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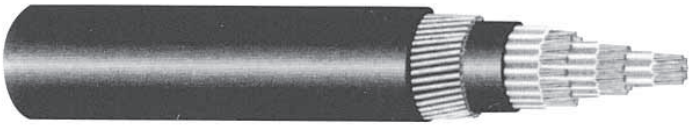
PRODUCT RANGE

This publication provides details of the following types of electric cables:

Control Cables with copper conductors, XLPE or PVC insulated, covering sizes from 1.5 mm^2 up to 10 mm^2, in 2, 3 and 4 cores.

Auxiliary Cables with copper conductors, XLPE or PVC insulated, covering sizes from 1.5 mm^2, 2.5 mm^2, 4 mm^2 from 5 cores to 48 cores.

Construction details in this publication pertain to Auxiliary cables with the standard number of cores (ie. 7, 12, 19, 27, 37 or 48). However, enquiries for other number of cores can be considered.



The cables conform to the following cable specification, as applicable:

BS 5467 specification for XLPE insulated Armoured cables, rated 600/1000V.

BS 6346 specification for PVC insulated Armoured cables, rated 600/1000V.

IEC 60502-1 specification for PVC or XLPE insulated Unarmoured cables, rated 600/1000V.

XLPE insulated LSF sheathed cables with "low smoke and fume" emission characteristics as per BS 6724 specification can also be manufactured and these have similar dimensional features as cables to BS 5467.

Armoured Control and Auxiliary cables, can be offered to IEC 60502-1 specifications where required. Details are available upon request.

Control and Auxiliary cables, both armoured and unarmoured, can be offered with a common/overall screen or shield. The screening material is plain annealed copper tape / copper laminate / Aluminium laminate as specified.

CONSTRUCTION

Conductors

The conductors are bunched seven wire strands, made from high conductivity plain annealed copper wires and meet the requirements of BS 6360 specification for "Conductors in insulated cables and cords" and also IEC 60228 specification.

These cables can also be offered with single strand, solid copper conductors in sizes up to 2.5 mm^2.

Insulation

According to its particular standard specification, a cable will be insulated with either:

XLPE (Cross-linked polyethylene) or
PVC (Polyvinyl Chloride).

PVC is a clean, easy to handle material with good electrical characteristics and reasonable resistance to a range of oils and chemicals. It is inherently flame retardant and is suitable for a maximum continuous operating temperature of 70˚C. XLPE is not flame retardant but matches all of the other attributes of PVC and at higher temperatures the toughness and physical properties are improved. In particular there is greatly enhanced resistance to deformation. This enables the conductors of XLPE insulated cables to operate at a maximum continuous temperature of 90˚C, which imparts an important advantage when considering current ratings and is of particular significance in countries and installation sites where the ambient temperature is relatively high.

Core Identification

Core identification is as follows unless otherwise specified:

Number of cores	Core Identification
Control Cables	
Two	Red, Black
Three	Red, Yellow, Blue
Four	Red, Yellow, Blue, Black
Auxiliary Cables	
Five and more	White cores with number printing in black

Cables to new colour scheme of BS5467 eg. Blue, Brown, Black, Grey could also be supplied on special request.

Fillers

Wherever necessary, non-hygroscopic polypropylene fillers are applied in the interstices of multicore cables during laying up.

Bedding

The bedding normally consists of a layer of extruded PVC for cables to BS 5467 and BS 6346. The material is a special halogen-free compound in the case of LSF cables to BS 6724.

Armour

The armour is a single layer of galvanised steel wires. The direction lay of the armour is left hand and the size of the armour-wires is as specified in the cable standard specification. See Tables 1 and 2 for armour wire diameter.

Finish

The standard finish of all cables consists of an extruded black PVC oversheath, the external surface of which is embossed with the appropriate legend. The oversheath PVC grade is usually Type TM 1 or Type 9 to BS 7655 although other grades, e.g., Type 5 (85˚C Hard) PVC or PVC sheath with anti-termite properties can be provided when specified. The PVC grade is ST2 for cables conforming to IEC 60502-1 standard.

Another option is medium density polyethylene (MDPE) sheath where abrasion resistance is important or where the cable is to be buried in a waterlogged area.

PVC is intrinsically flame retardant and all cables described in this publication conform to IEC 60332-1 “Test on Electric Cables under Fire Conditions”. For special enquiries, PVC with high oxygen index, specially formulated for enhanced fire performance can be considered.

In the case of LSF cables to BS 6724 the material is a special halogen-free compound. LSF cables meet the requirements of IEC 60332-3-24 Cat-C for reduced flame propagation and do not emit smoke or acid fumes when exposed to fire.

