

Power and control cables for extreme application in line with VDE 0250 part. 814

Cable type

PANZERFLEX-L VS 0,6/1 kV
(N)SHTÖU-J/ -O; (N)SHTÖU -JZ / OZ tough rubber sheathed cable

Main application

Extra heavy duty power and control cables. For application with high mechanical stresses (i.e.: tensile and torsion simultaneously applied). These cables have a tensile load of minimum 2000 N (standard for control cables) and are indicated to be used on equipment such as container crane spreader reels, rack and pinion elevators using shave guided cables, pendant station, all tenders etc.

Construction

Fibre optics:	Tinned copper conductor, extra flexible cl. 6 IEC 60228 up to 6 mm ² , flexible cl. 5 IEC 60228 from 10 mm ² Both the class of conductors are specially designed for mobile application
Insulation:	HEPR compound better than 3GI3 Special compound with improved electrical and mechanical characteristics
Cores identification:	Colours according to according to DIN VDE 0293 part 308 / HD 308 S2 Standard colours: - 4 cores: green/yellow, brown, black, grey - 5 cores: green/yellow, blue, brown, black, grey - ≥ 6 cores: black with printed numbers, green/yellow in the outer layer
Central strainer (if any):	Made of aramidic yarns To be used as support element
Laying-up:	Short lay length for better flexibility ≤ 6,5 times the laying-up cores diameter in maximum 3 layers (for control cables)
Separation (if any):	Tape(s)
Inner sheath:	Polychloroprene rubber based compound Better than 5GM2
Antitwisting protection:	Textile braid of synthetic yarns Firmly vulcanized bonded between inner and outer sheath
Outer sheath:	Yellow polychloroprene rubber compound Oil and chemical resistant, 5GM3 abrasion and notch resistant
Marking:	PALAZZO - PANZERFLEX-L VS 0,6/1 kV <i>n. of cores x cross section</i>

Parameters

Electrical	Rated voltage	U ₀ /U = 0,6/1 kV
	Maximum permissible operating voltage in AC systems	U _m = 1,2 kV
	AC test voltage over 5 minutes	3,5 kV
	Current Carrying Capacity	According to DIN VDE 0298 part 4
Thermal	Fully flexible operation	- 30 °C
	Fixed installation	- 40 °C
	Maximum permissible operating temperature of the conductor	90 °C
	Short-circuit temperature of the conductor	250 °C
Mechanical	Tensile load	Up to 20 N/mm ² with a minimum of 2000 N
	Minimum bending radii	According to DIN VDE 0298 part 3
	Reeling operation	No restriction. Consult the manufacturer if speed exceeds 180 m/min
Chemical	Resistance to oil	According to VDE / IEC standard
	Weather resistance	Unrestricted use outdoor and indoor, UV resistant, moisture resistant.

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Table 1: PANZERFLEX-L VS 0,6/1 kV (N)SHTÖU -J/ -O; (N)SHTÖU -JZ / OZ

N. of cores and nominal section (n·mm ²)	Conductor		Overall diameter		Net weight approx. kg/km	Maximum permissible tensile force N	Current carrying capacity at 30 °C*					Short circuit current 80 ° to 200 °C kA·1 sec.
	D.C. resist. at 20 °C Ohm/km	nom. diam. mm	min. mm	max. mm			Laid straight A	Suspended in free air A	Spiral or 1 layer A	2 layers A	3 layers A	
7G1,5	13,7	1,6	16,9	19,0	460	2.000	23	24	18	14	11	0,19
12G1,5	13,7	1,6	23,0	25,1	805	2.000	23	24	18	14	11	0,19
18G1,5	13,7	1,6	23,1	25,2	855	2.000	23	24	18	14	11	0,19
24G1,5	13,7	1,6	26,5	28,6	1.110	2.000	23	24	18	14	11	0,19
30G1,5	13,7	1,6	29,6	32,8	1.420	2.000	23	24	18	14	11	0,19
36G1,5	13,7	1,6	29,8	32,8	1.460	2.000	23	24	18	14	11	0,19
7G2,5	8,21	2,2	18,6	20,7	590	2.000	30	32	24	18	15	0,32
12G2,5	8,21	2,2	25,5	27,6	1.050	2.000	30	32	24	18	15	0,32
18G2,5	8,21	2,2	25,7	27,8	1.130	2.000	30	32	24	18	15	0,32
24G2,5	8,21	2,2	29,8	33,0	1.560	2.000	30	32	24	18	15	0,32
30G2,5	8,21	2,2	34,0	37,2	2.000	2.000	30	32	24	18	15	0,32
36G2,5	8,21	2,2	34,2	37,4	2.070	2.000	30	32	24	18	15	0,32
7G4	5,09	2,8	21,4	23,5	820	2.000	41	43	33	25	20	0,51
12G4	5,09	2,8	29,8	33,0	1.550	2.000	41	43	33	25	20	0,51
18G4	5,09	2,8	30,0	33,2	1.680	2.000	41	43	33	25	20	0,51
4G10	1,95	4,3	21,7	23,8	905	2.000	74	78	59	45	36	1,3
4G16	1,24	5,5	25,4	27,5	1.310	2.000	99	104	79	60	49	2,0
4G25	0,795	6,7	29,6	32,8	1.870	2.000	131	138	105	80	64	3,2
4G35	0,565	8,0	32,6	35,8	2.470	2.800	162	170	130	99	79	4,5
4G50	0,393	9,3	37,8	41,0	3.280	4.000	202	212	162	123	99	6,4
4G70	0,277	11,2	43,2	46,2	4.410	5.600	250	263	200	153	123	9,0
4G95	0,210	13,0	48,0	52,5	5.630	7.600	301	316	241	184	147	12,2

