MAVIS

Nový Bor s.r.o.

THERMOCOUPLES AND THERMOCOUPLE ASSEMBLIES

Product catalog

MTC

2025-01

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Content

MTC Series Overview

Series	Thermocouple type	Design	Outer Ø
MTC1	„S“, „R“ or „B“	double ceramic tube C610 (Pythagoras)	24 mm
MTC1C	„S“, „R“ or „B“	double ceramic tube C530 (Silimantin)/ C610 (Pythagoras)	26 mm
MTC1KV	meas. insert „K“ or „N“	double ceramic tube C530 (Lunit 20)/ C610 (Lunit 73)	26 mm
MTC1KD	„K“ or „N“	double ceramic tube C530 (Lunit 20)/ C610 (Lunit 73)	26 mm
MTC1L	„S“, „R“ or „B“	double ceramic tube C530 (Lunit 20)/ C610 (Lunit 73)	26 mm
MTC2	„S“, „R“ or „B“	double ceramic tube C799 (Alsint)	24 mm
MTC2C	„S“, „R“ or „B“	double ceramic tube C530 (Silimantin)/ C799 (Alsint)	26 mm
MTC2L	„S“, „R“ or „B“	double ceramic tube C799 (Luxal 203)	24 mm
MTC3	„J“, „K“ or „N“	ceramic tube C610 (Pythagoras)	24 mm
MTC3L	„J“, „K“ or „N“	ceramic tube C530 (Lunit 20)	26 mm
MTC4	„J“, „K“ or „N“	ceramic tube C799 (Alsint)	24 mm
MTC4L	„J“, „K“ or „N“	ceramic tube C799 (Luxal 203)	24 mm
MTC4S	„S“, „R“ or „B“	crystal sapphire tube	16 mm
MTC5	„J“, „K“ or „N“	ceramic tube C610 (Pythagoras)	15 mm
MTC5A	„S“, „R“ or „B“	ceramic tube C610 (Pythagoras)	15 mm
MTC5L	„J“, „K“ or „N“	ceramic tube C610 (Lunit 73)	15 mm
MTC5LA	„S“, „R“ or „B“	ceramic tube C610 (Lunit 73)	15 mm
MTC5M	„J“, „K“ or „N“	ceramic tube C610 (Pythagoras)	9 mm
MTC5MA	„S“, „R“ or „B“	ceramic tube C610 (Pythagoras)	9 mm
MTC6	„J“, „K“ or „N“	ceramic tube C799 (Alsint)	15 mm
MTC6A	„S“, „R“ or „B“	ceramic tube C799 (Alsint)	15 mm
MTC6L	„J“, „K“ or „N“	ceramic tube C799 (Luxal 203)	15 mm
MTC6LA	„S“, „R“ or „B“	ceramic tube C799 (Luxal 203)	15 mm
MTC6M	„J“, „K“ or „N“	ceramic tube C799 (Alsint)	9 mm
MTC6MA	„S“, „R“ or „B“	ceramic tube C799 (Alsint)	9 mm
MTC6S	„S“, „R“ or „B“	crystal sapphire tube	8 mm
MTC7	„J“, „K“ or „N“	Stainless steel tube 1.4841	21,3 mm
MTC7BM	„S“, „R“, „B“, „N“ or „K“	Stainless steel or ceramic tube	21,3 - 22 mm
MTC7V	meas. insert „J“, „K“ or „N“	Stainless steel tube 1.4841	21,3 mm
MTC7TV	meas. insert „J“, „K“ or „N“	Stainless steel tube 1.4841, with inspection hole	21,3 mm
MTC7C	„J“, „K“ or „N“	ceramic tube SiC	40 mm
MTC7U	meas. insert J“, „K“, „N“	Stainless steel tube 1.4841, angled	21,3 mm
MTC7UC	meas. insert J“, „K“, „N“	SiC ceramic tube, angled	40 mm
MTC8	„J“, „K“ or „N“	Stainless steel tube 1.4841	14 mm
MTC8V	meas. insert „J“, „K“ or „N“	Stainless steel tube 1.4841	14 mm
MTC8VR	meas. insert „J“, „K“ or „N“	Stainless steel tube 1.4841 with tapered tip	14 / 6 mm
MTC8J	sheated „J“, „K“, „N“	Metal sheated	3 - 6 mm
MTC9	„J“, „K“ or „N“	Stainless steel tube 1.4541	14 mm
MTC9V	meas. insert „J“, „K“ or „N“	Stainless steel tube 1.4541	14 mm
MTC9VR	meas. insert „J“, „K“ or „N“	Stainless steel tube 1.4541 with tapered tip	14 / 6 mm
MTC10	sheated „J“, „K“ or „N“	With/without connector	1 - 6 mm

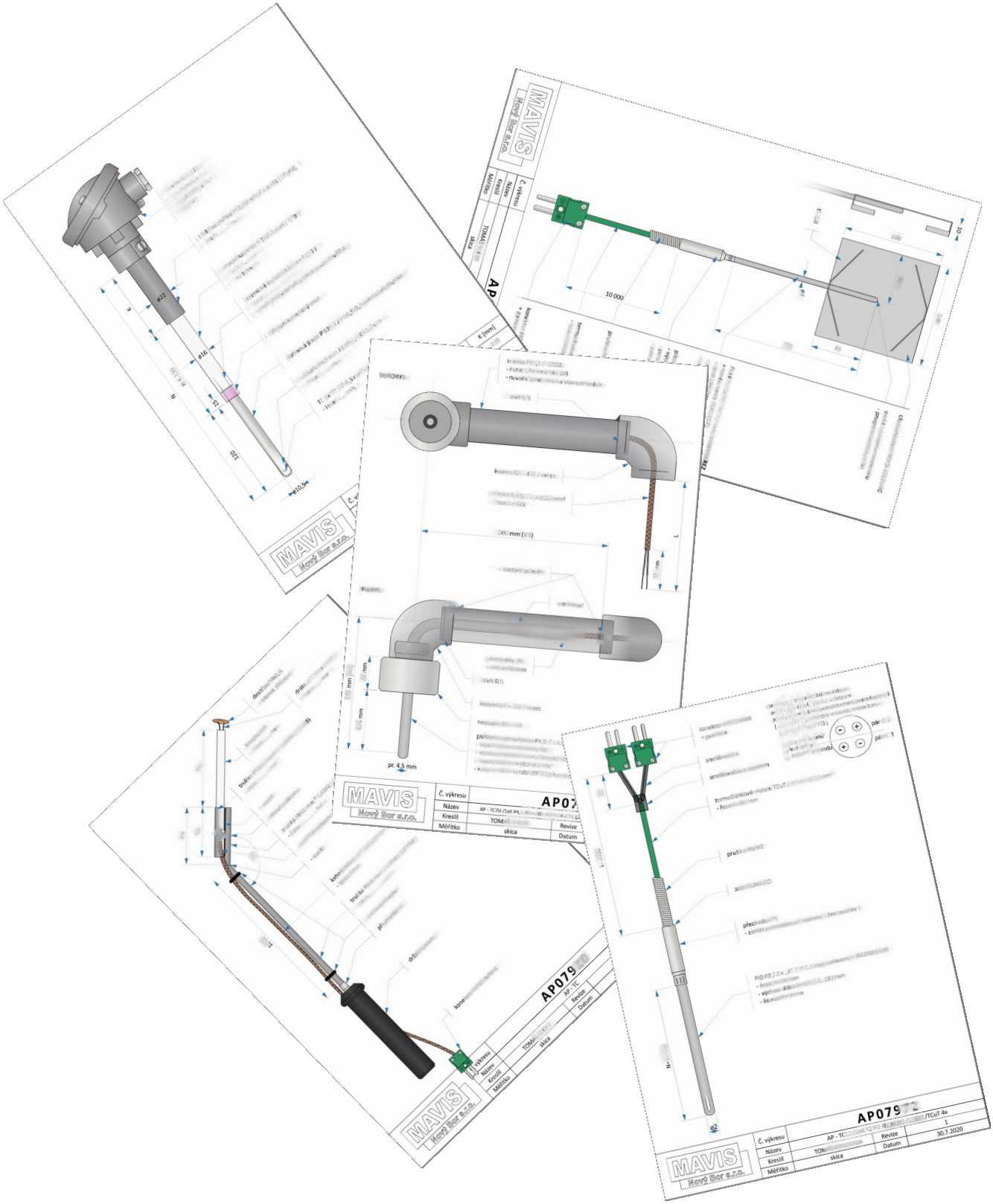
Series	Thermocouple type	Design	Outer Ø
MTC11	sheated „J“, „K“ or „N“	With extension cable	1 - 6 mm
MTC11U	sheated „J“, „K“ or „N“	with extension cable, angled	1 - 6 mm
MTC11P	sheated „J“, „K“ or „N“	with extension cable, pressure type	3; 4,5 mm
MTC11PU	sheated „J“, „K“ or „N“	with extension cable, pressure type, angled	3; 4,5 mm
MTC11R	sheated „J“, „K“ or „N“	With handle	2 - 6 mm
MTC11F	sheated „J“, „K“ or „N“	With head F	3 - 6 mm
MTC11FS	sheated „J“, „K“ or „N“	With head F, for screwing	3 - 6 mm
MTC11H	sheated „J“, „K“ or „N“	With head B	3 - 6 mm
MTC11HS	sheated „J“, „K“ or „N“	With head H, for screwing	3 - 6 mm
MTC12	cable „J“, „K“, „L“ or „N“	Without protection tube	
MTC12A	cable „J“, „K“, „L“ or „N“	With protection tube	3 - 6 mm
MTC12K	cable „J“, „K“ or „L“	With cable lug	
MTC12KN	cable „J“ or „K“	for sticking	
MTC12KP	cable „J“ or „K“	With tightening tape	
MTC12KR	cable „J“, „K“, „L“ or „N“	With crocodile clip	
MTC12U	cable „J“, „K“ or „L“	Angular, bayonet mechanism	5 mm
MTC13	cable „J“, „K“ or „L“	Bayonet mechanism	6 - 8 mm
MTC13T	cable „J“, „K“ or „L“	for pressure applications	6 mm
MTC14V	measuring insert „J“, „K“, „N“	Stainless steel tube and threaded fitting	11 mm
MTC15	measuring insert „J“, „K“, „L" „N“		3 - 6 mm
MTC15P	measuring insert „J“, „K“, „L" „N“	With transmitter	3 - 6 mm
MTC16	measuring insert „J“, „K“, „L" „N“	Stainless steel tube	8 mm
MTC16P	measuring insert „J“, „K“, „L" „N“	Stainless steel tube and with transmitter	8 mm
MTC16S	measuring insert „J“, „K“, „L" „N“	Stainless steel tube and threaded fitting	8 mm
MTC16SP	measuring insert „J“, „K“, „L" „N“	Stainless steel tube, threaded fitting and with transmitter	8 mm
MTC16N	measuring insert „J“, „K“, „L" „N“	Stainless steel tube, for screwing	8 mm
MTC16NP	measuring insert „J“, „K“, „L" „N“	Stainless steel tube, for screwing and with transmitter	8 mm
MTC20	„S“	ceramic tube C610, with holder (without head)	8 mm
MTC21	„K“ or „N“	ceramic tube C610, with holder (without head)	8 mm
MTC22	„S“, „K“ or „N“	ceramic tube C610, with head F	8 mm

AP

ATYPICAL DESIGN OF TEMPERATURE SENSORS

Some applications have special design requirements that are not coveredby the MTC product lines. For this purpose, an atypical design (AP) can be created according to the customer specification.

The simplest form of request is to refer to the most similar sensor from the MTC product line (E.g. Our sensor is similar to MTC11... but we need a different diameter ....).



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TP

PRECIOUS METAL THERMOCOUPLES

Precious metal thermocouples are intended for use in MTC1, MTC1C, MTC1L, MTC1KD, MTC2, MTC2C, MTC2L, MTC4S, MTC5A, MTC5MA, MTC5LA, MTC6A, MTC6LA, MTC6MA, MTC6S and MTC7BM assembly as a measuring element.

The output signal of thermoucouple is a thermoelectric voltage, the value of which is according to the ČSN EN 60584-1 ed. 2.

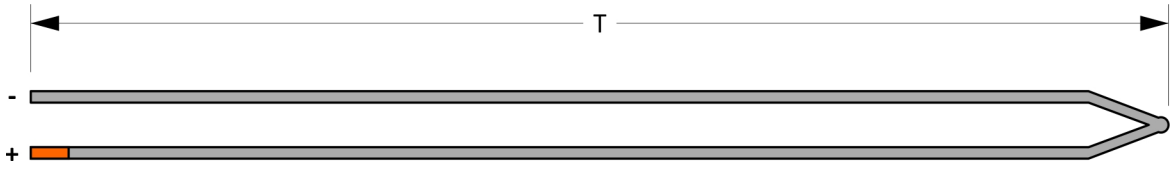

Figure TP.1: thermocouple

Optional Parameters Including the Creation of an Order Code (Table TP.1)

Pos.	Code	TP - ❶ - ❷
❶	**Thermocouple type**	
	S035	Thermocouple type „S“, wire diameter 0,35 mm, accuracy class 1 acc. ČSN EN 60584-1 ed. 2
	S05	Thermocouple type „S“, wire diameter 0,5 mm, accuracy class 1 acc. ČSN EN 60584-1 ed. 2
	R05	Thermocouple type „R“, wire diameter 0,5 mm, accuracy class 1 acc. ČSN EN 60584-1 ed. 2
	B05	Thermocouple type „B“, wire diameter 0,5 mm, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
❷	**Thermocouple length T [mm]**	
	xxx	Selectable range from 50 (in 1 mm increments)

Order code example: TP-S05-870

... Thermocouple type „S“, wire diameter 0,5 mm, accuracy class 1

... Thermocouple length T = 870 mm

Approximate weight of the product: TP-S05-870 ... < 10 g

Maximum operating temperature of thermocouples (Table TP.2)

Thermocouple type	Recommended	With limited lifetime
„S“, wire dia. 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire dia. 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire dia. 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire dia. 0,5 mm	< 1400 °C	< 1600 °C

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

Minimum thermocouple lengths in assemblies (Table TP.3)

Thermocouple assembly	Thermocouple length T [mm]
MTC1	N + 70
MTC1C	N + 70
MTC1KD	N + 70
MTC1L	N + 70
MTC2	N + 70
MTC2C	N + 70
MTC2L	N + 70
MTC4S	N + 80
MTC5A	N + 80
MTC5LA	N + 80
MTC5MA	N + 40
MTC6A	N + 80
MTC6LA	N + 80
MTC6MA	N + 40
MTC6S	N + 80
MTC7BM	N + 70

Notes: „N“ is the nominal length of the thermoucouple assembly.

MTC1

THERMOCOUPLE ASSEMBLIES WITH DOUBLE CERAMIC TUBE

Thermocouple assemblies of the MTC1 series are the standard version of temperature sensors with ceramic tube. They have a double protective ceramic tube made of "Pythagoras" material and are suitable for applications with operating temperatures up to 1300 °C. They withstand temperature shocks well, but their chemical resistance is only average. The ceramic parts are not completely gas-tight, which may negatively affect the long-term lifetime of the installed thermocouple.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, inner and outer ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 1.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 70) mm
②	**Capillary**	
	Material	Ceramic C610 (Pythagoras)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Inner ceramic tube**	
	Material	Ceramic C610 (Pythagoras)
	Outer / inner diameter	15 / 11 mm
④	**Outer ceramic tube**	
	Material	Ceramic C610 (Pythagoras)
	Outer / inner diameter	24 / 19 mm
⑤	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑥	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

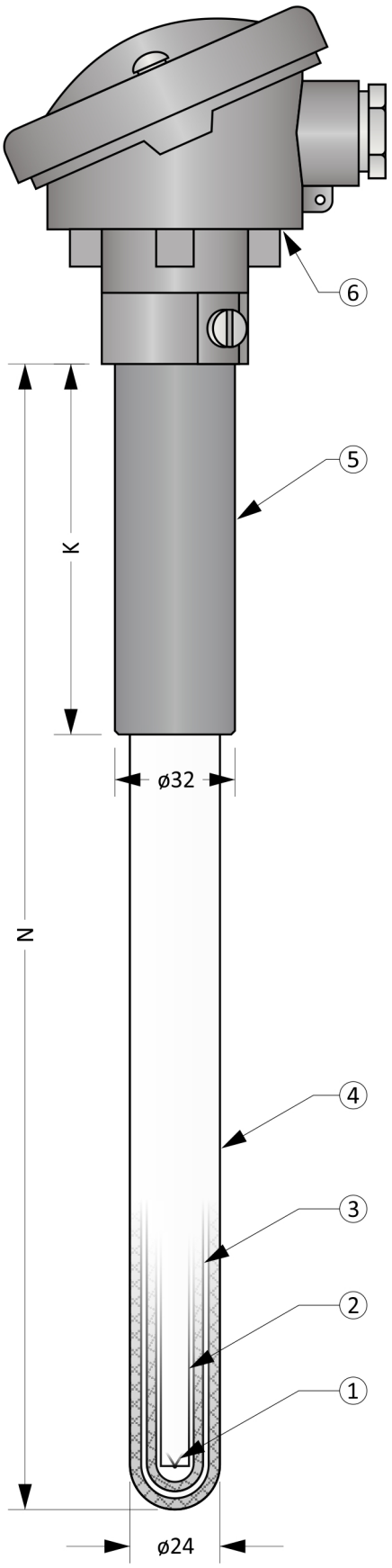

Figure 1.1: MTC1

Optional Parameters Including the Creation of an Order Code (Table 1.2)

Pos.	Code	MTC1 - ❶ - ❷ - ❸ ❹
❶	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH head and one thermocouple)**	
	0	Without transmitter
	3	INOR miniPAQ - HLP
	6	INOR IPAQ C330
	7	INOR IPAQ C530
	5	INOR IPAQ C520
	A	With another transmitter (e.g. supplied by the customer)

Recommended lengths of holding pipe:
K = 150 mm pro N < 800 mm
K = 200 mm pro 800 ≤ N < 1000 mm
K = 400 mm pro 1000 ≤ N mm

Order code example: MTC1-500-150-00
... Nominal length N = 500 mm
... Holding pipe length K = 150 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC1-500-150-00 ... 1,0 kg

Length Tolerances (Table 1.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 1.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1300 °C	-
„S“, wire dia. 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire dia. 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire dia. 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire dia. 0,5 mm	< 1400 °C	< 1600 °C

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

Head types

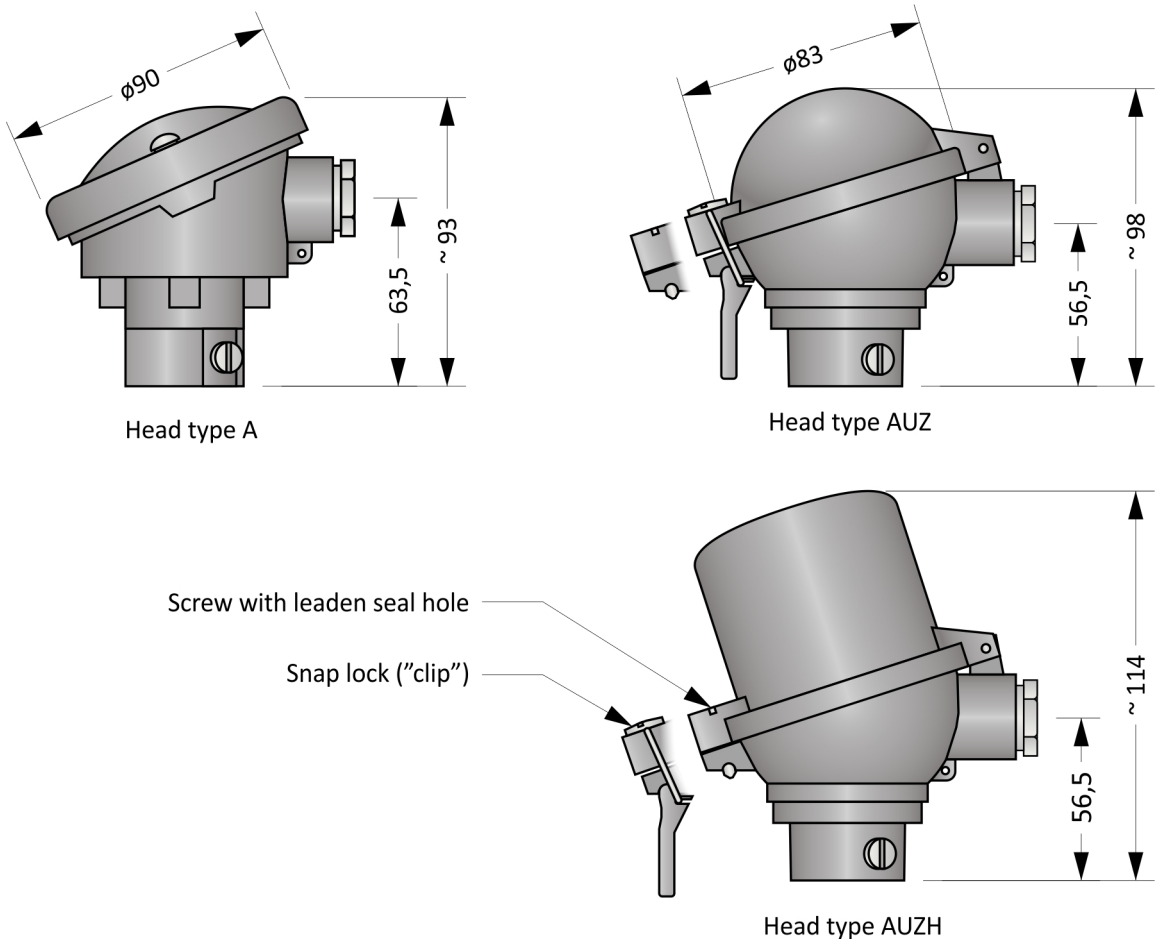

Figure 1.2: Head types

Head mounted transmitter (Table 1.5)

Typ	Input	Output	Setting	Notes
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 holding pipe 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 measuring part of the sensor may be exposed to a temperature gradient of up to 60 °C/min. Exceeding this value may cause damage.

The electrical connection of sensor with the transmitter is shown in Figure 1.3.

Electrical connection of the sensor without transmitter is shown in the Figures 1.4 and 1.5. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

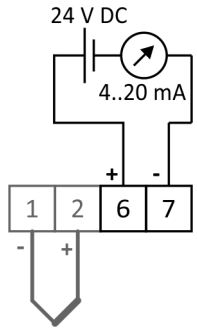

Figure 1.3: Transmitter wiring diagram

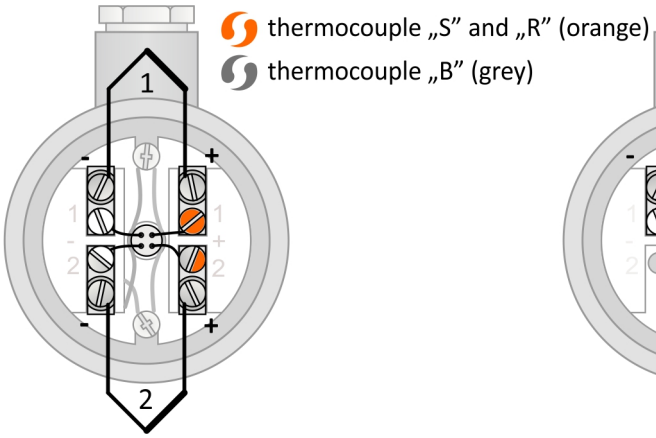

Figure 1.4: Double thermocouple wiring diagram

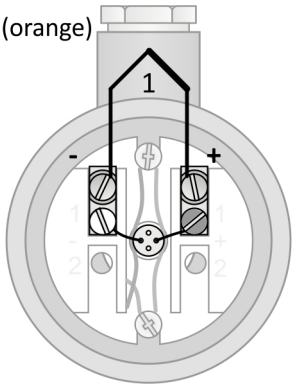

Figure 1.5: Single thermocouple wiring diagram

MTC1C

THERMOCOUPLE ASSEMBLIES WITH DOUBLE CERAMIC TUBE

Thermocouple assemblies of the MTC1C series are designed for applications with operating temperatures up to 1350 °C and increased chemical aggressiveness of the environment. They have a double ceramic tube: outer one made of "Silimantin" material, inner one and capillary made of "Pythagoras" material. They are characterised by good resistance to temperature shocks. The ceramic parts are not completely gas-tight, which may negatively affect the long-term lifetime of the installed thermocouple.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, inner and outer ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 1C.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 70) mm
②	**Capillary**	
	Material	Ceramic C610 (Pythagoras)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Inner ceramic tube**	
	Material	Ceramic C610 (Pythagoras)
	Outer / inner diameter	15 / 11 mm
④	**Outer ceramic tube**	
	Material	Ceramic C530 (Silimantin)
	Outer / inner diameter	26 / 18 mm
⑤	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑥	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

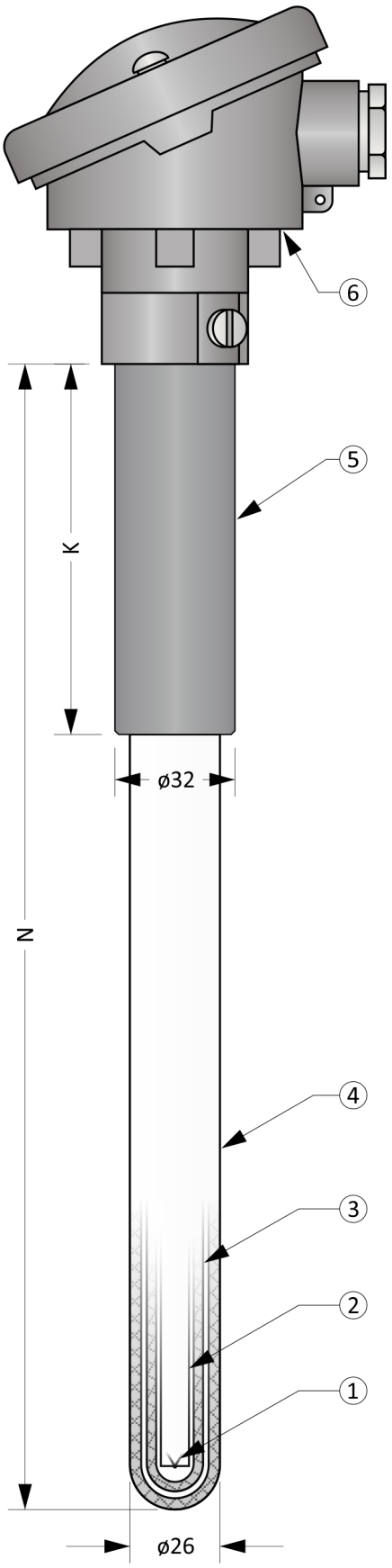

Figure 1C.1: MTC1C

Optional Parameters Including the Creation of an Order Code (Table 1C.2)

Pos.	Code	MTC1C - ❶ - ❷ - ❸ ❹
❶	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 1600 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH head and one thermocouple)**	
	0	Without transmitter
	3	INOR miniPAQ - HLP
	5	NOR IPAQ C520
	6	INOR IPAQ C330
	7	INOR IPAQ C530
	A	With another transmitter (e.g. supplied by the customer)

Recommended lengths of holding pipe:
K = 150 mm pro N < 800 mm
K = 200 mm pro 800 ≤ N < 1000 mm
K = 400 mm pro 1000 ≤ N mm

Order code example: MTC1C-800-200-00
... Nominal length N = 800 mm
... Holding pipe length K = 200 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC1C-800-200-00 ... 1,5 kg

Length Tolerances (Table 1C.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 1C.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1300 °C	-
„S“, wire dia. 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire dia. 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire dia. 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire dia. 0,5 mm	< 1400 °C	< 1600 °C

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

Head types

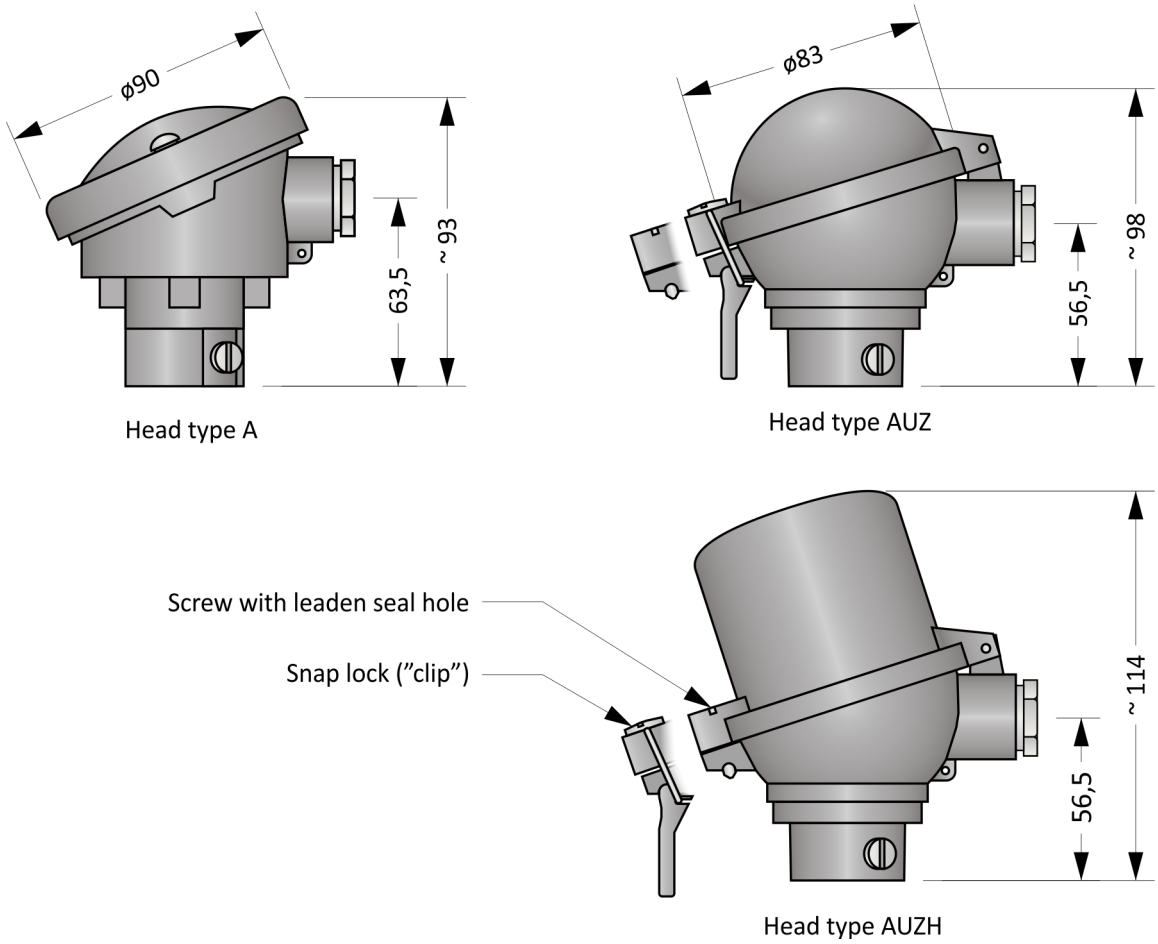

Figure 1C.2: Head types

Head mounted transmitter (Table 1C.5)

Type	Input	Output	Setting	Notes
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.

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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 measuring part of the sensor may be exposed to a temperature gradient of up to 60 °C/min. Exceeding this value may cause damage.

The electrical connection of sensor with the transmitter is shown in Figure 1C.3.

Electrical connection of the sensor without transmitter is shown in the Figures 1C.4 and 1C.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.

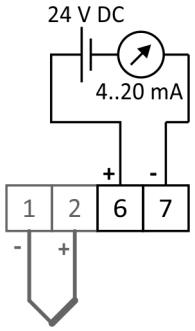


Figure 1C.3: Transmitter wiring diagram

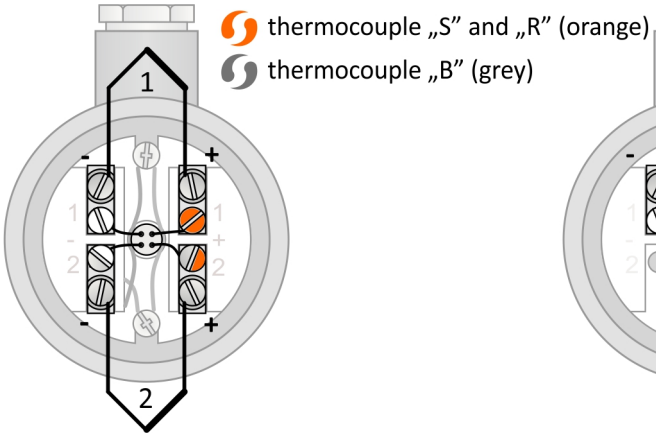


Figure 1C.4: Double thermocouple wiring diagram

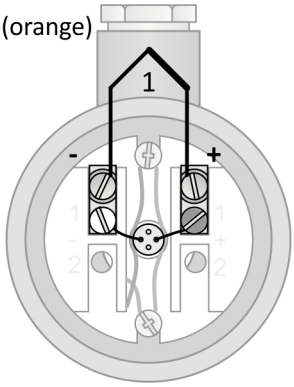


Figure 1C.5: Single thermocouple wiring diagram

MTC1KV

THERMOCOUPLE ASSEMBLIES WITH DOUBLE CERAMIC TUBE AND MEASURING INSERT

Thermocouple assemblies of the MTC1KV series are designed for applications with operating temperatures up to 1200°C and high chemical aggressiveness of the environment. They have a double ceramic tube: outer made of „Lunit 20“ and inner made of „Lunit 73“ material. They are characterized by good resistance to temperature shocks. The outer ceramic tube is not completely gas-tight, the inner one is. In combination with the thermocouple measuring insert, they provide the thermocouple with good protection against the negative influence of the measured atmosphere and thus increase the lifetime of the sensor.

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, holding pipe, inner and outer ceramic tube and a measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 1KV.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	6 mm
	sheath material	2.4816 (Inconel 600)
②	**Inner ceramic tube**	
	Material	Ceramic C610 (Lunit 73)
	Outer / inner diameter	15 / 11 mm
③	**Outer ceramic tube**	
	Material	Ceramic C530 (Lunit 20)
	Outer / inner diameter	26 / 18 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

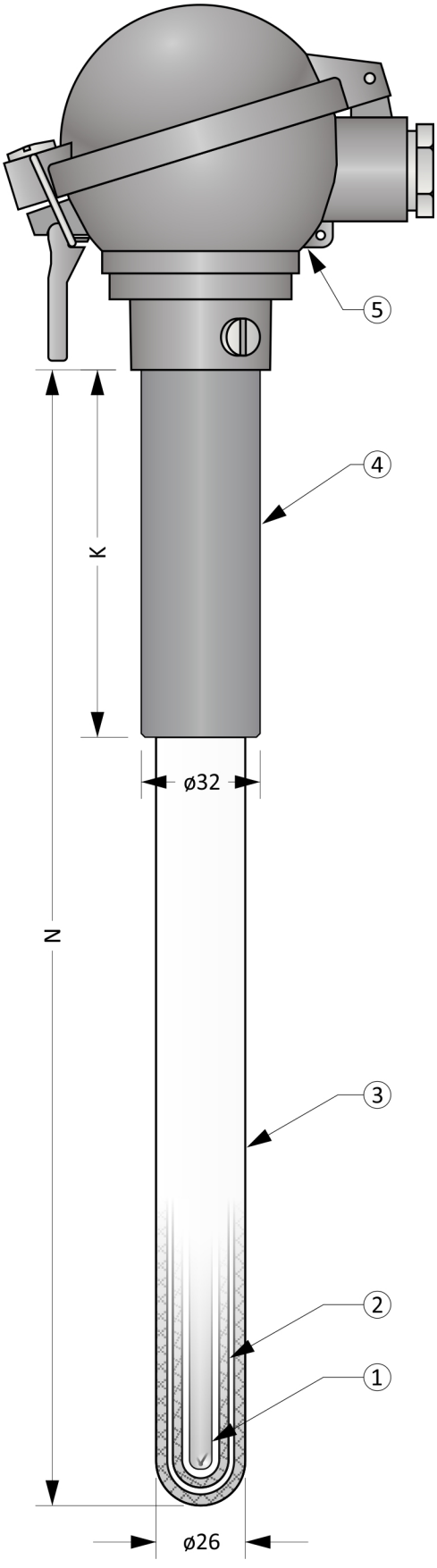


Figure 1KV.1: MTC1KV

Optional Parameters Including the Creation of an Order Code (Table 1KV.2)

Pos.	Code	MTC1KV - ❶❷ - ❸ - ❹ - ❺
❶	**Type of measuring insert (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „K“ , thermocouple isolated from the sheath, sheath material 2.4816
	1	2 x „K“ , thermocouple isolated from the sheath, sheath material 2.4816
	2	1 x „N“ , thermocouple isolated from the sheath, sheath material 2.4816
	3	2 x „N“ , thermocouple isolated from the sheath, sheath material 2.4816
❷	**Accuracy class**	
	0	Accuracy class 2 acc. ČSN EN 60584-1 ed. 2
	1	Accuracy class 1 acc. ČSN EN 60584-1 ed. 2
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 400 mm to 1600 mm (in 10 mm increments)
❹	**Holding pipe length K [mm]**	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❺	**Head type**	
	0	ABUZ-PS
	1	ABUZ-PS with standard connector (plug)
	2	ABUZ-PS with 2 m of compensation cable (GLGLP insulation) terminated with standard connector (plug)
	3	ABUZ-SL
	4	ABUZ-SL with standard connector (plug)
	5	ABUZ-SL with 2 m of compensation cable (GLGLP insulation) terminated with standard connector (plug)

Order code example: MTC1KV-01-800-200-0

... 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 = 800 mm
... Holding pipe length K = 200 mm
... Head ABUZ-PS

Approximate weight of the product: MTC1KV-00-800-200-0 ... 1,5 kg

Length Tolerances (Table 1KV.3)

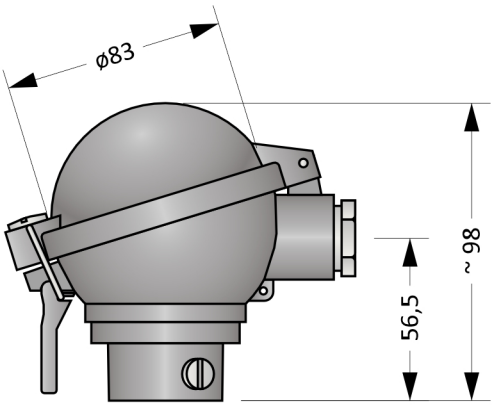
Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 1KV.4)

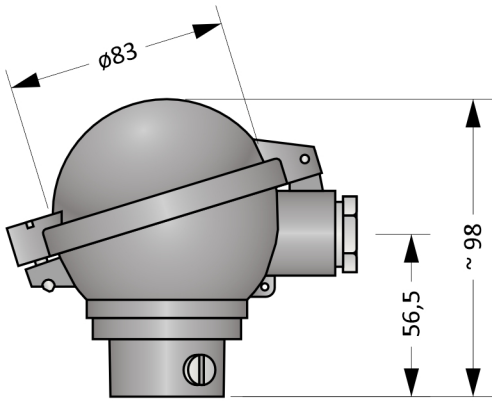
Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1300 °C	-
„K“, sheath dia. 6,0 mm	< 1140 °C	< 1200 °C
„N“, sheath dia. 6,0 mm	< 1140 °C	< 1200 °C

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

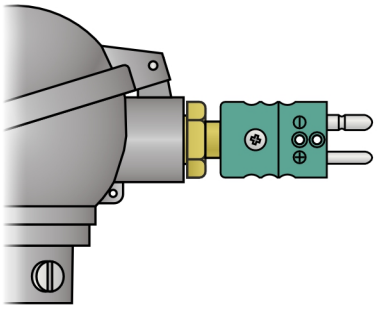
Head types



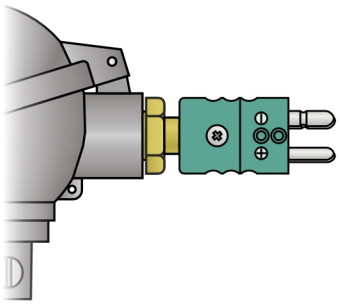
Head type ABUZ-SL



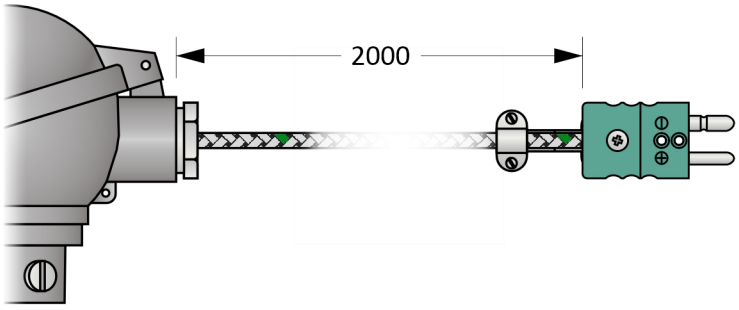
Head type ABUZ-PS



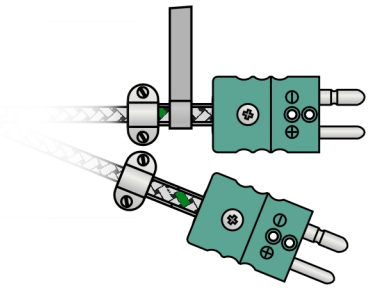
... with standard connector



... with double standard conector



... with cable terminated with standard connector



... with cable terminated
with 2 standard connectors

Figure 1KV.2: Head types

Installation And Operating Instructions

For mechanical installation, a holding pipe 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 measuring part of the sensor may be exposed to a temperature gradient of up to 60 °C/min. Exceeding this value may cause damage.

The electrical connection of the sensor is shown in Figures 1KV.3, 1KV.4, 1KV.5 and 1KV.6. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

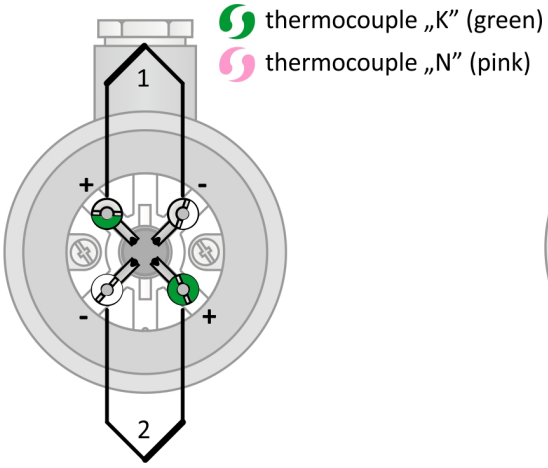


Figure 1KV.3: Double thermocouple wiring diagram

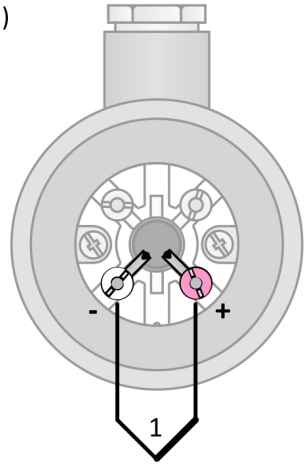


Figure 1KV.4: Single thermocouple wiring diagram

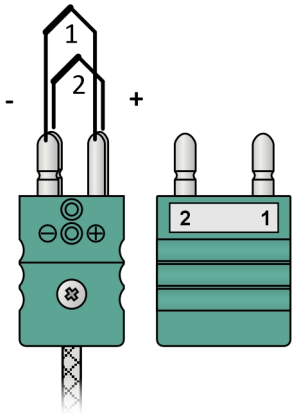


Figure 1KV.5: Double connector wiring diagram

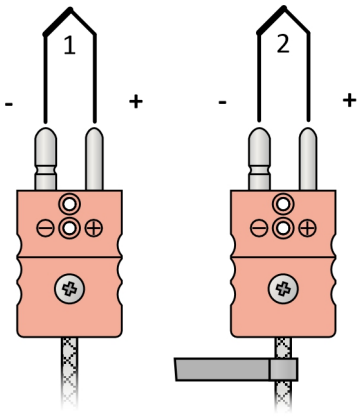


Figure 1KV.6: Connector wiring diagram

MTC1KD

THERMOCOUPLE ASSEMBLIES WITH DOUBLE CERAMIC TUBE

Thermocouple assemblies of the MTC1KD series are designed for applications with operating temperatures up to 1250°C and high chemical aggressiveness of the environment. They have a double ceramic tube: outer made of „Lunit 20“ and inner made of „Lunit 73“ material. They are characterized by good resistance to temperature shocks. The outer ceramic tube is not completely gas-tight, the inner one is.

The measuring element is base metal or precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, inner and outer ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 1KD.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Thermocouple**	
	Design	Thermocouple insulated by beads/capillary
	Material izolace	Ceramic C610 (Lunit 73)
	Thermocouple length	(N + 70) mm
②	**Inner ceramic tube**	
	Material	Ceramic C610 (Lunit 73)
	Outer / inner diameter	15 / 11 mm
③	**Outer ceramic tube**	
	Material	Ceramic C530 (Lunit 20)
	Outer / inner diameter	26 / 18 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

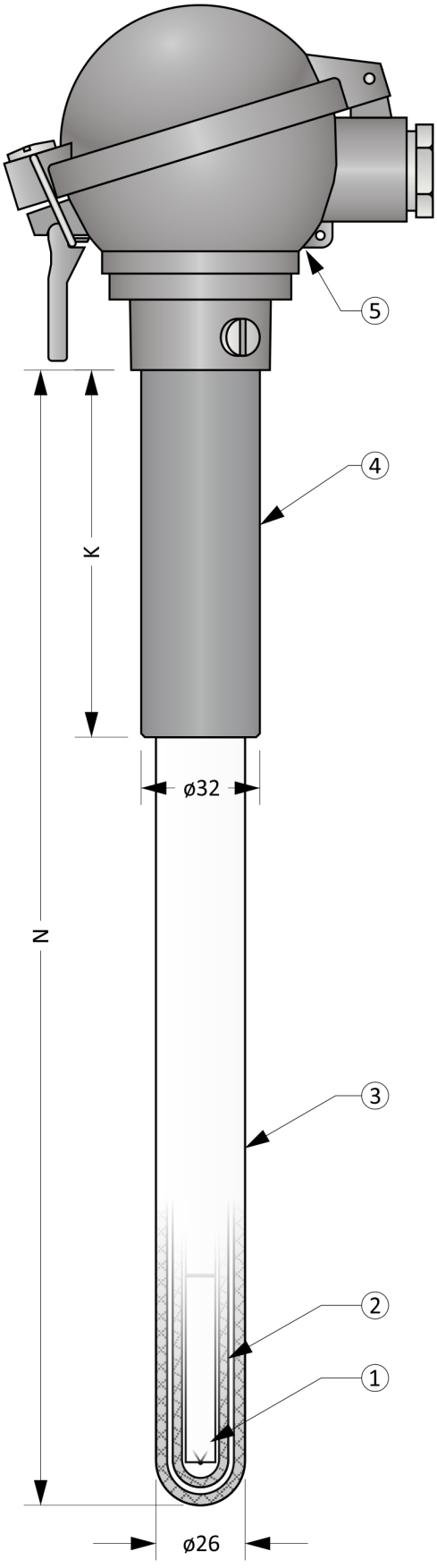


Figure 1KD.1: MTC1KD

Optional Parameters Including the Creation of an Order Code (Table 1KD.2)

Pos.	Code	MTC1KD - ❶ - ❷ - ❸ - ❹
❶	**Thermocouple according to the ČSN EN 60584-1 ed. 2**	
	0	1 x „K“, accuracy class 2, wire diameter 1,5 mm
	1	2 x „K“, accuracy class 2, wire diameter 1,5 mm
	2	1 x „N“, accuracy class 2, wire diameter 1,3 mm
	3	2 x „N“, accuracy class 2, wire diameter 1,3 mm
	4	Preparation for installation of precious metal thermocouple
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 400 mm to 1600 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❹	**Head type**	
	0	ABUZ-PS
	1	ABUZ-PS with standard connector (plug)
	2	ABUZ-PS with 2 m of compensation cable (GLGLP insulation) terminated with standard connector (plug)
	3	ABUZ-SL
	4	ABUZ-SL with standard connector (plug)
	5	ABUZ-SL with 2 m of compensation cable (GLGLP insulation) terminated with standard connector (plug)

Order code example: MTC1KD-0-800-200-0
... 1 x „K“, accuracy class 2, wire diameter 1,5 mm
... Nominal length N = 800 mm
... Holding pipe length K = 200 mm
... Head ABUZ-PS

Approximate weight of the product: MTC1KD-0-800-200-0 ... 1,5 kg

Recommended Maximum Temperatures of Sensor Parts (Table 1KD.3)

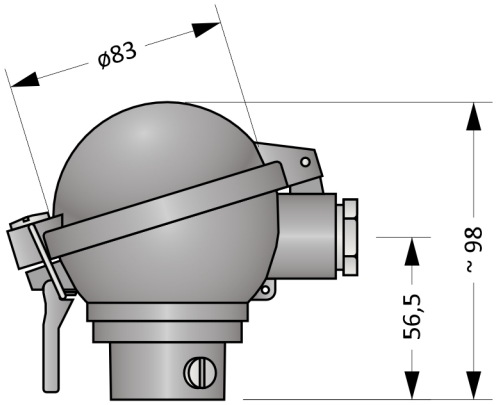
Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1300 °C	-
„K“, wire diameter 1,5 mm	< 950 °C	< 1020 °C
„N“, wire diameter 1,3 mm	< 950 °C	< 1090 °C
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

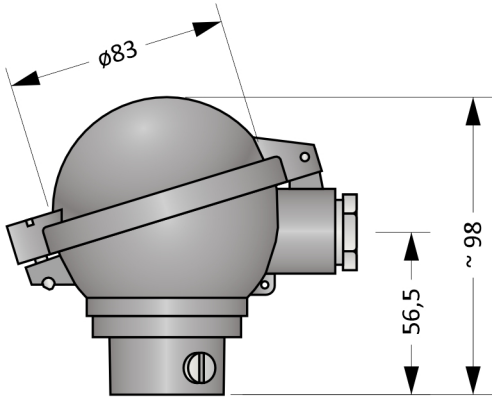
Length Tolerances (Table 1KD.4)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

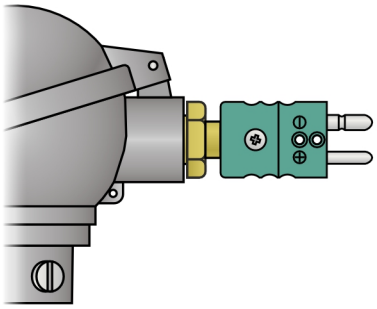
Head types



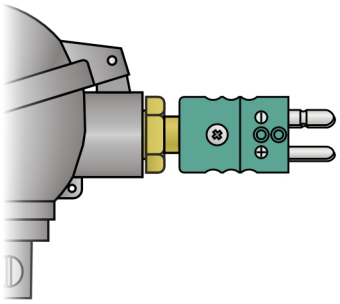
Head type ABUZ-SL



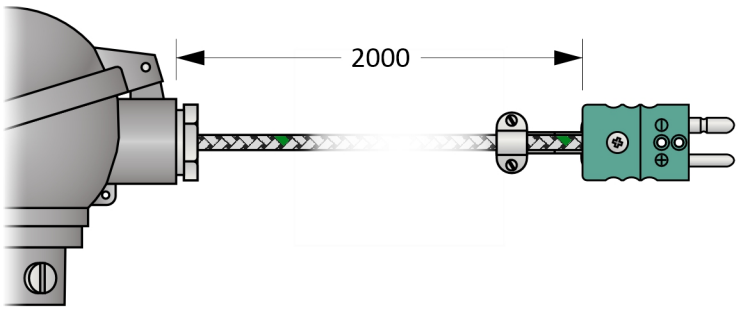
Head type ABUZ-PS



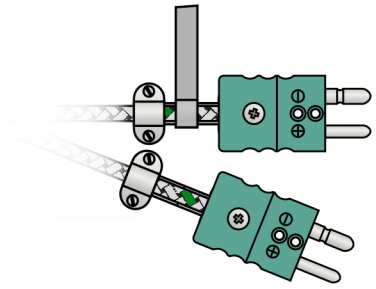
... with standard connector



... with double standard conector



... with cable terminated with standard connector



... with cable terminated with 2 standard connectors

Figure 1KD.2: Head types

Installation And Operating Instructions

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of the sensor is shown in Figures 1KD.3, 1KD.4, 1KD.5 and 1KD.6. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

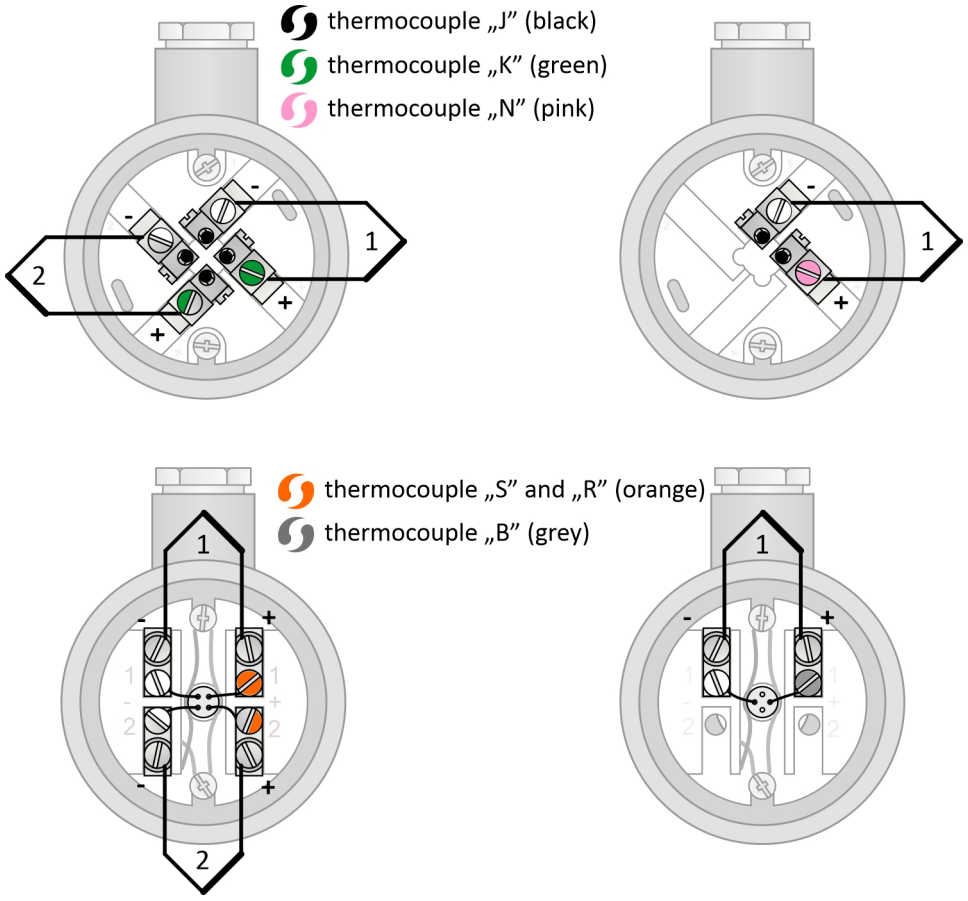


Figure 1KD.3: Double thermocouple wiring diagram

Figure 1KD.4: Single thermocouple wiring diagram

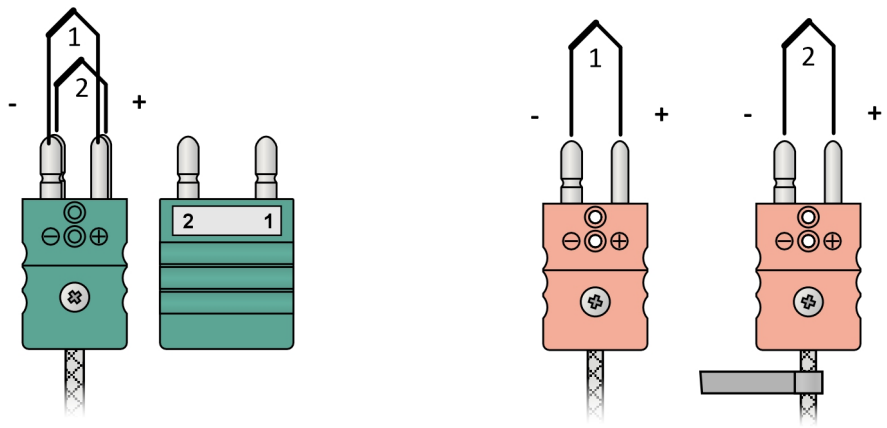


Figure 1KD.5: Double connector wiring diagram

Figure 1KD.6: Connector wiring diagram

MTC1L

THERMOCOUPLE ASSEMBLIES WITH DOUBLE CERAMIC TUBE

Thermocouple assemblies of the MTC1L series are designed for applications with operating temperatures up to 1350°C and high chemical aggressiveness of the environment. They have a double ceramic tube: outer made of „Lunit 20“ and inner made of „Lunit 73“ material. They are characterized by good resistance to temperature shocks. The outer ceramic tube is not completely gas-tight, the inner one is. The assemblies in this series therefore provide a slightly increased long-term lifetime of the installed thermocouple compared to the MTC1 series.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, inner and outer ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 1L.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 70) mm
②	**Capillary**	
	Material	Ceramic C610 (Lunit 73)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Inner ceramic tube**	
	Material	Ceramic C610 (Lunit 73)
	Outer / inner diameter	15 / 11 mm
④	**Outer ceramic tube**	
	Material	Ceramic C530 (Lunit 20)
	Outer / inner diameter	26 / 18 mm
⑤	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑥	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

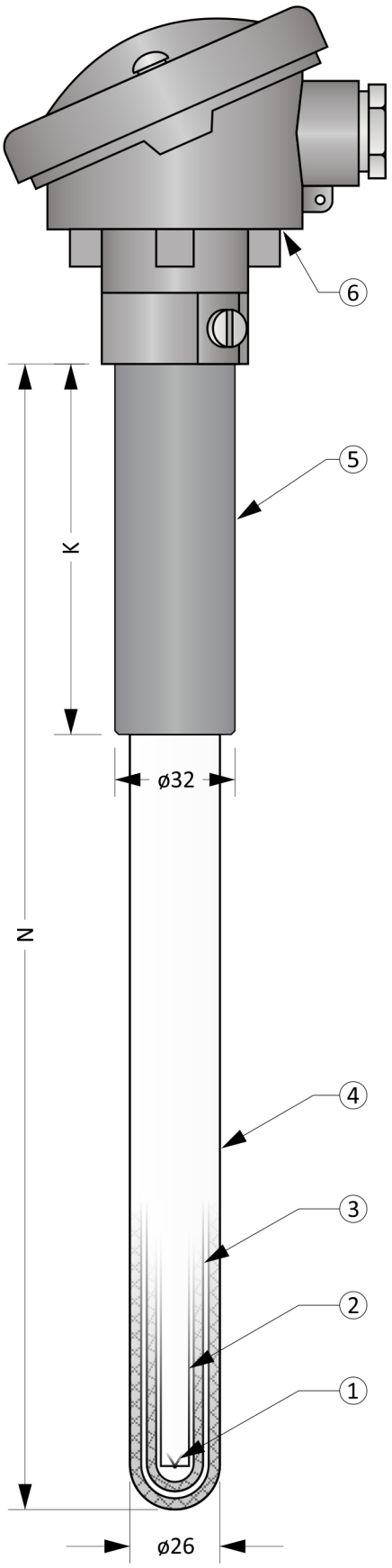


Figure 1L.1: MTC1L

Optional Parameters Including the Creation of an Order Code (Table 1L.2)

Pos.	Code	MTC1L - ❶ - ❷ - ❸ ❹
❶	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 1600 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH head and one thermocouple)**	
	0	Without transmitter
	3	INOR miniPAQ - HLP
	5	NOR IPAQ C520
	6	INOR IPAQ C330
	7	INOR IPAQ C530
	A	With another transmitter (e.g. supplied by the customer)

Recommended lengths of holding pipe:
K = 150 mm pro N < 800 mm
K = 200 mm pro 800 ≤ N < 1000 mm
K = 400 mm pro 1000 ≤ N mm

Order code example: MTC1L-800-200-00
... Nominal length N = 800 mm
... Holding pipe length K = 200 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC1L-800-200-00 ... 1,5 kg

Length Tolerances (Table 1L.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 1L.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1350 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Head types

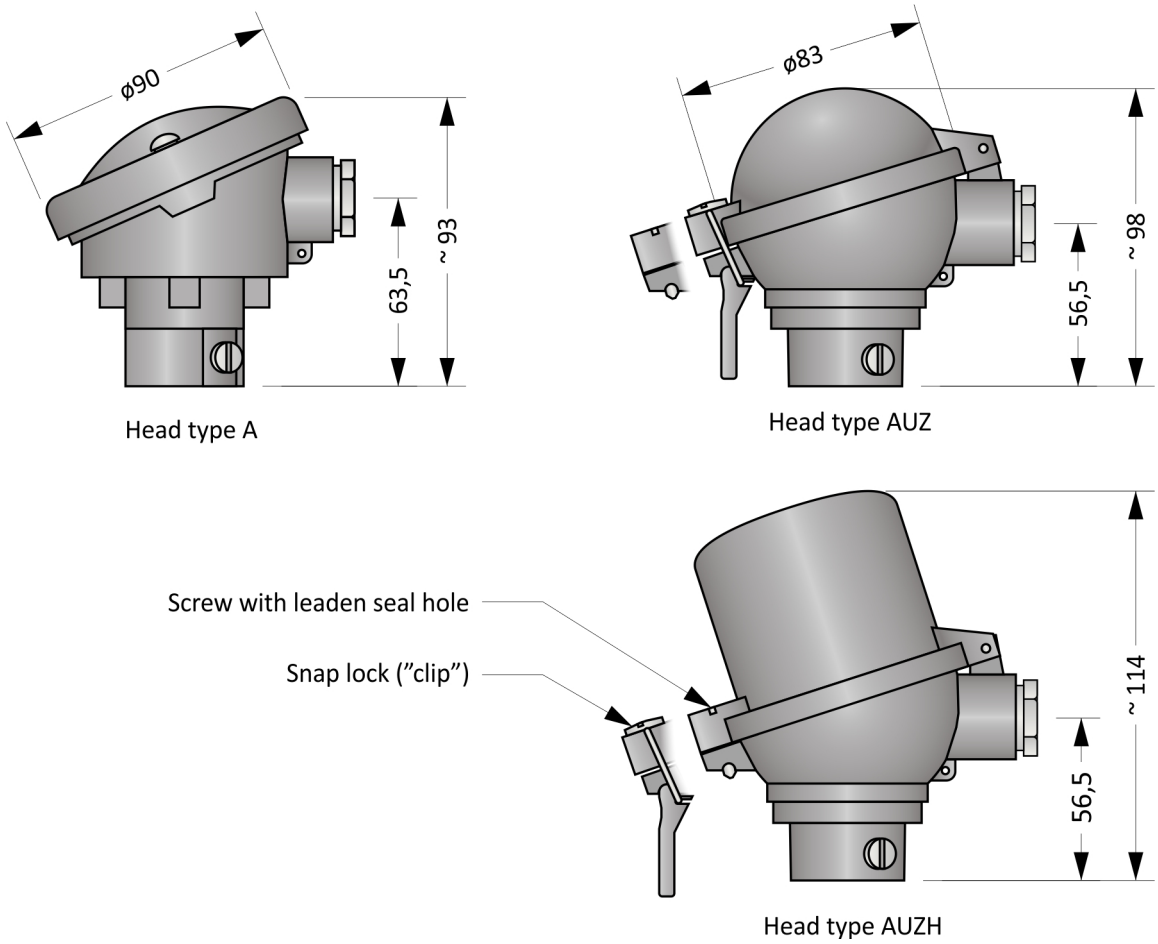


Figure 1L.2: Head types

Head mounted transmitter (Table 1L.5)

Typ	Input	Output	Setting	Notes
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 holding pipe 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 measuring part of the sensor may be exposed to a temperature gradient of up to 60 °C/min. Exceeding this value may cause damage.

The electrical connection of sensor with the transmitter is shown in Figure 1L.3.

Electrical connection of the sensor without transmitter is shown in the Figures 1L.4 and 1L.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.

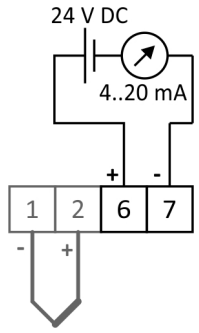


Figure 1L.3: Transmitter wiring diagram

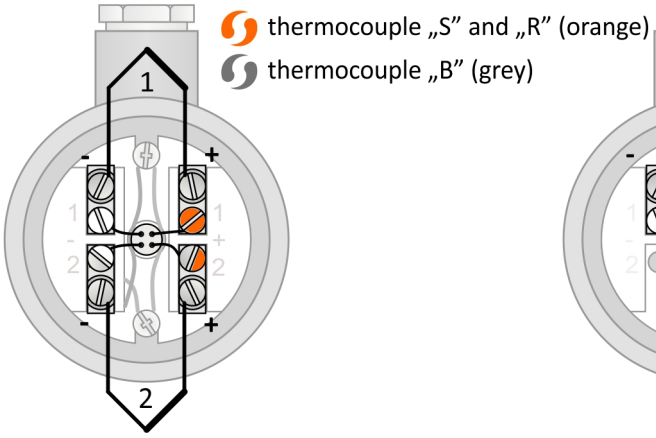


Figure 1L.4: Double thermocouple wiring diagram

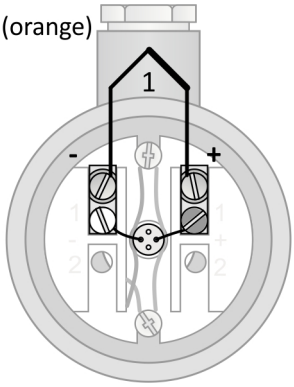


Figure 1L.5: Single thermocouple wiring diagram

MTC2

THERMOCOUPLE ASSEMBLIES WITH DOUBLE CERAMIC TUBE

Thermocouple assemblies of the MTC2 series are designed for applications with operating temperatures up to 1600 °C. They have a double ceramic tube made of „Alsint“ material, which is gas-tight. However, their resistance to thermal shock is low. The life of the thermocouple in these assemblies is one of the highest.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, inner and outer ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

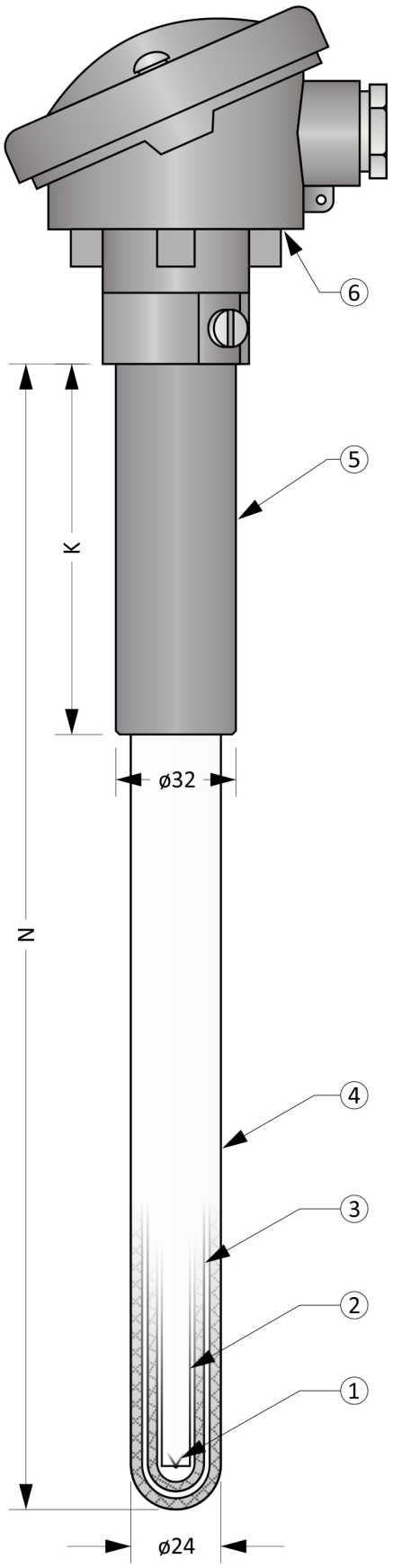


Figure 2.1: MTC2

General Information (Table 2.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 70) mm
②	**Capillary**	
	Material	Ceramic C799 (Alsint)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,2 mm
③	**Inner ceramic tube**	
	Material	Ceramic C799 (Alsint)
	Outer / inner diameter	15 / 10 mm
④	**Outer ceramic tube**	
	Material	Ceramic C799 (Alsint)
	Outer / inner diameter	24 / 18 mm
⑤	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑥	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 2.2)

Pos.	Code	MTC2 - ❶ - ❷ - ❸ ❹
❶	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH head and one thermocouple)**	
	0	Without transmitter
	3	INOR miniPAQ - HLP
	6	INOR IPAQ C330
	7	INOR IPAQ C530
	5	INOR IPAQ C520
	A	With another transmitter (e.g. supplied by the customer)

Recommended lengths of holding pipe:
K = 150 mm pro N < 800 mm
K = 200 mm pro 800 ≤ N < 1000 mm
K = 400 mm pro 1000 ≤ N mm

Order code example: MTC2-500-150-00
... Nominal length N = 500 mm
... Holding pipe length K = 150 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC2-500-150-00 ... 1,1 kg

Length Tolerances (Table 1.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 1.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1600 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Head types

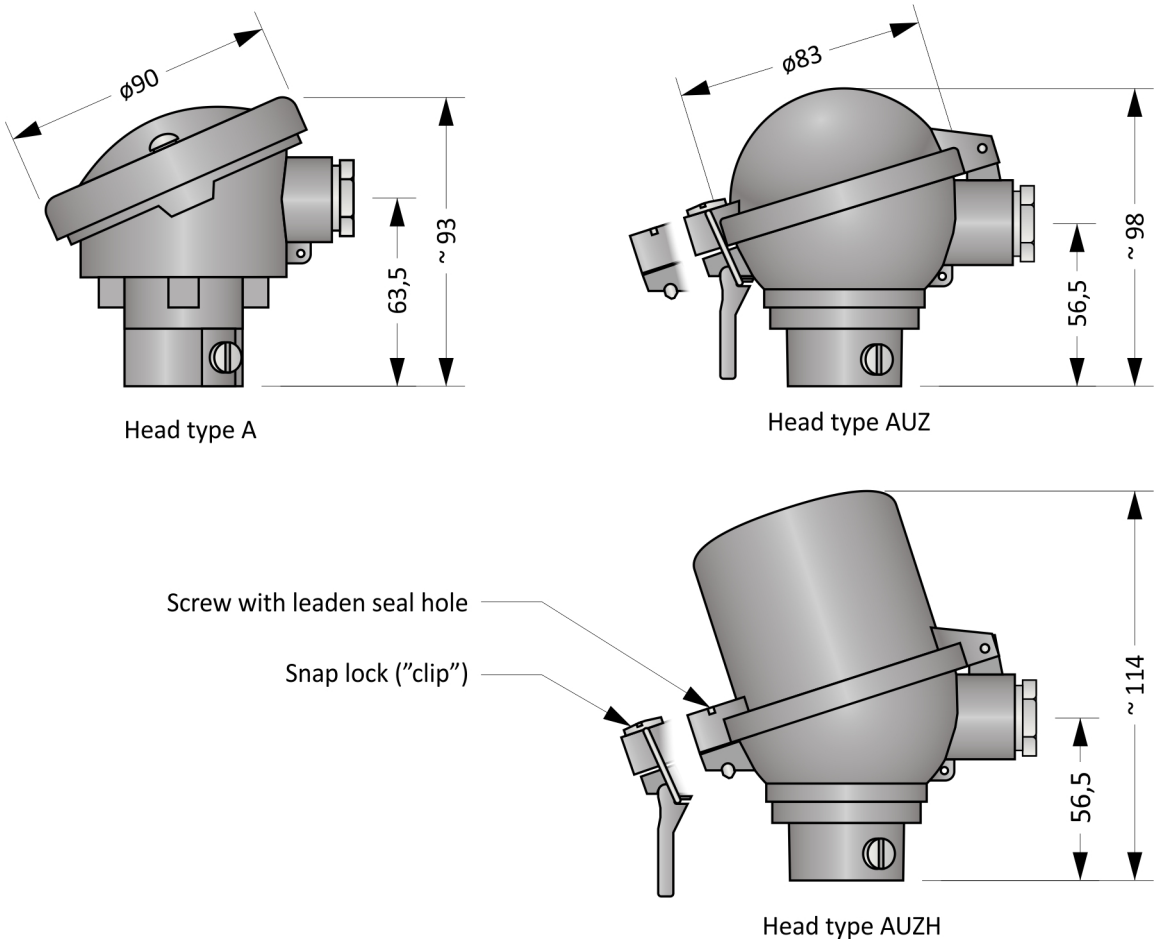


Figure 2.2: Head types

Head mounted transmitter (Table 2.5)

Typ	Input	Output	Setting	Notes
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 holding pipe 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 measuring part of the sensor may be exposed to a temperature gradient of up to 60 °C/min. Exceeding this value may cause damage.

The electrical connection of sensor with the transmitter is shown in Figure 2.3.

Electrical connection of the sensor without transmitter is shown in the Figures 2.4 a 2.5. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

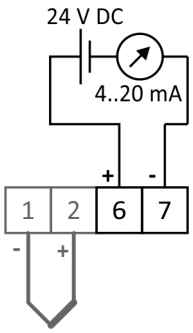


Figure 2.3: Transmitter wiring diagram

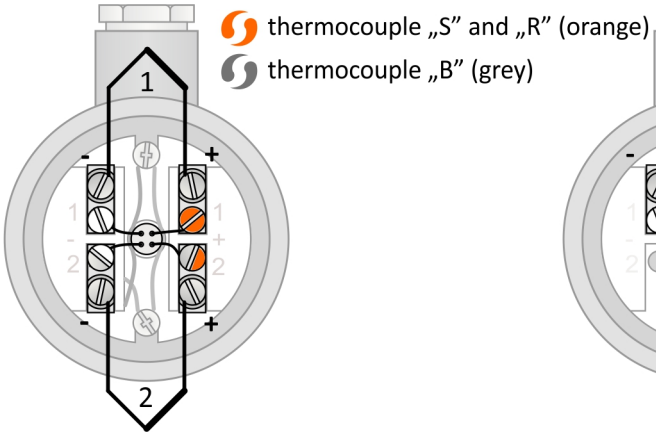


Figure 2.4: Double thermocouple wiring diagram

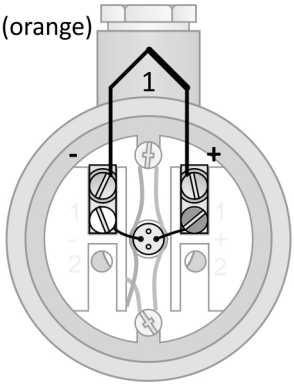


Figure 2.5: Single thermocouple wiring diagram

MTC2C

THERMOCOUPLE ASSEMBLIES WITH DOUBLE CERAMIC TUBE

Thermocouple assemblies of the MTC2C series are designed for applications with operating temperatures up to 1350°C and increased chemical aggressiveness of the environment. They have a double ceramic tube: outer tube made of „Silimantin“ material, inner tube and capillary made of „Alsint“ material. However, their resistance to thermal shocks is low. The outer ceramic tube is not gas-tight, but the inner one is. The assemblies in this series therefore provide a slightly increased long-term life of the installed thermocouple compared to the MTC1 series.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, inner and outer ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 2C.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 70) mm
②	**Capillary**	
	Material	Ceramic C799 (Alsint)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Inner ceramic tube**	
	Material	Ceramic C799 (Alsint)
	Outer / inner diameter	15 / 10 mm
④	**Outer ceramic tube**	
	Material	Ceramic C530 (Silimantin)
	Outer / inner diameter	26 / 18 mm
⑤	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑥	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

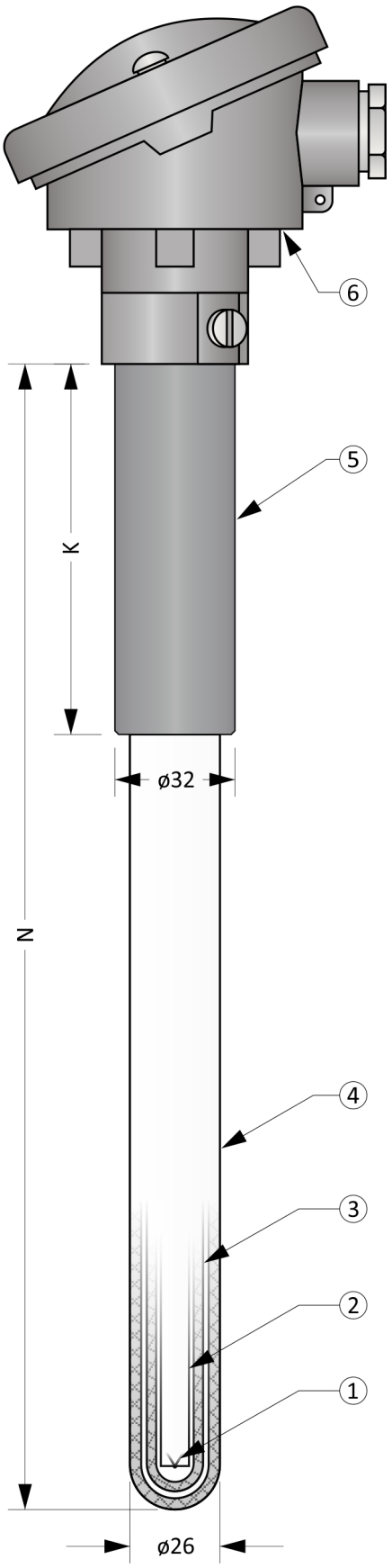


Figure 2C.1: MTC2C

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

Pos.	Code	MTC2C - ❶ - ❷ - ❸ ❹
❶	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 1600 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH head and one thermocouple)**	
	0	Without transmitter
	3	INOR miniPAQ - HLP
	5	NOR IPAQ C520
	6	INOR IPAQ C330
	7	INOR IPAQ C530
	A	With another transmitter (e.g. supplied by the customer)

Recommended lengths of holding pipe:
K = 150 mm pro N < 800 mm
K = 200 mm pro 800 ≤ N < 1000 mm
K = 400 mm pro 1000 ≤ N mm

Order code example: MTC2C-800-200-00
... Nominal length N = 800 mm
... Holding pipe length K = 200 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC2C-800-200-00 ... 1,5 kg

Length Tolerances (Table2C.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 2C.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1350 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Head types

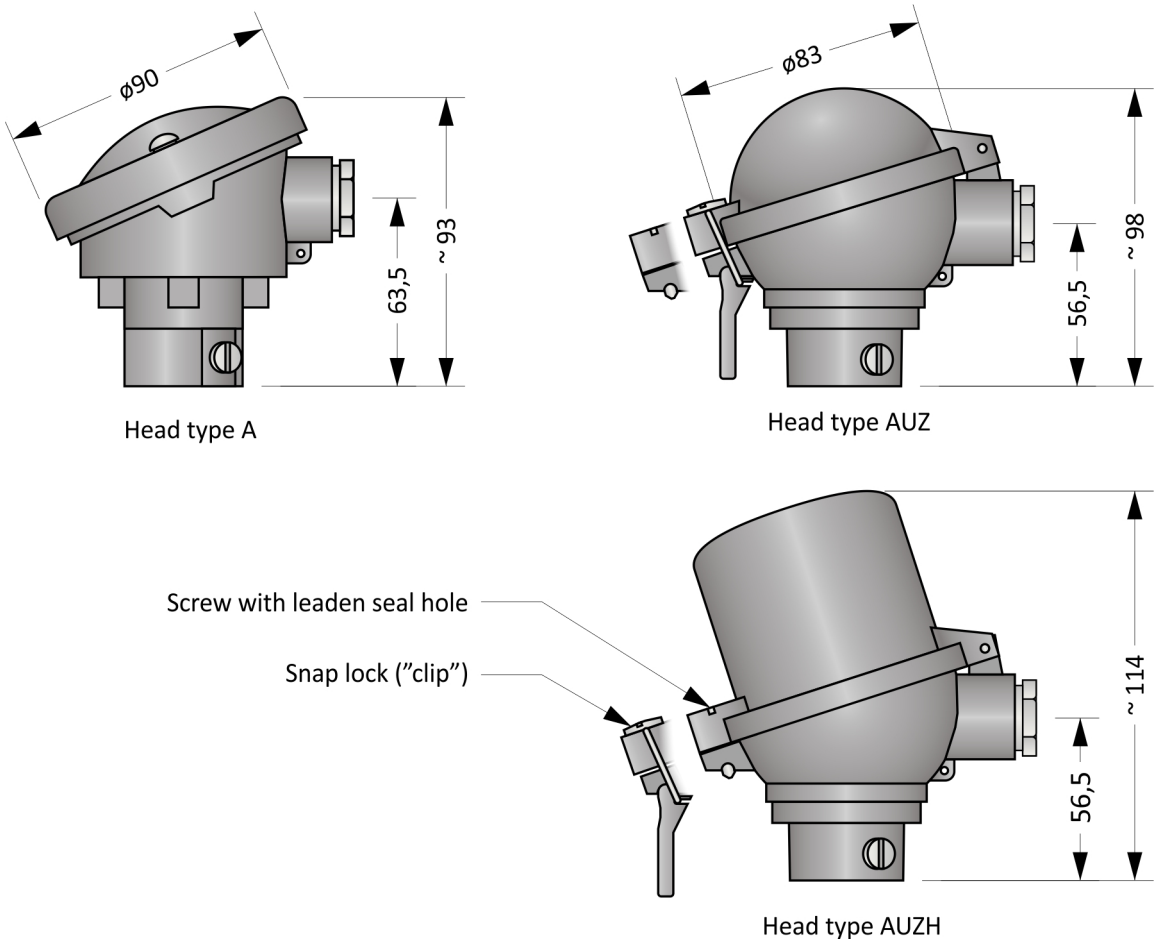


Figure 2C.2: Head types

Head mounted transmitter (Table 2C.5)

Typ	Input	Output	Setting	Notes
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 holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 2C.3.

Electrical connection of the sensor without transmitter is shown in the Figures 2C.4 a 2C.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.

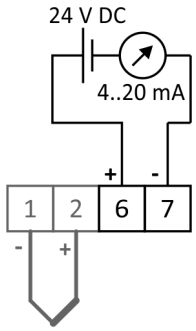


Figure 2C.3: Transmitter wiring diagram

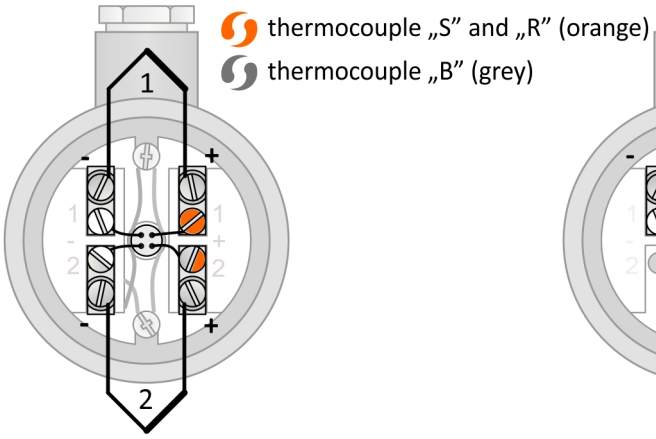


Figure 2C.4: Double thermocouple wiring diagram

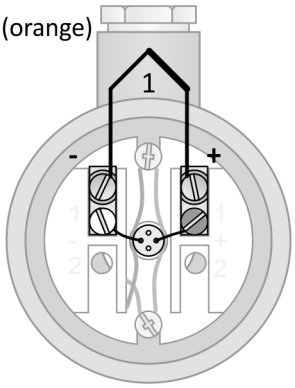


Figure 2C.5: Single thermocouple wiring diagram

MTC2L

THERMOCOUPLE ASSEMBLIES WITH DOUBLE CERAMIC TUBE

Temperature sensors of the MTC2L series are designed for applications with operating temperatures up to 1600 °C. They have a double ceramic tube made of „Luxal 203“ material which is gas tight. However, their resistance to temperature shocks is low. The thermocouple lifetime in the sensors of this series is one of the highest.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, inner and outer ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

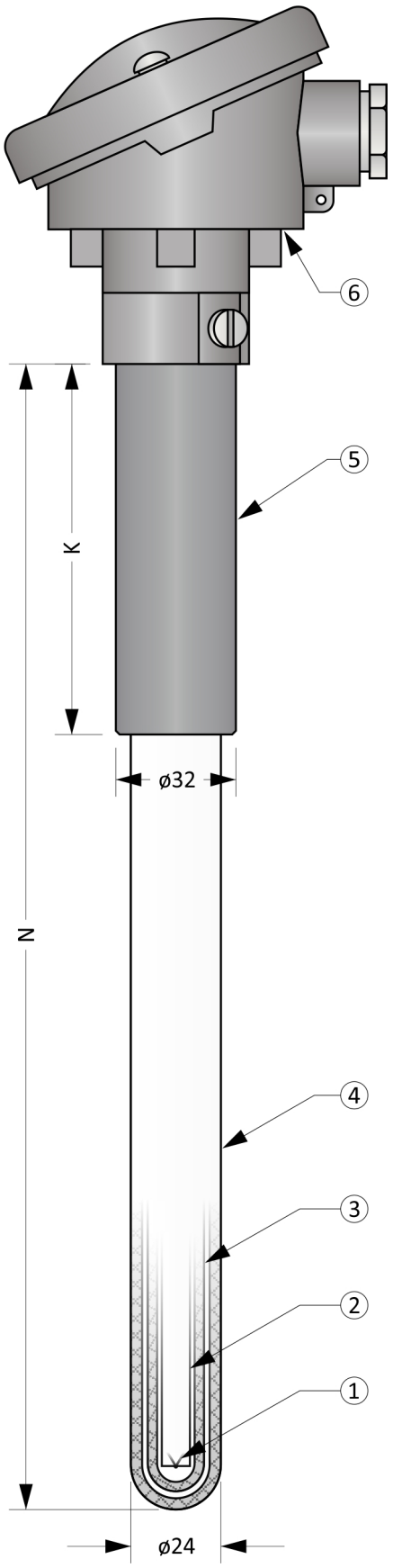


Figure 2L.1: MTC2L

General Information (Table 2L.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 70) mm
②	**Capillary**	
	Material	Ceramic C799 (Luxal 203)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Inner ceramic tube**	
	Material	Ceramic C799 (Luxal 203)
	Outer / inner diameter	15 / 10 mm
④	**Outer ceramic tube**	
	Material	Ceramic C799 (Luxal 203)
	Outer / inner diameter	24 / 18 mm
⑤	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑥	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

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

Pos.	Code	MTC2L - ❶ - ❷ - ❸ ❹
❶	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 1400 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH head and one thermocouple)**	
	0	Without transmitter
	3	INOR miniPAQ - HLP
	5	NOR IPAQ C520
	6	INOR IPAQ C330
	7	INOR IPAQ C530
	A	With another transmitter (e.g. supplied by the customer)

Recommended lengths of holding pipe:
K = 150 mm for N < 800 mm
K = 200 mm for 800 ≤ N < 1000 mm
K = 400 mm for 1000 ≤ N mm

Order code example: MTC2L-800-200-00
... Nominal length N = 800 mm
... Holding pipe length K = 200 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC2L-800-200-00 ... 2,0 kg

Length Tolerances (Table 2L.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 2L.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1600 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Head types

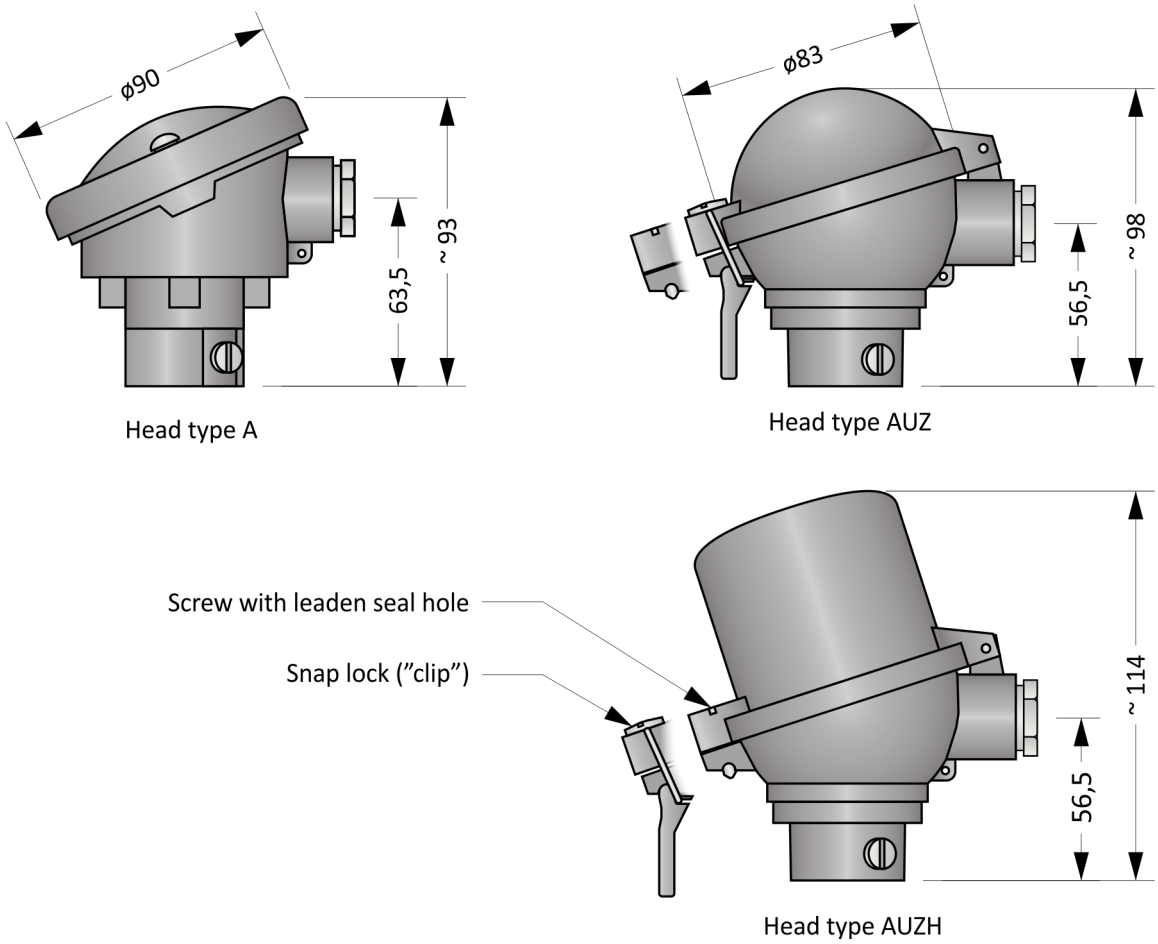


Figure 2L.2: Head types

Head mounted transmitter (Table 2L.5)

Typ	Input	Output	Setting	Notes
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 holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 2L.3.

