

MEDIUM VOLTAGE CABLES
Copper 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)
 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 6.35/11 kV – Single core heavy duty screened unarmoured														
Product code: 1CCUX11HD														
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	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	23.7	24.8	27.1	28.1	29.5	31.1	32.9	35.3	38.0	41.7	45.0	48.9	
Approx mass kg/100m	80	100	125	165	195	220	245	285	340	405	495	600	735	
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	1.6	2.0	2.1	2.6	2.8	3.1	3.4	3.8	4.4	5.1	6.1	7.1	8.4	
Min bending radius* during installation mm	390	430	450	490	510	530	560	590	630	680	750	810	880	
Min bending radius* set in position mm	260	280	300	330	340	350	370	390	420	460	500	540	590	
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	0.0980	0.0790	0.0630	0.0507	0.0413	
Inductance, trefoil touching mH/km	0.477	0.468	0.447	0.418	0.392	0.375	0.364	0.352	0.339	0.330	0.320	0.310	0.302	
Inductive reactance, trefoil touching @ 50Hz Ohm/km	0.150	0.147	0.140	0.131	0.123	0.118	0.114	0.110	0.107	0.104	0.101	0.0974	0.0948	
Zero seq. impedance @ 20°C & 50 Hz Ohm/km	1.51+ j0.0833	1.09+ j0.0801	0.783+ j0.0745	0.560+ j0.0663	0.475+ j0.0601	0.435+ j0.0559	0.406+ j0.0529	0.381+ j0.0498	0.358+ j0.0467	0.343+ j0.0443	0.330+ j0.0421	0.320+ j0.0395	0.312+ j0.0375	
Capacitance, phase to earth µF/km	0.211	0.230	0.254	0.289	0.324	0.353	0.382	0.418	0.463	0.516	0.586	0.650	0.725	
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	2.64	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	0.420	0.460	0.507	0.576	0.646	0.704	0.762	0.834	0.924	1.03	1.17	1.30	1.45	
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	365	410	450	495	545	600
	In free air, unenclosed & spaced from wall A	145	180	215	270	320	370	420	480	560	640	735	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.