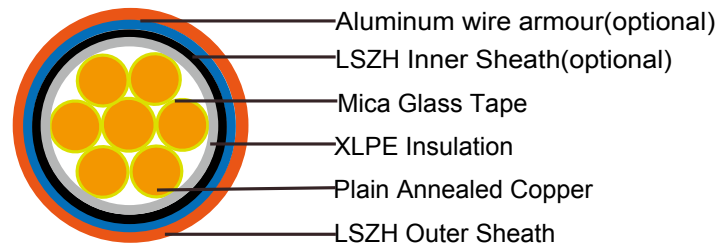


600/1000V Mica+XLPE Insulated, LSZH Sheathed Power Cables (Single-Core)

FFX300 1mRZ1-R (CU/MGT+XLPE/LSZH 600/1000V Class 2)

FFX300 1mRMZ1-R (CU/MGT+XLPE/LSZH/AWA/LSZH 600/1000V Class 2)



APPLICATION

This cable is designed for areas where the integrity of the electrical circuit is critical in maintaining power supply. Applications can be found in emergency lightings, control and power circuits, power stations, fire alarm systems, underground tunnels, communications systems, sewage treatment plants, lifts, escalators, and high-rise buildings.

STANDARDS

Basic design to IEC 60502-1 / BS 6724

FIRE PERFORMANCE

Circuit Integrity	IEC 60331-21; BS 6387 CWZ; DIN VDE 0472-814(FE180); CEI 20-36/2-1; SS229-1; NBN C 30-004 (cat. F3); NF C32-070-2.3(CR1)
System circuit integrity	DIN 4102-12, E30 depending on lay system
Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.



VOLTAGE RATING

600/1000 V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC(EN) 60228 class 2.

Insulation: Mica glass tape covered by extruded cross-linked XLPE compound

Inner Sheath (optional): Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1

Armouring (optional): Aluminum wire armour

Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.)

COLOUR CODE

Insulation Colour: Natural (other colors upon request)

Sheath Colour: Orange (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature range during operation (fixed state): -30°C – +90°C

Temperature range during installation (mobile state): -20°C – +50°C

Minimum bending radius: 8 x Overall Diameter (unarmoured cable)
10 x Overall Diameter (armoured cable)

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor				FFX300 1mRZ1-R		FFX300 1mRMZ1-R	
Nominal Cross Section Area	No./ Nominal Diameter of Strands	Dia. of Conductor	Nominal Insulation Thickness	Unarmoured Cable		Armoured Cable	
				Approx. Overall Diameter	Approx. Weigh	Approx. Overall Diameter	Approx. Weight
mm ²	No./mm	mm	mm	mm	kg/km	mm	kg/km
1.5	7/0.53	1.59	0.7	6.5	54	-	-
2.5	7/0.67	2.01	0.7	6.8	67	-	-
4	7/0.85	2.55	0.7	7.5	86	-	-
6	7/1.04	3.12	0.7	8.1	110	-	-
10	7/1.35	4.05	0.7	9.2	155	-	-
16	7/1.70	5.1	0.7	10.2	220	-	-
25	7/2.14	6.42	0.9	11.9	325	-	-

35	19/1.53	7.65	0.9	13.2	425	-	-
50	19/1.78	8.9	1	14.6	600	18.5	780
70	19/2.14	10.7	1.1	16.6	820	20.5	1010
95	19/2.52	12.6	1.1	18.7	1100	23	1320
120	37/2.03	14.21	1.2	20.5	1350	24.5	1610
150	37/2.25	15.75	1.4	22.7	1640	27	2010
185	37.2.52	17.64	1.6	25.5	2040	29.5	2440
240	61/2.25	20.25	1.7	28.5	2650	34.5	3060
300	61/2.52	22.68	1.8	31.5	3260	36.9	3690
400	65/2.85	25.65	2	35.4	4130	41.5	4780
500	61/3.20	28.8	2.2	39	5200	45.5	5970
630	127/2.52	32.76	2.4	43.5	6600	50.5	7530
800	127/2.85	37.05	2.6	48.5	8300	56.8	9680
1000	127/3.20	41.6	2.8	53.5	10000	61.5	11980

