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Power and Wiring Cables

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Single Core XLPE/LSF/AWA/LSF Power Cable

600/1000V and 1900/3300V

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Application

LSF insulated, armoured and sheathed, single core power cable for use in fixed installations. Especially for use in areas where fire would create dense smoke and toxic fumes causing a major threat to life and equipment.

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Specifications

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- In accordance with BS6724.
- **Conductors:** Stranded Class 2 copper conductors to BS EN 60228.
- **Insulation:** Brown XLPE insulation Type GP8 to BS7655.
- **Inner Sheath:** LSF inner sheath Type LTS1 to BS7655.
- Aluminium wires to BS2627.
- **Outer Sheath:** Black LSF outer sheath Type LTS1 to BS7655.
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Cat. C as a minimum.
- **Temperature Rating:** 90°C maximum conductor operating temperature.
- **Voltage Rating:** 600/1000 & 1900/3300V.

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Single Core XLPE/LSF/AWA/LSF Power Cable

600/1000V & 1900/3300V

Anixter Number	Number of Cores	Nominal Conductor Area mm ²	Insulation Thickness mm	Diameter Under Armour mm	Armour Wire Size mm	Nominal O/D mm	Approx Weight kg/km	Min Bending Radius (fixed bend) mm
600/1000V Cables								
BS6724-1C-0500	1	50	1.0	12.7	0.9	17.5	710	110
BS6724-1C-0700	1	70	1.1	14.7	1.25	20.2	940	130
BS6724-1C-0950	1	95	1.1	16.6	1.25	22.3	1220	140
BS6724-1C-1200	1	120	1.2	18.5	1.25	24.2	1480	150
BS6724-1C-1500	1	150	1.4	20.8	1.6	27.4	1870	150
BS6724-1C-1850	1	185	1.6	23.2	1.6	30.0	2280	180
BS6724-1C-2400	1	240	1.7	26.0	1.6	32.8	2880	200
BS6724-1C-3000	1	300	1.8	28.6	1.6	35.6	3520	220
BS6724-1C-4000	1	400	2.0	32.5	2.0	40.5	4520	250
BS6724-1C-5000	1	500	2.2	36.0	2.0	44.2	5640	270
BS6724-1C-6300	1	630	2.4	40.4	2.0	48.8	7110	300
BS6724-1C-10000	1	1000	2.8	50.6	2.5	60.6	11580	370
1900/3300V Cables								
A2-AY-0500	1	50	2.0	14.9	1.25	20.6	800	130
A2-AY-0700	1	70	2.0	16.7	1.25	22.4	1020	140
A2-AY-0950	1	95	2.0	18.6	1.25	24.3	1300	150
A2-AY-1200	1	120	2.0	20.6	1.6	27.2	1650	170
A2-AY-1500	1	150	2.0	22.2	1.6	28.8	1930	180
A2-AY-1850	1	185	2.0	24.0	1.6	30.8	2330	190
A2-AY-2400	1	240	2.0	26.7	1.6	33.5	2910	210
A2-AY-3000	1	300	2.0	29.1	1.6	36.1	3540	220
A2-AY-4000	1	400	2.0	32.5	2.0	40.5	4520	250
A2-AY-5000	1	500	2.2	36.0	2.0	44.2	5640	270
A2-AY-6300	1	630	2.4	40.4	2.0	48.8	7110	300
A2-AY-8000	1	800	2.6	46.6	2.5	56.4	9390	340
A2-AY-10000	1	1000	2.8	50.6	2.5	60.6	11580	370

CONDUCTORS MAY BE CIRCULAR OR CIRCULAR COMPACTED.

For further technical information refer to page 1:62 (See 1:76 for technical information on 1900/3300V cables).

For conductor and armour resistances refer page 19:30.

For Gross Cross-Sectional area of armour refer to page 19:33.

For conductor short-circuit ratings refer to page 19:28.

For armour short-circuit ratings refer to page 19:35.

