



Powering The Future of Connectivity

Product Catalogue

Established in 1964,
Sigma Cable Company
is the leading power cable
manufacturer in Singapore
under pioneer status.

Positioned as the preferred cable supplier
in domestic & regional markets, we stand
as your steadfast partner, ensuring that your
connectivity needs are met with ultimate
reliability, innovation, & satisfaction.



CELEBRATING
60
ANNIVERSARY
1964 - 2024



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Your Partner in a Connected Tomorrow

Global Recognition

Sigma Cable is widely acknowledged across ASEAN, Hong Kong, Australia/ New Zealand, Sri Lanka, Maldives, and the Middle East as a leading provider of power cables and communication solutions.

Quality Commitment

Our cables adhere to the Quality Management System standards of ISO9001, ensuring stringent manufacturing control and defect-free products.

Product Excellence

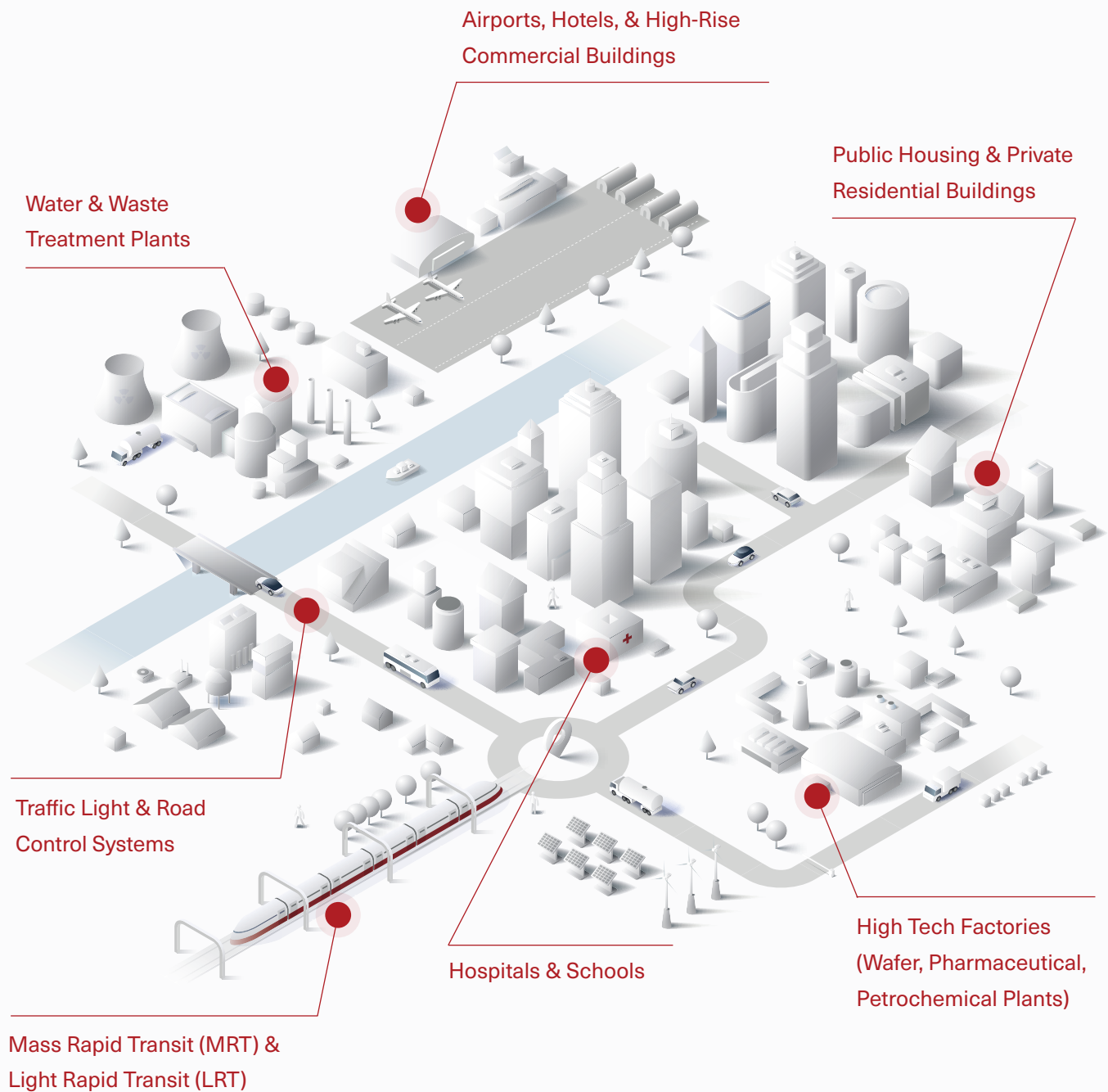
Endorsed by the Singapore Quality Mark and certified by TUV SUD PSB, our product ranges boast exceptional quality and reliability, earning accolades from our customers.

Industry Trust

With a track record of continuous improvement, Sigma Cable has earned trust from major entities like SP Power Assets Limited, Singapore Telecommunications Ltd, HDB, and numerous government and private projects, reaffirming our dedication to industry excellence.

Applications

Sigma Cable manufactures a comprehensive range of power cables, recognised for quality & reliability across diverse industries & sectors.



Certifications

Sigma is an ISO 9001 Certified Company. Our products are listed in the PSB product scheme.





01	Conductor
02	Insulation
03	Sheath



PVC Insulated Power Cables

PVC Insulated PVC Sheathed Cables (With or Without Sheath)

Characteristics

Voltage Rating (Uo/U)	300/500V, 450/750V or 600/1000V
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Standards Complied

Main Cable Specification	SS 358- 3	IEC 60227-3
	BS EN 50525-2-31	IEC 60228
	BS 6346	IEC 60502-1
	BS 6360	AS/NZS 5000-1
Materials Test Method	BS 7655	
	IEC 60811	
Flame Retardant Test	BS EN 50265	
	IEC 60332-1	
	IEC 60332-3	

Insulation Colour

1-Core	Brown, Black, Grey, Blue, Red, Yellow, Yellow/Green (or others upon request)
2-Core	(Brown, Blue) or (Red, Black)
3-Core	(Brown, Blue, Green / Yellow) or (Brown, Black, Grey) or (Red, Yellow, Blue)
4-Core	(Brown, Black, Grey, Blue) or (Red, Yellow, Blue, Black)
5-Core	White core with Black number or (Brown, Black, Grey, Blue, Green / Yellow)
Over Sheath	Black, Grey or White



PVC Insulated Power Cables

Single-Core PVC Insulated
Non-Sheathed Cables



Model	P-450S
Spec	SS 358 (IEC 60227-3), BS EN 50525-2-31
Conductor	Copper
Insulation	PVC
Outer Sheath	Nil
Voltage Rating (Uo/U)	450/750V
Operating Temperature	70°C

Table P1

Conductor			Cable		
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	1/1.38	1.38	0.7	2.9	20
1.5	7/0.53 CR	1.59	0.7	3.1	22
2.5	1/1.78	1.78	0.8	3.5	32
2.5	7/0.67 CR	2.01	0.8	3.7	34
4	7/0.85 CR	2.55	0.8	4.3	50
6	7/1.04 CR	3.12	0.8	4.8	70
10	7/1.35 CR	4.05	1.0	6.2	120
16	7/1.70 CR	5.1	1.0	7.2	180
25	7/2.14 CR	6.4	1.2	9.0	280
35	7/2.52 CP	7.1	1.2	9.7	375
50	19/1.78 CP	8.4	1.4	11.4	503
70	19/2.14 CP	9.9	1.4	12.9	707
95	19/2.52 CP	11.8	1.6	15.2	978
120	37/2.03 CP	13.2	1.6	16.6	1,215
150	37/2.25 CP	14.8	1.8	18.6	1,496
185	37/2.52 CP	16.4	2.0	20.6	1,873
240	37/2.88 CP	19.0	2.2	23.7	2,453
300	61/2.52 CP	21.2	2.4	26.3	3,062
400	61/2.85 CP	23.7	2.6	29.2	3,896
500	61/3.2 CP	27.0	2.8	32.9	4,898
630	89/3.0 CP	30.8	2.8	36.7	6,243
800	127/2.85 CR	37.1	2.8	43.0	7,963
1000	127/3.20 CR	41.6	3.0	47.9	10,004

Note : Current Rating & Volt Drop refer to Table T5 & T5a.

PVC Insulated Power Cables

Single-Core PVC Insulated
PVC Sheathed Cables



Model PP-600S
Spec IEC 60502-1

Conductor Copper
Insulation PVC
Outer Sheath PVC
Voltage Rating (Uo/U) 600/1000V
Operating Temperature 70°C

Table P2

Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	1/1.38	1.38	0.8	1.4	6.0	52
1.5	7/0.53 CR	1.59	0.8	1.4	6.2	55
2.5	1/1.78	1.78	0.8	1.4	6.4	65
2.5	7/0.67 CR	2.01	0.8	1.4	6.7	68
4	7/0.85 CR	2.55	1.0	1.4	7.6	95
6	7/1.04 CR	3.12	1.0	1.4	8.2	120
10	7/1.35 CR	4.05	1.0	1.4	9.1	169
16	7/1.70 CR	5.10	1.0	1.4	10.2	236
25	7/2.14 CR	6.42	1.2	1.4	11.9	350
35	7/2.52 CP	7.10	1.2	1.4	12.5	448
50	19/1.78 CP	8.40	1.4	1.4	14.2	588
70	19/2.14 CP	9.90	1.4	1.4	15.7	802
95	19/2.52 CP	11.80	1.6	1.5	18.2	1,097
120	37/2.03 CP	13.20	1.6	1.5	19.6	1,344
150	37/2.25 CP	14.80	1.8	1.6	21.8	1,650
185	37/2.52 CP	16.40	2.0	1.7	24.0	2,054
240	37/2.88 CP	19.00	2.2	1.8	27.3	2,671
300	61/2.52 CP	21.20	2.4	1.9	30.1	3,317
400	61/2.85 CP	23.70	2.6	2.0	33.2	4,194
500	61/3.2 CP	27.00	2.8	2.1	37.1	5,248
630	89/3.0 CP	31.20	2.8	2.2	41.5	6,656
800	127/2.85 CR	37.10	2.8	2.3	47.6	8,410
1000	127/3.20 CR	41.60	3.0	2.5	52.9	10,545

Note : Current Rating & Volt Drop refer to Table T5 & T5a.



01	Conductor
02	Insulation
03	Binder Tape (where applicable)
04	Bedding (for armoured cable)
05	Armour (for armoured cable)
06	Oversheath



XLPE Insulated PVC or LSHF Sheathed Power Cables

XLPE Insulated & PVC Sheathed or Low Smoke Halogen Free (LSHF) Sheathed Cables

Characteristics

Voltage Rating (Uo/U)	600/1000V or 1800/3300V
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Standards Complied

Main Cable Specification	BS 5467	IEC 60288
	BS 6724	IEC 60502
	BS 7211	AS/NZS 5000-1
	BS EN 50525-3-31	
Materials Test Method	BS EN 10257	
	BS 2627	
	BS 7655	
	IEC 60811	
Flame Retardant Test	BS EN 50265	
	BS EN 50266	
	IEC 60332-1	
	IEC 60332-3	
Acid Gas Evolved Test*	BS EN 50267	
	IEC 60754	
Smoke Density Test*	BS EN 50268	
	IEC 61034	
* For LSHF Sheathed Cable only		

Insulation Colour

1-Core	Natural
2-Core	(Brown, Blue) or (Red, Black)
3-Core	(Brown, Blue, Green / Yellow) or (Brown, Black, Grey) or (Red, Yellow, Blue)
4-Core	(Brown, Black, Grey, Blue) or (Red, Yellow, Blue, Black)
5-Core	White core with Black number or (Brown, Black, Grey, Blue, Green / Yellow)
Over Sheath	Black



Comparison of Main Properties Between PVC & XLPE Insulation

Insulation is made of plastics material; they are divided into two groups depending on how they react to heat. Thermoplastics can be repeatedly softened by heating and hardened by cooling. When you heat thermoplastics like PVC, the molecules do not chemically bond with each other. Instead, thermoplastic chains are held together by weak attractions between molecules. When heated, these chains slip off from each other and the material melts.

On the other hand, in case of thermosetting plastics, the cross-links or chemical bonds between molecular chains prevent displacement at elevated temperature. Thus thermosetting plastics do not become soft or change their shape on heating. Thermosetting plastics harden permanently once it is moulded and cured. XLPE is polyethylene with their molecular chain cross-linked.

The network structure of the molecular chains cannot deform and the excellent properties that polyethylene has at room temperature are retained at elevated temperature. The cross-linking of the molecules also has the effect of enhancing room temperature properties.

Characteristics	Unit	PVC	XLPE
Permittivity (50Hz , 20°C)	-	4 - 6	2.3
Dielectric loss factor (50Hz, 20°C)	-	0.05 – 0.07	0.0004
Volume resistivity (27°C), (min.)	Ω.cm	1 x 10 ¹³	1 x 10 ¹⁴
Max. conductor temp.	°C	70	90
Max. short circuit temp.	°C	160	250
Tensile strength, (min.)	N / mm ²	12.5	12.5
Resistance to abrasion	-	Medium	Good
Flexibility at -10°C	-	Poor	Good
Workability	-	Good	Poor
Current carrying capacity	-	low	High
Moisture resistant	-	Medium	Good
Flame retardant		Self-extinguishing	Support combustion
Oxidation resistant	-	Medium	Good
Chemical resistant	-	Medium	Good
Halogen content	-	Yes	No

XLPE Insulated PVC Sheathed Power Cables

Single-Core XLPE Insulated
PVC Sheathed Cables

Non-Armoured



Model XP-600S
Spec IEC 60502

Conductor Copper
Insulation XLPE
Bedding & Outer Sheath PVC
Voltage Rating (Uo/U) 600/1000V
Operating Temperature 90°C

Table XP1

Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.4	6.0	50
2.5	7/0.67 CR	2.01	0.7	1.4	6.5	60
4	7/0.85 CR	2.55	0.7	1.4	7.0	80
6	7/1.04 CR	3.12	0.7	1.4	7.5	105
10	7/1.35 CR	4.05	0.7	1.4	8.5	150
16	7/1.70 CR	5.10	0.7	1.4	9.5	210
25	7/2.14 CR	6.40	0.9	1.4	11.5	320
35	7/2.52 CP	7.10	0.9	1.4	11.8	416
50	19/1.78 CP	8.40	1.0	1.4	13.3	543
70	19/2.14 CP	9.90	1.1	1.4	15.1	756
95	19/2.52 CP	11.80	1.1	1.5	17.2	1,025
120	37/2.03 CP	13.20	1.2	1.5	18.8	1,272
150	37/2.25 CP	14.80	1.4	1.6	21.0	1,563
185	37/2.52 CP	16.40	1.6	1.6	23.0	1,939
240	37/2.88 CP	19.00	1.7	1.7	26.0	2,523
300	61/2.52 CP	21.20	1.8	1.8	28.6	3,135
400	61/2.85 CP	23.70	2.0	1.9	31.7	3,980
500	61/3.2 CP	27.00	2.2	2.0	35.7	4,995
630	89/3.0 CP	31.20	2.4	2.2	40.3	6,421
800	127/2.85 CR	37.05	2.6	2.3	47.5	8,185
1000	127/3.20 CR	41.60	2.8	2.4	52.5	10,255

Note : Current Rating & Volt Drop refer to Table T1, T1a, T3 & T3a



XLPE Insulated PVC Sheathed Power Cables

Single-Core XLPE Insulated
PVC Sheathed Cables

Aluminum Wired Armour (AWA)



Model	XAP-600S
Spec	IEC 60502
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	PVC
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C

Table XP2

Conductor			Armoured Cable					
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Bedding Thickness	Nom. Diam. Armour	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
50	19/1.78 CP	8.40	1.0	1.0	1.25	1.5	18	746
70	19/2.14 CP	9.90	1.1	1.0	1.25	1.5	19.8	979
95	19/2.52 CP	11.80	1.1	1.0	1.25	1.6	22.6	1,324
120	37/2.03 CP	13.20	1.2	1.0	1.6	1.7	24.4	1,608
150	37/2.25 CP	14.80	1.4	1.0	1.6	1.7	26.4	1,921
185	37/2.52 CP	16.40	1.6	1.0	1.6	1.8	28.6	2,340
240	37/2.88 CP	19.00	1.7	1.0	1.6	1.9	31.6	2,951
300	61/2.52 CP	21.20	1.8	1.0	1.6	1.9	34	3,604
400	61/2.85 CP	23.70	2.0	1.2	2.0	2.1	38.5	4,650
500	61/3.2 CP	27.00	2.2	1.2	2.0	2.2	42.5	5,738
630	89/3.0 CP	31.20	2.4	1.2	2.0	2.3	47.3	7,213
800	127/2.85 CR	37.05	2.6	1.4	2.5	2.5	55.5	9,400
1000	127/3.20 CR	41.60	2.8	1.4	2.5	2.7	61.0	11,625

