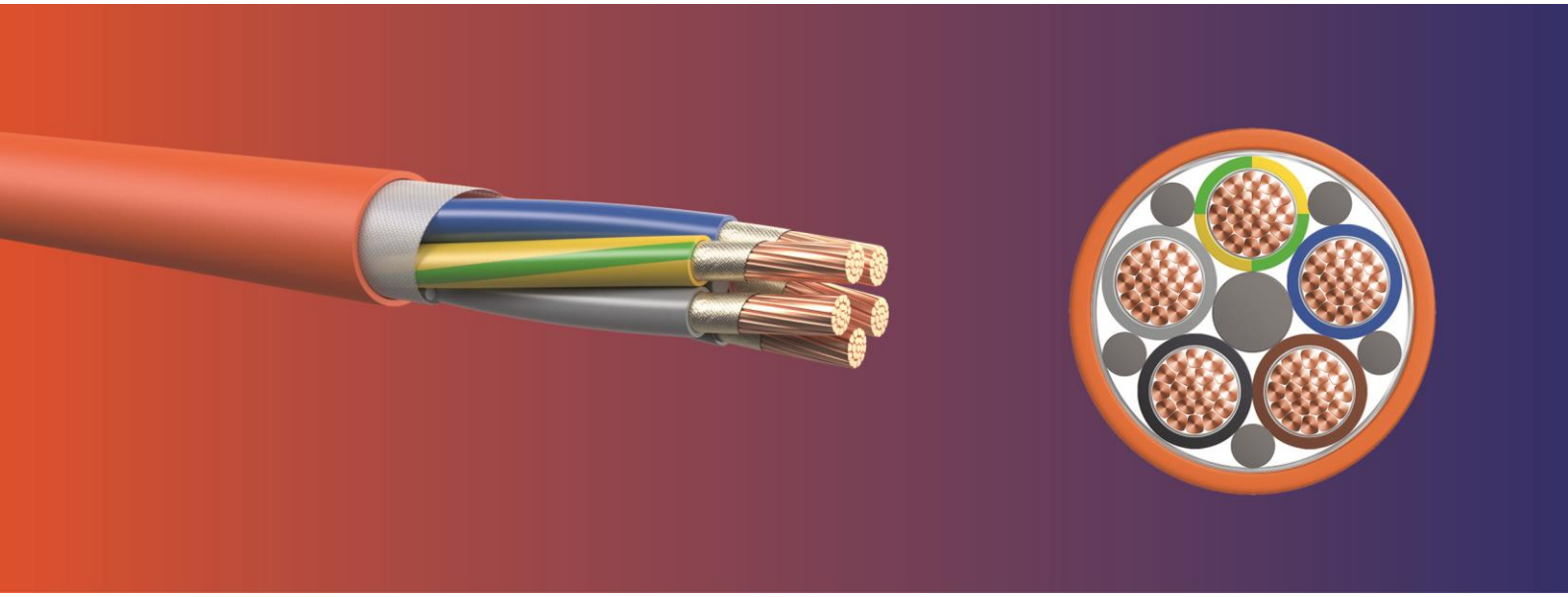
CIRCUIT INTEGRITY CABLES

FR-MI 110 MC / Multi core

BETAflam® Fire resistant power cables 0.6/1 kV, circuit integrity acc. to BS 6387, LSOH



Application

Power cable 0.6/1 kV for fixed installation , also for outside cable ducts, with the highest fire performance and circuit integrity requirements. For high temperature conditions and extra long expected lifetime.
Typical applications:
- Fire alarm circuits
- Fire detection circuits
- Emergency signal/control circuits
- Fire fighting systems (water pumps)
- Smoke exhaust systems etc.

Especially recommended in areas where human and animal life as well as valuable property are exposed to high risk in case of fire.

Construction

Conductor	Copper stranded wire, compacted, based on DIN VDE 0295 / IEC 60228, class 2
Taping	Glass MICA tape
Insulation	BETAflam® mineral copolymer, cross-linked
Core colour	See below
Shared inner covering	Glass fiber tape
Sheath	BETAflam® mineral copolymer
Sheath colour	Orange

Advantages

- High safety standard: BS 6387 C.W.Z, fully tested and certified by LPCB
- TÜV SÜD PSB tested and certified
- Fire tested by Electrosuisse
- Low Smoke Zero Halogen (LSOH)
- Operation temperature 110°C
- RoHS and REACH compliant
- Lead free - below 100 ppm
- Mineral filled fire resist. Materials
- High LOI
- Very long lifetime
- Flame test on insulation without sheath
- Made in Switzerland

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Electrical properties

Values referring		IEC 60502-1
Rated value	U_0 / U	0.6 / 1 kV AC
Test voltage		4 kV, 50 Hz / 5 min.

