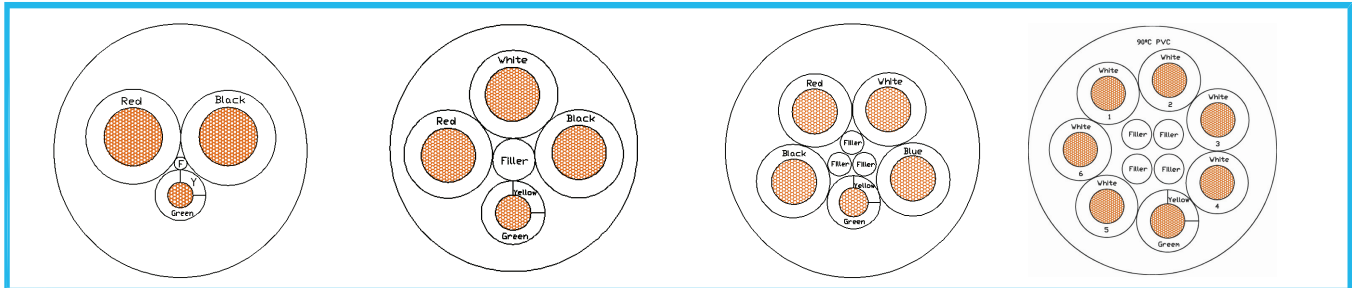


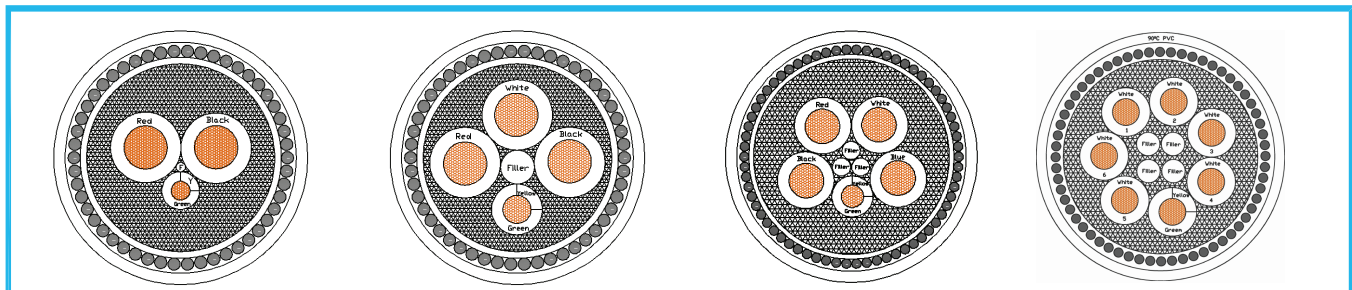
VIPERCON ELECTRIC CABLE

VIPERCON

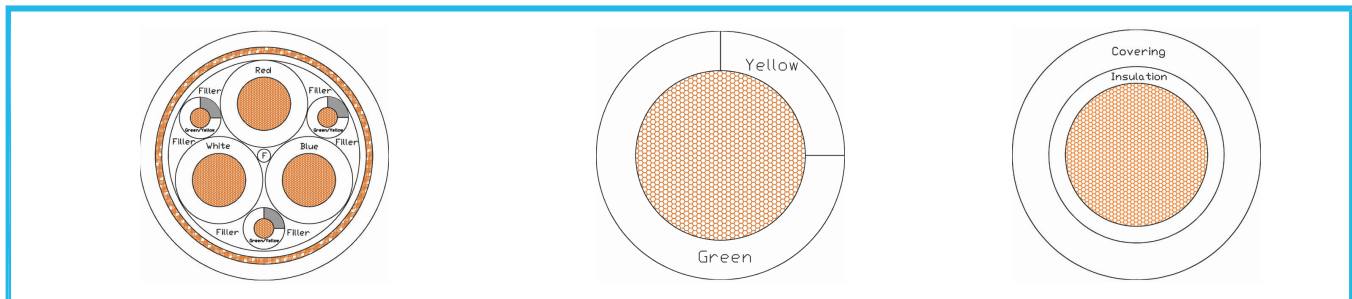
Low Voltage Electric Cable (For Fixed Installation)



PVC sheathed, unarmoured, 2C+E Power, 3C+E Power, 4C+E Power, Multi-Core Control



PVC sheathed, armoured, 2C+E Power, 3C+E Power, 4C+E Power, Multi-Core Control



VSD/EMC (Copper tape screened) Cable Earth Wire (Class 2 strands) SDI Power Cable (Class 2 strands)

● Standard references

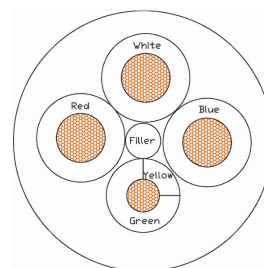
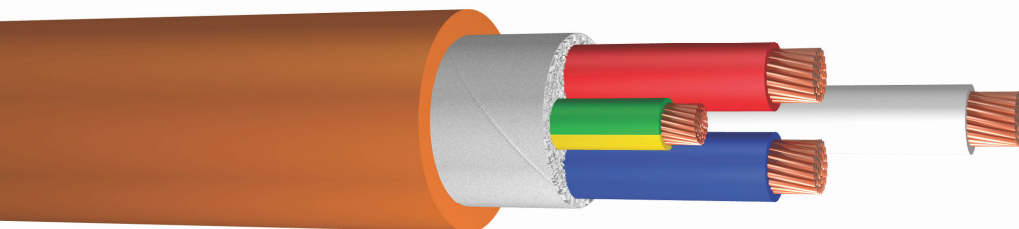
- | | |
|---------------|--|
| AS/NZS 5000.1 | - Part 1: For working voltages up to and including 0.6/1 (1.2) kV |
| AS 3147 | - Approved and test specifications - Electric cables - Thermoplastic insulated - for working voltage up to and including 0.6/1kV |
| AS/NZS 1125 | - Conductors in insulated electric cables, cords and conductors |
| AS/NZS 3808 | - Insulating and sheathing materials for electric cables |
| AS/NZS 3863 | - Galvanized mild steel wire for armouring cables |
| AS/NZS 3008 | - Electrical installations - selection of cables |
| AS/NZS 3000 | - Electrical installation - wiring rules |
| AS/NZS 4026 | - Electric cables - for underground residential distribution systems |
| AS/NZS 1660 | - Methods of test for electric cables, cords and conductors |
| IEC 60228 | - Conductors of insulated cables |
| IEC 60287 | - Electric cables (calculation of the current rating) |
| IEC 60949 | - Calculation of thermally permissible short circuit currents, taking into account non-adiabatic heating effects) |
| IEC 60502 | - Power cables with extruded insulation and their accessories for rated voltages from 1kV (Um = 1.2kV) up to 30kV (Um = 36kV) |
| IEC 60332-3 | - Tests on electric cables under fire conditions) |

VIPERCON ELECTRIC CABLE

PVC Sheathed, Unarmoured Power Cables - 0.6/1kV

● Applications

WW VIPERCON 0.6/1kV PVC sheathed power cables are mostly used for buildings, industrial plants, gantry wiring, and road transport depots where not subject to mechanical damage. The cables are suitable for installation indoor/outdoor, enclosed in conduit, and in underground duct.