Note : Current Rating & Volt Drop refer to Table T1, T1a, T3 & T3a

XLPE Insulated PVC Sheathed Power Cables

Two-Core XLPE Insulated
PVC Sheathed Cables

Non-Armoured



Model XP-600M
Spec IEC 60502-1

Conductor Copper
Insulation XLPE
Bedding & Outer Sheath PVC
Voltage Rating (Uo/U) 600/1000V
Operating Temperature 90°C

Table XP3

Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	10.0	125
2.5	7/0.67 CR	2.01	0.7	1.8	10.5	160
4	7/0.85 CR	2.55	0.7	1.8	12.0	205
6	7/1.04 CR	3.12	0.7	1.8	13.0	260
10	7/1.35 CR	4.05	0.7	1.8	15.0	375
16	7/1.70 CR	5.10	0.7	1.8	17.0	530
25	7/2.14 SS	-	0.9	1.8	17.0	655
35	19/1.53 SS	-	0.9	1.8	18.5	865
50	19/1.78 SS	-	1.0	1.8	21.0	1,135
70	19/2.14 SS	-	1.1	1.8	23.5	1,570
95	19/2.52 SS	-	1.1	1.9	26.5	2,120
120	37/2.03 SS	-	1.2	2.0	29.5	2,640
150	37/2.25 SS	-	1.4	2.2	33.0	3,250
185	37/2.52 SS	-	1.6	2.3	36.5	4,050
240	61/2.25 SS	-	1.7	2.5	46.0	5,300
300	61/2.52 SS	-	1.8	2.6	50.0	6,590
400	61/2.85 SS	-	2.0	2.9	54.0	8,365

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

XLPE Insulated Cables



XLPE Insulated PVC Sheathed Power Cables

Two-Core XLPE Insulated
PVC Sheathed Cables

Steel Wired Armour (SWA)



Model	XSP-600M
Spec	IEC 60502-1
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	PVC
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C

Table XP4

Conductor			Armoured Cable						
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Bedding Thickness	Nom. Diam. Armour	Nom. Sheath Thickness	Overall Diameter	Approx. Weight	
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	
1.5	7/0.53 CR	1.59	0.7	1.0	0.9	1.8	13.5	340	
2.5	7/0.67 CR	2.01	0.7	1.0	0.9	1.8	14.5	390	
4	7/0.85 CR	2.55	0.7	1.0	0.9	1.8	15.5	460	
6	7/1.04 CR	3.12	0.7	1.0	0.9	1.8	17.0	535	
10	7/1.35 CR	4.05	0.7	1.0	1.25	1.8	19.0	800	
16	7/1.70 CR	5.10	0.7	1.0	1.25	1.8	21.5	1,020	
25	7/2.14 SS	-	0.9	1.0	1.6	1.8	22.0	1,265	
35	19/1.53 SS	-	0.9	1.0	1.6	1.8	23.5	1,535	
50	19/1.78 SS	-	1.0	1.0	1.6	1.8	25.5	1,865	
70	19/2.14 SS	-	1.1	1.0	1.6	2.0	29.0	2,445	
95	19/2.52 SS	-	1.1	1.2	2.0	2.1	33.0	3,345	
120	37/2.03 SS	-	1.2	1.2	2.0	2.2	36.0	3,990	
150	37/2.25 SS	-	1.4	1.2	2.0	2.3	39.0	4,730	
185	37/2.52 SS	-	1.6	1.4	2.5	2.5	44.5	6,160	
240	61/2.25 SS	-	1.7	1.4	2.5	2.7	53.5	7,820	
300	61/2.52 SS	-	1.8	1.6	2.5	2.8	58.0	9,390	
400	61/2.85 SS	-	2.0	1.6	2.5	3.1	62.0	11,475	

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

XLPE Insulated PVC Sheathed Power Cables

Three-Core XLPE Insulated
PVC Sheathed Cables

Non-Armoured



Model XP-600M
Spec IEC 60502-1

Conductor Copper
Insulation XLPE
Bedding & Outer Sheath PVC
Voltage Rating (Uo/U) 600/1000V
Operating Temperature 90°C

Table XP5

Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	10.5	145
2.5	7/0.67 CR	2.01	0.7	1.8	11.0	185
4	7/0.85 CR	2.55	0.7	1.8	12.5	250
6	7/1.04 CR	3.12	0.7	1.8	14.0	310
10	7/1.35 CR	4.05	0.7	1.8	16.0	460
16	7/1.70 CR	5.10	0.7	1.8	18.0	670
25	7/2.14 SS	-	0.9	1.8	19.0	935
35	19/1.53 SS	-	0.9	1.8	21.5	1,245
50	19/1.78 SS	-	1.0	1.8	25.5	1,655
70	19/2.14 SS	-	1.1	1.9	28.0	2,320
95	19/2.52 SS	-	1.1	2.0	32.0	3,125
120	37/2.03 SS	-	1.2	2.1	35.5	3,905
150	37/2.25 SS	-	1.4	2.3	39.5	4,800
185	37/2.52 SS	-	1.6	2.4	44.0	6,010
240	61/2.25 SS	-	1.7	2.6	53.5	8,010
300	61/2.52 SS	-	1.8	2.7	60.0	9,995
400	61/2.85 SS	-	2.0	3.0	65.5	12,680

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

XLPE Insulated Cables



XLPE Insulated PVC Sheathed Power Cables

Three-Core XLPE Insulated
PVC Sheathed Cables

Steel Wired Armour (SWA)



Model	XSP-600M
Spec	IEC 60502-1
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	PVC
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C

Table XP6

Conductor			Armoured Cable					
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Bedding Thickness	Nom. Diam. Armour	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.0	0.90	1.8	14.0	370
2.5	7/0.67 CR	2.01	0.7	1.0	0.90	1.8	15.0	435
4	7/0.85 CR	2.55	0.7	1.0	0.90	1.8	16.0	520
6	7/1.04 CR	3.12	0.7	1.0	0.90	1.8	17.5	610
10	7/1.35 CR	4.05	0.7	1.0	1.25	1.8	20.0	910
16	7/1.70 CR	5.10	0.7	1.0	1.25	1.8	22.5	1,180
25	7/2.14 SS	-	0.9	1.0	1.60	1.8	24.5	1,610
35	19/1.53 SS	-	0.9	1.0	1.60	1.8	26.5	2,000
50	19/1.78 SS	-	1.0	1.0	1.60	1.9	30.5	2,560
70	19/2.14 SS	-	1.1	1.2	2.00	2.0	34.0	3,585
95	19/2.52 SS	-	1.1	1.2	2.00	2.2	38.5	4,590
120	37/2.03 SS	-	1.2	1.2	2.00	2.3	42.0	5,530
150	37/2.25 SS	-	1.4	1.4	2.50	2.5	47.5	7,050
185	37/2.52 SS	-	1.6	1.4	2.50	2.6	52.0	8,515
240	61/2.25 SS	-	1.7	1.6	2.50	2.8	62.0	11,180
300	61/2.52 SS	-	1.8	1.6	2.50	3.0	68.5	13,530
400	61/2.85 SS	-	2.0	1.6	2.50	3.2	74.0	16,520

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

XLPE Insulated PVC Sheathed Power Cables

Four-Core XLPE Insulated
PVC Sheathed Cables

Non-Armoured



Model XP-600M
Spec IEC 60502-1

Conductor Copper
Insulation XLPE
Bedding & Outer Sheath PVC
Voltage Rating (Uo/U) 600/1000V
Operating Temperature 90°C

Table XP7

Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	11.0	170
2.5	7/0.67 CR	2.01	0.7	1.8	12.0	225
4	7/0.85 CR	2.55	0.7	1.8	13.5	305
6	7/1.04 CR	3.12	0.7	1.8	15.0	385
10	7/1.35 CR	4.05	0.7	1.8	17.5	580
16	7/1.70 CR	5.10	0.7	1.8	20.0	835
25	7/2.14 SS	-	0.9	1.8	21.5	1,210
35	19/1.53 SS	-	0.9	1.8	24.0	1,610
50	19/1.78 SS	-	1.0	1.8	27.0	2,120
70	19/2.14 SS	-	1.1	2.0	31.5	3,015
95	19/2.52 SS	-	1.1	2.1	36.0	4,085
120	37/2.03 SS	-	1.2	2.3	40.0	5,155
150	37/2.25 SS	-	1.4	2.4	44.5	6,310
185	37/2.52 SS	-	1.6	2.6	50.5	7,940
240	61/2.25 SS	-	1.7	2.8	58.0	10,520
300	61/2.52 SS	-	1.8	3.0	64.0	13,135
400	61/2.85 SS	-	2.0	3.3	73.0	16,700

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a



XLPE Insulated PVC Sheathed Power Cables

Four-Core XLPE Insulated
PVC Sheathed Cables

Steel Wired Armour (SWA)



Model	XSP-600M
Spec	IEC 60502-1
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	PVC
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C

Table XP8

Conductor			Armoured Cable					
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Bedding Thickness	Nom. Diam. Armour	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.0	0.9	1.8	15.0	415
2.5	7/0.67 CR	2.01	0.7	1.0	0.9	1.8	16.0	490
4	7/0.85 CR	2.55	0.7	1.0	0.9	1.8	17.0	600
6	7/1.04 CR	3.12	0.7	1.0	1.25	1.8	19.5	815
10	7/1.35 CR	4.05	0.7	1.0	1.25	1.8	22.0	1,070
16	7/1.70 CR	5.10	0.7	1.0	1.6	1.8	25.0	1,540
25	7/2.14 SS	-	0.9	1.0	1.6	1.8	26.5	1,985
35	19/1.53 SS	-	0.9	1.0	1.6	1.9	29.0	2,475
50	19/1.78 SS	-	1.0	1.0	1.6	2.0	32.5	3,100
70	19/2.14 SS	-	1.1	1.2	2.0	2.2	38.0	4,480
95	19/2.52 SS	-	1.1	1.2	2.0	2.3	42.5	5,750
120	37/2.03 SS	-	1.2	1.4	2.5	2.5	48.0	7,460
150	37/2.25 SS	-	1.4	1.4	2.5	2.6	52.5	8,810
185	37/2.52 SS	-	1.6	1.4	2.5	2.8	58.5	10,780
240	61/2.25 SS	-	1.7	1.6	2.5	3.0	67.0	13,930
300	61/2.52 SS	-	1.8	1.6	2.5	3.2	72.0	16,850
400	61/2.85 SS	-	2.0	1.8	3.15	3.5	83.0	22,230

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

XLPE Insulated PVC Sheathed Power Cables

Multi-Core XLPE Insulated
PVC Sheathed Cables



Model	XP-600M, XSP-600M
Spec	IEC 60502-1
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	PVC
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C

Table XP11

Conductor				Non-Armoured Cable				Steel Wired Armoured (SWA) Cable				
No. of Core	Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thick	Nom. Sheath Thick	Overall Diameter	Approx. Weight	Nom. Bedding Thick	Nom. Diam. Armour	Nom. Sheath Thick	Overall Diameter	Approx. Weight
	(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(mm)	(mm)	(kg/km)
5	1.5	7/0.53 CR	1.59	0.7	1.8	12.2	203	1.0	0.90	1.8	15.2	486
7				0.7	1.8	13.0	245	1.0	0.90	1.8	17.2	530
10				0.7	1.8	16.5	369	1.0	1.25	1.8	20.5	775
12				0.7	1.8	16.5	375	1.0	1.25	1.8	21.0	867
15				0.7	1.8	18.6	485	1.0	1.25	1.8	22.7	1,030
20				0.7	1.8	19.5	540	1.0	1.60	1.8	24.5	1,286
5	2.5	7/0.67 CR	2.01	0.7	1.8	13.3	264	1.0	0.90	1.8	17.0	533
7				0.7	1.8	14.5	320	1.0	1.25	1.8	18.9	688
10				0.7	1.8	17.9	473	1.0	1.25	1.8	22.3	924
12				0.7	1.8	18.5	505	1.0	1.25	1.8	22.8	956
15				0.7	1.8	20.3	637	1.0	1.60	1.8	20.5	1,335
20				0.7	1.8	21.5	740	1.0	1.60	1.8	26.2	1,527

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

XLPE Insulated Cables



XLPE Insulated LSHF Sheathed Power Cables

Single-Core LSHF Insulated
Non-Sheathed Flame Retardant Cables



Model	L-FRT-450S, L-FRT-600S
Spec	BS EN 50525-3-31, IEC 60332-3, IEC 60754 & IEC 61034
Conductor	Copper
Insulation	LSHF
Bedding & Outer Sheath	Nil
Voltage Rating (Uo/U)	470/750V, 600/1000V
Operating Temperature	70°C

Table XL1

Conductor			450/750V			600/1000V		
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Overall Diameter	Approx. Weight	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	3.1	23	0.8	3.3	25
2.5	7/0.67 CR	2.01	0.8	3.7	35	0.8	3.7	35
4	7/0.85 CR	2.55	0.8	4.3	52	1.0	4.7	55
6	7/1.04 CR	3.12	0.8	4.8	73	1.0	5.3	75
10	7/1.35 CR	4.05	1.0	6.2	120	1.0	6.2	120
16	7/1.70 CR	5.10	1.0	7.2	180	1.0	7.2	180
25	7/2.14 CR	6.40	1.2	9.0	285	1.2	9.0	285
35	7/2.52 CP	7.10	1.2	9.7	368	1.2	9.7	368
50	19/1.78 CP	8.40	1.4	11.4	499	1.4	11.4	499
70	19/2.14 CP	9.90	1.4	12.9	701	1.4	12.9	701
95	19/2.52 CP	11.80	1.6	15.2	970	1.6	15.2	970
120	37/2.03 CP	13.20	1.6	16.6	1,208	1.6	16.6	1,208
150	37/2.25 CP	14.80	1.8	18.6	1,488	1.8	18.6	1,488
185	37/2.52 CP	16.40	2.0	20.6	1,863	2.0	20.6	1,863
240	37/2.88 CP	19.00	2.2	23.7	2,425	2.2	23.7	2,425
300	61/2.52 CP	21.20	2.4	26.3	3,050	2.4	26.3	3,050
400	61/2.85 CP	23.70	2.6	29.2	3,880	2.6	29.2	3,880
500	61/3.2 CP	27.00	2.8	32.9	4,877	2.8	32.9	4,877
630	89/3.0 CP	31.20	2.8	37.1	6,205	2.8	37.1	6,205

Note : Current Rating & Volt Drop refer to Table T1, T1a, T3 & T3a

XLPE Insulated LSHF Sheathed Power Cables

Single-Core XLPE Insulated LSHF Sheathed Flame Retardant Cables



Model XL-FRT-600S, XAL-FRT-600S
Spec IEC 60502-1 or BS 6724

Conductor Copper
Insulation XLPE
Bedding & Outer Sheath LSHF
Voltage Rating (Uo/U) 600/1000V
Operating Temperature 90°C

Table XL2

Conductor			Non-Armoured Cable				Aluminum Wired Armoured (AWA) Cable				
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thick	Nom. Sheath Thick	Overall Diameter	Approx. Weight	Nom. Bedding Thick	Nom. Diam. Armour	Nom. Sheath Thick	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.4	6.0	50					
2.5	7/0.67 CR	2.01	0.7	1.4	6.5	65					
4	7/0.85 CR	2.55	0.7	1.4	7.0	85					
6	7/1.04 CR	3.12	0.7	1.4	7.5	110					
10	7/1.35 CR	4.05	0.7	1.4	8.5	155					
16	7/1.70 CR	5.1	0.7	1.4	9.5	225					
25	7/2.14 CR	6.4	0.9	1.4	11.5	335					
35	7/2.52 CP	7.1	0.9	1.4	11.8	418					
50	19/1.78 CP	8.4	1.0	1.4	13.3	545	1.0	1.25	1.5	18.0	772
70	19/2.14 CP	9.9	1.1	1.4	15.1	758	1.0	1.25	1.5	19.7	1,005
95	19/2.52 CP	11.8	1.1	1.5	17.2	1,028	1.0	1.25	1.6	21.8	1,304
120	37/2.03 CP	13.2	1.2	1.5	18.8	1,275	1.0	1.6	1.7	24.3	1,642
150	37/2.25 CP	14.8	1.4	1.6	21.0	1,567	1.0	1.6	1.7	26.3	1,955
185	37/2.52 CP	16.4	1.6	1.6	23.0	1,944	1.0	1.6	1.8	28.6	2,378
240	37/2.88 CP	19.0	1.7	1.7	26.0	2,528	1.0	1.6	1.9	31.6	2,994
300	61/2.52 CP	21.2	1.8	1.8	28.6	3,141	1.0	1.6	1.9	34.0	3,647
400	61/2.85 CP	23.7	2.0	1.9	31.7	3,988	1.2	2.0	2.1	38.5	4,703
500	61/3.2 CP	27.0	2.2	2.0	35.7	5,004	1.2	2.0	2.2	42.4	5,798
630	89/3.0 CP	31.2	2.4	2.2	40.3	6,432	1.2	2.0	2.3	47.2	7,279
800	127/2.85 CR	37.1	2.6	2.3	47.5	8,420	1.4	2.5	2.5	55.1	9,445
1000	127/3.20 CR	41.6	2.8	2.4	52.5	10,540	1.4	2.5	2.7	60.3	11,650

