

Safety Instructions

iTEMP TMT71, TMT72, TMT82, TMT84, TMT85, TMT86

Temperature transmitters

0Ex ia IIC T6...T4 Ga X

1 Ex ia IIC T6...T4 Gb X

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

1Ex db IIC T6...T4 Gb X

Ex tb IIC T105°C Db X



iTEMP TMT71, TMT72, TMT82, TMT84, TMT85, TMT86

Temperature transmitters

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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. iTEMP TMT82

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: EAЭС KZ 7500525.01.01.01840

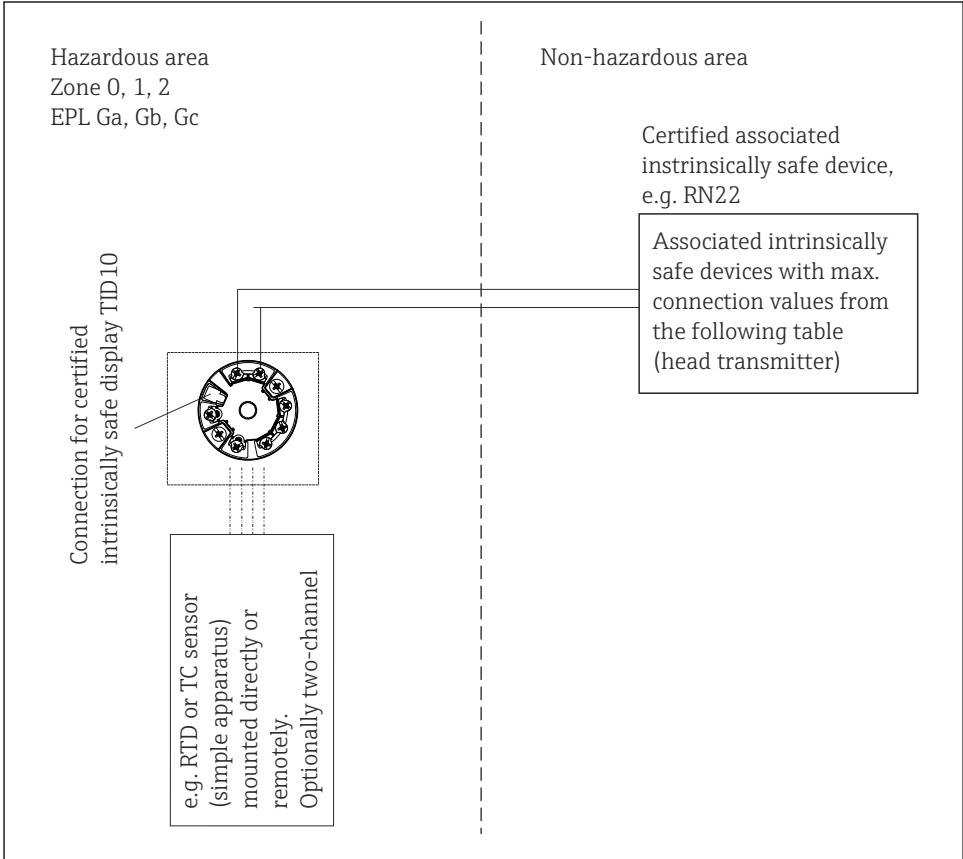
Affixing the certificate number certifies conformity with the following standards:

