

Reeling cables in line with
Tested

VDE 0250 part. 813



Cable type

PANZERFLEX-EL 3,6 ÷ 12/20 kV
with integrated OPTICAL FIBRES- (N)TSCGEWÖU - H.V. reeling cable 6 to 20 kV

Main application

Flexible H.V. reeling combined power and data transmission cables for use on connecting movable parts of machine tools and any material handling equipment (i.e. Stacker/reclaimer, ship to shore crane, container crane, excavators, also suitable for festoon system)
Perfectly suitable for any energy supply on cable reels systems associated from high to extreme mechanical stresses, frequent bending/torsional operation and fast movement with strong acceleration

Construction

| | |
|--------------------------|--|
| Conductor: | Tinned copper conductor, flexible cl.5 IEC 60228 Specially designed for mobile application |
| Insulation: | Micro filtered HEPR rubber compound better than 3GI3 New specially developed compound with improved electrical and mechanical characteristics |
| Cores identification: | Main cores: natural colour with black semiconductive layer Splitted earth cores: identified by position and covered with special black semiconductive compound |
| Field control: | - Conductor screen: semiconductive layer - Insulation screen: semiconductive layer of special compound Applied with insulation |
| Laying-up: | Short lay length for better flexibility and mechanical characteristics ≤ 8 times the laying-up cores diameter, three cores design with protective earth cores split in 2 interstitial areas |
| Separation (if any): | Tape(s) |
| Inner sheath: | Polychloroprene rubber based compound Special developed with improved mechanical characteristics |
| Antitwisting protection: | Textile braid of synthetic yarns Firmly bonded between inner and outer sheath |
| Outer sheath: | Red polychloroprene rubber compound UV resistant, oil and chemical resistant better than 5GM3 compound |
| Marking: | PALAZZO - PANZERFLEX-EL. rated voltage <i>nc</i> x cross section, fiber optics <i>n</i> . & type OPTICAL FIBER year of manufacturing |

Parameters

| | | |
|-------------------|--|---|
| Electrical | Rated voltage | U ₀ /U= 3,6/6 kV to 12/20 kV* |
| | Maximum permissible operating voltage in AC systems | U _m = 7,2 kV to 24 kV |
| | AC test voltage over 5 minutes | 11 kV to 29 kV according to VDE 0250 part 813 |
| | Current Carrying Capacity | According to DIN VDE 0298 part 4 |
| EMC | symmetrical design + narrow production tolerances | very low interference |
| Data transmission | Fibre-optics for absolute immunity from electrical interferences. Main type: graded index 62,5/125. Available also graded index 50/125 and monomode E9/125 6 (main type), 12, 18 fibre-optics in a structure composed by 6 loose tubes (1, 2 or 3 fibres per tube) | |
| Thermal | Fully flexible operation | - 30 °C |
| | Fixed installation | - 40 °C |
| | Maximum permissible operating temperature of the conductor | 90 °C |
| | Short-circuit temperature of the conductor | 250 °C |
| Mechanical | Tensile load | Up to 20 N/mm ² |
| | Minimum bending radii | According to DIN VDE 0298 part 3 |
| | Reeling operation | No restriction. Consult the manufacturer if speed exceeds 180 m/min |
| | Festoon systems | Up to 120 m/min |
| Chemical | Resistance to oil | According to VDE / IEC standard |
| | Weather resistance | Unrestricted use outdoor and indoor, UV resistant, moisture resistant. |

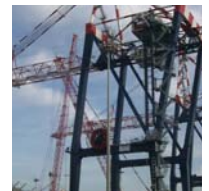
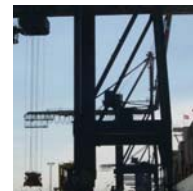




