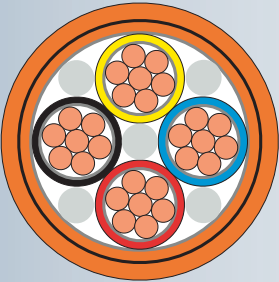


# FR-MI 110 / Multicore / Steel Tape Armour (STA)

BETAflam® Fire Resistant Safety Cables 0.6/1 kV, acc. to BS 6387 C.W.Z., LSOH



## Advantages

- High safety standard: BS 6387 C.W.Z, fully tested by LPCB
- Halogen and silicone free
- Operating temperature up to +110 °C
- In compliance with RoHS directive
- Robust cable with increased resistance to mechanical impact

## Application

Armoured Power Cable 0.6/1 kV with improved fire performance and circuit integrity. Suitable for fixed installation in areas with increased demand to mechanical stress. 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 live as well as valuable property are exposed to risk in case of fire.

## Construction

- **Conductor:** Bare annealed copper, acc. IEC 60228 class 2
- **Flame barrier:** MICA tape
- **Insulation:** BETAflam® mineral copolymer, cross-linked
- **Inner covering:** Glass fiber tape
- **Inner sheath:** BETAflam® mineral copolymer
- **Armouring:** Steel tape armour (STA)
- **Core identification:** See technical information (other colours on request)
- **Sheath:** BETAflam® mineral copolymer, orange (other colours on request)

## Technical specification

- **Rated voltage:**  $U_0/U$  0.6/1 kV
- **Test voltage:** 4 kV/50 Hz
- **Temperature range:**
  - Operation temperature from –30 °C to +110 °C
  - Laying temperature from –5 °C to +70 °C
  - Short circuit temperature +280 °C (temperature peak ≤ 5 s)

## Bending radius:

During laying > 15 × outer Ø

Fixed installed > 9 × outer Ø

- **Laying conditions:** For fixed indoor installation in trays, ladders, ducts or concretes. Direct laying in earth or water only in water-proof dry tubes/ducts.

Outdoor use if protected from direct sunlight only. Special designs with additional UV or anti termite-resistance are available on request.

## Material properties

- **Halogen free:** IEC 60754-1; BS EN 50267-2-1; VDE 0482-267-2-1
- **No corrosive gases:** IEC 60754-2; BS EN 50267-2-2; VDE 0482-267-2-2
- **No toxic gases:** NES 02-713; NF C20-454; BS EN 50267-2-1
- **Low smoke density:** IEC 61034-1 & -2; BS EN 61034-2; VDE 0482-1034-1 & -2

## Fire performance

- **Flame retardant:** IEC 60332-1; BS EN 60332-1; VDE 0482-332-1
- **No flame propagation:** IEC 60332-3-24; EN 60332-3-24; VDE 0482-266-1 & -2-4
- **Circuit integrity:**
  - BS 6387 C.W.Z. / Ø ≤ 20 mm
  - IEC 60331-21; VDE 0472-814

