Firetox

LSZH Flame Retardant Power & Control Cables

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TABLE OF CONTENTS

01/ 300/500V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-31 (Single Core)

04/ 300/500V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-41 (Single Core)

07/ 300/500V XLPE Insulated, LSZH Sheathed Power Cables to BS 7211 (Single Core)

10/ 300/500V XLPE Insulated, LSZH Sheathed Power Cables to BS 7211 (2-3 Cores)

13/ 300/500V XLPE Insulated, LSZH Sheathed, Screened Power Cables to BS 8436 (2-4 Cores)

16/ 450/750V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-31 (Single Core)

21/ 450/750V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-41 (Single Core)

26/ 450/750V XLPE Insulated, LSZH Sheathed Power Cables to BS 7211 (Single Core)

30/ 450/750V XLPE Insulated, LSZH Sheathed Power Cables to BS 7211 (2-5 Cores)

35/ 600/1000V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-41 (Single Core)

39/ 600/1000V XLPE Insulated, LSZH Sheathed Power Cables to BS 8573 (Single Core)

43/ 600/1000V XLPE Insulated, LSZH Sheathed Power Cables to IEC 60502-1 (Single Core)

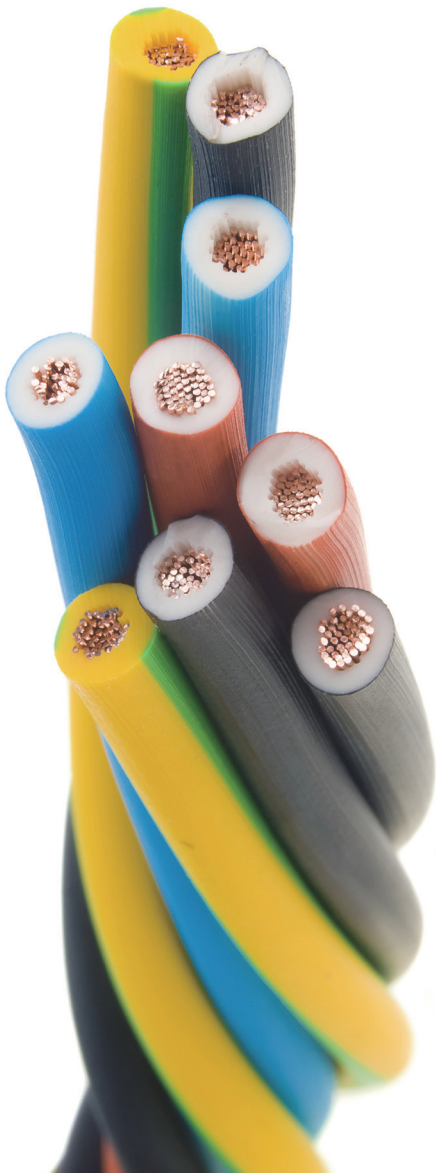


TABLE OF CONTENTS

47/ 600/1000V XLPE Insulated, LSZH Sheathed, Armoured Power Cables to BS 6724 (Single Core)

51/ 600/1000V XLPE Insulated, LSZH Sheathed, Armoured Power Cables to IEC 60502-1 (Single Core)

55/ 600/1000V XLPE Insulated, LSZH Sheathed Power Cables to BS 8573 (2-5 Cores)

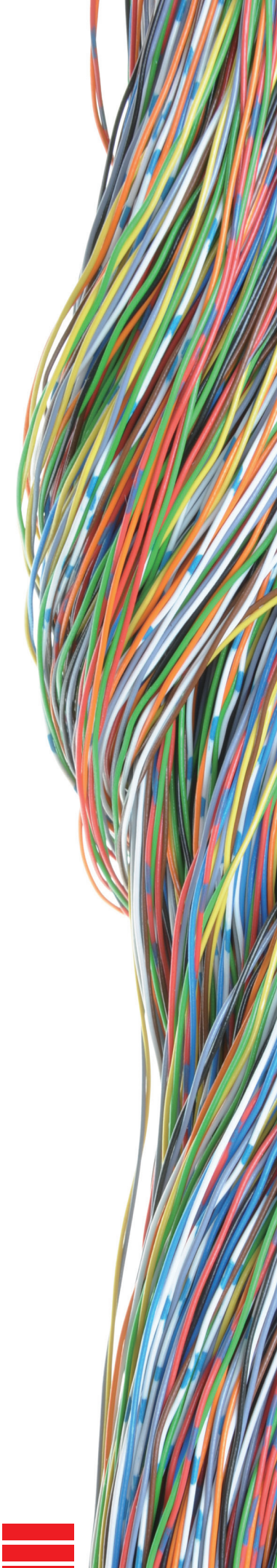
60/ 600/1000V XLPE Insulated, LSZH Sheathed Power Cables to IEC 60502-1 (2-5 Cores & Multicore)

66/ 600/1000V XLPE Insulated, LSZH Sheathed, Armoured Power Cables to BS 6724 (2-5 Cores)

71/ 600/1000V XLPE Insulated, LSZH Sheathed, Armoured Power Cables to IEC 60502-1 (2-5 Cores)

77/ Type Codes for LSZH Flame Retardant Power & Control Cables

78/ Technical Information for Fire Properties



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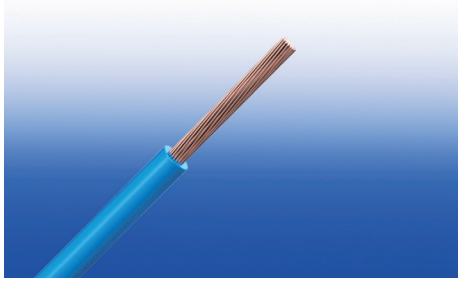
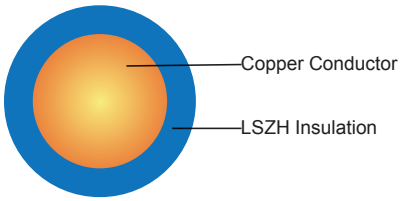
300/500V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-31 (Single Core)

FTX100 05Z1-U/R/K (CU/LSZH 300/500V Class 1/2/5)
HAR Code: H05Z1-U/R/K





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings.

STANDARDS

Basic design to BS EN 50525-3-31

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
CPR Compliance	Eca

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Copper conductor according to BS EN 60228 class 1/2/5.
Insulation: Thermoplastic compound of type TI 7 to EN 50363-7.
Insulation Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow. Bi-colours of any combination of the above mono-colours are permitted.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius: 4 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX100 05Z1-U/R/K			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
1×0.50	1	0.6	1.9	2.3	9.4
1×0.75	1	0.6	2.1	2.5	12.2
1×1.0	1	0.6	2.2	2.7	15.4
1×0.50	2	0.6	2.0	2.4	10.1
1×0.75	2	0.6	2.2	2.6	13.0
1×1.0	2	0.6	2.3	2.8	16.8
1×0.50	5	0.6	2.1	2.5	9.9
1×0.75	5	0.6	2.2	2.7	13.3
1×1.0	5	0.6	2.4	2.8	16.2

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 70°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp)

Conductor Cross-sectional Area	Single-phase a.c.	Three-phase a.c.
mm^2	A	A
0.5	3	3
0.75	6	6
1.0	10	10

Note: These values apply to the majority of cases. Further information should be sought in unusual cases eg.:
(i) When high ambient temperatures are involved, ie. above 30°C
(ii) Where long lengths are used
(iii) Where ventilation is restricted
(iv) Where the cords are used for other purposes, ego internal wiring of apparatus.

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Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		Ref. Methods A&B (enclosed in conduit or trunking)	Ref. Methods C, F&G (clipped direct, on trays or in free air)		Ref. Methods A&B (enclosed in conduit or trunking)	Ref. Methods C, F&G (clipped direct, on trays or in free air)		
			Cables touching	Cables spaced*		Cables touching, Trefoil	Cables touching, Flat	Cables spaced*, Flat
1	2	3	4	5	6	7	8	9
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
0.5	93	93	93	93	80	80	80	80
0.75	62	62	62	62	54	54	54	54
1.0	46	46	46	46	40	40	40	40

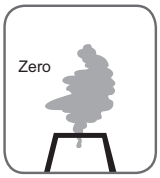
Note: *Spacings larger than one cable diameter will result in a large voltage drop.

Rated Voltage

Standard

Flame Retardancy
IEC 60332-1-2

Reduced Fire Propagation
IEC 60332-3-24



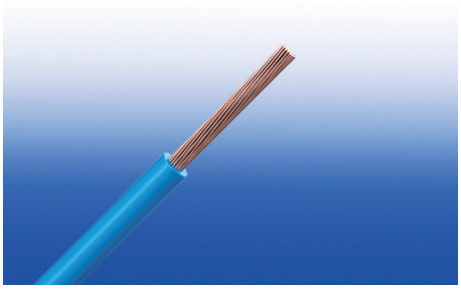
Halogen Free
IEC 60754-1

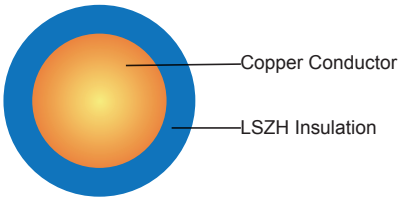
Low Corrosivity
IEC 60754-2

Low Smoke Emission
IEC 61034-2

300/500V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-41 (Single Core)

FTX100 05Z-U/K (CU/LSZH 300/500V Class 1/5)
BS Code: 2491B
HAR Code: H05Z-U/K





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings.

STANDARDS

Basic design to BS EN 50525-3-41(formerly BS 7211)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Copper conductor according to BS EN 60228 class 1/5.
Insulation: Crosslinked polyolefin material type EI 5 according to EN 50363-5.
Insulation Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow. Bi-colours of any

combination of the above mono-colours are permitted.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 4 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX100 05Z-U/K			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
1×0.50	1	0.6	1.9	2.4	9.4
1×0.75	1	0.6	2.1	2.6	12.2
1×1.0	1	0.6	2.2	2.8	15.4
1×0.50	5	0.6	2.1	2.6	9.9
1×0.75	5	0.6	2.2	2.8	13.3
1×1.0	5	0.6	2.4	2.9	16.2

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Single-phase a.c.	Three-phase a.c.
mm^2	A	A
0.5	3	3
0.75	6	6
1.0	10	10

Note: These values apply to the majority of cases. Further information should be sought in unusual cases eg.:
(i) When high ambient temperatures are involved, ie. above 30°C
(ii) Where long lengths are used
(iii) Where ventilation is restricted
(iv) Where the cords are used for other purposes, ego internal wiring of apparatus.

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

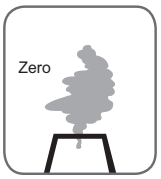
Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		Ref. Methods A&B (enclosed in conduit or trunking)	Ref. Methods C, F&G (clipped direct, on trays or in free air)		Ref. Methods A&B (enclosed in conduit or trunking)	Ref. Methods C, F&G (clipped direct, on trays or in free air)		
			Cables touching	Cables spaced*		Cables touching, Trefoil	Cables touching, Flat	Cables spaced*, Flat
1	2	3	4	5	6	7	8	9
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
0.5	101	101	101	101	87	87	87	87
0.75	68	68	68	68	59	59	59	59
1.0	50	50	50	50	44	44	44	44

Note: *Spacings larger than one cable diameter will result in a large voltage drop.

Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2



Halogen Free
IEC 60754-1


Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

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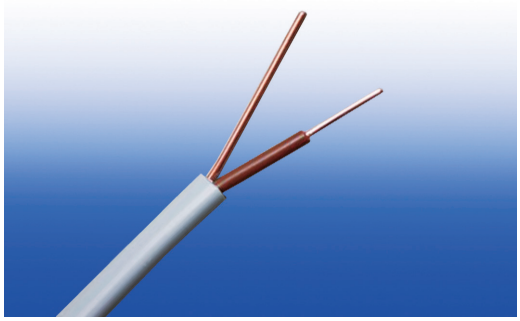
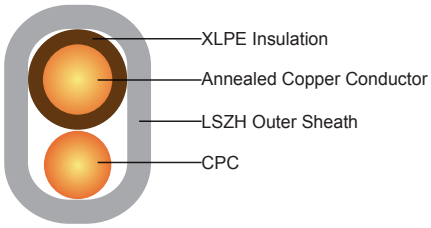
300/500V XLPE Insulated, LSZH Sheathed Power Cables to BS 7211 (Single Core)

FTX300 05RZ1-U (CU/XLPE/LSZH 300/500V Class 1)
BS Code: 6241B





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings.

STANDARDS

Basic design to BS 7211:2012

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, solid according to BS EN 60228 class 1.
Insulation: XLPE type GP8 according to BS 7655-1.3. Crosslinked polyolefin material type EI 5 according to EN 50363-5 can be offered as option.
CPC (Circuit Protective Conductor): Uninsulated copper conductor.
Outer Sheath: Extruded LSZH type LTS 2 according to BS 7655-6.1.
Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite

properties can be offered as option.

COLOUR CODE

Insulation Colour: Brown or blue.

Sheath Colour: White; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 4 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX300 05RZ1-U						
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Cross-sectional Area of CPC	Class of CPC	Nominal Sheath Thickness	Min. Overall Dimensions	Max. Overall Dimensions	Approx. Weight
No.×mm^2		mm	mm^2		mm	mm	mm	kg/km
1×1.0	1	0.70	1.0	1	0.9	4.1x5.2	5.0x6.3	45
1×1.5	1	0.70	1.0	1	0.9	4.4x5.4	5.3x6.6	55

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil
1	2	3	4	5	6	7
mm^2	A	A	A	A	A	A
1.0	14	13	17	15	19	17.5
1.5	19	17	23	20	25	23

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Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		Ref. Methods A&B (enclosed in conduit or trunking)	Ref. Methods C, F&G (clipped direct, on trays or in free air)		Ref. Methods A&B (enclosed in conduit or trunking)	Ref. Methods C, F&G (clipped direct, on trays or in free air)		
			Cables touching	Cables spaced*		Cables touching, Trefoil	Cables touching, Flat	Cables spaced*, Flat
1	2	3	4	5	6	7	8	9
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.0	46	46	46	46	40	40	40	40
1.5	31	31	31	31	27	27	27	27

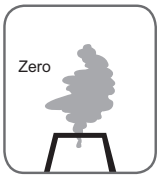
Note: *Spacings larger than one cable diameter will result in a large voltage drop.

Rated Voltage

Standard

Flame Retardancy
IEC 60332-1-2

Reduced Fire Propagation
IEC 60332-3-24



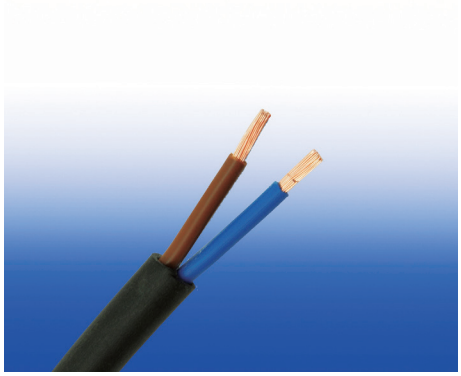
Halogen Free
IEC 60754-1

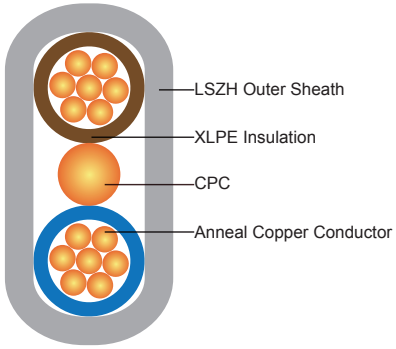
Low Corrosivity
IEC 60754-2

Low Smoke Emission
IEC 61034-2

300/500V XLPE Insulated, LSZH Sheathed Power Cables to BS 7211 (2-3 Cores)

FTX200 05RZ1-U/R (CU/XLPE/LSZH 300/500V Class 1/2)
BS Code: 6242B/6243B





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings.

STANDARDS

Basic design to BS 7211:2012

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, solid or stranded according to BS EN 60228 class 1 or class 2.
Insulation: XLPE type GP8 according to BS 7655-1.3. Crosslinked polyolefin material type EI 5 according to EN 50363-5 can be offered as option.
CPC (Circuit Protective Conductor): Uninsulated copper conductor.
Outer Sheath: Extruded LSZH type LTS 2 according to BS 7655-6.1.
Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

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COLOUR CODE

Insulation Colour:

Twin: Brown and blue or, for 2x1.0 and 2x1.5 cables, brown and brown.

