

# Ex-Mineral insulated Thermocouple TR14 model KM

for operation in the hazardous area with gas or dust

In general



The temperature sensors manufactured by Reckmann GmbH (R58®) are solely intended for the measurement of process temperatures in solid, liquid and gaseous media. This bendable model makes possible to measure the temperature on difficult to access places. The plug-in connection simplifies the replacement of the sensor.

#### Application area:

Uncritical process conditions at machine and plant engineering, chemicals industry, Research / Development

Depended on electrical and thermal parameters for operating with the following types of protection:

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

II 2D Ex ia IIC T135 °C Da.

Ambient temperature at the connection head max. -40 °C up to +100 °C.

**For installation please see our operating instructions**

Stock-number-code: TR14-M.

## Technical data

- **Measuring unit** (fig. 1/2) similar to DIN 43735

- **Sensor** depended on use:

with 1 or 2 thermocouples according to IEC / EN 60584-1.

Standard dim. 4x30, 6x30, 6x50, 8x50, 9,5x55 mm.

On request with antikink spring. (fig. 1/3) Operating temperature MIT (fig. 1/5) depended on the thermocouple type and diameter:

Type J: Ø 0,5 and 1,0 mm up to 260°C, Ø 1,5 and 2,0 mm up to 440°C, 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 0,25 mm up to 500°C, Ø 0,5 and 1,0 mm up to 700°C, Ø 1,5 and 2,0 mm up to 920°C, Ø 3,0 mm up to 1070°C, Ø 4,5; 6,0 and 8,0 mm up to 1100°C.

Type N: Ø 0,25 mm bis 500°C, Ø 0,5 and 1,0 mm bis 700°C, Ø 1,5 and 2,0 mm bis 920°C, Ø 3,0 mm bis 1070°C, Ø 4,5; 6,0 and 8,0 mm up to 1100°C.

Type E: Ø 0,5 and 1,0 mm up to 300°C, Ø 1,5 and 2,0 mm up to 510°C, 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 0,5 and 1,0 mm up to 260°C, Ø 1,5 and 2,0 mm up to 260°C, Ø 3,0 mm up to 315°C, Ø 4,5 / 6,0 and 8,0 mm up to 350°C.

- **Note:** Process and application temperature are the same and depend on the connecting cable and / or plug-in connection used. Higher process temperatures and temperatures above 100 °C are only possible with appropriate process decoupling.
- **Sheath material** type according to IEC / EN 61515.  
Standard - material 2.4816 or 1.4541 depended on process temperature, preference diameter 1,5 / 3 or 6 mm.  
**Notice:** MIT ground welded, 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.
- **Process connection** with compression fitting, union nut or "compression connection pipe according or similar to DIN 32676.sleeve.
- **Operating temperature connectors:** fig. 1/1) see page 2:  
Mini compensation plug connector -40°C up to 200 °C

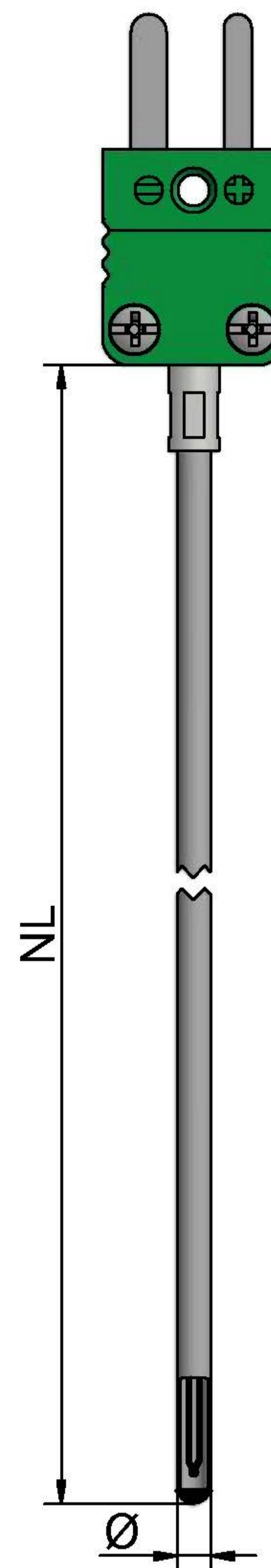


fig. 1

## 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

## Optional Connection heads / wiring diagram

Examples and dimensions and connection diagrams of possible connectors, TP1 is marked with a red dot on the Lemo connector.

