

SECTION - X
FIRE AND SECURITY CABLES



PRODUCTS

Fire Alarm Cables

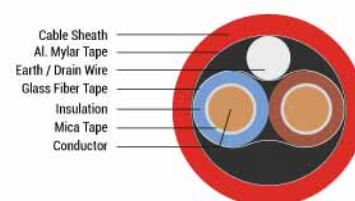
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Fire Survival Cables

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Single Core Fire Resistant

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Application

These cables are used in high rise buildings, commercial complexes, schools and educational institutions, hospitals, etc. for the connection with security systems like smoke detectors, emergency lightings, exit signboards and fire command center. These cables are used where the fire safety is utmost important.

Standard

BS 7629-1, BS EN 50200.

Technical Data

Voltage Rating : 300/500V

Temperature Range : -30°C to + 70°C (The cable should not be flexed when either the ambient or cable temperature is below 0°C)

Minimum Bending Radius : 6D

Cable Type - 1

FFX200 05mSOZ1-R - CU/MGT/SR/OSCR/LSZH 300/500V Class 2.

Cable Construction

Plain annealed copper conductor to BS EN 60228, class 2.

Primary insulation of glass mica fire resistant tape.

Secondary insulation of high performance silicone rubber.

EI 2 to BS 7655 Section 1.1.

Core colours :

2 Core : blue, brown.

3 Core : blue, brown, black.

4 Core : blue, brown, black, grey.

Glass fiber tape.

Earth/Drain wire of annealed tinned copper to BS EN 60228.

Electrostatic screen of aluminium fire barrier.

Sheath type LTS3 to BS 7655 section 6.1.

Properties

Low smoke zero halogen (LSZH), flame retardant.

Fire Performance Tests

BS 7629 - 1, 300 / 500 V fire resistant electric cables with non corrosive gases and low emission of smoke when affected by fire. Category STANDARD 30 & STANDARD 60 when tested in accordance with BS EN 50200-Method of test for resistance to fire of unprotected small cables for use in emergency circuits.

Also meets category ENHANCED 120 when tested in accordance with BS EN 50200 and the 120 min survival time when tested in accordance with BS 8434-2.

Meets requirement for fire resistant cables as described in clause 26 2e of BS 5839-1.

Range Details

Part Number	No. of Cores & Nominal Cross Sectional Area (Sq. mm)	No. of Strands/ Strand Diameter (mm)	Nominal Overall Diameter (mm)
100100201105	2 x 1.5	7/0.53	10.0
100100201205	2 x 2.5	7/0.67	11.5
100100301105	3 x 1.5	7/0.53	10.8
100100301205	3 x 2.5	7/0.67	12.3
100100401105	4 x 1.5	7/0.53	12.0
100100401205	4 x 2.5	7/0.67	13.5

Electrical Properties

Part Number	No. of Cores & Nominal Cross Section Area (Sq. mm)	Max. Conductor Resistance at 20°C (Ω/km)	Current Rating (A)		Voltage Drop DC or Single Phase AC (mV/A/m)
			DC or Single Phase AC enclosed	DC or Single Phase AC Clipped	
100100201105	2 x 1.5	12.1	17.5	20.0	29
100100201205	2 x 2.5	7.41	24.0	27.0	18
100100301105	3 x 1.5	12.1	17.5	20.0	29
100100301205	3 x 2.5	7.41	24.0	27.0	18
100100401105	4 x 1.5	12.1	17.5	20.0	29
100100401205	4 x 2.5	7.41	24.0	27.0	18

Cable Type - 2

FFX200 05SOZ1-U - CU/SR/OSCR/LSZH 300/500V Class 1.

Technical Data

Plain annealed copper conductor to BS EN 60228, class 1.

Insulation of high performance ceramified silicone rubber.

EI 2 to BS 7655 Section 1.1.

Core colours:

2 Core : blue, brown.

3 Core : blue, brown, black.

4 Core : blue, brown, black, grey.

Glass fiber tape.

Earth/Drain wire of annealed tinned copper to BS EN 60228.

Electrostatic screen of aluminium fire barrier.

