KEYSTONE CABLE

KEYFAB

Prefabricated Branch Cables

Building & Infrastructure

Keystone Cable is a Leading Singapore-based Cable Manufacturer and Supplier

Welcome to Keystone Cable, the trusted source for top-quality cables in Singapore. We bring 3 decades of experience focusing on Extra Low Voltage, Low Voltage, and High Voltage cable manufacturing and supply. Our team is driven by a commitment to innovation, proven legacy, and understanding of our customers' unique needs in Singapore and beyond. We are a longstanding supplier of cables across 6 key industries. As a forward-looking company, we continuously invest in our cable machinery, growing our expertise as a cable specialist and creating a greener tomorrow.

CERTIFICATIONS

KEYLAN™ Business Solutions

INDUSTRIES

Building | Infrastructure | Industrial | Communication | Sustainable Energy | Transmission & Distribution

This catalogue showcases our range of cables used in the manufacturing industries.
These cables are designed, manufactured, and tested in accordance to international standards.

For more information on our offerings in other industries, please visit our website:
www.keystone-cable.com

Contents

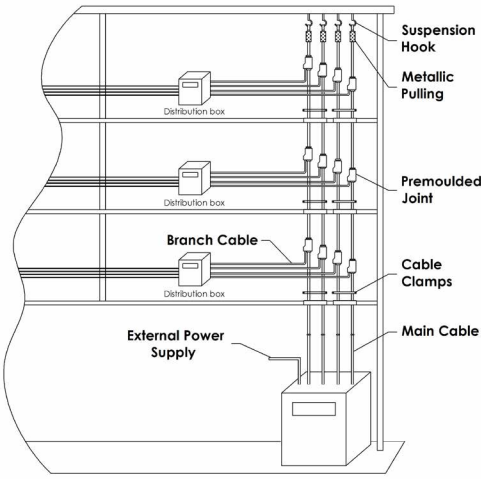
Introduction

KEYSTONE CABLE
tel (65) 6367 0107 fax (65) 6365 2963
www.keystone-cable.com

With rising cost of construction, increasing building complexity, and tighter project deadlines, there is a growing need for a cost-effective, reliable, and time-efficient solution, such as Keystone Cable's series of KEYFAB™ prefabricated branch cables. The KEYFAB™ prefabricated branch cable system is where the joint connecting the main cable and branch cables has been pre-moulded under factory conditions. Having cable joints prefabricated in the factory rather than on-site has the following advantages:

Minimal Installation Time

- With most of the site work done in the factory rather than on-site, KEYFAB™ prefabricated branch cable is ready to be installed and plugged together once delivered.



Low Labour Cost

- KEYFAB™ prefabricated branch cable is an economical solution which requires less manpower to be involved. The need for expensive skilled labour is also eliminated.

Reduction in Material Cost

- KEYFAB™ prefabricated branch cable is designed to fit your specific length requirements, and excess cable is trimmed to prevent extra material wastage. It can be fixed to the wall with cleats or brackets, and costly trunking is not necessary.

Enhanced Reliability

- Prefabrication in a stringent quality, controlled environment, certified by a third-party certifying body, is safer than site fabrication and installation without prior routine tests.

APPLICATIONS

HIGH RISE BUILDINGS:
Hotels
Hospitals
Residential Buildings
Commercial Buildings
Mixed Use Buildings

TUNNELS:
Transportation Tunnels
Public Work Tunnels
Mine Tunnels

Installable in Humid or Wet Environments

- Completely airtight and waterproof, KEYFAB™ prefabricated branch cable prevents problems often associated with moisture ingress during the construction phase.

Testing and Standards

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To ensure that Keystone Cable's KEYFAB™ prefabricated branch cables delivers maximum performance, pre-moulded joints have been type-tested with the corresponding KEYFAB™ prefabricated branch cables to the highest possible standard. Rigorous testing has been carried out in the factory for all of Keystone Cable's KEYFAB™ prefabricated branch systems, including joints, cables and termination, individually and then as a whole system, to verify compatibility.

KEYFAB™ prefabricated branch cables are subjected to comprehensive tests.

Some tests unique to the prefabricated branch system include:

- Type Test
- Heat Cycling Test : 125 cycle (per cycle = 60 minutes heat & 60 minutes cooling)
- AC Voltage Withstand Test : 1m depth; 20°C water; 3.5kV/5 minutes
- Insulation Resistance Test : After AC Voltage Withstand Test, apply 1000V D.C.
- Connector Resistance Test : Resistance measurement before applying static mechanical load and after applying static mechanical load that is equivalent to 2 x cable weight (main & branch) for 24 hours

Keystone Cable's KEYFAB™ fire resistant cables have also undergone Fire (SS 299, BS 6387, IEC 60331), Resistance to Fire with Water (SS 299, BS 6387), Resistance to Fire with Mechanical Shock (SS 299, BS 6387) and Resistance to Fire Alone (SS 299, BS 6387, IEC 60331-21) to ensure the cables maintain circuit intergity under fire conductions.

Track Record

Crowne Plaza Hotel, Nha Trang, Vietnam

The Kensington Royal Suite, Indonesia

West Vista Apartments, Indonesia

Crowne Plaza Hotel

The Kensington Royal Suite

West Vista

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Prefabricated Branch Cables

1	Conductor-1	Aluminium Conductor
2	Conductor-2	Plain Annealed Copper
3	Insulation	XLPE
4	Oversheath	PVC
5	Injection-molded	PVC

Prefabricated Branch Cables

KEYSTONE CABLE
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0.6/1kV Single-Core
XLPE Insulated, Unarmoured, PVC Sheathed Cable
Description: AL/XLPE/PVC
Model Code: AXP

Application :	This cable is used in power supply and distribution system for high-rise residential, commercial buildings, hotels, and factories.
Voltage rating :	0.6/1kV
Construction :	Aluminium conductor (IEC 60228 Class 2), XLPE insulated, unarmoured, PVC compound sheathed cable
Insulation colour :	Natural
Sheath colour :	Black
Specification :	IEC 60502-1, IEC 60332-1-2
Operating temperature :	90˚C

Conductor			Insulation		Unarmoured Cable	
Nominal Area	No./Diam. of Strand	Approx. Diam.	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(no./mm)	(mm)	(mm)		(mm)	(kg/km)
25 (cs)	7/2.16	6.0	0.9	**1301B******	11.2	170
35 (cs)	7/2.50	7.0	0.9	**1401B******	12.1	215
50 (cs)	7/2.90	8.3	1.0	**1501B******	13.6	265
70 (cs)	19/2.16	10.0	1.1	**1601B******	15.6	345
95 (cs)	19/2.50	11.5	1.1	**1701B******	17.6	440
120 (cs)	19/2.80	13.0	1.2	**1801B******	19.3	530
150 (cs)	19/3.15	14.5	1.4	**1901B******	21.3	650
185 (cs)	36/2.54	16.2	1.6	**2001B******	23.6	785
240 (cs)	36/2.90	18.3	1.7	**2101B******	26.0	980
300 (cs)	36/3.30	20.6	1.8	**2201B******	28.7	1200
400 (cs)	60/2.92	23.7	2.0	**2301B******	32.4	1520
500 (cs)	60/3.30	26.7	2.2	**2401B******	36.1	1890
630 (cs)	60/3.75	30.3	2.4	**2501B******	40.5	2395
800 (cs)	60/4.30	34.0	2.6	**2601B******	44.8	2980
1000 (cs)	60/4.70	37.8	2.8	**2701B******	49.2	3690

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
Please refer to Table 1 & 2 (Page 25)

(cs) : Circular Compact Stranded Conductor

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0.6/1kV Single-Core
XLPE Insulated, Unarmoured, PVC Sheathed Cable
Description: CU/XLPE/PVC
Model Code: XP

Application :	This cable is used in power supply and distribution system for high-rise residential, commercial buildings, hotels, and factories.
Voltage rating :	0.6/1kV
Construction :	Plain annealed copper (IEC 60228 Class 2), XLPE insulated, unarmoured, PVC compound sheathed cable
Insulation colour :	Natural
Sheath colour :	Black
Specification :	IEC 60502-1, IEC 60332-1-2
Operating temperature :	90˚C

Conductor			Insulation	Part No.	Unarmoured Cable	
Nominal Area	No./Diam. of Strand	Approx. Diam.	Thickness		Approx. Overall Diam.	Approx. Weight
(mm^2)	(no./mm)	(mm)	(mm)		(mm)	(kg/km)
10	7/1.35	4.05	0.7	**1101B******	8.5	150
16	7/1.70	5.10	0.7	**1201B******	9.5	200
25 (cs)	7/2.14	6.20	0.9	**1301B******	11.5	310
35 (cs)	19/1.53	7.30	0.9	**1401B******	12.5	420
50 (cs)	19/1.78	8.20	1.0	**1501B******	14.0	550
70 (cs)	19/2.14	10.00	1.1	**1601B******	16.3	770
95 (cs)	19/2.52	11.80	1.1	**1701B******	18.2	1040
120 (cs)	37/2.03	13.00	1.2	**1801B******	20.0	1300
150 (cs)	37/2.25	14.40	1.4	**1901B******	22.0	1580
185 (cs)	37/2.52	16.20	1.6	**2001B******	24.5	1970
240 (cs)	61/2.25	18.80	1.7	**2101B******	27.5	2520
300 (cs)	61/2.52	21.20	1.8	**2201B******	30.5	3150
400 (cs)	61/2.85	24.30	2.0	**2301B******	34.0	4000
500 (cs)	61/3.20	27.40	2.2	**2401B******	38.6	5000
630	127/2.52	32.76	2.4	**2501B******	43.5	6500
800	127/2.85	37.05	2.6	**2601B******	48.5	8200
1000	127/3.20	41.60	2.8	**2701B******	53.6	10000

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
Please refer to Table 3 & 4 (Page 26)

(cs) : Circular Compact Stranded Conductor

Prefabricated Branch Cables

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0.6/1kV 2-Core ~ 5-Core
XLPE Insulated, Unarmoured or Armoured, PVC Sheathed Cable
Description: CU/XLPE/PVC or CU/XLPE/PVC/SWA/PVC-AT
Model Code: XP or XPSP-AT