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600/1000V Armoured Cables: XLPE Insulated to BS 5467-1997 PVC Insulated to BS 6346-1997 Stranded Copper Conductors

TABLE 1 CONTROL CABLES - Dimensions and Weights

Conductor area mm²	Strand No. / Size mm	Approx. diameter under Armour mm		Armour wire size mm		Approx. overall diameter mm		Approx. weight of completed cable kg/km	
Two Core		XLPE	PVC	XLPE	PVC	XLPE	PVC	XLPE	PVC
1.5	7/0.53	7.7	7.7	0.9	0.9	12.1	12.3	275	285
2.5	7/0.67	9.0	9.0	0.9	0.9	13.6	13.6	340	350
4	7/0.85	10.1	10.5	0.9	0.9	14.7	15.1	420	440
6	7/1.04	11.3	11.7	0.9	0.9	15.9	16.5	490	530
10	7/1.35	13.2	14.4	0.9	1.25	18.0	20.1	640	800
Three Core									
1.5	7/0.53	8.2	8.2	0.9	0.9	12.6	12.8	300	305
2.5	7/0.67	9.5	9.5	0.9	0.9	14.1	14.1	385	380
4	7/0.85	10.7	11.2	0.9	0.9	15.3	15.8	460	495
6	7/1.04	12.0	12.5	0.9	1.25	16.6	18.0	570	690
10	7/1.35	14.0	15.5	1.25	1.25	19.5	21.2	835	935
Four Core									
1.5	7/0.53	8.9	8.9	0.9	0.9	13.3	13.5	355	365
2.5	7/0.67	10.4	10.4	0.9	0.9	15.0	15.0	445	460
4	7/0.85	11.8	12.3	0.9	1.25	16.4	17.8	550	685
6	7/1.04	13.2	13.7	1.25	1.25	18.7	19.2	760	810
10	7/1.35	15.6	17.1	1.25	1.25	21.1	22.8	985	1092

TABLE 2 AUXILIARY CABLES - Dimensions and Weights

Number of cores	Approx. diameter under Armour mm		Armour wire size mm		Approx. overall diameter mm		Approx. weight of completed cable kg/km	
Conductor 1.5 mm² (7/0.53 mm)	XLPE	PVC	XLPE	PVC	XLPE	PVC	XLPE	PVC
7	10.6	10.6	0.9	0.9	15.2	15.2	445	465
12	13.9	13.9	1.25	1.25	19.4	19.4	710	745
19	16.5	16.5	1.25	1.25	22.2	22.2	945	1000
27	20.1	20.1	1.6	1.6	26.7	26.7	1355	1435
37	22.4	22.4	1.6	1.6	29.0	29.2	1645	1765
48	25.9	25.9	1.6	1.6	32.7	32.9	2000	2155
Conductor 2.5 mm² (7/0.67 mm)								
7	12.5	12.5	0.9	1.25	17.1	18.0	575	685
12	16.7	16.7	1.25	1.25	22.4	22.4	945	995
19	20.0	20.0	1.6	1.6	26.6	26.6	1420	1500
27	23.9	23.9	1.6	1.6	30.7	30.7	1815	1930
37	27.0	27.0	1.6	1.6	33.8	34.0	2240	2392
48	31.3	31.3	2.0	2.0	39.3	39.5	3045	3245
Conductor 4 mm² (7/0.85 mm)								
7	14.2	14.8	1.25	1.25	19.7	20.5	830	900
12	19.3	20.2	1.6	1.6	25.7	26.8	1380	1535
19	22.7	23.7	1.6	1.6	29.3	30.5	1820	2010
27	27.4	29.1	1.6	2.0	34.4	37.1	2350	2945
37	31.2	32.6	2.0	2.0	39.2	40.8	3320	3650
48	35.9	37.6	2.0	2.0	44.1	46.0	4003	4475

TABLE 3 RESISTANCE OF CONDUCTOR AND ARMOUR - CONTROL CABLES

Nominal area of conductor mm²	Maximum resistance per km of cable at 20°C in ohm/km						
	Copper Conductor ohm/km	Steel wire armour					
		Two core		Three core		Four core	
		XLPE	PVC	XLPE	PVC	XLPE	PVC
1.5	12.1	10.2	10.2	9.5	9.5	8.8	8.8
2.5	7.41	8.8	8.8	8.2	8.2	7.7	7.7
4	4.61	7.9	7.5	7.5	7.0	6.8	4.6
6	3.08	7.0	6.8	6.7	4.6	4.3	4.1
10	1.83	6.0	3.9	4.0	3.7	3.7	3.4

