

Safety Instructions

Temperature transmitter

iTEMP TMT181, TMT182, TMT187, TMT188

OExiaIICT6...T4 X



Document: XA01423T
Safety instructions for electrical apparatus for explosion-hazardous areas →  3

Temperature transmitter

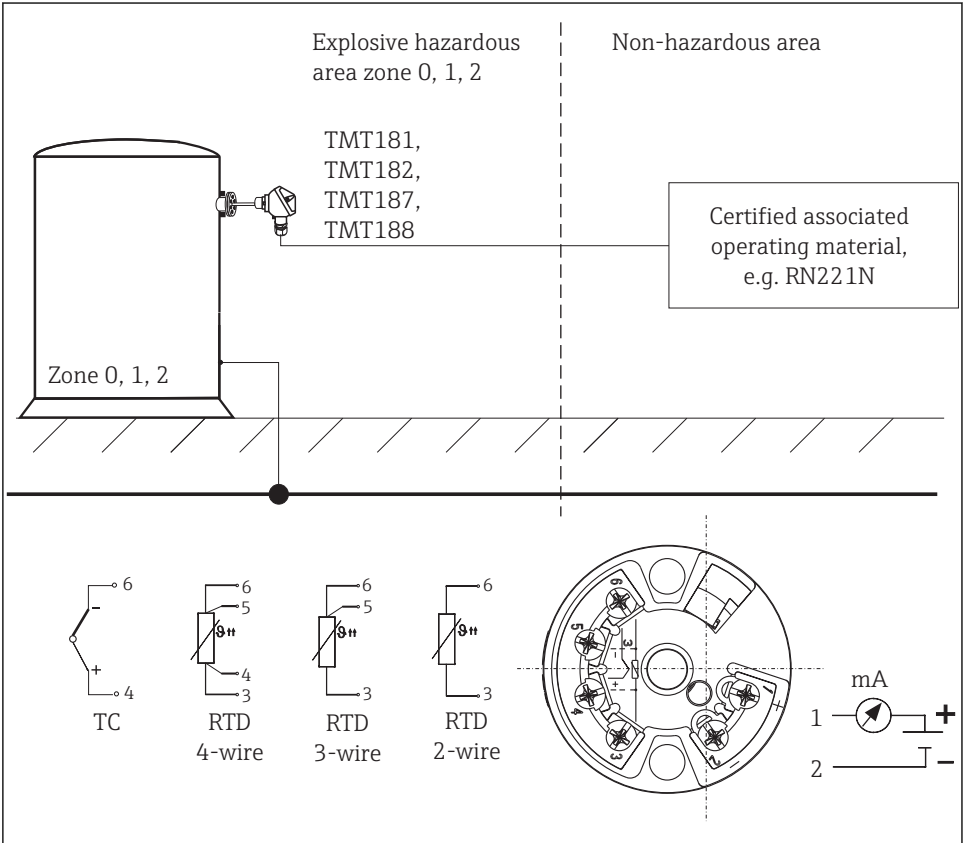
iTEMP TMT181, TMT182, TMT187, TMT188

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Associated documentation	<p>This document is an integral part of the following Operating Instructions:</p> <ul style="list-style-type: none">■ TMT181: KA00141R/09/■ TMT182: KA00142R/09/■ TMT187, TMT188: KA00120R/09/ <p>The Operating Instructions which correspond to the device type apply.</p>
Supplementary Documentation	<p>Explosion-protection brochure: CP00021Z/11</p>
EAC certificate of conformity according to TR CU 012/2011	<p>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 in accordance with TR CU 012/2011.</p> <p>Certification body: НАННО "ЦСВЭ"</p> <p>Certificate number: TC RU C-DE.ГБ05.В.00919</p> <p>Affixing the certificate number certifies conformity with the following standards:</p> <p>GOST 30852.0-2002 (IEC 60079-0:1998) GOST 30852.1-2002 (IEC 60079-1:1998) GOST 30852.10-2002 (IEC 60079-11:1999)</p>
Manufacturer address	<p>Endress+Hauser Wetzler GmbH + Co KG Obere Wank 1 D-87484 Nesselwang Germany Phone: +49 (0)8361 308 0</p>

Safety instructions



A0028703-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. ГОСТ 30852.13-2002 (МЭК 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 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.

- For TMT182: Unit set-up is also allowed in the Ex area using a certified handheld module, e.g. DXR375 or SFX100.
- Setting up the head transmitter (only TMT181 is possible) is only allowed to be done in a nonhazardous area.
Instrumentation used for setting up must not exceed a voltage of $U_m = 30\text{ V}$, this can, for example, be achieved by using battery powered laptops. Setting up with a mains powered PC $U_m = 253\text{ V}$ can only be done when using an approved adapter with barrier, e.g. TMT181A-VK.
- When interconnecting the rules and regulations for such intrinsically safe circuits must adhered to.
- The device (connection head) must be connected to the potential compensation cable.

