

# MTC13T

## CABLE THERMOCOUPLES

Temperature sensors of the MTC13T series are the basic design of cable pressure temperature sensors. They represent an economical solution for temperature measurement in environments with overpressure or underpressure of the medium to be measured.

The measuring element is a thermocouple of the J, K, L or N type, which uses the dependence of the thermoelectric voltage on the temperature to measure the temperature. The output signal is a thermoelectric voltage, the value of which is according to the ČSN EN 60584-1 ed. 2 or DIN 43 710 for L thermocouple.

### General Information (Table 13T.1)

|                                              |                                    |                                                                                             |
|----------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------|
|                                              | Insulation class acc. ČSN EN 60529 | IP50 (connector), IP00 (stripped ends)<br>IP5X (cable)<br>IP68 (measuring part in length U) |
|                                              | Max. medium overpressure           | 3 bar                                                                                       |
| <b>Cable thermocouple</b>                    |                                    |                                                                                             |
| ①                                            | Cable insulation                   | GHGHV (glass fiber braid / glass fiber braid / stainless steel wire braid)                  |
|                                              | Number x cross-section of wires    | 2 x 0,22 mm <sup>2</sup> , stranded                                                         |
|                                              | Cable diameter                     | ~ 3,0 mm                                                                                    |
| <b>Protection tube with threaded fitting</b> |                                    |                                                                                             |
| ②                                            | Material                           | Stainless steel 1.4541                                                                      |
| <b>Additional armor protection</b>           |                                    |                                                                                             |
| <b>Stripped ends</b>                         |                                    |                                                                                             |
| <b>Connector</b>                             |                                    |                                                                                             |

