TABLE BEC 107. (Continued) Current ratings for 6350/11000 volts grade PILC/SWA/PVC cable to BS6480/69

CABLES LAID IN AIR:

The ratings given in the foregoing tables are based on an ambient temperature of 25°C.
It is recommended when cables are fixed to a wall, the distance between the wall and the surface of the cable should be 20mm
The horizontal spacing between circuits should be at least 150mm.
Cable should be shielded from direct rays of the sun to reduce the effect of heating due to solar radiation.

Rating factors for variation in ambient air temperature.

MAXIMUM CONDUCTOR TEMPERATURE °C	AIR TEMPERATURE °C				
	25	30	35	40	45
90	1.00	0.95	0.91	0.87	0.81
80	1.00	0.94	0.89	0.84	0.77
70	1.00	0.93	0.87	0.80	0.72
65	1.00	0.93	0.85	0.77	0.68

TABLE BEC 108. Current ratings for XLPE cable to IEC502

SUSTAINED CURRENT RATINGS (50 HZ A.C.)

Current ratings are given for the three customary methods of installation: Laid direct in ground, in ducts or in air.

Generally, the current rating will be reduced if there is a variation from the Standard conditions. The rating for most conditions can be calculated by multiplying the sustained current rating by the factor(s) given in the appropriate adjustment table(s) below.

STANDARD CONDITIONS

The following conditions have been used to calculate the current ratings given in the tables:

Thermal resistivity of soil (g) * =1.2°K m/W
Standard ground temperature = 15°C
Ambient air temperature = 25°C
Maximum conductor temperature* = 90°C
Depth of burial, from ground surface to centre of cable, centre of duct or to centre of trefoil group of cables or ducts
= 0.5m for 600/1000V and 0.8m for cables 3.3kv and above.

* if cables are buried in the ground and loaded continuously, consideration should be given to the possibility of a local increase in soil thermal resistivity due to moisture migration, making it desirable to reduce the maximum conductor operating temperature to 80°C. A conductor operating temperature of 90°C is only recommended if the thermal resistivity of the soil, in the dry condition, is known and is used in the calculation of the current rating.

See below for variations in standard conditions.

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TABLE BEC 108. Current ratings for XLPE cable to IEC502 (Continued)

SHORT CIRCUIT RATINGS

In addition to the normal sustained current ratings, consideration must also be given to short-circuit ratings when selecting cable sizes. Ratings for given durations are listed within the table below. Short-circuit fault values are based on the cable being fully loaded at th start of the short-circuit (conductor temperature 90°C) and a final conductor temperature of 250°C.

Nominal area of conductor	Duration of fault current (Seconds)										
	0.2	0.3	0.4	0.45	0.6	0.7	0.8	0.9	1.0	2.0	3.0
mm²	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA
1.5	0.47	0.38	0.33	0.30	0.27	0.25	0.23	0.22	0.21	0.15	0.12
2.5	0.80	0.66	0.57	0.51	0.46	0.43	0.40	0.38	0.36	0.25	0.21
4	1.27	1.04	0.90	0.81	0.74	0.68	0.64	0.60	0.57	0.40	0.33
6	1.92	1.57	1.36	1.22	1.11	1.03	0.96	0.91	0.86	0.61	0.50
10	3.20	2.61	2.26	2.02	1.85	1.71	1.60	1.51	1.43	1.01	0.83
16	5.12	4.18	3.62	3.24	2.96	2.74	5.26	2.41	2.29	1.62	1.32
25	8.01	6.54	5.66	5.06	4.62	4.28	4.00	3.77	3.58	2.53	2.07
35	11.2	9.13	7.91	7.07	6.45	5.98	5.60	5.27	5.00	3.54	2.89
50	16.0	13.1	11.3	10.1	9.23	8.55	8.00	7.54	7.15	5.06	4.13
70	22	18.3	15.8	14.1	12.9	12.0	11.2	10.5	10.0	7.08	5.77
95	30	25	22	19.2	17.6	16.3	15.2	14.3	13.6	9.62	7.85
120	38	31	27	24	22	21	19.2	18.1	17.2	12.2	9.9
150	49	40	35	31	28	26	25	23	21	15.6	12.7
185	60	49	43	38	35	32	30	28	26	19.1	15.6
240	76	62	54	48	44	41	38	36	34	24	20
300	96	79	68	61	56	51	48	45	43	30	25
400	127	104	90	81	74	68	64	60	57	40	33

