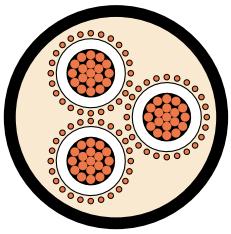
MEDIUM VOLTAGE CABLES

Copper 3.8/6.6 kV – Three 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

Physical & Electrical Characteristics

Copper 3.8/6.6 kV – Three core heavy duty screened unarmoured										
Product code: 3CCUX6HD										
Nominal conductor area mm²		25	35	50	70	95	120	150	185	240	300
Nominal conductor diameter mm		6.1	7.0	8.2	9.8	11.5	12.9	14.3	16.1	18.2	20.6
Nominal insulation thickness mm		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8
Approx cable diameter mm		38.3	40.5	43.2	46.9	51.0	54.2	57.4	61.4	67.0	73.3
Approx mass kg/100m		175	220	275	360	450	530	615	735	920	1120
Max pulling tension on conductors kN		5.3	7.4	11	15	20	25	25	25	25	25
Max pulling tension on stocking grip kN		5.1	5.8	6.5	7.7	9.1	10	12	13	16	19
Min bending radius* during installation mm		690	730	780	840	920	980	1030	1110	1210	1320
Min bending radius* set in position mm		460	490	520	560	610	650	690	740	800	880
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
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	0.0986	0.0797
Inductance mH/km		0.393	0.377	0.360	0.332	0.317	0.304	0.295	0.286	0.278	0.273
Inductive Reactance, @ 50Hz Ohm/km		0.124	0.118	0.113	0.104	0.0994	0.0954	0.0927	0.0899	0.0875	0.0857
Zero seq. impedance @ 20°C & 50 Hz Ohm/km		3.07+ j0.0764	2.16+ j0.0713	1.56+ j0.0662	1.11+ j0.0577	1.03+ j0.0531	0.995+ j0.0493	0.966+ j0.0467	0.941+ j0.0441	0.917+ j0.0418	0.902+ j0.0402
Capacitance, phase to earth µF/km		0.267	0.293	0.325	0.372	0.420	0.459	0.499	0.548	0.588	0.610
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
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
Charging current @ rated voltage & 50 Hz A/phase/km		0.319	0.350	0.388	0.444	0.501	0.548	0.595	0.654	0.702	0.728
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
	Metallic screen kA, 1 sec	3.5	5.1	7.1	10	10	10	10	10	10	10
Continuous current rating	In ground, direct buried A	140	170	200	245	290	325	370	410	475	530
	In ground, in singleway ducts A	120	145	170	205	240	280	310	350	405	455
	In free air, unenclosed & spaced from wall A	135	165	195	245	295	340	385	435	510	590

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.