

KEYFAB™ Prefabricated Branch Cables



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 supplies and distribution systems for high-rise residentials, hospitals, and airports where integrity of the electrical circuit is critical during a fire. |
| 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**** | 25.5 | 2040 |
| 240 (cs) | 61/2.25 | 18.80 | 1.7 | 2101B**** | 28.5 | 2650 |
| 300 (cs) | 61/2.52 | 21.20 | 1.8 | 2201B**** | 31.5 | 3260 |
| 400 (cs) | 61/2.85 | 24.30 | 2.0 | 2301B**** | 35.4 | 4130 |
| 500 (cs) | 61/3.20 | 27.40 | 2.2 | 2401B**** | 39.0 | 5200 |
| 630 | 127/2.52 | 32.76 | 2.4 | 2501B**** | 43.5 | 6600 |
| 800 | 127/2.85 | 37.05 | 2.6 | 2601B**** | 48.5 | 8300 |
| 1000 | 127/3.20 | 41.60 | 2.8 | 2701B**** | 54.0 | 10458 |

****Stands for branch size, please contact us for more information.
For technical specification, please refer to Table 24 (Page 65)

Current rating and voltage drop
Please refer to Table 10 & 11 (Page 58)

(cs) : Circular Compact Stranded Conductor

Current Rating and Voltage Drop

XLPE (or LSZH) Insulated Cables
Single-Core, Unarmoured

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Single-Core Cables with XLPE (or LSZH) Insulation, with or without PVC (or LSZH) Outsheath 450/750V or 0.6/1kV

Table 10 : Current-Carrying Capacities (Amp)

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

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

BS EN 50525-3-41 (BS 7211)
BS 8592
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) | | |
|--------------------------------|---|-----------------------------|---|-----------------------------|--|--|--|--|---|---|--------------------------------|
| | 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 | Horizontal flat spaced | Vertical flat spaced | 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 |
| 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 25 (Page 66)

Table 11 : Voltage Drop (Per Amp Per Meter)

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

Conductor Operating Temperature : 90°C

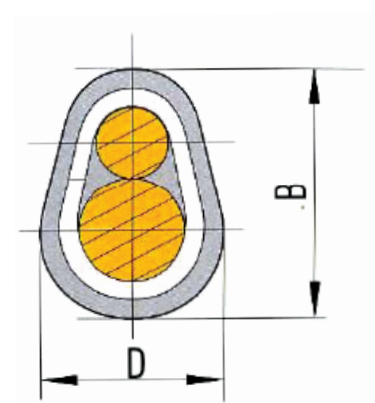
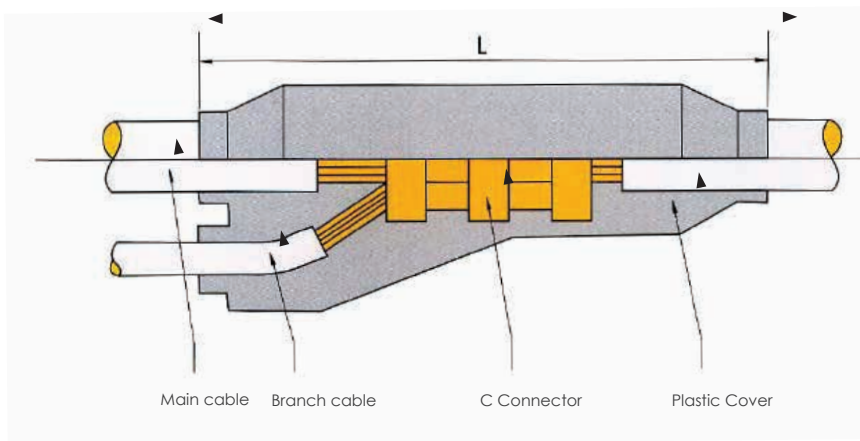
BS EN 50525-3-41 (BS 7211)
BS 8592
IEC 60502-1

| 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) | | | | | | |
| | | 3 | 4 | 3 | 4 | 5 | 6 | 7 | | | | | | | | |
| 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 | | | | | | | | | | |
| 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 | 4.7 | 4.0 | 4.0 | | | | | | | | | | |
| 16 | 2.9 | 2.9 | 2.9 | 2.9 | 2.5 | 2.5 | | | | | | | | | | |
| | 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