● Configuration

Conductor:	plain annealed copper or plain aluminium of the type specified in AS/NZS 1125. Insulation: 1.5mm ² ~ 10mm ² , polyvinylchloride compound PVC V90. 16mm ² and above, cross-linked polyethylene compound XLPE		
Laying-up:	cores are laid up together with a right-hand direction of lay, with non-hygroscopic filler where necessary to form a substantially compact and circular cross-section core assembly.		
Sheath:	The laid-up core is sheathed with a continuous flame retardant polyvinylchloride compound PVC 5V-90		
Core identification			
2C+E cable:	Phase core colour: Red,	Neutral core colour: Black	Earth core colour: Green
3C+E cable:	Phase core colour: Red, White, and Blue		Earth core colour: Green
4C+E cable:	Phase core colour: Red, White, and Blue	Neutral core colour: Black	Earth core colour: Green
Sheath colour:	Standard - Orange Optional - Black (Ultraviolet radiation stabilised)		

● Technical data

Rated voltage:	0.6 / 1 kV		
Conductor operating range:	PVC insulated, -25°C ~ 75°C, MAX 90°C, short circuit temperature 160°C for 5 sec XLPE insulated, -40°C ~ 90°C, short circuit temperature 250°C for 5 sec		
Temperature at surface:	In operation, -25°C ~ 90°C		
Minimum ambient temp:	0°C, after installation and only when cable is in a fixed position		
Minimum bending radius:	Stranded conductors	9 x cable O.D during installation	
		6 x cable O.D after installation	
	Compacted conductors	12 x cable O.D during installation	
		8 x cable O.D after installation	

--The maximum conductor temperatures specified are based on the properties of the insulation material but in practice may need to be derated to take account of joints and terminations and environmental conditions.

--When installed in tunnels, they should be fixed on brackets and cannot bear large pulling tension or pressure.

--Thermoplastic PVC V90 insulation is subject to deformation at temperatures above 75°C.

● Standards:

International	- IEC 60502, IEC 60228, IEC 60332
Australian/New Zealand	- AS/NZS 5000.1, AS/NZS 3808, AS/NZS 1125, AS/NZS 1660



VIPERCON ELECTRIC CABLE

PVC Sheathed, Unarmoured Power Cables - 0.6/1kV

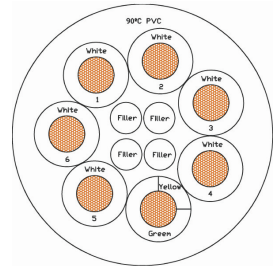
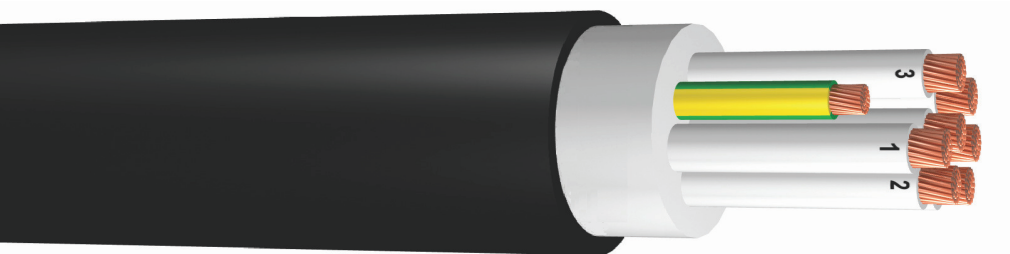
Type	Phase Cond. Area mm ²	Phase Cond. Type	Core Dia. mm	Earth Cond. Area mm ²	Core Dia. mm	Avg. Cable Dia. mm	Copper conductor		Aluminium conductor	
							Product Code	Approx Weight kg/km	Product Code	Approx Weight kg/km
2C+E	1.5	Strand	3.2	1.5	3.2	10.5	1301UA	119	-	-
2C+E	2.5	Strand	3.6	2.5	3.6	11.5	1302UA	159	-	-
2C+E	4	Strand	4.6	2.5	3.6	12.9	1304UA	213	-	-
2C+E	6	Strand	5.1	2.5	3.6	14.0	1306UA	263	-	-
2C+E	10	Strand	5.8	4	4.6	15.5	1310UA	390	-	-
2C+E	16	Strand	6.2	6	4.5	16.9	1316UA	554	-	-
2C+E	25	Strand	7.8	6	4.5	19.8	1325UA	779	-	-
2C+E	35	Strand	8.8	10	5.2	21.8	1335UA	1049	-	-
2C+E	50	Strand	10.4	16	6.2	25.0	1350UA	1478	-	-
2C+E	70	Compact	12.2	25	7.8	28.6	1370UA	2029	-	-
2C+E	95	Compact	13.8	25	7.8	32.0	1390UA	2406	-	-
2C+E	120	Compact	15.4	35	8.8	35.6	1312UA	3047	1312AUA	1364
2C+E	150	Compact	17.4	50	10.4	39.8	1315UA	3870	1315AUA	1705
2C+E	185	Compact	19.4	70	12.2	44.2	1318UA	4854	1318AUA	2132
2C+E	240	Compact	21.8	95	13.8	49.4	1324UA	6268	1324AUA	2711
2C+E	300	Compact	24.2	120	15.4	54.4	1330UA	7791	1330AUA	3336
3C+E	1.5	Strand	3.2	1.5	3.2	11.2	1015UA	148	-	-
3C+E	2.5	Strand	3.6	2.5	3.6	12.3	1025UA	200	-	-
3C+E	4	Strand	4.6	2.5	3.6	14.0	1004UA	278	-	-
3C+E	6	Strand	5.1	2.5	3.6	15.1	1006UA	351	-	-
3C+E	10	Strand	5.8	4	4.6	16.9	1010UA	523	-	-
3C+E	16	Strand	6.2	6	4.5	18.2	1016UA	752	-	-
3C+E	25	Strand	7.8	6	4.5	21.1	1125UA	1084	-	-
3C+E	35	Strand	8.8	10	5.2	23.3	1035UA	1459	-	-
3C+E	50	Strand	10.4	16	6.2	26.8	1050UA	2057	-	-
3C+E	70	Compact	12.2	25	7.8	31.5	1070UA	2816	-	-
3C+E	95	Compact	13.8	25	7.8	34.6	1095UA	3923	-	-
3C+E	120	Compact	15.4	35	8.8	38.5	1120UA	4287	1120AUA	1843
3C+E	150	Compact	17.4	50	10.4	43.3	1150UA	5420	1150AUA	2327
3C+E	185	Compact	19.4	70	12.2	48.4	1185UA	6765	1185AUA	2898
3C+E	240	Compact	21.8	95	13.8	54.1	1124UA	8730	1124AUA	3688
3C+E	300	Compact	24.2	120	15.4	59.8	1130UA	10852	1130AUA	4542
4C+E	1.5	Strand	3.2	1.5	3.2	12.1	1505UA	178	-	-
4C+E	2.5	Strand	3.6	2.5	3.6	13.3	1502UA	243	-	-
4C+E	4	Strand	4.6	2.5	3.6	15.5	1504UA	346	-	-
4C+E	6	Strand	5.1	2.5	3.6	16.7	1506UA	444	-	-
4C+E	10	Strand	5.8	4	4.6	18.7	1510UA	661	-	-
4C+E	16	Strand	6.2	6	4.5	20.0	1516UA	956	-	-
4C+E	25	Strand	7.8	6	4.5	23.5	1525UA	1398	-	-
4C+E	35	Strand	8.8	10	5.2	26.0	1535UA	1881	-	-
4C+E	50	Strand	10.4	16	6.2	30.2	1550UA	2653	-	-
4C+E	70	Compact	12.2	25	7.8	35.2	1570UA	3619	-	-
4C+E	95	Compact	13.8	25	7.8	38.8	1595UA	4403	-	-
4C+E	120	Compact	15.4	35	8.8	43.2	1520UA	5559	1520AUA	2373
4C+E	150	Compact	17.4	50	10.4	48.6	1515UA	7013	1515AUA	2991
4C+E	185	Compact	19.4	70	12.2	54.3	1585UA	8731	1585AUA	3719
4C+E	240	Compact	21.8	95	13.8	60.7	1524UA	11262	1524AUA	4735
4C+E	300	Compact	24.2	120	15.4	67.2	1530UA	13999	1530AUA	5832

