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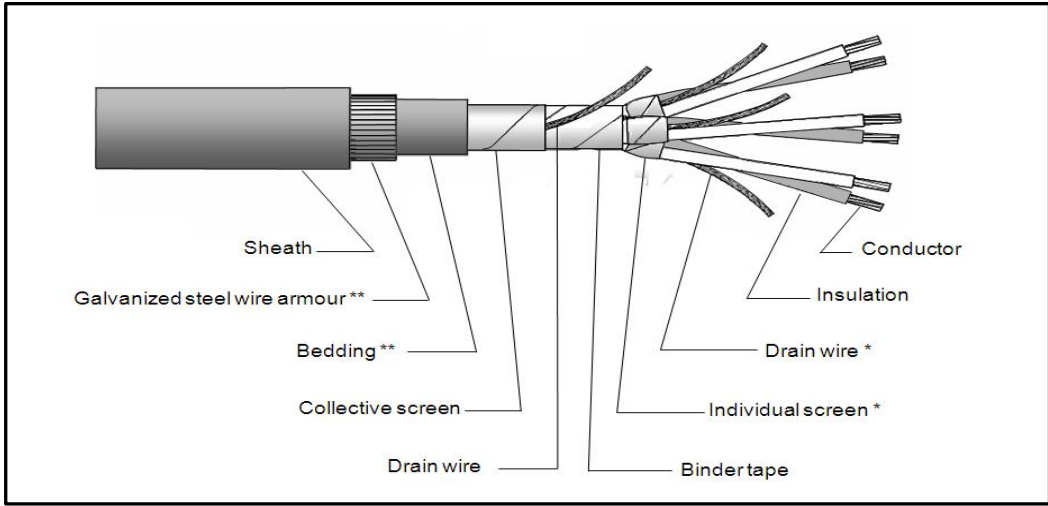


Diagram 1 – Construction of instrumentation cable

* instrumentation cables with individual screen

** instrumentation cables with steel wire armouring

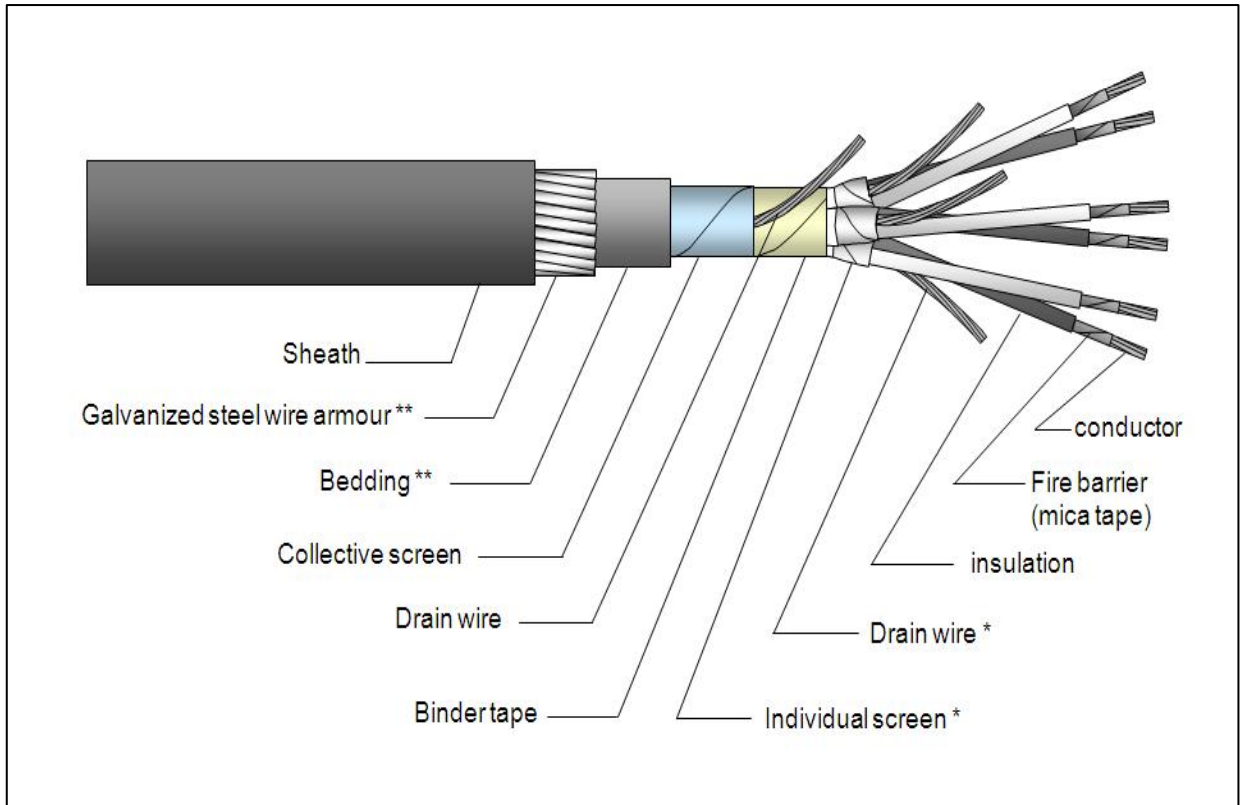


Diagram 2 -- Construction of fire resistant instrumentation cable

* instrumentation cables with individual screen

** instrumentation cable with steel wire armoring

INSTRUMENTATION CABLES

STANDARD

: BS 5308 PART 1

CONSTRUCTION:

| | | |
|----|-----------------------------------|--|
| 1 | Conductor | Plain Annealed Copper Wires to BS 6360 |
| 2 | Insulation | Type 03 Polyethylene to BS 6234 |
| 3 | Pairs | Insulated cores are twisted to form a pair, and the length of lay of any pair shall not exceed 100mm |
| 4 | Colour Code | Black / White with pair number printed on white core |
| 5 | Individual Screen (IS) (optional) | Aluminum / Polyester tape with tinned copper drain wire 0.5mm ² (7/0.32mm) |
| 6 | Cabling | The required number of pairs or cores shall be assembled in concentric layers |
| 7 | Binder | Polyester Binder tape |
| 8 | Collective screen(OS) | Aluminum / Polyester tape, with tinned copper drain wire 0.5mm ² (7/0.32mm) |
| 9 | Nylon Yarn | For easy stripping |
| 10 | Bedding (optional) | PVC to BS 6746, TM1 |
| 11 | Armouring (optional) | Galvanized steel wires to BS 1442 |
| 12 | Outer sheath | PVC to BS 6746, TM1 |

