

Marine Unarmoured Power Cables — Flame Retardant



Application

These cables are designed for use where mechanical protection is not required for fixed wiring in ships, and in mobile and fixed offshore units such as drilling rigs and oil platforms.

Specifications

- In accordance with IEC60092-353
- **Conductor:** Class 2 tinned or plain compacted copper conductor to BS EN 60228
- **Insulation:** XLPE complying with IEC60092-351
- **Core Identification:**
 - Single-core is black
 - 2 cores are black and light blue
 - 3 cores are black, brown and light blue
 - 4 cores are black, blue, brown and white
 - 5 cores and above are white and numbered
 - Earthing core (on request) is green/yellow
- **Outer Sheath:** Zero halogen type SHF1 to IEC60092-359
- **Identification:** The legend will include the manufacturers name, voltage, number of cores and cross sectional area, and IEC60332-3A reference where applicable. The standard sheath colour is black
- **Sheath Characteristics:**
 - Oxygen index: > 37%
 - Temperature index: 250°C
 - HCL emission: < 0.5% of weight of compound @ 800°C (typically < 0.1%)
- **Fire Performance:** Flame retardant to IEC60332-3-22 Category A (reduced propagation)
- **Temperature Rating:** 90°C maximum conductor operating temperature
- **Voltage Rating:** 600/1000 V

Marine Unarmoured Power Cables – Flame Retardant

Anixter Number	Nominal Cond Area mm ²	Nominal Cond Stranding #/mm	Approximate Overall Diameter mm	Approximate Weight kg/km	Flame Proof Stuffing Gland PRYSMIAN EIAT-A2EX	CMP EIAT-A2F
Single-Core						
A10FU-010015-02	1.5	7/0.53	5.0	45	-20SS	-16/20C
A10FU-010025-02	2.5	7/0.67	6.0	60	-20SS	-16/20C
A10FU-010040-02	4	19/0.53	7.0	80	-20SS	-16/20C
A10FU-010060-02	6	19/0.64	7.5	100	-20SS	-16/20C
A10FU-010100-02	10	56/0.52	8.0	145	-20SS	-20SC
A10FU-010160-02	16	80/0.52	9.5	205	-20S	-20SC
A10FU-010250-02	25	128/0.52	11.0	310	-20S	-20C
A10FU-010350-02	35	176/0.52	12.0	410	-20	-20C
A10FU-010500-02	50	240/0.52	13.5	570	-25S	-25C
A10FU-010700-02	70	360/0.52	16.5	785	-25	-25C
A10FU-010950-02	95	496/0.52	17.5	1020	-25	-25C
A10FU-011200-02	120	624/0.52	19.5	1275	-32	-32C
A10FU-011500-02	150	768/0.52	21.5	1585	-32	-32C
A10FU-011850-02	185	960/0.52	23.5	1945	-32	-32C
A10FU-012400-02	240	1280/0.52	26.5	2495	-40	-40C
A10FU-013000-02	300	1504/0.52	29.0	3095	-40	-40C
2 Core						
A10FU-020015-02	1.5	7/0.53	8.5	85	-20S	-20SC
A10FU-020025-02	2.5	7/0.67	9.5	110	-20S	-20SC
A10FU-020040-02	4	19/0.53	10.5	145	-20S	-20SC
A10FU-020060-02	6	19/0.64	12.0	195	-20	-20C
A10FU-020100-02	10	56/0.52	14.0	290	-25S	-25C
A10FU-020160-02	16	80/0.52	16.0	415	-25	-25C
A10FU-020250-02	25	128/0.52	19.5	630	-32	-32C
A10FU-020350-02	35	176/0.52	22.0	850	-32	-32C
A10FU-020500-02	50	240/0.52	25.0	1165	-32	-32C
A10FU-020700-02	70	360/0.52	30.0	1620	-40	-40C
A10FU-020950-02	95	496/0.52	32.5	2100	-50	-50SC