Cross section mm <sup>2</sup>	Partno. LSA	Number of cores	Conductor stranding n×Ømm	Nominal diameter under STA mm	Nominal diameter over STA Ømm	Nominal thickness sheath mm	Nominal diameter cable Ømm	Approx. weight kg / km	Current Rating <sup>1</sup>		AC Voltage Drop		Fire Load kWh / m
									1 phase <sup>2</sup> A	3 phase <sup>2</sup> A	1 phase <sup>2</sup> mV / Am	3 phase <sup>2</sup> mV / Am	
1.5	301924	2C	7×0.53	9.7	10.5	1.8	14.1	390	26		24.94		0.68
1.5	301925	2C+E	7×0.53	10.3	11.1	1.8	14.7	419	26		24.94		0.71
1.5	301926	3C	7×0.53	10.3	11.1	1.8	14.7	419		23		21.60	0.71
1.5	301927	3C+E	7×0.53	11.2	12.0	1.8	15.6	525		23		21.60	0.88
1.5	301928	4C	7×0.53	11.2	12.0	1.8	15.6	525		23		21.60	0.88
1.5	301929	4C+E	7×0.53	12.4	13.2	1.8	16.8	568					0.93
1.5	301930	6C+E	7×0.53	13.6	14.4	1.8	18.0	665					1.05
1.5	301931	9C+E	7×0.53	17.7	18.5	1.8	22.1	985					1.56
1.5	Ø	13C+E	7×0.53	19.0	19.8	1.8	23.4	1112					1.68
1.5	Ø	18C+E	7×0.53	21.3	22.1	1.8	25.7	1373					2.03
1.5	Ø	20C+E	7×0.53	22.7	23.5	1.8	27.1	1521					2.24
1.5	Ø	23C+E	7×0.53	24.7	25.5	1.8	29.1	1715					2.52
1.5	Ø	32C+E	7×0.53	27.7	28.5	1.8	32.1	2148					3.07
1.5	Ø	40C+E	7×0.53	32.4	33.2	1.8	36.8	2770					3.95
2.5	301932	2C	7×0.68	10.9	11.7	1.8	15.3	468	36		15.36		0.79
2.5	301933	2C+E	7×0.68	11.5	12.3	1.8	15.9	498	36		15.36		0.81
2.5	301934	3C	7×0.68	11.5	12.3	1.8	15.9	498		32		13.30	0.81
2.5	301935	3C+E	7×0.68	12.9	13.7	1.8	17.3	604		32		13.30	0.96
2.5	301936	4C	7×0.68	12.9	13.7	1.8	17.3	604		32		13.30	0.96
2.5	301937	4C+E	7×0.68	14.1	14.9	1.8	18.5	710					1.10
2.5	Ø	6C+E	7×0.68	15.5	16.3	1.8	19.9	879					1.33
2.5	Ø	9C+E	7×0.68	20.6	21.4	1.8	25.0	1286					1.94
2.5	Ø	15C+E	7×0.68	23.0	23.8	1.8	27.4	1606					2.26
2.5	Ø	20C+E	7×0.68	26.0	26.8	1.8	30.4	1987					2.74
4	301938	2C	7×0.85	12.4	13.2	1.8	16.8	573	49		9.64		0.94
4	301939	2C+E	7×0.85	13.1	13.9	1.8	17.5	614	49		9.64		0.94
4	301940	3C	7×0.85	13.1	13.9	1.8	17.5	614		42		8.34	0.94
4	301941	3C+E	7×0.85	14.6	15.4	1.8	19.0	747		42		8.34	1.12
4	301942	4C	7×0.85	14.6	15.4	1.8	19.0	747		42		8.34	1.12
4	Ø	4C+E	7×0.85	16.2	17.0	1.8	20.6	895					1.32
4	Ø	6C+E	7×0.85	17.8	18.6	1.8	22.2	1070					1.51
6	Ø	2C	7×1.04	13.9	14.7	1.8	18.3	692	63		6.60		1.09
6	Ø	2C+E	7×1.04	14.7	15.5	1.8	19.1	749	63		6.60		1.09
6	301944	3C	7×1.04	14.7	15.5	1.8	19.1	749		54		5.63	1.09
6	301945	3C+E	7×1.04	16.3	17.1	1.8	20.7	915		54		5.63	1.29
6	301946	4C	7×1.04	16.3	17.1	1.8	20.7	915		54		5.63	1.29
6	Ø	4C+E	7×1.04	18.1	18.9	1.8	22.5	1108					1.55
10	Ø	2C	7×1.32	17.4	18.2	1.8	21.8	1004	86		3.95		1.53
10	Ø	2C+E	7×1.32	18.4	19.2	1.8	22.8	1162	86		3.95		1.65
10	301947	3C	7×1.32	18.4	19.2	1.8	22.8	1162		75		3.42	1.65
10	301948	3C+E	7×1.32	20.2	21.0	1.8	24.6	1324		75		3.42	1.79
10	301949	4C	7×1.32	20.2	21.0	1.8	24.6	1324		75		3.42	1.79
10	301950	4C+E	7×1.32	22.1	22.9	1.8	26.5	1572					2.08
16	Ø	2C+E	7×1.72	20.4	21.2	1.8	24.8	1444	115		2.56		1.87
16	301951	3C+E	7×1.72	22.3	23.1	1.8	26.7	1660		100		2.21	2.00
16	301952	4C	7×1.72	22.3	23.1	1.8	26.7	1660		100		2.21	2.00
16	Ø	4C+E	7×1.72	24.5	25.3	1.8	28.9	1996					2.35
25	Ø	2C+E	7×2.15	23.6	24.4	1.8	28.0	1940	149		1.69		2.31
25	301953	3C+E	7×2.15	26.2	27.0	1.8	30.6	2392		127		1.46	2.72
25	301954	4C	7×2.15	26.2	27.0	1.8	30.6	2392		127		1.46	2.72
25	Ø	4C+E	7×2.15	29.0	29.8	1.8	33.4	2768					2.99
35	Ø	2C+E	7×2.52	26.1	26.9	1.8	30.5	2349	185		1.26		2.59
35	301955	3C+E	7×2.52	29.1	29.9	1.8	33.5	2948		158		1.10	3.11
35	301956	4C	7×2.52	29.1	29.9	1.8	33.5	2948		158		1.10	3.11
35	Ø	4C+E	7×2.52	32.7	33.5	1.8	37.1	3663					3.83

