



# **Caledonian**

## **Low Voltage cables to IEC 60502 Standard**



[www.caledonian-cables.co.uk](http://www.caledonian-cables.co.uk)  
[www.caledonian-cables.net](http://www.caledonian-cables.net)

**Addison**





# Company Profile

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

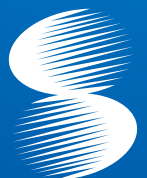
Among the national and international standards with which our cables could comply are: BS - British Standard; LPCB Fire Performance Standard. ISO Standard etc. Caledonian Cables offers a comprehensive stock of cables and cabling products through its nationwide network of resellers and distributors. Caledonian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

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

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

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

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



# Our Certificate



## Registration Certificate

***This document certifies that the administration systems of***

***Caledonian Cables Limited/Addison Technology Limited***  
*Marchants Industrial Centre, Mill Lane, Laughton, Lewes, Sussex, BN8 6AJ, United Kingdom*

***have been assessed and approved by QAS International***  
***to the following management systems, standards and guidelines:***

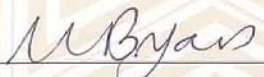
***ISO 9001 : 2008***

*With the permitted exclusion of clauses 7.3 Design and Development*

***The approved administration systems apply to the following:***

***The manufacture and supply of electrical cables and***  
***ancillary power equipment to customers internationally.***

Original Approval ..... **6<sup>th</sup> September 1997**.....  
Current Certificate ..... **7<sup>th</sup> February 2010**.....  
Certificate Expiry ..... **7<sup>th</sup> February 2011**.....  
Certificate Number ..... **A6211**.....



**On behalf of QAS International**

[www.qas-international.com](http://www.qas-international.com)

*This certificate remains valid while the holder maintains their quality administration systems in accordance with the standards and guidelines stated above, which will be audited annually by QAS International.*

*The holder is entitled to display the above registration mark for the duration of this certificate.*

*This certificate must be returned to QAS International on reasonable request.*

*Issuing Office: QAS International, The Gig House, Oxford Street, Malmesbury, Wiltshire, SN16 9AX*



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| Three core +1(unarmoured) | Three core +1(armoured) |
| Four core(unarmoured)     | Four core(armoured)     |

#### **Technical Reference** **38**

## 600/1000V, PVC Insulated Cables according to IEC 60502-1



- Single core(unarmoured)
- Two core(unarmoured)
- Three core(unarmoured)
- Three core +1(unarmoured)
- Four core(unarmoured)
- Multi- core(unarmoured)
- Single core(armoured)
- Two core(armoured)
- Three core(armoured)
- Three core +1(armoured)
- Four core(armoured)



# 600/1000V, PVC Insulated Cables according to IEC 60502-1

## Application:

These cables are used for electricity supply in low voltage installation system, They are suitable for installation in indoors and outdoors, in cable ducts, under ground, in power and switching stations, local energy distributions, industrial plants, where there is no risk of mechanical damage.

## Construction:

**Conductors** Copper or Aluminium conductor, round stranded or Shaped, Class 2 to IEC 60228, BS EN 60228. For smaller sizes, a solid round conductor, Class 1 as per IEC 60228, BS EN 60228 can also be supplied upon request.

**Insulation** PVC Insulation material and thickness shall be as per IEC 60502-1 and BS 6346. PVC material shall be Type A as per IEC 60502-1 or T11 as per BS EN 50363. PVC Insulation material as per SASO 1694 rated for 85°C continuous operation is also available upon special request.

**Colour Code** Colour Code (1) :

1 Core	:	Red or Black
2 Cores	:	Red, Black
3 Cores	:	Red, Yellow, Blue
4 Cores	:	Red, Yellow, Blue, Black
5 Cores	:	Red, Yellow, Blue, Black, Green
Above 5 Cores:	:	Black Cores with White numerals

Colour Code (2) :

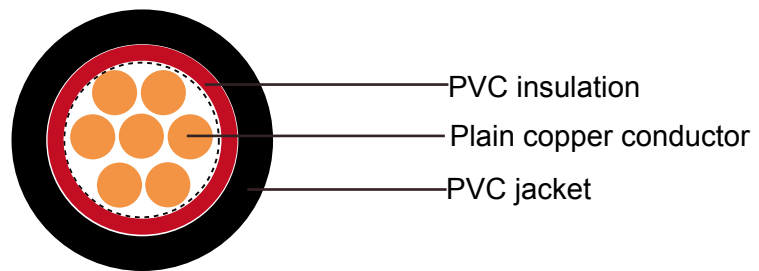
1 Core	:	Brown or Blue
2 Cores	:	Brown or Blue
3 Cores	:	Brown, Black, Grey
4 Cores	:	Blue, Brown, Black, Grey
5 Cores	:	Green/Yellow, Blue, Brown, Black, Grey
Above 5 Cores:	:	Black Cores with White numerals



- Assembly / Inner Sheath** Two, Three or Four insulated conductors are laid-up together with non-hygroscopic fillers and the assembly is bedded with an extruded layer of PVC. In case of non-armoured cables, this layer may be omitted
- Armour** Aluminum/Galvanized Steel Wires applied helically over the bedding as per IEC 60502 or as per BS 5467, BS 6346. Single core cables shall be Aluminium wire armour. Aluminum/Steel Tapes applied helically over the bedding of multi-core cables as per IEC 60502.
- Outer Sheath** Outer sheath shall be of Extruded PVC Type ST2 as per IEC 60502-1 or Type 9 as BS 6346/5467.  
Special type of PVC sheathing material such as Fire Retardant PVC, Anti-Termite PVC, Anti-Rodent PVC, Sunlight resistant PVC, Oil Resistant PVC are available on special request. Also, special sheathing materials such as LLDPE, MDPE, HDPE, LSF, CPE are available on request.
- Fire Performance of Cable Sheaths** Cables can be supplied with special flame retardant PVC outer sheath to comply with the flame test requirements of IEC 60332-3-22, IEC 60332-3-23 and IEC 60332-3-24, can also supply cables with Low Smoke Halogen Free (LSHF) material according to IEC 60502-1, BS 7211, BS 6724 or other equivalent standards.

### Cable Parameters:

#### Single core(unarmoured)

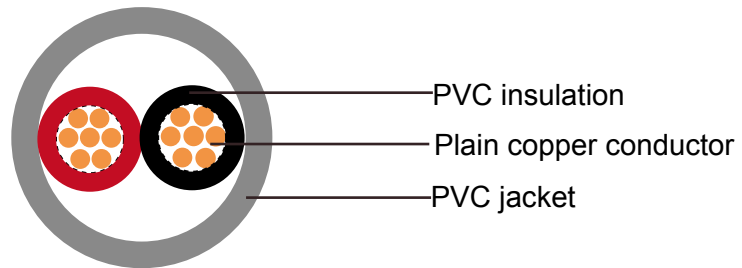


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
1x4	2.6	1	1.4	7.5	95
1x6	3.1	1	1.4	8	120
1x10	4	1	1.4	9	165
1x16	5	1	1.4	10	230
1x25	6.3	1.2	1.4	12	340
1x35	7.4	1.2	1.4	13	450
1x50	8.8	1.4	1.4	14.5	570
1x70	10.6	1.4	1.4	16	800



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
1x95	12.4	1.6	1.5	18.5	1070
1x120	14	1.6	1.5	20	1300
1x150	15.5	1.8	1.6	22	1600
1x185	17.4	2	1.7	24	1980
1x240	20.3	2.2	1.7	27	2560
1x300	22.7	2.4	1.8	30	3180
1x400	25.4	2.6	1.9	33	4060
1x500	28.8	2.8	2	37	5140
1x630	30.4	2.8	2.2	42	6600

### Two cores(unarmoured)

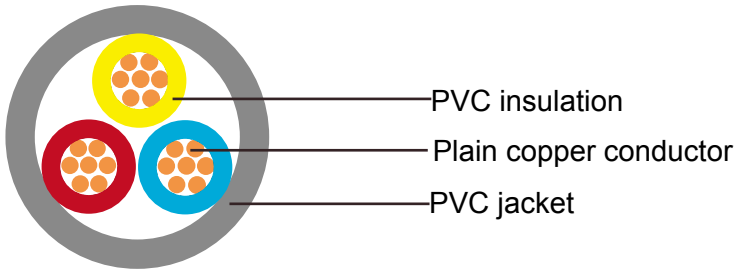


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
2x1.5	1.6	0.8	1.8	12	205
2x2.5	2	0.8	1.8	13	250
2x4	2.6	1	1.8	15	330
2x6	3.1	1	1.8	16	400
2x10	4	1	1.8	17.5	525
2x16	5	1	1.8	20	720
2x25	6.3	1.2	1.8	23.5	1030
2x35	7.4	1.2	1.8	25.5	1320
2x50	8.8	1.4	1.8	28.5	1670
2x70	10.6	1.4	1.8	32	2290
2x95	12.4	1.6	1.9	37	3060
2x120	14	1.6	2	40	3700
2x150	15.5	1.8	2.2	44	4500
2x185	17.4	2	2.3	48	5570
2x240	20.3	2.2	2.5	55	7180



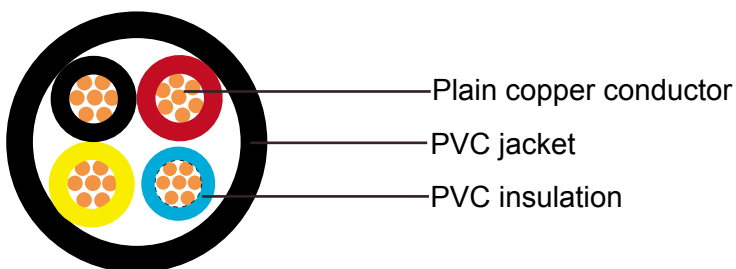


### Three cores(unarmoured)



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
3x1.5	1.6	0.8	1.8	13	230
3x2.5	2	0.8	1.8	13.5	280
3x4	2.6	1	1.8	15.5	380
3x6	3.1	1	1.8	17	470
3x10	4	1	1.8	18.5	630
3x16	5	1	1.8	21	880
3x25	6.3	1.2	1.8	24.5	1280
3x35	7.4	1.2	1.8	27	1660
3x50	8.8	1.4	1.8	30	2110
3x70	10.6	1.4	1.9	35	2980
3x95	12.4	1.6	2	40	3930
3x120	14	1.6	2.1	43	4780
3x150	15.5	1.8	2.3	48	5880
3x185	17.4	2	2.4	52	7230
3x240	20.3	2.2	2.6	59	9390
3x300	22.7	2.4	2.7	65	11620
3x400	25.4	2.6	3.0	72	14730

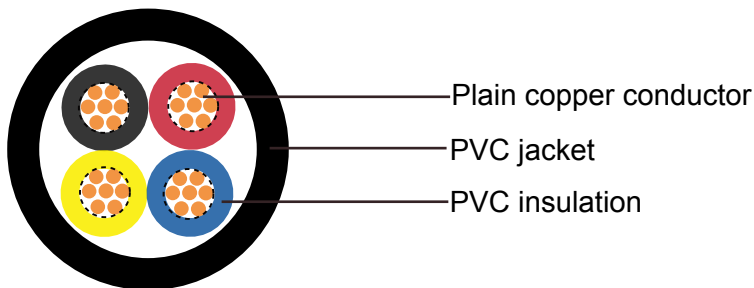
### Three cores+1(unarmoured)





