

# Safety Instructions

## **TMT142R, TMT142C**

RTD and TC Thermometer with display

OEx ia IIC T6...T1 Ga X

Ga/Gb Ex ia IIC T6...T1 X

Ex ia IIIC T85 °C...T450 °C Da/Db X



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Safety instructions for electrical apparatus for explosion-hazardous areas →  2

# TMT142R, TMT142C

RTD and TC Thermometer with display

## Table of contents

Associated documentation .....	3
Supplementary Documentation .....	3
Manufacturer address .....	3
EAC certificate of conformity .....	3
Safety instructions: Installation .....	5
Safety instructions: Zone 0 .....	5
Safety instructions: Special conditions .....	6
Safety instructions: Installation in the zone separating wall .....	6
Temperature table .....	6
Connection data .....	7

**Associated documentation**

Associated Technical Information:

- TI128R/09/EN, RTD thermometer TMT142R
- TI129R/09/EN, Thermocouple thermometer TMT142C

**Supplementary Documentation**

The Explosion-protection brochure is available:

In the download area of the Endress+Hauser website:

[www.endress.com](http://www.endress.com) -> Downloads -> "Brochures and catalogs" -> Text Search: CP00021Z

**Manufacturer address**

Endress+Hauser Wetzlar GmbH + Co. KG

Obere Wank 1,

D-87484 Nesselwang or [www.endress.com](http://www.endress.com)

**EAC certificate of conformity**

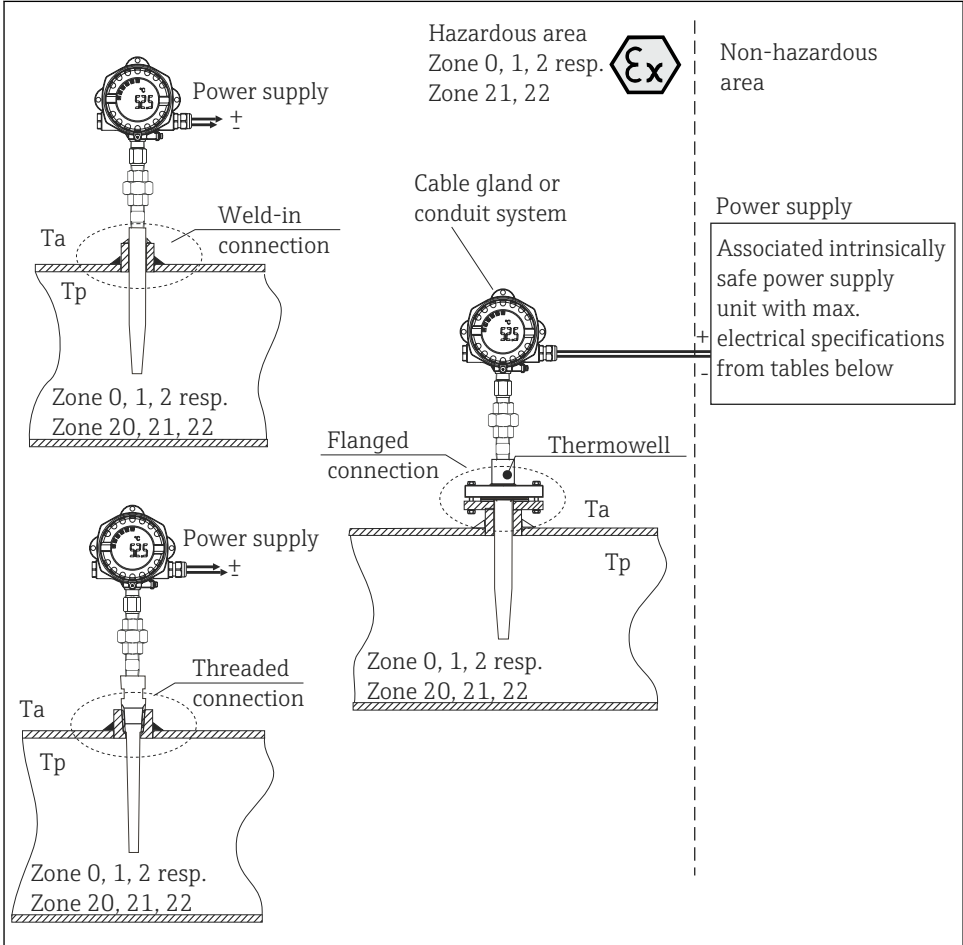
The RTD/TC inserts and cable thermometers meet the fundamental health and safety requirements for the design and construction of devices and protective systems intended for use in potentially explosive atmospheres in accordance with TR CU 012/2011.