Application :	This cable is used in power supply for lighting system of highways, tunnels, and bridges.
Voltage rating :	0.6/1kV
Construction :	Plain annealed copper (IEC 60228 Class 2), XLPE insulated, unarmoured or galvanized steel wires armoured, PVC or anti-termite PVC (for armoured cable only) compound sheathed cable
Insulation colour :	2-Core: Brown, Blue; 3-Core: Brown, Black, Grey; Brown, Blue, Green/Yellow; 4-Core: Brown, Black, Grey, Blue; Brown, Black, Grey, Green/Yellow; 5-Core: Brown, Black, Grey, Blue, Green/Yellow; (Other colour upon request)
Sheath colour :	Black
Specification :	IEC 60502-1, IEC 60332-1-2
Operating temperature :	90˚C

2-CORE [2C]
(Brown, Blue) (1-phase and neutral)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0802B******	11.0	160	**0802B******	15.5	400
4	0.7	**0902B******	12.0	200	**0902B******	16.5	475
6	0.7	**1002B******	13.1	260	**1002B******	17.5	570
10	0.7	**1102B******	16.0	380	**1102B******	20.8	800
16	0.7	**1202B******	18.0	480	**1202B******	22.9	1050
25 (cs)	0.9	**1302B******	21.2	709	**1302B******	26.7	1471
35 (cs)	0.9	**1402B******	23.4	925	**1402B******	29.0	1762

3-CORE [3C]
(Brown, Black, Grey) (3-phase, three wire)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0803B******	11.4	190	**0803B******	16.0	435
4	0.7	**0903B******	12.8	250	**0903B******	17.0	550
6	0.7	**1003B******	14.0	320	**1003B******	18.5	660
10	0.7	**1103B******	16.9	480	**1103B******	21.7	900
16	0.7	**1203B******	19.0	645	**1203B******	24.0	1260
25 (cs)	0.9	**1303B******	22.5	968	**1303B******	28.0	1772
35 (cs)	0.9	**1403B******	25.0	1278	**1403B******	30.5	2175

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

(cs) : Circular Compact Stranded Conductor

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0.6/1kV 2-Core ~ 5-Core
XLPE Insulated, Unarmoured or Armoured, PVC Sheathed Cable
Description: CU/XLPE/PVC or CU/XLPE/PVC/SWA/PVC-AT
Model Code: XP or XPSP-AT

3-CORE [3G]
(Brown, Blue, Green/Yellow) (1-phase and earth)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0803B******	11.4	190	**0803B******	16.0	435
4	0.7	**0903B******	12.8	250	**0903B******	17.0	550
6	0.7	**1003B******	14.0	320	**1003B******	18.5	660
10	0.7	**1103B******	16.9	480	**1103B******	21.7	900
16	0.7	**1203B******	19.0	645	**1203B******	24.0	1260
25 (cs)	0.9	**1303B******	22.5	968	**1303B******	28.0	1772
35 (cs)	0.9	**1403B******	25.0	1278	**1403B******	30.5	2175

4-CORE [4C]
(Brown, Black, Grey, Blue) (3-phase and neutral)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0804B******	12.5	230	**0804B******	16.5	495
4	0.7	**0904B******	14.0	315	**0904B******	18.0	610
6	0.7	**1004B******	15.0	395	**1004B******	20.0	810
10	0.7	**1104B******	18.4	590	**1104B******	23.2	1120
16	0.7	**1204B******	21.0	860	**1204B******	27.0	1480
25 (cs)	0.9	**1304B******	22.0	1265	**1304B******	30.8	2160
35 (cs)	0.9	**1404B******	27.4	1665	**1404B******	33.8	2690

4-CORE [4G]
(Brown, Black, Grey, Green/Yellow) (3-phase and earth)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0804B******	12.5	230	**0804B******	16.5	495
4	0.7	**0904B******	14.	315	**0904B******	18.0	610
6	0.7	**1004B******	15.0	395	**1004B******	20.0	810
10	0.7	**1104B******	18.4	590	**1104B******	23.2	1120
16	0.7	**1204B******	21.0	860	**1204B******	27.0	1480
25 (cs)	0.9	**1304B******	22.0	1265	**1304B******	30.8	2160
35 (cs)	0.9	**1404B******	27.4	1665	**1404B******	33.8	2690

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

(cs) : Circular Compact Stranded Conductor

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0.6/1kV 2-Core ~ 5-Core
XLPE Insulated, Unarmoured or Armoured, PVC Sheathed Cable
Description: CU/XLPE/PVC or CU/XLPE/PVC/SWA/PVC-AT
Model Code: XP or XPSP-AT

5-CORE [5G]
(Brown, Black, Grey, Blue, Green/Yellow) (3-phase, neutral and earth)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0805B******	13.9	263	**0805B******	17.8	540
4	0.7	**0905B******	15.4	355	**0905B******	20.0	795
6	0.7	**1005B******	16.9	465	**1005B******	21.8	956
10	0.7	**1105B******	19.8	700	**1105B******	24.8	1272
16	0.7	**1205B******	22.5	1020	**1205B******	28.6	1845
25 (cs)	0.9	**1305B******	27.0	1530	**1305B******	32.6	2500
35 (cs)	0.9	**1405B******	30.0	2035	**1405B******	36.2	3140

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

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LSZH Flame Retardant Prefabricated Branch Cables

1	Conductor-1	Aluminium Conductor
2	Conductor-2	Plain Annealed Copper
3	Insulation	XLPE
4	Oversheath	LSZH*
5	Injection-molded	LSZH*

* LSZH: Low Smoke Zero Halogen

LSZH Flame Retardant Prefabricated Branch Cables

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www.keystone-cable.com

0.6/1kV Single-Core
XLPE Insulated, Unarmoured, LSZH Sheathed Cable
Description: AL/XLPE/LSZH-AT-UV
Model Code: AXL-AT-UV

Application :	This cable is used in power supply and distribution system for high-rise residential, commercial buildings, hotels, and factories.
Voltage rating :	0.6/1kV
Construction :	Aluminium conductor (IEC 60228 Class 2), XLPE insulated, unarmoured, anti-termite and UV resistant LSZH compound sheathed cable
Insulation colour :	Natural
Sheath colour :	Black
Specification :	IEC 60502-1, BS 6724, IEC 60332-1-2, IEC 60332-3, IEC 60754, IEC 61034
Operating temperature :	90˚C

Conductor			Insulation	Part No.	Unarmoured Cable	
Nominal Area	No./Diam. of Strand	Approx. Diam.	Thickness		Approx. Overall Diam.	Approx. Weight
(mm^2)	(no./mm)	(mm)	(mm)		(mm)	(kg/km)
25 (cs)	7/2.16	6.0	0.9	**1301B******	11.2	170
35 (cs)	7/2.50	7.0	0.9	**1401B******	12.1	215
50 (cs)	7/2.90	8.3	1.0	**1501B******	13.6	265
70 (cs)	19/2.16	10.0	1.1	**1601B******	15.6	345
95 (cs)	19/2.50	11.5	1.1	**1701B******	17.6	440
120 (cs)	19/2.80	13.0	1.2	**1801B******	19.3	530
150 (cs)	19/3.15	14.5	1.4	**1901B******	21.3	650
185 (cs)	36/2.54	16.2	1.6	**2001B******	23.6	785
240 (cs)	36/2.90	18.3	1.7	**2101B******	26.0	980
300 (cs)	36/3.30	20.6	1.8	**2201B******	28.7	1200
400 (cs)	60/2.92	23.7	2.0	**2301B******	32.4	1520
500 (cs)	60/3.30	26.7	2.2	**2401B******	36.1	1890
630 (cs)	60/3.75	30.3	2.4	**2501B******	40.5	2395
800 (cs)	60/4.30	34.0	2.6	**2601B******	44.8	2980
1000 (cs)	60/4.70	37.8	2.8	**2701B******	49.2	3690

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
Please refer to Table 1 & 2 (Page 25)

(cs) : Circular Compact Stranded Conductor

LSZH Flame Retardant Prefabricated Branch Cables

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0.6/1kV Single-Core
XLPE Insulated, Unarmoured, LSZH Sheathed Cable
Description: CU/XLPE/LSZH-AT-UV
Model Code: XL-AT-UV

Application :	This cable is used in power supply and distribution system for high-rise residential, commercial buildings, hotels, and factories.
Voltage rating :	0.6/1kV
Construction :	Plain annealed copper (IEC 60228 Class 2), XLPE insulated, unarmoured, anti-termite and UV resistant LSZH compound sheathed cable
Insulation colour :	Natural
Sheath colour :	Black
Specification :	IEC 60502-1, BS 6724, IEC 60332-1-2, IEC 60332-3, IEC 60754, IEC 61034
Operating temperature :	90˚C

Conductor			Insulation	Part No.	Unarmoured Cable	
Nominal Area	No./Diam. of Strand	Approx. Diam.	Thickness		Approx. Overall Diam.	Approx. Weight
(mm^2)	(no./mm)	(mm)	(mm)		(mm)	(kg/km)
10	7/1.35	4.05	0.7	**1101B******	8.5	155
16	7/1.70	5.10	0.7	**1201B******	9.5	225
25 (cs)	7/2.14	6.20	0.9	**1301B******	11.2	335
35 (cs)	19/1.53	7.30	0.9	**1401B******	12.3	435
50 (cs)	19/1.78	8.20	1.0	**1501B******	13.5	570
70 (cs)	19/2.14	10.00	1.1	**1601B******	15.3	800
95 (cs)	19/2.52	11.80	1.1	**1701B******	17.4	1080
120 (cs)	37/2.03	13.00	1.2	**1801B******	18.8	1330
150 (cs)	37/2.25	14.40	1.4	**1901B******	20.8	1630
185 (cs)	37.2.52	16.20	1.6	**2001B******	23.1	2030
240 (cs)	61/2.25	18.80	1.7	**2101B******	26.3	2650
300 (cs)	61/2.52	21.20	1.8	**2201B******	29.1	3260
400 (cs)	61/2.85	24.30	2.0	**2301B******	32.9	4140
500 (cs)	61/3.20	27.40	2.2	**2401B******	36.7	5200
630	127/2.52	32.76	2.4	**2501B******	42.8	6650
800	127/2.85	37.05	2.6	**2601B******	48.0	8450
1000	127/3.20	41.60	2.8	**2701B******	53.0	10600

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 3 & 4 (Page 26)

