

# Safety Instructions

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

ATEX: Ex ic IIC T6 Gc



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

## Table of contents

|   |   |
|---|---|
| Associated documentation .....                  | 3 |
| Supplementary documentation .....               | 3 |
| Certificates and declarations .....             | 3 |
| Certificate holder .....                        | 3 |
| Safety instructions .....                       | 4 |
| Safety instructions: Installation .....         | 5 |
| Safety instructions: head transmitter .....     | 6 |
| Safety instructions: DIN rail transmitter ..... | 6 |
| Safety instructions: Special conditions .....   | 6 |
| Temperature tables .....                        | 6 |
| Electrical connection data .....                | 7 |

**Associated documentation**

All documentation is available on the Internet:  
[www.endress.com/Deviceviewer](http://www.endress.com/Deviceviewer)  
(enter the serial number from the nameplate).



If not yet available, a translation into EU languages can be ordered.

To commission the device, please observe the Operating Instructions pertaining to the device:

[www.endress.com/<product code>](http://www.endress.com/<product code>), e.g. TMT86

**Supplementary documentation**

Explosion protection brochure: CP00021Z

The explosion protection brochure is available on the Internet:

[www.endress.com/Downloads](http://www.endress.com/Downloads)

**Certificates and declarations****EU Declaration of Conformity**

Declaration number: EC\_00187

Affixing the certificate number certifies conformity with the following standards (depending on the device version)

- EN IEC 60079-0 : 2018
- EN 60079-11 : 2012

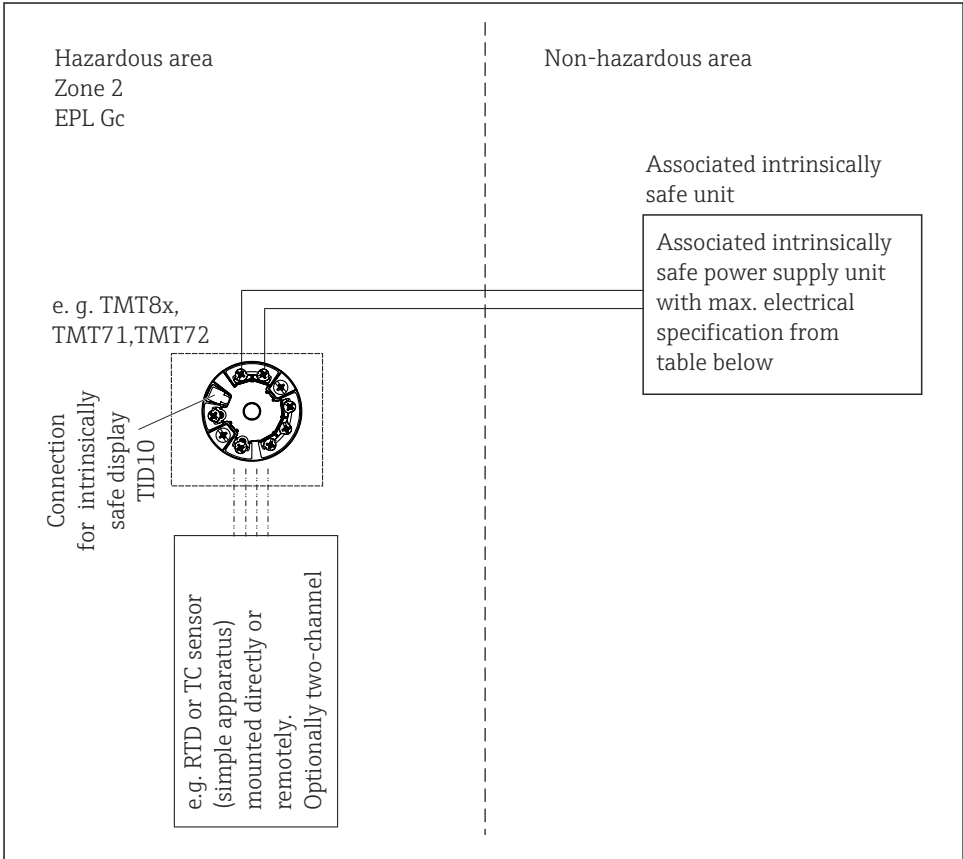
The EU Declaration of Conformity is available on the Internet:

[www.endress.com/Downloads](http://www.endress.com/Downloads)


**Certificate holder**

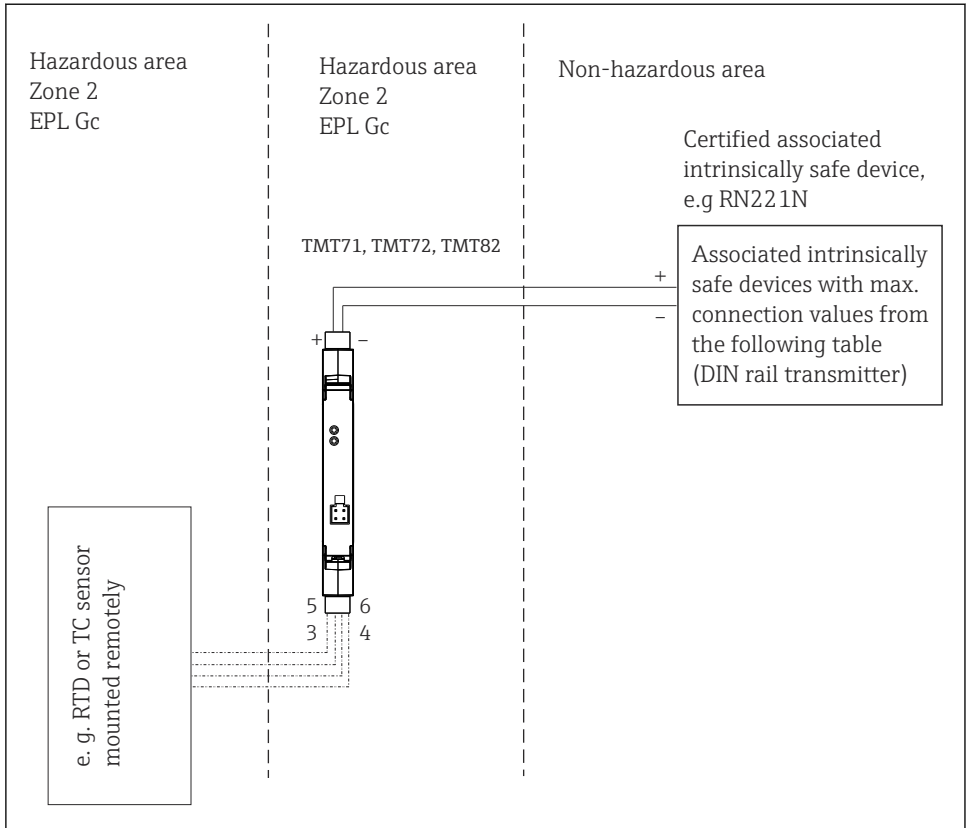
Endress+Hauser Wetzler GmbH + Co. KG  
Obere Wank 1  
87484 Nesselwang, Germany

### Safety instructions



A0052113

 1 Installation of the head 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).
- An enclosure shall be provided meeting the requirements of IP20 in accordance with EN/IEC 60529 or greater according to the intended use and environmental conditions.
- The device is only suitable for connection to certified, intrinsically safe equipment with explosion protection of at least Ex ic.
- If the conditions  $U_i > U_o$ ,  $(I_i > I_o)$ ,  $C_a > C_i + C_{\text{cable}}$  and  $L_a > L_i + L_{\text{cable}}$  are met, the energy-limited installation concept (Ex ic) allows energy-limited devices or associated energy-limited devices to be connected according to the entity concept.

- Observe the pertinent guidelines when interconnecting intrinsically safe circuits (e.g. EN/IEC 60079-14, Proof of Intrinsic Safety).
- The device (terminal head) must be connected to the potential matching line.
- The transmitter 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.

**Safety instructions: head transmitter**

The device (terminal head) must be connected to the potential matching line.

