

TABLE T1: 1-CORE CABLES HAVING XLPE or LSHF INSULATION, NON-ARMOURED, WITH or WITHOUT SHEATH (COPPER CONDUCTOR) 450/750V or 600/1000V

CURRENT-CARRYING CAPACITY (amp)

Ambient Temperature: 30°C

Conductor Operating Temperature: 90°C

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc.)		Reference Method B (enclosed in conduit on a wall or in trunking etc.)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical etc.) Touching			Reference Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat & touching	3 or 4 cables, Three-phase a.c. flat & touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, Three-phase a.c. flat	3 or 4 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables, three-phase a.c. flat	
1	2	3	4	5	6	7	8	9	10	11	12
mm ²	A	A	A	A	A	A	A	A	A	A	A
										Horizontal	Vertical
1.5	18	17	22	19	25	23					
2.5	24	23	30	26	34	31					
4	33	30	40	35	46	41					
6	43	39	51	45	59	54					
10	58	53	71	63	81	74					
16	76	70	95	85	109	99					
25	100	91	126	111	143	130	158	140	140	183	163
35	124	111	156	138	176	161	195	176	176	226	203
50	149	135	189	168	228	209	293	215	215	274	246
70	189	170	240	214	293	268	308	279	279	351	318
95	228	205	290	259	355	326	375	341	341	426	389
120	263	235	336	299	413	379	436	398	398	495	453
150	300	270	375	328	476	436	505	461	461	570	524
185	341	306	426	370	545	500	579	530	530	651	600
240	400	358	500	433	644	590	686	630	630	769	711
300	456	410	573	493	743	681	794	730	730	886	824
400			683	584	868	793	915	849	849	1065	994
500			783	666	990	904	1044	973	973	1228	1150
630			900	764	1130	1033	1191	1115	1115	1423	1338
800					1288	1179	1358	1275	1275	1581	1485
1000					1443	1323	1520	1436	1436	1775	1671

Table T1a

VOLTAGE DROP (PER amp PER METER)

Conductor cross-sectional area	2 Cables d.c.	2 Cables, single-phase a.c.									3 or 4 Cables, three-phase a.c.											
		Reference Methods A & B (enclosed in conduit or trunking)			Reference Methods C, F & G (clipped direct on trays or in free air)						Reference Methods A & B (enclosed in conduit or trunking)			Reference Methods C, F & G (clipped direct on trays or in free air)								
		Cable touching			Cable spaced*			Cable touching, Trefoil			Cable touching, flat			Cable spaced*, flat								
1	2	3	4	5	6	7	8	9														
mm²	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m														
1.5	31	31	31	31	31	27	27	27														
2.5	19	19	19	19	19	16	16	16														
4	12	12	12	12	12	10	10	10														
6	7.9	7.9	7.9	7.9	7.9	6.8	6.8	6.8														
10	4.7	4.7	4.7	4.7	4.7	4.0	4.0	4.0														
16	2.9	2.9	2.9	2.9	2.9	2.5	2.5	2.5														
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.850	1.850	0.310	1.900	1.850	0.190	1.850	1.850	0.280	1.850	1.600	0.270	1.650	1.600	0.165	1.600	1.600	0.190	1.600	1.600	0.270	1.650
35	1.350	1.350	0.290	1.350	1.350	0.180	1.350	1.350	0.270	1.350	1.150	0.250	1.150	1.150	0.155	1.150	1.150	0.180	1.150	1.150	0.260	1.200
50	0.990	1.000	0.290	1.050	0.990	0.180	1.000	0.990	0.270	1.000	0.870	0.250	0.900	0.860	0.155	0.870	0.860	0.180	0.870	0.860	0.260	0.890
70	0.680	0.700	0.280	0.750	0.680	0.175	0.710	0.680	0.260	0.730	0.600	0.240	0.650	0.590	0.150	0.610	0.590	0.175	0.620	0.590	0.250	0.650
95	0.490	0.510	0.270	0.580	0.490	0.170	0.520	0.490	0.260	0.560	0.440	0.230	0.500	0.430	0.145	0.450	0.430	0.170	0.460	0.430	0.250	0.490
120	0.390	0.410	0.260	0.480	0.390	0.165	0.430	0.390	0.250	0.470	0.350	0.230	0.420	0.340	0.140	0.370	0.340	0.165	0.380	0.340	0.240	0.420
150	0.320	0.330	0.260	0.430	0.320	0.165	0.360	0.320	0.250	0.410	0.290	0.230	0.370	0.280	0.140	0.310	0.280	0.165	0.320	0.280	0.240	0.370
185	0.250	0.270	0.260	0.370	0.260	0.165	0.300	0.250	0.250	0.360	0.230	0.230	0.320	0.220	0.140	0.260	0.220	0.165	0.280	0.220	0.240	0.330
240	0.190	0.210	0.260	0.330	0.200	0.160	0.250	0.195	0.250	0.310	0.185	0.220	0.290	0.170	0.140	0.220	0.170	0.165	0.240	0.170	0.240	0.290
300	0.155	0.175	0.250	0.310	0.160	0.160	0.220	0.155	0.250	0.290	0.150	0.220	0.270	0.140	0.140	0.195	0.135	0.160	0.210	0.135	0.240	0.270
400	0.120	0.140	0.250	0.290	0.130	0.155	0.200	0.125	0.240	0.270	0.125	0.220	0.250	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.240	0.260
500	0.093	0.120	0.250	0.280	0.105	0.155	0.185	0.098	0.240	0.260	0.100	0.220	0.240	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.240	0.250
630	0.072	0.100	0.250	0.270	0.086	0.155	0.175	0.078	0.240	0.250	0.088	0.210	0.230	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.230	0.240
800	0.056				0.072	0.150	0.170	0.064	0.240	0.250				0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.230	0.240
1000	0.045				0.063	0.150	0.165	0.054	0.240	0.240				0.055	0.130	0.140	0.050	0.155	0.165	0.047	0.230	0.240

NOTES: r = conductor resistance at operating temperature,

z = impedance, x = reactance

* Spacings larger than one cable diameter will result in a larger voltage drop.