VIPERCON ELECTRIC CABLE

PVC Sheathed, Unarmoured Control Cables - 0.6/1kV

● Applications

WW VIPERCON 0.6/1kV PVC sheathed multi-core control cables are mostly used for control circuit in buildings, industrial plants, gantry wiring, and road transport depots where not subject to mechanical damage. The cables are suitable for installation indoor/outdoor, enclosed in conduit, and in underground duct .



● Configuration

Conductor: plain annealed copper (class 2 strands) of the type specified in AS/NZS 1125.
Insulation: polyvinylchloride compound PVC V90.
Laying-up: cores are laid up together with a right-hand direction of lay, with non-hygroscopic filler where necessary to form a substantially compact and circular cross-section core assembly.
Sheath: the laid-up core is sheathed with a continuous flame retardant polyvinylchloride compound PVC 5V-90

Core identification

Core: Active core: White core with black numbering
Earth core: Green/Yellow
Sheath colour: Standard - Black (Ultraviolet radiation stabilised)
Optional - Orange

● Technical data

Rated voltage: 0.6 / 1 kV
Conductor operating range: -25°C ~ 75°C, MAX 90°C, short circuit temperature 160°C for 5 sec
Temperature at surface: In operation, -25°C ~ 90°C
Minimum ambient temp: 0°C after installation and only when cable is in a fixed position
Minimum bending radius: 9 x cable O.D during installation
6 x cable O.D after installation

--The maximum conductor temperatures specified are based on the properties of the insulation material but in practice may need to be derated to take account of joints and terminations and environmental conditions.

--When installed in tunnels, they should be fixed on brackets and cannot bear large pulling tension or pressure.

--Thermoplastic PVC V90 insulation is subject to deformation at temperatures above 75°C.

● Standards:

International - IEC 60502, IEC 60228, IEC 60332

Australian/New Zealand - AS/NZS 5000.1, AS/NZS 3808, AS/NZS 1125, AS/NZS 1660

Type	Product Code	Conductor Area mm ²	Core Dia. mm	Avg. Cable Dia. mm	Approx Weight kg/km	Product Code	Conductor Area mm ²	Core Dia. mm	Avg. Cable Dia. mm	Approx Weight kg/km
2C+E	1031UA	1.5	3.2	10.4	119	1032UA	2.5	3.7	11.5	159
3C+E	1041UA	1.5	3.2	11.2	148	1042UA	2.5	3.7	12.4	200
4C+E	1051UA	1.5	3.2	12.1	178	1052UA	2.5	3.7	13.5	243
6C+E	1701UA	1.5	3.2	13.1	231	1702UA	2.5	3.7	14.7	319
8C+E	1901UA	1.5	3.2	15.6	300	1902UA	2.5	3.7	17.6	414
10C+E	1111UA	1.5	3.2	16.8	351	1112UA	2.5	3.7	18.9	488
12C+E	1131UA	1.5	3.2	17.6	409	1132UA	2.5	3.7	19.8	570
15C+E	1161UA	1.5	3.2	18.5	486	1162UA	2.5	3.7	20.9	681
20C+E	1211UA	1.5	3.2	20.5	621	1212UA	2.5	3.7	23.2	874
25C+E	1261UA	1.5	3.2	23.1	758	1262UA	2.5	3.7	26.4	1071
30C+E	1311UA	1.5	3.2	24.8	898	1312UA	2.5	3.7	28.4	1272
40C+E	1411UA	1.5	3.2	28.9	1164	1412UA	2.5	3.7	33.6	1655
50C+E	1511UA	1.5	3.2	30.4	1410	1512UA	2.5	3.7	35.3	2012

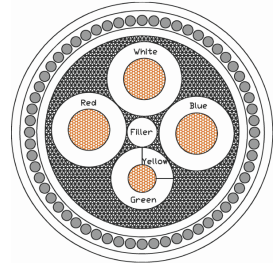
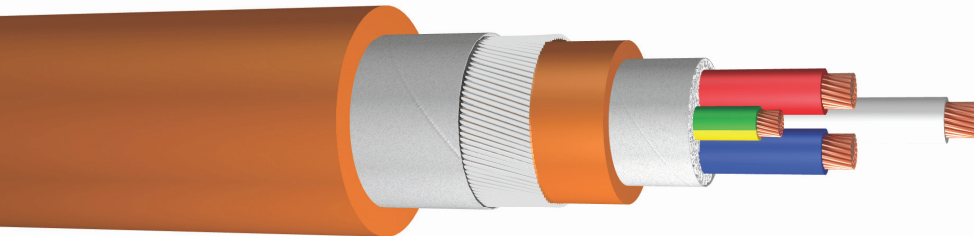


VIPERCON ELECTRIC CABLE

PVC Sheathed, Steel Wire Armoured Power Cables - 0.6/1kV

● Applications

WW VIPERCON 0.6/1kV armoured power cables are mostly used for buildings, industrial plants, mining and petroleum industry where extra mechanical protection is required. The cables are suitable for installation indoor/outdoor, enclosed in conduit, in underground duct, and buried directly in earth.



