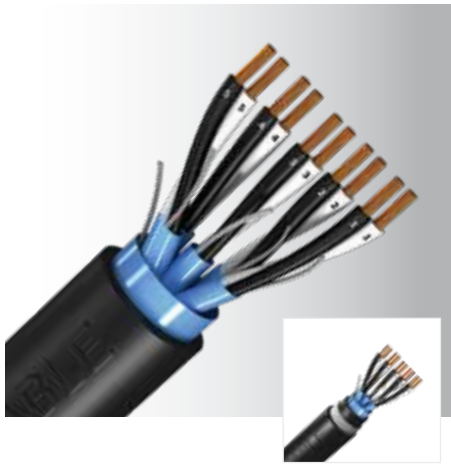


# Instrumentation Cables

500V Individual & Collective Screen  
XLPE Insulated, IS OS, Unarmoured & Armoured, PVC Sheathed Cable  
CU/XLPE/IS OS/PVC or CU/XLPE/IS OS/PVC/SWA/PVC  
Model Code: XIOP or XIOPSP



Standard Reference	BS EN 50290, BS EN 50288-1 BS EN 50288-7
Flame Retardant Ref.	IEC 60332-1, IEC 60332-3

Application :	This cable is used for the transmission of analogue and digital signals in machineries with measuring instruments and control systems.
Construction :	Plain annealed copper wire, XLPE insulated, twisted pair or triad, individual and overall aluminium/polyester tape with tinned copper drain wire screened, unarmoured or galvanized steel wire armoured, PVC bedding and sheathed cable
Insulation Colour :	Pair: Black, White with numbering Triple: Red, Black, White with numbering
Sheath Colour :	Black (Other colour upon request)
Operating Temperature :	90°C

Conductor			Insulation Thickness (mm)	Unarmoured			Armoured		
Nominal Area (mm <sup>2</sup> )	No. of Pair/Triple (no.)	Stranded Dia. (mm)		Part No.	Approx. Overall Dia. (mm)	Approx. Weight (kg/km)	Part No.	Approx. Overall Dia. (mm)	Approx. Weight (kg/km)
0.5	0.9	0.6	2P		11.0	118		16.2	393
			4P		13.0	181		18.0	524
			6P		15.5	239		21.0	754
			8P		17.0	305		23.0	875
			10P		19.5	366		26.0	1020
			12P		20.0	420		27.5	1101
			16P		22.2	545		29.0	1493
			20P		25.0	676		32.0	1746
			24P		28.0	804		35.0	2017
			36P		32.5	1133		40.5	2813
			50P		38.5	1545		47.0	3542
			2T		12.2	149		17.5	462
			4T		14.2	249		19.2	609
			6T		16.8	298		22.5	867
			12T		22.6	545		29.5	1495
			16T		25.2	709		32.0	1780
			36T		36.6	1481		45.0	3384
			0.75	1.11	0.6	2P		12.0	133
4P		13.5				225		18.5	577
6P		16.2				312		22.0	826
8P		18.5				362		24.5	984
10P		21.0				446		27.6	1332
12P		21.5				504		28.5	1412
16P		24.0				654		31.0	1668
20P		27.0				813		35.0	1952
24P		30.2				968		37.4	2272
36P		34.8				1388		43.2	3225
50P		41.5				1895		51.0	4550
2T		13.2				174		18.2	507
4T		15.5				300		21.4	811
6T		18.2				371		24.5	1003
12T		24.2				670		31.0	1676
16T		27.2				873		34.5	2017
36T		39.0				1858		48.5	3929

# Instrumentation Cables



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www.keystone-cable.com

500V Individual & Collective Screen  
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CU/XLPE/IS OS/PVC or CU/XLPE/IS OS/PVC/SWA/PVC  
Model Code: XIOP or XIOPSP