Three cores: Brown, black (centre core) and grey.

Position of CPC:

Twin: Centrally placed between cores in same plane.

Three cores: Centrally placed between black and grey cores in same plane.

Sheath Colour: White; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius

OD<8mm: 4 × Overall Diameter

8mm≤OD≤12mm: 5 × Overall Diameter

OD>12mm: 6 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX200 05RZ1-U/R						
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Cross-sectional Area of CPC	Class of CPC	Nominal Sheath Thickness	Min. Overall Dimensions	Max. Overall Dimensions	Approx. Weight
No.×mm^2		mm	mm^2		mm	mm	mm	kg/km
2×1.0	1	0.7	1.0	1	0.9	4.1×7.6	5.0×9.2	68
2×1.5	1	0.7	1.0	1	0.9	4.4×8.1	5.3×9.7	85
2×2.5	1	0.7	1.5	1	1.0	4.9×9.3	6.0×11.2	120
3×1.0	1	0.7	1.0	1	0.9	4.1×10.0	5.0×12.1	91
3×1.5	1	0.7	1.0	1	0.9	4.4×10.7	5.3×12.9	115
3×2.5	1	0.7	1.5	1	1.0	4.9×12.0	6.0×14.6	170
2×1.0	2	0.7	1.0	1	0.9	4.2×7.8	5.1×9.4	73
2×1.5	2	0.7	1.0	1	0.9	4.5×8.3	5.4×10.0	90
2×2.5	2	0.7	1.5	1	1.0	5.0×9.5	6.1×11.4	125
2×4	2	0.7	1.5	1	1.0	5.5×10.4	6.7×12.6	175
2×6	2	0.7	2.5	1	1.1	6.2×12.0	7.5×14.6	240
2×10	2	0.7	4.0	2	1.2	7.3×14.5	8.8×17.5	390
2×16	2	0.7	6.0	2	1.3	8.4×17.0	10.1×20.5	560
3×4	2	0.7	1.5	1	1.0	5.5×14.0	6.7×16.9	196
3×6	2	0.7	2.5	1	1.1	6.2×16.2	7.5×19.5	291
3×10	2	0.7	4.0	2	1.2	7.3×19.5	8.8×23.6	440
3×16	2	0.7	6.0	2	1.3	8.4×22.8	10.1×27.6	670

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E2A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method E (free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.0	14.5	13	17	15	19	17	21	18
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4	33	30	40	35	45	40	49	42
6	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100

Note: With or without a protective conductor.

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E2B

Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable, single-phase a.c.	Three- or four core cable, three-phase a.c.
1	2	3	4
mm^2	mV/A/m	mV/A/m	mV/A/m
1.0	46	46	40
1.5	31	31	27
2.5	19	19	16
4	12	12	10
6	7.9	7.9	6.8
10	4.7	4.7	4.0
16	2.9	2.9	2.5

Rated Voltage | Standard | Flame Retardancy IEC 60332-1-2 | Reduced Fire Propagation IEC 60332-3-24 | Halogen Free IEC 60754-1 | Low Corrosivity IEC 60754-2 | Low Smoke Emission IEC 61034-2

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FIRETOX LSZH Flame Retardant Power & Control Cables

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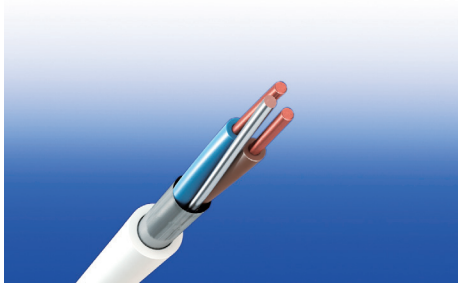
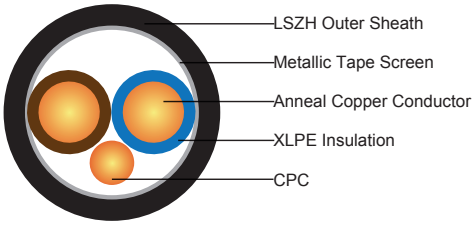
300/500V XLPE Insulated, LSZH Sheathed, Screened Power Cables to BS 8436 (2-4 Cores)

FTX200 05ROZ1-U/R/K (CU/XLPE/OSCR/LSZH 300/500V Class 1/2/5)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings.

STANDARDS

Basic design to BS 8436:2011

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Tinned annealed copper conductor, solid or stranded according to BS EN 60228 class 1, class 2 or class 5.

Insulation: Thermosetting XLPE type GP 8 according to BS 7655-1.3. Crosslinked polyolefin material type EI 5 according to EN 50363-5 or crosslinked elastomeric GP 4/GP 6 according to BS 7655-1.2 can be offered as option.

CPC (Circuit Protective Conductor): Uninsulated tinned annealed copper conductor conforming to BS EN 13630:2002.

Screen: One or more metallic or laminated metallic tape(s) shall be applied, either longitudinally or helically

or as a combination of both, with the metallic element in contact with the uninsulated circuit protective conductor.

Outer Sheath: LSZH type LTS 3 according to BS 7655-6.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour:

2-core + uninsulated circuit protective conductor: Brown, blue or brown, brown.

3-core + uninsulated circuit protective conductor: Brown, black, grey.

4-core + uninsulated circuit protective conductor: Blue, brown, black, grey.

Sheath Colour: White; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 70°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 6 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX200 05ROZ1-U/R/K			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
2×1.0	1/2/5	0.6	0.9	8.0	80
2×1.5	1/2/5	0.7	0.9	8.5	100
2×2.5	1/2/5	0.7	1.0	10.5	140
2×4	1/2/5	0.7	1.1	12.5	190
3×1.0	1/2/5	0.6	0.9	8.5	105
3×1.5	1/2/5	0.7	0.9	9.5	120
3×2.5	1/2/5	0.7	1.0	11.5	170
3×4	1/2/5	0.7	1.1	13.5	230
4×1.0	1/2/5	0.6	1.0	9.0	125
4×1.5	1/2/5	0.7	1.0	10.5	155
4×2.5	1/2/5	0.7	1.1	12.0	200
4×4	1/2/5	0.7	1.2	15.0	280

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor operating temperature: 70°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4D2A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc)		Ref. Method B (enclosed in conduit on a wall or in trunking etc)		Ref. Method C (clipped direct)		Ref. Method E (in free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three-core or 1 four-core cable*, three -phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-core or 1 four-core cable*, three -phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-core or 1 four-core cable*, three -phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-core or 1 four-core cable*, three -phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.0	11	10	13	11.5	15	13.5	17	14.5
1.5	14	13	16.5	15	19.5	17.5	22	18.5
2.5	18.5	17.5	23	20	27	24	30	25
4	25	23	30	27	36	32	40	34

Note: With or without a protective conductor.

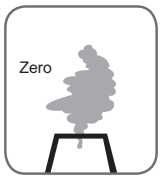
Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4D2B

Conductor cross-sectional area	Two-core cable d.c.	Two-core cable single-phase a.c.	Three- or four-core cable, three-phase a.c.
1	2	3	4
mm^2	mV/A/m	mV/A/m	mV/A/m
1.0	44	44	38
1.5	29	29	25
2.5	18	18	15
4	11	11	9.5

Rated Voltage

Standard

Flame Retardancy
IEC 60332-1-2



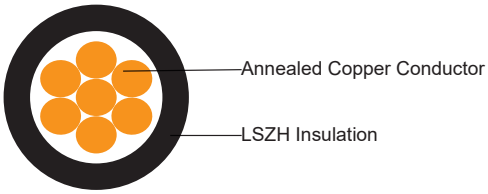
Halogen Free
IEC 60754-1

Low Corrosivity
IEC 60754-2

Low Smoke Emission
IEC 61034-2

450/750V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-31 (Single Core)

FTX100 07Z1-U/R/K (CU/LSZH 450/750V Class 1/2/5)
HAR Code: H07Z1-U/R/K



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings.

STANDARDS

Basic design to BS EN 50525-3-31

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Copper conductor according to BS EN 60228 class 1/2/5.
H07Z1-U: 1.5-10mm^2 Class 1 solid copper conductor to BS EN 60228.
H07Z1-R: 1.5-630mm^2 Class 2 stranded copper conductor to BS EN 60228.
H07Z1-K: 1.5-240mm^2 Class 5 stranded copper conductor to BS EN 60228.
Insulation: Thermoplastic compound of type TI 7 to EN 50363-7.
Insulation Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

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COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius

OD<8mm: 4 × Overall Diameter

8mm≤OD≤12mm: 5 × Overall Diameter

OD>12mm: 6 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX100 07Z1-U/R/K			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
1×1.5	1	0.7	2.6	3.2	22
1×2.5	1	0.8	3.2	3.9	35
1×4	1	0.8	3.6	4.4	52
1×6	1	0.8	4.1	5.0	73
1×10	1	1.0	5.3	6.4	122
1×1.5	2	0.7	2.7	3.3	24
1×2.5	2	0.8	3.3	4.0	37
1×4	2	0.8	3.8	4.6	54
1×6	2	0.8	4.3	5.2	76
1×10	2	1.0	5.6	6.7	127
1×16	2	1.0	6.4	7.8	191
1×25	2	1.2	8.1	9.7	301
1×35	2	1.2	9.0	10.9	405
1×50	2	1.4	10.6	12.8	550
1×70	2	1.4	12.1	14.6	774
1×95	2	1.6	14.1	17.1	1069
1×120	2	1.6	15.6	18.8	1333
1×150	2	1.8	17.3	20.9	1640
1×185	2	2.0	19.3	23.3	2055
1×240	2	2.2	22.0	26.6	2690
1×300	2	2.4	24.5	29.6	3364
1×400	2	2.6	27.5	33.2	4252
1×500	2	2.8	30.5	36.9	5343
1×630	2	2.8	34.0	41.1	6868
1×1.5	5	0.7	2.8	3.4	23

Conductor		FTX100 07Z1-U/R/K			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
1×2.5	5	0.8	3.4	4.1	37
1×4	5	0.8	3.9	4.8	54
1×6	5	0.8	4.4	5.3	76
1×10	5	1.0	5.7	6.8	128
1×16	5	1.0	6.7	8.1	191
1×25	5	1.2	8.4	10.2	297
1×35	5	1.2	9.7	11.7	403
1×50	5	1.4	11.5	13.9	577
1×70	5	1.4	13.2	16.0	803
1×95	5	1.6	15.1	18.2	1066
1×120	5	1.6	16.7	20.2	1332
1×150	5	1.8	18.6	22.5	1660
1×185	5	2.0	20.6	24.9	2030
1×240	5	2.2	23.5	28.4	2659

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 70°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4D1A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray horizontal or vertical)				
							Touching			Spaced by one diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-
4	26	24	32	28	37	33	-	-	-	-	-
6	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	131	114	110	146	130

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Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray horizontal or vertical)				
							Touching			Spaced by one diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
35	99	89	125	110	141	129	162	143	137	181	162
50	119	108	151	134	182	167	196	174	167	219	197
70	151	136	192	171	234	214	251	225	216	281	254
95	182	164	232	207	284	261	304	275	264	341	311
120	210	188	269	239	330	303	352	321	308	396	362
150	240	216	300	262	381	349	406	372	356	456	419
185	273	245	341	296	436	400	463	427	409	521	480
240	321	286	400	346	515	472	546	507	485	615	569
300	367	328	458	394	594	545	629	587	561	709	659
400	-	-	546	467	694	634	754	689	656	852	795
500	-	-	626	533	792	723	868	789	749	982	920
630	-	-	720	611	904	826	1005	905	855	1138	1070

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4D1B

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.											
		Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C & F(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking)			Ref. Methods C & F (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	29	29			29			29			25			25			25			25		
2.5	18	18			18			18			15			15			15			15		
4	11	11			11			11			9.5			9.5			9,5			9.5		
6	7.3	7.3			7.3			7.3			6.4			6.4			6.4			6.4		
10	4.4	4.4			4.4			4.4			3.8			3.8			3.8			3.8		
16	2.8	2.8			2.8			2.8			2.4			2.4			2.4			2.4		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.20	1.75	1.75	0.29	1.80	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.25	1.55	1.50	0.32	1.55
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30	1.10	0.27	1.10	1.10	0.170	1.10	1.10	0.24	1.10	1.10	0.32	1.15
50	0.93	0.95	0.3	1.0	0.93	0.19	0.95	0.93	0.28	0.97	0.81	0.26	0.85	0.8	0.165	0.82	0.8	0.24	0.84	0.8	0.32	0.86
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69	0.56	0.25	0.61	0.55	0.16	0.57	0.55	0.24	0.6	0.55	0.31	0.63
95	0.46	0.49	0.28	0.56	0.47	0.18	0.50	0.47	0.27	0.54	0.42	0.24	0.48	0.41	0.155	0.43	0.41	0.23	0.47	0.4	0.31	0.51
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45	0.33	0.23	0.41	0.32	0.15	0.36	0.32	0.23	0.4	0.32	0.3	0.44
150	0.29	0.31	0.27	0.41	0.3	0.175	0.34	0.29	0.26	0.39	0.27	0.23	0.36	0.26	0.15	0.3	0.26	0.23	0.34	0.26	0.3	0.40
185	0.23	0.25	0.27	0.37	0.24	0.17	0.29	0.24	0.26	0.35	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.22	0.31	0.21	0.3	0.36
240	0.18	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31	0.17	0.23	0.29	0.16	0.145	0.22	0.16	0.22	0.27	0.16	0.29	0.34
300	0.145	0.16	0.26	0.31	0.15	0.165	0.22	0.15	0.25	0.29	0.14	0.23	0.27	0.13	0.14	0.19	0.13	0.22	0.25	0.13	0.29	0.32
400	0.105	0.13	0.26	0.29	0.12	0.16	0.20	0.115	0.25	0.27	0.12	0.22	0.25	0.105	0.14	0.175	0.105	0.21	0.24	0.1	0.29	0.31
500	0.086	0.11	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26	0.1	0.22	0.25	0.086	0.135	0.16	0.086	0.21	0.23	0.081	0.29	0.30
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25	0.08	0.22	0.24	0.072	0.135	0.15	0.072	0.21	0.22	0.066	0.28	0.29

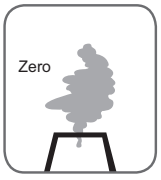
Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2


Reduced Fire Propagation
IEC 60332-3-24



Halogen Free
IEC 60754-1


Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

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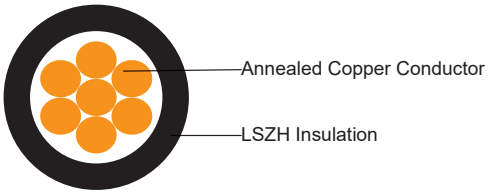
450/750V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-41 (Single Core)

FTX100 07Z-U/R/K (CU/LSZH 450/750V Class 1/2/5)

BS Code: 6491B

HAR Code: H07Z-U/R/K



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings. This product type is CE and TUV approved.

STANDARDS

Basic design to BS EN 50525-3-41(formerly BS 7211)

Approvals:

CE Certification (N8A 17 06 98200 005)

TUV Certification (B 17 06 98200 002)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Copper conductor according to BS EN 60228 class 1/2/5.

H07Z-U: 1.5-10mm^2 Class 1 solid copper conductor to BS EN 60228.