- 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

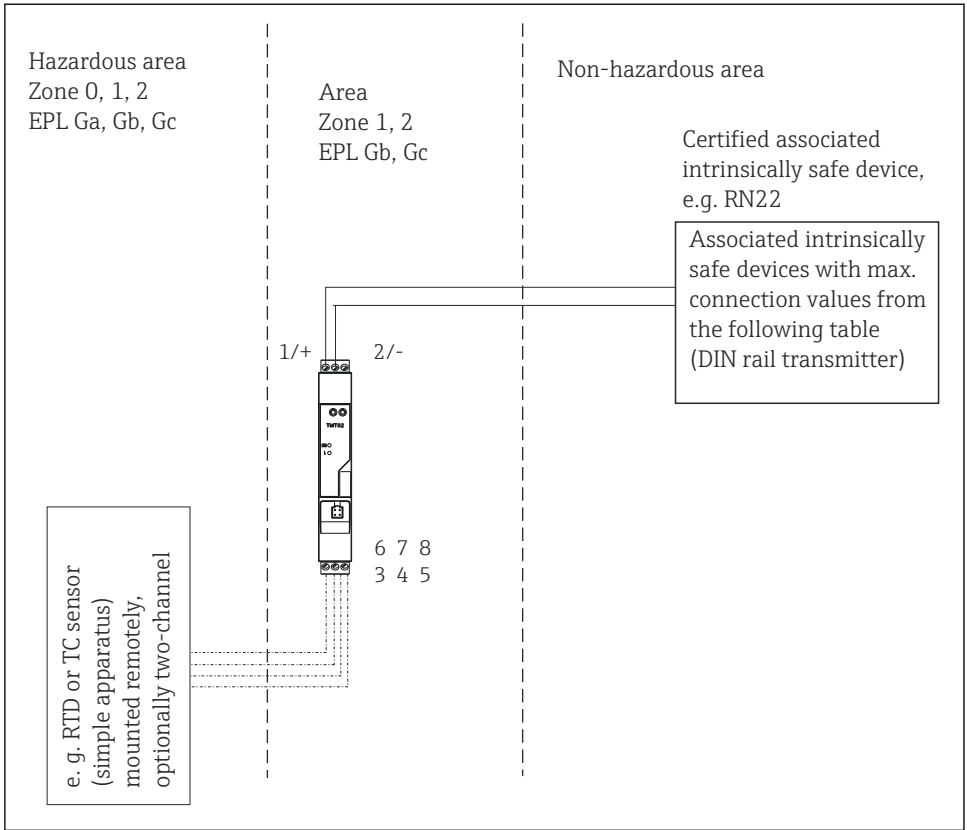
Endress+Hauser Wetzler GmbH + Co. KG
Obere Wank 1
87484 Nesselwang, Germany

Safety instructions
iTEMP TMT82: Ex
i




A0050493

1 Installation of the head transmitter



A0050503

 2 Installation of the DIN rail transmitter

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).
- When installing the unit note that the housing ingress protection classification IP20 according to EN/IEC 60529 is upheld.
- When connecting the measurement unit with a certified circuit of category "ib" into an IIC or IIB hazardous area the ignition class changes to: Ex ib IIC or Ex ib IIB.
- In hazardous areas it is not permitted to use the CDI interface for configuration.

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.

Safety instructions: 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.

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 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.
 - $-52\text{ °C} \leq T_a \leq +60\text{ °C}$
 - $0.8\text{ bar} \leq p \leq 1.1\text{ bar}$

If there is no explosive mixture present or the additional measures according to EN 1127-1 are upheld the unit can also be operated outside the atmospheric conditions according to the manufacturers specification.

- The restricted ambient temperatures as per EN 1127-1 6.4.2 must be observed (see table).
- The power circuit to be supplied must meet the specifications for explosion protection Ex ia IIC (EN/IEC 60079-14 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: silicone).
- 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.

Temperature tables

Type (order option)	Temperature class	Ambient temperature zone 1	Ambient temperature zone 0
iTEMP TMT82- xxA1xxxxxxxxx iTEMP TMT82- xxA2xxxxxxxxx without display	T6	-52 °C = Ta = +58 °C	-52 °C = Ta = +46 °C
	T5	-52 °C = Ta = +75 °C	-52 °C = Ta = +60 °C
	T4	-52 °C = Ta = +85 °C	-52 °C = Ta = +60 °C
iTEMP TMT82- xxA1xxxxxxxxx iTEMP TMT82- xxA2xxxxxxxxx with display (TID)	T6	-40 °C = Ta = +55 °C	
	T5	-40 °C = Ta = +70 °C	
	T4	-40 °C = Ta = +85 °C	
iTEMP TMT82- xxA3xxxxxxxxx (DIN rail transmitter)	T6	-40 °C = Ta = +46 °C	
	T5	-40 °C = Ta = +61 °C	
	T4	-40 °C = Ta = +85 °C	