Electrical connection of the sensor without transmitter is shown in the Figures 2L.4 a 2L.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.

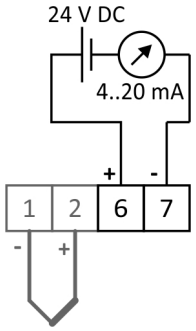


Figure 2L.3: Transmitter wiring diagram

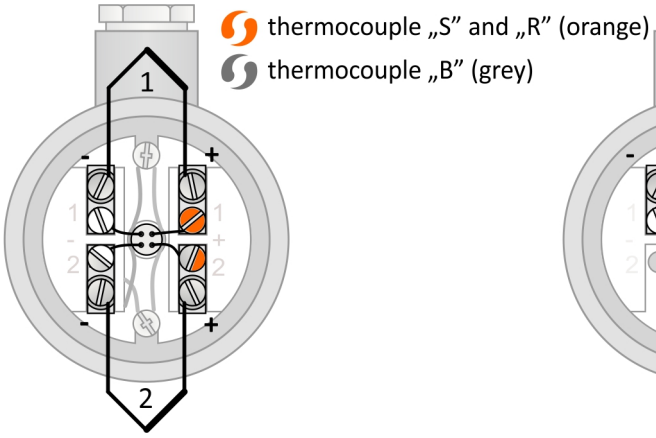


Figure 2L.4: Double thermocouple wiring diagram

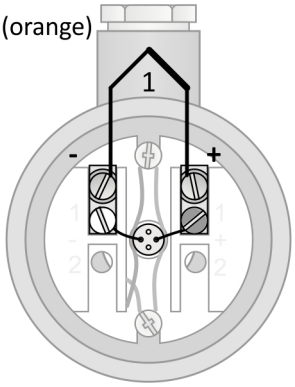


Figure 2L.5: Single thermocouple wiring diagram

MTC3

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC3 series are designed for applications with operating temperatures up to 1200°C. They have a single „Pythagoras“ ceramic tube, which resists temperature shocks well. The ceramic tube is not gas-tight, which can adversely affect the long-term life of the installed thermocouple.

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, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 3.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Ceramic C610 (Pythagoras)
	Outer / inner diameter	24 / 19 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

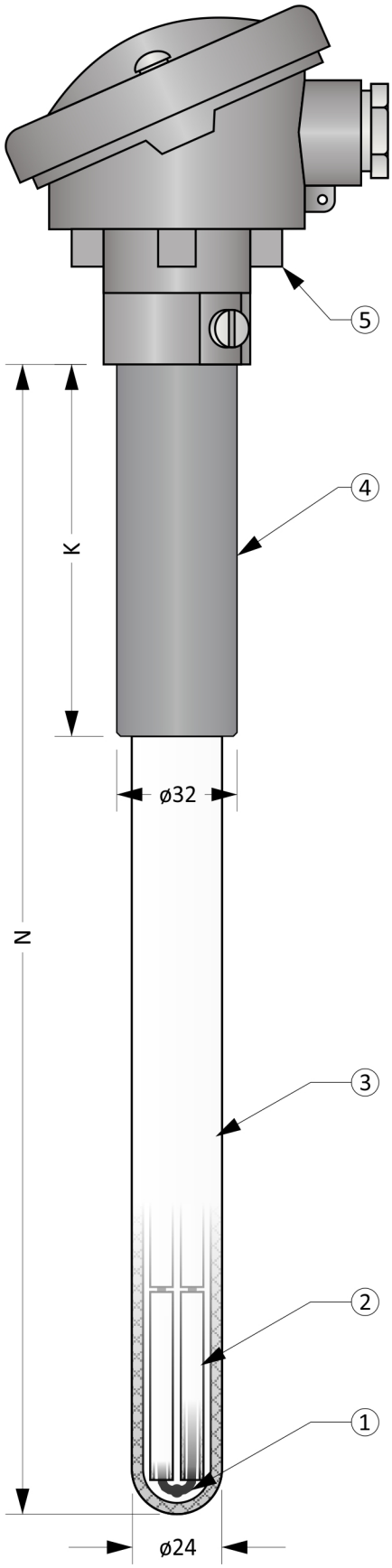


Figure 3.1: MTC3

Optional Parameters Including the Creation of an Order Code (Table 3.2)

Pos.	Code	MTC3 - ❶ - ❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 3,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 3,0 mm
	2	2 x „J“, accuracy class 2, wire diameter 3,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 3,0 mm
	4	1 x „N“, accuracy class 2, wire diameter 3,0 mm
	5	2 x „N“, accuracy class 2, wire diameter 3,0 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC3-1-800-200-00

... 1 x „K“, accuracy class 2, wire diameter 3,0 mm
... Nominal length N = 800 mm
... Holding pipe length K = 200 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC3-1-800-200-0 ... 1,5 kg

Length Tolerances (Table 3.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 3.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1300 °C	-
„J“, wire diameter 3,0 mm	< 600 °C	< 750 °C
„K“, wire diameter 3,0 mm	< 1100 °C	< 1200 °C
„N“, wire diameter 3,0 mm	< 1200 °C	< 1250 °C

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

Head types

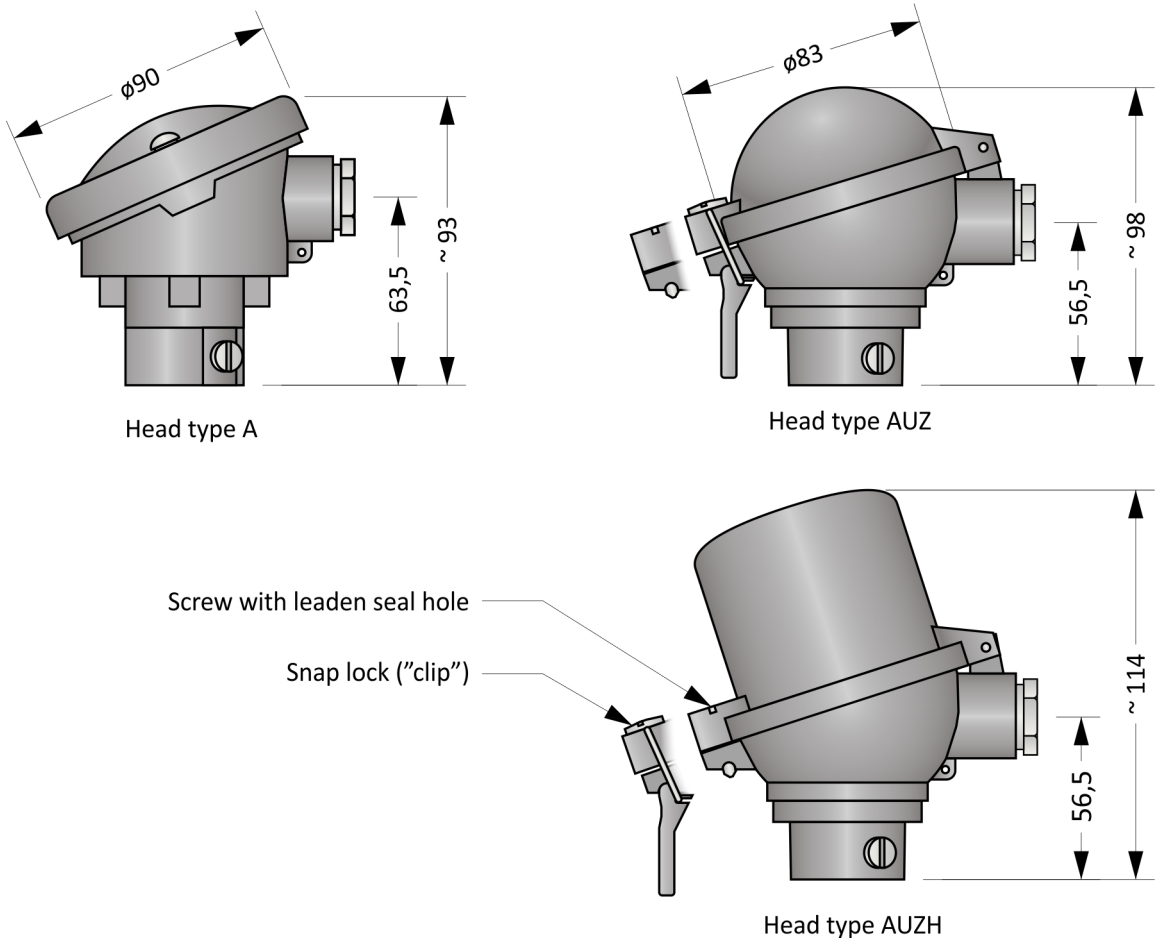


Figure 3.2: Head types

Head mounted transmitter (Table 3.5)

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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 3.5.

Electrical connection of the sensor without transmitter is shown in the Figures 3.3 and 3.4. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

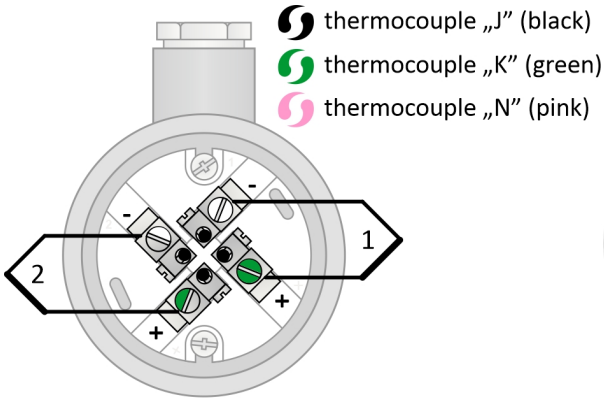


Figure 3.3: Double thermocouple wiring diagram

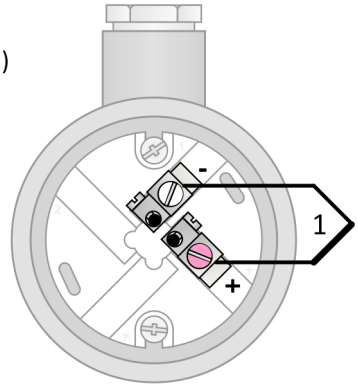


Figure 3.4: Single thermocouple wiring diagram

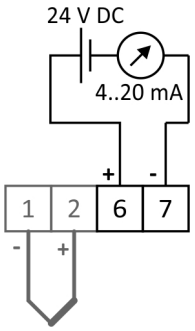


Figure 3.5: Transmitter wiring diagram

MTC3L

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC3L series are designed for applications with operating temperatures up to 1200°C. They have a single „Lunit 20“ ceramic tube, which resists temperature shocks well. The ceramic tube is not gas-tight, which can adversely affect the long-term life of the installed thermocouple.

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, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 3L.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Ceramic C530 (Lunit 20)
	Outer / inner diameter	26 / 18 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

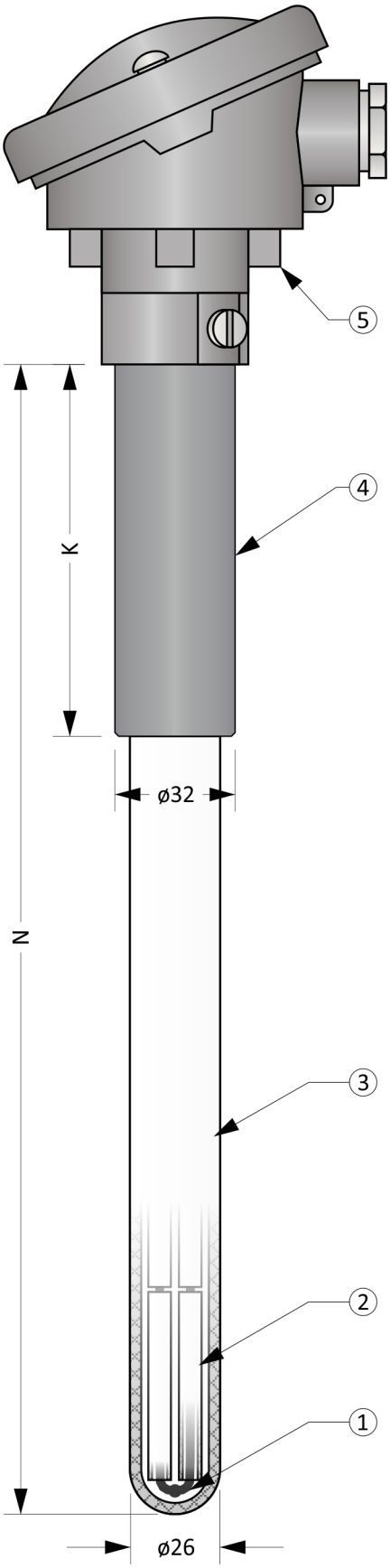


Figure 3L.1: MTC3L

Optional Parameters Including the Creation of an Order Code (Table 3L.2)

Pos.	Code	MTC3L - ❶ - ❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 3,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 3,0 mm
	2	2 x „J“, accuracy class 2, wire diameter 3,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 3,0 mm
	4	1 x „N“, accuracy class 2, wire diameter 3,0 mm
	5	2 x „N“, accuracy class 2, wire diameter 3,0 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 1600 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC3L-1-800-200-00

... 1 x „K“, accuracy class 2, wire diameter 3,0 mm

... Nominal length N = 800 mm

... Holding pipe length K = 200 mm

... Head A

... Without transmitter

Approximate weight of the product: MTC3L-1-800-200-00 ... 1,6 kg

Length Tolerances (Table 3L.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 3L.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1350 °C	-
„J“, wire diameter 3,0 mm	< 600 °C	< 750 °C
„K“, wire diameter 3,0 mm	< 1100 °C	< 1200 °C
„N“, wire diameter 3,0 mm	< 1200 °C	< 1250 °C

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

Head types

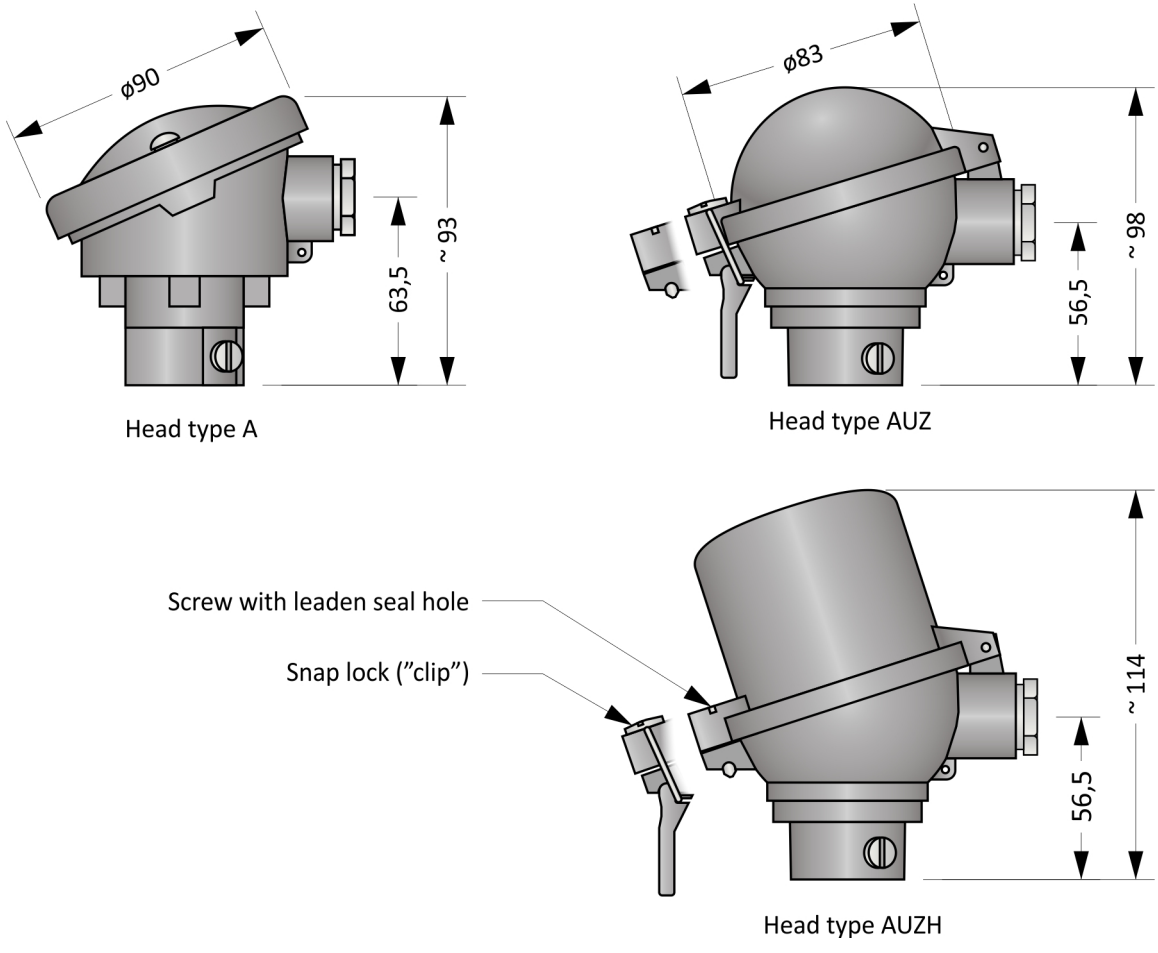


Figure 3L.2: Head types

Head mounted transmitter (Table 3L.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 3L.5.

Electrical connection of the sensor without transmitter is shown in the Figures 3L.3 and 3L.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.

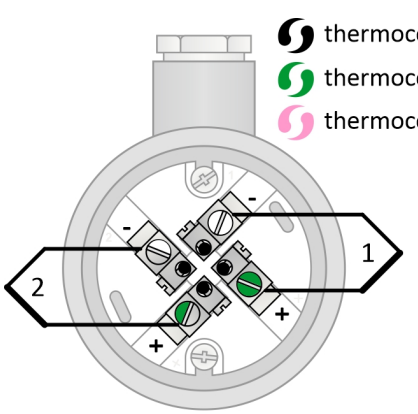


Figure 3L.3: Double thermocouple wiring diagram

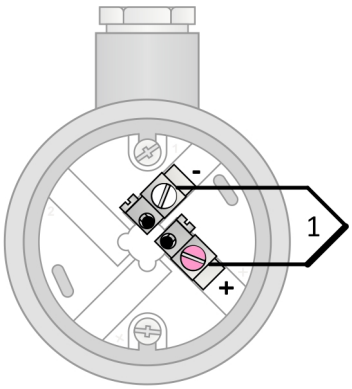


Figure 3L.4: Single thermocouple wiring diagram

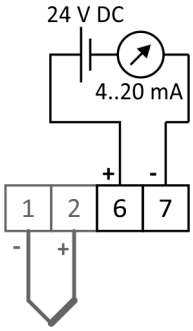


Figure 3L.5: Transmitter wiring diagram

MTC4

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC4 series are designed for applications with operating temperatures up to 1200 °C. They have a ceramic tube made of „Alsint“ material, which is gas-tight. However, their resistance to thermal shock is low. The life of the thermocouple in these assemblies is very good.

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, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

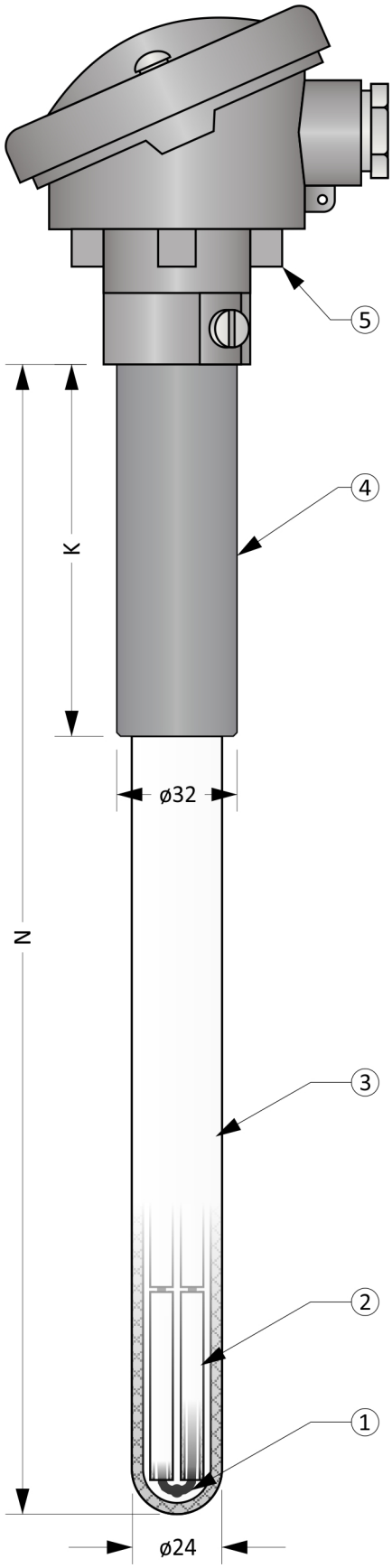


Figure 4.1: MTC4

General Information (Table 4.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Ceramic C799 (Alsint)
	Outer / inner diameter	24 / 18 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑤	**Hlavice**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 4.2)

Pos.	Code	MTC4 - ❶ - ❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 3,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 3,0 mm
	2	2 x „J“, accuracy class 2, wire diameter 3,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 3,0 mm
	4	1 x „N“, accuracy class 2, wire diameter 3,0 mm
	5	2 x „N“, accuracy class 2, wire diameter 3,0 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC4-1-800-200-00

... 1 x „K“, accuracy class 2, wire diameter 3,0 mm

... Nominal length N = 800 mm

... Holding pipe length K = 200 mm

... Head A

... Without transmitter

Approximate weight of the product: MTC4-1-800-200-0 ... 1,5 kg

Length Tolerances (Table 4.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 4.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1600 °C	-
„J“, wire diameter 3,0 mm	< 600 °C	< 750 °C
„K“, wire diameter 3,0 mm	< 1100 °C	< 1200 °C
„N“, wire diameter 3,0 mm	< 1200 °C	< 1250 °C

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

Head types

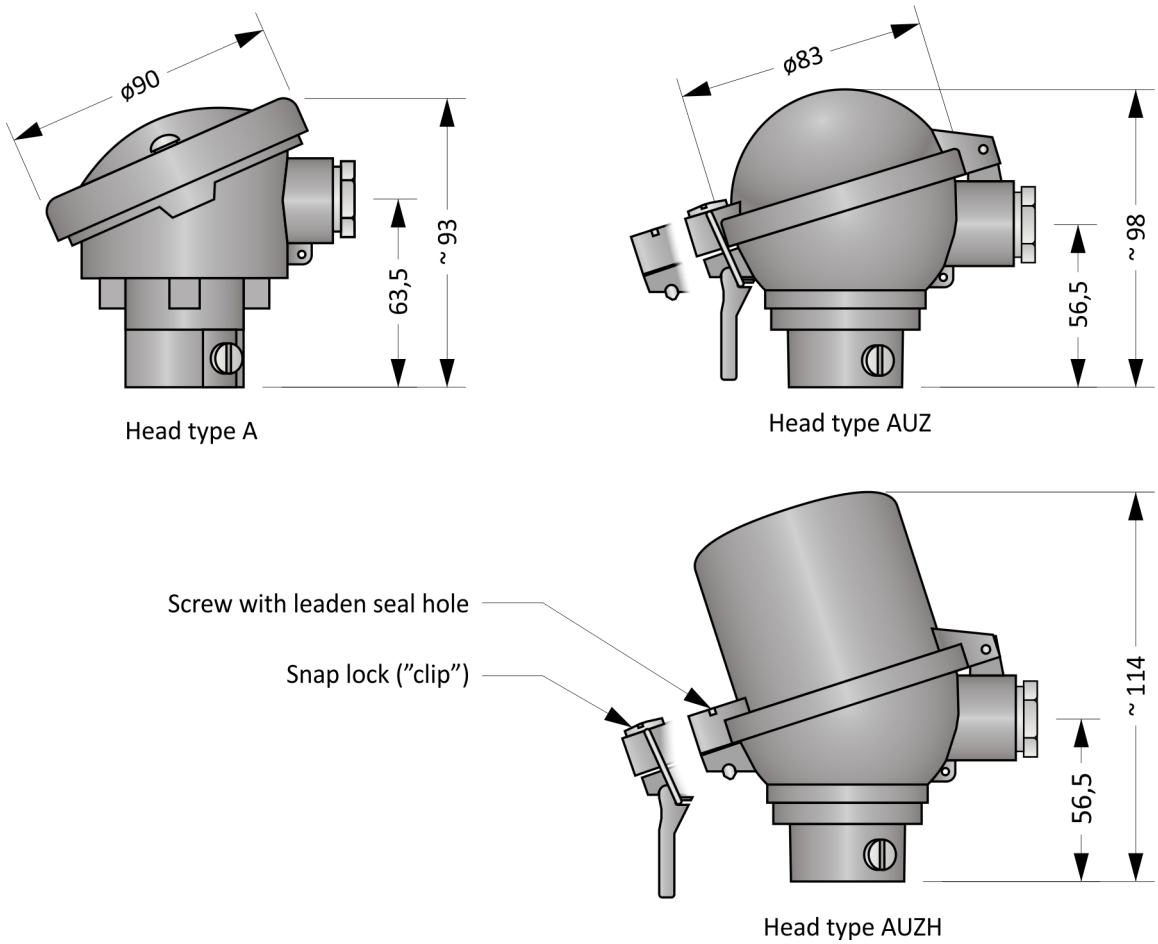


Figure 4.2: Head types

Head mounted transmitter (Table 4.5)

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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 4.5.

Electrical connection of the sensor without transmitter is shown in the Figures 4.3 and 4.4. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

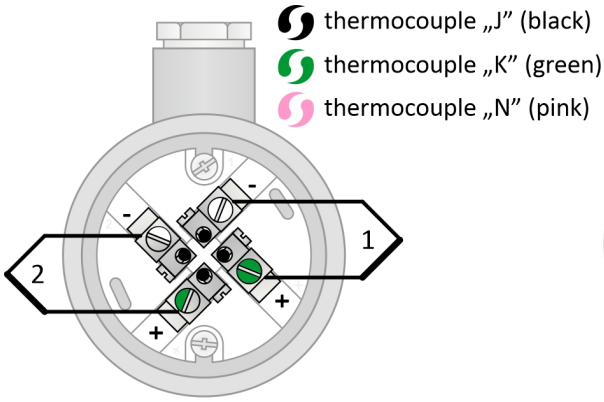


Figure 4.3: Double thermocouple wiring diagram

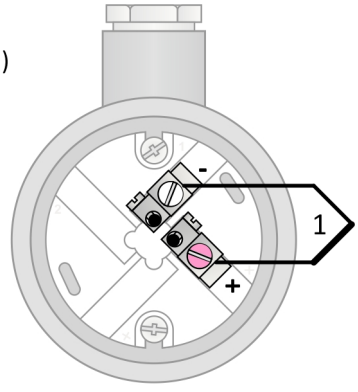


Figure 4.4: Single thermocouple wiring diagram

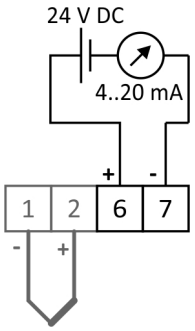


Figure 4.5: Transmitter wiring diagram

MTC4L

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC4L series are designed for applications with operating temperatures up to 1200 °C. They have a ceramic tube made of „Luxal 203“ material, which is gas-tight. However, their resistance to thermal shock is low. The life of the thermocouple in these assemblies is very good.

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, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 4L.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Ceramic C799 (Luxal 203)
	Outer / inner diameter	24 / 18 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

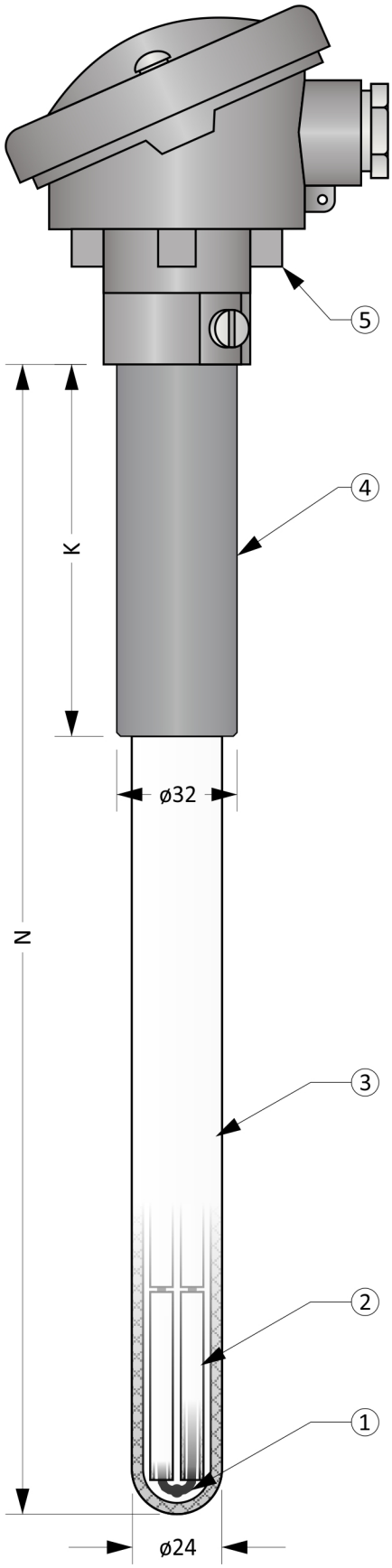


Figure 4L.1: MTC4L

Optional Parameters Including the Creation of an Order Code (Table 4L.2)

Pos.	Code	MTC4L - ❶ - ❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 3,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 3,0 mm
	2	2 x „J“, accuracy class 2, wire diameter 3,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 3,0 mm
	4	1 x „N“, accuracy class 2, wire diameter 3,0 mm
	5	2 x „N“, accuracy class 2, wire diameter 3,0 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 1400 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 50 mm to (N-30) mm (in 5 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC4L-1-800-200-00

... 1 x „K“, accuracy class 2, wire diameter 3,0 mm
... Nominal length N = 800 mm
... Holding pipe length K = 200 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC4L-1-800-200-0 ... 1,6 kg

Length Tolerances (Table 4L.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 4L.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1600 °C	-
„J“, wire diameter 3,0 mm	< 600 °C	< 750 °C
„K“, wire diameter 3,0 mm	< 1100 °C	< 1200 °C
„N“, wire diameter 3,0 mm	< 1200 °C	< 1250 °C

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

Head types

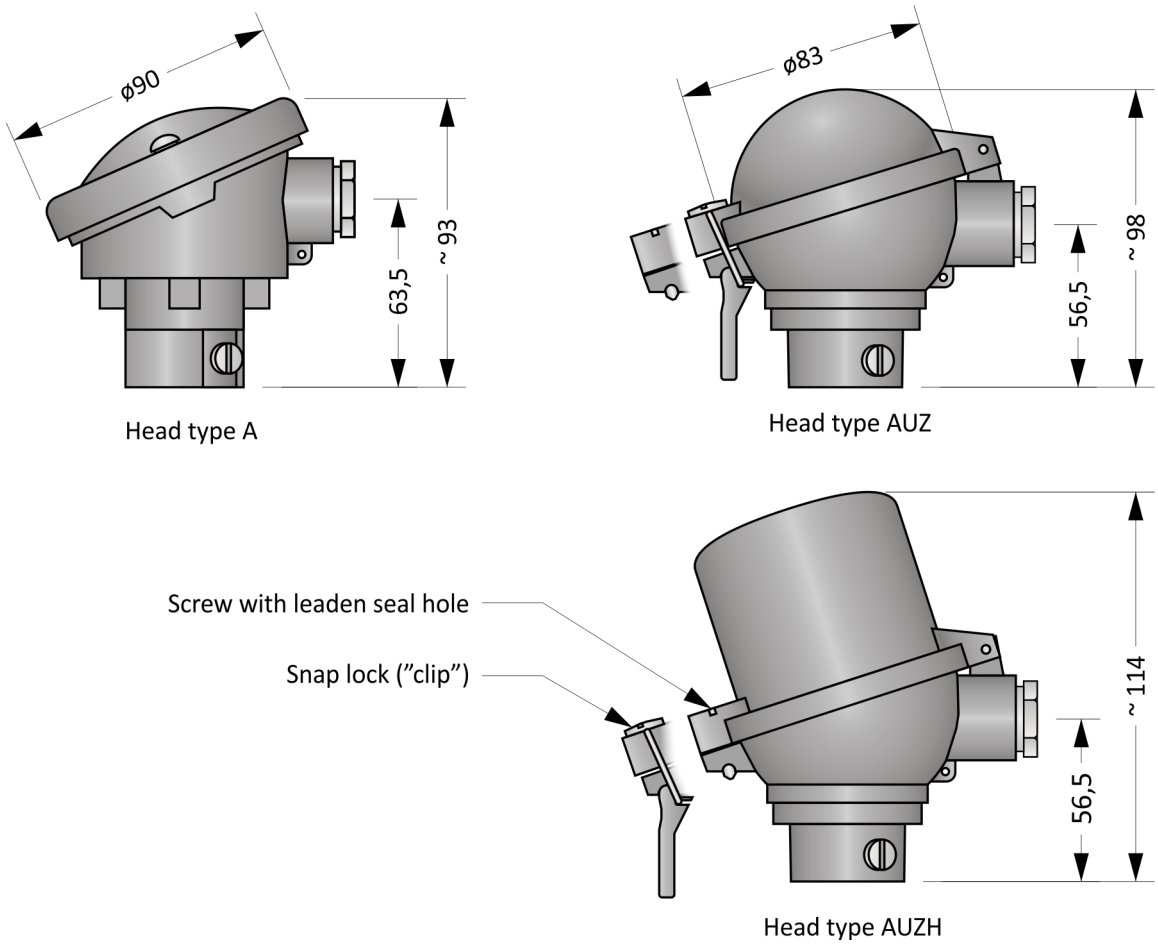


Figure 4L.2: Head types

Head mounted transmitter (Table 4L.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 4L.5.

Electrical connection of the sensor without transmitter is shown in the Figures 4L.3 and 4L.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.

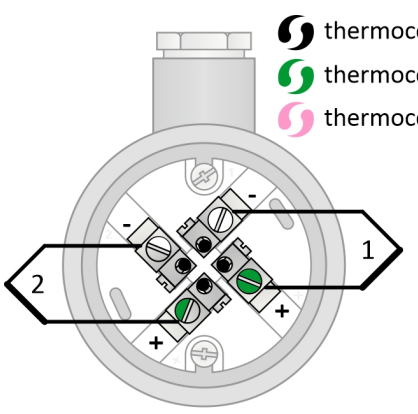


Figure 4L.3: Double thermocouple wiring diagram

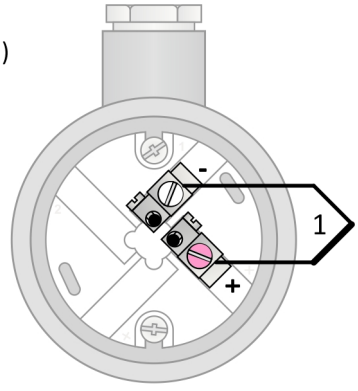


Figure 4L.4: Single thermocouple wiring diagram

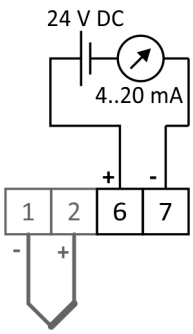


Figure 4L.5: Transmitter wiring diagram

MTC4S

THERMOCOUPLE ASSEMBLIES WITH SAPPHIRE TUBE

Thermocouple assemblies of the MTC4S series are designed for applications with operating temperatures up to 1600°C in inert environments and up to 1350°C when immersed in glass melt. They have a protective sapphire tube which has excellent resistance to chemical aggressiveness of the environment, as well as excellent hot strength. The assemblies of this series cannot be subjected to thermal shocks.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, guiding tube, protection sapphire tube and a capillary in which thermocouple can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 4S.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious metal thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 80) mm
②	**Capillary**	
	Material	Mono-crystalline sapphire
	Diameter	2,1 mm
	Bore for thermocouple	1 x ø1,3 mm
③	**Protection tube**	
	Material	Mono-crystalline sapphire
	Outer / inner diameter	16 / 4 mm
④	**Guiding tube**	
	Material	Ceramic C799
	Outer / inner diameter	24 / 18 mm
⑤	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	32 / 28 mm
⑥	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

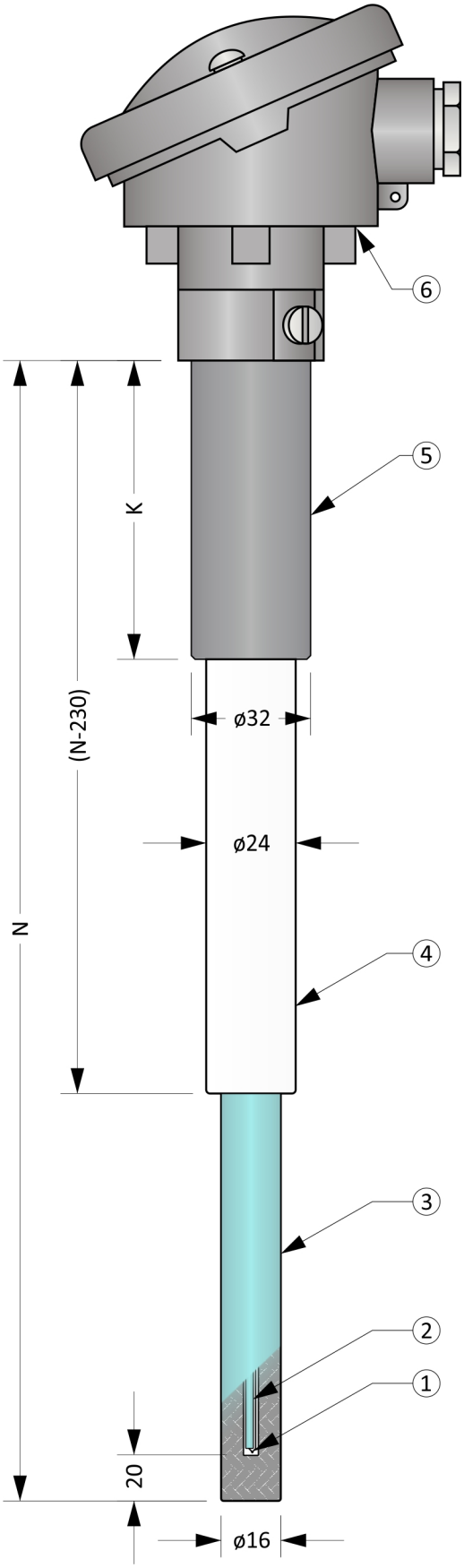


Figure 4S.1: MTC4S

Optional Parameters Including the Creation of an Order Code (Table 4S.2)

Pos.	Code	MTC4S - ❶ - ❷ - ❸ ❹
❶	**Nominal length N [mm]**	
	xxx	Selectable range from 310 mm to 1000 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	0	Selectable range from 50 mm to (N-260) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH head)**	
	0	Without transmitter
	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: MTC4S-500-150-00
... Nominal length N = 500 mm
... Holding pipe length K = 150 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC4S-500-150-00 ... 1,4 kg

Length Tolerances (Table 4S.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 4S.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Guiding tube	< 1600 °C	-
Sapphire tube (measuring part)	< 1900 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Head types

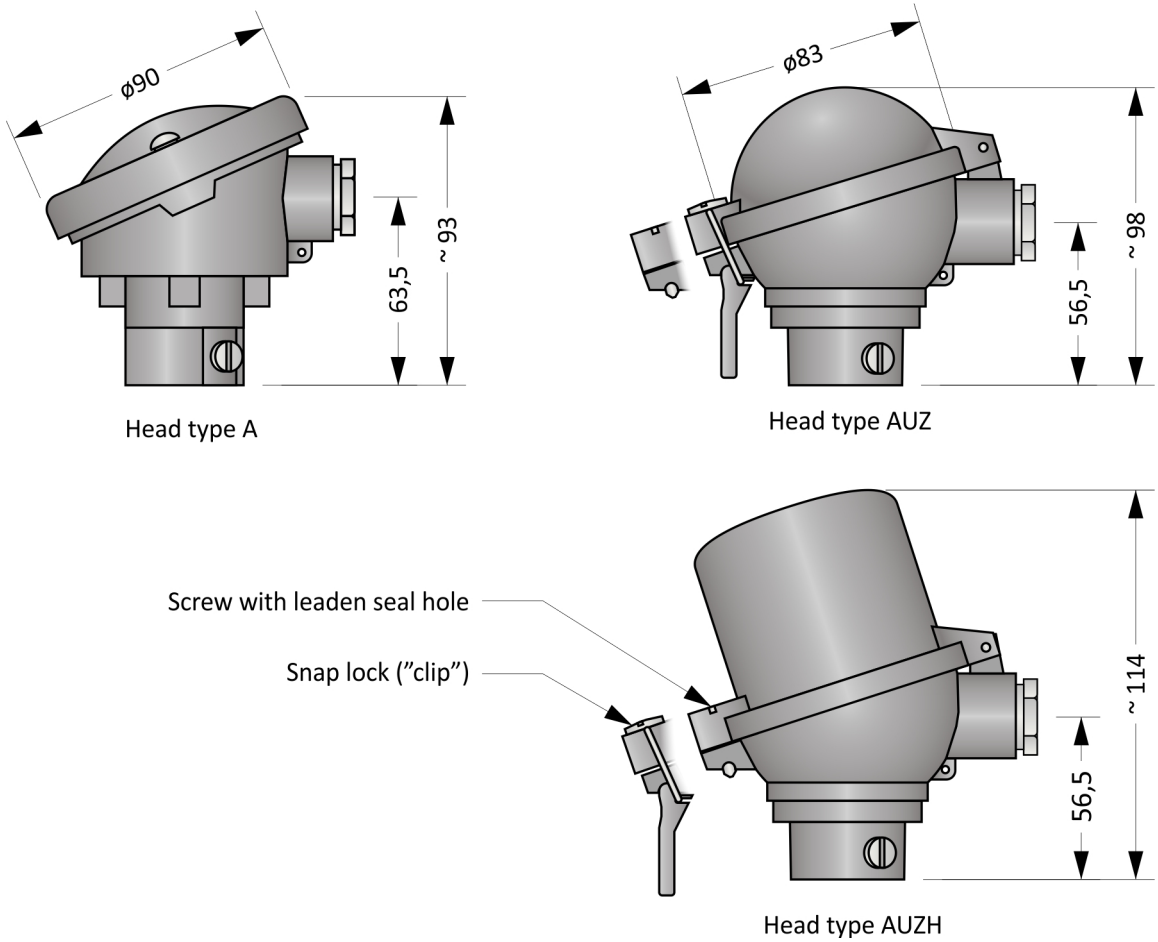


Figure 4S.2: Head types

Head mounted transmitter (Table 4S.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 20 °C/min. Exceeding this value may damage the sensor.

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

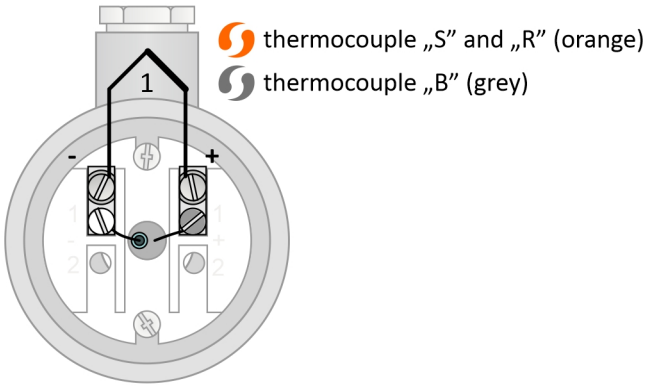


Figure 4S.3: Thermocouple wiring diagram

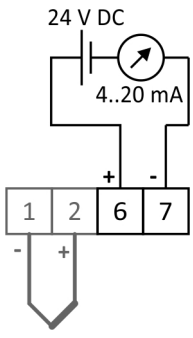


Figure 4S.4: Transmitter wiring diagram

MTC5

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC5 series are designed for applications with operating temperatures up to 1090 °C. They have a single „Pythagoras“ ceramic tube, which resists temperature shocks well. The ceramic tube is not gas-tight, which can adversely affect the long-term life of the installed thermocouple.

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, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 5.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Ceramic C610 (Pythagoras)
	Outer / inner diameter	15 / 11 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

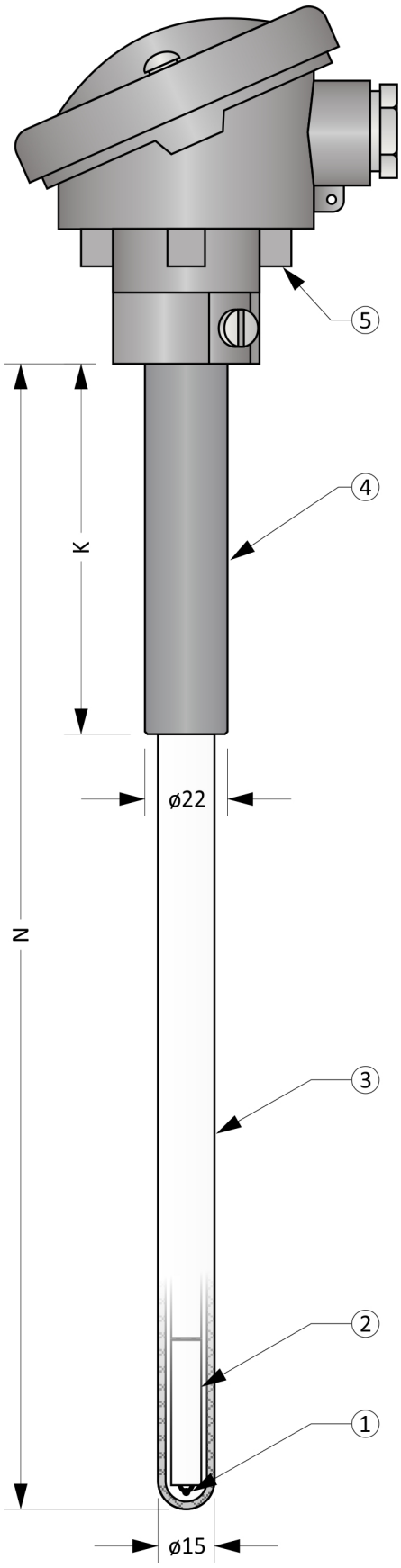


Figure 5.1: MTC5

Optional Parameters Including the Creation of an Order Code (Table 5.2)

Pos.	Code	MTC5 - ❶ - ❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 1,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 1,38 mm
	2	2 x „J“, accuracy class 2, wire diameter 1,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 1,38 mm
	4	1 x „N“, accuracy class 2, wire diameter 1,3 mm
	5	2 x „N“, accuracy class 2, wire diameter 1,3 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC5-1-800-200-00

... 1 x „K“, accuracy class 2, wire diameter 1,38 mm

... Nominal length N = 800 mm

... Holding pipe length K = 200 mm

... Head A

... Without transmitter

Approximate weight of the product: MTC5-1-800-200-0 ... 1,0 kg

Length Tolerances (Table 5.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 5.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1300 °C	-
„J“, wire diameter 1,0 mm	< 400 °C	< 520 °C
„K“, wire diameter 1,38 mm	< 900 °C	< 1020 °C
„N“, wire diameter 1,3 mm	< 950 °C	< 1090 °C

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

Head types

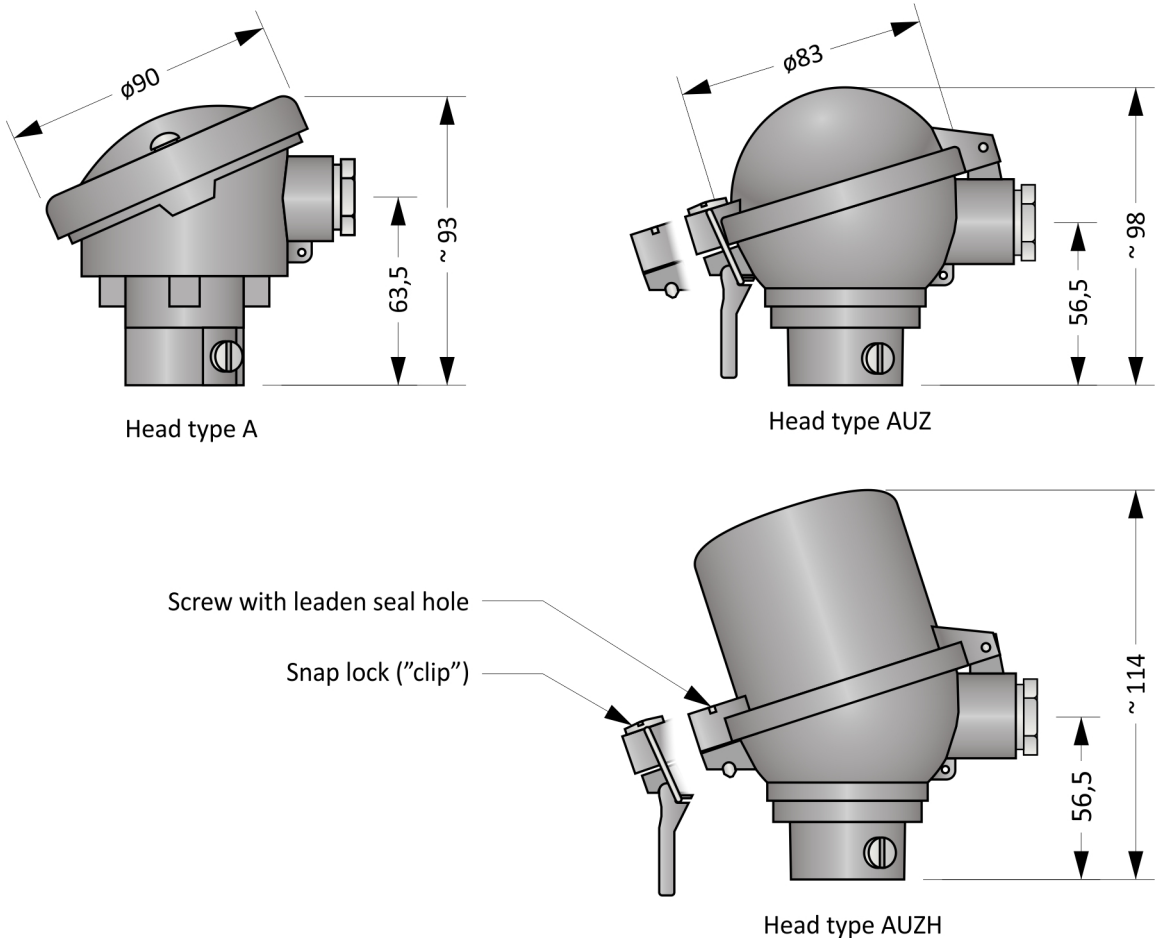


Figure 5.2: Head types

Head mounted transmitter (Table 5.5)

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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 5.5.

Electrical connection of the sensor without transmitter is shown in the Figures 5.3 and 5.4. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

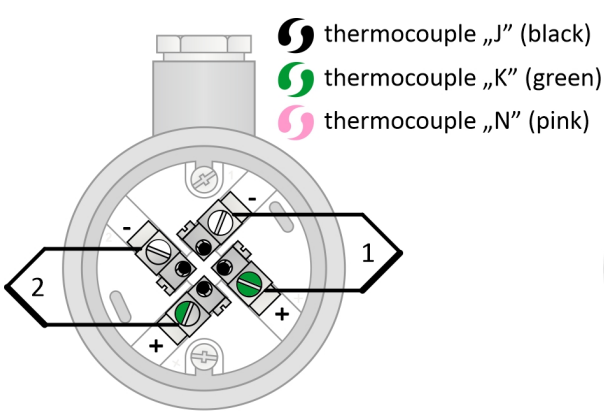


Figure 5.3: Double thermocouple wiring diagram

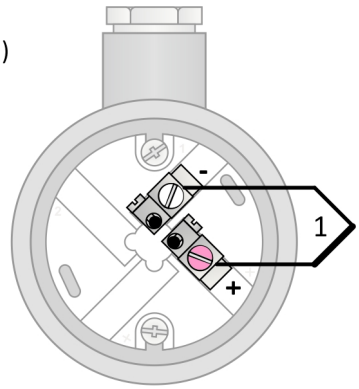


Figure 5.4: Single thermocouple wiring diagram

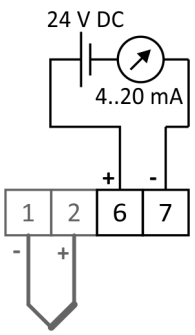


Figure 5.5: Transmitter wiring diagram

MTC5A

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC5A series are designed for applications with operating temperatures up to 1300 °C. They have a single „Pythagoras“ ceramic tube, which resists temperature shocks well. The ceramic tube is not gas-tight, which can adversely affect the long-term life of the installed thermocouple.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 5A.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious metal thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 80) mm
②	**Capillary tube**	
	Material	Ceramic C610 (Pythagoras)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Protection tube**	
	Material	Ceramic C610 (Pythagoras)
	Outer / inner diameter	15 / 11 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

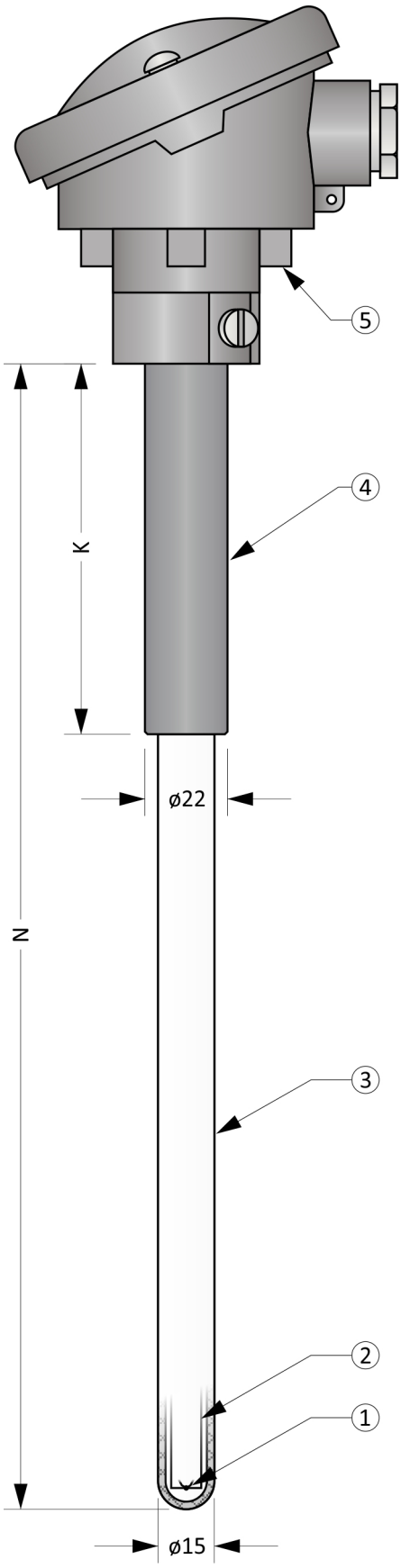


Figure 5A.1: MTC5A

Optional Parameters Including the Creation of an Order Code (Table 5A.2)

Pos.	Code	MTC5A - ❶ - ❷ - ❸❹
❶	**Nominal length N [mm]**	
	0	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	0	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC5A-800-150-00
... Nominal length N = 800 mm
... Holding pipe length K = 150 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC5A-800-150-00 ... 1,5 kg

Recommended Maximum Temperatures of Sensor Parts (Table 5A.3)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Protection tube (measuring part)	< 1300 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Length Tolerances (Table 5A.4)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Head types

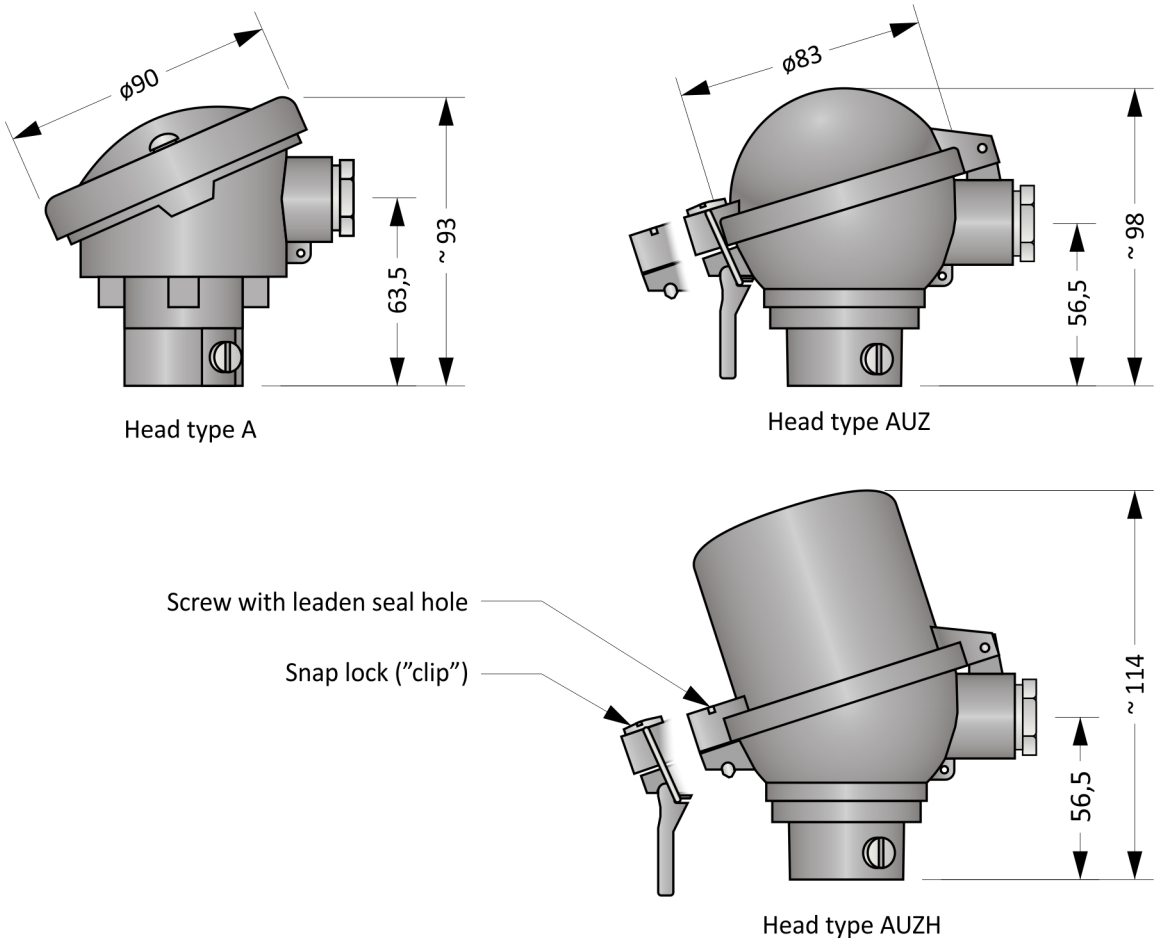


Figure 5A.2: Head types

Head mounted transmitter (Table 5A.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

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

Electrical connection of the sensor without transmitter is shown in the Figures 5A.3 and 5A.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.

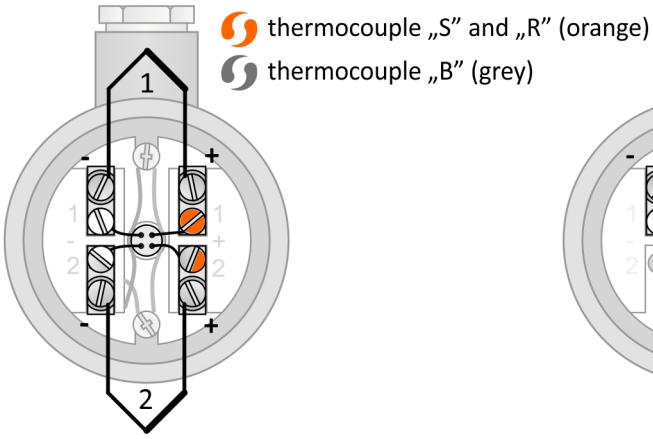


Figure 5A.3: Double thermocouple wiring diagram

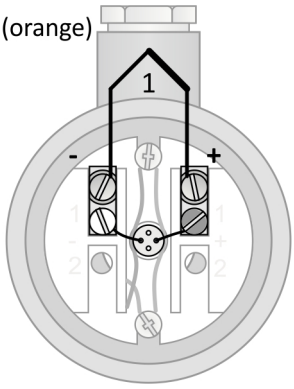


Figure 5A.4: Single thermocouple wiring diagram

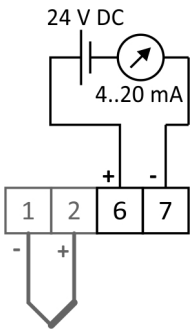


Figure 5A.5: Transmitter wiring diagram

MTC5L

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC5L series are designed for applications with operating temperatures up to 1090 °C. They have a single ceramic tube made of „Lunit 73“ material. They are characterized by good resistance to temperature shocks. The ceramic tube is gas-tight. The assemblies of this series therefore provide a slightly increased long-term lifetime of the installed thermocouple.

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, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 5L.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610 (Lunit73)
③	**Protection tube**	
	Material	Ceramic C610 (Lunit73)
	Outer / inner diameter	15 / 11 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

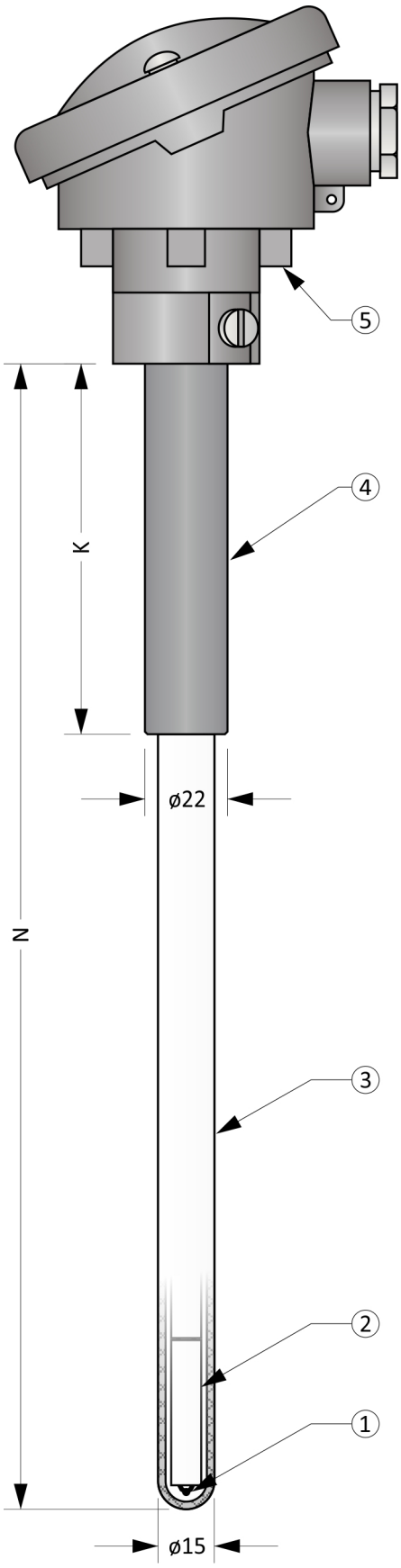


Figure 5L.1: MTC5L

Optional Parameters Including the Creation of an Order Code (Table 5L.2)

Pos.	Code	MTC5L - ❶ - ❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 1,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 1,38 mm
	2	2 x „J“, accuracy class 2, wire diameter 1,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 1,38 mm
	4	1 x „N“, accuracy class 2, wire diameter 1,3 mm
	5	2 x „N“, accuracy class 2, wire diameter 1,3 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 1600 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC5L-1-800-200-00

... 1 x „K“, accuracy class 2, wire diameter 1,38 mm

... Nominal length N = 800 mm

... Holding pipe length K = 200 mm

... Head A

... Without transmitter

Approximate weight of the product: MTC5L-1-800-200-00 ... 1,0 kg

Length Tolerances (Table 5L.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 5L.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1300 °C	-
„J“, wire diameter 1,0 mm	< 400 °C	< 520 °C
„K“, wire diameter 1,38 mm	< 900 °C	< 1020 °C
„N“, wire diameter 1,3 mm	< 950 °C	< 1090 °C

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

Head types

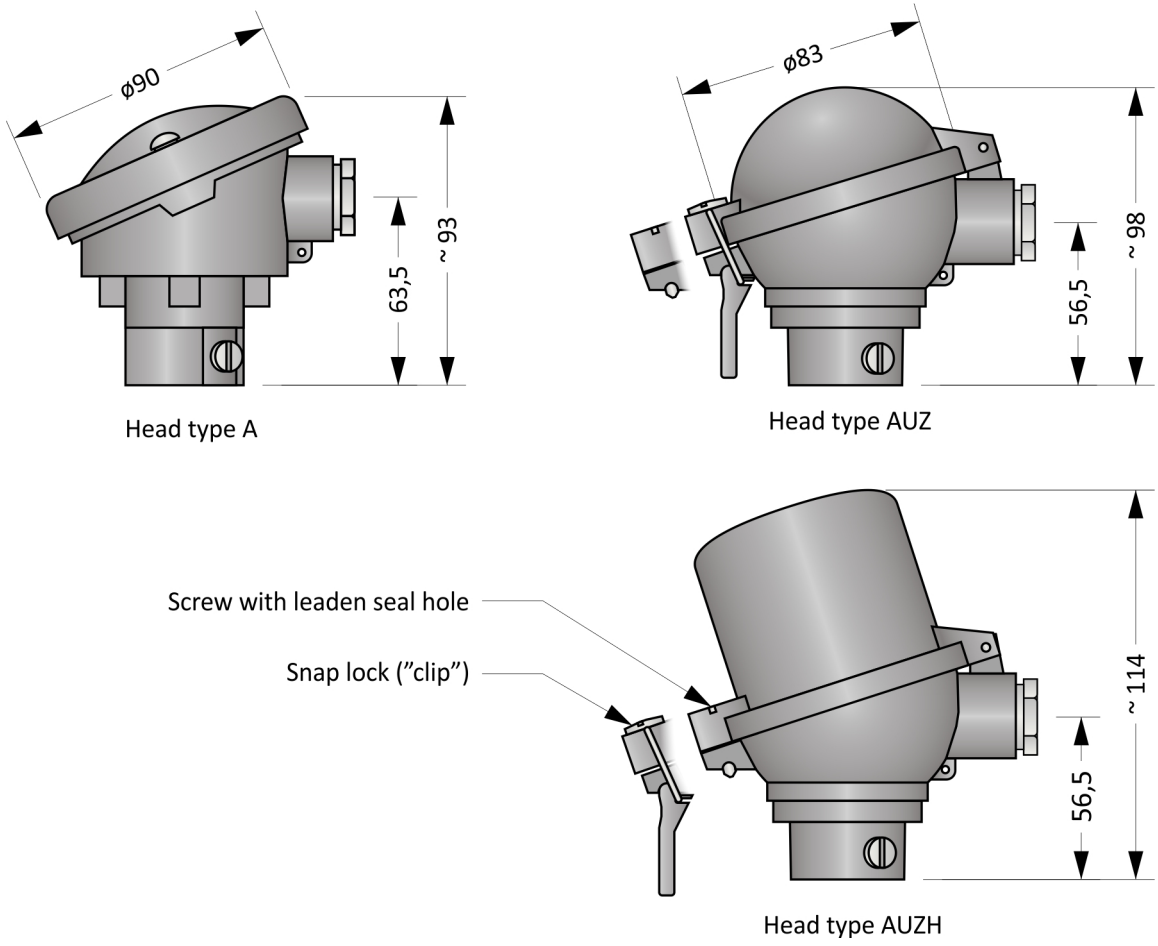


Figure 5L.2: Head types

Head mounted transmitter (Table 5L.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

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

Electrical connection of the sensor without transmitter is shown in the Figures 5L.3 and 5L.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.

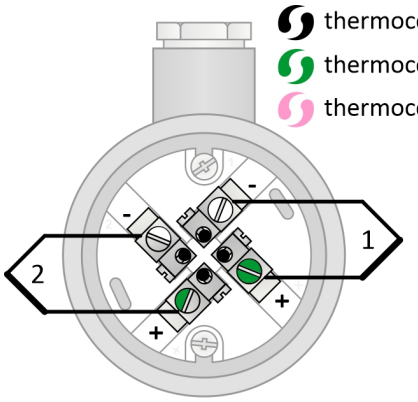


Figure 5L.3: Double thermocouple wiring diagram

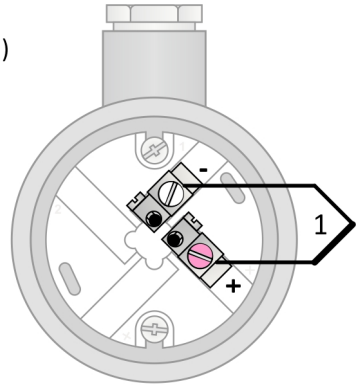


Figure 5L.4: Single thermocouple wiring diagram

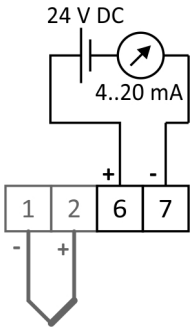


Figure 5L.5: Transmitter wiring diagram

MTC5LA

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC5LA series are designed for applications with operating temperatures up to 1400 °C. They have a single ceramic tube made of „Lunit 73“ material that resists temperature shocks well.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 5LA.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious metal thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 80) mm
②	**Capillary tube**	
	Material	Ceramic C610 (Lunit 73)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Protection tube**	
	Material	Ceramic C610 (Lunit 73)
	Outer / inner diameter	15 / 11 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

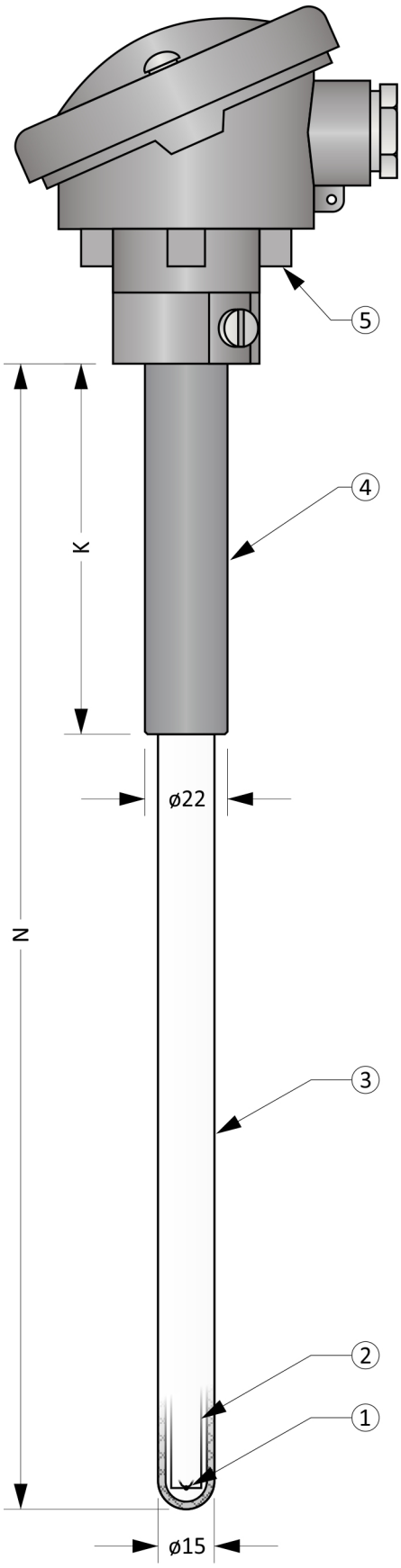


Figure 5LA.1: MTC5LA

Optional Parameters Including the Creation of an Order Code (Table 5LA.2)

Pos.	Code	MTC5LA - ❶ - ❷ - ❸❹
❶	**Nominal length N [mm]**	
	0	Selectable range from 250 mm to 1600 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	0	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC5LA-800-150-00
... Nominal length N = 800 mm
... Holding pipe length K = 200 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC5LA-800-150-00 ... 1,5 kg

Recommended Maximum Temperatures of Sensor Parts (Table 5LA.3)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Protection tube (measuring part)	< 1350 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Length Tolerances (Table 5LA.4)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Head types

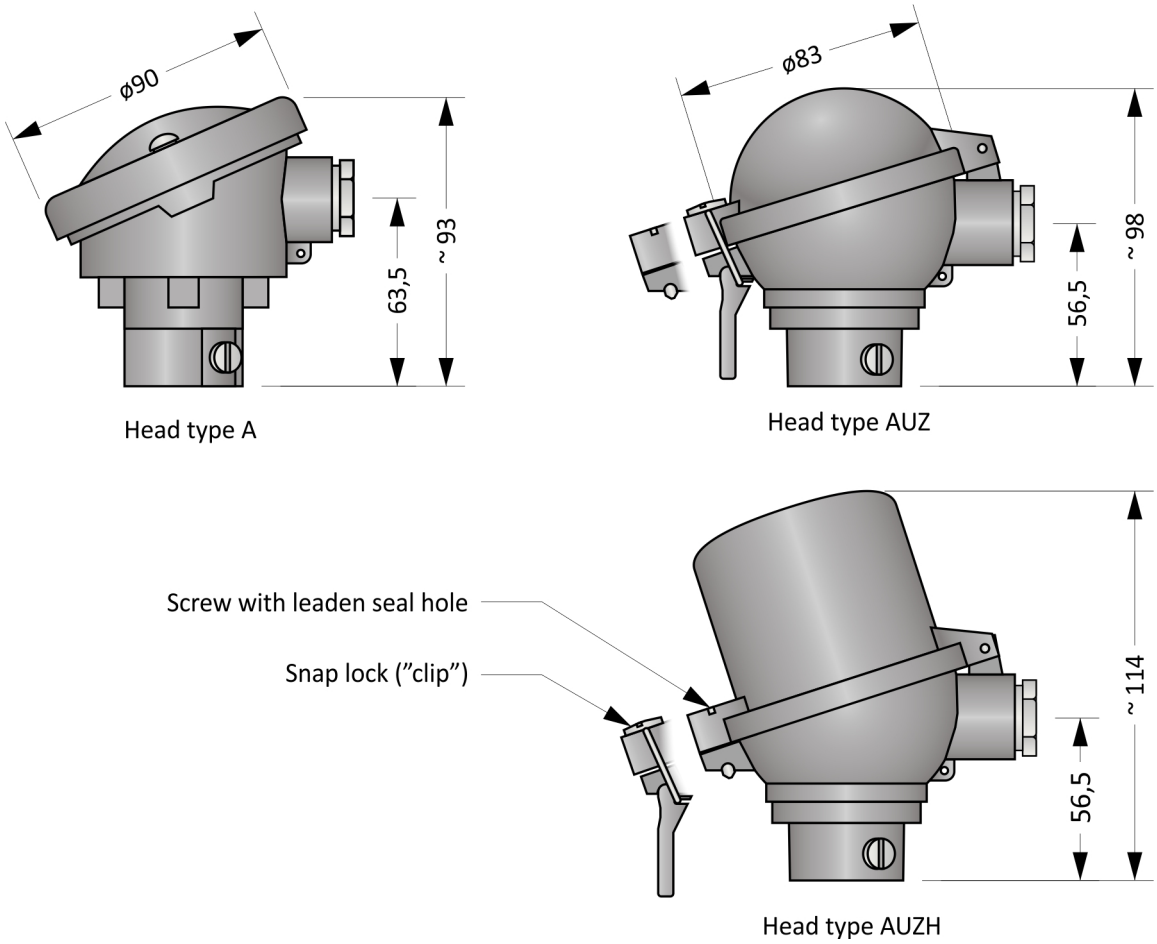


Figure 5LA.2: Head types

Head mounted transmitter (Table 5LA.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

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

Electrical connection of the sensor without transmitter is shown in the Figures 5LA.3 and 5LA.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.

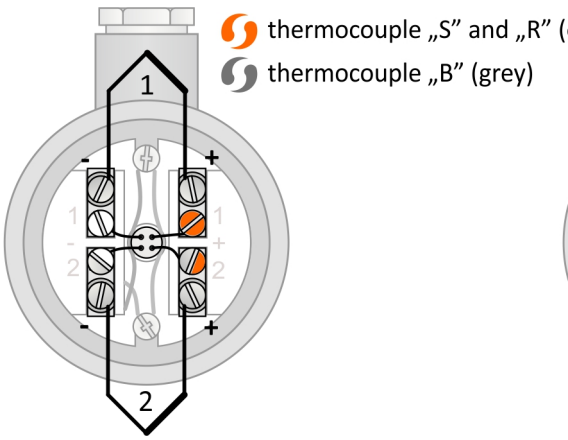


Figure 5LA.3: Double thermocouple wiring diagram

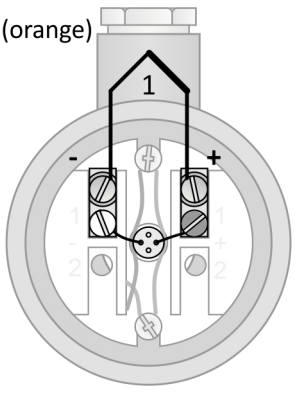


Figure 5LA.4: Single thermocouple wiring diagram

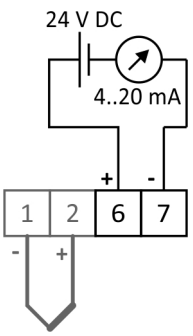


Figure 5LA.5: Transmitter wiring diagram

MTC5M

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE AND MEASURING INSERT

Thermocouple assemblies of the MTC5M series are designed for applications with operating temperatures up to 1100 °C. They have a single „Pythagoras“ ceramic tube, which resists temperature shocks well.

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, holding pipe, protection ceramic tube and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

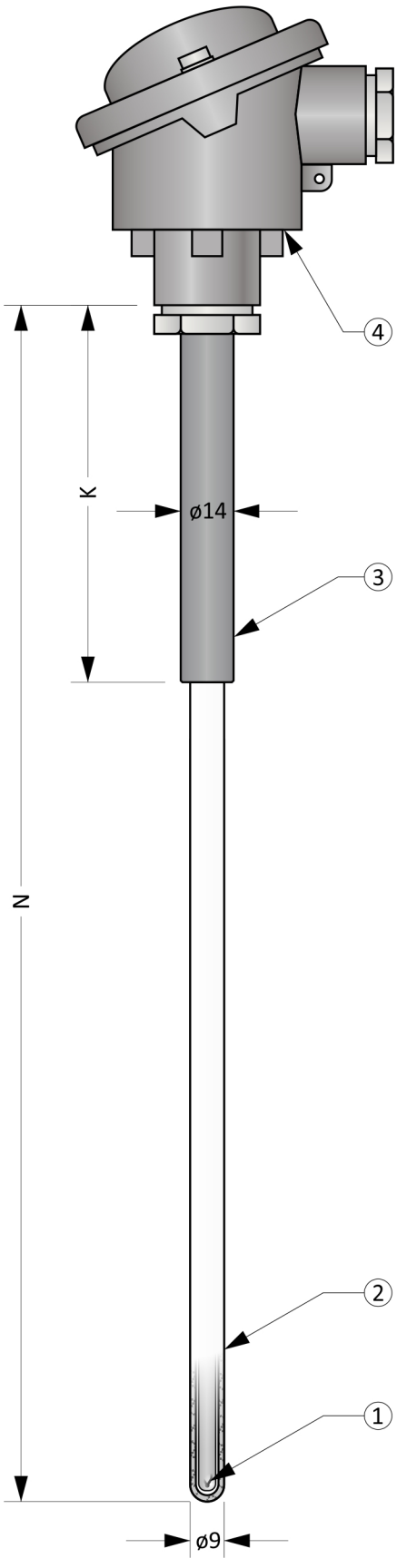


Figure 5M.1: MTC5M

General Information (Table 5M.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	4,5 mm
②	**Protection tube**	
	Material	Ceramic C610 (Pythagoras)
	Outer / inner diameter	9 / 6 mm
③	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	14 / 10 mm
④	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 5M.2)

Pos.	Code	MTC5M - ❶❷ - ❸ - ❹ - ❺❻
❶	**Type of measuring insert (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „K“, thermocouple isolated from the sheath, sheath material 2.4816
	2	1 x „J“, thermocouple isolated from the sheath, sheath material 1.4541
	1	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
	5	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	accuracy class 2
	1	accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 100 mm to 1000 mm (in 10 mm increments)
❹	**Immersion depth K [mm]**	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❺	**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
❻	**Transmitter (only for 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: MTC5M-01-500-150-00

... 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

... Immersion depth K = 150 mm

... Head B

... Without transmitter

Approximate weight of the product: MTC5M-01-500-150-00 ... 1,0 kg

Length Tolerances (Table 5M.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 5M.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Protection tube (measuring part)	< 1300 °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

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

Head types

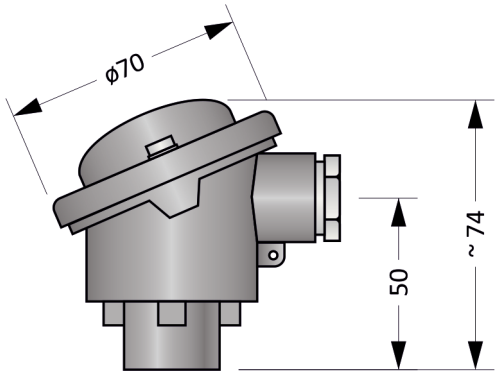


Figure 5M.3: Head B

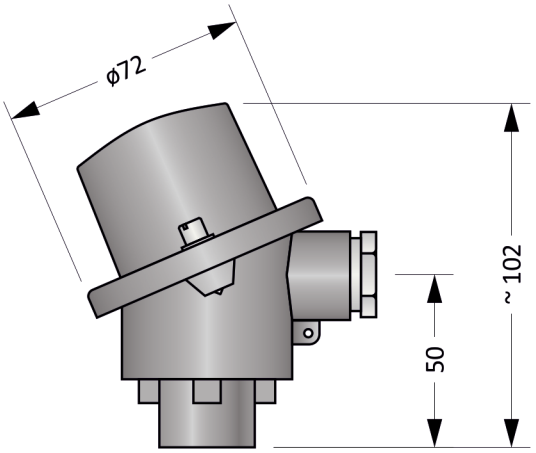


Figure 5M.4: Head BH

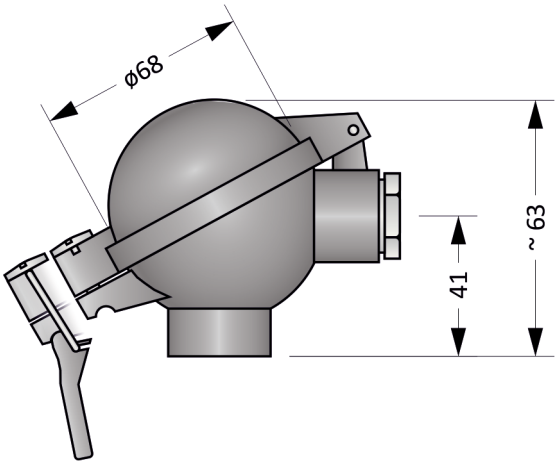


Figure 5M.5: Head BUZ

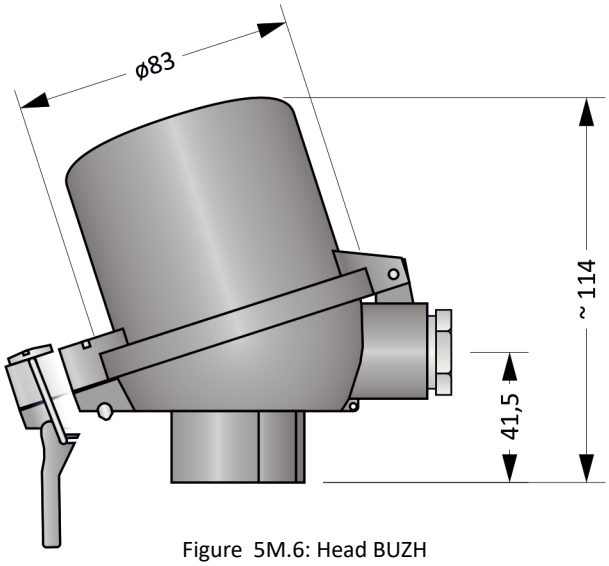


Figure 5M.6: Head BUZH

Head mounted transmitter (Table 5M.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 holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 5M.9.