Technical Information

- XLPE/PVC/AWA/PVC Single core
- XLPE/LSF/AWA/LSF 600/1000V

CURRENT - CARRYING CAPACITY (Amperes):

Direct Buried BS5467

Nominal Conductor Area	2 cables		3 cables		
	Touching	Spaced	Trefoil	Touching	Spaced
mm ²	Arm'd	Arm'd	Arm'd	Arm'd	Arm'd
50	274	279	231	231	242
70	337	342	284	283	295
95	403	408	340	337	350
120	458	461	386	381	395
150	510	508	431	424	434
185	574	566	485	474	482
240	661	643	558	542	545
300	739	709	623	601	597
400	820	761	691	657	637
500	910	825	765	720	688
630	1001	887	841	781	737
800	1055	909	888	816	760
1000	1115	952	942	860	797

Air BS5467 & BS6724

Nominal Conductor Area	2 cables				Trefoil	
	Horizontally Spaced		Vertically Spaced		Unarm'd	Arm'd
mm ²	Unarm'd	Arm'd	Unarm'd	Arm'd	Unarm'd	Arm'd
50	289	297	268	280	223	231
70	366	376	342	355	284	295
95	452	459	423	434	352	362
120	527	530	495	502	412	420
150	604	596	570	567	475	483
185	699	677	662	646	551	555
240	835	788	792	752	658	654
300	966	886	919	847	761	745
400	1129	978	1077	936	887	851
500	1315	1086	1257	1041	1027	963
630	1533	1199	1469	1149	1186	1084
800	1765	1267	1694	1216	1327	1178
1000	1993	1357	1916	1303	1503	1278

Technical Information

Standard depth of laying 0.5m
 Thermal resistivity of soil 1.2°C m/W
 Standard ground temperature 15°C
 Ambient air temperature 25°C
 Maximum conductor temperature 90°C

In Single-Way Duct BS5467				
Nominal Conductor Area	2 cables		3 cables	
	Flat		Trefoil	Flat
mm ²	Arm'd	Arm'd	Arm'd	Arm'd
50	252	231	232	
70	305	278	279	
95	360	327	328	
120	404	366	367	
150	439	396	398	
185	486	437	438	
240	546	489	490	
300	597	534	534	
400	638	567	567	
500	694	615	613	
630	752	664	661	
800	788	692	690	
1000	839	735	732	

For further guidance refer to the BS7671 (IEE Wiring Regulations - latest edition) and ERA 69-30 Part 5.

Ratings do not apply if the cable is protected by a semi-enclosed fuse to BS3036.

3 cables			
Vertically Spaced		Horizontally Spaced	
Unarm'd	Arm'd	Unarm'd	Arm'd
260	271	289	296
331	342	366	373
411	417	452	452
482	480	527	519
554	536	604	577
644	604	699	649
772	694	834	745
896	770	965	825
1050	829	1127	887
1226	906	1312	968
1434	983	1529	1049
1655	1029	1761	1097
1878	1096	1993	1168

Continued overleaf...

Technical Information

- XLPE/PVC/AWA/PVC Single core
- XLPE/LSF/AWA/LSF 600/1000V

For ambient air and ground temperatures other than those specified, the following rating factors should be applied:

Cables laid in air:

Ambient air temp °C	25	30	35	40	45	50	55
Rating factor	1.0	0.96	0.92	0.88	0.83	0.78	0.73

Cables laid direct in ground and in single-way ducts:

Ground temp °C	10	15	20	25	30	35	40
Rating factor	1.03	1.0	0.97	0.93	0.89	0.86	0.82

VOLTAGE DROP (per Ampere per metre):

2 Cables - Single Phase a.c.

Conductor Cross Sectional Area	2 Cables d.c.	Reference Methods 1 & 11 (touching)			Reference Methods 12 (spaced*)		
		1	2	3	4		
mm ²	mV	mV			mV		
		r	x	z	r	x	z
50	0.98	0.99	0.21	1.00	0.98	0.29	1.00
70	0.67	0.68	0.200	0.71	0.69	0.29	0.75
95	0.49	0.51	0.195	0.55	0.53	0.28	0.60
120	0.39	0.41	0.190	0.45	0.43	0.27	0.51
150	0.31	0.33	0.185	0.38	0.36	0.27	0.45
185	0.25	0.27	0.185	0.33	0.30	0.26	0.40
240	0.195	0.21	0.180	0.28	0.24	0.26	0.35
300	0.155	0.170	0.175	0.25	0.195	0.25	0.32
400	0.115	0.145	0.170	0.22	0.180	0.24	0.30
500	0.093	0.125	0.170	0.21	0.165	0.24	0.29
630	0.073	0.105	0.165	0.195	0.150	0.23	0.27
800	0.056	0.090	0.160	0.190	0.145	0.23	0.27
1000	0.045	0.092	0.155	0.180	0.140	0.21	0.25

* spaced by one cable diameter.

