

Colour coding of thermocouple extension wires

	IEC 60584-3 International standard	ANSI MC 96.1 American standard	DIN 43714 German std re- placed by IEC	BS 1843 British std re- placed by IEC	NFC 42323 French std re- placed by IEC	JIS 1620 Japanese std	
E							NiCr / CuNi
J							Fe / CuNi
K							NiCr / NiAl
N							NiCr / NiSi
T							Cu / CuNi
B							Pt-30%Rh / Pt-6%Rh
S/R							S: Pt-10%Rh / Pt R: Pt-13%Rh / Pt

Thermocouple wire

Thermocouples are defined by single letters – B, E, J, K, N, R, S, and T – having tolerances according to the IEC 60584-2. *The American ANSI standard dictates brown-coloured outer sheathing for thermocouples.* Thermocouple wires intended for high temperatures normally have sheaths which can't be coloured. However, it occurs that a fibre – coloured according to the codes above – is integrated to the sheath for identification.

Extension wire and compensating cable

Extension wires are nominally made by the same alloys as the corresponding thermocouples. These are defined by the additional letter X – e.g. KX – with temperature range -25 to 200 °C. The limits of tolerance equal thermocouple class 1 or class 2 of the IEC 60584-2 within this interval. Note that the sheath (e.g. PVC) can further limit the allowed ambient temperature of the cable location.

Compensation cables are produced from alloys differing from the original materials. Hence, the ambient

temperature will be more limited and the tolerances will not be better than those of class 2. Compensation cables are marked with the additional letter C combined with another letter identifying the used alloys, e.g. SCA or SCB. Compensated materials are used because they are cheaper and easier to produce.

For instance type K has the extension cable - KX – made by the very same material as the pure thermocouple. Moreover there is the compensation cable KCA with the temperature range 0 – 150 °C and iron in the positive wire. Compensation cables are only qualified to the class 2. Generally cable sheathing can limit the temperature ranges still more. For example PVC sheathing limits the location ambient temperature below 100 °C.

Connectors

Connectors should be colour marked as the corresponding cable.

2011-05-31