Electrical connection of the sensor without transmitter is shown in the Figures 5M.7 a 5M.8. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

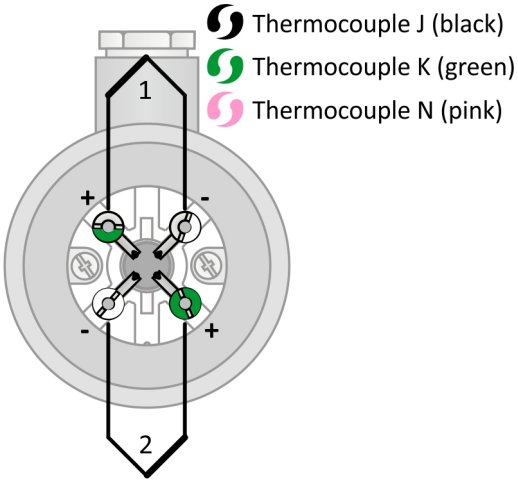


Figure 5M.7: Double thermocouple wiring diagram

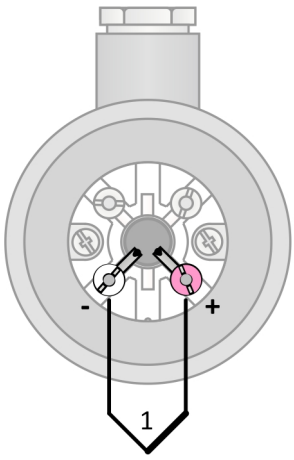


Figure 5M.8: Single thermocouple wiring diagram

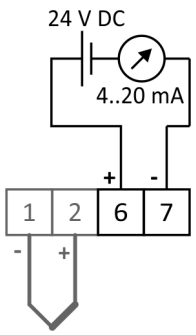


Figure 5M.9: Transmitter wiring diagram

MTC5MA

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC5MA series are designed for applications with operating temperatures up to 1300 °C. They have a single „Pythagoras“ ceramic tube, which resists temperature shocks well. The ceramic tube is not gas-tight, which can adversely affect the long-term life of the installed thermocouple.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, protection ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 5MA.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious metal thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 40) mm
②	**Capillary tube**	
	Material	Ceramic C610
	Diameter	4,5 mm
	Bore for thermocouple	4 x ø1,2 mm
③	**Protection tube**	
	Material	Ceramic C610 (Pythagoras)
	Outer / inner diameter	9 / 6 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	14 / 10 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

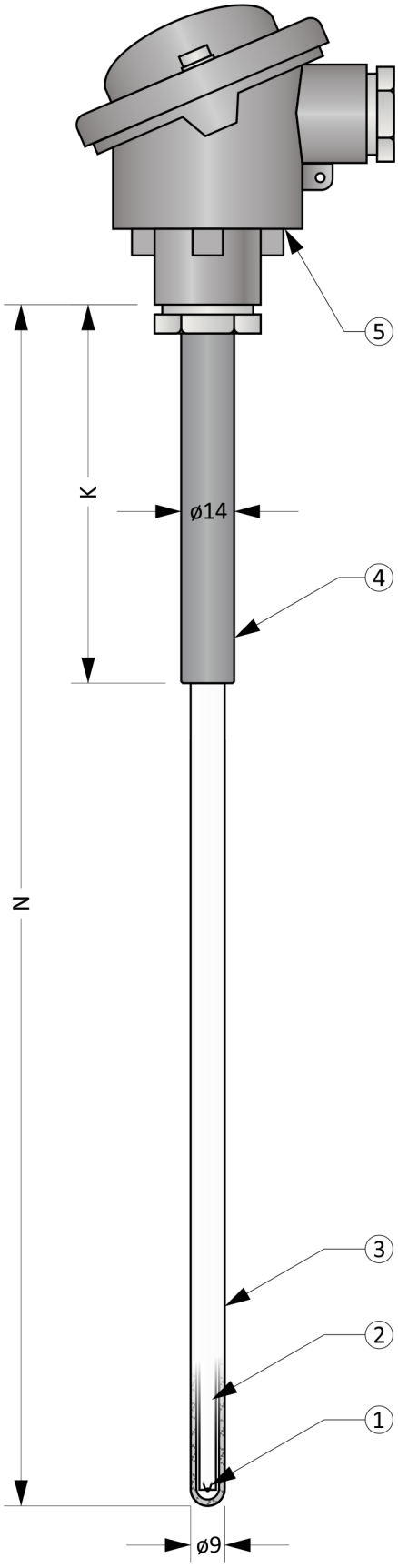


Figure 5MA.1: MTC5MA

Optional Parameters Including the Creation of an Order Code (Table 5MA.2)

Pos.	Code	MTC5MA - ❶ - ❷ - ❸❹
❶	**Nominal length N [mm]**	
	0	Selectable range from 100 mm to 1000 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	0	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❸	**Head type**	
	0	B
	1	BH
	2	BUZH with screws with leaden seal holes
	3	BUZH with snap lock
	4	BUZ with screws with leaden seal holes
	5	BUZ with snap lock
❹	**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: MTC5MA-800-150-00
... Nominal length N = 800 mm
... Holding pipe length K = 150 mm
... Head B
... Without transmitter

Approximate weight of the product: MTC5MA-800-150-00 ... 1,0 kg

Recommended Maximum Temperatures of Sensor Parts (Table 5MA.3)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Protection tube (measuring part)	< 1300 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Length Tolerances (Table 5MA.4)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm

Head types

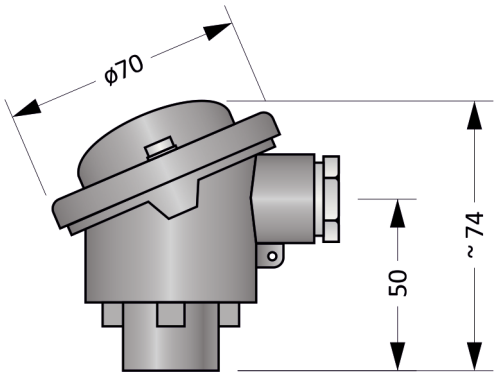


Figure 5MA.2: Head B

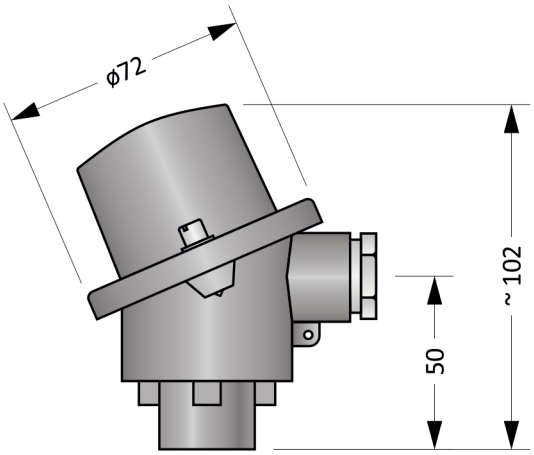


Figure 5MA.3: Head BH

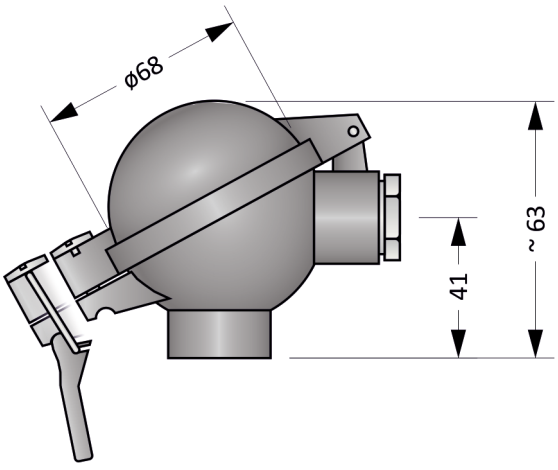


Figure 5MA.4: Head BUZ

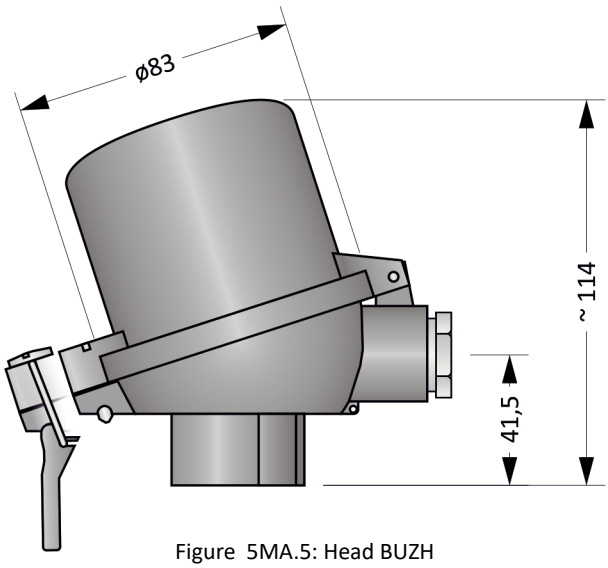


Figure 5MA.5: Head BUZH

Head mounted transmitter (Table 5MA.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 5MA.8.

Electrical connection of the sensor without transmitter is shown in the Figures 5MA.6 a 5MA.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.

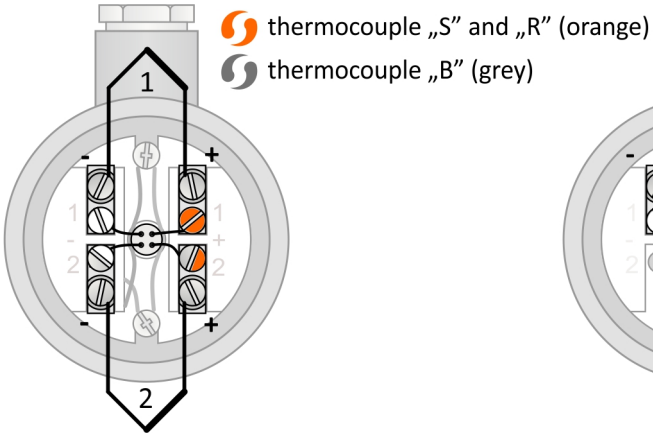


Figure 5MA.6: Double thermocouple wiring diagram

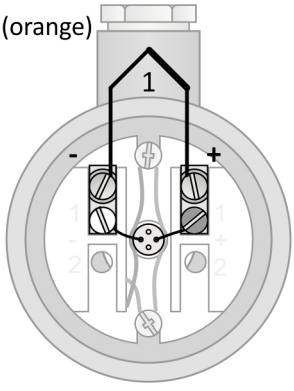


Figure 5MA.7: Single thermocouple wiring diagram

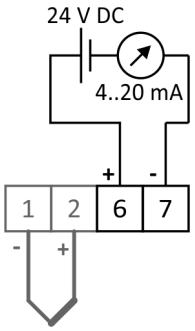


Figure 5MA.8: Transmitter wiring diagram

MTC6

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC6 series are designed for applications with operating temperatures up to 1090 °C. They have a ceramic tube made of „Alsint“ material, which is gas-tight. However, their resistance to thermal shock is low. The life of the thermocouple in these assemblies is one of the highest.

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, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 6.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Ceramic C799 (Alsint)
	Outer / inner diameter	15 / 10 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

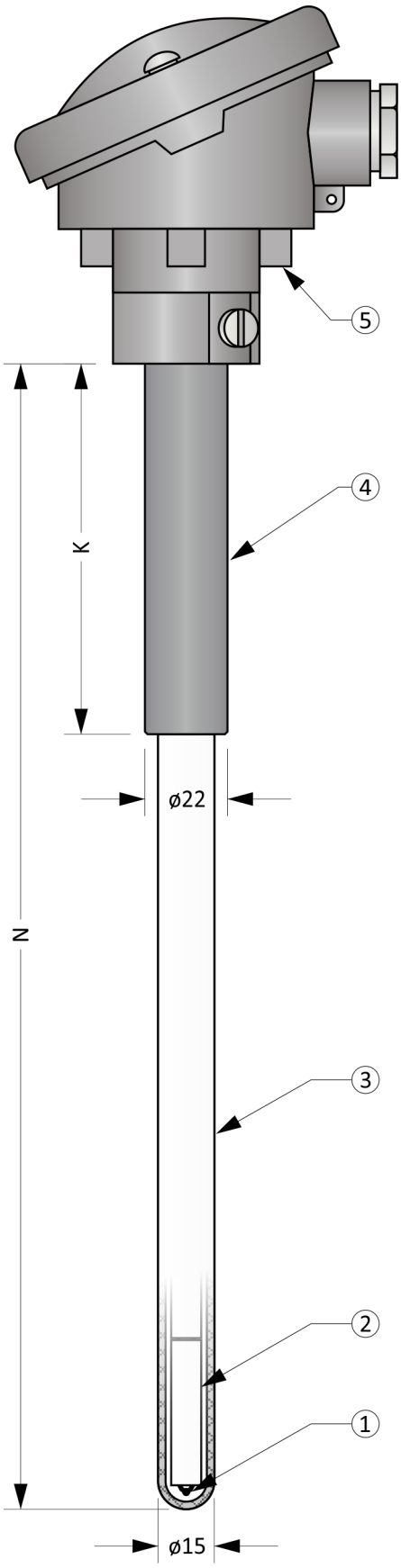


Figure 6.1: MTC6

Optional Parameters Including the Creation of an Order Code (Table 6.2)

Pos.	Code	MTC6 - ❶ - ❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 1,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 1,38 mm
	2	2 x „J“, accuracy class 2, wire diameter 1,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 1,38 mm
	4	1 x „N“, accuracy class 2, wire diameter 1,3 mm
	5	2 x „N“, accuracy class 2, wire diameter 1,3 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC6-1-800-200-00

... 1 x „K“, accuracy class 2, wire diameter 1,38 mm

... Nominal length N = 800 mm

... Holding pipe length K = 200 mm

... Head A

... Without transmitter

Approximate weight of the product: MTC6-1-800-200-0 ... 1,0 kg

Length Tolerances (Table 6.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 6.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1600 °C	-
„J“, wire diameter 1,0 mm	< 400 °C	< 520 °C
„K“, wire diameter 1,38 mm	< 900 °C	< 1020 °C
„N“, wire diameter 1,3 mm	< 950 °C	< 1090 °C

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

Head types

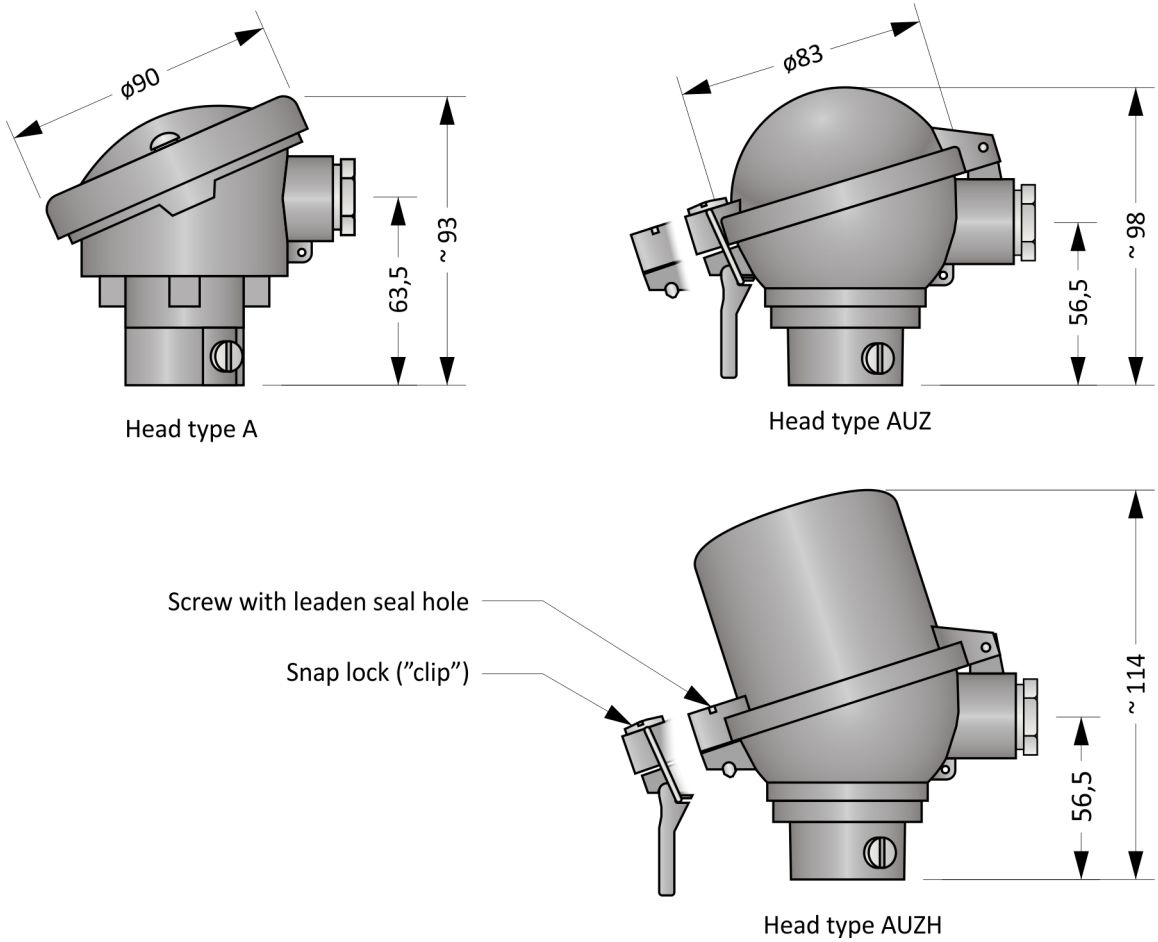


Figure 6.2: Head types

Head mounted transmitter (Table 6.5)

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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 6.5.

Electrical connection of the sensor without transmitter is shown in the Figures 6.3 and 6.4. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

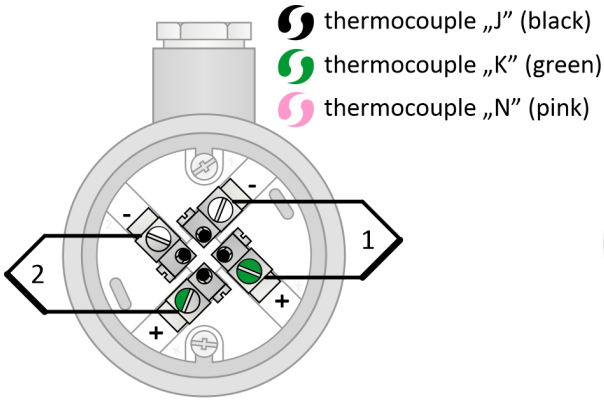


Figure 6.3: Double thermocouple wiring diagram

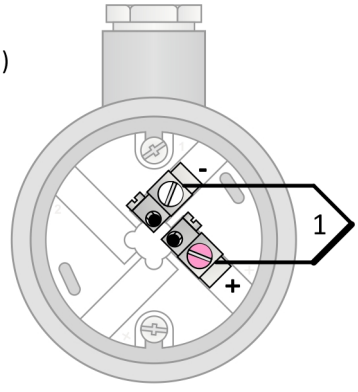


Figure 6.4: Single thermocouple wiring diagram

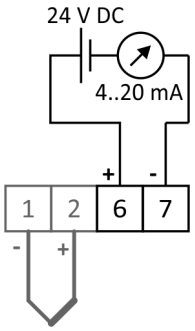


Figure 6.5: Transmitter wiring diagram

MTC6A

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC6a series are designed for applications with operating temperatures up to 1600 °C. They have a ceramic tube made of „Alsint“ material, which is gas-tight. However, their resistance to thermal shock is low. The life of the thermocouple in these assemblies is one of the highest.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, protection ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 6A.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious metal thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 80) mm
②	**Capillary tube**	
	Material	Ceramic C799 (Alsint)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Protection tube**	
	Material	Ceramic C799 (Alsint)
	Outer / inner diameter	15 / 10 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

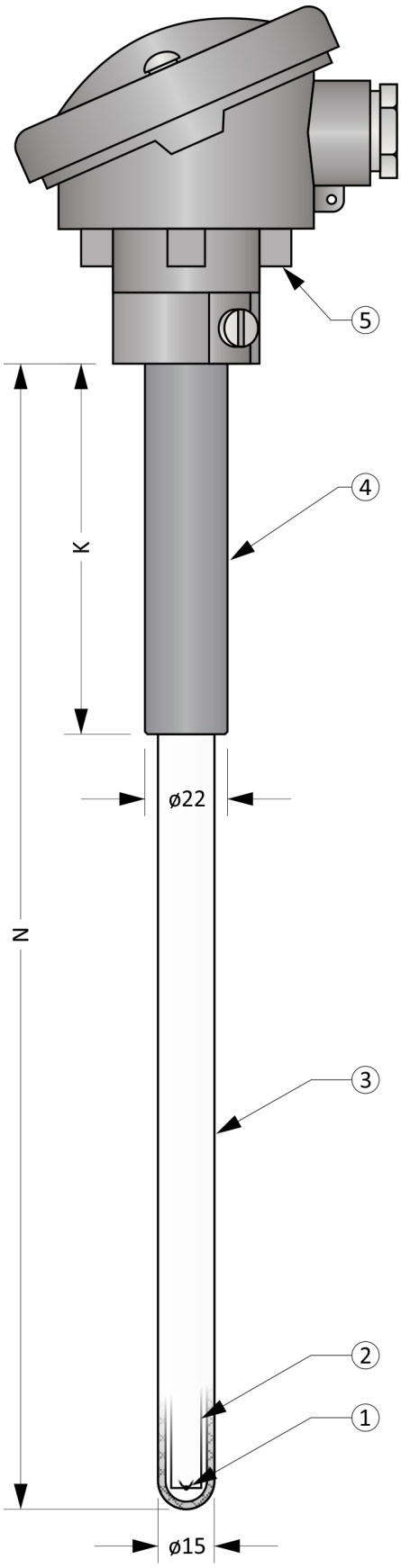


Figure 6A.1: MTC6A

Optional Parameters Including the Creation of an Order Code (Table 6A.2)

Pos.	Code	MTC6A - ❶ - ❷ - ❸❹
❶	**Nominal length N [mm]**	
	0	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	0	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC6A-800-150-00
... Nominal length N = 800 mm
... Holding pipe length K = 150 mm
... Head B
... Without transmitter

Approximate weight of the product: MTC6A-800-150-00 ... 1,5 kg

Recommended Maximum Temperatures of Sensor Parts (Table 6A.3)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Protection tube (measuring part)	< 1600 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Length Tolerances (Table 5A.4)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Head types

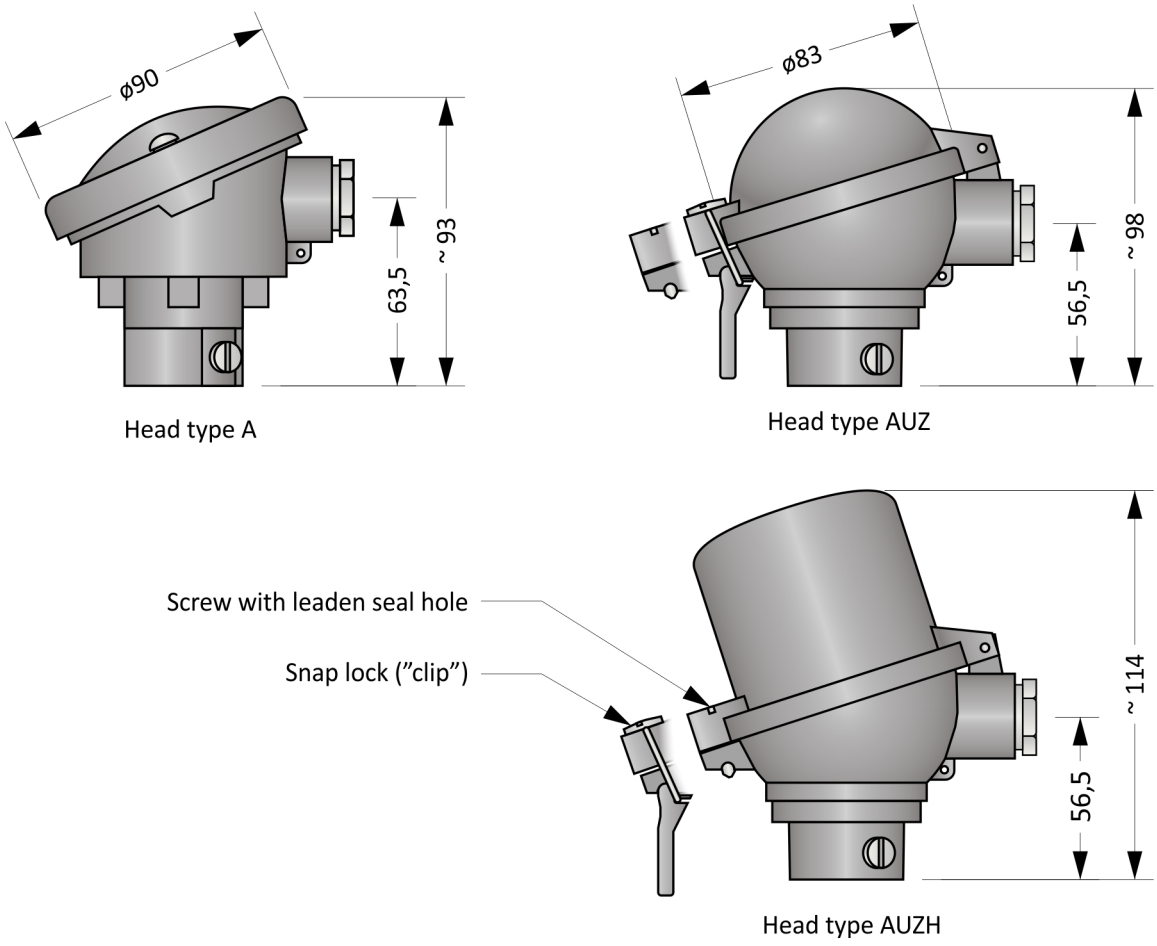


Figure 6A.2: Head types

Head mounted transmitter (Table 6A.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 6A.5.

Electrical connection of the sensor without transmitter is shown in the Figures 6A.3 and 6A.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.

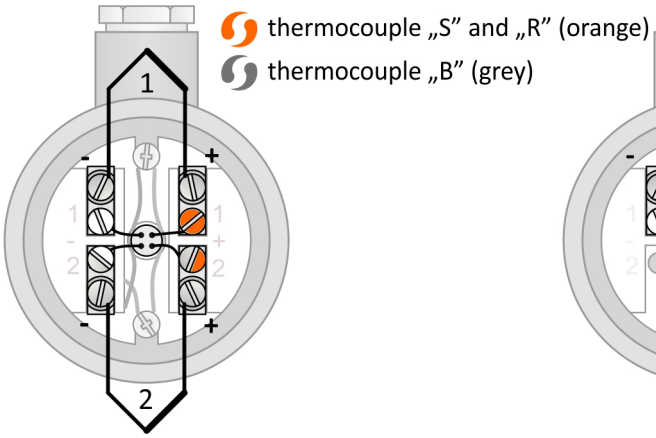


Figure 6A.3: Double thermocouple wiring diagram

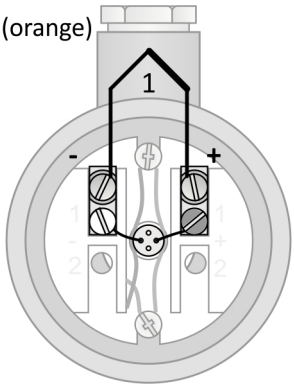


Figure 6A.4: Single thermocouple wiring diagram

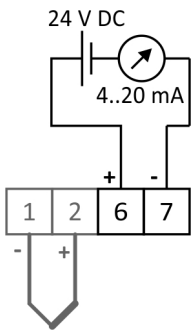


Figure 6A.5: Transmitter wiring diagram

MTC6L

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC6L series are designed for applications with operating temperatures up to 1090 °C. They have a ceramic tube made of „Luxal 203“ material, which is gas-tight. However, their resistance to thermal shock is low. The life of the thermocouple in these assemblies is one of the highest.

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, holding pipe, protection ceramic tube and a capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

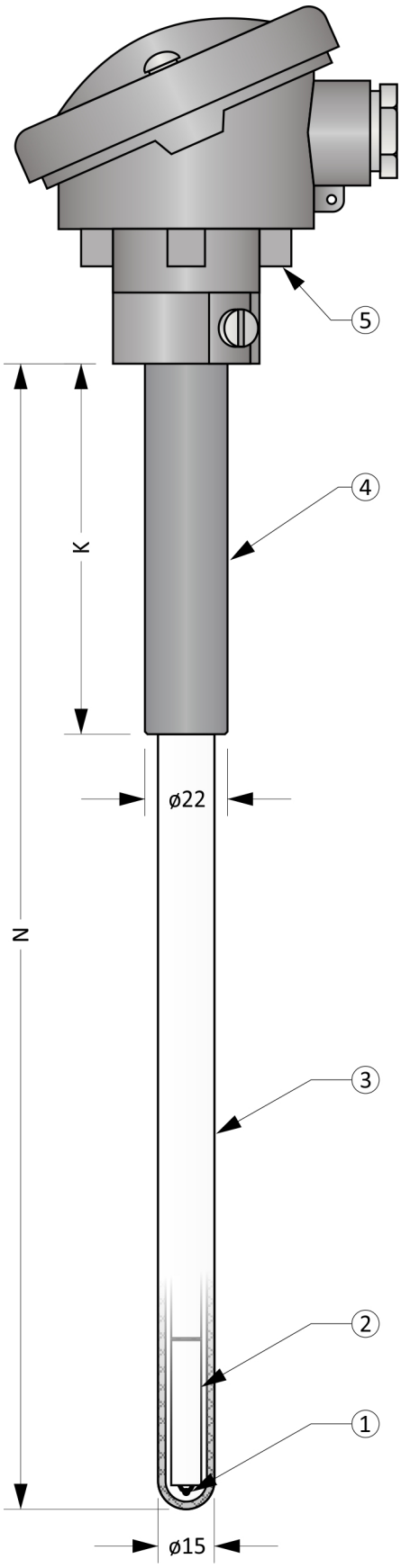


Figure 6L.1: MTC6L

General Information (Table 6L.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Ceramic C799 (Luxal 203)
	Outer / inner diameter	15 / 10 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 6L.2)

Pos.	Code	MTC6L - ❶ - ❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 1,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 1,38 mm
	2	2 x „J“, accuracy class 2, wire diameter 1,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 1,38 mm
	4	1 x „N“, accuracy class 2, wire diameter 1,3 mm
	5	2 x „N“, accuracy class 2, wire diameter 1,3 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 1400 mm (in 10 mm increments)
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC6L-1-800-200-00

... 1 x „K“, accuracy class 2, wire diameter 1,38 mm

... Nominal length N = 800 mm

... Holding pipe length K = 200 mm

... Head A

... Without transmitter

Approximate weight of the product: MTC6L-1-800-200-00 ... 1,1 kg

Length Tolerances (Table 6L.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 6L.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1600 °C	-
„J“, wire diameter 1,0 mm	< 400 °C	< 520 °C
„K“, wire diameter 1,38 mm	< 900 °C	< 1020 °C
„N“, wire diameter 1,3 mm	< 950 °C	< 1090 °C

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

Head types

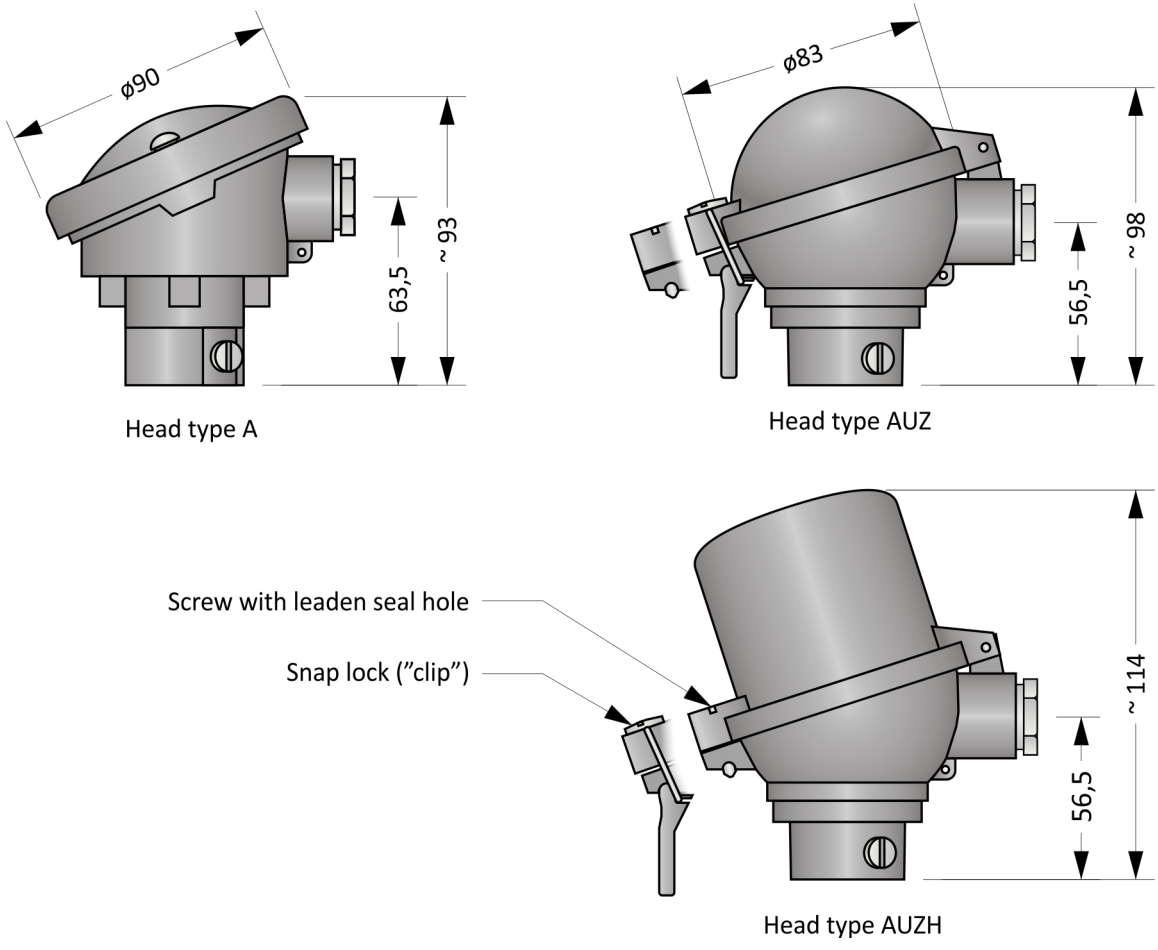


Figure 6L.2: Head types

Head mounted transmitter (Table 6L.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 6L.5.

Electrical connection of the sensor without transmitter is shown in the Figures 6L.3 and 6L.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.

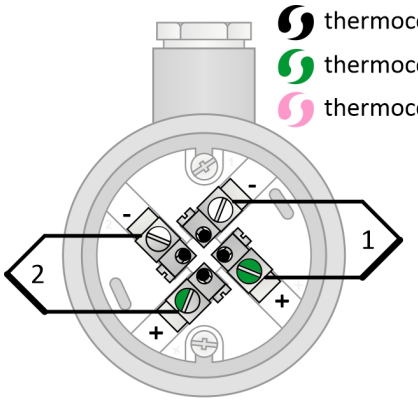


Figure 6L.3: Double thermocouple wiring diagram

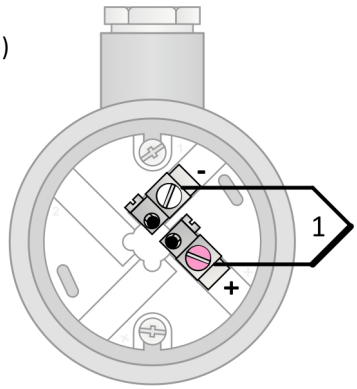


Figure 6L.4: Single thermocouple wiring diagram

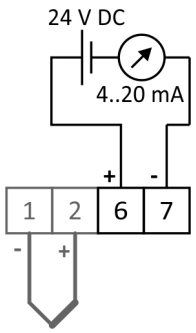


Figure 6L.5: Transmitter wiring diagram

MTC6LA

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC6LA series are designed for applications with operating temperatures up to 1600 °C. They have a ceramic tube made of „Luxal 203“ material, which is gas-tight. However, their resistance to thermal shock is low. The life of the thermocouple in these assemblies is one of the highest.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, protection ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 6LA.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious metal thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 80) mm
②	**Capillary tube**	
	Material	Ceramic C799 (Luxal 203)
	Diameter	8,5 mm
	Bore for thermocouple	4 x ø1,5 mm
③	**Protection tube**	
	Material	Ceramic C799 (Luxal 203)
	Outer / inner diameter	15 / 10 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

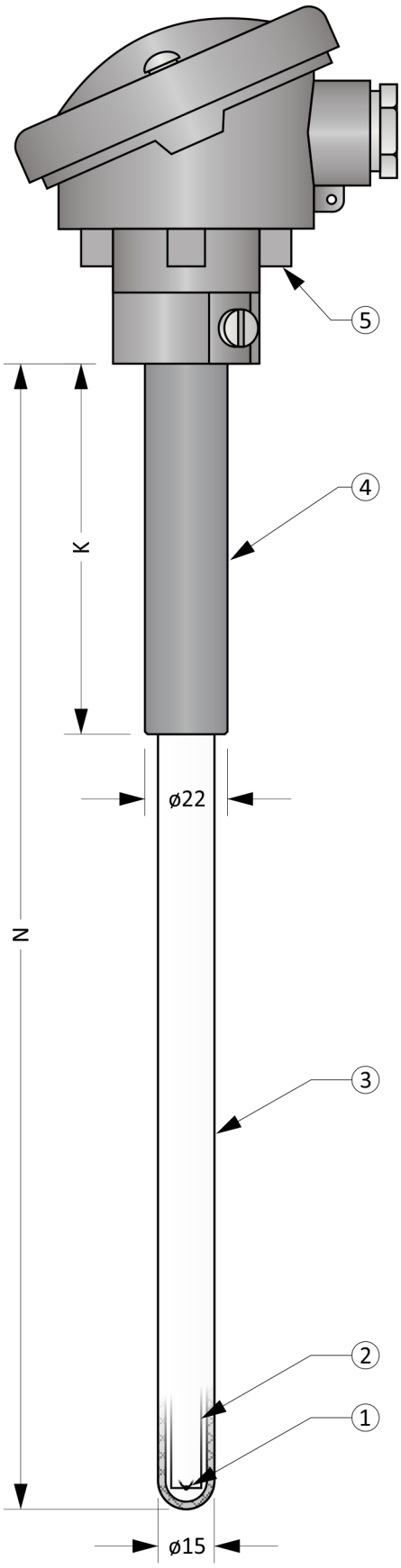


Figure 6LA.1: MTC6LA

Optional Parameters Including the Creation of an Order Code (Table 6LA.2)

Pos.	Code	MTC6LA - ❶ - ❷ - ❸❹
❶	**Nominal length N [mm]**	
	0	Selectable range from 250 mm to 1400 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	0	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes*
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC6LA-800-150-00
... Nominal length N = 800 mm
... Holding pipe length K = 150 mm
... Head B
... Without transmitter

Approximate weight of the product: MTC6LA-800-150-00 ... 1,5 kg

Recommended Maximum Temperatures of Sensor Parts (Table 6LA.3)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Protection tube (measuring part)	< 1600 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Length Tolerances (Table 6LA.4)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Head types

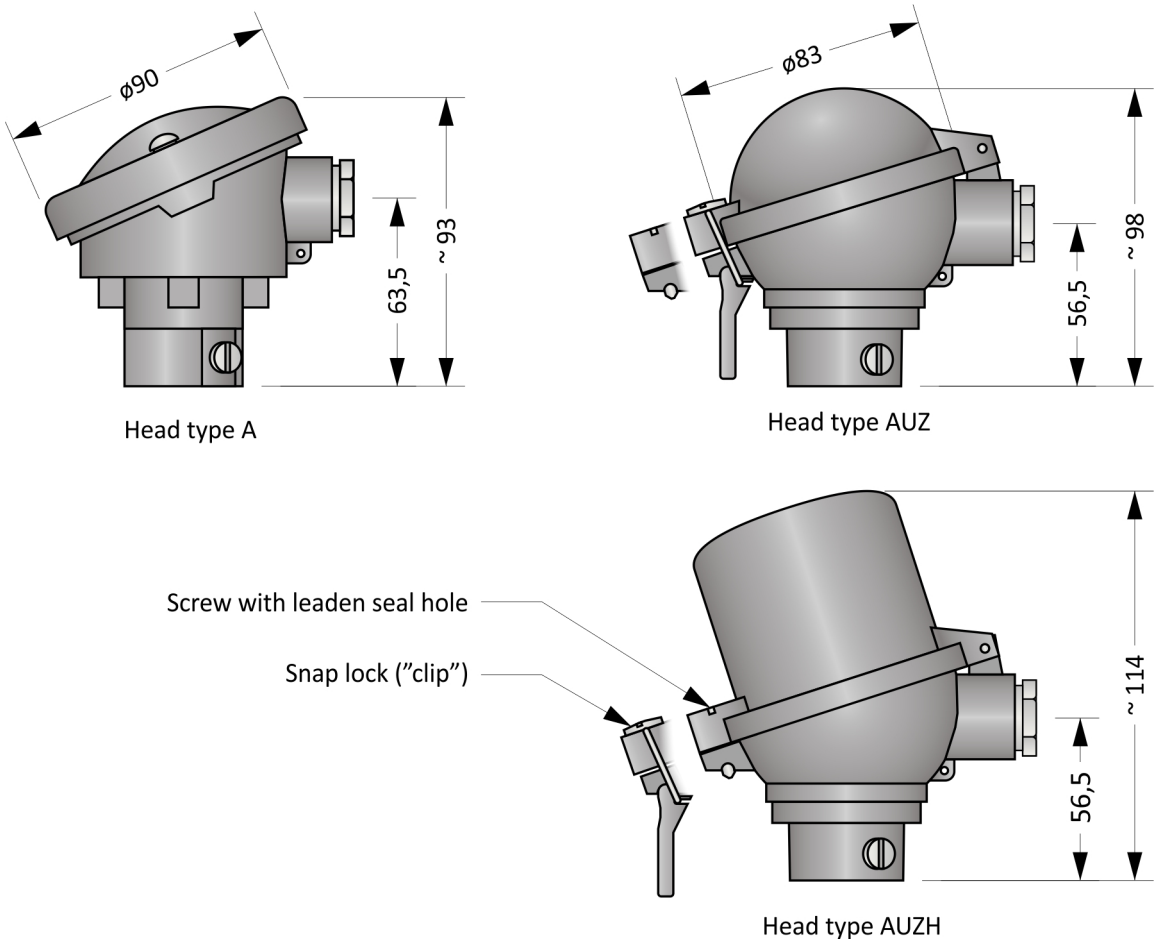


Figure 6LA.2: Head types

Head mounted transmitter (Table 6LA.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 6LA.5.

Electrical connection of the sensor without transmitter is shown in the Figures 6LA.3 and 6LA.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.

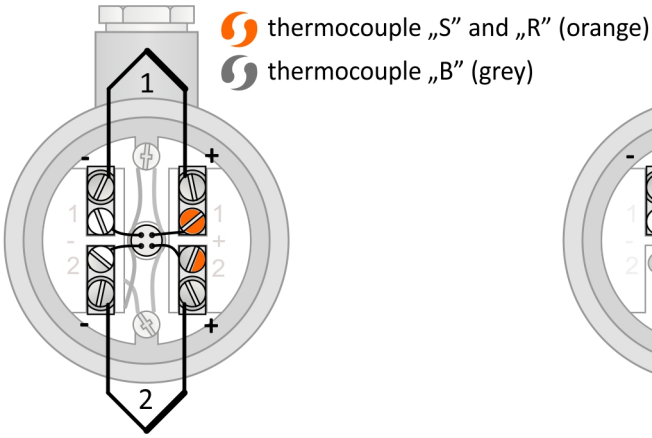


Figure 6LA.3: Double thermocouple wiring diagram

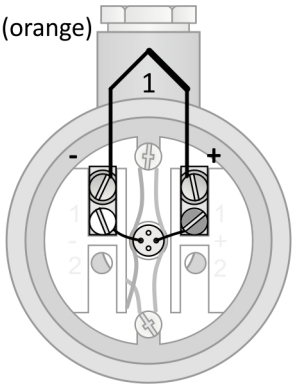


Figure 6LA.4: Single thermocouple wiring diagram

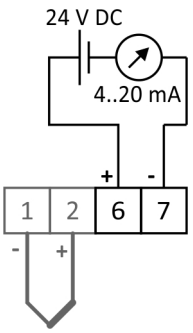


Figure 6LA.5: Transmitter wiring diagram

MTC6M

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE AND MEASURING INSERT

Thermocouple assemblies of the MTC6M series are designed for applications with operating temperatures up to 1100 °C and a requirement for a small outer diameter. They have a ceramic tube made of „Alsint“ material, which is gas-tight. However, their resistance to thermal shock is low.

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, holding pipe, protection ceramic tube and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

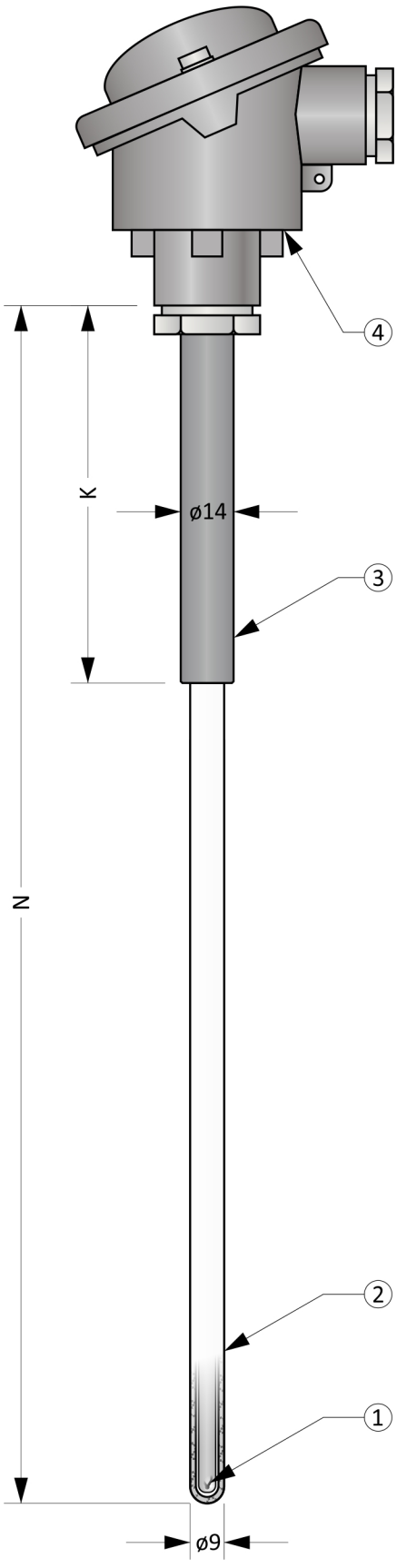


Figure 6M.1: MTC6M

General Information (Table 6M.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (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
	Diameter	4,5 mm
	Protection tube	
②	Material	Ceramic C799 (Alsint)
	Outer / inner diameter	9 / 6 mm
	Holding pipe	
③	Material	Stainless steel
	Outer / inner diameter	14 / 10 mm
	Head	
④	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 6M.2)

Pos.	Code	MTC6M - ❶❷ - ❸ - ❹ - ❺❻
❶	**Type of measuring insert (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „K“, thermocouple isolated from the sheath, sheath material 2.4816
	2	1 x „J“, thermocouple isolated from the sheath, sheath material 1.4541
	1	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
	5	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	accuracy class 2
	1	accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 100 mm to 1200 mm (in 10 mm increments)
❹	**Immersion depth K [mm]**	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❺	**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
❻	**Transmitter (only for 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: MTC6M-01-500-150-00

... 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

... Immersion depth K = 150 mm

... Head B

... Without transmitter

Approximate weight of the product: MTC6M-01-500-150-00 ... 1,0 kg

Length Tolerances (Table 6M.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 6M.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Protection tube (measuring part)	< 1700 °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

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

Head types

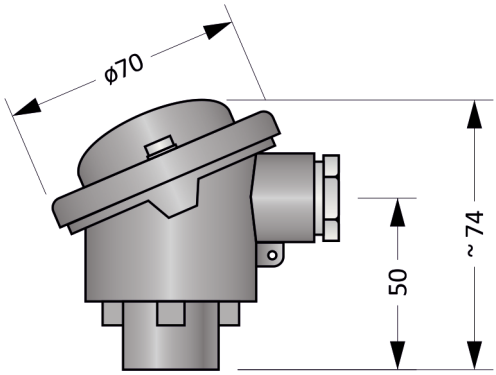


Figure 6M.3: Head B

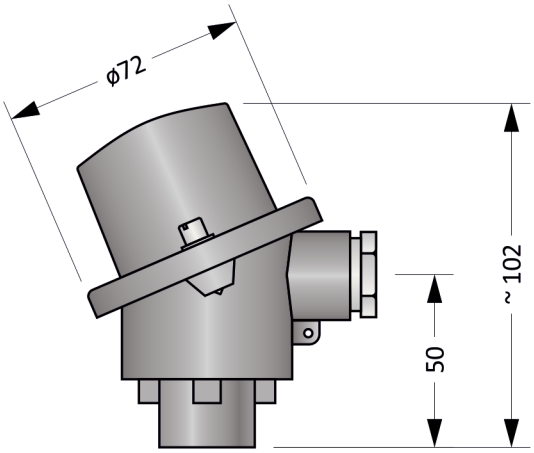


Figure 6M.4: Head BH

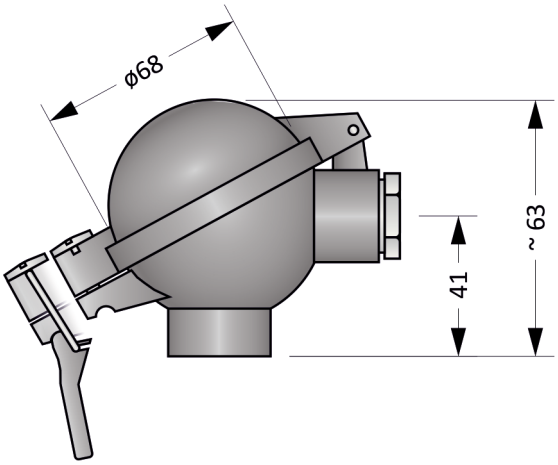


Figure 6M.5: Head BUZ

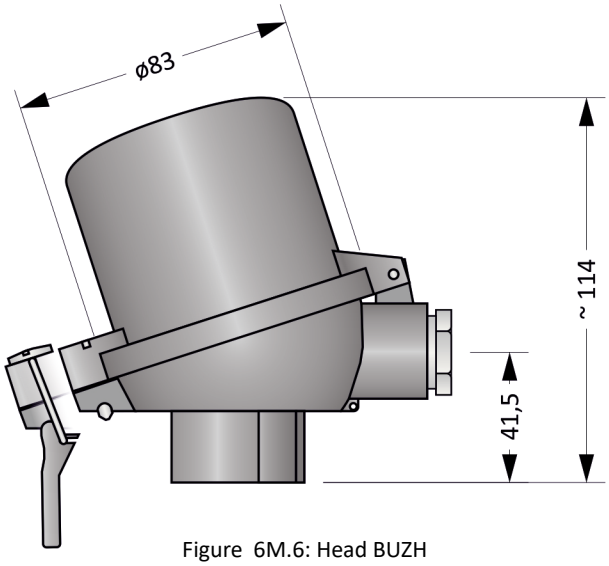


Figure 6M.6: Head BUZH

Head mounted transmitter (Table 6M.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 holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 6M.9.

Electrical connection of the sensor without transmitter is shown in the Figures 6M.7 a 6M.8. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

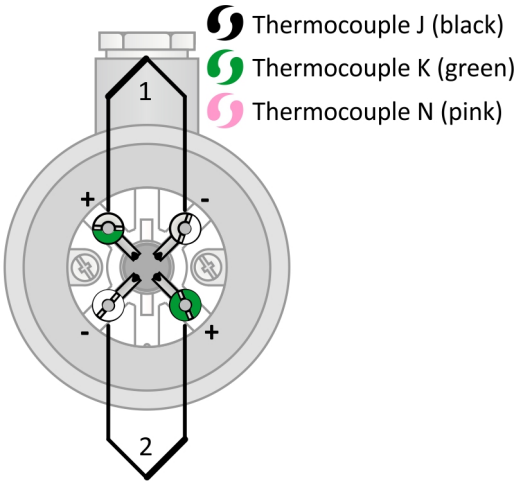


Figure 6M.7: Double thermocouple wiring diagram

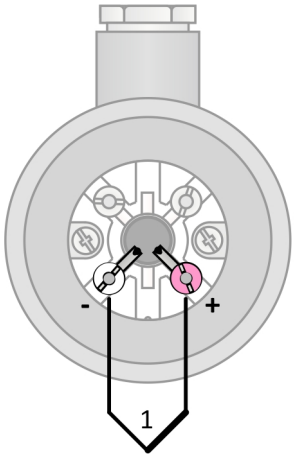


Figure 6M.8: Single thermocouple wiring diagram

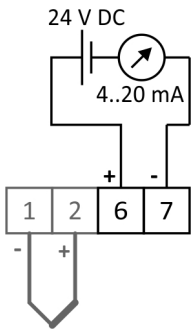


Figure 6M.9: Transmitter wiring diagram

MTC6MA

THERMOCOUPLE ASSEMBLIES WITH CERAMIC TUBE

Thermocouple assemblies of the MTC6MA series are designed for applications with operating temperatures up to 1600 °C and a requirement for a small outer diameter. They have a ceramic tube made of „Alsint“ material, which is gas-tight. However, their resistance to thermal shock is low.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, protection ceramic tube and a capillary in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 6MA.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious metal thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 40) mm
②	**Capillary tube**	
	Material	Ceramic C799 (Alsint)
	Diameter	4,5 mm
	Bore for thermocouple	4 x ø1,2 mm
③	**Protection tube**	
	Material	Ceramic C799 (Alsint)
	Outer / inner diameter	9 / 6 mm
④	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	14 / 10 mm
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

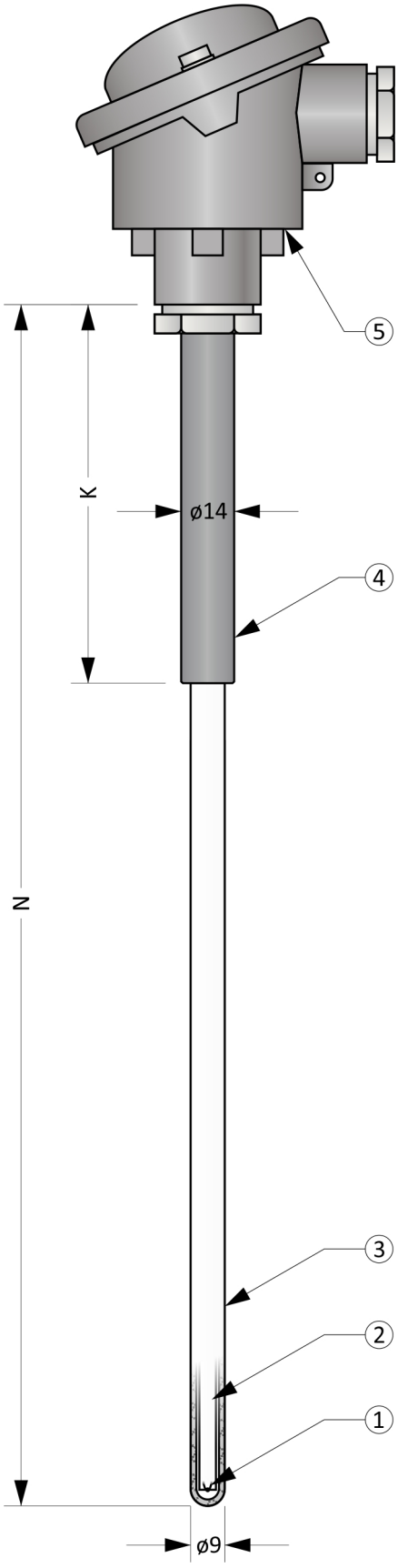


Figure 6MA.1: MTC6MA

Optional Parameters Including the Creation of an Order Code (Table 6MA.2)

Pos.	Code	MTC6MA - ❶ - ❷ - ❸❹
❶	**Nominal length N [mm]**	
	0	Selectable range from 100 mm to 1200 mm (in 10 mm increments)
❷	**Holding pipe length K [mm]**	
	0	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
❸	**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
❹	**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: MTC6MA-800-150-00
... Nominal length N = 800 mm
... Holding pipe length K = 150 mm
... Head B
... Without transmitter

Approximate weight of the product: MTC6MA-800-150-00 ... 1,0 kg

Recommended Maximum Temperatures of Sensor Parts (Table 6MA.3)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Protection tube (measuring part)	< 1600 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Length Tolerances (Table 6MA.4)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm
1000 < N mm	± 5 mm	± 2 mm

Head types

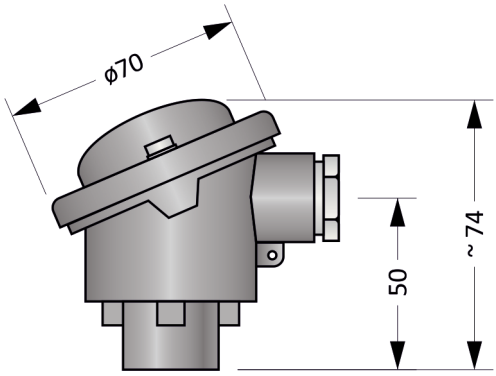


Figure 6MA.2: Head B

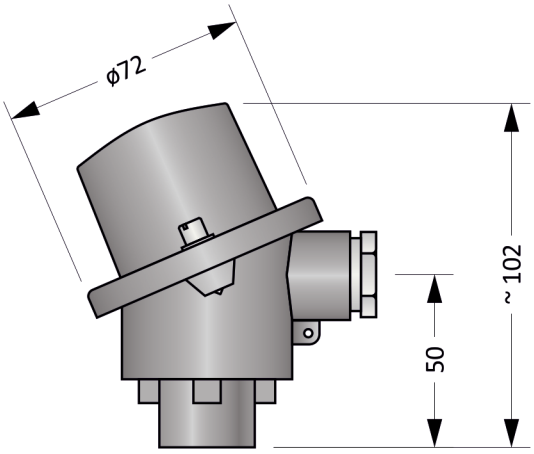


Figure 6MA.3: Head BH

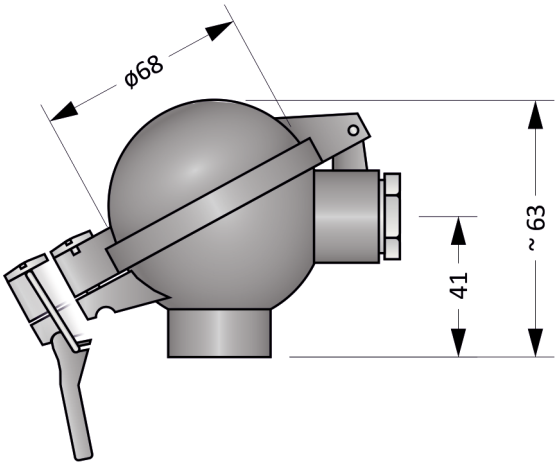


Figure 6MA.4: Head BUZ

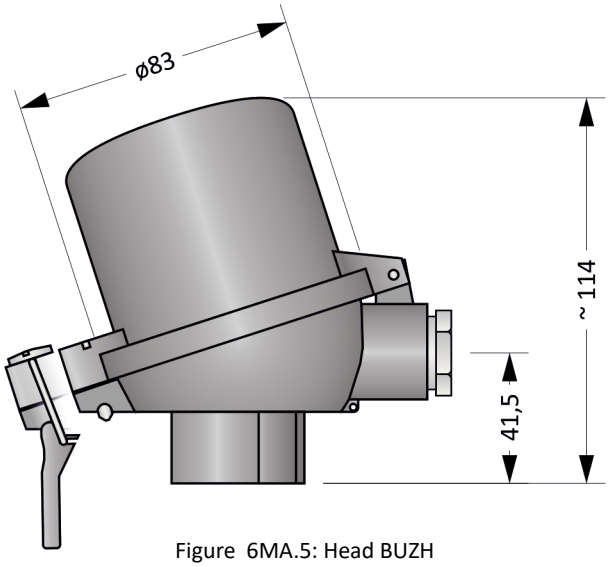


Figure 6MA.5: Head BUZH

Head mounted transmitter (Table 6MA.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

For mechanical installation, a holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 6MA.8.

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

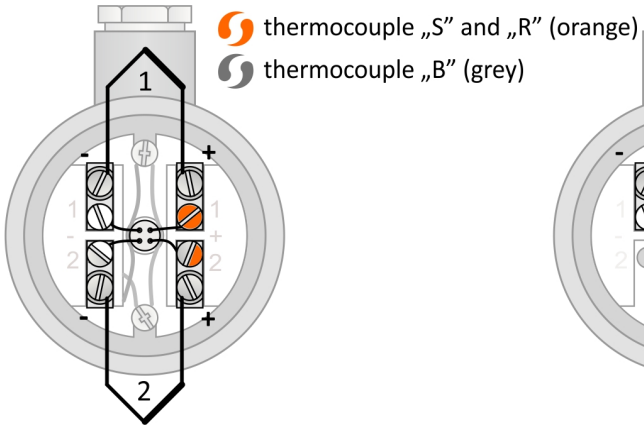


Figure 6MA.6: Double thermocouple wiring diagram

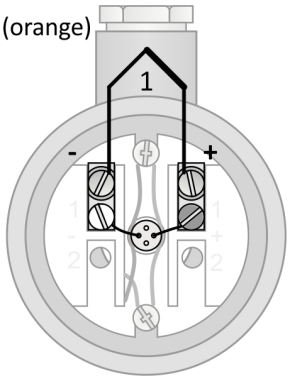


Figure 6MA.7: Single thermocouple wiring diagram

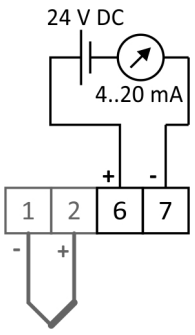


Figure 6MA.8: Transmitter wiring diagram

MTC6S

THERMOCOUPLE ASSEMBLIES WITH SAPPHIRE TUBE

Thermocouple assemblies of the MTC6S series are designed for applications with operating temperatures up to 1600°C in inert environments and up to 1350°C when immersed in glass melt. They have a protective sapphire tube which has excellent resistance to chemical aggressiveness of the environment, as well as excellent hot strength. The assemblies of this series cannot be subjected to thermal shocks.

The measuring element is a precious 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. Precious metal thermocouples are not included in the ordering code (ordered separately).

The assembly consists of head, holding pipe, protection sapphire tube and a capillary in which thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 6S.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious metal thermocouple (not included in the assembly)**	
	Thermocouple length	(N + 80) mm
②	**Capillary**	
	Material	Mono-crystalline sapphire
	Diameter	2,1 mm
	Bore for thermocouple	1 x ø1,3 mm
③	**Protection tube**	
	Material	Mono-crystalline sapphire
	Outer / inner diameter	8 / 4 mm
④	**Guiding tube**	
	Material	Ceramic C799
	Outer / inner diameter	15 / 10 mm
⑤	**Holding pipe**	
	Material	Stainless steel
	Outer / inner diameter	22 / 18 mm
⑥	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

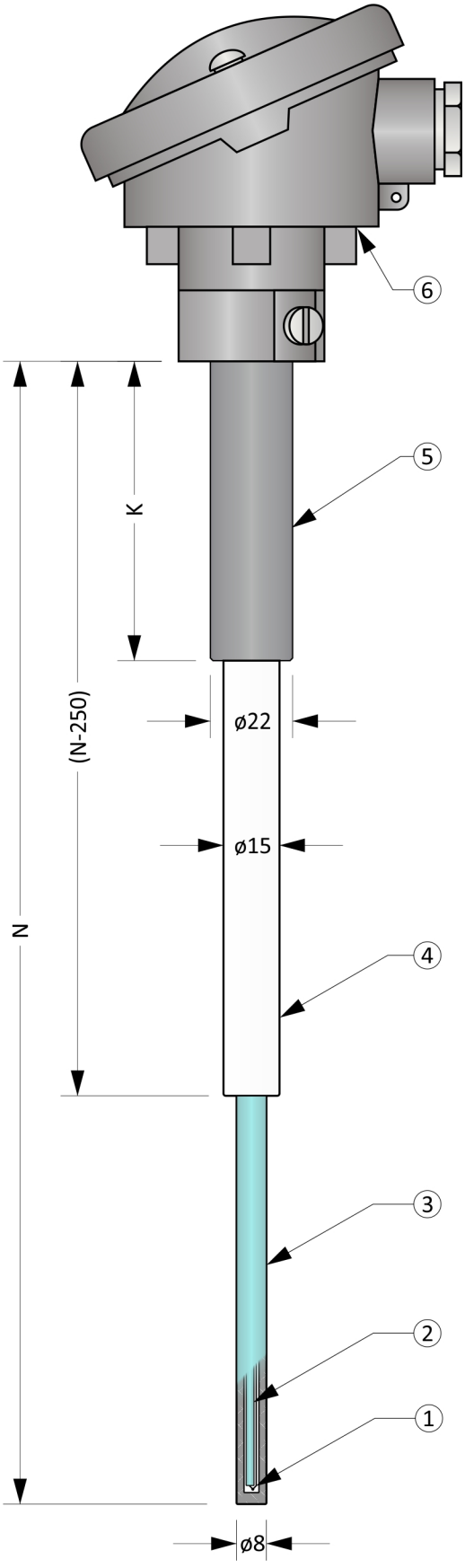


Figure 6S.1: MTC6S

Optional Parameters Including the Creation of an Order Code (Table 6S.2)

Pos.	Code	MTC6S - ❶ ❷ ❸ ❹
❶	**Nominal length N [mm]**	
	0	délka armatury N = 500 mm
	1	délka armatury N = 600 mm
	2	délka armatury N = 800 mm
	3	délka armatury N = 1000 mm
❷	**Holding pipe length K [mm]**	
	0	150 mm (doporučeno pro N = 500 mm a N = 600 mm)
	1	200 mm (doporučeno pro N = 800 mm a N = 1000 mm)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH head)**	
	0	Without transmitter
	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: MTC6S-0000
... Nominal length N = 500 mm
... Holding pipe length K = 150 mm
... Head B
... Without transmitter

Approximate weight of the product: MTC6S-0000 ... 1,1 kg

Length Tolerances (Table 6S.3)

Nominal length N	Length tolerance N	Length tolerance K
N ≤ 1000 mm	± 3 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 6S.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Guiding tube	< 1600 °C	-
Saphire tube (measuring part)	< 1900 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C

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

Head types

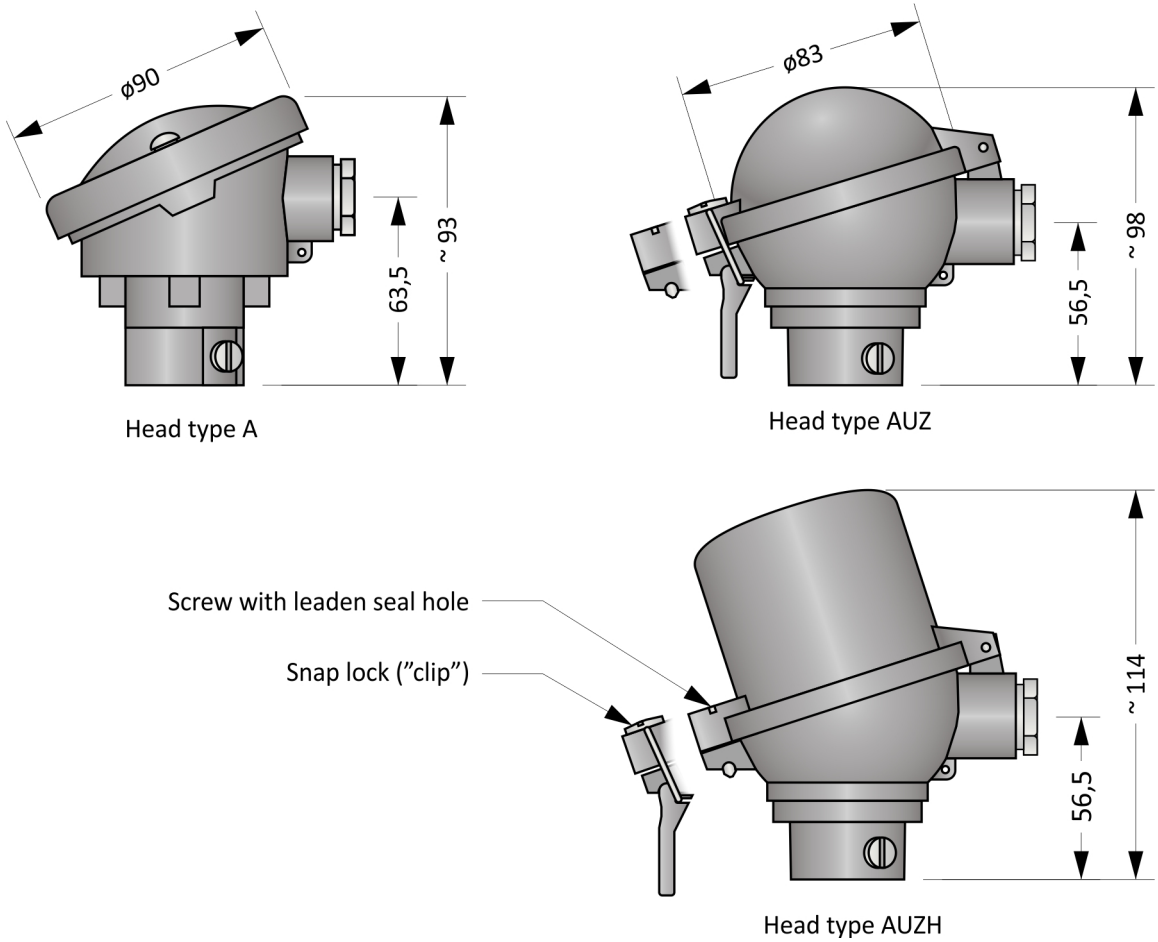


Figure 6S.2: Head types

Head mounted transmitter (Table 6S.5)

Typ	Input	Output	Setting	Notes
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 holding pipe 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 20 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 6S.4.

Electrical connection of the sensor without transmitter is shown in the Figures 6S.3. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

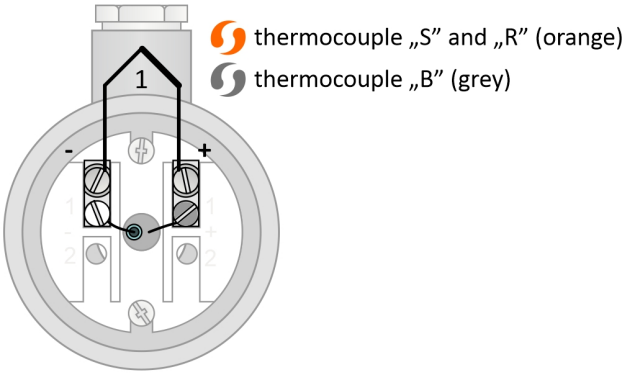


Figure 6S.3: Single thermocouple wiring diagram

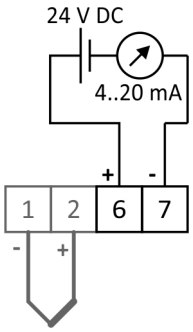


Figure 6S.4: Transmitter wiring diagram

MTC7

THERMOCOUPLE ASSEMBLIES WITH METAL TUBE

Thermocouple assemblies of the MTC7 series are designed for applications with operating temperatures up to 1100 °C and where high mechanical robustness is required.

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, protection metal tube and capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 7.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Stainless steel 1.4841
	Outer / inner diameter	21,3 / 17,3 mm
④	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

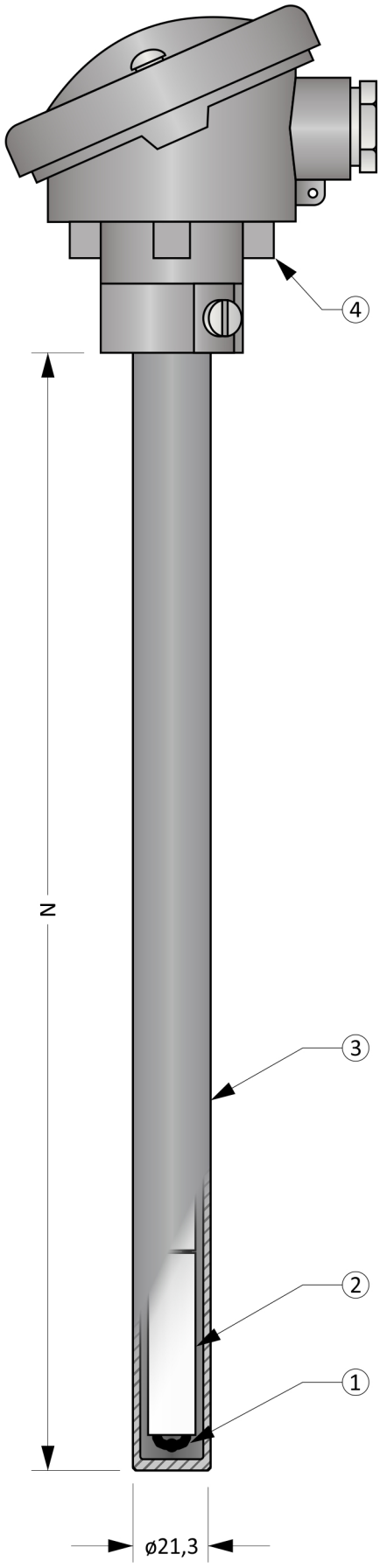


Figure 7.1: MTC7

Optional Parameters Including the Creation of an Order Code (Table 7.2)

Pos.	Code	MTC7 - ❶ - ❷ - ❸❹
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, wire diameter 3,0 mm
	1	1 x „K“, accuracy class 2, wire diameter 3,0 mm
	2	2 x „J“, accuracy class 2, wire diameter 3,0 mm
	3	2 x „K“, accuracy class 2, wire diameter 3,0 mm
	4	1 x „N“, accuracy class 2, wire diameter 3,0 mm
	5	2 x „N“, accuracy class 2, wire diameter 3,0 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 3000 mm (in 10 mm increments)
❸	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❹	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC7-1-800-00
... 1 x „K“, accuracy class 2, wire diameter 3,0 mm
... Nominal length N = 800 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC7-1-800-00 ... 1,5 kg

Length Tolerances (Table 7.3)

Nominal length N	Length tolerance N
N ≤ 1000 mm	± 2 mm
1000 < N mm	± 3 mm

Recommended Maximum Temperatures of Sensor Parts (Table 7.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Protection tube	< 1100 °C	-
„J“, wire diameter 3,0 mm	< 650 °C	< 760 °C
„K“, wire diameter 3,0 mm	< 1000 °C	< 1150 °C
„N“, wire diameter 3,0 mm	< 1100 °C	< 1260 °C

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

Head types

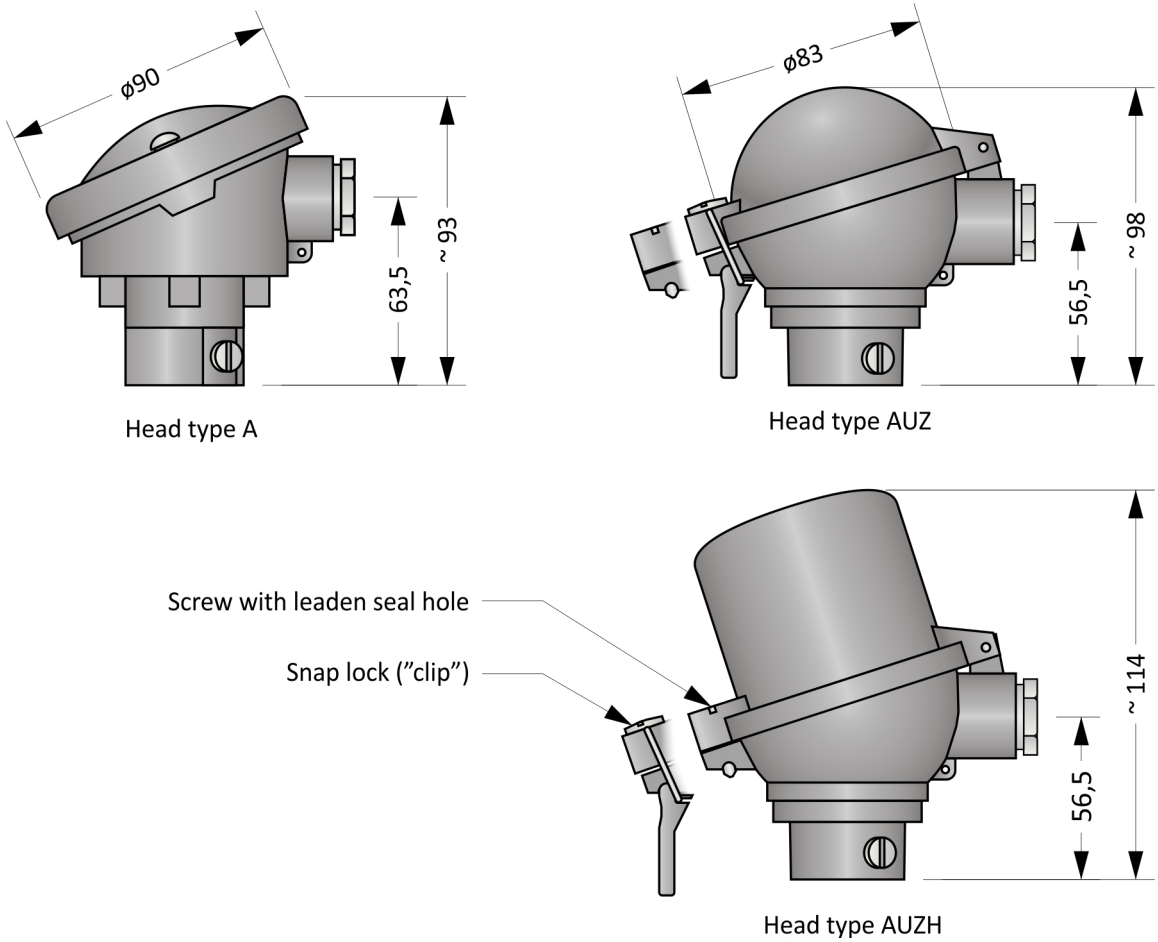


Figure 7.2: Head types

Head mounted transmitter (Table 7.5)

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 protection tube is used for mechanical mounting of the assembly. 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 7.5.

Electrical connection of the sensor without transmitter is shown in the Figures 7.3 and 7.4. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

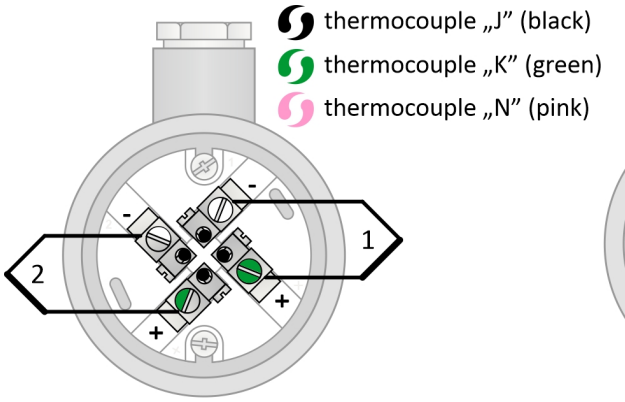


Figure 7.3: Double thermocouple wiring diagram

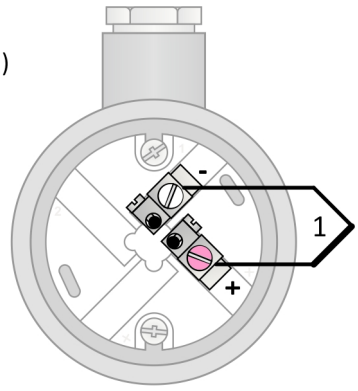


Figure 7.4: Single thermocouple wiring diagram

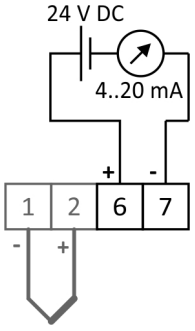


Figure 7.5: Transmitter wiring diagram

MTC7BM

THERMOCOUPLE ASSEMBLIES WITH METAL AND CERAMIC TUBE

Thermocouple assemblies of the MTC7BM series are designed for applications with operating temperatures up to 1250 °C and where high mechanical robustness is required. Thanks to the combination of metal and ceramic protective tubes, the assemblies show good shape stability even at higher temperatures.

The measuring element is a base metal or a precious 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, protection metal tube, inner ceramic tube and capillary/beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

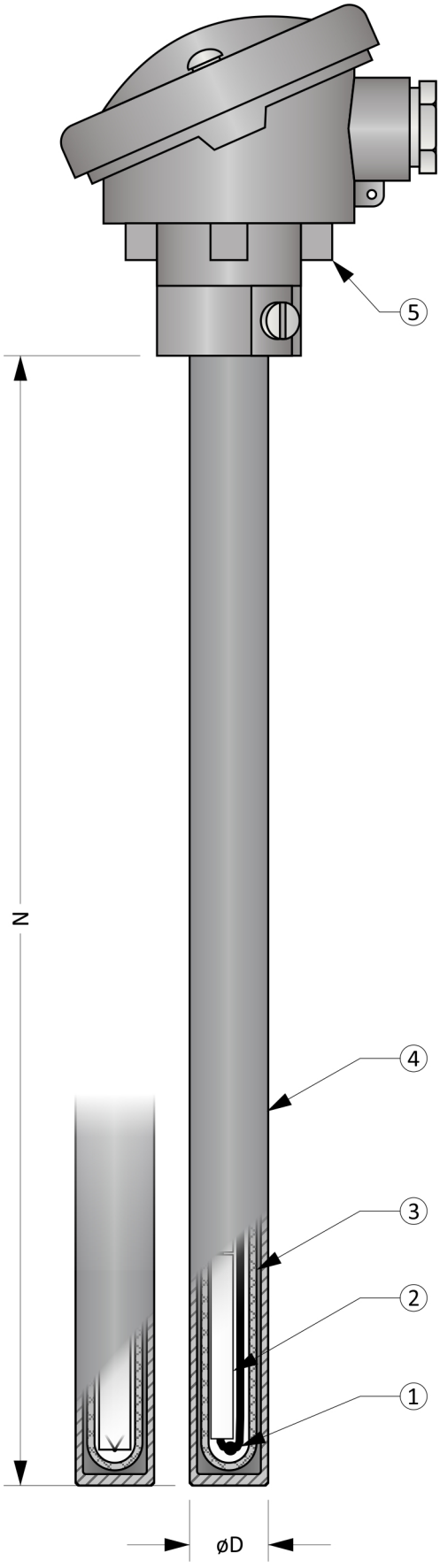


Figure 7BM.1: MTC7BM

General Information (Table 7BM.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
①	**Base metal or precious metal thermocouple**	
	Thermocouple length	(N + 70) mm
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Inner protection tube**	
	Material	Ceramic C610
	Outer / inner diameter	15 / 11 mm
④	**Outer protection tube**	
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

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

Pos.	Code	MTC7BM - ❶❷ - ❸ - ❹❺
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	Preparation for installation of precious metal thermocouple
	1	1 x „K“, accuracy class 2, wire diameter 3,0 mm
	2	1 x „K“, accuracy class 1, wire diameter 3,0 mm
	3	1 x „N“, accuracy class 2, wire diameter 3,0 mm
	4	1 x „N“, accuracy class 1, wire diameter 3,0 mm
❷	**Material and diameter of outer protection tube**	
	0	Material 1.4841 (stainless steel), outer / /inner dia. 21,3 / 17,3 mm
	1	Material 1.4767 (Kanthal AF), outer / /inner dia. 22 / 19,4 mm
	2	Material 2.4851 (INCONEL 601), outer / /inner dia. 22 / 18 mm
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 400 mm to 2000 mm (in 10 mm increments)
❹	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❺	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC7BM-10-800-00
... 1 x „K“, accuracy class 2, wire diameter 3,0 mm
... Material 1.4841 (stainless steel), outer / /inner dia. 21,3 / 17,3 mm
... Nominal length N = 800 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC7BM-10-800-00 ... 1,9 kg

Length Tolerances (Table 7BM.3)

Nominal length N	Length tolerance N
N ≤ 1000 mm	± 2 mm
1000 < N mm	± 3 mm

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

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Outer protection tube made of 1.4841	< 1100 °C	-
Outer protection tube made of 1.4767	< 1200 °C	-
Outer protection tube made of 2.4851	< 1250 °C	-
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„S“, wire diameter 0,35 mm	< 1300 °C	< 1400 °C
„B“, wire diameter 0,5 mm	< 1500 °C	< 1700 °C
„R“, wire diameter 0,5 mm	< 1400 °C	< 1600 °C
„K“, wire diameter 3,0 mm	< 1000 °C	< 1150 °C
„N“, wire diameter 3,0 mm	< 1100 °C	< 1260 °C

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

Head types

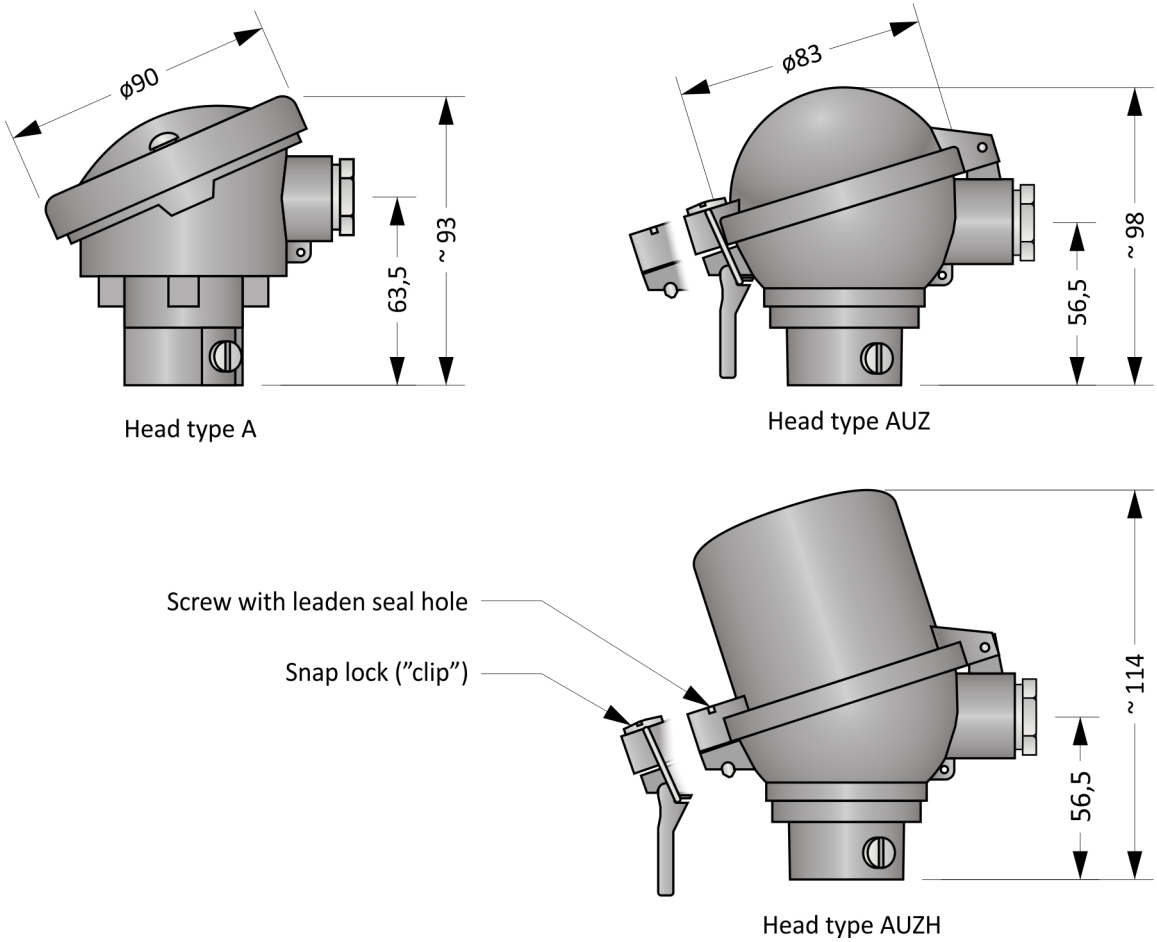


Figure 7BM.2: Head types

Head mounted transmitter (Table 7BM.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 sensor. 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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of sensor with the transmitter is shown in Figure 7BM.3.

