
BETA
ELECTRIC CABLES
Strength and quality for all your needs

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ABOUT THIS REPORT

BETA ELECTRIC CABLES Company operates its manufac-turing facility , specializing in the production of electrical power and control cables, flexible cables building wires, and overhead conduc-tors

Committed to adhering to stringent international standards such as IEC, BS, and American standards, BETA ELECTRIC CABLES aspires to establish itself as a leading cable manufacturer in the Middle East.

Customer satisfaction is paramount at BETA ELECTRIC CABLES , driving the compa-ny's ethos of getting it right the first time, every time. With a team of highly qualified and experienced personnel, BETA ELECTRIC CABLES has implemented efficient quality management systems across all operations.

BETA ELECTRIC CABLES meticulously selects cutting-edge machinery at every stage of production, drawing upon European expertise and state-of-the-art tech-nology to consistently deliver high-quality products. From sourcing raw materials from reputable suppliers to conducting final product inspections, BETA ELECTRIC CABLES embeds quality into each step of the manufacturing process.

The company exclusively utilizes raw materials from trusted suppliers, prioritizing electrolytic-grade copper with a minimum purity of 99.9% to guarantee superior conductivity. Employing advanced wire drawing and stranding techniques, BETA ELECTRIC CABLES achieves uniform conductor dimen-sions and optimal performance.

Equipped with advanced machinery, BETA ELECTRIC CABLES can process a diverse range of insulating and sheathing materials, including PVC and XLPE, meeting global standards. Special flame-retardant materials are also incor-porated to enhance safety. Stringent quality controls ensure consistency in cable diameter, concentricity, and surface finish.

In addition to stringent in-process testing, all finished products undergo comprehensive quality checks, including 100% high-voltage and other electrical tests. BETA ELECTRIC CABLES provides power cables in both standard and customized lengths, packaged securely for transportation.

With a state-of-the-art laboratory boasting high-precision instruments, BETA ELECTRIC CABLES conducts thorough inspections of raw materials and finished products, reinforcing its unwavering commitment to quality and safety.

BETA ELECTRIC CABLES stands ready to be your trusted partner, delivering reliable and safe power solutions with excellence ingrained in every cable produced.

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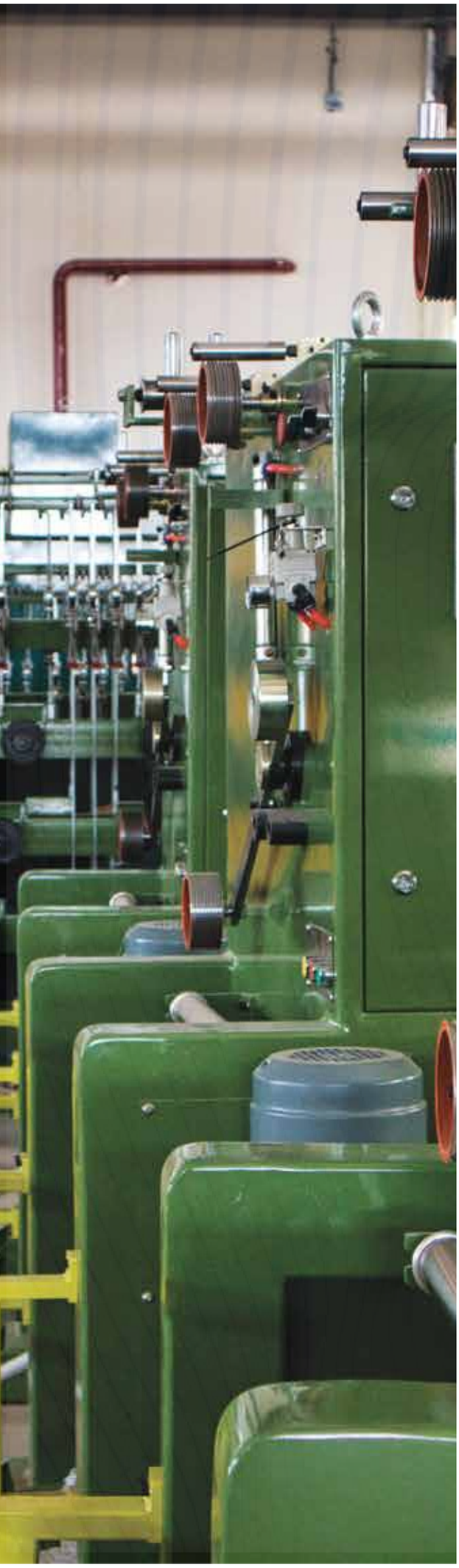

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BETA ELECTRIC CABLES POLICY

At BETA ELECTRIC CABLES Company, we are committed to delivering excep-
tional quality in every aspect of our cable products and services. Our quality policy is founded on the following principles:

1. Compliance: We adhere rigorously to both local and international quality standards to ensure that our cable products meet or exceed regulatory requirements and customer expectations.

2. Continuous Improvement: We foster a culture of continuous improvement, constantly seeking ways to enhance the quality of our products, processes, and services through feedback, innovation, and technological advancements.

3. Customer Satisfaction: Our customers are at the heart of everything we do. We strive to understand their needs and preferences, delivering cable solutions that not only meet but surpass their expectations, ensuring their satisfaction and loyalty.

4. Employee Empowerment: We recognize that our employees are our greatest asset. Through training, education, and empowerment, we cultivate a skilled and motivated workforce dedicated to maintaining the highest standards of quality and excellence.

5. Environmental Responsibility: We are committed to minimizing our environmental footprint by adopting sustainable practices and technologies throughout our operations, from sourcing raw materials to manufacturing processes and waste management.

By upholding these principles, we aim to establish
Beta electric cables
Company as a trusted leader in the cable industry, renowned for our uncompromising commitment to quality, reliability, and customer satisfaction."

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OUR ENVIRONMENTAL POLICY

By complying with all legal regulations and applicable laws in respect with environment our Company,

uses the most convenient in terms of invironmental protections.

tries to preclude pollution in itssources by taking environmental effects into consideration in the stage of manufacturing

and manages trainings in order to protect environment and preclude pollution by providing promotions continually.

The respects that are stated in above are our Company's policy.

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Founded in 2024 in Egypt, BETA Cables Company operates its manufac-

BETA ELECTRIC CABLES

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PVC-ISOLATED SOLID INSTALLATION CABLES

300/500 V & 450/750 V

STRUCTURE

*Single copper conductor, * PVC isolated

STANDARDS:

IEC 60227, BS 6004

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 300 / 500 V & 450 / 750 V
AC tesl voltage 2000 V - 2500 V

THE PLACES OF USE:

In closed and dry spaces, control panels,
VIn fixed wirings inside cable channel and pipe

Cross-section Area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 30 °C	(on air) 30 °C
0.5	36.00	8.0	2.10	----	9
0.75	24.50	11.0	2.30	----	16
1	18.10	14.0	2.50	11	19
1.5	12.10	20.0	2.80	16	25
2.5	7.41	31.0	3.40	21	34
4	4.61	46.0	3.90	27	45
6	3.08	54.0	4.40	35	57
10	1.83	108.0	5.60	48	78

PVC-ISOLATED INSTALLATION STRANDED CABLES

450/750 V

Cross-section Area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 30°C	(on air) 30°C
1.5	12.10	21.0	3.00	16	25
2.5	7.41	32.0	3.60	21	34
4	4.61	46.0	4.10	27	45
6	3.06	66.0	4.70	35	57
10	1.83	111.0	6.10	48	78
16	1.15	170.0	7.10	65	104
25	0.727	260.0	8.60	88	137
35	0.524	355.0	9.70	110	168
50	0.387	505.0	11.50	140	210
70	0.268	694.0	13.20	175	260
95	0.193	938.0	15.20	210	310
120	0.153	1172.0	16.80	250	365
150	0.124	1465.0	18.80	----	415
185	0.0991	1808.0	21.00	----	475
240	0.0754	2343.0	24.40	----	560
300	0.0601	2921.0	27.00	----	----
400	0.0470	3875.0	31.20	----	----

STRUCTURE

Multiple wire flexible copper conductor, "PVC-isolated

STANDARDS:

IEC 60227, BS 6004

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 450/750 V
AC tesl voltage 2500 V

THE PLACES OF USE:

Can be used in indoors and dry areas, in cable duct or tray in power switching stations and in pipes.

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PVC-ISOLATED, FLEXIBLE INSTALLATION CABLES 300/500 V & 450/750 V

STRUCTURE :
Multiple wire thin copper conductor, * PVC-isolated
STANDARDS:
IEC 60227, BS 6004
TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 300/500 V & 450/750 V
AC tesl voltage 2000 V - 2500 V
THE PLACES OF USE:
In the links of moving devices, closed and dry spaces, in flush mounted and surface mounted, in cable channel and inside pipes.

Cross-section Area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 30°C	(on air) 30°C
0,5	39,00	9,0	2,10	----	11
0,75	26,00	11,0	2,30	----	16
1	19,50	14,0	2,50	12	20
1,5	13,30	20,0	3,00	15	24
2,5	7,98	32,0	3,60	20	32
4	4,95	48,0	4,20	25	42
6	3,30	68,0	4,80	33	54
10	1,91	116,0	6,70	45	73
16	1,21	174,0	7,90	61	98
25	0,78	270,0	9,70	83	129
35	0,554	368,0	11,10	103	158
50	0,386	524,0	13,30	132	198
70	0,272	717,0	15,20	165	245
95	0,206	971,0	17,70	197	292
120	0,161	1212,0	19,60	235	344
150	0,129	1514,0	21,90	----	391
185	0,106	1869,0	24,30	----	448
240	0,0801	2415,0	27,50	----	528

INSTALLATION CABLES WITH PVC EXTERNAL SHEATHS

300/500 V PVC ISOLATED MULTICORE

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 30°C	(on air) 30°C
2x1,5	12,10	117,0	8,90	15	18
2x2,5	7,41	160,0	10,15	20	25
2x4	4,61	208,0	11,10	26	34
2x6	3,08	262,0	12,30	34	43
2x10	1,83	427,0	15,60	45	60
2x16	1,15	611,0	18,10	61	79
2x25	0,727	937,0	21,70	82	107
2x35	0,524	1245,0	24,70	105	135
3x1,5	12,10	138,0	9,45	15	18
3x2,5	7,41	191.0	10,65	20	25
3x4	4,61	252,0	11,75	26	34
3x6	3,08	341,0	13,40	34	43
3x10	1,83	537,0	16,50	45	60
3x16	1,15	777,0	79,06	61	79
3x25	0,727	1183,0	23,50	82	107
3x35	0,514	1556,0	26,50	105	135
4x1,5	12,10	164,0	10,25	15	18
4x2,5	7,41	236,0	11,55	20	25
4x4	4,61	313,0	13,00	26	34
4x6	3,08	432,0	14,70	34	43
4x10	1,83	662,0	18,00	45	60
4x16	1,15	984,0	20,50	61	79
4x25	0,727	1508,0	26,10	82	107
4x35	0,524	2020,0	29,10	105	135
5x1,5	12,10	192,0	11,05	15	18
5x2,5	7,41	280,0	12,50	20	25
5x4	4,61	383,0	14,40	26	34
5x6	3,08	520,0	16,00	34	43
5x10	1,83	815,0	19,70	45	60
5x16	1,15	1210,0	23,25	61	79
5x25	0,727	1855,0	28,50	82	107
5x35	0,524	2465,0	32,00	105	135

STRUCTURE :

"Singlecore or multicore flexible copper conductor, "PVC-isolated, "PVC fl

*PVC extemal sheath

STANDARDS:

IEC 60227, BS 6004

TECHNICAL VALUES:

Max operating temperature 70 °C

Max short circuit temperature 160 °C (ts5 sn)

Nominal voltage 300/500 V

AC tesl voltage 2000 V

THE PLACES OF USE:

In camp and closed spaces with no mechanical force,
in flush mounted and surface mounted,

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SINGLECORE, LOW VOLTAGE POWER CABLES
0,6/1 kV PVC ISOLATED

STRUCTURE

*Copper conductor with single or multiple twisted wires, "PVC isolated
*PVC external sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature Kesit< 300 mm² : 160°C (ts5 sn)
Kesit 300 mm² 140 °C (ts5 sn)
Nominal voltage 0,6/1 KV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

In places where no mechanical forces, energy grids, Inside and outside underground as lighting cable and Inside cable channels.

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Ω/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) (on air) 20°C ●●●	20°C ⁂	30°C ●●●	30°C ⁂
1x4	4,61	101,0	8,10	----	----	44	36
1x6	3,08	125,0	8,60	----	----	55	47
1x10	1,83	176,0	9,80	----	----	77	65
1x16	1,15	243,0	10,90	125	108	101	88
1x25	0,727	340,0	12,20	160	135	135	115
1x35	0,524	444,0	13,40	195	165	167	145
1x50	0,387	594,0	14,70	230	195	205	175
1x70	0,268	795,0	16,60	280	238	260	222
1x95	0,193	1057,0	18,80	336	285	320	271
1x120	0,153	1300,0	20,40	380	326	372	312
1x150	0,124	1600,0	22,70	428	366	426	360
1x185	0,0991	1990,0	25,10	480	414	494	412
1x240	0,0754	2554,0	28,10	560	480	590	484
1x300	0,0601	3168,0	31,10	630	542	678	549
1x400	0,0470	4168,0	35,20	730	622	817	657
1x500	0,0366	5100,0	39,00	823	696	940	749

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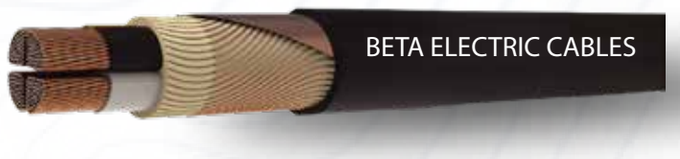
MULTICORE, LOW VOLTAGE POWER CABLES
0,6/1 kV PVC ISOLATED

STRUCTURE :
Copper conductor with single or multiple twisted wires, "PVC isolated, PVC fill "PVC external sheath



STANDARDS:
IEC 60502, BS 6346

TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
In places where no mechanical forces, energy grids, Inside and outside underground as lighting cable and Inside cable channels.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
2x1,5	12,10	177	11,60	32	20
2x2,5	7,41	215	12,40	42	27
2x4	4,61	293	14,20	54	37
2x6	3,08	357	15,20	68	48
2x10	1,83	504	17,60	90	66
2x16	1,15	686	19,80	116	89
2x25	0,727	986	23,20	150	118
2x35	0,524	1266	25,60	181	145
2x50	0,387	1706	29,00	215	176
2x70	0,268	2273	33,00	264	224
2x95	0,193	3046	38,00	318	271
2 x120	0,153	3717	41,40	360	314
2x150	0,124	4592	45,80	406	361
2x185	0,0991	5679	51,00	458	412
2x240	0,0754	7225	57,00	537	484
2x300	0,0601	9070	62,00	600	550

MULTICORE LOW VOLTAGE POWER CABLES

0,6/1 kV PVC ISOLATED

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
3x1,5	12,10	200	12,10	26	18
3x2,5	7,41	247	12,90	34	25
3x4	4,61	343	14,90	44	34
3x6	3,08	425	15,90	56	43
3x10	1,83	610	18,50	75	60
3x16	1,15	847	20,90	98	80
3x25	0,727	1231	24,50	128	106
3x35	0,524	1598	27,10	157	131
3x50	0,387	2176	30,80	185	159
3x70	0,268	2950	35,40	228	202
3x95	0,193	3933	40,60	275	244
3x120	0,153	4821	42,40	313	282
3x150	0,124	6015	49,30	353	324
3x185	0,0991	7370	54,50	399	371
3x240	0,0754	9465	61,30	464	436
3x300	0,0601	11855	66,00	520	480

STRUCTURE

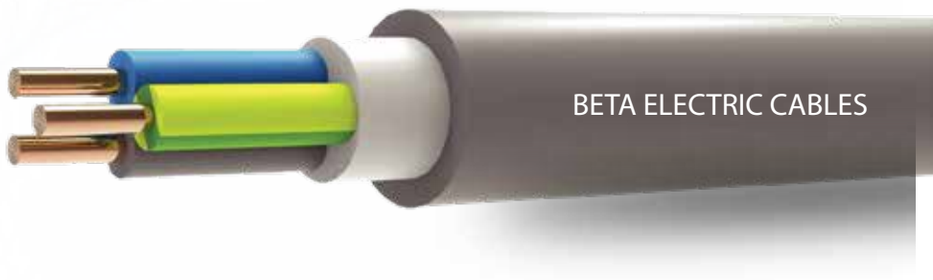
Copper conductor with single or multiple twisted wires, "PVC isolated, PVC fill "PVC external sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV



THE PLACES OF USE:

In places where no mechanical forces, energy grids, Inside and outside underground as lighting cable and Inside cable channels.

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LOW VOLTAGE POWER CABLES
0.6/1 kV PVC INSULATED, MULTICORE,

STRUCTURE
"Copper conductor with multiple twisted wires, "PVC isolated,"PVC fill
*PVC external sheath

STANDARDS:
IEC 60502, BS 6346

TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1kV
AC tesl voltage 3,5 KV

THE PLACES OF USE:
In places where no mechanical forces, energy grids, Inside and outside underground as lighting cable and Inside cable channels.

Number of core X cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
3x16+10	1,15 - 1,83	21,0	22,00	98	80
3x25+16	0,727 - 1,15	1424	25,80	128	106
3x35+16	0,524 - 1,15	1761	28,00	157	131
3x50+25	0,387 - 0,727	2457	32,20	185	159
3x70+35	0,268 - 0,524	3324	37,00	228	202
3x95+50	0,193 - 0,387	4460	42,40	275	244
3x120+70	0,153 - 0,268	5610	47,00	313	282
3x 50+70	0,124 - 0,268	6732	51,00	353	324
3x185+95	0,0991 - 0,193	8321	56,70	399	371
3x240+120	0,0754 - 0,153	10625	63,60	464	436
3x300+150	0,0601 - 0,124	13147	70,30	520	480
3x400+185	0,0470 - 0,0991	17110	78,50	600	560

MULTICORE, LOW VOLTAGE POWER CABLES

0,6/1 kV PVC ISOLATED,

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x1,5	12.10	233	12,80	26	18
4x2,5	7.41	292	13,80	34	25
4x4	4.61	411	16,00	44	34
4x6	3,08	517	17,20	56	43
4x10	1,83	751	20,10	75	60
4x16	1.15	1052	22,70	98	80
4x25	0,727	1542	26,80	128	106
4x35	0.524	2015	29,70	157	131
4x50	0.387	2809	34,40	185	159
4x70	0.268	3782	39,40	228	202
4x95	0.193	5027	45,00	275	244
4x120	0.153	6220	49,30	313	282
4x150	0.124	7725	55,00	353	324
4x185	0.0991	9529	61,00	399	371
4x240	0.0754	12162	68,10	464	436
4x300	0.0601	15220	73,20	520	480

STRUCTURE :
*Copper conductor with single or multiple twisted wires, "PVC isolated,
*PVC fill "PVC external sheath

STANDARDS:
IEC 60502, BS 6346

TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 k V
AC tesl voltage 3,5 kV

THE PLACES OF USE:
In places where no mechanical forces, energy grids, Inside and outside underground as lighting cable and Inside cable channels.