Nominal Cross Section	Diameter of Conductor (Approx.)		Nominal Insulation Thickness		Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
	mm <sup>2</sup>	(3)mm	(1)mm	(3)mm			
3x 16/10	5	4	1	1	1.8	22	1000
3x 25/16	6.3	5	1.2	1	1.8	26	1460
3x 35/16	7.4	5	1.2	1	1.8	28	1830
3x 50/25	8.8	6.3	1.4	1.2	1.8	32	2410
3x 70/35	10.6	7.4	1.4	1.2	1.9	36	3360
3x 95/50	12.4	8.8	1.6	1.4	2.1	41	4440
3x120/70	14	10.6	1.6	1.4	2.2	46	5580
3x150/70	15.5	10.6	1.4	1.2	2.3	49	6580
3x185/95	17.4	12.4	1.6	1.4	2.5	54	8200
3x240/120	20.3	14	1.6	1.4	2.6	61	10570
3x300/150	22.7	15.5	1.8	1.6	2.8	67	13020
3x400/185	25.4	17.4	2	1.6	3.1	75	16560

### Four cores(unarmoured)

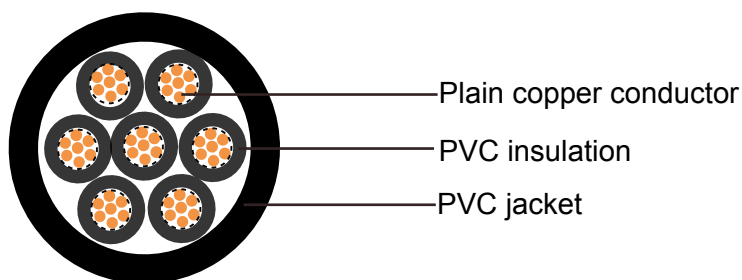


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
4x1.5	1.6	0.8	1.8	13.5	265
4x2.5	2	0.8	1.8	14.5	325
4x4	2.6	1	1.8	16.5	450
4x6	3.1	1	1.8	18	560
4x10	4	1	1.8	20	770
4x16	5	1	1.8	23	1080
4x25	6.3	1.2	1.8	26.5	1580
4x35	7.4	1.2	1.8	29.5	2070
4x50	8.8	1.4	1.8	34	2680



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
4x70	10.6	1.4	2	38	3760
4x95	12.4	1.6	2.1	44	4960
4x120	14	1.6	2.3	48	6110
4x150	15.5	1.8	2.4	53	7450
4x185	17.4	2	2.6	58	9220
4x240	20.3	2.2	2.8	65	11900
4x300	22.7	2.4	3	72	14730
4x400	25.4	2.6	3.3	81	18830

### Multi-cores(unarmoured)

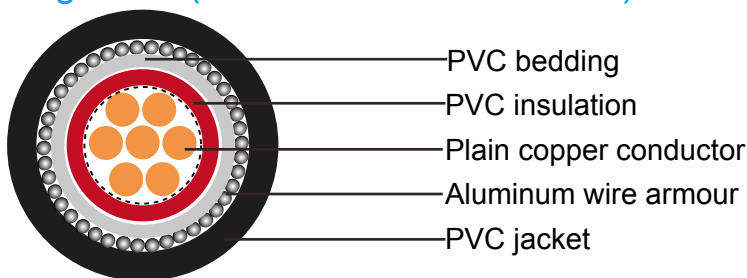


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
5x1.5	1.6	0.8	1.8	14.5	300
7x1.5	1.6	0.8	1.8	15.5	360
10x1.5	1.6	0.8	1.8	19	460
12x1.5	1.6	0.8	1.8	19.5	510
14x1.5	1.6	0.8	1.8	20	570
19x1.5	1.6	0.8	1.8	22	710
21x1.5	1.6	0.8	1.8	23	770
24x1.5	1.6	0.8	1.8	25	870
30x1.5	1.6	0.8	1.8	26	1020
40x1.5	1.6	0.8	1.8	29	1290
48x1.5	1.6	0.8	1.8	32	1520
61x1.5	1.6	0.8	1.8	35	1900
5x2.5	2	0.8	1.8	16	375
7x2.5	2	0.8	1.8	17	460
10x2.5	2	0.8	1.8	20	590



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
12x2.5	2	0.8	1.8	21	660
14x2.5	2	0.8	1.8	22	740
19x2.5	2	0.8	1.8	24	940
21x2.5	2	0.8	1.8	25	1030
24x2.5	2	0.8	1.8	27	1150
30x2.5	2	0.8	1.8	29	1370
40x2.5	2	0.8	1.8	32	1810
48x2.5	2	0.8	1.8	36	2130
61x2.5	2	0.8	1.8	39	2630

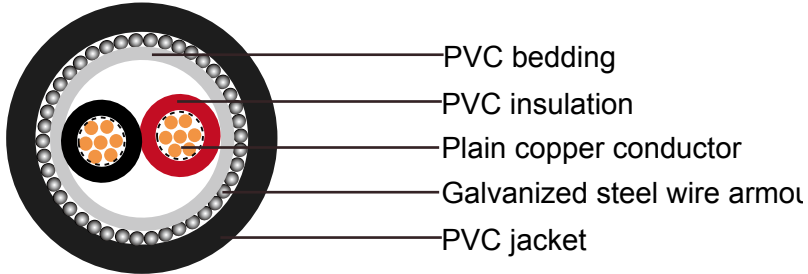
### Single core( aluminum wire armoured)



Nominal Area	Approx conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Alum Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
1x10	4	1	1	0.8	1.8	14	300
1x16	5	1	1	0.8	1.8	15	375
1x25	6.3	1.2	1	0.8	1.8	16	500
1x35	7.4	1.2	1	0.8	1.8	18	625
1x50	8.8	1.4	1	1.25	1.8	20	835
1x70	10.6	1.4	1	1.25	1.8	22	1075
1x95	12.4	1.6	1	1.25	1.8	24	1385
1x120	14	1.6	1	1.6	1.8	26	1700
1x150	15.5	1.8	1	1.6	1.8	28	2025
1x185	17.4	2	1	1.6	1.8	31	2450
1x240	20.3	2.2	1	1.6	1.9	34	3100
1x300	22.7	2.4	1	2	2	38	3900
1x400	25.4	2.6	1.2	2	2.1	42	4875
1x500	28.8	2.8	1.2	2	2.2	45	6050
1x630	30.4	2.8	1.2	2	2.4	50	7625

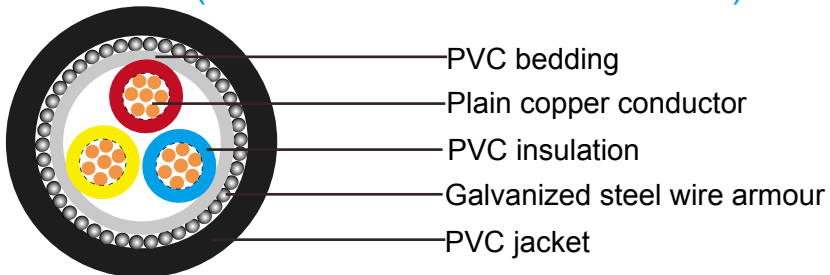


### Two cores(Galvanized steel wire armoured)



Nominal Area	Approx conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
2x2.5	2	0.8	1	0.8	1.8	15	425
2x4	2.6	1	1	0.8	1.8	17	525
2x6	3.1	1	1	1.25	1.8	19	775
2x10	4	1	1	1.25	1.8	20	825
2x16	5	1	1	1.25	1.8	21	950
2x25	6.3	1	1	1.25	1.8	23	1150
2x35	7.4	1.2	1	1.6	1.8	27	1700
2x2.5	2	1.2	1	1.6	1.8	29	2050

### Three cores(Galvanized steel wire armoured)

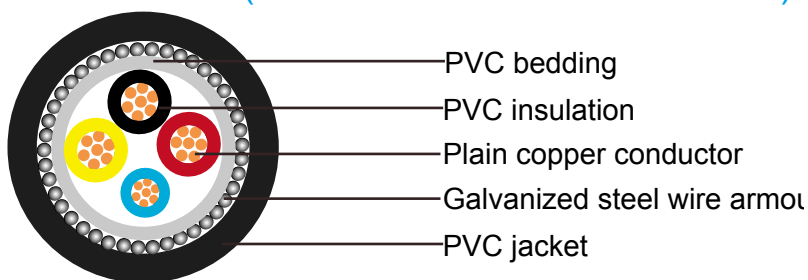


Nominal Area	Approx conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
3x2.5 rm	2	0.8	1.2	0.8	1.8	16	465
3x4 re	2.3	1	1.2	1.25	1.8	18	685
3x4 rm	2.6	1	1.2	1.25	1.8	19	725
3x6 re	2.8	1	1.2	1.25	1.8	19	800
3x6 rm	3.1	1	1.2	1.25	1.8	20	850
3x10 re	3.6	1	1.2	1.25	1.8	21	1000
3x10 rm	4	1	1.2	1.25	1.8	22	1050
3x16 rm	5	1	1.2	1.25	1.8	24	1350
3x25 rm	6.3	1.2	1.2	1.6	1.8	29	1975
3x35 rm	7.4	1.2	1.2	1.6	1.8	31	2300



Nominal Area	Approx Conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
3x50 sm	-	1.4	1.2	1.6	2	32	2675
3x70 sm	-	1.4	1.2	2	2.1	36	3700
3x95 sm	-	1.6	1.2	2	2.2	41	4750
3x120 sm	-	1.6	1.2	2	2.3	44	5575
3x150 sm	-	1.8	1.4	2.5	2.5	49	7150
3x185 sm	-	2	1.4	2.5	2.7	53	8550
3x240 sm	-	2.2	1.5	2.5	2.9	59	10700
3x300 sm	-	2.4	1.6	2.5	3.1	65	12925
3x400 sm	-	2.6	1.6	3.15	3.4	74	16900
3x500 sm	-	2.8	1.8	3.15	3.6	81	20650

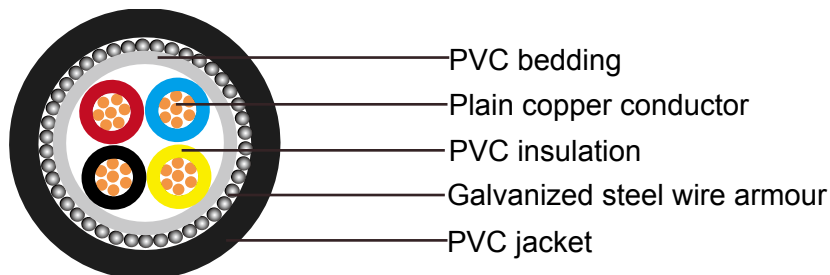
### Three cores+1(Galvanized steel wire armoured)



Nominal Area	Approx Conductor Diameter		Nominal Insulation thick-ness		Nominal bedding thick-ness	Nominal Steel Wire dia.	Nominal Sheath thick-ness	Approx. Overall Diameter	Approx. Weight
	mm	mm	mm	mm					
3x10 rm+6	4	3.1	1	1	1.2	1.25	1.8	23	1175
3x16 rm+10	5	4	1	1	1.2	1.6	1.8	26	1650
3x25 rm+16	6.3	5	1.2	1	1.2	1.6	1.8	30	2200
3x35 sm+16	-	5	1.2	1	1.2	1.6	1.9	30	2375
3x50 sm+25	-	6.3	1.4	1.2	1.2	2	2	35	3275
3x70 sm+35	-	7.4	1.4	1.2	1.2	2	2.1	39	4200
3x95 sm+50	-	8.8	1.6	1.4	1.2	2	2.3	44	5425
3x120 sm+70	-	10.6	1.6	1.4	1.2	2.5	2.5	48	6950
3x150 sm+70	-	10.6	1.8	1.4	1.4	2.5	2.6	52	8100
3x185 sm+95	-	12.4	2	1.6	1.4	2.5	2.7	57	9775
3x240 sm+120	-	14	2.2	1.6	1.5	2.5	2.9	63	12250
3x300 sm+150	-	15.5	2.4	1.8	1.6	2.5	3.1	70	14775
3x400 sm+185	-	17.4	2.6	2	1.6	0.3	3.5	79	19250
3x500 sm+240	-	20.3	2.8	2.2	1.8	3.15	3.7	85	23625