Sheath Type LTS3 to BS 7655 section 6.1.

Properties

Low smoke zero halogen (LSZH), flame retardant.

Fire Performance Tests

BS 7629 - 1, 300 / 500 V fire resistant electric cables with non corrosive gases and low emission of smoke when affected by fire.

Category STANDARD 60 when tested in accordance with BS EN 50200-Method of test for resistance to fire of unprotected small cables for use in emergency circuits.

In addition, it shall meet the 30 min survival time when tested in accordance with BS EN 50200, Annex E.

Meets requirement for the fire resistant cables as described in clause 26 2d of BS 5839-1

Cable Design Parameters

Part Number	No. of Cores & Nominal Cross Sectional Area (Sq. mm)	No. of Strands/ Strand Diameter (mm)	Nominal Overall Diameter (mm)
100200200001	2 x 1	1/1.13	7.5
100200201105	2 x 1.5	1/1.38	8.5
100200201205	2 x 2.5	1/1.78	9.9
100200301105	3 x 1.5	1/1.38	9.1
100200301205	3 x 2.5	1/1.78	10.7
100200401105	4 x 1.5	1/1.38	10.1
100200401205	4 x 2.5	1/1.78	11.6

Electrical Properties

Part Number	No. of Cores & Nominal Cross Section Area (Sq. mm)	Max. Conductor Resistance at 20°C (Ω/km)	Current Rating (A)		Voltage Drop DC or Single Phase AC (mV/A/m)
			DC or Single Phase AC enclosed	DC or Single Phase AC Clipped	
100200200001	2 x 1	18.1	13.1	15.5	44
100200201105	2 x 1.5	12.1	17.5	20.0	29
100200201205	2 x 2.5	7.41	24	27.0	18
100200301105	3 x 1.5	12.1	17.5	20.0	29
100200301205	3 x 2.5	7.41	24.0	27.0	18
100200401105	4 x 1.5	12.1	17.5	20.0	29
100200401205	4 x 2.5	7.41	24.0	27.0	18

Cable Type - 3

FFX200 05mZOZ1-R - Cu/MGT/LS0H /OSCR/LSZH 300/500V Class 2

Technical Data

Plain annealed copper conductor to BS EN 60228, class 2.

Primary insulation of glass mica fire resistant tape Secondary insulation to BS EN 50363-5, Type EI 5, Low smoke zero halogen (LSZH) cross-linkable flame retardant insulation.

Core colours:

2 Core : Blue, Brown.

3 Core : Blue, Brown, Black.

4 Core : Blue, Brown, Black, Grey.

Glass fiber tape.

Earth/Drain wire of annealed tinned copper to BS EN 60228.

Electrostatic screen of aluminium fire barrier.

Sheath Type LTS3 to BS 7655 section 6.1.

Properties

Low smoke zero halogen (LSZH), flame retardant.

Fire Performance Tests

BS 7629 - 1, 300 / 500 V fire resistant electric cables with non corrosive gases and low emission of smoke when affected by fire. Category STANDARD 60 when tested in accordance with BS EN 50200-Method of test for resistance to fire of unprotected small cables for use in emergency circuits.

In addition, it shall meet the 30 min survival time when tested in accordance with BS EN 50200, Annex E.

Meets requirement for the fire resistant cables as described in clause 26 2d of BS 5839-1

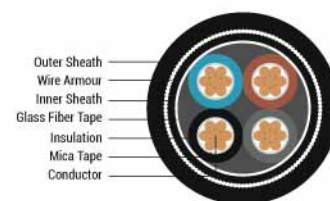
Part Number	No. of Cores & Nominal Cross Sectional Area (Sq. mm)	No. of Strands/ Strand Diameter (mm)	Nominal Overall Diameter (mm)
100300201105	2 x 1.5	7/0.53	10.0
100300201205	2 x 2.5	7/0.67	11.5
100300301105	3 x 1.5	7/0.53	10.8
100300301205	3 x 2.5	7/0.67	12.3
100300401105	4 x 1.5	7/0.53	12.0
100300401205	4 x 2.5	7/0.67	13.5