Electrical connection of the sensor without transmitter is shown in the Figures 7BM.4, 7BM.5 a 7BM.6. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

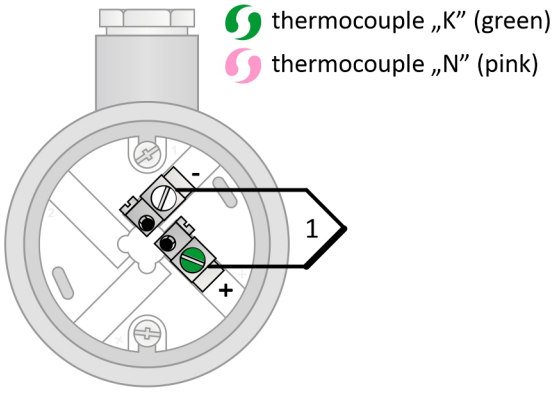


Figure 7BM.4: Single thermocouple wiring diagram

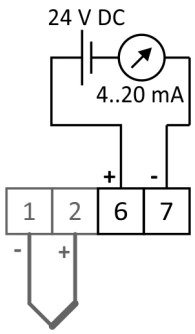


Figure 7BM.3: Transmitter wiring diagram

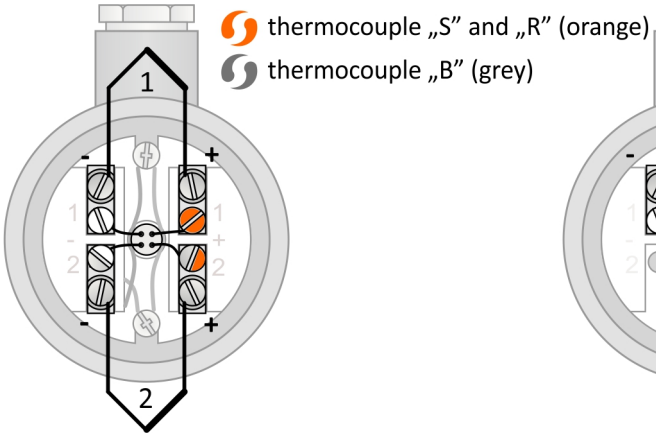


Figure 7BM.5: Double thermocouple wiring diagram

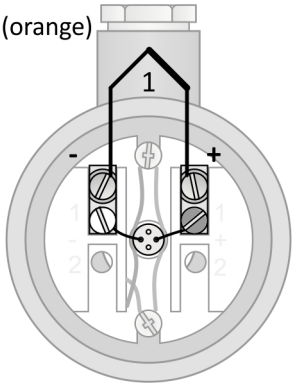


Figure 7BM.6: Single thermocouple wiring diagram

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MTC7V

TERMOCOUPLE ASSEMBLIES WITH 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 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.

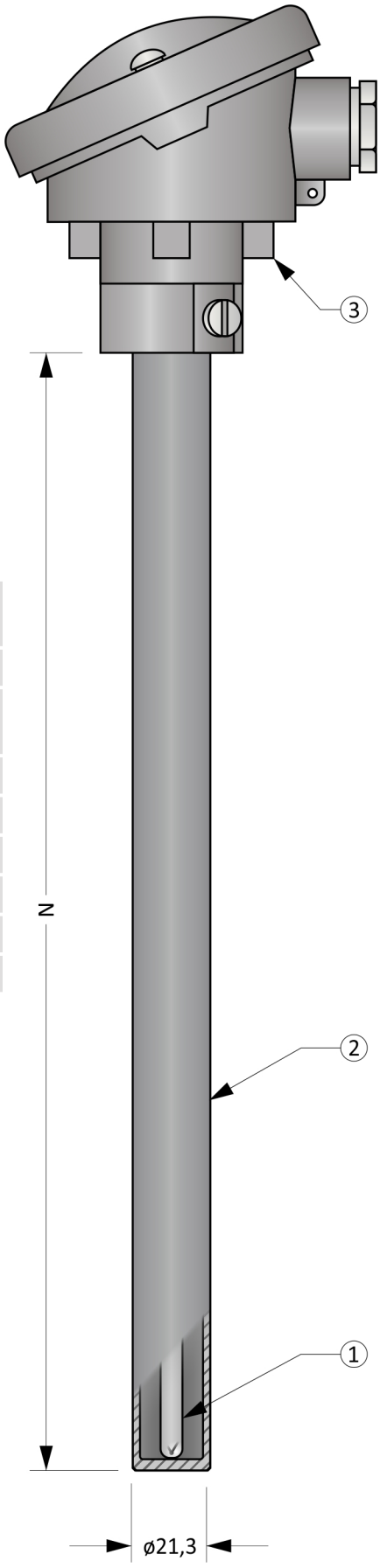

Figure 7V.1: MTC7V

General Information (Table 7V.1)

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

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

Pos.	Code	MTC7V - ❶❷ - ❸ - ❹❺
❶	**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
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	accuracy class 2
	1	accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 3000 mm (in 10 mm increments)
❹	**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
❺	**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: MTC7V-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: MTC7V-01-500-00 ... 1,5 kg

Length Tolerances (Table 7V.3)

Nominal length N	Length tolerance N
N ≤ 1000 mm	± 2 mm
1000 < N mm	± 3 mm

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

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Protection tube	< 1100 °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

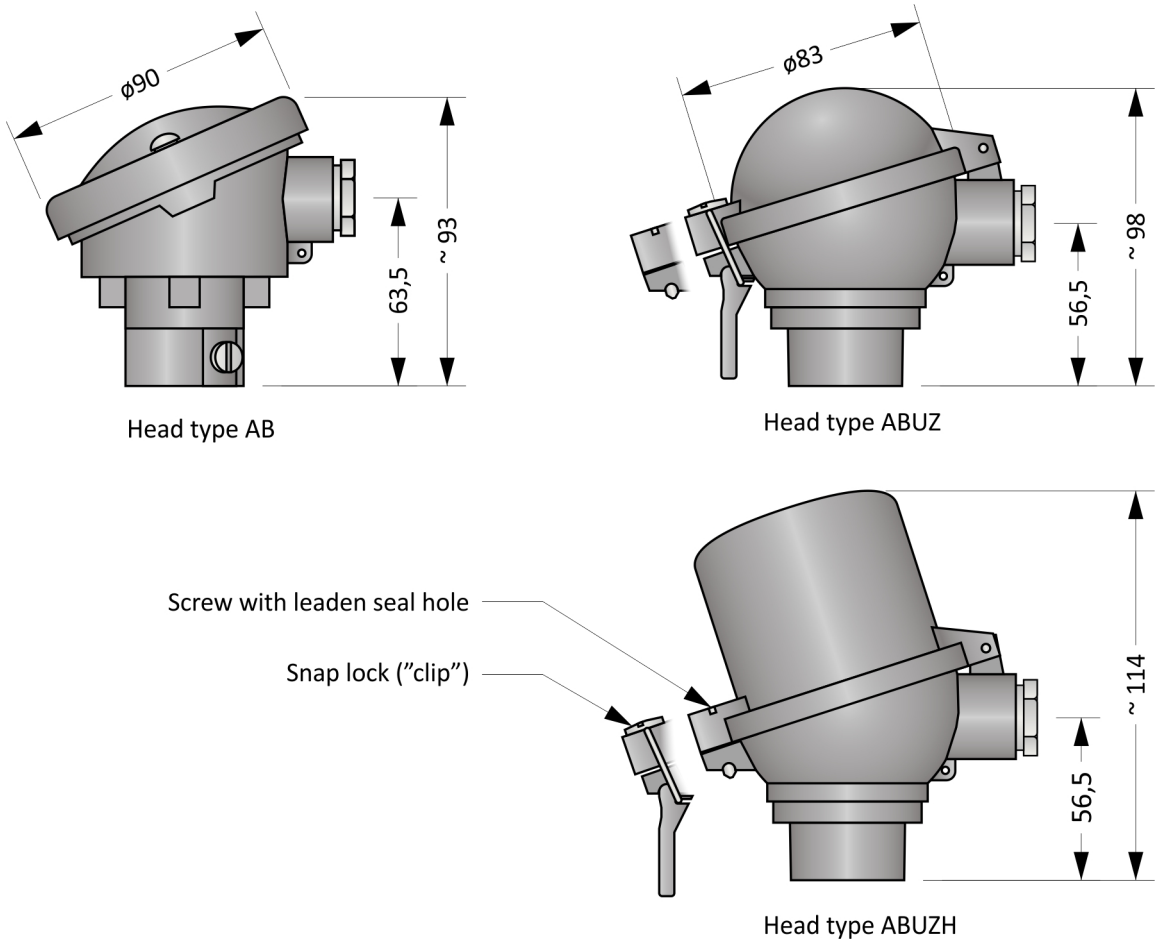

Figure 7V.2: Head types

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

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 with the head in the upper position.

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

Electrical connection of the sensor without transmitter is shown in the Figures 7V.3 and 7V.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.

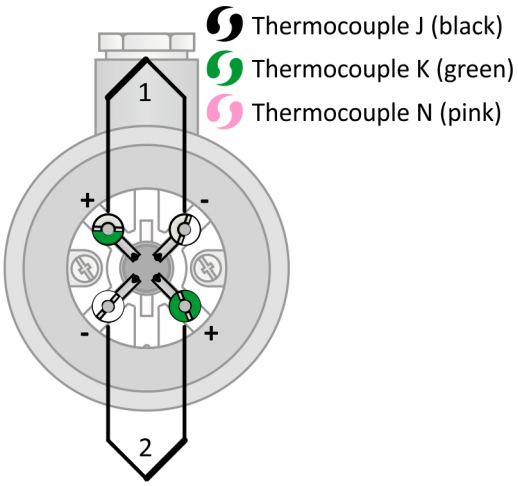

Figure 7V.3: Double thermocouple wiring diagram

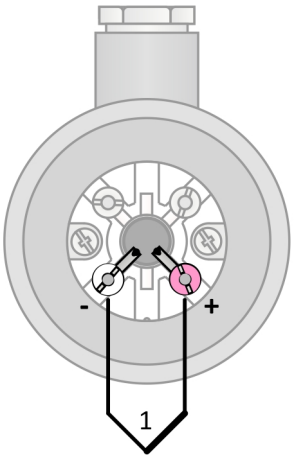

Figure 7V.4: Single thermocouple wiring diagram

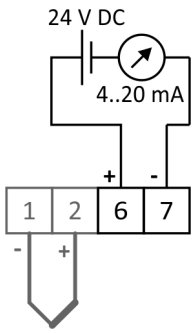

Figure 7V.5: Transmitter wiring diagram

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.

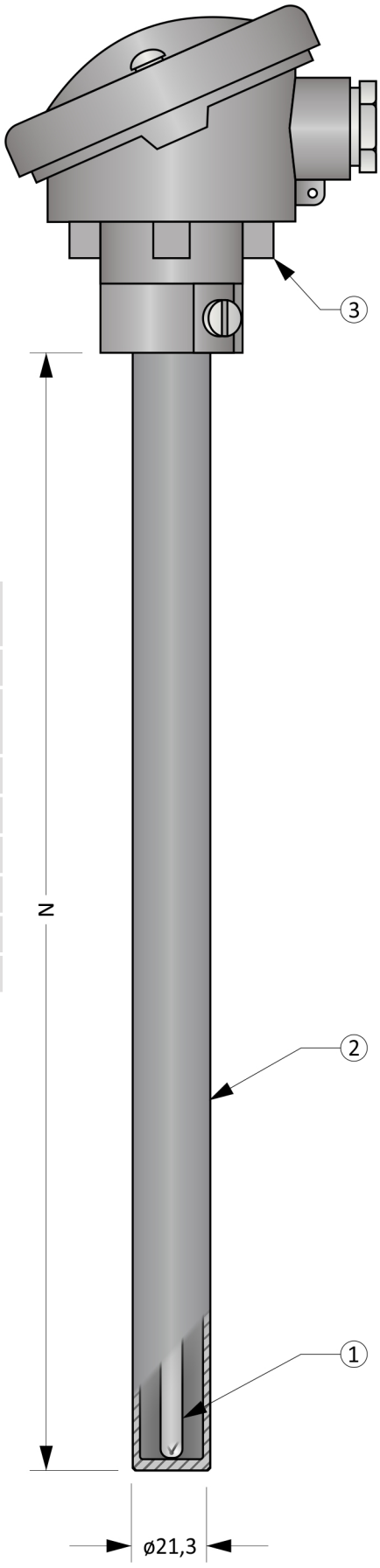

Figure 7TV.1: MTC7TV

General Information (Table 7TV.1)

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

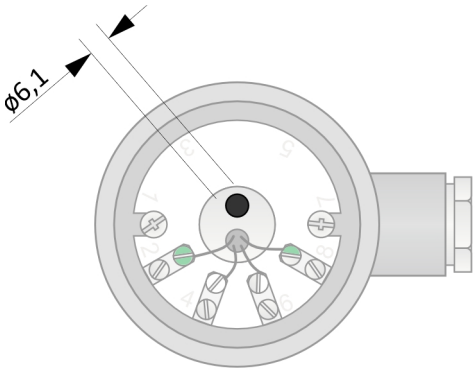

Figure 7TV.2: Terminal block with inspection hole

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

Pos.	Code	MTC7TV - ❶❷ - ❸ - ❹❺
❶	**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
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	accuracy class 2
	1	accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 3000 mm (in 10 mm increments)
❹	**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
❺	**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 ≤ 1000 mm	± 2 mm
1000 < N mm	± 3 mm

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

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Protection tube	< 1100 °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

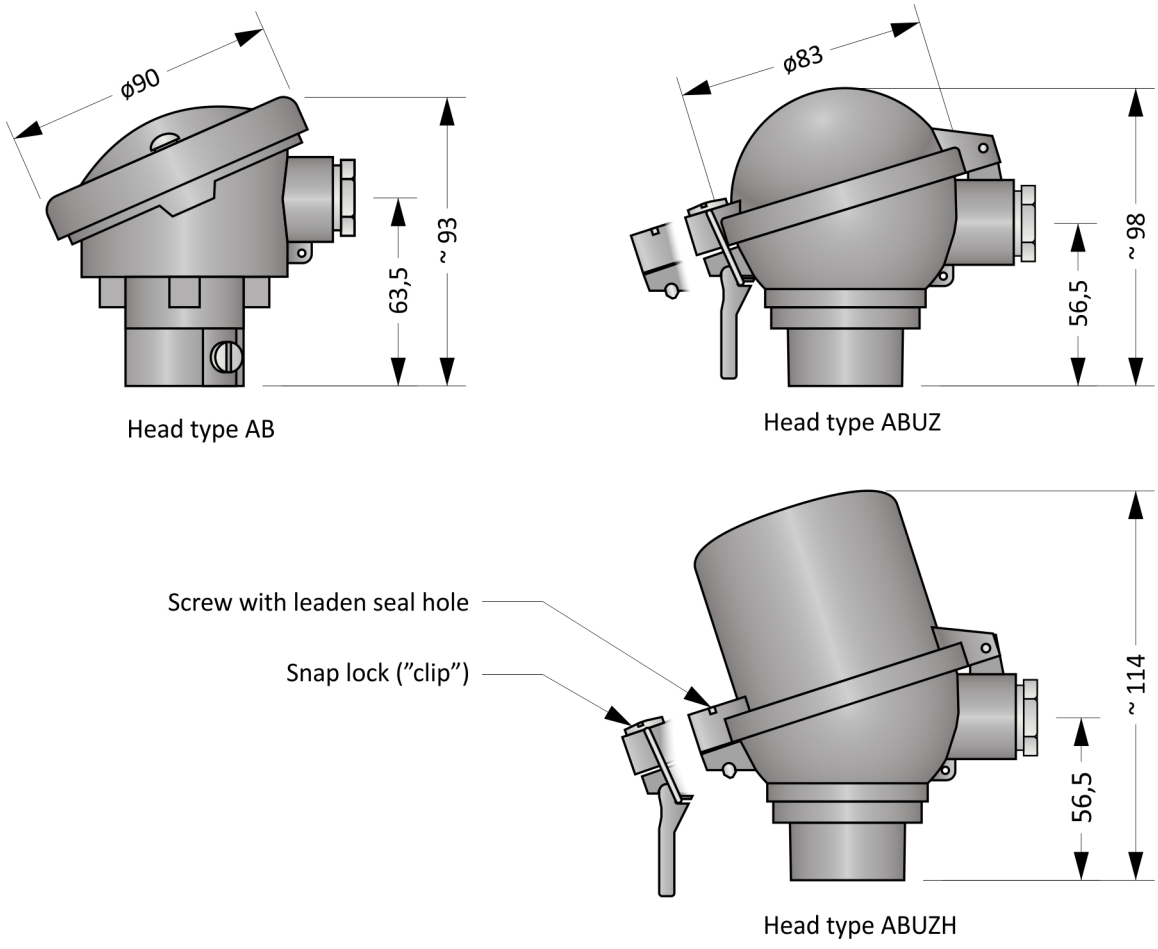

Figure 7TV.3: Head types

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.

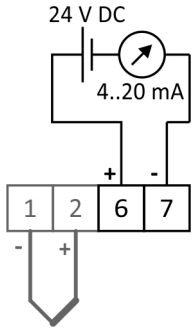

Figure 7TV.6: Transmitter wiring diagram

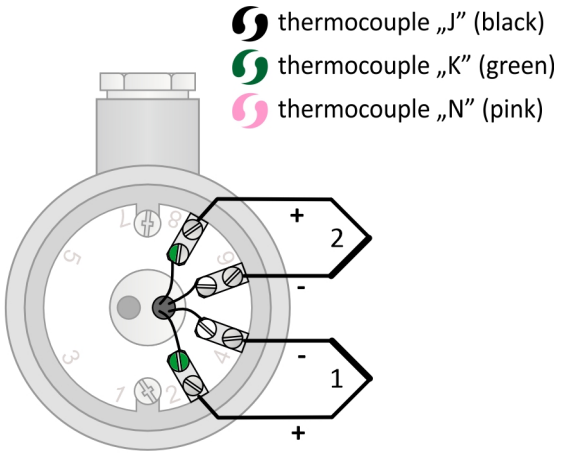

Figure 7TV.4: Double thermocouple wiring diagram

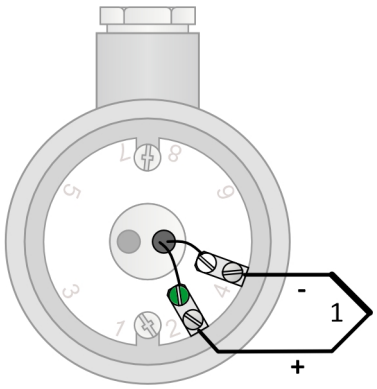

Figure 7TV.5: Single thermocouple wiring diagram

Figure 7TV.7: Measuring insert with reference probe

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MTC7C

THERMOCOUPLE ASSEMBLIES WITH CERAMIC SIC TUBE AND MEASURING INSERT

Thermocouple assembly of the MTC7C series are primarily designed to measure the temperature of non-ferrous metal melts. However, due to the thickness of the sump wall, they are not suitable for applications requiring a fast temperature response from the sensor.

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, clamping bell, inner and outer tube and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

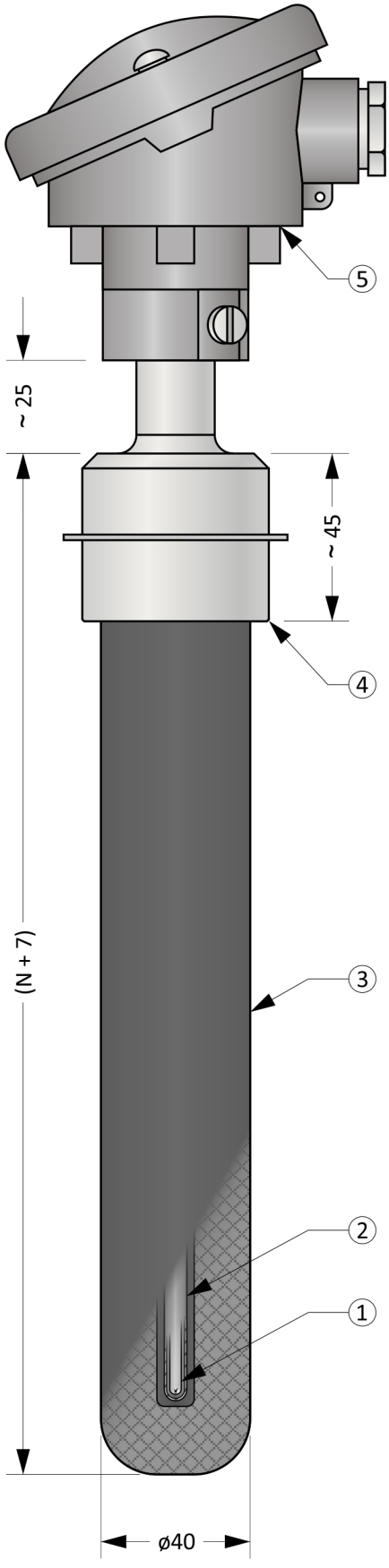

Figure 7C.1: MTC7C

General Information (Table 7C.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	3 mm
②	**Inner protection tube**	
	Material	Stainless steel 1.4541
	Outer / inner diameter	5 / 4 mm
③	**Outer protection tube**	
	Material	SiC ceramic
	Outer / inner diameter	40 / 10 mm
④	**Clamping bell**	
	Material	Nickel-plated structural steel
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

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

Pos.	Code	MTC7C - ❶❷ - ❸ - ❹❺❻
❶	**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
	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
	5	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	accuracy class 2
	1	accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 300 mm to 1000 mm (in 10 mm increments)
❹	**Inner protection tube**	
	0	Not used
	1	material 1 .4541, outer/inner diameter 5 / 4 mm
❺	**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
❻	**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: MTC7C-01-500-000

... 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
... Without inner protection tube
... Head AB
... Without transmitter

Approximate weight of the product: MTC7C-01-500-000 ... 2,0 kg

Length Tolerances (Table 7C.3)

Length tolerance N
± 3 mm

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

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Outer protection tube	< 1450 °C	-
Inner protection tube	< 800 °C	-
Clamping bell	< 500 °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

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

Head types

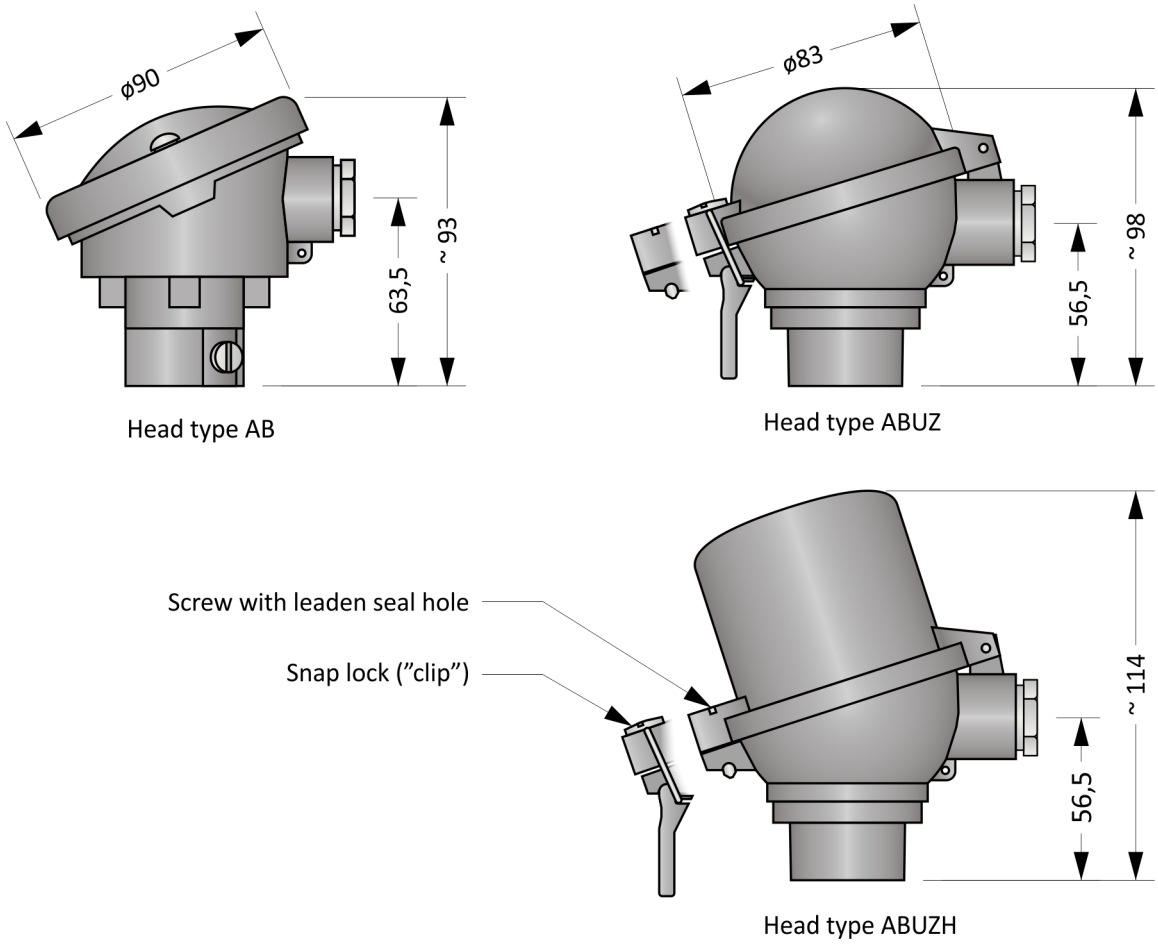

Figure 7C.2: Head types

Head mounted transmitter (Table 7C.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 with the head in the upper position.

The measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

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

Electrical connection of the sensor without transmitter is shown in the Figures 7C.3 and 7C.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.

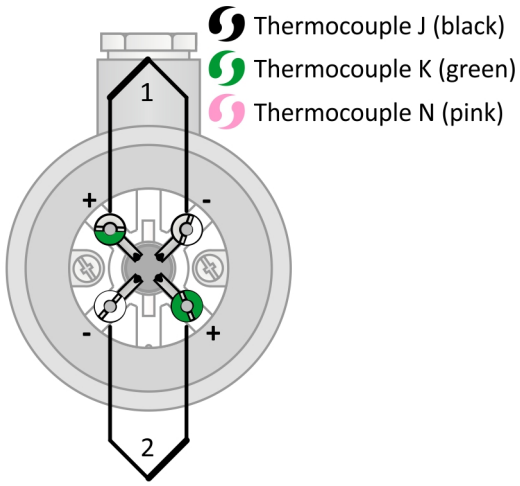

Figure 7C.3: Double thermocouple wiring diagram

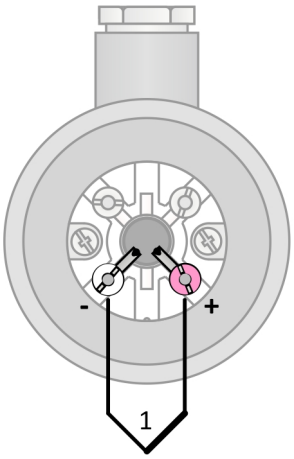

Figure 7C.4: Single thermocouple wiring diagram

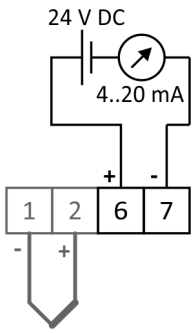

Figure 7C.5: Transmitter wiring diagram

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.

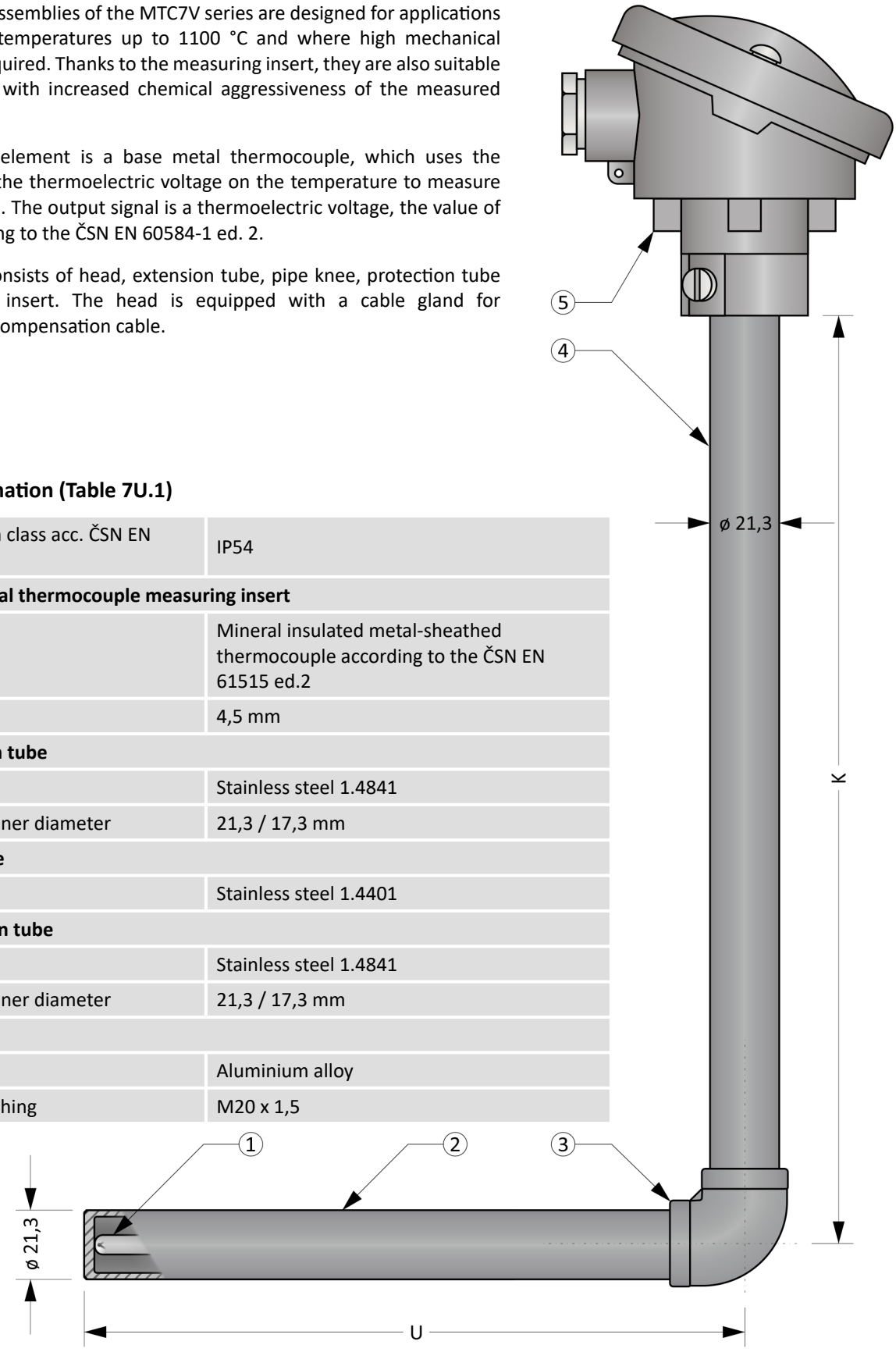

Figure 7U.1: MTC7U

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

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

Pos.	Code	MTC7U - ❶❷ - ❸ - ❹ - ❺❻
❶	**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
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	Accuracy class 2
	1	Accuracy class 1
❸	**Extension tube length K [mm]**	
	xxx	Selectable range from 200 mm to 1500 mm (in 10 mm increments)
❹	**Length U [mm]**	
	xxx	Selectable range from 200 mm to 1500 mm (in 10 mm increments)
❺	**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
❻	**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 ≤ 1000 mm	± 2 mm
1000 < U, K mm	± 3 mm

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

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Protection tube, extension tube	< 1100 °C	-
Knee pipe	< 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

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

Head types

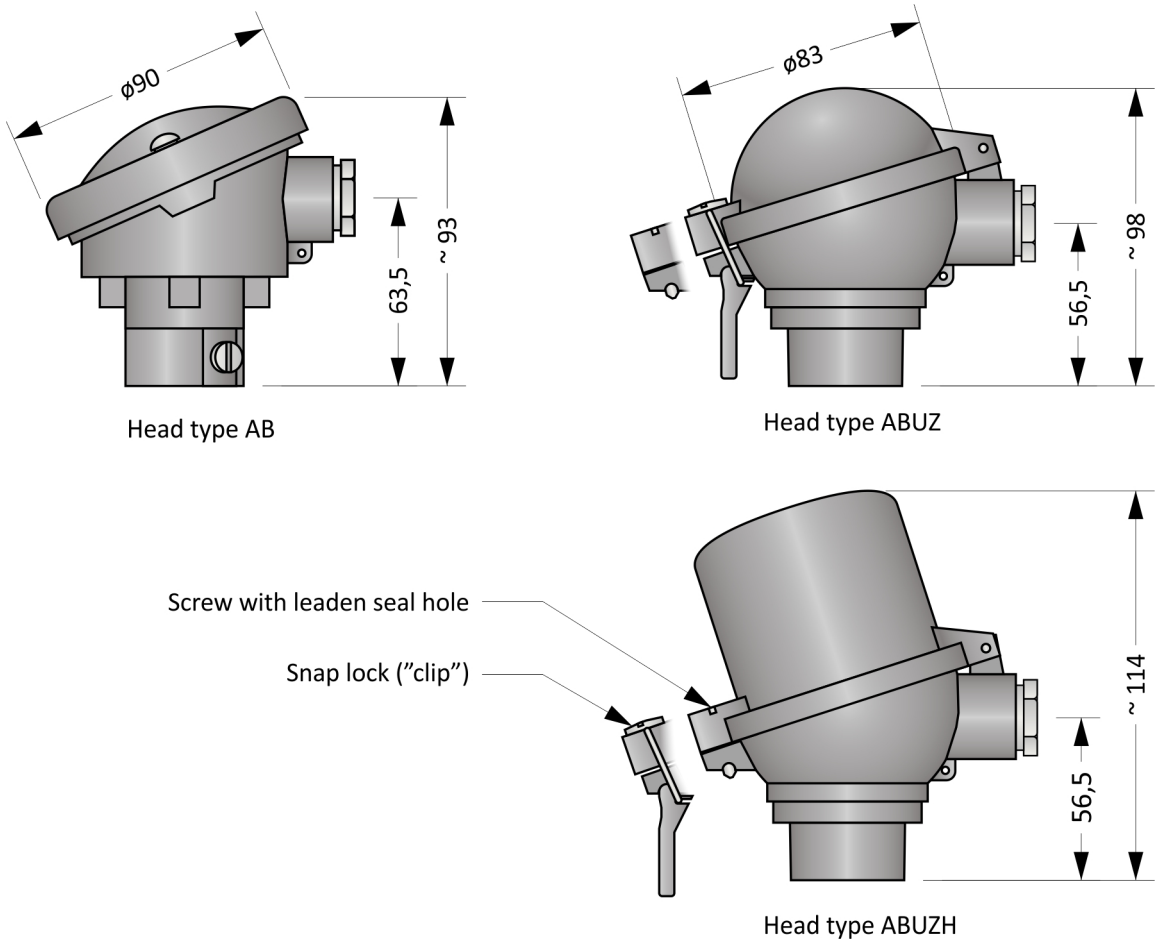

Figure 7U.2: Head types

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.

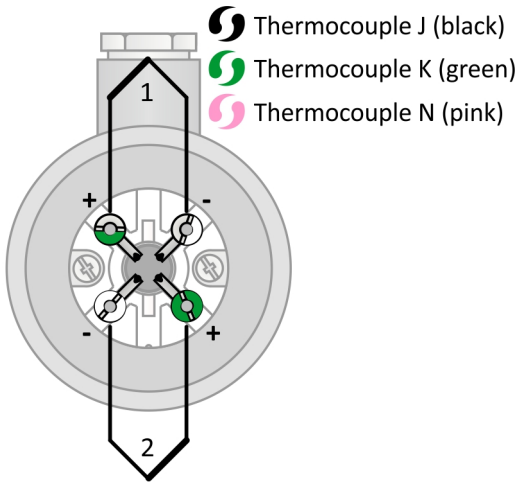

Figure 7U.3: Double thermocouple wiring diagram

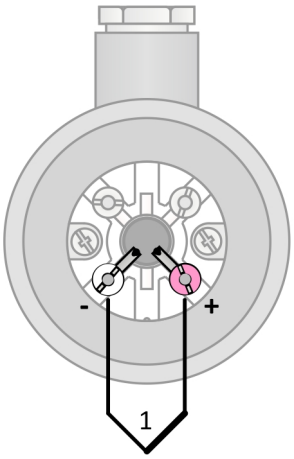

Figure 7U.4: Single thermocouple wiring diagram

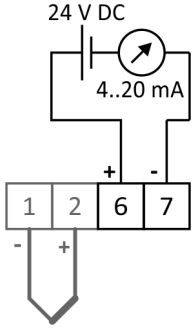

Figure 7U.5: Transmitter wiring diagram

MTC7UC

THERMOCOUPLE ASSEMBLIES WITH ANGLED SIC TUBE AND MEASURING INSERT

Thermocouple assembly of the MTC7UC series are primarily designed to measure the temperature of non-ferrous metal melts. However, due to the thickness of the sump wall, they are not suitable for applications requiring a fast temperature response from the sensor.

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, clamping bell, extension tube, knee pipe, inner and outer tube and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 7UC.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part)
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	3,0 mm
②	**Inner protection tube**	
	Material	Stainless steel 1.4541
	Outer / inner diameter	5 / 4 mm
③	**Outer protection tube**	
	Material	SiC ceramic
	Outer / inner diameter	40 / 10 mm
④	**Clamping bell**	
	Material	Nickel-plated structural steel
⑤	**Knee pipe**	
	Material	Stainless steel 1.4401
⑥	**Extension tube**	
	Material	Stainless steel 1.4841
	Outer / inner diameter	21,3 / 17,3 mm
⑦	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

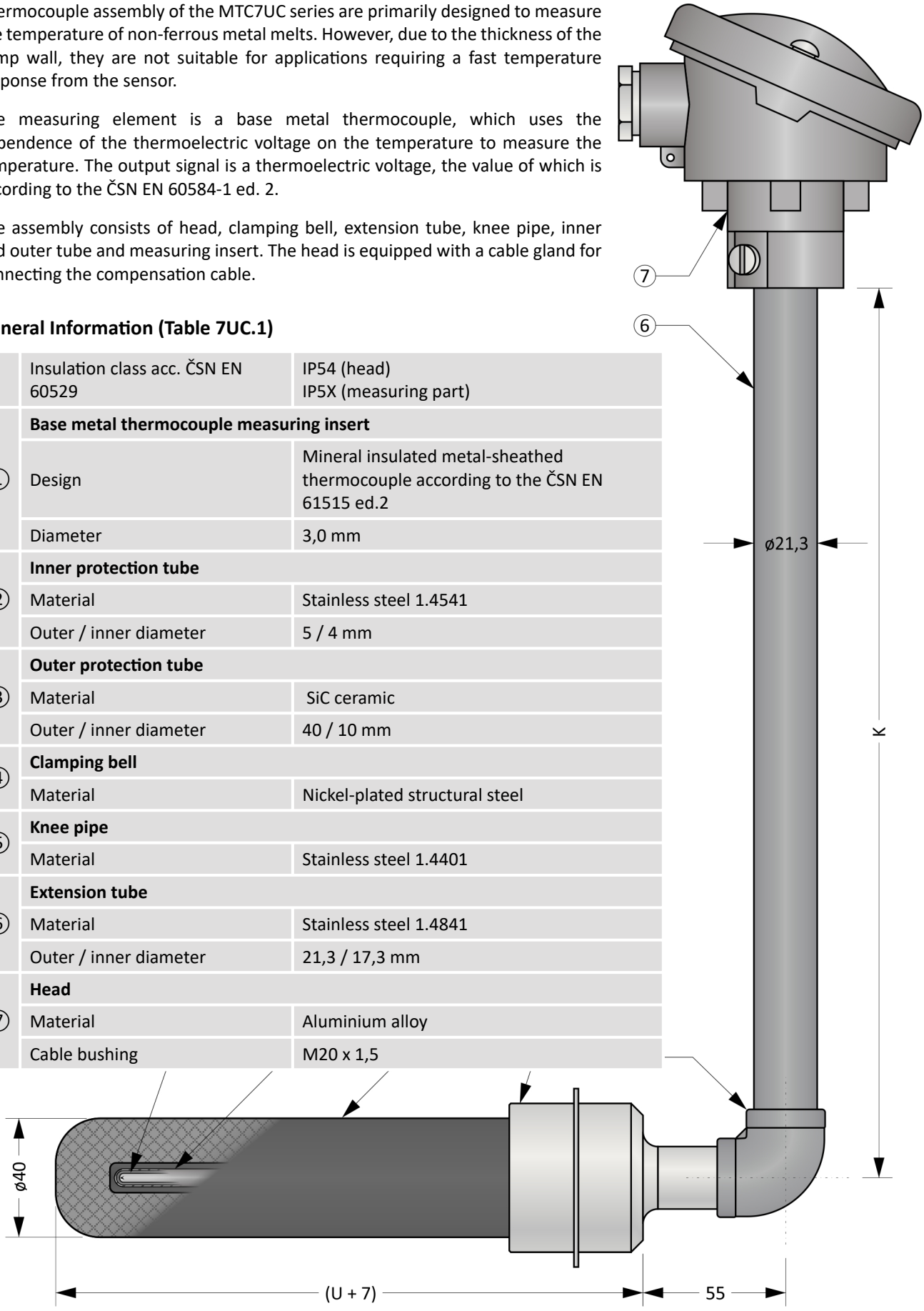

Figure 7UC.1: MTC7UC

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

Pos.	Code	MTC7UC - ❶❷ - ❸ - ❹ - ❺❻❼
❶	**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
	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
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	accuracy class 2
	1	accuracy class 1
❸	**Extension tube length K [mm]**	
	xxx	Selectable range from 200 mm to 1500 mm (in 10 mm increments)
❹	**Length U [mm]**	
	xxx	Selectable range from 300 mm to 1000 mm (in 10 mm increments)
❺	**Inner protection tube**	
	0	Not used
	1	material 1 .4541, outer/inner diameter 5 / 4 mm
❻	**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
❼	**Transmitter (only for 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: MTC7UC-01-500-500-100

... 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 K = 500 mm
... Inner protection tube
... Head AB
... Without transmitter

Approximate weight of the product: MTC7UC-01-500-500-100 ... 3,5 kg

Length Tolerances (Table 7UC.3)

Length U, K	Length K tolerance	Length U tolerance
U, K ≤ 1000 mm	± 2 mm	± 3 mm
1000 < K mm	± 3 mm	± 5 mm

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

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Protection tube	< 1450 °C	-
Clamping bell	< 500 °C	-
Knee pipe, extension tube, inner protection tube	< 800 °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

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

Head types

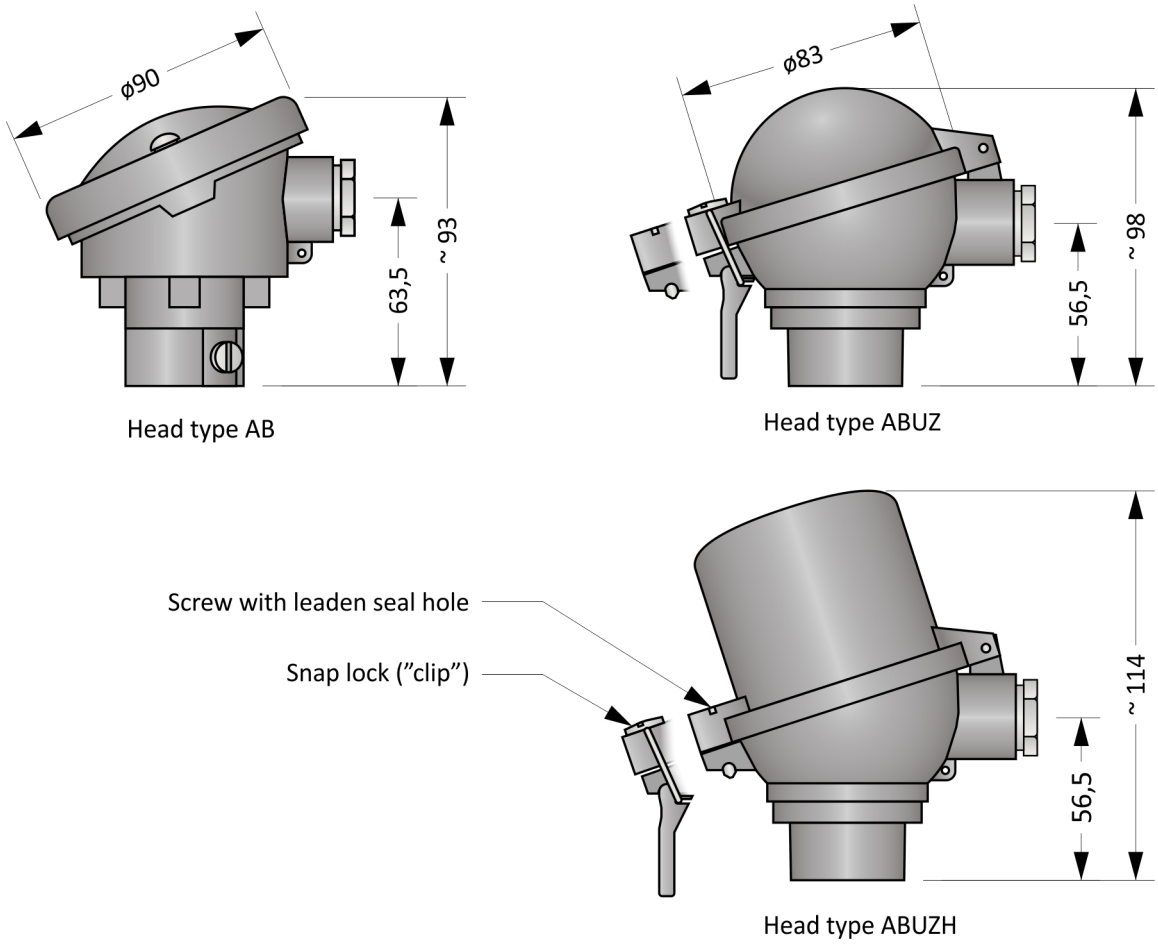

Figure 7UC.2: Head types

Head mounted transmitter (Table 7UC.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 or extension tube is used for mechanical installation of the assembly. Other parts cannot be used.

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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

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

Electrical connection of the sensor without transmitter is shown in the Figures 7UC.3 and 7UC.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.

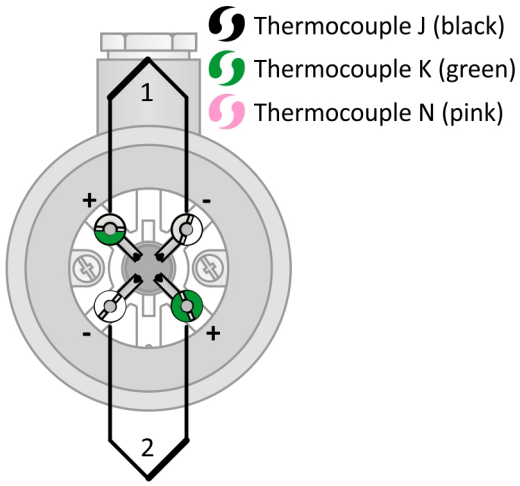

Figure 7UC.3: Double thermocouple wiring diagram

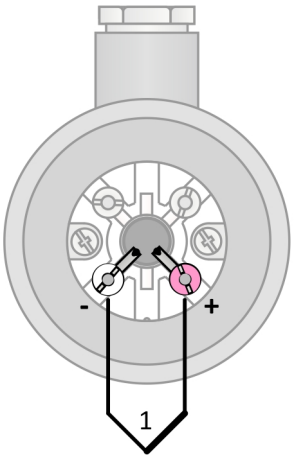

Figure 7UC.4: Single thermocouple wiring diagram

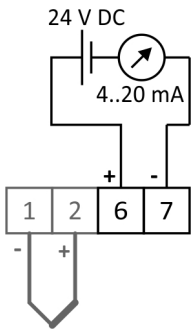

Figure 7UC.5: Transmitter wiring diagram

MTC8

THERMOCOUPLE ASSEMBLIES WITH METAL TUBE

Thermocouple assemblies of the MTC8 series are designed for applications with operating temperatures up to 1100 °C and where high mechanical robustness is required. Optional parameters include welded threaded fitting and tapered masuring tip for fast temperature response.

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, protection metal tube and capillary/ beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 8.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	16 bar
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Stainless steel 1.4841
	Outer / inner diameter	14 / 10 mm
④	**Threaded fitting**	
	Material	Stainless steel 1.4541
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5
⑥	**Tapered tip**	
	Material	Stainless steel 1.4841
	Diameter	9 mm

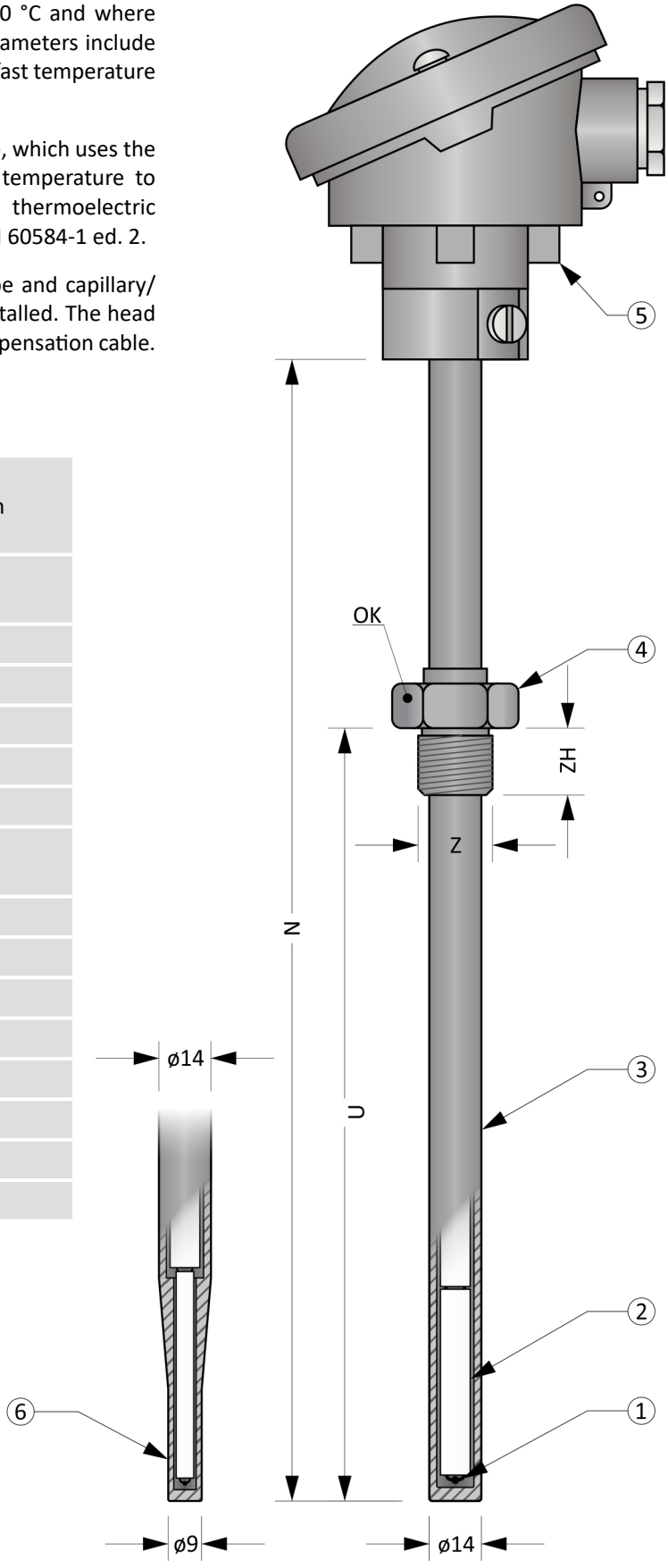

Figure 8.1: MTC8

Optional Parameters Including the Creation of an Order Code (Table 8.2)

Pos.	Code	MTC8 - ❶ - ❷ - ❸ - ❹❺❻❼
❶	**Thermocouple type (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, isolated, wire diameter 1,0 mm
	1	1 x „K“, accuracy class 2, isolated, wire diameter 1,38 mm (1,0 mm if tapered tip is used)
	2	2 x „J“, accuracy class 2, isolated, wire diameter 1,0 mm
	3	2 x „K“, accuracy class 2, isolated, wire diameter 1,38 mm (1,0 mm if tapered tip is used)
	4	1 x „N“, accuracy class 2, isolated, wire diameter 1,30 mm (not applicable if tapered tip is used)
	5	2 x „N“, accuracy class 2, isolated, wire diameter 1,30 mm (not applicable if tapered tip is used)
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 200 mm to 1500 mm (in 10 mm increments)
❸	**Immersion depth U [mm]**	
	0	Without threaded fitting
	xxx	Selectable range from 50 mm to (N-100) mm (in 10 mm increments)
❹	**Threaded fitting**	
	0	Not used
	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
❺	**Protection tube design**	
	0	Standard
	1	Tapered tip - reduced diameter form 14 to 9 mm
❻	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❼	**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: MTC8-1-800-500-0000

... 1 x „K“, accuracy class 2, wire diameter 1,38 mm
... Nominal length N = 800 mm
... Immersion depth U = 800 mm
... Without threaded fitting
... Standard
... Head A
... Without transmitter

Approximate weight of the product: MTC7-1-800-500-0000 ... 1,5 kg

Length Tolerances (Table 8.3)

Nominal length N	Length tolerance N	Length tolerance U
250 ≤ N ≤ 1000 mm	± 2 mm	± 2 mm
1000 < N mm	± 3 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 8.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Threaded fitting	< 800 °C	-
Protection tube	< 1100 °C	-
„J“, wire diameter 1,0 mm	< 400 °C	< 520 °C
„K“, wire diameter 1,0 mm	< 870 °C	< 980 °C
„K“, wire diameter 1,38 mm	< 900 °C	< 1020 °C
„N“, wire diameter 1,3 mm	< 950 °C	< 1090 °C

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

Head types

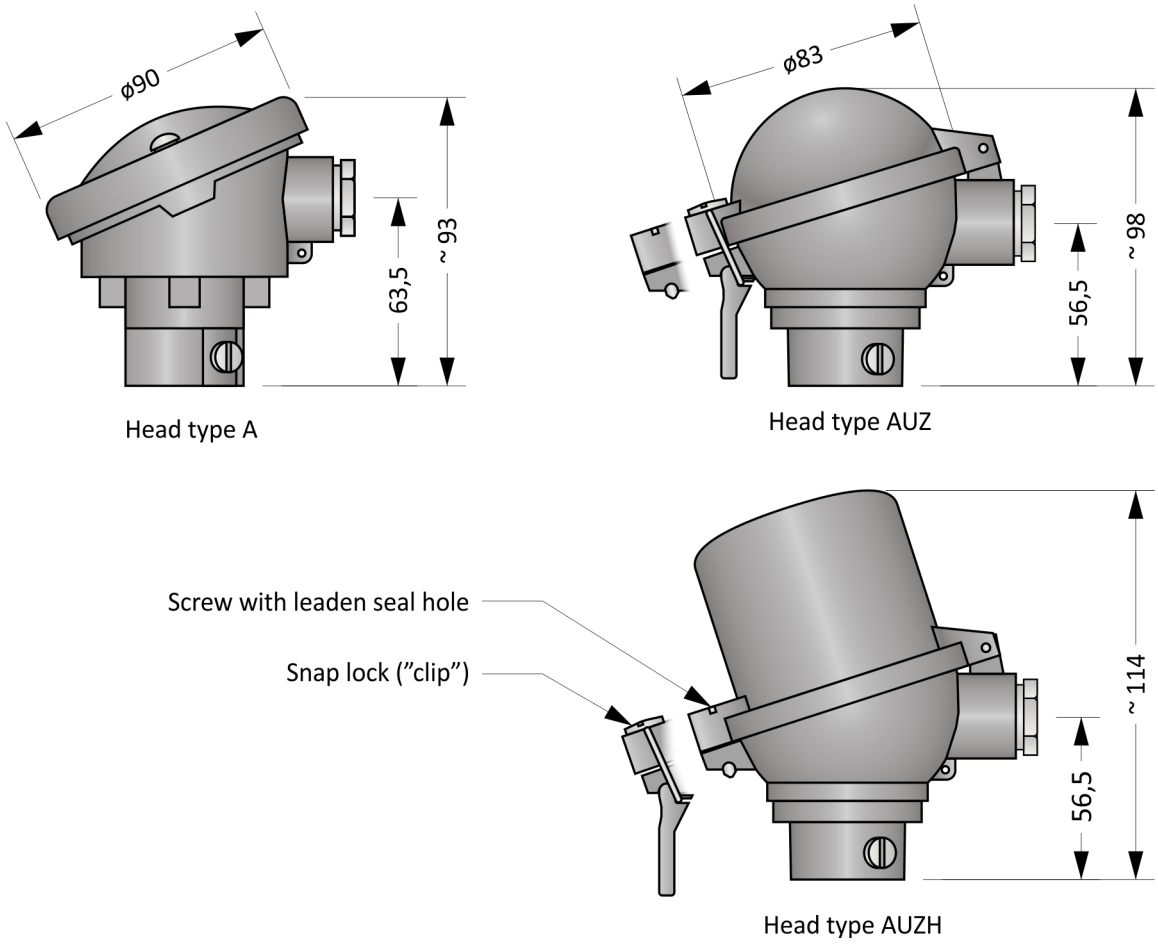

Figure 8.2: Head types

Head mounted transmitter (Table 8.5)

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

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 8.5.

Electrical connection of the sensor without transmitter is shown in the Figures 8.3 and 8.4. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

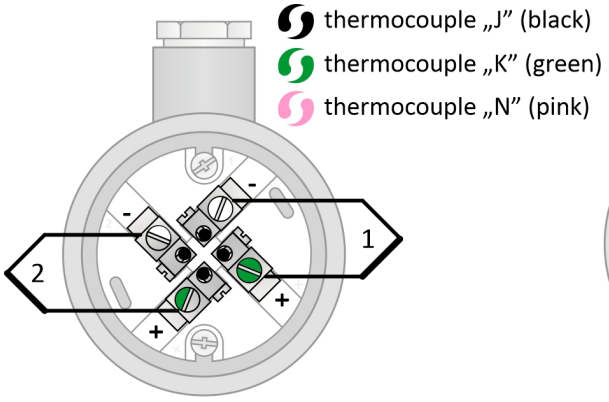

Figure 8.3: Double thermocouple wiring diagram

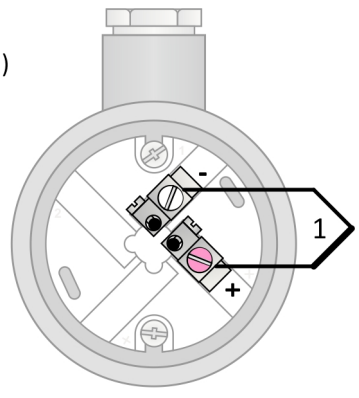

Figure 8.4: Single thermocouple wiring diagram

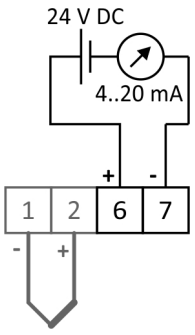

Figure 8.5: Transmitter wiring diagram

MTC8V

THERMOCOUPLE ASSEMBLIES WITH METAL TUBE AND MEASURING INSERT

Thermocouple assemblies of the MTC8V series are designed for applications with operating temperatures up to 1100 °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.

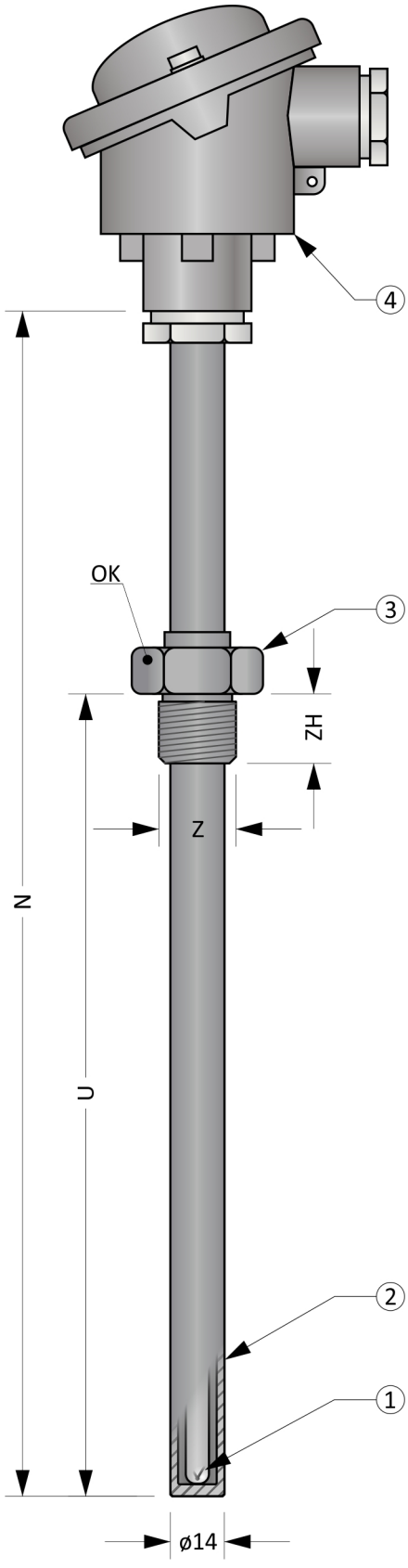

Figure 8V.1: MTC8V

General Information (Table 8V.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	16 bar
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
②	**Protection tube**	
	Material	1.4841
	Outer / inner diameter	14 / 10 mm
③	**Threaded fitting**	
	Material	Stainless steel 1.4541
④	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 8V.2)

Pos.	Code	MTC8V - ❶❷ - ❸ - ❹ - ❺❻❼
❶	**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
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	Accuracy class 2
	1	Accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❹	**Immersion depth U [mm]**	
	0	Without threaded fitting
	xxx	Selectable range from 50 mm to (N-100) mm (in 5 mm increments)
❺	**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
❻	**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
❼	**Transmitter (only for 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: MTC8V-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 fittingG½
... Head B
... Without transmitter

Approximate weight of the product: MTC8V-01-500-250-300 ... 1,5 kg

Length Tolerances (Table 8V.3)

Nominal length N	Length tolerance N	Length tolerance U
250 ≤ N ≤ 1000 mm	± 2 mm	± 2 mm
1000 < N mm	± 3 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 8VR.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Threaded fitting	< 800 °C	-
Protection tube	< 1100 °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

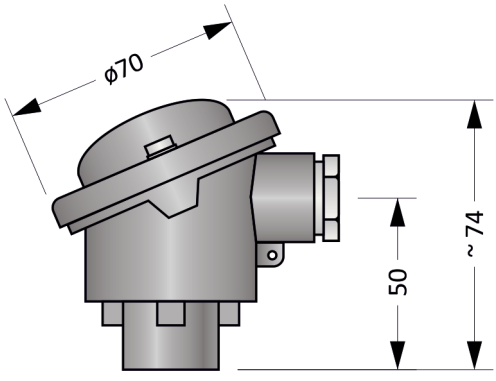

Figure 8V.2: Head B

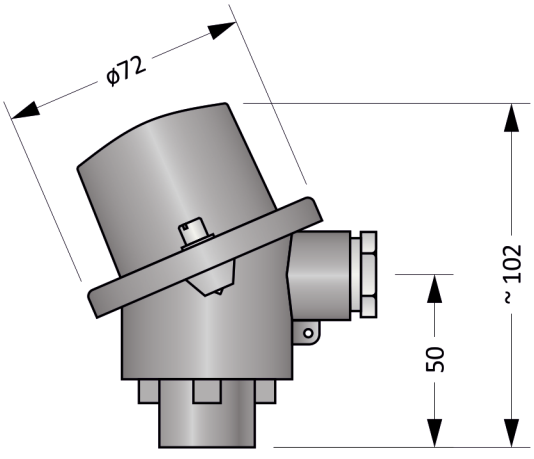

Figure 8V.3: Head BH

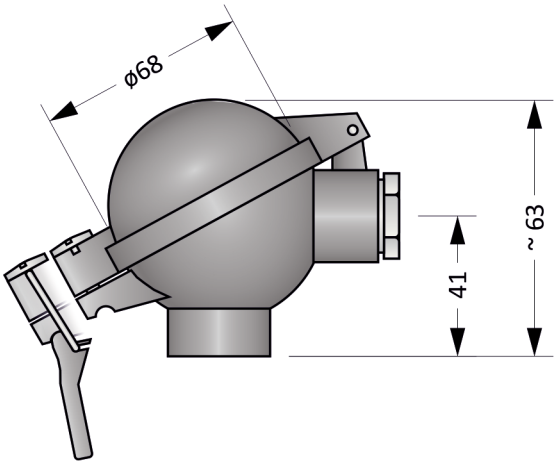

Figure 8V.4: Head BUZ

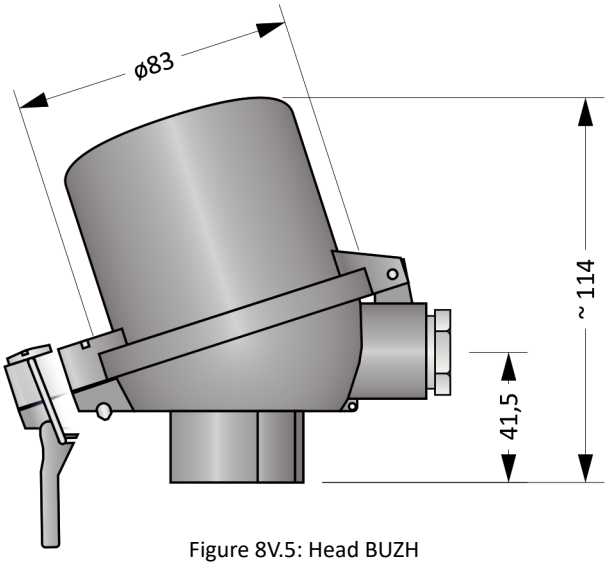

Figure 8V.5: Head BUZH

Head mounted transmitter (Table 8V.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 8V.8.

Electrical connection of the sensor without transmitter is shown in the Figures 8V.6 a 8V.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.

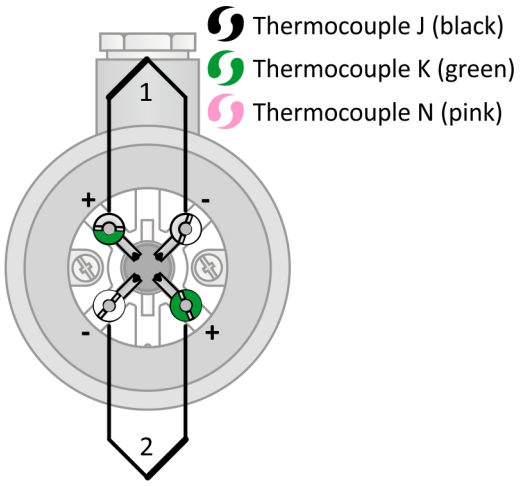

Figure 8V.7: Double thermocouple wiring diagram

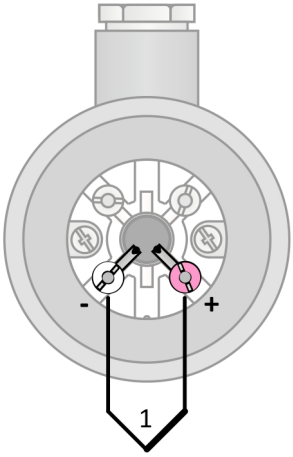

Figure 8V.8: Single thermocouple wiring diagram

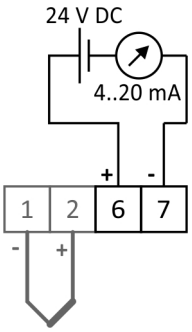

Figure 8V.9: Transmitter wiring diagram

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MTC8VR

THERMOCOUPLE ASSEMBLIES WITH TAPERED METAL TUBE AND MEASURING INSERT

Thermocouple assemblies of the MTC8V series are designed for applications with operating temperatures up to 1100 °C and where high mechanical robustness and fast temperature response is required. Optional parameters include welded threaded fitting.

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 with tapered tip and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

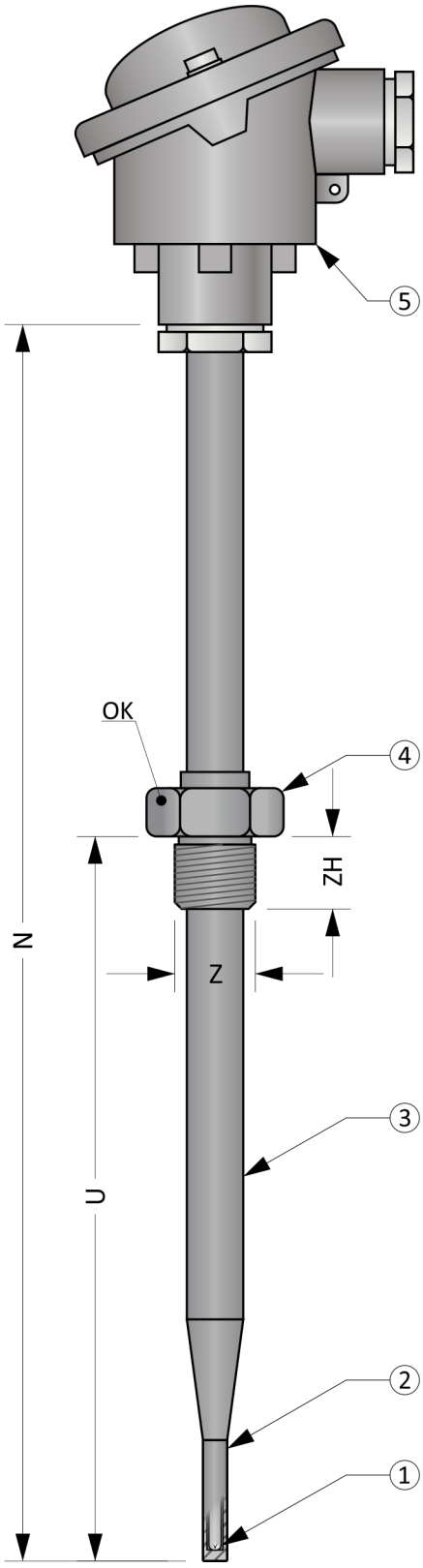

Figure 8VR.1: MTC8VR

General Information (Table 8VR.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	16 bar
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	3 mm
②	**Protection tube**	
	Material	1.4841
	Diameter	14 mm
③	**Tapered tip**	
	Material	Stainless steel 1.4841
	Diameter	6 mm
④	**Threaded fitting**	
	Material	Stainless steel 1.4541
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

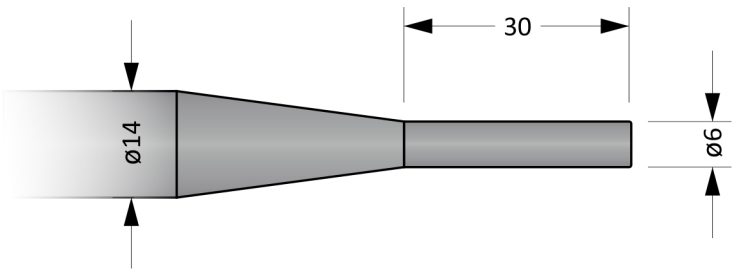

Figure 8VR.2: Detail of tapered tip

Optional Parameters Including the Creation of an Order Code (Table 8VR.2)

Pos.	Code	MTC8VR - ❶❷ - ❸ - ❹ - ❺❻❼
❶	**Type of measuring insert (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
	5	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	Accuracy class 2
	1	Accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❹	**Immersion depth U [mm]**	
	0	Without threaded fitting
	xxx	Selectable range from 50 mm to (N-100) mm (in 5 mm increments)
❺	**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
❻	**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
❼	**Transmitter (only for 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: MTC8VR-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 fittingG½“

... Head A

... Without transmitter

Approximate weight of the product: MTC8VR-01-500-250-300 ... 2,0 kg

Length Tolerances (Table 8VR.3)

Nominal length N	Length tolerance N	Length tolerance U
250 ≤ N ≤ 1000 mm	± 2 mm	± 2 mm
1000 < N mm	± 3 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 8VR.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Threaded fitting	< 800 °C	-
Protection tube	< 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

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

Head types

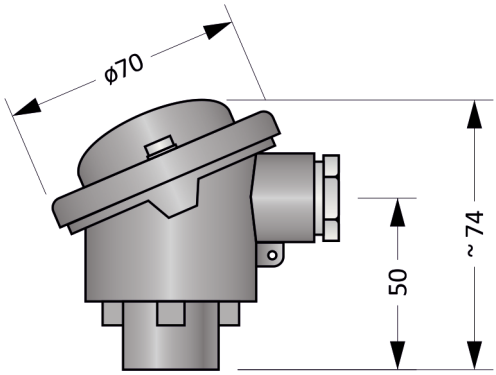

Figure 8VR.3: Head B

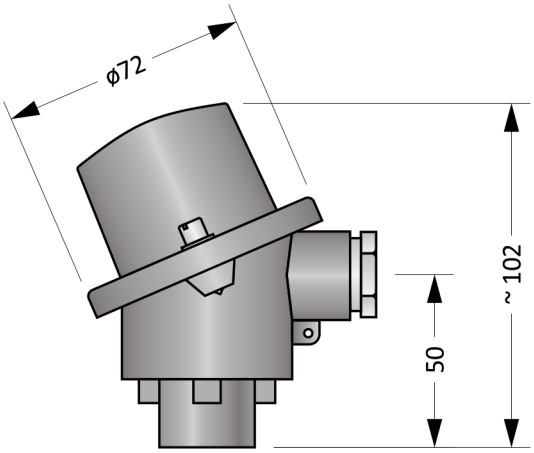

Figure 8VR.4: Head BH

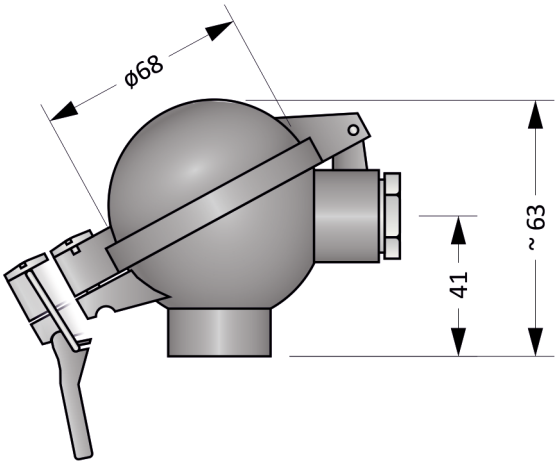

Figure 8VR.5: Head BUZ

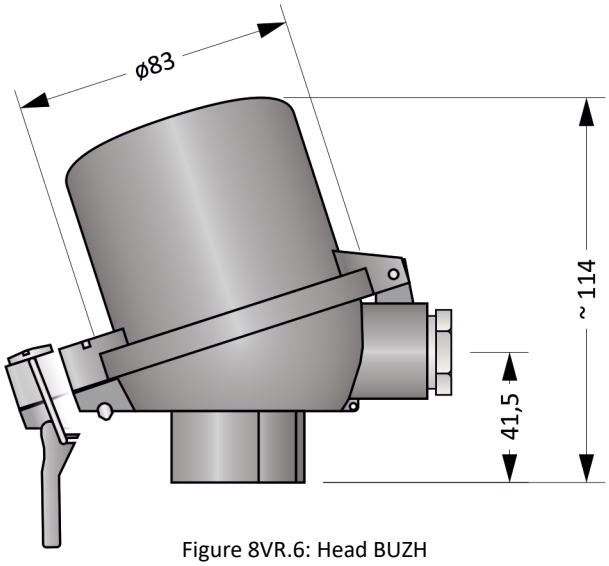

Figure 8VR.6: Head BUZH

Head mounted transmitter (Table 8VR.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 8VR.9.

Electrical connection of the sensor without transmitter is shown in the Figures 8VR.7 a 8VR.8. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

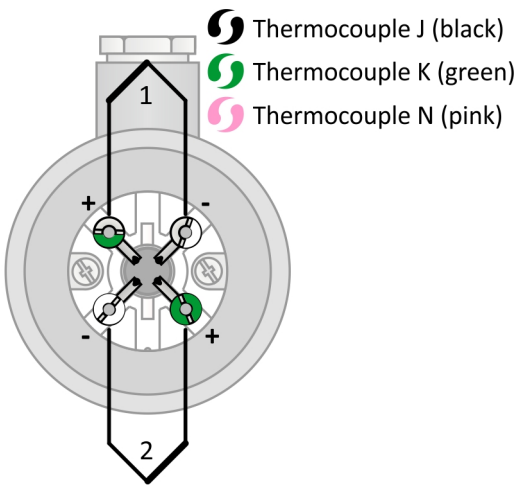

Figure 8VR.7: Double thermocouple wiring diagram

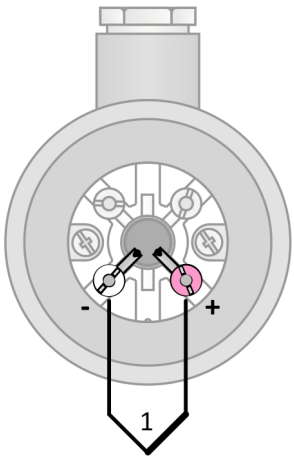

Figure 8VR.8: Single thermocouple wiring diagram

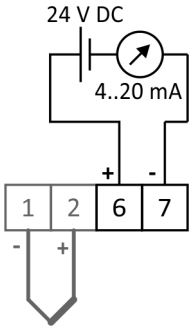

Figure 8VR.9: Transmitter wiring diagram

MTC8J

THERMOCOUPLE ASSEMBLIES WITH MEASURING INSERT INTO SUMP

MTC8J series temperature sensors are designed for installation in protective wells.

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, extension tube and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

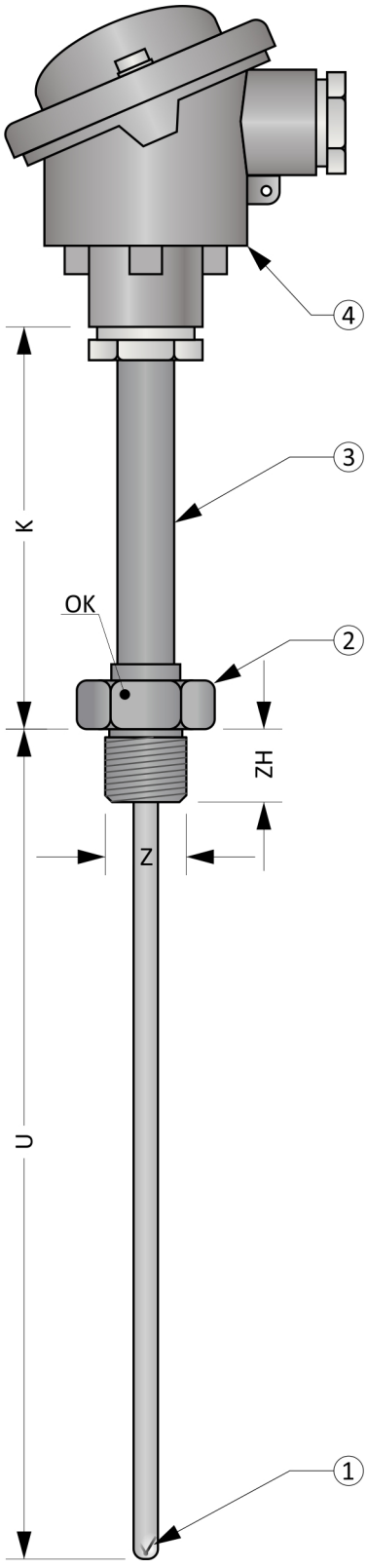

Figure 8J.1: MTC8J

General Information (Table 8J.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP54 (extension tube) IP6X (measuring part in length U)
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
②	**Threaded fitting**	
	Material	Stainless steel 1.4541
③	**Extension tube**	
	Material	Stainless steel 1.4541
	Outer / inner diameter	14 / 10 mm
④	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 8J.2)

Pos.	Code	MTC8J - ❶❷ - ❸ - ❹ - ❺❻❼
❶	**Measuring insert with dia. 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	2	1 x „K“, sheath material 2.4816
	3	1 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	E	1 x „N“, sheath material 2.4816
	H	2 x „N“, sheath material 2.4816
	Measuring insert with dia. 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	4	1 x „K“, sheath material 2.4816
	5	1 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	D	1 x „N“, sheath material 2.4816
	G	2 x „N“, sheath material 2.4816
	Type of measuring insert with a diameter of 3.0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	0	1 x „K“, sheath material 2.4816
	1	1 x „J“, sheath material 1.4541
	6	2 x „K“, sheath material 2.4816
	7	2 x „J“, sheath material 1.4541
	C	1 x „N“, sheath material 2.4816
	F	2 x „N“, sheath material 2.4816
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2 and measuring end design**	
	0	Accuracy class 2, thermocouple isolated from the sheath
	1	Accuracy class 1, thermocouple isolated from the sheath
	2	Accuracy class 2, thermocouple grounded to the sheath
	3	Accuracy class 1, thermocouple grounded to the sheath
❸	**Immersion depth U [mm]**	
	xxx	Selectable range from 10 mm to 3000 mm (in 1 mm increments)
	xxx	Selectable range from 3001 do 10000 mm (in 100 mm increments)
❹	**Extension tube length K [mm]**	
	xxx	Selectable range from 80 mm to 1500 mm (in 5 mm increments)
❺	**Threaded fitting**	
	0	Welded threaded fitting Z = M27 x 2, ZH = 26 mm, WAF36
	1	Welded threaded fitting Z = M20 x 1,5, ZH = 17 mm, WAF30
	2	Welded threaded fitting Z = G½“, ZH = 17 mm, WAF30

Continuation of table 8J.2 on the next page

Continuation of table 8J.2 from the previous page

Pos.	Code	MTC8J - ❶❷ - ❸ - ❹ - ❺❻❼
❻	**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
❼	**Transmitter (only for 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: MTC8J-01-500-250-200
... 1 x „K“ , sheath material 2.4816
... Accuracy class 1 acc. ČSN EN 60584-1 ed. 2
... Immersion depth U = 500 mm
... Extension tube length K = 250 mm
... Welded threaded fittingG½
... Head A
... Without transmitter

Approximate weight of the product: MTC8J-01-500-250-300 ... 1,0 kg

Recommended Maximum Temperatures of Sensor Parts (Table 8J.3)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Extension tube, threaded fitting	< 800 °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
„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.

Length Tolerances (Table 8J.4)

Length U, K	Length tolerance U	Length tolerance K
U, K ≤ 1500 mm	± 2 mm	± 2 mm
1500 < U ≤ 2500 mm	± 3 mm	---
U > 2500 mm	± 10 mm	---

Diameter tolerance (Table 8J.5)

Stem diameter A	Tolerance A
A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Head mounted transmitter (Table 8J.6)

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.

Head types

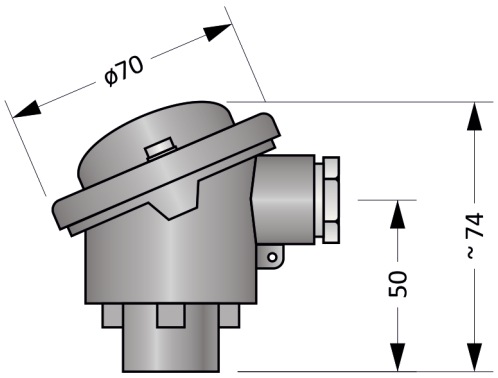

Figure 8J.2: Head B

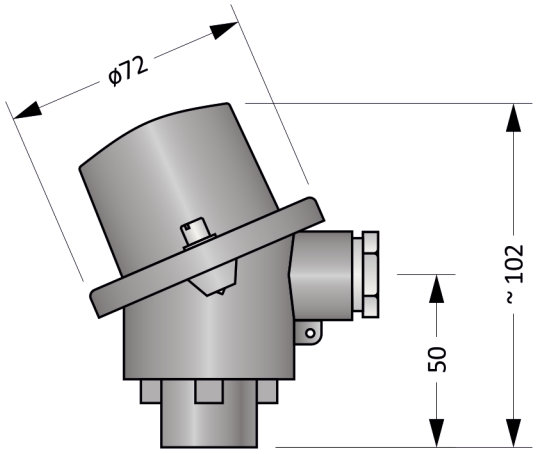

Figure 8J.3: Head BH

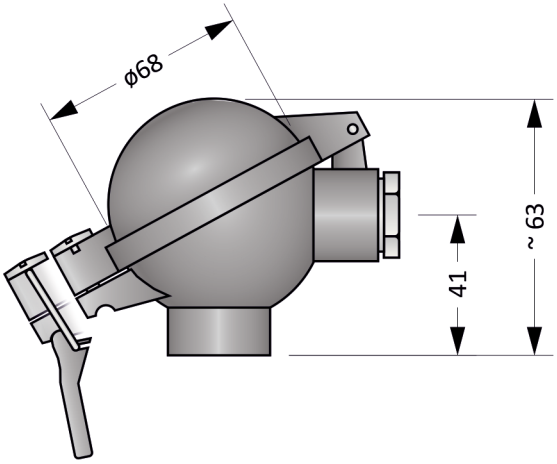

Figure 8J.4: Head BUZ

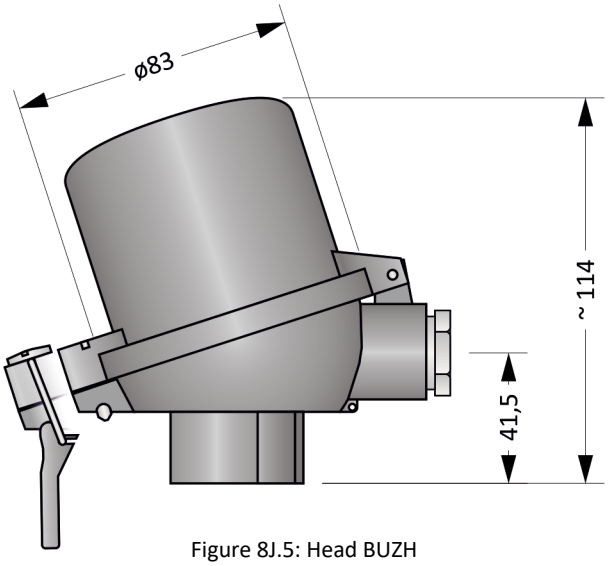

Figure 8J.5: Head BUZH

Installation And Operating Instructions

Use welded fitting 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 8J.8.

Electrical connection of the sensor without transmitter is shown in the Figures 8J.6 a 8J.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.

