

MTR16

RESISTANCE TEMPERATURE SENSORS WITH PROTECTION TUBE

MTR16 series temperature sensors are designed for applications with operating temperatures up to 600 °C and a requirement for a good mechanical durability.

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

The sensor consists of an assembly and a replaceable measuring insert. The assembly consists of a head and a protection tube. The head is equipped with a cable gland for connecting the cable.

General Information (Table 16.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. overpressure	16 bar
①	Measuring insert	
	RTD type	Thin film resistor with characteristics according to ČSN EN 60751, $\alpha = 3850$ ppm/°C
	RTD measuring current	1 mA
	Sensitive length	10 mm
	Design	Mineral insulated metal-sheathed sensor (MIMS)
	Sheath diameter	4,5 mm
	Sheath material	Stainless steel (1.4541, 1.4404, 1.4571)
②	Protection tube (stem)	
	Outer / inner diameter	8 / 6 mm
③	Head	
	Material	Aluminium alloy
	Cable gland	M20 x 1,5

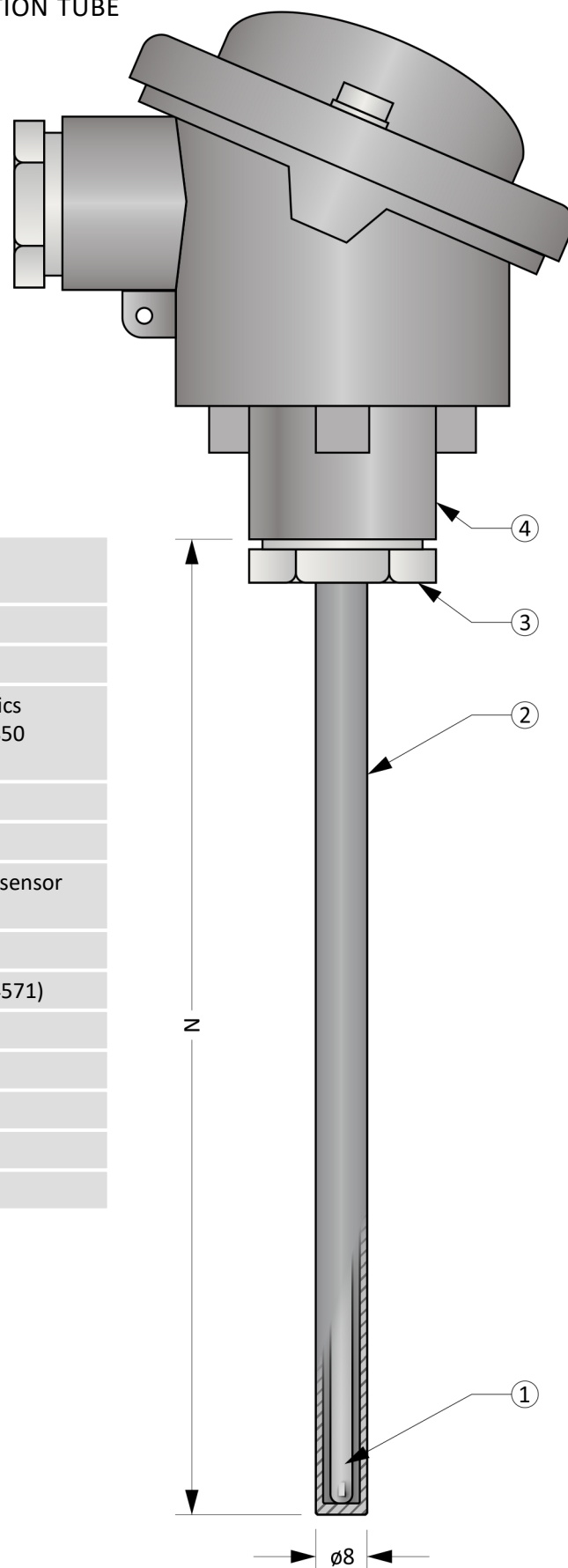


Figure 16.1: MTR16

Optional Parameters Including the Creation of an Order Code (Table 16.2)