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3 or 4 Cables - Three Phase a.c.								
Reference Methods 1, 11 & 12 (in trefoil touching)			Reference Methods 1 & 11 (flat touching)			Reference Methods 12 (flat spaced*)		
5			6			7		
mV			mV			mV		
r	x	z	r	x	z	r	x	z
0.86	0.180	0.87	0.84	0.25	0.88	0.84	0.33	0.90
0.59	0.170	0.62	0.60	0.25	0.65	0.62	0.32	0.70
0.44	0.170	0.47	0.46	0.24	0.52	0.49	0.31	0.58
0.35	0.165	0.39	0.38	0.24	0.44	0.41	0.30	0.51
0.29	0.160	0.33	0.31	0.23	0.39	0.34	0.29	0.45
0.23	0.160	0.28	0.26	0.23	0.34	0.29	0.29	0.41
0.180	0.155	0.24	0.21	0.22	0.30	0.24	0.28	0.37
0.145	0.150	0.21	0.170	0.22	0.28	0.20	0.27	0.34
0.125	0.150	0.195	0.160	0.21	0.27	0.20	0.27	0.33
0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.31
0.092	0.145	0.170	0.135	0.195	0.24	0.175	0.23	0.29
0.086	0.140	0.165	0.130	0.180	0.23	0.175	0.195	0.26
0.080	0.135	0.155	0.125	0.170	0.21	0.165	0.180	0.24

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Technical Information

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- Single core XLPE/PVC 600/1000V to BS7889 & XLPE/LSF 600/1000V
- Single core PCU/XLPE/PVC/AWA/PVC 600/1000V to BS5467
- Single core PCU/XLPE/LSF/AWA/LSF 600/1000V to BS6724

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ELECTRICAL CHARACTERISTICS

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Conductor Size	Maximum d.c. Conductor Resistance @ 20°C	Maximum a.c. Conductor Resistance @ 90°C		Reactance @ 50Hz		Impedance @ 90°C, 50Hz	
				Single Core Cables in Trefoil		Single Core Cables in Trefoil	
		Unarm'd	Arm'd	Unarm'd	Arm'd	Unarm'd	Arm'd
mm ²	ohms/km	ohms/km	ohms/km	ohms/km	ohms/km	ohms/km	ohms/km
50	0.387	0.494	0.494	0.0904	0.104	0.502	0.505
70	0.268	0.342	0.342	0.0871	0.101	0.353	0.357
95	0.193	0.247	0.246	0.0845	0.0969	0.261	0.264
120	0.153	0.196	0.196	0.0822	0.0920	0.213	0.217
150	0.124	0.160	0.160	0.0823	0.0945	0.180	0.186
185	0.0991	0.128	0.128	0.0812	0.0932	0.152	0.158
240	0.0754	0.0990	0.0985	0.0798	0.0902	0.127	0.134
300	0.0601	0.0802	0.0799	0.0790	0.0883	0.113	0.119
400	0.0470	0.0645	0.0639	0.0782	0.0886	0.101	0.109
500	0.0366	0.0523	0.0513	0.0776	0.0870	0.0936	0.101
630	0.0283	0.0430	0.0420	0.0768	0.0847	0.0880	0.0945
800	0.0221	0.0364	0.0349	0.0758	0.0850	0.0841	0.0919
1000	0.0176	0.0318	0.0303	0.0750	0.0840	0.0815	0.0893

Technical Information

- 1.9/3.3 kV 1 core & 3 cores XLPE Insulated, Armoured Cables BS5467 & BS6724

For further guidance refer to the BS7671 (IEE Wiring Regulations - latest edition) and ERA 69-30Part 5.