Marine Unarmoured Power Cables – Flame Retardant

Anixter Number	Nominal Cond Area mm²	Nominal Cond Stranding #/mm	Approximate Overall Diameter mm	Approximate Weight kg/Km	Flame Proof Stuffing Gland	
					PRYSMIAN EIAT-A2EX	CMP EIAT-A2F
3 Core						
A10FU-030015-02	1.5	7/0.53	8.5	100	-20S	-20SC
A10FU-030025-02	2.5	7/0.67	10.0	140	-20S	-20SC
A10FU-030040-02	4	19/0.53	11.5	195	-20	-20C
A10FU-030060-02	6	19/0.64	12.5	265	-20	-20C
A10FU-030100-02	10	56/0.52	14.5	395	-25	-25C
A10FU-030160-02	16	80/0.52	17.0	585	-25	-25C
A10FU-030250-02	25	128/0.52	22.1	1023	-32	-32C
A10FU-030350-02	35	176/0.52	23.5	1200	-32	-32C
A10FU-030500-02	50	240/0.52	26.0	1660	-40	-40C
A10FU-030700-02	70	360/0.52	31.0	2310	-40	-40C
A10FU-030950-02	95	496/0.52	33.5	3040	-50	-50SC
A10FU-031200-02	120	624/0.52	38.0	3815	-50	-50C
A10FU-031500-02	150	768/0.52	42.0	4740	-50	-50C
A10FU-031850-02	185	960/0.52	47.5	5840	-63	-63SC
A10FU-032400-02	240	1280/0.52	53.5	7505	-	-63C
A10FU-033000-02	300	1504/0.52	59.5	9350	-	-75SC
4 Core						
A10FU-040015-02	1.5	7/0.53	10.0	125	-20S	-20SC
A10FU-040025-02	2.5	7/0.67	11.0	175	-20S	-20C
A10FU-040040-02	4	19/0.53	12.5	250	-20	-20C
A10FU-040060-02	6	19/0.64	14.0	345	-25	-25C
A10FU-040100-02	10	56/0.52	16.0	510	-25	-25C
A10FU-040160-02	16	80/0.52	19.0	780	-25	-32C
A10FU-040250-02	25	128/0.52	23.0	1170	-32	-32C
A10FU-040350-02	35	176/0.52	26.0	1590	-40	-40C
A10FU-040500-02	50	240/0.52	29.5	2220	-40	-40C
A10FU-040700-02	70	360/0.52	35.5	3055	-50	-50SC
A10FU-040950-02	95	496/0.52	38.5	4045	-50	-50C
A10FU-041200-02	120	624/0.52	42.5	5075	-50	-50C
A10FU-041500-02	150	768/0.52	47.5	6330	-63	-63SC
A10FU-041850-02	185	960/0.52	53.0	7780	-	-63C
A10FU-042400-02	240	1280/0.52	59.5	9985	-	-75SC
A10FU-043000-02	300	1504/0.52	66.0	11880	-	-75C