TABLE 4 RESISTANCE OF CONDUCTOR AND ARMOUR - AUXILIARY CABLES

Nominal area of conductor mm²	Copper conductor ohm/km	Maximum resistance per km of cable at 20°C in ohm/km											
		Steel wire armour											
		Number of cores											
		7		12		19		27		37		48	
		XLPE	PVC	XLPE	PVC	XLPE	PVC	XLPE	PVC	XLPE	PVC	XLPE	PVC
1.5	12.1	7.5	7.5	4.0	4.0	3.5	3.5	2.3	2.3	2.0	2.0	1.8	1.8
2.5	7.41	6.3	4.6	3.5	3.5	2.3	2.3	1.9	1.9	1.7	1.7	1.2	1.2
4	4.61	4.0	3.9	2.3	2.2	2.0	1.9	1.7	1.3	1.2	1.1	1.0	0.96

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CURRENT RATINGS (AC)

XLPE INSULATED CABLES

(Maximum conductor temperature 90˚C)
Installed in free air (Reference Method 11 on cable tray or Method 13 in free air, IEE Wiring Regulations.

Table 7

Nominal area of Conductor mm²	Two core Current rating amp	Two core Volt drop per amp per metre mV	Three and Four core Current rating amp	Three and Four core Volt drop per amp per metre mV
1.5	29	31	25	27
2.5	39	19	33	16
4	52	12	44	10
6	66	7.9	56	6.8
10	90	4.9	78	4.0

Ratings based on Ambient air temp 30˚C
Laid directly in ground, run in single-way ducts

Table 8

Nominal area of Conductor mm²	Two core Current rating In ground amp	Two core Current rating In duct amp	Two core Volt drop per amp per metre mV	Three and Four core Current rating In ground amp	Three and Four core Current rating In duct amp	Three and Four core Volt drop per amp per metre mV
1.5	38	31	31	32	26	27
2.5	49	41	19	42	34	16
4	65	53	12	55	45	10
6	81	67	7.9	69	56	6.8
10	109	89	4.9	92	75	4.0

Ratings based on Ground temp 15˚C, Soil thermal resistivity 1.2˚Cm/W. Depth of laying 0.5m. All circuits thermally independent. 100mm diameter single-way ducts.

Current Ratings for cables having more than four cores are available on request.

PVC INSULATED CABLES

(Maximum conductor temperature 70˚C)
Installed in free air (Reference Method 11 on cable tray or Method 13 in free air, IEE Wiring Regulations.

Table 9

Nominal area of Conductor mm²	Two core Current rating amp	Two core Volt drop per amp per metre mV	Three and Four core Current rating amp	Three and Four core Volt drop per amp per metre mV
1.5	22	29	19	25
2.5	31	18	26	15
4	41	11	35	9.5
6	53	7.3	45	6.4
10	72	4.4	62	3.8

Ratings based on Ambient air temp 30˚C
Laid directly in ground, run in single-way ducts

Table 10

Nominal area of Conductor mm²	Two core Current rating In ground amp	Two core Current rating In duct amp	Two core Volt drop per amp per metre mV	Three and Four core Current rating In ground amp	Three and Four core Current rating In duct amp	Three and Four core Volt drop per amp per metre mV
1.5	32	26	29	27	22	25
2.5	41	34	18	35	29	15
4	55	45	11	47	38	9.5
6	69	57	7.3	59	48	6.4
10	92	76	4.4	78	64	3.8

Ratings based on Ground temp 15˚C, Soil thermal resistivity 1.2˚Cm/W. Depth of laying 0.5m. All circuits thermally independent. 100mm diameter single-way ducts.

Current Ratings for cables having more than four cores are available on request.

RATING FACTORS

Rating factors for ambient air temperature

Table 11

Ambient air temperature	25˚C	30˚C	35˚C	40˚C	45˚C	50˚C	55˚C
Cable type	Rating factor						
XLPE and LSF cable	1.02	1.00	0.96	0.91	0.87	0.82	0.76
PVC cable	1.03	1.00	0.94	0.87	0.79	0.71	0.61

Correction factors for Groups of Cables, installed in air

Table 12

Arrangement of cables	Number of circuits or multicore cables 2	3	4	5	6	7	8	9	10
In conduit, trunking or bunched and clipped directly	0.8	0.7	0.65	0.6	0.57	0.54	0.52	0.5	0.48
On metal tray and cables touching	0.86	0.81	0.77	0.75	0.74	0.73	0.73	0.72	0.71

Rating factors for depth of laying (to centre of cable or to centre of duct)