Thermal properties

Max. operating temperature	fixed installation	+110°C 20'000 h / IEC 60216
Min. ambient temperature	fixed installation	-30°C
Max. ambient temperature	during laying	+70°C
Min. ambient temperature	during laying	-5°C
Max. short circuit temperature		+280°C (max. 5s)

Mechanical properties

Bending radius	during laying	≥ 10 x Ø
Bending radius	fixed installation	≥ 6 x Ø

Material properties / Standards

Halogen free	IEC 60754-1; BS EN 60754-1
No corrosive gases	IEC 60754-2; BS EN 60754-2
No Toxicity of gases	NFX 70-100, Def Stan 02-713, NFC 20-454
Minimal smoke density	IEC 61034-1 & -2; BS EN 61034-1 & -2
Flame retardant	IEC 60332-1; BS EN 60332-1
No flame spread on bunched cables	IEC 60332-3-22, -23, -24 (Cat. A, B, C); BS EN 60332-3-22, -23, -24 (Cat. A, B, C)
Limiting oxygen index (LOI)	ASTM D2863; ≥ 38
Minimal Light absobation	ASTM D2843; 7 %
Circuit integrity FE180	IEC 60331-21
Circuit integrity	BS 6387 C.W.Z.; BS 7846 Category F2 - (Amendment 1 & 2, - Annex L.1 / cable Ø >20mm)
Circuit integrity	SS 299-1/A1

Approvals

LPCB - BRE Group
www.redbooklive.com

PSB Listed - TÜV SÜD

Additional information

Laying conditions:

	For electrical installations in control cabinets, switchboards or other closed cable wiring systems
	Not recommended for permanently high humid ambient.
	Shield from direct sunlight.

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Cross-sec. [mm²]	No. of cores	Conductor-Ø [mm]	Core-Ø [mm]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	former UK conductor colour code	conductor colour code: IEC 60446 and HD308 S2
							BK+RD	BU+BN
1.5	2C	1.6	3.7	10.3	135	0.354	215091	309485
2.5	2C	2.1	4	10.9	163	0.382	215093	309486
4	2C	2.6	4.65	12.4	219	0.489	301871	309496
6	2C	3.0	5.15	13.6	282	0.587	301875	310851
10	2C	4.0	5.65	17.4	453	0.937	301879	310852
16	2C	4.8	7.5	19.2	604	1.102	*	307996
35	2C	7.2	10.2	24.6	1140	1.850	*	307997
							BK+RD+GNYE	GNYE+BU+BN
1.5	2C+E	1.6	3.7	10.9	151	0.350	215448	310892
2.5	2C+E	2.1	4	11.5	187	0.377	215811	306605
4	2C+E	2.6	4.65	13.1	256	0.479	223867	306604
6	2C+E	3.0	5.15	14.4	335	0.575	223868	301876
10	2C+E	4.0	6.65	18.4	564	1.029	223869	310854
16	2C+E	4.8	7.5	20.4	773	1.218	224540	310855
25	2C+E	6.1	9.05	23.6	1130	1.586	223870	310856
35	2C+E	7.2	10.2	26.1	1449	1.829	*	*
50	2C+E	8.4	11.9	29.9	1880	2.150	*	*
70	2C+E	10.1	13.6	34.0	2603	2.730	*	*
95	2C+E	12	15.4	38.3	3531	3.530	*	*
120	2C+E	13.7	17.5	43.0	4575	3.820	*	*
150	2C+E	15.2	19.5	47.6	5359	4.860	*	*
185	2C+E	17	21.7	52.7	6643	5.930	*	*
240	2C+E	19.5	24.4	58.9	8549	7.250	*	*
300	2C+E	22.7	28.3	67.9	11283	10.080	*	*
400	2C+E	25.7	31.7	75.7	14210	12.160	*	*
							RD+BU+YE	BN+BK+GY
1.5	3C	1.6	3.7	10.9	153	0.347	215344	309487
2.5	3C	2.1	4	11.5	188	0.365	215067	310857
4	3C	2.6	4.65	13.1	257	0.467	301872	310858
6	3C	3.0	5.15	14.4	335	0.554	301877	310859
10	3C	4.0	6.65	18.4	570	1.026	301880	310860
16	3C	4.8	7.5	20.4	773	1.187	301882	310861
25	3C	6.1	9.05	23.6	1129	1.549	301884	310862

