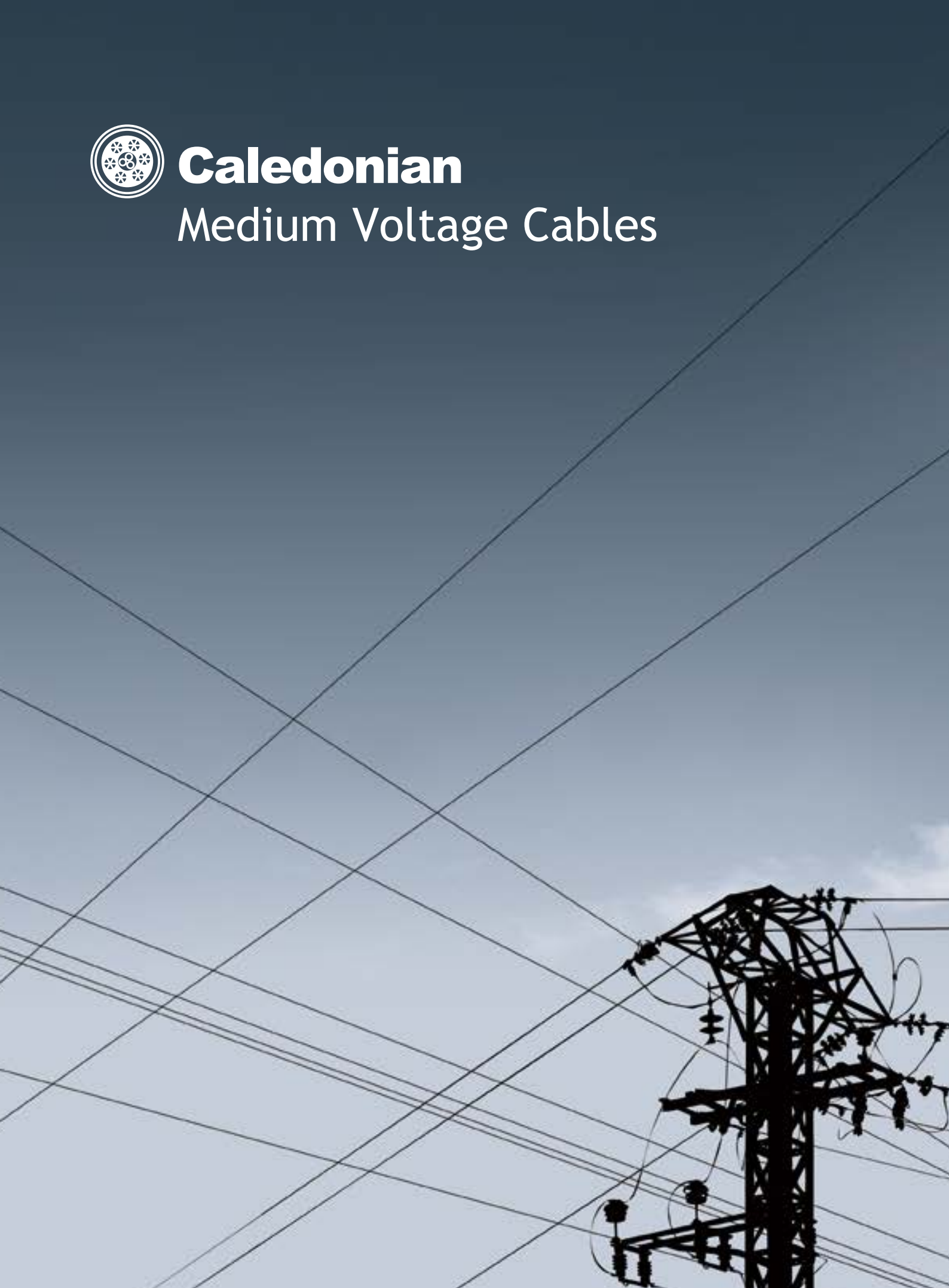




Caledonian

Medium Voltage Cables





Caledonian Medium Voltage Cables

RG7H1R

APPLICATIONS:

