

Unarmoured Single Core Cables to BS6883

TAC. EPR. SW4 600/1000V 6571



Application

Unarmoured cable for use where mechanical protection is not required for fixed wiring in ships and in mobile and fixed offshore units (e.g. drilling rigs, oil platforms, etc.).

Specifications

- In accordance with BS6883.
- **Conductor:** Tinned annealed copper conductor. Stranded to BS EN 60228 Class 2.
- **Insulation:** EPR complying with BS7655 GP4.
- **Sheath:** LSZH to BSS7655 section 2.6 Type SW4. Enhanced oil resistance, low smoke zero halogen, minimum tear resistance.
- **Identification:** Legend will include manufacturers name, voltage, BS6883, number of cores and c.s.a., cable sheath class (e.g. SW4), UK00A code where applicable.
- Oxygen index > 32% Temperature index 250°C, HCL emission < 0.5% of weight of compound @ 800°C.
- Flame retardant to IEC60332-3-22 Category A (reduced propagation).
- **Temperature Rating:** 90°C maximum conductor operating temperature.
- **Voltage Rating:** 600/1000V.

Marine and Offshore Cables

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Anixter Number	UK00A Code	Nominal Cond Area mm²	Nominal Cond Stranding #/mm	Minimum O/D mm	Maximum O/D mm	Approx Weight kg/km	Anixter Number Prysmian A2EX Gland	Anixter Number Hawke A2F Gland
Single core 6571 type							E1AT-A2EX	E1AT-A2F
A10DA-010025-60	-	2.5	7/0.67	5.4	6.6	53	-20SS	-16H-A
A10DA-010040-60	-	4.0	7/0.85	6.4	7.5	78	-20SS	-16H-A
A10DA-010060-60	WE106	6.0	7/1.04	6.8	8.1	101	-20SS	-16H-A
A10DA-010100-60	-	10.0	7/1.35	7.7	9.1	148	-20S	-20SH-A
A10DA-010160-60	WE116	16.0	7/1.70	8.9	10.3	213	-20S	-20SH-A
A10DA-010250-60	-	25.0	19/1.35	11.1	12.8	339	-20	-20H-A
A10DA-010350-60	WE135	35.0	19/1.53	12.0	13.7	419	-20	-20H-A
A10DA-010500-60	-	50.0	19/1.78	13.7	15.5	562	-25S	-25H-A
A10DA-010700-60	WE170	70.0	19/2.14	15.5	17.4	776	-25	-25H-A
A10DA-010950-60	-	95.0	37/1.78	17.7	19.8	1028	-25	-25H-A
A10DA-011200-60	WE10A	120.0	37/2.03	19.6	22.0	1301	-32	-32H-A
A10DA-011500-60	-	150.0	37/2.25	21.6	24.2	1642	-32	-32H-A
A10DA-011850-60	WE10C	185.0	37/2.52	24.0	26.6	2008	-40	-32H-A
A10DA-012400-60	-	240.0	61/2.25	27.1	29.9	2617	-40	-40H-A

Part numbers refer to cables with green/yellow outer sheaths for earthing purposes.
Other colours available, details upon request.
For further technical information refer to page 6:31.

Marine and Offshore Cables

Technical Information

Single Core Cables, EPR Insulated

Continuous current ratings for groups of circuits (up to 6 cables bunched) for single core EPR insulated cables, run open or enclosed. Also applicable to mica tape fire resistant types.

CURRENT RATINGS

Nominal Conductor Area mm ²	Current Rating Single Phase a.c. or d.c., or Three Phase a.c. A	Voltage Drop Per Ampere Per Metre		
		d.c. mV	Single Phase a.c. mV	Three Phase a.c. mV
1.0	17	53	53	46
1.5	21	34	34	29
2.5	30	18	18	16
4.0	40	12	12	10
6.0	51	7.6	7.6	6.6
10	71	4.5	4.5	3.9
16	95	2.7	2.7	2.3
25	125	1.7	1.7	1.5
35	155	1.2	1.2	1.1
50	190	0.96	0.98	0.87
70	240	0.67	0.69	0.63
95	290	0.48	0.52	0.49
120	340	0.38	0.42	0.43
150	385	0.31	0.36	0.38
185	440	0.25	0.32	0.34
240	520	0.19	0.27	0.31
300	590	0.15	0.24	0.29
	d.c.	a.c.		
400	690	670	0.12	0.23
500	780	720	0.093	0.22
630	890	780	0.071	0.21
				0.26

Where more than six cables are bunched, a rating factor of 0.85 should be applied to the current rating.