TABLE T2: MULTI-CORE CABLES HAVING XLPE or LSHF INSULATION, NON-ARMOURED, (COPPER CONDUCTOR) 300/500V or 600/1000V

CURRENT-CARRYING CAPACITY (amp)

Ambient Temperature: 30°C

Conductor Operating Temperature: 90°C

Conductor cross-sectional area	Reference Method A (enclosed in conduit and in insulated wall etc.)		Reference Method B (enclosed in conduit on a wall or ceiling, or in trunking)		Reference Method C (clipped direct)		Reference Method E (in free air or on a perforated cable tray etc, horizontal or vertical)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.
1	2	3	4	5	6	7	8	9
mm ²	A	A	A	A	A	A	A	A
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4	33	30	40	35	45	40	49	42
6	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127
35	121	109	146	128	171	147	185	158
50	145	130	175	154	209	179	225	192
70	183	164	221	194	269	229	289	246
95	220	197	265	233	328	278	352	298
120	253	227	305	268	382	322	410	346
150	290	259	334	300	441	371	473	399
185	329	295	384	340	506	424	542	456
240	386	346	459	398	599	500	641	538
300	442	396	532	455	693	576	741	621
400			625	536	803	667	865	741

*with or without a protective conductor

Table T2a

VOLTAGE DROP (PER amp PER METER)

Conductor cross-sectional area	Two-core Cable, d.c.	Two-core Cable, single-phase, a.c.			Three or Four-core Cable, three-phase a.c.		
1	2	3			4		
mm ²	mV/A/m	mV/A/m			mV/A/m		
1.5	31		31			27	
2.5	19		19			16	
4	12		12			10	
6	7.9		7.9			6.8	
10	4.7		4.7			4.0	
16	2.9		2.9			2.5	
		r	x	z	r	x	z
25	1.850	1.850	0.160	1.900	1.600	0.140	1.650
35	1.350	1.350	0.155	1.350	1.150	0.135	1.150
50	0.980	0.980	0.155	1.000	0.860	0.135	0.870
70	0.670	0.670	0.150	0.690	0.590	0.130	0.600
95	0.490	0.500	0.150	0.520	0.430	0.130	0.450
120	0.390	0.400	0.145	0.420	0.340	0.130	0.370
150	0.310	0.320	0.145	0.350	0.280	0.125	0.300
185	0.250	0.260	0.145	0.290	0.220	0.125	0.260
240	0.195	0.200	0.140	0.240	0.175	0.125	0.210
300	0.155	0.160	0.140	0.210	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

NOTES: r = conductor resistance at operating temperature,
z = impedance, x = reactance

TABLE T3: 1-CORE CABLES HAVING XLPE or LSHF INSULATION, ARMoured, (COPPER CONDUCTOR) 600/1000V

CURRENT-CARRYING CAPACITY (amp)

Ambient Temperature: 30°C
Ground Temperature: 15°C
Depth of Laying 0.5m
Ground thermal resistivity: 1.2 K.m/W
Conductor Operating Temperature: 90°C

Conductor cross-sectional area	Reference Method C (Clipped direct)		Reference Method F (in free air or on perforated cable tray, horizontal or vertical)										Laid in Ducting in Ground		Laid Direct In Ground	
	Touching		Touching			Spaced by one cable diameter						Touching		Touching		
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, d.c.		2 cables, single phase a.c.		3 or 4 cables, three-phase a.c.		2 cables, 1 phase ac or dc	3 cables, 3 phase ac, trefoil	2 cables, 1 phase ac or dc	3 cables, 3 phase ac, trefoil	
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical					
2 mm ²	2 A	3 A	4 A	5 A	6 A	7 A	8 A	9 A	10 A	11 A	12 A	13 A	14 A	15 A	16 A	
50	237	220	253	232	222	284	270	282	266	288	266	252	231	274	231	
70	303	277	322	293	285	356	349	357	337	358	331	305	278	337	284	
95	367	333	389	352	346	446	426	436	412	425	393	360	327	403	340	
120	425	383	449	405	402	519	497	504	477	485	449	404	366	458	386	
150	488	437	516	462	463	600	575	566	539	549	510	439	396	510	431	
185	557	496	587	524	529	688	660	643	614	618	574	486	437	574	485	
240	656	579	689	612	625	815	782	749	714	715	666	546	489	661	558	
300	755	662	792	700	720	943	906	842	805	810	755	597	534	739	623	
400	853	717	899	767	815	1137	1094	929	889	848	797	638	567	820	691	
500	962	791	1016	851	918	1314	1266	1032	989	923	871	694	615	910	765	
630	1082	861	1146	935	1027	1528	1474	1139	1092	992	940	752	664	1001	841	
800	1170	904	1246	987	1119	1809	1744	1204	1155	1042	978	788	692	1055	888	
1000	1261	961	1345	1055	1214	2100	2026	1289	1238	1110	1041	839	735	1115	942	