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CONTROL CABLES
0,6/1 kV PVC ISOLATED

STRUCTURE :
*Copper conductor with single or multiple twisted wires, "PVC isolated, "PVC fill "PVC external sheath

STANDARDS:
IEC 60502, BS 6346

TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV 37,0
AC tesl voltage 3,5 kV

THE PLACES OF USE:
In places where no mechanical forces and as automation and Control cable in energy centers, in industrial plants, inside and Outside underground and surface ground.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
5x1,5	12,10	270	13,0	18	14
7x1,5	12,10	320	14,0	16	12
10x1,5	12,10	470	17,0	13	10
12x1,5	12,10	520	18,0	12	10
14x1,5	12,10	570	19,0	12	9
19x1,5	12,10	700	20,0	10	8
21x1,5	12,10	780	21,0	10	8
24x1,5	12,10	920	23,0	9	7
30x1,5	12,10	1060	25,0	9	7
40x1,5	12,10	1350	27,0	8	7
48x1,5	12,10	1600	30,0	7	6
61x1,5	12,10	2000	33,0	7	6
5x2,5	7,41	350	14,0	24	19
7x2,5	7,41	420	15,0	20	16
10x2,5	7,41	620	19,0	17	14
12x2,5	7,41	680	19,5	16,0	13
14x2,5	7,41	750	20,0	15,0	13
19x2,5	7,41	950	22,0	14,0	11
21x2,5	7,41	1050	23,0	13,0	11
24x2,5	7,41	1250	26,0	12,0	10
30x2,5	7,41	1430	27,0	11,0	9
40x2,5	7,41	1850	30,0	10,0	9
48x2,5	7,41	2250	34,0	10,0	8
61x2,5	7,41	2750	37,0	9,0	8

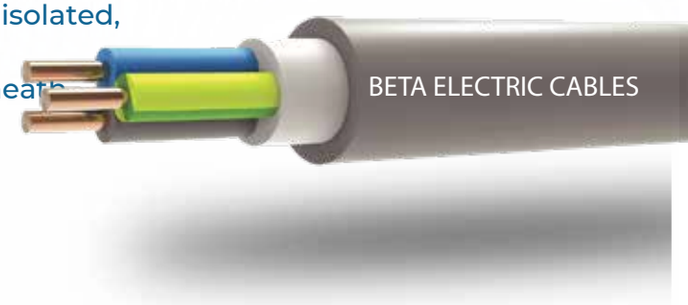
CONCENTRIC CONDUCTIVE LOW VOLTAGE POWER CABLES WITH PVC SHEATH

06/1 kV PVC-INSULATED

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x1,5/1,5	12,10/12,10	225	13,5	26	18,5
3x2,5/2,5	7,41/7,41	281	14,3	34	25
3x4/4	4,61/4,61	388	16,3	44	34
3x6/6	3,08/3,08	489	17,3	56	43
3x10/10	1,83/1,83	709	20,0	75	60
3x16/16	1,15/1,15	998	22,3	98	80
3x25/16	0,727/1,15	1383	26,0	128	106
3x35/16	0,524/1,15	1752	28,5	157	131
3x50/25	0,387/0,727	2424	32,5	185	159
3x70/35	0,268/0,524	3290	37,0	228	202
3x95/50	0,193/0,387	4392	42,0	275	244
3x120/70	0,153/0,268	5458	45,6	313	282
3x150/70	0,124/0,268	6775	50,9	353	324
3x185/95	0,0991/0,193	8232	55,9	399	371
3x240/120	0,0754/0,153	10555	62,7	464	436
3x300/150	0,0601/0,124	12890	67,5	520	480

STRUCTURE :

*Copper conductor with single or multiple twisted wires, *PVC isolated,
*PVC seperative sheath
*Concentric conductor, "Blocker Copper tape, "PVC external sheath



STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in industry plants, switching stations and mains. As different from other cables they sense mechanical strikes coming from outside and activate protection systems by sending information swiftly. In this way they protect the systems from every kind of damages.

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POWER CABLES WITH PVC SHEATHS AND ROUND STEEL WIRE-ARMOUR 0,6/1 kV PVC ISOLATED LOW VOLTAGE

STRUCTURE :
*Copper conductor with multiple wires, "PVC isolated,
PVC separative sheath,
*Galvanised round steel wire-armour, "PVC external sheath

STANDARDS:
IEC 60502

TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
As power cables in energy centers, switching stations, local energy distribution, Open and closed spaces, in direct underground applications and in heavy operational conditions. As special product they may be used in fresh and salt water.

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (on air) 20°C	30°C
3x16+10	1,15/1,83	1590	25,0	98	80
3x25+16	0,727/1,15	2150	28,0	128	106
3x35+16	0,524/1,15	2570	30,5	157	131
3x50+25	0,387/0,727	3530	35,5	185	159
3x70+35	0,268 /0,524	4600	39,5	228	202
3x95+50	0,193/0,387	5950	45,0	275	244
3x120+70	0,153/0,268	7660	50,5	313	282
3x150+70	0,124/0,268	8900	54,0	353	324
3x185+95	0,0991/0,193	10900	60,0	399	371
3x240+120	0,0754/0,153	13700	66,5	464	436
3x300+150	0,0601/0,124	16550	74,0	520	480

POWER CABLES WITH PVC SHEATHS AND ROUND STEEL WIRE-ARMOUR

0,6/1 kV PVC ISOLATED, LOW VOLTAGE

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x1,5	12,10	430	15	26	18,5
4x2,5	7,14	510	16	34	25
4x4	4,61	667	18,2	44	34
4x6	3,08	797	19,4	56	43
4x10	1,83	1100	22,5	75	60
4x16	1,15	1675	22,5	98	80
4x25	0,727	2280	29,0	128	106
4x35	0,524	22850	32,0	157	131
4x50	0,387	3920	37,5	185	159
4x70	0,268	5100	41,5	228	202
4x95	0,193	6780	48,5	275	244
4x120	0,153	8330	53,0	313	282
4x150	0,124	9990	58,0	353	324
4x185	0,0991	12270	64,0	399	371
4x240	0,0754	15400	71,0	464	436
4x300	0,0601	18770	79,5	520	480

STRUCTURE

*Copper conductor with single or multiple twisted wires, "PVC isolated,
*PVC separative sheath, * Galvanised round steel wire-armour,
*PVC external sheath

STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

As power cables in energy centers, switching stations, local energy distribution, Open and closed spaces, in direct underground applications and in heavy operational conditions. As special product they may be used in fresh and salt water.

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POWER CABLES WITH PVC SHEATHS AND STEEL WIRE-ARMOUR 0,6/1 kV PVC ISOLATED, LOW VOLTAGE

STRUCTURE :
*Copper conductor with multiple wires, "PVC isolated,
*PVC separative sheath, "Galvanised flat steel wire armour
*Galvanised blocker steel tape, "PVC external sheath

STANDARDS:
IEC 60502

TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
As power cables in energy centers, switching stations, local energy distribution, Open and closed spaces, in direct underground applications and in heavy operational conditions. As special product they may be used in fresh and salt water.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x16	1,15	1260	23,0	98	80
3x25	0,727	1732	26,7	128	106
3x35	0,524	2160	29,3	157	131
3x50	0,387	2815	33,2	185	159
3x70	0,268	3710	37,8	228	202
3x95	0,193	4789	43,0	275	244
3x120	0,153	5767	46,6	313	282
3x150	0,124	7038	51,7	353	324
3x185	0,0991	8560	57,0	399	371
3x240	0,0754	10808	63,7	464	436
3x300	0,0601	13167	70,0	520	480

POWER CABLES WITH PVC SHEATHS AND STEEL WIRE-ARMOUR

0,6/1 kV PVC ISOLATED, LOW VOLTAGE

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
4 x10	1,83	1136	22,3	75	60
4x16	1,15	1497	25,0	98	80
4x25	0,727	2078	29,0	128	106
4x35	0,524	2650	32,1	157	131
4x50	0,387	3537	36,8	185	159
4x70	0,268	4633	41,8	228	202
4x95	0,193	6000	47,3	275	244
4x120	0,153	7288	51,7	313	282
4x150	0,124	8916	57,2	353	324
4x185	0,0991	10845	63,3	399	371
4x240	0,0754	13633	70,5	464	436
4x300	0,0601	16690	77,6	520	480

STRUCTURE :

* Copper conductor with multiple wires, “PVC isolated,
*PVC separative sheath, “Galvanised fat stee! wire armour
* Galvanised blocker stee!tape,"PYC extemal sheath

STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

As power cables in energy centers, switching stations, local energy distribution, Open and closed spaces, in direct underground applications and in heavy operational conditions. As special product they may be used in fresh and salt water.

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POWER CABLES WITH PVC SHEATHS AND GALVANISED STEEL TAPE ARMOUR 0,6/1 kV PVC ISOLATED, LOW VOLTAGE

STRUCTURE :
*Copper conductor with multiple wires," PVC Isolated
*PVC separative sheath, Galvanised double steel tape armour,
*PVC extemal sheath

STANDARDS:
IEC 60502

TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
As power cables in energy centers, switching stations, local energy distribution, Open and closed spaces, in direct underground applications and in heavy operational conditions. As special product they may be used in fresh and salt water.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x16+10	1,15/1,83	1200	23,0	98	80
3x25+16	0,727/1,15	1680	26,0	128	106
3x35+16	0,524/1,15	2050	28,5	157	131
3x50+25	0,387/0,727	1700	32,5	185	159
3x70+35	0,268/0,524	3660	36,5	228	202
3x95+50	0,193/0,387	5100	42,5	275	244
3x120+70	0,153/0,268	6350	47,0	313	282
3x150+70	0,124/0,268	7450	51,0	353	324
3x185+95	0,0991/0,193	9250	56,5	399	371
3x240+120	0,0754/0,153	11850	63,0	464	436
3x300+150	0,0601/0,124	14560	69,0	520	480

POWER CABLES WITH PVC SHEATHS AND GALVANISED STEEL TAPE ARMOUR

0,6/1 kV PVC ISOLATED, LOW VOLTAGE

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
4 x10	1,83	970	21,5	75	60
4x16	1,15	1300	23,5	98	80
4x25	0,727	1800	27,0	128	106
4x35	0,524	2300	30,0	157	131
4x50	0,387	3050	34,5	185	159
4x70	0,268	4350	39,5	228	202
4x95	0,193	5750	45,5	275	244
4x120	0,153	6950	49,5	313	282
4x150	0,124	8450	54,5	353	324
4x185	0,0991	10500	60,5	399	371
4x240	0,0754	13450	68,0	464	436
4x300	0,0601	16600	74,0	520	480

STRUCTURE :
*Copper conductor with multiple wires, "PVC isolated,
PVC separative sheath, Galvanised double steel tape armour,
*PVC external sheath

STANDARDS:
IEC 60502

TECHNICAL VALUES:
Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
As power cables in energy centers, switching stations, local energy distribution, Open and closed spaces, in direct underground applications and in heavy operational conditions. As special product they may be used in fresh and salt water.

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LOW VOLTAGE POWER CABLES
0,6/1 kV XLPE-INSULATED, SINGLECORE,

CONSTRUCTION:
*Single or stranded copper conductor, "XLPE insulation, PVC outer sheath

STANDARDS:
IEC 60502, BS 7889

TECHNICAL VALUES:

Max operating temperature	90° C
Max short circuit temperature	250° C (ts5 sn)
Nominal voltage	0,6/1 KV
AC tesl voltage	3,5 kV

THE PLACES OF USE:
They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C		(on air) 30 °C	
1x4	4,61	80	6,5	66	55	56	44
1x6	3,08	100	7,0	82	68	71	57
1x10	1,83	140	8,5	109	90	96	77
1x16	1,15	200	9,0	139	115	128	102
1x25	0,727	300	11,0	179	149	173	139
1x35	0,524	400	12,0	213	178	212	170
1x50	0,387	510	13,5	251	211	258	208
1x70	0,268	700	15,0	307	259	328	265
1x95	0,193	1000	17,0	366	310	404	326
1x120	0,153	1200	19,0	416	352	471	381
1x150	0,124	1500	21,0	465	396	541	438
1x185	0,0991	1900	23,0	526	449	626	507
1x240	0,0754	2400	26,0	610	521	749	606
1x300	0,0601	3100	28,0	689	587	864	697
1x400	0,0470	3900	32,0	788	669	1018	816
1x500	0,0366	4950	36,0	889	748	1173	933

LOW VOLTAGE POWER CABLES

0,6/1 kV XLPE-INSULATED, MULTICORE,

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
2x1,5	12,10	170	11,0	37	26
2x2,5	7,14	210	12,0	49	35
2x4	4,61	255	12,5	64	46
2x6	3,08	320	13,5	79	58
2x10	1,83	450	16,0	106	79
2x16	1,15	620	17,5	137	104
2x25	0,727	900	21,0	176	141
2x35	0,524	1170	23,0	213	174
2x50	0,387	1500	26,0	252	212
2x70	0,268	2100	29,5	310	268
2x95	0,193	2800	34,0	361	331
2x120	0,153	3500	37,5	412	385
2x150	0,124	4300	41,5	464	440
2x185	0,0991	5400	47,0	525	507
2x240	0,0754	7000	52,0	608	595

STRUCTURE :
*Single or multiple wire copper conductor, "XLPE-insulated, "PVC fill
*PVC external sheath

STANDARDS:
IEC 60502, BS 7889

TECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables.

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LOW VOLTAGE POWER CABLES
0,6/1 kV XLPE-INSULATED, MULTICORE,

STRUCTURE :
*Single or multiple wire copper conductor, "XLPE-insulated, "PVC fill
*PVC external sheath

STANDARDS:
IEC 60502, BS 7889

TECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x1,5	12,10	180	11,0	30	24
2x2,5	7,41	230	12,0	40	32
3x4	4,61	300	13,0	25	42
3x6	3,08	380	14,0	64	53
3x10	1,83	540	16,0	86	73
3x16	1,15	760	18,0	111	96
3x25	0,727	1100	22.0	143	130
3x35	0,524	1480	24,0	173	160
3x50	0,387	1900	28,0	205	195
3x70	0,268	2750	32,0	252	247
3x95	0,193	3600	35,0	303	305
3x120	0,153	4500	40,0	346	355
3x150	0,124	5600	43,0	390	407
3x185	0,0991	7000	49,0	441	496
3x240	0,0754	9100	54,0	511	551
3x300	0,0601	11350	61,0	580	638
3x400	0,0470	14400	67,0	663	746

LOW VOLTAGE POWER CABLES

0,6/1 kV XLPE-INSULATED, MULTICORE,

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately Net Weight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x16+10	1,15/1,83	850	20,0	111	96
3x25+16	0,727/1,15	1300	23,0	143	130
3x35+16	0,524/1,15	1600	25,0	173	160
3x50+25	0,387/0,727	2200	30,0	205	195
3x70+35	0,268/0,524	3000	34,0	252	247
3x95+50	0,193/0,387	4000	38,0	303	305
3x120+70	0,153/0,268	5100	43,0	346	355
3x150+70	0,124/0,268	6100	46,0	390	407
3x185+95	0,0991/0,193	7750	52,0	441	496
3x240+120	0,0754/0,153	10100	58,0	511	551
3x300+150	0,0601/0,124	12600	64,0	580	638
3x400+185	0,0470/0,0991	16000	72,0	663	746

STRUCTURE :
*Multiple wire copper conductor, "XLPE-insulated, "PVC fill
*PVC external sheath

STANDARDS:
IEC 60502, BS 7889

TECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables.

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LOW VOLTAGE POWER CABLES
0,6/1 kV XLPE-INSULATED, MULTICORE,

STRUCTURE :

*Single or stranded copper conductor, "XLPE-insulated, "PVC fil

*PVC external sheath

STANDARDS:

IEC 60502, BS 7889

TECHNICAL VALUES:

Max operating temperature 90 °C

Max short circuit temperature 250 °C (ts5 sn)

Nominal voltage 0,6/1 kV

AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x1,5	12,10	210	12,0	30	24
4x2,5	7,41	270	13,0	40	32
4x4	4,61	350	14,0	25	42
4x6	3,08	450	15,0	64	53
4x10	1,83	650	18,0	86	73
4x16	1,15	920	20,0	111	96
4x25	0,727	1400	24,0	143	130
4x35	0,524	1800	27,0	173	160
4x50	0,387	2400	30,0	205	195
4x70	0,268	3450	35,0	252	247
4x95	0,193	4550	40,0	303	305
4x120	0,153	5700	45,0	346	355
4x150	0,124	7050	50,0	390	407
4x185	0,0991	8800	56,0	441	496
4x240	0,0754	11500	62,5	511	551
4x300	0,0601	14400	68,0	580	638
4x400	0,0470	17700	77,0	663	746

CONTROL CABLES

0,6/1 kV XLPE-INSULATED,

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
5x1,5	12,10	250	12,0	21	18
7x1,5	12,10	300	13,0	18	16
10x1,5	12,10	450	16,0	15	13
12x1,5	12,10	460	16,0	14	13
14x1,5	12,10	510	17,0	14	12
19x1,5	12,10	640	19,0	12	11
21x1,5	12,10	700	20,0	11	10
24x1,5	12,10	850	22,0	11	10
30x1,5	12,10	950	23,0	10	9
40x1,5	12,10	1200	26,0	9	8
48x1,5	12,10	1450	28,0	8	8
61x1,5	12,10	1800	31,0	8	7
5x2,5	7,41	310	13,0	28	24
7x2,5	7,41	390	14,0	24	21
10x2,5	7,41	570	18,0	20	18
12x2,5	7,41	620	18,0	19	17
14x2,5	7,41	690	19,0	18	16
19x2,5	7,41	870	21,0	16	14
21x2,5	7,41	950	22,0	15	14
24x2,5	7,41	1150	24,0	14	13
30x2,5	7,41	1300	26,0	13	12
40x2,5	7,41	1700	29,0	12	11
48x2,5	7,41	2100	32,0	11	11
61x2,5	7,41	2500	34,0	10	10

STRUCTURE :

*Single or multiple wire copper conductor, "XLPE-insulated, "PVC fill

*PVC external sheath

STANDARDS:

IEC 60502, BS 7889

TECHNICAL VALUES:

Max operating temperature 90 °C

Max short circuit temperature 250 °C (ts5 sn)

Nominal voltage 0,6/1 kV

AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables. They are used inside and outside, undergound and surface ground.

