OmanCables
الكابلات العمانية

Low Voltage Power & Control Cables

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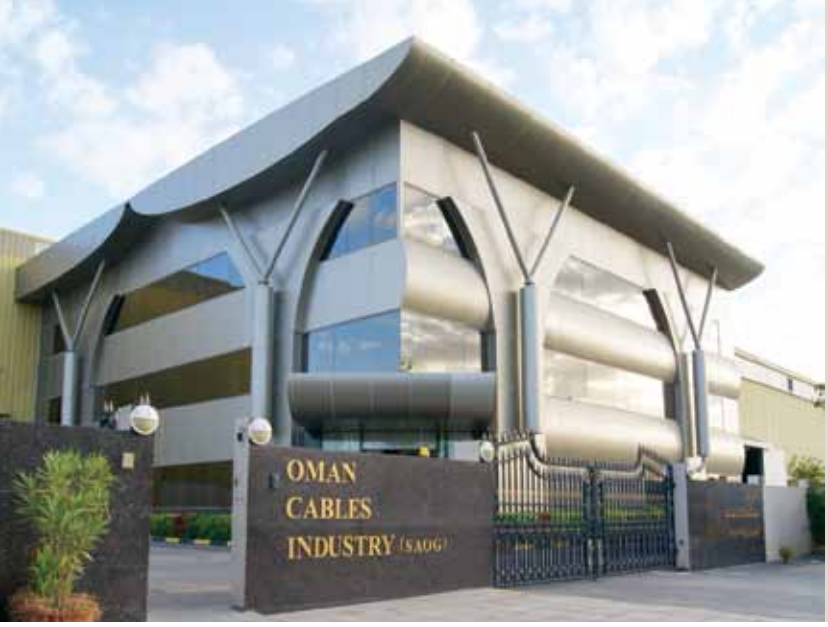


Company Profile

Oman Cables Industry (SAOG) develops, manufactures and markets a totally integrated variety of electrical products, which include medium voltage power cables, **low voltage power and control cables**, pilot cables, overhead power transmission line conductors and building wires.

OCI offers cables with special features suitable for different types of applications, environmental conditions or as per customer requirement.

- Flame retardant properties
- Low smoke and fume (LSF) properties
- Cables with anti-termite sheaths
- UV resistant outer sheath
- Lead sheath

The manufacturing facilities are situated within the largest industrial complex in Muscat, The Sultanate of Oman, with its offices and factory presently occupying an area of 135000 sqm with future expansion plans in mind. OCI have equivalent facilities in Sohar, Oman at its Aluminum manufacturing facility and together has a capacity of copper and aluminum of more than 120,000 MT annually.

Oman Cables Industry (SAOG) has its offices in Oman, UAE, Qatar, and KSA and has an extensive network of distributors and agents throughout MENA, Asia and Europe.

INTRODUCTION TO LOW VOLTAGE POWER AND CONTROL CABLES

All cable designs covered in this publication generally conform to BS 5467 or IEC 60502 Part-1 for XLPE and BS 6346 or IEC 60502 Part-1 for PVC insulated cables suitable for working voltages 600/1000 Volts and 3300 Volts. The general types of cables are:

1. XLPE Power Cables (Armoured/Unarmoured)

1. PVC Power Cables (Armoured/Unarmoured)

2. Control or Auxiliary Cables (Armoured/Unarmoured/Screened/Unscreened)

3. Special Category Cables:

OCI also manufactures cables conforming to other National or International standards with specific customer requirements. This includes cables with MDPE Sheath, Fire Retardant Cables (FR), Fire Retardant and Low Smoke PVC Sheathed Cables (FRLS), Fire Retardant and Reduced Toxic emission PVC sheathed cables (FRRT). Also, cables with special PVC compound with anti-termite and anti-rodent properties can be supplied upon request.

Medium Density Polyethylene (MDPE) Sheathing compound shall meet the requirements of Type ST7 to IEC 60502-1 and Type TS2 as per BS 7655-10.1. All dimensional details of such cables shall be same as the cables as per IEC 60502-1 and BS 5467.

Based on specific requirement, OCI can also provide copper wire armoured cables or additional tinned copper wires in the armour, swellable tapes under and over armour, steel tape armoured cables etc.

The above cables are supplied in Wooden/Steel drums covered with Lamiflex lagging as a standard practice.

TECHNICAL ADVISORY SERVICES

OCI's staff includes specialist Engineers with wide knowledge and decades of long experience in the field of cables and their applications. The technical expertise and experience is available to all clients in the selection of appropriate cable design/specifications.

CABLE CONSTRUCTION
&
MANUFACTURING PROCESS

Conductor : Copper or Aluminium used for the Conductors obtained in the form of 8.0 mm Copper or 9.5 mm Aluminium rods. After testing, rods are drawn into wires of required sizes. These wires are formed into final Conductor in the stranding machines under strict Quality surveillance.

Insulation : Cross linked polyethylene compound is insulated over the conductors by extrusion process. The raw materials and thicknesses of Insulation are maintained as per standards and conform to IEC 60502 Part-1 or any other International Standard.

The Cores of cables are identified either by colour or by numbers as follows:

No. of cores	**Identification**	
	Old Colour coding	**New Colour coding as per BS**
1	Red or Black	Brown or Blue
2	Red & Black	Brown & Blue
3	Red, Yellow & Blue	Brown, Black & Grey
4	Red, Yellow, Blue & Black	Blue, Brown, Black & Grey
5	Red, Yellow, Blue, Black & Y/G	Blue, Brown, Black, Grey & Y/G
6- 61	By numbers	By numbers

Laying up : The insulated cores are laid up with a right hand, or alternating left & right hand, direction of lay in the sequence of the core numbers or colours. Where necessary non-hygroscopic fillers and binder tape is used to form a compact and reasonably circular cable.

Bedding : All cables have taped bedding under the lead sheath (Extruded bedding can be provided, if required). The bedding material used is compatible with the operating temperature of Insulation material. Thickness of bedding shall be as per IEC-60502-1.

Armour : When armouring is required, the armour (for multi core cables) consists of single layer of galvanized steel wires/galvanized steel tapes. The armour is applied helically as per standards.

Single core cables are armoured with Aluminium Wires or Copper wires based on requirement.

Outer sheath : Standard cables are manufactured with Extruded black PVC Type ST-2 compound of IEC 60502-1. Outer sheath is embossed or printed with the information required by relevant standards.

Special **FR, FRLS, FRRT, MDPE** compounds are used for outer sheathing of cables, to suit customer's specific requirements.

NOTES ON FRLS AND FR SHEATHED CABLES

Oxygen Index (ASTM D 2863)

The criterion for burning is presence of percentage of oxygen in air. By mixing oxygen and nitrogen at various percentages this test finds at what percentage of oxygen the standard specimen starts burning. Higher the oxygen index higher the resistance to get ignited. Min. oxygen index shall be 30%.

Temperature Index (ASTM D 2863)

Temperature index is the temperature at which the oxygen index of the material becomes 21.This test is carried out usually by extrapolation after the oxygen index is measured at various temperatures. Minimum temperature index shall be 250 ºC.

Smoke Density (ASTM D 2843)

This parameter relates to measuring and observing relative amounts of smoke produced by the burning or decomposition of materials. This test is carried out in accordance with ASTM D 2843. The measurements are made in terms of loss of light transmission through a collected volume of smoke produced under control standardized conditions. Generally requirement by customer is smoke density rating less than 60%.

Acid Gas Emission (IEC 60754-1)

During burning of cable materials acid gases are evolved especially hydrogen chloride. The gas emission is evaluated in accordance with test method IEC 60754-1, where approximately 1 gm. of the material is pyrolysed at 800 ^{0}C in a combustion tube and resultant gases are analyzed.

Flame Retardance (IEC 60332-1)

A single cable sample is clamped vertically. The Bunsen or other similar burner is arranged at 45 Degree to the axis of the cable sample, applying flame at 475 mm below to top clamp. The flame is applied for a period of time depending upon the diameter of the cable.

The test requirement is that after all burning has ceased the charred or affected portion shall not have reached within 50 mm from the top clamp.

Flame Retardance Test (IEC 60332 -3)

This test is carried out to check flame retardant properties of bunched cables. Three categories of tests namely category "A", "B" and "C" have been defined according to quantity of combustible material available over unit length. Cable pieces are tied on vertical ladder and flame is applied from a horizontal ladder. After the specified time the burner is removed. All parameters are pre defined according to specification. The charred portion is measured and compared with the standards to decide on acceptability.

Special PVC Compounds with Additional Requirements which OCI can provide:

Property		Material	
	FR	FRLS	FRRT
Oxygen Index (Min.)	30	30	30
Temperature Index (Min.)	250	250	250
Smoke Density Rating (Max.)	-	60	-
Acid Gas Generation (Max.)	-	20 %	17%
Flammability Test*	IEC 60332-1 and IEC 60332-3-24	IEC 60332-1 and IEC 60332-3-24	IEC 60332-1 and IEC 60332-3-24

* Based on specific request, we can provide compounds which can meet flammability requirements of IEC 60332-3-23 and IEC 60332-3-22

Oman Cables Quality Assurance

In order to ensure the best quality assurance system, it is extremely desirable to test and inspect the product at each stage of manufacturing including raw materials and finished product.

Oman Cables have the following Quality Assurance System:-

A. Raw Materials Inspection

B. In-process inspection

C. Finished product inspection

Raw Materials Inspection:
All the raw materials are procured only from internationally approved companies known for their quality products and once the material is received with their product certificate, Oman Cables quality team tests and inspects the same again. Only those materials which meet Oman Cables internal standards are released for production.

In-Process Inspection:
A team of well experienced and qualified personnel, dedicated to quality, inspects and test all the in-process materials at every stage and materials complies to the specified requirements are only released for next process.

Finished Product Inspection:
Oman Cables products before leaving ware house undergo the entire applicable tests according to the standard to which it is manufactured.

Routine tests are carried out for conformity to the specifications on 100% cable drums. Sample tests and type tests are carried out at regular intervals as per the applicable standards to conform the product quality.

CABLE CARE

PRESERVATION/STORING & HANDLING OF CABLE DRUMS

1. STORAGE

a. The site chosen for storage of cable drums should be well-drained and should preferably have a concrete surface, which will not cause the drums to sink and so lead to flange rot and cause extreme difficulty in moving the drums.

b. The drums should be stored in such a manner as to leave sufficient space between them for air circulation. It is desirable for the drums to stand on battens placed directly under the flanges.

c. In no case shall the drums be stored “on the flat side” i.e. with flanges horizontal.

d. For drums, overhead shade is not essential except in areas where the rainfall is heavy.

e. The cables should however be protected from direct rays of Sun by leaving the battens on or by providing some form of sun shielding.

f. Cable ends must be sealed against water ingress at all times.

2 HANDLING

a. The drums should be rolled only in the direction of the arrow, indicated on them.

b. No cable drums shall be slung except by a bar through the center bore. Also the cable drums shall be stored away from Boilers or Furnaces.

c. When unloading the drums from truck, a crane or forklift should be used if available and the drums carefully lifted and deposited on the ground. If crane is not available then the drums should be carefully rolled down a suitably arranged ramp or rail. Under no circumstances should the drums be dropped to the ground, as the shock may cause serious damage to the inner layers of the cables.

d. Transportation over long distance, from storage site to work spots – The drums should be mounted on cable drum wheels strong enough to carry the weight of the drums, which are pulled by means of rope, or alternatively they may be mounted on trailer or vehicle with low loading platform for transportation to the destination.

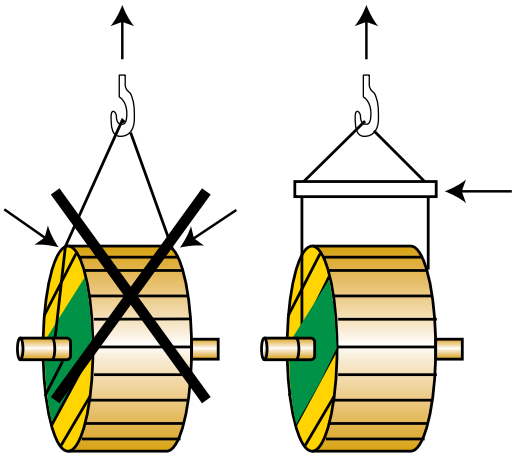
INSTALLATION

OCI cables are suitable for installation in the ground, duct or air as recommended by all standards and specifications. OCI cables are easier to handle and install.