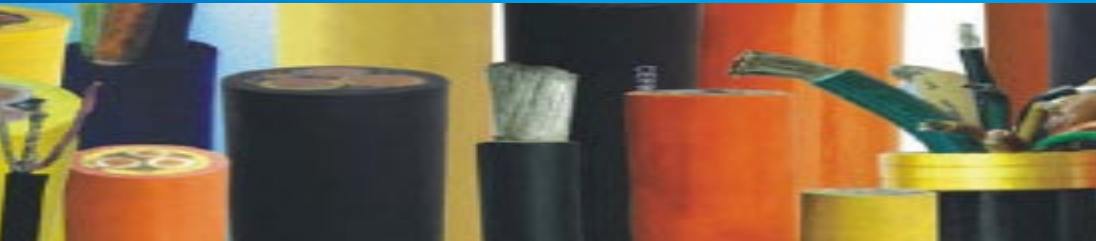


### Four cores(Galvanized steel wire armoured)



Nominal Area	Approx conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
4x4 re	2.3	1	1	1.25	1.8	19	790
4x4 rm	2.6	1	1	1.25	1.8	20	825
4x6 re	2.8	1	1	1.25	1.8	21	925
4x6 rm	3.1	1	1	1.25	1.8	21	975
4x10 re	3.6	1	1	1.25	1.8	23	1175
4x10 rm	4	1	1	1.25	1.8	24	1250
4x16 rm	5	1	1	1.6	1.8	27	1750
4x25 rm	6.3	1.2	1	1.6	1.8	31	2375
4x35 sm	-	1.2	1	1.6	1.9	31	2600
4x50 sm	-	1.4	1	2	2.1	37	3625
4x70 sm	-	1.4	1.2	2	2.2	40	4575
4x95 sm	-	1.6	1.2	2.5	2.4	46	6350
4x120 sm	-	1.6	1.4	2.5	2.5	50	7525
4x150 sm	-	1.8	1.4	2.5	2.7	55	8950
4x185 sm	-	2	1.4	2.5	2.9	60	10650
4x240 sm	-	2.2	1.6	2.5	3.1	66	13575
4x300 sm	-	2.4	1.6	2.5	3.3	73	16425
4x400 sm	-	2.6	1.8	3.15	3.6	83	21500
4x500 sm	-	2.8	2	3.15	3.9	91	26500

## 600/1000V, XLPE Insulated Cables according to IEC 60502-1



- Single core(unarmoured)
- Two core(unarmoured)
- Three core(unarmoured)
- Three core +1(unarmoured)
- Four core(unarmoured)
- Multi- core(unarmoured)
- Single core(armoured)
- Two core(armoured)
- Three core(armoured)
- Three core +1(armoured)
- Four core(armoured)





# 600/1000V, XLPE Insulated Cables according to IEC 60502-1

## Application:

These cables are used for electricity supply in low voltage installation system, They are suitable for installation in indoors and outdoors, in cable ducts, under ground, in power and switching stations, local energy distributions, industrial plants, where there is no risk of mechanical damage.

## Construction:

**Conductors** Copper or Aluminium conductor, round stranded or Shaped, Class 2 to IEC 60228, BS EN 60228. For smaller sizes, a solid round conductor, Class 1 as per IEC 60228, BS EN 60228 can also be supplied upon request.

**Insulation** XLPE material and thickness shall be as per IEC 60502 or BS 5467 rated for 90°C continuous operation.

**Colour Code** Colour Code (1) :

1 Core :	Red or Black
2 Cores :	Red, Black
3 Cores :	Red, Yellow, Blue
4 Cores :	Red, Yellow, Blue, Black
5 Cores :	Red, Yellow, Blue, Black, Green
Above 5 Cores :	Black Cores with White numerals

Colour Code (2) :

1 Core :	Brown or Blue
2 Cores :	Brown or Blue
3 Cores :	Brown, Black, Grey
4 Cores :	Blue, Brown, Black, Grey
5 Cores :	Green/Yellow, Blue, Brown, Black, Grey
Above 5 Cores :	Black Cores with White numerals

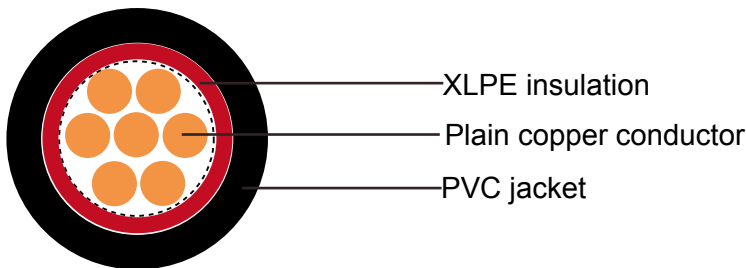
**Assembly / Inner Sheath** Two, Three or Four insulated conductors are laid-up together with non-hygroscopic fillers and the assembly is bedded with an extruded layer of PVC. In case of non-armoured cables, this layer may be omitted



- Armour** Aluminum/Galvanized Steel Wires applied helically over the bedding as per IEC 60502 or as per BS 5467, BS 6346. Single core cables shall be Aluminium wire armour.  
Aluminum/Steel Tapes applied helically over the bedding of multi-core cables as per IEC 60502.
- Outer Sheath** Outer sheath shall be of Extruded PVC Type ST2 as per IEC 60502-1 or Type 9 as BS 6346/5467.  
Special type of PVC sheathing material such as Fire Retardant PVC, Anti-Termite PVC, Anti-Rodent PVC, Sunlight resistant PVC, Oil Resistant PVC are available on special request. Also, special sheathing materials such as LLDPE, MDPE, HDPE, LSF, CPE are available on request.
- Fire Performance of Cable Sheaths** Cables can be supplied with special flame retardant PVC outer sheath to comply with the flame test requirements of IEC 60332-3-22, IEC 60332-3-23 and IEC 60332-3-24, can also supply cables with Low Smoke Halogen Free (LSHF) material according to IEC 60502-1, BS 7211, BS 6724 or other equivalent standards.

### Cable Parameters:

#### Single core(unarmoured)

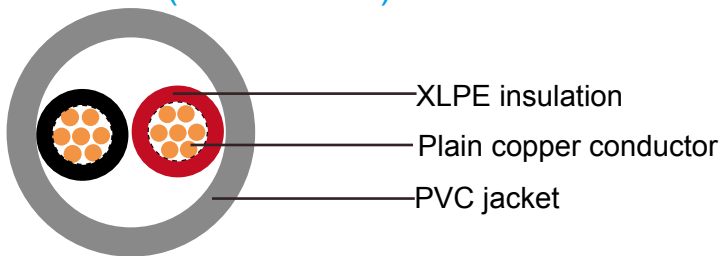


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
1x1.5	1.6	0.7	1.4	6	50
1x2.5	2	0.7	1.4	6.5	70
1x4	2.6	0.7	1.4	7	80
1x6	3.1	0.7	1.4	7.5	110
1x10	4	0.7	1.4	8.5	150
1x16	5	0.7	1.4	9.5	215
1x25	6.3	0.9	1.4	11.5	315
1x35	7.4	0.9	1.4	12	415
1x50	8.8	1	1.4	13	555
1x70	10.6	1.1	1.4	15	760
1x95	12.4	1.1	1.5	17	1025



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
1x120	14	1.2	1.5	18.5	1270
1x150	15.5	1.4	1.6	21.5	1575
1x185	17.4	1.6	1.6	23	1955
1x240	20.3	1.7	1.7	26	2470
1x300	22.7	1.8	1.8	28	3155
1x400	25.4	2	1.9	32	4049
1x500	28.8	2.2	2	36	5100
1x630	30.4	2.4	2.2	40	6410
1x800	□	2.6	2.3	47	8200
1x1000	□	2.8	2.4	52	10210

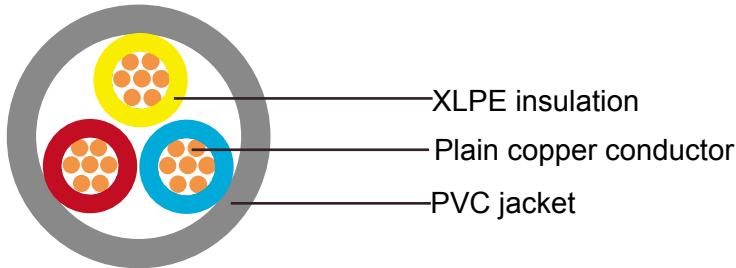
### Two cores(unarmoured)



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
2x1.5	1.6	0.7	1.8	10	125
2x2.5	2	0.7	1.8	11.5	155
2x4	2.6	0.7	1.8	12.5	195
2x6	3.1	0.7	1.8	13.5	255
2x10	4	0.7	1.8	15.5	370
2x16	5	0.7	1.8	17	500
2x25	6.3	0.9	1.8	20	700
2x35	7.4	0.9	1.8	22	900
2x50	8.8	1	1.8	25	1250
2x70	10.6	1.1	1.8	29	1600
2x95	12.4	1.1	1.9	32	2250
2x120	14	1.2	2	36	2750
2x150	15.5	1.4	2.2	40	3510
2x185	17.4	1.6	2.3	44	4200
2x240	20.3	1.7	2.5	50	5500
2x300	22.5	1.8	2.6	55	6950
2x400	25.4	2	2.9	60	8400

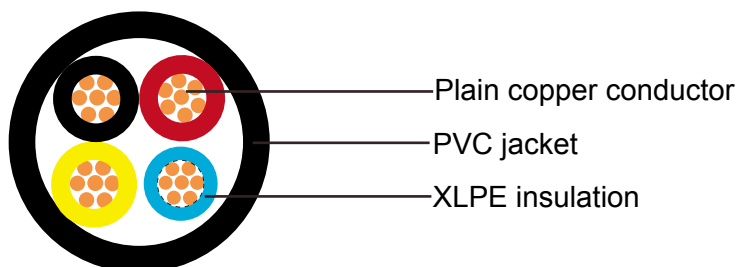


### Three cores(unarmoured)



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
3x1.5	1.6	0.7	1.8	10.5	150
3x2.5	2	0.7	1.8	11	190
3x4	2.6	0.7	1.8	12.5	250
3x6	3.1	0.7	1.8	14.5	320
3x10	4	0.7	1.8	15.5	465
3x16	5	0.7	1.8	18.5	670
3x25	6.3	0.9	1.8	19.5	965
3x35	7.4	0.9	1.8	22	1290
3x50	8.8	1	1.8	26	1750
3x70	10.6	1.1	1.9	28.5	2450
3x95	12.4	1.1	2	32.5	3200
3x120	14	1.2	2.1	35.5	4010
3x150	15.5	1.4	2.3	40	5050
3x185	17.4	1.6	2.4	44.5	6105
3x240	20.3	1.7	2.6	54	8050
3x300	22.5	1.8	2.7	60.5	9998
3x400	25.4	2	3	66	13210

