

## Thermocouple Extension and compensating cables











Thermocouple extension and compensating cables are designed for interconnection between thermocouple probes and control instrumentation. They are generally available in the following types.

- Type (1) Unarmoured cables with conductors insulated with PVC and twisted together in pairs, sheathed overall with PVC.
- Type (2) Armoured cables with conductors insulated with PVC and twisted together in pairs, PVC bedding, Galvanised steel wire armour and sheathed overall with PVC.
- Type (3) Lead sheathed and armoured cables with conductors insulated with PVC and twisted together in pairs, PVC bedded, Lead alloy sheathed, PVC bedded, galvanised steel wire armour and sheathed overall with PVC.

All of the above types of cable can be supplied unscreened or screened (Individually, collectively or both) with an Aluminium / Polyester tape screen incorporating tinned copper drain wires.

Alternative insulation and sheathing materials can also be used, details available upon request.

**Colour Code Table**

Conductor combinations		BS1843	BSEN 60584.3	Thermocouple		Cable
+	-			+	-	Extension
Copper	Constantan			Copper	Constantan	
Iron	Constantan			Iron	Constantan	Extension
Nickel Chromium	Nickel Aluminium			Nickel Chromium	Nickel Aluminium	Extension
Copper	Constantan			Nickel Chromium	Nickel Aluminium	Compensating
Copper	Copper Nickel			Platinum Rhodium	Platinum	Compensating

**IEC 60584 Tolerances for extension and compensating cables**

Type	Tolerance 1	Tolerance 2	Cable temperature range	Measuring junction temperature
TX	$\pm 30\mu\text{V}$ ( $\pm 0.5^\circ\text{C}$ )	$\pm 60\mu\text{V}$ ( $\pm 1.0^\circ\text{C}$ )	$-25^\circ\text{C} - + 100^\circ\text{C}$	$300^\circ\text{C}$
JX	$\pm 85\mu\text{V}$ ( $\pm 1.5^\circ\text{C}$ )	$\pm 140\mu\text{V}$ ( $\pm 2.5^\circ\text{C}$ )	$-25^\circ\text{C} - + 200^\circ\text{C}$	$500^\circ\text{C}$
KX	$\pm 60\mu\text{V}$ ( $\pm 1.5^\circ\text{C}$ )	$\pm 100\mu\text{V}$ ( $\pm 2.5^\circ\text{C}$ )	$-25^\circ\text{C} - + 200^\circ\text{C}$	$900^\circ\text{C}$
VX-KCB	-	$\pm 140\mu\text{V}$ ( $\pm 2.5^\circ\text{C}$ )	$0^\circ\text{C} - + 100^\circ\text{C}$	$900^\circ\text{C}$
RCA	-	$\pm 30\mu\text{V}$ ( $\pm 2.5^\circ\text{C}$ )	$0^\circ\text{C} - + 100^\circ\text{C}$	$1000^\circ\text{C}$
SCA	-	$\pm 30\mu\text{V}$ ( $\pm 2.5^\circ\text{C}$ )	$0^\circ\text{C} - + 100^\circ\text{C}$	$1000^\circ\text{C}$

Note: Cable temperature may be restricted to figures lower than those shown in the table because temperature limitations imposed by the insolation.



## Thermocouple Single Pair – TX, JX, KX, VX, KC

**Minimum bending radius:** Unscreened and screened – 4 x overall diameter  
 Screened with armour – 6 x overall diameter  
 Screened with lead and armour – 12 x overall diameter

