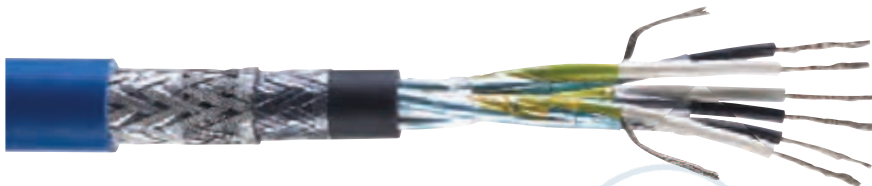


Armoured Instrumentation Cables to BS6883

Low Smoke Zero Halogen Pairs/Triples/Quads - Individually Screened

TAC, EPR, SCRN, SW4, GSWB, SW4 150/250 V



Application

Armoured control and instrumentation cables for fixed wiring on ships and in mobile offshore units (e.g. drilling rigs, oil platforms, etc.). For use in regularly occupied areas such as accommodation facilities, control rooms and computer suites. Any application where life may be endangered by smoke and noxious fumes and where vital, sensitive equipment may be damaged by acid forming gases.

Specifications

- In accordance with BS6883
- **Conductor:** Tinned annealed copper. Stranded Class 2 or flexible Class 5 to BS EN 60228
- **Insulation:** EPR complying with BS7655 GP4
- **Core Identification:** Black and white pairs. Triples - black, white and red. Quads - black, white, red, blue
- **Screening:** Aluminium mylar tape wrapped round each pair/triple/quad in contact with tinned copper drain wire
- **Inner Sheath:** Will be the same material as the outer sheath based on the requirements of BS7655 Section 2.6 Type SW4 with improved characteristics. Enhanced oil resistance, low smoke zero halogen, minimum tear resistance
- **Armour:** Galvanised steel wire braid to BS EN 10257-1
- **Outer Sheath:** As inner sheath. Identification legend will include manufacturers name, voltage, BS6883, number of pairs/triples and c.s.a., cable sheath class (e.g. SW4), IEC 60332 and UK00A code where applicable
- Standard sheath colours are grey, blue or black. Other colours available on request
- Oxygen index > 32%. Temperature index 250°C, HCL emission < 0.5% of weight of compound at 800°C
- Flame retardant to IEC 60332-3-22 Category A (reduced propagation)
- **Temperature Rating:** 90°C maximum conductor operating temperature
- **Voltage Rating:** 150/250 V