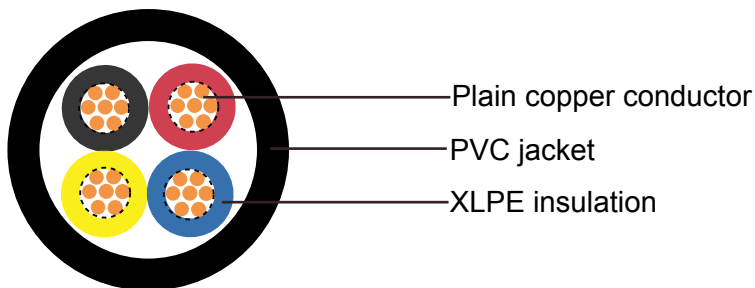
### Three cores+1(unarmoured)





Nominal Cross Section	Diameter of Conductor (Approx.)		Nominal Insulation Thickness		Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
	mm <sup>2</sup>	(3)mm	(1)mm	(3)mm	(1)mm	mm	mm
3x 16/10	5	4	0.7	0.7	1.8	20	825
3x 25/16	6.3	5	0.9	0.7	1.8	22.8	1235
3x 35/16	7.4	5	0.9	0.7	1.8	24.8	1565
3x 50/25	8.8	6.3	1	0.9	1.8	28.5	2220
3x 70/35	10.6	7.4	1.1	0.9	1.9	32	2925
3x 95/50	12.4	8.8	1.1	1	2.1	37.5	3525
3x120/70	14	10.6	1.2	1.1	2.2	41.5	4940
3x150/70	15.5	10.6	1.4	1.1	2.3	45	6250
3x185/95	17.4	12.4	1.6	1.1	2.5	50.5	7450
3x240/120	20.3	14	1.7	1.2	2.6	56	9500
3x300/150	22.7	15.5	1.8	1.4	2.8	64.5	12100
3x400/185	25.4	17.4	2	1.6	3.1	70	18900

### Four cores(unarmoured)

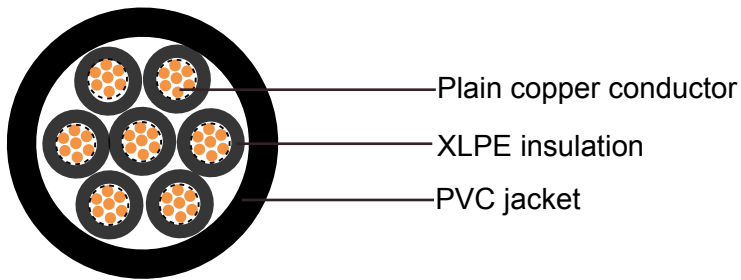


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
4x1.5	1.6	0.7	1.8	11	170
4x2.5	2	0.7	1.8	12	230
4x4	2.6	0.7	1.8	14	305
4x6	3.1	0.7	1.8	15.5	400
4x10	4	0.7	1.8	18	585
4x16	5	0.7	1.8	20	835
4x25	6.3	0.9	1.8	22	1210
4x35	7.4	0.9	1.8	24.5	1670
4x50	8.8	1	1.8	26.5	2250
4x70	10.6	1.1	2	32	3015
4x95	12.4	1.1	2.1	36.5	4085



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
4x120	14	1.2	2.3	40.5	5320
4x150	15.5	1.4	2.4	44.5	6510
4x185	17.4	1.6	2.6	51	8050
4x240	20.3	1.7	2.8	58.5	10520
4x300	22.7	1.8	3	64.5	13130
4x400	25.4	2	3.3	73.5	16850

### Multi-cores(unarmoured)

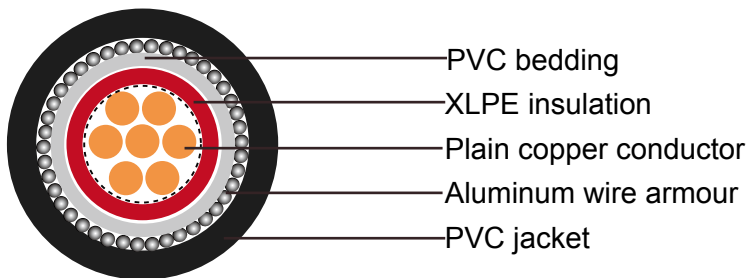


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
5x1.5	1.6	0.7	1.4	14	260
7x1.5	1.6	0.7	1.4	15	310
10x1.5	1.6	0.7	1.4	18	395
12x1.5	1.6	0.7	1.4	18.5	440
14x1.5	1.6	0.7	1.4	19	485
19x1.5	1.6	0.7	1.4	21	600
21x1.5	1.6	0.7	1.4	22	650
24x1.5	1.6	0.7	1.4	24	730
30x1.5	1.6	0.7	1.4	25	860
40x1.5	1.6	0.7	1.4	28	1080
48x1.5	1.6	0.7	1.4	30	1250
61x1.5	1.6	0.7	1.4	33	1570
5x2.5	2	0.7	1.4	15	330
7x2.5	2	0.7	1.4	16	400
10x2.5	2	0.7	1.4	19.5	515
12x2.5	2	0.7	1.4	20	580
14x2.5	2	0.7	1.4	21	650



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	Kg/Km
19x2.5	2	0.7	1.4	23	810
21x2.5	2	0.7	1.4	24	890
24x2.5	2	0.7	1.4	26	1000
30x2.5	2	0.7	1.4	28	1190
40x2.5	2	0.7	1.4	31	1525
48x2.5	2	0.7	1.4	34	1820
61x2.5	2	0.7	1.4	37	2240

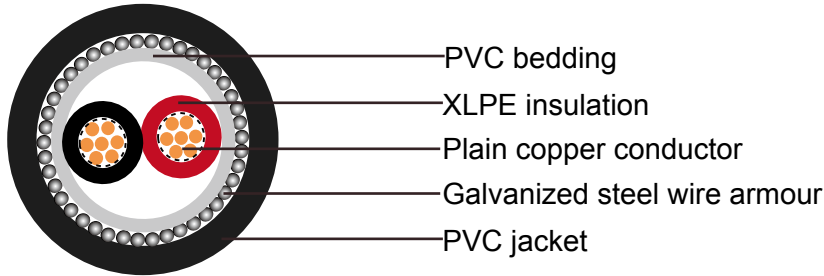
### Single core( aluminum wire armoured)



Nominal Area	Approx Conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Alum Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
1x50	8.8	1	1	1.25	1.8	19.5	730
1x70	10.6	1.1	1	1.25	1.8	21.5	970
1x95	12.4	1.1	1	1.6	1.8	24	1220
1x120	14	1.2	1	1.6	1.8	25.5	1520
1x150	15.5	1.4	1	1.6	1.8	27.5	1920
1x185	17.4	1.6	1	1.6	1.8	30	2320
1x240	20.3	1.7	1	1.6	1.9	33	2920
1x300	22.7	1.8	1	1.6	1.9	35	3650
1x400	25.4	2	1.2	2	2.1	40.5	4670
1x500	28.8	2.2	1.2	2	2.2	44.5	5870
1x630	30.4	2.4	1.2	2	2.3	49	7360
1x800	□	2.6	1.4	2.5	2.5	55.5	9360
1x1000	□	2.8	1.4	2.5	2.7	61	11350

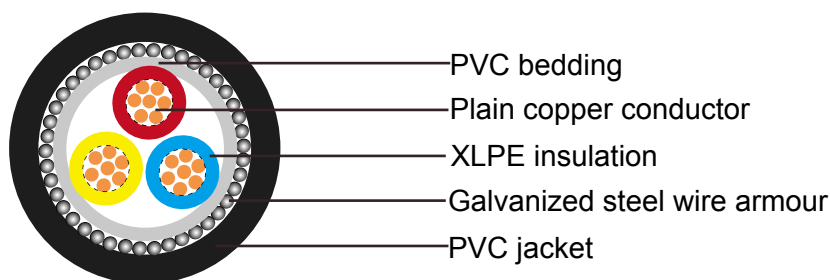


### Two cores(Galvanized steel wire armoured)



Nominal Area	Approx Conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
2x1.5	1.6	0.7	1	0.9	1.8	13.5	360
2x2.5	2	0.7	1	0.9	1.8	14.5	405
2x4	2.6	0.7	1	0.9	1.8	15.8	470
2x6	3.1	0.7	1	0.9	1.8	17	505
2x10	4	0.7	1	1.25	1.8	19.3	900
2x16	5	0.7	1	1.25	1.8	21.2	950
2x25	6.3	0.9	1	1.6	1.8	24	1205
2x35	7.4	0.9	1	1.6	1.8	24.8	1800
2x50	8.8	1	1	1.6	1.8	26	1850
2x70	10.6	1.1	1	2	2	29	2335
2x95	12.4	1.1	1.2	2	2.1	33.2	3165
2x120	14	1.2	1.2	2	2.3	36.1	3750
2x150	15.5	1.4	1.2	2.5	2.3	39.3	4410
2x185	17.4	1.6	1.3	2.5	2.5	44.8	5710
2x240	20.3	1.7	1.4	2.5	2.7	53.5	7150
2x300	22.5	1.8	1.5	2.5	2.9	58	8565
2x400	25.4	2	1.6	2.5	3.1	63	10695

### Three cores(Galvanized steel wire armoured)

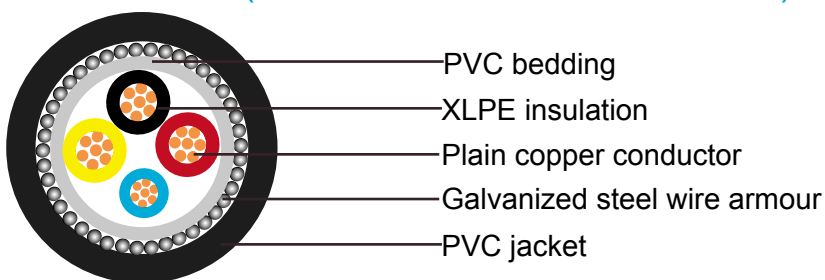






Nominal Area	Approx Conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
3x1.5	1.6	0.7	1.2	0.9	1.8	15	380
3x2.5	2	0.7	1.2	0.9	1.8	15.5	400
3x4	2.6	0.7	1.2	0.9	1.8	16.5	460
3x6	3.1	0.7	1.2	0.9	1.8	18	540
3x10	4	0.7	1.2	0.9	1.8	19.5	750
3x16	5	0.7	1.2	1.25	1.8	22.5	1000
3x25	6.3	0.9	1.2	1.6	1.8	26	1510
3x35	7.4	0.9	1.2	1.6	1.8	28	1950
3x50	8.8	1	1.2	1.6	1.9	32	2350
3x70	10.6	1.1	1.2	2	2	35	3230
3x95	12.4	1.1	1.2	2	2.1	39	4050
3x120	14	1.2	1.2	2	2.3	43	5230
3x150	15.5	1.4	1.4	2.5	2.4	47	6750
3x185	17.4	1.6	1.4	2.5	2.6	52	8230
3x240	20.3	1.7	1.5	2.5	2.7	59	10510
3x300	22.5	1.8	1.6	2.5	2.9	64	13210
3x400	25.4	2	1.6	2.5	3.2	74	16100

