ZARSIM Instrumentation Cable

acc. to BS EN 50288-7

Halogen-free, Flame Retardant Types / 300 V and 500 V

Single, multipair and multitriple, individual and/or collective screen, LSZH sheath

- unarmoured
- armoured

Technical Data

Type of insulation/sheath	**PE/LSZH**	**XLPE/LSZH**
Types of cabling elements	Pair, Triple, PiMF, TiMF	
No. of cabling elements	1, 2, 4, 5, 6, 8, 10, 12, 16, 20, 24	
Conductor sizes	0.5 mm² , 0.75 mm² , 1.0 mm² , 1.3 mm² , 1.5 mm²	
1. Unarmoured types	RE-2Y(St)H	RE-2X(St)H
■ Laying	Recommended for indoor and outdoor installation, on racks, trays, in conduits, in dry and wet locations	
■ Bending radius	7.5 x cable∅	
2. Armoured types	RE-2Y(St)HSWAH [1]	RE-2X(St)HSWAH [1]
■ Laying	Recommended for indoor and outdoor installation, on racks, trays, in conduits, in dry and wet locations, for direct burial	
■ Bending radius	10 x cable ∅	
Temperature range		
■ During operation	-30°C up to 70°C	-30°C up to 90°C
■ During installation	-5°C up to 50°C	-5°C up to 50°C
Reaction to fire		
■ **Flame propagation**		
a) Test on single cable	IEC 60332-1	
b) Test on bunched cables	IEC 60332-3 part 24 (Cat. C)	
■ **Test on gases evolved during combustion:**		
a) Amount of halogen acid gas	IEC 60754-1 (0%)	
b) Degree of acidity of gases	IEC 60754-2 (pH > 4.3, c < 10µS/mm)	
■ **Measurement of smoke density**	IEC 61034-2 (L.T. [2] > 60%)	
Oil resistance (Optional)	ICEA S-82-552	
Application	For transmission of analogue and digital signals in instrument and control systems; allowed for use in zone 1 and zone 2, group II, classified areas (IEC 60079-14), not allowed for direct connection to low impedance sources, e.g. public mains electricity supply. Recommended for use as fire protection measure for people and important material assets.	

1) Also with SWB or GSTA
2) L.T. = Light Transmission

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Construction

Product Type	Unarmoured Types				Armoured Types
Conductor	Plain annealed copper; 7 stranded acc. to HD 383, Class 2				
■ **Cross-section mm²**	0.5	0.75	1.0	1.3	1.5
■ **Conductor design mm**	7 x 0.30	7 x 0.37	7 x 0.43	7 x 0.49	7 x 0.53
Insulation materials	■ Polyethylene PE or ■ Cross linked Polyethylene XLPE				
Cabling element [1)] ■ **Without ind. screen** ■ **With ind. screen**	Pair, Triple, Quad PiMF, TiMF, QiMF				
Individual screen	Aluminium/Plastic tape over solid tinned copper drain wire, 0.6 mm plastic tape under and above screen				
Wrapping	At least one plastic tape above cable core				
Overall screen	Aluminium/Plastic tape over tinned copper drain wire 0.5 mm²/ 7 x 0.3 mm				
Inner sheath	—				LSZH , black
Armouring	—				Galvanized steel wire; wire ∅ depending on cable -∅ under armouring, at least 0.9 mm
Outer sheath	LSZH				
Colour	Black or blue for intrinsically safe systems				
Marking	ZARSIM Instrumentation Cable . Standard . Rated voltage . LSZH . Length marking				

1) Colour code of cabling elements: see Appendix I

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Electrical Data at 20°C 300 V