Electrical Properties

Part Number	No. of Cores & Nominal Cross Section Area (Sq. mm)	Max. Conductor Resistance at 20°C (Ω/km)	Current Rating (A)		Voltage Drop DC or Single Phase AC (mV/A/m)
			DC or Single Phase AC enclosed	DC or Single Phase AC Clipped	
100300201105	2 x 1.5	12.1	17.5	20.0	29
100300201205	2 x 2.5	7.41	24.0	27.0	18
100300301105	3 x 1.5	12.1	17.5	20.0	29
100300301205	3 x 2.5	7.41	24.0	27.0	18
100300401105	4 x 1.5	12.1	17.5	20.0	29
100300401205	4 x 2.5	7.41	24.0	27.0	18

Code Designations

FFX – Fire Alarm Cable, 200 – 300/500 V Multicore (Type), 05 – 300/500 V (Voltage), mS – Mica Tape + Silicon Rubber, mZ – Mica Tape + Thermosetting LSOH, S – Silicon Rubber, O – Overall Aluminium screen, Z1 –LSZH, U – Solid conductor to EN 60228 class 1, R – Stranded conductor to EN 60228 class 2



Application

These cables offer the advantages of an armoured 600/1000V rated, low smoke zero halogen (LSZH) cable with circuit integrity. They are intended for use in installations where vital circuits are required to continue operation in the event of the outbreak of fire. It is particularly suited for use in public buildings and constructions (such as hospitals, theatres, shopping developments, tunnels, mass transit railways, oil & petrochemical plants, power stations and computer installations) where the danger to life, equipment and structures may be greatly increased in the event of a power failure due to fire.

Standard

BS 7846

Technical Data

Voltage Rating : 600 / 1000V

Operating Temperature : -40°C to + 90°C

(The cable should not be flexed when either the ambient or cable temperature is below 0°C)

Minimum Bending Radius : 12 x overall diameter of cable

Cable Construction

Construction : Plain annealed stranded copper conductors.

Conductor : For sizes up to and including 16mm² are offered in circular . Shaped conductors are offered from 25 mm² and onwards.

Insulation : Mica (fire - resistant) tapes, covered by an extruded layer of cross - linked polyethylene.

Bedding : An extruded layer of thermoplastic low smoke zero halogen (LSZH) compound.

Armour : Single layer of galvanized steel wires.

Sheath : Thermoplastic low smoke zero halogen (LSZH) compound.