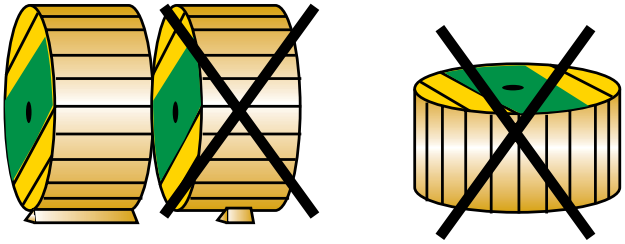
Wherever possible, installation radius should be large than those given below:

Type of cable	**Overall diameter (D) mm**	**Min. of internal bending radius mm**
Circular Copper conductor, unarmoured	All	6D
Circular Copper conductor armoured	All	6D
Shaped Copper/Aluminium conductor, armoured or unarmoured	All	8D

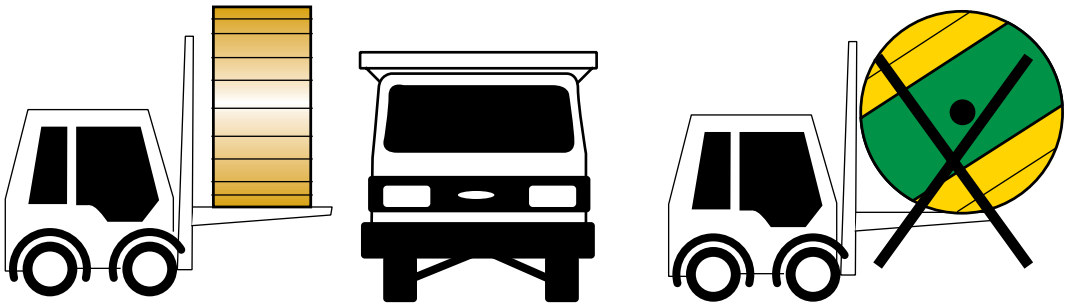
Drum Handling Instructions



Lifting cable drums using crane

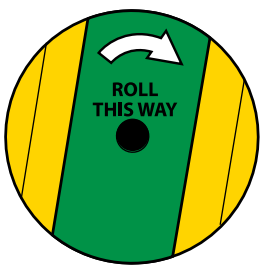


Do not lay drums flat on their sides, use proper wedges to prevent drums rolling



Lift drums on fork trucks correctly

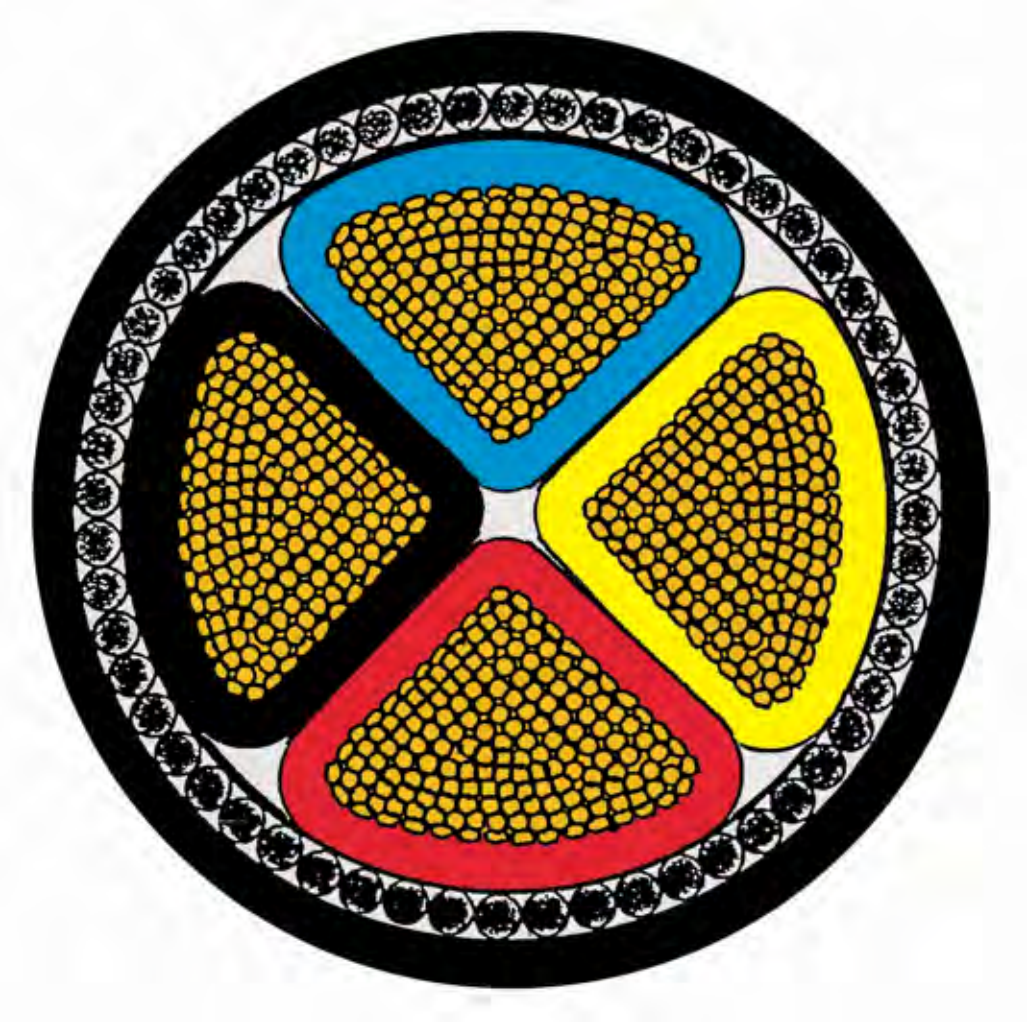
Secure drums adequately before transportation



Roll in the direction shown by the arrow

XLPE INSULATED POWER CABLES
CONFORMING TO IEC 60502-1 AND BS 5467

600/1000 VOLTS
1900/3300 VOLTS



SINGLE CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –1

CU or AL/XLPE/AWA/PVC – BS 5467
CU or AL CONDUCTOR, XLPE INSULATED, AL-WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
50	1.0	0.8	0.9	1.5	18.0	625	340	1000
70	1.1	0.8	1.25	1.5	20.0	885	475	1000
95	1.1	0.8	1.25	1.6	22.0	1160	590	1000
120	1.2	0.8	1.25	1.6	23.0	1415	695	1000
150	1.4	1.0	1.6	1.7	26.0	1790	900	1000
185	1.6	1.0	1.6	1.8	28.0	2180	1070	1000
240	1.7	1.0	1.6	1.8	31.0	2760	1300	1000
300	1.8	1.0	1.6	1.9	34.0	3375	1540	500
400	2.0	1.2	2.0	2.0	38.0	4370	2010	500
500	2.2	1.2	2.0	2.1	42.0	5400	2435	500
630	2.4	1.2	2.0	2.2	46.0	6915	3020	500
800	2.6	1.4	2.5	2.4	52.0	9030	3935	500
1000	2.8	1.4	2.5	2.5	57.0	11015	4730	500

TABLE –2

CU or AL/XLPE/PVC – IEC 60502 PART 1
CU or AL CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5	0.7	1.4	6.0	50	--	1000
2.5	0.7	1.4	6.5	60	--	1000
4	0.7	1.4	7.0	80	--	1000
6	0.7	1.4	7.5	100	--	1000
10	0.7	1.4	8.5	145	--	1000
16	0.7	1.4	9.0	200	105	1000
25	0.9	1.4	11.0	300	145	1000
35	0.9	1.4	12.0	395	180	1000
50	1.0	1.4	13.0	515	230	1000
70	1.1	1.4	15.0	715	305	1000
95	1.1	1.5	17.0	970	400	1000
120	1.2	1.5	19.0	1205	490	1000
150	1.4	1.6	21.0	1485	595	1000
185	1.6	1.6	23.0	1845	735	1000
240	1.7	1.7	26.0	2395	935	1000
300	1.8	1.8	28.0	2980	1145	1000
400	2.0	1.9	32.0	3795	1440	500
500	2.2	2.0	35.0	4765	1800	500
630	2.4	2.2	40.0	6230	2335	500
800	2.6	2.3	44.0	8020	2920	500
1000	2.8	2.4	49.0	9905	3620	500

2 CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –3

CU or AL/XLPE/SWA/PVC – BS 5467
CU or AL CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.6	0.8	0.9	1.3	12.5	265	--	1000
2.5 #	0.7	0.8	0.9	1.4	14.0	310	--	1000
4 #	0.7	0.8	0.9	1.4	15.0	380	--	1000
6 #	0.7	0.8	0.9	1.4	16.0	455	--	1000
10 #	0.7	0.8	0.9	1.5	18.0	610	--	1000
16 #	0.7	0.8	1.25	1.5	20.0	830	635	1000
25	0.9	0.8	1.25	1.6	20.0	975	665	1000
35	0.9	1.0	1.6	1.7	23.0	1385	955	1000
50	1.0	1.0	1.6	1.8	25.0	1705	1135	1000
70	1.1	1.0	1.6	1.9	28.0	2220	1395	1000
95	1.1	1.2	2.0	2.0	32.0	3050	1900	500
120	1.2	1.2	2.0	2.1	34.0	3655	2200	500
150	1.4	1.2	2.0	2.2	38.0	4340	2550	500
185	1.6	1.4	2.5	2.4	42.0	5590	3355	500
240	1.7	1.4	2.5	2.5	49.0	7080	4130	500
300	1.8	1.6	2.5	2.6	53.0	8540	4830	500
400	2.0	1.6	2.5	2.8	58.0	10475	5710	500

Circular conductor.

TABLE –4

CU or AL/XLPE/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.7	1.8	10.0	125	--	1000
2.5 #	0.7	1.8	11.0	160	--	1000
4 #	0.7	1.8	12.0	205	--	1000
6 #	0.7	1.8	13.0	265	--	1000
10 #	0.7	1.8	15.0	375	--	1000
16 #	0.7	1.8	17.0	465	270	1000
25	0.9	1.8	16.0	620	315	1000
35	0.9	1.8	18.0	815	390	1000
50	1.0	1.8	21.0	1065	495	1000
70	1.1	1.8	23.0	1480	655	1000
95	1.1	2.0	26.0	2010	860	1000
120	1.2	2.1	28.0	2500	1050	1000
150	1.4	2.2	32.0	3075	1280	500
185	1.6	2.3	34.0	3815	1575	500
240	1.7	2.5	41.0	5000	2055	500
300	1.8	2.7	45.0	6220	2505	500
400	2.0	2.9	51.0	7905	3145	500

Circular conductor.

3 CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –5

CU or AL/XLPE/SWA/PVC – BS 5467
CU or AL CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.6	0.8	0.9	1.3	13.0	295	--	1000
2.5 #	0.7	0.8	0.9	1.4	14.0	350	--	1000
4 #	0.7	0.8	0.9	1.4	15.0	435	--	1000
6 #	0.7	0.8	0.9	1.4	17.0	530	--	1000
10 #	0.7	0.8	1.25	1.5	19.0	825	--	1000
16 #	0.7	0.8	1.25	1.6	21.0	1025	730	1000
25	0.9	1	1.6	1.7	23.0	1450	990	1000
35	0.9	1.0	1.6	1.8	25.0	1815	1175	1000
50	1.0	1.0	1.6	1.8	28.0	2270	1410	1000
70	1.1	1.0	1.6	1.9	32.0	3005	1765	500
95	1.1	1.2	2.0	2.1	36.0	4160	2435	500
120	1.2	1.2	2.0	2.2	40.0	5045	2870	500
150	1.4	1.4	2.5	2.3	45.0	6475	3785	500
185	1.6	1.4	2.5	2.4	48.0	7705	4350	500
240	1.7	1.4	2.5	2.6	54.0	9705	5285	500
300	1.8	1.6	2.5	2.7	60.0	11845	6275	500
400	2.0	1.6	2.5	2.9	64.0	14465	7325	250

Circular conductor.

TABLE –6

CU or AL/XLPE/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.7	1.8	11.0	145	--	1000
2.5 #	0.7	1.8	12.0	185	--	1000
4 #	0.7	1.8	13.0	245	--	1000
6 #	0.7	1.8	14.0	325	--	1000
10 #	0.7	1.8	16.0	470	--	1000
16 #	0.7	1.8	18.0	630	335	1000
25	0.9	1.8	18.0	885	425	1000
35	0.9	1.8	21.0	1175	535	1000
50	1.0	1.8	23.0	1540	685	1000
70	1.1	1.9	27.0	2170	925	1000
95	1.1	2.0	30.0	2935	1210	1000
120	1.2	2.1	34.0	3675	1500	500
150	1.4	2.3	38.0	4535	1845	500
185	1.6	2.4	40.0	5630	2270	500
240	1.7	2.6	47.0	7355	2935	500
300	1.8	2.8	52.0	9160	3595	500
400	2.0	3.1	57.0	11660	4520	500

Circular conductor.

4 CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –7

CU or AL/XLPE/SWA/PVC – BS 5467
CU or AL CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.6	0.8	0.9	1.3	14.0	330	--	1000
2.5 #	0.7	0.8	0.9	1.4	15.0	405	--	1000
4 #	0.7	0.8	0.9	1.4	16.0	500	--	1000
6 #	0.7	0.8	1.25	1.5	18.0	730	--	1000
10 #	0.7	0.8	1.25	1.5	21.0	950	--	1000
16 #	0.7	0.8	1.25	1.6	23.0	1230	840	1000
25	0.9	1	1.6	1.7	26.0	1835	1225	1000
35	0.9	1.0	1.6	1.8	29.0	2285	1435	1000
50	1.0	1.0	1.6	1.9	31.0	2845	1705	1000
70	1.1	1.2	2	2.1	37.0	4115	2460	500
95	1.1	1.2	2.0	2.2	40.0	5280	2975	500
120	1.2	1.4	2.5	2.3	47.0	6910	4010	500
150	1.4	1.4	2.5	2.4	51.0	8210	4620	500
185	1.6	1.4	2.5	2.6	56.0	9980	5500	500
240	1.7	1.6	2.5	2.7	62.0	12540	6645	250
300	1.8	1.6	2.5	2.9	68.0	15160	7740	250
400	2.0	1.8	3.15	3.2	78.0	19860	10340	250

Circular conductor.

TABLE –8

CU or AL/XLPE/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.7	1.8	11.0	170	--	1000
2.5 #	0.7	1.8	12.0	225	--	1000
4 #	0.7	1.8	14.0	300	--	1000
6 #	0.7	1.8	15.0	395	--	1000
10 #	0.7	1.8	17.0	575	--	1000
16 #	0.7	1.8	19.0	805	410	1000
25	0.9	1.8	21.0	1165	550	1000
35	0.9	1.8	24.0	1540	690	1000
50	1.0	1.9	26.0	2030	885	1000
70	1.1	2	30.0	2860	1210	1000
95	1.1	2.1	34.0	3880	1580	500
120	1.2	2.3	39.0	4885	1980	500
150	1.4	2.4	43.0	5995	2410	500
185	1.6	2.6	49.0	7500	3020	500
240	1.7	2.8	55.0	9765	3870	500
300	1.8	3	60.0	12145	4725	500
400	2.0	3.3	68.0	15500	5980	250

Circular conductor.