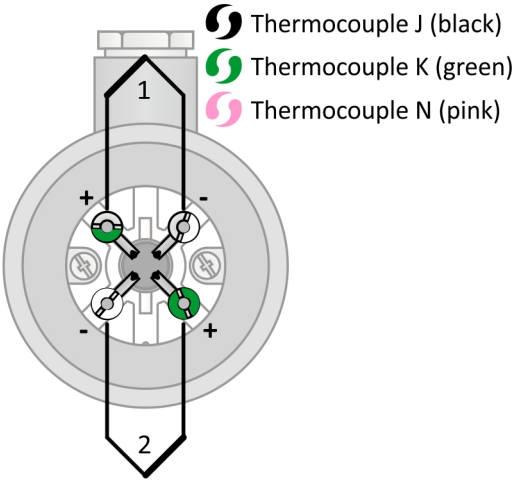

Figure 8J.6: Double thermocouple wiring diagram

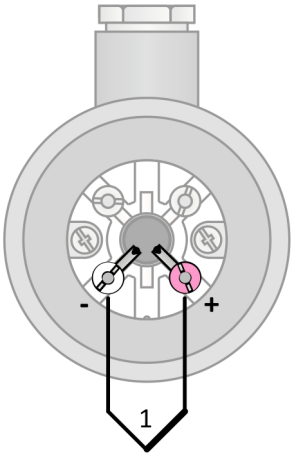

Figure 8J.7: Single thermocouple wiring diagram

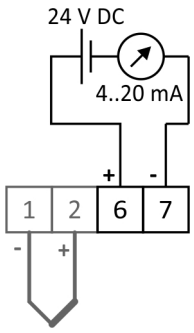

Figure 8J.8: Transmitter wiring diagram

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MTC9

THERMOCOUPLE ASSEMBLIES WITH METAL TUBE

Thermocouple assemblies of the MTC9 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 and tapered masuring tip for fast temperature response.

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, protection metal tube and capillary/ beads in which one or two thermocouples can be installed. The head is equipped with a cable gland for connecting the compensation cable.

General Information (Table 9.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	16 bar
①	**Base metal thermocouple**	
②	**Insulating beads / capillary**	
	Material	Ceramic C610
③	**Protection tube**	
	Material	Stainless steel 1.4541
	Outer / inner diameter	14 / 10 mm
④	**Threaded fitting**	
	Material	Stainless steel 1.4541
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5
⑥	**Tapered tip**	
	Material	Stainless steel 1.4541
	Diameter	9 mm

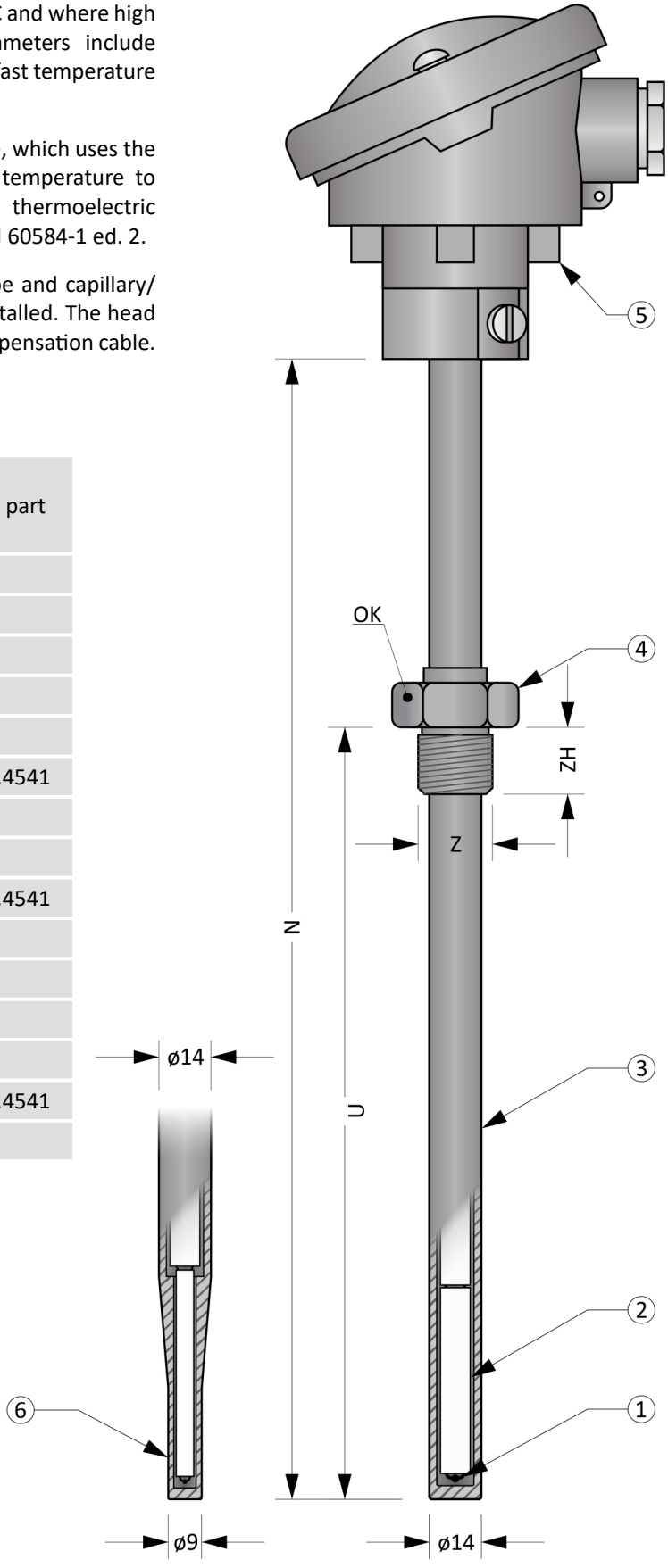

Figure 9.1: MTC9

Optional Parameters Including the Creation of an Order Code (Table 9.2)

Pos.	Code	MTC9 - ❶ - ❷ - ❸ - ❹❺❻❼
❶	**Thermocouple type (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „J“, accuracy class 2, isolated, wire diameter 1,0 mm
	1	1 x „K“, accuracy class 2, isolated, wire diameter 1,38 mm (1,0 mm if tapered tip is used)
	2	2 x „J“, accuracy class 2, isolated, wire diameter 1,0 mm
	3	2 x „K“, accuracy class 2, isolated, wire diameter 1,38 mm (1,0 mm if tapered tip is used)
	4	1 x „N“, accuracy class 2, isolated, wire diameter 1,30 mm (not applicable if tapered tip is used)
	5	2 x „N“, accuracy class 2, isolated, wire diameter 1,30 mm (not applicable if tapered tip is used)
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 200 mm to 1500 mm (in 10 mm increments)
❸	**Immersion depth U [mm]**	
	0	Without threaded fitting
	xxx	Selectable range from 50 mm to (N-100) mm (in 10 mm increments)
❹	**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
❺	**Tube design**	
	0	Standard
	1	Tapered tip - reduced diameter form 14 to 9 mm
❻	**Head type**	
	0	A
	1	AUZH with screws with leaden seal holes
	2	AUZH with snap lock
	3	AUZ with screws with leaden seal holes
	4	AUZ with snap lock
❼	**Transmitter (transmitters are designed for assemblies with AUZH 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: MTC9-1-800-500-0000
... 1 x „K“, accuracy class 2, wire diameter 1,38 mm
... Nominal length N = 800 mm
... Immersion depth U = 800 mm
... Without threaded fitting
... Standard
... Head A
... Without transmitter

Approximate weight of the product: MTC9-1-800-500-0000 ... 1,5 kg

Length Tolerances (Table 9.3)

Nominal length N	Length tolerance N	Length tolerance U
250 ≤ N ≤ 1000 mm	± 2 mm	± 2 mm
1000 < N mm	± 3 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 9.4)

Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Threaded fitting	< 800 °C	-
Protection tube	< 800 °C	-
„J“, wire diameter 1,0 mm	< 400 °C	< 520 °C
„K“, wire diameter 1,0 mm	< 870 °C	< 980 °C
„K“, wire diameter 1,38 mm	< 900 °C	< 1020 °C
„N“, wire diameter 1,3 mm	< 950 °C	< 1090 °C

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

Head types

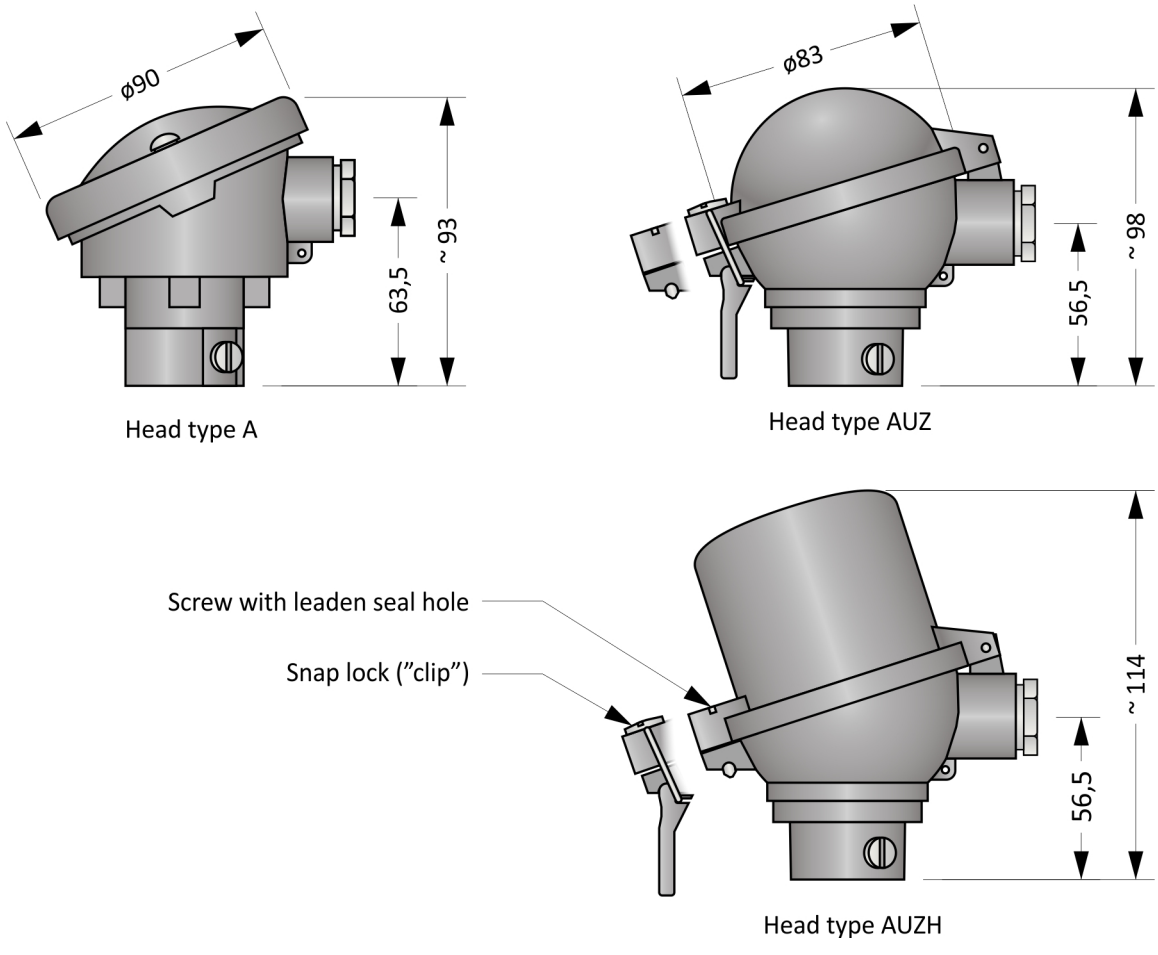

Figure 9.2: Head types

Head mounted transmitter (Table 9.5)

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

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 9.5.

Electrical connection of the sensor without transmitter is shown in the Figures 9.3 and 9.4. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

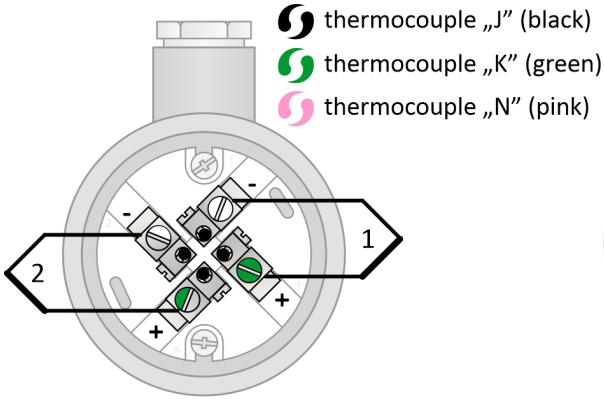

Figure 9.3: Double thermocouple wiring diagram

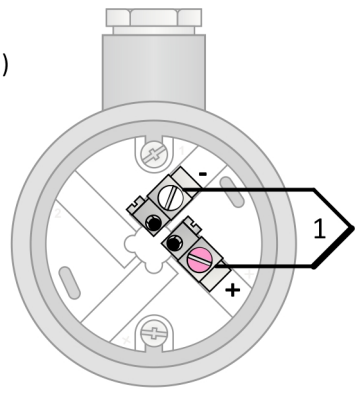

Figure 9.4: Single thermocouple wiring diagram

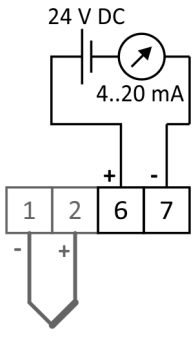

Figure 9.5: Transmitter wiring diagram

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.

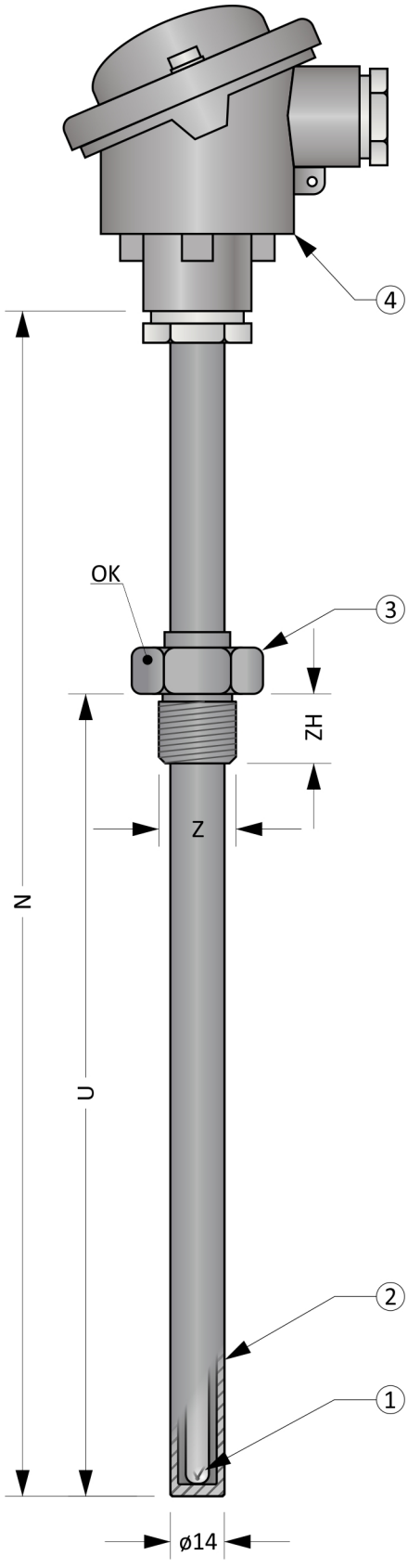

Figure 9V.1: MTC9V

General Information (Table 9V.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	16 bar
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
②	**Protection tube**	
	Material	1.4541
	Outer / inner diameter	14 / 10 mm
③	**Threaded fitting**	
	Material	Stainless steel 1.4541
④	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

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

Pos.	Code	MTC9V - ❶❷ - ❸ - ❹ - ❺❻❼
❶	**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
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	Accuracy class 2
	1	Accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❹	**Immersion depth U [mm]**	
	0	Without threaded fitting
	xxx	Selectable range from 50 mm to (N-100) mm (in 5 mm increments)
❺	**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
❻	**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
❼	**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 fittingG½
... 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 ≤ N ≤ 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

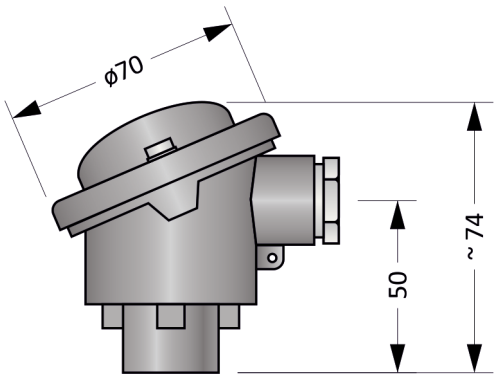

Figure 9V.2: Head B

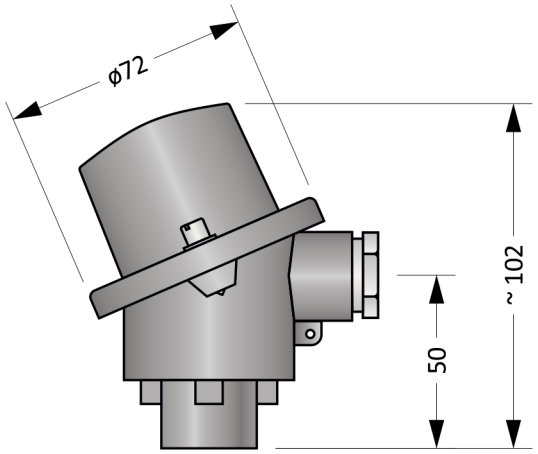

Figure 9V.3: Head BH

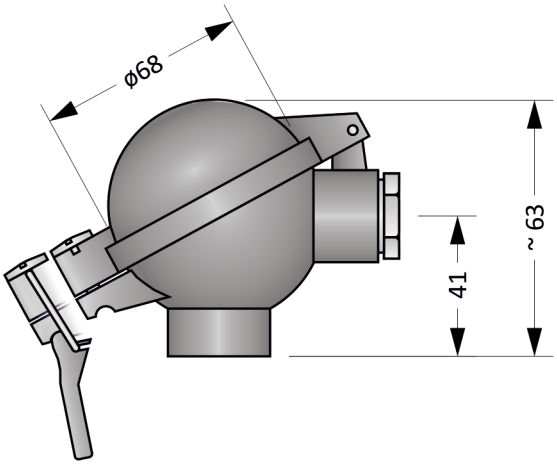

Figure 9V.4: Head BUZ

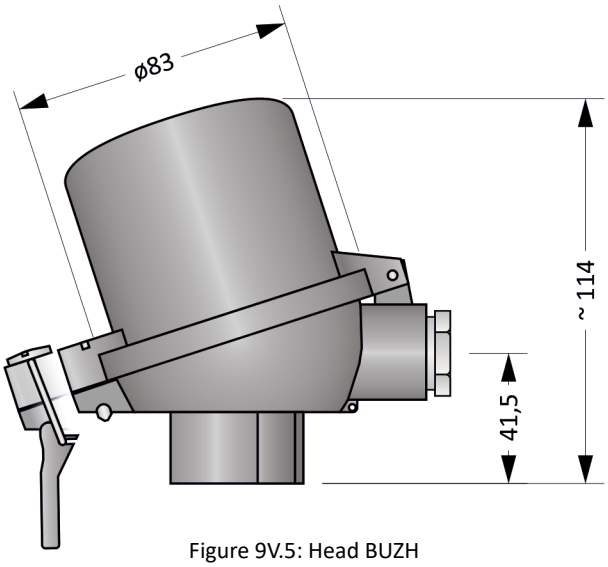

Figure 9V.5: Head BUZH

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.

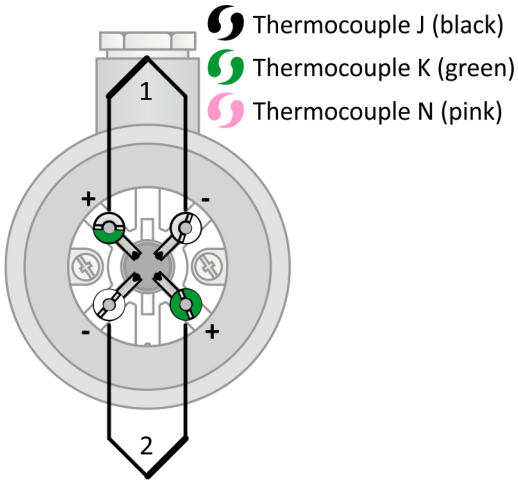

Figure 9V.7: Double thermocouple wiring diagram

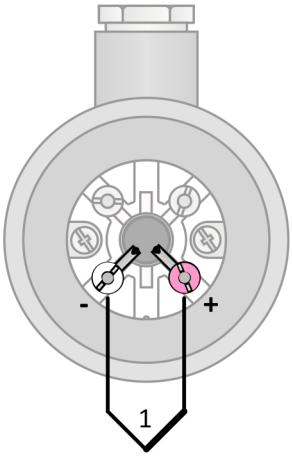

Figure 9V.8: Single thermocouple wiring diagram

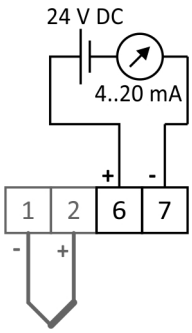

Figure 9V.9: Transmitter wiring diagram

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MTC9VR

THERMOCOUPLE ASSEMBLIES WITH TAPERED METAL TUBE AND MEASURING INSERT

Thermocouple assemblies of the MTC8V series are designed for applications with operating temperatures up to 800 °C and where high mechanical robustness and fast temperature response is required. Optional parameters include welded threaded fitting.

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 with tapered tip and measuring insert. The head is equipped with a cable gland for connecting the compensation cable.

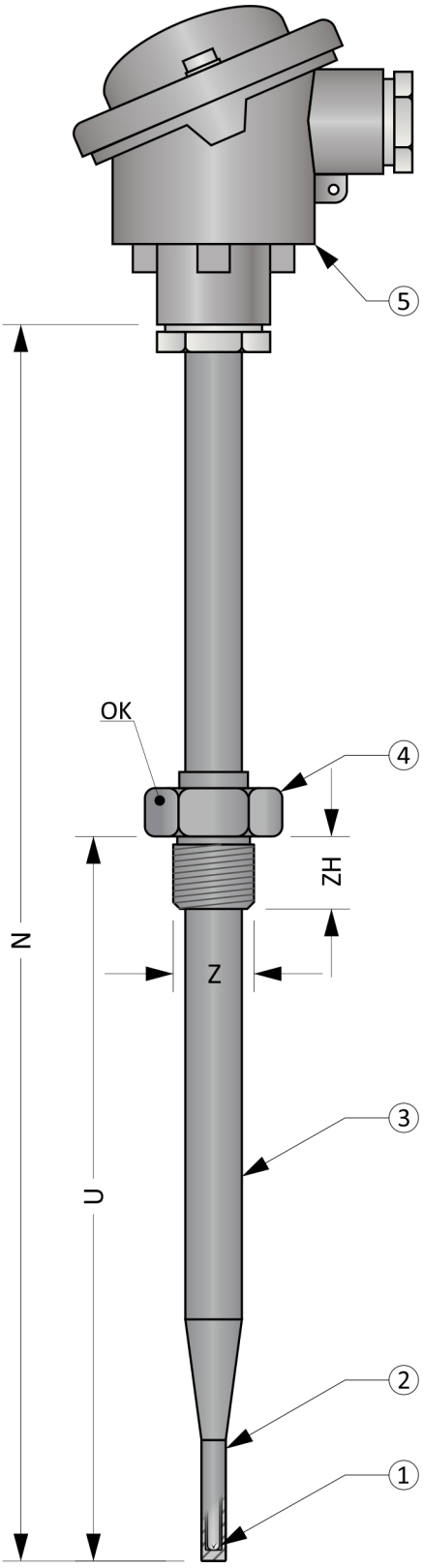


Figure 9VR.1: MTC8VR

General Information (Table 9VR.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	16 bar
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	3 mm
②	**Protection tube**	
	Material	1.4541
	Diameter	14 mm
③	**Tapered tip**	
	Material	Stainless steel 1.4541
	Diameter	6 mm
④	**Threaded fitting**	
	Material	Stainless steel 1.4541
⑤	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

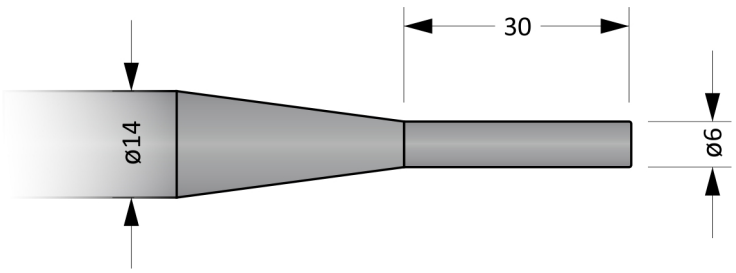


Figure 9VR.2: Detail of tapered tip

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

Pos.	Code	MTC9VR - ❶❷ - ❸ - ❹ - ❺❻❼
❶	**Type of measuring insert (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
	5	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	Accuracy class 2
	1	Accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❹	**Immersion depth U [mm]**	
	0	Without threaded fitting
	xxx	Selectable range from 50 mm to (N-100) mm (in 5 mm increments)
❺	**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
❻	**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
❼	**Transmitter (only for 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: MTC9VR-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 fittingG½“

... Head A

... Without transmitter

Approximate weight of the product: MTC9VR-01-500-250-300 ... 1,0 kg

Length Tolerances (Table 9VR.3)

Nominal length N	Length tolerance N	Length tolerance U
250 ≤ N ≤ 1000 mm	± 2 mm	± 2 mm
1000 < N mm	± 3 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 9VR.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. 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

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

Head types

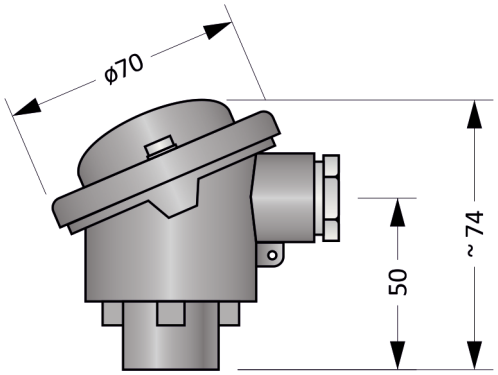


Figure 9VR.3: Head B

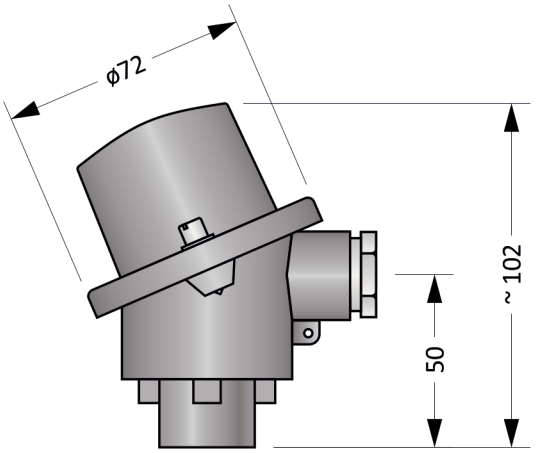


Figure 9VR.4: Head BH

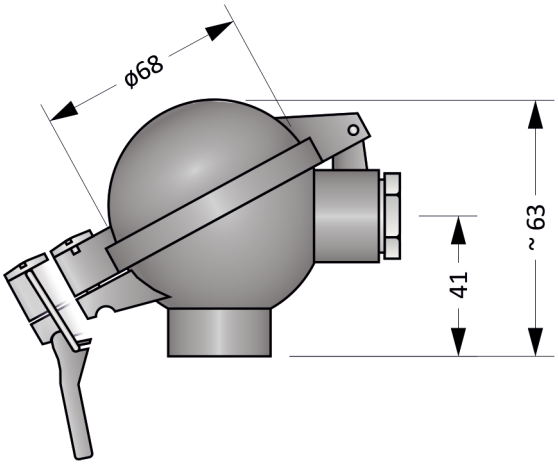


Figure 9VR.5: Head BUZ

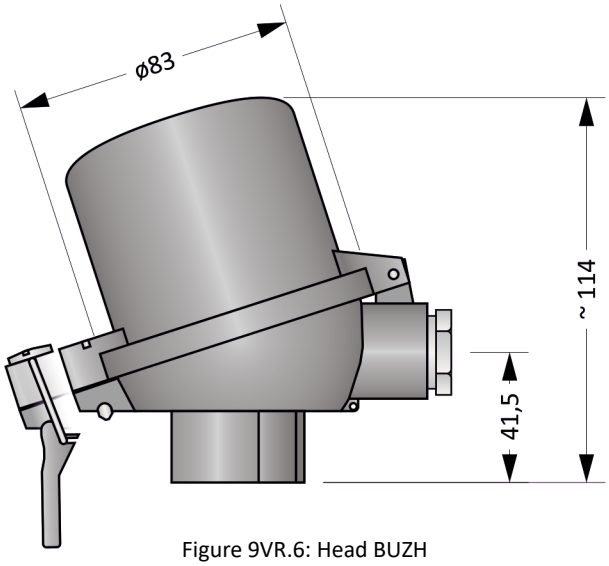


Figure 9VR.6: Head BUZH

Head mounted transmitter (Table 9VR.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 9VR.9.

Electrical connection of the sensor without transmitter is shown in the Figures 9VR.7 a 9VR.8. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

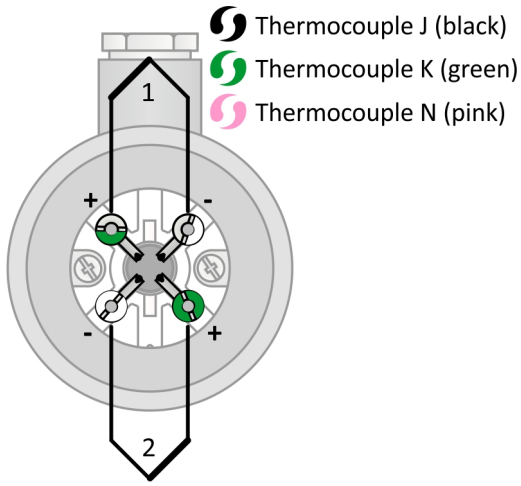


Figure 9VR.7: Double thermocouple wiring diagram

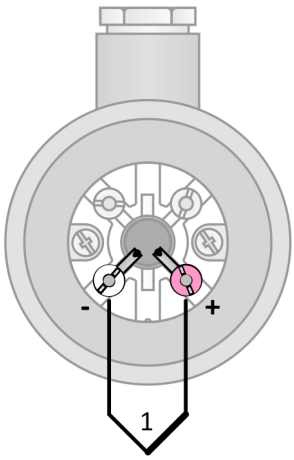


Figure 9VR.8: Single thermocouple wiring diagram

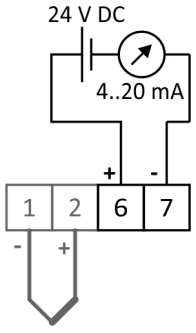


Figure 9VR.9: Transmitter wiring diagram

MTC10

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

The MTC10 series consists of mechanically simple but robust sensors suitable for industrial environments.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515. The sheath is flexible and the sensor can be easily adapted to the measurement place.

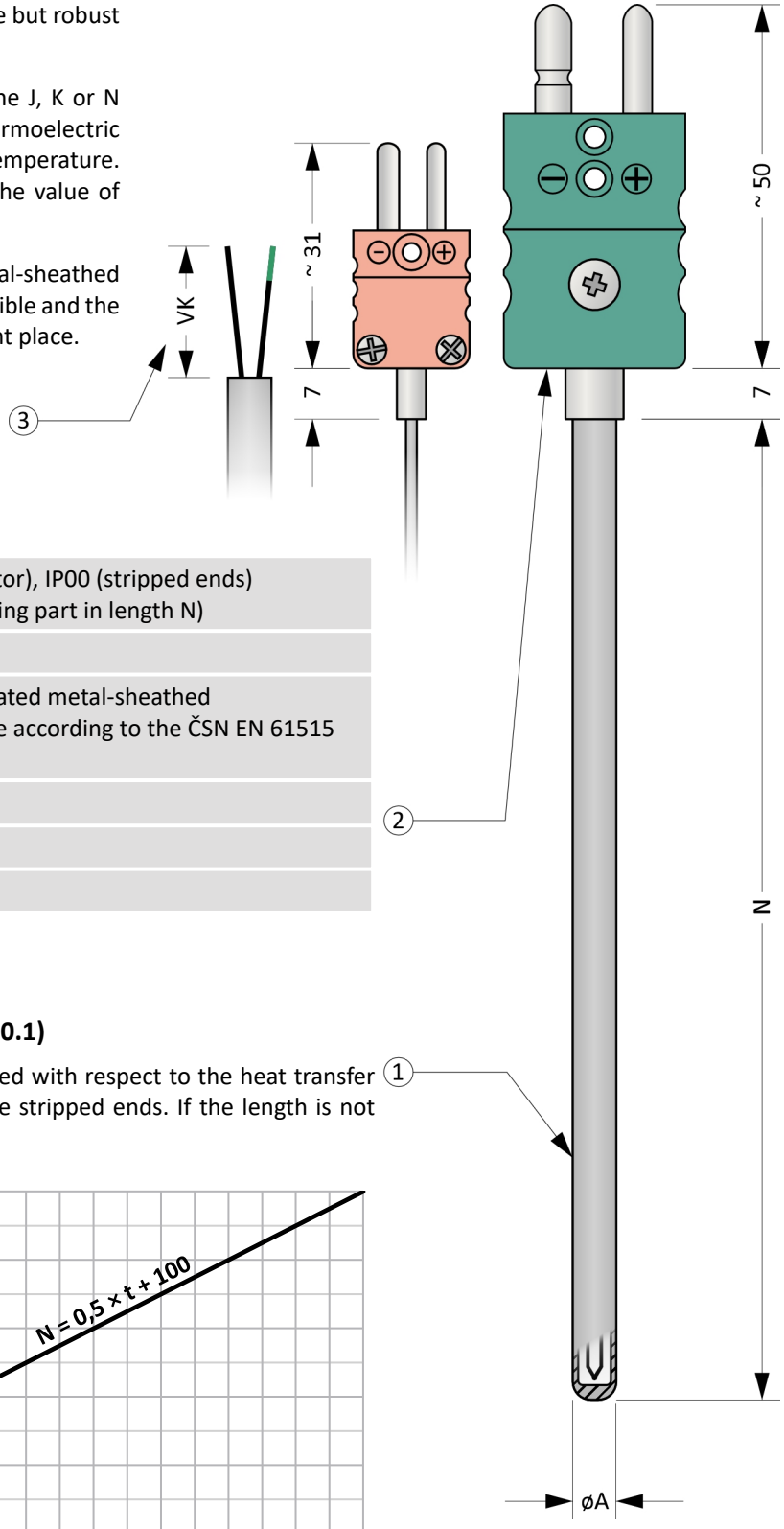


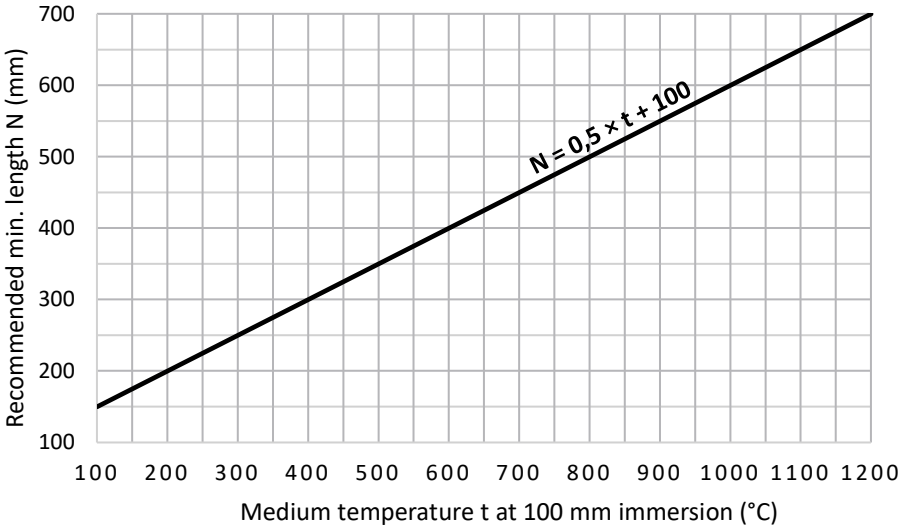
Figure 10.1: MTC10

General Information (Table 10.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP68 (measuring part in length N)
	Common metal thermocouple (stem)	
①	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Connector**	
③	**Loose conductors**	

Recommended Min. Sensor Length (Chart 10.1)

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



Optional Parameters Including the Creation of an Order Code (Table 10.2)

Pos.	Code	MTC10 - ❶❷ - ❸ - ❹
❶	**Thermocouple type of dia. A = 1,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	H	1 x „J“, sheath material 1.4541
	G	1 x „K“, sheath material 2.4816
	I	1 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 1,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	F	1 x „J“, sheath material 1.4541
	E	1 x „K“, sheath material 2.4816
	J	1 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 2,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	D	1 x „J“, sheath material 1.4541
	C	1 x „K“, sheath material 2.4816
	K	1 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	L	1 x „N“, sheath material 2.4816
	7	2 x „J“, sheath material 1.4541
	6	2 x „K“, sheath material 2.4816
	M	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	N	1 x „N“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	O	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	P	1 x „N“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	Q	2 x „N“, sheath material 2.4816
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**	
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip
	5	Accuracy class 1, thermocouple isolated from the sheath, sharp tip
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip
	7	Accuracy class 1, thermocouple connected to the sheath, sharp tip
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip
	4	Accuracy class 2, thermocouple isolated from the sheath, sharp tip
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip
	6	Accuracy class 2, thermocouple connected to the sheath, sharp tip

Continuation of table 10.2 on the next page

Continuation of table 10.2 from the previous page		
Pos.	Code	**MTC10 - ❶❷ - ❸ - ❹**
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 50 mm to 4 500 mm (in 5 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)
❹	**Cold junction desing - single thermocouple**	
	VKxxx	Loose conductors, selectable range from 10 mm to 200 mm in 5 mm increments (only 10 mm or 15 mm for 1 ≤ A ≤ 1,5 mm)
	1	Standard connector, type MTCK-S, plug (for A ≥ 3 mm)
	2	Standard connector, type MTCK-S, plug + socket (for A ≥ 3 mm)
	3	Miniature connector, MTCK-M type, plug (for A ≤ 3 mm)
	4	Miniature connector, MTCK-M type, plug + socket (for A ≤ 3 mm)
	5	Ceramic standard connector, MTCK-CS type, plug (for A ≥ 3 mm)
	6	Ceramic standard connector, MTCK-CS type, plug + socket (for A ≥ 3 mm)
	7	Ceramic miniature connector, MTCK-CM type, plug (for A ≤ 3 mm)
	8	Ceramic miniature connector, MTCK-CM type, plug + socket (for A ≤ 3 mm)
	Cold junction desing - double thermocouple	
	VKxxx	Loose conductors, selectable range from 10 mm to 200 mm in 5 mm increments (only 10 mm or 15 mm for 1 ≤ A ≤ 1,5 mm)
	A	Standard double connector, MTCK-DS type, plug (for A ≥ 3 mm)
	B	Standard double connector, MTCK-DS type, plug + socket (for A ≥ 3 mm)
	C	Miniature double connector, MTCK-DM type, plug (for A ≤ 3 mm)
	D	Miniature double connector, MTCK-DM type, plug + socket (for A ≤ 3 mm)

Order code example: MTC10-00-500-VK15

... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)

... Accuracy class 2, thermocouple isolated from the sheath, blunt tip

... Nominal length N = 500 mm

... Stripped ends of 15 mm

Approximate weight of the product: MTC10-00-500-VK15 ... 0,2 kg

Length Tolerances (Table 10.3)

Nominal length N	Tolerance N
50 ≤ N ≤ 1500 mm	± 2 mm
1500 < N ≤ 2500 mm	± 3 mm
2500 < N ≤ 5000 mm	± 5 mm
5000 < N ≤ 50000 mm	± 0,5 % of N

Diameter tolerance (Table 10.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 10.5)

Sensor part	Sheat dia.	Continuous operation	Short-term operation
Stripped ends		< 120 °C	-
Connectors MTCK-S, MTCK-M and MTCK-DS		< 160 °C	-
Connectors MTCK-CS and MTCK-CM		< 500 °C*	-
Thermocouple type „J“ measuring junction	1 mm	< 220 °C	< 260 °C
	1,5 mm	< 400 °C	< 440 °C
	2 mm	< 440 °C	< 490 °C
	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	1 mm	< 600 °C	< 650 °C
	1,5 mm	< 800 °C	< 850 °C
	2 mm	< 900 °C	< 950 °C
	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

Notes: Operating temperatures are related to temperature measurement in a chemically inert environment. The values are determined empirically.
(*) Once the cold junction is exposed to temperatures above 120 °C, the sensor will no longer be resistant to moisture penetration.

Measuring Junction Design

Figure 10.2: Blunt tip

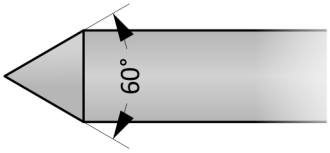


Figure 10.3: Sharp tip

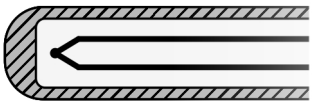


Figure 10.4: Thermocouple isolated from the sheath

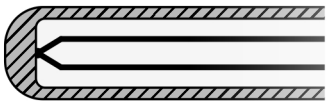


Figure 10.5: Thermocouple connected to the sheath

Installation And Operating Instructions

The sensor's stem is used for mechanical fastening. Other parts cannot be used.

The electrical connection of the sensor is shown in Figures 10.6 to 10.9. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

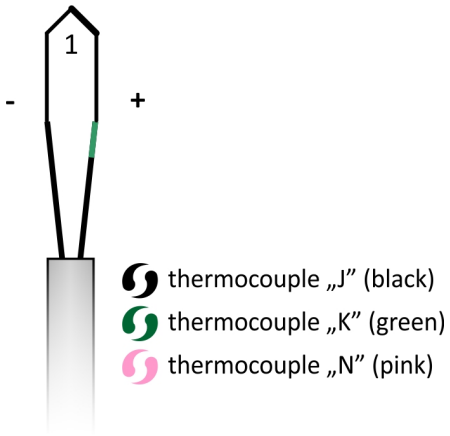


Figure 10.6: Single thermocouple wiring diagram

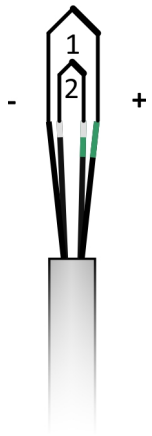


Figure 10.7: Double thermocouple wiring diagram

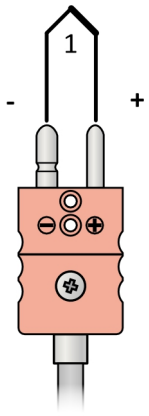


Figure 10.8: Connector wiring diagram

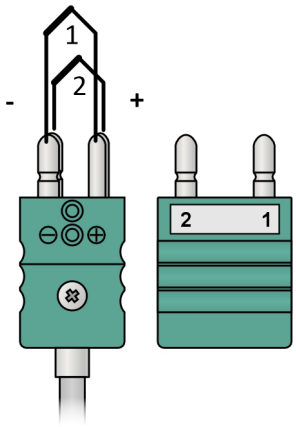


Figure 10.9: Double connector wiring diagram

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MTC11

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11 series are flexible and robust sensors with a fast temperature response suitable for industrial environments.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with compensation cable. The sheath is flexible and the sensor can be easily adapted to the measurement place.

General Information (Table 11.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP6X (transition part) IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Transition part**	
③	**Spring**	
④	**Compensation cable**	
	Min. bending radius	15 × outer diameter of the cable
⑤	**Additional armor protection**	
⑥	**Individual compensation wires**	
⑦	**Stripped ends**	
⑧	**Connector**	

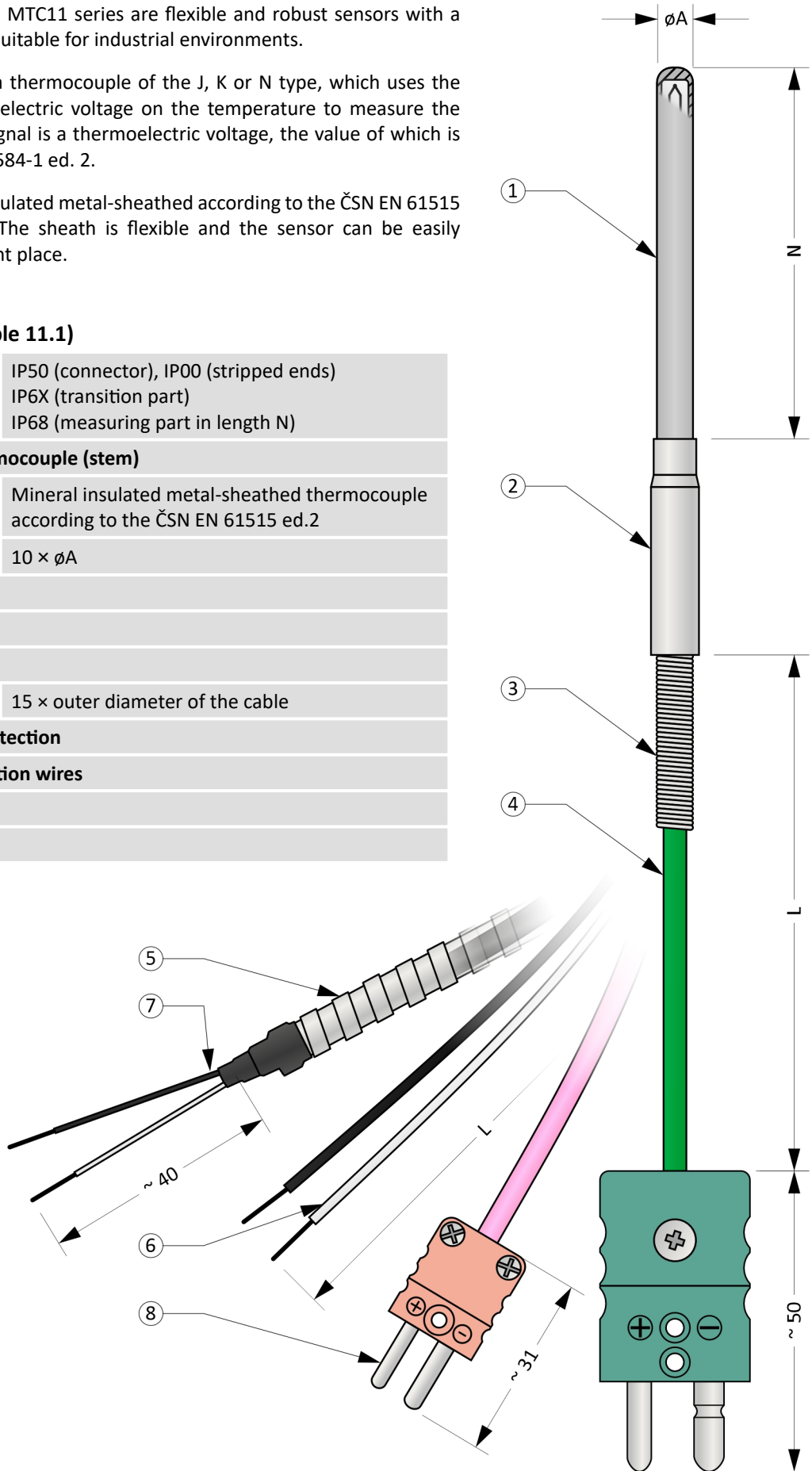


Figure 11.1: MTC11

Optional Parameters Including the Creation of an Order Code (Table 11.2)

Pos.	Code	MTC11 - ❶❷ - ❸ - ❹ - ❺❻
❶		**Thermocouple type of dia. A = 1,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**
	H	1 x „J“, sheath material 1.4541
	G	1 x „K“, sheath material 2.4816
	I	1 x „N“, sheath material 2.4816
		Thermocouple type of dia. A = 1,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)
	F	1 x „J“, sheath material 1.4541
	E	1 x „K“, sheath material 2.4816
	J	1 x „N“, sheath material 2.4816
		Thermocouple type of dia. A = 2,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)
	7	1 x „J“, sheath material 1.4541
	6	1 x „K“, sheath material 2.4816
	K	1 x „N“, sheath material 2.4816
		Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	L	1 x „N“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	M	2 x „N“, sheath material 2.4816
		Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	N	1 x „N“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	O	2 x „N“, sheath material 2.4816
		Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	P	1 x „N“, sheath material 2.4816
	D	2 x „J“, sheath material 1.4541
	C	2 x „K“, sheath material 2.4816
	Q	2 x „N“, sheath material 2.4816
❷		**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip
	5	Accuracy class 1, thermocouple isolated from the sheath, sharp tip
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip
	7	Accuracy class 1, thermocouple connected to the sheath, sharp tip
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip
	4	Accuracy class 2, thermocouple isolated from the sheath, sharp tip
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip
	6	Accuracy class 2, thermocouple connected to the sheath, sharp tip

Continuation of table 11.2 on the next page

Continuation of table 11.2 from the previous page

Pos.	Code	MTC11 - ❶❷ - ❸ - ❹ - ❺❻
❸		**Nominal length N [mm]**
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)
❹		**Cable length L [cm]**
	SLxxx	Individual insulated compensation wires (FEP), selectable range from 10 cm to 100 cm (in 1 cm increments) — Only combination is possible for this option: ❺ ... S; ❻ ... 0
	xxx	Compensation cable, selectable range from 10 cm to 450 cm (in 1 cm increments)
	xxx	Compensation cable, selectable range from 460 cm to 5 000 cm (in 10 cm increments)
	Axxx	Compensation cable with additional armor protection, selectable range from 10 cm to 450 cm (in 1 cm increments) — Only for øA ≥ 2 mm
	Axxx	Compensation cable with additional armor protection, selectable range from 460 cm to 600 cm (in 10 cm increments) — Only for øA ≥ 2 mm
❺		**Compensation cable insulation type** — Only combination is possible for this option: ❹ ... SLxxx
	S	Teflon FEP
	0	Polyvinyl chloride PVC / Polyvinyl chloride PVC (JJ) — Only for single thermocouple J, K type.
	1	Silicone / silicone (SLSL) — Only for single thermocouple J, K type.
	2	Silicone / glass fiber braid / galvanized steel wire braid (SLGLP) — Only for single thermocouple J, K type.
	3	Glass fiber braid / glass fiber braid / galvanized steel wire braid (GLGLP) — Only for single thermocouple.
	4	Teflon FEP / silicone (TSL) — Only for single thermocouple.
	5	Teflon FEP / oplet Cu / teflon FEP (TCuT) — Only for single thermocouple.
	A	Teflon FEP / glass fiber braid / stainless steel wire braid (TGLV) — Only for double thermocouple.
❻		**Design of the cold junction - single thermocouples**
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket
		Design of the cold junction - double thermocouples
	0	Stripped ends, length 40 mm
	A	Standard double connector, MTCK-DS type, plug
	B	Standard double connector, MTCK-DS type, plug + socket
	C	Miniature double connector, MTCK-DM type, plug
	D	Miniature double connector, MTCK-DM type, plug + socket

Order code example: MTC11-00-500-500-00

... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)
... Accuracy class 2, thermocouple isolated from the sheath, blunt tip
... Nominal length N = 500 mm
... Compensation cable length L = 500 cm
... Cable insulation type JJ
... Stripped ends

Approximate weight of the product: MTC11-00-500-500-00 ... 0,3 kg

Length Tolerances (Table 11.3)

Length N, L	Tolerance N	Tolerance L
50 ≤ (N, L) ≤ 1500 mm	± 2 mm	± 10 mm
1500 < (N, L) ≤ 2500 mm	± 3 mm	± 10 mm
2500 < (N, L) ≤ 5000 mm	± 5 mm	± 15 mm
5000 < (N, L) ≤ 50000 mm	± 0,5 % of N	± 0,5 % of N

Diameter tolerance (Table 11.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

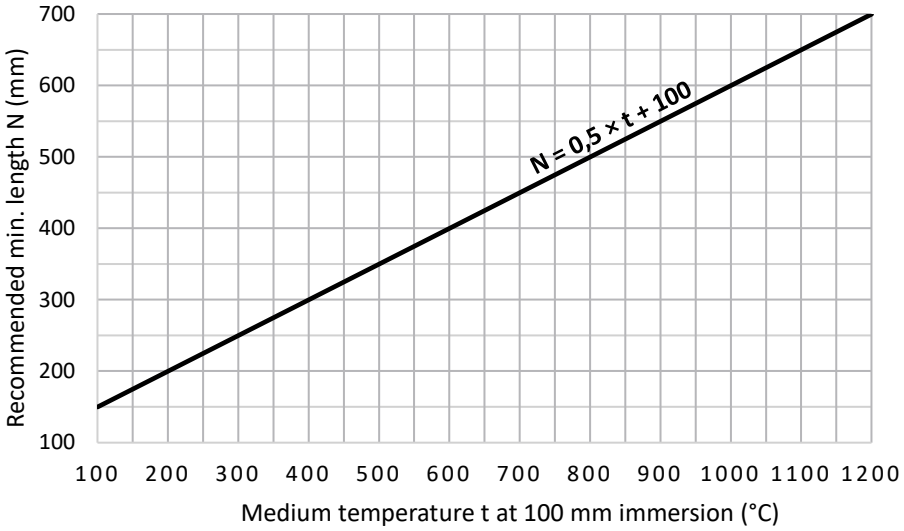
Recommended Maximum Temperatures of Sensor Parts (Table 11.5)

Sensor part	Sheat dia. / insulation type	Continuous operation	Short-term operation
Compensation cable	JJ	-10 ... 105 °C	-
	SLSL nebo SL	-60 ... 180 °C	-
	SLGLP	-60 ... 180 °C	-
	GLGLP	-200 ... 400 °C	-
	TSL	-60 ... 180 °C	-
	TCuT	-200 ... 205 °C	-
	TGLV	-200 ... 205 °C	-
Transition part		< 165 °C	-
Connectors MTCK-S, MTCK-M		See cable insulation, max. 220 °C	-
Connectors MTCK-CS, MTCK-CM		See cable insulation	-
Thermocouple type „J“ measuring junction	1 mm	< 220 °C	< 260 °C
	1,5 mm	< 400 °C	< 440 °C
	2 mm	< 440 °C	< 490 °C
	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	1 mm	< 600 °C	< 650 °C
	1,5 mm	< 800 °C	< 850 °C
	2 mm	< 900 °C	< 950 °C
	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

Recommended Min. Sensor Length (Chart 11.1)

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



Compensation Cable Overview (Table 11.6)

Compensation cables are in accuracy class 2 and meet the requirements of the ČSN EN 60584-3 standard.

Type	Insulation	Number x cross-section of wires	Cable outer diameter	Pros and cons
JX KCA	JJ	2 x 0,22 mm²	~ 3,6 mm	↗ Good flexibility, moisture resistant ↘ No shielding, unsuitable for higher temperatures
	SLSL	2 x 0,22 mm²	~ 3,8 mm	↗ Great flexibility, moisture resistant ↘ No shielding, low mechanical resistance
	SLGLP	2 x 0,22 mm²	~ 3,7 mm	↗ Moisture resistant, high mechanical resistance
JX KCA NC	GLGLP	2 x 0,22 mm²	~ 3,5 mm	↗ High mechanical resistance, suitable for higher temperatures ↘ Low moisture resistance
	TSL	2 x 0,22 mm²	~ 3,6 mm	↗ Great flexibility, moisture resistant ↘ No shielding, low mechanical resistance
	TCuT	2 x 0,22 mm²	~ 3,0 mm	↗ Moisture resistant
	TGLV	4 x 0,22 mm²	~ 3,7 mm	↗ Moisture resistant, high mechanical resistance
JX KCA NC	FEP	1 x 0,22 mm² (+) 1 x 0,22 mm² (-)	~ 1,2 mm	Individual conductors

Measuring Junction Design

Figure 11.3: Blunt tip

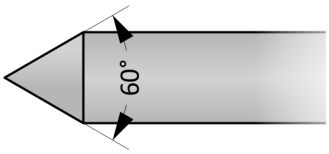


Figure 11.4: Sharp tip

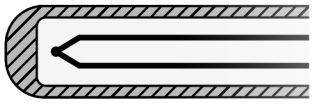


Figure 11.5: Thermocouple isolated from the sheath

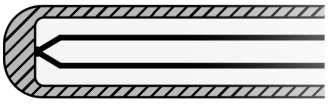


Figure 11.6: Thermocouple connected to the sheath

Design of the transition part (Table 11.7)

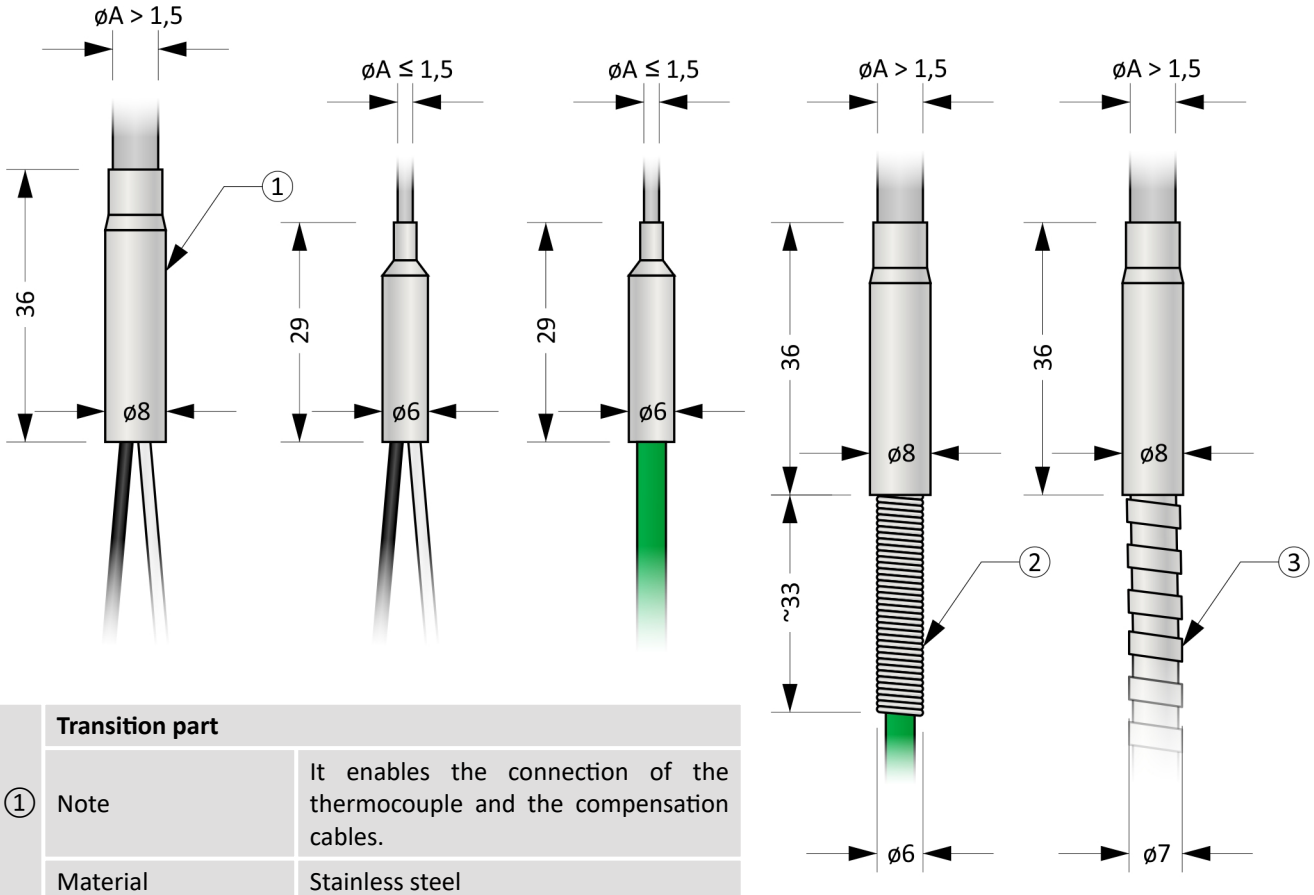


Figure 11.2: Transition part design options.

①	**Transition part**	
	Note	It enables the connection of the thermocouple and the compensation cables.
	Material	Stainless steel
②	**Spring**	
	Note	It is only used for thermocouples with a diameter of 2 mm and above. It reduces the wear of the cable at the point of exit from the trasition part.
	Material	Stainless steel
③	**Additional armor protection**	
	Note	It increases the mechanical resistance of the cable.
	Material	Stainless steel
	Properties	Flexible, does not prevent the ingress of moisture

Installation And Operating Instructions

The sensor's stem is used for mechanical fastening. Other parts cannot be used.

The electrical connection of the sensor is shown in Figures 11.7 to 11.10. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

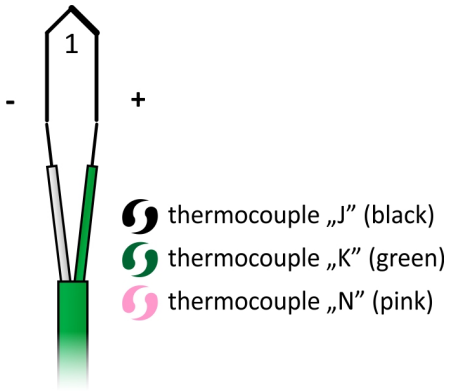


Figure 11.7: Single thermocouple wiring diagram

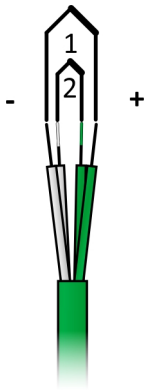


Figure 11.8: Double thermocouple wiring diagram

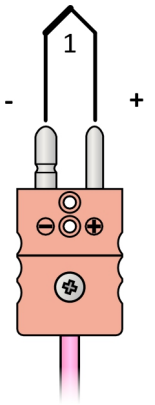


Figure 11.9: Connector wiring diagram

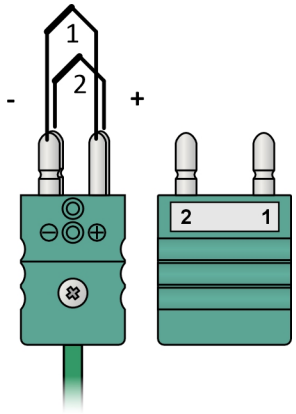


Figure 11.10: Double connector wiring diagram

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MTC11U

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11U series are flexible and robust sensors with a fast temperature response suitable for industrial environments.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with compensation cable. The sheath is flexible and the sensor can be easily adapted to the measurement place.

General Information (Table 11U.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP6X (transition part), IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Transition part**	
③	**Spring**	
④	**Compensation cable**	
	Min. bending radius	15 × outer diameter of the cable
⑤	**Additional armor protection**	
⑥	**Individual compensating wires**	
⑦	**Stripped ends**	
⑧	**Connector**	

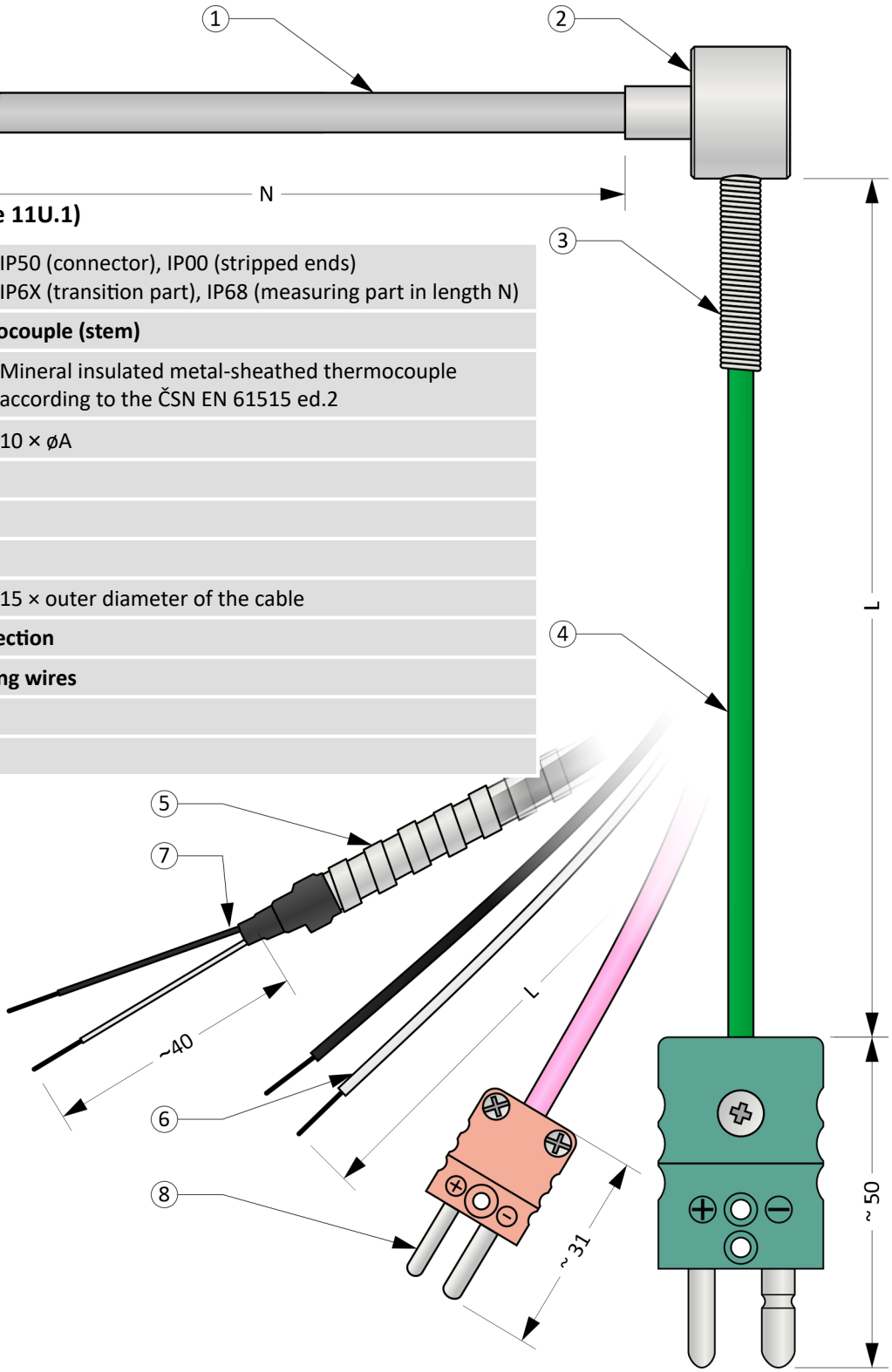


Figure 11U.1: MTC11U

Optional Parameters Including the Creation of an Order Code (Table 11U.2)

Pos.	Code	MTC11U - ❶❷ - ❸ - ❹ - ❺❻
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	C	1 x „N“, sheath material 2.4816
	7	2 x „J“, sheath material 1.4541
	6	2 x „K“, sheath material 2.4816
	D	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	E	1 x „N“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	F	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	G	1 x „N“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	H	2 x „N“, sheath material 2.4816
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**	
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip
	5	Accuracy class 1, thermocouple isolated from the sheath, sharp tip
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip
	7	Accuracy class 1, thermocouple connected to the sheath, sharp tip
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip
	4	Accuracy class 2, thermocouple isolated from the sheath, sharp tip
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip
	6	Accuracy class 2, thermocouple connected to the sheath, sharp tip
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)
❹	**Cable length L [cm]**	
	SLxxx	Individual insulated compensation wires, selectable range from 10 cm to 100 cm (in 1 cm increments)
	xxx	Compensation cable, selectable range from 10 cm to 450 cm (in 1 cm increments)
	xxx	Compensation cable, selectable range from 460 cm to 5 000 cm (in 10 cm increments)
	Axxx	Compensation cable with additional armor protection, selectable range from 10 cm to 450 cm (in 1 cm increments)
	Axxx	Compensation cable with additional armor protection, selectable range from 460 cm to 600 cm (in 10 cm increments)

Only combination is possible for this option:
❺ ... S
❻ ... 0

Only for øA ≥ 2 mm

Only for øA ≥ 2 mm

Continuation of table 11U.2 on the next page

MTC11U

Continuation of table 11U.2 from the previous page

Pos.	Code	MTC11U - ❶❷ - ❸ - ❹ - ❺❻
❺	**Compensation cable insulation type**	Only combination is possible for this option: ❹ ... SLxxx
	S	Teflon FEP
	0	Polyvinyl chloride PVC / Polyvinyl chloride PVC (JJ) — Only for single thermocouple J, K type.
	1	Silicone / silicone (SLSL) — Only for single thermocouple J, K type.
	2	Silicone / glass fiber braid / galvanized steel wire braid (SLGLP) — Only for single thermocouple J, K type.
	3	Glass fiber braid / glass fiber braid / galvanized steel wire braid (GLGLP) — Only for single thermocouple.
	4	Teflon FEP / silicone (TSL) — Only for single thermocouple.
	5	Teflon FEP / oplet Cu / teflon FEP (TCuT) — Only for single thermocouple.
	A	Teflon FEP / glass fiber braid / stainless steel wire braid (TGLV) — Only for double thermocouple.
❻	**Design of the cold junction - single thermocouples**	
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket
	Design of the cold junction - double thermocouples	
	0	Stripped ends, length 40 mm
	A	Standard double connector, MTCK-DS type, plug
	B	Standard double connector, MTCK-DS type, plug + socket
	C	Miniature double connector, MTCK-DM type, plug
	D	Miniature double connector, MTCK-DM type, plug + socket

Order code example: MTC11U-00-500-500-00

... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)
... Accuracy class 2, thermocouple isolated from the sheath, blunt tip
... Nominal length N = 500 mm
... Compensation cable length L = 500 cm
... Cable insulation type JJ
... Stripped ends

Approximate weight of the product: MTC11U-00-500-500-00 ... 0,4 kg

Length Tolerances (Table 11U.3)

Length N, L	Tolerance N	Tolerance L
50 ≤ (N, L) ≤ 1500 mm	± 2 mm	± 10 mm
1500 < (N, L) ≤ 2500 mm	± 3 mm	± 10 mm
2500 < (N, L) ≤ 5000 mm	± 5 mm	± 15 mm
5000 < (N, L) ≤ 50000 mm	± 0,5 % of N	± 0,5 % of N

Diameter tolerance (Table 11U.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 11U.5)

Sensor part	Sheat dia. / insulation type	Continuous operation	Short-term operation
Compensation cable	JJ	-10 ... 105 °C	-
	SLSL nebo SL	-60 ... 180 °C	-
	SLGLP	-60 ... 180 °C	-
	GLGLP	-200 ... 400 °C	-
	TSL	-60 ... 180 °C	-
	TCuT	-200 ... 205 °C	-
	TGLV	-200 ... 205 °C	-
Transition part		< 165 °C	-
Connectors MTCK-S, MTCK-M		See cable insulation, max. 220 °C	
Connectors MTCK-CS, MTCK-CM		See cable insulation	
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

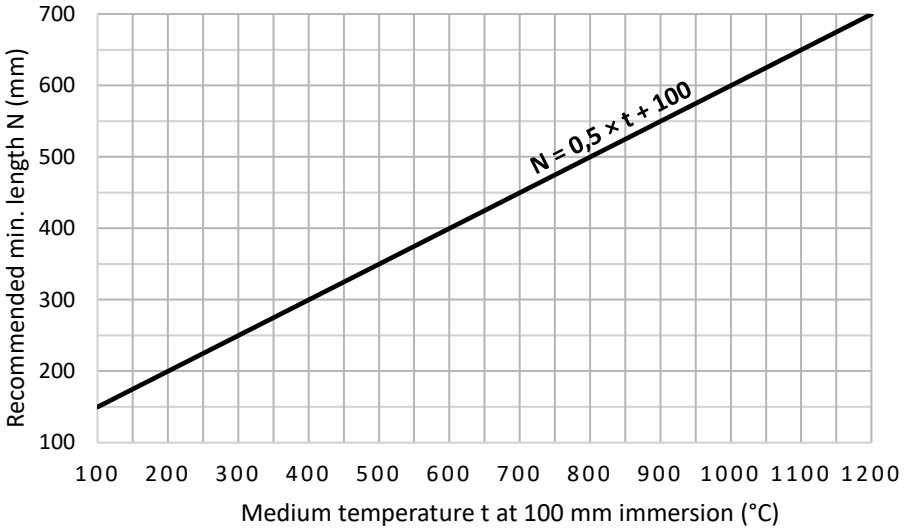
Compensation Cable Overview (Table 11U.6)

Compensation cables are in accuracy class 2 and meet the requirements of the ČSN EN 60584-3 standard.

Type	Insulation	Number x cross-section of wires	Cable outer diameter	Pros and cons
JX KCA	JJ	2 x 0,22 mm²	~ 3,6 mm	↗ Good flexibility, moisture resistant ↘ No shielding, unsuitable for higher temperatures
	SLSL	2 x 0,22 mm²	~ 3,8 mm	↗ Great flexibility, moisture resistant ↘ No shielding, low mechanical resistance
	SLGLP	2 x 0,22 mm²	~ 3,7 mm	↗ Moisture resistant, high mechanical resistance
JX KCA NC	GLGLP	2 x 0,22 mm²	~ 3,5 mm	↗ High mechanical resistance, suitable for higher temperatures ↘ Low moisture resistance
	TSL	2 x 0,22 mm²	~ 3,6 mm	↗ Great flexibility, moisture resistant ↘ No shielding, low mechanical resistance
	TCuT	2 x 0,22 mm²	~ 3,0 mm	↗ Moisture resistant
	TGLV	4 x 0,22 mm²	~ 3,7 mm	↗ Moisture resistant, high mechanical resistance
JX KCA NC	FEP	1 x 0,22 mm² (+) 1 x 0,22 mm² (-)	~ 1,2 mm	Individual conductors

Recommended Min. Sensor Length (Chart 11U.1)

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



Measuring Junction Design

Figure 11U.3: Blunt tip

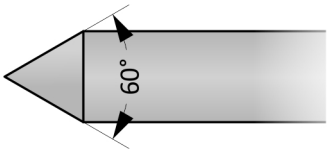


Figure 11U.4: Sharp tip

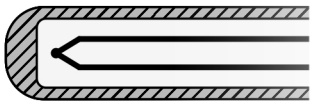


Figure 11U.5: Thermocouple isolated from the sheath

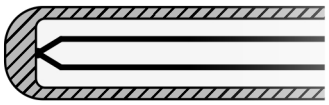


Figure 11U.6: Thermocouple connected to the sheath

Design of the transition part (Table 11U.7)

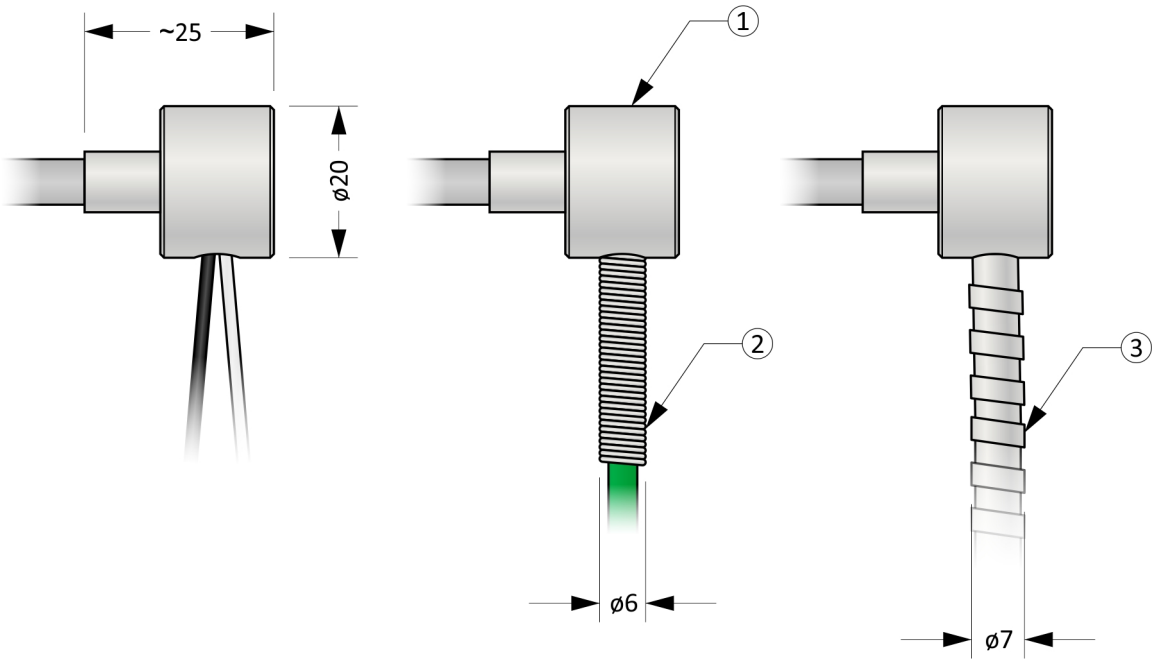


Figure 11U.2: Transition part design options.

①	**Transition part**	
	Note	It enables the connection of the thermocouple and the compensation cables.
	Material	Stainless steel
②	**Spring**	
	Note	It is only used for thermocouples with a diameter of 2 mm and above. It reduces the wear of the cable at the point of exit from the trasition part.
	Material	Stainless steel
③	**Additional armor protection**	
	Note	It increases the mechanical resistance of the cable.
	Material	Stainless steel
	Properties	Flexible, does not prevent the ingress of moisture

Installation And Operating Instructions

The sensor's stem is used for mechanical fastening. Other parts cannot be used.

The electrical connection of the sensor is shown in Figures 11.7 to 11.10. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

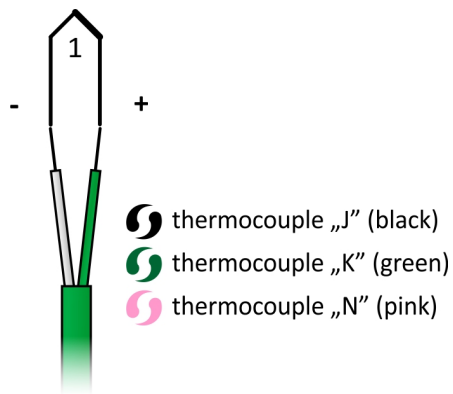


Figure 11U.7: Single thermocouple wiring diagram

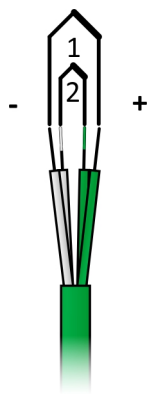


Figure 11U.8: Double thermocouple wiring diagram

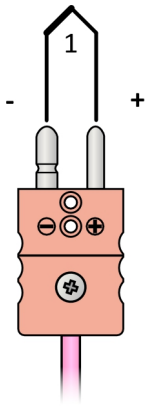


Figure 11U.9: Connector wiring diagram

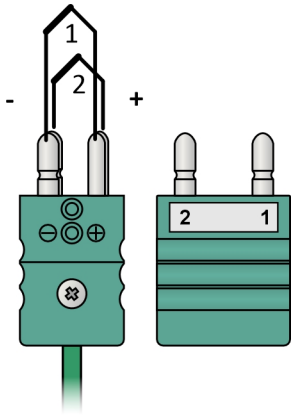


Figure 11U.10: Double connector wiring diagram

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MTC11P

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11P series are flexible and robust sensors with a fast temperature response suitable for industrial environments. Thanks to the pressure mechanism, constant contact with the measured place is guaranteed.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with bayonet mechanism and compensation cable. The sheath is flexible and the sensor can be easily adapted to the measurement place.

General Information (Table 11P.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP6X (transition part), IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Spring stop**	
③	**Bayonet spring**	
④	**Bayonet cap**	
⑤	**Transition part**	
⑥	**Spring**	
⑦	**Compensation cable**	
	Min. bending radius	15 × outer diameter of the cable
⑧	**Additional armor protection**	
⑨	**Stripped ends**	
⑩	**Connector**	

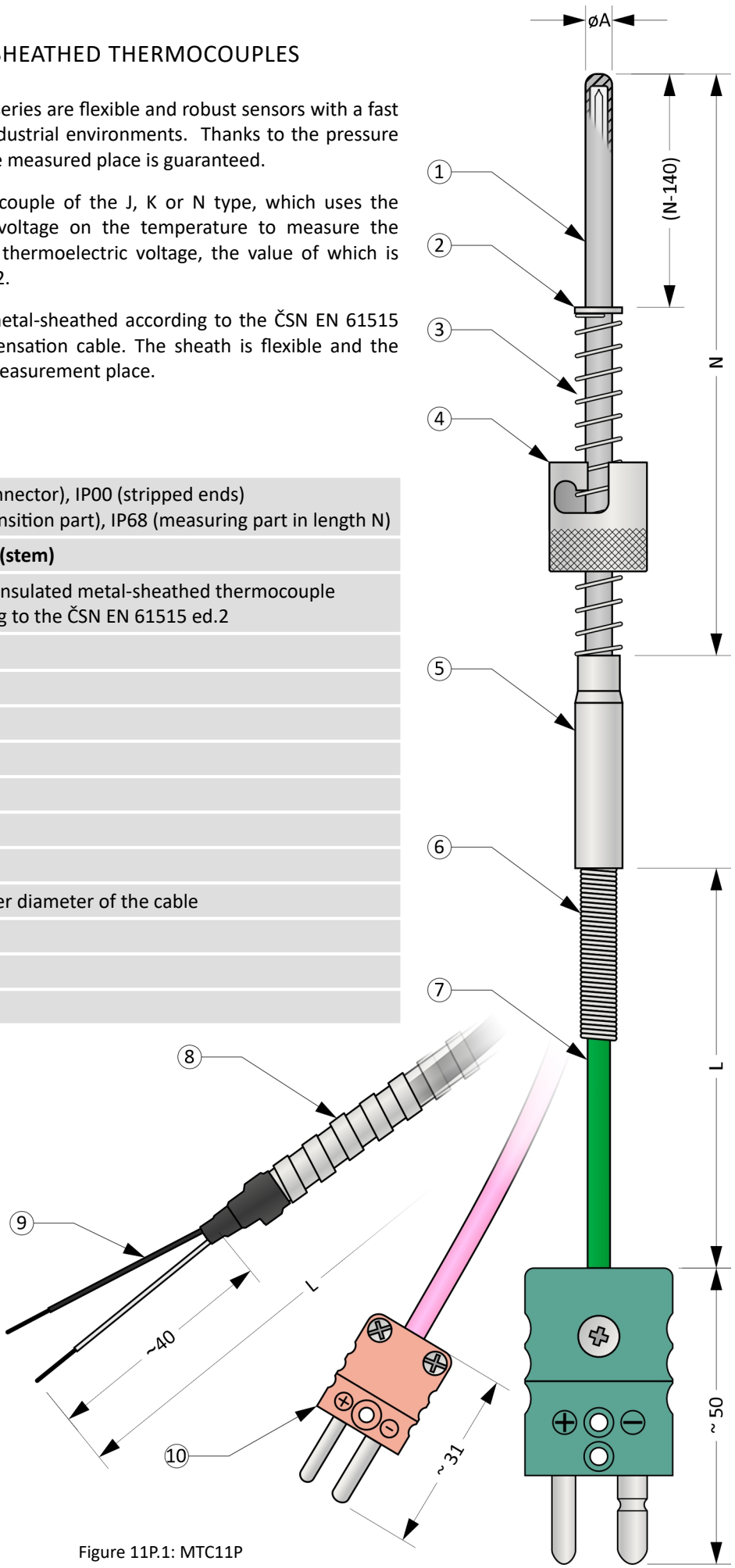


Figure 11P.1: MTC11P

Optional Parameters Including the Creation of an Order Code (Table 11P.2)

Pos.	Code	MTC11P - ❶❷ - ❸ - ❹ - ❺❻	
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**		
	1	1 x „J“, sheath material 1.4541	
	0	1 x „K“, sheath material 2.4816	
	4	1 x „N“, sheath material 2.4816	
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)		
	3	1 x „J“, sheath material 1.4541	
	2	1 x „K“, sheath material 2.4816	
	5	1 x „N“, sheath material 2.4816	
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**		
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip	
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip	
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip	
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip	
❸	**Nominal length N [mm]**		
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)	
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)	
❹	**Cable length L [cm]**		
	xxx	Compensation cable, selectable range from 10 cm to 450 cm (in 1 cm increments)	
	xxx	Compensation cable, selectable range from 460 cm to 5 000 cm (in 10 cm increments)	
	Axxx	Compensation cable with additional armor protection, selectable range from 10 cm to 450 cm (in 1 cm increments)	
	Axxx	Compensation cable with additional armor protection, selectable range from 460 cm to 600 cm (in 10 cm increments)	
❺	**Design of the cold junction**		
	0	Stripped ends, length 40 mm	
	1	Standard connector, MTCK-S type, plug	
	2	Standard connector, MTCK-S type, plug + socket	
	3	Miniature connector, MTCK-M type, plug	
	4	Miniature connector, MTCK-M type, plug + socket	
	5	Ceramic standard connector, MTCK-CS type, plug	
	6	Ceramic standard connector, MTCK-CS type, plug + socket	
	7	Ceramic miniature connector, MTCK-CM type, plug	
	8	Ceramic miniature connector, MTCK-CM type, plug + socket	
❻	**Bayonet cap**		
	0	Inner diameter C = 11,3 mm, 2 slot, with a spring of dia. 6 mm	Only for A = 3,0 mm.
	1	Inner diameter C = 12 mm, 2 slot, with a spring of dia. 6 mm	Only for A = 3,0 mm.
	2	Inner diameter C = 15 mm, 2 slot, with a spring of dia. 6 mm	Only for A = 3,0 mm.
	3	Inner diameter C = 12 mm, 2 slot, with a spring of dia. 8 mm	Only for A = 4,5 mm.
	4	Inner diameter C = 15 mm, 2 slot, with a spring of dia. 8 mm	Only for A = 4,5 mm.

Order code example: MTC11P-00-500-500-00

... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)
... Accuracy class 2, thermocouple isolated from the sheath, blunt tip
... Nominal length N = 500 mm
... Compensation cable length L = 500 cm
... Stripped ends
... Bayonet cap C = 11,3 mm

Approximate weight of the product: MTC11P-00-500-500-00 ... 0,4 kg

Length Tolerances (Table 11P.3)

Length N, L	Tolerance N	Tolerance L
50 ≤ (N, L) ≤ 1500 mm	± 2 mm	± 10 mm
1500 < (N, L) ≤ 2500 mm	± 3 mm	± 10 mm
2500 < (N, L) ≤ 5000 mm	± 5 mm	± 15 mm
5000 < (N, L) ≤ 50000 mm	± 0,5 % of N	± 0,5 % of N

Diameter tolerance (Table 11P.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 11P.5)

Sensor part	Sheat dia. / insulation type	Continuous operation	Short-term operation
Compensation cable	GLGLP	-200 ... 400 °C	-
Spring stop, spring, bayonet cap		< 500 °C	-
Transition part		< 165 °C	-
Connectors MTCK-S, MTCK-M		< 220 °C	-
Connectors MTCK-CS, MTCK-CM		< 400 °C	-
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C

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

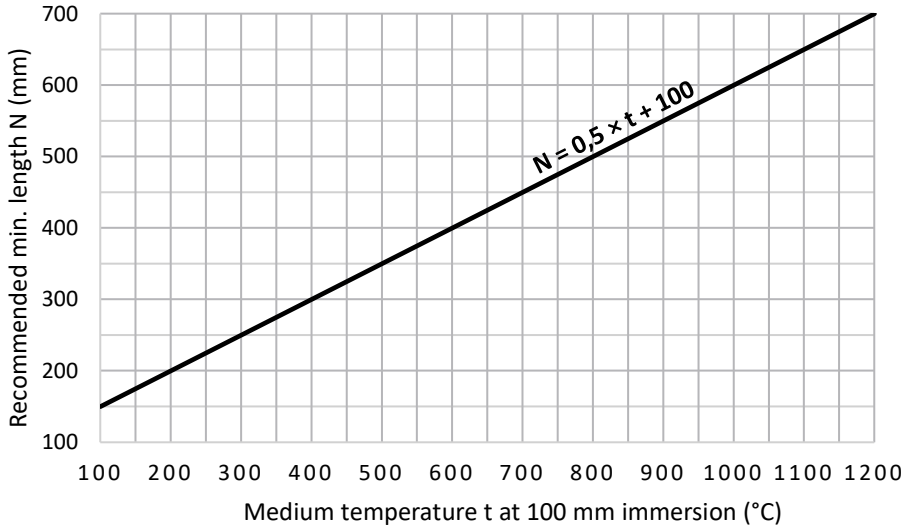
Compensation Cable Overview (Table 11P.6)

Compensation cables are in accuracy class 2 and meet the requirements of the ČSN EN 60584-3 standard.

