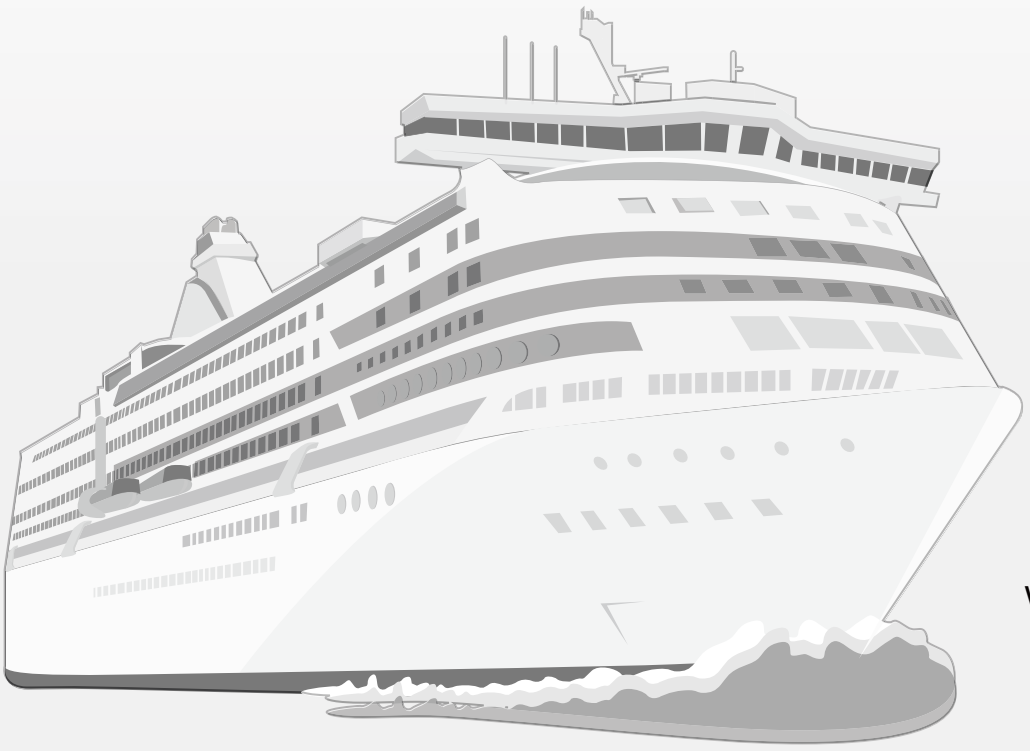
Caledonian

Caledonian Offshore & Marine Cables

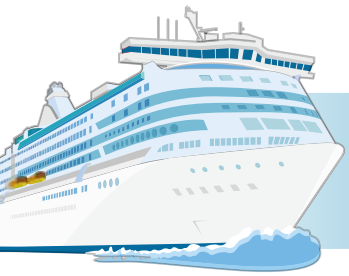
NEK606 STANDARD



ADDISON

www.caledonian-cables.co.uk

www.addison-cables.com



Company Profile

Caledonian, established in 1978, offers one of the most complete lines of fiber and copper cabling system solutions with over hundreds of different cabling system products. Our superior products provide leading edge within every cable series and for every application.

Among the national and international standards with which our cables could comply are: BS - British Standard; LPCB Fire Performance Standard, ISO Standard etc. Caledonian Cables offers a comprehensive stock of cables and cabling products through its nationwide network of resellers and distributors. Caledonian Cables has continually expanded its global presence in Europe and Asia.

Caledonian & Addison, produces a wide range of cables for communication, power and electronics in its primary plants in UK, Italy and Spain. To stay in front, we continually keep expanding our manufacturing capabilities in more low cost region such as Romania, Taiwan, Malaysia etc. This low-cost manufacturing facilities enable us provide a flexible, scalable global system that delivers superior operational performance and optimal results for our customers.

Our extensive global network of manufacturing facilities gives us significant scale and the flexibility to fulfill our customer requirements. This global presence provides design and consultancy solutions that are combined with core cable manufacturing, logistic services, and vertically integrated with our E commerce technologies, to optimize customer operations by lowering costs and reducing time to market.

Caledonian & Addison has been respected for its high standards of quality, excellent service level, competitive pricing and a unique and innovative spirit. With our latest technologies, we are both inspired and well-positioned to meet the changing needs of our customers. We have the resources to diversify and to enhance our product lines and services. We understand the need for change and with our accurate planning, we are ready for the future and the promise of new marketing opportunities. Our tradition of growth through excellence is assured.

Our Design Centers work closely with customers to constantly improve its standard range of products and technologies and to develop customized, country and industry-specific solutions. Caledonian & Addison has established an extensive network of design, manufacturing, and logistics facilities in the world’s major markets to serve the growing outsourcing needs of both multinational and regional customers.

CONTENT

Telecommunication Cables

Optical Fibre Cables

Data Cables

Coaxial Cables

Technical Information

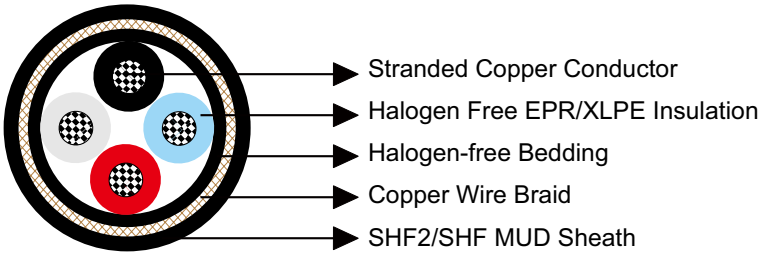
P101 (Formerly P1 or P1/P8) RFOU/TFOU 0.6/1KV

Applications

These cables are flame retardant, low smoke, halogen free and mud resistant, used for control, power and lighting systems.

Standards

- IEC 60092-353
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Insulation:** Halogen-free EPR or XLPE.
- **Bedding:** Extruded halogen free compound.
- **Armour:** Tinned copper wire braid in accordance with IEC 60092-350.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (TYPE 101, formerly TYPE P1). Halogen free, mud resistant thermosetting compound, SHF MUD (formerly TYPE P1/P8), coloured black.

Electrical Characteristics

Nominal Cross Section Area	mm²	1.5	2.5	4	6	10	16	25	35	50	70
Nominal Conductor Diameter	mm	1.6	2.1	2.6	3.2	4.0	5.1	6.5	7.4	8.7	10.3
Maximum DC Resistant@20℃	Ω/km	12.2	7.56	4.7	3.11	1.84	1.16	0.734	0.529	0.391	0.27
Continuous Current Rating@45℃ 1 Core	A	23	30	40	52	72	96	127	157	196	242
Continuous Current Rating@45℃ 2 Core	A	20	26	34	44	61	82	108	133	167	206

Continuous Current Rating@45℃ 3&4 Core	A	16	21	28	36	50	67	89	110	137	169
Short Circuit Current 1s	A	210	360	570	860	1430	2290	3580	5010	7150	10020
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Nominal Cross Section Area	mm²	95	120	150	185	240	300	400	500	630
Nominal Conductor Diameter	mm	12.2	13.8	15.1	17.0	19.6	21.9	24.6	27.6	32.5
Maximum DC Resistant@20℃	Ω/km	0.195	0.154	0.126	0.1	0.0762	0.0607	0.0475	0.0369	0.0286
Continuous Current Rating@45℃ 1 Core	A	293	339	389	444	522	601	690	780	890
Continuous Current Rating@45℃ 2 Core	A	249	288	331	444	444	511	587	663	757
Continuous Current Rating@45℃ 3&4 Core	A	205	237	272	311	365	421	483	546	623
Short Circuit Current 1s	A	13590	17170	21460	26470	34340	42930	57230	71540	90140
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Note: For more than 4-cores, the current ratings may be calculated from the following formula ($I_N = I_1 / \sqrt[3]{N}$), I_1= Current rating for 1-core, N = Number of cores.

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×1.5	1.0	1.1	1.1	8.9	135
1×2.5	1.0	1.1	1.1	9.3	150
1×4	1.0	1.1	1.1	9.9	180
1×6	1.0	1.1	1.1	10.4	205
1×10	1.0	1.1	1.2	12.2	295
1×16	1.0	1.1	1.2	13.5	385
1×25	1.2	1.1	1.2	15.4	525
1×35	1.2	1.1	1.3	16.9	685

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×50	1.4	1.1	1.4	18.7	870
1×70	1.4	1.1	1.4	20.4	1105
1×95	1.6	1.1	1.5	22.8	1435
1×120	1.6	1.2	1.6	24.9	1745
1×150	1.8	1.2	1.6	26.8	2055
1×185	2.0	1.2	1.7	29.3	2560
1×240	2.2	1.2	1.8	32.5	3190
1×300	2.4	1.2	1.9	35.2	3935
1×400	2.4	1.4	2.1	40.5	5060
1×500	2.4	1.4	2.2	44.0	6180
1×630	2.4	1.4	2.3	48.0	7620
2×1.5	1.0	1.1	1.2	13.6	295
2×2.5	1.0	1.1	1.2	14.4	335
2×4	1.0	1.1	1.3	16.1	445
2×6	1.0	1.1	1.3	17.1	520
2×10	1.0	1.1	1.4	19.3	680
2×16	1.0	1.1	1.5	21.7	955
2×25	1.2	1.2	1.6	25.9	1335
2×35	1.2	1.2	1.7	27.9	1595
2×50	1.4	1.2	1.9	31.9	2250
2×70	1.4	1.2	2.1	35.8	2795
2×95	1.6	1.2	2.3	41.2	3780
2×120	1.6	1.4	2.4	44.8	4560
2×150	1.8	1.4	2.6	49.2	5500
2×185	2.0	1.4	2.7	53.8	6675
2×240	2.2	1.6	3.0	61.0	8605
2×300	2.4	1.6	3.2	67.0	10510
3×1.5	1.0	1.1	1.2	14.2	320
3×2.5	1.0	1.1	1.3	15.6	415
3×4	1.0	1.1	1.3	16.8	500
3×6	1.0	1.1	1.4	18.1	605
3×10	1.0	1.1	1.4	20.3	795
3×16	1.0	1.1	1.5	22.8	1125
3×25	1.2	1.2	1.6	27.5	1620
3×35	1.2	1.2	1.7	29.6	1955
3×50	1.4	1.2	1.9	33.9	2730
3×70	1.4	1.4	2.0	38.4	3655
3×95	1.6	1.4	2.2	43.8	4885
3×120	1.6	1.4	2.3	47.6	6000
3×150	1.8	1.6	2.5	52.4	7300

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
3×185	2.0	1.6	2.7	58.6	8960
3×240	2.2	1.8	2.9	66.1	11610
3×300	2.2	1.8	3.4	71.9	13490
4×1.5	1.0	1.1	1.3	15.7	350
4×2.5	1.0	1.1	1.3	16.6	425
4×4	1.0	1.1	1.4	18.1	590
4×6	1.0	1.1	1.4	19.5	725
4×10	1.0	1.1	1.5	22.1	955
4×16	1.0	1.2	1.6	25.2	1375
4×25	1.2	1.2	1.7	30.0	1965
4×35	1.2	1.2	1.8	32.4	2410
4×50	1.4	1.4	2.0	37.3	3365
4×70	1.4	1.4	2.2	42.1	4580
4×95	1.6	1.4	2.4	48.2	6020
4×120	1.6	1.6	2.5	52.7	7440
4×150	1.8	1.6	2.9	58.3	8800
4×185	2.0	1.6	3.1	64.0	10760
4×240	2.2	1.8	3.4	72.4	13890
4×300	2.4	1.8	3.7	79.8	17405
5×1.5	1.0	1.1	1.3	16.7	420
6×1.5	1.0	1.1	1.3	17.8	495
7×1.5	1.0	1.1	1.3	17.8	540
8×1.5	1.0	1.1	1.5	20.3	645
9×1.5	1.0	1.1	1.5	21.5	675
10×1.5	1.0	1.1	1.5	21.8	705
12×1.5	1.0	1.1	1.5	22.5	805
14×1.5	1.0	1.1	1.6	23.6	860
16×1.5	1.0	1.1	1.7	24.9	940
19×1.5	1.0	1.1	1.7	26.0	1100
20×1.5	1.0	1.1	1.7	27.2	1130
23×1.5	1.0	1.1	1.8	29.3	1285
24×1.5	1.0	1.1	1.8	30.0	1305
27×1.5	1.0	1.1	1.9	30.8	1460
30×1.5	1.0	1.1	1.9	31.8	1520
33×1.5	1.0	1.2	2.0	33.5	1670
37×1.5	1.0	1.2	2.0	34.6	1840
44×1.5	1.0	1.2	2.2	39.2	2210
5×2.5	1.0	1.1	1.4	18.0	555
6×2.5	1.0	1.1	1.4	19.2	590
7×2.5	1.0	1.1	1.4	19.2	655

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
8×2.5	1.0	1.1	1.5	21.8	775
9×2.5	1.0	1.1	1.6	23.3	785
10×2.5	1.0	1.1	1.6	23.6	865
12×2.5	1.0	1.1	1.6	24.5	955
14×2.5	1.0	1.1	1.7	25.5	1070
16×2.5	1.0	1.1	1.7	26.7	1155
19×2.5	1.0	1.1	1.8	28.2	1360
20×2.5	1.0	1.1	1.8	29.5	1410
23×2.5	1.0	1.1	1.9	31.8	1610
24×2.5	1.0	1.2	2.0	33.2	1690
27×2.5	1.0	1.2	2.0	33.9	1815
30×2.5	1.0	1.2	2.0	34.9	1960
33×2.5	1.0	1.2	2.1	36.7	2190
37×2.5	1.0	1.2	2.1	38.0	2370
44×2.5	1.0	1.2	2.3	42.6	2795

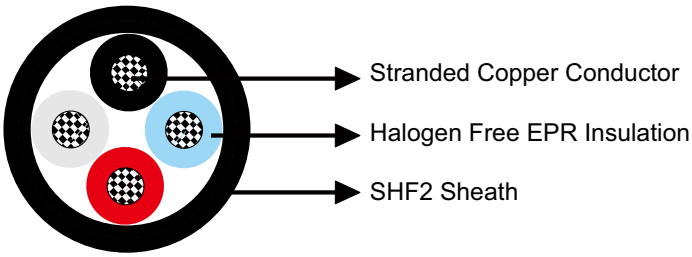
P111 RU/TU (Formerly P18 RU) 0.6/1kV

Applications

These cables are flame retardant, low smoke and halogen free, used for control, power and lighting systems.

Standards

- IEC 60092-353
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Insulation:** Halogen-free EPR or XLPE.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2, coloured black.

Electrical Characteristics

Nominal Cross Section Area	mm²	1.5	2.5	4	6	10	16	25	35
Nominal Conductor Diameter	mm	1.6	2.1	2.6	3.2	4	5.1	6.5	7.4
Maximum DC Resistant@20℃	Ω/km	12.2	7.56	4.7	3.11	1.84	1.16	0.734	0.529
Continuous Current Rating@45℃ 1 Core	A	23	30	40	52	72	96	127	157
Continuous Current Rating@45℃ 2 Core	A	20	26	34	44	61	82	108	133
Continuous Current Rating@45℃ 3&4 Core	A	16	21	28	36	50	67	89	110
Short Circuit Current 1s	A	210	360	570	860	1430	2290	3580	5010
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Nominal Cross Section Area	mm²	50	70	95	120	150	185	240	300
Nominal Conductor Diameter	mm	8.7	10.3	12.2	13.8	15.1	17.0	19.6	21.9
Maximum DC Resistant@20℃	Ω/km	0.391	0.27	0.195	0.154	0.126	0.1	0.0762	0.0607
Continuous Current Rating@45℃ 1 Core	A	196	242	293	339	389	444	522	601
Continuous Current Rating@45℃ 2 Core	A	167	206	249	288	331	444	444	511
Continuous Current Rating@45℃ 3&4 Core	A	137	169	205	237	272	311	365	421
Short Circuit Current 1s	A	7150	10020	13590	17170	21460	26470	34340	42930
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Note: For more than 4-cores, the current ratings may be calculated from the following formula ($I_N = I_1 / \sqrt[3]{N}$), I_1= Current rating for 1-core, N = Number of cores.

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

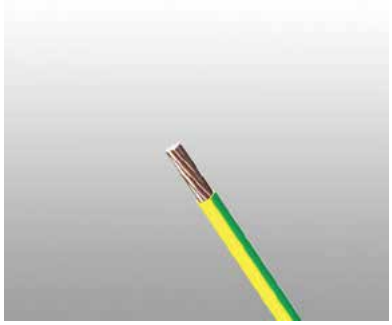
Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×1.5	1.0	1.0	6.0	60
1×2.5	1.0	1.0	6.5	80
1×4	1.0	1.0	7.1	110
1×6	1.0	1.0	7.6	130
1×10	1.0	1.1	8.5	165
1×16	1.0	1.1	9.8	235
1×25	1.2	1.2	11.7	355
1×35	1.2	1.2	12.8	455
1×50	1.4	1.3	14.4	595
1×70	1.4	1.4	16.3	805
1×95	1.6	1.5	18.7	1090
1×120	1.6	1.5	20.3	1345
1×150	1.8	1.6	22.4	1635
1×185	2.0	1.7	24.9	2075

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×240	2.2	1.8	28.1	2660
1×300	2.4	1.9	30.8	3340
2×1.5	1.0	1.1	9.7	145
2×2.5	1.0	1.1	10.5	175
2×4	1.0	1.2	11.6	225
2×6	1.0	1.2	12.9	295
2×10	1.0	1.3	14.8	420
2×16	1.0	1.4	17.2	605
2×25	1.2	1.5	21.3	940
2×35	1.2	1.6	23.3	1185
2×50	1.4	1.8	26.9	1585
2×70	1.4	1.9	31.9	2280
2×95	1.6	2.1	36.9	3090
2×120	1.6	2.2	40.3	3780
2×150	1.8	2.4	44.7	4640
2×185	2.0	2.6	49.5	5750
2×240	2.2	2.8	56.1	7460
2×300	2.4	3.0	62.0	9265
3×1.5	1.0	1.1	10.3	165
3×2.5	1.0	1.2	11.1	205
3×4	1.0	1.2	12.5	280
3×6	1.0	1.3	13.6	360
3×10	1.0	1.3	16.0	530
3×16	1.0	1.4	18.5	770
3×25	1.2	1.6	22.9	1200
3×35	1.2	1.7	25.0	1525
3×50	1.4	1.8	28.7	2030
3×70	1.4	2.0	32.6	2765
3×95	1.6	2.2	37.6	3745
3×120	1.6	2.3	41.2	4640
3×150	1.8	2.5	45.7	5675
3×185	2.0	2.7	51.2	7200
3×240	2.2	3.0	57.5	9300
3×300	2.4	3.2	66.8	12080
4×1.5	1.0	1.2	11.2	200
4×2.5	1.0	1.2	12.4	255
4×4	1.0	1.3	13.7	340
4×6	1.0	1.3	15.2	455
4×10	1.0	1.4	17.5	665
4×16	1.0	1.5	20.4	970
4×25	1.2	1.7	25.5	1530
4×35	1.2	1.8	27.8	1955
4×50	1.4	2.0	31.9	2600

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
4×70	1.4	2.1	36.3	3540
4×95	1.6	2.4	42.0	4815
4×120	1.6	2.5	46.0	5965
4×150	1.8	2.7	53.5	7720
4×185	2.0	2.9	59.2	9570
4×240	2.2	3.2	67.3	12480
4×300	2.4	3.5	74.6	15870
5×1.5	1.0	1.2	13.1	245
6×1.5	1.0	1.3	14.4	275
7×1.5	1.0	1.3	14.4	285
8×1.5	1.0	1.4	16.9	380
9×1.5	1.0	1.4	18.1	395
10×1.5	1.0	1.4	18.4	435
12×1.5	1.0	1.4	19.0	485
14×1.5	1.0	1.5	20.2	565
16×1.5	1.0	1.5	21.3	615
19×1.5	1.0	1.6	22.6	715
20×1.5	1.0	1.6	23.8	780
23×1.5	1.0	1.7	25.9	905
24×1.5	1.0	1.7	26.6	920
27×1.5	1.0	1.7	27.2	985
30×1.5	1.0	1.8	28.4	1110
33×1.5	1.0	1.8	29.5	1190
37×1.5	1.0	1.9	30.8	1315
44×1.5	1.0	2.0	34.8	1560
5×2.5	1.0	1.3	14.3	305
6×2.5	1.0	1.3	15.6	360
7×2.5	1.0	1.3	15.6	390
8×2.5	1.0	1.4	18.4	495
9×2.5	1.0	1.5	19.9	505
10×2.5	1.0	1.5	20.2	570
12×2.5	1.0	1.5	20.9	625
14×2.5	1.0	1.5	21.9	735
16×2.5	1.0	1.6	23.3	810
19×2.5	1.0	1.6	24.6	935
20×2.5	1.0	1.7	26.1	1035
23×2.5	1.0	1.8	28.4	1205
24×2.5	1.0	1.8	29.2	1220
27×2.5	1.0	1.8	29.9	1295
30×2.5	1.0	1.9	31.1	1475
33×2.5	1.0	1.9	32.3	1585
37×2.5	1.0	2.0	33.8	1730
44×2.5	1.0	2.2	38.4	2100

P108 (Formerly P15) UX 0.6/1kV

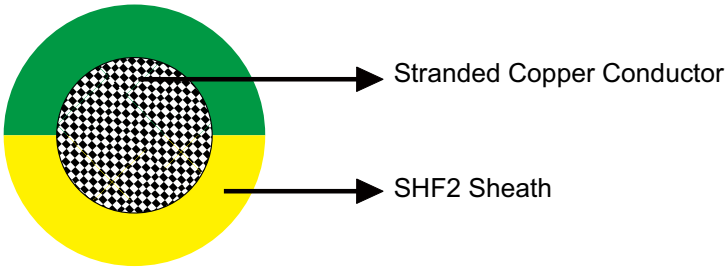
Applications



These cables are flame retardant, low smoke and halogen free, used for earthing and bonding services.

Standards

- IEC 60092-353
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Sheath:** Halogen free thermosetting compound, SHF2.yellow/green.

Electrical Characteristics

Nominal Cross Section Area	mm²	10	16	25	35	50	70
Nominal Conductor Diameter	mm	4	5.1	6.5	7.4	8.7	10.3
Maximum DC Resistant@20℃	Ω/km	1.84	1.16	0.734	0.529	0.391	0.27
Continuous Current Rating@45℃ 1 Core	A	72	96	127	157	196	242
Short Circuit Current 1s	A	1430	2290	3580	5010	7150	10020
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Nominal Cross Section Area	mm²	95	120	150	185	240	300
Nominal Conductor Diameter	mm	12.2	13.8	15.1	17.0	19.6	21.9
Maximum DC Resistant@20℃	Ω/km	0.195	0.154	0.126	0.1	0.0762	0.0607

Continuous Current Rating@45℃ 1 Core	A	293	339	389	444	522	601
Short Circuit Current 1s	A	13590	17170	21460	26470	34340	42930
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×10	1.0	6.6	125
1×16	1.0	7.7	185
1×25	1.2	9.5	290
1×35	1.2	10.4	380
1×50	1.4	12.1	510
1×70	1.4	13.6	700
1×95	1.6	15.5	950
1×120	1.6	17.5	1205
1×150	1.8	19.4	1470
1×185	2.0	21.7	1875
1×240	2.2	24.7	2420
1×300	2.4	27.2	3060

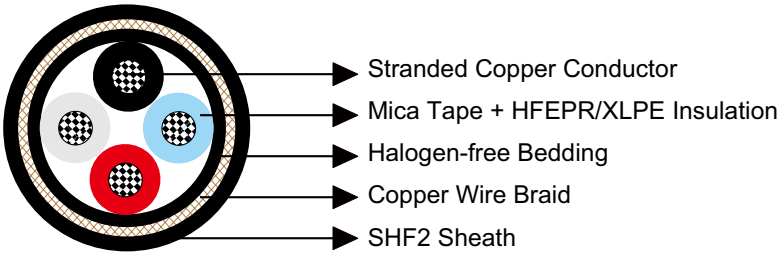
P105 (Formerly P5 or P5/P12) BFOU 0.6/1KV

Applications

These cables are fire resistant, flame retardant, low smoke, halogen free and mud resistant, used for control, power and lighting systems.

Standards

- IEC 60092-353
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Tinned annealed stranded compacted copper to IEC 60228 class 2 or calss 5.
- **Insulation:** Mica tape + Halogen free EPR/Mica tape + XLPE.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid in accordance with IEC 60092-350.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (for fomerly TYPE P5). Halogen free, mud resistant thermosetting compound, SHF MUD (for fomerly TYPE P5/P12), coloured black.