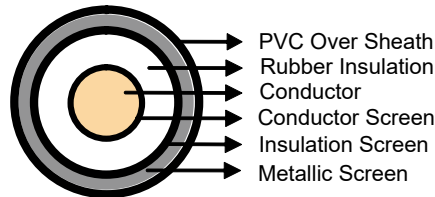
The single core cables are designed for distribution of electrical power with nominal voltage U_0/U ranging from 1.8/3KV to 18/30KV and frequency 50Hz. They are suitable for installation mostly in power supply stations, indoors and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switchboards and power stations.



STANDARD:

IEC 60502 / CEI 20-13

Flame Retardant acc.to:
DIN VDE 0482 part 265-2-1
EN 50265-2-1
EN 60332-1-2



CONSTRUCTION:

Conductor: Plain annealed copper with IEC 60228 class 2.

Conductor Screen: The conductor screen consists of an extruded layer of non metallic, semi-conducting compound firmly bonded to the insulation to exclude all air voids.

Insulation: Rubber, type G7 .

Insulation Screen: The insulation screen consists of an extruded layer of non metallic, semi-conducting compound extruded over the insulation. The extruded semi-conducting layer shall consist of bonded or cold strippable semi-conducting compound capable of removal for jointing or terminating. As an option, a semi-conducting tape may be applied over the extruded semi-conducting layer as a bedding for the metallic layer. The minimum thickness is 0.3 mm and the maximum resistivity is 500 Ohm-m at 90°C. The screen is tightly fitted to the insulation to exclude all air voids and can be easily hand stripped on site.

Table 2a. Total Cross Section and Max. DC Resistance of Copper Wire Screen

Nom. Cross Section Area of Conductor	Total Cross Section					Max. DC Resistance at 20 °C
	3.6/6KV (Um=7.2KV)	6/10KV (Um=12KV)	8.7/15KV (Um=17.5KV)	12/20KV (Um=24KV)	18/30KV (Um=36KV)	
mm ²	mm	mm	mm	mm	mm	Ω
10	10	10	10	10	10	1.075
16	16	16	16	16	16	1.075
25	16	16	16	16	16	1.075
35	16	16	16	16	16	1.075
50	16	16	16	16	16	1.075
70	16	16	16	16	16	1.075

Nom. Cross Section Area of Conductor	Total Cross Section					Max. DC Resistance at 20 °C
	3.6/6KV (Um=7.2KV)	6/10KV (Um=12KV)	8.7/15KV (Um=17.5KV)	12/20KV (Um=24KV)	18/30KV (Um=36KV)	
mm ²	mm	mm	mm	mm	mm	Ω
95	16	16	16	16	16	1.075
120	16	16	16	16	16	1.075
150	25	25	25	25	25	0.688
185	25	25	25	25	25	0.688
240	25	25	25	25	25	0.688
300	25	25	25	25	25	0.688
400	35	35	35	35	35	0.491
500	35	35	35	35	35	0.491
630	35	35	35	35	35	0.491
800	50	50	50	50	50	0.344
1000	50	50	50	50	50	0.344

Table 2a. Total Cross Section and Max. DC Resistance of Copper Tape Screen (0.1mm)

