

Safety Instructions

Temperature transmitter

iTEMP TMT82, TMT84, TMT85

0Ex ia IIC T6...T4 Ga X

1Ex ib [ia Ga] IIC T6...T4 Gb X

1Ex d IIC T6...T4 Ga X



Document: XA01422T

Safety instructions for electrical apparatus for explosion-hazardous areas →  3

Temperature transmitter

iTEMP TMT82, TMT84, TMT85

Table of contents

Associated documentation	4
Supplementary Documentation	4
EAC certificate of conformity according to TR CU 012/2011	4
Manufacturer address	4
Safety instructions Ex ia	5
Temperature tables Ex ia	7
Electrical connection data Ex ia	8
Type of protection Ex ia	9
Safety instructions Ex d	9
Temperature tables Ex d	11
Electrical connection data Ex d	11
Type of protection Ex d	11

Associated documentation

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

- TMT82:
Operating instructions: BA01028T/09/
Brief Operating Instructions: KA01095T/09/
- TMT84:
Operating instructions: BA00257R/09/
Brief Operating Instructions: KA00258R/09/
- TMT85:
Operating instructions: BA00251R/09/
Brief Operating Instructions: KA00252R/09/

The Operating Instructions which correspond to the device type apply.

Supplementary Documentation

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

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 "ІСВЭ"

Certificate number: EAЭС RU C-DE.AA87.B.00330/20

Affixing the certificate number certifies conformity with the following standards:

GOST 31610.0-2014 (IEC 60079-0:2011)

GOST IEC 60079-1-2011

GOST 31610.11-2014 (IEC 60079-11:2011)

GOST 31610.26-2012/IEC 60079-26:2006

Manufacturer address

Endress+Hauser Wetzler GmbH + Co KG

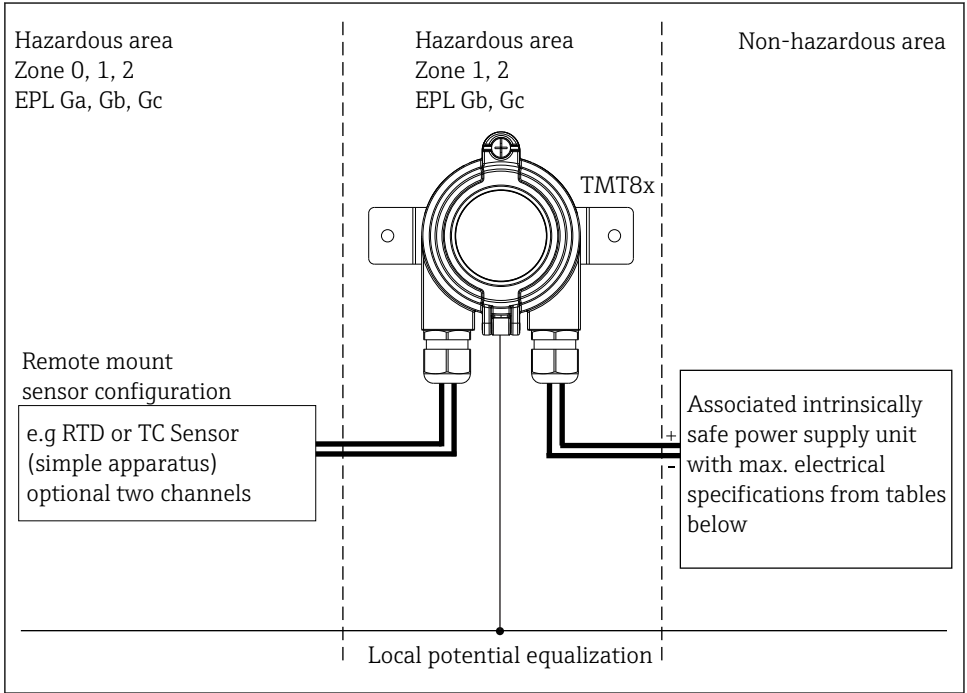
Obere Wank 1

D-87484 Nesselwang

Germany

Phone: +49 (0)8361 308 0

Safety instructions Ex ia



A0028679-EN

Safety instructions: Installation

- Comply with the installation and safety instructions in the Operating Instructions.
- Install the device and route the cable according to the manufacturer's instructions and any other valid standards and regulations (e.g. GOST 30852.13-2002 (IEC 60079-14:1996)).
- Install the device only with power supply disconnected.
- When installing the head transmitter note that the housing ingress protection classification IP20 according to EN/IEC 60529 is upheld.
- The housing of field transmitter must be connected to the potential matching line.
- 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.
- In hazardous areas it is not permitted to use the CDI interface for configuration.
- When connecting two independent sensors to one transmitter make sure that the potential equalisation cables are at the same potential.

