

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)
Thermocouple		
①	Design	Thermocouple insulated by beads/capillary
	Material izolace	Ceramic C610 (Lunit 73)
	Thermocouple length	(N + 70) mm
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

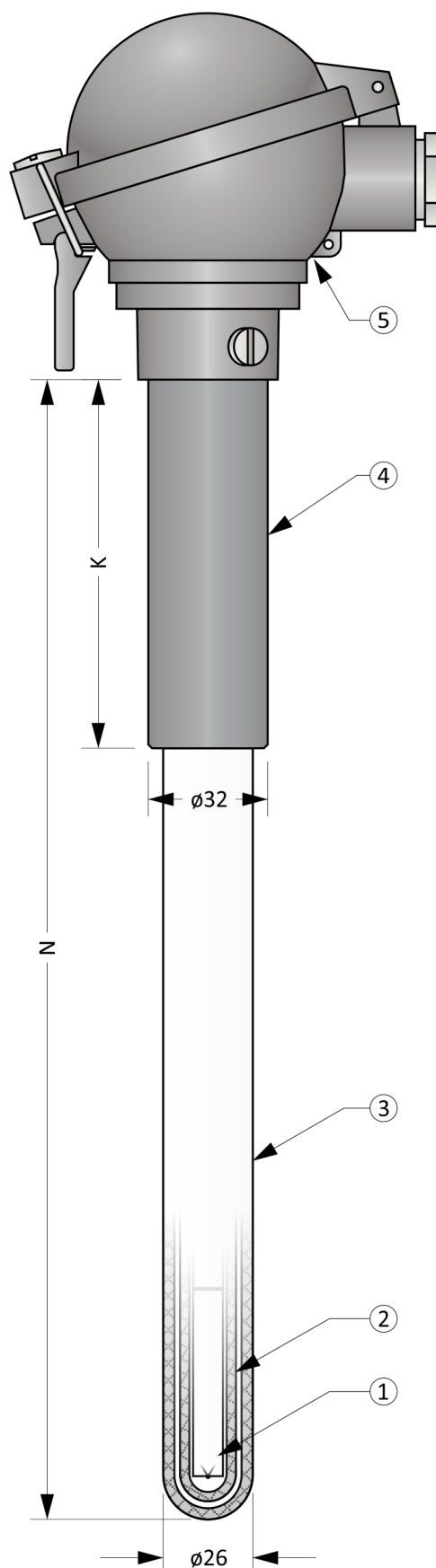


Figure 1KD.1: MTC1KD

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

Pos.	Code	MTC1KD - ① - ② - ③ - ④
①	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
②	Nominal length N [mm]	
	xxx	Selectable range from 400 mm to 1600 mm (in 10 mm increments)
③	Holding pipe length K [mm]	
	xxx	Selectable range from 40 mm to (N-40) mm (in 5 mm increments)
④	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)

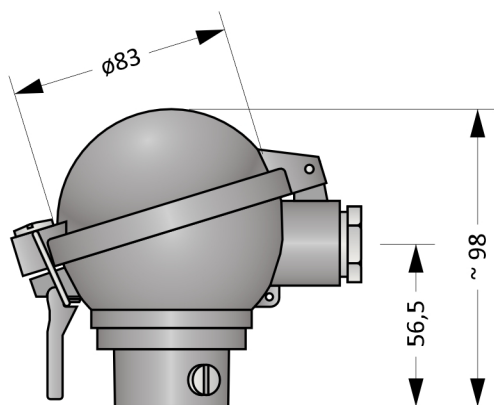
Sensor part	Continuous operation	Short-term operation
Head / head with transmitter	< 100 °C / < 85 °C	-
Holding pipe	< 500 °C	-
Ceramic parts (measuring part)	< 1300 °C	-
„K“, wire diameter 1,5 mm	< 950 °C	< 1020 °C
„N“, wire diameter 1,3 mm	< 950 °C	< 1090 °C
„S“, wire diameter 0,5 mm	< 1400 °C	< 1600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

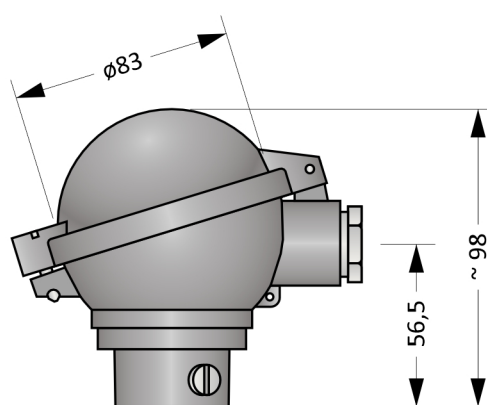
Length Tolerances (Table 1KD.4)

Nominal length N	Length tolerance N	Length tolerance K
$N \leq 1000$ mm	± 3 mm	± 2 mm
$1000 < N$ mm	± 5 mm	± 2 mm

