

0.45/0.75KV Single Core Standard Wall Traction Cables

Applications

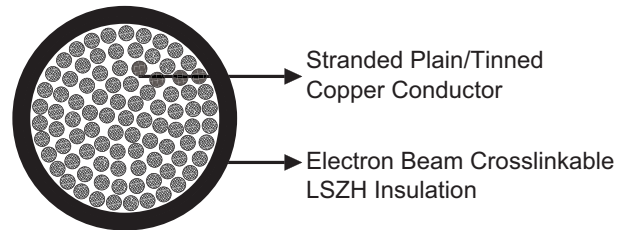
Single core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.

Standard

- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.
- Insulation: Electron beam crosslinkable standard wall LSZH compound



Optional

FRA-SW-0.75S (Sheathed); FRA-SW-0.75S-OS (Screened & sheathed)
FRA-SW-0.75SU-FR (Fire resistant & Unsheathed)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.0	1.5	2.5	4.0	6.0	10	16
Maximum Conductor Resistance	Ω/km	20	13.7	8.21	5.09	3.39	1.95	1.24
Voltage Rating	KV	0.45/0.75						

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C



Impact Resistant Highly Flexible UV Resistant Oil Resistant

Dimensions and Weight

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-SW-0.75SU-1G1	1×1.0	32/0.2	0.8	3.9	28
FRA-SW-0.75SU-1G1.5	1×1.5	30/0.25	0.8	4.2	34
FRA-SW-0.75SU-1G2.5	1×2.5	50/0.25	0.8	4.6	41
FRA-SW-0.75SU-1G4	1×4.0	56/0.3	0.8	5.2	64
FRA-SW-0.75SU-1G6	1×6.0	84/0.3	0.9	6.4	93
FRA-SW-0.75SU-1G10	1×10.0	80/0.4	0.9	7.5	141
FRA-SW-0.75SU-1G16	1×16.0	126/0.4	1.1	8.6	203



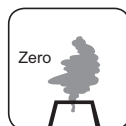
Weather Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



0.45/0.75KV Multicore Standard Wall Traction Cables

Applications

Multicore power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.



Standard

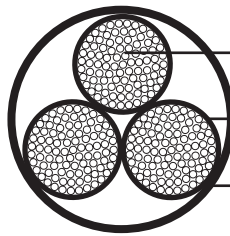
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation: Electron beam crosslinkable standard wall LSZH compound.

- Outer Sheath: Electron beam crosslinkable LSZH compound.



Stranded Plain/Tinned Copper Conductor

Electron Beam Crosslinkable LSZH Insulation

Electron Beam Crosslinkable LSZH Sheath

Optional

FRA-SW-0.75M-OS (Screened)

FRA-SW-0.75M-FR (Fire resistant)

Electrical Characteristics at 20°C



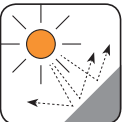
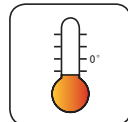







Nominal Conductor Cross Section	mm ²	1.0	1.5	2.5	4.0	6.0	10	16
Maximum Conductor Resistance	Ω/km	20	13.7	8.21	5.09	3.39	1.95	1.24
Voltage Rating	KV	0.45/0.75						

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-SW-0.75M-2G1.5	2x1.5	30/0.25	0.7	8.9	127
FRA-SW-0.75M-3G1.5	3x1.5	30/0.25	0.7	9.6	144
FRA-SW-0.75M-4G1.5	4x1.5	30/0.25	0.7	10.6	177
FRA-SW-0.75M-5G1.5	5x1.5	30/0.25	0.7	11.6	186
FRA-SW-0.75M-7G1.5	7x1.5	30/0.25	0.7	12.5	243
FRA-SW-0.75M-13G1.5	13x1.5	30/0.25	0.7	17.0	411
FRA-SW-0.75M-19G1.5	19x1.5	30/0.25	0.7	19.3	586
FRA-SW-0.75M-28G1.5	28x1.5	30/0.25	0.7	23.6	901
FRA-SW-0.75M-37G1.5	37x1.5	30/0.25	0.7	26.6	1068
FRA-SW-0.75M-2G2.5	2x2.5	50/0.25	0.8	10.3	166
FRA-SW-0.75M-3G2.5	3x2.5	50/0.25	0.8	11.1	201
FRA-SW-0.75M-4G2.5	4x2.5	50/0.25	0.8	12.3	252
FRA-SW-0.75M-5G2.5	5x2.5	50/0.25	0.8	13.4	282
FRA-SW-0.75M-7G2.5	7x2.5	50/0.25	0.8	14.6	345
FRA-SW-0.75M-13G2.5	13x2.5	50/0.25	0.8	20.0	616
FRA-SW-0.75M-19G2.5	19x2.5	50/0.25	0.8	22.8	806
FRA-SW-0.75M-28G2.5	28x2.5	50/0.25	0.8	28.2	1236
FRA-SW-0.75M-37G2.5	37x2.5	50/0.25	0.8	31.7	1650

					
Impact Resistant	Highly Flexible	UV Resistant	Weather Resistant	Oil Resistant	
					
Flame Retardant NF C32-070-2.1(C2) IEC 60332-1/EN 50265-2-1	Fire Retardant NF C32-070-2.2(C1) IEC 60332-3/EN50266	Zero Halogen IEC 60754-1/NF C20-454 EN 50267-2-1	Low Smoke Emission IEC 61034/NFC20-902 EN 50268/NF C32-073	Low Corrosivity EN 50267-2-2/NF C32-074 IEC 60754-2/NF C20-453	Low Toxicity





0.45/0.75KV Single Core Thin Wall Traction Cables

Applications

Single core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.



Standard

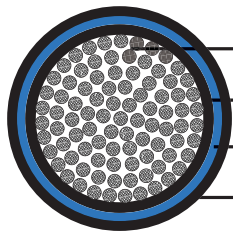
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation: Electron beam crosslinkable thin wall LSZH compound.

- Screen(optional): Copper Wire Screen (for screened & sheathed cables).
- Outer Sheath(optional): Electron beam crosslinkable LSZH compound (for screened & sheathed cables).



Stranded Plain/Tinned Copper Conductor

Electron Beam Crosslinkable LSZH Insulation

Optional Copper Wire Screen

Optional Electron Beam Crosslinkable LSZH Sheath

Optional

FRA-TW-0.75S (Sheathed)

FRA-TW-0.75SU-FR (Fire resistant & Unsheathed)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	AWG	20	18	16	14	12	10
Maximum Conductor Resistance	Ω/km	28.3	17.9	14.1	8.3	6.8	3.6
Voltage Rating	KV	0.45/0.75					

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

FRA-TW-0.75SU (Unsheathed)

Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. x AWG	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-0.75SU-1C20A	1 x 20	19/0.2	0.18	1.5	7
FRA-TW-0.75SU-1C18A	1 x 18	19/0.25	0.18	1.75	10
FRA-TW-0.75SU-1C16A	1 x 16	19/0.3	0.18	2.0	14
FRA-TW-0.75SU-1C14A	1 x 14	37/0.25	0.22	2.35	19
FRA-TW-0.75SU-1C12A	1 x 12	37/0.3	0.28	2.77	28
FRA-TW-0.75SU-1C10A	1 x 10	37/0.4	0.34	3.45	47

FRA-TW-0.75S-OS (Screened & Sheathed)

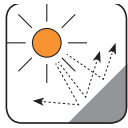
Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. x AWG	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-0.75S-OS-1C20A	1 x 20	19/0.2	0.18	2.5	17
FRA-TW-0.75S-OS-1C18A	1 x 18	19/0.25	0.18	2.7	19.4
FRA-TW-0.75S-OS-1C16A	1 x 16	19/0.3	0.18	2.9	24.2



Impact Resistant



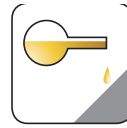
Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity





0.45/0.75KV Multicore Thin Wall Traction Cables

Applications

Multicore power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.



Standard

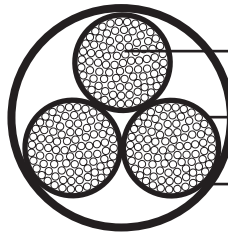
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Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360

- Insulation: Electron beam crosslinkable thin wall LSZH compound

- Outer Sheath: Electron beam crosslinkable LSZH compound



Stranded Plain/Tinned Copper Conductor

Electron Beam Crosslinkable LSZH Insulation

Electron Beam Crosslinkable LSZH Sheath

Optional

FRA-TW-0.75M-OS (Screened)

FRA-TW-0.75M-FR (Fire resistant)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	AWG	20	18	16	14	12	10
Maximum Conductor Resistance	Ω/km	28.3	17.9	14.1	8.3	6.8	3.6
Voltage Rating	KV	0.45/0.75					

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

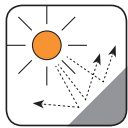
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x AWG	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-0.75M-2C20A	2×20	19/0.2	0.18	4.2	32
FRA-TW-0.75M-2C18A	2×18	19/0.25	0.18	4.6	39
FRA-TW-0.75M-2C16A	2×16	19/0.3	0.18	5.3	54
FRA-TW-0.75M-2C14A	2×14	37/0.25	0.22	6.1	66
FRA-TW-0.75M-2C12A	2×12	37/0.3	0.28	7.3	92
FRA-TW-0.75M-3C20A	3×20	19/0.2	0.18	4.4	46
FRA-TW-0.75M-3C18A	3×18	19/0.25	0.18	4.95	62
FRA-TW-0.75M-4C20A	4×20	19/0.2	0.18	4.65	59
FRA-TW-0.75M-4C18A	4×18	19/0.25	0.18	5.2	80
FRA-TW-0.75M-4C16A	4×16	19/0.3	0.18	6.0	104



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity





0.6/1KV Single Core Medium Wall Traction Cables

Applications

Single Core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.