Table T3a

VOLTAGE DROP (PER amp PER METER)

Conductor cross-sectional area	2 Cables d.c.	Reference method C & F (clipped direct, on tray or in free air)															Laid Direct in Ground	
		2 Cables, single-phase a.c.						3 or 4 cables, three-phase a.c.									Single-core	
		Touching			Spaced*			Trefoil and touching			Flat and touching			Flat and spaced*			Trefoil, three-phase a.c.	Flat, three-phase a.c.
		3			4			5			6			7			8	9
mm ²	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m	mV/A/m
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z		
50	0.980	0.990	0.210	1.000	0.980	0.290	1.000	0.860	0.180	0.870	0.840	0.250	0.880	0.840	0.330	0.900	0.870	0.900
70	0.670	0.680	0.200	0.710	0.690	0.290	0.750	0.590	0.170	0.620	0.600	0.250	0.650	0.620	0.320	0.700	0.620	0.700
95	0.490	0.510	0.195	0.550	0.530	0.280	0.600	0.440	0.170	0.470	0.460	0.240	0.520	0.490	0.310	0.580	0.470	0.580
120	0.390	0.410	0.190	0.450	0.430	0.270	0.510	0.350	0.165	0.390	0.380	0.240	0.440	0.410	0.300	0.510	0.390	0.510
150	0.310	0.330	0.185	0.380	0.360	0.270	0.450	0.290	0.160	0.330	0.310	0.230	0.390	0.340	0.290	0.450	0.330	0.450
185	0.250	0.270	0.185	0.330	0.300	0.260	0.400	0.230	0.160	0.280	0.260	0.230	0.340	0.290	0.290	0.410	0.280	0.410
240	0.195	0.210	0.180	0.280	0.240	0.260	0.350	0.180	0.155	0.240	0.210	0.220	0.300	0.240	0.280	0.370	0.240	0.370
300	0.155	0.170	0.175	0.250	0.195	0.250	0.320	0.145	0.150	0.210	0.170	0.220	0.280	0.200	0.270	0.340	0.210	0.340
400	0.115	0.145	0.170	0.220	0.180	0.240	0.300	0.125	0.150	0.195	0.160	0.210	0.270	0.200	0.270	0.330	0.195	0.330
500	0.093	0.125	0.170	0.210	0.165	0.240	0.290	0.105	0.145	0.180	0.145	0.200	0.250	0.190	0.240	0.310	0.180	0.310
630	0.073	0.105	0.165	0.195	0.150	0.230	0.270	0.092	0.145	0.170	0.135	0.195	0.240	0.175	0.230	0.290	0.170	0.290
800	0.056	0.090	0.160	0.190	0.145	0.230	0.270	0.086	0.140	0.165	0.130	0.180	0.230	0.175	0.195	0.260	0.165	0.260
1000	0.045	0.092	0.155	0.180	0.140	0.210	0.250	0.080	0.135	0.155	0.125	0.170	0.210	0.165	0.180	0.240	0.155	0.240

NOTES: r = conductor resistance at operating temperature,

z = impedance, x = reactance

* Spacings larger than one cable diameter will result in a larger voltage drop.

TABLE T4: MULTI-CORE CABLES HAVING XLPE or LSHF INSULATION, ARMoured, (COPPER CONDUCTOR) 600/1000V

CURRENT-CARRYING CAPACITY (amp)

Ambient Temperature: 30°C
Ground Temperature: 15°C
Depth of Laying 0.5m
Ground thermal resistivity: 1.2 K.m/W
Conductor Operating Temperature: 90°C

Conductor cross-sectional area	Reference Method C (Clipped direct)		Reference Method E (on perforated cable tray) or Method 13 (free air)		Laid in Ducting in Ground		Laid Direct in Ground	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or 1 four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or 1 four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or 1 four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or 1 four-core cable, three-phase a.c.
1	2	3	4	5	6	7	8	9
mm ²	A	A	A	A	A	A	A	A
1.5	27	23	29	25	31	26	38	32
2.5	36	31	39	33	41	34	49	42
4	49	42	52	44	53	45	65	55
6	62	53	66	56	67	56	81	69
10	85	73	90	78	89	75	109	92
16	110	94	115	99	115	96	141	119
25	146	124	152	131	148	124	183	152
35	180	154	188	162	178	149	219	182
50	219	187	228	197	211	177	259	217
70	279	238	291	251	260	218	317	266
95	338	289	354	304	313	263	381	319
120	392	335	410	353	357	300	433	363
150	451	386	472	406	401	338	485	406
185	515	441	539	463	455	382	547	458
240	607	520	636	546	527	442	632	529
300	698	599	732	628	592	496	708	592
400	787	673	847	728	669	570	799	667

Table T4a

VOLTAGE DROP (PER amp PER METER)