Ø = On request

1 AC circuit, max. conductor temperature 90 °C

2 Open tray, touching

Cross section	Part no.	Number of cores	Conductor stranding	Nominal diameter under STA	Nominal diameter over STA	Nominal thickness sheath	Nominal diameter cable	Approx. weight	Current Rating <sup>1</sup>		AC Voltage Drop		Fire Load
									1 phase <sup>2</sup>	3 phase <sup>2</sup>	1 phase <sup>2</sup>	3 phase <sup>2</sup>	
mm <sup>2</sup>	LSA		n × Ø mm	mm	Ø mm	mm	Ø mm	kg / km	A	A	mV / Am	mV / Am	kWh / m
50	∅	2C+E	19 × 1.79	29.9	30.7	1.8	34.3	3022	225		0.99		3.20
50	301957	3C+E	19 × 1.79	33.5	34.3	1.8	37.9	3838		198		0.85	3.91
50	301958	4C	19 × 1.79	33.5	34.3	1.8	37.9	3838		198		0.85	3.91
50	∅	4C+E	19 × 1.79	37.7	38.5	1.8	42.1	4764					4.82
70	∅	2C+E	19 × 2.15	34.0	34.8	1.8	38.4	3975	284		0.74		3.90
70	301959	3C+E	19 × 2.15	37.9	38.7	1.8	42.3	4990		246		0.64	4.63
70	301960	4C	19 × 2.15	37.9	38.7	1.8	42.3	4990		246		0.64	4.63
70	∅	4C+E	19 × 2.15	42.5	43.3	2.1	47.5	6286					6.00
95	∅	2C+E	19 × 2.52	39.3	40.1	2.1	44.3	5284	352		0.58		5.12
95	301961	3C+E	19 × 2.52	43.1	43.9	2.1	48.1	6625		298		0.50	6.02
95	301962	4C	19 × 2.52	43.1	43.9	2.1	48.1	6625		298		0.50	6.02
95	∅	4C+E	19 × 2.52	48.3	49.1	2.1	53.3	8195					7.35
120	∅	2C+E	37 × 2.02	40.1	40.9	2.1	45.1	6174	410		0.49		5.43
120	301963	3C+E	37 × 2.02	48.2	49.0	2.1	53.2	8132		346		0.43	7.04
120	301964	4C	37 × 2.02	48.2	49.0	2.1	53.2	8132		346		0.43	7.04
150	∅	2C+E	37 × 2.23	47.6	48.4	2.1	52.6	7636	473		0.44		6.76
150	301965	3C+E	37 × 2.23	53.1	53.9	2.5	58.9	9932		399		0.38	8.73
150	301966	4C	37 × 2.23	53.1	53.9	2.5	58.9	9932		399		0.38	8.73
185	∅	2C+E	37 × 2.49	52.7	53.5	2.5	58.5	9427	542		0.39		8.44
185	301967	3C+E	37 × 2.49	58.7	59.5	2.5	64.5	12138		456		0.33	10.37
185	301968	4C	37 × 2.49	58.7	59.5	2.5	64.5	12138		456		0.33	10.37
240	∅	2C+E	61 × 2.23	59.1	59.9	2.5	64.9	11831	641		0.34		10.04
240	301969	3C+E	61 × 2.23	65.9	66.7	2.9	72.5	15441		538		0.28	12.93
240	301970	4C	61 × 2.23	65.9	66.7	2.9	72.5	15441		538		0.28	12.93
300	∅	2C+E	61 × 2.52	68.9	69.7	2.9	75.5	15704					13.85
300	301971	3C+E	61 × 2.52	77.3	78.1	3.3	84.7	20407					17.63
300	301972	4C	61 × 2.52	77.3	78.1	3.3	84.7	20407					17.63
400	∅	2C+E	61 × 2.85	77.1	77.9	3.3	84.5	19561					16.95
400	∅	3C+E	61 × 2.85	85.8	86.6	3.7	94.0	25186					21.05
400	∅	4C	61 × 2.85	85.8	86.6	3.7	94.0	25186					21.05

∅ = On request  
<sup>1</sup> AC circuit, max. conductor temperature 90 °C  
<sup>2</sup> Open tray, touching