● Configuration

Conductor:	plain annealed copper or plain aluminium (class 2 strands) of the type specified in AS/NZS 1125.
Insulation:	1.5mm ² ~ 10mm ² , polyvinylchloride compound PVC V90. 16mm ² and above, cross-linked polyethylene compound XLPE
Laying-up:	cores are laid up together with a right-hand direction of lay, with non-hygroscopic filler where necessary to form a substantially compact and circular cross-section core assembly.
Bedding:	flame retardant polyvinylchloride compound PVC 5V-90
Armour:	single layer galvanized (Mild) steel wires helically applied over bedding.
Sheath:	The laid-up core is sheathed with a continuous flame retardant polyvinylchloride compound PVC 5V-90 to AS/NZS 3808.

Core identification

2C+E cable:	Phase core colour: Red,	Neutral core colour: Black	Earth core colour: Green/Yellow
3C+E cable:	Phase core colour: Red, White, and Blue		Earth core colour: Green/Yellow
4C+E cable:	Phase core colour: Red, White, and Blue	Neutral core colour: Black	Earth core colour: Green/Yellow

Sheath colour:	Standard - Orange Optional - Black (Ultraviolet radiation stabilised)
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● Technical data

Rated voltage:	0.6 / 1 kV
Conductor operating range:	PVC insulated, -25°C ~ 75°C, MAX 90°C XLPE insulated, -40°C ~ 90°C
Temperature at surface:	In operation, -25°C ~ 90°C
Minimum ambient temp:	0°C after installation and only when cable is in a fixed position
Minimum bending radius:	18 x cable O.D during installation 12 x cable O.D after installation

--The maximum conductor temperatures specified are based on the properties of the insulation material but in practice may need to be derated to take account of joints and terminations and environmental conditions.

--When installed in tunnels, they should be fixed on brackets and cannot bear large pulling tension or pressure.

--Thermoplastic PVC V90 insulation is subject to deformation at temperature above 75°C.

● Standards:

International	- IEC 60502, IEC 60228, IEC 60332
Australian/New Zealand	- AS/NZS 5000.1, AS/NZS 3808, AS/NZS 1125, AS/NZS 1660, AS/NZS 3863

VIPERCON ELECTRIC CABLE

● PVC Sheathed, Steel Wire Armoured Power Cables - 0.6/1kV

Type	Phase Cond. Area mm ²	Phase Cond. Type	Core Dia. mm	Earth Cond. Area mm ²	Core Dia mm	Over Bedding Dia. mm	Avg. Cable Dia. mm	Copper conductor		Aluminium conductor	
								Product Code	Approx Weight kg/km	Product Code	Approx Weight kg/km
2C+E	1.5	Strand	3.2	1.5	3.2	8.8	14.0	1301	313	-	-
2C+E	2.5	Strand	3.6	2.5	3.6	9.8	15.0	1302	379	-	-
2C+E	4	Strand	4.6	2.5	3.6	11.2	16.4	1304	586	-	-
2C+E	6	Strand	5.1	2.5	3.6	12.3	18.4	1306	663	-	-
2C+E	10	Strand	5.8	4	4.6	13.8	20.2	1310	861	-	-
2C+E	16	Strand	6.2	6	4.5	15.3	22.0	1316	1091	-	-
2C+E	25	Strand	7.8	6	4.5	18.2	24.9	1325	1548	-	-
2C+E	35	Strand	8.8	10	5.2	20.2	27.6	1335	1918	-	-
2C+E	50	Strand	10.4	16	6.2	23.4	30.8	1305	2494	-	-
2C+E	70	Compact	12.2	25	7.8	27.0	34.6	1307	3204	-	-
2C+E	95	Compact	13.8	25	7.8	30.6	39.6	1309	3914	-	-
2C+E	120	Compact	15.4	35	8.8	33.8	43.0	1312	4739	1312A	3038
2C+E	150	Compact	17.4	50	10.4	38.2	48.8	1350	6205	1350A	4040
2C+E	185	Compact	19.4	70	12.2	42.2	53.0	1318	7480	1318A	4758
2C+E	240	Compact	21.8	95	13.8	47.0	58.2	1324	9237	1324A	5680
2C+E	300	Compact	24.2	120	15.4	52.2	63.8	1330	11099	1330A	6644
3C+E	1.5	Strand	3.2	1.5	3.2	9.6	14.8	1015	360	-	-
3C+E	2.5	Strand	3.6	2.5	3.6	10.7	16.8	1025	442	-	-
3C+E	4	Strand	4.6	2.5	3.6	12.4	18.5	1004	681	-	-
3C+E	6	Strand	5.1	2.5	3.6	13.5	19.9	1006	789	-	-
3C+E	10	Strand	5.8	4	4.6	15.3	21.7	1010	1156	-	-
3C+E	16	Strand	6.2	6	4.5	16.6	24.0	1016	1481	-	-
3C+E	25	Strand	7.8	6	4.5	19.5	26.9	1125	1947	-	-
3C+E	35	Strand	8.8	10	5.2	21.7	29.1	1035	2439	-	-
3C+E	50	Strand	10.4	16	6.2	25.2	32.8	1050	3401	-	-
3C+E	70	Compact	12.2	25	7.8	29.9	38.9	1070	4425	-	-
3C+E	95	Compact	13.8	25	7.8	32.8	42.0	1095	5118	-	-
3C+E	120	Compact	15.4	35	8.8	36.7	47.3	1120	6634	1120A	4190
3C+E	150	Compact	17.4	50	10.4	41.3	52.3	1150	8087	1150A	4993
3C+E	185	Compact	19.4	70	12.2	46.4	57.8	1185	9774	1185A	5907
3C+E	240	Compact	21.8	95	13.8	51.7	63.5	1124	12151	1124A	7109
3C+E	300	Compact	24.2	120	15.4	57.0	70.7	1130	15495	1130A	9185
4C+E	1.5	Strand	3.2	1.5	3.2	10.5	15.7	1505	413	-	-
4C+E	2.5	Strand	3.6	2.5	3.6	11.7	16.9	1502	512	-	-
4C+E	4	Strand	4.6	2.5	3.6	13.9	20.0	1504	745	-	-
4C+E	6	Strand	5.1	2.5	3.6	15.1	21.6	1506	874	-	-
4C+E	10	Strand	5.8	4	4.6	17.1	24.5	1510	1176	-	-
4C+E	16	Strand	6.2	6	4.5	18.4	25.8	1516	1547	-	-
4C+E	25	Strand	7.8	6	4.5	21.9	29.5	1525	2230	-	-
4C+E	35	Strand	8.8	10	5.2	24.4	32.2	1535	2836	-	-
4C+E	50	Strand	10.4	16	6.2	28.8	37.4	1550	3778	-	-
4C+E	70	Compact	12.2	25	7.8	33.6	43.0	1570	4924	-	-
4C+E	95	Compact	13.8	25	7.8	37.4	48.0	1595	6075	-	-
4C+E	120	Compact	15.4	35	8.8	41.4	52.4	1520	7444	1520A	4257
4C+E	150	Compact	17.4	50	10.4	47.0	58.4	1515	9557	1515A	5536
4C+E	185	Compact	19.4	70	12.2	52.3	64.1	1585	11605	1585A	6593
4C+E	240	Compact	21.8	95	13.8	58.3	72.0	1524	14569	1524A	8042
4C+E	300	Compact	24.2	120	15.4	64.8	78.9	1530	17703	1530A	9536