Conductor cross-sectional area	Two-core Cable, d.c.	Two-core Cable, single-phase, a.c.			Three or Four-core Cable, three-phase a.c.		
1	2	3			4		
mm ²	mV/A/m	mV/A/m			mV/A/m		
1.5	31		31			27	
2.5	19		19			16	
4	12		12			10	
6	7.9		7.9			6.8	
10	4.7		4.7			4.0	
16	2.9		2.9			2.5	
		r	x	z	r	x	z
25	1.850	1.850	0.160	1.900	1.600	0.140	1.650
35	1.350	1.350	0.155	1.350	1.150	0.135	1.150
50	0.980	0.990	0.155	1.000	0.860	0.135	0.870
70	0.670	0.670	0.150	0.690	0.590	0.130	0.600
95	0.490	0.500	0.150	0.520	0.430	0.130	0.450
120	0.390	0.400	0.145	0.420	0.340	0.130	0.370
150	0.310	0.320	0.145	0.350	0.280	0.125	0.300
185	0.250	0.260	0.145	0.290	0.220	0.125	0.260
240	0.195	0.200	0.140	0.240	0.175	0.125	0.210
300	0.155	0.160	0.140	0.210	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

NOTES: r = conductor resistance at operating temperature,
z = impedance, x = reactance

TABLE T5: SINGLE-CORE PVC INSULATED CABLES, NON-ARMoured, WITH or WITHOUT SHEATH (COPPER CONDUCTOR) 450/750V or 600/1000V

Ambient Temperature: 30°C

Conductor Operating Temperature: 70°C

CURRENT-CARRYING CAPACITY (amp)

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc.)		Reference Method B (enclosed in conduit on a wall or in trunking etc.)		Reference Method C (clipped direct)		Reference Method F (in free air or on perforated cable tray, horizontal or vertical)				
							Touching			Spaced by one diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat & touching	3 or 4 cables, three-phase a.c. flat & touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm ²	A	A	A	A	A	A	A	A	A	A	A
1.5	14.5	13.5	17.5	15.5	20	18					
2.5	19.5	18	24	21	27	25					
4	26	24	32	28	37	33					
6	34	31	41	36	47	43					
10	46	42	57	50	65	59					
16	61	56	76	68	87	79					
25	80	73	101	89	114	104	126	112	112	146	130
35	99	89	125	110	141	129	156	141	141	181	162
50	119	108	151	134	182	167	191	172	172	219	197
70	151	136	192	171	234	214	246	223	223	281	254
95	182	164	232	207	284	261	300	273	273	341	311
120	210	188	269	239	330	303	349	318	318	396	362
150	240	216	300	262	381	349	404	369	369	456	419
185	273	245	341	296	436	400	463	424	424	521	480
240	320	286	400	346	515	472	549	504	504	615	569
300	367	328	458	394	594	545	635	584	584	709	659
400			546	467	694	634	732	679	679	852	795
500			626	533	792	723	835	778	778	982	920
630			720	611	904	826	953	892	892	1138	1070
800					1030	943	1086	1020	1020	1265	1188
1000					1154	1058	1216	1149	1149	1420	1337

Table T5a

VOLTAGE DROP (PER amp PER METER)

Conductor cross-sectional area	2 Cables d.c.	2 Cables, single-phase a.c.									3 or 4 Cables, three-phase a.c.											
		Reference Methods A & B (enclosed in conduit or trunking)			Reference Methods C & F (clipped direct on trays or in free air)						Reference Methods A & B (enclosed in conduit or trunking)			Reference Methods C & F (clipped direct on trays or in free air)								
1	2	3	4	5	6	7	8	9														
mm²	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m													
1.5	29	29	29	29	25	25	25	25	25													
2.5	18	18	18	18	15	15	15	15	15													
4	11	11	11	11	9.5	9.5	9.5	9.5	9.5													
6	7.3	7.3	7.3	7.3	6.4	6.4	6.4	6.4	6.4													
10	4.4	4.4	4.4	4.4	3.8	3.8	3.8	3.8	3.8													
16	2.8	2.8	2.8	2.8	2.4	2.4	2.4	2.4	2.4													
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.750	1.800	0.33	1.80	1.750	0.200	1.750	1.750	0.29	1.80	1.50	0.29	1.55	1.500	0.175	1.50	1.500	0.25	1.550	1.500	0.32	1.55
35	1.250	1.300	0.31	1.30	1.250	0.195	1.250	1.250	0.28	1.30	1.10	0.27	1.10	1.100	0.170	1.10	1.100	0.24	1.100	1.100	0.32	1.15
50	0.930	0.950	0.30	1.00	0.930	0.190	0.950	0.930	0.28	0.97	0.81	0.26	0.85	0.800	0.165	0.82	0.800	0.24	0.840	0.800	0.32	0.86
70	0.630	0.650	0.29	0.72	0.630	0.185	0.660	0.630	0.27	0.69	0.56	0.25	0.61	0.550	0.160	0.57	0.550	0.24	0.600	0.550	0.31	0.63
95	0.460	0.490	0.28	0.56	0.470	0.180	0.500	0.470	0.27	0.54	0.42	0.24	0.48	0.410	0.155	0.43	0.410	0.23	0.470	0.400	0.31	0.51
120	0.360	0.390	0.27	0.47	0.370	0.175	0.410	0.370	0.26	0.45	0.33	0.23	0.41	0.320	0.150	0.36	0.320	0.23	0.400	0.320	0.30	0.44
150	0.290	0.310	0.27	0.41	0.300	0.175	0.340	0.290	0.26	0.39	0.27	0.23	0.36	0.260	0.150	0.30	0.260	0.23	0.340	0.260	0.30	0.40
185	0.230	0.250	0.27	0.37	0.240	0.170	0.290	0.240	0.26	0.35	0.22	0.23	0.32	0.210	0.145	0.26	0.210	0.22	0.310	0.210	0.30	0.36
240	0.180	0.195	0.26	0.33	0.185	0.165	0.250	0.185	0.25	0.31	0.17	0.23	0.29	0.160	0.145	0.22	0.160	0.22	0.270	0.160	0.29	0.34
300	0.145	0.160	0.26	0.31	0.150	0.165	0.220	0.150	0.25	0.29	0.14	0.23	0.27	0.130	0.140	0.19	0.130	0.22	0.250	0.130	0.29	0.32
400	0.105	0.130	0.26	0.29	0.120	0.160	0.200	0.115	0.25	0.27	0.12	0.22	0.25	0.105	0.140	0.18	0.105	0.21	0.240	0.100	0.29	0.31
500	0.086	0.110	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26	0.10	0.22	0.25	0.086	0.135	0.16	0.086	0.21	0.230	0.081	0.29	0.30
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25	0.08	0.22	0.24	0.072	0.135	0.15	0.072	0.21	0.220	0.066	0.28	0.29
800	0.053				0.068	0.150	0.165	0.061	0.24	0.25				0.060	0.130	0.15	0.060	0.21	0.220	0.053	0.28	0.29
1000	0.042				0.059	0.150	0.160	0.050	0.24	0.24				0.052	0.130	0.14	0.052	0.20	0.210	0.044	0.28	0.28

