



#### **ENVIRONMENTAL POLICY**

#### **Elsewedy Power Cables**

has identified environmental management as one of its highest corporate priorities.

#### **Elsewedy Power Cables**

has established policies, programs and practices to reduce risk to the environment and to "Conduct business activities in an environmentally sound manner".

#### **Our Commitment**

- Integrate our environmental policies and procedures fully into all business activities as a critical element.
- Comply with all environmental legislation, standards and contract requirements that are applicable to the company's operation.
- Continually improve four environmental performance and prevention of environment impact considering all current best practice, technological advances & current scientific.
- Moreover understanding, customer and community needs, educate, train and promote employees to work in an environmentally responsible manner.
- Carry out complete environmental assessments for aspects and impacts of all new activities that the company may undertake, promote, develop and design services, facilities, equipment and work practices that have the least environmental impact, considering the efficient use of energy and materials, the sustainable use of renewable resources and the responsible disposal of waste, thereby minimizing any serious or irreversible environmental degradation.
- Promote and encourage the adoption of these principals by suppliers and contractors acting on behalf of the organization.
- Develop, implement and maintain emergency preparedness plans, provide the communications means for openness dialogue with employees.
- Encouraging them to respond with their concerns or improvement ideas within the scope of the organization's operations.
- Maintain a set of environmental objectives and targets that are monitored through the management review process to ensure effectiveness.



## **QUALITY POLICY**

#### **Customer Satisfaction First**

Our top Priority is to provide our customer with Outstanding Customer Experience in the different interactions with us and to achieve that we do:

#### **QUALITY OBJECTIVES**

- We endeavor to consistently meet or exceed our Clients' expectations with regards to excellence in quality, timeliness and value for money.
- Respond to complaints by acting immediately and decisively, thereby improving our service delivery and company resilience.
- Identify, report, investigate and resolve all nonconformance and take action to prevent recurrence.
- To strive to continually improve our products & services provided to Clients, through using of this Quality Policy, quality objectives, performance.
- Educate and train our people to continually improve their skills, awareness and knowledge to foster core values in quality excellence and practices.
- Maintain and calibrate equipment to meet or exceed the applicable standard or statutory obligation.
- Uphold regulatory compliance including ongoing review of statutory obligations, standards and codes of practice that apply to our Business.
- To maintain and monitor a culture that supports these objectives.

#### **OUR COMMITMENT**

- We commit to provide our customers with world class Product & Services moreover complying with all legislative and client requirements whilst continually improving the effectiveness of our Business Management System.
- This Quality Policy is evaluated as part of the overall review of the Quality Management System to ensure its stated objectives are met.

#### **OUR VALUES**

- Teamwork
- Innovation
- Knowledge
- Excellence
- Integrity
- Honesty Loyalty
- Reliability

#### **OUR VISION**

- Expanding our reputation as a world class electric cables manufacturer and distributor.
- Delivering long term benefits and services to consumers.
- Establishing our brand as the most effective element in energy solutions.
- Enabling greater understanding of the market and its development.
- Positioning our brands as the credible source in the electric industry and marketplace.

#### **OUR MISSION**

- Manufacturing and marketing safe energy products in order to developing our society and environment.
- Maintaining a successful growth rate in electric cables.
- Providing suitable prices and facilitating consumer needs.
- Offering a variety of the most innovative products and solutions to consumers within the frameworks of transparency and efficiency.



#### **HEALTH & SAFETY POLICY**

#### Together we will make our work environment Healthy & Safely

"Through the way we work and behave, all our people and stakeholders will be protected from risks of occupational injury or ill health. "We will lead industry by promoting best practice and exceeding"

It is our intent to demonstrate an ongoing and determined commitment to improving health and safety at work throughout our organization.

This policy reflects our commitment to ensuring that health and safety at work is paramount to the business, and that effective health and safety actively contributes to our success.

#### **Management Will:**

- Make sure that all our people and stakeholders have an awareness and understanding of health and safety hazards and risks that affect our business.
- Adequate resources will be provided to ensure all our people and stakeholders are aware of this policy and committed to its effective implementation.
- Set health and safety objectives and performance criteria for all managers and work areas Annually review health and safety objectives and managers' performance.
- Encourage accurate and timely reporting and recording of all incidents and injuries.
- Investigate all reported incidents and injuries to identify all contributing factors and, where appropriate, formulate plans for corrective action.
- Actively encourage the early reporting of any pain or discomfort.
- Provide treatment and rehabilitation plans that ensure a safe, early and durable return to work.
- Identify all existing and new hazards and take all practicable steps to eliminate or minimize the exposure to any hazards.
- Encourage employee consultation and participation in all health and safety matters.
- Promote a system of continuous improvement, including annual reviews of policies and procedures.
- Meet legal obligations as specified in the legislation, codes of practice and any relevant standards or guidelines.
- Every manager, supervisor or foreperson is accountable to the employer for the health and safety of employees working under their direction.
- Each employee is expected to help maintain a safe and healthy workplace through:
  - Following all safe work procedures, rules and instructions.
  - Share in the commitment to health and safety.
  - Properly using all PPE provided.

"We are generating a culture that does not tolerate threats to health and safety and ensuring the real involvement of all our people, Vendors and stakeholders."

This policy has immediate effect and replaces all previous versions. This policy will be reviewed and amended, as necessary.



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# GENERAL INFORMATION AND TECHNICAL DATA

#### **GENERAL INFORMATION**

The following factors are important when selecting a suitable cable construction which is required to transport electrical energy from the power station to the consumer.

- Maximum operating voltage.
- Insulation level.
- Frequency.
- Load to be carried.
- Magnitude and duration of possible overload.
- Magnitude and duration of short-circuit current.
- Voltage drop.
- Length of line.
- Type of installation Underground (direct or in ducts) In air.
- Chemical and physical properties of soil.
- Max. and min. ambient air temperatures and soil temperature.
- Specification and requirements to be met.

#### **Voltage**

The standard rated voltage of a cable is denoted by Uo/U (Um),

#### Where

Uo: is the rated power-frequency voltage between conductor and earth or metallic screen.

U: is the rated power-frequency voltage between conductors.

Um: is the maximum continuously permissible operating voltage of a cable at time or in any part of the network.

UO/U	(KV)	0.6/1	1.8/3	3.6/6	6/10	8.7/15	12/20	18/30	38/66	76/132	127/220
UM	(KV)	1.2	3.6	7.2	12	17.5	24	36	72.5	145	245

Note: Cable design for 6/10, 12/20 and 18/30 kv is applicable for 6.35/11, 12.7/22 and 19/33 kv respectively.

#### **Standards**

Cables described in this catalogue are standard types, and their performance has been proved in operation. Construction and tests are in accordance with the recommendation of IEC publications where ever applicable. Power cables in accordance to other standard (e.g. BS, HD, NEMA) can be manufactured upon customer's request.

#### **Weight and Dimension**

Weight and dimension are approximate.

The deviations are due to manufacturing tolerance.

#### **Jacket Marking**

Standard embossed outer Jacket Marking consisting of:

- -1 Name of manufacturer." EL SEWEDY POWER CABLES"
- -2 Type designation, size of conductor, rated voltage.
- -3 Continous length marking every meter.
- -4 Year of manufacture.
- -5 Any special part no. on request.

#### **IEC Standard**

S/N	No. of IEC	Subject
1	60028	International Standard of Resistance for Copper.
2	60060-1	High-Voltage Test Techniques.
3	60104	Aluminum-Magnesium-Silicon Alloy Wire for Overhead Line Conductors.
4	60121	Recommendation for commercial annealed aluminum electrical conductor wire.
5	60137	Insulated bushings for alternating voltage above 1000 V.
6	60173	Colours of the cores of flexible cables and cores.
7	60183	Guide to the selection of high voltage cables.
8	60227	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V
9	60228	Conductors of insulated cables.
10	60229	Tests on cable over-sheaths which have a special protection function and are applied by extrusion.
11	60230	Impulse tests on cables and their accessories.
12	60270	Partial discharge measurements.
13	60287	Current rating equations (100% load factor) and calculation of losses.
14	60331	Tests for electric cables under fire conditions circuit integrity.
15	60332	Test on electric cables under fire conditions.
16	60502	Cables for rated voltages of 0.6 kV (Um=1kV) up to and including 30kV (Um=36kV).
17	60719	Calculation of the lower and upper limits for the average outer dimensions of cables with- circular copper conductors and of rated voltages up to and including 450/750 V
18	60724	Guide to the short-circuit temperature limits of electric cables with a rated voltage not exceeding 0.6/1 kV.
19	60811	Common test methods for insulating and sheathing materials of electric cables.
20	60840	Test method and requirements
		Power cables with extruded insulation and their accessories for rated voltages
		above 30 kV (Um=36kV) up to 150 kV [Um=170kV).
21	60853	Calculation of the cyclic and emergency current rating of cables.
22	60885	Electrical test for electric cables.

#### **IEC Standard**

S/N	No. of IEC	Subject
23	60888	Zinc-Coated steel wires for stranded conductors.
24	60889	Hard drawn aluminum wire for overhead line conductors.
25	60949	Calculation of thermally permissible short-circuit currents, taking into account
		non-adiabatic heating effects.
26	60986	Guide to the short-circuit temperature limits of electric cables with a rated voltage
		from 1.8/3 (3.6) kV to 18/30 [36] kV.
27	61089	Round wire concentric lay overhead electrical stranded conductors.
28	61232	Aluminum - clad steel wires for electrical purposes.
29	61597	Overhead electrical conductors - calculation methods for stranded bare conductors.
30	61443	Short circuit temperature limits of electric cables with rated voltages above 30
		kV(Um=36kV).
31	62067	Power cable with extruded insulation and their accessories for rated voltages above
		150 kV (Um=170kV) up to 500kV (Um=550 kV) - Test methods and requirements.

#### **HD Standard**

S/N	No. of HD	Subject
1	HD21.1 S4	Cables of rated voltages up to and including 450/750 V and having thermoplastic
		insulation.
2	HD 21.3 S3	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750V.
3	HD603	Electric Power distribution, electric cable, insulated cable, polyvinyl chloride,
		Specification, dimension, test, marking.
4	HD620	Distribution cables with extruded insulation for rated voltages from 3.6/6(7.2) kV to 20.8/36(42) kV.
5	HD626	Overhead distribution cables of rated voltage U0 /U (Um):0.6/1 (1.2)kV.
6	HD632	Power cables with extruded insulation and their accessories for rated voltages above 36 kV (Um = 42 kV) up to I50kv(Um = 170kV).

#### **BS Standard**

1 B	3S215-1	
		Aluminum conductors and Aluminum conductors, steel-reinforced for overhead
		power transmission. Part 1 : Aluminum stranded conductors.
2 E	3S215-2	Aluminum conductors and Aluminum conductors, steel-reinforced for overhead power transmission. Part 2: Aluminum stranded conductors, steel reinforced.
3 B	3S 2627	Wrought aluminum for electrical purposes Wire.
4 B	BS 5099	Spark testing of electric cables.
5 B	BS 5467	600/1000 V and 1900/3300 V armoured electric cables having thermosetting
		insulation.
6 E		Electric cables - PVC insulation, non-armoured cables for voltages up to and including 450/750 V for electric power, lighting and internal wiring.
7 E	BS6007	Electric cables - single core unsheathed heat resisting cables for voltages up to and
		including 450/750V for internal wiring.
8 E	BS 6346	600/1000 V and 1900/3300 V armoured electric cables having PVC insulation.
9 E	BS 6360	Conductors in insulated cables and cords.
10 E	BS 6387	Performance requirements for cables required to maintain circuit integrity underfire conditions.
11 E	BS 6485	PVC- covered conductors for overhead power lines.
12 E	BS 6500	Electric cables - Flexible cords rated up to 300/500 V, for use with appliances and equipment intended for domestic, office and similar environments.
13 E	BS 6622	Cables with extruded cross-linked polyethylene or ethylene propylene rubber insulation for rated voltages from 3.8/6.6KV up to 19/33 KV.
14 E	BS 7655	Insulation and sheathing materials for cables.
15 E	BS 7884	Copper and copper-cadmium stranded conductors for overhead electric traction and
		power transmission systems.
16 E	BS7889	Electric cables - Thermosetting insulated, unarmoured cables for a voltage of 600/1000V.
17 E	BS 7919	Electric cables - Flexible cables rated up to 450/750 V, for use with appliances and
		equipment intended for industrial and similar environments.

#### **BS Standard**

S/N	No. of BS	Subject
1	BS EN 10218-1	Steel wire and products- Part 1: Test Methods.
2	BS EN 10218-2	Steel wire and products- Part 2: wire dimensions and tolerances.
3	BS EN 10244-2	Steel wire and products- Non-ferrous metallic coating on steel wire
		part2: Zinc or zinc alloy coatings
4	BS EN 10257	Zinc or zinc alloy coated non-alloy steel wire for armouring either power cables or telecommunication cables.
5	BS EN 12548	Lead and lead alloyes - lead alloy ingots for electric cable sheathing and for sleeves.
6	BS EN 12659	Lead and lead alloys - lead.
7	BS EN 13601	Copper and copper alloys - Copper rod, bar and wire for general electrical purposes.
8	BS EN 13602	Copper and copper alloys - Drawn, round copper wire for the manufacture of electrical conductors.
9	BS EN 50182	Conductors for overhead lines - Round wire concentric lay stranded conductors.
10	BS EN 50183	Conductors for overhead lines - Aluminum - magnesium - silicon alloy wires.
11	BS EN 50189	Conductors for overhead lines - Zinc coated steel wires.
12	BS EN 50266	Common test methods for cables under fire conditions - Test for vertical flame
		spread of verticaly-mounted bunched wires or cables.
13	BS EN 50356	Method for spark testing of cables.
14	BS EN 50395	Electrical test methods for low voltage energy cables (Supersedes HD 21.2).
15	BS EN 60811	Insulating and sheathing materials of electric cables, common test methods.

#### **DEFINITIONS**

#### **Definitions of dimensional values**

#### 1. Nominal value

Value by which a quantity is designated and which is often used in tables. Usually, in IEC standard, nominal values give rise to values to be checked by measurements taking into account specified tolerances.

#### 2. Approximate value

Value which is neither guaranteed nor checked; it is used, for example, for the calculation of other dimensional values.

#### 3. Median value

When several test results have been obtained and ordered in an increasing [ or decreasing ) succession, the median value is the middle value if the number of available values is odd, and the mean of the two middle values if the number is even.

#### 4. Fictitious value

Value calculated according to the "fictitious method" described in annex A in IEC 60502.

#### **Definitions concerning Tests**

#### 1. Routine tests

Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

#### 2. Sample tests

Tests made by the manufacturer on samples of completed cable or components taken from a completed cable, at a specified frequency, so as to verify that the finished product meets the specified requirements.

#### 3. Type tests

Test made before supplying, on a general commercial basis, a type of cable covered by this standard, in order to demonstrate satisfactory performance characteristics to meet the intended application.

These tests are of such a nature that, after they have been made, they need not be repeated, unless changes are made in the cable materials or design or manufacturing process, which might change the performance characteristics.

#### 4. Electrical test after installation

Tests made to demonstrate the integrity of the cable and its accessories as installed.

## **TECHNICAL DATA & CABLES PARAMETERS**

#### 1. Resistance

The values of conductor DC resistance given in the following tables are based on 20 °C. In case the DC resistance is required at any other temperature the following formula is used

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

wnere		
$R_{\theta}$ : Cond	luctor DC resistance at θ°C	$\Omega$ /km
R <sub>20</sub> : Cond	uctor DC resistance at 20°C	$\Omega$ /km
$\theta$ : Opera	ating temperature	°C
$\alpha$ : Resist	tance temperature coefficient	1/°C

= 0.00393 for Copper = 0.00403 for Aluminium

To get AC resistance of the conductor at its operating temperature the following formula is used

$$R_{AC} = R_{\theta} (1 + y_p + y_s)$$

Where

y<sub>n</sub> and ys are proximity and skin effect factors respectively which depend on operation frequency and cable spacing.

#### 2. Inductance

The self and mutual inductance are formulated as

$$L=K + 0.2 \ln \left(\frac{2s}{d}\right) \qquad \text{mh/km}$$

Where

L: Inductance mh/km

K: Constant depends on the conductor's number of wires

d: Conductors diameter mm

S: Axial spacing between cables in trefoil formation

S: 1.26 x axial spacing between cables in flat formation mm

#### 3. Capacitance

The capacitance is formulated as follow

$$C = \frac{\epsilon_r}{18In\frac{D}{d}}$$

μf/km

Where

C: Capacitance

∈r: Relative permittivity of insulation material

D: Diameter over insulation mm

d: Conductor diameter mm

#### 4. Insulation Resistance

The Insulation Resistance is formulated as follow R=K In  $(\frac{D}{d})$ Where

R: Insulation resistance  $M\Omega/km$ 

K: Constant depends on the insulation material

d: Diameter of the conductor (including the

semiconducting layer) mm mm

D: Diameter of the insulated core

#### 5. Charging Current

The charging current is the capacitive current which flows when AC voltage is applied to the cables as a result of the capacitance between the conductor and earth, and for a multicore cable in which cores are not screened, between conductors. The value can be derived from the following equation,

 $I_c = U_c \omega C 10^{-6}$ A/km

Where

I : Charging current A/km Ug: Voltage between phase and earth.

 $\omega:2\pi f$ 

f: Frequency Hz

C: Capacitance to neutral μf/km

#### 6. Dielectric Losses

The dielectric losses of an AC cable are proportional to the capacitance, the frequency, the phase voltage and the power factor. The value can be derived from the following equation.

 $W_{D} = 2 \pi f C U_{0}^{2} \tan \delta 10^{-6}$ watt/km/phase

Where

mm

W<sub>D</sub>: Dielectric losses watt/km/phase f: Frequency Hz C : Capacitance to neutral μf/km U<sub>a</sub>: Voltage between phase and earth

 $tan\delta$ : Dielectric power factor

#### **TECHNICAL DATA & CABLES PARAMETERS**

#### 7. Cable Ampacity

Cable ampacity or current carrying capacity is defined as the continuous maximum current the cable can carry at its maximum operating temperature. In the technical information tables the following installation conditions were assumed during the current calculation:

- Ambient air temperature = 40 °C
- Ground temperature = 35 °C
- Ground thermal resistivity = 120 °C. cm/Watt
- Burial depth = 0.5 mt.
- In case of installation conditions are different from the stated, derating factors tabulated in tables 2 to 10 must be used for calculating the new current carrying capacity.
- All cable ampacities are based on IEC 60287

#### 8. Cable Short Circuit Capacity

Tables 12-16 give the short circuit current for conductor and screen based on the following conditions

- A- Short circuit starts from the maximum operating conductor/screen temperature.
- B- Maximum temperature during short circuit
- C- Maximum short circuit current duration is 5 seconds.

If the short circuit current is required at duration not metioned in the catalogue, it is obtained by dividing the short circuit current for 1 second by the square root of the required duration as follows:

$$I_{s.c.t} = \frac{K_{s.c.1}}{\sqrt{t}}$$

#### Where

 $\begin{array}{lll} I_{s,c,t} & : Short \ circuit \ current \ for \ 1 \ second & kA \\ k_{s,c,1} & : Short \ circuit \ current \ for \ 1 \ second & kA \\ t & : Duration & Sec. \end{array}$ 

#### 9. Voltage Drop

When current flows in a cable conductor there is a voltage drop between the ends of the conductor which is the product of the current and the impedance.

The following equations should be used to calculate the voltage drop:

A. Single phase circuit.

 $V_d = 2 I \ell (R \cos \emptyset + X \sin \emptyset)$ 

B. Three phase circuit.

 $V_d = \sqrt{3} \, I \, \ell \, (R \cos \phi + X \sin \phi)$  V

Where

cos ø: Power factor

 $\ell$  : Length  $$\rm km$$   $X=\omega\;L\;10^{-3}$   $\Omega\;/km$ 

 $\omega$ = 2  $\pi$  f

L = from tables mh/km

Relation between cos ø and sin ø

COS Ø 1.0 0.9 0.8 0.71 0.6 0.5 Sin Ø 0.0 0.44 0.6 0.71 0.8 0.87

- \* L.V. cable systems should be planned so as not to exceed voltage drop 3-5 % in normal operating conditions.
- \* Voltage drop data for L.V. Cable (Single & Multi Core) are tabulated in Tables 17 & 18.

## **METALS USED FOR CABLES**

**Table 1 Electrical Properties** 

Metal	Relative Conductivity Copper 100%	Electrical Resistivity at 20°C ohm. m(10 <sup>-8</sup> )	Temperature Coefficient of Resistance per°c
Copper (annealed)	100	1.7241	0.00393
Cooper ( hard drawn )	97	1.777	0.00393
Tinned copper	95 – 97	1.741 – 1.814	0.00393
Aluminum	61	2.8264	0.00403
Lead	8	21.40	0.00400

#### **Physical Properties**

•				
Property	Unit	Copper	Aluminum	Lead
Density at 20 °C	Kg/m³	8890.0	2703.0	11340.00
Coeff. thermal expansion	Per °Cx10 <sup>-6</sup>	17.0	23.0	29.00
Melting point	°C	1083.0	659.0	327.00
Thermal conductivity	W/cm °C	3.8	2.4	0.34
Ultimate tensile strength	Mn/m²	225.0	70-90	

#### **Derating Factors**

#### Table 2

**Ground Temperature Derating Factor** 

Ground Temperature °C	15	20	25	30	35	40	45	50	55
PVC cables rated 70 °C	1.25	1.19	1.13	1.07	1.00	0.93	0.85	0.76	0.65
XLPE cables rated 90 °C	1.16	1.13	1.09	1.04	1.00	0.95	0.90	0.85	0.80

**Table 3** Air Temperature Derating Factor

Air temperature °C	20	25	30	35	40	45	50	55
PVC cables rated 70 °C	1.29	1.22	1.15	1.08	1.00	0.95	0.82	0.71
XLPE cables rated 90 °C	1.18	1.14	1.10	1.05	1.00	0.90	0.89	0.84

## **DERATING FACTORS**

**Table 4**Burial Depth Derating Factor

Double of Louise and		Cables cross section	
Depth of Laying mt.	Up to 70 mm <sup>2</sup>	95 up to 240 mm²	300 mm² & above
0.50	1.00	1.00	1.00
0.60	0.99	0.98	0.97
0.80	0.97	0.96	0.94
1.00	0.95	0.93	0.92
1.25	0.94	0.92	0.89
1.50	0.93	0.90	0.87
1.75	0.92	0.89	0.86
2.00	0.91	0.88	0.85

Table 5

**Soil Thermal Resistivity Derating Factor** 

Soil Thermal Resistivity in °C. cm/Watt	80	90	100	120	150	200	250	300
Rating factor	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67

**Table 6**PVC Rated Temperature Derating Factor

Type of PVC Rated Temperature °C	70	85
Rating factor	1.000	1.195

**Table 7**Trefoil or Flat Formation Derating Factors for Three Single Core Cables Laid Direct in Ground

Number of circuits		L L Trefoil infor	L •• mation		L •• ••• ormation	
	Touc	ching	Spacing	= 0.15M	Spacing	= 0.30 M
Nr	Trefoil	Flat	Trefoil	Flat	Trefoil	Flat
2	0.77	0.80	0.82	0.85	0.88	0.91
3	0.66	0.69	0.73	0.76	0.80	0.83
4	0.60	0.63	0.68	0.71	0.74	0.77
5	0.56	0.59	0.64	0.67	0.72	0.75
6	0.53	0.57	0.61	0.64	0.70	0.73

<sup>\*</sup> L = Spacing

## **DERATING FACTORS**

**Table 8**Trefoil Formation Derating Factors for Multi-core Core Cables Laid Direct in Ground

Number of circuits	!	T Trefoil inform	正 L  nation	n Flat information				
	Tou	ching	Spacing	= 0.15M	Spacing	= 0.30 M		
Nr	Trefoil	Flat	Trefoil	Flat	Trefoil	Flat		
2	0.81	0.81	0.87	0.87	0.91	0.91		
3	0.69	0.70	0.76	0.78	0.82	0.84		
4	0.62	0.63	0.72	0.74	0.77	0.81		
5	0.58	0.60	0.66	0.70	0.73	0.78		
6	0.54	0.56	0.63	0.67	0.70	0.76		

<sup>\*</sup> L = Spacing

**Table 9**Reduction factors for groups of more than one muiti-core cable in air
To be applied to the current-carrying capacity for one multi-core cable in free air

Number of		N	umber	of Cabl	es		Method of installation				
trays	1	2	3	4	6	9					
1	1.00	0.88	0.82	0.79	0.76	0.73		Touching			
2	1.00	0.87	0.80	0.77	0.73	0.68	Cables on				
3	1.00	0.86	0.79	0.76	0.71	0.66	perforated	- ≥ 20mm			
1	1.00	1.00	0.98	0.95	0.91	-	•	Spaced			
2	1.00	0.99	0.96	0.92	0.87	-	trayes				
3	1.00	0.98	0.95	0.91	0.85	-		<b>← &gt; ←</b> ≥ 20mm			
1	1.00	0.88	0.82	0.78	0.73	0.72					
							Cables on	Trouching Spaced			
2	1.00	0.88	0.81	0.76	0.71	0.70	vertical	225 mm			
1	1.00	0.91	0.89	0.88	0.87	-	perforated	3			
							trays	<b>3 9 9</b>			
2	1.00	0.91	0.88	0.87	0.85	-					
1	1.00	0.87	0.82	0.80	0.79	0.78		Touching			
2	1.00	0.86	0.80	0.78	0.76	0.73	Cables on				
3	1.00	0.85	0.79	0.76	0.73	0.70	ladder	4 ≥ 20mm			
1	1.00	1.00	1.00	1.00	1.00	-	supports,	Spaced			
2	1.00	0.99	0.98	0.97	0.96	-	cleats, etc.				
3	1.00	0.98	0.97	0.96	0.93	-		20mm			

NOTE 1 Values given are averages for the cable types and range of conductor sizes considered. The spread of values is generally less than 5%

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

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

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

## **DERATING FACTORS**

**Table 10**Reduction factors for groups of more than one circuit of single-core cables (Note 2)
To be applied to the current-carrying capacity for one circuit of single-core cables in free air

Number	Nun	nber of Ca	bles	Use a multiplier	Metho	od of installation
of trays	1	2	3	to rating for	IVIECTIC	d of ilistaliation
1	0.98	0.91	0.87	Three cables in	Perforated trays	Touching
2	0.96	0.87	0.81	horizontal	(Note 3)	
3	0.95	0.85	0.78	formation		≥ 20mm
1	1.00	0.97	0.96	Three cobles in	Ladder	Touching
2	0.98	0.93	0.89	horizontal	supports, cleats,	
3	0.97	0.90	0.86	formation	etc. (Note3)	+ → + ≥ 20mm
1	1.00	0.98	0.96		Perforated trays	≥ 2D
2	0.97	0.93	0.89		(Note 3)	
3	0.96	0.92	0.86			20mm
1	1.00	0.91	0.89	Three cables in trefoil	Vertical perforated trays	
2	1.00	0.90	0.86	formation	(Note4)	225 mm
1	1.00	1.00	1.00		Ladder	≥ 2D.
2	0.97	0.95	0.93		supports, cleats,	
3	0.96	0.94	0.90		etc. (Note3)	+ + - ≥ 20mm

NOTE 1 Values given are averages for the cable types and range of conductor sizes considered. The spread of values is generally less than 5% NOTE 2 Factors are given for single layers of cables (or trefoil groups) as shown in the table and do not apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and should be determined by an appropriate method. NOTE 3 Values are given for vertical spacings between trays of 300 mm. For closer spacing, the factors should be reduced.

NOTE 4 Values are given for horizontal spacing between trays of 225 mm with frays mounted back to back. For closer spacing, the factors should be reduced.

**NOTE 5** For circuits having more than one cable in parallel per phase, each three phase set of conductors should be considered as a circuit for the purpose of this table.

## **SHORT CIRCUIT CURRENT**

**Table 11**Max. Short Circuit Temperature for Cable Components :

Material	ltem	Temp.°C
Insulation	PVC Insulation	140 For C.S.A > 300mm <sup>2</sup>
		160 For C.S.A ≤ 300mm <sup>2</sup>
	XLPE Insulation	250
Jacket	PVC Sheathing	200
	LLDPE Sheathing	150
	HDPE Sheathing	180
Metal	Lead Sheath	170
	Lead Sheath - alloy	200*
	Copper	250
	Aluminum	250

<sup>\*</sup> Temp =  $210^{\circ}$ C for cables with rated voltages above 30kV(Um=36kV)

**Table 12**KA Short Circuit Current – Copper conductor – PVC Insulated :

		coppe. c								
C.S.A mm <sup>2</sup>					Duratio	on sec.				
C.S.A IIIII	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0
16	5.8	4.1	3.4	2.9	2.6	1.8	1.3	1.1	0.9	0.8
25	9.1	6.4	5.2	4.5	4.1	2.9	2.0	1.7	1.4	1.3
35	12.7	9.0	7.3	6.4	5.7	4.0	2.8	2.3	2.0	1.8
50	18.2	12.9	10.5	9.1	8.1	5.8	4.1	3.3	2.9	2.6
70	25.5	18.0	14.7	12.7	11.4	8.1	5.7	4.6	4.0	3.6
95	34.5	24.4	19.9	17.3	15.5	10.9	7.7	6.3	5.5	4.9
120	43.6	30.9	25.2	21.8	19.5	13.8	9.8	8.0	6.9	6.2
150	54.5	38.6	31.5	27.3	24.4	17.3	12.2	10.0	8.6	7.7
185	67.3	47.6	38.8	33.6	30.1	21.3	15.0	12.3	10.6	9.5
240	87.3	61.7	50.4	43.6	39.0	27.6	19.5	15.9	13.8	12.3
300	109.1	77.1	63.0	54.5	48.8	34.5	24.4	19.9	17.3	15.4
400	130.0	91.9	75.1	65.0	58.2	41.1	29.1	23.7	20.6	18.4
500	162.5	114.9	93.8	81.3	72.7	51.4	36.3	29.7	25.7	23.0
630	204.8	144.8	118.2	102.4	91.6	64.8	45.8	37.4	32.4	29.0

## **SHORT CIRCUIT CURRENT**

**Table 13**KA Short Circuit Current – Aluminium conductor – PVC Insulated :

C.S.A mm <sup>2</sup>					Durati	on sec.				
C.3.A IIIII	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0
16	3.8	2.7	2.2	1.9	1.7	1.2	0.9	0.7	0.6	0.5
25	6.0	4.2	3.5	3.0	2.7	1.9	1.3	1.1	1.0	0.8
35	8.4	5.9	4.9	4.2	3.8	2.7	1.9	1.5	1.3	1.2
50	12.0	8.5	6.9	6.0	5.4	3.8	2.7	2.2	1.9	1.7
70	16.8	11.9	9.7	8.4	7.5	5.3	3.8	3.1	2.7	2.4
95	22.8	16.1	13.2	11.4	10.2	7.2	5.1	4.2	3.6	3.2
120	28.8	20.4	16.7	14.4	12.9	9.1	6.4	5.3	4.6	4.1
150	36.0	25.5	20.8	18.0	16.1	11.4	8.1	6.6	5.7	5.1
185	44.5	31.4	25.7	22.2	19.9	14.1	9.9	8.1	7.0	6.3
240	57.7	40.8	33.3	28.8	25.8	18.2	12.9	10.5	9.1	8.2
300	72.1	51.0	41.6	36.0	32.2	22.8	16.1	13.2	11.4	10.2
400	86.0	60.8	49.7	43.0	38.5	27.2	19.2	15.7	13.6	12.2
500	107.5	76.0	62.1	53.8	48.1	34.0	24.0	19.6	17.0	15.2
630	135.5	95.8	78.2	67.7	60.6	42.8	30.3	24.7	21.4	19.2

**Table 14**KA Short Circuit Current – Copper conductor – XLPE Insulated :

ia i bii oi c cii caic c	u	coppe. c	011446601	/	a.cca	•							
C.S.A mm <sup>2</sup>	Duration sec.												
C.3.A IIIII-	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0			
16	7.2	5.1	4.2	3.6	3.2	2.3	1.6	1.3	1.1	1.02			
25	11.3	8.0	6.5	5.7	5.1	3.6	2.5	2.1	1.8	1.60			
35	15.8	11.2	9.1	7.9	7.1	5.0	3.5	2.9	2.5	2.24			
50	22.6	16.0	13.1	11.3	10.1	7.2	5.1	4.1	3.6	3.20			
70	31.7	22.4	18.3	15.8	14.2	10.0	7.1	5.8	5.0	4.5			
95	43.0	30.4	24.8	21.5	19.2	13.6	9.6	7.8	6.8	6.1			
120	54.3	38.4	31.3	27.1	24.3	17.2	12.1	9.9	8.6	7.7			
150	67.8	48.0	39.2	33.9	30.3	21.5	15.2	12.4	10.7	9.6			
185	83.7	59.2	48.3	41.8	37.4	26.5	18.7	15.3	13.2	11.8			
240	108.5	76.7	62.7	54.3	48.5	34.3	24.3	19.8	17.2	15.3			
300	135.7	95.9	78.3	67.8	60.7	42.9	30.3	24.8	21.6	19.2			
400	180.9	127.9	104.4	90.4	80.9	57.2	40.4	33.0	28.6	25.6			
500	226.1	159.9	130.5	113.1	101.1	71.5	50.6	41.3	35.8	32.0			
630	284.9	201.4	164.5	142.4	127.4	90.1	63.7	52.0	45.0	40.3			
800	361.8	255.8	208.9	180.9	161.8	114.4	80.9	66.0	57.2	51.2			
1000	452.2	319.8	261.1	226.1	202.2	143.0	101.1	82.6	71.5	64.0			
1200	542.6	383.7	313.3	271.3	242.7	171.6	121.3	99.1	85.8	76.7			
1600	723.5	511.6	417.7	361.8	323.6	228.8	161.8	132.1	114.4	102.3			
2000	904.4	639.5	522.2	452.2	404.5	286	202.2	165.1	143	127.9			
2500	1130.5	799.4	652.7	565.3	505.6	357.5	252.8	206.4	178.8	159.9			

## **SHORT CIRCUIT CURRENT**

Table 15 KA Short Circuit Current - Aluminium conductor - XLPE Insulated:

C.S.A mm <sup>2</sup>					Durati	on sec.				
C.3.A IIIII	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0
16	4.7	3.4	2.7	2.4	2.1	1.5	1.1	0.9	0.75	0.67
25	7.4	5.2	4.3	3.7	3.3	2.3	1.7	1.4	1.2	1.0
35	10.4	7.3	6.0	5.2	4.6	3.3	2.3	1.9	1.6	1.5
50	14.8	10.5	8.6	7.4	6.6	4.7	3.3	2.7	2.3	2.1
70	20.7	14.7	12.0	10.4	9.3	6.6	4.6	3.8	3.3	2.9
95	28.1	19.9	16.3	14.1	12.6	8.9	6.3	5.1	4.5	4.0
120	35.6	25.1	20.5	17.8	15.9	11.2	8.0	6.5	5.6	5.0
150	44.4	31.4	25.7	22.2	19.9	14.1	9.9	8.1	7.0	6.3
185	54.8	38.8	31.6	27.4	24.5	17.3	12.3	10.0	8.7	7.8
240	71.1	50.3	41.1	35.6	31.8	22.5	15.9	13.0	11.2	10.1
300	88.9	62.9	51.3	44.4	39.8	28.1	19.9	16.2	14.1	12.6
400	118.5	83.8	68.4	59.3	53.0	37.5	26.5	21.6	18.7	16.8
500	148.2	104.8	85.5	74.1	66.3	46.9	33.1	27.0	23.4	21.0
630	186.7	132.0	107.8	93.3	83.5	59.0	41.7	34.1	29.5	26.4
800	237.0	167.6	136.9	118.5	106.0	75.0	53.0	43.3	37.5	33.5
1000	296.3	209.5	171.1	148.2	132.5	93.7	66.3	54.1	46.9	41.9
1200	355.6	251.4	205.3	177.8	159.0	112.4	79.5	64.9	56.2	50.3
1600	474.1	335.2	273.7	237	212	149.9	106	86.6	75	67
2000	592.6	419	342.1	296.3	265	187.4	132.5	108.2	93.7	83.8
2500	741.2	524.1	427.9	370.6	331.5	234.4	165.7	135.3	117.2	104.8

Table 16 KA Short Circuit Current - Copper Screen:

C.S.A mm <sup>2</sup>		Duration sec.										
C.S.A IIIII	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0		
16	7.5	5.3	4.3	3.7	3.3	2.4	1.7	1.4	1.2	1.1		
25	11.7	8.3	6.8	5.9	5.2	3.7	2.6	2.1	1.9	1.7		
35	16.4	11.6	9.5	8.3	7.3	5.2	3.7	3.0	2.6	2.3		

Conductor temperature before short circuit = 90°C .

Maximum Conductor temperature during short circuit = 250°C .

Maximum Screen temperature before short circuit =  $80^{\circ}$ C.

