

MTC16SP

THERMOCOUPLE ASSEMBLY WITH METAL TUBE AND MEASURING INSERT

Temperature sensors of the MTC16SP series are designed for applications with operating temperatures up to 1100°C where extremely high robustness is not required. The sensor is equipped with the transmitter and threaded fitting.

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.

The sensors consist of an armature and a replaceable measuring insert. The armature comprises a head and a protective metal tube. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 16SP.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	16 bar
	Base metal thermocouple measuring insert	
①	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	3 mm
	Protection tube	
②	Outer / inner diameter	8 / 6 mm
	Threaded fitting	
③	Material	Stainless steel 1.4541
	Head	
④	Material	Aluminium alloy
	Cable bushing	M20 x 1,5
⑤	Transmitter	

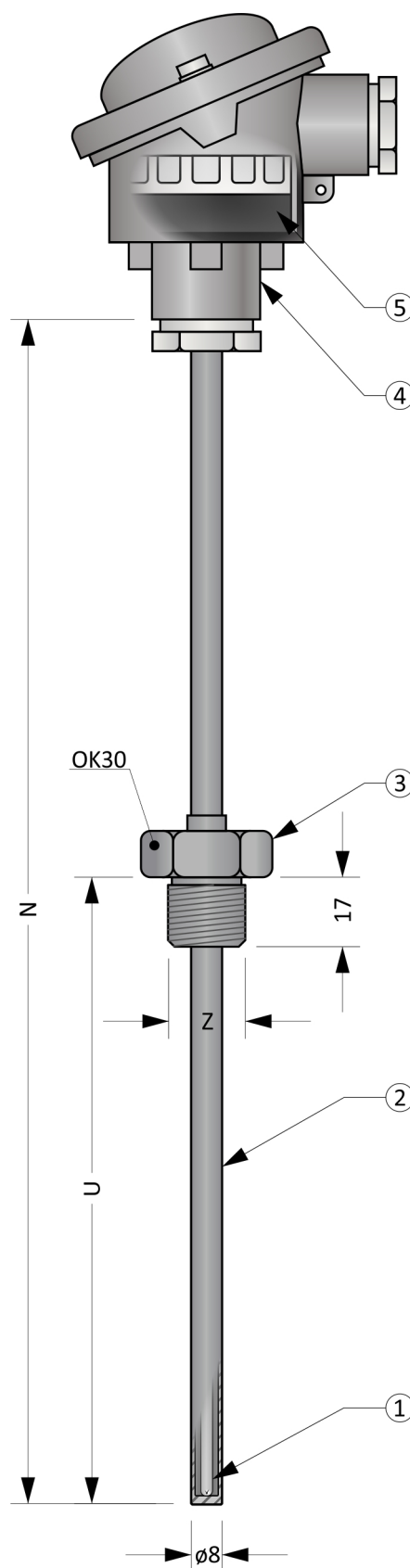


Figure 16SP.1: MTC16SP

Optional Parameters Including the Creation of an Order Code (Table 16SP.2)

Pos.	Code	MTC16SP - ① ② ③ - ④ - ⑤ - ⑥ ⑦
①	Type of measuring insert with a diameter of 3.0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	0	1 x „K“, thermocouple isolated from the sheath, sheath material 2.4816
	1	1 x „J“, thermocouple isolated from the sheath, sheath material 1.4541
	4	1 x „L“, thermocouple isolated from the sheath, sheath material 1.4541 (acc. DIN 43 710)
	5	1 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
②	Accuracy class acc. ČSN EN 60584-1 ed. 2	
	0	Accuracy class 2 (Type L without accuracy class acc. DIN 43 710)
	1	Accuracy class 1 For J, K, N thermocouples only.
③	Threaded fitting	
	0	Welded threaded fitting M20 x 1,5
	1	Welded threaded fitting G½"
④	Nominal length N [mm] and tube material	
	Axxx	Material 1.4541, selectable range from 50 mm to 2000 mm (in 10 mm increments)
	Bxxx	Material 1.4841, selectable range from 50 mm to 2000 mm (in 10 mm increments)
⑤	Immersion depth U [mm]	
	xxx	Selectable range from 20 mm to (N-80) mm (in 10 mm increments)
⑥	Head type	
	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
⑦	Transmitter	
	7	INOR APAQ C130 TC Not for L thermocouples.
	1	INOR miniPAQ - HLP
	4	INOR IPAQ C520 Not for L thermocouples.
	5	INOR IPAQ C330 Not for L thermocouples.
	6	INOR IPAQ C530 Not for L thermocouples.
	A	With another transmitter (e.g. supplied by the customer)

Order code example: MTC16SP-010-A500-100-05

... 1 x „K“, thermocouple isolated from the sheath, sheath material 2.4816

... Accuracy class 1 acc. ČSN EN 60584-1 ed. 2

... Process thread M20 x 1,5

... Nominal length N = 500 mm, material 1.4541

... Immersion depth U = 100 mm

... Head B

... INOR IPAQ C330

Approximate weight of the product: MTC16SP-010-A500-100-05 ... 1,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 16SP.3)

Sensor part	Continuous operation	Short-term operation
Head with transmitter	< 85 °C	-
Threaded fitting	< 800 °C	-
Protection tube, material 1.4541	< 800 °C	-
Protection tube, material 1.4841	< 1100 °C	-
„J“, sheath dia. 3,0 mm	< 470 °C	< 520 °C
„K“, sheath dia. 3,0 mm	< 980 °C	< 1050 °C
„N“, sheath dia. 3,0 mm	< 980 °C	< 1050 °C
„L“, sheath dia. 3,0 mm	< 480 °C	< 530 °C