Properties	Character	Unit	Values				
Conductor sizes	nom.	mm²	0.5	0.75	1.0	1.3	1.5
Conductor resistance	max.	Ω/km	36.7	25.0	18.5	14.2	12.3
Insulation resistance							
■ **PE / XLPE insulation**	min.	MΩxkm			5000		
L/R Ratio	max.	µH/Ω		25		40	
Inductance	max.	mH/km			1		
Mutual capacitance							
■ **PVC / PVCw insulation**							
Pair, Triple [1), 2)]	max.	nF/km		75		85	
PiMF, TiMF	max.	nF/km		115		115	
Capacitance unbalance							
■ **Pair**	max.	pF/500m			500		
Test voltage							
■ **Core/core** (U_{rms})		V			1500		
■ **Core/screen** (U_{rms})		V			500		
Operating voltage (U_{rms})	max.	V			300		

1) Values for cables with 1 element correspond to those for PiMF and TiMF resp.
2) Values for cables with 2 up to 4 elements + 20%

Halogen-free, Flame Retardant Types / 500 V

Single, multipair and multitriple, individual and/or collective screen, LSZH sheath

- unarmoured
- armoured

Electrical Data at 20°C 500 V									
Properties	**Character**	**Unit**	**Values**						
Conductor sizes	nom.	mm²	0.5	0.75	1.0	1.3	1.5		
Conductor resistance	max.	Ω/km	36.7	25.0	18.5	14.2	12.3		
Insulation resistance ■ **PE / XLPE insulation**	min.	MΩxkm			5000				
L/R Ratio	max.	µH/Ω		25		40			
Inductance	max.	mH/km			1				
Mutual capacitance ■ **PVC / PVCw insulation**									
Pair, Triple [1), 2)]	max.	nF/km		65		75			
PiMF, TiMF	max.	nF/km		100		100			
Capacitance unbalance ■ **Pair**	max.	pF/500m			500				
Test voltage									
■ **Core/core** (U_{rms})		V			2000				
■ **Core/screen** (U_{rms})		V			2000				
Operating voltage (U_{rms})	max.	V			500				

1) Values for cables with 1 element correspond to those for PiMF and TiMF resp.
2) Values for cables with 2 up to 4 elements + 20%

Halogen-free, Flame Retardant Types / 90°C / 300 V

Single, multipair, XLPE insulation, individval & collective screen, LSZH sheath

Unarmoured RE-2X(St)H			Armoured RE-2X(St)HSWAH		
Cross section	Outer diameter	Weight	Diameter under armour	Outer diameter	Weight
(mm²)	(mm)	(kg/km)	(mm²)	(mm)	(kg/km)
0.5 mm²/7 , RE-2X(St)H			**0.5 mm²/7 , RE-2X(St)HSWAH**		
1 x 2 x 0.5	6.3	38	6.3	9.6	177
2 x 2 x 0.5	8.3	63	8.3	12.2	279
4 x 2 x 0.5	9.0	94	9.0	13.6	336
5 x 2 x 0.5	9.8	112	9.8	14.4	375
12 x 2 x 0.5	13.7	226	13.7	18.5	592
24 x 2 x 0.5	18.5	417	18.5	24.4	1,058
0.75 mm²/7 , RE-2X(St)H			**0.75 mm²/7 , RE-2X(St)HSWAH**		
1 x 2 x 0.75	6.7	48	6.7	10.2	199
2 x 2 x 0.75	9.2	126	9.2	13.3	307
4 x 2 x 0.75	10.0	118	10.0	14.6	382
5 x 2 x 0.75	11.1	149	11.1	15.9	435
12 x 2 x 0.75	15.3	298	15.3	21.0	825
24 x 2 x 0.75	21.0	559	21.0	27.1	1,291
1 mm²/7 , RE-2X(St)H			**1 mm²/7 , RE-2X(St)HSWAH**		
1 x 2 x 1	7.2	58	7.2	10.7	219
2 x 2 x 1	9.9	107	9.9	14.0	357
4 x 2 x 1	11.1	150	11.1	15.9	449
5 x 2 x 1	12.1	182	12.1	16.9	508
12 x 2 x 1	17.0	382	17.0	22.9	972
24 x 2 x 1	23.3	719	23.3	29.4	1,520
1.3 mm²/7 , RE-2X(St)H			**1.3 mm²/7 , RE-2X(St)HSWAH**		
1 x 2 x 1.3	7.7	65	7.7	11.2	241
2 x 2 x 1.3	11.1	128	11.1	15.0	382
4 x 2 x 1.3	12.2	184	12.2	17.0	510
5 x 2 x 1.3	13.6	226	13.6	18.4	595
12 x 2 x 1.3	19.1	486	19.1	25.0	1,110
24 x 2 x 1.3	26.2	918	26.2	33.2	1,960
1.5 mm²/7 , RE-2X(St)H			**1.5 mm²/7 , RE-2X(St)HSWAH**		
1 x 2 x 1.5	8.2	68	8.2	11.7	259
2 x 2 x 1.5	11.5	134	11.5	15.8	448
4 x 2 x 1.5	12.7	208	12.7	17.5	544
5 x 2 x 1.5	14.2	259	14.2	19.2	644
12 x 2 x 1.5	19.9	545	19.9	25.8	1,227
24 x 2 x 1.5	27.6	1,047	27.6	34.8	2,247

