CONTROL & AUXILIARY CABLES

CONTENTS

GENERAL
INTRODUCTION

Bahra Cables Company was established in 2008 to serve Saudi & GCC Markets. It is based in Bahra industrial city located 25km from Jeddah. Bahra Cables Factory occupies over 300.000 square meters of prime manufacturing space together with associated design offices, laboratories and storage area. It specializes in Manufacturing and Distributing Electric Cables.

Bahra Cables Company is committed to the production of the best product quality and service, utilizing cutting edge European Technology in manufacturing. The core technologies in production processes, material applications and logistic procedures were provided from German experts and the key functions are being managed by the best local and international engineers.

The organization has a lean vertical management structure which is designed to integrate with a highly developed IT-based structure. This partnership allows the rapid flow of information through the management chain and facilities timely response in the best traditions of 'hands on' management.

Bahra Cables Company has the flexibility to provide a versatile product range to serve its customers. As example, construction sectors, electric utilities, distribution, industrial, oil & gas and petrochemical sectors. The cables produced comply with both American standards (CSA, ANSI and ICEA) and European standards (IEC, BS, NF and VDE Specifications.)

The scope of this catalogue is to provide an in depth view of the technical information of the Control & Auxiliary cables up to 0.6/1.0 KV, with XLPE insulation to IEC 60502-1 & BS 5467 & Lead Sheathed according to EEMUA publication No. 133. Other Catalogues are available upon request.

AREA

Bahra Cables Company has a total land area of about 300,000sqm at disposal.
The built-up area, including offices and plant, of start up phase is more than 100,000sqm.
The total available stock yard for(drum) storage is more than 80,000sqm.

PRODUCT SCOPE

BAHRA CABLES COMPANY is committed to deliver the highest standard wires and power cables to the local market, GCC and for export.
To do so, Bahra Cables Company produces a versatile product range cover most of our customer needs:

- Control & Auxiliary cables up to 0.6/1.0 KV, with XLPE insulation to IEC 60502-1 & BS 5467 & Lead Sheathed according to EEMUA publication No. 133, in addition to other products described in separate catalogues::
- Flexible wires and cables up to 240 mm^2 to IEC 60227 & British Standards.
- Building wires, THHN/THWN & THW to UL 83, with conductor sizes starting from 16 AWG.
- Thermosetting insulated wires types XHHW-2 , XHHW, XHH, RHW-2, RHW &RHH to UL44
- Building wires (NYA) to IEC 60227 and BS 6004, from 1.5 mm2 and above.
- LV power Cables with PVC and XLPE insulation to IEC 60502-1, BS 6346, BS 5476, BS 7889 and UL 1277.
- Low smoke and fume , zero halogen building wire (LSFZH) to BS 7211, with thermosetting insulation which is alternative to wire type (NYA) , where the application requires higher standards of safety against the emission of smoke, fumes and toxic gases.
- LV cables with LSFZH, thermosetting insulated cables for voltages of 600/1000 V, having low emission of smoke and corrosive gasses when affected by fire. The cables are produced according to BS 6724, IEC 60502-1 and tested to IEC 61034 , IEC 60754 & IEC 60332.
- Fire Resistance wire & cables to IEC 60331 & BS 6387 Cat C,W & Z
- MV cables to IEC 60502-2 up to 18/30 (36) kv and to BS 6622 up to 19/33 (36) kv.
- MV cables with LSFZH to BS 7835.
- MV cables (Lead Sheathed / Armoured / Un armoured) PVC or MDPE Sheath.
- HV cables up to 220 kv to IEC 60840, IEC 62067 and to ANSI / ICEA S-108-720, with conductor sizes up to 2500 mm2.

The future product scope will be extended to Extra High Voltage cables up to 480 kV.

FACTORY MACHINERY

All production machines are top of the line of the cables machinery suppliers. From start up with wire drawing lines to extrusion lines, to assembly machines up to the laboratories and the final test fields , all technical equipment is provided with the highest European standards of electronic control equipment and measuring devices which insures that the requirements of different quality standards are met.
All machines/production lines are prepared for data communication and data exchange bottom up and top down using the most modern decentralized control software at the lines (PLC) combined with an efficient central steering and a planning system focused on the demand of cable manufacturers. This way, full traceability will be guaranteed from production start to end, by being able to follow up the machines involved and the material used.

LOGISTICS

All material flow in BCC from incoming raw material up to outgoing cables are planned and controlled by a complete software system. Herein a classical ERP system is enhanced and completed by the most modern MES (Manufacturing Executive System) which has a unique focus on the specific problematic issues of cables manufacturing with longitudinal products being winded up and winded off.

The Manufacturing Executive System - MES - covers:

PLANNING

The planning system is active on several levels. For the proper function, all master data (material properties, dimensions, etc.) are saved and permanently maintained in the central database based on

- Cable design
- Planning of Sales Orders
- Planning of Production Orders

DATA COMMUNICATION

The exchange of data is important in several areas

- Incoming inspection
- Raw Materials – Status quo of production orders
- Finished goods
- Shipping status

Bahra Cables Company is willing to provide advice and assistance on all matters concerning PVC and XLPE insulated power cables. Please contact the Technology Department for any query.

QUALITY IS OUR MAIN TARGET

Bahra Cables Company is born to be one of the leading Power Cables Manufacturers in Saudi Arabia and the GCC area. We are working in different axes to completely fulfill customers satisfaction, which is the milestone of our business, such axes are:

1. Product quality complying with the local and international standards

2. Product Reliability is starting from the time of product design to fit for the intended application and environmental conditions, to the selection of the raw material from only the highest class suppliers with internationally trusted reputation. Our state of art testing equipments and the strict quality procedures ensure the product quality and integrity so we can guarantee that our cables are defect free and suitable for the intended application through the cable service lifetime.

3. High performance of the product and service through cooperation between experienced staff from Germany and local experts who are aware of the local market requirements and the highest international standards of cables manufacturing. Such cooperation in knowhow is invested to provide our customer with the best service and support.

4. Bahra Cables Company's Quality Management System conforms to the ISO 9001: 2008 International Management Quality System Standard with scope of Design and Manufacturing of Electrical Power Cables and Wires. BCC is certified by American Systems Registrar (ASR), ANAB Accredited.

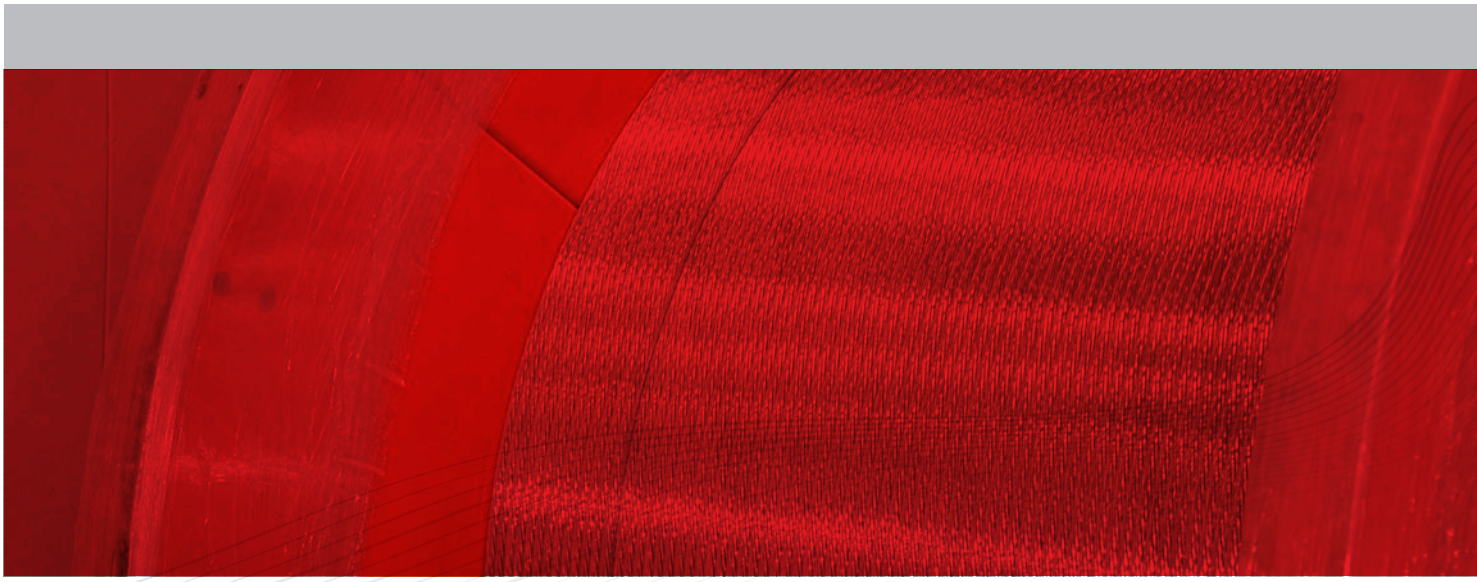
5. Bahra Cables Company is frequently testing its products at internationally reputable labs, diversity of products have been tested and confirmed compliance to the international standard at KEMA, IPH, SAG(Berlin), BSI and BASEC Labs.

TECHNICAL INFORMATION
GENERAL

PRODUCT RANGE
This catalogue is intended for Control & Auxiliary Cables up to and including 37 cores, Copper conductors of voltage range up to and including 0.6/1.0 KV

CABLE TYPES
1) Unarmoured unscreened Control & Auxiliary Cables
2) Armoured unscreened Control & Auxiliary Cables
3) Unarmoured screened Control & Auxiliary Cables
4) Armoured screened Control & Auxiliary Cables
5) Lead Sheathed Unarmoured unscreened Control & Auxiliary Cables
6) Lead Sheathed Armoured unscreened Control & Auxiliary Cables
7) Lead Sheathed Unarmoured screened Control & Auxiliary Cables
8) Lead Sheathed Armoured screened Control & Auxiliary Cables

APPLICABLE STANDARDS
IEC 60502-1 for XLPE insulated multi-core unarmoured or armoured cables.
BS 7889 for XLPE insulated multi-core unarmoured cables.
BS 5467 for XLPE insulated armoured cables, PVC sheathed.
BS 6724 for XLPE insulated armoured cables, LS0H sheathed.
IEC 60502-1 & BS 7889 /EEMUA 133 for XLPE insulated, Lead Sheathed unarmoured cables.
IEC 60502-1 & BS 5467/EEMUA 133 for XLPE insulated, Lead Sheathed armoured cables.
Any other customer of International standards e.g. ANSI/ACEA, VDE/DIN, NF, etc...



1. NOMINAL VOLTAGE

The Nominal voltage is to be expressed with two values of alternative current Uo/U in V (volt)

U_o: The rated r.m.s. power frequency voltage between each conductor and screen or sheath for which cables and accessories are designed.

U: The rated r.m.s. power frequency voltage between any two conductors for which cables and accessories are designed.

U_m: The maximum r.m.s. power frequency voltage between any two conductors for which cables and accessories are designed. It is the highest voltage that can be sustained under normal operating conditions at any time and in any point in a system.

