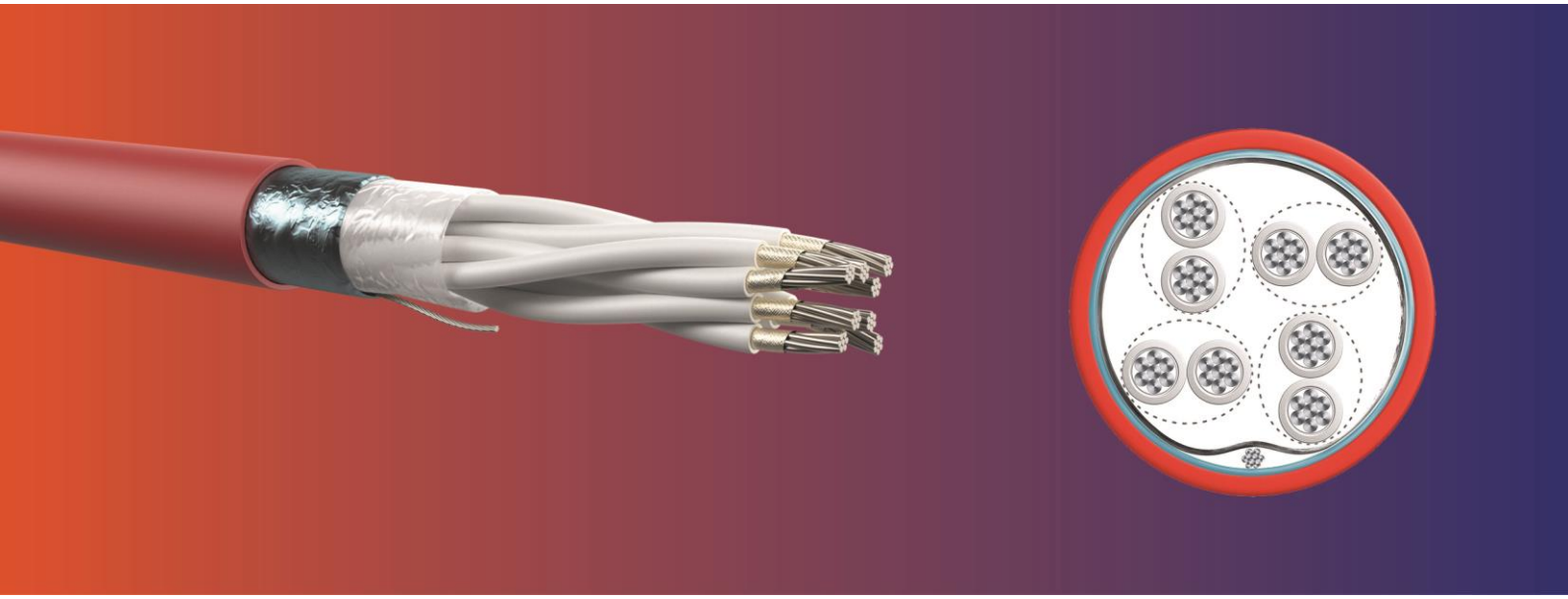
CIRCUIT INTEGRITY CABLES

FR-MI 110 S/UTP / Signal-and communication cables

BETAflam® Fire resistant signal comms cables screened 300/500 V, circuit integrity acc. to BS 6387, LSOH



Application

Shielded communication cable 300/500 V for fixed installation in cable systems 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

Construction	According to EN 50288-7
Conductor	Bare annealed copper strand, fine-wire, acc. to VDE 0295 / IEC 60228, class 2
Taping	Glass Mica tape
Insulation	BETAflam® mineral copolymer, cross-linked
Core colour	See below
Shared inner covering	Halogenfree tape
Shield	Aluminium laminated foil with tinned drain wire
Sheath	BETAflam® mineral copolymer
Sheath colour	Red

Advantages

- High safety standard: BS 6387 C.W.Z, fully tested and certified by LPCB
- Fire tested by Electrosuisse
- Low Smoke Zero Halogen (LSOH)
- Operation temperature 110°C
- RoHS and REACH compliant
- Lead free - below 300 ppm
- Mineral filled fire resist. Materials
- High LOI
- Space saving installation due to small outer diameter
- Very long lifetime
- Made in Switzerland

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Electrical properties

Rated value	U_0 / U	300 / 500 V AC
Test voltage	Core/core	4.0 kV, 50Hz / 5 min.
Test voltage	Core/shield	2.0 kV, 50Hz / 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	≥ 12 x Ø
Bending radius	fixed installation	≥ 8 x Ø

Material properties / Standards

Halogen free	IEC 60754-1; BS EN 60754-1
No corrosive gases	IEC 60754-2, BS EN 60754-2
Toxicity of gases	NFX 70-100, Def Stan 02-713, NFC 20-454
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)

Additional information

Laying conditions:

	Also for electrical installations outside of cable ducts.
	Not recommended for permanently high humid ambient.
	Shield from direct sunlight.

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Cross-sec. [mm²]	No. of pairs	Conductor-Ø [mm]	Core-Ø [mm]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	insulation color BK+WT Pairs numbered from 1 to n1 (sheath colour red)	insulation color WT Pairs numbered from 1 to 2n1 (sheath colour red)	insulation color WT Pairs numbered from 1 to 2n1 (sheath colour orange)
0.75	1P	1.2	2.9	8.3	83	0.210	303953	*	301973
0.75	2P	1.2	2.9	14.2	204	0.590	306889	*	301974
0.75	3P	1.2	2.9	14.1	205	0.520	309056	*	301975
0.75	4P	1.2	2.9	16.9	284	0.730	308760	*	*
0.75	5P	1.2	2.9	17.9	336	0.850	*	*	301976
0.75	7P	1.2	2.9	20.4	426	1.040	*	*	301977
0.75	10P	1.2	2.9	26.1	500	1.500	*	*	301978
1	1P	1.3	3.2	8.8	93	0.230	303877	225323	*
1	2P	1.3	3.2	15.3	233	0.660	*	*	301979
1	3P	1.3	3.2	16.2	240	0.590	*	*	*
1	4P	1.3	3.2	17.7	316	0.780	*	*	307346
1	5P	1.3	3.2	19.1	387	0.950	*	*	301980
1	6P	1.3	3.2	21.5	480	1.210	*	*	307347
1	7P	1.3	3.2	22.1	550	1.300	*	*	*
1	10P	1.3	3.2	26.2	677	1.560	316041	*	301981
1.5	1P	1.6	3.5	9.5	111	0.260	226328	215389	*
1.5	2P	1.6	3.5	16.4	283	0.770	311140	310142	218481
1.5	3P	1.6	3.5	16.2	282	0.640	309495	*	303775
1.5	5P	1.6	3.5	20.8	475	1.100	*	*	301982
1.5	7P	1.6	3.5	23.8	606	1.320	*	*	301983
1.5	10P	1.6	3.5	30.8	730	1.650	*	*	301984
2.5	1P	2.1	4	10.7	146	0.320	226329	221865	*
2.5	2P	2.1	4	18.9	391	1.020	309654	*	303776
2.5	3P	2.1	4	18.0	382	0.780	310729	*	301985
2.5	7P	2.1	4	27.3	842	1.670	*	*	301986
2.5	10P	2.1	4	34.8	1050	1.900	*	*	301987
4	1P[2]	2.6	4.7	12.2	200	0.400	309054	307330	*

BK=black, WT=white

1n= number of pairs

2=without LPCB marking

S/UTP = Shielded/Unshielded Twisted Pair

* upon request

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