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CONCENTRIC CONDUCTIVE LOW VOLTAGE POWER CABLES WITH PVC SHEATH 0,6/1 kV XLPE-INSULATED

STRUCTURE :
*Single or multiple wire copper conductor, "XLPE-insulated, "PVC seperative sheath,
*Concentric copper conductor, "Blocker copper tape, "PVC extemal sheath

STANDARDS:
IEC 60502

TECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
They are used in industry plants, switching stations and mains. As different from other cables they sense mechanical strikes coming from outside and activate protection systems by sending information swiftly. In this way they protect the systems from every kind of damages.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x1,5/1,5	12,10/12,10	230	12,8	30	24
3x2,5/2,5	7,41/7,41	285	13,7	40	32
3x4/4	4,61/4,61	365	14,7	52	42
3x6/6	3,08/3,08	475	15,8	64	53
3x10/10	1,83/1,83	690	18,6	86	73
3x16/16	1,15/1,15	950	20,6	111	96
3x25/16	0,727/1,15	1280	25,0	143	130
3x35/16	0,524/1,15	1600	26,0	173	160
3x50/25	0,387/0,727	2160	29.5	205	195
3x70/35	0,268/0,524	3070	34,0	252	247
3x95/50	0,193/0,387	4080	39,0	303	305
3x120/70	0,153/0,268	5250	44,0	346	355
3x150/70	0,124/0,268	6250	49,0	390	407
3x185/95	0,0991/0,193	7950	55,0	441	496
3x240/120	0,0754/0,153	10250	60,0	511	551
3x300/150	0,0601/0,124	12660	67,0	575	635

WIRE-ARMOURED LOW VOLTAGE POWER CABLES WITH PVC SHEATHS

0,6/1 kV XLPE-INSULATED ROUND STEEL

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x16+10	1,15/1,83	1400	22,0	111	96
3x25+16	0,727/1,15	1950	26,5	143	130
3x35+16	0,524/1,15	2360	29,0	173	160
3x50+25	0,387/0,727	3030	32,5	205	195
3x70+35	0,268/0,524	4350	38,0	252	247
3x95+50	0,193/0,387	5500	42,0	303	305
3x120+70	0,153/0,268	6750	46,5	346	355
3x150+70	0,124/0,268	8400	52,0	390	407
3x185+95	0,0991/0,193	10250	57,0	441	496
3x240+120	0,0754/0,153	12900	63,5	511	551
3x300+150	0,0601/0,124	15675	71,0	580	635

STRUCTURE :
* Multiple wire copper conductor, "XLPE-insulated,
*PVC seperative sheath, "Galvanised round steel wire armour,
*PVC external sheath

STANDARDS:
IEC 60502,BS 5467

TECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables. They are used inside and outside, undergound and surface ground.

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WIRE-ARMOURED LOW VOLTAGE POWER CABLES WITH PVC SHEATHS 0,6/1 kV XLPE-INSULATED ROUND STEEL

STRUCTURE :
*Single or stranded copper conductor, "XLPE-insulated,
*PVC seperative sheath, "Galvanised round steel wire armour,
*PVC external sheath

STANDARDS:
IEC 60502, 5467

TECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables. They are used inside and outside, undergound and surface ground.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x1,5	12,10	350	13,0	30	24
4x2,5	7,41	450	15,0	40	32
4x4	4,61	540	16,0	25	42
4x6	3,08	780	18,0	64	53
4x10	1,83	1000	20,0	86	73
4x16	1,15	1350	23,0	111	96
4x25	0,727	2100	28,0	143	130
4x35	0,524	2600	31,0	173	160
4x50	0,387	3300	35,0	205	195
4x70	0,268	4800	41,0	252	247
4x95	0,193	6100	44,0	303	305
4x120	0,153	7900	41,0	346	355
4x150	0,124	9400	55,0	390	407
4x185	0,0991	11500	61,0	441	496
4x240	0,0754	14500	68,0	511	551
4x300	0,0601	17600	74,0	580	638
4x400	0,0470	23000	84,0	663	746

WIRE-ARMOURED LOW VOLTAGE POWER CABLES WITH PVC SHEATHS

0,6/1 kV XLPE-INSULATED ROUND STEEL

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x16	1,15	1160	21,5	111	96
3x25	0,727	1620	25,0	143	130
3x35	0,524	2050	27,0	173	160
3x50	0,387	2550	30,0	205	195
3x70	0,268	3500	35,0	252	247
3x95	0,193	4400	39,0	303	305
3x120	0,153	5450	43,0	346	355
3x150	0,124	6700	48,0	390	407
3x185	0,0991	8200	53,0	441	496
3x240	0,0754	10500	59,0	511	551
3x300	0,0601	12850	66,5	580	638

STRUCTURE :

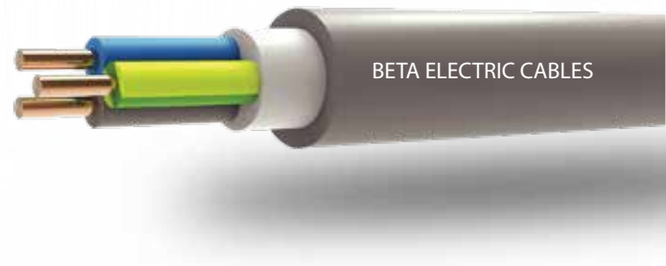
*Multiple wire copper conductor, "XLPE-insulated,
*PVC seperative sheath, "Galvanised flat steel wire armour
*Galvanised blocker steel tape, "PVC external sheath

STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV



THE PLACES OF USE:

They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables. They are used inside and outside, undergound and surface ground.

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WIRE-ARMOURED LOW VOLTAGE POWER CABLES WITH PVC SHEATHS 0,6/1 kV XLPE-INSULATED FLAT STEEL

STRUCTURE :
*Multi wire copper conductor, "XLPE-Insulated,
*PVC seperative sheath, "Galvanised flat steel wire armour,
*Galvanised blocker steel tape, "PVC external sheath

STANDARDS:
EC 60502 T

ECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
As power cable in power centers, switching and industrial stations, Local energy distribution, in closed and open spaces, direct underground Applications and in heavy operational conditions. They are used in the Systems having rapid load changes as they have less dielectric losses.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	30 °C
3x16+10	1,15/1,83	1300	22,5	111	96
3x25+16	0,727/1,15	1780	26,0	143	130
3x35+16	0,524/1,15	2200	28,0	173	160
3x50+25	0,387/0,727	2850	31,5	205	195
3x70+35	0,268/0,524	3850	36,0	252	247
3x95+50	0,193/0,387	4950	40,5	303	305
3x120+70	0,153/0,268	6130	45,0	346	355
3x150+70	0,124/0,268	7300	49,0	390	407
3x185+95	0,0991/0,193	9020	55,0	441	496
3x240+120	0,0754/0,153	11530	61,0	511	551
3x300+150	0,0601/0,124	14150	67,0	580	638

WIRE-ARMOURED LOW VOLTAGE POWER CABLES WITH PVC SHEATHS

0,6/1 kV XLPE-INSULATED FLAT STEEL

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4 x10	1,83	1055	21,0	86	73
4x16	1,15	1370	23,0	111	96
4x25	0,727	1920	26,5	143	130
4x35	0,524	2430	29,5	173	160
4x50	0,387	3100	33,0	205	195
4x70	0,268	4300	38,0	252	247
4x95	0,193	5500	43,0	303	305
4x120	0,153	6800	48,0	346	355
4x150	0,124	8250	52,5	390	407
4x185	0,0991	10200	59,0	441	496
4x240	0,0754	13100	65,0	511	551
4x300	0,0601	16100	71,0	580	638

STRUCTURE :
*Multiple wire copper conductor, "XLPE-insulated,
*PVC seperative sheath," Galvanised flat steel wire armour,
*Galvanised blocker steel tape, PVC external sheath

STANDARDS:
IEC 60502

TECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:
They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables. They are used inside and outside, undergound and surface ground.

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STEEL TAPE ARMOURED, LOW VOLTAGE POWER CABLES WITH PVC SHEATHS 0,6/1 kV XLPE-INSULATED, GALVANIZED

STRUCTURE :

*Multiple wire copper conductor, "XLPE-insulated, "PVC seperative sheath,
*Galvanized double steel tape armoured "PVC external sheath

STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables. They are used inside and outside, undergound and surface ground.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x16+10	1,15/1,83	1100	21,5	111	96
3x25+16	0,727/1,15	1550	24,5	143	130
3x35+16	0,524/1,15	1900	27,0	173	160
3x50+25	0,387/0,727	2500	30,5	205	195
3x70+35	0,268/0,524	3450	35,0	252	247
3x95+50	0,193/0,387	4710	40,0	303	305
3x120+70	0,153/0,268	5900	45,0	346	355
3x150+70	0,124/0,268	7050	49,0	390	407
3x185+95	0,0991/0,193	8750	54,5	441	496
3x240+120	0,0754/0,153	11200	61,0	511	551
3x300+150	0,0601/0,124	13800	66,5	580	638

STEEL TAPE ARMOURED, LOW VOLTAGE POWER CABLES WITH PVC SHEATHS

0,6/1 kV XLPE-INSULATED, GALVANIZED

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
4 x10	1,83	860	20,0	86	73
4x16	1,15	1150	22,0	111	96
4x25	0,727	1650	25,5	143	130
4x35	0,524	2150	28,5	173	160
4x50	0,387	2750	32,0	205	195
4x70	0,268	4100	38,0	252	247
4x95	0,193	5300	42,5	303	305
4x120	0,153	6570	47,5	346	355
4x150	0,124	7000	52,5	390	407
4x185	0,0991	9850	58,5	441	496
4x240	0,0754	12700	65,0	511	551
4x300	0,0601	15700	71,0	580	638

STRUCTURE :

*Multiple wire copper conductor, "XLPE-insulated, "PVC seperative sheath,

*Galvanized double steel tape armoured "PVC external sheath

STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 90 °C

Max short circuit temperature 250 °C (ts5 sn)

Nominal voltage 0,6/1kV

AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are preferable in energy applications in industrial and settlement regions, especially in energy systems with much load charges as their dielectric losses are less than other cables. They are used inside and outside, undergound and surface ground.

HALOJEN FREE CABLES

The cables including any halogen elements such as fluorine, chlorine, bromine and iodine in their bodies, poduced by using isolation, filing and sheath materials.
Operating Temperature: 90 °C XLPE (on EVA/PE basis), 70 plasic (on EVAPE basis)
For example, cables that are produced by using PE, PP, EPR, EVA, SR (silicon) are called halogen-free cables. However, the materials such as PE, PP, EPR may be easily flamed up without halogens.
By applying various processes on these materials, for example by adding flame retardant materials such as HFFR to them, halogen-free flame retardant cables are produced.
HFFR materials never give toxic gases when they are burned but give only water and cartondi-coūide.
These cables are produced with the following codes in product groups of Installation Cable and 0.6/1kV Low Voltage power cable (with or without armours):
H0521-U, H0721-U, H0721-R, H0521-K, H032121-+052121-F
HO3Z121H2-F, H052121H2-F, NHMH-JO, NEDOMH-JD, NHXHX-JO, NHSLH LIHH, ILIHCH, LIHISTICH, N2XH, N2XCH, N2XRH

PROPERTIES OF FLAME RETARDANT CABLES

They prevent spreading of smoke during buming and give no rise to dense smoke that lower visibility range. The never cause suffocations as they do not give up toxic and corrosive gases. On the other hand, they assure living and management security by giving no damage to machines and devices with electronic and metal parts. They secure electrical transmission Task during fire in even 800 50s in approximately 180 minutes. They provide opportunities to maintenance of various security and other activities.

AREA OF USE OF HALOGEN- FREE FLAME RETARDANT CABLES

They are used in the spaces that are not enough ventilated such as planes, ships, railway cars, underground railways and in the electric installations of shopping centers, hospitals, airports, multistorey buildings, movie theatres as well as in fire alarm systems.

STANDARD TESTS OF HALOGEN-FREE FLAME RETARDANT CABLES

*Flame Transmission Test
(IEC 60332-1/EC 60332-3VDE 0472 SECTION 804-BIC)
By this test performance properties of cables in single threaded and in bunchy cables are tested in terms of flame transmission.
*Test of Resistence to Fire
(IEC 60331/VDE 0472 SECTION 814)
Performance property of the cable is tested in terms of working in fire.
*Smoke Density Test
(IEC 61034 SECTION 1VDE 0472 SECTION 816 BS 6724 EK:F)
Smoke density values of the cables are tested. Smoke density causes decreasing in visibility range and suffocations in HFFR cables.
*Test of Toxic and Corrosive Gases
(IEC 60754-1/2 VDE 472 SECTION:813)
Toxic and corrosive gas values that have not to be in HFFR cables are tested.

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HALOGEN-FREE FLAME RETARDANT INSTALLATION CABLES 300/500 V and 450/750 V

STRUCTURE :

*Single wire copper conductor "XLPE insulated on basis of EVA

STANDARDS:

BS 7211

TECHNICAL VALUES:

Max operating temperature 90 °C

Max short circuit temperature 250 °C (ts5 sn)

Nominal voltage 300/500 V, 450/750 V

AC tesl voltage 2000 V - 2500 V

THE PLACES OF USE:

In the places where fire is possible such as business and shopping centers, hotels, schools, tunnels. They are used in pipes flush mounting and cable tunnels at surface mounting. They provides security of life and property by retarding flames and precluding dense smoke.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
0,5	36,00	9	2,1	----	9
0,75	24,50	12	2,3	----	16
1	18,10	15	2,5	11	19
1,5	12,10	21	2,8	16	24
2,5	7,41	33	3,4	20	32
4	4,61	48	3,9	27	43
6	3,08	68	4,4	34	54
10	1,83	112	5,6	47	74

HALOGEN-FREE FLAME RETARDANT INSTALLATION CABLES

450/750 V

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
1,5	12,10	21	2,8	16	24
2.5	7,41	33	3,4	20	32
4	4,61	48	3,8	27	43
6	3,06	68	4,4	34	54
10	1,83	115	6,1	47	74
16	1,15	174	7,1	64	99
25	0,727	266	8,6	86	134
35	0,524	362	9,7	107	150
50	0,387	514	11,5	133	199
70	0,268	704	13,2	164	246
95	0,193	952	15,2	197	294
120	0,153	1187	16,8	237	354
150	0,124	1485	18,8	----	393
185	0,0991	1832	21,0	----	451
240	0,0754	2375	24,4	----	529
300	0,0601	2959	27,0	----	611
400	0,0470	3925	31,2	----	729

STRUCTURE :

*Multiple wire copper conductor "XLPE insulated on basis of EVA

STANDARDS:

BS 7211

TECHNICAL VALUES:

Max operating temperature 90 °C

Max short circuit temperature 250 °C (ts5 sn)

Nominal voltage 450/750 V

AC tesl voltage 2500 V

THE PLACES OF USE:

In the places where fire is possible such as business and shopping centers, hotels, schools, tunnels. They are used in pipes flush mounting and cable tunnels at surface mounting. They provides security of life and property by retarding flames and precluding dense smoke.

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HALOGEN FREE, FLAME RETARDANT, FLEXIBLE INSTALLATION CABLES 300/500 V and 450/750 V

STRUCTURE :

*Thin multiple copper conductor "XLPE insulated on basis of EVA

STANDARDS:

BS 7211

TECHNICAL VALUES:

Max operating temperature 90 °C

Max short circuit temperature 250 °C (ts5 sn)

Nominal voltage 300/500 V & 450/750 V

AC tesl voltage 2000 V - 2500 V

THE PLACES OF USE:

In the places where fire is possible such as business and shopping centers, hotels, schools, tunnels. They are used in pipes flush mounting and cable tunnels at surface mounting. They provides security of life and property by retarding flames and precluding dense smoke.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
0,5	39,00	9	2,1	----	11
0,75	26,00	12	2,3	----	15
1	19,50	15	2,5	11	19
1,5	13,30	22	3,0	15	24
2,5	7,98	34	3,6	20	31
4	4,95	50	4,2	25	41
6	3,30	70	4,8	33	53
10	1,91	120	6,7	45	73
16	1,21	179	7,9	61	98
25	0,78	277	9,7	83	129
35	0,554	376	11,1	103	158
50	0,386	535	13,3	132	198
70	0,272	730	15,2	165	245
95	0,206	988	17,7	197	292
120	0,161	1231	19,6	235	344
150	0,129	1538	21,9	----	391
185	0,106	1899	24,3	----	448
240	0,0801	2453	27,5	----	528

HALOGEN-FREE FLAME RETARDANT FLEXIBLE INSTALLATION CABLES

300/300 V and 300/500 V

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
2x0,50	39,00	38	5,0	----	11
2x0,75	26,00	56	6,2	----	13
2x1	19,50	68	6,6	----	15
2x1,5	13,30	92	7,6	----	20
2x2,5	7,98	140	9,2	----	26
2x4	4,95	193	10,6	----	33
3x0,50	39,00	50	5,3	----	11
3x0,75	26,00	75	6,5	----	13
3x1	19,50	92	7,2	----	15
3x1,5	13,30	130	8,5	----	20
3x2,5	7,98	190	9,9	----	26
3x4	4,95	266	11,4	----	33
5x0,50	39,00	65	5,8	----	11
4x0,75	26,00	93	7,1	----	13
4x1	19,50	120	7,8	----	15
4x1,5	13,3	169	9,2	----	20
4x2,5	7,98	249	10,9	----	26
4x4	4,95	348	12,5	----	33
5x0,50	39,00	81	6,3	----	11
5x0,75	26,00	120	8,0	----	13
5x1	19,50	150	8,6	----	15
5x1,5	13,30	215	10,3	----	20
5x2,5	7,98	315	12,1	----	16
5x4	4,95	450	14,1	----	33

STRUCTURE :

*Thin multiple copper conductor "XLPE insulated on basis of EVA,

*External sheath on basis of EVA

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90 °C

Max short circuit temperature 250 °C (ts5 sn)

Nominal voltage 300/300 V, 300/500 V

AC tesl voltage 2000 V

THE PLACES OF USE:

As being flame retardant and giving up no suffocating gases in moving systems and dry, moist and steamy environments they are used in crowded surroundings.