2. RESISTANCE

The values of conductor DC resistance are dependant on temperature as given below:

$$R_\theta = R_{20}[1 + \alpha\,(\theta - 20)] \qquad \Omega/km$$

where,

R_θ	:	The conductor DC resistance at θ°C	Ω/km
R_{20}	:	The conductor DC resistance at 20°C	Ω/km
θ	:	Operating temperature	°C
α	:	Temperature coefficient = 0.00393 for Copper / 0.00403 for Aluminum	

Generally the DC resistance is based on IEC 60228 and to calculate the AC resistance of the conductor at the operating temperature as the following:

$$R_{AC} = R_\theta(1 + Y_S + Y_P) \qquad \Omega/km$$

where,

YS	:	Skin effect factor	
YP	:	Proximity effect factor	

Generally, AC resistance is based on IEC 60287

3. CAPACITANCE

$$C = \frac{\epsilon_r}{18 \ln \frac{D}{d}} \qquad \mu F/Km$$

where,

C	:	Capacitance	μF/Km
εr	:	Relative permitivity of insulation material $\epsilon r = 4.8$ for PVC $\epsilon r = 2.3$ for XLPE	
D	:	Diameter over insulation	mm
d	:	Conductor diameter	mm

4. INDUCTANCE

$$L = K + 0.2 \ln (2S/d) \qquad mh/km$$

where,

L	:	The Inductance	mh/km
K	:	Constant depend on number of wires	
d	:	Conductor diameter	
S	:	Axial Spacing between cables (Trefoil formation) =1.26 x axial spacing between cables in case of flat formation	

5. REACTANCE

The inductive reactance per phase of a cable may be obtained by the formula:

$$X = 2\,\pi\,f\,L \times 10^{-3} \qquad \Omega/km$$

where,

X	:	The Cable Reactance	Ω/km
L	:	The Inductance	mh/km
f	:	Frequency	Hz

6. IMPEDANCE

$$Z = \sqrt{X^2 + R^2_{AC}} \qquad \Omega/km$$

Z: Phase impedance of cable		Ω/km
R_{AC}: AC resistance at operating temperature		Ω/km
X: Reactance		Ω/km

7. INSULATION RESISTANCE

$$R = \frac{1000}{2 + \pi} * LN\ (D/d)$$

R	:	Insulation resistance at 20° C	MΩ.km
D	:	Insulated conductor diameter	mm
d	:	Conductor diameter	mm

8. CHARGING CURRENT

$$I_c = 2\pi\ f\ C\ U_o\ x\ 10^{-6}$$ A/Km

where,

I_C	:	Charging Current	A/km
C	:	Capacitance to neutral	μF/Km
f	:	Frequency	Hz
Uo	:	Rated Phase Voltage	V

9. DIELECTRIC LOSSES

$$D = 2\pi\ f\ C\ U^2_o\ tan\delta\ x\ 10^{-6}$$ watt/Km/phase

D	:	Dielectric losses	watt/km/phase
Uo	:	Voltage between phase and earth	V
C	:	Capacitance to neutral	μF/km
tan δ	:	Dielectric power factor	

10. SHORT CIRCUIT CURRENT

$$I_{sc(t)} = I_{sc(1)} / \sqrt{t}$$ KA

where,

Isc(t)	:	Short Circuit current for t seconds	KA
Isc(1)	:	Short Circuit current for 1 seconds	KA
t	:	Duration	Sec

11. VOLTAGE DROP

When the current flows in conductor, there is a voltage drop between the ends of the conductor. For low voltage cable network of normal operation, it is advisable of a voltage drop of 3-5 %. To calculate voltage drop as the following:

1- for single phase circuit:

$$Vd = 2I\ell\ (\ R\ cos\varphi + X\ sin\varphi\ )$$

2- for three phase circuit :

$$Vd = \sqrt{3}\ I\ \ell\ (\ R\ cos\varphi + X\ sin\varphi\ )$$

Vd	: Voltage drop	V
I	: Load current	A
R	: AC resistance	Ω/km
X	: Reactance	Ω/km
ι	: Length	km
cosϕ	: Power factor	

Table 1: Relation between cosφ and sinφ

cosφ	1.0	0.9	0.8	0.71	0.6	0.5
sinφ	0.0	0.44	0.6	0.71	0.8	0.87

1.0 CONDUCTORS

A conductor is the metallic part of cables that is carrying the electric current
Conductor materials are Plain annealed or tin-coated copper conductor (to BS EN 1977, ASTM B3, ASTM B49 & ASTM B 33)
The conductor structure is complying with the requirements of BS EN 60228 (IEC 60228) class 2 stranded, non Compacted conductors. Also available upon request conducter class 1 & 5 according to IEC 60228.

2.0 INSULATION

2.1 Each core conductor is insulated by extruded plastic material with thickness based on the designated voltage rate complying with IEC 60502-1 & BS 5467 suitable for 0.6/1.0 KV.

2.2 The insulation integrity is controlled online by an AC spark tester with test methods specified in BS EN 62230 and using test voltage specified in BS 5099.

2.3 Insulation Material is Cross Linked Polyethylene XLPE complying with IEC 60502-1. The XLPE is selected to comply with the requirements of GP8 type as specified in BS 7655-1.3

2.4 Bahra Cables' standard insulation color codes are described in Table-1 (i.e. used in the products of this catalogue), meanwhile the color code as per BS 5467 is offered to our customers upon their request.

2.5 When the insulation is required to be Ultra-violet (UV), the insulation is covered by Ultra-violet (UV) resistant Master batch. This protects the insula -tion from deterioration when exposed to continuous sunlight,
the UV resistant performance of the Insulation is assessed by using the Arc Xe -non test as per UL 1581

Table 1: Insulated Core Color Codes

SI. NO.	Number of Cores	Colors to IEC 60502-1
1	Two(Control)	Red, Black
2	Three(Control)	Red, Yellow, Blue
3	Four(Control)	Red, Yellow, Blue, Black
4	Five(Control)	Red, Yellow, Blue Black, Green/Yellow
5	More than five(Control)	* Black Cores with Number Printing * Black Cores with number printing and one core green yellow available upon request

3.0 CABLE ASSEMBLY

The insulated cores are laid up together to form the laid up cable cores. Extruded suitable polymer compound or non-hygroscopic polypropylene filler is applied (when required) between laid up cores to provide a circular shape to the cable.
Polypropylene tape(s) or PETP (Polyester) tape(s) may be used as a barrier tape over the laid up cores. Such tape(s) will bind the cores together and prevent them from opening out, acts as a separator between different polymers used in a cable and works as a heat barrier between the cores and the extruded bedding.

4.0 INNER SHEATH

It could be also called inner jacket, which serves as a bedding under metallic layer to protect the laid up cores and as an inner sheath. The bedding is an extruded (PVC, PE or LS0H) compound depending on the sheathing compound and customer requirements.

5.0 COLLECTIVE METALLIC LAYER (OPTIONAL)

Copper tapes or Copper wires applied directly over the inner sheath where required to cancel out the electric field outside the cables & provide a low resistance path for charging current to flow to ground. It also carry out the short circuit fault current.

6.0 SEPARATION SHEATH

It serves as a bedding under Lead Sheath to protect the laid up cores and as an inner sheath. The bedding is an extruded (PVC, PE or LS0H) compound depending on the sheathing compound and customer requirements.

7.0 LEAD SHEATH(Optional)

It consists of Lead or Lead Alloy Compound protects the cable against moisture, hydrocarbons, and corrosive contaminants.

8.0 SEPARATION SHEATH

It serves as a bedding under cable armouring to protect the lead Sheath as a separation sheath. The bedding is an extruded (PVC, PE or LS0H) compound depending on the sheathing compound and customer requirements.

9.0 ARMOURING (Optional)

The cable intended for tray application is protected enough and does not require lead sheath & armour in general, while it is recommended to have armour for the cable intended for Direct Burial application. The armour provides mechanical protection against crushing forces. Armour also can serve as an Earth Continuity Conductor (ECC). The armouring type could be:

9.1 One layer of Galvanized Round Steel Wires to BS EN 10257 applied helically over the bedding.

9.2 Double Galvanized Steel Tape applied over each other, with a suitable overlap, one layer covers the gap of the other layer and it is applied over the bedding.

10.0 OUTERSHEATH (OUTER JACKET)

10.1 It is the outer protection part of the cable against the surrounding environment.

10.2 Several materials can be used as oversheath based on the intended application as below:

10.2.1 General purpose PVC Type ST2 compound as specified in IEC 60502-1, or its equivalent PVC Type 9 to BS 7655-4.2.

10.2.2 High-density Polyethylene HDPE compound fulfill and exceed the requirements of Type ST7 IEC 60502-1 for cables that require to be abrasion resistant, protected against water ingress and strong Environmental Stress Crack Resistant (ESCR).

10.2.3 Halogen Free Flame Retardant (HFFR) compounds complying with ST8 to IEC 60502-1 or Types LTS 1 & LTS 4 to BS 7655: section 6 for non lead sheathed Control & Auxiliary cables installed in intrinsically safe locations and where the cables require to be low smoke, low fume and low toxic gas emitting in case of fire. Cables to this category are complying with the requirements of BS 6724. The standard sheath color is Black. Any other colour can also be provided as per customer request and in this case UV can be provided upon request.

10.3 When the cable is required to be anti-termite / anti-vermin, a special additive can be added to the sheathing compound.

10.4 All cables produced at Bahra Cables Company with PVC or Halogen free (Non-lead sheathed cables) jackets are complying with the flame retardant test to IEC 60332-1. Whenever a requirement for more severe tests as IEC 60332-3-24 CAT C is needed, a jacketing compound with Oxygen index value more than 30% will be used.

11.0 INSTALLATION

The following recommendations should be followed to achieve the optimal cable service

1. Lead Sheath/ Armoured cables are not recommended for tray applications, as they are heavy in weight and extra loads are exerted on the tray.
2. Unarmoured cables are not recommended for direct burial applications, except if the quoted cables are designed & produced to pass direct burial test requirements.
3. A PVC jacket is a very stable material against a wide range of chemicals, while HDPE jacketed cables can serve better in wet locations.
4. A recommended minimum bending radius is included in Table2; the cable jacket may be damaged if the cable is bent in diameters less than these values.

Table 2 : Cables bending radius

Cable Type	Cable Minimum Bending Radius
PE, LSHF jacket or LC Unarmoured Cables	18 x D
Lead armoured or PVC jacket armoured tape	15 x D
PVC jacket single core or multi armored wire or unarmored	8 x D

D: Cable diameter

3 INSTALLATION CONDITIONS FOR CABLES IN DUCTS

A duct is an enclosure of metal or insulating material other than conduits or cable trunking, intended for the protection of cables which are drawn in after erection of the ducting.
The recommended relation between the cable size and duct size is as in table 7

Table 7 : Recommended duct dimensions and cable sizes

Number of Cables in Group	Duct	
	Inside Diameter (mm)	Outside Diameter (mm)
Upto and including 65	100	130

As the same principal of cables installed in direct burial methods above, the current carrying capacities of cables depends on the installation condition, the current rating is calculated based on the values in section 1.4.
The de-rating factors of other conditions should be considered to calculate the actual possible maximum current carrying capacity of the cables.

Tables 8-12 are for the factors to be multiplied by the tabulated current.

Table 8 : Rating factors for ground temperature variation

Ground Temparature	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C
XLPE Insulated	1.16	1.13	1.09	1.03	1	0.95	0.89	0.84	0.79

Table 9 : Rating factors for variation in thermal resistivity of soil (average values)

Soil Thermal Resistivity (°C.m/W)						
0.8	0.9	1.0	1.5	2.0	2.5	3.0
1.04	1.03	1.02	0.97	0.92	0. 88	0.86

1. CURRENT RATING ASSUMPTIONS

1.1 The calculation of the current ratings, Current rating equations (100% load factor) and calculation of losses are based on IEC 60287 series , and the values of Current ratings for under ground applications (In Duct or Direct Buried) are derived from the latest issue of ERA Report ' Current Rating Standards 69.30 Part V '.

The ratings for cable installed in Air are adapted from BS 7671 IEE Wiring Regulations, 17th edition.

1.2 The calculation is based on the standard dimensions of cables based on IEC 60502-1, which may have a slight difference from the applied cable dimension, which are following the best common manufacturing practices.