3 1/2 CORE (4 CORE WITH REDUCED NEUTRAL) CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –9

CU or AL/XLPE/SWA/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor		Nominal Thickness of Insulation		Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
Phase	Neutral	Phase	Neutral							
mm²		mm		mm	mm	mm	mm	kg/km	kg/km	mtrs
25	16	0.9	0.7	1.0	1.6	1.8	26.0	1745	1190	1000
35	16	0.9	0.7	1.0	1.6	1.8	29.0	2105	1370	1000
50	25	1.0	0.9	1.0	1.6	1.9	31.0	2645	1630	1000
70	35	1.1	0.9	1.2	2.0	2.1	37.0	3805	2350	500
95	50	1.1	1.0	1.2	2.0	2.2	40.0	4840	2830	500
120	70	1.2	1.1	1.2	2.0	2.4	46.0	6015	3425	500
150	70	1.4	1.1	1.4	2.5	2.5	51.0	7500	4395	500
185	95	1.6	1.1	1.4	2.5	2.7	57.0	9165	5230	500
240	120	1.7	1.2	1.6	2.5	2.9	63.0	11425	6280	250
300	150	1.8	1.4	1.6	2.5	3.0	68.0	13745	7285	250
400	185	2.0	1.6	1.6	3.15	3.3	77.0	17950	9690	250

TABLE –10

CU or AL/XLPE/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor		Nominal Thickness of Insulation		Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
Phase	Neutral	Phase	Neutral					
mm²		mm		mm	mm	kg/km	kg/km	mtrs
25	16	0.9	0.7	1.8	21.0	1075	515	1000
35	16	0.9	0.7	1.8	24.0	1360	625	1000
50	25	1.0	0.9	1.8	26.0	1810	800	1000
70	35	1.1	0.9	1.9	30.0	2535	1085	1000
95	50	1.1	1.0	2.1	34.0	3445	1430	500
120	70	1.2	1.1	2.2	39.0	4395	1805	500
150	70	1.4	1.1	2.3	43.0	5245	2140	500
185	95	1.6	1.1	2.5	49.0	6635	2700	500
240	120	1.7	1.2	2.7	54.0	8595	3445	500
300	150	1.8	1.4	2.9	60.0	10670	4205	500
400	185	2.0	1.6	3.1	68.0	13550	5290	250

5 CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –11

CU or AL/XLPE/SWA/PVC – BS 5467
CU or AL CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
1.5	0.6	0.8	0.9	1.4	15.0	380	--	1000
2.5	0.7	0.8	0.9	1.4	16.0	460	--	1000
4	0.7	0.8	0.9	1.5	18.0	580	--	1000
6	0.7	0.8	1.25	1.5	20.0	845	--	1000
10	0.7	0.8	1.25	1.6	23.0	1125	--	1000
16	0.7	1.0	1.6	1.7	26.0	1640	1150	1000
25	0.9	1.0	1.6	1.8	30.0	2285	1510	1000
35	0.9	1.0	1.6	1.9	33.0	2865	1790	500
50	1.0	1.2	2.0	2.0	38.0	3935	2495	500
70	1.1	1.2	2.0	2.2	43.0	5240	3150	500

TABLE –12

CU or AL/XLPE/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5	0.7	1.8	12.0	200	--	1000
2.5	0.7	1.8	13.0	265	--	1000
4	0.7	1.8	15.0	355	--	1000
6	0.7	1.8	16.0	475	--	1000
10	0.7	1.8	19.0	700	--	1000
16	0.7	1.8	21.0	985	495	1000
25	0.9	1.8	25.0	1500	725	1000
35	0.9	1.8	28.0	1975	900	1000
50	1.0	2.0	32.0	2645	1200	500
70	1.1	2.1	37.0	3725	1640	500

SINGLE CORE CABLES - 1900/3300 V

DIMENSIONS & WEIGHTS

TABLE –13

CU or AL/XLPE/AWA/PVC – BS 5467
CU or AL CONDUCTOR, XLPE INSULATED, AL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
50	2.0	0.8	1.25	1.6	20.0	735	455	1000
70	2.0	0.8	1.25	1.6	22.0	960	550	1000
95	2.0	0.8	1.25	1.6	23.0	1230	660	1000
120	2.0	1.0	1.6	1.7	26.0	1570	850	1000
150	2.0	1.0	1.6	1.7	27.0	1845	960	1000
185	2.0	1.0	1.6	1.8	29.0	2215	1110	1000
240	2.0	1.0	1.6	1.8	32.0	2790	1330	1000
300	2.0	1.0	1.6	1.9	34.0	3400	1565	500
400	2.0	1.2	2.0	2.0	38.0	4370	2010	500
500	2.2	1.2	2.0	2.1	42.0	5400	2435	500
630	2.4	1.2	2.0	2.2	46.0	6915	3020	500
800	2.6	1.4	2.5	2.4	52.0	9030	3935	500
1000	2.8	1.4	2.5	2.5	57.0	11015	4730	500

3 CORE CABLES - 1900/3300 V

DIMENSIONS & WEIGHTS

TABLE –14

CU or AL/XLPE/SWA/PVC – BS 5467
CU or AL CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm		mm	kg/km	kg/km	mtrs
16 #	2.0	1.0	1.6	1.8	28.0	1520	1225	1000
25 #	2.0	1.0	1.6	1.8	31.0	1920	1455	1000
35	2.0	1.0	1.6	1.9	30.0	2135	1495	1000
50	2.0	1.2	2.0	2.0	34.0	2840	1980	500
70	2.0	1.2	2.0	2.1	37.0	3585	2345	500
95	2.0	1.2	2.0	2.2	40.0	4490	2760	500
120	2.0	1.4	2.5	2.3	45.0	5815	3635	500
150	2.0	1.4	2.5	2.4	48.0	6765	4075	500
185	2.0	1.4	2.5	2.5	50.0	7915	4555	500
240	2.0	1.6	2.5	2.6	56.0	9920	5495	500
300	2.0	1.6	2.5	2.7	61.0	11950	6385	500
400	2.0	1.6	2.5	2.9	64.0	14465	7325	250

Circular conductor.

PVC INSULATED POWER CABLES

CONFORMING TO IEC 60502-1 AND BS 6346

600/1000 VOLTS

1900/3300 VOLTS

SINGLE CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –15

CU or AL/PVC/AWA/PVC – BS 6346
CU or AL CONDUCTOR, PVC INSULATED, AL-WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
50	1.4	0.8	1.25	1.5	18.0	715	430	1000
70	1.4	0.8	1.25	1.6	20.0	940	530	1000
95	1.6	0.8	1.25	1.6	22.0	1235	665	1000
120	1.6	1.0	1.6	1.7	25.0	1575	855	1000
150	1.8	1.0	1.6	1.7	26.5	1880	995	1000
185	2.0	1.0	1.6	1.8	29.0	2280	1170	1000
240	2.2	1.0	1.6	1.9	32.0	2905	1445	500
300	2.4	1.0	1.6	1.9	34.5	3540	1705	500
400	2.6	1.2	2.0	2.1	39.0	4575	2220	500
500	2.8	1.2	2.0	2.1	42.5	5625	2660	500
630	2.8	1.2	2.0	2.2	46.5	7160	3240	500
800	2.8	1.4	2.5	2.4	52.5	9240	4140	500
1000	3.0	1.4	2.5	2.5	57.0	11265	4975	500

TABLE –16

CU or AL/PVC/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5	0.8	1.4	7.0	55	--	1000
2.5	0.8	1.4	7.5	70	--	1000
4	1.0	1.4	8.5	95	--	1000
6	1.0	1.4	9.0	120	--	1000
10	1.0	1.4	10.0	165	--	1000
16	1.0	1.4	11.0	220	125	1000
25	1.2	1.4	12.5	325	175	1000
35	1.2	1.4	13.5	420	210	1000
50	1.4	1.4	15.0	555	270	1000
70	1.4	1.4	16.5	760	350	1000
95	1.6	1.5	19.0	1035	465	1000
120	1.6	1.5	20.5	1270	555	1000
150	1.8	1.6	22.5	1560	675	1000
185	2.0	1.7	24.5	1945	835	1000
240	2.2	1.8	27.5	2535	1070	1000
300	2.4	1.9	30.5	3145	1310	1000
400	2.6	2.0	33.5	3985	1630	500
500	2.8	2.1	37.5	4990	2025	500
630	2.8	2.2	41.0	6460	2540	500
800	2.8	2.3	45.5	8225	3125	500
1000	3.0	2.5	50.5	10170	3885	500

2 CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –17

CU or AL/PVC/SWA/PVC – BS 6346
CU or AL CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.6	0.8	0.9	1.4	13.0	290	--	1000
2.5 #	0.7	0.8	0.9	1.4	13.5	340	--	1000
4 #	0.8	0.8	0.9	1.4	15.5	440	--	1000
6 #	0.8	0.8	0.9	1.5	17.0	535	--	1000
10 #	1.0	0.8	1.25	1.6	19.5	800	--	1000
16 #	1.0	0.8	1.25	1.6	21.5	905	710	1000
25	1.2	1.0	1.6	1.7	22.0	1210	905	1000
35	1.2	1.0	1.6	1.8	24.0	1485	1060	1000
50	1.4	1.0	1.6	1.9	27.0	1865	1295	1000
70	1.4	1.0	1.6	1.9	29.5	2355	1530	1000
95	1.6	1.2	2.0	2.1	34.0	3300	2145	500
120	1.6	1.2	2.0	2.2	36.0	3875	2425	500
150	1.8	1.2	2.0	2.3	39.5	4595	2800	500
185	2.0	1.4	2.5	2.4	43.0	5890	3650	500
240	2.2	1.4	2.5	2.5	50.5	7495	4535	500
300	2.4	1.6	2.5	2.7	55.5	9040	5330	500
400	2.6	1.6	2.5	2.9	60.5	10995	6235	500

Circular conductor.

TABLE –18

CU or AL/PVC/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.8	1.8	11.0	140	--	1000
2.5 #	0.8	1.8	12.0	175	--	1000
4 #	1.0	1.8	14.0	245	--	1000
6 #	1.0	1.8	15.0	315	--	1000
10 #	1.0	1.8	17.0	435	--	1000
16 #	1.0	1.8	18.5	540	345	1000
25	1.2	1.8	18.0	680	375	1000
35	1.2	1.8	20.0	885	460	1000
50	1.4	1.8	23.0	1160	590	1000
70	1.4	1.9	25.5	1590	765	1000
95	1.6	2.0	28.5	2160	1010	1000
120	1.6	2.1	30.5	2650	1200	1000
150	1.8	2.2	34.0	3250	1460	500
185	2.0	2.4	36.5	4040	1800	500
240	2.2	2.6	44.0	5305	2350	500
300	2.4	2.7	48.5	6560	2845	500
400	2.6	3.0	54.0	8335	3575	500

Circular conductor.

3 CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –19

CU or AL/PVC/SWA/PVC – BS 6346
CU or AL CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.6	0.8	0.9	1.4	13.5	325	--	1000
2.5 #	0.7	0.8	0.9	1.4	14.0	385	--	1000
4 #	0.8	0.8	0.9	1.4	16.0	510	--	1000
6 #	0.8	0.8	1.25	1.5	18.5	720	--	1000
10 #	1.0	0.8	1.25	1.6	20.5	930	--	1000
16 #	1.0	0.8	1.25	1.6	22.5	1120	825	1000
25	1.2	1.0	1.6	1.7	24.0	1575	1115	1000
35	1.2	1.0	1.6	1.8	26.5	1965	1325	1000
50	1.4	1.0	1.6	1.9	30.0	2475	1615	1000
70	1.4	1.2	2.0	2.0	34.0	3470	2230	500
95	1.6	1.2	2.0	2.1	38.0	4460	2730	500
120	1.6	1.2	2.0	2.2	41.5	5345	3170	500
150	1.8	1.4	2.5	2.4	47.0	6845	4155	500
185	2.0	1.4	2.5	2.5	49.5	8125	4765	500
240	2.2	1.6	2.5	2.6	56.5	10295	5860	500
300	2.4	1.6	2.5	2.8	62.5	12475	6910	250
400	2.6	1.6	2.5	3.0	67.0	15220	8080	250

Circular conductor.

TABLE –20

CU or AL/PVC/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.8	1.8	11.5	165	--	1000
2.5 #	0.8	1.8	12.5	210	--	1000
4 #	1.0	1.8	14.5	300	--	1000
6 #	1.0	1.8	16.0	385	--	1000
10 #	1.0	1.8	18.0	545	--	1000
16 #	1.0	1.8	19.5	720	425	1000
25	1.2	1.8	20.0	970	510	1000
35	1.2	1.8	22.5	1270	630	1000
50	1.4	1.8	26.0	1675	820	1000
70	1.4	2.0	29.0	2320	1080	1000
95	1.6	2.1	33.0	3165	1440	500
120	1.6	2.2	36.5	3910	1735	500
150	1.8	2.3	40.0	4795	2105	500
185	2.0	2.5	43.0	5960	2600	500
240	2.2	2.7	49.5	7790	3355	500
300	2.4	2.9	55.5	9685	4120	500
400	2.6	3.1	60.0	12250	5105	500

Circular conductor.

4 CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –21

CU or AL/PVC/SWA/PVC – BS 6346
CU or AL CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.6	0.8	0.9	1.4	14.0	365	--	1000
2.5 #	0.7	0.8	0.9	1.4	15.0	435	--	1000
4 #	0.8	0.8	1.25	1.5	18.0	695	--	1000
6 #	0.8	0.8	1.25	1.5	19.5	835	--	1000
10 #	1.0	0.8	1.25	1.6	22.5	1080	--	1000
16 #	1.0	1.0	1.6	1.7	25.5	1565	1175	1000
25	1.2	1.0	1.6	1.8	27.5	1985	1370	1000
35	1.2	1.0	1.6	1.9	30.0	2460	1610	1000
50	1.4	1.2	2.0	2.0	34.0	3370	2225	500
70	1.4	1.2	2.0	2.1	38.0	4355	2700	500
95	1.6	1.2	2.0	2.2	42.5	5645	3340	500
120	1.6	1.4	2.5	2.4	49.0	7310	4410	500
150	1.8	1.4	2.5	2.5	53.0	8660	5075	500
185	2.0	1.6	2.5	2.6	58.5	10565	6085	500
240	2.2	1.6	2.5	2.8	64.5	13220	7305	250
300	2.4	1.6	2.5	3.0	70.5	15985	8560	250
400	2.6	1.8	3.15	3.3	80.5	20885	11365	250

Circular conductor.

TABLE –22

CU or AL/PVC/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5 #	0.8	1.8	12.5	195	--	1000
2.5 #	0.8	1.8	13.5	250	--	1000
4 #	1.0	1.8	15.5	365	--	1000
6 #	1.0	1.8	17.0	470	--	1000
10 #	1.0	1.8	19.5	650	--	1000
16 #	1.0	1.8	21.5	910	520	1000
25	1.2	1.8	23.5	1275	660	1000
35	1.2	1.8	26.0	1665	815	1000
50	1.4	1.9	28.5	2205	1060	1000
70	1.4	2.1	32.5	3060	1405	1000
95	1.6	2.2	37.0	4180	1875	500
120	1.6	2.4	42.0	5190	2290	500
150	1.8	2.5	46.5	6360	2775	500
185	2.0	2.7	51.5	7930	3450	500
240	2.2	2.9	58.0	10340	4425	500
300	2.4	3.1	64.0	12835	5415	500
400	2.6	3.4	72.0	16315	6795	250

Circular conductor.