Nom. Cross Section Area of Conductor	Total Cross Section & Max. DC Resistance									
	3.6/6KV (Um=7.2KV)		6/10KV (Um=12KV)		8.7/15KV (Um=17.5KV)		12/20KV (Um=24KV)		18/30KV (Um=36KV)	
	Total Cross Section	Max. DC Resistance at 20 °C	Total Cross Section	Max. DC Resistance at 20 °C	Total Cross Section	Max. DC Resistance at 20 °C	Total Cross Section	Max. DC Resistance at 20 °C	Total Cross Section	Max. DC Resistance at 20 °C
mm ²	mm		mm		mm		mm		mm	
10	4.7	3.646	-	-	-	-	-	-	-	-
16	5.1	3.342	5.9	2.925	-	-	-	-	-	-
25	5.7	3.025	6.4	2.679	7.3	2.350	8.1	2.114	-	-
35	6.2	2.796	6.9	2.498	7.8	2.210	8.6	2.000	-	-
50	6.7	2.568	7.4	2.314	8.3	2.064	9.1	1.880	11.2	0.579
70	7.4	2.314	8.2	2.106	9.1	1.897	9.9	1.740	11.9	0.543
95	8.2	2.095	8.9	2.925	9.8	1.748	10.7	1.614	12.7	0.510
120	9.0	1.905	9.8	2.679	10.7	1.613	11.5	1.498	13.5	0.479
150	9.7	1.781	10.4	2.498	11.3	1.523	12.1	1.420	14.2	0.458
185	10.6	1.626	11.2	2.314	12.2	1.407	12.9	1.335	14.9	0.434
240	11.7	1.465	12.4	2.106	2.106	1.294	14.1	1.219	16.2	0.401
300	12.9	1.334	13.4	1.923	1.923	1.204	15.1	1.139	17.1	0.378
400	14.3	1.205	14.6	1.761	1.761	1.110	16.3	1.054	18.4	0.353
500	15.7	1.094	16.2	1.655	1.655	1.005	17.5	0.982	20.0	0.325
630	17.3	0.992	18.9	1.540	1.540	0.918	19.5	0.880	21.6	0.300
800	20.3	0.849	20.4	1.388	21.3	0.807	22.1	0.777	24.2	0.268
1000	22.3	0.771	22.4	1.285	23.3	0.738	24.1	0.713	26.2	0.248

Over Sheath: Red(RAL 3000), PVC, type RZ, other dimensions and colours available on request.

PHYSICAL PROPERTIES:

- Temperature Range: -15°C / +90°C
- Max Short Circuit Temperature: +250°C
- Min Installation Temperature: 0°C
- Min Bending Radius: 12 x OD
- Max. Tensile Stress: 60 N/mm²



Caledonian Medium Voltage Cables

Table 4. Nominal /Operating /Testing Voltages

Rated Voltage Uo/U	Operating Voltage (Um)	Testing Voltage (rms)
1.8/3KV	3.6KV	6KV
3.6/6KV	7.2KV	11KV
6/10KV	12KV	17KV
8.7/15KV	17.5KV	24KV
12/20KV	24KV	29KV
18/30KV	36KV	45KV

*21/35KV and 26/35KV power frequency voltage test can be made under the following conditions: 2.5Uo x 30mins or 3.0Uo x 15mins. Numbers in brackets refer to the test values for 3.0Uo x 1.5mins.

Single Core 1.8/3KV (Um=3.6KV) Dimensional Data

Nom. Cross-Section Area	Outer-Ø ca.mm	Cable Weight Approx	AWG
n×mm ²	± 10%	kg/km	no.*)
1×10	14.5	290	8
1×16	15.2	350	6
1×25	16.5	450	4
1×35	17.5	550	2
1×50	18.5	670	1
1×70	20	880	2/0
1×95	22	1100	3/0
1×120	23.3	1400	4/0
1×150	24.7	1650	250 MCM
1×185	26.5	2000	350 MCM
1×240	29	2550	450 MCM
1×300	31.6	3150	550 MCM
1×400	34.6	3950	750 MCM
1×500	38.3	5050	900 MCM
1×630	43.1	6300	1150 MCM

