

## CORDAFLEX(SMK) (N)SHTOEU

Low voltage reeling cable for E-RTG's



### Application

Flexible low voltage reeling cable for power supply (also with integrated fiber optics), suitable for application under high and very high mechanical stresses. The main application is reeling operation on ERTG's (Electrified Rubber Tyred Gantry cranes).

### Global data

Brand	CORDAFLEX(SMK)
Type designation	(N)SHTOEU-J/-O
Standard	Based on DIN VDE 0250-814
Certifications / Approvals	VDE Reg. Nr. 7519; GOST-R

### Notes on installation

Notes on installation	Preparation of fibre-optics requires special skills and use of elaborate tools. It is therefore recommended that performance of this work is entrusted to our customer service (Factory assembly). Please provide the connection dimensions.
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### Design features

Conductor	Electrolytic copper tinned, very finely stranded class FS																																								
Insulation	PROTOLON MS Special compound based on high-quality EPR (min. 3GI3); improved mechanical and electrical characteristics.																																								
Core identification	Best identification as a result of light colored insulation with numbers printed in black for power and control cables, earth conductor green-yellow colored.																																								
Optical Fiber	Fibre core diameter: 62.5, 50 or 9µm; diameter across the cladding: 125µm; diameter over the coating: 250µm. Design available with 6,12, 18 or 24 fibres.																																								
	<table border="1"> <thead> <tr> <th>Fibre class:</th> <th>G50/125µm</th> <th>G62,5/125µm</th> <th>E9/125µm</th> </tr> <tr> <th>Type:</th> <td>Graded-index fibre</td> <td>Graded-index fibre</td> <td>Monomode fibre</td> </tr> </thead> <tbody> <tr> <td>- Attenuation at 850 nm:</td> <td>&lt;2,8 dB/km</td> <td>&lt;3,3 dB/km</td> <td>-</td> </tr> <tr> <td>- Attenuation at 1310 nm:</td> <td>&lt;0,8 dB/km</td> <td>&lt;0,9 dB/km</td> <td>&lt;0,4 dB/km</td> </tr> <tr> <td>- Attenuation at 1550 nm:</td> <td>-</td> <td>-</td> <td>&lt;0,3 dB/km</td> </tr> <tr> <td>- Bandwidth at 850 nm:</td> <td>&gt;400 MHz</td> <td>&gt;400 MHz</td> <td>-</td> </tr> <tr> <td>- Bandwidth at 1300 nm:</td> <td>&gt;1200 MHz</td> <td>&gt;600 MHz</td> <td>-</td> </tr> <tr> <td>- Numerical aperture:</td> <td>0,2 ± 0,02</td> <td>0,275 ± 0,02</td> <td>0,14 ± 0,02</td> </tr> <tr> <td>- Chromatic dispersion at 1300 nm:</td> <td>-</td> <td>-</td> <td>&lt;3,5 ps/nm km</td> </tr> <tr> <td>- Chromatic dispersion at 1550 nm:</td> <td>-</td> <td>-</td> <td>&lt;3,5 ps/nm km</td> </tr> </tbody> </table>	Fibre class:	G50/125µm	G62,5/125µm	E9/125µm	Type:	Graded-index fibre	Graded-index fibre	Monomode fibre	- Attenuation at 850 nm:	<2,8 dB/km	<3,3 dB/km	-	- Attenuation at 1310 nm:	<0,8 dB/km	<0,9 dB/km	<0,4 dB/km	- Attenuation at 1550 nm:	-	-	<0,3 dB/km	- Bandwidth at 850 nm:	>400 MHz	>400 MHz	-	- Bandwidth at 1300 nm:	>1200 MHz	>600 MHz	-	- Numerical aperture:	0,2 ± 0,02	0,275 ± 0,02	0,14 ± 0,02	- Chromatic dispersion at 1300 nm:	-	-	<3,5 ps/nm km	- Chromatic dispersion at 1550 nm:	-	-	<3,5 ps/nm km
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Fiber coding	Specially developed color code for identification of the individual fibres																																								
Fiber covering	Hollow core with filling compound, Basic material: ETFE, Compound: 7YI 1, Natural color																																								
Core arrangement	Laid-up in a maximum of 3 layers																																								
Sheath system	- PROTOFIRM Special - Inner sheath: High grade special compound based on PCP, color: yellow; - Anti-torsion braid: Reinforced braid made of polyester threads, in a vulcanized bond between the sheaths, resulting in a high strength of the sheath system; - PROTOFIRM Special - Outer sheath: A sheath system with a unique combination of flexibility and robustness has been achieved through the use of this structure. Abrasion and tear resistant special rubber compound based on PCP, color: yellow.																																								
Marking	CORDAFLEX (SMK) (N)SHTOEU -J/-O (number of cores) x (cross section)+VDE Reg.-Nr.																																								