NOTES: r = conductor resistance at operating temperature,

z = impedance, x = reactance

* Spacings larger than one cable diameter will result in a larger voltage drop.

TABLE T6: MULTI-CORE PVC INSULATED CABLES, NON-ARMOURED, (COPPER CONDUCTOR) 600/1000V

Ambient Temperature: 30°C

Conductor Operating Temperature: 70°C

CURRENT-CARRYING CAPACITY (amp)

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc.)		Reference Method B (enclosed in conduit on a wall or in trunking etc.)		Reference Method C (clipped direct)		Reference Method E (in free air or on a perforated cable tray etc, horizontal or vertical)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.
1	2	3	4	5	6	7	8	9
mm ²	A	A	A	A	A	A	A	A
1.5	14	13	16.5	15	19.5	17.5	22	18.5
2.5	18.5	17.5	23	20	27	24	30	25
4	25	23	30	27	36	32	40	34
6	32	29	38	34	46	41	51	43
10	43	39	52	46	63	57	70	60
16	57	52	69	62	85	76	94	80
25	75	68	90	80	112	96	119	101
35	92	83	111	99	138	119	148	126
50	110	99	133	118	168	144	180	153
70	139	125	168	149	213	184	232	196
95	167	150	201	179	258	223	282	238
120	192	172	232	206	299	259	328	276
150	219	196	258	225	344	299	379	319
185	248	223	294	255	392	341	434	364
240	291	261	344	297	461	403	514	430
300	334	298	394	339	530	464	593	497
400			470	402	634	557	715	597

*with or without a protective conductor

Table T6a

VOLTAGE DROP (PER amp PER METER)

Conductor cross-sectional area	Two-core Cable, d.c.	Two-core cable, single-phase a.c.			Three or four-core Cable, three-phase a.c.		
1	2	3			4		
mm ²	mV/A/m	mV/A/m			mV/A/m		
1.5	29		29			25	
2.5	18		18			15	
4	11		11			9.5	
6	7.3		7.3			6.4	
10	4.4		4.4			3.8	
16	2.8		2.8			2.4	
		r	x	z	r	x	z
25	1.750	1.750	0.170	1.75	1.50	0.145	1.50
35	1.250	1.250	0.165	1.25	1.10	0.145	1.10
50	0.930	0.930	0.165	0.94	0.80	0.140	0.81
70	0.630	0.630	0.160	0.65	0.55	0.140	0.57
95	0.460	0.470	0.155	0.50	0.41	0.135	0.43
120	0.360	0.380	0.155	0.41	0.33	0.135	0.35
150	0.290	0.300	0.155	0.34	0.26	0.130	0.29
185	0.230	0.250	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

NOTES: r = conductor resistance at operating temperature,
z = impedance, x = reactance

TABLE T7: 600/1000V 1C PVC/AWA/PVC ARMoured CABLE (COPPER)

CURRENT-CARRYING CAPACITY (amp)

Ambient Temperature: 30°C

Ground Temperature: 15°C

Depth of Laying 0.5m

Ground thermal resistivity 1.2 K.m/W

Conductor Operating Temperature: 70°C

Conductor cross-sectional area	Reference Method C (Clipped direct)		Reference method F (in free air or on a perforated cable tray, horizontal or vertical)									Laid In Ducting in Ground		Laid Direct In Ground	
	Touching		Touching			Spaced by one cable diameter						Touching		Touching	
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.		2 cables, 1 phase a.c. or d.c.	3 cables, three-phase a.c., trefoil	2 cables, 1 phase a.c. or d.c.	3 cables, three-phase a.c., trefoil
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
mm ²	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
50	193	179	205	189	181	229	216	229	217	230	212	216	199	238	203
70	245	225	259	238	231	294	279	287	272	286	263	262	241	292	248
95	296	269	313	285	280	357	340	349	332	338	313	308	282	349	297
120	342	309	360	327	324	415	396	401	383	385	357	341	311	396	337
150	393	352	413	373	373	479	458	449	429	436	405	375	342	443	376
185	447	399	469	422	425	548	525	511	489	490	456	414	375	497	423
240	525	465	550	492	501	648	622	593	568	566	528	463	419	571	485
300	594	515	624	547	567	748	719	668	640	616	578	509	459	640	542
400	687	575	723	618	657	885	851	737	707	674	632	545	489	708	600
500	763	622	805	673	731	1035	997	810	777	721	676	585	523	780	660
630	843	669	891	728	809	1218	1174	893	856	771	723	632	563	856	721
800	919	710	976	777	886	1441	1390	943	905	824	772	662	587	895	756
1000	975	737	1041	808	945	1685	1627	1008	967	872	816	703	621	939	797