## **VOLTAGE DROP**

Table 17 Voltage Drop for single Core L.V Cables:

C C A 22222	Copper Conductor Voltage Drop (mv / AMP / Meter )								
C.S.A mm²	PVC Insulation 8	& PVC Sheathed	XLPE Insulation & PVC Sheathed						
	Flat 👓	Trefoil	Flat 👓	Trefoil 🛞					
4	7.830	7.770	8.337	8.277					
6	5.287	5.226	5.628	5.568					
10	3.184	3.124	3.40	3.341					
16	2.068	2.008	2.203	2.142					
25	1.357	1.297	1.440	1.380					
35	1.034	0.971	1.085	1.024					
50	0.793	0.732	0.836	0.776					
70	0.595	0.534	0.624	0.564					
95	0.469	0.408	0.490	0.430					
120	0.410	0.349	0.417	0.357					
150	0.354	0.294	0.366	0.305					
185	0.312	0.252	0.322	0.262					
240	0.272	0.211	0.278	0.218					
300	0.247	0.187	0.253	0.192					
400	0.224	0.164	0.220	0.159					
500	0.208	0.148	0.211	0.150					
630	0.194	0.134	0.191	0.131					

C.S.A mm²	Aluminium Conductor Voltage Drop (mv / AMP / Meter )								
C.S.A IIIII	PVC Insulation 8	& PVC Sheathed	XLPE Insulation & PVC Sheathed						
	Flat 👓	Trefoil 쉱	Flat 👓	Trefoil 쉱					
16	3.343	3.283	3.561	3.500					
25	2.161	2.100	2.296	2.235					
35	1.602	1.602 1.542		1.640					
50	1.222	1.162	1.291	1.230					
70	0.890	0.830	0.937	0.877					
95	0.686	0.623	0.719	0.655					
120	0.569	0.509	0.594	0.534					
150	0.490	0.430	0.511	0.451					
185	0.420	0.360	0.437	0.377					
240	0.353	0.293	0.367	0.307					
300	0.312	0.252	0.322	0.262					
400	0.274	0.214	0.278	0.218					
500	0.245	0.185	0.260	0.199					
630	0.222	0.162	0.223	0.163					

- The above data are based on:
   Max. operating temp: 90°C for XLPE & 70°C for PVC.
   Power factor: 0.8 Rated frequency: 50 HZ
   Cables are touched in flat formation.

## **VOLTAGE DROP**

Table 18 Voltage Drop for Multi Core L.V Cables:

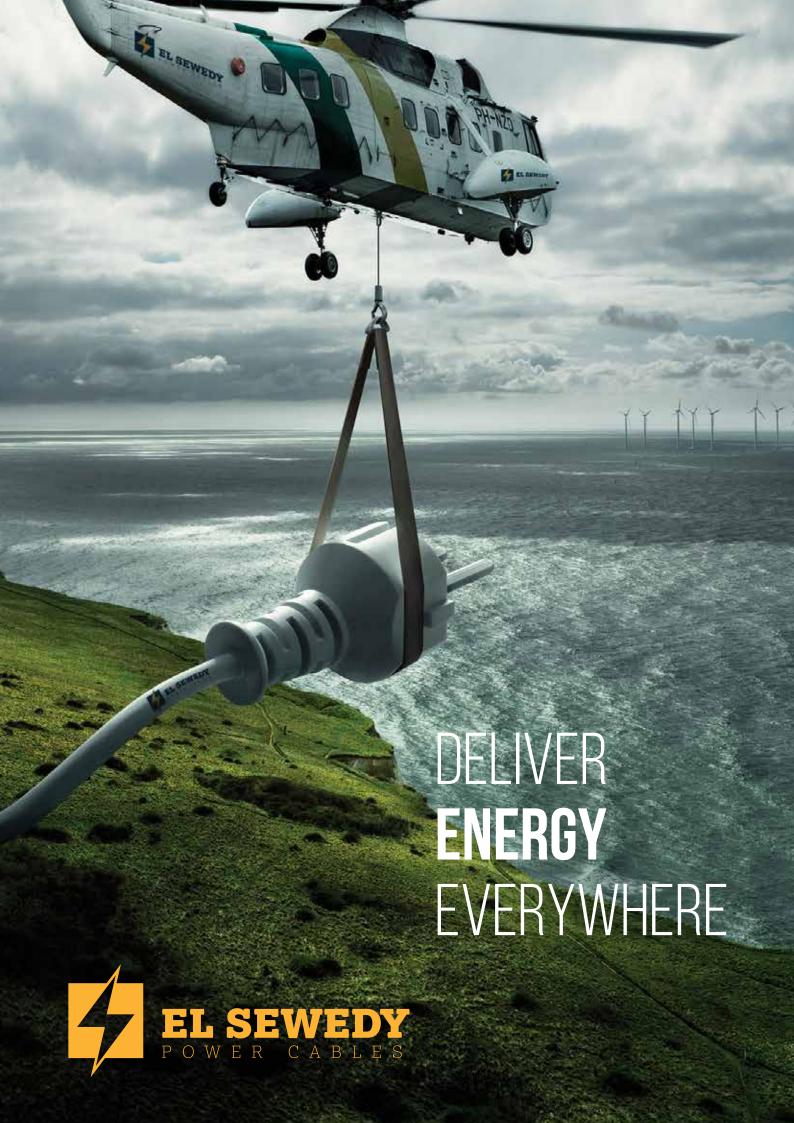
Voltage Brop for Marie Core Erv cubics.										
C.S.A mm <sup>2</sup>	Copper C Voltage Drop (m	onductor v / AMP / Meter )								
	PVC Insulation & PVC Sheathed	XLPE Insulation & PVC Sheathed								
1.5	20.345	20.341								
2.5	12.397	13.197								
4	7.741	7.731								
6	5.199	5.191								
10	3.101	3.094								
16	1.988	1.982								
25	1.280	1.276								
35	0.959	0.955								
50	0.720	0.715								
70	0.524	0.520								
95	0.398	0.394								
120	0.341	0.337								
150	0.285	0.282								
185	0.244	0.241								
240	0.204	0.201								
300	0.180	0.177								
400	0.157	0.155								

C.S.A mm²	Aluminium Conductor Voltage Drop (mv / AMP / Meter )						
	PVC Insulation & PVC Sheathed	XLPE Insulation & PVC Sheathed					
1	3.263	3.479					
25	2.084	2.218					
35	1.527	1.624					
50	1.150	1.217					
70	0.819	0.865					
95	0.613	0.645					
120	0.500	0.524					
150	0.421	0.442					
185	0.352	0.369					
240	0.286	0.299					
300	0.245	0.255					
400	0.208	0.211					

- The above data are based on:
   Max. operating temp: 90°C for XLPE & 70°C for PVC.
   Power factor: 0.8 Rated frequency: 50 HZ
   Cables are touched in flat formation.

## **CONVERSION TABLE**

Multiply	Ву	To obtain	Multiply	Ву	To obtain
Weight-Imperial	- 7		Inches	25.40	Mm.
Ounces	28.3495	Grams	Inches	2.54	Cm.
Pounds (Av)	453.59	Grams	Feet	30.48	Cm.
Pounds (Av)	0.45359	Kilogroms	Feet	0.3048	Meters.
Tons (short)	907.19	Kilograms	Feet (thousands of)		Kilometers.
Tons (long)	1016.05	Kilograms	Yards	0.9144	Meters.
Weight-Metric			Miles	1.6093	Kilometers
Grams	0.03527	Ounces	Length-Metric		
Grams	0.002205	Pounds	Millimeters	39.37	Mils.
Kilograms	35.274	Ounces	Millimeters	0.03937	Inches.
Kilograms	2.2046	Pounds	Centimeters	0.3937	Inches.
Kilograms	0.001102	Tons (short)	Centimeters	0.032808	Feet.
Kilograms		Tons (long)	Meters	39.37	Inches.
Miscellaneous-Imperial		3 2 ( 3 6)	Meters	3.2808	Feet.
Pounds per 1000 feet	1.48816	Kg/Km	Meters	1.0936	Yards.
Pounds per mile	0.28185	Kg/Km	Kilometers	3280.83	Feet.
Pounds per square inch		Kg. per square mm.	Kilometers	0.62137	Miles.
Pounds per square inch		Kg. per square cm.	Area-Imperial		
Pounds per cubic	27.68	Grams per cubic cm.	Square mils	1 .2732	Circular mils
Feet per second	18.288	Meters per minute.	Square mils	0.000001	Square Inches
Feet per second	1.09728	Kilometers per hour.	Circular mils	0.7854	Square mils
Miles per hour	1.60935	Kilometers per hour.	Circular mils	0.0000007854	Square Inches
Ohms per 1000 feet	3.28083	Ohms per Kilometer.	Square mils	0.0005067	Square mm.
Ohms per mile	0.62137	Ohms per Kilometer.	Square inches	1000000	Square mils
Decibels per 1000 feet	3.28083	Decibels per Kilometer.	Square inches	1 273240	Circualr mils
Decibels per mile	0.062137	Decibels per Kilometer.	Square inches	645.16	Square mm.
Decibels	0.01153	Nepers.	Square inches	6.4516	Square cm.
Miscellaneous-Metric			Square feet	0.09290	Square Meters
Kg/Km	0.67197	Pounds per 100 feet.	Square yards	0.8361	Square Meters
Kg/Km	3.54795	Pounds per mile.	Area-Metric		
Kg/per square mm	1422.34	Pounds per square inch.	Square millirnefers	1973.52	Circular mils
Kg. per square cm	14.2234	Pounds per square inch.	Square millimeters	0.00155	Square inches
Grams per cubic cm	0.03613	Pounds per cubic inch.	Square centimeters	0.155	Square inches
Meters per minute	0.05468	Feet per second.	Square meters	10.7638	Square feet
Kilometers per hour	0.91134	Feet per second.	Square meters	1.19599	Square yards
Kilometers per hour	0.62137	Miles per hour	Volume-Imperial		
Ohms per kilometer	0.3048	Ohms per 1000 feet	Cubic inches	16.38716	Cubic cm.
Ohms per kilometer	1.6093	Ohms per mile.	Cubic feet	0.028317	Cubic meters
Decibels per kilometer	0.3048	Decibels per 1000 feet.	Volume-U.S.		
Decibels per kilometer	1.6093	Decibels per mile.	Quarts (liquid)	0.9463	Leters
Temperature			Gallons	3.7854	Leters
Fahrenheit	5/9(oF)-32	"Celsius	Volume-Metric		
Celsius	9/5(oC)+32	"Fahrenheit	Cubic cm	0.06102	Cubic inches.
Length-Imperial			Cubic meters	35.3145	Cubic feet.
Mils	0.001	Inches.	Liters	1 .05668	Quarts(liquid
Mils	0.0254	Mm.	Liters	0.26417	U.S)
Inches	1000	Mils.			Gallons (U.S.)



LOW VOLTAGE CABLES 450/750 V AND 0.6/1(1.2)KV

## **OPERATING VOLTAGE (UP TO 0.6/1 KV)**

#### **Cable Construction**

#### 1. Conductor

Copper or Aluminium conductors, solid, stranded or flexible with round or sectoral shaped conductors.

#### 2. Insulation

An extruded layer of PVC or XLPE is applied over the conductor.

PVC insulated cables are suitable for maximum conductor operating temperature of 70°C or 85°C and 90°C for XLPE.

#### 3. Assembly

In case of multicore cables cores are assembled together using non hygroscopic filler (if needed) to fill space between cores, wrapped with suitable binder tape to form a round cable.

#### 4. Bedding

In case of armoured cables an extruded layer of PVC is applied as bedding.

#### 5. Armouring

- a. Steel Tape: Double layers of steel tapes are applied helically.
- b. Steel Wire: Galvanized steel wires are applied helically.

#### 6 Sheath

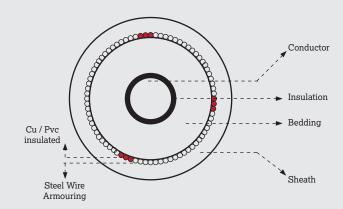
An extruded layer of PVC is applied as an outer sheath, or according to the client special requirements.

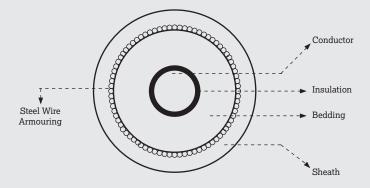
#### Option

Lead sheath: Upon request a layer of lead is extruded over the bedding layer.

#### **Armouring of Single Core Cable**

- 1. Armouring by non-magnetic material either Aluminium Tape or Aluminium Wire armouring to reduce the magnetic losses.
- 2. If it is required for single core cable to be armoured by steel wire armouring, the magnetic circuit around the single core cable should be interrupted by inserting insulated copper wires between the steel wires as shown in the figure .





# Single Core Cables with Solid or Stranded Copper Conductors and PVC Insulated

#### **Description**

Soft annealed Solid or Stranded Copper Conductors insulated with PVC compound rated 70  $^{\circ}$ C or 90  $^{\circ}$ C according to IEC 60227 & BS 6004.

#### **Application**

For indoor fixed installations in dry locations, laid in conduits, as well as in steel support brackets.

Nominal	Max. Conduc	tor Resistance	Current R	ating in Air	Арриом	
Cross Sectional Area	DC at 20°c	AC at 70°c	Free O	In Pipes	Approx. Overall Diameter	Approx. Weight
mm²	Ω/km	Ω/km	Α	Α	Mm	Kg/km
1.5 ra	12.1000	14.6000	17	13	2.8	20
1.5 rs	12.1000	14.6000	17	13	3.0	21
2 ra	9.1500	10.9000	19	15	3.2	27
2 rs	9.1500	10.9000	19	15	3.4	28
2.5 ra	7.4100	8.8900	24	19	3.4	31
2.5 rs	7.4100	8.8900	24	19	3.6	33
3 ra	6.1000	7.4100	27	21	3.6	37
3 rs	6.1000	7.4100	27	21	3.8	39
4 ra	4.6100	5.5100	32	23	3.9	47
4 rs	4.6100	5.5100	32	23	4.2	50
6 rs	3.0800	3.6800	40	29	4.4	68
6 rs	3.0800	3.6800	40	29	4.7	71
10 rs	1.8300	2.1700	57	41	6.1	117
16 rs	1.1500	1.3700	76	54	7.1	177
25 rs	0.7270	0.8600	103	70	8.8	278
35 rs	0.5240	0.6300	128	87	9.9	371
50 rs	0.3870	0.4600	156	106	11.8	514
70 rs	0.2680	0.3200	200	131	13.5	711
95 rs	0.1930	0.2300	251	166	15.7	967
120 rs	0.1530	0.1900	293	190	17.4	1240
150 rs	0.1240	0.1500	335	219	19.4	1500
185 rs	0.0991	0.1200	390	250	21.5	1852
240 rs	0.0754	0.0920	471	300	24.7	2457
300 rs	0.0601	0.0750	540	340	27.2	2977

The above data is approximate and subjected to manufacturing tolerance.

ra : round, Solid rs : round. Stranded



# Single Core Cables with Flexible Copper Conductors and PVC Insulated.

#### **Description**

- $\bullet$  Soft annealed Copper fine wires, bunched together in subunits or stranded bunched groups into a main units, which forms the flexible conductor. Insulated with soft PVC 70 °C or 90 °C Compound.
- Cables are produced according to IEC 60227 or BS 6004.

#### **Application**

- For indoor fixed installations in dry locations, where particular flexibility is required. For electrical panels connection or for electrical apparatus they can be laid in groups
- around steel sheets.

Nominal	Maximum	Max. Conduct	or Resistance	Current F	Rating in Air	Approx	
Cross Sectional Area	Diameter Of Wires	DC at 20°c	AC at 70°c	Free O	In Pipes	Approx. Overall Diameter	Approx. Weight
mm²	mm²	Ω/km	Ω/km	Α	A	Mm	Kg/km
1.5	0.26	13.3000	15.9500	17	13	3.0	21
2.5	0.26	7.9800	9.5600	24	19	3.7	34
4	0.31	4.9500	5.9300	32	23	4.5	50
6	0.31	3.3000	3.9500	40	29	5.1	71
10	0.41	1.9100	2.2900	57	41	6.9	120
16	0.41	1.2100	1.4500	76	54	7.6	179
25	0.41	0.7800	0.9400	103	70	9.5	276
35	0.41	0.5540	0.6630	128	87	11.0	375
50	0.41	0.3860	0.4620	156	106	12.6	542
70	0.51	0.2720	0.3260	200	131	14.6	733
95	0.51	0.2060	0.2470	251	166	16.8	957
120	0.51	0.1610	0.1930	293	190	18.9	1243
150	0.51	0.1290	0.1550	335	219	21.2	1548
185	0.51	0.1060	0.1270	390	250	23.4	1895
240	0.51	0.0801	0.0960	471	300	26.7	2400

The above data is approximate and subjected to manufacturing tolerance.



Single Core Cables, with Stranded Circular Copper Conductors, PVC Insulated and PVC Sheathed.

#### **Description**

- Soft annealed stranded Copper or Aluminium conductor. insulated with PVC compound rated 70°C and sheathed with PVC Compound layer.
- Cables are produced according to IEC 60502.

#### **Application**

• For outdoor and indoor installations in damp and wet locations. They are normally used for power distribution in urban networks, industrial plants, as well as in thermopower and hydropower stations.

Nominal		nductor			Curren	t Rating	3		Annrox		
Cross	Resis	tance	Lai	d in Gro	ound	Laid	in Free	Air	Approx. Overall	Approx.	
Sectional Area	DC at 20°c	AC at 70°c	$ \infty  $	<u>&amp;</u>	8	0	$ \infty$	<u>&amp;</u>	Diameter	Weight	
mm²	Ω/km	Ω/km	Α	Α	Α	Α	Α	Α	Mm	Kg/km	
4	4.6100	5.5100	42	40	32	37	33	29	7.0	86	
6	3.0800	3.6800	52	50	40	48	42	38	7.9	115	
10	1.8300	2.1700	70	67	52	66	58	51	8.9	165	
16	1.1500	1.3700	90	85	65	80	75	65	9.9	231	
25	0.7270	0.8600	115	110	85	105	95	90	11.6	343	
35	0.5240	0.6300	135	130	105	130	125	110	12.7	445	
50	0.3870	0.4600	160	155	125	160	150	135	14.6	600	
70	0.2680	0.3200	200	190	155	200	190	170	16.3	805	
95	0.1930	0.2300	235	225	185	250	240	210	18.7	1085	
120	0.1530	0.1900	270	255	210	285	275	245	20.4	1350	
150	0.1240	0.1500	300	285	235	330	320	280	22.6	1654	
185	0.0991	0.1200	345	325	270	380	370	320	24.9	2030	
240	0.0754	0.0920	400	375	310	480	460	385	28.3	2675	
300	0.0601	0.0750	450	420	350	550	530	450	31.1	3280	
400	0.0470	0.0590	515	475	390	630	615	520	35.3	4350	
500	0.0366	0.0480	580	525	435	720	700	600	38.8	5355	
630	0.0283	0.0390	660	590	495	830	810	680	42.7	6685	
800	0.0221	0.0290	740	650	555	940	920	775	47.2	8600	
1000	0.0176	0.0250	820	710	605	1030	1010	860	52.0	10500	

The above data is approximate and subjected to manufacturing tolerance.

Single Core Cables, with Stranded Circular Aluminium Conductors, PVC Insulated and PVC Sheathed.

Nominal		nductor			Curren	t Ratin	5		Approx	
Cross	Resis	tance	Laid	d in Gro	ound	Laid	in Free	Air	Approx. Overall	Approx.
Sectional Area	DC at 20°c	AC at 70°c	$ \infty $	<u>&amp;</u>	<b>&amp;</b>	0	$ \infty $	<u>&amp;</u>	Diameter	Weight
mm <sup>2</sup>	Ω/km	Ω/km	Α	Α	Α	Α	Α	Α	Mm	Kg/km
16	1.9100	2.2900	65	63	50	65	60	45	9.9	132
25	1.2000	1.4400	85	83	65	85	80	65	11.6	185
35	0.8680	1.0400	105	102	80	105	100	85	12.7	250
50	0.6410	0.7700	125	120	95	125	120	105	14.6	295
70	0.4430	0.5330	155	145	120	165	155	125	16.3	375
95	0.3200	0.3850	185	175	135	205	195	160	18.7	500
120	0.2530	0.3050	210	200	165	235	225	185	20.4	605
150	0.2060	0.2480	235	225	180	265	255	210	22.6	725
185	0.1640	0.1980	265	255	205	310	300	245	24.8	900
240	0.1250	0.1510	310	295	240	365	355	290	28.3	1150
300	0.1000	0.1220	355	335	270	420	405	335	31.1	1420
400	0.0778	0.0954	410	380	310	500	480	390	35.3	1750
500	0.0605	0.0751	465	430	355	580	560	460	38.8	2220
630	0.0469	0.0595	535	490	405	680	660	535	42.7	2750
800	0.0367	0.0470	600	530	450	765	745	620	47.2	3450
1000	0.029	0.0370	665	585	495	840	820	690	52.0	4230

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with Stranded Copper Conductors, PVC Insulated and PVC Sheathed.

#### **Description**

- Multicore cables of stranded Copper conductors are insulated with PVC compound rated 70°C, assembled together, covered with overall jacket of PVC compound.
- Cables are produced according to IEC 60502.

#### **Application**

• For outdoor and indoor installations in damp and wet locations.

Nominal	Max. Conduct	or Resistance	C	urrent Ratin	σ	Approx.	
Cross			Laid direct	Laid in	ಕ Laid in	Overall	Approx. Weight
Sectional Area	DC at 20°c	AC at 70°c	in Ground	Ducts	free Air	Diameter	Weight
mm²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
		Tv	wo core cable	es			
1.5	12.1000	14.600	24	19	20	10.1	120
2.5	7.4100	8.870	30	25	28	10.9	145
4	4.6100	5.540	40	32	39	12.9	205
6	3.0800	3.690	50	40	50	13.9	255
10	1.8300	2.190	65	55	66	15.0	425
16	1.1500	1.390	85	65	88	17.0	580
25	0.7270	0.870	110	85	116	20.0	845
35	0.5240	0.628	130	105	143	22.2	1090
			ree core cabl				
1.5	12.1000	14.600	21	18	18	10.6	145
2.5	7.4100	8.870	27	23	22	11.5	190
4	4.6100	5.540	35	30	31	13.6	270
6	3.0800	3.690	45	36	39	14.7	340
10	1.8300	2.190	60	48	53	16.4	485
16	1.1500	1.390	75	60	72	18.6	685
25	0.7270	0.870	100	80	94	21.8	995
35	0.5240	0.628	120	95	110	24.2	1300
			our core cable				
1.5	12.1000	14.6000	21	18	18	11.4	180
2.5	7.4100	8.8700	27	23	22	12.4	230
4	4.6100	5.5400	35	30	31	14.8	335
6	3.0800	3.6900	45	36	39	16.0	425
10	1.8300	2.1900	60	48	53	17.9	635
16	1.1500	1.3900	75	60	72	20.3	880
25	0.7270	0.8700	100	80	94	23.9	1295
35	0.5240	0.6280	120	95	110	26.6	1700
50	0.3870	0.4640	145	115	138	29.3	2225
70	0.2680	0.3220	175	145	171	32.9	3065
95	0.1930	0.2320	210	165	209	37.8	4175
120	0.1530	0.1850	240	195	242	41.2	5205
150	0.1240	0.1510	270	220	275	45.9	6400
185	0.0991	0.1210	300	245	314	50.7	7960
240	0.0754	0.0840	345	290	374	57.0	10330
300	0.0601	0.0770	390	320	440	63.3	12915
400	0.047	0.0606	453	376	507	70.1	16500
500	0.0366	0.0491	510	429	566	77.6	21085

# Multicore Cables, with Stranded Copper Conductors, PVC Insulated and PVC Sheathed.

Non	ninal	Max. Conduct	tor Resistance	С	urrent Ratin <sub>โ</sub>	g	Approx.	Approx.
_	Cross Sectional Area DC at 20°c		AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
m	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced neutral			
35 rs	16 rs	0.5240/1.1500	0.6280/1.3900	120	95	110	25.0	1505
50 ss	25 rs	0.3870/0.7270	0.4640/0.8700	145	115	138	28.1	2115
70 ss	35 rs	0.2680/0.5240	0.3220/0.6280	175	145	171	31.4	2725
95 ss	50 ss	0.1930/0.3870	0.2320/0.4640	210	165	209	36.1	3690
120ss	70 ss	0.1530/0.2680	0.1850/0.3220	240	195	242	39.5	4675
150ss	70 ss	0.1240/0.2680	0.1510/0.3220	270	220	275	43.5	5580
185ss	95 ss	0.0991/0.1930	0.1210/0.2320	300	245	314	48.2	7025
240ss	120ss	0.0754/0.1530	0.0840/0.1850	345	290	374	54.2	9060
300ss	150ss	0.0601/0.1240	0.0770/0.1510	390	320	440	60.0	11280
400ss	185ss	0.0470/0.0991	0.0606/0.1210	453	376	507	66.0	15270
500ss	240ss	0.0366/0.0754	0.0491/0.0840	510	429	566	73.3	19205

The above data is approximate and subjected to manufacturing tolerance.

rs : round, Stranded ss : Sector, Stranded



## Multicore Cables, with Stranded Aluminium Conductors, PVC Insulated and PVC Sheathed.

#### **Description**

 Multicore cables of stranded Aluminium conductors are insulated with PVC compound rated 70°C, assembled together, covered with overall jacket of PVC compound.

Cables are produced according to IEC 60502.

#### **Application**

• For outdoor and indoor installations In damp and wet locations.

Nominal	Max. Conductor Resistance		Current Rating			Approx.	Approx.		
Cross Sectional Area	DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight		
mm <sup>2</sup>	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km		
Two core cables									
10rs	3.080	3.300	46	39	46	15.0	295		
16 rs	1.910	2.290	60	46	62	17.0	385		
25 rs	1.200	1.440	77	60	81	20.0	540		
35 rs	0.868	1.040	103	83	114	22.2	670		
Three core cables									
10 rs	3.080	3.300	42	34	37	16.4	305		
16 rs	1.910	2.290	53	42	50	18.6	400		
25 rs	1.200	1.440	70	56	66	21.8	550		
35 rs	0.868	1.040	95	75	88	24.2	680		
		Fo	our core cable	es					
10 rs	3.0800	3.3000	42	34	37	17.9	395		
16 rs	1.9100	2.2900	53	42	50	20.3	495		
25 rs	1.2000	1.4400	70	56	66	23.9	700		
35 rs	0.8680	1.0400	95	75	88	26.6	870		
50 ss	0.6410	0.7710	115	85	105	29.3	1060		
70 ss	0.4430	0.5330	135	110	132	32.9	1380		
95 ss	0.3200	0.3850	165	130	160	37.8	1865		
120ss	0.2530	0.3050	185	150	187	41.2	2300		
150ss	0.2060	0.2490	210	170	215	45.9	2760		
185ss	0.1640	0.1990	235	195	248	50.7	3400		
240 ss	0.1250	0.1510	275	225	292	57.0	4345		
300 ss	0.1000	0.1230	310	260	347	63.3	5400		
400 ss	0.0778	0.0962	361	300	405	70.1	6890		
500 ss	0.0605	0.0761	413	348	459	77.6	8500		

The above data is approximate and subjected to manufacturing tolerance.

rs : round, Stranded ss : Sector, Stranded



# Multicore Cables, with Stranded Aluminium Conductors, PVC Insulated and PVC Sheathed.

Nominal Cross Sectional Area		Max. Conductor Resistance		Current Rating			Approx.	Approx.
		DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mı	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
Four Core Cables with Reduced Neutral								
35 rs	16 rs	0.8680/1.9100	1.0430/2.2900	95	75	88	25.0	720
50 ss	25 rs	0.6410/1.2000	0.7710/1.4400	115	85	105	28.1	970
70 ss	35 rs	0.4430/0.8680	0.5330/1.0400	135	110	132	31.4	1240
95 ss	50 ss	0.3200/0.6410	0.3850/0.7710	165	130	160	36.1	1660
120ss	70 ss	0.2530/0.4430	0.3050/0.5330	185	150	187	39.5	2040
150ss	70 ss	0.2060/0.4430	0.2490/0.5330	210	170	215	43.5	2435
185ss	95 ss	0.1640/0.3200	0.1990/0.3850	235	195	248	48.2	3025
240ss	120ss	0.1250/0.2530	0.1510/0.3050	275	225	292	54.2	3830
300ss	150ss	0.1000/0.2060	0.1230/0.2490	310	260	347	60.0	4720
400ss	185ss	0.0778/0.1640	0.0962/0.1990	361	300	405	66.0	5980
500ss	240ss	0.0605/0.1250	0.0761/0.1510	413	348	459	73.3	7460

The above data is approximate and subjected to manufacturing tolerance.

rs : round, Stranded ss : Sector, Stranded



# Multicore Cables, with Stranded Copper Conductors, PVC Insulated, Steel Tape Armoured and PVC Sheathed.

#### **Description**

Multicore cables of stranded Copper conductors are insulated with PVC compound rated 70°C, assembled together, armoured with steel tape and covered with overall jacket of PVC compound.

Cables are produced according to IEC 60502.

#### **Application**

For outdoor installations in damp and wet locations, where mechanical damages are expected to occur.

Nominal	Max. Conductor Resistance		Current Rating			Approx.	Approx.		
Cross Sectional Area	DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight		
mm²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km		
Two core cables									
6 rs	3.0800	3.6900	50	40	50	16.9	460		
10 rs	1.8300	2.1900	65	55	66	17.0	560		
16 rs	1.1500	1.3900	85	65	88	19.0	740		
25 rs	0.7270	0.8700	110	85	116	22.0	1030		
35 rs	0.5240	0.6280	130	105	143	24.2	1295		
Three core cables									
4 rs	4.6100	5.5400	35	30	31	16.4	440		
6 rs	3.0800	3.6900	45	36	39	17.5	525		
10 rs	1.8300	2.1900	60	48	53	18.4	640		
16 rs	1.1500	1.3900	75	60	72	20.6	860		
25 rs	0.7270	0.8700	100	80	94	23.8	1200		
35 rs	0.5240	0.6280	120	95	110	26.2	1530		
		Fo	our core cabl	es					
4 rs	4.6100	5.5400	35	30	31	17.6	520		
6 rs	3.0800	3.6900	45	36	39	18.8	630		
10 rs	1.8300	2.1900	60	48	53	19.9	805		
16 rs	1.1500	1.3900	75	60	72	22.3	1070		
25 rs	0.7270	0.8700	100	80	94	25.9	1520		
35 rs	0.5240	0.6280	120	95	110	28.6	1950		
50 ss	0.3870	0.4640	145	115	138	32.7	2640		
70 ss	0.2680	0.3220	175	145	171	37.5	3915		
95 ss	0.1930	0.2320	210	165	209	42.4	5140		
120 ss	0.1530	0.1850	240	195	242	46.2	6310		
150 ss	0.1240	0.1510	270	220	275	50.9	7615		
185 ss	0.0991	0.1210	300	245	314	56.1	9365		
240 ss	0.0754	0.0840	345	290	374	62.6	12790		
300 ss	0.0601	0.0770	390	320	440	68.7	14645		
400 ss	0.0470	0.0606	444	373	500	74.9	18510		
500 sm	0.0366	0.0491	499	425	556	83.8	23700		

The above data is approximate and subjected to manufacturing tolerance.

rs: round, Stranded ss: Sector, Stranded



# Multicore Cables, with Stranded Copper Conductors , PVC Insulated, Steel Tape Armoured and PVC Sheathed.

Non	ninal	Max. Conduct	or Resistance	C	urrent Ratiท <sub>ู</sub>	g	Approx.	Approx.
Cro Section		DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mı	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced Neutral			
35 rs	16 rs	0.5240/1.1500	0.6280/1.3900	120	95	110	27.0	1740
50 ss	25 rs	0.3870/0.7270	0.4640/0.8700	145	115	138	30.9	2365
70 ss	35 rs	0.2680/0.5240	0.3220/0.6280	175	145	171	34.6	3155
95 ss	50 ss	0.1930/0.3870	0.2320/0.4640	210	165	209	40.7	4625
120ss	70 ss	0.1530/0.2680	0.1850/0.3220	240	195	242	44.5	5730
150ss	70 ss	0.1240/0.2680	0.1510/0.3220	270	220	275	48.5	6740
185ss	95 ss	0.0991/0.1930	0.1210/0.2320	300	245	314	53.2	8300
240ss	120ss	0.0754/0.1530	0.0840/0.1850	345	290	374	59.6	10550
300ss	150ss	0.0601/0.1240	0.0770/0.1510	390	320	440	65.4	12920
400ss	185ss	0.0470/0.0991	0.0606/0.1210	444	373	500	70.8	16360
500ss	240ss	0.0366/0.0754	0.0491/0.0840	499	425	556	79.5	21000

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with Stranded Aluminium Conductors, PVC Insulated, Steel Tape Armoured and PVC Sheathed.

#### **Description**

 Multicore cables of stranded Aluminium conductors are insulated with PVC compound rated 70°C, assembled together, armoured with steel tape and covered with overall jacket of PVC compound.

Cables are produced according to IEC 60502.

#### **Application**

• For outdoor installations in damp wet locations, where mechanical damages are expected to occur.

		· ·						
Nominal	Max. Conduct	or Resistance		ırrent Ratin	<del>ĭ                                      </del>	Approx.	Approx.	
Cross Sectional Area	DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight	
mm <sup>2</sup>	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km	
	Two core cables							
10 rs	3.080	3.300	46	39	46	17.0	435	
16 rs	1.910	2.290	60	46	62	19.0	545	
25 rs	1.200	1.440	77	60	81	22.0	730	
35 rs	0.868	1.040	103	83	115	24.2	880	
		Th	ree core cabl	es				
10 rs	3.080	3.300	42	34	37	18.4	460	
16 rs	1.910	2.290	53	42	50	20.6	570	
25 rs	1.200	1.440	70	56	66	23.8	750	
35 rs	0.868	1.040	95	75	88	26.2	905	
	Four core cables							
10 rs	3.0800	3.3000	42	34	37	19.9	560	
16 rs	1.9100	2.2900	53	42	50	22.3	680	
25 rs	1.2000	1.4400	70	56	66	25.9	920	
35 rs	0.8680	1 .0430	95	75	88	28.6	1120	
50 ss	0.6410	0.7710	115	85	105	32.7	1475	
70 ss	0.4430	0.5530	135	110	132	37.5	2225	
95 ss	0.3200	0.3850	165	130	160	42.4	2830	
120 ss	0.2530	0.3050	185	150	187	46.2	3360	
150 ss	0.2060	0.2490	210	170	215	50.9	3975	
185 ss	0.1640	0.1990	235	195	248	56.1	4815	
240 ss	0.1250	0.1510	275	225	292	62.6	5925	
300 ss	0.1000	0.1230	310	260	347	68.7	7125	
400 ss	0.0778	0.0962	355	298	399	74.9	8950	
500 ss	0.0605	0.0761	406	346	452	83.8	11390	

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with Stranded Aluminium Conductors, PVC Insulated, Steel Tape Armoured and PVC Sheathed.

Non	ninal	Max. Conduct	or Resistance	C	urrent Ratin	g	Approx.	Approx.
Cro Section		DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mı	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced Neutral			
35 rs	16 rs	0.8680/1.9100	1.0430/2.2900	95	75	88	27.0	1020
50 ss	25 rs	0.6410/1.2000	0.7710/1.4400	115	85	105	30.9	1330
70 ss	35 rs	0.4430/0.8680	0.5330/1.0400	135	110	132	34.6	1675
95 ss	50 ss	0.3200/0.6410	0.3850/0.7710	165	130	160	40.7	2585
120ss	70 ss	0.2530/0.4430	0.3050/0.5330	185	150	187	44.5	3100
150ss	70 ss	0.2060/0.4430	0.2490/0.5330	210	170	215	48.5	3590
185 ss	95 ss	0.1640/0.3200	0.1990/0.3850	235	195	248	53.2	4300
240ss	120ss	0.1250/0.2530	0.1510/0.3050	275	225	292	59.6	5325
300ss	150ss	0.1000/0.2060	0.1230/0.2490	310	260	347	65.4	6365
400ss	185ss	0.0778/0.1640	0.0962/0.1990	355	298	399	70.8	8000
500ss	240ss	0.0605/0.1250	0.0761/0.1510	406	346	452	79.5	10250

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with Stranded Copper Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed.

#### **Description**

- Multicore cables of stranded Copper conductors are insulated with PVC compound rated 70°C, assembled together, armoured with steel wires and covered with overall jacket of PVC compound.
- Cables are produced according to IEC 60502 or BS 6346.

#### **Application**

• For outdoor installations in damp wet locations where mechanical damages are expected to occur.