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 ГOCT 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 ГOCT 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 (ГOCT 30852.13-2002 (MЭК 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)).
- 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	Temperature class	Ambient temperature Zone 1, 2	Ambient temperature Zone 0
TMT181, TMT187, TMT188	T6	$T_a = -40\text{ to }+55\text{ °C}$	$T_a = -20\text{ to }+40\text{ °C}$
	T5	$T_a = -40\text{ to }+70\text{ °C}$	$T_a = -20\text{ to }+50\text{ °C}$
	T4	$T_a = -40\text{ to }+85\text{ °C}$	$T_a = -20\text{ to }+60\text{ °C}$

Type (order code)	Temperature class	Ambient temperature Zone 1, 2	Ambient temperature Zone 0
TMT182-VxxxA/B/K (without advanced diagnostic)	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	$-40\text{ °C} \leq T_a \leq +85\text{ °C}$	$-20\text{ °C} \leq T_a \leq +60\text{ °C}$
TMT182-VxxxC/D/L (with advanced diagnostic)	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 data

Type	Electrical data
TMT181, TMT187, TMT188	<p>Power supply set (terminals 1 and 2)</p> <ul style="list-style-type: none"> $U_i \leq 30\text{ V}_{DC}$ $I_i \leq 100\text{ mA}$ $P_i \leq 750\text{ mW}$ $C_i = \text{negligible low}$ $L_i = \text{negligible low}$ <p>Sensor circuit (terminals 3 to 6)</p> <ul style="list-style-type: none"> $U_o \leq 8.2\text{ V}_{DC}$ $I_o \leq 4.6\text{ mA}$ $P_o \leq 9.35\text{ mW}$ <p>Max. connection values</p> <ul style="list-style-type: none"> Ex ia IIC $L_o = 4.5\text{ mH}$ $C_o = 974\text{ nF}$ Ex ia IIB $L_o = 8.5\text{ mH}$ $C_o = 1900\text{ nF}$

Type (order code)	Electrical data
TMT182-VxxxA/B/K (without advanced diagnostic)	<p>Supply (terminal 1 and 2)</p> <ul style="list-style-type: none"> $U_i \leq 30\text{ V}_{DC}$ $I_i \leq 100\text{ mA}$ $P_i \leq 750\text{ mW}$ $C_i = \text{negligible low}$ $L_i = \text{negligible low}$ <p>Sensor circuit (terminal 3 to 6)</p> <ul style="list-style-type: none"> $U_o \leq 5\text{ V}_{DC}$ $I_o \leq 5.4\text{ mA}$ $P_o \leq 6.6\text{ mW}$

Type (order code)	Electrical data									
	<p>Ci = negligible low</p> <p>Li = negligible low</p> <p>Max. connection values</p> <table border="0"> <tr> <td>Ex ia IIC</td> <td>Lo = 100 mH</td> <td>Co = 2 µF</td> </tr> <tr> <td>Ex ia IIB</td> <td>Lo = 100 mH</td> <td>Co = 9.9 µF</td> </tr> <tr> <td>Ex ia IIA</td> <td>Lo = 100 mH</td> <td>Co = 9.9 µF</td> </tr> </table>	Ex ia IIC	Lo = 100 mH	Co = 2 µF	Ex ia IIB	Lo = 100 mH	Co = 9.9 µF	Ex ia IIA	Lo = 100 mH	Co = 9.9 µF
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Ex ia IIB	Lo = 100 mH	Co = 9.9 µF								
Ex ia IIA	Lo = 100 mH	Co = 9.9 µF								

Type (order code)	Electrical data									
TMT182-VxxxC/D/L (with advanced diagnostic)	<p>Supply</p> <p>(terminal + and -)</p> <p>$U_i \leq 30 V_{DC}$</p> <p>$i_i \leq 100 \text{ mA}$</p> <p>$P_i \leq 800 \text{ mW}$</p> <p>Ci = negligible low</p> <p>Li = negligible low</p> <p>Sensor circuit</p> <p>(terminal 3 to 6)</p> <p>$U_o \leq 5 V_{DC}$</p> <p>$I_o \leq 3.6 \text{ mA}$</p> <p>$P_o \leq 4.5 \text{ mW}$</p> <p>Ci = negligible low</p> <p>Li = negligible low</p> <p>Max. connection values</p> <table border="0"> <tr> <td>Ex ia IIC</td> <td>Lo = 100 mH</td> <td>Co = 2.1 µF</td> </tr> <tr> <td>Ex ia IIB</td> <td>Lo = 100 mH</td> <td>Co = 10 µF</td> </tr> <tr> <td>Ex ia IIA</td> <td>Lo = 100 mH</td> <td>Co = 15 µF</td> </tr> </table>	Ex ia IIC	Lo = 100 mH	Co = 2.1 µF	Ex ia IIB	Lo = 100 mH	Co = 10 µF	Ex ia IIA	Lo = 100 mH	Co = 15 µF
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Ex ia IIB	Lo = 100 mH	Co = 10 µF								
Ex ia IIA	Lo = 100 mH	Co = 15 µF								

Type of protection

Type of protection (EAC)	Type
OEx ia IIC T6...T4 X	iTEMP TMT181, TMT182, TMT187, TMT188

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