(cs) : Circular Compact Stranded Conductor

LSZH Flame Retardant Prefabricated Branch Cables

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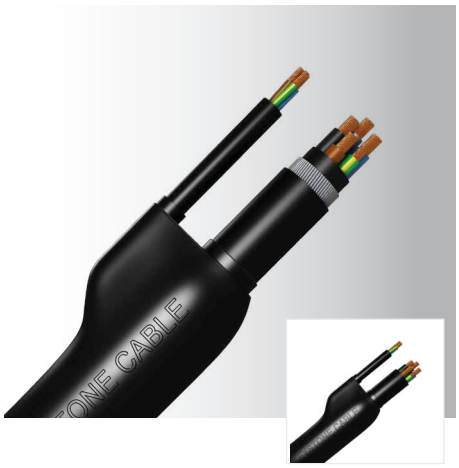
0.6/1kV 2-Core ~ 5-Core
XLPE Insulated, Unarmoured or Armoured, LSZH Sheathed Cable
Description: CU/XLPE/LSZH-AT-UV or CU/XLPE/LSZH/SWA/LSZH-AT-UV
Model Code: XL-AT-UV or XLSL-AT-UV



Application :	This cable is used in power supply for lighting system of highways, tunnels, and bridges.
Voltage rating :	0.6/1kV
Construction :	Plain annealed copper (IEC 60228 Class 2), XLPE insulated, unarmoured or galvanized steel wires armoured, anti-termite and UV resistant LSZH compound sheathed cable
Insulation colour :	2-Core: Brown, Blue; 3-Core: Brown, Black, Grey; Brown, Blue, Green/Yellow; 4-Core: Brown, Black, Grey, Blue; Brown, Black, Grey, Green/Yellow; 5-Core: Brown, Black, Grey, Blue, Green/Yellow; (Other colour upon request)
Sheath colour :	Black
Specification :	IEC 60502-1, BS 6724, IEC 60332-1, IEC 60332-3, IEC 60754, IEC 61034
Operating temperature :	90˚C

2-CORE [2C]
(Brown, Blue) (1-phase and neutral)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0802B******	11.0	165	**0802B******	15.5	410
4	0.7	**0902B******	12.0	215	**0902B******	16.5	490
6	0.7	**1002B******	13.1	270	**1002B******	18.0	580
10	0.7	**1102B******	16.0	390	**1102B******	20.8	800
16	0.7	**1202B******	18.0	495	**1202B******	22.9	1050
25 (cs)	0.9	**1302B******	21.2	726	**1302B******	26.7	1473
35 (cs)	0.9	**1402B******	23.4	944	**1402B******	29.0	1780

3-CORE [3C]
(Brown, Black, Grey) (3-phase, three wire)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0803B******	11.4	190	**0803B******	16.0	435
4	0.7	**0903B******	12.8	250	**0903B******	17.0	550
6	0.7	**1003B******	14.0	320	**1003B******	18.5	660
10	0.7	**1103B******	16.9	480	**1103B******	21.7	900
16	0.7	**1203B******	19.0	645	**1203B******	24.0	1260
25 (cs)	0.9	**1303B******	22.5	968	**1303B******	28.0	1772
35 (cs)	0.9	**1403B******	25.0	1278	**1403B******	30.5	2175

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

(cs) : Circular Compact Stranded Conductor

LSZH Flame Retardant Prefabricated Branch Cables

KEYSTONE CABLE
tel (65) 6367 0107 fax (65) 6365 2963
www.keystone-cable.com

0.6/1kV 2-Core ~ 5-Core
XLPE Insulated, Unarmoured or Armoured, LSZH Sheathed Cable
Description: CU/XLPE/LSZH-AT-UV or CU/XLPE/LSZH/SWA/LSZH-AT-UV
Model Code: XL-AT-UV or XLSL-AT-UV

3-CORE [3G]
(Brown, Blue, Green/Yellow) (1-phase and earth)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0803B******	11.4	190	**0803B******	16.0	435
4	0.7	**0903B******	12.8	250	**0903B******	17.0	550
6	0.7	**1003B******	14.0	320	**1003B******	18.5	660
10	0.7	**1103B******	16.9	480	**1103B******	21.7	900
16	0.7	**1203B******	19.0	645	**1203B******	24.0	1260
25 (cs)	0.9	**1303B******	22.5	968	**1303B******	28.0	1772
35 (cs)	0.9	**1403B******	25.0	1278	**1403B******	30.5	2175

4-CORE [4C]
(Brown, Black, Grey, Blue) (3-phase and neutral)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0804B******	12.5	230	**0804B******	16.5	495
4	0.7	**0904B******	14.0	315	**0904B******	18.0	610
6	0.7	**1004B******	15.0	395	**1004B******	20.0	810
10	0.7	**1104B******	18.4	590	**1104B******	23.2	1120
16	0.7	**1204B******	21.4	860	**1204B******	27.0	1480
25 (cs)	0.9	**1304B******	25.0	1365	**1304B******	30.8	2160
35 (cs)	0.9	**1404B******	27.4	1665	**1404B******	33.8	2690

4-CORE [4G]
(Brown, Black, Grey, Green/Yellow) (3-phase and earth)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0804B******	12.5	230	**0804B******	16.5	495
4	0.7	**0904B******	14.0	315	**0904B******	18.0	610
6	0.7	**1004B******	15.0	395	**1004B******	20.0	810
10	0.7	**1104B******	18.4	590	**1104B******	23.2	1120
16	0.7	**1204B******	21.4	860	**1204B******	27.0	1480
25 (cs)	0.9	**1304B******	25.0	1365	**1304B******	30.8	2160
35 (cs)	0.9	**1404B******	27.4	1665	**1404B******	33.8	2690

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

(cs) : Circular Compact Stranded Conductor

LSZH Flame Retardant Prefabricated Branch Cables

KEYSTONE CABLE
tel (65) 6367 0107 **fax** (65) 6365 2963
www.keystone-cable.com

0.6/1kV 2-Core ~ 5-Core
XLPE Insulated, Unarmoured or Armoured, LSZH Sheathed Cable
Description: CU/XLPE/LSZH-AT-UV or CU/XLPE/LSZH/SWA/LSZH-AT-UV
Model Code: XL-AT-UV or XLSL-AT-UV

5-CORE [5G]
(Brown, Black, Grey, Blue, Green/Yellow) (3-phase, neutral and earth)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0805B******	13.9	263	**0805B******	17.8	540
4	0.7	**0905B******	15.4	355	**0905B******	20.0	795
6	0.7	**1005B******	16.9	465	**1005B******	21.8	956
10	0.7	**1105B******	19.8	700	**1105B******	24.8	1272
16	0.7	**1205B******	22.5	1020	**1205B******	28.6	1845
25 (cs)	0.9	**1305B******	27.0	1530	**1305B******	32.6	2500
35 (cs)	0.9	**1405B******	30.0	2035	**1405B******	36.2	3140

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

(cs) : Circular Compact Stranded Conductor

KEYSTONE CABLE
tel (65) 6367 0107 fax (65) 6365 2963
www.keystone-cable.com

LSZH Fire Resistant Prefabricated Branch Cables

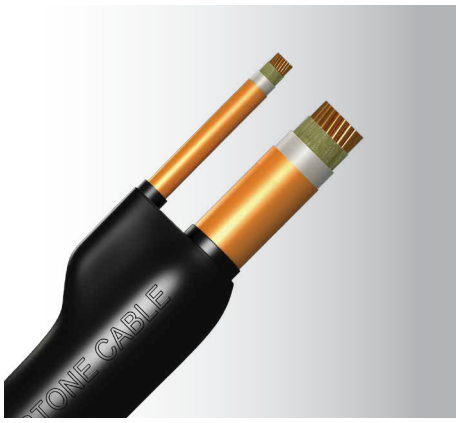
1	Conductor	Plain Annealed Copper
2	Fire Barrier	Mica Tape
3	Insulation	XLPE
4	Bedding	LSZH*
5	Armouring	Galvanized Steel Wire
6	Oversheath	LSZH*
7	Injection-molded	LSZH*

* LSZH: Low Smoke Zero Halogen

LSZH Fire Resistant Prefabricated Branch Cables

KEYSTONE CABLE
tel (65) 6367 0107 **fax** (65) 6365 2963
www.keystone-cable.com

0.6/1kV Single-Core
Mica Tape, XLPE Insulated, Unarmoured, LSZH Sheathed Cable
Description: CU/MT/XLPE/LSZH-AT-UV
Model Code: MXL-AT-UV



Application :	This cable is used in power supply and distribution system for high-rise buildings, hospitals, hotels, and airports where the integrity of the electrical circuit is critical during a fire event.
Voltage rating :	0.6/1kV
Construction :	Plain annealed copper (IEC 60228 Class 2), mica tape fire barrier, XLPE insulated, unarmoured, anti-termite and UV resistant LSZH compound sheathed cable
Insulation colour :	Natural
Sheath colour :	Orange
Specification :	IEC 60502-1, SS 299, BS 6387, IEC 60331, IEC 60332-1-2, IEC 60332-3, IEC 60754, IEC 61034-2
Operating temperature :	90˚C

Conductor			Insulation	Part No.	Unarmoured Cable	
Nominal Area	No./Diam. of Strand	Approx. Diam.	Thickness		Approx. Overall Diam.	Approx. Weight
(mm^2)	(no./mm)	(mm)	(mm)		(mm)	(kg/km)
10	7/1.35	4.05	0.7	**1101B******	9.6	170
16	7/1.70	5.10	0.7	**1201B******	10.6	235
25 (cs)	7/2.14	6.20	0.9	**1301B******	12.3	343
35 (cs)	19/1.53	7.30	0.9	**1401B******	13.7	455
50 (cs)	19/1.78	8.20	1.0	**1501B******	15.1	590
70 (cs)	19/2.14	10.00	1.1	**1601B******	16.6	820
95 (cs)	19/2.52	11.80	1.1	**1701B******	19.0	1075
120 (cs)	37/2.03	13.00	1.2	**1801B******	20.5	1350
150 (cs)	37/2.25	14.40	1.4	**1901B******	22.7	1640
185 (cs)	37/2.52	16.20	1.6	**2001B******	25.1	2040
240 (cs)	61/2.25	18.80	1.7	**2101B******	28.1	2650
300 (cs)	61/2.52	21.20	1.8	**2201B******	30.9	3260
400 (cs)	61/2.85	24.30	2.0	**2301B******	34.8	4130
500 (cs)	61/3.20	27.40	2.2	**2401B******	38.7	5200
630	127/2.52	32.76	2.4	**2501B******	44.9	6600
800	127/2.85	37.05	2.6	**2601B******	50.0	8300
1000	127/3.20	41.60	2.8	**2701B******	55.1	10458