Nominal	Max. Conduct	or Resistance	Cı	urrent Ratin	g	Approx.	Approx.
Cross Sectional Area	DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mm <sup>2</sup>	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
		Τν	wo core cable	es			
4 rs	4.6100	5.5400	40	32	39	17.8	645
6 rs	3.0800	3.6900	50	40	50	18.8	735
10 rs	1.8300	2.1900	65	55	66	19.2	835
16 rs	1.1500	1.3900	85	65	88	21.2	1030
25 rs	0.7270	0.8700	110	85	116	25.3	1535
35 rs	0.5240	0.6280	130	105	143	27.5	1790
		Th	ree core cabl	es			
4 rs	4.6100	5.5400	35	30	31	18.5	730
6 rs	3.0800	3.6900	45	36	39	19.6	835
10 rs	1.8300	2.1900	60	48	53	20.6	920
16 rs	1.1500	1.3900	75	60	72	22.8	1175
25 rs	0.7270	0.8700	100	80	94	27.1	1765
35 rs	0.5240	0.6280	120	100	110	29.5	2145
		Fo	our core cable	es			
4 rs	4.6100	5.5400	37	29	29	19.7	840
6 rs	3.0800	3.6900	47	37	37	20.9	965
10 rs	1.8300	2.1900	63	50	50	22.1	1115
16 rs	1.1500	1.3900	79	68	68	25.6	1590
25 rs	0.7270	0.8700	105	89	89	29.2	2125
35 rs	0.5240	0.6280	120	95	116	32.1	2635
50 ss	0.3870	0.4640	145	115	143	37.1	3870
70 ss	0.2680	0.3220	175	145	176	40.7	4900
95 ss	0.1930	0.2320	210	165	215	46.6	6665
120 ss	0.1530	0.1850	240	195	248	50.6	7990
150 ss	0.1240	0.1510	270	220	281	55.1	9445
185 ss	0.0991	0.1210	300	245	319	60.5	11425
240 ss	0.0754	0.0840	345	290	380	66.8	14205
300 ss	0.0601	0.0770	390	320	446	72.9	17870
400 ss	0.0470	0.0606	427	361	490	80.0	21275
500 ss	0.0366	0.0491	472	403	536	87.7	26595

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with Stranded Copper Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed.

Non	ninal	Max. Conduct	tor Resistance	С	urrent Ratin	g	Approx.	Approx.
Cro Section	oss ial Area	DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mm²		Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced Neutral			
35 rs	16 rs	0.5240/1.1500	0.6280/1.3900	120	95	116	28.7	2310
50 ss	25 rs	0.3870/0.7270	0.4640/0.8700	145	115	143	35.5	3550
70 ss	35 rs	0.2680/0.5240	0.3220/0.6280	175	145	176	39.2	4480
95 ss	50 ss	0.1930/0.3870	0.2320/0.4640	210	165	215	42.6	5475
120ss	70 ss	0.1530/0.2680	0.1850/0.3220	240	195	248	48.9	7385
150ss	70 ss	0.1240/0.2680	0.1510/0.3220	270	220	281	52.7	8505
185ss	95 ss	0.0991/0.1930	0.1210/0.2320	300	245	319	57.6	10260
240ss	120ss	0.0754/0.1530	0.0840/0.1850	345	290	380	64.0	12755
300ss	150ss	0.0601/0.1240	0.0770/0.1510	390	320	446	69.8	15330
400ss	185ss	0.0470/0.0991	0.0606/0.1210	427	361	490	75.9	19260
500ss	240ss	0.0366/0.0754	0.0491/0.0840	472	403	536	83.4	23630

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with Stranded Aluminium Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed.

#### **Description**

- Multicore cables of stranded Aluminium conductors are insulated with PVC compound rate 70°C, assembled together, armoured with steel wires and covered with overall jacket of PVC compound.
- Cables are produced according to IEC 60502 or BS 6346.

#### **Application**

• For outdoor installations in damp wet locations where mechanical damages are expected to occur.

Nominal	Max. Conduct	or Resistance	Cı	urrent Ratin	g	Approx.	Approx.
Cross Sectional Area	DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mm <sup>2</sup>	Ω/km	Ω/km	A wo core cable	Α	Α	Mm	Kg/km
10 rs	3.0800	3.3000	46	39	46	19.2	695
16 rs	1.9100	2.2900	60	46	62	21.2	835
25 rs	1.2000	1.4400	77	60	81	25.3	1235
35 rs	0.8680	1.0400	103	83	115	27.5	1370
		Th	ree core cab	es			
10 rs	3.0800	3.3000	42	34	37	20.6	740
16 rs	1.9100	2.2900	53	42	50	22.8	885
25 rs	1.2000	1.4400	70	56	66	27.1	1315
35 rs	0.8680	1.0400	95	75	88	29.5	1525
		Fo	our core cable	es			
10 rs	3.0800	3.3000	42	34	37	22.1	870
16 rs	1.9100	2.2900	53	42	50	25.6	1205
25 rs	1.2000	1.4400	70	56	66	29.2	1525
35 rs	0.8680	1.0430	95	75	88	32.1	1805
50 ss	0.6410	0.7710	115	85	105	37.1	3040
70 ss	0.4430	0.5530	135	110	138	40.7	3750
95 ss	0.3200	0.3850	165	130	165	46.6	4730
120 ss	0.2530	0.3050	185	150	193	50.6	5570
150 ss	0.2060	0.2490	210	170	220	55.1	6430
185 ss	0.1640	0.1990	235	195	253	60.5	7790
240 ss	0.1250	0.1510	275	225	297	66.8	9180
300 ss	0.1000	0.1230	310	260	352	72.9	10590
400 ss	0.0778	0.0962	348	294	397	80.0	11715
500 ss	0.0605	0.0761	392	335	443	87.7	14005

The above data is approximate and subjected to manufacturing tolerance.

# Multicore Cables, with Stranded Aluminium Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed.

Non	ninal	Max. Conduct	or Resistance	C	urrent Ratiท <sub>ี</sub>	3	Approx.	Approx.
_	oss ial Area	DC at 20°c	AC at 70°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mm <sup>2</sup>		Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced Neutral			
35 rs	16rm	0.8680/1.9100	1.0430/2.2900	95	75	94	28.7	1585
50 ss	25 rs	0.6410/1.2000	0.7710/1.4400	115	85	110	35.5	2300
70 ss	35 rs	0.4430/0.8680	0.5330/1.0400	135	110	138	39.2	2820
95 ss	50 ss	0.3200/0.6410	0.3850/0.7710	165	130	165	42.6	3410
120ss	70 ss	0.2530/0.4430	0.3050/0.5330	185	150	193	48.9	4370
150ss	70 ss	0.2060/0.4430	0.2490/0.5330	210	170	220	52.7	5080
185ss	95 ss	0.1640/0.3200	0.1990/0.3850	235	195	253	57.6	5950
240ss	120ss	0.1250/0.2530	0.1510/0.3050	275	225	297	64.0	7230
300ss	150ss	0.1000/0.2060	0.1230/0.2490	310	260	352	69.8	8540
400ss	185ss	0.0778/0.1640	0.0962/0.1990	348	294	397	75.9	10870
500ss	240ss	0.0605/0.1250	0.0761/0.1510	392	335	443	83.4	12650

The above data is approximate and subjected to manufacturing tolerance.



Single Core Cables, with Stranded Circular Copper Conductors, XLPE Insulated and PVC Sheathed.

#### **Description**

- Soft annealed stranded Copper or Aluminium conductor, Insulated with XLPE compound covered with a layer of PVC compound to form the overall jacket.
- Cables are according to IEC 60502 or BS 7889.

#### **Application**

• For outdoor and indoor installations in damp and wet locations.

They are normally used for power distribution in urban networks, in industrial plants, as well as in Thermo power and Hydropower stations.

power and r											
Nominal		nductor			Curren	t Rating	3		Annual		
Cross	Resis	tance	Lai	d in Gro	ound	Laid	in Free	Air	Approx. Overall	Approx.	
Sectional Area	DC at 20°c	AC at 90°c	$\infty$	<u>&amp;</u>	8	0	0000	8	Diameter	Weight	
mm <sup>2</sup>	Ω/km	Ω/km	Α	Α	Α	Α	Α	Α	Mm	Kg/km	
			a- Cop	per Co	onduct	ors					
4	4.6100	5.8800	55	51	40	53	47	40	6.8	80	
6	3.0800	3.9300	68	65	53	65	59	53	7.3	102	
10	1 .8300	2.3300	98	86	68	84	79	68	8.3	150	
16	1.1500	1.4700	116	111	87	116	110	95	9.3	210	
25	0.7270	0.9270	150	142	110	143	137	121	11.0	315	
35	0.5240	0.6690	179	172	137	179	173	152	12.1	410	
50	0.3870	0.4940	210	200	163	221	210	184	13.8	555	
70	0.2680	0.3430	263	247	200	278	268	236	15.7	760	
95	0.1930	0.2480	310	294	242	347	336	289	17.7	1015	
120	0.1530	0.1970	357	336	273	404	394	341	19.6	1280	
150	0.1240	0.1600	394	373	310	457	446	389	21.8	1570	
185	0.0991	0.1290	452	425	352	530	520	441	23.9	1920	
240	0.0754	0.0990	520	488	404	651	641	536	27.1	2530	
300	0.0601	0.0810	588	546	457	824	756	620	29.7	3105	
400	0.0470	0.0638	672	620	515	893	872	714	33.9	4135	
500	0.0366	0.0517	761	693	572	1008	987	814	37.4	5110	
630	0.0283	0.0425	872	777	651	1155	1134	956	41.9	6455	
800	0.0221	0.0292	957	861	735	1313	1292	1092	46.8	8260	
1000	0.0176	0.0234	1082	935	798	1449	1428	1208	51.5	10075	

# Single Core Cables, with Stranded Circular Aluminum Conductors, XLPE Insulated and PVC Sheathed.

Nominal		nductor			Curren	t Rating	3		Арриом	
Cross	Resis	tance	Lai	d in Gro	ound	Laid	in Free	Air	Approx. Overall	Approx.
Sectional Area	DC at 20°c	AC at 90°c	$ \infty  $	<u></u>	<b>&amp;</b>	0	$ \infty  $	<u></u>	Diameter	Weight
mm <sup>2</sup>	Ω/km	Ω/km	Α	Α	Α	Α	Α	Α	Mm	Kg/km
			b- Alum	inum	Condu	ctors				
16	1.9100	2.4500	89	87	66	89	84	63	9.3	115
25	1.2000	1.5400	113	110	84	116	110	95	11.0	165
35	0.8680	1.1130	137	131	105	142	137	121	12.1	205
50	0.6410	0.8220	163	155	121	173	168	147	13.8	260
70	0.4430	0.5690	200	189	152	221	215	179	15.7	340
95	0.3200	0.4110	236	226	179	284	273	215	17.7	450
120	0.2530	0.3250	278	263	215	326	315	242	19.6	550
150	0.2060	0.2650	310	294	236	373	362	299	21.8	670
185	0.1640	0.2120	352	336	267	436	420	336	23.9	830
240	0.1250	0.1630	410	389	315	515	499	399	27.1	1050
300	0.1000	0.1310	467	436	357	578	567	462	29.7	1300
400	0.0778	0.1000	541	504	410	693	677	541	33.9	1610
500	0.0605	0.0870	609	567	467	809	788	630	37.4	2000
630	0.0469	0.0620	698	646	536	945	924	746	41.9	2520
800	0.0367	0.0560	788	704	599	1071	1050	851	46.8	3150
1000	0.0291	0.0470	872	767	651	1176	1155	966	51.5	3870

# Multicore Cables, with Stranded, Copper Conductors, XLPE Insulated and PVC Sheathed.

#### **Description**

- Multicore cables of stranded Copper conductors are insulated with XLPE compound, assembled together and covered with an overall jacket of PVC compound.
- Cables are produced according to IEC 60502.

#### **Application**

• For outdoor and indoor installations in damp and wet locations. They are normally used for power distribution in urban networks, in industrial plants, as well as in Therrnopower and Hydropower Stations.

Nominal	Max. Conduct	or Resistance	Cı	urrent Ratin	g	Approx.	Approx.
Cross Sectional Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mm²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
		Τν	wo core cable	es			
1.5 rs	12.1000	15.4000	30	25	25	9.6	105
2.5 rs	7.4100	9.4500	37	32	34	10.5	135
4 rs	4.6100	5.8800	50	40	46	11.7	175
6 rs	3.0800	3.9300	63	52	60	12.7	225
10 rs	1.8300	2.3300	82	69	79	13.8	360
16 rs	1.1500	1.4700	106	83	105	15.8	505
25 rs	0.7270	0.9270	139	107	139	18.8	750
35 rs	0.5240	0.6690	166	134	166	21.0	980
		Th	ree core cabl	es			
1.5 rs	12.1000	15.4000	26	23	22	10.1	130
2.5 rs	7.4100	9.4500	35	29	32	11.0	165
4 rs	4.6100	5.8800	45	36	41	12.3	225
6 rs	3.0800	3.9300	57	45	50	13.4	295
10 rs	1.8300	2.3300	75	60	68	15.1	430
16 rs	1.1500	1.4700	97	75	89	17.3	620
25 rs	0.7270	0.9270	128	102	120	20.5	910
35 rs	0.5240	0.6690	155	120	145	22.9	1205

The above data is approximate and subjected to manufacturing tolerance.

rs : round, Stranded



# Multicore Cables, with Stranded, Copper Conductors, XLPE Insulated and PVC Sheathed.



Max. Conductor	Resistance	Cı	ırrent Rati	ng	Approx.	Approx.
DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
	Four C	ore Cables				
12.1000	15.4000	26	23	22	10.6	150
7.4100	9.4500	35	29	32	11.9	205
4.6100	5.8800	45	36	41	13.4	280
3.0800	3.9300	57	45	50	14.6	365
1.8300	2.3300	75	60	68	16.4	565
1.1500	1.4700	97	75	89	18.9	795
0.7270	0.9270	128	102	120	22.5	1185
0.5240	0.6690	155	120	145	25.2	1575
0.3870	0.4940	185	145	179	27.1	2060
0.2680	0.3430	220	180	225	31.4	2905
0.1930	0.2480	265	210	268	35.1	3910
0.1530	0.1790	305	245	310	39.2	4915
0.1240	0.1600	335	275	352	43.7	6035
0.0991	0.1290	375	310	404	48.7	7540
0.0754	0.0990	435	365	483	54.5	9785
0.0601	0.0810	490	405	562	60.1	12190
0.0470	0.06420	579	476	660	66.9	15540
0.0366	0.05190	653	546	762	74.4	20075
	Four core Cables	with Reduced	Neutral			
0.5240/1.1500	0.6690/1.4700	155	120	142	23.6	1390
0.3870/0.7270	0.4940/0.9270	185	145	179	25.9	1835
0.2680/0.5240	0.3430/0.6690	220	180	215	29.7	2540
0.1930/0.3870	0.2480/0.4940	265	210	268	33.6	3435
0.1530/0.2680	0.1970/0.3430	305	245	310	37.5	4400
0.1240/0.2680	0.1600/0.3430	335	275	352	41.3	5255
0.0991/0.1930	0.1290/0.2480	375	310	404	46.2	6640
0.0754/0.1530	0.0990/0.1970	435	365	483	51.5	8555
0.0601/0.1240	0.0810/0.1600	490	405	562	56.8	10640
0.0470/0.0991	0.0642/0.1290	579	476	660	62.8	14436
0.0366/0.0754	0.0519/0.0990	653	546	762	70.1	18291
	DC at 20°c  Ω/km  12.1000 7.4100 4.6100 3.0800 1.8300 1.1500 0.7270 0.5240 0.3870 0.2680 0.1930 0.1530 0.1240 0.0991 0.0754 0.0601 0.0470 0.0366  0.5240/1.1500 0.3870/0.7270 0.2680/0.5240 0.1930/0.3870 0.1530/0.2680 0.1930/0.3870 0.1530/0.2680 0.1240/0.2680 0.0991/0.1930 0.0754/0.1530 0.0601/0.1240 0.0470/0.0991	Ω/km         Γour Co           12.1000         15.4000           7.4100         9.4500           4.6100         5.8800           3.0800         3.9300           1.8300         2.3300           1.1500         1.4700           0.7270         0.9270           0.5240         0.6690           0.3870         0.4940           0.2680         0.3430           0.1930         0.2480           0.1530         0.1790           0.1240         0.1600           0.0991         0.1290           0.0754         0.0990           0.0601         0.0810           0.0470         0.06420           0.0366         0.05190           Four core Cables           0.5240/1.1500         0.6690/1.4700           0.3870/0.7270         0.4940/0.9270           0.2680/0.5240         0.3430/0.6690           0.1530/0.2680         0.1970/0.3430           0.1240/0.2680         0.1600/0.3430           0.0991/0.1930         0.1290/0.2480           0.0754/0.1530         0.0990/0.1970           0.0601/0.1240         0.0810/0.1600           0.0470/0.0991         0.	DC at 20°c         AC at 90°c         Laid direct in Ground           Ω/km         Λ         A           12.1000         15.4000         26           7.4100         9.4500         35           4.6100         5.8800         45           3.0800         3.9300         57           1.8300         2.3300         75           1.1500         1.4700         97           0.7270         0.9270         128           0.5240         0.6690         155           0.3870         0.4940         185           0.2680         0.3430         220           0.1930         0.2480         265           0.1530         0.1790         305           0.0991         0.1290         375           0.0754         0.0990         435           0.0601         0.0810         490           0.0470         0.06420         579           0.25240/1.1500         0.6690/1.4700         155           0.2680/0.5240         0.3430/0.6690         220           0.1930/0.3870         0.2480/0.4940         265           0.1530/0.2680         0.1970/0.3430         305           0.1240/0.2680 </td <td>DC at 20°c         AC at 90°c         Laid direct in Ground In Ground         Laid in Ducts           Ω/km         Ω/km         A         A           Four Core Cables           12.1000         15.4000         26         23           7.4100         9.4500         35         29           4.6100         5.8800         45         36           3.0800         3.9300         57         45           1.8300         2.3300         75         60           1.1500         1.4700         97         75           0.7270         0.9270         128         102           0.5240         0.6690         155         120           0.3870         0.4940         185         145           0.2680         0.3430         220         180           0.1930         0.2480         265         210           0.1530         0.1790         305         245           0.0991         0.1290         375         310           0.0754         0.0990         435         365           0.0601         0.0810         490         405           0.5240/1.1500         0.6690/1.4700         155</td> <td>DC at 20°c         AC at 90°c         Laid direct in Ground In Ground In Gree Air         Laid in Free Air           Ω/km         Ω/km         A         A           12.1000         15.4000         26         23         22           7.4100         9.4500         35         29         32           4.6100         5.8800         45         36         41           3.0800         3.9300         57         45         50           1.8300         2.3300         75         60         68           1.1500         1.4700         97         75         89           0.7270         0.9270         128         102         120           0.5240         0.6690         155         120         145           0.3870         0.4940         185         145         179           0.2680         0.3430         220         180         225           0.1930         0.2480         265         210         268           0.1530         0.1790         305         245         310           0.1240         0.1600         335         275         352           0.0991         0.1290         375         310</td> <td>DC at 20°c         AC at 90°c         Laid direct in Ground in Ground in Ground         Laid in Free Air Diameter         Overall Diameter           Ω/km         A         A         A         A           12.1000         15.4000         26         23         22         10.6           7.4100         9.4500         35         29         32         11.9           4.6100         5.8800         45         36         41         13.4           3.0800         3.9300         57         45         50         14.6           1.8300         2.3300         75         60         68         16.4           1.1500         1.4700         97         75         89         18.9           0.7270         0.9270         128         102         120         22.5           0.5240         0.6690         155         120         145         25.2           0.3870         0.4940         185         145         179         27.1           0.2680         0.3430         220         180         225         31.4           0.1930         0.2480         265         210         268         35.1           0.1530         0.1790</td>	DC at 20°c         AC at 90°c         Laid direct in Ground In Ground         Laid in Ducts           Ω/km         Ω/km         A         A           Four Core Cables           12.1000         15.4000         26         23           7.4100         9.4500         35         29           4.6100         5.8800         45         36           3.0800         3.9300         57         45           1.8300         2.3300         75         60           1.1500         1.4700         97         75           0.7270         0.9270         128         102           0.5240         0.6690         155         120           0.3870         0.4940         185         145           0.2680         0.3430         220         180           0.1930         0.2480         265         210           0.1530         0.1790         305         245           0.0991         0.1290         375         310           0.0754         0.0990         435         365           0.0601         0.0810         490         405           0.5240/1.1500         0.6690/1.4700         155	DC at 20°c         AC at 90°c         Laid direct in Ground In Ground In Gree Air         Laid in Free Air           Ω/km         Ω/km         A         A           12.1000         15.4000         26         23         22           7.4100         9.4500         35         29         32           4.6100         5.8800         45         36         41           3.0800         3.9300         57         45         50           1.8300         2.3300         75         60         68           1.1500         1.4700         97         75         89           0.7270         0.9270         128         102         120           0.5240         0.6690         155         120         145           0.3870         0.4940         185         145         179           0.2680         0.3430         220         180         225           0.1930         0.2480         265         210         268           0.1530         0.1790         305         245         310           0.1240         0.1600         335         275         352           0.0991         0.1290         375         310	DC at 20°c         AC at 90°c         Laid direct in Ground in Ground in Ground         Laid in Free Air Diameter         Overall Diameter           Ω/km         A         A         A         A           12.1000         15.4000         26         23         22         10.6           7.4100         9.4500         35         29         32         11.9           4.6100         5.8800         45         36         41         13.4           3.0800         3.9300         57         45         50         14.6           1.8300         2.3300         75         60         68         16.4           1.1500         1.4700         97         75         89         18.9           0.7270         0.9270         128         102         120         22.5           0.5240         0.6690         155         120         145         25.2           0.3870         0.4940         185         145         179         27.1           0.2680         0.3430         220         180         225         31.4           0.1930         0.2480         265         210         268         35.1           0.1530         0.1790

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with stranded, Aluminum Conductors, XLPE Insulated and PVC sheathed.

#### **Description**

- Multicore cables of stranded Aluminium conductors are insulated with XLPE compound, assembled together and covered with an overall jacket of PVC compound.
- Cables are produced according to IEC 60502.

#### **Application**

For outdoor and indoor installations in damp and wet locations. They are normally used for power distribution in urban networks, in industrial plants, as well as in Thermopower and Hydropower Stations.

Nominal	Max. Conduct	or Resistance	Cu	urrent Ratin	g	Approx.	Approx.	
Cross Sectional Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight	
mm²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km	
	Two core cables							
10 rs	3.0800	3.9500	57	48	55	13.8	235	
16 rs	1.9100	2.4500	74	58	73	15.8	310	
25 rs	1.2000	1.5400	97	75	97	18.8	450	
35 rs	0.8680	1.1130	128	106	120	21.0	565	
		Th	ree core cabl	es				
10 rs	3.0800	3.9500	52	42	48	15.1	250	
16 rs	1.9100	2.4500	68	52	62	17.3	330	
25 rs	1.2000	1.5400	90	71	84	20.5	460	
35 rs	0.8680	1.1130	120	95	105	22.9	580	
		Fo	ur Core Cabl	es				
10 rs	3.0800	3.9500	52	42	48	16.4	320	
16 rs	1.9100	2.4500	68	52	62	18.9	405	
25 rs	1.2000	1.5400	90	71	84	22.5	585	
35 rs	0.8680	1.1130	120	95	110	25.2	745	
50 ss	0.6410	0.8220	145	110	136	26.5	905	
70 ss	0.4430	0.5690	175	140	168	30.8	1260	
95 ss	0.3200	0.4110	210	165	205	33.5	1565	
120 ss	0.2530	0.3250	235	190	236	37.6	1950	
150 ss	0.2060	0.2650	265	215	278	42.1	2405	
185 ss	0.1640	0.2120	290	240	315	47.1	2930	
240 ss	0.1250	0.1630	340	280	378	52.9	3725	
300 ss	0.1000	0.1310	390	325	446	58.5	4625	
400 ss	0.0778	0.1025	461	379	526	66.9	5975	
500 ss	0.0605	0.0809	527	441	615	74.4	7485	

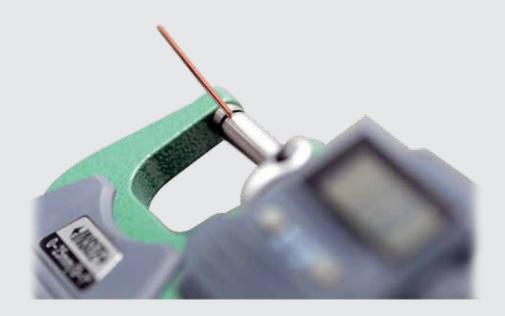
The above is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with stranded, Aluminum Conductors, XLPE Insulated and PVC sheathed.

Non	ninal	Max. Conduct	or Resistance	C	urrent Ratiท <sub>ี</sub>	3	Approx.	Approx.
	oss ial Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mı	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced neutral			
35 rs	16 rs	0.8680/1.9100	1.1130/2.4500	120	95	110	23.6	670
50 ss	25 rs	0.6410/1.2000	0.8220/1.5400	145	110	136	25.3	830
70 ss	35 rs	0.4430/0.8680	0.5690/1.1130	175	140	168	29.1	1120
95 ss	50 ss	0.3200/0.6410	0.4110/0.8220	210	165	205	33.0	1415
120ss	70 ss	0.2530/0.4430	0.3250/0.5690	235	190	236	35.9	1770
150ss	70 ss	0.2060/0.4430	0.2650/0.5690	265	215	278	39.7	2120
185ss	95 ss	0.1640/0.3200	0.2120/0.4110	290	240	315	44.6	2590
240ss	120ss	0.1250/0.2530	0.1630/0.3250	340	280	378	49.9	3260
300ss	150ss	0.1000/0.2060	0.1310/0.2650	390	325	446	55.2	4065
400ss	185ss	0.0778/0.1640	0.1025/0.2120	461	379	526	62.8	5255
500ss	240ss	0.0605/0.1250	0.0809/0.1630	527	441	615	70.1	6545

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with Stranded Copper Conductors, XLPE Insulated, Steel Tape Armoured and PVC Sheathed.

#### **Description**

- Multicore cables of stranded Copper conductors are insulated with XLPE compound, assembled together, armoured with steel tape and covered with an overall jacket of PVC compound.
- Cables are produced according to IEC 60502.

#### **Application**

• For outdoor installations in damp wet locations where mechanical damages are expected to occur.

Nominal	Max. Conduct	or Resistance	Cu	ırrent Ratin	g	Approx.	Approx.
Cross Sectional Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mm²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			wo core cable				
6 rs	3.0800	3.9300	62	51	59	15.5	405
10 rs	1.8300	2.3300	81	68	78	15.6	490
16 rs	1.1500	1.4700	105	82	103	17.8	655
25 rs	0.7270	0.9270	138	106	137	20.8	935
35 rs	0.5240	0.6690	164	132	164	23.0	1185
		Th	ree core cabl	es			
6 rs	3.0800	3.9300	56	44	49	16.2	465
10 rs	1 .8300	2.3300	74	59	67	17.1	575
16 rs	1.1500	1.4700	96	74	88	19.3	790
25 rs	0.7270	0.9270	127	100	120	22.5	1105
35 rs	0.5240	0.6690	153	119	143	24.9	1420
		Fo	our Core Cabl	es			
6 rs	3.0800	3.9300	56	44	49	17.4	555
10 rs	1.8300	2.3300	74	59	67	18.4	720
16 rs	1.1500	1.4700	96	74	88	20.9	975
25 rs	0.7270	0.9270	127	100	120	24.5	1385
35 rs	0.5240	0.6690	153	119	143	27.2	1775
50 ss	0.3870	0.4940	185	145	178	30.1	2415
70 ss	0.2680	0.3430	220	180	215	34.6	3335
95 ss	0.1930	0.2480	265	210	268	39.7	4815
120 ss	0.1530	0.1970	305	245	310	43.8	5910
150 ss	0.1240	0.1600	335	275	352	48.7	7195
185 ss	0.0991	0.1290	375	310	404	53.7	8830
240 ss	0.0754	0.0990	435	365	483	60.0	11285
300 ss	0.0601	0.0810	490	405	562	65.5	13835
400 ss	0.0470	0.0642	567	472	645	71.7	17515
500 ss	0.0366	0.0519	614	524	746	80.6	22885

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with Stranded Copper Conductors, XLPE Insulated, Steel Tape Armoured and PVC Sheathed.

Non	ninal	Max. Conduct	or Resistance	С	urrent Ratin	g	Approx.	Approx.
Cro Section		DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mı	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced neutral			
35 rs	16 rs	0.5240/1.1500	0.6690/1.4700	153	119	143	25.6	1615
50 ss	25 rs	0.3870/0.7270	0.4940/0.9270	185	145	178	28.7	2160
70 ss	35 rs	0.2680/0.5240	0.3430/0.6690	220	180	215	33.1	2960
95 ss	50 ss	0.1930/0.3870	0.2480/0.4940	265	210	268	38.0	4280
120ss	70 ss	0.1530/0.2680	0.1970/0.3430	305	245	310	42.1	5365
150ss	70 ss	0.1240/0.2680	0.1600/0.3430	335	275	352	46.3	6355
185ss	95 ss	0.0991/0.1930	0.1290/0.2480	375	310	404	51.2	7865
240ss	120ss	0.0754/0.1530	0.0990/0.1970	435	365	483	57.1	10000
300ss	150ss	0.0601/0.1240	0.0810/0.1600	490	405	562	62.2	12205
400ss	185ss	0.0470/0.0991	0.0642/0.1290	567	472	645	67.8	15505
500ss	240ss	0.0366/0.0754	0.0519/0.0990	614	524	746	75.3	19515

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with stranded, Aluminum Conductors, XLPE Insulated , Steel Tape Armoured and PVC sheathed.

#### **Description**

 Multicore cables of stranded Aluminum Conductors are Insulated with XLPE compound, assembled together, armoured with steel tape and covered with

an overall jacket of PVC compound .
Cables are produced according to IEC 60502 .

#### **Application**

• For outdoor installations in damp wet locations where mechanical damages are expected to occur .

Nominal	Max. Conduct	or Resistance	Current Rating			Approx.	Approx
Cross Sectional Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Approx. Weight
mm²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
		Τ\	wo core cable	es			
10 rs	3.0800	3.9500	56	47	55	15.8	370
16 rs	1.9100	2.4500	73	57	72	17.8	460
25 rs	1.2000	1.5400	96	74	96	20.8	630
35 rs	0.8680	1.1130	129	105	126	23.0	770
		Th	ree core cabl	les			
10 rs	3.0800	3.9500	52	41	47	17.1	390
16 rs	1.9100	2.4500	67	52	62	19.3	495
25 rs	1.2000	1.5400	89	70	84	22.5	650
35 rs	0.8680	1.1130	120	95	110	24.9	795
		Fo	ur Core Cabl	es			
10 rs	3.0800	3.9500	52	41	47	18.4	475
16 rs	1.9100	2.4500	67	52	62	20.9	585
25 rs	1.2000	1.5400	89	70	84	24.5	780
35 rs	0.8680	1.1130	120	95	110	27.2	940
50 ss	0.6410	0.8220	145	110	136	30.1	1300
70 ss	0.4430	0.5690	175	140	168	34.6	1750
95 ss	0.3200	0.4110	210	165	205	39.7	2540
120 ss	0.2520	0.3250	235	190	236	43.8	3020
150 ss	0.2060	0.2650	265	215	278	48.7	3670
185 ss	0.1640	0.2120	290	240	315	53.7	4380
240 ss	0.1250	0.1630	340	280	378	60.0	4430
300 ss	0.1000	0.1310	390	325	446	65.5	6510
400 ss	0.0778	0.1025	453	377	515	71.7	7950
500 ss	0.0605	0.0809	498	425	604	80.6	10295

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with stranded, Aluminum Conductors, XLPE Insulated , Steel Tape Armoured and PVC sheathed.

Non	ninal	Max. Conduct	or Resistance	C	urrent Ratiท <sub>ู</sub>	g	Approx.	Approx.
Cro Section	oss ial Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mı	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced neutral			
35 rs	16 rs	0.8680/1.9100	1.1130/2.4500	120	95	110	25.6	890
50 ss	25 rs	0.6410/1.2000	0.8220/1.5400	145	110	136	28.7	1200
70 ss	35 rs	0.4430/0.8680	0.5690/1.1130	175	140	168	33.1	1550
95 ss	50 ss	0.3200/0.6410	0.4110/0.8220	210	165	205	38.0	1970
120 ss	70 ss	0.2530/0.4430	0.3250/0.5690	235	190	236	42.1	2710
150 ss	70 ss	0.2060/0.4430	0.2650/0.5690	265	215	278	46.3	3290
185 ss	95 ss	0.1640/0.3200	0.2120/0.4110	290	240	315	51.2	3980
240 ss	120 ss	0.1250/0.2530	0.1630/0.3250	340	280	378	57.1	4910
300 ss	150 ss	0.1000/0.2060	0.1310/0.2650	390	325	446	62.2	5920
400 ss	185 ss	0.0778/0.1640	0.1025/0.2120	453	377	515	67.6	7110
500 ss	240 ss	0.0605/0.1250	0.0809/0.1630	498	425	604	74.9	8515

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with stranded, copper Conductors ,XLPE Insulated , Steel Wire Armoured and PVC sheathed.

#### **Description**

- Multicore cables of stranded Copper Conductors are Insulated with XLPE compound, assembled together, armoured with steel wires and covered with an overall jacket of PVC compound.
- Cables are produced according to IEC 60502 or BS 5467.

#### **Application**

• For outdoor installations in damp wet locations where mechanical damages are expected to occur.

Nominal	Max. Conduct	or Resistance	Cı	ırrent Ratin	g	Approx.	Approx.
Cross Sectional Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mm <sup>2</sup>	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			wo core cable	S .			
4 rs	4.6100	5.8800	51	41	47	16.6	580
6 rs	3.0800	3.9300	64	53	61	17.6	660
10 rs	1.8300	2.3300	83	70	80	18.0	730
16 rs	1.1500	1.4700	107	84	106	20.0	925
25 rs	0.7270	0.9270	140	108	140	24.1	1410
35 rs	0.5240	0.6690	168	135	168	26.3	1715
			ree core cabl	es			
4 rs	4.6100	5.8800	46	37	42	17.2	650
6 rs	3.0800	3.9300	58	46	51	18.3	755
10 rs	1.8300	2.3300	76	61	69	19.3	825
16 rs	1.1500	1.4700	98	76	90	21.5	1070
25 rs	0.7270	0.9270	130	103	120	25.8	1620
35 rs	0.5240	0.6690	158	122	147	28.2	1990
		Fo	our core cable	es es			
4 rs	4.6100	5.8800	46	37	42	18.3	740
6 rs	3.0800	3.9300	58	46	51	19.5	860
10 rs	1.8300	2.3300	76	61	69	20.6	990
16 rs	1.1500	1.4700	98	76	90	24.2	1450
25 rs	0.7270	0.9270	130	103	122	27.8	1975
35 rs	0.5240	0.6690	158	122	147	30.7	2465
50 ss	0.3870	0.4940	185	145	184	33.1	3200
70 ss	0.2680	0.3430	220	180	220	39.2	4645
95 ss	0.1930	0.2480	265	210	273	42.9	5870
120 ss	0.1530	0.1970	305	245	315	48.4	7555
150 ss	0.1240	0.1600	335	275	375	53.1	8985
185 ss	0.0991	0.1290	375	310	410	57.9	10760
240 ss	0.0754	0.0990	435	365	488	64.1	13480
300 ss	0.0601	0.0810	490	405	562	69.7	16215
400 ss	0.0470	0.0642	547	459	634	76.8	20190
500 ss	0.0366	0.0519	605	514	716	84.5	25375

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with stranded, Copper Conductors, XLPE Insulated , Steel Wire Armoured and PVC sheathed.

Non	ninal	Max. Conduct	or Resistance	C	urrent Ratin	g	Approx.	Approx.
Cro Section	oss ial Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mı	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four Core Cabl	es with Redu	iced Neutra	l		
35 rs	16 rs	0.5240/1.1500	0.6690/1.4700	158	122	147	28.9	2210
50 ss	25 rs	0.3870/0.7270	0.4940/0.9270	185	145	184	31.3	2860
70 ss	35 rs	0.2680/0.5240	0.3430/0.6990	220	180	220	37.5	4240
95 ss	50 ss	0.1930/0.3870	0.2480/0.4940	265	210	273	41.2	5290
120 ss	70 ss	0.1530/0.2680	0.1970/0.3430	305	245	315	45.3	6475
150 ss	70 ss	0.1240/0.2680	0.1600/0.3430	335	275	375	50.5	8055
185 ss	95 ss	0.0991/0.1930	0.1290/0.2480	375	310	410	55.4	9735
240 ss	120 ss	0.0754/0.1530	0.0990/0.1970	435	365	488	60.3	11780
300 ss	150 ss	0.0601/0.1240	0.0810/0.1600	490	405	562	66.4	14435
400 ss	185 ss	0.0470/0.0991	0.0642/0.1290	547	459	634	72.7	18500
500 ss	240 ss	0.0366/0.0754	0.0519/0.0990	605	514	716	80.2	22575

The above data is approximate and subjected to manufacturing tolerance.

# Multicore Cables, with stranded, Aluminum Conductors, XLPE Insulated, Steel wire Armoured and PVC sheathed.

#### **Description**

- Multicore cables of stranded Aluminium Conductors are Insulated with XLPE compound, assembled together, armoured with steel wires and covered with an overall jacket of PVC compound.
- Cables are produced according to IEC 60502 or BS 5467.