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

Length Tolerances (Table 16SP.4)

Nominal length N	Length tolerance N	Length tolerance U
$N \leq 1000$ mm	± 2 mm	± 2 mm
$1000 < N$ mm	± 3 mm	± 2 mm

Head types

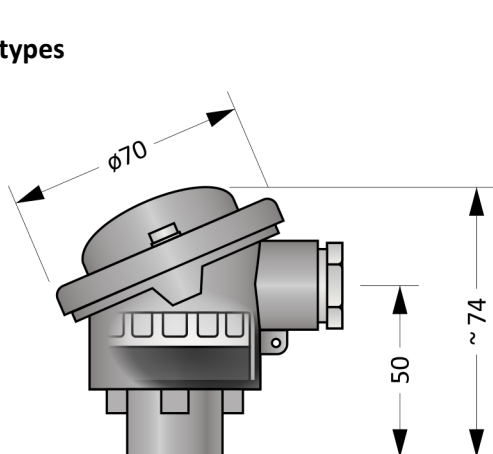


Figure 16SP.2: Head B

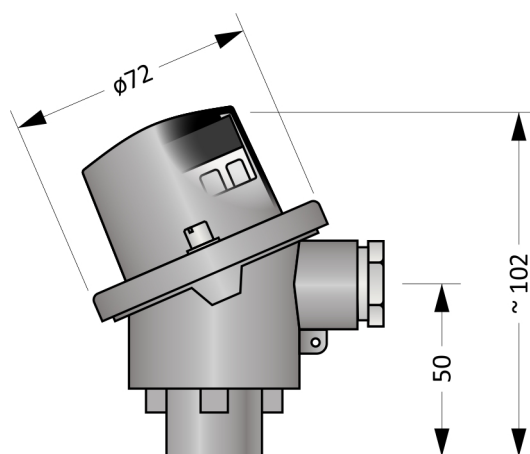


Figure 16SP.3: Head BH

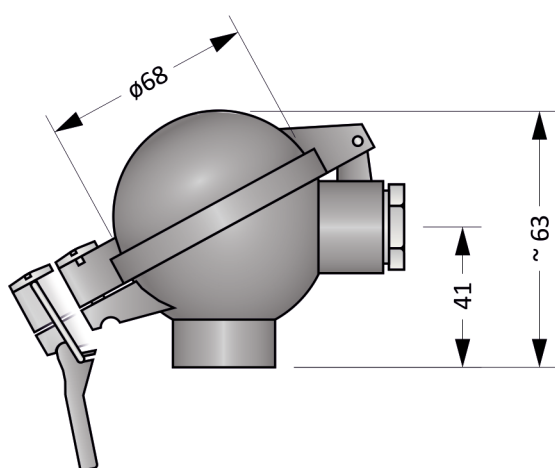


Figure 16SP.4: Head BUZ

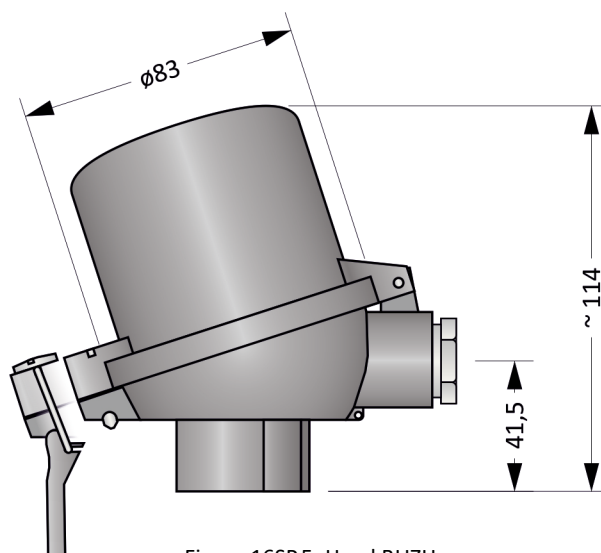


Figure 16SP.5: Head BUZH

Head mounted transmitter (Table 16SP.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.

Typ	Input	Output	Setting	Notes
INOR APAQ C130 TC	Thermocouple - B, E, J, K, N, R, S, T	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 adapter)	
INOR IPAQ C330	Thermocouple - B, C, D, E, J, K, N, R, S, T RTD, mV	4 ... 20 mA, galvanic isolated	PC WIN ConSoft (ICON USB adapter) INOR CONNECT (NFC, Bluetooth®)	
INOR IPAQ C530	Thermocouple - B, C, D, E, J, K, N, R, S, T RTD, mV	4 ... 20 mA, HART, galvanic isolated	INOR CONNECT (NFC, Bluetooth®) PC WIN ConSoft (ICON USB adapter)	
INOR IPAQ C520	Thermocouple - B, C, D, E, J, K, N, R, S, T RTD, mV	4 ... 20 mA, HART, galvanic isolated	PC WIN ConSoft (ICON USB adapter)	2 inputs (redundancy) SIL 2, ATEX certificate

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

Installation And Operating Instructions

For mechanical installation, a tube and/or threaded fitting is used. Other parts cannot be used. The longest lifetime of the sensor can be achieved by mounting it vertically.

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 is shown in Figure 16SP.6.

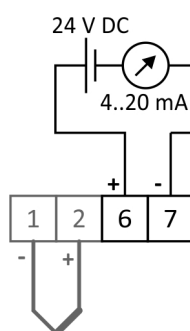


Figure 16SP.6: Transmitter wiring diagram