H07Z-R: 1.5-630mm^2 Class 2 stranded copper conductor to BS EN 60228.
H07Z-K: 1.5-240mm^2 Class 5 stranded copper conductor to BS EN 60228.
Insulation: Crosslinked polyolefin material type EI 5 according to EN 50363-5.
Insulation Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C
Maximum short circuit temperature (5 Seconds): 250°C
Minimum bending radius
D<8mm: 4 × Overall Diameter
8mm≤OD≤12mm: 5 × Overall Diameter
OD>12mm: 6 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX100 07Z-U/R/K			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
1×1.5	1	0.7	2.6	3.3	22
1×2.5	1	0.8	3.2	4.0	35
1×4	1	0.8	3.6	4.6	52
1×6	1	0.8	4.1	5.2	73
1×10	1	1.0	5.3	6.6	122
1×1.5	2	0.7	2.7	3.4	24
1×2.5	2	0.8	3.3	4.1	37
1×4	2	0.8	3.8	4.7	54
1×6	2	0.8	4.3	5.4	76
1×10	2	1.0	5.6	7.0	127
1×16	2	1.0	6.4	8.0	191
1×25	2	1.2	8.1	10.1	301
1×35	2	1.2	9.0	11.3	405
1×50	2	1.4	10.6	13.2	550
1×70	2	1.4	12.1	15.1	774
1×95	2	1.6	14.1	17.6	1069
1×120	2	1.6	15.6	19.4	1333
1×150	2	1.8	17.3	21.6	1640
1×185	2	2.0	19.3	24.1	2055
1×240	2	2.2	22.0	27.5	2690
1×300	2	2.4	24.5	30.6	3364
1×400	2	2.6	27.5	34.3	4252
1×500	2	2.8	30.5	38.2	5343

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Conductor		FTX100 07Z-U/R/K			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
1×630	2	2.8	34.0	42.5	6868
1×1.5	5	0.7	2.8	3.5	23
1×2.5	5	0.8	3.4	4.3	37
1×4	5	0.8	3.9	4.9	54
1×6	5	0.8	4.4	5.5	76
1×10	5	1.0	5.7	7.1	128
1×16	5	1.0	6.7	8.4	191
1×25	5	1.2	8.4	10.6	297
1×35	5	1.2	9.7	12.1	403
1×50	5	1.4	11.5	14.4	577
1×70	5	1.4	13.2	16.6	803
1×95	5	1.6	15.1	18.8	1066
1×120	5	1.6	16.7	20.9	1332
1×150	5	1.8	18.6	23.3	1660
1×185	5	2.0	20.6	25.8	2030
1×240	5	2.2	23.5	29.4	2659

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc)		Ref. Method B (enclosed in conduit on a wall or in trunking etc)		Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray, horizontal or vertical etc) Touching			Ref. Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4	35	31	42	37	46	41	-	-	-	-	-
6	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc)		Ref. Method B (enclosed in conduit on a wall or in trunking etc)		Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray, horizontal or vertical etc) Touching			Ref. Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	-	-	683	584	868	793	940	868	823	1085	1008
500	-	-	783	666	990	904	1083	998	946	1253	1169
630	-	-	900	764	1130	1033	1254	1151	1088	1454	1362

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.											
		Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)						Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4	12	12			12			12			10			10			10			10		
6	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37

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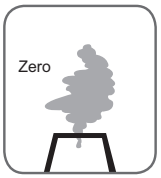
Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.												
		Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)						Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard

Flame Retardancy
IEC 60332-1-2



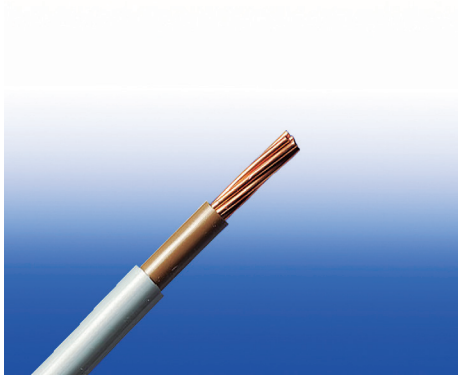
Halogen Free
IEC 60754-1

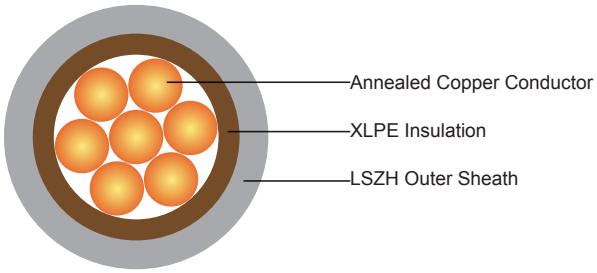
Low Corrosivity
IEC 60754-2

Low Smoke Emission
IEC 61034-2

450/750V XLPE Insulated, LSZH Sheathed Power Cables to BS 7211 (Single Core)

FTX300 07RZ1-U/R (CU/XLPE/LSZH 450/750V Class 1/2)
BS Code: 6181B





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 7211:2012

Approvals:
TUV Certification (Z1 17 08 98200 009)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, solid or stranded according to BS EN 60228 class 1 or class 2.
Insulation: XLPE type GP8 according to BS 7655-1.3. Crosslinked polyolefin material type EI 5 according to EN 50363-5 can be offered as option.

Outer Sheath: Extruded LSZH type LTS 4 according to BS 7655-6.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour: Brown or blue.

Sheath Colour: White; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius

OD<8mm: 4 × Overall Diameter

8mm≤OD≤12mm: 5 × Overall Diameter

OD>12mm: 6 × Overall Diameter

CONSTRUCTION PARAMETER

Conductor		FTX300 07RZ1-U/R				
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Sheath Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	kg/km
1×1.0	1	0.7	0.8	3.9	4.8	26
1×1.5	1	0.7	0.8	4.2	5.0	34
1×2.5	1	0.7	0.8	4.6	5.5	46
1×4	1	0.7	0.8	5.2	6.3	65
1×6	1	0.7	0.8	5.7	6.8	90
1×1.0	2	0.7	0.8	4.0	4.9	31
1×1.5	2	0.7	0.8	4.3	5.2	39
1×2.5	2	0.7	0.8	4.7	5.6	51
1×4	2	0.7	0.9	5.3	6.4	72
1×6	2	0.7	0.9	5.9	7.1	99
1×10	2	0.7	0.9	6.7	8.1	141
1×16	2	0.7	0.9	7.6	9.2	205
1×25	2	0.9	1.0	9.4	11.4	318
1×35	2	0.9	1.1	10.6	12.8	482

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc)		Ref. Method B (enclosed in conduit on a wall or in trunking etc)		Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray, horizontal or vertical etc) Touching			Ref. Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.0	14	13	17	15	19	17.5	-	-	-	-	-
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4	35	31	42	37	46	41	-	-	-	-	-
6	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201

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Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.												
		Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)						Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.0	46	46			46			46			40			40			40			40		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4	12	12			12			12			10			10			10			10		
6	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2


Reduced Fire Propagation
IEC 60332-3-24

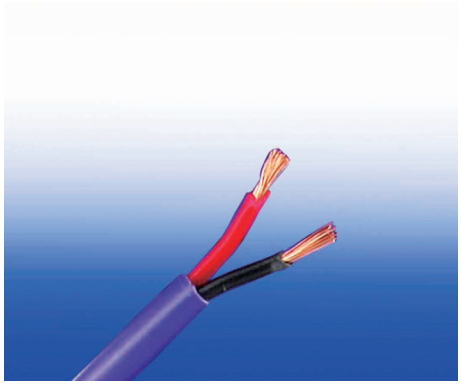
Halogen Free
IEC 60754-1

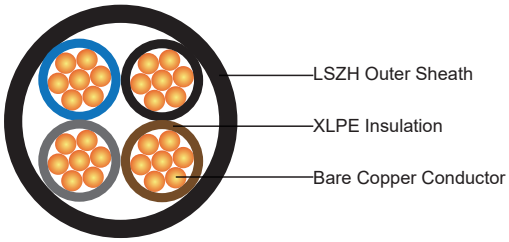

Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

450/750V XLPE Insulated, LSZH Sheathed Power Cables to BS 7211 (2-5 Cores)

FTX200 07RZ1-U/R (CU/XLPE/LSZH 450/750V Class 1/2)
BS Code: 6182B/6183B/6184B/6185B





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 7211:2012

Approvals:
TUV Certification (Z1 17 08 98200 009)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, solid or stranded according to BS EN 60228 class 1 or class 2.

Insulation: XLPE type GP8 according to BS 7655-1.3. Crosslinked polyolefin material type EI 5 according to EN 50363-5 can be offered as option.

Inner Covering Option: The optional inner covering, where used, shall consist of an extruded layer of synthetic polymeric material. It shall surround the laid-up two, three, four or five cores, giving the assembly a practically circular shape.

Outer Sheath: Extruded LSZH type LTS 4 according to BS 7655-6.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour:

2-core: Brown and blue.

3-core: Brown, black and grey.

4-core: Blue, brown black and grey.

5-core: Green/yellow, blue, brown black and grey.

Sheath Colour: White; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius

OD<8mm: 4 × Overall Diameter

8mm≤OD≤12mm: 5 × Overall Diameter

OD>12mm: 6 × Overall Diameter

CONSTRUCTION PARAMETER

Conductor		FTX200 07RZ1-U/R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Sheath Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	mm	kg/km
2×1.0	1	0.7	0.4	1.2	7.1	9.5	94
2×1.5	1	0.7	0.4	1.2	7.6	10.1	121
2×2.5	1	0.7	0.4	1.2	8.4	11.0	165
2×4	1	0.7	0.4	1.2	9.2	12.1	212
2×6	1	0.7	0.4	1.2	10.2	13.2	272
2×10	1	0.7	0.4	1.4	12.1	16.0	446
2×1.0	2	0.7	0.4	1.2	7.3	9.7	110
2×1.5	2	0.7	0.4	1.2	7.8	10.3	132

Conductor		FTX200 07RZ1-U/R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Sheath Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	mm	kg/km
2×2.5	2	0.7	0.4	1.2	8.5	11.3	178
2×4	2	0.7	0.4	1.2	9.5	12.4	232
2×6	2	0.7	0.4	1.2	10.6	13.7	302
2×10	2	0.7	0.6	1.4	12.7	16.7	490
2×16	2	0.7	0.6	1.4	14.4	18.8	674
2×25	2	0.9	0.8	1.4	17.7	23.2	1040
2×35	2	0.9	0.8	1.6	20.0	26.0	1130
3×1.0	1	0.7	0.4	1.2	7.5	10.0	110
3×1.5	1	0.7	0.4	1.2	8.0	10.6	143
3×2.5	1	0.7	0.4	1.2	8.8	11.6	198
3×4	1	0.7	0.4	1.2	9.8	12.7	260
3×6	1	0.7	0.4	1.2	11.2	14.4	387
3×10	1	0.7	0.6	1.4	12.8	16.9	557
3×1.0	2	0.7	0.4	1.2	7.7	10.2	128
3×1.5	2	0.7	0.4	1.2	8.2	10.9	156
3×2.5	2	0.7	0.4	1.2	9.0	11.9	213
3×4	2	0.7	0.4	1.2	10.1	13.1	282
3×6	2	0.7	0.4	1.4	11.6	15.0	387
3×10	2	0.7	0.6	1.4	13.5	17.7	607
3×16	2	0.7	0.6	1.4	15.3	19.9	850
3×25	2	0.9	0.8	1.4	18.9	24.6	1315
3×35	2	0.9	0.8	1.6	21.3	27.6	1562
4×1.0	1	0.7	0.4	1.2	8.1	10.7	130
4×1.5	1	0.7	0.4	1.2	8.7	11.4	170
4×2.5	1	0.7	0.4	1.2	9.6	12.6	240
4×4	1	0.7	0.4	1.2	10.7	13.8	330
4×6	1	0.7	0.4	1.4	12.2	16.1	445
4×10	1	0.7	0.6	1.4	14.1	18.4	687
4×1.0	2	0.7	0.4	1.2	8.3	11.0	150
4×1.5	2	0.7	0.4	1.2	8.9	11.7	185
4×2.5	2	0.7	0.4	1.2	9.9	12.8	256
4×4	2	0.7	0.4	1.2	11.0	14.2	344
4×6	2	0.7	0.6	1.4	12.7	16.7	490
4×10	2	0.7	0.6	1.4	14.8	19.2	747
4×16	2	0.7	0.6	1.4	16.9	21.8	1055
4×25	2	0.9	0.8	1.6	21.2	27.5	1670
4×35	2	0.9	1.0	1.6	23.5	30.7	2044
5×1.0	1	0.7	0.4	1.2	8.8	11.5	157
5×1.5	1	0.7	0.4	1.2	9.4	12.3	208
5×2.5	1	0.7	0.4	1.2	10.5	13.6	295
5×4	1	0.7	0.4	1.4	12.0	15.9	422
5×6	1	0.7	0.6	1.4	13.3	17.5	551
5×10	1	0.7	0.6	1.4	15.4	20.0	858

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FIRETOX LSZH Flame Retardant Power & Control Cables

www.caledonian-cables.co.uk www.addison-cables.com

Conductor		FTX200 07RZ1-U/R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Sheath Thickness	Min. Overall Diameter	Max. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	mm	kg/km
5×1.0	2	0.7	0.4	1.2	9.0	11.9	183
5×1.5	2	0.7	0.4	1.2	9.7	12.6	227
5×2.5	2	0.7	0.4	1.2	10.7	13.9	317
5×4	2	0.7	0.6	1.4	12.4	16.4	460
5×6	2	0.7	0.6	1.4	13.8	18.1	610
5×10	2	0.7	0.6	1.4	16.2	20.9	937
5×16	2	0.7	0.8	1.4	18.5	24.2	1328
5×25	2	0.9	1.0	1.6	23.3	30.5	1860
5×35	2	0.9	1.0	1.6	25.9	33.6	2500

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E2A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method E (in free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.0	14.5	13	17	15	19	17	21	18
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4	33	30	40	35	45	40	49	42
6	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method E (in free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
35	121	109	146	128	171	147	185	158

Note: With or without a protective conductor.

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E2B

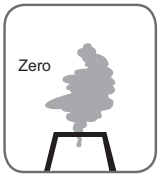
Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.0	46	46			40		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15

Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2


Reduced Fire Propagation
IEC 60332-3-24



Halogen Free
IEC 60754-1


Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

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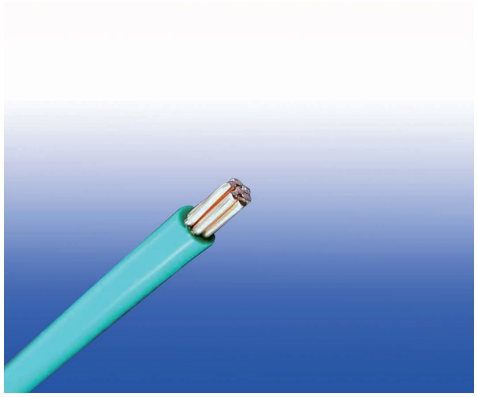
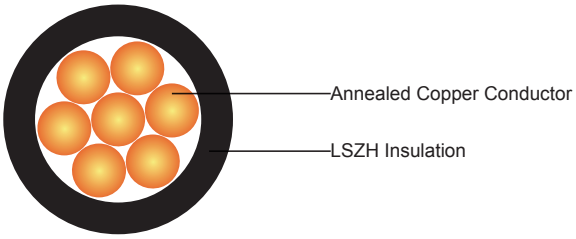
600/1000V LSZH Insulated, Non-sheathed Power Cables to BS EN 50525-3-41 (Single Core)

FTX100 1Z-R (CU/LSZH 600/1000V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings.