Table 24 : KEYFAB™ Prefabricated Branch Cables Size Reference

| | | | | | | | | | | | | | | | | | | | | | | |
|----------------|--------------------|---------|---------|---------|---------|----------|---------|---------|----------|-----------|----------|---------|---------|-----|-----------|-----------|---------|-----------|----------|----------|----------|----------|
| Main Cable | (mm ²) | 25 | 35 | 50 | 70 | 70 | 95 | 120 | 95 | 120 | 150 | 185 | 240 | 185 | 240 | 300 | 400 | 400 | 500 | 630 | 800 | 1000 |
| Branch Cable | (mm ²) | 6 to 25 | 6 to 35 | 6 to 50 | 6 to 25 | 35 to 70 | 6 to 50 | 6 to 25 | 70 to 95 | 35 to 120 | 6 to 120 | 6 to 95 | 6 to 35 | 120 | 50 to 120 | 60 to 150 | 6 to 50 | 70 to 150 | 6 to 185 | 6 to 185 | 6 to 185 | 6 to 185 |
| Reference Size | L (mm) | 104 | | 130 | | 154 | | | | 190 | | | | 213 | | | | 250 | | 290 | | |
| | D (mm) | 28 | | 35 | | 42 | | | | 52 | | | | 66 | | | | 78 | | 88 | | |
| | B (mm) | 46 | | 58 | | 70 | | | | 86 | | | | 100 | | | | 113 | | 134 | | |



KEYFAB™ Prefabricated Branch Cables Inspection and Testing

- 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.

Table 25 : Correction Factor for Ambient Air Temperature Other Than 30°C to be Applied to the Current-Carrying Capacities for Cables in Free Air

| Ambient Temperature (°C) | Insulation | | | | |
|-----------------------------|---------------|----------------|------------------|------------------|------------------|
| | PVC (70°C) | XLPE (90°C) | HT-PVC (90°C) | Rubber (85°C) | Rubber (60°C) |
| 10 | 1.22 | 1.15 | - | - | - |
| 15 | 1.17 | 1.12 | - | - | - |
| 20 | 1.12 | 1.08 | - | - | - |
| 25 | 1.06 | 1.04 | 1.03 | 1.02 | - |
| 30 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 35 | 0.94 | 0.96 | 0.97 | 0.95 | 0.91 |
| 40 | 0.87 | 0.91 | 0.94 | 0.90 | 0.82 |
| 45 | 0.79 | 0.87 | 0.91 | 0.85 | 0.71 |
| 50 | 0.71 | 0.82 | 0.87 | 0.80 | 0.58 |
| 55 | 0.61 | 0.76 | 0.84 | 0.74 | 0.41 |
| 60 | 0.50 | 0.71 | 0.80 | 0.67 | - |
| 65 | 0.35 | 0.65 | 0.76 | 0.60 | - |
| 70 | - | 0.58 | 0.71 | 0.52 | - |
| 75 | - | 0.50 | 0.61 | 0.43 | - |
| 80 | - | 0.41 | 0.50 | 0.30 | - |
| 85 | - | 0.29 | 0.35 | - | - |

Table 26 : 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

| Ground Temperature (°C) | Insulation | |
|----------------------------|---------------|----------------|
| | PVC (70°C) | XLPE (90°C) |
| 10 | 1.04 | 1.03 |
| 15 | 1.00 | 1.00 |
| 20 | 0.95 | 0.97 |
| 25 | 0.90 | 0.93 |
| 30 | 0.85 | 0.89 |
| 35 | 0.80 | 0.86 |
| 40 | 0.74 | 0.82 |
| 45 | 0.67 | 0.77 |
| 50 | 0.60 | 0.73 |
| 55 | - | 0.68 |
| 60 | - | 0.63 |
| 65 | - | 0.58 |