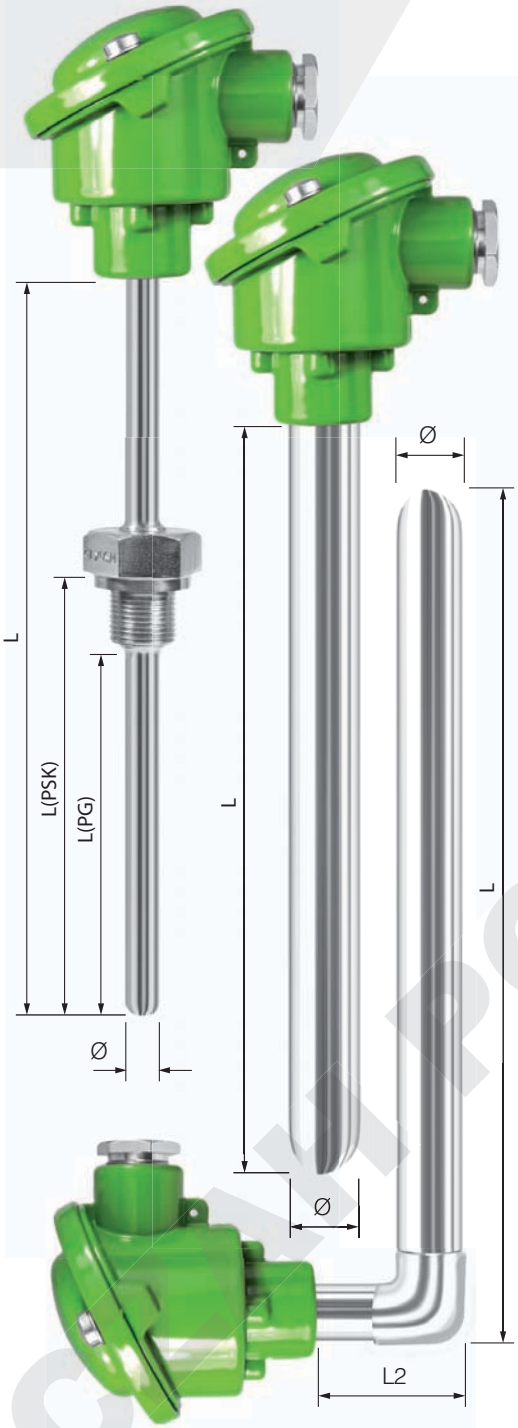
Calibration certificate of
our Accredited Laboratory upon request

CALIBRATION CERTIFICATE

05

METAL SHEATHED THERMOCOUPLES

- The sensors are manufactured with sheaths made of many different steel grades. Material depends on the application's requirements and the operating environment.
- Designed for high temperatures applications and tough environment, such as in furnaces, dryers, quenching pits, etc.
- With the appropiate sheath, thermocouples can be used at temperatures up to 1250 °C
- With the appropiate sheath, thermocouples are suitable for oxidising atmosphere applications.
- For very harsh operating conditions we can apply an inner ceramic sheath.
- Measuring inserts made of thermocouple wire
- Additionaly the temperature sensors can be equipped with a welded compression fitting, a flange or a moveable compression fitting.
- Also available in the angled version



05	sensor type	accuracy class	sheath maerial	diameter	length 'L'	terminal head type	ceramic thermowell	way of fixing	temperature transmitter

give a type and a number of sensor; table 1
1K - single
2K – double

Give accuracy class; table I, page 63

Give sheath material; table 2

give outer diameter, se table 3

Give length 'L' [mm] for straight sensor or L/L2 for angled sensor

Give terminal head type; table 4

Give ceramic type of an inner thermowell, see taqble 5 (skip in not requested)

Give type of additional assembling parts; table 6. For a thread, please specify its dimenstons [mm] from sensor tip to a thread L (PG) or to a hexagon L(PSK). For a flange DN20, please spefify L (DN) (skip if not requested)

Give temperature transmiter details; table 7 (skip in not requested)

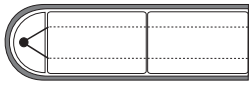
TAB. ORDERING CODE:

05	1K	1	310	21,3	1000	NA	C799	G34 700(PSK)	SEM206TC, 4 ... 20 mA 0 ... 1000 °C

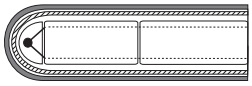
05 – 1K – 1 – 310 – 21,3 – 1000 – NA – C799 – G34 700(PSK) – SEM206TC, 4 .. 20mA, 0 ... 1000 °C

Temperature sensor model 05 (thermocouple with a metal-ceramic thermowell). Type K, single (1K), class one "1", a steel tube grade 310 (H25N20S2) and diameter 21,3 mm, total length L=1000 mm. Sensor ended with a terminal head type NA. An additional inner ceramic sheath grade C799. Head with a transmitter SEM206TC 4 ... 20 mA for temperatur range 0 do 1000 °C. Sensor with a welded compression fitting G3/4", distance between tip and hexagon is 700 mm.

