

# MTR12M

## CABLE RESISTANCE TEMPERATURE SENSORS

MTR12M series consists of the simplest version of cable resistance temperature sensors with a protective tube.

The measuring element is a resistor whose resistance is temperature dependent according to the characteristic specified in ČSN EN 60751.

The sensor consists of a resistance temperature element protected by a protective tube and a cable.

### General Information (Table 12M.1)

|                        |                                    |                                                                                                               |
|------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------|
|                        | Insulation class acc. ČSN EN 60529 | IP50 (connector), IP00 (loose conductors)<br>IP50 (cable)<br>IP68 (measuring part in length N)                |
| <b>Sensor</b>          |                                    |                                                                                                               |
| ①                      | RTD type                           | Thin film resistor with characteristics according to ČSN EN 60751, $\alpha = 3850 \text{ ppm/}^\circ\text{C}$ |
|                        | Accuracy class                     | B according to ČSN EN 60751                                                                                   |
|                        | RTD measuring current              | 1 mA                                                                                                          |
|                        | Sensitive length                   | 10 mm                                                                                                         |
| <b>Protection tube</b> |                                    |                                                                                                               |
| ②                      | Material                           | Stainless steel                                                                                               |
|                        | Outer diameter                     | 5 mm                                                                                                          |
| <b>Cable</b>           |                                    |                                                                                                               |
|                        | Type                               | TSL 2 x 0,25 mm <sup>2</sup> , vodiče Cu                                                                      |
| ③                      | Min. bending radius                | 15 x extension cable diameter                                                                                 |
|                        | Properties                         | ↗ Good flexibility, moisture resistant<br>↘ No shielding, low mechanical resistance                           |
| ④                      | <b>Connector</b>                   |                                                                                                               |
| ⑤                      | <b>Loose conductors</b>            |                                                                                                               |

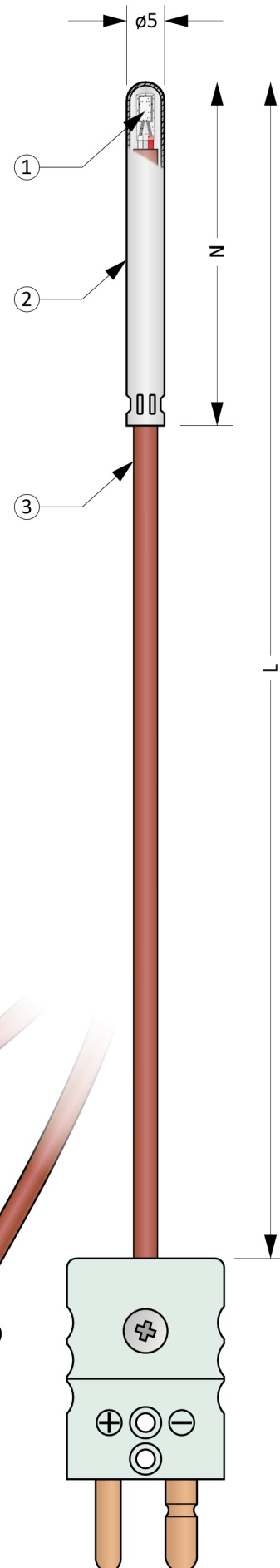


Figure 12M.1: MTR12M

## Optional Parameters Including the Creation of an Order Code (Table 12M.2)

| Pos. | Code                              | MTR012M - ① ② - ③ - ④                                      |
|------|-----------------------------------|------------------------------------------------------------|
| ①    | RTD type                          |                                                            |
|      | 0                                 | 1 x Pt100, two-wire connection (2W)                        |
|      | 1                                 | 1 x Pt500, two-wire connection (2W)                        |
|      | 2                                 | 1 x Pt1000, two-wire connection (2W)                       |
| ②    | Protection tube length N [mm]     |                                                            |
|      | 0                                 | Length N = 50 mm                                           |
| ③    | Cable length L [cm]               |                                                            |
|      | xxx                               | Selectable range from 20 to 450 cm (in 1 cm increments)    |
|      | xxx                               | Selectable range from 451 to 3000 cm (in 10 cm increments) |
| ④    | Provedení studeného konce snímače |                                                            |
|      | 0                                 | Loose conductors, length 40 mm                             |
|      | 1                                 | Standard 2-pin connector, type MTCK-S, plug                |
|      | 2                                 | Standard 2-pin connector, type MTCK-S, plug + socket       |
|      | 3                                 | Miniature 2-pin connector, type MTCK-M, plug               |
|      | 4                                 | Miniature 2-pin connector, type MTCK-M, plug + socket      |