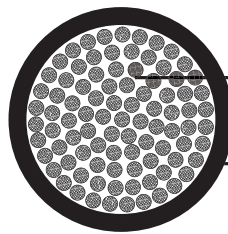


Standard

- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.
- Insulation: Electron beam crosslinkable medium wall LSZH compound.



Stranded Plain/Tinned Copper Conductor

Electron Beam Crosslinkable LSZH Insulation

Optional

FRA-MW-1S (Sheathed); FRA-MW-1S-OS (Screened & Sheathed)
FRA-MW-1SU-FR (Fire resistant & Unsheathed)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	0.5	0.75	1.0	1.5	2.5	4.0	6.0
Maximum Conductor Resistance	Ω/km	40.1	26.7	20.0	13.7	8.21	5.09	3.39
Voltage Rating	KV	0.6/1.0						

Nominal Conductor Cross Section	mm ²	10	16	25	35	50	70	95
Maximum Conductor Resistance	Ω/km	1.95	1.24	0.795	0.565	0.393	0.277	0.21
Voltage Rating	KV	0.6/1.0						

Nominal Conductor Cross Section	mm ²	120	150	185	240	300	400
Maximum Conductor Resistance	Ω/km	0.164	0.132	0.108	0.0817	0.0654	0.0495
Voltage Rating	KV	0.6/1.0					

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

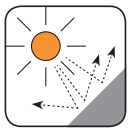
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-1SU-1G0.5	1×0.5	16/0.2	0.6	2.0	6
FRA-MW-1SU-1G0.75	1×0.75	24/0.2	0.6	2.2	8
FRA-MW-1SU-1G1	1×1.0	32/0.2	0.6	2.6	10
FRA-MW-1SU-1G1.5	1×1.5	30/0.25	0.7	3.1	20
FRA-MW-1SU-1G2.5	1×2.5	50/0.25	0.7	3.5	30
FRA-MW-1SU-1G4	1×4.0	56/0.3	0.7	4.1	50
FRA-MW-1SU-1G6	1×6.0	84/0.3	0.7	4.6	60
FRA-MW-1SU-1G10	1×10	80/0.4	0.7	5.5	110
FRA-MW-1SU-1G16	1×16	126/0.4	0.7	6.7	160
FRA-MW-1SU-1G25	1×25	196/0.40	0.9	8.5	240
FRA-MW-1SU-1G35	1×35	276/0.40	0.9	9.8	330
FRA-MW-1SU-1G50	1×50	396/0.40	1.0	11.5	460
FRA-MW-1SU-1G70	1×70	360/0.50	1.0	13.6	660
FRA-MW-1SU-1G95	1×95	475/0.50	1.1	15.1	860
FRA-MW-1SU-1G120	1×120	608/0.50	1.1	17.1	1080
FRA-MW-1SU-1G150	1×150	756/0.50	1.4	19.1	1370
FRA-MW-1SU-1G185	1×185	925/0.50	1.6	21.3	1690
FRA-MW-1SU-1G240	1×240	1221/0.50	1.7	24.1	2230
FRA-MW-1SU-1G300	1×300	1525/0.50	1.8	26.7	2780
FRA-MW-1SU-1G400	1×400	2013/0.50	2.0	30.5	3740



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
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EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity





0.6/1KV Multicore Medium Wall Traction Cables

Applications

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Standard

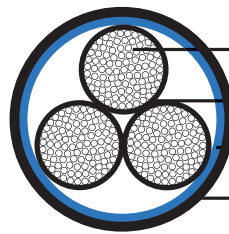
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- DIN 5510-1 1-4
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Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation: Electron beam crosslinkable medium wall LSZH compound.

- Screening (optional) : Copper Wire Screen(for screened cables).
- Outer Sheath: Electron beam crosslinkable LSZH compound.



- Stranded Plain/Tinned Copper Conductor
- Electron Beam Crosslinkable LSZH Insulation
- Optional Copper Wire Screen
- Electron Beam Crosslinkable LSZH Sheath

Optional

FRA-MW-1M-FR (Fire resistant)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	0.5	0.75	1.0	1.5	2.5	4.0	6.0
Maximum Conductor Resistance	Ω/km	40.1	26.7	20.0	13.7	8.21	5.09	3.39
Voltage Rating	KV	0.6/1.0						

Nominal Conductor Cross Section	mm ²	10	16	25	35	50
Maximum Conductor Resistance	Ω/km	1.95	1.24	0.795	0.565	0.393
Voltage Rating	KV	0.6/1.0				

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

↳ Dimensions and Weight

FRA-MW-1M (Multicore unscreened)

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-1M-2G0.5	2×0.5	16/0.20	0.6	5.9	48
FRA-MW-1M-4G0.5	4×0.5	16/0.20	0.6	7.0	55
FRA-MW-1M-7G0.5	7×0.5	16/0.20	0.6	9.1	72
FRA-MW-1M-18G0.5	18×0.5	16/0.20	0.6	12.7	86
FRA-MW-1M-3G0.75	3×0.75	24/0.20	0.6	6.8	70
FRA-MW-1M-5G0.75	5×0.75	24/0.20	0.6	8.4	107
FRA-MW-1M-8G0.75	8×0.75	24/0.20	0.6	10.9	147
FRA-MW-1M-12G0.75	12×0.75	24/0.20	0.6	11.9	175
FRA-MW-1M-20G0.75	20×0.75	24/0.20	0.6	15.2	350
FRA-MW-1M-2G1	2×1.0	32/0.20	0.6	6.9	72
FRA-MW-1M-6G1	6×1.0	32/0.20	0.6	10.0	160
FRA-MW-1M-9G1	9×1.0	32/0.20	0.6	12.5	210
FRA-MW-1M-25G1	25×1.0	32/0.20	0.6	18.7	519
FRA-MW-1M-2G1.5	2×1.5	30/0.25	0.7	7.5	86
FRA-MW-1M-3G1.5	3×1.5	30/0.25	0.7	8.0	90
FRA-MW-1M-5G1.5	5×1.5	30/0.25	0.7	10.2	169
FRA-MW-1M-7G1.5(G/Y)	*7G 1.5	30/0.25	0.7	12.1	238
FRA-MW-1M-12G1.5	12×1.5	30/0.25	0.7	14.2	313
FRA-MW-1M-36G1.5	36×1.5	30/0.25	0.7	23	905

*G—yellow/green

FRA-MW-1M-OS (Multicore screened)

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-1M-OS-2G0.5	2×0.5	16/0.20	0.6	6.6	68
FRA-MW-1M-OS-4G0.5	4×0.5	16/0.20	0.6	7.5	102
FRA-MW-1M-OS-7G0.5	7×0.5	16/0.20	0.6	9.8	145
FRA-MW-1M-OS-15G0.5	15×0.5	16/0.20	0.6	13.4	240
FRA-MW-1M-OS-9P0.5S	9×2×0.5	16/0.20	0.6	20.6	541
FRA-MW-1M-OS-3G0.75	3×0.75	24/0.20	0.6	7.5	94
FRA-MW-1M-OS-6G0.75	6×0.75	24/0.20	0.6	9.9	165
FRA-MW-1M-OS-9G0.75	9×0.75	24/0.20	0.6	12.3	243
FRA-MW-1M-OS-16G0.75	16×0.75	24/0.20	0.6	14.4	348
FRA-MW-1M-OS-5P0.75S	5×2×0.75	24/0.20	0.6	16.0	354
FRA-MW-1M-OS-4G1	4×1.0	32/0.20	0.6	8.8	140
FRA-MW-1M-OS-7G1	7×1.0	32/0.20	0.6	11.8	226
FRA-MW-1M-OS-3G1.5	3×1.5	32/0.25	0.7	8.6	124
FRA-MW-1M-OS-5G1.5	5×1.5	32/0.25	0.7	10.9	208
FRA-MW-1M-OS-9G1.5	9×1.5	30/0.25	0.7	14.9	409
FRA-MW-1M-OS-16G1.5	16×1.5	30/0.25	0.7	17.5	560
FRA-MW-1M-OS-6P1.5S	6×2×1.5	30/0.25	0.7	18.9	540
FRA-MW-1M-OS-2G2.5	2×2.5	50/0.25	0.7	9.6	160
FRA-MW-1M-OS-4G2.5	4×2.5	50/0.25	0.7	11.3	222
FRA-MW-1M-OS-7G2.5	7×2.5	50/0.25	0.7	14.8	400
FRA-MW-1M-OS-3G4	3×4	56/0.30	0.7	11.8	260
FRA-MW-1M-OS-5G4	5×4	56/0.30	0.7	14.7	440
FRA-MW-1M-OS-3G6	3×6	84/0.30	0.7	13.8	370
FRA-MW-1M-OS-5G6	5×6	84/0.30	0.7	17.4	620
FRA-MW-1M-OS-3G10	3×10	80/0.40	0.7	17.1	580



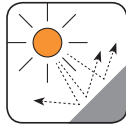
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-1M-OS-4G10	4x10	80/0.40	0.7	19.2	750
FRA-MW-1M-OS-5G10	5x10	80/0.40	0.7	21.1	850
FRA-MW-1M-OS-3G16	3x16	126/0.40	0.7	20.5	820
FRA-MW-1M-OS-2G25	2x25	196/0.40	0.9	22.9	990
FRA-MW-1M-OS-3G35	3x35	276/0.40	0.9	27.9	1600
FRA-MW-1M-OS-6G35	6x35	276/0.40	0.9	39.7	3390
FRA-MW-1M-OS-2G50	2x50	396/0.40	1.0	29.8	1760



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



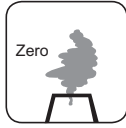
Flame Retardant

NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant

NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen

IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission

IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity

EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



0.6/1KV Single Core Thin Wall Traction Cables

Applications

Single core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.