3 1/2 CORE (4 CORE WITH REDUCED NEUTRAL) CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –23

CU or AL/PVC/SWA/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor		Nominal Thickness of Insulation		Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
Phase	Neutral	Phase	Neutral							
mm²		mm		mm	mm	mm	mm	kg/km	kg/km	mtrs
25	16	1.2	1.0	1.0	1.6	1.8	27.5	1885	1330	1000
35	16	1.2	1.0	1.0	1.6	1.9	30.0	2270	1535	1000
50	25	1.4	1.2	1.0	2.0	2.0	33.5	3095	2085	500
70	35	1.4	1.2	1.2	2.0	2.1	38.0	4030	2575	500
95	50	1.6	1.4	1.2	2.0	2.3	42.5	5200	3190	500
120	70	1.6	1.4	1.4	2.5	2.5	49.0	6835	4245	500
150	70	1.8	1.4	1.4	2.5	2.6	53.0	7915	4810	500
185	95	2.0	1.6	1.4	2.5	2.7	58.5	9625	5690	500
240	120	2.2	1.6	1.6	2.5	2.9	64.5	12035	6875	250
300	150	2.4	1.8	1.6	2.5	3.1	70.5	14490	8030	250
400	185	2.6	2.0	1.8	3.15	3.4	80.5	18945	10685	250

TABLE –24

CU or AL/PVC/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor		Nominal Thickness of Insulation		Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
Phase	Neutral	Phase	Neutral					
mm²		mm		mm	mm	kg/km	kg/km	mtrs
25	16	1.2	1.0	1.8	23.5	1175	620	1000
35	16	1.2	1.0	1.8	26.0	1475	740	1000
50	25	1.4	1.2	1.9	28.5	1985	975	1000
70	35	1.4	1.2	2.0	32.5	2720	1265	500
95	50	1.6	1.4	2.2	37.0	3715	1705	500
120	70	1.6	1.4	2.3	42.0	4670	2085	500
150	70	1.8	1.4	2.4	46.0	5565	2460	500
185	95	2.0	1.6	2.6	51.5	7025	3095	500
240	120	2.2	1.6	2.8	57.5	9100	3940	500
300	150	2.4	1.8	3.0	63.5	11275	4815	250
400	185	2.6	2.0	3.2	71.5	14265	6005	250

5 CORE CABLES - 600/1000 V

DIMENSIONS & WEIGHTS

TABLE –25

CU or AL/PVC/SWA/PVC – BS 6346
CU or AL CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
1.5	0.6	0.8	0.9	1.4	15.0	415	--	1000
2.5	0.7	0.8	0.9	1.5	16.5	515	--	1000
4	0.8	0.8	1.25	1.5	19.5	800	--	1000
6	0.8	0.8	1.25	1.6	21.5	975	--	1000
10	1.0	1.0	1.6	1.7	25.5	1420	--	1000
16	1.0	1.0	1.6	1.7	27.5	1780	1295	1000
25	1.2	1.0	1.6	1.9	31.5	2435	1665	500
35	1.2	1.0	1.6	1.9	34.5	3015	1940	500
50	1.4	1.2	2.0	2.1	40.0	4295	2855	500
70	1.4	1.2	2.0	2.2	45.0	5580	3490	500

TABLE –26

CU or AL/PVC/PVC – IEC-60502 Part 1
CU or AL CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
1.5	0.8	1.8	13.5	230	--	1000
2.5	0.8	1.8	14.5	300	--	1000
4	1.0	1.8	17.0	435	--	1000
6	1.0	1.8	18.5	565	--	1000
10	1.0	1.8	21.5	785	--	1000
16	1.0	1.8	23.5	1070	580	1000
25	1.2	1.8	27.5	1585	815	1000
35	1.2	1.9	30.5	2085	1010	1000
50	1.4	2.1	35.0	2915	1475	500
70	1.4	2.2	39.5	4030	1940	500

SINGLE CORE CABLES - 1900/3300 V

DIMENSIONS & WEIGHTS

TABLE –27

CU or AL/PVC/AWA/PVC – BS 6346
CU or AL CONDUCTOR, PVC INSULATED, AL-WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
50	2.2	0.8	1.25	1.6	20.0	790	505	1000
70	2.2	0.8	1.25	1.6	21.5	1020	610	1000
95	2.2	1.0	1.6	1.7	24.5	1380	810	1000
120	2.2	1.0	1.6	1.7	26.0	1645	930	1000
150	2.2	1.0	1.6	1.8	27.5	1930	1040	1000
185	2.2	1.0	1.6	1.8	29.0	2310	1200	1000
240	2.2	1.0	1.6	1.9	32.0	2905	1445	500
300	2.4	1.0	1.6	1.9	34.5	3540	1705	500
400	2.6	1.2	2.0	2.1	39.0	4575	2220	500
500	2.8	1.2	2.0	2.1	42.5	5625	2660	500
630	2.8	1.2	2.0	2.2	46.5	7160	3240	500
800	2.8	1.4	2.5	2.4	52.5	9240	4140	500
1000	3.0	1.4	2.5	2.5	57.0	11265	4975	500

3 CORE CABLES - 1900/3300 V

DIMENSIONS & WEIGHTS

TABLE –28

CU or AL/PVC/SWA/PVC – BS 6346
CU or AL CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

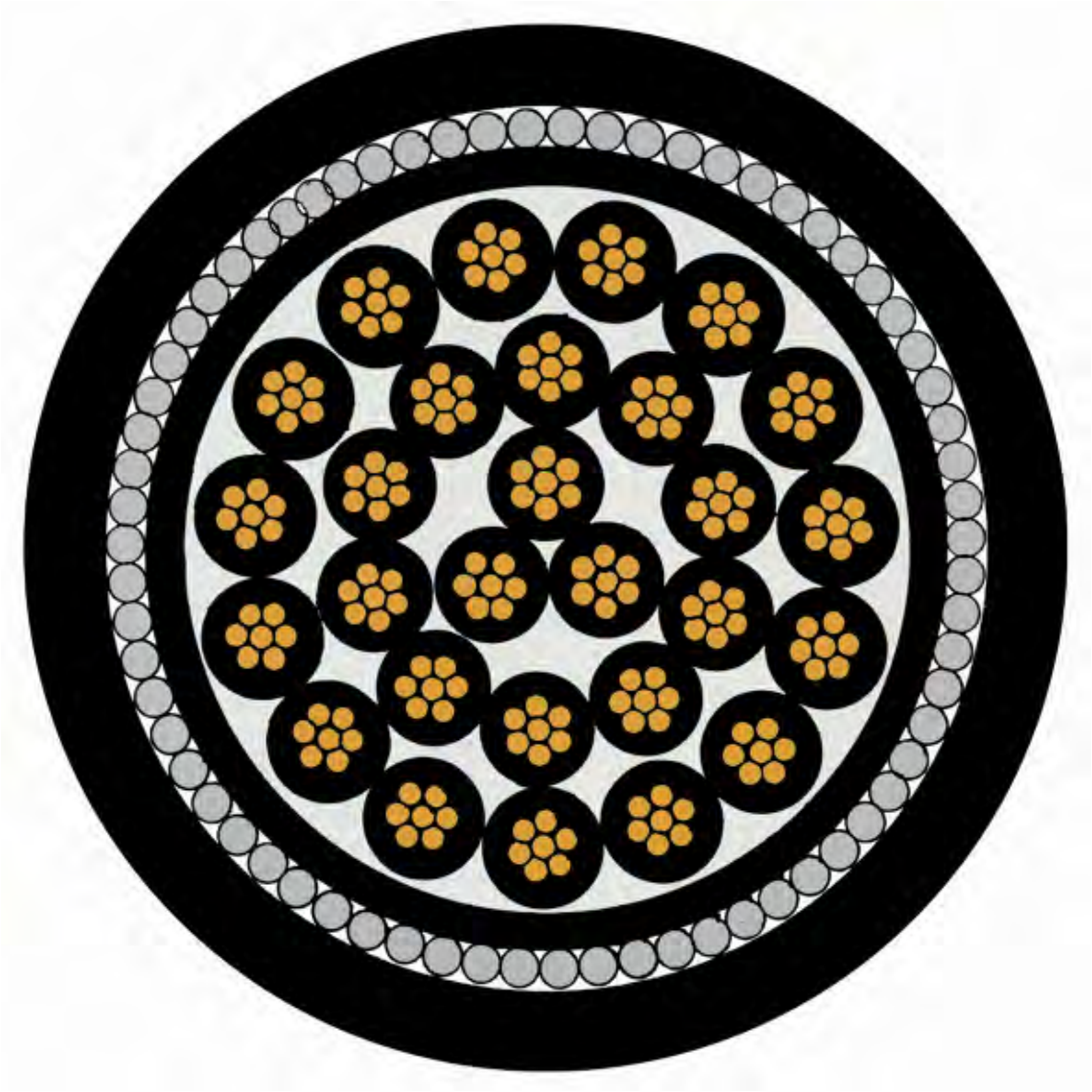
Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
16 #	2.2	1.0	1.6	1.8	29.0	1705	1410	1000
25 #	2.2	1.0	1.6	1.8	31.0	2105	1640	1000
35	2.2	1.0	1.6	1.9	31.0	2300	1660	1000
50	2.2	1.2	2.0	2.0	35.0	3055	2200	500
70	2.2	1.2	2.0	2.1	37.5	3800	2560	500
95	2.2	1.2	2.0	2.2	41.0	4760	3030	500
120	2.2	1.4	2.5	2.3	45.5	6095	3920	500
150	2.2	1.4	2.5	2.4	48.5	7065	4375	500
185	2.2	1.4	2.5	2.5	50.5	8240	4880	500
240	2.2	1.6	2.5	2.6	56.5	10295	5860	500
300	2.4	1.6	2.5	2.8	62.5	12475	6910	250
400	2.6	1.6	2.5	3.0	67.0	15220	8080	250

Circular conductor.

XLPE INSULATED CONTROL CABLES

CONFORMING TO IEC 60502-1 AND BS 5467

600/1000 VOLTS



CONTROL/AUXILIARY CABLES - 600/1000 V

DIMENSIONS & WEIGHTS - SIZE 1.5 mm2 (Stranded)

TABLE –29

CU/XLPE/SWA/PVC – BS 5467
CU CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
6	0.6	0.8	0.9	1.4	16.0	420	1000	1000
7	0.6	0.8	0.9	1.4	16.0	435	1000	1000
9	0.6	0.8	1.25	1.5	18.5	645	1000	1000
12	0.6	0.8	1.25	1.5	19.5	740	1000	1000
19	0.6	0.8	1.25	1.6	22.5	975	1000	1000
21	0.6	1.0	1.6	1.7	24.5	1220	1000	1000
27	0.6	1.0	1.6	1.7	27.0	1450	1000	1000
37	0.6	1.0	1.6	1.7	29.5	1740	1000	1000
48	0.6	1.0	1.6	1.8	33.5	2100	500	1000

DIMENSIONS & WEIGHTS - SIZE 1.5 mm2 (Stranded)

TABLE –30

CU/XLPE/PVC – IEC-60502 Part 1
CU CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Cable Weight	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km
6	0.7	1.8	13.0	230	1000
7	0.7	1.8	13.0	245	1000
9	0.7	1.8	15.0	315	1000
12	0.7	1.8	17.0	375	1000
19	0.7	1.8	19.0	535	1000
21	0.7	1.8	20.0	585	1000
27	0.7	1.8	23.0	720	1000
37	0.7	1.8	25.0	940	1000
48	0.7	1.8	29.0	1185	1000

CONTROL/AUXILIARY CABLES - 600/1000 V

DIMENSIONS & WEIGHTS - SIZE 2.5 mm2 (Stranded)

TABLE –31

CU/XLPE/SWA/PVC – BS 5467
CU CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
6	0.7	0.8	0.9	1.4	17.5	515	1000	1000
7	0.7	0.8	0.9	1.4	17.5	540	1000	1000
9	0.7	0.8	1.25	1.6	20.0	795	1000	1000
12	0.7	0.8	1.25	1.6	21.5	930	1000	1000
19	0.7	1.0	1.6	1.7	26.0	1415	1000	1000
21	0.7	1.0	1.6	1.8	27.0	1525	1000	1000
27	0.7	1.0	1.6	1.8	30.0	1815	1000	1000
37	0.7	1.0	1.6	1.8	33.0	2225	500	1000
48	0.7	1.2	2	2.0	38.5	3040	500	1000

DIMENSIONS & WEIGHTS - SIZE 2.5 mm2 (Stranded)

TABLE –32

CU/XLPE/PVC – IEC-60502 Part 1
CU CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
6	0.7	1.8	14.0	305	1000	1000
7	0.7	1.8	14.0	325	1000	1000
9	0.7	1.8	17.0	420	1000	1000
12	0.7	1.8	18.0	510	1000	1000
19	0.7	1.8	21.0	740	1000	1000
21	0.7	1.8	22.0	815	1000	1000
27	0.7	1.8	25.0	1010	1000	1000
37	0.7	1.8	28.0	1330	1000	1000
48	0.7	1.9	32.0	1700	500	1000

CONTROL/AUXILIARY CABLES - 600/1000 V

DIMENSIONS & WEIGHTS - SIZE 4 mm2 (Stranded)

TABLE –33

CU/XLPE/SWA/PVC – BS 5467
CU CONDUCTOR, XLPE INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
6	0.7	0.8	1.25	1.5	19.0	770	1000	1000
7	0.7	0.8	1.25	1.5	19	805	1000	1000
9	0.7	1.0	1.6	1.6	23.0	1175	1000	1000
12	0.7	1.0	1.6	1.6	25	1355	1000	1000
19	0.7	1.0	1.6	1.7	28.5	1815	1000	1000
21	0.7	1.0	1.6	1.9	30	1975	1000	1000
27	0.7	1.0	1.6	1.9	33.5	2375	500	1000
37	0.7	1.2	2	2.0	38	3265	500	1000
48	0.7	1.2	2	2.1	43	3990	500	1000

DIMENSIONS & WEIGHTS - SIZE 4 mm2 (Stranded)