Electrical connection data

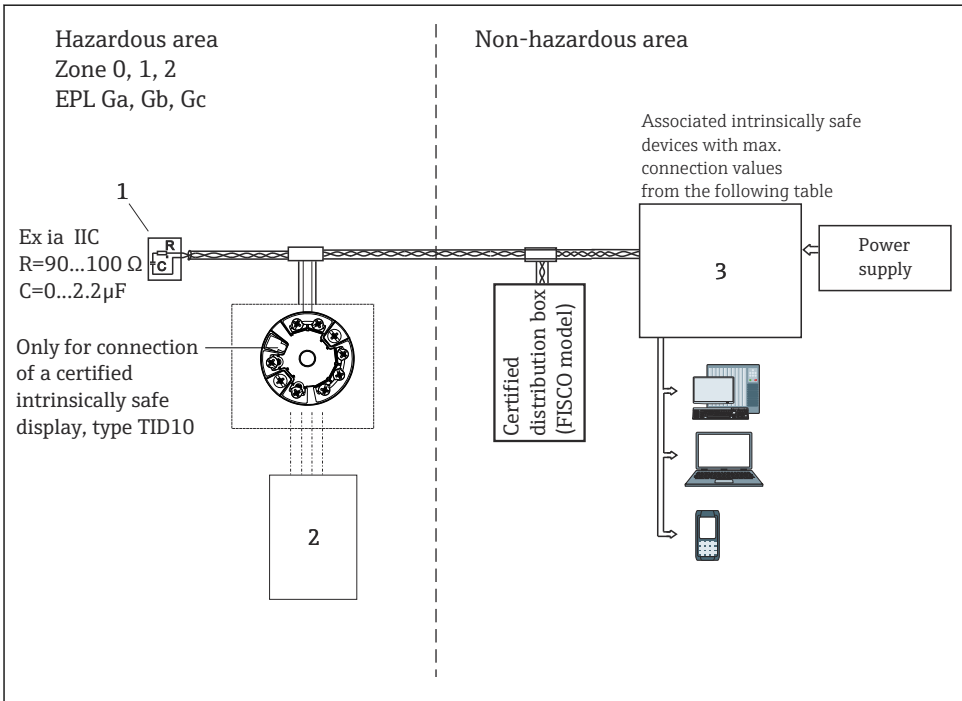
Type	Electrical data		
iTEMP TMT82 HART® Order option: iTEMP TMT82- xxA1xxxxxxxxx iTEMP TMT82- xxA2xxxxxxxxx (head transmitter)	Power supply (terminals + and -)	$U_i \leq 30 V_{DC}$ $I_i \leq 130 \text{ mA}$ $P_i = 800 \text{ mW}$ $C_i = \text{negligibly small}$ $L_i = \text{negligibly small}$	
	Sensor circuit (terminals 3 to 7)	$U_o \leq 7.6 V_{DC}$ $I_o \leq 13 \text{ mA}$ $P_o \leq 24.7 \text{ mW}$	
	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	$L_o = 50 \text{ mH}$	$C_o = 6.7 \mu\text{F}$	
iTEMP TMT82 HART® Order option: iTEMP TMT82- xxA3xxxxxxxxx (DIN rail transmitter)	Display connection (optional)	$U_o \leq 7.6 V_{DC}$ $I_i \leq 130 \text{ mA}$ $C_i = \text{negligibly small}$ $L_i = \text{negligibly small}$	
	Max. connection values		
	Ex ia IIC	$L_o = 3.1 \text{ mH}$	$C_o = 0.64 \mu\text{F}$
	Ex ia IIB	$L_o = 16 \text{ mH}$	$C_o = 3.8 \mu\text{F}$
	Ex ia IIA	$L_o = 27 \text{ mH}$	$C_o = 12 \mu\text{F}$

Type	Electrical data	
	Sensor circuit (terminals 3 to 8)	$U_0 = 9 V_{DC}$ $I_0 = 13 mA$ $P_0 = 29.3 mW$
	Max. connection values	
	Ex ia IIC	$L_0 = 5 mH$ $C_0 = 0.93 \mu F$
	Ex ia IIB	$L_0 = 20 mH$ $C_0 = 3.8 \mu F$
	Ex ia IIA	$L_0 = 50 mH$ $C_0 = 4.8 \mu F$

Safety instructions

iTEMP

TMT84/85: Ex i



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- 1 Termination resistance (FISCO model)
- 2 E.g. RTD or TC sensor (simple apparatus) mounted directly or remotely. Optionally two-channel
- 3 Certified additional operating material (FISCO model) with max. connection values from the following table

Safety instructions: Installation

- Install the device according to the manufacturer's instructions and any other valid standards and regulations (e.g. EN/IEC 60079-14).
- When installing the unit note that the housing ingress protection classification IP20 according to EN/IEC 60529 is upheld.
- When connecting the measurement unit with a certified circuit of category "ib" into an IIC or IIB hazardous area the ignition class changes to: Ex ib IIC or Ex ib IIB.
- The device (terminal 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 1500 V, ceramic).
- Disconnect the transmitter from the power supply, terminals (1+) and (2-), before accessing the device via the CDI (Endress+Hauser Common Data Interface) using the Commubox type FXA291.

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

(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 EN 1127-1 are upheld the unit can also be operated outside the atmospheric conditions according to the manufacturers specification.

- The restricted ambient temperatures as per EN 1127-1 6.4.2 must be observed (see table).
- The power circuit to be supplied must meet the specifications for explosion protection Ex ia IIC (EN/IEC 60079-14 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 (silicone)).
- 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: Specific conditions of use

- Only the display type TID10, which has undergone an EU-Type Examination in accordance with PTB 08 ATEX 2007, may be optionally connected to the display interface of the iTEMP TMT8x and OTMT8x temperature head transmitter.
- Please ensure that no electrostatic charge can occur during installation of the iTEMP TMT84, TMT85 or OTMT84 and OTMT85 temperature head transmitter.

