Thermocouple Extension Cables

KEYSTONE CABLE
tel (65) 6367 0107 fax (65) 6365 2963
www.keystone-cable.com

500V Pair(s), Type KX
XLPE Insulated, Overall Screen, Unarmoured or Armoured, PVC Sheathed Cable
Description: Type KX-XLPE/OS/PVC-UV or Type KX-XLPE/OS/PVC/SWA/PVC-UV
Model Code: Type KX-XOP-UV or Type KX-XOPSP-UV

Application :	This cable is used in temperature measurement to convey information from a thermocouple sensor, to the measuring instrument.
Voltage rating :	500V
Construction :	Solid conductor (Positive: Nickel Chromium / Negative: Nickel Aluminium), XLPE insulated, twisted pair(s), overall screen (aluminium/ polyester tape with tinned copper drain wire), unarmoured or galvanized steel wire armoured, UV resistant PVC* sheathed cable
Insulation colour :	(+) Green, (-) White (or with numbering)
Sheath colour :	Green
Specification :	BS EN 50288-7, IEC 60584-3, IEC 60332-1-2
	IEC 60332-3 (upon request)
Operating temperature :	90˚C

**LSZH sheath (upon request), comply with IEC 60332-3, IEC 60754, IEC 61034-2*

No. of Pair(s)	Conductor		Insulation	Unarmoured Cable			Armoured Cable		
	Nominal Area	No./Diam. of Strand	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
	(mm^2)	(no./mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
1P	0.5	1/0.80	0.6	**041P6115**	7.1	55	**041P6673**	9.3	265
2P				**042P6115**	9.9	100	**042P6673**	12.2	380
4P				**044P6115**	11.9	150	**044P6673**	13.8	455
6P				**046P6115**	14.2	200	**046P6673**	16.1	575
8P				**048P6115**	15.7	250	**048P6673**	17.6	655
10P				**040P6115**	17.8	310	**040P6673**	20.4	890
12P				**04BP6115**	18.5	340	**04BP6673**	21.0	960
16P				**04FP6115**	20.3	415	**04FP6673**	22.8	1090
20P				**04KP6115**	22.7	505	**04KP6673**	25.3	1270
24P				**04RP6115**	25.3	610	**04RP6673**	28.4	1635
36P				**04P26115**	28.9	830	**04P26673**	32.1	2015
1P	1	1/1.13	0.6	**061P6115**	7.8	75	**061P6673**	10.1	295
2P				**062P6115**	11.3	135	**062P6673**	13.5	440
4P				**064P6115**	13.1	200	**064P6673**	15.2	540
6P				**066P6115**	15.8	285	**066P6673**	17.7	685
8P				**068P6115**	17.9	360	**068P6673**	20.4	940
10P				**060P6115**	20.1	435	**060P6673**	22.6	1105
12P				**06BP6115**	20.9	495	**06BP6673**	23.4	1195
16P				**06FP6115**	23.1	615	**06FP6673**	25.6	1395
20P				**06KP6115**	25.8	755	**06KP6673**	29.1	1715
24P				**06RP6115**	28.6	910	**06RP6673**	31.9	2095
36P				**06P26115**	32.9	1260	**06P26673**	36.1	2630

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Model Code: Type KX-XOP-UV or Type KX-XOPSP-UV

No. of Pair(s)	Conductor		Insulation	Unarmoured Cable			Armoured Cable		
	Nominal Area	No./Diam. of Strand	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
	(mm²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(mm)
1P	1.3	1/1.29	0.6	**411P6115**	8.1	85	**411P6673**	10.5	310
2P				**412P6115**	12.0	155	**412P6673**	14.0	470
4P				**414P6115**	14.2	240	**414P6673**	16.0	610
6P				**416P6115**	16.8	435	**416P6673**	19.4	890
8P				**418P6115**	18.8	420	**418P6673**	21.3	1050
10P				**410P6115**	21.4	520	**410P6673**	23.9	1230
12P				**41BP6115**	22.0	585	**41BP6673**	24.5	1315
16P				**41FP6115**	24.5	740	**41FP6673**	27.7	1750
20P				**41KP6115**	27.4	910	**41KP6673**	30.6	2045
24P				**41RP6115**	30.4	1095	**41RP6673**	33.6	2345
36P				**41P26115**	35.2	1540	**41P26673**	39.2	3300
1P	1.5	1/1.38	0.6	**071P6115**	8.3	85	**071P6673**	10.7	320
2P				**072P6115**	12.2	170	**072P6673**	14.3	485
4P				**074P6115**	14.6	260	**074P6673**	16.4	630
6P				**076P6115**	17.4	365	**076P6673**	19.9	930
8P				**078P6115**	19.4	455	**078P6673**	21.8	1100
10P				**070P6115**	21.9	565	**070P6673**	24.4	1300
12P				**07BP6115**	22.7	635	**07BP6673**	25.2	1390
16P				**07FP6115**	25.2	810	**07FP6673**	28.4	1845
20P				**07KP6115**	28.3	1000	**07KP6673**	31.4	2155
24P				**07RP6115**	31.4	1195	**07RP6673**	34.5	2500
36P				**07P26115**	36.2	1690	**07P26673**	40.2	3510