#### **Application**

• For outdoor installations in damp wet locations where mechanical damages are expected to occur.

Nominal	Max. Conduct	or Resistance	C	urrent Ratin	g	Approx.	Approx.
Cross Sectional Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
mm <sup>2</sup>	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
		Tv	wo core cable	es			
10 rs	3.0800	3.9500	56	47	60	18.0	610
16 rs	1.9100	2.4500	73	57	79	20.0	735
25 rs	1.2000	1.5400	96	74	101	24.1	1110
35 rs	0.8680	1.1130	129	105	131	26.3	1300
		Th	ree core cab	les			
10 rs	3.0800	3.9500	52	41	52	19.3	645
16 rs	1.9100	2.4500	67	52	67	21.5	780
25 rs	1.2000	1.5400	89	70	89	25.8	1170
35 rs	0.8680	1.1130	120	95	115	28.2	1365
		Fo	our core cabl	es			
10 rs	3.0800	3.9500	52	41	52	20.6	750
16 rs	1.9100	2.4500	67	52	67	24.2	1060
25 rs	1.2000	1.5400	89	70	89	27.8	1370
35 rs	0.8680	1.1130	120	95	115	30.7	1635
50 ss	0.6410	0.8220	145	110	141	33.1	2330
70 ss	0.4430	0.5690	175	140	173	39.2	2760
95 ss	0.3200	0.4110	210	165	210	42.9	3340
120 ss	0.2520	0.3250	235	190	241	48.4	4320
150 ss	0.2060	0.2650	265	215	283	53.1	5080
185 ss	0.1640	0.2120	290	240	320	57.9	5990
240 ss	0.1250	0.1630	340	280	383	64.1	7220
300 ss	0.1000	0.1310	390	325	451	69.7	8440
400 ss	0.0778	0.1025	444	373	513	76.8	10630
500 ss	0.0605	0.0809	500	426	591	84.5	12785

The above data is approximate and subjected to manufacturing tolerance.



# Multicore Cables, with stranded, Aluminum Conductors, XLPE Insulated , Steel Wire Armoured and PVC sheathed

Non	ninal	Max. Conduct	or Resistance	C	urrent Ratin <sub>ี</sub>	g	Approx.	Approx.
	oss ial Area	DC at 20°c	AC at 90°c	Laid direct in Ground	Laid in Ducts	Laid in free Air	Overall Diameter	Weight
m	m²	Ω/km	Ω/km	Α	Α	Α	Mm	Kg/km
			Four core cabl	es with redu	ced Neutral			
35 rs	16 rs	0.8680/1.9100	1.1130/2.4500	120	95	115	28.9	1490
50 ss	25 rs	0.6410/1.2000	0.8220/1.5400	145	110	141	31.3	1870
70 ss	35 rs	0.4430/0.8680	0.5690/1.1130	175	140	173	37.5	2600
95 ss	50 ss	0.3200/0.6410	0.4110/0.8220	210	165	210	41.2	3090
120 ss	70 ss	0.2530/0.4430	0.3250/0.5690	235	190	241	45.3	3690
150 ss	70 ss	0.2060/0.4430	0.2650/0.5690	265	215	283	50.5	4700
185 ss	95 ss	0.1640/0.3200	0.2120/0.4110	290	240	320	55.4	5550
240 ss	120 ss	0.1250/0.2530	0.1630/0.3250	340	280	383	60.3	6560
300 ss	150 ss	0.1000/0.2060	0.1310/0.2650	390	325	451	66.4	7820
400 ss	185 ss	0.0778/0.1640	0.1025/0.2120	444	373	513	72.7	9845
500 ss	240 ss	0.0605/0.1250	0.0809/0.1630	500	426	591	80.2	11620

The above data is approximate and subjected to manufacturing tolerance.

# OVERHEAD CONDUCTORS

## **PRODUCT TYPES**

- 1. Bare hard drawn Copper.
- 2. All Aluminium conductor (A.A.C).
- 3. All Aluminium alloy conductor (A.A.A.C).
- 4. Aluminium conductor steel reinforced (A.C.S.R) .
- 5. Service drop cables .

#### **Cable Construction:**

#### 1. Conductor:

Copper , Aluminium or Aluminium alloy conductors consist of wires concentrically applied in successive layers in opposite direction .

In case of A.C.S.R conductor a core of soild or stranded galvanized steel is applied first .

#### 2. Insulation:

In case of service drop cables , an extruded layer of PVC or XLPE or HDPE with 2.5% of Carbon black as UV protector is applied upon the conductor .

## BARE SOFT AND HARD DRAWN COPPER STRANDED

#### **Copper Conductors**

#### **Description**

- Plain bare soft drawn Copper conductors as per IEC 60228 class 2.
- Plain bare hard drawn Copper conductors as per DIN 48201.

#### **Application**

- Soft drawn Copper conductors are used for grounding electrical systems, where high conductivity and flexibility are required.
- Hard drawn Copper conductors are used in overhead electrical distribution networks.

Nominal cross sectional Area	Number and nominal diameter of wires	Max DC. Resistance at 20°C	Approx. Overall Diameter	Approx. Weight
mm²	No x ø (mm)	Ω/km	Mm	Kg/km
	a - Bare soft	drawn		
10	7 x 1.43	1.8300	3.7	86.5
16	7 x 1.75	1.1500	4.7	137
25	7 x 2.18	0.7270	5.8	217
35	7 x 2.65	0.5240	6.9	298
50	19 x 1.86	0.3870	8.2	410
70	19 x 2.16	0.2680	10.1	595
95	19 x 2.65	0.1930	11.3	820
120	19 x 3.05	0.1530	12.7	1040
150	19 x 3.38	0.1240	14.1	1277
185	37 x 2.63	0.0991	15.8	1610
240	34 x 3.23	0.0754	18.2	2120
300	61 x 2.64	0.0601	20.6	2630
400	61 x 2.98	0.0470	23.2	3390
500	61 x 3.33	0.0366	26.6	4420
	b - Bare hard			
10	7 x 1.35	1.8290	4.1	90
16	7 x 1.70	1.1540	5.1	143
25	7 x 2.10	0.7563	6.3	218
35	7 x 2.50	0.5337	7.5	310
50	7 x 3.00	0.3706	9.0	446
50	19 x 1.80	0.3819	9.0	437
70	19 x 2.10	0.2806	10.5	596
95	19 x 2.50	0.1980	12.5	845
120	19 x 2.80	0.1578	14.0	1060
150	37 x 2.25	0.1264	15.8	1337
185	37 x 2.50	0.1024	17.5	1649
240	61 x 2.25	0.07528	20.3	2209
300	61 x 2.50	0.06097	22.5	2725
400	61 x 2.89	0.0456	26.0	3640
500	61 x 3.23	0.0365	29.1	4545

# **ALL ALUMINIUM CONDUCTORS (A.A.C.)**

#### **Description**

Hard drawn Aluminium wires, stranded in successive layers, in opposite direction to form the Aluminium stranded A.A.C. conductor. As per BS EN 50182 or IEC 61089.

#### **Application**

• All Aluminium bare conductors are used for aerial distribution lines having relatively short spans, aerial feeders and bus bars of substations.

Nominal cross sectional Area	Number and nominal diameter of wires	Max DC. Resistance at 20°C	Rated strength	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	No x ø (mm)	Ω/km	kN	Mm	Kg/km
	a – According to B	S EN 50182 - G	ermany		
16	7 x 1.70	1.7986	3.02	5.10	43.4
25	7 x 2.10	1.1787	4.36	6.30	66.3
35	7 x 2.50	0.8317	6.01	7.50	93.9
50	7 x 3.00	0.5776	8.41	9.00	135.2
50	19 x 1.80	0.5944	8.94	9.00	132.9
70	19 x 2.10	0.4367	11.35	10.5	180.9
95	19 x 2.50	0.3081	16.32	12.5	256.3
120	19 x 2.80	0.2456	19.89	14.0	321.5
150	37 x 2.25	0.1960	26.48	15.8	405.7
185	37 x 2.50	0.1588	31.78	17.5	500.9
240	61 x 2.25	0.1193	43.66	20.3	671.1
300	61 x 2.50	0.0966	52.40	22.5	828.5
400	61 x 2.89	0.0723	68.02	26.0	1107.1
500	61 x 3.23	0.0579	82.47	29.1	1382.9
625	91 x 2.96	0.0464	106.45	32.6	1739.7
800	91 x 3.35	0.0362	132.34	36.9	2228.3
1000	91 x 3.74	0.0291	159.95	41.1	2777.3

# **ALL ALUMINIUM CONDUCTORS (A.A.C.)**

Nominal cross sectional Area	Number and nominal diameter of wires	Max DC. Resistance at 20°C	Rated strength	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	No x ø (mm)	Ω/km	kN	Mm	Kg/km
	a – According to BS E	N 50182 - Unite	d Kingdom		
23.3	7 x 2.06	1 .2249	4.20	6.18	63.8
26.9	7 x 2.21	1 .0643	4.83	6.63	73.4
36.9	7 x 2.59	0.7749	6.27	7.77	100.8
42.8	7 x 2.79	0.6678	7.28	8.37	117.0
52.8	7 x 3.10	0.5409	8.72	9.30	144.4
63.6	7 x 3.40	0.4497	10.49	10.2	173.7
73.6	7 x 3.66	0.3880	11.78	11.0	201,3
78.6	7 x 3.78	0.3638	12.57	11.3	214.7
84.1	7 x 3.91	0.3400	13.45	11.7	229.7
95.6	7 x 4.17	0.2989	15.30	12.5	261.3
106.0	7 x 4.39	0.2697	16.95	13.2	289.6
106.4	19 x 2.67	0.2701	18.08	13.4	292.4
132.0	7 x 4.90	0.2165	21.12	14.7	360.8
157.6	19 x 3.25	0.1823	26.01	16.3	433.2
185.9	19 x 3.53	0.1546	29.75	17.7	511.1
213.2	19 x 3.78	0.1348	34.12	18.9	586.0
237.6	19 x 3.99	0.1210	38.01	20.0	652.9
265.7	19 x 4.22	0.1081	42.52	21.1	730.4
322.7	19 x 4.65	0.0891	51.63	23.3	886.8
373.1	19 x 5.00	0.0770	59.69	25.0	1025.3
372.4	37 x 3.58	0.0774	59.59	25.1	1027.1
415.2	37 x 3.78	0.0695	66.43	26.5	1145.1
486.1	37 x 4.09	0.0593	77.78	28.6	1340.6
529.8	37 x 4.27	0.0544	84.77	29.9	1461.2
628.3	37 x 4.65	0.0459	100.54	32.6	1732.9

# **ALL ALUMINIUM ALLOY CONDUCTORS (A.A.A.C.)**

#### **Description**

• AN Aluminium alloy (ALMELEC) conductors, stranded in successive layers to form the stranded A.A.A.C. conductor. As per IEC 61089 or BS EN 50182 or ASTM B 399.

#### **Application**

A.A.A.C. are mainly used for overhead lines, in transmission and distribution electrical networks, having relatively long spans. They are also used a messenger to support overhead electrical cables.

Nominal cross sectional Area	Number and nominal diameter of wires	Max DC. Resistance at 20°C	Rated strength	Approx. Overall Diameter	Approx. Weight
mm <sup>2</sup>	No x ø (mm)	Ω/km	kN	Mm	Kg/km
	a – According to B	S EN 50182 - G	ermany		
16	7 x 1 .70	2.0701	4.69	5.10	43.4
25	7 x 2.10	1 .3566	7.15	6.30	66.2
35	7 x 2.50	0.9572	10.14	7.50	93.8
50	7 x 3.00	0.6647	14.60	9.00	135.1
50	19 x 1.80	0.6841	14.26	9.00	132.7
70	19 x 2.10	0.5026	19.41	10.50	180.7
95	19 x 2.50	0.3546	27.51	12.50	256.0
120	19 x 2.80	0.2827	34.51	14.00	321.2
150	37 x 2.25	0.2256	43.40	15.80	405.3
185	37 x 2.50	0.1827	53.58	17.50	500.3
240	61 x 2.25	0.1373	71.55	20.30	670.3
300	61 x 2.50	0.1112	88.33	22.50	827.5
400	61 x 2.89	0.0832	118.04	26.00	1105.9
500	61 x 3.23	0.0666	147.45	29.10	1381.4
625	91 x 2.96	0.0534	184.73	32.60	1737.7
800	91 x 3.35	0.0417	236.62	36.90	2225.8
1000	91 x 3.74	0.0334	294.91	41.10	2774.3

# **ALL ALUMINIUM ALLOY CONDUCTORS (A.A.A.C.)**

Name	Nominal cross sectional Area	Number and nominal diameter of wires	Max DC. Resistance at 20°C	Rated strength	Approx. Overall Diameter	Approx. Weight
	mm²	No x ø (mm)	Ω/km	kN	Mm	Kg/km
	b- Ac	cording to BS EN 5018	82 – United Ki	ngdom		
BOX	18.8	7 x 1.85	1 .7480	5.55	5.55	51.4
ACACIA	23.8	7 x 2.08	1 .3828	7.02	6.24	64.9
ALMOND	30.1	7 x 2.34	1 .0926	8.88	7.02	82.2
CEDAR	35.5	7 x 2.54	0.9273	10.46	7.62	96.8
DEODAR	42.2	7 x 2.77	0.7797	12.44	8.31	115.2
FIR	47.8	7 x 2.95	0.6875	14.11	8.85	130.6
HAZEL	59.9	7 x 3.30	0.5494	17.66	9.90	163.4
PINE	71.6	7 x 3.61	0.4591	21.14	10.8	195.6
HOLLY	84.1	7 x 3.91	0.3913	24.79	11.7	229.5
WILLOW	89.7	7 x 4.04	0.3665	26.47	12.1	245.0
OAK	118.9	7 x 4.65	0.2767	35.07	14.0	324.5
MULBERRY	150.9	19 x 3.18	0.2192	44.52	15.9	414.3
ASH	180.7	19 x 3.48	0.1830	53.31	17.4	496.1
ELM	211.0	19 x 3.76	0.1568	62.24	18.8	579.2
POPLAR	239.4	37 x 2.87	0.1387	70.61	20.1	659.4
SYCAMORE	303.2	37 x 3.23	0.1095	89.40	22.6	835.2
UPAS	362.1	37 x 3.53	0.0917	106.82	24.7	997.5
YEW	479.0	37 x 4.06	0.0693	141.31	28.4	1319.6
TOTARA	498.1	37 x 4.14	0.0666	146.93	29.0	1372.1
RUBUS	586.9	61 x 3.50	0.0567	173.13	31.5	1622.0
SORBUS	659.4	61 x 3.71	0.0505	194.53	33.4	1822.5
ARAUCARIA	821.1	61 x 4.14	0.0406	242.24	37.3	2269.4
REDWOOD	996.2	61 x 4.56	0.0334	293.88	41.0	2753.2

#### **Description**

• An outer layer of Aluminium conductor concentrically stranded over the central core of galvanized solid or stranded steel wires to form Aluminium steel reinforced conductor. As per BS EN 50182 or ASTM B 232 or IEC 61089.

#### **Application**

• A.C.S.R conductors are widely used for electrical power transmission over long distances, since they are ideal for long overhead lines spans. They are also used as a messenger for supporting overhead electrical cables.

Nominal cross sectional Area	Number and nominal diameter of wires		of wires Resistance		Approx. Overall	Approx. Weight
	Aluminium	Steel	at 20°C		Diameter	J
mm <sup>2</sup>	No x ø (mm)	No x ø (mm)	Ω/km	kN	Mm	Kg/km
	a -	According to B	S EN 50182 - G	ermany		
16/2.5	6 x 1 .80	1 x 1.80	1 .8769	5.80	5.4	61.6
25/4	6 x 2.25	1 x 2.25	1.2012	8.95	6.75	96.3
35/6	6 x 2.70	1 x 2.70	0.8342	12.37	8.1	138.7
50/8	6 x 3.20	1 x 3.20	0.5939	16.81	9.6	194.8
70/12	26 x 1.85	7 x 1.44	0.4132	26.27	11.7	282.2
95/15	26 x 2.15	7 x 1.67	0.3060	34.93	13.6	380.6
120/20	26 x 2.44	7 x 1.90	0.2376	44.50	15.5	491.0
150/25	26 x 2.70	7 x 2.10	0.1940	53.67	17.1	600.8
185/30	26 x 3.00	7 x 2.33	0.1571	65.27	19.0	741.0
210/35	26 x 3.20	7 x 2.49	0.1381	73.36	20.3	844.1
240/40	26 x 3.45	7 x 2.68	0.1188	85.12	21.8	980.1
380/50	54 x 3.00	7 x 3.00	0.0758	121.30	27.0	1442.5
490/65	54 x 3.40	7 x 3.40	0.0590	150.81	30.6	1852.9

Name	cross ectional Area	Number and diameter	of wires	Max DC. Resistance at 20°C	Rated strength	Approx. Overall Diameter	Approx. Weight
36		Aluminium	Steel				16 (1
	mm²	No x ø (mm)		Ω/km	kN	Mm	Kg/km
14015			BS EN 50182 -	_		4.50	40.0
MOLE	12.4	6 x 1.50	1 x 3.50	2.7027	4.14	4.50	42.8
SQUIRREL	24.5	6 x 2.11	1 x 2.11	1.3659	7.87	6.33	84.7
GOPHER	30.6	6 x 2.36	1 x 2.36	1.0919	9.58	7.08	106.0
WEASEL	36.9	6 x 2.59	1 x 2.59	0.9065	11.38	7.77	127.6
FOX	42.8	6 x 2.79	1 x 2.79	0.7812	13.21	8.37	148.1
FERRET	49.5	6 x 3.00	1 x 3.00	0.6757	15.27	9.00	171.2
RABBIT	61.7	6 x 3.35	1 x 3.35	0.5419	18.42	10.1	213.5
MINK	73.6	6 x 3.66	1 x 3.66	0.4540	21.67	11.0	254.9
SKUNK	100.1	12 x 2.59	7 x 2.59	0.4568	52.79	13.0	463.0
BEAVER	87.5	6 x 3.99	1 x 3.99	0.3820	25.76	12.0	302.9
HORSE	116.2	12 x 2.79	7 x 2.79	0.3936	61.26	14.0	537.3
RACOON	92.0	6 x 4.09	1 x 4.09	0.3635	27.06	12.3	318.3
OTTER	97.9	6 x 4.22	1 x 4.22	0.3415	28.81	12.7	338.8
CAT	111.3	6 x 4.50	1 x 4.50	0.3003	32.76	13.5	385.3
HARE	122.5	6 x 4.72	1 x 4.72	0.2730	36.04	14.2	423.8
DOG	118.5	6 x 4.72	7 x 1.57	0.2733	32.65	14.2	394.0
COYOTE	151.8	26 x 2.54	7 x 1.91	0.2192	45.86	15.9	520.7
COUGAR	138.8	18 x 3.05	1 x 3.05	0.2188	29.74	15.3	418.8
TIGER	161.9	30 x 2.36	7 x 2.36	0.2202	57.87	16.5	602.2
WOLF	194.9	30 x 2.59	7 x 2.59	0.1829	68.91	18.1	725.3
DINGO	167.5	18 x 3.35	1 x 3.35	0.1814	35.87	16.8	505.2
LYNX	226.2	30 x 2.79	7 x 2.79	0.1576	79.97	19.5	841.6
CARACAL	194.5	18 x 3.61	1 x 3.61	0.1562	40.74	18.1	586.7
PANTHER	261.5	30 x 3.00	7 x 3.00	0.1363	92.46	21.0	973.1
JAGUAR	222.3	18 x 3.86	1 x 3.86	0.1366	46.57	19.3	670.8
LION	293.9	30 x 3.18	7 x 3.18	0.1213	100.47	22.3	1093.4
BEAR	326.1	30 x 3.35	7 x 3.35	0.1093	111.50	23.5	1213.4
GOAT	400.0	30 x 3.71	7 x 3.71	0.0891	135.13	26.0	1488.2
SHEEP	462.6	30 x 3.99	7 x 3.99	0.0771	156.30	27.9	1721.3
ANTELOPE	422.6	54 x 2.97	7 x 2.97	0.0773	118.88	26.7	1413.8
BISON	431.2	54 x 3.00	7 x 3.00	0.0758	121.30	27.0	1442.5
DEER	529.8	30 x 4.27	7 x 4.27	0.0673	179.00	29.9	1971.4
ZESRA	484.5	54 x 3.18	7 x 3.18	0.0674	131.92	28.6	1620.8
ELK	588.5	30 x 4.50	7 x 4.50	0.0606	198.80	31.5	2189.5
CAMEL	538.7	54 x 3.35	7 x 3.35	0.0608	146.40	30.2	1798.8
MOOSE	597.0	54 x 3.53	7 x 3.53	0.0547	159.92	31.8	1997.3

Name	Nominal cross sectional	diameter	nd nominal r of wires	Calculated DC. Resistance		Approx. Overall Diameter	Approx. \	Veight
	Area	Aluminium	Steel	at 20°C	strength		Aluminium	Steel
	mm²	No x Ø (mm)	No x ø (mm)	Ω/km	kN	Mm	Kg/km	Kg/km
			c- According	g to ASTM B	232			
GROUSE	40.5	8 x 2.54	1 x 4.24	0.7112	23.1	9.3	112	110
PETREL	51.6	12 x 2.34	7 x 2.34	0.5614	46.2	11.7	143	235
MINORCA	56.1	12 x 2.44	7 x 2.44	0.5163	50.2	12.2	156	256
LEGHORN	68.2	12 x 2.69	7 x 2.69	0.4248	60.7	13.5	189	311
GUINEA	80.4	12 x 2.92	7 x 2.92	0.3605	71.1	14.6	223	367
DOTTEREL	89.4	12 x 3.08	7 x 3.08	0.3240	76.7	15.4	248	409
DORKING	96.5	12 x 3.20	7 x 3.20	0.3002	82.8	16.0	268	441
BRAHMA	102.8	16 x 2.86	19 x 2.48	0.2819	126.5	18.1	285	722
COCHIN	107.1	12 x 3.37	7 x 3.37	0.2707	91.8	16.9	297	488
TURKEY	13.3	6 x 1.68	1 x 1.68	2.1570	5.3	5.0	36	17
SWAN	21.2	6 x 2.12	1x 2.12	1.3545	8.3	6.4	58	27
SWANATE	21.1	7 x 1.96	1 x 2.61	1.3583	10.5	6.5	58	42
SPARROW	33.6	6 x 2.67	1 x 2.67	0.8530	12.7	8.0	92	44
SPA RATE	33.5	7 x 2.47	1 x 3.30	0.8553	16.1	8.3	92	67
ROBIN	42.4	6 x 3.00	1 x 3.00	0.6764	15.8	9.0	117	55
RAVEN	53.5	6 x 3.37	1 x 3.37	0.5364	19.5	10.1	147	69
QUAIL	67.4	6 x 3.78	1 x 3.78	0.4255	23.6	11.4	185	87
PIGEON	85.1	6 x 4.25	1 x 4.25	0.3370	29.5	12.7	233	110
PENGUIN	107.2	6 x 4.77	1 x 4.77	0.2676	37.1	14.3	294	139
WAX WING	135.0	18 x 3.09	1 x 3.09	0.2133	30.3	15.5	373	59
PARTRIDGE	134.9	26 x 2.57	7 x 2.00	0.2142	50.2	16.3	373	172
OSTRICH	152.2	26 x 2.73	7 x 2.12	0.1906	56.6	17.3	421	193
MERLIN	170.2	18 x 3.47	1 x 3.47	0.1692	38.2	17.4	470	74
LINNET	170.6	26 x 2.89	7 x 2.25	0.1699	62.8	18.3	472	217
ORIOLE	170.5	30 x 2.69	7 x 2.69	0.1704	77.4	18.8	473	311
CHICKADEE	200.9	18 x 3.77	1 x 3.77	0.1432	44.3	18.9	555	87
BRANT	201.6	24 x 3.27	7 x 2.18	0.1437	64.7	19.6	558	204
IBIS	201.3	26 x 3.14	7 x 2.44	0.1438	72.1	19.9	558	256
LARK	200.9	30 x 2.92	7 x 2.92	0.1442	88.7	20.5	559	367
PELICAN	242.3	18 x 4.14	1 x 4.14	0.1193	52.3	20.7	667	105
FLICKLER	241.6	24 x 3.58	7 x 2.39	0.1199	76.8	21.5	670	245
HAWK	241.7	26 x 3.44	7 x 2.67	0.1199	86.4	21.8	670	308
HEN	241.3	30 x 3.20	7 x 3.20	0.1202	105.9	22.4	672	440
OSPREY	282.5	18 x 4.47	1 x 4.47	0.1022	61.0	22.3	777	122
PARAKEET	282.3	24 x 3.87	7 x 2.58	0.1026	88.3	23.2	782	285
DOVE	282.6	26 x 3.72	7 x 2.89	0.1025	101.1	23.5	781	359
EAGLE	282.1	30 x 3.46	7 x 3.46	0.1030	122.9	24.2	783	514
PEACOCK	306.1	24 x 4.03	7 x 2.69	0.0945	95.9	24.2	850	311
SQUAB	305.8	26 x 3.87	7 x 3.01	0.0945	108.1	24.5	849	390
WOOD DUCK	307.1	30 x 3.6 1	7 x 3.61	0.0947	129.0	25.3	851	559
TEAL	307.1	30 x 3.61	19 x 2.16	0.0947	133.4	25.3	851	547
SWIR	323.0	36 x 3.38	1 x 3.38	0.0893	60.7	23.7	888	70
KINGBIRD	323.0	18 x 4.78	1 x 4.78	0.0894	69.7	23.9	889	139
ROOK	323.1	24 x 4.14	7 x 2.76	0.0899	101.0	24.8	893	326



Name	Nominal cross sectional Area	diametei	nd nominal r of wires	Calculated DC. Resistance at 20°C	Calculat ed Rated Tensile strength	Approx. Overall Diameter	Approx. V	
		Aluminium	Steel				Aluminium	Steel
	mm <sup>2</sup>	No x Ø (mm)	No x Ø (mm)	Ω/km	kN	Mm	Kg/km	Kg/km
				g to ASTM B				100
GROSBEAK	321.8	26 x 3.97	7 x 3.09	0.0900	111.9	25.2	893	409
SCOTER	322.6	30 x 3.70	7 x 3.70	0.0900	135.5	25.9	895	588
EGRET	322.6	30 x 3.70	19 x 2.22	0.0900	140.6	25.9	895	575
FLAMINGO	337.3	24 x 4.23	7 x 2.82	0.0859	105.5	25.4	936	342
GANNET	338.3	26 x 4.07	7 x 3.16	0.0857	117.3	25.8	936	429
STILT	363.3	24 x 4.39	7 x 2.92	0.0798	113.3	26.3	1005	367
STARLING	361.9	26 x 4.21	7 x 3.28	0.0800	126.0	26.7	1004	461
REDWING	362.1	30 x 3.92	19 x 2.35	0.0801	154.0	27.5	1006	646
CUCKOO	402.3	24 x 4.62	7 x 3.08	0.0720	124.5	27.7	1116	408
DRAKE	402.6	26 x 4.44	7 x 3.45	0.0720	139.7	28.1	1117	511
TERN	403.8	45 x 3.38	7 x 2.25	0.0720	97.5	27.0	1115	217
COOT	401.9	36 x 3.77	1 x 3.77	0.0717	74.7	26.4	1111	87
CONDOR	402.3	54 x 3.08	7 x 3.08	0.0720	124.3	27.7	1115	407
MALLARD	403.8	30 x 4.14	19 x 2.48	0.0721	171.2	29.0	1119	718
RUDDY	455.5	45 x 3.59	7 x 2.40	0.0636	109.4	28.7	1263	246
CANARY	456.3	54 x 3.28	7 x 3.28	0.0635	141.0	29.5	1263	461
RAIL	483.8	45 x 3.70	7 x 2.47	0.0599	116.1	29.6	1339	261
CATBIRD	484.6	36 x 4.14	1 x 4.14	0.0595	87.9	29.0	1335	105
CARDINAL	484.5	54 x 3.38	7 x 3.38	0.0599	149.7	30.4	1338	490
ORTLAN	523.9	45 x 3.85	7 x 2.57	0.0553	123.3	30.8	1450	283
TANAGER	522.8	36 x 4.30	1 x 4.30	0.0551	94.8	30.1	1444	113
CURLEW	522.5	54 x 3.51	7 x 3.51	0.0553	161.8	31.6	1450	529
BLUEJAY	565.5	45 x 4.00	7 x 2.66	0.0513	132.7	32.0	1562	304
FINCH	565.0	54 x 3.65	19 x 2.19	0.0516	174.6	32.8	1571	558
BUNTING	605.8	45 x 4.14	7 x 2.76	0.0479	142.4	33.1	1674	326
GRAKCLE	602.8	54 x 3.77	19 x 2.27	0.0483	186.9	34.0	1681	599
BITTERN	644.4	45 x 4.27	7 x 2.85	0.0450	151.6	34.2	1786	348
PHEASANT	645.1	54 x 3.90	19 x 2.34	0.0452	194.1	35.1	1795	639
SKYLARK	643.3	36 x 4.77	1 x 4.77	0.0448	116.7	33.4	1777	140
DIPPER	684.2	45 x 4.40	7 x 2.93	0.0423	160.7	35.2	1897	370
MARTIN	685.4	54 x 4.02	19 x 2.41	0.0425	206.1	36.2	1906	679
BOBOLINK	725.2	45 x 4.53	7 x 3.02	0.0399	170.5	36.3	2010	392
PLOVER	725.2	54 x 4.14	19 x 2.48	0.0333	218.4	37.2	2010	719
NUTHATCH	746.2	45 x 4.65	7 x 3.10	0.0379	177.6	37.2	2120	413
PARROT	766.1	54 x 4.25	19 x 2.55	0.0379	230.5	38.2	2129	758
LAPWING	807.5	45 x 4.77	7 x 3.18	0.0359	187.4	38.2	2232	435
FALCON	806.2	54 x 4.36	19 x 2.62	0.0359	243.0	39.2	2242	799
FALCON	000.2	J4 X 4.30	13 / 2.02	0.0301	243.0	33.4	ZZ4Z	133

## **SERVICE DROP CABLES**

#### **Copper Conductors & XLPE Insulated**

#### **Description**

• They are composed of one or more insulated conductors and one neutral (bare or insulated) conductor. They are required as two (Duplex) or three (Triplex) or four (Quadru-plex) conductors, XLPE with 2.5 % Carbon black insulated.
• As per NEMA WC7/IEC 60228.

#### **Application**

• They are used for secondary over head lines (in circuits not exceeding 600 volts phase to phase) on poles or as feeders to residential premises.

Copper conductors with bare neutral adopted from IEC60228

Pha	ase	Max DC.	Ammay Overell	Approx.
Nominal cross sectional Area	Insulation thickness	Resistance at 20°C	Approx. Overall Diameter	Weight
mm <sup>2</sup>	mm	Ω/km	Mm	Kg/km
	Two c	conductors (Duplex)		
10	1.2	1.830	10.7	198
16	1.2	1.150	12.8	307
25	1.2	0.727	15.3	469
35	1.2	0.524	17.6	650
50	1.5	0.387	21.2	898
70	1.5	0.268	24.5	1247
95	1.5	0.193	28.3	1736
120	1.7	0.153	31.8	2170
	Three o	conductors (Triplex	)	
10	1.2	1.830	13.7	305
16	1.2	1.150	15.8	471
25	1.2	0.727	18.5	719
35	1.2	0.524	20.7	991
50	1.5	0.387	25.0	1357
70	1.5	0.268	28.7	1900
95	1.5	0.193	32.4	2631
120	1.7	0.153	36.6	3285
	Four con	ductors ( Quadruple	ex)	
10	1.2	1.830	16.3	413
16	1.2	1.150	18.8	634
25	1.2	0.727	22.0	970
35	1.2	0.524	24.6	1332
50	1.5	0.387	29.8	1821
70	1.5	0.268	34.2	2553
95	1.5	0.193	38.6	3526
120	1.7	0.153	43.5	4579



## **ALUMINIUM CONDUCTORS & XLPE INSULATED**

Multicore Cables, with stranded, Aluminum Conductors, XLPE Insulated and PVC sheathed.

#### **Description**

• They are composed of one or more insulated conductors and one neutral (bare or insulated) conductor. They are required as two (Duplex) or three (Triplex) or four (Quadruplex) conductors, XLPE with 2.5 % Carbon black insulated.

• As per NEMA WC 7/IEC60228.

#### **Application**

• They are used for secondary over head lines (in circuits not-exceeding 600 volts phase to phase) on poles or as feeders to residential premises.

Aluminium conductors with bare neutral adopted from IEC 60228.

Ph	Phase			Approx.
Nominal cross sectional Area	Insulation thickness	Max DC. Resistance at 20°C		
mm²	mm	Ω/km	Mm	Kg/km
	Two	conductors (Duplex)		
16	1.2	1.910	12.9	115
25	1.2	1.200	15.3	168
35	1.2	0.868	17.7	229
50	1.5	0.641	21.4	322
70	1.5	0.443	24.4	428
95	1.5	0.320	28.4	626
120	1.7	0.253	31.8	734
	Three	conductors ( Triplex	)	
16	1.2	1.910	15.6	185
25	1.2	1.200	18.0	267
35	1.2	0.868	20.4	364
50	1.5	0.641	25.2	519
70	1.5	0.443	28.2	674
95	1.5	0.320	32.2	928
120	1.7	0.253	36.6	1245
	Four con	ductors ( Quadruple	ex)	
16	1.2	1.910	19.0	256
25	1.2	1.200	22.0	367
35	1.2	0.868	24.9	499
50	1.5	0.641	30.3	710
70	1.5	0.443	33.9	920
95	1.5	0.320	38.8	1263
120	1.7	0.253	43.5	1556



# INSTRUMENTATION CABLES

PVC Insulation, Multipass, Twisted in Bundles, Collective Screen.

PVC Insulation, Single Pair or Triple, Collective Screen.

PVC Insulation, Multipairs, Layers, Collective Screen.

PVC Insulation, Multipairs, Layers, Individual and Collective Screen.

PVC Insulation, MuLtitriples, Layers, Collective Screen.

PVC Insulation, Multitriples, Layers, Individual and Collective Screen.

PVC Insulation, Single Pair, Collective Screen, Galvanized Steel Wire Armour.

PVC Insulation, Multipairs, Layers, Collective Screen, Galvanized Steel Wire Armour.

PVC Insulation, Multipairs, Layers, Individual and Collective Screen, Galvanized Steel Wire Armour.

PE Insulation, Multipairs, Twisted in Bundles, Collective Screen.

PE Insulation, Single Pair or Triple, Collective Screen.

PE Insulation, Multipairs, Layers, Collective Screen.

PE Insulation, Multipairs, Layers, Individual and Collective Screen.

PE Insulation, Multitriples, Layers, Collective Screen.

PE Insulation, Multitriples, Layers, Individual and Collective Screen.

PE Insulation, Single pair, Collective Screen, Galvanized Steel wire Armoured.

PE Insulation, Multipairs, Layers, Collective Screen, Galvanized Steel wire Armoured.

PE Insulation, Multipairs, Layers, Individual and Collective Screen, Galvanized Steel Wire Armour.

PE Insulation, Multicores, Layers, Overall Screen of Tinned Copper Wire Braid.

PE Insulation, Single Pair, Collective Screen of Tinned Copper Wire Braid.

PE Insulation, Multipairs, Layers, Overall Screen of Tinned Copper Wire Braid.

#### **PVC** insulation

#### Multipairs, Twisted in Bundles, Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-2.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded annealed Plain Copper.

#### **Insulation:**

Polyvinylchloride, TI1 to BS 6746.

#### **Assembly:**

Cores twisted to form pairs, 4 pairs twisted to form a bundle, bundles twisted in concentric layers, 2 pairs twisted as star quad.

#### **Colour Code:**

- 1. Pair Blue / Red
- 2. pair Grey / Yellow
- 3. pair Green / Brown
- 4. Pair White / Black

Bundles are identified by coloured

Polyester tapes.

#### Wrapping:

Polyester tapes.

#### **Collective Screen:**

Aluminium Polyester tape with tinned Drain wire and wrapped by Polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746 colour Black or Grey or Blue.

#### Minimum bending radius:

7.5 \* d (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.0	7.9	80
	4	7 x 0.3	39.2	0.6	1.0	10.1	100
	8	7 x 0.3	39.2	0.6	1.0	12.1	160
0.5	12	7 x 0.3	39.2	0.6	1.2	14.4	250
	16	7 x 0.3	39.2	0.6	1.2	16.1	300
	20	7 x 0.43	39.2	0.6	1.2	18.5	360
	24	7 x 0.43	39.2	0.6	1.4	20.3	450
	2	7 x 0.43	18.4	0.6	1.0	8.9	100
	4	7 x 0.43	18.4	0.6	1.0	12	160
	8	7 x 0.43	18.4	0.6	1.2	16	300
1.0	12	7 x 0.43	18.4	0.6	1.4	20	430
	16	7 x 0.43	18.4	0.6	1.4	22	550
	20	7 x 0.43	18.4	0.6	1.4	24.3	660
	24	7 x 0.43	18.4	0.6	1.6	26.7	800

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

#### **PVC Insulation**

#### Single Pair or Triple, Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

## **Engineering Specification:**

Standard: BS 5308-2.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyvinylchloride, TI1 to BS 6746.

