

MEDIUM VOLTAGE CABLES

Physical & electrical characteristics

| Aluminium 1.9/3.3kV – Single core heavy duty screened unarmoured | | | | | | | | | | | | | |
|--|--|------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Product code: 1CALX3HD | | | | | | | | | | | | | |
| Nominal conductor area mm ² | 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 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.4 |
| Approx cable diameter mm | 18.6 | 19.6 | 21.9 | 23.6 | 25.3 | 26.7 | 28.0 | 30.0 | 32.1 | 34.8 | 38.5 | 42.2 | 46.4 |
| Approx mass kg/100m | 45 | 55 | 70 | 95 | 120 | 135 | 145 | 160 | 180 | 200 | 235 | 270 | 325 |
| 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 | 1.2 | 1.3 | 1.7 | 2.0 | 2.2 | 2.5 | 2.8 | 3.1 | 3.6 | 4.2 | 5.2 | 6.2 | 7.5 |
| Min bending radius* during installation mm | 330 | 350 | 390 | 430 | 460 | 480 | 500 | 540 | 580 | 630 | 690 | 760 | 840 |
| Min bending radius* set in position mm | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 390 | 420 | 460 | 510 | 560 |
| 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 | 0.0804 | 0.0638 |
| Inductance, trefoil touching mH/km | 0.449 | 0.427 | 0.422 | 0.389 | 0.370 | 0.357 | 0.347 | 0.334 | 0.322 | 0.311 | 0.305 | 0.298 | 0.291 |
| Inductive reactance, trefoil touching @ 50Hz Ohm/km | 0.141 | 0.134 | 0.133 | 0.122 | 0.116 | 0.112 | 0.109 | 0.105 | 0.101 | 0.0978 | 0.0958 | 0.0936 | 0.0915 |
| Zero seq. impedance @ 20°C & 50 Hz Ohm/km | 2.37+ j0.0720 | 1.71+ j0.0665 | 1.24+ j0.0649 | 0.871+ j0.0563 | 0.635+ j0.0519 | 0.535+ j0.0490 | 0.488+ j0.0466 | 0.446+ j0.0432 | 0.407+ j0.0405 | 0.382+ j0.0381 | 0.360+ j0.0369 | 0.343+ j0.0356 | 0.330+ j0.0342 |
| Capacitance, phase to earth µF/km | 0.316 | 0.353 | 0.388 | 0.448 | 0.507 | 0.554 | 0.601 | 0.663 | 0.737 | 0.824 | 0.943 | 0.962 | 0.993 |
| Min insulation resistance @ 20°C MOhm.km | 8,300 | 7,300 | 6,600 | 5,700 | 5,000 | 4,600 | 4,200 | 3,800 | 3,400 | 3,000 | 2,700 | 2,600 | 2,500 |
| Electric stress at conductor screen kV/mm | 1.19 | 1.16 | 1.14 | 1.11 | 1.09 | 1.08 | 1.07 | 1.06 | 1.05 | 1.03 | 1.02 | 0.929 | 0.850 |
| Charging current @ rated voltage & 50 Hz A/phase/km | 0.189 | 0.211 | 0.232 | 0.267 | 0.303 | 0.331 | 0.359 | 0.395 | 0.440 | 0.492 | 0.563 | 0.574 | 0.593 |
| 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 | 59.5 |
| | Metallic screen kA, 1 sec | 2.4 | 3.3 | 4.7 | 6.6 | 8.9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Continuous current rating | In ground, direct buried A | 115 | 135 | 160 | 195 | 230 | 260 | 290 | 330 | 375 | 425 | 480 | 610 |
| | In ground, in singleway ducts A | 115 | 135 | 155 | 190 | 220 | 245 | 270 | 300 | 335 | 375 | 415 | 520 |
| | In free air, unenclosed & spaced from wall A | 110 | 135 | 165 | 205 | 250 | 285 | 325 | 370 | 435 | 505 | 585 | 785 |

The cables described in this technical manual 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 in this catalogue are for XLPE cables only. *Increased radius required for HDPE and nylon incorporating designs.