TECHNICAL INFORMATION:

| | | |
|---|--------------------------------|--|
| 1 | Operating Temperature | max. 65°C |
| 2 | Working Voltage | max. 300 / 500 V r.m.s. |
| 3 | Test Voltage | 1000 V r.m.s. for 1 min between conductor, and between conductors and screen / armour |
| 4 | Insulation Resistance | Individual Conductor --- min. 5000MΩ/km at 20 °C. Between individual screens --- min. 1 MΩ/km at 20 °C. |
| 5 | Mutual Capacitance at 1KHz | Cables without individual pair screens, 1.5mm ² --max. 85 pF/m. Cables with individual pair screens and 1 or 2 pair cables collectively screened, 1.5mm ² --115pF/m |
| 6 | Capacitance unbalance | max. 250pF/250m at 1kHz |
| 7 | DC conductor Resistance | 1.5mm ² --- max. 12.3 Ω/km 2.5mm ² --- max. 7.41 Ω/km |
| 8 | L/R Ratio (For Adjacent Cores) | 1.5mm ² --- max. 40 μH/Ω 2.5mm ² --- max. 50 μH/Ω |
| 9 | Bending Radius | unarmoured cable --- min. 6D armoured cable --- min. 8D |

**INSTRUMENTATION CABLES (BS 5308 PART 1)
300/500V (65°C) PE Insulated, Unarmoured / Armoured**

TABLE 1

| Conductor | | Core | Unarmoured (PE/OS/PVC) | | | | Armoured (PE/OS/PVC/SWA/PVC) | | | | |
|-----------------|--------------------|------|-------------------------|---------------------|---------------------|-----------------|------------------------------|------------------|---------------------|---------------------|-----------------|
| Nom. Area | No/Dia. of wire | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. of | Nom. | Approx. | Approx. |
| | | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | Armoured Wire | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km |
| 1.5 | 7/0.53 | 2 | 0.6 | 0.8 | 7.9 | 87 | 0.8 | 0.9 | 1.4 | 12.2 | 288 |
| | | 3 | 0.6 | 0.9 | 8.4 | 108 | 0.9 | 0.9 | 1.4 | 12.9 | 337 |
| | | 4 | 0.6 | 0.9 | 9.1 | 136 | 0.9 | 0.9 | 1.4 | 13.6 | 361 |
| | | 6 | 0.6 | 1.1 | 11.5 | 207 | 1.1 | 0.9 | 1.4 | 15.7 | 488 |
| | | 10 | 0.6 | 1.2 | 14.4 | 329 | 1.2 | 1.25 | 1.6 | 19.9 | 835 |
| | | 20 | 0.6 | 1.3 | 18.3 | 576 | 1.3 | 1.6 | 1.7 | 24.8 | 1344 |
| | | 40 | 0.6 | 1.5 | 24.4 | 1075 | 1.5 | 1.6 | 1.9 | 31.3 | 1972 |

INSTRUMENTATION CABLES (BS 5308 PART 1)
300/500V (65°C) PE Insulated, Unarmoured / Armoured

TABLE 2

| Conductor | | Pair | Unarmoured (PE /OS/PVC) | | | | Armoured (PE /OS/PVC/SWA/PVC) | | | | |
|-----------------|--------------------|------|-------------------------|---------------------|---------------------|-----------------|-------------------------------|------------------|---------------------|---------------------|-----------------|
| Nom. Area | No/Dia. of wire | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. of | Nom. | Approx. | Approx. |
| | | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | Armoured Wire | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 1 | 0.6 | 0.9 | 8 | 85 | 0.9 | 0.9 | 1.4 | 12.5 | 300 |
| | | 2 | 0.6 | 0.9 | 10.5 | 124 | 0.9 | 0.9 | 1.4 | 15 | 404 |
| | | 4 | 0.6 | 1.2 | 14 | 234 | 1.2 | 1.25 | 1.6 | 20 | 729 |
| | | 6 | 0.6 | 1.2 | 17 | 323 | 1.2 | 1.25 | 1.6 | 23 | 908 |
| | | 8 | 0.6 | 1.2 | 19 | 407 | 1.2 | 1.25 | 1.6 | 24.5 | 1042 |
| | | 10 | 0.6 | 1.3 | 21.5 | 512 | 1.3 | 1.6 | 1.8 | 28 | 1407 |
| | | 12 | 0.6 | 1.3 | 23 | 596 | 1.3 | 1.6 | 1.8 | 30 | 1571 |
| | | 16 | 0.6 | 1.5 | 25.5 | 785 | 1.5 | 1.6 | 1.9 | 32.5 | 1860 |
| | | 20 | 0.6 | 1.5 | 28.5 | 953 | 1.5 | 1.6 | 2 | 35.5 | 2158 |
| 24 | 0.6 | 1.6 | 30 | 1127 | 1.6 | 2 | 2 | 38 | 2672 | | |
| 2.5 | 7/0.67 | 1 | 0.7 | 0.9 | 9 | 113 | 0.9 | 0.9 | 1.4 | 14 | 363 |
| | | 2 | 0.7 | 1.1 | 13 | 190 | 1.1 | 0.9 | 1.4 | 17.5 | 520 |
| | | 4 | 0.7 | 1.2 | 17 | 336 | 1.2 | 1.25 | 1.6 | 22.5 | 911 |
| | | 6 | 0.7 | 1.2 | 20.5 | 486 | 1.2 | 1.6 | 1.6 | 26.5 | 1336 |
| | | 8 | 0.7 | 1.3 | 22.5 | 617 | 1.3 | 1.6 | 1.8 | 29.5 | 1572 |
| | | 10 | 0.7 | 1.5 | 26 | 777 | 1.5 | 1.6 | 1.9 | 33 | 1877 |
| | | 12 | 0.7 | 1.6 | 28 | 923 | 1.6 | 1.6 | 2 | 35.5 | 2128 |
| | | 16 | 0.7 | 1.7 | 31 | 1209 | 1.7 | 2 | 2.1 | 39 | 2834 |
| | | 20 | 0.7 | 1.8 | 35 | 1495 | 1.8 | 2 | 2.2 | 43 | 3310 |
| 24 | 0.7 | 1.8 | 36 | 1745 | 1.8 | 2 | 2.2 | 44.5 | 3625 | | |