### Electrical parameters

Rated voltage	0.6/1 kV (600/1000V)
Max. permissible operating voltage AC	0.7/1.2 kV
Max. permissible operating voltage DC	0.9/1.8 kV
AC Test Voltage	3.5 kV (5 Min.)
Data transmission	Special design with fibre-optics for trouble free data transmission at high data rates.
Current Carrying Capacity description	Acc. to DIN VDE 0298-4

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#### Chemical parameters

Resistance to oil	Acc. to DIN EN 60811-404; DIN VDE 0473-811-404, paragraph 10
Weather resistance	Unrestricted use outdoors and indoors, resistant to ozone, UV and moisture.
Water resistance	Given and verified in long-term tests

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#### Thermal parameters

Max. permissible temperature at conductor	90 °C
Max. short circuit temperature of the conductor	250 °C
Ambient temperature for fixed installation	min -50 °C ; max +80 °C
Ambient temperature in fully flexible operation	min -35 °C ; max +80 °C

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#### Mechanical parameters

Max. tensile load on the conductor	30 N/mm <sup>2</sup>
Torsional stress	± 50 °/m
Min. bending radius	Acc. to DIN VDE 0298 part 3
Min. distance with S-type directional changes	20 X D
Travel speed	- Gantry (reeling operation): no restriction. It is recommended to consult the manufacturer for speeds beyond 240m/min; - Trolley (festoon operation): up to 240 m/min.
Additional tests	Reversed bending test, roller bending test, torsional stress test.

Number of cores x cross section	Part number	MLFB Number	Conductor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permissible tensile force max. N	Conductor resistance at 20°C max. Ω/km	Current carrying capacity (1) A	Short Circuit Current (conductor) kA
(N)SHTOEU-J power cables, 3-core design, earth conductor split in three											
3x35+3x16/3	20004037	5DH3121	8.4	28.7	31.7	159	1990	3150	0.57	162	5.01
3x50+3x25/3	20004038	5DH3122	10.3	34.4	37.4	187	2810	4500	0.39	202	7.15
3x70+3x35/3	20004039	5DH3123	12	39.7	42.7	214	3860	6300	0.28	250	10.01
3x95+3x50/3	20004040	5DH3124	14	44.3	47.3	237	4950	8550	0.21	301	13.59
3x120+3x70/3	20004041	5DH3125	15.8	51	55	275	6440	10800	0.16	352	17.16
3x150+3x70/3	20004042	5DH3126	17.5	53.9	57.9	290	7500	13500	0.13	404	21.45
3x185+3x95/3	20004043	5DH3127	19.4	58.9	62.9	315	8990	16650	0.11	461	26.46
3x240+3x120/3	20004044	5DH3128	22.5	67.4	71.4	357	11940	21600	0.08	540	34.32
3x300+3x150/3	20051390	5DH3119	25.2	75.6	79.6	398	14740	27000	0.07	620	42.9
(N)SHTOEU-J 3-core design power cables with FO, earth conductor splitted in two											
3x35 + 2x16/2 + 1x(6G62,5)		5DH3***	8.4	35.7	38.7	194	2390	3150	0.57	162	5.01
3x50 + 2x25/2 + 1x(6G62,5)		5DH3***	10.3	39.9	42.9	215	3220	4500	0.39	202	7.15
3x70 + 2x35/2 + 1x(6G62,5)		5DH3***	12	43.7	46.7	234	4200	6300	0.28	250	10.01
3x95 + 2x50/2 + 1x(6G62,5)		5DH3***	14	47.6	50.6	253	5220	8550	0.21	301	13.59
3x120 + 2x70/2 + 1x(6G62,5)		5DH3***	15.8	54	58	290	6700	10800	0.16	352	17.16
3x150 + 2x70/2 + 1x(6G62,5)		5DH3283	17.5	57	61	305	7750	13500	0.13	404	21.45
3x185 + 2x95/2 + 1x(6G62,5)	20155139	5DH3284	19.4	59.5	63.5	318	9200	16650	0.11	461	26.46
3x240 + 2x120/2 + 1x(6G62,5)	20168346	5DH3***	22.5	69.7	73.7	369	12320	21600	0.08	540	34.32
3x300 + 2x150/2 + 1x(6G62,5)		5DH3***	25.2	78	82	410	15000	27000	0.07	620	42.9

(1) Nominal current carrying capacity for rubber cables laid on a surface, at 30°C ambient temperature (see also VDE 0298-4, Table 15). Design with 12,18 or 24 fibers and/or G50 or E9 types available upon request.