

PROTOMONT Medium-Voltage Cables for Tunnel Driving Machines



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Selection and dimensioning criteria

Refer to Section 4 for further details



	Type	PROTOMONT	Page	4/2
	Type designation	NTSCGECWÖU	Page	4/3
	Approvals/standards	DIN VDE 0250, Part 813	Page	4/4
	Application (refer also to DIN VDE 0298, Part 3)	The cables are suitable for use as reeling power supply cables for tunnel driving machines in underground mines and for tunnel construction applications.	Page	4/6
Electrical parameters	Rated voltage	$U_0/U = 3.6/6$ kV to 12/20 kV	Pages to	4/14
	Maximum permissible operating voltage in AC systems	$U_0/U = 4.2/7.2$ kV to 13.9/24 kV		4/17
	Maximum permissible operating voltage in DC systems	$U_0/U = 5.4/10.8$ kV to 18/36 kV		
	AC test voltage	11 kV to 29 kV		
	Current-carrying capacity	According to DIN VDE 0298, Part 4		
Thermal parameters	Ambient temperature		Pages to	4/18
	<ul style="list-style-type: none"> ● Fully flexible operation - 20 °C to + 60 °C ● Fixed installation - 40 °C to + 80 °C 			4/19
	Maximum permissible operating temperature of the conductor	+ 90 °C		
	Short-circuit temperature of the conductor	200 °C		
Mechanical parameters	Tensile load	Up to 15 N/mm ²	Page	4/20
	Torsional stresses	± 25 °/m	Page	4/21
	Minimum bending radii	According to DIN VDE 0298, Part 3	Page	4/22
	Minimum distance with S-type directional changes	20 x D		
	Travel speed	Max. 60 m/min	Page	4/23
Chemical parameters	Resistance to oil	Given to DIN VDE 0473, Part 811-2-1, Para. 10	Page	4/28
	Behaviour in case of fire	Given to DIN VDE 0482, Part 265-2-1, Para. 10		
	Weather resistance	Unrestricted use outdoors and indoors, resistant to ozone and moisture		

PROTOMONT Medium-Voltage Cables for Tunnel Driving Machines

- 1 Conductor
- 2 Insulation
- 3 Outer semiconductive layer
- 4 Individual-concentric protective-earth conductor
- 5 Control cores
- 6 Inner sheath
- 7 Monitoring conductor
- 8 Outer sheath



Design features		Refer to Section 4 for further details	→
Type	PROTOMONT	Page	4/2
Conductor (refer also to DIN VDE 0295)	Finely stranded copper conductor, tinned, Class 5	Page	4/29
Insulation (refer also to DIN VDE 0207, Part 20)	PROTOLON, basic material EPR, compound type: 3GI3	Page	4/32
Electrical field control	Inner and outer semiconductive layer of semiconductive rubber	Page	4/36
Arrangement of protective-earth conductor	Copper/textile combined braid individually laid-up concentrically around each individual core		
Core identification	Main cores: natural colouring with black semiconductive rubber Control cores: black		
Core arrangement	Three main conductors laid-up with three control cores in the outer interstice	Page	4/37
Inner sheath (refer also to DIN VDE 0207, Part 21)	Vulcanized rubber inner sheath Basic material EPR, compound type: GM1b	Page	4/32
Monitoring conductor	Overall concentric lay of copper wire spinning		
Outer sheath (refer also to DIN VDE 0207, Part 21)	Basic material PCP, compound type: 5GM5, colour red	Page	4/32
Marking	(Year of manufacture) <VDE> PROTOMONT NTSCGECWÖU (number of cores) x (rated cross-section)	Page	4/40