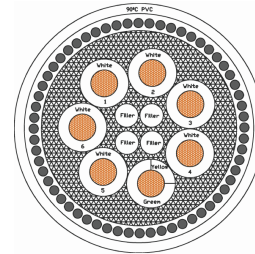
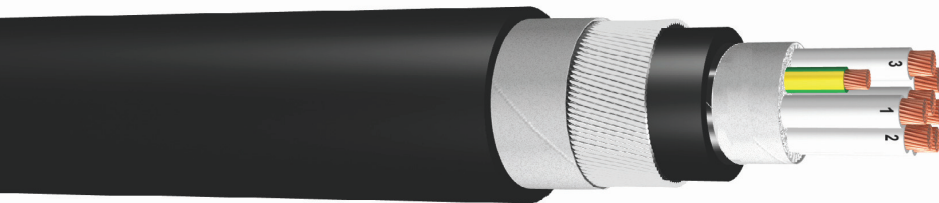


VIPERCON ELECTRIC CABLE

PVC Sheathed, Steel Wire Armoured Multi-Core Control Cables - 0.6/1kV

● Applications

WW VIPERCON 0.6/1kV armoured multi-core control cables are mostly used for control circuit in buildings, industrial plants, mining and petroleum industry where extra mechanical protection is required. The cables are suitable for installation indoor/outdoor, enclosed in conduit, in underground duct, and buried directly in earth.



● Configuration

Conductor:	plain annealed copper (class 2 strands) of the type specified in AS/NZS 1125.
Insulation:	polyvinylchloride compound PVC V90.
Laying-up:	cores are laid up together with a right-hand direction of lay, with non-hygroscopic filler where necessary to form a substantially compact and circular cross-section core assembly.
Bedding:	flame retardant polyvinylchloride compound PVC 5V-90
Armour:	single layer galvanized (Mild) steel wires helically applied over bedding.
Sheath:	the laid-up core is sheathed with a continuous flame retardant polyvinylchloride compound PVC 5V-90 to AS/NZS 3808.

Core identification

Core:	Active core: White core with black numbering, Earth: Green/Yellow
Sheath colour:	Standard - Black (Ultraviolet radiation stabilised) Optional - Orange

● Technical data

Rated voltage:	0.6 / 1 kV
Conductor operating range:	-25°C ~ 75°C, MAX 90°C, short circuit temperature 160°C for 5 sec
Temperature at surface:	In operation, -25°C ~ 90°C
Minimum ambient temp:	0°C after installation and only when cable is in a fixed position
Minimum bending radius:	18 x cable O.D during installation 12 x cable O.D after installation

--The maximum conductor temperatures specified are based on the properties of the insulation material but in practice may need to be derated to take account of joints and terminations and environmental conditions.

--When installed in tunnels, they should be fixed on brackets and cannot bear large pulling tension or pressure.

--Thermoplastic PVC V90 insulation is subject to deformation at temperature above 75°C.

● Standards:

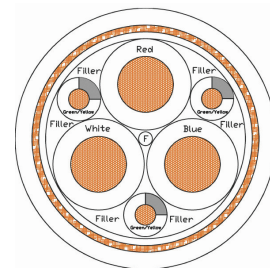
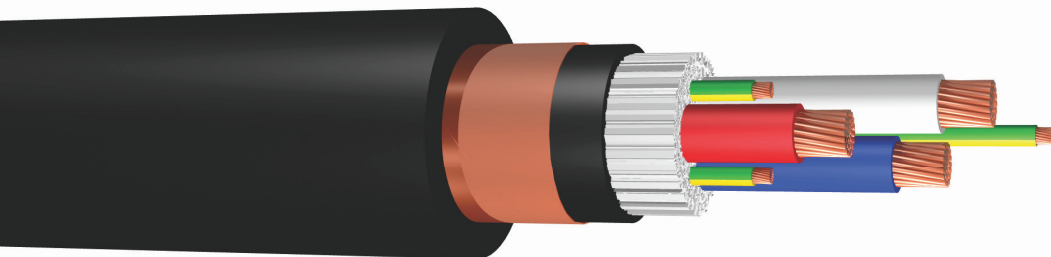
International - IEC 60502, IEC 60228, IEC 60332

Australian/New Zealand - AS/NZS 5000.1, AS/NZS 3808, AS/NZS 1125, AS/NZS 1660, AS/NZS 3863

Type	Product Code	Conductor Area mm ²	Core Dia. mm	Over Bedding Dia. mm	Avg. Cable Dia. mm	Approx Weight kg/km	Product Code	Conductor Area mm ²	Core Dia. mm	Over Bedding Dia. mm	Avg. Cable Dia. mm	Approx Weight kg/km
2C+E	1031	1.5	3.2	8.8	14.0	313	1032	2.5	3.7	9.9	15.1	379
3C+E	1041	1.5	3.2	9.6	14.8	360	1042	2.5	3.7	10.8	16.0	442
4C+E	1051	1.5	3.2	10.5	15.7	413	1052	2.5	3.7	11.9	18.0	512
6C+E	1701	1.5	3.2	11.5	16.7	528	1702	2.5	3.7	13.1	19.2	705
8C+E	1901	1.5	3.2	14.0	20.1	771	1902	2.5	3.7	16.0	22.1	940
10C+E	1111	1.5	3.2	15.2	21.3	835	1112	2.5	3.7	17.3	23.4	1028
12C+E	1131	1.5	3.2	16.0	22.1	949	1132	2.5	3.7	18.2	25.4	1294
15C+E	1161	1.5	3.2	16.9	23.0	1049	1162	2.5	3.7	19.3	26.4	1439
20C+E	1211	1.5	3.2	18.9	26.0	1392	1212	2.5	3.7	21.6	28.7	1737
25C+E	1261	1.5	3.2	21.5	28.6	1640	1262	2.5	3.7	24.6	32.0	2038
30C+E	1311	1.5	3.2	23.2	30.5	1910	1312	2.5	3.7	26.6	34.2	2425
40C+E	1411	1.5	3.2	27.3	34.8	2340	1412	2.5	3.7	31.8	40.3	3228
50C+E	1511	1.5	3.2	28.6	37.1	2837	1512	2.5	3.7	33.3	42.0	3629

VIPERCON ELECTRIC CABLE

0.6/1kV VSD/EMC Cables (Copper Tape Screened)



Configuration

Conductor:	plain annealed copper (class 2 strands) of the type specified in AS/NZS 1125.
Insulation:	cross-linked polyethylene compound XLPE.
Laying-up:	cores are laid up together with a right-hand direction of lay, with non-hygroscopic filler where necessary to form a substantially compact and circular cross-section core assembly.
Bedding:	flame retardant polyvinylchloride compound PVC 5V-90
Screen:	plain annealed copper tape with 100% coverage
Sheath:	the laid-up core is sheathed with a continuous flame retardant polyvinylchloride compound PVC 5V-90 to AS/NZS 3808.