Electrical Characteristics

Nominal Cross Section Area	mm²	1.5	2.5	4	6	10	16	25	35	50
Nominal Conductor Diameter	mm	1.6	2.1	2.6	3.2	4	5.1	6.5	7.4	8.7

Maximum DC Resistant@20℃	Ω/km	12.2	7.56	4.7	3.11	1.84	1.16	0.734	0.529	0.391
Continuous Current Rating@45℃ 1 Core	A	23	30	40	52	72	96	127	157	196
Continuous Current Rating@45℃ 2 Core	A	20	26	34	44	61	82	108	133	167
Continuous Current Rating@45℃ 3&4 Core	A	16	21	28	36	50	67	89	110	137
Short Circuit Current 1s	A	210	360	570	860	1430	2290	3580	5010	7150
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Nominal Cross Section Area	mm²	70	95	120	150	185	240	300	400	630
Nominal Conductor Diameter	mm	10.3	12.2	13.8	15.1	17.0	19.6	21.9	24.6	32.5
Maximum DC Resistant@20℃	Ω/km	0.27	0.195	0.154	0.126	0.1	0.0762	0.0607	0.0475	0.0286
Continuous Current Rating@45℃ 1 Core	A	242	293	339	389	444	522	601	690	890
Continuous Current Rating@45℃ 2 Core	A	206	249	288	331	444	444	511	587	757
Continuous Current Rating@45℃ 3&4 Core	A	169	205	237	272	311	365	421	483	623
Short Circuit Current 1s	A	10020	13590	17170	21460	26470	34340	42930	57230	90140
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Note: For more than 4-cores, the current ratings may be calculated from the following formula ($I_N = I_1 / \sqrt[3]{N}$), I_1= Current rating for 1-core, N = Number of cores.

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×1.5	1.0	1.1	1.1	9.3	145
1×2.5	1.0	1.1	1.1	9.7	160
1×4	1.0	1.1	1.1	10.4	220
1×6	1.0	1.1	1.1	10.9	250

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×10	1.0	1.1	1.2	12.7	310
1×16	1.0	1.1	1.2	13.9	390
1×25	1.2	1.1	1.3	16.3	585
1×35	1.2	1.1	1.3	17.2	690
1×50	1.4	1.1	1.4	19.0	890
1×70	1.4	1.1	1.4	20.6	1110
1×95	1.6	1.1	1.5	23.1	1440
1×120	1.6	1.2	1.6	25.0	1735
1×150	1.8	1.2	1.7	27.0	2060
1×185	2.0	1.2	1.7	29.4	2545
1×240	2.2	1.2	1.8	32.6	3170
1×300	2.4	1.2	1.9	35.3	3910
1×400	2.4	1.4	2.1	41.0	5100
1×630	2.8	1.4	2.3	48.5	7660
2×1.5	1.0	1.1	1.2	14.2	310
2×2.5	1.0	1.1	1.3	15.1	360
2×4	1.0	1.1	1.3	16.6	470
2×6	1.0	1.1	1.4	17.9	555
2×10	1.0	1.1	1.4	19.9	705
2×16	1.0	1.1	1.5	22.5	985
2×25	1.2	1.2	1.6	26.4	1360
2×35	1.2	1.2	1.7	28.4	1620
2×50	1.4	1.2	1.9	32.4	2290
2×70	1.4	1.2	2.1	38.0	3260
2×95	1.6	1.2	2.3	41.6	3910
2×120	1.6	1.4	2.4	45.3	4710
2×150	1.8	1.4	2.6	49.7	5670
2×185	2.0	1.4	2.7	54.3	6840
2×240	2.2	1.6	3.0	61.5	8790
2×300	2.4	1.6	3.2	67.8	10630
3×1.5	1.0	1.1	1.3	14.8	345
3×2.5	1.0	1.1	1.3	16.2	445
3×4	1.0	1.1	1.3	17.4	530
3×6	1.0	1.1	1.4	18.7	635
3×10	1.0	1.1	1.5	21.1	830
3×16	1.0	1.1	1.5	23.7	1160
3×25	1.2	1.2	1.7	28.1	1640
3×35	1.2	1.2	1.8	30.2	1980
3×50	1.4	1.2	2.0	34.3	2750
3×70	1.4	1.2	2.2	39.0	3675

Fire Resistant Power and Control Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
3×95	1.6	1.4	2.4	44.7	4955
3×120	1.6	1.4	2.5	48.3	6035
3×150	1.8	1.4	2.7	53.2	7355
3×185	2.0	1.6	2.9	59.5	9025
3×240	2.2	1.6	3.2	66.5	11590
3×300	2.4	1.8	3.4	72.6	13740
4×1.5	1.0	1.1	1.3	16.4	400
4×2.5	1.0	1.1	1.3	17.3	505
4×4	1.0	1.1	1.4	18.8	620
4×6	1.0	1.1	1.4	20.1	750
4×10	1.0	1.1	1.5	22.7	985
4×16	1.0	1.2	1.6	25.9	1400
4×25	1.2	1.2	1.8	30.7	1995
4×35	1.2	1.2	1.9	33.1	2440
4×50	1.4	1.4	2.0	38.2	3430
4×70	1.4	1.4	2.2	42.7	4600
4×95	1.6	1.6	2.4	49.4	6135
4×120	1.6	1.6	2.5	53.6	7515
4×150	1.8	1.6	2.9	59.0	9010
4×185	2.0	1.6	3.1	64.7	11000
4×240	2.2	1.8	3.4	73.1	14160
4×300	2.4	1.8	3.7	80.7	17550
5×1.5	1.0	1.1	1.4	17.7	510
6×1.5	1.0	1.1	1.4	19.0	545
7×1.5	1.0	1.1	1.4	19.0	590
8×1.5	1.0	1.1	1.5	21.8	715
9×1.5	1.0	1.1	1.6	23.3	720
10×1.5	1.0	1.1	1.6	23.6	790
12×1.5	1.0	1.2	1.6	24.3	880
14×1.5	1.0	1.2	1.7	25.5	965
16×1.5	1.0	1.2	1.7	26.7	1035
19×1.5	1.0	1.2	1.7	27.4	1185
20×1.5	1.0	1.2	1.8	29.5	1260
23×1.5	1.0	1.2	1.9	31.8	1435
24×1.5	1.0	1.2	2.0	33.2	1510
27×1.5	1.0	1.2	2.0	33.9	1615
30×1.5	1.0	1.2	2.0	34.9	1735
32×1.5	1.0	1.4	2.0	35.5	1800
33×1.5	1.0	1.4	2.0	36.7	1940
37×1.5	1.0	1.4	2.0	38.0	2090

Fire Resistant Power and Control Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
44×1.5	1.0	1.4	2.3	42.6	2460
5×2.5	1.0	1.1	1.4	18.8	595
6×2.5	1.0	1.1	1.4	20.4	650
7×2.5	1.0	1.1	1.4	20.4	700
8×2.5	1.0	1.1	1.5	23.5	790
9×2.5	1.0	1.1	1.6	25.1	860
10×2.5	1.0	1.1	1.6	25.4	955
12×2.5	1.0	1.2	1.6	26.1	1045
14×2.5	1.0	1.2	1.7	27.3	1160
16×2.5	1.0	1.2	1.8	28.8	1265
19×2.5	1.0	1.2	1.8	29.6	1445
20×2.5	1.0	1.2	1.9	31.8	1545
23×2.5	1.0	1.4	2.0	34.7	1805
24×2.5	1.0	1.4	2.0	35.8	1850
27×2.5	1.0	1.4	2.0	35.4	1970
30×2.5	1.0	1.4	2.1	38.1	2235
33×2.5	1.0	1.4	2.2	39.6	2390
37×2.5	1.0	1.4	2.3	41.2	2610
44×2.5	1.0	1.4	2.4	46.2	3075

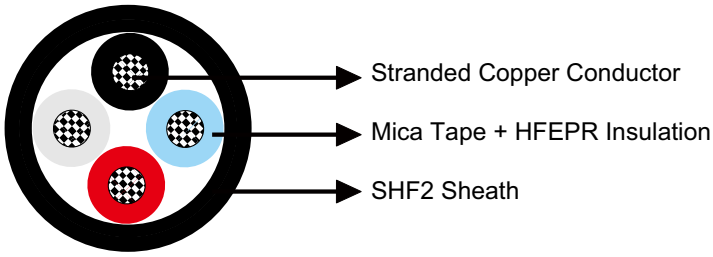
P110 (Formerly P17) BU 0.6/1 kV

Applications

These cables are fire resistant, flame retardant, low smoke and halogen free, used for control, power and lighting systems.

Standards

- IEC 60092-353
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-2
- NEK 606:2004



Construction

- **Conductors:** Tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR or Mica tape + XLPE.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2, coloured black.

Electrical Characteristics

Nominal Cross Section Area	mm²	1.5	2.5	4	6	10	16	25	35
Nominal Conductor Diameter	mm	1.6	2.1	2.6	3.2	4	5.1	6.5	7.4
Maximum DC Resistant@20℃	Ω/km	12.2	7.56	4.7	3.11	1.84	1.16	0.734	0.529
Continuous Current Rating@45℃ 1 Core	A	23	30	40	52	72	96	127	157
Continuous Current Rating@45℃ 2 Core	A	20	26	34	44	61	82	108	133
Continuous Current Rating@45℃ 3&4 Core	A	16	21	28	36	50	67	89	110
Short Circuit Current 1s	A	210	360	570	860	1430	2290	3580	5010
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Nominal Cross Section Area	mm²	50	70	95	120	150	185	240	300
Nominal Conductor Diameter	mm	8.7	10.3	12.2	13.8	15.1	17.0	19.6	21.9
Maximum DC Resistant@20℃	Ω/km	0.391	0.27	0.195	0.154	0.126	0.1	0.0762	0.0607
Continuous Current Rating@45℃ 1 Core	A	196	242	293	339	389	444	522	601
Continuous Current Rating@45℃ 2 Core	A	167	206	249	288	331	444	444	511
Continuous Current Rating@45℃ 3&4 Core	A	137	169	205	237	272	311	365	421
Short Circuit Current 1s	A	7150	10020	13590	17170	21460	26470	34340	42930
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Note: For more than 4-cores, the current ratings may be calculated from the following formula ($I_N = I_1 / \sqrt[3]{N}$), I_1= Current rating for 1-core, N = Number of cores.

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×1.5	1.0	1.0	6.4	65
1×2.5	1.0	1.0	6.8	75
1×4	1.0	1.0	7.4	95
1×6	1.0	1.0	7.9	120
1×10	1.0	1.1	8.8	170
1×16	1.0	1.1	10.2	240
1×25	1.2	1.2	12.0	360
1×35	1.2	1.2	13.1	455
1×50	1.4	1.3	14.7	600
1×70	1.4	1.4	16.6	805
1×95	1.6	1.5	19.0	1095
1×120	1.6	1.5	20.6	1345
1×150	1.8	1.6	22.7	1635
1×185	2.0	1.7	25.2	2070

Fire Resistant Power and Control Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×240	2.2	1.8	28.4	2655
1×300	2.4	1.9	31.1	3335
2×1.5	1.0	1.1	10.3	155
2×2.5	1.0	1.2	11.0	190
2×4	1.0	1.2	12.3	250
2×6	1.0	1.3	13.4	310
2×10	1.0	1.3	15.6	445
2×16	1.0	1.4	18.2	635
2×25	1.2	1.6	22.0	970
2×35	1.2	1.7	24.0	1215
2×50	1.4	1.8	27.4	1615
2×70	1.4	1.9	32.6	2335
2×95	1.6	2.1	37.6	3155
2×120	1.6	2.3	41.2	3875
2×150	1.8	2.4	45.4	4725
2×185	2.0	2.6	50.2	5845
2×240	2.2	2.8	56.8	7570
2×300	2.4	3.1	63.0	9395
3×1.5	1.0	1.2	10.9	180
3×2.5	1.0	1.2	11.9	230
3×4	1.0	1.2	13.1	295
3×6	1.0	1.3	14.2	375
3×10	1.0	1.4	16.5	550
3×16	1.0	1.5	19.3	795
3×25	1.2	1.6	23.5	1220
3×35	1.2	1.7	25.6	1545
3×50	1.4	1.9	29.5	2075
3×70	1.4	2.0	33.2	2775
3×95	1.6	2.2	38.5	3800
3×120	1.6	2.4	42.0	4685
3×150	1.8	2.5	46.3	5685
3×185	2.0	2.7	51.8	7215
3×240	2.2	3.0	58.0	9320
3×300	2.4	3.2	67.6	12280
4×1.5	1.0	1.2	12.1	225
4×2.5	1.0	1.2	13.0	275
4×4	1.0	1.3	14.5	365
4×6	1.0	1.4	15.8	490
4×10	1.0	1.4	18.4	695
4×16	1.0	1.5	21.5	1005
4×25	1.2	1.7	26.1	1550
4×35	1.2	1.8	28.5	1970
4×50	1.4	2.0	32.8	2645
4×70	1.4	2.2	36.9	3545

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
4×95	1.6	2.4	42.8	4850
4×120	1.6	2.6	46.5	5965
4×150	1.8	2.8	54.6	8020
4×185	2.0	3.0	60.3	9930
4×240	2.2	3.3	68.4	12920
4×300	2.4	3.5	75.5	15995
5×1.5	1.0	1.3	14.3	265
6×1.5	1.0	1.3	15.6	305
7×1.5	1.0	1.3	15.6	320
8×1.5	1.0	1.4	18.4	425
9×1.5	1.0	1.5	19.9	440
10×1.5	1.0	1.5	20.2	495
12×1.5	1.0	1.5	20.9	530
14×1.5	1.0	1.6	21.9	630
16×1.5	1.0	1.6	23.3	690
19×1.5	1.0	1.6	24.6	790
20×1.5	1.0	1.7	26.1	880
23×1.5	1.0	1.8	28.4	1030
24×1.5	1.0	1.8	29.2	1035
27×1.5	1.0	1.8	29.9	1080
30×1.5	1.0	1.9	31.1	1250
33×1.5	1.0	1.9	32.3	1335
37×1.5	1.0	2.0	33.8	1445
44×1.5	1.0	2.2	38.4	1765
5×2.5	1.0	1.3	14.5	340
6×2.5	1.0	1.4	17.0	395
7×2.5	1.0	1.4	17.0	420
8×2.5	1.0	1.5	20.0	535
9×2.5	1.0	1.5	21.5	560
10×2.5	1.0	1.5	21.8	620
12×2.5	1.0	1.6	22.7	680
14×2.5	1.0	1.6	23.9	810
16×2.5	1.0	1.7	25.4	895
19×2.5	1.0	1.7	26.8	1000
20×2.5	1.0	1.8	28.4	1140
23×2.5	1.0	1.9	30.9	1325
24×2.5	1.0	1.9	31.8	1340
27×2.5	1.0	1.9	32.5	1395
30×2.5	1.0	2.0	33.9	1620
33×2.5	1.0	2.0	35.2	1735
37×2.5	1.0	2.1	36.8	1865
44×2.5	1.0	2.3	41.8	2295

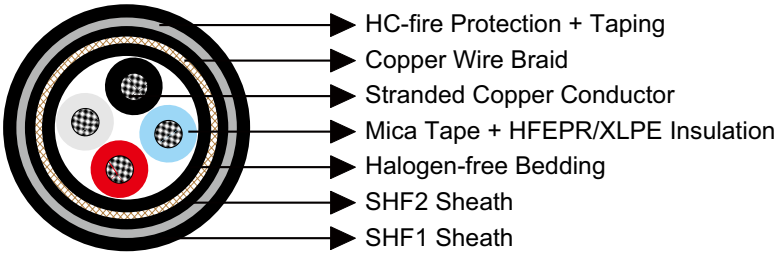
P118 (Formerly P34) BFOU-HCF 0.6/1 kV

Applications

These cables are fire resistant, flame retardant, low smoke and halogen free, used for emergency control, power and lighting systems that need to be operational during a 1100℃ hydrocarbon fire.

Standards

- IEC 60092-353
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Tinned annealed stranded compacted copper to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR/XLPE.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid in accordance with IEC 60092-350.
- **Outer Sheath1:** Halogen free thermosetting compound, SHF2.
- **HC-fire protection:** Extruded thermoplastic fire protection compound.
- **Taping:** Lapped fire resistant tape.
- **Outer Sheath2:** Flame retardant halogen-free thermoplastic compound, SHF1, coloured black.

Electrical Characteristics

Nominal Cross Section Area	mm²	1.5	2.5	4	6	16	35
Nominal Conductor Diameter	mm	1.6	2.1	2.6	3.2	5.1	7.4
Maximum DC Resistant@20℃	Ω/km	12.2	7.56	4.7	3.11	1.16	0.529
Continuous Current Rating@45℃ 1 Core	A	23	30	40	52	96	157
Continuous Current Rating@45℃ 2 Core	A	20	26	34	44	82	133
Continuous Current Rating@45℃ 3&4 Core	A	16	21	28	36	67	110
Short Circuit Current 1s	A	210	360	570	860	2290	5010
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Nominal Cross Section Area	mm²	50	70	95	120	150	185	240	300
Nominal Conductor Diameter	mm	8.7	10.3	12.2	13.8	15.1	17.0	19.6	21.9
Maximum DC Resistant@20℃	Ω/km	0.391	0.27	0.195	0.154	0.126	0.1	0.0762	0.0607
Continuous Current Rating@45℃ 1 Core	A	196	242	293	339	389	444	522	601
Continuous Current Rating@45℃ 2 Core	A	167	206	249	288	331	444	444	511
Continuous Current Rating@45℃ 3&4 Core	A	137	169	205	237	272	311	365	421
Short Circuit Current 1s	A	7150	10020	13590	17170	21460	26470	34340	42930
Operating Voltage	KV	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1	0.6/1

Note: For more than 4-cores, the current ratings may be calculated from the following formula ($I_N = I_1 / \sqrt[3]{N}$), I_1= Current rating for 1-core, N = Number of cores.

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 20×OD (during installation); 12×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Diameter Over Bedding mm	Nominal Diameter Over Sheath1 mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×50	1.4	15.0	18.5	45.5	2900
1×70	1.4	16.5	20.5	47.5	3300
1×95	1.6	18.5	23.0	50.5	3800
1×120	1.6	20.5	25.0	52.5	4260
1×150	1.8	23.0	27.0	54.5	4750
1×185	2.0	25.0	29.5	57.5	5380
1×240	2.2	28.0	32.5	66.0	7050
1×300	2.4	30.5	35.5	68.0	8000
2×1.5	1.0	10.0	13.0	40.5	1890
2×2.5	1.0	11.0	14.5	42.0	2080
3×1.5	1.0	10.5	14.0	42.0	2140
3×2.5	1.0	11.5	15.0	42.5	2200
3×4	1.0	13.0	16.5	43.0	2400
3×6	1.0	14.0	18.0	45.0	2600
3×16	1.0	18.5	23.0	50.0	3500
3×35	1.2	25.0	29.5	57.5	4840
3×70	1.4	33.0	39.0	72.0	8150
3×120	1.6	41.0	48.0	81.5	11300
3×150	1.8	46.0	54.5	88.5	13300
4×2.5	1.0	12.5	16.5	44.0	2300
4×6	1.0	15.5	19.5	47.5	2870
4×16	1.0	20.5	25.0	53.5	3830
7×1.5	1.0	14.0	17.5	44.5	2550
12×1.5	1.0	18.5	22.5	50.0	3140
27×1.5	1.0	26.5	31.0	64.5	5070
7×2.5	1.0	15.0	19.0	46.0	2760
12×2.5	1.0	20.5	24.5	52.0	3500

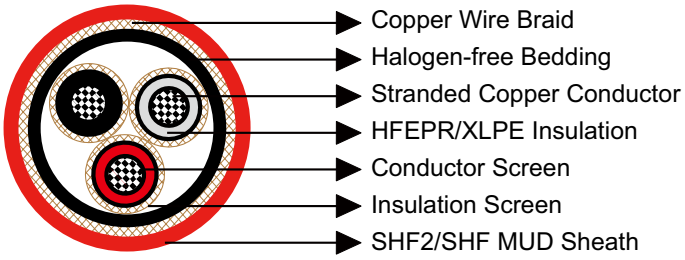
P102 (Formerly P2 or P2/P9) RFOU/TFOU 3.6/6KV

Applications

These cables are flame retardant, low smoke, halogen free and mud resistant, used for fixed installation for medium voltage power.

Standards

- IEC 60092-354
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Conductor Screen:** Semi conducting material.
- **Insulation:** Halogen-free EPR or XLPE).
- **Insulation Screen:** Semi conducting material and tinned copper wire braid.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid in accordance with IEC 60092-350.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (for formerly TYPE P2), or halogen free mud resistant thermosetting compound, SHF MUD (for formerly TYPE P2/P9), coloured red.

Electrical Characteristics

Nominal Cross Section Area	mm²	16	25	35	50	70	95	120

Nominal Conductor Diameter	mm	5.1	6.5	7.4	8.7	10.3	12.2	13.8
Maximum DC Resistant@20℃	Ω/km	1.16	0.734	0.529	0.391	0.27	0.195	0.154
Continuous Current Rating@45℃ 1 Core	A	96	127	157	196	242	293	339
Continuous Current Rating@45℃ 3 Core	A	67	89	110	137	169	205	237
Short Circuit Current 1s	A	2290	3580	5010	7150	10020	13590	17170
Operating Voltage	KV	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6

Nominal Cross Section Area	mm²	150	185	240	300	400	500	630
Nominal Conductor Diameter	mm	15.1	17.0	19.6	21.9	24.6	27.6	32.5
Maximum DC Resistant@20℃	Ω/km	0.126	0.1	0.0762	0.0607	0.0475	0.0369	0.0286
Continuous Current Rating@45℃ 1 Core	A	389	444	522	601	690	780	890
Continuous Current Rating@45℃ 3 Core	A	272	311	365	421	483	546	623
Short Circuit Current 1s	A	21460	26470	34340	42930	57230	71540	90140
Operating Voltage	KV	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 15×OD (during installation); 9×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×16	2.5	1.4	1.1	22.8	780
1×25	2.5	1.5	1.1	24.0	1020
1×35	2.5	1.5	1.2	25.1	1155
1×50	2.5	1.6	1.2	26.3	1320
1×70	2.5	1.6	1.3	28.2	1595
1×95	2.5	1.7	1.3	30.0	1905

Medium Voltage Power Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×120	2.5	1.8	1.4	31.8	2235
1×150	2.5	1.8	1.4	33.5	2550
1×185	2.5	1.9	1.5	35.4	3015
1×240	2.6	2.0	1.5	38.8	3725
1×300	2.8	2.1	1.6	42.3	4625
1×400	3.0	2.2	1.7	46.6	5420
1×500	3.2	2.4	1.8	50.8	6610
1×630	3.2	2.5	1.9	55.1	8170
3×16	2.5	2.2	1.6	44.9	2930
3×25	2.5	2.3	1.7	45.4	3390
3×35	2.5	2.4	1.8	47.6	3820
3×50	2.5	2.5	1.9	50.9	4495
3×70	2.5	2.7	2.0	54.8	5585
3×95	2.5	2.8	2.1	58.9	6765
3×120	2.5	3.0	2.2	63.5	8165
3×150	2.5	3.1	2.3	67.4	9495
3×185	2.5	3.3	2.4	75.8	10660
3×240	2.6	3.5	2.5	82.3	11660
3×300	2.8	3.8	2.7	89.3	12940

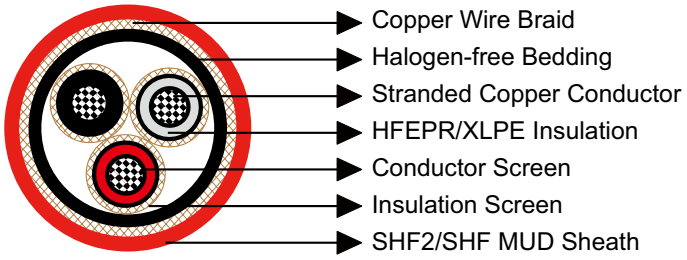
P103 (Formerly P3 or P3/P10) RFOU/TFOU 6/10KV

Applications

These cables are flame retardant, low smoke, halogen free and mud resistant, used for fixed installation for medium voltage power.

Standards

- IEC 60092-354
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Conductor Screen:** Semi conducting material.
- **Insulation:** Halogen-free EPR or XLPE.
- **Insulation Screen:** Semi conducting material and tinned copper wire braid.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid in accordance with IEC 60092-350.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (formerly TYPE P3), or halogen free mud resistant thermosetting compound, SHF MUD (for formerly TYPE P3/P10), coloured red.