For ambient temperatures other than 45°C, the following rating factors should be applied:

Ambient air temp °C	35	40	45	50	55	60	65	70	75	80
Rating factor	1.11	1.05	1.0	0.94	0.88	0.82	0.75	0.67	0.58	0.47

600/1000V EPR Insulated Cables to BS6883 Armoured and Non-Armoured, Single Core

CABLE TYPES:

Single core TCU/EPR/SW4 “6571” Type 600/1000V to BS6883

Single core TCU/EPR/SW4/PBWB/SW4 “6591” Type 600/1000V to BS6883

ELECTRICAL CHARACTERISTICS

Conductor Size	Maximum d.c. Conductor Resistance @ 20°C	Maximum a.c. Conductor Resistance @ 90°C		Reactance @ 60 Hz Single Core Cables in Trefoil		Impedance @ 90°C, 60 Hz Single Core Cables in Trefoil	
		Unarmoured	Armoured	Unarmoured	Armoured	Unarmoured	Armoured
mm²	ohms/km	ohms/km	ohms/km	ohms/km	ohms/km	ohms/km	ohms/km
1.5	12.2	15.6	15.6	0.178	0.222	15.6	15.6
2.5	7.56	9.64	9.64	0.165	0.207	9.64	9.64
4.0	4.70	5.99	5.99	0.159	0.196	5.99	5.99
6.0	3.11	3.97	3.97	0.150	0.184	3.97	3.97
10	1.84	2.35	2.35	0.139	0.177	2.35	2.35
16	1.16	1.48	1.48	0.132	0.161	1.48	1.49
25	0.734	0.935	0.936	0.124	0.150	0.943	0.948
35	0.529	0.673	0.674	0.120	0.145	0.684	0.689
50	0.391	0.499	0.499	0.119	0.141	0.513	0.519
70	0.270	0.344	0.344	0.113	0.134	0.362	0.369
95	0.195	0.271	0.271	0.111	0.130	0.293	0.301
120	0.154	0.214	0.214	0.108	0.127	0.240	0.249
150	0.126	0.175	0.175	0.108	0.126	0.206	0.215
185	0.100	0.140	0.140	0.108	0.126	0.177	0.188
240	0.0762	0.108	0.108	0.106	0.123	0.151	0.163
300	0.0607	0.0864	0.087	0.105	0.121	0.136	0.149
400	0.0475	0.0693	0.069	0.104	0.119	0.125	0.138
500	0.0369	0.0576	0.058	0.103	0.117	0.118	0.131
630	0.0286	0.0436	0.045	0.101	0.114	0.110	0.123

Conductor Short-Circuit Ratings

EPR or MICA/EPR Insulated Cables

Short-Circuit Ratings

Conductor Size mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
1.5	0.479	0.214	0.123
2.5	0.799	0.357	0.206
4.0	1.27	0.572	0.330
6.0	1.91	0.858	0.495
10	3.19	1.43	0.825
16	5.11	2.28	1.32
25	7.99	3.57	2.06
35	11.1	5.0	2.88
50	15.9	7.15	4.12
70	22.3	10.0	5.77
95	30.3	13.5	7.84
120	38.3	17.1	9.9
150	47.9	21.4	12.3
185	59.1	26.4	15.2
240	76.7	34.3	19.8
300	95.9	42.9	24.7
400	127	57.2	33.0
500	159	71.5	41.2
630	201	90.0	52.0

N.B: The above ratings assume an adiabatic temperature rise and are based on a conductor temperature of 90°C at start of short-circuit and 250°C at end of shortcircuit.

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.