- Certification body: "Ex НИИ"
- Certificate number: EAЭС RU C-IT.EX01.B.00054/19

Affixing the certificate number certifies conformity with the following standards:

- GOST 31610.0
- GOST 31610.11
- GOST 31610.26

### Safety instructions



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**Safety  
instructions:  
Installation**

**Intrinsic safety:**

- 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 31610.14).
- 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 without any thermowell.
- When connecting two independent sensors make sure that the potential equalisation cables are at the same potential.

**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. GOST 31610.14).
- Seal the cable entries tight with certified cable glands (min. IP6X) IP6X according to IEC 60529.
- The housing of the thermometer must be connected to the potential matching line.
- For ambient temperatures higher than +70 °C, use suitable heat-resisting cables or wires.
- During operation, the cover must be screwed all the way in and the cover's safety catch must be fastened.

**⚠ WARNING**

**Explosive atmosphere**

- ▶ In an explosive atmosphere, do not open the device when voltage is supplied (ensure that the IP 66/67 housing protection is maintained during operation).

**Safety  
instructions: Zone  
0**

- Only operate devices in potentially explosive vapour/air mixtures 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 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:**  
**Special conditions**

- The thermometer must be installed and maintained 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 only thermowells out of materials complying with GOST 31610.0 chapter 8.3 (e.g. AISI316/W.1.4401, AISI316L/W.1.4404, AISI 316Ti/1.4571)

**Safety instructions:**  
**Installation in the zone separating wall**

This information only has to be observed when the device is installed in a zone separating wall (e.g. category 1/2).

- The separation between the hazardous zone, in which the insert is installed, and the less hazardous area must be sufficiently sealed or explosion-proof, depending on the process conditions.
- The welded parts, process connections, clamping connections, thermowells or housing used must be designed in such a way that they can withstand all influences occurring as a result of the process, such as heat, flow forces, pressure, corrosion, vibration and shocks.
- Use of standardized thermowells (for example DIN 43772) with suitable process connections (welding, screw or flange connections from the industrial or sanitary sector).

In order to effect a zone separation to category 1 by means of mechanical separation, one of the points has to be fulfilled (this only affects electrical circuits that are not intrinsically safe according to the protection level „ia“):

- Use of corrosion-resistant metal (for example Alloy) with a wall thickness of at least 1 mm.
- Use of a homogeneous material (e.g. rusting steel) with a wall thickness of at least 3 mm.

*Protection level of the intrinsically safe power supply of the gauge slide with/without thermowell (separating element as per GOST 31610.26):*

Zone	With thermowell	Without thermowell
Zone 0	ib	ia
Zone 1	ib	ib

**Temperature table**

**Permitted ambient and process temperatures**

The dependency of the ambient and process temperatures upon the temperature class.

Type	Temperature class / code	Ambient temperature (housing)
TMT142R TMT142C	T6/T85 °C	-40 ≤ Ta ≤ +55 °C
	T5/T100 °C	-40 ≤ Ta ≤ +70 °C
	T4/T110 °C	-40 ≤ Ta ≤ +85 °C

Type	Insert diameter	Temperature class	Process temperature range <sup>1)</sup>
TMT142R TMT142C	3 mm, 6 mm dual	T6/T85 °C	-50 ≤ Tp ≤ +55 °C
		T5/T100 °C	-50 ≤ Tp ≤ +70 °C
		T4/T135 °C	-50 ≤ Tp ≤ +105 °C
		T3/T200 °C	-50 ≤ Tp ≤ +170 °C
		T2/T300 °C	-50 ≤ Tp ≤ +265 °C
		T1/T450 °C	-50 ≤ Tp ≤ +415 °C
		6 mm	T6/T85 °C
	T5/T100 °C		-50 ≤ Tp ≤ +83 °C
	T4/T135 °C		-50 ≤ Tp ≤ +118 °C
	T3/T200 °C		-50 ≤ Tp ≤ +183 °C
	T2/T300 °C		-50 ≤ Tp ≤ +278 °C
	T1/T450 °C		-50 ≤ Tp ≤ +428 °C

1) Maximum process pressure see relevant Technical Information

## Connection data

Type	Electrical data
TMT142R, TMT142C HART®-protocol	Supply (terminals + and -): $U_i \leq 30 V_{DC}$ $I_i \leq 300 \text{ mA}$ $P_i \leq 1000 \text{ mW}$ $C_i \leq 5 \text{ nF}$ $L_i = 0$

Category	Type of protection (ATEX)	Type
II 1G	Ex ia IIC T6...T1 Ga	TMT142R, TMT142C
II 1/2D	Ex ia IIIC T85 °C...T450 °C Da/Db	



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