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**	

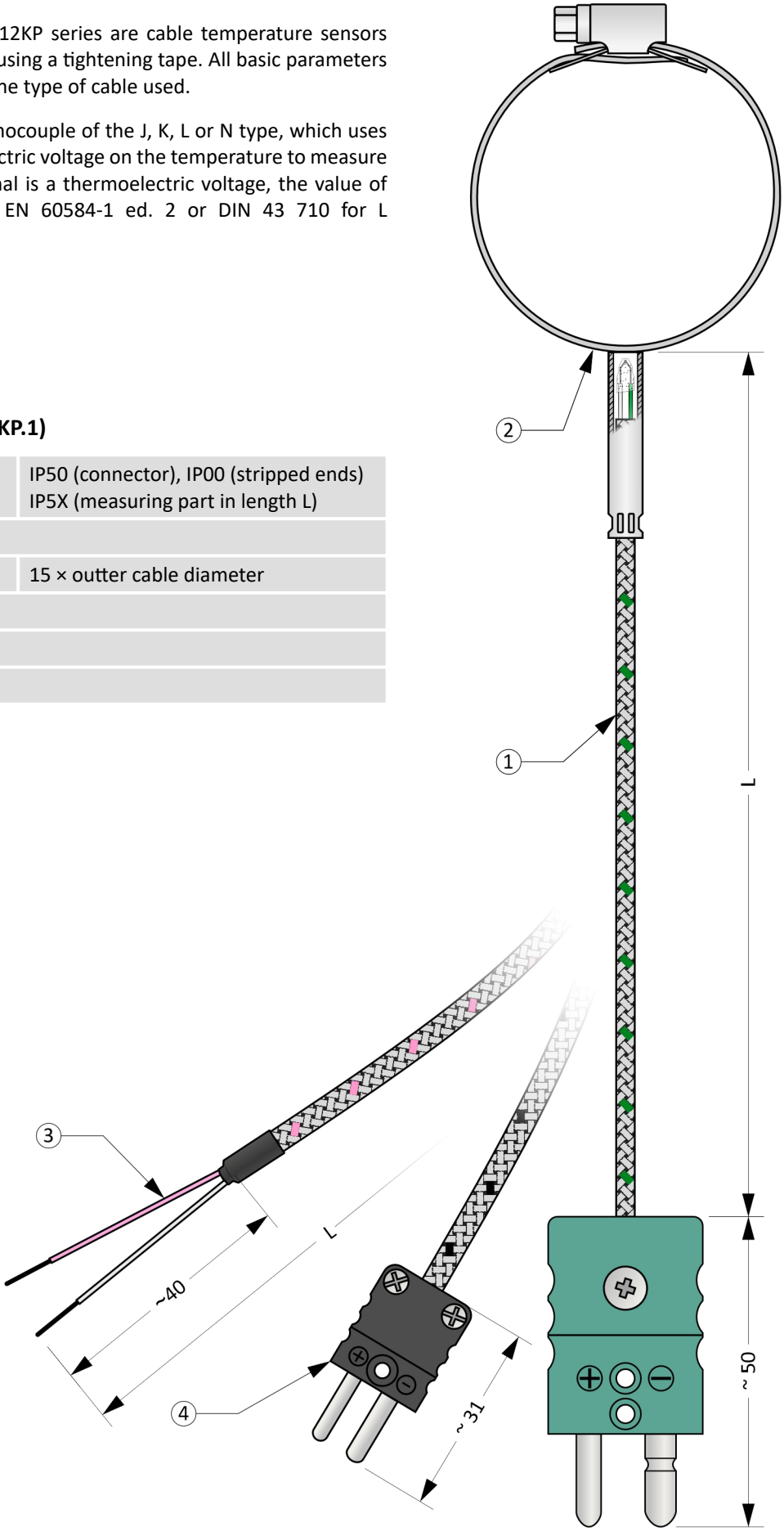


Figure 12KP.1: MTC12KP

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)

