

MTC7U

THERMOCOUPLE ASSEMBLIES WITH ANGLED METAL TUBE AND MEASURING INSERT

Thermocouple assemblies of the MTC7V series are designed for applications with operating temperatures up to 1100 °C and where high mechanical robustness is required. Thanks to the measuring insert, they are also suitable for applications with increased chemical aggressiveness of the measured environment.

The measuring element is a base metal thermocouple, 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, extension tube, pipe knee, protection tube and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 7U.1)

	Insulation class acc. ČSN EN 60529	IP54
Base metal thermocouple measuring insert		
①	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	4,5 mm
Extension tube		
②	Material	Stainless steel 1.4841
	Outer / inner diameter	21,3 / 17,3 mm
Knee pipe		
③	Material	Stainless steel 1.4401
Protection tube		
④	Material	Stainless steel 1.4841
	Outer / inner diameter	21,3 / 17,3 mm
Head		
⑤	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

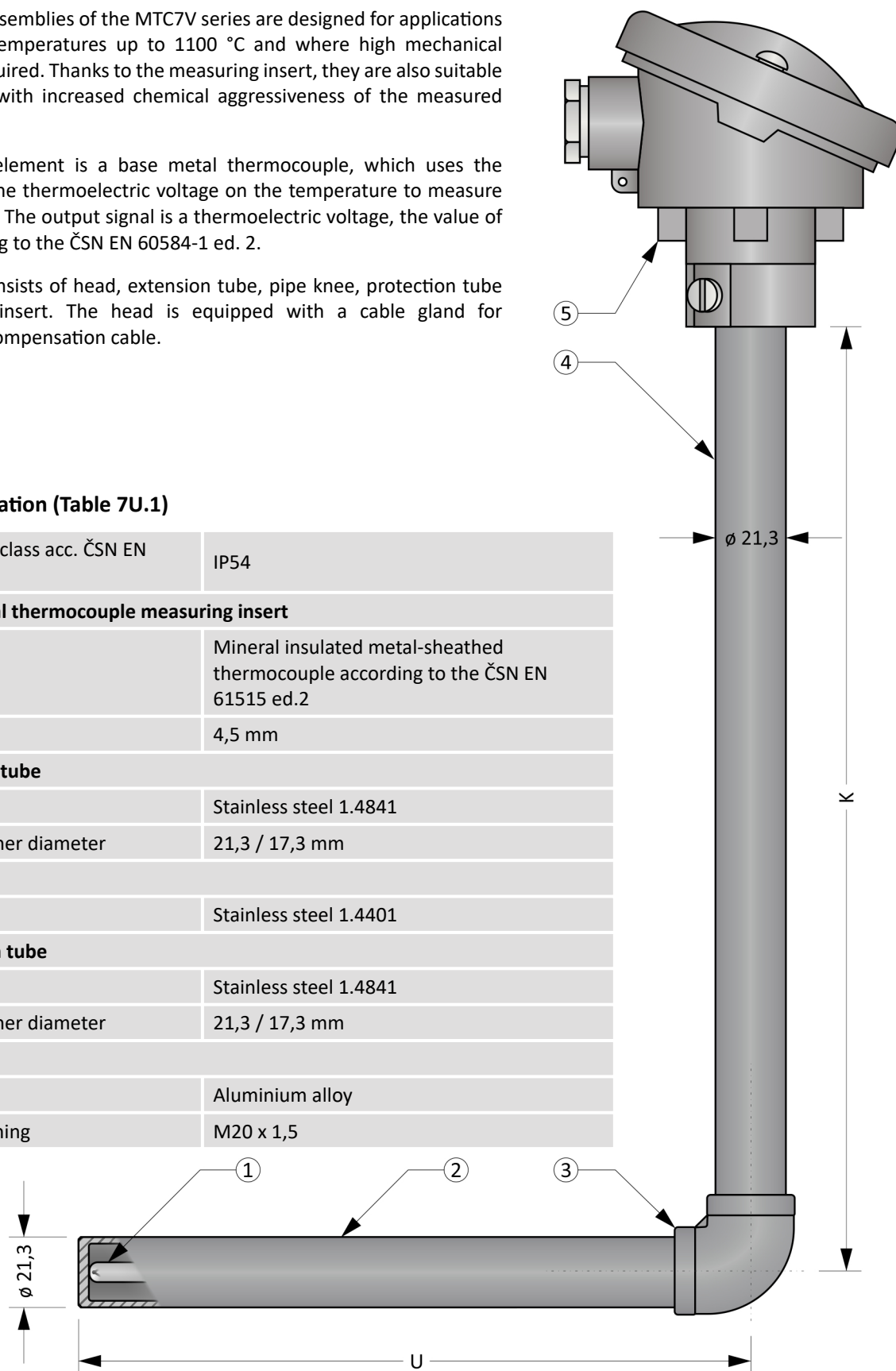


Figure 7U.1: MTC7U

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

Pos.	Code	MTC7U - ① ② - ③ - ④ - ⑤ ⑥
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
