

PROTOLON (M) R-(N)TSCGEWOEU LWL 6/10KV

Medium voltage reeling cable with integrated fiber-optics



For connection of large material handling machines such as excavators, dumpers, mobile crushers in open-cast mines. Flexible MV reeling cable suitable for high mechanical stresses in conjunction with mono-spiral reels and cylindrical reels.

STANDARDS / APPROVALS



DIN VDE 0207-21

Based on DIN VDE 0250-813

DIN EN 60811-404 / IEC 60811-404

GOST -R/-K/-B Fire Certificate of Russian Federation

DIN EN 60332-1-2 / IEC 60332-1-2

EN 50525-2-21

DIN VDE 0298-3

Compound

General

Chemical behaviour

Certifications / Approvals

Fire performance

Electrical parameters

Mechanical parameters

CABLE DESIGN

Conductor	Very finely stranded copper, bare (class FS)
Inner semi-conducting layer	PE: Very finely stranded copper, bare (class FS)
-	Yes
Core insulation material	Semi-conductive EPR
-	EPR rubber
-	PROTOLON
Outer semi-conducting layer	Special compound > 3GI3
-	Yes
Core arrangement	Semi-conductive NBR easy-strip
	Three core design, with split earth conductor and optical element in the interstices;
	Also design with control cores available
	Optical element: six tubes, laid up around a central support element, each with one, two, three or four optical fibers
Material inner sheath	Rubber
-	Special EPR compound GM1b
Armouring/reinforcement	Braiding
Armouring/reinforcement material	Polyester
Material outer sheath	Rubber - polychloroprene (PCP)
-	Special compound > 5GM5

ELECTRICAL PARAMETERS

Rated voltage U ₀ /U (U _m)	6/10 (12) kV
Test voltage [kV]	17
Nominal voltage U [V]	10,000

THERMAL PARAMETERS

Max. conductor temperature [°C]	90
Max. conductor temperature at short circuit [°C]	250
Ambient temperature fix installation (min) [°C]	-40
Ambient temperature fix installation (max) [°C]	80
Ambient temperature flexible installation (min) [°C]	-35
Ambient temperature flexible installation (max) [°C]	80

CHEMICAL PARAMETERS

Flame retardant	In accordance with EN/IEC 60332-1-2
Oil resistant	Yes
Ozone resistance	Yes
Resistant to UV	Yes
Sea water resistance	Yes

OPTICAL FIBER PROPERTIES

Fiber type	G62,5/125 µm Multi-mode graded index	G50/125 µm Multi-mode graded index	E9/125 µm Single-mode graded index
Cladding diameter	125 µm	125 µm	125 µm
Fiber diameter	250 µm	250 µm	250 µm
Attenuation at 850 nm	< 3,3 dB/km	< 2,8 dB/km	
Attenuation at 1310 nm	< 0,9 dB/km	< 0,8 dB/km	< 0,4 dB/km
Attenuation at 1550 nm			< 0,3 dB/km
Bandwidth at 850 nm	> 400 MHz	> 400 MHz	
Bandwidth at 1310 nm	> 600 MHz	> 1200 MHz	
Numerical Aperture	0,275 +/- 0,02	0,2 +/- 0,02	0,14 +/- 0,02
Chromatic Dispersion at 1300 nm			< 3,5 ps/nm km
Chromatic Dispersion at 1550 nm			< 18 ps/nm km



SUSTAINABILITY COMMITMENT

Our commitment to a low-carbon future remains unwavering as we strive to create sustainable solutions while upholding quality standards. We prioritize sustainability and environmental protection in our daily operations, collaborating with local communities to ensure workplace safety and safeguard the areas we operate in.

Sustainability and environmental responsibility is evident also in our **packaging** solutions across the CEE region. We use fully recyclable drum cover foils to minimize environmental impact. Our packaging for rings is made from 30% recycled materials, supporting a circular economy. Additionally, our boxes are made from recyclable, environment-friendly cardboard, promoting eco-conscious choices. By choosing Prysmian, you are not only selecting high-quality products but also contributing to a greener future.

Check for more details about our sustainability commitment here: [Sustainability report and responsibility](#).

MECHANICAL PARAMETERS

Torsional stress +/- [%/m]	100
Permanent tensile strength (rule)	20 N/mm ² static 25 N/mm ² dynamic
Travel speed	On rewinding: up to 100 m/min Reeling operation: up to 120 m/min
Bending radius (rule)	Acc. to VDE 0298-3: 6 X D fixed installation 10 X D flexible operation 20 X D min distance with S-type directional changes

