



INSTRUMENTATION CABLES

Multipair Overall Screen

NOT ARMoured

PE/OS/PVC
XLPE/OS/LSZH

ARMoured

PE/OS/PE/SWA/PVC
XLPE/OS/LSZH/SWA/LSZH

APPLICATIONS

Can be used in cable tray or conduit to connect electrical instrumentation and communication circuits in industrial process controls, refineries, oil and gas plants.

OPERATING TEMPERATURE

-20 °C to +80 °C (for general use); -40 °C to +90 °C (on request).

MINIMUM BENDING RADIUS

Not armoured type

12 times the outer diameter (for conductors class 1 and class 2);
10 times the outer diameter (for conductors class 5).

Armoured type

15 times the outer diameter.

CABLE CONSTRUCTION

Conductors Plain annealed electrolytic copper wire according to EN 60228 class 1(U) solid, class 2 (R) stranded, class 5 (F) flexible.

Insulation PVC, PE, XLPE or LSZH thermoplastic material.

Twisting The insulated cores shall be twisted in pairs for a good reduction of the electromagnetic noise.

Cabling The pairs/triads are cabled with suitable non hygroscopic fillers (when necessary) and wrapped with polyester tape if required.

Overall screen Aluminium/polyester tape, coverage >100%, aluminium in contact with tinned copper drain wire.

Armoured

*Inner sheath: PE, PVC or LSZH thermoplastic material.
Armour: Single layer of galvanized steel wires (SWA).*

Outer sheath PVC or LSZH thermoplastic material.

APPLICABLE STANDARDS

Basic design EN 50288-7 or PAS 5308

Flame retardant IEC 60332-1

Fire retardant (cat. C or A according to requirements) IEC 60332-3

Halogen free properties (only for LSZH cables) IEC 60754-1

Low smoke emission (only for LSZH cables) IEC 61034-2

EN 50288-7 (500 V)

| Cross section (mm ²) | UNARMoured | | ARMoured | | |
|------------------------------------|---------------------|----------------|----------------------------|---------------------|----------------|
| | Outer diameter (mm) | Weight (kg/km) | Diameter under armour (mm) | Outer diameter (mm) | Weight (kg/km) |
| 1 mm² stranded | R-XLPE/OS/LSZH | | R-XLPE/OS/LSZH/SWA/LSZH | | |
| 1x2x1 | 6,8 | 60 | 6,8 | 11,4 | 250 |
| 2x2x1 | 9,4 | 105 | 9,4 | 14,1 | 370 |
| 5x2x1 | 12,6 | 210 | 12,6 | 17,6 | 540 |
| 10x2x1 | 17,2 | 365 | 17,2 | 24,0 | 1080 |
| 12x2x1 | 18,5 | 425 | 18,5 | 25,3 | 1190 |
| 1,5 mm² stranded | R-XLPE/OS/LSZH | | R-XLPE/OS/LSZH/SWA/LSZH | | |
| 1x2x1,5 | 7,4 | 75 | 7,4 | 12,2 | 280 |
| 1x3x1,5 | 7,8 | 95 | 7,8 | 12,6 | 310 |
| 2x2x1,5 | 10,2 | 155 | 10,2 | 15,0 | 420 |
| 4x2x1,5 | 12,7 | 220 | 12,7 | 17,7 | 550 |
| 5x2x1,5 | 14,1 | 280 | 14,1 | 19,3 | 660 |
| 6x2x1,5 | 16,4 | 355 | 16,4 | 21,6 | 780 |
| 8x2x1,5 | 17,3 | 405 | 17,3 | 24,1 | 1120 |
| 10x2x1,5 | 19,2 | 495 | 19,2 | 26,0 | 1285 |
| 12x2x1,5 | 20,8 | 580 | 20,8 | 27,8 | 1440 |
| 20x2x1,5 | 25,6 | 925 | 25,6 | 32,8 | 1980 |
| 24x2x1,5 | 28,7 | 1105 | 28,7 | 36,1 | 2300 |
| 2,5 mm² stranded | R-XLPE/OS/LSZH | | R-XLPE/OS/LSZH/SWA/LSZH | | |
| 1x2x2,5 | 8,8 | 105 | 8,8 | 13,6 | 340 |
| 1x3x2,5 | 9,3 | 135 | 9,3 | 14,1 | 380 |
| 2x2x2,5 | 12,2 | 220 | 12,2 | 17,2 | 550 |
| 4x2x2,5 | 15,3 | 325 | 15,3 | 20,5 | 730 |
| 5x2x2,5 | 16,9 | 415 | 16,9 | 23,7 | 1120 |
| 6x2x2,5 | 19,7 | 520 | 19,7 | 26,5 | 1330 |
| 8x2x2,5 | 20,8 | 600 | 20,8 | 27,8 | 1460 |
| 10x2x2,5 | 23,2 | 745 | 23,2 | 30,1 | 1690 |
| 12x2x2,5 | 25,3 | 885 | 25,3 | 32,5 | 1930 |
| 20x2x2,5 | 31,1 | 1410 | 31,1 | 38,6 | 2700 |

approximate values

ELECTRICAL CHARACTERISTICS

| Cross section (mm ²) | 1 | 1,5 | 2,5 |
|----------------------------------|------|------|------|
| Capacitance (pF/m) | ≤150 | ≤150 | ≤150 |
| L/R (μH/Ohm) | ≤25 | ≤40 | ≤60 |