Table T7a

VOLTAGE DROP (PER amp PER METER)

Conductor cross-sectional area	2 Cables d.c.	Reference method C & F (clipped direct, on tray or in free air)															Laid Direct in Ground	
		2 Cables, single-phase a.c.						3 or 4 cables, three-phase a.c.									Single-core	
		Touching			Spaced*			Trefoil and touching			Flat and touching			Flat and spaced*			Trefoil, three-phase a.c.	Flat, three-phase a.c.
		3			4			5			6			7			8	9
mm ²	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m	mV/A/m
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z		
50	0.930	0.930	0.220	0.950	0.920	0.300	0.970	0.800	0.190	0.820	0.790	0.260	0.840	0.790	0.340	0.860	0.820	0.860
70	0.630	0.640	0.210	0.680	0.660	0.290	0.720	0.560	0.180	0.580	0.570	0.250	0.620	0.590	0.320	0.680	0.580	0.680
95	0.460	0.480	0.200	0.520	0.510	0.280	0.580	0.420	0.175	0.450	0.440	0.250	0.500	0.470	0.310	0.570	0.450	0.570
120	0.360	0.390	0.195	0.430	0.420	0.280	0.500	0.330	0.170	0.370	0.360	0.240	0.430	0.400	0.300	0.500	0.370	0.500
150	0.290	0.310	0.190	0.370	0.340	0.270	0.440	0.270	0.165	0.320	0.300	0.240	0.380	0.340	0.300	0.450	0.320	0.450
185	0.230	0.260	0.190	0.320	0.290	0.270	0.390	0.220	0.160	0.270	0.250	0.230	0.340	0.290	0.290	0.410	0.270	0.410
240	0.180	0.200	0.180	0.270	0.230	0.260	0.350	0.175	0.160	0.230	0.200	0.230	0.300	0.200	0.280	0.370	0.230	0.370
300	0.145	0.160	0.180	0.240	0.190	0.260	0.320	0.140	0.155	0.210	0.165	0.220	0.280	0.210	0.280	0.340	0.210	0.340
400	0.105	0.140	0.175	0.220	0.180	0.240	0.300	0.120	0.130	0.195	0.160	0.210	0.280	0.190	0.250	0.320	0.195	0.320
500	0.086	0.120	0.170	0.210	0.165	0.230	0.290	0.105	0.145	0.180	0.145	0.200	0.250	0.175	0.240	0.300	0.180	0.300
630	0.068	0.105	0.165	0.195	0.150	0.220	0.270	0.091	0.145	0.170	0.135	0.195	0.230	0.165	0.220	0.280	0.170	0.280
800	0.053	0.095	0.160	0.185	0.145	0.210	0.250	0.082	0.140	0.160	0.125	0.180	0.220		0.195	0.260	0.160	-
1000	0.042	0.091	0.155	0.180	0.140	0.190	0.240	0.079	0.135	0.155	0.125	0.165	0.210		0.170	0.240	0.155	-

NOTES: r = conductor resistance at operating temperature,

z = impedance, x = reactance

* Spacings larger than one cable diameter will result in a larger voltage drop.

TABLE T8: 600/1000V MULTI-CORE PVC/SWA/PVC, ARMOURED CABLE (COPPER)

CURRENT-CARRYING CAPACITY (amp)

Ambient Temperature: 30°C

Ground Temperature: 15°C

Depth of Laying 0.5m

Thermal Resistivity of soil 1.2 K.m/W

Conductor Operating Temperature: 70°C

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method E (in free air or on perforated cable tray etc, horizontal or vertical)		Laid in ducting in ground		Laid direct in ground	
	1 two-core cable, single-phase a.c. or d.c.	1 three or 1 four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three or 1 four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three or 1 four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three or 1 four-core cable, three-phase a.c.
1	2	3	4	5	6	7	8	9
mm ²	A	A	A	A	A	A	A	A
1.5	21	18	22	19	26	22	32	27
2.5	28	25	31	26	34	29	41	35
4	38	33	41	35	45	38	55	47
6	49	42	53	45	57	48	69	59
10	67	58	72	62	76	64	92	78
16	89	77	97	83	98	83	119	101
25	118	102	128	110	129	107	158	132
35	145	125	157	135	154	129	190	159
50	175	151	190	163	183	153	225	188
70	222	192	241	207	225	190	277	233
95	269	231	291	251	271	228	332	279
120	310	267	336	290	309	260	377	317
150	356	306	386	332	346	292	422	355
185	405	348	439	378	393	331	478	401
240	476	409	516	445	455	382	551	462
300	547	469	592	510	510	428	616	517
400	621	540	683	590	574	490	693	580

Table T8a

VOLTAGE DROP (PER amp PER METER)

