

Electric cables.



ARISTONCAVI

MINING & TUNNELLING

*Electric cables for mining and tunnelling.*

*Aristoncavi spa reserve the right to modify the data in this catalogue without notice.*

*© 02/2013 Copyright  
Drawings and technical descriptions in this catalogue may not, under penalty of law, be copied, reprinted, duplicated or otherwise wrongfully reproduced or utilized without our written consent, in either their original state or after alteration. The names, trademarks and designs of our products are all protected by law. It does not constitute a warrantee of any kind, expressed or implied, of our products or their suitability for any particular use.*



ARISTONCAVI

Index.

Low voltage cables.

|                      |    |
|----------------------|----|
| HD FLEX .....        | 02 |
| SNAKEFLEX .....      | 06 |
| SNAKEFLEX FC .....   | 12 |
| PURFLEX HF (C) ..... | 16 |

Medium voltage cables.

|                                    |    |
|------------------------------------|----|
| URSUS® MT SC PLUS .....            | 22 |
| URSUS® MT PLUS .....               | 26 |
| URSUS® MT FO .....                 | 30 |
| URSUS® MT MIN PLUS .....           | 34 |
| URSUS® MT MIN-E PLUS .....         | 38 |
| URSUS® MT MIN PUR HF PLUS .....    | 42 |
| URSUS® MT MIN GC .....             | 46 |
| URSUS® MT MIN F PLUS .....         | 50 |
| URSUS® MT MIN F-E PLUS .....       | 54 |
| URSUS® MT SUB PLUS .....           | 58 |
| URSUS® MT SUB-E PLUS .....         | 62 |
| URSUS® MT BM PLUS .....            | 66 |
| URSUS® MT BM PUR HF PLUS .....     | 70 |
| URSUS® MT TUNNEL V PLUS .....      | 74 |
| URSUS® MT TUNNEL V ATOX PLUS ..... | 78 |
| URSUS® MT TUNNEL I PLUS .....      | 82 |

Technical data.

|                                                         |    |
|---------------------------------------------------------|----|
| BENDING RADIUS .....                                    | 89 |
| REELS APPLICATION DATA .....                            | 90 |
| ANTI-TORSIONAL BRAID .....                              | 92 |
| CONDUCTORS .....                                        | 93 |
| CURRENT CARRYING CAPACITY - SHORT CIRCUIT CURRENT ..... | 94 |
| VOLTAGE DROP .....                                      | 96 |



*Low voltage  
cables.*

HD FLEX  
SNAKEFLEX  
SNAKEFLEX FC  
PURFLEX HF (C)

HD FLEX 0,6/1 kV

Based on DIN VDE 0250 Part 812

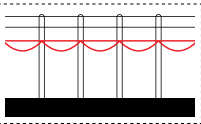
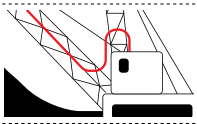
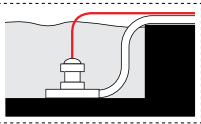
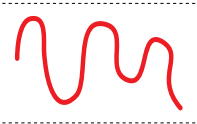


Cable construction

|                      |                  |                                         |                                                                                |
|----------------------|------------------|-----------------------------------------|--------------------------------------------------------------------------------|
| ①                    | Phase Conductors | Conductor material                      | Flexible bare copper                                                           |
|                      |                  | Conductor construction                  | Class 5 VDE 0295 (IEC 60228)                                                   |
| ②                    | Insulation       | Insulation material                     | 3GI3 quality rubber compound, according to VDE 0207 Part 20                    |
|                      |                  | Nominal thickness                       | According to VDE 0250 Part 812                                                 |
| Cores identification |                  | According to VDE 0293 Part 308 (HD 308) |                                                                                |
| ③                    | Inner Sheath     | Material                                | Special rubber compound                                                        |
| ④                    | Outer Sheath     | Material                                | Special heavy duty rubber compound 5GM5 quality, according to VDE 0207 Part 21 |
|                      |                  | Colour                                  | Black                                                                          |



Main applications



**Applications** Flexible cable, rubber sheathed, suitable for mining application alongside conveyor belts, for energy supply of equipment in movement, industrial apparatus and submersed pumps. It's resistant to the abrasion and oils, flame retardant.

Electrical working data

|                                 |                                |
|---------------------------------|--------------------------------|
| Nominal rated voltage $U_0 / U$ | kV 0,6/1                       |
| Test voltage                    | kV 3                           |
| Max AC voltage                  | kV 0,7/1,2                     |
| Max DC voltage                  | kV 1,8                         |
| Current rating                  | A According to VDE 0298 Part 4 |

Thermal working data

|                                        |                 |
|----------------------------------------|-----------------|
| Maximum short circuit temperature      | °C 250          |
| Maximum working temp. on the conductor | °C 90           |
| Ambient temperature: mobile condition  | °C - 25 to + 80 |
| Ambient temperature: static condition  | °C - 40 to + 80 |

Mechanical working data

|                       |                                 |
|-----------------------|---------------------------------|
| Bending radius        | mm According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm <sup>2</sup> 15            |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |
|--------------------|--------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |
| Resistance to oil  | According to IEC 60811-2-1                 |
| Ozone resistance   | According to IEC 60811-2-1                 |
| Weather resistance | For indoor and outdoor application         |



HD FLEX 0,6/1 kV

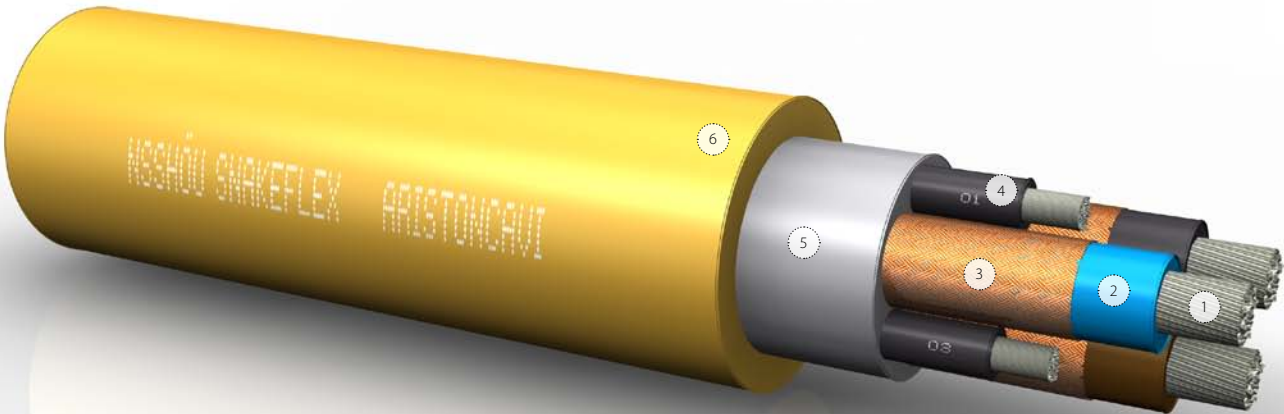
| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 3x1,5                 | 1,5         | 9,7           | 10,3          | 141           | 68               |
| 0,6/1   | 3x2,5                 | 1,9         | 11,1          | 11,7          | 200           | 113              |
| 0,6/1   | 3x4                   | 2,4         | 13,2          | 13,8          | 297           | 180              |
| 0,6/1   | 3x6                   | 2,9         | 14,4          | 15,0          | 381           | 270              |
| 0,6/1   | 3x10                  | 3,8         | 17,4          | 18,5          | 590           | 450              |
| 0,6/1   | 3x16                  | 4,8         | 19,5          | 20,6          | 797           | 720              |
| 0,6/1   | 3x25                  | 6,1         | 23,7          | 24,8          | 1206          | 1125             |
| 0,6/1   | 3x35                  | 7,2         | 26,6          | 27,7          | 1649          | 1575             |
| 0,6/1   | 3x50                  | 8,9         | 31,8          | 33,0          | 2195          | 2250             |
| 0,6/1   | 3x70                  | 10,6        | 35,3          | 36,5          | 3124          | 3150             |
| 0,6/1   | 3x95                  | 12,3        | 40,9          | 42,6          | 4100          | 4275             |
| 0,6/1   | 3x120                 | 13,8        | 43,4          | 45,1          | 4723          | 5400             |
| 0,6/1   | 3x150                 | 15,5        | 47,8          | 49,5          | 5916          | 6750             |
| 0,6/1   | 3x185                 | 17,0        | 53,1          | 55,4          | 7271          | 8325             |
| 0,6/1   | 3x50 + 3x25/3         | 8,9         | 32,3          | 33,5          | 2481          | 2250             |
| 0,6/1   | 3x70 + 3x35/3         | 10,6        | 35,7          | 37,4          | 3319          | 3150             |
| 0,6/1   | 3x95 + 3x50/3         | 12,3        | 41,5          | 43,2          | 4324          | 4275             |
| 0,6/1   | 3x120 + 3x70/3        | 13,8        | 45,0          | 46,7          | 5476          | 5400             |
| 0,6/1   | 3x150 + 3x70/3        | 15,5        | 49,5          | 51,3          | 6468          | 6750             |
| 0,6/1   | 3x185 + 3x95/3        | 17,0        | 54,9          | 57,2          | 8298          | 8325             |
| 0,6/1   | 3x240 + 3x120/3       | 19,5        | 60,9          | 63,2          | 10473         | 10800            |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 4x1,5                 | 1,5         | 10,5          | 11,1          | 173           | 90               |
| 0,6/1   | 4x2,5                 | 1,9         | 12,9          | 13,5          | 274           | 150              |
| 0,6/1   | 4x4                   | 2,4         | 14,3          | 14,9          | 356           | 240              |
| 0,6/1   | 4x6                   | 2,9         | 15,7          | 16,3          | 459           | 360              |
| 0,6/1   | 4x10                  | 3,8         | 19,1          | 20,2          | 729           | 600              |
| 0,6/1   | 4x16                  | 4,8         | 22,0          | 23,1          | 1038          | 960              |
| 0,6/1   | 4x25                  | 6,1         | 27,0          | 28,1          | 1576          | 1500             |
| 0,6/1   | 4x35                  | 7,2         | 29,2          | 30,4          | 2078          | 2100             |
| 0,6/1   | 4x50                  | 8,9         | 35,0          | 36,2          | 2967          | 3000             |
| 0,6/1   | 4x70                  | 10,6        | 38,8          | 40,5          | 3931          | 4200             |
| 0,6/1   | 4x95                  | 12,3        | 45,1          | 46,8          | 5165          | 5700             |
| 0,6/1   | 4x120                 | 13,8        | 50,0          | 51,8          | 6152          | 7200             |
| 0,6/1   | 4x150                 | 15,5        | 55,0          | 57,3          | 7537          | 9000             |
| 0,6/1   | 4x185                 | 17,0        | 61,0          | 63,3          | 9420          | 11100            |
| 0,6/1   | 5x1,5                 | 1,5         | 11,4          | 12,0          | 214           | 113              |
| 0,6/1   | 5x2,5                 | 1,9         | 14,0          | 14,6          | 328           | 188              |
| 0,6/1   | 5x4                   | 2,4         | 15,6          | 16,2          | 434           | 300              |
| 0,6/1   | 5x6                   | 2,9         | 17,5          | 18,6          | 594           | 450              |
| 0,6/1   | 5x10                  | 3,8         | 20,9          | 22,0          | 898           | 750              |
| 0,6/1   | 5x16                  | 4,8         | 24,1          | 25,2          | 1283          | 1200             |
| 0,6/1   | 5x25                  | 6,1         | 29,6          | 30,8          | 1965          | 1875             |
| 0,6/1   | 7x1,5                 | 1,5         | 14,5          | 15,1          | 313           | 158              |
| 0,6/1   | 12x1,5                | 1,5         | 16,8          | 17,4          | 422           | 270              |
| 0,6/1   | 18x1,5                | 1,5         | 19,4          | 20,5          | 613           | 405              |
| 0,6/1   | 24x1,5                | 1,5         | 20,9          | 22,0          | 752           | 540              |
| 0,6/1   | 7x2,5                 | 1,9         | 16,8          | 17,4          | 461           | 263              |
| 0,6/1   | 12x2,5                | 1,9         | 19,5          | 20,6          | 653           | 450              |
| 0,6/1   | 18x2,5                | 1,9         | 23,3          | 24,4          | 922           | 675              |
| 0,6/1   | 24x2,5                | 1,9         | 25,2          | 26,3          | 1147          | 900              |



SNAKEFLEX 0,6/1kV

DIN VDE 0250 Part 812 approved

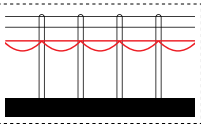
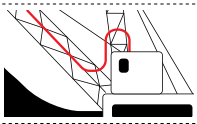
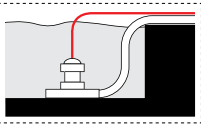
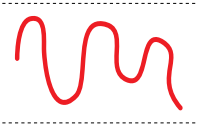


Cable construction

|                      |                                     |                                         |                                                                              |
|----------------------|-------------------------------------|-----------------------------------------|------------------------------------------------------------------------------|
| ①                    | Phase Conductors                    | Conductor material                      | Tinned copper                                                                |
|                      |                                     | Conductor construction                  | Class 5 VDE 0295 (IEC 60228)                                                 |
| ②                    | Insulation                          | Insulation material                     | 3GI3 quality rubber compound, according to VDE 0207 Part 20                  |
|                      |                                     | Nominal thickness                       | According to VDE 0250 Part 812                                               |
| Cores identification |                                     | According to VDE 0293 Part 308 (HD 308) |                                                                              |
| ③                    | Individual core screen (if present) | Material                                | Bare copper                                                                  |
|                      |                                     | Construction                            | Copper braid up to 10 mm <sup>2</sup> , copper wires from 16 mm <sup>2</sup> |
| ④                    | Control conductors (if present)     | Conductor material                      | Tinned copper                                                                |
|                      |                                     | Conductor construction                  | Class 5 VDE 0295 (IEC 60228)                                                 |
|                      |                                     | Insulation material                     | 3GI3 quality rubber compound, according to VDE 0207 Part 20                  |
| ⑤                    | Inner Sheath                        | Material                                | Rubber compound GM1b quality, according to VDE 0207 Part 21                  |
| ⑥                    | Outer Sheath                        | Material                                | Rubber compound 5GM5 quality, according to VDE 0207 Part 21                  |
|                      |                                     | Colour                                  | Yellow                                                                       |



Main applications



**Applications** Heavy duty tough rubber flexible cable with or without individually earth screened cores for dynamic or static applications and in aggressive environments. Flame retardant, abrasion, cut, notch and tear resistant. Good resistance to oil and fats. SNAKEFLEX is suitable for installation inside or outside in dry, damp or wet environments and in hazardous environments (subject to local regulations). For power supplies and controlling in mines, quarries, industrial plants, ports, infrastructure, agriculture and mobile equipment where high levels of mechanical stress and abrasion are expected. SNAKEFLEX can be permanently submersed in fresh water, salt water, waste water, storm water, oily water and sewage contaminated water to a depth of 100 meters.

Electrical working data

|                                 |    |                              |
|---------------------------------|----|------------------------------|
| Nominal rated voltage $U_0 / U$ | kV | 0,6/1                        |
| Test voltage                    | kV | 3                            |
| Max AC voltage                  | kV | 0,7/1,2                      |
| Max DC voltage                  | kV | 1,8                          |
| Current rating                  | A  | According to VDE 0298 Part 4 |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Submersible           | m                 | 100                          |
| Maximum tensile load* | N/mm <sup>2</sup> | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                                                                  |
|--------------------|----------------------------------------------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2                                       |
| Resistance to oil  | According to IEC 60811-2-1                                                       |
| Ozone resistance   | According to IEC 60811-2-1                                                       |
| Behaviour in water | HD 22.16 and AC internal test, suitable for immersion in salt and brackish water |
| Weather resistance | For indoor and outdoor application                                               |



SNAKEFLEX 0,6/1kV NSSHÖU O/J



| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 1x1,5                 | 1,5         | 6,3           | 7,0           | 60            | 23               |
| 0,6/1   | 1x2,5                 | 1,9         | 7,0           | 7,7           | 75            | 38               |
| 0,6/1   | 1x4                   | 2,4         | 7,6           | 8,3           | 95            | 60               |
| 0,6/1   | 1x6                   | 2,9         | 8,2           | 8,9           | 120           | 90               |
| 0,6/1   | 1x10                  | 3,8         | 9,5           | 10,2          | 180           | 150              |
| 0,6/1   | 1x16                  | 4,8         | 10,5          | 11,2          | 245           | 240              |
| 0,6/1   | 1x25                  | 6,1         | 13,0          | 13,7          | 375           | 375              |
| 0,6/1   | 1x35                  | 7,2         | 14,1          | 14,8          | 480           | 525              |
| 0,6/1   | 1x50                  | 8,9         | 16,2          | 16,9          | 660           | 750              |
| 0,6/1   | 1x70                  | 10,6        | 18,3          | 19,0          | 875           | 1050             |
| 0,6/1   | 1x95                  | 12,5        | 20,5          | 21,7          | 1150          | 1425             |
| 0,6/1   | 1x120                 | 14,2        | 22,8          | 24,0          | 1430          | 1800             |
| 0,6/1   | 1x150                 | 15,9        | 25,0          | 26,2          | 1750          | 2250             |
| 0,6/1   | 1x185                 | 17,7        | 28,2          | 29,4          | 2180          | 2775             |
| 0,6/1   | 1x240                 | 20,1        | 31,1          | 32,3          | 2770          | 3600             |
| 0,6/1   | 1x300                 | 22,5        | 34,9          | 36,1          | 3510          | 4500             |
| 0,6/1   | 3x1,5                 | 1,5         | 11,7          | 12,3          | 190           | 68               |
| 0,6/1   | 3x2,5                 | 1,9         | 13,1          | 13,7          | 255           | 113              |
| 0,6/1   | 3x4                   | 2,4         | 15,6          | 16,2          | 375           | 180              |
| 0,6/1   | 3x6                   | 2,9         | 16,8          | 17,4          | 465           | 270              |
| 0,6/1   | 3x10                  | 3,8         | 20,2          | 21,3          | 710           | 450              |
| 0,6/1   | 3x16                  | 4,8         | 22,3          | 23,4          | 930           | 720              |
| 0,6/1   | 3x25                  | 6,1         | 26,9          | 28,0          | 1390          | 1125             |
| 0,6/1   | 3x35                  | 7,2         | 30,2          | 31,4          | 1880          | 1575             |
| 0,6/1   | 3x50                  | 8,9         | 35,8          | 37,0          | 2500          | 2250             |
| 0,6/1   | 3x70                  | 10,6        | 39,3          | 40,5          | 3460          | 3150             |
| 0,6/1   | 3x95                  | 12,5        | 45,7          | 47,4          | 4570          | 4275             |
| 0,6/1   | 3x120                 | 14,2        | 48,2          | 49,9          | 5220          | 5400             |
| 0,6/1   | 3x150                 | 15,9        | 52,6          | 54,4          | 6460          | 6750             |
| 0,6/1   | 3x185                 | 17,7        | 58,7          | 61,0          | 7980          | 8325             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 3x50 + 3x25/3         | 8,9         | 36,3          | 37,5          | 2790          | 2250             |
| 0,6/1   | 3x70 + 3x35/3         | 10,6        | 39,7          | 41,4          | 3660          | 3150             |
| 0,6/1   | 3x95 + 3x50/3         | 12,5        | 46,3          | 48,0          | 4800          | 4275             |
| 0,6/1   | 3x120 + 3x70/3        | 14,2        | 48,5          | 50,3          | 5990          | 5400             |
| 0,6/1   | 3x150 + 3x70/3        | 15,9        | 54,3          | 56,1          | 7030          | 6750             |
| 0,6/1   | 3x185 + 3x95/3        | 17,7        | 61,7          | 64,0          | 9030          | 8325             |
| 0,6/1   | 3x240 + 3x120/3       | 20,1        | 66,5          | 68,8          | 11280         | 10800            |
| 0,6/1   | 4x1,5                 | 1,5         | 12,5          | 13,1          | 225           | 90               |
| 0,6/1   | 4x2,5                 | 1,9         | 15,3          | 15,9          | 350           | 150              |
| 0,6/1   | 4x4                   | 2,4         | 16,7          | 17,3          | 440           | 240              |
| 0,6/1   | 4x6                   | 2,9         | 18,1          | 18,7          | 550           | 360              |
| 0,6/1   | 4x10                  | 3,8         | 21,9          | 23,0          | 860           | 600              |
| 0,6/1   | 4x16                  | 4,8         | 25,2          | 26,3          | 1210          | 960              |
| 0,6/1   | 4x25                  | 6,1         | 30,6          | 31,8          | 1810          | 1500             |
| 0,6/1   | 4x35                  | 7,2         | 32,8          | 34,0          | 2330          | 2100             |
| 0,6/1   | 4x50                  | 8,9         | 39,0          | 40,2          | 3300          | 3000             |
| 0,6/1   | 4x70                  | 10,6        | 42,8          | 44,5          | 4300          | 4200             |
| 0,6/1   | 4x95                  | 12,5        | 49,9          | 51,7          | 5680          | 5700             |
| 0,6/1   | 4x120                 | 14,2        | 55,6          | 57,4          | 6820          | 7200             |
| 0,6/1   | 4x150                 | 15,9        | 60,6          | 62,9          | 8270          | 9000             |
| 0,6/1   | 4x185                 | 17,7        | 67,4          | 69,7          | 10350         | 11100            |
| 0,6/1   | 5x1,5                 | 1,5         | 13,4          | 14,0          | 270           | 113              |
| 0,6/1   | 5x2,5                 | 1,9         | 16,4          | 17,0          | 410           | 188              |
| 0,6/1   | 5x4                   | 2,4         | 18,0          | 18,6          | 525           | 300              |
| 0,6/1   | 5x6                   | 2,9         | 20,3          | 21,4          | 715           | 450              |
| 0,6/1   | 5x10                  | 3,8         | 23,7          | 24,8          | 1040          | 750              |
| 0,6/1   | 5x16                  | 4,8         | 27,3          | 28,4          | 1470          | 1200             |
| 0,6/1   | 5x25                  | 6,1         | 33,2          | 34,4          | 2220          | 1875             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 7x1,5                 | 1,5         | 16,9          | 17,5          | 400           | 158              |
| 0,6/1   | 12x1,5                | 1,5         | 19,6          | 20,2          | 540           | 270              |
| 0,6/1   | 18x1,5                | 1,5         | 22,2          | 23,3          | 750           | 405              |
| 0,6/1   | 24x1,5                | 1,5         | 23,7          | 25,1          | 900           | 540              |
| 0,6/1   | 7x2,5                 | 1,9         | 19,2          | 19,8          | 560           | 263              |
| 0,6/1   | 12x2,5                | 1,9         | 22,3          | 23,4          | 790           | 450              |
| 0,6/1   | 18x2,5                | 1,9         | 26,5          | 27,6          | 1110          | 675              |
| 0,6/1   | 24x2,5                | 1,9         | 28,4          | 29,6          | 1350          | 900              |