STANDARDS

Basic design adapted to BS EN 50525-3-41

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, stranded according to BS EN 60228 class 2.
Insulation: Crosslinked polyolefin material type EI 5 according to EN 50363-5.
Insulation Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow. Bi-colours of any combination of the above mono-colours are permitted.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius

OD<8mm: 4 × Overall Diameter

8mm≤OD≤12mm: 5 × Overall Diameter

OD>12mm: 6 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX100 1Z-R		
No. of Cores x Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	kg/km
1x1.5	2	0.7	3.1	23
1x2.5	2	0.8	3.7	35
1x4.0	2	0.8	4.3	52
1x6.0	2	0.8	4.8	73
1x10	2	1.0	6.2	120
1x16	2	1.0	7.2	180
1x25	2	1.2	9.0	285
1x35	2	1.2	10.2	375
1x50	2	1.4	12.0	510
1x70	2	1.4	14.0	720
1x95	2	1.6	16.0	995
1x120	2	1.6	18.0	1230
1x150	2	1.8	20.0	1520
1x185	2	2.0	22.0	1900
1x240	2	2.2	25.0	2480
1x300	2	2.4	28.0	3100
1x400	2	2.6	31.5	3950
1x500	2	2.8	35.0	4950
1x630	2	2.8	39.0	6360

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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FIRETOX LSZH Flame Retardant Power & Control Cables

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ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

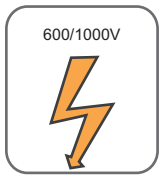
Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray, horizontal or vertical etc.) Touching			Ref. Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4.0	35	31	42	37	46	41	-	-	-	-	-
6.0	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	-	-	683	584	868	793	940	868	823	1085	1008
500	-	-	783	666	990	904	1083	998	946	1253	1169
630	-	-	900	764	1130	1033	1254	1151	1088	1454	1362

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.											
		Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)						Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4.0	12	12			12			12			10			10			10			10		
6.0	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24

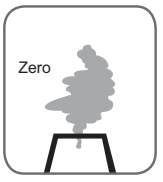
Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2



Halogen Free
IEC 60754-1


Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

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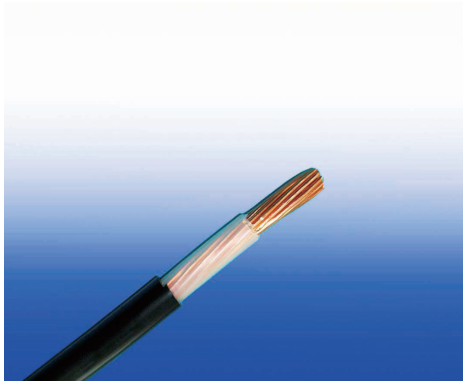
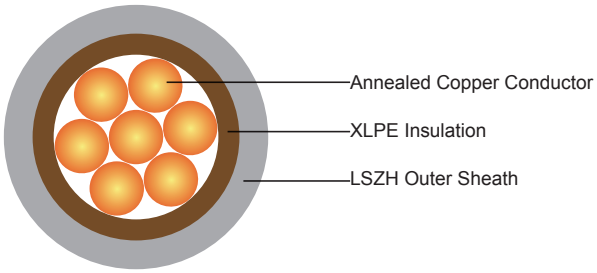
600/1000V XLPE Insulated, LSZH Sheathed Power Cables to BS 8573 (Single Core)

FTX300 1RZ1-R (CU/XLPE/LSZH 600/1000V Class 2)





APPLICATION

These XLPE insulated and LSZH sheathed cables are generally used for fixed installation. Suitable for building wiring, especially in areas where smoke and fume emissions may cause a potential threat to life but not for burial in the ground, either directly or in ducts. This product type is TUV approved.

STANDARDS

Basic design to BS 8573:2012

Approvals:

TUV Certification (Z1 17 09 98200 010)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, stranded according to BS EN 60228 class 2.

Insulation: XLPE type GP8 according to BS 7655-1.3. HEPR type GP6 according to BS 7655-1.2 or crosslinked polyolefin material type EI 5 according to BS EN 50363-5 can be offered as option.

Inner Covering Option: The optional inner covering, where used, shall consist of an extruded layer of synthetic polymeric material. It shall surround the single core and the laid-up two, three, four or five cores, giving the assembly a practically circular shape.

Outer Sheath: Extruded layer of polymeric material LTS 4 according to BS 7655-6.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour: Brown or blue.

Sheath Colour: Black; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius

circular copper conductors OD≤25mm : 4 × Overall Diameter

circular copper conductors OD>25mm: 6 × Overall Diameter

shaped copper conductors: 8 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX300 1RZ1-R				
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	kg/km
1×1.5	2	0.7	0.4	1.4	5.8	54
1×2.5	2	0.7	0.4	1.4	6.2	67
1×4	2	0.7	0.4	1.4	6.8	87
1×6	2	0.7	0.4	1.4	7.3	113
1×10	2	0.7	0.4	1.4	8.3	163
1×16	2	0.7	0.4	1.4	9.3	232
1×25	2	0.9	0.4	1.4	11.0	346
1×35	2	0.9	0.4	1.4	12.2	456
1×50	2	1.0	0.6	1.4	13.7	599
1×70	2	1.1	0.6	1.4	15.7	835
1×95	2	1.1	0.6	1.5	17.8	1131
1×120	2	1.2	0.8	1.5	19.6	1407
1×150	2	1.4	0.8	1.6	21.8	1727
1×185	2	1.6	0.8	1.6	24.0	2144
1×240	2	1.7	1.0	1.7	27.1	2786
1×300	2	1.8	1.0	1.8	29.9	3466
1×400	2	2.0	1.2	1.9	33.5	4405
1×500	2	2.2	1.2	2.0	37.2	5520
1×630	2	2.4	1.4	2.2	42.0	7097
1×800	2	2.6	1.6	2.3	46.9	9010

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Conductor		FTX300 1RZ1-R				
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	kg/km
1×1000	2	2.8	1.6	2.4	52.0	11286

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

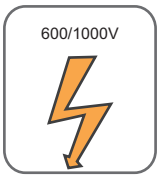
Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray, horizontal or vertical etc.) Touching			Ref. Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4	35	31	42	37	46	41	-	-	-	-	-
6	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	-	-	683	584	868	793	940	868	823	1085	1008
500	-	-	783	666	990	904	1083	998	946	1253	1169
630	-	-	900	764	1130	1033	1254	1151	1088	1454	1362
800	-	-	-	-	1288	1179	1358	1275	1214	1581	1485
1000	-	-	-	-	1443	1323	1520	1436	1349	1775	1671

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.											
		Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)						Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4	12	12			12			12			10			10			10			10		
6	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800	0.056	-			0.072	0.150	0.170	0.064	0.24	0.25	-			0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000	0.045	-			0.063	0.150	0.165	0.054	0.24	0.24	-			0.055	0.130	0.145	0.050	0.155	0.165	0.047	0.23	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2


Reduced Fire Propagation
IEC 60332-3-24

Halogen Free
IEC 60754-1


Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

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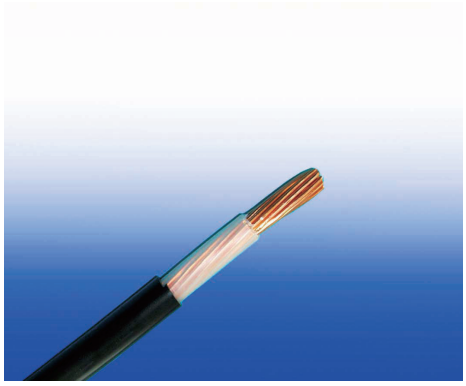
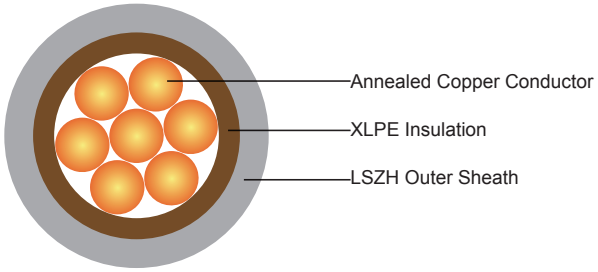
600/1000V XLPE Insulated, LSZH Sheathed Power Cables to IEC 60502-1 (Single Core)

FTX300 1RZ1-R (CU/XLPE/LSZH 600/1000V Class 2)





APPLICATION

These XLPE insulated and LSZH sheathed cables are generally used for fixed installation. Suitable for building wiring, especially in areas where smoke and fume emissions may cause a potential threat to life but not for burial in the ground, either directly or in ducts.

STANDARDS

Basic design to IEC 60502-1

Approvals:

TUV Certification (B 098200 0033 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: The conductors shall be class 2 plain or metal-coated annealed copper in accordance with IEC

60228. Class 1 and class 5 conductor can be offered as option.

Insulation: Thermosetting XLPE compound as per IEC 60502-1.

Outer Sheath: Thermoplastic halogen free compound ST_8 as per IEC 60502-1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour: Brown or blue; other colours can be offered upon request.

Sheath Colour: Black; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius:

circular copper conductors OD≤25mm : 4 × Overall Diameter

circular copper conductors OD>25mm: 6 × Overall Diameter

shaped copper conductors: 8 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX300 1RZ1-R			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
1×1.5	2	0.7	1.4	5.8	54
1×2.5	2	0.7	1.4	6.2	67
1×4	2	0.7	1.4	6.8	87
1×6	2	0.7	1.4	7.3	113
1×10	2	0.7	1.4	8.3	163
1×16	2	0.7	1.4	9.3	232
1×25	2	0.9	1.4	11.0	346
1×35	2	0.9	1.4	12.2	456
1×50	2	1.0	1.4	13.7	599
1×70	2	1.1	1.4	15.7	835
1×95	2	1.1	1.5	17.8	1131
1×120	2	1.2	1.5	19.6	1407
1×150	2	1.4	1.6	21.8	1727
1×185	2	1.6	1.6	24.0	2144
1×240	2	1.7	1.7	27.1	2786
1×300	2	1.8	1.8	29.9	3466
1×400	2	2.0	1.9	33.5	4405
1×500	2	2.2	2.0	37.2	5520
1×630	2	2.4	2.2	42.0	7097
1×800	2	2.6	2.3	46.9	9010
1×1000	2	2.8	2.4	52.0	11286

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray, horizontal or vertical etc.) Touching			Ref. Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4	35	31	42	37	46	41	-	-	-	-	-
6	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	-	-	683	584	868	793	940	868	823	1085	1008
500	-	-	783	666	990	904	1083	998	946	1253	1169
630	-	-	900	764	1130	1033	1254	1151	1088	1454	1362
800	-	-	-	-	1288	1179	1358	1275	1214	1581	1485
1000	-	-	-	-	1443	1323	1520	1436	1349	1775	1671

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.													
		Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)						Ref. Methods A&B (enclosed in conduit or trunking)			Ref. Methods C, F&G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4	12	12			12			12			10			10			10			10		
6	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800	0.056	-			0.072	0.150	0.170	0.064	0.24	0.25	-			0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000	0.045	-			0.063	0.150	0.165	0.054	0.24	0.24	-			0.055	0.130	0.145	0.050	0.155	0.165	0.047	0.23	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage | Standard | Flame Retardancy IEC 60332-1-2 | Reduced Fire Propagation IEC 60332-3-24 | Halogen Free IEC 60754-1 | Low Corrosivity IEC 60754-2 | Low Smoke Emission IEC 61034-2

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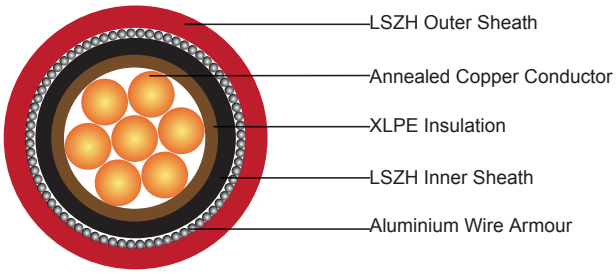
600/1000V XLPE Insulated, LSZH Sheathed, Armoured Power Cables to BS 6724 (Single Core)

FTX300 1RZ1MAZ1-R (CU/XLPE/LSZH/AWA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 6724

Approvals:

TUV Certification (No.B 098200 0030 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.

Insulation: XLPE type GP8 according to BS 7655-1.3. HEPR type GP6 according to BS 7655-1.2 or

crosslinked polyolefin material type EI 5 according to BS EN 50363-5 can be offered as option.

Bedding: Extruded layer of polymeric material.

Armouring: Aluminium wire.

Outer Sheath: Extruded layer of polymeric material LTS 1 according to BS 7655-6.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour: Brown or blue; other colours can be offered upon request.

Sheath Colour: Black; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 8 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX300 1RZ1MAZ1-R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal AL Wire Armour Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm²		mm	mm	mm	mm	mm	kg/km
1×50	2	1.0	0.8	0.9	1.5	17.5	688
1×70	2	1.1	0.8	1.25	1.5	20.2	941
1×95	2	1.1	0.8	1.25	1.6	22.3	1244
1×120	2	1.2	0.8	1.25	1.6	24.2	1524
1×150	2	1.4	1.0	1.6	1.7	27.4	1853
1×185	2	1.6	1.0	1.6	1.8	30.0	2292
1×240	2	1.7	1.0	1.6	1.8	32.8	2925
1×300	2	1.8	1.0	1.6	1.9	35.6	3612
1×400	2	2.0	1.2	2.0	2.0	40.5	4653
1×500	2	2.2	1.2	2.0	2.1	44.2	5779
1×630	2	2.4	1.2	2.0	2.2	48.8	7341
1×800	2	2.6	1.4	2.5	2.4	55.4	9364
1×1000	2	2.8	1.4	2.5	2.5	60.6	11644

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E3A

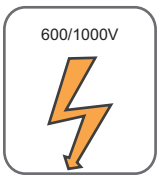
Conductor cross-sectional area	Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray, horizontal or vertical)								
	Touching		Touching			Spaced by on cable diameter					
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	3 cables three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.	
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
50	237	220	253	232	222	284	270	282	266	288	266
70	303	277	322	293	285	356	349	357	337	358	331
95	367	333	389	352	346	446	426	436	412	425	393
120	425	383	449	405	402	519	497	504	477	485	449
150	488	437	516	462	463	600	575	566	539	549	510
185	557	496	587	524	529	688	660	643	614	618	574
240	656	579	689	612	625	815	782	749	714	715	666
300	755	662	792	700	720	943	906	842	805	810	755
400	853	717	899	767	815	1137	1094	929	889	848	797
500	962	791	1016	851	918	1314	1266	1032	989	923	871
630	1082	861	1146	935	1027	1528	1474	1139	1092	992	940
800	1170	904	1246	987	1119	1809	1744	1204	1155	1042	978
1000	1261	961	1345	1055	1214	2100	2026	1289	1238	1110	1041

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E3B

Conductor cross-sectional area	2 cables d.c.	Ref. Methods C&F (clipped direct, on trays or in free air)														
		2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.								
		Touching			Spaced*			Trefoil and touching			Flat and touching			Flat and spaced*		
1	2	3			4			5			6			7		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.98	0.99	0.21	1.00	0.98	0.29	1.00	0.86	0.180	0.87	0.84	0.25	0.88	0.84	0.33	0.90
70	0.67	0.68	0.20	0.71	0.69	0.29	0.75	0.59	0.170	0.62	0.60	0.25	0.65	0.62	0.32	0.70
95	0.49	0.51	0.195	0.55	0.53	0.28	0.60	0.44	0.170	0.47	0.46	0.24	0.52	0.49	0.31	0.58
120	0.39	0.41	0.190	0.45	0.43	0.27	0.51	0.35	0.165	0.39	0.38	0.34	0.44	0.41	0.30	0.51
150	0.31	0.33	0.185	0.38	0.36	0.27	0.45	0.29	0.160	0.33	0.31	0.23	0.39	0.34	0.39	0.45
185	0.25	0.27	0.185	0.33	0.30	0.26	0.40	0.23	0.160	0.28	0.26	0.23	0.34	0.29	0.29	0.41
240	0.195	0.21	0.180	0.28	0.24	0.26	0.35	0.180	0.155	0.24	0.21	0.22	0.30	0.24	0.28	0.37
300	0.155	0.17	0.175	0.25	0.195	0.25	0.32	0.145	0.150	0.21	0.170	0.22	0.28	0.20	0.27	0.34
400	0.115	0.145	0.170	0.22	0.180	0.24	0.30	0.125	0.150	0.195	0.160	0.21	0.27	0.20	0.27	0.33
500	0.093	0.125	0.170	0.21	0.165	0.24	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.31
630	0.073	0.105	0.165	0.195	0.150	0.23	0.27	0.092	0.145	0.170	0.135	0.195	0.24	0.175	0.23	0.29
800	0.056	0.090	0.160	0.190	0.145	0.23	0.27	0.086	0.140	0.165	0.130	0.180	0.23	0.175	0.195	0.26
1000	0.045	0.092	0.155	0.180	0.140	0.21	0.25	0.080	0.135	0.155	0.125	0.170	0.21	0.165	0.180	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.

r = conductor resistance at operating temperature
x = reactance
z = impedance

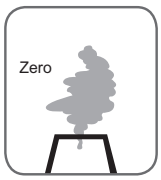


Rated Voltage

Standard

Flame Retardancy
IEC 60332-1-2

Reduced Fire Propagation
IEC 60332-3-24



Halogen Free
IEC 60754-1

Low Corrosivity
IEC 60754-2

Low Smoke Emission
IEC 61034-2

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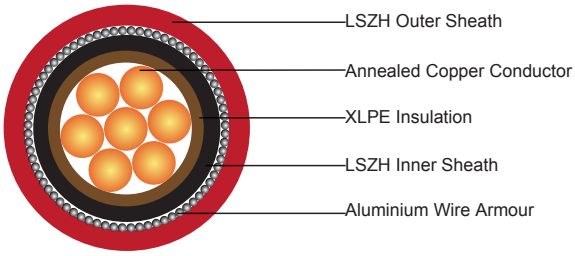
600/1000V XLPE Insulated, LSZH Sheathed, Armoured Power Cables to IEC 60502-1 (Single Core)

FTX300 1RZ1MAZ1-R (CU/XLPE/LSZH/AWA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings.