****Stands for branch size, please contact us for more information.

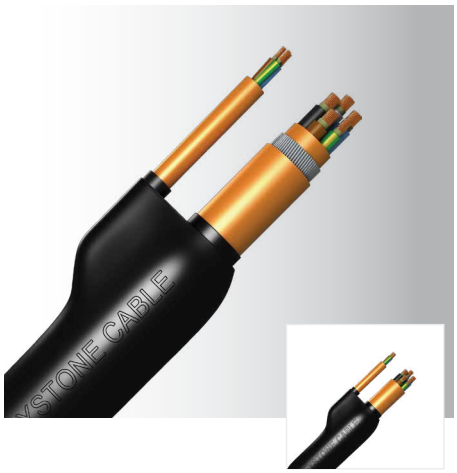
Current rating and voltage drop
Please refer to Table 3 & 4 (Page 26)

(cs) : Circular Compact Stranded Conductor

LSZH Fire Resistant Prefabricated Branch Cables

KEYSTONE CABLE
tel (65) 6367 0107 fax (65) 6365 2963
www.keystone-cable.com

0.6/1kV 2-Core ~ 5-Core
Mica Tape, XLPE Insulated, Unarmoured or Armoured, LSZH Sheathed Cable
Description: CU/MT/XLPE/LSZH-AT-UV or CU/MT/XLPE/LSZH/SWA/LSZH-AT-UV
Model Code: MXL-AT-UV or MXLSL-AT-UV



Application :	This cable is used in power supply for lighting system of highways, tunnels, and bridges where the integrity of the electrical circuit is critical during a fire event.
Voltage rating :	0.6/1kV
Construction :	Plain annealed copper (IEC 60228 Class 2), mica tape fire barrier, XLPE insulated, unarmoured or galvanized steel wire armoured, anti-termite and UV resistant LSZH compound sheathed cable
Insulation colour :	2-Core: Brown, Blue; 3-Core: Brown, Black, Grey; Brown, Blue, Green/Yellow; 4-Core: Brown, Black, Grey, Blue; Brown, Black, Grey, Green/Yellow; 5-Core: Brown, Black, Grey, Blue, Green/Yellow; (Other colour upon request)
Sheath colour :	Orange
Specification :	IEC 60502-1, SS 299, BS 6387, IEC 60331, IEC 60332-1-2, IEC 60332-3, IEC 60754, IEC 61034-2
Operating temperature :	90˚C

2-CORE [2C]
(Brown, Blue) (1-phase and neutral)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0802B******	12.6	193	**0802B******	17.3	511
4	0.7	**0902B******	13.8	250	**0902B******	18.4	595
6	0.7	**1002B******	15.0	326	**1002B******	19.5	809
10	0.7	**1102B******	17.5	411	**1102B******	22.1	940
16	0.7	**1202B******	19.5	550	**1202B******	24.3	1100
25 (cs)	0.9	**1302B******	22.5	792	**1302B******	28.0	1634
35 (cs)	0.9	**1402B******	26.0	1043	**1402B******	31.5	2000

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

(cs) : Circular Compact Stranded Conductor

LSZH Fire Resistant Prefabricated Branch Cables

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www.keystone-cable.com

0.6/1kV 2-Core ~ 5-Core
Mica Tape, XLPE Insulated, Unarmoured or Armoured, LSZH Sheathed Cable
Description: CU/MT/XLPE/LSZH-AT-UV or CU/MT/XLPE/LSZH/SWA/LSZH-AT-UV
Model Code: MXL-AT-UV or MXLSL-AT-UV

3-CORE [3C]
(Brown, Black, Grey) (3-phase, three wire)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0803B******	13.8	200	**0803B******	18.0	500
4	0.7	**0903B******	15.2	300	**0903B******	18.9	600
6	0.7	**1003B******	16.8	380	**1003B******	20.1	883
10	0.7	**1103B******	18.6	550	**1103B******	33.1	1086
16	0.7	**1203B******	21.0	760	**1203B******	25.2	1370
25 (cs)	0.9	**1303B******	24.0	1068	**1303B******	29.2	1900
35 (cs)	0.9	**1403B******	27.4	1420	**1403B******	33.2	2458

3-CORE [3G]
(Brown, Blue, Green/Yellow) (1-phase and earth)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0803B******	13.8	200	**0803B******	18.0	500
4	0.7	**0903B******	15.2	300	**0903B******	18.9	600
6	0.7	**1003B******	16.8	380	**1003B******	20.1	883
10	0.7	**1103B******	18.6	550	**1103B******	23.1	1086
16	0.7	**1203B******	21.0	760	**1203B******	25.2	1370
25 (cs)	0.9	**1303B******	24.0	1068	**1303B******	29.2	1900
35 (cs)	0.9	**1403B******	27.4	1420	**1403B******	33.2	2458

4-CORE [4C]
(Brown, Black, Grey, Blue) (3-phase and neutral)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0804B******	15.2	248	**0804B******	18.9	570
4	0.7	**0904B******	16.5	335	**0904B******	20.1	690
6	0.7	**1004B******	18.0	440	**1004B******	22.5	940
10	0.7	**1104B******	20.6	670	**1104B******	24.5	1267
16	0.7	**1204B******	23.0	933	**1204B******	28.1	1776
25 (cs)	0.9	**1304B******	26.7	1364	**1304B******	31.6	2400
35 (cs)	0.9	**1404B******	30.4	1822	**1404B******	36.1	2973

**** Stands for branch size, please contact us for more information.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

(cs) : Circular Compact Stranded Conductor

LSZH Fire Resistant Prefabricated Branch Cables

KEYSTONE CABLE
tel (65) 6367 0107 fax (65) 6365 2963
www.keystone-cable.com

0.6/1kV 2-Core ~ 5-Core
Mica Tape, XLPE Insulated, Unarmoured or Armoured, LSZH Sheathed Cable
Description: CU/MT/XLPE/LSZH-AT-UV or CU/MT/XLPE/LSZH/SWA/LSZH-AT-UV
Model Code: MXL-AT-UV or MXLSL-AT-UV

4-CORE [4G]
(Brown, Black, Grey, Green/Yellow) (3-phase and earth)

Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0804B******	15.2	248	**0804B******	18.9	570
4	0.7	**0904B******	16.5	335	**0904B******	20.1	690
6	0.7	**1004B******	18.0	440	**1004B******	22.5	940
10	0.7	**1104B******	20.6	670	**1104B******	24.5	1267
16	0.7	**1204B******	23.0	933	**1204B******	28.1	1776
25 (cs)	0.9	**1304B******	26.7	1364	**1304B******	31.6	2400
35 (cs)	0.9	**1404B******	30.4	1822	**1404B******	36.1	2973

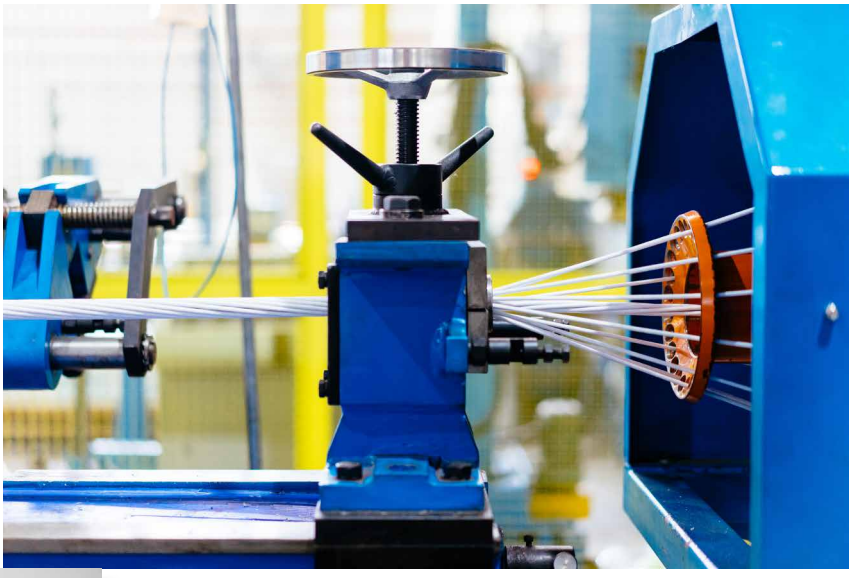
5-CORE [5G]
(Brown, Black, Grey, Blue, Green/Yellow) (3-phase, neutral and earth)

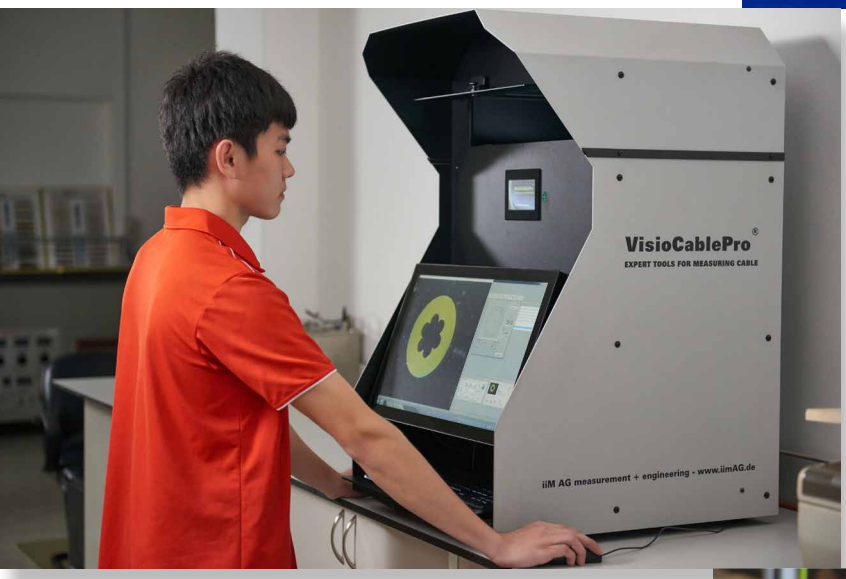
Conductor	Insulation	Unarmoured Cable			Armoured Cable		
Nominal Area	Thickness	**Part No.**	Approx. Overall Diam.	Approx. Weight	**Part No.**	Approx. Overall Diam.	Approx. Weight
(mm^2)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)
2.5	0.7	**0805B******	16.4	330	**0805B******	20.6	674
4	0.7	**0905B******	17.8	434	**0905B******	22.9	928
6	0.7	**1005B******	19.5	547	**1005B******	24.6	1083
10	0.7	**1105B******	22.0	780	**1105B******	27.3	1679
16	0.7	**1205B******	24.8	1105	**1205B******	30.6	2096
25 (cs)	0.9	**1305B******	29.0	1625	**1305B******	34.8	2765
35 (cs)	0.9	**1405B******	33.8	2270	**1405B******	40.0	3415