Type	Insulation	Number x cross-section of wires	Cable outer diameter	Pros and cons
JX KCA NC	GLGLP	2 x 0,22 mm²	~ 3,5 mm	↗ High mechanical resistance, suitable for higher temperatures ↘ Low moisture resistance

Recommended Min. Sensor Length (Chart 11P.1)

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



Measuring Junction Design

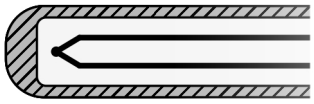


Figure 11P.2: Thermocouple isolated from the sheath

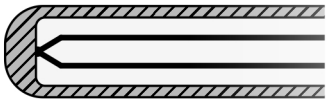


Figure 11P.3: Thermocouple connected to the sheath

Bayonet part design (Table 11P.7)

①	**Bayonet cap**	
	Material	Stainless steel
②	**Bayonet spring**	
	Material	Stainless steel

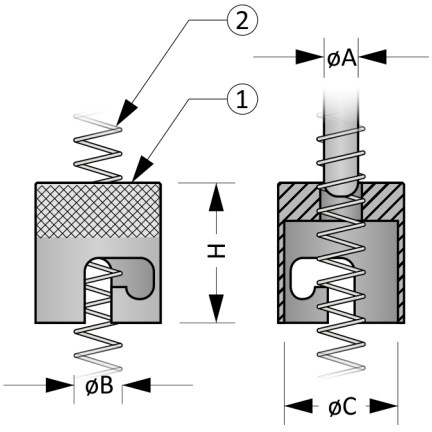


Figure 11P.4: Bayonet cap

Dimensions of the bayonet cap (Table 11P.8)

øC	H	øB	øA
11,3 mm	16 mm	6 mm	3,0 mm
12,0 mm	18 mm	6 mm	3,0 mm
		8 mm	4,5 mm
15,0 mm	18 mm	6 mm	3,0 mm
		8 mm	4,5 mm

Design of the transition part (Table 11P.9)

①	**Transition part**	
	Note	It enables the connection of the thermocouple and the compensation cables.
	Material	Stainless steel
②	**Spring**	
	Note	It is only used for thermocouples with a diameter of 2 mm and above. It reduces the wear of the cable at the point of exit from the trasition part.
	Material	Stainless steel
③	**Additional armor protection**	
	Note	It increases the mechanical resistance of the cable.
	Material	Stainless steel
	Properties	Flexible, does not prevent the ingress of moisture

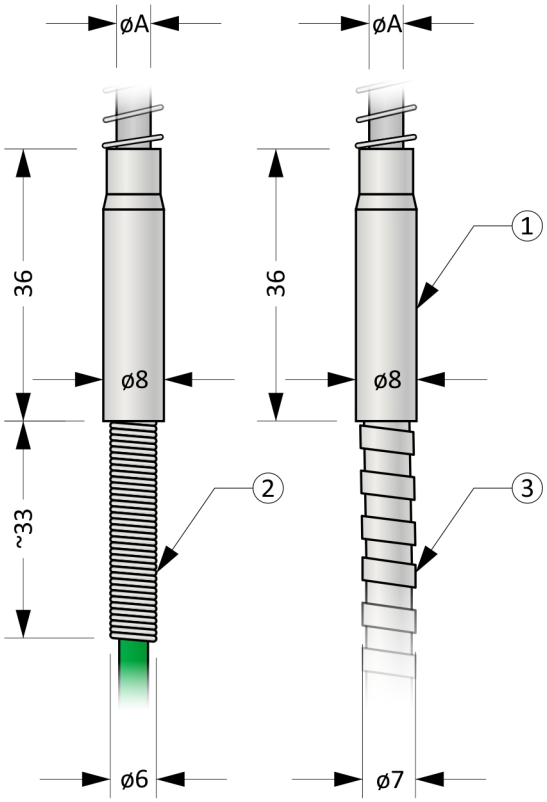


Figure 11P.5: Transition part design options.

Installation And Operating Instructions

The sensor is fixed using a bayonet mechanism. Other parts cannot be used.

The electrical connection of the sensor is shown in Figures 11P.6 and 11P.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.

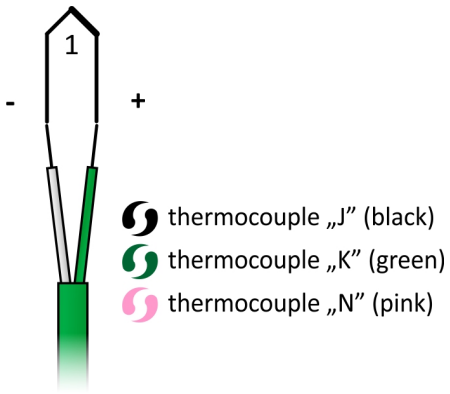


Figure 11P.6: Single thermocouple wiring diagram

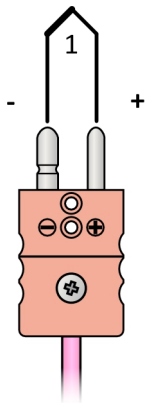


Figure 11P.7: Connector wiring diagram

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MTC11PU

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11PU series are flexible and robust sensors with a fast temperature response suitable for industrial environments. Thanks to the pressure mechanism, constant contact with the measured place is guaranteed.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with bayonet mechanism and compensation cable. The sheath is flexible and the sensor can be easily adapted to the measurement place.

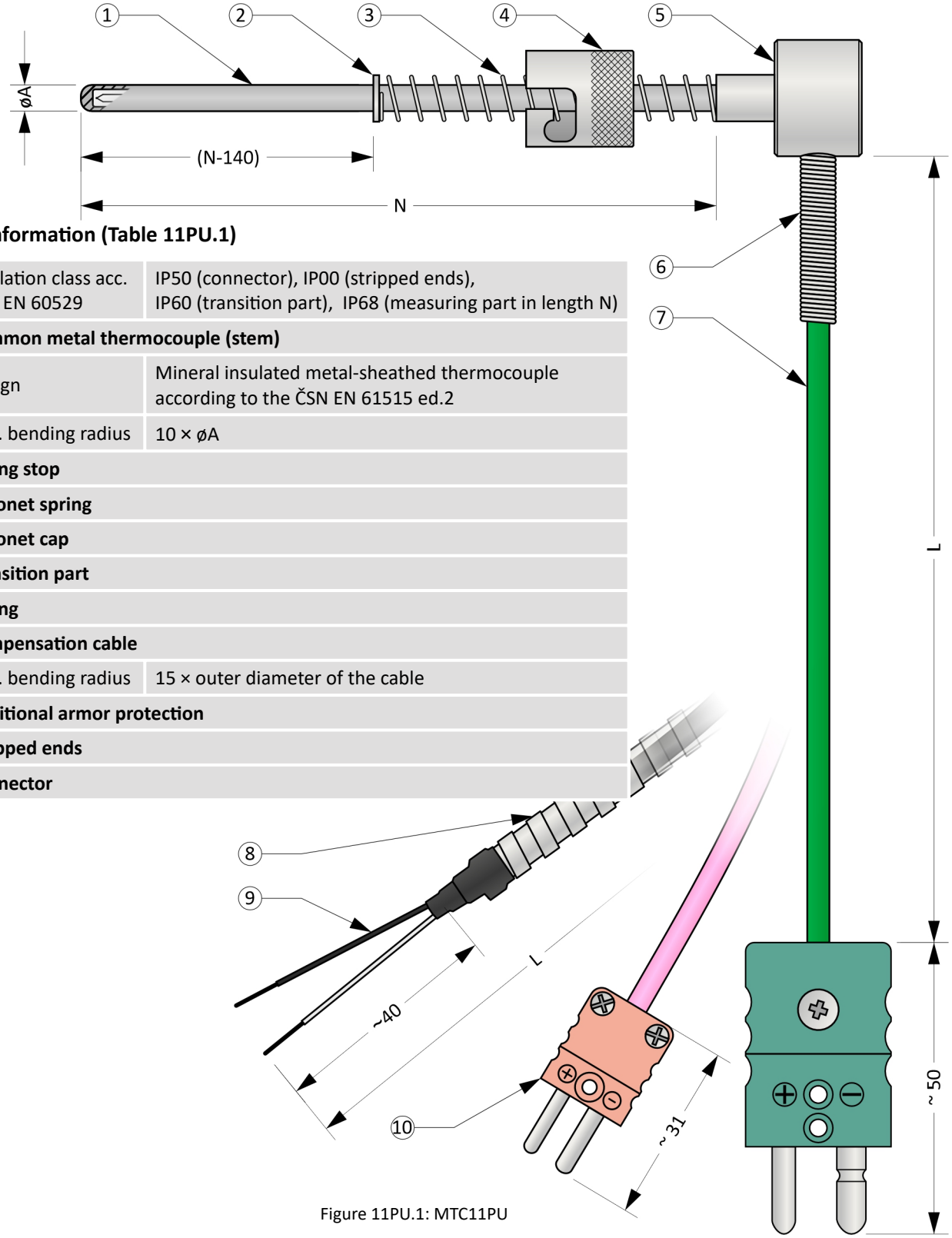


Figure 11PU.1: MTC11PU

General Information (Table 11PU.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends), IP60 (transition part), IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Spring stop**	
③	**Bayonet spring**	
④	**Bayonet cap**	
⑤	**Transition part**	
⑥	**Spring**	
⑦	**Compensation cable**	
	Min. bending radius	15 × outer diameter of the cable
⑧	**Additional armor protection**	
⑨	**Stripped ends**	
⑩	**Connector**	

Optional Parameters Including the Creation of an Order Code (Table 11PU.2)

Pos.	Code	MTC11PU - ❶❷ - ❸ - ❹ - ❺❻	
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**		
	1	1 x „J“, sheath material 1.4541	
	0	1 x „K“, sheath material 2.4816	
	4	1 x „N“, sheath material 2.4816	
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)		
	3	1 x „J“, sheath material 1.4541	
	2	1 x „K“, sheath material 2.4816	
	5	1 x „N“, sheath material 2.4816	
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**		
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip	
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip	
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip	
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip	
❸	**Nominal length N [mm]**		
	xxx	Selectable range from 200 mm to 4 500 mm (in 1 mm increments)	
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)	
❹	**Cable length L [cm]**		
	xxx	Compensation cable, selectable range from 10 cm to 450 cm (in 1 cm increments)	
	xxx	Compensation cable, selectable range from 460 cm to 5 000 cm (in 10 cm increments)	
	Axxx	Compensation cable with additional armor protection, selectable range from 10 cm to 450 cm (in 1 cm increments)	
	Axxx	Compensation cable with additional armor protection, selectable range from 460 cm to 600 cm (in 10 cm increments)	
❺	**Design of the cold junction**		
	0	Stripped ends, length 40 mm	
	1	Standard connector, MTCK-S type, plug	
	2	Standard connector, MTCK-S type, plug + socket	
	3	Miniature connector, MTCK-M type, plug	
	4	Miniature connector, MTCK-M type, plug + socket	
	5	Ceramic standard connector, MTCK-CS type, plug	
	6	Ceramic standard connector, MTCK-CS type, plug + socket	
	7	Ceramic miniature connector, MTCK-CM type, plug	
	8	Ceramic miniature connector, MTCK-CM type, plug + socket	
❻	**Bayonet cap**		
	0	Inner diameter C = 11,3 mm, 2 slot, with a spring of dia. 6 mm	Only for A = 3,0 mm.
	1	Inner diameter C = 12 mm, 2 slot, with a spring of dia. 6 mm	Only for A = 3,0 mm.
	2	Inner diameter C = 15 mm, 2 slot, with a spring of dia. 6 mm	Only for A = 3,0 mm.
	3	Inner diameter C = 12 mm, 2 slot, with a spring of dia. 8 mm	Only for A = 4,5 mm.
	4	Inner diameter C = 15 mm, 2 slot, with a spring of dia. 8 mm	Only for A = 4,5 mm.

Order code example: MTC11PU-00-500-500-00

... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)
... Accuracy class 2, thermocouple isolated from the sheath, blunt tip
... Nominal length N = 500 mm
... Compensation cable length L = 500 cm
... Stripped ends
... Bayonet cap C = 11,3 mm

Approximate weight of the product: MTC11PU-00-500-500-00 ... 0,4 kg

Length Tolerances (Table 11PU.3)

Length N, L	Tolerance N	Tolerance L
(N, L) ≤ 1500 mm	± 2 mm	± 10 mm
1500 < (N, L) ≤ 2500 mm	± 3 mm	± 10 mm
2500 < (N, L) ≤ 5000 mm	± 5 mm	± 15 mm
5000 < (N, L) mm	± 0,5 % of N	± 0,5 % of N

Diameter tolerance (Table 11PU.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 11PU.5)

Sensor part	Sheat dia. / insulation type	Continuous operation	Short-term operation
Compensation cable	GLGLP	-200 ... 400 °C	-
Spring stop, spring, bayonet cap		< 500 °C	-
Transition part		< 165 °C	-
Connectors MTCK-S, MTCK-M		< 220 °C	-
Connectors MTCK-CS, MTCK-CM		< 400 °C	-
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C

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

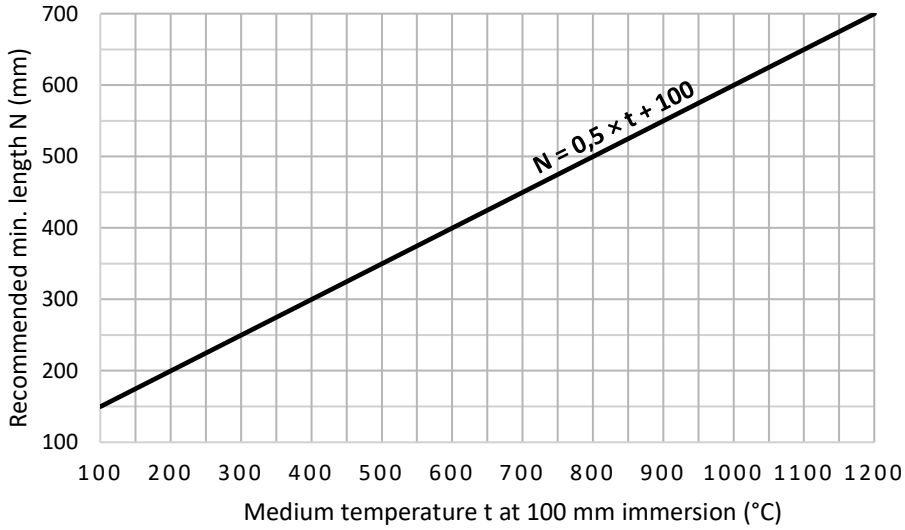
Compensation Cable Overview (Table 11PU.6)

Compensation cables are in accuracy class 2 and meet the requirements of the ČSN EN 60584-3 standard.

Type	Insulation	Number x cross-section of wires	Cable outer diameter	Pros and cons
JX KCA NC	GLGLP	2 x 0,22 mm²	~ 3,5 mm	↗ High mechanical resistance, suitable for higher temperatures ↘ Low moisture resistance

Recommended Min. Sensor Length (Chart 11PU.1)

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



Measuring Junction Design

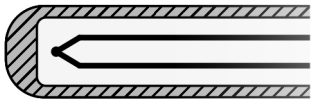


Figure 11PU.2: Thermocouple isolated from the sheath

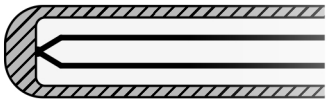


Figure 11PU.3: Thermocouple connected to the sheath

Bayonet part design (Table 11PU.7)

①	**Bayonet cap**	
	Material	Stainless steel
②	**Bayonet spring**	
	Material	Stainless steel

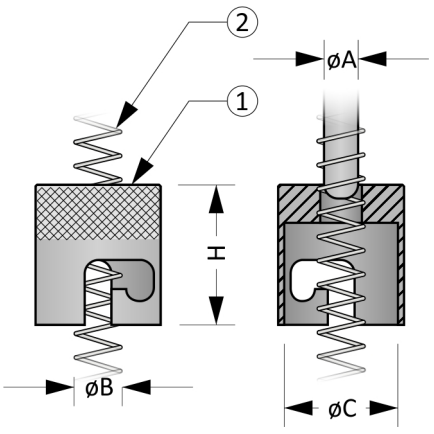


Figure 11PU.4: Bayonet cap

Dimensions of the bayonet cap (Table 11PU.8)

øC	H	øB	øA
11,3 mm	16 mm	6 mm	3,0 mm
12,0 mm	18 mm	6 mm	3,0 mm
		8 mm	4,5 mm
15,0 mm	18 mm	6 mm	3,0 mm
		8 mm	4,5 mm

Design of the transition part (Table 11PU.9)

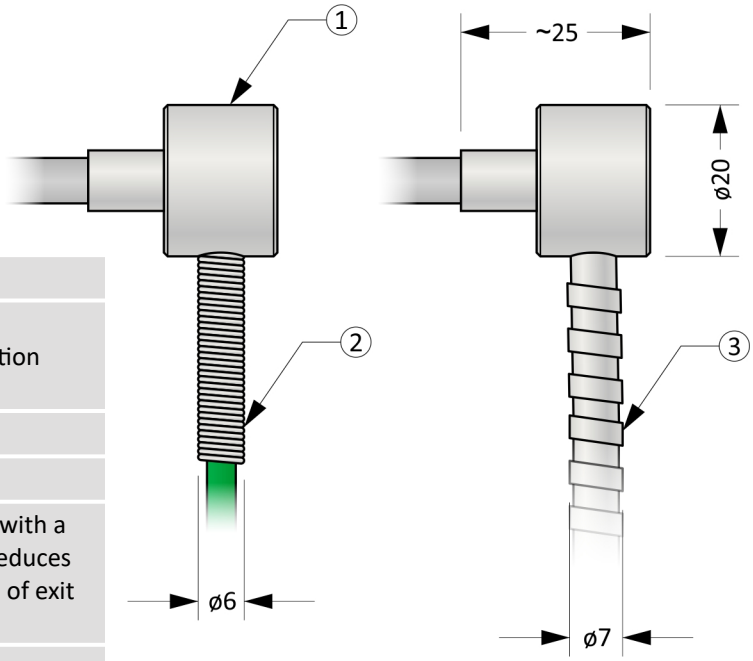


Figure 11PU.5: Transition part design options.

①	**Transition part**	
	Note	It enables the connection of the thermocouple and the compensation cables.
	Material	Stainless steel
②	**Spring**	
	Note	It is only used for thermocouples with a diameter of 2 mm and above. It reduces the wear of the cable at the point of exit from the trasition part.
	Material	Stainless steel
③	**Additional armor protection**	
	Note	It increases the mechanical resistance of the cable.
	Material	Stainless steel
	Properties	Flexible, does not prevent the ingress of moisture

Installation And Operating Instructions

The sensor is fixed using a bayonet mechanism. Other parts cannot be used.

The electrical connection of the sensor is shown in Figures 11PU.6 and 11PU.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.

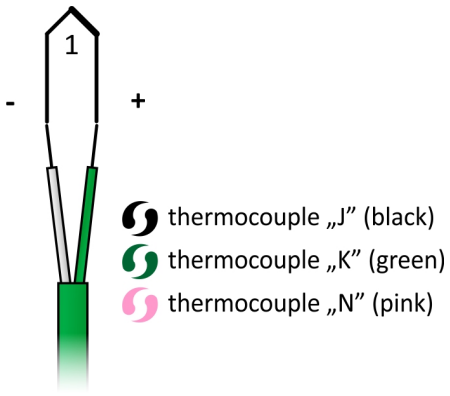


Figure 11PU.6: Single thermocouple wiring diagram

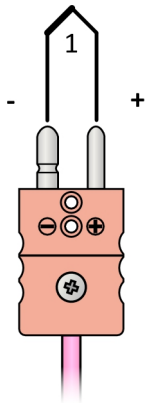


Figure 11PU.7: Connector wiring diagram

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MTC11R

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11R series are hand-held flexible and robust sensors with a fast temperature response suitable for industrial environments.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with handle and compensation cable. The sheath is flexible and the sensor can be easily adapted to the measurement place.

General Information (Table 11R.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends), IP6X (transition part), IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Handle**	
	Material	Silon
③	**Compensation cable**	
	Min. bending radius	15 × outer diameter of the cable
④	**Stripped ends**	
⑤	**Connector**	
⑥	**Additional protection tube**	
	Material	1.4541
	Outer / inner diameter	5 / 4 mm

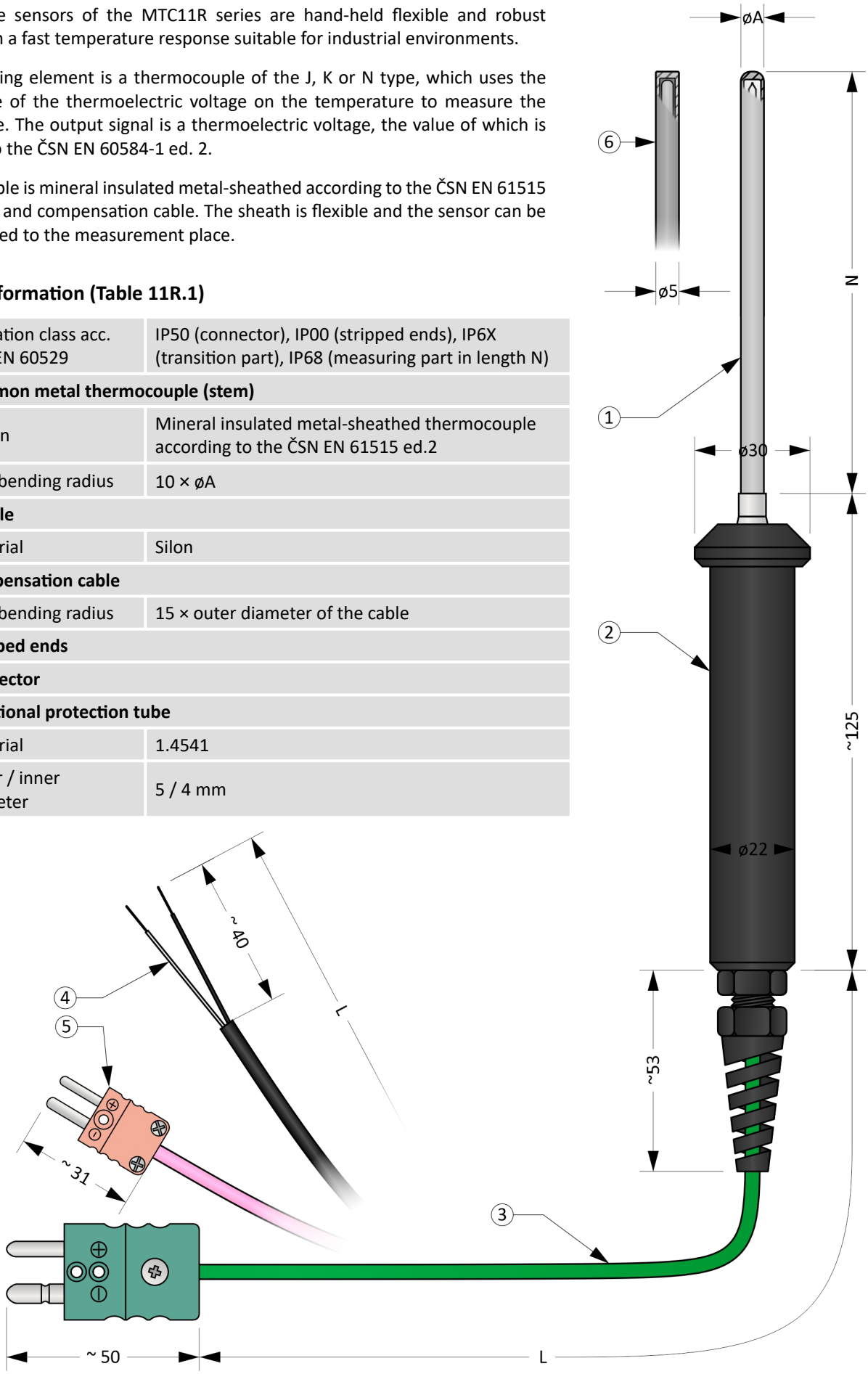


Figure 11R.1: MTC11R

Optional Parameters Including the Creation of an Order Code (Table 11R.2)

Pos.	Code	MTC11R - ❶❷❸ - ❹ - ❺ - ❻❼	
❶	**Thermocouple type of dia. A = 2,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**		
	1	1 x „J“, sheath material 1.4541	
	0	1 x „K“, sheath material 2.4816	
	8	1 x „N“, sheath material 2.4816	
	Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)		
	3	1 x „J“, sheath material 1.4541	
	2	1 x „K“, sheath material 2.4816	
	9	1 x „N“, sheath material 2.4816	
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)		
	5	1 x „J“, sheath material 1.4541	
	4	1 x „K“, sheath material 2.4816	
	A	1 x „N“, sheath material 2.4816	
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)		
	7	1 x „J“, sheath material 1.4541	
	6	1 x „K“, sheath material 2.4816	
	B	1 x „N“, sheath material 2.4816	
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**		
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip	
	5	Accuracy class 1, thermocouple isolated from the sheath, sharp tip	
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip	
	7	Accuracy class 1, thermocouple connected to the sheath, sharp tip	
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip	
	4	Accuracy class 2, thermocouple isolated from the sheath, sharp tip	
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip	
	6	Accuracy class 2, thermocouple connected to the sheath, sharp tip	
❸	**Additional protection tube**		
	0	Without additional protection tube	
	1	With protection tube of dia. 5,0 mm	Only for A = 3,0 mm
❹	**Nominal length N [mm]**		
	xxx	Selectable range from 150 mm to 1 500 mm (in 1 cm increments)	
❺	**Cable length L [cm]**		
	xxx	Compensation cable, selectable range from 20 cm to 450 cm (in 1 cm increments)	
	xxx	Compensation cable, selectable range from 460 cm to 5 000 cm (in 10 cm increments)	
❻	**Compensation cable insulation type**		
	0	Polyvinyl chloride PVC / Polyvinyl chloride PVC (JJ)	Only for J, K type thermocouples.
	1	Silicone / silicone (SLSL)	Only for J, K type thermocouples.
	2	Silicone / glass fiber braid / galvanized steel wire braid (SLGLP)	Only for J, K type thermocouples.
	3	Glass fiber braid / glass fiber braid / galvanized steel wire braid (GLGLP)	
	4	Teflon FEP / silicone (TSL)	
	5	Teflon FEP / oplet Cu / teflon FEP (TCuT)	

Continuation of table 11R.2 on the next page

Continuation of table 11R.2 from the previous page		
Pos.	Code	**MTC11R - ❶❷❸ - ❹ - ❺ - ❻❼**
❼	**Design of the cold junction - single thermocouples**	
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket

Order code example: MTC11R-000-500-500-00
... 1 x „K“, sheath dia. A = 1 mm, sheath material 2.4816 (INCONEL 600)
... Accuracy class 2, thermocouple isolated from the sheath, blunt tip
... Without additional protection tube
... Nominal length N = 500 mm
... Compensation cable length L = 500 cm
... Cable insulation type JJ
... Stripped ends

Approximate weight of the product: MTC11R-000-500-500-00 ... 0,4 kg

Length Tolerances (Table 11R.3)

Length N, L	Tolerance N	Tolerance L
50 ≤ (N, L) ≤ 1500 mm	± 2 mm	± 10 mm
1500 < L ≤ 2500 mm	± 3 mm	± 10 mm
2500 < L ≤ 5000 mm	± 5 mm	± 15 mm
5000 < L ≤ 50000 mm	± 0,5 % of N	± 0,5 % of N

Diameter tolerance (Table 11R.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

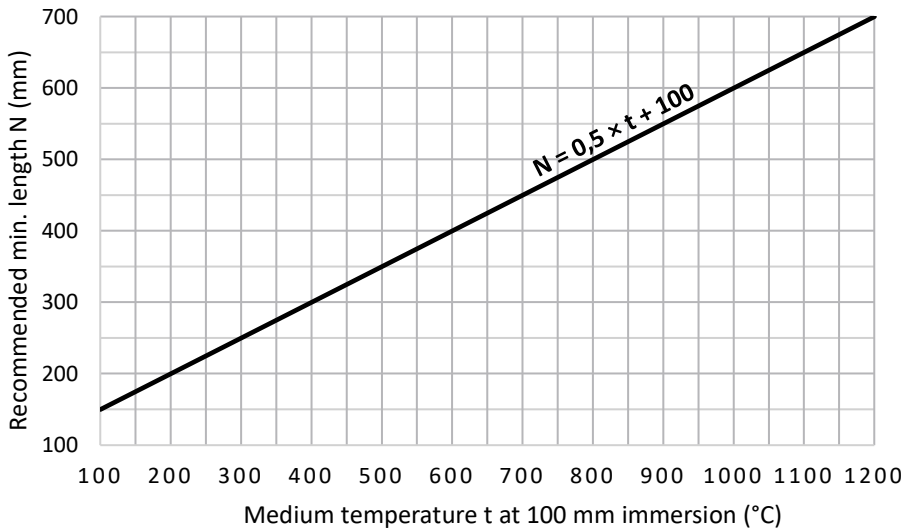
Recommended Maximum Temperatures of Sensor Parts (Table 11R.5)

Sensor part	Sheat dia. / insulation type	Continuous operation	Short-term operation
Compensation cable	JJ	-10 ... 105 °C	-
	SLSL nebo SL	-60 ... 180 °C	-
	SLGLP	-60 ... 180 °C	-
	GLGLP	-200 ... 400 °C	-
	TSL	-60 ... 180 °C	-
	TCuT	-200 ... 205 °C	-
Connectors MTCK-S, MTCK-M		See cable insulation, max. 220 °C	-
Connectors MTCK-CS, MTCK-CM		See cable insulation	-
Handle		< 100 °C	-
Additional protection tube		< 500 °C	-
Thermocouple type „J“ measuring junction	2 mm	< 440 °C	< 490 °C
	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	2 mm	< 900 °C	< 950 °C
	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

Recommended Min. Sensor Length (Chart 11R.1)

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



Compensation Cable Overview (Table 11R.6)

Compensation cables are in accuracy class 2 and meet the requirements of the ČSN EN 60584-3 standard.

Type	Insulation	Number x cross-section of wires	Cable outer diameter	Pros and cons
JX KCA	JJ	2 x 0,22 mm²	~ 3,6 mm	↗ Good flexibility, moisture resistant ↘ No shielding, unsuitable for higher temperatures
	SLSL	2 x 0,22 mm²	~ 3,8 mm	↗ Great flexibility, moisture resistant ↘ No shielding, low mechanical resistance
	SLGLP	2 x 0,22 mm²	~ 3,7 mm	↗ Moisture resistant, high mechanical resistance
JX KCA NC	GLGLP	2 x 0,22 mm²	~ 3,5 mm	↗ High mechanical resistance, suitable for higher temperatures ↘ Low moisture resistance
	TCuT	2 x 0,22 mm²	~ 3,0 mm	↗ Moisture resistant
	TSL	2 x 0,22 mm²	~ 3,6 mm	↗ Great flexibility, moisture resistant ↘ No shielding, low mechanical resistance

Measuring Junction Design

Figure 11R.3: Blunt tip

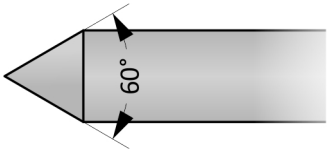


Figure 11R.4: Sharp tip

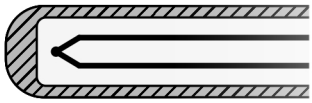


Figure 11R.5: Thermocouple isolated from the sheath

Figure 11R.6: Thermocouple connected to the sheath

Installation And Operating Instructions

The electrical connection of the sensor is shown in Figures 11R.7 and 11R.8. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

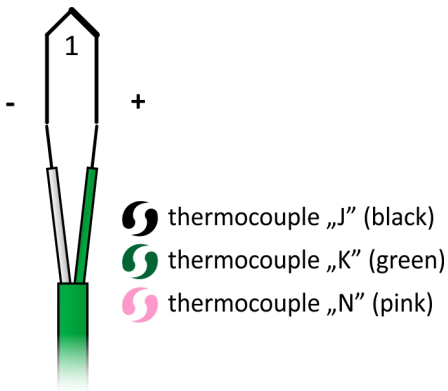


Figure 11R.7: Single thermocouple wiring diagram

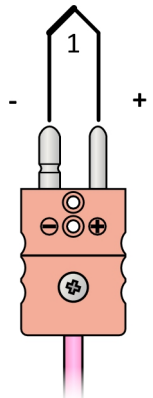


Figure 11R.8: Connector wiring diagram

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MTC11F

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11F series are flexible and robust sensors with a fast temperature response suitable for industrial environments. The small size of the head enables use in places with limited installation space.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with connection head. The sheath is flexible and the sensor can be easily adapted to the measurement place.

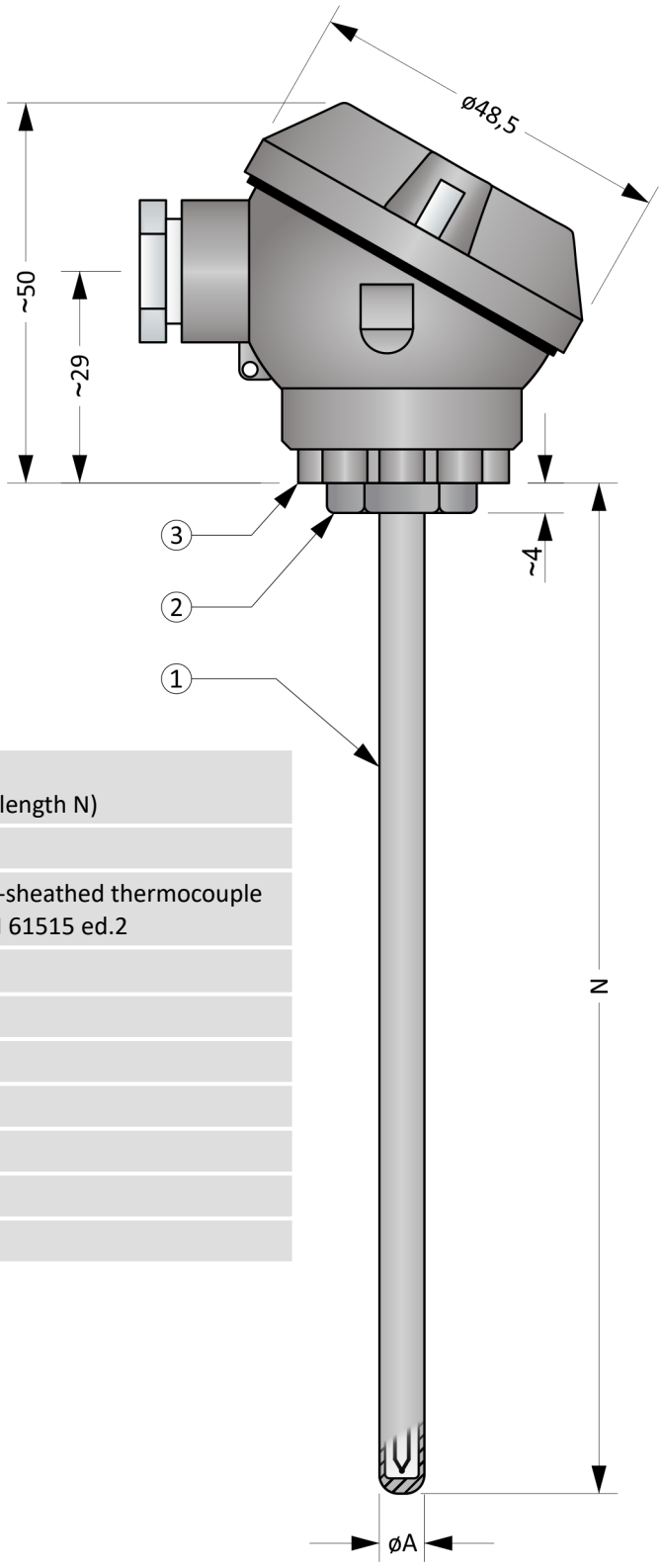


Figure 11F.1: MTC11F

General Information (Table 11F.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Bushing**	
	Material	Stainless steel
③	**Head**	
	Typ	F
	Material	Aluminium alloy
	Cable bushing	M16 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 11F.2)

Pos.	Code	MTC11F - ❶❷ - ❸
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	C	1 x „N“, sheath material 2.4816
	7	2 x „J“, sheath material 1.4541
	6	2 x „K“, sheath material 2.4816
	F	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	D	1 x „N“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	G	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	E	1 x „N“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	H	2 x „N“, sheath material 2.4816
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**	
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip
	5	Accuracy class 1, thermocouple isolated from the sheath, sharp tip
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip
	7	Accuracy class 1, thermocouple connected to the sheath, sharp tip
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip
	4	Accuracy class 2, thermocouple isolated from the sheath, sharp tip
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip
	6	Accuracy class 2, thermocouple connected to the sheath, sharp tip
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)

Order code example: MTC11F-00-500

... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)

... Accuracy class 2, thermocouple isolated from the sheath, blunt tip

... Nominal length N = 500 mm

Approximate weight of the product: MTC11F-00-500 ... 0,4 kg

Length Tolerances (Table 11F.3)

Nominal length N	Tolerance N
50 ≤ N ≤ 1500 mm	± 2 mm
1500 < N ≤ 2500 mm	± 3 mm
2500 < N ≤ 5000 mm	± 5 mm
5000 < N ≤ 50000 mm	± 0,5 % of N

Diameter tolerance (Table 11F.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 11F.5)

Sensor part	Sheat dia.	Continuous operation	Short-term operation
Head		< 100 °C	-
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

Measuring Junction Design

Figure 11F.2: Blunt tip

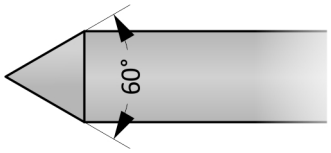


Figure 11F.3: Sharp tip

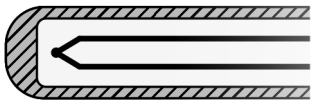


Figure 11F.4: Thermocouple isolated from the sheath

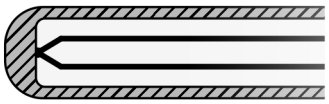
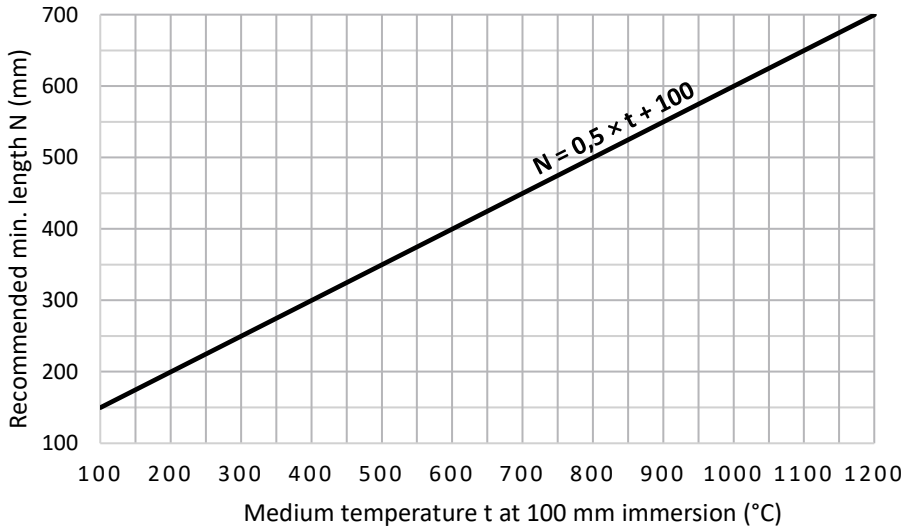


Figure 11F.5: Thermocouple connected to the sheath

Recommended Min. Sensor Length (Chart 11F.1)

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



Installation And Operating Instructions

The sensor's stem is used for mechanical fastening. Other parts cannot be used.

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 the sensor is shown in Figures 11F.6 and 11F.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.

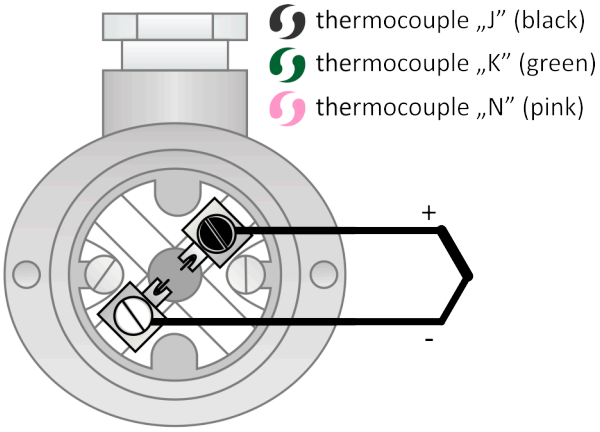


Figure 11F.6: Single thermocouple wiring diagram

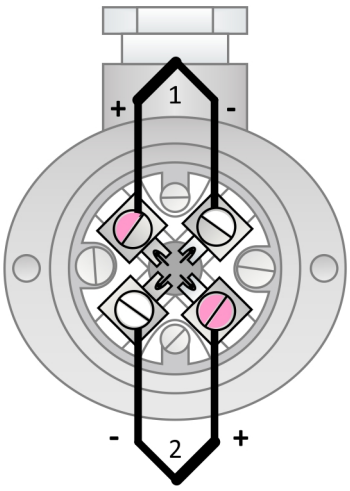


Figure 11F.7: Double thermocouple wiring diagram

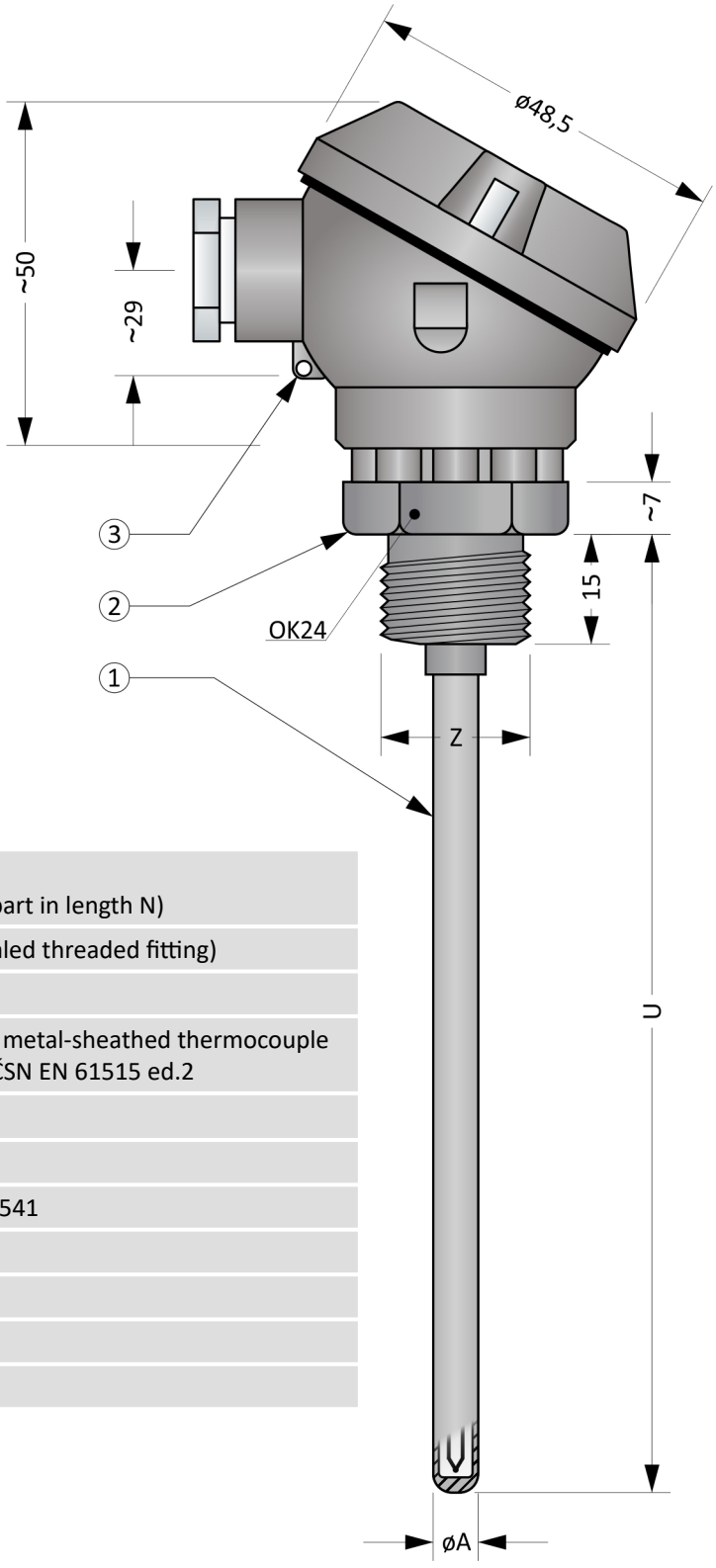
MTC11FS

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11FS series are flexible and robust sensors with a fast temperature response suitable for industrial environments. The small size of the head enables use in places with limited installation space. Sensors are designed for screwing into welding socket.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with connection head. The sheath is flexible and the sensor can be easily adapted to the measurement place.



General Information (Table 11FS.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Medium max. overpressure	3 bar (only for sealed threaded fitting)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Threaded fitting**	
	Material	Stainless steel 1.4541
③	**Head**	
	Type	F
	Material	Aluminium alloy
	Cable bushing	M16 x 1,5

Figure 11FS.1: MTC11FS

Optional Parameters Including the Creation of an Order Code (Table 11FS.2)

Pos.	Code	MTC11FS - ❶❷ - ❸ - ❹
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	C	1 x „N“, sheath material 2.4816
	7	2 x „J“, sheath material 1.4541
	6	2 x „K“, sheath material 2.4816
	F	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	D	1 x „N“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	G	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	E	1 x „N“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	H	2 x „N“, sheath material 2.4816
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**	
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)
❹	**Process thread Z**	
	0	Process thread Z = G½“, unsealed, OK24
	1	Process thread Z = G½“, sealed, OK24
	2	Process thread Z = M20 x 1,5, unsealed, OK24
	3	Process thread Z = M20 x 1,5, unsealed, OK24

Order code example: MTC11FS-00-500-2

... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)

... Accuracy class 2, thermocouple isolated from the sheath, blunt tip

... Nominal length N = 500 mm

... Process thread M20 x 1,5, unsealed

Approximate weight of the product: MTC11FS-00-500-2 ... 0,4 kg

Length Tolerances (Table 11FS.3)

Nominal length N	Tolerance N
50 ≤ N ≤ 1500 mm	± 2 mm
1500 < N ≤ 2500 mm	± 3 mm
2500 < N ≤ 5000 mm	± 5 mm
5000 < N ≤ 50000 mm	± 0,5 % of N

Diameter tolerance (Table 11FS.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 11FS.5)

Sensor part	Sheat dia.	Continuous operation	Short-term operation
Head		< 100 °C	-
Threaded fitting		< 500 °C	-
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

Measuring Junction Design

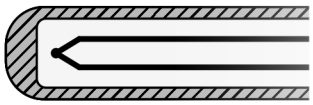


Figure 11FS.2: Thermocouple isolated from the sheath

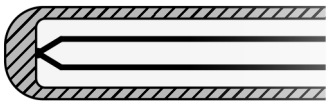
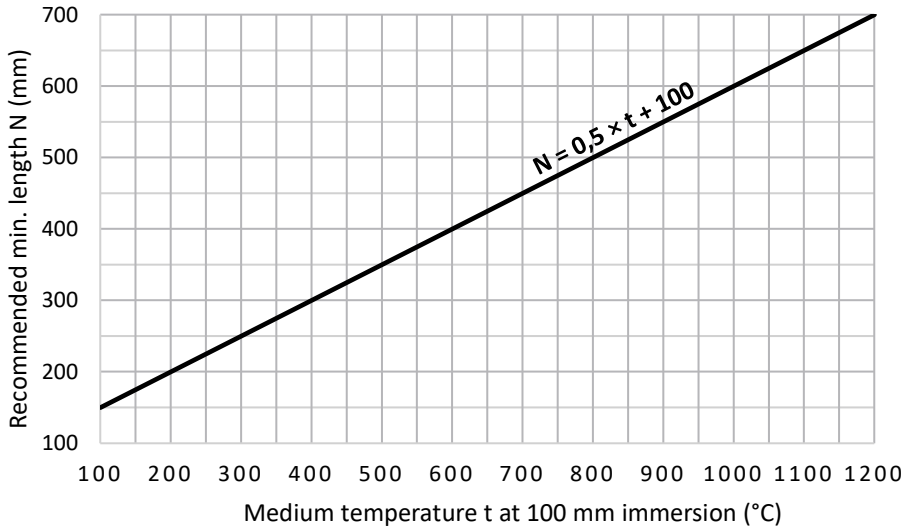


Figure 11FS.3: Thermocouple connected to the sheath

Recommended Min. Sensor Length (Chart 11FS.1)

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



Installation And Operating Instructions

The sensor's threaded fitting is used for mechanical fastening.

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 the sensor is shown in Figures 11FS.4 and 11FS.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.

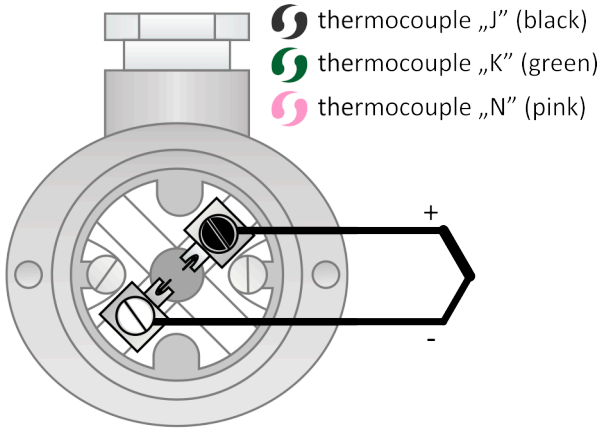


Figure 11FS.4: Single thermocouple wiring diagram

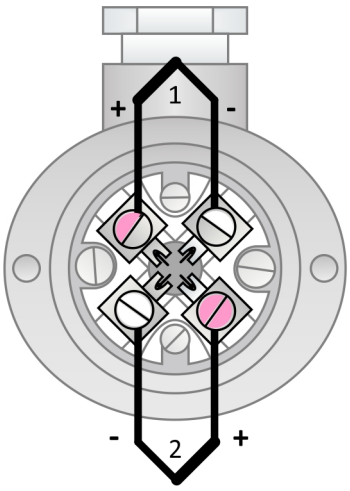


Figure 11FS.5: Double thermocouple wiring diagram

MTC11H

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11H series are flexible and robust sensors with a fast temperature response suitable for industrial environments. The size of the head allows the transmitter to be installed inside.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with connection head. The sheath is flexible and the sensor can be easily adapted to the measurement place.

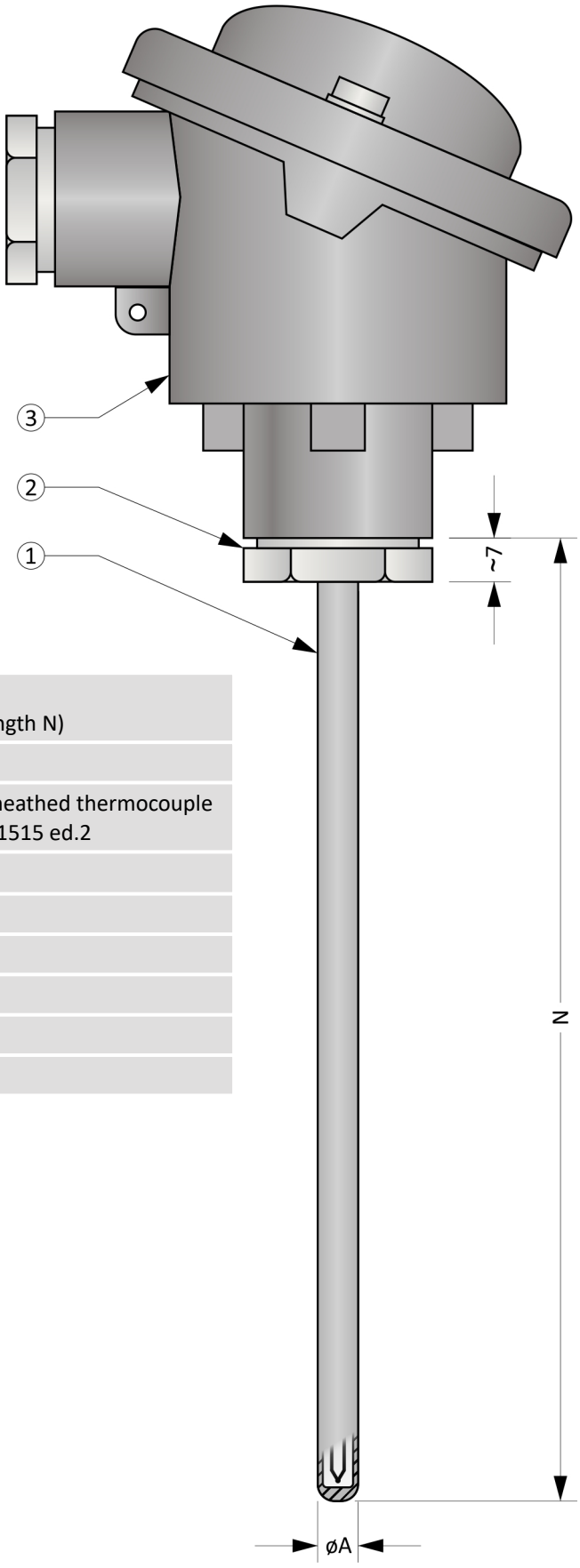


Figure 11H.1: MTC11H

General Information (Table 11H.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Cable bushing**	
	Material	Aluminium alloy
③	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 11H.2)

Pos.	Code	MTC11H - ❶❷ - ❸ - ❹❺
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	C	1 x „N“, sheath material 2.4816
	7	2 x „J“, sheath material 1.4541
	6	2 x „K“, sheath material 2.4816
	F	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	D	1 x „N“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	G	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	E	1 x „N“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	H	2 x „N“, sheath material 2.4816
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**	
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)
❹	**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

Continuation of table 11H.2 on the next page

MTC11H

Continuation of table 11H.2 from the previous page		
Pos.	Code	**MTC11H - ❶❷ - ❸ - ❹❺**
❺	**Transmitter (only for 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: MTC11H-00-500-00
... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)
... Accuracy class 2, thermocouple isolated from the sheath, blunt tip
... Nominal length N = 500 mm
... Head A
... Without transmitter

Approximate weight of the product: MTC11H-00-500-00 ... 0,5 kg

Length Tolerances (Table 11H.3)

Nominal length N	Tolerance N
50 ≤ N ≤ 1500 mm	± 2 mm
1500 < N ≤ 2500 mm	± 3 mm
2500 < N ≤ 5000 mm	± 5 mm
5000 < N ≤ 50000 mm	± 0,5 % of N

Diameter tolerance (Table 11H.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 11H.5)

Sensor part	sheath dia.	Continuous operation	Short-term operation
Head / head with transmitter		< 100 °C / < 85 °C	-
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

Measuring Junction Design

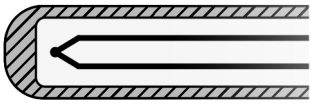


Figure 11H.2: Thermocouple isolated from the sheath

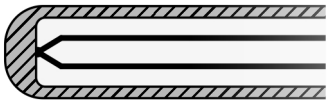
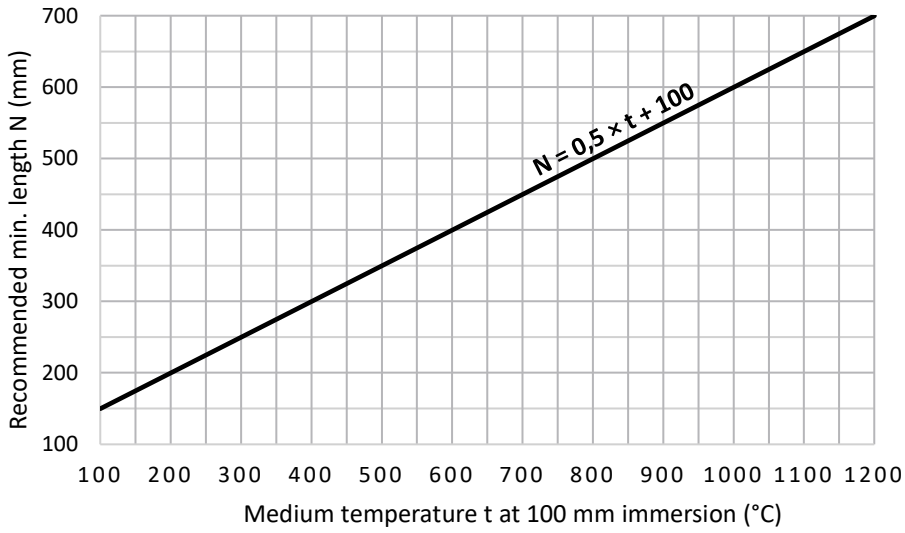


Figure 11H.3: Thermocouple connected to the sheath

Recommended Min. Sensor Length (Chart 11H.1)

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



Head types

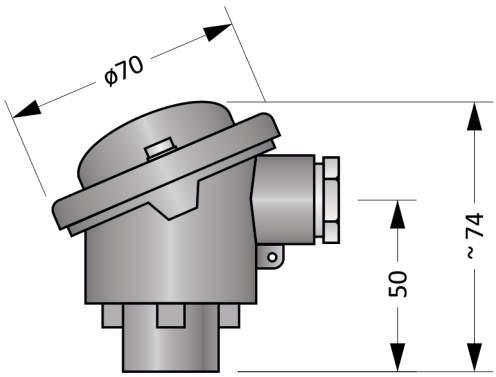


Figure 11H.4: Head B

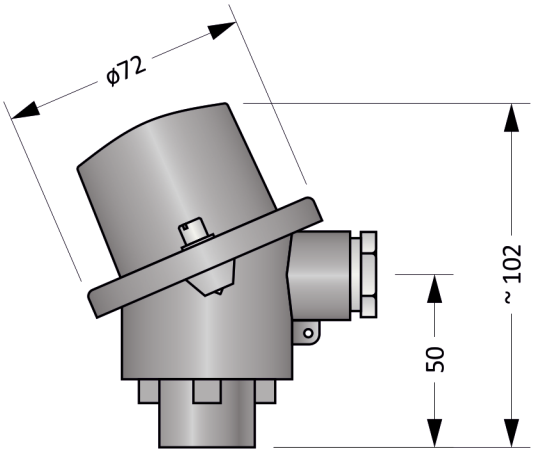


Figure 11H.5: Head BH

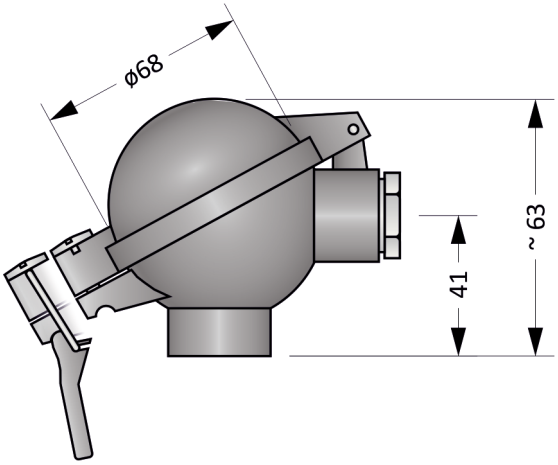


Figure 11H.6: Head BUZ

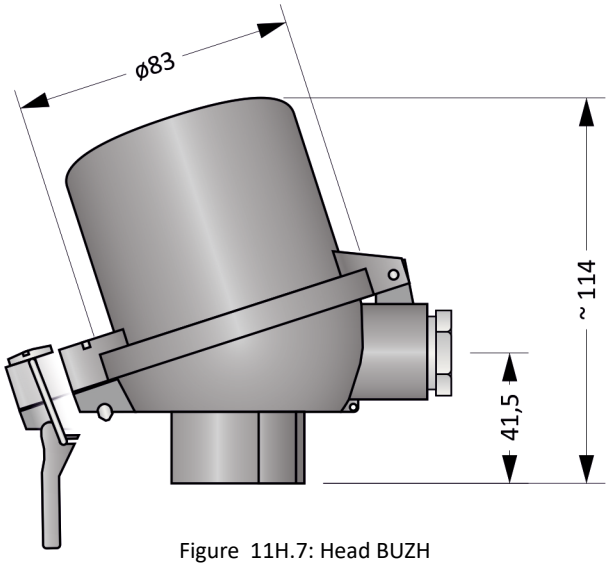


Figure 11H.7: Head BUZH

Head mounted transmitter (Table 11H.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	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 sensor's stem is used for mechanical fastening. Other parts cannot be used.

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 11H.10.

The electrical connection of the sensor is shown in Figures 11H.8 and 11H.9. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

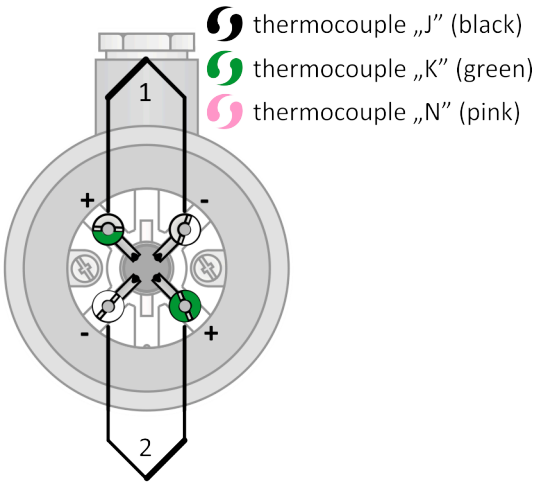


Figure 11HS.8: Double thermocouple wiring diagram

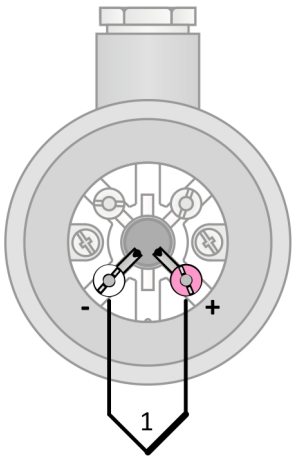


Figure 11HS.9: Single thermocouple wiring diagram

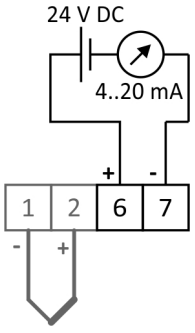


Figure 11HS.10: Transmitter wiring diagram

MTC11HS

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Temperature sensors of the MTC11HS series are flexible and robust sensors with a fast temperature response suitable for industrial environments. Sensors are designed for screwing into welding socket. The size of the head allows the transmitier to be installed inside.

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.

Thermocouple is mineral insulated metal-sheathed according to the ČSN EN 61515 with connection head. The sheath is flexible and the sensor can be easily adapted to the measurement place.

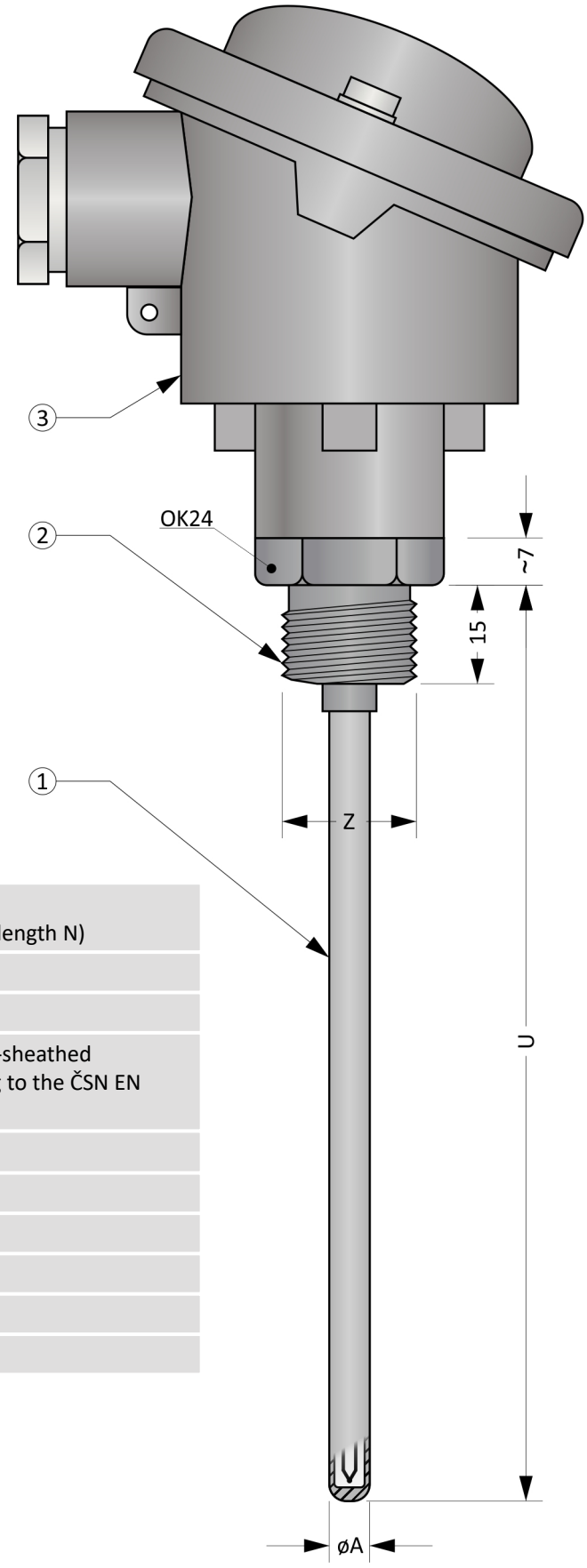


Figure 11HS.1: MTC11HS

General Information (Table 11HS.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	3 bar
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Threaded fitting**	
	Material	Stainless steel 1.4541
③	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 11HS.2)

Pos.	Code	MTC11HS - ❶❷ - ❸ - ❹❺❻
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	C	1 x „N“, sheath material 2.4816
	7	2 x „J“, sheath material 1.4541
	6	2 x „K“, sheath material 2.4816
	F	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	D	1 x „N“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	G	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	E	1 x „N“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	H	2 x „N“, sheath material 2.4816
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**	
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip
	3	Accuracy class 1, thermocouple connected to the sheath, blunt tip
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip
	2	Accuracy class 2, thermocouple connected to the sheath, blunt tip
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)
❹	**Process thread Z**	
	0	Process thread Z = G½“, OK24
	1	Process thread Z = M20 x 1,5, OK24
❺	**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

Continuation of table 11HS.2 on the next page

Continuation of table 11HS.2 from the previous page		
Pos.	Code	**MTC11HS - ❶❷ - ❸ - ❹❺❻**
❻	**Transmitter (only for 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: MTC11HS-00-500-200
... 1 x „K“, sheath dia. A = 3,0 mm, sheath material 2.4816 (INCONEL 600)
... Accuracy class 2, thermocouple isolated from the sheath, blunt tip
... Nominal length N = 500 mm
... Process thread M20 x 1,5
... Head A
... Without transmitter

Approximate weight of the product: MTC11HS-00-500-200 ... 0,6 kg

Length Tolerances (Table 11HS.3)

Nominal length N	Tolerance N
50 ≤ N ≤ 1500 mm	± 2 mm
1500 < N ≤ 2500 mm	± 3 mm
2500 < N ≤ 5000 mm	± 5 mm
5000 < N ≤ 50000 mm	± 0,5 % of N

Diameter tolerance (Table 11HS.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 11HS.5)

Sensor part	Sheat dia.	Continuous operation	Short-term operation
Head / head with transmitter		< 100 °C / < 85 °C	-
Threaded fitting		< 500 °C	-
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

Measuring Junction Design

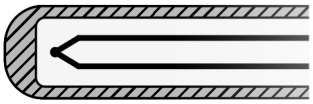


Figure 11HS.2: Thermocouple isolated from the sheath

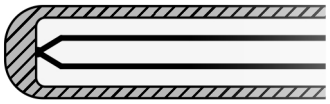
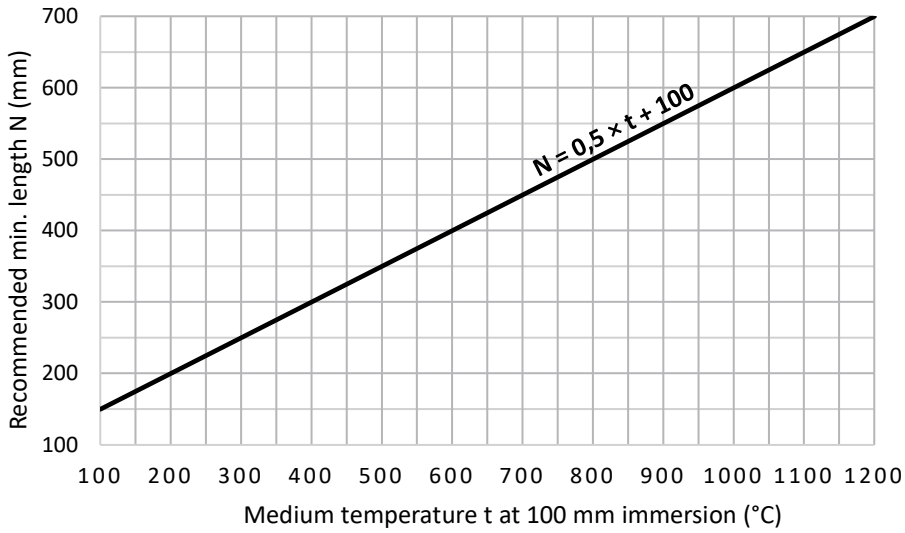


Figure 11HS.3: Thermocouple connected to the sheath

Recommended Min. Sensor Length (Chart 11HS.1)

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



Head types

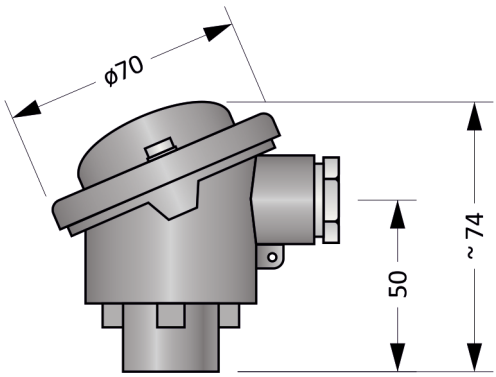


Figure 11HS.4: Head B

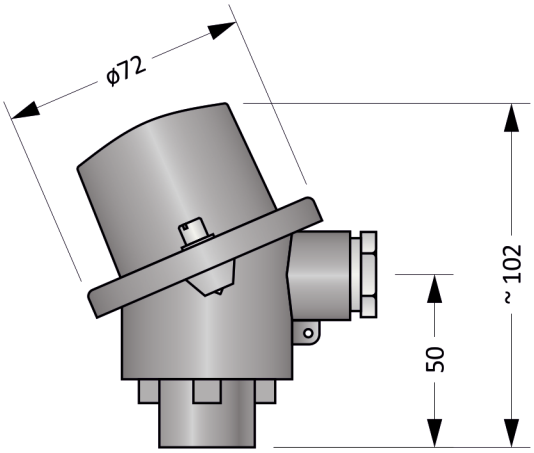


Figure 11HS.5: Head BH

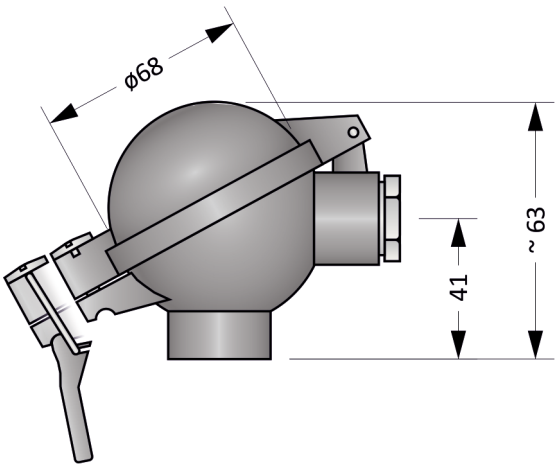


Figure 11HS.6: Head BUZ

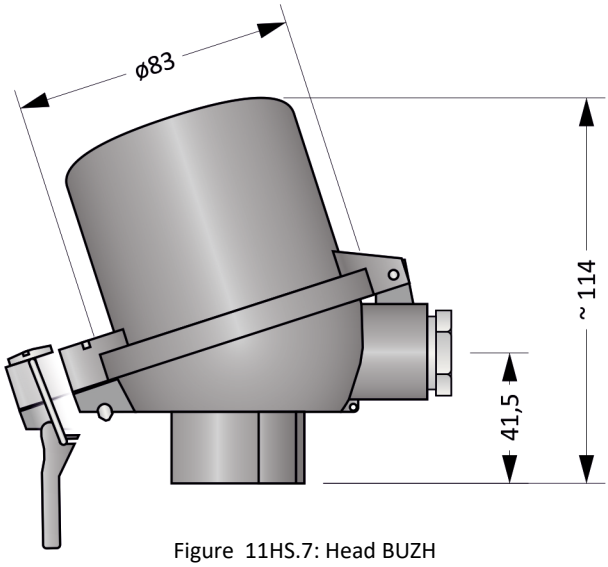


Figure 11HS.7: Head BUZH

Head mounted transmitter (Table 11HS.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

The sensor's threaded fiting is used for mechanical fastening.

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 11HS.10.

The electrical connection of the sensor is shown in Figures 11HS.8 and 11HS.9. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

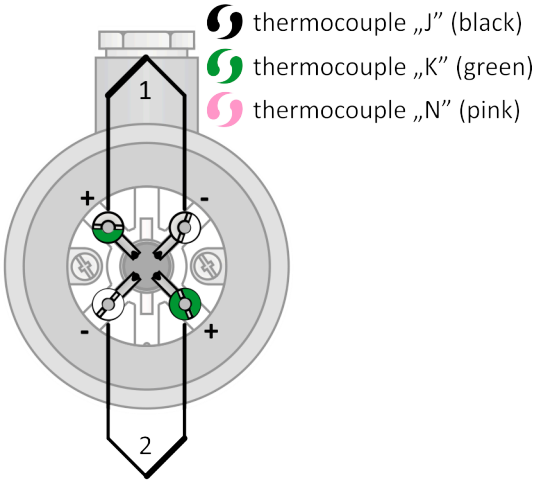


Figure 11HS.8: Double thermocouple wiring diagram

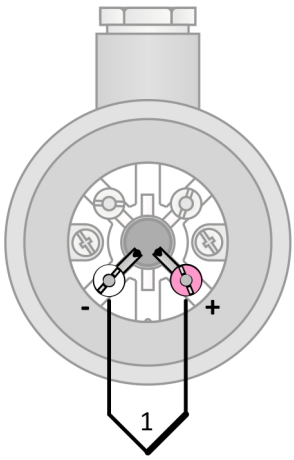


Figure 11HS.9: Single thermocouple wiring diagram

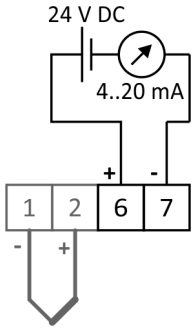


Figure 11HS.10: Transmitter wiring diagram

MTC12

CABLE THERMOCOUPLES

MTC12 series temperature sensors are the basic design of cable temperature sensors. They represent an economically viable solution at the cost of some compromise in sensor performance. The parameters of the sensor are determined by the type of cable used.

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.

General Information (Table 12.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (Stripped ends, measuring part)
①	**Cable thermocouple**	
	Min. bending radius	15 × outter cable diameter
②	**Bead**	
	Material	Ceramic C610
③	**Anti-fraying cable ring** (for braided cables)	
	Material	Stainless steel
④	**Stripped ends**	
⑤	**Connector**	

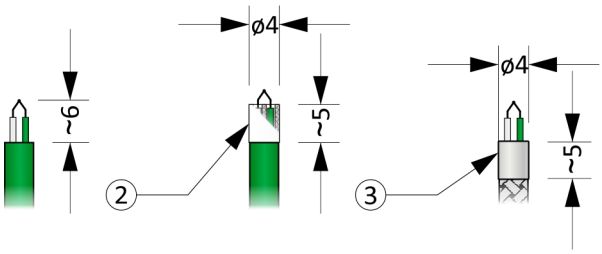


Figure 12.1: Measuring Junction Design

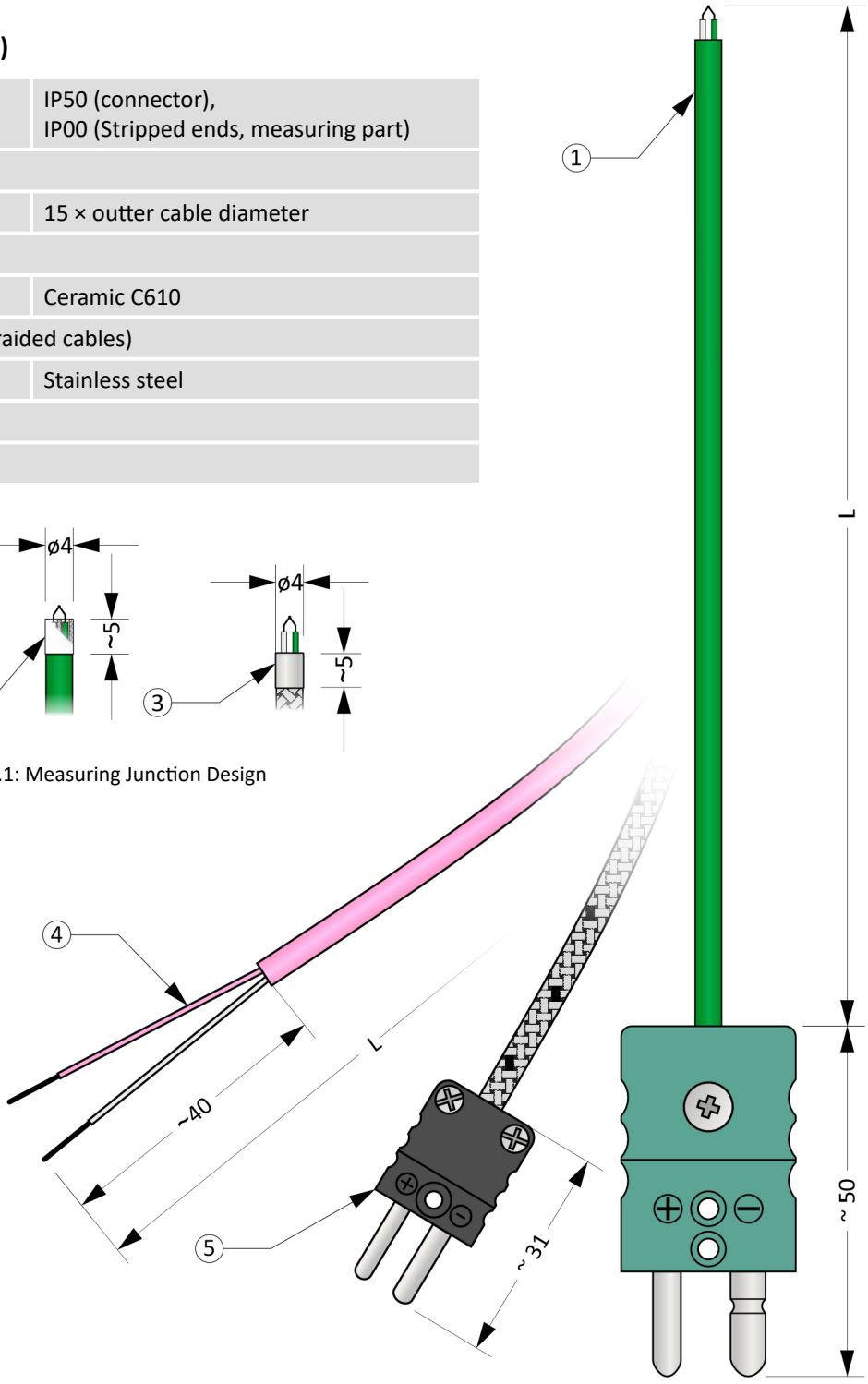


Figure 12.2: MTC12

Optional Parameters Including the Creation of an Order Code (Table 12.2)

Pos.	Code	MTC12 - ❶❷ - ❸ - ❹
❶	**Thermocouple type J, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type**	
	A	Cable SLSL 2 x 0,22 mm², stranded
	C	Cable TSL 2 x 0,22 mm², stranded
	B	Cable TT oval 2 x 0,75 mm², stranded
	2	Cable GLGL wrap 2 x 0,2 mm, solid
	3	Cable GLGL wrap 2 x 0,5 mm, solid
	8	Cable GHGHV 2 x 0,22 mm², stranded
	M	Cable TCuT 2 x 0,22 mm², stranded
	Thermocouple type K, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type	
	F	Cable TT oval 2 x 0,2 mm, solid
	H	Cable TT oval 2 x 0,5 mm, solid
	I	Cable TcuT 2 x 0,22 mm², stranded
	0	Cable GLGL wrap 2 x 0,2 mm, solid
	1	Cable GLGL wrap 2 x 0,5 mm, solid
	4	Cable GHGH oval 2 x 0,5 mm, solid
	5	Cable GHGH oval 2 x 1,0 mm, solid
	6	Cable GHGHV 2 x 1,0 mm, solid
	7	Cable GHGHV 2 x 0,22 mm², stranded
	L	Cable KFKF 1400 oval 2 x 0,8 mm, solid
	Thermocouple type L, acc. DIN 43 710 - cable type	
	D	Cable TSL 2 x 0,22 mm², stranded
	G	Cable TT oval 2 x 0,5 mm², stranded
	9	Cable GHGHV 2 x 0,22 mm², stranded
	Thermocouple type N, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type	
	E	Cable TSL 2 x 0,22 mm², stranded
	J	Cable TcuT 2 x 0,22 mm², stranded
	K	Cable GHGHV 2 x 0,22 mm², stranded
❷	**Measuring Junction Design**	
	0	Without ceramic bead
	1	With ceramic bead
❸	**Sensor length L [cm]**	
	xxx	Selectable range from 50 cm to 450 cm (in 1 cm increments)
	xxx	Selectable range from 460 cm to 3 500 cm (in 10 cm increments)
❹	**Design of the cold junction**	
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket

Order code example: MTC12-00-500-0

... Thermocouple type K, accuracy class 2, GLGL wrap 2 x 0,2 mm, solid
... Without ceramic bead
... Sensor length L = 500 cm
... Stripped ends

Approximate weight of the product: MTC12-00-500-0 ... 0,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 12.3)

Sensor part	Insulation type	Continuous operation	Short-term operation
Thermocouple - measuring end	SLSL	-60 ... 180 °C	-
	TSL	-60 ... 180 °C	-
	TT	-200 ... 205 °C	-
	TCuT	-200 ... 205 °C	-
	GLGL	-200 ... 400 °C	-
	GHGH	-40 ... 600 °C	-
	GHGHV	-40 ... 600 °C	-
	KFKF 1400	-40 ... 1200 °C	< 1400 °C
Connectors MTCK-S, MTCK-M		See cable insulation, max. 220 °C	-
Connectors MTCK-CS, MTCK-CM		See cable insulation, max. 650 °C	-

Cable Parameters (Table 12.4)

Insulation	Number x cross-section / dia. of wires	Outer dia. / size of cable	Pros and cons
SLSL (silicone / silicone)	2 x 0,22 mm²	~ 3,8 mm	↗ Great flexibility ↘ Low mechanical resistance
TSL (teflon FEP / silicone)	2 x 0,22 mm²	~ 3,7 mm	↗ Great flexibility, resistant to weak chemicals ↘ Low mechanical resistance
TT oval (teflon FEP / teflon FEP)	2 x 0,2 mm 2 x 0,5 mm 2 x 0,50 mm² 2 x 0,75 mm²	~ 1,3 x 2,0 mm ~ 1,6 x 3,4 mm ~ 2,0 x 3,5 mm ~ 2,4 x 4,2 mm	↗ Great flexibility ↘ Low mechanical resistance
TCuT (teflon FEP / tinned copper wire braid / teflon FEP)	2 x 0,22 mm²	~ 3,0 mm	↗ Great flexibility, resistant to weak chemicals, screening
GLGL wrap (glass fiber braid / glass fiber braid)	2 x 0,2 mm 2 x 0,5 mm	~ 0,6 x 1,0 mm ~ 1,1 x 1,9 mm	↗ Good flexibility ↘ Low moisture resistance, low abrasion resistance
GHGH (glass fiber braid / glass fiber braid)	2 x 0,5 mm 2 x 1,0 mm	~ 1,5 x 2,4 mm ~ 1,8 x 3,1 mm	↗ Long durability ↘ Low flexibility, low moisture resistance, low abrasion resistance
GHGHV (glass fiber braid / glass fiber braid / stainless steel wire braid)	2 x 0,22 mm² 2 x 1,0 mm	~ 3,0 mm ~ 2,5 x 4,0 mm	↗ Long durability, very good flexibility, good abrasion resistance ↘ Low moisture resistance
KFKF 1400 (ceramic braid / ceramic braid)	2 x 0,8 mm	~ 4,5 mm	↗ Long durability ↘ Low flexibility, low moisture resistance, low abrasion resistance

Length Tolerances (Table 12.5)

Length L	Tolerance L
50 ≤ L ≤ 250 cm	± 1 cm
250 < L ≤ 500 cm	± 1,5 cm
500 < L ≤ 3500 cm	± 0,5 % z L

Installation And Operating Instructions

The cable is used for mechanical fixing.

The electrical connection of the sensor is shown in Figures 12.3 and 12.4. 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.

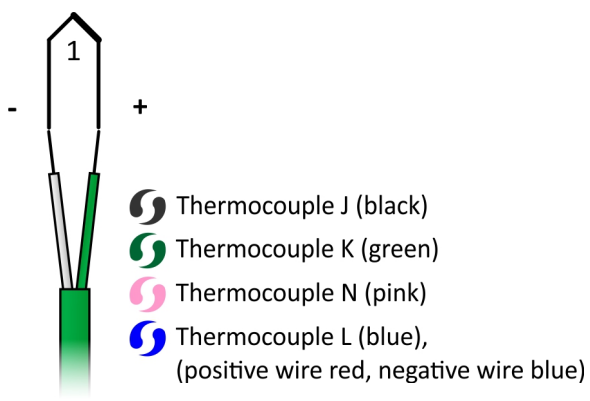


Figure 12.3: Single thermocouple wiring diagram

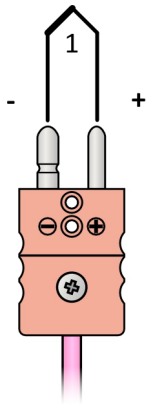


Figure 12.4: Connector wiring diagram

MTC12A

CABLE THERMOCOUPLES

MTC12A series temperature sensors are cable thermocouples with a protective tube protecting the measuring junction. They represent an economically feasible solution at the cost of certain compromises in sensor performance. The parameters of the sensor are determined by the type of cable used.

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.