### Three cores+1(Galvanized steel wire armoured)

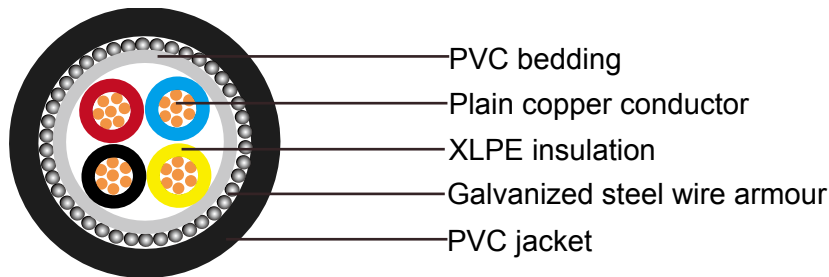


Nominal Area	Approx Conductor Diameter		Nominal Insulation thickness		Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
	(3) mm	(1) mm	(3) mm	(1) mm					
3x 16/10	5	4	0.7	0.7	1	1.6	1.8	25.5	1550
3x 25/16	6.3	5	0.9	0.7	1	1.6	1.8	27.5	2010
3x 35/16	7.4	5	0.9	0.7	1	1.6	1.8	29	2375
3x 50/25	8.8	6.3	1	0.9	1	1.6	2	33	3100
3x 70/35	10.6	7.4	1.1	0.9	1.2	2	2.1	38	4290
3x 95/50	12.4	8.8	1.1	1	1.2	2	2.3	43.5	5540



Nominal Area	Approx Conductor Diameter		Nominal Insulation thickness		Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
	mm <sup>2</sup>	(3) mm	(1) mm	(3) mm					
3x120/70	14	10.6	1.2	1.1	1.2	2	2.4	49	7150
3x150/70	15.5	10.6	1.4	1.1	1.4	2.5	2.5	52	8330
3x185/95	17.4	12.4	1.6	1.1	1.4	2.5	2.7	57.2	10110
3x240/120	20.3	14	1.7	1.2	1.6	2.5	3	64	12740
3x300/150	22.7	15.5	1.8	1.4	1.6	2.5	3	69.8	15430
3x400/185	25.4	17.4	2	1.6	1.6	3.15	3.3	78.6	19990

### Four cores(Galvanized steel wire armoured)



Nominal Area	Approx Conductor Diameter	Nominal Insulation thickness	Nominal bedding thickness	Nominal Steel Wire dia.	Nominal Sheath thickness	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	Kg/Km
4x1.5	1.6	0.7	1	0.9	1.8	15	415
4x2.5	2	0.7	1	0.9	1.8	17.5	490
4x4	2.6	0.7	1	0.9	1.8	19	600
4x6	3.1	0.7	1	0.9	1.8	20	730
4x10	4	0.7	1	1.25	1.8	23	970
4x16	5	0.7	1	1.6	1.8	26	1520
4x25	6.3	0.9	1	1.6	1.8	29	2010
4x35	7.4	0.9	1	1.6	1.9	31	2560
4x50	8.8	1	1	1.6	2.1	36	3350
4x70	10.6	1.1	1.2	2	2.2	40	4680
4x95	12.4	1.1	1.2	2	2.4	44	5710
4x120	14	1.2	1.4	2.5	2.5	50	7500
4x150	15.5	1.4	1.4	2.5	2.6	55	9010
4x185	17.4	1.6	1.4	2.5	2.8	61	10820
4x240	20.3	1.7	1.6	2.5	3.1	69	13630
4x300	22.7	1.8	1.6	2.5	3.2	75	16820
4x400	25.4	2	1.8	3.15	3.4	83	22230

## 600/1000V, XLPE Insulated and Lead Sheathed Cables according to IEC 60502-1



Single core(unarmoured)

Two core(unarmoured)

Three core(unarmoured)

Three core +1(unarmoured)

Four core(unarmoured)

Single core(armoured)

Two core(armoured)

Three core(armoured)

Three core +1(armoured)

Four core(armoured)



# 600/1000V, XLPE Insulated and Lead Sheathed Cables according to IEC 60502-1

## Application:

These cables are used for electricity supply in low voltage installation system, They are suitable for installation in indoors and outdoors, in cable ducts, under ground, in power and switching stations, local energy distributions, industrial plants, where there is no risk of mechanical damage. The lead sheath brings an enhanced resistance to aromatic hydrocarbons.

## Construction

**Conductors** Conductors shall be Round Stranded (Non-compacted or Compacted) or shaped, Class 2 as per IEC 60228. For smaller sizes up to and including 4 mm<sup>2</sup>, Solid Conductors, Class 1 to IEC 60228 can also be provided based on special request.

**Insulation** XLPE Insulation material and thickness shall be as per IEC 60502-1 rated for 90°C continuous operation.

PVC Insulation material and thickness shall be as per IEC 60502-1 and BS 6346. PVC material shall be Type A as per IEC 60502-1 or T11 as per BS 6346.

PVC Insulation material as per SASO 1694 rated for 85°C continuous operation is also available upon special request.

**Colour Code** Colour Code (1) :

1 Core :	Red or Black
2 Cores :	Red, Black
3 Cores :	Red, Yellow, Blue
4 Cores :	Red, Yellow, Blue, Black
5 Cores :	Red, Yellow, Blue, Black, Green
Above 5 Cores :	Black Cores with White numerals

Colour Code (2) :

1 Core :	Brown or Blue
2 Cores :	Brown or Blue
3 Cores :	Brown, Black, Grey
4 Cores :	Blue, Brown, Black, Grey
5 Cores :	Green/Yellow, Blue, Brown, Black, Grey
Above 5 Cores :	Black Cores with White numerals



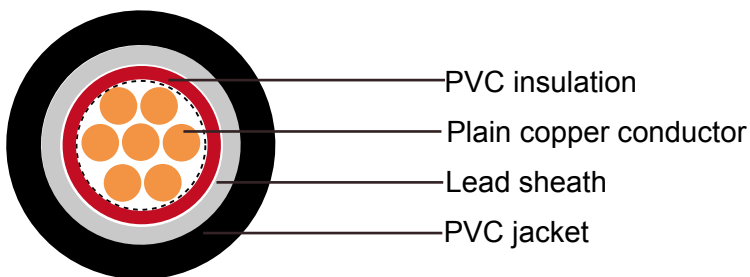
## XLPE Insulation with Lead Sheath

### IEC60502-1

- Assembly / Inner Sheath** Two, Three or Four insulated conductors are laid-up together with non-hygroscopic fillers compatible with the insulation material and the assembly is bedded with an extruded layer of PVC.
- Lead Sheath** Extruded lead Alloy Type "E" to BS 12548. Thickness of lead shall be as per IEC 60502-1. Cables with other thickness of Lead Sheath can also be provided based on specific request.
- Armour** Galvanized Steel Wires in accordance with IEC 60502-1 or BS 6346 or BS 5467 laid helically over PVC bedding as per requirement.  
Galvanized Steel Tapes applied helically over PVC bedding in accordance with IEC 60502-1
- Outer Sheath** Outer sheath shall be of Extruded PVC Type ST2 as per IEC 60502-1 or Type 9 as BS 6346/5467.  
Special type of PVC sheathing material such as Fire Retardant PVC, Anti-Termite PVC, Anti-Rodent PVC, Sunlight resistant PVC, Oil Resistant PVC are available on special request. Also, special sheathing materials such as LLDPE, MDPE, HDPE, LSF, CPE are available on request.

## Cable Parameters:

### Single core(unarmoured)

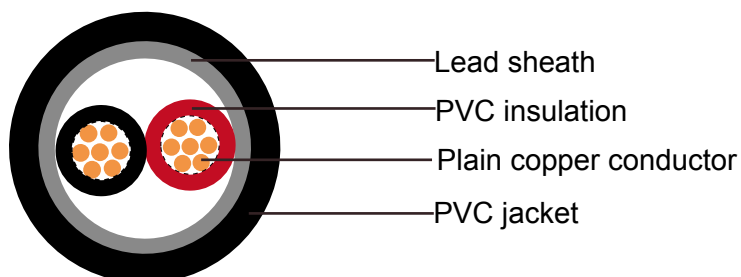


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km
1x10 rm	4	0.7	1.2	1.4	16	715
1x16 rm	5	0.7	1.2	1.4	17	825
1x25 rm	6.3	0.9	1.2	1.4	19	1025
1x35 rm	7.4	0.9	1.2	1.4	20	1150
1x50 rm	8.8	1	1.2	1.4	21	1350
1x70 rm	10.6	1.1	1.2	1.5	23	1675



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km
1x95 rm	12.4	1.1	1.2	1.5	25	2025
1x120 rm	14	1.2	1.2	1.6	27	2425
1x150 rm	15.5	1.4	1.3	1.7	29	2800
1x185 rm	17.4	1.6	1.4	1.7	31	3400
1x240 rm	20.3	1.7	1.4	1.8	35	4250
1x300 rm	22.7	1.8	1.5	1.9	37	5000
1x400 rm	25.4	2	1.6	2	42	6250
1x500 rm	28.8	2.2	1.7	2.2	46	7725
1x630 rm	30.4	2.4	1.8	2.3	48	9275

### Two cores(unarmoured)



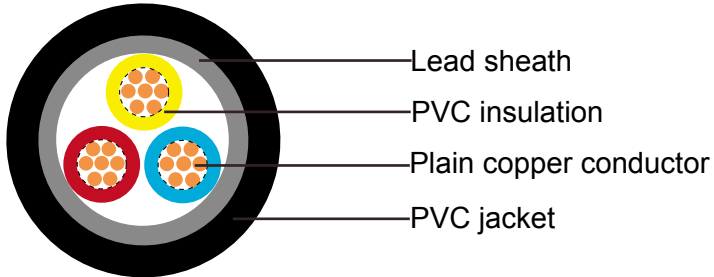
Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km
2x2.5 rm	2	0.7	1.2	1.8	18	825
2x4 rm	2.6	0.7	1.2	1.8	19	925
2x6 rm	3.1	0.7	1.2	1.8	20	1025
2x10 rm	4	0.7	1.2	1.8	22	1225
2x16 rm	5	0.7	1.2	1.8	24	1500
2x25 rm	6.3	0.9	1.2	1.8	27	1925
2x35 rm	7.4	0.9	1.2	1.8	29	2300
2x50 rm	8.8	1	1.3	1.8	33	2875



## XLPE Insulation with Lead Sheath

**IEC60502-1**

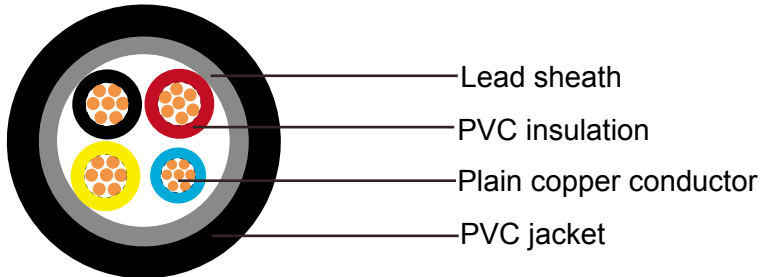
### Three cores(unarmoured)