Core identification

Core:	Active core:	Red, White, and Blue
	Earth core:	Green/Yellow
Sheath colour:	Standard - Black (Ultraviolet radiation stabilised)	
	Optional - Orange	

Technical data

Rated voltage:	0.6 / 1 kV
Test voltage:	2500V rms between conductors, between conductors and screen 6000V rms spark test
Conductor operating temp:	-25°C ~ 90°C, short circuit: 160°C for 5 sec
Minimum ambient temp:	0°C, after installation and only when cable is in a fixed position
Minimum bending radius:	18 x cable O.D during installation 12 x cable O.D after installation

--The maximum conductor temperatures specified are based on the properties of the insulation material but in practice may need to be derated to take account of joints and terminations and environmental conditions.

--Thermoplastic PVC V90 insulation is subject to deformation at temperature above 75°C.

Standards:

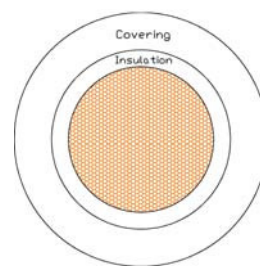
International	- IEC 60502, IEC 60228, IEC 60332
Australian/New Zealand	- AS/NZS 5000.1, AS/NZS 3808, AS/NZS 1125, AS/NZS 1660

Product Code	No. of Core	Phase Cond. Area (mm ²)	Phase Core Dia. (mm)	Earth Cond. Area (mm ²)	Earth Core Dia. (mm)	Over Bedding Dia. (mm)	Cable Dia. (mm)	Approx. Weight (kg/km)
9401XCTPV	3C+E	1.5	3.2	1.5	3.0	9.8	12.84	272
9402XCTPV	3C+E	2.5	3.4	2.5	3.4	10.3	14.05	305
9404XCTPV	3C+E	4	4.0	2.5	3.4	11.2	15.03	472
9406XCTPV	3C+E	6	4.5	2.5	3.4	12.3	16.07	522
9410XCTPV	3C+3E	10	5.5	1.5	3.0	14.5	18.33	707
9416XCTPV	3C+3E	16	6.5	2.5	3.4	16.9	20.67	879
9425XCTPV	3C+3E	25	8.6	4	4.0	20.8	24.55	1238
9435XCTPV	3C+3E	35	9.5	6	4.5	23.0	26.78	1631
9450XCTPV	3C+3E	50	10.9	10	5.5	26.5	30.60	2239
9470XCTPV	3C+3E	70	12.9	10	5.5	29.9	34.23	2949
9495XCTPV	3C+3E	95	14.8	16	6.5	34.4	38.97	3897
9412XCTPV	3C+3E	120	16.6	16	6.5	37.1	41.87	4727
9415XCTPV	3C+3E	150	18.6	25	8.6	43.5	48.71	6025
9418XCTPV	3C+3E	185	20.9	25	8.6	46.9	52.38	7164
9424XCTPV	3C+3E	240	23.7	35	9.4	52.9	58.76	9244
9430XCTPV	3C+3E	300	26.3	50	10.9	59.0	65.31	12357



VIPERCON ELECTRIC CABLE

SDI Power Cable



Configuration

Conductor:	plain annealed copper or plain aluminium (class 2 strands) of the type specified in AS/NZS 1125.
Inner Insulation:	cross-linked polyethylene (XLPE).
Outer insulation:	flame retardant polyvinyl chloride PVC 5V-90.
Outer Insulation colour:	Standard – Black (Ultraviolet radiation stabilised) Optional – Orange

Technical data

Rated voltage:	0.6 / 1 kV
Conductor operating temp:	- 40°C ~ 90°C, short circuit: 250°C for 5 sec
Minimum bending radius:	Stranded conductors 9 x cable O.D during installation 6 x cable O.D after installation

--The maximum conductor temperatures specified are based on the properties of the insulation material but in practice may need to be derated to take account of joints and terminations and environmental conditions.

--The cables should not be flexed when either the ambient or cable temperature is below 0°C

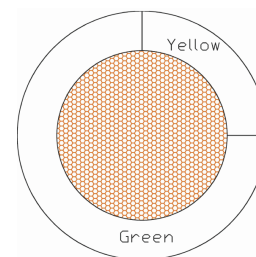
Standards:

International:	- IEC 60228, IEC 60332-1
Australian/New Zealand	- AS/NZS 5000.1, AS/NZS 3808, AS/NZS 1125, AS/NZS 1660

Nominal CSA mm ²	Nominal Cable Dia. mm	Copper conductor		Aluminium conductor	
		Product Code	Weight kg/km	Product Code	Weight kg/km
6	7.3	7806XV	97.2	-	-
10	8.0	7810XV	139.9	-	-
16	9.0	7816XV	201.6	-	-
25	10.6	7825XV	305.2	-	-
35	11.6	7835XV	405.4	SMAL35	180
50	13.1	7850XV	552.0	SMAL50	241
70	14.8	7870XV	754.9	SMAL70	320
95	17.3	7895XV	999.7	SMAL95	410
120	18.8	7812XV	1237.3	SMAL120	505
150	20.6	7815XV	1533.9	SMAL150	624
185	22.8	7818XV	1863.2	SMAL185	762
240	26.6	7824XV	2377.5	SMAL240	961
300	27.8	7830XV	2935.4	SMAL300	1176

VIPERCON ELECTRIC CABLE

Earth Wire



● Configuration

Conductor: plain annealed copper or plain aluminium (class 2 strands) of the type specified in AS/NZS 1125.
Insulation: polyvinylchloride compound PVC V90.
Insulation colour: Green/Yellow

● Technical data

Conductor operating temp: - 25°C ~ 90°C, short circuit: 160°C for 5 sec
Minimum bending radius: 12 x cable O.D

--The maximum conductor temperatures specified are based on the properties of the insulation material but in practice may need to be derated to take account of joints and terminations and environmental conditions.

--The cables should not be flexed when either the ambient or cable temperature is below 0°C

--Thermoplastic 90°C PVC insulation is subject to deformation at temperature above 75°C.