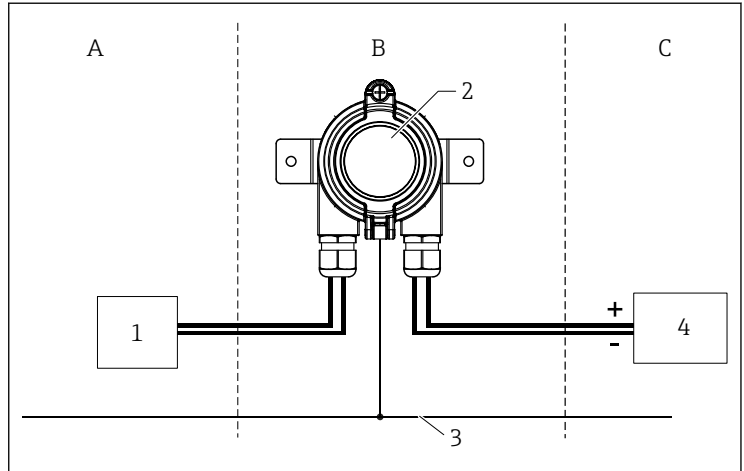
Temperature tables

Type	Temperature class	Ambient temperature zone 1	Ambient temperature zone 0
iTEMP TMT84 iTEMP TMT85	T6	$-40\text{ °C} \leq T_a \leq +55\text{ °C}$	$-20\text{ °C} \leq T_a \leq +40\text{ °C}$
	T5	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$	$-20\text{ °C} \leq T_a \leq +50\text{ °C}$
	T4	$-40\text{ °C} \leq T_a \leq +85\text{ °C}$	$-20\text{ °C} \leq T_a \leq +60\text{ °C}$

Electrical connection

Type	Electrical data		
iTEMP TMT84 iTEMP TMT85	Power supply (terminals + and -)	$U_i \leq 17.5\text{ V}_{DC}$ or $I_i \leq 380\text{ mA}$	24 V_{DC} 250 mA $P_i \leq 1400\text{ mW}$
		$C_i = 5\text{ nF}$ $L_i = 2.75\text{ }\mu\text{H}$	5 nF 2.75 μH
	Applicable for connection to a Fieldbus system according to FISCO/FNICO-model		
	Sensor circuit (terminals 3 to 6)	$U_o \leq 7.2\text{ V}_{DC}$ $I_o \leq 25.9\text{ mA}$ $P_o \leq 46.7\text{ mW}$ $C_i = 5\text{ nF}$ $L_i = \text{negligibly small}$	
Max. connection values			
Ex ia IIC	$L_o = 20\text{ mH}$		$C_o = 0.97\text{ }\mu\text{F}$
Ex ia IIB	$L_o = 50\text{ mH}$		$C_o = 4.6\text{ }\mu\text{F}$
Ex ia IIA	$L_o = 100\text{ mH}$		$C_o = 6.0\text{ }\mu\text{F}$

Safety instructions
iTEMP TMT86: Ex i



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- A Hazardous area; Zone 0, 1, 2; EPL Ga, Gb, Gc
 B Hazardous area; Zone 1, 2; EPL Gb, Gc
 C Non-hazardous area
 1 Remote mount sensor configuration, e. g. RTD, TC Sensor (simple apparatus)
 2 Temperature transmitter with field housing as option
 3 Local potential equalization
 4 Associated intrinsically safe devices with maximum connection values from the following table

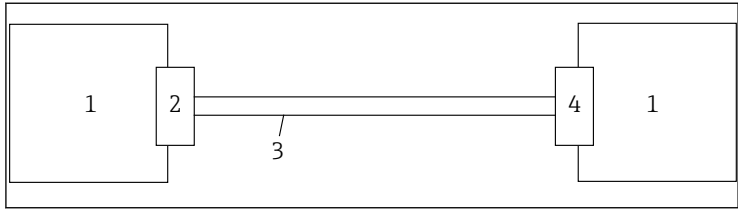


Interconnection details see in transmitter installation graphics in the associated operating instructions.

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).
- When installing the unit note that the housing ingress protection classification IP20 according to EN/IEC 60529 is upheld.
- When connecting the device with a certified circuit of category “ib” into an IIC or IIB hazardous area the ignition class changes to: Ex ib IIC or Ex ib IIB.
- In hazardous areas it is not permitted to use the CDI interface for configuration.