Electrical Characteristics

Nominal Cross Section Area	mm²	16	25	35	50	70	95	120

Nominal Conductor Diameter	mm	5.2	6.5	7.4	8.7	10.3	12.2	13.8
Maximum DC Resistant@20℃	Ω/km	1.16	0.734	0.529	0.391	0.27	0.195	0.154
Continuous Current Rating@45℃ 1 Core	A	96	127	157	196	242	293	339
Continuous Current Rating@45℃ 3 Core	A	67	89	110	137	169	205	237
Short Circuit Current 1s	A	2290	3580	5010	7150	10020	13590	17170
Operating Voltage	KV	6/10	6/10	6/10	6/10	6/10	6/10	6/10

Nominal Cross Section Area	mm²	150	185	240	300	400	500	630
Nominal Conductor Diameter	mm	15.1	17.0	19.6	21.9	24.5	27.5	32.3
Maximum DC Resistant@20℃	Ω/km	0.126	0.1	0.0762	0.0607	0.0475	0.0369	0.0286
Continuous Current Rating@45℃ 1 Core	A	389	444	522	601	690	780	890
Continuous Current Rating@45℃ 3 Core	A	272	311	365	421	483	546	623
Short Circuit Current 1s	A	21460	26470	34340	42930	57230	71540	90140
Operating Voltage	KV	6/10	6/10	6/10	6/10	6/10	6/10	6/10

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 15×OD (during installation); 9×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×16	3.4	1.5	1.1	24.0	900
1×25	3.4	1.5	1.2	26.0	1140
1×35	3.4	1.6	1.2	26.9	1265
1×50	3.4	1.6	1.2	28.3	1460
1×70	3.4	1.7	1.3	30.0	1710
1×95	3.4	1.8	1.3	32.0	2060
1×120	3.4	1.8	1.4	33.8	2380

Medium Voltage Power Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×150	3.4	1.9	1.4	35.3	2700
1×185	3.4	2.0	1.5	37.8	3225
1×240	3.4	2.1	1.6	41.0	3990
1×300	3.4	2.2	1.6	43.7	4760
1×400	3.4	2.3	1.7	45.5	5900
1×500	3.4	2.4	1.8	49.5	7350
1×630	3.4	2.6	1.9	54.5	8750
3×16	3.4	2.3	1.7	46.0	3300
3×25	3.4	2.4	1.8	50.1	3905
3×35	3.4	2.5	1.8	52.2	4360
3×50	3.4	2.6	1.9	55.1	5185
3×70	3.4	2.7	2.0	58.9	6125
3×95	3.4	2.9	2.1	63.5	7500
3×120	3.4	3.0	2.2	67.6	8775
3×150	3.4	3.2	2.3	71.7	10235
3×185	3.4	3.4	2.4	74.0	11300
3×240	3.4	3.6	2.6	79.5	13300
3×300	3.4	3.8	2.7	85.0	16300

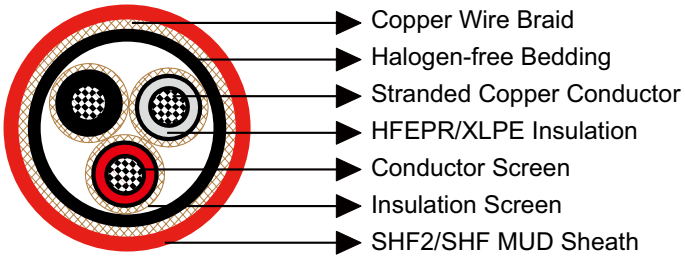
P104 (Formerly P4 or P4/P11) RFOU/TFOU 8.7/15KV

Applications

These cables are flame retardant, low smoke, halogen free and mud resistant, used for fixed installation for medium voltage power.

Standards

- IEC 60092-354
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Conductor Screen:** Semi conducting material.
- **Insulation:** Halogen-free EPR. XLPE.
- **Insulation Screen:** Semi conducting material and tinned copper wire braid.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid in accordance with IEC 60092-350.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (formerlyTYPE P4), or halogen free mud resistant thermosetting compound, SHF MUD (for formerlyTYPE P4/P11), coloured red.

Electrical Characteristics

Nominal Cross Section Area	mm²	25	35	50	70	95	120

Nominal Conductor Diameter	mm	6.5	7.4	8.7	10.3	12.2	13.8
Maximum DC Resistant@20℃	Ω/km	0.734	0.529	0.391	0.27	0.195	0.154
Continuous Current Rating@45℃ 1 Core	A	127	157	196	242	293	339
Continuous Current Rating@45℃ 3 Core	A	89	110	137	169	205	237
Short Circuit Current 1s	A	3580	5010	7150	10020	13590	17170
Operating Voltage	KV	8.7/15	8.7/15	8.7/15	8.7/15	8.7/15	8.7/15

Nominal Cross Section Area	mm²	150	185	240	300	400	500	630
Nominal Conductor Diameter	mm	15.1	17.0	19.6	21.9	24.5	27.5	32.3
Maximum DC Resistant@20℃	Ω/km	0.126	0.1	0.0762	0.0607	0.0475	0.0369	0.0286
Continuous Current Rating@45℃ 1 Core	A	389	444	522	601	690	780	890
Continuous Current Rating@45℃ 3 Core	A	272	311	365	421	483	546	623
Short Circuit Current 1s	A	21460	26470	34340	42930	57230	71540	90140
Operating Voltage	KV	8.7/15	8.7/15	8.7/15	8.7/15	8.7/15	8.7/15	8.7/15

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 15×OD (during installation); 9×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×25	4.5	1.6	1.2	28.4	1305
1×35	4.5	1.6	1.3	29.3	1430
1×50	4.5	1.7	1.3	30.7	1620
1×70	4.5	1.8	1.3	32.4	1900
1×95	4.5	1.8	1.4	34.4	2250
1×120	4.5	1.9	1.5	36.6	2625
1×150	4.5	2.0	1.5	38.1	2940

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×185	4.5	2.0	1.5	40.6	3545
1×240	4.5	2.1	1.6	43.4	4220
1×300	4.5	2.2	1.7	46.3	5070
1×400	4.5	2.4	1.8	50.2	5760
1×500	4.5	2.5	1.8	53.6	6880
1×630	4.5	2.6	1.9	57.9	8460
3×25	4.5	2.6	1.9	55.3	4725
3×35	4.5	2.7	2.0	57.5	5215
3×50	4.5	2.8	2.0	60.6	5960
3×70	4.5	2.9	2.1	64.4	7035
3×95	4.5	3.1	2.2	68.7	8370
3×120	4.5	3.2	2.3	72.7	9745
3×150	4.5	3.4	2.4	76.8	11140
3×185	4.5	3.6	2.6	84.2	13490
3×240	4.5	3.8	2.7	90.6	15860
3×300	4.5	4.0	2.9	96.6	18320

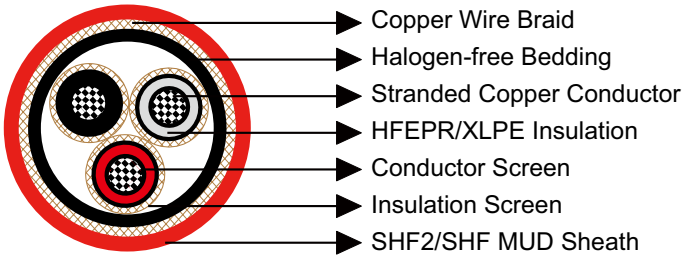
P112 (Formerly P19 or P19/P21) RFOU 12/20KV

Applications

These cables are flame retardant, low smoke, halogen free and mud resistant, used for fixed installation for medium voltage power.

Standards

- IEC 60092-354
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Conductor Screen:** Semi conducting material.
- **Insulation:** Halogen-free EPR. XLPE can be offered as an option (for TFOU cable).
- **Insulation Screen:** Semi conducting material and tinned copper wire braid.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid in accordance with IEC 60092-350.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (formerly TYPE P19), or halogen free mud resistant thermosetting compound, SHF MUD (for formerly TYPE P19/P21), coloured red.

Optional

P113 (Formerly P20 or P20/P22) RFOU/TFOU 18/30(36) kV

Electrical Characteristics

Nominal Cross Section Area	mm²	16	25	35	50	70	95
Nominal Conductor Diameter	mm	5.2	6.5	7.4	8.7	10.3	12.2
Maximum DC Resistant@20℃	Ω/km	1.16	0.734	0.529	0.391	0.27	0.195
Continuous Current Rating@45℃ 1 Core	A	96	127	157	196	242	293
Continuous Current Rating@45℃ 3 Core	A	67	89	110	137	169	205
Short Circuit Current 1s	A	2290	3580	5010	7150	10020	13590
Operating Voltage	KV	12/20	12/20	12/20	12/20	12/20	12/20

Nominal Cross Section Area	mm²	120	150	185	240	300
Nominal Conductor Diameter	mm	13.8	15.1	17.0	19.6	21.9
Maximum DC Resistant@20℃	Ω/km	0.154	0.126	0.1	0.0762	0.0607
Continuous Current Rating@45℃ 1 Core	A	339	389	444	522	601
Continuous Current Rating@45℃ 3 Core	A	237	272	311	365	421
Short Circuit Current 1s	A	17170	21460	26470	34340	42930
Operating Voltage	KV	12/20	12/20	12/20	12/20	12/20

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 15×OD (during installation); 9×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×16	5.5	1.4	1.2	28	1200
1×25	5.5	1.5	1.2	31.6	1530
1×35	5.5	1.8	1.3	32.3	1595

Medium Voltage Power Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×50	5.5	1.8	1.4	33.8	1795
1×70	5.5	1.9	1.4	34.6	2070
1×95	5.5	2.0	1.5	37.0	2470
1×120	5.5	2.0	1.5	38.8	2810
1×150	5.5	2.1	1.6	40.7	3245
1×185	5.5	2.2	1.6	42.9	3765
1×240	5.5	2.3	1.7	45.8	4510
1×300	5.5	2.4	1.8	48.5	5315
3×16	5.5	1.8	2.0	55.5	4950
3×25	5.5	1.9	2.0	62.2	5705
3×35	5.5	2.9	2.1	62.6	5990
3×50	5.5	3.0	2.2	65.4	6740
3×70	5.5	3.1	2.3	69.1	7790
3×95	5.5	3.3	2.4	73.0	9150
3×120	5.5	3.4	2.5	77.4	10580
3×150	5.5	3.6	2.6	81.9	12145
3×185	5.5	3.8	2.7	89.5	12265
3×240	5.5	4.0	2.9	96.1	14725
3×300	5.5	4.2	3.0	101.9	17190

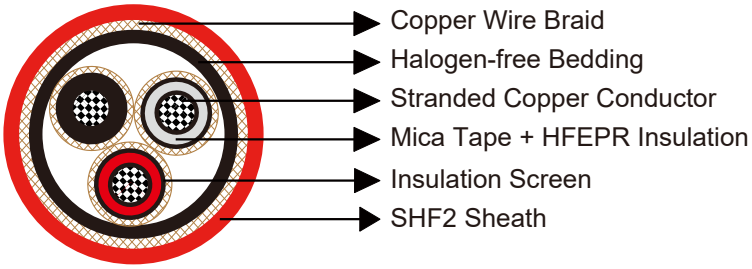
P106 (Formerly P6 or P6/P13) BFOU 3.6/6kV

Applications

These cables are fire resistant, flame retardant, low smoke, halogen free and mud resistant, used for fixed installation for medium voltage power.

Standards

- IEC 60092-354
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR.
- **Insulation Screen:** Semi conducting material and tinned copper wire braid.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid in accordance with IEC 60092-350.

Outer Sheath: Halogen free thermosetting compound, SHF2 (formerly TYPE P6), or halogen free mud resistant thermosetting compound, SHF MUD (for formerly TYPE P6/P13), coloured red.

Electrical Characteristics

Nominal Cross Section Area	mm²	25	35	50	70	95	120	150

Nominal Conductor Diameter	mm	6.5	7.4	8.7	10.3	12.2	13.8	15.1
Maximum DC Resistant@20℃	Ω/km	0.734	0.529	0.391	0.27	0.195	0.154	0.126
Continuous Current Rating@45℃ 1 Core	A	127	157	196	242	293	339	389
Continuous Current Rating@45℃ 3 Core	A	89	110	137	169	205	237	272
Short Circuit Current 1s	A	3580	5010	7150	10020	13590	17170	21460
Operating Voltage	KV	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6	3.6/6

Nominal Cross Section Area	mm²	185	240	300	400	500	630
Nominal Conductor Diameter	mm	17.0	19.6	21.9	24.5	27.5	32.3
Maximum DC Resistant@20℃	Ω/km	0.1	0.0762	0.0607	0.0475	0.0369	0.0286
Continuous Current Rating@45℃ 1 Core	A	444	522	601	690	780	890
Continuous Current Rating@45℃ 3 Core	A	311	365	421	483	546	623
Short Circuit Current 1s	A	26470	34340	42930	57230	71540	90140
Operating Voltage	KV	3.6/6	3.6/6	3.6/6	8.7/15	8.7/15	8.7/15

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

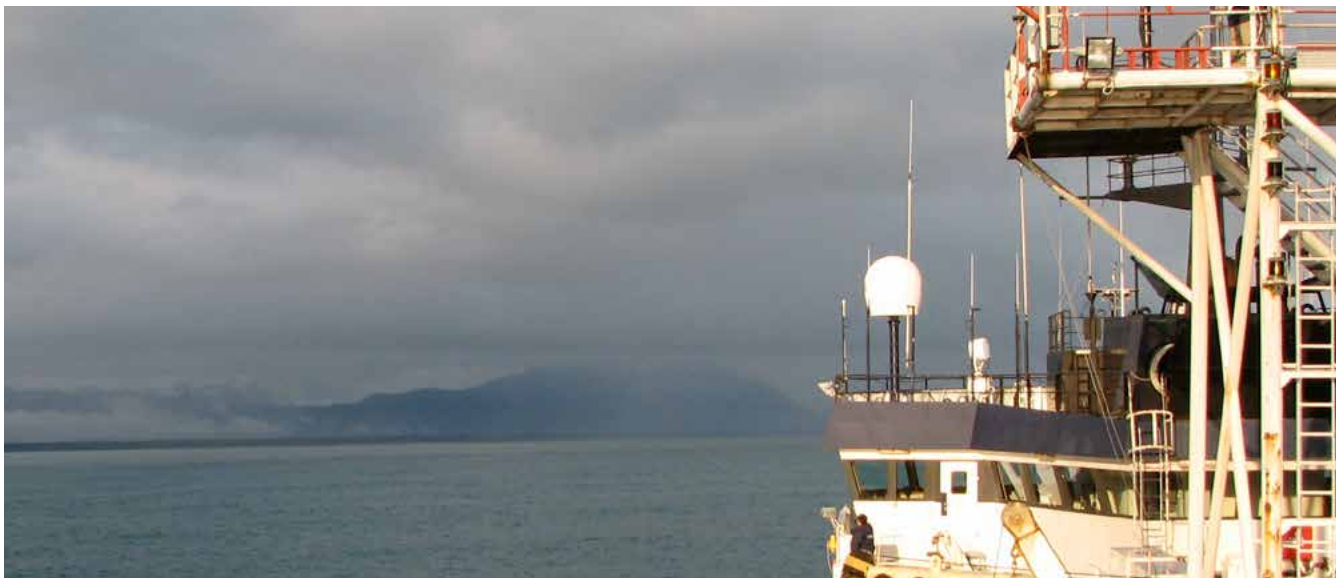
- Bending Radius: 15×OD (during installation); 9×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×16	2.5	1.5	1.2	24.8	950
1×25	2.5	1.6	1.2	26.3	1110
1×35	2.5	1.6	1.2	27.6	1260
1×50	2.5	1.7	1.3	29.1	1460
1×70	2.5	1.7	1.3	30.9	1740
1×95	2.5	1.8	1.4	33.2	2110
1×120	2.5	1.9	1.4	34.9	2430
1×150	2.5	1.9	1.4	36.9	2890

Fire Resistant Medium Voltage Power Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×185	2.5	2.0	1.5	39.1	3370
1×240	2.6	2.1	1.6	42.2	4100
1×300	2.8	2.2	1.6	44.7	4810
1×400	3.0	2.3	1.7	48.1	5810
1×500	3.2	2.5	1.8	52.1	7030
1×630	3.2	2.6	1.9	56.5	8630
3×16	2.5	2.3	1.7	48.2	3550
3×25	2.5	2.5	1.8	51.5	4180
3×35	2.5	2.6	1.9	54.7	4820
3×50	2.5	2.7	1.9	57.4	5490
3×70	2.5	2.8	2.0	61.6	6590
3×95	2.5	3.0	2.1	66.2	7920
3×120	2.5	3.1	2.2	70.1	9150
3×150	2.5	3.3	2.3	74.0	10460
3×185	2.5	3.4	2.4	78.6	12010
3×240	2.6	3.7	2.6	86.3	14690
3×300	2.8	3.9	2.8	92.3	17130



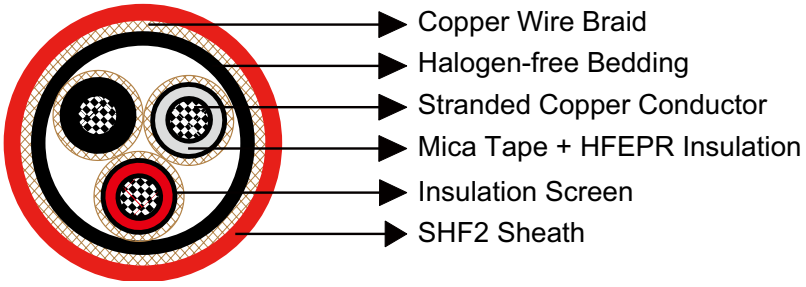
P107 (Formerly P7 or P7/P14) BFOU 6/10kV

Applications

These cables are fire resistant, flame retardant, low smoke, halogen free and mud resistant, used for fixed installation for medium voltage power.

Standards

- IEC 60092-354
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR.
- **Insulation Screen:** Semi conducting material and tinned copper wire braid.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (formerly TYPE P7), or halogen free mud resistant thermosetting compound, SHF MUD (formerly TYPE P7/P14), coloured red.

Electrical Characteristics

Nominal Cross Section Area	mm²	25	35	50	70	95	120	150
Nominal Conductor Diameter	mm	6.5	7.4	8.7	10.3	12.2	13.8	15.1
Maximum DC Resistant@20℃	Ω/km	0.734	0.529	0.391	0.27	0.195	0.154	0.126
Continuous Current Rating@45℃ 1 Core	A	127	157	196	242	293	339	389
Continuous Current Rating@45℃ 3 Core	A	89	110	137	169	205	237	272
Short Circuit Current 1s	A	3580	5010	7150	10020	13590	17170	21460
Operating Voltage	KV	6/10	6/10	6/10	6/10	6/10	6/10	6/10

Nominal Cross Section Area	mm²	185	240	300	400	500	630
Nominal Conductor Diameter	mm	17.0	19.6	21.9	24.5	27.5	32.3
Maximum DC Resistant@20℃	Ω/km	0.1	0.0762	0.0607	0.0475	0.0369	0.0286
Continuous Current Rating@45℃ 1 Core	A	444	522	601	690	780	890
Continuous Current Rating@45℃ 3 Core	A	311	365	421	483	546	623
Short Circuit Current 1s	A	26470	34340	42930	57230	71540	90140
Operating Voltage	KV	6/10	6/10	6/10	8.7/15	8.7/15	8.7/15

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 15×OD (during installation); 9×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×16	3.4	1.5	1.2	25.6	990
1×25	3.4	1.6	1.2	27.1	1150

Fire Resistant Medium Voltage Power Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×35	3.4	1.7	1.2	28.5	1320
1×50	3.4	1.7	1.3	29.9	1500
1×70	3.4	1.8	1.3	31.9	1810
1×95	3.4	1.8	1.4	34.0	2160
1×120	3.4	1.9	1.4	36.1	2610
1×150	3.4	2.0	1.5	38.1	2990
1×185	3.4	2.0	1.5	39.9	3440
1×240	3.4	2.2	1.6	43.1	4180
1×300	3.4	2.3	1.7	45.9	4930
1×400	3.4	2.4	1.7	49.0	5900
1×500	3.4	2.5	1.8	52.5	7070
1×630	3.4	2.7	1.9	57.0	8690
3×16	3.4	2.4	1.8	50.2	3780
3×25	3.4	2.5	1.8	53.2	4380
3×35	3.4	2.6	1.9	56.4	5040
3×50	3.4	2.7	2.0	59.3	5740
3×70	3.4	2.9	2.1	63.7	6900
3×95	3.4	3.1	2.2	68.4	8270
3×120	3.4	3.2	2.3	72.1	9470
3×150	3.4	3.3	2.4	76.0	10800
3×185	3.4	3.5	2.5	80.8	12370
3×240	3.4	3.7	2.7	88.2	15040
3×300	3.4	3.9	2.9	94.0	17450

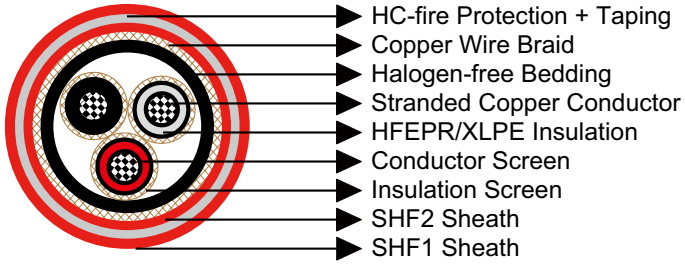
P114 (Formerly P30) RFOU-HCF / TFOU-HCF 6/10(12) kV

Applications

These cables are fire resistant, flame retardant, low smoke and halogen free, used for emergency control, power and lighting systems that need to be operational during a 1100℃ hydrocarbon fire.

Standards

- IEC 60092-354
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper to IEC 60228 class 2 or class 5.
- **Conductor Screen:** Semi conducting material.
- **Insulation:** Halogen-free EPR or XLPE.
- **Insulation Screen:** Semi conducting material and tinned copper wire braid.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath1:** Halogen free thermosetting compound, SHF2, coloured red.
- **HC-fire protection:** Extruded thermoplastic fire protection compound.
- **Taping:** Lapped glass fibre tape.
- **Outer Sheath2:** Flame retardant halogen-free thermoplastic compound, SHF1, coloured red.

Optional

P115 (Formerly P31) RFOU-HCF / TFOU-HCF 8.7/15kV
P116 (Formerly P32) RFOU-HCF / TFOU-HCF 12/20(24) kV
P117 (Formerly P33) RFOU-HCF / TFOU-HCF 18/30(36) kV

Electrical Characteristics

Nominal Cross Section Area	mm²	70	95	120	150	185	240	300
Nominal Conductor Diameter	mm	10.3	12.2	13.8	15.1	17.0	19.6	21.9
Maximum DC Resistant@20℃	Ω/km	0.27	0.195	0.154	0.126	0.1	0.0762	0.0607
Continuous Current Rating@45℃ 1 Core	A	242	293	339	389	444	522	601
Continuous Current Rating@45℃ 3 Core	A	169	205	237	272	311	365	421
Short Circuit Current 1s	A	10020	13590	17170	21460	26470	34340	42930
Operating Voltage	KV	6/10	6/10	6/10	6/10	6/10	6/10	6/10

Ambient Temperature Correction Factors

Ambient Temperature Correction Factors	35	40	45	50	55	60	65	70	75	80
Rating Factor	1.1	1.05	1.0	0.94	0.88	0.82	0.74	0.67	0.58	0.47

Mechanical and Thermal Properties

- Bending Radius: 20×OD (during installation); 12×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Diameter Over Bedding mm	Nominal Diameter Over Sheath1 mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×70	3.4	23.5	30.0	62.0	5220
1×95	3.4	25.5	32.0	64.5	5900
1×120	3.4	27.5	34.0	66.5	6340
1×150	3.4	28.5	35.0	67.5	6670

Fire Resistant Medium Voltage Power Cables

Construction No. of cores×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Diameter Over Bedding mm	Nominal Diameter Over Sheath1 mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×185	3.4	30.5	36.5	69.0	7320
1×240	3.4	33.0	39.0	72.0	8250
1×300	3.4	35.0	41.5	74.5	9280
3×50	3.4	47.0	55.0	89.0	10970
3×95	3.4	54.0	62.5	97.0	14230
3×150	3.4	60.0	70.5	106.0	17400

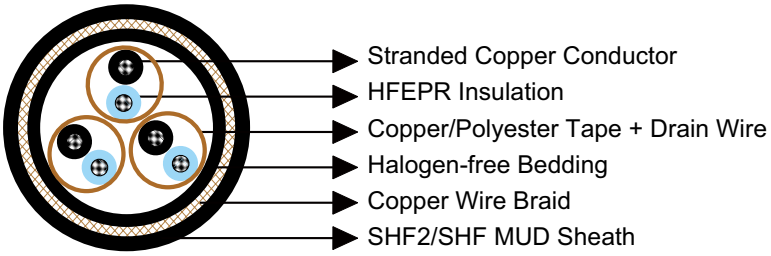
S101 (Formerly S1 or S1/S5) RFOU(i) 250V

Applications

These cables are flame retardant, low smoke, halogen free and mud resistant, used for instrumentation, communication, control and alarm systems.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Halogen free EPR compound or XLPE.
- **Twinning:** Colour coded cores twisted together.
- **Individual Shielding:** Each pairs/triples are screened by copper backed polyester tape in contact with a stranded tinned copper drain wire and wrapped with polyester tape. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (formerly TYPE S1). Halogen free MUD resistant thermosetting compound, SHF MUD (formerly TYPE S1/S5), coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	0.75	1.0	1.5	2.5
Nominal Conductor Diameter	mm	1.1	1.3	1.6	2.0
Maximum Resistant@20℃	Ω/km	26.3	19.3	12.9	8.02
Mutual Capacitance	nF/km	90	100	110	120
Nominal Inductance@1KHz	MH/km	0.686	0.649	0.637	0.598
Maximum L/R@1KHz	μH/Ω	20	25	35	50
Operating Voltage	V	250	250	250	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×2×0.75	0.6	1.1	1.1	10.9	210
2×2×0.75	0.6	1.1	1.3	13.2	325
4×2×0.75	0.6	1.1	1.3	16.2	480
7×2×0.75	0.6	1.1	1.4	19.0	670
8×2×0.75	0.6	1.1	1.4	20.4	755
9×2×0.75	0.6	1.1	1.5	22.6	835
10×2×0.75	0.6	1.1	1.5	23.5	875
12×2×0.75	0.6	1.1	1.5	24.1	1010
14×2×0.75	0.6	1.1	1.6	25.3	1040
15×2×0.75	0.6	1.1	1.6	26.9	1120
16×2×0.75	0.6	1.1	1.6	27.3	1165
18×2×0.75	0.6	1.1	1.7	28.7	1270
19×2×0.75	0.6	1.1	1.7	29.0	1360
20×2×0.75	0.6	1.1	1.7	30.1	1420
21×2×0.75	0.6	1.1	1.8	31.0	1490
23×2×0.75	0.6	1.1	1.8	31.5	1595
24×2×0.75	0.6	1.2	1.8	33.4	1720
27×2×0.75	0.6	1.2	1.9	34.0	1770
30×2×0.75	0.6	1.2	1.9	35.1	1910