Table 13

Depth of laying m	Multicore Cables Direct in ground	Multicore Cables In single way ducts
0.50	1.00	1.00
0.60	0.99	0.99
0.80	0.97	0.97
1.00	0.95	0.96
1.25	0.94	0.95

Rating factors for variation in thermal resistivity of soil (average values)

Table 14

Type of installation	Soil thermal resistivity in ˚Cm/W 0.8	0.9	1.0	1.5	2.0	2.5
Multicore cables laid directly in ground	1.09	1.06	1.04	0.93	0.84	0.77
Multicore cables installed in single way ducts	1.03	1.02	1.02	0.97	0.91	0.87

Rating factors for ground temperature (cables laid direct or in ducts)

Table 15

Ground temperature	15˚C	20˚C	25˚C	30˚C	35˚C	40˚C	45˚C
XLPE insulated	1.0	0.97	0.93	0.89	0.86	0.82	0.76
PVC insulated	1.0	0.95	0.90	0.85	0.80	0.74	0.67

Group rating factors for multicore cables in horizontal formation (average values)

Table 16

	Number of cables in group	Spacing between cable centres Touching	0.15m	0.3m	0.45m	0.6m
Cables direct in ground	2	0.81	0.87	0.91	0.93	0.94
	3	0.70	0.78	0.84	0.87	0.90
	4	0.63	0.74	0.81	0.86	0.89
	5	0.59	0.70	0.78	0.83	0.87
	6	0.55	0.67	0.76	0.82	0.86
Cables in single way ducts	2	0.90		0.93	0.95	0.96
	3	0.82		0.87	0.90	0.93
	4	0.78		0.85	0.89	0.91
	5	0.76		0.82	0.87	0.90
	6	0.72		0.81	0.86	0.90

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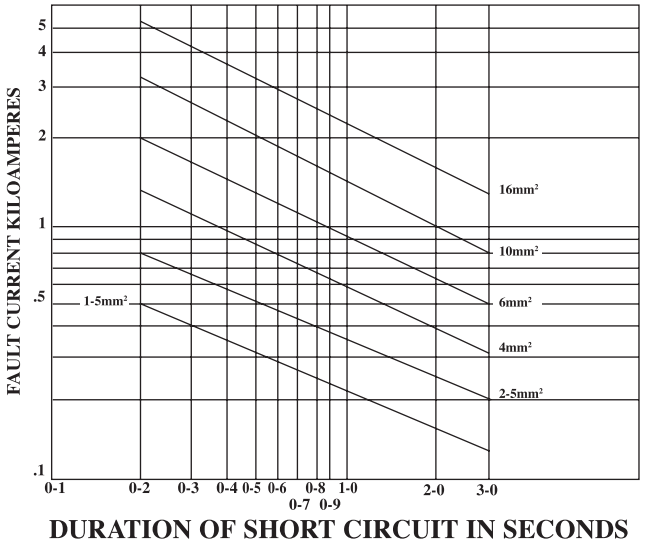
SHORT CIRCUIT RATINGS

XLPE Insulated Cables

The values of fault current given in the graph are based on the cable being fully loaded at the start of the short circuit (conductor temperature 90˚C) and a final conductor temperature of 250˚C. It should be ensured that the accessories associated with the cable are also capable of operation at these values of fault current and temperature.

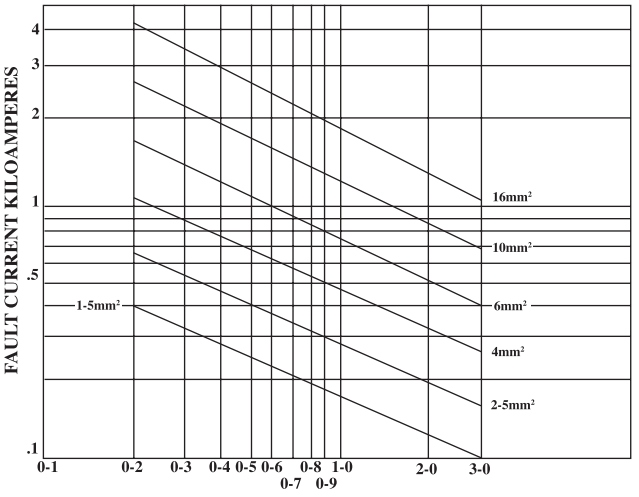
Copper Conductors



PVC Insulated Cables

The values of fault current given in the graph are based on the cable being fully loaded at the start of the short circuit (conductor temperature 70˚C) and a final conductor temperature of 160˚C.