Note : Current Rating & Volt Drop refer to Table T1, T1a, T3 & T3a



XLPE Insulated LSHF Sheathed Power Cables

Multi-Core XLPE Insulated LSHF Sheathed Flame Retardant Cables



Model	XL-FRT-600S, XAL-FRT-600S
Spec	IEC 60502-1 or BS 6724
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	LSHF
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C

Table XL3

Conductor				Non-Armoured Cable				Steel Wired Armoured (SWA) Cable				
No. of Core	Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thick	Nom. Sheath Thick	Overall Diameter	Approx. Weight	Nom. Bedding Thick	Nom. Diam. Armour	Nom. Sheath Thick	Overall Diameter	Approx. Weight
	(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(mm)	(mm)	(kg/km)
5	1.5	7/0.53	1.59	0.7	1.8	12.2	203	0.8	0.90	1.4	14.0	390
7				0.7	1.8	13.0	245	0.8	0.90	1.4	16.0	480
10				0.7	1.8	16.5	369	0.8	1.25	1.5	19.5	745
12				0.7	1.8	16.5	375	0.8	1.25	1.5	20.0	800
15				0.7	1.8	18.6	485	0.8	1.25	1.6	21.9	960
19				0.7	1.8	19.5	540	0.8	1.25	1.6	23.0	1,035
5	2.5	7/0.67	2.01	0.7	1.8	13.3	264	0.8	0.90	1.4	15.8	500
7				0.7	1.8	14.5	320	0.8	0.90	1.4	17.0	580
10				0.7	1.8	17.9	473	0.8	1.25	1.6	21.5	912
12				0.7	1.8	18.5	505	0.8	1.25	1.6	22.0	990
15				0.7	1.8	20.3	637	1.0	1.60	1.7	25.1	1,360
19				0.7	1.8	21.5	740	1.0	1.60	1.7	26.0	1,465
7	4.0	7/0.85	2.6	0.7	1.8	16.0	460	0.8	1.25	1.5	19.5	865
12				0.7	1.8	20.5	735	1.0	1.60	1.6	25.5	1,455
19				0.7	1.8	24.0	1,090	1.0	1.60	1.7	29.0	1,940

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

XLPE Insulated LSHF Sheathed Power Cables

Multi-Core XLPE Insulated LSHF Sheathed Flame Retardant Cables



Model XL-FRT-600M, XSL-FRT-600M
Spec IEC 60502-1 or BS 6724

Conductor Copper
Insulation XLPE
Bedding & Outer Sheath LSHF
Voltage Rating (Uo/U) 600/1000V
Operating Temperature 90°C

Table XL4

2 - Core											
Conductor			Non-Armoured Cable				Steel Wired Armoured (SWA) Cable				
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thick	Nom. Sheath Thick	Overall Diameter	Approx. Weight	Nom. Bedding Thick	Nom. Diam. Armour	Nom. Sheath Thick	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	10.0	130	0.8	0.9	1.8	13.5	300
2.5	7/0.67 CR	2.01	0.7	1.8	10.5	165	0.8	0.9	1.8	14.5	350
4	7/0.85 CR	2.55	0.7	1.8	12.0	215	0.8	0.9	1.8	15.5	430
6	7/1.04 CR	3.12	0.7	1.8	13.0	265	0.8	0.9	1.8	17.0	500
10	7/1.35 CR	4.05	0.7	1.8	15.0	385	0.8	0.9	1.8	19.0	665
16	7/1.70 CR	5.10	0.7	1.9	17.0	545	0.8	1.25	1.8	21.5	985
25	7/2.14 SS	-	0.9	1.8	17.0	665	0.8	1.25	1.8	22.0	1,105
35	19/1.53 SS	-	0.9	1.8	18.5	875	1.0	1.6	1.8	23.5	1,540
50	19/1.78 SS	-	1.0	1.8	21.0	1,145	1.0	1.6	1.8	25.5	1,890
70	19/2.14 SS	-	1.1	1.8	23.5	1,585	1.0	1.6	1.9	29.0	2,460
95	19/2.52 SS	-	1.1	1.9	26.5	2,140	1.2	2.0	2.0	33.0	3,360
120	37/2.03 SS	-	1.2	2.0	29.5	2,665	1.2	2.0	2.1	36.0	4,015
150	37/2.25 SS	-	1.4	2.2	33.0	3,280	1.2	2.0	2.2	39.0	4,755
185	37/2.52 SS	-	1.6	2.3	36.5	4,080	1.4	2.5	2.4	44.5	6,195
240	61/2.25 SS	-	1.7	2.5	46.0	5,330	1.4	2.5	2.5	53.5	7,610
300	61/2.52 SS	-	1.8	2.6	50.0	6,090	1.6	2.5	2.6	58.0	9,190
400	61/2.85 SS	-	2.0	2.9	54.0	8,350	1.6	2.5	2.8	62.0	11,220

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a



Table XL5

3 - Core											
Conductor			Non-Armoured Cable				Steel Wired Armoured (SWA) Cable				
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thick	Nom. Sheath Thick	Overall Diameter	Approx. Weight	Nom. Bedding Thick	Nom. Diam. Armour	Nom. Sheath Thick	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	10.5	150	0.8	0.9	1.8	14.0	330
2.5	7/0.67 CR	2.01	0.7	1.8	11.0	195	0.8	0.9	1.8	15.0	400
4	7/0.85 CR	2.55	0.7	1.8	12.5	260	0.8	0.9	1.8	16.0	485
6	7/1.04 CR	3.12	0.7	1.8	14.0	320	0.8	0.9	1.8	17.5	570
10	7/1.35 CR	4.05	0.7	1.8	16.0	470	0.8	1.25	1.8	20.0	875
16	7/1.70 CR	5.10	0.7	1.8	18.0	680	0.8	1.25	1.8	22.5	1,150
25	7/2.14 SS	-	0.9	1.8	19.0	950	1.0	1.6	1.8	24.5	1,615
35	19/1.53 SS	-	0.9	1.8	21.5	1,260	1.0	1.6	1.8	26.5	2,020
50	19/1.78 SS	-	1.0	1.8	25.5	1,670	1.0	1.6	1.9	30.5	2,575
70	19/2.14 SS	-	1.1	1.9	28.0	2,335	1.0	1.6	2.0	34.0	3,320
95	19/2.52 SS	-	1.1	2.0	32.0	3,150	1.2	2.0	2.2	38.5	4,615
120	37/2.03 SS	-	1.2	2.1	35.5	3,930	1.2	2.0	2.3	42.0	5,555
150	37/2.25 SS	-	1.4	2.3	39.5	4,830	1.4	2.5	2.5	47.5	7,065
185	37/2.52 SS	-	1.6	2.4	44.0	6,045	1.4	2.5	2.6	52.0	8,530
240	61/2.25 SS	-	1.7	2.6	53.5	8,080	1.4	2.5	2.8	62.0	10,875
300	61/2.52 SS	-	1.8	2.7	60.0	10,070	1.6	2.5	3.0	68.5	13,225
400	61/2.85 SS	-	2.0	3.0	65.5	12,770	1.6	2.5	3.2	76.5	16,200

Table XL6

4 - Core											
Conductor			Non-Armoured Cable				Steel Wired Armoured (SWA) Cable				
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thick	Nom. Sheath Thick	Overall Diameter	Approx. Weight	Nom. Bedding Thick	Nom. Diam. Armour	Nom. Sheath Thick	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	11.0	180	0.8	0.9	1.8	15.0	375
2.5	7/0.67 CR	2.01	0.7	1.8	12.0	230	0.8	0.9	1.8	16.0	460
4	7/0.85 CR	2.55	0.7	1.8	13.5	315	0.8	0.9	1.8	17.0	565
6	7/1.04 CR	3.12	0.7	1.8	15.0	395	0.8	1.25	1.8	19.5	780
10	7/1.35 CR	4.05	0.7	1.8	17.5	590	0.8	1.25	1.8	22.0	1,030
16	7/1.70 CR	5.10	0.7	1.8	20.0	860	0.8	1.25	1.8	25.0	1,370
25	7/2.14 SS	-	0.9	1.8	21.5	1,225	1.0	1.6	1.8	26.5	1,995
35	19/1.53 SS	-	0.9	1.8	24.0	1,625	1.0	1.6	1.9	29.0	2,485
50	19/1.78 SS	-	1.0	1.8	27.0	2,140	1.0	1.6	2.0	32.5	3,115
70	19/2.14 SS	-	1.1	2.0	31.5	3,040	1.2	2.0	2.2	38.0	4,500
95	19/2.52 SS	-	1.1	2.1	36.0	4,110	1.2	2.0	2.3	42.5	5,775
120	37/2.03 SS	-	1.2	2.3	40.0	5,190	1.4	2.5	2.5	48.0	7,475
150	37/2.25 SS	-	1.4	2.4	44.5	6,350	1.4	2.5	2.6	52.5	8,830
185	37/2.52 SS	-	1.6	2.6	50.5	7,985	1.4	2.5	2.8	58.5	10,805
240	61/2.25 SS	-	1.7	2.8	58.0	10,595	1.6	2.5	3.0	67.0	13,630
300	61/2.52 SS	-	1.8	3.0	64.0	13,220	1.6	2.5	3.2	72.0	16,530
400	61/2.85 SS	-	2.0	3.3	73.0	16,805	1.8	3.15	3.5	83.0	21,840

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

Table XL7

5 - Core											
Conductor			Non-Armoured Cable				Steel Wired Armoured (SWA) Cable				
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thick	Nom. Sheath Thick	Overall Diameter	Approx. Weight	Nom. Bedding Thick	Nom. Diam. Armour	Nom. Sheath Thick	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	13.0	199	1.0	0.9	1.8	16.5	439
2.5	7/0.67 CR	2.01	0.7	1.8	14.0	259	1.0	0.9	1.8	17.5	617
4	7/0.85 CR	2.55	0.7	1.8	15.5	351	1.0	1.25	1.8	20.0	753
6	7/1.04 CR	3.12	0.7	1.8	17.0	467	1.0	1.25	1.8	21.5	903
10	7/1.35 CR	4.05	0.7	1.8	19.5	698	1.0	1.25	1.8	24.0	1,334
16	7/1.70 CR	5.10	0.7	1.8	22.5	1,019	1.0	1.6	1.8	27.5	1,763
25	7/2.14 CR	6.4	0.9	1.8	26.0	1,555	1.0	1.6	1.8	32.0	2,462
35	7/2.52 CP	7.1	0.9	1.8	29.0	2,054	1.0	1.6	1.9	35.5	3,094
50	19/1.78 CP	8.4	1.0	1.9	32.5	2,733	1.2	2	2.1	41.0	4,226
70	19/2.14 CP	9.9	1.1	2.1	37.5	3,880	1.2	2	2.3	47.0	5,600
95	19/2.52 CP	11.8	1.1	2.2	43.0	5,248	1.4	2.5	2.4	53.5	7,689
120	37/2.03 CP	13.2	1.2	2.4	47.5	6,577	1.4	2.5	2.6	59.0	9,308
150	37/2.25 CP	14.8	1.4	2.6	52.0	8,091	1.4	2.5	2.8	65.0	11,085
185	37/2.52 CP	16.4	1.6	2.7	57.5	10,098	1.6	2.5	3.0	72.0	13,513
240	37/2.88 CP	19.0	1.7	3	66.5	13,145	1.6	2.5	3.2	80.0	17,015

Note : Current Rating & Volt Drop refer to Table T2, T2a, T4 & T4a

01	Conductor
02	Mica Tape Fire Barrier
03	XLPE Insulation
04	LSHF Bedding
05	Galvanised Steel Armour
06	LSHF Sheath



LSHF Fire Resistant Power Cables

Low Smoke Halogen Free (LSHF) Fire Resistant Cables

Characteristics

Voltage Rating (Uo/U)	300/500V, 450/750V or 600/1000V
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Standards Complied

Main Cable Specification	BS 6724 BS 7211 BS 8592 BS EN 50525-3-41	BS 7629 BS 7846 IEC 60502 AS/NZS 5000-1
Materials Test Method	SS 299 CWZ BS 6387 CWZ IEC 60331 AS/NZS 3013	
Flame Retardant Test	BS EN 50265 BS EN 50266 IEC 60332-1 IEC 60332-3	
Acid Gas Evolved Test	BS EN 50267 IEC 60754	
Smoke Density Test	BS EN 50268 IEC 61034	

Insulation Colour

1-Core	Natural
2-Core	(Brown, Blue) or (Red, Black)
3-Core	(Brown, Blue, Green / Yellow) or (Brown, Black, Grey) or (Red, Yellow, Blue)
4-Core	(Brown, Black, Grey, Blue) or (Red, Yellow, Blue, Black)
5-Core	White core with Black number or (Brown, Black, Grey, Blue, Green / Yellow)
Over Sheath	Orange



LSHF Fire Resistant Power Cables

Single-Core EVA Insulated Non-Sheathed
Fire Resistant & Retardant Cables

Non-Armoured



Model	E-FR-450S or E-FR-600S
Spec	BS 7211, BS 8592, BS EN 50525-3-41, BS 6387, SS 299, IEC 60332-3, IEC 60754 & IEC 61034
Conductor	Copper
Insulation	EVA
Bedding & Outer Sheath	Nil
Voltage Rating (Uo/U)	450/750V or 600/1000V
Operating Temperature	90°C (up to 110°C)

Table FR1

Conductor			450/750V			600/1000V		
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Overall Diameter	Approx. Weight	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(kg/km)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	4.2	28	0.8	4.4	30
2.5	7/0.67 CR	2.01	0.8	4.8	40	0.8	4.8	40
4	7/0.85 CR	2.55	0.8	5.3	58	1.0	5.7	65
6	7/1.04 CR	3.12	0.8	5.9	80	1.0	6.3	85
10	7/1.35 CR	4.05	1.0	7.2	130	1.0	7.2	130
16	7/1.70 CR	5.10	1.0	8.3	190	1.0	8.3	190
25	7/2.14 CR	6.10	1.2	10.0	285	1.2	10.0	285
35	7/2.52 CP	7.1	1.2	11.3	380	1.2	11.3	380
50	19/1.78 CP	8.4	1.4	12.9	510	1.4	12.9	510
70	19/2.14 CP	9.9	1.4	14.7	715	1.4	14.7	715
95	19/2.52 CP	11.8	1.6	17.0	980	1.6	17.0	980
120	37/2.03 CP	13.2	1.6	19.2	1,220	1.6	19.2	1,220
150	37/2.25 CP	14.8	1.8	21.1	1,500	1.8	21.1	1,500
185	37/2.52 CP	16.4	2.0	23.4	1,870	2.0	23.4	1,870
240	37/2.88 CP	19.0	2.2	26.5	2,445	2.2	26.5	2,445
300	61/2.52 CP	21.2	2.4	29.3	3,050	2.4	29.3	3,050
400	61/2.85 CP	23.7	2.6	32.7	3,880	2.6	32.7	3,880
500	61/3.20 CP	27.0	2.8	36.3	4,950	2.8	36.3	4,950
630	91/2.97 CP*	31.2	2.8	40.2	6,325	2.8	40.2	6,325

Note : Current Rating & Volt Drop refer to Table T1
Model E-FR-450S & E-FR-600S is suitable for 90°C or up to 110°C operating temperature.

