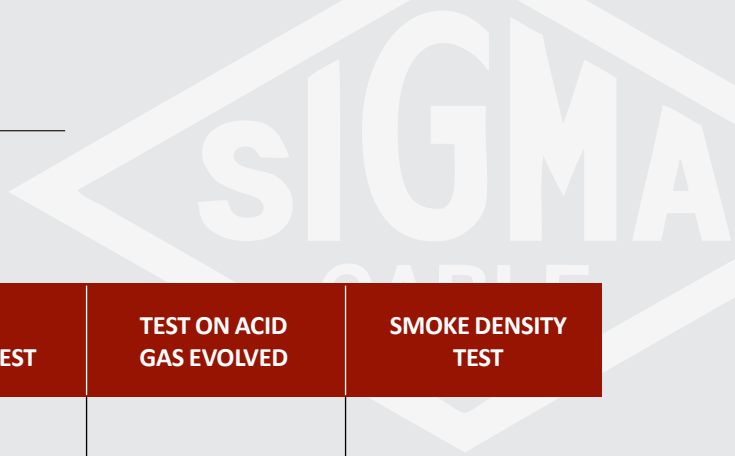


# LOW SMOKE HALOGEN FREE (LSHF) FIRE RESISTANT CABLES

Voltage Rating (U<sub>o</sub>/U) : 300/500V, 450/750V or 600/1000V



## Standards Complied

MAIN CABLE SPECIFICATION	FIRE TESTS	FLAME RETARDANT TEST	TEST ON ACID GAS EVOLVED	SMOKE DENSITY TEST
BS 6724				
BS 7211	SS 229 CAT CWZ	BS EN 50265		
BS 7629	BS 6387 CAT CWZ	BS EN 50266	BS EN 50267	BS EN 50268
BS 7846	IEC 60331	IEC 60332-1	IEC 60754	IEC 61034
IEC 60502-1	AS/NZS 3013	IEC 60332-3		
AS/NZS 5000-1				