Pos.	Code	MTR016 - ① ② - ③ - ④ - ⑤ ⑥
①	Type of measuring insert	
	0	1 x Pt100, four-wire connection (4W)
	1	1 x Pt500, four-wire connection (4W)
	2	1 x Pt1000, four-wire connection (4W)
	A	2 x Pt100, three-wire connection (2x3W)
	B	2 x Pt500, three-wire connection (2x3W)
	C	2 x Pt1000, three-wire connection (2x3W)
②	Working range and accuracy class according to EN 60751	
	0	Working range -200 ... +400 °C, accuracy class B in range -50 ... +400 °C
	1	Working range -200 ... +400 °C, accuracy class A in range -30 ... +300 °C
	2	Working range -200 ... +600 °C, accuracy class B in range -50 ... +500 °C
	3	Working range -200 ... +600 °C, accuracy class A in range -30 ... +300 °C
	4	Working range -200 ... +600 °C, accuracy class B in range -200 ... +600 °C Not possible for Pt500 and Pt1000.
	5	Working range -200 ... +600 °C, accuracy class A in range -200 ... +600 °C Not possible for Pt500 and Pt1000.
③	Material of protection tube	
	A	Stainless steel 1.4541
	B	Stainless steel 1.4841
④	Nominal length N [mm]	
	xxx	Selectable range from 50 to 2500 mm (in 1 mm increments)
⑤	Head	
	0	B
	1	BH
	2	BUZ with screws with leaden seal holes
	3	BUZ with snap lock
	4	BUZH with screws with leaden seal holes
	5	BUZH with snap lock
⑥	Transmitter (only for sensor with 1xRTD)	
	0	Without transmitter - equipped with terminal
	9	INOR APAQ C130 RTD
	3	INOR miniPAQ - HLP
	7	INOR IPAQ C330
	8	INOR IPAQ C530
	5	INOR IPAQ C520
	A	With another transmitter (e.g. supplied by the customer)

Order code example: MTR016-01-A500-00

... 1 x Pt100, four-wire connection
 ... Working range -200 ... +400 °C, accuracy class A in range -30 ... +300 °C
 ... Tube material 1.4541
 ... Nominal length N = 500 mm
 ... Head B
 ... Without transmitter

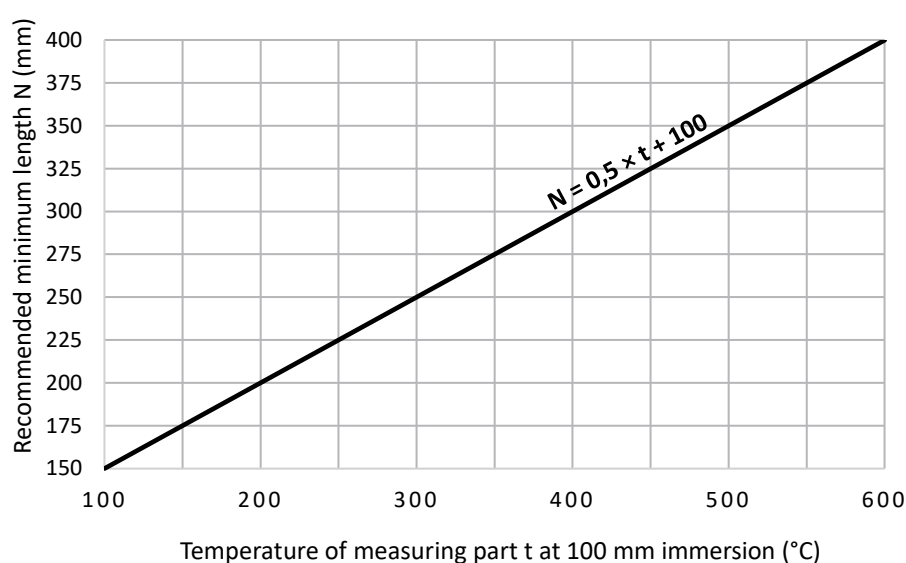
Approximate weight of the product: MTR016-01-A500-00 ... 0,7 kg

Length Tolerances (Table 16.3)

Length	Length tolerance N
≤ 1500 mm	± 2 mm
> 1500 mm	± 3 mm

Recommended Min. Sensor Length N (Chart 16.1)

The minimum recommended length is determined with respect to the heat transfer from the measuring end to the terminal. If the length is not observed, there is a risk of overheating.