LSHF Fire Resistant Power Cables

Single-Core XLPE Insulated LSHF Sheathed
Fire Resistant & Retardant Cables

Non-Armoured



Model	XL-FR-600S
Spec	IEC 60502-1, IEC 60332-3, IEC 60754, IEC 61034, BS 6387 & SS 299
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	LSHF
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C (up to 110°C)

Table FR2

Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.4	7.1	60
2.5	7/0.67 CR	2.01	0.7	1.4	7.5	70
4	7/0.85 CR	2.55	0.7	1.4	8.1	90
6	7/1.04 CR	3.12	0.7	1.4	8.6	115
10	7/1.35 CR	4.05	0.7	1.4	9.6	165
16	7/1.70 CR	5.10	0.7	1.4	10.6	230
25	7/2.14 CR	6.10	0.9	1.4	12.3	325
35	7/2.52 CP	7.1	0.9	1.4	13.6	425
50	19/1.78 CP	8.4	1.0	1.4	15.0	555
70	19/2.14 CP	9.9	1.1	1.4	17.0	765
95	19/2.52 CP	11.8	1.1	1.5	19.2	1,035
120	37/2.03 CP	13.2	1.2	1.5	21.5	1,280
150	37/2.25 CP	14.8	1.4	1.6	23.7	1,575
185	37/2.52 CP	16.4	1.6	1.6	26.0	1,945
240	37/2.88 CP	19.0	1.7	1.7	29.0	2,525
300	61/2.52 CP	21.2	1.8	1.8	31.8	3,135
400	61/2.85 CP	23.7	2.0	1.9	35.4	3,970
500	61/3.20 CP	27.0	2.2	2.0	39.2	5,055
630	91/2.97 CP*	31.2	2.4	2.2	44.0	6,515
800	127/2.85 CR	37.1	2.6	2.3	48.9	8,270
1000	127/3.20 CR	41.6	2.8	2.4	54.1	10,340

Note : CR=circular stranded conductor, CP=circular compacted stranded conductor (*630mm2 shall be 89/3.0mm or 91/2.97mm
Current Rating & Volt Drop refer to Table T1



LSHF Fire Resistant Power Cables

Multi-Core XLPE Insulated LSHF Sheathed
Fire Resistant & Retardant Cables

Non-Armoured



Model	XL-FR-600M
Spec	IEC 60502-1, IEC 60331, IEC 60332-3, IEC 60754, IEC 61034, BS 6387 & SS 299
Conductor	Copper
Insulation	XLPE
Outer Sheath	LSHF
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C (up to 110°C)

Table FR3

2 - Core						
Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	12.0	190
2.5	7/0.67 CR	2.01	0.7	1.8	12.5	225
4	7/0.85 CR	2.55	0.7	1.8	14.0	295
6	7/1.04 CR	3.12	0.7	1.8	15.0	360
10	7/1.35 CR	4.05	0.7	1.8	17.0	490
16	7/1.70 CR	5.10	0.7	1.8	19.0	665
25	7/2.14 CR	6.42	0.9	1.8	22.0	935
35	7/2.52 CP	7.1	0.9	1.8	24.0	1,185
50	19/1.78 CP	8.4	1.0	1.8	27.0	1,545
70	19/2.14 CP	9.9	1.1	1.8	30.5	2,090
95	19/2.52 CP	11.8	1.1	1.9	34.5	2,780
120	37/2.03 SS	-	1.2	2.0	38.0	3,445
150	37/2.25 SS	-	1.4	2.2	42.5	4,255
185	37/2.52 SS	-	1.6	2.3	46.5	5,245
240	37/2.88 SS	-	1.7	2.5	52.5	6,780
300	61/2.52 SS	-	1.8	2.6	57.5	8,340
400	61/2.85 SS	-	2.0	2.9	64.0	10,525

Note : Current Rating & Volt Drop refer to Table T2 & T2a
Model EL-FR-600M is suitable for 90°C or up to 110°C operating temperature.

Table FR4

3 - Core						
Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	12.5	215
2.5	7/0.67 CR	2.01	0.7	1.8	13.5	265
4	7/0.85 CR	2.55	0.7	1.8	15.0	350
6	7/1.04 CR	3.12	0.7	1.8	16.0	435
10	7/1.35 CR	4.05	0.7	1.8	18.0	600
16	7/1.70 CR	5.10	0.7	1.8	20.5	835
25	7/2.14 CR	6.42	0.9	1.8	23.5	1,185
35	7/2.52 CP	7.1	0.9	1.8	25.5	1,520
50	19/1.78 CP	8.4	1.0	1.8	29.0	1,995
70	19/2.14 CP	9.9	1.1	1.9	33.0	2,745
95	19/2.52 CP	11.8	1.1	2.0	37.0	3,660
120	37/2.03 SS	-	1.2	2.1	41.0	4,560
150	37/2.25 SS	-	1.4	2.3	45.5	5,630
185	37/2.52 SS	-	1.6	2.4	50.0	6,945
240	37/2.88 SS	-	1.7	2.6	56.5	8,995
300	61/2.52 SS	-	1.8	2.7	62.0	11,100
400	61/2.85 SS	-	2.0	3.0	69.0	14,045

Table FR5

4 - Core						
Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	1.8	13.5	260
2.5	7/0.67 CR	2.01	0.7	1.8	14.5	320
4	7/0.85 CR	2.55	0.7	1.8	16.5	425
6	7/1.04 CR	3.12	0.7	1.8	17.5	535
10	7/1.35 CR	4.05	0.7	1.8	20.0	750
16	7/1.70 CR	5.10	0.7	1.8	22.5	1,040
25	7/2.14 CR	6.42	0.9	1.8	26.0	1,495
35	7/2.52 CP	7.1	0.9	1.8	28.5	1,930
50	19/1.78 CP	8.4	1.0	1.8	32.0	2,535
70	19/2.14 CP	9.9	1.1	2.0	36.5	3,510
95	19/2.52 CP	11.8	1.1	2.1	41.5	4,710
120	37/2.03 SS	-	1.2	2.3	45.5	5,885
150	37/2.25 SS	-	1.4	2.4	50.5	7,230
185	37/2.52 SS	-	1.6	2.6	56.0	8,955
240	37/2.88 SS	-	1.7	2.8	63.0	11,615
300	61/2.52 SS	-	1.8	3.0	69.0	14,360
400	61/2.85 SS	-	2.0	3.3	77.0	18,175

Note : Current Rating & Volt Drop refer to Table T2 & T2a
Model EL-FR-600M is suitable for 90°C or up to 110°C operating temperature.



LSHF Fire Resistant Power Cables

Multi-Core XLPE Insulated LSHF Sheathed
Fire Resistant & Retardant Cables

Non-Armoured



Model	XL-FR-300M
Spec	BS 6387, SS 299, IEC 60331, IEC 60332-3, IEC 60754 & IEC 61034
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	LSHF
Voltage Rating (Uo/U)	300/500V
Operating Temperature	90°C

Table FR6

Conductor			Cable			
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
2 - Core						
1.5	7/0.53 CR	1.59	0.5	0.5	8.1	115
2.5	7/0.67 CR	2.01	0.5	0.5	9.6	160
4.0	7/0.85 CR	2.55	0.8	1.1	12.0	220
3 - Core						
1.5	7/0.53 CR	1.59	0.5	0.5	8.7	140
2.5	7/0.67 CR	2.01	0.5	0.5	10.3	195
4.0	7/0.85 CR	2.55	0.8	1.1	12.5	265
4 - Core						
1.5	7/0.53 CR	1.59	0.5	0.5	9.8	170
2.5	7/0.67 CR	2.01	0.5	0.5	11.4	240
4.0	7/0.85 CR	2.55	0.8	1.2	14.0	335

Note : Current Rating & Volt Drop refer to Table T2 & T2a
Model EL-FR-600M is suitable for 90°C or up to 110°C operating temperature.

LSHF Fire Resistant Power Cables

Single-Core XLPE Insulated LSHF Sheathed Armoured Fire Resistant & Retardant Cables

Aluminum Wired Armour (AWA)



Model	XAL-FR-600M
Spec	BS 6724, BS 6387, SS 299, IEC 60332-3, 60754 & 61034
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	LSHF
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C (up to 110°C)

Table FR7

Conductor			Armoured Cable						
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Bedding Thickness	Nom. Diam. Armour	Nom. Sheath Thickness	Overall Diameter	Approx. Weight	
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)	
50	19/1.78 CP	8.4	1.0	0.8	1.25	1.5	19.3	760	
70	19/2.14 CP	9.9	1.1	0.8	1.25	1.5	21.4	990	
95	19/2.52 CP	11.8	1.1	0.8	1.25	1.6	23.5	1,285	
120	37/2.03 CP	13.2	1.2	0.8	1.25	1.6	25.8	1,550	
150	37/2.25 CP	14.0	1.4	1.0	1.60	1.7	29.1	1,960	
185	37/2.52 CP	16.4	1.6	1.0	1.60	1.8	31.6	2,380	
240	37/2.88 CP	19.0	1.7	1.0	1.60	1.8	34.4	2,990	
300	61/2.52 CP	21.2	1.8	1.0	1.60	1.9	37.3	3,640	
400	61/2.85 CP	23.7	2.0	1.2	2.00	2.0	42.1	4,680	
500	61/3.20 CP	27.0	2.2	1.2	2.00	2.1	45.8	5,840	
630	89/3.0 CP*	31.2	2.4	1.2	2.00	2.2	50.4	7,370	
800	127/2.85 CR	37.1	2.6	1.4	2.50	2.4	57.0	9,505	
1000	127/3.20 CR	41.6	2.8	1.4	2.50	2.5	62.1	11,695	

Note : Current Rating & Volt Drop refer to Table T3 & T3a

LSHF FR Cables



LSHF Fire Resistant Power Cables

Multi-Core XLPE Insulated LSHF Sheathed Armoured Fire Resistant & Retardant Cables

Steel Wired Armour (SWA)



Model	XSL-FR-600M
Spec	BS 7629, BS 6387, SS299, IEC 60331, IEC 60332-3, IEC60754 & IEC 61034
Conductor	Copper
Insulation	XLPE
Bedding & Outer Sheath	LSHF
Voltage Rating (Uo/U)	600/1000V
Operating Temperature	90°C (up to 110°C)

Table FR8

2 - Core								
Conductor			Armoured Cable					
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Bedding Thickness	Nom. Diam. Armour	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	0.8	0.90	1.4	14.5	400
2.5	7/0.67 CR	2.01	0.7	0.8	0.90	1.4	15.5	460
4	7/0.85 CR	2.55	0.7	0.8	0.90	1.4	16.5	550
6	7/1.04 CR	3.12	0.7	0.8	0.90	1.4	18.0	630
10	7/1.35 CR	4.05	0.7	0.8	0.90	1.5	20.0	805
16	7/1.70 CR	5.10	0.7	0.8	1.25	1.5	22.5	1,155
25	7/2.14 CR	6.42	0.9	0.8	1.25	1.6	26.0	1,510
35	7/2.52 CP	7.1	0.9	1.0	1.60	1.7	29.0	2,045
50	19/1.78 CP	8.4	1.0	1.0	1.60	1.8	32.0	2,515
70	19/2.14 CP	9.9	1.1	1.0	1.60	1.9	36.0	3,215
95	19/2.52 CP	11.8	1.1	1.2	2.00	2.0	41.0	4,390
120	37/2.03 SS	-	1.2	1.2	2.00	2.1	44.5	5,175
150	37/2.25 SS	-	1.4	1.2	2.00	2.2	49.0	6,155
185	37/2.52 SS	-	1.6	1.4	2.50	2.4	54.5	7,920
240	61/2.25 SS	-	1.7	1.4	2.50	2.5	60.5	9,730
300	61/2.52 SS	-	1.8	1.6	2.50	2.6	66.0	11,630
400	61/2.85 SS	-	2.0	1.6	2.50	2.8	73.0	14,235

Table FR9

3 - Core								
Conductor			Armoured Cable					
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Bedding Thickness	Nom. Diam. Armour	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	0.8	0.90	1.4	15.0	440
2.5	7/0.67 CR	2.01	0.7	0.8	0.90	1.4	16.0	505
4	7/0.85 CR	2.55	0.7	0.8	0.90	1.4	17.5	615
6	7/1.04 CR	3.12	0.7	0.8	0.90	1.4	19.0	720
10	7/1.35 CR	4.05	0.7	0.8	1.25	1.5	21.5	1,110
16	7/1.70 CR	5.10	0.7	0.8	1.25	1.6	24.0	1,365
25	7/2.14 CR	6.42	0.9	1.0	1.60	1.7	28.5	2,020
35	7/2.52 CP	7.1	0.9	1.0	1.60	1.8	31.0	2,430
50	19/1.78 CP	8.4	1.0	1.0	1.60	1.8	34.0	3,020
70	19/2.14 CP	9.9	1.1	1.0	1.60	1.9	38.0	3,925
95	19/2.52 CP	11.8	1.1	1.2	2.00	2.1	43.5	5,360
120	37/2.03 SS	-	1.2	1.2	2.00	2.2	47.5	6,400
150	37/2.25 SS	-	1.4	1.4	2.50	2.3	53.0	8,160
185	37/2.52 SS	-	1.6	1.4	2.50	2.4	58.0	9,725
240	61/2.25 SS	-	1.7	1.4	2.50	2.6	64.5	12,115
300	61/2.52 SS	-	1.8	1.6	2.50	2.7	70.0	14,570
400	61/2.85 SS	-	2.0	1.6	2.50	2.9	79.0	18,915

Table FR10

4 - Core								
Conductor			Armoured Cable					
Size	No. & Diameter of Wire	Approx. Diameter	Nom. Insulation Thickness	Nom. Bedding Thickness	Nom. Diam. Armour	Nom. Sheath Thickness	Overall Diameter	Approx. Weight
(mm²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
1.5	7/0.53 CR	1.59	0.7	0.8	0.90	1.4	16.0	500
2.5	7/0.67 CR	2.01	0.7	0.8	0.90	1.4	17.0	580
4	7/0.85 CR	2.55	0.7	0.8	0.90	1.4	19.0	710
6	7/1.04 CR	3.12	0.7	0.8	1.25	1.5	21.0	975
10	7/1.35 CR	4.05	0.7	0.8	1.25	1.5	23.5	1,315
16	7/1.70 CR	5.10	0.7	0.8	1.25	1.6	26.0	1,620
25	7/2.14 CR	6.42	0.9	1.0	1.60	1.7	31.0	2,400
35	7/2.52 CP	7.1	0.9	1.0	1.60	1.8	33.5	2,930
50	19/1.78 CP	8.4	1.0	1.0	1.60	1.9	37.5	3,705
70	19/2.14 CP	9.9	1.1	1.2	2.00	2.1	43.0	5,175
95	19/2.52 CP	11.8	1.1	1.2	2.00	2.2	48.0	6,590
120	37/2.03 SS	-	1.2	1.4	2.50	2.3	53.5	8,415
150	37/2.25 SS	-	1.4	1.4	2.50	2.4	58.5	10,045
185	37/2.52 SS	-	1.6	1.4	2.50	2.6	63.5	12,015
240	61/2.25 SS	-	1.7	1.6	2.50	2.7	71.0	15,115
300	61/2.52 SS	-	1.8	1.6	2.50	2.9	78.5	19,130
400	61/2.85 SS	-	2.0	1.8	3.15	3.2	87.0	23,710



Technical Data

Technical Data

Fire Performance

Circuit Integrity

Circuit integrity refers to the cable property that maintains function in the event of fire.

Test Standards

SS 299 CWZ
BS 6387 CWZ
IEC 60331

During the test, the conductor is energized with load current, it shall maintain circuit integrity, no fuse shall be ruptured or no short circuit shall occur.

Test Standards	Duration	Subject To			Temperature	Category
		Fire	Water	Shock		
SS 299, BS 6387	3 hr	●			650°C	A
SS 299, BS 6387, IEC 60331-21	3 hr	●			750°C	B
SS 299, BS 6387	3 hr	●			950°C	C
SS 299, BS 6387	20 min	●			950°C	S
SS 299, BS 6387	30 min		●		650°C	W
SS 299, BS 6387	15 min			●	650°C	X
SS 299, BS 6387	15 min			●	750°C	Y
SS 299, BS 6387, IEC 60331-31	15 min			●	950°C	Z



Fire Resistant Test
With Fire Alone



Fire Resistant Test
With Water Spray



Fire Resistant Test
With Mechanical Shock

Flame Retardance

Vertical-Mounted
Single Wire Test

The test piece is mounted vertically in the test chamber, fire source is applied according to the test method, the fire shall be self-extinguished and the char shall not be greater than 425mm from the point of application of fire.

Test Standards

IEC 60332-1-2
BS EN 60332-1-2
EN 60332-1-2
BS EN 50265



Vertical-Mounted
Bundled Wires & Cable Test

Test Standards

IEC 60332-3
BS EN 60332-3
EN 60332-3
BS EN 50266

Test Standards	Nom. Total Volume of Non-Metallic of Test Sample (litre/ meter)	Duration	Category
IEC 60332-3-25; BS EN 60332-3-25; EN 60332-3-25	0.5	20 mins	D
IEC 60332-3-24; BS EN 60332-3-24; EN 60332-3-24	1.5	20 mins	C
IEC 60332-3-23; BS EN 60332-3-23; EN 60332-3-23	3.5	40 mins	B
IEC 60332-3-22; BS EN 60332-3-22; EN 60332-3-22	7.0	40 mins	A
IEC 60332-3-21; BS EN 60332-3-21; EN 60332-3-21	7.0	40 mins	A F/R

The cables shall self-extinguish after removing the fire source. The fire shall not have propagated any further than 2.5 meter from the point of application of fire.