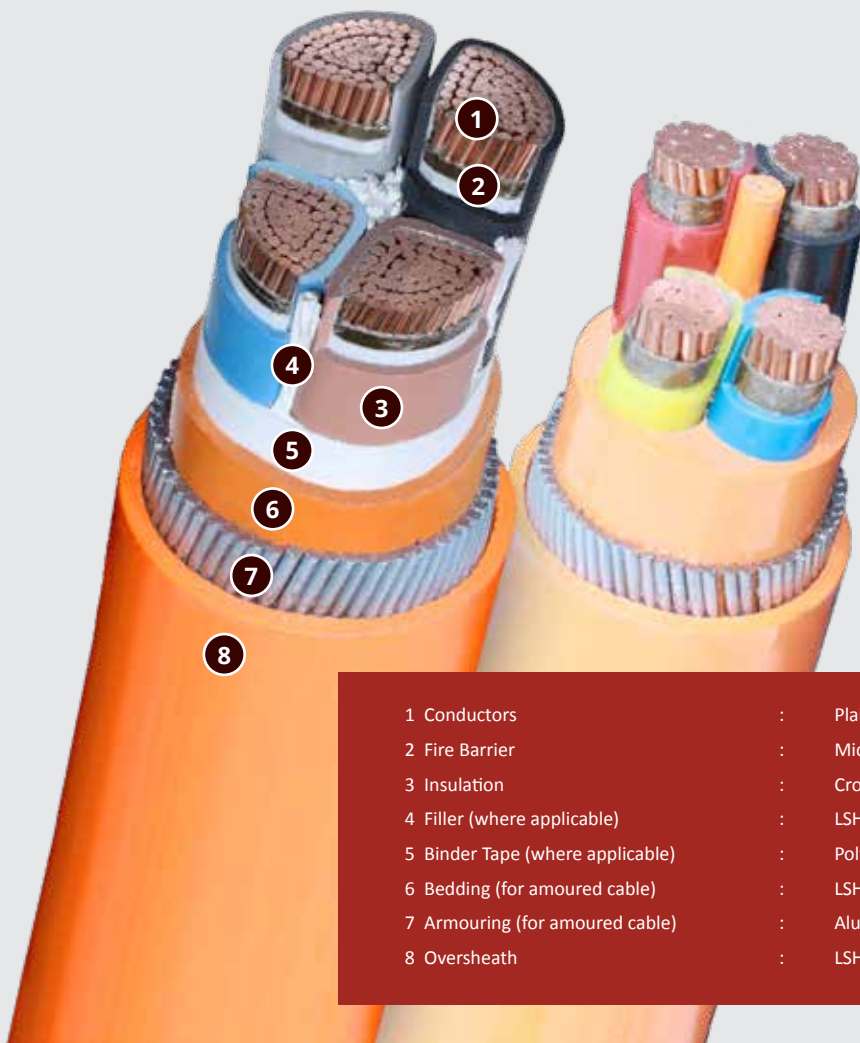
## Colours of Identification

### INSULATION:

- 1-core: Natural. (Orange for Non-sheathed)
- 2-core: (Red & Black) or (Brown & Blue)
- 3-core: (Red, Yellow, Blue) or (Brown, Black, Grey)
- 4-core: (Red, Yellow, Blue, Black) or (Brown, Black, Grey, Blue)

### OVER SHEATH:

Orange



- |                                  |   |   |
|----------------------------------|---|---|
| 1 Conductors                     | : | Plain annealed stranded copper conductor.         |
| 2 Fire Barrier                   | : | Mica tape.  |
| 3 Insulation                     | : | Cross-linked PE or LSHF compound.                 |
| 4 Filler (where applicable)      | : | LSHF or Polypropylene yarn.                       |
| 5 Binder Tape (where applicable) | : | Polyester (mylar) tape/ non-woven polyester tape. |
| 6 Bedding (for armoured cable)   | : | LSHF compound, type LTS 1 or ST8.                 |
| 7 Armouring (for armoured cable) | : | Aluminium wires or Galvanized steel wires.        |
| 8 Oversheath                     | : | LSHF compound, type LTS 1, LTS 4 or ST8.          |

**Table FR1**

600/1000V SINGLE-CORE LSHF FIRE RESISTANT CABLE

MODEL: XL-FR-600S, EL-FR-600S

SPEC. : REFER IEC 60502, 60331, 60332-3, 60754, 61034, BS6387 &amp; SS 299

CONDUCTOR			Nom. Thick. of Insulation mm	Nom. Thick. of Sheath kg/km	Approx. OD of Cable mm	Approx. Weight of Cable	
Size mm <sup>2</sup>	No./Dia. of Wire mm	Approx. Dia. mm				XL-FR-600S kg/km	EL-FR-600S kg/km
1.5	7/0.53CR	1.59	0.7	1.4	7.1	60	65
2.5	7/0.67CR	2.01	0.7	1.4	7.5	70	75
4	7/0.85CR	2.55	0.7	1.4	8.1	90	100
6	7/1.04CR	3.12	0.7	1.4	8.6	115	120
10	7/1.35CR	4.05	0.7	1.4	9.6	165	170
16	7/1.70CR	5.10	0.7	1.4	10.6	230	235
25	7/2.14CP	6.10	0.9	1.4	12.3	325	340
35	7/2.52CP	7.10	0.9	1.4	13.6	425	440
50	19/1.78CP	8.40	1.0	1.4	15.0	555	575
70	19/2.14CP	9.90	1.1	1.4	17.0	765	795
95	19/2.52CP	11.80	1.1	1.5	19.2	1035	1065
120	37/2.03CP	13.20	1.2	1.5	21.5	1280	1320
150	37/2.25CP	14.80	1.4	1.6	23.7	1575	1625
185	37/2.52CP	16.40	1.6	1.6	26.0	1945	2005
240	37/2.88CP	19.00	1.7	1.7	29.0	2525	2600
300	61/2.52CP	21.20	1.8	1.8	31.8	3135	3225
400	61/2.85CP	23.70	2.0	1.9	35.4	3970	4085
500	61/3.20CP	27.00	2.2	2.0	39.2	5055	5200
630	91/2.97CP*	31.20	2.4	2.2	44.0	6515	6690
800	127/2.85CR	37.10	2.6	2.3	48.9	8270	8480
1000	127/3.20CR	41.60	2.8	2.4	54.1	10340	10600

