xxx2xxxxxxxx TMT7x-xxx3xxxxxxxx DIN rail transmitter	T6	$-50\text{ °C} \leq T_a \leq +55\text{ °C}$	
	T5	$-50\text{ °C} \leq T_a \leq +70\text{ °C}$	
	T4	$-50\text{ °C} \leq T_a \leq +85\text{ °C}$	

Flameproof and dust ignition protection:

Transmitter version with field housing, type TA30H		Temperature class / code	Ambient temperature range
Ex db IIC / Ex tb IIC	TMT71, TMT72 with or without display TID10	T6 / T85 °C	-50 to +65 °C
		T5 / T100 °C	-50 to +80 °C
		T4 / T105 °C	-50 to +85 °C

Connection values

Flameproof and dust ignition protection:

Type	Supply voltage U_b
iTEMP TMT71, TMT72	10 to 36 V _{DC}

Flameproof and dust ignition protection:

Type of protection (EAC)	Type
1Ex db IIC T6...T4 Gb X	iTEMP TMT71, TMT72
Ex tb IIIC T85°C...T105°C Db X	

Intrinsic safety:

Type	Electrical data		
TMT7x Order option: TMT7x-xxx1xxxx (head transmitter) TMT7x-xxx2xxxx TMT7x-xxx3xxxx (DIN rail transmitter)	Power supply (Klemmen + und -)	$U_i \leq 30 V_{DC}$ $I_i \leq 100 \text{ mA}$ $P_i = 800 \text{ mW}$ (head transmitter) $P_i = 700 \text{ mW}$ (DIN rail transmitter) $C_i = \text{negligible}$ $L_i = \text{negligible}$	
	Sensor circuit (terminals 3 to 6)	$U_o \leq 4.3 V_{DC}$ $I_o \leq 4.8 \text{ mA}$ $P_o \leq 5.2 \text{ mW}$	
	Max. connection data		
	Ex ia IIC	$L_o = 50 \text{ mH}$	$C_o = 3 \mu\text{F}$
	Ex ia IIB	$L_o = 100 \text{ mH}$	$C_o = 18 \mu\text{F}$
	Ex ia IIA	$L_o = 100 \text{ mH}$	$C_o = 48 \mu\text{F}$

Intrinsic safety:

Protection (EAC)	Type
0Ex ia IIC T6...T4 Ga X	without display
0Ex ia IIC T6...T4 Gb X	with display
1Ex ia [ia Ga] IIC T6...T4 Gb X	with field housing
1Ex ib [ia Ga] IIC T6...T4 Gb X	with DIN rail housing



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