**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: Special conditions**

- 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 code)  | Temperature class | Ambient temperature                        |
|--|-------------------|--|
| TMT82-xxA1xxxxxxxxx<br>TMT82-xxA2xxxxxxxxx<br>without display  | T6                | $-52\text{ °C} \leq Ta \leq +58\text{ °C}$ |
|  | T5                | $-52\text{ °C} \leq Ta \leq +75\text{ °C}$ |
|  | T4                | $-52\text{ °C} \leq Ta \leq +85\text{ °C}$ |
| TMT82-xxA1xxxxxxxxx<br>TMT82-xxA2xxxxxxxxx<br>with display (TID10)   | T6                | $-40\text{ °C} \leq Ta \leq +55\text{ °C}$ |
|  | T5                | $-40\text{ °C} \leq Ta \leq +70\text{ °C}$ |
|  | T4                | $-40\text{ °C} \leq Ta \leq +85\text{ °C}$ |
| TMT84-xxA1xxxxxxxxx<br>TMT84-xxA2xxxxxxxxx<br>TMT85-xxA1xxxxxxxxx<br>TMT85-xxA2xxxxxxxxx<br>without display      | T6                | $-40\text{ °C} \leq Ta \leq +55\text{ °C}$ |
|  | T5                | $-40\text{ °C} \leq Ta \leq +70\text{ °C}$ |
|  | T4                | $-40\text{ °C} \leq Ta \leq +85\text{ °C}$ |
| TMT84-xxA1xxxxxxxxx<br>TMT84-xxA2xxxxxxxxx<br>TMT85-xxA1xxxxxxxxx<br>TMT85-xxA2xxxxxxxxx<br>with display (TID10) | T6                | $-40\text{ °C} \leq Ta \leq +55\text{ °C}$ |
|  | T5                | $-40\text{ °C} \leq Ta \leq +70\text{ °C}$ |
|  | T4                | $-40\text{ °C} \leq Ta \leq +85\text{ °C}$ |

| Type (order code)  | Temperature class | Ambient temperature                         |
|--|-------------------|---|
| TMT86-xxA1xxxxxxx<br>without display                       | T6                | $-52\text{ °C} \leq T_a \leq +58\text{ °C}$ |
|  | T5                | $-52\text{ °C} \leq T_a \leq +75\text{ °C}$ |
|  | T4                | $-52\text{ °C} \leq T_a \leq +85\text{ °C}$ |
| TMT86-xxA1xxxxxxx<br>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<br>Head transmitter<br>without display      | 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<br>Head transmitter<br>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-xxx2xxxx<br>TMT7x-xxx3xxxx<br>DIN rail transmitter   | T6                | $-50\text{ °C} \leq T_a \leq +43\text{ °C}$ |
|  | T5                | $-50\text{ °C} \leq T_a \leq +58\text{ °C}$ |
|  | T4                | $-50\text{ °C} \leq T_a \leq +85\text{ °C}$ |

## Electrical connection data

| Type   | Electrical data                     |  |
|--|-------------------------------------|--|
| TMT82 HART®<br>order code:<br>TMT82-xxA1xxxxxxxxx<br>TMT82-xxA2xxxxxxxxx | Supply<br>(terminal + and -)        | $U_i \leq 42\text{ V}_{DC}$<br>$I_i$ = not applicable (current-controlled circuit)<br>$P_i$ = not applicable<br>$C_i$ = negligible small<br>$L_i$ = negligible small |
|  | Sensor circuit<br>(terminal 3 to 7) | $U_o \leq 7.6\text{ V}_{DC}$<br>$I_o \leq 13\text{ mA}$<br>$P_o \leq 24.7\text{ mW}$   |
|  | Max. connection values              |  |
|  | Ex ic IIC<br>Ex ic IIB<br>Ex ic IIA | $L_o = 10\text{ mH}$ $C_o = 1\text{ }\mu\text{F}$<br>$L_o = 50\text{ mH}$ $C_o = 4.5\text{ }\mu\text{F}$<br>$L_o = 50\text{ mH}$ $C_o = 6.7\text{ }\mu\text{F}$      |