Safety instructions: Head transmitter

- The device (connection head) must be connected to the potential compensation cable.
- The certified TID10 display may only be installed in zone 1/EPL Gb or zone 2/EPL Gc.
- The permissible ambient temperatures for the display, type TID10, are to be observed.
- When using a capacitive isolation of the ground system the maximum capacity must not exceed 10 nF and must also be done in the non-hazardous area (e.g. 1 nF capacitors, insulation voltage 1 500 V, ceramic). This is only applicable for TMT84, TMT85.

Safety instructions: Zone 1 and Zone 2

- According to the specifications of the manufacturer, this apparatus can be operated in zone 1 (category 2)/EPL Gb or zone 2 (category 3) /EPL Gc.
- The sensor current circuit may be introduced into zone 0 (category 1)/EPL Ga.

Safety instructions: Zone 0 (only applicable for head transmitters)

(These instructions are only valid if the unit is to be installed directly in the zone 0 (category 1)/EPL Ga.)

- Explosive moisture/air mixtures are only allowed to occur under atmospheric conditions.
 - $-20\text{ °C} \leq T_a \leq +60\text{ °C}$
 - $0.8\text{ bar} \leq p \leq 1.1\text{ bar}$
If there is no explosive mixture present or the additional measures according to GOST 31438.1-2011 (EN 1127-1:2007) are upheld the unit can also be operated outside the atmospheric conditions according to the manufacturers specification.
- The restricted ambient temperatures as per GOST 31438.1-2011 (EN 1127-1:2007) 6.4.2 must be observed (see table).
- The power circuit to be supplied must meet the specifications for explosion protection Ex ia IIC (GOST 30852.13-2002 (IEC 60079-14:1996) 12.3).
- The devices can only be used in fluids if the process-wetted materials are sufficiently resistant to such fluids.
- If the entire device is operated in Zone 0/EPL Ga, the compatibility of the device materials with the fluids has to be ensured. (Housing: polycarbonate (PC), potting: polyurethane (PUR)).
- It is not permitted to mount the TID10 display in zone 0/EPL Ga.
- The temperature transmitter must be installed in such a way that electrostatic charge cannot occur, e.g. installation in grounded metallic head or grounded housing.

Safety Instructions: Special conditions

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 Ex ia

Type	Temperature class	Ambient temperature Zone 1 and 2	Ambient temperature Zone 0
TMT82 (only head transmitter without display TID10)	T6	-52 to +58 °C	-52 to +46 °C
	T5	-52 to +75 °C	-52 to +60 °C
	T4	-52 to +85 °C	-52 to +60 °C
TMT84, TMT85 (only head transmitter without display)	T6	-40 to +50 °C	-40 to +40 °C
	T5	-40 to +65 °C	-40 to +50 °C
	T4	-40 to +75 °C	-40 to +60 °C
TMT82 (only head transmitter with display TID10)	T6	-40 to +55 °C	
	T5	-40 to +70 °C	
	T4	-40 to +85 °C	
TMT84, TMT85 (only head transmitter with display TID10)	T6	-40 to +50 °C	
	T5	-40 to +65 °C	
	T4	-40 to +75 °C	
TMT84, TMT85 (assembled in TA30x enclosure)	T6	-40 to +50 °C	
	T5	-40 to +65 °C	
	T4	-40 to +75 °C	
TMT82 (assembled in TA30x enclosure)	T6	-40 to +58 °C	
	T5	-40 to +75 °C	
	T4	-40 to +85 °C	
TMT82 with display TID10 (assembled in TA30x enclosure)	T6	-40 to +55 °C	
	T5	-40 to +70 °C	
	T4	-40 to +85 °C	
TMT84, TMT85 with display TID10 (assembled in TA30x enclosure)	T6	-40 to +50 °C	
	T5	-40 to +65 °C	
	T4	-40 to +75 °C	

**Electrical
connection data
Ex ia**

Type	Electrical Data	
TMT82 HART®	Supply	
	(terminal + and -)	$U_i \leq 30 V_{DC}$
		$I_i \leq 130 \text{ mA}$
		$P_i \leq 800 \text{ mW}$
		$C_i = \text{negligible small}$
		$L_i = \text{negligible small}$
	Sensor circuit	
	(terminal 3 to 7)	$U_o \leq 7.6 V_{DC}$
		$I_o \leq 13 \text{ mA}$
		$P_o \leq 24.7 \text{ mW}$
		$C_i = \text{negligible small}$
		$L_i = \text{negligible small}$

Type	Electrical Data
TMT82 HART®	Max. connection values
	Ex ia IIC $L_o = 10 \text{ mH}$ $C_o = 1 \mu\text{F}$
	Ex ia IIB $L_o = 50 \text{ mH}$ $C_o = 4.5 \mu\text{F}$
	Ex ia IIA $L_o = 50 \text{ mH}$ $C_o = 6.7 \mu\text{F}$