TABLE –34

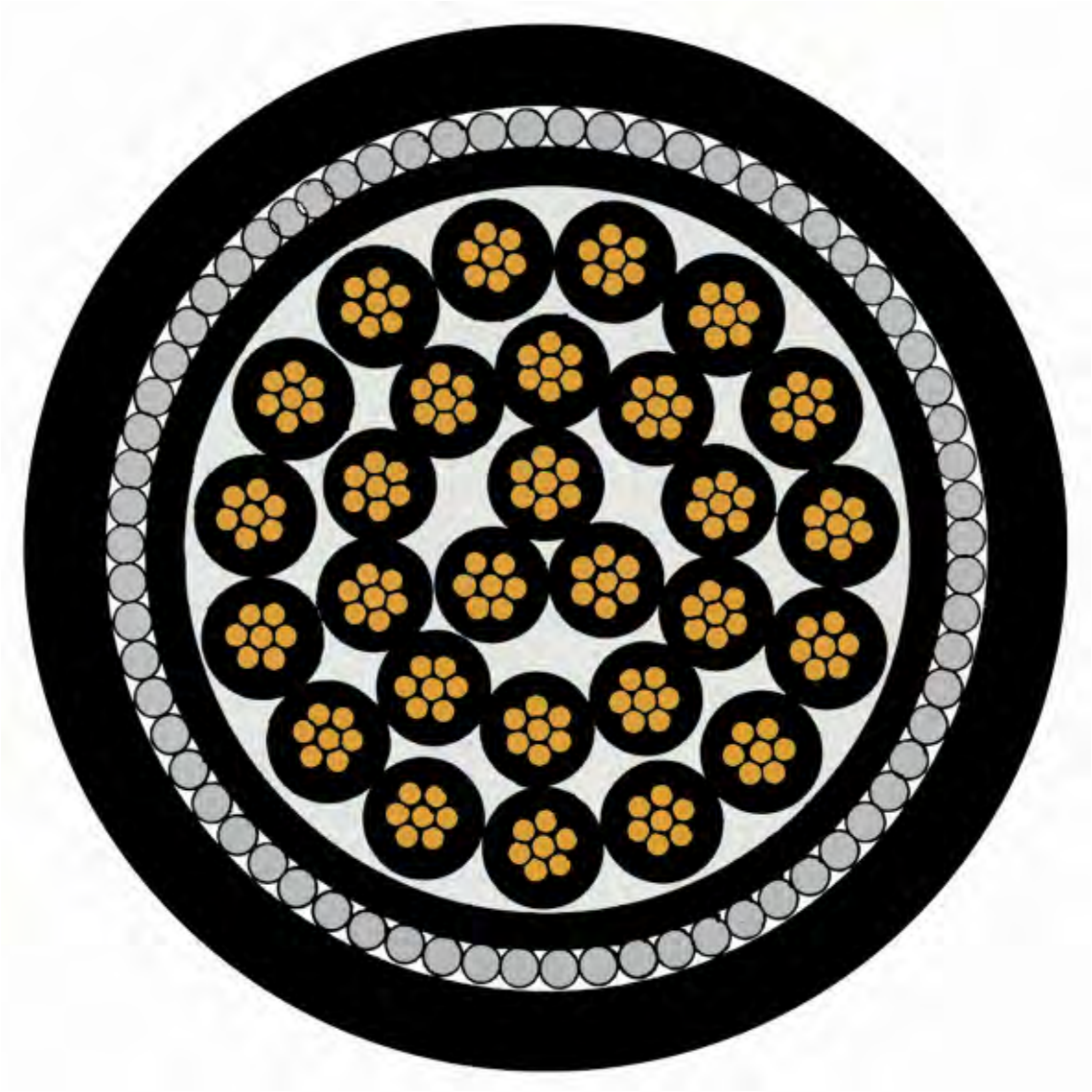
CU/XLPE/PVC – IEC-60502 Part 1
CU CONDUCTOR, XLPE INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
6	0.7	1.8	16.0	415	1000	1000
7	0.7	1.8	16.0	450	1000	1000
9	0.7	1.8	19.0	580	1000	1000
12	0.7	1.8	20.0	715	1000	1000
19	0.7	1.8	24.0	1050	1000	1000
21	0.7	1.8	25.0	1160	1000	1000
27	0.7	1.8	28.0	1450	1000	1000
37	0.7	1.9	32.0	1930	500	1000
48	0.7	2.1	37.0	2490	500	1000

PVC INSULATED CONTROL CABLES

CONFORMING TO IEC 60502-1 AND BS 6346

600/1000 VOLTS



CONTROL/AUXILIARY CABLES - 600/1000 V

DIMENSIONS & WEIGHTS - SIZE 1.5 mm2 (Stranded)

TABLE –35

CU/PVC/SWA/PVC – BS 6346
CU CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	kg/km	mtrs
6	0.6	0.8	0.9	1.4	17.5	470	1000	1000
7	0.6	0.8	0.9	1.4	17.5	490	1000	1000
9	0.6	0.8	1.25	1.5	20.0	730	1000	1000
12	0.6	0.8	1.25	1.5	21.5	835	1000	1000
19	0.6	0.8	1.25	1.6	24.5	1105	1000	1000
21	0.6	1.0	1.6	1.7	27.0	1380	1000	1000
27	0.6	1.0	1.6	1.7	29.5	1635	1000	1000
37	0.6	1.0	1.6	1.8	32.5	1995	1000	1000
48	0.6	1.0	1.6	1.9	36.0	2430	500	1000

DIMENSIONS & WEIGHTS - SIZE 1.5 mm2 (Stranded)

TABLE –36

CU/PVC/PVC – IEC-60502 Part 1
CU CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
6	0.8	1.8	14.5	270	1000	1000
7	0.8	1.8	14.5	285	1000	1000
9	0.8	1.8	16.5	375	1000	1000
12	0.8	1.8	18.0	445	1000	1000
19	0.8	1.8	21.0	640	1000	1000
21	0.8	1.8	22.0	705	1000	1000
27	0.8	1.8	24.5	870	1000	1000
37	0.8	1.8	27.0	1140	1000	1000
48	0.8	1.9	31.0	1460	1000	1000

CONTROL/AUXILIARY CABLES - 600/1000 V

DIMENSIONS & WEIGHTS - SIZE 2.5 mm2 (Stranded)

TABLE –37

CU/PVC/SWA/PVC – BS 6346
CU CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	mtrs
6	0.7	0.8	1.25	1.5	19.0	670	1000
7	0.7	0.8	1.25	1.5	19.0	700	1000
9	0.7	0.8	1.25	1.6	21.5	890	1000
12	0.7	0.8	1.25	1.6	23.5	1030	1000
19	0.7	1.0	1.6	1.7	28.0	1575	1000
21	0.7	1.0	1.6	1.8	29.0	1700	1000
27	0.7	1.0	1.6	1.8	32.0	2025	1000
37	0.7	1.0	1.6	1.9	35.5	2525	500
48	0.7	1.2	2.0	2.1	41.0	3445	500

DIMENSIONS & WEIGHTS - SIZE 2.5 mm2 (Stranded)

TABLE –38

CU/PVC/PVC – IEC-60502 Part 1
COPPER CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight for CU Cable	Approx. Cable Weight for AL Cable	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	kg/km	mtrs
6	0.8	1.8	15.5	345	1000	1000
7	0.8	1.8	15.5	375	1000	1000
9	0.8	1.8	18.0	495	1000	1000
12	0.8	1.8	20.0	590	1000	1000
19	0.8	1.8	23.0	865	1000	1000
21	0.8	1.8	24.0	955	1000	1000
27	0.8	1.8	27.0	1185	1000	1000
37	0.8	1.9	30.5	1575	1000	1000
48	0.8	2.0	34.5	2020	500	1000

CONTROL/AUXILIARY CABLES - 600/1000 V

DIMENSIONS & WEIGHTS - SIZE 4 mm2 (Stranded)

TABLE –39

CU/PVC/SWA/PVC – BS 6346
COPPER CONDUCTOR, PVC INSULATED, STEEL WIRE ARMOURED, PVC SHEATHED

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Extruded Bedding	Nominal Diameter of Armour Wire	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight	Packing Length (Standard)
mm²	mm	mm	mm	mm	mm	kg/km	mtrs
6	0.8	0.8	1.25	1.6	22.0	915	1000
7	0.8	0.8	1.25	1.6	22.0	960	1000
9	0.8	1.0	1.6	1.7	26.5	1385	1000
12	0.8	1.0	1.6	1.7	28.5	1610	1000
19	0.8	1.0	1.6	1.8	32.5	2160	500
21	0.8	1.2	2.0	2.0	35.5	2645	500
27	0.8	1.2	2.0	2.0	39.5	3150	500
37	0.8	1.2	2.0	2.1	43.5	3930	500
48	0.8	1.2	2.0	2.2	49.0	4825	500

DIMENSIONS & WEIGHTS - SIZE 4 mm2 (Stranded)

TABLE –40

CU/PVC/PVC – IEC-60502 Part 1
CU CONDUCTOR, PVC INSULATED, PVC SHEATHED (UNARMOURED)

Nominal Area of Conductor	Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter	Approx. Cable Weight	Packing Length (Standard)
mm²	mm	mm	mm	kg/km	mtrs
6	1.0	1.8	18.5	510	1000
7	1.0	1.8	18.5	555	1000
9	1.0	1.8	21.5	735	1000
12	1.0	1.8	23.5	885	1000
19	1.0	1.8	27.5	1305	1000
21	1.0	1.8	29.0	1445	1000
27	1.0	2.0	33.0	1830	500
37	1.0	2.1	37.0	2435	500
48	1.0	2.3	42.5	3140	500

Current rating of Cables:

Current rating of Cables given below are based on IEC 60287 calculation and these values can be followed for the cables as per BS/IEC standard.

TABLE - 41

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
Single Core Copper, XLPE insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	"Approx Voltage drop of 3 Single core cables (3 Phase System)
	Single Core in Trefoil		Single Core in Trefoil	Single Core in Trefoil	
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
1.5	22	--	--	--	26.73
2.5	30	--	--	--	16.37
4	39	--	--	--	10.19
6	49	--	--	--	6.81
10	67	67	82	78	4.04
16	92	92	108	101	2.56
25	123	123	139	134	1.62
35	146	146	165	154	1.18
50	174	180	199	199	0.878
70	222	230	244	239	0.620
95	275	282	292	281	0.463
120	321	328	332	315	0.379
150	371	377	371	341	0.326
185	430	433	417	376	0.276
240	513	510	480	421	0.235
300	594	581	536	459	0.212
400	692	664	594	488	0.192
500	801	751	658	529	0.179
630	925	846	723	571	0.168
800	1051	919	764	595	0.162
1000	1172	997	810	632	0.157

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 42

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
Two Core Copper, XLPE insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	Approx Voltage Drop (1 Phase System)
	Two Core		Two Core	Two Core	
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
1.5	22	24	33	27	30.86
2.5	30	32	42	35	18.90
4	39	43	56	46	11.76
6	50	55	70	58	7.86
10	67	74	94	77	4.66
16	97	98	121	99	2.94
25	122	128	157	127	1.86
35	151	158	188	153	1.35
50	183	190	223	181	1.00
70	232	239	273	224	0.702
95	287	295	328	269	0.516
120	335	341	372	307	0.419
150	383	389	417	345	0.352
185	444	449	470	391	0.295
240	529	530	544	453	0.245
300	611	605	609	509	0.216
400	711	696	687	575	0.192

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 43

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
3 and 4 Core, Copper, XLPE insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	In Duct	Approx Voltage Drop (3 Phase System)
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
1.5	19	20	28	22	26.73
2.5	27	27	36	29	16.37
4	34	37	47	39	10.19
6	44	46	59	48	6.81
10	58	64	79	65	4.04
16	83	83	102	83	2.55
25	105	109	131	107	1.61
35	129	134	157	128	1.17
50	157	163	187	152	0.866
70	200	205	229	187	0.608
95	246	253	274	226	0.447
120	288	293	312	258	0.363
150	330	335	349	291	0.305
185	381	386	394	329	0.256
240	454	456	455	380	0.212
300	524	519	509	427	0.187
400	608	597	574	490	0.167

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 44

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
Single Core Aluminium, XLPE insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	Approx Voltage drop of 3 Single core cables (3 Phase System)
	Single Core in Trefoil		Single Core in Trefoil	Single Core in Trefoil	
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
16	72	72	84	79	4.25
25	94	94	109	103	2.68
35	118	118	127	123	1.93
50	129	135	152	153	1.44
70	165	172	187	186	1.00
95	204	211	224	219	0.733
120	237	245	255	248	0.587
150	274	282	285	271	0.490
185	319	325	322	301	0.402
240	381	385	372	341	0.324
300	442	441	418	377	0.276
400	535	526	481	415	0.236
500	619	595	534	451	0.209
630	713	672	589	485	0.188
800	833	760	649	520	0.175
1000	956	843	706	559	0.166

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 45

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
Two Core Aluminium, XLPE insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	In Duct	Approx Voltage Drop (1 Phase System)
	Two Core		Two Core	Two Core	
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
16	73	74	93	76	4.90
25	90	95	119	96	3.08
35	111	116	142	116	2.23
50	134	140	169	138	1.65
70	171	177	207	169	1.15
95	211	218	248	204	0.835
120	235	235	266	232	0.668
150	269	269	304	256	0.550
185	308	308	349	293	0.448
240	364	364	406	336	0.356
300	409	409	450	372	0.298
400	470	470	492	425	0.249

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 46

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
3 and 4 Core, Aluminium, XLPE insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	Approx Voltage Drop (3 Phase System)
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
16	63	63	78	64	4.25
25	79	83	100	82	2.67
35	97	101	120	97	1.93
50	118	122	142	116	1.43
70	150	154	175	144	0.994
95	185	190	210	173	0.723
120	216	221	239	198	0.578
150	247	253	267	223	0.476
185	287	293	304	253	0.388
240	342	346	352	294	0.308
300	395	396	396	332	0.258
400	420	420	428	357	0.216

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

Current rating of Cables:

Current rating of Cables given below are based on IEC 60287 calculation and these values can be followed for the cables as per BS/IEC standards.