Table 1: PANZERFLEX-EL + FO 3.6 ÷ 12/20 kV (N)TSCGEWÖU

| N. of cores and nominal section n-mm ² +n-mm ² /2 | Main conductor | | Protective earth cond. nom. diam. mm | Overall diameter | | Net weight approx. kg/km | Maximum permissible tensile force N | Spiral or Laid straight A | Current carrying capacity at 30 °C | | | Short circuit current 80 ° to 200 °C kA |
|--|---------------------------------|------------------|--|------------------|-----------------|-----------------------------|--|------------------------------|------------------------------------|--------------|--------------|---|
| | D.C. resist. at 20 °C Ohm/km | nom. diam. mm | | min.value mm | max.value mm | | | | 1 layer A | 2 layer A | 3 layer A | |
| 3,6/6 kV | | | | | | | | | | | | |
| 3x25+2x25/2+1x(6 OF) | 0,795 | 6,6 | 4,9 | 40,1 | 43,1 | 2570 | 1500 | 131 | 105 | 80 | 64 | 3,2 |
| 3x35+2x25/2+1x(6 OF) | 0,565 | 8,0 | 4,9 | 42,1 | 45,1 | 3020 | 2100 | 162 | 130 | 99 | 79 | 4,5 |
| 3x50+2x25/2+1x(6 OF) | 0,393 | 9,3 | 4,9 | 44,8 | 47,8 | 3550 | 3000 | 202 | 162 | 123 | 99 | 6,4 |
| 3x70+2x35/2+1x(6 OF) | 0,277 | 11,2 | 6,6 | 50,1 | 54,1 | 4780 | 4200 | 250 | 200 | 153 | 123 | 9,0 |
| 3x95+2x50/2+1x(6 OF) | 0,210 | 13,0 | 6,6 | 54,1 | 58,1 | 5670 | 5700 | 301 | 241 | 184 | 147 | 12,2 |
| 3x120+2x70/2+1x(6 OF) | 0,164 | 15, | 8,0 | 58,6 | 62,6 | 7090 | 7200 | 352 | 282 | 215 | 172 | 15,4 |
| 3x150+2x70/2+1x(6 OF) | 0,132 | 16,9 | 8,0 | 63,3 | 67,3 | 8200 | 9000 | 404 | 323 | 246 | 198 | 19,2 |
| 3x185+2x95/2+1x(6 OF) | 0,108 | 18,3 | 9,3 | 67,0 | 71,0 | 9630 | 11100 | 461 | 369 | 281 | 226 | 23,7 |
| 3x240+2x120/2+1x(6 OF) | 0,0817 | 20,5 | 11,2 | 76,8 | 80,8 | 12750 | 14400 | 540 | 432 | 329 | 265 | 30,7 |
| 6/10 kV | | | | | | | | | | | | |
| 3x25+2x25/2+1x(6 OF) | 0,795 | 6,6 | 4,9 | 41,4 | 44,4 | 2680 | 1500 | 131 | 105 | 80 | 64 | 3,2 |
| 3x35+2x25/2+1x(6 OF) | 0,565 | 8,0 | 4,9 | 43,8 | 46,8 | 3180 | 2100 | 162 | 130 | 99 | 79 | 4,5 |
| 3x50+2x25/2+1x(6 OF) | 0,393 | 9,3 | 4,9 | 46,6 | 49,6 | 3720 | 3000 | 202 | 162 | 123 | 99 | 6,4 |
| 3x70+2x35/2+1x(6 OF) | 0,277 | 11,2 | 6,6 | 51,4 | 55,4 | 4910 | 4200 | 250 | 200 | 153 | 123 | 9,0 |
| 3x95+2x50/2+1x(6 OF) | 0,210 | 13,0 | 6,6 | 55,4 | 59,4 | 5810 | 5700 | 301 | 241 | 184 | 147 | 12,2 |
