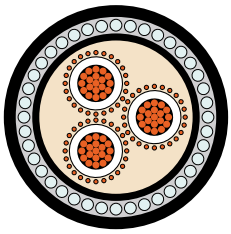
MEDIUM VOLTAGE CABLES

Copper 1.9/3.3 kV – Three core heavy duty screened armoured



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:	Heavy (Armoured)
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.

Armouring:
Galvanised steel wires

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

Physical & Electrical Characteristics

Copper 1.9/3.3 kV – Three core heavy duty screened armoured										
Product code: 3CCUX3HDA										
Nominal conductor area mm²		25	35	50	70	95	120	150	185	240
Nominal conductor diameter mm		6.1	7.0	8.2	9.8	11.5	12.9	14.3	16.1	18.2
Nominal insulation thickness mm		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Approx cable diameter mm		43.0	45.2	49.7	53.6	57.5	61.0	64.4	68.6	73.7
Approx mass kg/100m		325	380	490	600	700	805	915	1050	1250
Max pulling tension on conductors kN		5.3	7.4	11	15	20	25	25	25	25
Max pulling tension on stocking grip kN		5.3	7.2	8.6	10	12	13	15	16	19
Max Pulling Tension On Armour Wires kN		7.5	8.3	9.8	12	13	15	17	19	22
Min bending radius*: during installation mm		770	810	890	970	1040	1100	1160	1230	1330
Min bending radius*: set in position mm		520	540	600	640	690	730	770	820	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
Conductor resistance, ac @ 90°C & 50 Hz Ohm/km		0.927	0.668	0.494	0.342	0.247	0.196	0.160	0.128	0.0987
Inductance mH/km		0.380	0.364	0.348	0.321	0.307	0.295	0.287	0.278	0.270
Inductive Reactance, @ 50Hz Ohm/km		0.119	0.114	0.109	0.101	0.0964	0.0926	0.0900	0.0874	0.0847
Zero seq. impedance @ 20°C & 50 Hz Ohm/km		3.07+ j0.0720	2.16+ j0.0671	1.56+ j0.0624	1.11+ j0.0542	1.03+ j0.0499	0.995+ j0.0463	0.966+ j0.0440	0.941+ j0.0415	0.917+ j0.0390
Capacitance, phase to earth µF/km		0.319	0.352	0.391	0.449	0.509	0.558	0.607	0.668	0.745
Min insulation resistance @ 20°C MOhm.km		8,200	7,300	6,600	5,700	5,000	4,600	4,200	3,800	3,400
Electric stress at conductor screen kV/mm		1.19	1.17	1.14	1.11	1.09	1.08	1.07	1.06	1.04
Charging current @ rated voltage & 50 Hz A/phase/km		0.190	0.210	0.234	0.268	0.304	0.333	0.362	0.399	0.445
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
	Metallic screen kA, 1 sec	3.5	5.1	7.1	10	10	10	10	10	10
Continuous current rating	In ground, direct buried A	140	165	195	240	290	335	365	410	475
	In ground, in singleway ducts A	120	140	165	205	240	275	310	350	400
	In free air, unenclosed & spaced from wall A	135	160	190	240	290	340	380	435	510

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.