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C

Ambient Temperature : 30°C

FFX300 1mRZ1-R

Current-Carrying Capacities (Amp)

Conductor cross-section area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
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	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	183	163	138
35	125	111	156	138	176	161	195	176	226	203	171



50	149	135	189	168	228	209	293	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606
300	459	410	573	493	743	681	794	730	886	824	701
400	-	-	684	584	868	793	915	849	1065	994	820
500	-	-	783	666	990	904	1044	973	1228	1150	936
630	-	-	900	764	1130	1033	1191	1115	1423	1338	1069
800	-	-	-	-	1288	1179	1358	1275	1580	1485	1214
1000	-	-	-	-	1443	1323	1520	1436	1775	1671	1349

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, 3-phase a.c.								
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1 and 11 (clipped direct or on trays touching)			Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1, 11 and 12 (in trefoil)			Ref. Methods 1 and 11 (Flat and touching)		
		3			4			5			6			7		
mm ²	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			27			27			27			27		
2.5	19	19			16			16			16			16		
4	33	12			10			10			10			10		
6	7.8	7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4			4			4		
16	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
25	1.85	1.85	0.31	1.9	1.85	0.19	1.85	1.6	0.27	1.65	1.6	0.165	1.6	1.6	0.19	1.6
35	1.35	1.35	0.29	1.35	1.35	0.18	1.35	1.15	0.25	1.15	1.15	0.155	1.5	1.15	0.18	1.15
50	0.99	1	0.29	1.05	0.99	0.18	1	0.87	0.25	0.9	0.86	0.155	0.87	0.86	0.18	0.87
70	0.68	0.7	0.28	0.75	0.68	0.175	0.71	0.6	0.24	0.65	0.59	0.15	0.61	0.59	0.175	0.62
95	0.49	0.51	0.27	0.58	0.49	0.17	0.52	0.44	0.23	0.5	0.43	0.145	0.45	0.43	0.17	0.46
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.35	0.23	0.42	0.34	0.14	0.37	0.34	0.165	0.38
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.29	0.23	0.37	0.28	0.14	0.31	0.28	0.165	0.32
185	0.25	0.27	0.26	0.37	0.26	0.165	0.3	0.23	0.23	0.32	0.22	0.14	0.26	0.22	0.165	0.28
240	0.19	0.21	0.26	0.33	0.2	0.16	0.25	0.185	0.22	0.29	0.17	0.14	0.22	0.17	0.165	0.24

300	0.155	0.175	0.25	0.31	0.16	0.16	0.22	0.15	0.22	0.27	0.14	0.14	0.195	0.135	0.16	0.21
400	0.12	0.14	0.25	0.29	0.13	0.155	0.2	0.125	0.22	0.25	0.11	0.135	0.175	0.11	0.16	0.195
500	0.093	0.12	0.25	0.28	0.105	0.155	0.185	0.1	0.22	0.24	0.09	0.135	0.16	0.088	0.16	0.18
630	0.072	0.1	0.25	0.27	0.086	0.155	0.175	0.088	0.21	0.23	0.074	0.135	0.15	0.071	0.16	0.17
800	0.056	-	-	-	0.072	0.15	0.17	-	-	-	0.062	0.13	0.145	0.059	0.155	0.165
1000	0.045	-	-	-	0.063	0.15	0.165	-	-	-	0.055	0.13	0.14	0.05	0.155	0.165

FFX300 1mRMZ1-R

Current-Carrying Capacities (Amp)