SNAKEFLEX 0,6/1kV NSSHÖU...../3E



| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 3x2,5 + 3x2,5/3E      | 1,9         | 16,2          | 16,9          | 370           | 113              |
| 0,6/1   | 3x4 + 3x4/3E          | 2,4         | 17,7          | 18,4          | 490           | 180              |
| 0,6/1   | 3x6 + 3x6/3E          | 2,9         | 18,9          | 19,6          | 590           | 270              |
| 0,6/1   | 3x10 + 3x10/3E        | 3,8         | 22,4          | 23,5          | 890           | 450              |
| 0,6/1   | 3x16 + 3x16/3E        | 4,8         | 26,6          | 27,7          | 1260          | 720              |
| 0,6/1   | 3x25 + 3x16/3E        | 6,1         | 29,9          | 31,1          | 1700          | 1125             |
| 0,6/1   | 3x35 + 3x16/3E        | 7,2         | 33,9          | 35,1          | 2100          | 1575             |
| 0,6/1   | 3x50 + 3x25/3E        | 8,9         | 39,8          | 41,5          | 3060          | 2250             |
| 0,6/1   | 3x70 + 3x35/3E        | 10,6        | 43,4          | 45,1          | 3940          | 3150             |
| 0,6/1   | 3x95 + 3x50/3E        | 12,5        | 50,0          | 51,8          | 5240          | 4275             |
| 0,6/1   | 3x120 + 3x70/3E       | 14,2        | 54,1          | 55,9          | 6580          | 5400             |
| 0,6/1   | 3x150 + 3x70/3E       | 15,9        | 59,7          | 62,0          | 7590          | 6750             |
| 0,6/1   | 3x185 + 3x95/3E       | 17,7        | 66,1          | 68,4          | 9400          | 8325             |

SNAKEFLEX 0,6/1kV NSSHÖU...../3E.....+ ST



| Voltage | Cores x cross section      | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|----------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>       | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 3x2,5 + 3x2,5/3E + 3x1,5ST | 1,9         | 16,2          | 18,1          | 425           | 113              |
| 0,6/1   | 3x4 + 3x4/3E + 3x1,5ST     | 2,4         | 17,7          | 19,6          | 540           | 180              |
| 0,6/1   | 3x6 + 3x6/3E + 3x1,5ST     | 2,9         | 18,9          | 20,3          | 640           | 270              |
| 0,6/1   | 3x10 + 3x10/3E + 3x2,5ST   | 3,8         | 22,4          | 23,5          | 940           | 450              |
| 0,6/1   | 3x16 + 3x16/3E + 3x2,5ST   | 4,8         | 26,6          | 27,7          | 1310          | 720              |
| 0,6/1   | 3x25 + 3x16/3E + 3x2,5ST   | 6,1         | 29,9          | 31,1          | 1800          | 1125             |
| 0,6/1   | 3x35 + 3x16/3E + 3x2,5ST   | 7,2         | 33,9          | 35,1          | 2230          | 1575             |
| 0,6/1   | 3x50 + 3x25/3E + 3x2,5ST   | 8,9         | 39,8          | 41,5          | 3160          | 2250             |
| 0,6/1   | 3x70 + 3x35/3E + 3x2,5ST   | 10,6        | 43,4          | 45,1          | 4210          | 3150             |
| 0,6/1   | 3x95 + 3x50/3E + 3x2,5ST   | 12,5        | 50,0          | 51,8          | 5520          | 4275             |
| 0,6/1   | 3x120 + 3x70/3E + 3x2,5ST  | 14,2        | 54,1          | 55,9          | 6730          | 5400             |
| 0,6/1   | 3x150 + 3x70/3E + 3x2,5ST  | 15,9        | 59,7          | 62,0          | 7740          | 6750             |
| 0,6/1   | 3x185 + 3x95/3E + 3x2,5ST  | 17,7        | 66,1          | 68,4          | 9700          | 8325             |

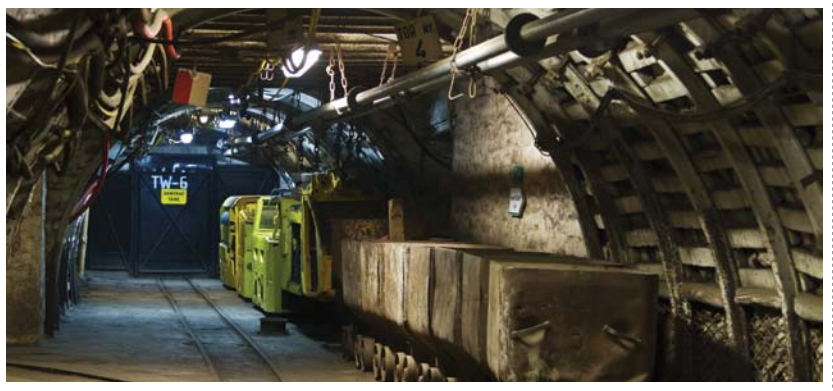
SNAKEFLEX FC 0,6/1 kV

Based on DIN VDE 0250 Part 812

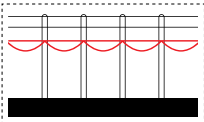
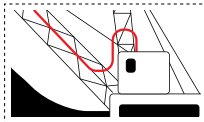
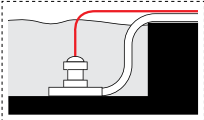
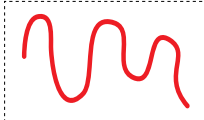


Cable construction

|   |                  |                                                                 |                                                             |
|---|------------------|-----------------------------------------------------------------|-------------------------------------------------------------|
| ① | Phase Conductors | Conductor material                                              | Tinned copper                                               |
|   |                  | Conductor construction                                          | Class 5 VDE 0295 (IEC 60228)                                |
| ② | Insulation       | Insulation material                                             | 3GI3 quality rubber compound, according to VDE 0207 Part 20 |
|   |                  | Nominal thickness                                               | According to VDE 0250 Part 812                              |
|   |                  | Cores identification<br>According to VDE 0293 Part 308 (HD 308) |                                                             |
| ③ | Earth Conductors | Material                                                        | Tinned copper                                               |
|   |                  | Conductor construction                                          | Class 5 VDE 0295 (IEC 60228)                                |
|   |                  | Insulation material                                             | 3GI3 quality rubber compound, according to VDE 0207 Part 20 |
| ④ | Overall Screen   | Material                                                        | Tinned copper                                               |
|   |                  | Construction                                                    | Copper braid                                                |
| ⑤ | Inner Sheath     | Material                                                        | Rubber compound GM1b quality, according to VDE 0207 Part 21 |
| ⑥ | Outer Sheath     | Material                                                        | Rubber compound 5GM5 quality, according to VDE 0207 Part 21 |
|   |                  | Colour                                                          | Yellow                                                      |



Main applications



**Applications** Heavy duty tough rubber flexible cable for dynamic or static applications and in aggressive environments. Flame retardant, abrasion, cut, notch and tear resistant. Good resistance to oil and fats. SNAKEFLEX FC is suitable for installation inside or outside in dry, damp or wet environments and in hazardous environments (subject to local regulations). For power supplies and controlling in mines, quarries, industrial plants, ports, infrastructure, agriculture and mobile equipment where high levels of mechanical stress and abrasion are expected. The overall screen provides a high level of electrical safety with EMC protection and makes the cable especially suitable for frequency converter controlled drives. SNAKEFLEX FC can be permanently submersed in fresh water, salt water, waste water, storm water, oily water and sewage contaminated water to a depth of 100 meters.

Electrical working data

|                                 |    |                              |
|---------------------------------|----|------------------------------|
| Nominal rated voltage $U_0 / U$ | kV | 0,6/1                        |
| Test voltage                    | kV | 3                            |
| Max AC voltage                  | kV | 0,7/1,2                      |
| Max DC voltage                  | kV | 1,8                          |
| Current rating                  | A  | According to VDE 0298 Part 4 |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Submersible           | m                 | 100                          |
| Maximum tensile load* | N/mm <sup>2</sup> | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |  |
|--------------------|--------------------------------------------|--|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |  |
| Resistance to oil  | According to IEC 60811-2-1                 |  |
| Ozone resistance   | According to IEC 60811-2-1                 |  |
| Weather resistance | For indoor and outdoor application         |  |



SNAKEFLEX FC 0,6/1 kV



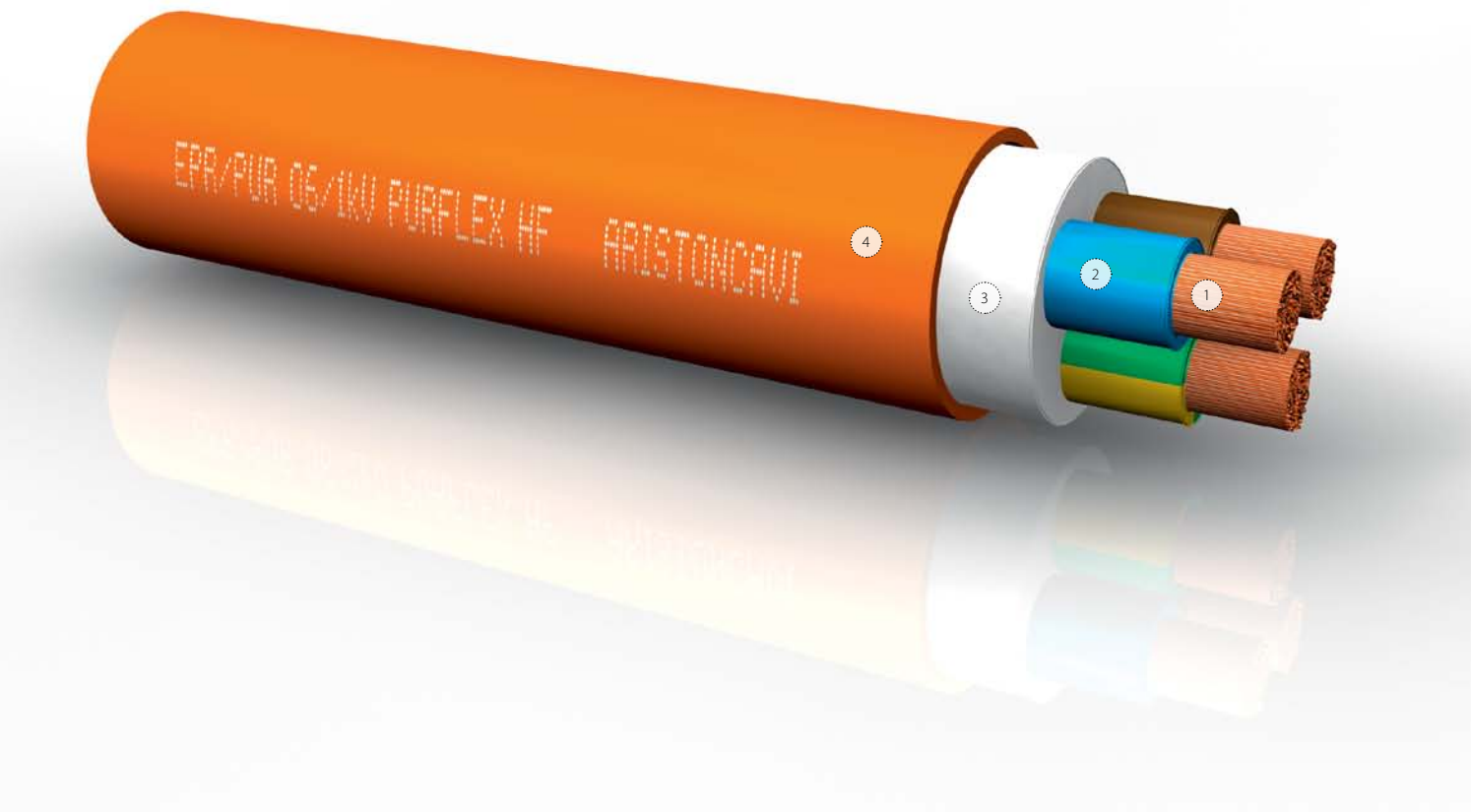
| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Screen cross section (approx) | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|-------------------------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | mm <sup>2</sup>               | kg/km         | N                |
| 0,6/1   | 3x16 + 3x2,5          | 4,8         | 24,6          | 27,1          | 12                            | 1170          | 720              |
| 0,6/1   | 3x25 + 3x4            | 6,1         | 28,4          | 31,1          | 15                            | 1650          | 1125             |
| 0,6/1   | 3x35 + 3x16/3         | 7,2         | 31,9          | 33,6          | 22                            | 2200          | 1575             |
| 0,6/1   | 3x50 + 3x25/3         | 8,9         | 37,6          | 39,3          | 25                            | 3110          | 2250             |
| 0,6/1   | 3x70 + 3x35/3         | 10,6        | 41,4          | 44,2          | 30                            | 3990          | 3150             |
| 0,6/1   | 3x95 + 3x50/3         | 12,5        | 47,7          | 49,4          | 34                            | 5080          | 4275             |
| 0,6/1   | 3x120 + 3x70/3        | 14,2        | 51,6          | 53,4          | 38                            | 6250          | 5400             |
| 0,6/1   | 3x150 + 3x70/3        | 15,9        | 56,5          | 58,3          | 53                            | 7450          | 6750             |
| 0,6/1   | 3x185 + 3x95/3        | 17,7        | 62,4          | 64,4          | 59                            | 9200          | 8325             |
| 0,6/1   | 3x240 + 3x120/3       | 20,1        | 68,4          | 71,3          | 67                            | 11700         | 10800            |





PURFLEX HF (C) 0,6/1 kV

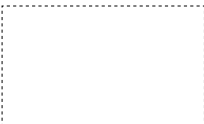
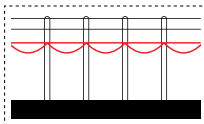
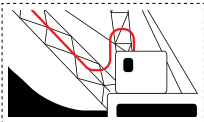
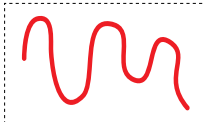
Based on AC specifications



| Cable construction          |                        |                                                |  |
|-----------------------------|------------------------|------------------------------------------------|--|
| ① Phase Conductors          | Conductor material     | Flexible bare copper                           |  |
|                             | Conductor construction | Class 5 VDE 0295 (IEC 60228)                   |  |
| ② Insulation                | Insulation material    | EPR based compound                             |  |
| Cores identification        |                        | According to VDE 0293 Part 308 (HD 308)        |  |
| ③ Inner Sheath              | Material               | Rubber filler                                  |  |
| Overall screen (if present) | Material               | Bare copper                                    |  |
|                             | Construction           | Braid (min. coverage 70%)                      |  |
| ④ Outer Sheath              | Material               | HFFR Halogen Free Flame Retardant polyurethane |  |
|                             | Colour                 | Orange                                         |  |



Main applications



**Applications** Highly flexible, halogen free polyurethane sheathed cable, for use in dry or wet environments. Suitable for application where mechanical stress and abrasion are expected. Examples: power leads for electric tools such as drills, disk saws and for portable motors and generators on building sites, in industry, or equipment with vibrations and in agriculture, mines, ports and naval sites. Also suitable for permanent low temperature application in cold rooms and for situations where the cable is subjected to strong abrasion and tearing stress. The halogen free characteristic makes it suitable for use in closed or confined areas, like tunnel drilling and underground mining sites.

Electrical working data

|                                 |    |                              |
|---------------------------------|----|------------------------------|
| Nominal rated voltage $U_0 / U$ | kV | 0,6/1                        |
| Test voltage                    | kV | 4                            |
| Max AC voltage                  | kV | 0,7/1,2                      |
| Max DC voltage                  | kV | 1,8                          |
| Current rating                  | A  | According to VDE 0298 Part 4 |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 50 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm <sup>2</sup> | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2<br>Halogen free according to IEC 60754-1 and IEC 60754-2 |
| Resistance to oil  | According to IEC 60811-2-1                                                                          |
| Ozone resistance   | According to IEC 60811-2-1                                                                          |
| Weather resistance | For indoor and outdoor application                                                                  |

PURFLEX HF 0,6/1 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 1x1,5                 | 1,5         | 5,9           | 6,6           | 50            | 23               |
| 0,6/1   | 1x2,5                 | 1,9         | 6,6           | 7,3           | 66            | 38               |
| 0,6/1   | 1x4                   | 2,4         | 7,2           | 7,9           | 84            | 60               |
| 0,6/1   | 1x6                   | 2,9         | 7,8           | 8,5           | 107           | 90               |
| 0,6/1   | 1x10                  | 3,8         | 9,1           | 9,8           | 159           | 150              |
| 0,6/1   | 1x16                  | 4,8         | 10,3          | 11,0          | 222           | 240              |
| 0,6/1   | 1x25                  | 6,1         | 11,9          | 12,6          | 418           | 375              |
| 0,6/1   | 1x35                  | 7,2         | 13,0          | 13,7          | 591           | 525              |
| 0,6/1   | 1x50                  | 8,9         | 15,3          | 16,0          | 794           | 750              |
| 0,6/1   | 1x70                  | 10,6        | 16,7          | 17,4          | 319           | 1050             |
| 0,6/1   | 1x95                  | 12,3        | 19,4          | 20,1          | 1044          | 1425             |
| 0,6/1   | 1x120                 | 13,8        | 21,0          | 22,2          | 2018          | 1800             |
| 0,6/1   | 1x150                 | 15,5        | 23,4          | 24,6          | 1298          | 2250             |
| 0,6/1   | 1x185                 | 17,0        | 25,8          | 27,0          | 1646          | 2775             |
| 0,6/1   | 1x240                 | 19,5        | 28,8          | 30,0          | 2573          | 3600             |
| 0,6/1   | 1x300                 | 22,2        | 31,8          | 33,0          | 3200          | 4500             |
| 0,6/1   | 3x50 + 3x25/3         | 8,9         | 32,3          | 33,5          | 2750          | 2250             |
| 0,6/1   | 3x70 + 3x35/3         | 10,6        | 36,3          | 37,5          | 3646          | 3150             |
| 0,6/1   | 3x95 + 3x50/3         | 12,3        | 41,7          | 42,9          | 4762          | 4275             |
| 0,6/1   | 3x120 + 3x70/3        | 13,8        | 45,6          | 47,3          | 5993          | 5400             |
| 0,6/1   | 3x150 + 3x70/3        | 15,5        | 50,8          | 52,6          | 7132          | 6750             |
| 0,6/1   | 3x185 + 3x95/3        | 17,0        | 56,0          | 57,8          | 9089          | 8325             |
| 0,6/1   | 3x240 + 3x120/3       | 19,5        | 63,0          | 65,3          | 11486         | 10800            |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 4x1,5                 | 1,5         | 10,1          | 10,7          | 162           | 90               |
| 0,6/1   | 4x2,5                 | 1,9         | 11,7          | 12,3          | 236           | 150              |
| 0,6/1   | 4x4                   | 2,4         | 13,7          | 14,3          | 336           | 240              |
| 0,6/1   | 4x6                   | 2,9         | 15,5          | 16,1          | 449           | 360              |
| 0,6/1   | 4x10                  | 3,8         | 20,0          | 21,1          | 752           | 600              |
| 0,6/1   | 4x16                  | 4,8         | 22,5          | 23,6          | 1042          | 960              |
| 0,6/1   | 4x25                  | 6,1         | 27,4          | 28,5          | 1555          | 1500             |
| 0,6/1   | 4x35                  | 7,2         | 30,3          | 31,5          | 2022          | 2100             |
| 0,6/1   | 4x50                  | 8,9         | 35,9          | 37,1          | 2884          | 3000             |
| 0,6/1   | 4x70                  | 10,6        | 40,5          | 42,2          | 3885          | 4200             |
| 0,6/1   | 4x95                  | 12,3        | 46,5          | 48,2          | 5114          | 5700             |
| 0,6/1   | 4x120                 | 13,8        | 51,0          | 52,8          | 6322          | 7200             |
| 0,6/1   | 4x150                 | 15,5        | 57,0          | 58,8          | 7840          | 9000             |
| 0,6/1   | 4x185                 | 17,0        | 62,7          | 65,0          | 9700          | 11100            |

PURFLEX HF C 0,6/1 kV



| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 0,6/1   | 3x16 + 3x2,5          | 4,8         | 23,9          | 25,9          | 1020          | 720              |
| 0,6/1   | 3x25 + 3x4            | 6,1         | 27,9          | 30,1          | 1450          | 1125             |
| 0,6/1   | 3x35 + 3x16/3         | 7,2         | 30,6          | 32,9          | 1880          | 1575             |
| 0,6/1   | 3x50 + 3x25/3         | 8,9         | 35,5          | 38,0          | 2650          | 2250             |
| 0,6/1   | 3x70 + 3x35/3         | 10,6        | 39,7          | 42,8          | 3580          | 3150             |
| 0,6/1   | 3x95 + 3x50/3         | 12,3        | 44,9          | 48,3          | 4500          | 4275             |
| 0,6/1   | 3x120 + 3x70/3        | 13,8        | 49,0          | 52,5          | 5650          | 5400             |
| 0,6/1   | 3x150 + 3x70/3        | 15,5        | 55,1          | 58,9          | 6870          | 6750             |
| 0,6/1   | 3x185 + 3x95/3        | 17,0        | 60,1          | 64,6          | 8450          | 8325             |
| 0,6/1   | 3x240 + 3x120/3       | 19,5        | 66,9          | 71,7          | 10900         | 10800            |



# *Medium voltage cables.*

URSUS® MT SC PLUS

URSUS® MT PLUS

URSUS® MT FO

URSUS® MT MIN PLUS

URSUS® MT MIN-E PLUS

URSUS® MT MIN PUR HF PLUS

URSUS® MT MIN GC

URSUS® MT MIN F PLUS

URSUS® MT MIN F-E PLUS

URSUS® MT SUB PLUS

URSUS® MT SUB-E PLUS

URSUS® MT BM PLUS

URSUS® MT BM PUR HF PLUS

URSUS® MT TUNNEL V PLUS

URSUS® MT TUNNEL V ATOX PLUS

URSUS® MT TUNNEL I PLUS

URSUS® MT SC PLUS 3,6/6 – 18/30 kV

Based on DIN VDE 0250 Part 813



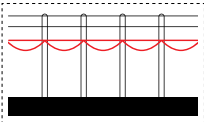
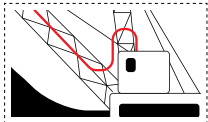
Cable construction

|                    |                        |                                                                                                           |
|--------------------|------------------------|-----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors | Conductor material     | Tinned copper                                                                                             |
|                    | Conductor construction | Class 5 VDE 0295 (IEC 60228)                                                                              |
|                    | Insulation material    | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                               |
|                    | Semiconductive layers  | Semiconductive tape over the conductor and inner and outer semi-conductive rubber layer on the insulation |
| ② Earth Conductor  | Material               | Bare copper                                                                                               |
|                    | Construction           | Copper wire screen                                                                                        |
| ③ Outer Sheath     | Material               | compound 5GM5 quality, according to VDE 0207 Part 21                                                      |
|                    | Colour                 | Red                                                                                                       |

Upon request:  
URSUS® MT SCB PLUS version with bare copper braid earth conductor.