Electrical Data

Nom. Cross-Section Area	DC Resistance CU	AC Resistance CU	Short Circuit Rating of Conductor CU 1 sec	Capacitance	Charging Current	Reactance		Inductance		Impedance	
						Trefoil	Flat Spaced	Trefoil	Flat Spaced	Trefoil	Flat Spaced
						µΩ/m		nH/m		µΩ/ m	
mm ²	µΩ/m	µΩm	kA	pF/m	mA/m	µΩ/m		nH/m		µΩ/ m	
10	1830	2330	1.4	182	0.27	151	201	384	558	2332	2332
16	1150	1460	2.2	201	0.29	140	193	362	546	1462	1478
25	727	927	3.6	222	0.32	131	185	345	535	936	952
35	524	668	5.0	251	0.35	122	178	327	524	679	695
50	387	494	6.8	281	0.39	116	172	313	514	511	527
70	268	343	9.8	341	0.45	110	165	300	495	364	386
95	193	248	13.3	397	0.50	104	160	287	485	272	300
120	153	196	17.2	430	0.55	104	159	283	480	225	257
150	124	159	21.2	464	0.59	100	156	280	475	193	229
185	99	128	26.6	513	0.65	98	154	274	465	165	206

240	75	98	34.9	573	0.70	94	150	267	459	140	185
300	60	80	43.8	652	0.72	91	147	260	455	128	174
400	47	64	57.3	727	0.75	90	147	253	445	113	164
500	37	51	72.3	754	0.79	89	145	248	435	105	158
630	28	42	91.2	786	0.87	86	143	245	425	97	151

Single Core 3.6/6KV (Um=7.2KV)

Dimensional Data

Nom. Cross-Section Area	Outer-Ø ca.mm	Cable Weight Approx	AWG
n×mm ²	± 10%	kg/km	no.*)
1×10	17	330	8
1×16	17.5	410	6
1×25	18.8	510	4
1×35	19.8	630	2
1×50	21.4	750	1
1×70	23.3	1010	2/0
1×95	24.8	1250	3/0
1×120	26.3	1500	4/0
1×150	27.8	1800	250 MCM
1×185	29.5	2100	350 MCM
1×240	32.1	2650	450 MCM
1×300	34.8	3200	550 MCM
1×400	37.8	4000	750 MCM
1×500	41.8	5100	900 MCM
1×630	45.8	6500	1150 MCM

Electrical Data

Nom. Cross-Section Area	D C Resistance CU	A C Resistance CU	Short Circuit Rating of Conductor CU 1 sec	Capacitance	Charging Current	Reactance		Inductance		Impedance	
						Trefoil	Flat Spaced	Trefoil	Flat Spaced	Trefoil	Flat Spaced
						µΩ/m		nH/m		µΩ/m	
10	1830	2330	1.4	182	0.27	151	201	384	558	2332	2332
16	1150	1460	2.2	201	0.29	140	193	362	546	1462	1478
25	727	927	3.6	222	0.32	131	185	345	535	936	952
35	524	668	5.0	251	0.35	122	178	327	524	679	695
50	387	494	6.8	281	0.39	116	172	313	514	511	527
70	268	343	9.8	341	0.45	110	165	300	495	364	386
95	193	248	13.3	397	0.50	104	160	287	485	272	300
120	153	196	17.2	430	0.55	104	159	283	480	225	257
150	124	159	21.2	464	0.59	100	156	280	475	193	229
185	99	128	26.6	513	0.65	98	154	274	465	165	206
240	75	98	34.9	573	0.70	94	150	267	459	140	185
300	60	80	43.8	652	0.72	91	147	260	455	128	174
400	47	64	57.3	727	0.75	90	147	253	445	113	164
500	37	51	72.3	754	0.79	89	145	248	435	105	158
630	28	42	91.2	786	0.87	86	143	245	425	97	151



Caledonian Medium Voltage Cables

Single Core 6/10KV (Um=12KV)

Dimensional Data

Nom. Cross-Section Area	Outer- \varnothing ca.mm	Cable Weight Approx	AWG
n \times mm ²	$\pm 10\%$	kg/km	no. *)
1 \times 10	19.9	420	8
1 \times 16	20.4	530	6
1 \times 25	21.8	650	4
1 \times 35	23.3	760	2
1 \times 50	24.8	880	1
1 \times 70	26.3	1100	2/0
1 \times 95	27.8	1400	3/0
1 \times 120	29.3	1630	4/0
1 \times 150	30.8	1900	250 MCM
1 \times 185	32.8	2350	350 MCM
1 \times 240	35.3	2900	450 MCM
1 \times 300	37.8	3500	550 MCM
1 \times 400	40.8	4300	750 MCM
1 \times 500	44.3	5420	900 MCM
1 \times 630	54.8	6850	1150 MCM