Instrumentation Cables

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
32×2×0.75	0.6	1.2	2.0	36.1	2060
33×2×0.75	0.6	1.2	2.0	36.9	2160
37×2×0.75	0.6	1.2	2.0	38.0	2330
1×3×0.75	0.6	1.1	1.2	11.3	225
2×3×0.75	0.6	1.1	1.3	16.4	490
3×3×0.75	0.6	1.1	1.4	17.2	520
4×3×0.75	0.6	1.1	1.4	18.5	610
5×3×0.75	0.6	1.1	1.5	19.8	720
6×3×0.75	0.6	1.1	1.5	21.7	835
7×3×0.75	0.6	1.1	1.5	21.7	870
8×3×0.75	0.6	1.1	1.6	23.5	950
9×3×0.75	0.6	1.1	1.6	24.6	1065
10×3×0.75	0.6	1.1	1.7	26.4	1095
12×3×0.75	0.6	1.1	1.7	27.3	1275
14×3×0.75	0.6	1.1	1.8	28.5	1320
15×3×0.75	0.6	1.1	1.8	29.3	1395
16×3×0.75	0.6	1.1	1.8	30.1	1465
18×3×0.75	0.6	1.1	1.9	31.6	1600
19×3×0.75	0.6	1.1	1.9	31.9	1655
20×3×0.75	0.6	1.2	2.0	33.2	1820
21×3×0.75	0.6	1.2	2.0	33.8	1890
23×3×0.75	0.6	1.2	2.0	35.1	2050
24×3×0.75	0.6	1.2	2.0	36.0	2220
27×3×0.75	0.6	1.2	2.1	37.9	2335
30×3×0.75	0.6	1.2	2.2	39.7	2555
32×3×0.75	0.6	1.2	2.2	40.7	2690
1×2×1.0	0.6	1.1	1.2	11.4	230
2×2×1.0	0.6	1.1	1.3	14.5	370
3×2×1.0	0.6	1.1	1.3	16.6	515
4×2×1.0	0.6	1.1	1.4	17.4	595
5×2×1.0	0.6	1.1	1.4	19.1	685
6×2×1.0	0.6	1.1	1.5	20.7	790
7×2×1.0	0.6	1.1	1.5	20.7	820
8×2×1.0	0.6	1.1	1.6	21.6	875
9×2×1.0	0.6	1.1	1.6	23.8	995
10×2×1.0	0.6	1.1	1.6	24.8	1010
12×2×1.0	0.6	1.1	1.7	25.6	1195
14×2×1.0	0.6	1.1	1.7	26.7	1210
15×2×1.0	0.6	1.1	1.8	28.5	1320
16×2×1.0	0.6	1.1	1.8	29.0	1375
18×2×1.0	0.6	1.1	1.9	30.5	1500
19×2×1.0	0.6	1.1	1.9	30.8	1555

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
20×2×1.0	0.6	1.1	1.9	31.9	1680
21×2×1.0	0.6	1.2	2.0	33.3	1790
23×2×1.0	0.6	1.2	2.0	33.7	1920
24×2×1.0	0.6	1.2	2.0	35.2	2015
27×2×1.0	0.6	1.2	2.1	36.5	2185
30×2×1.0	0.6	1.2	2.1	37.7	2365
33×2×1.0	0.6	1.2	2.2	39.2	2570
37×2×1.0	0.6	1.2	2.2	40.4	2775
1×3×1.0	0.6	1.1	1.2	11.8	250
2×3×1.0	0.6	1.1	1.4	17.3	555
3×3×1.0	0.6	1.1	1.4	17.9	590
4×3×1.0	0.6	1.1	1.4	19.4	700
5×3×1.0	0.6	1.1	1.5	20.7	825
6×3×1.0	0.6	1.1	1.6	23.0	975
7×3×1.0	0.6	1.1	1.6	23.0	990
8×3×1.0	0.6	1.1	1.6	24.4	1095
9×3×1.0	0.6	1.1	1.7	26.4	1245
10×3×1.0	0.6	1.1	1.8	28.0	1265
12×3×1.0	0.6	1.1	1.8	28.9	1500
14×3×1.0	0.6	1.1	1.8	30.0	1545
15×3×1.0	0.6	1.1	1.9	31.1	1655
16×3×1.0	0.6	1.1	1.9	31.8	1870
18×3×1.0	0.6	1.2	2.0	33.9	1935
19×3×1.0	0.6	1.2	2.0	34.2	2040
20×3×1.0	0.6	1.2	2.0	35.1	2150
21×3×1.0	0.6	1.2	2.1	35.9	2245
23×3×1.0	0.6	1.2	2.1	37.6	2525
24×3×1.0	0.6	1.2	2.1	38.7	2685
27×3×1.0	0.6	1.2	2.2	40.3	2785
30×3×1.0	0.6	1.2	2.3	42.1	3050
32×3×1.0	0.6	1.2	2.3	43.2	3215
1×2×1.5	0.7	1.1	1.2	12.4	270
2×2×1.5	0.7	1.1	1.4	15.8	495
3×2×1.5	0.7	1.1	1.4	17.9	640
4×2×1.5	0.7	1.1	1.5	19.5	715
5×2×1.5	0.7	1.1	1.5	21.5	850
6×2×1.5	0.7	1.1	1.6	23.3	990
7×2×1.5	0.7	1.1	1.6	23.3	1030
8×2×1.5	0.7	1.1	1.7	24.8	1130
9×2×1.5	0.7	1.1	1.7	26.9	1230
10×2×1.5	0.7	1.1	1.8	28.2	1270
12×2×1.5	0.7	1.1	1.8	29.3	1375

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
14×2×1.5	0.7	1.1	1.8	30.2	1520
15×2×1.5	0.7	1.2	1.9	32.7	1685
16×2×1.5	0.7	1.2	2.0	33.4	1775
18×2×1.5	0.7	1.2	2.0	35.0	1920
19×2×1.5	0.7	1.2	2.0	35.3	1990
20×2×1.5	0.7	1.2	2.1	37.2	2255
21×2×1.5	0.7	1.2	2.1	38.2	2345
23×2×1.5	0.7	1.2	2.2	39.0	2540
24×2×1.5	0.7	1.2	2.2	40.7	2610
27×2×1.5	0.7	1.2	2.3	41.7	2775
30×2×1.5	0.7	1.2	2.3	43.1	3005
33×2×1.5	0.7	1.4	2.4	45.1	3480
37×2×1.5	0.7	1.4	2.5	46.7	3600
1×3×1.5	0.7	1.1	1.2	13.0	300
2×3×1.5	0.7	1.1	1.4	17.5	510
3×3×1.5	0.7	1.1	1.5	20.1	740
4×3×1.5	0.7	1.1	1.5	21.8	870
5×3×1.5	0.7	1.1	1.6	23.3	1045
6×3×1.5	0.7	1.1	1.7	25.9	1230
7×3×1.5	0.7	1.1	1.7	26.0	1265
8×3×1.5	0.7	1.1	1.8	27.8	1405
9×3×1.5	0.7	1.1	1.8	29.5	1585
10×3×1.5	0.7	1.1	1.9	31.8	1680
12×3×1.5	0.7	1.2	2.0	33.1	1950
14×3×1.5	0.7	1.2	2.0	34.6	2020
15×3×1.5	0.7	1.2	2.0	35.6	2145
16×3×1.5	0.7	1.2	2.1	36.6	2450
18×3×1.5	0.7	1.2	2.2	39.2	2580
19×3×1.5	0.7	1.2	2.2	39.5	2675
20×3×1.5	0.7	1.2	2.2	40.5	2875
21×3×1.5	0.7	1.2	2.3	41.5	3000
23×3×1.5	0.7	1.2	2.3	43.0	3260
24×3×1.5	0.7	1.4	2.4	44.9	3310
27×3×1.5	0.7	1.4	2.4	46.4	3635
30×3×1.5	0.7	1.4	2.5	48.5	3980
32×3×1.5	0.7	1.4	2.6	50.0	4225
1×2×2.5	0.7	1.1	1.2	13.3	320
2×2×2.5	0.7	1.1	1.4	17.5	530
3×2×2.5	0.7	1.1	1.5	20.2	780
4×2×2.5	0.7	1.1	1.5	21.5	900
5×2×2.5	0.7	1.1	1.6	23.4	1060
6×2×2.5	0.7	1.1	1.7	25.4	1235

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
7×2×2.5	0.7	1.1	1.7	25.4	1290
8×2×2.5	0.7	1.1	1.7	27.5	1400
9×2×2.5	0.7	1.1	1.8	29.4	1495
10×2×2.5	0.7	1.1	1.9	30.9	1595
12×2×2.5	0.7	1.1	1.9	31.6	1755
14×2×2.5	0.7	1.2	2.0	33.6	1990
15×2×2.5	0.7	1.2	2.1	36.0	2165
16×2×2.5	0.7	1.2	2.1	36.9	2350
18×2×2.5	0.7	1.2	2.2	38.9	2565
19×2×2.5	0.7	1.2	2.2	39.3	2665
20×2×2.5	0.7	1.2	2.2	40.8	2880
21×2×2.5	0.7	1.2	2.3	42.1	3020
23×2×2.5	0.7	1.2	2.3	42.7	3255
24×2×2.5	0.7	1.4	2.4	45.2	3330
27×2×2.5	0.7	1.4	2.4	46.1	3615
30×2×2.5	0.7	1.4	2.5	47.8	3950
33×2×2.5	0.7	1.4	2.6	49.7	4300
37×2×2.5	0.7	1.4	2.6	51.2	4670
1×3×2.5	0.7	1.1	1.3	13.9	355
2×3×2.5	0.7	1.1	1.5	20.9	840
3×3×2.5	0.7	1.1	1.5	21.6	945
4×3×2.5	0.7	1.1	1.6	23.3	1115
5×3×2.5	0.7	1.1	1.7	25.4	1315
6×3×2.5	0.7	1.1	1.8	28.3	1555
7×3×2.5	0.7	1.1	1.8	28.3	1640
8×3×2.5	0.7	1.1	1.8	30.2	1780
9×3×2.5	0.7	1.2	1.9	32.6	2055
10×3×2.5	0.7	1.2	2.0	35.1	2080
12×3×2.5	0.7	1.2	2.1	36.8	2435
14×3×2.5	0.7	1.2	2.1	38.3	2700
15×3×2.5	0.7	1.2	2.2	39.7	2895
16×3×2.5	0.7	1.2	2.2	40.8	3050
18×3×2.5	0.7	1.2	2.3	42.9	3335
19×3×2.5	0.7	1.2	2.3	43.3	3470
20×3×2.5	0.7	1.4	2.4	44.9	3785
21×3×2.5	0.7	1.4	2.4	45.8	3935
23×3×2.5	0.7	1.4	2.5	47.7	4150
24×3×2.5	0.7	1.4	2.5	48.6	4300
27×3×2.5	0.7	1.4	2.6	51.1	4765
30×3×2.5	0.7	1.4	2.7	53.5	5235
32×3×2.5	0.7	1.6	2.8	55.5	5620

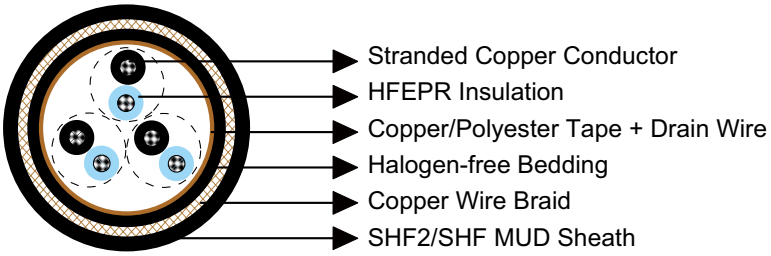
S102 (Formerly S2 or S2/S6) RFOU(c) 250V

Applications

These cables are flame retardant, low smoke, halogen free and mud resistant, used for instrumentation, communication, control and alarm systems.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Halogen free EPR compound or XLPE.
- **Twinning:** Colour coded cores twisted together.
- **Collective Shielding:** Pairs/triples are layed up and collectively screened by copper backed polyester tape in contact with a stranded tinned copper drain wire. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (formerly TYPE S2). Halogen free MUD resistant thermosetting compound, SHF MUD (formerly TYPE S2/S6), coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	0.75	1.0	1.5	2.5
Nominal Conductor Diameter	mm	1.1	1.3	1.6	2.0
Maximum Resistant@20℃	Ω/km	26.3	19.3	12.9	8.02
Mutual Capacitance	nF/km	80	90	100	110
Nominal Inductance@1KHz	MH/km	0.682	0.645	0.632	0.593
Maximum L/R@1KHz	μH/Ω	20	25	35	50
Operating Voltage	V	250	250	250	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×2×0.75	0.6	1.1	1.1	11.1	200
2×2×0.75	0.6	1.1	1.3	15.0	295
3×2×0.75	0.6	1.1	1.3	15.6	355
4×2×0.75	0.6	1.1	1.3	16.4	390
5×2×0.75	0.6	1.1	1.4	17.8	540
6×2×0.75	0.6	1.1	1.4	19.1	610
7×2×0.75	0.6	1.1	1.4	19.1	625
8×2×0.75	0.6	1.1	1.5	20.7	680
9×2×0.75	0.6	1.1	1.5	21.8	745
10×2×0.75	0.6	1.1	1.6	22.9	760
12×2×0.75	0.6	1.1	1.6	23.4	810
14×2×0.75	0.6	1.1	1.6	24.5	875
15×2×0.75	0.6	1.1	1.7	26.1	960
16×2×0.75	0.6	1.1	1.7	26.5	1010
18×2×0.75	0.6	1.1	1.8	27.9	1080
19×2×0.75	0.6	1.1	1.8	28.2	1115
20×2×0.75	0.6	1.1	1.8	29.2	1210
21×2×0.75	0.6	1.1	1.8	30.0	1255
23×2×0.75	0.6	1.1	1.9	30.6	1355
24×2×0.75	0.6	1.1	1.9	31.9	1370

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
27×2×0.75	0.6	1.2	1.9	32.9	1480
30×2×0.75	0.6	1.2	2.0	34.1	1605
33×2×0.75	0.6	1.2	2.0	35.3	1725
37×2×0.75	0.6	1.2	2.1	36.9	1950
1×3×0.75	0.6	1.1	1.2	11.7	230
2×3×0.75	0.6	1.1	1.3	14.5	360
3×3×0.75	0.6	1.1	1.3	16.2	415
4×3×0.75	0.6	1.1	1.4	17.6	540
5×3×0.75	0.6	1.1	1.4	19.1	645
6×3×0.75	0.6	1.1	1.5	21.1	755
7×3×0.75	0.6	1.1	1.5	21.1	780
8×3×0.75	0.6	1.1	1.6	22.6	845
9×3×0.75	0.6	1.1	1.6	23.9	945
10×3×0.75	0.6	1.1	1.7	25.7	960
12×3×0.75	0.6	1.1	1.7	26.4	1080
14×3×0.75	0.6	1.1	1.7	27.5	1150
15×3×0.75	0.6	1.1	1.8	28.5	1230
16×3×0.75	0.6	1.1	1.8	29.2	1310
18×3×0.75	0.6	1.1	1.9	30.7	1405
19×3×0.75	0.6	1.1	1.9	31.0	1475
20×3×0.75	0.6	1.1	1.9	31.8	1560
21×3×0.75	0.6	1.2	1.9	32.7	1640
23×3×0.75	0.6	1.2	2.0	34.1	1795
24×3×0.75	0.6	1.2	2.0	34.6	1830
27×3×0.75	0.6	1.2	2.1	36.8	2040
30×3×0.75	0.6	1.2	2.1	38.3.	2210
32×3×0.75	0.6	1.2	2.2	39.5	2345
1×2×1.0	0.6	1.1	1.2	11.7	225
2×2×1.0	0.6	1.1	1.3	13.4	335
3×2×1.0	0.6	1.1	1.3	16.3	470
4×2×1.0	0.6	1.1	1.4	17.4	535
5×2×1.0	0.6	1.1	1.4	18.7	610
6×2×1.0	0.6	1.1	1.5	20.2	700
7×2×1.0	0.6	1.1	1.5	20.2	720
8×2×1.0	0.6	1.1	1.5	21.8	775
9×2×1.0	0.6	1.1	1.6	23.2	850
10×2×1.0	0.6	1.1	1.6	24.1	880
12×2×1.0	0.6	1.1	1.6	24.7	980
14×2×1.0	0.6	1.1	1.7	26.0	1030
15×2×1.0	0.6	1.1	1.8	27.8	1125
16×2×1.0	0.6	1.1	1.8	28.2	1175
18×2×1.0	0.6	1.1	1.8	29.5	1255
19×2×1.0	0.6	1.1	1.8	29.8	1295

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
20×2×1.0	0.6	1.1	1.9	31.1	1420
21×2×1.0	0.6	1.1	1.9	31.9	1475
23×2×1.0	0.6	1.2	1.9	32.7	1610
24×2×1.0	0.6	1.2	2.0	34.3	1620
27×2×1.0	0.6	1.2	2.0	35.0	1745
30×2×1.0	0.6	1.2	2.1	36.7	1980
33×2×1.0	0.6	1.2	2.1	38.0	2130
37×2×1.0	0.6	1.2	2.2	39.3	2305
1×3×1.0	0.6	1.1	1.2	12.0	250
2×3×1.0	0.6	1.1	1.4	17.0	520
3×3×1.0	0.6	1.1	1.4	17.4	540
4×3×1.0	0.6	1.1	1.4	18.7	625
5×3×1.0	0.6	1.1	1.5	20.2	745
6×3×1.0	0.6	1.1	1.6	22.4	875
7×3×1.0	0.6	1.1	1.6	22.4	905
8×3×1.0	0.6	1.1	1.6	23.8	980
9×3×1.0	0.6	1.1	1.7	25.4	1080
10×3×1.0	0.6	1.1	1.7	27.1	1150
12×3×1.0	0.6	1.1	1.8	28.1	1265
14×3×1.0	0.6	1.1	1.8	29.2	1355
15×3×1.0	0.6	1.1	1.8	30.1	1440
16×3×1.0	0.6	1.1	1.9	31.1	1570
18×3×1.0	0.6	1.2	1.9	32.8	1675
19×3×1.0	0.6	1.2	2.0	33.3	1750
20×3×1.0	0.6	1.2	2.0	34.1	1880
21×3×1.0	0.6	1.2	2.0	34.8	1950
23×3×1.0	0.6	1.2	2.1	36.6	2215
24×3×1.0	0.6	1.2	2.1	37.3	2200
27×3×1.0	0.6	1.2	2.2	39.2	2425
30×3×1.0	0.6	1.2	2.2	40.8	2630
32×3×1.0	0.6	1.2	2.3	42.1	2790
1×2×1.5	0.7	1.1	1.2	12.7	260
2×2×1.5	0.7	1.1	1.4	15.4	420
3×2×1.5	0.7	1.1	1.4	17.6	585
4×2×1.5	0.7	1.1	1.4	18.8	635
5×2×1.5	0.7	1.1	1.5	21.1	770
6×2×1.5	0.7	1.1	1.6	22.8	890
7×2×1.5	0.7	1.1	1.6	22.8	925
8×2×1.5	0.7	1.1	1.6	23.7	975
9×2×1.5	0.7	1.1	1.7	26.3	1060
10×2×1.5	0.7	1.1	1.7	27.4	1130
12×2×1.5	0.7	1.1	1.8	28.3	1270
14×2×1.5	0.7	1.1	1.8	29.5	1325

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
15×2×1.5	0.7	1.1	1.9	31.6	1445
16×2×1.5	0.7	1.1	1.9	32.1	1575
18×2×1.5	0.7	1.2	2.0	34.2	1670
19×2×1.5	0.7	1.2	2.0	34.5	1765
20×2×1.5	0.7	1.2	2.1	36.0	1895
21×2×1.5	0.7	1.2	2.1	37.3	2050
23×2×1.5	0.7	1.2	2.1	37.9	2185
24×2×1.5	0.7	1.2	2.2	39.8	2200
27×2×1.5	0.7	1.2	2.2	40.6	2390
30×2×1.5	0.7	1.2	2.3	42.1	2600
33×2×1.5	0.7	1.2	2.3	43.6	2805
37×2×1.5	0.7	1.4	2.4	45.4	3080
1×3×1.5	0.7	1.1	1.2	13.2	295
2×3×1.5	0.7	1.1	1.4	17.0	490
3×3×1.5	0.7	1.1	1.5	19.5	685
4×3×1.5	0.7	1.1	1.5	20.9	785
5×3×1.5	0.7	1.1	1.6	21.0	820
6×3×1.5	0.7	1.1	1.7	22.8	960
7×3×1.5	0.7	1.1	1.7	25.1	1135
8×3×1.5	0.7	1.1	1.7	27.0	1270
9×3×1.5	0.7	1.1	1.8	28.9	1445
10×3×1.5	0.7	1.1	1.9	31.1	1450
12×3×1.5	0.7	1.1	1.9	31.5	1710
14×3×1.5	0.7	1.2	2.0	33.8	1815
15×3×1.5	0.7	1.2	2.0	34.8	1930
16×3×1.5	0.7	1.2	2.1	36.0	2110
18×3×1.5	0.7	1.2	2.1	38.1	2305
19×3×1.5	0.7	1.2	2.2	38.6	2375
20×3×1.5	0.7	1.2	2.2	39.6	2580
21×3×1.5	0.7	1.2	2.2	40.4	2680
23×3×1.5	0.7	1.2	2.3	42.0	2925
24×3×1.5	0.7	1.2	2.3	42.7	3140
27×3×1.5	0.7	1.4	2.4	45.3	3250
30×3×1.5	0.7	1.4	2.5	47.4	3555
32×3×1.5	0.7	1.4	2.5	48.6	3745
1×2×2.5	0.7	1.1	1.2	13.5	300
2×2×2.5	0.7	1.1	1.4	18.9	650
3×2×2.5	0.7	1.1	1.5	19.9	720
4×2×2.5	0.7	1.1	1.5	21.1	820
5×2×2.5	0.7	1.1	1.6	23.0	965
6×2×2.5	0.7	1.1	1.6	24.8	1105
7×2×2.5	0.7	1.1	1.6	24.8	1150
8×2×2.5	0.7	1.1	1.7	27.0	1255

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
9×2×2.5	0.7	1.1	1.8	28.8	1385
10×2×2.5	0.7	1.1	1.8	30.0	1430
12×2×2.5	0.7	1.3	1.9	31.0	1545
14×2×2.5	0.7	1.2	1.9	32.7	1730
15×2×2.5	0.7	1.2	2.0	35.0	1885
16×2×2.5	0.7	1.2	2.0	35.6	1970
18×2×2.5	0.7	1.2	2.1	37.9	2235
19×2×2.5	0.7	1.2	2.1	38.3	2315
20×2×2.5	0.7	1.2	2.2	39.9	2530
21×2×2.5	0.7	1.2	2.2	41.0	2630
23×2×2.5	0.7	1.2	2.3	41.8	2750
24×2×2.5	0.7	1.2	2.3	43.7	2850
27×2×2.5	0.7	1.4	2.4	45.1	3150
30×2×2.5	0.7	1.4	2.5	46.8	3435
33×2×2.5	0.7	1.4	2.5	48.5	3715
37×2×2.5	0.7	1.4	2.6	50.2	4040
1×3×2.5	0.7	1.1	1.3	14.3	360
2×3×2.5	0.7	1.1	1.5	20.5	785
3×3×2.5	0.7	1.1	1.5	21.2	875
4×3×2.5	0.7	1.1	1.6	22.9	1035
5×3×2.5	0.7	1.1	1.6	24.8	1205
6×3×2.5	0.7	1.1	1.8	27.8	1430
7×3×2.5	0.7	1.1	1.8	27.8	1505
8×3×2.5	0.7	1.1	1.8	29.6	1625
9×3×2.5	0.7	1.1	1.9	31.7	1855
10×3×2.5	0.7	1.2	2.0	34.4	1890
12×3×2.5	0.7	1.2	2.0	35.5	2110
14×3×2.5	0.7	1.2	2.1	37.6	2445
15×3×2.5	0.7	1.2	2.2	38.9	2620
16×3×2.5	0.7	1.2	2.2	40.0	2755
18×3×2.5	0.7	1.2	2.3	42.0	3010
19×3×2.5	0.7	1.2	2.3	42.4	3125
20×3×2.5	0.7	1.2	2.3	43.5	3360
21×3×2.5	0.7	1.4	2.4	44.9	3555
23×3×2.5	0.7	1.4	2.5	46.7	3885
24×3×2.5	0.7	1.4	2.5	47.5	3870
27×3×2.5	0.7	1.4	2.6	50.0	4280
30×3×2.5	0.7	1.4	2.7	52.3	4695
32×3×2.5	0.7	1.4	2.7	53.8	4960

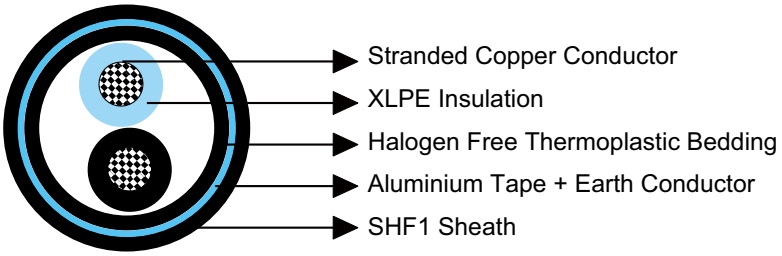
P109 TFLI (Formerly P16 IFLI) 250 V

Applications

These cables are flame retardant, low smoke and halogen free, used for living, quarter and office areas.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular stranded copper wire to IEC 60228 class 2.
- **Insulation:** XLPE.
- **Bedding:** Halogen free thermoplastic compound.
- **Metal Screen:** Longitudinal aluminium tape, thickness 0.2 mm in contact with a stranded copper earth conductor.
- **Outer Sheath:** Halogen free thermoplastic compound, SHF1, coloured grey.