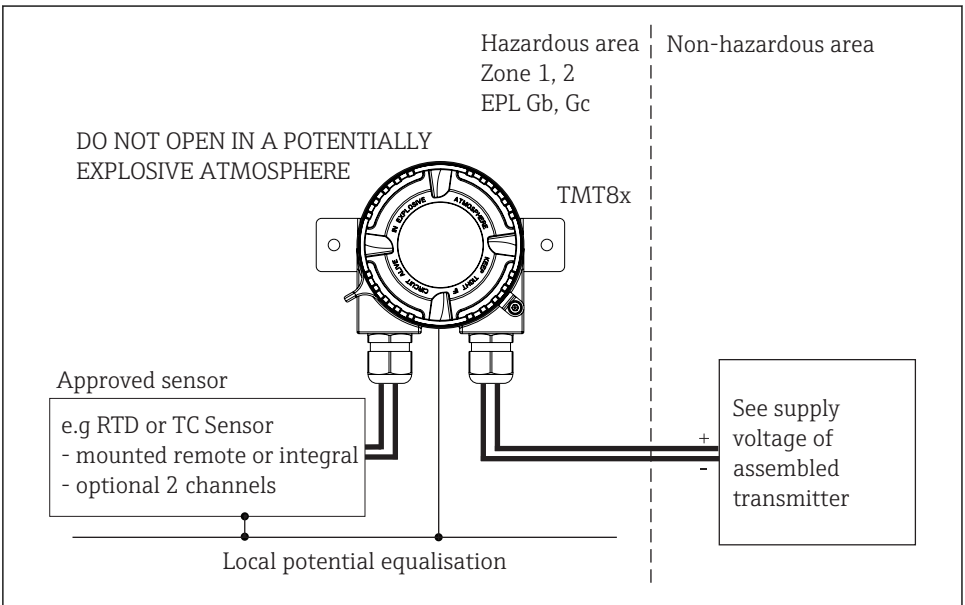
Type	Electrical Data	
TMT84 PROFIBUS® PA TMT85 FOUNDATION Fieldbus™	Supply	
	(terminal + and -)	$U_i \leq 17.5 V_{DC}$ or $U_i \leq 24 V_{DC}$
		$I_i \leq 380 \text{ mA}$ or $I_i \leq 250 \text{ mA}$
		$C_i \leq 5 \text{ nF}$
		$L_i = 2.75 \mu\text{H}$
	Applicable for connection to a Fieldbus system according to FISCO-model	
	Sensor circuit	
	(terminal 3 to 7)	$U_o \leq 7.2 V_{DC}$
		$I_o \leq 25.9 \text{ mA}$
		$P_o \leq 46.7 \text{ mW}$
		$C_i \leq 5 \text{ nF}$
		$L_i = \text{negligible low}$

Type	Electrical Data
TMT84 PROFIBUS® PA TMT85 FOUNDATION Fieldbus™	Max. connection values Ex ia IIC Lo = 20 mH Co = 0.97 µF Ex ia IIB Lo = 50 mH Co = 4.6 µF Ex ia IIA Lo = 100 mH Co = 6 µF

Type of protection Ex ia

Type of protection (EAC)	Type
0Ex ia IIC T6...T4 Ga X	TMT82 (head transmitter only)
	TMT84 (head transmitter only)
	TMT85 (head transmitter only)
1Ex ib [ia Ga] IIC T6...T4 Gb X	TMT82 (assembled in TA30x enclosure)
	TMT84 (assembled in TA30x enclosure)
	TMT85 (assembled in TA30x enclosure)

Safety instructions Ex d



A0028690-EN

Safety instruction for type of protection 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. GOST 30852.13-2002 (IEC 60079-14:1996)).
- 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 30852.13-2002 (IEC 60079-14:1996), paragraph 16 of GOST 30852.0-2002 (IEC 60079-0:1998), paragraph 13 of GOST 30852.1-2002 (IEC 60079-1:1998) 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 Ta 5 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 30852.1-2002 (IEC 60079-1:1998).
- Use for integral temperature sensors only approved sensors certified for category 2G marked not less than 1ExdIICT6...T4 X for use in 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.

WARNING

Explosive atmosphere

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

Temperature tables Ex d*Permitted ambient temperatures*

Temperature class	Ambient temperature Zone 1 and 2
T6	$-40\text{ °C} \leq T_a \leq +65\text{ °C}$
T5	$-40\text{ °C} \leq T_a \leq +80\text{ °C}$
T4	$-40\text{ °C} \leq T_a \leq +85\text{ °C}$

Electrical connection data Ex d

Type	Supply voltage U_b
iTEMP TMT84, TMT85	9 to 32 V_{DC}
iTEMP TMT82	11 to 42 V_{DC}

Type of protection Ex d

Type of protection (EAC)	Type
1Ex d IIC T6...T4 Ga X	iTEMP TMT82, TMT84, TMT85

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