

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

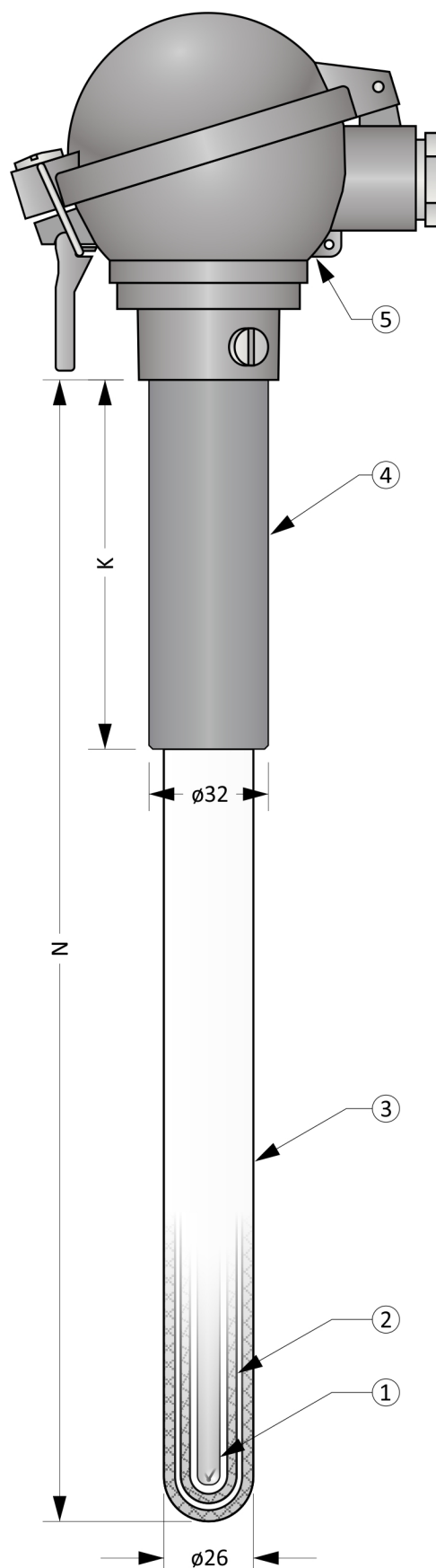


Figure 1KV.1: MTC1KV

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

Pos.	Code	MTC1KV - ① ② - ③ - ④ - ⑤
①	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
②	Accuracy class	
	0	Accuracy class 2 acc. ČSN EN 60584-1 ed. 2
	1	Accuracy class 1 acc. ČSN EN 60584-1 ed. 2
③	Nominal length N [mm]	
	xxx	Selectable range from 400 mm to 1600 mm (in 10 mm increments)
④	Holding pipe length K [mm]	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
⑤	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)

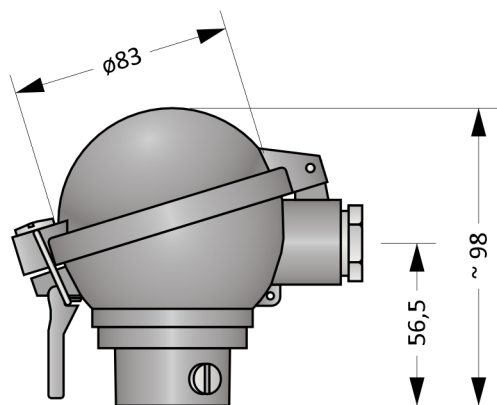
Nominal length N	Length tolerance N	Length tolerance K
$N \leq 1000 \text{ mm}$	$\pm 3 \text{ mm}$	$\pm 2 \text{ mm}$
$1000 < N \text{ mm}$	$\pm 5 \text{ mm}$	$\pm 2 \text{ mm}$

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

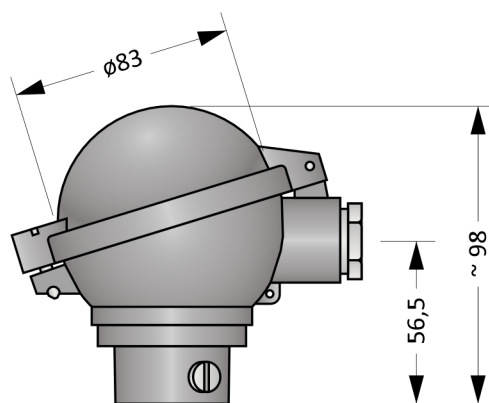
Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	$< 100 \text{ }^{\circ}\text{C} / < 85 \text{ }^{\circ}\text{C}$	-
Holding pipe	$< 500 \text{ }^{\circ}\text{C}$	-
Ceramic parts (measuring part)	$< 1300 \text{ }^{\circ}\text{C}$	-
„K“, sheath dia. 6,0 mm	$< 1140 \text{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