TABLE - 47

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
Single Core Copper, PVC insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	Approx Voltage drop of 3 Single core cables (3 Phase System)
	Single Core in Trefoil		Single Core in Trefoil	Single Core in Trefoil	
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
1.5	16	--	--	--	25.10
2.5	22	--	--	--	15.40
4	29	--	--	--	9.60
6	36	--	--	--	6.40
10	49	49	68	64	3.80
16	67	67	89	84	2.40
25	90	90	115	111	1.50
35	107	107	136	127	1.10
50	123	129	162	159	0.828
70	156	163	198	193	0.587
95	194	200	238	226	0.442
120	226	232	270	249	0.365
150	260	265	301	274	0.314
185	302	303	338	300	0.268
240	360	356	388	335	0.229
300	415	407	434	367	0.206
400	484	462	480	391	0.191
500	557	520	528	418	0.178
630	641	582	577	450	0.166
800	726	628	605	470	0.161
1000	808	677	638	497	0.156

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 48

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
Two Core Copper, PVC insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	Approx Voltage Drop (1 Phase System)
	Two Core		Two Core	Two Core	
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
1.5	16	16	26	21	28.96
2.5	22	22	33	27	17.74
4	29	29	44	36	11.04
6	37	38	55	46	7.38
10	48	52	74	61	4.38
16	65	68	95	78	2.77
25	87	91	126	103	1.75
35	107	111	152	123	1.26
50	130	135	180	146	0.94
70	163	169	222	180	0.662
95	202	209	266	217	0.488
120	235	241	302	247	0.40
150	269	274	338	277	0.337
185	311	317	382	314	0.284
240	370	374	441	364	0.239
300	426	426	493	408	0.213
400	495	488	554	459	0.192

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 49

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
3 and 4 Core, Copper, PVC insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	Approx Voltage Drop (3 Phase System)
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
1.5	14	14	22	18	25.1
2.5	20	19	28	23	15.4
4	25	25	38	30	9.6
6	32	32	47	38	6.4
10	42	44	62	51	3.8
16	56	58	81	66	2.4
25	74	78	106	86	1.5
35	91	95	127	103	1.10
50	111	115	150	122	0.816
70	141	146	186	152	0.573
95	174	180	223	182	0.423
120	202	208	254	208	0.346
150	231	238	284	234	0.292
185	267	273	321	265	0.246
240	318	322	370	306	0.207
300	365	366	414	342	0.184
400	423	420	464	392	0.166

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 50

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
Single Core Aluminium, PVC insulated Armoured/Unarmoured Cables

Area	In Air		In Ground	I n Duct	"Approx Voltage drop of 3 Single core cables
	Single Core in Trefoil		Single Core in Trefoil	Single Core in Trefoil	
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
16	52	52	69	65	4.00
25	69	69	90	85	2.50
35	86	86	105	102	1.80
50	92	94	123	123	1.35
70	117	119	150	150	0.94
95	144	146	181	178	0.691
120	168	170	206	202	0.558
150	193	194	230	224	0.464
185	224	226	261	245	0.383
240	268	267	302	278	0.31
300	311	307	339	307	0.265
400	357	357	340	347	0.23
500	394	394	361	393	0.21
630	447	447	410	447	0.185
800	505	505	463	506	0.173
1000	568	568	520	567	0.163

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 51

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
Two Core Aluminium, PVC insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	"Approx Voltage Drop (1 Phase System)"
	Two Core		Two Core	Two Core	
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
16	50	52	73	60	4.60
25	64	66	94	77	2.89
35	78	80	114	92	2.09
50	96	97	134	110	1.55
70	121	124	167	136	1.08
95	149	152	200	163	0.786
120	172	172	219	191	0.628
150	197	197	251	211	0.520
185	226	226	287	242	0.425
240	267	267	334	277	0.339
300	299	299	371	307	0.287
400	344	344	402	351	0.243

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 52

CURRENT RATINGS & VOLTAGE DROP OF THE CABLES - 600/1000 V
3 and 4 Core, Aluminium, PVC insulated Armoured/Unarmoured Cables.

Area	In Air		In Ground	I n Duct	Approx Voltage Drop (3 Phase System)
	Unarmoured	Armoured	Armoured	Armoured	Trefoil
mm²	A	A	A	A	V/A/km
16	42	44	62	50	4.0
25	56	57	80	65	2.5
35	68	70	96	78	1.8
50	83	86	114	93	1.3
70	106	108	141	115	0.934
95	131	134	170	139	0.681
120	151	155	194	159	0.544
150	174	177	218	178	0.450
185	200	205	247	203	0.368
240	239	245	288	238	0.294
300	276	282	326	270	0.249
400	308	308	353	286	0.210

Operating Conditions

Ambient air temp.	50 °C
Ground temp.	35 °C
Depth of Laying	0.50 m
Thermal resistivity of Soil	1.2 K.m/W

TABLE - 53

RATING FACTORS FOR VARIATION IN AMBIENT TEMPERATURE FOR CABLES LAID IN AIR (FOR INSTALLATION IN AIR ONLY)

Ambient temperature ° C	25	30	35	40	45	50	55
PVC insulated cables	1.49	1`.40	1.31	1.22	1.11	1.00	0.86
XLPE insulated cables	1.28	1.23	1.18	1.13	1.06	1.00	0.94

TABLE - 54

RATING FACTORS FOR VARIATION IN AMBIENT TEMPERATURE FOR CABLES LAID DIRECT IN GROUND OR IN DUCTS (FOR INSTALLATION IN GROUND & DUCTS ONLY)

Ground temperature ° C	15	20	25	30	35	40	45
PVC insulated cables	1.25	1.19	1.12	1.06	1.00	0.92	0.85
XLPE insulated cables	1.16	1.13	1.08	1.03	1.00	0.95	0.90

TABLE - 55

RATING FACTORS FOR DEPTH OF LAYING FOR CABLES LAID DIRECT IN GROUND OR IN DUCTS (FOR INSTALLATION IN GROUND & DUCTS ONLY)

"Depth of Laying Metre	Cables Laid Direct in Ground			Cables Laid in Ducts	
	Upto 50mm2	70 mm² to 300mm2	Above 300 mm2	Single Core	Multicore
0.75	0.975	0.965	0.947	0.957	0.982
0.8	0.970	0.960	0.940	0.950	0.980
1.0	0.950	0.930	0.920	0.930	0.960
1.25	0.940	0.920	0.890	0.910	0.950
1.5	0.930	0.900	0.870	0.890	0.940
1.75	0.920	0.890	0.860	0.880	0.940
2.0	0.910	0.880	0.850	0.870	0.930
2.5	0.900	0.870	0.840	0.860	0.920
3 or more	0.890	0.850	0.820	0.850	0.910

TABLE - 56

(FOR INSTALLATION IN GROUND ONLY)
RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWO OR THREE SINGLE-CORE CABLES LAID DIRECT IN THE GROUND

Nominal Area of Conductor mm²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
Up to 50	1.21	1.16	1.11	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
70	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
95	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
120	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
150	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
185	1.22	1.17	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.62	0.59
240	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.68	0.62	0.59
300	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.68	0.62	0.59
400	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.62	0.58
500	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.62	0.58
630	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.61	0.58
800	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.72	0.66	0.61	0.58
1000	1.24	1.18	1.12	1.07	1.0	0.91	0.80	0.72	0.66	0.61	0.58

TABLE - 57

(FOR INSTALLATION IN GROUND ONLY)
RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWIN OR MULTI CORE CABLES LAID DIRECT IN THE GROUND

Nominal Area of Conductor mm²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
1.5/2.5	1.12	1.09	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.70	0.66
4	1.13	1.10	1.07	1.05	1.0	0.94	0.85	0.79	0.74	0.69	0.65
6	1.14	1.10	1.07	1.05	1.0	0.93	0.85	0.79	0.74	0.68	0.64
10	1.15	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.67	0.63
16	1.16	1.12	1.08	1.05	1.0	0.93	0.84	0.77	0.72	0.66	0.62
25	1.17	1.13	1.09	1.05	1.0	0.93	0.83	0.77	0.71	0.65	0.61
35	1.17	1.13	1.09	1.06	1.0	0.92	0.83	0.76	0.71	0.65	0.61
50	1.17	1.13	1.09	1.06	1.0	0.92	0.83	0.76	0.71	0.65	0.61
70	1.18	1.14	1.09	1.06	1.0	0.92	0.83	0.75	0.70	0.64	0.60
95	1.18	1.14	1.09	1.06	1.0	0.92	0.83	0.75	0.70	0.64	0.60
120	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.75	0.69	0.64	0.60
150	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.75	0.69	0.63	0.59
185	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.74	0.69	0.63	0.59
240	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59
300	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59
400	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59

TABLE - 58

(FOR INSTALLATION IN DUCT ONLY)
RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR THREE SINGLE-CORE CABLES IN DUCTS

Nominal Area of Conductor mm²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
Up to 50	1.11	1.08	1.06	1.04	1.0	0.94	0.87	0.82	0.77	0.73	0.69
70	1.12	1.09	1.06	1.04	1.0	0.94	0.87	0.81	0.76	0.72	0.68
95	1.12	1.09	1.06	1.04	1.0	0.94	0.87	0.81	0.76	0.72	0.68
120	1.13	1.10	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.72	0.67
150	1.13	1.10	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.71	0.67
185	1.13	1.10	1.07	1.04	1.0	0.93	0.86	0.79	0.75	0.70	0.67
240	1.14	1.11	1.07	1.04	1.0	0.93	0.86	0.79	0.74	0.70	0.66
300	1.14	1.11	1.08	1.05	1.0	0.93	0.85	0.79	0.74	0.69	0.65
400	1.14	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.68	0.65
500	1.15	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.68	0.64
630	1.15	1.12	1.08	1.05	1.0	0.93	0.84	0.78	0.72	0.68	0.64
800	1.16	1.12	1.09	1.05	1.0	0.93	0.84	0.77	0.72	0.67	0.64
1000	1.16	1.13	1.09	1.05	1.0	0.92	0.84	0.77	0.71	0.67	0.63

TABLE - 59

(FOR INSTALLATION IN DUCT ONLY)
RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWIN OR MULTI-CORE CABLES LAID IN SINGLE-WAY DUCTS

Nominal Area of Conductor mm²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
1.5/2.5	1.04	1.03	1.02	1.02	1.00	0.98	0.94	0.91	0.88	0.86	0.83
4	1.04	1.04	1.03	1.02	1.00	0.97	0.94	0.90	0.87	0.85	0.82
6	1.05	1.04	1.03	1.02	1.00	0.97	0.93	0.90	0.86	0.84	0.81
10	1.05	1.04	1.03	1.02	1.00	0.97	0.93	0.89	0.86	0.83	0.80
16	1.06	1.04	1.03	1.02	1.00	0.97	0.92	0.88	0.85	0.82	0.79
25	1.06	1.05	1.03	1.02	1.00	0.96	0.92	0.88	0.84	0.82	0.78
35	1.06	1.05	1.03	1.02	1.00	0.96	0.92	0.87	0.83	0.81	0.77
50	1.07	1.05	1.03	1.02	1.00	0.96	0.91	0.87	0.83	0.80	0.77
70	1.07	1.05	1.04	1.02	1.00	0.96	0.91	0.86	0.82	0.79	0.76
95	1.07	1.06	1.04	1.02	1.00	0.96	0.91	0.86	0.82	0.78	0.75
120	1.08	1.06	1.04	1.03	1.00	0.95	0.90	0.85	0.81	0.78	0.74
150	1.09	1.06	1.04	1.03	1.00	0.95	0.90	0.85	0.80	0.77	0.73
185	1.09	1.07	1.05	1.03	1.00	0.95	0.89	0.84	0.80	0.76	0.72
240	1.09	1.07	1.05	1.03	1.00	0.95	0.89	0.84	0.79	0.76	0.72
300	1.10	1.07	1.05	1.03	1.00	0.95	0.88	0.83	0.78	0.75	0.71
400	1.10	1.07	1.05	1.03	1.00	0.95	0.88	0.83	0.78	0.75	0.71

TABLE - 60

(FOR INSTALLATION IN GROUND ONLY)

GROUP RATING FACTORS FOR MORE THAN ONE TWIN OR MULTI-CORE ARMOURED OR UNARMOURED CABLES IN HORIZONTAL FORMATION LAID IN DIRECT GROUND.

No. of cables	2	3	4	5	6	7	8	9	10	11	12
Cables laid touching	0.81	0.70	0.63	0.59	0.55	0.52	0.50	0.48	0.47	0.45	0.44
Cables laid 15 cm apart	0.87	0.78	0.74	0.70	0.68	0.66	0.64	0.63	0.62	0.61	0.60
Cables laid 30 cm apart	0.91	0.84	0.81	0.78	0.77	0.75	0.75	0.74	0.73	0.73	0.72
Cables laid 45 cm apart	0.93	0.88	0.86	0.84	0.83	0.82	0.81	0.81	0.80	0.80	0.80
Cables laid 60 cm apart	0.95	0.90	0.89	0.87	0.87	0.86	0.86	0.85	0.85	0.85	0.84

TABLE - 61

(FOR INSTALLATION IN GROUND ONLY)

GROUP RATING FACTORS FOR MORE THAN ONE CIRCUITS OF 3 SINGLE CORE ARMOURED OR UNARMOURED CABLES IN TREFOIL TOUCHING,HORIZONTAL FORMATION LAID IN DIRECT GROUND

No. of cables	2	3	4	5	6	7	8	9	10	11	12
Cables laid touching	0.78	0.66	0.61	0.56	0.53	0.50	0.49	0.47	0.46	0.44	0.43
Cables laid 15 cm apart	0.83	0.73	0.68	0.64	0.61	0.59	0.57	0.56	0.55	0.54	0.53
Cables laid 30 cm apart	0.88	0.79	0.73	0.73	0.71	0.69	0.68	0.67	0.67	0.66	0.66
Cables laid 45 cm apart	0.91	0.84	0.81	0.79	0.78	0.76	0.76	0.75	0.75	0.74	0.74
Cables laid 60 cm apart	0.93	0.87	0.85	0.83	0.82	0.82	0.81	0.81	0.80	0.80	0.80

TABLE - 62

(FOR INSTALLATION IN DUCT ONLY)

GROUP RATING FACTORS FOR MORE THAN ONE TWIN OR MULTI-CORE ARMOURED OR UNARMOURED CABLES IN HORIZONTAL FORMATION LAID IN SINGLE WAY DUCTS

No. of cables	2	3	4	5	6	7	8	9	10	11	12
Cables laid touching	0.90	0.83	0.79	0.75	0.73	0.71	0.70	0.68	0.67	0.66	0.66
Cables laid 30 cm apart	0.93	0.88	0.85	0.83	0.82	0.81	0.80	0.79	0.79	0.78	0.78
Cables laid 45 cm apart	0.95	0.91	0.89	0.88	0.87	0.86	0.85	0.85	0.85	0.84	0.84
Cables laid 60 cm apart	0.96	0.93	0.92	0.91	0.90	0.89	0.89	0.89	0.89	0.88	0.88
Cables laid 60 cm apart	0.95	0.90	0.89	0.87	0.87	0.86	0.86	0.85	0.85	0.85	0.84

TABLE - 63

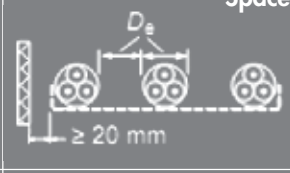
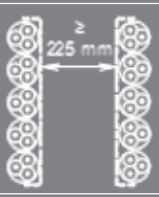
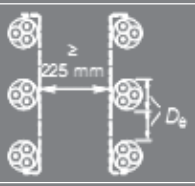
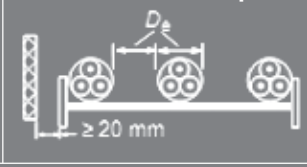
(FOR INSTALLATION IN DUCT ONLY)

