

Instrumentation and connection cables

ULInstrumen® IN-XOSP

CU / XLPE / OS / PVC / SWA / PVC (PAIRS & TRIADS)

XLPE Insulated, Overall Aluminium Foil Screened, PVC Bedded, Galvanised Steel Wire Armoured, PVC Sheathed Cable, 300 / 500V, BS EN50288-7



CONSTRUCTION

Conductor:	Plain Annealed Copper, Class 2 Stranded Circular
Insulation:	Cross-linked Polyethylene (XLPE) Compound
Insulation Colour:	Pair/s - Black/White with Black numberings Triad/s - Red/Black/White with Black numberings
Cores Twisted:	Cores twisted to form a pair, triad or quad
Lay Up:	Multi-pairs, triads or quads are assembled together in concentric layers to form the cable core
Wrap Film:	Polyester Binder Tape
Overall Screen:	Aluminium/Polyester Tape, with a Tinned Copper Drain Wire 0.5mm ² (7/0.3mm) (OS)
Bedding:	Polyvinyl Chloride (PVC) Compound Type ST2
Bedding Colour:	Black
Armour:	Galvanized Steel Wire Armoured (SWA)
Outer Sheath:	Flame Retardancy Polyvinyl Chloride (PVC) Compound Type ST2 FR
Outer Sheath Colour:	Black or Blue

ELECTRICAL CHARACTERISTICS

Operating Voltage, U _o /U:	300/500V
Operating Temperature:	-15°C to 90°C (XLPE Insulated)
Final Short Circuit Temperature:	250°C (XLPE Insulated)
Test Voltage:	2kV for 1 minute

REFERENCE STANDARDS

Design Specification:	BS EN50288-7
Conductor:	IEC60228, BS EN60228
Flame Retardancy:	IEC60332-3

INSTALLATION REFERENCE

Min. Bending Radius (mm):	10 x cable overall diameter
Max. Pulling Tension (N/mm ²):	70

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Electrical Properties of Instrumentation Cables

Electrical Properties at 20°C

	Unit of Measure	Conductor Size (Pair Cables)				
		0.5mm ²	0.75mm ²	1.0mm ²	1.5mm ²	2.5mm ²
Operating Temperature (Max):						
PVC Insulation	°C			70		
XLPE & LSZH Insulation	°C			90		
Rated Voltage U ₀ /U _M						
	V			300/500		
Test Voltage:						
Core To Core for 1 Minute	V			2000		
Core To Screen for 1 Minute	V			1000		
Conductor Resistance (Max):						
	Ω/km	36.7	25.0	18.5	12.3	7.6
Insulation Resistance (Min):						
Individual Conductor (between each conductor and remaining bunched conductors/screened and/or armour) (PVC Insulated)	MΩ • km			10		
Individual Screens (between screens) (PVC Insulated)	MΩ • km			1		
Individual Conductor (between each conductor and remaining bunched conductors/screened and/or armour) (XLPE & LSZH Insulated)	MΩ • km			1000		
Individual Screens (between screens) (XLPE & LSZH Insulated)	MΩ • km			1		
Mutual Capacitance at 1KHz (Max):						
PVC Insulation	nf/km			250		
XLPE & LSZH Insulation	nf/km			150		
Capacitance Unbalanced at 1KHz (Max)						
	pf/500m			500		
Maximum Inductance/Resistance Ratio (L/R)						
	μH/Ω	25	25	25	40	60

Note 1: Cables with Maximum Operating Temperature of 105°C are available upon request.

Note 2: For 600/1000V cables, the Test Voltage will be 3.5kV/5min.