**Recommended Maximum Temperatures of Sensor Parts (Table 16.4)**

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	---
Measuring end, protection tube and thread fitting	See working range from table 16.2	---

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

Head Mounted Transmitters (Table 16.5)

The transmitter is installed in the head and replaces the terminal block. When using a head with a raised lid (version BH, BUZH), the terminal block is preserved and the transmitter is placed in the lid.

Type	Input	Output	Settings	Notes
INOR APAQ C130 RTD	RTD	4 ... 20 mA	INOR CONNECT (NFC)	
INOR miniPAQ - HLP	Thermocouple - B, C, E, J, K, L, N, R, S, T, U RTD	4 ... 20 mA	PC WIN ConSoft (ICON USB adaptor)	
INOR IPAQ C330	Thermocouple - B, C, D, E, J, K, N, R, S, T RTD, mV	4 ... 20 mA, galvanically isolated	PC WIN ConSoft (ICON USB adaptor) INOR CONNECT (NFC, Bluetooth®)	
INOR IPAQ C530	Thermocouple - B, C, D, E, J, K, N, R, S, T RTD, mV	4 ... 20 mA, HART, galvanically isolated	INOR CONNECT (NFC, Bluetooth®) PC WIN ConSoft (ICON USB adaptor)	
INOR IPAQ C520	Thermocouple - B, C, D, E, J, K, N, R, S, T RTD, mV	4 ... 20 mA, HART, galvanically isolated	PC WIN ConSoft (ICON USB adaptor)	2 Inputs (redundance) SIL 2 certificate, ATEX

Notes: Detailed information about the transmitters can be found in the respective data sheets.

