

MEDIUM VOLTAGE CABLES
Copper 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:
 Plain circular compacted copper
 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

Copper 3.8/6.6 kV – Single core heavy duty screened unarmoured														
Product code: 1CCUX6HD														
Nominal conductor area mm ²	25	35	50	70	95	120	150	185	240	300	400	500	630	
Nominal conductor diameter mm	6.1	7.0	8.2	9.8	11.5	12.9	14.3	16.1	18.2	20.6	23.5	26.6	30.3	
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	21.9	23.0	25.3	27.0	27.7	29.1	31.1	33.7	36.6	40.7	44.4	48.3	
Approx mass kg/100m	75	95	120	160	185	210	240	275	335	395	485	595	730	
Max pulling tension on conductor kN	1.8	2.5	3.5	4.9	6.7	8.4	11	13	17	21	25	25	25	
Max pulling tension on stocking grip kN	1.3	1.7	1.8	2.2	2.6	2.7	3.0	3.4	4.0	4.7	5.8	6.9	8.1	
Min bending radius* during installation mm	350	390	410	460	490	500	520	560	610	660	730	800	870	
Min bending radius* set in position mm	240	260	280	300	320	330	350	370	400	440	490	530	580	
Max conductor resistance, dc @ 20°C Ohm/km	0.727	0.524	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	
Conductor resistance, ac @ 90°C & 50 Hz Ohm/km	0.927	0.668	0.494	0.342	0.247	0.196	0.159	0.128	0.0981	0.0791	0.0631	0.0508	0.0414	
Inductance, trefoil touching mH/km	0.459	0.451	0.431	0.403	0.383	0.362	0.350	0.340	0.330	0.322	0.315	0.307	0.299	
Inductive reactance, trefoil touching @ 50Hz Ohm/km	0.144	0.142	0.135	0.127	0.120	0.114	0.110	0.107	0.104	0.101	0.0990	0.0965	0.0940	
Zero seq. impedance @ 20°C & 50 Hz Ohm/km	1.51+ j0.0761	1.09+ j0.0736	0.783+ j0.0684	0.560+ j0.0608	0.485+ j0.0560	0.435+ j0.0510	0.406+ j0.0483	0.381+ j0.0456	0.358+ j0.0432	0.343+ j0.0415	0.330+ j0.0403	0.320+ j0.0385	0.312+ j0.0366	
Capacitance, phase to earth µF/km	0.266	0.292	0.324	0.371	0.418	0.458	0.497	0.546	0.586	0.607	0.651	0.682	0.762	
Min insulation resistance @ 20°C MOhm.km	9,700	8,800	8,000	6,900	6,100	5,500	5,100	4,600	4,300	4,100	3,800	3,700	3,300	
Electric stress at conductor screen kV/mm	2.00	1.95	1.90	1.84	1.80	1.78	1.75	1.73	1.65	1.52	1.41	1.32	1.30	
Charging current @ rated voltage & 50 Hz A/phase/km	0.317	0.349	0.387	0.443	0.499	0.546	0.593	0.651	0.699	0.725	0.777	0.814	0.910	
Short circuit rating	Phase conductor kA, 1 sec	3.6	5.0	7.2	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1
	Metallic screen kA, 1 sec	3.5	5.0	7.1	10	10	10	10	10	10	10	10	10	10
Continuous current rating	In ground, direct buried A	145	175	205	250	295	335	370	415	475	530	595	665	735
	In ground, in singleway ducts A	145	170	195	235	270	300	330	360	405	445	495	545	600
	In free air, unenclosed & spaced from wall A	145	180	210	265	320	365	415	475	555	635	730	835	950

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.