#### **Assembly:**

Cores twisted to form a pair or triple and wrapped by Polyester Tapes.

#### **Colour Code:**

Pair: Black / White.

Triple: Black/White/Red.

#### Screen:

Collective Screen of Aluminium Polyester with tinned drain wire and wrapped by polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

7.5 \* d (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Cable	Cond	Conductor		Nominal	Approximate	Approximate
size	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
1 x 2 x 0.5	7 x 0.3	39.2	0.6	0.8	6.0	50
1 x 3 x 0.5	7 x 0.3	39.2	0.6	0.8	6.3	60
1 x 2 x 0.75	7 x 0.37	24.6	0.6	0.8	6.4	60
1 x 3 x 0.75	7 x 0.37	24.6	0.6	0.8	6.7	70
1 x 2 x 1.0	7 x 0.43	18.4	0.6	0.8	6.8	70
1 x 3 x 1.0	7 x 0.43	18.4	0.6	0.8	7.1	80
1 x 2 x 1.3	7 x 0.49	14.2	0.6	0.8	7.1	80
1 x 3 x 1.3	7 x 0.49	14.2	0.6	0.8	7.4	90
1 x 2 x 1.5	7 x 0.53	12.6	0.6	0.8	7.6	90
1 x 3 x 1.5	7 x 0.53	12.6	0.6	0.8	8.0	110

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

<sup>•</sup>Other Types can be provided on specific request.

## PVC Insulation Multipairs, Layers, Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-2.

# Rated Voltage:

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyvinylchloride, TI1 to BS 6746

#### **Assembly:**

Cores twisted to form pairs, twisted pairs in Concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White, continuously numbered, Or Identification tapes numbered.

#### Screen:

Collective Screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746 , colour Black or Blue

#### Minimum bending radius:

 $7.5 \times d$  (d = overall diameter) during installation.

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.0	9.3	107
	4	7 x 0.3	39.2	0.6	1.0	10.0	117
	8	7 x 0.3	39.2	0.6	1.2	13.2	199
0.5	12	7 x 0.3	39.2	0.6	1.2	15.0	265
	16	7 x 0.3	39.2	0.6	1.2	16.7	340
	20	7 x 0.3	39.2	0.6	1.3	18.7	410
	24	7 x 0.3	39.2	0.6	1.3	20.6	480
	30	7 x 0.3	39.2	0.6	1.5	23.3	685
	2	7 x 0.37	24.6	0.6	1.0	10.1	125
	4	7 x 0.37	24.6	0.6	1.0	10.8	140
	8	7 x 0.37	24.6	0.6	1.2	14.3	245
0.75	12	7 x 0.37	24.6	0.6	1.2	16.3	330
	16	7 x 0.37	24.6	0.6	1.3	18.3	430
	20	7 x 0.37	24.6	0.6	1.3	20.3	520
	24	7 x 0.37	24.6	0.6	1.3	22.5	610
	30	7 x 0.37	24.6	0.6	1.5	23.3	720

## **PVC Insulation Multipairs, Layers, Collective Screen**

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.0	10.8	142
	4	7 x 0.43	18.4	0.6	1.0	11.6	166
	8	7 x 0.43	18.4	0.6	1.2	15.4	295
1.0	12	7 x 0.43	18.4	0.6	1.3	17.8	415
	16	7 x 0.43	18.4	0.6	1.3	19.8	532
	20	7 x 0.43	18.4	0.6	1.3	22.0	641
	24	7 x 0.43	18.4	0.6	1.5	24.8	784
	30	7 x 0.43	18.4	0.6	1.7	27.5	1063
	2	7 x 0.49	14.2	0.6	1.0	11.7	160
	4	7 x 0.49	14.2	0.6	1.2	13.3	230
	8	7 x 0.49	14.2	0.6	1.3	16.5	375
1.3	12	7 x 0.49	14.2	0.6	1.3	19.3	400
	16	$7 \times 0.49$	14.2	0.6	1.3	21.7	590
	20	7 x 0.49	14.2	0.6	1.5	24.2	815
	24	$7 \times 0.49$	14.2	0.6	1.7	26.3	950
	30	7 x 0.49	14.2	0.6	1.7	31.0	1300
	2	7 x 0.53	12.6	0.6	1.2	12.9	202
	4	7 x 0.53	12.6	0.6	1.2	14.1	243
1.5	8	7 x 0.53	12.6	0.6	1.3	18.6	425
	12	7 x 0.53	12.6	0.6	1.3	21.3	594
	16	7 x 0.53	12.6	0.6	1.5	24.3	797
	20	7 x 0.53	12.6	0.6	1.5	27.1	963
	24	7 x 0.53	12.6	0.6	1.7	30.3	1164
	30	7 x 0.53	12.6	0.6	2.0	33.7	1595

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

#### **PVC Insulation**

#### MultiPairs, Layers, Individual and Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

## **Engineering Specification:**

Standard: BS 5308-2.

# Rated Voltage:

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyvinylchloride, TI1 to BS 6746.

#### Assembly:

Cores twisted to form pairs, pairs screened by Aluminium Polyester tapes, screened pairs twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White, continuously numbered Or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### Sheath:

Polvinylchloride TM1 to BS 6746, colour Black or Blue

#### Minimum bending radius:

 $7.5 \times d (d = overall diameter)$ .

#### **Temperature rating:**

+5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Cond	ductor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.0	10.3	122
	4	7 x 0.3	39.2	0.6	1.0	11.1	140
	8	7 x 0.3	39.2	0.6	1.2	14.7	240
0.5	12	7 x 0.3	39.2	0.6	1.3	17.0	340
	16	7 x 0.3	39.2	0.6	1.3	18.9	433
	20	7 x 0.3	39.2	0.6	1.3	21.0	518
	24	7 x 0.3	39.2	0.6	1.5	23.7	636
	30	7 x 0.3	39.2	0.6	1.5	26.3	867
	2	7 x 0.37	24.6	0.6	1.0	11.2	149
	4	7 x 0.37	24.6	0.6	1.0	11.9	165
	8	7 x 0.37	24.6	0.6	1.2	15.8	291
0.75	12	7 x 0.37	24.6	0.6	1.3	18.3	409
	16	7 x 0.37	24.6	0.6	1.3	20.4	523
	20	7 x 0.37	24.6	0.6	1.3	22.8	631
	24	7 x 0.37	24.6	0.6	1.5	25.7	770
	30	7 x 0.37	24.6	0.6	1.7	26.4	902

## **PVC Insulation** Multipairs, Layers, Indviduals and Collective Screen

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.2	12.2	172
	4	7 x 0.43	18.4	0.6	1.2	13.1	201
	8	7 x 0.43	18.4	0.6	1.3	17.2	351
1.0	12	7 x 0.43	18.4	0.6	1.3	19.7	486
	16	7 x 0.43	18.4	0.6	1.3	21.9	626
	20	7 x 0.43	18.4	0.6	1.5	25.0	670
	24	7 x 0.43	18.4	0.6	1.5	27.6	923
	30	7 x 0.43	18.4	0.6	1.7	30.5	1253
	2	7 x 0.49	14.2	0.6	1.2	12.8	195
	4	7 x 0.49	14.2	0.6	1.3	14.0	245
	8	7 x 0.49	14.2	0.6	1.3	18.2	425
1.3	12	7 x 0.49	14.2	0.6	1.3	20.3	615
	16	7 x 0.49	14.2	0.6	1.5	23.2	790
	20	7 x 0.49	14.2	0.6	1.5	27.0	880
	24	7 x 0.49	14.2	0.6	1,7	31.2	1100
	30	7 x 0.49	14.2	0.6	2.0	34.5	1450
	2	7 x 0.53	12.6	0.6	1,2	14.1	228
	4	7 x 0.53	12.6	0.6	1.2	15.4	273
1.5	8	7 x 0.53	12.6	0.6	1.3	20.3	480
	12	7 x 0.53	12.6	0.6	1.5	24.0	700
	16	7 x 0.53	12.6	0.6	1.5	26.7	904
	20	7 x 0.53	12.6	0.6	1.7	30.2	1119
	24	7 x 0.53	12.6	0.6	2.0	34.0	1370
	30	7 x 0.53	12.6	0.6	2.2	37.4	1845

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

#### **PVC Insulation**

#### Multitriple, Layers, Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

## **Engineering Specification:**

Standard: BS 5308-2.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyvinylchloride, TI1 to BS 6746.

#### **Assembly:**

Cores twisted to form triples, twisted triples in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White / Red, Continuously numbered, or Identification tapes numbered.

#### Screen:

Collective Screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue

#### Minimum bending radius:

 $7.5 \times d (d = overall diameter)$ .

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Triples	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.0	10.1	125
	4	7 x 0.3	39.2	0.6	1.0	10.8	150
	8	$7 \times 0.3$	39.2	0.6	1.2	14.6	245
0.5	12	7 x 0.3	39.2	0.6	1.3	16.5	347
	16	7 x 0.3	39.2	0.6	1.3	18.7	450
	20	7 x 0.3	39.2	0.6	1.3	21.2	565
	24	7 x 0.3	39.2	0.6	1.5	24.0	670
	30	7 x 0.3	39.2	0.6	1.5	27.7	975
	2	7 x 0.37	24.6	0.6	1.0	10.9	145
	4	7 x 0.37	24.6	0.6	1.0	11.8	190
	8	7 x 0.37	24.6	0.6	1.3	15.9	375
0.75	12	7 x 0.37	24.6	0.6	1.3	17.9	435
	16	7 x 0.37	24.6	0.6	1.3	20.2	535
	20	7 x 0.37	24.6	0.6	1.5	23.8	675
	24	7 x 0.37	24.6	0.6	1.5	26.0	970
	30	7 x 0.37	24.6	0.6	1.7	30.0	1175

## **PVC Insulation** Multitriple, Layers, Collective Screen

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Triples	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.2	12.1	170
	4	7 x 0.43	18.4	0.6	1.2	13.6	255
	8	7 x 0.43	18.4	0.6	1.3	17.6	430
1.0	12	7 x 0.43	18.4	0.6	1.3	20.3	590
	16	7 x 0.43	18.4	0.6	1.3	22.8	750
	20	7 x 0.43	18.4	0.6	1.5	25.6	930
	24	7 x 0.43	18.4	0.6	1.5	27.6	1090
	30	7 x 0.43	18.4	0.6	1.7	33.2	1325
	2	7 x 0.49	14.2	0.6	1.2	12.8	200
	4	7 x 0.49	14.2	0.6	1.3	14.4	295
	8	7 x 0.49	14.2	0.6	1.3	18.8	510
1.3	12	7 x 0.49	14.2	0.6	1.3	21.7	710
	16	$7 \times 0.49$	14.2	0.6	1.5	25.0	930
	20	7 x 0.49	14.2	0.6	1.5	27.4	1130
	24	$7 \times 0.49$	14.2	0.6	1.7	29.6	1335
	30	7 x 0.49	14.2	0.6	2.0	34.6	1630
	2	7 x 0.53	12.6	0.6	1.2	14.0	230
	4	7 x 0.53	12.6	0.6	1.3	15.9	325
1.5	8	7 x 0.53	12.6	0.6	1.3	20.8	570
	12	7 x 0.53	12.6	0.6	1.5	24.8	810
	16	7 x 0.53	12.6	0.6	1.5	27.9	1120
	20	7 x 0.53	12.6	0.6	1.7	30.7	1280
	24	7 x 0.53	12.6	0.6	2.0	33.1	1515
	30	7 x 0.53	12.6	0.6	2.2	37.3	1960

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

#### **PVC Insulation**

## Multitriples; Layers, Individual and Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

## **Engineering Specification:**

Standard: BS 5308-2.

## Rated Voltage:

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyvinylchloride, TI1 to BS 6746.

#### **Assembly:**

Cores twisted to form triples, triples screened by Aluminium Polyester tapes, screened triples twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White / Red, Continuously numbered, or Identification tapes numbered.

#### Screen:

Collective Screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue

#### Minimum bending radius:

 $7.5 \times d (d = overall diameter)$ .

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Triples	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.0	11.7	150
	4	7 x 0.3	39.2	0.6	1.2	13.2	205
	8	7 x 0.3	39.2	0.6	1.3	17.0	335
0.5	12	7 x 0.3	39.2	0.6	1.3	19.6	450
	16	7 x 0.3	39.2	0.6	1.3	22.0	575
	20	7 x 0.3	39.2	0.6	1.5	24.7	710
	24	7 x 0.3	39.2	0.6	1.5	26.6	835
	30	7 x 0.3	39.2	0.6	1.7	29.2	1130
	2	7 x 0.37	24.6	0.6	1.0	12.5	165
	4	7 x 0.37	24.6	0.6	1.2	14.1	235
	8	7 x 0.37	24.6	0.6	1.3	18.3	395
0.75	12	7 x 0.37	24.6	0.6	1.3	21.1	550
	16	7 x 0.37	24.6	0.6	1.5	24.2	720
	20	7 x 0.37	24.6	0.6	1.7	26.7	875
	24	7 x 0.37	24.6	0.6	1.7	28.8	1030
	30	7 x 0.37	24.6	0.6	2.0	32.4	1325

**PVC Insulation** Multitriples; Layers, Individual and Collective Screen

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Triples	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.2	13.7	195
	4	7 x 0.43	18.4	0.6	1.3	15.5	285
	8	7 x 0.43	18.4	0.6	1.3	20.3	480
1.0	12	7 x 0.43	18.4	0.6	1.5	23.5	665
	16	7 x 0.43	18.4	0.6	1.5	27.1	880
	20	7 x 0.43	18.4	0.6	1.7	29.8	1060
	24	7 x 0.43	18.4	0.6	1.7	32.2	1250
	30	7 x 0.43	18.4	0.6	2.0	35.3	1530
	2	7 x 0.49	14.2	0.6	1.3	14.4	230
	4	7 x 0.49	14.2	0.6	1.3	16.4	330
	8	7 x 0.49	14.2	0.6	1.3	21.6	565
1.3	12	7 x 0.49	14.2	0.6	1.5	25.6	810
	16	7 x 0.49	14.2	0.6	1.7	28.9	1050
	20	7 x 0.49	14.2	0.6	1.7	31.8	1270
	24	7 x 0.49	14.2	0.6	2.0	35.4	1525
	30	7 x 0.49	14.2	0.6	2.2	37.2	1730
	2	7 x 0.53	12.6	0.6	1.3	15.2	265
	4	7 x 0.53	12.6	0.6	1.3	17.3	365
1.5	8	7 x 0.53	12.6	0.6	1.3	22.9	610
	12	7 x 0.53	12.6	0.6	1.5	27.2	935
	16	7 x 0.53	12.6	0.6	1.7	30.7	1180
	20	7 x 0.53	12.6	0.6	2.0	33.8	1430
	24	7 x 0.53	12.6	0.6	2.2	37.0	1710
	30	7 x 0.53	12.6	0.6	2.2	40.6	2200

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

#### **PVC Insulation**

Single Pair, Collective Screen, Galvanized Steel Wire Armour.

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes, where mechanical damages are expected to occur.

#### **Engineering Specification:**

Standard: BS 5308-2.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyvinylchloride, TI1 to BS 6746.

#### **Assembly:**

Cores twisted to form a pair and screened by Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White.

#### Bedding:

Polyvinylchloride.

#### **Armouring:**

Galvanized steel wire armour to BS 1442.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $10 \times d$  (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor Number		Conductor		Nominal	Steel	Nominal	Approximate	Approximate	
	of Triples	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	WIIC	Jiicatii	Ovcian	Net Weight	
mm²	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km	
0.5	1	7 x 0.3	39.2	0.6	0.8	1.3	10.7	219	
0.75	1	7 x 0.37	24.6	0.6	0.8	1.3	11.0	240	
1.0	1	7 x 0.43	18.4	0.6	0.8	1.3	11.4	255	
1.3	1	7 x 0.49	14.2	0.6	0.8	1.4	11.8	275	
1.5	1	7 x 0.53	12.6	0.6	0.8	1.4	12.6	300	

<sup>\*</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

#### **PVC Insulation**

#### Multipairs, Layers, Collective Screen, Galvanized Steel Wire Armour

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.where mechanical damages

are expected to occur.

#### **Engineering Specification:**

Standard: BS 5308-2.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### Insulation:

Polyvinylchloride, TI1 to BS 6746.

#### **Assembly:**

Cores twisted to form pairs, pairs twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White Continuously numbered, or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tapes with tinned drain wire and wrapped by Polyester tapes.

#### **Bedding:**

Polyvinylchloride.

#### **Armouring:**

Galvanized steel wire armour to BS 1442.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $10 \times d$  (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

					G: 1			
Conductor	Number	C(	onductor	Nominal	Steel	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness		J. i Cati.	O v Ci aii	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	2	$7 \times 0.3$	39.2	0.6	0.8	1.4	13.5	344
	4	7 x 0.3	39.2	0.6	0.8	1.4	14.6	395
	8	7 x 0.3	39.2	0.6	1.25	1.5	18.7	665
0.5	12	7 x 0.3	39.2	0.6	1.25	1.6	20.7	800
	16	7 x 0.3	39.2	0.6	1.25	1.6	22.4	920
	20	7 x 0.3	39.2	0.6	1.6	1.7	25.3	1220
	24	7 x 0.3	39.2	0.6	1.6	1.7	27.2	1370
	30	7 x 0.3	39.2	0.6	1.6	1.9	30.1	1710
	2	7 x 0.37	24.6	0.6	0.8	1.5	15.6	395
	4	7 x 0.37	24.6	0.6	0.8	1.5	16.7	440
	8	7 x 0.37	24.6	0.6	1.25	1.6	21.5	760
0.75	12	7 x 0.37	24.6	0.6	1.25	1.7	24.9	905
	16	7 x 0.37	24.6	0.6	1.6	1.7	27.0	1240
	20	7 x 0.37	24.6	0.6	1.6	1.8	29.6	1390
	24	7 x 0.37	24.6	0.6	1.6	1.9	32.7	1580
	30	7 x 0.37	24.6	0.6	1.6	2.0	36.1	1800

PVC Insulation Multipairs, Layers, Collective Screen, Galvanized Steel Wire Armour

Conductor	Number	C	onductor	Nominal	Steel	Nominal	Approximate Overall	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	wire diameter	Jileacii	0.00.00	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	8.0	1.5	15.2	440
	4	7 x 0.43	18.4	0.6	0.8	1.5	16.4	490
	8	7 x 0.43	18.4	0.6	1.25	1.6	21.1	840
1.0	12	7 x 0.43	18.4	0.6	1.6	1.7	24.4	1200
	16	7 x 0.43	18.4	0.6	1.6	1.7	26.4	1380
	20	7 x 0.43	18.4	0.6	1.6	1.8	28.8	1580
	24	7 x 0.43	18.4	0.6	1.6	1.9	31.8	1850
	30	7 x 0.43	18.4	0.6	2.0	2.0	35.0	2470
	2	7 x 0.49	14.2	0.6	0.8	1.5	15.6	460
	4	7 x 0.49	14.2	0.6	1.25	1.5	18.1	630
	8	7 x 0.49	14.2	0.6	1.25	1.6	22.2	900
1.3	12	7 x 0.49	14.2	0.6	1.6	1.7	25.3	1290
	16	7 x 0.49	14.2	0.6	1.6	1.8	28.1	1510
	20	7 x 0.49	14.2	0.6	1.6	1.8	30.4	1660
	24	7 x 0.49	14.2	0.6	1.6	1.9	32.5	1970
	30	7 x 0.49	14.2	0.6	2.0	2.0	35.9	2420
	2	7 x 0.53	12.6	0.6	1.25	1.6	18.2	620
	4	7 x 0.53	12.6	0.6	1.25	1.6	19.7	745
	8	7 x 0.53	12.6	0.6	1.6	1.7	25.2	1230
1.5	12	7 x 0.53	12.6	0.6	1.6	1.8	28.1	1520
	16	7 x 0.53	12.6	0.6	1.6	1.9	31.3	1865
	20	7 x 0.53	12.6	0.6	1.6	1.9	34.1	2140
	24	7 x 0.53	12.6	0.6	2.0	2.0	38.3	2740
	30	7 x 0.53	12.6	0.6	2.0	2.0	41.6	3340

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

#### **PVC Insulation.**

Multipairs, Layers, Individual and Collective Screen, Galvanized Steel Wire Armour.

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.where mechanical damages are expected to occur.

#### **Engineering Specification:**

Standard: BS 5308-2.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyvinylchloride, TI1 to BS 6746.

#### Assembly:

Cores twisted to form pairs, pairs screened by Aluminium Polyester tapes, screened pairs twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White Continuously numbered, or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tapes with tinned drain wire and wrapped by Polyester tapes.

#### **Bedding**:

Polyvinylchloride.

#### **Armouring:**

Galvanized steel wire armour to BS 1442.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $10 \times d$  (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Co	onductor	Nominal	Steel	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	wire diameter	Sileatii	Overan	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	2	$7 \times 0.3$	39.2	0.6	0.8	1.4	14.7	390
	4	7 x 0.3	39.2	0.6	0.8	1.5	15.9	450
	8	7 x 0.3	39.2	0.6	1.25	1.6	20.4	760
0.5	12	7 x 0.3	39.2	0.6	1.25	1.6	22.7	940
	16	7 x 0.3	39.2	0.6	1.6	1.7	25.5	1260
	20	7 x 0.3	39.2	0.6	1.6	1.8	27.8	1420
	24	7 x 0.3	39.2	0.6	1.6	1.9	30.7	1660
	30	7 x 0.3	39.2	0.6	1.6	1.9	33.0	2015
	2	7 x 0.37	24.6	0.6	0.8	1.5	15.6	440
	4	7 x 0.37	24.6	0.6	0.8	1.5	16.7	490
	8	7 x 0.37	24.6	0.6	1.25	1.6	21.5	850
0.75	12	7 x 0.37	24.6	0.6	1.6	1.7	24.9	1210
	16	7 x 0.37	24.6	0.6	1.6	1.7	27.0	1390
	20	7 x 0.37	24.6	0.6	1.6	1.8	29.6	1620
	24	7 x 0.37	24.6	0.6	1.6	1.9	32.7	1880
	30	7 x 0.37	24.6	0.6	2.0	2.0	36.1	2590

#### **PVC Insulation.**

Multipairs, Layers, Individual and Collective Screen, Galvanized Steel Wire Armour.

Conductor	Number	Co	onductor	Nominal	Steel	Nominal	Approximate Overall	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	wire diameter	Sheath Thickness		Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.25	1.5	17.2	570
	4	7 x 0.43	18.4	0.6	1.25	1.5	18.6	660
	8	7 x 0.43	18.4	0.6	1.25	1.7	23.1	960
1.0	12	7 x 0.43	18.4	0.6	1.6	1.7	26.3	1335
	16	7 x 0.43	18.4	0.6	1.6	1.8	28.7	1570
	20	7 x 0.43	18.4	0.6	1.6	1.9	32.0	1870
	24	7 x 0.43	18.4	0.6	1.6	1.9	34.6	2120
	30	7 x 0.43	18.4	0.6	2.0	2.1	38.3	2830
	2	7 x 0.49	14.2	0.6	1.25	1.5	18.2	680
	4	7 x 0.49	14.2	0.6	1.25	1.6	20.3	850
	8	7 x 0.49	14.2	0.6	1.6	1.7	26.4	1350
1.3	12	7 x 0.49	14.2	0.6	1.6	1.8	29.5	1560
	16	7 x 0.49	14.2	0.6	1.6	1.9	32.0	1860
	20	7 x 0.49	14.2	0.6	2.0	2.0	36.6	2300
	24	7 x 0.49	14.2	0.6	2.0	2.1	39.3	3200
	30	7 x 0.49	14.2	0.6	2.0	2.2	44.2	3900
	2	7 x 0.53	12.6	0.6	1.25	1.7	22.8	1000
	4	7 x 0.53	12.6	0.6	1.25	1.7	24.1	1130
	8	7 x 0.53	12.6	0.6	1.6	1.8	30.4	1690
1.5	12	7 x 0.53	12.6	0.6	1.6	1.9	34.1	2130
	16	7 x 0.53	12.6	0.6	1.6	2.0	38.7	2280
	20	7 x 0.53	12.6	0.6	2.0	2.2	43.3	3430
	24	7 x 0.53	12.6	0.6	2.0	2.3	48.5	4420
	30	7 x 0.53	12.6	0.6	2.5	2.5	52.8	5390

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

#### **PE Insulation**

#### **Multipairs, Twisted in Bundles, Collective Screen**

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene, type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form pairs, 4 pairs twisted to form a bundle, bundles twisted in concentric layers, 2 pairs twisted as star quad.

#### **Colour Code:**

1. Pair: Blue / Red

2. Pair: Grey / Yellow

3. Pair: Green / Brown

4. Pair: White / Black

Bundles are identified by coloured Polyester tapes.

#### Wrapping:

Polyester tapes.

#### **Collective Screen:**

Aluminium Polyester tape with tinned Drain wire and wrapped by polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Grey or Blue.

#### Minimum bending radius:

 $7.5 \times d$  (d = overall diameter).

## **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Cor	nductor	Nominal	Nominal	Approximate Overall	<b>∆</b> nnroximate	
Size	of Pairs		Max. DC Res. at 20°C		Jiicacii	Overan	Net Weight	UIC - Code
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km	
	2	7 x 0.3	39.2	0.6	1.0	6.9	65	CGC-T1202-JU05BQ
	4	7 x 0.3	39.2	0.6	1.0	9.1	85	CGC-T1204-JU05BQ
	8	7 x 0.3	39.2	0.6	1.0	11.1	140	CGC-T1208-JU05BQ
0.5	12	7 x 0.3	39.2	0.6	1.2	13.4	195	CGC-T1212-JU05BQ
	16	7 x 0.3	39.2	0.6	1.2	15.1	260	CGC-T1216-JU05BQ
	20	7 x 0.3	39.2	0.6	1.2	16.5	340	CGC-T1220-JU05BQ
	24	7 x 0.3	39.2	0.6	1.4	18.3	430	CGC-T1224-JU05BQ
	2	7 x 0.43	18.4	0.6	1.0	8.9	85	CGC-T1202-JU12BQ
	4	7 x 0.43	18.4	0.6	1.0	12.0	140	CGC-T1204-JU12BQ
	8	7 x 0.43	18.4	0.6	1.2	16.0	165	CGC-T1208-JU12BQ
1.0	12	7 x 0.43	18.4	0.6	1.4	20.0	390	CGC-T1212-JU12BQ
	16	7 x 0.43	18.4	0.6	1.4	22.0	500	CGC-T1216-JU12BQ
	20	7 x 0.43	18.4	0.6	1.4	24.0	640	CGC-T1220-JU12BQ
	24	7 x 0.43	18.4	0.6	1.6	26.0	780	CGC-T1224-JU12BQ

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

#### PE Insulation.

#### Single Pair or Triple, Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-1.

## Rated Voltage:

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene, type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form a pair or triple and wrapped by Polyester Tapes.

#### **Colour Code:**

Pair : Black / White.
Triple : Black / White / Red.

#### Screen:

Collective screen of Aluminium Polyester tapes with tinned drain wire and wrapped by polyester tapes

#### Sheath:

Polyvinylchloride TM1 to BS 6746, Colour Black or Blue

#### Minimum bending radius:

 $7.5 \times d (d = overall diameter)$ .

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

	Con	ductor	Nominal	Nominal	Approximate	Approximate
Cable size	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
1 x 2 x 0.5	7 x 0.3	39.2	0.6	0.8	5.3	40
1 x 3 x 0.5	7 x 0.3	39.2	0.6	0.8	5.6	50
1 x 2 x 0.75	7 x 0.37	24.6	0.6	0.8	6.4	56
1 x 3 x 0.75	7 x 0.37	24.6	0.6	0.8	6.7	65
1 x 2 x 1.0	7 x 0.43	18.4	0.6	0.8	6.8	66
1 x 3 x 1.0	7 x 0.43	18.4	0.6	0.8	7.1	75
1 x 2 x 1.3	7 x 49	14.2	0.6	0.8	7.1	75
1 x 3 x 1.3	7 x 49	14.2	0.6	0.8	7.4	85
1 x 2 x 1.5	7 x 0.53	12.6	0.6	0.8	7.6	85
1 x 3 x 1.5	7 x 0.53	12.6	0.6	0.8	8.0	104

<sup>\*</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

#### **PE Insulation**

#### **Multipairs, Layers, Collective Screen**

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form pairs, pairs twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White, continuously numbered, or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tapes with tinned drain wire and wrapped by Polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, Colour Black or Blue.

#### Minimum bending radius:

 $7.5 \times d (d = overall diameter)$ .

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.0	9.3	98
	4	7 x 0.3	39.2	0.6	1.0	10.0	112
	8	7 x 0.3	39.2	0.6	1.2	13.2	189
0.5	12	7 x 0.3	39.2	0.6	1.2	15.0	252
	16	7 x 0.3	39.2	0.6	1.2	16.7	318
	20	7 x 0.3	39.2	0.6	1.3	18.7	387
	24	7 x 0.3	39.2	0.6	1.3	20.6	452
	30	7 x 0.3	39.2	0.6	1.5	23.3	640
	2	7 x 0.37	24.6	0.6	1.0	10.1	120
	4	7 x 0.37	24.6	0.6	1.0	10.8	134
	8	7 x 0.37	24.6	0.6	1.2	14.3	232
0.75	12	7 x 0.37	24.6	0.6	1.2	16.3	315
	16	7 x 0.37	24.6	0.6	1.3	18.3	410
	20	7 x 0.37	24.6	0.6	1.3	20.3	490
	24	7 x 0.37	24.6	0.6	1.3	22.5	575
	30	7 x 0.37	24.6	0.6	1.5	24.3	683

PE Insulation Multipairs, Layers, Collective Screen

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	$7 \times 0.43$	18.4	0.6	1.0	10.8	138
	4	7 x 0.43	18.4	0.6	1.0	11.6	160
	8	$7 \times 0.43$	18.4	0.6	1.2	15.4	282
1.0	12	7 x 0.43	18.4	0.6	1.3	17.8	396
	16	$7 \times 0.43$	18.4	0.6	1.3	19.8	504
	20	7 x 0.43	18.4	0.6	1.3	22.0	608
	24	7 x 0.43	18.4	0.6	1.5	24.8	745
	30	7 x 0.43	18.4	0.6	1.7	27.5	1005
	2	$7 \times 0.49$	14.2	0.6	1.0	11.7	152
	4	7 x 0.49	14.2	0.6	1.2	13.3	215
	8	$7 \times 0.49$	14.2	0.6	1.3	16.5	360
1.3	12	$7 \times 0.49$	14.2	0.6	1.3	19.3	385
	16	$7 \times 0.49$	14.2	0.6	1.3	21.7	575
	20	$7 \times 0.49$	14.2	0.6	1.5	24.2	780
	24	$7 \times 0.49$	14.2	0.6	1.7	26.3	930
	30	7 x 0.49	14.2	0.6	1.7	31.0	1280
	2	7 x 0.53	12.6	0.6	1.2	12.9	194
	4	7 x 0.53	12.6	0.6	1.2	14.1	233
	8	7 x 0.53	12.6	0.6	1.3	18.6	405
1.5	12	7 x 0.53	12.6	0.6	1.3	21.3	564
	16	7 x 0.53	12.6	0.6	1.5	24.3	797
	20	7 x 0.53	12.6	0,6	1.5	27.1	912
	24	7 x 0.53	12.6	0.6	1.7	30.3	1104
	30	7 x 0.53	12.6	0.6	2.0	33.7	1507

#### **PE Insulation**

#### Multipairs, Layers, Individual and Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form pairs, pairs screened by Aluminium Polyester tapes, screened pairs twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White, continuously numbered, or identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### Sheath:

PolyvinylchlorideTMl to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $7.5 \times d$  (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Cond	ductor	Nominal	Nominal	Approximate	Approximate			
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight			
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km			
	2	$7 \times 0.3$	39.2	0.6	1.0	10.3	118			
	4	7 x 0.3	39.2	0.6	1.0	11.1	136			
	8	7 x 0.3	39.2	0.6	1.2	14.7	234			
0.5	12	7 x 0.3	39.2	0.6	1.3	17.0	325			
	16	7 x 0.3	39.2	0.6	1.3	18.9	413			
	20	7 x 0.3	39.2	0.6	1.3	21.0	495			
	24	7 x 0.3	39.2	0.6	1.5	23.7	606			
	30	7 x 0.3	39.2	0.6	1.5	26.3	822			
	2	$7 \times 0.37$	24.6	0.6	1.0	11.2	145			
	4	7 x 0.37	24.6	0.6	1.0	11.9	159			
	8	$7 \times 0.37$	24.6	0.6	1.2	15.8	280			
0.75	12	7 x 0.37	24.6	0.6	1.3	18.3	390			
	16	7 x 0.37	24.6	0.6	1.3	20.4	500			
	20	7 x 0.37	24.6	0.6	1.3	22.8	602			
	24	7 x 0.37	24.6	0.6	1.5	25.7	736			
	30	7 x 0.37	24.6	0.6	1.7	26.4	864			

## **PE Insulation** Multipairs, Layers, Individual and Collective Screen

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.2	12.2	170
	4	7 x 0.43	18.4	0.6	1.2	13.1	195
	8	7 x 0.43	18.4	0.6	1.3	17.2	340
1.0	12	7 x 0.43	18.4	0.6	1.3	19.7	465
	16	7 x 0.43	18.4	0.6	1.3	21.9	600
	20	7 x 0.43	18.4	0.6	1.5	25.0	645
	24	7 x 0.43	18.4	0.6	1.5	27.6	880
	30	7 x 0.43	18.4	0.6	1.7	30.5	1195
	2	$7 \times 0.49$	14.2	0.6	1.2	12.8	180
	4	7 x 0.49	14.2	0.6	1.3	14.0	230
	8	$7 \times 0.49$	14.2	0.6	1.3	18.2	410
1.3	12	7 x 0.49	14.2	0.6	1.3	20.3	590
	16	$7 \times 0.49$	14.2	0.6	1.5	23.3	760
	20	7 x 0.49	14.2	0.6	1.5	27.0	850
	24	$7 \times 0.49$	14.2	0.6	1.7	31.2	1065
	30	7 x 0.49	14.2	0.6	2.0	34.5	1400
	2	7 x 0.53	12.6	0.6	1.2	14.1	220
	4	7 x 0.53	12.6	0.6	1.2	15.4	263
	8	7 x 0.53	12.6	0.6	1.3	20.3	460
1.5	12	7 x 0.53	12.6	0.6	1.5	24.0	670
	16	7 x 0.53	12.6	0.6	1.5	26.7	865
	20	7 x 0.53	12.6	0.6	1.7	30.2	1070
	24	7 x 0.53	12.6	0.6	2.0	34.0	1300
	30	7 x 0.53	12.6	0.6	2.2	37.4	1750

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

#### **PE Insulation**

#### **Multitriples, Layers, Collective Screen**

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form triples, triples twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black/White/Red, continuously numbered, or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $7.5 \times d$  (d = overall diameter).

## Temperature rating:

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Triples	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.0	10.1	115
	4	7 x 0.3	39.2	0.6	1.0	10.8	135
	8	7 x 0.3	39.2	0.6	1.2	14.6	230
0.5	12	7 x 0.3	39.2	0.6	1.3	16.5	330
	16	7 x 0.3	39.2	0.6	1.3	18.7	420
	20	7 x 0.3	39.2	0.6	1.3	21.2	535
	24	7 x 0.3	39.2	0.6	1.5	24.0	635
	30	7 x 0.3	39.2	0.6	1.5	27.7	960
	2	7 x 0.37	24.6	0.6	1.0	10.9	130
	4	7 x 0.37	24.6	0.6	1.0	11.8	175
	8	7 x 0.37	24.6	0.6	1.3	15.9	355
0.75	12	7 x 0.37	24.6	0.6	1.3	17.9	415
	16	7 x 0.37	24.6	0.6	1.3	20.2	515
	20	7 x 0.37	24.6	0.6	1.5	23.8	645
	24	7 x 0.37	24.6	0.6	1.5	26.0	955
	30	7 x 0.37	24.6	0.6	1.7	30.0	1150

## **PE Insulation** Multitriples, Layers, Individual and Collective Screen

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Triples	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.2	12.1	160
	4	7 x 0.43	18.4	0.6	1.2	13.6	240
	8	7 x 0.43	18.4	0.6	1.3	17.6	420
1.0	12	7 x 0.43	18.4	0.6	1.3	20.3	570
	16	7 x 0.43	18.4	0.6	1.3	22.8	730
	20	7 x 0.43	18.4	0.6	1.5	25.6	900
	24	7 x 0.43	18.4	0.6	1.5	27.6	1050
	30	7 x 0.43	18.4	0.6	1.7	33.2	1295
	2	$7 \times 0.49$	14.2	0.6	1.2	12.8	190
	4	7 x 0.49	14.2	0.6	1.3	14.4	275
	8	$7 \times 0.49$	14.2	0.6	1.3	18.8	485
1.3	12	7 x 0.49	14.2	0.6	1.3	21.7	685
	16	$7 \times 0.49$	14.2	0.6	1.5	25.0	910
	20	7 x 0.49	14.2	0.6	1.5	27.4	1100
	24	$7 \times 0.49$	14.2	0.6	1.7	29.6	1300
	30	7 x 0.49	14.2	0.6	2.0	35.6	1590
	2	7 x 0.53	12.6	0.6	1.2	14.0	220
	4	7 x 0.53	12.6	0.6	1.3	15.9	300
	8	7 x 0.53	12.6	0.6	1.3	20.8	545
1.5	12	7 x 0.53	12.6	0.6	1.5	24.8	785
	16	7 x 0.53	12.6	0.6	1.5	27.9	1100
	20	7 x 0.53	12.6	0.6	1.7	30.7	1250
	24	7 x 0.53	12.6	0.6	2.0	33.1	1460
	30	7 x 0.53	12.6	0.6	2.2	37.3	1920

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

#### **PE Insulation**

#### multitriples, Layers, Individual and Collective Screen

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form triples, triples Screened by Aluminium Polyester tapes, screened triples Twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

0.75

Black /White/Red, continuously numbered, or Identification tapes numbered.

