

MTC7TV

TERMOCOUPLE ASSEMBLIES WITH METAL TUBE AND INSPECTION HOLE

Thermocouple assemblies of the MTC7TV series are designed for applications with operating temperatures up to 1100 °C and where high mechanical robustness is required. Inspection hole is used to insert a reference probe, allowing control measurements to be made without the need to disassemble the sensor.

The measuring element is a thermocouple of the J, K 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.

The assembly consists of head, protection metal tube and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 7TV.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Base metal thermocouple measuring insert	
①	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Protection tube	
②	Material	Stainless steel 1.4841
	Outer / inner dia.	21,3 / 17,3 mm
	Head	
③	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

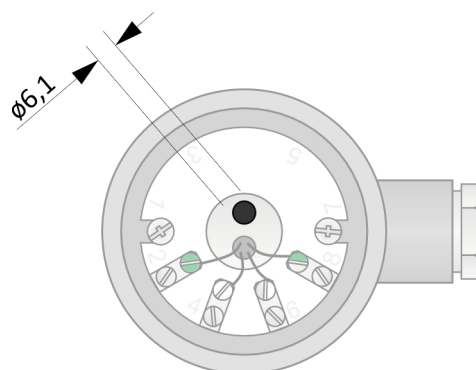


Figure 7TV.2: Terminal block with inspection hole

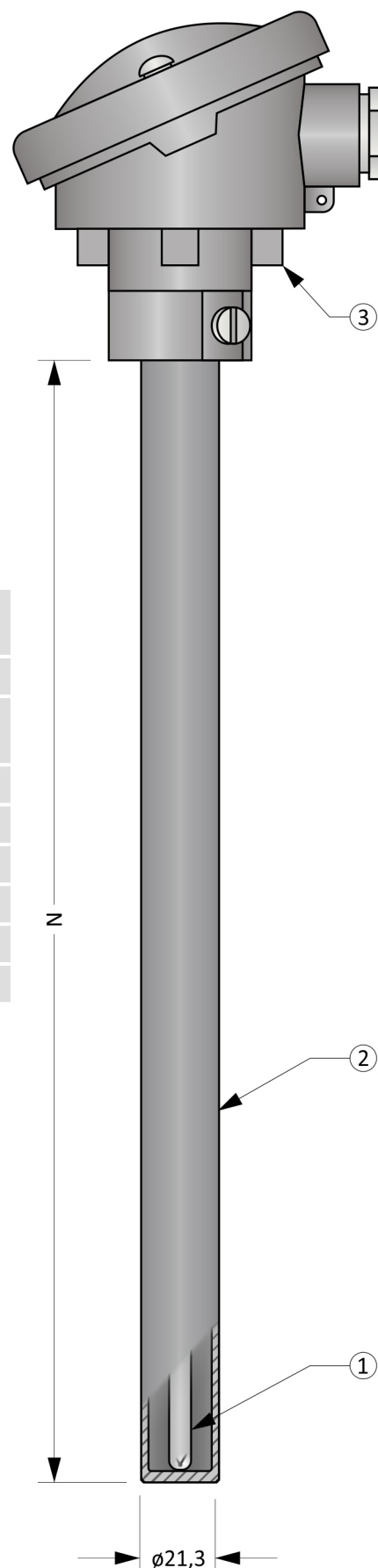


Figure 7TV.1: MTC7TV

Optional Parameters Including the Creation of an Order Code (Table 7TV.2)

Pos.	Code	MTC7TV - ① ② - ③ - ④ ⑤
①	Measuring insert with dia. 6,0 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
	2	2 x „K“, thermocouple isolated from the sheath, sheath material 2.4816
	3	2 x „J“, thermocouple isolated from the sheath, sheath material 1.4541
	4	1 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
	A	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
	Measuring insert with dia. 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „K“, thermocouple isolated from the sheath, sheath material 2.4816
	6	1 x „J“, thermocouple isolated from the sheath, sheath material 1.4541
	7	2 x „K“, thermocouple isolated from the sheath, sheath material 2.4816
	8	2 x „J“, thermocouple isolated from the sheath, sheath material 1.4541
	9	1 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
	B	2 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
	1	accuracy class 1
③	Nominal length N [mm]	
	xxx	Selectable range from 250 mm to 3000 mm (in 10 mm increments)
④	Head type	
	0	AB
	1	ABUZH with screws with leaden seal holes
	2	ABUZH with snap lock
	3	ABUZ with screws with leaden seal holes
	4	ABUZ with snap lock
⑤	Transmitter (transmitters are designed for sensors with ABUZH head and single thermocouple)	
	0	Without transmitter
	8	INOR APAQ C130 TC
	3	INOR miniPAQ - HLP
	5	INOR IPAQ C520
	6	INOR IPAQ C330
	7	INOR IPAQ C530
	A	With another transmitter (e.g. supplied by the customer)