For ambient air and ground temperatures other than those specified, the following factors should be applied.

Cables laid in air

Ambient air temp °C	25	30	35	40	45	50	55
Rating factor	1.0	0.96	0.92	0.88	0.83	0.78	0.73

Cables laid direct in ground and in single-way ducts

Ground temp °C	10	15	20	25	30	35	40
Rating factor	1.03	1.0	0.97	0.93	0.89	0.86	0.82

CURRENT CARRYING CAPACITY (Amperes)

Single Core 1900/3300V 50Hz

Direct Buried - BS5467				In Single-Way Duct - BS5467		
Nominal Conductor Area	Trefoil	3 Cables Touching	Spaced	Nominal Conductor	3 Cables	
	Arm'd	Arm'd	Arm'd		Trefoil	Flat
mm ²	Arm'd	Arm'd	Arm'd	mm ²	Arm'd	Arm'd
50	222	221	230	50	219	220
70	271	269	279	70	264	265
95	324	321	331	95	310	311
120	366	361	369	120	342	342
150	409	402	409	150	376	376
185	460	449	454	185	414	414
240	528	513	512	240	464	463
300	589	568	560	300	506	504
400	651	619	595	400	535	532
500	720	677	641	500	579	574
630	789	733	684	630	624	618
800	831	763	703	800	650	644
1000	880	802	735	1000	689	682

Technical Information

CURRENT CARRYING CAPACITY (Amperes)

3 Core 1900/3300V 50Hz XLPE/PVC/SWA/PVC, XLPE/LSF/SWA/LSF

Direct Buried - BS5467		In Single-Way Duct - BS5467		Air - BS5467 & BS6724	
Nominal Conductor Area	3 Core	Nominal Conductor Area	3 Core	Nominal Conductor Area	3 Core
mm ²	Arm'd	mm ²	Arm'd	mm ²	Arm'd
16	114	16	96	16	112
25	147	25	124	25	149
35	175	35	147	35	177
50	207	50	174	50	213
70	254	70	214	70	268
95	304	95	257	95	328
120	345	120	293	120	380
150	387	150	328	150	432
185	436	185	371	185	496
240	502	240	428	240	583
300	563	300	480	300	667
400	633	400	549	400	765

XLPE/PVC/AWA/PVC XLPE/LSF/AWA/LSF

Air - BS5467 & 6724			
Nominal Conductor Area	Trefoil	3 Cables Vertical Spaced	Horizontally Spaced
mm ²	Arm'd	Arm'd	Arm'd
50	240	277	299
70	300	345	372
95	368	420	452
120	428	478	513
150	487	536	576
185	556	604	648
240	656	695	745
300	747	771	826
400	851	829	887
500	963	906	968
630	1084	983	1049
800	1178	1030	1098
1000	1278	1096	1168

Standard depth of laying 0.8m
 Thermal resistivity of soil 1.2°C m/W
 Standard ground temperature 15°C
 Ambient air temperature 25°C
 Maximum conductor temperature 90°C

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Technical Information

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- Single core PCU/XLPE/PVC/AWA/PVC 1900/3300V to BS5467
- Single core PCU/XLPE/LSF/AWA/LSF 1900/3300V to BS6724

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ELECTRICAL CHARACTERISTICS

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Conductor Size mm ²	Maximum d.c. Conductor Resistance @ 20°C ohms/km	Maximum a.c. Conductor Resistance @ 90°C ohms/km	Reactance @ 50Hz Single Core Cables in Trefoil ohms/km	Impedance @ 90°C, 50Hz Single Core Cables in Trefoil ohms/km
50	0.387	0.493	0.116	0.506
70	0.268	0.342	0.110	0.359
95	0.193	0.246	0.104	0.267
120	0.153	0.195	0.104	0.221
150	0.124	0.160	0.100	0.189
185	0.0991	0.128	0.098	0.161
240	0.0754	0.0984	0.094	0.136
300	0.0601	0.0795	0.091	0.121
400	0.0470	0.0639	0.0886	0.109
500	0.0366	0.0513	0.0870	0.101
630	0.0283	0.0420	0.0847	0.0945
800	0.0221	0.0349	0.0850	0.0919
1000	0.0176	0.0303	0.0840	0.0893