Heads

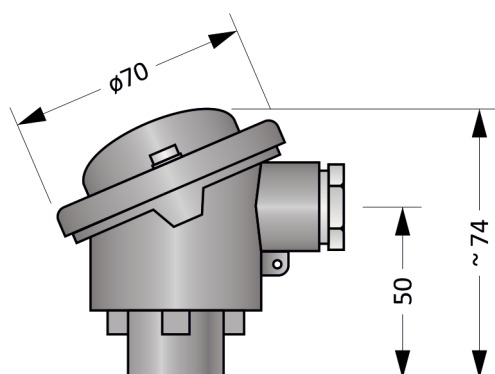


Figure 16.2: Head B

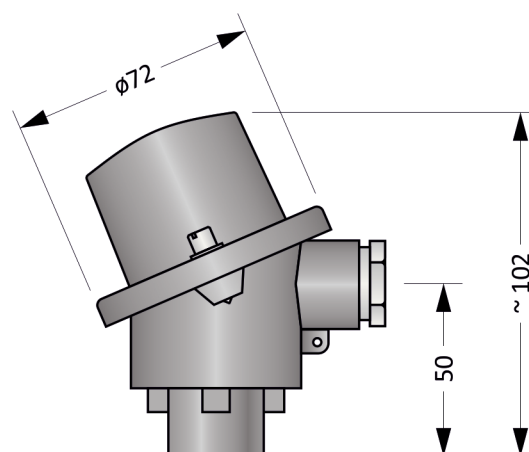


Figure 16.3: Head BH

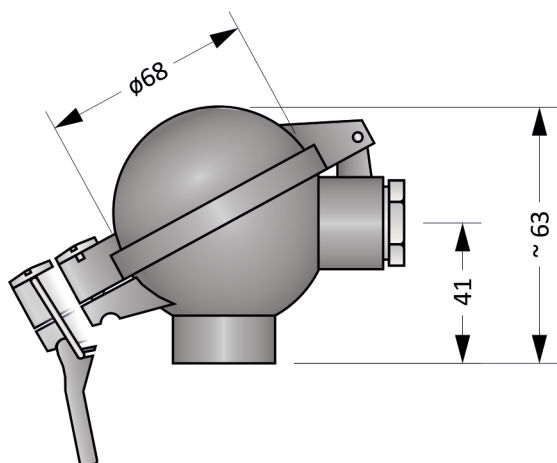


Figure 16.4: Head BUZ

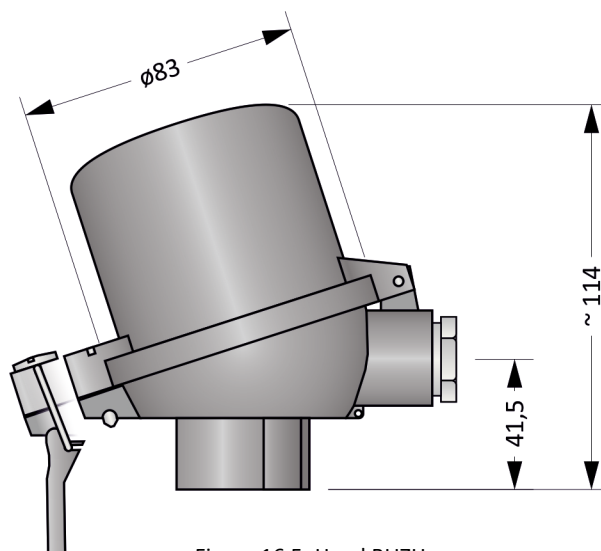


Figure 16.5: Head BUZH

Installation And Operating Instructions

A protection tube or welded fitting is used for mounting. To ensure IP54 protection of the head, it is necessary to install the sensor in a vertical position with the head in the upper position.

The electrical connection of sensor with the transmitter is shown in Figure 16.8.

Electrical connection of the sensor without transmitter is shown in the Figures 16.6 a 16.7. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

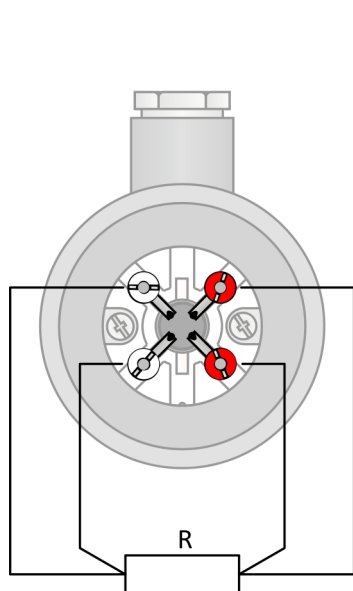


Figure 16.6: Four-wire RTD wiring diagram

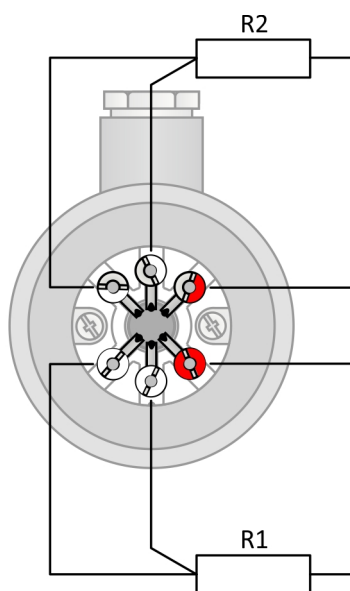


Figure 16.7: Three-wire 2 x RTD wiring diagram

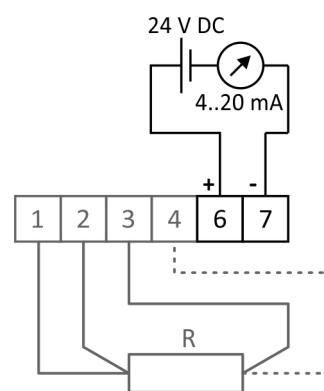


Figure 16.8: Transmitter wiring diagram

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