

MTC9V

THERMOCOUPLE ASSEMBLY WITH METAL TUBE AND MEASURING INSERT

Thermocouple assemblies of the MTC9V series are designed for applications with operating temperatures up to 800 °C and where high mechanical robustness is required. Optional parameters include welded threaded fitting. Thanks to the measuring insert, they are also suitable for applications with increased chemical aggressiveness of the measured environment.

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 9V.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
	Protection tube	
②	Material	1.4541
	Outer / inner diameter	14 / 10 mm
	Threaded fitting	
③	Material	Stainless steel 1.4541
	Head	
④	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

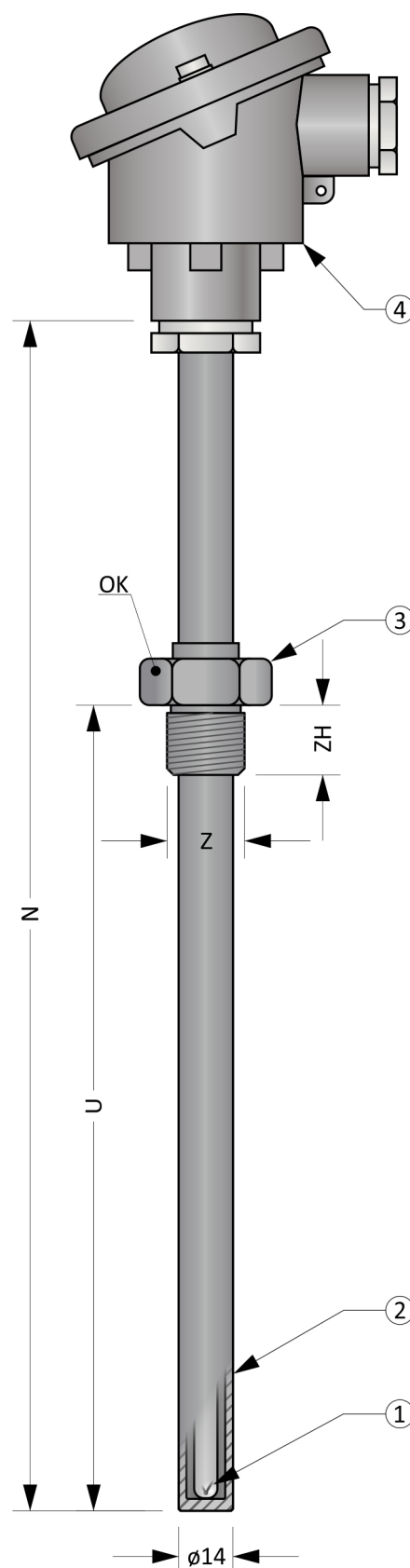


Figure 9V.1: MTC9V

Optional Parameters Including the Creation of an Order Code (Table 9V.2)

Pos.	Code	MTC9V - ① ② - ③ - ④ - ⑤ ⑥ ⑦
①	Measuring insert with dia. 4,5 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. 6,0 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 2000 mm (in 10 mm increments)
④	Immersion depth U [mm]	
	0	Without threaded fitting
	xxx	Selectable range from 50 mm to (N-100) mm (in 5 mm increments)
⑤	Threaded fitting	
	0	Without threaded fitting
	1	Welded threaded fitting Z = M27 x 2, ZH = 26 mm, WAF36
	2	Welded threaded fitting Z = M20 x 1,5, ZH = 17 mm, WAF30
	3	Welded threaded fitting Z = G½“, ZH = 17 mm, WAF30
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 (transmitters are designed for assemblies with BUZH, BH head and one 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: MTC9V-01-500-250-300

... 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

... Immersion depth U = 250 mm

... Welded threaded fitting G½

... Head A

... Without transmitter

Approximate weight of the product: MTC9V-01-500-250-300 ... 1,5 kg

Length Tolerances (Table 9V.3)

Nominal length N	Length tolerance N	Length tolerance U
$250 \leq N \leq 1000$ mm	± 2 mm	± 2 mm
$1000 < N$ mm	± 3 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 9V.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Threaded fitting	< 800 °C	-
Protection tube	< 800 °C	-
„J“, sheath dia. 4,5 mm	< 550 °C	< 620 °C
„K“, sheath dia. 4,5 mm	< 1080 °C	< 1140 °C
„N“, sheath dia. 4,5 mm	< 1080 °C	< 1140 °C
„J“, sheath dia. 6,0 mm	< 650 °C	< 720 °C
„K“, sheath dia. 6,0 mm	< 1140 °C	< 1200 °C
„N“, sheath dia. 6,0 mm	< 1140 °C	< 1200 °C