TECHNICAL INFORMATION

#### Screen:

Collective screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $7.5 \times d$  (d = overall diameter).

## Temperature rating:

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

#### Conductor Nominal **Nominal Approximate** Conductor Number **Approximate** . Overall Insulation Sheath Max. DC of Triples **Net Weight** Size No.xdia. **Thickness** Thickness diameter Res. at 20°C No. Mm $mm^2$ No. x mm Ohm/Km mm mm Kg/km 39.2 0.6 145 2 7 x 0.3 1.0 11.7 4 39.2 0.6 195 7 x 0.3 1.2 13.2 320 8 7 x 0.3 39.2 0.6 1.3 17.0 12 430 0.5 7 x 0.3 39.2 0.6 1.3 19.6 16 7 x 0.3 39.2 0.6 1.3 22.0 560 20 39.2 0.6 1.5 680 7 x 0.3 24.7 24 7 x 0.3 39.2 0.6 1.5 26.6 800 30 $7 \times 0.3$ 39.2 0.6 1.7 29.2 1100 24.6 0.6 160 2 $7 \times 0.37$ 1.0 12.5 4 $7 \times 0.37$ 24.6 0.6 1.2 14.1 220 8 7 x 0.37 24.6 0.6 1.3 18.3 380

0.6

0.6

0.6

0.6

0.6

1.3

1.5

1.7

1.7

2.0

21.1

24.2

26.7

28.8

32.4

530

690

845

1000

1300

# EL SEWEDY

12

16

20

24

30

7 x 0.37

 $7 \times 0.37$ 

 $7 \times 0.37$ 

7 x 0.37

7 x 0.37

24.6

24.6

24.6

24.6

24.6

# PE Insulation multitriples, Layers, Individual and Collective Screen

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Triples	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.2	13.7	185
	4	7 x 0.43	18.4	0.6	1.3	15.5	270
	8	7 x 0.43	18.4	0.6	1.3	20.3	465
1.0	12	7 x 0.43	18.4	0.6	1.3	23.5	650
	16	7 x 0.43	18.4	0.6	1.5	27.1	850
	20	7 x 0.43	18.4	0.6	1.7	29.8	1030
	24	7 x 0.43	18.4	0.6	1.7	32.2	1220
	30	7 x 0.43	18.4	0.6	2.0	35.3	1480
	2	7 x 0.49	14.2	0.6	1.3	14.4	220
	4	7 x 0.49	14.2	0.6	1.3	16.4	310
	8	7 x 0.49	14.2	0.6	1.3	21.6	540
1.3	12	7 x 0.49	14.2	0.6	1.5	25.6	780
	16	7 x 0.49	14.2	0.6	1.7	28.9	1010
	20	7 x 0.49	14.2	0.6	1.7	31.8	1190
	24	7 x 0.49	14.2	0.6	2.0	35.4	1475
	30	7 x 0.49	14.2	0.6	2.0	37.2	1680
	2	7 x 0.53	12.6	0.6	1.3	15.2	255
	4	7 x 0.53	12.6	0.6	1.3	17.3	340
	8	7 x 0.53	12.6	0.6	1.3	22.9	570
1.5	12	7 x 0.53	12.6	0.6	1.5	27.2	900
	16	7 x 0.53	12.6	0.6	1.7	30.7	1150
	20	7 x 0.53	12.6	0.6	2.0	33.8	1400
	24	7 x 0.53	12.6	0.6	2.2	37.0	1660
	30	7 x 0.53	12.6	0.6	2.2	40.6	2100

#### **PE Insulation**

#### Single Pair, Collective Screen, Galvanized Steel Wire Amour

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes. Where mechanical damages are expected to occur.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form a pair or triple and screened by Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White.

#### **Bedding:**

Polyvinylchloride.

#### **Armouring:**

Galvanized steel wire armour to BS 1442.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $10 \times d$  (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Conductor Number of Pairs	Conductor		Nominal	Steel	Nominal	Approximate	Approximate
		No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	I WILE I	Jucatu	Overall	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
0.5	1	7 x 0.3	39.2	0.6	0.8	1.3	10.3	210
0.75	1	7 x 0.37	24.6	0.6	0.8	1.3	11.0	230
1.0	1	7 x 0.43	18.4	0.6	0.8	1.3	11.4	240
1.3	1	7 x 0.49	14.2	0.6	0.8	1.4	11.8	260
1.5	1	7 x 0.53	12.6	0.6	0.8	1.4	12.6	290

#### **PE Insulation**

Multipairs, Layers, Collective Screen, Galvanized Steel wire Armour.

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes. Where mechanical damages are expected to occur.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form pairs, pairs twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White, Continuously numbered, or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tapes with tinned drain wire and wrapped by Polyester tapes .

#### Screen:

Collective screen of Aluminium Polyester tapes with tinned drain wire and wrapped by Polyester tapes.

#### Bedding:

Polyvinylchloride.

## **Armouring:**

Galvanized steel wire armour to BS 1442.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $10 \times d$  (d = overall diameter).

## **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	C	onductor	Nominal	Steel	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	wire diameter			Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	0.8	1.4	13.5	330
	4	7 x 0.3	39.2	0.6	0.8	1.4	14.6	370
	8	7 x 0.3	39.2	0.6	1.25	1.5	18.7	630
0.5	12	7 x 0.3	39.2	0.6	1.25	1.6	20.7	770
	16	7 x 0.3	39.2	0.6	1.25	1.6	22.4	880
	20	7 x 0.3	39.2	0.6	1.6	1.7	25.3	1170
	24	7 x 0.3	39.2	0.6	1.6	1.7	27.2	1340
	30	7 x 0.3	39.2	0.6	1.6	1.9	30.1	1660
	2	7 x 0.37	24.6	0.6	0.8	1.5	15.6	370
	4	7 x 0.37	24.6	0.6	0.8	1.5	16.7	410
	8	7 x 0.37	24.6	0.6	1.25	1.6	21.5	720
0.75	12	7 x 0.37	24.6	0.6	1.25	1.7	24.9	880
	16	7 x 0.37	24.6	0.6	1.6	1.7	27.0	1200
	20	7 x 0.37	24.6	0.6	1.6	1.8	29.6	1350
	24	7 x 0.37	24.6	0.6	1.6	1.9	32.7	1530
	30	7 x 0.37	24.6	0.6	1.6	2.0	36.1	1730

**PE Insulation** 

Multipairs, Layers, Collective Screen, Galvanized Steel wire Armour.

Conductor	Number	Co	onductor	Nominal	Steel	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C		diameter	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	0.8	1.5	15.2	420
	4	7 x 0.43	18.4	0.6	0.8	1.5	16.4	470
	8	7 x 0.43	18.4	0.6	1.25	1.6	21.1	820
1.0	12	7 x 0.43	18.4	0.6	1.6	1.7	24.4	1170
	16	7 x 0.43	18.4	0.6	1.6	1.7	26.4	1350
	20	7 x 0.43	18.4	0.6	1.6	1.8	28.8	1530
	24	7 x 0.43	18.4	0.6	1.6	1.9	31.8	1760
	30	7 x 0.43	18.4	0.6	2.0	2.0	35.0	2390
	2	7 x 0.49	14.2	0.6	0.8	1.5	15.6	430
	4	7 x 0.49	14.2	0.6	1.25	1.5	18.1	600
	8	7 x 0.49	14.2	0.6	1.25	1.6	22.2	860
1.3	12	7 x 0.49	14.2	0.6	1.6	1.7	25.3	1240
	16	7 x 0.49	14.2	0.6	1.6	1.8	28.1	1460
	20	7 x 0.49	14.2	0.6	1.6	1.8	30.4	1600
	24	7 x 0.49	14.2	0.6	1.6	1.9	32.5	1900
	30	7 x 0.49	14.2	0.6	2.0	2.0	35.9	2350
	2	7 x 0.53	12.6	0.6	1.25	1.6	18.2	600
	4	7 x 0.53	12.6	0.6	1.25	1.6	19.7	705
	8	7 x 0.53	12.6	0.6	1.6	1.7	25.2	1190
1.5	12	7 x 0.53	12.6	0.6	1.6	1.8	28.1	1460
	16	7 x 0.53	12.6	0.6	1.6	1.9	31.3	1800
	20	7 x 0.53	12.6	0.6	1.6	1.9	34.1	2090
	24	7 x 0.53	12.6	0.6	2.0	2.0	38.3	2680
	30	7 x 0.53	12.6	0.6	2.0	2.2	41.6	3220

#### **PE Insulation**

Multipairs, Layers, Individual and Collective Screen, Galvanized Steel Wire Armour.

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes. Where mechanical damages are expected to occur.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form pairs, pairs Screened by Aluminium Polyester tapes, screened pairs twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black / White Continuously numbered, or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes.

#### **Bedding:**

Polyvinylchloride.

## **Armouring:**

Galvanized steel wire armour to BS 1442.

#### Sheath:

Polyvinylchloride YM1 to DIN VDE 0207, colour Black or Blue.

## Minimum bending radius:

 $10 \times d$  (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Screen:

Collective screen of Aluminium Polyester.

Conductor	Number	Co	onductor	Nominal	Steel		Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	wire diameter	Sheath Thickness	Overall	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	0.8	1.4	14.7	315
	4	7 x 0.3	39.2	0.6	0.8	1.5	15.9	410
	8	7 x 0.3	39.2	0.6	1.25	1.6	20.4	690
0.5	12	7 x 0.3	39.2	0.6	1.25	1.6	22.7	820
	16	7 x 0.3	39.2	0.6	1.6	1.7	25.5	1160
	20	7 x 0.3	39.2	0.6	1.6	1.8	27.8	1320
	24	7 x 0.3	39.2	0.6	1.6	1.9	30.7	1580
	30	7 x 0.3	39.2	0.6	1.6	1.9	33.0	1930
	2	7 x 0.37	24.6	0.6	0.8	1.5	15.6	355
	4	7 x 0.37	24.6	0.6	0.8	1.5	16.7	450
	8	7 x 0.37	24.6	0.6	1.25	1.6	21.5	755
0.75	12	7 x 0.37	24.6	0.6	1.6	1.7	24.9	1110
	16	7 x 0.37	24.6	0.6	1.6	1.7	27.0	1260
	20	7 x 0.37	24.6	0.6	1.6	1.8	29.6	1540
	24	7 x 0.37	24.6	0.6	1.6	1.9	32.7	1760
	30	7 x 0.37	24.6	0.6	2.0	2.0	36.1	2470

**PE Insulation** 

Multipairs, Layers, Individual and Collective Screen, Galvanized Steel Wire Armour.

Conductor	Number	Co	onductor	Nominal	Steel	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness		Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.25	1.5	17.2	500
	4	7 x 0.43	18.4	0.6	1.25	1.5	18.6	610
	8	7 x 0.43	18.4	0.6	1.25	1.7	23.1	920
1.0	12	7 x 0.43	18.4	0.6	1.6	1.7	26.3	1290
	16	7 x 0.43	18.4	0.6	1.6	1.8	28.7	1500
	20	7 x 0.43	18.4	0.6	1.6	1.9	32.0	1810
	24	7 x 0.43	18.4	0.6	1.6	1.9	34.6	2130
	30	7 x 0.43	18.4	0.6	2.0	2.1	38.3	2760
	2	7 x 0.49	14.2	0.6	1.25	1.5	18.2	620
	4	7 x 0.49	14.2	0.6	1.25	1.6	20.3	800
	8	7 x 0.49	14.2	0.6	1.6	1.7	26.4	1290
1.3	12	7 x 0.49	14.2	0.6	1.6	1.8	29.5	1480
	16	7 x 0.49	14.2	0.6	1.6	1.9	32.0	1800
	20	7 x 0.49	14.2	0.6	2.0	2.0	36.6	2220
	24	7 x 0.49	14.2	0.6	2.0	2.1	39.3	3130
	30	7 x 0.49	14.2	0.6	2.0	2.2	44.2	3810
	2	7 x 0.53	12.6	0.6	1.25	1.7	22.8	930
	4	7 x 0.53	12.6	0.6	1.25	1.7	24.1	1070
	8	7 x 0.53	12.6	0.6	1.6	1.8	30.4	1600
1.5	12	7 x 0.53	12.6	0.6	1.6	1.9	34.1	2030
	16	7 x 0.53	12.6	0.6	1.6	2.0	38.7	2190
	20	7 x 0.53	12.6	0.6	2.0	2.2	43.3	3320
	24	7 x 0.53	12.6	0.6	2.0	2.3	48.5	4310
	30	7 x 0.53	12.6	0.6	2.5	2.5	52.8	5280

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

#### **PE Insulation**

Multicores, Layers, Overall Screen of Tinned Copper Wire Braid.

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-1. **Rated Voltage:** 

# 300/500 V.

Conductor:

Stranded Plain annealed Copper.

**Insulation:** 

Polyethylene, type 03 to BS 6234.

**Assembly:** 

Cores twisted in concentric layers and wrapped by Polyester tapes.

**Colour Code:** 

Black, Continuously numbered.

#### Screen:

Collective screen of tinned Copper wire braid with coverage from 60% up to 80% and wrapped by polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $7.5 \times d (d = overall diameter)$ .

## **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

## Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.1	0.6	1.2	7.2	95
	3	7 x 0.43	18.1	0.6	1.2	7.6	110
	5	7 x 0.43	18.1	0.6	1.3	10.3	150
1.0	7	7 x 0.43	18.1	0.6	1.3	11.1	180
	12	7 x 0.43	18.1	0.6	1.4	14.2	270
	19	7 x 0.43	18.1	0.6	1.4	16.3	380
	24	7 x 0.43	18.1	0.6	1.6	19.2	465
	2	7 x 0.53	12.1	0.6	1.2	9.0	125
	3	7 x 0.53	12.1	0.6	1.2	9.4	145
	5	7 x 0.53	12.1	0.6	1.3	11.2	200
1.5	7	7 x 0.53	12.1	0.6	1.3	12.0	240
	12	7 x 0.53	12.1	0.6	1.4	15.4	375
	19	7 x 0.53	12.1	0.6	1.5	18.0	545
	24	7 x 0.53	12.1	0.6	1.6	21.0	670

<sup>\*</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

#### **PE Insulation**

Single Pair, Collective Screen of Tinned Copper Wire Braid.

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

## **Engineering Specification:**

Standard: BS 5308-1.

## **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethelene, type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form a pair wrapped by Polyester Tapes.

#### **Colour Code:**

Black / White.

#### Screen:

Collective screen of Aluminium polyester tapes and tinned Copper wire braid with coverage from 60% up to 80 % and wrapped by polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $7.5 \times d (d = overall diameter).$ 

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

	Cable	Con	ductor	Nominal	Nominal	Approximate	Approximate Net Weight	
	Size	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter		
	mm²	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km	
	1 x 2 x 0.5	7 x 0.3	39.2	0.6	0.8	6.3	40	
	1 x 2 x 0.75	7 x 0.37	24.6	0.6	0.8	6.6	46	
	1 x 2 x 1.0	7 x 0.43	18.4	0.6	0.8	7.0	53	
	1 x 2 x 1.3	7 x 0.49	14.2	0.6	0.9	7.6	65	
	1 x 2 x 1.5	7 x 0.53	12.6	0.6	0.9	8.2	73	

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

#### **PE Insulation**

Multipairs, Layers, Overall Screen of Tinned Copper Wire Braid.

#### **Application:**

These cables are used in the chemical and petrochemical industries for the transmission of analog and digital signals for measurements and process control purposes.

#### **Engineering Specification:**

Standard: BS 5308-1.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain annealed Copper.

#### **Insulation:**

Polyethylene, type 03 to BS 6234.

#### **Assembly:**

Cores twisted to form pairs, twisted pairs in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black, / White / Continuously numbered, or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium polyester tapes and tinned copper wire braid with coverage from 60% up to 80 % and wrapped by polyester tapes.

#### Sheath:

Polyvinylchloride TM1 to BS 6746, colour Black or Blue.

#### Minimum bending radius:

 $7.5 \times d$  (d = overall diameter).

#### **Temperature rating:**

+ 5 °C up to + 50 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Cond	ductor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.0	9.3	95
	4	7 x 0.3	39.2	0.6	1.0	10.0	115
	6	7 x 0.3	39.2	0.6	1.2	12.3	175
0.5	8	7 x 0.3	39.2	0.6	1.2	13.2	190
	10	7 x 0.3	39.2	0.6	1.2	14.5	220
	12	7 x 0.3	39.2	0.6	1.2	15.0	250
	2	7 x 0.37	24.6	0.6	1.0	10.1	120
	4	7 x 0.37	24.6	0.6	1.0	10.8	134
	6	7 x 0.37	24.6	0.6	1.2	13.8	220
0.75	8	7 x 0.37	24.6	0.6	1.2	14.3	230
	10	7 x 0.37	24.6	0.6	1.2	15.8	275
	12	7 x 0.37	24.6	0.6	1.2	16.3	320

**PE Insulation** Multipairs, Layers, Overall Screen of Plain or Tinned Copper Wire Braid.

Conductor	Number	Cond	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.0	10.8	135
	4	7 x 0.43	18.4	0.6	1.0	11.6	160
	6	7 x 0.43	18.4	0.6	1.2	12.8	255
1.0	8	7 x 0.43	18.4	0.6	1.2	15.4	280
	10	7 x 0.43	18.4	0.6	1.3	17.2	345
	12	7 x 0.43	18.4	0.6	1.3	17.8	400
	2	7 x 0.49	14.2	0.6	1.0	11.4	165
	4	7 x 0.49	14.2	0.6	1.2	13.5	195
	6	7 x 0.49	14.2	0.6	1.3	14.7	260
1.3	8	7 x 0.49	14.2	0.6	1.3	16.6	340
	10	7 x 0.49	14.2	0.6	1.3	18.1	410
	12	7 x 0.49	14.2	0.6	1.3	20.2	480
	2	7 x 0.53	12.6	0.6	1.2	12.9	195
	4	7 x 0.53	12.6	0.6	1.2	14.1	230
	6	7 x 0.53	12.6	0.6	1.3	17.8	390
1.5	8	7 x 0.53	12.6	0.6	1.3	18.6	405
	10	7 x 0.53	12.6	0.6	1.3	20.6	490
	12	7 x 0.53	12.6	0.6	1.3	21.3	564

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

# FIRE RESISTANT AND FIRE ALARM CABLES

# **B. FIRE RESISTANT & FIRE ALARM CABLES**

Fire Resistant, Multicores, Layers. Collective Screen.

Fire Resistant, Multipairs, Layers, Collective Screen.

Fire Resistant, Multipairs, Layers, Individual and Collective Screen.

Fire Alarm, PVC Insulation, Multicores Cables, Unscreened.

Fire Alarm, PVC Insulation, Multipairs, Layers, Collective Screen.

# **B. FIRE RESISTANT CABLES**

#### **Multicores, Layers, Collective Screen**

#### **Application:**

These cables are used in fire fighting alarm systems in hazardous area where the safety is highly required during fire condition .

#### **Engineering Specification:**

Standard: IEC 60502.

#### **Rated Voltage:**

600/1000 V.

#### **Conductor:**

Stranded Plain / Tinned annealed Copper.

#### Insulation:

Flame barrier mica tape , cross-linked Polyethylene .

#### Assembly:

Cores twisted together in concentric layers and wrapped by Polyester tapes .

#### **Colour Code:**

Black, continuously numbered.

#### Screen:

Collective screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes .

#### Sheath:

Halogen free, low smoke thermoplastic material, red colour .

#### Minimum bending radius:

 $6 \times d$  (d = overall diameter).

#### **Temperature rating:**

750 °C according to IE 60331.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	ductor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.52	12.1	0.7	1.8	10.5	115
	5	7 x 0.52	12.1	0.7	1.8	12.8	204
	7	7 x 0.52	12.1	0.7	1.8	13.8	212
	10	7 x 0.52	12.1	0.7	1.8	17.2	352
1.5	12	7 x 0.52	12.1	0.7	1.8	17.8	402
	19	7 x 0.52	12.1	0.7	1.8	20.6	582
	24	7 x 0.52	12.1	0.7	1.8	23.9	720
	30	7 x 0.52	12.1	0.7	1.8	25.3	870
	37	7 x 0.52	12.1	0.7	1.8	27.3	1040
	2	7 x 0.67	7.41	0.7	1.8	11.4	146
	5	7 x 0.67	7.41	0.7	1.8	14.1	260
	7	7 x 0.67	7.41	0.7	1.8	15.2	325
	10	7 x 0.67	7.41	0.7	1.8	19.0	435
2.5	12	7 x 0.67	7.41	0.7	1.8	19.6	500
	19	7 x 0.67	7.41	0.7	1.8	22.8	700
	24	7 x 0.67	7.41	0.7	1.8	26.6	860
	30	7 x 0.67	7.41	0.7	1.9	28.4	1040
	37	7 x 0.67	7.41	0.7	1.9	30.1	1250

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

<sup>•</sup>We can meet all other standard as BS 5308 and IEC 60502 .

# **B. FIRE RESISTANT CABLES**

#### **Multipairs, Layers, Collective Screen**

#### **Application:**

These cables are used in fire fighting alarm systems in hazardous area where the safety is highly required during fire condition .

#### **Engineering Specification:**

Standard: BS - 5308.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain / Tinned annealed Copper.

#### Insulation:

Flame barrier mica tape , cross-linked Polyethylene .

#### Assembly:

Cores twisted to from pairs , pairs twisted In concentric layers and wrapped by Polyester tapes .

#### **Colour Code:**

Black/ White continuously numbered or identification tapes numbered .

#### Screen:

Collective screen of Aluminium Polyester tape with tinned drain wire and wrapped by Polyester tapes .

#### Sheath:

Halogen free , low smoke thermoplastic material , red colour .

#### Minimum bending radius:

 $6 \times d$  (d = overall diameter).

#### **Temperature rating:**

750 °C according to IE 60331.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.2	11.1	98
	4	7 x 0.3	39.2	0.6	1.2	12.8	145
	6	7 x 0.3	39.2	0.6	1.2	15.3	200
	8	7 x 0.3	39.2	0.6	1.3	17.0	270
	10	7 x 0.3	39.2	0.6	1.3	18.8	310
0.5	12	7 x 0.3	39.2	0.6	1.4	19.9	355
	16	7 x 0.3	39.2	0.6	1.4	22.5	454
	20	7 x 0.3	39.2	0.6	1.5	25.0	560
	24	7 x 0.3	39.2	0.6	1.5	27.1	650
	30	7 x 0.3	39.2	0.6	1.6	30.1	800
	2	7 x 0.37	24.6	0.6	1.2	11.8	110
	4	7 x 0.37	24.6	0.6	1.2	13.7	175
	6	7 x 0.37	24.6	0.6	1.3	16.6	245
	8	7 x 0.37	24.6	0.6	1.3	17.7	305
	10	7 x 0.37	24.6	0.6	1.3	20.1	370
0.75	12	7 x 0.37	24.6	0.6	1.4	21.3	435
	16	7 x 0.37	24.6	0.6	1.4	24.1	555
	20	7 x 0.37	24.6	0.6	1.5	26.8	685
	24	7 x 0.37	24.6	0.6	1.5	29.1	800
	30	7 x 0.37	24.6	0.6	1.6	32.3	990

# **FIRE RESISTANT CABLES**

Multipairs, Layers, Collective Screen.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.2	12.4	127
	4	7 x 0.43	18.4	0.6	1.3	14.6	205
	6	7 x 0.43	18.4	0.6	1.3	17.5	285
	8	7 x 0.43	18.4	0.6	1.3	18.7	355
	10	7 x 0.43	18.4	0.6	1.3	21.3	435
1.0	12	7 x 0.43	18.4	0.6	1.4	22.5	510
	16	7 x 0.43	18.4	0.6	1.5	25.7	685
	20	7 x 0.43	18.4	0.6	1.6	28.6	820
	24	7 x 0.43	18.4	0.6	1.6	31.0	962
	30	7 x 0.43	18.4	0.6	1.7	34.5	1185
	2	7 x 0.53	12.6	0.6	1.2	13.3	155
	4	7 x 0.53	12.6	0.6	1.3	15.8	258
	6	7 x 0.53	12.6	0.6	1.3	19.0	360
	8	7 x 0.53	12.6	0.6	1.3	20.3	455
	10	7 x 0.53	12.6	0.6	1.3	23.2	555
1.5	12	7 x 0.53	12.6	0.6	1.4	24.5	660
	16	7 x 0.53	12.6	0.6	1.5	28.1	860
	20	7 x 0.53	12.6	0.6	1.6	31.2	1060
	24	7 x 0.53	12.6	0.6	1.7	34.1	1290
	30	7 x 0.53	12.6	0.6	1.7	37.7	1550

<sup>•</sup> The above data are approximate and subject to normal manufacturing tolerance.
• Other Types can be provided on specific request.
• We can meet all other standard as BS 5308 and IEC 60502.

# **FIRE RESISTANT CABLES**

#### Multipairs, Layers, Individual and Collective Screen.

#### **Application:**

These cables are used in fire fighting alarm systems in hazardous area where the safety is highly required during fire condition.

#### **Engineering Specification:**

Standard: BS-5308.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Plain /Tinned annealed Copper.

#### Insulation

Flame barrier mica tape, cross-linked Polyethylene.

#### **Assembly:**

Cores twisted to form pairs, pairs Screened by Aluminium Polyester tapes, screened pairs twisted in concentric layers and wrapped by Polyester tapes.

#### **Colour Code:**

Black/White continuously numbered, or Identification tapes numbered.

#### Screen:

Collective screen of Aluminium Polyester tape with tinned drain wire and wrapped by polyester tapes.

#### Sheath:

Halogen free, low smoke thermoplastic material, red colour.

#### Minimum bending radius:

 $6 \times d (d = overall diameter)$ .

#### **Temperature rating:**

750 °C According to IEC 60331.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	ductor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.3	39.2	0.6	1.2	11.8	110
	4	7 x 0.3	39.2	0.6	1.2	13.7	170
	6	7 x 0.3	39.2	0.6	1.2	16.4	234
	8	7 x 0.3	39.2	0.6	1.3	17.7	296
	10	7 x 0.3	39.2	0.6	1.3	20.1	360
0.5	12	7 x 0.3	39.2	0.6	1.4	21.3	425
	16	7 x 0.3	39.2	0.6	1.4	24.1	540
	20	7 x 0.3	39.2	0.6	1.5	26.8	670
	24	7 x 0.3	39.2	0.6	1.5	29.1	780
	30	7 x 0.3	39.2	0.6	1.6	32.3	960
	2	7 x 0.37	24.6	0.6	1.2	12.5	126
	4	7 x 0.37	24.6	0.6	1.2	14.5	200
	6	7 x 0.37	24.6	0.6	1.3	17.7	285
	8	7 x 0.37	24.6	0.6	1.3	18.8	350
	10	7 x 0.37	24.6	0.6	1.3	21.5	430
0.75	12	7 x 0.37	24.6	0.6	1.4	22.7	505
	16	7 x 0.37	24.6	0.6	1.4	25.8	650
	20	7 x 0.37	24.6	0.6	1.5	28.7	800
	24	7 x 0.37	24.6	0.6	1.5	31.1	935
	30	7 x 0.37	24.6	0.6	1.6	34.6	1155

# **FIRE RESISTANT CABLES**

Multipairs, Layers, Individual and Collective Screen.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.4	0.6	1.2	13.1	142
	4	7 x 0.43	18.4	0.6	1.3	15.5	230
	6	7 x 0.43	18.4	0.6	1.3	18.6	325
	8	7 x 0.43	18.4	0.6	1.3	19.8	405
	10	7 x 0.43	18.4	0.6	1.3	22.6	490
1.0	12	7 x 0.43	18.4	0.6	1.4	23.9	585
	16	7 x 0.43	18.4	0.6	1.5	27.4	760
	20	7 x 0.43	18.4	0.6	1.6	30.4	940
	24	7 x 0.43	18.4	0.6	1.6	33.0	1100
	30	7 x 0.43	18.4	0.6	1.7	36.7	1360
	2	7 x 0.53	12.6	0.6	1.2	14.0	166
	4	7 x 0.53	12.6	0.6	1.3	16.7	286
	6	7 x 0.53	12.6	0.6	1.3	20.1	400
	8	7 x 0.53	12.6	0.6	1.3	21.5	505
	10	7 x 0.53	12.6	0.6	1.3	24.5	620
1.5	12	7 x 0.53	12.6	0.6	1.4	26.0	735
	16	7 x 0.53	12.6	0.6	1.5	29.7	960
	20	7 x 0.53	12.6	0.6	1.6	33.0	1185
	24	7 x 0.53	12.6	0.6	1.7	36.1	1410
	30	7 x 0.53	12.6	0.6	1.7	40.0	1725

<sup>•</sup> The above data are approximate and subject to normal manufacturing tolerance.
• Other Types can be provided on specific request.
• We can meet all other standard as BS 5308 and IEC 60502.

# **FIRE ALARM CABLES**

#### **PVC Insulation**

**Multicores Cables, Unscreened** 

#### **Application:**

These cables are used for communication and signalling in fire alarm systems.

#### **Engineering Specification:**

Standard: BS-5308.

#### **Rated Voltage:**

300/500 V.

#### **Conductor:**

Stranded Annealed Plain Copper.

#### **Insulation:**

Polyvinylchloride rated for 105 °C.

#### **Assembly:**

Cores twisted together in concentric layers.

#### **Colour Code:**

Two core:

Red, Black.

#### Three core:

Red, Yellow, Blue.

#### Four core:

Red, Yellow, Blue, Black.

#### Sheath:

Flame retardant polyvinylchloride, red coloured.

#### Minimum bending radius:

 $7.5 \times d$  (d = overall diameter).

#### Packing:

On non-returnable wooden drums.

Conductor	Number of Triples	Conductor		Nominal	Nominal	Approximate	Approximate
Size		No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.43	18.1	0.6	0.8	6.6	65
1.0	3	7 x 0.43	18.1	0.6	0.8	7.0	79
	4	7 x 0.43	18.1	0.6	0.8	7.6	98
1.5	2	7 x 0.52	12.1	0.6	0.8	7.1	81
	3	7 x 0.52	12.1	0.6	0.9	7.8	103
	4	7 x 0.52	12.1	0.6	0.9	8.5	128

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

# **FIRE ALARM CABLES**

#### **PVC Insulation**

Multipairs, Layers, Collective screen.

#### **Application:**

These cables are used for communication and signalling in fire alarm systems.

#### **Engineering Specification:**

Standard: BS-5308. **Rated Voltage:** 300/500 V.

#### **Conductor:**

Stranded Annealed Plain Copper.

#### **Insulation:**

Polyvinylchloride rated for 105 °C.

#### **Assembly:**

Cores twisted to form pairs, twisted pairs in concentric layers and wrapped by polyester tapes.

#### **Colour Code:**

Red, Black., continuously numbered, or identification tapes numbered.

#### Screen:

Collective screen of aluminium polyester tape with tinned drain wire and wrapped by polyester tapes.

#### Sheath:

Flame retardant polyvinylchloride, red coloured.

#### Minimum bending radius:

 $7.5 \times d$  (d=overall diameter).

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conductor		Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	2	7 x 0.53	12.6	0.6	1.2	12.0	155
	4	7 x 0.53	12.6	0.6	1.2	14.0	253
	8	7 x 0.53	12.6	0.6	1.3	18.1	457
	12	7 x 0.53	12.6	0.6	1.3	21.6	652
1.5	16	7 x 0.53	12.6	0.6	1.5	24.7	860
	20	7 x 0.53	12.6	0.6	1.5	27.5	1058
	24	7 x 0.53	12.6	0.6	1.7	30.2	1270
	30	7 x 0.53	12.6	0.6	2.0	33.9	1600

<sup>\*</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.





# **C - CONTROL CABLES**

Solid copper conductors, PVC Insulation, PVC Sheathed

Stranded copper conductors, PVC Insulation, PVC Sheathed

Stranded copper conductors, PVC Insulation, Copper tape screened, PVC Sheathed

Stranded copper conductors, PVC Insulation, steel tape armoured, PVC Sheathed

Stranded copper conductors, PVC Insulation, Steel wire armoured, PVC Sheathed

# Stranded Copper Conductors PVC Insulation, PVC Sheathed.

#### **Application:**

For outdoor and indoor installations in damp and wet locations, connecting signalling and control units in industry, in railways, in traffic signals, in Thermopower and Hydropower stations. They are laid in air, in ducts, in trenches, in steel support

brackets or direct in ground, when well protected.

#### **Engineering Specification:**

Standard: IEC - 60502.

#### **Rated Voltage:**

600/1000 V.

#### **Conductor:**

Soft annealed stranded Copper wires as per class 2 of IEC 60228.

#### **Insulation:**

Polyvinylchoride rated 70 °C or 85 °C.

#### Assembly:

Cores twisted together to form a round assembly cable with fillers whenever necessary.

#### **Colour Code:**

Black cores with white numbers and one green yellow core.

#### Sheath:

Flame retardant Polyvinylchoride, Black or Gray colour.

#### Minimum bending radius:

 $15 \times d (d = overall diameter)$  for fixed installation.

#### **Temperature rating:**

+ 5 °C up to + 60 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	5	7 x 0.52	12.1	0.8	1.8	12.3	215
	7	7 x 0.52	12.1	0.8	1.8	13.3	265
	10	7 x 0.52	12.1	0.8	1.8	16.5	360
	12	7 x 0.52	12.1	0.8	1.8	17.0	410
1.5	14	7 x 0.52	12.1	0.8	1.8	17.8	465
	16	7 x 0.52	12.1	0.8	1.8	18.7	530
	19	7 x 0.52	12.1	0.8	1.8	19.7	600
	24	7 x 0.52	12.1	0.8	1.8	22.9	740
	30	7 x 0.52	12.1	0.8	1.8	24.2	890
	37	7 x 0.52	12.1	0.8	1.8	26.1	1070
	44	7 x 0.52	12.1	0.8	1.9	30.2	1295

#### **Stranded Copper Conductors PVC Insulation, PVC Sheathed.**

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	5	7 x 0.67	7.41	0.8	1.8	13.4	275
	7	7 x 0.67	7.41	0.8	1.8	14.5	350
	10	7 x 0.67	7.41	0.8	1.8	18.1	480
	12	7 x 0.67	7.41	0.8	1.8	18.7	555
	14	7 x 0.67	7.41	0.8	1.8	19.6	630
2.5	16	7 x 0.67	7.41	0.8	1.8	20.6	710
	19	7 x 0.67	7.41	0.8	1.8	21.7	820
	24	7 x 0.67	7.41	0.8	1.8	25.3	1020
	30	7 x 0.67	7.41	0.8	1.8	26.3	1235
	37	7 x 0.67	7.41	0.8	1.9	28.9	1495
	44	7 x 0.67	7.41	0.8	2.0	33.5	1800
	5	7 x 0.85	4.61	1.0	1.8	16.1	440
	7	7 x 0.85	4.61	1.0	1.8	17.4	520
	10	7 x 0.85	4.61	1.0	1.8	22.0	720
	12	7 x 0.85	4.61	1.0	1.8	22.7	840
	14	7 x 0.85	4.61	1.0	1.8	23.9	950
4.0	16	7 x 0.85	4.61	1.0	1.8	25.2	1070
	19	7 x 0.85	4.61	1.0	1.9	26.6	1260
	24	7 x 0.85	4.61	1.0	2.0	31.4	1580
	30	7 x 0.85	4.61	1.0	2.1	33.5	1965
	37	7 x 0.85	4.61	1.0	2.2	36.2	2510

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

#### Stranded Copper Conductors PVC Insulation, Copper Tape Screened, PVC Sheathed

#### **Application:**

For outdoor installations in damp and wet locations, connecting signalling and control units in industry, in railways, in traffic signals, in Thermopower and Hydropower stations, where electrical interference could alter signal transmissions. They are laid in air, in ducts, in trenches, in steel support brackets or direct in ground, when well protected.

#### **Engineering Specification:**

Standard: IEC - 60502.

#### **Rated Voltage:**

600/1000 V.