Conductor cross-sectional area	Two-core Cable, d.c.	Two-core cable, single-phase a.c.			Three or four-core Cable, three-phase a.c.		
1	2	3			4		
mm ²	mV/A/m	mV/A/m			mV/A/m		
1.5	29		29			25	
2.5	18		18			15	
4	11		11			9.5	
6	7.3		7.3			6.4	
10	4.4		4.4			3.8	
16	2.8		2.8			2.4	
		r	x	z	r	x	z
25	1.750	1.750	0.170	1.75	1.500	0.145	1.500
35	1.250	1.250	0.165	1.25	1.100	0.145	1.100
50	0.930	0.930	0.165	0.94	0.800	0.140	0.810
70	0.630	0.630	0.160	0.65	0.550	0.140	0.570
95	0.460	0.470	0.155	0.50	0.410	0.135	0.430
120	0.360	0.380	0.155	0.41	0.330	0.135	0.350
150	0.290	0.300	0.155	0.34	0.260	0.130	0.290
185	0.230	0.250	0.150	0.29	0.210	0.130	0.250
240	0.180	0.190	0.150	0.24	0.165	0.130	0.210
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

NOTES: r = conductor resistance at operating temperature,
z = impedance, x = reactance

TABLE T9: RATING FACTORS(C_a) FOR AMBIENT AIR TEMPERATURES OTHER THAN 30°C

AMBIENT TEMPERATURE (°C)			15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
IN AIR	PVC	70°C			1.03	1.00	0.94	0.87	0.79	0.71	0.61	0.50					
	XLPE or LSHF	90°C			1.02	1.00	0.96	0.91	0.87	0.82	0.76	0.71	0.65	0.58	0.50	0.41	

TABLE T10A: RATING FACTORS(C_a) FOR PVC IN AMBIENT GROUND TEMPERATURES OTHER THAN 15°C

AMBIENT TEMPERATURE (°C)		10	15	20	25	30	35	40	45	50
PVC	IN GROUND OR IN DUCTS	1.04	1.00	0.95	0.90	0.85	0.80	0.74	0.67	0.60

TABLE T10B: RATING FACTORS(C_a) FOR XLPE IN AMBIENT GROUND TEMPERATURES OTHER THAN 15°C

AMBIENT TEMPERATURE (°C)		10	15	20	25	30	35	40
XLPE	IN GROUND OR IN DUCTS	1.03	1.00	0.97	0.93	0.89	0.86	0.82

TABLE T11: RATING FACTORS FOR DEPTHS OF LAYING OTHER THAN 0.5M FOR DIRECT BURRIED CABLES AND CABLES IN SINGLE-WAY DUCTS

Depth of Laying, Metre	Direct In Ground			In Single-Way Ducts	
	Up to 50 mm ²	70 mm ² to 300 mm ²	Above 300 mm ²	Single-Core	Multi-Core
0.50	1.00	1.00	1.00	1.00	1.00
0.60	0.99	0.98	0.97	0.98	0.99
0.80	0.97	0.96	0.94	0.95	0.98
1.00	0.95	0.93	0.92	0.93	0.96
1.25	0.94	0.92	0.89	0.91	0.95
1.50	0.93	0.90	0.87	0.89	0.94
2.00	0.91	0.88	0.85	0.87	0.93
2.50	0.90	0.87	0.84	0.86	0.92
3.0 or more	0.89	0.85	0.82	0.85	0.91

TABLE T12: RATING FACTORS FOR CABLES HAVING MORE THAN 4 LOADED CORES

Number of loaded cores	5	6	7	10	12	14	19
Rating Factor	0.72	0.67	0.63	0.56	0.53	0.51	0.45
Number of loaded cores	24	27	30	37	44	46	48
Rating Factor	0.42	0.40	0.39	0.36	0.34	0.33	0.33

NOTE 1: The current-carrying capacity for a cable in the size range 1.5 to 4 mm², having more than 4 loaded cores, is obtained by multiplying the current-carrying capacity of a 2-core, having the same insulation type, by the factor selected from this table. The current-carrying capacity for the 2-core cable is that for the installation condition to be used for the multicore cable.

NOTE 2: If, due to known operating conditions, a core is expected to carry not more than 30% of its current-carrying capacity in the multicore cable it may be ignored for the purpose of determining the number of cores in the cable.

NOTE 3: If, due to known operating conditions, a core is expected to carry not more than 30% of its rating after applying the rating factor for the total number of current-carrying cores, it may be ignored for the purpose of obtaining the rating factor for the number of loaded cores. For example, the current-carrying capacity of a cable having N loaded cores would normally be obtained by multiplying the current-carrying capacity of a 2-core, having the same insulation type, by the factor selected from this table for N cores. That is $I_{zlc} = I_{t2c} \times C_{gN}$ where:

I_{zlc} is the current-carrying capacity of the multicore cable after applying the rating factor for the total number of current-carrying cores.

I_{t2c} is the tabulated current-carrying capacity of a 2-core cable, having the same insulation type as the multi-core cable

C_{gN} is the rating factor from Table T12 for the total number of current-carrying cores

However, if M cores in the cable carry loads which are not greater than $0.3 \times I_{t2c} \times C_{gN}$, the current-carrying capacity can be obtained by using the rating factor corresponding to (N-M) cores.

The "not greater than $0.3 \times I_{t2c} \times C_{gN}$ " calculation should be applied before the adjacent multicore cable grouping factor, if applicable, from Table T13. The 30% rule should not be further applied to any adjacent cable grouping factor calculations.

