

MEDIUM VOLTAGE CABLES
Aluminium 3.8/6.6 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)
 15D (HDPE)
 During installation: 18D (PVC only)
 25D (HDPE)

Resistance to

Chemical exposure: Accidental
 Mechanical impact: Light (PVC only)
 Heavy (HDPE)
 Water exposure: XLPE – Spray
 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

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Physical & electrical characteristics

Aluminium 3.8/6.6 kV – Single core heavy duty screened unarmoured														
Product code: 1CALX6LD														
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	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3.0	3.2	3.2	
Approx cable diameter mm	19.6	20.6	21.6	23.3	25.0	26.4	27.7	29.7	32.0	35.1	39.2	43.1	46.9	
Approx mass kg/100m	50	60	65	70	85	90	100	120	140	165	200	240	290	
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	1.5	1.6	1.9	2.2	2.4	2.7	3.1	3.6	4.3	5.4	6.5	7.7	
Min bending radius* during installation mm	350	370	390	420	450	470	500	530	580	630	700	770	840	
Min bending radius* set in position mm	230	250	260	280	300	320	330	360	380	420	470	520	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	0.0803	0.0638	
Inductance, trefoil touching mH/km	0.460	0.437	0.419	0.386	0.367	0.355	0.344	0.331	0.321	0.313	0.309	0.303	0.293	
Inductive reactance, trefoil touching @ 50Hz Ohm/km	0.144	0.137	0.132	0.121	0.115	0.111	0.108	0.104	0.101	0.0984	0.0970	0.0950	0.0922	
Zero seq. impedance @ 20°C & 50 Hz Ohm/km	2.37+ j0.0764	1.80+ j0.0706	1.57+ j0.0662	1.38+ j0.0575	1.25+ j0.0530	1.19+ j0.0500	1.14+ j0.0476	1.10+ j0.0441	1.06+ j0.0418	1.03+ j0.0401	1.01+ j0.0395	0.996+ j0.0379	0.982+ j0.0357	
Capacitance, phase to earth µF/km	0.265	0.295	0.323	0.371	0.418	0.456	0.494	0.543	0.582	0.607	0.651	0.682	0.761	
Min insulation resistance @ 20°C MOhm.km	9,900	8,800	8,000	6,900	6,100	5,600	5,100	4,600	4,300	4,100	3,800	3,700	3,300	
Electric stress at conductor screen kV/mm	2.00	1.94	1.90	1.84	1.80	1.78	1.76	1.73	1.65	1.52	1.41	1.32	1.30	
Charging current @ rated voltage & 50 Hz A/phase/km	0.316	0.352	0.385	0.443	0.499	0.545	0.590	0.648	0.695	0.725	0.777	0.814	0.909	
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	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Continuous current rating	In ground, direct buried A	115	135	160	195	230	260	295	330	385	435	495	560	640
	In ground, in singleway ducts A	115	135	155	190	225	255	285	320	365	410	465	530	595
	In free air, unenclosed & spaced from wall A	110	135	160	200	245	285	325	375	440	510	600	695	810

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.