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	No. of Pairs	Nominal Conductor Area (mm ²)	No. and Diameter of Wires (no./mm)	Radial Thickness of Insulation (mm)	Diameter Under Armour (mm)	Armour Wire Diameter (mm)	IN-XOSP		IN-POSP	
							Cable Overall Diameter (mm)	Approx. Weight (kg/km)	Cable Overall Diameter (mm)	Approx. Weight (kg/km)
SINGLE & MULTI-PAIRS	1P	0.5	7 / 0.3	0.6	7.2	0.9	11.9	264	11.9	269
	2P (Quad)		7 / 0.3	0.6	8.1	0.9	12.7	308	12.7	318
	2P		7 / 0.3	0.6	10.8	0.9	15.7	398	15.7	408
	3P		7 / 0.3	0.6	11.4	0.9	16.3	434	16.3	449
	4P		7 / 0.3	0.6	12.5	0.9	17.4	487	17.4	507
	5P		7 / 0.3	0.6	13.6	0.9	18.5	541	18.5	565
	6P		7 / 0.3	0.6	14.8	1.25	20.6	714	20.6	743
	8P		7 / 0.3	0.6	16.6	1.25	22.4	814	22.4	854
	10P		7 / 0.3	0.6	18.8	1.25	24.6	940	24.6	989
	12P		7 / 0.3	0.6	19.4	1.25	25.4	1008	25.4	1068
	16P		7 / 0.3	0.6	21.6	1.25	27.6	1175	27.6	1252
	20P		7 / 0.3	0.6	24.1	1.25	30.3	1357	30.3	1455
	24P		7 / 0.3	0.6	26.8	1.25	33.0	1539	33.0	1657
	36P		7 / 0.3	0.6	30.8	1.25	37.2	1939	37.2	2116
	SINGLE & MULTI-PAIRS		1P	0.75	7 / 0.37	0.6	7.6	0.9	12.3	280
2P (Quad)		7 / 0.37	0.6		8.6	0.9	13.2	336	13.2	346
2P		7 / 0.37	0.6		11.5	0.9	16.4	433	16.4	444
3P		7 / 0.37	0.6		12.2	0.9	17.1	477	17.1	493
4P		7 / 0.37	0.6		13.4	0.9	18.3	537	18.3	559
5P		7 / 0.37	0.6		14.6	1.25	20.4	711	20.4	738
6P		7 / 0.37	0.6		15.9	1.25	21.7	782	21.7	815
8P		7 / 0.37	0.6		17.9	1.25	23.7	907	23.7	950
10P		7 / 0.37	0.6		20.3	1.25	26.3	1070	26.3	1124
12P		7 / 0.37	0.6		21.0	1.25	27.0	1139	27.0	1204
16P		7 / 0.37	0.6		23.3	1.25	21.3	1327	29.3	1414
20P		7 / 0.37	0.6		26.1	1.25	32.3	1549	32.3	1657
24P		7 / 0.37	0.6		29.0	1.25	35.4	1775	35.4	1905
36P		7 / 0.37	0.6		33.4	1.6	40.7	2499	40.7	2694
SINGLE & MULTI-PAIRS		1P	1.0		7 / 0.43	0.6	8.0	0.9	12.7	296
	2P (Quad)	7 / 0.43		0.6	9.1	0.9	13.9	365	13.9	376
	2P	7 / 0.43		0.6	12.2	0.9	17.1	464	17.1	475
	3P	7 / 0.43		0.6	12.9	0.9	17.8	518	17.8	536
	4P	7 / 0.43		0.6	14.1	1.25	19.9	693	19.9	717
	5P	7 / 0.43		0.6	15.5	1.25	21.3	771	21.3	801
	6P	7 / 0.43		0.6	16.9	1.25	22.7	859	22.7	894
	8P	7 / 0.43		0.6	19.0	1.25	25.0	1010	25.0	1056
	10P	7 / 0.43		0.6	21.6	1.25	27.6	1174	27.6	1233
	12P	7 / 0.43		0.6	22.3	1.25	28.3	1265	28.3	1334
	16P	7 / 0.43		0.6	24.8	1.25	31.0	1495	31.0	1588
	20P	7 / 0.43		0.6	27.8	1.25	34.0	1727	34.0	1844
	24P	7 / 0.43		0.6	30.9	1.25	37.3	1990	37.3	2129
	36P	7 / 0.43		0.6	35.6	1.6	42.9	2803	42.9	3013