1.3 The values given in the tables are for one circuit installed thermally isolated from other circuits or any other heat source.

1.4 The basis of the standard conditions is the climate condition of the Kingdom of Saudi Arabia, which is :

Ambient Air Temperature	:	40 ◦C
Ambient Ground Temperature	:	35 ◦C
Depth of laying in ground	:	0.50 m
Soil Thermal Resistivity	:	1.2 K.m/W

1.5 For other installation conditions or any value of different air/ ground temperature, depth of laying, different soil thermal resistivity the customer is advised to multiply the tabulated current rating by the de-rating factor values as in tables 3 to 6 for direct buried cables in ground, tables 8 to 11 for cables installed in duct and table13 for cables installed in air

2 INSTALLATION CONDITIONS FOR DIRECT BURIAL CABLES

For a cable installed direct buried, the following tables will be used to calculate the current rating based on the actual soil thermal resistivity, Ground ambient temperature and the Depth of laying.

Table 3 : Rating factors for ground temperature variation

Ground Temparature	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C
XLPE Insulated	1.16	1.13	1.09	1.03	1	0.95	0.89	0.84	0.79

Table 4 : Rating factors for depth of laying (to center of cable or trefoil group of cables)

Depth of Laying (m)	Control & Auxiliary Cables
0.50	1.00
0.60	0.99
0.80	0.97
1.00	0.95
1.25	0.94
1.50	0.93
1.75	0.92
2.00	0.91
2.50	0.90

Table 5 : Rating factors for variation in thermal resistivity of soil (average values)

Soil Thermal Resistivity (°C.m/W)						
0.8	0.9	1.0	1.5	2.0	2.5	3.0
1.12	1.08	1.05	0.93	0.84	0.77	0.72

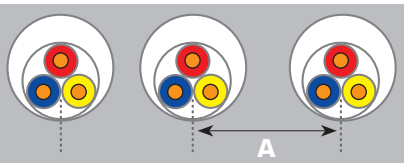
Table 6 : Group rating factors for multicore cables in horizontal formation

Number of Cables in Group	 Spacing				
	Cable to Cable Clearance A				
	Touching	0.15m	0.30m	0.45m	0.60m
2	0.81	0.87	0.91	0.93	0.95
3	0.70	0.78	0.84	0.88	0.90
4	0.63	0.74	0.81	0.86	0.89
5	0.59	0.70	0.78	0.84	0.87
6	0.55	0.68	0.77	0.83	0.87

Table 10 : Rating factors for depth of laying (to center of duct or trefoil group of ducts)

Depth of Laying	Multi Core
0.50	1.00
0.60	0.99
0.80	0.98
1.00	0.96
1.25	0.95
1.50	0.94
1.75	0.94
2.00	0.93
2.50	0.92
3.00 or more	0.91

Table 11 : Group rating factors for multicore cables in single way ducts horizontal formation (average values)

Number of Cables in Group				
	Cable to Cable Clearance A			
	Nil Cables Touching	0.30m	0.45m	0.60mm
2	0.90	0.93	0.95	0.96
3	0.83	0.88	0.91	0.93
4	0.79	0.85	0.89	0.92
5	0.75	0.83	0.88	0.91
6	0.73	0.82	0.87	0.90

4 INSTALLATION CONDITIONS FOR CABLES IN AIR

Cables installed in air could have many forms of installation methods as described in BS 7671 IEE wiring regulation 17th edition. Some of these methods are like C or B (for cables on Trefoil format laying as in table 12) or like E or F (For cables laid Flat vertically or horizontally as in table 12). It is assumed that the cables are not exposed to the direct sunlight and away from any external heat sources.

Table 12 : Installation methods for cables

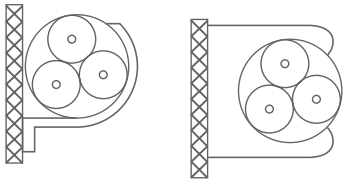
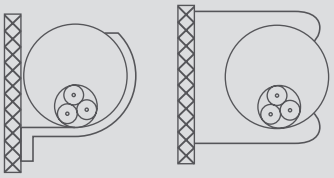
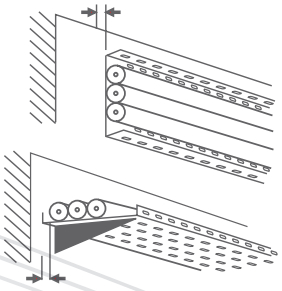
Installation Method	Description	Current Carrying Capacity Reference
	Multi core cables: Fixed on (clipped direct) or spaced less than 0.3 times the cable diameter from a wall	C
	Multi core cable in conduit, spaced less than 0.3 x conduit diameter	B
	Cables run horizontally or vertically flat on perforated tray For multi core cable De = Cable diameter	E or F

Table 13 : Rating factors for ambient air temperature variation

Air Temparature	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
XLPE Insulated	1.12	1.10	1.055	1.00	0.96	0.90	0.835	0.78

5 CURRENT CARRYING CAPACITY

Table 14 : 1.5 mm² Unarmoured or Lead Sheathed Armoured Control cables with copper conductor, XLPE insulated and PVC Sheathed, 0.6/1 kv

Conductor		Unarmoured		Lead Sheathed Armoured	
No. of cores	Cross Sectional Area mm²	Laid in Ground Direct Laid	Laid in Air Free Laid	Laid in Ground Direct Laid	Laid in Air Free Laid
		Approximate Amperes			
2	1.5	30	25	31	26
3		27	22	28	23
4		27	22	28	23
5		24	20	25	21
7		21	18	22	19
12		18	16	19	17
20		16	14	16	14
24		15	13	16	14
30		14	13	14	13
37		13	12	14	13

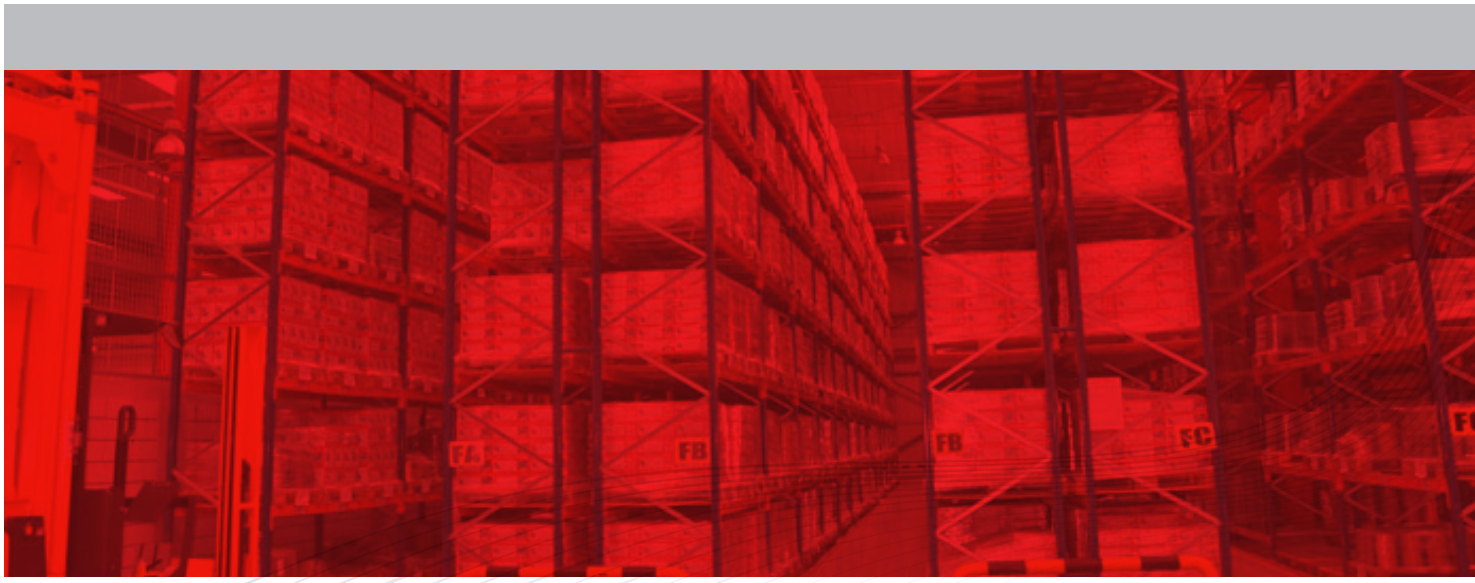


Table 15 : 2.5 mm² Unarmoured or Lead Sheathed & Armoured Control cables with copper conductor, XLPE insulated and PVC Sheathed, 0.6/1 kv

Conductor		Unarmoured		Lead Sheathed Armoured	
No. of cores	Cross Sectional Area mm²	Laid in Ground Direct Laid	Laid in Air Free Laid	Laid in Ground Direct Laid	Laid in Air Free Laid
		Approximate Amperes			
2	2.5	37	32	38	33
3		35	29	36	30
4		35	29	36	30
5		31	27	32	28
7		28	24	28	25
12		24	21	25	22
20		21	18	21	19
24		20	17	20	18
30		18	17	18	18
37		17	16	18	17

Table 16 : 4 mm² Unarmoured or Lead Sheathed & Armoured Control cables with copper conductor, XLPE insulated and PVC Sheathed, 0.6/1 kv

Conductor		Unarmoured		Lead Sheathed Armoured	
No. of cores	Cross Sectional Area mm²	Laid in Ground Direct Laid	Laid in Air Free Laid	Laid in Ground Direct Laid	Laid in Air Free Laid
		Approximate Amperes			
2	4	50	46	51	47
3		45	38	46	39
4		45	38	46	39
5		40	36	41	37
7		36	32	36	33
12		31	28	32	29
20		27	24	27	25
24		26	23	26	24
30		23	22	23	23
37		22	22	23	22