● Standards:

International - IEC 60502, IEC 60228, IEC 60332
Australian/New Zealand - AS/NZS 5000.1, AS/NZS 3808, AS/NZS 1125, AS/NZS 1660

Nominal Conductor Area (mm ²)	Insulation Thickness (mm)	Cable Dia. (mm)	Copper Product Code	Approximate Weight (kg/km)	Aluminium Product Code	Approximate Weight (kg/km)
4	1.0	4.6	E2V4	52	-	-
6	1.0	5.2	E2V6	73	-	-
10	1.0	6.0	E2V10	113	-	-
16	1.0	7.0	E2V16	171	-	-
25	1.2	8.6	E2V25	266	E2V25A	111
35	1.2	9.5	E2V35	361	E2V35A	145
50	1.4	11.4	E2V50	514	E2V50A	205
70	1.4	12.8	E2V70	703	E2V70A	270
95	1.6	15.1	E2V95	952	E2V95A	364
120	1.6	16.5	E2V120	1186	E2V120A	444
150	1.8	19.4	E2V150	1484	E2V150A	556
185	2.0	20.4	E2V185	1830	E2V185A	686
240	2.2	23.3	E2V240	2366	E2V240A	881
300	2.4	26.0	E2V300	2949	E2V300A	1093



VIPERCON ELECTRIC CABLE

Supplementary Technical Information

A. Rated voltage designation

Voltage rating for low voltage power cable is expressed in the form U_0/U (U_m), the voltage designation takes into consideration the fact that the system voltage may vary up to 9.1% from the designated voltage.

0.6/1kV (1.2kV): $U_0 = 0.6\text{kV}$, $U = 1\text{kV}$, $U_m = 1.2\text{kV}$

U_0 is the R.M.S power frequency voltage between phase conductor and earth conductor of the supply system.

U is the R.M.S power frequency voltage between phases conductor of the supply system.

U_m is the maximum R.M.S power frequency voltage between any two phases conductor for which cables are designed. It is the highest voltage that can be sustained under normal operating conditions at any time and at any point in a system. It excludes transient voltage variation due to fault condition and sudden disconnection of large load.

The rated voltage of the cable for a given application shall be suitable for the operating condition in the system.

B. Conductor materials characteristics:

Conductor Type	Conductivity %	Resistivity at 20°C nΩ.m	Density g/cm³	Temperature °C
Copper	100	17.07~17.24	8.92	234.5
Aluminium	61	28.26	2.73	228.1

C. Conductor maximum d.c resistance at 20°C and a.c resistance at 90°C (Multi-core):

Nominal Area mm²	Max. d.c resistance of conductor at 20°C		a.c resistance of conductor at 90°C	
	Copper Ω / km	Aluminium Ω / km	Copper Ω / km	Aluminium Ω / km
1.5	13.6	-	17.3	-
2.5	7.41	-	9.45	-
4	4.61	-	5.88	-
6	3.08	-	3.93	-
10	1.83	-	2.33	-
16	1.15	-	1.47	-
25	0.7270	1.20	0.927	-
35	0.5238	0.8670	0.669	1.11
50	0.3661	0.6061	0.494	0.822
70	0.2604	0.4310	0.343	0.569
95	0.1931	0.3196	0.248	0.411
120	0.1528	0.2529	0.197	0.325
150	0.1222	0.2023	0.160	0.265
185	0.0991	0.1641	0.129	0.212
240	0.0761	0.1260	0.0998	0.162
300	0.0611	0.1012	0.0812	0.131

*Further conductor types and stranding configuration on request. Conductor compacted index is not less than 0.9.

D. Conversion factor for conductor temperatures:

Temperature Rating °C	Conversion Copper	Factor Aluminium
20	1.000	1.000
90	1.275	1.282
105	1.334	1.343
130	1.432	1.443
250	1.904	1.927

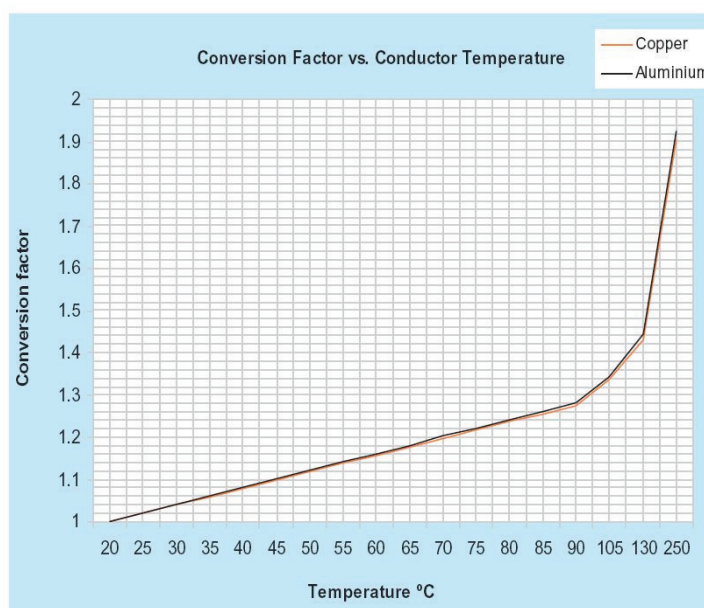
Conversion Example

50 mm² Cable (Copper)

Max d.c resistance at 20°C = 0.3661 Ω / km.

Conversion factor for 50mm² at 90°C = 1.275

Max d.c resistance at 90°C = 0.3661 Ω / km * 1.275 = 0.4668 Ω/km



VIPERCON ELECTRIC CABLE

E. Conductor three phase voltage drop* at 50Hz. 90°C (mV/A.m)

Nominal Area mm ²	Copper		Aluminium	
	Max	0.8 power factor	Max	0.8 power factor
1.5	30.0	-	-	-
2.5	16.4	-	-	-
4	10.2	-	-	-
6	6.8	-	-	-
10	4.05	-	-	-
16	2.55	-	-	-
25	1.61	-	-	-
35	1.17	-	1.93	-
50	0.87	-	1.43	-
70	0.61	-	0.993	-
95	0.45	-	0.723	-
120	0.37	-	0.577	-
150	0.31	-	0.476	-
185	0.26	-	0.388	-
240	0.22	0.22	0.307	-
300	0.19	0.19	0.258	-

*Single phase voltage drop is multiplying the three phase values by 1.155.

