



Thermocouple : type K

Up to 1 250°C

Type K

Nickel chromium (+)
Nickel alloy (-)

The best known and the most used thermocouple belonging to the group chromium-nickel aluminium is type K.

Acceptable deviations are $\pm 2.5^{\circ}\text{C}$ up to 333°C and $\pm 0.75\%$ above 333°C (in accordance with I.E.C. standards).

Its e.m.f. /temperature curve is virtually linear and its sensitivity is $41\mu\text{V}/^{\circ}\text{C}$.

Type K thermocouples can be used in temperatures up to 1150°C and, for short periods, up to 1250°C depending on sheath material and diameter.



Wire Materials	Type	Thermocouple				Code	Material	Sheath							
		Mean Sensitivity $\mu\text{V}/^{\circ}\text{C}$	Sheath material	Working Temperature acc. to environment	Diameter in mm										
					0.25			0.34	0.5	1.0	1.5	2.0	3.0	4.75	
Nickel Chromium (+) Nickel alloy (-)	K	41	Stainless steel AISI 304L	900°C	2 AB	Ac	●	●	●	●	●	●	●	●	
			Stainless steel AISI 316L	900°C	2 AB	Ao				●	●	●	●	●	●
			Stainless steel AISI 321	900°C	2 AB	At				●	●	●	●		
			Stainless steel AISI 347	700°C	2 AB	An				●	●	●	●		
			Stainless steel AISI 310	1150°C	2 AB	Ar				●	●	●	●		
			Inconel® alloy 600	1150°C	2 AB	I				●	●	●	●		
			Nimonic®75	1150°C	2 AB	Nm				●	●	●	●		
			Refractory alloy	1200°C	2 AB	If				●	●	●	●		
			Specific alloys	1250°C	2 AB	Ig				●	●	●	●		
			Specific alloys	1150°C	2 AB	Ih				●	●	●	●		
			Specific alloys	900°C	2 AB	It				●	●	●	●		

Sheath materials: more information in our documentation
 "Which thermocouple to choose"
 This range is standard:

- Other diameters
- Other sheath materials
- Other construction

Please consult us.



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Extension cable

The thermocouple is connected to the measurement device by means of an extension cable.

The extension cables have two cores (each made of one single wire individually insulated with P.V.C. (2AB25) or P.T.F.E. (2AB25T) and

one tinned copper earth wire. All three are totally screened by a flexible aluminum ribbon and again insulated by P.V.C. Their outer diameter is 2.5 mm. For the 2AB35 and 2AB35T and the 2AB21T and 2AB17T, the

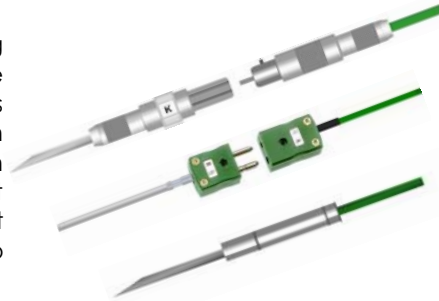
structure is nearly the same, but is screened by a flexible earth braid made of silvered copper and the outer sheath has a diameter of 3.5 / 2.1 / 1.7 mm.

Wire Materials	Type	Sheath Material	Maximum temperature	Outer Diameter in mm				Loop Resistance Ω/m	IEC 584.3 Identification
				2.5	3.5	1.7	2.1		
Nickel Chromium (+) Nickel alloy(-)	K	PVC	100°C	2AB25	2AB35			13.5	
		PTFE	250°C	2AB25T	2AB35T	2AB17T	2AB21T		

Connection

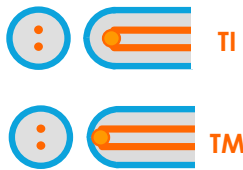
In order to ensure the faultless function of the thermocouples, the end has to be closed by means of an organic sealing compound to avoid any ingress of moisture. As connection to the plastic

sheathed cable, transferring the measurement signal to the instrument, direct connections are used. Besides this, it is often necessary, especially when being confronted with difficult of complicated measurement problems or specifications, to develop special connections.



Hot junctions

The hot junction is the point where the two cores are joined. This therefore is the sensing part and can take a number of different forms.



TI insulated hot junction
 TM grounded hot junction
 TIS swaged insulated hot junction
 TMS swaged grounded hot junction
 TIL laminated insulated hot junction
 TML laminated grounded hot junction

Accessories

Any form of brazing or welding of a thermocouple through a wall requires some skill, and to facilitate thermocouple mounting, a range of small seal-glands have been developed and adapted for the standard THERMOCOAX dimensions.



Quality

Whether they are standard or manufactured to customers specifications, all THERMOCOAX products are developed with the same procedures, the same control principles, the same feed back and the same qualified personnel.

Control and tests:

- X-ray of the hot junction
- Sheath integrity test
- Metallographic test on sample
- Calibration with appropriate thermal treatment...

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