I_{zlc} should be greater than or equal to I_n or I_b as appropriate, divided by the relevant rating factor(s) C, that is $I_{zlc} \geq I_n$ or I_b/C

TABLE T13: RATING FACTORS FOR ONE CIRCUIT OR ONE MULTICORE CABLE OR FOR A GROUP OF CIRCUITS, OR A GROUP OF MULTICORE CABLES, TO BE USED WITH CURRENT-CARRYING CAPACITIES OF TABLES T1 TO T8

Item	Arrangement (cables touching)	Number of circuits or multi-core cables												To be used with current-carrying capacities
		1	2	3	4	5	6	7	8	9	12	16	20	Reference Method
1	Bunched in air, on a surface, embedded or enclosed	1.00	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.45	0.41	0.38	A to F
2	Single layer on wall or floor	1.00	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	0.70	0.70	0.70	C
3	Single layer multi-core on a perforated horizontal or vertical cable tray system	1.00	0.88	0.82	0.77	0.75	0.73	0.73	0.72	0.72	0.72	0.72	0.72	E
4	Single layer multi-core on cable ladder system or cleats etc.	1.00	0.87	0.82	0.80	0.80	0.79	0.79	0.78	0.78	0.78	0.78	0.78	E

NOTE 1: These factors are applicable to uniform groups of cables, equally loaded.

NOTE 2: Where horizontal clearances between adjacent cables exceed twice their overall diameter, no rating factor need be applied.

NOTE 3: The same factors are applied to:

- group of two or three single-core cables;
- multicore cables

NOTE 4: If a group consists of both two- and three-core cables, the total number of cables is taken as the number of circuits, and the corresponding factor is applied to the tables for two loaded conductors for the two-core cables, and to the Tables for three loaded conductors for the three-core cables.

NOTE 5: If a group consists of n single-core cables it may either be considered as $n/2$ circuits of two loaded conductors or $n/3$ circuits of three loaded conductors.

NOTE 6: The rating factors given have been averaged over the range of conductor sizes and types of installation included in Tables T1 to T8 and the overall accuracy of tabulated values is within 5%.

NOTE 7: For some installations and for other methods not provided for in the above tables, it may be appropriate to use factors calculated for specific cases, see for examples Tables T16 and T17

NOTE 8: Where cables having differing conductor operating temperature are grouped together, the current rating is to be based upon the lowest operating temperature of any cable in the group.

NOTE 9: If, due to known operating conditions, a cable is expected to carry not more than 30% of its *grouped* rating, it may be ignored for the purpose of obtaining the rating factor for the rest of the group. For example, a group of N loaded cables would normally require a group rating factor of C_g applied to the tabulated I_t . However, if M cables in the group carry loads which are not greater than $0.3 C_g I_t$ amperes the other cables can be sized by using the group rating factor corresponding to $(N-M)$ cables.



TABLE T14: RATING FACTORS FOR MORE THAN ONE CIRCUIT, CABLES BURIED DIRECTLY IN THE GROUND - REFERENCES METHOD D IN TABLES T1 TO T8 MULTICORE CABLES

Number of circuits	Cable-to-cable clearance(α)				
	Nil(cables touching)	One cable diameter	0.125m	0.25m	0.50m
2	0.75	0.80	0.85	0.90	0.90
3	0.65	0.70	0.75	0.80	0.85
4	0.60	0.60	0.70	0.75	0.80
5	0.55	0.55	0.65	0.70	0.80
6	0.50	0.55	0.60	0.70	0.80

Multicore cables



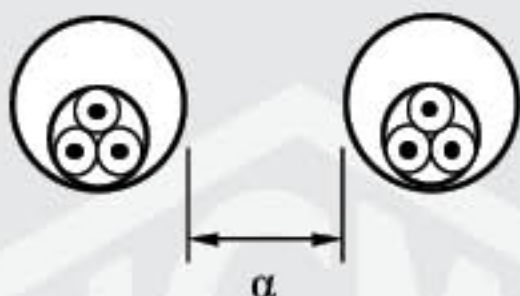
NOTE 1: Values given apply to an installation depth of 0.7m and a soil thermal resistivity of 1.2 K.m/W. These are average values for the range of cable sizes and types quoted for Table T1 to T8. The process of averaging, together with rounding off, can result in some cases in errors of up to $\pm 10\%$. (Where more precise values are required they may be calculated by methods given in BS 7769 (BS IEC 60287))

NOTE 2: Where more precise values are required they may be calculated by methods given in BS 7769 (BS IEC 60287)

TABLE T15: RATING FACTORS FOR MORE THAN ONE CIRCUIT, CABLES IN DUCTS BURIED IN THE GROUND - REFERENCES METHOD D IN TABLES T1 TO T8 (MULTICORE CABLES IN SINGLE-WAY DUCTS)

Number of cables	Cable-to-cable clearance(α)			
	Nil(ducts touching)	0.25m	0.50m	1.0m
2	0.85	0.90	0.95	0.95
3	0.75	0.85	0.90	0.95
4	0.70	0.80	0.85	0.90
5	0.65	0.80	0.85	0.90
6	0.60	0.80	0.80	0.90

Multicore cables



NOTE 1: Values given apply to an installation depth of 0.7m and a soil thermal resistivity of 1.2 K.m/W. These are average values for the range of cable sizes and types quoted for Table T1 to T8. The process of averaging, together with rounding off, can result in some cases in errors of up to $\pm 10\%$. (Where more precise values are required they may be calculated by methods given in BS 7769 (BS IEC 60287)).

NOTE 2: Where more precise values are required they may be calculated by methods given in BS 7769 (BS IEC 60287)