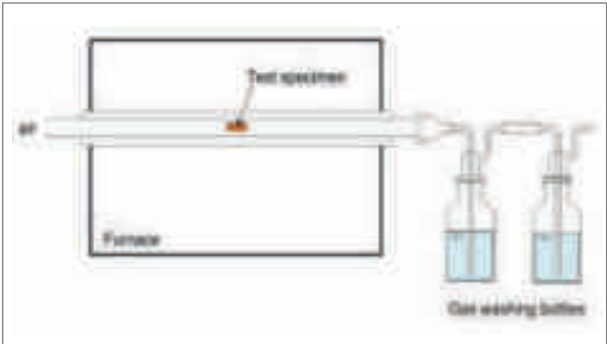


Halogen Free & Emission of Corrosive Gas

Halogen containing plastic material release substance like hydrogen chloride, a poisonous gas that form hydrochloride acid when it comes in contact with moisture. It causes fatality and hinder the operation of firefighting. Furthermore, it damages expensive equipment. Halogen free material emits no halogen when exposed to fire.

- A** 1g of insulation or sheath sample taken from cable construction is subject to the test, If the hydrochloric acid yield is less than 5 mg/g, the cable specimen is categorized as LSZH (Low Smoke Zero Halogen) or LSHF (Low Smoke Halogen Free).
- B** 1g of insulation or sheath sample taken from cable construction is subject to the test, The resulting gases are guided by air blow-trough to scrubbers with distilled water. Take measurement of acidity (pH) and conductivity of the solution. The pH acidity of the solutions shall not be less than 4.3 and the conductivity shall be not greater than 10 μ S/mm.

Test Standards A	IEC 60754-1 EN 50267-2-1
Test Standards B	IEC 60754-2 EN 50267-2-2

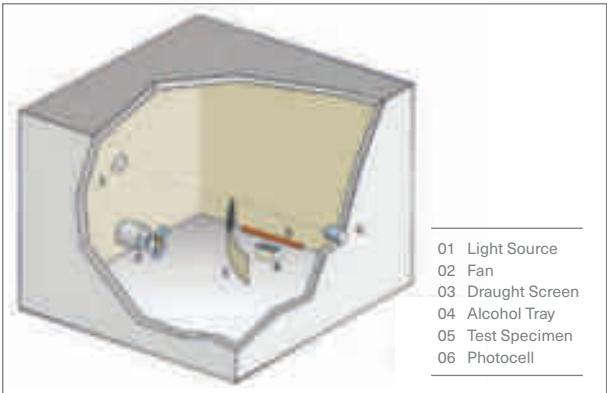


Smoke

Some plastic materials emit dense smoke during combustion which affects visibility and causes difficulty in the evacuation. Low smoke material emits very little smoke in the event of fire and ensures at least 60% of light transmission when tested in a 3-meter cube chamber.

The cable sections are burned in test chamber with light source on one side of the wall and the photometric measuring system in the opposite. Photometric measuring system takes the reading of the light transmission in the chamber. The result of measurement shall be not less than 60%.

Test Standards	IEC 61034-1&2 EN 61034 -1&2 BS EN 50268
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Technical Data

Current Rating & Voltage Drop

Single-Core XLPE or LSHF Insulation,
Non-Armoured, With or Without Sheath Cables

Copper Conductor
450/750V or 600/1000V

Ambient Temperature: 30°C Conductor Operating Temperature: 90°C

Current Carrying Capacity (Amp) Table T1

Conductor Cross- Sectional Area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc.)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc.)		Reference Method 1 (Clipped Direct)		Reference Method 11 (on perforated cable tray, horizontal or vertical)		Reference Method 12 (in free air)		
	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c. or 3 Cables, Three-Phase a.c.	3 Cables, Three-Phase a.c.	
					Touching/ Flat	Flat, Touching/Trefoil	Touching/ Flat	Flat, Touching/Trefoil	Horizontal Flat Spaced	Vertical Flat Spaced	Trefoil
	(mm²)	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23					
2.5	24	23	30	26	34	31					
4	33	30	40	35	46	41					
6	43	39	51	45	59	54					
10	58	53	71	63	81	74					
16	76	70	95	85	109	99					
25	100	91	126	111	143	130	158	140	183	163	138
35	124	111	156	138	176	161	195	176	226	203	171
50	149	135	189	168	228	209	293	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606
300	459	410	573	493	743	681	794	730	886	824	701
400			683	584	868	793	915	849	1065	994	820
500			783	666	990	904	1044	973	1228	1150	936
630			900	764	1130	1033	1091	1115	1423	1338	1069
800					1288	1179	1358	1275	1581	1485	1214
1000					1443	1323	1520	1436	1775	1671	1349

Voltage Drop (Per Amp Per Meter) Table T1a

Conductor Cross- Sectional Area	2 Cables, Single Phase a.c.										3 or 4 Cables, Three-Phase a.c.											
	2 Cables d.c.	Reference Method 3 & 4 (enclosed in conduit etc. in or on a wall)			Reference Method 1 & 11 (clipped direct or on trays touching)			Reference Method 12			Reference Method 3 & 4 (enclosed in conduit etc. in or on a wall)			Reference Method 1, 11, & 12			Reference Method 1 & 11			Reference Method 12		
		Spaced*	Trefoil	Touching/ Flat	Spaced/ Flat*																	
(mm²)	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m					
1.5	31	31			31			31			27			27			27					
2.5	19	19			19			19			16			16			16					
4	12	12			12			12			10			10			10					
6	7.9	7.9			7.9			7.9			6.8			6.8			6.8					
10	4.7	4.7			4.7			4.7			4			4			4					
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5					
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800	0.056				0.072	0.150	0.170	0.064	0.24	0.25				0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000	0.045				0.063	0.150	0.165	0.054	0.24	0.24				0.055	0.130	0.140	0.050	0.155	0.165	0.047	0.23	0.24

Note : r = conductor resistance at operating temperature, z = impedance, x = reactance

Multi-Core XLPE or LSHF Insulation,
Non-Armoured Cables

Copper Conductor
300/500V or 600/1000V

Ambient Temperature: 30°C

Conductor Operating Temperature: 90°C

Current Carrying Capacity (Amp)

Table T2

Conductor Cross- Sectional Area	Reference Method 4 (enclosed in an insulated wall etc.)		Reference Method 3 (enclosed in conduit on a wall or ceiling, or in trunking)		Reference Method 1 (Clipped Direct)		Reference Method 11 (on perforated tray) or Reference Method 13 (in free air)	
	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.
	(mm ²)	A	A	A	A	A	A	A
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4	33	30	40	35	45	40	49	42
6	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127
35	121	109	146	128	171	147	185	158
50	145	130	175	154	209	179	225	192
70	183	164	221	194	269	229	289	246
95	220	197	265	233	328	278	352	298
120	253	227	305	268	382	322	410	346
150	290	259	334	300	441	371	473	399
185	329	295	384	340	506	424	542	456
240	386	346	459	398	599	500	641	538
300	442	396	532	455	693	576	741	621
400			625	536	803	667	865	741

Voltage Drop (Per Amp Per Meter)

Table T2a

Conductor Cross-Sectional Area	2- Core Cables d.c.	2-Core Cable, Single-Phase, a.c.			3 or 4-Core Cable, Three-Phase a.c.		
(mm²)	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Note : r = conductor resistance at operating temperature, z = impedance, x = reactance

Single-Core XLPE or LSHF Insulation,
Armoured Cables

Copper Conductor
600/1000V

Ambient Temperature: 30°C

Conductor Operating Temperature: 90°C

Ground Temperature: 15°C

Depth of Laying: 0.5m

Ground Thermal Resistivity: 1.2 K.m/W

Current Carrying Capacity (Amp)

Table T3

Conductor Cross- Sectional Area	Reference Method 1 (Clipped Direct)		Reference Method 11 (in free air/ on perforated cable tray)		Reference Method 12 (in free air)							Laid in Ducting in Ground		Laid Direct in Ground	
	2 Cables, Single- Phase a.c. or d.c.	3 or 4 Cables, Three- Phase a.c.	2 Cables, Single- Phase a.c. or d.c.	3 Cables, Three- Phase a.c.	2 Cables, d.c.		2 Cables, Single-Phase a.c.		3 or 4 Cables, Three-Phase a.c.			2 Cables, Single- Phase a.c. or d.c.	3 Cables, Three- Phase a.c.	2 Cables, Single- Phase a.c. or d.c.	3 Cables, Three- Phase a.c.
					Horizontal Spaced	Vertical Spaced	Horizontal Flat Spaced	Vertical Flat Spaced	Horizontal Flat Spaced	Vertical Flat Spaced	3 Cables/ Trefoil				
(mm²)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
50	237	220	253	232	284	270	282	266	288	266	222	252	231	274	231
70	303	277	322	293	356	349	357	337	358	331	285	305	278	337	284
95	367	333	389	352	446	426	436	412	425	393	346	360	327	403	340
120	425	383	449	405	519	497	504	477	485	449	402	404	366	458	386
150	488	437	516	462	600	575	566	539	549	510	463	439	396	510	431
185	557	496	587	524	688	660	643	614	618	574	529	486	437	574	485
240	656	579	689	612	815	782	749	714	715	666	625	546	489	661	558
300	755	662	792	700	943	906	842	805	810	755	720	597	534	739	623
400	853	717	899	767	1137	1094	929	889	848	797	815	638	567	820	691
500	962	791	1016	851	1314	1266	1032	989	923	871	918	694	615	910	765
630	1082	861	1146	935	1528	1474	1139	1092	992	940	1027	752	664	1001	841
800	1170	904	1246	987	1809	1744	1204	1155	1042	978	1119	788	692	1055	888
1000	1261	961	1345	1055	2100	2026	1289	1238	1110	1041	1214	839	735	1115	942

Voltage Drop (Per Amp Per Meter)

Table T3a

Conductor Cross- Sectional Area	2 Cables d.c.	Reference Method 1 & 11			Reference Method 12			Reference Method 1, 11, & 12			Reference Method 1 & 11			Reference Method 12			Laid Direct in Ground	
		2 Cables, Single-Phase a.c.									3 or 4 Cables, Three-Phase a.c.						1-Core, Three-Phase a.c.	
		Touching			Spaced*			Touching/Trefoil			Touching/ Flat			Spaced/ Flat*			Trefoil	Flat
		mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m	mV/A/m
(mm²)	mV/A/m	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z		
50	0.98	0.99	0.21	1.00	0.98	0.29	1.00	0.86	0.180	0.87	0.84	0.25	0.88	0.84	0.33	0.90	0.87	0.90
70	0.67	0.68	0.200	0.71	0.69	0.29	0.75	0.59	0.170	0.62	0.60	0.25	0.65	0.62	0.32	0.70	0.62	0.70
95	0.49	0.51	0.195	0.55	0.53	0.28	0.60	0.44	0.170	0.47	0.46	0.24	0.52	0.49	0.31	0.58	0.47	0.58
120	0.39	0.41	0.190	0.45	0.43	0.27	0.51	0.35	0.165	0.39	0.38	0.24	0.44	0.41	0.30	0.51	0.39	0.51
150	0.31	0.33	0.185	0.38	0.36	0.27	0.45	0.29	0.160	0.33	0.31	0.23	0.39	0.34	0.29	0.45	0.33	0.45
185	0.25	0.27	0.185	0.33	0.30	0.26	0.40	0.23	0.160	0.28	0.26	0.23	0.34	0.29	0.29	0.41	0.28	0.41
240	0.195	0.21	0.180	0.28	0.24	0.26	0.35	0.180	0.155	0.24	0.21	0.22	0.30	0.24	0.28	0.37	0.24	0.37
300	0.155	0.170	0.175	0.25	0.195	0.25	0.32	0.145	0.150	0.21	0.170	0.22	0.28	0.20	0.27	0.34	0.21	0.34
400	0.115	0.145	0.170	0.22	0.180	0.24	0.30	0.125	0.150	0.195	0.160	0.21	0.27	0.20	0.27	0.33	0.195	0.33
500	0.093	0.125	0.170	0.21	0.165	0.24	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.31	0.180	0.31
630	0.073	0.105	0.165	0.195	0.150	0.23	0.27	0.092	0.145	0.170	0.135	0.195	0.24	0.175	0.23	0.29	0.170	0.29
800	0.056	0.090	0.160	0.190	0.145	0.23	0.27	0.086	0.140	0.165	0.130	0.180	0.23	0.175	0.195	0.26	0.165	0.26
1000	0.045	0.092	0.155	0.180	0.140	0.21	0.25	0.080	0.135	0.155	0.125	0.170	0.21	0.165	0.180	0.24	0.155	0.24

Note : r = conductor resistance at operating temperature, z = impedance, x = reactance

Multi-Core XLPE or LSHF Insulation, Armoured Cables

Copper Conductor
600/1000V

Ambient Temperature: 30°C **Conductor Operating Temperature:** 90°C **Ground Temperature:** 15°C
Depth of Laying: 0.5m **Ground Thermal Resistivity:** 1.2 K.m/W

Current Carrying Capacity (Amp) **Table T4**

Conductor Cross-Sectional Area	Reference Method 1 (Clipped Direct)		Reference Method 11 (on perforated tray) or Reference Method 13 (in free air)		Laid in Ducting in Ground		Laid Direct in Ground	
	One 2-Core Cable, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.
(mm²)	A	A	A	A	A	A	A	A
1.5	27	23	29	25	31	26	38	32
2.5	36	31	39	33	41	34	49	42
4	49	42	52	44	53	45	65	55
6	62	53	66	56	67	56	81	69
10	85	73	90	78	89	75	109	92
16	110	94	115	99	115	96	141	119
25	146	124	152	131	148	124	183	152
35	180	154	188	162	178	149	219	182
50	219	187	228	197	211	177	259	217
70	279	238	291	251	260	218	317	266
95	338	289	354	304	313	263	381	319
120	392	335	410	353	357	300	433	363
150	451	386	472	406	401	338	485	406
185	515	441	539	463	455	382	547	458
240	607	520	636	546	527	442	632	529
300	698	599	732	628	592	496	708	592
400	787	673	847	728	669	570	799	667

Voltage Drop (Per Amp Per Meter) **Table T4a**

Conductor Cross-Sectional Area	2- Core Cables d.c.	2-Core Cable, Single-Phase, a.c.			3 or 4-Core Cable, Three-Phase a.c.		
(mm²)	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.2	0.140	0.24	0.175	0.125	0.21
300	0.155	0.16	0.140	0.21	0.140	0.120	0.185
400	0.120	0.13	0.140	0.190	0.115	0.120	0.165

Note : r = conductor resistance at operating temperature, z = impedance, x = reactance

Single-Core PVC Insulation, Non-Armoured,
With or Without Sheath Cables

Copper Conductor
450/750V or 600/1000V

Ambient Temperature: 30°C

Conductor Operating Temperature: 70°C

Current Carrying Capacity (Amp)

Table T5

Conductor Cross-Sectional Area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc.)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc.)		Reference Method 1 (Clipped Direct)		Reference Method 11 (on perforated cable tray, horizontal or vertical)		Reference Method 12 (in free air)		
	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, Three-Phase a.c.	2 Cables, Single-Phase a.c. or d.c. or 3 Cables, Three-Phase a.c.		3 Cables, Three-Phase a.c.
	A	A	A	A	Touching/ Flat		Flat, Touching/Trefoil		Horizontal Flat Spaced	Vertical Flat Spaced	Trefoil
					A	A	A	A			
(mm²)	A	A	A	A	A	A	A	A	A	A	A
1.5	14.5	13.5	17.5	15.5	20	18					
2.5	19.5	18	24	21	27	25					
4	26	24	32	28	37	33					
6	34	31	41	36	47	43					
10	46	42	57	50	65	59					
16	61	56	76	68	87	79					
25	80	73	101	89	114	104	126	112	146	130	110
35	99	89	125	110	141	129	156	141	181	162	137
50	119	108	151	134	182	167	191	172	219	197	167
70	151	136	192	171	234	214	246	223	281	254	216
95	182	164	232	207	284	261	300	273	341	311	264
120	210	188	269	239	330	303	349	318	396	362	308
150	240	216	300	262	381	349	404	369	456	419	356
185	273	245	341	296	436	400	463	424	521	480	409
240	320	286	400	346	515	472	549	504	615	569	485
300	367	328	458	394	594	545	635	584	709	659	561
400			546	467	694	634	732	679	852	795	656
500			626	533	792	723	835	778	982	920	749
630			720	611	904	826	953	892	1138	1070	855
800					1030	943	1086	1020	1265	1188	971
1000					1154	1058	1216	1149	1420	1337	1079

Voltage Drop (Per Amp Per Meter)