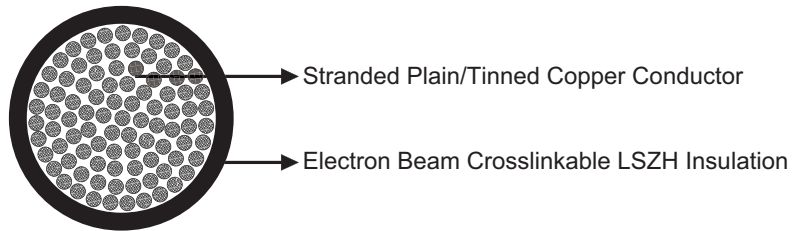


Standard

- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.
- Insulation: Electron beam crosslinkable thin wall LSZH compound.



Stranded Plain/Tinned Copper Conductor

Electron Beam Crosslinkable LSZH Insulation

Optional

FRA-TW-1SU-FR (Fire resistant & Unsheathed)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	0.5	0.6	0.75	1.0	1.2	1.5	2.0	2.5	4.0
Maximum Conductor Resistance	Ω/km	40.1	33.4	26.7	20	16.3	13.7	11.2	8.21	5.09
Voltage Rating	KV	0.6/1.0								

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C



➤ Dimensions and Weight

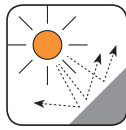
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-1SU-1C0.5S	1x0.5	19/0.18	0.3	1.4	5.8
FRA-TW-1SU-1C0.6S	1x0.6	19/0.20	0.3	1.5	7
FRA-TW-1SU-1C0.75S	1x0.75	19/0.22	0.3	1.6	8.4
FRA-TW-1SU-1C1S	1x1.0	19/0.26	0.3	1.75	10
FRA-TW-1SU-1C1.2S	1x1.2	19/0.28	0.3	2.0	13
FRA-TW-1SU-1C1.5S	1x1.5	19/0.30	0.3	2.15	16
FRA-TW-1SU-1C2S	1x2.0	37/0.25	0.4	2.4	19
FRA-TW-1SU-1C2.5S	1x2.5	19/0.40	0.4	2.75	26
FRA-TW-1SU-1C4S	1x4.0	56/0.30	0.4	3.35	40



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



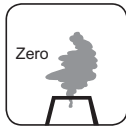
Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



0.6/1KV Multicore Thin Wall Traction Cables

Applications

Multicore power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.



Standard

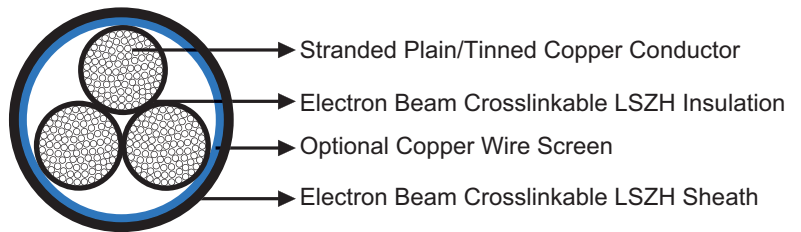
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation: Electron beam crosslinkable thin wall LSZH compound.

- Screen(optional): Copper Wire Screen (for screened cable).
- Outer Sheath: Electron beam crosslinkable LSZH compound.



Optional

FRA-TW-1M-FR (Fire resistant)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	0.5	0.75	1.0	1.5	2.5
Maximum Conductor Resistance	Ω/km	40.1	26.7	20	13.7	8.21
Voltage Rating	KV	0.6/1.0				

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C



↳ Dimensions and Weight

FRA-TW-1M (Multicore unscreened)

Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-1M-2C0.5S	2×0.5	19/0.18	0.3	4.4	31
FRA-TW-1M-3C0.5S	3×0.5	19/0.18	0.3	4.6	36
FRA-TW-1M-4C0.5S	4×0.5	19/0.18	0.3	5.0	43
FRA-TW-1M-5C0.5S	5×0.5	19/0.18	0.3	5.5	53
FRA-TW-1M-6C0.5S	6×0.5	19/0.18	0.3	6.0	62
FRA-TW-1M-2P0.5S	2×2×0.5	19/0.18	0.3	6.5	58
FRA-TW-1M-4P0.5S	4×2×0.5	19/0.18	0.3	8.7	99
FRA-TW-1M-2C0.75S	2×0.75	19/0.22	0.3	4.75	35
FRA-TW-1M-3C0.75S	3×0.75	19/0.22	0.3	5.15	47
FRA-TW-1M-4C0.75S	4×0.75	19/0.22	0.3	5.6	57
FRA-TW-1M-6C0.75S	6×0.75	19/0.22	0.3	6.75	83
FRA-TW-1M-2P0.75S	2×2×0.75	19/0.22	0.3	7.75	81
FRA-TW-1M-2C1S	2×1.0	19/0.25	0.3	5.1	45
FRA-TW-1M-3C1S	3×1.0	19/0.25	0.3	5.4	54
FRA-TW-1M-4C1S	4×1.0	19/0.25	0.3	5.8	64
FRA-TW-1M-6C1S	6×1.0	19/0.25	0.3	7.3	98
FRA-TW-1M-10C1S	10×1.0	19/0.25	0.3	8.7	143
FRA-TW-1M-25C1S	25×1.0	19/0.25	0.3	12.8	324
FRA-TW-1M-2C1.5S	2×1.5	19/0.3	0.3	6.0	63
FRA-TW-1M-3C1.5S	3×1.5*	19/0.3	0.3	6.3	76
FRA-TW-1M-4C1.5S	4×1.5	19/0.3	0.3	6.9	94
FRA-TW-1M-5C1.5S	5×1.5*	19/0.3	0.3	7.8	116
FRA-TW-1M-6C1.5S	6×1.5	19/0.3	0.3	8.45	141
FRA-TW-1M-7C1.5S(G/Y)	7G 1.5	19/0.3	0.3	9.1	165
FRA-TW-1M-8C1.5S	8×1.5	19/0.3	0.3	10.3	201
FRA-TW-1M-10C1.5S	10×1.5	19/0.3	0.3	10.6	216
FRA-TW-1M-18C1.5S	18×1.5	19/0.3	0.3	13.4	374
FRA-TW-1M-25C1.5S(G/Y)	25G 1.5	19/0.3	0.3	15.5	494
FRA-TW-1M-2C2.5S	2×2.5	19/0.4	0.4	7.3	98
FRA-TW-1M-3C2.5S	3×2.5*	19/0.4	0.4	7.8	122
FRA-TW-1M-4C2.5S	4×2.5	19/0.4	0.4	8.7	152
FRA-TW-1M-5C2.5S	5×2.5	19/0.4	0.4	9.4	181
FRA-TW-1M-6C2.5S	6×2.5	19/0.4	0.4	10.6	223

*earth cable can be offered as an option

G: earth cable (yellow/green)

FRA-TW-1M-OS (Multicore screened)

Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-1M-OS-2C0.5S	2×0.5	19/0.18	0.3	4.8	42
FRA-TW-1M-OS-3C0.5S	3×0.5	19/0.18	0.3	5.3	51
FRA-TW-1M-OS-4C0.5S	4×0.5	19/0.18	0.3	5.4	56
FRA-TW-1M-OS-6C0.5S	6×0.5	19/0.18	0.3	6.5	82
FRA-TW-1M-OS-15C0.5S	15×0.5	19/0.18	0.3	9.0	167
FRA-TW-1M-OS-2P0.5S	2×2×0.5	19/0.18	0.3	7.2	80
FRA-TW-1M-OS-3P0.5S	3×2×0.5	19/0.18	0.3	8.1	98
FRA-TW-1M-OS-4P0.5S	4×2×0.5	19/0.18	0.3	9.3	131
FRA-TW-1M-OS-12P0.5S	12×2×0.5	19/0.18	0.3	13.0	276