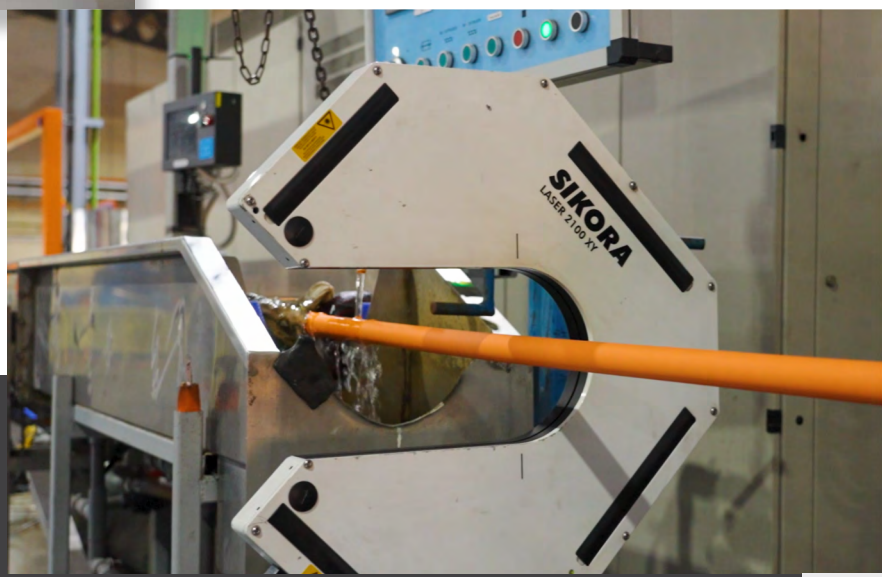
**** Stands for branch size, please contact us for more info.

Current rating and voltage drop
For Unarmoured Cable, please refer to Table 5 & 6 (Page 27)
For Armoured Cable, please refer to Table 7 & 8 (Page 28)

(cs) : Circular Compact Stranded Conductor







Technical Information

KEYSTONE CABLE
tel (65) 6367 0107 fax (65) 6365 2963
www.keystone-cable.com

Inspection and Testing Procedure

- Each connection made between the main and prefabricated branch cable employs a copper "C" type connector and is encapsulated in thermoplastic;
- The insulation resistance value of the system is measured over 200MΩ at the factory;
- Cable with connectors can withstand dielectric voltage of 3.5kV for 5 minutes under one meter water pressure;
- The DC conductor resistance ratio between the connected cable system and the cables with same length is less than 1.2;
- Able to withstand 250 Heat Cycle Test;
- Cable system meets flame retardant requirement to IEC 60332.

Installation Procedure

The KEYFAB™ Prefabrication Branch Cables for vertical main cable are generally installed according to the following procedure:

1. Place the cable reel on the payoff rack. In general, the cable reel is placed at ground floor to lift the cable.
2. The lifting rope is connected to the cable via coiler.
3. Start the coiler to life the cable; During the pulling process, the pulling speed shall be 4 ~ 5 metre/min or less. The process should be continously monitored to prevent any damage from happening.
4. When the cable sleeve for lifting reaches the roof, hang it on the prepared hook. If the end cap on the main cable shows any sign of damage after installation, the cap should be replaced.
5. Fasten the middle part.
6. Connect the terminal of the branch cable to the power meter or the circuit breaker.
7. Connect the main cable to the switch box.

Pre-Installation

1. Check and confirm transportation method in advance.
2. Check and confirm whether the KEYFAB™ prefabricated branch cable branch parts can safely pass through the hole.
3. Take preventative measures to prevent damages to the branch cable during the lifting process.
4. During lifting, no tensile should be applied onto the prefabricated branch cable.
5. The strength of lifting rope should be more than 4 times of the cable weight.
6. Prior consideration to shelter the installation from rain, and to remove empty drums upon completion.
7. Upon lifting completion, immediately fasten the main cable to avoid cable fall and damages.
8. No steel cable clamp is allowed for single-core cables.

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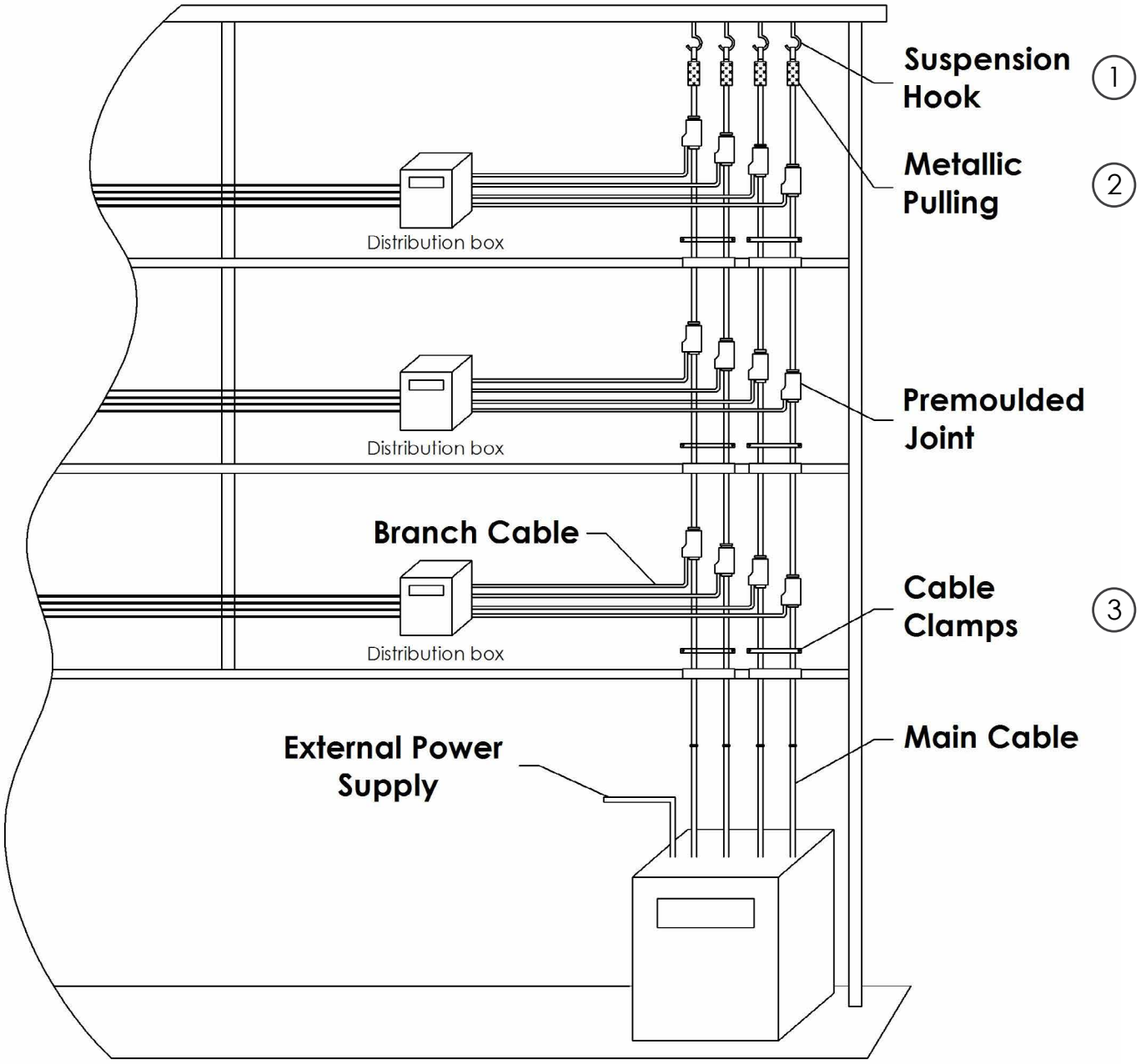

Prefabricated Branch Cable Accessories

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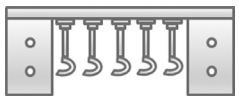
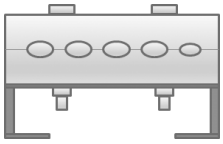
No.	Product	Single-Core/Multi-Core	Model Code	Applicable Size (mm^2)
1	Suspension Hook 	Single-Core	FZHD-1	10 ~ 35
			FZHD-2	50 ~ 70
			FZHD-3	95 ~150
			FZHD-4	185 ~ 400
			FZHD-5	500 ~ 1000
		Multi-Core	FZHD-1	10 ~ 35
			FZHD-2	50 ~ 70
			FZHD-3	95 ~150
			FZHD-4	185 ~ 400
			FZHD-5	500 ~ 1000
2	Metallic Pulling 	Single-Core	FZDT-1 / MG-15	16 ~ 70
			FZDT-2 / MG-20	95 ~ 150
			FZDT-3 / MG-30	185 ~ 400
			FZDT-4 / MG-40	500 ~ 630
		Multi-Core	FZDT-S-1 / TG-100	10 ~ 50
			FZDT-S-2 / TG-150	70 ~ 120
			FZDT-S-3 / TG-200	150 ~ 185
			FZDT-S-3 / TG-250	240
			FZDT-S-4 / TG-300	300
3	Cable Clamps 	Single-Core	FZGD-1	10 ~ 35
			FZGD-2	50 ~ 70
			FZGD-3	95 ~ 150
			FZGD-4	185 ~ 400
			FZGD-5	500 ~ 1000
		Multi-Core	FZGD-1	10 ~ 35
			FZGD-2	50 ~ 70
			FZGD-3	95 ~ 150
			FZGD-4	185 ~ 400
			FZGD-5	500 ~ 1000

Current Rating and Voltage Drop

XLPE Insulated Cables
Single-Core, Aluminium Conductors

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Single-Core Cables with XLPE Insulation, with PVC (or LSZH) Outersheath 0.6/1kV

Table 1 : Current-Carrying Capacities (Amp)
[AL/XLPE/PVC or AL/XLPE/LSZH Cables]