Safety instructions: 2-WISE



A0049009

- 1 2-WISE device
- 2 2-WISE power source port
- 3 Cable
- 4 2-WISE power load port

Approved 2-WISE device (1) with intrinsically safe 2-WISE power source port (2)		Approved 2-WISE device (1) with intrinsically safe 2-WISE power load port (4)	
$U_o (V_{oc}) = 14 \text{ to } 17.5 \text{ V}$	$C_i \leq 5 \text{ nF}$	$U_i (V_{max}) = 17.5 \text{ V}$	$C_i \leq 5 \text{ nF}$
$I_o (I_{sc}) \leq 380 \text{ mA}$	$L_i \leq 10 \text{ }\mu\text{H}$	$I_i (I_{max}) = 380 \text{ mA}$	$L_i \leq 10 \text{ }\mu\text{H}$
$P_o (P_{max}) \leq 5.32 \text{ W}$		$P_i (P_{max}) = 5.32 \text{ W}$	
		Leakage current $\leq 1 \text{ mA}$	

Temperature transmitter with maximum connection values see table electrical data.

- The 2-WISE concept allows interconnection of intrinsically safe apparatus and associated apparatus not specially assessed for such a combination. For the acceptance of the interconnection of the different intrinsically safe circuits of these apparatus, the comparison of the voltage $U_i (V_{max})$ with $U_o (V_{oc})$, the current $I_i (I_{max})$ with $I_o (I_{oc})$, and the power $P_i (P_{max})$ with $P_o (P_{max})$ of the interconnected circuits must demonstrate that $U_i (V_{max})$, $I_i (I_{max})$ and $P_i (P_{max})$ are equal to or greater than $U_o (V_{oc})$, $I_o (I_{sc})$ and $P_o (P_{max})$ of the connected circuits.
- In addition, the maximum internal capacitance (C_i) and maximum internal inductance (L_i) of each apparatus (other than those from auxiliary devices) connected to a 2-WISE system must not exceed 5 nF and 10 μH respectively.
- In a powered 2-WISE system only 2 ports (power source and power load) are allowed to be connected at the opposite ends of a cable, with a maximum of two auxiliary devices connected in between. The power source port supplies DC power to the system, and the power load port consumes DC power from the system. Auxiliary device ports may also consume DC power from the system.

- The voltage U_0 (V_{oc}) of a power source port must be in the range of 14 to 17.5 V. Any other device connected to the cable shall be passive, meaning that it is not allowed to provide energy to the system, with the exception of a leakage current of 1 mA for a power load port and a leakage current of 50 μ A for each auxiliary device port.
- The intrinsically safe circuit of a 2-WISE port shall be galvanically isolated from non-intrinsically safe circuits.
- The parameters of cable used to interconnect 2-WISE ports must be as follows:
 - Cable resistance R_c : 15 to 150 Ohm/km
 - Cable inductance L_c : 0.4 to 1 mH/km
 - Cable capacitance C_c ¹⁾: 45 to 200 nF/km
 - Length of cable (not including cable stubs): ≤ 200 m
 - Length of cable stubs: ≤ 1 m

If the above rules are respected, the inductance and the capacitance of the cable will not impair the intrinsic safety of the installation.

Safety instructions: Head transmitter

- The device installed in a terminal 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 TID10 display are to be observed.

Safety instructions: Field housing (as option)

- The housing of the field transmitter must be connected to the potential matching line.
- When connecting two independent sensors make sure that the potential equalisation cables are at the same potential.
- The circuits of an assembled head transmitter are isolated from its terminal head in conformance with EN/IEC 60079-11 chapter 6.3.13.

Safety instructions: Zone 0

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

1) $C_c = C_c \text{ line/line} + 0.5 C_c \text{ line/screen}$, if both lines are floating, or $C_c = C_c \text{ line/line} + C_c \text{ line/screen}$ if the screen is connected to one line

- In the event of potentially explosive vapor/air mixtures, only operate the device under atmospheric conditions.
 - Temperature: -52 to $+60$ °C
 - Pressure: 80 to 110 kPa (0.8 to 1.1 bar)
 - Air with normal oxygen content, usually 21 % (V/V)
- If no potentially explosive mixtures are present, or if additional protective measures have been taken according to EN 1127-1, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.
- The restricted ambient temperatures as per EN 1127-1 6.4.2 must be observed (see table).
- The power circuit to be supplied must meet the specifications for explosion protection Ex ia IIC (EN/IEC 60079-14 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: silicone.
- It is not permitted to mount the TID10 display in zone 0/EPL Ga.
- The temperature transmitter must be installed so that electrostatic charge cannot occur, e.g. installation in grounded metallic head or grounded housing.