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Table 4 : Code, Colour Code and Properties

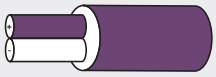
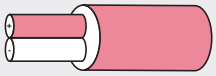
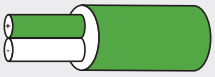
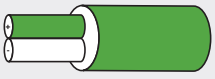
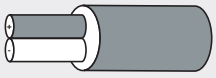
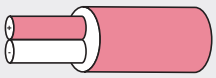
Sensors	Types	Conductor Composition		Colours (IEC 60584-3-2007)	Nominal e.m.f. (microvolts 0°C/100°C)	Limits of Error		Temperature of Connected Point with Thermocouple	Measuring Junction Temperature
		Positive (PX)	Negative (NX)			Class 1	Class 2		
						(°C)		(°C)	(°C)
Extension Cables :									
K	KX	Nickel Chromium	Nickel Aluminium	 Green (+) White (-) Green (Sheath)	4,10	±1.5	±2.5	-25 ~ +200	900
J	JX	Iron	Copper Nickel (Constantan)	 Black (+) White (-) Black (Sheath)	5,27	±1.5	±2.5	-25 ~ +200	500
T	TX	Copper	Copper Nickel (Constantan)	 Brown (+) White (-) Brown (Sheath)	4,28	±0.5	±1.0	-25 ~ +100	300
E	EX	Nickel Chromium	Copper Nickel (Constantan)	 Violet (+) White (-) Violet (Sheath)	6,32	±1.5	±2.5	-25 ~ +200	500
N	NX	Nickel Chromium Silicon	Nickel Silicon	 Pink (+) White (-) Pink (Sheath)	2,77	±1.5	±2.5	-25 ~ +200	900
Compensating Cables :									
K	KCA	Iron	Copper Nickel Alloy	 Green (+) White (-) Green (Sheath)	4,10	-	±2.5	0 ~ +150	900
	KCB	Copper	Copper Nickel (Constantan)	 Green (+) White (-) Green (Sheath)	4,10	-	±2.5	0 ~ +100	900
R	RCA	Copper	Copper Low Nickel Alloy	 Orange (+) White (-) Orange (Sheath)	0,65	-	±2.5	0 ~ +100	1000
	RCB	Copper	Copper Nickel Mo Alloy	 Orange (+) White (-) Orange (Sheath)	0,65	-	±5.0	0 ~ +200	1000
S	SCA	Copper	Copper Low Nickel Alloy	 Orange (+) White (-) Orange (Sheath)	0,65	-	±2.5	0 ~ +100	1000
	SCB	Copper	Copper Nickel Mo Alloy	 Orange (+) White (-) Orange (Sheath)	0,65	-	±5.0	0 ~ +200	1000
B	BC	Copper	Copper	 Grey (+) White (-) Grey (Sheath)	0,03	-	±3.5	0 ~ +100	1400
N	NC	Copper Nickel Mg	Copper Nickel Mg	 Pink (+) White (-) Pink (Sheath)	2,77	-	±2.5	0 ~ +150	900

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Table 5 : Code and Notes

Sensors	Types	Conductor Composition		Notes
		Positive (PX)	Negative (NX)	
K	KX	Nickel Chromium	Nickel Aluminium	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	Iron	Copper Nickel Alloy	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	Copper	Copper Nickel (Constantan)	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.
J	JX	Iron	Copper Nickel (Constantan)	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.
T	TX	Copper	Copper Nickel (Constantan)	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.
E	EX	Nickel Chromium	Copper Nickel (Constantan)	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	Copper	Copper Low Nickel Alloy	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		Copper Nickel Mo Alloy	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	Copper	Copper Low Nickel Alloy	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		Copper Nickel Mo Alloy	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	Copper	Copper	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.
N	NX	Nickel Chromium Silicon	Nickel Silicon	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 readily available at the present.
	NC	Copper Nickel Mg	Copper Nickel Mg	Type NC compensating cable is not readily available at the present. It can be assumed that as Type N thermocouples become more popular the compensating cable will start to be produced.