INSTRUMENTATION CABLES (BS 5308 PART 1)
300/500V (65°C) PE Insulated, Unarmoured / Armoured

TABLE 3

| Conductor | | Pair | Unarmoured (PE/IS/OS/PVC) | | | | Armoured (PE/IS/OS/PVC/SWA/PVC) | | | | |
|-----------------|--------------------|------|---------------------------|---------------------|---------------------|-----------------|---------------------------------|------------------|---------------------|---------------------|-----------------|
| Nom. Area | No/Dia. of wire | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. of | Nom. | Approx. | Approx. |
| | | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | Armoured Wire | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 2 | 0.6 | 1.2 | 12 | 164 | 1.2 | 1.25 | 1.6 | 17.5 | 574 |
| | | 4 | 0.6 | 1.2 | 15 | 274 | 1.2 | 1.25 | 1.6 | 20.5 | 779 |
| | | 6 | 0.6 | 1.3 | 18 | 393 | 1.3 | 1.6 | 1.7 | 24.5 | 1163 |
| | | 8 | 0.6 | 1.4 | 21 | 507 | 1.4 | 1.6 | 1.8 | 28 | 1397 |
| | | 10 | 0.6 | 1.5 | 24 | 627 | 1.5 | 1.6 | 1.9 | 31 | 1642 |
| | | 12 | 0.6 | 1.5 | 26 | 736 | 1.5 | 1.6 | 1.9 | 33 | 1831 |
| | | 16 | 0.6 | 1.7 | 29 | 970 | 1.7 | 2 | 2 | 37 | 2475 |
| | | 20 | 0.6 | 1.7 | 32 | 1173 | 1.7 | 2 | 2.1 | 40 | 2833 |
| 2.5 | 7/0.67 | 2 | 0.7 | 1.2 | 14.5 | 220 | 1.2 | 1.25 | 1.6 | 20 | 715 |
| | | 4 | 0.7 | 1.2 | 18.5 | 381 | 1.2 | 1.25 | 1.6 | 24.5 | 1006 |
| | | 6 | 0.7 | 1.3 | 23 | 561 | 1.3 | 1.6 | 1.7 | 29.5 | 1506 |
| | | 8 | 0.7 | 1.4 | 25.5 | 712 | 1.4 | 1.6 | 1.8 | 32 | 1757 |
| | | 10 | 0.7 | 1.5 | 28.5 | 882 | 1.5 | 1.6 | 1.9 | 35.5 | 2087 |
| | | 12 | 0.7 | 1.6 | 31 | 1048 | 1.6 | 1.6 | 2 | 38.5 | 2383 |
| | | 16 | 0.7 | 1.7 | 34.5 | 1384 | 1.7 | 2 | 2.1 | 42.5 | 3174 |
| | | 20 | 0.7 | 1.8 | 36 | 1660 | 1.8 | 2 | 2.2 | 44.5 | 3540 |
| | | 24 | 0.7 | 1.8 | 40.5 | 1980 | 1.8 | 2 | 2.2 | 48.5 | 4065 |

INSTRUMENTATION CABLES

REFERENCE STANDARD : BS 5308 PART 1

CONSTRUCTION:

| | | |
|----|-----------------------------------|--|
| 1 | Conductor | Plain Annealed Copper Wires to BS 6360 |
| 2 | Insulation | XLPE Compound to BS 7655 Section 1.3, GP8 |
| 3 | Pairs | Insulated cores are twisted to form a pair, and the length of lay of any pair shall not exceed 100mm |
| 4 | Colour Code | Black / White with pair number printed on white core |
| 5 | Individual Screen (IS) (optional) | Aluminum / Polyester tape with tinned copper drain wire 0.5mm ² (7/0.32mm) |
| 6 | Cabling | The required number of pairs or cores shall be assembled in concentric layers |
| 7 | Binder tape | Polyester tape |
| 8 | Collective screen(OS) | Aluminum / Polyester tape, with tinned copper drain wire 0.5mm ² (7/0.32mm) |
| 9 | Nylon Yarn | For easy stripping |
| 10 | Bedding (optional) | PVC to BS 6746, TM1 |
| 11 | Armouring (optional) | Galvanized steel wires to BS 1442 |
| 12 | Outer sheath | PVC to BS 6746, TM1 |