Table T5a

Conductor Cross- Sectional Area	2 Cables, Single Phase a.c.										3 or 4 Cables, Three-Phase a.c.											
	2 Cables d.c.	Reference Method 3 & 4 (enclosed in conduit etc. in or on a wall)			Reference Method 1 & 11 (clipped direct/ on trays/ in free air)			Reference Method 12	Reference Method 3 & 4 (enclosed in conduit etc. in or on a wall)			Reference Method 1, 11, & 12	Reference Method 1 & 11			Reference Method 12						
		Touching			Spaced*				Touching/ Trefoil				Touching/ Flat			Spaced/ Flat*						
		(mm²)	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m		mV/A/m	mV/A/m	mV/A/m		mV/A/m	mV/A/m	mV/A/m	mV/A/m						
1.5	29	29	29	29	29	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25		
2.5	18	18	18	18	18	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
4	11	11	11	11	11	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5		
6	7.3	7.3	7.3	7.3	7.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4		
10	4.4	4.4	4.4	4.4	4.4	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8		
16	2.8	2.8	2.8	2.8	2.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.20	1.75	1.75	0.29	1.80	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.25	1.55	1.50	0.32	1.55
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30	1.10	0.27	1.10	1.10	0.170	1.10	1.10	0.24	1.10	1.10	0.32	1.15
50	0.93	0.95	0.30	1.00	0.93	0.190	0.95	0.93	0.28	0.97	0.81	0.26	0.85	0.80	0.165	0.82	0.80	0.24	0.84	0.80	0.32	0.86
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69	0.56	0.25	0.61	0.55	0.160	0.57	0.55	0.24	0.60	0.55	0.31	0.63
95	0.46	0.49	0.28	0.56	0.47	0.180	0.50	0.47	0.27	0.54	0.42	0.24	0.48	0.41	0.155	0.43	0.41	0.23	0.47	0.40	0.31	0.51
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45	0.33	0.23	0.41	0.32	0.150	0.36	0.32	0.23	0.40	0.32	0.30	0.44
150	0.29	0.31	0.27	0.41	0.30	0.175	0.34	0.29	0.26	0.39	0.27	0.23	0.36	0.26	0.150	0.30	0.26	0.23	0.34	0.26	0.30	0.40
185	0.23	0.25	0.27	0.37	0.24	0.170	0.29	0.24	0.26	0.35	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.22	0.31	0.21	0.30	0.36
240	0.180	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31	0.17	0.23	0.29	0.160	0.145	0.22	0.160	0.22	0.27	0.160	0.29	0.34
300	0.145	0.160	0.26	0.31	0.150	0.165	0.22	0.150	0.25	0.29	0.14	0.23	0.27	0.130	0.140	0.190	0.130	0.22	0.25	0.130	0.29	0.32
400	0.105	0.130	0.26	0.29	0.120	0.160	0.20	0.115	0.25	0.27	0.12	0.22	0.25	0.105	0.140	0.175	0.105	0.21	0.24	0.100	0.29	0.31
500	0.086	0.110	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26	0.10	0.22	0.25	0.086	0.135	0.160	0.086	0.21	0.23	0.081	0.29	0.30
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25	0.08	0.22	0.24	0.072	0.135	0.150	0.072	0.21	0.22	0.066	0.28	0.29
800	0.053				0.068	0.150	0.165	0.061	0.24	0.25				0.060	0.130	0.145	0.060	0.21	0.22	0.053	0.28	0.29
1000	0.042				0.059	0.150	0.160	0.050	0.24	0.24				0.052	0.130	0.140	0.052	0.20	0.21	0.044	0.28	0.28

Note : r = conductor resistance at operating temperature, z = impedance, x = reactance

Multi-Core PVC Insulation,
Non-Armoured Cables

Copper Conductor
600/1000V

Ambient Temperature: 30°C

Conductor Operating Temperature: 70°C

Current Carrying Capacity (Amp)

Table T6

Conductor Cross- Sectional Area	Reference Method 4 (enclosed in an insulated wall etc.)		Reference Method 3 (enclosed in conduit on a wall or ceiling, or in trunking)		Reference Method 1 (Clipped Direct)		Reference Method 11 (on perforated tray) or Reference Method 13 (in free air)	
	One 2-Core Cable *, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable *, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable *, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable *, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.
	(mm²)	A	A	A	A	A	A	A
1.5	14	13	16.5	15	19.5	17.5	22	18.5
2.5	18.5	17.5	23	20	27	24	30	25
4	25	23	30	27	36	32	40	34
6	32	29	38	34	46	41	51	43
10	43	39	52	46	63	57	70	60
16	57	52	69	62	85	76	94	80
25	75	68	90	80	112	96	119	101
35	92	83	111	99	138	119	148	126
50	110	99	133	118	168	144	180	153
70	139	125	168	149	213	184	232	196
95	167	150	201	179	258	223	282	238
120	192	172	232	206	299	259	328	276
150	219	196	258	225	344	299	379	319
185	248	223	294	255	392	341	434	364
240	291	261	344	297	461	403	514	430
300	334	298	394	339	530	464	593	497
400			470	402	634	557	715	597

Voltage Drop (Per Amp Per Meter)

Table T6a

Conductor Cross-Sectional Area	2- Core Cables d.c.	2-Core Cable, Single-Phase, a.c.			3 or 4-Core Cable, Three-Phase a.c.		
(mm²)	mV/A/m	mV/A/m			mV/A/m		
1.5	29	29			25		
2.5	18	18			15		
4	11	11			9.5		
6	7.3	7.3			6.4		
10	4.4	4.4			3.8		
16	2.8	2.8			2.4		
		r	x	z	r	x	z
25	1.75	1.75	0.170	1.75	1.50	0.145	1.50
35	1.25	1.25	0.165	1.25	1.10	0.145	1.10
50	0.93	0.93	0.165	0.94	0.80	0.140	0.81
70	0.63	0.63	0.160	0.65	0.55	0.140	0.57
95	0.46	0.47	0.155	0.50	0.41	0.135	0.43
120	0.36	0.38	0.155	0.41	0.33	0.135	0.35
150	0.29	0.30	0.155	0.34	0.26	0.130	0.29
185	0.23	0.25	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

Note : r = conductor resistance at operating temperature, z = impedance, x = reactance



Single-Core PVC Insulation,
AWA Armoured Cables

Copper Conductor
600/1000V

Ambient Temperature: 30°C Conductor Operating Temperature: 70°C Ground Temperature: 15°C
Depth of Laying: 0.5m Ground Thermal Resistivity: 1.2 K.m/W

Current Carrying Capacity (Amp) Table T7

Conductor Cross- Sectional Area	Reference Method 1 (Clipped Direct)		Reference Method 11 (in free air/ on perforated cable tray)		Reference Method 12 (in free air)						Laid in Ducting in Ground		Laid Direct in Ground		
	2 Cables, Single- Phase a.c. or d.c.	3 or 4 Cables, Three- Phase a.c.	2 Cables, Single- Phase a.c. or d.c.	3 Cables, Three- Phase a.c.	2 Cables, d.c.	2 Cables, Single-Phase a.c.		3 or 4 Cables, Three-Phase a.c.		2 Cables, Single- Phase a.c. or d.c.	3 Cables, Three- Phase a.c.	2 Cables, Single- Phase a.c. or d.c.	3 Cables, Three- Phase a.c.		
		Touching/ Flat		Touching/ Flat		Horizontal Spaced	Vertical Spaced	Horizontal Flat Spaced	Horizontal Flat Spaced	Vertical Flat Spaced	Touching	Touching/ Trefoil	Touching	Touching/ Trefoil	
(mm²)	A	A	A	A	A	A	A	A	A	A	A	A	A		
50	193	179	205	189	229	216	229	217	230	212	181	216	199	238	203
70	245	225	259	238	294	279	287	272	286	263	231	262	241	292	248
95	296	269	313	285	357	340	349	332	338	313	280	308	282	349	297
120	342	309	360	327	415	396	401	383	385	357	324	341	311	396	337
150	393	352	413	373	479	458	449	429	436	405	373	375	342	443	376
185	447	399	469	422	548	525	511	489	490	456	425	414	375	497	423
240	525	465	550	492	648	622	593	568	566	528	501	463	419	571	485
300	594	515	624	547	748	719	668	640	616	578	567	509	459	640	542
400	687	575	723	618	885	851	737	707	674	632	657	545	489	708	600
500	763	622	805	673	1035	997	810	777	721	676	731	585	523	780	660
630	843	669	891	728	1218	1174	893	856	771	723	809	632	563	856	721
800	919	710	976	777	1441	1390	943	905	824	772	886	662	587	895	756
1000	975	737	1041	808	1685	1627	1008	967	872	816	945	703	621	939	797

Voltage Drop (Per Amp Per Meter) Table T7a

Conductor Cross- Sectional Area	2 Cables d.c.	Reference Method 1 & 11			Reference Method 12			Reference Method 1, 11, & 12			Reference Method 1 & 11			Reference Method 12			Laid Direct in Ground	
		2 Cables, Single-Phase a.c.						3 or 4 Cables, Three-Phase a.c.									1-Core, Three-Phase a.c.	
		Touching			Spaced*			Touching/Trefoil			Touching/ Flat			Spaced/ Flat*			Trefoil	Flat
		mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m	mV/A/m
(mm²)		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z		
50	0.93	0.93	0.22	0.95	0.92	0.3	0.97	0.80	0.190	0.82	0.79	0.26	0.84	0.79	0.34	0.86	0.82	0.86
70	0.63	0.64	0.21	0.68	0.66	0.29	0.72	0.56	0.180	0.58	0.57	0.25	0.62	0.59	0.32	0.68	0.58	0.68
95	0.46	0.48	0.20	0.52	0.51	0.28	0.58	0.42	0.175	0.45	0.44	0.25	0.5	0.47	0.31	0.57	0.45	0.57
120	0.36	0.39	0.195	0.43	0.42	0.28	0.50	0.33	0.170	0.37	0.36	0.24	0.43	0.40	0.30	0.50	0.37	0.5
150	0.29	0.31	0.190	0.37	0.34	0.27	0.44	0.27	0.165	0.32	0.30	0.24	0.38	0.34	0.30	0.45	0.32	0.45
185	0.23	0.26	0.190	0.32	0.29	0.27	0.39	0.22	0.160	0.27	0.25	0.23	0.34	0.29	0.29	0.41	0.27	0.41
240	0.180	0.20	0.180	0.27	0.23	0.26	0.35	0.175	0.160	0.23	0.20	0.23	0.3	0.24	0.28	0.37	0.23	0.37
300	0.145	0.160	0.180	0.24	0.190	0.26	0.32	0.140	0.155	0.21	0.165	0.22	0.28	0.20	0.28	0.34	0.21	0.34
400	0.105	0.140	0.175	0.22	0.180	0.24	0.30	0.120	0.130	0.195	0.160	0.21	0.28	0.21	0.25	0.32	0.195	0.32
500	0.086	0.120	0.170	0.21	0.165	0.23	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.30	0.18	0.3
630	0.068	0.105	0.165	0.195	0.150	0.22	0.27	0.091	0.145	0.170	0.135	0.195	0.23	0.175	0.22	0.28	0.17	0.28
800	0.053	0.095	0.160	0.185	0.145	0.21	0.25	0.082	0.140	0.160	0.125	0.180	0.22	0.170	0.195	0.26	0.16	
1000	0.042	0.091	0.155	0.180	0.140	0.190	0.24	0.079	0.135	0.155	0.125	0.165	0.21	0.165	0.170	0.24	0.155	

Note : r = conductor resistance at operating temperature, z = impedance, x = reactance

Multi-Core PVC Insulation,
SWA Armoured Cables

Copper Conductor
600/1000V

Ambient Temperature: 30°C Conductor Operating Temperature: 70°C Ground Temperature: 15°C
Depth of Laying: 0.5m Ground Thermal Resistivity: 1.2 K.m/W

Current Carrying Capacity (Amp) Table T8

Conductor Cross-Sectional Area	Reference Method 1 (Clipped Direct)		Reference Method 11 (on perforated tray) or Reference Method 13 (in free air)		Laid in Ducting in Ground		Laid Direct in Ground	
	One 2-Core Cable, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.	One 2-Core Cable, Single-Phase a.c. or d.c.	One 3 or 4-Core Cable, Three-Phase a.c.
	(mm²)	A	A	A	A	A	A	A
1.5	21	18	22	19	26	22	32	27
2.5	28	25	31	26	34	29	41	35
4	38	33	41	35	45	38	55	47
6	49	42	53	45	57	48	69	59
10	67	58	72	62	76	64	92	78
16	89	77	97	83	98	83	119	101
25	118	102	128	110	129	107	158	132
35	145	125	157	135	154	129	190	159
50	175	151	190	163	183	153	225	188
70	222	192	241	207	225	190	277	233
95	269	231	291	251	271	228	332	279
120	310	267	336	290	309	260	377	317
150	356	306	386	332	346	292	422	355
185	405	348	439	378	393	331	478	401
240	476	409	516	445	455	382	551	462
300	547	469	592	510	510	428	616	517
400	621	540	683	590	574	490	693	580

Voltage Drop (Per Amp Per Meter) Table T8a

Conductor Cross-Sectional Area	2- Core Cables d.c.	2-Core Cable, Single-Phase, a.c.			3 or 4-Core Cable, Three-Phase a.c.		
(mm²)	mV/A/m	mV/A/m			mV/A/m		
1.5	29	29			25		
2.5	18	18			15		
4	11	11			9.5		
6	7.3	7.3			6.4		
10	4.4	4.4			3.8		
16	2.8	2.8			2.4		
		r	x	z	r	x	z
25	1.75	1.75	0.170	1.75	1.50	0.145	1.50
35	1.25	1.25	0.165	1.25	1.10	0.145	1.10
50	0.93	0.93	0.165	0.94	0.80	0.140	0.81
70	0.63	0.63	0.16	0.65	0.55	0.140	0.57
95	0.46	0.47	0.155	0.50	0.41	0.135	0.43
120	0.36	0.38	0.155	0.41	0.33	0.135	0.35
150	0.29	0.30	0.155	0.34	0.26	0.130	0.29
185	0.23	0.25	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

Note : r = conductor resistance at operating temperature, z = impedance, x = reactance



Technical Data

Rating Factors

Rating Factors for Ambient Temperature Other Than 30°C

For Cables In Free Air Table T9

Ambient Temperature (°C)	PVC (70°C)	XLPE or LSHF (90°C)
15		
20		
25	1.03	1.02
30	1.00	1.00
35	0.94	0.96
40	0.87	0.91
45	0.79	0.87
50	0.71	0.82
55	0.61	0.76
60	0.50	0.71
65	0.35	0.65
70		0.58
75		0.50
80		0.41
85		

Rating Factors for PVC Ambient Temperature Other Than 15°C

For Cables In Ground or In Ducts Table T10a & b

Ambient Temperature (°C)	PVC	XLPE
10	1.04	1.03
15	1.00	1.00
20	0.95	0.97
25	0.90	0.93
30	0.85	0.89
35	0.80	0.86
40	0.74	0.82
45	0.67	
50	0.60	

Rating Factors for Depths of Laying Other Than 0.5m

For Cables In Buried Ducts & Direct Buried Cables Table T11

Depth of Laying (m)	Direct In Ground			Single-Way Ducts	
	Up to 50 mm²	70 mm² to 300 mm²	Above 300 mm²	Single-Core	Multi-Core
0.50	1.00	1.00	1.00	1.00	1.00
0.70	0.99	0.98	0.97	0.98	0.99
1.00	0.97	0.96	0.94	0.95	0.98
1.25	0.95	0.93	0.92	0.93	0.96
1.50	0.94	0.92	0.89	0.91	0.95
1.75	0.93	0.90	0.87	0.89	0.94
2.00	0.91	0.88	0.85	0.87	0.93
2.50	0.90	0.87	0.84	0.86	0.92
3.00 or more	0.89	0.85	0.82	0.85	0.91

Rating Factors for Cables Having More Than 4 Loaded Cores

For Cables In Buried Ducts & Direct Buried Cables

Table T12

No. of Loaded Cores	Rating Factor
5	0.72
6	0.67
7	0.63
10	0.56
12	0.53
14	0.51
19	0.45
24	0.42
27	0.40
30	0.39
37	0.36
44	0.34
46	0.33
48	0.33

Note 1: The current-carrying capacity for a cable in the size range 1.5 to 4 mm², having more than 4 loaded cores, is obtained by multiplying the current- carrying capacity of a 2-core, having the same insulation type, by the factor selected from this table. The current-carrying capacity for the 2-core cable is that for the installation condition to be used for the multicore cable.

Note 2: If, due to known operating conditions, a core is expected to carry not more than 30% of its current-carrying capacity in the multicore cable it may be ignored for the purpose of determining the number of cores in the cable.