Electrical Characteristics

Nominal Cross Section Area	mm²	2.5
Maximum Resistant@20℃	Ω/km	7.41
Continuous Current Rating@45℃ 2 Core	A	26
Short Circuit Current 1s	A	360
Operating Voltage	V	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
2×1×2.5	0.7	1.1	1.2	10.0	180

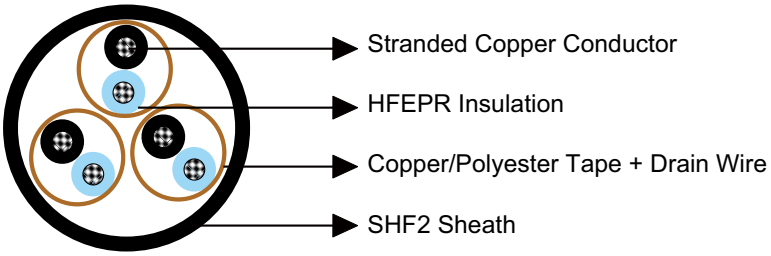
S105 (Formerly S11) RU(i)/TU(i) 250 V

Applications

These unarmoured cables are flame retardant, low smoke and halogen free, used for instrumentation, communication, control and alarm systems.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Halogen free EPR compound or XLPE.
- **Twinning:** Colour coded cores twisted together.
- **Individual Shielding:** Each pairs/triples are screened by copper backed polyester tape in contact with a stranded tinned copper drain wire and wrapped with polyester tape. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2, coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	0.75	1.0	1.5	2.5
Nominal Conductor Diameter	mm	1.1	1.3	1.6	2.0

Maximum Resistant@20℃	Ω/km	26.3	19.3	12.9	8.02
Mutual Capacitance	nF/km	90	100	110	120
Nominal Inductance@1KHz	MH/km	0.686	0.649	0.637	0.598
Maximum L/R@1KHz	μH/Ω	20	25	35	50
Operating Voltage	V	250	250	250	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

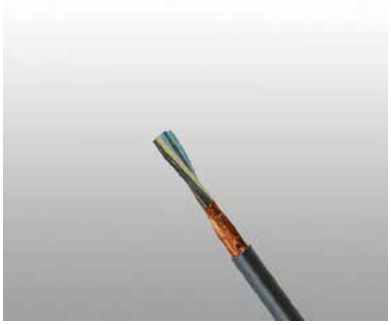
Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×2×0.75	0.6	1.0	7.6	95
2×2×0.75	0.6	1.1	9.7	180
4×2×0.75	0.6	1.2	12.1	255
7×2×0.75	0.6	1.3	14.4	380
8×2×0.75	0.6	1.3	15.6	425
12×2×0.75	0.6	1.5	19.0	610
16×2×0.75	0.6	1.5	21.0	785
19×2×0.75	0.6	1.6	22.4	895
24×2×0.75	0.6	1.7	25.6	1135
32×2×0.75	0.6	1.8	28.4	1440
1×3×0.75	0.6	1.0	8.0	110
2×3×0.75	0.6	1.2	11.0	180
3×3×0.75	0.6	1.2	12.7	265
4×3×0.75	0.6	1.2	13.8	325
7×3×0.75	0.6	1.4	16.7	500
8×3×0.75	0.6	1.4	18.0	540
12×3×0.75	0.6	1.6	22.2	815
16×3×0.75	0.6	1.6	24.7	1045
19×3×0.75	0.6	1.7	26.2	1205
24×3×0.75	0.6	1.9	30.5	1545
1×2×1.0	0.6	1.0	8.1	110
2×2×1.0	0.6	1.1	10.4	215
4×2×1.0	0.6	1.2	12.9	310
7×2×1.0	0.6	1.4	15.5	475
8×2×1.0	0.6	1.4	17.0	540

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
12×2×1.0	0.6	1.5	20.5	760
16×2×1.0	0.6	1.5	22.9	995
19×2×1.0	0.6	1.7	24.1	1135
24×2×1.0	0.6	1.8	27.8	1450
32×2×1.0	0.6	1.9	30.8	1850
1×3×1.0	0.6	1.0	8.5	125
3×3×1.0	0.6	1.3	13.4	320
4×3×1.0	0.6	1.3	14.8	395
7×3×1.0	0.6	1.5	17.9	615
12×3×1.0	0.6	1.6	23.7	990
16×3×1.0	0.6	1.7	26.5	1295
19×3×1.0	0.6	1.8	28.0	1475
24×3×1.0	0.6	2.0	32.6	1900
1×2×1.5	0.7	1.0	9.1	140
2×2×1.5	0.7	1.2	11.7	280
4×2×1.5	0.7	1.3	14.9	410
7×2×1.5	0.7	1.5	18.0	635
8×2×1.5	0.7	1.5	19.7	720
12×2×1.5	0.7	1.6	23.8	1015
16×2×1.5	0.7	1.6	26.6	1330
19×2×1.5	0.7	1.9	28.3	1525
24×2×1.5	0.7	2.0	32.6	1945
32×2×1.5	0.7	2.2	36.1	2475
1×3×1.5	0.7	1.0	9.5	160
2×3×1.5	0.7	1.3	14.0	285
3×3×1.5	0.7	1.3	15.5	425
4×3×1.5	0.7	1.3	17.0	525
7×3×1.5	0.7	1.6	20.9	830
8×3×1.5	0.7	1.6	22.5	900
12×3×1.5	0.7	1.8	27.6	1340
16×3×1.5	0.7	1.9	31.1	1770
19×3×1.5	0.7	2.0	32.8	2020
24×3×1.5	0.7	2.2	38.4	2610
1×2×2.5	0.7	1.0	9.8	175
1×3×2.5	0.7	1.2	10.4	205

S106 (Formerly S12) RU(c) 250 V

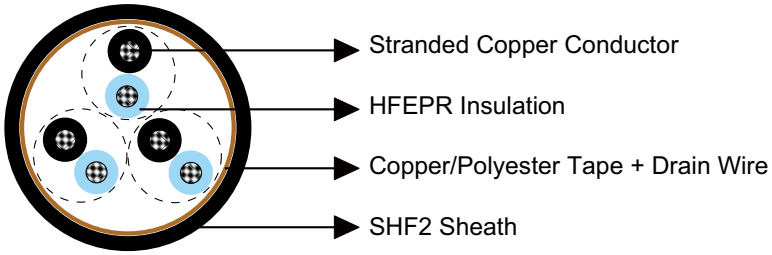
Applications



These unarmoured cables are flame retardant, low smoke and halogen free, used for instrumentation, communication, control and alarm systems.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Halogen free EPR compound.
- **Twinning:** Colour coded cores twisted together.
- **Collective Shielding:** Pairs/triples are layed up and collectively screened by copper backed polyester tape in contact with a stranded tinned copper drain wire. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2, coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	0.75	1.0	1.5

Nominal Conductor Diameter	mm	1.1	1.3	1.6
Maximum Resistant@20℃	Ω/km	26.3	19.3	12.9
Mutual Capacitance	nF/km	80	90	100
Nominal Inductance@1KHz	MH/km	0.682	0.645	0.632
Maximum L/R@1KHz	μH/Ω	20	25	35
Operating Voltage	V	250	250	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
2×2×0.75	0.6	1.1	9.4	160
4×2×0.75	0.6	1.1	11.5	215
7×2×0.75	0.6	1.3	13.6	300
8×2×0.75	0.6	1.3	14.7	340
12×2×0.75	0.6	1.4	17.6	465
16×2×0.75	0.6	1.5	19.7	595
19×2×0.75	0.6	1.5	20.7	665
24×2×0.75	0.6	1.7	24.1	850
32×2×0.75	0.6	2.0	26.7	1065
2×3×0.75	0.6	1.1	11.0	170
3×3×0.75	0.6	1.1	12.1	235
4×3×0.75	0.6	1.2	13.1	280
7×3×0.75	0.6	1.4	15.7	410
8×3×0.75	0.6	1.4	17.5	490
12×3×0.75	0.6	1.5	20.6	645
16×3×0.75	0.6	1.6	23.1	835
19×3×0.75	0.6	1.7	24.3	940
24×3×0.75	0.6	1.8	28.2	1210
2×2×1.0	0.6	1.1	9.9	190
4×2×1.0	0.6	1.1	12.3	255
7×2×1.0	0.6	1.3	14.7	370
8×2×1.0	0.6	1.3	15.7	410
12×2×1.0	0.6	1.5	18.9	565
16×2×1.0	0.6	1.6	21.1	730

Instrumentation Cables

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
19×2×1.0	0.6	1.7	22.5	830
24×2×1.0	0.6	1.8	25.9	1050
32×2×1.0	0.6	2.1	28.7	1315
3×3×1.0	0.6	1.1	12.9	280
4×3×1.0	0.6	1.3	14.0	335
7×3×1.0	0.6	1.5	16.9	500
12×3×1.0	0.6	1.6	22.1	795
16×3×1.0	0.6	1.6	24.8	1025
19×3×1.0	0.6	1.8	26.3	1175
24×3×1.0	0.6	2.0	30.4	1490
2×2×1.5	0.7	1.2	11.3	250
4×2×1.5	0.7	1.2	14.1	345
7×2×1.5	0.7	1.4	17.2	515
8×2×1.5	0.7	1.4	18.4	575
12×2×1.5	0.7	1.6	22.4	810
16×2×1.5	0.7	1.7	25.0	1045
19×2×1.5	0.7	1.8	26.4	1175
24×2×1.5	0.7	1.9	30.7	1505
32×2×1.5	0.7	2.2	33.9	1890
2×3×1.5	0.7	1.2	13.5	265
3×3×1.5	0.7	1.2	14.9	380
4×3×1.5	0.7	1.3	16.3	465
7×3×1.5	0.7	1.5	19.8	705
8×3×1.5	0.7	1.5	21.5	820
12×3×1.5	0.7	1.7	26.2	1140
16×3×1.5	0.7	1.8	29.4	1475
19×3×1.5	0.7	1.9	30.9	1675
24×3×1.5	0.7	2.1	36.2	2160

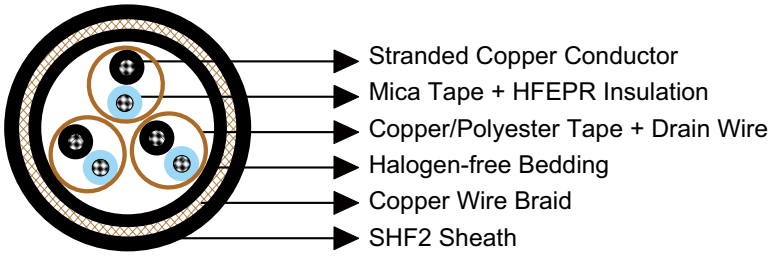
S103 (Formerly S3 or S3/S7) BFOU(i) 250V

Applications

These cables are fire resistant, flame retardant, low smoke, halogen free and mud resistant, used for instrumentation, communication, control and alarm systems.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR compound or Mica tape + XLPE.
- **Twinning:** Colour coded cores twisted together.
- **Individual Shielding:** Each pairs/triples are screened by copper backed polyester tape in contact with a stranded tinned copper drain wire and wrapped with polyester tape. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (formerly TYPE S3). Halogen free MUD resistant thermosetting compound, SHF MUD (for formerlyTYPE S3/S7), coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	0.75	1.0	1.5	2.5
Nominal Conductor Diameter	mm	1.1	1.3	1.6	2.0
Maximum Resistant@20℃	Ω/km	26.3	19.3	12.9	8.02
Mutual Capacitance	nF/km	85	95	100	110
Nominal Inductance@1KHz	MH/km	0.731	0.691	0.673	0.629
Maximum L/R@1KHz	μH/Ω	20	25	35	55
Operating Voltage	V	250	250	250	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×2×0.75	0.6	1.1	1.2	12.1	225
2×2×0.75	0.6	1.1	1.3	16.7	405
3×2×0.75	0.6	1.1	1.4	17.5	540
4×2×0.75	0.6	1.1	1.4	18.6	610
5×2×0.75	0.6	1.1	1.5	20.2	705
6×2×0.75	0.6	1.1	1.5	21.7	805
7×2×0.75	0.6	1.1	1.5	21.7	830
8×2×0.75	0.6	1.1	1.6	23.6	905
9×2×0.75	0.6	1.1	1.7	25.1	1000
10×2×0.75	0.6	1.1	1.7	26.2	1030
12×2×0.75	0.6	1.1	1.7	26.8	1145
14×2×0.75	0.6	1.1	1.8	28.2	1205
15×2×0.75	0.6	1.1	1.8	30.0	1305
16×2×0.75	0.6	1.1	1.9	30.6	1415
18×2×0.75	0.6	1.1	1.9	32.1	1475
19×2×0.75	0.6	1.2	1.9	32.7	1575
20×2×0.75	0.6	1.2	2.0	34.1	1700

Fire Resistant Instrumentation Cables

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
21×2×0.75	0.6	1.2	2.0	35.0	1765
23×2×0.75	0.6	1.2	2.0	35.5	1895
24×2×0.75	0.6	1.2	2.1	37.7	1980
27×2×0.75	0.6	1.2	2.2	38.7	2165
30×2×0.75	0.6	1.2	2.2	39.9	2335
33×2×0.75	0.6	1.2	2.3	41.5	2535
37×2×0.75	0.6	1.2	2.3	42.7	2725
1×3×0.75	0.6	1.1	1.1	11.9	245
2×3×0.75	0.6	1.1	1.4	15.5	420
3×3×0.75	0.6	1.1	1.4	18.4	580
4×3×0.75	0.6	1.1	1.4	19.7	675
7×3×0.75	0.6	1.1	1.6	23.6	960
8×3×0.75	0.6	1.1	1.7	25.0	980
12×3×0.75	0.6	1.3	1.8	29.6	1435
16×3×0.75	0.6	1.4	1.9	32.6	1770
19×3×0.75	0.6	1.4	2.1	34.4	1985
24×3×0.75	0.6	1.8	2.2	39.6	2580
1×2×1.0	0.6	1.1	1.2	12.5	245
2×2×1.0	0.6	1.1	1.4	17.6	450
3×2×1.0	0.6	1.1	1.4	18.3	600
4×2×1.0	0.6	1.1	1.4	19.3	625
5×2×1.0	0.6	1.1	1.5	21.1	920
6×2×1.0	0.6	1.1	1.6	22.8	950
7×2×1.0	0.6	1.1	1.6	22.8	860
8×2×1.0	0.6	1.1	1.6	24.7	985
9×2×1.0	0.6	1.1	1.7	26.3	1135
10×2×1.0	0.6	1.1	1.7	27.4	1170
12×2×1.0	0.6	1.1	1.8	28.3	1300
14×2×1.0	0.6	1.1	1.8	29.5	1380
15×2×1.0	0.6	1.1	1.9	31.6	1510
16×2×1.0	0.6	1.1	1.9	32.1	1620
18×2×1.0	0.6	1.2	2.0	34.2	1745
19×2×1.0	0.6	1.2	2.0	34.5	1830
20×2×1.0	0.6	1.2	2.1	36.0	1975
21×2×1.0	0.6	1.2	2.1	37.3	2135
23×2×1.0	0.6	1.2	2.1	37.9	2295
24×2×1.0	0.6	1.2	2.2	39.8	2335
27×2×1.0	0.6	1.2	2.2	40.6	2500
30×2×1.0	0.6	1.2	2.3	42.1	2720
33×2×1.0	0.6	1.2	2.3	43.6	2940

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
37×2×1.0	0.6	1.4	2.4	45.4	3230
1×3×1.0	0.6	1.1	1.2	12.6	275
2×3×1.0	0.6	1.1	1.4	18.8	640
3×3×1.0	0.6	1.1	1.5	19.3	665
4×3×1.0	0.6	1.1	1.5	20.9	775
5×3×1.0	0.6	1.1	1.6	22.8	965
6×3×1.0	0.6	1.1	1.7	25.4	1135
7×3×1.0	0.6	1.1	1.7	25.4	1180
8×3×1.0	0.6	1.1	1.7	27.0	1270
9×3×1.0	0.6	1.1	1.8	28.9	1450
10×3×1.0	0.6	1.1	1.9	31.1	1455
12×3×1.0	0.6	1.1	1.9	32.0	1685
14×3×1.0	0.6	1.2	2.0	33.8	1820
15×3×1.0	0.6	1.2	2.0	34.8	1935
16×3×1.0	0.6	1.2	2.1	36.0	2105
18×3×1.0	0.6	1.2	2.1	38.1	2310
19×3×1.0	0.6	1.2	2.2	38.6	2355
20×3×1.0	0.6	1.2	2.2	39.6	2590
21×3×1.0	0.6	1.2	2.2	40.4	2685
23×3×1.0	0.6	1.2	2.3	42.0	2935
24×3×1.0	0.6	1.2	2.3	42.8	3145
27×3×1.0	0.6	1.4	2.4	45.3	3255
30×3×1.0	0.6	1.4	2.5	47.4	3565
32×3×1.0	0.6	1.4	2.5	48.6	3755
1×2×1.5	0.7	1.1	1.2	13.5	295
2×2×1.5	0.7	1.1	1.4	19.2	545
3×2×1.5	0.7	1.1	1.5	20.2	725
4×2×1.5	0.7	1.1	1.5	21.5	770
5×2×1.5	0.7	1.1	1.6	23.4	975
6×2×1.5	0.7	1.1	1.7	25.4	1130
7×2×1.5	0.7	1.1	1.7	25.4	1170
8×2×1.5	0.7	1.1	1.7	27.5	1225
9×2×1.5	0.7	1.1	1.8	29.4	1405
10×2×1.5	0.7	1.1	1.9	30.9	1440
12×2×1.5	0.7	1.1	1.9	31.6	1680
14×2×1.5	0.7	1.2	2.0	33.6	1750
15×2×1.5	0.7	1.2	2.1	36.0	1910
16×2×1.5	0.7	1.2	2.1	36.9	2055
18×2×1.5	0.7	1.2	2.2	38.9	2260
19×2×1.5	0.7	1.2	2.2	39.3	2395

Fire Resistant Instrumentation Cables

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
20×2×1.5	0.7	1.2	2.2	40.8	2540
21×2×1.5	0.7	1.2	2.3	42.1	2660
23×2×1.5	0.7	1.2	2.3	42.7	2865
24×2×1.5	0.7	1.4	2.4	45.2	3080
27×2×1.5	0.7	1.4	2.4	46.1	3155
30×2×1.5	0.7	1.4	2.5	47.8	3440
32×2×1.5	0.7	1.4	2.6	49.0	3685
33×2×1.5	0.7	1.4	2.6	49.7	3740
37×2×1.5	0.7	1.4	2.6	51.2	4040
1×3×1.5	0.7	1.1	1.3	13.6	325
2×3×1.5	0.7	1.1	1.5	18.5	560
3×3×1.5	0.7	1.1	1.5	21.4	800
4×3×1.5	0.7	1.1	1.6	23.7	975
5×3×1.5	0.7	1.1	1.7	25.4	1195
6×3×1.5	0.7	1.1	1.8	28.3	1405
7×3×1.5	0.7	1.1	1.8	28.3	1470
8×3×1.5	0.7	1.1	1.8	30.2	1585
9×3×1.5	0.7	1.2	1.9	32.6	1835
10×3×1.5	0.7	1.2	2.0	35.1	1935
12×3×1.5	0.7	1.2	2.1	36.8	2115
14×3×1.5	0.7	1.2	2.1	38.3	2360
15×3×1.5	0.7	1.2	2.2	39.7	2530
16×3×1.5	0.7	1.2	2.2	40.8	2775
18×3×1.5	0.7	1.2	2.3	42.9	2905
19×3×1.5	0.7	1.2	2.3	43.3	3200
20×3×1.5	0.7	1.4	2.4	44.9	3305
21×3×1.5	0.7	1.4	2.4	45.8	3430
23×3×1.5	0.7	1.4	2.5	47.7	3755
24×3×1.5	0.7	1.4	2.5	48.6	3925
27×3×1.5	0.7	1.4	2.6	51.1	4115
30×3×1.5	0.7	1.4	2.7	53.5	4510
32×3×1.5	0.7	1.6	2.8	55.5	4850
1×2×2.5	0.7	1.1	1.3	14.0	340
2×2×2.5	0.7	1.1	1.5	18.5	560
3×2×2.5	0.7	1.1	1.5	21.6	865
4×2×2.5	0.7	1.1	1.6	23.2	1010
5×2×2.5	0.7	1.1	1.7	25.3	1185
6×2×2.5	0.7	1.1	1.7	27.4	1370
7×2×2.5	0.7	1.1	1.7	27.4	1430
8×2×2.5	0.7	1.1	1.8	29.9	1560

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
9×2×2.5	0.7	1.1	1.9	31.9	1780
10×2×2.5	0.7	1.2	2.0	33.8	1775
12×2×2.5	0.7	1.2	2.0	34.6	1965
14×2×2.5	0.7	1.2	2.1	36.9	2275
15×2×2.5	0.7	1.2	2.2	39.5	2480
16×2×2.5	0.7	1.2	2.2	40.1	2590
18×2×2.5	0.7	1.2	2.3	42.3	2825
19×2×2.5	0.7	1.2	2.3	42.7	2930
20×2×2.5	0.7	1.4	2.4	44.8	3240
21×2×2.5	0.7	1.4	2.4	46.1	3375
23×2×2.5	0.7	1.4	2.5	46.9	3560
24×2×2.5	0.7	1.4	2.5	49.1	3660
27×2×2.5	0.7	1.4	2.6	50.3	4000
30×2×2.5	0.7	1.4	2.7	52.2	4370
33×2×2.5	0.7	1.4	2.7	54.1	4735
37×2×2.5	0.7	1.6	2.8	56.4	5225
1×3×2.5	0.7	1.1	1.2	14.5	380
2×3×2.5	0.7	1.1	1.6	22.5	950
3×3×2.5	0.7	1.1	1.6	23.4	1055
4×3×2.5	0.7	1.1	1.7	25.3	1250
5×3×2.5	0.7	1.1	1.7	27.4	1460
6×3×2.5	0.7	1.1	1.9	30.7	1735
7×3×2.5	0.7	1.1	1.9	30.7	1830
8×3×2.5	0.7	1.2	2.0	33.3	2025
9×3×2.5	0.7	1.2	2.0	35.4	2290
10×3×2.5	0.7	1.2	2.2	38.8	2405
12×3×2.5	0.7	1.2	2.2	40.0	2685
14×3×2.5	0.7	1.2	2.3	41.9	3000
15×3×2.5	0.7	1.2	2.3	43.1	3190
16×3×2.5	0.7	1.4	2.4	44.9	3420
18×3×2.5	0.7	1.4	2.5	47.2	3740
19×3×2.5	0.7	1.4	2.5	47.6	3885
20×3×2.5	0.7	1.4	2.5	48.9	4185
21×3×2.5	0.7	1.4	2.6	50.0	4370
23×3×2.5	0.7	1.4	2.7	52.1	4760
24×3×2.5	0.7	1.4	2.7	53.0	4785
27×3×2.5	0.7	1.6	2.8	56.2	5335
30×3×2.5	0.7	1.6	2.9	58.8	5855
32×3×2.5	0.7	1.6	3.0	60.6	6215

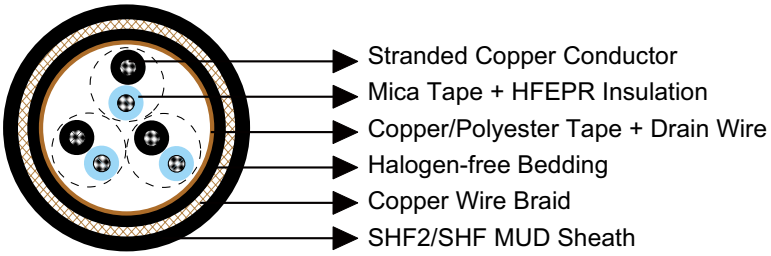
S104 (Formerly S4 or S4/S8) BFOU(c) 250V