TECHNICAL INFORMATION:

| | | |
|---|--------------------------------|---|
| 1 | Operating Temperature | Maximum 90°C |
| 2 | Working Voltage | 300 / 500 V r.m.s. |
| 3 | Test Voltage | 1000 V r.m.s. for 1 min between conductor, and between conductors and screen / armour |
| 4 | Insulation Resistance | Min. Individual Conductor- 5000MΩ/km at 20 °C. Between individual screens-1 MΩ /km at 20 °C |
| 5 | Mutual Capacitance at 1KHz | Cables without individual pair screens, – max. 85 pF/m. (1.5mm ²) Cables with individual pair screens and 1 or 2 pair cables collectively screened, – max. 115pF/m (1.5mm ²) |
| 6 | Capacitance unbalance | Max. 250pF/250m at 1kHz |
| 7 | DC conductor Resistance | 1.5mm ² – Max. 12.3 Ω/km, 20 °C 2.5mm ² – Max. 7.41 Ω/km, 20 °C |
| 8 | L/R Ratio (For Adjacent Cores) | 1.5mm ² – Max. 40 μH/Ω 2.5mm ² – Max. 50 μH/Ω |
| 9 | Bending Radius | unarmoured cable – min. 6D armoured cable – min. 8D |

**INSTRUMENTATION CABLES (REF. TO BS 5308 PART 1)
300/500V (90°C) XLPE Insulated, Unarmoured / Armoured**

TABLE 4

| Conductor | | Core | Unarmoured (XLPE/OS/PVC) | | | | Armoured (XLPE/OS/PVC/SWA/PVC) | | | | |
|-----------------|--------------------|------|--------------------------|---------------------|---------------------|-----------------|--------------------------------|------------------|---------------------|---------------------|-----------------|
| Nom. Area | No/Dia. of wire | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. of | Nom. | Approx. | Approx. |
| | | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | Armoured Wire | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 2 | 0.6 | 0.8 | 7.9 | 87 | 0.8 | 0.9 | 1.4 | 12.2 | 288 |
| | | 3 | 0.6 | 0.9 | 8.4 | 108 | 0.9 | 0.9 | 1.4 | 12.9 | 337 |
| | | 4 | 0.6 | 0.9 | 9.1 | 136 | 0.9 | 0.9 | 1.4 | 13.6 | 361 |
| | | 6 | 0.6 | 1.1 | 11.5 | 207 | 1.1 | 0.9 | 1.4 | 15.7 | 488 |
| | | 10 | 0.6 | 1.2 | 14.4 | 329 | 1.2 | 1.25 | 1.6 | 19.9 | 835 |
| | | 20 | 0.6 | 1.3 | 18.3 | 576 | 1.3 | 1.6 | 1.7 | 24.8 | 1344 |
| | | 40 | 0.6 | 1.5 | 24.4 | 1075 | 1.5 | 1.6 | 1.9 | 31.3 | 1972 |

**INSTRUMENTATION CABLES (REF. TO BS 5308 PART 1)
300/500V (90°C) XLPE Insulated, Unarmoured / Armoured**

TABLE 5

| Conductor | | Pair | Unarmoured (XLPE /OS/PVC) | | | | Armoured (XLPE /OS/PVC/SWA/PVC) | | | | |
|-----------------|---------|------|---------------------------|------------------|------------------|--------------|---------------------------------|---------------|------------------|------------------|--------------|
| Nom. Area | No/Dia. | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. of | Nom. | Approx. | Approx. |
| | of wire | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | Armoured Wire | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 1 | 0.6 | 0.9 | 8 | 85 | 0.9 | 0.9 | 1.4 | 12.5 | 300 |
| | | 2 | 0.6 | 0.9 | 10.5 | 124 | 0.9 | 0.9 | 1.4 | 15 | 404 |
| | | 4 | 0.6 | 1.2 | 14 | 234 | 1.2 | 1.25 | 1.6 | 20 | 729 |
| | | 6 | 0.6 | 1.2 | 17 | 323 | 1.2 | 1.25 | 1.6 | 23 | 908 |
| | | 8 | 0.6 | 1.2 | 19 | 407 | 1.2 | 1.25 | 1.6 | 24.5 | 1042 |
| | | 10 | 0.6 | 1.3 | 21.5 | 512 | 1.3 | 1.6 | 1.8 | 28 | 1407 |
| | | 12 | 0.6 | 1.3 | 23 | 596 | 1.3 | 1.6 | 1.8 | 30 | 1571 |
| | | 16 | 0.6 | 1.5 | 25.5 | 785 | 1.5 | 1.6 | 1.9 | 32.5 | 1860 |
| | | 20 | 0.6 | 1.5 | 28.5 | 953 | 1.5 | 1.6 | 2 | 35.5 | 2158 |
| 24 | 0.6 | 1.6 | 30 | 1127 | 1.6 | 2 | 2 | 38 | 2672 | | |
| 2.5 | 7/0.67 | 1 | 0.7 | 0.9 | 9 | 113 | 0.9 | 0.9 | 1.4 | 14 | 363 |
| | | 2 | 0.7 | 1.1 | 13 | 190 | 1.1 | 0.9 | 1.4 | 17.5 | 520 |
| | | 4 | 0.7 | 1.2 | 17 | 336 | 1.2 | 1.25 | 1.6 | 22.5 | 911 |
| | | 6 | 0.7 | 1.2 | 20.5 | 486 | 1.2 | 1.6 | 1.6 | 26.5 | 1336 |
| | | 8 | 0.7 | 1.3 | 22.5 | 617 | 1.3 | 1.6 | 1.8 | 29.5 | 1572 |
| | | 10 | 0.7 | 1.5 | 26 | 777 | 1.5 | 1.6 | 1.9 | 33 | 1877 |
| | | 12 | 0.7 | 1.6 | 28 | 923 | 1.6 | 1.6 | 2 | 35.5 | 2128 |
| | | 16 | 0.7 | 1.7 | 31 | 1209 | 1.7 | 2 | 2.1 | 39 | 2834 |
| | | 20 | 0.7 | 1.8 | 35 | 1495 | 1.8 | 2 | 2.2 | 43 | 3310 |
| 24 | 0.7 | 1.8 | 36 | 1745 | 1.8 | 2 | 2.2 | 44.5 | 3625 | | |