Conductor			Insulation	Unarmoured			Armoured		
Nominal Area	No. of Pair/ Triple	Stranded Dia.	Thickness	Part No.	Approx. Overall Dia.	Approx. Weight	Part No.	Approx. Overall Dia.	Approx. Weight
(mm <sup>2</sup> )	(no.)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
1.0	2P	1.29	0.6		12.5	148		17.8	477
	4P				14.5	253		19.5	621
	6P				17.2	324		23.0	905
	8P				19.5	415		25.5	1078
	10P				22.5	510		29.2	1439
	12P				23.0	590		30.0	1560
	16P				25.5	767		32.5	1860
	20P				28.8	944		36.6	2198
	24P				32.5	1126		40.5	2824
	36P				37.5	1622		46.0	3581
	50P				44.5	2217		54.5	5028
	2T				14.0	196		19.0	544
	4T				16.2	341		22.2	879
	6T				19.2	431		25.2	1089
	12T				26.0	799		33.0	1885
	16T				29.0	1039		36.5	2287
36T		42.2	2196		52.0	4856			
1.5	2P	1.59	0.6		14.0	203		19.5	657
	4P				16.0	355		23.0	882
	6P				19.2	452		25.4	1094
	8P				21.5	583		28.0	1306
	10P				24.5	727		31.5	1755
	12P				25.5	829		32.5	1895
	16P				28.5	1083		36.0	2275
	20P				32.0	1336		42.2	3020
	24P				36.0	1611		44.2	3468
	36P				41.5	2327		51.2	4917
	50P				49.5	3185		59.5	6335
	2T				15.2	256		21.5	769
	4T				18.0	452		24.0	1045
	6T				21.5	593		27.5	1312
	12T				29.0	1114		36.5	2330
	16T				32.5	1455		40.5	3131
36T		47.2	3131		57.0	6130			
2.5	2P	2.01	0.7		16.0	254		22.2	793
	4P				18.8	443		25.0	1076
	6P				22.5	586		29.5	1533
	8P				25.5	768		32.5	1857
	10P				29.2	948		36.5	2204
	12P				30.5	1085		38.5	2649
	16P				34.0	1429		42.0	3205
	20P				38.5	1760		47.0	3758
	24P				42.8	2117		52.4	4841
	36P				49.8	3052		60.0	6239
	50P				59.2	4226		70.0	8053
	2T				18.0	332		24.0	926
	4T				21.2	585		27.5	1296
	6T				25.5	793		32.5	1862
	12T				34.2	1500		42.5	3278
	16T				38.5	1955		47.5	3955
36T		56.5	4230		67.0	7860			

Note : For technical specification, please refer to Table 9 to 13 (Page 69)

**Table 9 : Electrical Characteristics for Instrumentation Cables**

Material	PVC	PE	XLPE	XLEVA	V-90
Max. Conductor Operating Temperature (°C)	70	70	90	105	90
Min. Ambient Temperature (°C)	-15	-15	-15	-15	-15
Max. Working Voltage (r.m.s)	300/500V	300/500V	300/500V	300/500V	300/500V
Test Voltage (1 minute)	2000 V R.M.S between conductors and screen/armour				
Min. Insulation Resistance (mΩ/km)	10	1000	1000	10	10

**Table 10 : Conductor Resistance @ 20 °C**

Conductor			Plain		Tinned	
Size mm <sup>2</sup>	Class	Stranding no./mm	Single/Multi-Core	Multi-Pair/Triple	Single/Multi-Core	Multi-Pair/Triple
0.5	1	1/0.80	36.0	36.7	36.7	37.1
	2	7/0.30	36.0	36.7	36.7	37.1
	5	16/0.20	39.0	39.7	40.1	40.9
0.75	1	1/0.97	24.5	25.0	24.8	25.3
	2	7/0.37	24.5	25.0	24.8	25.3
	5	24/0.20	26.0	26.5	26.7	27.2
1.0	1	1/1.13	18.1	18.4	18.2	18.6
	2	7/0.43	18.1	18.4	18.2	18.6
	5	32/0.20	19.5	19.9	20.0	20.4
1.5	1	1/1.38	12.1	12.3	12.2	12.4
	2	7/0.53	12.1	12.3	12.2	12.4
	5	30/0.25	13.3	13.6	13.7	14.0
2.5	1	1/1.78	7.41	7.6	7.56	7.71
	2	7/0.67	7.41	7.6	7.56	7.71
	5	50/0.25	8.0	8.1	8.212	8.37

**Table 11 : Maximum Inductance to Resistance Ratio (L/R)**

Conductor	
Size mm <sup>2</sup>	L/R Ratio (for adjacent cores) μH/Ω
0.50	25
0.75	25
1.0	25
1.5	40
2.5	60

**Table 12 : Maximum Mutual Capacitance Values**

Conductor Size mm <sup>2</sup>	Type of Material	Requirement nF/km
0.5	PE XLPE XLEVA	150
0.75		
1.0		
1.5		
2.5	PVC	250

**Table 13 : Minimum Bending Radius**

Cable Type	Unarmoured	Armoured
Collective Screen (OS)	8D	10D
Individual and Overall Screen (ISOS)	8D	10D