**Table FR2**

450/750V &amp; 600/1000V SINGLE-CORE NON-SHEATHED LSHF FIRE RESISTANT CABLE

MODEL: E-FR-450S, E-FR-600S

SPEC. : REFER BS 7211, 6387, SS 299, IEC 60331, 60332-3, 60754 &amp; 61034

CONDUCTOR			450/750V E-FR-450S			600/1000V E-FR-600S		
Size mm <sup>2</sup>	No./Dia. of Wire mm	Approx. Dia. mm	Nom. Thick. of Insulation mm	Approx. OD of Cable mm	Approx. Weight of Cable kg/km	Nom. Thick. of Insulation mm	Approx. OD of Cable mm	Approx. Weight of Cable kg/km
1.5	7/0.53CR	1.59	0.7	4.2	28	0.8	4.4	30
2.5	7/0.67CR	2.01	0.8	4.8	40	0.8	4.8	40
4	7/0.85CR	2.55	0.8	5.3	58	1.0	5.7	65
6	7/1.04CR	3.12	0.8	5.9	80	1.0	6.3	85
10	7/1.35CR	4.05	1.0	7.2	130	1.0	7.2	130
16	7/1.70CR	5.10	1.0	8.3	190	1.0	8.3	190
25	7/2.14CP	6.10	1.2	10.0	285	1.2	10.0	285
35	7/2.52CP	7.10	1.2	11.3	380	1.2	11.3	380
50	19/1.78CP	8.40	1.4	12.9	510	1.4	12.9	510
70	19/2.14CP	9.90	1.4	14.7	715	1.4	14.7	715
95	19/2.52CP	11.80	1.6	17.0	980	1.6	17.0	980
120	37/2.03CP	13.20	1.6	19.2	1,220	1.6	19.2	1220
150	37/2.25CP	14.80	1.8	21.1	1,500	1.8	21.1	1500
185	37/2.52CP	16.40	2.0	23.4	1,870	2.0	23.4	1870
240	37/2.88CP	19.00	2.2	26.5	2,445	2.2	26.5	2445
300	61/2.52CP	21.20	2.4	29.3	3,050	2.4	29.3	3050
400	61/2.85CP	23.70	2.6	32.7	3,880	2.6	32.7	3880
500	61/3.20CP	27.00	2.8	36.3	4,950	2.8	36.3	4950
630	91/2.97CP*	31.20	2.8	40.2	6,325	2.8	40.2	6325

NOTES : CR=circular stranded conductor

CP=circular compacted stranded conductor (\*630mm<sup>2</sup> shall be 89/3.0mm or 91/2.97mm)

Current Rating &amp; Volt Drop refer to Table T1 on page 32

Model E-FR-600S is suitable for 90°C or up to 125°C operating temperature.