Applications

These cables are fire resistant, flame retardant, low smoke, halogen free and mud resistant, used for instrumentation, communication, control and alarm systems.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR compound or Mica tape + XLPE.
- **Twinning:** Colour coded cores twisted together.
- **Collective Shielding:** Pairs/triples are layed up and collectively screened by copper backed polyester tape in contact with a stranded tinned copper drain wire. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2 (formerly TYPE S4). Halogen free MUD resistant thermosetting compound, SHF MUD (for formerly TYPE S4/S8), coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	0.75	1.0	1.5	2.5
Nominal Conductor Diameter	mm	1.1	1.3	1.6	2.0
Maximum Resistant@20℃	Ω/km	26.3	19.3	12.9	8.02
Mutual Capacitance	nF/km	75	80	85	95
Nominal Inductance@1KHz	MH/km	0.727	0.686	0.667	0.623
Maximum L/R@1KHz	μH/Ω	20	25	35	55
Operating Voltage	V	250	250	250	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×2×0.75	0.6	1.1	1.2	12.1	230
2×2×0.75	0.6	1.1	1.3	16.4	340
3×2×0.75	0.6	1.1	1.4	17.2	495
4×2×0.75	0.6	1.1	1.4	18.2	555
5×2×0.75	0.6	1.1	1.5	19.8	640
6×2×0.75	0.6	1.1	1.5	21.2	725
7×2×0.75	0.6	1.1	1.5	21.2	740
8×2×0.75	0.6	1.1	1.6	23.1	805
9×2×0.75	0.6	1.1	1.6	24.3	880
10×2×0.75	0.6	1.1	1.7	25.6	900
12×2×0.75	0.6	1.1	1.7	26.2	950
14×2×0.75	0.6	1.1	1.7	27.3	1035
15×2×0.75	0.6	1.1	1.8	29.2	1130
16×2×0.75	0.6	1.1	1.8	29.7	1175
18×2×0.75	0.6	1.1	1.9	31.3	1275
19×2×0.75	0.6	1.1	1.9	31.6	1315
20×2×0.75	0.6	1.2	2.0	33.3	1475
21×2×0.75	0.6	1.2	2.0	34.1	1530
23×2×0.75	0.6	1.2	2.0	34.6	1635
24×2×0.75	0.6	1.2	2.1	36.8	1730

Fire Resistant Instrumentation Cables

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
27×2×0.75	0.6	1.2	2.1	37.5	1850
30×2×0.75	0.6	1.2	2.2	38.9	1965
33×2×0.75	0.6	1.2	2.2	40.3	2155
37×2×0.75	0.6	1.2	2.3	41.7	2325
1×3×0.75	0.6	1.1	1.2	12.6	255
2×3×0.75	0.6	1.1	1.4	17.7	545
3×3×0.75	0.6	1.1	1.4	18.3	585
4×3×0.75	0.6	1.1	1.5	19.7	670
5×3×0.75	0.6	1.1	1.5	21.2	770
6×3×0.75	0.6	1.1	1.6	23.5	900
7×3×0.75	0.6	1.1	1.6	23.5	935
8×3×0.75	0.6	1.1	1.7	25.2	1015
9×3×0.75	0.6	1.1	1.7	26.7	1135
10×3×0.75	0.6	1.1	1.8	28.7	1140
12×3×0.75	0.6	1.1	1.8	29.6	1230
14×3×0.75	0.6	1.1	1.9	31.0	1375
15×3×0.75	0.6	1.1	1.9	31.9	1455
16×3×0.75	0.6	1.2	2.0	33.3	1545
18×3×0.75	0.6	1.2	2.0	34.8	1690
19×3×0.75	0.6	1.2	2.0	35.1	1750
20×3×0.75	0.6	1.2	2.1	36.6	1985
21×3×0.75	0.6	1.2	2.1	37.3	2055
23×3×0.75	0.6	1.2	2.2	38.8	2215
24×3×0.75	0.6	1.2	2.2	39.5	2245
27×3×0.75	0.6	1.2	2.3	41.5	2435
30×3×0.75	0.6	1.2	2.3	43.3	2645
32×3×0.75	0.6	1.4	2.4	44.9	2840
1×2×1.0	0.6	1.1	1.2	12.5	245
2×2×1.0	0.6	1.1	1.4	17.2	375
3×2×1.0	0.6	1.1	1.4	17.9	550
4×2×1.0	0.6	1.1	1.4	19.0	615
5×2×1.0	0.6	1.1	1.5	20.6	710
6×2×1.0	0.6	1.1	1.6	22.4	820
7×2×1.0	0.6	1.1	1.6	22.4	845
8×2×1.0	0.6	1.1	1.6	24.1	905
9×2×1.0	0.6	1.1	1.7	25.7	995
10×2×1.0	0.6	1.1	1.7	26.8	1035
12×2×1.0	0.6	1.1	1.7	27.4	1095
14×2×1.0	0.6	1.1	1.8	28.9	1195
15×2×1.0	0.6	1.1	1.9	30.9	1305
16×2×1.0	0.6	1.1	1.9	31.4	1355
18×2×1.0	0.6	1.2	2.0	33.4	1500
19×2×1.0	0.6	1.2	2.0	33.7	1550

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
20×2×1.0	0.6	1.2	2.0	35.0	1685
21×2×1.0	0.6	1.2	2.1	36.5	1850
23×2×1.0	0.6	1.2	2.1	37.0	1975
24×2×1.0	0.6	1.2	2.2	38.9	1990
27×2×1.0	0.6	1.2	2.2	39.6	2135
30×2×1.0	0.6	1.2	2.2	40.9	2300
33×2×1.0	0.6	1.2	2.3	42.5	2495
37×2×1.0	0.6	1.4	2.4	44.3	2735
1×3×1.0	0.6	1.1	1.2	13.0	280
2×3×1.0	0.6	1.1	1.4	18.0	550
3×3×1.0	0.6	1.1	1.4	18.7	600
4×3×1.0	0.6	1.1	1.5	20.0	690
5×3×1.0	0.6	1.1	1.6	22.4	880
6×3×1.0	0.6	1.1	1.6	24.6	1020
7×3×1.0	0.6	1.1	1.6	24.6	1060
8×3×1.0	0.6	1.1	1.7	26.4	1150
9×3×1.0	0.6	1.1	1.8	28.2	1305
10×3×1.0	0.6	1.1	1.8	30.2	1290
12×3×1.0	0.6	1.1	1.9	31.3	1435
14×3×1.0	0.6	1.2	1.9	32.9	1605
15×3×1.0	0.6	1.2	2.0	34.0	1720
16×3×1.0	0.6	1.2	2.0	35.0	1765
18×3×1.0	0.6	1.2	2.1	37.2	2050
19×3×1.0	0.6	1.2	2.1	37.5	2120
20×3×1.0	0.6	1.2	2.2	38.7	2300
21×3×1.0	0.6	1.2	2.2	39.4	2380
23×3×1.0	0.6	1.2	2.2	40.8	2515
24×3×1.0	0.6	1.2	2.3	41.7	2575
27×3×1.0	0.6	1.2	2.3	43.7	2815
30×3×1.0	0.6	1.4	2.4	46.1	3125
32×3×1.0	0.6	1.4	2.5	47.5	3310
1×2×1.5	0.7	1.1	1.3	14.3	335
2×2×1.5	0.7	1.1	1.5	20.5	740
3×2×1.5	0.7	1.1	1.5	21.2	805
4×2×1.5	0.7	1.1	1.6	22.9	945
5×2×1.5	0.7	1.1	1.6	24.8	1095
6×2×1.5	0.7	1.1	1.8	27.8	1300
7×2×1.5	0.7	1.1	1.8	27.8	1355
8×2×1.5	0.7	1.1	1.8	29.6	1455
9×2×1.5	0.7	1.1	1.9	31.7	1660
10×2×1.5	0.7	1.1	2.0	34.4	1680
12×2×1.5	0.7	1.1	2.0	35.5	1855
14×2×1.5	0.7	1.2	2.1	37.6	2150

Fire Resistant Instrumentation Cables

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
15×2×1.5	0.7	1.2	2.2	38.9	2300
16×2×1.5	0.7	1.2	2.2	40.0	2415
18×2×1.5	0.7	1.2	2.3	42.0	2630
19×2×1.5	0.7	1.2	2.3	42.4	2725
20×2×1.5	0.7	1.2	2.3	43.5	2940
21×2×1.5	0.7	1.2	2.4	44.9	3110
23×2×1.5	0.7	1.2	2.5	46.7	3400
24×2×1.5	0.7	1.2	2.5	47.5	3360
27×2×1.5	0.7	1.4	2.6	50.0	3710
30×2×1.5	0.7	1.4	2.7	52.3	4060
32×2×1.5	0.7	1.4	2.7	53.8	4285
33×2×1.5	0.7	1.4	2.5	48.5	3245
37×2×1.5	0.7	1.4	2.6	50.2	3515
1×3×1.5	0.7	1.1	1.3	14.6	341
2×3×1.5	0.7	1.1	1.5	21.8	722
3×3×1.5	0.7	1.1	1.5	22.7	825
4×3×1.5	0.7	1.1	1.6	24.9	960
5×3×1.5	0.7	1.1	1.6	27.0	1111
6×3×1.5	0.7	1.1	1.8	29.4	1281
7×3×1.5	0.7	1.1	1.8	30.4	1373
8×3×1.5	0.7	1.1	1.8	32.6	1531
9×3×1.5	0.7	1.1	1.9	34.8	1727
10×3×1.5	0.7	1.2	2.0	37.2	1903
12×3×1.5	0.7	1.2	2.0	38.4	2123
14×3×1.5	0.7	1.2	2.1	40.7	2411
15×3×1.5	0.7	1.2	2.2	42.8	2569
16×3×1.5	0.7	1.2	2.2	43.0	2683
18×3×1.5	0.7	1.2	2.3	45.6	3050
19×3×1.5	0.7	1.2	2.3	45.8	3165
20×3×1.5	0.7	1.2	2.3	47.0	3297
21×3×1.5	0.7	1.4	2.4	48.0	3428
23×3×1.5	0.7	1.4	2.5	51.8	3821
24×3×1.5	0.7	1.4	2.5	53.4	3913
27×3×1.5	0.7	1.4	2.6	55.2	4327
30×3×1.5	0.7	1.4	2.7	57.3	4703
32×3×1.5	0.7	1.4	2.7	59.4	4970
1×2×2.5	0.7	1.1	1.3	14.5	335
2×2×2.5	0.7	1.1	1.5	20.4	740
3×2×2.5	0.7	1.1	1.5	21.3	800
4×2×2.5	0.7	1.1	1.6	22.8	930
5×2×2.5	0.7	1.1	1.6	24.7	1075
6×2×2.5	0.7	1.1	1.7	26.9	1245
7×2×2.5	0.7	1.1	1.7	26.9	1290

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
8×2×2.5	0.7	1.1	1.8	29.3	1405
9×2×2.5	0.7	1.1	1.9	31.3	1585
10×2×2.5	0.7	1.2	2.0	33.2	1605
12×2×2.5	0.7	1.2	2.0	34.0	1745
14×2×2.5	0.7	1.2	2.0	35.6	1920
15×2×2.5	0.7	1.2	2.2	38.8	2205
16×2×2.5	0.7	1.2	2.2	39.4	2230
18×2×2.5	0.7	1.2	2.3	41.5	2500
19×2×2.5	0.7	1.2	2.3	41.9	2590
20×2×2.5	0.7	1.2	2.3	43.5	2815
21×2×2.5	0.7	1.4	2.4	45.2	2990
23×2×2.5	0.7	1.4	2.4	45.8	3215
24×2×2.5	0.7	1.4	2.5	48.2	3270
27×2×2.5	0.7	1.4	2.6	49.4	3515
30×2×2.5	0.7	1.4	2.6	51.0	3810
33×2×2.5	0.7	1.4	2.7	53.1	4145
37×2×2.5	0.7	1.4	2.8	54.9	4500
1×3×2.5	0.7	1.1	1.3	15.1	385
2×3×2.5	0.7	1.1	1.5	22.0	880
3×3×2.5	0.7	1.1	1.6	23.0	990
4×3×2.5	0.7	1.1	1.6	24.6	1150
5×3×2.5	0.7	1.1	1.7	26.9	1350
6×3×2.5	0.7	1.1	1.8	30.0	1595
7×3×2.5	0.7	1.1	1.8	30.0	1670
8×3×2.5	0.7	1.1	1.9	32.2	1820
9×3×2.5	0.7	1.2	2.0	34.8	2105
10×3×2.5	0.7	1.2	2.1	37.9	2190
12×3×2.5	0.7	1.2	2.2	39.2	2455
14×3×2.5	0.7	1.2	2.2	40.9	2715
15×3×2.5	0.7	1.2	2.3	42.3	2905
16×3×2.5	0.7	1.2	2.3	43.5	3060
18×3×2.5	0.7	1.4	2.4	46.1	3380
19×3×2.5	0.7	1.4	2.5	46.7	3530
20×3×2.5	0.7	1.4	2.5	47.9	3800
21×3×2.5	0.7	1.4	2.5	48.9	3950
23×3×2.5	0.7	1.4	2.6	50.9	4290
24×3×2.5	0.7	1.4	2.6	51.8	4325
27×3×2.5	0.7	1.4	2.7	54.5	4745
30×3×2.5	0.7	1.6	2.9	57.7	5300
32×3×2.5	0.7	1.6	2.9	59.3	5595

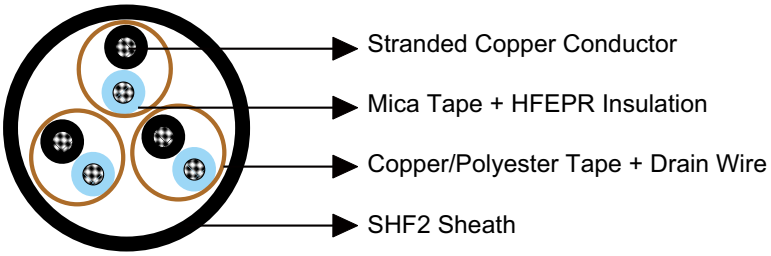
S107 (Formerly S13) BU(i) 250 V

Applications

These cables are fire resistant, flame retardant, low smoke and halogen free, used for instrumentation, communication, control and alarm systems.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR compound or Mica tape + XLPE.
- **Twinning:** Colour coded cores twisted together.
- **Individual Shielding:** Each pairs/triples are screened by copper backed polyester tape in contact with a stranded tinned copper drain wire and wrapped with polyester tape. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2, coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	0.75	1.0	1.5	2.5
Nominal Conductor Diameter	mm	1.1	1.3	1.6	2.0
Maximum Resistant@20℃	Ω/km	26.3	19.3	12.9	8.02
Mutual Capacitance	nF/km	85	95	100	110
Nominal Inductance@1KHz	MH/km	0.731	0.691	0.673	0.629
Maximum L/R@1KHz	μH/Ω	20	25	35	55
Operating Voltage	V	250	250	250	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

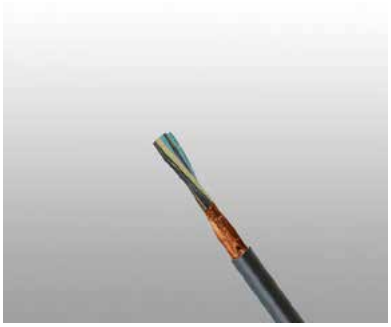
Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×2×0.75	0.6	1.0	8.2	105
2×2×0.75	0.6	1.2	10.5	205
4×2×0.75	0.6	1.2	13.2	290
7×2×0.75	0.6	1.4	16.0	445
8×2×0.75	0.6	1.4	17.3	495
12×2×0.75	0.6	1.6	21.1	705
16×2×0.75	0.6	1.7	23.5	915
19×2×0.75	0.6	1.8	24.8	1035
24×2×0.75	0.6	1.9	28.6	1320
32×2×0.75	0.6	2.0	31.7	1670
1×3×0.75	0.6	1.0	8.6	120
2×3×0.75	0.6	1.2	12.0	205
3×3×0.75	0.6	1.2	13.8	300
4×3×0.75	0.6	1.3	15.1	365
7×3×0.75	0.6	1.5	18.3	560
8×3×0.75	0.6	1.5	19.5	650
12×3×0.75	0.6	1.7	24.4	915
16×3×0.75	0.6	1.8	27.3	1185
19×3×0.75	0.6	1.9	29.0	1360
24×3×0.75	0.6	2.1	33.7	1750

Fire Resistant Instrumentation Cables

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×2×1.0	0.6	1.0	8.6	125
2×2×1.0	0.6	1.2	11.1	240
4×2×1.0	0.6	1.3	14.0	345
7×2×1.0	0.6	1.5	16.9	525
8×2×1.0	0.6	1.5	18.5	600
12×2×1.0	0.6	1.6	22.3	840
16×2×1.0	0.6	1.6	24.9	1095
19×2×1.0	0.6	1.8	26.5	1255
24×2×1.0	0.6	1.9	30.5	1605
32×2×1.0	0.6	2.0	33.8	2030
1×3×1.0	0.6	1.0	9.1	140
3×3×1.0	0.6	1.3	14.7	360
4×3×1.0	0.6	1.3	16.1	440
7×3×1.0	0.6	1.6	19.7	695
12×3×1.0	0.6	1.7	26.0	1115
16×3×1.0	0.6	1.8	29.2	1455
19×3×1.0	0.6	1.9	31.0	1675
24×3×1.0	0.6	2.1	36.1	2145
1×2×1.5	0.7	1.0	9.6	155
2×2×1.5	0.7	1.3	12.6	310
4×2×1.5	0.7	1.4	16.1	450
7×2×1.5	0.7	1.6	19.4	690
8×2×1.5	0.7	1.6	21.3	780
12×2×1.5	0.7	1.7	25.7	1100
16×2×1.5	0.7	1.9	28.9	1450
19×2×1.5	0.7	2.0	30.5	1645
24×2×1.5	0.7	2.2	35.3	2115
32×2×1.5	0.7	2.3	39.1	2680
1×3×1.5	0.7	1.1	10.1	175
2×3×1.5	0.7	1.3	14.5	320
3×3×1.5	0.7	1.3	16.8	470
4×3×1.5	0.7	1.4	18.4	580
7×3×1.5	0.7	1.7	22.6	910
8×3×1.5	0.7	1.7	23.5	1030
12×3×1.5	0.7	1.9	30.0	1475
16×3×1.5	0.7	2.0	33.6	1925
19×3×1.5	0.7	2.1	35.7	2210
24×3×1.5	0.7	2.4	41.7	2855
1×2×2.5	0.7	1.1	10.5	190
1×3×2.5	0.7	1.3	11.0	220

S108 (Formerly S14) BU(c) 250 V

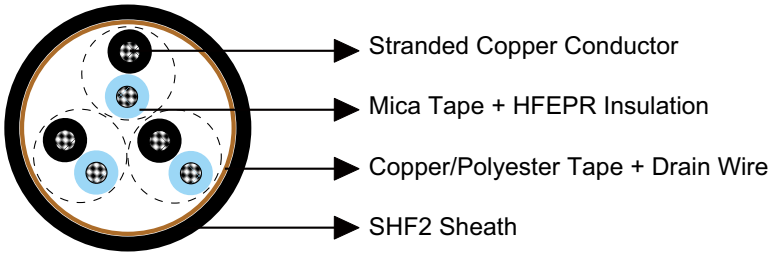
Applications



These unarmoured cables are fire resistant, flame retardant, low smoke and halogen free, used for instrumentation, communication, control and alarm systems.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR compound.
- **Twinning:** Colour coded cores twisted together.
- **Collective Shielding:** Pairs/triples are layed up and collectively screened by copper backed polyester tape in contact with a stranded tinned copper drain wire. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Outer Sheath:** Halogen free thermosetting compound, SHF2, coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	0.75	1.0	1.5
Nominal Conductor Diameter	mm	1.1	1.3	1.6
Maximum Resistant@20℃	Ω/km	26.3	19.3	12.9
Mutual Capacitance	nF/km	75	80	85
Nominal Inductance@1KHz	MH/km	0.727	0.686	0.667
Maximum L/R@1KHz	μH/Ω	20	25	35
Operating Voltage	V	250	250	250

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
2×2×0.75	0.6	1.1	10.2	185
4×2×0.75	0.6	1.2	12.5	240
7×2×0.75	0.6	1.4	15.0	350
8×2×0.75	0.6	1.4	16.3	395
12×2×0.75	0.6	1.5	19.5	540
16×2×0.75	0.6	1.6	21.8	690
19×2×0.75	0.6	1.7	23.2	780
24×2×0.75	0.6	1.8	26.7	985
32×2×0.75	0.6	2.1	29.6	1225
2×3×0.75	0.6	1.2	12.0	205
3×3×0.75	0.6	1.2	13.1	265
4×3×0.75	0.6	1.3	14.4	320
7×3×0.75	0.6	1.3	17.4	475
8×3×0.75	0.6	1.5	19.5	590
12×3×0.75	0.6	1.6	22.9	745
16×3×0.75	0.6	1.7	25.6	965
19×3×0.75	0.6	1.8	27.2	1095
24×3×0.75	0.6	2.0	31.6	1405
2×2×1.0	0.6	1.1	10.7	210

Fire Resistant Instrumentation Cables

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
4×2×1.0	0.6	1.1	13.3	285
7×2×1.0	0.6	1.4	16.0	415
8×2×1.0	0.6	1.4	17.3	465
12×2×1.0	0.6	1.6	20.8	645
16×2×1.0	0.6	1.7	23.3	825
19×2×1.0	0.6	1.8	24.7	940
24×2×1.0	0.6	1.9	28.8	1200
32×2×1.0	0.6	2.3	31.8	1495
3×3×1.0	0.6	1.2	14.0	310
4×3×1.0	0.6	1.4	15.3	380
7×3×1.0	0.6	1.6	18.6	570
12×3×1.0	0.6	1.6	24.4	900
16×3×1.0	0.6	1.7	27.3	1160
19×3×1.0	0.6	1.9	29.0	1325
24×3×1.0	0.6	2.1	33.7	1700
2×2×1.5	0.7	1.2	12.1	275
4×2×1.5	0.7	1.3	15.2	380
7×2×1.5	0.7	1.5	18.4	565
8×2×1.5	0.7	1.5	20.0	640
12×2×1.5	0.7	1.7	24.3	895
16×2×1.5	0.7	1.8	27.2	1150
19×2×1.5	0.7	1.9	28.6	1295
24×2×1.5	0.7	2.1	33.5	1670
32×2×1.5	0.7	2.3	37.0	2095
2×3×1.5	0.7	1.3	15.0	310
3×3×1.5	0.7	1.3	16.0	420
4×3×1.5	0.7	1.4	17.7	515
7×3×1.5	0.7	1.6	21.5	785
8×3×1.5	0.7	1.6	23.5	930
12×3×1.5	0.7	1.8	28.5	1255
16×3×1.5	0.7	1.9	31.9	1630
19×3×1.5	0.7	2.0	33.8	1855
24×3×1.5	0.7	2.2	39.3	2375

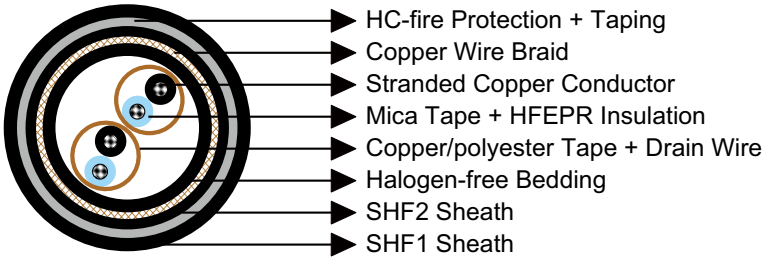
S109 (Formerly S15) BFOU-HCF(i) 250 V

Applications

These cables are fire resistant, flame retardant, low smoke and halogen free, used for emergency instrumentation, communication, control and alarm systems that need to be operational during a 1100℃ hydrocarbon fire.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned annealed stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR compound or Mica tape + XLPE.
- **Twinning:** Colour coded cores twisted together.
- **Individual Shielding:** Each pairs/triples are screened by copper backed polyester tape in contact with a stranded tinned copper drain wire and wrapped with polyester tape. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath1:** Halogen free thermosetting compound, SHF2.
- **HC-fire protection:** Extruded thermoplastic fire protection compound.

- **Taping:** Lapped glass fibre tape.
- **Outer Sheath2:** Flame retardant halogen-free thermoplastic compound, type SHF1, coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	1.5
Nominal Conductor Diameter	mm	1.6
Maximum Resistant@20℃	Ω/km	12.9
Mutual Capacitance	nF/km	100
Nominal Inductance@1KHz	MH/km	0.673
Operating Voltage	V	250

Mechanical and Thermal Properties

- Bending Radius: 20×OD (during installation); 12×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Diameter Over Bedding mm	Nominal Diameter Over Sheath1 mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×2×1.5	0.7	9.0	13.1	39.5	1880
2×2×1.5	0.7	13.0	16.8	44.5	2450
4×2×1.5	0.7	15.0	20.7	47.5	2830
8×2×1.5	0.7	21.0	26.4	54.0	3690
12×2×1.5	0.7	25.0	31.2	63.0	5200

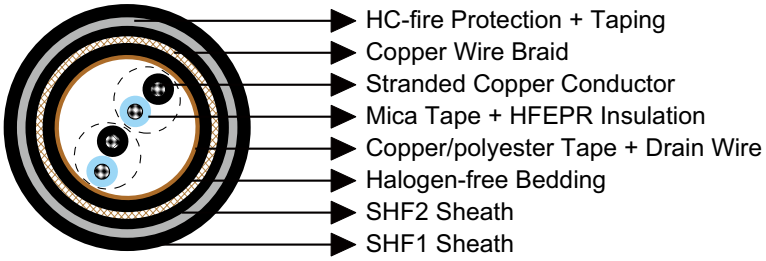
S110 (Formerly S16) BFOU-HCF(c) 250 V

Applications

These cables are fire resistant, flame retardant, low smoke and halogen free, used for emergency instrumentation, communication, control and alarm systems that need to be operational during a 1100℃ hydrocarbon fire.