Main applications



**Applications** Medium voltage rubber sheathed flexible cable, single-core, normally used for short-length connections of transformers and switchgears, as well as power cables on mining equipment and alongside conveyor belts.

Electrical working data

|                                 |                                                                                     |                              |        |         |         |         |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|---------|
| Nominal rated voltage $U_0$ / U | kV                                                                                  | 3,6/6                        | 6/10   | 8,7/15  | 12/20   | 18/30   |
| Test voltage                    | kV                                                                                  | 11                           | 17     | 24      | 29      | 43      |
| Max AC voltage                  | kV                                                                                  | 4/7,2                        | 6,9/12 | 10,4/18 | 13,9/24 | 20,8/36 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation |                              |        |         |         |         |
| Current rating A                | A                                                                                   | According to VDE 0298 Part 4 |        |         |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                      |       |                              |
|----------------------|-------|------------------------------|
| Bending radius       | mm    | According to VDE 0298 Part 3 |
| Maximum tensile load | N/mm² | 15                           |

Chemical working data

|                    |                                            |  |
|--------------------|--------------------------------------------|--|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |  |
| Resistance to oil  | According to IEC 60811-2-1                 |  |
| Ozone resistance   | According to IEC 60811-2-1                 |  |
| Weather resistance | For indoor and outdoor application         |  |

URSUS® MT SC PLUS 3,6/6 – 18/30 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 1x25/16               | 6,8         | 19,3          | 20,3          | 730           | 375              |
| 3,6/6   | 1x35/16               | 7,8         | 20,5          | 22,4          | 860           | 525              |
| 3,6/6   | 1x50/16               | 9,4         | 22,0          | 23,9          | 1030          | 750              |
| 3,6/6   | 1x70/16               | 11,2        | 23,8          | 25,7          | 1260          | 1050             |
| 3,6/6   | 1x95/16               | 12,7        | 26,4          | 28,3          | 1550          | 1425             |
| 3,6/6   | 1x120/16              | 14,4        | 28,2          | 30,2          | 1840          | 1800             |
| 3,6/6   | 1x150/25              | 16,3        | 30,6          | 32,6          | 2280          | 2250             |
| 3,6/6   | 1x185/25              | 17,6        | 32,5          | 34,5          | 2630          | 2775             |
| 3,6/6   | 1x240/25              | 20,6        | 35,6          | 37,6          | 3270          | 3600             |
| 6/10    | 1x25/16               | 6,8         | 19,3          | 20,9          | 770           | 375              |
| 6/10    | 1x35/16               | 7,8         | 20,5          | 23,0          | 900           | 525              |
| 6/10    | 1x50/16               | 9,4         | 22,0          | 24,5          | 1070          | 750              |
| 6/10    | 1x70/16               | 11,2        | 23,8          | 26,3          | 1300          | 1050             |
| 6/10    | 1x95/16               | 12,7        | 26,4          | 28,9          | 1590          | 1425             |
| 6/10    | 1x120/16              | 14,4        | 28,2          | 30,9          | 1880          | 1800             |
| 6/10    | 1x150/25              | 16,3        | 30,6          | 33,3          | 2320          | 2250             |
| 6/10    | 1x185/25              | 17,6        | 32,5          | 35,2          | 2670          | 2775             |
| 6/10    | 1x240/25              | 20,6        | 35,6          | 38,3          | 3310          | 3600             |
| 8,7/15  | 1x25/16               | 6,8         | 21,2          | 23,1          | 820           | 375              |
| 8,7/15  | 1x35/16               | 7,8         | 22,1          | 24,0          | 930           | 525              |
| 8,7/15  | 1x50/16               | 9,4         | 23,6          | 25,5          | 1110          | 750              |
| 8,7/15  | 1x70/16               | 11,2        | 26,0          | 27,9          | 1370          | 1050             |
| 8,7/15  | 1x95/16               | 12,7        | 27,6          | 29,5          | 1620          | 1425             |
| 8,7/15  | 1x120/16              | 14,4        | 29,4          | 31,4          | 1910          | 1800             |
| 8,7/15  | 1x150/25              | 16,3        | 32,8          | 34,8          | 2430          | 2250             |
| 8,7/15  | 1x185/25              | 17,6        | 33,8          | 35,8          | 2720          | 2775             |
| 8,7/15  | 1x240/25              | 20,6        | 37,8          | 39,8          | 3450          | 3600             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 12/20   | 1x25/16               | 6,8         | 22,4          | 24,3          | 870           | 375              |
| 12/20   | 1x35/16               | 7,8         | 23,1          | 25,0          | 970           | 525              |
| 12/20   | 1x50/16               | 9,4         | 25,4          | 27,3          | 1200          | 750              |
| 12/20   | 1x70/16               | 11,2        | 27,2          | 29,1          | 1440          | 1050             |
| 12/20   | 1x95/16               | 12,7        | 28,8          | 30,8          | 1690          | 1425             |
| 12/20   | 1x120/16              | 14,4        | 31,6          | 33,6          | 2060          | 1800             |
| 12/20   | 1x150/25              | 16,3        | 34,0          | 36,0          | 2510          | 2250             |
| 12/20   | 1x185/25              | 17,6        | 35,0          | 37,0          | 2810          | 2775             |
| 12/20   | 1x240/25              | 20,6        | 39,0          | 41,0          | 3540          | 3600             |
| 14/25   | 1x25/16               | 6,8         | 24,6          | 26,5          | 980           | 375              |
| 14/25   | 1x35/16               | 7,8         | 26,1          | 28,0          | 1130          | 525              |
| 14/25   | 1x50/16               | 9,4         | 27,6          | 29,5          | 1320          | 750              |
| 14/25   | 1x70/16               | 11,2        | 29,4          | 31,4          | 1570          | 1050             |
| 14/25   | 1x95/16               | 12,7        | 32,0          | 34,0          | 1900          | 1425             |
| 14/25   | 1x120/16              | 14,4        | 33,8          | 35,8          | 2210          | 1800             |
| 14/25   | 1x150/25              | 16,3        | 36,3          | 38,3          | 2680          | 2250             |
| 14/25   | 1x185/25              | 17,6        | 38,2          | 40,2          | 3060          | 2775             |
| 14/25   | 1x240/25              | 20,6        | 41,1          | 44,0          | 3730          | 3600             |
| 18/30   | 1x25/16               | 6,8         | 27,2          | 29,1          | 1120          | 375              |
| 18/30   | 1x35/16               | 7,8         | 28,1          | 30,0          | 1240          | 525              |
| 18/30   | 1x50/16               | 9,4         | 29,6          | 31,6          | 1440          | 750              |
| 18/30   | 1x70/16               | 11,2        | 32,4          | 34,4          | 1770          | 1050             |
| 18/30   | 1x95/16               | 12,7        | 34,1          | 36,1          | 2040          | 1425             |
| 18/30   | 1x120/16              | 14,4        | 35,9          | 37,9          | 2360          | 1800             |
| 18/30   | 1x150/25              | 16,3        | 39,3          | 41,3          | 2920          | 2250             |
| 18/30   | 1x185/25              | 17,6        | 40,1          | 43,0          | 3230          | 2775             |
| 18/30   | 1x240/25              | 20,6        | 43,1          | 46,0          | 3910          | 3600             |

URSUS® MT PLUS 3,6/6 ÷ 12/20 kV

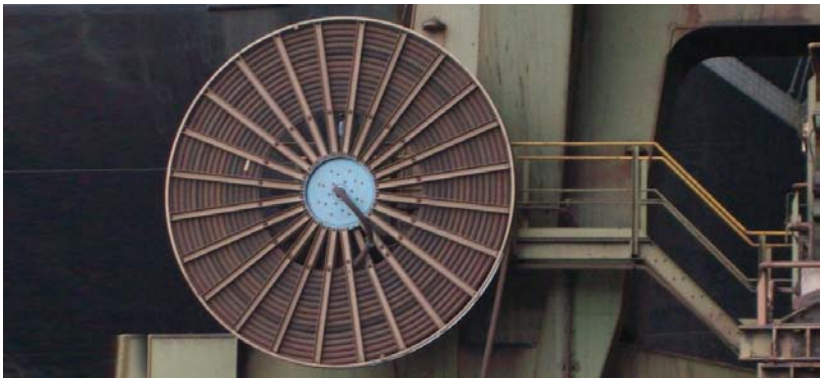
Based on DIN VDE 0250 Part 813



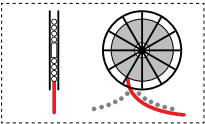
Cable construction

|                        |                                   |                                                                                                          |
|------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors     | Conductor material                | Tinned copper                                                                                            |
|                        | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                        | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
| ② Earth Conductors     | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
|                        | Conductor material                | Tinned copper                                                                                            |
|                        | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
| Central Filler         | Covering material                 | Semiconductive layer                                                                                     |
|                        | Material                          | Semiconductive compound on textile polyester support                                                     |
|                        | Assembly                          | Twisted cores with earth conductor split into 3 parts                                                    |
| Cores Assembly         | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
|                        |                                   |                                                                                                          |
| ③ Inner Sheath         | Material                          | Gm1b/5GM5 quality rubber compound, according to VDE 0207 Part 21                                         |
|                        | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
| ④ Antitwisting element | Material                          | Polyester braid between inner and outer sheath                                                           |
| ⑤ Outer Sheath         | Material                          | 5GM5 quality rubber compound, according to VDE 0207 Part 21                                              |
|                        | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |

\* Special construction for higher flexibility



Main applications



**Applications** Flexible reeling cable with reduced weight and dimensions for high and extreme mechanical stresses, e.g. torsional stress, deflection into different planes and high reeling speed.

Electrical working data

|                                 |                                                                                     |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                  | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                  | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                  | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation |                              |        |         |         |
| Current rating                  | A                                                                                   | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                          |              |                              |
|--------------------------|--------------|------------------------------|
| Bending radius           | mm           | According to VDE 0298 Part 3 |
| Maximum torsional stress | °/m          | ± 25                         |
| Maximum tensile load*    | N/mm²        | 20                           |
| Max working speed        | m/min        | 120                          |
| Special test             | Reeling test |                              |

\* Referred to the total phase conductors cross section  
Upon request it's available the KN version with improved mechanical characteristics designed for ASC's and ARMG's

Chemical working data

|                    |                                            |
|--------------------|--------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |
| Resistance to oil  | According to IEC 60811-2-1                 |
| Ozone resistance   | According to IEC 60811-2-1                 |
| Weather resistance | For indoor and outdoor application         |



URSUS® MT PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 3,6/6   | 3x25 + 3x25/3         | 6,8         | 39,9          | 41,6          | 2390          | 1500             |
| 3,6/6   | 3x35 + 3x25/3         | 7,8         | 42,9          | 44,6          | 2970          | 2100             |
| 3,6/6   | 3x50 + 3x25/3         | 9,4         | 46,0          | 47,7          | 3600          | 3000             |
| 3,6/6   | 3x70 + 3x35/3         | 11,2        | 49,8          | 51,6          | 4600          | 4200             |
| 3,6/6   | 3x95 + 3x50/3         | 12,7        | 55,8          | 57,6          | 5800          | 5700             |
| 3,6/6   | 3x120 + 3x70/3        | 14,4        | 59,6          | 61,4          | 7070          | 7200             |
| 3,6/6   | 3x150 + 3x70/3        | 16,3        | 66,0          | 68,3          | 8870          | 9000             |
| 3,6/6   | 3x185 + 3x95/3        | 17,6        | 67,9          | 70,2          | 9980          | 11100            |
|         |                       |             |               |               |               |                  |
| 6/10    | 3x25 + 3x25/3         | 6,8         | 39,9          | 41,6          | 2390          | 1500             |
| 6/10    | 3x35 + 3x25/3         | 7,8         | 42,9          | 44,6          | 2970          | 2100             |
| 6/10    | 3x50 + 3x25/3         | 9,4         | 46,0          | 47,7          | 3600          | 3000             |
| 6/10    | 3x70 + 3x35/3         | 11,2        | 49,8          | 51,6          | 4600          | 4200             |
| 6/10    | 3x95 + 3x50/3         | 12,7        | 55,8          | 57,6          | 5860          | 5700             |
| 6/10    | 3x120 + 3x70/3        | 14,4        | 59,6          | 61,4          | 7120          | 7200             |
| 6/10    | 3x150 + 3x70/3        | 16,3        | 66,0          | 68,3          | 8930          | 9000             |
| 6/10    | 3x185 + 3x95/3        | 17,6        | 67,9          | 70,2          | 10080         | 11100            |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 8,7/15  | 3x25 + 3x25/3         | 6,8         | 44,7          | 46,4          | 2800          | 1500             |
| 8,7/15  | 3x35 + 3x25/3         | 7,8         | 46,2          | 47,9          | 3160          | 2100             |
| 8,7/15  | 3x50 + 3x25/3         | 9,4         | 49,4          | 51,2          | 3960          | 3000             |
| 8,7/15  | 3x70 + 3x35/3         | 11,2        | 55,0          | 56,8          | 5020          | 4200             |
| 8,7/15  | 3x95 + 3x50/3         | 12,7        | 58,4          | 60,2          | 5840          | 5700             |
| 8,7/15  | 3x120 + 3x70/3        | 14,4        | 63,9          | 66,2          | 7420          | 7200             |
| 8,7/15  | 3x150+3x70/3          | 16,3        | 68,5          | 70,9          | 8620          | 9000             |
|         |                       |             |               |               |               |                  |
|         |                       |             |               |               |               |                  |
| 12/20   | 3x25 + 3x25/3         | 6,8         | 47,3          | 49,0          | 3340          | 1500             |
| 12/20   | 3x35 + 3x25/3         | 7,8         | 48,8          | 50,6          | 3690          | 2100             |
| 12/20   | 3x50 + 3x25/3         | 9,4         | 53,7          | 55,5          | 4640          | 3000             |
| 12/20   | 3x70 + 3x35/3         | 11,2        | 57,5          | 59,3          | 5720          | 4200             |
| 12/20   | 3x95 + 3x50/3         | 12,7        | 60,8          | 63,1          | 6660          | 5700             |
| 12/20   | 3x120 + 3x70/3        | 14,4        | 66,4          | 68,7          | 8200          | 7200             |

URSUS® MT FO 3,6/6 ÷ 12/20 kV

DIN VDE 0250 Part 813 approved

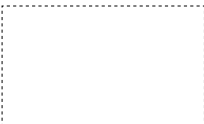
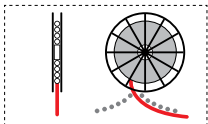


| Cable construction     |                                   |                                                                                                          |
|------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors     | Conductor material                | Tinned copper                                                                                            |
|                        | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                        | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                        | Insulation thickness              | According to VDE 0250 Part 813 (table 1)                                                                 |
|                        | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② Earth Conductors     | Conductor material                | Tinned copper                                                                                            |
|                        | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                        | Covering material                 | Semiconductive layer                                                                                     |
| ③ Fibre optics         | Fibre                             | Transmission data kind 50/125 multimode, 62.5/125 multimode, 9/125 singlemode                            |
|                        | Nominal num. aperture             | 250 µm                                                                                                   |
|                        | Number of fibres                  | 6 - 8 - 12 - 24 multimode optical fibre,<br>4 - 6 - 8 -12 -24 singlemode optical fibre                   |
|                        | Fibres arrangement covering       | Special rubber compound over the twisted cores                                                           |
|                        |                                   |                                                                                                          |
| Central Filler         | Material                          | Semiconductive compound on textile polyester support                                                     |
| Cores Assembly         | Assembly                          | Twisted cores with earth conductor split into 2 parts + FO                                               |
|                        | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
| ④ Inner Sheath         | Material                          | 5GM3 quality rubber compound, according to VDE 0207 Part 21                                              |
|                        | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
| ⑤ Antitwisting element | Material                          | Polyester braid between inner and outer sheath                                                           |
| ⑥ Outer Sheath         | Material                          | 5GM5 quality rubber compound, according to VDE 0207 Part 21                                              |
|                        | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |

\* Special construction for higher flexibility



Main applications



**Applications** Flexible reeling cable with integrated fibre optics wires for high and extreme mechanical stresses, e.g. tor-sional stress, deflection into different planes and high reeling speed.

| Electrical working data                                                                                                                                                     |                                                                                     |                                |                                              |                                            |                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------|--------------------------------------------|--------------------|
| Nominal rated voltage U <sub>0</sub> / U                                                                                                                                    | kV                                                                                  | 3,6/6                          | 6/10                                         | 8,7/15                                     | 12/20              |
| Test voltage                                                                                                                                                                | kV                                                                                  | 11                             | 17                                           | 24                                         | 29                 |
| Max AC voltage                                                                                                                                                              | kV                                                                                  | 4,2/7,2                        | 6,9/12                                       | 10,4/18                                    | 13,9/24            |
| Electrical field control                                                                                                                                                    | Inner and outer semiconductive layers extruded in a single pass with the insulation |                                |                                              |                                            |                    |
| Current rating                                                                                                                                                              | A                                                                                   | According to VDE 0298 Part 4   |                                              |                                            |                    |
| Thermal working data                                                                                                                                                        |                                                                                     |                                |                                              |                                            |                    |
| Maximum short circuit temperature                                                                                                                                           | °C                                                                                  | 250                            |                                              |                                            |                    |
| Maximum working temp. on the conductor                                                                                                                                      | °C                                                                                  | 90                             |                                              |                                            |                    |
| Ambient temperature: mobile condition                                                                                                                                       | °C                                                                                  | - 25 to + 80                   |                                              |                                            |                    |
| Ambient temperature: static condition                                                                                                                                       | °C                                                                                  | - 40 to + 80                   |                                              |                                            |                    |
| Mechanical working data                                                                                                                                                     |                                                                                     |                                |                                              |                                            |                    |
| Bending radius                                                                                                                                                              | mm                                                                                  | According to VDE 0298 Part 3   |                                              |                                            |                    |
| Maximum torsional stress                                                                                                                                                    | °/m                                                                                 | ± 25                           |                                              |                                            |                    |
| Maximum tensile load*                                                                                                                                                       | N/mm <sup>2</sup>                                                                   | 20                             |                                              |                                            |                    |
| Max working speed                                                                                                                                                           | m/min                                                                               | 120                            |                                              |                                            |                    |
| Special test                                                                                                                                                                | Reeling test                                                                        |                                |                                              |                                            |                    |
| * Referred to the total phase conductors cross section<br>Upon request it's available the KN version with improved mechanical characteristics designed for ASC's and ARMG's |                                                                                     |                                |                                              |                                            |                    |
| Chemical working data                                                                                                                                                       |                                                                                     |                                |                                              |                                            |                    |
| Burning behaviour                                                                                                                                                           | Flame retardant according to IEC 60332-1-2                                          |                                |                                              |                                            |                    |
| Resistance to oil                                                                                                                                                           | According to IEC 60811-2-1                                                          |                                |                                              |                                            |                    |
| Ozone resistance                                                                                                                                                            | According to IEC 60811-2-1                                                          |                                |                                              |                                            |                    |
| Weather resistance                                                                                                                                                          | For indoor and outdoor application                                                  |                                |                                              |                                            |                    |
| Optical working data                                                                                                                                                        |                                                                                     |                                |                                              |                                            |                    |
| Graded index multimode fibre                                                                                                                                                |                                                                                     |                                |                                              |                                            |                    |
| Fibre                                                                                                                                                                       | Attenuation at 850 nm (dB/km)                                                       | Attenuation at 1300 nm (dB/km) | Bandwidth at 850 nm (MHz*km)                 | Bandwidth at 1300 nm (MHz*km)              | Numerical aperture |
| 50/125                                                                                                                                                                      | ≤ 2,5                                                                               | ≤ 0,7                          | ≥ 200                                        | ≥ 500                                      | 0,200 ± 0,015      |
| 62,5/125                                                                                                                                                                    | ≤ 3,0                                                                               | ≤ 0,7                          | ≥ 200                                        | ≥ 500                                      | 0,275 ± 0,015      |
| 9/125                                                                                                                                                                       |                                                                                     |                                |                                              |                                            |                    |
| Step index singlemode fibre                                                                                                                                                 |                                                                                     |                                |                                              |                                            |                    |
|                                                                                                                                                                             | Attenuation at 1310 nm (dB/km)                                                      | Attenuation at 1550 nm (dB/km) | Chromatic disp. at 1285 - 1300 nm (ps/nm km) | Chromatic dispersion at 1550 nm (ps/nm km) |                    |
|                                                                                                                                                                             | ≤ 0,35                                                                              | ≤ 0,24                         | ≤ 3                                          | ≤ 18                                       |                    |

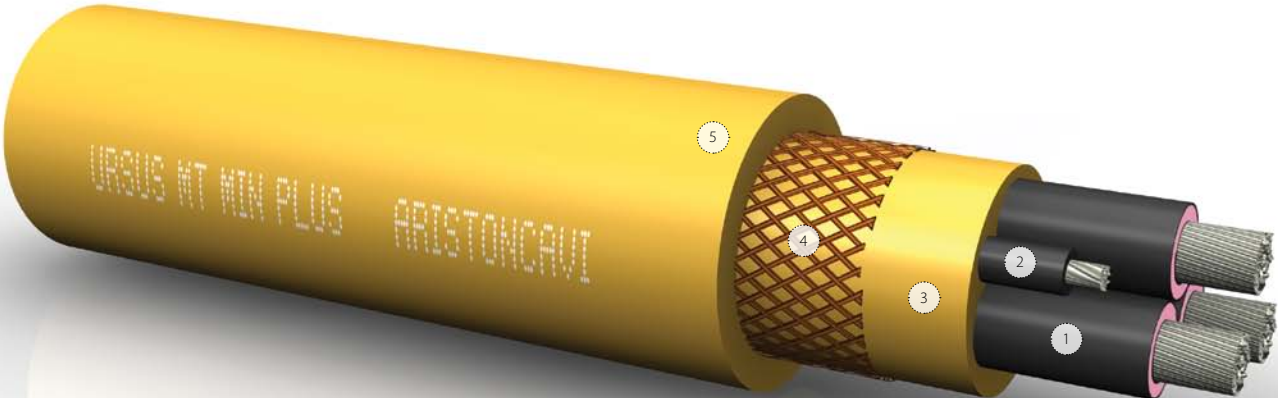
URSUS® MT FO 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 3x25 + 2x25/2 + FO    | 6,8         | 44,7          | 47,6          | 2820          | 1500             |
| 3,6/6   | 3x35 + 2x25/2 + FO    | 7,8         | 46,6          | 49,5          | 3190          | 2100             |
| 3,6/6   | 3x50 + 2x25/2 + FO    | 9,4         | 49,9          | 52,9          | 3990          | 3000             |
| 3,6/6   | 3x70 + 2x35/2 + FO    | 11,2        | 55,5          | 58,5          | 5070          | 4200             |
| 3,6/6   | 3x95 + 2x50/2 + FO    | 12,7        | 58,9          | 61,9          | 5900          | 5700             |
| 3,6/6   | 3x120 + 2x70/2 + FO   | 14,4        | 64,4          | 68,3          | 7490          | 7200             |
| 3,6/6   | 3x150 + 2x70/2 + FO   | 16,3        | 68,5          | 72,5          | 8710          | 9000             |
| 6/10    | 3x25 + 2x25/2 + FO    | 6,8         | 47,3          | 50,3          | 3370          | 1500             |
| 6/10    | 3x35 + 2x25/2 + FO    | 7,8         | 48,8          | 51,8          | 3730          | 2100             |
| 6/10    | 3x50 + 2x25/2 + FO    | 9,4         | 53,7          | 56,7          | 4680          | 3000             |
| 6/10    | 3x70 + 2x35/2 + FO    | 11,2        | 57,5          | 60,5          | 5770          | 4200             |
| 6/10    | 3x95 + 2x50/2 + FO    | 12,7        | 60,8          | 64,7          | 6720          | 5700             |
| 6/10    | 3x120 + 2x70/2 + FO   | 14,4        | 66,4          | 70,4          | 8280          | 7200             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 8,7/15  | 3x25 + 2x25/2 + FO    | 6,8         | 52,0          | 55,0          | 3680          | 1500             |
| 8,7/15  | 3x35 + 2x25/2 + FO    | 7,8         | 55,2          | 58,2          | 4310          | 2100             |
| 8,7/15  | 3x50 + 2x25/2 + FO    | 9,4         | 58,4          | 61,4          | 5020          | 3000             |
| 8,7/15  | 3x70 + 2x35/2 + FO    | 11,2        | 62,1          | 66,0          | 6170          | 4200             |
| 8,7/15  | 3x95 + 2x50/2 + FO    | 12,7        | 67,2          | 71,2          | 7380          | 5700             |
| 12/20   | 3x25 + 2x25/2 + FO    | 6,8         | 58,0          | 61,0          | 4490          | 1500             |
| 12/20   | 3x35 + 2x25/2 + FO    | 7,8         | 59,4          | 62,4          | 4830          | 2100             |
| 12/20   | 3x50 + 2x25/2 + FO    | 9,4         | 64,3          | 68,2          | 5840          | 3000             |
| 12/20   | 3x70 + 2x35/2 + FO    | 11,2        | 68,1          | 72,1          | 7030          | 4200             |