TECHNICAL INFORMATION

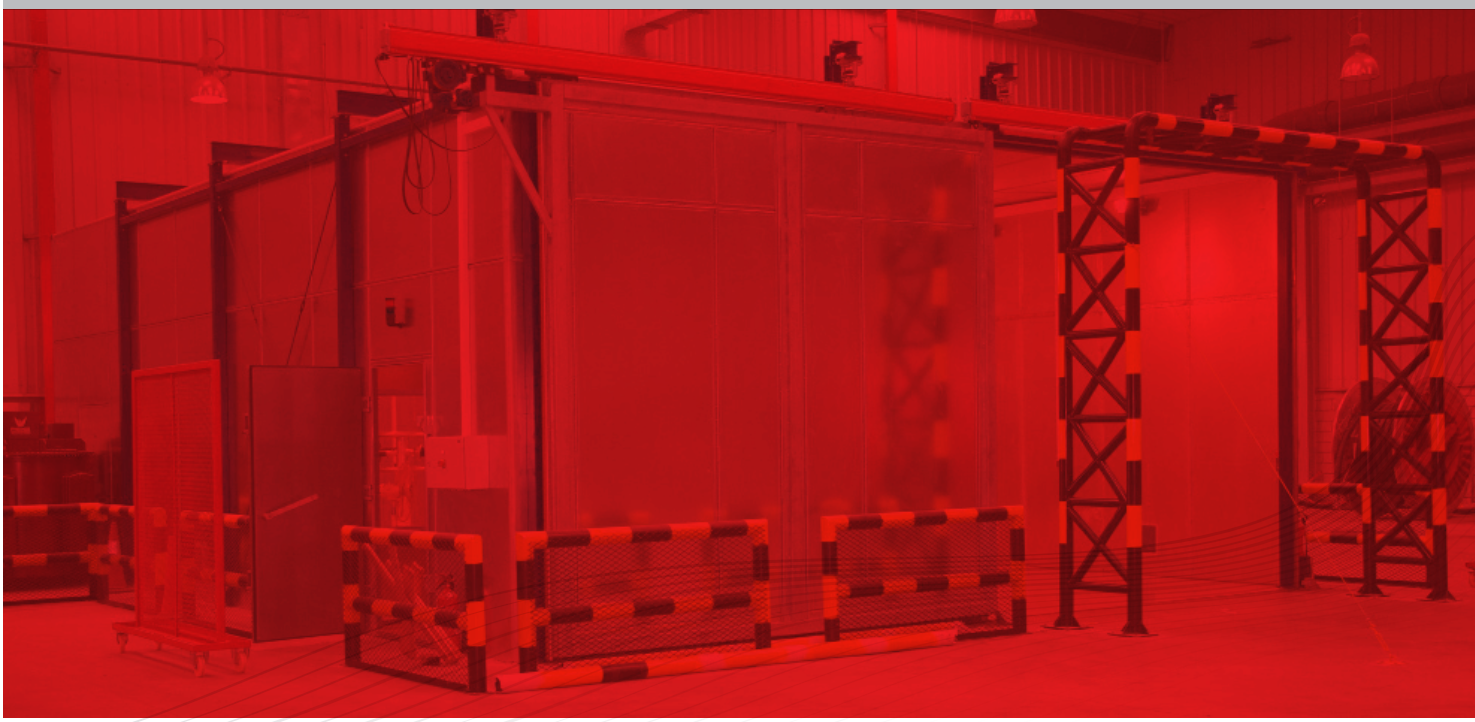
ELECTRICAL CHARACTERISTICS

ELECTRICAL PARAMETERS

According to BS 7671 IEE wiring regulation 17th edition, under normal service conditions the voltage at the terminals of any fixed current-using equipment shall be greater than the lower limit corresponding to the product standard relevant to the equipment.
Moreover, where fixed current-using equipment is not the subject of a product standard the voltage at the terminals shall be such as not to impair the safe functioning of the equipment.
This infers the importance of the voltage drop calculation for the low voltage control & Auxiliary cables, which is covered by this catalogue.

Table 17 : Conductor Resistance, Reactance, Impedance & Approximate Voltage drop

Insulation Type		XLPE insulated Cables (Rated 90°C)		
Conductor Size	mm²	1.5	2.5	4
Maximum DC resistance of Conductor @ 20°C	Ω / km	12.1	7.41	4.61
Approximate AC resistance of Conductor @ 90°C	Ω / km	15.4	9.45	5.88
Reactance at 60 Hz	Ω / km	0.165	0.143	0.132
Impedance	Ω / km	15.43	9.45	5.88
Approximate Voltage Drop	V/A/km	22.8	14	8.7



SHORT CIRCUIT RATING - CONDUCTORS

Short circuit characteristics is based on IEC 60724, for an insulated conductor with operating temperature of 90°C for XLPE cable and the maximum temperature during the fault is up to 250°C

Table 18: Maximum Short circuit temperature for cable components

Material	Item	Temp. °C
Insulation	XLPE insulation	250
Sheathing	PVC sheathing	200
	LDPE sheathing	150
	HDPE sheathing	180
	LS0H Sheathing	180

Table 19: Maximum Short circuit current for Control & Auxiliary cables

Conductor Size	Short Circuit Ratings for 1 second in k Amp
	XLPE Insulated Cables (Rated 90°C)
1.5	0.21
2.5	0.36
4.0	0.57

XLPE INSULATED PVC SHEATHED CABLES

UNARMOURED | 0.6/1 kV

CU/XLPE/PVC

Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- PVC oversheath / ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is no risk of mechanical damage.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

UNARMOURED | 0.6/1 kV

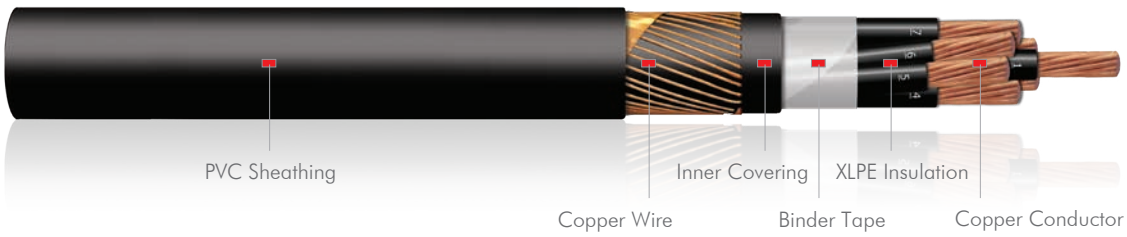
Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13511302	1.5	2	9.4	125	1000
13511303		3	9.8	145	1000
13511304		4	10.6	170	1000
13511305		5	11.4	195	1000
13511307		7	12.7	230	1000
13511312		12	16.1	355	1000
13511320		20	19	530	500
13511324		24	21.4	625	500
13511330		30	22.6	750	500
13511337		37	24.3	895	500
13511202	2.5	2	10.2	160	1000
13511203		3	10.8	190	1000
13511204		4	11.6	225	1000
13511205		5	12.6	265	1000
13511207		7	14.1	315	1000
13511212		12	17.9	495	1000
13511220		20	21.3	755	500
13511224		24	24	895	500
13511230		30	25.4	1075	500
13511237		37	27.3	1295	500
13511402	4	2	11.2	205	1000
13511403		3	11.8	245	1000
13511404		4	12.8	295	1000
13511405		5	13.9	350	1000
13511407		7	15.5	420	1000
13511412		12	19.9	675	1000
13511420		20	23.9	1045	500
13511424		24	27	1245	500
13511430		30	28.5	1510	500
13511437		37	31	1840	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED PVC SHEATHED CABLES

UNARMOURED | COPPER WIRE SCREENED | 0.6/1 kV

CU/XLPE/CW/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper wire screen with open helix Copper Tape
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is no risk of mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

UNARMOURED | COPPER WIRE SCREENED | 0.6/1 kV

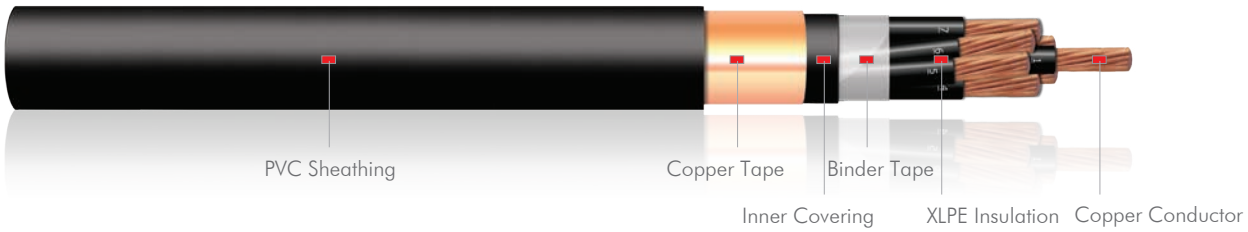
Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13551302	1.5	2	13	235	1000
13551303		3	13.5	255	1000
13551304		4	14.2	285	1000
13551305		5	15	320	1000
13551307		7	16.4	360	1000
13551312		12	19.7	510	1000
13551320		20	22.7	740	500
13551324		24	25.1	850	500
13551330		30	26.3	980	500
13551337		37	28.7	1180	500
13551202	2.5	2	13.6	275	1000
13551203		3	14.4	310	1000
13551204		4	15.3	350	1000
13551205		5	16.2	395	1000
13551207		7	17.7	455	1000
13551212		12	21.9	675	1000
13551220		20	25.8	1015	500
13551224		24	28.5	1175	500
13551230		30	29.8	1370	500
13551237		37	31.8	1600	500
13551402	4	2	15.2	345	1000
13551403		3	15.8	390	1000
13551404		4	16.8	445	1000
13551405		5	17.9	505	1000
13551407		7	19.5	590	1000
13551412		12	23.9	870	1000
13551420		20	27.8	1270	500
13551424		24	30.9	1490	500
13551430		30	32.7	1785	500
13551437		37	35.5	2175	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED PVC SHEATHED CABLES

UNARMOURED | COPPER TAPE SCREENED | 0.6/1 kV

CU/XLPE/CUT/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper tape screen applied helically with suitable overlap
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is no risk of mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

UNARMOURED | COPPER TAPE SCREENED | 0.6/1 kV

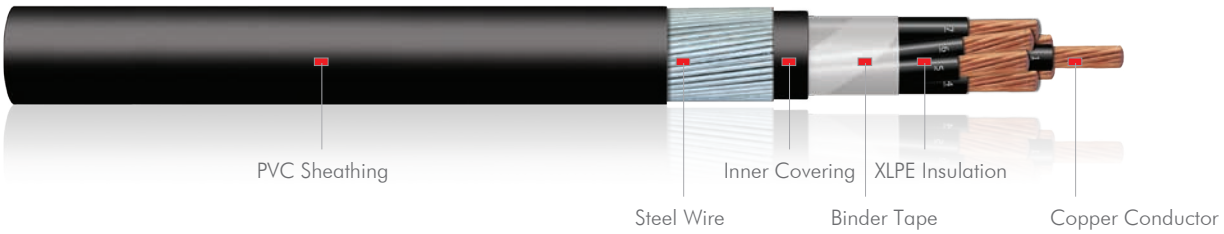
Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13541302	1.5	2	11.7	210	1000
13541303		3	12.1	230	1000
13541304		4	12.9	260	1000
13541305		5	13.7	290	1000
13541307		7	15	335	1000
13541312		12	18.4	485	1000
13541320		20	21.3	685	500
13541324		24	23.7	805	500
13541330		30	24.9	935	500
13541337		37	26.6	1095	500
13541202	2.5	2	12.5	250	1000
13541203		3	13.1	280	1000
13541204		4	13.9	325	1000
13541205		5	14.9	370	1000
13541207		7	16.4	430	1000
13541212		12	20.2	640	1000
13541220		20	23.6	930	500
13541224		24	26.3	1085	500
13541230		30	27.7	1285	500
13541237		37	29.6	1515	500
13541402	4	2	13.5	305	1000
13541403		3	14.1	350	1000
13541404		4	15.1	405	1000
13541405		5	16.2	470	1000
13541407		7	17.8	550	1000
13541412		12	22.2	835	1000
13541420		20	26.2	1245	500
13541424		24	29.3	1470	500
13541430		30	31	1760	500
13541437		37	33.7	2135	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED PVC SHEATHED CABLES

STEEL WIRE ARMOURED | 0.6/1 kV

CU/XLPE/SWA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Steel Wire Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of mechanical damage.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

STEEL WIRE ARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13531302	1.5	2	13.2	330	1000
13531303		3	13.6	360	1000
13531304		4	14.4	405	1000
13531305		5	15.2	450	1000
13531307		7	16.5	510	1000
13531312		12	20.6	810	1000
13531320		20	24.2	1210	500
13531324		24	26.6	1385	500
13531330		30	27.8	1555	500
13531337		37	29.5	1760	500
13531202	2.5	2	14	385	1000
13531203		3	14.6	425	1000
13531204		4	15.4	485	1000
13531205		5	16.4	545	1000
13531207		7	18.6	720	1000
13531212		12	22.4	1010	1000
13531220		20	26.5	1515	500
13531224		24	29.2	1750	500
13531230		30	30.8	2000	500
13531237		37	32.7	2290	500
13531402	4	2	15	455	1000
13531403		3	15.6	510	1000
13531404		4	16.6	580	1000
13531405		5	18.4	745	1000
13531407		7	20	865	1000
13531412		12	25.1	1375	1000
13531420		20	29.1	1895	500
13531424		24	32.4	2220	500
13531430		30	34.1	2565	500
13531437		37	37.8	3265	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED PVC SHEATHED CABLES