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FLAME RETARDANT INSTALLATION CABLES 300/500 V HALOGEN-FREE

STRUCTURE

*Single or multiple copper conductor "XLPE insulated on basis of EVA,
*Filling on basis of EVA "External sheath on basis of EVA

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 300/500 V
AC tesl voltage 2000 V

THE PLACES OF USE:

As being flame retardant and giving up no suffocating gases in fixed installations having no mechanical forces and in dry, moist and steamy environments they are used in crowded surroundings.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
2x1,5	12,10	96,0	8,50	15,00	18,00
2x2,5	7,41	120,0	9,50	20,00	25,00
2x4	4,61	171,0	10,50	26,00	34,00
2x6	3,08	220,0	11,50	34,00	43,00
2x10	1,83	370,0	15,50	45,00	60,00
2x16	1,15	512,0	17,00	61,00	79,00
2x25	0,727	760,0	22,00	82,00	107,00
2x35	0,524	1010,0	24,00	105,00	135,00
3x1,5	12,10	110,0	10,00	15,00	18,00
3x2,5	7,41	147,0	11,00	20,00	25,00
3x4	4,61	202,0	12.55	26,00	34,00
3x6	3,08	292,0	13,20	34,00	43,00
3x10	1,83	454,0	15,00	45,00	60,00
3x16	1,15	662,0	17,00	61,00	79,00
3x25	0,727	1020,0	22,50	82,00	107,00
3x35	0,514	1315,0	24,70	105,00	135,00
4x1,5	12,10	130,0	9,50	15,00	18,00
4x2,5	7,41	177,0	10,40	20,00	25,00
4x4	4,61	280,0	12.50	26,00	34,00
4x6	3,08	380,0	14,00	34,00	43,00
4x10	1,83	575,0	18,00	45,00	60,00
4x16	1,15	822,0	20,20	61,00	79,00
4x25	0,727	1265,0	24,00	82,00	107,00
4x35	0,524	1670,0	26,00	105,00	135,00
5x1,5	12,10	170,0	10,50	15,00	18,00
5x2,5	7,41	225,0	11,50	20,00	25,00
5x4	4,61	340,0	14,60	26,00	34,00
5x6	3,08	465,0	15,00	34,00	43,00
5x10	1,83	691,0	18,25	45,00	60,00
5x16	1,15	1019,0	23,00	61,00	79,00

XLPE-INSULATED HALOGEN-FREE FLAME RETARDANT LOW VOLTAGE POWER CABLES

0,6/1 kV SINGLECORE,

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C •••	20°C ⁂	(on air) 30°C •••	30°C ⁂
1x4	4,61	65	6,5	66	55	56	44
1x6	3,08	85	7,0	82	68	71	57
1x10	1,83	125	8,0	109	90	96	77
1x16	1,15	190	9,0	139	115	128	102
1x25	0,727	300	11,0	179	149	173	139
1x35	0,524	375	12,0	213	178	212	170
1x50	0,387	500	14,0	251	211	258	208
1x70	0,268	700	15,0	307	259	328	265
1x95	0,193	950	17,0	366	310	404	326
1x120	0,153	1200	19,0	416	352	471	381
1x150	0,124	1400	21,0	465	396	541	438
1x185	0,0991	1800	23,0	526	449	626	507
1x240	0,0754	2300	26,0	610	521	749	606
1x300	0,0601	3000	28,0	689	587	864	697
1x400	0,0470	3800	32,0	788	669	1018	816
1x500	0,0366	4800	36,0	889	748	1173	933

STRUCTURE:

*Single or multiple wire copper conductor "XLPE-insulated,

*External sheath on basis of EVA/PE

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90° C

Max short circuit temperature 250° C (ts5 sn)

Nominal voltage 0,6/1 KV

AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in energy applications of industrial and settlement regions, especially in places where load changes occur frequently as they have less dielectric losses, retard flames and hiving no suffocating gases in fires.

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XLPE-INSULATED HALOGEN-FREE FLAME RETARDANT LOW VOLTAGE POWER CABLES 0,6/1 kV MULTICORE,

CONSTRUCTION:

*Stranded copper conductor, XLPE insulation, "Hologen free filler
*EVA/PE based outer sheath

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211
ECHNICAL VALUES:
Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in energy applications of industrial and settlement regions, especially in places where load changes occur frequently as they have less dielectric losses, retard flames and hiving no suffocating gases in fres.

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
3x16+10	1,15/1,83	750	19,5	111	96
3x25+16	0,727/1,15	1150	23,0	143	130
3x35+16	0,524/1,15	1450	25,0	173	160
3x50+25	0,387/0,727	2000	29,0	205	195
3x70+35	0,268/0,524	2800	33,0	252	247
3x95+50	0,193/0,387	3800	37,0	303	305
3x120+70	0,153/0,268	4800	42,0	346	355
3x150+70	0,124/0,268	5750	46,0	390	407
3x185+95	0,0991/0,193	7250	51,0	441	496
3x240+120	0,0754/0,153	9350	57,0	511	551
3x300+150	0,0601/0,124	11650	63,0	580	638
3x400+185	0,0470/0,0991	14750	71,0	663	746

XLPE-INSULATED HALOGEN-FREE FLAME RETARDANT LOW VOLTAGE POWER CABLES

0,6/1 kV MULTICORE,

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x1,5	12,10	160	11,5	30	24
4x2,5	7,41	210	12,5	40	32
4x4	4,61	280	13,5	25	42
4x6	3,08	380	15,0	64	53
4x10	1,83	540	17,0	86	73
4x16	1,15	800	20,0	111	96
4x25	0,727	1250	24,0	143	130
4x35	0,524	1650	26,0	173	160
4x50	0,387	2250	30,0	205	195
4x70	0,268	3150	35,0	252	247
4x95	0,193	4200	39,0	303	305
4x120	0,153	5300	44,0	346	355
4x150	0,124	6500	48,0	390	407
4x185	0,0991	8100	53,0	441	496
4x240	0,0754	10500	60,0	511	551
4x300	0,0601	13100	66,0	580	638
4x400	0,0470	16750	75,0	663	746

STRUCTURE

*Single or multiple wire copper conductor "XLPE-insulated,"Halogen-free fill
*External sheath on basis of EVA/PE

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in energy applications of industrial and settlement regions, especially in places where load changes occur frequently as they have less dielectric losses, retard flames and hiving no suffocating gases in fres.

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0,6/1 kV XLPE-INSULATED HALOGEN-FREE FLAME RETARDANT CONTROL CABLES

STRUCTURE

*Single or multiple wire copper conductor "XLPE insulated, "Halogen-free fill
*External sheath on basis of EVA/PE

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

These type of cables are used in the power installations (without mechanical stresses) of industrial and residential areas as automation and power control cable, since they have less dielectric losses compared to other cables, retard fames and release no choking gases in fires; and especially in the power systems, where sudden energy loads are often, in public and fire-sensitive areas, indoors and outdoors, under oraboveground

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
5x1,5	12,10	190	12,0	21	18
7x1,5	12,10	230	13,0	18	16
10x1,5	12,10	320	15,0	15	13
12x1,5	12,10	370	16,0	14	13
14x1,5	12,10	400	17,0	14	12
19x1,5	12,10	500	18,5	12	11
21x1,5	12,10	550	19,5	11	10
24x1,5	12,10	600	21,5	11	10
30x1,5	12,10	750	23,0	10	9
40x1,5	12,10	950	25,0	9	8
48x1,5	12,10	1100	28,0	8	8
61x1,5	12,10	1650	31,0	8	7
5x2,5	7,41	250	13,0	28	24
7x2,5	7,41	300	14,0	24	21
10x2,5	7,41	430	17,0	20	18
12x2,5	7,41	500	18,0	19	17
14x2,5	7,41	550	19,0	18	16
19x2,5	7,41	700	21,0	16	14
21x2,5	7,41	750	22,0	15	14
24x2,5	7,41	850	24,0	14	13
30x2,5	7,41	1050	26,0	13	12
40x2,5	7,41	1400	28,0	12	11
48x2,5	7,41	1650	31,0	11	11
61x2,5	7,41	2050	34,0	10	10

SINGLETHREADED, HALOGEN FREE FLAME RETARDANT, LOW VOLTAGE POWER CABLES

0,6/1 kV XLPE-INSULATED

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C •••	20°C ⁂	(on air) 30°C •••	30°C ⁂
1x4	4,61	85	8,0	66	55	56	44
1x6	3,08	106	8,5	82	68	71	57
1x10	1,83	150	9,5	109	90	96	77
1x16	1,15	210	10,0	139	115	128	102
1x25	0,727	300	11,5	179	149	173	139
1x35	0,524	390	12,5	213	178	212	170
1x50	0,387	520	13,5	251	211	258	208
1x70	0,268	710	16,0	307	259	328	265
1x95	0,193	950	17,0	366	310	404	326
1x120	0,153	1200	19,0	416	352	471	381
1x150	0,124	1450	21,0	465	396	541	438
1x185	0,0991	1800	23.0	526	449	626	507
1x240	0,0754	2350	26,0	610	521	749	606
1x300	0,0601	3000	29,0	689	587	864	697
1x400	0,0470	3850	32,0	788	669	1018	816
1x500	0,0366	4850	36,0	889	748	1173	933

STRUCTURE:

*Single or multiple wire copper conductor, "Mica tape, "XLPE-insulated,

*External sheath on basis of EVA/PE

*According to FE 180:IEC 60331-21, the cable keeps current-carrying function in fire conditions in flame for 180 minutes.

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90° C

Max short circuit temperature 250° C (ts5 sn)

Nominal voltage 0,6/1 KV

AC tesl voltage 3,5 kV

THE PLACES OF USE:

As having less dielectric loss than other cables, being flame retardant and giving up no suffocating gas in fire they are used in energy applications for industry and settlement regions, in communal living spaces, particularly in energy systems having rapid load changes.

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HALOGEN-FREE FLAME RETARDANT LOW VOLTAGE POWER CABLES 0,6/1 kV XLPE-INSULATED, MULTICORE

STRUCTURE :

*Single or multiple wire copper conductor, "Mica tape, "XLPE-insulated,
*Halogen-free fill, "Extemal sheath on basis of EVA/PE
*According to FE 180 IEC 60331-21, the cable keeps current-carrying function in fire conditions in flame for 180 minutes.

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in energy applications of industrial and settlement regions where mechanical forces are not as being automation and power control cables, in places where fire is possible, in and out spaces, underground and surface ground, especiall in places where load changes occur frequently as they have less dielectric losses than other cables, retard flames and do not give up suffocating gasses.

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
3x1,5	12,10	200	14,0	30	24
3x2,5	7,41	240	15,0	40	32
3x4	4,61	300	16,0	52	42
3x6	3,08	380	17,0	64	53
3x10	1,83	520	19,0	86	73
3x16	1,15	720	20,0	111	96
3x25	0,727	1030	23,0	143	130
3x35	0,524	1350	25,0	173	160
3x50	0,387	1750	28,0	205	195
3x70	0,268	2500	32,0	252	247
3x95	0,193	3350	36,0	303	305
3x120	0,153	4150	40,0	346	355
3x150	0,124	5100	44,0	390	407
3x185	0,0991	6350	49,0	441	496
3x240	0,0754	8250	55,0	511	551
3x300	0,0601	10250	61,0	580	638
3x400	0,0470	13100	68,0	663	746

HALOGEN-FREE FLAME RETARDANT LOW VOLTAGE POWER CABLES

0,6/1 kV XLPE-INSULATED, MULTICORE

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Ω/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
3x16+10	1,15/1,83	850	22,0	111	96
3x25+16	0,727/1,15	1200	25,0	143	130
3x35+16	0,524/1,15	1500	27,0	173	160
3x50+25	0,387/0,727	2100	30,0	205	195
3x70+35	0,268/0,524	2850	34,0	252	247
3x95+50	0,193/0,387	3850	39,0	303	305
3x120+70	0,153/0,268	4900	43,0	346	355
3x150+70	0,124/0,268	5800	47,0	390	407
3x185+95	0,0991/0,193	7300	52,0	441	496
3x240+120	0,0754/0,153	9450	58,0	511	551
3x300+150	0,0601/0,124	11750	64,0	580	638
3x400+185	0,0470/0,0991	14850	72,0	663	746

CONSTRUCTION:

*Multiple wire copper conductor, "Mica tape, "XLPE-insulated,
*Halogen-free fill, *External sheath on basis of EVA/PE
*According to FE 180 IEC 60331-21, the cable keeps current-carrying function in fire conditions in flame for 180 minutes.

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

ECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in energy applications of industrial and settlement regions where mechanical forces are not as being automation and power control cables, in places where fire is possible, in and out spaces, underground and surface ground, especaiall in places where load changes occur frequently as they have less dielectric losses than other cables, retard flames and do not give up suffocating gasses.

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HALOGEN-FREE FLAME RETARDANT LOW VOLTAGE POWER CABLES 0,6/1 kV XLPE-INSULATED, MULTICORE

STRUCTURE :

*Single or multiple wire copper conductor, Mica tape, *XLPE-insulated,
*Halogen-free fill, *External sheath on basis of EVA/PE
*According to FE 180 IEC 60331-21, the cable keeps current-carrying function in fire conditions in flame for 180 minutes.

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in energy applications of industrial and settlement regions where mechanical forces are not as being automation and power control cables, in places where fire is possible, in and out spaces, underground and surface ground, especiall in places where load changes occur frequently as they have less dielectric losses than other cables, retard flames and do not give up suffocating gasses.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x1,5	12,10	230	14,5	30	24
4x2,5	7,41	290	15,5	40	32
4x4	4,61	370	17,0	25	42
4x6	3,08	460	18,5	64	53
4x10	1,83	640	20,0	86	73
4x16	1,15	900	23,0	111	96
4x25	0,727	1300	25,0	143	130
4x35	0,524	1700	28,0	173	160
4x50	0,387	2300	31,0	205	195
4x70	0,268	3200	36,0	252	247
4x95	0,193	4300	40,0	303	305
4x120	0,153	5400	45,0	346	355
4x150	0,124	6550	49,0	390	407
4x185	0,0991	8200	54,0	441	496
4x240	0,0754	10600	61,0	511	551
4x300	0,0601	13250	68,0	580	638
4x400	0,0470	16900	76,0	663	746

CONTROL CABLES
FLAME RETARDANT LOW VOLTAGE

0,6/1 kV XLPE-INSULATED, HALOGEN-FREE

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
5x1,5	12,10	270	16,0	21	18
7x1,5	12,10	330	17,0	18	16
10x1,5	12,10	470	21,0	15	13
12x1,5	12,10	530	22,0	14	13
14x1,5	12,10	570	23,0	14	12
19x1,5	12,10	700	25,0	12	11
21x1,5	12,10	750	27,0	11	10
24x1,5	12,10	950	30,0	11	10
30x1,5	12,10	1100	32,0	10	9
40x1,5	12,10	1400	35,0	9	8
48x1,5	12,10	1700	39,0	8	8
61x1,5	12,10	2050	43,0	8	7
5x2,5	7,41	340	17,0	28	24
7x2,5	7,41	420	19,0	24	21
10x2,5	7,41	600	23,0	20	18
12x2,5	7,41	700	24,0	19	17
14x2,5	7,41	750	25,0	18	16
19x2,5	7,41	950	28,0	16	14
21x2,5	7,41	1050	29,0	15	14
24x2,5	7,41	1250	32,0	14	13
30x2,5	7,41	1500	35,0	13	12
40x2,5	7,41	1900	39,0	12	11
48x2,5	7,41	2300	43,0	11	11
61x2,5	7,41	2800	47	10	10

STRUCTURE

*Single or multiple wire copper conductor, "Mica tape, "XLPE- insulated,
*Halogen-free fill, "External sheath on basis of EVA/PE
*According to FE 180:IEC 60331-21, the cable keeps current-carrying function in fire conditions in flame for 180 minutes.

STANDARDS:

BS EN 50525-3-21/IEC60332/IEC 60754/BS7211

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in energy applications of industrial and settlement regions where mechanical forces are not as being automation and power control cables, in places where fire is possible, in and out spaces, underground and surface ground, especial in places where load changes occur frequently as they have less dielectric losses than

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MULTICORE, HALOGEN-FREE CABLES WITH ROUND STEEL WIRE ARMOUR FLAME RETARDANT LOW VOLTAGE POWER 0,6/1 kV XLPE-INSULATED,

STRUCTURE :

*Single or multiple wire copper conductor, XLPE-insulated,
*Halogen-free separative sheath, Galvanized round steel armour,
*External sheath on basis of EVA/PE

STANDARDS:

BS 6724

TECHNICAL VALUES:

Max operating temperature 90 °C
Max short circuit temperature 250 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used in energy applications of industrial and settlement regions where mechanical forces are not as being automation and power control cables, in places where fire is possible, in and out spaces, underground and surface ground, especiall in places where load changes occur frequently as they have less dielectric losses than other cables, retard flames and do not give up suffocating gasses.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x1,5	12,10	320	13,0	30	24
4x2,5	7,41	420	15,0	40	32
4x4	4,61	500	16,0	25	42
4x6	3,08	730	18,5	64	53
4x10	1,83	970	21,0	86	73
4x16	1,15	1250	23,0	111	96
4x25	0,727	1950	28,0	143	130
4x35	0,524	2450	30,0	173	160
4x50	0,387	3000	33,0	205	195
4x70	0,268	4300	39,0	252	247
4x95	0,193	5450	43,0	303	305
4x120	0,153	7000	48,0	346	355
4x150	0,124	8400	53,0	390	407
4x185	0,0991	10100	58,0	441	496
4x240	0,0754	12750	64,0	511	551

ALUMINIUM CONDUCTIVE, SINGLECORE LOW VOLTAGE POWER CABLES

0,6/1 kV PVC-INSULATED

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C •••	20°C ⁂	(on air) 30°C •••	30°C ⁂
1x16	1,910	130	10,0	75	66	72	64
1x25	1,200	180	11,5	97	86	99	84
1x35	0,868	215	12,5	151	127	131	113
1x50	0,641	280	14,0	179	151	160	138
1x70	0,443	360	16,0	218	186	202	174
1x95	0,320	470	18,0	261	223	249	210
1x120	0,253	560	19,0	297	254	291	244
1x150	0,206	710	22,0	332	285	333	280
1x185	0,164	860	23,0	376	323	384	320
1x240	0,125	1080	26,5	437	378	460	378
1x300	0,100	1350	29,0	494	427	530	433

STRUCTURE:

Multiple wire aluminium conductor, "PVC-insulated, "PVC External Sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70° C

Max short circuit temperature 160° C (ts5 sn)

Nominal voltage 0,6/1 KV

AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used as network, lighting and power cables underground and cable channels where there is no much mechanical forces.