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C

IEC 60502-1

Conductor Cross-sectional Area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (in free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, 1-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, 1-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, 1-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, 1-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, 1-phase a.c. or d.c. or 3 cables 3-phase a.c.	2 cables, 1-phase a.c. or d.c. or 3 cables 3-phase a.c.	3 cables trefoil, 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
50	125	113	157	140	169	149	180	165	210	188	159
70	158	142	200	179	215	189	231	211	271	244	206
95	191	171	242	217	265	234	281	258	332	300	253
120	220	197	281	251	308	273	326	300	387	351	296
150	253	226	-	-	353	314	376	346	448	408	343
185	288	256	-	-	340	366	430	396	515	470	395
240	338	300	-	-	489	438	509	469	611	561	471
300	387	344	-	-	564	507	586	541	708	652	544
380 (400)	-	-	-	-	658	594	679	628	798	742	638
480 (500)	-	-	-	-	765	692	786	728	927	865	743
600 (630)	-	-	-	-	871	791	903	836	1058	990	849
740 (800)	-	-	-	-	1001	911	1025	951	1218	1143	979
960 (1000)	-	-	-	-	1176	1072	1191	1108	1440	1355	1151

Note : For rating factors of ambient temperature other than 30°C, please refer to Table 9 (Page 29)

Table 2 : Voltage Drop (Per Amp Per Meter)
[AL/XLPE/PVC or AL/XLPE/LSZH Cables]

Conductor Operating Temperature : 90°C

IEC 60502-1

Conductor Cross-sectional Area	2 cables, d.c.	2 cables, 1-phase a.c.						3 or 4 cables, 3-phase a.c.								
		Reference Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Reference Methods 1 and 11 (clipped direct or on trays touching)			Reference Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Reference Methods 1, 11 and 12 (trefoil)			Reference Methods 1 and 11 (flat and touching)		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	1.65	1.70	0.30	1.72	1.65	0.190	1.66	1.44	0.26	1.46	1.44	0.165	1.45	1.44	0.24	1.46
70	1.13	1.17	0.30	1.21	1.12	0.185	1.14	1.00	0.26	1.04	0.97	0.160	0.98	0.97	0.24	1.00
95	0.82	0.86	0.29	0.91	0.82	0.185	0.84	0.75	0.25	0.79	0.71	0.160	0.73	0.71	0.23	0.75
120	0.65	0.68	0.29	0.74	0.65	0.180	0.67	0.59	0.25	0.64	0.57	0.155	0.59	0.57	0.23	0.61
150	0.53	0.54	0.28	0.61	0.52	0.175	0.55	0.48	0.24	0.54	0.45	0.155	0.47	0.45	0.23	0.50
185	0.42	0.45	0.28	0.53	0.43	0.175	0.46	0.38	0.24	0.45	0.36	0.150	0.39	0.36	0.23	0.43
240	0.32	0.34	0.27	0.43	0.32	0.170	0.36	0.30	0.24	0.38	0.28	0.150	0.32	0.28	0.22	0.35
300	0.26	0.28	0.27	0.38	0.26	0.170	0.31	0.25	0.23	0.34	0.22	0.145	0.27	0.22	0.22	0.31
380 (400)	0.20	-	-	-	0.21	0.165	0.27	0.20	0.23	0.31	0.180	0.145	0.23	0.180	0.22	0.28
480 (500)	0.160	-	-	-	0.170	0.165	0.23	0.165	0.23	0.28	0.150	0.140	0.20	0.150	0.22	0.27
600 (630)	0.130	-	-	-	0.140	0.160	0.21	0.135	0.22	0.26	0.120	0.140	0.185	0.120	0.22	0.25
740 (800)	0.105	-	-	-	0.115	0.160	0.19	-	-	-	0.100	0.135	0.170	0.100	0.21	0.23
960 (1000)	0.080	-	-	-	0.092	0.155	0.18	-	-	-	0.082	0.135	0.160	0.082	0.21	0.23

Note : r = resistive component; x = reactive component; z = impedance value

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Single-Core Cables with XLPE Insulation, PVC (or LSZH) Outersheath 0.6/1kV

Table 3 : Current-Carrying Capacities (Amp)
[CU/XLPE/PVC, CU/XLPE/LSZH, or CU/MT/XLPE/LSZH Cables]

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C

IEC 60502-1

Conductor Cross-sectional Area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (in free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, 1-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, 1-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, 1-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, 1-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, 1-phase a.c. or d.c. or 3 cables 3-phase a.c.	2 cables, 1-phase a.c. or d.c. or 3 cables 3-phase a.c.	3 cables trefoil, 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm²	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-
6	43	39	51	45	59	54	-	-	-	-	-
10	58	53	71	63	81	74	-	-	-	-	-
16	76	70	95	85	109	99	-	-	-	-	-
25	100	91	126	111	143	130	158	140	183	163	138
35	124	111	156	138	176	161	195	176	226	203	171
50	149	135	189	168	228	209	239	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606
300	459	410	573	493	743	681	794	730	886	824	701
400	-	-	683	584	868	793	915	849	1065	994	820
500	-	-	783	666	990	904	1044	973	1228	1150	936
630	-	-	900	764	1130	1033	1191	1115	1423	1338	1069
800	-	-	-	-	1288	1179	1358	1275	1581	1485	1214
1000	-	-	-	-	1443	1323	1520	1436	1775	1671	1349

Note : For rating factors of ambient temperature other than 30°C, please refer to Table 9 (Page 29)

Table 4 : Voltage Drop (Per Amp Per Meter)
[CU/XLPE/PVC, CU/XLPE/LSZH, or CU/MT/XLPE/LSZH Cables]

Conductor Operating Temperature : 90°C

IEC 60502-1

Conductor Cross-sectional Area	2 cables, d.c.	2 cables, 1-phase a.c.						3 or 4 cables, 3-phase a.c.								
		Reference Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Reference Methods 1 and 11 (clipped direct or on trays touching)			Reference Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Reference Methods 1, 11 and 12 (trefoil)			Reference Methods 1 and 11 (flat and touching)		
1	2	3			4			5			6			7		
mm²	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			27			27			27			27		
2.5	19	19			16			16			16			16		
4	12	12			10			10			10			10		
6	7.9	7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.0			4			4		
16	2.9	2.9			2.9			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21
400	0.12	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170
800	0.056	-	-	-	0.072	0.150	0.170	-	-	-	0.062	0.130	0.145	0.059	0.155	0.165
1000	0.045	-	-	-	0.063	0.150	0.165	-	-	-	0.055	0.130	0.140	0.050	0.155	0.165

Note : r = resistive component; x = reactive component; z = impedance value

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Table 5 : Current-Carrying Capacities (Amp)
[CU/XLPE/PVC, CU/XLPE/LSZH or CU/MT/XLPE/LSZH Cables]

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C

IEC 60502-1

Conductor Cross-sectional Area	Reference Method 4 (enclosed in an conduit insulated wall etc)	Reference Method 3 (enclosed in conduit on a wall or ceiling, or in trunking)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray), or Reference Method 13 (in free air)	
	one 3-core or 4-core cable, 3-phase a.c.	one 2-core cable, 1-phase a.c. or d.c.	one 3-core or 4-core cable, 3-phase a.c.	one 2-core cable, 1-phase a.c. or d.c.	one 3-core or 4-core cable, 3-phase a.c.	one 2-core cable, 1-phase a.c. or d.c.	one 3-core or 4-core cable, 3-phase a.c.
1	2	3	4	5	6	7	8
mm^2	A	A	A	A	A	A	A
1.5	16.5	22	19.5	24	22	26	23
2.5	22	30	26	33	30	36	32
4	30	40	35	45	40	49	42
6	38	51	44	58	52	63	54
10	51	69	60	80	71	86	75
16	68	91	80	107	96	115	100
25	89	119	105	138	119	149	127
35	109	146	128	171	147	185	158
50	130	175	154	209	179	225	192
70	164	221	194	269	229	289	246
95	197	265	233	328	278	352	298
120	227	305	268	382	322	410	346
150	259	334	300	441	371	473	399
185	295	384	340	506	424	542	456
240	346	459	398	599	500	641	538
300	396	532	455	693	576	741	621
400	472	625	536	803	667	865	741

Note : For rating factors of ambient temperature other than 30°C, please refer to Table 9 (Page 29)

Table 6 : Voltage Drop (Per Amp Per Meter)
[CU/XLPE/PVC, CU/XLPE/LSZH or CU/MT/XLPE/LSZH Cables]

Conductor Operating Temperature : 90°C

IEC 60502-1

Conductor Cross-sectional Area	2-core cable, d.c.	2-core cable, 1-phase a.c.			3-core or 4-core cables, 3-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Note : r = resistive component; x = reactive component; z = impedance value

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Multi-Core Cables with XLPE Insulation, Armoured, PVC or LSZH Outersheath 0.6/1kV

Table 7 : Current-Carrying Capacities (Amp)

[CU/XLPE/PVC/SWA/PVC, CU/XLPE/LSZH/SWA/LSZH, CU/MT/XLPE/LSZH/SWA/LSZH Cables]

Conductor Operating Temperature : 90°C — BS 6724
Ambient Temperature : 30°C — IEC 60502-1
Ground Temperature : 15°C — Depth of Laying : 0.5m — Soil Thermal Resistivity : 1.2 k•m/W

Conductor Cross-sectional Area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable tray) or Reference Method 13 (in free air)		In single-way ducts		Laid direct in ground	
	one 2-core cable, 1-phase a.c. or d.c.	one 3-core or 4-core cable, 3-phase a.c.	one 2-core cable, 1-phase a.c. or d.c.	one 3-core or 4-core cable, 3-phase a.c.	one 2-core cable, 1-phase a.c. or d.c.	one 3-core or 4-core cable, 3-phase a.c.	one 2-core cable, 1-phase a.c. or d.c.	one 3-core or 4-core cable, 3-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	27	23	29	25	-	23	-	28
2.5	36	31	39	33	-	30	-	36
4	49	42	52	44	-	40	-	48
6	62	53	66	56	-	50	-	60
10	85	73	90	78	-	65	-	80
16	110	94	115	99	115	94	140	115
25	146	124	152	131	145	125	180	150
35	180	154	188	162	175	150	215	180
50	219	187	228	197	210	175	255	215
70	279	238	291	251	260	215	315	265
95	338	289	354	304	310	260	380	315
120	392	335	410	353	355	300	430	360
150	451	386	472	406	400	335	480	405
185	515	441	539	463	455	380	540	460
240	607	520	636	546	520	440	630	530
300	698	599	732	628	590	495	700	590
400	787	673	847	728	660	560	790	670