URSUS® MT MIN PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813



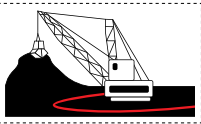
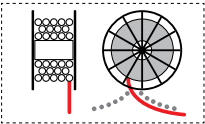
Cable construction

|                |                      |                                   |                                                                                                          |
|----------------|----------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| 1              | Phase Conductors     | Conductor material                | Tinned copper                                                                                            |
|                |                      | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                |                      | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                |                      | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| 2              | Earth Conductors     | Conductor material                | Tinned copper                                                                                            |
|                |                      | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                |                      | Covering material                 | Semiconductive layer                                                                                     |
| Central Filler |                      | Material                          | Semiconductive compound on textile polyester support                                                     |
| Cores Assembly |                      | Assembly                          | Twisted cores with earth conductor split into 3 parts                                                    |
|                |                      | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
| 3              | Inner Sheath         | Material                          | Gm1b/5GM5 quality rubber compound, according to VDE 0207 Part 21                                         |
|                |                      | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
| 4              | Antitwisting element | Material                          | Polyester braid between inner and outer sheath                                                           |
| 5              | Outer Sheath         | Material                          | Special abrasion resistant rubber compound 5GM5 quality, according to VDE 0207 Part 21                   |
|                |                      | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|                |                      | Colour                            | Yellow                                                                                                   |

\* Special construction for higher flexibility



Main applications



**Applications** Flexible cable for energy supply of heavy mobile equipment such as drag lines, shovels, dredges, drills, under extreme mechanical stresses and abrasion during trailing operation in opencast mine.

Electrical working data

|                                 |                                                                                     |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                  | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                  | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                  | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation |                              |        |         |         |
| Current rating                  | A                                                                                   | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                          |              |                              |
|--------------------------|--------------|------------------------------|
| Bending radius           | mm           | According to VDE 0298 Part 3 |
| Maximum torsional stress | °/m          | ± 25                         |
| Maximum tensile load*    | N/mm²        | 20                           |
| Special test             | Reeling test |                              |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |  |
|--------------------|--------------------------------------------|--|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |  |
| Resistance to oil  | According to IEC 60811-2-1                 |  |
| Ozone resistance   | According to IEC 60811-2-1                 |  |
| Weather resistance | For indoor and outdoor application         |  |



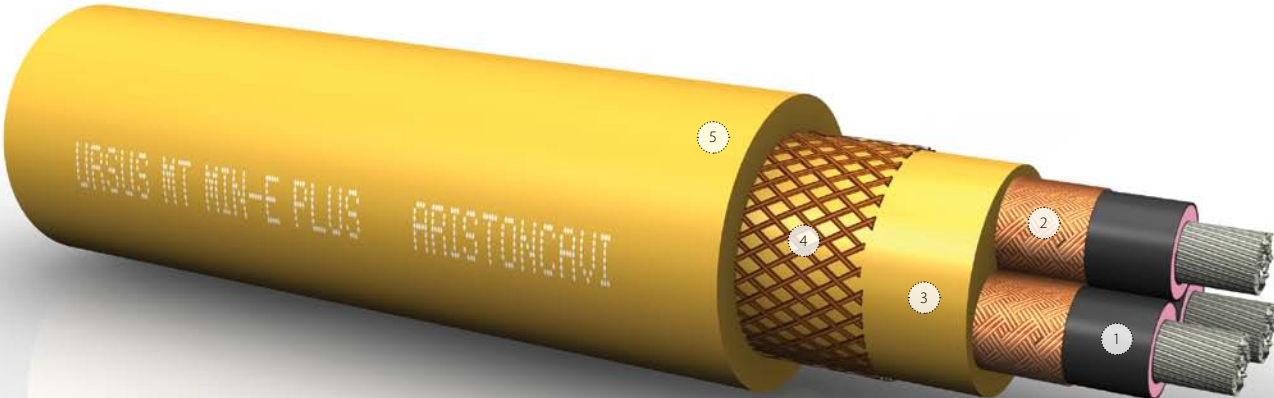
URSUS® MT MIN PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 3,6/6   | 3x25 + 3x25/3         | 6,8         | 39,9          | 41,6          | 2390          | 1500             |
| 3,6/6   | 3x35 + 3x25/3         | 7,8         | 42,9          | 44,6          | 2970          | 2100             |
| 3,6/6   | 3x50 + 3x25/3         | 9,4         | 46,0          | 47,7          | 3600          | 3000             |
| 3,6/6   | 3x70 + 3x35/3         | 11,2        | 49,8          | 51,6          | 4600          | 4200             |
| 3,6/6   | 3x95 + 3x50/3         | 12,7        | 55,8          | 57,6          | 5800          | 5700             |
| 3,6/6   | 3x120 + 3x70/3        | 14,4        | 59,6          | 61,4          | 7070          | 7200             |
| 3,6/6   | 3x150 + 3x70/3        | 16,3        | 66,0          | 68,3          | 8870          | 9000             |
| 3,6/6   | 3x185 + 3x95/3        | 17,6        | 67,9          | 70,2          | 9980          | 11100            |
|         |                       |             |               |               |               |                  |
| 6/10    | 3x25 + 3x25/3         | 6,8         | 39,9          | 42,2          | 2430          | 1500             |
| 6/10    | 3x35 + 3x25/3         | 7,8         | 42,9          | 45,2          | 3010          | 2100             |
| 6/10    | 3x50 + 3x25/3         | 9,4         | 46,0          | 48,3          | 3640          | 3000             |
| 6/10    | 3x70 + 3x35/3         | 11,2        | 49,8          | 52,2          | 4640          | 4200             |
| 6/10    | 3x95 + 3x50/3         | 12,7        | 55,8          | 58,2          | 5900          | 5700             |
| 6/10    | 3x120 + 3x70/3        | 14,4        | 59,6          | 62,1          | 7160          | 7200             |
| 6/10    | 3x150 + 3x70/3        | 16,3        | 66,0          | 69,0          | 8970          | 9000             |
| 6/10    | 3x185 + 3x95/3        | 17,6        | 67,9          | 70,9          | 10120         | 11100            |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 8,7/15  | 3x25 + 3x25/3         | 6,8         | 44,7          | 46,4          | 2800          | 1500             |
| 8,7/15  | 3x35 + 3x25/3         | 7,8         | 46,2          | 47,9          | 3160          | 2100             |
| 8,7/15  | 3x50 + 3x25/3         | 9,4         | 49,4          | 51,2          | 3960          | 3000             |
| 8,7/15  | 3x70 + 3x35/3         | 11,2        | 55,0          | 56,8          | 5020          | 4200             |
| 8,7/15  | 3x95 + 3x50/3         | 12,7        | 58,4          | 60,2          | 5840          | 5700             |
| 8,7/15  | 3x120 + 3x70/3        | 14,4        | 63,9          | 66,2          | 7420          | 7200             |
| 8,7/15  | 3x150+3x70/3          | 16,3        | 68,5          | 70,9          | 8620          | 9000             |
|         |                       |             |               |               |               |                  |
|         |                       |             |               |               |               |                  |
| 12/20   | 3x25 + 3x25/3         | 6,8         | 47,3          | 49,0          | 3340          | 1500             |
| 12/20   | 3x35 + 3x25/3         | 7,8         | 48,8          | 50,6          | 3690          | 2100             |
| 12/20   | 3x50 + 3x25/3         | 9,4         | 53,7          | 55,5          | 4640          | 3000             |
| 12/20   | 3x70 + 3x35/3         | 11,2        | 57,5          | 59,3          | 5720          | 4200             |
| 12/20   | 3x95 + 3x50/3         | 12,7        | 60,8          | 63,1          | 6660          | 5700             |
| 12/20   | 3x120 + 3x70/3        | 14,4        | 66,4          | 68,7          | 8200          | 7200             |

URSUS® MT MIN-E PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813



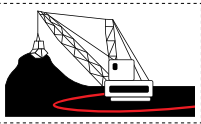
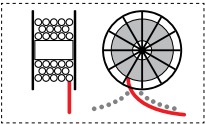
Cable construction

|                            |                                   |                                                                                                          |
|----------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors         | Conductor material                | Tinned copper                                                                                            |
|                            | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                            | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                            | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② Protec. Earth Conductors | Material                          | Bare copper                                                                                              |
|                            | Conductor construction            | Individual copper braid                                                                                  |
|                            | Central Filler                    | Material Rubber compound on textile polyester support                                                    |
|                            | Cores Assembly                    | Assembly Twisted cores                                                                                   |
| ③ Inner Sheath             | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
|                            | Material                          | Special abrasion resistant rubber compound 5GM5 quality, according to VDE 0207 Part 21                   |
|                            | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
| ④ Antitwisting element     | Material                          | Polyester braid between inner and outer sheath                                                           |
| ⑤ Outer Sheath             | Material                          | Special abrasion resistant rubber compound 5GM5 quality, according to VDE 0207 Part 21                   |
|                            | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|                            | Colour                            | Yellow                                                                                                   |

\* Special construction for higher flexibility



Main applications



**Applications** Flexible cable for energy supply of heavy mobile equipment such as drag lines, shovels, dredges, drills, under extreme mechanical stresses and abrasion during trailing operation in opencast mine.

Electrical working data

|                                 |                                                                                     |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                  | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                  | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                  | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation |                              |        |         |         |
| Current rating                  | A                                                                                   | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |       |                              |
|-----------------------|-------|------------------------------|
| Bending radius        | mm    | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm² | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |  |
|--------------------|--------------------------------------------|--|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |  |
| Resistance to oil  | According to IEC 60811-2-1                 |  |
| Ozone resistance   | According to IEC 60811-2-1                 |  |
| Weather resistance | For indoor and outdoor application         |  |

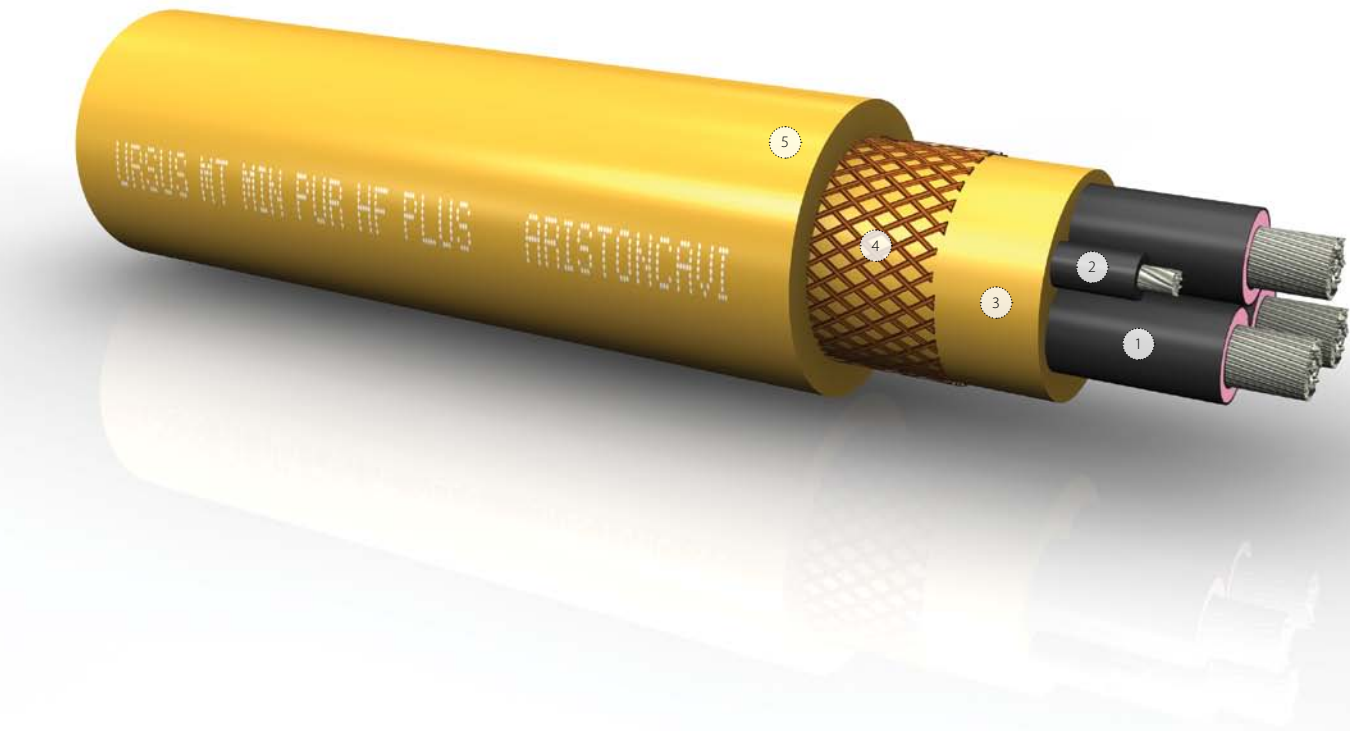
URSUS® MT MIN-E PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 3,6/6   | 3x25 + 3x25/3E        | 6,8         | 43,4          | 45,1          | 2850          | 1125             |
| 3,6/6   | 3x35 + 3x25/3E        | 7,8         | 45,0          | 46,7          | 3200          | 1575             |
| 3,6/6   | 3x50 + 3x25/3E        | 9,4         | 48,1          | 49,8          | 3850          | 2250             |
| 3,6/6   | 3x70 + 3x35/3E        | 11,2        | 53,7          | 55,5          | 4980          | 3150             |
| 3,6/6   | 3x95 + 3x50/3E        | 12,7        | 58,4          | 60,2          | 6200          | 4275             |
| 3,6/6   | 3x120 + 3x70/3E       | 14,4        | 62,9          | 65,2          | 7580          | 5400             |
| 3,6/6   | 3x150 + 3x70/3E       | 16,3        | 69,3          | 71,7          | 9090          | 6750             |
|         |                       |             |               |               |               |                  |
| 6/10    | 3x25 + 3x25/3E        | 6,8         | 43,4          | 45,7          | 2890          | 1125             |
| 6/10    | 3x35 + 3x25/3E        | 7,8         | 45,0          | 47,3          | 3240          | 1575             |
| 6/10    | 3x50 + 3x25/3E        | 9,4         | 48,1          | 50,4          | 3890          | 2250             |
| 6/10    | 3x70 + 3x35/3E        | 11,2        | 53,7          | 56,1          | 5020          | 3150             |
| 6/10    | 3x95 + 3x50/3E        | 12,7        | 58,4          | 60,8          | 6240          | 4275             |
| 6/10    | 3x120 + 3x70/3E       | 14,4        | 62,9          | 65,9          | 7620          | 5400             |
| 6/10    | 3x150 + 3x70/3E       | 16,3        | 69,3          | 72,4          | 9130          | 6750             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 8,7/15  | 3x25 + 3x25/3E        | 6,8         | 46,9          | 48,6          | 3180          | 1125             |
| 8,7/15  | 3x35 + 3x25/3E        | 7,8         | 48,3          | 50,0          | 3570          | 1575             |
| 8,7/15  | 3x50 + 3x25/3E        | 9,4         | 53,3          | 55,1          | 4420          | 2250             |
| 8,7/15  | 3x70 + 3x35/3E        | 11,2        | 57,1          | 58,9          | 5410          | 3150             |
| 8,7/15  | 3x95 + 3x50/3E        | 12,7        | 60,8          | 63,1          | 6500          | 4275             |
| 8,7/15  | 3x120 + 3x70/3E       | 14,4        | 67,2          | 69,5          | 8150          | 5400             |
|         |                       |             |               |               |               |                  |
| 12/20   | 3x25 + 3x25/3E        | 6,8         | 49,4          | 51,2          | 3450          | 1125             |
| 12/20   | 3x35 + 3x25/3E        | 7,8         | 50,9          | 52,7          | 3820          | 1575             |
| 12/20   | 3x50 + 3x25/3E        | 9,4         | 55,8          | 57,6          | 4720          | 2250             |
| 12/20   | 3x70 + 3x35/3E        | 11,2        | 59,6          | 61,4          | 5690          | 3150             |
| 12/20   | 3x95 + 3x50/3E        | 12,7        | 63,3          | 65,6          | 6860          | 4275             |

URSUS® MT MIN PUR HF PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813



Cable construction

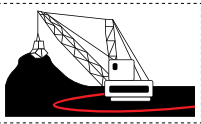
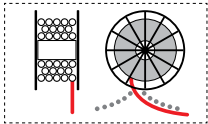
|                        |                                   |                                                                                                          |
|------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors     | Conductor material                | Tinned copper                                                                                            |
|                        | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                        | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                        | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② Earth Conductors     | Conductor material                | Tinned copper                                                                                            |
|                        | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                        | Covering material                 | Semiconductive layer                                                                                     |
| Central Filler         | Material                          | Semiconductive compound on textile polyester support                                                     |
| Cores Assembly         | Assembly                          | Twisted cores with earth conductor split into 3 parts                                                    |
|                        | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
| ③ Inner Sheath         | Material                          | Halogen free polyurethane                                                                                |
| ④ Antitwisting element | Material                          | Polyester braid between inner and outer sheath                                                           |
| ⑤ Outer Sheath         | Material                          | Halogen free polyurethane                                                                                |
|                        | Colour                            | Yellow                                                                                                   |

\* Special construction for higher flexibility

Upon request:  
URSUS® MT MIN PUR HF RFB special version with reflecting tape and transparent outer sheath, without textile braid.



Main applications



**Applications** Flexible cable for energy supply of heavy mobile equipment such as drag lines, shovels, dredges, drills, under extreme mechanical stresses and abrasion during trailing operation in opencast mine. Halogen free polyurethane sheathed version.