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km
Round conductor						
3x1.5 rm	1.6	0.7	1.2	1.8	17	790
3x2.5 rm	2	0.7	1.2	1.8	18	875
3x4 rm	2.6	0.7	1.2	1.8	19	1000
3x6 rm	3.1	0.7	1.2	1.8	21	1125
3x10 rm	4	0.7	1.2	1.8	23	1375
3x16 rm	5	0.7	1.2	1.8	25	1700
3x25 rm	6.3	0.9	1.2	1.8	28	2225
3x35 rm	7.4	0.9	1.3	1.8	31	2650
3x50 rm	8.8	1	1.4	1.9	35	3350
3x70 rm	10.6	1.1	1.5	2	40	4425
3x95 rm	12.4	1.1	1.6	2.1	44	5625
3x120 rm	14	1.2	1.7	2.3	49	6850
3x150 rm	15.5	1.4	1.8	2.4	54	8250
3x185 rm	17.4	1.6	1.9	2.6	59	10025
3x240 rm	20.3	1.7	2.1	2.8	67	12900
3x300 rm	22.7	1.8	2.2	2.9	73	15550
Sectoral conductor						
3x50 sm	-	1	1.3	1.9	32	3000
3x70 sm	-	1.1	1.4	2	36	4000
3x95 sm	-	1.1	1.5	2.1	40	5075
3x120 sm	-	1.2	1.6	2.3	44	6175
3x150 sm	-	1.4	1.7	2.4	48	7525
3x185 sm	-	1.6	1.8	2.6	53	9125
3x240 sm	-	1.7	2	2.8	59	11650
3x300 sm	-	1.8	2.1	2.9	64	14025

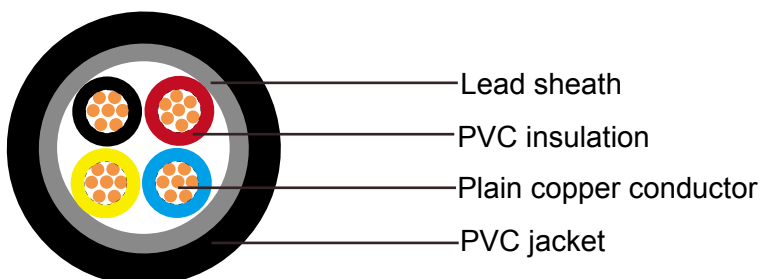


#### Three cores+1(unarmoured)



Nominal Cross Section	Diameter of Conductor (Approx.)		Nominal Insulation Thickness		Nominal Lead Sheath Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
	mm <sup>2</sup>	(3) mm	(1) mm	(3) mm				
3x10 rm+6	5	3.1	0.7	0.7	1.2	1.8	23	1475
3x16 rm+10	6.3	4	0.7	0.7	1.2	1.8	26	1850
3x25 rm+16	7.4	5	0.9	0.7	1.2	1.8	29	2425
3x35 sm+16	-	5	0.9	0.7	1.2	1.8	30	2575
3x50 sm+25	-	6.3	1	0.9	1.3	1.9	33	3325
3x70 sm+35	-	7.4	1.1	0.9	1.4	2	38	4450
3x95 sm+50	-	8.8	1.1	1	1.5	2.2	42	5675
3x120 sm+70	-	10.6	1.2	1.1	1.6	2.3	46	6975
3x150 sm+70	-	10.6	1.4	1.1	1.7	2.4	50	8325
3x185 sm+95	-	12.4	1.6	1.1	1.9	2.6	56	10400
3x240 sm+120	-	14	1.7	1.2	2	2.8	62	13025
3x300 sm+150	-	15.5	1.8	1.4	2.2	3	67	15950

#### Four cores(unarmoured)



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km
4x1.5 rm	1.6	0.7	1.2	1.8	18	850



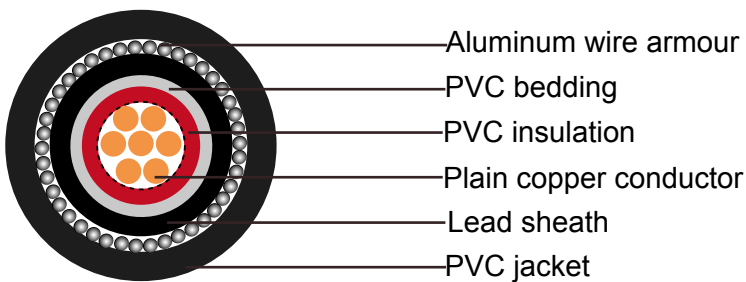


## XLPE Insulation with Lead Sheath

### IEC60502-1

Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km
4x2.5 rm	2	0.7	1.2	1.8	19	950
4x4 rm	2.6	0.7	1.2	1.8	20	1100
4x6 rm	3.1	0.7	1.2	1.8	22	1250
4x10 rm	4	0.7	1.2	1.8	24	1550
4x16 rm	5	0.7	1.2	1.8	26	1950
4x25 rm	6.3	0.9	1.3	1.8	31	2700
4x35 sm	-	0.9	1.2	1.8	31	2800
4x50 sm	-	1	1.4	2	35	3700
4x70 sm	-	1.1	1.5	2.1	40	4950
4x95 sm	-	1.1	1.6	2.3	44	6350
4x120 sm	-	1.2	1.7	2.4	48	7750
4x150 sm	-	1.4	1.8	2.6	53	9425
4x185 sm	-	1.6	2	2.7	58	11575
4x240 sm	-	1.7	2.2	3	65	14800
4x300 sm	-	1.8	2.3	3.2	71	17900

### Single core( aluminum wire armoured)

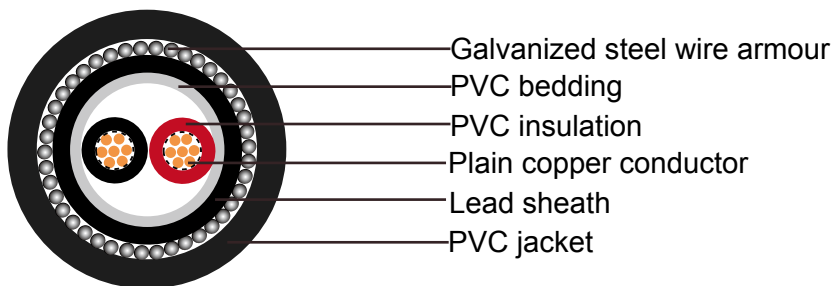


Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal dia. of Alum. wire armour	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km	Kg/Km
1x35 rm	7.4	0.9	1.2	1.3	1.8	24	1450
1x50 rm	8.8	1	1.2	1.3	1.8	26	1750
1x70 rm	10.6	1.1	1.2	1.6	1.8	28	2075
1x95 rm	12.4	1.1	1.2	1.6	1.8	30	2450
1x120 rm	14	1.2	1.2	1.6	1.8	32	2900



Nominal Cross Section	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal dia. of Alum. wire armour	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km	Kg/Km
1x150 rm	15.5	1.4	1.3	1.6	1.9	34	3300
1x185 rm	17.4	1.6	1.4	1.6	2	37	3950
1x240 rm	20.3	1.7	1.4	2	2.1	41	5000
1x300 rm	22.7	1.8	1.5	2	2.1	44	5825
1x400 rm	25.4	2	1.6	2	2.3	48	7150
1x500 rm	28.8	2.2	1.7	2.5	2.4	54	8900
1x630 rm	30.4	2.4	1.8	2.5	2.6	57	10600

### Two cores(Galvanized steel wire armoured)



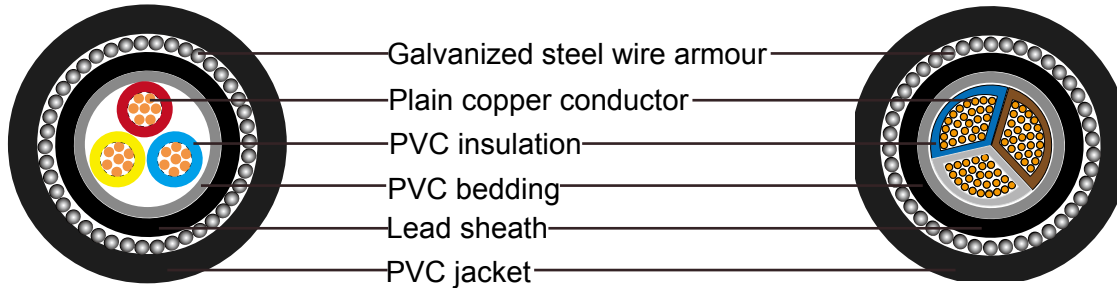
Nominal Cross Section	Nominal Diameter of Conductor	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal dia. of Steel wire armour	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km	Kg/Km
2x2.5 rm	2	0.7	1.2	1.3	1.8	22	1325
2x4 rm	2.6	0.7	1.2	1.3	1.8	23	1450
2x6 rm	3.1	0.7	1.2	1.3	1.8	24	1600
2x10 rm	4	0.7	1.2	1.6	1.8	27	2025
2x16 rm	5	0.7	1.2	1.6	1.8	29	2350
2x25 rm	6.3	0.9	1.2	1.6	1.8	32	2900
2x35 rm	7.4	0.9	1.2	1.6	1.9	35	3350
2x50 rm	8.8	1	1.3	2	2	39	4375



## XLPE Insulation with Lead Sheath

**IEC60502-1**

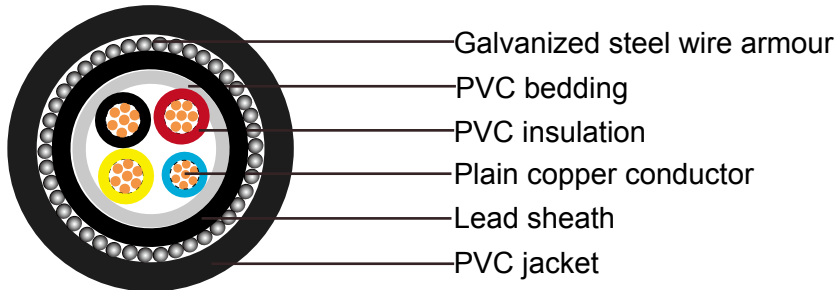
Three cores(Galvanized steel wire armoured)



Nominal Cross Section	Nominal Diameter of Conductor	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal dia. of Steel wire armour	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km	Kg/Km
Round conductor							
3x1.5 rm	1.6	0.7	1.2	1.3	1.8	22	1275
3x2.5 rm	2	0.7	1.2	1.3	1.8	23	1400
3x4 rm	2.6	0.7	1.2	1.3	1.8	24	1550
3x6 rm	3.1	0.7	1.2	1.3	1.8	25	1725
3x10 rm	4	0.7	1.2	1.6	1.8	28	2175
3x16 rm	5	0.7	1.2	1.6	1.8	30	2575
3x25 rm	6.3	0.9	1.2	1.6	1.9	34	3250
3x35 rm	7.4	0.9	1.3	1.6	1.9	36	3750
3x50 rm	8.8	1	1.4	2	2.1	41	4900
3x70 rm	10.6	1.1	1.5	2	2.2	47	6225
3x95 rm	12.4	1.1	1.6	2.5	2.4	51	7650
3x120 rm	14	1.2	1.7	2.5	2.5	57	9550
3x150 rm	15.5	1.4	1.8	2.5	2.7	62	11300
3x185 rm	17.4	1.6	1.9	2.5	2.8	68	13375
3x240 rm	20.3	1.7	2.1	2.5	3.1	76	16700
3x300 rm	22.7	1.8	2.2	2.5	3.2	82	19725
Sectoral conductor							
3x50 sm	-	1	1.3	2	2.1	39	4450
3x70 sm	-	1.1	1.4	2	2.2	43	5650
3x95 sm	-	1.1	1.5	2	2.4	47	6900
3x120 sm	-	1.2	1.6	2.5	2.5	52	8575
3x150 sm	-	1.4	1.7	2.5	2.7	57	10275
3x185 sm	-	1.6	1.8	2.5	2.8	61	12100
3x240 sm	-	1.7	2	2.5	3	67	14975
3x300 sm	-	1.8	2.1	2.5	3.2	73	17700