GROUP RATING FACTORS FOR MORE THAN ONE CIRCUITS OF 3 SINGLE CORE ARMOURED OR UNARMOURED CABLES IN TREFOIL TOUCHING ,HORIZONTAL FORMATION LAID IN SINGLE WAY DUCTS

No. of cables	2	3	4	5	6	7	8	9	10	11	12
Cables laid touching	0.87	0.78	0.74	0.70	0.69	0.67	0.66	0.65	0.64	0.63	0.63
Cables laid 45 cm apart	0.91	0.84	0.81	0.79	0.78	0.76	0.76	0.75	0.75	0.74	0.74
Cables laid 60 cm apart	0.93	0.87	0.85	0.83	0.82	0.82	0.81	0.81	0.80	0.80	0.80

TABLE - 64

(FOR INSTALLATION IN AIR ONLY)
GROUP RATING FACTORS FOR GROUPS OF MORE THAN ONE MULTI-CORE CABLE IN AIR - TO BE APPLIED TO THE CURRENT-CARRYING CAPACITY FOR ONE MULTI-CORE CABLE IN FREE AIR

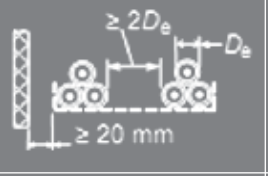
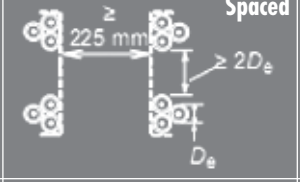
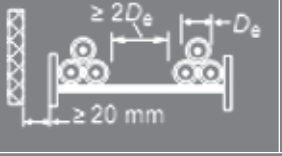
Method of Installation			Number of trays	Number of cables					
				1	2	3	4	6	9
Cables on perforated trays		Touching	1	1.00	0.88	0.82	0.79	0.76	0.73
			2	1.00	0.87	0.80	0.77	0.73	0.68
			3	1.00	0.86	0.79	0.76	0.71	0.66
		Spaced	1	1.00	1.00	0.98	0.95	0.91	-
			2	1.00	0.99	0.96	0.92	0.87	-
			3	1.00	0.98	0.95	0.91	0.85	-
Cables on vertical perforated trays		Touching	1	1.00	0.88	0.82	0.78	0.73	0.72
			2	1.00	0.88	0.81	0.76	0.71	0.70
		Spaced	1	1.00	0.91	0.89	0.88	0.87	-
			2	1.00	0.91	0.88	0.87	0.85	-
Cables on ladder supports, cleats, etc		Touching	1	1.00	0.87	0.82	0.80	0.79	0.78
			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
		Spaced	1	1.00	1.00	1.00	1.00	1.00	-
			2	1.00	0.99	0.98	0.97	0.96	-
			3	1.00	0.98	0.97	0.96	0.93	-

Note 1: Values are given for vertical spacings between trays of 300 mm and at least 20 mm between trays and wall. For closer spacing, the factors should be reduced.

Note 2: Values are given for horizontal spacing between trays of 225 mm with trays mounted back to back. For closer spacing, the factors should be reduced.

TABLE - 65

(FOR INSTALLATION IN AIR ONLY)
GROUP RATING FACTORS FOR GROUPS OF MORE THAN ONE CIRCUIT OF SINGLE CORE CABLES
TO BE APPLIED TO THE CURRENT-CARRYING CAPACITY FOR ONE CIRCUIT OF SINGLE-CORE CABLES IN FREE AIR

Method of Installation		Number of trays	Number of three-phase circuits (Note 3)			Use as a multiplier to rating for
			1	2	3	
Perforated trays (Note 1)		1 2 3	1.00 0.97 0.96	0.98 0.93 0.92	0.96 0.89 0.86	Three cables in trefoil formation
Vertical perforated trays (Note 2)		1 2	1.00 1.00	0.91 0.90	0.89 0.86	
Ladder supports, cleats, etc. (Note 1)		1 2 3	1.00 0.97 0.96	1.00 0.95 0.94	1.00 0.93 0.90	

Note 1: Values are given for vertical spacings between trays of 300 mm. For closer spacing, the factors should be reduced.

Note 2: Values are given for horizontal spacing between trays of 225 mm with trays mounted back to back. For closer spacing, the factors should be reduced.

Note 3: For circuits having more than one cable in parallel per phase, each three phase set of conductors should be considered as a circuit for the purpose of this table.

TABLE - 66

MAXIMUM D.C. RESISTANCE OF CONDUCTOR AND ARMOUR FOR XLPE INSULATED CABLES

Nominal Cross-sectional area of conductor	Maximum D.C. Resistance per km of cable at 20 °C								
	Copper conductor	Aluminium conductor	Aluminium wire armour		Galvanized Steel Wire armour				
			0.6/1.0 kV	1.9/3.3 kV	0.6/1.0 kV	0.6/1.0 kV	1.9/3.3 kV	0.6/1.0 kV	0.6/1.0 kV
			Single core	Single core	Two core	Three core		Four core	Five core
mm²	ohm	ohm	ohm	ohm	ohm	ohm	ohm	ohm	ohm
1.5	12.1	-------	-------	-------	10.2	9.5	-------	8.8	8.2
2.5	7.41	-------	-------	-------	8.8	8.2	-------	7.7	6.8
4	4.61	-------	-------	-------	7.9	7.5	-------	6.8	6.2
6	3.08	-------	-------	-------	7.0	6.7	-------	4.3	3.9
10	1.83	-------	-------	-------	6.0	4.0	-------	3.7	3.4
16	1.15	1.91	-------	-------	3.7	3.5	1.9	3.1	2.2
25	0.727	1.20	-------	-------	3.7	2.5	1.7	2.3	1.8
35	0.524	0.868	-------	-------	2.6	2.3	1.4	2.0	1.6
50	0.387	0.641	1.30	0.75	2.3	2.0	1.3	1.8	1.1
70	0.268	0.443	0.75	0.67	2.0	1.8	1.2	1.2	0.94
95	0.193	0.32	0.67	0.61	1.4	1.3	1.1	1.1	-------
120	0.153	0.253	0.61	0.42	1.3	1.2	0.76	0.76	-------
150	0.124	0.206	0.42	0.39	1.2	0.78	0.71	0.68	-------
185	0.0991	0.164	0.38	0.37	0.82	0.71	0.65	0.61	-------
240	0.0754	0.125	0.34	0.34	0.73	0.63	0.59	0.54	-------
300	0.0601	0.100	0.31	0.31	0.67	0.58	0.55	0.49	-------
400	0.0470	0.0778	0.22	0.22	0.59	0.52	0.50	0.35	-------
500	0.0366	0.0605	0.20	0.20	-------	-------	-------	-------	-------
630	0.0283	0.0469	0.18	0.18	-------	-------	-------	-------	-------
800	0.0221	0.0367	0.13	0.13	-------	-------	-------	-------	-------
1000	0.0176	0.0291	0.12	0.12	-------	-------	-------	-------	-------

TABLE - 67

MAXIMUM D.C. RESISTANCE OF CONDUCTOR AND ARMOUR FOR PVC INSULATED CABLES

Nominal Cross-sectional area of conductor	Maximum D.C. Resistance per km of cable at 20 °C								
	Copper conductor	Aluminium conductor	Aluminium wire armour		Galvanized Steel Wire armour				
			0.6/1.0 kV	1.9/3.3 kV	0.6/1.0 kV	0.6/1.0 kV	1.9/3.3 kV	0.6/1.0 kV	0.6/1.0 kV
			Single core	Single core	Two core	Three core		Four core	Five core
mm²	ohm	ohm	ohm	ohm	ohm	ohm	ohm	ohm	ohm
1.5	12.1	-------	-------	-------	10.2	9.5	-------	8.8	8.2
2.5	7.41	-------	-------	-------	8.8	8.2	-------	7.7	6.8
4	4.61	-------	-------	-------	7.5	7.0	-------	4.6	4.1
6	3.08	-------	-------	-------	6.8	4.6	-------	4.1	3.8
10	1.83	-------	-------	-------	3.9	3.7	-------	3.4	2.3
16	1.15	1.91	-------	-------	3.4	3.1	1.9	2.2	2.0
25	0.727	1.20	-------	-------	2.6	2.4	1.7	2.1	1.7
35	0.524	0.868	-------	-------	2.4	2.1	1.7	1.9	1.5
50	0.387	0.641	0.82	0.73	2.1	1.9	1.3	1.3	1.1
70	0.268	0.443	0.73	0.65	1.9	1.4	1.2	1.2	0.89
95	0.193	0.320	0.64	0.45	1.3	1.2	1.1	0.98	-------
120	0.153	0.253	0.45	0.42	1.2	1.1	0.74	0.71	-------
150	0.124	0.206	0.40	0.39	1.1	0.74	0.69	0.65	-------
185	0.0991	0.164	0.37	0.36	0.78	0.68	0.64	0.59	-------
240	0.0754	0.125	0.33	0.33	0.69	0.60	0.58	0.52	-------
300	0.0601	0.100	0.30	0.30	0.63	0.54	0.53	0.47	-------
400	0.0470	0.0778	0.21	0.21	0.56	0.49	0.48	0.34	-------
500	0.0366	0.0605	0.19	0.19	-------	-------	-------	-------	-------
630	0.0283	0.0469	0.18	0.18	-------	-------	-------	-------	-------
800	0.0221	0.0367	0.13	0.13	-------	-------	-------	-------	-------
1000	0.0176	0.0291	0.12	0.12	-------	-------	-------	-------	-------

TABLE - 68

A.C. RESISTANCE AND REACTANCE VALUES FOR XLPE INSULATED CABLES

Nominal Cross-sectional area of conductor	XLPE Insulated Cables (600/1000 V Grade)						
	A.C Resistance at 90 °C				Reactance at 50 Hz		
	Single Core Cables		Multi Core Cables		Single Core Cables		Multi Core Cables
	Copper	Aluminium	Copper	Aluminium	Armoured	Unarmoured	
mm²	Ohm/km		Ohm/km		Ohm/km		Ohm/km
1.5	15.43	-------	15.43	-------	-------	0.147	0.105
2.5	9.45	-------	9.45	-------	-------	0.137	0.099
4	5.88	-------	5.88	-------	-------	0.128	0.093
6	3.93	-------	3.93	-------	-------	0.119	0.089
10	2.33	-------	2.33	-------	-------	0.111	0.084
16	1.47	2.45	1.47	2.45	-------	0.103	0.081
25	0.927	1.54	0.927	1.54	-------	0.103	0.081
35	0.668	1.11	0.669	1.11	-------	0.098	0.079
50	0. 494	0.822	0.494	0.822	0.114	0.093	0.078
70	0.342	0.568	0.343	0.569	0.106	0.088	0.074
95	0.247	0.411	0.248	0.411	0.102	0.086	0.072
120	0.196	0.325	0.197	0.326	0.097	0.085	0.072
150	0.160	0.265	0.160	0.265	0.099	0.085	0.073
185	0.128	0.212	0.129	0.212	0.095	0.083	0.072
240	0.0990	0.162	0.100	0.163	0.093	0.082	0.071
300	0.0805	0.130	0.0815	0.131	0.092	0.079	0.071
400	0.0645	0.102	0.0660	0.103	0.090	0.080	0.070
500	0.0525	0.0815	-------	-------	0.089	0.078	-------
630	0.0430	0.0650	-------	-------	0.087	0.078	-------
800	0.0365	0.0530	-------	-------	0.086	0.076	-------
1000	0.0320	0.0445	-------	-------	0.085	0.075	-------

TABLE - 69

Nominal Cross-sectional area of conductor	PVC Insulated Cables (600/1000 V Grade)						
	A.C Resistance at 90 °C				Reactance at 50 Hz		
	Single Core Cables		Multi Core Cables		Single Core Cables		Multi Core Cables
	Copper	Aluminium	Copper	Aluminium	Armoured	Unarmoured	
mm²	Ohm/km		Ohm/km		Ohm/km		Ohm/km
1.5	14.48	-------	14.48	-------	-------	0.147	0.110
2.5	8.87	-------	8.87	-------	-------	0.137	0.103
4	5.52	-------	5.52	-------	-------	0.132	0.102
6	3.69	-------	3.69	-------	-------	0.123	0.097
10	2.19	-------	2.19	-------	-------	0.114	0.091
16	1.38	2.30	1.38	2.30	-------	0.110	0.086
25	0.870	1.442	0.870	1.44	-------	0.108	0.085
35	0.627	1.043	0.627	1.04	-------	0.104	0.083
50	0.463	0.771	0.464	0.771	0.117	0.098	0.083
70	0.321	0.533	0.322	0.533	0.109	0.092	0.077
95	0.232	0.385	0.232	0.385	0.105	0.090	0.077
120	0.184	0.305	0.185	0.305	0.103	0.089	0.075
150	0.150	0.248	0.151	0.249	0.101	0.088	0.075
185	0.121	0.198	0.121	0.199	0.098	0.086	0.074
240	0.093	0.152	0.094	0.153	0.095	0.084	0.074
300	0.0755	0.1225	0.0765	0.123	0.093	0.084	0.074
400	0.0610	0.0965	0.0620	0.097	0.092	0.082	0.073
500	0.0495	0.0765	-------	-------	0.091	0.081	-------
630	0.041	0.0615	-------	-------	0.088	0.078	-------
800	0.035	0.0500	-------	-------	0.087	0.077	-------
1000	0.0305	0.0420	-------	-------	0.085	0.077	-------