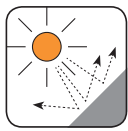
Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-1M-OS-2C0.75S	2×0.75	19/0.22	0.3	5.0	48
FRA-TW-1M-OS-4C0.75S	4×0.75	19/0.22	0.3	6.0	72
FRA-TW-1M-OS-6C0.75S	6×0.75	19/0.22	0.3	7.2	103
FRA-TW-1M-OS-10C0.75S	10×0.75	19/0.22	0.3	8.7	152
FRA-TW-1M-OS-18C0.75S	18×0.75	19/0.22	0.3	11.0	244
FRA-TW-1M-OS-3P0.75S	3×2×0.75	19/0.22	0.3	9.0	127
FRA-TW-1M-OS-2C1S	2×1.0	19/0.25	0.3	5.6	60
FRA-TW-1M-OS-3C1S	3×1.0	19/0.25	0.3	6.0	76
FRA-TW-1M-OS-4C1S	4×1.0	19/0.25	0.3	6.5	88
FRA-TW-1M-OS-6C1S	6×1.0	19/0.25	0.3	7.8	114
FRA-TW-1M-OS-8C1S	8×1.0	19/0.25	0.3	8.9	171
FRA-TW-1M-OS-25C1S	25×1.0	19/0.25	0.3	13.8	392
FRA-TW-1M-OS-2P1S	2×2×1.0	19/0.25	0.3	8.3	117
FRA-TW-1M-OS-2C1.5S	2×1.5	19/0.3	0.3	6.5	86
FRA-TW-1M-OS-3C1.5S	3×1.5	19/0.3	0.3	6.8	95
FRA-TW-1M-OS-4C1.5S	4×1.5	19/0.3	0.3	7.4	118
FRA-TW-1M-OS-6C1.5S	6×1.5	19/0.3	0.3	9.0	168
FRA-TW-1M-OS-18C1.5S	18×1.5	19/0.3	0.3	14.4	452
FRA-TW-1M-OS-2C2.5S	2×2.5	19/0.4	0.4	7.8	122
FRA-TW-1M-OS-4C2.5S	4×2.5	19/0.4	0.4	8.4	152
FRA-TW-1M-OS-6C2.5S	6×2.5	19/0.4	0.4	11.4	268



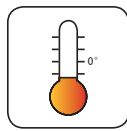
Impact Resistant



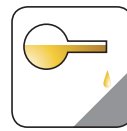
Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity





0.6/1KV Single Core Dual Wall Traction Cables

Applications

Single Core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts



Standards

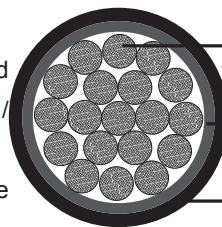
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation 1: Electron beam crosslinkable thin wall LSZH compound.

- Insulation 2: Electron beam crosslinkable thin wall LSZH compound.



Stranded Plain/Tinned Copper Conductor

Electron Beam Crosslinkable LSZH Insulation

Electron Beam Crosslinkable LSZH Sheath

Optional

FRA-DW-1S (Sheathed); FRA-DW-1S-OS (Screened & Sheathed);
FRA-DW-1SU-FR (Fire resistant & Unsheathed)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	0.5	0.6	0.75	1.0	1.2	1.5	2.5	3	4
Maximum Conductor Resistance	Ω/km	40.1	31.1	26.7	20	15.5	13.7	8.21	6.56	5.09
Voltage Rating	KV	0.6/1.0								

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

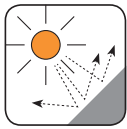
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-1SU-1G0.5	1x0.5	19/0.18	0.2	1.3	5.5
FRA-DW-1SU-1G0.6	1x0.6	19/0.20	0.2	1.39	6.5
FRA-DW-1SU-1G0.75	1x0.75	19/0.22	0.2	1.52	8
FRA-DW-1SU-1G1	1x1.0	19/0.26	0.2	1.67	10
FRA-DW-1SU-1G1.2	1x1.2	19/0.28	0.2	1.83	12
FRA-DW-1SU-1G1.5	1x1.5	19/0.30	0.3	2.04	15
FRA-DW-1SU-1G2	1x2.0	37/0.25	0.3	2.29	19
FRA-DW-1SU-1G2.5	1x2.5	19/0.40	0.3	2.54	24
FRA-DW-1SU-1G3	1x3.0	37/0.32	0.3	2.78	29
FRA-DW-1SU-1G4	1x4.0	56/0.30	0.4	3.21	39



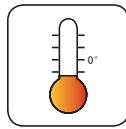
Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity





0.6/1KV Multicore Dual Wall Traction Cables

Applications

Multicore unscreened and screened power and control cable designed for protected, fixed installation for connecting fixed parts inside equipment.

Standards

- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0



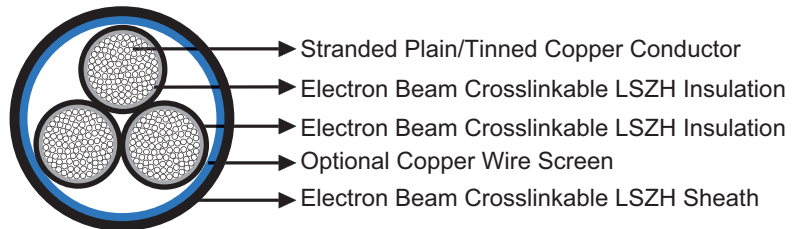
Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation 1: Electron beam crosslinkable thin wall LSZH compound.

- Insulation 2: Electron beam crosslinkable thin wall LSZH compound.

- Screen (optional) : Copper Wire Screen (screened cables).
- Outer Sheath: Electron beam crosslinkable LSZH compound.



Optional

FRA-DW-1M-FR (Fire resistant)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	0.25	0.5	0.75	1.0	1.5	2.5
Maximum Conductor Resistance	Ω/km	88.5	40.1	26.7	20	13.7	8.21
Voltage Rating	KV	0.6/1.0					

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

FRA-DW-1M (Multicore unscreened)

Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No.×mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-1M-2C0.5S	2×0.5	19/0.18	0.2	4.0	24
FRA-DW-1M-3C0.5S	3×0.5	19/0.18	0.2	4.6	36
FRA-DW-1M-5C0.5S	5×0.5	19/0.18	0.2	5.0	43
FRA-DW-1M-9C0.5S	9×0.5	19/0.18	0.2	6.7	66
FRA-DW-1M-12C0.5S	12×0.5	19/0.18	0.2	6.9	89
FRA-DW-1M-16C0.5S	16×0.5	19/0.18	0.2	7.8	115
FRA-DW-1M-25C0.5S	25×0.5	19/0.18	0.2	9.5	170
FRA-DW-1M-30C0.5S	30×0.5	19/0.18	0.2	10.1	205
FRA-DW-1M-2P0.5S	2×2×0.5	19/0.18	0.2	5.8	50
FRA-DW-1M-2C0.75S	2×0.75	19/0.22	0.2	4.4	32
FRA-DW-1M-4C0.75S	4×0.75	19/0.22	0.2	5.0	49
FRA-DW-1M-9C0.75S	9×0.75	19/0.22	0.2	7.7	106
FRA-DW-1M-14C0.75S	14×0.75	19/0.22	0.2	8.4	140
FRA-DW-1M-27C0.75S	27×0.75	19/0.22	0.2	11.3	270
FRA-DW-1M-36C0.75S	36×0.75	19/0.22	0.2	12.8	360
FRA-DW-1M-3C1S	3×1.0	19/0.25	0.2	5.0	47
FRA-DW-1M-6C1S	6×1.0	19/0.25	0.2	6.6	88
FRA-DW-1M-14C1S	14×1.0	19/0.25	0.2	9.1	174
FRA-DW-1M-20C1S	20×1.0	19/0.25	0.2	11.2	256
FRA-DW-1M-50C1S	50×1.0	19/0.25	0.2	16.8	620
FRA-DW-1M-2C1.5S	2×1.5	37/0.22	0.3	5.4	55
FRA-DW-1M-5C1.5S	5×1.5	37/0.22	0.3	7.1	110
FRA-DW-1M-7C1.5S	7×1.5	37/0.22	0.3	8.4	150
FRA-DW-1M-10C1.5S	10×1.5	37/0.22	0.3	9.9	170
FRA-DW-1M-18C1.5S	18×1.5	37/0.22	0.3	12.4	350
FRA-DW-1M-30C1.5S	30×1.5	37/0.22	0.3	15.6	560
FRA-DW-1M-50C1.5S	50×1.5	37/0.22	0.3	20.1	870
FRA-DW-1M-3C2.5S	3×2.5	37/0.29	0.3	7.0	105
FRA-DW-1M-6C2.5S	6×2.5	37/0.29	0.3	9.6	200
FRA-DW-1M-12C2.5S	12×2.5	37/0.29	0.3	12.6	360
FRA-DW-1M-18C2.5S	18×2.5	37/0.29	0.3	15.3	545
FRA-DW-1M-24C2.5S	24×2.5	37/0.29	0.3	17.8	695
FRA-DW-1M-30C2.5S	30×2.5	37/0.29	0.3	19.3	870
FRA-DW-1M-36C2.5S	36×2.5	37/0.29	0.3	21.0	1050

FRA-DW-1M-OS (Multicore screened)

Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No.×mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-1M-OS-2P0.25S	2×2×0.25	19/0.13	0.2	5.7	48.9
FRA-DW-1M-OS-3P0.25S	3×2×0.25	19/0.13	0.2	6.1	57.2
FRA-DW-1M-OS-4P0.25S	4×2×0.25	19/0.13	0.2	7.0	72
FRA-DW-1M-OS-7P0.25S	7×2×0.25	19/0.13	0.2	7.8	92
FRA-DW-1M-OS-25C0.25S	25×0.25	19/0.13	0.2	8.9	139
FRA-DW-1M-OS-2C0.5S	2×0.5	19/0.18	0.2	4.3	34
FRA-DW-1M-OS-3C0.5S	3×0.5	19/0.18	0.2	4.5	40
FRA-DW-1M-OS-4C0.5S	4×0.5	19/0.18	0.2	4.8	47
FRA-DW-1M-OS-5C0.5S	5×0.5	19/0.18	0.2	5.4	58
FRA-DW-1M-OS-6C0.5S	6×0.5	19/0.18	0.2	5.9	70
FRA-DW-1M-OS-7C0.5S	7×0.5	19/0.18	0.2	6.3	80
FRA-DW-1M-OS-8C0.5S	8×0.5	19/0.18	0.2	6.8	86
FRA-DW-1M-OS-9C0.5S	9×0.5	19/0.18	0.2	7.2	95
FRA-DW-1M-OS-10C0.5S	10×0.5	19/0.18	0.2	7.2	101
FRA-DW-1M-OS-12C0.5S	12×0.5	19/0.18	0.2	7.4	112
FRA-DW-1M-OS-15C0.5S	15×0.5	19/0.18	0.2	8.5	135
FRA-DW-1M-OS-16C0.5S	16×0.5	19/0.18	0.2	8.5	142



Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-1M-OS-18C0.5S	18x0.5	19/0.18	0.2	8.9	162
FRA-DW-1M-OS-20C0.5S	20x0.5	19/0.18	0.2	9.3	185
FRA-DW-1M-OS-22C0.5S	22x0.5	19/0.18	0.2	9.9	195
FRA-DW-1M-OS-25C0.5S	25x0.5	19/0.18	0.2	10.3	213
FRA-DW-1M-OS-27C0.5S	27x0.5	19/0.18	0.2	10.5	231
FRA-DW-1M-OS-30C0.5S	30x0.5	19/0.18	0.2	11.3	265
FRA-DW-1M-OS-36C0.5S	36x0.5	19/0.18	0.2	12.1	301
FRA-DW-1M-OS-42C0.5S	42x0.5	19/0.18	0.2	12.9	360
FRA-DW-1M-OS-48C0.5S	48x0.5	19/0.18	0.2	13.6	410
FRA-DW-1M-OS-50C0.5S	50x0.5	19/0.18	0.2	14.2	430
FRA-DW-1M-OS-2P0.5S	2x2x0.5	19/0.18	0.2	6.4	69
FRA-DW-1M-OS-3P0.5S	3x2x0.5	19/0.18	0.2	6.7	80
FRA-DW-1M-OS-4P0.5S	4x2x0.5	19/0.18	0.2	7.4	95
FRA-DW-1M-OS-5P0.5S	5x2x0.5	19/0.18	0.2	9.2	136
FRA-DW-1M-OS-6P0.5S	6x2x0.5	19/0.18	0.2	9.2	148
FRA-DW-1M-OS-8P0.5S	8x2x0.5	19/0.18	0.2	9.7	155
FRA-DW-1M-OS-10P0.5S	10x2x0.5	19/0.18	0.2	10.9	200
FRA-DW-1M-OS-12P0.5S	12x2x0.5	19/0.18	0.2	12.1	240
FRA-DW-1M-OS-15P0.5S	15x2x0.5	19/0.18	0.2	13.0	300
FRA-DW-1M-OS-16P0.5S	16x2x0.5	19/0.18	0.2	13.0	320
FRA-DW-1M-OS-20P0.5S	20x2x0.5	19/0.18	0.2	14.4	360
FRA-DW-1M-OS-2T0.5S	2x3x0.5	19/0.18	0.2	7.3	90
FRA-DW-1M-OS-2C0.75S	2x0.75	19/0.22	0.2	4.8	40
FRA-DW-1M-OS-3C0.75S	3x0.75	19/0.22	0.2	5.0	50
FRA-DW-1M-OS-4C0.75S	4x0.75	19/0.22	0.2	5.5	62
FRA-DW-1M-OS-5C0.75S	5x0.75	19/0.22	0.2	6.1	75
FRA-DW-1M-OS-6C0.75S	6x0.75	19/0.22	0.2	6.6	85
FRA-DW-1M-OS-7C0.75S	7x0.75	19/0.22	0.2	7.2	100
FRA-DW-1M-OS-8C0.75S	8x0.75	19/0.22	0.2	7.8	113
FRA-DW-1M-OS-10C0.75S	10x0.75	19/0.22	0.2	8.1	130
FRA-DW-1M-OS-12C0.75S	12x0.75	19/0.22	0.2	8.4	150
FRA-DW-1M-OS-14C0.75S	14x0.75	19/0.22	0.2	9.1	170
FRA-DW-1M-OS-16C0.75S	16x0.75	19/0.22	0.2	9.7	206
FRA-DW-1M-OS-18C0.75S	18x0.75	19/0.22	0.2	10.2	230
FRA-DW-1M-OS-20C0.75S	20x0.75	19/0.22	0.2	11.1	258
FRA-DW-1M-OS-24C0.75S	24x0.75	19/0.22	0.2	12.0	294
FRA-DW-1M-OS-25C0.75S	25x0.75	19/0.22	0.2	12.3	300
FRA-DW-1M-OS-2P0.75S	2x2x0.75	19/0.22	0.2	7.1	86
FRA-DW-1M-OS-3P0.75S	3x2x0.75	19/0.22	0.2	7.6	109
FRA-DW-1M-OS-4P0.75S	4x2x0.75	19/0.22	0.2	9.9	143
FRA-DW-1M-OS-5P0.75S	5x2x0.75	19/0.22	0.2	10.7	182
FRA-DW-1M-OS-6P0.75S	6x2x0.75	19/0.22	0.2	11.9	227
FRA-DW-1M-OS-7P0.75S	7x2x0.75	19/0.22	0.2	13.4	279
FRA-DW-1M-OS-8P0.75S	8x2x0.75	19/0.22	0.2	13.2	291
FRA-DW-1M-OS-10P0.75S	10x2x0.75	19/0.22	0.2	14.8	333
FRA-DW-1M-OS-3T0.75S	3x3x0.75	19/0.22	0.2	8.9	151
FRA-DW-1M-OS-5Q0.75S	5x4x0.75	19/0.22	0.2	12.8	290
FRA-DW-1M-OS-2C1S	2x1.0	19/0.25	0.2	5.0	50
FRA-DW-1M-OS-3C1S	3x1.0	19/0.25	0.2	5.5	60
FRA-DW-1M-OS-4C1S	4x1.0	19/0.25	0.2	5.8	72
FRA-DW-1M-OS-5C1S	5x1.0	19/0.25	0.2	6.6	88
FRA-DW-1M-OS-6C1S	6x1.0	19/0.25	0.2	7.3	114
FRA-DW-1M-OS-7C1S	7x1.0	19/0.25	0.2	7.9	134
FRA-DW-1M-OS-8C1S	8x1.0	19/0.25	0.2	8.5	150
FRA-DW-1M-OS-9C1S	9x1.0	19/0.25	0.2	8.9	160
FRA-DW-1M-OS-10C1S	10x1.0	19/0.25	0.2	8.9	168
FRA-DW-1M-OS-12C1S	12x1.0	19/0.25	0.2	9.2	188
FRA-DW-1M-OS-16C1S	16x1.0	19/0.25	0.2	10.5	250
FRA-DW-1M-OS-18C1S	18x1.0	19/0.25	0.2	11.2	275
FRA-DW-1M-OS-25C1S	25x1.0	19/0.25	0.2	12.7	357
FRA-DW-1M-OS-27C1S	27x1.0	19/0.25	0.2	13.3	395
FRA-DW-1M-OS-30C1S	30x1.0	19/0.25	0.2	13.8	450
FRA-DW-1M-OS-36C1S	36x1.0	19/0.25	0.2	15.2	530