Electrical working data

|                                 |                                                                                     |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                  | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                  | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                  | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation |                              |        |         |         |
| Current rating                  | A                                                                                   | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 50 to + 80 |

Mechanical working data

|                          |              |                              |
|--------------------------|--------------|------------------------------|
| Bending radius           | mm           | According to VDE 0298 Part 3 |
| Maximum torsional stress | °/m          | ± 25                         |
| Maximum tensile load*    | N/mm²        | 20                           |
| Special test             | Reeling test |                              |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                                                                                     |  |
|--------------------|-----------------------------------------------------------------------------------------------------|--|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2<br>Halogen free according to IEC 60754-1 and IEC 60754-2 |  |
| Resistance to oil  | According to IEC 60811-2-1                                                                          |  |
| Ozone resistance   | According to IEC 60811-2-1                                                                          |  |
| Weather resistance | For indoor and outdoor application                                                                  |  |



URSUS® MT MIN PUR HF PLUS 3,6/6 ÷ 12/20 kV

| Voltage      | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|--------------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV           | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|              |                       |             |               |               |               |                  |
| <b>3,6/6</b> | 3x25 + 3x25/3         | 6,8         | 37,4          | 38,6          | 2280          | 1500             |
| <b>3,6/6</b> | 3x35 + 3x25/3         | 7,8         | 39,0          | 40,2          | 2630          | 2100             |
| <b>3,6/6</b> | 3x50 + 3x25/3         | 9,4         | 42,0          | 43,7          | 3230          | 3000             |
| <b>3,6/6</b> | 3x70 + 3x35/3         | 11,2        | 45,8          | 47,5          | 4160          | 4200             |
| <b>3,6/6</b> | 3x95 + 3x50/3         | 12,7        | 50,0          | 51,8          | 5080          | 5700             |
| <b>3,6/6</b> | 3x120 + 3x70/3        | 14,4        | 53,8          | 55,6          | 6280          | 7200             |
| <b>3,6/6</b> | 3x150 + 3x70/3        | 16,3        | 59,3          | 61,1          | 7570          | 9000             |
| <b>3,6/6</b> | 3X185 + 3X95/3        | 17,6        | 61,1          | 63,4          | 8740          | 11100            |
|              |                       |             |               |               |               |                  |
| <b>6/10</b>  | 3x25 + 3x25/3         | 6,8         | 37,4          | 39,2          | 2320          | 1500             |
| <b>6/10</b>  | 3x35 + 3x25/3         | 7,8         | 39,0          | 40,8          | 2670          | 2100             |
| <b>6/10</b>  | 3x50 + 3x25/3         | 9,4         | 42,0          | 44,3          | 3270          | 3000             |
| <b>6/10</b>  | 3x70 + 3x35/3         | 11,2        | 45,8          | 48,1          | 4200          | 4200             |
| <b>6/10</b>  | 3x95 + 3x50/3         | 12,7        | 50,0          | 52,4          | 5120          | 5700             |
| <b>6/10</b>  | 3x120 + 3x70/3        | 14,4        | 53,8          | 56,3          | 6320          | 7200             |
| <b>6/10</b>  | 3x150 + 3x70/3        | 16,3        | 59,3          | 61,8          | 7610          | 9000             |
| <b>6/10</b>  | 3x185 + 3x95/3        | 17,6        | 61,1          | 64,1          | 8780          | 11100            |

| Voltage       | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV            | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|               |                       |             |               |               |               |                  |
| <b>8,7/15</b> | 3x25 + 3x25/3         | 6,8         | 40,7          | 42,4          | 2580          | 1500             |
| <b>8,7/15</b> | 3x35 + 3x25/3         | 7,8         | 42,2          | 43,9          | 2930          | 2100             |
| <b>8,7/15</b> | 3x50 + 3x25/3         | 9,4         | 45,4          | 47,1          | 3560          | 3000             |
| <b>8,7/15</b> | 3x70 + 3x35/3         | 11,2        | 49,2          | 51,0          | 4510          | 4200             |
| <b>8,7/15</b> | 3x95 + 3x50/3         | 12,7        | 52,6          | 54,4          | 5360          | 5700             |
| <b>8,7/15</b> | 3x120 + 3x70/3        | 14,4        | 57,2          | 59,0          | 6690          | 7200             |
| <b>8,7/15</b> | 3x150 + 3x70/3        | 16,3        | 61,7          | 64,0          | 7910          | 9000             |
| <b>8,7/15</b> | 3x185 + 3x95/3        | 17,6        | 63,8          | 66,1          | 9110          | 11100            |
|               |                       |             |               |               |               |                  |
| <b>12/20</b>  | 3x25 + 3x25/3         | 6,8         | 43,3          | 45,0          | 2810          | 1500             |
| <b>12/20</b>  | 3x35 + 3x25/3         | 7,8         | 44,8          | 46,5          | 3160          | 2100             |
| <b>12/20</b>  | 3x50 + 3x25/3         | 9,4         | 47,9          | 49,6          | 3810          | 3000             |
| <b>12/20</b>  | 3x70 + 3x35/3         | 11,2        | 51,7          | 53,5          | 4780          | 4200             |
| <b>12/20</b>  | 3x95 + 3x50/3         | 12,7        | 55,1          | 56,9          | 5660          | 5700             |
| <b>12/20</b>  | 3x120 + 3x70/3        | 14,4        | 59,6          | 61,9          | 7020          | 7200             |
| <b>12/20</b>  | 3x150 + 3x70/3        | 16,3        | 64,2          | 66,5          | 8250          | 9000             |
| <b>12/20</b>  | 3x185 + 3x95/3        | 17,6        | 66,3          | 68,6          | 9460          | 11100            |

URSUS® MT MIN GC 1,8/3 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813



Cable construction

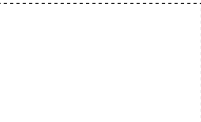
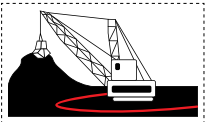
|     |                                  |                                   |                                                                                                                         |
|-----|----------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| ①   | Phase Conductors                 | Conductor material                | Tinned copper                                                                                                           |
|     |                                  | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                                           |
|     |                                  | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                                             |
|     |                                  | Insulation thickness              | According to VDE 0250 Part 813 (table 1)                                                                                |
| ②③④ | Earth Conductors                 | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation, from 3,6/6 kV |
|     |                                  | Material                          | Bare copper                                                                                                             |
|     |                                  | Construction                      | Individual copper braid +2 earth conductors + 1 checking earth wiring conductor                                         |
|     |                                  |                                   |                                                                                                                         |
|     | Central Filler<br>Cores Assembly | Material                          | Rubber compound on textile polyester support                                                                            |
|     |                                  | Assembly                          | Twisted cores with earth conductor split into 3 parts                                                                   |
|     |                                  | Separator on the twisted assembly | 1,8/3 kV cables: TNT tape wound on the twisted cores<br>From 3,6/6 kV: semiconductive tape wound on the twisted cores   |
| ⑤   | Inner Sheath                     | Material                          | Special abrasion resistant rubber compound 5GM5 quality, according to VDE 0207 Part 21                                  |
|     |                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                                |
| ⑥   | Antitwisting element             | Material                          | Polyester braid between inner and outer sheath                                                                          |
| ⑦   | Outer Sheath                     | Material                          | Special abrasion resistant rubber compound 5GM5 quality, according to VDE 0207 Part 21                                  |
|     |                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                                |
|     |                                  | Colour                            | Yellow                                                                                                                  |

\* Special construction for higher flexibility

Upon request:  
URSUS® MIN GC PUR HF: special version with halogen free polyurethane outer sheath  
URSUS® MIN GC PUR HF RFB: special version with reflecting tape and halogen free transparent polyurethane outer sheath, without textile braid



Main applications



**Applications** Flexible cable for energy supply of heavy mobile equipment such as drag lines, shovels, dredges, drills, under extreme mechanical stresses and abrasion during trailing operation in opencast mine. Special construction with additional ground check conductor.

Electrical working data

|                                 |                                                                                     |                              |         |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------|---------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                  | 1,8/3                        | 3,6/6   | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                  | 6                            | 11      | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                  | 2,1/3,6                      | 4,2/7,2 | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation |                              |         |        |         |         |
| Current rating                  | A                                                                                   | According to VDE 0298 Part 4 |         |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |       |                              |
|-----------------------|-------|------------------------------|
| Bending radius        | mm    | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm² | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |
|--------------------|--------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |
| Resistance to oil  | According to IEC 60811-2-1                 |
| Ozone resistance   | According to IEC 60811-2-1                 |
| Weather resistance | For indoor and outdoor application         |

URSUS® MT MIN GC 1,8/3 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | kg/km         | N                |
| 1,8/3   | 3x25 + 2x25/2 + 10    | 6,8         | 38,2          | 42,3          | 2530          | 1125             |
| 1,8/3   | 3x35 + 2x25/2 + 10    | 7,8         | 39,7          | 44,0          | 2930          | 1575             |
| 1,8/3   | 3x50 + 2x25/2 + 10    | 9,4         | 42,7          | 47,2          | 3540          | 2250             |
| 1,8/3   | 3x70 + 2x35/2 + 10    | 11,2        | 48,1          | 53,0          | 4730          | 3150             |
| 1,8/3   | 3x95 + 2x50/2 + 10    | 12,7        | 53,0          | 58,3          | 5930          | 4275             |
| 1,8/3   | 3x120 + 2x70/2 + 10   | 14,4        | 57,4          | 63,1          | 7270          | 5400             |
| 1,8/3   | 3x150 + 2x70/2 + 10   | 16,3        | 63,8          | 70,0          | 8920          | 6750             |
| 1,8/3   | 3x185 + 2x95/2 + 10   | 17,6        | 65,6          | 71,9          | 10220         | 8325             |
| 3,6/6   | 3x25 + 2x25/2 + 10    | 6,8         | 45,4          | 50,1          | 3300          | 1125             |
| 3,6/6   | 3x35 + 2x25/2 + 10    | 7,8         | 46,7          | 51,5          | 3710          | 1575             |
| 3,6/6   | 3x50 + 2x25/2 + 10    | 9,4         | 51,5          | 56,7          | 4600          | 2250             |
| 3,6/6   | 3x70 + 2x35/2 + 10    | 11,2        | 55,2          | 60,7          | 5710          | 3150             |
| 3,6/6   | 3x95 + 2x50/2 + 10    | 12,7        | 58,9          | 64,8          | 6820          | 4275             |
| 3,6/6   | 3x120 + 2x70/2 + 10   | 14,4        | 65,1          | 71,4          | 8540          | 5400             |
| 3,6/6   | 3x150 + 2x70/2 + 10   | 16,3        | 69,6          | 76,3          | 9890          | 6750             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | kg/km         | N                |
| 6/10    | 3x25 + 2x25/2 + 10    | 6,8         | 48,1          | 53,0          | 3640          | 1125             |
| 6/10    | 3x35 + 2x25/2 + 10    | 7,8         | 49,5          | 54,6          | 4070          | 1575             |
| 6/10    | 3x50 + 2x25/2 + 10    | 9,4         | 54,2          | 59,7          | 4980          | 2250             |
| 6/10    | 3x70 + 2x35/2 + 10    | 11,2        | 57,9          | 63,6          | 6070          | 3150             |
| 6/10    | 3x95 + 2x50/2 + 10    | 12,7        | 61,6          | 67,7          | 7280          | 4275             |
| 6/10    | 3x120 + 2x70/2 + 10   | 14,4        | 67,9          | 74,4          | 9070          | 5400             |
| 8,7/15  | 3x25 + 2x25/2 + 10    | 6,8         | 53,9          | 59,3          | 4490          | 1125             |
| 8,7/15  | 3x35 + 2x25/2 + 10    | 7,8         | 55,3          | 60,8          | 4920          | 1575             |
| 8,7/15  | 3x50 + 2x25/2 + 10    | 9,4         | 58,5          | 64,2          | 5700          | 2250             |
| 8,7/15  | 3x70 + 2x35/2 + 10    | 11,2        | 64,2          | 70,5          | 7200          | 3150             |
| 8,7/15  | 3x95 + 2x50/2 + 10    | 12,7        | 67,9          | 74,4          | 8480          | 4275             |
| 12/20   | 3x25 + 2x25/2 + 10    | 6,8         | 58,2          | 63,9          | 5110          | 1125             |
| 12/20   | 3x35 + 2x25/2 + 10    | 7,8         | 59,8          | 65,7          | 5580          | 1575             |
| 12/20   | 3x50 + 2x25/2 + 10    | 9,4         | 64,6          | 70,9          | 6550          | 2250             |
| 12/20   | 3x70 + 2x35/2 + 10    | 11,2        | 68,3          | 74,8          | 7800          | 3150             |

URSUS® MT MIN F PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813

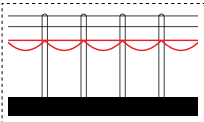
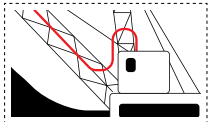


Cable construction

|                                  |                                   |                                                                                                          |
|----------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors               | Conductor material                | Tinned copper                                                                                            |
|                                  | Conductor construction            | Class 5 VDE 0295 (IEC 60228)                                                                             |
|                                  | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
| ② Earth Conductors               | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
|                                  | Conductor material                | Tinned copper                                                                                            |
|                                  | Conductor construction            | Class 5 VDE 0295 (IEC 60228)                                                                             |
| Central Filler<br>Cores Assembly | Covering material                 | Semiconductive layer                                                                                     |
|                                  | Material                          | Semiconductive compound on textile polyester support                                                     |
|                                  | Assembly                          | Twisted cores with earth conductor split into 3 parts                                                    |
| ③ Inner Sheath                   | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
|                                  | Material                          | Rubber compound GM1b quality, according to VDE 0207 Part 21                                              |
|                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
| ④ Outer Sheath                   | Material                          | Rubber compound 5GM3 quality, according to VDE 0207 Part 21                                              |
|                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|                                  | Colour                            | Red                                                                                                      |



Main applications



**Applications** Flexible cable for fixed energy distribution lines in mines and alongside material handling equipment.

Electrical working data

|                                 |                                                                                     |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                  | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                  | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                  | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation |                              |        |         |         |
| Current rating                  | A                                                                                   | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm <sup>2</sup> | 20                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |
|--------------------|--------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |
| Resistance to oil  | According to IEC 60811-2-1                 |
| Ozone resistance   | According to IEC 60811-2-1                 |
| Behaviour in water | According to HD22.16                       |
| Weather resistance | For indoor and outdoor application         |



URSUS® MT MIN F PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 3x25 + 3x25/3         | 6,8         | 39,9          | 41,6          | 2580          | 1500             |
| 3,6/6   | 3x35 + 3x25/3         | 7,8         | 42,9          | 44,6          | 3080          | 2100             |
| 3,6/6   | 3x50 + 3x25/3         | 9,4         | 46,0          | 47,7          | 3710          | 3000             |
| 3,6/6   | 3x70 + 3x35/3         | 11,2        | 49,8          | 51,6          | 4670          | 4200             |
| 3,6/6   | 3x95 + 3x50/3         | 12,7        | 55,8          | 57,6          | 5880          | 5700             |
| 3,6/6   | 3x120 + 3x70/3        | 14,4        | 59,6          | 61,4          | 7140          | 7200             |
| 3,6/6   | 3x150 + 3x70/3        | 16,3        | 66,0          | 68,3          | 8690          | 9000             |
| 3,6/6   | 3x185 + 3x95/3        | 17,6        | 67,9          | 70,2          | 9890          | 11100            |
| 6/10    | 3x25 + 3x25/3         | 6,8         | 39,9          | 42,2          | 2620          | 1500             |
| 6/10    | 3x35 + 3x25/3         | 7,8         | 42,9          | 45,2          | 3120          | 2100             |
| 6/10    | 3x50 + 3x25/3         | 9,4         | 46,0          | 48,3          | 3750          | 3000             |
| 6/10    | 3x70 + 3x35/3         | 11,2        | 49,8          | 52,2          | 4710          | 4200             |
| 6/10    | 3x95 + 3x50/3         | 12,7        | 55,8          | 58,2          | 5920          | 5700             |
| 6/10    | 3x120 + 3x70/3        | 14,4        | 59,6          | 62,1          | 7180          | 7200             |
| 6/10    | 3x150 + 3x70/3        | 16,3        | 66,0          | 69,0          | 8730          | 9000             |
| 6/10    | 3x185 + 3x95/3        | 17,6        | 67,9          | 70,9          | 9930          | 11100            |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>  | mm          | mm            | mm            | kg/km         | N                |
| 8,7/15  | 3x25 + 3x25/3         | 6,8         | 44,7          | 46,4          | 3040          | 1500             |
| 8,7/15  | 3x35 + 3x25/3         | 7,8         | 46,2          | 47,9          | 3410          | 2100             |
| 8,7/15  | 3x50 + 3x25/3         | 9,4         | 49,4          | 51,2          | 4080          | 3000             |
| 8,7/15  | 3x70 + 3x35/3         | 11,2        | 55,0          | 56,8          | 5300          | 4200             |
| 8,7/15  | 3x95 + 3x50/3         | 12,7        | 58,4          | 60,2          | 6210          | 5700             |
| 8,7/15  | 3x120 + 3x70/3        | 14,4        | 63,9          | 66,2          | 7770          | 7200             |
| 8,7/15  | 3x150+3x70/3          | 16,3        | 68,5          | 70,9          | 9070          | 9000             |
| 8,7/15  | 3x185 + 3x95/3        | 17,6        | 70,6          | 73,0          | 10300         | 11100            |
| 12/20   | 3x25 + 3x25/3         | 6,8         | 47,3          | 49,0          | 3310          | 1500             |
| 12/20   | 3x35 + 3x25/3         | 7,8         | 48,8          | 50,6          | 3680          | 2100             |
| 12/20   | 3x50 + 3x25/3         | 9,4         | 53,7          | 55,5          | 4580          | 3000             |
| 12/20   | 3x70 + 3x35/3         | 11,2        | 57,5          | 59,3          | 5600          | 4200             |
| 12/20   | 3x95 + 3x50/3         | 12,7        | 60,8          | 63,1          | 6550          | 5700             |
| 12/20   | 3x120 + 3x70/3        | 14,4        | 66,4          | 68,7          | 8130          | 7200             |
| 12/20   | 3x150 + 3x70/3        | 16,3        | 71,0          | 73,4          | 9460          | 9000             |

URSUS® MT MIN F-E PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813

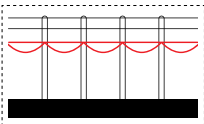
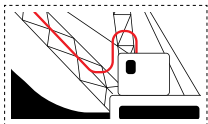


Cable construction

|                                  |                                   |                                                                                                          |
|----------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors               | Conductor material                | Tinned copper                                                                                            |
|                                  | Conductor construction            | Class 5 VDE 0295 (IEC 60228)                                                                             |
|                                  | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
| ② Protec. Earth Conductors       | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
|                                  | Material                          | Bare copper                                                                                              |
|                                  | Construction                      | Individual copper wire screen                                                                            |
| Central Filler<br>Cores Assembly | Material                          | Rubber compound on textile polyester support                                                             |
|                                  | Assembly                          | Twisted cores                                                                                            |
|                                  | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
| ③ Inner Sheath                   | Material                          | Rubber compound GM1b quality, according to VDE 0207 Part 21                                              |
|                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
| ④ Outer Sheath                   | Material                          | Rubber compound 5GM3 quality, according to VDE 0207 Part 21                                              |
|                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|                                  | Colour                            | Red                                                                                                      |



Main applications



**Applications** Flexible cable for fixed energy distribution lines in mines and alongside material handling equipment.

Electrical working data

|                                 |                                                                                                                         |         |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                                                      | 3,6/6   | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                                                      | 11      | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                                                      | 4,2/7,2 | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation and the screen over every conductor |         |        |         |         |
| Current rating                  | A According to VDE 0298 Part 4                                                                                          |         |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm <sup>2</sup> | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |
|--------------------|--------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |
| Resistance to oil  | According to IEC 60811-2-1                 |
| Ozone resistance   | According to IEC 60811-2-1                 |
| Behaviour in water | According to HD22.16                       |
| Weather resistance | For indoor and outdoor application         |

URSUS® MT MIN F-E PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 3,6/6   | 3x25 + 3x25/3E        | 6,8         | 43,9          | 45,6          | 2870          | 1125             |
| 3,6/6   | 3x35 + 3x25/3E        | 7,8         | 45,4          | 47,1          | 3230          | 1575             |
| 3,6/6   | 3x50 + 3x25/3E        | 9,4         | 48,5          | 50,3          | 3860          | 2250             |
| 3,6/6   | 3x70 + 3x35/3E        | 11,2        | 54,1          | 55,9          | 5010          | 3150             |
| 3,6/6   | 3x95 + 3x50/3E        | 12,7        | 58,4          | 60,2          | 6150          | 4275             |
| 3,6/6   | 3x120 + 3x70/3E       | 14,4        | 62,5          | 64,8          | 7450          | 5400             |
| 3,6/6   | 3x150 + 3x70/3E       | 16,3        | 68,9          | 71,3          | 8980          | 6750             |
| 3,6/6   | 3x185 + 3x95/3E       | 17,6        | 71,9          | 74,3          | 10290         | 8325             |
|         |                       |             |               |               |               |                  |
| 6/10    | 3x25 + 3x25/3E        | 6,8         | 43,9          | 46,2          | 2910          | 1125             |
| 6/10    | 3x35 + 3x25/3E        | 7,8         | 45,4          | 47,7          | 3270          | 1575             |
| 6/10    | 3x50 + 3x25/3E        | 9,4         | 48,5          | 50,9          | 3900          | 2250             |
| 6/10    | 3x70 + 3x35/3E        | 11,2        | 54,1          | 56,5          | 5050          | 3150             |
| 6/10    | 3x95 + 3x50/3E        | 12,7        | 58,4          | 60,8          | 6190          | 4275             |
| 6/10    | 3x120 + 3x70/3E       | 14,4        | 62,5          | 65,5          | 7490          | 5400             |
| 6/10    | 3x150 + 3x70/3E       | 16,3        | 68,9          | 72,0          | 9020          | 6750             |
| 6/10    | 3x185 + 3x95/3E       | 17,6        | 71,9          | 75,0          | 10330         | 8325             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 8,7/15  | 3x25 + 3x25/3E        | 6,8         | 47,3          | 49,0          | 3200          | 1125             |
| 8,7/15  | 3x35 + 3x25/3E        | 7,8         | 48,8          | 50,6          | 3570          | 1575             |
| 8,7/15  | 3x50 + 3x25/3E        | 9,4         | 53,7          | 55,5          | 4440          | 2250             |
| 8,7/15  | 3x70 + 3x35/3E        | 11,2        | 57,5          | 59,3          | 5410          | 3150             |
| 8,7/15  | 3x95 + 3x50/3E        | 12,7        | 60,8          | 63,1          | 6480          | 4275             |
| 8,7/15  | 3x120 + 3x70/3E       | 14,4        | 66,8          | 69,1          | 8060          | 5400             |
| 8,7/15  | 3x150+3x70/3E         | 16,3        | 71,5          | 73,9          | 9370          | 6750             |
|         |                       |             |               |               |               |                  |
|         |                       |             |               |               |               |                  |
| 12/20   | 3x25 + 3x25/3E        | 6,8         | 49,8          | 51,6          | 3450          | 1125             |
| 12/20   | 3x35 + 3x25/3E        | 7,8         | 51,3          | 53,1          | 3810          | 1575             |
| 12/20   | 3x50 + 3x25/3E        | 9,4         | 56,3          | 58,1          | 4740          | 2250             |
| 12/20   | 3x70 + 3x35/3E        | 11,2        | 60,1          | 61,9          | 5730          | 3150             |
| 12/20   | 3x95 + 3x50/3E        | 12,7        | 63,3          | 65,6          | 6810          | 4275             |
| 12/20   | 3x120 + 3x70/3E       | 14,4        | 69,3          | 71,7          | 8420          | 5400             |

URSUS® MT SUB PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813



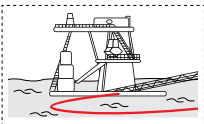
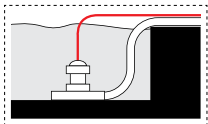
Cable construction

|                    |                                   |                                                                                                          |
|--------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors | Conductor material                | Tinned copper                                                                                            |
|                    | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                    | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                    | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② Earth Conductors | Conductor material                | Tinned copper                                                                                            |
|                    | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|                    | Covering material                 | Semiconductive layer                                                                                     |
| Central Filler     | Material                          | Semiconductive compound on textile polyester support                                                     |
| Cores Assembly     | Assembly                          | Twisted cores with earth conductor split into 3 parts                                                    |
|                    | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
| ③ Inner Sheath     | Material                          | Special EPR rubber compound water proofing GM1b quality, according to VDE 0207 Part 21                   |
|                    | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
| ④ Outer Sheath     | Material                          | Special CM rubber compound water proofing 5GM3 quality, according to VDE 0207 Part 21                    |
|                    | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|                    | Colour                            | Black                                                                                                    |

\* Special construction for higher flexibility



Main applications



**Applications** Flexible energy supply cable for use in permanent immersion in water under high mechanical stresses: pumps, dredgers, floating docks, etc. It is suitable for immersion up to 300 m depth and for trailing operations of opencast mining equipment.

