

HIGH TEMPERATURE THERMOCOUPLES/ EXTENSION CABLES



These wires are used in many high-tech applications and research projects in aerospace, nuclear technology and sensor technology, where temperatures have to be measured in a closed environment and in extreme heat.

High-Temperature Thermocouple Cables / Compensating Cables for 500°C

Types K and E with ceramic insulation KD500

These thermal and compensating conductors are made of two ceramic-coated wires. Their outstanding features are:

- Extremely high temperature resistance
- Miniaturized sizes
- Significantly reduced weight

Properties

Thermal:

Continuous temperature -90°C to +500°C, 800°C for at least 240h Peak temperature 1000°C Nickel migration. From temperatures of >315°C, the cables may be subject to nickel migration after prolonged use and thus experience an increase in maximum resistance.

Chemical:

Excellent resistance in chemical environments (standard and organic solvents). Poor resistance to moisture.

Electrical:

Test voltage (1 min) 150V AC / 212V DC

Radiation resistance:

Can be exposed to neutrons or gamma rays for long periods without changing the mechanical resistance of the insulation.

Flame resistance:

Completely incombustible. Above >1000°C the wires can melt but not burn.

Color:

Grey

Outgassing:

Low

Halogen-free:

Yes

Dimensions

Type	Number x conductor diameter	AWG	Nominal diameter	Weight g/km	Length m/kg
Type K	2 x 0.20 mm	2 x AWG 32	0.44 mm	286	3500
Type K	2 x 0.32 mm	2 x AWG28	0.68 mm	637	1570
Type K	2 x 0.50 mm	2 x AWG 24	1.04 mm	1754	570
Type E	2 x 0.20 mm	2 x AWG 32	0.44 mm	286	3500
Type E	2 x 0.30 mm	2 x AWG 28	0.68 mm	637	1570

Other types on request.

EMK type K

Temperature	EMF	Tolerance	
		Class 1 (KX1)	Class 2 (KX2)
0°C	0 µV	±60 µV	±100 µV
100°C	4.095 µV	±60 µV	±100 µV
200°C	8.137 µV	±60 µV	±100 µV
400°C	16.395 µV	±60 µV	±100 µV

EMK type E

Temperature	EMF	Tolerance	
		Class 1 (KX1)	Class 2 (KX2)
0°C	0 μ V	$\pm 120 \mu$ V	$\pm 200 \mu$ V
100°C	6.319 μ V	$\pm 120 \mu$ V	$\pm 200 \mu$ V
200°C	13.421 μ V	$\pm 120 \mu$ V	$\pm 200 \mu$ V
400°C	28.946 μ V	$\pm 120 \mu$ V	$\pm 200 \mu$ V

Processing instructions

Ceramic is very different from conventional wire insulation. It is very hard and sensitive to moisture. It therefore requires special care during processing:

- The wires must be stored and processed in a dry environment.
- The wires must not be subjected to impact or shock.
- The wires must not be kinked under any circumstances. Visual inspection: A bending radius that is too tight or a kink in the wire can generally be recognized by cracks in the ceramic insulation, which are visible as bleaching of the surface.

Advise for the stripping of the insulation

The ceramic coating on the KD500 is very thin and adheres to the conductor. Conventional stripping tools can therefore not be used. Stripping can be carried out with fine sandpaper.