COPPER WIRE SCREENED | STEEL WIRE ARMOURED | 0.6/1 kV

CU/XLPE/CW/SWA/PVC

Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper wire screen with open helix Copper Tape
- Separation sheath
- Steel Wire Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of mechanical damage and where there is high level of magnetic noise

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

COPPER WIRE SCREENED | STEEL WIRE ARMOURED | 0.6/1 kV

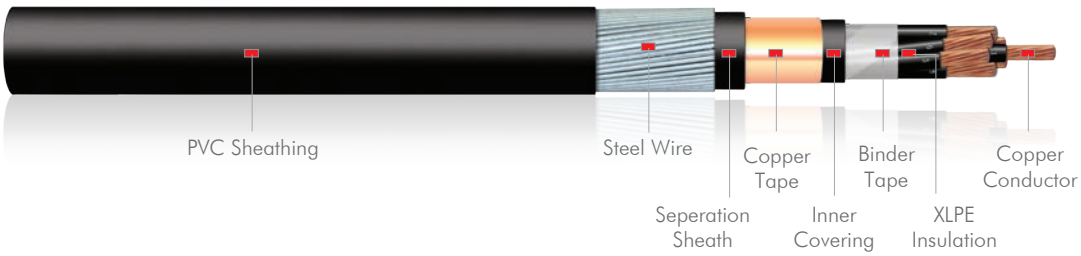
Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13591302	1.5	2	17.2	540	1000
13591303		3	17.7	575	1000
13591304		4	19.1	720	1000
13591305		5	19.9	775	1000
13591307		7	21.3	860	1000
13591312		12	25.3	1250	1000
13591320		20	28.3	1585	500
13591324		24	30.7	1780	500
13591330		30	32.1	1985	500
13591337		37	34.5	2265	500
13591202	2.5	2	18.8	695	1000
13591203		3	19.3	740	1000
13591204		4	20.2	810	1000
13591205		5	21.1	890	1000
13591207		7	22.6	990	1000
13591212		12	27.5	1500	1000
13591220		20	31.6	2000	500
13591224		24	34.3	2265	500
13591230		30	35.8	2520	500
13591237		37	38.8	3105	500
13591402	4	2	20.1	805	1000
13591403		3	20.7	875	1000
13591404		4	21.7	960	1000
13591405		5	22.8	1045	1000
13591407		7	24.4	1180	1000
13591412		12	29.2	1775	1000
13591420		20	34.1	2400	500
13591424		24	38.4	3020	500
13591430		30	40	3390	500
13591437		37	42.8	3880	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED PVC SHEATHED CABLES

COPPER TAPE SCREENED | STEEL WIRE ARMOURED | 0.6/1 kV

CU/XLPE/CUT/SWA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper tape screen applied helically with suitable overlap
- Separation sheath
- Steel Wire Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installatio n where there is a risk of mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

COPPER TAPE SCREENED | STEEL WIRE ARMOURED | 0.6/1 kV

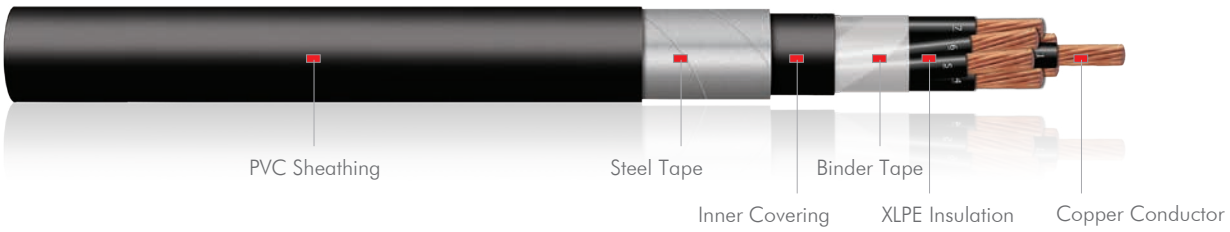
Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13581302	1.5	2	15.9	485	1000
13581303		3	16.3	515	1000
13581304		4	17.1	565	1000
13581305		5	18.6	710	1000
13581307		7	19.9	795	1000
13581312		12	23.3	1050	1000
13581320		20	26.9	1485	500
13581324		24	29.3	1685	500
13581330		30	30.7	1875	500
13581337		37	32.4	2095	500
13581202	2.5	2	16.7	550	1000
13581203		3	18	675	1000
13581204		4	18.8	745	1000
13581205		5	19.8	815	1000
13581207		7	21.3	930	1000
13581212		12	25.8	1385	1000
13581220		20	29.2	1810	500
13581224		24	32.1	2090	500
13581230		30	33.5	2330	500
13581237		37	36.4	2900	500
13581402	4	2	18.4	710	1000
13581403		3	19	780	1000
13581404		4	20	865	1000
13581405		5	21.1	965	1000
13581407		7	22.7	1090	1000
13581412		12	27.8	1660	1000
13581420		20	32	2225	500
13581424		24	36.1	2820	500
13581430		30	37.8	3185	500
13581437		37	40.7	3700	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED PVC SHEATHED CABLES

STEEL TAPE ARMOURED | 0.6/1 kV

CU/XLPE/STA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Double Steel Tape Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of mechanical damage.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

STEEL TAPE ARMOURED | 0.6/1 kV

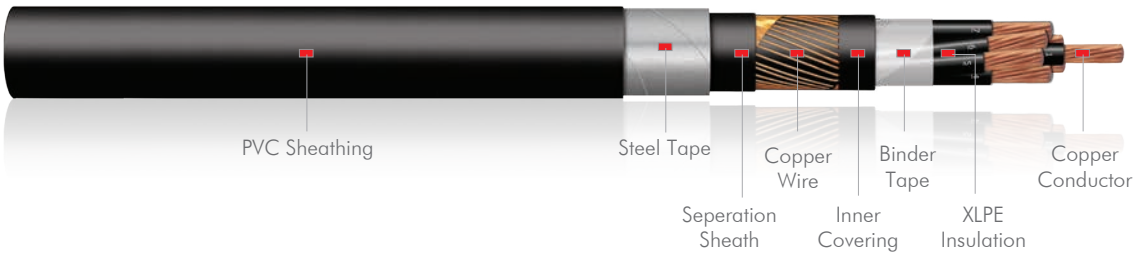
Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13521302	1.5	2	12.2	245	1000
13521303		3	12.6	270	1000
13521304		4	13.4	305	1000
13521305		5	14.2	340	1000
13521307		7	15.5	390	1000
13521312		12	18.9	555	1000
13521320		20	21.8	765	500
13521324		24	24.2	890	500
13521330		30	25.4	1025	500
13521337		37	27.1	1195	500
13521202	2.5	2	13	290	1000
13521203		3	13.6	325	1000
13521204		4	14.4	370	1000
13521205		5	15.4	420	1000
13521207		7	16.9	485	1000
13521212		12	20.7	710	1000
13521220		20	24.1	1015	500
13521224		24	26.8	1185	500
13521230		30	28.2	1390	500
13521237		37	30.1	1630	500
13521402	4	2	14	350	1000
13521403		3	14.6	395	1000
13521404		4	15.6	460	1000
13521405		5	16.7	525	1000
13521407		7	18.3	615	1000
13521412		12	22.7	920	1000
13521420		20	26.7	1345	500
13521424		24	29.8	1580	500
13521430		30	31.5	1875	500
13521437		37	34.4	2280	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED PVC SHEATHED CABLES

COPPER WIRE SCREENED | STEEL TAPE ARMOURED | 0.6/1 kV

CU/XLPE/CW/STA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper wire screen with open helix Copper Tape
- Separation sheath
- Double Steel Tape Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

COPPER WIRE SCREENED | STEEL TAPE ARMOURED | 0.6/1 kV

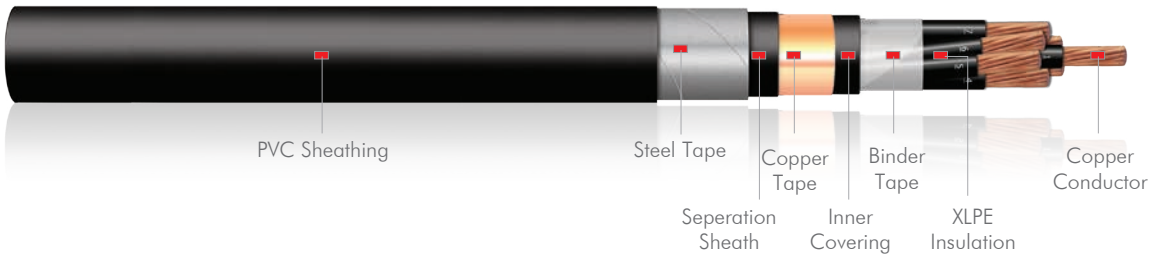
Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13571302	1.5	2	16.2	415	1000
13571303		3	16.7	440	1000
13571304		4	17.4	480	1000
13571305		5	18.2	525	1000
13571307		7	19.6	585	1000
13571312		12	22.9	775	1000
13571320		20	25.9	1045	500
13571324		24	28.3	1190	500
13571330		30	29.5	1335	500
13571337		37	32.1	1580	500
13571202	2.5	2	17.1	465	1000
13571203		3	17.6	505	1000
13571204		4	18.5	560	1000
13571205		5	19.4	615	1000
13571207		7	20.9	695	1000
13571212		12	25.1	970	1000
13571220		20	29	1365	500
13571224		24	31.7	1560	500
13571230		30	33.2	1785	500
13571237		37	35.4	2065	500
13571402	4	2	18.4	555	1000
13571403		3	19	605	1000
13571404		4	20	675	1000
13571405		5	21.1	750	1000
13571407		7	22.7	850	1000
13571412		12	26.8	1205	1000
13571420		20	31.7	1725	500
13571424		24	34.8	1985	500
13571430		30	36.6	2305	500
13571437		37	39.4	2730	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED PVC SHEATHED CABLES

COPPER TAPE SCREENED | STEEL TAPE ARMOURED | 0.6/1 kV

CU/XLPE/CUT/STA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessar
- Inner Covering
- Copper tape screen applied helically with suitable overlap
- Separation sheath
- Double Steel Tape Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of mechanical damage and where there is high level of magnetic noise.