**Table FR3**

600/1000V MULTI-CORE LSHF FIRE RESISTANT CABLE

MODEL: XL-FR-600M, EL-FR-600M

SPEC. : REFER IEC 60502, 60331, 60332-3, 60754, 61034, SS299 &amp; BS 6387

No. of Core	CONDUCTOR			Nom. Thick. of Insulation mm	Nom. Thick. of Sheath mm	Approx. OD of Cable mm	Approx. Weight of Cable	
	Size mm <sup>2</sup>	No./Dia. of Wire No./mm	Approx. Dia. mm				XL-FR-600M kg/km	EL-FR-600M kg/km
2	1.5	7/0.53CR	1.59	0.7	1.8	12.0	190	200
	2.5	7/0.67CR	2.01	0.7	1.8	12.5	225	235
	4	7/0.85CR	2.55	0.7	1.8	14.0	295	305
	6	7/1.04CR	3.12	0.7	1.8	15.0	360	375
	10	7/1.35CR	4.05	0.7	1.8	17.0	490	510
	16	7/1.70CR	5.10	0.7	1.8	19.0	665	685
	25	7/2.14CP	6.10	0.9	1.8	22.0	935	965
	35	7/2.52CP	7.10	0.9	1.8	24.0	1185	1220
	50	19/1.78CP	8.40	1.0	1.8	27.0	1545	1590
	70	19/2.14CP	9.90	1.1	1.8	30.5	2090	2145
	95	19/2.52CP	11.80	1.1	1.9	34.5	2780	2845
	120	37/2.03CP	13.20	1.2	2.0	38.0	3445	3520
	150	37/2.25CP	14.80	1.4	2.2	42.5	4255	4360
	185	37/2.52CP	16.40	1.6	2.3	46.5	5245	5375
	240	37/2.88CP	19.00	1.7	2.5	52.5	6780	6940
300	61/2.52CP	21.20	1.8	2.6	57.5	8340	8520	
400	61/2.85CP	23.70	2.0	2.9	64.0	10525	10750	
3	1.5	7/0.53CR	1.59	0.7	1.8	12.5	215	230
	2.5	7/0.67CR	2.01	0.7	1.8	13.5	265	280
	4	7/0.85CR	2.55	0.7	1.8	15.0	350	365
	6	7/1.04CR	3.12	0.7	1.8	16.0	435	455
	10	7/1.35CR	4.05	0.7	1.8	18.0	600	630
	16	7/1.70CR	5.10	0.7	1.8	20.5	835	865
	25	7/2.14CP	6.10	0.9	1.8	23.5	1185	1230
	35	7/2.52CP	7.10	0.9	1.8	25.5	1520	1575
	50	19/1.78CP	8.40	1.0	1.8	29.0	1995	2065
	70	19/2.14CP	9.90	1.1	1.9	33.0	2745	2830
	95	19/2.52CP	11.80	1.1	2.0	37.0	3660	3760
	120	37/2.03CP	13.20	1.2	2.1	41.0	4560	4675
	150	37/2.25CP	14.80	1.4	2.3	45.5	5630	5780
	185	37/2.52CP	16.40	1.6	2.4	50.0	6945	7135
	240	37/2.88CP	19.00	1.7	2.6	56.5	8995	9230
300	61/2.52CP	21.20	1.8	2.7	62.0	11100	11375	
400	61/2.85CP	23.70	2.0	3.0	69.0	14045	14380	
4	1.5	7/0.53CR	1.59	0.7	1.8	13.5	260	280
	2.5	7/0.67CR	2.01	0.7	1.8	14.5	320	340
	4	7/0.85CR	2.55	0.7	1.8	16.5	425	450
	6	7/1.04CR	3.12	0.7	1.8	17.5	535	560
	10	7/1.35CR	4.05	0.7	1.8	20.0	750	785
	16	7/1.70CR	5.10	0.7	1.8	22.5	1040	1080
	25	7/2.14CP	6.10	0.9	1.8	26.0	1495	1555
	35	7/2.52CP	7.10	0.9	1.8	28.5	1930	2000
	50	19/1.78CP	8.40	1.0	1.8	32.0	2535	2625
	70	19/2.14CP	9.90	1.1	2.0	36.5	3510	3625
	95	19/2.52CP	11.80	1.1	2.1	41.5	4710	4840
	120	37/2.03CP	13.20	1.2	2.3	45.5	5885	6040
	150	37/2.25CP	14.80	1.4	2.4	50.5	7230	7435
	185	37/2.52CP	16.40	1.6	2.6	56.0	8955	9215
	240	37/2.88CP	19.00	1.7	2.8	63.0	11615	11930
300	61/2.52CP	21.20	1.8	3.0	69.0	14360	14720	
400	61/2.85CP	23.70	2.0	3.3	77.0	18175	18625	

NOTES : CR=circular stranded conductor

CP=circular compacted stranded conductor

Current Rating &amp; Volt Drop refer to Table T2 on page 33

Model EL-FR-600M is suitable for 90°C or up to 125°C operating temperature

## Table FR4

300/500V MULTI-CORE LSHF FIRE RESISTANT CABLE

MODEL: XL-FR-300M

SPEC. : REFER BS 7211, 6387, SS 299, IEC 60331, 60332-3, 60754 & 61034

No. of Core	CONDUCTOR			Nom. Thick. of Insulation mm	Nom. Thick. of Sheath mm	Approx. OD of Cable mm	Approx. Weight of Cable kg/km
	Size mm <sup>2</sup>	No./Dia. of Wire No./mm	Approx. Dia. mm				
2	1.5	7/0.53CR	1.59	0.7	0.9	9.0	115
	2.5	7/0.67CR	2.01	0.8	1.0	10.5	160
	4.0	7/0.85CR	2.55	0.8	1.1	12.0	220
3	1.5	7/0.53CR	1.59	0.7	1.0	10.0	140
	2.5	7/0.67CR	2.01	0.8	1.1	11.5	195
	4.0	7/0.85CR	2.55	0.8	1.1	12.5	265
4	1.5	7/0.53CR	1.59	0.7	1.0	11.0	170
	2.5	7/0.67CR	2.01	0.8	1.1	12.5	240
	4.0	7/0.85CR	2.55	0.8	1.2	14.0	335

NOTES : CR=circular stranded conductor

Current Rating & Volt Drop refer to Table T2 on page 33.