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ALUMINIUM CONDUCTIVE, MULTCORE LOW VOLTAGE POWER CABLES 0,6/1 kV PVC-INSULATED

STRUCTURE:

*Multiple wire aluminium conductor, "PVC-insulated, "PVC fill,

*PVC External Sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70° C

Max short circuit temperature 160° C (ts5 sn)

Nominal voltage 0,6/1 KV

AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used as network, lighting and power cables underground and cable channels where there is no much mechanical forces.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
2x16	1,910	510	19,0	70	59
2x25	1,200	690	22,0	90	78
2x35	0,868	840	24,0	110	99
2x50	0,641	1095	27,0	135	125
2x70	0,443	1420	31,0	160	150
2x95	0,320	1875	35,5	190	185
2x120	0,253	2230	38,5	210	210
2x150	0,206	2820	43,5	240	240
2x185	0,164	3325	46,0	275	275
2x240	0,125	4300	53,0	320	325
2x300	0,100	5320	59,0	355	365

CONDUCTIVE, MULTICORE LOW VOLTAGE POWER CABLES

0,6/1 kV PVC-INSULATED ALUMINIUM

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
3x16	1,910	570	20,5	66	64
3x25	1,200	780	23,5	99	83
3x35	0,868	950	25,5	118	102
3x50	0,641	1250	29,0	142	124
3x70	0,443	1700	33,5	176	158
3x95	0,320	2200	38,0	211	160
3x120	0,253	2600	41,0	242	220
3x150	0,206	3300	47,0	270	252
3x185	0,164	3900	49,5	308	290
3x240	0,125	5050	57,5	363	339
3x300	0,100	6200	63,0	412	377

STRUCTURE:

* Multiple wire aluminium conductor, "PVC-insulated, "PVC fill
*PVC External Sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70° C
Max short circuit temperature 160° C (ts5 sn)
Nominal voltage 0,6/1 KV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used as network, lighting and power cables underground and cable channels where there is no much mechanical forces

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CONDUCTIVE, MULTIPLE CORE LOW VOLTAGE POWER CABLES 0,6/1 kV PVC-INSULATED ALUMINIUM

STRUCTURE :

* Multiple wire aluminium conductor, "PVC-insulated, "PVC fill
*PVC External Sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used as network, lighting and power cables underground and cable channels where there is no much mechanical forces.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x25+10	1,200/1,910	860	25,0	99	83
3x35+16	0,868/1,910	1010	27,0	118	102
3x50+25	0,641/1,200	1400	31,0	142	124
3x70+35	0,443/0,868	1800	35,0	176	158
3x95+50	0,320/0,641	2400	40,0	211	160
3x120+70	0,253/0443	2900	44,0	242	220
3x150+70	0,206/0,443	3500	49,0	270	252
3x185+95	0,164/0,320	4200	52,0	308	289
3x240+120	0,125/0,253	5400	59,5	363	339
3x300+150	0,100/0,206	6400	66,0	412	377

CONDUCTIVE, MULTIPLE CORE LOW VOLTAGE POWER CABLES

0,6/1 kV PVC-INSULATED ALUMINIUM

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
4x16	1,910	670	22,0	60	51
4x25	1,200	920	25,5	99	83
4x35	0,868	1120	28,0	118	102
4x50	0,641	1550	32,5	142	124
4x70	0,443	2000	37,0	176	158
4x95	0,320	2600	42,0	211	160
4x120	0,253	3150	46,0	242	220
4x150	0,206	4000	52,0	270	252
4x185	0,164	4800	55,0	308	289
4x240	0,125	6100	64,0	363	339
4x300	0,100	7500	70,0	412	377

STRUCTURE:

"Multiple wire aluminium conductor, *PVC-insulated, * PVC fill
*PVC External Sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70° C
Max short circuit temperature 160° C (ts5 sn)
Nominal voltage 0,6/1 KV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

They are used as network, lighting and power cables underground and cable channels where there is no much mechanical forces.

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CONDUCTIVE, MULTICORE LOW VOLTAGE POWER CABLES WITH ROUND STEEL WIRE ARMOUR 0,6/1 kV PVC-INSULATED ALUMINIUM

STRUCTURE:

*Multiple wire aluminium conductor, "PVC-insulated,
*PVC seperative sheath "Galvanised round steel armour,
*PVC External Sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70° C
Max short circuit temperature 160° C (ts5 sn)
Nominal voltage 0,6/1 KV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

As being network, lighting and power cables resistent to mechanical forces they are used in heavy operational conditions, in underground and surface ground cable channels internally and externally.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x16	1,910	1070	23,0	66	64
3x25	1,200	1550	27,0	99	83
3x35	0,868	1850	30,0	118	102
3x50	0,641	2200	33,0	142	124
3x70	0,443	3050	38,0	176	158
3x95	0,320	3700	42,5	211	160
3x120	0,253	4250	46,0	242	220
3x150	0,206	5700	52,5	270	252
3x185	0,164	6420	55,0	308	289
3x240	0,125	7800	63,0	363	339
3x300	0,100	9400	69,0	412	377

CONDUCTIVE, MULTIPLE CORE LOW VOLTAGE POWER CABLES WITH ROUND STEEL WIRE ARMOUR

0,6/1 kV PVC-INSULATED ALUMINIUM

Number of core X Cross-section area (mm^2)	DC at 20°C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20°C	(on air) 30°C
3x25+16	1,200/1,910	1650	28,0	99	83
3x35+16	0,868/1,910	1900	30,5	118	102
3x50+25	0,641/1,200	2600	35,0	142	124
3x70+35	0,443/0,868	3250	39,5	176	158
3x95+50	0,320/0,641	4000	44,5	211	160
3x120+70	0,253/0443	5150	50,0	242	220
3x150+70	0,206/0,443	6000	54,5	270	252
3x185+95	0,164/0,320	6850	57,0	308	289
3x240+120	0,125/0,253	8400	65,0	363	339
3x300+150	0,100/0,206	10000	71,5	412	377

STRUCTURE:

*Multiple wire aluminium conductor, "PVC-insulated,

*PVC seperative sheath "Galvanised round steel armour,

*PVC External Sheath

STANDARDS:

IEC 60502, BS 6346

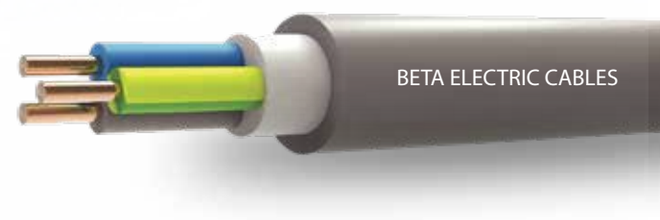
TECHNICAL VALUES:

Max operating temperature 70° C

Max short circuit temperature 160° C (ts5 sn)

Nominal voltage 0,6/1 KV

AC tesl voltage 3,5 kV



THE PLACES OF USE:

As being network, lighting and power cables resistent to mechanical forces they are used in heavy operational conditions, in underground and surface ground cable channels internally and externally.

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CONDUCTIVE, MULTICORE LOW VOLTAGE POWER CABLES WITH ROUND STEEL WIRE ARMOUR 0,6/1 kV PVC-INSULATED ALUMINIUM

STRUCTURE:

*Multiple wire aluminium conductor, "PVC-insulated,
*PVC seperative sheath "Galvanised round steel armour,
*PVC External Sheath

STANDARDS:

IEC 60502, BS 6346

TECHNICAL VALUES:

Max operating temperature 70° C
Max short circuit temperature 160° C (ts5 sn)
Nominal voltage 0,6/1 KV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

As being network, lighting and power cables resistent to mechanical forces they are used in heavy operational conditions, in underground and surface ground cable channels internally and externally.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x16	1,910	1350	26,0	60	51
4x25	1,200	1750	29,0	99	83
4x35	0,868	2050	31,5	118	102
4x50	0,641	2900	37,0	142	124
4x70	0,443	3550	41,5	176	158
4x95	0,320	4750	48,0	211	160
4x120	0,253	5500	52,0	242	220
4x150	0,206	6700	58,0	270	252
4x185	0,164	7650	61,0	308	289
4x240	0,125	9350	69,5	363	339
4x300	0,100	11050	76,0	412	377

CONDUCTIVE, MULTIPLE CORE LOW VOLTAGE POWER CABLES WITH FLAT STEEL ARMOUR

0,6/1 kV PVC-INSULATED ALUMINIUM

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x16	1,910	1000	23,0	60	64
3x25	1,200	1300	26,0	99	83
3x35	0,868	1650	29,0	118	102
3x50	0,641	2000	31,5	142	124
3x70	0,443	2500	36,0	176	158
3x95	0,320	3100	40,5	211	160
3x120	0,253	3600	44,0	242	220
3x150	0,206	4500	50,0	270	252
3x185	0,164	5150	52,0	308	290
3x240	0,125	6500	60,0	363	339
3x300	0,100	7800	66,0	412	377

STRUCTURE:

*Multiple wire aluminium conductor, "PVC-insulated,
*PVC seperative sheath * Galvanised flat steel armour,
*Galvanised blocker steel tape "PVC External Sheath

STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 70° C
Max short circuit temperature 160° C (ts5 sn)
Nominal voltage 0,6/1 KV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

As being network, lighting and power cables resistent to mechanical forces they are used in heavy operational conditions, in underground and surface ground cable channels internally and externally.

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CONDUCTIVE, MULTICORE LOW VOLTAGE POWER CABLES WITH FLAT STEEL ARMOUR 0,6/1 kV PVC-INSULATED ALUMINIUM

STRUCTURE :

*Multiple wire aluminium conductor, "PVC-insulated,
*PVC seperative sheath, "Galvanised flat steel wire armour,
*Galvanised blocker steel tape "PVC External Sheath

STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 70 °C
Max short circuit temperature 160 °C (ts5 sn)
Nominal voltage 0,6/1 kV
AC tesl voltage 3,5 kV

THE PLACES OF USE:

As being network, lighting and power cables resistent to mechanical forces they are used in heavy operational conditions, in underground and surface ground cable channels internally and externally.

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
3x25+16	1,200/1,910	1450	27,0	99	83
3x35+16	0,868/1,910	1650	29,0	118	102
3x50+25	0,641/1,200	2100	33,0	142	124
3x70+35	0,443/0,868	2700	38,0	176	158
3x95+50	0,320/0,641	3350	42,5	211	160
3x120+70	0,253/0443	4000	47,0	242	220
3x150+70	0,206/0,443	4700	51,5	270	252
3x185+95	0,164/0,320	5500	54,5	308	289
3x240+120	0,125/0,253	6850	62,0	363	339
3x300+150	0,100/0,206	8300	68,5	412	377

CONDUCTIVE, MULTICORE LOW VOLTAGE POWER CABLES WITH FLAT STEEL ARMOUR

0,6/1 kV PVC-INSULATED ALUMINIUM

Number of core X Cross-section area (mm^2)	DC at 20 °C Conductor Resistance (Q/km)	Approximately NetWeight (kg/km)	Appraximate Outer Diameter (mm)	Current-carrying capacity (Ampere) (inside the pipe) 20 °C	(on air) 30 °C
4x16	1,910	1200	25,0	60	51
4x25	1,200	1550	28,0	99	83
4x35	0,868	1800	30,5	118	102
4x50	0,641	2350	35,0	142	124
4x70	0,443	2900	40,0	176	158
4x95	0,320	3650	44,5	211	160
4x120	0,253	4300	49,0	242	220
4x150	0,206	5300	55,0	270	252
4x185	0,164	6150	58,0	308	289
4x240	0,125	7650	66,5	363	339
4x300	0,100	9250	73,0	412	377

STRUCTURE:

*Multiple wire aluminium conductor, "PVC-Insulated,

*PVC seperative sheath Galvanised flat steel armour,

*Galvanised blocker steel tape "PVC External Sheath

STANDARDS:

IEC 60502

TECHNICAL VALUES:

Max operating temperature 70° C

Max short circuit temperature 160° C (ts5 sn)

Nominal voltage 0,6/1 KV

AC tesl voltage 3,5 kV

THE PLACES OF USE:

As being network, lighting and power cables resistent to mechanical forces they are used in heavy operational conditions, in underground and surface ground cable channels internally and externally.

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BETA ELECTRIC

Wooden bobbins specifications

BETA Cables Company	WOODEN BOBBINS SPECIFICATIONS

Code	Drum size (mm)	Barrel diam (mm)	Inner width (mm)	Outer width (mm)	Outer Width with Steel Bars (mm)	Max capacity (kg)	Drum weight (kg)	Lagging weight (kg)
A	630	375	400	450	500	250	20	8
B	700	375	400	476	526	300	25	10
C	800	400	550	650	700	450	40	20
D	900	500	610	710	760	600	65	23
E	1000	500	650	750	800	800	70	27
F	1100	550	570	700	750	1300	90	30
G	1250	550	650	750	800	1300	105	34
H	1400	700	800	950	1000	2000	145	48
I	1500	700	800	950	1000	2500	175	51
J	1600	700	800	950	1000	2500	190	55
K	1700	920	900	1050	1100	3000	230	64
L	1800	920	900	1050	1100	3000	250	68
M	1900	1020	1200	1350	1400	4000	300	92
N	2000	1020	1200	1350	1400	4000	320	97
O	2100	1020	1200	1350	1400	4500	330	102
P	2200	1020	1200	1350	1400	4500	340	107
Q	2300	1100	1300	1450	1500	5000	405	120
R	2400	1100	1300	1450	1500	5000	430	125
S	2500	1400	1300	1450	1500	5500	515	130
T	2600	1400	1300	1450	1500	5500	545	135
U	2700	1400	1300	1450	1500	6000	600	140
V	2800	1400	1300	1450	1500	6000	750	145
W	2800	1700	1500	1730	1780	6500	1180	155
X	2900	1500	1500	1650	1700	6000	800	160
Y	3000	1500	1500	1650	1700	6000	850	165
Z	3000	1800	1500	1730	1780	6500	1270	165

Note:

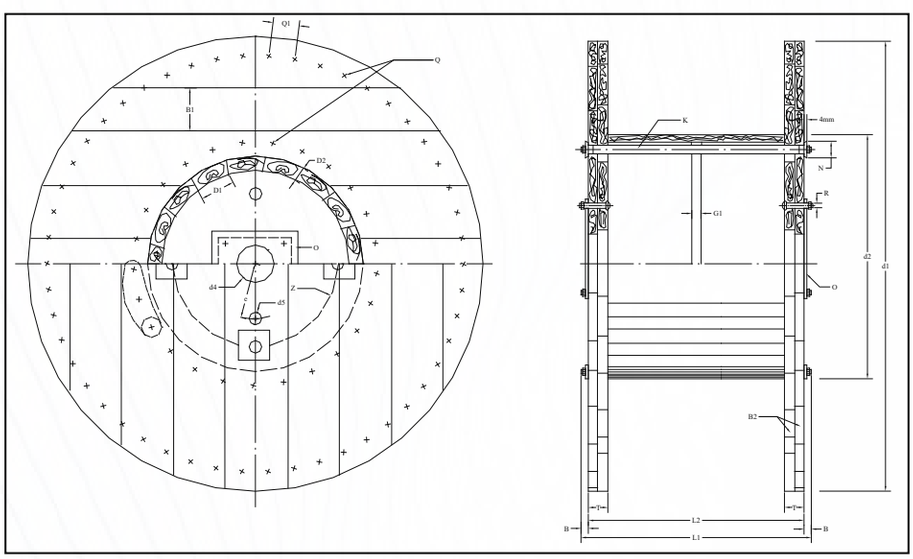
All above mentioned dimensions are subjected to 5% tolerance

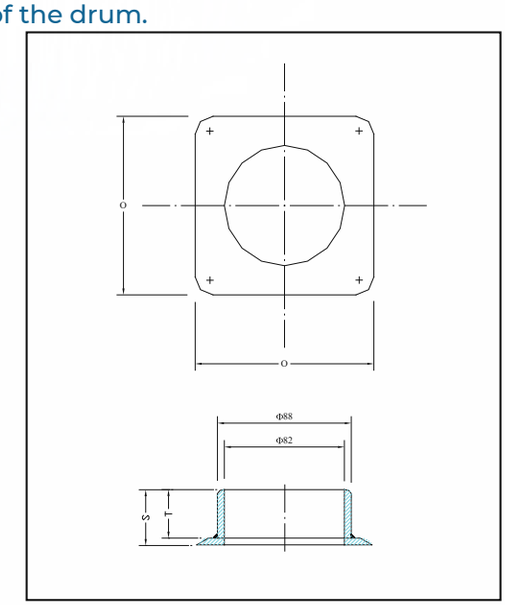
Drums Size 1000&1250 mm, the outer width with steel bars should be 750 mm. in case of insulated cables to save shipping cost in container.

Code + X :Means Special drum and width or barrel diameter or both will be changed.

Lagging thickness for all drum is 25mm except 630 & 700mm lagging thickness is 19mm.

In case of lagging Lagging thickness to be added to the overall diameter of the drum.





BETA ELECTRIC

Technical Information

Technical Information and cable construction

VOLTAGE DESIGNATION

3-Phase Alternating Current transmission system is mostly used all over the World. The Rated Voltage of the Cable for a given application shall be suitable for the operating conditions in the system in which the cable is used. The design or Rated Voltage of the Cables is expressed in the form Uo/U (formerly Eo/E).

The Rated Voltage Uo/U (Um) of the Cables considered in this Catalogue are 0.6/1 (1.2) kV and 1.8/3 (3.6) kv.

Uo= the Rated Power frequency Voltage between conductor and earth or metallic screen for which the Cable is designed.
U= the Rated Power frequency Voltage between conductors for which the Cable is designed.
Um= the maximum Value of the “highest system voltage” for which the equipment may be used with reference to IEC 60038.
It should be noted that in a system where an earth fault is not automatically and promptly isolated, the extra stress on the insulation of cables during the earth fault reduces the life of cable to a certain degree.

CONDUCTORS

A conductor is a metallic current carrying component of the Cable. The conductors are in accordance with BS EN 60228. Plain Annealed soft drawn Copper conductors with Conductivity 100% IACS standard are usually used.

Aluminium Conductors are also being used due to the everyday increasing prices of Copper. The conductivity of Aluminum is 61% IACS standard.

BETA is using Electrolytic Copper in accordance with ASTM B-49 and Aluminium as per ASTM B-233and producing both metal Conductors in accordance with BS EN 60228 for the manufacturing of ElectricCables. The Conductors are designated with their Nominal area, minimum number of wires and Maximum D.C Resistance in BSEN 60228. BETA Cables are produced with the following classes and shapes of conductors in accordance with BSEN 60228:

Class I - Round solid conductors

Class II- Round stranded or, round Compacted or Shaped Stranded conductors

Class V- Round Flexible conductors.