**Operating temperature:** Maximum 105°C, Minimum -30°C, Minimum bending 0°C

### Unscreened (Type 1)

PVC insulated / PVC sheathed – Flat

Size sq.mm	Stranding mm	RT of insulation mm	Diameter over laid up cores mm	RT of outer sheath mm	Nominal overall diameter mm	Approx. weight kg/km	Type	Colour	BATT Part No
0.22	7/.2	0.5	1.6 x 3.2	0.8	3.2 x 4.8	23	-	-	-
0.5	16/.2	0.6	2.1 x 4.3	0.8	3.7 x 5.9	35	TX	Blue	52109
0.5	16/.2	0.6	2.1 x 4.3	0.8	3.7 x 5.9	35	KX	Green	52183
0.5	16/.2	0.6	2.1 x 4.3	0.8	3.7 x 5.9	35	TX	Brown	52018
0.75	24/.2	0.6	2.3 x 4.7	0.8	3.9 x 6.3	42	KX	Green	52196
0.75	24/.2	0.6	2.3 x 4.7	0.8	3.9 x 6.3	42	KX	Red	52045
1.0	32/.2	0.6	2.5 x 5.0	0.8	4.1 x 6.7	50	-	-	-
1.3	1/1.29	0.6	2.5 x 5.0	0.8	4.1 x 6.6	55	-	-	-

### Screened (Type 1)

PVC insulated / CAM (Collective Aluminium Mylar) screen including drain wire / PVC sheathed - circular

Size sq.mm	Stranding mm	RT of insulation mm	Diameter over screen mm	RT of outer sheath mm	Nominal overall diameter mm	Approx. weight kg/km	Type	Colour	BATT Part No
0.5	1 / 0.8	0.5	3.9	0.8	5.5	35	-	-	-
0.5	16 / 0.2	0.6	4.8	0.8	6.4	42	KCB	Green	52185
0.5	16 / 0.2	0.6	4.8	0.8	6.4	42	KX	Red	82002
0.5	16 / 0.2	0.6	4.8	0.8	6.4	42	TX	Brown	52182
0.5	16 / 0.2	0.6	4.8	0.8	6.4	42	TX	Blue	52107
0.5	16 / 0.2	0.6	4.8	0.8	6.4	42	VX	Red	52108
0.75	24 / 0.2	0.6	5.2	0.8	6.8	49	-	-	-
1.3	1 / 1.30	0.6	5.3	0.8	6.9	59	KX	Yellow	52077
1.3	1 / 1.30	0.6	5.3	0.8	6.9	59	KCB	Yellow	52081
1.3	1 / 1.30	0.6	5.3	0.8	6.9	59	VX	Blue	52010
1.3	1 / 1.30	0.6	5.3	0.8	6.9	59	KCB	Green	52201

### Screened and armoured (Type 2)

PVC insulated / CAM (Collective Aluminium Mylar) screen including drain wire / PVC extruded bedded / Steel wire armour / PVC sheathed – circular

Size sq.mm	Stranding mm	RT of insulation mm	Diameter over bedding mm	Diameter of armour wire	Diameter over armour mm	RT of outer sheath mm	Nominal overall diameter mm	Approx. weight kg/km	Type	Colour	BATT Part No
0.5	1 / 0.8	0.5	5.5	0.9	7.3	1.0	9.3	142	TX	Brown	52065
0.5	1 / 0.8	0.5	5.5	0.9	7.3	1.0	9.3	142	VX	Red	52117
0.5	1 / 0.8	0.5	5.5	0.9	7.3	1.0	9.3	142	VX	Red	52111
0.5	1 / 0.8	0.5	5.5	0.9	7.3	1.0	9.3	142	KCB	Blue	52177
0.5	1 / 0.8	0.5	5.5	0.9	7.3	1.0	9.3	142	KX	Green	52200
0.75	-	-	-	-	-	-	-	-	TX	Brown	52206
0.75	-	-	-	-	-	-	-	-	KX	Green	52171
1.3	1 / 1.29	0.6	6.9	0.9	8.7	1.0	10.7	185	JX	Black	52015
1.3	1 / 1.29	0.6	6.9	0.9	8.7	1.0	10.7	185	KCB	Green	52194
1.3	1 / 1.29	0.6	6.9	0.9	8.7	1.0	10.7	185	TX	Brown	52016
1.3	1 / 1.29	0.6	6.9	0.9	8.7	1.0	10.7	185	KX	Green	52187