Electrical working data

|                                 |                                                                                     |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                  | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                  | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                  | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation |                              |        |         |         |
| Current rating                  | A                                                                                   | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Maximum permissible water temperature  | °C | 40           |
| Ambient temperature: mobile condition  | °C | - 25 to + 60 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm <sup>2</sup> | 20                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                                                                  |
|--------------------|----------------------------------------------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2                                       |
| Resistance to oil  | According to IEC 60811-2-1                                                       |
| Ozone resistance   | According to IEC 60811-2-1                                                       |
| Behaviour in water | HD22.16 and AC internal test, suitable for immersion in salty and brackish water |
| Weather resistance | For indoor and outdoor application                                               |



URSUS® MT SUB PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 3x25 + 3x25/3         | 6,8         | 39,9          | 41,6          | 2580          | 1500             |
| 3,6/6   | 3x35 + 3x25/3         | 7,8         | 42,9          | 44,6          | 3080          | 2100             |
| 3,6/6   | 3x50 + 3x25/3         | 9,4         | 46,0          | 47,7          | 3710          | 3000             |
| 3,6/6   | 3x70 + 3x35/3         | 11,2        | 49,8          | 51,6          | 4670          | 4200             |
| 3,6/6   | 3x95 + 3x50/3         | 12,7        | 55,8          | 57,6          | 5880          | 5700             |
| 3,6/6   | 3x120 + 3x70/3        | 14,4        | 59,6          | 61,4          | 7140          | 7200             |
| 3,6/6   | 3x150 + 3x70/3        | 16,3        | 66,0          | 68,3          | 8690          | 9000             |
| 3,6/6   | 3x185 + 3x95/3        | 17,6        | 67,9          | 70,2          | 9890          | 11100            |
| 6/10    | 3x25 + 3x25/3         | 6,8         | 39,9          | 42,2          | 2620          | 1500             |
| 6/10    | 3x35 + 3x25/3         | 7,8         | 42,9          | 45,2          | 3120          | 2100             |
| 6/10    | 3x50 + 3x25/3         | 9,4         | 46,0          | 48,3          | 3750          | 3000             |
| 6/10    | 3x70 + 3x35/3         | 11,2        | 49,8          | 52,2          | 4710          | 4200             |
| 6/10    | 3x95 + 3x50/3         | 12,7        | 55,8          | 58,2          | 5920          | 5700             |
| 6/10    | 3x120 + 3x70/3        | 14,4        | 59,6          | 62,1          | 7180          | 7200             |
| 6/10    | 3x150 + 3x70/3        | 16,3        | 66,0          | 69,0          | 8730          | 9000             |
| 6/10    | 3x185 + 3x95/3        | 17,6        | 67,9          | 70,9          | 9930          | 11100            |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 8,7/15  | 3x25 + 3x25/3         | 6,8         | 47,3          | 49,0          | 3310          | 1500             |
| 8,7/15  | 3x35 + 3x25/3         | 7,8         | 48,8          | 50,6          | 3680          | 2100             |
| 8,7/15  | 3x50 + 3x25/3         | 9,4         | 53,7          | 55,5          | 4580          | 3000             |
| 8,7/15  | 3x70 + 3x35/3         | 11,2        | 57,5          | 59,3          | 5600          | 4200             |
| 8,7/15  | 3x95 + 3x50/3         | 12,7        | 60,8          | 63,1          | 6550          | 5700             |
| 8,7/15  | 3x120 + 3x70/3        | 14,4        | 66,4          | 68,7          | 8130          | 7200             |
| 8,7/15  | 3x150+3x70/3          | 16,3        | 71,0          | 73,4          | 9460          | 9000             |
| 8,7/15  | 3x185+3x95/3          | 17,6        | 73,1          | 75,5          | 10700         | 11100            |
| 12/20   | 3x25 + 3x25/3         | 6,8         | 52,0          | 53,8          | 3830          | 1500             |
| 12/20   | 3x35 + 3x25/3         | 7,8         | 55,2          | 57,0          | 4440          | 2100             |
| 12/20   | 3x50 + 3x25/3         | 9,4         | 58,4          | 60,2          | 5170          | 3000             |
| 12/20   | 3x70 + 3x35/3         | 11,2        | 62,1          | 64,4          | 6250          | 4200             |
| 12/20   | 3x95 + 3x50/3         | 12,7        | 67,2          | 69,5          | 7480          | 5700             |
| 12/20   | 3x120 + 3x70/3        | 14,4        | 71,0          | 73,4          | 8840          | 7200             |

URSUS® MT SUB-E PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813



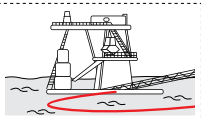
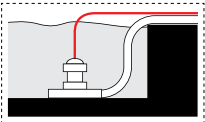
Cable construction

|   |                          |                                   |                                                                                                          |
|---|--------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① | Phase Conductors         | Conductor material                | Tinned copper                                                                                            |
|   |                          | Conductor construction            | Class 5 VDE 0295 (IEC 60228)*                                                                            |
|   |                          | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|   |                          | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② | Protec. Earth Conductors | Material                          | Bare copper                                                                                              |
|   |                          | Construction                      | Individual copper braid                                                                                  |
|   |                          | Central Filler                    | Rubber compound on textile polyester support                                                             |
|   |                          | Cores Assembly                    | Twisted cores                                                                                            |
| ③ | Inner Sheath             | Separator on the twisted assembly | Semiconductive tape wound on the twisted cores                                                           |
|   |                          | Material                          | Special EPR rubber compound water proofing GM1b quality, according to VDE 0207 Part 21                   |
|   |                          | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|   |                          | ④ Outer Sheath                    | Material                                                                                                 |
| ④ | Outer Sheath             | Material                          | Special CM rubber compound water proofing 5GM3 quality, according to VDE 0207 Part 21                    |
|   |                          | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|   |                          | Colour                            | Black                                                                                                    |
|   |                          |                                   |                                                                                                          |

\* Special construction for higher flexibility



Main applications



**Applications** Flexible energy supply cable for use in permanent immersion in water under high mechanical stresses: pumps, dredgers, floating docks, etc. It is suitable for immersion up to 300 m depth and for trailing operations of opencast mining equipment.

Electrical working data

|                                 |                                                                                                                         |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                                                      | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                                                      | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                                                      | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation and the screen over every conductor |                              |        |         |         |
| Current rating                  | A                                                                                                                       | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Maximum permissible water temperature  | °C | 40           |
| Ambient temperature: mobile condition  | °C | - 25 to + 60 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |       |                              |
|-----------------------|-------|------------------------------|
| Bending radius        | mm    | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm² | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                                                                  |
|--------------------|----------------------------------------------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2                                       |
| Resistance to oil  | According to IEC 60811-2-1                                                       |
| Ozone resistance   | According to IEC 60811-2-1                                                       |
| Behaviour in water | HD22.16 and AC internal test, suitable for immersion in salty and brackish water |
| Weather resistance | For indoor and outdoor application                                               |

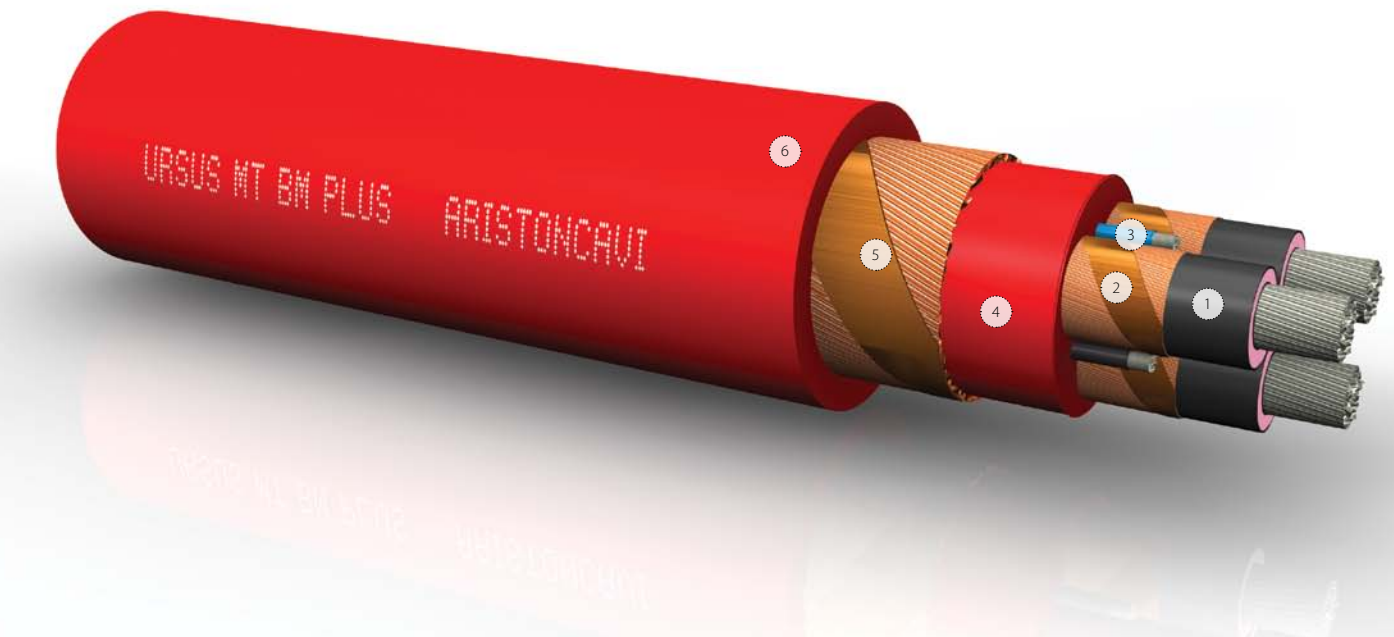
URSUS® MT SUB-E PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 3x25 + 3x25/3E        | 6,8         | 43,4          | 45,1          | 2830          | 1125             |
| 3,6/6   | 3x35 + 3x25/3E        | 7,8         | 45,0          | 46,7          | 3180          | 1575             |
| 3,6/6   | 3x50 + 3x25/3E        | 9,4         | 48,1          | 49,8          | 3830          | 2250             |
| 3,6/6   | 3x70 + 3x35/3E        | 11,2        | 53,7          | 55,5          | 4960          | 3150             |
| 3,6/6   | 3x95 + 3x50/3E        | 12,7        | 58,4          | 60,2          | 6170          | 4275             |
| 3,6/6   | 3x120 + 3x70/3E       | 14,4        | 62,9          | 65,2          | 7540          | 5400             |
| 3,6/6   | 3x150 + 3x70/3E       | 16,3        | 69,3          | 71,7          | 9050          | 6750             |
| 3,6/6   | 3x185 + 3x95/3E       | 17,6        | 72,1          | 74,5          | 10350         | 8325             |
| 6/10    | 3x25 + 3x25/3E        | 6,8         | 43,4          | 45,7          | 2870          | 1125             |
| 6/10    | 3x35 + 3x25/3E        | 7,8         | 45,0          | 47,3          | 3220          | 1575             |
| 6/10    | 3x50 + 3x25/3E        | 9,4         | 48,1          | 50,4          | 3870          | 2250             |
| 6/10    | 3x70 + 3x35/3E        | 11,2        | 53,7          | 56,1          | 5000          | 3150             |
| 6/10    | 3x95 + 3x50/3E        | 12,7        | 58,4          | 60,8          | 6210          | 4275             |
| 6/10    | 3x120 + 3x70/3E       | 14,4        | 62,9          | 65,9          | 7580          | 5400             |
| 6/10    | 3x150 + 3x70/3E       | 16,3        | 69,3          | 72,4          | 9090          | 6750             |
| 6/10    | 3x185 + 3x95/3E       | 17,6        | 72,1          | 75,2          | 10390         | 8325             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
| 8,7/15  | 3x25 + 3x25/3E        | 6,8         | 49,4          | 51,2          | 3430          | 1125             |
| 8,7/15  | 3x35 + 3x25/3E        | 7,8         | 50,9          | 52,7          | 3800          | 1575             |
| 8,7/15  | 3x50 + 3x25/3E        | 9,4         | 55,8          | 57,6          | 4700          | 2250             |
| 8,7/15  | 3x70 + 3x35/3E        | 11,2        | 59,6          | 61,4          | 5670          | 3150             |
| 8,7/15  | 3x95 + 3x50/3E        | 12,7        | 63,3          | 65,6          | 6830          | 4275             |
| 8,7/15  | 3x120 + 3x70/3E       | 14,4        | 69,8          | 72,2          | 8520          | 5400             |
| 12/20   | 3x25 + 3x25/3E        | 6,8         | 55,9          | 57,7          | 4160          | 1125             |
| 12/20   | 3x35 + 3x25/3E        | 7,8         | 57,3          | 59,1          | 4560          | 1575             |
| 12/20   | 3x50 + 3x25/3E        | 9,4         | 60,5          | 62,3          | 5300          | 2250             |
| 12/20   | 3x70 + 3x35/3E        | 11,2        | 66,1          | 67,9          | 6580          | 3150             |
| 12/20   | 3x95 + 3x50/3E        | 12,7        | 69,8          | 72,2          | 7740          | 4275             |

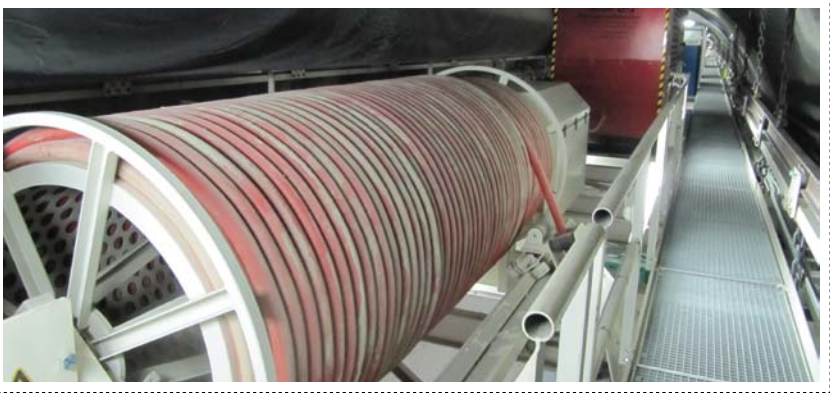
URSUS® MT BM PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813

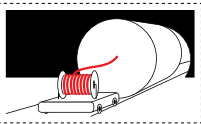
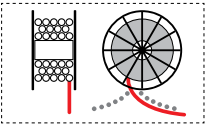


Cable construction

|                                  |                                   |                                                                                                          |
|----------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors               | Conductor material                | Tinned copper                                                                                            |
|                                  | Conductor construction            | Class 5 VDE 0295 (IEC 60228)                                                                             |
|                                  | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                                  | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② Protec. Earth Conductors       | Material                          | Bare copper                                                                                              |
|                                  | Construction                      | Individual copper wire screen                                                                            |
| ③ Control Conductors             | Nominal cross section             | 2,5 mm²                                                                                                  |
|                                  | Conductor material                | Tinned copper                                                                                            |
|                                  | Conductor construction            | Class 5 VDE 0295 (IEC 60228)                                                                             |
|                                  | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
| Central Filler<br>Cores Assembly | Material                          | Semiconductive compound on textile polyester support                                                     |
|                                  | Assembly                          | Twisted cores                                                                                            |
|                                  | Separator on the twisted assembly | TNT tape wound on the twisted cores                                                                      |
| ④ Inner Sheath                   | Material                          | 5GM5 quality rubber compound, according to VDE 0207 Part 21                                              |
|                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
| ⑤ Monitoring Conductor           | Material                          | Copper wire                                                                                              |
|                                  | Assembly                          | Screen over the inner sheath                                                                             |
| ⑥ Outer Sheath                   | Material                          | 5GM5 quality rubber compound, according to VDE 0207 Part 21                                              |
|                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|                                  | Colour                            | Red                                                                                                      |



Main applications



**Applications** Flexible cable suitable for reeling drum of tunnel boring machines and generally for tunnel application.

Electrical working data

|                                 |                                                                                                                         |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                                                      | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                                                      | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                                                      | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation and the screen over every conductor |                              |        |         |         |
| Current rating                  | A                                                                                                                       | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                          |       |                              |
|--------------------------|-------|------------------------------|
| Bending radius           | mm    | According to VDE 0298 Part 3 |
| Maximum torsional stress | °/m   | ± 25                         |
| Maximum tensile load*    | N/mm² | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |
|--------------------|--------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |
| Resistance to oil  | According to IEC 60811-2-1                 |
| Ozone resistance   | According to IEC 60811-2-1                 |
| Weather resistance | For indoor and outdoor application         |



URSUS® MT BM PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section          | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|--------------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>           | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,8         | 45,4          | 48,8          | 3010          | 1125             |
| 3,6/6   | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,8         | 46,9          | 50,4          | 3390          | 1575             |
| 3,6/6   | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 9,4         | 50,0          | 53,6          | 4050          | 2250             |
| 3,6/6   | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 11,2        | 55,6          | 59,4          | 5260          | 3150             |
| 3,6/6   | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,7        | 59,9          | 63,9          | 6460          | 4275             |
| 3,6/6   | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 14,4        | 64,0          | 68,4          | 7820          | 5400             |
| 3,6/6   | 3x150 + 3x70/3E + 3x2,5ST + ÜL | 16,3        | 70,4          | 75,0          | 9430          | 6750             |
| 6/10    | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,8         | 45,4          | 49,4          | 3050          | 1125             |
| 6/10    | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,8         | 46,9          | 51,0          | 3430          | 1575             |
| 6/10    | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 9,4         | 50,0          | 54,2          | 4090          | 2250             |
| 6/10    | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 11,2        | 55,6          | 60,0          | 5300          | 3150             |
| 6/10    | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,7        | 59,9          | 64,5          | 6500          | 4275             |
| 6/10    | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 14,4        | 64,0          | 69,1          | 7860          | 5400             |
| 6/10    | 3x150 + 3x70/3E + 3x2,5ST + ÜL | 16,3        | 70,4          | 75,7          | 9470          | 6750             |

| Voltage | Cores x cross section          | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|--------------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>           | mm          | mm            | mm            | kg/km         | N                |
| 8,7/15  | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,8         | 48,0          | 51,5          | 3590          | 1125             |
| 8,7/15  | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,8         | 49,5          | 53,1          | 3990          | 1575             |
| 8,7/15  | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 9,4         | 54,4          | 58,2          | 4880          | 2250             |
| 8,7/15  | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 11,2        | 58,2          | 62,2          | 5950          | 3150             |
| 8,7/15  | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,7        | 61,4          | 65,7          | 7030          | 4275             |
| 8,7/15  | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 14,4        | 67,4          | 71,9          | 8690          | 5400             |
| 12/20   | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,8         | 50,5          | 54,1          | 3860          | 1125             |
| 12/20   | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,8         | 52,3          | 56,0          | 4260          | 1575             |
| 12/20   | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 9,4         | 57,5          | 61,4          | 5190          | 2250             |
| 12/20   | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 11,2        | 61,0          | 65,3          | 6280          | 3150             |
| 12/20   | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,7        | 66,4          | 70,9          | 7640          | 4275             |
| 12/20   | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 14,4        | 70,5          | 75,2          | 9050          | 5400             |

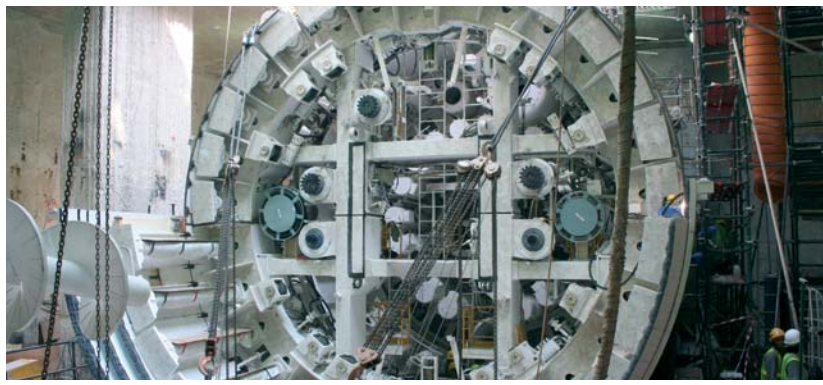
URSUS® MT BM PUR HF PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 813

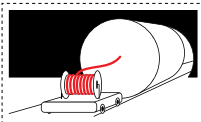
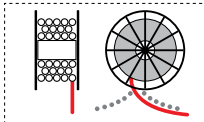


Cable construction

|                                  |                                   |                                                                                                          |
|----------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors               | Conductor material                | Tinned copper                                                                                            |
|                                  | Conductor construction            | Class 5 VDE 0295 (IEC 60228)                                                                             |
|                                  | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                                  | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② Protec. Earth Conductors       | Material                          | Bare copper                                                                                              |
|                                  | Construction                      | Individual copper wire screen                                                                            |
| ③ Control Conductors             | Nominal cross section             | 2,5 mm <sup>2</sup>                                                                                      |
|                                  | Conductor material                | Tinned copper                                                                                            |
|                                  | Conductor construction            | Class 5 VDE 0295 (IEC 60228)                                                                             |
| Central Filler<br>Cores Assembly | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                                  | Material                          | Semiconductive compound on textile polyester support                                                     |
|                                  | Assembly                          | Twisted cores                                                                                            |
| ④ Inner Sheath                   | Separator on the twisted assembly | TNT tape wound on the twisted cores                                                                      |
|                                  | Material                          | Halogen free compound                                                                                    |
| ⑤ Monitoring Conductor           | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|                                  | Material                          | Copper wire                                                                                              |
| ⑥ Outer Sheath                   | Assembly                          | Screen over the inner sheath                                                                             |
|                                  | Material                          | Halogen free polyurethane                                                                                |
|                                  | Thickness                         | According to VDE 0250 Part 813 (table 2)                                                                 |
|                                  | Colour                            | Black                                                                                                    |



Main applications



**Applications** Flexible cable suitable for reeling drum of tunnel boring machines and generally for tunnel application. Halogen free polyurethane sheathed version.