STANDARDS

Basic design to IEC 60502-1

Approvals:

TUV Certification (B 098200 0033 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: The conductors shall be class 2 plain or metal-coated annealed copper in accordance with IEC 60228. Class 1 and class 5 conductor can be offered as option.

Insulation: Thermosetting XLPE compound as per IEC 60502-1.

Inner Covering Option: Thermoplastic halogen free compound ST_8 as per IEC 60502-1.

Armouring: Aluminium wire.

Outer Sheath: Thermoplastic halogen free compound ST_8 as per IEC 60502-1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour: Brown or blue; other colours can be offered upon request.

Sheath Colour: Black; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 6 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX300 1RZ1MAZ1-R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal AL Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm²		mm	mm	mm	mm	mm	kg/km
1×4	2	0.7	1.0	0.8	1.8	11.2	200
1×6	2	0.7	1.0	0.8	1.8	11.7	233
1×10	2	0.7	1.0	0.8	1.8	12.7	294
1×16	2	0.7	1.0	0.8	1.8	13.7	377
1×25	2	0.9	1.0	0.8	1.8	15.4	513
1×35	2	0.9	1.0	1.25	1.8	17.5	688
1×50	2	1.0	1.0	1.25	1.8	19.0	856
1×70	2	1.1	1.0	1.25	1.8	21.0	1124
1×95	2	1.1	1.0	1.6	1.8	24.0	1521
1×120	2	1.2	1.0	1.6	1.8	25.8	1831
1×150	2	1.4	1.0	1.6	1.8	27.8	2176
1×185	2	1.6	1.0	1.6	1.8	30.4	2668
1×240	2	1.7	1.0	1.6	1.9	33.5	3367
1×300	2	1.8	1.0	2.0	2.0	37.5	4241
1×400	2	2.0	1.2	2.0	2.2	41.3	5283
1×500	2	2.2	1.2	2.0	2.3	45.4	6535

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E3A

Conductor cross-sectional area	Ref. Method C (clipped direct)		Ref. Method F (in free air or on a perforated cable tray, horizontal or vertical)								
	Touching		Touching			Spaced by on cable diameter					
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	3 cables three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.	
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
50	237	220	253	232	222	284	270	282	266	288	266
70	303	277	322	293	285	356	349	357	337	358	331
95	367	333	389	352	346	446	426	436	412	425	393
120	425	383	449	405	402	519	497	504	477	485	449
150	488	437	516	462	463	600	575	566	539	549	510
185	557	496	587	524	529	688	660	643	614	618	574
240	656	579	689	612	625	815	782	749	714	715	666
300	755	662	792	700	720	943	906	842	805	810	755
400	853	717	899	767	815	1137	1094	929	889	848	797
500	962	791	1016	851	918	1314	1266	1032	989	923	871

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E3B

Conductor cross-sectional area	2 cables d.c.	Ref. Methods C&F (clipped direct, on trays or in free air)														
		2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.								
		Touching			Spaced*			Trefoil and touching			Flat and touching			Flat and spaced*		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.98	0.99	0.21	1.00	0.98	0.29	1.00	0.86	0.180	0.87	0.84	0.25	0.88	0.84	0.33	0.90
70	0.67	0.68	0.20	0.71	0.69	0.29	0.75	0.59	0.170	0.62	0.60	0.25	0.65	0.62	0.32	0.70
95	0.49	0.51	0.195	0.55	0.53	0.28	0.60	0.44	0.170	0.47	0.46	0.24	0.52	0.49	0.31	0.58
120	0.39	0.41	0.190	0.45	0.43	0.27	0.51	0.35	0.165	0.39	0.38	0.34	0.44	0.41	0.30	0.51
150	0.31	0.33	0.185	0.38	0.36	0.27	0.45	0.29	0.160	0.33	0.31	0.23	0.39	0.34	0.39	0.45
185	0.25	0.27	0.185	0.33	0.30	0.26	0.40	0.23	0.160	0.28	0.26	0.23	0.34	0.29	0.29	0.41
240	0.195	0.21	0.180	0.28	0.24	0.26	0.35	0.180	0.155	0.24	0.21	0.22	0.30	0.24	0.28	0.37
300	0.155	0.17	0.175	0.25	0.195	0.25	0.32	0.145	0.150	0.21	0.170	0.22	0.28	0.20	0.27	0.34
400	0.115	0.145	0.170	0.22	0.180	0.24	0.30	0.125	0.150	0.195	0.160	0.21	0.27	0.20	0.27	0.33
500	0.093	0.125	0.170	0.21	0.165	0.24	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.31

Note: *Spacings larger than one cable diameter will result in a large voltage drop.

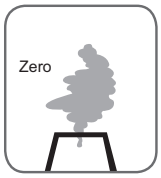
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2


Reduced Fire Propagation
IEC 60332-3-24



Halogen Free
IEC 60754-1


Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

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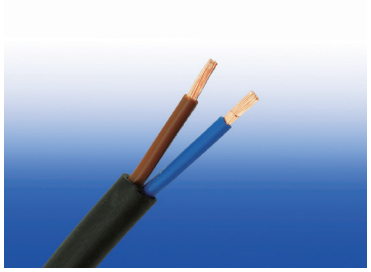
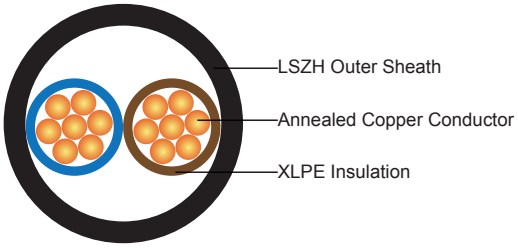
600/1000V XLPE Insulated, LSZH Sheathed Power Cables to BS 8573 (2-5 Cores)

FTX400 1RZ1-R (CU/XLPE/LSZH 600/1000V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 8573:2012

Approvals:

TUV Certification (Z1 17 09 98200 010)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, stranded according to BS EN 60228 class 2.

Insulation: Thermosetting insulation XLPE Type GP8 according to BS 7655-1.3. HEPR Type GP6 according to BS 7655-1.2 or crosslinked polyolefin material type EI 5 according to BS EN 50363-5 can be offered as option.

Inner Covering Option: The optional inner covering, where used, shall consist of an extruded layer of synthetic polymeric material. It shall surround the single core and the laid-up two, three, four or five cores,

giving the assembly a practically circular shape.

Outer Sheath: Extruded layer of polymeric material LTS 4 according to BS 7655-6.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour

2-core: Brown and blue.

3-core: Brown, black and grey.

Alternatively, green-and-yellow, blue, brown.

4-core: Blue, brown black and grey.

Alternatively, green-and-yellow, brown, black, grey.

5-core: Green and yellow, blue, brown black, grey.

Sheath Colour: Black; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius

circular copper conductors OD≤25mm : 4 × Overall Diameter

circular copper conductors OD>25mm: 6 × Overall Diameter

shaped copper conductors: 8 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX400 1RZ1-R				
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	kg/km
2×1.5[a]	2	0.7	0.4	1.8	9.6	117
2×2.5[a]	2	0.7	0.4	1.8	10.4	146
2×4[a]	2	0.7	0.4	1.8	11.5	190
2×6[a]	2	0.7	0.4	1.8	12.6	244
2×10[a]	2	0.7	0.6	1.8	14.5	349
2×16[a]	2	0.7	0.6	1.8	16.6	495
2×25[a]	2	0.9	0.8	1.8	20.0	735
2×35[a]	2	0.9	0.8	1.8	22.3	963
2×50[a]	2	1.0	1.0	1.8	25.4	1261
2×70[a]	2	1.1	1.0	1.8	29.4	1751
2×95[a]	2	1.1	1.2	1.9	33.4	2359
2×120[a]	2	1.2	1.2	2.0	37.2	2950
2×25[b]	2	0.9	0.6	1.8	16.1	692
2×35[b]	2	0.9	0.6	1.8	17.9	913
2×50[b]	2	1.0	0.8	1.8	20.6	1205

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Conductor		FTX400 1RZ1-R				
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	kg/km
2×70[b]	2	1.1	0.8	1.8	23.5	1680
2×95[b]	2	1.1	1.0	1.9	26.2	2268
2×120[b]	2	1.2	1.0	2.0	29.0	2838
3×1.5[a]	2	0.7	0.4	1.8	10.0	143
3×2.5[a]	2	0.7	0.4	1.8	10.9	183
3×4[a]	2	0.7	0.4	1.8	12.1	244
3×6[a]	2	0.7	0.4	1.8	13.3	321
3×10[a]	2	0.7	0.6	1.8	15.3	472
3×16[a]	2	0.7	0.6	1.8	17.6	681
3×25[a]	2	0.9	0.8	1.8	21.3	1027
3×35[a]	2	0.9	0.8	1.8	23.8	1360
3×50[a]	2	1.0	1.0	1.8	27.1	1795
3×70[a]	2	1.1	1.2	1.9	31.6	2530
3×95[a]	2	1.1	1.2	2.0	36.1	3441
3×120[a]	2	1.2	1.2	2.1	40.2	4307
3×25[b]	2	0.9	0.6	1.8	18.5	993
3×35[b]	2	0.9	0.8	1.8	21.1	1327
3×50[b]	2	1.0	0.8	1.8	23.7	1751
3×70[b]	2	1.1	1.0	1.9	27.6	2474
3×95[b]	2	1.1	1.2	2.0	31.0	3364
3×120[b]	2	1.2	1.2	2.1	33.8	4205
4×1.5[a]	2	0.7	0.4	1.8	10.8	172
4×2.5[a]	2	0.7	0.4	1.8	11.8	223
4×4[a]	2	0.7	0.4	1.8	13.1	303
4×6[a]	2	0.7	0.6	1.8	14.5	402
4×10[a]	2	0.7	0.6	1.8	16.8	599
4×16[a]	2	0.7	0.6	1.8	19.3	873
4×25[a]	2	0.9	0.8	1.8	23.4	1328
4×35[a]	2	0.9	1.0	1.8	26.2	1767
4×50[a]	2	1.0	1.0	1.8	29.9	2339
4×70[a]	2	1.1	1.2	2.0	35.1	3326
4×95[a]	2	1.1	1.2	2.1	39.9	4505
4×120[a]	2	1.2	1.2	2.3	44.7	5669
4×25[b]	2	0.9	0.8	1.8	18.8	1293
4×35[b]	2	0.9	0.8	1.8	21.1	1727
4×50[b]	2	1.0	1.0	1.8	24.2	2296
4×70[b]	2	1.1	1.2	2.0	27.6	3258
4×95[b]	2	1.1	1.2	2.1	30.7	4409
4×120[b]	2	1.2	1.2	2.3	34.0	5549
5×1.5[a]	2	0.7	0.4	1.8	10.8	172
5×2.5[a]	2	0.7	0.4	1.8	11.8	223
5×4[a]	2	0.7	0.6	1.8	14.2	367
5×6[a]	2	0.7	0.6	1.8	15.8	492

Conductor		FTX400 1RZ1-R				
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	mm	kg/km
5×10[b]	2	0.7	0.6	1.8	17.5	754
5×16[b]	2	0.7	0.8	1.8	21.6	1141
5×25[b]	2	0.9	1.0	1.8	24.6	1678
5×35[b]	2	0.9	1.0	1.8	28.2	2273
5×50[b]	2	1.0	1.2	1.9	31.9	3000
5×70[b]	2	1.1	1.2	2.1	35.7	4187
5×95[b]	2	1.1	1.4	2.2	41.0	5748
5×120[b]	2	1.2	1.4	2.4	44.2	7142

[a] Circular or compacted circular stranded conductors (class 2).
[b] Shaped stranded conductor (class 2).
Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E2A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method E (in free air or on a perforated cable tray tec. horizontal or vertical)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4	33	30	40	35	45	40	49	42
6	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127
35	121	109	146	128	171	147	185	158
50	145	130	175	154	209	179	225	192
70	183	164	221	194	269	229	289	246
95	220	197	265	233	328	278	352	298
120	253	227	305	268	382	322	410	346

Note: With or without a protective conductor.

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Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E2B

Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37

Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2


Reduced Fire Propagation
IEC 60332-3-24

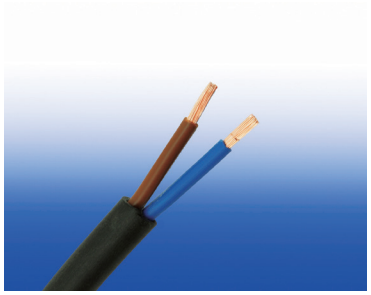
Halogen Free
IEC 60754-1

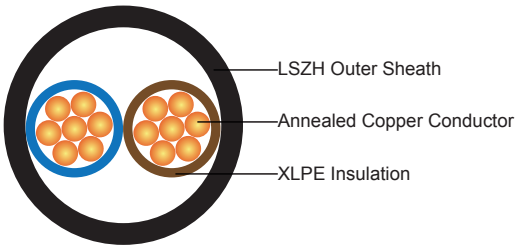

Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

600/1000V XLPE Insulated,
LSZH Sheathed Power Cables to IEC 60502-1 (2-5 Cores & Multicore)

FTX400 1RZ1-R (CU/XLPE/LSZH 600/1000V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings. This product type is CE approved.

STANDARDS

Basic design to IEC 60502-1

Approvals:

TUV Certification (B 098200 0033 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: The conductors shall be class 2 plain or metal-coated annealed copper in accordance with IEC 60228. Class 1 and class 5 conductor can be offered as option.

Insulation: Thermosetting XLPE material and thickness shall be as per IEC 60502-1.

Outer Sheath: Thermoplastic halogen free compound ST_8 as per IEC 60502-1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour

2-core: Brown and blue.

3-core: Brown, black and grey.

4-core: Blue, brown, black and grey.

5-core: Green and yellow, blue, brown, black, grey.

Above 5 Cores: Black cores with white numerals.

Other colours can be offered upon request.