Note : For rating factors of ambient temperature other than 30°C, please refer to Table 9 (Page 29)
For rating factors of ground temperature other than 15°C, please refer to Table 10 (Page 29)

Table 8 : Voltage Drop (Per Amp Per Meter)

[CU/XLPE/PVC/SWA/PVC, CU/XLPE/LSZH/SWA/LSZH, CU/MT/XLPE/LSZH/SWA/LSZH Cables]

Conductor Operating Temperature : 90°C — BS 6724 IEC 60502-1

Conductor Cross-sectional Area	2-core cable, d.c.	2-core cables, 1-phase a.c.			3-core or 4-core cables, 3-phase a.c.			2-core cables, 1-phase a.c.	3-core or 4-core cables, 3-phase a.c.
								In ducts or in ground	In ducts or in ground
1	2	3			4			5	6
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m	mV/A/m
1.5	31.0	31.0			27.0			31.0	25.0
2.5	19.0	19.0			16.0			19.0	15.0
4	12.0	12.0			10.0			12.0	9.7
6	7.9	7.9			6.8			7.9	6.5
10	4.7	4.7			4.0			4.7	3.9
16	2.9	2.9			2.5			2.9	2.6
		r	x	z	r	x	z		
25	1.850	1.850	0.160	1.900	1.600	0.140	1.650	1.900	1.600
35	1.350	1.350	0.155	1.350	1.150	0.135	1.150	1.350	1.200
50	0.980	0.990	0.155	1.000	0.860	0.135	0.870	1.000	0.870
70	0.670	0.670	0.150	0.690	0.590	0.130	0.600	0.690	0.610
95	0.490	0.500	0.150	0.520	0.430	0.130	0.450	0.520	0.450
120	0.390	0.400	0.145	0.420	0.340	0.130	0.370	0.420	0.360
150	0.310	0.320	0.145	0.350	0.280	0.125	0.300	0.350	0.300
185	0.250	0.260	0.145	0.290	0.220	0.125	0.260	0.290	0.250
240	0.195	0.200	0.140	0.240	0.175	0.125	0.210	0.240	0.210
300	0.155	0.160	0.140	0.210	0.140	0.120	0.185	0.210	0.190
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165	0.190	0.180

Note : r = resistive component; x = reactive component; z = impedance value

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Table 9 : Correction Factor for Ambient Air Temperature Other than 30°C to be Applied to the Current-Carrying Capacities for Cables in Free Air

Insulation	Ambient Temperature (°C)															
	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
XLPE (90°C)	1.15	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71	0.65	0.58	0.50	0.41	0.29

Table 10 : Correction Factor for Ambient Ground Temperature Other Than 15°C to be Applied to the Current-Carrying Capacities for Cables in Ducts or in Ground

Insulation	Ground Temperature (°C)											
	10	15	20	25	30	35	40	45	50	55	60	65
XLPE (90°C)	1.03	1.00	0.97	0.93	0.89	0.86	0.82	0.77	0.73	0.67	0.63	0.58

Table 11 : Correction Factors for Ambient Temperature & Group Installation

Correction for groups of more than one circuit of single-core cables, or more than one multi-core cable

Reference Methods of Installation		Correction Factor (Cg)													
		Number of Circuits or Multi-Core Cables													
		2	3	4	5	6	7	8	9	10	12	14	16	18	20
Enclosed (Method 3 or 4) or bunched and clipped to a non-metallic surface (Method 1)		0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.41	0.39	0.38
Single layer clipped to a non-metallic surface (Method 1)	Touching	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	-	-	-	-	-	-
	Spaced*	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Single layer multi-core on a perforated metal cable tray (Method 11)	Touching	0.86	0.81	0.77	0.75	0.74	0.73	0.73	0.72	0.71	0.70	-	-	-	-
	Spaced*	0.91	0.89	0.88	0.87	0.87	-	-	-	-	-	-	-	-	-
Single layer single-core on a perforated metal cable tray, touching (Method 11)	Horizontal	0.90	0.85	-	-	-	-	-	-	-	-	-	-	-	-
	Vertical	0.85	-	-	-	-	-	-	-	-	-	-	-	-	-
Single layer multi-core touching on ladder supports		0.86	0.82	0.80	0.79	0.78	0.78	0.78	0.77	-	-	-	-	-	-

* Space means a clearance between adjacent surfaces of at least one cable Diam. (D_e). Where the horizontal clearance between adjacent cables exceeds 2 D_e, no correction factor need be applied

Note : 1 The factors in the table are applicable to a group of cables all of the same sizes. The value of the current derived from application of the appropriate factors is the maximum continous current to be carried by any of the cables in the group.

2 If, due to known operating conditions, a cable is expected to carry not more than 30% of its grouped rating, it may be ignored for the purpose of obtaining the rating factor for the rest of the group.

For example, a group of N loaded cables would normally require a group reduction factor of Cg applied to the tabulated Lt. However, if M cables in the group carry loads which are not greater than 0.3Cg Lt amperes, the other cables can be sized by using the group rating factor corresponding to (N-M) cables.

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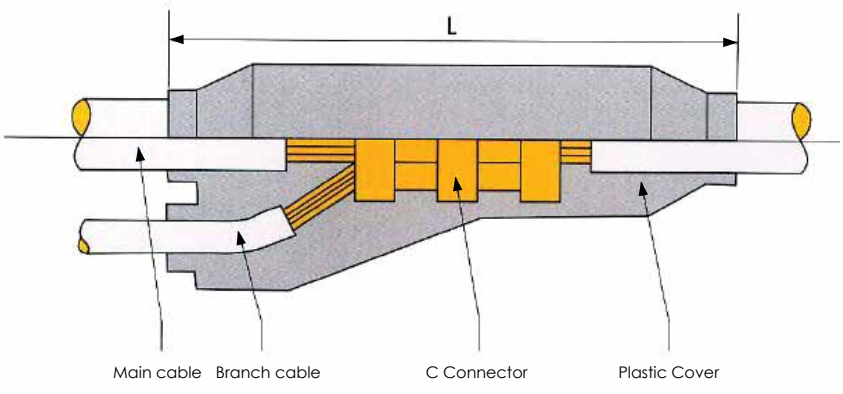
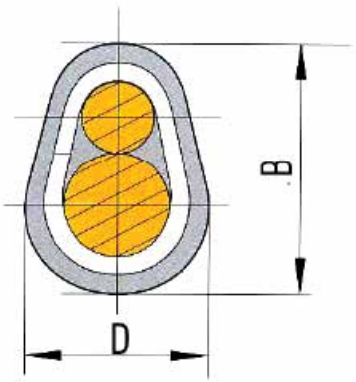
Table 12 : Single-Core Prefabricated Branch Cables Size Reference





Main Cable		Branch Cable	Reference Dimension (Unarmoured)		
No. of Core	Nominal Area	Nominal Area	D	B	L
	(mm^2)	(mm^2)	(mm)	(mm)	(mm)
1	10	6 10	40	72	190
	16	6 10 16	40	72	190
	25	6 10 16 25	40	72	190
	35	6 10 16 25 35	40	72	190
	50	6 10 16 25 35 50	40	72	190
	70	6 10 16 25 35 50 70	40	72	190
	95	6 10 16 25 35 50 70 95	40	72	190
	120	6 10 16 25 35 50 70 95 120	40	72	190
	150	6 10 16 25 35 50 70 95 120 150	40	72	190
	185	6 10 16 25 35 50 70 95 120 150 185	52	87	255
	240	6 10 16 25 35 50 70 95 120 150 185 240	52	87	255
	300	6 10 16 25 35 50 70 95 120 150 185 240 300	52	87	255
	400	6 10 16 25 35 50 70 95 120 150 185 240 300 400	72	114	375
	500	6 10 16 25 35 50 70 95 120 150 185 240 300 400 500	72	114	375
	630	6 10 16 25 35 50 70 95 120 150 185 240 300 400 500 630	83	133	396
	800	6 10 16 25 35 50 70 95 120 150 185 240 300 400 500 630 800	83	133	396
	1000	6 10 16 25 35 50 70 95 120 150 185 240 300 400 500 630 800 1000	96	144	455

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Table 13 : 2-Core ~ 5-Core Prefabricated Branch Cables Size Reference

Main Cable		Branch Cable							Reference Dimension (Unarmoured)			Reference Dimension (Armoured)		
No. of Core	Nominal Area	Nominal Area							D	B	L	D	B	L
	(mm^2)	(mm^2)							(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
2	2.5	2.5							40	72	190	40	72	190
	4	2.5	4						40	72	190	40	72	190
	6	2.5	4	6					40	72	190	40	72	190
	10	2.5	4	6	10				40	72	190	40	72	190
	16	2.5	4	6	10	16			40	72	190	52	87	255
	25	2.5	4	6	10	16	25		40	72	190	52	87	255
	35	2.5	4	6	10	16	25	35	40	72	190	52	87	255
3	2.5	2.5							40	72	190	40	72	190
	4	2.5	4						40	72	190	40	72	190
	6	2.5	4	6					40	72	190	40	72	190
	10	2.5	4	6	10				40	72	190	40	72	190
	16	2.5	4	6	10	16			40	72	190	52	87	255
	25	2.5	4	6	10	16	25		52	87	255	52	87	255
	35	2.5	4	6	10	16	25	35	52	87	255	72	114	375
4	2.5	2.5							40	72	190	40	72	190
	4	2.5	4						40	72	190	40	72	190
	6	2.5	4	6					40	72	190	40	72	190
	10	2.5	4	6	10				40	72	190	52	87	255
	16	2.5	4	6	10	16			40	72	190	52	87	255
	25	2.5	4	6	10	16	25		52	87	255	52	87	255
	35	2.5	4	6	10	16	25	35	52	87	255	72	114	375
5	2.5	2.5							40	72	190	40	72	190
	4	2.5	4						40	72	190	40	72	190
	6	2.5	4	6					40	72	190	40	72	190
	10	2.5	4	6	10				40	72	190	52	87	255
	16	2.5	4	6	10	16			40	72	190	52	87	255
	25	2.5	4	6	10	16	25		52	87	255	52	87	255
	35	2.5	4	6	10	16	25	35	52	87	255	72	114	375

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Table 14 : Maximum Conductor Resistance D.C. at 20°C