* Tabulated values are valid up to three loaded conductors with or without earth.

Derating factor shall be used for multicore cables depending on loaded conductors. See page 57.

Control cables for vertical application

Cable type

PANZERLITE 0,6/1 kV

Polyurethane double sheathed cables

Main application

Extra heavy duty control cables. For application with high mechanical stresses (i.e.: tensile and torsion simultaneously applied).

This cable has been developed and designed in order to meet special conditions of application, in particular where small dimensions and light weight are mandatory.

Among its main features we can define:

- . small dimension
- . lighter weight
- . excellent flexibility
- . high operating speed (up to 240m/1')
- . excellent mechanical performances

Construction

Conductor:	Plain copper conductor, extra flexible better than cl. 6 IEC 60228 Specially designed for mobile application
Insulation:	Thin thickness made of special tecnopolymer Special compound with improved electrical and mechanical characteristics
Cores identification:	White with printed numbers
Central strainer:	Made of aramidic yarns To be used as support element
Laying-up:	Short lay length for better flexibility In maximum 3 layers
Separation (if any):	Tape(s)
Inner sheath:	Made of special polyurethane A combination of high flexibility characteristics with improved abrasion and tear resistance characteristics
Antitwisting protection:	Textile braid of synthetic yarns Firmly bonded between inner and outer sheath
Outer sheath:	Made of Yellow special polyurethane A combination of high flexibility characteristics with improved abrasion and tear resistance characteristics
Marking:	PALAZZO - PANZERLITE 0,6/1 kV <i>n. of cores x cross section</i>

Parameters

Electrical	Rated voltage	U ₀ /U = 0,6/1 kV
	Maximum permissible operating voltage in AC systems	U _m = 1,2 kV
	AC test voltage over 5 minutes	2,5 kV
	Current Carrying Capacity	According to DIN VDE 0298 part 4
Thermal	Fully flexible operation	- 30 °C
	Fixed installation	- 40 °C
	Maximum permissible operating temperature of the conductor	90 °C
	Short-circuit temperature of the conductor	200 °C
Mechanical	Tensile load	from 2000 N to 4000 N
	Minimum bending radii	According to DIN VDE 0298 part 3
	Reeling operation	No restriction.
		Consult the manufacturer if speed exceeds 240 m/min
Chemical	Resistance to oil	According to VDE / IEC standard
	Weather resistance	Unrestricted use outdoor and indoor, UV resistant, moisture resistant.

Control cables for vertical application

Table 1: PANZERLITE 0,6/1 kV

N. of cores and nominal section (n·mm ²)	Conductor		Overall diameter		Net weight approx. kg/km	Maximum permissible tensile force N	Current carrying capacity at 30 °C*					Short circuit current 80 ° to 200 °C kA·1 sec.
	D.C. resist. at 20 °C Ohm/km	nom. diam. mm	min. mm	max. mm			Laid straight A	Suspended in free air A	Spiral or 1 layer A	2 layers A	3 layers A	
18x2,5	7,98	2,2	20,5	23,0	805	2.000	30	32	24	18	15	0,32
24x2,5	7,98	2,2	25,0	28,0	1.070	3.000	30	32	24	18	15	0,32
30x2,5	7,98	2,2	28,5	31,5	1.340	3.000	30	32	24	18	15	0,32
37x2,5	7,98	2,2	29,5	32,5	1.540	3.000	30	32	24	18	15	0,32
44x2,5	7,98	2,2	32,5	35,5	1.780	4.000	30	32	24	18	15	0,32
50x2,5	7,98	2,2	34,5	38,0	2.040	4.000	30	32	24	18	15	0,32
54x2,5	7,98	2,2	36,0	39,0	2.275	4.000	30	32	24	18	15	0,32

* Tabulated values are valid up to three loaded conductors with or without earth.

Derating factor shall be used for multicore cables depending on loaded conductors. See page 57.

Other sizes or configurations are available on specific request.