



**DESCRIPTION AND APPLICATION**

The temperature sensors are designed to meet the requirements of EN 60 079-0 and EN 60 079-15 as amended by a valid certificate. The operation of the sensor is based on a pre-defined ratio between the resistance value of the temperature sensing element and the temperature. They are not able to form sparks, electric arcs or high surface temperatures. The sensors that are identified on the type label by II 3G ex nA II ty code can be applied in explosion endangered rooms, device group II, zone 2. The operating temperature range for using them in zone 2 is identified by the lead-in cable type. These limits must not be exceeded even for a short time - see Y in the specifications. According to the design of the sensors there are the following variants:

**Serie TG 8** – The sensing element is located in the stainless steel case with diameter 5.7 mm as a standard, the length of the case can be selected in the range 40 to 500 mm optionally. The stainless steel thermowell JTG8 can be delivered as an accessory.  
Certificate FTZU 07 ATEX 0142X

**Serie TR 011** – The sensing element is located in the stainless steel case, the part of which is the screwing enabling the direct assembly in tubing etc. Diameter of the case and the type of thread is taken up by customer, the length of the case can be selected in the range 40 to 500 mm optionally.  
Certificate FTZU 07 ATEX 0143X



The sensors meet the IP 67 ingress protection requirements according to EN 60 529 standard. The sensors are designed to be operated in chemically non-aggressive environment. **They can be used only for fix installations of group II and the user must provide fixed clamping of the cable in the distance max. 100 to 300 mm from the sensor enclosure according EN 60 079-0 as amended by a valid certificate.**

**SPECIFICATIONS**

**BASIC DATA**

Standard types of sensing elements	Ni 1000/5000, Ni 1000/6180, Ni 891, Pt 100/3850, Pt 500/3850, Pt 1000/3850, NTC 20 kΩ
Measuring range	Y -- T6: -20 ≤ Ta ≤ 70 °C cable PVC T5: -20 ≤ Ta ≤ 95 °C cable PVC up to 105 °C T3: -30 ≤ Ta ≤ 180 °C cable SILICONE
Recommended/maximum DC measuring current	1 mA/3 mA for the sensors with the sensing element Pt 100 0.5 mA/1.5 mA for the sensors with the sensing element Pt 500 0.3 mA/1 mA for other sensors
Recommended/maximum DC power consumption of sensing element	0.05 mW/1 mW for the sensors with the sensing element NTC 20 kΩ
Accuracy class	Ni sensing elements: class B, Δt = ± (0.4 + 0.007t), for t ≥ 0; Δt = ± (0.4 + 0.028 t ), for t ≤ 0 in °C; Pt sensing elements: class B according to IEC 751, Δt = ± (0.3 + 0.005 t ) in °C NTC 20 kΩ: ± 1 °C for the range 0 to 70 °C
Sensor connection	2-wire, 3-wire, 4-wire
Insulation resistance	min. 200 MΩ at 500 V DC, at the temperature 15 to 35 °C, maximum rel. humidity 80 %
Dielectric strength (ATEX)	1 000 V DC during the period 1 s, at the temperature 15 to 35 °C, maximum rel. humidity 80 % according to the article 6.8.1. of the EN 60 079-15 ed. 2 standard
Ingress protection	IP 67 according to EN 60 529
Types of lead-in cables and their thermal resistivity	-30 to 200 °C MCBE-AFEP, 2 x 0.34 a 4 x 0.22 mm <sup>2</sup> , silicone insulation -25 to 105 °C FLRYWYW, 2 x 0.35 a 4 x 0.35 mm <sup>2</sup> , PVC insulation up to 105 °C -30 to 80 °C LiYCY 2 x 0.34 mm <sup>2</sup> , PVC insulation
Resistance of lead-in cables / conductor cross section	0,11 Ω/m / 0,35 mm <sup>2</sup> ; 0,16 Ω/m / 0,22 mm <sup>2</sup> (2-wire connection)
Weight	according to the length of the cable, minimum 0.15 kg