Metal sheath with measuring insert



Ceramic metal sheath with measuring insert



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TAB. 1 THERMO-ELECTRODES TYPES

SENSOR TYPE	THERMO--ELECTRODES TYPE	OPERATIONG TEMPERA-TURE RANGE (LONG TERM) [°C] *)	OPERATIONG TEMPERATURE RANGE (SHOT TERM) [°C] *)
J	Fe - CuNi	+20 ÷ 700	-180 ÷ 750
T	Cu - CuNi	-185 ÷ 300	-250 ÷ 400
K	NiCr - NiAl	0 ÷ 1100	-180 ÷ 1350
N	NiCrSi - NiSiMg	0 ÷ 1100	-270 ÷ 1300
E	NiCr - CuNi	0 ÷ 800	-40 ÷ 900
S	PtRh10 - Pt	0 ÷ 1550	-50 ÷ 1750
R	PtRh13 - Pt	0 ÷ 1600	-50 ÷ 1700

*) Temperature range depends on sheath material

TAB. 2 STEEL SHEATH MATERIAL *)

GRADE	DESCRIPTION
INC (Inconel 600; 2.4816)	Nickel-chrome-iron alloy characterized by great resistance to oxidising and high temperature (up to 1150°C)
310 (H25N20S2; 1.4841)	Steel containing 25%Cr – 20%Ni. It is stainless and heat resistant. Resistant to oxidising up to 1100°C.
KAN (KANTHALAF ™)	Kanthal – ferritic alloy for high temperature applications up to 1300°C. Recommended especially when resistance to oxidation and abration is required.
321 (1.4541; 1H18N9T)	Steel similar to grade 304 (18% Cr, 10% Ni) but with titanium as a stabilizer. Max. operating temperature in the air is 900 °C.
316 (1.4401; H17N13M2T)	Steel similar to grade 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 aplications in places threatened by corrosion (sea water).

*) other steel grades available on request

TAB. 3 DIAMETER *)

DIAMETERS W [mm]
10,0
11,0
12,0
14,0
15,0
21,3
22,0

*) other diameters available on request

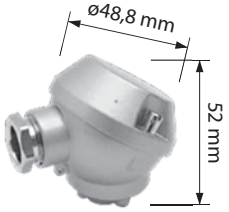
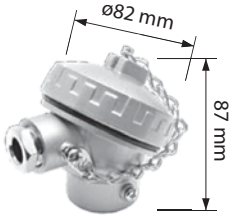
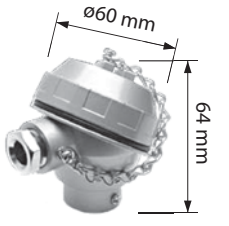
TAB. 5 INNER CERAMIC *)

TYPE	MATERIAL	DESCRIPTION
C799	99,7% Al_2O_3	Gas-tight ceramic type C799, trade name Alsint 99,7
C610	60% Al_2O_3	Gas-tight ceramic type C799, trade name Pythagoras

*) possibility of using the additional ceramic tube depends on the outer tube diameter

TAB. 4 TERMINAL HEAD TYPE

TERMINAL HEAD *) **)

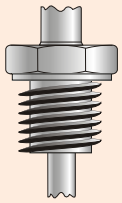
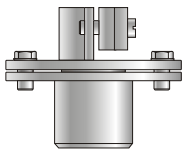
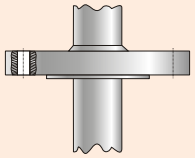
TYPE	B	NA
		
TYPE	**DA**	**MA ***)**
		
TYPE	**G1**	**G2**
		

*) different connection heads available on request

**) for technical data see table A, page 50

***) MA head possible only for the max. thermowell diameter 12 mm.

TAB. 6 SPOSÓB MOCOWANIA CZUJNIKA

TYPE	DESCRIPTION	MATERIAL	THREAD	DRAWING **)
M2015	Compression fitting welded to the thermowell *)	Steel	M20x1.5	
G12			G1/2"	
G10			G1.0"	
G34			G3/4"	
UZ 22	Mounting bracket D=22 mm **)	Aluminium alloy + steel	n/d	
UZ25	Mounting bracket D=25 mm **)			
DN20	Flange welded to the thermowell **)	Steel	n/d	

*) other threads on request **) see table G, page 62 for more information

TAB. 7 TEMPERATURE TRANSMITTER

If the signal tramsmitter inside a head is requested eg. for signal 4…20 mA, please provide all the necessary details, such as: transmitter type, temperature range. List of transmitters is available in the table E, page 60.