General Information (Table 12A.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP50 (measuring part in length L)
①	**Cable thermocouple**	
	Min. bending radius	15 × outter cable diameter
②	**Protection tube**	
	Material	Stainless steel 1.4404
③	**Stripped ends**	
④	**Connector**	

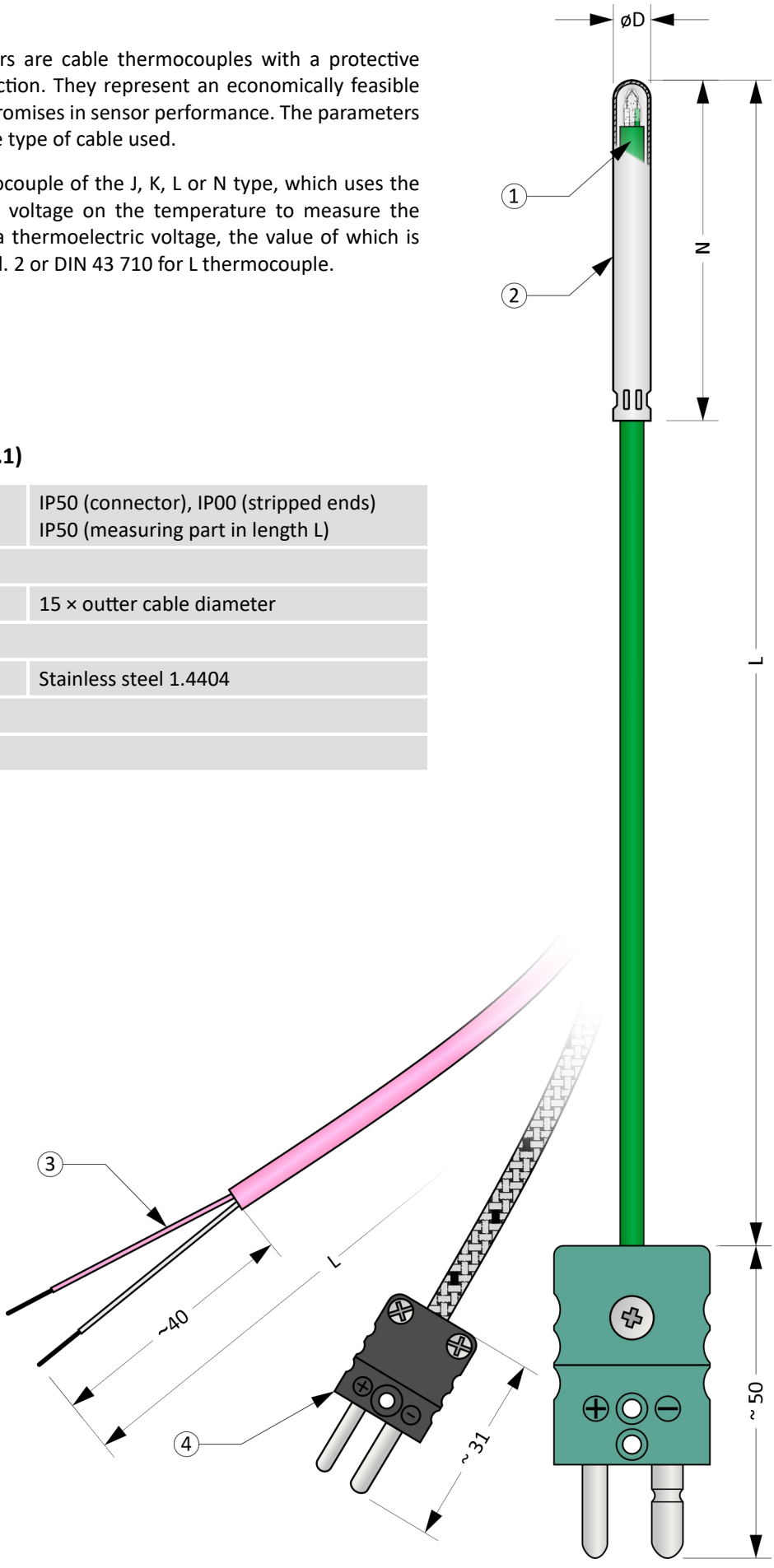


Figure 12A.1: MTC12A

Optional Parameters Including the Creation of an Order Code (Table 12A.2)

Pos.	Code	MTC12A - ❶ - ❷ - ❸ - ❹❺	
❶	**Thermocouple type J, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type**		
	6	Cable SLSL 2 x 0,22 mm², stranded	
	3	Cable TSL 2 x 0,22 mm², stranded	
	5	Cable TT oval 2 x 0,75 mm², stranded	
	F	Cable GLGL wrap 2 x 0,2 mm, solid	
	G	Cable GLGL wrap 2 x 0,5 mm, solid	
	1	Cable GHGHV 2 x 0,22 mm², stranded	
	M	Cable TcuT 2 x 0,22 mm², stranded	
	Thermocouple type K, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type		
	9	Cable TT oval 2 x 0,2 mm, solid	
	A	Cable TT oval 2 x 0,5 mm, solid	
	B	Cable TcuT 2 x 0,22 mm², stranded	
	D	Cable GLGL wrap 2 x 0,2 mm, solid	
	E	Cable GLGL wrap 2 x 0,5 mm, solid	
	H	Cable GHGH oval 2 x 0,5 mm, solid	
	I	Cable GHGH oval 2 x 1,0 mm, solid	
	J	Cable GHGHV 2 x 1,0 mm, solid	
	0	Cable GHGHV 2 x 0,22 mm², stranded	
	L	Cable KFKF 1400 oval 2 x 0,8 mm, solid	
	Thermocouple type L, acc. DIN 43 710 - cable type		
	4	Cable TSL 2 x 0,22 mm², stranded	
	8	Cable TT oval 2 x 0,5 mm², stranded	
	2	Cable GHGHV 2 x 0,22 mm², stranded	
	Thermocouple type N, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type		
	7	Cable TSL 2 x 0,22 mm², stranded	
	C	Cable TcuT 2 x 0,22 mm², stranded	
	K	Cable GHGHV 2 x 0,22 mm², stranded	
❷	**Sensor length L [cm]**		
	xxx	Selectable range from (L+50) cm to 450 cm (in 1 cm increments)	
	xxx	Selectable range from 460 cm to 3 500 cm (in 10 cm increments)	
❸	**Protection tube length N [mm]**		
	xxx	Selectable range from 20 mm to 150 mm (in 1 mm increments)	For dia. D = 3,0 ... 5,0 mm
	xxx	Selectable range from 20 mm to 500 mm (in 1 mm increments)	For dia. D = 6,0 mm
❹	**Protection tube diameter D [mm]**		
	4	D = 3,0 mm	Can be for: ❶ ... 9, A, D, E, F, G
	0	D = 4,0 mm	Can be for: ❶ ... 0, 1, 2, 9, A, B, C, D, E, F, G, K
	2	D = 5,0 mm	Can be for: ❶ ... 0, 1, 2, 3, 4, 6, 7, 8, B, C, H, I, K
	3	D = 6,0 mm	Can be for: ❶ ... 0, 1, 2, 3, 4, 5, 6, 7, 8, B, C, H, I, J, K, L

Continuation of table 12A.2 on the next page

Continuation of table 12A.2 from the previous page		
Pos.	Code	**MTC12A - ❶ - ❷ - ❸ - ❹❺**
❺	**Design of the cold junction**	
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket

Order code example: MTC12A-D-500-50-30
... Thermocouple type K, accuracy class 2, GLGL wrap 2 x 0,2 mm, solid
... Sensor length L = 500 cm
... Protection tube length N = 50 mm
... Protection tube diameter D = 6,0 mm
... Stripped ends

Approximate weight of the product: MTC12A-D-500-50-30 ... 0,2 kg

Length Tolerances L (Table 12A.3)

Length L	Tolerance L
50 ≤ L ≤ 250 cm	± 1 cm
250 < L ≤ 500 cm	± 1,5 cm
500 < L ≤ 3500 cm	± 0,5 % z L

Length Tolerance N (Table 12A.4)

Tolerance N
± 1 mm

Recommended Maximum Temperatures of Sensor Parts (Table 12.5)

Sensor part	Insulation type	Continuous operation	Short-term operation
Thermocouple - measuring end	SLSL	-60 ... 180 °C	-
	TSL	-60 ... 180 °C	-
	TT	-200 ... 205 °C	-
	TCuT	-200 ... 205 °C	-
	GLGL	-200 ... 400 °C	-
	GHGH	-40 ... 600 °C	-
	GHGHV	-40 ... 600 °C	-
	KFKF 1400	-40 ... 1200 °C	< 1400 °C
Connectors MTCK-S, MTCK-M		See cable insulation, max. 220 °C	-
Connectors MTCK-CS, MTCK-CM		See cable insulation, max. 650 °C	-

Cable Parameter (Table 12A.6)

Insulation	Number x cross-section / dia. of wires	Outer dia. / size of cable	Pros and cons
SLSL (silicone / silicone)	2 x 0,22 mm²	~ 3,8 mm	↗ Great flexibility ↘ Low mechanical resistance
TSL (teflon FEP / silicone)	2 x 0,22 mm²	~ 3,7 mm	↗ Great flexibility, resistant to weak chemicals ↘ Low mechanical resistance
TT oval (teflon FEP / teflon FEP)	2 x 0,2 mm 2 x 0,5 mm 2 x 0,50 mm² 2 x 0,75 mm²	~ 1,3 x 2,0 mm ~ 1,6 x 3,4 mm ~ 2,0 x 3,5 mm ~ 2,4 x 4,2 mm	↗ Great flexibility ↘ Low mechanical resistance
TCuT (teflon FEP / tinned copper wire braid / teflon FEP)	2 x 0,22 mm²	~ 3,0 mm	↗ Great flexibility, resistant to weak chemicals, screening
GLGL wrap (glass fiber braid / glass fiber braid)	2 x 0,2 mm 2 x 0,5 mm	~ 0,6 x 1,0 mm ~ 1,1 x 1,9 mm	↗ Good flexibility ↘ Low moisture resistance, low abrasion resistance
GHGH (glass fiber braid / glass fiber braid)	2 x 0,5 mm 2 x 1,0 mm	~ 1,5 x 2,4 mm ~ 1,8 x 3,1 mm	↗ Long durability ↘ Low flexibility, Low mechanical resistance, low abrasion resistance
GHGHV (glass fiber braid / glass fiber braid / stainless steel wire braid)	2 x 0,22 mm² 2 x 1,0 mm	~ 3,0 mm ~ 2,5 x 4,0 mm	↗ Long durability, very good flexibility, good abrasion resistance ↘ Low moisture resistance
KFKF 1400 (glass fiber braid / glass fiber braid)	2 x 0,8 mm	~ 4,5 mm	↗ Long durability ↘ Low flexibility, Low mechanical resistance, low abrasion resistance

Installation And Operating Instructions

The protection tube is used for mechanical fixing.

The electrical connection of the sensor is shown in Figures 12A.2 and 12A.3. 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.

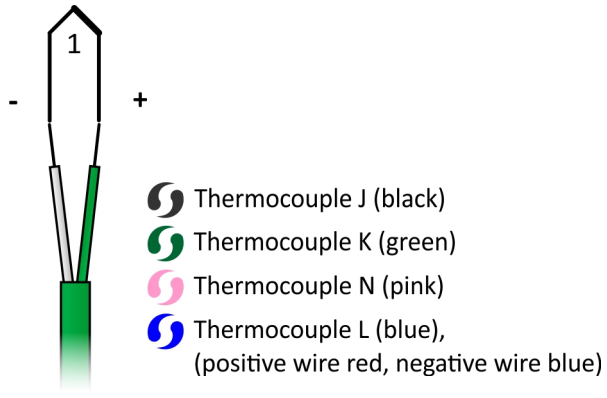


Figure 12A.2: Single thermocouple wiring diagram

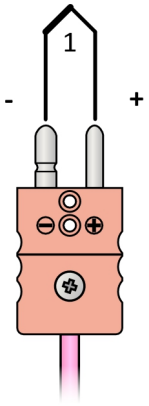


Figure 12A.3: Connector wiring diagram

MTC12K

CABLE THERMOCOUPLES

Temperature sensors of the MTC12K series are cable temperature sensors that can be mounted under a screw, under a strap or in a hole in the object to be measured. They represent an economically feasible solution at the cost of certain compromises in sensor characteristics. All basic sensor parameters are determined by the type of cable used.

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.

General Information (Table 12K.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP5X (measuring part in length L)
①	**Cable thermocouple**	
	Cable insulation	GHGHV (glass fiber braid / glass fiber braid / stainless steel wire braid)
	Number x cross-section of wires	2 x 0,22 mm², stranded
	Cable diameter	~ 3,0 mm
	Min. bending radius	15 × outter cable diameter
②	**Measuring end**	
③	**Stripped ends**	
④	**Connector**	

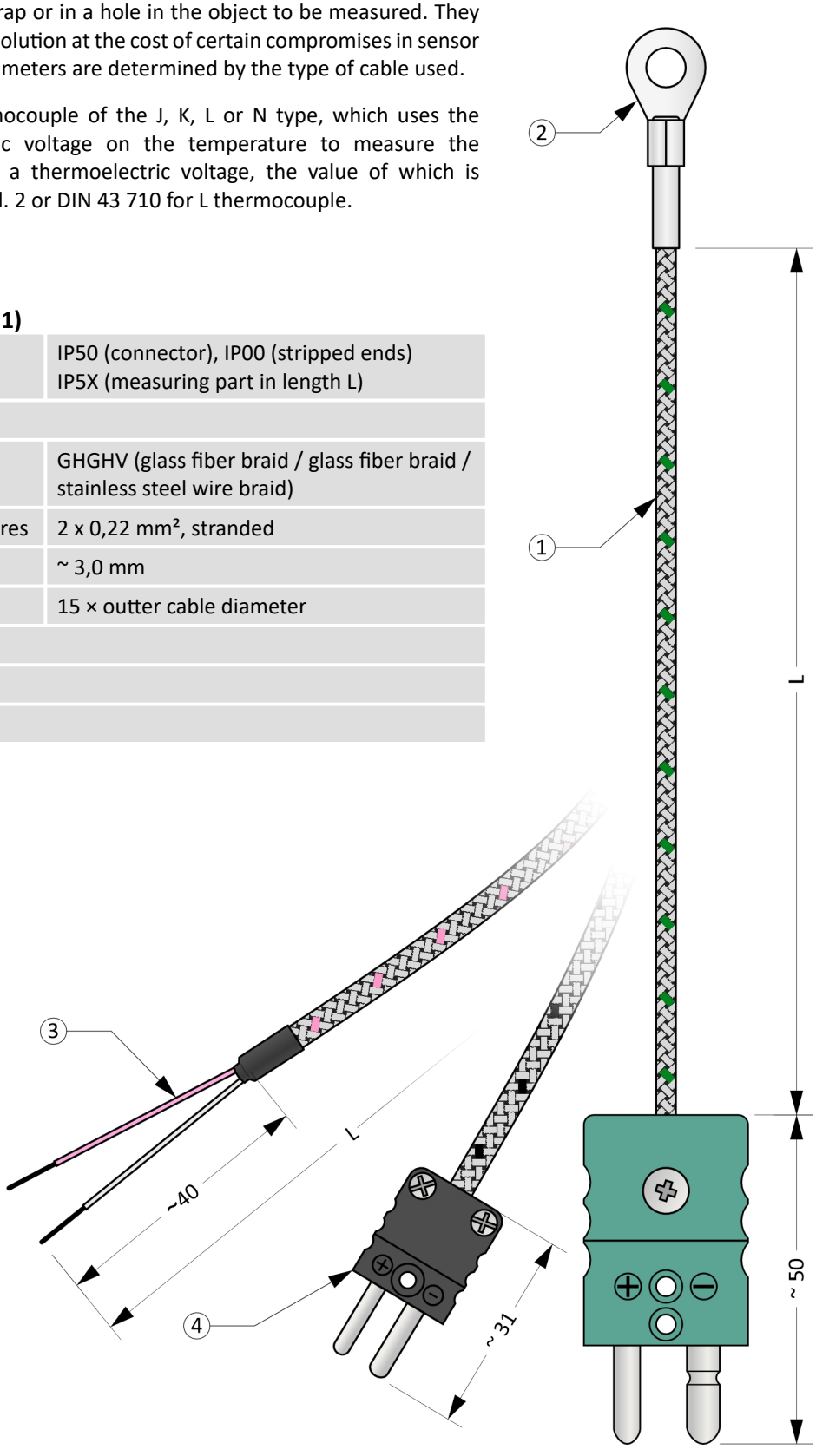


Figure 12K.1: MTC12K

Optional Parameters Including the Creation of an Order Code (Table 12K.2)

Pos.	Code	MTC12K - ❶❷ - ❸ - ❹
❶	**Thermocouple type**	
	1	1 x „J“, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
	0	1 x „K“, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
	2	1 x „L“, acc. DIN 43 710
	3	1 x „N“, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
❷	**Thermocouple measuring end design**	
	0	Type A6 (see figure 12K.3), material CuZnSn, hole diameter D = ~ 6,4 mm (for screw M6)
	4	Type A5 (see figure 12K.2), material CuZnSn, hole diameter D = ~ 5,3 mm (for screw M5)
	5	Type A4 (see figure 12K.2), material CuZnSn, hole diameter D = ~ 4,3 mm (for screw M4)
	1	Type B6 (see figure 12K.4), material stainless steel, hole diameter D = ~ 6,2 mm (for screw M6)
	7	Type B5 (see figure 12K.4), material stainless steel, hole diameter D = ~ 5,2 mm (for screw M5)
	8	Type B4 (see figure 12K.4), material stainless steel, hole diameter D = ~ 4,2 mm (for screw M4)
	2	Type C (see figure 12K.5), material stainless steel
	3	Type D (see figure 12K.6), material brass, for fastening with tape
❸	**Sensor length L [cm]**	
	xxx	Selectable range from 50 cm to 450 cm (in 1 cm increments)
	xxx	Selectable range from 460 cm to 3 500 cm (in 10 cm increments)
❹	**Design of the cold junction**	
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket

Order code example: MTC12K-00-500-0

... Thermocouple type 1 x „K“, accuracy class 2 acc. ČSN EN 60584-1 ed. 2

... Type A6 (see figure 12K.3), material CuZnSn, hole dia. D = ~ 6,4 mm (for screw M6)

... Sensor length L = 500 cm

... Stripped ends

Approximate weight of the product: MTC12K-00-500-0 ... 0,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 12K.3)

Sensor part	Continuous operation	Short-term operation
Thermocouple - measuring end, cable	-40 ... 600 °C	-
Connectors MTCK-S, MTCK-M	< 220 °C	-
Connectors MTCK-CS, MTCK-CM	< 600 °C	-

Measuring end design

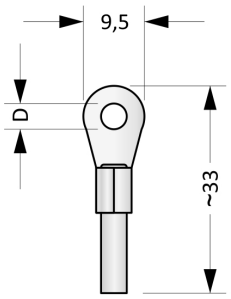


Figure 12K.2: Type A4 and A5

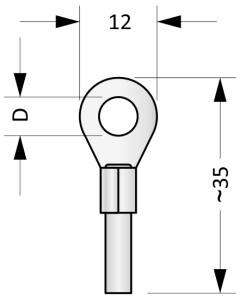


Figure 12K.3: Type A6

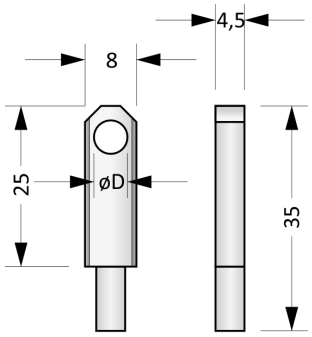


Figure 12K.4: Type B4, B5, B6

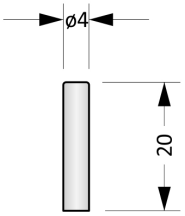


Figure 12K.5: Type C

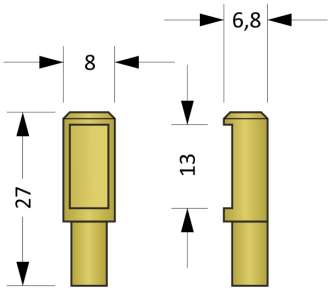


Figure 12K.6: Type D

Length Tolerances (Table 12K.4)

Length L	Tolerance L
50 ≤ L ≤ 250 cm	± 1 cm
250 < L ≤ 500 cm	± 1,5 cm
500 < L ≤ 3500 cm	± 0,5 % z L

Installation And Operating Instructions

The measuring end of the sensor is used for mechanical fixing. Sensors with an cable eye (type A and B versions) are mounted under the screw. Type D sensors are fastened with a tightening strap.

The electrical connection of the sensor is shown in Figures 12K.6 and 12K.7. 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.

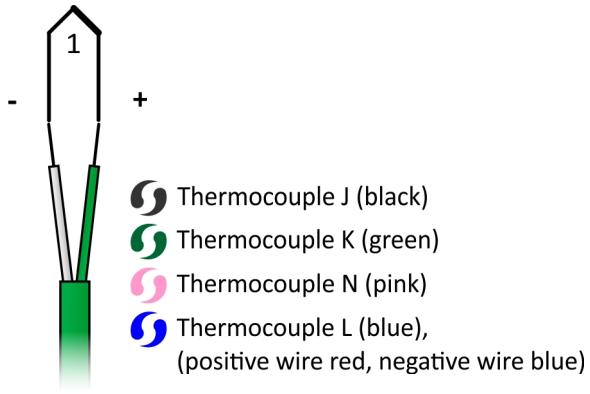


Figure 12K.6: Single thermocouple wiring diagram

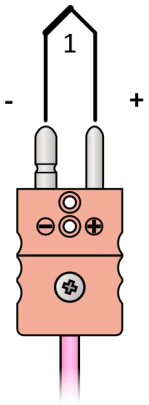


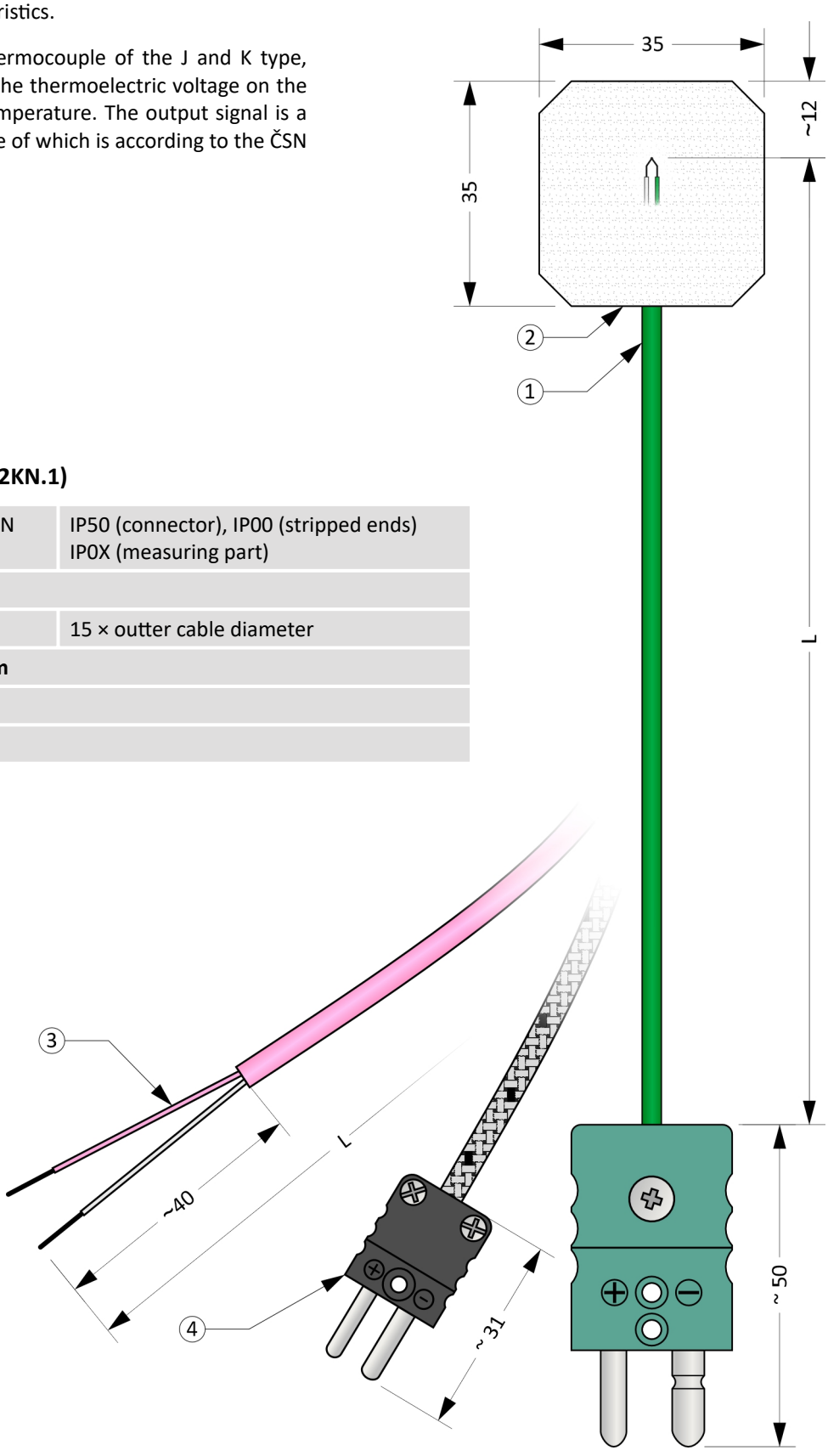
Figure 12K.7: Connector wiring diagram

MTC12KN

CABLE THERMOCOUPLES

Temperature sensors of the MTC12KN series are cable temperature sensors designed to be glued to the measured object. They represent a cost-effective solution at the price of certain compromises in sensor characteristics.

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



General Information (Table 12KN.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP0X (measuring part)
①	**Cable thermocouple**	
	Min. bending radius	15 × outter cable diameter
②	**Adhesive tape 35 x 35 mm**	
③	**Stripped ends**	
④	**Connector**	

Figure 12KN.1: MTC12KN

Optional Parameters Including the Creation of an Order Code (Table 12KN.2)

Pos.	Code	MTC12KN - ❶❷ - ❸ - ❹
❶	**Thermocouple type J, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type**	
	1	Cable GLGL wrap, 2 x 0,2 mm, solid
	Thermocouple type K, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type	
	0	Cable GLGL wrap, 2 x 0,2 mm, solid
	2	Cable TT oval, 2 x 0,2 mm, solid
❷	**Thermocouple measuring end design**	
	0	Insulated thermocouple, IP5x dle ČSN EN 60529
	1	Non-insulated thermocouple, IP0x dle ČSN EN 60529
❸	**Sensor length L [cm]**	
	xxx	Selectable range from 50 cm to 450 cm (in 1 cm increments)
	xxx	Selectable range from 460 cm to 3 500 cm (in 10 cm increments)
❹	**Design of the cold junction**	
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket

Order code example: MTC12KN-00-500-0
... Thermocouple type K, accuracy class 2, GLGL wrap 2 x 0,2 mm, solid
... Insulated thermocouple, IP5x dle ČSN EN 60529
... Sensor length L = 500 cm
... Stripped ends

Approximate weight of the product: MTC12KN-00-500-0 ... 0,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 12KN.3)

Sensor part	Insulation type	Continuous operation	Short-term operation
Measuring end		0 ... 180 °C	-
Cable	TT	-200 ... 205 °C	-
	GLGL	-200 ... 400 °C	-
Connectors MTCK-S, MTCK-M		See cable insulation, max. 220 °C	-
Connectors MTCK-CS, MTCK-CM		See cable insulation	-

Length Tolerances (Table 12KN.4)

Length L	Tolerance L
50 ≤ L ≤ 250 cm	± 1 cm
250 < L ≤ 500 cm	± 1,5 cm
500 < L ≤ 3500 cm	± 0,5 % z L

Cable Parameters (Table 12KN.5)

Insulation	Number x cross-section / dia. of wires	Outer dia. / size of cable	Pros and cons
TT oval (teflon FEP / teflon FEP)	2 x 0,2 mm	~ 1,3 x 2,0 mm	↗ Great flexibility ↘ Low mechanical resistance
GLGL wrap (glass fiber braid / glass fiber braid)	2 x 0,2 mm	~ 0,6 x 1,0 mm	↗ Good flexibility ↘ Low moisture resistance, low abrasion resistance

Installation And Operating Instructions

The sensor is attached to the object to be measured with adhesive tape on a clean and degreased surface. Repeated sticking of the sensor is not recommended.

The electrical connection of the sensor is shown in Figures 12KN.2 and 12KN.3. The output signal is a thermoelectric voltage, the value of which is according to the ČSN EN 60584-1 ed. 2

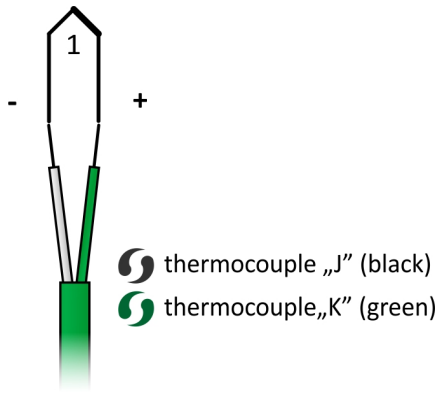


Figure 12KN.2: Single thermocouple wiring diagram

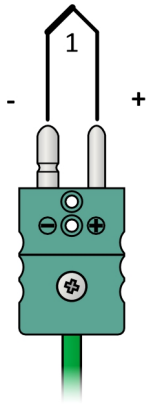


Figure 12KN.3: Connector wiring diagram

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MTC12KP

CABLE THERMOCOUPLES

Temperature sensors of the MTC12KP series are cable temperature sensors designed to be installed on pipes using a tightening tape. All basic parameters of the sensor are determined by the type of cable used.

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.

General Information (Table 12KP.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP5X (measuring part in length L)
①	**Cable thermocouple**	
	Min. bending radius	15 × outter cable diameter
②	**Tightening tape**	
③	**Stripped ends**	
④	**Connector**	

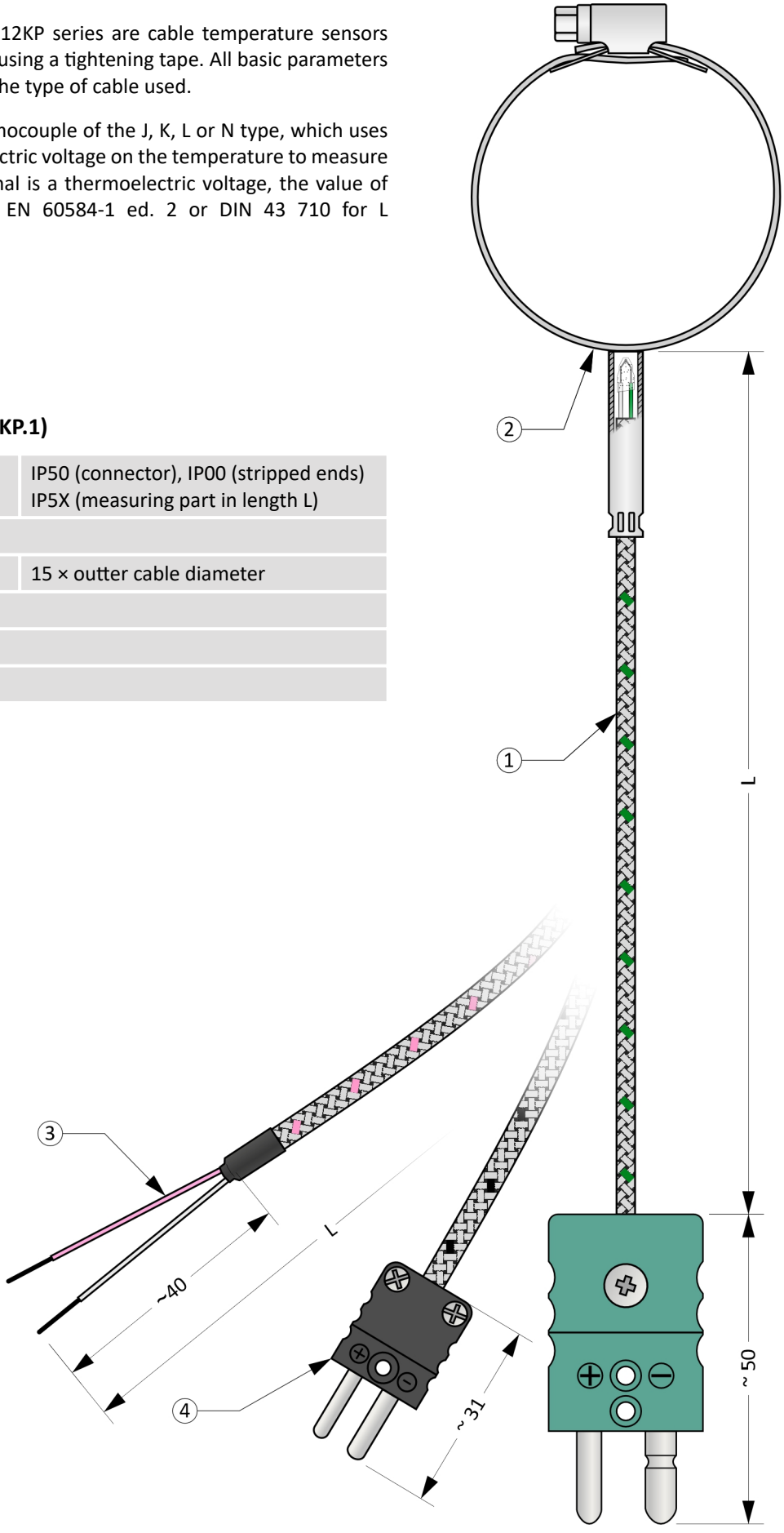


Figure 12KP.1: MTC12KP

Optional Parameters Including the Creation of an Order Code (Table 12KP.2)

Pos.	Code	MTC12KP - ❶❷ - ❸ - ❹ - ❺	
❶	**Thermocouple type J, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type**		
	1	Cable GHGHV, 2 x 0,22 mm², stranded	For types A, B and C only.
	6	Cable GLGL wrap, 2 x 0,2 mm, solid	For type D only.
	5	Cable GLGL wrap, 2 x 0,5 mm, solid	For type D only.
	Thermocouple type K, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type		
	0	Cable GHGHV, 2 x 0,22 mm², stranded	For types A, B and C only.
	4	Cable GLGL wrap, 2 x 0,2 mm, solid	For type D only.
	3	Cable GLGL wrap, 2 x 0,5 mm, solid	For type D only.
	Thermocouple type L, acc. DIN 43710 - cable type		
	2	Cable GHGHV, 2 x 0,22 mm², stranded	For types A, B and C only.
	Thermocouple type N, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type		
	7	Cable GHGHV, 2 x 0,22 mm², stranded	For types A, B and C only.
❷	**Thermocouple measuring end design**		
	0	Type A (see figure 12KP.2), insulated thermocouple, with screw clamp	
	1	Type B (see figure 12KP.3), insulated thermocouple, with screw clamp	
	2	Type C (see figure 12KP.4), insulated thermocouple, with screw clamp	
	3	Type D (see figure 12KP.5), non-insulated thermocouple, tightening tape with clamping mechanism	
❸	**Length of tightening tape Z [cm]**		
	xxx	Selectable range from 10 cm to 200 cm (in 10 cm increments)	For types A, B and C only.
	xxx	Selectable range from 36 cm to 216 cm (krok 36 cm)	For type D only.
❹	**Sensor length L [cm]**		
	xxx	Selectable range from 50 cm to 450 cm (in 1 cm increments)	
	xxx	Selectable range from 460 cm to 3 500 cm (in 10 cm increments)	
❺	**Design of the cold junction**		
	0	Stripped ends, length 40 mm	
	1	Standard connector, MTCK-S type, plug	
	2	Standard connector, MTCK-S type, plug + socket	
	3	Miniature connector, MTCK-M type, plug	
	4	Miniature connector, MTCK-M type, plug + socket	
	5	Ceramic standard connector, MTCK-CS type, plug	
	6	Ceramic standard connector, MTCK-CS type, plug + socket	
	7	Ceramic miniature connector, MTCK-CM type, plug	
	8	Ceramic miniature connector, MTCK-CM type, plug + socket	

Order code example: MTC12KP-00-50-500-0

... Thermocouple type K, accuracy class 2, GLGL wrap 2 x 0,2 mm, solid

... Type A (see figure 12KP.2), insulated thermocouple, with screw clamp

... Length of tightening tape Z = 50 cm

... Sensor length L = 500 cm

... Stripped ends

Approximate weight of the product: MTC12KP-00-50-500-0 ... 0,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 12KP.3)

Sensor part	Insulation type	Continuous operation	Short-term operation
Thermocouple - measuring end	GLGL	-200 ... 400 °C	-
	GHGHV	-40 ... 600 °C	-
Connectors MTCK-S, MTCK-M		See cable insulation, max. 220 °C	-
Connectors MTCK-CS, MTCK-CM		See cable insulation	-

Measuring end design (Table 12KP.4)

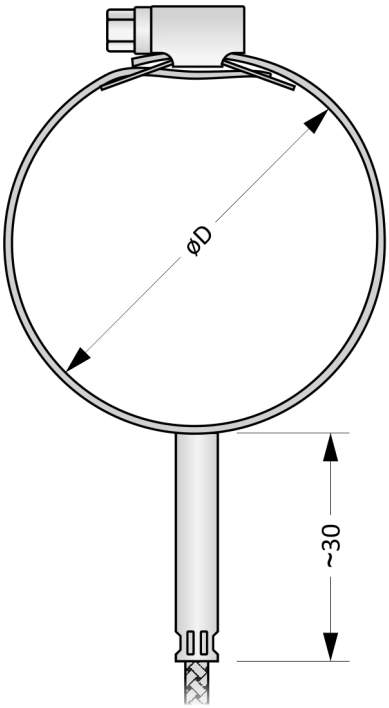


Figure 12KP.2: Type A

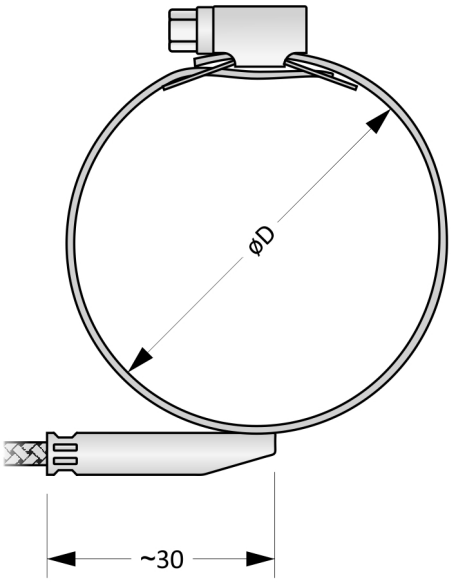


Figure 12KP.3: Type B

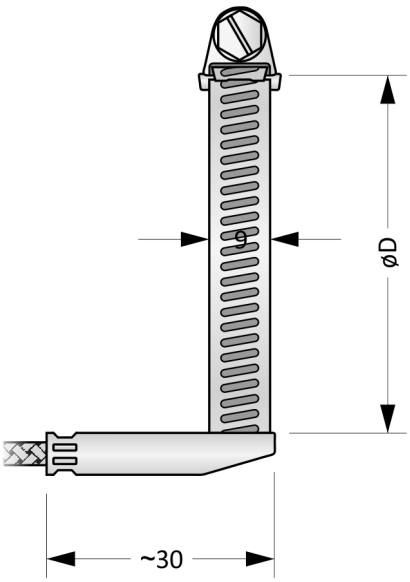


Figure 12KP.4: Type C

Type A, B a C	
Material	Stainless steel (tightening tape and) Galvanized steel (screw)
Note	Fastening of the tape with a screw. Disassembled.
Type D	
Material	Stainless steel
Note	Tape fastening by means of a self-locking ball mechanism that cannot be disassembled without damaging the tape.

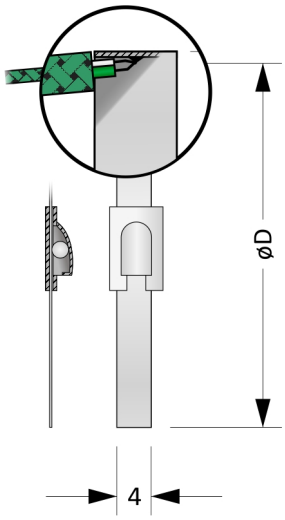


Figure 12KP.5: Type D

Length of the tightening tape

The approximate calculation of the length of the strapping is given by the following relation:

$$Z = 3{,}14 \cdot D + 4 \text{ [cm]},$$

where Z is the length of the tape and D is the diameter of the twisted tape.

Length Tolerances (Table 12KP.4)

Length L, Z	Tolerance L	Tolerance Z
(L, Z) ≤ 250 cm	± 1 cm	± 0,5 cm
250 < L ≤ 500 cm	± 1,5 cm	-
500 < L cm	± 0,5 % z L	-

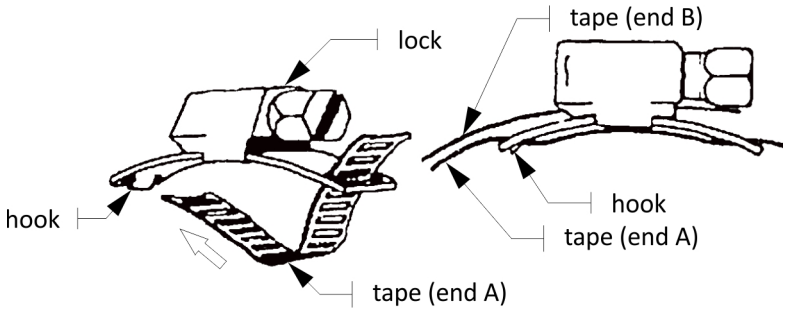
Cable Parameter (Table 12KP.5)

Insulation	Number x cross-section / dia. of wires	Outer dia. / size of cable	Pros and cons
GLGL wrap (glass fiber braid / glass fiber braid)	2 x 0,2 mm 2 x 0,5 mm	~ 0,6 x 1,0 mm ~ 1,1 x 1,9 mm	↗ Good flexibility ↘ Low moisture resistance, low abrasion resistance
GHGHV (glass fiber braid / glass fiber braid / stainless steel wire braid)	2 x 0,22 mm² 2 x 1,0 mm	~ 3,0 mm ~ 2,5 x 4,0 mm	↗ Long durability, very good flexibility, good abrasion resistance ↘ Low moisture resistance

Installation And Operating Instructions

Type A, B and C

The sensor is mounted with a tightening tape. The tape can be shortened as required. One end (end A) of the tape is inserted through the lock as shown in Figure 12KN.6 with an overlap of approx. 1 cm behind the hook. Insert the other end (end B) of the tape into the lock and tighten it into position using the screw. The joint can be disassembled.



Type D

Insert the free end of the tape through the lock and pull to set the desired size. The joint cannot be disassembled.

The electrical connection of the sensor is shown in Figures 12KP.7 and 12KP.8. 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.

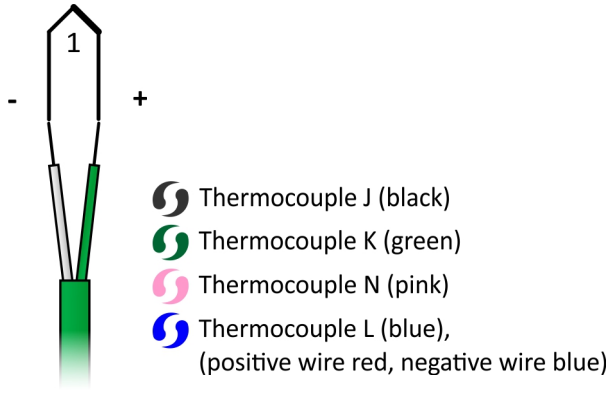


Figure 12KP.7: Single thermocouple wiring diagram

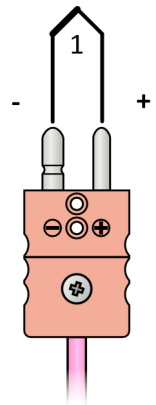


Figure 12KP.8: Connector wiring diagram

MTC12KR

CABLE THERMOCOUPLES

Temperature sensors of the MTC12KR series are cable temperature sensors that allow attachment to the measured object by means of a crocodile clip. All basic parameters of the sensor are determined by the type of cable used.

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.

General Information (Table 12KR.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP5X (measuring part in length L)
①	**Cable thermocouple**	
	Min. bending radius	15 × outter cable diameter
②	**Shrink tubing**	
③	**Crocodile clip**	
④	**Stripped ends**	
⑤	**Connector**	

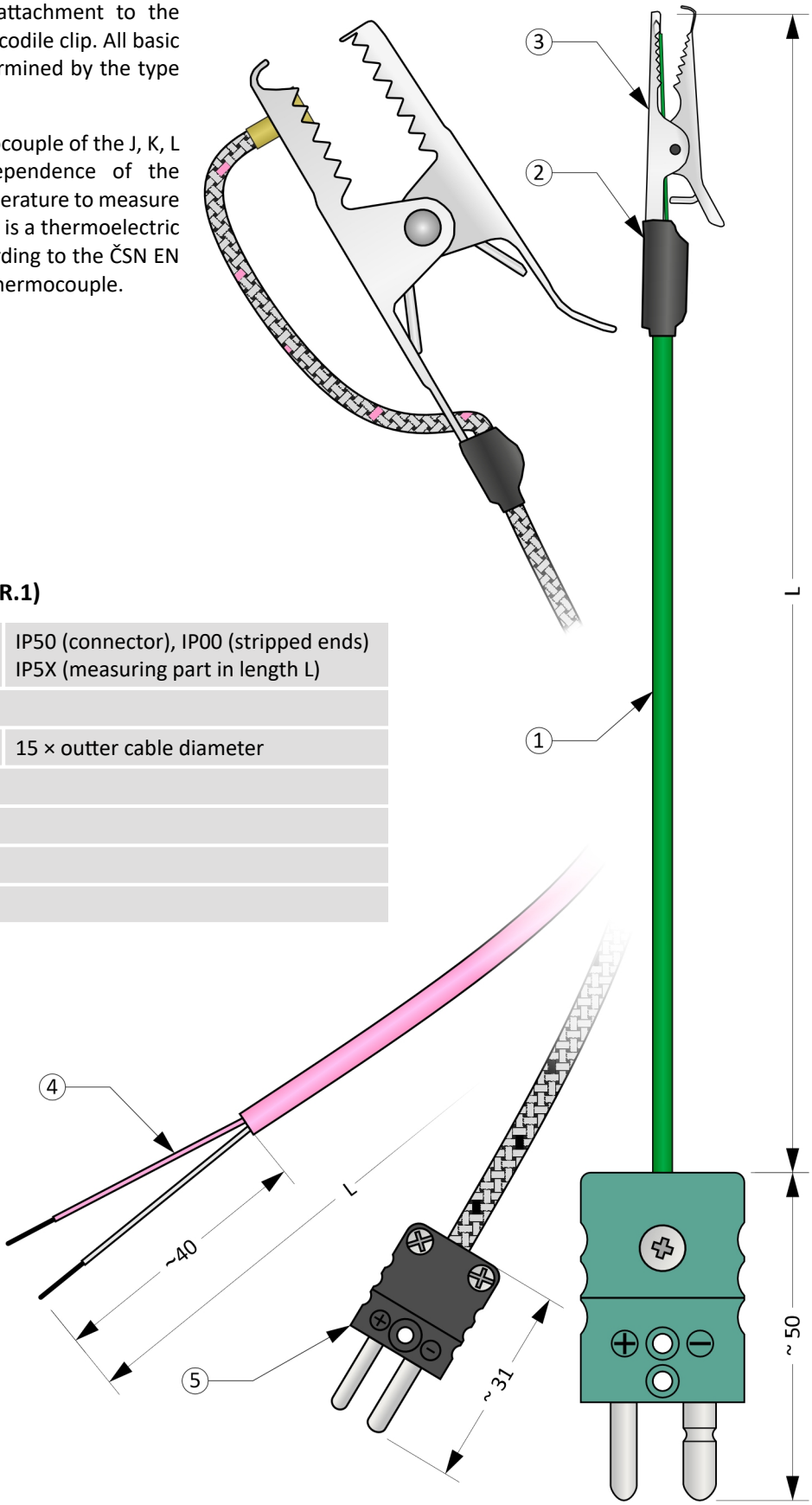


Figure 12KR.1: MTC12KR

Optional Parameters Including the Creation of an Order Code (Table 12KR.2)

Pos.	Code	MTC12KR - ❶❷ - ❸ - ❹	
❶	**Thermocouple type J, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type**		
	1	Cable TSL, 2 x 0,22 mm², stranded	For type A crocodile clip only.
	6	Cable GLGL wrap, 2 x 0,2 mm, solid	For type B crocodile clip only.
	7	Cable GLGL wrap, 2 x 0,5 mm, solid	For type B crocodile clip only.
	9	Cable TCuT, 2 x 0,22 mm², stranded	For type B crocodile clip only.
	Thermocouple type K, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type		
	2	Cable TCuT, 2 x 0,22 mm², stranded	For type A crocodile clip only.
	5	Cable GLGL wrap, 2 x 0,2 mm, solid	For type B crocodile clip only.
	4	Cable GLGL wrap, 2 x 0,5 mm, solid	For type B crocodile clip only.
	Thermocouple type L, acc. DIN 43710 - cable type		
	0	Cable TSL, 2 x 0,22 mm², stranded	For type A crocodile clip only.
	Thermocouple type N, accuracy class 2 acc. ČSN EN 60584-1 ed. 2 - cable type		
	8	Cable TSL, 2 x 0,22 mm², stranded	For type A crocodile clip only.
	3	Cable TCuT, 2 x 0,22 mm², stranded	For type A crocodile clip only.
❷	**Thermocouple measuring end design**		
	0	Crocodile clip type A (see figure 12KR.2), insulated thermocouple	
	1	Crocodile clip type B (see figure 12KR.3), non-insulated thermocouple	
❸	**Sensor length L [cm]**		
	xxx	Selectable range from 50 cm to 450 cm (in 1 cm increments)	
	xxx	Selectable range from 460 cm to 3 500 cm (in 10 cm increments)	
❹	**Design of the cold junction**		
	0	Stripped ends, length 40 mm	
	1	Standard connector, MTCK-S type, plug	
	2	Standard connector, MTCK-S type, plug + socket	
	3	Miniature connector, MTCK-M type, plug	
	4	Miniature connector, MTCK-M type, plug + socket	
	5	Ceramic standard connector, MTCK-CS type, plug	
	6	Ceramic standard connector, MTCK-CS type, plug + socket	
	7	Ceramic miniature connector, MTCK-CM type, plug	
	8	Ceramic miniature connector, MTCK-CM type, plug + socket	

Order code example: MTC12KR-20-500-0

... Thermocouple type K, accuracy class 2, TCuT wrap 2 x 0,22 mm², stranded

... Crocodile clip type A (see figure 12KR.2), insulated thermocouple

... Sensor length L = 500 cm

... Stripped ends

Approximate weight of the product: MTC12KR-20-500-0 ... 0,2 kg

Measuring Junction Design

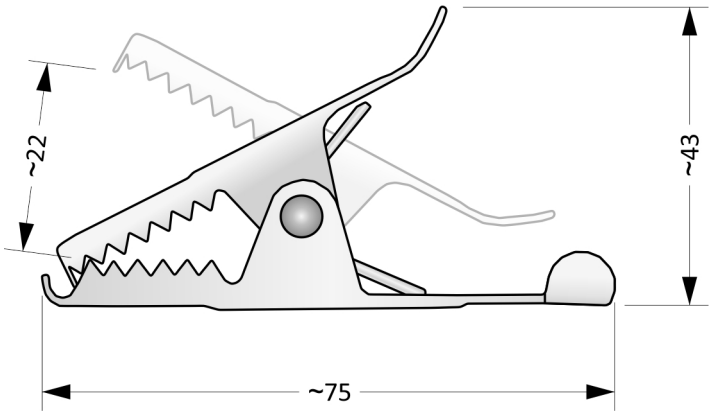


Figure 12KR.2: Type A

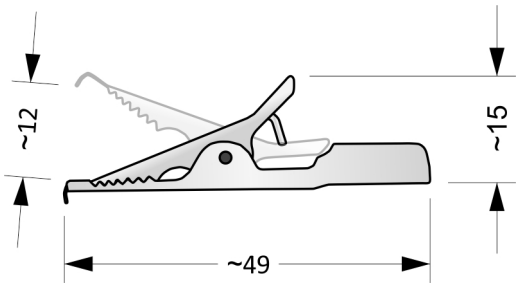


Figure 12KR.3: Type B

Recommended Maximum Temperatures of Sensor Parts (Table 12KR.3)

Sensor part	Type / insulation type	Continuous operation	Short-term operation
Measuring end (crocodile clip)	Type A	< 180 °C	-
	Type B	< 280 °C	-
Cable	TSL	-60 ... 180 °C	-
	TCuT	-200 ... 205 °C	-
	GLGL	-200 ... 400 °C	-
Connectors MTCK-S, MTCK-M		See cable insulation, max. 220 °C	-
Connectors MTCK-CS, MTCK-CM		See cable insulation	-

Length Tolerances (Table 12KR.4)

Length L	Tolerance L
L ≤ 250 cm	± 1 cm
250 < L ≤ 500 cm	± 1,5 cm
500 < L cm	± 0,5 % z L

Cable Parameter (Table 12KR.5)

Insulation	Number x cross-section / dia. of wires	Outer dia. / size of cable	Pros and cons
TSL (teflon FEP / silicone)	2 x 0,22 mm²	~ 3,7 mm	↗ Great flexibility, resistant to weak chemicals ↘ Low mechanical resistance
TCuT (teflon FEP / tinned copper wire braid / teflon FEP)	2 x 0,22 mm²	~ 3,0 mm	↗ Great flexibility, resistant to weak chemicals, screening
GLGL wrap (glass fiber braid / glass fiber braid)	2 x 0,2 mm 2 x 0,5 mm	~ 0,6 x 1,0 mm ~ 1,1 x 1,9 mm	↗ Good flexibility ↘ Low moisture resistance, low abrasion resistance

Installation And Operating Instructions

The jaws of the crocodile clip are used for mechanical fastening.

The electrical connection of the sensor is shown in Figures 12KR.4 and 12KR.5. 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.

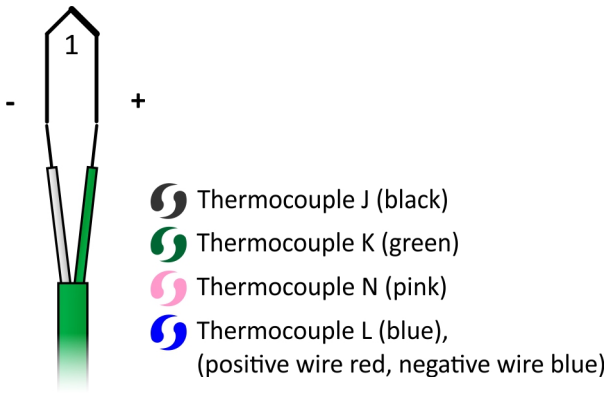


Figure 12KR.4: Single thermocouple wiring diagram

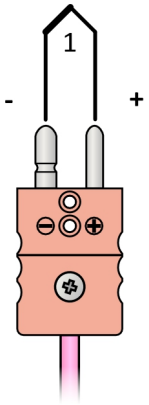


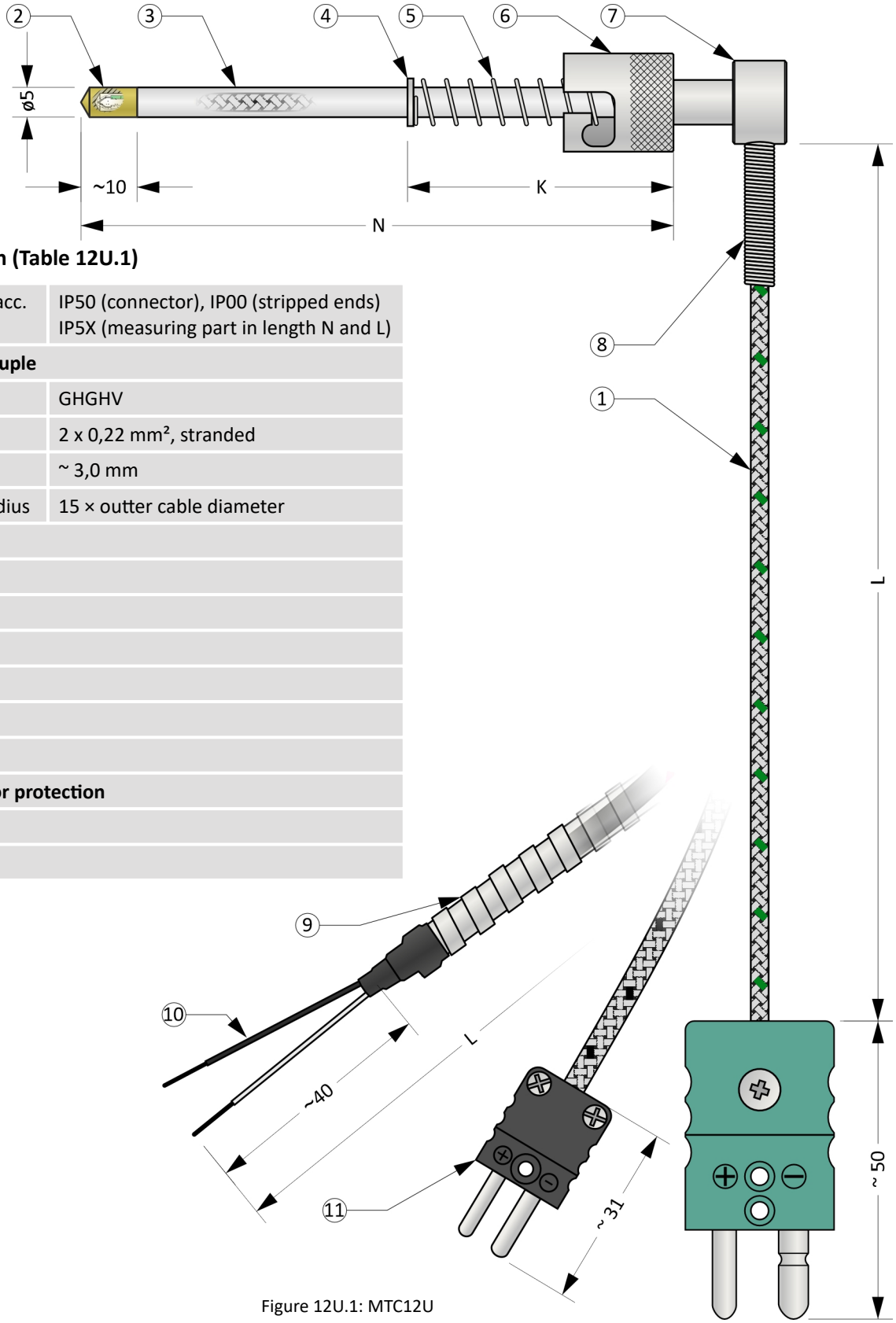
Figure 12KR.5: Connector wiring diagram

MTC12U

CABLE THERMOCOUPLES

Temperature sensors of the MTC12U series are cable temperature sensors in angular design, providing pressure to the measured surface by a spring. The angled design is advantageous in applications with limited installation space.

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.



General Information (Table 12U.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP5X (measuring part in length N and L)
①	**Cable thermocouple**	
	Cable insulation	GHGHV
	Wires	2 x 0,22 mm², stranded
	Cable diameter	~ 3,0 mm
	Min. bending radius	15 × outter cable diameter
②	**Brass tip**	
③	**Protection tube**	
④	**Spring stop**	
⑤	**Bayonet spring**	
⑥	**Bayonet cap**	
⑦	**Transition part**	
⑧	**Spring**	
⑨	**Additional armor protection**	
⑩	**Stripped ends**	
⑪	**Connector**	

Figure 12U.1: MTC12U

Optional Parameters Including the Creation of an Order Code (Table 12U.2)

Pos.	Code	MTC12U - ❶ - ❷ - ❸ - ❹ - ❺❻
❶	**Thermocouple type**	
	1	1 x „J“, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
	0	1 x „K“, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
	2	1 x „L“, acc. DIN 43 710
	3	1 x „N“, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
❷	**Length N [mm]**	
	xxx	Selectable range from (K+25) mm to 1000 mm (in 1 mm increments)
❸	**Length K [mm]**	
	0	Without spring
	xxx	Selectable range from 35 mm to 190 mm (in 1 mm increments)
❹	**Length L [cm]**	
	xxx	Selectable range from 10 cm to 450 cm (in 1 cm increments)
	xxx	Selectable range from 460 cm to 999 cm (in 10 cm increments)
	Axxx	Additional armor protection, selectable range from 10 cm to 450 cm (in 1 cm increments)
	Axxx	Additional armor protection, selectable range from 460 cm to 600 cm (in 10 cm increments)
❺	**Design of the cold junction**	
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket
❻	**Bayonet cap**	
	0	Inner diameter C = 12 mm, 2 slot, with a spring of dia. 8 mm
	1	Inner diameter C = 15 mm, 2 slot, with a spring of dia. 8 mm

Order code example: MTC12U-0-100-50-500-00

... Thermocouple type K, accuracy class 2

... Length N = 100 mm

... Length K = 50 cm

... Length L = 500 cm

... Stripped ends

... Inner diameter C = 12 mm

Approximate weight of the product: MTC12U-0-100-50-500-00 ... 0,4 kg

Length Tolerances (Table 12U.3)

Length K, L, N	Tolerance K	Tolerance L	Tolerance N
(K, L, N) ≤ 250 cm	± 3 mm	± 1 cm	± 2 mm
250 < L ≤ 500 cm	-	± 1,5 cm	-
500 < L cm	-	± 0,5 % z L	-

Recommended Maximum Temperatures of Sensor Parts (Table 12U.4)

Sensor part	Continuous operation	Short-term operation
Thermocouple - measuring end, cable	-40 ... 600 °C	-
Spring stop, spring, bayonet cap, transition part	< 500 °C	-
Connectors MTCK-S, MTCK-M	< 220 °C	-
Connectors MTCK-CS, MTCK-CM	< 600 °C	-

Design of the transition part (Table 12U.5)

①	**Transition part**	
	Material	Stainless steel
②	**Spring**	
	Note	Reduces wear on the cable at the point of exit from the transition.
	Material	Stainless steel
③	**Additional armor protection**	
	Note	It increases the mechanical resistance of the cable.
	Material	Stainless steel
	Properties	Flexible, does not prevent the ingress of moisture

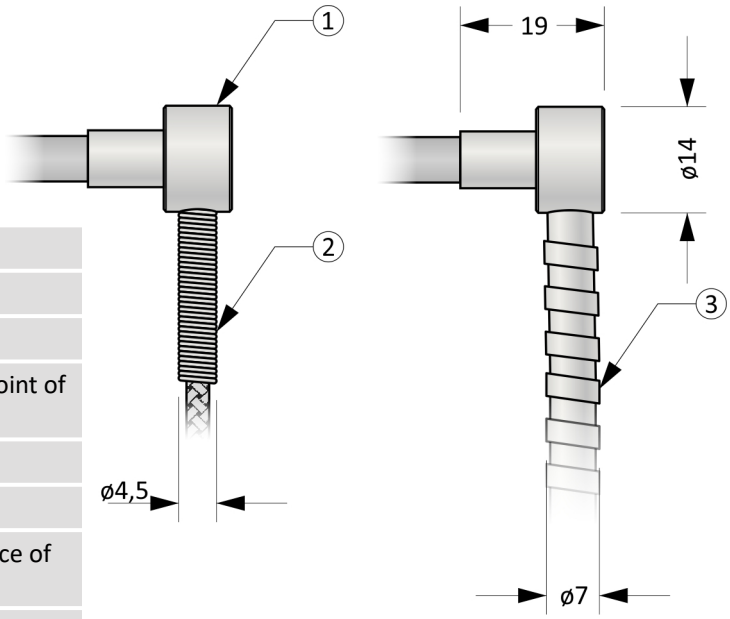


Figure 12U.4: Transition part design options.

Bayonet part design (Table 12U.6)

The spring compressibility is 50 % (e.g. if we have a spring with a length of 100 mm, then its length after maximum compression will be 50 mm).

④	**Bayonet cap**	
	Material	Stainless steel
⑤	**Bayonet spring**	
	Material	Stainless steel

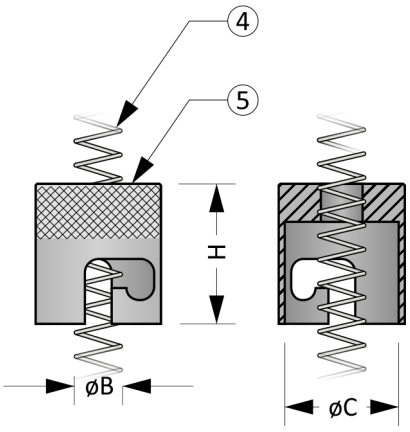


Figure 12U.5: Bayonet cap

Dimensions of the bayonet cap (Table 12U.7)

øC	H	øB
12,0 mm	18 mm	8 mm
15,0 mm	18 mm	8 mm

Installation And Operating Instructions

The sensor stem with bayonet cap is used for mechanical fixing

The electrical connection of the sensor is shown in Figures 12U.6 and 12U.7. 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.

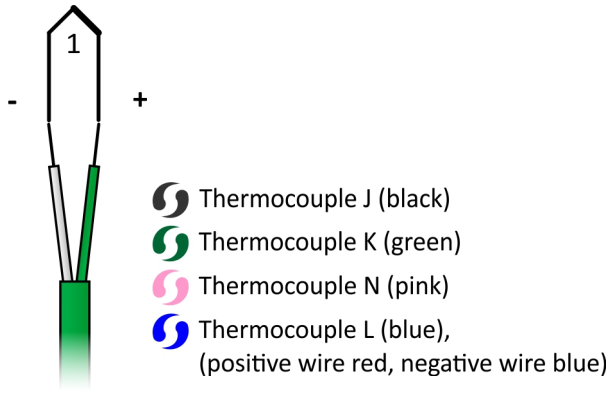


Figure 12U.6: Single thermocouple wiring diagram

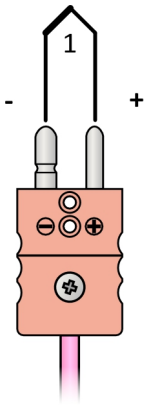


Figure 12U.7: Connector wiring diagram

MTC13

CABLE THERMOCOUPLES

Temperature sensors of the MTC13 series are the standard version of cable contact temperature sensors. The shape and size of the sensor tip can be selected according to the borehole in the object to be measured.

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.

General Information (Table 13.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP5X (measuring part in length L)
①	**Cable thermocouple**	
	Cable insulation	GHGHV (glass fiber braid / glass fiber braid / stainless steel wire braid)
	Number x cross-section of wires	2 x 0,22 mm², stranded
	Cable diameter	~ 3,0 mm
	Min. bending radius	15 × outter cable diameter
②	**Protection tube**	
	Material	Stainless steel 1.4541
③	**Bayonet cap**	
④	**Bayonet spring**	
⑤	**Stripped ends**	
⑥	**Connector**	

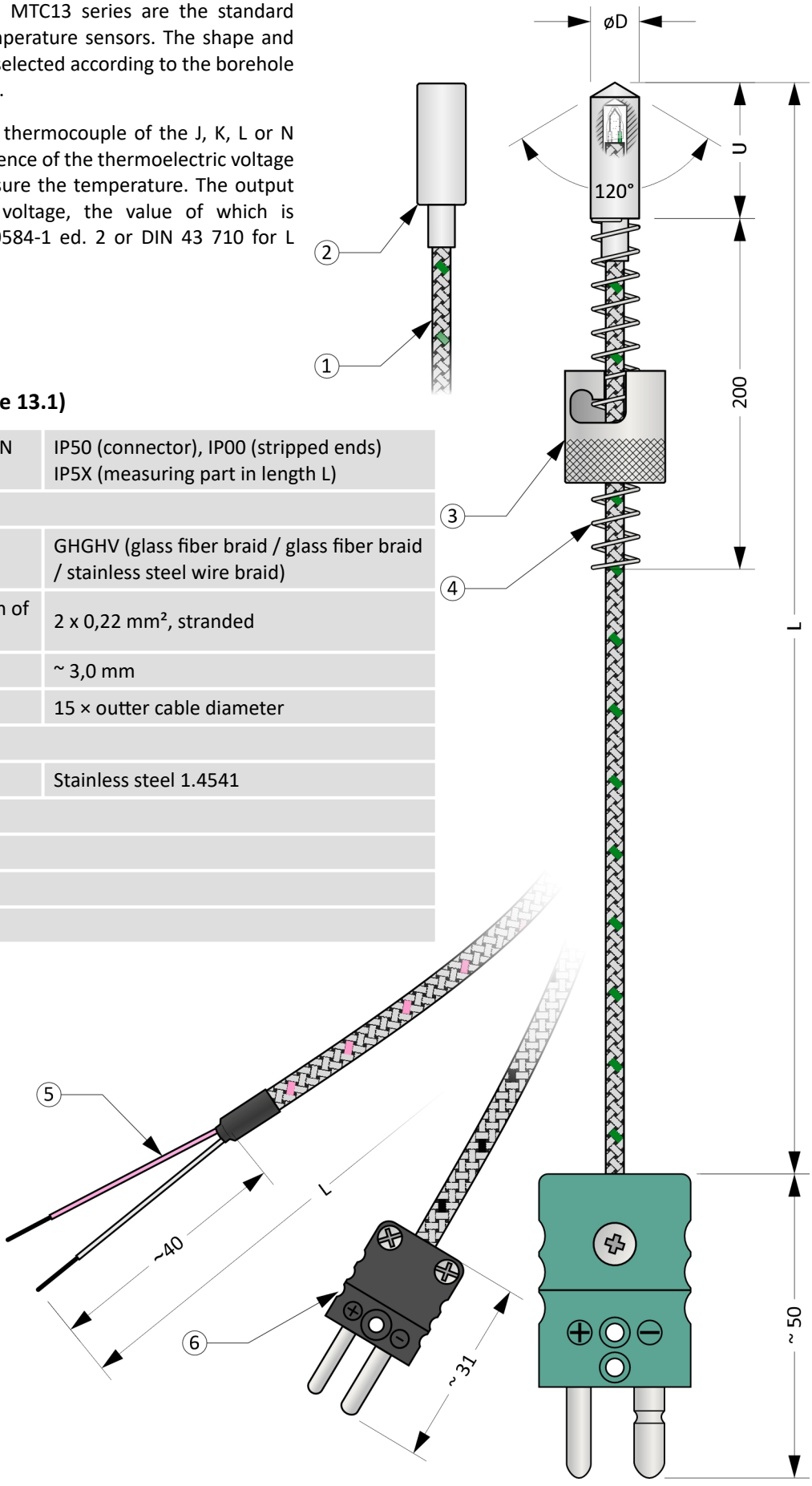


Figure 13.1: MTC13

Optional Parameters Including the Creation of an Order Code (Table 13.2)

Pos.	Code	MTC13 - ❶❷❸ - ❹ - ❺❻	
❶	**Basic design**		
	0	Without spring and bayonet cap	
	1	With spring and bayonet cap	
❷	**Thermocouple type**		
	1	1 x „J“, thermocouple isolated from the sheath, accuracy class 2 acc. ČSN EN 60584-1 ed. 2	
	0	1 x „K“, thermocouple isolated from the sheath,accuracy class 2 acc. ČSN EN 60584-1 ed. 2	
	2	1 x „L“, thermocouple isolated from the sheath, acc. DIN 43 710	
	3	1 x „N“, thermocouple isolated from the sheath, accuracy class 2 acc. ČSN EN 60584-1 ed. 2	
❸	**Protection tube design**		
	0	Length U = 60 mm, dia. D = 6 mm, tip with 120° bevel	For spring with dia.= 6 mm
	1	Length U = 20 mm, dia. D = 6 mm, tip with 120° bevel	For spring with dia.= 6 mm
	2	Length U = 10 mm, dia. D = 6 mm, tip with 120° bevel	For spring with dia.= 6 mm
	3	Length U = 14 mm, dia. D = 6 mm, tip with 120° bevel	For spring with dia.= 6 mm
	4	Length U = 14 mm, dia. D = 6 mm, flat tip	For spring with dia.= 6 mm
	5	Length U = 14 mm, dia. D = 8 mm, tip with 120° bevel	For spring with dia.= 8 mm
	6	Length U = 14 mm, dia. D = 8 mm, flat tip	For spring with dia.= 8 mm
	7	Length U = 35 mm, dia. D = 6 mm, tip with 120° bevel	For spring with dia.= 6 mm
	8	Length U = 35 mm, dia. D = 6 mm, flat tip	For spring with dia.= 6 mm
❹	**Sensor length L [cm]**		
	xxx	Selectable range from 10 cm to 450 cm (in 1 cm increments)	
	xxx	Selectable range from 460 cm to 3500 cm (in 10 cm increments)	
❺	**Design of the cold junction**		
	0	Stripped ends, length 40 mm	
	1	Standard connector, MTCK-S type, plug	
	2	Standard connector, MTCK-S type, plug + socket	
	3	Miniature connector, MTCK-M type, plug	
	4	Miniature connector, MTCK-M type, plug + socket	
	5	Ceramic standard connector, MTCK-CS type, plug	
	6	Ceramic standard connector, MTCK-CS type, plug + socket	
	7	Ceramic miniature connector, MTCK-CM type, plug	
	8	Ceramic miniature connector, MTCK-CM type, plug + socket	
❻	**Bayonet cap**		Only combination is possible for this option: ❶ ... 0
	N	Not used	
	0	Inner diameter C = 11,3 mm, 2 slots, with a spring of dia. 6 mm	
	1	Inner diameter C = 12,2 mm, 2 slots, with a spring of dia. 6 mm	
	2	Inner diameter C = 15,2 mm, 2 slots, with a spring of dia. 6 mm	
	3	Inner diameter C = 12 mm, 2 slots, with a spring of dia. 8 mm	
	4	Inner diameter C = 15 mm, 2 slots, with a spring of dia. 8 mm	

Order code example: MTC13-100-500-00

... With spring and bayonet cap
... Thermocouple type K, accuracy class 2
... Tube length U = 60 mm, dia. D = 6 mm, tip with 120° bevel
... Length L = 500 cm
... Stripped ends
... Bayonet cap, inner dia. D = 12 mm

Approximate weight of the product: MTC13-100-500-00 ... 0,4 kg

Length Tolerances (Table 13.3)

Length L, U	Tolerance U	Tolerance L
(L, U) ≤ 250 cm	± 1 mm	± 1 cm
250 < L ≤ 500 cm	-	± 1,5 cm
500 < L cm	-	± 0,5 % z L

Recommended Maximum Temperatures of Sensor Parts (Table 13.4)

Sensor part	Continuous operation	Short-term operation
Thermocouple - measuring end, cable	-40 ... 600 °C	-
Spring, bayonet cap	< 500 °C	-
Connectors MTCK-S, MTCK-M	< 220 °C	-
Connectors MTCK-CS, MTCK-CM	< 600 °C	-

Bayonet part design (Table 13.5)

The spring compressibility is 50 % (e.g. if we have a spring with a length of 100 mm, then its length after maximum compression will be 50 mm).

④	**Bayonet cap**	
	Material	Stainless steel
⑤	**Bayonet spring**	
	Material	Stainless steel

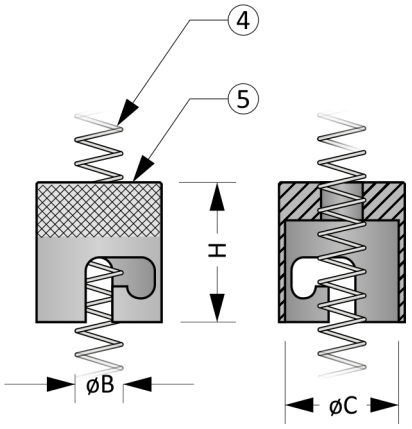


Figure 13.2: Bayonet cap

Dimensions of the bayonet cap (Table 13.6)

øC	H	øB
11,3 mm	16 mm	6 mm
12,2 mm	18 mm	6 mm
15,2 mm	18 mm	6 mm
12,0 mm	18 mm	8 mm
15,0 mm	18 mm	8 mm

Installation And Operating Instructions

The sensor stem with bayonet cap is used for mechanical fixing.

The electrical connection of the sensor is shown in Figures 13.3 and 13.4. 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.

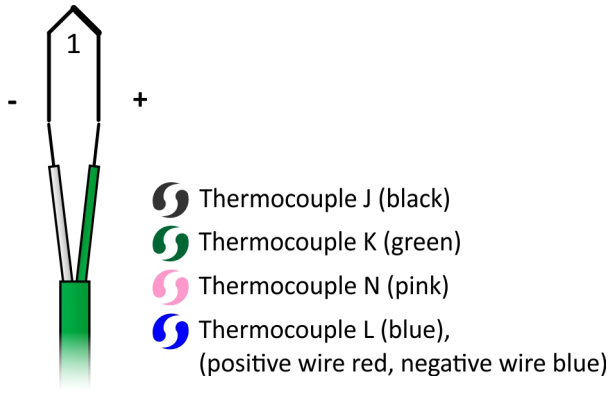


Figure 13.3: Single thermocouple wiring diagram

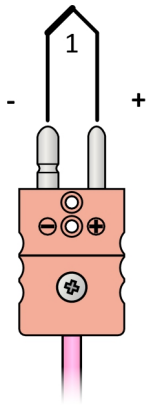


Figure 13.4: Connector wiring diagram

MTC13T

CABLE THERMOCOUPLES

Temperature sensors of the MTC13T series are the basic design of cable pressure temperature sensors. They represent an economical solution for temperature measurement in environments with overpressure or underpressure of the medium to be measured.

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.

General Information (Table 13T.1)

	Insulation class acc. ČSN EN 60529	IP50 (connector), IP00 (stripped ends) IP5X (cable) IP68 (measuring part in length U)
	Max. medium overpressure	3 bar
①	**Cable thermocouple**	
	Cable insulation	GHGHV (glass fiber braid / glass fiber braid / stainless steel wire braid)
	Number x cross-section of wires	2 x 0,22 mm², stranded
	Cable diameter	~ 3,0 mm
②	**Protection tube with threaded fitting**	
	Material	Stainless steel 1.4541
③	**Additional armor protection**	
④	**Stripped ends**	
⑤	**Connector**	

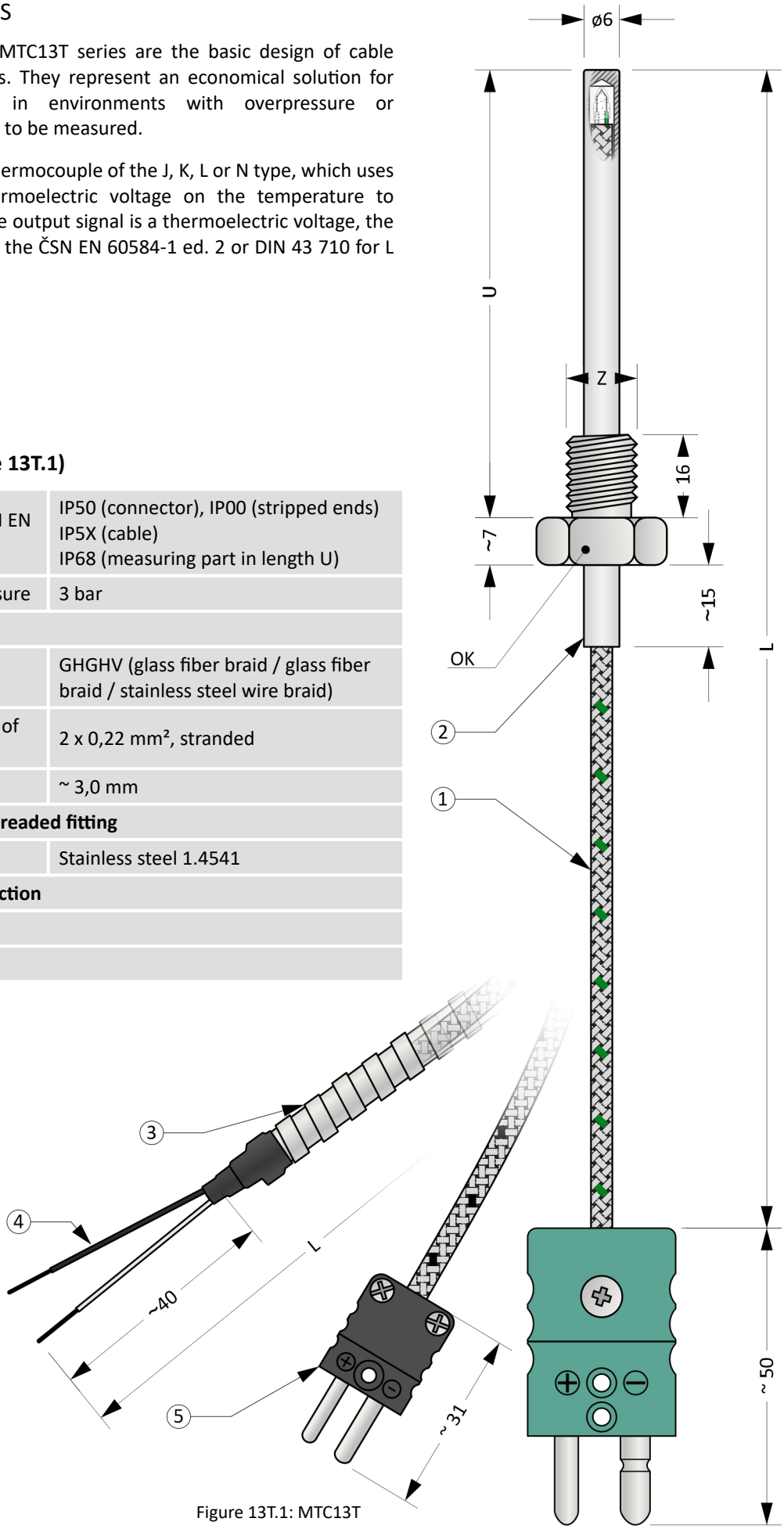


Figure 13T.1: MTC13T

Optional Parameters Including the Creation of an Order Code (Table 13T.2)

Pos.	Code	MTC13T- ❶❷ - ❸ - ❹ - ❺
❶	**Thermocouple type**	
	1	1 x „J“, thermocouple isolated, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
	0	1 x „K“, thermocouple isolated, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
	2	1 x „L“, thermocouple isolated, acc. DIN 43 710
	3	1 x „N“, thermocouple isolated, accuracy class 2 acc. ČSN EN 60584-1 ed. 2
❷	**Threaded fitting**	
	0	Welded threaded fitting Z = M12 x 1,75, OK19
	1	Welded threaded fitting Z = M12 x 1,5, OK19
	2	Welded threaded fitting Z = M10 x 1,5, OK17
	3	Welded threaded fitting Z = G½“, OK24
❸	**Length U [mm]**	
	xxx	Selectable range from 20 mm to 500 mm (in 1 mm increments)
❹	**Length L [cm]**	
	xxx	Selectable range from 10 cm to 450 cm (in 1 cm increments)
	xxx	Selectable range from 460 cm to 3500 cm (in 10 cm increments)
	Axxx	Additional armor protection, selectable range from 10 cm to 450 cm (in 1 cm increments)
	Axxx	Additional armor protection, selectable range from 460 cm to 600 cm (in 10 cm increments)
❺	**Design of the cold junction**	
	0	Stripped ends, length 40 mm
	1	Standard connector, MTCK-S type, plug
	2	Standard connector, MTCK-S type, plug + socket
	3	Miniature connector, MTCK-M type, plug
	4	Miniature connector, MTCK-M type, plug + socket
	5	Ceramic standard connector, MTCK-CS type, plug
	6	Ceramic standard connector, MTCK-CS type, plug + socket
	7	Ceramic miniature connector, MTCK-CM type, plug
	8	Ceramic miniature connector, MTCK-CM type, plug + socket

Order code example: MTC13T-00-50-500-0

... Thermocouple type K, accuracy class 2
... Process thread Z = M12 x 1,75
... Length U = 50 mm
... Length L = 500 mm
... Stripped ends

Approximate weight of the product: MTC13T-00-50-500-0 ... 0,4 kg

Length Tolerances (Table 13T.3)

Length L, U	Tolerance U	Tolerance L
(L, U) ≤ 250 cm	± 1 mm	± 1 cm
250 < L ≤ 500 cm	-	± 1,5 cm
500 < L cm	-	± 0,5 % z L

Recommended Maximum Temperatures of Sensor Parts (Table 13T.4)

Sensor part	Continuous operation	Short-term operation
Thermocouple - measuring end, cable	-40 ... 600 °C	-
Protection tube with threaded fitting	< 500 °C	-
Connectors MTCK-S, MTCK-M	< 220 °C	-
Connectors MTCK-CS, MTCK-CM	< 600 °C	-

Installation And Operating Instructions

For mechanical fixing, the sensor stem and the fitting are used.

The electrical connection of the sensor is shown in Figures 13T.2 and 13T.3. 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.

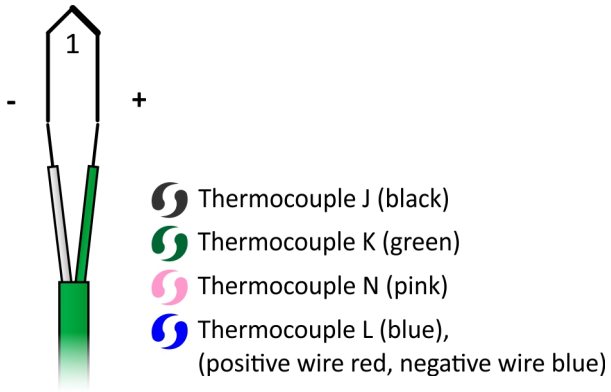


Figure 13T.2: Single thermocouple wiring diagram

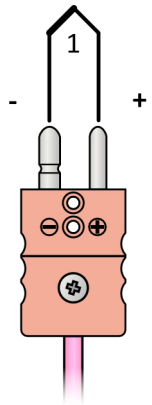


Figure 13T.3: Connector wiring diagram

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MTC14V

THERMOCOUPLE ASSEMBLY WITH METAL TUBE AND MEASURING INSERT

Temperature sensors of the MTC14V series are designed for applications with operating temperatures up to 800°C and a requirement for mechanical robustness of the design. Optional features include a fixed welded fitting with a customer-specified immersion.

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 sensor consists of an assembly and a replaceable measuring insert. The assembly consists of a head, a protective metal tube and a threaded fitting. The head is equipped with a cable gland for connecting the compensation cable.