Technical Information and cable construction

INSULATION:

The Conductors are insulated by the extruded dielectric materials like Polyvinyl Chloride (PVC) and Cross Linked Polyethylene (XLPE). Following Grades of Insulation are being used in BETA in accordance with BS 50363-3, BS 6346, BS 5467, BS 7655 and IEC 60502-1.

TI 1 or PVC/A – it is suitable for a continuous permissible conductor temperature of 70 deg C
TI 3 – it is suitable for a continuous permissible conductor temperature of 90 deg C.
XLPE (GP8) - it is suitable for a continuous permissible conductor temperature of 90 deg C.

Special Insulation material for Hazardous area application is available with LSFOH and fire retardant thermosetting insulation. All Insulations are subjected to online SPARK testing Application in accordance with BS EN 62230 and BS 5099.
Ultraviolet (UV) stabilized Colors for sunlight protection are used for the identification of Phase and Neutral conductors; usually the color codes Red, Yellow, Blue are used for Phase, Black for Neutral and Green/Yellow for Earth conductor. Core Identification will be provided as per customer requirements.
The color codes are given as below:

No of Cores	Color code as per IEC 60502 - 1	Color code as per BS 5467, 6346 Latest
1	Red or Black	Brown or Blue
2	Red and Black	Brown and Blue
3	Red, Yellow and Blue	Brown, Black and Grey
4	Red, Yellow, Blue and Black	Blue, Brown, Black and Grey
5	Red, Yellow, Blue, Black and Green/ Yellow	Green/ Yellow, Blue, Brown, Black and Grey

ASSEMBLY:

The individual multi cores of cables are subject to core assembly and lay up together to form a reasonable circular shape. The Interstices between the cores are filled with Non-hygroscopic Polypropylene Strings fillers wherever required. Polypropylene binder tapes are applied helically to keep the assembled cores intact and also served as a separator between the insulation and inner sheath or separation sheath as applicable

INNER COVERING AND BEDDING:

The inner covering and bedding is an extruded layer of PVC material provided above the Multi-Core assembly. It is compatible with the insulation material. PVC bedding is applied under the Armour (Steel wire or Alum wire.etc) in accordance with IEC 60502-1, BS 5467 and BS 6346. The application of Inner covering may be omitted in the construction of un-armoured cables and cables without collective metallic layer provided the outer shape of the cable remains practically circular and no adhesion occurs between cores and sheath.

Technical Information and cable construction

ARMOUR:

The Armouring is used usually for direct burial underground Cables. It may be used for Earthing and provides protection against mechanical damage. It consist of Aluminium wire, Aluminium tape, Galvanized Steel wire or Double Steel Tape Armour applied helically over the bedding in accordance with IEC 60502-1, BS EN 10257, BS 5467, BS 6346. Armouring for single core Cables will be Non-Magnetic.

OUTER SHEATH:

It is also known as Outer jacket of Cable and consists of a Black Extruded layer of PVC Type ST2 or Type 9 in accordance with IEC 60502-1, BS 5467 and BS 6346 respectively.
BETA Cables are having PVC outer sheath Fire Retardant to IEC 60332 -1.It can resists moisture,acid and alkaline content present in normal soil.
Special properties for Hazardous area or potentially explosive gas atmosphere and Fire Retardant application with minimum Oxygen Index 30 or more are available upon requirements.
Anti-Termite, Anti-Rodent, LSFOH, HDPE, MDPE, etc are also available.

RECOMMENDATIONS FOR INSTALLATION:

There are various methods and measures recommended for the installation of Low Voltage Cables. Some of them are given below:

- Cables should be installed and used in association with other equipment in accordance with BS 7671, 17th Edition.
- Un-armoured Cables are not recommended for direct burial application. They are usually used on cable Trays and in ducts.
- Armoured Cables are usually recommended for underground and under Road crossings applications.
- Care should be exercised during installation to avoid any mechanical damage or damage of Cable or outer sheath before and during the installation, recommended maximum pulling tension and pulling tooling to be used. This is important in wet or other aggressive environments.
- If Cables are to be installed in ducts, the correct size of duct should be used. Reference should be made to ERA publication 69-30, Part III.
- The cables should not be bent during installation to a radius smaller than the Minimum bending radius given below. Minimum bending radius during installation must be maintained larger wherever possible to avoid the damage of the cable.

Cable Type Armoured/Un-armoured	Cable Min. Bending Radius
Circular Copper Conductor	6D
Shaped Copper/ Aluminium Conductor	8D

D: Outer diameter of cable.

- The Protective End caps should not be removed from the Cable ends until immediately prior to termination or jointing especially for Cables that do not have extruded bedding. When the end caps have been removed the unprotected ends of the cable should not be exposed to moisture.
- It is to be noted that owing the absence of a metal sheath, all earth fault currents will return through the armour unless there is a parallel bonding connection to relieve them of some of the Fault current. In either event it is necessary to ensure that there is no discontinuity in the return current via armour and the resistance added by bonds and clamps is kept to a minimum.

Technical Information And cable construction Ampacity of cables

• The Cable support system should be such as to avoid damage or danger under normal or fault conditions. Bonding Clamps in joints should be electrically connected with a conducting material having conductance at least equal to that of the length of the armour it replaces, and with adequate thermal capacity to avoid excessive overheating under short circuit conditions, where excessive amount of short circuit current will flow in initial seconds. The type of jointing and filling compounds employed should be chemically compatible with the cable materials.

• It is recommended that the Cables to be installed only when both the cable and ambient temperature are above 0 degree C and have been so for the previous 24 hours, or where special precautions have been taken to maintain the cable above this temperature.

1.0 GENERAL BASIS OF AMPACITY DETERMINATION:

The Electric cables suffers electrical losses during service. These losses are usually referred as Ohmic and Induced Losses and generate heat in the conductor, insulation and metallic components. The heat evolved must be transmitted to the ambient Earth or Air.

The Ampacity or Current Rating of Cable is dependent on the way this heat is transmitted to the Cable surface and then dissipated to the sourrounding. Temperature is clearly an important factor and is expressed as a conductor temperature to establish a datum for the Cable itself. A maximum conductor temperature is fixed which is commonly the limit for the insulation material, without undue ageing, for a resonable maximum life then, by choosing a base ambient temperature for the sourroundings, a permissible temperature rise is available from which a maximum cable Ampacity can be calculated for a particular environment.

Under steady state conditions the difference between the conductor temperature and the external ground or ambient temperature is related to the total heat losses and the Law of heat flow is very similar to Ohm>s Law. Heat flow corresponds to Current, Tempearture difference to voltage and the total thermal resistance in the cable and sourroundings to Electrical resistance. Using this analogy it is possible to construct a circuit diagram as illustrated in **Fig.1**. This shows how the heat generated at several positions has to flow through a number of layers of different thermal resistances. By measuring values for the materials, Ampacity or current Ratings calculation can then be made.

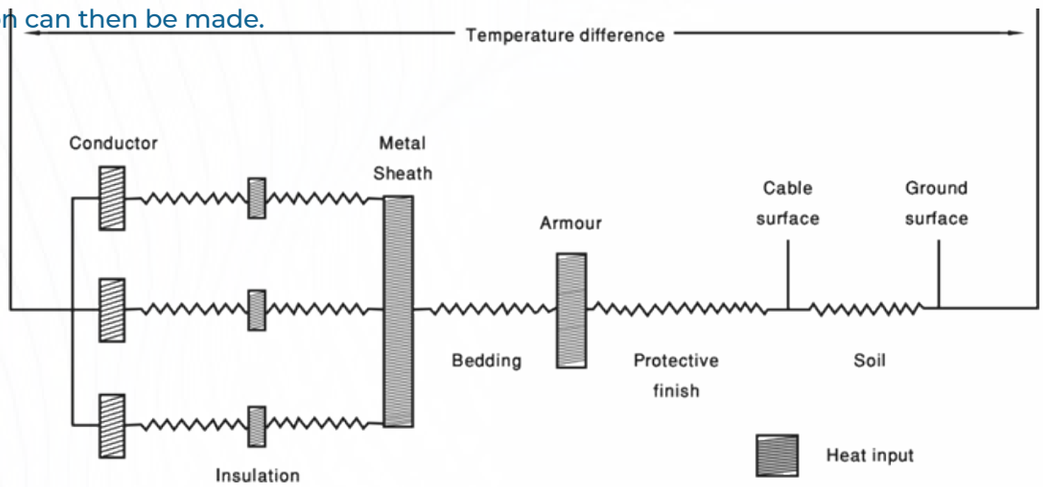


Fig. 1: Circuit Diagram to represnt heat generated in a 3-core Metal sheathed Cable.e

Technical Information
Ampacity of cables

Thermal Resistivity is defined as the difference in temperature in Kelvin between opposite faces of a metre cube of material caused by the transference of 1 watt of heat hence the units K.m/W.

The flow within a cable is radial but externally it is not so and allowance must be made for the method of installation. Fig2 , which shows the pattern of heat flow for three buried single-core cables, illustrates the importance of making allowance for the depth of burial and could be extended to show the effects of other cables in close proximity.

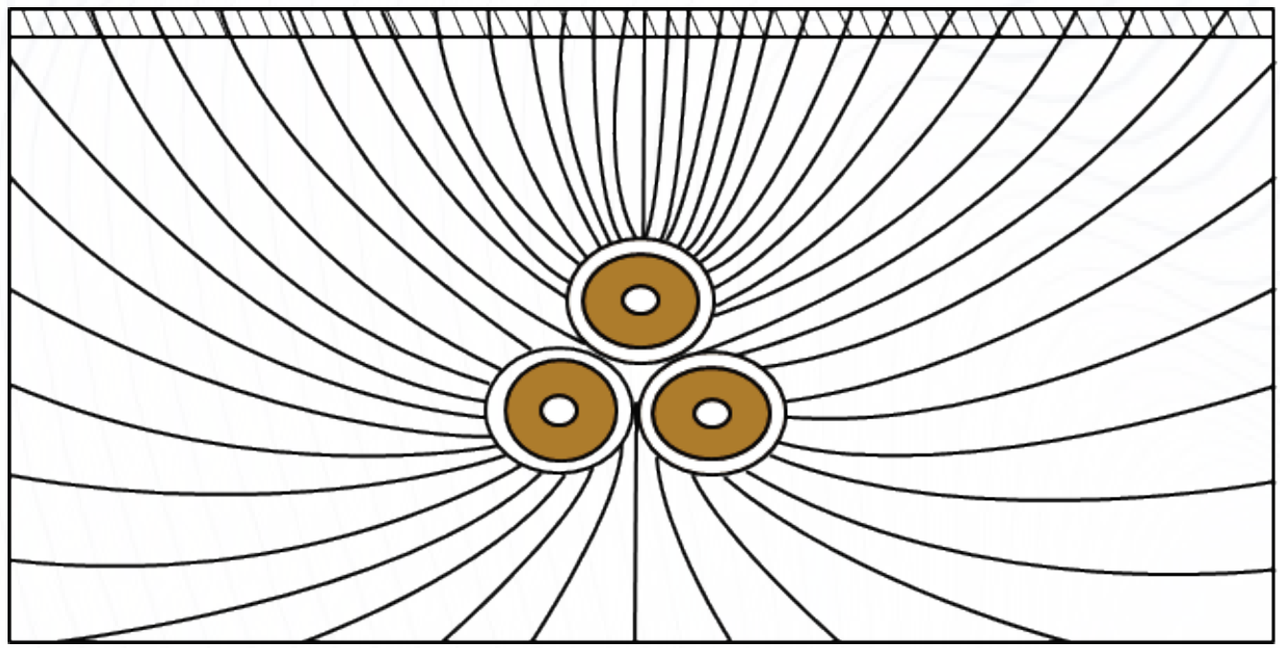


Fig. 2: Heat Flow from a circuit of single core Cables installed in trefoil.

Mathematical treatment is most conveniently expressed for steady state conditions, i.e. for continuous (sustained) ratings. A small cable in air will heat up very quickly to a steady state condition but a large buried power cable may take very many hours. Hence for most types of operation for supply distribution cables laid direct, the continuous ratings may be conservative and allowance can be made for cyclic operation.

(Fundamental formula for current computation):
The Heat generated by the temperature rise in the conductors (I2R), in the insulation (W) and in the metallic sheath and Armour (λI2R), with allowances being made by multiplying each of these by the thermal resistance of the layers through which the heat flows (T). IEC 60287 deals this in details. the general formula for a.c Cables can be given as follows

$$\Delta\theta = \left(I^2R + \frac{1}{2}W_d\right)T_1 + \left[I^2R\left(1+\lambda_1\right)+W_d\right]nT_2 + \left[I^2R\left(1+\lambda_1+\lambda_2\right)+W_d\right]n\left(T_3+T_4\right)$$

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Δ θ = Conductor temperature rise (K)
I = Current Flowing in one conductor (A)
R = Alternating resistance per unit length of the conductor at maximum operating temperature (Ω/m).
Wd = Dielectric loss per unit length for the insulation surrounding the conductor (W/m).
T1 = Thermal resistance per unit length between one conductor and metallic sheath (K.m/W).
T2 = Thermal resistance per unit length of the bedding between sheath and armor (K.m/W).
T3 = Thermal resistance per unit length of the external serving/ outer sheath of the cable (K.m/W).
T4 = Thermal resistance per unit length between the cable surface and the surrounding medium (K.m/W).
n = No. of load carrying conductors in the cable (conductors of equal size and carrying the same load).
λ1 = Ratio of losses in the metal sheath to total losses in all conductors in that cable.
λ1 = Ratio of losses in the armoring to total losses in all conductors in that cable.

The Formula may be written as follows to obtain the permissible current rating:

$$I = \left\{ \frac{\Delta\theta - W_d \left[\frac{1}{2} T_1 + n \left[T_2 + T_3 + T_4 \right] \right]}{RT_1 + nR\,(1+\lambda_1)\,T_2 + nR\,(1+\lambda_1+\lambda_2)\,(T_3+T_4)} \right\}$$

Please note that the above formula only provides ratings for the prescribed representative conditions. it does not allow for heat generation from any other source, such as other cables in close proximity, or from exposure to direct solar radiation. We can refer to IEC 60287 for further details in this regard.

Conisdering a 4 core-600 / 1000 Volts Power Cable, " n " may be assumed to be 3 if the fourth conductor is neutral or is a protective conductor. this assumes that the neutral conductor is not carrying current, which is due to the presence of Harmonics. Where Triple harmonic currents, particularly the Third Harmonic, are present in a system they do not cancel in the neutral. This means that all four conductors will be loaded and measurements have shown that the current in the neutral conductor may be higher than 50Hz current in phase currents. Therefore, the use of Power cable with reduced neutral conductor usually known as 31/2 - core cable must be avoided.

Presently Electrical Engineers are using Neher - McGrath Calculating method, IEEE Stand Power Cable Ampacity Tables and IEC 60287 Group of Standard for computing the Ampacities of Electric Cables. Ampacity Tables are available in the catalogues of Cable Manufacturers are based on the same for many conductor sizes and various types of Cables. These Tables are designed to cover most common installation conditions

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Cable design parameters and dimensions of cables are based on IEC 60502-1, which may have a slight variation in practical values applied in cable manufacturing to the best common Engineering practices.

BETA offers our standard products having PVC Insulation TypeTI-1
(70 Deg.C), Heat resistant PVC Type TI-3 (90 Deg.C)and Cross-linked Polyethylene XLPE (90 Deg.C).

The basis of the standard conditions is the climatic condition of the Kingdom of Saudi Arabia, having following

details:

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

For other Installation conditions or any value of different air/ground temperature, depth of laying, different soil thermal resistivity, the customer is advised to multiply the tabulated current rating by the de-rating factor values as in tables 1 to 5 for direct buried cables in ground and tables 7 to 10 for cables installed in ducts.

2.0 INSTALLATION CONDITIONS FOR DIRECT BURIAL CABLES

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

Table 1: Rating Factors for Ground temperature variations

Ground Temperature	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C
Cable Type									
PVC Insulated 70°C	1.25	1.20	1.13	1.07	1	0.93	0.85	0.76	0.65
PVC Insulated 90°C	1.17	1.13	1.09	1.04	1	0.95	0.90	0.85	0.80
XLPE Insulated	1.16	1.13	1.09	1.03	1	0.95	0.90	0.85	0.80

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Table 2: Rating Factors for depth of Laying (to center of cable or trefoil group of cables)

Depth of Laying (m)	upto 70 mm²	95 mm² to 240 mm²	300 mm² and bove
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	0.98
1.50	0.93	0.90	0.87
1.75	0.92	0.89	0.86
2.00	0.91	0.88	0.85
2.50	0.90	0.87	0.84

Table 3: Rating Factors for variations in thermal resistivity of soil (average values)

Size of Cables (mm)2	Soil Thermal Resistivity (°C m/W)						
	0.8	0.9	1.0	1.5	2.0	2.5	3.0
Single Core Cables							
Upto 150	1.16	1.12	1.07	0.91	0.81	0.73	0.66
From 185 to 300	1.17	1.12	1.07	0.91	0.80	0.73	0.66
From 400 to 1000	1.16	1.12	1.07	0.91	0.81	0.73	0.66
Multi Core Cables							
Upto 16	1.12	1.08	1.05	0.93	0.84	0.77	0.72
From 25 to 150	1.14	1.10	1.06	0.92	0.82	0.75	0.69
From 185 to 500	1.15	1.10	1.07	0.92	0.81	0.74	0.67

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Table 4: Group rating factors for circuits of three single core cables in trefoil or laid flat touching, in horizontal formation

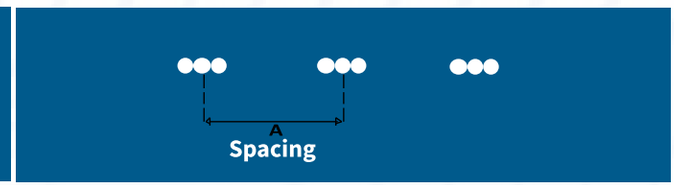
Number of circuits						
	Cables Touching		Cable to Cable Clearance A			
	Trefoil	Flat Laying	0.15 m	0.30 m	0.45 m	0.60 m
2	0.78	0.81	0.83	0.88	0.91	0.93
3	0.66	0.70	0.73	0.79	0.84	0.87
4	0.61	0.64	0.68	0.73	0.79	0.85
5	0.56	0.60	0.64	0.73	0.79	0.85
6	0.53	0.57	0.61	0.71	0.78	0.82

Table 5: Group rating Factors for multicore cables in Horizontal formation

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

2.0 INSTALLATION CONDITIONS FOR DIRECT BURIAL CABLES

A duct is an enclosure of metal or insulating material other than conduits or cable trunking, intended for the protection of cables which are drawn in after errection of the ducting. The recommended relation between the cable size and duct size is as in table 6.