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-1M-OS-42C1S	42x1.0	19/0.25	0.2	16.3	605
FRA-DW-1M-OS-50C1S	50x1.0	19/0.25	0.2	17.8	690
FRA-DW-1M-OS-2P1S	2x2x1.0	19/0.25	0.2	7.9	107
FRA-DW-1M-OS-4P1S	4x2x1.0	19/0.25	0.2	9.4	128
FRA-DW-1M-OS-6P1S	6x2x1.0	19/0.25	0.2	11.6	240
FRA-DW-1M-OS-12P1S	12x2x1.0	19/0.25	0.2	14.3	400
FRA-DW-1M-OS-4T1S	4x3x1.0	19/0.25	0.2	11.5	230
FRA-DW-1M-OS-3Q1S	3x4x1.0	19/0.25	0.2	11.3	245
FRA-DW-1M-OS-4Q1S	4x4x1.0	19/0.25	0.2	12.5	267
FRA-DW-1M-OS-2C1.5S	2x1.5	37/0.22	0.3	5.8	70
FRA-DW-1M-OS-3C1.5S	3x1.5	37/0.22	0.3	6.1	81
FRA-DW-1M-OS-4C1.5S	4x1.5	37/0.22	0.3	6.7	100
FRA-DW-1M-OS-5C1.5S	5x1.5	37/0.22	0.3	7.7	135
FRA-DW-1M-OS-6C1.5S	6x1.5	37/0.22	0.3	8.3	155
FRA-DW-1M-OS-7C1.5S	7x1.5	37/0.22	0.3	9.1	184
FRA-DW-1M-OS-8C1.5S	8x1.5	37/0.22	0.3	10.3	222
FRA-DW-1M-OS-9C1.5S	9x1.5	37/0.22	0.3	10.5	234
FRA-DW-1M-OS-10C1.5S	10x1.5	37/0.22	0.3	10.5	240
FRA-DW-1M-OS-12C1.5S	12x1.5	37/0.22	0.3	10.9	268
FRA-DW-1M-OS-14C1.5S(G/Y)	14G 1.5	37/0.22	0.3	12.2	333
FRA-DW-1M-OS-16C1.5S	16x1.5	37/0.22	0.3	12.5	364
FRA-DW-1M-OS-18C1.5S	18x1.5	37/0.22	0.3	13.2	405
FRA-DW-1M-OS-25C1.5S	25x1.5*	37/0.22	0.3	15.8	562
FRA-DW-1M-OS-48C1.5S	48x1.5	37/0.22	0.3	20.7	989
FRA-DW-1M-OS-2P1.5S	2x2x1.5	37/0.22	0.3	9.2	153
FRA-DW-1M-OS-3P1.5S	3x2x1.5	37/0.22	0.3	9.8	205
FRA-DW-1M-OS-7P1.5S	7x2x1.5	37/0.22	0.3	12.6	330
FRA-DW-1M-OS-2C2.5S	2x2.5	37/0.29	0.3	7.0	105
FRA-DW-1M-OS-3C2.5S	3x2.5	37/0.29	0.3	7.6	130
FRA-DW-1M-OS-4C2.5S	4x2.5	37/0.29	0.3	8.4	170
FRA-DW-1M-OS-5C2.5S	5x2.5	37/0.29	0.3	9.4	190
FRA-DW-1M-OS-6C2.5S	6x2.5	37/0.29	0.3	10.4	225
FRA-DW-1M-OS-7C2.5S	7x2.5	37/0.29	0.3	11.4	270
FRA-DW-1M-OS-8C2.5S	8x2.5	37/0.29	0.3	12.6	343
FRA-DW-1M-OS-10C2.5S	10x2.5	37/0.29	0.3	13.2	370
FRA-DW-1M-OS-12C2.5S	12x2.5	37/0.29	0.3	13.6	420
FRA-DW-1M-OS-16C2.5S	16x2.5	37/0.29	0.3	15.7	560
FRA-DW-1M-OS-18C2.5S	18x2.5	37/0.29	0.3	16.6	620
FRA-DW-1M-OS-25C2.5S	25x2.5	37/0.29	0.3	19.3	835
FRA-DW-1M-OS-27C2.5S	27x2.5	37/0.29	0.3	20.5	870
FRA-DW-1M-OS-48C2.5S	48x2.5	37/0.29	0.3	25.7	1560

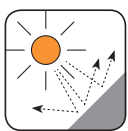
* earth cable (yellow/green) can be offered



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



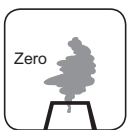
Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



1.8/3KV Single Core Standard Wall Traction Cables

Applications

Single Core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts in direct current and alternating voltage technology, especially converter technology



Standard

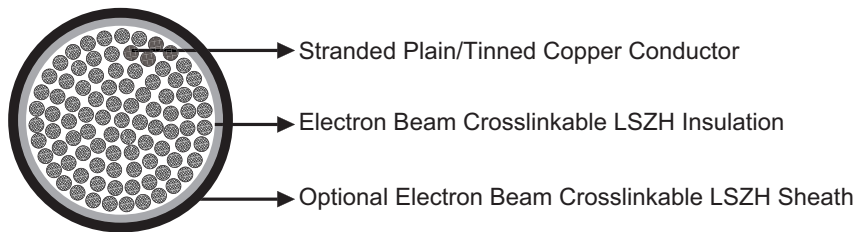
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation: Electron beam crosslinkable standard wall LSZH compound.

- Outer Sheath (optional): Electron beam crosslinkable LSZH compound (for sheathed cables).



Optional

- FRA-SW-3S-OS (Screened & Sheathed);
- FRA-SW-3SU-FR(Fire resistant & Unsheathed)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.5	2.5	4.0	6.0	10	16	25	35	50
Maximum Conductor Resistance	Ω/km	13.7	8.21	5.09	3.39	1.95	1.24	0.795	0.565	0.393
Voltage Rating	KV	1.8/3								

Nominal Conductor Cross Section	mm ²	70	95	120	150	185	240	300	400
Maximum Conductor Resistance	Ω/km	0.277	0.21	0.164	0.132	0.108	0.0817	0.0654	0.0495
Voltage Rating	KV	1.8/3							

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

FRA-SW-3SU (Unsheathed)

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-SW-3SU-1G1.5	1x1.5	30/0.25	2.5	6.8	70
FRA-SW-3SU-1G2.5	1x2.5	50/0.25	2.5	7.2	90
FRA-SW-3SU-1G4	1x4.0	56/0.30	2.5	7.8	110
FRA-SW-3SU-1G6	1x6.0	84/0.30	2.5	8.3	130
FRA-SW-3SU-1G10	1x10.0	80/0.40	2.5	9.2	190
FRA-SW-3SU-1G16	1x16.0	126/0.40	2.5	10.3	250
FRA-SW-3SU-1G25	1x25.0	196/0.40	2.5	11.8	330
FRA-SW-3SU-1G35	1x35.0	276/0.40	2.5	13.1	430
FRA-SW-3SU-1G50	1x50.0	396/0.40	2.5	14.6	570
FRA-SW-3SU-1G70	1x70.0	360/0.50	2.7	16.4	760
FRA-SW-3SU-1G95	1x95.0	475/0.50	2.7	18.4	980
FRA-SW-3SU-1G120	1x120.0	608/0.50	2.7	20.1	1210
FRA-SW-3SU-1G150	1x150.0	756/0.50	2.7	21.7	1500
FRA-SW-3SU-1G185	1x185.0	925/0.50	2.7	23.5	1800
FRA-SW-3SU-1G240	1x240.0	1221/0.50	2.7	26.2	2360
FRA-SW-3SU-1G300	1x300.0	1525/0.50	2.7	28.6	2840
FRA-SW-3SU-1G400	1x400.0	2013/0.50	2.9	32.4	3800

FRA-SW-3S (Sheathed)

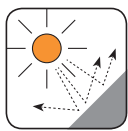
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-SW-3S-1G1.5	1x1.5	30/0.25	1.3	7.3	80
FRA-SW-3S-1G2.5	1x2.5	50/0.25	1.3	7.7	100
FRA-SW-3S-1G4	1x4.0	56/0.30	1.3	8.3	120
FRA-SW-3S-1G6	1x6.0	84/0.30	1.3	8.8	140
FRA-SW-3S-1G10	1x10.0	80/0.40	2.2	11.5	250
FRA-SW-3S-1G16	1x16.0	126/0.40	2.2	12.7	310
FRA-SW-3S-1G25	1x25.0	196/0.40	2.2	14.1	410
FRA-SW-3S-1G35	1x35.0	276/0.40	2.2	15.4	520
FRA-SW-3S-1G50	1x50.0	396/0.40	2.2	17.0	660
FRA-SW-3S-1G70	1x70.0	360/0.50	2.2	19.0	880
FRA-SW-3S-1G95	1x95.0	475/0.50	2.4	21.0	1130
FRA-SW-3S-1G120	1x120.0	608/0.50	2.4	22.9	1370
FRA-SW-3S-1G150	1x150.0	756/0.50	2.4	24.7	1690
FRA-SW-3S-1G185	1x185.0	925/0.50	2.4	26.1	2000
FRA-SW-3S-1G240	1x240.0	1221/0.50	2.4	29.3	2620
FRA-SW-3S-1G300	1x300.0	1525/0.50	2.4	31.9	3140
FRA-SW-3S-1G400	1x400.0	2013/0.50	2.6	35.5	4140



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



1.8/3KV Single Core Medium Wall Traction Cables

Applications

Single core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts in direct current and alternating voltage technology, especially converter technology.



Standard

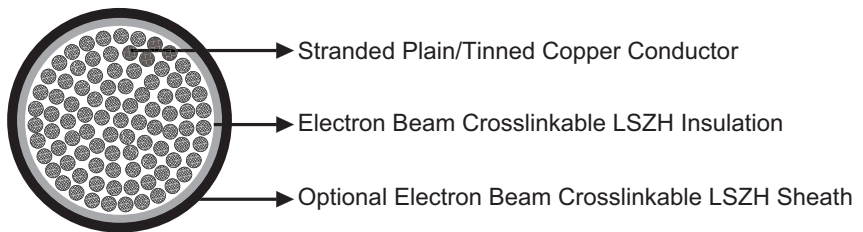
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation: Electron beam crosslinkable medium wall LSZH compound.

- Outer Sheath: Electron beam crosslinkable LSZH compound (for sheathed cables).



