THERMOCOUPLE EXTENSION AND COMPENSATING CABLES CODES · CONDUCTOR COMBINATIONS · NATIONAL & INTERNATIONAL SPECIFICATIONS

THERMOCOUPLE CONDUCTOR COMBINATION TYPE	EXTENSION AND COMPENSATING CABLE TYPE		INTERNATIONAL COLOUR CODE TO IEC 584.3:1989 BS 4937 Part 30:1993 (soon to be replaced by BS EN 60584.3)	INTERNATIONAL COLOUR CODE TO IEC 584.3:1989 BS 4937 Part 30:1993 (soon to be replaced by BS EN 60584.3) FOR INTRINSICALLY SAFE CIRCUITS	Redundant national colour coding for insulation of thermocouple extension and compensating cable					TOLERANCE CLASS		CABLE TEMPERATURE RANGE °C	MEASURING JUNCTION TEMPERATURE	NOTES
	EXTENSION CABLE	COMPENSATING CABLE			BRITISH TO BS 1843	AMERICAN TO ANSI/MC96.1	GERMAN TO DIN 43714	FRENCH TO NFC 42324	JAPANESE TO JIS C 1610-1981	1	2			
K	KX									±60 µV (±1.5°C)	±100 µV (±2.5°C)	−25°C TO +200°C	900°C	Type KX Thermocouple extension cable conductors are made from the same constituent elements as the Type K thermocouple combination and therefore minimises potential errors when connecting to a sensor.
		KCA									±100 µV (±2.5°C)	0°C TO +150°C	900°C	This compensating cable conductor combination is little known and generally not available. It should not be confused with the more popular Type KCB as shown below.
		KCB									±100 µV (±2.5°C)	0°C TO +100°C	900°C	This popular compensating cable conductor combination (previously known as Type V) is made with Copper vs Copper-Nickel conductors, and should only be used when the ambient temperature of the interconnection point between the cable and its Type K sensor is below 100°C. If suitable to your requirements it can save money where long runs are necessary.
T	TX									±30 µV (±0.5°C)	±60 µV (±1.0°C)	−25°C TO +100°C	300°C	Type TX extension cable conductors are made from the same constituent elements as Type T thermocouples. There is no compensating cable available for Type T, however the extension cable is relatively inexpensive.
J	JX									±85 µV (±1.5°C)	±140 µV (±2.5°C)	−25°C TO +200°C	500°C	Type JX extension cable conductors are made from the same constituent elements as Type J thermocouples. There is no compensating cable available for Type J, however the extension cable is relatively inexpensive.
N	NX									±60 µV (±1.5°C)	±100 µV (±2.5°C)	−25°C TO +200°C	900°C	Type NX extension cable conductors are made from the same constituent elements as Type N thermocouples. Although there is a designated compensating cable for Type N, it is not at present readily available.
		NC									±100 µV (±2.5°C)	0°C TO +150°C	900°C	Type NC compensating cable is not at present readily available. It can be assumed that as Type N thermocouples become more popular the compensating cable will start to be produced.
E	EX									±120 µV (±1.5°C)	±200 µV (±2.5°C)	−25°C TO +200°C	500°C	Type EX extension cable conductors are made from the same constituent elements as Type E thermocouples. There is no compensating cable available for Type E.
R		RCA									±30 µV (±2.5°C)	0°C TO +100°C	1000°C	Type RCA compensating cable is suitable for connecting to Type R thermocouples where the ambient temperature of the interconnection point between the cable and its Type R sensor is below 100°C.
		RCB									±60 µV (±5.0°C)	0°C TO +200°C	1000°C	Type RCB compensating cable is suitable for connecting to Type R thermocouples where the ambient temperature of the interconnection point between the cable and its Type R sensor is below 200°C, however this increased range is achieved with a lesser degree of accuracy than Type RCA as shown above.
S	SCA										±30 µV (±2.5°C)	0°C TO +100°C	1000°C	Type SCA compensating cable is suitable for connecting to Type S thermocouples where the ambient temperature of the interconnection point between the cable and its Type S sensor is below 100°C. SCA is in fact the same material as Type RCA.
		SCB									±60 µV (±5.0°C)	0°C TO +200°C	1000°C	Type SCB compensating cable is suitable for connecting to Type S thermocouples where the ambient temperature of the interconnection point between the cable and its Type S sensor is below 200°C, however this increased range is achieved with a lesser degree of accuracy than Type SCA as shown above. SCB is in fact the same material as Type RCB.
B		BC												This compensating cable is made from Copper vs Copper conductors. The expected maximum additional deviation when the ambient interconnection point is between 0 and 100°C would be approximately 3.5°C when the measuring junction is at 1400°C.
G (Formerly Code W)		GC												This compensating cable is made from Alloy 200* vs Alloy 226* and is suitable for use with Type G (Formerly W) Thermocouples.
C (Formerly Code W5)		CC												This compensating cable is made from Alloy 405* vs Alloy 426* and is suitable for use with Type C (Formerly W5) Thermocouples.
D (Formerly Code W3)		DC												This compensating cable is made from Alloy 203* vs Alloy 225* and is suitable for use with Type D (Formerly W3) Thermocouples.

Tolerance values to IEC 584.3 1989/BS 4937 Part 30 1993 (soon to be replaced by BS EN 60584.3) for extension and compensating cables when used at temperatures within the cable temperature range column shown below.

Extension and compensating cables are used for the electrical connection between the open ends of a thermocouple and the reference junction in those installations where the conductors of the thermocouple are not directly connected to the reference junction.

* Codes G, C and D and the cable colours shown, are not officially recognised symbols.
* Trade Names

Extension Cables
Extension cables are manufactured from conductors having the same nominal composition as those of the corresponding thermocouple. They are designated by a letter "X" following the designation of the thermocouple, for example "JX".

Compensating Cables
Compensating cables are manufactured from conductors having a composition different from the corresponding thermocouple. They are designated by a letter "C" following the designation of the thermocouple, for example "KC". Different alloys may be used for the same thermocouple type and are distinguished by additional letters, for example, "KCA" or "KCB".

FOR FURTHER INFORMATION ON CONDUCTOR COMBINATIONS SEE PAGE