②	Accuracy class acc. ČSN EN 60584-1 ed. 2	
	0	Accuracy class 2
	1	Accuracy class 1
③	Extension tube length K [mm]	
	xxx	Selectable range from 200 mm to 1500 mm (in 10 mm increments)
④	Length U [mm]	
	xxx	Selectable range from 200 mm to 1500 mm (in 10 mm increments)
⑤	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
⑥	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: MTC7U-01-500-500-00

... 1 x „K“, thermocouple isolated from the sheath, sheath material 2.4816
 ... Accuracy class 1 acc. ČSN EN 60584-1 ed. 2
 ... Length K = 500 mm
 ... Length U = 500 mm
 ... Head AB
 ... Without transmitter

Approximate weight of the product: MTC7U-01-500-500-00 ... 3,0 kg

Length Tolerances (Table 7U.3)

Length U, K	Length tolerance U, K
$U, K \leq 1000 \text{ mm}$	$\pm 2 \text{ mm}$
$1000 < U, K \text{ mm}$	$\pm 3 \text{ mm}$

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

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	$< 100 \text{ }^{\circ}\text{C} / < 85 \text{ }^{\circ}\text{C}$	-
Protection tube, extension tube	$< 1100 \text{ }^{\circ}\text{C}$	-
Knee pipe	$< 800 \text{ }^{\circ}\text{C}$	-
„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	$< 1080 \text{ }^{\circ}\text{C}$	$< 1140 \text{ }^{\circ}\text{C}$