Armoured Instrumentation Cables to BS6883

Low Smoke Zero Halogen Pairs/Triples/Quads - Individually Screened

TAC, EPR, SCRNL, SW4, GSWB, SW4 150/250 V

| Anixter Number | UK00A Code | Nominal Cond Area mm ² | Nominal Cond Stranding #/mm | Number of Pairs/Triples | Diameter Over Inner Sheath | | Min O/D mm | Max O/D mm | Approx Weight kg/km | Anixter No Prysmian E1XF Gland | Anixter Number Hawke Gland |
|-----------------------|------------|-----------------------------------|-----------------------------|-------------------------|----------------------------|--------|------------|------------|---------------------|--------------------------------|----------------------------|
| | | | | | Min mm | Max mm | | | | | |
| Pairs | | | | | | | | | | E1BP-E1XF | E1DZ-UNI |
| BS6883-3P-0007-I-6 | KHH00 | 0.75 | 24/0.2 | 3PR | 12.6 | 14.5 | 16.7 | 19.0 | 549 | N/A | -25 |
| BS6883-3P-0007-I-9 | KKH00 | 0.75 | 24/0.2 | 3PR | 12.6 | 14.5 | 16.7 | 19.0 | 549 | N/A | -25 |
| BS6883-7P-0007-I-6 | KHJ00 | 0.75 | 24/0.2 | 7PR | 16.9 | 19.0 | 21.4 | 24.3 | 919 | -25 | -25 |
| BS6883-7P-0007-I-9 | KKJ00 | 0.75 | 24/0.2 | 7PR | 16.9 | 19.0 | 21.4 | 24.3 | 919 | -25 | -25 |
| BS6883-12P-0007-I-6 | KHK00 | 0.75 | 24/0.2 | 12PR | 21.3 | 23.7 | 26.1 | 29.2 | 1380 | -32 | -32 |
| BS6883-12P-0007-I-9 | KKK00 | 0.75 | 24/0.2 | 12PR | 21.3 | 23.7 | 26.1 | 29.2 | 1380 | -32 | -32 |
| | | | | | | | | | | | |
| BS6883-1P-0010-I-6 | KHF01 | 1.0 | 32/0.2 | 1PR | 7.7 | 9.5 | 11.5 | 13.4 | 262 | -20S | -20S |
| BS6883-1P-0010-I-9 | KKF01 | 1.0 | 32/0.2 | 1PR | 7.7 | 9.5 | 11.5 | 13.4 | 262 | -20S | -20S |
| | | | | | | | | | | | |
| BS6883-1P-0015-I-# # | N/A | 1.5 | 7/0.53 | 1PR | 8.7 | 9.8 | 12.7 | 14.3 | 297 | -20S | -20S |
| BS6883-2P-0015-I-# # | N/A | 1.5 | 7/0.53 | 2PR | 14.6 | 16.1 | 19.0 | 21.1 | 591 | -25 | -25 |
| BS6883-3P-0015-I-# # | N/A | 1.5 | 7/0.53 | 3PR | 15.2 | 16.8 | 19.7 | 22.1 | 697 | -25 | -25 |
| BS6883-5P-0015-I-# # | N/A | 1.5 | 7/0.53 | 5PR | 18.8 | 20.5 | 23.5 | 26.0 | 983 | -25 | -25 |
| BS6883-7P-0015-I-# # | N/A | 1.5 | 7/0.53 | 7PR | 20.9 | 23.0 | 25.9 | 28.5 | 1181 | -32 | -32 |
| BS6883-10P-0015-I-# # | N/A | 1.5 | 7/0.53 | 10PR | 25.6 | 27.8 | 31.8 | 35.0 | 1323 | -32 | -32 |
| BS6883-12P-0015-I-# # | N/A | 1.5 | 7/0.53 | 12PR | 27.2 | 29.4 | 33.4 | 36.5 | 1907 | -40 | -40 |
| BS6883-20P-0015-I-# # | N/A | 1.5 | 7/0.53 | 20PR | 36.2 | 39.0 | 42.9 | 46.8 | 3052 | -50 | -50 |
| | | | | | | | | | | | |
| Triples | | | | | | | | | | | |
| BS6883-3T-0007-I-6 | KHS00 | 0.75 | 24/0.2 | 3TR | 14.2 | 16.2 | 18.6 | 20.9 | 699 | -25 | -25 |
| BS6883-3T-0007-I-9 | KKS00 | 0.75 | 24/0.2 | 3TR | 14.2 | 16.2 | 18.6 | 20.9 | 699 | -25 | -25 |
| BS6883-7T-0007-I-6 | KHT00 | 0.75 | 24/0.2 | 7TR | 19.7 | 22.1 | 24.4 | 27.4 | 1172 | -32 | -35 |
| BS6883-7T-0007-I-9 | KKT00 | 0.75 | 24/0.2 | 7TR | 19.7 | 22.1 | 24.4 | 27.4 | 1172 | -32 | -35 |
| BS6883-12T-0007-I-6 | KHU00 | 0.75 | 24/0.2 | 12TR | 24.4 | 27.1 | 30.4 | 34.1 | 1982 | -32 | -32 |
| BS6883-12T-0007-I-9 | KKU00 | 0.75 | 24/0.2 | 12TR | 24.4 | 27.1 | 30.4 | 34.1 | 1982 | -32 | -32 |
| | | | | | | | | | | | |
| BS6883-1T-0010-I-6 | KHR01 | 1.0 | 32/0.2 | 1TR | 8.4 | 10.1 | 12.1 | 14.0 | 273 | -20S | -20S |
| BS6883-1T-0010-I-9 | KKR01 | 1.0 | 32/0.2 | 1TR | 8.4 | 10.1 | 12.1 | 14.0 | 273 | -20S | -20S |
| | | | | | | | | | | | |
| BS6883-1T-0015-I-# # | N/A | 1.5 | 7/0.53 | 1TR | 9.2 | 10.3 | 13.2 | 14.8 | 304 | -20S | -20S |
| | | | | | | | | | | | |
| Quads | | | | | | | | | | | |
| BS6883-1Q-0007-I-6 | KHX00 | 0.75 | 24/0.2 | 1QD | 8.4 | 10.1 | 12.1 | 14.0 | 287 | -20S | -20S |
| BS6883-1Q-0007-I-9 | KKX00 | 0.75 | 24/0.2 | 1QD | 8.4 | 10.1 | 12.1 | 14.0 | 287 | -20S | -20S |
| BS6883-1Q-0010-I-6 | KHX01 | 1.0 | 32/0.2 | 1QD | 9.1 | 10.9 | 12.9 | 14.8 | 380 | -20S | -20S |
| BS6883-1Q-0010-I-9 | KKX01 | 1.0 | 32/0.2 | 1QD | 9.1 | 10.9 | 12.9 | 14.8 | 380 | -20S | -20S |
| BS6883-1Q-0015-I-6 | N/A | 1.5 | 7/0.53 | 1QD | 10.0 | 11.2 | 14.2 | 15.6 | 505 | -20S | -20S |
| BS6883-1Q-0015-I-9 | N/A | 1.5 | 7/0.53 | 1QD | 10.1 | 11.2 | 14.2 | 15.6 | 505 | -20S | -20S |

