

Application

Type P instrumentation cable with individually shielded triads is a flexible offshore and marine instrumentation cable to IEEE 1580, dual certified to UL 1309 / CSA 245 as Type X110 and rated 0.6/1 kV at +110 °C. Each triad of soft annealed, flexible stranded tinned copper conductors with XLPO insulation is twisted with a bare tinned drain wire and shielded with a polyester-backed aluminium foil, under a black arctic-grade thermosetting jacket. The cable is designed for the demanding environments of offshore drilling and energy production facilities: the high strand count makes it flexible, easy to install and resistant to vibration. It is available unarmoured, armoured with a bronze basket-weave braid (B) or armoured and sheathed (BS); only the armoured and sheathed construction is suitable for Class I Division 1 and Zone 1. Individually shielded pairs are covered on a separate sheet.



CONSTRUCTION

Conductor	Soft annealed flexible stranded tinned copper acc. to IEEE 1580 Table 11; 19 strands in 18 and 16 AWG.
Insulation	Cross-linked, flame-retardant polyolefin (XLPO), meeting the requirements for Type P of IEEE 1580 and Type X110 of UL 1309 / CSA 245.
Triads	Each triad twisted with a bare tinned copper drain wire and shielded with polyester-backed aluminium foil tape, 100 % coverage. Triad-to-triad isolation plus overall shielding is provided.
Core identification	Each triad black/white/red.
Jacket	Black, arctic-grade, flame-retardant thermosetting compound, resistant to oil, abrasion, chemicals and sunlight, meeting UL 1309 / CSA 245 and IEEE 1580. Blue jacket or blue stripe for intrinsically safe circuits on request.
Armour (B and BS)	Basket-weave wire armour acc. to IEEE 1580 and UL 1309 / CSA 245; bronze as standard, tinned copper on request.
Sheath (BS)	Black, arctic-grade, flame-retardant thermosetting compound over the armour, resistant to oil, drilling mud, abrasion, chemicals and sunlight, meeting UL 1309 / CSA 245 and IEEE 1580. A sheath resistant to ester-based drilling mud acc. to NEK 606 is available.

ELECTRICAL & THERMAL PROPERTIES

Rated voltage Uo/U	0.6/1 kV.
Standard	IEEE 1580 Type P; UL 1309 / CSA 245 Type X110; conductors acc. to IEEE 1580 Table 11.
Max. conductor temperature	+110 °C.
Classification society ratings	ABS +100 °C, DNV +95 °C, Lloyd's Register +95 °C, Transport Canada +95 °C.
Cold durability	Exceeds the CSA cold bend and cold impact tests (-40 °C / -35 °C).
Flame-retardant	Acc. to IEC 60332-3 Category A and IEEE 1202.
Hazardous areas	Suitable for use in Class I Division 1 and Zone 1 environments in the armoured and sheathed (BS) construction only. NEC Article 337 additionally requires termination with fittings listed for the location.
Approvals	American Bureau of Shipping (ABS); Det Norske Veritas (DNV); Lloyd's Register of Shipping (LRS); Transport Canada; United States Coast Guard; UL listed as marine shipboard cable; CSA listed as marine shipboard cable.
Reaction to fire (CPR)	Outside the scope of EN 50575 (shipboard / offshore cable; not a construction product for permanent installation in construction works).

INSTALLATION DATA

Min. bending radius, unarmoured	6 × outer diameter (IEEE 45).
Min. bending radius, armoured (B)	8 × outer diameter (IEEE 45).
Min. bending radius, armoured and sheathed (BS)	8 × outer diameter (IEEE 45 and IEC 60092).

DIMENSIONS & TECHNICAL DATA

Elements × size: number of triads × 3 conductors × conductor size. Three constructions: unarmoured, armoured (B, bronze braid as outer layer) and armoured and sheathed (BS, bronze braid with an overall sheath).

Elements × size	Unarmoured Ø (mm)	Unarmoured (kg/km)	Armoured (B) Ø (mm)	Armoured (B) (kg/km)	Armoured and sheathed (BS) Ø (mm)	Armoured and sheathed (BS) (kg/km)
1 × 3 × 18 AWG	9.0	103	10.3	238	14.1	249
2 × 3 × 18 AWG	16.5	304	17.8	451	22.3	640
3 × 3 × 18 AWG	17.9	351	19.1	513	23.5	710
4 × 3 × 18 AWG	19.7	470	21.0	592	24.8	884
5 × 3 × 18 AWG	22.6	525	23.9	740	28.3	979
7 × 3 × 18 AWG	24.3	686	25.6	914	30.5	1168
8 × 3 × 18 AWG	26.0	877	27.3	1094	29.0	1339
12 × 3 × 18 AWG	31.0	1179	32.3	1473	41.7	1778
1 × 3 × 16 AWG	9.6	121	10.8	307	14.7	394
3 × 3 × 16 AWG	19.3	545	20.6	612	25.9	850
4 × 3 × 16 AWG	20.8	610	22.1	680	25.4	961
6 × 3 × 16 AWG	24.1	935	25.4	1177	30.4	1524
7 × 3 × 16 AWG	26.1	780	27.4	1024	31.7	1527
8 × 3 × 16 AWG	28.1	1018	29.4	1180	33.3	1638

Electrical values per conductor size

Size	Equivalent c.s.a. (mm ²)	No. of strands	Cond. R @20°C (Ω/km)	Capacitance (nF/km)	Inductance (mH/km)
18 AWG	0.96	19	23.7	91.9	0.722
16 AWG	1.32	19	14.8	105.0	0.656

Outer diameters and weights are nominal manufacturer values and are subject to a ±5 % manufacturing tolerance. The equivalent c.s.a. per size is the manufacturer's value for its stranded conductor, not the nominal AWG cross-section (18 AWG: 19 strands of 0.0100 inch, 0.96 mm²; nominal 0.82 mm²). In a few sizes the diameters or weights do not rise with the number of triads (for example 8 × 3 × 18 AWG BS is thinner than 7 × 3, and 7 × 3 × 16 AWG unarmoured lighter than 6 × 3); these figures are reproduced as published. All values are indicative and non-binding.