Sheath Colour: Black; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius

circular copper conductors OD≤25mm : 4 × Overall Diameter

circular copper conductors OD>25mm: 6 × Overall Diameter

shaped copper conductors: 8 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX400 1RZ1-R			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
2 Cores					
2×1.5	2	0.7	1.8	9.2	117
2×2.5	2	0.7	1.8	10.0	146
2×4	2	0.7	1.8	11.0	190
2×6	2	0.7	1.8	12.0	244
2×10	2	0.7	1.8	13.6	349
2×16	2	0.7	1.8	15.4	495
2×25	2	0.9	1.8	18.4	735
2×35	2	0.9	1.8	20.6	963
2×50	2	1.0	1.8	23.6	1261
2×70	2	1.1	1.8	26.8	1751
2×95	2	1.1	1.9	30.2	2359
2×120	2	1.2	2.0	33.7	2950
2×150	2	1.4	2.2	37.5	3633
2×185	2	1.6	2.3	41.6	4523
2×240	2	1.7	2.5	46.7	5877
2×300	2	1.8	2.6	51.4	7285

Conductor		FTX400 1RZ1-R			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
2×400	2	2	2.9	58.9	9294
3 Cores					
3×1.5	2	0.7	1.8	9.6	143
3×2.5	2	0.7	1.8	10.5	183
3×4	2	0.7	1.8	11.6	244
3×6	2	0.7	1.8	12.6	321
3×10	2	0.7	1.8	14.4	472
3×16	2	0.7	1.8	16.3	681
3×25	2	0.9	1.8	19.5	1027
3×35	2	0.9	1.8	21.9	1360
3×50	2	1.0	1.8	25.1	1795
3×70	2	1.1	1.9	28.7	2530
3×95	2	1.1	2.0	32.4	3441
3×120	2	1.2	2.1	36.1	4307
3×150	2	1.4	2.3	40.3	5276
3×185	2	1.6	2.4	44.6	6607
3×240	2	1.7	2.6	50.2	8593
3×300	2	1.8	2.7	55.2	10668
3×400	2	2.0	3.0	63.3	13570
3 Cores + 1 Core Earth Conductor					
		3 Cores	1 Core		
3×16/10	2	0.7	0.7	1.8	18.3	792
3×25/16	2	0.9	0.7	1.8	22.1	1201
3×35/16	2	0.9	0.7	1.8	24.7	1533
3×50/25	2	1.0	0.9	1.8	28.2	2069
3×70/35	2	1.1	0.9	2.0	33.1	2906
3×95/50	2	1.1	1.0	2.1	37.6	3949
3×120/70	2	1.2	1.1	2.3	42.0	5036
3×150/70	2	1.4	1.1	2.4	46.6	6005
3×185/95	2	1.6	1.1	2.6	52.2	7608
3×240/120	2	1.7	1.2	2.8	59.0	9856
3×300/150	2	1.8	1.4	3.0	65.2	12224
3×400/185	2	2.0	1.6	3.2	73.2	15523
4 Cores					
4×1.5	2	0.7	1.8	10.4	172
4×2.5	2	0.7	1.8	11.3	223
4×4	2	0.7	1.8	12.5	303
4×6	2	0.7	1.8	13.7	402
4×10	2	0.7	1.8	15.7	599
4×16	2	0.7	1.8	17.5	873
4×25	2	0.9	1.8	21.2	1328
4×35	2	0.9	1.8	23.8	1767
4×50	2	1.0	1.8	27.5	2339

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Conductor		FTX400 1RZ1-R			
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm^2		mm	mm	mm	kg/km
4×70	2	1.1	2.0	31.7	3326
4×95	2	1.1	2.1	35.8	4505
4×120	2	1.2	2.3	39.9	5669
4×150	2	1.4	2.4	44.6	6948
4×185	2	1.6	2.6	49.5	8701
4×240	2	1.7	2.8	55.7	11322
4×300	2	1.8	3.0	61.4	14105
4×400	2	2.0	3.2	70.4	17943
Multicore					
5×1.5	2	0.7	1.8	11.7	212
5×2.5	2	0.7	1.8	12.8	276
7×1.5	2	0.7	1.8	12.6	264
7×2.5	2	0.7	1.8	13.8	351
10×1.5	2	0.7	1.8	15.6	360
10×2.5	2	0.7	1.8	17.2	483
12×1.5	2	0.7	1.8	16.0	408
12×2.5	2	0.7	1.8	17.8	552
14×1.5	2	0.7	1.8	17.0	459
14×2.5	2	0.7	1.8	18.7	626
19×1.5	2	0.7	1.8	18.6	585
19×2.5	2	0.7	1.8	20.7	806
21×1.5	2	0.7	1.8	19.4	638
21×2.5	2	0.7	1.8	21.7	881
24×1.5	2	0.7	1.8	21.5	724
24×2.5	2	0.7	1.8	24.1	1002
30×1.5	2	0.7	1.8	22.8	866
30×2.5	2	0.7	1.8	25.5	1209
40×1.5	2	0.7	1.8	25.4	1108
40×2.5	2	0.7	1.9	28.7	1560
48×1.5	2	0.7	1.8	28.0	1307
48×2.5	2	0.7	1.9	31.6	1864
61×1.5	2	0.7	1.9	30.7	1631
61×2.5	2	0.7	2.0	34.7	2312

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Ambient temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E2A

Conductor cross-sectional area	Ref. Method A (enclosed in conduit in thermally insulating wall etc.)		Ref. Method B (enclosed in conduit on a wall or in trunking etc.)		Ref. Method C (clipped direct)		Ref. Method E (in free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three- or four-core cable*, three-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4	33	30	40	35	45	40	49	42
6	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127
35	121	109	146	128	171	147	185	158
50	145	130	175	154	209	179	225	192
70	183	164	221	194	269	229	289	246
95	220	197	265	233	328	278	352	298
120	253	227	305	268	382	322	410	346
150	290	259	334	300	441	371	473	399
185	329	295	384	340	506	424	542	456
240	386	346	459	398	599	500	641	538
300	442	396	532	455	693	576	741	621
400	-	-	625	536	803	667	865	741

Note: With or without a protective conductor.

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Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E2B

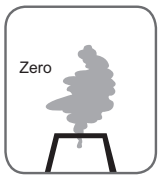
Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Rated Voltage

Standard

Flame Retardancy
IEC 60332-1-2

Reduced Fire Propagation
IEC 60332-3-24



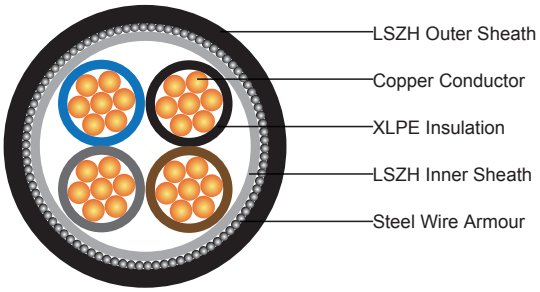
Halogen Free
IEC 60754-1

Low Corrosivity
IEC 60754-2

Low Smoke Emission
IEC 61034-2

600/1000V XLPE Insulated, LSZH Sheathed, Armoured Power Cables to BS 6724 (2-5 Cores)

FTX400 1RZ1MZ1-R (CU/XLPE/LSZH/SWA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 6724

Approvals:

TUV Certification (No.B 098200 0030 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.

Insulation: XLPE type GP8 according to BS 7655-1.3. HEPR type GP6 according to BS 7655-1.2 or crosslinked polyolefin material type EI 5 according to BS EN 50363-5 can be offered as option.

Bedding: Extruded layer of polymeric material.

Armouring: Galvanized steel wire.

Outer Sheath: Extruded layer of polymeric material LTS 1 according to BS 7655-6.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour

2-core: Brown and blue.

3-core: Brown, black and grey.

4-core: Blue, brown, black and grey.

5-core: Green and yellow, blue, brown, black, grey.

Sheath Colour: Black; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 8 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX400 1RZ1MZ1-R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armour Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm²		mm	mm	mm	mm	mm	kg/km
2 Cores							
2×1.5[a]	2	0.6	0.8	0.9	1.3	12.1	294
2×2.5[a]	2	0.7	0.8	0.9	1.4	13.6	354
2×4[a]	2	0.7	0.8	0.9	1.4	14.7	420
2×6[a]	2	0.7	0.8	0.9	1.4	15.9	497
2×10[a]	2	0.7	0.8	0.9	1.5	18.0	650
2×16[a]	2	0.7	0.8	1.25	1.5	20.4	964
2×25[a]	2	0.9	0.8	1.25	1.6	24.1	1314
2×25[b]	2	0.9	0.8	1.25	1.6	20.4	1254
2×35[a]	2	0.9	1.0	1.6	1.7	27.7	1832
2×35[b]	2	0.9	1.0	1.6	1.7	23.3	1736
2×50[b]	2	1.0	1.0	1.6	1.8	25.8	2261
2×70[b]	2	1.1	1.0	1.6	1.9	29.0	2922
2×95[b]	2	1.1	1.2	2.0	2.0	33.1	4029
2×120[b]	2	1.2	1.2	2.0	2.1	36.1	4796
2×150[b]	2	1.4	1.2	2.0	2.2	39.3	5646
2×185[b]	2	1.6	1.4	2.5	2.4	44.7	7365
2×240[b]	2	1.7	1.4	2.5	2.5	49.0	9027
2×300[b]	2	1.8	1.6	2.5	2.6	53.5	10832
2×400[b]	2	2.0	1.6	2.5	2.8	59.0	13216
3 Cores							

Conductor		FTX400 1RZ1MZ1-R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armour Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm²		mm	mm	mm	mm	mm	kg/km
3×1.5[a]	2	0.6	0.8	0.9	1.3	12.6	320
3×2.5[a]	2	0.7	0.8	0.9	1.4	14.1	401
3×4[a]	2	0.7	0.8	0.9	1.4	15.3	487
3×6[a]	2	0.7	0.8	0.9	1.4	16.6	588
3×10[a]	2	0.7	0.8	1.25	1.5	19.5	906
3×16[a]	2	0.7	0.8	1.25	1.6	21.6	1190
3×25[a]	2	0.9	1.0	1.6	1.7	26.7	1858
3×25[b]	2	0.9	1.0	1.6	1.7	23.6	1755
3×35[a]	2	0.9	1.0	1.6	1.8	29.4	2298
3×35[b]	2	0.9	1.0	1.6	1.8	25.7	2154
3×50[b]	2	1.0	1.0	1.6	1.8	28.5	2858
3×70[b]	2	1.1	1.0	1.6	1.9	32.2	3761
3×95[b]	2	1.1	1.2	2.0	2.1	37.0	5204
3×120[b]	2	1.2	1.2	2.0	2.2	40.4	6258
3×150[b]	2	1.4	1.4	2.5	2.3	45.5	7989
3×185[b]	2	1.6	1.4	2.5	2.4	49.8	9586
3×240[b]	2	1.7	1.4	2.5	2.6	55.1	11930
3×300[b]	2	1.8	1.6	2.5	2.7	60.2	14427
3×400[b]	2	2.0	1.6	2.5	2.9	66.6	17765
4 Cores							
4×1.5[a]	2	0.6	0.8	0.9	1.3	13.3	388
4×2.5[a]	2	0.7	0.8	0.9	1.4	15.0	460
4×4[a]	2	0.7	0.8	0.9	1.4	16.4	566
4×6[a]	2	0.7	0.8	1.25	1.5	18.7	813
4×10[a]	2	0.7	0.8	1.25	1.5	21.1	1073
4×16[a]	2	0.7	0.8	1.25	1.6	23.4	1431
4×25[a]	2	0.9	1.0	1.6	1.7	28.9	2239
4×25[b]	2	0.9	1.0	1.6	1.7	26.1	2102
4×35[a]	2	0.9	1.0	1.6	1.8	31.9	2797
4×35[b]	2	0.9	1.0	1.6	1.8	28.6	2606
4×50[b]	2	1.0	1.0	1.6	1.9	32.0	3530
4×70[b]	2	1.1	1.2	2.0	2.1	37.7	5074
4×95[b]	2	1.1	1.2	2.0	2.2	41.7	6474
4×120[b]	2	1.2	1.4	2.5	2.3	47.1	8390
4×150[b]	2	1.4	1.4	2.5	2.4	51.4	9947
4×185[b]	2	1.6	1.4	2.5	2.6	56.6	12096
4×240[b]	2	1.7	1.6	2.5	2.7	63.0	15109
4×300[b]	2	1.8	1.6	2.5	2.9	68.8	18276
4×400[b]	2	2.0	1.8	3.15	3.2	78.1	23849
5 Cores							
5×1.5[a]	2	0.6	0.8	0.9	1.4	14.3	413
5×2.5[a]	2	0.7	0.8	0.9	1.4	16.1	521
5×4[a]	2	0.7	0.8	0.9	1.5	17.8	658
5×6[a]	2	0.7	0.8	1.25	1.5	20	932

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Conductor		FTX400 1RZ1MZ1-R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armour Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.×mm²		mm	mm	mm	mm	mm	kg/km
5×10[a]	2	0.7	0.8	1.25	1.6	22.9	1258
5×16[a]	2	0.7	1.0	1.6	1.7	26.6	1893
5×25[a]	2	0.9	1.0	1.6	1.8	31.5	2646
5×35[a]	2	0.9	1.0	1.6	1.9	34.8	3326
5×50[a]	2	1.0	1.2	2	2	40.4	4567
5×70[a]	2	1.1	1.2	2	2.2	46.3	6056

[a] Circular or compacted circular stranded conductors (class 2).
[b] Shaped stranded conductor (class 2).
Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Air ambient temperature: 30°C

Ground ambient temperature: 20°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E4A

Conductor cross-sectional area	Ref. Method C (clipped direct)		Ref. Method E (in free air or on a perforated cable tray etc. horizontal or vertical)		Ref. Method D (direct in in groud or in ducting in groud. in or around buildings)	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.
1	2	3	4	5	6	7
mm^2	A	A	A	A	A	A
1.5	27	23	29	25	25	21
2.5	36	31	39	33	33	28
4	49	42	52	44	43	36
6	62	53	66	56	53	44
10	85	73	90	78	71	58
16	110	94	115	99	91	75
25	146	124	152	131	116	96
35	180	154	188	162	139	115
50	219	187	228	197	164	135
70	279	238	291	251	203	167
95	338	289	354	304	239	197
120	392	335	410	353	271	223
150	451	386	472	406	306	251
185	515	441	539	463	343	281
240	607	520	636	546	395	324
300	698	599	732	628	446	365
400	787	673	847	728	-	-

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E4B

Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.38	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Note: r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2


Reduced Fire Propagation
IEC 60332-3-24

Halogen Free
IEC 60754-1


Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

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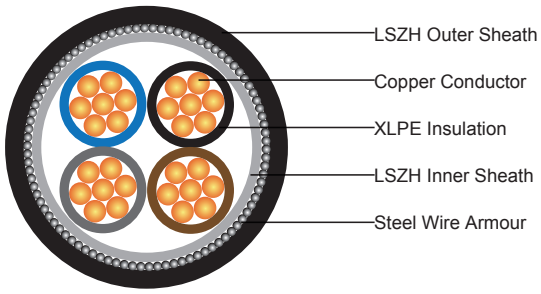
600/1000V XLPE Insulated, LSZH Sheathed, Armoured Power Cables to IEC 60502-1 (2-5 Cores)

FTX400 1RZ1MZ1-R (CU/XLPE/LSZH/SWA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals and high-rise buildings. This product type is CE approved.

STANDARDS

Basic design to IEC 60502-1

Approvals:

TUV Certification (B 098200 0033 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single vertical wire or cable test)	IEC 60332-1-2; EN 60332-1-2
Reduced Fire Propagation (Vertically-mounted bundled wires & cables test)	IEC 60332-3-24; EN 60332-3-24
Halogen Free	IEC 60754-1; EN 50267-2-1
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2
Minimum Smoke Emission	IEC 61034-2; EN 61034-2
CPR Compliance	Eca

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: The conductors shall be class 2 plain or metal-coated annealed copper in accordance with IEC 60228. Class 1 and class 5 conductor can be offered as option.

Insulation: Thermosetting XLPE material as per IEC 60502-1.

Inner Covering: Thermoplastic halogen free compound ST_8 as per IEC 60502-1.

Armouring: Steel wire armour.

Outer Sheath: Thermoplastic halogen free compound ST_8 as per IEC 60502-1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti-rodent and anti-termite properties can be offered as option.

COLOUR CODE

Insulation Colour

2-core: Brown and blue.

3-core: Brown, black and grey.

4-core: Blue, brown, black and grey.

5-core: Green-and-yellow, blue, brown, black, grey.

Other colours can be offered upon request.