Marine Unarmoured Power Cables – Flame Retardant

Anixter Number	Nominal Cond Area mm ²	Nominal Cond Stranding #/mm	Approximate Overall Diameter mm	Approximate Weight kg/km	Flame Proof Stuffing Gland PRYSMIAN EIAT-A2EX	CMP EIAT-A2F
5 Core						
A10FU-050015-02	1.5	7/0.53	11.0	155	-20S	-20C
A10FU-050025-02	2.5	7/0.67	12.0	210	-20	-20C
7 Core						
A10FU-070015-02	1.5	7/0.53	12.0	195	-20	-20C
A10FU-070025-02	2.5	7/0.67	13.0	275	-20	-20C
10 Core						
A10FU-100015-02	1.5	7/0.53	15.0	280	-25	-25C
12 Core						
A10FU-120015-02	1.5	7/0.53	15.5	320	-25	-25C
A10FU-120025-02	2.5	7/0.67	17.5	455	-25	-25C
14 Core						
A10FU-140015-02	1.5	7/0.53	16.5	370	-25	-25C
16 Core						
A10FU-160015-02	1.5	7/0.53	17.5	410	-25	-25C
19 Core						
A10FU-190015-02	1.5	7/0.53	18.0	470	-25	-25C
A10FU-190025-02	2.5	7/0.67	20.5	690	-32	-32C
24 Core						
A10FU-240015-02	1.5	7/0.53	22.0	610	-32	-32C
27 Core						
A10FU-270015-02	1.5	7/0.53	22.5	670	-32	-32C
A10FU-270025-02	2.5	7/0.67	25.0	970	-32	-32C
30 Core						
A10FU-300015-02	1.5	7/0.53	23.0	730	-32	-32C
37 Core						
A10FU-370015-02	1.5	7/0.53	25.0	885	-32	-32C
A10FU-370025-02	2.5	7/0.67	28.5	1335	-40	-40C

For further technical information please refer to page 6.51.

Marine and Offshore Cables

Technical Information — IEC60092 Marine Cables

Single Core Cables

Continuous current ratings for groups of circuits (up to 6 cables bunched) for single core XLPE or EPR insulated cables, run open or enclosed, and are 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	0.28
500	780	720	0.093	0.22	0.27
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

Technical Information — IEC60092 Marine Cables (continued)

MultiCore Cables

Continuous current ratings for groups of circuits (up to 6 cables bunched) for twin and multicore XLPE or EPR insulated cables, run open or enclosed, and are also applicable to mica taped fire resistant types.

CURRENT RATINGS					
Nominal Conductor Area	Twin Cables			Three & Four Core Cables	
	Current Rating Single Phase a.c. or d.c.	Voltage Drop Per Ampere Per Metre		Current Rating Three Phase a.c.	Voltage Drop Per Ampere Per Metre
		d.c.	Single Phase a.c.		
mm ²	A	mV	mV	A	mV
1.0	14	54	54	12	47
1.5	18	35	35	15	30
2.5	25	18	18	21	16
4.0	34	12	12	29	10
6.0	43	7.8	7.8	36	6.7
10	60	4.6	4.6	50	4.0
16	81	2.7	2.7	67	2.3
25	105	1.7	1.7	89	1.5
35	135	1.2	1.2	105	1.1
50	165	0.98	1.0	135	0.89
70	200	0.68	0.70	170	0.64
95	250	0.49	0.53	205	0.50
120	290	0.39	0.43	240	0.44
150	330	0.31	0.36	270	0.38
185	370	0.25	0.32	305	0.34
240	445	0.19	0.27	365	0.31
300	505	0.15	0.24	415	0.29

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

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Technical Information — Cable Types

XLPE Insulated IEC60092 Type XAI(c) 250 Volts Instrumentation Cable

Electrical Characteristics

Electrical Characteristic	Unit	Nominal Conductor Area	
		0.75mm ²	1.5mm ²
Maximum DC conductor resistance @ 20°C	ohms/km	25.2	12.4
Maximum DC loop conductor resistance @ 20°C	ohms/km	50.4	24.8
Maximum AC conductor resistance @ 90°C	ohms/km	32.1	15.8
Nominal LOOP inductance	mH/km	0.72	0.66
Nominal L/R ratio	μH/ohm	15	27
Maximum mutual capacitance on all cables with individually screened pairs/triples	pF/m	120	100
Maximum mutual capacitance on all cables with collective screen	pF/m	95	110

Cables to IEC60092

Type of Cable*	Minimum Bending Radius
Instrumentation	8 x diameter
Power and control up to 3.3/3.3kV	
Unarmoured	4 x diameter
Armoured	4 x diameter

* All fire survival (FS) cables - 8 x diameter.

Conductor Short-Circuit Ratings

XLPE 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.