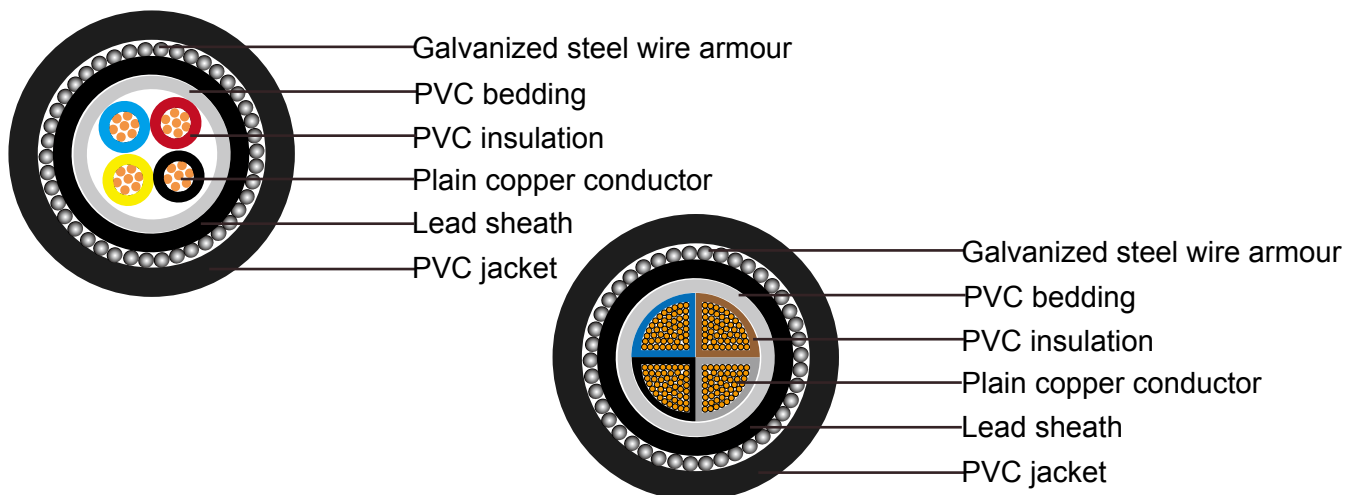


#### Three cores+1(Galvanized steel wire armoured)



Nominal Cross Section	Diameter of Conductor (Approx.)		Nominal Insulation Thickness		Nominal Lead Sheath Thickness	Nominal dia. of Steel Wire armour	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
	mm <sup>2</sup>	(3) mm	(1) mm	(3) mm					
3x10 rm+6	5	3.1	0.7	0.7	1.2	1.8	1.6	29	2325
3x16 rm+10	6.3	4	0.7	0.7	1.2	1.8	1.6	31	2775
3x25 rm+16	7.4	5	0.9	0.7	1.2	1.9	1.6	35	3475
3x35 sm+16	-	5	0.9	0.7	1.2	2	1.6	35	3650
3x50 sm+25	-	6.3	1	0.9	1.3	2.1	2	40	4825
3x70 sm+35	-	7.4	1.1	0.9	1.4	2.3	2	45	6175
3x95 sm+50	-	8.8	1.1	1	1.5	2.4	2.5	50	8025
3x120 sm+70	-	10.6	1.2	1.1	1.6	2.6	2.5	54	9575
3x150 sm+70	-	10.6	1.4	1.1	1.7	2.7	2.5	59	11175
3x185 sm+95	-	12.4	1.6	1.1	1.9	2.9	2.5	64	13575
3x240 sm+120	-	14	1.7	1.2	2	3.1	2.5	70	16525
3x300 sm+150	-	15.5	1.8	1.4	2.2	3.4	3.15	78	20800

#### Four cores(Galvanized steel wire armoured)





Nominal Cross Section	Nominal Diameter of Conductor	Nominal Insulation Thickness	Nominal Lead Sheath Thickness	Nominal dia. of Steel wire armour	Nominal PVC Sheath Thickness	Overall Diameter (Approx.)	Weight of Cable (Approx.)
mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg/Km	Kg/Km
4x1.5 rm	1.6	0.7	1.2	1.3	1.8	23	1350
4x2.5 rm	2	0.7	1.2	1.3	1.8	24	1500
4x4 rm	2.6	0.7	1.2	1.3	1.8	25	1700
4x6 rm	3.1	0.7	1.2	1.6	1.8	27	2050
4x10 rm	4	0.7	1.2	1.6	1.8	29	2425
4x16 rm	5	0.7	1.2	1.6	1.8	32	2875
4x25 rm	6.3	0.9	1.3	1.6	1.9	36	3800
4x35 sm	-	0.9	1.2	2	2.1	38	4200
4x50 sm	-	1	1.4	2	2.2	42	5300
4x70 sm	-	1.1	1.5	2	2.3	46	6775
4x95 sm	-	1.1	1.6	2.5	2.5	52	8800
4x120 sm	-	1.2	1.7	2.5	2.7	57	10500
4x150 sm	-	1.4	1.8	2.5	2.9	62	12450
4x185 sm	-	1.6	2	2.5	3	67	14950
4x240 sm	-	1.7	2.2	2.5	3.3	74	18550
4x300 sm	-	1.8	2.3	3.2	3.5	81	22900

# Technical Reference



Insulation Options

Insulation Thickness

Mechanical Characteristics of Insulation

Mechanical Characteristics of Jacket Materials

Electrical Characteristics of Single Core Cables

Electrical Characteristics of Three Core Cables



### Insulation Options

Either PVC, XLPE or EPR can be offered upon request.

### Insulation Thickness

#### Nominal thickness of PVC/A insulation

Nominal cross-sectional area of conductor mm <sup>2</sup>	Nominal thickness of insulation at rated voltage U <sub>0</sub> /U (Um)	
	0.6/1 (1.2) kV mm	1.8/3 (3.6) kV mm
1.5 and 2.5	0.8	-
4 and 6	1.0	-
10 and 16	1.0	2.2
25 and 35	1.2	2.2
50 and 70	1.4	2.2
95 and 120	1.6	2.2
150	1.8	2.2
185	2.0	2.2
240	2.2	2.2
300	2.4	2.4
400	2.6	2.6
500 to 800	2.8	2.8
1 000	3.0	3.0

#### Nominal thickness of cross-linked polyethylene (XLPE) insulation

Nominal cross-sectional area of conductor mm <sup>2</sup>	Nominal thickness of insulation at rated voltage U <sub>0</sub> /U (Um)	
	0.6/1 (1.2) kV mm	1.8/3 (3.6) kV mm
1.5 and 2.5	0.7	-
4 and 6	0.7	-
10 and 16	0.7	2.0
25 and 35	0.9	2.0
50	1.0	2.0
70 and 95	1.1	2.0
120	1.2	2.0
150	1.4	2.0



Nominal cross-sectional area of conductor mm <sup>2</sup>	Nominal thickness of insulation at rated voltage U <sub>0</sub> /U (Um)	
	0.6/1 (1.2) kV mm	1.8/3 (3.6) kV mm
185	1.6	2.0
240	1.7	2.0
300	1.8	2.0
400	2.0	2.0
500	2.2	2.2
630	2.4	2.4
800	2.6	2.6
1 000	2.8	2.8

### Nominal thickness of ethylene propylene rubber (EPR) and hard ethylene propylene rubber (HEPR) insulation

Nominal cross-sectional area of conductor mm <sup>2</sup>	Nominal thickness of insulation at rated voltage U <sub>0</sub> /U (Um)			
	0,6/1 (1,2) kV		1.8/3 (3.6) kV	
	ERP mm	HEPR mm	ERP mm	HEPR mm
1.5 and 2.5	1.0	0.7	-	-
4 and 6	1.0	0.7	-	-
10 and 16	1.0	0.7	2.2	2.0
25 and 35	1.2	0.9	2.2	2.0
50	1.4	1.0	2.2	2.0
70	1.4	1.1	2.2	2.0
95	1.6	1.1	2.4	2.0
120	1.6	1.2	2.4	2.0
150	1.8	1.4	2.4	2.0
185	2.0	1.6	2.4	2.0
240	2.2	1.7	2.4	2.0
300	2.4	1.8	2.4	2.0
400	2.6	2.0	2.6	2.0
500	2.8	2.2	2.8	2.2
630	2.8	2.4	2.8	2.4
800	2.8	2.6	2.8	2.6
1 000	3.0	2.8	3.0	2.8





### Mechanical Characteristics of Insulation Materials

Mechanical characteristics of insulating compounds with copper conductor (before and after aging)

Designation of compounds	Unit	PVC/A	EPR		HEPR		XLPE	
			0,6/1(1,2) kv cables	All other cables	0,6/1(1,2) kv cables	All other cables	0,6/1(1,2) kv cables	All other cables
<b>Maximum conductor temperature in normal operation</b>	°C	70	90	90	90	90	90	90
<b>Without ageing (IEC 60811-1-1,)</b>								
<b>Tensile strength, minimum</b>	N/mm <sup>2</sup>	12,5	4,2	4,2	8,5	8,5	12,5	12,5
<b>Elongation-at-break, minimum</b>	%	150	200	200	200	200	200	200
<b>After ageing without conductor Treatment:</b>								
– temperature	°C	100	135	135	135	135	135	135
– tolerance	°C	±2	±3	±3	±3	±3	±3	±3
– duration	h	168	168	168	168	168	168	168
<b>Tensile strength</b>								
a) value after ageing, min	N/mm <sup>2</sup>	12,5	–	–	–	–	–	–
b) variation a, max	%	±25	±30	±30	±30	±30	±25	±25
<b>Elongation-at-break:</b>								
a) value after ageing, minimum	%	150	–	–	–	–	–	–
b) variation a, maximum	%	±25	±30	±30	±30	±30	±25	±25
<b>After ageing with copper conductor followed by the tensile test b</b>								
<b>Treatment:</b>	°C	–	135	–	135	–	135	–
– temperature	°C	–	±3	–	±3	–	±3	–
– tolerance	h	–	168	–	168	–	168	–
– duration								
<b>Tensile strength: Variation a, maximum</b>	%	–	±30	–	±30	–	±30	–
<b>Elongation-at-break: Variation a, maximum</b>	%	–	±30	–	±30	–	±30	–
<b>After ageing with copper conductor followed by bending test (only if the tensile test is not practicable) b</b>								
<b>Treatment:</b>	°C	–	150	–	150	–	150	–
– temperature	°C	–	±3	–	±3	–	±3	–
– tolerance	h	–	240	–	240	–	240	–
– duration								
<b>Results to be obtained</b>		–	No cracks	–	No cracks	–	No cracks	–



### Mechanical Characteristics of Jacket Materials

#### Mechanical characteristics of sheathing compounds (before and after aging)

Designation of compounds	Unit	ST1	ST2	ST3	ST7	ST8	SE1
<b>Maximum conductor temperature in normal operation</b>	°C	80	90	80	90	90	85
<b>Without ageing (IEC 60811-1-1)</b> Tensile strength, minimum Elongation-at-break, minimum	N/mm <sup>2</sup> %	12,5 150	12,5 150	10,0 300	12,5 300	9,0 125	10,0 300
<b>After ageing in an air oven (IEC 60811-1-2)</b> <b>Treatment:</b> – temperature (tolerance ±2 °C) – duration	°C h	100 168	100 168	100 240	110 240	100 168	100 168
<b>Tensile strength:</b> a) value after ageing, minimum b) variation a, maximum	N/mm <sup>2</sup> %	12,5 ±25	12,5 ±25	– –	– –	9,0 ±40	– ±30
<b>Elongation-at-break:</b> a) value after ageing, minimum b) variation a, maximum	% %	150 ±25	150 ±25	300 –	300 –	100 ±40	250 ±40