Note 3: If, due to known operating conditions, a core is expected to carry not more than 30% of its rating after applying the rating factor for the total number of current-carrying cores, it may be ignored for the purpose of obtaining the rating factor for the number of loaded cores.

For example, the current-carrying capacity of a cable having N loaded cores would normally be obtained by multiplying the current-carrying capacity of a 2-core, having the same insulation type, by the factor selected from this table for N cores.

That is $I_{ZLC} = I_{I2c} \times C_{gN}$ where:

I_{ZLC} is the current-carrying capacity of the multicore cable after applying the rating factor for the total number of current-carrying cores.

I_{I2c} is the tabulated current-carrying capacity of a 2-core cable, having the same insulation type as the multi-core cable

C_{gN} is the rating factor from Table 12 for the total number of current-carrying cores

However, if M cores in the cable carry loads which are not greater than $0.3 \times I_{I2c} \times C_{gN}$, the current-carrying capacity can be obtained by using the rating factor corresponding to (N-M) cores.

The “not greater than $0.3 \times I_{I2c} \times C_{gN}$ ” calculation should be applied before the adjacent multicore cable grouping factor, if applicable, from Table 13.

The 30% rule should not be further applied to any adjacent cable grouping factor calculations.

I_{ZLC} should be greater than or equal to I_n or I_b as appropriate, divided by the relevant rating factor(s) C, that is $I_{ZLC} \geq I_n$ or I_b/C



Rating Factors for One Circuit, One Multi-Core Cable, a Group of Circuits, or a Group of Multi-Core Cables

To Be Used with Current-Carrying Capacities of Tables T1 - T8**

Table T13

Reference Method of Installation		No. of Circuits or Multi-Core Cables													
(see Table 4A)		2	3	4	5	6	7	8	9	10	12	14	16	18	20
1	Method 1 Enclosed or bunched and clipped direct to a non-metallic surface	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.41	0.39	0.38
2	Method 1 Single layer clipped to a non-metallic surface	Touching	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	-	-	-	-	-
		Spaced*	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
3	Method 11 Single layer multi-core on a perforated metal cable tray, vertical or horizontal	Touching	0.86	0.81	0.77	0.75	0.74	0.73	0.73	0.72	0.71	0.70	-	-	-
		Spaced*	0.91	0.89	0.88	0.87	0.87	-	-	-	-	-	-	-	-
4	Method 11 Single layer single-core on a perforated metal cable tray, touching	Horizontal	0.90	0.85	-	-	-	-	-	-	-	-	-	-	-
		Vertical	0.85	-	-	-	-	-	-	-	-	-	-	-	-
5	Method 13 Single layer multi-core touching on ladder support		0.86	0.82	0.80	0.79	0.78	0.78	0.78	0.77	-	-	-	-	-

* Spaced by clearance between adjacent surface of at least one cable diameter (De). Where the horizontal clearance between adjacent cables exceeds 2De no correction factor need be applied.

** When cable having differing conductor operating temperatures are grouped together, the current rating shall be based upon the lowest operating temperature of any cable in the group.

Rating Factors for More Than One Circuit,
Cables Buried Directly In The Ground

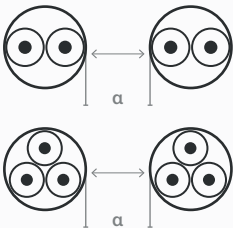
Reference Method Laid Direct
In Ground in Tables T1 - T8a

Multi-Core Cables

Table T14

No. of Circuits	Cable-to-Cable Clearance (α)				
	Nil (Touching)	One Cable Diameter	0.125m	0.25m	0.50m
2	0.75	0.80	0.85	0.90	0.90
3	0.65	0.70	0.75	0.80	0.85
4	0.60	0.60	0.70	0.75	0.80
5	0.55	0.55	0.65	0.70	0.80
6	0.50	0.55	0.60	0.70	0.80

Multi-Core Cables



- Note 1:**

Values given apply to an installation depth of 0.7m and a soil thermal resistivity of 1.2 K.m/W. These are average values for the range of cable sizes and types quoted for Table T1 to T8. The process of averaging, together with rounding off, can result in some cases in errors of up to ±10%. (Where more precise values are required, they may be calculated by methods given in BS 7769 (BS IEC 60287))
- Note 2:**

In case of a thermal resistivity lower than 2.5 K.m/W the rating factors can, in general, be increased and can be calculated by the methods given in BS 7769(BS IEC 60287).

Rating Factors for More Than One Circuit,
Cables In Ducts Buried In The Ground

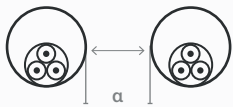
Reference Method Laid In Ducts
Buried In Ground in Tables T1 - T8a

Multi-Core Cables in Single-Way Ducts

Table T15

No. of Circuits	Duct-to-Duct Clearance (α)			
	Nil (Touching)	0.25m	0.50m	1.0m
2	0.85	0.90	0.95	0.95
3	0.75	0.85	0.90	0.95
4	0.70	0.80	0.85	0.90
5	0.65	0.80	0.85	0.90
6	0.60	0.80	0.80	0.90

Multi-Core Cables



- Note 1:**

Values given apply to an installation depth of 0.7m and a soil thermal resistivity of 1.2 K.m/W. These are average values for the range of cable sizes and types quoted for Table T1 to T8. The process of averaging, together with rounding off, can result in some cases in errors of up to ±10%. (Where more precise values are required, they may be calculated by methods given in BS 7769 (BS IEC 60287))
- Note 2:**

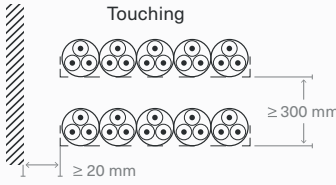
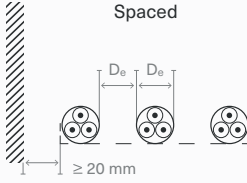
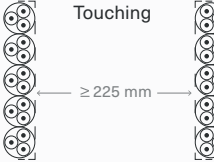
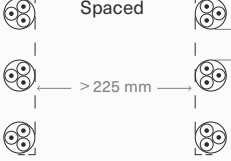
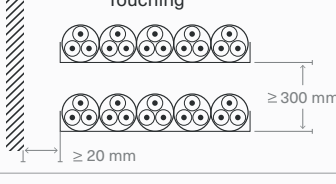
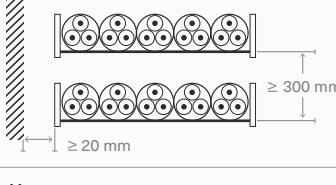
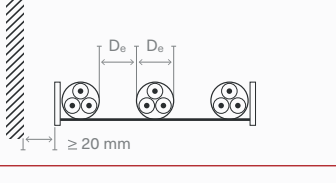
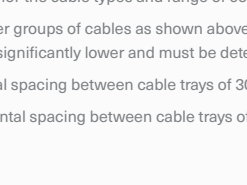
In case of a thermal resistivity lower than 2.5 K.m/W the rating factors can, in general, be increased and can be calculated by the methods given in BS 7769(BS IEC 60287).

Rating Factors for Groups of
More Than One Multi-Core Cable

Reference Method 11 in Tables T1 - T8

To Be Applied To Reference Current-Carrying Capacities For Multi-Core Cables In Free Air

Table T16

Installation Method In Table T19	No. of Trays or Ladders	No. of Cables per Tray or Ladder					
		1	2	3	4	6	9
Perforated Cable Tray Systems (Note 3)							
	1	See item 3 of Table T13					
	2	1.00	0.87	0.80	0.77	0.73	0.68
	3	1.00	0.86	0.79	0.76	0.71	0.66
Perforated Cable Tray Systems (Note 3)							
	1	1.00	1.00	0.98	0.95	0.91	-
	2	1.00	0.99	0.96	0.92	0.87	-
	3	1.00	0.98	0.95	0.91	0.85	-
Vertical Perforated Cable Tray Systems (Note 4)							
	1	See item 3 of Table T13					
	2	1.00	0.88	0.81	0.76	0.71	0.70
	3	1.00	0.91	0.89	0.88	0.87	-
Vertical Perforated Cable Tray Systems (Note 4)							
	1	1.00	0.91	0.89	0.88	0.87	-
	2	1.00	0.91	0.88	0.87	0.85	-
	3	1.00	0.91	0.88	0.87	0.85	-
Unperforated Cable Tray Systems							
	1	0.97	0.84	0.78	0.75	0.71	0.68
	2	0.97	0.83	0.76	0.72	0.68	0.63
	3	0.97	0.82	0.75	0.71	0.66	0.61
Unperforated Cable Tray Systems							
	1	0.97	0.81	0.73	0.69	0.63	0.58
	2	0.97	0.83	0.76	0.72	0.68	0.63
	3	0.97	0.82	0.75	0.71	0.66	0.61
Cable Ladder Systems, Cleats, Wire Mesh Tray, etc. (Note 3)							
	1	See item 5 of Table T13					
	2	1.00	0.86	0.80	0.78	0.76	0.73
	3	1.00	0.85	0.79	0.76	0.73	0.70
Cable Ladder Systems, Cleats, Wire Mesh Tray, etc. (Note 3)							
	1	1.00	0.84	0.77	0.73	0.68	0.64
	2	1.00	0.86	0.80	0.78	0.76	0.73
	3	1.00	0.85	0.79	0.76	0.73	0.70
Cable Ladder Systems, Cleats, Wire Mesh Tray, etc. (Note 3)							
	1	1.00	0.84	0.77	0.73	0.68	0.64
	2	1.00	0.86	0.80	0.78	0.76	0.73
	3	1.00	0.85	0.79	0.76	0.73	0.70

Note 1: Values given are averages for the cable types and range of conductor sizes considered in Tables T1 to T8. The spread of values is generally less than 5%.

Note 2: Factors apply to single layer groups of cables as shown above and do not apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and must be determined by an appropriate method.

Note 3: Values are given for vertical spacing between cable trays of 300 mm and at least 20 mm between cable trays and wall. For closer spacing the factors should be reduced.

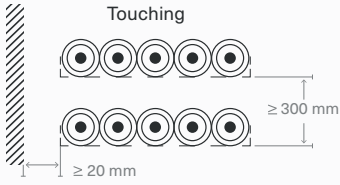
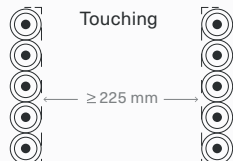
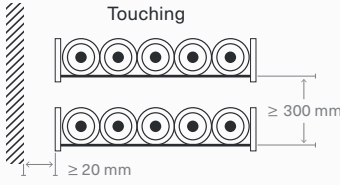
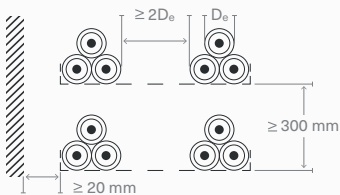
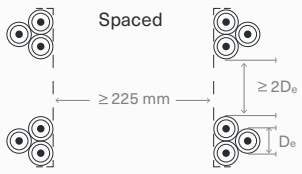
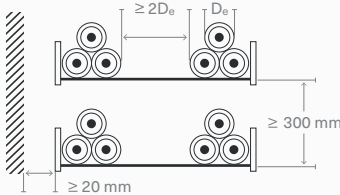
Note 4: Values are given for horizontal spacing between cable trays of 225 mm with cable trays mounted back-to-back. For closer spacing the factors should be reduced.

Rating Factors for Groups of One or More Circuits of Single-Core Cables

Reference Method 11 in Tables T1 - T8

To Be Applied To Reference Current-Carrying Capacities For One Circuit of Single-Core Cables In Free Air

Table T17

Installation Method In Table T19	No. of Trays or Ladders	No. of Three-Phase Circuits Per Tray or Ladder			Use as a multiplier to rating for
		1	2	3	
Perforated Cable Tray Systems (Note 3) 	1 2 3	0.98 0.96 0.95	0.91 0.87 0.85	0.87 0.81 0.78	Three cables in horizontal formation
Vertical Perforated Cable Tray Systems (Note 4) 	1 2	0.96 0.95	0.86 0.84	- -	Three cables in vertical formation
Cable Ladder Systems, Cleats, Wire Mesh Tray, etc. (Note 3) 	1 2 3	1.00 0.98 0.97	0.97 0.93 0.90	0.96 0.89 0.86	Three cables in horizontal formation
Perforated Cable Tray Systems (Note 3) 	1 2 3	1.00 0.97 0.96	0.98 0.93 0.92	0.96 0.89 0.86	
Vertical Perforated Cable Tray Systems (Note 4) 	1 2	1.00 1.00	0.91 0.90	0.89 0.86	Three Cables in Trefoil Formation
Cable Ladder Systems, Cleats, Wire Mesh Tray, etc. (Note 3) 	1 2 3	1.00 0.97 0.96	1.00 0.95 0.94	1.00 0.93 0.90	

Note 1: Values given are averages for the cable types and range of conductor sizes considered in Tables T1 to T8a. The spread of values is generally less than 5%.

Note 2: Factors apply to single layer groups of cables (or trefoil groups) as shown above and do not apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and must be determined by an appropriate method.

Note 3: Values are given for vertical spacing between cable trays of 300mm and at least 20mm between cable trays and wall. For closer spacing the factors should be reduced.

Note 4: Values are given for horizontal spacing between cable trays of 225mm with cable trays mounted back-to-back. For closer spacing the factors should be reduced.

Note 4: For circuits having more than one cable in parallel per phase, each three-phase set of conductors is to be considered as a circuit for the purpose of this table.

Rating Factors for Cables Enclosed in In-Floor Concrete Troughs

The rating factors tabulated below relate to the disposition of cables illustrated in items of Table T19 and are applicable to the current-carrying capacities for Reference Methods 12 and 13 as given in the relevant tables of this appendix.

Rating Factors

Table T18

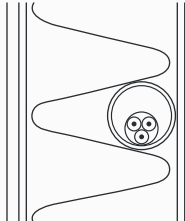
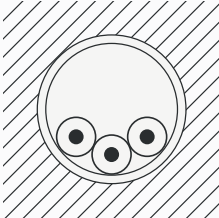
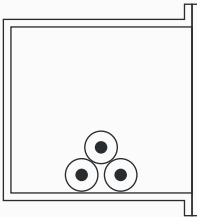
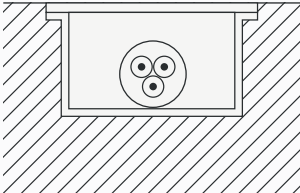
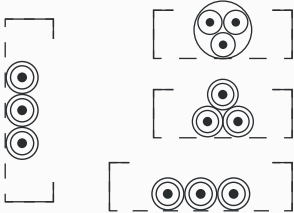
Conductor Cross-Sectional Area (mm ²)	Installation Method 18				Installation Method 19			Installation Method 20		
	2 Single-Core Cables, One 3 or 4-Core Cable	3 Single-Core Cables, Two 2-Core Cables	4 Single-Core Cables, Two 3 or 4-Core Cables	6 Single-core Cables, Four 2-Core Cables, or Three 3 or 4-Core Cables	6 Single-core Cables, Four 2-Core Cables, or Three 3 or 4-Core Cables	8 Single-Core Cables, Four 3 or 4-Core Cables	12 Single-Core Cables, Eight 2-Core Cables, or Six 3 or 4-Core Cables	12 Single-Core Cables, Eight 2-Core Cables, or Six 3 or 4-Core Cables	18 Single-Core Cables, 12 2-Core Cables, or Nine 3 or 4-Core Cables	24 Single-Core Cables, 16 2-Core Cables, or 12 3 or 4-Core Cables
4	0.93	0.90	0.87	0.82	0.86	0.83	0.76	0.81	0.74	0.69
6	0.92	0.89	0.86	0.81	0.86	0.82	0.75	0.80	0.73	0.68
10	0.91	0.88	0.85	0.80	0.85	0.80	0.74	0.78	0.72	0.66
16	0.91	0.87	0.84	0.78	0.83	0.78	0.71	0.76	0.70	0.64
25	0.90	0.86	0.82	0.76	0.81	0.76	0.69	0.74	0.67	0.62
35	0.89	0.85	0.81	0.75	0.80	0.74	0.68	0.72	0.66	0.60
50	0.88	0.84	0.79	0.74	0.78	0.73	0.66	0.71	0.64	0.59
70	0.87	0.82	0.78	0.72	0.77	0.72	0.64	0.70	0.62	0.57
95	0.86	0.81	0.76	0.70	0.75	0.70	0.63	0.68	0.60	0.55
120	0.85	0.80	0.75	0.69	0.73	0.68	0.61	0.66	0.58	0.53
150	0.84	0.78	0.74	0.67	0.72	0.67	0.59	0.64	0.57	0.51
185	0.83	0.77	0.73	0.65	0.70	0.65	0.58	0.63	0.55	0.49
240	0.82	0.76	0.71	0.63	0.69	0.63	0.56	0.61	0.53	0.48
300	0.81	0.74	0.69	0.62	0.68	0.62	0.54	0.59	0.52	0.46
400	0.80	0.73	0.67	0.59	0.66	0.60	0.52	0.57	0.50	0.44
500	0.78	0.72	0.66	0.58	0.64	0.58	0.51	0.56	0.48	0.43
630	0.77	0.71	0.65	0.56	0.63	0.57	0.49	0.54	0.47	0.41