Electrical working data

|                                 |                                                                                                                         |                              |        |         |         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage $U_0 / U$ | kV                                                                                                                      | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                    | kV                                                                                                                      | 11                           | 17     | 24      | 29      |
| Max AC voltage                  | kV                                                                                                                      | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control        | Inner and outer semiconductive layers extruded in a single pass with the insulation and the screen over every conductor |                              |        |         |         |
| Current rating                  | A                                                                                                                       | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | - 25 to + 80 |
| Ambient temperature: static condition  | °C | - 50 to + 80 |

Mechanical working data

|                          |                   |                              |
|--------------------------|-------------------|------------------------------|
| Bending radius           | mm                | According to VDE 0298 Part 3 |
| Maximum torsional stress | °/m               | ± 25                         |
| Maximum tensile load*    | N/mm <sup>2</sup> | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                                                                                     |  |
|--------------------|-----------------------------------------------------------------------------------------------------|--|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2<br>Halogen free according to IEC 60754-1 and IEC 60754-2 |  |
| Resistance to oil  | According to IEC 60811-2-1                                                                          |  |
| Ozone resistance   | According to IEC 60811-2-1                                                                          |  |
| Weather resistance | For indoor and outdoor application                                                                  |  |

URSUS® MT BM PUR HF PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section          | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|--------------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²                       | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,8         | 45,4          | 48,8          | 2960          | 1125             |
| 3,6/6   | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,8         | 46,9          | 50,4          | 3340          | 1575             |
| 3,6/6   | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 9,4         | 50,0          | 53,6          | 3990          | 2250             |
| 3,6/6   | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 11,2        | 55,6          | 59,4          | 5180          | 3150             |
| 3,6/6   | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,7        | 59,9          | 63,9          | 6370          | 4275             |
| 3,6/6   | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 14,4        | 64,0          | 68,4          | 7730          | 5400             |
| 6/10    | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,8         | 45,4          | 49,4          | 3000          | 1125             |
| 6/10    | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,8         | 46,9          | 51,0          | 3380          | 1575             |
| 6/10    | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 9,4         | 50,0          | 54,2          | 4030          | 2250             |
| 6/10    | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 11,2        | 55,6          | 60,0          | 5220          | 3150             |
| 6/10    | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,7        | 59,9          | 64,5          | 6410          | 4275             |
| 6/10    | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 14,4        | 64,0          | 69,1          | 7770          | 5400             |

| Voltage | Cores x cross section         | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-------------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²                      | mm          | mm            | mm            | kg/km         | N                |
| 8,7/15  | 3x25 + 3x25/3E + 3x2,5ST + ÜL | 6,8         | 48,0          | 51,5          | 3540          | 1125             |
| 8,7/15  | 3x35 + 3x25/3E + 3x2,5ST + ÜL | 7,8         | 49,5          | 53,1          | 3930          | 1575             |
| 8,7/15  | 3x50 + 3x25/3E + 3x2,5ST + ÜL | 9,4         | 54,4          | 58,2          | 4810          | 2250             |
| 8,7/15  | 3x70 + 3x35/3E + 3x2,5ST + ÜL | 11,2        | 58,2          | 62,2          | 5880          | 3150             |
| 8,7/15  | 3x95 + 3x50/3E + 3x2,5ST + ÜL | 12,7        | 61,4          | 65,7          | 6950          | 4275             |
| 12/20   | 3x25 + 3x25/3E + 3x2,5ST + ÜL | 6,8         | 50,5          | 54,1          | 3800          | 1125             |
| 12/20   | 3x35 + 3x25/3E + 3x2,5ST + ÜL | 7,8         | 52,3          | 56,0          | 4190          | 1575             |
| 12/20   | 3x50 + 3x25/3E + 3x2,5ST + ÜL | 9,4         | 57,5          | 61,4          | 5120          | 2250             |
| 12/20   | 3x70 + 3x35/3E + 3x2,5ST + ÜL | 11,2        | 61,0          | 65,3          | 6200          | 3150             |
| 12/20   | 3x95 + 3x50/3E + 3x2,5ST + ÜL | 12,7        | 66,4          | 70,9          | 7550          | 4275             |

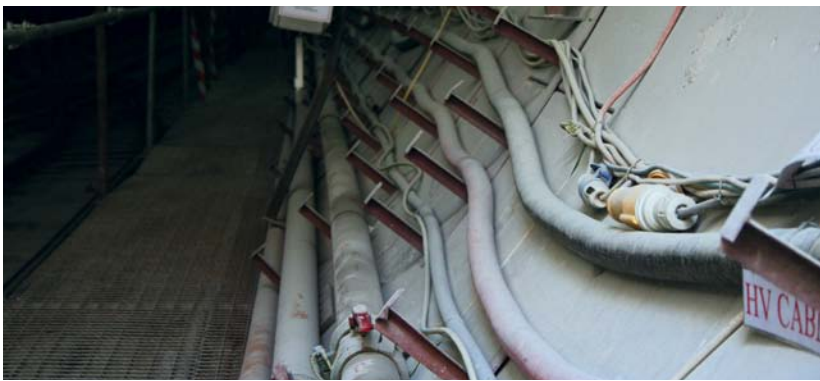
URSUS® MT TUNNEL V PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 605

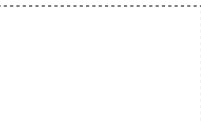
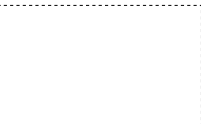
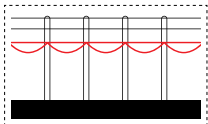


Cable construction

|                                  |                                   |                                                                                                          |
|----------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors               | Conductor material                | Bare copper                                                                                              |
|                                  | Conductor construction            | Class 5, according to VDE 0295 (IEC 60228)                                                               |
|                                  | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                                  | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② Protec. Earth Conductors       | Material                          | Bare copper                                                                                              |
|                                  | Construction                      | Individual copper wire screen                                                                            |
| ③ Control Conductors             | Nominal cross section             | 2,5 mm <sup>2</sup>                                                                                      |
|                                  | Conductor material                | Tinner copper                                                                                            |
|                                  | Conductor construction            | Class 5, according to VDE 0295 (IEC 60228)                                                               |
|                                  | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
| Central Filler<br>Cores Assembly | Material                          | Rubber compound on textile polyester support                                                             |
|                                  | Assembly                          | Twisted cores                                                                                            |
|                                  | Separator on the twisted assembly | TNT tape wound on the twisted cores                                                                      |
| ④ First Inner Sheath             | Sheath material                   | PVC, DMV6 quality                                                                                        |
| ⑤ Monitoring Conductor           | Material                          | Copper wire                                                                                              |
|                                  | Assembly                          | Screen over the first inner sheath                                                                       |
| ⑥ Second Inner Sheath            | Material                          | PVC, DMV6 quality                                                                                        |
| ⑦ Armor                          | Material                          | Steel wire braid                                                                                         |
|                                  | Assembly                          | Braid over the second inner sheath                                                                       |
| ⑧ Outer Sheath                   | Material                          | PVC, DMV6 quality                                                                                        |
|                                  | Colour                            | Red                                                                                                      |



Main applications



**Applications** Flexible cable for energy supply of MV equipment, in tunnelling and underground mining applications, according to VDE 0250 Part 605 Standard, as far as applicable.

Electrical working data

|                                          |                                                                                                                         |                              |        |         |         |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage U <sub>0</sub> / U | kV                                                                                                                      | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                             | kV                                                                                                                      | 11                           | 17     | 24      | 29      |
| Max AC voltage                           | kV                                                                                                                      | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control                 | Inner and outer semiconductive layers extruded in a single pass with the insulation and the screen over every conductor |                              |        |         |         |
| Current rating                           | A                                                                                                                       | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | + 5 to + 80  |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm <sup>2</sup> | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                            |  |
|--------------------|--------------------------------------------|--|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2 |  |
| Weather resistance | For indoor and outdoor application         |  |



URSUS® MT TUNNEL V PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section          | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|--------------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²                       | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,1         | 47,2          | 52,1          | 4160          | 1125             |
| 3,6/6   | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,2         | 49,0          | 54,0          | 4610          | 1575             |
| 3,6/6   | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 8,9         | 52,5          | 57,8          | 5340          | 2250             |
| 3,6/6   | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 10,6        | 56,1          | 61,6          | 6410          | 3150             |
| 3,6/6   | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,3        | 60,3          | 66,2          | 7650          | 4275             |
| 3,6/6   | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 13,8        | 63,8          | 70,0          | 9040          | 5400             |
| 3,6/6   | 3x150 + 3x70/3E + 3x2,5ST + ÜL | 15,5        | 67,2          | 73,7          | 10190         | 6750             |
| 6/10    | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,1         | 47,2          | 52,7          | 4200          | 1125             |
| 6/10    | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,2         | 49,0          | 54,6          | 4650          | 1575             |
| 6/10    | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 8,9         | 52,5          | 58,4          | 5380          | 2250             |
| 6/10    | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 10,6        | 56,1          | 62,2          | 6450          | 3150             |
| 6/10    | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,3        | 60,3          | 66,8          | 7690          | 4275             |
| 6/10    | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 13,8        | 63,8          | 70,7          | 9080          | 5400             |
| 6/10    | 3x150 + 3x70/3E + 3x2,5ST + ÜL | 15,5        | 67,2          | 74,4          | 10230         | 6750             |

| Voltage | Cores x cross section          | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|--------------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²                       | mm          | mm            | mm            | kg/km         | N                |
| 8,7/15  | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,1         | 50,5          | 55,6          | 4530          | 1125             |
| 8,7/15  | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,2         | 52,3          | 57,6          | 5000          | 1575             |
| 8,7/15  | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 8,9         | 55,8          | 61,3          | 5740          | 2250             |
| 8,7/15  | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 10,6        | 59,3          | 65,2          | 6840          | 3150             |
| 8,7/15  | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,3        | 62,8          | 68,9          | 8020          | 4275             |
| 8,7/15  | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 13,8        | 66,2          | 72,6          | 9270          | 5400             |
| 12/20   | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,1         | 52,9          | 58,2          | 4820          | 1125             |
| 12/20   | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,2         | 54,7          | 60,2          | 5290          | 1575             |
| 12/20   | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 8,9         | 58,3          | 64,0          | 6120          | 2250             |
| 12/20   | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 10,6        | 61,7          | 67,8          | 7210          | 3150             |
| 12/20   | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,3        | 65,2          | 71,5          | 8410          | 4275             |
| 12/20   | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 13,8        | 68,7          | 75,3          | 9700          | 5400             |

URSUS® MT TUNNEL V ATOX PLUS 3,6/6 ÷ 12/20 kV

Based on DIN VDE 0250 Part 605



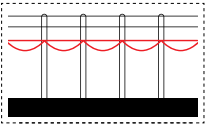
Cable construction

|                                  |                          |                                   |                                                                                                          |
|----------------------------------|--------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| 1                                | Phase Conductors         | Conductor material                | Bare copper                                                                                              |
|                                  |                          | Conductor construction            | Class 5, according to VDE 0295 (IEC 60228)                                                               |
|                                  |                          | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
|                                  |                          | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| 2                                | Protec. Earth Conductors | Material                          | Bare copper                                                                                              |
|                                  |                          | Construction                      | Individual copper wire screen                                                                            |
| 3                                | Control Conductors       | Nominal cross section             | 2,5 mm <sup>2</sup>                                                                                      |
|                                  |                          | Conductor material                | Tinned copper                                                                                            |
|                                  |                          | Conductor construction            | Class 5, according to VDE 0295 (IEC 60228)                                                               |
|                                  |                          | Insulation material               | 3GI3 quality rubber compound, according to VDE 0207 Part 20                                              |
| Central Filler<br>Cores Assembly |                          | Material                          | Rubber compound on textile polyester support                                                             |
|                                  |                          | Assembly                          | Twisted cores                                                                                            |
|                                  |                          | Separator on the twisted assembly | TNT tape wound on the twisted cores                                                                      |
| 4                                | First Inner Sheath       | Sheath material                   | M1 quality, according to CEI EN 50363, LSOH material                                                     |
| 5                                | Monitoring Conductor     | Material                          | Copper wire                                                                                              |
|                                  |                          | Assembly                          | Screen over the first inner sheath                                                                       |
| 6                                | Second Inner Sheath      | Material                          | M1 quality, according to CEI EN 50363, LSOH material                                                     |
| 7                                | Armor                    | Material                          | Steel wire braid                                                                                         |
|                                  |                          | Assembly                          | Braid over the second inner sheath                                                                       |
| 8                                | Outer Sheath             | Material                          | M1 quality, according to CEI EN 50363, LSOH material                                                     |
|                                  |                          | Colour                            | Black                                                                                                    |

Upon request:  
URSUS® MT TUNNEL V PUR HF PLUS: special version halogen free black polyurethane sheathed.



Main applications



**Applications** Flexible cable for energy supply of MV equipment, in tunnelling and underground mining applications.  
LSOH Low smoke zero halogen sheathed version.

Electrical working data

|                                          |                                                                                                                         |                              |        |         |         |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage U <sub>0</sub> / U | kV                                                                                                                      | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                             | kV                                                                                                                      | 11                           | 17     | 24      | 29      |
| Max AC voltage                           | kV                                                                                                                      | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control                 | Inner and outer semiconductive layers extruded in a single pass with the insulation and the screen over every conductor |                              |        |         |         |
| Current rating                           | A                                                                                                                       | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | + 5 to + 80  |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm <sup>2</sup> | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------------------------|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2<br>Halogen free according to IEC 60754-1 and IEC 60754-2 |
| Resistance to oil  | According to IEC 60811-2-1                                                                          |
| Ozone resistance   | According to IEC 60811-2-1                                                                          |
| Weather resistance | For indoor and outdoor application                                                                  |

URSUS® MT TUNNEL V ATOX PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section          | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|--------------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>           | mm          | mm            | mm            | kg/km         | N                |
| 3,6/6   | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,1         | 47,2          | 52,1          | 4120          | 1125             |
| 3,6/6   | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,2         | 49,0          | 54,0          | 4570          | 1575             |
| 3,6/6   | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 8,9         | 52,5          | 57,8          | 5300          | 2250             |
| 3,6/6   | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 10,6        | 56,1          | 61,6          | 6370          | 3150             |
| 3,6/6   | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,3        | 60,3          | 66,2          | 7600          | 4275             |
| 3,6/6   | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 13,8        | 63,8          | 70,0          | 8990          | 5400             |
| 3,6/6   | 3x150 + 3x70/3E + 3x2,5ST + ÜL | 15,5        | 67,2          | 73,7          | 10130         | 6750             |
| 6/10    | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,1         | 47,2          | 52,7          | 4160          | 1125             |
| 6/10    | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,2         | 49,0          | 54,6          | 4610          | 1575             |
| 6/10    | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 8,9         | 52,5          | 58,4          | 5340          | 2250             |
| 6/10    | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 10,6        | 56,1          | 62,2          | 6410          | 3150             |
| 6/10    | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,3        | 60,3          | 66,8          | 7640          | 4275             |
| 6/10    | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 13,8        | 63,8          | 70,7          | 9030          | 5400             |
| 6/10    | 3x150 + 3x70/3E + 3x2,5ST + ÜL | 15,5        | 67,2          | 74,4          | 10170         | 6750             |

| Voltage | Cores x cross section          | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|--------------------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm <sup>2</sup>           | mm          | mm            | mm            | kg/km         | N                |
| 8,7/15  | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,1         | 50,5          | 55,6          | 4030          | 1125             |
| 8,7/15  | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,2         | 52,3          | 57,6          | 4480          | 1575             |
| 8,7/15  | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 8,9         | 55,8          | 61,3          | 5210          | 2250             |
| 8,7/15  | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 10,6        | 59,3          | 65,2          | 6230          | 3150             |
| 8,7/15  | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,3        | 62,8          | 68,9          | 7350          | 4275             |
| 8,7/15  | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 13,8        | 66,2          | 72,6          | 8540          | 5400             |
| 12/20   | 3x25 + 3x25/3E + 3x2,5ST + ÜL  | 6,1         | 52,9          | 58,2          | 4330          | 1125             |
| 12/20   | 3x35 + 3x25/3E + 3x2,5ST + ÜL  | 7,2         | 54,7          | 60,2          | 4780          | 1575             |
| 12/20   | 3x50 + 3x25/3E + 3x2,5ST + ÜL  | 8,9         | 58,3          | 64,0          | 5540          | 2250             |
| 12/20   | 3x70 + 3x35/3E + 3x2,5ST + ÜL  | 10,6        | 61,7          | 67,8          | 6570          | 3150             |
| 12/20   | 3x95 + 3x50/3E + 3x2,5ST + ÜL  | 12,3        | 65,2          | 71,5          | 7690          | 4275             |
| 12/20   | 3x120 + 3x70/3E + 3x2,5ST + ÜL | 13,8        | 68,7          | 75,3          | 8920          | 5400             |

URSUS® MT TUNNEL I PLUS 3,6/6 ÷ 12/20 kV

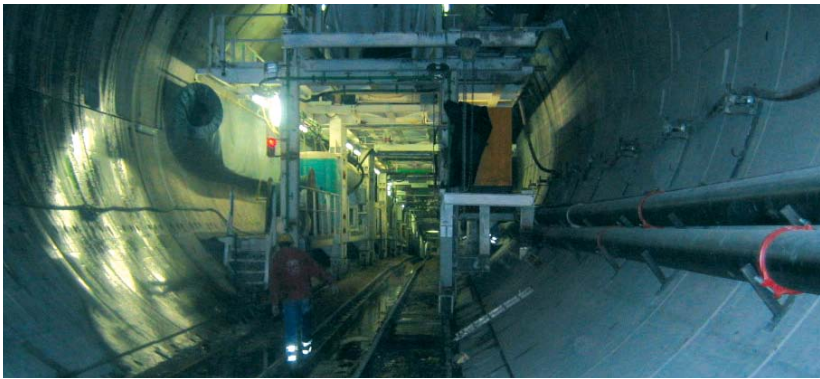
Based on IEC 60502-2 and VDE 0250 Part 813



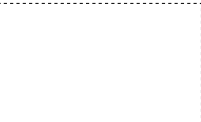
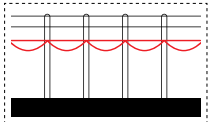
Cable construction

|                            |                                   |                                                                                                          |
|----------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| ① Phase Conductors         | Conductor material                | Bare copper                                                                                              |
|                            | Conductor construction            | Class 5, according to IEC 60228                                                                          |
|                            | Insulation material               | HEPR, G7 quality                                                                                         |
|                            | Semiconductive layers             | Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation |
| ② Protec. Earth Conductors | Material                          | Bare copper                                                                                              |
|                            | Construction                      | Individual copper wire screen                                                                            |
| ③ Control Conductors       | Nominal cross section             | 2,5 mm <sup>2</sup>                                                                                      |
|                            | Conductor material                | Tinned copper                                                                                            |
|                            | Conductor construction            | Class 5, according to IEC 60228                                                                          |
|                            | Insulation material               | Rubber compound                                                                                          |
| Central Filler             | Material                          | Rubber compound on textile polyester support                                                             |
| Cores Assembly             | Assembly                          | Twisted cores                                                                                            |
|                            | Separator on the twisted assembly | TNT tape wound on the twisted cores                                                                      |
| ④ Inner Sheath             | Sheath material                   | PVC, Rz quality                                                                                          |
| ⑤ Armor                    | Material                          | Steel wire braid                                                                                         |
|                            | Assembly                          | Braid over the inner sheath                                                                              |
| ⑥ Outer Sheath             | Material                          | PVC, Rz quality                                                                                          |
|                            | Colour                            | Red                                                                                                      |

Upon request:  
URSUS® MT TUNNEL I ATOX PLUS: special version with LSOH outer sheath.



Main applications



**Applications** Flexible cable for energy supply of MV equipment, in tunnelling and underground mining applications, according to IEC 60502-2 Standard.

Electrical working data

|                                          |                                                                                                                         |                              |        |         |         |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------|--------|---------|---------|
| Nominal rated voltage U <sub>0</sub> / U | kV                                                                                                                      | 3,6/6                        | 6/10   | 8,7/15  | 12/20   |
| Test voltage                             | kV                                                                                                                      | 11                           | 17     | 24      | 29      |
| Max AC voltage                           | kV                                                                                                                      | 4,2/7,2                      | 6,9/12 | 10,4/18 | 13,9/24 |
| Electrical field control                 | Inner and outer semiconductive layers extruded in a single pass with the insulation and the screen over every conductor |                              |        |         |         |
| Current rating                           | A                                                                                                                       | According to VDE 0298 Part 4 |        |         |         |

Thermal working data

|                                        |    |              |
|----------------------------------------|----|--------------|
| Maximum short circuit temperature      | °C | 250          |
| Maximum working temp. on the conductor | °C | 90           |
| Ambient temperature: mobile condition  | °C | + 5 to + 80  |
| Ambient temperature: static condition  | °C | - 40 to + 80 |

Mechanical working data

|                       |                   |                              |
|-----------------------|-------------------|------------------------------|
| Bending radius        | mm                | According to VDE 0298 Part 3 |
| Maximum tensile load* | N/mm <sup>2</sup> | 15                           |

\* Referred to the total phase conductors cross section

Chemical working data

|                    |                                                          |  |
|--------------------|----------------------------------------------------------|--|
| Burning behaviour  | Flame retardant according to IEC 60332-1-2, EN 60332-1-2 |  |
| Weather resistance | For indoor and outdoor application                       |  |



URSUS® MT TUNNEL I PLUS 3,6/6 ÷ 12/20 kV

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 3,6/6   | 3x25 + 3x2,5ST        | 6,1         | 36,3          | 40,2          | 2250          | 1125             |
| 3,6/6   | 3x35 + 3x2,5ST        | 7,2         | 38,8          | 43,0          | 3200          | 1575             |
| 3,6/6   | 3x50 + 3x2,5ST        | 8,9         | 42,5          | 47,0          | 3860          | 2250             |
| 3,6/6   | 3x70 + 3x2,5ST        | 10,6        | 46,1          | 50,8          | 4630          | 3150             |
| 3,6/6   | 3x95 + 3x2,5ST        | 12,3        | 49,9          | 55,0          | 5680          | 4275             |
| 3,6/6   | 3x120 + 3x2,5ST       | 13,8        | 56,8          | 62,5          | 7010          | 5400             |
| 3,6/6   | 3x150 + 3x2,5ST       | 15,5        | 57,8          | 63,5          | 7910          | 6750             |
| 3,6/6   | 3x185 + 3x2,5ST       | 17,0        | 61,2          | 67,1          | 9060          | 8325             |
|         |                       |             |               |               |               |                  |
| 6/10    | 3x25 + 3x2,5ST        | 6,1         | 36,3          | 40,8          | 2290          | 1125             |
| 6/10    | 3x35 + 3x2,5ST        | 7,2         | 38,8          | 43,6          | 3240          | 1575             |
| 6/10    | 3x50 + 3x2,5ST        | 8,9         | 42,5          | 47,6          | 3900          | 2250             |
| 6/10    | 3x70 + 3x2,5ST        | 10,6        | 46,1          | 51,4          | 4670          | 3150             |
| 6/10    | 3x95 + 3x2,5ST        | 12,3        | 49,9          | 55,6          | 5720          | 4275             |
| 6/10    | 3x120 + 3x2,5ST       | 13,8        | 56,8          | 63,2          | 7050          | 5400             |
| 6/10    | 3x150 + 3x2,5ST       | 15,5        | 57,8          | 64,2          | 7950          | 6750             |
| 6/10    | 3x185 + 3x2,5ST       | 17,0        | 61,2          | 67,8          | 9100          | 8325             |

| Voltage | Cores x cross section | Conductor Ø | Min overall Ø | Max overall Ø | Approx weight | Max tensile load |
|---------|-----------------------|-------------|---------------|---------------|---------------|------------------|
| kV      | Nr x mm²              | mm          | mm            | mm            | kg/km         | N                |
|         |                       |             |               |               |               |                  |
| 8,7/15  | 3x25 + 3x2,5ST        | 6,1         | 40,9          | 45,2          | 3040          | 1125             |
| 8,7/15  | 3x35 + 3x2,5ST        | 7,2         | 42,9          | 47,4          | 3470          | 1575             |
| 8,7/15  | 3x50 + 3x2,5ST        | 8,9         | 46,9          | 51,8          | 4280          | 2250             |
| 8,7/15  | 3x70 + 3x2,5ST        | 10,6        | 51,5          | 56,7          | 5300          | 3150             |
| 8,7/15  | 3x95 + 3x2,5ST        | 12,3        | 55,2          | 60,7          | 6420          | 4275             |
| 8,7/15  | 3x120 + 3x2,5ST       | 13,8        | 57,1          | 62,8          | 7120          | 5400             |
| 8,7/15  | 3x150 + 3x2,5ST       | 15,5        | 62,1          | 68,2          | 8600          | 6750             |
|         |                       |             |               |               |               |                  |
| 12/20   | 3x25 + 3x2,5ST        | 6,1         | 43,8          | 48,4          | 3410          | 1125             |
| 12/20   | 3x35 + 3x2,5ST        | 7,2         | 45,7          | 50,4          | 3830          | 1575             |
| 12/20   | 3x50 + 3x2,5ST        | 8,9         | 49,3          | 54,4          | 4570          | 2250             |
| 12/20   | 3x70 + 3x2,5ST        | 10,6        | 54,1          | 59,6          | 5760          | 3150             |
| 12/20   | 3x95 + 3x2,5ST        | 12,3        | 57,8          | 63,5          | 6890          | 4275             |
| 12/20   | 3x120 + 3x2,5ST       | 13,8        | 61,0          | 66,9          | 7650          | 5400             |