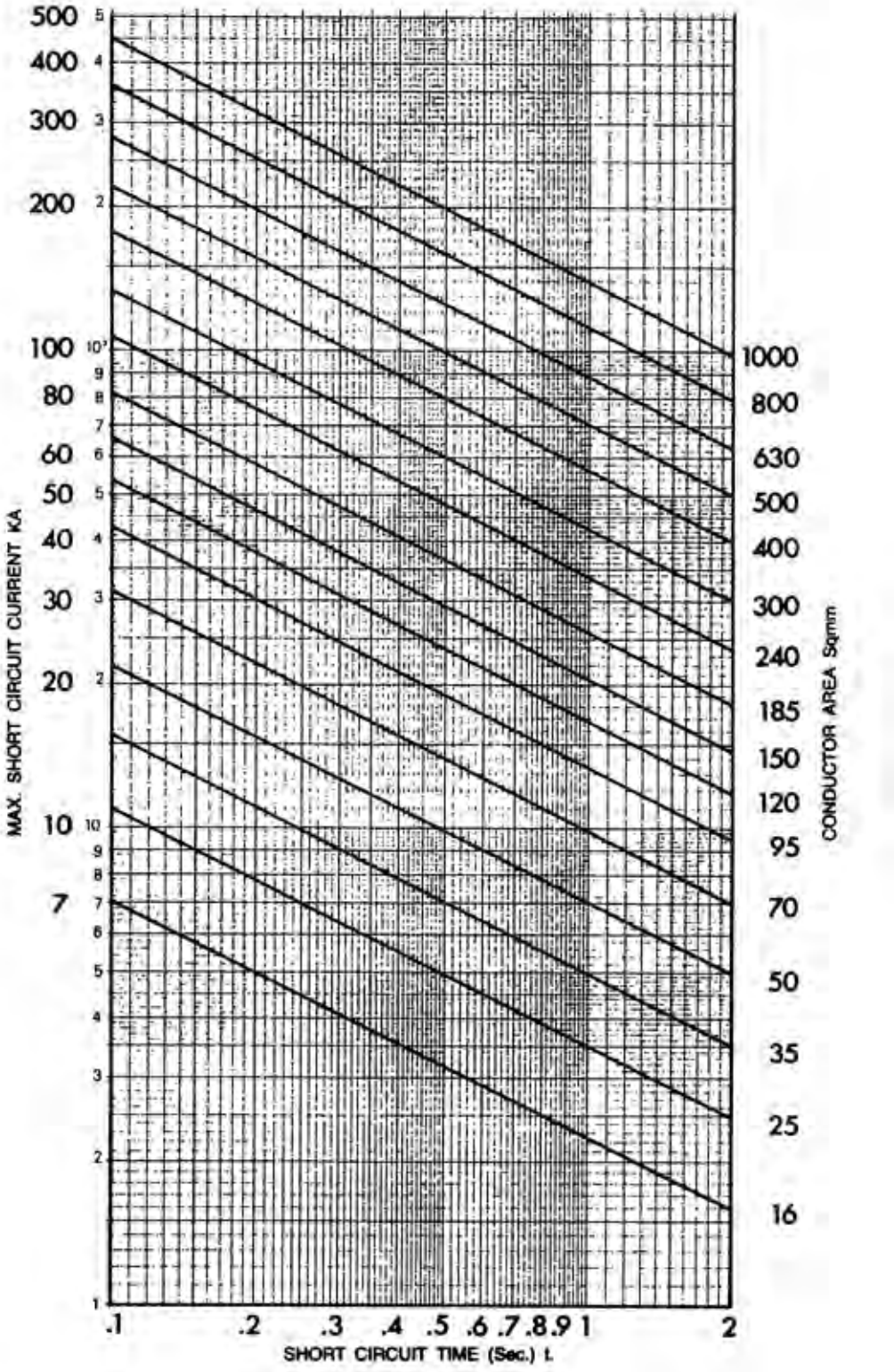
SHORT CIRCUIT CURRENT CURVES FOR COPPER CONDUCTOR XLPE INSULATED CABLES

$Isc = \frac{KA}{\sqrt{t}}$

K = 0.143

A - Conductor Area in Sqmm

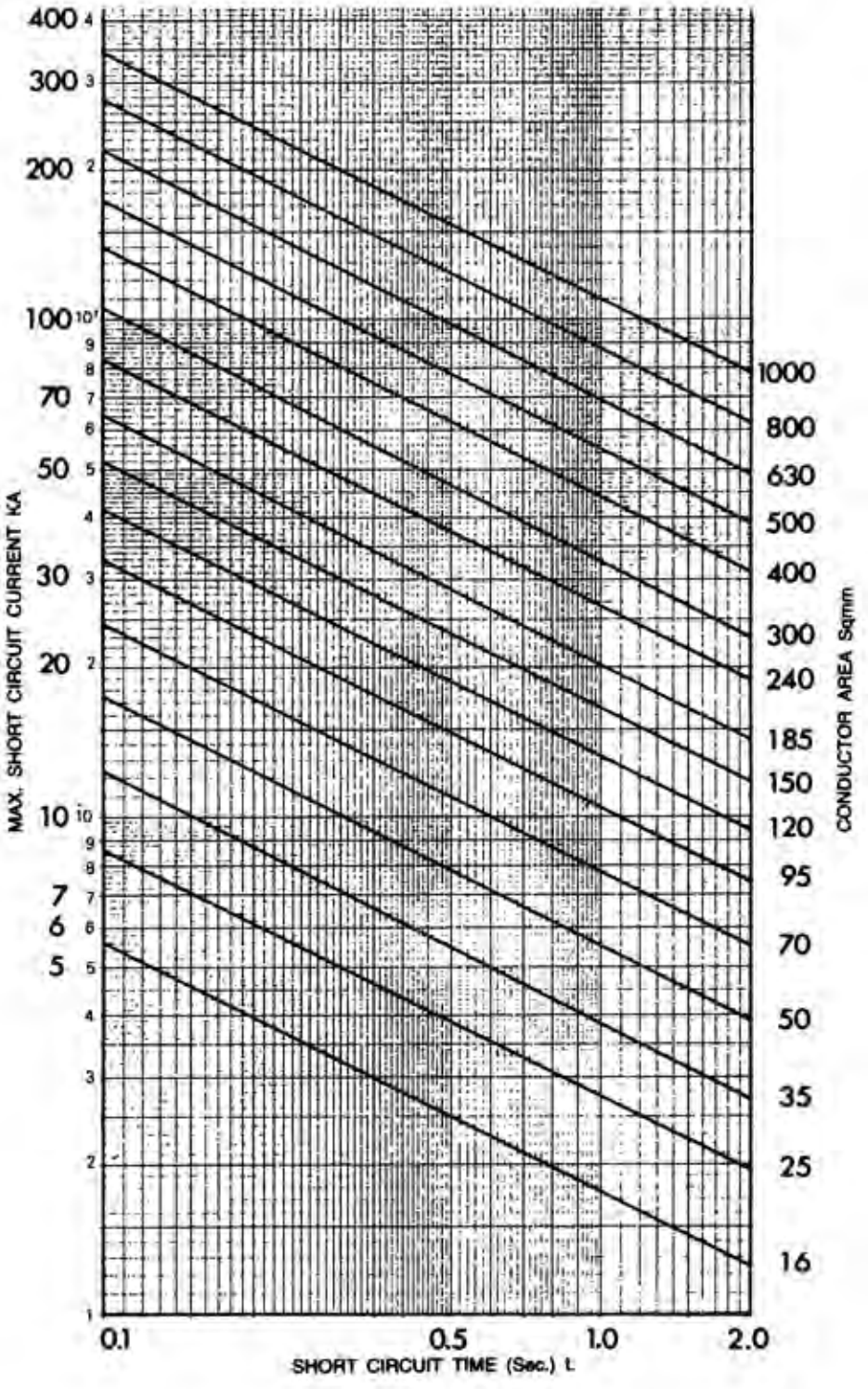
t - Short Circuit Time in Sec.



SHORT CIRCUIT CURRENT CURVES FOR COPPER CONDUCTOR PVC INSULATED CABLES

$$Isc = \frac{KA}{\sqrt{t}}$$

K = 0.115 (upto 300 sq.mm)
0.1028 (400 sq.mm & above)
A - Conductor Area in Sqmm
t - Short Circuit Time in Sec.



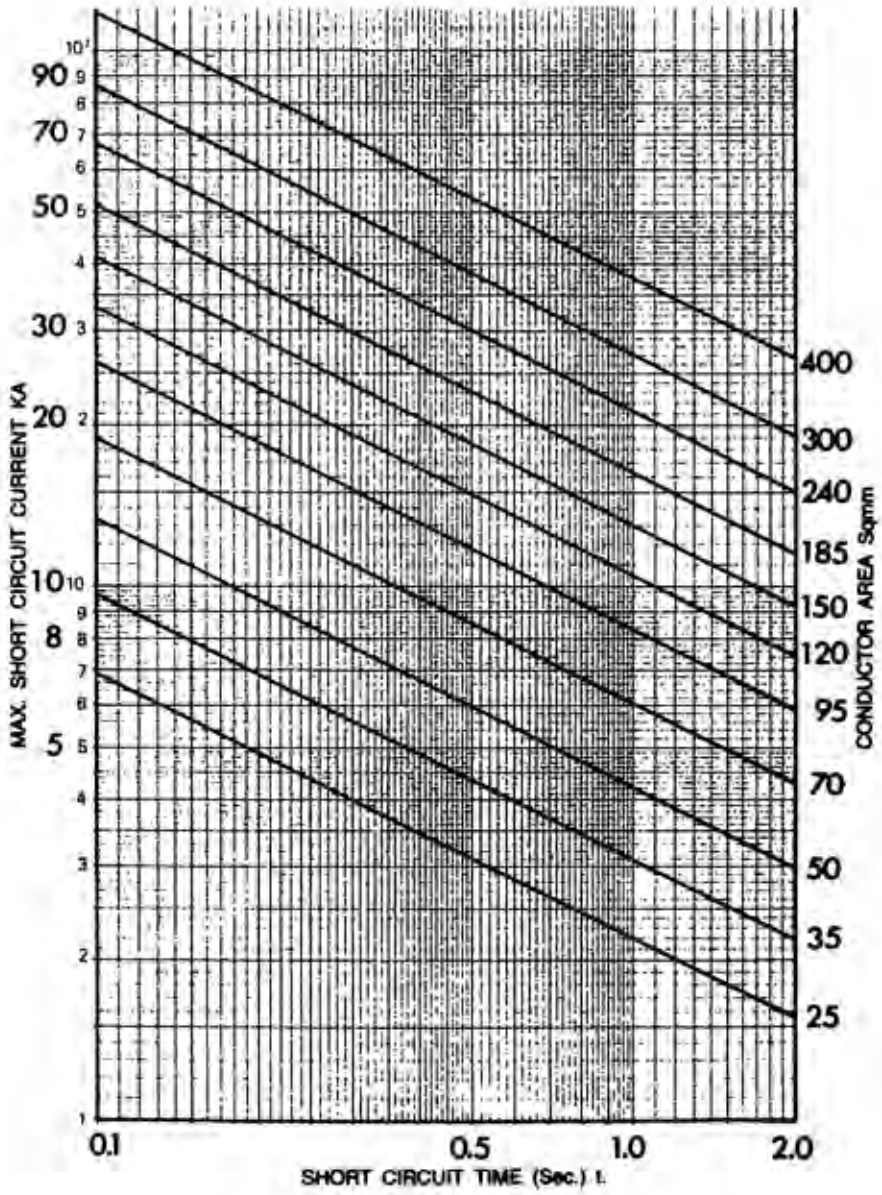
SHORT CIRCUIT CURRENT CURVES FOR ALUMINIUM CONDUCTOR XLPE INSULATED CABLES

$$Isc = \frac{KA}{\sqrt{t}}$$

K = 0.094

A - Conductor Area in Sqmm

t - Short Circuit Time in Sec



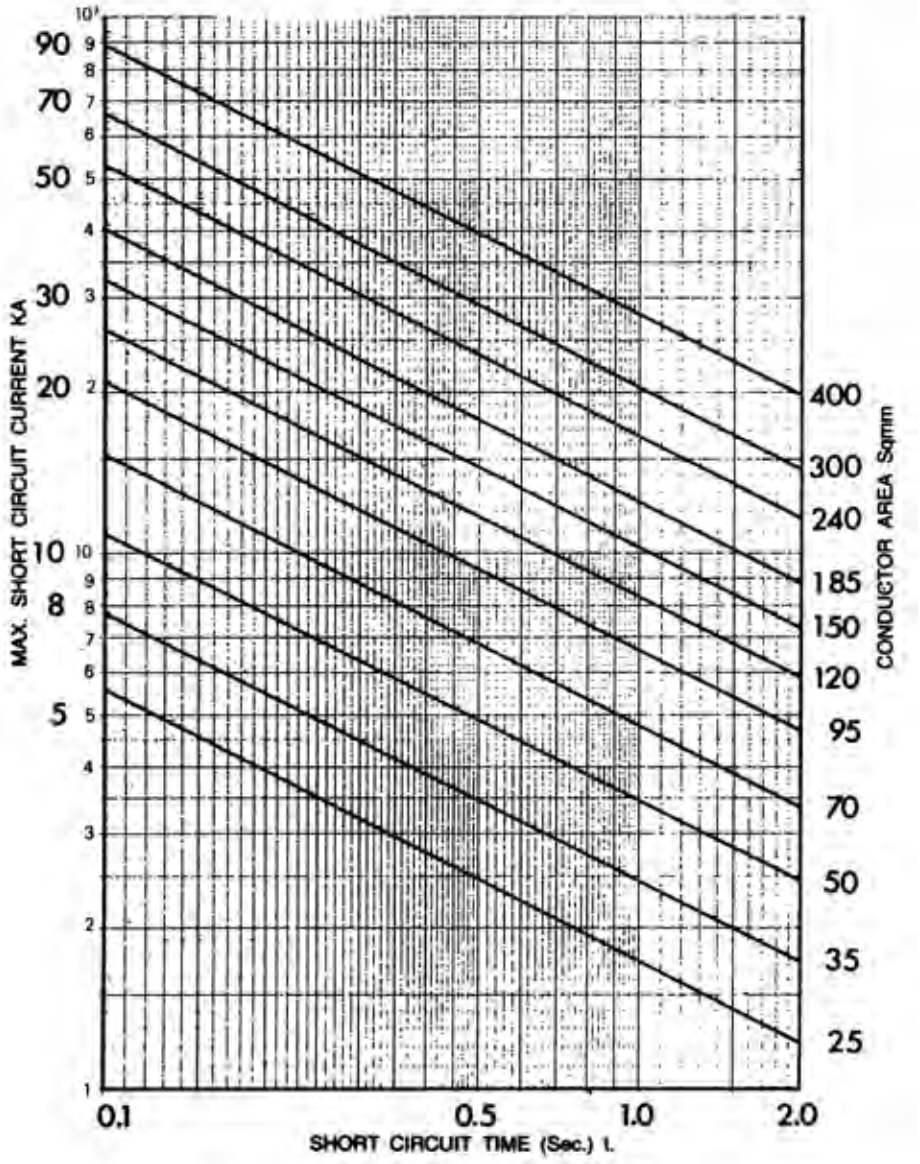
SHORT CIRCUIT CURRENT CURVES FOR ALUMINIUM CONDUCTOR PVC INSULATED CABLES

$$Isc = \frac{KA}{t}$$

K = 0.076 (upto 300 sq.mm)
0.068 (400 sq.mm & above)

A - Conductor Area in Sqmm

t - Short Circuit Time in Sec.



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