#### **Conductor:**

Soft annealed stranded Copper wires as per class 2 of I EC 60228.

#### Insulation:

Polyvinylchoride rated 70 °C or 85 °C.

#### Assembly:

Cores twisted together to form a round assembly cable with fillers whenever necessary.

#### **Colour Code:**

Black cores with white numbers and one green yellow core.

#### **Bedding:**

Polyvinylchoride rated 70 °C.

#### Screen:

Copper Tape helically applied over the bedding.

#### Sheath:

Flame retardant Polyvinylchoride, Black or Gray colour.

#### Minimum bending radius:

 $15 \times d$  (d = overall diameter) for fixed installation.

#### **Temperature rating:**

+ 5 °C up to + 60 °C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	5	7 x 0.52	12.1	0.8	1.8	15.3	340
	7	7 x 0.52	12.1	0.8	1.8	15.7	370
	10	7 x 0.52	12.1	0.8	1.8	18.9	495
	12	7 x 0.52	12.1	0.8	1.8	19.4	550
1.5	14	7 x 0.52	12.1	0.8	1.8	20.2	610
	16	7 x 0.52	12.1	0.8	1.8	21.1	670
	19	7 x 0.52	12.1	0.8	1.8	22.1	760
	24	7 x 0.52	12.1	0.8	1.8	25.3	930
	30	7 x 0.52	12.1	0.8	1.8	27.5	1115
	37	7 x 0.52	12.1	0.8	1.9	28.5	1290
	44	7 x 0.52	12.1	0.8	2.0	31.0	1500

#### **Stranded Copper Conductors** PVC Insulation, Copper Tape Screened, PVC Sheathed

Conductor	Number	Conc	luctor	Nominal	Nominal	Approximate	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	5	7 x 0.67	7.41	0.8	1.8	15.8	390
	7	7 x 0.67	7.41	0.8	1.8	16.9	470
	10	7 x 0.67	7.41	0.8	1.8	20.5	630
	12	7 x 0.67	7.41	0.8	1.8	21.1	710
	14	7 x 0.67	7.41	0.8	1.8	22.0	800
2.5	16	7 x 0.67	7.41	0.8	1.8	23.0	875
	19	7 x 0.67	7.41	0.8	1.8	24.1	1000
	24	7 x 0.67	7.41	0.8	1.8	27.7	1225
	30	7 x 0.67	7.41	0.8	1.9	29.8	1470
	37	7 x 0.67	7.41	0.8	2.0	31.5	1750
	44	7 x 0.67	7.41	0.8	2.1	35.7	2140
	5	7 x 0.85	4.61	1.0	1.8	18.5	540
	7	7 x 0.85	4.61	1.0	1.8	19.5	670
	10	7 x 0.85	4.61	1.0	1.8	24.4	850
	12	7 x 0.85	4.61	1.0	1.8	25.2	980
	14	7 x 0.85	4.61	1.0	1.8	26.3	1160
4.0	16	7 x 0.85	4.61	1.0	1.9	27.6	1310
	19	7 x 0.85	4.61	1.0	2.1	29.0	1520
	24	7 x 0.85	4.61	1.0	2.2	33.8	1900
	30	7 x 0.85	4.61	1.0	2.3	35.9	2350
	37	7 x 0.85	4.61	1.0	2.4	38.8	2970

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

# Stranded Copper Conductors PVC Insulation, steel Tape Armoured , PVC Sheathed

#### **Application:**

For outdoor installations in damp and wet locations, laid Direct in the ground, where mechanical damages are expected to occur. They are normally used in connecting signalling and control units in industry, in railways, in traffic signals, in Thermopower and Hydropower stations.

#### **Engineering Specification:**

Standard: IEC - 60502.

#### **Rated Voltage:**

600/1000 V.

#### Conductor:

Soft annealed stranded Copper wires as per class 2 of IEC 60228.

#### **Insulation:**

Polyvinylchoride rated 70 °C or 85 °C.

#### Assembly:

Cores twisted together to form a round assembly cable with fillers whenever necessary.

#### **Colour Code:**

Black cores with white numbers and one green yellow core.

#### **Bedding:**

Polyvinylchoride rated 70 °C.

#### **Armouring:**

double layers of steel tapes are applied helically.

#### Sheath

Flame retardant Polyvinylchoride, Black or Gray colour.

#### Minimum bending radius:

 $15 \times d$  (d = overall diameter) for fixed installation.

#### **Temperature rating:**

+ 5 °C up to + 60°C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number	Co	onductor	Nominal	Steel	Nominal	Approximate	Approximate
Size	of Cores	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	wire diameter		Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	5	7 x 0.52	12.1	0.8	0.2	1.8	14.6	350
	7	7 x 0.52	12.1	0.8	0.2	1.8	17.0	430
	10	7 x 0.52	12.1	0.8	0.2	1.8	19.3	570
	12	7 x 0.52	12.1	0.8	0.2	1.8	19.8	625
	14	7 x 0.52	12.1	0.8	0.2	1.8	20.6	690
1.5	16	7 x 0.52	12.1	0.8	0.2	1.8	21.5	800
	19	7 x 0.52	12.1	0.8	0.2	1.8	22.5	850
	24	7 x 0.52	12.1	0.8	0.2	1.8	25.7	1030
	30	7 x 0.52	12.1	0.8	0.2	1.8	27.3	1285
	37	7 x 0.52	12.1	0.8	0.2	1.8	28.9	1400
	44	7 x 0.52	12.1	0.8	0.2	1.9	31.0	1800

**Stranded Copper Conductors PVC Insulation, steel Tape Armoured, PVC Sheathed.** 

Conductor		C	onductor	Nominal	Steel		Approximate	Approximate
Size		No.xdia.	Max. DC Res. at 20°C	Insulation Thickness		Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	5	$7 \times 0.67$	7.41	0.8	0.2	1.8	16.2	440
	7	7 x 0.67	7.41	0.8	0.2	1.8	17.3	530
	10	7 x 0.67	7.41	0.8	0.2	1.8	20.9	710
	12	7 x 0.67	7.41	0.8	0.2	1.8	21.5	790
	14	7 x 0.67	7.41	0.8	0.2	1.8	22.4	880
2.5	16	7 x 0.67	7.41	0.8	0.2	1.8	23.4	970
	19	7 x 0.67	7.41	0.8	0.2	1.8	24.5	1090
	24	7 x 0.67	7.41	0.8	0.2	1.8	28.1	1140
	30	7 x 0.67	7.41	0.8	0.2	1.9	27.3	1630
	37	7 x 0.67	7.41	0.8	0.2	1.9	31.9	1875
	44	7 x 0.67	7.41	0.8	0.5	2.1	36.0	2500
	5	7 x 0.85	4.61	1.0	0.2	1.8	18.9	660
	7	7 x 0.85	4.61	1.0	0.2	1.8	20.3	740
	10	7 x 0.85	4.61	1.0	0.2	1.8	24.9	960
	12	7 x 0.85	4.61	1.0	0.2	1.8	25.6	1120
	14	7 x 0.85	4.61	1.0	0.2	1.8	26.7	1270
4.0	16	7 x 0.85	4.61	1.0	0.2	1.8	28.0	1390
	19	7 x 0.85	4.61	1.0	0.2	1.8	29.4	1610
	24	7 x 0.85	4.61	1.0	0.2	2.0	34.4	2030
	30	7 x 0.85	4.61	1.0	0.2	2.1	36.5	2660
	37	7 x 0.85	4.61	1.0	0.5	2.2	39.4	3250

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

# Stranded Copper Conductors PVC Insulation, steel wire Armoured , PVC Sheathed

#### **Application:**

For outdoor installations in damp and wet locations, laid Direct in the ground, where mechanical damages are expected to occur . They are normally used in connecting signalling and control units in industry, in railways, in traffic signals, in Thermopower and Hydropower stations.

#### **Engineering Specification:**

Standard: IEC - 60502.

# Rated Voltage:

600/1000 V.

#### Conductor:

Soft annealed stranded Copper wires as per class 2 of IEC 60228.

#### **Insulation:**

Polyvinylchoride rated 70 °C or 85 °C.

#### **Assembly:**

Cores twisted together to form a round assembly cable with fillers whenever necessary.

#### **Colour Code:**

Black cores with white numbers and one green yellow core.

#### **Bedding:**

Polyvinylchoride rated 70 °C.

#### **Armouring:**

Single layer of steel wire are applied helically.

#### Sheath

Flame retardant Polyvinylchoride, Black or Gray colour.

#### Minimum bending radius:

 $15 \times d$  (d = overall diameter) for fixed installation.

#### **Temperature rating:**

+ 5 °C up to + 60°C during operation.

#### Packing:

On non-returnable wooden drums.

Conductor	Number of Cores	C	onductor	Nominal	Steel	Nominal	Approximate	Approximate
Size		No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	wire diameter			Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	5	$7 \times 0.52$	12.1	0.8	0.8	1.8	16.6	500
	7	7 x 0.52	12.1	0.8	0.8	1.8	18.0	550
	10	7 x 0.52	12.1	0.8	0.8	1.8	21.0	770
	12	7 x 0.52	12.1	0.8	1.6	1.8	23.3	1080
	14	7 x 0.52	12.1	0.8	1.6	1.8	24.2	1140
1.5	16	7 x 0.52	12.1	0.8	1.6	1.8	25.0	1260
	19	7 x 0.52	12.1	0.8	1.6	1.8	26.0	1370
	24	7 x 0.52	12.1	0.8	1.6	1.8	28.9	1620
	30	7 x 0.52	12.1	0.8	1.6	1.8	31.0	1850
	37	7 x 0.52	12.1	0.8	1.6	1.9	34.0	2250
	44	7 x 0.52	12.1	0.8	2.0	2.0	37.3	2560

#### **Stranded Copper Conductors PVC Insulation, steel wire Armoured, PVC Sheathed**

Conductor	Number	C	onductor	Nominal	Steel		Approximate	Approximate
Size	ize of Cores No.xdia. Res. at 20		Max. DC Res. at 20°C	Insulation Thickness		Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No.	No. x mm	Ohm/Km	Mm	Mm	mm	mm	Kg/km
	5	7 x 0.67	7.41	0.8	0.8	1.8	17.8	600
	7	7 x 0.67	7.41	0.8	0.8	1.8	19.2	660
	10	7 x 0.67	7.41	0.8	1.6	1.8	23.8	1160
	12	7 x 0.67	7.41	0.8	1.6	1.8	25.0	1280
	14	7 x 0.67	7.41	0.8	1.6	1.8	26.0	1390
2.5	16	7 x 0.67	7.41	0.8	1.6	1.8	27.0	1510
	19	7 x 0.67	7.41	0.8	1.6	1.9	28.3	1670
	24	7 x 0.67	7.41	0.8	1.6	1.9	31.4	2030
	30	7 x 0.67	7.41	0.8	1.6	1.9	34.5	2450
	37	7 x 0.67	7.41	0.8	1.6	2.0	37.4	2870
	44	7 x 0.67	7.41	0.8	2.0	2.1	40.5	3280
	5	7 x 0.85	4.61	1.0	1.6	1.8	20.8	780
	7	7 x 0.85	4.61	1.0	1.6	1.8	23.5	1190
	10	7 x 0.85	4.61	1.0	1.6	1.8	27.2	1510
	12	7 x 0.85	4.61	1.0	1.6	1.8	29.0	1700
	14	7 x 0.85	4.61	1.0	1.6	1.8	30.0	1850
4.0	16	7 x 0.85	4.61	1.0	1.6	1.9	31.6	2040
	19	7 x 0.85	4.61	1.0	1.6	1.9	33.0	2260
	24	7 x 0.85	4.61	1.0	2.0	2.1	38.4	3070
	30	7 x 0.85	4.61	1.0	2.0	2.1	41.3	3560
	37	7 x 0.85	4.61	1.0	2.0	2.2	43.2	4120

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

# **D-LAN AND TELEPHONE CABLES**

Unscreened Twisted Pairs (UTP), Data Cable - Category 5e

Foil Screened Twisted Pairs (STP), Data Cable - Category 5e

Unscreened Twisted Pairs (UTP), Data Cable - Category 6

Shielded, shielded Twisted Pairs (SSTP), Data Cable - Category 7

Telephone Cable, PVC Insulated Multipairs

#### **Unscreened Twisted Pairs (UTP) Data Cable - Category 5e**

#### **Application:**

The Cable is used for Local Area Computer Networks Mainly in office or

business environments.

#### **Engineering Specification:**

Type: UTP - Cat. 5e.

Standard: TIA / EIA 568 A, ISO / IEC 11801.

#### **Conductor:**

24 AWG (0.528 mm) Solid bare conductor.

#### **Insulation:**

Solid Polyethylene, Diameter 0.95 mm.

2 Insulated conductors twisted together, Lay varied to minimize crosstalk.

#### Assembly:

4 pairs twisted together.

#### Sheath:

Flame retardant PVC Grey RAL 7032, 5.86 mm nominal diameter.

#### **Pair Colours:**

Pair (1): blue & white / blue Pair (2): orange & white / orange. Pair (3): green & white / green. Pair (4): brown & white / brown.

#### **Bending radius:**

8 x O.D during installation.

#### Temperature range during operation:

+5 up to +50 °C

# **TECHNICAL INFORMATION**

Frequency (MHz)	Characteristic impedance (ohms)	Maximum Attenuation (dB/100m@20°C)	Near End Cross talk Minimum	Minimum structural return loss (dB) at 100m
1	100 ± 15%	2.1	65	23
4	100 ± 15%	4.1	56	23
10	100 ± 15%	6.5	50	23
16	100 ± 15%	8.3	47	23
20	100 ± 15%	9.3	46	23
31.25	100 ± 15%	11.7	43	21
62.5	100 ± 15%	17.0	38	18
100	100 ± 15%	22.0	36	16
125	100 ± 15%	25.0	34	16

#### Packaging:

- Available in easy pull boxes of 1000 feet (305 m) capacity.
   This assures the cable will not be damaged during installation due to the "figure 8" internal coiling.
- It also enables easy, tidy storage before and during installation.

# Foil Screened Twisted Pairs (STP) Data Cable - Category 5e

#### **Application:**

The Cable is used for Local Area Computer Networks Mainly in electrically

noisy office or industrial environments.

#### **Engineering Specification:**

Type: STP - Cat. 5e.

Standard: TIA/EIA568A, ISO/ IEC 11801.

#### **Conductor:**

24 AWG (0.528mm) Solid bare conductor.

#### Insulation:

Solid Polyethylene, Diameter 1.09mm.

#### Pairs:

2 Insulated conductors twisted together, Lays varied to minimize crosstalk.

#### **Assembly:**

4 pairs twisted together.

#### Screen:

Aluminium Polyester tape and 0.5 mm plain or tinned copper drain wire.

#### Sheath:

Flame retardant PVC Grey RAL 7032, 6.72 mm nominal diameter.

#### **Pair Colours:**

Pair (1): blue & white / blue

Pair (2): orange & white / orange.

Pair (3): green & white / green.

Pair (4): brown & white / brown.

#### **Bending radius:**

8 x O.D during installation.

#### Temperature range during operation:

+5 up to +50 °C.

# **TECHNICAL INFORMATION**

Frequency (MHz)	Characteristic impedance (ohms)	Maximum Attenuation (dB/100m@20°C)	Near End Cross talk Minimum	Minimum structural return loss (dB) at 100m
0.772	-	1.8	64	-
1	100 ± 15%	2.0	62	23
4	100 ± 15%	4.1	53	23
10	100 ± 15%	6.5	47	23
16	100 ± 15%	8.2	44	23
20	100 ± 15%	9.2	42	23
31.25	100 ± 15%	11.7	39	21
62.5	100 ± 15%	17.0	35	18
100	100 ± 15%	22.0	32	16
125	100 ± 15%	25.0	32	16

#### Packaging:

• Available in easy - pull boxes of 1000 feet (305 m) capacity.

This assures the cable will not be damaged during installation due to the "figure 8" internal coiling.

It also enables easy, tidy storage before and during installation.

#### Unscreened Twisted-Pairs (UTP) Data Cable - Category 6.

#### **Application:**

The Cable is used for Local area Computer Networks where performance greater than that available from category 5 specification is required.

#### **Engineering Specification:**

Type: UTP - Cat. 6.

Standard: TIA/ EIA568A, ISO / IEC 11801.

#### **Conductor:**

23 AWG (0.575 mm) Solid bare conductor.

#### **Insulation:**

Solid Polyethylene, Diameter 0.97 mm.

#### Pairs:

2 Insulated conductors twisted together, Lay varied to minimize crosstalk.

#### **Assembly:**

4 pairs twisted together.

#### Sheath:

Flame retardant PVC Grey RAL 7032, 5.94 mm nominal diameter.

#### **Pair Colours:**

Pair (1): blue & white / blue.
Pair (2): orange & white / orange.
Pair (3): green & white / green.
Pair (4): brown & white / brown.

#### **Bending radius:**

8 x O.D during installation.

#### Temperature range during operation:

+5 up to +50 °C.

# **TECHNICAL INFORMATION**

Frequency (MHz)	Characteristic impedance (ohms)	Maximum Attenuation (dB/100m@20°C)	Near End Cross talk Minimum	ACR (dB) at 100m
1	100 ± 15%	1.9	80.0	78.0
4	100 ± 15%	3.8	74.0	70.3
10	100 ± 15%	6.0	68.0	62.2
16	100 ± 15%	7.6	64.0	56.6
20	100 ± 15%	8.6	62.2	53.8
31.25	100 ± 15%	10.9	59.0	48.6
62.5	100 ± 15%	15.8	54.0	39.2
100	100 ± 15%	20.5	50.0	31.2
125	100 ± 15%	20.9	48.0	27.1
200	100 ± 15%	27.0	42.0	15.0

Available in easy pull wooden drums of 1000 feet (305 m) capacity.

#### Shielded, Screened Twisted Pairs (SSTP) Data Cable - Category 7.

#### **Application:**

The Cable is used for Local area Computer Networks where performance greater than that available from category 6 specification is required.

#### **Engineering Specification:**

Type: SSTP - Cat. 7.

Standard: TIA / EIA 568 A.

#### **Conductor:**

0.63 mm Solid bare conductor.

#### **Insulation:**

Foamed Polyethylene, Diameter 1.55 mm Maximum.

#### Pairs:

2 Insulated conductor twisted together, Lays varied to minimize crosstalk, shielded by Aluminium Polyester tape.

#### **Drain Wire:**

0.56 mm tinned copper.

#### Assembly:

4 pairs twisted together, Shielded by 80% plain or tinned copper braiding.

#### Sheath:

Flame retardant PVC, magenta RAL 4003, 9.45 mm nominal diameter.

#### **Pair Colours:**

Pair (1): blue & white / blue Pair (2): orange & white / orange. Pair (3): green & white / green. Pair (4): brown & white / brown.

#### **Bending radius:**

8 x O.D during installation.

#### Temperature range during operation:

+5 up to +50 °C.

Frequency (MHz)	Characteristic impedance (ohms)	Maximum Attenuation (dB/100m@20°C)	Near End Cross talk Minimum	ACR (dB) at 100 m
1	100 ± 15%	2	80	78
4	100 ± 15%	3.8	80	76.2
10	100 ± 15%	6	80	74
16	100 ± 15%	7.6	80	72.4
20	100 ± 15%	8.5	80	71.5
31.25	100 ± 15%	10.6	80	69.4
62.5	100 ± 15%	15	75.3	60.3
100	100 ± 15%	19	71.1	52.1
175	100 ± 15%	25	67.3	42.3
300	100 ± 15%	33	63.7	30.7
600	100 ± 15%	50	60	10

#### **PVC Insulated Multipairs.**

#### **Application:**

This Cable is used for indoor installation and interconnection of Transmission,

Telephone, Telegraph and Electronic equipment.

#### **Engineering Specification:**

Standard: IEC-189 & TC-113.

#### **Conductor:**

Solid, Plain / Tinned Copper.

#### **Insulation:**

PVC rated 70 °C as per IEC 189.2.

#### Assembly:

Cores are twisted into pairs and pairs twisted together to form a cable core.

#### Sheath:

Polyvinylchloride as per IEC 189-2 and nylon rip cord is provided under the sheath For easy Stripping.

#### **Temperature rating:**

+5 °C to + 50 °C during operation.

# **COLOUR CODE OF INSULATION**

No. of Pairs	A Wire	B Wire	No. of Pairs	A Wire	B Wire	Unit No.	Colour of Bindings
1	White	Blue	11	Black	Blue	1	Blue
2	White	Orange	12	Black	Orange	2	Orange
3	White	Green	13	Black	Green	3	Green
4	White	Brown	14	Black	Brown	4	Brown
5	White	Grey	15	Black	Grey	5	Grey
6	Red	Blue	16	Yellow	Blue	6	White
7	Red	Orange	17	Yellow	Orange	7	Red
8	Red	Green	18	Yellow	Green	8	Black
9	Red	Brown	19	Yellow	Brown	9	Yellow
10	Red	Grey	20	Yellow	Grey	10	Violet

#### Packaging :

<sup>•</sup> Cables supplied on coils of (200 m) or in non-returnable wooden drums.

# **PVC Insulated Multipairs**

		Con	ductor	Minimum	Minimum	Approximate	
Conductor		Conc		Insulation	Sheath	Overall	Approximate
Size	of Pairs	No.xdia.	Max. DC Res. at 20°C	Thickness	Thickness	diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	1	1 x 0.4	153.0	0.15	0.6	3.0	12
	2	1 x 0.4	153.0	0.15	0.6	4.1	19
	3	1 x 0.4	153.0	0.15	0.6	4.2	23
	4	1 x 0.4	153.0	0.15	0.6	4.6	28
	5	1 x 0.4	153.0	0.15	0.6	5.0	33
	6	1 x 0.4	153.0	0.15	0.7	5.6	40
	7	1 x 0.4	153.0	0.15	0.7	5.9	44
	10	1 x 0.4	153.0	0.15	0.7	6.7	57
	15	1 x 0.4	153.0	0.15	0.7	7.9	79
	20	1 x 0.4	153.0	0.15	0.8	9.1	104
0.4	25	1 x 0.4	153.0	0.15	0.8	10.0	125
	30	1 x 0.4	153.0	0.15	0.8	10.7	143
	40	1 x 0.4	153.0	0.15	0.9	12.4	191
	50	1 x 0.4	153.0	0.15	0.9	13.6	230
	60	1 x 0.4	153.0	0.15	0.9	14.7	270
	80	1 x 0.4	153.0	0.15	1.0	16.9	355
	100	1 x 0.4	153.0	0.15	1.0	18.6	430
	200	1 x 0.4	153.0	0.15	1.4	28.0	1012
	300	1 x 0.4	153.0	0.15	1.5	33.4	1486
	400	1 x 0.4	153.0	0.15	1.6	38.4	1952
	1	1 x 0.5	97.8	0.15	0.6	3.4	6
	2	1 x 0.5	97.8	0.15	0.6	4.8	16
	3	1 x 0.5	97.8	0.15	0.6	4.9	32
	4	1 x 0.5	97.8	0.15	0.6	5.4	38
	5	1 x 0.5	97.8	0.15	0.6	5.9	45
	6	1 x 0.5	97.8	0.15	0.7	6.6	56
	7	1 x 0.5	97.8	0.15	0.7	7.0	63
	10	1 x 0.5	97.8	0.15	0.7	8.0	82
	15	1 x 0.5	97.8	0.15	0.7	9.5	114
	20	1 x 0.5	97.8	0.15	0.8	10.9	150
0.5	25	1 x 0.5	97.8	0.15	0.8	12.0	180
	30	1 x 0.5	97.8	0.15	0.9	13.2	215
	40	1 x 0.5	97.8	0.15	0.9	14.9	280
	50	1 x 0.5	97.8	0.15	0.9	16.5	340
	60	1 x 0.5	97.8	0.15	0.9	17.9	400
	80	1 x 0.5	97.8	0.15	1.0	20.5	520
	100	1 x 0.5	97.8	0.15	1.0	22.7	640
	200	1 x 0.5	97.8	0.15	1.5	30.6	1350
	300	1 x 0.5	97.8	0.15	1.6	37.0	2000

# **PVC Insulated Multipairs**

Conductor	Nivenhau	Cond	ductor	Minimum	Minimum	Approximate	Approximate
Conductor Size	Number of Pairs	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm²	No.	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
	1	1 x 0.6	67.9	0.15	0.6	3.6	19
	2	1 x 0.6	67.9	0.15	0.6	5.1	31
	3	1 x 0.6	67.9	0.15	0.6	5.2	38
	4	1 x 0.6	67.9	0.15	0.6	5.8	47
	5	1 x 0.6	67.9	0.15	0.6	6.4	57
	6	1 x 0.6	67.9	0.15	0.7	7.1	69
	7	1 x 0.6	67.9	0.15	0.7	8.7	77
	10	1 x 0.6	67.9	0.15	0.7	10.5	103
	15	1 x 0.6	67.9	0.15	0.8	12.0	150
0.6	20	1 x 0.6	67.9	0.15	0.9	13.2	195
	25	1 x 0.6	67.9	0.15	0.9	14.3	235
	30	1 x 0.6	67.9	0.15	0.9	16.2	275
	40	1 x 0.6	67.9	0.15	0.9	17.9	355
	50	1 x 0.6	67.9	0.15	0.9	19.6	430
	60	1 x 0.6	67.9	0.15	1.0	22.3	515
	80	1 x 0.6	67.9	0.15	1.0	25.1	670
	100	1 x 0.6	67.9	0.15	1.2	26.0	845
	150	1 x 0.6	67.9	0.15	1.4	26.7	1240
	200	1 x 0.6	67.9	0.15	1.5	30.71	1260
	250	1 x 0.6	67.9	0.15	1.6	34.0	2000
	1	1 x 0.8	37.5	0.25	0.7	6.4	30
	2	1 x 0.8	37.5	0.25	0.7	6.5	50
	3	1 x 0.8	37.5	0.25	0.7	7.3	62
	4	1 x 0.8	37.5	0.25	0.7	7.9	78
	5	1 x 0.8	37.5	0.25	0.7	9.0	91
	6	1 x 0.8	37.5	0.25	0.9	9.5	115
	7	1 x 0.8	37.5	0.25	0.9	11.0	128
	10	1 x 0.8	37.5	0.25	0.9	13.1	171
0.8	15	1 x 0.8	37.5	0.25	0.9	14.8	240
	20	1 x 0.8	37.5	0.25	0.9	16.5	310
	25	1 x 0.8	37.5	0.25	1.0	17.9	385
	30	1 x 0.8	37.5	0.25	1.0	20.3	450
	40	1 x 0.8	37.5	0.25	1.0	22.9	580
	50	1 x 0.8	37.5	0.25	1.2	24.8	735
	60	1 x 0.8	37.5	0.25	1.2	28.7	865
	80	1 x 0.8	37.5	0.25	1.4	31.7	1150
	100	1 x 0.8	37.5	0.25	1.4	32.5	1410

MATV Cables.
CATV Cables.
SAT Cables.
RG Cables.

#### **MATV Cables**

**Application:** 

TV Patented Coaxial Cables for satellite and digital installations.

**Engineering Specification:** 

**Conductor:** 

Solid Plain Copper.

**Insulation:** 

Cellular Foam Polyethylene.

Shield:

Aluminium polyester with tinned or plain copper braid .

Jacket:

Polyvinylchloride, white or black Colour.

Packing:

Available in easy - pull boxes 100 m or 500 m on wooden drums.

# **TECHNICAL INFORMATION**

#### **TYPE: RG-59/U MATV**

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	8.2
0.81	3.71	Tape +40%	6.16	75 ± 2%	53	82	200	11.5
		T.CU braid					400	16.1
							700	21.3

#### **TYPE: RG-11/U MATV**

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	3.9
1.63	7.25	Tape +40%	10.3	75 ± 2%	53	82	200	5.6
		T.CU braid					400	7.9
							700	11.5

#### **MATV Cables**

Type: RG-6/U MATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	6.6
1.02	4.59	Tape +40%	7.0	75 ± 2%	53	82	200	9.2
		T.CU braid					400	13.1
							700	17.4

#### Type: CF-160 MATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	6
1.14	5.1	Tape +70%	7.0	75 ± 2%	53	82	300	9
		CU braid					500	13
							800	16

# Type: CF-128 MATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	6
1.14	5.1	Tape +60%	7.0	75 ± 2%	53	82	300	9
		CU braid					500	13
							800	16

#### Type: 12C MATV

	ductor meter	Insulation Diameter	Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
n	nm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
			100% AL/PET					100	6.5
	1.1	4.9	Tape +70%	6.7	75 ± 2%	53	82	400	14.5
			CU braid					600	18
								800	21

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.



#### **CATV Cables**

#### **Application:**

Low attenuation patented coaxial cables for underground laying of distribution network, satellite broadcasting and for digital signal.

#### **Engineering Specification:**

#### **Conductor:**

Solid Plain Copper.

#### **Insulation:**

Cellular Foam Polyethylene.

#### Shield:

Aluminium polyester with tinned copper braid or copper polyester with copper braid.

#### Jacket:

Polyvinylchloride or Polyethylene, Black Colour.

#### Packing:

Available in easy - pull boxes 100 m or 500 m on wooden drums.

# **TECHNICAL INFORMATION**

#### TYPE:C-0-12A CATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	5
1.15	5.1	Tape +48%	PE/7.0	75 ± 2%	53	82	300	9
		T.CU braid					500	12
							800	15.5

#### Type: C-O-14 CATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	4
1.4	6.5	Tape +94%	PE/9.5	75 ± 2%	53	82	300	7
		T.CU braid					500	10
							800	13

#### Type: RG-11/U CATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	3.8
1.63	7.25	Tape +61%	PVC/10.3	75 ± 2%	53	82	200	5.6
		T.CU braid					400	7.9
							700	11.5

#### **CATV Cables**

Type: C-O-14R CATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Nominal Attenuation at 20 °C	
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	4
1.4	6.5	Tape +94%	PE/9.5	75 ± 2%	53	82	300	7
		CU braid					500	10
							800	13

#### Type: C-O-165R CATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	4
1.65	7.2	Tape +65%	PE/10	75 ± 2%	53	82	300	7.5
		CU braid					500	9.5
							800	12

#### Type: RG-59/U CATV

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Att	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	8.2
0.81	3.71	Tape +67%	PVC/6.16	75 ± 2%	53	82	200	11.5
		T.CU braid					400	16.1
							700	21.3

#### Type: RG-6/U CATV

Condu Diame			Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Att	ominal enuation t 20 °C
mn	n	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
			100% AL/PET					100	6.6
1.0	2	4.59	Tape +61%	PVC/7.0	75 ± 2%	53	82	200	9.2
			T.CU braid					400	13.1
								700	17.4

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.



#### **SAT Cables**

#### **Application:**

Low attenuation patented coaxial cables for satellite broadcasting and digital broadcasting.

#### **Engineering Specification:**

#### **Conductor:**

Solid Plain Copper.

#### **Insulation:**

Cellular Foam Polyethylene.

#### Shield:

Aluminium polyester with tinned copper braid.

#### Jacket:

Polyvinylchloride, White or black Colour.

#### Packing:

Available in easy - pull boxes 100 m or 500 m on wooden drums.

# **TECHNICAL INFORMATION**

#### TYPE: C-0-8 SAT

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Nominal Attenuation at 20 °C	
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	9
0.8	3.9	Tape +96%	6.2	75 ± 2%	53	82	300	15
		T.CU braid					500	19
							800	24

#### TYPE:C-0-10 SAT

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Nominal Attenuation at 20 °C	
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	5.5
1.0	4.7	Tape +48%	6.7	75 ± 2%	53	82	300	10
		T.CU braid					500	13.5
							800	18

# **COAXIAL CABLES**

# **SAT Cables**

Type: C-O-12A SAT

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	5
1.15	5.1	Tape +48%	7.0	75 ± 2%	53	82	300	9
		T.CU braid					500	12
							800	15.5

Type: C-O-12 SAT

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	5
1.15	5.1	Tape +94%	7.0	75 ± 2%	53	82	300	9
		T.CU braid					500	12
							800	15.5

Type: C-O-14 SAT

Conductor Diameter		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
		100% AL/PET					100	4
1.4	6.5	Tape +94%	9.5	75 ± 2%	53	82	300	7
		T.CU braid					500	10
							800	13

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

# **RG CABLES**

# **MATV Cables**

# **Application:**

Cables used for transmitting and receiving high frequency signals in radiofrequency devices and connections.

# **Engineering Specification:**

# **Conductor:**

Solid or stranded Plain / tinned Copper.

## **Insulation:**

Solid Polyethylene.

# Shield:

Plain or tinned copper braid.

# Jacket:

Polyvinylchloride, White or black Colour.

# Packing:

Available in easy - pull boxes 100 m or 500 m on wooden drums.

# **TECHNICAL INFORMATION**

# **TYPE: RG-58 C/U**

		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Att	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
							100	16.1
T.CU/19x0.18	2.95	96%	4.9	50 ± 2%	101	66	200	23.9
		T.CU braid					400	37.7
							700	55.8

# **TYPE: RG-58/U**

		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
							100	14.8
T.CU/1x0.82	2.95	96%	4.9	53 ± 2%	93	66	200	22.3
		T.CU braid					400	32.8
							700	45.9

# **COAXIAL CABLES**

# **RG Cables**

**TYPE: RG-216** 

		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
							100	6.6
T.CU/7x0.4	7.25	95%	10.8	75 ± 2%	67.3	66	200	9.5
		2 CU braid					400	13.8
							700	19.0

**TYPE: RG-174/U** 

		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
							100	12.0
T.CU/7x0.16	1.5	88%	2.55	50 ± 2%	99	66	200	39.5
		T.CU braid					400	58.0
							1000	99.0

TYPE: RG 8/U

		Shield Type & Coverage	Outer Diameter	Nominal Impedance	Nominal Capacitance	Nominal velocity of Propag.	Atte	ominal enuation t 20 °C
mm	mm	%	mm	Ohms	PF/m	%	MHz	dB / 100 m
							100	6.2
T.CU/7x0.74	7.16	97%	10.29	52 ± 2%	96.8	66	200	8.9
		CU braid					400	13.4
							1000	26.2

The above data are approximate and subject to normal manufacturing tolerance. Other Types can be provided on specific request.

# CONTROL CABLES

# **G-APPLIANCE CABLES AND CORDS**

Appliance Cables, flexible PVC Cables, H05VV-F.

Appliance Cables, flexible PVC Cables, H03VV-F.

Appliance Cords, Flat Cords.

Appliance cords, Round cords with double earthing system.

Appliance cords, Round cords with lateral earthing contact.

# **APPLIANCE CABLES**

# Flexible PVC Cables H05VV-F

# **Application:**

These cables can be used for domestic cooking and heating appliances provided that the cable does not come into contact with the heating elements.

# **Engineering Specification:**

Standard: BS-6500. **Rated Voltage:** 

300 / 500 V.

**Conductor:** 

Standard annealed Plain copper as per BS - 6360.

**Insulation:** 

PVC type TI - 2 as per. BS-6746.

**Colour Code:** 

Two cores: Blue, Brown.

#### Three cores:

Green/Yellow, Blue, Brown.

**Four Cores:** 

Green/Yellow, Black, Blue, Brown.

# **Assembly:**

Cores twisted together to form a round cable.

#### Sheath:

PVC type TM-2 as per BS 6746-White Colour.

# **Temperature rating:**

- 5 °C up to + 70 °C

# **TECHNICAL INFORMATION**

Conductor	Cond	ductor	Nominal	Nominal	Approximate	Approximate
Size	No.xdia.	Max. DC Res. at 20°C	Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight
mm <sup>2</sup>	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km
2 x 0.75	24 x 0.2	26.4	0.6	0.8	6.5	61
2 x 1.0	32 x 0.2	19.5	0.6	0.8	6.8	70
2 x 1.5	30 x 0.25	13.3	0.7	0.8	7.7	91
2 x 2.5	50 x 0.25	7.98	0.8	1.0	9.4	139
2 x 4	56 x 0.3	4.95	0.8	1.1	10.7	192
3 x 0.75	24 x 0.2	26.4	0.6	0.8	6.9	73
3 x 1.00	32 x 0.2	19.5	0.6	0.8	7.2	85
3 x 1.5	30 x 0.25	13.3	0.7	0.9	8.4	114
3 x 2.5	50 x 0.25	7.98	0.8	1.1	10.2	175
3 x 4	56 x 0.3	4.95	0.8	1.2	11.6	244
4 x 0.75	24 x 0.2	26.4	0.6	0.9	7.7	91
4 x 1.0	32 x 0.2	19.5	0.6	0.9	8.1	106
4 x 1.5	30 x 0.25	13.3	0.7	1.0	9.3	142
4 x 2.5	50 x 0.25	7.98	0.8	1.1	11.1	211
4 x 4	56 x 0.3	4.95	0.8	1.2	12.6	297

<sup>•</sup> The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

# **APPLIANCE CABLES**

# Flexible PVC Cables H03VV-F

# **Application:**

These cables are useful in domestic premises, kitchens, offices or light duties

for light portable appliances.

# **Engineering Specification:**

Standard: BS-6500.

# **Rated Voltage:**

300 / 300 V.

# **Conductor:**

Standard annealed Plain copper as per BS-6360.