For black outer sheath insert suffix -2, for blue outer sheath insert suffix -6, for grey outer sheath insert suffix -9.

For further technical information refer to page 6.33.

Installation Guide for Offshore Cables

General Precautions

Cables described in this section should not be installed at temperatures below minus 15°C, nor in any situation where the cooling air temperature exceeds 75°C. The cables meet the IEE requirement concerning impervious sheathing for cables installed on decks, exposed to weather, in damp or wet situations, in machinery compartments and in general, where water condensation or harmful vapours (including oil vapour) may be present. The sheathing compounds will withstand normal handling, installation and service but in areas where mechanical stress is envisaged unarmoured cables should be fitted in pipes or conduit or trunking. Alternatively, armoured and sheathed cables should be used. Cables should be protected from avoidable risks of mechanical damage and routed away from heat sources such as boilers, hot pipes and resistors. Cable runs should be selected to avoid action from condensed moisture or drips. Cables should not be installed across expansion joints, but where this is unavoidable a proportioned loop of cable should be arranged, suitably supported and having an internal radius not less than twelve times its diameter. For services with duplicate supplies, the cables should

follow different paths and be separated as far apart as is reasonably practical. Cables and wiring for mains and emergency power, lighting, internal communications or signalling should be routed away from galleys, machinery spaces and other high fire-risk areas except when supplying equipment in those places. In situations offering considerable risk of mechanical damage, such as storage spaces, cables should be protected by steel casing, trunking or conduit if the structure or attached parts do not afford sufficient protection, even to armoured cables. Any metal casing so used should be sufficiently protected against corrosion. All cable supports and accessories should be robust and constructed from corrosion-resistant material, or suitably treated to resist corrosion. Metals or alloys with low melting points (e.g. aluminium) should not be used. Cables passing through watertight decks or bulkheads should be provided with deck-tubes, watertight glands, multi-transit assemblies, or fire-retardant packed boxes as appropriate to meet the requirements of the Authority approving the installation.