Electrical Data

Nom. Cross-Section Area	D C Resistance CU	A C Resistance CU	Short Circuit Rating of Conductor CU 1 sec	Capacitance	Charging Current	Reactance		Inductance		Impedance	
						Trefoil	Flat Spaced	Trefoil	Flat Spaced	Trefoil	Flat Spaced
						$\mu\Omega/m$		nH/m		$\mu\Omega/m$	
16	1150	1460	2.2	201	0.29	140	193	362	546	1462	1478
25	727	927	3.6	222	0.32	131	185	345	535	936	952
35	524	668	5.0	251	0.35	122	178	327	524	679	695
50	387	494	6.8	281	0.39	116	172	313	514	511	527
70	268	343	9.8	341	0.45	110	165	300	495	364	386
95	193	248	13.3	397	0.50	104	160	287	485	272	300
120	153	196	17.2	430	0.55	104	159	283	480	225	257
150	124	159	21.2	464	0.59	100	156	280	475	193	229
185	99	128	26.6	513	0.65	98	154	274	465	165	206
240	75	98	34.9	573	0.70	94	150	267	459	140	185
300	60	80	43.8	652	0.72	91	147	260	455	128	174
400	47	64	57.3	727	0.75	90	147	253	445	113	164
500	37	51	72.3	754	0.79	89	145	248	435	105	158
630	28	42	91.2	786	0.87	86	143	245	425	97	151

Single Core 8.7/15KV (Um=17.5KV) Dimensional Data

Nom. Cross-Section Area	Outer- \varnothing ca.mm	Cable Weight Approx	AWG
n×mm ²	± 10%	kg/km	no.*)
1×16	23	650	6
1×25	24.3	750	4
1×35	25.3	850	2
1×50	26.3	1000	1
1×70	28.3	1220	2/0
1×95	30.3	1500	3/0
1×120	31.9	1900	4/0
1×150	33.3	2100	250 MCM
1×185	35.3	2500	350 MCM
1×240	38.3	3030	450 MCM
1×300	40.3	3800	550 MCM
1×400	43.3	4600	750 MCM
1×500	47.3	5700	900 MCM
1×630	52.3	7100	1150 MCM

Electrical Data

Nom. Cross-Section Area	D C Resistance CU	A C Resistance CU	Short Circuit Rating of Conductor CU 1 sec	Capacitance	Charging Current	Reactance		Inductance		Impedance	
						Trefoil	Flat Spaced	Trefoil	Flat Spaced	Trefoil	Flat Spaced
						μΩ/m		nH/m		μΩ/ m	
mm ²	μΩ/m	μΩm	kA	pF/m	mA/m						
25	727	927	3.6	222	0.32	131	185	345	535	936	952
35	524	668	5.0	251	0.35	122	178	327	524	679	695
50	387	494	6.8	281	0.39	116	172	313	514	511	527
70	268	343	9.8	341	0.45	110	165	300	495	364	386
95	193	248	13.3	397	0.50	104	160	287	485	272	300
120	153	196	17.2	430	0.55	104	159	283	480	225	257
150	124	159	21.2	464	0.59	100	156	280	475	193	229
185	99	128	26.6	513	0.65	98	154	274	465	165	206
240	75	98	34.9	573	0.70	94	150	267	459	140	185
300	60	80	43.8	652	0.72	91	147	260	455	128	174
400	47	64	57.3	727	0.75	90	147	253	445	113	164
500	37	51	72.3	754	0.79	89	145	248	435	105	158
630	28	42	91.2	786	0.87	86	143	245	425	97	151