Order code example: MTR012M-00-500-1

... 1 x Pt100, dvou vodičové zapojení

... Tube length N = 50 mm

... Délka kabelu L = 500 cm

... Standard 2-pin connector, type MTCK-S, plug

Approximate weight of the product: MTR012M-00-500-1 ... 0,1 kg

## Length tolerance L (Table 12M.3)

| Length L                                  | Length tolerance L        |
|-------------------------------------------|---------------------------|
| $20 \leq L \leq 250 \text{ cm}$           | $\pm 1 \text{ cm}$        |
| $250 \text{ cm} < L \leq 500 \text{ cm}$  | $\pm 1,5 \text{ cm}$      |
| $500 \text{ cm} < L \leq 3000 \text{ cm}$ | $\pm 0,5 \% \text{ z } L$ |

## Length tolerance N (Table 12M.4)

| Length tolerance N |
|--------------------|
| $\pm 1 \text{ mm}$ |

## Diameter tolerances (Table 12M.5)

| Diameter tolerance D |
|----------------------|
| $\pm 0,1 \text{ mm}$ |

## Recommended Maximum Temperatures of Sensor Parts (Table 12M.6)

| Sensor part               | Continuous operation |
|---------------------------|----------------------|
| Connector MTCK-M, MTCK-S  | < 180 °C             |
| Measuring end incl. cable | -60 ... 180 °C       |

Notes: Operating temperatures are related to temperature measurement in a chemically inert environment. The values are determined empirically.

### Connectors

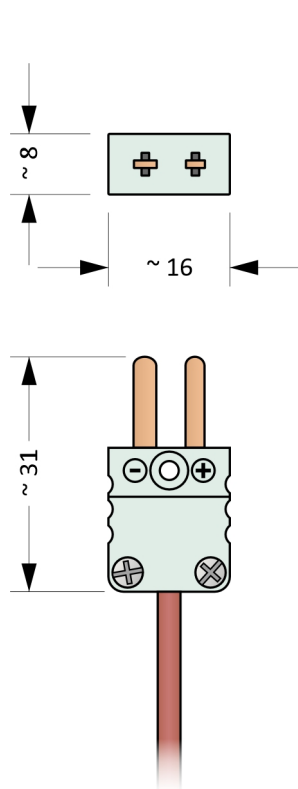


Figure 12M.2: MTCK-M

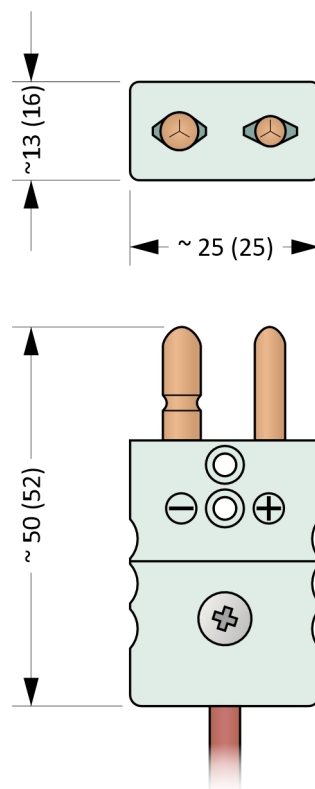


Figure 12M.3: MTCK-S

## Installation And Operating Instructions

The sensor stem is used for mounting.

The electrical wiring of the sensor is shown in the Figures 12.4 to 12.6. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

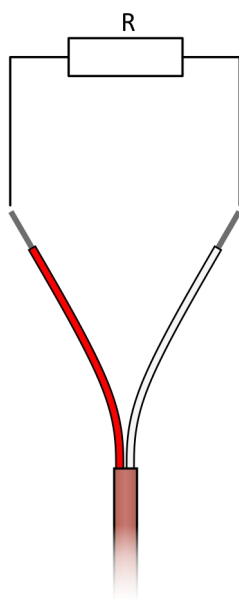


Figure 12M.4: Two-wire RTD wiring diagram

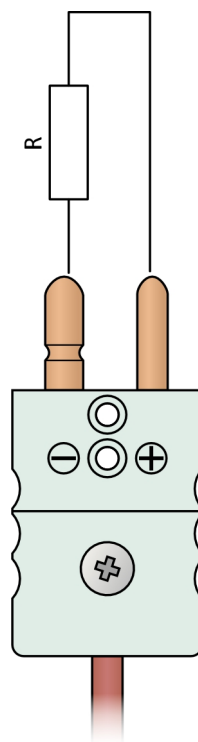


Figure 12M.5: Three-wire RTD wiring diagram with connector

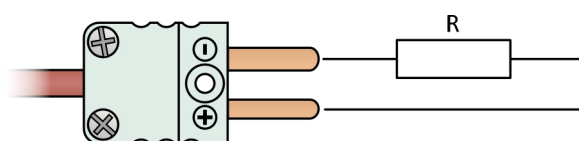


Figure 12M.6: Two-wire RTD wiring diagram with miniature connector