Sheath Colour: Black; other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius

circular copper conductors: 6 × Overall Diameter

shaped copper conductors: 8 × Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FTX400 1RZ1MZ1-R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
mm^2		mm	mm	mm	mm	mm	kg/km
2 Cores							
2×1.5	2	0.7	1.0	0.8	1.8	13.2	325
2×2.5	2	0.7	1.0	0.8	1.8	14.0	372
2×4	2	0.7	1.0	0.8	1.8	15.1	438
2×6	2	0.7	1.0	1.25	1.8	17.1	645
2×10	2	0.7	1.0	1.25	1.8	19.0	806
2×16	2	0.7	1.0	1.25	1.8	21.1	1015
2×25	2	0.9	1.0	1.6	1.8	25.2	1517
2×35	2	0.9	1.0	1.6	1.8	27.5	1830
2×50	2	1.0	1.0	1.6	1.9	30.8	2259
2×70	2	1.1	1.0	2.0	2.0	35.8	3182
2×95	2	1.1	1.2	2.0	2.1	40.2	4022
2×120	2	1.2	1.2	2.0	2.3	44.2	4810
2×150	2	1.4	1.2	2.5	2.4	49.3	6120
2×185	2	1.6	1.4	2.5	2.6	54.7	7375
2×240	2	1.7	1.4	2.5	2.7	60.5	9037

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Conductor		FTX400 1RZ1MZ1-R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
mm^2		mm	mm	mm	mm	mm	kg/km
2×300	2	1.8	1.6	2.5	2.9	66.6	10871
2×400	2	2.0	1.6	2.5	3.1	73.7	13256
3 Cores							
3×1.5	2	0.7	1.0	0.8	1.8	13.6	368
3×2.5	2	0.7	1.0	0.8	1.8	14.5	427
3×4	2	0.7	1.0	0.8	1.8	15.7	514
3×6	2	0.7	1.0	1.25	1.8	17.8	752
3×10	2	0.7	1.0	1.25	1.8	19.8	965
3×16	2	0.7	1.0	1.25	1.8	22.1	1244
3×25	2	0.9	1.0	1.6	1.8	26.5	1872
3×35	2	0.9	1.0	1.6	1.8	29.0	2298
3×50	2	1.0	1.0	1.6	1.9	32.5	2876
3×70	2	1.1	1.0	2.0	2.1	38.0	4081
3×95	2	1.1	1.2	2.0	2.2	42.7	5227
3×120	2	1.2	1.2	2.0	2.3	46.8	6283
3×150	2	1.4	1.4	2.5	2.5	52.8	8045
3×185	2	1.6	1.4	2.5	2.7	58.1	9678
3×240	2	1.7	1.4	2.5	2.8	64.3	11998
3×300	2	1.8	1.6	2.5	3.0	70.8	14540
3×400	2	2	1.6	3.15	3.3	80.0	18919
3 Cores + 1 Core Earth Conductor							
		3 Cores	1 Core				
3×16/10	2	0.7	0.7	1.0	1.6	1.8	23.5	1363
3×25/16	2	0.9	0.7	1.0	1.6	1.8	27.3	2054
3×35/16	2	0.9	0.7	1.0	1.6	1.9	30.1	2480
3×50/25	2	1.0	0.9	1.0	1.6	2.1	34.0	3167
3×70/35	2	1.1	0.9	1.2	2	2.2	39.9	4476
3×95/50	2	1.1	1.0	1.2	2	2.3	44.3	5757
3×120/70	2	1.2	1.1	1.2	2	2.5	48.8	7047
3×150/70	2	1.4	1.1	1.4	2.5	2.7	55.0	8812
3×185/95	2	1.6	1.1	1.4	2.5	2.8	60.4	10723
3×240/120	2	1.7	1.2	1.6	2.5	3.1	67.8	13326
3×300/150	2	1.8	1.4	1.6	2.5	3.2	73.8	16169
3×400/185	2	2.0	1.6	1.6	3.15	3.6	83.5	20955
4 Cores							
4×1.5	2	0.7	1.0	0.8	1.8	14.4	414
4×2.5	2	0.7	1.0	0.8	1.8	15.4	487
4×4	2	0.7	1.0	0.8	1.8	16.7	617
4×6	2	0.7	1.0	1.25	1.8	19.0	870
4×10	2	0.7	1.0	1.25	1.8	21.3	1136
4×16	2	0.7	1.0	1.6	1.8	24.5	1642
4×25	2	0.9	1.0	1.6	1.8	28.6	2254
4×35	2	0.9	1.0	1.6	1.9	31.6	2814
4×50	2	1.0	1.0	2.0	2.1	36.5	3837

Conductor		FTX400 1RZ1MZ1-R					
No. of Cores × Cross-sectional Area	Conductor Class	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
mm^2		mm	mm	mm	mm	mm	kg/km
4×70	2	1.1	1.2	2.0	2.2	41.9	5096
4×95	2	1.1	1.2	2.0	2.3	46.7	6499
4×120	2	1.2	1.4	2.5	2.5	52.9	8446
4×150	2	1.4	1.4	2.5	2.7	58.0	10039
4×185	2	1.6	1.4	2.5	2.8	63.7	12099
4×240	2	1.7	1.6	2.5	3.1	71.5	15261
4×300	2	1.8	1.6	2.5	3.2	78.0	18400
4×400	2	2.0	1.8	3.15	3.6	88.7	24037
5 Cores							
5x1.5	2	0.7	1.0	0.8	1.8	16.0	481
5×2.5	2	0.7	1.0	0.8	1.8	17.1	571
5×4	2	0.7	1.0	0.8	1.8	18.8	702
5×6	2	0.7	1.0	1.25	1.8	21.0	1020
5×10	2	0.7	1.0	1.25	1.8	23.6	1345
5×16	2	0.7	1.0	1.6	1.8	27.2	1944
5×25	2	0.9	1.0	1.6	1.9	32.1	2810
5×35	2	0.9	1.0	1.6	2.0	35.8	3398

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor operating temperature: 90°C

Air ambient temperature: 30°C

Ground ambient temperature: 20°C

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FIRETOX LSZH Flame Retardant Power & Control Cables

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Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E4A

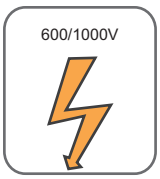
Conductor cross-sectional area	Ref. Method C (clipped direct)		Ref. Method E (in free air or on a perforated cable tray etc. horizontal or vertical)		Ref. Method D (direct in in groud or in ducting in groud. in or around buildings)	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.
1	2	3	4	5	6	7
mm^2	A	A	A	A	A	A
1.5	27	23	29	25	25	21
2.5	36	31	39	33	33	28
4	49	42	52	44	43	36
6	62	53	66	56	53	44
10	85	73	90	78	71	58
16	110	94	115	99	91	75
25	146	124	152	131	116	96
35	180	154	188	162	139	115
50	219	187	228	197	164	135
70	279	238	291	251	203	167
95	338	289	354	304	239	197
120	392	335	410	353	271	223
150	451	386	472	406	306	251
185	515	441	539	463	343	281
240	607	520	636	546	395	324
300	698	599	732	628	446	365
400	787	673	847	728	-	-

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E4B

Conductor cross-sectional area	Two-core cables, d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.38	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26

Conductor cross-sectional area	Two-core cables, d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Note: r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard


Flame Retardancy
IEC 60332-1-2


Reduced Fire Propagation
IEC 60332-3-24

Halogen Free
IEC 60754-1


Low Corrosivity
IEC 60754-2


Low Smoke Emission
IEC 61034-2

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Type Codes for LSZH Flame Retardant Power & Control Cables

FTX A-B-C-D-E-F-G-H

H Conductor
U: Solid to BS EN/IEC 60228 class 1
R: Stranded to BS EN/IEC 60228 class 2
K: Stranded to BS EN/IEC 60228 class 5

G Outer Sheath
Z1: Thermoplastic LSZH
Z: Crosslinked LSZH

F Armour
M: Steel wire armour
MA: Aluminium wire armour
F: Steel tape armour
FA: Aluminium tape armour
F2: Double steel tape armour
F3: Flat steel wire armour

E Inner Sheath
Z1: Thermoplastic LSZH
Z: Crosslinked LSZH

D Screen
O: Overall aluminium screen
C: Overall copper braiding

C Insulation
R: XLPE
Z1: Thermoplastic LSZH
Z: Crosslinked LSZH

B Voltage
05: 300/500V
07: 450/750V
1: 600/1000V

A Type
100: Single core unsheathed
200: 300/500V & 450/750V multicore/multipair
300: Single core sheathed
400: 600/1000V multicore

Technical Information for Fire Properties

FLAME RETARDANCE IN ACCORDANCE WITH DIFFERENT STANDARDS

The following standards specify a method for flame propagation test for single core cables. The single cable sample undergoes the flame action of a bunsen burner. The test only lasts few minutes.

The IEC 60332-1 standards are taken over as EN standards and transferred to national standards. Example: IEC 60332-1 becomes EN 60332-1 and introduced in Germany as DIN EN 60332-1.

Flame retardance in accordance with EN 60332:2004

EN 60332:2004 Tests on electrical and optical cables under fire conditions. The standard applies to single insulated wires (cables) and requires a vertical flame test with a maximum flame climb of 450mm. The test lasts between 1 and 8 minutes, depending on the cable diameter.

EN 60332-1-1:2004 / BS EN 60332-1-1:2004 / IEC 60332-1-1:2004 / DIN EN 60332-1-1:2004 / VDE 0482-1-1:2005-06 Test on electrical and optical cables under fire conditions. Test for a vertical flame propagation fo a single insulated wire or cables.

EN 60332-1-2:2004 / BS EN 60332-1-2:2004 / IEC 60332-1-2:2004 / DIN EN 60332-1-2:2004 / VDE 0482-1-2:2005-06 / CEI 60332-2-2 (CEI 20-35/2-2) Tests on electrical and optical fiber cables under fire conditions. Test for a verticalflame propagation for a single insulated wire or cable – Procedure for 1kW premixed flame.

This standard specifies a method of test for resistance to vertical flame propagation for a single insulated wire or cable. Part 1-1 specifies the test apparatus and Part 1-2 specifies the test procedure.

The cable sample is deemed to pass the test if the distance between the lower edge of the top support and the onset of charring is greater than 50mm. In addition, a failure shall be recorded if burning extends downward to a point greater than 540mm from the lower edge of the top support.

EN 60332-1-2:2004 specifies the use of 1kW premix flame and is for general use, except that the procedure may not be suitable for the testing of small insulated conductors or cables of less than 0.5mm sq cross section because the conductor melts before the test is completed, or for the testing of small optic fiber cables because the fiber will be broken before the test is completed. In this case, the procedure given by EN 60332-2-1/2 is recommended.

EN 60332-2-1:2004 / BS EN 60332-2-1:2004 / IEC 60332-2-1:2004 / DIN EN 60332-2-1:2004 / VDE 0482-

2-1:2005-06 Tests on electrical and optical cables under fire conditions. Test for a vertical flame propagation for a single small insulated wire or cable.

EN 60332-2-2:2004 / BS EN 60332-2-2:2004 / IEC60332-2-2:2004 / DIN EN 60332-2-2:2004 / VDE 0482-2-2:2005-06 / CEI 60332-2-2 (CEI 20-35/2-2) Test on electric and optical fiber cables under fire conditions. Tests for vertical flame propagation for a single small insulated wire or cable. Procedure for diffusion flame. This test applies to small dimensions cables.
This standard specifies a method of test for resistance to vertical flame propagation for a single insulated wire or cable. Part 2-1 specifies the test apparatus and Part 2-2 specifies the test procedure.

Flame retardance in accordance with NF C32-070-2.1(C2)

NF C32-070:2001 Insulated conductors and cables for installation - Classification tests on conductors and cables with regard to fire behavior.

NF C32-070 2.1 Procedure for 1 kW pre-mixed flame.

The NF F 32070 2.1 (Category C2) and IEC 60332-1-2 are very similar. The sole difference is the time during which the flame is applied.

Flame retardance in accordance with EN 50265-1:1999 (replaced by EN 60332)

EN 50265-1:1999 / BS EN 50265-1:1999 / DIN EN 50265-1:1999 / VDE 0482-265-1:1999-04– Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Apparatus (Replaced by EN 60332-1-1:2004 and EN 60332-2-1:2004).

EN 50265-2-1:1999 / BS EN 50265-2-1:1999 / DIN EN 50265-2-1:1999 / VDE 0482-265-2-1:1999-04 – Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Part 2-1: Procedure 1kW pre-mixed flame (Replaced by EN 60332-1-2:2004).

EN 50265-2-2:1999 / BS EN 50265-2-2:1999 / DIN EN 50265-2-2:1999 / VDE 0482-265-2-2:1999-04 – Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Part 2-2: Procedure Diffusion flame (Replaced by EN 60332-2-2:2004).

Flame retardance in accordance with BS 4066 Part 1 & 2 (replaced by EN 60332)

BS 4066-2:1980 (superseded) – Tests on electic cables under fire conditions. Method of test on a single vertical insulated wire or cable.

This standard is no longer in force and is replaced by BS EN 50265-2-1 which was also superseded by BS EN 60332-1:2009.

Flame retardance in accordance with NBN C 30-004 (cat. F1)

NBN C 32-004 specifies a method of test for measuring the vertical flame propagation characteristics of a

single wire or cable. The cable specimen is deemed to have passed the test and categorized as F1 if after burning has ceased, the charred or affected portion does not reach within 50mm of the lower edge of the top clamp which is equivalent to 425mm above the point of flame application.

Flame retardance in accordance with IEEE 383

In the IEEE 383 test, cables are supported by a one foot wide vertical rack eight feet high. The cables are positioned in the centre six inches of the rack, spaced one-half diameter apart. The rack is centered in an eight foot enclosure. A ten inch ribbon burner ignites the cable with a 21kW (70000 BTU). The burner is positioned 2 feet above the floor and 9 to 12 inches of cables are exposed to direct flames for 20 minutes. Cables on which flame extends above the top of the 8 foot rack fail the test.

REDUCED FIRE PROPAGATION IN ACCORDANCE WITH DIFFERENT STANDARDS

These standards specify a method for fire propagation test for vertically mounted bunched cables. These tests simulate the chimney effect in vertical installation of bunch of cables. A certain number of cable sections with a length of 3.5m is fastened to a vertical ladder in an adapted chamber. The amount of combustible materials for cables and duration of flame application depends on the category the cable has to meet.

Resistance of the wires bundle arranged vertically to the spread of the flame should be such that after a certain time and stopping the source of ignition, flame is extinguished by itself and the length of charred fragments will not exceed 2.5m in height measured above the lower edge of the burner.

Reduced fire propagation in accordance with IEC 60332-3

This test is the most common one to verify the behaviour of a cables for the fire propagation. The cables are installed on a bunch of vertical ladder inside a metal cabinet and undergo the action of a ribbon flame at 750°C.The standard is subdivided in several parts that differ one from the other for the quantity of cable to be installed, the installation mode and the flame application time.

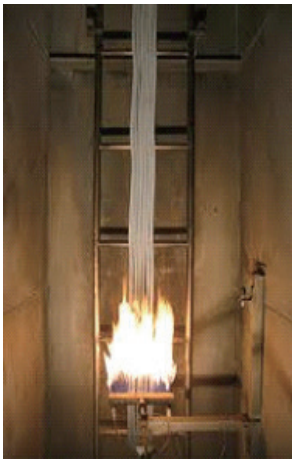
EN 60332-3-10:2009 / BS EN 60332-3-10:2009 / IEC 60332-3-10 ed1.1 / DIN EN 60332-3-10:2009 / VDE 0482-332-3-10:2010-08 – Common test methods for cables under fire conditions. Tests on electric and optical fiber cables under fire conditions - Part 3-10: Test for vertical flame spread of vertically mounted bunched wires or cables.

EN 60332-3-21:2009 / BS EN 60332-3-21:2009 / IEC 60332-3-21 ed1.1 / DIN EN 60332-3-21 / VDE 0482-332-3-21:2010-08 / CEI EN 60332-3-21:2009 (CEI 20-22/3-1)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-21: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A . F/R
-Installation in one layer (front).

-Installation in two layers (front and rear)
-The quantity of the Installed cable is equal to 7 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes

EN 60332-3-22:2009 / BS EN 60332-3-22:2009 / IEC 60332-3-22 ed1.1 / DIN EN 60332-3-22:2009 /VDE 0482-332-3-22:2010-08 / CEI EN 60332-3-22:2009 (CEI 20-22/3-2)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cable - Category A

-Installation in one layer (front).
-The quantity of the installed cable is equal to 7 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes



EN 60332-3-23:2009 / BS EN 60332-3-23:2009 / IEC 60332-3-23 ed1.1 / DIN EN 60332-3-23:2009 / VDE 0482-332-3-23:2010-08 / CEI EN 60332-3-23:2009 (CEI 20-22/3-3)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-23: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category B

-Installation in one layer (front).
-The quantity of the installed cable is equal to 3.5 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes

EN 60332-3-24:2009 / BS EN 60332-3-24:2009 / IEC 60332-3-24 ed1.1 / DIN EN 60332-3-24:2009 / VDE 0482-332-3-24:2010-08 / CEI EN 60332-3-24:2009 (CEI 20-22/3-4) – Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C

-Installation in one layer (front).
-The quantity of the installed cable is equal to 1.5 litres/m of combustible materials for cables
-The time of application of the flame is 20 minutes

EN 60332-3-25:2009 / BS EN 60332-3-25:2009 / IEC 60332-3-25 ed1.1 / DIN EN 60332-3-25: 2009 / VDE 0482-332-3-25:2010-08 / CEI EN 60332-3-25:2009 (CEI 20-22/3-5)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-25: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category D
-Installation in one layer (front).
-The quantity of the installed cable is equal to 0.5 litres/m of combustible materials for cables
-The time of application of the flame is 20 minutes.