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Table 6: Recommended duct dimensions and cable sizes:

Number of Cables in Group	DUCT	
	Inside Diameter (mm)	Outside Diameter (mm)
Upto and including 65	100	130
Above 65 upto 90	140	175

As the same principal of cables installed in direct burial methods above, the current carrying capacities of cables depends on the installed condition, the rating is calculated based on the values given on page 8. The de-rating factors of other conditions should be considered to calculate the actual possible maximum current carrying capacity of the cables.
Tables 7 - 11 are for the factors to be multiplied by the tabulated current.
Table 7: Rating Factors for ground temperature variation

Ground Temperature	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C
Cable Type									
PVC Insulated 70°C	1.25	1.20	1.13	1.07	1	0.93	0.85	0.76	0.65
PVC Insulated 90°C	1.17	1.13	1.09	1.04	1	0.95	0.90	0.85	0.80
XLPE Insulated	1.16	1.13	1.09	1.03	1	0.95	0.90	0.85	0.80

Table 8 : Rating Factors for variation in thermal resistivity of soil (average values)

Size of Cables	Soil Thermal Resistivity (°C m/W)						
	0.8	0.9	1.0	1.5	2.0	2.5	3.0
Single Core Cables							
Upto 150	1.10	1.07	1.04	0.94	0.86	0.80	0.76
From 185 to 300	1.11	1.08	1.05	0.93	0.85	0.79	0.75
From 400 to 1000	1.12	1.08	1.05	0.93	0.84	0.78	0.74
Multi Core Cables							
Upto 16	1.04	1.03	1.02	0.97	0.92	0.88	0.86
From 25 to 150	1.06	1.04	1.03	0.95	0.90	0.85	0.81
From 185 to 500	1.07	1.05	1.03	0.95	0.88	0.83	0.78

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Ampacity of cables

Table 9 : Rating Factors of depth of Laying (to center of duct or trefoil group of ducts)

Depth of Laying of Cables (m)	Single Core Cables	Multi Core Cables
0.50	1.00	1.00
0.60	0.98	0.99
0.80	0.95	0.98
1.00	0.93	0.96
1.25	0.91	0.95
1.50	0.89	0.94
1.75	0.88	0.94
2.00	0.87	0.93
2.50	0.86	0.92
3.00 or more	0.85	0.91

Table10: Group rating factors for single core cables in trefoil single way ducts, horizontal formation (average values)

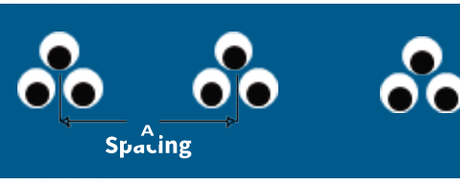
Number of Circuits			
	Cable to Cable Clearance A		
	Touching	0.45 m	0.60 m
2	0.87	0.91	0.93
3	0.78	0.84	0.87
4	0.74	0.81	0.85
5	0.70	0.79	0.83
6	0.69	0.78	0.82

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

Number of Cables in				
	Cable to Cable Clearance A			
	Cables Touching	0.30 m	0.45 m	0.60 m
2	0.90	0.93	0.95	0.96
3	0.83	0.88	0.91	0.93
4	0.79	0.85	0.89	0.92
5	0.75	0.83	0.88	0.91
6	0.73	0.82	0.87	0.90
2	0.88	0.91	0.93	0.94
3	0.80	0.85	0.88	0.90
4	0.76	0.81	0.85	0.88
5	0.72	0.78	0.83	0.86
6	0.69	0.76	0.81	0.85

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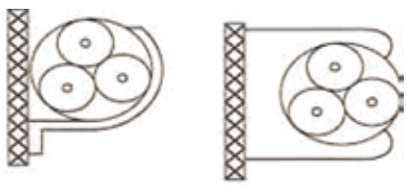
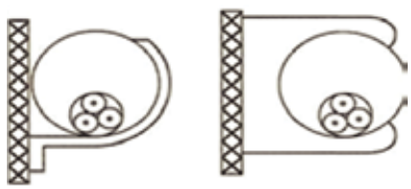
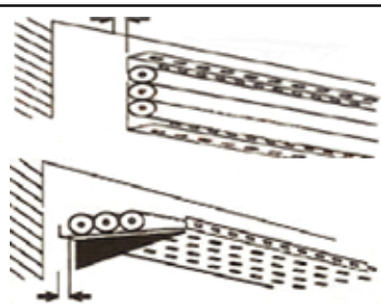
4.0 INSTALLATION CONDITIONS FOR CABLES IN AIR

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

Table 12: Installation Method for Cables

Installation Method	Description	Current carrying Capacity Reference Method
	Single Core or multi core cables: Fixed on (Clipped direct) or space less than 0.3 times the cable diameter from a wall	**A**
	Multi Core cable in conduit, spaced less than 0.3 times conduit diameter	**B**
	Cables run horizontally or vertically flat on perforated tray For multi core cable De= Cable diameter, And for 3 single core cables De = 3 times cable diameter	**C OR D**

Technical Information
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Important note for Single core cables:

The conductors of an A.C. circuit installed in an Iron pipes or ferromagnetic enclosure shall be arranged so that all line conductors and the neutral conductor, if any, and the appropriate protective conductor are contained in the same enclosure.

When such conductors enter an Iron pipes or ferrous enclosure, they shall be arranged such that the conductors are only collectively surrounded by ferrous material.

Table 13: Rating factors for other ambient air temperatures

Air Temperature	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
Air Temperature								
PVC Insulated 70°C	1.22	1.15	1.08	1.00	0.91	0.82	0.71	0.58
PVC Insulated 90°C	1.14	1.10	1.05	1.00	0.95	0.90	0.84	0.78
XLPE Insulated	1.14	1.10	1.05	1.00	0.95	0.90	0.84	0.78

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5.0 (AMPACITY OR CURRENT CARRYING CAPACITY)

Table 14: (Single Core cables with copper conductor, PVC 70°C insulated and PVC sheathed 0.6/ 1 K.V)

Conductor	Conductor Resistance			Current Carrying Capacity					
				In Ground			In Air		
Sectional	DC at 20°C	AC at 70°C in	in Trefoil	Laid	Laid				
mm²	ohm/Km	ohm/Km	ohm/Km	amps	amps	amps	amps	amps	amps
1.5	12.1	14.5	14.5	25	24	18	20	18	15
2.5	7.41	8.87	8.87	33	31	24	27	23	19
4	4.61	5.52	5.52	42	41	31	36	31	25
6	3.08	3.69	3.69	53	51	39	46	40	32
10	1.83	2.19	2.19	70	68	52	62	54	43
16	1.15	1.38	1.38	91	87	67	83	71	56
25	0.727	0.87	0.87	116	112	87	109	94	73
35	0.524	0.627	0.627	140	134	104	135	116	89
50	0.387	0.463	0.464	166	158	125	164	141	107
70	0.268	0.321	0.232	204	194	154	208	179	134
95	0.193	0.232	0.232	245	233	186	259	222	163
120	0.153	0.184	0.185	279	264	212	301	258	188
150	0.124	0.150	0.151	313	296	238	345	296	213
185	0.0991	0.120	0.1215	354	334	270	399	343	243
240	0.0754	0.0922	0.0941	412	385	313	476	407	285
300	0.0601	0.0743	0.0767	466	433	353	551	469	324
400	0.0470	0.0593	0.0623	531	488	399	642	542	369
500	0.0366	0.0476	0.0513	603	546	449	747	624	417
630	0.0283	0.0386	0.0431	686	609	501	875	717	470

Technical Information
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Table 15: (Three and Four core cable with copper conductor, PVC 70°C insulated and PVC sheathed 0.6/1K.V)

	Conductor Resistance		In Ground			In Air		
			Unarmoured		Armoured	Unarmoured		Armoured
Sectional Area	DC at 20°C Maximum	AC at 70°C	Direct Laid	in	Direct	Free	In pipes Method A	Free
mm²	ohm/Km	ohm/Km	amps	amps	amps	amps	amps	amps
1.5	12.1	14.5	21	18	-	16	14	-
2.5	7.41	8.87	27	23	-	22	19	-
4	4.61	5.52	36	30	36	29	24	29
6	3.08	3.69	45	37	45	37	31	37
10	1.83	2.19	60	50	60	50	41	51
16	1.15	1.38	78	65	78	66	54	66
25	0.727	0.87	100	83	100	87	70	88
35	0.524	0.628	125	101	124	106	84	109
50	0.387	0.464	149	121	147	130	102	133
70	0.268	0.323	183	148	180	163	126	167
95	0.193	0.232	219	178	215	201	154	204
120	0.153	0.185	249	203	245	233	177	235
150	0.124	0.151	280	229	273	268	202	268
185	0.0991	0.121	315	259	306	308	230	305
240	0.0754	0.0939	364	301	349	364	269	355
300	0.0601	0.0764	409	339	387	417	306	401
400	0.0470	0.0619	465	386	428	485	352	454
500	0.0366	0.0507	520	441	468	554	406	506

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Ampacity of cables

Table 16: (Single Core cables with copper conductor, XLPE insulated and PVC sheathed, 0.6 / 1 K.V)

Conductor	Conductor Resistance			Current Carrying Capacity					
				In Ground			In Air		
Sectional	DC at 20°C	AC at 90°C in	in Trefoil	Laid	Laid (Trefoil)	In	Free Flat	Free Trefoil	In
mm²	ohm/Km	ohm/Km	ohm/Km	amps	amps	amps	amps	amps	amps
1.5	12.1	15.2	15.2	31	30	22	27	22	19
2.5	7.41	9.45	9.45	40	39	29	36	29	24
4	4.61	5.88	5.88	52	50	38	47	38	32
6	3.08	3.93	3.93	65	63	47	60	49	40
10	1.83	2.33	2.33	87	83	63	82	66	54
16	1.15	1.47	1.47	112	107	82	109	88	70
25	0.727	0.927	0.927	144	137	105	145	116	92
35	0.524	0.668	0.669	172	165	127	178	143	112
50	0.387	0.494	0.494	204	195	151	218	175	134
70	0.268	0.342	0.343	251	238	187	277	222	168
95	0.193	0.247	0.248	301	286	225	344	274	205
120	0.153	0.196	0.197	345	327	258	409	326	237
150	0.124	0.159	0.160	385	363	290	461	367	269
185	0.0991	0.128	0.129	436	410	330	534	425	308
240	0.0754	0.098	0.100	507	447	382	638	505	361
300	0.0601	0.079	0.0815	573	532	431	740	583	411
400	0.0470	0.0629	0.0661	645	600	489	865	676	469
500	0.0366	0.0504	0.0543	744	673	550	1009	779	533
630	0.0283	0.0407	0.0453	847	752	615	1184	900	603

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Ampacity of cables

Table 17: (Three and Four core cable with copper conductor, XLPE insulated and PVC sheathed, 0.6 / 1 KV)

Conductor	Conductor Resistance		In Ground			In Air		
			Unarmoured		Armoured	Unarmoured		Armoured
Cross Sectional Area	DC at 20°C Maximum	AC at 90°C	Direct Laid	Laid in Duct	Direct Laid	Free	In pipes Method A	Free
mm²	ohm/Km	ohm/Km	amps	amps	amps	amps	amps	amps
1.5	12.1	15.4	27	22	-	22	18	-
2.5	7.41	9.45	35	29	-	29	24	-
4	4.61	5.88	45	37	46	38	31	39
6	3.08	3.93	56	46	57	48	39	50
10	1.83	2.33	76	62	76	67	52	67
16	1.15	1.47	98	80	98	88	68	89
25	0.727	0.927	128	104	128	118	90	120
35	0.524	0.669	157	125	158	142	107	149
50	0.387	0.494	187	149	188	175	129	182
70	0.268	0.343	229	183	229	220	161	229
95	0.193	0.248	276	220	274	272	196	280
120	0.153	0.197	313	251	310	316	226	322
150	0.124	0.160	350	283	346	363	258	368
185	0.0991	0.129	395	321	387	418	295	420
240	0.0754	0.0998	458	372	444	496	346	491
300	0.0601	0.0812	516	420	494	571	394	557
400	0.0470	0.0656	584	478	549	665	454	635
500	0.0366	0.0536	655	538	597	760	515	705

Technical Information
Ampacity of cables

Table 18: (Single Core cables with Aluminium conductor, XLPE insulated and PVC sheathed, 0.6 / 1 K.V)

Conductor	Conductor Resistance			Current Carrying Capacity					
				In Ground			In Air		
Sectional	DC at 20°C Maximum	AC at 90°C in Flat Formation	AC at 90°C in Trefoil Formation	Laid (Flat)	Direct Laid (Trefoil)	In Duct	Free Flat	Free Trefoil	In Pipes
mm²	ohm/Km	ohm/Km	ohm/Km	amps	amps	amps	amps	amps	amps
16	1.91	2.45	2.45	87	83	63	85	68	54
25	1.2	1.54	1.54	111	107	82	112	90	71
35	0.868	1.113	1.113	133	128	98	138	111	87
50	0.641	0.822	0.822	158	151	117	169	135	104
70	0.443	0.568	0.569	194	185	145	215	172	131
95	0.32	0.411	0.411	233	222	175	266	213	159
120	0.253	0.325	0.325	266	252	201	312	249	184
150	0.206	0.265	0.265	298	282	226	357	285	209
185	0.164	0.211	0.212	339	320	257	416	332	241
240	0.125	0.161	0.163	395	371	300	497	396	283
300	0.100	0.130	0.131	448	419	340	578	459	324
400	0.0778	0.1016	0.1037	514	479	390	681	540	375
500	0.0605	0.0799	0.0826	590	546	446	801	631	432
630	0.0469	0.0632	0.0666	681	621	509	954	746	498

Technical Information
Ampacity of cables

Table 19: (Three and Four core cable with Aluminium conductor, XLPE insulated and PVC sheathed, 0.6/ 1 KV)

Conductor	Conductor Resistance		In Ground			In Air		
			Unarmoured		Armoured	Unarmoured		Armoured
Cross Sectional Area	DC at 20°C Maximum	AC at 90°C	Direct Laid	in Duct	Direct Laid	Free	In pipes	Free
mm²	ohm/Km	ohm/Km	amps	amps	amps	amps	amps	amps
16	1.91	2.45	76	62	76	68	53	69
25	1.20	1.54	99	81	99	92	70	93
35	0.868	1.113	121	96	122	110	83	115
50	0.641	0.822	145	116	146	136	100	141
70	0.443	0.569	178	142	178	171	125	178
95	0.320	0.411	214	171	213	211	152	218
120	0.253	0.325	243	195	242	246	176	252
150	0.206	0.265	272	220	270	282	200	288
185	0.164	0.212	309	250	305	326	230	331
240	0.125	0.163	359	282	352	388	271	390
300	0.100	0.131	406	331	395	449	449	445
400	0.0778	0.1034	466	381	447	530	362	516
500	0.0605	0.0822	529	434	497	614	416	586

Technical Information
6.0 Voltage Drop

Voltage drop is one the important factor to be considered for cable selection. According to BS 7671 IEE Wiring Regulation 17th edition under normal service conditions the voltage at the terminals of any fixed current-using equipment shall be greater than the lower limit corresponding to the product standard relevant to the equipment and where fixed current using equipment is not the subject of product standard the voltage at the terminals shall be such as not to impair the safe functioning of the equipment.

Table 20: (Approximate voltage drop at 60 Hz for single core stranded plain Copper/ Aluminium conductors, PVC insulated, PVC sheathed).

Nominal Area of Conductor	Copper Conductor mV/ amp/ m		Aluminium Conductor mV/ amp/ m	
	PVC Rated 70° C	PVC Rated 70° C	PVC Rated 70° C	PVC Rated 70° C
mm^2	Flat	Trefoil	Flat	Trefoil
1.5	22.6	22.5	-	-
2.5	13.9	13.8	-	-
4	8.70	8.70	-	-
6	5.80	5.80	-	-
10	3.50	3.50	-	-
16	2.30	2.20	3.70	3.70
25	1.50	1.50	2.40	2.30
35	1.10	1.10	1.70	1.70
50	0.83	0.82	1.30	1.30
70	0.61	0.6	0.94	0.92
95	0.47	0.45	0.71	0.69
120	0.39	0.38	0.58	0.56
150	0.34	0.33	0.49	0.48
185	0.29	0.28	0.41	0.4
240	0.25	0.24	0.34	0.33
300	0.22	0.21	0.29	0.28
400	0.2	0.18	0.25	0.24
500	0.18	0.17	0.22	0.21
630	0.16	0.15	0.19	0.18

Technical Information
Voltage Drop

Table 21: (Approximate voltage drop at 60 Hz for Three and Four core stranded plain copper/ aluminium conductors, PVC insulated, PVC sheathed).

Nominal Area of Conductor	Copper Conductor	Aluminium Conductor
	mV/ amp/ m	mV/ amp/ m
mm²	PVC Rated 70 °C	PVC Rated 70 °C
1.5	22.6	-
2.5	13.8	-
4	8.60	-
6	5.80	-
10	3.50	-
16	2.20	3.60
25	1.40	2.30
35	1.10	1.70
50	0.80	1.30
70	0.58	0.91
95	0.44	0.68
120	0.37	0.55
150	0.32	0.47
185	0.27	0.39
240	0.23	0.32
300	0.20	0.27
400	0.18	0.23
500	0.15	0.2

Technical Information
Voltage Drop

Table 22: (Approximate voltage drop at 60 Hz for single core stranded plain copper/ aluminium conductors, XLPE insulated, PVC sheathed).

Nominal Area of Conductor	Copper Conductor mV/ amp/ m		Aluminium Conductor mV/ amp/ m	
	XLPE Rated 90°C	XLPE Rated 90°C	XLPE Rated 90°C	XLPE Rated 90°C
mm^2	Flat	Trefoil	Flat	Trefoil
1.5	22.9	22.8	-	-
2.5	14.1	14.1	-	-
4	8.80	8.70	-	-
6	5.90	5.90	-	-
10	3.60	3.60	-	-
16	2.30	2.30	3.70	3.70
25	1.50	1.50	2.40	2.40
35	1.10	1.10	1.80	1.70
50	0.84	0.83	1.30	1.30
70	0.61	0.6	0.95	0.93
95	0.47	0.46	0.71	0.7
120	0.39	0.38	0.58	0.57
150	0.34	0.33	0.5	0.48
185	0.29	0.28	0.42	0.4
240	0.25	0.24	0.34	0.33
300	0.22	0.21	0.29	0.28
400	0.19	0.18	0.25	0.24
500	0.17	0.16	0.22	0.21
630	0.16	0.15	0.19	0.18

Technical Information
Voltage Drop

Table 23: (Approximate voltage drop at 60 Hz for Three and Four core stranded plain copper/ aluminium conductors, XLPE insulated, PVC sheathed).