Applicable Standards

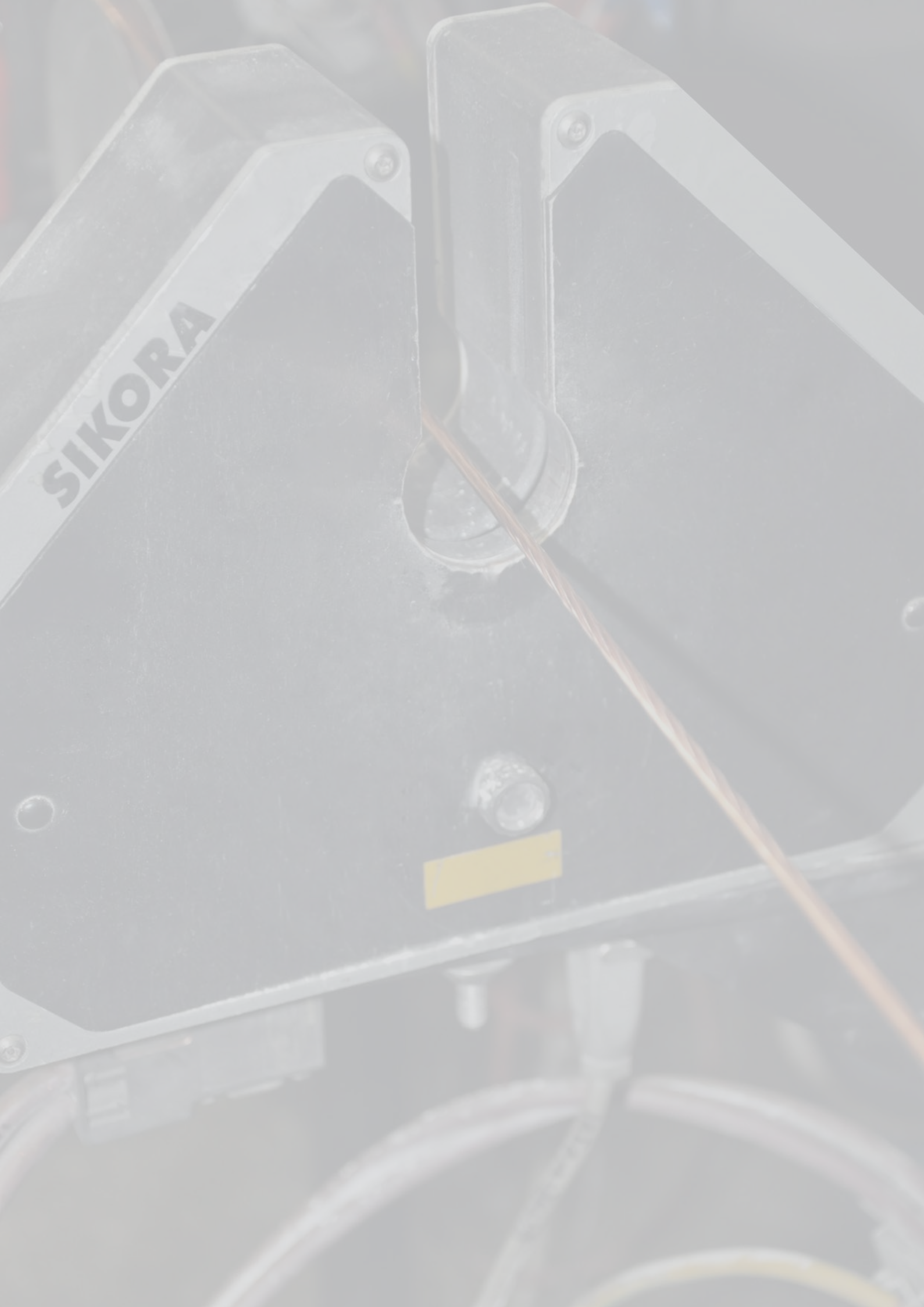
- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

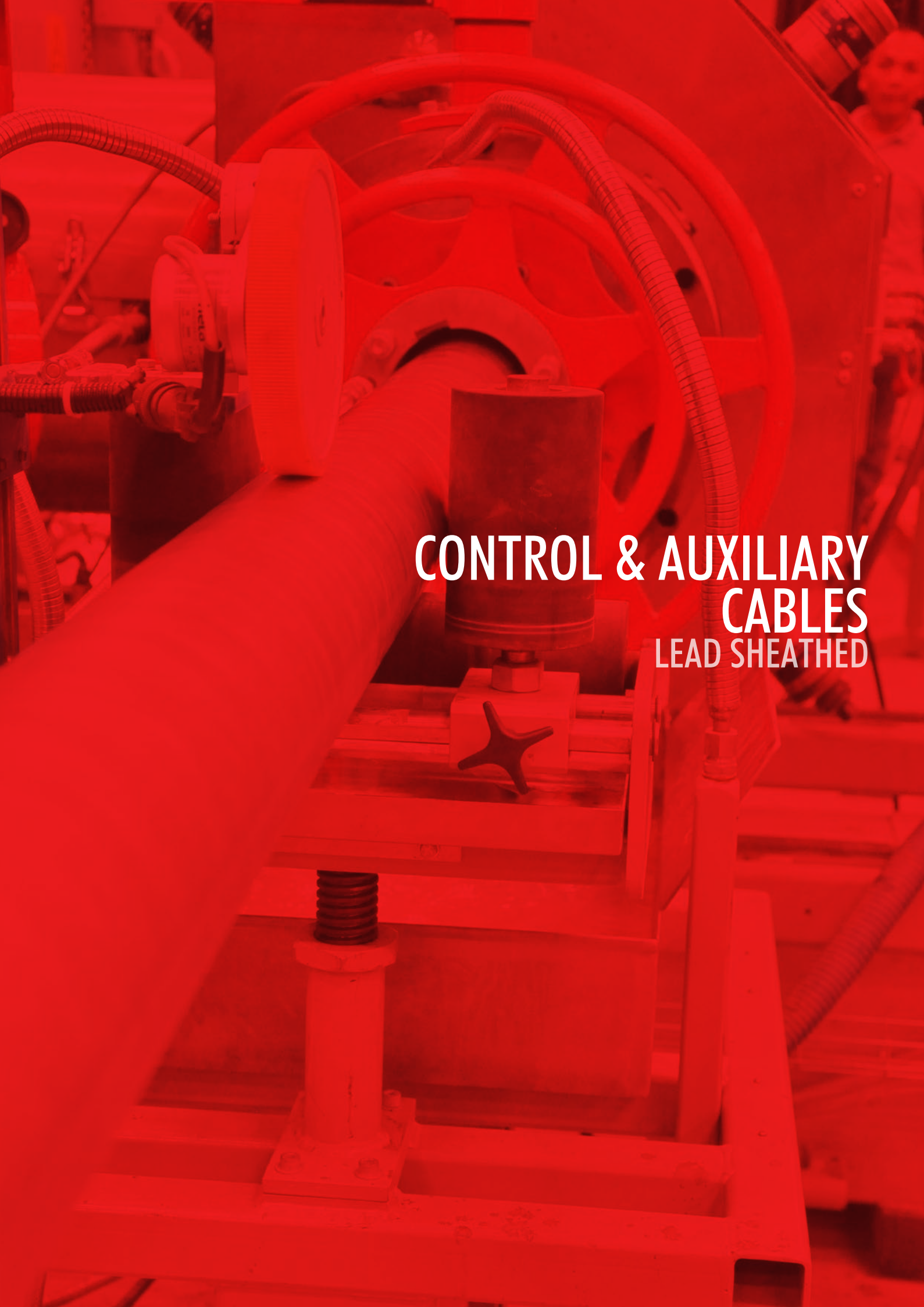
TECHNICAL INFORMATION

COPPER TAPE SCREENED | STEEL TAPE ARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13561302	1.5	2	14.9	370	1000
13561303		3	15.3	395	1000
13561304		4	16.1	435	1000
13561305		5	16.9	480	1000
13561307		7	18.2	540	1000
13561312		12	21.6	735	1000
13561320		20	24.5	975	500
13561324		24	26.9	1120	500
13561330		30	28.1	1265	500
13561337		37	29.8	1445	500
13561202	2.5	2	15.7	420	1000
13561203		3	16.3	460	1000
13561204		4	17.1	515	1000
13561205		5	18.1	570	1000
13561207		7	19.6	650	1000
13561212		12	23.4	910	1000
13561220		20	26.8	1245	500
13561224		24	29.5	1440	500
13561230		30	31.1	1670	500
13561237		37	33	1930	500
13561402	4	2	16.7	490	1000
13561403		3	17.3	540	1000
13561404		4	18.3	610	1000
13561405		5	19.4	685	1000
13561407		7	21	790	1000
13561412		12	25.4	1135	1000
13561420		20	29.4	1590	500
13561424		24	32.7	1870	500
13561430		30	34.4	2190	500
13561437		37	37.1	2595	500

Any other number of cores up to 37 are available upon request


SIKORA



CONTROL & AUXILIARY CABLES

LEAD SHEATHED

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

UNARMOURED | 0.6/1 kV

CU/XLPE/LC/PVC

Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Lead Sheath
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons & corrosive contaminants.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

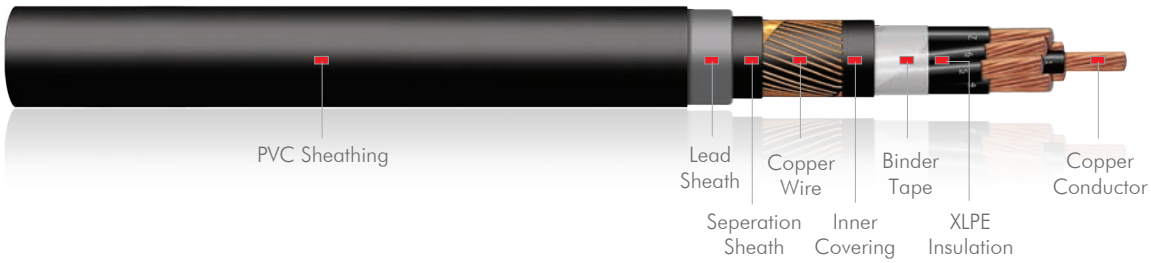
UNARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13611302	1.5	2	13.8	610	1000
13611303		3	14.2	650	1000
13611304		4	15	715	1000
13611305		5	15.8	780	1000
13611307		7	17.1	885	1000
13611312		12	20.5	1175	1000
13611320		20	23.4	1500	500
13611324		24	25.8	1715	500
13611330		30	27.2	1990	500
13611337		37	28.9	2225	500
13611202	2.5	2	14.6	690	1000
13611203		3	15.2	745	1000
13611204		4	16	825	1000
13611205		5	17	910	1000
13611207		7	18.5	1035	1000
13611212		12	22.3	1405	1000
13611220		20	25.7	1840	500
13611224		24	28.6	2210	500
13611230		30	30	2470	500
13611237		37	32.3	2920	500
13611402	4	2	15.6	785	1000
13611403		3	16.2	855	1000
13611404		4	17.2	955	1000
13611405		5	18.3	1065	1000
13611407		7	19.9	1215	1000
13611412		12	24.3	1690	1000
13611420		20	28.5	2355	500
13611424		24	32	2845	500
13611430		30	33.7	3225	500
13611437		37	36.6	3850	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

UNARMOURED | COPPER WIRE SCREENED | 0.6/1 kV
CU/XLPE/CW/LC/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper wire screen with open helix Copper Tape
- Separation sheath
- Lead Sheath
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons, corrosive contaminants, mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

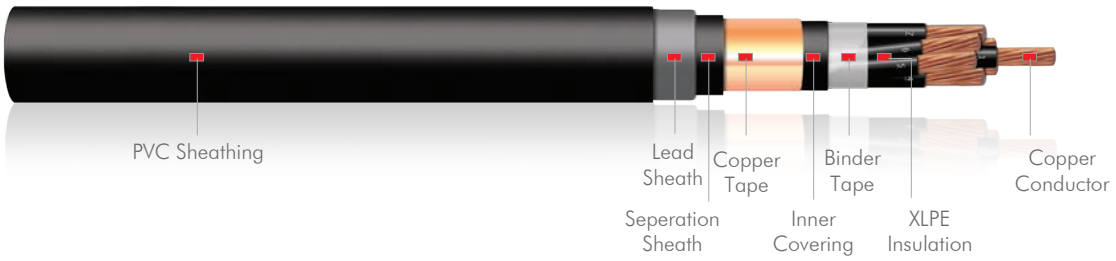
UNARMOURED | COPPER WIRE SCREENED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13651302	1.5	2	17.4	900	1000
13651303		3	17.9	945	1000
13651304		4	18.6	1015	1000
13651305		5	19.4	1085	1000
13651307		7	20.8	1200	1000
13651312		12	24.1	1515	1000
13651320		20	27.1	1895	500
13651324		24	29.7	2225	500
13651330		30	30.9	2420	500
13651337		37	33.7	2885	500
13651202	2.5	2	18.3	990	1000
13651203		3	18.8	1045	1000
13651204		4	19.7	1130	1000
13651205		5	20.6	1225	1000
13651207		7	22.1	1355	1000
13651212		12	26.3	1790	1000
13651220		20	30.4	2430	500
13651224		24	33.5	2865	500
13651230		30	34.8	3140	500
13651237		37	37.4	3665	500
13651402	4	2	19.6	1120	1000
13651403		3	20.2	1195	1000
13651404		4	21.2	1305	1000
13651405		5	22.3	1420	1000
13651407		7	23.9	1580	1000
13651412		12	28.2	2185	1000
13651420		20	33.3	3010	500
13651424		24	37	3585	500
13651430		30	38.8	3985	500
13651437		37	42	4715	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