| Type  | Electrical data   |                        |                       |                       |           |                        |                        |           |                        |                        |
|---|---|------------------------|-----------------------|-----------------------|-----------|------------------------|------------------------|-----------|------------------------|------------------------|
| TMT71, TMT72<br>Order option:<br>TMT7x-xxx1xxxx<br>(head transmitter),<br>TMT7x-xxx2xxxx,<br>TMT7x-xxx3xxxx<br>(DIN rail transmitter) | <p>Power supply</p> <p>(terminals + and -)</p> <p><math>U_i \leq 30 V_{DC}</math><br/> <math>I_i \leq 100 \text{ mA}</math><br/> <math>P_i = 800 \text{ mW}</math> (head)<br/> <math>P_i = 700 \text{ mW}</math> (DIN rail)<br/> <math>C_i = \text{negligibly small}</math><br/> <math>L_i = \text{negligibly small}</math></p> <p>Sensor circuit</p> <p>(terminal 3 to 6)</p> <p><math>U_o \leq 4.3 V_{DC}</math><br/> <math>I_o \leq 4.8 \text{ mA}</math><br/> <math>P_o \leq 5.2 \text{ mW}</math></p> <p>Max. connection values</p> <table> <tr> <td>Ex ic IIC</td> <td><math>L_o = 50 \text{ mH}</math></td> <td><math>C_o = 3 \mu\text{F}</math></td> </tr> <tr> <td>Ex ic IIB</td> <td><math>L_o = 100 \text{ mH}</math></td> <td><math>C_o = 18 \mu\text{F}</math></td> </tr> <tr> <td>Ex ic IIA</td> <td><math>L_o = 100 \text{ mH}</math></td> <td><math>C_o = 48 \mu\text{F}</math></td> </tr> </table> | Ex ic IIC              | $L_o = 50 \text{ mH}$ | $C_o = 3 \mu\text{F}$ | Ex ic IIB | $L_o = 100 \text{ mH}$ | $C_o = 18 \mu\text{F}$ | Ex ic IIA | $L_o = 100 \text{ mH}$ | $C_o = 48 \mu\text{F}$ |
| Ex ic IIC   | $L_o = 50 \text{ mH}$   | $C_o = 3 \mu\text{F}$  |                       |                       |           |                        |                        |           |                        |                        |
| Ex ic IIB   | $L_o = 100 \text{ mH}$  | $C_o = 18 \mu\text{F}$ |                       |                       |           |                        |                        |           |                        |                        |
| Ex ic IIA   | $L_o = 100 \text{ mH}$  | $C_o = 48 \mu\text{F}$ |                       |                       |           |                        |                        |           |                        |                        |

| Type            | Electrical data   |                          |                       |                          |           |                       |                         |           |                        |                       |
|-----------------|---|--------------------------|-----------------------|--------------------------|-----------|-----------------------|-------------------------|-----------|------------------------|-----------------------|
| TMT84,<br>TMT85 | <p>Supply</p> <p>(terminal + and -)</p> <p>FISCO:<br/> <math>U_i \leq 17.5 V_{DC}</math><br/> <math>I_i = \text{not applicable}</math><br/> (current-controlled circuit)<br/> <math>C_i \leq 5 \text{ nF}</math><br/> <math>L_i = 2.75 \mu\text{F}</math></p> <p>or:<br/> <math>U_i \leq 32 V_{DC}</math><br/> <math>I_i \leq 11 \text{ mA}</math></p> <p>Applicable for connection to a Fieldbus system according to FISCO-model</p> <p>Sensor circuit</p> <p>(terminal 3 to 7)</p> <p><math>U_o \leq 7.2 V_{DC}</math><br/> <math>I_o \leq 25.9 \text{ mA}</math><br/> <math>P_o \leq 46.7 \text{ mW}</math><br/> <math>C_i \leq 5 \text{ nF}</math><br/> <math>L_i = \text{negligible low}</math></p> <p>Max. connection values</p> <table> <tr> <td>Ex ic IIC</td> <td><math>L_o = 20 \text{ mH}</math></td> <td><math>C_o = 0.97 \mu\text{F}</math></td> </tr> <tr> <td>Ex ic IIB</td> <td><math>L_o = 50 \text{ mH}</math></td> <td><math>C_o = 4.6 \mu\text{F}</math></td> </tr> <tr> <td>Ex ic IIA</td> <td><math>L_o = 100 \text{ mH}</math></td> <td><math>C_o = 6 \mu\text{F}</math></td> </tr> </table> | Ex ic IIC                | $L_o = 20 \text{ mH}$ | $C_o = 0.97 \mu\text{F}$ | Ex ic IIB | $L_o = 50 \text{ mH}$ | $C_o = 4.6 \mu\text{F}$ | Ex ic IIA | $L_o = 100 \text{ mH}$ | $C_o = 6 \mu\text{F}$ |
| Ex ic IIC       | $L_o = 20 \text{ mH}$   | $C_o = 0.97 \mu\text{F}$ |                       |                          |           |                       |                         |           |                        |                       |
| Ex ic IIB       | $L_o = 50 \text{ mH}$   | $C_o = 4.6 \mu\text{F}$  |                       |                          |           |                       |                         |           |                        |                       |
| Ex ic IIA       | $L_o = 100 \text{ mH}$  | $C_o = 6 \mu\text{F}$    |                       |                          |           |                       |                         |           |                        |                       |