Cable Technical Data

	Part Number	Nominal Cross Sectional Area (Sq. mm)	Insulation Thickness (mm)	Nominal Armour Wire Diameter (mm)	Approx. Diameter Under Armour (mm)	Approx. Overall Diameter (mm)	Approx. Cable Weight (kg/km)	Max. DC Conductor Resistance at 20°C (Ω/km)	Max. AC Conductor Resistance at 90°C (Ω/km)	Reactance at 50Hz (Ω/km)	AC Impedance at 90°C (Ω/km)	Max. Arm. Resistance at 20°C (Ω/km)
2 Core	100300201105	1.5*	0.6	0.9	8.5	13.0	415	12.1	15.428	0.104	15.428	10.7
	100300201205	2.5*	0.7	0.9	10	14.5	495	7.41	9.448	0.101	9.448	8.8
	100300200004	4*	0.7	0.9	11	15.5	575	4.61	5.878	0.099	5.878	7.9
	100300200006	6*	1	0.9	12.5	17.0	658	3.08	3.927	0.094	3.928	7.0
	100300200010	10*	1	0.9	14.0	19.0	828	1.83	2.333	0.093	2.335	6.0
	100300200016	16	1	1.25	16.0	21.5	1005	1.15	1.466	0.088	1.469	3.8
	100300200025	25	1	1.25	15.5	21.2	1105	0.727	0.927	0.082	0.93	3.7
	100300200035	35	1	1.6	17.5	24.0	1555	0.524	0.668	0.077	0.673	2.5
	100300200050	50	1	1.6	20.0	26.5	1855	0.387	0.494	0.076	0.5	2.3
	100300200070	70	1.1	1.6	23.0	30.0	2455	0.268	0.342	0.075	0.349	2.0
	100300200095	95	1.1	2.0	26.0	34.0	3345	0.193	0.247	0.074	0.258	1.4
	100300200120	120	1.2	2.0	29.0	37.0	3898	0.153	0.196	0.072	0.209	1.3
	100300200150	150	1.4	2.0	32.0	40.0	4645	0.124	0.16	0.073	0.176	1.2
	100300200185	185	1.6	2.5	36.0	45.5	5945	0.0991	0.128	0.073	0.148	0.82
	100300200240	240	1.7	2.5	40.0	50.0	7345	0.0754	0.099	0.072	0.122	0.73
	100300200300	300	1.8	2.5	44.0	54.5	8695	0.0601	0.08	0.072	0.107	0.67
100300200400	400	2	2.5	49.5	60.0	10745	0.047	0.064	0.071	0.096	0.59	
3 Core	100300301105	1.5*	0.6	0.9	9.0	13.5	423	12.1	15.428	0.104	15.428	10.2
	100300301205	2.5*	0.7	0.9	10.5	15.0	544	7.41	9.448	0.101	9.448	8.2
	100300300004	4*	0.7	0.9	11.5	16.5	644	4.61	5.878	0.099	5.878	7.5
	100300300006	6*	0.7	0.9	13.0	17.5	738	3.08	3.927	0.094	3.925	6.6
	100300300010	10*	0.7	1.25	15.0	20.5	1085	1.83	2.333	0.093	2.335	4.0
	100300300016	16	0.7	1.25	17.0	22.5	1313	1.15	1.466	0.088	1.469	3.6
	100300300025	25	0.9	1.6	20.0	26.5	1803	0.727	0.927	0.082	0.93	2.5
	100300300035	35	0.9	1.6	22.0	29.0	2202	0.524	0.668	0.077	0.673	2.3
	100300300050	50	1	1.6	22.5	29.5	2453	0.387	0.494	0.076	0.5	2.0
	100300300070	70	1.1	1.6	26.0	33.0	3202	0.268	0.342	0.075	0.349	1.8
	100300300095	95	1.1	2.0	30.0	38.0	4455	0.193	0.247	0.074	0.258	1.3
	100300300120	120	1.2	2.0	33.0	41.5	5305	0.153	0.196	0.072	0.209	1.2
	100300300150	150	1.4	2.5	37.0	46.5	6705	0.124	0.16	0.073	0.176	0.78
	100300300185	185	1.6	2.5	41.0	51.0	8052	0.0991	0.128	0.073	0.148	0.71
	100300300240	240	1.7	2.5	46.0	56.0	9953	0.0754	0.099	0.072	0.122	0.63
	100300300300	300	1.8	2.5	51.0	61.0	12053	0.0601	0.08	0.072	0.107	0.58
100300300400	400	2.0	2.5	57.0	67.5	14803	0.047	0.064	0.071	0.096	0.52	