*Technical data.*

BENDING RADIUS

REELS APPLICATION DATA

ANTI-TORSIONAL BRAID

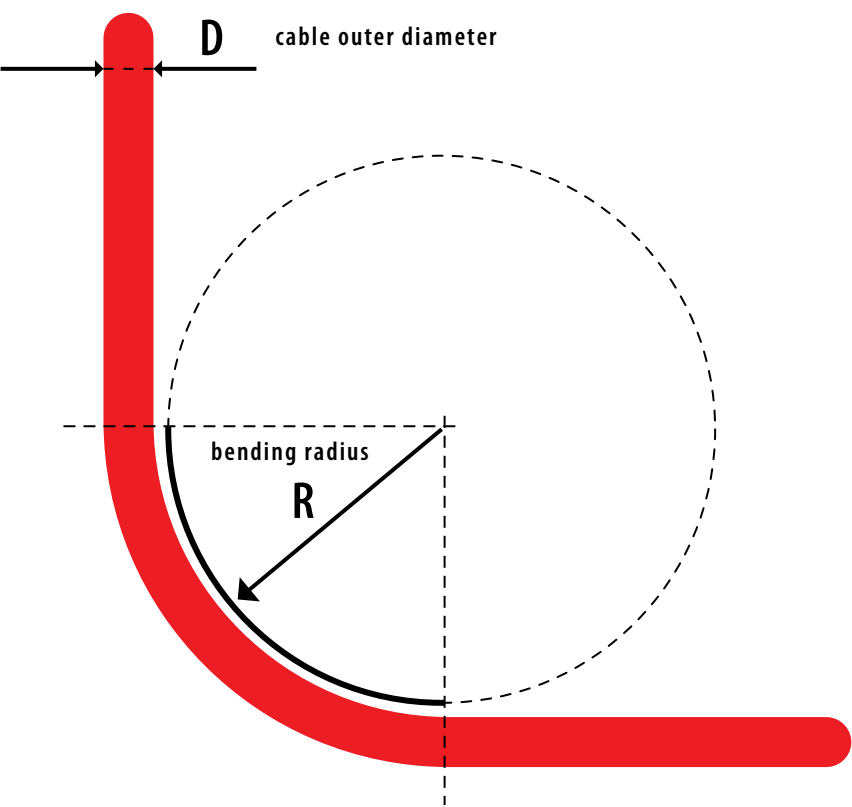
CONDUCTORS

CURRENT CARRYING CAPACITY - SHORT CIRCUIT CURRENT

VOLTAGE DROP

# Minimum bending radius.

According to VDE 0298-3



| Rated voltage U0/U                                  | Up to 0,6/1kV |              |               |          | Above 0,6/1kV |
|-----------------------------------------------------|---------------|--------------|---------------|----------|---------------|
|                                                     | Up to 8       | from 8 to 12 | from 12 to 20 | above 20 |               |
| Cable diameter D mm                                 |               |              |               |          |               |
| Fixed installation                                  | 3 x D         | 3 x D        | 4 x D         | 4 x D    | 6 x D         |
| Freely flexing                                      | 3 x D         | 4 x D        | 5 x D         | 5 x D    | 10 x D        |
| For the entry e.g. at a center feed point           | 3 x D         | 4 x D        | 5 x D         | 5 x D    | 10 x D        |
| Forced guidance with reeling operation              | 5 x D         | 5 x D        | 5 x D         | 6 x D    | 12 x D        |
| Forced guidance with festoon operation              | 3 x D         | 4 x D        | 5 x D         | 5 x D    | 10 x D        |
| Forced guidance with power tracks                   | 4 x D         | 4 x D        | 5 x D         | 5 x D    | 10 x D        |
| Forced guidance with sheaves and multiroller guides | 7,5 x D       | 7,5 x D      | 7,5 x D       | 7,5 x D  | 15 x D        |
| Forced guidance with cable tenders                  | 7,5 x D       | 7,5 x D      | 7,5 x D       | 7,5 x D  | 15 x D        |

# Reels application data.

## Types

**Monospiral drum (single spire multi layers)** ideal to guarantee the heat dissipation and the control of irregular twisting during unwinding. The limit could be the cable's length in relation with the reel's diameter.

**Multispiral drum (multi spires single layer)** used in case of long cable lengths. It is important to ensure that the guide mechanism doesn't damage the cable during unwinding, for example: avoiding anomalous rub against the surface of the previous spire or irregular twisting. It is advisable to use maximum two layers to allow the thermal balance.

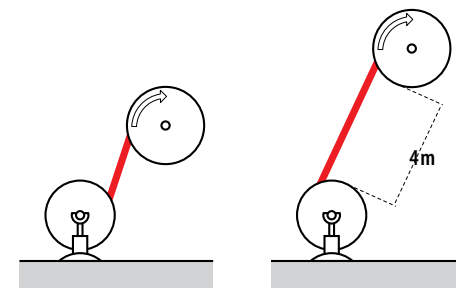
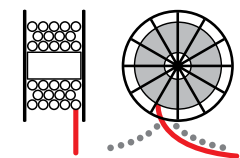
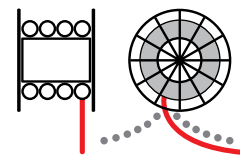
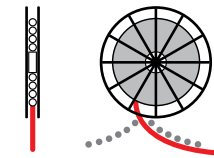
**Cylindric drum (multi spires multi layers random wound)** it is the cheaper reel but it doesn't guarantee the control over the layers of cable: the cable could be stacked, for example, on one side of the drum.

## Installation & Use

The correct installation method is to wind the cable directly to the operating drum avoiding reverse bending and, if possible, with a distance between the reels at least of 4 meters:

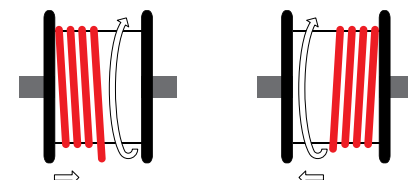
Aristoncavi's cables are produced with S stranding direction. In this case we recommend to start winding the cables, on the reeling drum, from the left side of reel as shown in the pictures:

Changing direction during winding or unwinding, is a dangerous operation: it has to be gradual. The rollers and the shaves must be well positioned at an adequate distance in order to avoid mechanical stresses to the cores.



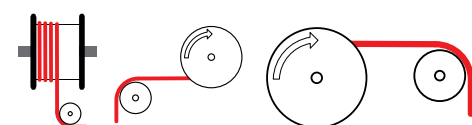
Incorrect

Correct



Correct

Incorrect



Incorrect

Correct

If the change of direction cannot be avoided, the minimum distance with double or S-type directional changer must be bigger than  $20xD$  ( $D$ = overall cable diameter).

For a large diameter cable it would be better to use rollers to reduce the friction with the sheath during the change of direction.

If sheaves are used, it is important to have a flat surface profile, to avoid unwanted rotations or twisting caused by the continuous clash with the sides of the sheave. In any case, the width of a cradle or that of a roller, should be 10-15% larger than the outer cable diameter to allow a correct running.

## Cable guide

Safe and smooth guidance of the cable for end and centre feed.

## Roller guide

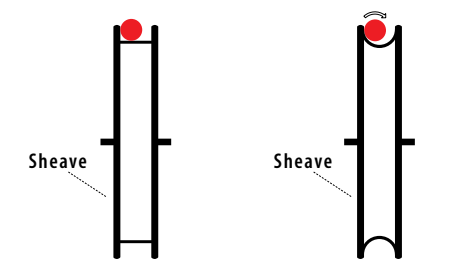
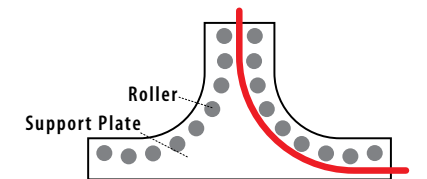
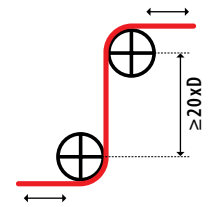
Defined guidance of the cable from reel body to feed point.

## Cable feed point

Ideal cable guidance at feeding point for centre feed applications.

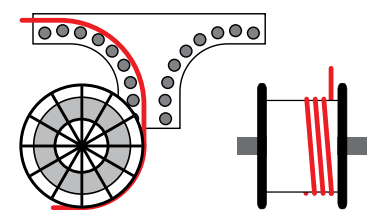
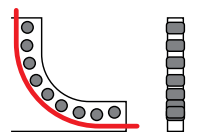
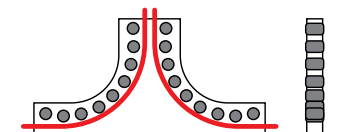
## Cable mesh grip

Ideal tension relief for cable at feeding point. Safe and simple to handle, it spreads the forces over a wide surface area to prevent cable damage.



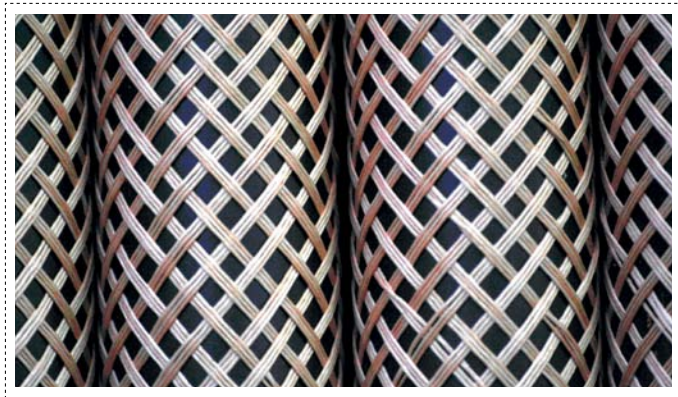
Correct

Incorrect





Anti-torsional braid.

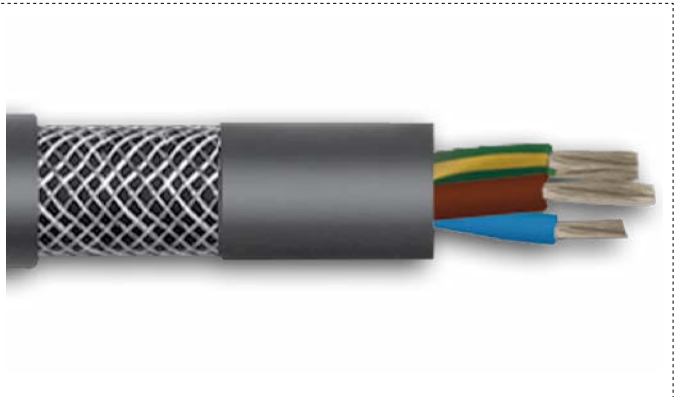


A polyester braid is used between inner and outer sheath to avoid loops, anomalous twists and corkscrew effects.

Torsional stresses could be caused, for example, by: elevated dynamic stress, change of direction into different planes, high tensile load of the cable, not aligned guide pulley, wrong unwinding of the cable, etc...

The braid is designed with the following criteria: coverage percentage, braid angle, material, chemical compatibility between braid and sheaths. On request the braid could be made with Aramide textile, in order to perform an higher tensile strength.

Conductors.



FLEXIBLE COPPER CONDUCTORS CLASS 5  
According to VDE 0295 (IEC 60228)

| Cross section   | Max diameter of wires | Max resistance of conductor at 20° C |               |
|-----------------|-----------------------|--------------------------------------|---------------|
|                 |                       | bare copper                          | tinned copper |
| mm <sup>2</sup> | mm                    | Ohm/Km                               | Ohm/Km        |
| 1,5             | 0,26                  | 13,3                                 | 13,7          |
| 2,5             | 0,26                  | 7,98                                 | 8,21          |
| 4               | 0,31                  | 4,95                                 | 5,09          |
| 6               | 0,31                  | 3,3                                  | 3,39          |
| 10              | 0,41                  | 1,91                                 | 1,95          |
| 16              | 0,41                  | 1,21                                 | 1,24          |
| 25              | 0,41                  | 0,78                                 | 0,795         |
| 35              | 0,41                  | 0,554                                | 0,565         |
| 50              | 0,41                  | 0,386                                | 0,393         |
| 70              | 0,51                  | 0,272                                | 0,277         |
| 95              | 0,51                  | 0,206                                | 0,21          |
| 120             | 0,51                  | 0,161                                | 0,164         |
| 150             | 0,51                  | 0,129                                | 0,132         |
| 185             | 0,51                  | 0,106                                | 0,108         |
| 240             | 0,51                  | 0,0801                               | 0,0817        |
| 300             | 0,51                  | 0,0641                               | 0,0654        |

Current carrying capacity.  
Short circuit current.

CURRENT CARRYING CAPACITY UP TO 6/10 kV (VDE 0298-4) ambient temperature 30°C

| Applica-<br>tion |  |  |  |  |  |  |  |  |  |
|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Cross<br>section | Laying<br>on the<br>floor                                                         | Free<br>in air                                                                    | Reeled                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|                  |                                                                                   |                                                                                   | 1 layer                                                                           | 2 layer                                                                           | 3 layer                                                                           | 4 layer                                                                           | 5 layer                                                                             | 6 layer                                                                             | 7 layer                                                                             |
| mm²              | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                   | A                                                                                   | A                                                                                   |
| 1                | 19                                                                                | 20                                                                                | 15                                                                                | 12                                                                                | 9                                                                                 | 8                                                                                 | 7                                                                                   | 5                                                                                   | 4                                                                                   |
| 1,5              | 24                                                                                | 25                                                                                | 19                                                                                | 15                                                                                | 12                                                                                | 10                                                                                | 9                                                                                   | 6                                                                                   | 5                                                                                   |
| 2,5              | 30                                                                                | 32                                                                                | 24                                                                                | 18                                                                                | 15                                                                                | 13                                                                                | 11                                                                                  | 8                                                                                   | 7                                                                                   |
| 4                | 41                                                                                | 43                                                                                | 33                                                                                | 25                                                                                | 20                                                                                | 17                                                                                | 16                                                                                  | 11                                                                                  | 9                                                                                   |
| 6                | 53                                                                                | 56                                                                                | 42                                                                                | 32                                                                                | 26                                                                                | 22                                                                                | 20                                                                                  | 14                                                                                  | 12                                                                                  |
| 10               | 74                                                                                | 78                                                                                | 59                                                                                | 45                                                                                | 36                                                                                | 31                                                                                | 28                                                                                  | 20                                                                                  | 16                                                                                  |
| 16               | 99                                                                                | 104                                                                               | 79                                                                                | 60                                                                                | 49                                                                                | 42                                                                                | 38                                                                                  | 27                                                                                  | 22                                                                                  |
| 25               | 131                                                                               | 138                                                                               | 105                                                                               | 80                                                                                | 64                                                                                | 55                                                                                | 50                                                                                  | 35                                                                                  | 29                                                                                  |
| 35               | 162                                                                               | 170                                                                               | 130                                                                               | 99                                                                                | 79                                                                                | 68                                                                                | 62                                                                                  | 44                                                                                  | 36                                                                                  |
| 50               | 202                                                                               | 212                                                                               | 162                                                                               | 123                                                                               | 99                                                                                | 85                                                                                | 77                                                                                  | 55                                                                                  | 44                                                                                  |
| 70               | 250                                                                               | 263                                                                               | 200                                                                               | 153                                                                               | 123                                                                               | 105                                                                               | 95                                                                                  | 68                                                                                  | 55                                                                                  |
| 95               | 301                                                                               | 316                                                                               | 241                                                                               | 184                                                                               | 147                                                                               | 126                                                                               | 114                                                                                 | 81                                                                                  | 66                                                                                  |
| 120              | 352                                                                               | 370                                                                               | 282                                                                               | 215                                                                               | 172                                                                               | 148                                                                               | 134                                                                                 | 95                                                                                  | 77                                                                                  |
| 150              | 404                                                                               | 424                                                                               | 323                                                                               | 246                                                                               | 198                                                                               | 170                                                                               | 154                                                                                 | 109                                                                                 | 89                                                                                  |
| 185              | 461                                                                               | 484                                                                               | 369                                                                               | 281                                                                               | 226                                                                               | 194                                                                               | 175                                                                                 | 124                                                                                 | 101                                                                                 |
| 240              | 528                                                                               | 554                                                                               | 422                                                                               | 322                                                                               | 259                                                                               | 222                                                                               | 201                                                                                 | 143                                                                                 | 116                                                                                 |
| 300              | 608                                                                               | 638                                                                               | 486                                                                               | 371                                                                               | 298                                                                               | 255                                                                               | 231                                                                                 | 164                                                                                 | 134                                                                                 |

CURRENT CARRYING CAPACITY ABOVE 6/10 kV (VDE 0298-4) ambient temperature 30°C

| Applica-<br>tion |  |  |  |  |  |  |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Cross<br>section | Laying<br>on the<br>floor                                                           | Reeled                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                  |                                                                                     | 1 layer                                                                             | 2 layer                                                                             | 3 layer                                                                             | 4 layer                                                                             | 5 layer                                                                             | 6 layer                                                                             | 7 layer                                                                             |
| mm²              | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   |
| 16               | 105                                                                                 | 84                                                                                  | 64                                                                                  | 51                                                                                  | 44                                                                                  | 40                                                                                  | 28                                                                                  | 23                                                                                  |
| 25               | 139                                                                                 | 111                                                                                 | 85                                                                                  | 68                                                                                  | 58                                                                                  | 53                                                                                  | 38                                                                                  | 31                                                                                  |
| 35               | 172                                                                                 | 138                                                                                 | 105                                                                                 | 84                                                                                  | 72                                                                                  | 65                                                                                  | 46                                                                                  | 38                                                                                  |
| 50               | 216                                                                                 | 173                                                                                 | 132                                                                                 | 106                                                                                 | 91                                                                                  | 82                                                                                  | 58                                                                                  | 48                                                                                  |
| 70               | 265                                                                                 | 212                                                                                 | 162                                                                                 | 130                                                                                 | 111                                                                                 | 101                                                                                 | 72                                                                                  | 58                                                                                  |
| 95               | 319                                                                                 | 255                                                                                 | 195                                                                                 | 156                                                                                 | 134                                                                                 | 121                                                                                 | 86                                                                                  | 70                                                                                  |
| 120              | 371                                                                                 | 297                                                                                 | 226                                                                                 | 182                                                                                 | 156                                                                                 | 141                                                                                 | 100                                                                                 | 82                                                                                  |
| 150              | 428                                                                                 | 342                                                                                 | 261                                                                                 | 210                                                                                 | 180                                                                                 | 163                                                                                 | 116                                                                                 | 94                                                                                  |
| 185              | 488                                                                                 | 390                                                                                 | 298                                                                                 | 239                                                                                 | 205                                                                                 | 185                                                                                 | 132                                                                                 | 107                                                                                 |
| 240              | 574                                                                                 | 459                                                                                 | 350                                                                                 | 281                                                                                 | 241                                                                                 | 218                                                                                 | 155                                                                                 | 126                                                                                 |
| 300              | 660                                                                                 | 528                                                                                 | 403                                                                                 | 323                                                                                 | 277                                                                                 | 251                                                                                 | 178                                                                                 | 145                                                                                 |

CORRECTION FACTORS (VDE 0298-4)

| N° opera-<br>ting cores | 5    | 7    | 10   | 14   | 19   | 24   | 40   | 61   |      |      |      |      |      |      |      |      |  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| Factor                  | 0,75 | 0,65 | 0,55 | 0,50 | 0,45 | 0,40 | 0,35 | 0,30 |      |      |      |      |      |      |      |      |  |
| Ambient<br>temp. (C°)   | 10   | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80   | 85   |  |
| Factor                  | 1,15 | 1,12 | 1,08 | 1,04 | 1    | 0,96 | 0,91 | 0,87 | 0,82 | 0,76 | 0,71 | 0,65 | 0,58 | 0,50 | 0,41 | 0,29 |  |

The maximum temperature allowed for rubber cables, during short circuit, is 250°C. The maximum thermal short circuit current allowed, for a time **t**, can be calculated by the following formulas, valid in adiabatic conditions :

$I_{cc} = \frac{143 \cdot S}{\sqrt{t}}$

Where :  
I<sub>cc</sub> = Short circuit current (A)  
S = Conductor size (mm²)  
t = Time period of short circuit (max 5 s)

Voltage drop.

Normally for an electric line or for power supply to a motor the voltage drop would be less than 5% of nominal voltage. To calculate the voltage drop must apply the following formula:

$$\Delta V = \frac{K \cdot I \cdot L}{1000}$$

Where :  
ΔV = Voltage drop in Volts  
K = Coefficient as per table  
I = Current rate in Ampere  
L = Length of the line in meters

| THREE PHASE CABLE     |                  |                  |                  |                |
|-----------------------|------------------|------------------|------------------|----------------|
| Nominal cross section | Power factor     |                  |                  |                |
| mm²                   | Power factor 0,7 | Power factor 0,8 | Power factor 0,9 | Power factor 1 |
| 1,5                   | 20,65            | 23,56            | 26,47            | 29,32          |
| 2,5                   | 12,43            | 14,17            | 15,91            | 17,59          |
| 4                     | 7,75             | 8,82             | 9,89             | 10,92          |
| 6                     | 5,19             | 5,90             | 6,60             | 7,27           |
| 10                    | 3,04             | 3,44             | 3,84             | 4,20           |
| 16                    | 1,96             | 2,21             | 2,45             | 2,66           |
| 25                    | 1,29             | 1,45             | 1,60             | 1,71           |
| 35                    | 0,95             | 1,06             | 1,16             | 1,23           |
| 50                    | 0,69             | 0,77             | 0,83             | 0,87           |
| 70                    | 0,51             | 0,56             | 0,60             | 0,61           |
| 95                    | 0,41             | 0,45             | 0,47             | 0,47           |
| 120                   | 0,34             | 0,36             | 0,38             | 0,36           |
| 150                   | 0,29             | 0,31             | 0,32             | 0,29           |
| 185                   | 0,25             | 0,27             | 0,27             | 0,24           |
| 240                   | 0,21             | 0,22             | 0,21             | 0,18           |



*CSQ: this certified that Aristoncavi S.p.A.  
implements a quality system in conformity  
with the standard UNI EN ISO 9001 to  
ensure quality in design, development,  
manufacture, selling/marketing and  
installation of the product.*





ARISTONCAVI