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Cross-sec. [mm²]	No. of cores	Conductor-Ø [mm]	Core-Ø [mm]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	former UK conductor colour code	conductor colour code: IEC 60446 and HD308 S2
35	3C	7.2	10.2	26.1	1439	1.759	301887	*
50	3C	8.4	11.9	29.9	1942	2.282	301890	*
70	3C	10.1	13.6	34.0	2677	2.894	301893	*
95	3C	12	15.4	38.3	3507	3.291	301896	*
120	3C	13.7	17.5	43.0	4330	4.050	301899	*
150	3C	15.2	19.5	47.6	5331	4.918	301901	*
185	3C	17	21.7	52.7	6591	5.994	301903	*
240	3C	19.5	24.4	58.9	8356	6.872	301905	*
300	3C	22.7	28.3	67.9	11239	9.859	301906	*
400	3C	25.7	31.7	75.7	14111	11.763	301907	*
							RD+BU+YE+GNYE	GNYE+BN+BK+GY
1.5	3C+E	1.6	3.7	12.1	193	0.455	215923	310863
2.5	3C+E	2.1	4	12.9	244	0.483	219259	310864
4	3C+E	2.6	4.65	14.6	333	0.612	301873	310865
6	3C+E	3.0	5.15	16.0	436	0.729	301878	310866
10	3C+E	4.0	6.65	20.2	683	1.097	301881	310867
16	3C+E	4.8	7.5	22.3	942	1.280	301883	310868
25	3C+E	6.1	9.05	26.2	1434	1.852	301885	310869
35	3C+E	7.2	10.2	29.1	1882	2.253	301888	*
50	3C+E	8.4	11.9	33.5	2540	2.922	301891	*
70	3C+E	10.1	13.6	37.9	3483	3.611	301894	*
95	3C+E	12	15.4	42.6	4648	4.373	301897	*
120	3C+E	13.7	17.5	48.2	5706	5.248	301900	*
150	3C+E	15.2	19.5	53.1	7013	6.319	301902	*
185	3C+E	17	21.7	58.7	8669	7.683	301904	*
240	3C+E	19.5	24.4	65.9	11298	9.330	*	*
300	3C+E	22.7	28.3	76.1	14905	12.830	*	*
400	3C+E	25.7	31.7	85.8	18624	15.080	*	*
							BK+RD+BU+YE	BU+BN+BK+GY
1.5	4C	1.6	3.7	12.1	195	0.452	215066	309488
2.5	4C	2.1	4	12.9	245	0.472	215068	310870
4	4C	2.6	4.65	14.6	334	0.599	301874	310871
6	4C	3.0	5.15	16.0	435	0.707	301240	306606
120	4C	13.7	17.5	48.2	5686	5.101	*	306616

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Cross-sec. [mm²]	No. of cores	Conductor-Ø [mm]	Core-Ø [mm]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	former UK conductor colour code	conductor colour code: IEC 60446 and HD308 S2
							BK+RD+BU+YE+GNYE	GNYE+BU+BN+BK+GY
1.5	4C+E	1.6	3.7	13.0	234	0.527	301858	310872
2.5	4C+E	2.1	4	14.1	301	0.595	301865	310873
4	4C+E	2.6	4.65	16.2	417	0.768	215932	310874
6	4C+E	3.0	5.15	17.8	548	0.923	215545	310875
10	4C+E	4.0	6.65	22.1	841	1.327	215933	310876
16	4C+E	4.8	7.5	24.5	1167	1.561	216433	310877
25	4C+E	6.1	9.05	29.0	1736	2.093	301886	310928
35	4C+E	7.2	10.2	32.7	2341	2.783	301889	310929
50	4C+E	8.4	11.9	37.7	3164	3.615	301892	*
70	4C+E	10.1	13.6	42.5	4344	4.478	301895	*
95	4C+E	12	15.4	47.3	5775	5.343	301898	*
								WH+numbers
1.5	5C	1.6	3.7	13.0	236	0.524	*	301859
2.5	5C	2.1	4	14.1	302	0.584	*	301866
4	5C	2.6	4.65	16.2	417	0.768	*	
1.5	7C	1.6	3.7	14.4	300	0.626	*	301860
2.5	7C	2.1	4	15.5	387	0.686	*	301867
4	7C	2.6	4.65	17.8	497	0.850	*	*
1.5	8C	1.6	3.7	16.0	363	0.800	*	*
1.5	10C	1.6	3.7	19.4	489	1.121	*	301861
2.5	10C	2.1	4	20.6	614	1.213	*	301868
1.5	12C	1.6	3.7	19.4	509	1.070	*	*
2.5	12C	2.1	4	20.6	651	1.144	*	301869
1.5	14C	1.6	3.7	20.6	586	1.231	*	301862
1.5	16C	1.6	3.7	21.7	658	1.370	*	*
2.5	16C	2.1	4	23.0	780	1.440	*	*
1.5	19C	1.6	3.7	22.9	757	1.520	*	301863
1.5	20C	1.6	3.7	24.0	815	1.690	*	*
1.5	21C	1.6	3.7	24.3	850	1.732	*	301864
2.5	21C	2.1	4	26.0	1003	1.820	*	*
1.5	24C	1.6	3.7	24.7	904	1.840	*	*
2.5	24C	2.1	4	28.4	1155	2.120	*	*
1.5	30C	1.6	3.7	28.3	1135	2.220	*	*
1.5	33C	1.6	3.7	27.7	1059	2.100	*	*

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Cross-sec. [mm²]	No. of cores	Conductor-Ø [mm]	Core-Ø [mm]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	former UK conductor colour code	conductor colour code: IEC 60446 and HD308 S2
1.5	36C	1.6	3.7	30.5	1340	2.600	*	*
1.5	40C	1.6	3.7	31.6	1459	2.780	*	*
1.5	41C	1.6	3.7	32.4	1387	2.820	*	*
1.5	46C[1]	1.6	3.7	35.3	1750	3.470	*	*
1.5	48C[1]	1.6	3.7	36.0	1772	3.600	*	*

Colour shortcuts: BK = black, RD = red, BU = blue, BN = brown, GNYE = green/yellow, YE = yellow, GY = grey, WH = white

* upon request

[1] =without LPCB-marking

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