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

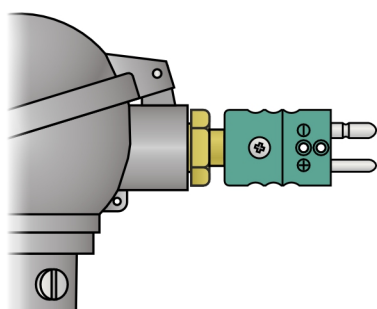
Head types



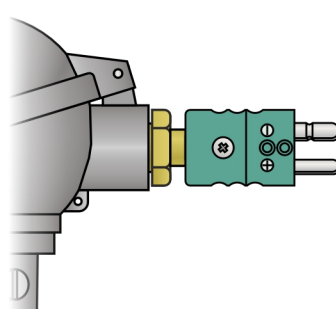
Head type ABUZ-SL



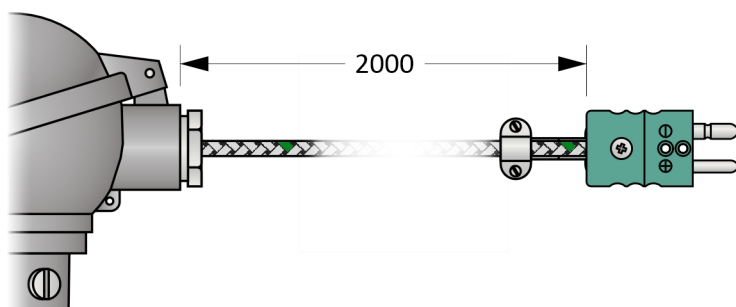
Head type ABUZ-PS



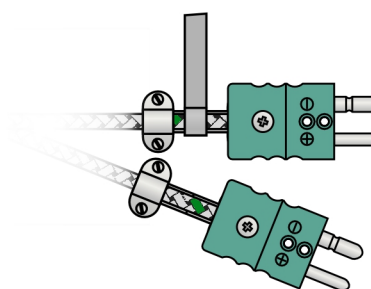
... with standard connector



... with double standard connector



... 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.

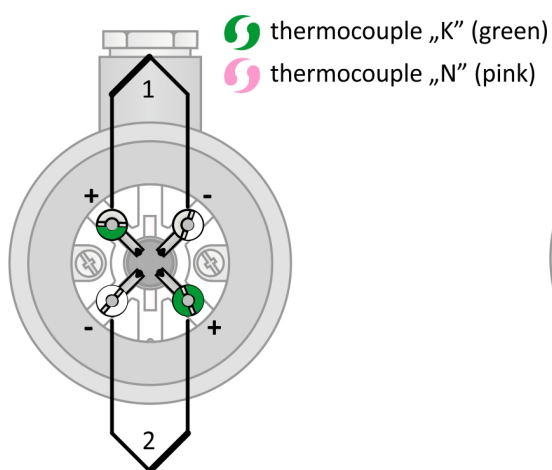


Figure 1KV.3: Double thermocouple wiring diagram

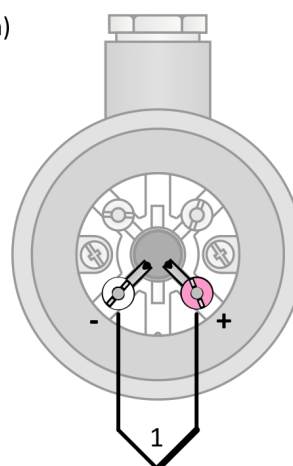


Figure 1KV.4: Single thermocouple wiring diagram

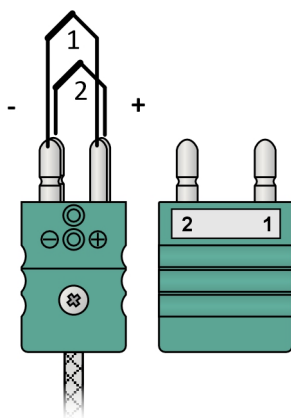


Figure 1KV.5: Double connector wiring diagram

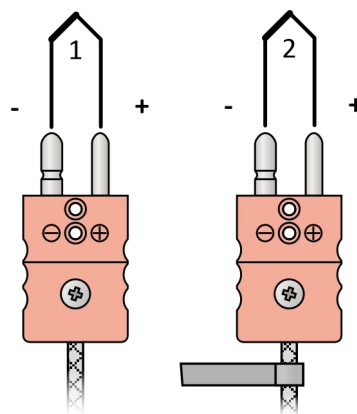


Figure 1KV.6: Connector wiring diagram