Standards

- IEC 60092-376
- IEC 60092-351
- IEC 60092-359
- IEC 60331-21
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Circular tinned stranded copper wire to IEC 60228 class 2 or class 5.
- **Insulation:** Mica tape + Halogen free EPR compound or Mica tape + XLPE.
- **Twinning:** Colour coded cores twisted together.
- **Collective Shielding:** Pairs/triples are layed up and collectively screened by copper backed polyester tape in contact with a stranded tinned copper drain wire. Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors.
- **Bedding:** Halogen free compound.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath1:** Halogen free thermosetting compound, SHF2.
- **HC-fire protection:** Extruded thermoplastic fire protection compound.
- **Taping:** Lapped glass fibre tape.

- **Outer Sheath2:** Flame retardant halogen-free thermoplastic compound, type SHF1, coloured grey (blue for intrinsically safe).

Electrical Characteristics

Nominal Cross Section Area	mm²	1.5
Nominal Conductor Diameter	mm	1.6
Maximum Resistant@20℃	Ω/km	12.9
Mutual Capacitance	nF/km	85
Nominal Inductance@1KHz	MH/km	0.667
Operating Voltage	V	250

Mechanical and Thermal Properties

- Bending Radius: 20×OD (during installation); 12×OD (fixed installed)
- Temperature Range: -20℃ ~ +90℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Cross section(mm²)	Nominal Insulation Thickness mm	Nominal Diameter Over Bedding mm	Nominal Diameter Over Sheath1 mm	Nominal Overall Diameter mm	Nominal Weight kg/km
2×2×1.5	0.7	13.0	16.4	44.5	2400
4×2×1.5	0.7	15.0	19.9	46.5	2650
8×2×1.5	0.7	20.5	25.3	53.0	3570
12×2×1.5	0.7	23.5	29.6	57.0	4160

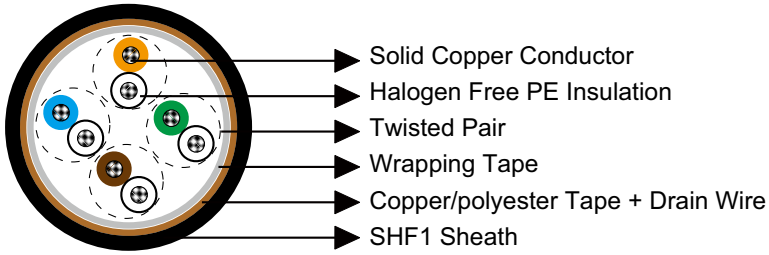
S9 IYXI(c) 60 V

Applications

These cables are flame retardant, low smoke and halogen free, used for indoor telecommunication.

Standards

- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Solid tinned copper, 0.5mm.
- **Insulation:** Halogen-free thermoplastic compound PE.
- **Twinning:** Colour coded cores twisted together. Pairs are cross-stranded to finished cable or 10 pair units. The units are stranded to 20 - 30 - 50 pair cables. 2 pair is stranded as a star quad.
- **Wrapping:** Polyester tape.
- **Collective Shielding:** The cable core is screened by copper backed polyester tape in contact with a 0.5mm solid tinned drain wire.
- **Sheath:** Halogen-free thermoplastic compound, type SHF1, coloured grey.

Electrical Characteristics

Nominal Conductor Diameter	mm	0.5
Maximum Resistant@20℃	Ω/km	95
Nominal Inductance@1KHz	MH/km	0.61
Mutual Capacitance 1-pair cable	nF/km	90
Mutual Capacitance 2-pair cable	nF/km	80

Mutual Capacitance 4-pair and above cable	nF/km	70
Operating Voltage	V	60

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -10℃ ~ +60℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Core diameter(mm)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1×2×0.5	0.2	1.2	5.0	30
2×2×0.5	0.2	1.2	5.5	35
4×2×0.5	0.2	1.2	7.0	55
10×2×0.5	0.2	1.5	8.5	90
20×2×0.5	0.2	1.5	11.0	148
30×2×0.5	0.2	1.5	13.5	210
50×2×0.5	0.2	1.5	16.0	320

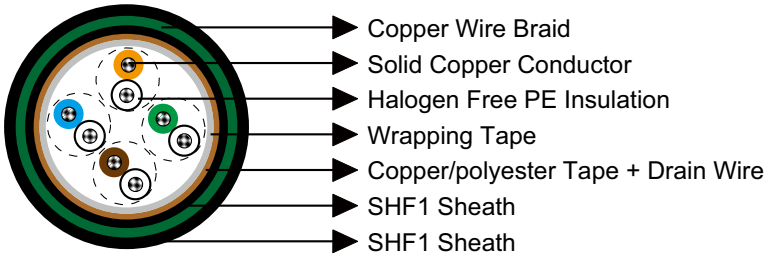
S10 IYOI(c) 60 V

Applications

These cables are flame retardant, low smoke and halogen free, used for indoor telecommunication.

Standards

- IEC 60092-359
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Conductors:** Solid tinned copper, 0.5mm.
- **Insulation:** Halogen-free thermoplastic compound PE.
- **Twinning:** Colour coded cores twisted together. Pairs are cross-stranded to finished cable or 10 pair units. The units are stranded to 20 - 30 - 50 pair cables. 2 pair is stranded as a star quad.
- **Wrapping:** Polyester tape.
- **Collective Shielding:** The cable core is screened by copper backed polyester tape in contact with a 0.5mm solid tinned drain wire.
- **Bedding:** Halogen-free thermoplastic compound, type SHF1, coloured grey.
- **Armour:** Tinned copper wire braid
- **Outer Sheath:** Halogen-free thermoplastic compound, type SHF1, coloured grey.

Electrical Characteristics

Nominal Conductor Diameter	mm	0.5
Maximum Resistant@20℃	Ω/km	95
Nominal Inductance@1KHz	MH/km	0.61

Mutual Capacitance 1-pair cable	nF/km	90
Mutual Capacitance 2-pair cable	nF/km	80
Mutual Capacitance 4-pair and above cable	nF/km	70
Operating Voltage	V	60

Mechanical and Thermal Properties

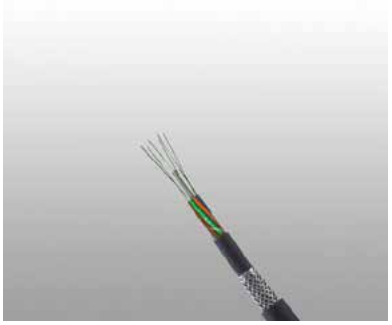
- Bending Radius: 8×OD (during installation); 6×OD (fixed installed)
- Temperature Range: -10℃ ~ +60℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Core diameter(mm)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1×2×0.5	0.2	1.2	1.2	8.0	95
2×2×0.5	0.2	1.2	1.2	9.0	110
4×2×0.5	0.2	1.2	1.2	10.0	145
10×2×0.5	0.2	1.5	1.5	12.0	200
20×2×0.5	0.2	1.5	1.5	15.0	330
30×2×0.5	0.2	1.5	1.5	17.0	430
50×2×0.5	0.2	1.5	1.5	20.0	580

F101 (Formerly F1) QFCI

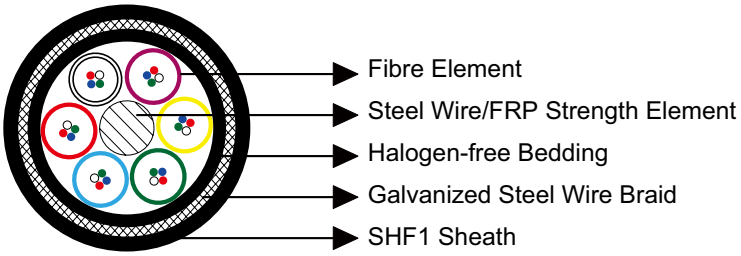
Applications



These steel armoured optical fibre cables are flame retardant, low smoke, halogen free and fire resistant, used for communication and emergency systems that need to be operational during fire.

Standards

- IEC 60794
- IEC 60811-2-1
- IEC 60331-25
- IEC 60332-3-24
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Fibre Element:** Loose tube core design.
- **Central Strength Element:** Steel wire or fibre reinforced plastic (FRP).
- **Bedding:** Halogen free and flame retardant thermoplastic compound.
- **Armour:** Galvanized steel wire braid.
- **Outer Sheath:** Halogen free and flame retardant, UV-stabilized, thermoplastic compound, SHF1.

Optional

F102 (Formerly F4) QFCI-HCF: QFCI-HCF cables are consist of loose tube fibre element, steel wire or FRP central strength element, halogen free and flame retardant thermoplastic bedding, galvanized steel wire braid armour, SHF1 sheath, HC-fire protection, fire resistant tape and SHF1 outer sheath.

Electrical Characteristics

Fibre Type		9/125	50/125	50/125	62.5/125
ITU-T type		G652.D	G651	G651	-
IEC11801 Classification		OS1 & OS2	OM2	OM3	OM1
Core Diameter	μm	8.7±0.4	50±3.0	50±3.0	62.5±3.0
Cladding Diameter	μm	125 ± 1.0	125 ± 2.0	125 ± 2.0	125 ± 2.0
Coating Diameter	μm	245 ± 10	245 ± 10	245 ± 10	245 ± 10
Maximum Attenuation					
@850 nm	dB/km	-	3.0	3.0	3.5
@1300 nm	dB/km	-	1.5	1.0	1.5
@1310 nm	dB/km	0.36	-	-	-
@1550 nm	dB/km	0.22	-	-	-
Minimum Bandwidth(OFL*)					
@850 nm	MHz.km	-	500	1500	200
@1300 nm	MHz.km	-	500	500	600
Maximum Chromatic Dispersion					
1285-1330 nm	ps/nm·km	2.8	-	-	-
1550 nm	ps/nm·km	18	-	-	-
Zero Dispersion Wavelength	nm	1300~1324	-	-	-

Mechanical and Thermal Properties

- Bending Radius: 20×OD (during installation); 10×OD (fixed installed)
- Temperature Range: -40℃ ~ +70℃

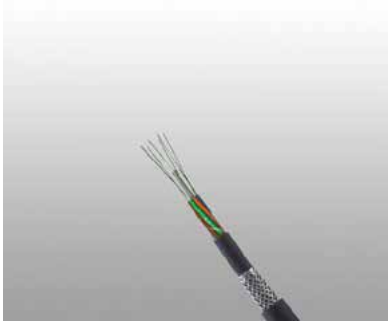
Dimensions and Weight

No. of Fibres	Construction No. of tubes×No. of fibres in each tube	Number of Fillers	Nominal Loose Tube Diameter mm	Nominal Overall Diameter mm	Nominal Weight kg/km
2	1×2	5	2.2	13.9	244
4	1×4	5	2.2	13.9	244
6	3×2	3	2.2	13.9	244
8	2×4	4	2.2	13.9	244
10	5×2	1	2.2	13.9	244
12	3×4	3	2.2	13.9	244
16	4×4	2	2.2	13.9	244
20	5×4	1	2.2	13.9	244
24	6×4	0	2.2	13.9	244
32	4×8	2	2.2	13.9	244
40	5×8	1	2.2	13.9	244
48	6×8	0	2.2	13.9	244

F103 (Formerly F5) QFCB

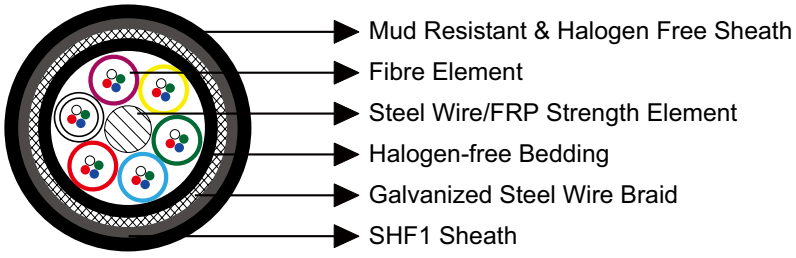
Applications

These steel armoured optical fibre cables are flame retardant, low smoke, halogen free and fire resistant, used for communication and emergency systems that need to be operational during fire.



Standards

- IEC 60794
- IEC 60811-2-1
- IEC 60331-25
- IEC 60332-3-24
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Fibre Element:** Loose tube core design.
- **Central Strength Element:** Steel wire or fibre reinforced plastic (FRP).
- **Bedding:** Halogen free and flame retardant thermoplastic compound.
- **Armour:** Galvanized steel wire braid.
- **Outer Sheath1:** Halogen free and flame retardant, UV-stabilized, thermoplastic compound, SHF1.
- **Outer Sheath2:** Mud resistant and halogen-free thermoplastic compound.

Electrical Characteristics

Fibre Type		9/125	50/125	50/125	62.5/125
ITU-T type		G652.D	G651	G651	-
IEC11801 Classification		OS1 & OS2	OM2	OM3	OM1

Core Diameter	μm	8.7±0.4	50±3.0	50±3.0	62.5±3.0
Cladding Diameter	μm	125 ± 1.0	125 ± 2.0	125 ± 2.0	125 ± 2.0
Coating Diameter	μm	245 ± 10	245 ± 10	245 ± 10	245 ± 10
Maximum Attenuation					
@850 nm	dB/km	-	3.0	3.0	3.5
@1300 nm	dB/km	-	1.5	1.0	1.5
@1310 nm	dB/km	0.36	-	-	-
@1550 nm	dB/km	0.22	-	-	-
Minimum Bandwidth(OFL*)					
@850 nm	MHz.km	-	500	1500	200
@1300 nm	MHz.km	-	500	500	600
Maximum Chromatic Dispersion					
1285-1330 nm	ps/nm·km	2.8	-	-	-
1550 nm	ps/nm·km	18	-	-	-
Zero Dispersion Wavelength	nm	1300~1324	-	-	-

Mechanical and Thermal Properties

- Bending Radius: 20×OD (during installation); 10×OD (fixed installed)
- Temperature Range: -40℃ ~ +70℃

Dimensions and Weight

No. of Fibres	Construction No. of tubes×No. of fibres in each tube	Number of Fillers	Nominal Loose Tube Diameter mm	Nominal Overall Diameter mm	Nominal Weight kg/km
2	1×2	5	2.2	15.0	290
4	1×4	5	2.2	15.0	290
6	3×2	3	2.2	15.0	290
8	2×4	4	2.2	15.0	290
10	5×2	1	2.2	15.0	290
12	3×4	3	2.2	15.0	290
16	4×4	2	2.2	15.0	290
20	5×4	1	2.2	15.0	290
24	6×4	0	2.2	15.0	290
32	4×8	2	2.2	15.0	290
40	5×8	1	2.2	15.0	290
48	6×8	0	2.2	15.0	290

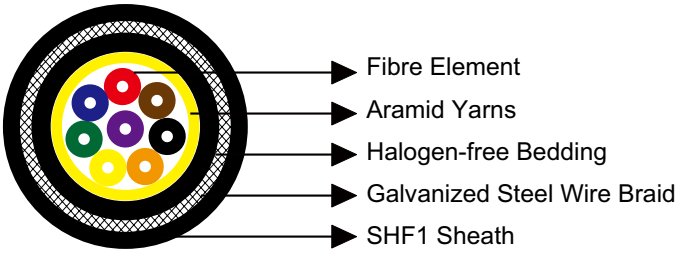
F104 (Formerly F6) AICI

Applications

These optical fibre cables are fire resistant, flame retardant, low smoke and halogen free, used for instrumentation, data and communication systems.

Standards

- IEC 60794
- IEC 60811-2-1
- IEC 60331-25
- IEC 60332-3-24
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

- **Fibre Element:** Tight buffered fibres.
- **Central Strength Element:** Fibre reinforced plastic (FRP) and/or aramid yarns.
- **Bedding:** Halogen free and flame retardant thermoplastic compound.
- **Armour:** Galvanized steel wire braid.
- **Outer Sheath:** Halogen free and flame retardant, UV-stabilized, thermoplastic compound, SHF1.

Electrical Characteristics

Fibre Type		9/125	50/125	50/125	62.5/125
ITU-T type		G652.D	G651	G651	-
IEC11801 Classification		OS1 & OS2	OM2	OM3	OM1
Core Diameter	µm	8.7±0.4	50±3.0	50±3.0	62.5±3.0
Cladding Diameter	µm	125 ± 1.0	125 ± 2.0	125 ± 2.0	125 ± 2.0

Coating Diameter	μm	245 ± 10	245 ± 10	245 ± 10	245 ± 10
Maximum Attenuation					
@850 nm	dB/km	-	3.0	3.0	3.5
@1300 nm	dB/km	-	1.5	1.0	1.5
@1310 nm	dB/km	0.36	-	-	-
@1550 nm	dB/km	0.22	-	-	-
Minimum Bandwidth(OFL*)					
@850 nm	MHz.km	-	500	1500	200
@1300 nm	MHz.km	-	500	500	600
Maximum Chromatic Dispersion					
1285-1330 nm	ps/nm·km	2.8	-	-	-
1550 nm	ps/nm·km	18	-	-	-
Zero Dispersion Wavelength	nm	1300~1324	-	-	-

Mechanical and Thermal Properties

- Bending Radius: 20×OD (during installation); 10×OD (fixed installed)
- Temperature Range: -40℃ ~ +70℃

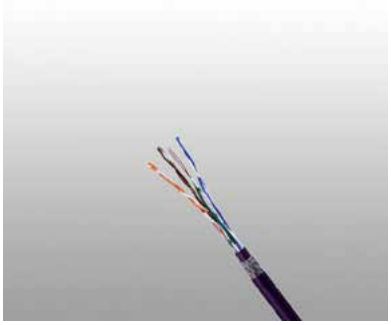
Dimensions and Weight

No. of Fibres	Secondary Coating mm	Nominal Overall Diameter mm	Nominal Weight kg/km
2	0.9	7.8	100
4	0.9	8.2	110
8	0.9	9.4	125
12	0.9	10.3	145
24	0.9	12.0	185

Cat5E UTP/FTP Armoured Data Cable

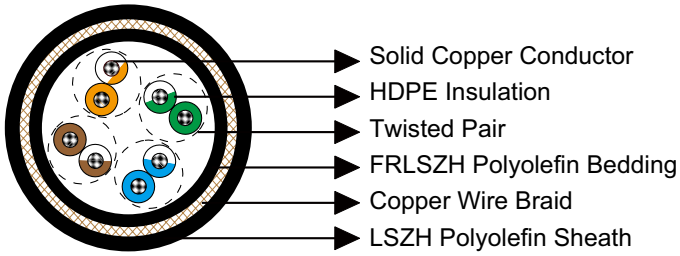
Applications

Cat5E Cable is a cable standard for Gigabit Ethernet and other network protocol, suitable for basic voice and data installations up to 100 MHz. In addition, these cables are with tinned copper wire braid armoured & flame retardant mud resistant outer sheath, providing additional mechanically protection still maintaining the flexibility of the cable.



Standards

- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



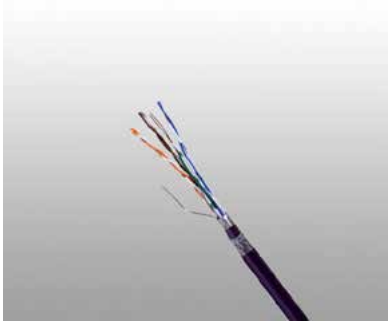
Construction

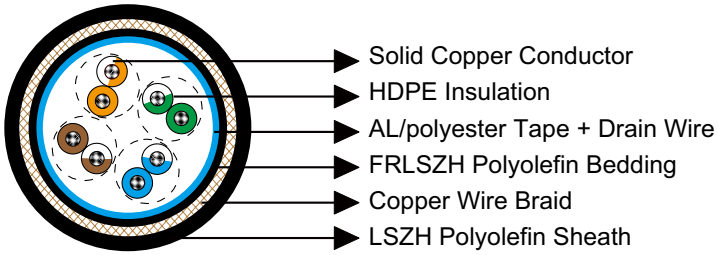
- **Conductors:** 24AWG solid bare copper.
- **Insulation:** HDPE.
- **Twinning:** Two coloured insulated conductors twisted together to form a pair.
- **Bedding:** Flame retardant, low smoke and halogen-free polyolefin, coloured black.
- **Armour:** 0.2/0.3mm tinned copper wire braid.
- **Outer Sheath:** Low smoke and halogen-free polyolefin.

Optional

Cat5E F/UTP: These cables have collective shielding of aluminium/Polyester tape with drain wire.

Cat5E SF/UTP: These cables have double collective shieldings of aluminium/Polyester tape & tinned copper wire braid with drain wire.





Electrical Characteristics

AWG		24
Nominal Conductor Diameter	mm	0.53
Maximum DC Resistant@20℃	Ω/100m	9.38
Maximum DCR Unbalance	%	5
Maximum Mutual Capacitance	pF/m	55.8
Maximum Capacitance Unbalance	pF/100m	330
Characteristic Impedance@1-100MHz	Ω	100+/-15
Maximum Propagation Delay Skew	ns/100m	45

FREQ MHz	Maximum Attenuation dB/100m	Minimum NEXT dB	Minimum PSNEXT dB	Minimum ELFEXT dB/100m	Minimum PSELFEXT dB/100m	Minimum RL dB
0.772	1.8	67.0	64.0	66.0	63.0	—
1	2.0	65.3	62.3	63.8	60.8	20.0
4	4.1	56.3	53.3	51.7	48.7	23.0
8	5.8	51.8	48.8	45.7	42.7	24.5
10	6.5	50.3	47.3	43.8	40.8	25.0
16	8.2	47.3	44.3	39.7	36.7	25.0
20	9.3	45.8	42.8	37.7	34.7	25.0
25	10.4	44.3	41.3	35.8	32.8	24.3
31.25	11.7	42.9	39.9	33.9	30.9	23.6
62.5	17.0	38.4	35.4	27.8	24.8	21.5
100	22.0	35.3	32.3	23.8	20.8	20.1

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 4×OD (fixed installed)
- Temperature Range: -30℃ ~ +75℃

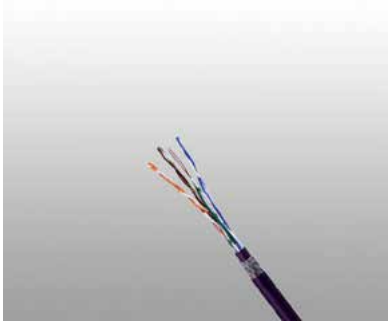
Dimensions and Weight

Construction No. of elements×No. of cores in element×Conductor diameter(mm)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
4×2×0.53	0.2	0.8	1.14	10.1	179

Cat6 UTP/FTP Armoured Data Cable

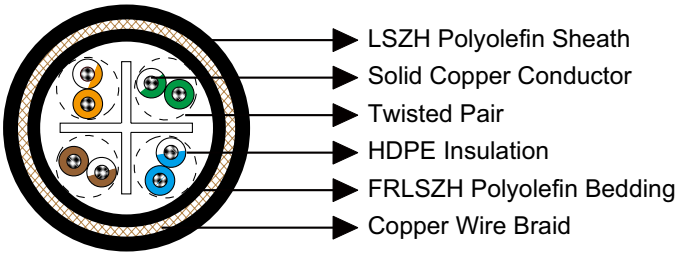
Applications

Cat6 Cable is a cable standard for Gigabit Ethernet and other network protocol, suitable for 10BaseT, 100BaseTx & 1000BaseT (Gigabit Ethernet) application. In addition, these cables are with tinned copper wire braid armoured & flame retardant mud resistant outer sheath, providing additional mechanically protection still maintaining the flexibility of the cable.



Standards

- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



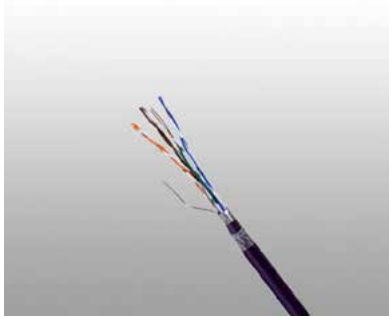
Construction

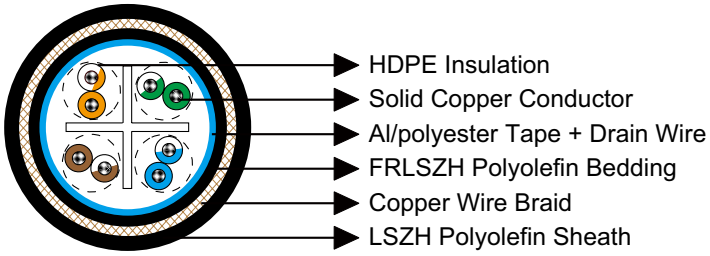
- **Conductors:** 23AWG solid bare copper.
- **Insulation:** HDPE.
- **Twinning:** Two coloured insulated conductors twisted together to form a pair.
- **Bedding:** Flame retardant, low smoke and halogen-free polyolefin, coloured black.
- **Armour:** 0.2/0.3mm tinned copper wire braid.
- **Outer Sheath:** Low smoke and halogen-free polyolefin.