| Type      | Electrical data   |                        |                       |                       |           |                        |                        |           |                        |                        |
|-----------|---|------------------------|-----------------------|-----------------------|-----------|------------------------|------------------------|-----------|------------------------|------------------------|
| TMT86     | <p>Supply</p> <p>(terminal + and -)</p> <p>FISCO:<br/> <math>U_i \leq 17.5 V_{DC}</math><br/> <math>I_i \leq 380 \text{ mA}</math><br/> <math>C_i = \text{negligible small}</math><br/> <math>L_i = \text{negligible small}</math></p> <p>Applicable for connection to a Fieldbus system according to FISCO-model</p> <p>Sensor circuit</p> <p>(terminal 3 to 7)</p> <p><math>U_o \leq 3.71 V_{DC}</math><br/> <math>I_o \leq 5.24 \text{ mA}</math><br/> <math>P_o \leq 4.86 \text{ mW}</math></p> <p>Max. combined connection values</p> <table> <tr> <td>Ex ic IIC</td> <td><math>L_o = 50 \text{ mH}</math></td> <td><math>C_o = 4 \mu\text{F}</math></td> </tr> <tr> <td>Ex ic IIB</td> <td><math>L_o = 100 \text{ mH}</math></td> <td><math>C_o = 24 \mu\text{F}</math></td> </tr> <tr> <td>Ex ic IIA</td> <td><math>L_o = 100 \text{ mH}</math></td> <td><math>C_o = 64 \mu\text{F}</math></td> </tr> </table> | Ex ic IIC              | $L_o = 50 \text{ mH}$ | $C_o = 4 \mu\text{F}$ | Ex ic IIB | $L_o = 100 \text{ mH}$ | $C_o = 24 \mu\text{F}$ | Ex ic IIA | $L_o = 100 \text{ mH}$ | $C_o = 64 \mu\text{F}$ |
| Ex ic IIC | $L_o = 50 \text{ mH}$   | $C_o = 4 \mu\text{F}$  |                       |                       |           |                        |                        |           |                        |                        |
| Ex ic IIB | $L_o = 100 \text{ mH}$  | $C_o = 24 \mu\text{F}$ |                       |                       |           |                        |                        |           |                        |                        |
| Ex ic IIA | $L_o = 100 \text{ mH}$  | $C_o = 64 \mu\text{F}$ |                       |                       |           |                        |                        |           |                        |                        |

| Category | Type of protection   | Type (order code)   |
|----------|----------------------|---------------------|
| II 3G    | Ex ic IIC T6...T4 Gc | TMT8x-xxA1xxxxxxxxx |
|          |                      | TMT8x-xxA2xxxxxxxxx |
|          |                      | TMT7x-xxx1xxxx      |
|          |                      | TMT7x-xxx2xxxx      |
|          |                      | TMT7x-xxx3xxxx      |







71604350

[www.addresses.endress.com](http://www.addresses.endress.com)

---