Armour Resistances

Max. DC Resistance of Conductor & Armour for Single Core XLPE Insulated Cables Having Aluminium Wire Armour

XLPE/PVC/AWA/PVC Cables to BS5467

XLPE/LSF/AWA/LSF Cables to BS6724

Nominal Conductor Area	Max Resistance per Km of Cable @ 20°C		
	Copper Conductor (plain)	Aluminium Wire Armour Cables with Stranded Copper Conductors	
		600/1000V	1900/3300V
mm ²	ohms/km	ohms/km	ohms/km
50	0.387	1.3	0.75
70	0.268	0.75	0.67
95	0.193	0.67	0.61
120	0.153	0.61	0.42
150	0.124	0.42	0.39
185	0.0991	0.38	0.37
240	0.0754	0.34	0.34
300	0.0601	0.31	0.31
400	0.0470	0.22	0.22
500	0.0366	0.20	0.20
630	0.0283	0.18	0.18
800	0.0221	0.13	0.13
1000	0.0176	0.12	0.12

Gross Cross-Sectional Gross Cross-sectional Area of Armour for Auxiliary PVC Insulated Cables

PVC/PVC/SWA/PVC Cables to BS6346 and ENATS 09-6 600/1000V

Nominal Conductor Area	Gross cross-sectional area of round armour wires							
	Number of Cores							
	5	7	10	12	19	27	37	48
mm ²	mm ²	mm ²	mm ²	mm ²	mm ²	mm ²	mm ²	mm ²
1.5	19	20	36	39	45	70	78	90
2.5	22	34	44	45	70	84	92	138
4.0	39	40	72	72	84	131	144	163

Gross Cross-sectional Area of Armour for Single Core XLPE Insulated Cables

XLPE/PVC/AWA/PVC Cables to BS5467

XLPE/LSF/AWA/LSF Cables to BS6724

Nominal Conductor Area	Gross cross-sectional area of round armour wires
	Cables with Stranded Copper Conductors
	Aluminium Wire Armour 600/1000V
mm ²	mm ²
50	26
70	42
95	47
120	52
150	76
185	84
240	94
300	104
400	147
500	163
630	182
800	260
1000	284

Conductor Short-Circuit Ratings

XLPE Insulated Cables

Short-Circuit Ratings

Conductor Size mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
1.5	0.479	0.214	0.123
2.5	0.799	0.357	0.206
4.0	1.27	0.572	0.330
6.0	1.91	0.858	0.495
10	3.19	1.43	0.825
16	5.11	2.28	1.32
25	7.99	3.57	2.06
35	11.1	5.0	2.88
50	15.9	7.15	4.12
70	22.3	10.0	5.77
95	30.3	13.5	7.84
120	38.3	17.1	9.9
150	47.9	21.4	12.3
185	59.1	26.4	15.2
240	76.7	34.3	19.8
300	95.9	42.9	24.7
400	127	57.2	33.0
500	159	71.5	41.2
630	201	90.0	52.0

N.B: The above ratings assume an adiabatic temperature rise and are based on a conductor temperature of 90°C at start of short-circuit and 250°C at end of shortcircuit.

Armour Short-Circuit Ratings

Single Core XLPE/PVC/AWA/PVC 600/1000V

Single Core XLPE/LSF/AWA/LSF 600/1000V

Short-Circuit Ratings

Conductor Size mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
50	4.83	2.16	1.25
70	7.80	3.49	2.01
95	8.72	3.90	2.25
120	9.66	4.32	2.49
150	14.1	6.31	3.64
185	15.6	6.97	4.02
240	17.4	7.80	4.50
300	19.3	8.63	4.98
400	27.3	12.2	7.04
500	30.2	13.5	7.79
630	33.8	15.1	8.72
800	48.3	21.6	12.5
1000	52.8	23.6	13.6

N.B: The above ratings assume an adiabatic temperature rise and are based on an armour temperature of 80°C at start of short-circuit and 200°C at end of short-circuit.