Copper Conductors



INSTALLATION

Environment

All the cables described in this publication can be used indoors or outdoors, but some reservations are necessary concerning cables without armour for direct burial e.g.:

(i) Unarmoured cables are not recommended for laying directly in the ground;
(ii) Cables laid directly in the ground, particularly in sustained wet conditions, should have extruded bedding;
(iii) For installations where there is water-logging or where it is likely to occur, advice should be obtained from our technical department. It may be desirable to recommend an alternative type of outersheath for the cable (e.g. MDPE).

Cable support spacing

The following tables are for XLPE and PVC insulated cables to BS 5467 and BS 6346. They are, where possible, in line with the IEE Wiring Regulations.

Copper conductor cables

Table 17

Overall cable diameter mm	Support spacing	
	Horizontal mm	Vertical mm
Below 15	350	450
15 to less than 20	400	550
20 to less than 40	450	600
40 to less than 60	700	900

Minimum Bending Radius

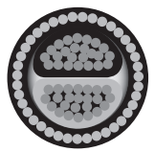
Table 18

Type of cable	Minimum Bending Radius	
	During installation	Adjacent to joints and terminations
BS 5467, BS 6346 & IEC 60502-1 Circular copper conductor	6 D	6 D

Note: The minimum bending radius for LSF cables to BS 6724 is 8 times the overall diameter.

XLPE INSULATED CABLES TO BS 5467 & IEC - 60502 - 1

DIMENSIONS AND WEIGHTS



STRANDED COPPER & ALUMINIUM CONDUCTORS TWO CORE CABLES

600/1000 V *UNARMOURED AND ARMOURED, PVC SHEATHED CABLES

Nominal area of conductor mm^2	Thickness of insulation mm	Unarmoured Cables (approximate values)			Armoured Cables (approximate values)				
		Cable diameter overall mm	Cable weight Aluminium kg/km	Cable weight Copper kg/km	Diameter under armour mm	Armour** wire diameter mm	Cable diameter overall mm	Cable weight Aluminium kg/km	Cable weight Copper kg/km
16*	0.7	17.0	-	475	15.2	1.25	20.4	-	900
25*	0.9	20.2	415	740	18.5	1.25	24.1	915	1240
35*	0.9	22.5	480	955	21.5	1.60	27.7	1255	1710
50	1.0	20.4	497	1100	18.7	1.60	25.8	1430	1800
70	1.1	23.1	690	1520	21.5	1.60	29.0	1780	2320
95	1.1	26.5	850	2050	24.6	2.00	33.1	1950	3150
120	1.2	28.4	1170	2610	26.8	2.00	36.1	2440	3880
150	1.4	31.7	1450	3220	29.7	2.00	39.3	3050	4820
185	1.6	35.1	1810	4030	33.3	2.50	44.7	3690	5920
240	1.7	40.3	2280	5200	38.1	2.50	49.0	4380	7300
300	1.8	44.3	2760	6430	42.3	2.50	53.5	5100	8770

* Circular conductor, all others are sector shaped.

Note: Unarmoured cables & cables with Stranded Aluminium Conductors conform to IEC 60502 - 1

CURRENT RATINGS (AC)

STRANDED COPPER & ALUMINIUM CONDUCTORS – TWO CORE CABLES

600/1000 V ARMOURED PVC SHEATHED CABLES

Nominal area of conductor mm²	Stranded Copper Conductors						Aluminium Conductors					
	Current Ratings			Approximate voltage drop per ampere per metre			Current Ratings			Approximate voltage drop per ampere per metre		
	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV
16*	140	115	115	2.9	2.9	2.9	-	-	-	-	-	-
25*	180	145	152	1.9	1.9	1.9	135	110	112	3.1	3.1	3.1
35*	215	175	188	1.3	1.3	1.3	165	130	138	2.2	2.2	2.2
50	255	210	228	1.0	1.0	1.0	195	155	166	1.7	1.7	1.7
70	315	260	291	0.7	0.7	0.7	240	195	211	1.1	1.1	1.1
95	381	313	354	0.5	0.5	0.5	288	237	254	0.8	0.8	0.8
120	410	344	430	0.4	0.4	0.4	-	-	-	-	-	-
150	472	384	480	0.4	0.4	0.4	-	-	-	-	-	-
185	539	432	540	0.3	0.3	0.3	-	-	-	-	-	-
240	632	504	636	0.2	0.2	0.2	-	-	-	-	-	-
300	708	560	732	0.2	0.2	0.2	-	-	-	-	-	-
800	888	692	1119	0.17	0.25	0.17	-	-	-	-	-	-
1000	942	735	1214	0.16	0.24	0.16	-	-	-	-	-	-