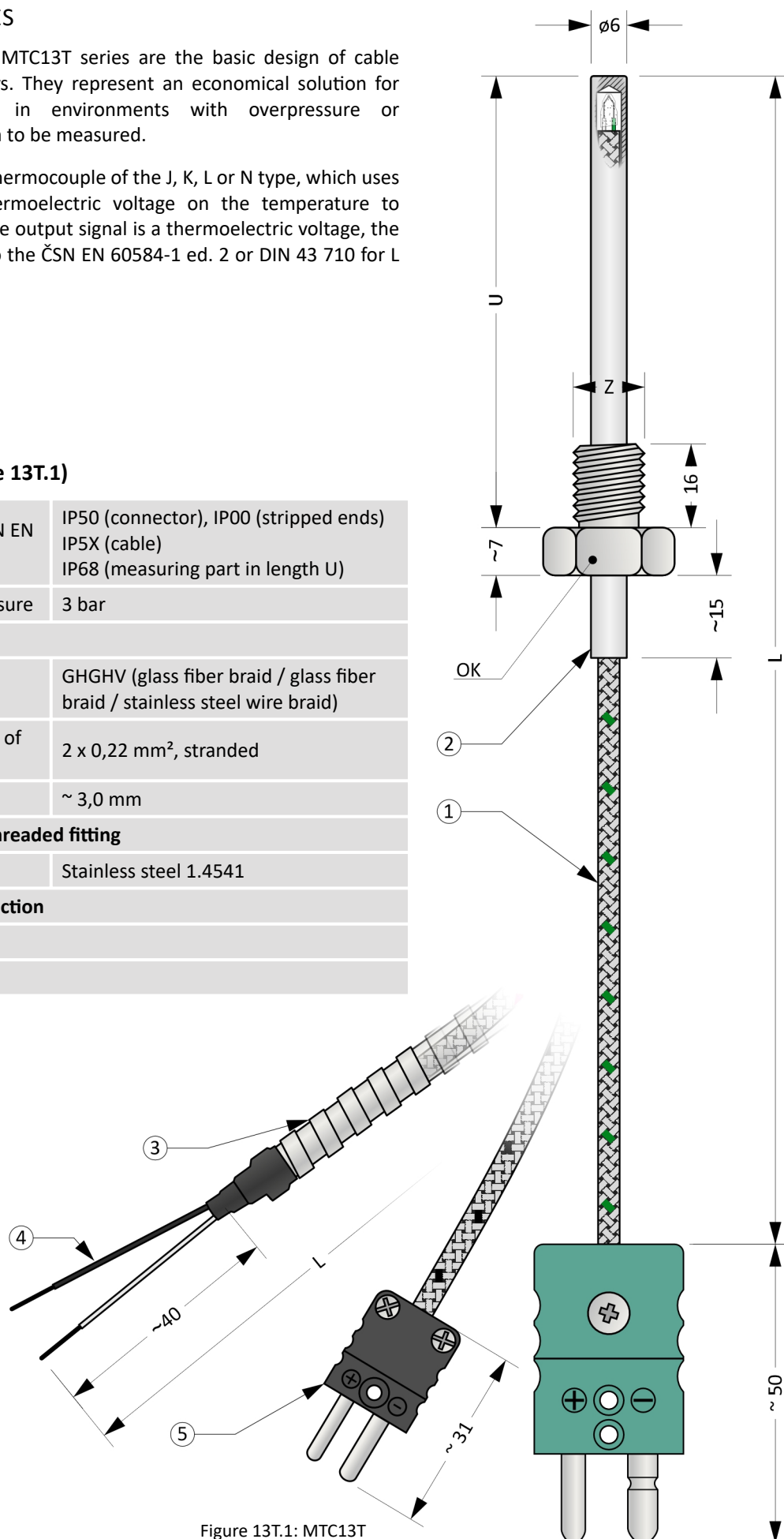


Figure 13T.1: MTC13T

## Optional Parameters Including the Creation of an Order Code (Table 13T.2)

| Pos. | Code                               | MTC13T- ① ② - ③ - ④ - ⑤                                                                     |
|------|------------------------------------|---------------------------------------------------------------------------------------------|
| ①    | <b>Thermocouple type</b>           |                                                                                             |
|      | 1                                  | 1 x „J“, thermocouple isolated, accuracy class 2 acc. ČSN EN 60584-1 ed. 2                  |
|      | 0                                  | 1 x „K“, thermocouple isolated, accuracy class 2 acc. ČSN EN 60584-1 ed. 2                  |
|      | 2                                  | 1 x „L“, thermocouple isolated, acc. DIN 43 710                                             |
|      | 3                                  | 1 x „N“, thermocouple isolated, accuracy class 2 acc. ČSN EN 60584-1 ed. 2                  |
| ②    | <b>Threaded fitting</b>            |                                                                                             |
|      | 0                                  | Welded threaded fitting Z = M12 x 1,75, OK19                                                |
|      | 1                                  | Welded threaded fitting Z = M12 x 1,5, OK19                                                 |
|      | 2                                  | Welded threaded fitting Z = M10 x 1,5, OK17                                                 |
|      | 3                                  | Welded threaded fitting Z = G½“, OK24                                                       |
| ③    | <b>Length U [mm]</b>               |                                                                                             |
|      | xxx                                | Selectable range from 20 mm to 500 mm (in 1 mm increments)                                  |
| ④    | <b>Length L [cm]</b>               |                                                                                             |
|      | xxx                                | Selectable range from (U+10) cm to 450 cm (in 1 cm increments)                              |
|      | xxx                                | Selectable range from 460 cm to 3500 cm (in 10 cm increments)                               |
|      | Axxx                               | Additional armor protection, selectable range from (U+10) cm to 450 cm (in 1 cm increments) |
|      | Axxx                               | Additional armor protection, selectable range from 460 cm to 600 cm (in 10 cm increments)   |
| ⑤    | <b>Design of the cold junction</b> |                                                                                             |
|      | 0                                  | Stripped ends, length 40 mm                                                                 |
|      | 1                                  | Standard connector, MTCK-S type, plug                                                       |
|      | 2                                  | Standard connector, MTCK-S type, plug + socket                                              |
|      | 3                                  | Miniature connector, MTCK-M type, plug                                                      |
|      | 4                                  | Miniature connector, MTCK-M type, plug + socket                                             |
|      | 5                                  | Ceramic standard connector, MTCK-CS type, plug                                              |
|      | 6                                  | Ceramic standard connector, MTCK-CS type, plug + socket                                     |
|      | 7                                  | Ceramic miniature connector, MTCK-CM type, plug                                             |
|      | 8                                  | Ceramic miniature connector, MTCK-CM type, plug + socket                                    |

Order code example: MTC13T-00-50-500-0

... Thermocouple type K, accuracy class 2

... Process thread Z = M12 x 1,75

... Length U = 50 mm

... Length L = 500 mm

... Stripped ends

Approximate weight of the product: MTC13T-00-50-500-0 ... 0,4 kg

## Length Tolerances (Table 13T.3)

| Length L, U      | Tolerance U | Tolerance L |
|------------------|-------------|-------------|
| (L, U) ≤ 250 cm  | ± 1 mm      | ± 1 cm      |
| 250 < L ≤ 500 cm | -           | ± 1,5 cm    |
| 500 < L cm       | -           | ± 0,5 % z L |

## Recommended Maximum Temperatures of Sensor Parts (Table 13T.4)

| Sensor part                           | Continuous operation | Short-term operation |
|---------------------------------------|----------------------|----------------------|
| Thermocouple - measuring end, cable   | -40 ... 600 °C       | -                    |
| Protection tube with threaded fitting | < 500 °C             | -                    |
| Connectors MTCK-S, MTCK-M             | < 220 °C             | -                    |
| Connectors MTCK-CS, MTCK-CM           | < 600 °C             | -                    |

## Installation And Operating Instructions

For mechanical fixing, the sensor stem and the fitting are used.

The electrical connection of the sensor is shown in Figures 13T.2 and 13T.3. The output signal is a

thermoelectric voltage, the value of which is according to the ČSN EN 60584-1 ed. 2 or DIN 43 710 for L thermocouple.

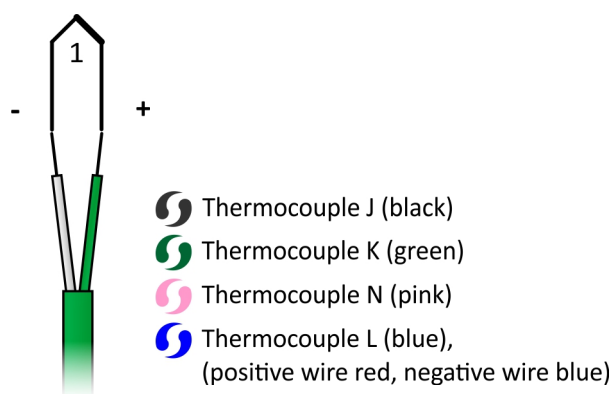


Figure 13T.2: Single thermocouple wiring diagram

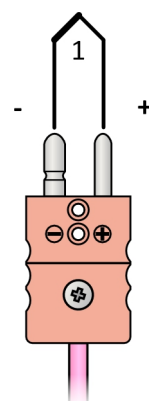


Figure 13T.3: Connector wiring diagram

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