### Screened with lead sheath and armour (Type 3)

PVC insulated / CAM (Collective Aluminium Mylar) screen including drain wire / PVC extruded bedded / lead sheathed / PVC extruded bedded / steel wire armoured / PVC sheathed - circular

Size sq.mm	Stranding mm	RT of insulation mm	Diameter over bedding mm	Diameter over lead mm	Diameter over armour mm	RT of outer sheath mm	Nominal overall diameter mm	Approx. weight kg/km	Type	Colour	BATT Part No
0.5	1 / 0.8	0.5	5.5	7.7	9.5	1.1	11.7	467	-	-	-
1.3	1 / 1.29	0.6	6.9	9.1	10.9	1.1	13.1	563	KX	Red	52167

### Thermocouple Multi Pair – TX, JX, KX, VX, KC

**Minimum bending radius:** 6 x overall diameter (Type 2)  
12 x overall diameter (Type 3)

**Operating temperature:** Maximum 105°C, Minimum -10°C, Minimum bending 0°C (Type 2)  
Maximum 105°C, Minimum 30°C, Minimum bending 0°C (Type 3)

### Screened and armoured (Type 2)

PVC insulated / CAM (Collective Aluminium Mylar) screen including drain wire / PVC extruded bedded / steel wire armour / PVC sheathed – Circular

#### 0.5sqmm (16 / 0.2mm)

No of pairs	Nominal diameter laid up pairs mm	Nominal diameter collective screen mm	RT of bedding mm	Diameter over bedding mm	Diameter of armour wire mm	Diameter over armour mm	Nominal overall diameter mm	Approx weight kg/km	Type	Colour	BATT Part No
2	4.3	4.7	0.8	6.8	0.9	8.6	11.2	260	-	-	-
5	9.9	10.9	1.1	13.1	0.9	14.9	17.9	470	VX	Green	52008
10	13.8	14.8	1.2	17.2	1.25	19.7	22.9	810	-	-	-
15	16.2	17.2	1.3	19.8	1.6	23.0	26.4	1160	-	-	-
20	18.7	19.7	1.3	22.3	1.6	25.5	29.1	1370	-	-	-
30	22.9	23.9	1.5	26.9	1.6	30.1	33.9	1760	-	-	-
50	29.5	30.5	1.7	33.9	2.0	37.9	42.1	2730	-	-	-

#### 0.75sq.mm (24/0.2mm)

No of pairs	Nominal diameter laid up pairs mm	Nominal diameter collective screen mm	RT of bedding mm	Diameter over bedding mm	Diameter of armour wire mm	Diameter over armour mm	Nominal overall diameter mm	Approx weight kg/km	Type	Colour	BATT Part No
2	4.7	5.1	0.8	7.3	0.9	9.1	11.9	310	-	-	-
5	10.4	11.1	1.2	14.3	1.25	16.8	19.8	710	-	-	-
10	13.6	14.6	1.3	18.7	1.6	21.9	25.3	1200	-	-	-
15	17.5	18.6	1.3	21.4	1.6	24.6	28.2	1500	-	-	-
20	19.9	21.0	1.5	24.5	1.6	27.7	31.3	1700	-	-	-
30	23.2	24.5	1.7	29.5	2.0	33.5	37.5	2500	-	-	-
50	31.0	32.5	2.0	37.4	2.0	42.4	47.0	3300	-	-	-

#### 1.5sq.mm (1/1.38mm)

No of pairs	Nominal diameter laid up pairs mm	Nominal diameter collective screen mm	RT of bedding mm	Diameter over bedding mm	Diameter of armour wire mm	Diameter over armour mm	Nominal overall diameter mm	Approx weight kg/km	Type	Colour	BATT Part No
1	-	5.4	1.0	7.6	0.9	9.4	12.4	290	KX	Yellow	52140

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### Individual and collective pair screened and armoured (Type 2)

PVC insulated – IAM (Individual Aluminium Mylar) pair screened including drain wire / CAM (Collective Aluminium Mylar) screen including drain wire / PVC extruded bedded / Steel wire armoured / PVC sheathed.