Nominal Area of Conductor	Copper Conductor	Aluminium Conductor
	mV/ amp/ m	mV/ amp/ m
mm²	XLPE Rated 90° C	XLPE Rated 90° C
1.5	22.8	-
2.5	14	-
4	8.70	-
6	5.90	-
10	3.50	-
16	2.20	3.70
25	1.50	2.40
35	1.10	1.70
50	0.81	1.30
70	0.58	0.92
95	0.44	0.68
120	0.37	0.56
150	0.31	0.47
185	0.27	0.39
240	0.23	0.32
300	0.2	0.27
400	0.18	0.23
500	0.15	0.2

Technical Information 7.0(Short Circuit Raring - Conductors)

Short circuit rating is based on, IEC 60724. for an insulated conductor with operating temperature of 70 °C for PVC and 90 °C for XLPE, the maximum temperature during the fault is 140 °C or 160 °C for PVC insulated cables, small sizes and big sizes respectively, and up to 250 °C for XLPE cables.

Tables 24 and 25 represents the short circuit current rating at duration of fault time equal to 1 second. For any other values graph 1,2,3 and 4 may be used.

Table 24: (PVC Insulated 70 °C type TI-1 or 90 °C type TI-3) cables copper and Aluminium conductor).

Conductor Size	Short circuit ratings for 1 second in k amp	
	Copper Conductor	Aluminium Conductor
10	1.03	0.68
16	1.65	1.09
25	2.58	1.7
35	3.60	2.38
50	5.15	3.40
70	7.21	1.76
95	9.79	6.46
120	12.36	8.16
150	15.45	10.2
185	19.1	12.6
240	24.72	16.32
300	34.5	22.8
400	46.00	30.4
500	57.5	38.0
630	72.45	47.88
800	92.0	60.8
1000	115	76.00

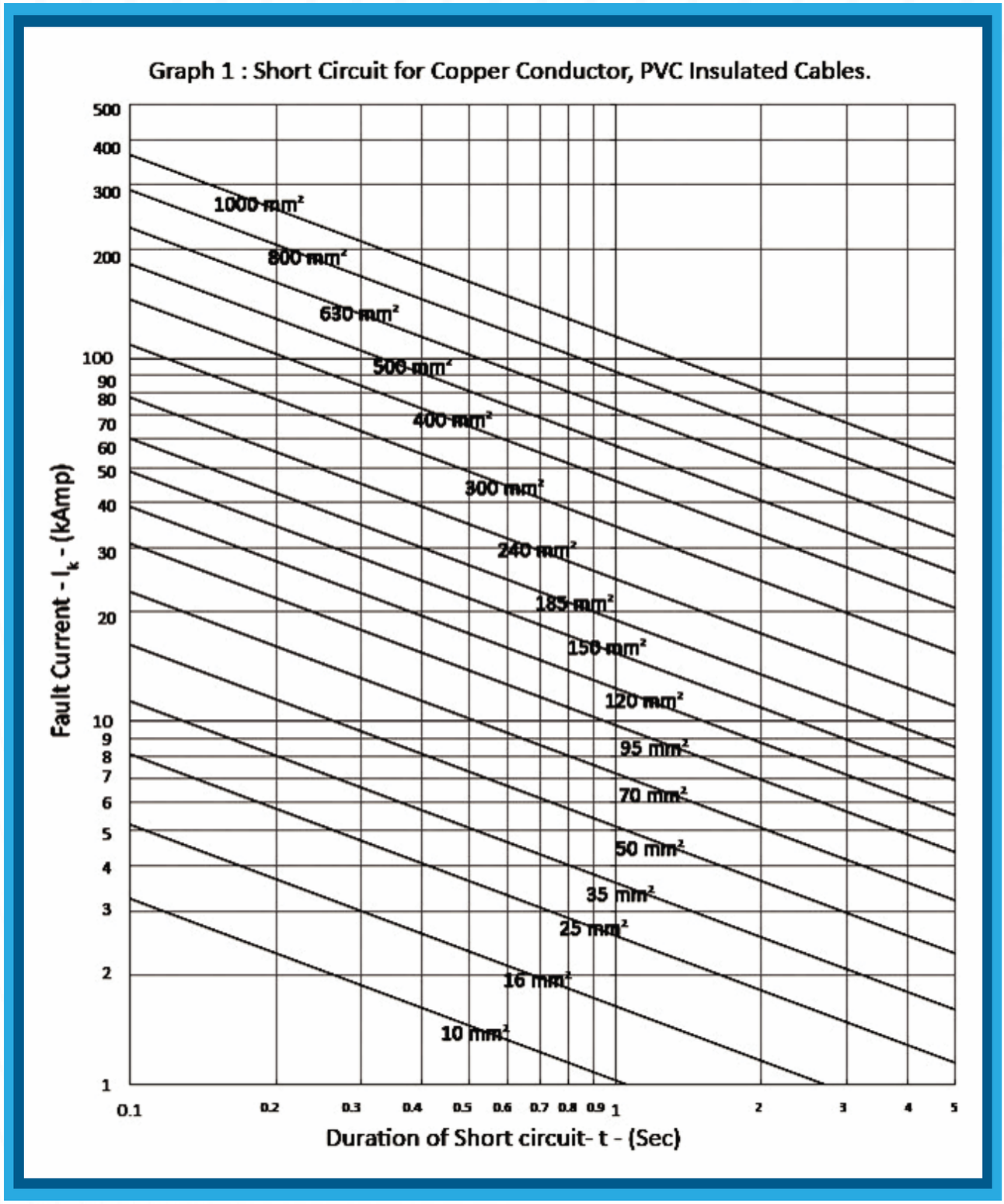
Technical Information
Short Circuit Raring - Conductors

Table 25: XLPE cables copper and Aluminium conductor

Conductor Size	Short circuit ratings for 1 second in k amp	
	Copper Conductor	Aluminium Conductor
10	1.43	0.94
16	2.29	1.50
25	3.58	2.35
35	5.00	3.29
50	7.15	4.70
70	10.01	6.58
95	13.59	8.93
120	17.16	11.28
150	21.45	14.10
185	26.46	17.39
240	34.32	22.56
300	42.90	28.20
400	57.20	37.60
500	71.5	47
630	90.09	59.22
800	114.40	75.20
1000	143.00	94.00

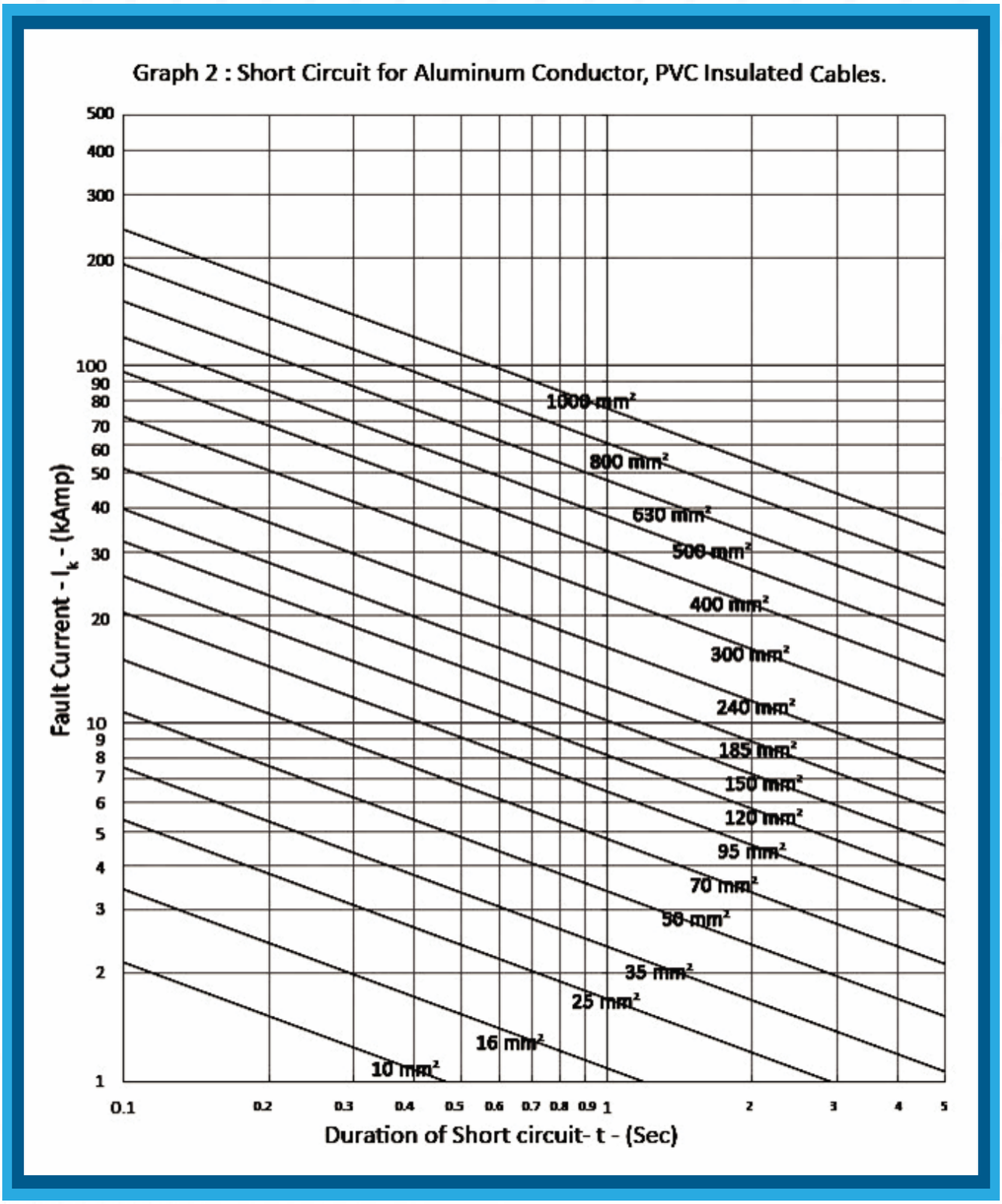
Technical Information
Short Circuit Raring - Conductors

Graph 1: PVC (70 °C type) insulated cables short circuit (Copper Conductor)



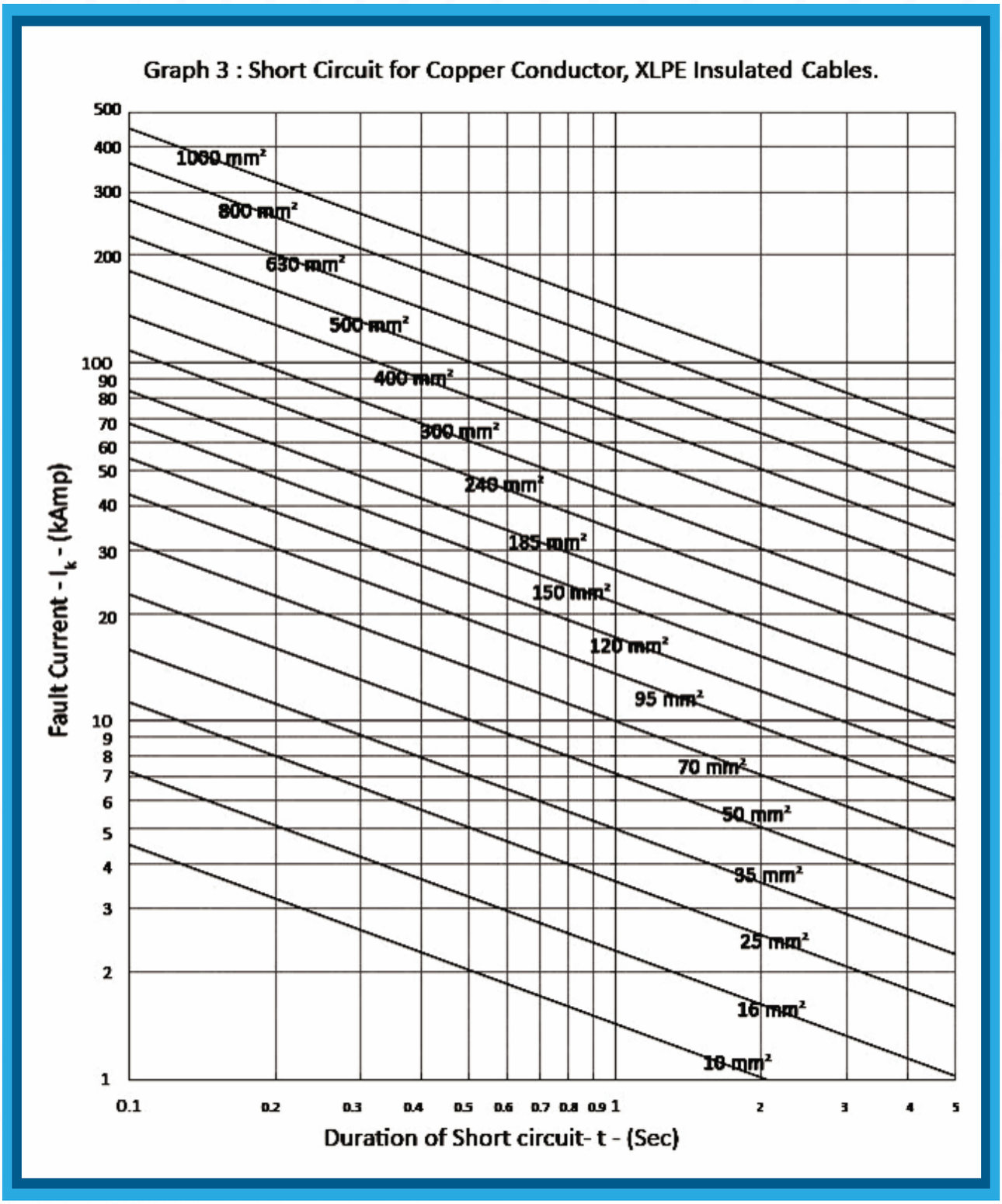
Technical Information
Short Circuit Raring - Conductors

Graph 2: PVC (70 °C type) insulated cables short circuit (Aluminium Conductor)



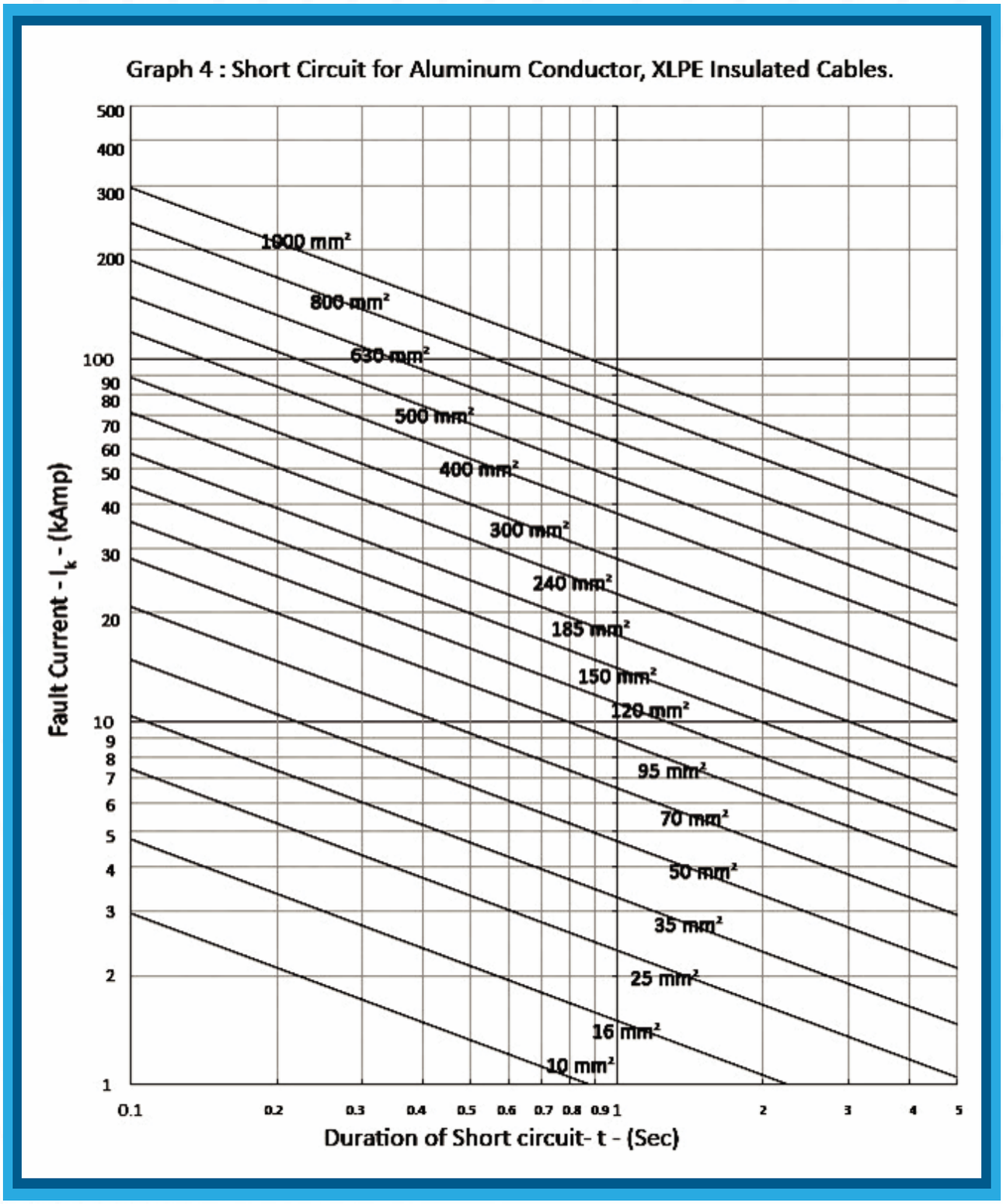
Technical Information
Short Circuit Raring - Conductors

Graph 3: XLPE insulated cables short circuit (Copper Conductor)



Technical Information
Short Circuit Raring - Conductors

Graph 4: XLPE insulated cables short circuit (Aluminium Conductor)



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