



PROTOLON (FL)
(N)TSFLCGEWOEU
Flat Medium Voltage Reeling Cable

ENERGY





Technical Data

	Type	PROTOLON (FL)		
	Type designation	(N)TSFLCGEWOEU		
	Approvals/ standards	DIN VDE 0250, Part 813		
	Application	Flexible H.V. flexible reeling cable, for high mechanical stresses, e.g. dynamic tensile loads, multiple changes of direction within one plane, running over rollers. Mainly for mobile equipment, e.g. container cranes, cranes, large mobile equipment and excavators.		
Electrical parameters	Rated voltage (U ₀ /U)	3,6/6	6/10	8,7/15
	Maximum permissible operating voltage in AC systems (U ₀ /U)	4,2/7,2	6,9/12	10,4/18
	Maximum permissible operating voltage in DC systems (U ₀ /U)	5,4/10,8	9/18	13,5/27
	AC test voltage	11,0	17,0	24,0
		according to DIN VDE 0250, Part 813		
	Current-carrying capacity	According to DIN VDE 0298, Part 4 Higher values are permissible in specific cases. Please consult the manufacturer.		
	Bus compatibility	A special cable design with fibre-optics can be found in the product range PROTOLON (FL) LWL		
Thermal parameters	Ambient temperature			
	- Fully flexible operation	-35°C to +80°C		
	- Fixed installation	-50°C to +80°C		
	Maximum permissible operating temperature of the conductor	90°C		
	Short-circuit temperature of the conductor	250°C		
Mechanical parameters	max. permissible tensile load	up to 15 N/mm ² (acc. to DIN VDE 0298 part 3)		
	Torsional stresses	n.a.		
	Minimum bending radii	According to DIN VDE 0298, Part 3 recommendation: applied cable OD = 1.5 x height of the flat cable		
	Minimum distance with S-type directional changes	20xD (cable diameter)		
	Travel speed			
	- Gantry (reeling operation)	120 m/min		
	Additional tests	Reversed bending test, reeling test		
Chemical parameters	Resistance to oil	DIN VDE 0473, Part 811-2-1 Para. 10		
	Weather resistance	Unrestricted use outdoors and indoors, resistant to ozone, UV and moisture		
	Water compatibility	According to HD 2216		



Design features

Type	PROTOLON (FL)
Conductor and earth conductor (refer also to DIN VDE 0295)	Electrolytic copper tinned, finely stranded, class F
Insulation (refer also to DIN VDE 0207, Part 20)	PROTOLON special compound based on high-quality EPR (at least 3GI3); improved mechanical and electrical characteristics
Field control	inner semiconductive layer of EPR, outer semiconductive layer of modified EPR, removable in warm condition
Core identification	natural coloured insulation with black semiconductive layer
Core arrangement	parallel core arrangement, Earth conductor splitted and concentric distributed around each core
Sheath system	- PROTOFIRM Special compound based on CR, quality at least 5GM5, colour: red
Marking	PROTOLON (FL) (N)TSFLCGEWÖU (number of cores)x(cross-section) (rated voltage) (year of manufacture) (serial number)

Selection and ordering data

Number of cores and nominal cross-section	Order No.	Conductor diameter (guidance value) [mm]	min. Dimensions (guidance value) [mm]	max. Dimensions (guidance value) [mm]	Approx. net weight for 1000 m [kg/km]	Maximum permissible tensile force (dyn. value) [N]
3,6/6kV (N)TSFLCGEWOEU						
3x35+3x25/3E	5DK ...	8,2	24,7x65,8	27,7x69,8	3120	1575
3x50+3x25/E	5DK ...	9,7	27,2x71,7	30,2x75,7	3840	2250
3x70+3x35/3E	5DK ...	11,4	28,9x76,8	31,9x80,8	4730	3150
3x95+3x50/3E	5DK ...	13,1	30,9x82,8	33,9x86,8	5760	4275
3x120+3x70/3E	5DK ...	15,0	34,3x90,5	37,3x95,5	7250	5400
6/10kV (N)TSFLCGEWOEU						
3x35+3x25/3E	5DK ...	8,2	25,5x68,2	28,5x72,2	3250	1575
3x50+3x25/E	5DK ...	9,7	28,0x74,1	31,0x78,1	3980	2250
3x70+3x35/3E	5DK ...	11,4	29,7x79,2	32,7x83,2	4870	3150
3x95+3x50/3E	5DK ...	13,1	31,7x84,7	34,7x89,7	5920	4275
3x120+3x70/3E	5DK ...	15,0	35,1x92,9	38,1x97,9	7420	5400
8,7/15kV (N)TSFLCGEWOEU						
3x35+3x25/3E	5DK ...	8,2	28,7x76,2	31,7x80,2	3820	1575
3x50+3x25/E	5DK ...	9,7	30,2x80,7	33,2x84,7	4440	2250
3x70+3x35/3E	5DK ...	11,4	33,3x87,5	36,3x92,5	5610	3150
3x95+3x50/3E	5DK ...	13,1	35,3x93,5	38,3x98,5	6700	4275
3x120+3x70/3E	5DK ...	15,0	37,3x99,5	40,3x104,5	8000	5400