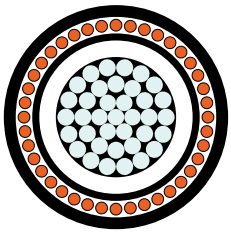
**MEDIUM VOLTAGE CABLES**

# Aluminium 6.35/11 kV – Single core heavy duty screened unarmoured



## Application

Electricity distribution network cable typically used as primary supply to Commercial, Industrial and urban residential networks. Suitable for high fault level systems rated up to 10kA/1sec. Higher fault current rated constructions are available on request.

## Approvals

Approved by all major power Utilities and industrial customers in Australia.

## Behaviour in flame and fire:

PVC or LSOH outer sheath exceeds the requirements of IEC 60332-1.

## Temperature range

Minimum installation temperature: 0 °C
Maximum operating temperature: +90 °C
Minimum operating temperature: -25 °C

## Minimum bending radius

| | |
|---|---|
| Installed cables: | 12D (PVC only)<br>15D (HDPE) |
| During installation: | 18D (PVC only)<br>25D (HDPE) |

## Resistance to

| | |
|---|---|
| Chemical exposure: | Accidental |
| Mechanical impact: | Light (PVC only)<br>Heavy (HDPE) |
| Water exposure: | XLPE – Spray<br>EPR – Immersion/Temporary coverage |
| Solar radiation and weather exposure: | Suitable for direct exposure. |

## Cable design

Conductor:
Circular compacted aluminium

Conductor screen:
Extruded semi-conductive compound, bonded to the insulation and applied in the same operations as the insulation.

Insulation:
Cross Linked Polyethylene (XLPE) – standard
Ethylene Propylene Rubber (EPR) – alternative

Insulation screen:
Extruded, semi-conductive compound

Metallic screen:
Plain annealed copper wire: nominal 10kA for 1 second. See table next page.

Sheath:
Black 5V-90 polyvinyl chloride (PVC) – standard
Orange 5V-90 PVC inner plus black high density polyethylene (HDPE) outer – alternative
Low smoke zero halogen (LSOH) – alternative

## Installation conditions

In free air
In duct
In trench
In ground with protection

## Physical & electrical characteristics

| Aluminium 6.35/11 kV – Single core heavy duty screened unarmoured | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Product code: 1CALX11HD | | | | | | | | | | | | | | |
| Nominal conductor area mm² | | 25 | 35 | 50 | 70 | 95 | 120 | 150 | 185 | 240 | 300 | 400 | 500 | 630 |
| Nominal conductor diameter mm | | 6.1 | 7.1 | 8.1 | 9.8 | 11.5 | 12.9 | 14.2 | 16.0 | 18.1 | 20.6 | 23.5 | 26.6 | 30.2 |
| Nominal insulation thickness mm | | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Approx cable diameter mm | | 21.4 | 22.4 | 24.7 | 26.4 | 28.1 | 29.5 | 31.0 | 32.8 | 35.1 | 38.0 | 41.7 | 45.0 | 48.8 |
| Approx mass kg/100m | | 55 | 65 | 80 | 100 | 130 | 145 | 155 | 170 | 195 | 220 | 255 | 290 | 340 |
| Max pulling tension on conductor kN | | 1.3 | 1.8 | 2.5 | 3.5 | 4.8 | 6.0 | 7.5 | 9.3 | 12 | 15 | 20 | 25 | 25 |
| Max pulling tension on stocking grip kN | | 1.3 | 1.8 | 2.1 | 2.4 | 2.8 | 3.0 | 3.4 | 3.8 | 4.3 | 5.1 | 6.1 | 7.1 | 8.3 |
| Min bending radius* during installation mm | | 380 | 400 | 450 | 480 | 510 | 530 | 560 | 590 | 630 | 680 | 750 | 810 | 880 |
| Min bending radius* set in position mm | | 260 | 270 | 300 | 320 | 340 | 350 | 370 | 390 | 420 | 460 | 500 | 540 | 590 |
| Max conductor resistance, dc @ 20°C Ohm/km | | 1.20 | 0.868 | 0.641 | 0.443 | 0.320 | 0.253 | 0.206 | 0.164 | 0.125 | 0.100 | 0.0778 | 0.0605 | 0.0469 |
| Conductor resistance, ac @ 90°C & 50 Hz Ohm/km | | 1.54 | 1.11 | 0.822 | 0.568 | 0.411 | 0.325 | 0.265 | 0.211 | 0.161 | 0.130 | 0.102 | 0.0802 | 0.0636 |
| Inductance, trefoil touching mH/km | | 0.478 | 0.455 | 0.447 | 0.412 | 0.392 | 0.378 | 0.368 | 0.352 | 0.340 | 0.330 | 0.322 | 0.312 | 0.302 |
| Inductive reactance, trefoil touching @ 50Hz Ohm/km | | 0.150 | 0.143 | 0.141 | 0.129 | 0.123 | 0.119 | 0.116 | 0.111 | 0.107 | 0.104 | 0.101 | 0.0979 | 0.0948 |
| Zero seq. impedance @ 20°C & 50 Hz Ohm/km | | 2.37+ j0.0836 | 1.71+ j0.0774 | 1.24+ j0.0747 | 0.871+ j0.0653 | 0.635+ j0.0601 | 0.535+ j0.0568 | 0.488+ j0.0539 | 0.446+ j0.0500 | 0.407+ j0.0469 | 0.382+ j0.0443 | 0.360+ j0.0425 | 0.343+ j0.0400 | 0.330+ j0.0376 |
| Capacitance, phase to earth µF/km | | 0.210 | 0.232 | 0.253 | 0.289 | 0.324 | 0.352 | 0.380 | 0.416 | 0.460 | 0.516 | 0.586 | 0.650 | 0.724 |
| Min insulation resistance @ 20°C MOhm.km | | 12,000 | 11,000 | 10,000 | 8,900 | 7,900 | 7,200 | 6,600 | 6,000 | 5,400 | 4,900 | 4,300 | 3,900 | 3,400 |
| Electric stress at conductor screen kV/mm | | 2.65 | 2.56 | 2.49 | 2.40 | 2.33 | 2.29 | 2.25 | 2.22 | 2.18 | 2.14 | 2.11 | 2.08 | 2.06 |
| Charging current @ rated voltage & 50 Hz A/phase/km | | 0.419 | 0.463 | 0.505 | 0.576 | 0.646 | 0.702 | 0.758 | 0.830 | 0.918 | 1.03 | 1.17 | 1.30 | 1.44 |
| Short circuit rating | Phase conductor kA, 1 sec | 2.4 | 3.3 | 4.7 | 6.6 | 9.0 | 11.3 | 14.2 | 17.5 | 22.7 | 28.3 | 37.8 | 47.2 | 59.5 |
| | Metallic screen kA, 1 sec | 2.4 | 3.3 | 4.7 | 6.6 | 8.9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Continuous current rating | In ground, direct buried A | 115 | 135 | 160 | 195 | 230 | 260 | 290 | 330 | 380 | 425 | 480 | 545 | 615 |
| | In ground, in singleway ducts A | 115 | 135 | 155 | 190 | 220 | 245 | 270 | 300 | 340 | 375 | 420 | 470 | 525 |
| | In free air, unenclosed & spaced from wall A | 115 | 135 | 165 | 210 | 250 | 290 | 330 | 375 | 440 | 510 | 590 | 685 | 790 |

The cables described are designed to be used for the supply of electrical energy in fixed applications up to the rated voltages at a nominal power frequency between 49Hz and 61Hz.
All values are for XLPE cables only. *Increased radius required for HDPE and nylon incorporating designs.