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

Head types

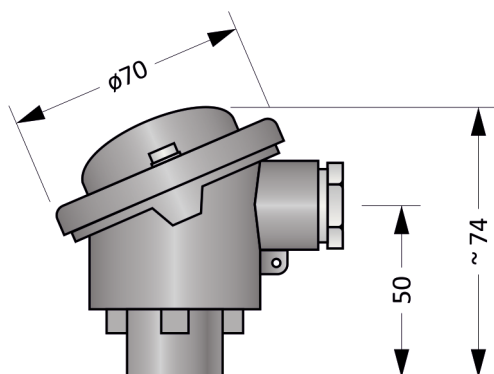


Figure 9V.2: Head B

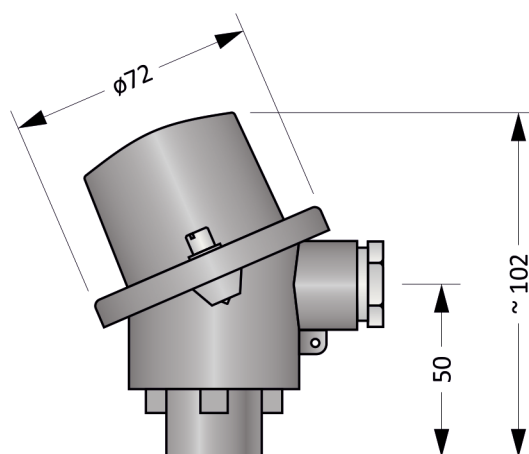


Figure 9V.3: Head BH

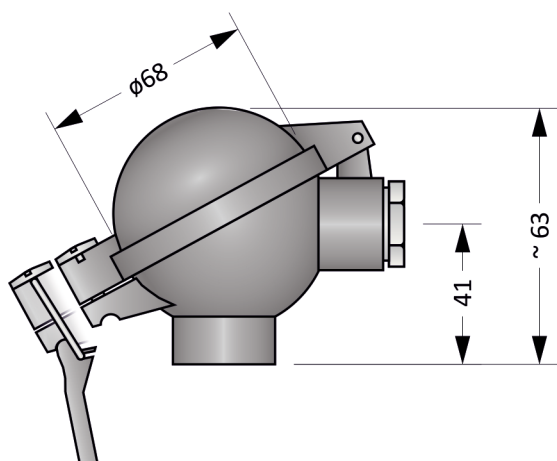


Figure 9V.4: Head BUZ

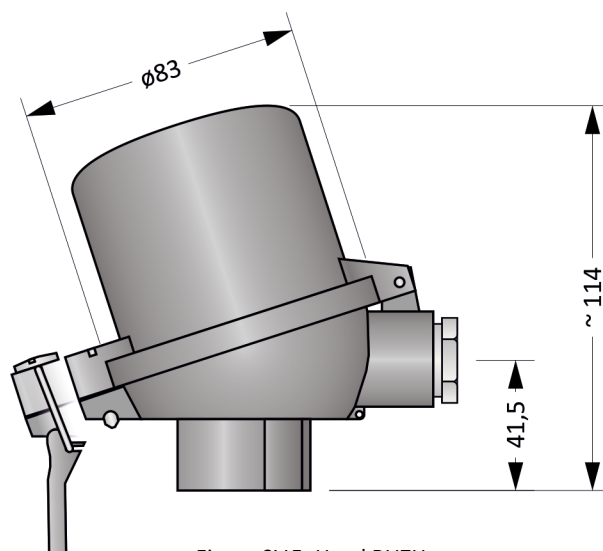


Figure 9V.5: Head BUZH

Head mounted transmitter (Table 9V.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

Use metal tube or welded fitting (if applicable) for mounting. 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 with the transmitter is shown in Figure 9V.8.

Electrical connection of the sensor without transmitter is shown in the Figures 9V.6 a 9V.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.

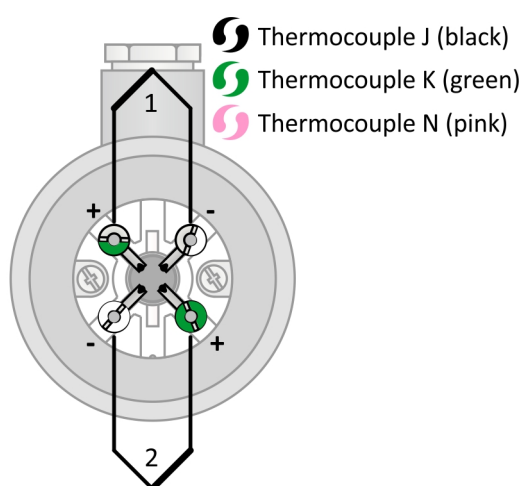


Figure 9V.7: Double thermocouple wiring diagram

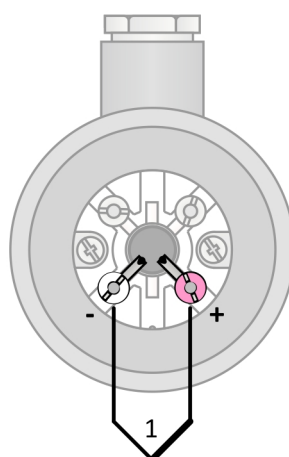


Figure 9V.8: Single thermocouple wiring diagram

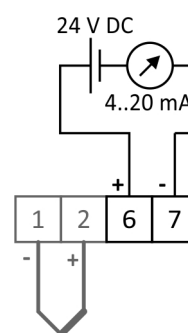


Figure 9V.9: Transmitter wiring diagram

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