Selection and ordering data

Number of cores and nominal cross-section mm ²	Order No.	Conductor diameter (Max. value) mm	Overall diameter of cable (guidance value) (Min. value) (Max. value) mm		Conductor resistance at 20 °C Ω/km	Inductance per unit length mH/km	Operating capacitance per unit length μF/km	Current-carrying capacity at 30 °C A	Permissible short-circuit current (1s) kA	Approx. net weight for 1000 m kg	Maximum permissible tensile force N
3.6/6 kV NTSCGECWÖU											
3 x 25 + 3 x 16/3E + 3 x 2.5ST + 6ÜL KON	5DM1520	6.9	50.0	56.0	0.795	0.15	0.25	131	3.05	3980	1125
3 x 35 + 3 x 25/3E + 3 x 2.5ST + 6ÜL KON	5DM1521	8.3	53.0	59.0	0.565	0.14	0.28	162	4.27	4570	1575
3 x 50 + 3 x 25/3E + 3 x 2.5ST + 6ÜL KON	5DM1522	9.9	59.0	65.0	0.393	0.13	0.32	202	6.10	5720	2250
3 x 70 + 3 x 35/3E + 3 x 2.5ST + 6ÜL KON	5DM1523	11.7	63.0	70.0	0.277	0.12	0.36	250	8.54	6900	3150
3 x 95 + 3 x 50/3E + 3 x 2.5ST + 6ÜL KON	5DM1524	13.4	68.0	74.0	0.210	0.11	0.40	301	11.59	8170	4275
3 x 120 + 3 x 70/3E + 3 x 2.5ST + 6ÜL KON	5DM1525	15.2	72.0	79.0	0.164	0.10	0.45	352	14.64	9980	5400
6/10 kV NTSCGECWÖU											
3 x 25 + 3 x 16/3E + 3 x 2.5ST + 6ÜL KON	5DM1528	6.9	52.0	59.0	0.795	0.15	0.23	131	3.05	4250	1125
3 x 35 + 3 x 25/3E + 3 x 2.5ST + 6ÜL KON	5DM1531	8.3	57.0	63.0	0.565	0.14	0.26	162	4.27	5110	1575
3 x 50 + 3 x 25/3E + 3 x 2.5ST + 6ÜL KON	5DM1532	9.9	61.0	68.0	0.393	0.13	0.29	202	6.10	6100	2250
3 x 70 + 3 x 35/3E + 3 x 2.5ST + 6ÜL KON	5DM1533	11.7	63.0	70.0	0.277	0.12	0.33	250	8.54	6840	3150
3 x 95 + 3 x 50/3E + 3 x 2.5ST + 6ÜL KON	5DM1534	13.4	69.0	76.0	0.210	0.11	0.37	301	11.59	8540	4275
3 x 120 + 3 x 70/3E + 3 x 2.5ST + 6ÜL KON	5DM1555	15.2	75.0	82.0	0.164	0.10	0.41	352	14.64	10300	5400
12/20 kV NTSCGECWÖU											
3 x 25 + 3 x 16/3E + 3 x 2.5ST + 6ÜL KON	5DM1535	6.9	64.0	71.0	0.795	0.14	0.14	139	3.05	5540	1125
3 x 35 + 3 x 25/3E + 3 x 2.5ST + 6ÜL KON	5DM1536	8.3	67.0	74.0	0.565	0.13	0.17	172	4.27	6600	1575
3 x 50 + 3 x 25/3E + 3 x 2.5ST + 6ÜL KON	5DM1554	9.9	71.0	78.0	0.393	0.12	0.20	215	6.10	7070	2250
3 x 70 + 3 x 35/3E + 3 x 2.5ST + 6ÜL KON	5DM1537	11.7	76.0	83.0	0.277	0.11	0.23	265	8.54	8500	3150
3 x 95 + 3 x 50/3E + 3 x 2.5ST + 6ÜL KON	5DM1538	13.4	79.0	87.0	0.210	0.10	0.27	319	11.59	10320	4275
3 x 120 + 3 x 70/3E + 3 x 2.5ST + 6ÜL KON	5DM1540	15.2	85.0	93.0	0.164	0.09	0.31	371	14.64	11500	5400