## Table FR5

600/1000V SINGLE-CORE ARMoured LSHF FIRE RESISTANT CABLE

MODEL: XAL-FR-600S, EAL-FR-600S

SPEC. : REFER BS 6724, 6387, SS 299, IEC 60332-3, 60754 & 61034

Size mm <sup>2</sup>	CONDUCTOR			Nom. Thick. of Insulation mm	Nom. Thick. of Bedding mm	Nom. Dia. of Armour Wire mm	Nom. Thick. of Sheath mm	Approx. OD of Cable mm	Approx. Weight of Cable	
	No./Dia. of Wire No./mm	Approx. Dia. mm							XAL-FR-600S kg/km	EAL-FR-600S kg/km
50	19/1.78CP	8.40	1.0	0.8	1.25	1.5	19.3	760	780	
70	19/2.14CP	9.90	1.1	0.8	1.25	1.5	21.4	990	1015	
95	19/2.52CP	11.80	1.1	0.8	1.25	1.6	23.5	1285	1315	
120	37/2.03CP	13.20	1.2	0.8	1.25	1.6	25.8	1550	1590	
150	37/2.25CP	14.80	1.4	1.0	1.60	1.7	29.1	1960	2010	
185	37/2.52CP	16.40	1.6	1.0	1.60	1.8	31.6	2380	2440	
240	37/2.88CP	19.00	1.7	1.0	1.60	1.8	34.4	2990	3070	
300	61/2.52CP	21.20	1.8	1.0	1.60	1.9	37.3	3640	3730	
400	61/2.85CP	23.70	2.0	1.2	2.00	2.0	42.1	4680	4785	
500	61/3.20CP	27.00	2.2	1.2	2.00	2.1	45.8	5840	5975	
630	91/2.97CP*	31.20	2.4	1.2	2.00	2.2	50.4	7370	7540	
800	127/2.85CR	37.05	2.6	1.4	2.50	2.4	57.0	9505	9720	
1000	127/3.20CR	41.60	2.8	1.4	2.50	2.5	62.1	11695	11950	

NOTES : CP=circular compacted stranded conductor (\*630mm<sup>2</sup> shall be 89/3.0mm or 91/2.97mm)

CR=circular stranded conductor

Current Rating & Volt Drop refer to Table T3 on page 34

Model EAL-FR-600S is suitable for 90°C or up to 125°C operating temperature.