#### 0.5sqmm (1/0.8mm)

No of pairs	Nominal diameter laid up pairs mm	Nominal diameter collective screen mm	RT of bedding mm	Diameter over bedding mm	Diameter of armour wire mm	Diameter over armour mm	Nominal overall diameter mm	Approx weight kg/km	Type	Colour	BATT Part No
2	7.7	8.7	0.8	10.3	0.9	12.1	14.9	380	VX	Red	52085
2	7.7	8.7	0.8	10.3	0.9	12.1	14.9	380	TX	Brown	52020
2	7.7	8.7	0.8	10.3	0.9	12.1	14.9	380	TX	Blue	52086
4	-	-	-	-	-	-	-	-	KCB	Blue	52179
5	10.1	11.1	1.2	13.5	1.25	16.0	19.0	660	-	-	-
6	-	-	-	-	-	-	-	-	TX	Blue	52089
6	-	-	-	-	-	-	-	-	KCB	Blue	52125
6	-	-	-	-	-	-	-	-	KX	Green	52204
8	-	-	-	-	-	-	-	-	KCB	Blue	52180
8	-	-	-	-	-	-	-	-	TX	Blue	82087
10	14.9	15.9	1.2	18.3	1.25	20.8	24.2	950	KC	Green	52048
12	-	-	-	-	-	-	-	-	VX	Blue	82176
12	-	-	-	-	-	-	-	-	KC	Green	82184
15	14.9	16.9	1.3	19.5	1.6	22.7	27.3	1291	-	-	-
20	19.9	20.9	1.3	23.5	1.6	26.7	30.3	1560	KC	Green	52049
30	23.9	24.9	1.5	27.9	1.6	31.1	34.9	1990	KC	Green	52021
50	31.1	32.1	2.0	36.1	2.0	40.1	44.5	3200	KC	Green	-

#### 1.3sqmm (1/1.29mm)

No of pairs	Insulation thickness mm	Diameter under armour mm	Diameter of armour wire mm	Nominal overall diameter mm	Approx weight kg/km	Colour	BATT Part No
2	0.60	11.16	0.90	15.30	434	Green	52011

### Individual and collective pair screened, lead sheathed and armoured (Type 3)

PVC insulated – IAM (Individual Aluminium Mylar) pair screened including drain wire / CAM (Collective Aluminium Mylar) screen including drain wire / PVC extruded bedded / Lead sheathed / PVC extruded bedded / Steel wire armoured / PVC sheathed.

#### 0.5sqmm (1/0.8mm)

No of pairs	Nom dia over laid up cores mm	Nom dia over collective screen mm	RT of inner bedding mm	Dia over inner bedding mm	RT of lead alloy sheath mm	Dia over lead alloy sheath mm	RT of outer bedding mm	Dia of outer bedding mm	Dia of armour wire mm	Dia over armour mm	RT of outer sheath mm	Nom overall dia mm	Weight kg/km	Type	Colour	BATT Part No
2	1.5	-	-	-	-	-	-	-	-	-	-	12.4	290	KX	Yellow	52140
2	7.5	0.9	10.3	1.1	12.5	0.8	14.1	1.25	16.6	1.5	16.6	19.6	1140	-	-	-
5	10.1	1.2	13.5	1.1	14.7	0.8	17.3	1.25	19.8	1.6	19.8	23.0	1450	-	-	-
10	14.9	1.2	18.3	1.2	20.7	1.0	22.7	1.6	25.9	1.7	25.9	29.3	2300	VX	Blue	52039
20	19.9	1.3	23.5	1.4	26.3	1.2	28.7	2.0	32.7	1.9	32.7	36.5	3580	VX	Blue	52041
30	23.9	1.5	27.9	1.5	30.9	1.2	33.3	2.0	37.3	2.0	37.3	41.3	4470	-	-	-
50	32.1	2.0	36.1	1.8	39.7	1.4	42.5	2.5	47.5	2.5	47.5	52.1	6780	-	-	-

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