**INSTRUMENTATION CABLES (REF TO BS 5308 PART 1)
300/500V (90°C) XLPE Insulated, Unarmoured / Armoured**

TABLE 6

| Conductor | | Pair | Unarmoured (XLPE/IS/OS/PVC) | | | | Armoured (XLPE/IS/OS/PVC/SWA/PVC) | | | | |
|-----------------|---------|-----------|-----------------------------|----------|---------|-----------|-----------------------------------|-----------|----------|---------|---------|
| Nom. Area | No/Dia. | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. of | Nom. | Approx. | Approx. |
| | of wire | | Insulation | Sheath | Overall | Cable | Bedding | Armoured | Sheath | Overall | Cable |
| mm ² | No/mm | Thickness | Thickness | Diameter | Weight | Thickness | Wire | Thickness | Diameter | Weight | |
| | | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 2 | 0.6 | 1.2 | 12 | 164 | 1.2 | 1.25 | 1.6 | 17.5 | 574 |
| | | 4 | 0.6 | 1.2 | 15 | 274 | 1.2 | 1.25 | 1.6 | 20.5 | 779 |
| | | 6 | 0.6 | 1.3 | 18 | 393 | 1.3 | 1.6 | 1.7 | 24.5 | 1163 |
| | | 8 | 0.6 | 1.4 | 21 | 507 | 1.4 | 1.6 | 1.8 | 28 | 1397 |
| | | 10 | 0.6 | 1.5 | 24 | 627 | 1.5 | 1.6 | 1.9 | 31 | 1642 |
| | | 12 | 0.6 | 1.5 | 26 | 736 | 1.5 | 1.6 | 1.9 | 33 | 1831 |
| | | 16 | 0.6 | 1.7 | 29 | 970 | 1.7 | 2 | 2 | 37 | 2475 |
| | | 20 | 0.6 | 1.7 | 32 | 1173 | 1.7 | 2 | 2.1 | 40 | 2833 |
| 2.5 | 7/0.67 | 2 | 0.7 | 1.2 | 14.5 | 220 | 1.2 | 1.25 | 1.6 | 20 | 715 |
| | | 4 | 0.7 | 1.2 | 18.5 | 381 | 1.2 | 1.25 | 1.6 | 24.5 | 1006 |
| | | 6 | 0.7 | 1.3 | 23 | 561 | 1.3 | 1.6 | 1.7 | 29.5 | 1506 |
| | | 8 | 0.7 | 1.4 | 25.5 | 712 | 1.4 | 1.6 | 1.8 | 32 | 1757 |
| | | 10 | 0.7 | 1.5 | 28.5 | 882 | 1.5 | 1.6 | 1.9 | 35.5 | 2087 |
| | | 12 | 0.7 | 1.6 | 31 | 1048 | 1.6 | 1.6 | 2 | 38.5 | 2383 |
| | | 16 | 0.7 | 1.7 | 34.5 | 1384 | 1.7 | 2 | 2.1 | 42.5 | 3174 |
| | | 20 | 0.7 | 1.8 | 36 | 1660 | 1.8 | 2 | 2.2 | 44.5 | 3540 |
| | | 24 | 0.7 | 1.8 | 40.5 | 1980 | 1.8 | 2 | 2.2 | 48.5 | 4065 |

INSTRUMENTATION CABLES

STANDARD : BS 5308 PART 2

CONSTRUCTION:

| | | |
|----|-----------------------------------|--|
| 1 | Conductor | Plain Annealed Copper Wires to BS 6360 |
| 2 | Insulation | PVC to BS 6746, T11 |
| 3 | Pairs | Insulated cores are twisted to form a pair, and the length of lay of any pair shall not exceed 100mm |
| 4 | Colour Code | Black / White with pair number printed on white core |
| 5 | Individual Screen (IS) (optional) | Aluminum / Polyester tape with tinned copper drain wire 0.5mm ² (7/0.32mm) |
| 6 | Cabling | The required number of pairs shall be assembled in concentric layers |
| 7 | Binder tape | Polyester |
| 8 | Collective screen(OS) | Aluminum / Polyester tape, with tinned copper drain wire 0.5mm ² (7/0.32mm) |
| 9 | Nylon Yarn | For easy stripping |
| 10 | Bedding (optional) | PVC to BS 6746, TM1 |
| 11 | Armouring (optional) | Galvanized steel wires to BS 1442 |
| 12 | Outer sheath | PVC to BS 6746, TM1 |

TECHNICAL INFORMATION:

| | | |
|---|---|---|
| 1 | Operating Temperature | Max. 70°C to 105°C |
| 2 | Working Voltage | 300 / 500 V r.m.s. |
| 3 | Test Voltage | 1000 V r.m.s. for 1 min between conductor, and between conductors and screen / armour |
| 4 | Insulation Resistance at 20°C | Individual Conductor (between each conductor and remaining bunched conductors / screens and / or armour): Min.25 MΩ /km |
| 5 | Mutual Capacitance at 1 KHz | pairs or adjacent cores max. 250 pF/m |
| 6 | Capacitance between any core and screen | Max. 450 pF/m |
| 7 | DC conductor Resistance | 1.5mm ² -- Max. 12.3 Ω/km 2.5mm ² -- Max. 7.41 Ω/km |
| 8 | L/R Ratio | 1.5mm ² -- max. 40 μH/Ω 2.5mm ² -- max. 50 μH/Ω |
| 9 | Bending Radius | unarmoured cable -- min. 6D armoured cable -- min. 8D |