UNARMOURED | COPPER TAPE SCREENED | 0.6/1 kV
CU/XLPE/CUT/LC/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper tape screen applied helically with suitable overlap
- Separation sheath
- Lead Sheath
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons, corrosive contaminants, mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

UNARMOURED | COPPER TAPE SCREENED | 0.6/1 kV

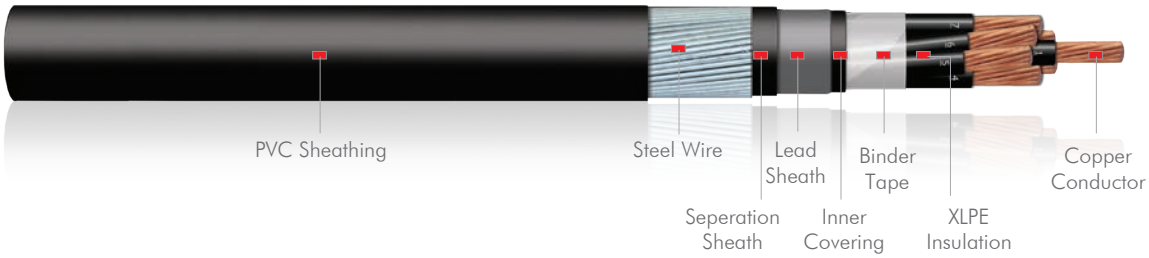
Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13641302	1.5	2	16.1	805	1000
13641303		3	16.5	850	1000
13641304		4	17.3	915	1000
13641305		5	18.1	990	1000
13641307		7	19.4	1105	1000
13641312		12	22.8	1425	1000
13641320		20	25.7	1770	500
13641324		24	28.3	2100	500
13641330		30	29.5	2295	500
13641337		37	31.6	2670	500
13641202	2.5	2	16.9	890	1000
13641203		3	17.5	950	1000
13641204		4	18.3	1035	1000
13641205		5	19.3	1130	1000
13641207		7	20.8	1265	1000
13641212		12	24.6	1670	1000
13641220		20	28.2	2225	500
13641224		24	31.3	2650	500
13641230		30	32.7	2930	500
13641237		37	35.2	3440	500
13641402	4	2	17.9	995	1000
13641403		3	18.5	1070	1000
13641404		4	19.5	1175	1000
13641405		5	20.6	1295	1000
13641407		7	22.2	1460	1000
13641412		12	26.6	1970	1000
13641420		20	31.2	2795	500
13641424		24	34.9	3360	500
13641430		30	36.4	3740	500
13641437		37	39.5	4435	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

STEEL WIRE ARMOURED | 0.6/1 kV

CU/XLPE/LC/SWA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Lead Sheath
- Separation sheath
- Steel Wire Armoured
- PVC over sheath /ST2 according to IEC 60502-

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons, corrosive contaminants and mechanical damage.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

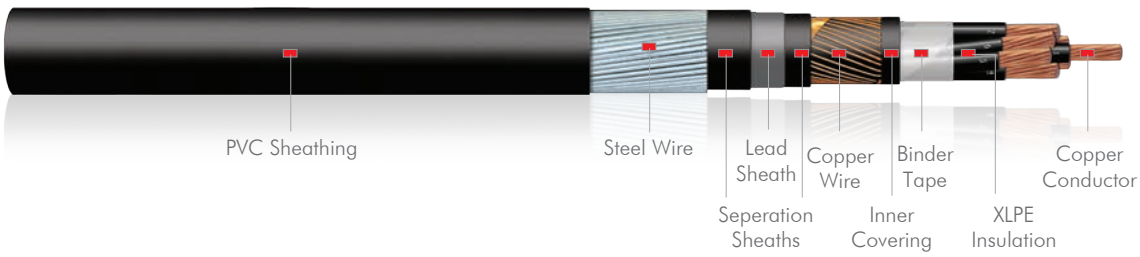
STEEL WIRE ARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13631302	1.5	2	18.3	1000	1000
13631303		3	18.7	1055	1000
13631304		4	19.5	1145	1000
13631305		5	20.3	1235	1000
13631307		7	21.6	1375	1000
13631312		12	25.7	1895	1000
13631320		20	28.6	2340	500
13631324		24	31.2	2650	500
13631330		30	32.6	2985	500
13631337		37	35.5	3535	500
13631202	2.5	2	19.1	1110	1000
13631203		3	19.7	1175	1000
13631204		4	20.5	1280	1000
13631205		5	21.5	1390	1000
13631207		7	23	1565	1000
13631212		12	27.5	2205	1000
13631220		20	31.1	2775	500
13631224		24	34.4	3300	500
13631230		30	36.8	3860	500
13631237		37	38.9	4390	500
13631402	4	2	20.1	1230	1000
13631403		3	20.7	1320	1000
13631404		4	21.7	1450	1000
13631405		5	23.5	1705	1000
13631407		7	25.1	1915	1000
13631412		12	29.5	2550	1000
13631420		20	35.1	3665	500
13631424		24	38.6	4285	500
13631430		30	40.3	4755	500
13631437		37	43.6	5555	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

COPPER WIRE SCREENED | STEEL WIRE ARMOURED | 0.6/1 kV
CU/XLPE/CW/LC/SWA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper wire screen with open helix copper tape
- Separation sheath
- Lead Sheath
- Separation sheath
- Steel Wire Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons, corrosive contaminants, mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

COPPER WIRE SCREENED | STEEL WIRE ARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13691302	1.5	2	21.9	1395	1000
13691303		3	22.4	1450	1000
13691304		4	23.1	1545	1000
13691305		5	24.6	1770	1000
13691307		7	26	1940	1000
13691312		12	29.3	2375	1000
13691320		20	32.5	2875	500
13691324		24	35.5	3355	500
13691330		30	37.7	3845	500
13691337		37	40.3	4415	500
13691202	2.5	2	22.8	1520	1000
13691203		3	23.3	1590	1000
13691204		4	24.9	1830	1000
13691205		5	25.8	1960	1000
13691207		7	27.3	2140	1000
13691212		12	31.5	2730	1000
13691220		20	37	3805	500
13691224		24	40.1	4395	500
13691230		30	41.6	4755	500
13691237		37	44.2	5405	500
13691402	4	2	24.8	1820	1000
13691403		3	25.4	1915	1000
13691404		4	26.4	2060	1000
13691405		5	27.5	2220	1000
13691407		7	29.1	2440	1000
13691412		12	33.6	3205	1000
13691420		20	39.9	4510	500
13691424		24	43.8	5295	500
13691430		30	45.6	5760	500
13691437		37	50	7070	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

COPPER TAPE SCREENED | STEEL WIRE ARMOURED | 0.6/1 kV
CU/XLPE/CUT/LC/SWA/PVC

Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper tape screen applied helically with suitable overlap
- Separation sheath
- Lead Sheath
- Separation sheath
- Steel Wire Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons, corrosive contaminants, mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

COPPER TAPE SCREENED | STEEL WIRE ARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13681302	1.5	2	20.6	1260	1000
13681303		3	21	1315	1000
13681304		4	21.8	1410	1000
13681305		5	22.6	1510	1000
13681307		7	24.6	1785	1000
13681312		12	28	2225	1000
13681320		20	31.1	2710	500
13681324		24	33.9	3150	500
13681330		30	36.1	3635	500
13681337		37	38.2	4105	500
13681202	2.5	2	21.4	1375	1000
13681203		3	22	1455	1000
13681204		4	22.8	1565	1000
13681205		5	24.5	1810	1000
13681207		7	26	2005	1000
13681212		12	29.8	2550	1000
13681220		20	34	3290	500
13681224		24	37.9	4085	500
13681230		30	39.3	4425	500
13681237		37	42	5060	500
13681402	4	2	22.4	1515	1000
13681403		3	23.7	1730	1000
13681404		4	24.7	1860	1000
13681405		5	25.8	2015	1000
13681407		7	27.4	2240	1000
13681412		12	32	2945	1000
13681420		20	37.8	4200	500
13681424		24	41.7	4975	500
13681430		30	43.4	5445	500
13681437		37	46.3	6245	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

STEEL TAPE ARMOURED | 0.6/1 kV

CU/XLPE/LC/STA/PVC

Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Lead Sheath
- Separation sheath
- Double Steel Tape Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons, corrosive contaminants and mechanical damage.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

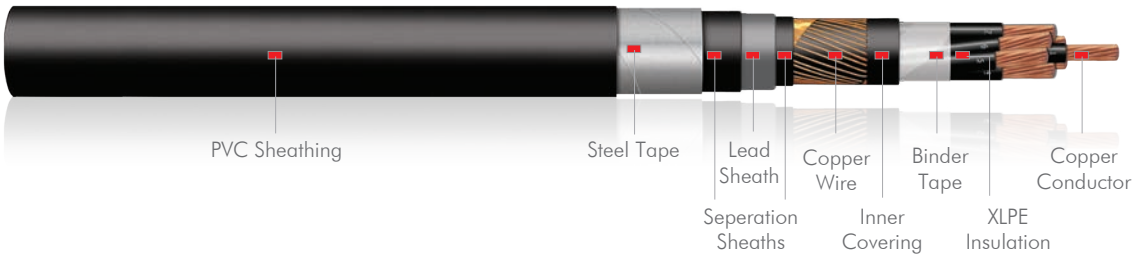
STEEL TAPE ARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13621302	1.5	2	16.6	780	1000
13621303		3	17	825	1000
13621304		4	17.8	895	1000
13621305		5	18.6	975	1000
13621307		7	19.9	1095	1000
13621312		12	23.3	1425	1000
13621320		20	26.2	1785	500
13621324		24	28.6	2030	500
13621330		30	30	2320	500
13621337		37	32.1	2610	500
13621202	2.5	2	17.4	870	1000
13621203		3	18	930	1000
13621204		4	18.8	1020	1000
13621205		5	19.8	1115	1000
13621207		7	21.3	1260	1000
13621212		12	25.1	1680	1000
13621220		20	28.5	2150	500
13621224		24	31.8	2595	500
13621230		30	33.2	2870	500
13621237		37	35.5	3350	500
13621402	4	2	18.4	975	1000
13621403		3	19	1055	1000
13621404		4	20	1165	1000
13621405		5	21.1	1285	1000
13621407		7	22.7	1460	1000
13621412		12	27.1	1985	1000
13621420		20	31.7	2735	500
13621424		24	35.2	3270	500
13621430		30	36.9	3670	500
13621437		37	41.4	4745	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

COPPER WIRE SCREENED | STEEL TAPE ARMOURED | 0.6/1 kV
CU/XLPE/CW/LC/STA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper wire screen with open helix copper tape
- Separation sheath
- Lead Sheath
- Separation sheath
- Double Steel Tape Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons, corrosive contaminants, mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