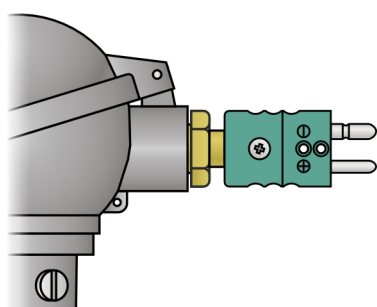
Head types



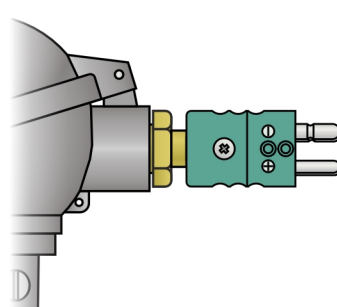
Head type ABUZ-SL



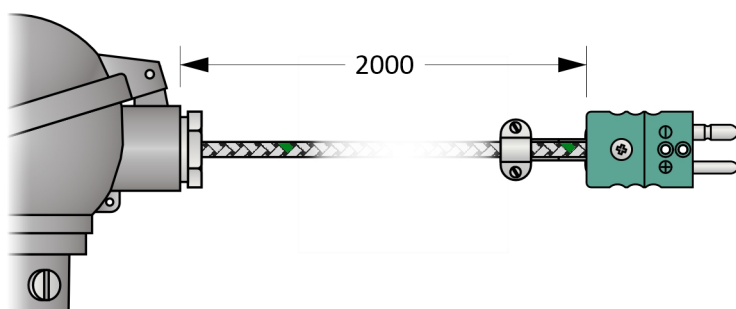
Head type ABUZ-PS



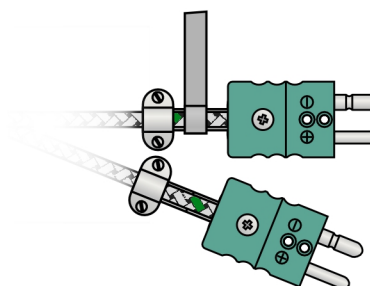
... with standard connector



... with double standard connector



... 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.

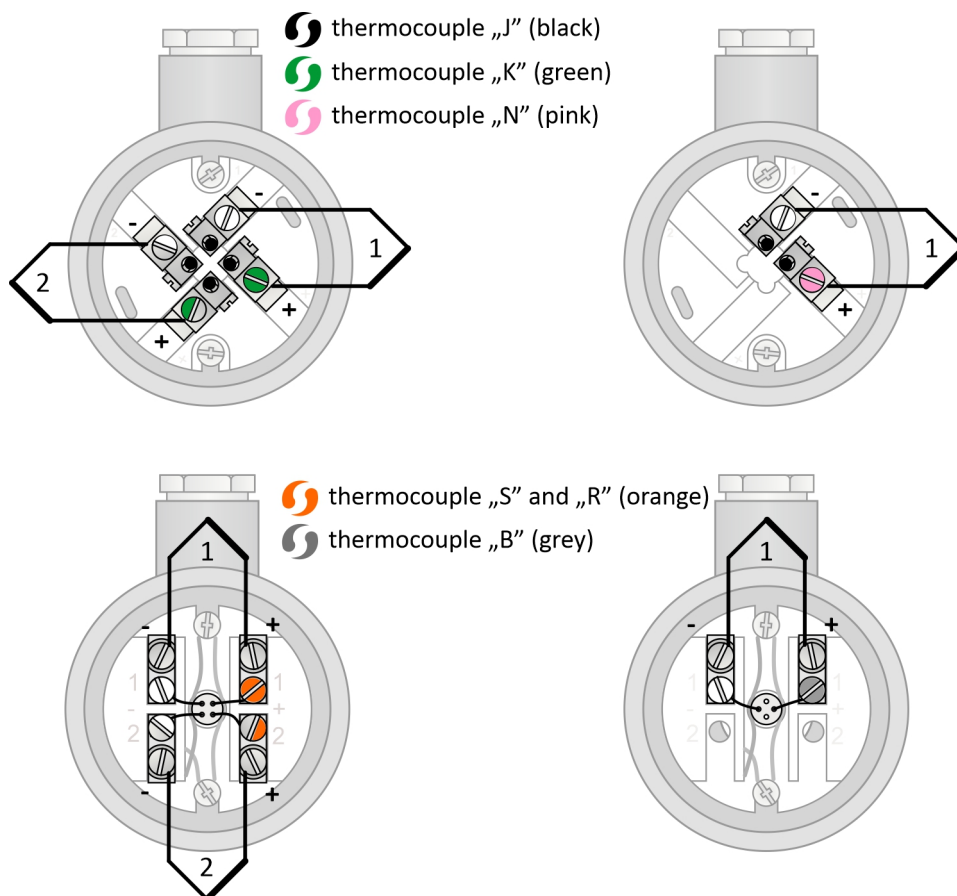


Figure 1KD.3: Double thermocouple wiring diagram

Figure 1KD.4: Single thermocouple wiring diagram

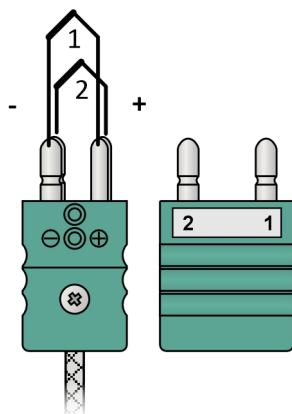


Figure 1KD.5: Double connector wiring diagram

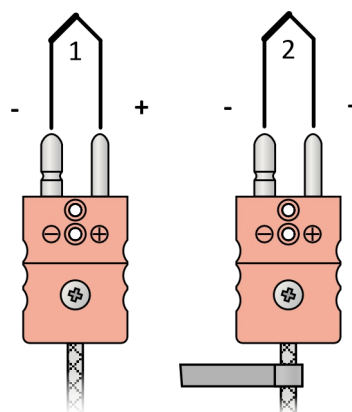


Figure 1KD.6: Connector wiring diagram