Three-core 1900/3300V Cable with Stranded Copper Conductors BS5467

Nominal Area of Conductor		sq.mm	16	25	35	50	70	95	120	150	185	240	300
Inductance		mH/km	0.33	0.30	0.29	0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.23
Reactance at 50Hz		ohm/km	0.104	0.094	0.091	0.088	0.084	0.081	0.079	0.077	0.070	0.074	0.073
Impedance at 90°C		ohm/km	1.47	0.93	0.67	0.50	0.35	0.26	0.21	0.18	0.15	0.12	0.11
Sustained current rating	Laid direct	amp	114	147	175	207	254	304	345	387	436	502	563
	in single way ducts	amp	96	124	147	174	214	257	293	328	371	428	480
	in air	amp	112	149	177	213	268	328	380	432	496	583	667

Three-core 6350/11000V Cable with Stranded Copper Conductors IEC502

Nominal Area of Conductor		sq.mm	16	25	35	50	70	95	120	150	185	240	300
Inductance		mH/km	0.43	0.40	0.37	0.35	0.34	0.32	0.31	0.30	0.29	0.28	0.27
Reactance at 50Hz		ohm/km	0.134	0.124	0.116	0.111	0.106	0.100	0.097	0.094	0.092	0.089	0.063
Impedance at 90°C		ohm/km	1.48	0.94	0.68	0.51	0.36	0.27	0.22	0.18	0.16	0.13	0.10
Sustained current rating	Laid direct	amp	110	145	170	200	245	295	335	375	420	485	540
	in single way ducts	amp	94	120	145	170	210	250	280	315	365	420	465
	in air	amp	110	145	175	210	260	320	365	415	470	560	630

Three-core 19000/33000V Cable with Stranded Copper Conductors IEC502

Nominal Area of Conductor		sq.	50	70	95	120	150	185	240	300
Inductance		mH/km	0.43	0.41	0.39	0.37	0.36	0.35	0.34	0.32
Reactance at 50Hz		ohm/km	0.136	0.129	0.122	0.117	0.110	0.110	0.106	0.102
Impedance at 90°C		ohm/km	0.51	0.37	0.28	0.23	0.17	0.17	0.14	0.13
Sustained current rating	Laid direct	amp	205	250	300	335	375	420	485	540
	in single way ducts	amp	180	220	260	295	325	375	430	475
	in air	amp	225	275	330	360	425	485	570	640

TABLE BEC 108. Current ratings for XLPE cable to IEC502 (Continued)

CABLES LAID DIRECT IN THE GROUND

Rating factors for variation in soil thermal resistivity (average values)

Nominal area of conductor mm²	Soil thermal resistivity in k m/W					
	0.8	0.9	1.0	1.5	2.0	2.5
Single core cables						
up to 150	1.15	1.11	1.06	0.91	0.81	0.73
from 185 to 300	1.17	1.12	1.07	0.90	0.80	0.72
from 400 to 630	1.17	1.12	1.07	0.90	0.79	0.71
Multicore cables						
up to 16	1.09	1.06	1.04	0.93	0.84	0.77
from 25 to 150	1.12	1.09	1.05	0.92	0.82	0.75
from 185 to 400	1.14	1.10	1.06	0.92	0.81	0.74

Rating factors for variation in ground temperature and/or conductor temperature.

Conductor temperature °C	GROUND TEMPERATURE °C						
	10	15	20	25	30	35	40
90	1.03	1.00	0.97	0.93	0.89	0.86	0.82
85	1.00	0.97	0.94	0.90	0.86	0.82	0.78
80	0.98	0.95	0.91	0.87	0.83	0.79	0.74

Rating factors for variation in depth of laying.

DEPTH OF LAYING METRE	RATING FACTOR UP TO 300 SQ.MM	RATING FACTOR ABOVE 300 SQ.MM
0.50	-	-
0.60	-	-
0.80	1.00	1.00
1.00	0.98	0.97
1.25	0.96	0.95
1.50	0.95	0.94
1.75	0.94	0.92
2.0	0.92	0.90
2.5	0.91	0.89
3.0 or more	0.90	0.88

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TABLE BEC 108. Current ratings for XLPE cable to IEC502 (Continued)

CABLES LAID DIRECT IN THE GROUND

Rating factors for variation in soil thermal resistivity (average values)

Nominal area of conductor mm²	Soil thermal resistivity in k m/W					
	0.8	0.9	1.0	1.5	2.0	2.5
Single core cables						
up to 150	1.15	1.11	1.06	0.91	0.81	0.73
from 185 to 300	1.17	1.12	1.07	0.90	0.80	0.72
from 400 to 630	1.17	1.12	1.07	0.90	0.79	0.71
Multicore cables						
up to 16	1.09	1.06	1.04	0.93	0.84	0.77
from 25 to 150	1.12	1.09	1.05	0.92	0.82	0.75
from 185 to 400	1.14	1.10	1.06	0.92	0.81	0.74

Rating factors for variation in ground temperature and/or conductor temperature.