* Circular conductor, all others are sector shaped

600/1000 V UNARMOURED PVC SHEATHED CABLES

Nominal area of conductor mm²	Stranded Copper Conductors						Aluminium Conductors					
	Current Ratings			Approximate voltage drop per ampere per metre			Current Ratings			Approximate voltage drop per ampere per metre		
	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV
16*	140	115	115	2.9	2.9	2.9	-	-	-	-	-	-
25*	180	140	149	1.9	1.9	1.9	135	105	108	3.1	3.1	3.1
35*	215	170	185	1.3	1.3	1.3	165	130	135	2.2	2.2	2.2
50	255	205	225	1.0	1.0	1.0	195	150	164	1.7	1.7	1.7
70	315	255	289	0.7	0.7	0.7	240	195	211	1.2	1.2	1.2
95	380	311	352	0.5	0.5	0.5	285	235	257	0.8	0.8	0.8
120	410	344	430	0.4	0.4	0.4	-	-	-	-	-	-
150	473	384	480	0.4	0.4	0.4	-	-	-	-	-	-
185	542	432	540	0.3	0.3	0.3	-	-	-	-	-	-
240	641	504	650	0.2	0.2	0.2	-	-	-	-	-	-
300	741	560	750	0.2	0.2	0.2	-	-	-	-	-	-

Direct in ground - Cables touching Single way ducts - ducts touching
* Circular conductors, all others are sector shaped
Note: (1) 50mm² and above are with D-shaped conductor
(2) Unarmoured cables are as per IEC 60502 - 1

Installation conditions for above ratings:
Ambient air temperature:30˚C
Ground temperature: 15˚C, Depth of laying: 0.5 m
Soil thermal resistivity: 1.2˚C m/W
Maximum conductor operating temperature at rated current is 90˚C
For rating factors see Tables 2 to 6 and 8 to 12

XLPE INSULATED CABLES TO BS 5467 & IEC - 60502 - 1

DIMENSIONS AND WEIGHTS

STRANDED COPPER & ALUMINIUM CONDUCTORS THREE CORE CABLES

600/1000 V *UNARMOURED AND ARMOURED, PVC SHEATHED CABLES

Nominal area of conductor mm^2	Thickness of insulation mm	Unarmoured Cables (approximate values)			Armoured Cables (approximate values)				
		Cable diameter overall mm	Cable weight Aluminium kg/km	Cable weight Copper kg/km	Diameter under armour mm	Armour** wire diameter mm	Cable diameter overall mm	Cable weight Aluminium kg/km	Cable weight Copper kg/km
16*	0.7	18.0	-	675	16.0	1.25	21.6	-	1130
25*	0.9	21.5	500	990	20.0	1.6	26.7	1220	1710
35*	0.9	24.0	610	1295	22.7	1.6	29.4	1415	2100
25	0.9	19.9	440	900	18.1	1.6	23.8	1040	1530
35	0.9	21.6	540	1190	19.8	1.6	25.7	1210	1870
50	1.0	24.6	740	1640	23.0	1.6	28.5	1550	2450
70	1.1	28.0	1050	2220	26.0	1.6	32.2	1810	3120
95	1.1	31.0	1170	2980	30.0	2.0	37.0	2500	4310
120	1.2	34.8	1440	3730	32.8	2.0	40.4	2870	5160
150	1.4	38.5	2300	5195	36.8	2.5	45.5	3660	7160
185	1.6	44.0	2750	6470	41.5	2.5	49.8	4320	8600
240	1.7	49.5	3020	8380	46.0	2.5	55.1	5170	10755
300	1.8	53.5	3660	10420	51.5	2.5	60.2	6100	13080
400	2.0	59.2	3730	11575	56.4	2.5	66.6	7050	15810

* Circular conductors, all others are sector shaped.

Note: Unarmoured cables & cables with Stranded Aluminium Conductors conform to IEC 60502 - 1

CURRENT RATINGS (AC)