F. Cable reactance at 50Hz (Ω /km)

Nominal Area mm ²	PVC insulated Max	XLPE insulated Max
1.5	0.111	-
2.5	0.102	-
4	0.102	-
6	0.0967	-
10	0.0906	-
16	0.0861	-
25	0.0853	-
35	0.0826	-
50	0.0797	-
70	0.0770	-
95	-	0.0725
120	-	0.0713
150	-	0.0718
185	-	0.0720
240	-	0.0709
300	-	0.0704



VIPERCON ELECTRIC CABLE

G. Current carrying capacity

The current rating given in this catalogue has been calculated using the method described in IEC 60287 - Calculation of the current rating (All parts), and based on typical Australia installation condition:

Lay in air: Ambient air temperature 40°C
 Lay in ground: Ambient soil temperature 25°C,
 Specific thermal resistivity 1.2 K.m/W, Buried depth 0.75 ~ 0.8m
 Lay in conduits: The current carrying capacity will be reduced by approximate 15 ~ 25%.
 Other conditions: Balance load, Unexposed to the direct sunlight.

Multi - Core cables current rating

Nomin al Phase CSA mm ²	Insulated Material	3G(2C+E) - 2 loaded						4G(3C+E) or 5G(3C+N+E) - 3 loaded						Fault Current Rating	
		Unenclosed Touching		Buried direct		Buried in conduit		Unenclosed touching		Buried direct		Buried in conduit			
		Cu A	Al A	Cu A	Al A	Cu A	Al A	Cu A	Al A	Cu A	Al A	Cu A	Al A	Cu kA	Al kA
1.5	PVC	18	-	28	-	22	-	15	-	24	-	19	-	0.21	-
2.5	PVC	26	-	40	-	31	-	22	-	34	-	26	-	0.36	-
4	PVC	34	-	52	-	40	-	29	-	44	-	34	-	0.57	-
6	PVC	44	-	65	-	51	-	37	-	55	-	43	-	0.86	-
10	PVC	60	-	87	-	68	-	51	-	74	-	57	-	1.43	-
16	XLPE	80	-	115	-	88	-	68	-	96	-	74	-	2.29	-
25	XLPE	105	-	145	-	115	-	91	-	125	-	96	-	3.58	-
35	XLPE	130	100	180	140	140	110	110	87	150	115	115	91	5.01	3.31
50	XLPE	160	125	210	165	165	130	135	105	180	140	140	110	7.15	4.73
70	XLPE	200	155	260	200	205	160	170	135	220	170	175	135	10.02	6.62
95	XLPE	310	240	360	280	285	220	265	205	300	235	240	185	13.59	8.98
120	XLPE	360	280	410	320	325	255	305	240	345	265	275	215	17.17	11.35
150	XLPE	410	320	460	355	375	290	350	270	385	300	310	240	21.46	14.18
185	XLPE	475	370	520	405	425	330	405	315	435	340	355	280	26.47	17.49
240	XLPE	560	440	600	470	500	390	480	375	500	395	420	330	34.34	22.69
300	XLPE	640	510	680	530	570	450	550	430	570	445	475	375	42.93	28.37

Single - Core & SDI cables current rating

Copper conductor

Nominal Area mm ²		6	10	16	25	35	50	70	95	120	150	185	240	300
90°C PVC	Touching (laid flat) A	40	54	72	97	120	145	185	230	265	310	355	425	490
	Enclosed in duct (trefoil) A	34	47	62	87	100	125	155	185	220	250	285	340	390
XLPE	Touching (laid flat) A	47	65	86	115	145	175	225	280	325	375	435	520	600
	Enclosed in duct (trefoil) A	42	58	78	110	125	155	190	230	270	310	355	420	485

Aluminium conductor

Nominal Area mm ²		6	10	16	25	35	50	70	95	120	150	185	240	300
XLPE	Touching (laid flat) A	-	-	-	-	110	135	175	215	255	290	340	405	470
	Enclosed in duct (trefoil) A	-	-	-	-	105	125	160	195	230	260	300	360	415

VIPERCON ELECTRIC CABLE

H. Current rating factor

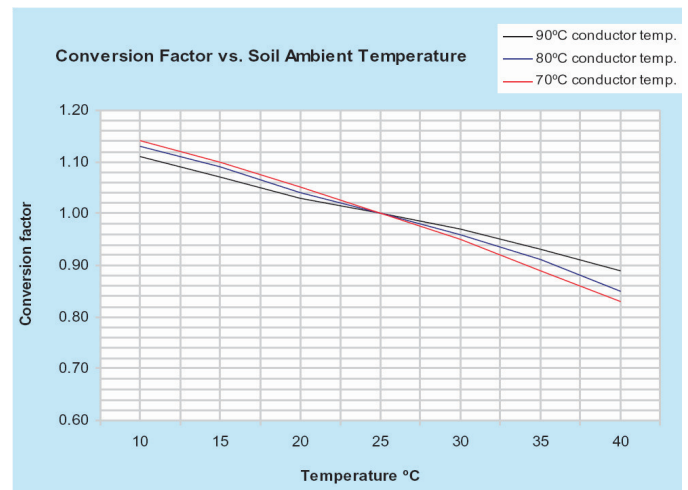
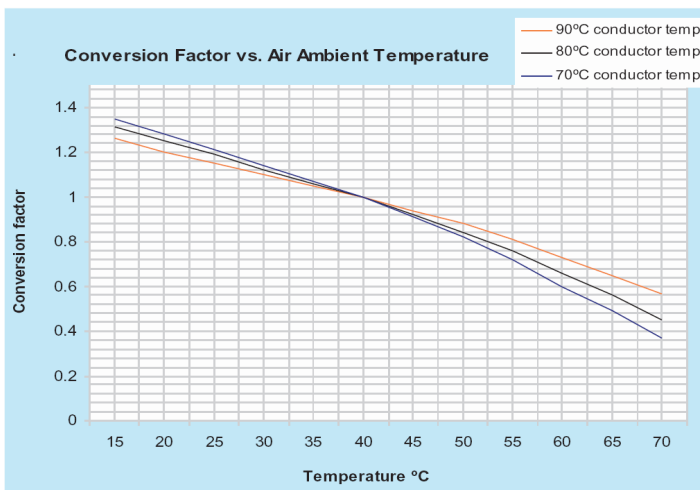
1. Depth of laying rating factor

Nominal Area	Conductor area vs. Depth (Laid direct in ground)							
	0.8m	1m	1.25m	1.5m	1.75m	2m	2.5m	+3m
≤300 mm ²	1	0.98	0.96	0.95	0.94	0.92	0.91	0.90

2. The current carrying capacity of a cable will vary dependent on the installation condition and the cable surrounding condition.

(I) ambient air temperature conversion factor

(II) ambient soil temperature conversion factor



Note: the current rating and the derating factor is referenced from AS/NZS 3008.1, please refer to AS/NZS 3008.1 or AS/NZS 3000 for current rating on other installation condition.

I. Cable testing criterias

The following test will be conducted at manufacturer's work, and testing method is in accordance with AS/NZS 1660

- Cable construction test, sample test
- Conductor resistance test, routine test
- Insulation spark test (6kV a.c)
- Cable A.C withstand voltage test (3.5kV a.c /5 min.)
- Cable mechanical test, sample test on tensile strength, bending radius