Safety instructions: Specific conditions of use

- In hazardous areas it is not permitted to use the CDI interface of the device for configuration.
- The device must be protected against electrostatic charge/discharge.

Temperature tables

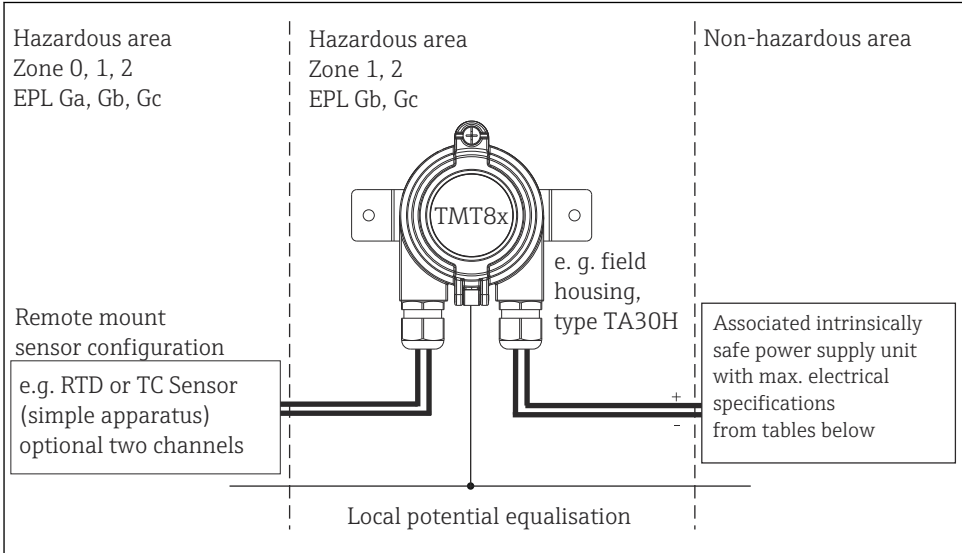
Type (order option)	Temperature class	Ambient temperature EPL Gb/Zone 1	Ambient temperature EPL Ga/Zone 0
iTEMP TMT86-xxA1xxxx Head transmitter without display	T6	$-52\text{ °C} \leq T_a \leq +55\text{ °C}$	$-52\text{ °C} \leq T_a \leq +40\text{ °C}$
	T5	$-52\text{ °C} \leq T_a \leq +70\text{ °C}$	$-52\text{ °C} \leq T_a \leq +60\text{ °C}$
	T4	$-52\text{ °C} \leq T_a \leq +85\text{ °C}$	$-52\text{ °C} \leq T_a \leq +60\text{ °C}$
iTEMP TMT86-xxA1xxxx 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	$-40\text{ °C} \leq T_a \leq +85\text{ °C}$	-
iTEMP TMT86-xxA1xxxx Field housing without display	T6	$-52\text{ °C} \leq T_a \leq +55\text{ °C}$	-
	T5	$-52\text{ °C} \leq T_a \leq +70\text{ °C}$	-
	T4	$-52\text{ °C} \leq T_a \leq +85\text{ °C}$	-

Type (order option)	Temperature class	Ambient temperature EPL Gb/Zone 1	Ambient temperature EPL Ga/Zone 0
iTEMP TMT86-xxA1xxxx 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	$-40\text{ °C} \leq T_a \leq +85\text{ °C}$	-

Electrical connection data

Type	Electrical data	
iTEMP TMT86 Order option: iTEMP TMT86-xxA1xxxx (Head transmitter)	Power supply (terminals + and -): Respectively as a field device appropriate for connection to a field bus system according to the FISCO-model	$U_i \leq 17.5\text{ V}_{DC}$ $I_i \leq 380\text{ mA}$ $C_i = \text{negligibly small}$ $L_i = \text{negligibly small}$
	Sensor circuit (terminals 3 to 7):	$U_o \leq 3.71\text{ V}_{DC}$ $I_o \leq 5.24\text{ mA}$ $P_o \leq 4.86\text{ mW}$
	Display connection (as option)	$U_o \leq 3.9\text{ V}_{DC}$ $I_o \leq 4\text{ mA}$ $C_i = \text{negligibly small}$ $L_i = \text{negligibly small}$
	Max. combined connection values:	
	Ex ia IIC Ex ia IIB Ex ia IIA	$L_o = 50\text{ mH}$ $C_o = 4\text{ }\mu\text{F}$ $L_o = 100\text{ mH}$ $C_o = 24\text{ }\mu\text{F}$ $L_o = 100\text{ mH}$ $C_o = 64\text{ }\mu\text{F}$

Safety instructions
iTEMP
TMT82/84/85: Ex ia [ia Ga] IIC T6



A0050182

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 the field transmitter must be connected to the potential matching line.
- The type of protection changes as follows when the device is 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 (EPL Ga).
- When connecting two independent sensors make sure that the potential equalisation cables are at the same potential.
- The circuits of assembled head transmitter are isolated from its enclosure in conformance with EN/IEC 60079-11 chapter 6.3.13.