Optional

Cat6 F/UTP: These cables have collective shielding of aluminium/Polyester tape with drain wire.

Cat6 SF/UTP: These cables have double collective shieldings of aluminium/Polyester tape & tinned copper wire braid with drain wire.





Electrical Characteristics

AWG		23
Nominal Conductor Diameter	mm	0.58
Maximum DC Resistant@20℃	Ω/100m	7.5
Maximum DCR Unbalance	%	3
Maximum Mutual Capacitance	pF/m	5.6
Maximum Capacitance Unbalance	pF/100m	330
Characteristic Impedance@1-100MHz	Ω	100+/-15
Maximum Propagation Delay Skew	ns/100m	18

FREQ MHz	Maximum Attenuation dB/100m	Minimum NEXT dB	Minimum PSNEXT dB	Minimum ELFEXT dB/100m	Minimum PSELFEXT dB/100m	Minimum RL dB
0.772	1.8	76.0	74.0	70.0	67.0	—
1	2.0	74.3	72.3	67.8	64.8	20.0
4	3.8	65.3	63.3	55.7	52.7	23.0
8	5.3	60.8	58.8	49.7	46.7	24.5
10	6.0	59.3	57.3	47.8	44.8	25.0
16	7.6	56.3	54.3	43.7	40.7	25.0
20	8.5	54.8	52.8	41.7	38.7	25.0
25	9.5	53.3	51.3	39.8	36.8	24.3
31.25	10.7	51.9	49.9	37.9	34.9	23.6
62.5	15.4	47.4	45.4	31.8	28.8	21.5
100	19.8	44.3	42.3	27.8	24.8	20.1
155	25.2	41.5	39.5	23.9	20.9	18.8
200	29.0	39.8	37.8	21.7	18.7	18.0
250	32.8	38.3	36.3	19.8	16.8	17.3

Mechanical and Thermal Properties

- Bending Radius: 8×OD (during installation); 4×OD (fixed installed)
- Temperature Range: -30℃ ~ +75℃

Dimensions and Weight

Construction No. of elements×No. of cores in element×Conductor diameter(mm)	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
4×2×0.58	0.23	0.8	1.14	11.6	214

RG6 Armoured Coaxial Cable

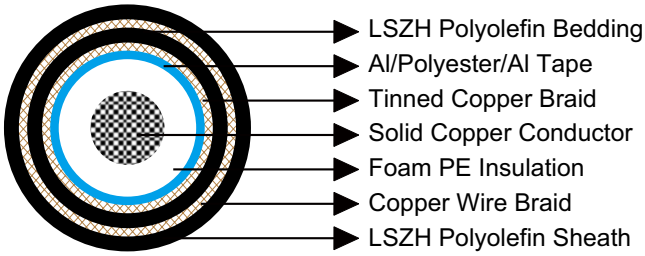
Applications

These 75Ω coaxial cables are suitable for installation on board of ships and other indoor marine environments.

Standards

- IEC 60092-350
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004

Construction



- **Conductors:** 18AWG solid bare copper.
- **Insulation:** Foam PE.
- **Shielding1:** Al/Polyester/Al tape.
- **Shielding2:** Tinned copper braid.
- **Bedding:** Low smoke and halogen-free polyolefin, coloured black.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Low smoke and halogen-free polyolefin.

Electrical Characteristics

AWG		18
Nominal Conductor Diameter	mm	1.0
Impedance	Ω	75+/-5
Nominal Attenuation@100MHz	dB/100m	6.9
Nominal Attenuation@200MHz	dB/100m	9.0
Nominal Attenuation@300MHz	dB/100m	11.8
Nominal Attenuation@400MHz	dB/100m	13.1
Nominal Attenuation@500MHz	dB/100m	15.4
Nominal Attenuation@900MHz	dB/100m	21.5

Nominal Attenuation@1700MHz	dB/100m	29.4
Capacitance	pF/m	53.5
Velocity of Propagation	%	83
Conductor DCR	Ω/km	21.4
Shield DCR	Ω/km	7.5
Inductance	μH/m	0.32
Time Delay	ns/m	4

Mechanical and Thermal Properties

- Bending Radius: 15×OD
- Temperature Range: -30℃ ~ +75℃

Dimensions and Weight

Nominal Inner Conductor Diameter mm	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1.0	1.8	1.2	11.2	208

RG11 Armoured Coaxial Cable

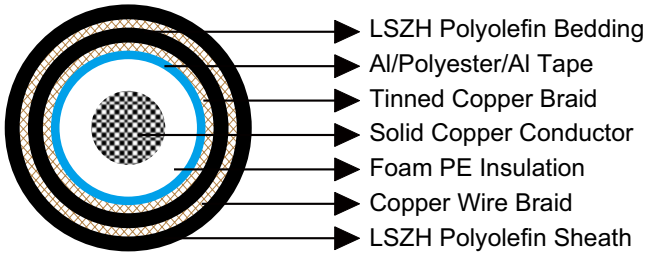
Applications

These 75Ω coaxial cables are suitable for installation on board of ships and other indoor marine environments.

Standards

- IEC 60092-350
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004

Construction



- **Conductors:** 14AWG solid bare copper.
- **Insulation:** Foam PE.
- **Shielding1:** Al/Polyester/Al tape.
- **Shielding2:** Tinned copper braid.
- **Bedding:** Low smoke and halogen-free polyolefin, coloured black.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Low smoke and halogen-free polyolefin.

Electrical Characteristics

AWG		14
Nominal Conductor Diameter	mm	1.6
Impedance	Ω	75+/-5
Nominal Attenuation@100MHz	dB/100m	4.5
Nominal Attenuation@270MHz	dB/100m	7.6
Nominal Attenuation@540MHz	dB/100m	10.8
Nominal Attenuation@750MHz	dB/100m	12.8
Nominal Attenuation@1000MHz	dB/100m	14.8
Capacitance	pF/m	53.5

Velocity of Propagation	%	83
Conductor DCR	Ω/km	8.5
Shield DCR	Ω/km	12.1
Inductance	μH/m	0.32
Time Delay	ns/m	4

Mechanical and Thermal Properties

- Bending Radius: 15×OD
- Temperature Range: -30℃ ~ +75℃

Dimensions and Weight

Nominal Inner Conductor Diameter mm	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
1.6	2.7	1.7	15.0	353

RG59 Armoured Coaxial Cable

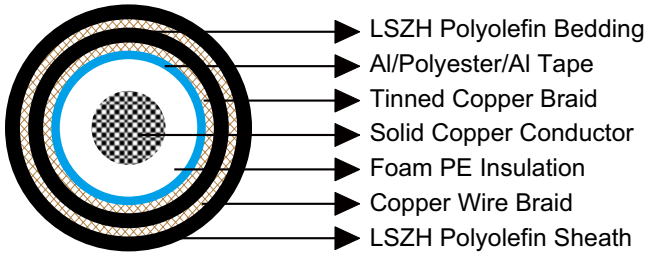
Applications

These 75Ω coaxial cables are suitable for installation on board of ships and other indoor marine environments.

Standards

- IEC 60092-350
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004

Construction



- **Conductors:** 20AWG solid bare copper.
- **Insulation:** Foam PE.
- **Shielding1:** Al/Polyester/Al tape.
- **Shielding2:** Tinned copper braid.
- **Bedding:** Low smoke and halogen-free polyolefin, coloured black.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Low smoke and halogen-free polyolefin.

Electrical Characteristics

AWG		20
Nominal Conductor Diameter	mm	0.8
Impedance	Ω	75+/-5
Nominal Attenuation@100MHz	dB/100m	7.6
Nominal Attenuation@270MHz	dB/100m	12.5
Nominal Attenuation@540MHz	dB/100m	17.9
Nominal Attenuation@720MHz	dB/100m	20.9
Nominal Attenuation@750MHz	dB/100m	21.3
Nominal Attenuation@1000MHz	dB/100m	24.9

Capacitance	pF/m	53.5
Velocity of Propagation	%	83
Conductor DCR	Ω/km	32.8
Shield DCR	Ω/km	12.5
Inductance	μH/m	0.318
Time Delay	ns/m	4.0

Mechanical and Thermal Properties

- Bending Radius: 15×OD
- Temperature Range: -30℃ ~ +75℃

Dimensions and Weight

Nominal Inner Conductor Diameter mm	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
0.8	1.4	1.2	10.0	177

RG58 Armoured Coaxial Cable

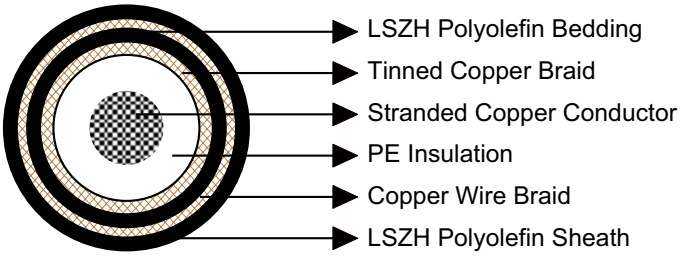
Applications

These 50Ω coaxial cables are suitable for installation on board of ships and other indoor marine environments.

Standards

- IEC 60092-350
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004

Construction



- **Conductors:** 21AWG tinned copper.
- **Insulation:** PE.
- **Shielding:** Tinned copper braid.
- **Bedding:** Low smoke and halogen-free polyolefin, coloured black.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Low smoke and halogen-free polyolefin.

Electrical Characteristics

AWG		21
Conductor Construction No./Diameter of Wires	-/mm	19/0.18
Nominal Conductor Diameter	mm	0.89
Impedance	Ω	50+/-3
Nominal Attenuation@100MHz	dB/100m	15.7
Nominal Attenuation@200MHz	dB/100m	22.3
Nominal Attenuation@400MHz	dB/100m	32.8
Nominal Attenuation@700MHz	dB/100m	46.6
Nominal Attenuation@900MHz	dB/100m	54.1
Nominal Attenuation@1000MHz	dB/100m	56.1

Capacitance	pF/m	101
Velocity of Propagation	%	66
Conductor DCR	Ω/km	35.4
Inductance	μH/m	0.246
Time Delay	ns/m	5.0

Mechanical and Thermal Properties

- Bending Radius: 15×OD
- Temperature Range: -30℃ ~ +75℃

Dimensions and Weight

Nominal Inner Conductor Diameter mm	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
0.89	1.0	1.14	8.6	149

RG213 Armoured Coaxial Cable

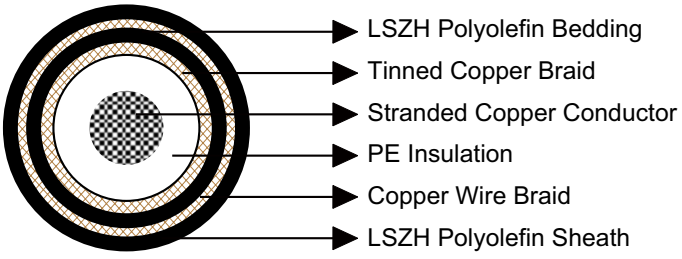
Applications

These 50Ω coaxial cables are suitable for installation on board of ships and other indoor marine environments.

Standards

- IEC 60092-350
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004

Construction



- **Conductors:** 13AWG bare copper.
- **Insulation:** PE.
- **Shielding:** Copper braid.
- **Bedding:** Low smoke and halogen-free polyolefin, coloured black.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Low smoke and halogen-free polyolefin.

Electrical Characteristics

AWG		13
Conductor Construction No./Diameter of Wires	-/mm	7/0.75
Nominal Conductor Diameter	mm	2.24
Impedance	Ω	50+/-3
Nominal Attenuation@100MHz	dB/100m	7.5
Nominal Attenuation@200MHz	dB/100m	10.5
Nominal Attenuation@400MHz	dB/100m	15.1
Nominal Attenuation@1000MHz	dB/100m	29.5
Capacitance	pF/m	101
Velocity of Propagation	%	66

Conductor DCR	Ω/km	5.7
Shield DCR	Ω/km	3.9
Inductance	μH/m	0.246
Time Delay	ns/m	5.0

Mechanical and Thermal Properties

- Bending Radius: 15×OD
- Temperature Range: -30℃ ~ +75℃

Dimensions and Weight

Nominal Inner Conductor Diameter mm	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
2.24	2.2	1.14	13.9	379

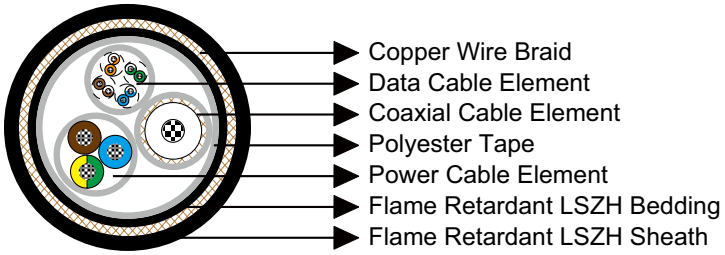
Mud Resistant Composite Cable

Applications

These composite cables consist of cat6 data cable & coaxial cable & power cable, with copper wire braid armoured & flame retardant oil&mud resistant outer sheath.

Standards

- IEC 60092-359
- IEC 60332-3-22
- IEC 60754-1,2
- IEC 61034-1,2
- NEK 606:2004



Construction

1) 4×2×0.57mm U/UTP Cat6 Data Cable:

- **Conductors:** Solid bare copper wire.
- **Insulation:** PE.
- **Twinning:** Two coloured insulated wire twisted to form a pair.
- **Sheath:** Flame retardant LSZH, coloured grey.

2) RG59 Coaxial Cable:

- **Conductors:** 0.58mm solid bare copper wire.
- **Insulation:** PE.
- **Shielding:** Bare copper wire braid.
- **Sheath:** Flame retardant LSZH, coloured grey.

3) 3×1.0mm² Power Cable:

- **Conductors:** 7/0.44mm stranded bare copper wire.
- **Insulation:** XLPE. Coloured Blue, Brown, Green/Yellow.
- **Sheath:** Flame retardant LSZH, coloured grey

4) Element Assembly

- **Filler:** PP, PVC, PE or LSZH Material.
- **Wrapping:** Polyester Tape.

- **Bedding:** Flame retardant LSZH.
- **Armour:** Tinned copper wire braid.
- **Outer Sheath:** Oil & mud resistant, flame retardant LSZH, coloured grey.

Dimensions

Cable Construction	Nominal Data Cable Diameter mm	Nominal Coaxial Cable Diameter mm	Nominal Power Cable Diameter mm	Nominal Overall Diameter mm
4×2×0.57mm + RG59 + 3×1.0mm²	6.0	6.2	6.8	21.0

Note: Other construction can be offered opon request.

Cable Code Designation

A cable code of 2 letters (1. and 4.) or 4 letters is used to describe the construction.
For example:

1st Letter:
Insulation:
B: Fire resistant tape + insulation (Halogen-free)
R: Ethylene propylene rubber - EPR
T: Cross-linked polyethylene XLPE
I: Thermoplastic compound (Halogen-free)
U: Halogen-free thermosetting compound EMA or EVA
A: Fibre, tight buffered
Q: Fibre in loose tube

2nd letter:
Inner Sheath:
F: Bedding/Inner covering or taping (Halogen-free)
Y: Screen (poss. with PE or PP)
I: Thermoplastic compound (Halogen-free) SHF1

3rd letter:
Armour/Screen:
L: Aluminium (laminated to outer sheath)
X: No armour
O: Copper wire braid (Tinned or bare)
A: Strength member of yarn
C: Galvanized steel wire braid

4rd letter:
Outer Sheath:
I: Thermoplastic compound (Halogen-free), SHF1
U: Halogen-free thermosetting compound, SHF2
U: Halogen-free mud resistant thermosetting compound, SHF Mud
B*: Halogen-free mud resistant thermoplastic compound
*QFCB cables only

Additional Abbreviation for Instrumentation Cables:
(c): Collective screen
(i): Individual pair or triple screen

RFOU(i)

Standards and Tests

NEK 606-2004	Cables for Offshore Installations halogen-free and/or mud resistant
IEC 60092-350	Electrical installations in ships Part 350: Low-voltage shipboard power cables. (General construction and test requirements)
IEC 60092-351	Electrical installations in ships Part 351: Insulating materials for shipboard power cables
IEC 60092-352	Electrical installations in ships Part 352: Choice and installation of electric cables for low voltage power systems
IEC 60092-353	Electrical installations in ships Part 353: Single and multicore cables with extruded solid insulation for rated voltages 0,6/1 and 1,8/3 kV
IEC 60092-354	Electrical installations in ships Part 354: Single and three-core power cables with extruded solid insulation for rated voltages 6 kV up to 30 kV.
IEC 60092-359	Electrical installations in ships Part 359: Sheathing materials for shipboard power and telecommunication cables
IEC 60092-375	Electrical installations in ships Part 375: General instrumentation, control and communication cables
IEC 60092-376	Electrical installations in ships Part 376: 150/250 V cables for Control and instrumentation Circuits
IEC 60228	Conductors of insulated cables
IEC 60331-11/12/21/25/31	Fire resisting characteristics of electrical cables
IEC 60332-1/3	Tests on electric cables under fire condition. Part 1: Tests on a single vertical insulated wire or cable. Part 3: Test on bunched wires or cables.
IEC 60446	Basic and safety principles for man-machine interface, marking and identification. Identification of conductors by colours or alphanumerics
IEC 60754-1/2	Test on gases evolved during combustion of electric cables
IEC 60811	Common test methods for insulating and sheathing materials of electric cables
IEC 61034-1/2	Measurement of smoke density of electric cables burning under defined conditions. Part 1: Test apparatus Part 2: Test procedure and requirements

Cable Characteristics

Mud Resistant

The suitability of sheathing materials for use in areas in which the cables are exposed to drilling fluids is heavily dependent upon the type of fluid present. Each type of fluid contains additives which can have a deleterious effect on the sheathing material.

According to NEK 606, the mud resistant cables shall have a SHF Mud sheath that comply with the requirements in IEC 60092-359 for SHF2 and the below specified. The mud resistant cables shall be designed with sheathing compounds suitable for installation and operation in contact with MUD unless otherwise specified.

The MUD resistance test requirements for sheathing compounds SHF Mud are as follows:

Test fluid	Temperature	Duration	Tensile Strength & Elongation At Break Variation	Volume Swell Variation	Weight Increase Variation
Mineral oil type - IRM 903	100℃	7 d	30%	30%	30%
Calcium Bromide Brine (Waterbased)	70℃	56 d	25%	20%	15%
Carbo Sea (oil based)	70℃	56 d	25%	20%	15%

Oil Resistance

All thermoset sheathed cables shall be suitable for an oil production installation. The oil resistance properties shall be demonstrated by a test according to IEC 60092-359 SHF2.

Flame Retardance

The cables shall withstand the test specified in IEC 60332-3-10, -22, -23, -24, -25. Single, earth and bonding wires shall withstand the test specified in IEC 60332-1 or IEC 60332-2.

Fire Resistance

Fire resistance cables shall be tested according to IEC 60331-11, -12, -21, -25 and -31.

Hydrocarbon (HCF) Fire Resistant

The purchaser shall specify which of the curves below in Figure 1 or 2 to comply with the HCF test.

The test requires no breakdown for 30 or 60 minutes when connected to operating voltage. Time to breakdown to be considered in agreement with the customer or approval authority.

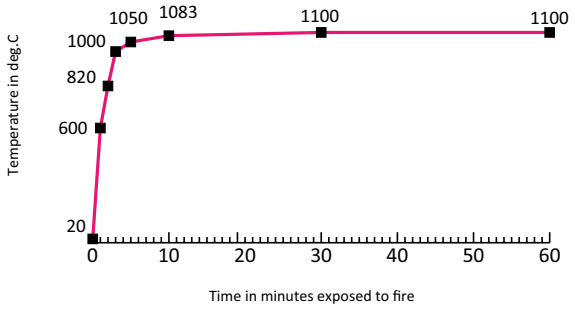


Fig.1 HC fire curve based on Exxon calculations, which required functional security for 15 minutes

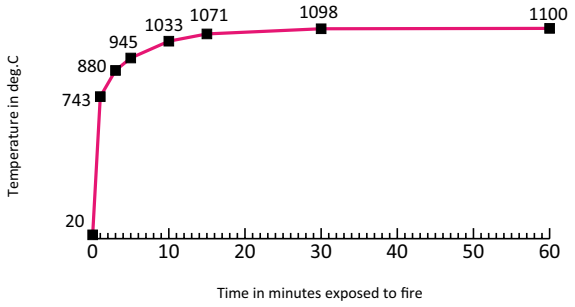


Fig.2 International recognized HC fire curve.

Content of Halogen

All cables shall be halogen-free according to IEC 60754-1/2.

Smoke Emission

During a cable fire smoke emission shall be kept to a minimum value of 60% according to IEC 61034-1/2.

Electrical Data

Conductor Resistance

Resistance formula:

$$R = \rho \frac{L}{A} \qquad [\Omega]$$

p = specific resistance, Ω.mm²/m
A = conductor area, mm²
L = conductor length, m

Resistance as a function of temperature:

$$R = R_0[1 + \alpha(t - 20)]$$

R_0= Resistance at t=20°C
t = conductor temperature °C
α= 0.00393 for copper

Short circuit ratings

The following short circuit currents are for cables normally operating at a maximum conductor temperature of 90°C.

The theoretical temperature that arises in the conductor during a short circuit, which is used as a basis of the calculation, is 250°C. EPR and XLPE insulation are capable of withstanding short term temperatures up to 250°C.

The short circuit currents for copper conductors given in the table are values for one second,for other durations the current may be calculated from the following formula:

$$I = I/\sqrt{t}$$

I_t=short ciricut current for t sec.(Amp)
I=short circuit current for one sec.(Amp)
t=short circuit duration(sec.)

The duration of the short circuit based on these assumptions should be between 0.2 sec. and 5 sec.

Conductor area mm²	Current 1 second amperes	Conductor area mm²	Current 1 second amperes	Conductor area mm²	Current 1 second amperes	Conductor area mm²	Current 1 second amperes
1.0	140	10	1400	70	9800	240	33600
1.5	210	16	2240	95	13300	300	42000
2.5	350	25	3500	120	16800	400	56000
4	560	35	4900	150	21000	500	70000
6	840	50	7000	185	25900	630	88200

Reactance

The reactance of a cable operating in an AC system depends on many factors, including, in particular, the axial spacing between conductors and the proximity and magnetic properties of adjacent steelwork. The former is known for multicore cable, but may vary for single core cables depending upon the spacing between them and their disposition when installed.

Reactance of cables in certain dispositions remote from steelwork is calculable and is shown. The values are for cables with circular conductors.

The value for a sector-shaped conductor should be taken as 90% of the calculated value. Induction for 2-, 3- and 4- conductor cables is given by the formula:

$$L = 0.2 \times \ln\left(2\frac{a}{d}\right) + 0.25 \times 10^{-6} \quad [H/m]$$

a = Axial space between conductors in mm.
d = conductor diameter in mm.

Reactance for 2-, 3- and 4-conductor cables is given by the formula:

$$X = 2\pi fLl \quad [\Omega]$$

f = frequency in Hz
L = Induction in H/m
l = Conductor length in m

Impedance

Induction for 2-, 3- and 4- conductor cables is given by the formula:

$$Z = \sqrt[3]{R^2 + X^2} \quad [\Omega]$$

R = Resistance at operating temprature in Ω
X = Reactance in Ω

Core Identification

The identification of insulated conductors (cores) for the 250 V cables

Cable element	Colour of cores		
Pair	Black	Light blue	
Triple	Black	Light blue	Brown
Pairs/triples are numbered with numbered tape or by numbers printed directly on the insulated conductors			

The identification of insulated conductors (cores) for the 0.6/1 kV cables according to NEK standard

No. of cores	Colour of cores			
Single core	Off-white(grey)			
Two cores	Off-white(grey)	Black		
Three cores	Off-white(grey)	Black	Red	
Four cores	Off-white(grey)	Black	Red	Blue
above 4 cores	black numbers on white base			
earthing core	yellow/green			

The identification of insulated conductors (cores) for the 0.6/1 kV cables according to standard HD 308 S2

Cables with a green/yellow core					
No. of cores	Colour of cores*				
Three cores	Green/yellow	Blue	Brown		
Four cores**	Green/yellow	-	Brown	Black	Grey
Four cores	Green/yellow	Blue	Brown	Black	
Five cores	Green/yellow	Blue	Brown	Black	Grey

** For certain applications only.
* In this table an uninsulated concentric conductor, such as a metallic sheath, armour or screen wires, is not regarded as a core. A concentric conductor is identified by its position and, therefore, need not be identified by colour.

Cables without a green/yellow core					
No. of cores	Colour of cores*				
Two cores	Blue	Brown			
Three cores**	-	Brown	Black	Grey	
Three cores	Blue	Brown	Black		
Four cores	Blue	Brown	Black	Grey	
Five cores	Blue	Brown	Black	Grey	Black

** For certain applications only.
* In this table an uninsulated concentric conductor, such as a metallic sheath, armour or screen wires, is not regarded as a core. A concentric conductor is identified by its position and, therefore, need not be identified by colour.

The identification of insulated conductors (cores) for the 3.6/6kV, 6/10kV, 8.7/15kV,12/20kV and 18/30kV cables

No. of cores	Colour of cores
Single core	off-white insulation + black semi conducting layers
Three cores	off-white insulation + black semi conducting layers identified by White-Black-Red threads under and over the metallic screen on each individual core.
earthing core	yellow/green

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