Technical Data

Installation Methods of Cables

For Determining Current-Carrying Capacities

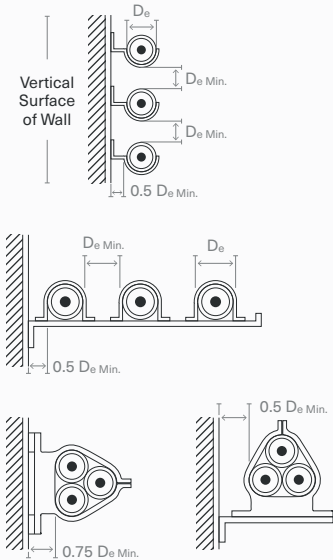
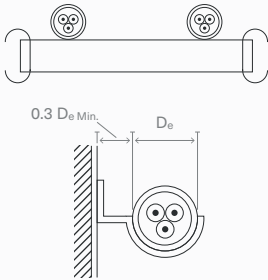
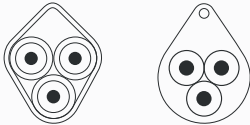
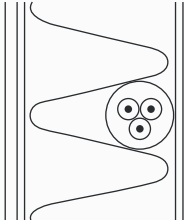
Table T19

Installation Method	Examples	Reference Method
Sheathed cables in conduit in a thermally insulating wall etc.		Method 4
Cables in conduit embedded in masonry, brickwork, concrete, plaster or the like (other than thermally insulating materials)		Method 3
In Trunking		
Cables in trunking on a wall or suspended in the air		Method 3
Cables in flush floor trunking		Method 3
Single core cables in skirting trunking		Method 3
On Trays		
Sheathed cables on a perforated cable tray, bunched and unenclosed. A perforated cable tray is considered as a tray to which the holes occupy at least 30% of the surface area		Method 11

Schedule of Installation Methods of Cables

For Determining Current-Carrying Capacities

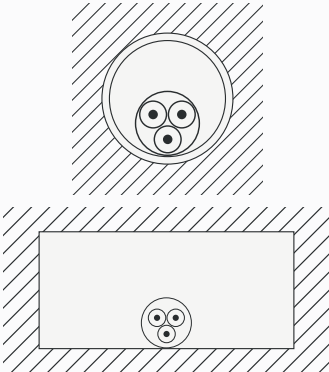
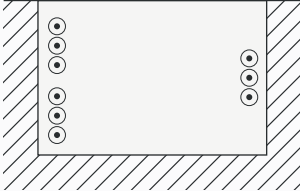
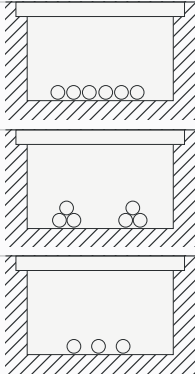
Table T19

Installation Method	Examples	Reference Method
In Free Air, On Cleats, Brackets or a Ladder		
Sheathed single-core cables in free air (any supporting metalwork under the cables occupying less than 10% of the plan area): Two or three cables vertically one above the other, minimum distance between cable surfaces equal to the overall cable diameter (D_e); distance from the wall not less than $0.5D_e$. Two or three cables horizontally, with spacings as above Three cables in trefoil, distance between wall and surface of nearest cable $0.5D_e$ or nearest cables $0.75D_e$	 The diagrams illustrate three cable installation methods. The first shows three single-core cables mounted vertically on a wall, with vertical spacing of D_e between cable surfaces and a minimum distance of $0.5D_e$ from the wall. The second shows three cables mounted horizontally on a cleat, with horizontal spacing of D_e between cable surfaces and a minimum distance of $0.5D_e$ from the wall. The third shows three cables in a trefoil arrangement, with a minimum distance of $0.5D_e$ from the wall and $0.75D_e$ between the nearest cables.	Method 12
Sheathed multicore cables on ladder or brackets; separation greater than $2D_e$. Sheathed multicore cables in free air distance between wall and cable surface not less than $0.3D_e$. Any supporting metalwork under the cables occupying less than 10% of the plan area	 The diagrams show multicore cable installation. The first shows two multicore cables on a ladder with a separation greater than $2D_e$. The second shows a multicore cable in free air, with a minimum distance of $0.3D_e$ from the wall and D_e between cable surfaces.	Method 13
Cables suspended from or incorporating a catenary wire	 The diagrams show cables suspended from a catenary wire. The first shows three cables suspended from a single wire, and the second shows three cables suspended from a single wire, with the cables in contact with each other.	Method 12 or 13 As appropriate
Cables in Building Voids		
Sheathed cables installed directly in a thermally insulating wall or above a thermally insulating ceiling, the cable being in contact with a thermally conductive surface on one side	 The diagram shows three cables installed in a building void, with the cables in contact with a thermally conductive surface on one side.	Method 4

Schedule of Installation Methods of Cables

For Determining Current-Carrying Capacities

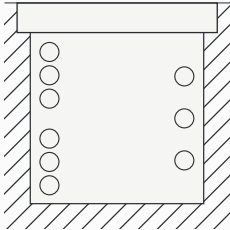
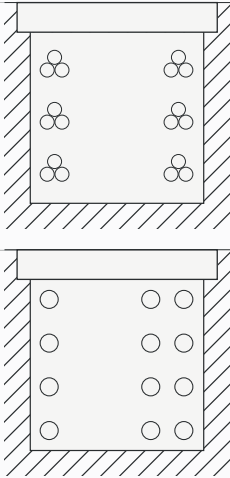
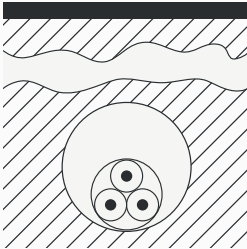
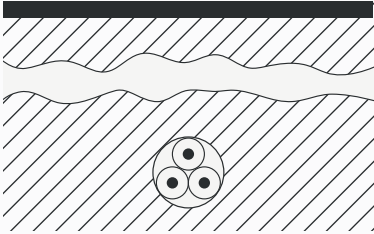
Table T19

Installation Method	Examples	Reference Method
Sheathed cables in ducts or voids formed by the building structure, other than thermally insulating materials		Method 4 Where the cable has a diameter D_c and the duct has a diameter not greater than $5D_c$ or a perimeter not greater than $20D_c$ Method 3 Where the duct has either a diameter greater than $5D_c$ or a perimeter greater than $20D_c$ Note 1: Where the perimeter is greater than $60D_c$, installation methods 12 or 13, as appropriate, should be used. Note 2: D_c is the overall cable diameter. For group of cables D_c is the sum of the cable diameter.
Cables in Trenches		
Cables supported on the wall of an open or ventilated trench, with spacings as indicated for reference method 12 or 13 as appropriate		Method 12 or 13
Cables in enclosed trench 450mm wide by 300mm deep (minimum dimension) including 100mm cover	Two single-core cables with surfaces separated by a minimum of one cable diameter.	
	Three single-core cables in trefoil and touching throughout.	
	Multicore cables or groups of single-core cables with surfaces separated by a minimum of 50mm	
		Method 18 Using rating factor in table 18

Schedule of Installation Methods of Cables

For Determining Current-Carrying Capacities

Table T19

Installation Method	Examples	Reference Method
Cables in enclosed trench 450mm wide by 600mm deep (minimum dimension) including 100mm cover	Single-core cables arrange in flat groups of two or three on the vertical trench wall with surfaces separated by one diameter with a minimum distance of 50mm between groups. Multicore cables installed with surfaces separated by a minimum* of 75mm. All cables spaced at least 25mm from the trench wall 	Method 19 Using rating factor in table 18
Cables in enclosed trench 600mm wide by 760mm deep (minimum dimension) including 100mm cover	Single-core cables arranged in groups of two or three in flat formation with the surfaces separated by one diameter or in trefoil formation with cables touching. Groups separated by a minimum* of 50mm either horizontally or vertically. Multicore cables installed with surfaces separated by a minimum* of 75mm either horizontally or vertically. All cables spaced at least 25mm from the trench wall. 	Method 20 Using rating factor in table 18
Cables in Ground		
Cables laid in ducts. Multicore armoured cable in conduit or in cable ducting in the ground		
Cables laid directly in the ground. Sheathed, armoured or multicore cable direct in the ground		

* Larger spacing to be used where practicable.

Technical Data

Conductors

Identification of Conductors

Table T20

Function Protective Conductors	Alphanumeric	Colour Green & Yellow
a.c. power circuit ⁽¹⁾		
Line of single-phase circuit	L	Brown
Neutral of single- or three-phase circuit	N	Blue
Line 1 of three-phase a.c circuit	L1	Brown
Line 2 of three-phase a.c circuit	L2	Black
Line 3 of three-phase a.c circuit	L3	Grey

Note : Power circuits include lighting circuits

Conductor Resistance & Short Circuit Currents

Table T21

Conductor Size	Max. Conductor Resistance at 20°C		Short Circuit Current Rating at 1 Second			
			Copper		Aluminum	
	Copper	Aluminum	XLPE or LSHF Cable	PVC Cable	XLPE or LSHF Cable	PVC Cable
(mm²)	ohm/km	ohm/km	KA	KA	KA	KA
1.5	12.1		0.215	0.173	0.141	0.114
2.5	7.41		0.358	0.288	0.235	0.190
4	4.61	7.41	0.572	0.460	0.376	0.304
6	3.08	4.61	0.858	0.690	0.564	0.456
10	1.83	3.08	1.430	1.150	0.940	0.760
16	1.15	1.91	2.288	1.840	1.504	1.216
25	0.727	1.20	3.575	2.875	2.350	1.900
35	0.524	0.868	5.005	4.025	3.290	2.660
50	0.387	0.641	7.150	5.750	4.700	3.800
70	0.268	0.443	10.010	8.050	6.580	5.320
95	0.193	0.320	13.585	10.925	8.930	7.220
120	0.153	0.253	17.160	13.800	11.280	9.120
150	0.124	0.206	21.450	17.250	14.100	11.400
185	0.0991	0.164	26.455	21.275	17.390	14.060
240	0.0754	0.125	34.320	27.600	22.560	18.240
300	0.0601	0.100	42.900	34.500	28.200	22.800
400	0.0470	0.0778	57.200	41.200	37.600	27.200
500	0.0366	0.0605	71.500	51.500	47.000	34.000
630	0.0283	0.0469	90.090	64.890	59.220	42.840
800	0.0221	0.0367	114.400	82.400	75.200	54.400
1000	0.0176	0.0291	143.000	103.000	94.000	68.000

Where

- I = SHORT CIRCUIT CURRENT in KA.
A = CONDUCTOR CROSS-SECTION AREA in mm².
t = TIME OF SHORT CIRCUIT in second

$$I = \frac{0.143A}{\sqrt{t}}$$

$$I = \frac{0.115A}{\sqrt{t}}$$

For ≤300mm²

$$I = \frac{0.103A}{\sqrt{t}}$$

For >300mm²

$$I = \frac{0.094A}{\sqrt{t}}$$

For ≤300mm²

$$I = \frac{0.068A}{\sqrt{t}}$$

For >300mm²

Technical Information

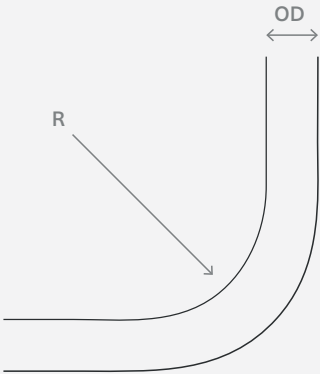
Minimum Bending Radius

Table T22

Construction	Overall Diameter	Minimum Internal Bending Radius
	(OD)	(R)
Circular copper conductor (unarmoured cable)	Up to and include 25	4 x cable OD
	Above 25	6 x cable OD
Circular copper conductor (armoured cable)	Any	6 x cable OD
All cable with solid aluminium or shaped compacted copper conductor	Any	8 x cable OD
All fire-resistant cable with circular copper conductor	Any	8 x cable OD
All fire-resistant cable with compacted copper conductor	Any	10 x cable OD

Note : Wherever possible, larger installation radii should be used.

R = Minimum Internal Bending Radius
OD = Overall Diameter



Selection of Cable Based on Voltage Drops and Current-Carrying Capacity

Voltage drop is normally only of importance for cables of voltage rating not exceeding 600/1000 volts. If the voltage drop is to be in compliance with the Regulations of CP5/IEE Wiring Regulations, then the voltage drop for any particular cable run must be such that the total voltage drops in the circuit of which the cable forms a part does not exceed 4% of the nominal voltage.

Since the actual power factor of the load is usually not known, the most practical approach to the question of the voltage drop is to assume the worst conditions, i.e. power factor equal to one and the conductor is at maximum operating temperature. The voltage drop value given in the tables are based on these assumptions and tabulated for a current of 1 amp for a 1 metre run, i.e. for a distance of 1 metre along the route taken by the cables, and represent the result of the voltage drops in all the circuit conductors. For a balanced three phase a.c. circuits, the values relate to the line voltage. For any given run, the values need to be multiplied by the length of the run (in metres) and by the current (in amps) that the cables are to carry.

Voltage drop can be calculated using the following formulas:

1 $V_{max} = 4\% \times \text{supply voltage}$

2 $V_d = \frac{V_{max} \times 1000}{I \times L}$

3 $V_{ds} \leq V_d$

4 $V_1 = \frac{V_{ds} \times I \times L}{1000}$

Where

- I = Current (A)
- L = Length of cable installed (m)
- Vmax = Max. permissible volt drop in the circuit (V)
- Vd = Max. volt drop in the circuit (mV/A/m)
- Vc = Volt drop of the selected cable (mV/A/m)
- Vt = Total volt drop in the circuit (V)

Example: Consider a route of 200 metres of cable to be laid on a perforated cable tray and to carry a 200-amp load, the supply voltage being 400 V, three phase a.c. and the cable to be copper conductor, XLPE insulated unarmoured type

1 $V_{max} = \text{Max. permissible volt drop in the circuit} = 4\% \times 400V = 16V$

2 $V_d = \text{Max. volt drop in the circuit} = \frac{16 \times 1000}{200 \times 200} = 0.4mV/A/m$

3 Select a cable from Table T1a, such that the V_c value is equal to, or less than V_d , the 0.4mV/A/m calculated, at the same time ensuring that it would carry the current. It will be seen and this value (V_c) is 0.37mV/A/m (under Z in column 6 of Table T1a) giving a cable size of 120 mm².

4 $V_t = \text{Total volt drop in the circuit} = \frac{0.37 \times 200 \times 200}{1000} = 14.8V$

Project References

Our client roster includes notable organisations such as SP Power Assets Limited, Singapore Telecommunications Ltd., and both government and private sectors.

Sigma Cable operates a proficient project engineering team, Supply, Deliver, and Install, specializing in executing turnkey projects for SP Power Assets Limited, a key player in the transmission and distribution of electrical energy as part of Singapore Power. Since our inception in 1997, we've successfully completed multiple 66kV projects, collectively surpassing S\$950 million in value.

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Novotel in Sihanoukville

ACLEDA Bank HQ & Data Center
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Mining Projects in Philippines
Brunei National Housing Scheme
School Projects in Mandalay
NKY Hypermarket Project in Mandalay
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Sedona Hotel in Yangon
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Singapore

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Boon Lay MRT Extension
Circle Line Stage 3 C853
PSA Terminals
Deep Tunnel Sewage Project (DTSS)
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Singapore General Hospital
Changi General Hospital
National Skin Centre
National Cancer Centre
Integrated Intermediate Care Hub (IICH)
Connexion (Asia 1st Medical Centre and Hotel)
KK Hospital
Raffles Hospital

Nursing Homes

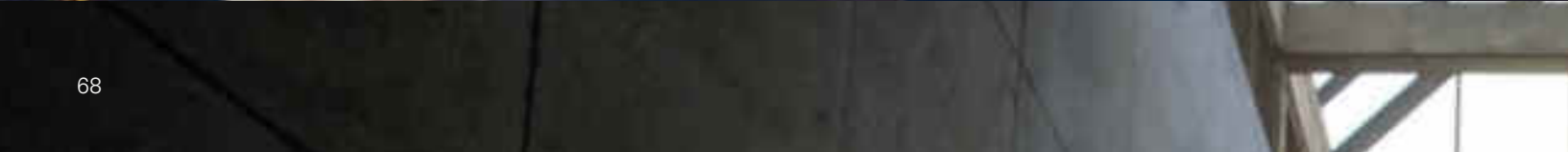
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