**INSTRUMENTATION CABLES (BS 5308 PART 2)
300/500V (70°C) PVC Insulated, Unarmoured / Armoured**

TABLE 7

| Conductor | | Core | Unarmoured (PVC/OS/PVC) | | | | Armoured (PVC/OS/PVC/SWA/PVC) | | | | |
|-----------------|---------------------|------|-------------------------|---------------------|---------------------|-----------------|-------------------------------|------------------|---------------------|---------------------|-----------------|
| Nom. Area | No./Dia. of wire | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. of | Nom. | Approx. | Approx. |
| | | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | Armoured Wire | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 2 | 0.6 | 0.8 | 7.9 | 79 | 0.8 | 0.9 | 1.4 | 12.2 | 293 |
| | | 3 | 0.6 | 0.9 | 8.4 | 100 | 0.9 | 0.9 | 1.4 | 12.9 | 328 |
| | | 4 | 0.6 | 0.9 | 9.1 | 124 | 0.9 | 0.9 | 1.4 | 13.6 | 357 |
| | | 6 | 0.6 | 1.1 | 11.5 | 189 | 1.1 | 0.9 | 1.4 | 15.7 | 470 |
| | | 10 | 0.6 | 1.2 | 14.4 | 300 | 1.2 | 1.25 | 1.6 | 19.9 | 807 |
| | | 20 | 0.6 | 1.3 | 18.3 | 518 | 1.3 | 1.6 | 1.7 | 24.8 | 1287 |
| | | 40 | 0.6 | 1.5 | 24.4 | 955 | 1.5 | 1.6 | 1.9 | 31.3 | 1852 |

INSTRUMENTATION CABLES (BS 5308 :PART 2)
300/500V (70°C) PVC Insulated, Unarmoured / Armoured

TABLE 8

| Conductor | | Pair | Unarmoured (PVC/OS/PVC) | | | | Armoured (PVC/OS/PVC/SWA/PVC) | | | | |
|-----------------|---------|------|-------------------------|------------------|------------------|--------------|-------------------------------|---------------|------------------|------------------|--------------|
| Nom. Area | No/Dia. | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. of | Nom. | Approx. | Approx. |
| | of wire | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | Armoured Wire | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 1 | 0.6 | 0.9 | 8 | 90 | 0.9 | 0.9 | 1.4 | 12.5 | 305 |
| | | 2 | 0.6 | 0.9 | 10.5 | 135 | 0.9 | 0.9 | 1.4 | 15 | 415 |
| | | 4 | 0.6 | 1.2 | 14 | 255 | 1.2 | 1.25 | 1.6 | 20 | 750 |
| | | 6 | 0.6 | 1.2 | 17 | 355 | 1.2 | 1.25 | 1.6 | 23 | 940 |
| | | 8 | 0.6 | 1.2 | 19 | 450 | 1.2 | 1.25 | 1.6 | 24.5 | 1085 |
| | | 10 | 0.6 | 1.3 | 21.5 | 565 | 1.3 | 1.6 | 1.8 | 28 | 1460 |
| | | 12 | 0.6 | 1.3 | 23 | 660 | 1.3 | 1.6 | 1.8 | 30 | 1635 |
| | | 16 | 0.6 | 1.5 | 25.5 | 870 | 1.5 | 1.6 | 1.9 | 32.5 | 1945 |
| | | 20 | 0.6 | 1.5 | 28.5 | 1060 | 1.5 | 1.6 | 2 | 35.5 | 2265 |
| 24 | 0.6 | 1.6 | 30 | 1255 | 1.6 | 2 | 2 | 38 | 2800 | | |
| 2.5 | 7/0.67 | 1 | 0.7 | 0.9 | 9 | 120 | 0.9 | 0.9 | 1.4 | 14 | 370 |
| | | 2 | 0.7 | 1.1 | 13 | 205 | 1.1 | 0.9 | 1.4 | 17.5 | 535 |
| | | 4 | 0.7 | 1.2 | 17 | 365 | 1.2 | 1.25 | 1.6 | 22.5 | 940 |
| | | 6 | 0.7 | 1.2 | 20.5 | 530 | 1.2 | 1.6 | 1.6 | 26.5 | 1380 |
| | | 8 | 0.7 | 1.3 | 22.5 | 675 | 1.3 | 1.6 | 1.8 | 29.5 | 1630 |
| | | 10 | 0.7 | 1.5 | 26 | 850 | 1.5 | 1.6 | 1.9 | 33 | 1950 |
| | | 12 | 0.7 | 1.6 | 28 | 1010 | 1.6 | 1.6 | 2 | 35.5 | 2215 |
| | | 16 | 0.7 | 1.7 | 31 | 1325 | 1.7 | 2 | 2.1 | 39 | 2950 |
| | | 20 | 0.7 | 1.8 | 35 | 1640 | 1.8 | 2 | 2.2 | 43 | 3455 |
| 24 | 0.7 | 1.8 | 36 | 1920 | 1.8 | 2 | 2.2 | 44.5 | 3800 | | |