Nominal Cross Section Area	Reference Method 1 (clipped direct)		Reference Method 11 (on perforated cable tray)		Reference Method 12 (free air)	In single-way ducts		Laid direct in ground	
	2 cables singlephase a.c. or d.c. flat and touching	3 or 4 cables 3-phase a.c. flat and touching	2 cables singlephase a.c. or d.c. flat and touching	3 or 4 cables 3-phase a.c. flat and touching	3 cables 3-phase a.c. trefoil touching	2 cables singlephase a.c. or d.c. ducts touching	3 cables 3-phase a.c. trefoil touching	2 cables singlephase a.c. or d.c. touching	3 cables 3-phase a.c. trefoil touching
1	2	3	4	5	6	7	8	9	10
mm ²	A	A	A	A	A	A	A	A	A
50	237	220	253	232	222	255	235	275	235
70	303	277	322	293	285	310	280	340	290
95	367	333	389	352	346	365	330	405	345
120	425	383	449	405	402	410	370	460	389
150	488	437	516	462	463	445	405	510	435
185	557	496	587	524	529	485	440	580	490
240	656	579	689	612	625	550	500	670	560
300	755	662	792	700	720	610	550	750	630
400	853	717	899	767	815	640	580	830	700
500	962	791	1016	851	918	690	620	910	770
630	1082	861	1146	935	1027	750	670	1000	840
800	1170	904	1246	987	1119	828	735	1117	931
1000	1261	961	1345	1055	1214	919	811	1254	1038



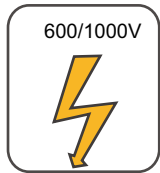
Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables single- phase a.c.			3 or 4 cables three-phase a.c.						2 cables singlephase a.c.		3 or 4 cables, 3-phase a.c. touching	
		Reference Method 1 & 11 (touching)			Reference Method 1, 11 & 12 (in trefoil touching)			Reference Method 1 & 11 (Flat touching)			In ducts	In ground	In ducts	In ground
		3			4			5						
1	2	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				
50	0.98	0.99	0.21	1	0.86	0.18	0.87	0.84	0.25	0.88	1.1	0.99	0.93	0.86
70	0.67	0.68	0.2	0.71	0.59	0.17	0.62	0.6	0.25	0.65	0.8	0.7	0.7	0.61
95	0.49	0.51	0.195	0.55	0.44	0.17	0.47	0.46	0.24	0.52	0.65	0.53	0.56	0.46
120	0.39	0.41	0.19	0.45	0.35	0.165	0.39	0.38	0.24	0.44	0.55	0.43	0.48	0.37
150	0.31	0.33	0.185	0.38	0.29	0.16	0.33	0.31	0.23	0.39	0.5	0.37	0.43	0.32
185	0.25	0.27	0.185	0.33	0.23	0.16	0.28	0.26	0.23	0.34	0.45	0.31	0.39	0.27
240	0.195	0.21	0.18	0.28	0.18	0.155	0.24	0.21	0.22	0.3	0.4	0.26	0.35	0.23
300	0.155	0.17	0.175	0.25	0.145	0.15	0.21	0.17	0.22	0.28	0.37	0.24	0.32	0.21
400	0.115	0.145	0.17	0.22	0.125	0.15	0.195	0.16	0.21	0.27	0.35	0.21	0.3	0.19
500	0.093	0.125	0.17	0.21	0.105	0.145	0.18	0.145	0.2	0.25	0.33	0.2	0.28	0.18
630	0.073	0.105	0.165	0.195	0.092	0.145	0.17	0.135	0.195	0.24	0.3	0.19	0.26	0.17
800	0.056	0.09	0.16	0.19	0.086	0.14	0.165	0.13	0.18	0.23	0.28	0.18	0.24	0.16
1000	0.045	0.092	0.155	0.18	0.08	0.135	0.155	0.125	0.17	0.21	0.26	0.17	0.22	0.15

Note: r = conductor resistance at operating temperature

x = reactance

z = impedance

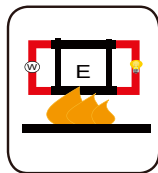


600/1000V



BS 6724
IEC 60502-1

Standard



Circuit Integrity
IEC 60331/BS 6387
NF C32-070-2.3(CR1)



Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4



Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1



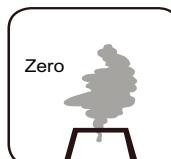
Low Toxicity
NES 02-713/NF C 20-454



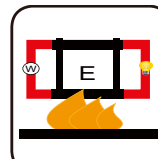
Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074



Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073



Zero
Halogen Free
IEC60754-1
EN50267-2-1



Functional Integrity
DIN 4102-12