#### Mechanical characteristics for PVC sheathing compounds

Designation of compound	Unit	ST1	ST2
<b>Use of the PVC compound</b>		Sheath	
<b>Loss of mass in an air oven (IEC 60811-3-2)</b> <b>Treatment:</b> – temperature (tolerance ±2 °C) – duration <b>Maximum loss of mass</b>	°C h g/cm <sup>2</sup>	– – –	100 168 1,5
<b>Pressure test at high temperature (IEC 60811-3-1)</b> – temperature (tolerance ±2 °C)	°C	80	90
<b>Behaviour at low temperature a (IEC 60811-1-4)</b> <b>Test to be carried out without previous ageing:</b> – cold bending test for diameter <12,5 mm – temperature (tolerance ±2 °C) <b>Cold elongation test on dumb-bells:</b> – temperature (tolerance ±2 °C) <b>Cold impact test:</b> – temperature (tolerance ±2 °C)	°C °C °C	–15 –15 –15	–15 –15 –15
<b>Heat shock test (IEC 60811-3-1)</b> <b>Treatment:</b> – temperature (tolerance ±3 °C) – duration	°C h	150 1	150 1



### Mechanical characteristics of thermoplastic PE sheathing compounds

Designation of compounds	Unit	ST3	ST7
<b>Density (IEC 60811-1-3)</b>			
<b>Carbon black content (for black oversheaths only) (IEC 60811-4-1)</b> Nominal value Tolerance	% %	2,5 ±0,5	2,5 ±0,5
<b>Shrinkage test (IEC 60811-1-3)</b> <b>Treatment:</b> – temperature (tolerance ±2 °C) – heating, duration – heating, cycles <b>Maximum shrinkage</b>	°C h  %	80 5 5 3	80 5 5 3
<b>Pressure test at high temperature (IEC 60811-3-1)</b> – temperature (tolerance ±2 °C)	°C	–	110

### Mechanical characteristics of halogen free sheathing compound

Designation of compound	Unit	ST8
<b>Behaviour at low temperature a (IEC 60811-1-4)</b> <b>Test to be carried out without previous ageing:</b> – cold bending test for diameter <12,5 mm – temperature (tolerance ±2 °C) <b>Cold elongation test on dumb-bells:</b> – temperature (tolerance ±2 °C) <b>Cold impact test:</b> – temperature (tolerance ±2 °C)	°C  °C °C	-15  -15 -15
<b>Pressure test at high temperature (IEC 60811-3-1)</b> – temperature (tolerance ±2 °C)	°C	80
<b>Water absorption (IEC 60811-1-3)</b> <b>Gravimetric method:</b> <b>Treatment:</b> – temperature (tolerance ±2 °C) – duration <b>Maximum increase of mass</b>	°C h g/cm <sup>2</sup>	70 24 10



### Mechanical characteristics of elastomeric sheathing compound

Designation of compound	Unit	SE1
<b>Oil immersion test followed by a determination of the mechanical properties (IEC 60811-2-1 and IEC 60811-1-1)</b> <b>Treatment:</b> – oil temperature (tolerance $\pm 2$ °C) – duration <b>Maximum variation aof:</b> a) tensile strength b) elongation-at-break	°C H % %	100 24 ±40 ±40
<b>Hot set test (IEC 60811-2-1)</b> <b>Treatment:</b> – temperature (tolerance $\pm 3$ °C) – time under load – mechanical stress <b>Maximum elongation under load</b> <b>Maximum permanent elongation after cooling</b>	°C min N/cm <sup>2</sup> % %	200 15 20 175 15

### Electrical Characteristics of Single Core Cables

#### PVC insulation, PVC sheath cables with copper conductor

LOW VOLTAGE SINGLE CORE CABLE

LINEAR RESISTANCE, REACTANCE AND VOLTAGE DROP

PVC INSULATED (85°C)

SIZE mm <sup>2</sup>	Direct Current Resistance at 20°C, Ohm/Km	Direct Current Resistance at 85°C, Ohm/Km	Alternating Current Resistance at 85°C, Ohm/Km	Reactance Ohm / Km	Impedance Ohm / Km	Voltage Drop (Phase to Phase) V/A.Km
1.5	12.1	15.19	15.19	0.165	15.19	21.22
2.5	7.41	9.30	9.30	0.149	9.30	13.04
4	4.61	5.79	5.79	0.143	5.79	8.17
6	3.08	3.87	3.87	0.134	3.87	5.5
10	1.83	2.3	2.3	0.132	2.3	3.32
16	1.15	1.444	1.444	0.124	1.449	2.13
25	0.727	0.913	0.913	0.121	0.921	1.39
35	0.524	0.658	0.658	0.115	0.668	1.031
50	0.387	0.486	0.467	0.111	0.499	0.79
70	0.268	0.336	0.337	0.105	0.353	0.576
95	0.193	0.242	0.244	0.103	0.265	0.445
120	0.153	0.192	0.194	0.100	0.218	0.373



SIZE mm <sup>2</sup>	Direct Current Resistance at 20°C, Ohm/Km	Direct Current Resistance at 85°C, Ohm/Km	Alternating Current Resistance at 85°C, Ohm/Km	Reactance Ohm / Km	Impedance Ohm / Km	Voltage Drop (Phase to Phase) V/A.Km
150	0.124	0.156	0.158	0.100	0.187	0.323
185	0.0991	0.1244	0.1272	0.099	0.161	0.279
240	0.0754	0.0947	0.0978	0.097	0.138	0.236
300	0.0601	0.0754	0.0800	0.096	0.124	0.210
400	0.0470	0.0590	0.0626	0.094	0.113	0.184
500	0.0366	0.0459	0.0504	0.092	0.105	0.165
630	0.0283	0.0355	0.0413	0.091	0.100	0.152

### XLPE insulation, LSF sheath cables with copper conductor

LOW VOLTAGE SINGLE CORE CABLE

LINEAR RESISTANCE, REACTANCE AND VOLTAGE DROP

XLPE INSULATED (90°C)

SIZE mm <sup>2</sup>	Direct Current Resistance at 20°C, Ohm/Km	Direct Current Resistance at 90°C, Ohm/Km	Alternating Current Resistance at 90°C, Ohm/Km	Reactance Ohm / Km	Impedance Ohm / Km	Voltage Drop (Phase to Phase) V/A.Km
1.5	12.1	15.43	15.43	0.165	15.43	21.43
2.5	7.41	9.45	9.45	0.149	9.45	13.85
4	4.61	5.88	5.88	0.143	5.88	8.3
6	3.08	3.93	3.93	0.134	3.93	5.58
10	1.83	2.333	2.333	0.132	2.337	3.37
16	1.15	1.466	1.466	0.124	1.471	2.16
25	0.727	0.927	0.927	0.121	0.935	1.41
35	0.524	0.668	0.669	0.115	0.679	1.046
50	0.387	0.493	0.494	0.111	0.506	0.8
70	0.268	0.342	0.343	0.105	0.359	0.584
95	0.193	0.246	0.248	0.103	0.269	0.451
120	0.153	0.195	0.197	0.1	0.221	0.377
150	0.124	0.158	0.16	0.1	0.189	0.326
185	0.0991	0.126	0.129	0.099	0.163	0.282
240	0.0754	0.0961	0.0993	0.097	0.139	0.238
300	0.0601	0.0766	0.0812	0.096	0.126	0.212
400	0.047	0.0599	0.0636	0.094	0.114	0.186
500	0.0366	0.0467	0.0513	0.092	0.105	0.167
630	0.0283	0.0361	0.042	0.091	0.1	0.153



### Electrical Characteristics of Three Core Cables

#### PVC insulation, PVC sheath cables with copper conductor

LOW VOLTAGE MULTI CORE CABLE

LINEAR RESISTANCE, REACTANCE AND VOLTAGE DROP

PVC INSULATED (85°C)

SIZE mm <sup>2</sup>	Direct Current Resistance at 20°C, Ohm/Km	Direct Current Resistance at 85°C, Ohm/Km	Alternating Current Resistance at 85°C, Ohm/Km	Reactance Ohm / Km	Impedance Ohm / Km	Voltage Drop (Phase to Phase), V/A.Km
1.5	12.1	15.19	15.19	0.165	15.19	21.22
2.5	7.41	9.30	9.30	0.143	9.30	13.04
4	4.61	5.79	5.79	0.132	5.79	8.16
6	3.08	3.87	3.87	0.121	3.87	5.49
10	1.83	2.30	2.30	0.109	2.30	3.3
16	1.15	1.444	1.444	0.106	1.448	2.11
25	0.727	0.913	0.913	0.103	0.919	1.37
35	0.524	0.658	0.658	0.098	0.666	1.014
50	0.387	0.486	0.487	0.098	0.496	0.777
70	0.268	0.336	0.337	0.095	0.351	0.566
95	0.193	0.242	0.244	0.093	0.261	0.435
120	0.153	0.192	0.194	0.091	0.214	0.363
150	0.124	0.156	0.158	0.091	0.182	0.314
185	0.0991	0.1244	0.1272	0.091	0.1564	0.271
240	0.0754	0.0947	0.0978	0.090	0.1329	0.229
300	0.0601	0.0754	0.0800	0.090	0.1204	0.204
400	0.0470	0.0590	0.0626	0.089	0.1088	0.179
500	0.0366	0.0459	0.0504	0.088	0.1014	0.161
630	0.0283	0.0355	0.0413	0.088	0.0972	0.149



### XLPE insulation, LSF sheath cables with copper conductor

LOW VOLTAGE MULTI CORE CABLE

LINEAR RESISTANCE, REACTANCE AND VOLTAGE DROP

XLPE INSULATED (90°C)

SIZE mm <sup>2</sup>	Direct Current Resistance at 20°C, Ohm/Km	Direct Current Resistance at 90°C, Ohm/Km	Alternating Current Resistance at 90°C, Ohm/Km	Reactance Ohm / Km	Impedance Ohm / Km	Voltage Drop (Phase to Phase) V/A.Km
1.5	12.1	15.43	15.43	0.165	15.43	21.55
2.5	7.41	9.45	9.45	0.143	9.45	13.24
4	4.61	5.88	5.88	0.132	5.88	8.28
6	3.08	3.93	3.93	0.121	3.93	5.57
10	1.83	2.333	2.333	0.109	2.336	3.35
16	1.15	1.466	1.466	0.106	1.47	2.14
25	0.727	0.927	0.927	0.103	0.933	1.39
35	0.524	0.668	0.669	0.098	0.676	1.03
50	0.387	0.493	0.494	0.098	0.504	0.786
70	0.268	0.342	0.343	0.095	0.356	0.574
95	0.193	0.246	0.248	0.093	0.264	0.44
120	0.153	0.195	0.197	0.091	0.217	0.37
150	0.124	0.158	0.16	0.091	0.184	0.316
185	0.0991	0.126	0.129	0.091	0.1579	0.273
240	0.0754	0.0961	0.0993	0.09	0.134	0.231
300	0.0601	0.0766	0.0812	0.09	0.1212	0.206
400	0.047	0.0599	0.0636	0.089	0.1094	0.181
500	0.0366	0.0467	0.0513	0.088	0.1019	0.163
630	0.0283	0.0361	0.042	0.088	0.0975	0.15



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