Safety instructions: Specific conditions of use

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

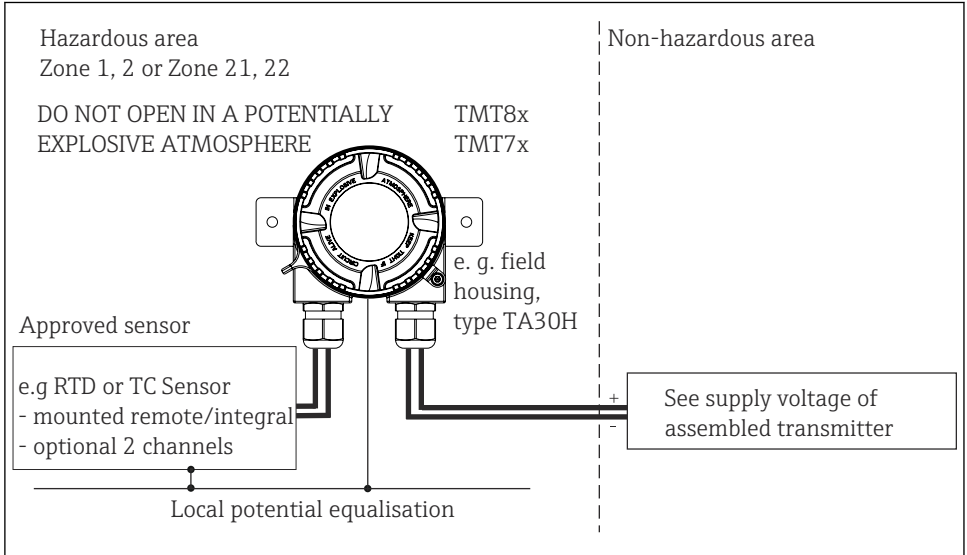
Transmitter version with field housing, type TA30H, TA30A, TA30D		Temperature class / code	Ambient temperature range
Ex ia IIC	iTEMP TMT82 without display TID10	T6	-52 to +58 °C
		T5	-52 to +75 °C
		T4	-52 to +85 °C
	iTEMP TMT84 and iTEMP TMT85 without display TID10	T6	-40 to +55 °C
		T5	-40 to +70 °C
		T4	-40 to +85 °C
	iTEMP TMT82, TMT84, TMT85 with display TID10	T6	-40 to +55 °C
		T5	-40 to +70 °C
		T4	-40 to +85 °C

Transmitter version with field mount housing (dual compartment)		Temperature class / code	Ambient temperature range
Ex ia IIC	iTEMP TMT82 without display TID10	T6	-40 to +58 °C
		T5	-40 to +75 °C
		T4	-40 to +85 °C
	iTEMP TMT82 with display TID10	T6	-40 to +55 °C
		T5	-40 to +70 °C
		T4	-40 to +85 °C

