

# Ex-MIT Measuring Insert model BM with free ends

for operation in hazardous area with gas or dust

In general



The ex-temperature sensors listed in this document are solely intended for the measurement of process temperatures in solid, liquid and gaseous media. The measuring insert with free ends (fig. 1) is prepared for mounting an Ex i approved transmitter instead of the connection socket (Exi verification required!).

## Application area:

**Use in potentially explosive atmospheres is only permissible with installation in a suitable protective fitting. or in model B.**

**Types TR15 / TR14-J-Q.** Type of protection marking depending on design and installation specification

II 2G Ex ia IIC T1...T6 Gb or

II 2D Ex ia IIIC T135 °C Db.

Ambient temperature at the connection head -40 °C to 80 °C depending on the transmitter used.

**For installation-specific data, see the operating instructions of the transmitter and the temperature sensor type code TR14-X-Q.**

## Technical datas

- **Measuring insert** with 50 mm free ends (fig. 1) according to or similar to DIN EN 43735.
- **Sensor** depending on use:
  - with 1 or 2 thermocouples according to IEC / EN 60584-1.
  - Operating temperature MIT (fig. 1/5) depended on the thermocouple type and diameter -40°C up to:
    - Type J: Ø 3,0 mm up to 520°C, Ø 4,5 up to 620°C, 6,0 und 8,0 mm up to 720°C.
    - Type K: Ø 3,0 mm up to 1070°C, Ø 4,5; 6,0 and 8,0 mm up to 1100°C.
    - Type N: Ø 3,0 mm bis 1070°C, Ø 4,5; 6,0 and 8,0 mm up to 1100°C.
    - Type E: Ø 3,0 mm up to 650°C, Ø 4,5 up to 730°C, 6,0 und 8,0 mm up to 820°C.
    - Type T: Ø 3,0 mm up to 315°C, Ø 4,5 / 6,0 and 8,0 mm up to 350°C.
- **Sheath material** type according to IEC / EN 61515.
  - Standard - material 2.4816.
  - Preference diameter 3 or 6 mm.
  - Note:** Process temperatures above 450 °C are only possible with appropriate process decoupling. With a customer order for the installation of an Exi approved transmitter, proof of intrinsic safety is required. Operating instructions of the transmitter used and Exi proof are then part of the Ex documentation. Dual sensors with Exi transmitter only on request. MIT ground welded or Sensors with Ø 3 mm and more than 4 inner conductors, Ø < 3 mm, Ø > 3 mm and more than 6 inner conductors are considered to be non-insulated or grounded in accordance with IEC / EN 60079-11 (dielectric strength) and must be connected to equipotential bonding of the system throughout the intrinsically safe circuit for safety reasons, taking into account the special conditions according to IEC / EN 60079-14.
- **Optional materials for gas and dust explosion protection:**
  - please see operating instructions chapter 4 X-conditions.