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

Head types

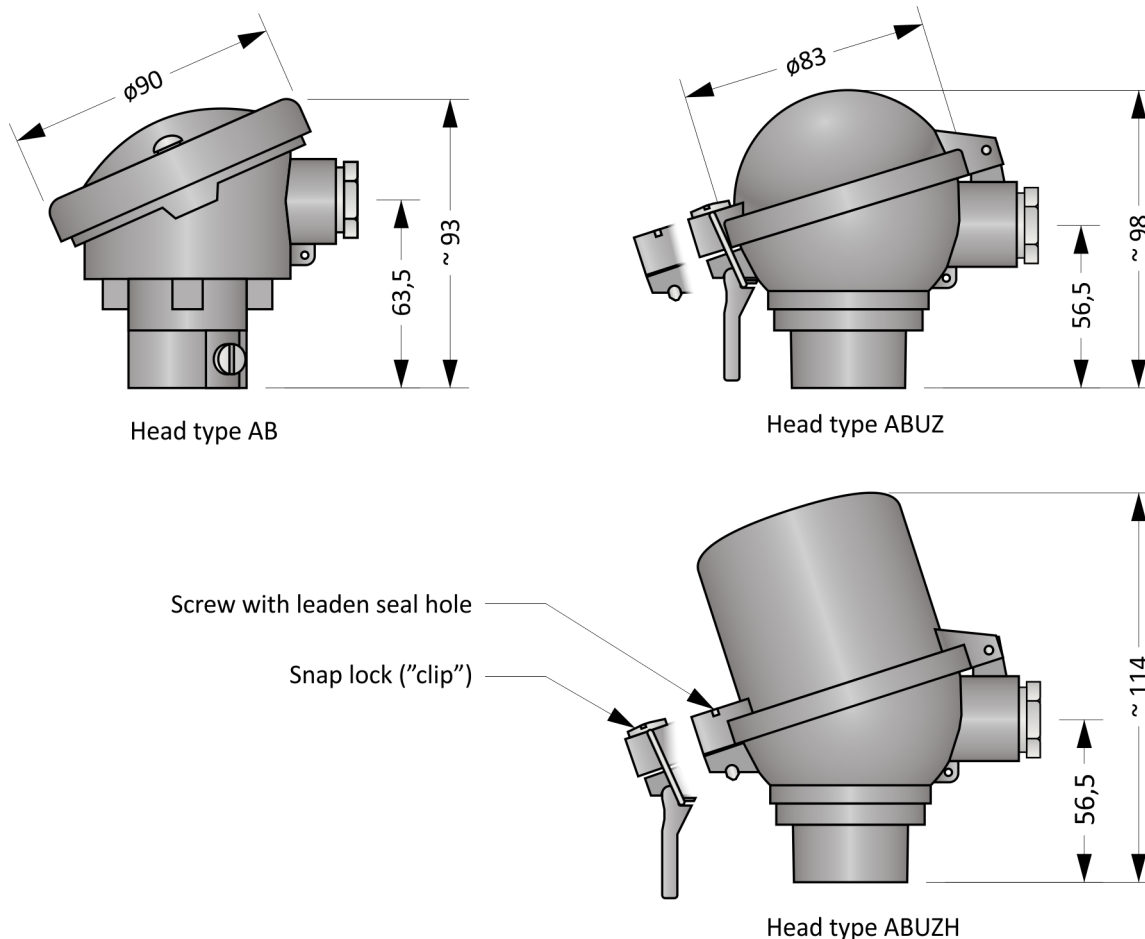


Figure 7U.2: Head types

Head mounted transmitter (Table 7U.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

A protection tube is used for mechanical installation of the assembly. 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 (extension tube) with the head in the upper position.

The electrical connection of sensor with the transmitter is shown in Figure 7U.5.

Electrical connection of the sensor without transmitter is shown in the Figures 7U.3 and 7U.4. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

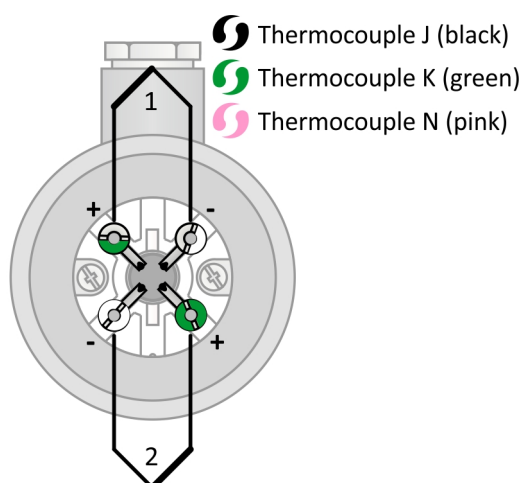


Figure 7U.3: Double thermocouple wiring diagram

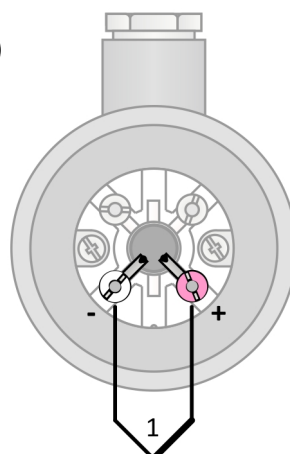


Figure 7U.4: Single thermocouple wiring diagram

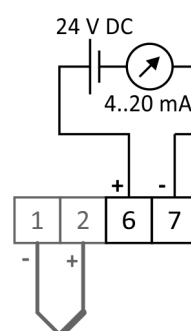


Figure 7U.5: Transmitter wiring diagram