STRANDED COPPER & ALUMINIUM CONDUCTORS – THREE CORE CABLES

600/1000 V ARMOURED PVC SHEATHED CABLES

Nominal area of conductor mm²	Stranded Copper Conductors						Aluminium Conductors					
	Current Ratings			Approximate voltage drop per ampere per metre			Current Ratings			Approximate voltage drop per ampere per metre		
	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV
16	115	94	99	2.5	2.5	2.5	89	72	74	4.2	4.2	4.2
25	150	125	131	1.7	1.7	1.7	115	94	98	2.7	2.7	2.7
35	180	150	162	1.2	1.2	1.2	135	110	120	1.9	1.9	1.9
50	215	175	197	0.9	0.9	0.9	165	135	145	1.4	1.4	1.4
70	265	215	251	0.6	0.6	0.6	200	165	185	1.0	1.0	1.0
95	315	260	304	0.5	0.5	0.5	240	200	224	0.7	0.7	0.7
120	360	300	353	0.4	0.4	0.4	275	230	264	0.6	0.6	0.6
150	405	335	406	0.3	0.3	0.3	310	255	305	0.5	0.5	0.5
185	460	380	463	0.3	0.3	0.3	350	295	350	0.4	0.4	0.4
240	530	440	546	0.2	0.2	0.2	410	340	418	0.3	0.3	0.3
300	590	495	628	0.2	0.2	0.2	460	385	488	0.3	0.3	0.3
400	667	570	728	0.2	0.2	0.2	520	443	562	0.2	0.2	0.2

600/1000 V UNARMOURED PVC SHEATHED CABLES

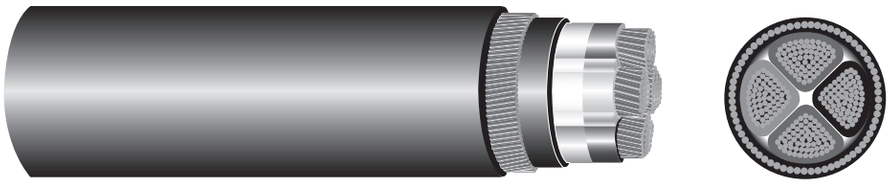
Nominal area of conductor mm²	Stranded Copper Conductors						Aluminium Conductors					
	Current Ratings			Approximate voltage drop per ampere per metre			Current Ratings			Approximate voltage drop per ampere per metre		
	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV
16	120	93	100	2.5	2.5	2.5	-	-	-	-	-	-
25	145	125	127	1.7	1.7	1.7	115	92	97	2.7	2.7	2.7
35	180	145	158	1.2	1.2	1.2	135	110	120	1.9	1.9	1.9
50	215	175	192	0.9	0.9	0.9	165	135	146	1.4	1.4	1.4
70	265	215	246	0.6	0.6	0.6	200	165	187	1.0	1.0	1.0
95	315	255	298	0.5	0.5	0.5	240	195	227	0.7	0.7	0.7
120	365	300	346	0.4	0.4	0.4	275	225	263	0.6	0.6	0.6
150	405	330	399	0.3	0.3	0.3	310	255	304	0.5	0.5	0.5
185	465	380	456	0.3	0.3	0.3	350	290	347	0.4	0.4	0.4
240	540	440	538	0.2	0.2	0.2	415	340	409	0.3	0.3	0.3
300	600	500	621	0.2	0.2	0.2	465	385	471	0.3	0.3	0.3
400	675	575	741	0.2	0.2	0.2	523	443	570	0.2	0.2	0.2

Direct in ground - Cables touching
Single way ducts - ducts touching
* Circular conductors, all others are sector shaped
Note: Unarmoured cables are as per IEC 60502 - 1

Installation conditions for above ratings:
Ambient air temperature:30˚C
Ground temperature: 15˚C, Depth of laying:0.5 m
Soil thermal resistivity: 1.2˚C m/W
Maximum conductor operating temperature at rated current is 90˚C
For rating factors see Tables 2 to 6 and 8 to 12

XLPE INSULATED CABLES TO BS 5467 & IEC - 60502 -

DIMENSIONS AND WEIGHTS



STRANDED COPPER & ALUMINIUM CONDUCTORS FOUR CORE CABLES

600/1000 V *UNARMOURED AND ARMOURED, PVC SHEATHED CABLES

Nominal area of conductor mm²	Thickness of insulation mm	Unarmoured Cables (approximate values)			Armoured Cables (approximate values)				
		Cable diameter overall mm	Cable weight Aluminium kg/km	Cable weight Copper kg/km	Diameter under armour mm	Armour** wire diameter mm	Cable diameter overall mm	Cable weight Aluminium kg/km	Cable weight Copper kg/km
16*	0.7	20.0	-	780	18.0	1.25	23.4	-	1320
25	0.9	21.0	520	1160	20.0	1.6	26.1	1200	1840
35	0.9	24.5	650	1540	22.8	1.6	28.6	1420	2310
50	1.0	26.5	900	2100	25.5	1.6	32.0	1770	2970
70	1.1	31.0	1210	2950	29.5	2.0	37.7	2500	4240
95	1.1	35.2	1550	3970	33.5	2.0	41.7	2980	5400
120	1.2	39.0	1910	4960	37.5	2.5	47.1	3950	7000
150	1.4	43.5	2410	6160	41.5	2.5	51.4	4600	8350
185	1.6	49.0	2990	7690	46.0	2.5	56.6	5430	10130
240	1.7	54.5	3890	10070	52.5	2.5	63.0	6660	12840
300	1.8	61.0	4730	12490	57.5	2.5	68.8	7770	15530
400	2.0	67.5	5780	15620	65.0	3.15	78.1	10380	19950
500**	2.2	74.2	7500	19900	72.6	3.15	82.0	12200	24360