Electrical connection

Type	Electrical data											
iTEMP TMT82 HART®-protocol	Supply voltage (terminal + and -)	$U_i \leq 30 V_{DC}$ $I_i \leq 130 \text{ mA}$ $P_i \leq 800 \text{ mW}$ $C_i = \text{negligibly small}$ $L_i = \text{negligibly small}$										
	Sensor circuit (terminal 3 to 7)	$U_o \leq 7.6 V_{DC}$ $I_o \leq 13 \text{ mA}$ $P_o \leq 24.7 \text{ mW}$ $C_i = \text{negligibly small}$ $L_i = \text{negligibly small}$										
	Maximum connection values	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Ex ia IIC</td> <td style="width: 25%;">$L_o = 10 \text{ mH}$</td> <td style="width: 25%;">$C_o = 1 \mu\text{F}$</td> </tr> <tr> <td>Ex ia IIB</td> <td>$L_o = 50 \text{ mH}$</td> <td>$C_o = 4.5 \mu\text{F}$</td> </tr> <tr> <td>Ex ia IIA</td> <td>$L_o = 50 \text{ mH}$</td> <td>$C_o = 6.7 \mu\text{F}$</td> </tr> </table>	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	$L_o = 50 \text{ mH}$	$C_o = 6.7 \mu\text{F}$	
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iTEMP TMT84 PROFIBUS® PA-protocol iTEMP TMT85 FOUNDATION Fieldbus™-protocol	Supply voltage (terminal + and -)	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">FISCO:</td> <td style="width: 50%;">or:</td> </tr> <tr> <td>$U_i \leq 17.5 V_{DC}$</td> <td>$U_i \leq 24 V_{DC}$</td> </tr> <tr> <td>$I_i \leq 380 \text{ mA}$</td> <td>$I_i \leq 250 \text{ mA}$</td> </tr> <tr> <td>$C_i \leq 5 \text{ nF}$</td> <td>$C_i \leq 5 \text{ nF}$</td> </tr> <tr> <td>$L_i = 2.75 \mu\text{H}$</td> <td>$L_i = 2.75 \mu\text{H}$</td> </tr> </table>	FISCO:	or:	$U_i \leq 17.5 V_{DC}$	$U_i \leq 24 V_{DC}$	$I_i \leq 380 \text{ mA}$	$I_i \leq 250 \text{ mA}$	$C_i \leq 5 \text{ nF}$	$C_i \leq 5 \text{ nF}$	$L_i = 2.75 \mu\text{H}$	$L_i = 2.75 \mu\text{H}$
	FISCO:	or:										
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$L_i = 2.75 \mu\text{H}$	$L_i = 2.75 \mu\text{H}$											
Applicable for connection to a Fieldbus system according to FISCO-model												
Sensor circuit (terminal 3 to 7)	$U_o \leq 7.2 V_{DC}$ $I_o \leq 25.9 \text{ mA}$ $P_o \leq 46.7 \text{ mW}$ $C_i \leq 5 \text{ nF}$ $L_i = \text{negligibly low}$											
Max. connection values	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Ex ia IIC</td> <td style="width: 25%;">$L_o = 20 \text{ mH}$</td> <td style="width: 25%;">$C_o = 0.97 \mu\text{F}$</td> </tr> <tr> <td>Ex ia IIB</td> <td>$L_o = 50 \text{ mH}$</td> <td>$C_o = 4.6 \mu\text{F}$</td> </tr> <tr> <td>Ex ia IIA</td> <td>$L_o = 100 \text{ mH}$</td> <td>$C_o = 6 \mu\text{F}$</td> </tr> </table>	Ex ia IIC	$L_o = 20 \text{ mH}$	$C_o = 0.97 \mu\text{F}$	Ex ia IIB	$L_o = 50 \text{ mH}$	$C_o = 4.6 \mu\text{F}$	Ex ia IIA	$L_o = 100 \text{ mH}$	$C_o = 6 \mu\text{F}$		
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Safety instructions
iTEMP
TMT71/72/82/84
/85/86: Ex d, Ex t



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Safety instructions: Installation

Type 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 field transmitter must be connected to the potential matching line.
- Only the approved wire entries as specified in paragraph 10.3 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 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 °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 EN/IEC 60079-1.
- 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 (EPL Gb).
- 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 (EPL Ga) resp. Zone 1 (EPL Gb).
- 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

- 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 EN/IEC 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 +5 K above surrounding.

- Use for integral temperature sensors only approved sensors certified for category 1D or 2D marked not less than II1/2D Ex ta/Ex tb IIIC T135 °C Da/Db or II2D Ex tb IIIC T135 °C Db for use in Zone 20 (EPL Da) or Zone 21 (EPL Db).
- Use for remote temperature sensors only approved sensors certified for category 2D marked not less than II2D Ex tb IIIC 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

- In an explosive atmosphere, do not open the device when voltage is supplied (ensure that the IP6x housing protection is maintained during operation).

Temperature tables

Transmitter version with field housing, type TA30H, TA30A, TA30D		Temperature class / code	Ambient temperature range
Ex db IIC / Ex tb IIIC	iTEMP TMT71, TMT72, TMT82, TMT84 and TMT85 and TMT86, 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
Ex tb IIIC		T105 °C	-50 to +85 °C

Transmitter version with field mount housing (dual compartment)		Temperature class / code	Ambient temperature range
Ex db IIC / Ex tb IIIC	iTEMP TMT82 with or without display TID10	T6 / T85 °C	-40 to +55 °C
		T5 / T100 °C	-40 to +70 °C
		T4 / T110 °C	-40 to +80 °C
Ex tb IIIC		T110 °C	-40 to +80 °C

Electrical connection

Type	Supply voltage U_b
iTEMP TMT84, TMT85	9 to 32 V _{DC}
iTEMP TMT86	9 to 30 V _{DC}
iTEMP TMT82	11 to 42 V _{DC}
iTEMP TMT71, TMT72	10 to 36 V _{DC}



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