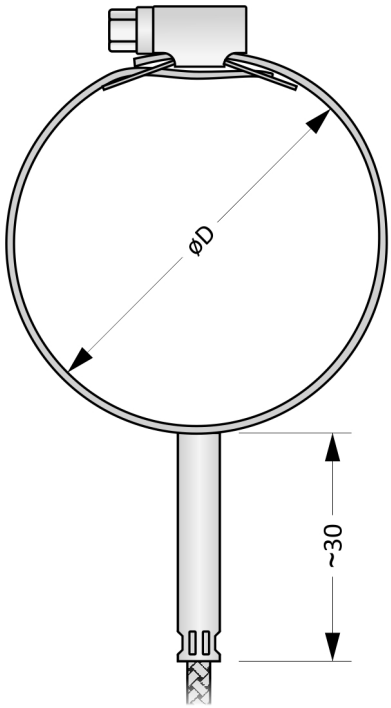


Figure 12KP.2: Type A

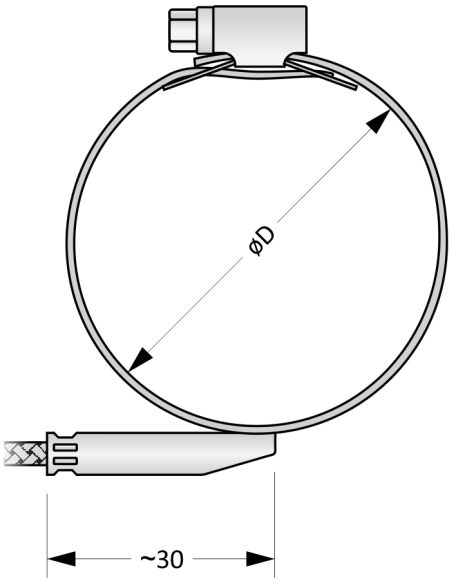


Figure 12KP.3: Type B

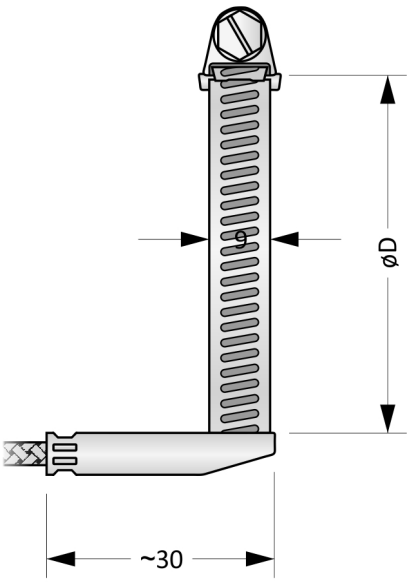


Figure 12KP.4: Type C

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.

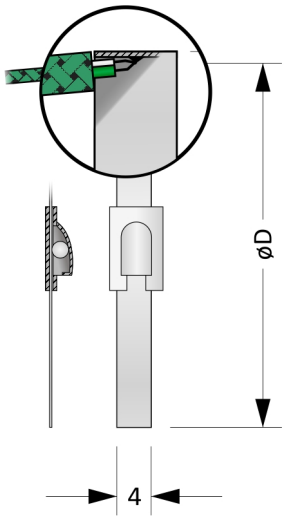


Figure 12KP.5: Type D

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	-

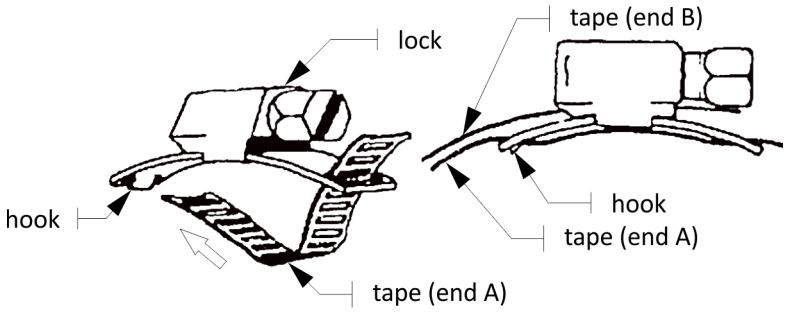
Cable Parameter (Table 12KP.5)

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.

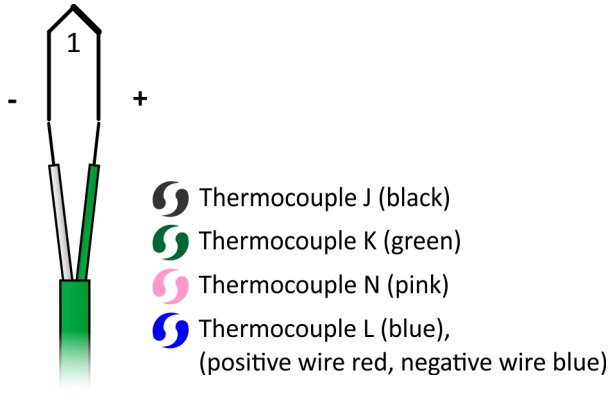


Figure 12KP.7: Single thermocouple wiring diagram

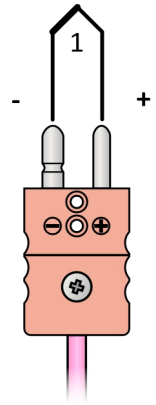


Figure 12KP.8: Connector wiring diagram