Caledonian Medium Voltage Cables

Single Core 12/20KV (Um=24KV)

Dimensional Data

Nom. Cross-Section Area	Outer-Ø ca.mm	Cable Weight Approx	AWG
n×mm ²	± 10%	kg/km	no.*)
1×35	27.3	960	2
1×50	28.5	1100	1
1×70	30.4	1350	2/0
1×95	32.4	1650	3/0
1×120	33.9	1950	4/0
1×150	35.2	2300	250 MCM
1×185	37	2600	350 MCM
1×240	39.5	3200	450 MCM
1×300	42	3900	550 MCM
1×400	45.3	4800	750 MCM
1×500	49	5900	900 MCM
1×630	53.7	7300	1150 MCM

Electrical Data

Nom. Cross-Section Area	DC Resistance CU	AC Resistance CU	Short Circuit Rating of Conductor CU 1 sec	Capacitance	Charging Current	Reactance		Inductance		Impedance	
						Trefoil	Flat Spaced	Trefoil	Flat Spaced	Trefoil	Flat Spaced
						µΩ/m		nH/m		µΩ/ m	
35	524	668	5.0	251	0.35	122	178	327	524	679	695
50	387	494	6.8	281	0.39	116	172	313	514	511	527
70	268	343	9.8	341	0.45	110	165	300	495	364	386
95	193	248	13.3	397	0.50	104	160	287	485	272	300
120	153	196	17.2	430	0.55	104	159	283	480	225	257
150	124	159	21.2	464	0.59	100	156	280	475	193	229
185	99	128	26.6	513	0.65	98	154	274	465	165	206
240	75	98	34.9	573	0.70	94	150	267	459	140	185
300	60	80	43.8	652	0.72	91	147	260	455	128	174
400	47	64	57.3	727	0.75	90	147	253	445	113	164
500	37	51	72.3	754	0.79	89	145	248	435	105	158
630	28	42	91.2	786	0.87	86	143	245	425	97	151

Single Core 18/30KV (Um=36KV) Dimensional Data

Nom. Cross-Section Area	Outer-Ø ca.mm	Cable Weight Approx	AWG
n×mm ²	± 10%	kg/km	no.*)
1×50	35.9	1400	1
1×70	36.1	1700	2/0
1×95	37.8	1950	3/0
1×120	39.1	2230	4/0
1×150	40.7	2550	250 MCM
1×185	42.6	3000	350 MCM
1×240	45.3	3600	450 MCM
1×300	47.8	4300	550 MCM
1×400	51.2	5200	750 MCM
1×500	55	6300	900 MCM
1×630	61.9	7800	1150 MCM

Electrical Data

Nom. Cross-Section Area	D C Resistance CU	A C Resistance CU	Short Circuit Rating of Conductor CU 1 sec	Capacitance	Charging Current	Reactance		Inductance		Impedance	
						Trefoil	Flat Spaced	Trefoil	Flat Spaced	Trefoil	Flat Spaced
						µΩ/m		nH/m		µΩ/m	
50	387	494	6.8	281	0.39	116	172	313	514	511	527
70	268	343	9.8	341	0.45	110	165	300	495	364	386
95	193	248	13.3	397	0.50	104	160	287	485	272	300
120	153	196	17.2	430	0.55	104	159	283	480	225	257
150	124	159	21.2	464	0.59	100	156	280	475	193	229
185	99	128	26.6	513	0.65	98	154	274	465	165	206
240	75	98	34.9	573	0.70	94	150	267	459	140	185
300	60	80	43.8	652	0.72	91	147	260	455	128	174
400	47	64	57.3	727	0.75	90	147	253	445	113	164
500	37	51	72.3	754	0.79	89	145	248	435	105	158
630	28	42	91.2	786	0.87	86	143	245	425	97	151

Current Rating Conditions:

Ground Temperature: 20°C

Ambient Temperature (air): 30°C

Depth of Soil: 0.8m

Thermal Resistance of Soil: 1.5K·m/W