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SINGLE & MULTI-PAIRS	1P	1.5	7 / 0.53	0.6	8.6	0.9	13.3	329	13.3	336
	2P (Quad)		7 / 0.53	0.6	9.8	0.9	14.6	411	14.6	424
	2P		7 / 0.53	0.6	13.2	0.9	18.1	519	18.1	532
	3P		7 / 0.53	0.6	14.1	1.25	19.9	696	19.9	716
	4P		7 / 0.53	0.6	15.4	1.25	21.2	785	21.2	811
	5P		7 / 0.53	0.6	16.9	1.25	22.7	885	22.7	918
	6P		7 / 0.53	0.6	18.5	1.25	24.5	1000	24.5	1039
	8P		7 / 0.53	0.6	20.8	1.25	26.8	1173	26.8	1225
	10P		7 / 0.53	0.6	23.7	1.25	29.9	1380	29.9	1445
	12P		7 / 0.53	0.6	24.5	1.25	30.7	1494	30.7	1572
	16P		7 / 0.53	0.6	27.3	1.25	33.5	1769	33.5	1873
	20P		7 / 0.53	0.6	30.6	1.25	37.0	2209	37.0	2079
	24P		7 / 0.53	0.6	34.1	1.6	41.4	2637	41.4	2793
	36P		7 / 0.53	0.6	39.8	1.6	47.3	3475	47.3	3709

SINGLE & MULTI-PAIRS	1P	2.5	7 / 0.67	0.7	9.8	0.9	14.7	394	14.7	403
	2P (Quad)		7 / 0.67	0.7	11.3	0.9	16.1	499	16.1	516
	2P		7 / 0.67	0.7	15.4	1.25	21.2	746	21.2	764
	3P		7 / 0.67	0.7	16.5	1.25	22.3	853	22.3	881
	4P		7 / 0.67	0.7	18.1	1.25	24.1	990	24.1	1026
	5P		7 / 0.67	0.7	19.9	1.25	25.9	1127	25.9	1173
	6P		7 / 0.67	0.7	21.8	1.25	27.8	1256	27.8	1311
	8P		7 / 0.67	0.7	24.6	1.25	30.8	1506	30.8	1579
	10P		7 / 0.67	0.7	28.1	1.25	34.5	1789	34.5	1880
	12P		7 / 0.67	0.7	29.1	1.25	35.5	1960	35.5	2070
	16P		7 / 0.67	0.7	32.5	1.6	39.8	2587	39.8	2733
	20P		7 / 0.67	0.7	36.9	1.6	44.4	3108	44.4	3209
	24P		7 / 0.67	0.7	41.2	1.6	48.9	3586	48.9	3805
	36P		7 / 0.67	0.7	47.5	2.0	56.2	5066	56.2	5394

* Other pairs, triads and quads configurations are available upon request.

* Class 5 conductors are available upon request.

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	No. of Triads	Nominal Conductor Area (mm ²)	No. and Diameter of Wires (no./mm)	Radial Thickness of Insulation (mm)	IN-XOSP		IN-POSP	
					Cable Overall Diameter (mm)	Approximate Weight (kg/km)	Cable Overall Diameter (mm)	Approximate Weight (kg/km)
SINGLE & MULTI-TRIADS	1T	0.5	7 / 0.3	0.6	12.2	282	12.2	290
	6T		7 / 0.3	0.6	22.3	830	22.3	877
	16T		7 / 0.3	0.6	30.4	1427	30.4	1554
	24T		7 / 0.3	0.6	36.5	1899	36.5	2090
	1T	0.75	7 / 0.37	0.6	12.7	302	12.7	310
	6T		7 / 0.37	0.6	23.5	926	23.5	979
	16T		7 / 0.37	0.6	32.4	1642	32.4	1781
	24T		7 / 0.37	0.6	39.8	2441	39.8	2650
	1T	1.0	7 / 0.43	0.6	13.1	325	13.1	334
	6T		7 / 0.43	0.6	24.8	1035	24.8	1091
	16T		7 / 0.43	0.6	34.1	1853	34.1	2002
	24T		7 / 0.43	0.6	42.2	2765	42.2	2990
	1T	1.5	7 / 0.53	0.6	13.9	367	13.9	377
	6T		7 / 0.53	0.6	26.7	1210	26.7	1273
	16T		7 / 0.53	0.6	37.2	2250	37.2	2417
	24T		7 / 0.53	0.6	46.4	3415	46.4	3666
	1T	2.5	7 / 0.67	0.7	15.3	443	15.3	457
	6T		7 / 0.67	0.7	30.6	1563	30.6	1651
	16T		7 / 0.67	0.7	44.6	3357	44.6	3589
	24T		7 / 0.67	0.7	55.2	5007	55.2	5356

* Other pairs, triads and quads configurations are available upon request.

* Class 5 conductors are available upon request.