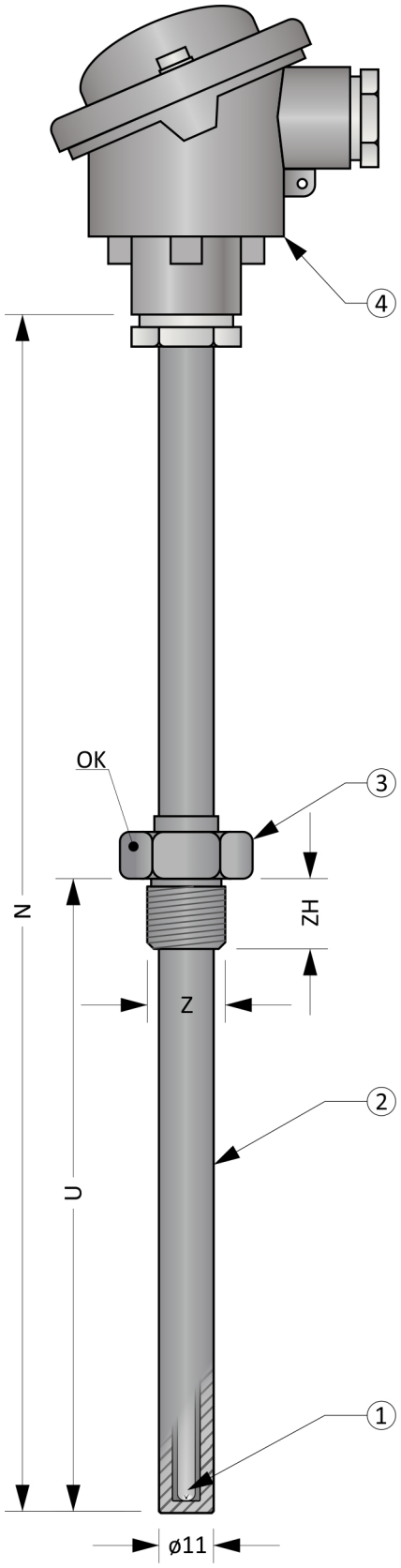

Figure 14V.1: MTC14V

General Information (Table 14V.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP68 (measuring part in length N)
	Max. medium overpressure	16 bar
①	**Base metal thermocouple measuring insert**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Diameter	4,5 mm
②	**Protection tube**	
	Material	1.4404
	Outer / inner diameter	11 / 7 mm
③	**Threaded fitting**	
	Material	Stainless steel 1.4301
④	**Head**	
	Material	Aluminium alloy
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 14V.2)

Pos.	Code	MTC14V - ❶❷ - ❸ - ❹ - ❺❻❼
❶	**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
	5	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**Accuracy class acc. ČSN EN 60584-1 ed. 2**	
	0	Accuracy class 2
	1	Accuracy class 1
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 250 mm to 2000 mm (in 10 mm increments)
❹	**Immersion depth U [mm]**	
	0	Without threaded fitting
	xxx	Selectable range from 50 mm to (N-100) mm (in 5 mm increments)
❺	**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
❻	**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
❼	**Transmitter (only for 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: MTC14V-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 fittingG½

... Head B

... Without transmitter

Approximate weight of the product: MTC14V-01-500-250-300 ... 1,5 kg

Length Tolerances (Table 14V.3)

Nominal length N	Length tolerance N	Length tolerance U
N ≤ 1000 mm	± 2 mm	± 2 mm
1000 < N mm	± 3 mm	± 2 mm

Recommended Maximum Temperatures of Sensor Parts (Table 14V.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

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

Head types

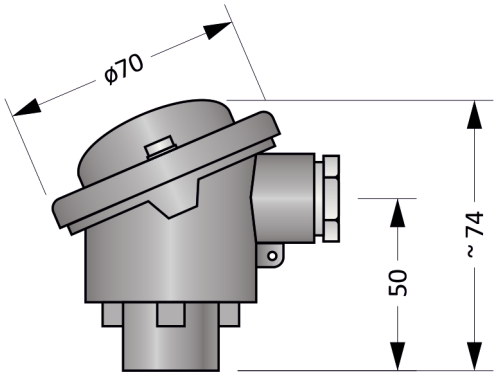

Figure 14V.2: Head B

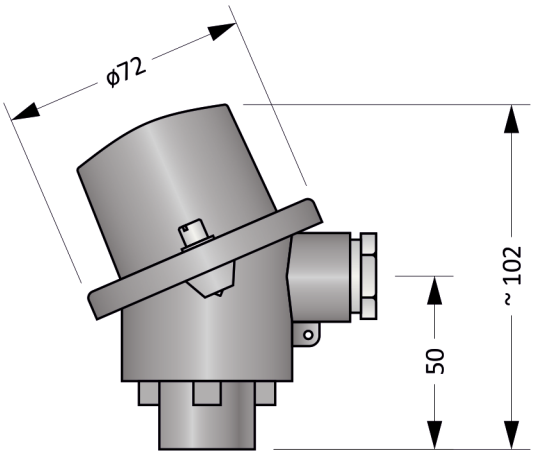

Figure 14V.3: Head BH

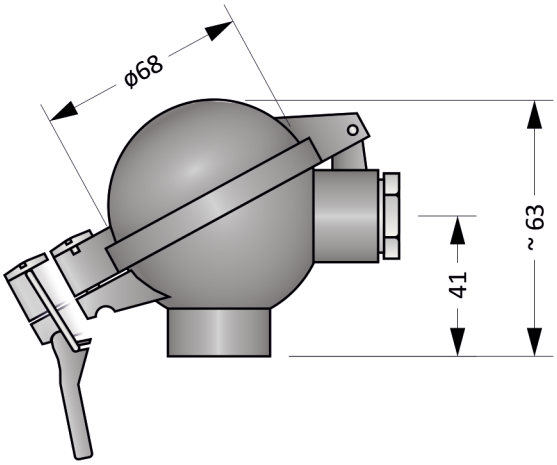

Figure 14V.4: Head BUZ

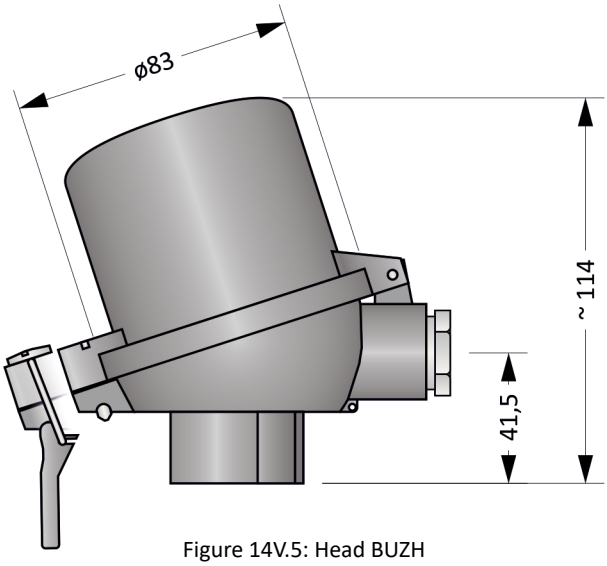

Figure 14V.5: Head BUZH

Head mounted transmitter (Table 14V.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. 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 14V.8.

The electrical connection of the sensor is shown in Figures 14V.6 and 14V.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

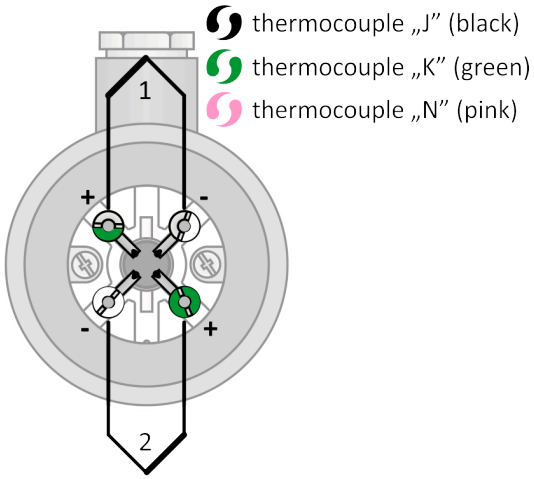

Figure 14V.7: Double thermocouple wiring diagram

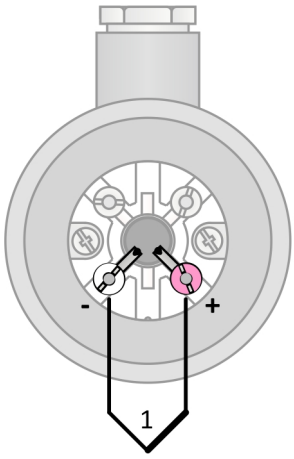

Figure 14V.8: Single thermocouple wiring diagram

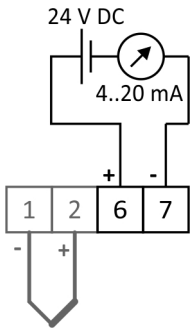

Figure 14V.9: Transmitter wiring diagram

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MTC15

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Thermocouple inserts of the MTC15 series are a components with a wide range of applications as a measuring element in a wide range of temperature sensors with metal or ceramic tube and as a stand-alone temperature sensor.

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 measuring part of the sensor is made of mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515. The sheath is flexible and can be easily adjusted to the measuring place.

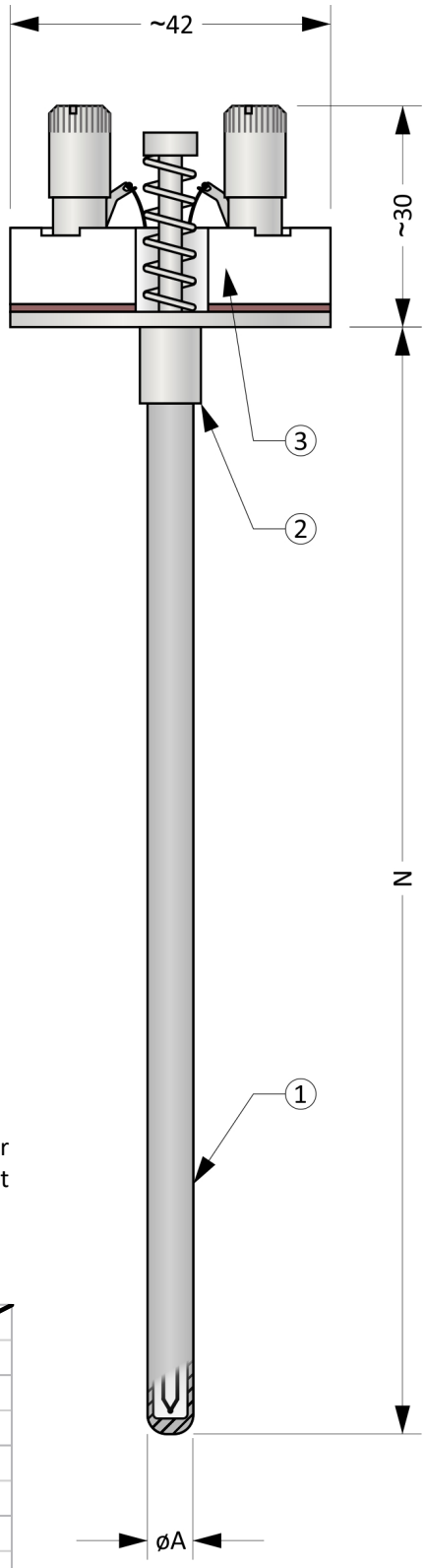


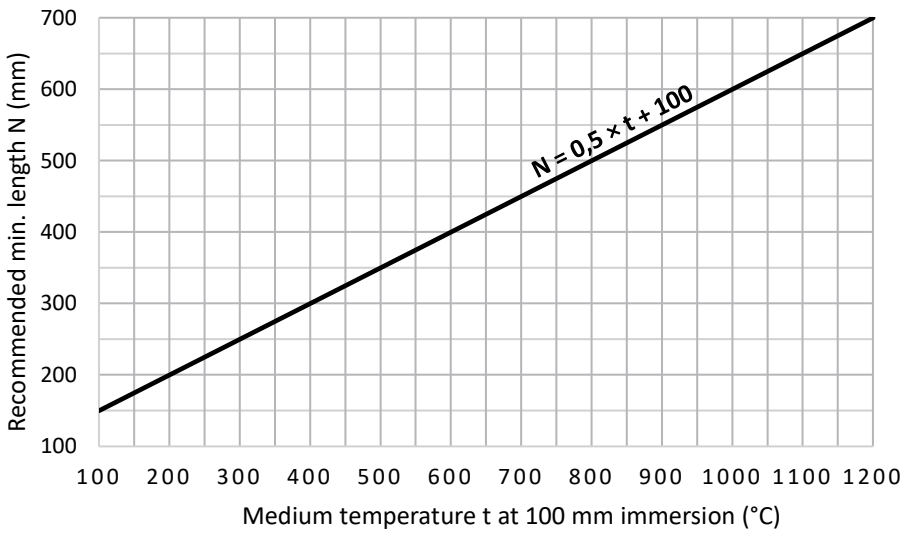
Figure 15.1: MTC15

General Information (Table 15.1)

	Insulation class acc. ČSN EN 60529	IP00 (terminal) IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Disk**	
③	**Terminal block**	

Recommended Min. Sensor Length (Chart 15.1)

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



Optional Parameters Including the Creation of an Order Code (Table 15.2)

Pos.	Code	MTC15 - ❶❷ - ❸
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	D	1 x „N“, sheath material 2.4816
	C	1 x „L“, sheath material 1.4541, (acc. DIN 43 710)
	7	2 x „J“, sheath material 1.4541
	6	2 x „K“, sheath material 2.4816
	G	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	E	1 x „N“, sheath material 2.4816
	B	2 x „J“, sheath material 1.4541
	A	2 x „K“, sheath material 2.4816
	H	2 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	F	1 x „N“, sheath material 2.4816
	9	2 x „J“, sheath material 1.4541
	8	2 x „K“, sheath material 2.4816
	I	2 x „N“, sheath material 2.4816
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**	
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip — For J, K, N thermocouples only.
	2	Accuracy class 1, thermocouple connected to the sheath, blunt tip — For J, K, N thermocouples only.
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip (Type L without accuracy class acc. DIN 43 710)
	3	Accuracy class 2, thermocouple connected to the sheath, blunt tip (Type L without accuracy class acc. DIN 43 710)
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)

Order code example: MTC15-00-500

... 1 x „K“, sheath dia. A = 3 mm, sheath material 2.4816 (INCONEL 600)

... Accuracy class 2, thermocouple isolated from the sheath, blunt tip

... Nominal length N = 500 mm

Approximate weight of the product: MTC15-00-500 ... 0,2 kg

Length Tolerances (Table 15.3)

Nominal length N	Tolerance N
50 ≤ N ≤ 1500 mm	± 2 mm
1500 < N ≤ 2500 mm	± 3 mm
2500 < N mm	± 5 mm

Diameter tolerance (Table 15.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 15.5)

Sensor part	Sheat dia.	Continuous operation	Short-term operation
Terminal block		< 100 °C	-
Thermocouple type „L“ measuring junction	3 mm	< 480 °C	< 530 °C
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

Measuring Junction Design

Figure 15.2: Thermocouple isolated from the sheath

Figure 15.3: Thermocouple connected to the sheath

Installation And Operating Instructions

The thermocouple insert is mounted into the sensor assembly using screws.

The electrical connection of the sensor is shown in Figures 15.4 and 15.5. 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.

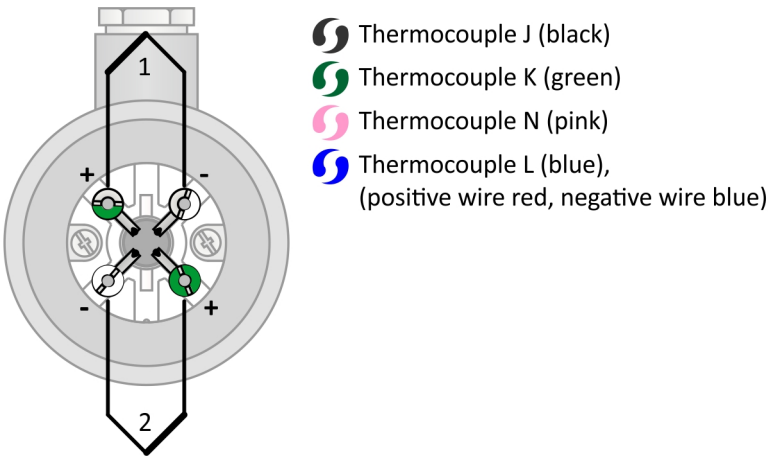


Figure 15.4: Double thermocouple wiring diagram

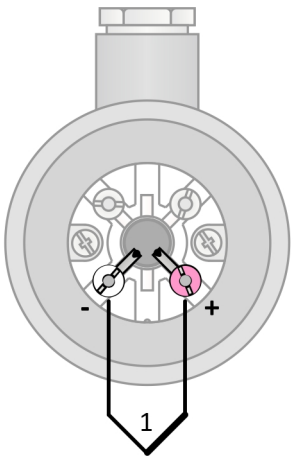


Figure 15.5: Single thermocouple wiring diagram

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MTC15P

MINERAL INSULATED METAL-SHEATHED THERMOCOUPLES

Thermocouple inserts with transmitter of the MTC15P series are a components with a wide range of applications as a measuring element in a wide range of temperature sensors with metal or ceramic tube and as a stand-alone temperature sensor.

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 measuring part of the sensor is made of mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515. The sheath is flexible and can be easily adjusted to the measuring place.

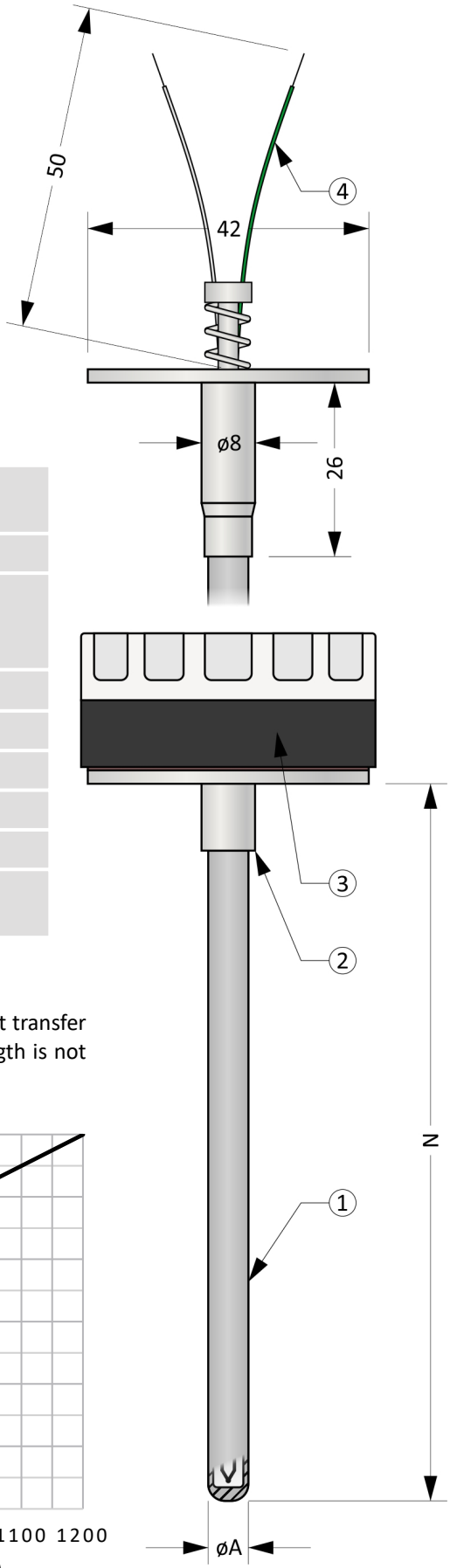


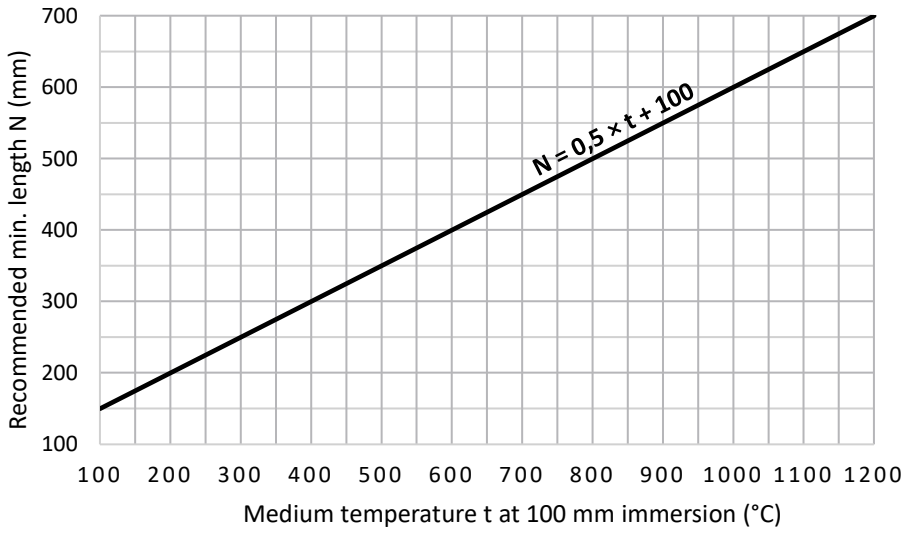
Figure 15P.1: MTC15P

General Information (Table 15P.1)

	Insulation class acc. ČSN EN 60529	IP00 (terminal block, extension wires) IP68 (measuring part in length N)
①	**Common metal thermocouple (stem)**	
	Design	Mineral insulated metal-sheathed thermocouple according to the ČSN EN 61515 ed.2
	Min. bending radius	10 × øA
②	**Disk**	
③	**Terminal block**	
④	**Extension wires**	
	Length	50 mm
	insulation / cross-section of wires	SL (silicone), 0,22 mm², stranded

Recommended Min. Sensor Length (Chart 15P.1)

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



Optional Parameters Including the Creation of an Order Code (Table 15.2)

Pos.	Code	MTC15 - ❶❷ - ❸ - ❹ - ❺ - ❻
❶	**Thermocouple type of dia. A = 3,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)**	
	1	1 x „J“, sheath material 1.4541
	0	1 x „K“, sheath material 2.4816
	D	1 x „N“, sheath material 2.4816
	C	1 x „L“, sheath material 1.4541 (acc. DIN 43 710)
	Thermocouple type of dia. A = 4,5 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	5	1 x „J“, sheath material 1.4541
	4	1 x „K“, sheath material 2.4816
	E	1 x „N“, sheath material 2.4816
	Thermocouple type of dia. A = 6,0 mm (thermocouples acc. ČSN EN 60584-1 ed. 2)	
	3	1 x „J“, sheath material 1.4541
	2	1 x „K“, sheath material 2.4816
	F	1 x „N“, sheath material 2.4816
❷	**Measuring junction design and thermocouple accuracy class acc. ČSN EN 60584-1 ed. 2**	
	1	Accuracy class 1, thermocouple isolated from the sheath, blunt tip — For J, K, N thermocouples only.
	2	Accuracy class 1, thermocouple connected to the sheath, blunt tip — For J, K, N thermocouples only.
	0	Accuracy class 2, thermocouple isolated from the sheath, blunt tip (Type L without accuracy class acc. DIN 43 710)
	3	Accuracy class 2, thermocouple connected to the sheath, blunt tip (Type L without accuracy class acc. DIN 43 710)
❸	**Nominal length N [mm]**	
	xxx	Selectable range from 50 mm to 4 500 mm (in 1 mm increments)
	xxx	Selectable range from 4501 mm to 50 000 mm (in 100 mm increments)
❹	**Transmitter**	
	8	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)
❺	**Transmitter range settings 4 ... 20 mA [°C]**	
	xxx	Lower limit (= 4 mA)
❻	xxx	Upper limit (= 20 mA)

Order code example: MTC15P-00-500-5-0-250

... 1 x „K“, sheath dia. A = 1 mm, sheath material 2.4816 (INCONEL 600)
... Accuracy class 2, thermocouple isolated from the sheath, blunt tip
... Nominal length N = 500 mm
... INOR IPAQ C330
... Lower limit = 0 °C
... Upper limit = 250 °C

Approximate weight of the product: MTC15P-00-500-5-0-250 ... 0,2 kg

Length Tolerances (Table 15P.3)

Nominal length N	Tolerance N
50 ≤ N ≤ 1500 mm	± 2 mm
1500 < N ≤ 2500 mm	± 3 mm
2500 < N mm	± 5 mm

Diameter tolerance (Table 15P.4)

Stem diameter A	Tolerance A
1 ≤ A ≤ 4,5 mm	± 0,05 mm
4,5 < A mm	± 0,06 mm

Recommended Maximum Temperatures of Sensor Parts (Table 15P.5)

Sensor part	Sheat dia.	Continuous operation	Short-term operation
Transmitter		< 85 °C	-
Thermocouple type „L“ measuring junction	3 mm	< 480 °C	< 530 °C
Thermocouple type „J“ measuring junction	3 mm	< 470 °C	< 520 °C
	4,5 mm	< 550 °C	< 620 °C
	6 mm	< 650 °C	< 720 °C
Thermocouple type „K“ and „N“ measuring junction	3 mm	< 980 °C	< 1050 °C
	4,5 mm	< 1080 °C	< 1140 °C
	6 mm	< 1140 °C	< 1200 °C

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

Measuring Junction Design

Figure 15P.2: Thermocouple isolated from the sheath

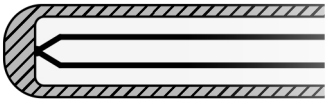


Figure 15P.3: Thermocouple connected to the sheath

Head mounted transmitter (Table 15P.6)

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 thermocouple insert is mounted into the sensor assembly using screws.

The electrical connection of the sensor is shown in Figures 15P.4 and 15P.5. 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.

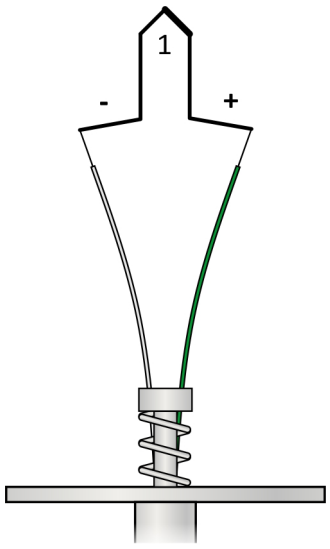


Figure 15P.4: Thermocouple wiring diagram

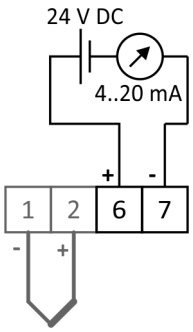


Figure 15P.5: Transmitter wiring diagram

MTC16

THERMOCOUPLE ASSEMBLY WITH METAL TUBE AND MEASURING INSERT

Temperature sensors of the MTC16 series are designed for applications with operating temperatures up to 1100°C where extremely high robustness is not required.

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 sensor consists of an assembly and a replaceable measuring insert. The assembly consists of a head, a protective metal tube and a threaded fiting. The head is equipped with a cable gland for connecting the compensation cable.

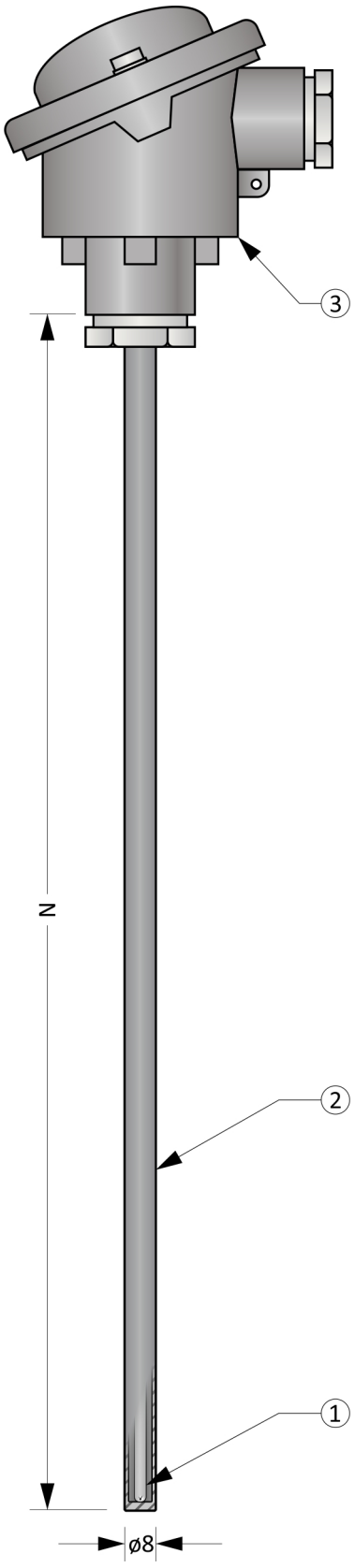


Figure 16.1: MTC16

General Information (Table 16.1)

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

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

Pos.	Code	MTC16 - ❶❷ - ❸ - ❹
❶	**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
	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 „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
	6	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**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.
❸	**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)
❹	**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

Order code example: MTC16-01-A500-0

... 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, material 1.4541

... Head B

Approximate weight of the product: MTC16-01-A500-0 ... 1,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 16.4)

Sensor part	Continuous operation	Short-term operation
Head	< 100 °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 16.3)

Nominal length N	Length tolerance N
N ≤ 1000 mm	± 2 mm
1000 < N mm	± 3 mm

Head types

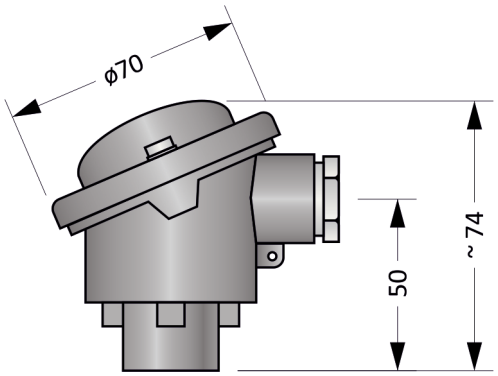


Figure 16.2: Head B

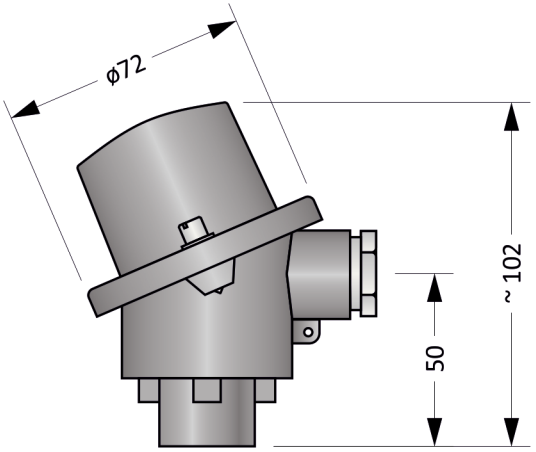


Figure 16.3: Head BH

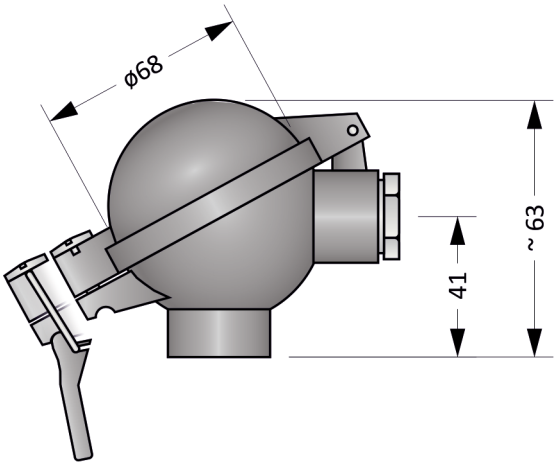


Figure 16.4: Head BUZ

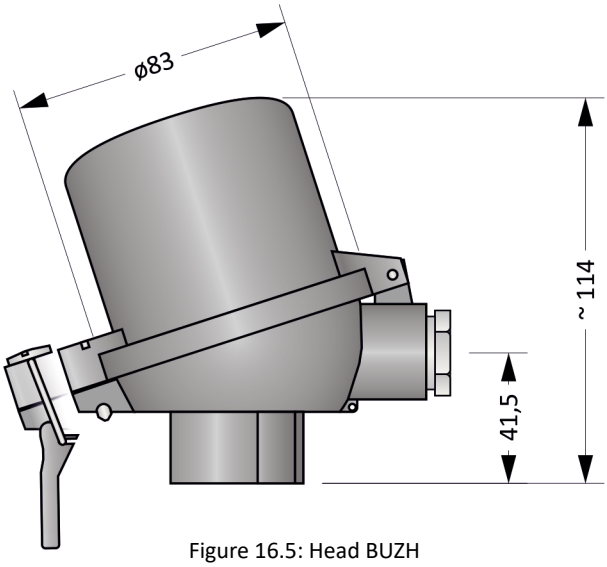


Figure 16.5: Head BUZH

Installation And Operating Instructions

The sensor tube is used for mechanical 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 the sensor is shown in Figures 16.6 and 16.7. 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.

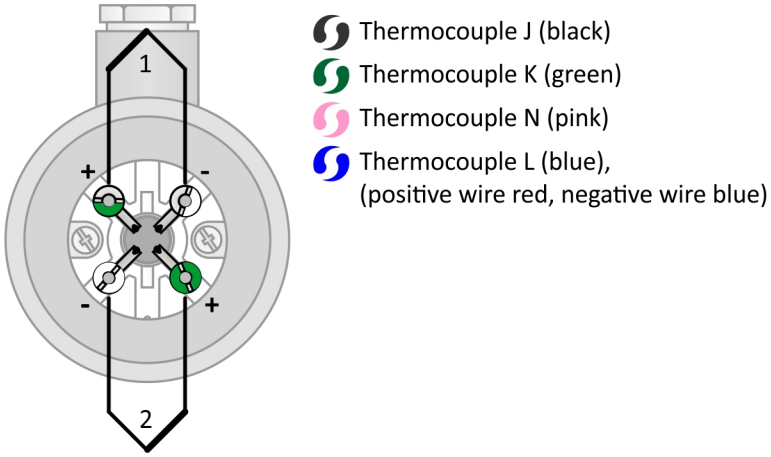


Figure 16.7: Double thermocouple wiring diagram

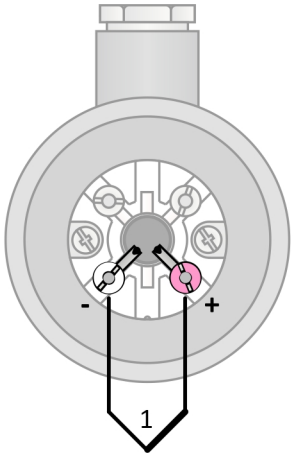


Figure 16.8: Single thermocouple wiring diagram

MTC16P

THERMOCOUPLE ASSEMBLY WITH METAL TUBE AND MEASURING INSERT

Temperature sensors of the MTC16P 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.

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 sensor consists of an assembly and a replaceable measuring insert. The assembly consists of a head, a protective metal tube and a threaded fiting. The head is equipped with a cable gland for connecting the compensation cable.

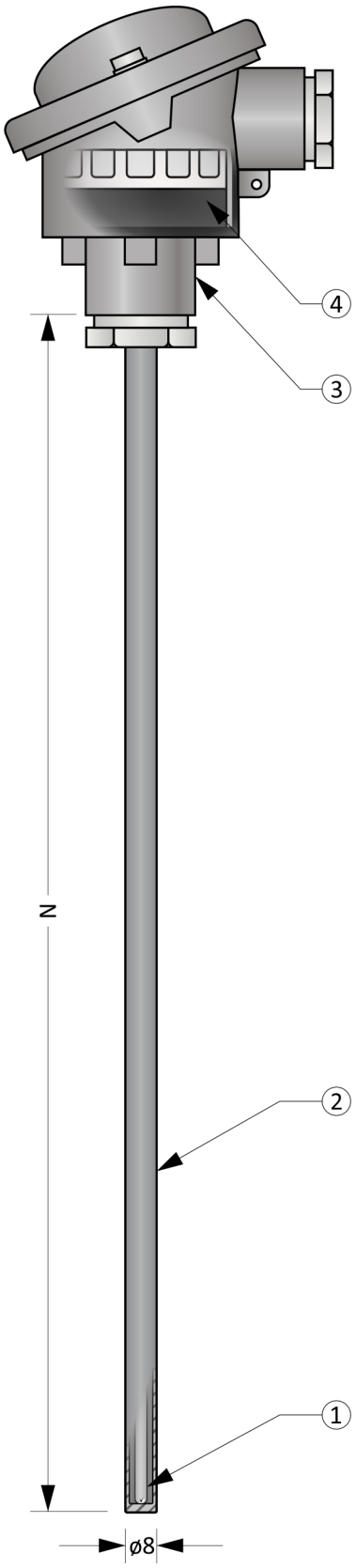


Figure 16P.1: MTC16P

General Information (Table 16.1)

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

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

Pos.	Code	MTC16P - ❶❷ - ❸ - ❹❺
❶	**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
	2	1 x „L“, thermocouple isolated from the sheath, sheath material 1.4541 (acc. DIN 43 710)
	3	1 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**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.
❸	**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)
❹	**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
❺	**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: MTC16P-01-A500-05

... 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, material 1 .4541

... Head B

... INOR IPAQ C330

Approximate weight of the product: MTC16P-01-A500-05 ... 1,2 kg

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

Sensor part	Continuous operation	Short-term operation
head with transmitter	< 85 °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 16P.4)

Nominal length N	Length tolerance N
N ≤ 1000 mm	± 2 mm
1000 < N mm	± 3 mm

Head types

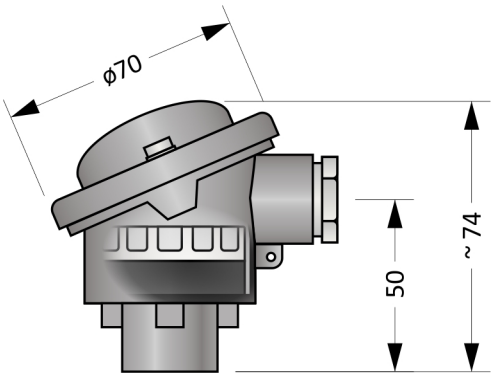


Figure 16P.2: Head B

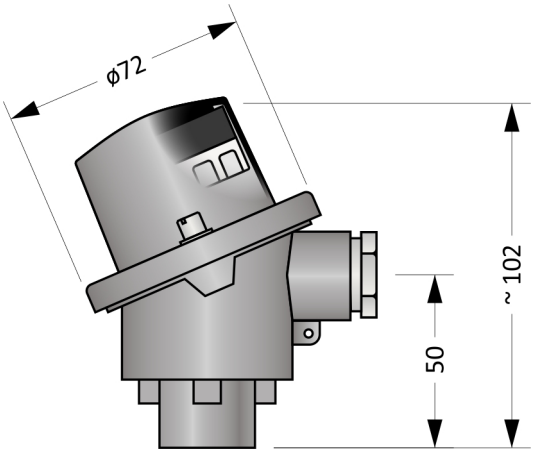


Figure 16P.3: Head BH

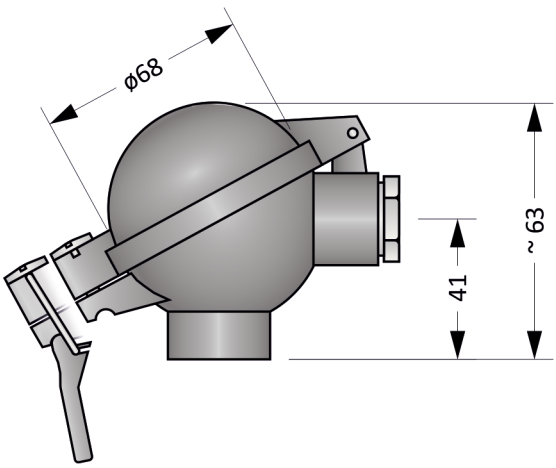


Figure 16P.4: Head BUZ

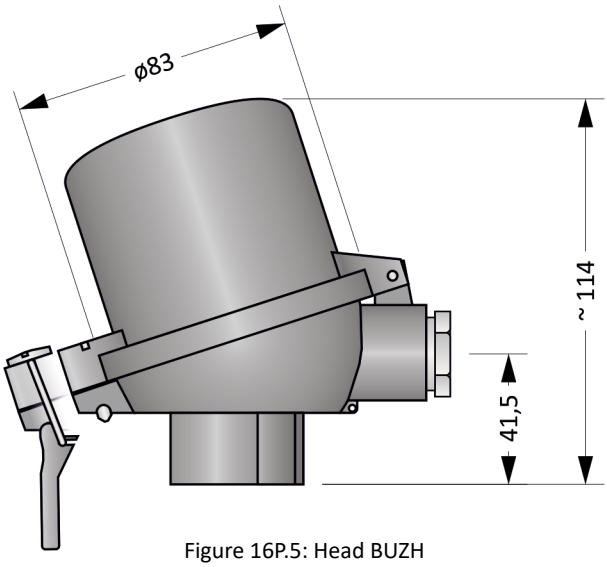


Figure 16P.5: Head BUZH

Head mounted transmitter (Table 16P.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

The sensor tube is used for mechanical 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 16P.6.

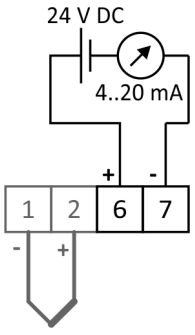


Figure 16P.6: Transmitter wiring diagram

MTC16S

THERMOCOUPLE ASSEMBLY WITH METAL TUBE AND MEASURING INSERT

Temperature sensors of the MTC16S 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 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 sensor consists of an assembly and a replaceable measuring insert. The assembly consists of a head, a protective metal tube and a threaded fitting. The head is equipped with a cable gland for connecting the compensation cable.

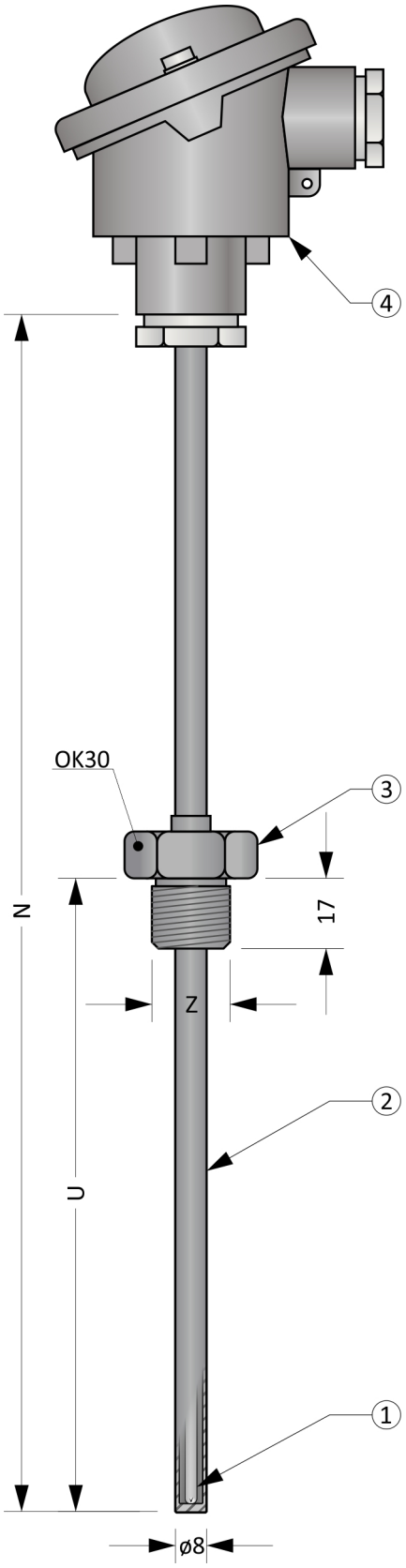


Figure 16.1: MTC16

General Information (Table 16S.1)

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

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

Pos.	Code	MTC16S - ❶❷❸ - ❹ - ❺ - ❻
❶	**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
	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 „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
	6	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**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.
❸	**Threaded fittings**	
	0	Welded threaded fitting Z = M20 x 1,5
	1	Welded threaded fitting Z = G½“
❹	**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)
❺	**Immersion depth U [mm]**	
	xxx	Selectable range from 20 mm to (N-80) mm (in 10 mm increments)
❻	**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

Order code example: MTC16S-010-A500-100-0

... 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

Approximate weight of the product: MTC16S-010-A500-100-0 ... 1,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 16S.4)

Sensor part	Continuous operation	Short-term operation
Head	< 100 °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 16S.3)

Nominal length N	Length tolerance N	Length tolerance U
N ≤ 1000 mm	± 2 mm	± 2 mm
1000 < N mm	± 3 mm	± 2 mm

Head types

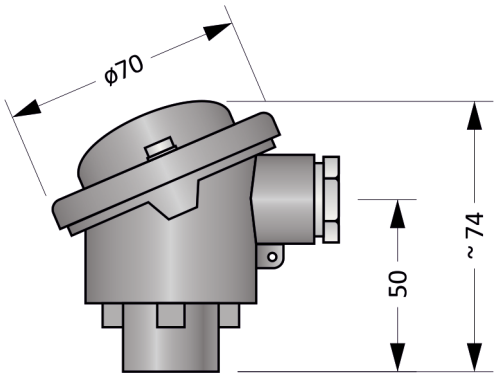


Figure 16S.2: Head B

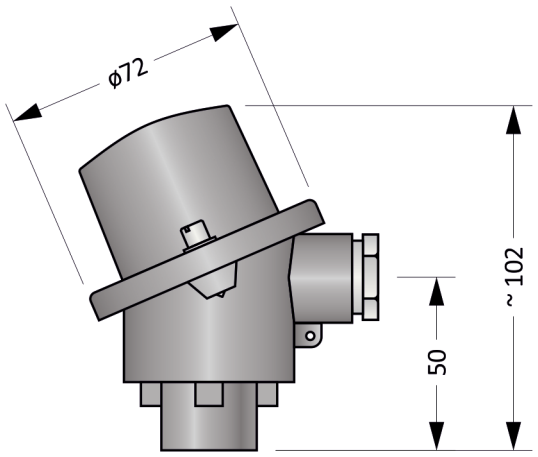


Figure 16S.3: Head BH

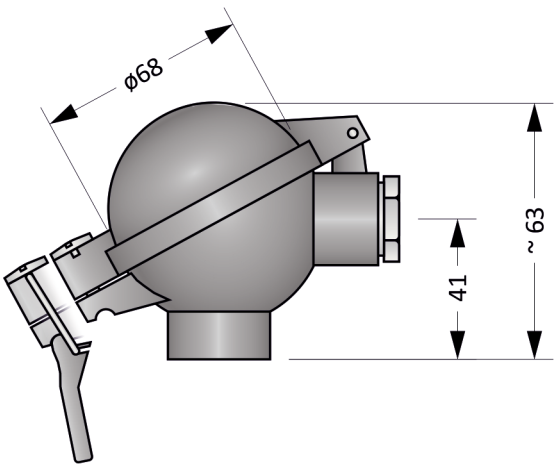


Figure 16S.4: Head BUZ

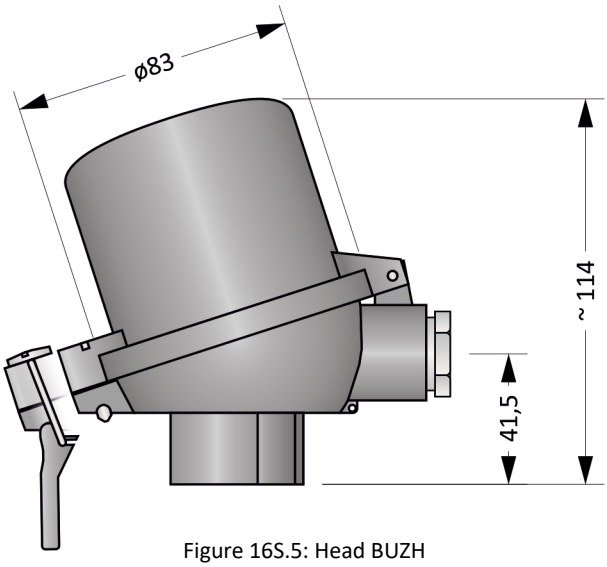


Figure 16S.5: Head BUZH

Installation And Operating Instructions

The sensor tube or threaded fitting is used for mechanical 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 the sensor is shown in Figures 16S.6 and 16S.7. 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.

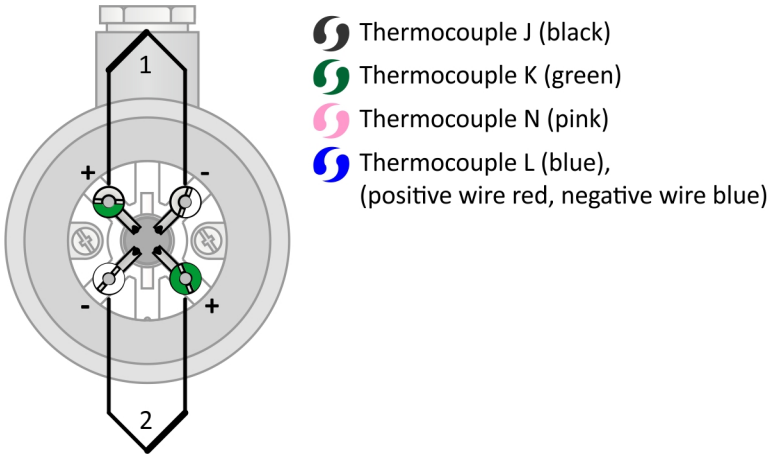


Figure 16S.7: Double thermocouple wiring diagram

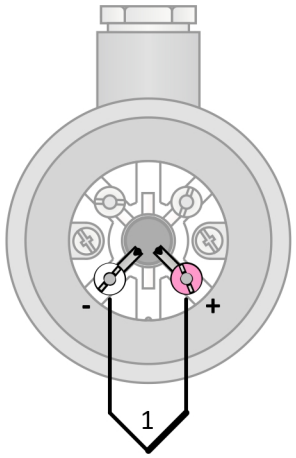


Figure 16S.8: Single thermocouple wiring diagram

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.

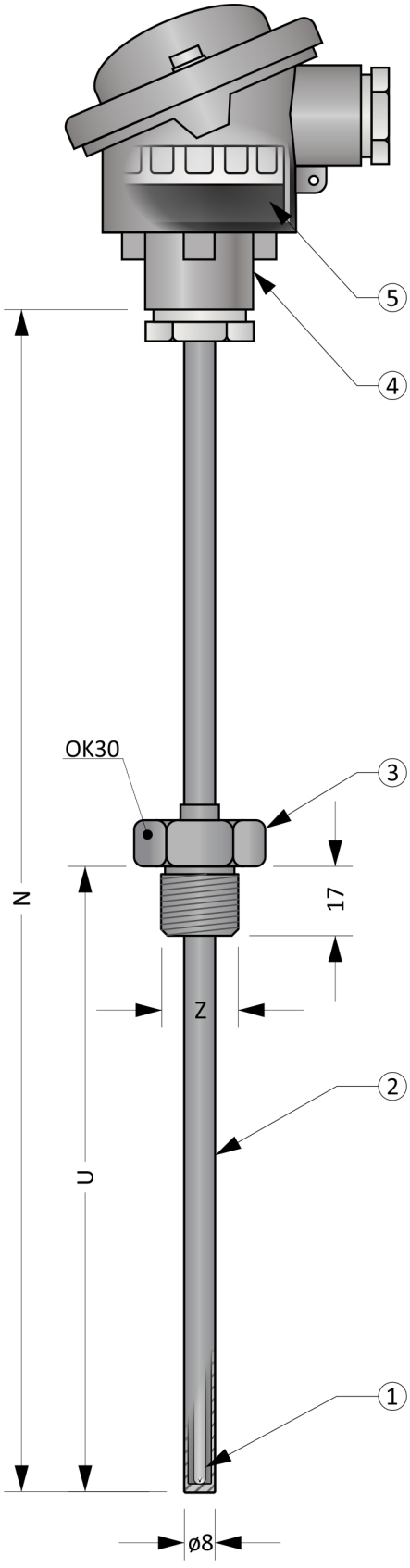


Figure 16SP.1: MTC16SP

General Information (Table 16SP.1)

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

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

Pos.	Code	MTC16SP - ❶❷❸ - ❹ - ❺ - ❻❼
❶		**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
❷		**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.
❸		**Threaded fitting**
	0	Welded threaded fitting M20 x 1,5
	1	Welded threaded fittingG½“
❹		**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)
❺		**Immersion depth U [mm]**
	xxx	Selectable range from 20 mm to (N-80) mm (in 10 mm increments)
❻		**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
❼		**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 ≤ 1000 mm	± 2 mm	± 2 mm
1000 < N mm	± 3 mm	± 2 mm

Head types

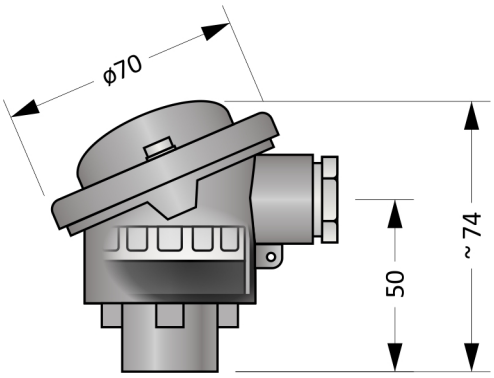


Figure 16SP.2: Head B

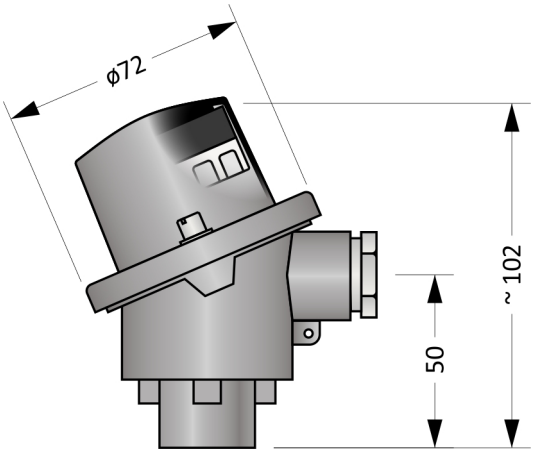


Figure 16SP.3: Head BH

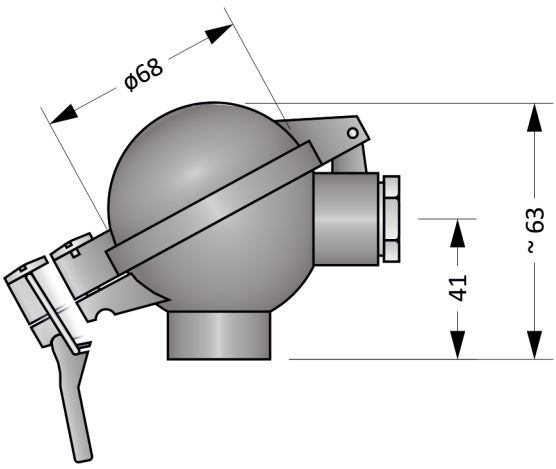


Figure 16SP.4: Head BUZ

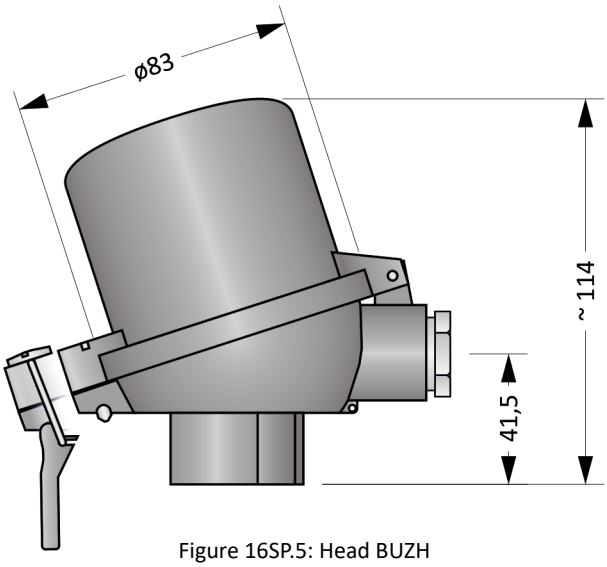


Figure 16SP.5: Head BUZH

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.

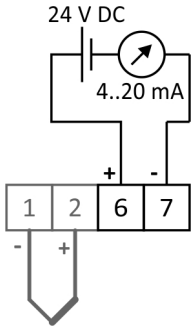


Figure 16SP.6: Transmitter wiring diagram

MTC16N

THERMOCOUPLE ASSEMBLY WITH METAL TUBE AND MEASURING INSERT

Temperature sensors of the MTC16N 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 threaded fitting for installation in welded-on piece.

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 sensor consists of an assembly and a replaceable measuring insert. The assembly consists of a head, a protective metal tube and a threaded fitting. The head is equipped with a cable gland for connecting the compensation cable.

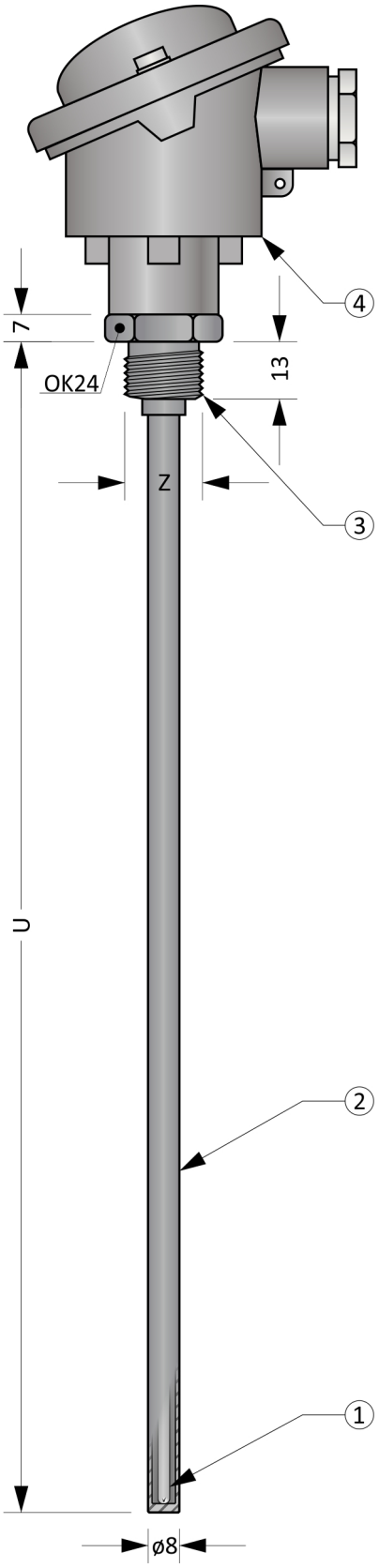


Figure 16N.1: MTC16N

General Information (Table 16N.1)

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

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

Pos.	Code	MTC16N - ❶❷❸ - ❹ - ❺
❶	**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
	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 „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
	6	2 x „N“, thermocouple isolated from the sheath, sheath material 2.4816
❷	**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.
❸	**Threaded fitting**	
	0	Process thread M20 x 1,5, OK24
	1	Process thread G½“, OK24
❹	**Immersion depth U [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)
❺	**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

Order code example: MTC16N-010-A500-0

... 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

... Immersion depth U = 500 mm, material 1 .4541

... Head B

Approximate weight of the product: MTC16N-010-A500-0 ... 1,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 16N.4)

Sensor part	Continuous operation	Short-term operation
Head	< 100 °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 16N.3)

Sensor length U	Length tolerance U
N ≤ 1000 mm	± 2 mm
1000 < N mm	± 3 mm

Head types

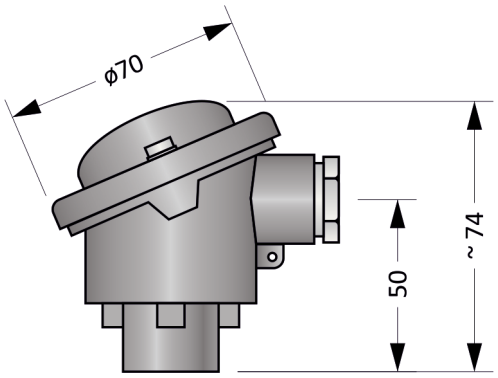


Figure 16N.2: Head B

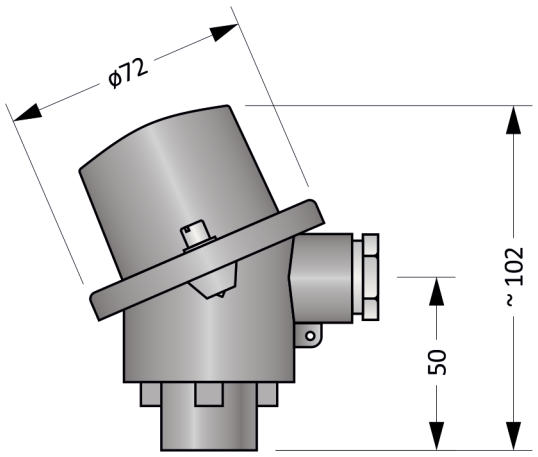


Figure 16N.3: Head BH

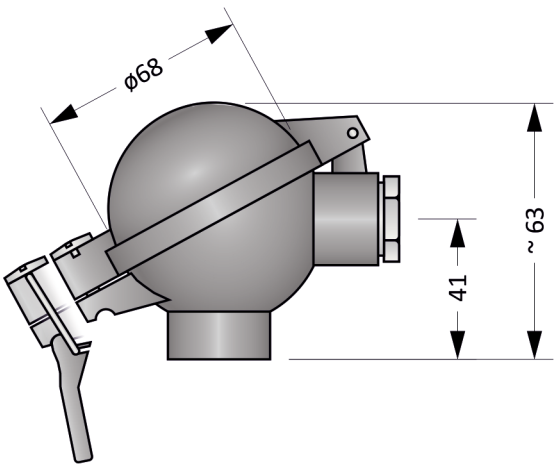


Figure 16N.4: Head BUZ

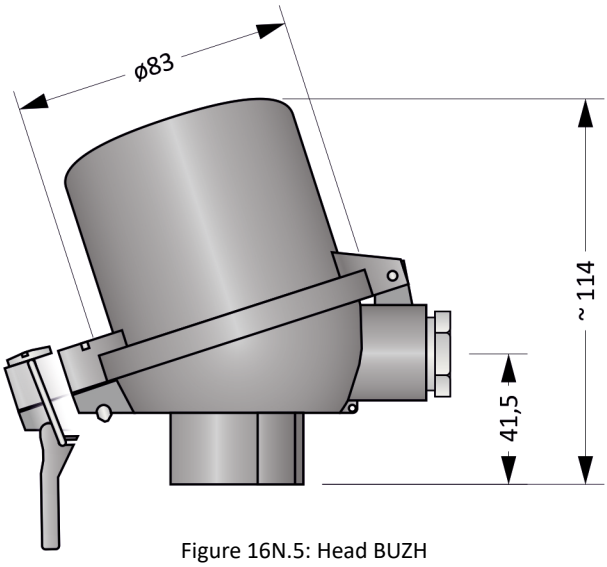


Figure 16N.5: Head BUZH

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 the sensor is shown in Figures 16N.6 and 16N.7. 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.

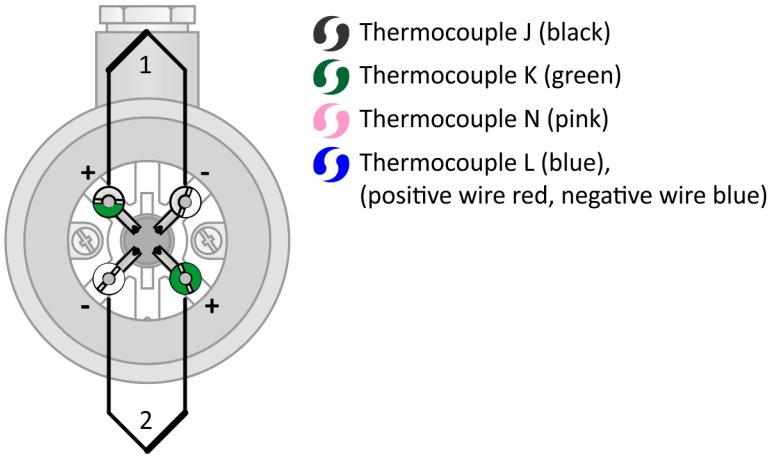


Figure 16N.7: Double thermocouple wiring diagram

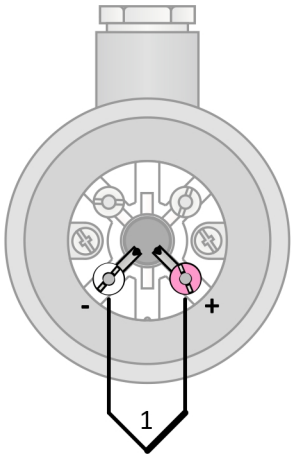


Figure 16N.8: Single thermocouple wiring diagram

MTC16NP

THERMOCOUPLE ASSEMBLY WITH METAL TUBE AND MEASURING INSERT

Temperature sensors of the MTC16NP 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 for installation in welded-on piece.

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 sensor consists of an assembly and a replaceable measuring insert. The assembly consists of a head, a protective metal tube and a threaded fiting. The head is equipped with a cable gland for connecting the compensation cable.

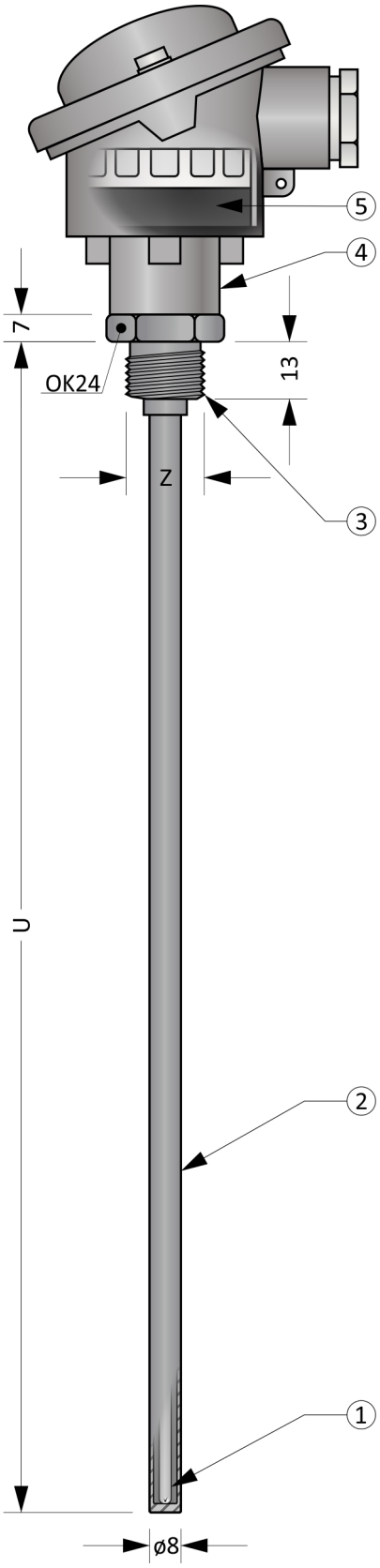


Figure 16NP.1: MTC16NP

General Information (Table 16NP.1)

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

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

Pos.	Code	MTC16NP - ❶❷❸ - ❹ - ❺ - ❻❼
❶	**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
❷	**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.
❸	**Threaded fitting**	
	0	Process thread M20 x 1,5, OK24
	1	Process thread G½“, OK24
❹	**Immersion depth U [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)
❺	**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
❻	**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: MTC16NP-010-A500-05

... 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
... Immersion depth U = 500 mm, material 1 .4541
... Head B
... INOR IPAQ C330

Approximate weight of the product: MTC16NP-010-A500-05 ... 1,2 kg

Recommended Maximum Temperatures of Sensor Parts (Table 16NP.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 16NP.4)

Sensor length U	Length tolerance U
U ≤ 1000 mm	± 2 mm
1000 < U mm	± 2 mm

Head types

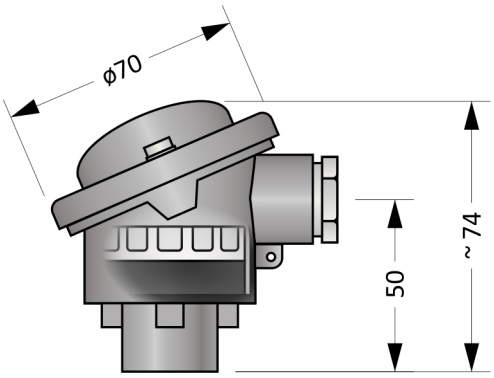


Figure 16NP.2: Head B

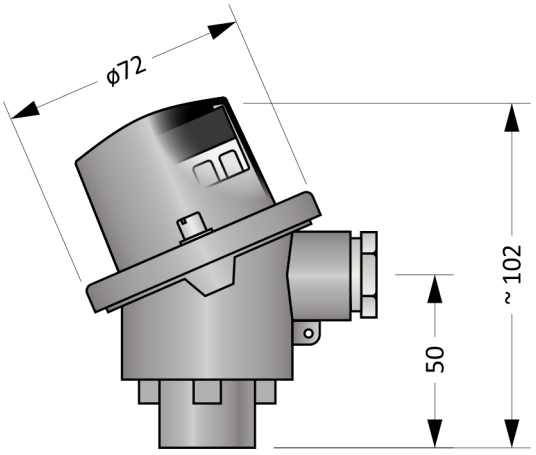


Figure 16NP.3: Head BH

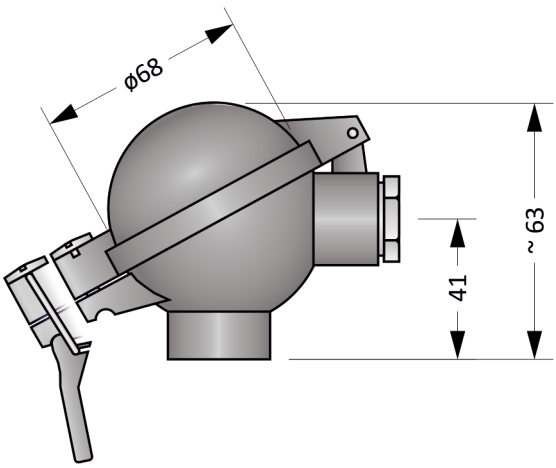


Figure 16NP.4: Head BUZ

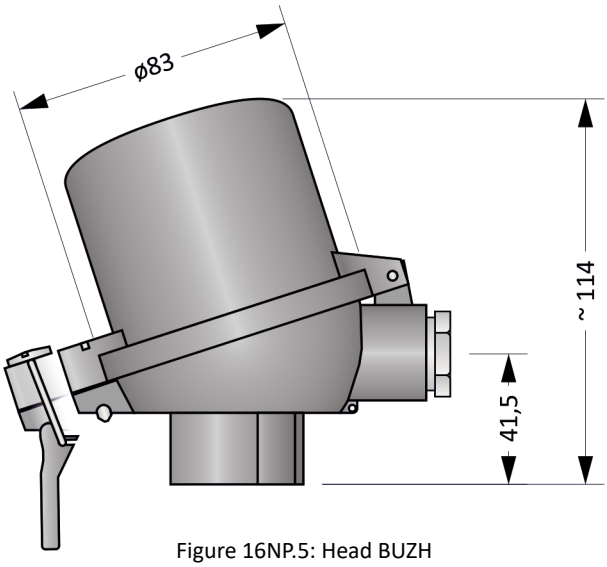


Figure 16NP.5: Head BUZH

Head mounted transmitter (Table 16NP.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 with the transmitter is shown in Figure 16NP.6.

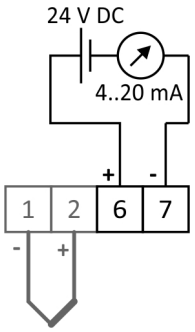


Figure 16NP.6: Transmitter wiring diagram

MTC20

THERMOCOUPLE WITH CERAMIC TUBE AND WITHOUT HEAD

Temperature sensors of the MTC20 series are designed as a cost-effective alternative to robust industrial designs. The small tube diameter and overall small size make the sensors suitable for applications with limited mounting space.

The measuring element is a thermocouple of the S 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 sensor consists of a holder with a terminal block, a ceramic protective tube and a capillary tube.

General Information (Table 20.1)

	Insulation class acc. ČSN EN 60529	IP00 (terminal) IP6X (measuring part)
①	**Precious metal thermocouple**	
	Thermocouple type	S
	Design	Insulated in ceramic capillary
②	**Protection ceramic tube**	
	Material	Ceramic C610
	Outer / inner diameter	8 / 5 mm
③	**Holder**	
	Material	Stainless steel
④	**Terminal block**	
	Material	Keramika

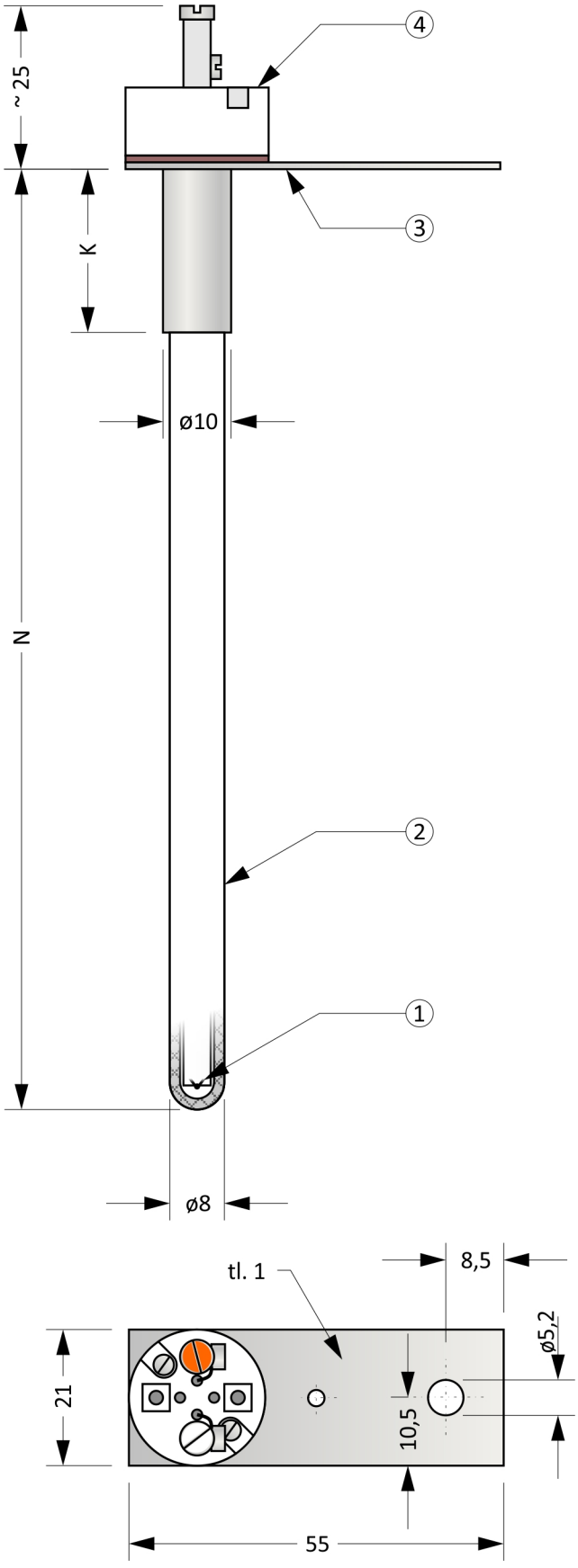


Figure 20.1: MTC20

Optional Parameters Including the Creation of an Order Code (Table 20.2)

Pos.	Code	MTC20 - ❶ - ❷ - ❸
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „S“, accuracy class 1, wire diameter 0,35 mm
	1	1 x „S“, accuracy class 1, wire diameter 0,20 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 120 mm to 500 mm (in 5 mm increments)
	120	Length 120 mm*
	150	Length 150 mm*
	180	Length 180 mm*
	210	Length 210 mm*
	250	Length 250 mm*
	300	Length 300 mm*
	500	Length 500 mm*
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 20 mm to (N-30) mm (in 1 mm increments)
	24	Length 24 mm*

Notes: (*) ... discounted price and shortened delivery time

Order code example: MTC20-0-120-24
... 1 x „S“, accuracy class 1, wire diameter 0,35 mm
... Nominal length N = 120 mm
... Holding pipe length K = 24 mm

Approximate weight of the product: MTC20-0-120-24 ... 0,3 kg

Length Tolerances (Table 20.3)

Length tolerance N	Length tolerance K
± 2 mm	± 1 mm

Recommended Maximum Temperatures of Sensor Parts (Table 20.4)

Sensor part	Continuous operation	Short-term operation
Terminal block	< 100 °C	-
Holder	< 200 °C	-
Ceramic parts (measuring part)	< 1350 °C	-
„S“, wire dia. 0,35 mm	< 1300 °C	< 1400 °C
„S“, wire dia. 0,2 mm	< 1150 °C	< 1300 °C

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

Installation And Operating Instructions

For mechanical installation, a metal holder is used. Other parts cannot be used.

The measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of the sensor is shown in Figure 20.2. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

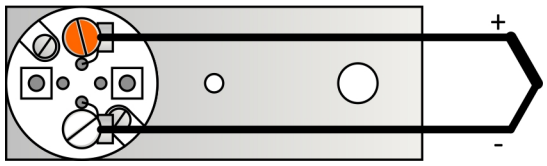


Figure 20.2: wiring diagram

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MTC21

THERMOCOUPLE WITH CERAMIC TUBE AND WITHOUT HEAD

Temperature sensors of the MTC21 series are designed as a cost-effective alternative to robust industrial designs. The small tube diameter and overall small size make the sensors suitable for applications with limited mounting space.

The measuring element is a thermocouple of the 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 sensor consist of ceramic tube, metal holder with terminal block and thermoucouple insulated by ceramic beads.

General Information (Table 21.1)

	Insulation class acc. ČSN EN 60529	IP00 (terminal) IP5X (measuring part)
①	**Base metal thermocouple**	
	Design	Insulated by ceramic beads
②	**Protection ceramic tube**	
	Material	Ceramic C610
	Outer / inner diameter	8 / 5 mm
③	**Holder**	
	Material	Stainless steel
④	**Terminal block**	
	Material	Keramika

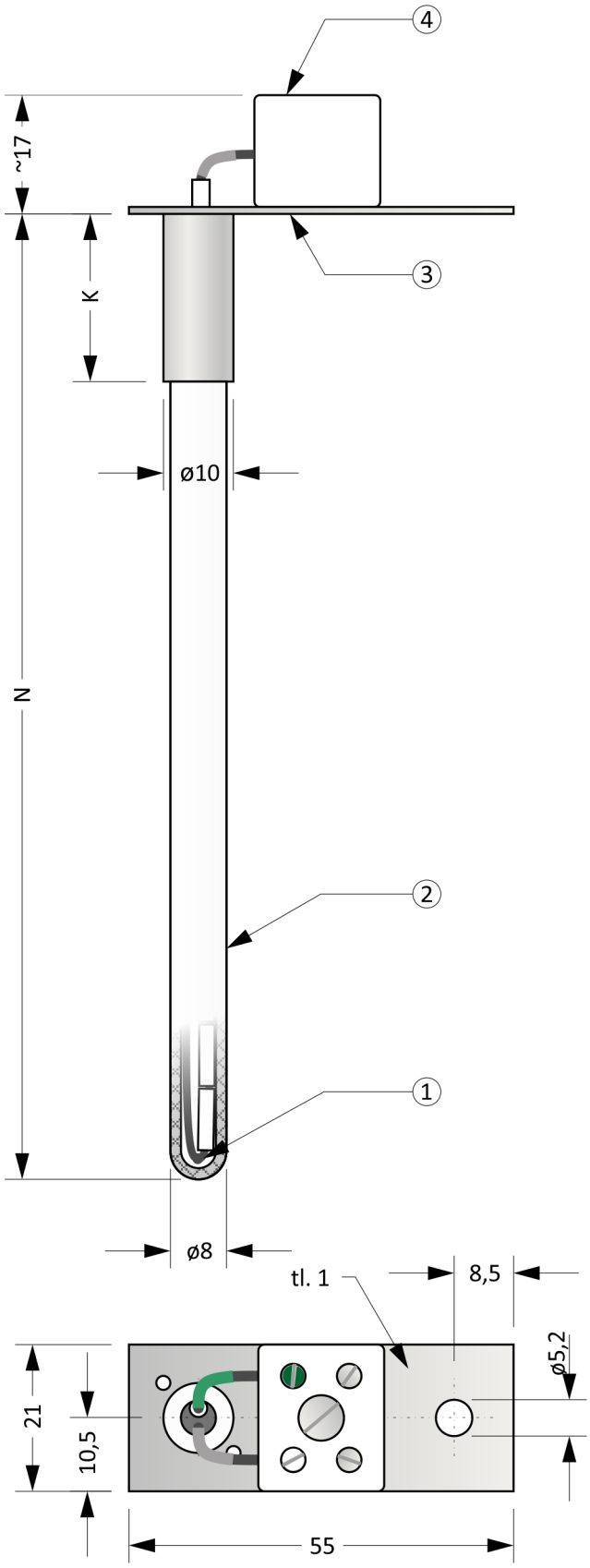


Figure 21.1: MTC21

Optional Parameters Including the Creation of an Order Code (Table 21.2)

Pos.	Code	MTC21 - ❶ - ❷ - ❸
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „K“, accuracy class 2, wire diameter 1,38 mm
	1	1 x „N“, accuracy class 2, wire diameter 1,30 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 120 mm to 500 mm (in 5 mm increments)
	120	Length 120 mm*
	150	Length 150 mm*
	180	Length 180 mm*
	210	Length 210 mm*
	250	Length 250 mm*
	300	Length 300 mm*
	500	Length 500 mm*
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 20 mm to (N-30) mm (in 1 mm increments)
	24	Length 24 mm*

Notes: (*) ... discounted price and shortened delivery time

Order code example: MTC21-0-120-24
... 1 x „K“, accuracy class 2, wire diameter 1,38 mm
... Nominal length N = 120 mm
... Holding pipe length K = 24 mm

Approximate weight of the product: MTC21-0-120-24 ... 0,3 kg

Length Tolerances (Table 21.3)

Length tolerance N	Length tolerance K
± 2 mm	± 1 mm

Recommended Maximum Temperatures of Sensor Parts (Table 21.4)

Sensor part	Continuous operation	Short-term operation
Terminal block	< 100 °C	-
Holder	< 220 °C	-
Ceramic parts (measuring part)	< 1350 °C	-
„K“, wire dia. 1,38 mm	< 900 °C	< 1020 °C
„N“, wire dia. 1,3 mm	< 950 °C	< 1090 °C

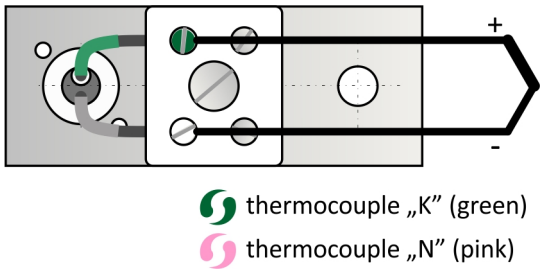
Notes: Operating temperatures are related to temperature measurement in a chemically inert environment. The values are determined empirically.

Installation And Operating Instructions

For mechanical installation, a metal holder is used. Other parts cannot be used.

The measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of the sensor is shown in Figure 21.2. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.



thermocouple „K" (green)
thermocouple „N" (pink)

Figure 21.2: wiring diagram

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MTC22

THERMOCOUPLE WITH CERAMIC TUBE AND WITH HEAD

Temperature sensors of the MTC22 series are designed as a cost-effective alternative to robust industrial designs. The small tube diameter and overall small size make the sensors suitable for applications with limited mounting space.

The measuring element is a thermocouple of the S, 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 sensor consists of a head, a ceramic protective tube and a capillary tube.

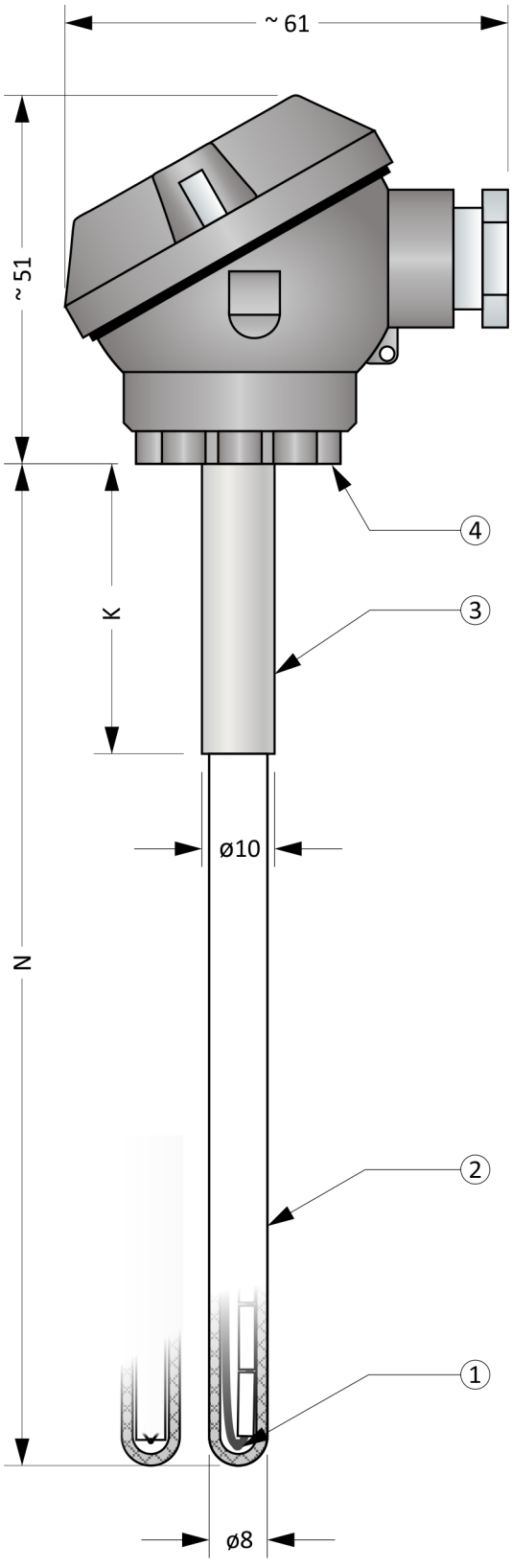

Figure 22.1: Sensor MTC22

General Information (Table 22.1)

	Insulation class acc. ČSN EN 60529	IP54 (head) IP5X (measuring part in length N)
①	**Precious or base metal thermocouple**	
	Design	Insulated by ceramic beads or in cappilary
②	**Protection ceramic tube**	
	Material	Ceramic C610
	Outer / inner diameter	8 / 5 mm
③	**Holding pipe**	
	Material	Stainless steel
④	**Head**	
	Material	Aluminium alloy
	Typ	F
	Cable bushing	M20 x 1,5

Optional Parameters Including the Creation of an Order Code (Table 22.2)

Pos.	Code	MTC22 - ❶ - ❷ - ❸
❶	**Thermocouple type (acc. ČSN EN 60584-1 ed. 2)**	
	0	1 x „S“, accuracy class 1, wire diameter 0,35 mm
	1	1 x „S“, accuracy class 1, wire diameter 0,20 mm
	2	1 x „K“, accuracy class 2, wire diameter 1,38 mm
	3	1 x „N“, accuracy class 2, wire diameter 1,30 mm
❷	**Nominal length N [mm]**	
	xxx	Selectable range from 120 mm to 500 mm (in 5 mm increments)
	120	Length 120 mm*
	150	Length 150 mm*
	180	Length 180 mm*
	210	Length 210 mm*
	250	Length 250 mm*
	300	Length 300 mm*
	500	Length 500 mm*
❸	**Holding pipe length K [mm]**	
	xxx	Selectable range from 40 mm to (N-30) mm (in 1 mm increments)
	50	Length 50 mm*

Notes: (*) ... discounted price and shortened delivery time

Order code example: MTC22-2-120-50
... 2 x „K“, accuracy class 2, wire diameter 1,38 mm
... Nominal length N = 120 mm
... Holding pipe length K = 50 mm

Approximate weight of the product: MTC22-2-120-50 ... 0,5 kg

Length Tolerances (Table 22.3)

Length tolerance N	Length tolerance K
± 2 mm	± 1 mm

Recommended Maximum Temperatures of Sensor Parts (Table 22.4)

Sensor part	Continuous operation	Short-term operation
Head	< 100 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1350 °C	-
„S“, wire dia. 0,35 mm	< 1300 °C	< 1400 °C
„S“, wire dia. 0,2 mm	< 1150 °C	< 1300 °C
„K“, wire dia. 1,38 mm	< 900 °C	< 1020 °C
„N“, wire dia. 1,3 mm	< 950 °C	< 1090 °C

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

Installation And Operating Instructions

For mechanical installation, a metal holder is used. Other parts cannot be used.

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 measuring part of the sensor is allowed to be exposed to a temperature gradient up to 60 °C/min. Exceeding this value may damage the sensor.

The electrical connection of the sensor is shown in Figure 22.2. The output signal is thermoelectric voltage. The dependence of temperature on thermoelectric voltage is given by the standard ČSN EN 60584-1 ed. 2.

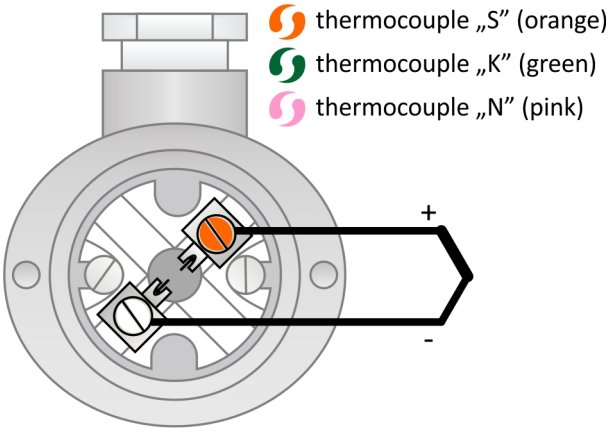

Figure 22.2: Wiring diagram

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