Optional

FRA-MW-3S-OS (Screened & Sheathed)

FRA-MW-3SU-FR(Fire resistant & Unsheathed)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.5	2.5	4.0	6.0	10	16	25	35	50
Maximum Conductor Resistance	Ω/km	13.7	8.21	5.09	3.39	1.95	1.24	0.795	0.565	0.393
Voltage Rating	KV	1.8/3								

Nominal Conductor Cross Section	mm ²	70	95	120	150	185	240	300	400
Maximum Conductor Resistance	Ω/km	0.277	0.21	0.164	0.132	0.108	0.0817	0.0654	0.0495
Voltage Rating	KV	1.8/3							

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

FRA-MW-3SU (Unsheathed)

Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-3SU-1G1.5	1x1.5	30/0.25	2.0	5.8	50
FRA-MW-3SU-1G2.5	1x2.5	50/0.25	2.0	6.2	60
FRA-MW-3SU-1G4	1x4.0	56/0.30	2.0	6.8	80
FRA-MW-3SU-1G6	1x6.0	84/0.30	2.0	7.3	100
FRA-MW-3SU-1G10	1x10.0	80/0.40	2.0	8.2	150
FRA-MW-3SU-1G16	1x16.0	126/0.40	2.0	9.3	220
FRA-MW-3SU-1G25	1x25.0	196/0.40	2.0	10.8	290
FRA-MW-3SU-1G35	1x35.0	276/0.40	2.0	12.1	390
FRA-MW-3SU-1G50	1x50.0	396/0.40	2.0	13.6	530
FRA-MW-3SU-1G70	1x70.0	360/0.50	2.0	15.4	720
FRA-MW-3SU-1G95	1x95.0	475/0.50	2.2	17.4	940
FRA-MW-3SU-1G120	1x120.0	608/0.50	2.2	19.1	1160
FRA-MW-3SU-1G150	1x150.0	756/0.50	2.2	20.7	1440
FRA-MW-3SU-1G185	1x185.0	925/0.50	2.4	22.7	1760
FRA-MW-3SU-1G240	1x240.0	1221/0.50	2.4	25.6	2350
FRA-MW-3SU-1G300	1x300.0	1525/0.50	2.4	27.9	2820
FRA-MW-3SU-1G400	1x400.0	2013/0.50	2.6	31.7	3730

FRA-MW-3S (Sheathed)

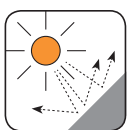
Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-3S-1G1.5	1x1.5	30/0.25	1.3	6.2	60
FRA-MW-3S-1G2.5	1x2.5	50/0.25	1.3	6.5	70
FRA-MW-3S-1G4	1x4.0	56/0.30	1.3	7.1	90
FRA-MW-3S-1G6	1x6.0	84/0.30	1.3	7.6	110
FRA-MW-3S-1G10	1x10.0	80/0.40	1.5	8.9	170
FRA-MW-3S-1G16	1x16.0	126/0.40	1.5	10	240
FRA-MW-3S-1G25	1x25.0	196/0.40	1.8	12.5	350
FRA-MW-3S-1G35	1x35.0	276/0.40	1.8	13.8	450
FRA-MW-3S-1G50	1x50.0	396/0.40	1.8	15.3	590
FRA-MW-3S-1G70	1x70.0	360/0.50	1.8	17.2	790
FRA-MW-3S-1G95	1x95.0	475/0.50	2.2	19.5	1050
FRA-MW-3S-1G120	1x120.0	608/0.50	2.2	21.3	1270
FRA-MW-3S-1G150	1x150.0	756/0.50	2.2	23.3	1590
FRA-MW-3S-1G185	1x185.0	925/0.50	2.4	25.4	1900
FRA-MW-3S-1G240	1x240.0	1221/0.50	2.4	28.1	2490
FRA-MW-3S-1G300	1x300.0	1525/0.50	2.4	30.5	3010
FRA-MW-3S-1G400	1x400.0	2013/0.50	2.6	34.7	3980



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



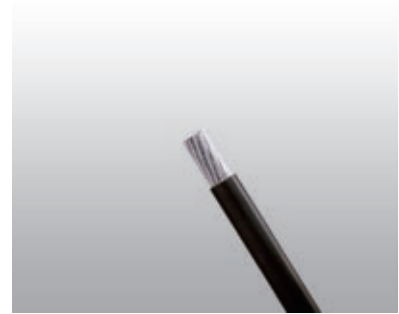
Low Toxicity



1.8/3KV Single Core Dual Wall Traction Cables

Applications

Single core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts in direct current and alternating voltage technology, especially converter technology.

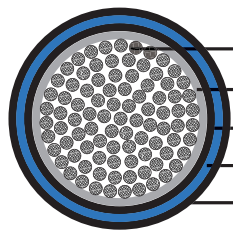


Standard

- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.



- Stranded Plain/Tinned Copper Conductor
- Electron Beam Crosslinkable LSZH Insulation
- Electron Beam Crosslinkable LSZH Insulation
- Optional Copper Wire Screen
- Optional Electron Beam Crosslinkable LSZH Sheath

- Insulation1: Electron beam crosslinkable thin wall LSZH compound.

- Insulation2: Electron beam crosslinkable thin wall LSZH compound.
- Screen(optional): Copper Wire Screen (for screened and sheathed cables).
- Outer Sheath(optional): Electron beam crosslinkable LSZH compound (for screened and sheathed cables).

Optional

FRA-DW-3SU-FR(Fire resistant & Unsheathed)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.5	2.5	4.0	6.0	10	16	25	35	50
Maximum Conductor Resistance	Ω/km	13.7	8.21	5.09	3.39	1.95	1.24	0.795	0.565	0.393
Voltage Rating	KV	1.8/3								

Nominal Conductor Cross Section	mm ²	70	95	120	150	185	240	300	400
Maximum Conductor Resistance	Ω/km	0.277	0.21	0.164	0.132	0.108	0.0817	0.0654	0.0495
Voltage Rating	KV	1.8/3							

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

FRA-DW-3SU (Unsheathed)

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-3SU-1G1.5	1×1.5	30/0.25	0.8	3.2	22
FRA-DW-3SU-1G2	1×2.0	37/0.25	0.9	3.55	28
FRA-DW-3SU-1G2.5	1×2.5	50/0.25	0.9	3.75	34
FRA-DW-3SU-1G4	1×4.0	56/0.30	1.0	4.50	52
FRA-DW-3SU-1G6	1×6.0	84/0.30	1.1	5.10	74
FRA-DW-3SU-1G10	1×10.0	80/0.40	1.2	6.35	120
FRA-DW-3SU-1G16	1×16.0	126/0.40	1.5	8.30	180
FRA-DW-3SU-1G25	1×25.0	196/0.40	1.8	10.20	280
FRA-DW-3SU-1G35	1×35.0	276/0.40	2.0	11.70	390
FRA-DW-3SU-1G50	1×50.0	396/0.40	2.2	13.60	550
FRA-DW-3SU-1G70	1×70.0	360/0.50	2.1	15.60	730
FRA-DW-3SU-1G95	1×95.0	475/0.50	2.3	17.30	940
FRA-DW-3SU-1G120	1×120.0	608/0.50	2.4	19.60	1180
FRA-DW-3SU-1G150	1×150.0	756/0.50	2.6	21.90	1510
FRA-DW-3SU-1G185	1×185.0	925/0.50	2.8	23.80	1800
FRA-DW-3SU-1G240	1×240.0	1221/0.50	2.9	26.90	2290
FRA-DW-3SU-1G300	1×300.0	1525/0.50	3.0	29.70	2910
FRA-DW-3SU-1G400	1×400.0	2013/0.50	3.4	35.80	4040

FRA-DW-3S-OS (Screened & Sheathed)

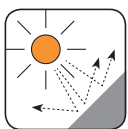
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-3S-OS-1G1.5	1×1.5	30/0.25	0.8	5.2	48
FRA-DW-3S-OS-1G2.5	1×2.5	50/0.25	0.9	5.8	63
FRA-DW-3S-OS-1G4	1×4.0	56/0.30	1.0	6.7	89
FRA-DW-3S-OS-1G6	1×6.0	84/0.30	1.1	7.4	120
FRA-DW-3S-OS-1G10	1×10.0	80/0.40	1.2	9.0	180
FRA-DW-3S-OS-1G16	1×16.0	126/0.40	1.5	11.2	280
FRA-DW-3S-OS-1G25	1×25.0	196/0.40	1.8	13.4	400
FRA-DW-3S-OS-1G35	1×35.0	276/0.40	2.0	14.8	510
FRA-DW-3S-OS-1G50	1×50.0	396/0.40	2.2	16.8	700
FRA-DW-3S-OS-1G70	1×70.0	360/0.50	2.1	19.0	920
FRA-DW-3S-OS-1G95	1×95.0	475/0.50	2.3	20.7	1160
FRA-DW-3S-OS-1G120	1×120.0	608/0.50	2.4	23.4	1450
FRA-DW-3S-OS-1G150	1×150.0	756/0.50	2.6	25.9	1830
FRA-DW-3S-OS-1G185	1×185.0	925/0.50	2.8	27.8	2130
FRA-DW-3S-OS-1G240	1×240.0	1221/0.50	2.9	31.2	2910
FRA-DW-3S-OS-1G300	1×300.0	1525/0.50	3.0	34.2	3370



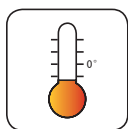
Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



3.6/6KV Single Core Standard Wall Traction Cables

Applications

Single core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts in direct current and alternating voltage technology, especially converter technology.



Standard

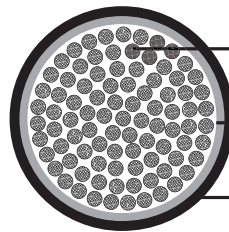
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation: Electron beam crosslinkable standard wall LSZH compound.