Cable Technical Data

	Part Number	Nominal Cross Sectional Area (Sq. mm)	Insulation Thickness (mm)	Nominal Armour Wire Diameter (mm)	Approx. Diameter Under Armour (mm)	Approx. Overall Diameter (mm)	Approx. Cable Weight (kg/km)	Max. DC Conductor Resistance at 20°C (Ω/km)	Max. AC Conductor Resistance at 90°C (Ω/km)	Reactance at 50Hz (Ω/km)	AC Impedance at 90°C (Ω/km)	Max. Arm. Resistance at 20°C (Ω/km)
4 Core	100300401105	1.5*	0.6	0.9	10	14.8	522	12.1	15.428	0.104	15.428	9.5
	100300401205	2.5*	0.7	0.9	11.5	16.0	618	7.41	9.448	0.101	9.448	7.7
	100300400004	4*	0.7	0.9	13	17.8	725	4.61	5.878	0.099	5.878	6.8
	100300400006	6*	0.7	1.25	14.5	20.0	985	3.08	3.927	0.094	3.925	4.3
	100300400010	10*	0.7	1.25	16.5	22.0	1255	1.83	2.333	0.093	2.335	3.7
	100300400016	16	0.7	1.25	19	24.5	1635	1.15	1.466	0.088	1.469	3.2
	100300400025	25	0.9	1.6	22	28.5	2145	0.727	0.927	0.082	0.930	2.3
	100300400035	35	0.9	1.6	24.5	31.5	2645	0.524	0.668	0.077	0.673	2
	100300400050	50	1.0	1.6	26	33.2	3103	0.387	0.494	0.076	0.500	1.8
	100300400070	70	1.1	2.0	30.5	39.2	4405	0.268	0.342	0.075	0.349	1.2
	100300400095	95	1.1	2.0	34.5	43.2	5653	0.193	0.247	0.074	0.258	1.1
	100300400120	120	1.2	2.5	38.5	48.6	7252	0.153	0.196	0.072	0.209	0.76
	100300400150	150	1.4	2.5	42.5	53.0	8553	0.124	0.16	0.073	0.176	0.68
	100300400185	185	1.6	2.5	47.5	58.0	10304	0.0991	0.128	0.073	0.148	0.61
	100300400240	240	1.7	2.5	53.5	64.5	12895	0.0754	0.099	0.072	0.122	0.54
	100300400300	300	1.8	2.5	59.0	70.3	15545	0.0601	0.08	0.072	0.107	0.49
100300400400	400	2.0	3.15	66.5	79.8	20245	0.047	0.064	0.071	0.096	0.35	

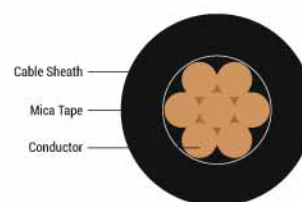
Note :

* Class 2 stranded circular (non compacted) conductor.

For current ratings refer table no. 15-1 & voltage drop refer table no. 15-2.

SINGLE CORE FIRE RESISTANT

REACH | RoHS | CE



Application

These cables are designed for installations in trunking and conduits where a fire situation may pose a major hazard. Circuit integrity is maintained and to achieve optimum performance such cables should be installed in metal conduits.

Standard

Adapted to EN 50525-3-41

Technical Data

Voltage rating : 450 / 750 V

Operating temperature : -200C to + 900C (the cable should not be flexed when the temperature is below 00C)

Minimum Bending Radius : 8 x Overall diameter

Cable Construction

Conductors : Stranded plain annealed copper conductor to BS EN 60228, class 2.

Insulation : Mica (fire resistant) tape covered by an extruded layer of cross - linked low smoke zero halogen (LS0H), insulating compound

*Sheathed version also available. Details available on request.

Properties

Circuit Integrity for installation in metal conduits : BS 6387 categories C, W & Z (when applied to a single cable)

Exceeds IEC 60331 - 3 hours at 750°C - when the test temperature was increased to 950°C, equivalent to BS 6387 category C

Acid Gas Emission : IEC 60754-1, BS EN 50267-2-1

Smoke Emission : IEC 61034, BS EN 50268

Flame Propagation : EN 60332-1, EN 60332-3, BS EN 50265, BS EN 50266

Cable Design Parameters

Kindly complete the part numbers for these cables by adding the suffix (in place of 'xx') for the insulation colour required :

01 - green, 02 - black, 03 - red, 04 - blue, 05 - yellow, 06 - green / yellow, 09 - brown, 12 - grey.

Part Number	Nominal Cross Sectional Area (Sq. mm)	Insulation Thickness (mm)	Max. Overall Diameter (mm)	Approx. Cable Weight (kg/km)
10040101xx60	1.5	0.7	3.8	32
10040102xx60	2.5	0.8	4.5	43
10040103xx60	4	0.8	5	55
10040104xx60	6	0.8	5.5	85
10040105xx60	10	1	7	146
10040106xx60	16	1	8	198
10040107xx60	25	1.2	9.7	320
10040108xx60	35	1.2	10.8	410
10040109xx60	50	1.4	13.3	549
10040110xx60	70	1.4	15.1	770
10040111xx60	95	1.6	17.5	1140
10040112xx60	120	1.6	19.2	1425
10040113xx60	150	1.8	21.2	1720
10040114xx60	185	2	23.6	2155