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Unarmoured RE-2X(St)H, PiMF			Armoured RE-2X(St)HSWAH, PiMF		
Cross section	Outer diameter	Weight	Diameter under armour	Outer diameter	Weight
(mm²)	(mm)	(kg/km)	(mm²)	(mm)	(kg/km)
0.5 mm²/7 , RE-2X(St)H, PiMF			**0.5 mm²/7 , RE-2X(St)HSWAH, PiMF**		
2 X 2 X 0.5	9.4	89	9.4	13.5	311
4 X 2 X 0.5	10.2	115	10.2	14.8	373
5 X 2 X 0.5	11.4	145	11.4	16.2	451
12 X 2 X 0.5	15.8	286	15.8	21.5	801
24 X 2 X 0.5	21.8	551	21.8	27.9	1,264
0.75 mm²/7 , RE-2X(St)H, PiMF			**0.75 mm²/7 , RE-2X(St)HSWAH, PiMF**		
2 X 2 X 0.75	10.2	95	10.2	14.3	341
4 X 2 X 0.75	11.4	145	11.4	16.2	451
5 X 2 X 0.75	12.5	176	12.5	17.3	511
12 X 2 X 0.75	17.6	366	17.6	23.5	970
24 X 2 X 0.75	24.4	704	24.4	30.7	1,531
1 mm²/7 , RE-2X(St)H, PiMF			**1 mm²/7 , RE-2X(St)HSWAH, PiMF**		
2 X 2 X 1	11.1	112	11.1	15.0	389
4 X 2 X 1	12.3	174	12.3	17.1	501
5 X 2 X 1	13.7	220	13.7	18.5	583
12 X 2 X 1	19.3	454	19.3	25.2	1,081
24 X 2 X 1	26.5	871	26.5	33.5	1,902
1.3 mm²/7 , RE-2X(St)H, PiMF			**1.3 mm²/7 , RE-2X(St)HSWAH, PiMF**		
2 X 2 X 1.3	12.1	153	12.1	16.9	482
4 X 2 X 1.3	13.7	208	13.7	18.5	576
5 X 2 X 1.3	15.0	263	15.0	20.0	664
12 X 2 X 1.3	21.2	552	21.2	27.3	1,286
24 X 2 X 1.3	29.3	1,067	29.3	36.5	2,353
1.5 mm²/7 , RE-2X(St)H, PiMF			**1.5 mm²/7 , RE-2X(St)HSWAH, PiMF**		
2 X 2 X 1.5	12.5	164	12.5	17.3	474
4 X 2 X 1.5	14.2	235	14.2	19.2	615
5 X 2 X 1.5	15.5	289	15.5	21.2	818
12 X 2 X 1.5	22.2	623	22.2	28.3	1,385
24 X 2 X 1.5	30.7	1,219	30.7	38.1	2,541