CABLE PROPERTIES

Basic construction	SAP code	External code	Diameter conductor [mm]	Cable diameter (min) [mm]	Cable diameter (max) [mm]	Cable weight [kg/km]
3x25+2x25/2+LWL	M_R_L_10KV_005	5DK4***	7.1	41.3	44.3	2,660
3x25+2x50/2+LWL	M_R_L_10KV_006	5DK4***	7.1	43.6	46.6	2,900
3x35+2x25/2+LWL	M_R_L_10KV_008	5DK4***	8.4	42.9	45.9	3,070
3x35+2x50/2+LWL	M_R_L_10KV_009	5DK4***	8.4	45.2	48.2	3,500
3x50+2x25/2+FO	M_R_L_10KV_010	5DK4***	10.1	44.1	47.1	3,560
3x50+2x50/2+LWL	M_R_L_10KV_011	5DK4***	10.1	47.8	50.8	3,900
3x70+2x35/2+LWL	M_R_L_10KV_012	5DK4***	11.8	49.4	53.4	4,900
3x70+2x50/2+LWL	M_R_L_10KV_013	5DK4***	11.8	51.2	55.2	5,010
3x95+2x50/2+LWL	M_R_L_10KV_014	5DK4***	13.8	52.8	56.8	5,770
3x120+2x70/2+LWL	M_R_L_10KV_001	5DK4***	15.5	56.4	60.4	6,950
3x150+2x70/2+LWL	M_R_L_10KV_002	5DK4***	17.4	62.9	66.9	8,560
3x185+2x95/2+LWL	M_R_L_10KV_003	5DK4***	19.2	65.7	69.7	9,810
3x240+2x120/2+LWL	M_R_L_10KV_004	5DK4***	22.1	73.3	77.3	12,600
3x300+2x150/2+LWL	M_R_L_10KV_007	5DK4***	24.7	78.7	82.7	15,090
3x50+1x25+1x(4x2,5ST)+LWL	M_R_L_10KV_020	5DK4***	10.1	47.8	50.8	3,990
3x70+1x35+1x(4x2,5ST)+LWL	M_R_L_10KV_021	5DK4***	11.8	52.2	55.2	5,100
3x95+1x50+1x(4x2,5ST)+LWL	M_R_L_10KV_022	5DK4***	13.8	60.1	64.1	7,350
3x120+1x70+1x(4x2,5ST)+LWL	M_R_L_10KV_023	5DK4***	15.5	66	70	8,800

CABLE PROPERTIES ELECTRIC / MECHANICAL

Basic construction	SAP code	External code	Max. tensile strength [N]	Nominal operation capacitance [nF/km]	Operation self inductance [mH/km]	Conductor resistance at 20° C [Ohm/km]	Current carrying capacity [A]
3x25+2x25/2+LWL	M_R_L_10KV_005	5DK4***	1,500	330	0.35	0.7839	131
3x25+2x50/2+LWL	M_R_L_10KV_006	5DK4***	1,500	330	0.38	0.7839	131
3x35+2x25/2+LWL	M_R_L_10KV_008	5DK4***	2,100	380	0.33	0.554	162
3x35+2x50/2+LWL	M_R_L_10KV_009	5DK4***	2,100	380	0.35	0.554	162
3x50+2x25/2+FO	M_R_L_10KV_010	5DK4***	3,000	430	0.29	0.386	202
3x50+2x50/2+LWL	M_R_L_10KV_011	5DK4***	3,000	430	0.32	0.386	202
3x70+2x35/2+LWL	M_R_L_10KV_012	5DK4***	4,200	490	0.28	0.272	250
3x70+2x50/2+LWL	M_R_L_10KV_013	5DK4***	4,200	490	0.3	0.272	250
3x95+2x50/2+LWL	M_R_L_10KV_014	5DK4***	5,700	560	0.27	0.206	301
3x120+2x70/2+LWL	M_R_L_10KV_001	5DK4***	7,200	620	0.25	0.161	352
3x150+2x70/2+LWL	M_R_L_10KV_002	5DK4***	9,000	670	0.25	0.129	404
3x185+2x95/2+LWL	M_R_L_10KV_003	5DK4***	11,100	730	0.24	0.106	461
3x240+2x120/2+LWL	M_R_L_10KV_004	5DK4***	14,400	820	0.24	0.0801	540
3x300+2x150/2+LWL	M_R_L_10KV_007	5DK4***	18,000	910	0.23	0.0641	620
3x50+1x25+1x(4x2,5ST)+LWL	M_R_L_10KV_020	5DK4***	3,000	430	0.32	0.386	202
3x70+1x35+1x(4x2,5ST)+LWL	M_R_L_10KV_021	5DK4***	4,200	490	0.28	0.272	250
3x95+1x50+1x(4x2,5ST)+LWL	M_R_L_10KV_022	5DK4***	5,700	560	0.27	0.206	301
3x120+1x70+1x(4x2,5ST)+LWL	M_R_L_10KV_023	5DK4***	7,200	620	0.25	0.161	352

Current carrying capacity acc. VDE 0298-4, Tab. 15, on a surface at 30°C ambient temperature.

Design with 6, 12, 18 or 24 fibers, in G62,5, G50 and E9 available upon request. Further combination with different fiber types is also possible.