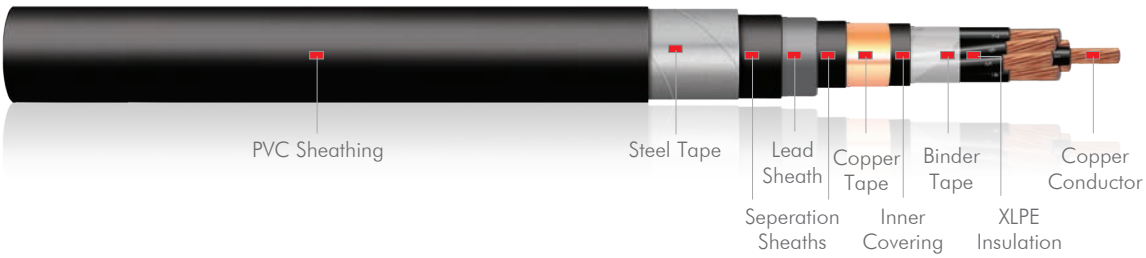
COPPER WIRE SCREENED | STEEL TAPE ARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13671302	1.5	2	20.2	1115	1000
13671303		3	20.7	1165	1000
13671304		4	21.4	1240	1000
13671305		5	22.2	1325	1000
13671307		7	23.6	1450	1000
13671312		12	26.9	1805	1000
13671320		20	29.9	2225	500
13671324		24	32.9	2620	500
13671330		30	34.1	2835	500
13671337		37	36.9	3330	500
13671202	2.5	2	21.1	1210	1000
13671203		3	21.6	1275	1000
13671204		4	22.5	1370	1000
13671205		5	23.4	1475	1000
13671207		7	24.9	1625	1000
13671212		12	29.1	2110	1000
13671220		20	33.6	2835	500
13671224		24	36.7	3310	500
13671230		30	38	3605	500
13671237		37	42.2	4575	500
13671402	4	2	22.4	1360	1000
13671403		3	23	1440	1000
13671404		4	24	1560	1000
13671405		5	25.1	1690	1000
13671407		7	26.7	1875	1000
13671412		12	31	2530	1000
13671420		20	36.5	3450	500
13671424		24	41.8	4490	500
13671430		30	43.4	4905	500
13671437		37	46.8	5740	500

Any other number of cores up to 37 are available upon request

XLPE INSULATED, LEAD SHEATHED & PVC SHEATHED CABLES

COPPER TAPE SCREENED | STEEL TAPE ARMOURED | 0.6/1 kV
CU/XLPE/CUT/LC/STA/PVC



Cable Construction

- Stranded annealed plain copper conductor class 2 according to IEC 60228
- XLPE insulation / 90°C
- Cores assembled together and wrapped using polymer tape and fillers when necessary
- Inner Covering
- Copper tape screen applied helically with suitable overlap
- Separation sheath
- Lead Sheath
- Separation sheath
- Double Steel Tape Armoured
- PVC over sheath /ST2 according to IEC 60502-1

Special Features

- These cables are used to carry analogue and digital signals for measurements and process control purposes
- They are suitable for installation where there is a risk of moisture, hydrocarbons, corrosive contaminants, mechanical damage and where there is high level of magnetic noise.

Applicable Standards

- IEC 60228 & BS EN 60228
- IEC 60502-1 & IEC 60332-1

TECHNICAL INFORMATION

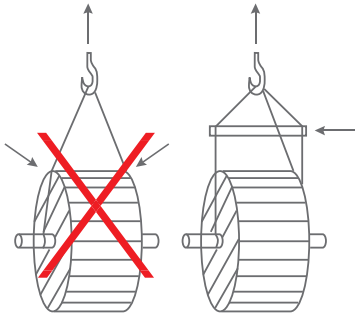
COPPER TAPE SCREENED | STEEL TAPE ARMOURED | 0.6/1 kV

Cable Code	Conductor		Dimensions	Packaging	
	Size	No. of Cores	Overall Diameter Approx.	Net Weight Approx.	Delivery Length (± 5 %)
	mm^2	No.	mm	Kg/km	M
13661302	1.5	2	18.9	1000	1000
13661303		3	19.3	1050	1000
13661304		4	20.1	1130	1000
13661305		5	20.9	1215	1000
13661307		7	22.2	1340	1000
13661312		12	25.6	1700	1000
13661320		20	28.5	2085	500
13661324		24	31.3	2460	500
13661330		30	32.7	2690	500
13661337		37	34.8	3085	500
13661202	2.5	2	19.7	1100	1000
13661203		3	20.3	1160	1000
13661204		4	21.1	1260	1000
13661205		5	22.1	1365	1000
13661207		7	23.6	1520	1000
13661212		12	27.4	1970	1000
13661220		20	31.4	2600	500
13661224		24	34.5	3070	500
13661230		30	35.9	3360	500
13661237		37	39.8	4285	500
13661402	4	2	20.7	1215	1000
13661403		3	21.3	1295	1000
13661404		4	22.3	1415	1000
13661405		5	23.4	1545	1000
13661407		7	25	1730	1000
13661412		12	29.4	2290	1000
13661420		20	34.4	3210	500
13661424		24	39.5	4195	500
13661430		30	41.2	4635	500
13661437		37	44.3	5395	500

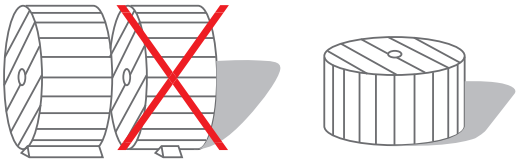
Any other number of cores up to 37 are available upon request

DRUM HANDLING INSTRUCTIONS

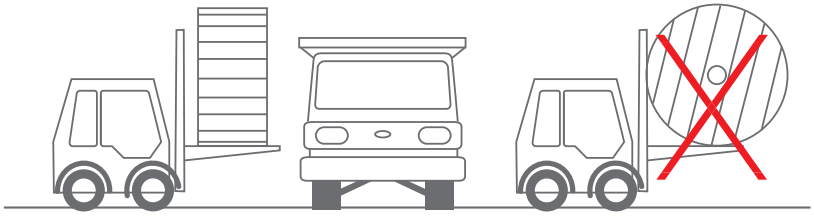
Cables and Conductors should be installed by trained personnel in accordance with good engineering practices, recognized codes of practise, statutory local requirements, IEE wiring regulations and where relevant, in accordance with any specific instructions issued by the company. Cables are often supplied in heavy cable reels and handling these reels can constitute a safety hazard. In particular, dangers may arise during the removal of steel binding straps and during the removal of retaining battens and timbers which may expose projecting nails.



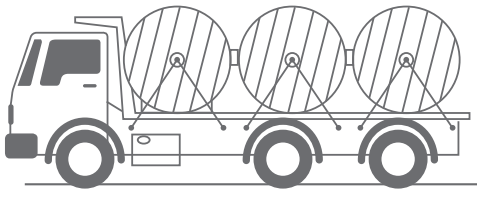
Lifting cable drums using crane.



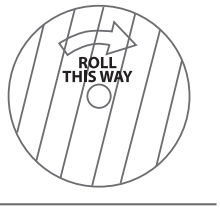
Do not lay drums flat on their sides, use proper stops to prevent drums roling.



Lift drums on fork trucks correctly.



Secure drums adequately before transportation.



Roll in the direction shown by the arrow.

RECOMMENDATIONS FOR CABLES INSTALLATION

PRODUCT LIFE DATA

Low Voltage Control and Auxiliary cables are not subjected to high electric stress, the XLPE insulating material has a dielectric strength voltage of about 22 KV, with the best manufacturing and testing practice applied in Bahra Cables Company to ensure good quality insulation . As Insulation treeing is uncommon problem for LV cables, the chance of electric break down is very minor. The PVC or PE jacketing material is very stable against most of the Chemical traces could be existing at the soil, these material with Black colour Master batch up to 2.5 % have a strong resistance against UV and Environmental conditions.
The cables have to be selected and installed as per the recommendation mentioned below.
By keeping such standard of installation and operation, Low Voltage Control and Auxiliary cables can survive in service for a long time without failure.

RECOMMENDATIONS FOR THE SELECTION, INSTALLATIONS AND OPERATION OF CABLES

- The cables are intended to be installed in air, or for burial in free draining soil Conditions. Where the cables are to be laid in any other environment, reference should be made to the cable manufacturer - Bahra Cables Company.

- The rated voltage of the cable for a given application should be suitable for the operating conditions in the system in which the cable is used.

- Precautions should be taken to avoid mechanical damage to the cables before and during installation.

- If cables are to be installed in ducts, the correct size of duct should be used.

- The type of jointing and filling compounds employed should be chemically compatible with the cable materials.

- The cable support system should be such as to avoid damage to the cables.

- Cables specified in this catalogue are designed for fixed installations only; they are not intended for use as, for example, trailing or reeling cables.

- The selection of cable glands, accessories and any associated tools should take account of all aspects of intended use.

CABLES INSTALLED IN HAZARDOUS AREAS

Where cables are required to be installed in areas classified as hazardous, i.e. potentially explosive gas atmospheres, reference should be made to IEC 60079-14

CURRENT RATINGS

The current rates introduced previously in this catalogue have to be followed.

- Cables should be installed and used in association with other equipment in accordance with BS7671 and/or the Electricity Safety, Quality and Continuity Regulations, as appropriate. In special environments, the appropriate regulations and codes of practice should be observed.

RECOMMENDATIONS FOR CABLES INSTALLATION

- Minimum temperature during installation It is recommended that the cables be installed only when both the cable and ambient temperatures are above 0 °C and have been so for the previous 24 h, or where special precautions have been taken to maintain the cable above this temperature.

MINIMUM INSTALLATION RADIUS

None of the cables specified in this catalogue should be bent during installation to a radius smaller than that given in BCC product Catalogues and the offered data sheets, wherever possible, larger installation radius should be used.

PREVENTION OF MOISTURE INGRESS

Care should be exercised during installation to avoid any damage to cable coverings. This is important in wet or other aggressive environments. The protective cable end cap should not be removed from the ends of the cable until immediately prior to termination or jointing, especially for cables that do not have extruded bedding. When the end caps have been removed the unprotected ends of the cable should not be exposed to any kind of moisture.

CABLES FAULTS PREVENTION

The Low Voltage Control and Auxiliary Cables faults are possible due to different reasons:

1. Physical damage due to mishandling or misuse
2. Physical Damage during operations.
3. Over current.
4. Fire or excessive temperature at the cables location.
5. Manufacturing malfunction, which Bahra Cables Company guarantees its product against any defect or wrong workmanship, meanwhile in case of damage due to this reason, the action will be taken as per the submitted warranty letter, and the company will apply the required corrective and preventive actions.

Recommendation for failures:

Insulation failure, the defected section is recommended to be replaced , the replacement should be from joint to joint.

Serving/ jacketing failure, if the water did not ingress through the cable, the jacket will be repaired using proper repairing techniques carried out by skilled technician. If the water came inside the cables to insulation, for cables suitable for wet location, practically dry the defected portion before repair.

If the cable is not suitable for wet applications and the underground water engrossed inside it, replacing the defected section from joint to joint is the recommend solution.

ORDERING INFORMATION

To serve our customer in minimum time and high efficiency, our valuable customers are requested to provide the following details along with their enquiries and orders:

1. Number of phases/cores.
2. Conductor required cross sectional area (conductor size along with size of neutral phase).
3. Conductor class (2 Stranded, 1 Solid or 5 Flexible) according to IEC 60228
4. System Voltage Rate.
5. Applicable customer specification or International Standard / Norm.
6. Insulation Material (PVC/XLPE/LSZH).
7. Bedding / Inner Sheathing (Inner Jacketing (PVC/PE, ..).
8. Screen Type (Copper Wire/Copper Tape)
9. Lead Sheath if required
10. Armouring Type (SWA/STA).
11. Cable jacketing material (PVC/MDPE/LSZH).
12. Cable special features required, e.g. circular conductors, Flame Retardant Type to IEC 60332-3, Anti-termite.
13. Required length of cables (drum schedules)

LOCATION MAP