Summary of test condition:

IEC	60332-3-21	60332-3-22			60332-3-23		60332-3-24		60332-3-25	
BS EN 50266	50266-2-1	50266-2-2			50266-2-3		50266-2-4		50266-2-5	
CEI	20-22/3-1	20-22/3-2			20-22/3-3		20-22/3-4		20-22/3-5	
Category	AF/R	A			B		C		D	
Conductor cross-sectionsmm^2	>35	>35	≤35		>35	≤35	>35	≤35	>35	≤35
NMV(litres per metre of cable)	7	7			3.5		1.5		0.5	
Minimum length of test pieces(m)	3.5	3.5			3.5		3.5		3.5	
Standard ladder (500 mm wide): • number of layers • maximum width of test sample	1front+1rear 300mm	≥1front 300mm	1front 300mm	-	≥1front 300mm	1front 300mm	≥1front 300mm	1front 300mm	≥1front 300mm	
Wide ladder (800 mm wide): • number of layers • maximum width of test sample	- -	- -	- -	1front 600mm	- -		- -		- -	
Positioning of test pieces	Spaced 0.5×Diameter cable (Max.20mm)	Touching	Spaced 0.5×Diameter cable (Max.20mm)		Touching	Spaced 0.5×Diameter cable (Max.20mm)	Touching	Spaced 0.5×Diameter cable (Max.20mm)	Touching	
Number of burners	1	1	1	2	1		1		1	
Ladder mounting	Front and rear	Front, Wider ladder for larger cables			Front		Front		Front	
Flame application time(min)	40	40	40		40		40		40	
Test conditions	Wind speed: <8 m/s; Ternperature: 5°C - +40°C									
Extent of the charred portion	≤2.5m above the bottom edge of the burner, neither at the front nor at the rear of the ladder.									

Reduced fire propagation in accordance with NF C32-070-2.2(C1)

NF C32-070 :2001 Insulated conductors and cables for installation.
-Classification tests on conductors and cables with regard to fire behavior.

A 1600mm vertically installed bundled of cable is exposed to the effects of a radiating oven (approx 830°C) and forced ventilation. Pilot flames arranged above the oven burn off the emitted gases. The test duration is 30 minutes, with the ventilation stopped for every 10 minutes during the flame application period. The cable sample is classified under Category C1 according to NF F 32070-2.2 if the carbonised part of the cable sample does not extend more than 0.8m above the upper base of the oven.

Depending on the damaged length, they can be further classified into 4 classes A, B, C and D according to NF F 16-101 as follows:

Category	Test Result
A	No damaged length from top of the oven in upper position.
B	Damaged length from top of oven in upper position not extending more than 50mm.
C	Damaged length from top of oven in upper position not extending more than 300mm
D	Damaged length from top of oven in upper position not extending above the top of the chimney

Reduced fire propagation in accordance with EN 50266-1, EN 50266-2-2, EN 50266-2-3, EN 50266-2-4.

EN 50266-1:2001 / BS EN 50266-1:2001 / DIN EN 50266-1:2001 / VDE 0482-266-1:2001-09– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 1: Apparatus (Replaced by EN 60332-3-10:2009)

EN 50266-2-1:2001 / BS EN 50266-2-1:2001 / DIN EN 50266-2-1:2001 / VDE 0482-266-2-1:2001-09 / CEI EN 50266-2-1– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-1 : Procedures. Category A F/R (Replaced by EN 60332-3-21:2009)

EN 50266-2-2:2001 / BS EN 50266-2-2:2001 / DIN EN 50266-2-2:2001 / VDE 0482-266-2-2:2001-09 / CEI EN 50266-2-2– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables
- Part 2-2: Procedures. Category A (Replaced by EN 60332-3-22:2009)

EN 50266-2-3:2001 / BS EN 50266-2-3:2001 / DIN EN 50266-2-3:2001 / VDE 0482-266-2-3:2001-09 / CEI EN 50266-2-1– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables
- Part 2-3: Procedures. Category B (Replaced by EN 60332-3-23:2009)

EN 50266-2-4:2001 / BS EN 50266-2-4:2001 / DIN EN 50266-2-4:2001 / VDE 0482-266-2-4:2001-09 / CEI EN 50266-2-4:2001 – Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-4: Procedures. Category C (Replaced by EN 60332-3-24:2009).

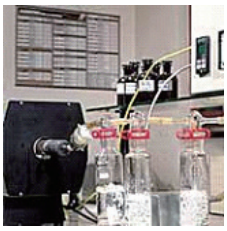
Reduced fire propagation in accordance with BS 4066-3

BS 4066-3:1994 (superseded) – Tests on electic cables under fire conditions. Tests on bunched wires or cables. This standard is no longer in force and is replaced by the BS EN 50266-1:2001

Reduced fire propagation in accordance with NBN C 32-004 (F2)

NBN C 32-004 specifies a method of test for measuring the vertical flame propagation characteristics of a bunch of cables. The cable specimen is deemed to have passed the test and categorized as F2 if after burning has ceased, the extent of charred or affected portion does not reach a height exceeding 2.5m above the bottom edge of the burner.

HALOGEN CONTENT TEST IN ACCORDANCE WITH DIFFERENT STANDARDS



In the event of a fire, many fumes are produced. This test is concerned with the possibilities of corrosive acid gases being released from halogen containing cables and the damage such cables can cause (to equipments). These standards specify a method for determination of the amount of halogen acid gas, evolved during combustion of compound.

Halogen content test in accordance with EN 50267-2-1

EN 50267-2-1:1998 / BS EN 50267-2-1:1999 / DIN EN 50267-2-1: 1999 / VDE 0482-267-2-1:1999-04 / CEI EN 50267-2-1:1999 (CEI 20-37/2-1) Common test methods for cables under fire conditions- Test on gases evolved during combustion of materials from cables- Part 2-1: Procedures. Determination of the amount of halogen acid gas. This part of the standard defines the method to measure the amount of halogen acid evolved and which should be expressed in hydrochloric acid. The amount of halogen acid contained in the test solution is determined by a titration method.

If the cables are described as zero halogen or halogen free, it is recommended that the hydrochoric acid yield should be less than 0.5%.

Halogen content test in accordance with IEC 60754-1

IEC 60754-1 ed 2.0 Common test methods for cables under fire conditions. Test on gases evolved during combustion of materials from cables. Part 1: Procedures. Determination of the amount of halogen acid gas. Basically, this is same as EN 50267-2-1.

Halogen content test in accordance with BS 6425-1

BS 6425-1:1990(superseded): Test on gases evolved during the combustion of materials from cables. Method for determination of amount of halogen acid gas evolved during combustion of polymeric materials taken from cables.
This standard is no longer in force and is replaced by the EN 50267-2-1.

ACID GAS EMISSION TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

The following standards specify a method for determination of acidity of gas evolved during combustion of cables by measuring PH and conductivity. This test allows to determine the corrosivity of the acid gases generally halogens, that develop during the electric cable combustion.

Acid gas emission test in accordance with EN 50267-2-2

EN 50267-2-2:1999 / BS EN 50267-2-2:1999 / DIN EN 50267-2-2:1999 / VDE 0482-267-2-2:1999- 04/ CEI EN 50267-2-2:1999 (CEI 20-37/2-2). Common test methods for cables under fire conditions- Test on gases evolved during combustion of materials from cables- Part 2-2: Procedures. Determination of degree of acidity of gases for materials by measuring PH and conductivity.
The standard states that the pH and the conductivity of a test solution should be measured, using calibrated PH and conductivity meters.

If the cables are described as zero halogen or halogen free, it is recommended that at least both of the following requirements should be met for each of the individual materials of a cable:

-The PH value should not be less than 4.3 when related to 1 litre of water

-The conductivity should not be less than 10us/mm when related to 1 litre of water

EN 50267-2-3:1999 / BS EN 50267-2-3:1999 / DIN EN 50267-2-3:1999 / VDE 0482-267-2-3:1999-04 / CEI EN 50267-2-3:1999 (CEI 20-37/2-3). Common test methods for cables under fire conditions- Test on gases evolved during combustion of materials from cables- Part 2-3:Procedures. Determination of degree of acidity of gases for cables by determination of the weighted average of pH and conductivity.

The standard states that the pH and the conductivity of a test solution should be measured, using calibrated pH and conductivity meters. The results from the different components of the cable are then weighted.

Acid gas emission test in accordance with IEC 60754-2

IEC 60754-2 ed1.0 Test on gases evolved during combustion of electric cables - Part 2 : Determination of degree of acidity of gases evolved during combustion of materials taken from electric cables by measuring pH and conductivity.

Acid gas emission test in accordance with NF C32-074

NF C32-074 Common test methods for cables under fire conditions - Test on gases evolved during combustion of materials from cables. This standard is equivalent to IEC 60754-2

Acid gas emission test in accordance with BS 6425-2

BS 6425-2:1993 (superseded) test on gases evolved during the combustion of materials from cables. Determination of degree of acidity (corrosivity) of gases by measuring pH and conductivity.

This standard is no longer in force and is replaced by the EN 50267-2-2:1999.

Acid gas emission test in accordance with DIN VDE 0472-813 / VDE 0472-813:1994

DIN VDE 0472-813 / VDE 0472-813:1994 Corrosivity of combustion gases.
The standards are no longer in force and are replaced by the EN 50267-2-2 & VDE 0482-267-2-2.

SMOKE DENSITY TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

The smoke density measurement taken from a material under fire conditions gives an indication of the visibility through the smoke. This is important as reduced visibility in a real fire situation makes it more difficult to escape from the fire thus increasing the threat to human life from the toxic gas, fumes and heat.
The following standards specify the method for measuring the generation of smoke from cables during fire.

Smoke density test in accordance with IEC 61034-1 & IEC 61034-2

IEC 61034-1:2005 / EN 61034-1:2005 / BS EN 61034-1:2005 / DIN EN 61034-1:2006 / VDE 0482-1034-1:2006 Measurement of smoke density of cables burning under defined conditions. Part 1: Test apparatus

IEC 61034-2:2005 / EN 61034-2:2005 / BS EN 61034-2:2005 / DIN EN 61034-2:2006 / VDE 0482-1034-2:2006 / CEI EN 61034-2:2006 (CEI 20-37/3-1) Measurement of smoke density of cables burning under defined conditions.
Part 2: Test procedure and requirements.

The standard specifies a method of measurement of smoke density of cables. Part 1 specifies the test apparatus and Part 2 specifies the test procedure.

The test is usually performed inside a chamber of 3mx3mx3m and the test is sometimes described as 3 metres cube test. The test is performed by monitoring the transmittance reduction of a white light beam, running from one side of the chamber to the other, at a set height, thus monitoring the build up of smoke inside the chamber. The minimum percentage of light transmittance is often used to determine if the cable has passed or failed the test , often a minimum light transmittance of 60% is applied in order to classify a cable as low smoke.

Smoke density test in accordance with NF C32- 073

NF C32 073 Common test methods for cables under fire conditions.
- Measurement of smoke density of cables burning under defined conditions.
This standard is equivalent to IEC 61034-2

Smoke density test in accordance with BS 7622-1 & BS 7622-2

BS 7622-1:1993 (superseded) – Measurement of smoke density of electric cables burning under defined conditions. Test apparatus.
BS 7622-2:1993 (superseded) – Measurement of smoke density of electric cables burning under defined conditions. Test procedure and requirements.

The standards are no longer in force and were replaced by the EN 50268-1:2000 and EN 50268-2:2000 even though they too were superseded by EN 61034-1:2005 and EN 61034-2:2005.

Smoke density test in accordance with EN 50268-1 & EN 50268-2

EN 50268-1:2000 / BS EN 50268-1:2000 / DIN EN 50268-1:2000 / VDE 0482-268-1:2000 (superseded) – Common test methods for cables under fire conditions. Measurement of smoke density of cable burning under defined conditions. Part 1: Apparatus.
EN 50268-2:2000 / BS EN 50268-2:2000 / DIN EN 50268-2:2000 / VDE 0482-268-2:2000 (superseded) – Common test methods for cables under fire conditions. Measurement of smoke density of cable burning under defined conditions. Part 2: Procedure.
The standards are no longer in force and are replaced by the EN 61034-1:2005 and EN 61034-2:2005. Although these standards have been withdrawn, they are still called upon in some specification documents such as in the London Underground specification 1-085.

Smoke density test In accordance with DIN VDE 0472-816 / VDE 0472-816:1994

DIN VDE 0472-816/VDE 0472-816:1994 Testing of cables, wires and flexible cords. Smoke Density.

The standards are no longer in force and are replaced by the EN 50268-1, VDE 0482-268-1, EN 50268-2 & VDE 0482-268-2 which are also replaced by the EN 61034-1:2005 and EN 61034-2:2005.

OXYGEN INDEX TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

The oxygen index is defined as the minimum concentration of oxygen, expressed as volume percentage, in a mixture of oxygen and nitrogen that will just support combustion of a material initially at room temperature under specified test conditions.

Oxygen Index test in accordance with ASTM D 2863

ASTM D 2863-10 Measuring the minimum oxygen concentration to support candle-like combustion of plastics (Oxygen Index).

The test is performed in accordance with the procedure specified in ASTM 2863-95 using test piece cut from the outer sheath of the cable. The apparatus holds a small specimen which is clamped vertically in a tube in an atmosphere where the relative concentration of oxygen and nitrogen can be changed. The aim is to test the flammability of the sample with a small pilot flame to find the minimum oxygen concentration required to just sustain combustion of the sample.

Oxygen index test in accordance with ISO 4589-2

ISO4589-2:1996 Determination of burning behaviour by oxygen index Part 2: Ambient temperature test.
Specimens measuring 100mm long by 6mm wide are used for testing. The test is performed in accordance with the procedure specified in the standard.

TEMPERATURE INDEX TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

This is a test for assessing the performance of a material when it is tested in accordance with BS2782: Part 1: Method 143a and 143b. The oxygen index of a material will drop when the temperature rises. When the temperature rises and the oxygen index drops to 21%, the material will burn automatically. This temperature is defined as temperature index. For example, the oxygen index of the coal at room temperature is 50% and when the temperature climbs to 150°C, it's oxygen index drops to 21°C and the coal will burn by itself automatically. The temperature index of the coal is defined as 150°C. In general, the temperature index of fire retardant cable exceeds 250°C.

Temperature index test in accordance with BS 2782

BS 2782: Part 1:1989 Method 143a and 143b Temperature of materials. Determination of flammability. Specimens measuring nominally 100mm long by 6.5mm wide by 3mm thick are used for testing. The specimens are then tested in accordance with the test procedure specified in the standard.

Temperature index test in accordance with ISO 4589-3

ISO4589-3:1996 Determination of burning behaviour by oxygen index Part 3: Elevated temperature test. Specimens measuring 100mm long by 6mm wide are used for testing. The test is performed in accordance with the procedure specified in the standard.

TOXICITY TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

Toxicity test in accordance with NES 02-713

Measuring a fume from a material exposed to a controlled fire conditions gives an indication of the fumes which may be produced in a real fire situation. A standard method of test for determining the toxicity of materials under fire condition is Defense Standard NES 02-713- Toxicity. This method gives the level of toxicity of the fumes produced from the material under test. During the test, the test specimen is heated via direct flame application at 1150°C.

The flame is applied via a bunsen burner with a flame height of between 100m and 125mm formed with a methane gas and an external supply of compressed air. The specimen toxicity is determined from accurate pre-analysis weight (4pp) colorimetric tubes and ion chromatography.
The test may determine the following species: Hydrogen Bromide, Hydrochloric Acid, Hydrogen Fluoride, Formaldehyde, Nitrous gases, Carbon Monoxide, Carbon Dioxide, Acrylonitrile, Phenol,
Hydrogen Sulphide, Sulphur Dioxide, Hydrocyanic Acid, Ammonia. The concentration in ppm for each gas detected are provided. The toxicity index of the speciments summates the toxic gases, taking into account of their level of danger to humans. The smaller the toxicity index, the better the product. A limit of 5 is often applicable.

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Toxicity test in accordance with NF C 20-454

NF C 20-454 base environmental testing procedures. Fire behaviour. Analysis and titration of gases evolved during pyrolysis or combustion of materials used in electrotechnics. Exposure to abnormal heat or fire. Tube furnace method.

The test defined by this standard serves to define the conventional toxicity index (cti) of the gases emitted by the insulating or sleeving materials during combustion at 800°C.

Toxicity test in accordance with NF X 70-100

NF X 70-100 Fire Tests; Analysis of gaseous effluents.

The test is conducted within a tube furnace where the temperature is set at either 400°C, 600°C, 800°C (commonly 600°C is used for most of the materials or 800°C for some electrical products) for 40 minutes throughout the test by analysis of the toxicity index of the gases including CO, CO2, HCl, HBr, HCN, HF and SO2.

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