### **Insulation:**

PVC type TI - 2 as per BS-6746.

## **Colour Cores:**

Two cores: Blue, Brown.

#### Three cores:

Green/Yellow, Blue, Brown.

## **Four Cores:**

Green/Yellow, Black, Blue, Brown.

# Assembly:

Cores twisted together to form a round cable. For flat cables, two cores are laid parallel.

## Sheath:

PVC type TM-2 as per BS-6746-White Colour.

# **Temperature range:**

-5 °C up to +70 °C.

# **TECHNICAL INFORMATION**

Conductor	Cond	ductor	Nominal	Nominal	Approximate	Approximate	
Size			Insulation Thickness	Sheath Thickness	Overall diameter	Net Weight	
mm²	No. x mm	Ohm/Km	Mm	mm	mm	Kg/km	
2 x 0.5	16 x 0.2	39.0	0.5	0.6	3.6 x 6.0	30	
2 x 0.5	16 x 0.2	39.0	0.5	0.6	5.2	40	
2 x 0.75	24 x 0.2	26.4	0.5	0.6	3.9 x 6.4	40	
2 x 0.75	24 x 0.2	26.4	0.5	0.6	5.7	49	
3 x 0.5	16 x 0.2	39.0	0.5	0.6	5.6	48	
3 x 0.75	24 x 0.2	26.4	0.5	0.6	6.0	60	
4 x 0.5	16 x 0.2	39.0	0.5	0.6	6.1	58	
4 x 0.75	24 x 0.2	26.4	0.5	0.6	6.6	72	

<sup>•</sup>The above data are approximate and subject to normal manufacturing tolerance.

Other Types can be provided on specific request.

# LAN CABLES

#### **Instrumentation Cable**

## - DC resistance of conductor:

DC resistance per unit length of the conductor at anther conductor temperature t is given by :

R= 
$$R_0$$
 [ 1 +  $\alpha_{20}$  (t-20 °C )]•

#### Where:

R = DC resistance at temperature t °C  $\Omega$ /Km. R<sub>0</sub> = DC resistance at temperature 20 °C  $\Omega$ /Km. t = conductor temperature °C.  $\alpha_{20}$  = temperature coefficient at 20 °C 1/°c.

# - AC resistance of conductor :

To calculate the AC resistance of the conductor at its operating temperature the following formula is used:

$$R_{ac} = R (1 + k_p + k_s).$$

#### Where

 $K_n$  and  $K_s$  are a proximity effect and skin effect factors.

# Inductance:

Self mutal inductance is defing as follows:

L= K + 0.2 Ln 
$$(\frac{25}{d})$$

# Where:

L = Inductance in mH/Km.

K = A constant depending on the number of wires in the conductor.

d = Conductor diameter in mm.

n = Axial spacing between cables in trefoil formation in mm.

= 1.26 x axial spacing between cables in flat formation in mm.

# Capacitance:

The mutual capacitance of the pairs or adjacent cores shall not exceed a maximum of 250 PF/m at a frequency of 1 KHz.

1- Mutual capacitance of unshielded twisted pair.

$$C = \frac{7.218\epsilon}{\log\left(\frac{1.3D}{fd}\right)}$$

2 - Mutual capacitance of shielded twisted pair.

$$C = \frac{21.14\epsilon}{\log\left(\frac{1.2D}{fd}\right)}$$

3- Mutual capacitance of overall shielded & cables.

$$C = \frac{9.515\epsilon}{\log\left(\frac{1.5D}{fd}\right)}$$

#### Where:

C: mutual capacitance in PF/m.

 $\boldsymbol{\epsilon}$  : dielectric constant of insulation material.

D : diameter over insulation in mm. d : diameter over conductor in mm.

#### L/R ratio:

The L/R ratio for adjacent cores shall not exceed the following maximum values :

Conductor	Maximum L/R ratio
mm <sup>2</sup>	μΗ/Ω
0.5	25
0.75	25
1.5	40

# Capacitance:

# Impedance Z<sub>0</sub> (ohms):

1 - Unshielded twisted Pair: 
$$Z_0 = \frac{310\sqrt{\epsilon}}{\mathit{C}}$$

2 - Shielded twisted Pair: 
$$Z_0 = \frac{276}{\sqrt{\varepsilon}} \log \left(\frac{1.2D}{f(d)}\right)$$
  $\Omega$ 

3 - overall shield & cabled : 
$$Z_0 = \frac{347}{\sqrt{\varepsilon}} \, \text{Log} \left( \frac{1.5D}{f(d)} \right)$$

## Where:

C: Mutual capacitance in PF/m.

E: Dielectric constant of insulation.

f: Stranding factor depend on no. of wires in conductor.

D: Diameter over insulation in mm.

d: Diameter over conductor in mm.

#### **Attenuation:**

The power loss in an electrical system. In cables, generally expressed in decibls (dB) per unit

length Attenuation (A) = 86.8 
$$\sqrt{\frac{RGW}{2}}$$

#### Where:

A: Attenuation in dB per 100 ft.

R: Resistance (AC)

G: Conductance

W:  $2 \pi f$  (f = test frequency MHz)

# **Velocity of Propagation:**

The speed of an electrical signal down a length of cable compared to speed in free space expressed as a percent. It is inversely proportional to the dielectric constant. Lowering the dielectric constant increases the velocity.

$$V_p = \frac{1}{\sqrt{\varepsilon}}$$
 or  $V_p = \frac{1}{\sqrt{LC}}$ 

#### Where:

ε: Dielectric constant.

L: Inductance.

C: Capacitance.

Dielectric medium or material	vp (%)
Air	100.0
Solid polyethylene	65.9
Foamed polyethylene	80.0
PVC	45.0

#### **Fire Resistant Cables**

A Cable can be described as fire resistant when it complies with the severe test in IEC 331 in which the middle portion of a sample of cable 1200 mm long is supported by two metal rings 300 mm apart and exposed to the flame from a tube type gas burner at 750°C . Simultaneously the rated voltage of the cable is applied continuously throughout the test period . Furthermore, not less than 12 hours after the flame has been extinguished, the cable is reenergized. No electrical failure must occur under these conditions.

## **Halogen Free Material:**

# What are Halogens?

Halogens are salts of the elements Fluorine, Chlorine, Bromine and Iodine.

Fluorine and Chlorine are important in cable design. For example; Fluorine, Chlorine and Bromine are common components of flame protection additives.

# When is a cable Halogen - free?

The burning behavior of cables is very important for the safety of buildings and also in control plants. Consequently the following points are important:

- Behavior under flame influence I.e., The inflammability as well as the propagation of fire.
- Development of smoke density (darkening of emergency exits, hindrance of the fire fighters). Cables produced of non halogen-free materials such as those with Chlorine in the molecule-chain: polyvinlchloride (PVC), chloroprene rubber (CR), chlorinated polyethylene (CM), have a better behavior in case of fire. These are barely combustible or not flammable and self-extinguishing. In case of fire molecules of Chlorine (or Fluorine) are released which hinder the access of oxygen at the fire location and hence suffocate the flame. The disadvantage of these materials is that the released Chlorine (or Fluorine) atoms combine with hydrogen which is decomposed from the plastic material as well as hydro Choleric acid or hydrofluoric acid from the existing air. These compounds are extremely corrosive and toxic. In consequence, damage by corrosion may be higher than the damage caused by fire.

Halogen free cables contain no halogens, I.e., the insulation and sheath materials of these cables are composed of polymers of pure hydrocarbons. Burning these materials, produce no corrosive compounds or toxic gases, only water vapor and carbon dioxide gas.

For maximum security halogen free cables must be hardly flammable and self-extinguishing. This is achieved by using special polymer compounds, containing high percentages of flame protective materials.

# **Application:**

Halogen free cables are increasingly specified for public buildings and areas where large numbers of people may be present.

#### **LAN Cables**

The necessity to communicate through digital information, to share data, to reach calculation-resources and to share costly devices has encouraged the development of local area networks. A local area network (LAN) is a computer network linking users in a small area.

Generally, a local area network connects users located either in the same office, or at the same floor, or in the same building. The success of local area networks is due to their ability to satisfy communication needs at a reasonable price. Compatibility is a critical element.

Local area networks require high-speed channels for data-transmission, permitting the transfer of large blocks of data, images, and video-signals.

The technology used in local networks can reach a transmission rate which is higher than 100 Mbps, I.e., higher than that of traditional direct connections. Moreover, the traditionally low transfer-capacity of public telecommunications is increasing.

Therefore the distinction between direct connections, local area networks and wide area networks is going to loose significance, at least as far as transmission-capacity is concerned.

The transmission media is the cable. Common media are phone-pairs, coaxial cables and purpose designed LAN cables which are essentially extremely high performance telephone pairs, sometimes provided with shielding.

This kind of shielded cable is more immune to electrical interference and permits high speed transmission over longer distances.

Pairs are still the most versatile media for transmission and are often the best choice for new network installations.

# **Maximum attenuation values of Cat 5**

# Attenuation:

The reduction in a transmitted signal as it passes through wires or equipment in an electrical circuit.

Frequency (MHz)	Maximum attenuation dB
0.1	N/A
1.0	2.5
4.0	4.8
10.0	7.5
16.0	9.4
20.0	10.5
31.25	13.1
62.5	18.4
100.0	23.2

# **Characteristic Impedance:**

The nominal differential characteristic impedance of a cabling link shall be 100  $\Omega$  at frequencies between 1 MHz and the highest specified frequency for the cabling class. The tolerance of the characteristic impedance in a given link shall not exceed the chosen nominal impedance by more than  $\pm$  15  $\Omega$ . From 1 MHz. Up to the highest specified frequency for the class.

UNITED INDUSTRIES - EL SEWEDY

# Near end crosstalk loss (NEXT):

The near-end crosstalk loss of a link shall meet or exceed the values shown in table below, and shall be consistent with the design values of cable length and cabling materials used.

Minimum next Loss of cat 5

Frequency (MHz)	Minimum crosstalk loss dB
1.0	54
4.0	45
10.0	39
16.0	36
20.0	35
31.25	32
62.5	27
100.0	24

# Attenuation To Crosstalk loss ration (ASR):

This is the difference between the crosstalk and the attenuation of the link in dB. ACR (dB) =  $a_n$  (dB) - a (dB).

# **Return Loss:**

The return loss of the cabling, measured at any interface, shall meet or exceed the values shown in the Table below :

Frequency (MHz)	Minimum crosstalk loss dB
1 < F < 10	18
10 < F < 16	15
16 < F < 20	15
20 < F < 100	10

# **Coaxial Cables**

A Cable consisting of two cylindrical conductors with a common axis, separated by a dielectric.

# **Electrical Parameters:**

1- Characteristic Impedance

$$Z_0 = \frac{138}{\sqrt{\varepsilon}} Log \left(\frac{D}{d}\right)$$

2- Velocity of Propagation :

$$V = \frac{100}{\sqrt{\varepsilon}} \%$$

3- Capacitance :

$$C = \frac{24.148 \varepsilon}{\log_{\left(\frac{D}{d}\right)}}$$

4- Inductance :

$$L = 0.459 \log \left(\frac{D}{d}\right)$$

5- Braiding Details :

Braid angle : 
$$\Phi$$
 = tan -1 ,  $\left(\frac{2\pi + (D+e)P}{C}\right)$  Degress.

Braid Picks per cm : 
$$\frac{0.394(C) \tan \Phi}{2 \pi M}$$

Braid angle : R = 
$$\frac{r}{n(C)(\cos \Phi)}$$

$$\Omega$$
 /Km.

#### Where:

- D = diameter under shield in m
- d = conductor diameter in mm.
- $\varepsilon$  = dielectric constant of insulation.
- = 1.56 cellular polyethylene.
- = 2.26 solid polyethylene.
- C = number of carriers.
- n = number of wires in one carrier.
- M = D + build of braid on one shield wall in mm.
- e = diameter of each wire in mm.
- R = DC resistance of the braid in ohm/Km.
- r = DC resistance of each wire in ohm/Km.
- P = picks per cm.

# **Packing**

# 1- LAN Cable:

Available in easy - pull boxes of 1000 feet (305 m) capacity.

This assures the cable will not be damaged during installation due to the "figure 8" coiling. it also enables easy, tidy storage before and during installation.

#### 2- Coaxial Cable:

Available in easy - pull boxes of 100 m or 500 m on wooden drum.

# 3- Telephone Cable:

Cables supplied on coils of (200 m) or in non-returnable wooden drums.

#### 4- Automotive wires:

Wires are packed in Carton boxes which reduces storage area & cost. Boxes may be delivered individually or as a solid cube on wooden pallet.

# **TELEPHONE CABLES**

# 5- Instrumentation, Fire Resistant and Control Cables.

International practice is to supply cables on wooden drums. At the customers request we will also supply on Steel drums for improved on-site performance and handling.

Upon customer request the drums may be closed with continuous wooden lagging for enhanced security.

# **DRUM DIMENSIONS**

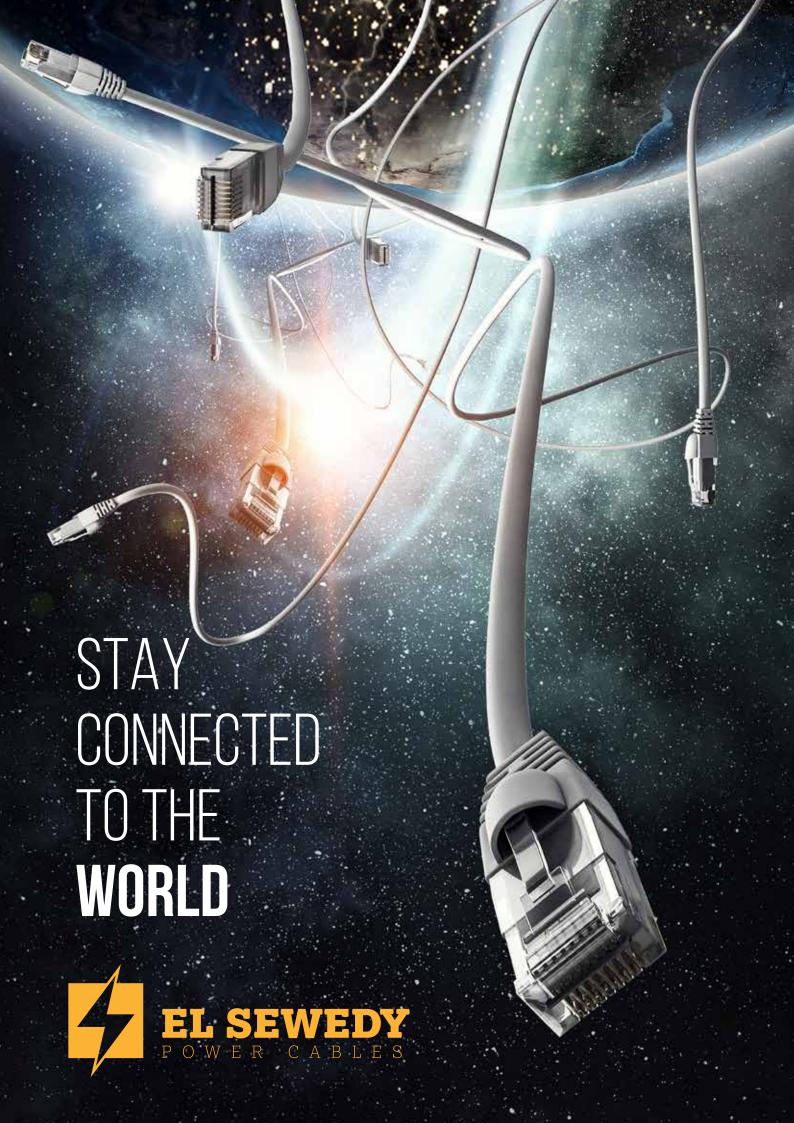
D	d	d <sub>1</sub>	B <sub>1</sub>	B <sub>2</sub>	W <sub>1</sub>	W <sub>2</sub>
600	300	85	410	530	16	300
700	350	85	410	530	20	350
800	400	85	410	530	24	400
1000	500	85	610	710	46	800
1250	580	85	580	680	60	1700
1400	700	85	800	950	160	2000
1600	700	110	800	950	170	2500
1800	920	110	900	1050	240	3000
2000	1020	110	1200	1350	335	4000

# Where:

D	: Flange diameter	mm
d	: Barrel diameter	mm
$d_1$	: Axis hole diameter	mm
B <sub>1</sub>	: Distance between flanges	mm
$B_2$	: Overall width	mm.
W <sub>1</sub>	: Approximate net weight of drum	Kg.
$W_2$	: Maximum gross weight of drum	Kg.

# **Conversion Tables**

Multiply	Ву	To obtain	Multiply	Ву	To obtain
obtain Weight- Imperial			Length-Imperial		
Ounces	28.3495	Grams	Mils	0.001	inches.
Pounds (Av)	453.59	Grams	Mils	0.0254	mm.
Pounds (Av)	0.45359	Kilogroms	Inches	1000	mils.
Tons (short)	907.19	Kilograms	Inches	25.40	mm.
Tons (long)	1016.05	Kilograms	Inches	2.54	cm.
. 0,		O	Feet	30.48	crn.
Weight-Metric			Feet	0.3048	meters.
Grams	0.03527	Ounces	Feet(thousands of)	0.3048	kilometers.
Grams	0.002205	Pounds	Yards	0.9144	meters.
Kilograms	35.274	Ounces	Miles	1.6093	kilometers
Kilograms	2.2046	Pounds	Length-Metric		
Kilograms	0.001102	Tons (short)	Millimeters	39.37	mils.
Kilograms		Tons (long)	Millimeters	0.03937	inches.
		3 3 ( 3 0)	Centimeters	0.3937	inches.
Miscellaneous-Imperial			Centimeters	0.032808	feet.
Pounds per 1000 feet	1.48816	Kg/Km	Meters	39.37	inches.
Pounds per mile	0.28185	Kg/Km	Meters	3.2808	feet.
Pounds per square inch		Kg. per square mm.	Meters	1.0936	yards.
Pounds per square inch		Kg. per square cm.	Kilometers	3280.83	feet.
Pounds per cubic	27.68	grams per cubic crn.	Kilometers	0.62137	miles.
Feet per second	18.288	meters per minute.	Area-Imperial	0.02137	Trinics.
Feet per second	1.09728	Kilometers per hour.	Square mils	1 .2732	circular mils
Miles per hour	1.60935	Kilometers per hour.	Square mils	0.000001	square inches
Ohms per 1000 feet	3.28083	ohms per Kilometer.	Circular mils	0.7854	square mils
Ohms per mile	0.62137	ohms per Kilometer.	Circular mils		square inches
Decibels per 1000 feet	3.28083	decibels per Kilometer.	Square mils	0.0005067	square mm.
Decibels per mile	0.62137	decibels per Kilometer.	Square inches	1000000	square mils
Decibels	0.1153	nepers.	Square inches	1273240	circular mils
Decibers	0.1155	перегз.	Square inches	645.16	square mm.
Miscellaneous-Metric			Square inches	6.4516	square cm.
Kg /Km	0.67197	pounds per 100 feet.	Square feet	0.09290	square meters
Kg/Km	3.54795	pounds per mile.	Square yards	0.8361	square meters
Kg.per square mm	1422.34	pounds per square inch.	Area-Metric	0.0301	square meters
Kg.per square crn	14.2234	pounds per square inch.	Square millimeters	1973 52	circular mils
Grams per cubic cm	0.03613	pounds per cubic inch.	Square millimeters		square inches
Meters per minute	0.05468	feet per second	Square centimeters		square inches
Kilometers per hour	0.91134	feet per second	square meters	10.7638	square feet
Kilometer per hour	0.62137	miles per hour.	square meters	1.19599	square yards
Ohms per Kilometer	0.3048	ohms per 1000 feet.	Cubic inches	16.38716	cubic cm.
Ohms per Kilometer	1 .6093	ohms per mile.	Cubic freet	0.028317	cubic cm.
Decibels per kilometer	0.3048	decibels per 1000 feet.	Volume-U.S.	0.020317	cubic meters
Decibels per kilometer	1.6093	decibels per mile.	Quarts (liquid)	0.9463	litors
Decibers per knorneter	1.0033	decibels per fille.	Gallons	3.7854	liters liters.
Temperature			Volume-Metric	5.7034	iiters.
° Fahrenheit	5/9(°F}-32	°Colcius	Cubic cm	0.06102	cubic inches.
° Celsius		° Fahrenheit	Cubic cm Cubic meters	35.3145	cubic inches.
Ceisius	3/3( C)T32	i dili eriffett	Liters	1.05668	
			Liters	0.26417	quarts (liquid U.S) gallons (U.S.)
			LICEIS	0.20417	Sallol13 (0.5.)



#### Α

#### **Abrasion Resistance**

Ability of a material or cable to resist Surface wear.

#### A.C. Resistance

The total resistance offered by a device to alternating current circuit due to inductive and capacitive effects, as well as the direct current resistance.

#### **Active Current**

In an alternating current, a component in phase with the voltage. The working component as distinguished from the idle or wattles component.

#### **Aerial Cable**

A cable suspended in the air on poles or other overhead structure.

#### **Air Core Cable**

A telephone cable in which the interstices in the cable core are not filled with a moisture bloking material.

## **Air Spaced Coaxial Cable**

One in which air is the essential dielectric material. A spirally wound synthetic filament or spacer may be used to center the conductor.

# **Alpeth**

A telephone **cable** having an aluminum shield and a polyethylene **jacket**.

## **Alternating Current (A.C.)**

**An electric** current that continually reverses its direction **giving a rebetitive** plus and minus **wave** form at **fixed** intervals.

# **Alternating Voltage**

The voltage developed across a resistance or impedance through which alternating current is flowing.

# **Ambient Temperature**

The romal temperature within a given area.

# **American Wire Gauge**

A standard used in the determination of the physical **size of a conductor** determined by its circular mil area. Usually expressed as AWG. Also referred to **as Brown** and Sharpe (B&S) wire gauge.

# **Ampacity**

The maximum current an insulated wire or cable can safely carry without exceeding either.

the insulation or jacket material limitations. (Same as current carrying capacity).

## **Ampere**

The unit of current. One ampere is the current flowing through one ohm of resistance at one volt potential.

#### **Anneal**

To subject to high heat with subsequent cooling. When annealing copper, the act of softening the metal by means of heat to render it less brittle.

#### **Anode**

The electrode through which a direct current enters the liquid, gas or other discrete part of an electrical circuit; the positively charged pole of an electrochemical cell.

## **Appliance Wire and Cable**

Appliance wiring material is a classification of Underwriters' Laboratories, Inc., covering insulated wire and cable, internal wiring of appliances and equipment. Each construction satisfies the requirements for use in particular applications.

#### **Area of Conductor**

The size of a conductor cross-section measured in circular mils, square inches,etc.

#### Armor

A braid or wrapping of metal, usually steel, used for mechanical protection.

# **Armored Cable**

A cable having a metallic covering for protection **against** mechanical injury.

#### **ASTM**

The American Society for Testing and Materials.

## **Attenuation**

The reduction in a transmitted signal as it **passes** through wires or **equipment** in an **electrical** circuit.

#### **AWG**

Abbreviation for American Wire Gauge.

В

#### **Balance Circuit**

A circuit so arranged that the impressed voltages on each conductor of the pair are equal in magnitude but opposite in polarity with respect to ground.



#### **Band Width**

The frequency range of transmitted electrical signals, expressed in Hertz.

#### **Bare Conductor**

A conductor having no covering. A conductor with no coating or cladding on the copper.

#### **Bedding**

A layer of material applied to a cable immediately below the armoring.

#### **Binder**

A spirally served tape or thread used for holding assembled cable components in place awaiting subsequent manufac-turing operations.

## **Bonded Flat Cable**

Flat cable consisting of individually insulated conductors lying parallel and bonded together typically for application in electronics, telecommunications or computers.

#### **Braid**

A fibrous or metallic group of filaments interwoven in cylindrical form to form a covering over one or more wires.

#### **Braid Angle**

The smaller of the two angles formed by the shielding strand and the axis of the cable being shielded.

# **Breakdown of Insulation**

Failure of an insulated conductor resulting in a flow of current through the insulation. It may be caused by the application of excess voltage or by defects or decay.

#### **Breakdown Voltage**

The voltage at which the insulation between two conductors breaks down.

# **Bunched Strand**

Any number of conductor strands twisted together in one direction with the same lay length.

## **Buried Cable**

A cable installed directly in the ground without use of underground conduit. Also called "direct burial cable".

#### C

# **Cable**

A group of individually insulated conductors in twisted or parallel configuration, with or without an overall covering.

#### Cable, Star Quad

A multicore radio or television relay cable in which the conductors are arranged in quads and each quad consists of four conductors twisted together, the diagonally opposite conductors constituting a pair circuit. Also known as spiral four cable.

#### **Cabling**

The act of twisting together two or more insulated components by machine to form a cable.

## **Capacitance**

Storage of electrically separated charges between two plates having different potentials. The value depends on the surface area of the plates and the distance and material between them.

## **Capacitance, Direct**

The capacitance measured directly with all other conductors, including shield, short circuited to ground.

# Capacitance, Mutual

The capacitance between two conductors With all other conductors, including shield, short circuit to ground.

# **Capacitance Unbalance**

The inequalities of the capacitances of the wires of a telephone circuit to other wires or to earth which produce interference. Various forms of unbalance arise according to the circuits concerned in the measurement, hence side-to-side, pair-to-pair, pair-to-earth unbalance.

# **Capacitance Unbalance to Ground**

An inequality of capacitance between the ground capac¬itance the conductors of a pair which results in a pickup of external source energy, usually from power transmission lines.

# **Capacitance Coupling**

Electrical interaction between two conductors caused by the capacitance between them.

## **Characteristic Impedance**

The impedance that, when connected to the output terminals of a transmission line of any length, makes the line appear infinitely long. The ratio of voltage to current at every point along a transmission line on which there are no stranding waves.

## Charge

The quantity of electricity held statically in a capacitor or an insulated conductor.

## **Circular Mil**

A measurement used in determining the area of wire. The area of a circle one one thousandth (.001) of an inch in diameter.

## **Coating**

A material applied to the surface of a conductor to prevent environmental deterioration, facilitate soldering or improve electrical performance.

#### **Coaxial Cable**

A cable consisting of two cylindrical conductors with a common axis, separated by a dielectric.

#### **Cold Test**

Any test to determine the performance of cables during or after subjection to a specified low temperature for a specified time.

#### **Colour Code**

A colour system for circuit identification by use of solid colours, tracers, braids, surface printing, etc.

## **Composite Cable**

A cable consisting of two or more different types or sizes of wires.

# Concentricity

In a wire or cable, the measurement of the location of the center of the conductor with respect to the geometric center of the circular insulation.

# **Concentric Stranding**

A group of wires twisted so as to contain a center core with one or more distinct layers of spirally wrapped, wires laid overall.

## **Conductance**

The ability of a conductor to carry electric current. It is the reciprocal of resistance and is measured in Mhos.

# **Conductivity**

A term used in describing the capability of a material to carry an electrical charge. Usually expressed as a per¬centage of copper conductivity copper being one hundred (100%) percent.

# **Conductor**

Any material capable of transferring electrical charge easily.

#### **Control Cable**

A multi-conductor cable made for operation in control or signal circuits.

#### Core

In cables, a term used to denote a component or assembly of components, over which other materials are applied, such as additional components, shield, sheath, or armor.

#### **Cross-Sectional Area**

The area of the cut surface of an object cut at right angles to the length of the object.

# Crosstalk

Signal interference between nearby conductors caused by pickup of stray energy. It is also called induced interference.

#### Cure

To change the physical properties of a material by chemical reaction, by the action of heat and catalysts, alone or in combination, with or without pressure.

#### Current

The rate of flow of electricity in a circuit, measured in amperes.

# **Current Carrying Capacity**

The maximum current an insulated conductor or cable can continuously carry without exceeding its temperature rating. It is also called ampacity.

# **Current, Direct (D.C.)**

Electrical current whose electrons flow in one direction only; it may be constant or pulsating as long as their movement is in the same direction.

#### Cycle

The complete sequence of alternation or reversal of alternation or reversal of the flow of an alternating electric current. (See Hertz).

D

#### D.C.

Abbreviation for "Direct Current"

#### Decibel (dB)

A unit to express differences of power level. Used to express power gain in amplifiers or power loss in passive circuits or cables.

## **Dielectric Constant (K)**

The ratio of the capacitance of a capacitor (or consoles) with dielectric between the electrodes to the capacitance when air is between the electrodes. Also called permittivity and Specific Inductive Capacity.

## **Dielectric Strength**

The voltage which an insulation can withstand before breakdown occurs. Usually expressed as a voltage gradient (such as volts per mil).

#### **Dielectric Test**

A test in which a higher than the rated voltage is applied for a specified time to determine the adequacy of the Insulation under normal conditions.

## **Direct Capacitance**

The capacitance measured directly from conductor to conductor through a single insulating layer.

# **Direction of Lay**

The direction, either clockwise or counterclockwise, of a conductor or group of conductors when looking axially down a cable length.

#### **Drain Wire**

In a cable, an uninsulated wire laid over the component or components and used as a ground connection. Normally laid in contact with a metallic foil shield.

# **Drawing**

In the manufacturing of wire, pulling the metal through a die or series of dies for reduction of diameter to a specified size.

#### **Drop Wire**

A telephone cable, usually consisting of one insulated telephone pair, which is used to connect a subscribers premises to open wire lines on poles.

## E

# **Eccentricity**

Like concentricity, a measure of the center of a conductor's location with respect to the circular cross-section of the insulation; expressed as a percentage of center displace¬ment of one circle within the other.

#### **EIA**

Abbreviation for Electronic Industries Association.

# **Elongation**

The fractional increase in length of a material stressed in tension.

#### **Embossing**

A means of identification or lettering usingheat and or pressure to leave raised lettering on the sheath material of the cable.

#### **Emergency Overloads**

Loads which occur when larger than normal currents are carried through a cable or wire over a short period time.

#### **Extrusion**

The process of continuously forcing a plastic or elastomer and a conductor core through a die, thereby applying a continuous coating of insulation or jacket to the core or conductor.

#### F

#### Farad

A unit of electrical capacity.

#### **Fext**

Far end crosstalk.

# Figure 8 Cable

An aerial cable configuration in which the conductors and the strand which supports the cable are integrally jacketed A cross-section of the finished cable approximates the figure "eight".

# **Filler**

(1) A material used in the cable to fill large interstices between electrical components.

(2) A substance, often inert, added to a compound to improve properties and/or decrease cost.

# Film

A thin plastic sheet.

# Flame Resistance

Ability of the material to extinguish flame once the source of heat is removed.

#### **Flat Cable**

A cable with two essentially flat surfaces.

#### **Mutual Inductance**

The ratio of voltage induced in one conductor to the time rate of current change in the separate conductor causing this induction.

## Mylar

DuPont tradmark for polyethylene terephthalate (polyester) film used in the form of a tape.

N

#### **NEXT**

Near end crosstalk.

0

#### **Ohm**

Unit of resistance such that a constant current of one ampere produces a force of one volt.

#### **Overall Diameter**

Finished diameter over wire or cable.

#### **Over Current**

The current which causes and excessive temperature rise in a conductor.

# **Overload Capacity**

The maximum level of current, voltage, or power which a device can withstand before it is damaged.

# **Oxygen Index**

Percentage of Oxygen necessary to support combustion of specified material.

P

# Pair

Two insulated wires of a single circuit associated together.

# **Peak Voltage**

The maximum instantaneous voltage.

# **Percent Conductivity**

Conductivity of a material expressed as a percentage of that of copper.

# Polyester

Polyethylene terephthalate which is used extensively in the production of a high strength moisture resistant film used as a cable core wrapping material.

## **Polyethylene**

A family of insulating materials derived from polymerization of ethylene gas. They are basically pure hydrocarbon resins, with excellent dielectric properties.

# **Polypropylene**

A thermoplastic polymer of propylene.

# Polyvinylchloride (PVC)

A thermoplastic material composed of polymers of vinylchloride which may be rigid or elastomeric, depending on specific formulation.

# **Power Factor**

The ratio of resistance to impedance. The ratio of the actual power of an alternating current to apparent power. Mathematically, the cosine of the angle between the voltage applied and the current resulting.

# **Propagation Time**

Time required for an electrical wave to travel between two points on a transmission line.

#### Pulse

A current or voltage which changes abruptly from one value to another and back to the original value in a finite length of time.

#### **Pulse Cable**

A type of coaxial cable constructed to transmit repeated high voltage pulses without degradation.

Q

# Quad

A four-wire unit of insulated conductors. See Star Ouad.

R

# **Rated Temperature**

The maximum temperature at which an electric component can operate for extended periods without loss of its operating properties.

## **Rated Voltage**

The maximum voltage at which an electric component can operate for extended periods without degradation of performance or safety hazard.

#### **Reactance**

The opposition offered to the flow of alternating current by the inductance or capacitance of a component or circuit.

#### Resistance

In D,C. circuits, the opposition a material offers to current, measured in ohms. In A.C. Circuits, resistance is the real component of impedance, and may be higher than the value measured at D.C.

#### **RFI**

Radio Frequency Interference.

#### RG/U

Radio Government, Universal. RG is the military designation for coaxial cable and U stands for "general utility".

#### **Round Conductor**

A conductor whose cross-section is substantially circular.

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# **Sheath**

The material, usually an extruded plastic or elastomer, applied outermost to a wire or cable. Very often referred to as a jacket.

## **Shield**

A metallic layer around an insulated conductor or group of conductors to prevent electrostatic or electromagnetic interference between the enclosed wires and external fields. This shield can be braided or served wires, foil wrap, foil backed tape, a metallic tube, or conductive vinyl or rubber. When a metallic braid or tinned or bare copper is applied over the insulated conductors, the shielding effectiveness is in proportion to the amount of coverage, usually expressed in percentage.

# **Shield Coverage**

The physical area of a cable that is actually covered by the shielding material and is expressed in percentage.

#### Signal

Current used to convey information, either digital, analog, audio or video.

# Signal cable

A cable designed to carry current of usually less than one ampere per conductor.

#### **Skin Effect**

The tendency of alternating current, as its frequency increases, to travel only on the surface of a conductor.

#### **Solid Conductor**

A conductor consisting of a single wire.

## **Spark Test**

A test designed to locate imperfections (usually pin-holes) in a wire insulation by application of an electrical potential across the material for a short period of time while the wire is drawn through an electrode field with one end of the wire grounded.

#### **Specific Gravity**

The ratio of the weight of any volume of substance to a weight of an equal volume of some substance taken as a standard, usually water for liquids and hydrogen for gases.

# **Square Mil**

The area of a square one mil by one mil.

#### **Stranded Conductor**

A conductor composed of individual groups of wires twisted together to form an entire unit.

# **Strand Lay Length**

A distance of advance of one strand of a spirally stranded conductor, in one turn, measured axially.

ı

# **Temperature Rating**

The maximum temperature at which insulating material may be used in continuous operation without loss of its basic properties.

# **Tensile Strength**

A term denoting the greatest longitudinal tensile stress a substance can bear without mechanical failure

# **Thermal Rating**

The maximum and/or minimum temperature at which a material will perform its functions without undue degration.

#### **Thermal Shock**

A test to determine the ability of a material to withstand heat and cold by subjecting it to rapid and wide changes in temperature.

# **Tinned Copper**

Tin coating over copper to aid in soldering and inhibit corrosion.

#### **Tinned Wire**

Copper wire that has been coated with a layer of tin or solder to simplify soldering.

# **Triple (Traid)**

A cable consisting of three insulated single conductors twisted together.

#### **Tubing**

A tube of extruded nonsupported plastic or metallic material.

#### **Twin Cable**

A cable composed of two separated insulated stranded conductors laid parallel under a common covering.

#### **Twin Coaxial Cable**

A single cable consisting of two separate coaxial cables laid adjacent and parallel or twisted together.

#### **Twisted Pair**

A twisted pair is composed of two small separately insulated wires twisted together.

# **Twisted Triad**

Any three individually insulated conductors which are twisted together.



# **Velocity of Propagation**

The speed of an electric signal down a length of cable compared to speed in free space expressed as a percentage. It is the reciprocal of the square root of the dielectric constant of the cable insulation.

## Volt (potential difference)

A unit of electrical pressure. One volt is the amount of pressure that will cause one ampere of current in one ohm of resistance.

#### Voltage.

The term most often used in place of electromotive force, potential, potential difference, or voltage drop, to designate electric pressure that exists between two points and is capable of producing a flow of current when a circuit is connected between the two points.

#### Voltage Drop.

The amount of voltage loss between two power in a circuit.

# **Voltage Rating**

The highest voltage that may be continuously applied to a wire or cord in conformance with standards or specifications.

## **Volume Resistivity**

The electrical resistance between opposite faces of a 1 cm cube of insulating material, commonly expressed in ohms/centimeter.

#### W

# **Water Absorption**

Ratio of the weight of water absorbed by a material to the weight of the dry material.

#### Watt

A unit of electrical power. One watt is equivalent to the power generated by one ampere of current under a pressure of one volt in a D.C. circuit.

## Wavelength

The distance, measured in the direction of propagation, of a repetitive electrical pulse or waveform between two successive points.



LIGHT YOUR WAY