**INSTRUMENTATION CABLES (BS 5308 PART 2)
300/500V (70° C) PVC Insulated, Unarmoured / Armoured**

TABLE 9

| Conductor | | Pair | Unarmoured (PVC /IS/OS/PVC) | | | | Armoured (PVC/IS/OS/PVC/SWA/PVC) | | | | |
|-----------------|-----------------|------|-----------------------------|------------------|------------------|--------------|----------------------------------|-----------------------|------------------|------------------|--------------|
| Nom. Area | No/Dia. of wire | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. Of Armoured Wire | Nom. | Approx. | Approx. |
| | | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 2 | 0.6 | 1.2 | 12 | 175 | 1.2 | 1.25 | 1.6 | 17.5 | 585 |
| | | 4 | 0.6 | 1.2 | 15 | 295 | 1.2 | 1.25 | 1.6 | 20.5 | 800 |
| | | 6 | 0.6 | 1.3 | 18 | 425 | 1.3 | 1.6 | 1.7 | 24.5 | 1195 |
| | | 8 | 0.6 | 1.4 | 21 | 550 | 1.4 | 1.6 | 1.8 | 28 | 1440 |
| | | 10 | 0.6 | 1.5 | 24 | 680 | 1.5 | 1.6 | 1.9 | 31 | 1695 |
| | | 12 | 0.6 | 1.5 | 26 | 800 | 1.5 | 1.6 | 1.9 | 33 | 1895 |
| | | 16 | 0.6 | 1.7 | 29 | 1055 | 1.7 | 2 | 2 | 37 | 2560 |
| | | 20 | 0.6 | 1.7 | 32 | 1280 | 1.7 | 2 | 2.1 | 40 | 2940 |
| 2.5 | 7/0.67 | 2 | 0.7 | 1.2 | 14.5 | 235 | 1.2 | 1.25 | 1.6 | 20 | 730 |
| | | 4 | 0.7 | 1.2 | 18.5 | 410 | 1.2 | 1.25 | 1.6 | 24.5 | 1035 |
| | | 6 | 0.7 | 1.3 | 23 | 605 | 1.3 | 1.6 | 1.7 | 29.5 | 1550 |
| | | 8 | 0.7 | 1.4 | 25.5 | 770 | 1.4 | 1.6 | 1.8 | 32 | 1815 |
| | | 10 | 0.7 | 1.5 | 28.5 | 955 | 1.5 | 1.6 | 1.9 | 35.5 | 2160 |
| | | 12 | 0.7 | 1.6 | 31 | 1135 | 1.6 | 1.6 | 2 | 38.5 | 2470 |
| | | 16 | 0.7 | 1.7 | 34.5 | 1500 | 1.7 | 2 | 2.1 | 42.5 | 3290 |
| | | 20 | 0.7 | 1.8 | 36 | 1805 | 1.8 | 2 | 2.2 | 44.5 | 3685 |
| | | 24 | 0.7 | 1.8 | 40.5 | 2155 | 1.8 | 2 | 2.2 | 48.5 | 4240 |

FIRE RESISTANT INSTRUMENTATION CABLES

REFERENCE STANDARD : BS 5308 / BS 7629

CONSTRUCTION:

| | | |
|----|------------------------|--|
| 1 | Conductor | Plain Annealed Copper Wires to BS 6360 |
| 2 | Fire Barrier | Mica Tape |
| 3 | Insulation | XLPE Compound to BS7655,GP8 |
| 4 | Pairs | Insulated cores are twisted to form a pair, and the length of lay of any pair shall not exceed 100mm |
| 5 | Colour Code | Black / White with pair number printed on white core |
| 6 | Individual Screen (IS) | Aluminum / Polyester tape with tinned copper drain wire (optional) 0.5mm ² (7/0.32mm) |
| 7 | Cabling | The required number of pairs shall be assembled in concentric layers |
| 8 | Binder: | Polyester Binder tape |
| 9 | Collective screen(OS) | Aluminum / Polyester tape, with tinned copper drain wire 0.5mm ² (7/0.32mm) |
| 10 | Nylon Yarn | For easy stripping |
| 11 | Bedding (optional) | LSHF Compound to BS7655 Part 6.1, LTS4 |
| 12 | Armouring(optional) | Galvanized steel wires to BS 1442 |
| 13 | Outer sheath | LSHF Compound to BS7655 Part 6.1, LTS4 |

TECHNICAL INFORMATION:

| | | |
|---|-------------------------|---|
| 1 | Operating Temperature | 90°C |
| 2 | Working Voltage | 300 / 500 V r.m.s. |
| 3 | Test Voltage | 1000 V r.m.s. for 1 min between conductor, and between conductors and screen / armour |
| 4 | DC conductor Resistance | 1.5mm ² – max.12.3 Ω/km 2.5mm ² – max.7.41 Ω/km |
| 5 | Bending Radius | unarmoured cable – min. 6D armoured cable – min. 8D |

FIRE RESISTANT INSTRUMENTATION CABLES (Reference Standard : BS 5308/BS7629)
300/500V (90° C) XLPE Insulated, Unarmoured / Armoured