PAS 5308 (300/500 V)

| Cross section (mm ²) | UNARMoured | | ARMoured | | |
|------------------------------------|---------------------|----------------|----------------------------|---------------------|----------------|
| | Outer diameter (mm) | Weight (kg/km) | Diameter under armour (mm) | Outer diameter (mm) | Weight (kg/km) |
| 0,5 mm² solid | U-PE/OS/PVC | | U-PE/OS/PE/SWA/PVC | | |
| 1x2x0,5 | 6,3 | 50 | 6,3 | 10,7 | 200 |
| 2x2x0,5 (quad cabled) | 7,1 | 75 | 7,1 | 11,5 | 260 |
| 5x2x0,5 | 11,6 | 200 | 11,6 | 16,2 | 460 |
| 10x2x0,5 | 15,0 | 270 | 15,0 | 20,7 | 790 |
| 15x2x0,5 | 17,1 | 370 | 17,1 | 22,8 | 1100 |
| 20x2x0,5 | 19,4 | 440 | 19,4 | 26,0 | 1280 |
| 30x2x0,5 | 23,0 | 630 | 23,0 | 29,8 | 1520 |
| 50x2x0,5 | 28,9 | 980 | 28,9 | 36,1 | 2100 |
| 0,5 mm² flexible | F-PE/OS/PVC | | F-PE/OS/PE/SWA/PVC | | |
| 1x2x0,5 | 7,0 | 60 | 7,0 | 11,4 | 250 |
| 2x2x0,5 (quad cabled) | 7,9 | 80 | 7,9 | 12,3 | 300 |
| 5x2x0,5 | 13,1 | 210 | 13,1 | 17,9 | 560 |
| 10x2x0,5 | 17,2 | 340 | 17,2 | 22,9 | 970 |
| 15x2x0,5 | 19,8 | 440 | 19,8 | 26,4 | 1240 |
| 20x2x0,5 | 22,3 | 570 | 22,3 | 29,1 | 1640 |
| 30x2x0,5 | 26,9 | 780 | 26,9 | 33,9 | 1770 |
| 50x2x0,5 | 33,9 | 1130 | 33,9 | 42,1 | 2770 |
| 1 mm² solid | U-PE/OS/PVC | | U-PE/OS/PE/SWA/PVC | | |
| 1x2x1 | 7,4 | 85 | 7,4 | 11,8 | 290 |
| 2x2x1 (quad cabled) | 8,4 | 115 | 8,4 | 13,0 | 345 |
| 5x2x1 | 14,2 | 290 | 14,2 | 19,7 | 790 |
| 10x2x1 | 17,4 | 500 | 17,4 | 24,3 | 1310 |
| 15x2x1 | 21,3 | 670 | 21,3 | 28,1 | 1740 |
| 20x2x1 | 24,4 | 950 | 24,4 | 31,2 | 2040 |
| 30x2x1 | 29,0 | 1030 | 29,0 | 36,2 | 2180 |
| 50x2x1 | 37,3 | 1750 | 37,3 | 45,7 | 3500 |
| 1,5 mm² stranded | R-PE/OS/PVC | | R-PE/OS/PE/SWA/PVC | | |
| 1x2x1,5 | 8,3 | 100 | 8,3 | 12,6 | 320 |
| 2x2x1,5 (quad cabled) | 9,7 | 150 | 9,7 | 14,3 | 420 |
| 5x2x1,5 | 16,4 | 360 | 16,4 | 22,1 | 940 |
| 10x2x1,5 | 21,6 | 690 | 21,6 | 28,4 | 1500 |
| 15x2 x1,5 | 25,2 | 880 | 25,2 | 32,2 | 1970 |
| 20x2x1,5 | 28,5 | 1230 | 28,5 | 36,5 | 2400 |
| 30x2x1,5 | 34,3 | 1560 | 34,3 | 42,5 | 3170 |
| 50x2x1,5 | 43,6 | 2400 | 43,6 | 53,4 | 5020 |

approximate values

ELECTRICAL CHARACTERISTICS

| Cross section (mm ²) | 0,5 | | 1 | | 1,5 | |
|----------------------------------|------|-----|------|-----|------|-----|
| n. of pairs | 1-2 | ≥5 | 1-2 | ≥5 | 1-2 | ≥5 |
| Capacitance (pF/m) | ≤115 | ≤75 | ≤115 | ≤75 | ≤120 | ≤85 |
| L/R (μH/Ohm) | ≤25 | | ≤25 | | ≤40 | |