| 3x120+2x70/2+1x(6 OF) | 0,164 | 15,0 | 8,0 | 61,5 | 65,5 | 7480 | 7200 | 352 | 282 | 215 | 172 | 15,4 |
| 3x150+2x70/2+1x(6 OF) | 0,132 | 16,9 | 8,0 | 65,7 | 69,7 | 8520 | 9000 | 404 | 323 | 246 | 198 | 19,2 |
| 3x185+2x95/2+1x(6 OF) | 0,108 | 18,3 | 9,3 | 68,3 | 72,3 | 9810 | 11100 | 461 | 369 | 281 | 226 | 23,7 |
| 3x240+2x120/2+1x(6 OF) | 0,0817 | 20,5 | 11,2 | 77,6 | 82,6 | 12960 | 14400 | 540 | 432 | 329 | 265 | 30,7 |
| 8,7/15 kV | | | | | | | | | | | | |
| 3x25+2x25/2+1x(6 OF) | 0,795 | 6,6 | 4,9 | 44,5 | 47,5 | 2970 | 1500 | 139 | 111 | 85 | 68 | 3,2 |
| 3x35+2x25/2+1x(6 OF) | 0,565 | 8, | 4,9 | 47,2 | 50,2 | 3520 | 2100 | 172 | 138 | 105 | 84 | 4,5 |
| 3x50+2x25/2+1x(6 OF) | 0,393 | 9,3 | 4,9 | 50,7 | 54,7 | 4220 | 3000 | 215 | 172 | 131 | 105 | 6,4 |
| 3x70+2x35/2+1x(6 OF) | 0,277 | 11,2 | 6,6 | 55,0 | 59,0 | 5330 | 4200 | 265 | 212 | 162 | 130 | 9,0 |
| 3x95+2x50/2+1x(6 OF) | 0,210 | 13,0 | 6,6 | 58,7 | 62,7 | 6260 | 5700 | 319 | 255 | 195 | 156 | 12,2 |
| 3x120+2x70/2+1x(6 OF) | 0,164 | 15,0 | 8,0 | 62,8 | 66,8 | 7650 | 7200 | 371 | 297 | 226 | 182 | 15,4 |
| 3x150+2x70/2+1x(6 OF) | 0,132 | 16,9 | 8,0 | 68,7 | 72,7 | 8970 | 9000 | 428 | 342 | 261 | 210 | 19,2 |
| 3x185+2x95/2+1x(6 OF) | 0,108 | 18,3 | 9,3 | 73,5 | 77,5 | 10650 | 11100 | 488 | 390 | 298 | 239 | 23,7 |
| 3x240+2x120/2+1x(6 OF) | 0,0817 | 20,5 | 11,2 | 79,5 | 84,5 | 13270 | 14400 | 574 | 459 | 350 | 281 | 30,7 |
| 12/20 kV | | | | | | | | | | | | |
| 3x25+2x25/2+1x(6 OF) | 0,795 | 6,6 | 4,9 | 48,8 | 52,8 | 3450 | 1500 | 139 | 111 | 85 | 68 | 3,2 |
| 3x35+2x25/2+1x(6 OF) | 0,565 | 8,0 | 4,9 | 52,7 | 56,7 | 4170 | 2100 | 172 | 138 | 105 | 84 | 4,5 |
| 3x50+2x25/2+1x(6 OF) | 0,393 | 9,3 | 4,9 | 55,5 | 59,5 | 4760 | 3000 | 215 | 172 | 131 | 105 | 6,4 |
| 3x70+2x35/2+1x(6 OF) | 0,277 | 11,2 | 6,6 | 59,6 | 63,6 | 5920 | 4200 | 265 | 212 | 162 | 130 | 9,0 |
| 3x95+2x50/2+1x(6 OF) | 0,210 | 13,0 | 6,6 | 65,0 | 69,0 | 7120 | 5700 | 319 | 255 | 195 | 156 | 12,2 |
| 3x120+2x70/2+1x(6 OF) | 0,164 | 15,0 | 8,0 | 69,3 | 73,3 | 8590 | 7200 | 371 | 297 | 226 | 182 | 15,4 |
| 3x150+2x70/2+1x(6 OF) | 0,132 | 16,9 | 8,0 | 75,2 | 79,2 | 10000 | 9000 | 428 | 342 | 261 | 210 | 19,2 |
| 3x185+2x95/2+1x(6 OF) | 0,108 | 18,3 | 9,3 | 77,8 | 82,8 | 11400 | 11100 | 488 | 390 | 298 | 239 | 23,7 |

18/30 kV available on request