17

HAND HELD THERMOCOUPLES

tab. 4

We offer a wide variety of general purpose hand held thermocouples. All sensors are supplied with a 1,5 metre coiled lead and a fixed miniature pin plug which makes them suitable for most of hand held indicators and other instrumentation by using thermocouple extension cable and the appropriate connectors. Depending on the thermocouple length and its construction (e.g. sheath material), operating range is up to 1150 °C

- available types are K, J,N or T
- accuracy class is 2 (standard) or 1 (to PN-EN 60584-1, table I, page 63)
- available in mineral insulated cable or steel protective pipe
- several tips available: flat, needlelike, touch etc.
- ending with extension coiled lead and a miniature pin plug
- plastic handle rated up to 120 °C

17	sensor type	accuracy class	junction type	sheath maerial	the tip type	sheath diameter	length L	max. operating temp.

Give sensor type, table 1 (e.g.J, T, K, N)

Give accuracy class 1 or 2

Give junction type, table 2

Give sheath material, table 3

Give the tip type, table 4

Give sheath diameter, table 4

Give length L [mm], table 4

Give max. operating temp. [°C]

TAB. ORDERING CODE:

17	K	1	I1	310	PK	6,0	1500	800 °C

17 – K – 1 – I1 – 310 – PK – 6,0 – 1500 – 800 °C

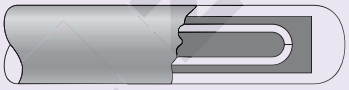
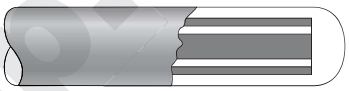
Sensor type 17 (hand held thermocouple with a plactic hand), type K (NiCr-NiAl), simplex, grounded junction, the protective pipe made of heat-proof steel 310 (H25N20S2), mineral insulated thermocouple with a standard tip (round). Sheath diameter 6,0 mm, length 1500 mm, max.operating range 800 °C.

TAB. 1 TEMPERATURE RANGE *)

SENSOR TYPE	TYPE OF THERMO-ELECTRODES	LONG-TERM OPERATING RANGE [°C] *)	SHORT-TERM OPERATING RANGE [°C] *)
J	Fe - CuNi	+20 ÷ 700	-180 ÷ 750
T	Cu - CuNi	-185 ÷ 300	-250 ÷ 400
K	NiCr - NiAl	0 ÷ 1100	-180 ÷ 1350
N	NiCrSi - NiSi	0 ÷ 1100	-270 ÷ 1300

*) Given temperature ranges are mostly dependent on the outer sheath material of a cable. Tolerance to PN-EN 60584-1; table I, page 63

TAB. 2 JUNCTION TYPES

HOT JUNCTION CODE	DESCRIPTION	DRAWING
I1	Simplex Insulated Junction	
Z1	Duplex insulated junction	

TAB. 3 SHEATH MATERIALS *)

MATERIAL	DESCRIPTION	AIR OPERATING TEMPERATURE
INC (Inconel 600; 2.4816)	Nickel – chrome – iron alloy, with very good oxidation resistance and great high temperature resistance (to 1150 °C). Suitable for neutral, oxidising environment or vacuum.	to 1150 °C
310 (H25N20S2; 1.4841)	Steel comprised of 25%Cr – 20%Ni. Stainless steel, heatproof, oxidation-proof up to temperature of 1150 °C	to 1150 °C
NIC (Nicrobell®)	Nicrobell is nickel-chrome alloy with 1,4% of silicon oxide. Silicon ensure high oxidation resistance and strength at high temperature up to 1250 °C.	to 1250 °C
OXL (OMEGACLAD® XL)	OMEGACLAD® XL type of steel ensures excellent resistance at high temperature It is resistant to oxidation, carburization and chlorination. Continuous operating temperature is up to 150 °C and short-term operating temperature: 1335 °C	to 1335 °C
PYR (PYROSIL®)	PYROSIL® ensures perfect mechanical strength, high corrosion resistance as well as durability and stability of EMF level during long-term usage at high temperature up to 1250 °C.	to 1250 °C
321 (1.4541; 1H18N9T)	Steel similar to grade 304 (18% Cr, 10% Ni) but with titanium as a stabilizer.	to 900 °C
316 (1.4401; H17N13M2T)	Steel similar to 304 (17% Cr, 9% Ni) with 3% of molybdenum. Because this steel grade is more corrosion resistant than 321 and 304, it is good for humid environment and for aplication in places threatened by corrosion (sea water).	to 900 °C
304 (1.4301; 0H18N9)	Austentic stainles steel 18%Cr-8%Ni. Corrosion resistant (with no excess oxidation and no resistance lost) up to 80 800 °C. It is the most popular acidproof material, easy for metalworking and welding.	to 800 °C
PtRh10	Recommended for operating temperature 1550 °C, its melting point is 1850 °C. Most often used in neutral, oxidising environment or vacuum.	to 1850 °C

*) other types available on request

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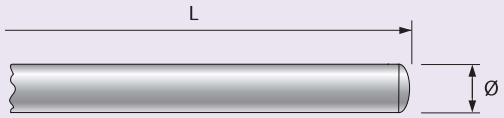
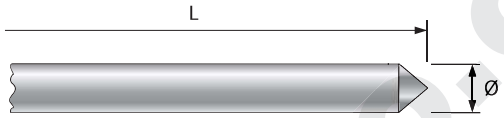
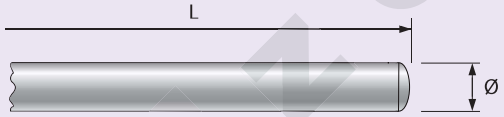
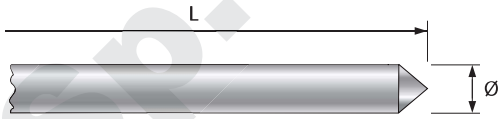
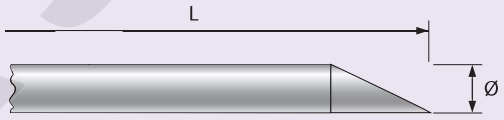
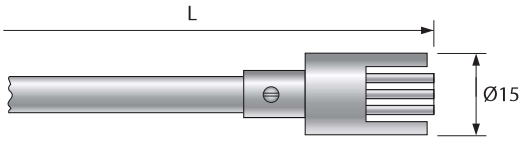
TAB. 4 MEASURING TIP TYPES **)

TYPE	CONSTRUCTION	DIAMETER Ø	MAX. OPERATING TEMP.	DRAWING
PK*)	MI sensor with round tip	1 mm, 1.5 mm, 2.0 mm, 3.0 mm, 4.5 mm, 6.0 mm	max.1150 °C, depending on sheath diameter and length	
PS	MI sensor with conical tip	3.0 mm, 4.5 mm, 6.0 mm	max.1150 °C, depending on sheath diameter and length	
RK*)	Tube, round tip	3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm	Max. 400 °C	
RS	Tube, conical tip	3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm	Max. 400 °C	
RI	Tube, needlelike tip	4.0 mm, 5.0 mm, 6.0 mm	Max. 400 °C	
RD	Tube - touch probe	15 mm	Max. 400 °C	

*) flat tip available on request

**) other tips available on request