* Circular conductors, all others are sector shaped.
** Cable as per IEC 60502 - 1

Note:Unarmoured cables & cables with Stranded Aluminium Conductors conform to IEC 60502 - 1

CURRENT RATINGS (AC)

STRANDED COPPER & ALUMINIUM CONDUCTORS – FOUR CORE CABLES

600/1000 V ARMOURED PVC SHEATHED CABLES

Nominal area of conductor mm²	Stranded Copper Conductors						Aluminium Conductors					
	Current Ratings			Approximate voltage drop per ampere per metre			Current Ratings			Approximate voltage drop per ampere per metre		
	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV
16	115	94	99	2.5	2.5	2.5	89	72	74	4.2	4.2	4.2
25	150	125	131	1.7	1.7	1.7	115	94	98	2.7	2.7	2.7
35	180	150	162	1.2	1.2	1.2	135	110	120	1.9	1.9	1.9
50	215	175	197	0.9	0.9	0.9	165	135	145	1.4	1.4	1.4
70	265	215	251	0.6	0.6	0.6	200	165	185	1.0	1.0	1.0
95	315	260	304	0.5	0.5	0.5	240	200	224	0.7	0.7	0.7
120	360	300	353	0.4	0.4	0.4	275	230	264	0.6	0.6	0.6
150	405	335	406	0.3	0.3	0.3	310	255	305	0.5	0.5	0.5
185	460	380	463	0.3	0.3	0.3	350	295	350	0.4	0.4	0.4
240	530	440	546	0.2	0.2	0.2	410	340	418	0.3	0.3	0.3
300	590	495	628	0.2	0.2	0.2	460	385	488	0.3	0.3	0.3
400	667	570	728	0.2	0.2	0.2	520	443	562	0.2	0.2	0.2
500	720	605	800	0.2	0.2	0.2	561	470	618	0.2	0.2	0.2

600/1000 V UNARMOURED PVC SHEATHED CABLES

Nominal area of conductor mm²	Stranded Copper Conductors						Aluminium Conductors					
	Current Ratings			Approximate voltage drop per ampere per metre			Current Ratings			Approximate voltage drop per ampere per metre		
	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV	Direct in ground amps	In single way ducts amps	Installed in air amps	Ground mV	Duct mV	Air mV
16	120	93	100	2.5	2.5	2.5	89	72	74	4.2	4.2	4.2
25	145	125	127	1.7	1.7	1.7	115	92	97	2.7	2.7	2.7
35	180	145	158	1.2	1.2	1.2	135	110	120	1.9	1.9	1.9
50	215	175	192	0.9	0.9	0.9	165	135	146	1.4	1.4	1.4
70	265	215	246	0.6	0.6	0.6	200	165	187	1.0	1.0	1.0
95	315	255	298	0.5	0.5	0.5	240	195	227	0.7	0.7	0.7
120	365	300	346	0.4	0.4	0.4	275	225	263	0.6	0.6	0.6
150	405	330	399	0.3	0.3	0.3	310	255	304	0.5	0.5	0.5
185	465	380	456	0.3	0.3	0.3	350	290	347	0.4	0.4	0.4
240	540	440	538	0.2	0.2	0.2	415	340	409	0.3	0.3	0.3
300	600	500	621	0.2	0.2	0.2	465	385	471	0.3	0.3	0.3
400	675	575	741	0.2	0.2	0.2	523	443	570	0.2	0.2	0.2
500	730	610	814	0.2	0.2	0.2	565	470	626	0.2	0.2	0.2

Direct in ground - Cables touching
Single way ducts - ducts touching
* Circular conductors, all others are sector shaped
Note: Unarmoured cables are as per IEC 60502 - 1

Installation conditions for above ratings:
Ambient air temperature:30˚C
Ground temperature: 15˚C, Depth of laying:0.5 m
Soil thermal resistivity: 1.2˚C m/W
Maximum conductor operating temperature at rated current is 90˚C
For rating factors see Tables 2 to 6 and 8 to 12