Order code example: MTC7TV-01-500-00

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

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

... Nominal length N = 500 mm

... Head AB

... Without transmitter

Approximate weight of the product: MTC7TV-01-500-00 ... 1,5 kg

Length Tolerances (Table 7TV.3)

Nominal length N	Length tolerance N
$N \leq 1000 \text{ mm}$	$\pm 2 \text{ mm}$
$1000 < N \text{ mm}$	$\pm 3 \text{ mm}$

Recommended Maximum Temperatures of Sensor Parts (Table 7TV.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	$< 100 \text{ }^{\circ}\text{C} / < 85 \text{ }^{\circ}\text{C}$	-
Protection tube	$< 1100 \text{ }^{\circ}\text{C}$	-
„J“, sheath dia. 4,5 mm	$< 550 \text{ }^{\circ}\text{C}$	$< 620 \text{ }^{\circ}\text{C}$
„K“, sheath dia. 4,5 mm	$< 1080 \text{ }^{\circ}\text{C}$	$< 1140 \text{ }^{\circ}\text{C}$
„N“, sheath dia. 4,5 mm	$< 1080 \text{ }^{\circ}\text{C}$	$< 1140 \text{ }^{\circ}\text{C}$
„J“, sheath dia. 6,0 mm	$< 650 \text{ }^{\circ}\text{C}$	$< 720 \text{ }^{\circ}\text{C}$
„K“, sheath dia. 6,0 mm	$< 1140 \text{ }^{\circ}\text{C}$	$< 1200 \text{ }^{\circ}\text{C}$
„N“, sheath dia. 6,0 mm	$< 1140 \text{ }^{\circ}\text{C}$	$< 1200 \text{ }^{\circ}\text{C}$