IEC 60228
BS EN 60288

Nominal	Maximum Conductor Resistance D.C. at 20 °C	
Cross-sectional Area	Class 2	
	Plain Copper	Aluminium
(mm²)	(Ω/km)	(Ω/km)
0.5	36.0	-
0.75	24.5	-
1	18.1	-
1.5	12.1	-
2.5	7.41	-
4	4.61	-
6	3.08	-
10	1.83	3.08
16	1.15	1.91
25	0.727	1.20
35	0.524	0.868
50	0.387	0.641
70	0.268	0.443
95	0.193	0.320
120	0.153	0.253
150	0.124	0.206
185	0.0991	0.164
240	0.0754	0.125
300	0.0601	0.100
400	0.0470	0.0778
500	0.0366	0.0605
630	0.0283	0.0469
800	0.0211	0.0367
1000	0.0176	0.0291

Table 15 : Conductor Resistance Temperature Other Than 20°C

Temperature (°C)	Factor	Temperature (°C)	Factor
10	0.961	25	1.020
11	0.965	30	1.039
12	0.969	35	1.059
13	0.972	40	1.079
14	0.976	45	1.098
15	0.980	50	1.118
16	0.984	55	1.138
17	0.988	60	1.157
18	0.922	65	1.177
19	0.996	70	1.196
20	1.000	75	1.216
21	1.004	80	1.236
22	1.008	85	1.255
23	1.012	90	1.275

Note : The value of correction factors are based on a resistance-temperature co-efficient of 0.00393 per °C at 20 °C

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Table 16 : Short-Circuit Ratings for One Second for XLPE Insulated Cables with Copper or Aluminium Conductor

No.	Cross-sectional Area	Short-Circuit Rating (kA)	
	(mm^2)	Copper	Aluminium
1	1.5	0.21	0.14
2	2.5	0.36	0.24
3	4	0.57	0.38
4	6	0.86	0.56
5	10	1.43	0.94
6	16	2.29	1.50
7	25	3.58	2.35
8	35	5.01	3.29
9	50	7.15	4.70
10	70	10.01	6.58
11	95	13.59	8.93
12	120	17.16	11.28
13	150	21.45	14.10
14	185	26.46	17.39
15	240	34.32	22.56
16	300	42.90	28.20
17	400	57.20	37.60
18	500	71.50	47.00
19	630	90.09	59.22
20	800	114.40	75.20
21	1000	143.00	94.00

The above rating is calculated by using the following formula :

Copper Cables	Aluminium Cables
$I = \frac{0.143\ S}{\sqrt{T}}\ KA$	$I = \frac{0.094\ S}{\sqrt{T}}\ KA$

Where I = short-circuit rating (kA)
S = conductor area (sq mm)
T = duration of short-circuit (1 second)

Basic conditions for circuit calculation :

The conductor temperature prior to short circuit is assumed to be 90°C (XLPE) and short-circuit temperature is 250°C (XLPE).

Above ratings are based on fault duration (symmetrical short-circuit) of 1 second.

For other periods, divide the above tabulated values by the square root of the time in seconds.

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Selection of Cables Based on Voltage Drops and Current-Carrying Capacity

Voltage drop is normally only of importance for cables of voltage rating not exceeding 0.6/1kV. If the voltage drop is to be in compliance with CP5/IEE wiring regulations, then the voltage drop for any particular cable run must be such that the total voltage drop in the circuit of which the cable forms a part does not exceed 4% of the nominal voltage (i.e. 9.2V for a 1-phase 230V supply and 16.6V for a 3-phase 415V supply).

Since the actual power factor of the load is usually not known, the most practical approach to calculate the voltage drop is to assume the worst conditions (i.e. power factor equal to one and the conductor is at maximum operating temperature). The voltage drop values given in the tables are based on these assumptions and tabulated for a current of 1 amp for a 1 metre run (i.e. for a distance of 1 metre along the route taken by the cables), and represent the result of the voltage drops in all the circuit conductors. For balance 3-phase a.c. circuits, the values relate to the line voltage. For any given run, the values need to be multiplied by the length of the run (metres) and by the current (amps) that the cables carry.

Voltage drop can be calculated using the following formulas :

1. V_{max} = 4% x supply voltage

2. $V_d = \dfrac{V_{max} \times 1000}{I \times L}$

3. $V_{ds} \leq V_d$

4. $V_t = \dfrac{V_{ds} \times I \times L}{1000}$

Where
I = Current (A)
L = Length of cable installed (m)
V_{max} = Max. permissible volt drop in the circuit (V)
V_d = Max. volt drop in the circuit (mV/A/m)
V_{ds} = Volt drop of the selected cable (mV/A/m)
V_t = Total volt drop in the circuit (V)

Example :

Consider a route of 200 metres of cable to be laid direct in ground and carries a 100 amp load, the supply voltage is 415V, 3-phase a.c. and the cable structure is copper conductor, XLPE insulated armoured.

1. V_{max} = Max. permissible voltage drop in the circuit = 4% x 415V = 16.6V
2. V_d = Max. voltage drop in the circuit = 16.6 x 1000 / (100 x 200) = 0.83 mV/A/m
3. Select a cable from Table 19, such that the V^{ds} is equal to, or less than Vd the 0.83mV/A/m calculated. It will be seen that this value (V^{ds}) is 0.61mV/A/m giving a cable size of 70mm^2.
4. V_t = Total voltage drop in the circuit = 0.61 x 100 x 200 / 1000 = 12.2V

Selection of Cable Exposed to Fire Condition Based on Conductor Resistance

Conductor resistance of cable increases suddenly when the cable is subjected to fire conditions and conductor resistance at 750°C becomes 3.87 times that of the one at 20°C.
(For other temperatures, refer to Table 15)

Correspondingly, the voltage drop is also increased by 3.87 times.

To select the size of cable exposed to fire conditions, calculate R_0 using the formula shown below and select the size of cable based on the value shown which should not exceed R_0 calculated by the formula.

$$R_0 \leq \frac{V_{max}}{KI} \times \frac{1}{L\left[1 + (F-1)\frac{L_1}{L}\right]} \times 10^3 \quad (\Omega / km)$$

Where
R_0 = Conductor resistance at 20°C (Ω / km)
V_{max} = Max. permissible voltage drop in the circuit (V)
K = Factor according to the wiring

1-phase 2-Core, $K = 2$

3-phase 3-Core, $K = \sqrt{3}$

I = Current (A)
L = Lengh of cable installed (m)
L_1 = Lengh of cable subjected to flame (m)
F = Correction factor (Table 15)

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Table 17 : Minimum Bending Radius

To install the cables safely without damaging the electrical and physical properties of the cables, the tabulated minimum bending radius must be observed.

Type of Product	Construction	Overall Diam. (mm)		Minimum Bending Radius (mm)	
		Single-Core	Multi-Core	Single-Core	Multi-Core
PVC Insulated Power / Control Cables Unarmoured / Armoured	Unarmoured for fixed wiring	D ≤ 25	D ≤ 25	3D	4D
		D > 25	D > 25	6D	6D
	Circular conductor	Any		6D	
	Shaped conductor			10D	
XLPE (or LSZH) Insulated Power / Control Cables Unarmoured / Armoured	Circular conductor	Any		8D	
	Shaped conductor	Any		10D	
Fire Resistant Cables Unarmoured / Armoured	Circular conductor	Any		10D	
		Any			

Note : D means the Overall Diam. of cable (mm)

Side Wall Pressure to Cable

Permissible maximum side wall pressure to the cable at bending point during installation is 500 kgf/m

$$\text{Side Wall Pressure to Cable} = \frac{\text{Pulling Tension (kgf)}}{\text{Bending Radius (m)}}$$

$$= \frac{T}{R}$$

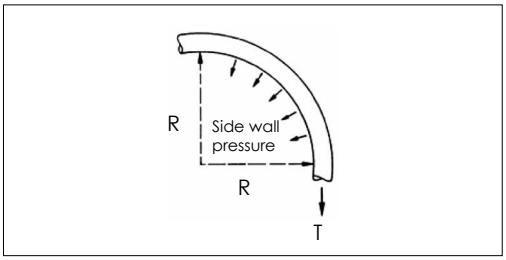

Table 18 : Permissible Maximum Pulling Tension

Pulling Tool	Material of Conductor	Maximum Pulling Tension (kgf)
Pulling Eye	Copper	7 x No. of cores x Nominal Area of Conductor
	Aluminium	4 x No. of cores x Nominal Area of Conductor
Cable Grip	Copper & Aluminium	Same as above, but maximum tension should be less than 2 tons

Drum Handling

Handle the drums with care.

It is always recommended and a must with heavy drums :

- To lift drums with a fork-lift truck or a crane when removing them from the vehicle.
- Always lower the drums into an upright position on their flanges.

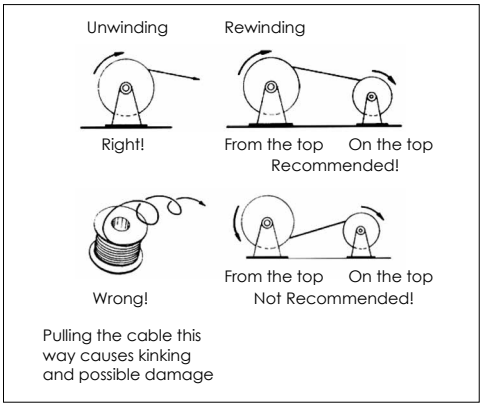

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Table 19 : Wire Gauge Conversion

Size	Cross-sectional Area	Nearest Available	Size	Cross-sectional Area	Nearest Available
(AWG/kcmil)	(mm^2)	(mm^2)	(AWG/kcmil)	(mm^2)	(mm^2)
26	0.128	0.14	250	127	120
24	0.205	0.22	300	152	150
23	0.259	0.25	350	177	185
22	0.324	0.34	400	203	185
20	0.519	0.5	450	228	240
18	0.823	1	500	253	240
16	1.31	1.5	550	279	300
14	2.08	2.5	600	304	300
12	3.31	4	650	329	300
10	5.26	6	700	355	400
8	8.37	10	750	380	400
6	13.3	16	800	405	400
4	21.1	25	900	456	400
2	33.6	35	1000	507	500
1	42.4	50	1250	633	630
1/0	53.5	70	1300	659	630
2/0	67.4	70	1500	760	800
3/0	85.0	95	1750	887	800 or 1000
4/0	107	120	2000	1013	1000

Note : AWG - American Wire Gauge
kcmil is an abbreviation for thousands of circular mills, an old measurement of wire gauge
1 kcmil = 0.5067 mm^2

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REV.2024.1