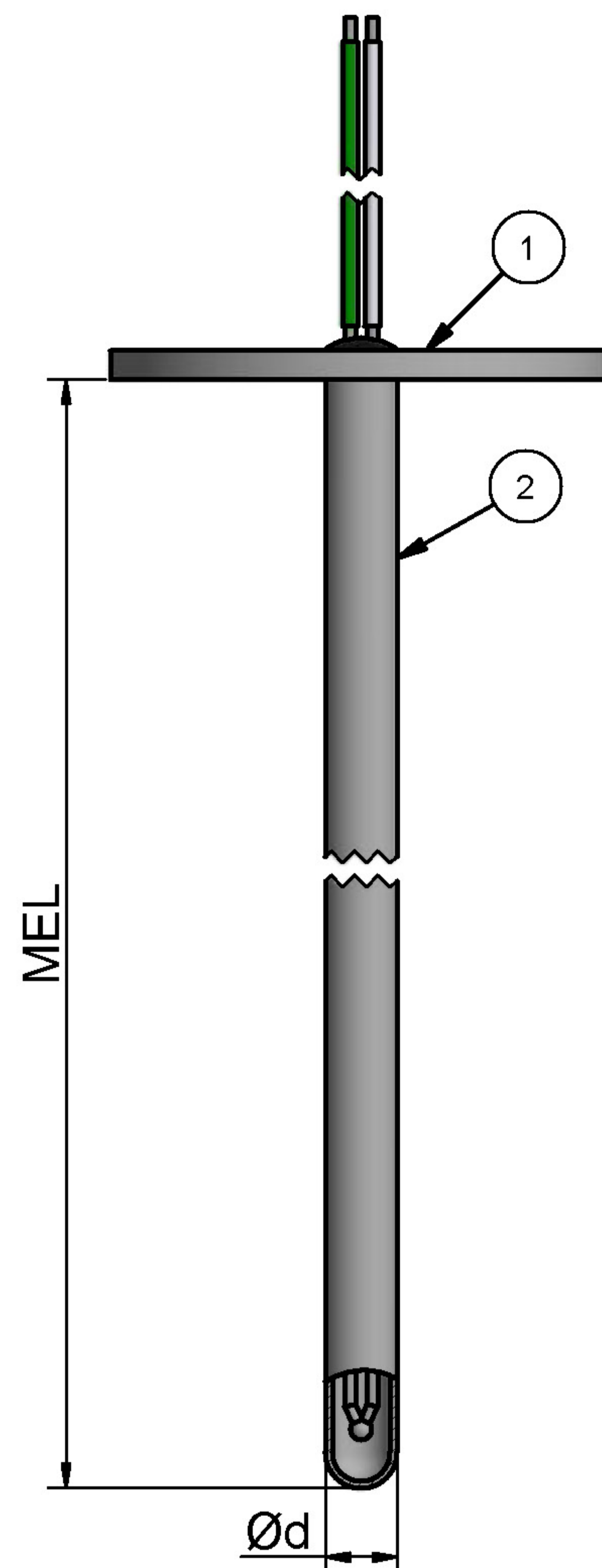


fig. 1

# Deviations according to the sensor type

## Thermocouples

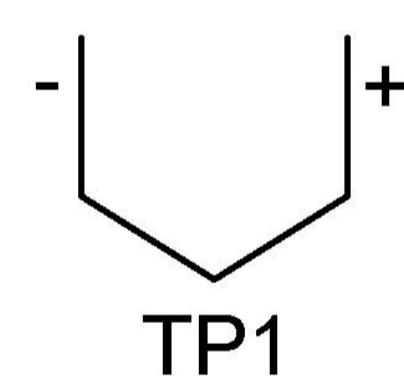
table 1

Thermocouple type	Permitted deviations <sup>1)</sup> (±°C) and the validity for the temperature		
	class 1	class 2	class 3 <sup>2)</sup>
<b>by Type T</b>	0,5 °C oder 0,004 x  t	1 °C oder 0,0075 x  t	1 °C oder 0,015 x  t
<b>Type T</b>	-40 °C bis +350 °C	-40 °C bis +350 °C	-200 °C bis +40 °C
<b>bei Typ E,J,K,N</b>	1,5 °C oder 0,004 x  t	2,5 °C oder 0,0075 x  t	2,5 °C oder 0,015 x  t
<b>Type E</b>	-40 °C bis +800 °C	-40 °C bis +900 °C	-200 °C bis +40 °C
<b>Type J</b>	-40 °C bis +750 °C	-40 °C bis +750 °C	/
<b>Type K</b>	-40 °C bis +1000 °C	-40 °C bis +1200 °C	-200 °C bis +40 °C
<b>Type N</b>	-40 °C bis +1000 °C	-40 °C bis +1200 °C	-200 °C bis +40 °C
<b>by Typ R oder S</b>	1 °C für t < 1100 °C [1 + 0,003 x (t - 1100)] für t > 1100 °C	1,5 °C oder 0,0025 x  t	4 °C oder 0,005 x  t
<b>by Type B</b>	/	0,01 x  t	/
<b>Type B</b>	/	600 °C bis 1700 °C	600 °C bis 1700 °C

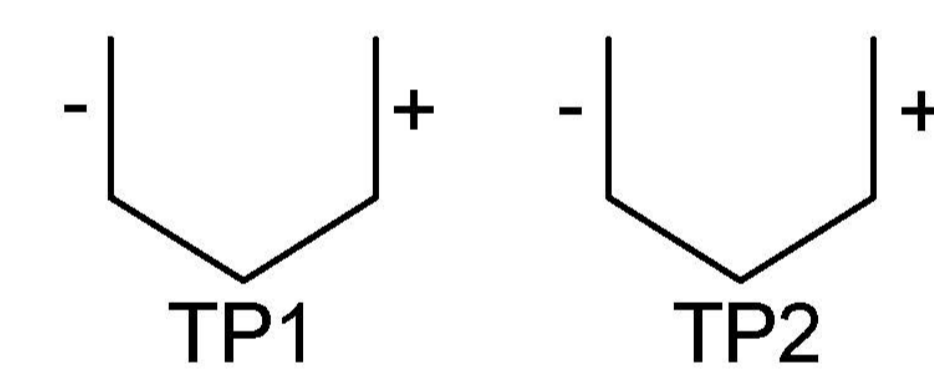
1) The deviation limit is either given as the difference in °C or as a function of temperature (°C from IST-90) according to the above mentioned table. For each the greater value is valid.  
2) The normally available material for thermocouples keeps the limit deviation according to Table 1 for temperatures above -40°C. At low temperatures, these materials do not necessarily meet the class 3 limit deviations. If thermocouples of types T, E, K and N are required, which comply with both the class 3 and class 1 or 2 limit deviations, this must be specified by the user because therefore a special selection of the available material is usually necessary.

Source: Technical dates from IEC / EN 60584-1:2014-07 chapter 5

Thermocouples according to IEC / EN 60584-1 and colour code according to IEC / EN 60584-3.



1 Thermocouple connection see datasheet transmitter



2 Thermocouple connection see datasheet transmitter