TABLE 10

| Conductor | | Pair | Unarmoured (MICA/XLPE/OS/LSHF) | | | | Armoured (MICA/XLPE/OS/SWA/LSHF) | | | | |
|-----------------|-----------------|------|--------------------------------|-----------------------|------------------|--------------|----------------------------------|-----------------------|-----------------------|------------------|--------------|
| Nom. Area | No/Dia. of wire | | Nom. Insulation Thickness | Nom. Sheath Thickness | Approx. | Approx. | Nom. Bedding Thickness | Dia. Of Armoured Wire | Nom. Sheath Thickness | Approx. | Approx. |
| | | | | | Overall Diameter | Cable Weight | | | | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 1 | 0.6 | 0.9 | 9 | 92 | 0.9 | 0.9 | 1.4 | 13.5 | 336 |
| | | 2 | 0.6 | 0.9 | 12.5 | 153 | 0.9 | 0.9 | 1.4 | 17 | 476 |
| | | 4 | 0.6 | 1.2 | 16.5 | 285 | 1.2 | 1.25 | 1.6 | 22 | 844 |
| | | 6 | 0.6 | 1.2 | 20 | 406 | 1.2 | 1.25 | 1.6 | 25.5 | 1069 |
| | | 8 | 0.6 | 1.2 | 22 | 499 | 1.2 | 1.25 | 1.6 | 27.5 | 1239 |
| | | 10 | 0.6 | 1.3 | 25 | 620 | 1.3 | 1.6 | 1.8 | 31.5 | 1661 |
| | | 12 | 0.6 | 1.3 | 27 | 723 | 1.3 | 1.6 | 1.8 | 33.5 | 1851 |
| | | 16 | 0.6 | 1.5 | 30 | 950 | 1.5 | 1.6 | 1.9 | 37 | 2223 |
| | | 20 | 0.6 | 1.5 | 33.5 | 1152 | 1.5 | 1.6 | 2 | 40.5 | 2585 |
| | | 24 | 0.6 | 1.6 | 35 | 1361 | 1.6 | 2 | 2 | 42.5 | 3168 |
| 2.5 | 7/0.67 | 1 | 0.7 | 0.9 | 10.5 | 120 | 0.9 | 0.9 | 1.4 | 15 | 391 |
| | | 2 | 0.7 | 1.1 | 14.5 | 220 | 1.1 | 0.9 | 1.4 | 19 | 589 |
| | | 4 | 0.7 | 1.2 | 19 | 387 | 1.2 | 1.25 | 1.6 | 24.5 | 1018 |
| | | 6 | 0.7 | 1.2 | 23 | 555 | 1.2 | 1.6 | 1.6 | 29.5 | 1479 |
| | | 8 | 0.7 | 1.3 | 25.5 | 707 | 1.3 | 1.6 | 1.8 | 32.5 | 1770 |
| | | 10 | 0.7 | 1.5 | 29.5 | 891 | 1.5 | 1.6 | 1.9 | 36 | 2116 |
| | | 12 | 0.7 | 1.6 | 32 | 1058 | 1.6 | 1.6 | 2 | 39 | 2407 |
| | | 16 | 0.7 | 1.7 | 35.5 | 1368 | 1.7 | 2 | 2.1 | 43.5 | 3155 |
| | | 20 | 0.7 | 1.8 | 39.5 | 1681 | 1.8 | 2 | 2.2 | 48 | 3694 |
| | | 24 | 0.7 | 1.8 | 41 | 1963 | 1.8 | 2 | 2.2 | 49.5 | 4033 |

**FIRE RESISTANT INSTRUMENTATION CABLES (Reference Standard : BS 5308/BS7629)
300/500V (90° C) XLPE Insulated, Unarmoured / Armoured**

TABLE 11

| Conductor | | Pair | Unarmoured (MICA/XLPE/IS/OS/LSHF) | | | | Armoured (MICA/XLPE/IS/OS /SWA/LSHF) | | | | |
|-----------------|-----------------|------|-----------------------------------|------------------|------------------|--------------|--------------------------------------|-----------------------|------------------|------------------|--------------|
| Nom. Area | No/Dia. of wire | | Nom. | Nom. | Approx. | Approx. | Nom. | Dia. Of Armoured Wire | Nom. | Approx. | Approx. |
| | | | Insulation Thickness | Sheath Thickness | Overall Diameter | Cable Weight | Bedding Thickness | | Sheath Thickness | Overall Diameter | Cable Weight |
| mm ² | No/mm | mm | mm | mm | Kg/km | mm | mm | mm | mm | Kg/km | |
| 1.5 | 7/0.53 | 2 | 0.6 | 1.2 | 13.5 | 199 | 1.2 | 1.25 | 1.6 | 19 | 662 |
| | | 4 | 0.6 | 1.2 | 17 | 327 | 1.2 | 1.25 | 1.6 | 22.5 | 912 |
| | | 6 | 0.6 | 1.2 | 20.5 | 469 | 1.3 | 1.6 | 1.7 | 27.5 | 1355 |
| | | 8 | 0.6 | 1.2 | 23 | 582 | 1.4 | 1.6 | 1.8 | 30 | 1582 |
| | | 10 | 0.6 | 1.3 | 26 | 723 | 1.5 | 1.6 | 1.9 | 33 | 1853 |
| | | 12 | 0.6 | 1.3 | 28 | 846 | 1.5 | 1.6 | 1.9 | 35 | 2065 |
| | | 16 | 0.6 | 1.5 | 31 | 1114 | 1.7 | 2 | 2 | 39.5 | 2782 |
| | | 20 | 0.6 | 1.5 | 34.5 | 1355 | 1.7 | 2 | 2.1 | 43 | 3282 |
| 2.5 | 7/0.67 | 2 | 0.7 | 1.2 | 15.5 | 256 | 1.2 | 1.25 | 1.6 | 21 | 780 |
| | | 4 | 0.7 | 1.2 | 19.5 | 433 | 1.2 | 1.25 | 1.6 | 25.5 | 1093 |
| | | 6 | 0.7 | 1.2 | 24 | 623 | 1.3 | 1.6 | 1.7 | 30.5 | 1629 |
| | | 8 | 0.7 | 1.3 | 26.5 | 796 | 1.4 | 1.6 | 1.8 | 33.5 | 1921 |
| | | 10 | 0.7 | 1.5 | 30.5 | 1004 | 1.5 | 1.6 | 1.9 | 37.5 | 2278 |
| | | 12 | 0.7 | 1.6 | 33 | 1193 | 1.6 | 1.6 | 2 | 40 | 2593 |
| | | 16 | 0.7 | 1.7 | 36.5 | 1546 | 1.7 | 2 | 2.1 | 44 | 3196 |
| | | 20 | 0.7 | 1.8 | 41 | 1903 | 1.8 | 2 | 2.2 | 49.5 | 3991 |
| | | 24 | 0.7 | 1.8 | 42.5 | 2227 | 1.8 | 2 | 2.2 | 51 | 4062 |