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

Head types

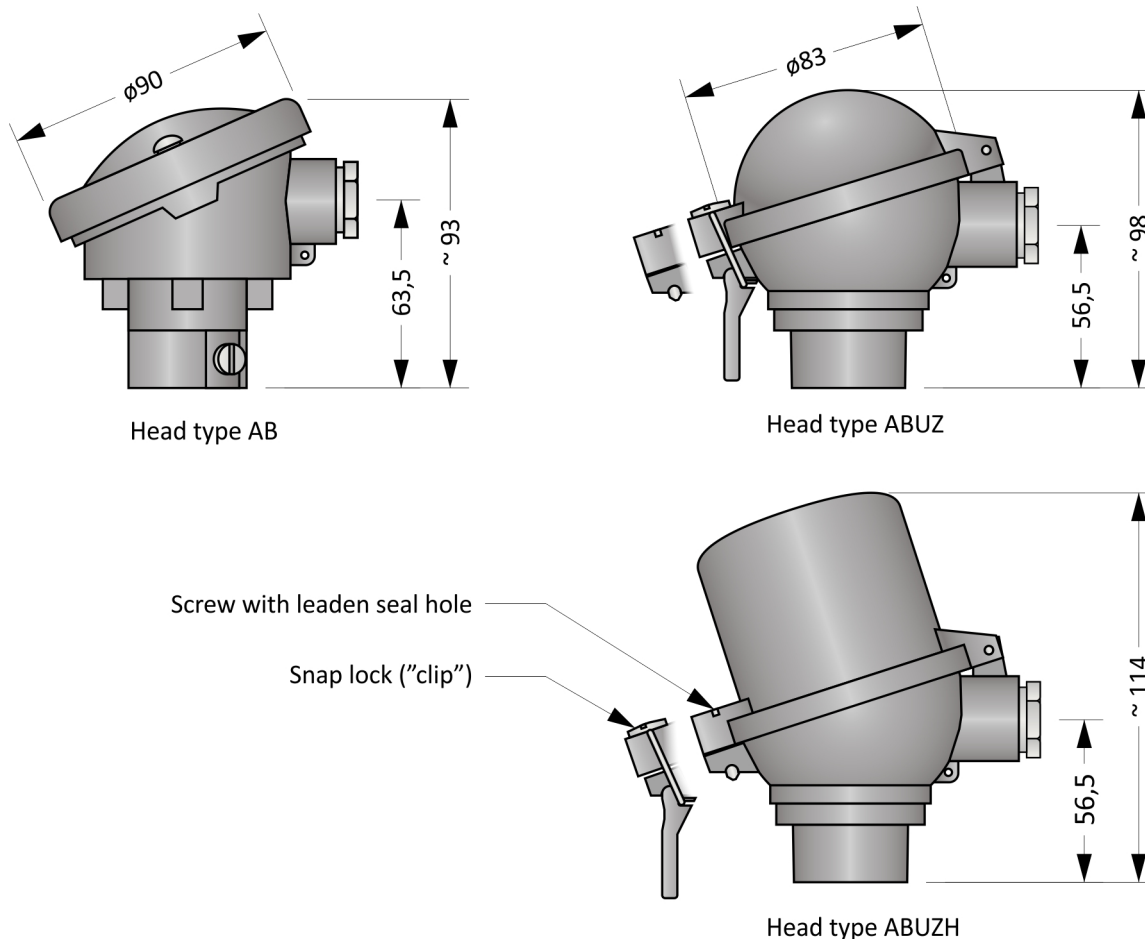


Figure 7TV.3: Head types

Head mounted transmitter (Table 7V.5)

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

The measurement using the inspection hole is shown in Figure 7TV.7. The hole is designed for a reference probe with a diameter of up to 6 mm. Insert the probe into the hole to the bottom of the sump, wait for the temperature to stabilize, and then take temperature readings from both sensors. Take care when removing the probe so as not to damage the terminal block with the hot part.

The electrical connection of sensor with the transmitter is shown in Figure 7TV.6. The output signal is the current loop of 4 to 20 mA. The transmitter is powered over the current loop.

Electrical connection of the sensor without transmitter is shown in the Figures 7TV.4 and 7TV.5. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

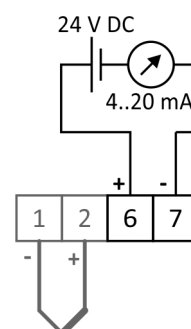


Figure 7TV.6: Transmitter wiring diagram

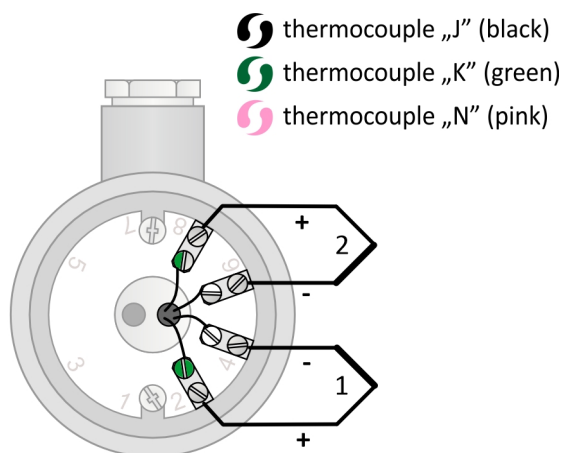


Figure 7TV.4: Double thermocouple wiring diagram

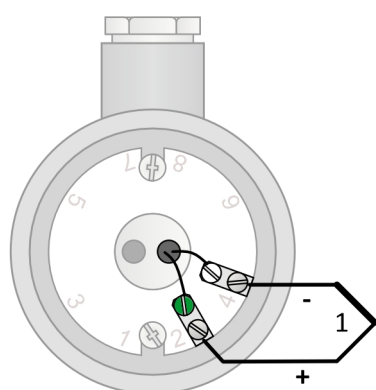


Figure 7TV.5: Single thermocouple wiring diagram



Figure 7TV.7: Measuring insert with reference probe

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