

PROTOMONT TBM (N)TSCGECWHXOEU 12/20 kV Halogen-free MV reeling cables for TBM



Application

These halogen-free cables are intended for use as reeling power supply cables for tunnel boring machines (TBM) in underground mines and for tunnel construction sites.

Global data

Brand	PROTOMONT TBM
Type designation	(N)TSCGECWHXOEU
Standard	Based on DIN VDE 0250-813
Certifications / Approvals	Fire Certificate of Russian Federation GOST-R/-K/-B

Design features

Conductor	Finely stranded copper conductor, tinned (class 5)
PE-Conductor	Single concentric copper/textile mixed braid over every core
Insulation	PROTOLON, Basic material: EPR, Compound type: special compound
Electrical field control	Inner and outer protective layer of semiconductive rubber compound
Core identification	Main cores: Natural coloring with black semiconductive rubber, Control cores: Black
Core arrangement	Three main conductors laid-up with three control cores in the outer interstice
Inner sheath	Vulcanized rubber inner sheath, Basic material: EPR, Compound type: GM1B
Monitoring conductor	Overall concentric lay of copper wire spinning
Outer sheath	Synthetic halogen-free elastomer compound EVA, type: 5GM3
Outer sheath colour	Red

Electrical parameters

Rated voltage	12/20 kV
Max. permissible operating voltage AC	13.9/24 kV
Max. permissible operating voltage DC	18/36 kV
AC test voltage	29 kV
AC test voltage - control cores	2 kV

Chemical parameters

Performance against fire	IEC 60332-1-2
Resistance to oil	IEC 60811-404
Weather resistance	Unrestricted use outdoors and indoors, resistant to ozone and moisture

Thermal parameters

Max. operating temperature of the conductor	90 °C
Max. short circuit temperature of the conductor	250 °C
Ambient temperature for fixed installation	min -40 °C ; max +80 °C
Ambient temperature in fully flexible operation	min -20 °C ; max +60 °C

Mechanical parameters

Max. tensile load	For reeling application: max. 15 N/mm ² For TBM application: max. 30 N/mm ²
Torsional stress +/-	25 °/m
Bending radii min.	Acc. to DIN VDE 0298 part 3
Min. distance with S-type directional changes	20 x D
Travel speed	max. 30 m/min

Number of cores x cross section	Part number	Conductor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Weight (approx.) kg/km	Permissible tensile force max. N	Conductor resistance at 20°C max. Ω/km	Nominal operating capacitance μF/km	Inductance nom. mH/km	Current carrying capacity (1) A	Short Circuit Current (conductor) kA
3x25 + 3x16/3E + 3x2,5ST + 6UELKON		6.4	48.7	52.7	3540	1125	0.795	0.22	0.37	139	3.58
3x35 + 3x25/3E + 3x2,5ST + 6UELKON	20111560	7.6	51.1	55.1	4310	1575	0.565	0.24	0.35	172	5.01
3x50 + 3x25/3E + 3x2,5ST + 6UELKON	20121232	9.1	56.7	60.7	5310	2250	0.393	0.27	0.33	215	7.15
3x70 + 3x35/3E + 3x2,5ST + 6UELKON		10.9	61.2	65.2	6150	3150	0.277	0.31	0.32	265	10.01
3x95 + 3x50/3E + 3x2,5ST + 6UELKON	20121231	12.6	66.4	70.4	7820	4275	0.21	0.34	0.3	319	13.59
3x120 + 3x70/3E + 3x2,5ST + 6UELKON		14.2	70.1	74.1	8580	5400	0.164	0.38	0.29	371	17.16
3x150 + 3x70/3E + 3x2,5ST + 6UELKON		15.8	70.8	74.8	9492	6750	0.129	0.42	0.28	428	21.45
3x185 + 3x95/3E + 3x2,5ST + 6UELKON		17.8	71.2	75.2	10200	8325	0.106	0.64	0.26	488	26.46
3x240 + 3x120/3E + 3x2,5ST + 6UELKON		20.4	74.5	78.5	11800	10800	0.0801	0.69	0.25	574	34.32

(1) Nominal current carrying capacity for rubber cables laid on a surface, at 30°C ambient temperature (see also VDE 0298-4, Table 15). For derating-factors see tables in Technical Appendix