Conductor temperature °C	GROUND TEMPERATURE °C						
	10	15	20	25	30	35	40
90	1.03	1.00	0.97	0.93	0.89	0.86	0.82
85	1.00	0.97	0.94	0.90	0.86	0.82	0.78
80	0.98	0.95	0.91	0.87	0.83	0.79	0.74

Rating factors for variation in depth of laying.

DEPTH OF LAYING METRE	RATING FACTOR
0.50	-
0.60	-
0.80	1.00
1.00	0.99
1.25	0.97
1.50	0.96
1.75	0.95
2.0	0.94
2.5	0.93
3.0 or more	0.92

TABLE BEC 108. Current ratings for XLPE cable to IEC502 (Continued)

CABLES IN AIR

Rating factors for variation in ambient temperature and/or conductor temperature.

Conductor temperature °C	AIR TEMPERATURE °C						
	25	30	35	40	45	50	55
90	1.00	0.95	0.91	0.86	0.81	0.75	0.70
85	0.95	0.91	0.86	0.81	0.75	0.70	0.64

TABLE BEC 109. Current-carrying capacities and associated volt drops for single-core cables insulated with impregnated paper (BS6480), Lead sheathed, with PVC oversheath**, non-armoured (Copper conductors).

Conductor operating temperature: 80°C

Nominal cross-sectional area of conductor	(CLIPPED DIRECT)					(DEFINED CONDITIONS)						
	2 cables single-phase a.c. or d.c.			3 or 4 cables three-phase a.c.		2 cables flat or vertical, single phase a.c or d.c			3 or 4 cables flat or vertical three-phase a.c.		3 cables in trefoil, three phase a.c.	
	Current carrying capacity	Volt drop per ampere per metre a.c.	Volt drop per ampere per metre d.c.	Current carrying capacity	Volt drop per amp per metre	Current carrying capacity	Volt drop per ampere per metre a.c.	Volt drop per ampere per metre d.c.	Current carrying capacity	Volt drop per amp per metre	Current carrying capacity	Volt drop per amp per metre
mm²	A	mV	mV	A	mV	A	mV	mV	A	mV	A	mV
50	190	0.93	0.93	180	0.82	230	0.94	0.93	220	0.84	205	0.81
70	240	0.64	0.64	230	0.61	290	0.68	0.64	280	0.61	255	0.58
95	300	0.48	0.47	285	0.48	355	0.56	0.47	345	0.47	315	0.43
120	350	0.40	0.37	340	0.39	415	0.48	0.37	405	0.41	370	0.35
150	405	0.33	0.30	390	0.35	475	0.42	0.30	460	0.38	420	0.30
185	470	0.29	0.24	450	0.31	550	0.36	0.24	535	0.35	485	0.25
240	580	0.25	0.18	575	0.28	675	0.38	0.18	670	0.33	580	0.22
300	670	0.22	0.14	660	0.26	770	0.36	0.14	760	0.32	670	0.20
400	775	0.20	0.11	765	0.23	890	0.31	0.11	870	0.30	775	0.18
500	895	0.18	0.09	870	0.21	1000	0.29	0.09	975	0.28	885	0.17
630	1030	0.17	0.07	990	0.18	1150	0.27	0.07	1100	0.26	1020	0.16
800	1160	0.16	0.05	1100	0.17	1290	0.26	0.05	1220	0.24	1150	0.15
1000	1280	0.16	0.04	1190	0.15	1420	0.25	0.04	1330	0.22	1270	0.15

CORRECTION FACTORS FOR AMBIENT TEMPERATURE

Ambient temperature:	25°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C	75°C
Correction factor:	1.05	0.95	0.89	0.82	0.75	0.68	0.61	0.53	0.43	0.30

CORRECTION FACTORS FOR ** UNSERVED LEAD-SHEATHED CABLES.

Cross sectional area of conductor mm²:	50 to 185	240 to 500	630 to 1000
2 or 3 cables, flat formation	0.95	1.00	1.01
3 cables, trefoil formation	0.93	0.94	0.96

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