**Table FR6**

600/1000V MULTI-CORE ARMoured LSHF FIRE RESISTANT CABLE

MODEL: XSL-FR-600M, ESL-FR-600M

SPEC. : REFER BS 7846, 6387, SS 299, IEC 60331, 60332-3, 60754 &amp; 61034

No. of Core	CONDUCTOR			Nom. Thick. of Insulation mm	Nom. Thick. of Bedding mm	Nom. Dia. of Armour Wire mm	Nom. Thick. of Sheath mm	Approx. OD of Cable mm	Approx. Weight of Cable	
	Size mm <sup>2</sup>	No./Dia. of Wire No./mm	Approx. Dia. mm						XSL-FR-600M kg/km	ESL-FR-600M kg/km
2	1.5	7/0.53CR	1.59	0.7	0.8	0.90	1.4	14.5	400	415
	2.5	7/0.67CR	2.01	0.7	0.8	0.90	1.4	15.5	460	470
	4	7/0.85CR	2.55	0.7	0.8	0.90	1.4	16.5	550	560
	6	7/1.04CR	3.12	0.7	0.8	0.90	1.4	18.0	630	645
	10	7/1.35CR	4.05	0.7	0.8	0.90	1.5	20.0	805	825
	16	7/1.70CR	5.10	0.7	0.8	1.25	1.5	22.5	1155	1180
	25	7/2.14CP	6.10	0.9	0.8	1.25	1.6	26.0	1510	1540
	35	7/2.52CP	7.10	0.9	1.0	1.60	1.7	29.0	2045	2080
	50	19/1.78CP	8.40	1.0	1.0	1.60	1.8	32.0	2515	2560
	70	19/2.14CP	9.90	1.1	1.0	1.60	1.9	36.0	3215	3270
	95	19/2.52CP	11.80	1.1	1.2	2.00	2.0	41.0	4390	4455
	120	37/2.03CP	13.20	1.2	1.2	2.00	2.1	44.5	5175	5255
	150	37/2.25CP	14.80	1.4	1.2	2.00	2.2	49.0	6155	6260
	185	37/2.52CP	16.40	1.6	1.4	2.50	2.4	54.5	7920	8050
	240	37/2.88CP	19.00	1.7	1.4	2.50	2.5	60.5	9730	9885
	300	61/2.52CP	21.20	1.8	1.6	2.50	2.6	66.0	11630	11815
400	61/2.85CP	23.70	2.0	1.6	2.50	2.8	73.0	14235	14465	
3	1.5	7/0.53CR	1.59	0.7	0.8	0.90	1.4	15.0	440	455
	2.5	7/0.67CR	2.01	0.7	0.8	0.90	1.4	16.0	505	520
	4	7/0.85CR	2.55	0.7	0.8	0.90	1.4	17.5	615	635
	6	7/1.04CR	3.12	0.7	0.8	0.90	1.4	19.0	720	740
	10	7/1.35CR	4.05	0.7	0.8	1.25	1.5	21.5	1110	1135
	16	7/1.70CR	5.10	0.7	0.8	1.25	1.6	24.0	1365	1395
	25	7/2.14CP	6.10	0.9	1.0	1.60	1.7	28.5	2020	2070
	35	7/2.52CP	7.10	0.9	1.0	1.60	1.8	31.0	2430	2485
	50	19/1.78CP	8.40	1.0	1.0	1.60	1.8	34.0	3020	3090
	70	19/2.14CP	9.90	1.1	1.0	1.60	1.9	38.0	3925	4010
	95	19/2.52CP	11.80	1.1	1.2	2.00	2.1	43.5	5360	5460
	120	37/2.03CP	13.20	1.2	1.2	2.00	2.2	47.5	6400	6520
	150	37/2.25CP	14.80	1.4	1.4	2.50	2.3	53.0	8160	8310
	185	37/2.52CP	16.40	1.6	1.4	2.50	2.4	58.0	9725	9920
	240	37/2.88CP	19.00	1.7	1.4	2.50	2.6	64.5	12115	12350
	300	61/2.52CP	21.20	1.8	1.6	2.50	2.7	70.0	14570	14845
400	61/2.85CP	23.70	2.0	1.6	2.50	2.9	79.0	18915	19260	
4	1.5	7/0.53CR	1.59	0.7	0.8	0.90	1.4	16.0	500	520
	2.5	7/0.67CR	2.01	0.7	0.8	0.90	1.4	17.0	580	605
	4	7/0.85CR	2.55	0.7	0.8	0.90	1.4	19.0	710	735
	6	7/1.04CR	3.12	0.7	0.8	1.25	1.5	21.0	975	1000
	10	7/1.35CR	4.05	0.7	0.8	1.25	1.5	23.5	1315	1350
	16	7/1.70CR	5.10	0.7	0.8	1.25	1.6	26.0	1620	1660
	25	7/2.14CP	6.10	0.9	1.0	1.60	1.7	31.0	2400	2465
	35	7/2.52CP	7.10	0.9	1.0	1.60	1.8	33.5	2930	3000
	50	19/1.78CP	8.40	1.0	1.0	1.60	1.9	37.5	3705	3790
	70	19/2.14CP	9.90	1.1	1.2	2.00	2.1	43.0	5175	5290
	95	19/2.52CP	11.80	1.1	1.2	2.00	2.2	48.0	6590	6720
	120	37/2.03CP	13.20	1.2	1.4	2.50	2.3	53.5	8415	8570
	150	37/2.25CP	14.80	1.4	1.4	2.50	2.4	58.5	10045	10250
	185	37/2.52CP	16.40	1.6	1.4	2.50	2.6	63.5	12015	12275
	240	37/2.88CP	19.00	1.7	1.6	2.50	2.7	71.0	15115	15430
	300	61/2.52CP	21.20	1.8	1.6	2.50	2.9	78.5	19130	19500
400	61/2.85CP	23.70	2.0	1.8	3.15	3.2	87.0	23710	24170	

NOTES : CR=circular stranded conductor

CP=circular compacted stranded conductor

Current Rating &amp; Volt Drop refer to Table T2 on page 33

Model ESL-FR-600M is suitable for 90°C or up to 125°C operating temperature