**SUPPLEMENTARY DATA TO THE INDIVIDUAL TYPES**

**Serie TG 8**

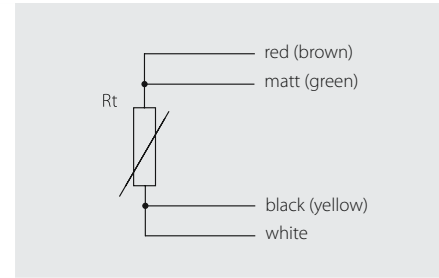
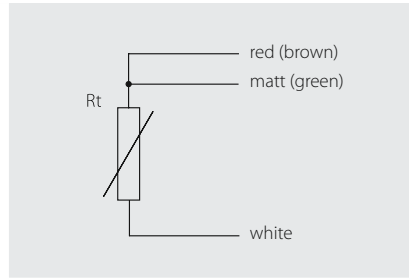
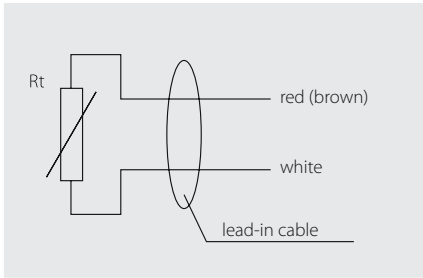
Stem length	40 to 500 mm
Stem diameter	5.7 to 10 mm
Material of the stem	stainless steel 1.4301
Response time	τ <sub>0.5</sub> < 6 s (in streaming air at 1 m.s <sup>-1</sup> ) for the diameter 5.7 mm

**Serie TR 011**

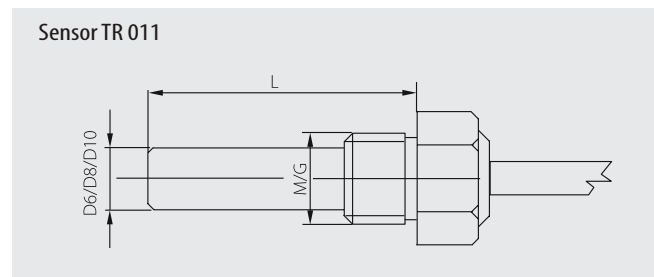
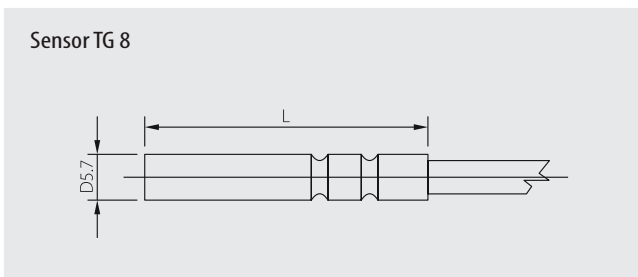
Stem length	40 to 500 mm
Stem diameter	6 to 10 mm
Material of the stem	stainless steel 1.4301
Response time	τ <sub>0.5</sub> < 7 s (in streaming air at 1 m.s <sup>-1</sup> ) for the diameter 6 mm

## TEMPERATURE SENSORS FOR EXPLOSIVE ENVIRONMENTS WITH A CABLE

### ■ WIRING DIAGRAM



### ■ DIMENSIONAL DRAFT



### ■ SENSOR INSTALLATION AND SERVICING

1. Assemble the sensor in the location in which the temperature to be measured. **They can be used only for fix installations of group II and user must provide fixed clamping of the cable in the distance max. 100 to 300 mm from the sensor case according EN 60 079-0 as amended by a valid certificate.**
2. Connect the wires of the lead-in cable according to the wiring diagram. **The shielding of the lead-in cable is not electrically connected to the external sensor case not even sensing element. For the temperature range  $-30 \leq T_a \leq 180 \text{ }^\circ\text{C}$  the end of the cable of the length 150 mm including of the type label should not be placed in the zone 2.**

After installing and connecting the sensor to the sequential evaluating electrical equipment the sensor is ready to use. The sensor does not require any special servicing or maintenance. The sensor can be operated in any working position.

### ■ CUSTOMER SPECIFIC MODIFICATIONS

REGARDING TO SENSORS MANUFACTURED IN A STANDARD VERSION THE FOLLOWING PARAMETERS CAN BE MODIFIED:

- length of the sensor
- possibility of encapsulation of two sensing elements
- A class of accuracy (except for the NTC 20k $\Omega$  sensing elements)
- encapsulation of other types of sensing elements KTY, DALLAS, SMT 160 etc.
- type of the thread and the case

### ■ HOW TO ORDER

WHEN ORDERING GOODS, THE FOLLOWING DATA ARE REQUIRED:

Type name of sensor serie	TG 8 or TR 011
Type of sensing element	
Connection	2, 3 or 4-wire
Temperature operating range	-20 to 70 °C; -20 to 95 °C; -30 to 80 °C
Length of the case	
Type of the thread	only for TR 011
Optionally diameter of the case	