Installation Guide for Offshore Cables

General Precautions

Where cables pass through non-watertight bulkheads, beams or other steel structure, the holes should be glanded or bushed with non-corroding materials to prevent damage to both cables and structure. The means of fixing of conductors and terminals should be capable of withstanding the thermal and dynamic effects of short circuits. When single-core cables, having a current rating greater than 250A need to be installed close to a steel bulkhead, the clearance between cable and metal surface should be at least 50mm,

unless the cables belonging to the same a.c. circuit are installed in trefoil. In the interests of safety and circuit reliability, it is assumed that installers will adhere to the IEE Regulations and Recommendations for the Electrical Equipment of Ships and of Mobile and Fixed Offshore installations. Particular attention should be paid to recommendations concerning cables, with regard to their effect on navigational and radio equipment.

MINIMUM BENDING RADIUS

Ideally cables should be bent as little as possible and never to radii less than the following:

| Type of Cable* | Minimum Bending Radius |
|-------------------------------------|------------------------|
| Instrumentation | 8 x diameter |
| Power & Control up to 3.3/3.3 kV ** | |
| Armoured up to 25mm D | 4 x diameter |
| Armoured over 25mm D | 6 x diameter |
| Unarmoured up to 10mm D | 3 x diameter |
| Unarmoured over 10mm up to 25mm D | 4 x diameter |
| Unarmoured over 25mm D | 6 x diameter |
| Power cable 3.8/6.6 kV and above ** | |
| Un-screened | 12 x diameter |
| Screened - single-core | 20 x diameter |
| Screened - three core | 15 x diameter |

* All fire survival (FS) cables - 8 x diameter. ** 4 x diameter Class 2 flexible cables.

CABLE TYPES:

EPR insulated 150/250 V instrumentation cable.

MICA/EPR insulated 150/250 V instrumentation cable.

ELECTRICAL CHARACTERISTICS

| Electrical Characteristic | Unit | Cable | | | | | |
|--|---------|--|-------|-------|---|-------|-------|
| | | Flame Retardant EPR Insulated Conductor Size (mm ²) | | | Type Fire Resistant MICA/EPR Insulated Conductor Size (mm ²) | | |
| | | 0.75 | 1.0 | 1.5 | 0.75 | 1.0 | 1.5 |
| Maximum d.c. conductor resistance @ 20°C | ohms/km | 25.3 | 18.6 | 12.4 | 25.3 | 18.6 | 12.4 |
| Maximum a.c. conductor resistance @ 90°C | ohms/km | 32.3 | 23.7 | 15.9 | 32.3 | 23.7 | 15.9 |
| Maximum LOOP self-inductance (up to 1kHz) | mH/km | 0.860 | 0.819 | 0.778 | 0.912 | 0.867 | 0.823 |
| Maximum L/R ratio | μH/ohm | 21.0 | 27.0 | 38.0 | 22.0 | 29.0 | 40.0 |
| Maximum mutual capacitance: | | | | | | | |
| Cables with collective screen only (except one-pair, one triple & one quad) | pF/m | 88 | 96 | 105 | 80 | 86 | 94 |
| One-pair collectively screened and all cables with individually screened pairs | pF/m | 104 | 115 | 128 | 93 | 102 | 114 |
| One triple/quad collectively screened and all cables with individually screened triples/quads | pF/m | 92 | 101 | 111 | 83 | 91 | 100 |

Resistances for 0.75mm² (24/0.2mm) and 1.0mm² (32/0.2mm) Class 5 conductors will be as follows:

| | 0.75mm ² | 1.0mm ² |
|--|---------------------|--------------------|
| Maximum d.c. conductor resistance @ 20°C ohms/km | 27.2 | 20.4 |
| Maximum a.c. conductor resistance @ 90°C ohms/km | 34.7 | 26.0 |