- Outer Sheath: Electron beam crosslinkable LSZH compound.



Stranded Plain/Tinned Copper Conductor

Electron Beam Crosslinkable LSZH Insulation

Electron Beam Crosslinkable LSZH Sheath

Optional

FRA-SW-6S-OS (Screened)

FRA-SW-6S-FR (Fire resistant)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.5	2.5	4.0	6.0	10	16	25	35	50
Maximum Conductor Resistance	Ω/km	13.7	8.21	5.09	3.39	1.95	1.24	0.795	0.565	0.393
Voltage Rating	KV	3.6/6								

Nominal Conductor Cross Section	mm ²	70	95	120	150	185	240	300	400
Maximum Conductor Resistance	Ω/km	0.277	0.21	0.164	0.132	0.108	0.0817	0.0654	0.0495
Voltage Rating	KV	3.6/6							

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

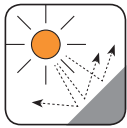
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-SW-6S-1G2.5	1×2.5	50/0.25	3.0	11.4	170
FRA-SW-6S-1G4	1×4.0	56/0.30	3.0	12.0	190
FRA-SW-6S-1G6	1×6.0	84/0.30	3.0	12.5	230
FRA-SW-6S-1G10	1×10.0	80/0.40	3.0	13.4	300
FRA-SW-6S-1G16	1×16.0	126/0.40	3.0	14.5	360
FRA-SW-6S-1G25	1×25.0	196/0.40	3.0	16.0	450
FRA-SW-6S-1G35	1×35.0	276/0.40	3.0	17.3	560
FRA-SW-6S-1G50	1×50.0	396/0.40	3.0	19.0	720
FRA-SW-6S-1G70	1×70.0	360/0.50	3.0	20.8	930
FRA-SW-6S-1G95	1×95.0	475/0.50	3.0	22.6	1160
FRA-SW-6S-1G120	1×120.0	608/0.50	3.1	24.7	1430
FRA-SW-6S-1G150	1×150.0	756/0.50	3.1	26.3	1740
FRA-SW-6S-1G185	1×185.0	925/0.50	3.2	28.5	2080
FRA-SW-6S-1G240	1×240.0	1221/0.50	3.4	31.7	2730
FRA-SW-6S-1G300	1×300.0	1525/0.50	3.4	34.2	3230
FRA-SW-6S-1G400	1×400.0	2013/0.50	3.4	37.8	4210



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity





3.6/6KV Single Core Medium Wall Traction Cables

Applications

Single core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts in direct current and alternating voltage technology, especially converter technology.



Standard

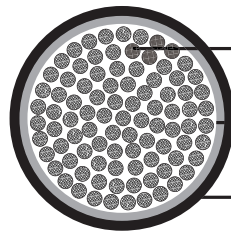
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation: Electron beam crosslinkable medium wall LSZH compound.

- Outer Sheath: Electron beam crosslinkable LSZH compound.



Stranded Plain/Tinned Copper Conductor

Electron Beam Crosslinkable LSZH Insulation

Electron Beam Crosslinkable LSZH Sheath

Optional

FRA-MW-6S-OS (Screened)

FRA-MW-6S-FR (Fire resistant)

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.5	2.5	4.0	6.0	10	16	25	35	50
Maximum Conductor Resistance	Ω/km	13.7	8.21	5.09	3.39	1.95	1.24	0.795	0.565	0.393
Voltage Rating	KV	3.6/6								

Nominal Conductor Cross Section	mm ²	70	95	120	150	185	240	300	400
Maximum Conductor Resistance	Ω/km	0.277	0.21	0.164	0.132	0.108	0.0817	0.0654	0.0495
Voltage Rating	KV	3.6/6							

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

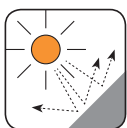
Cable Code	No. of cores& Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-6S-1G2.5	1×2.5	50/0.25	2.6	9.4	120
FRA-MW-6S-1G4	1×4.0	56/0.30	2.6	9.9	140
FRA-MW-6S-1G6	1×6.0	84/0.30	2.6	10.4	165
FRA-MW-6S-1G10	1×10.0	80/0.40	2.6	11.3	220
FRA-MW-6S-1G16	1×16.0	126/0.40	2.6	12.5	290
FRA-MW-6S-1G25	1×25.0	196/0.40	2.9	14.9	430
FRA-MW-6S-1G35	1×35.0	276/0.40	2.9	16.2	540
FRA-MW-6S-1G50	1×50.0	396/0.40	2.9	17.8	670
FRA-MW-6S-1G70	1×70.0	360/0.50	2.9	19.6	880
FRA-MW-6S-1G95	1×95.0	475/0.50	2.9	21.2	1100
FRA-MW-6S-1G120	1×120.0	608/0.50	2.9	23.3	1380
FRA-MW-6S-1G150	1×150.0	756/0.50	2.9	24.9	1660
FRA-MW-6S-1G185	1×185.0	925/0.50	3.2	27.3	2010
FRA-MW-6S-1G240	1×240.0	1221/0.50	3.4	30.7	2670
FRA-MW-6S-1G300	1×300.0	1525/0.50	3.4	32.2	3170
FRA-MW-6S-1G400	1×400.0	2013/0.50	3.4	36.6	4150



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity

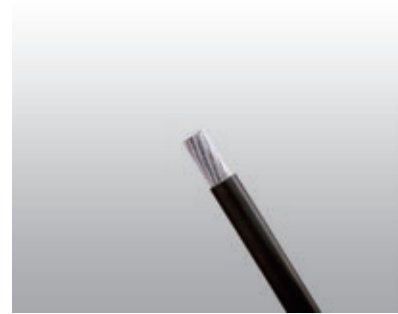




3.6/6KV Single Core Dual Wall Traction Cables

Applications

Single core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts in direct current and alternating voltage technology, especially converter technology.



Standard

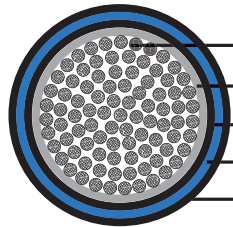
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Insulation1: Electron beam crosslinkable thin wall LSZH compound.

- Insulation2: Electron beam crosslinkable thin wall LSZH compound.
- Screen(optional): Copper wire screen (for screened and sheathed cables).
- Outer Sheath(optional): Electron beam crosslinkable LSZH compound. (for screened and sheathed cables).



- Stranded Plain/Tinned Copper Conductor
- Electron Beam Crosslinkable LSZH Insulation
- Electron Beam Crosslinkable LSZH Insulation
- Optional Copper Wire Screen
- Optional Electron Beam Crosslinkable LSZH Sheath

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.5	2.5	4.0	6.0	10	16	25	35	50
Maximum Conductor Resistance	Ω/km	13.7	8.21	5.09	3.39	1.95	1.24	0.795	0.565	0.393
Voltage Rating	KV	3.6/6								

Nominal Conductor Cross Section	mm ²	70	95	120	150	185	240	300	400
Maximum Conductor Resistance	Ω/km	0.277	0.21	0.164	0.132	0.108	0.0817	0.0654	0.0495
Voltage Rating	KV	3.6/6							

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Temperature Range: -40°C to +120°C

➤ **Dimensions and Weight**

FRA-DW-6SU (Usheathed)

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-6SU-1G1.5	1x1.5	30/0.25	1.4	4.4	20
FRA-DW-6SU-1G2.5	1x2.5	50/0.25	1.5	4.9	50
FRA-DW-6SU-1G4	1x4.0	56/0.30	1.6	5.7	60
FRA-DW-6SU-1G6	1x6.0	84/0.30	1.7	6.3	90
FRA-DW-6SU-1G10	1x10.0	80/0.40	1.8	7.5	140
FRA-DW-6SU-1G16	1x16.0	126/0.40	2.1	9.4	210
FRA-DW-6SU-1G25	1x25.0	196/0.40	2.2	10.9	300
FRA-DW-6SU-1G35	1x35.0	276/0.40	2.4	12.5	410
FRA-DW-6SU-1G50	1x50.0	396/0.40	2.6	14.5	580
FRA-DW-6SU-1G70	1x70.0	360/0.50	2.6	16.5	770
FRA-DW-6SU-1G95	1x95.0	475/0.50	2.8	18.3	1000
FRA-DW-6SU-1G120	1x120.0	608/0.50	2.9	20.6	1260
FRA-DW-6SU-1G150	1x150.0	756/0.50	3.1	22.9	1610
FRA-DW-6SU-1G185	1x185.0	925/0.50	3.3	24.8	1920
FRA-DW-6SU-1G240	1x240.0	1221/0.50	3.4	27.8	2470
FRA-DW-6SU-1G300	1x300.0	1525/0.50	3.6	30.8	3000
FRA-DW-6SU-1G400	1x400.0	2013/0.50	3.7	36.5	4220

FRA-DW-6S-OS (Screened & Sheathed)

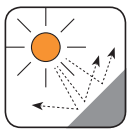
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-DW-6S-OS-1G1.5	1x1.5	30/0.25	1.4	6.6	72
FRA-DW-6S-OS-1G2.5	1x2.5	50/0.25	1.5	7.2	89
FRA-DW-6S-OS-1G4	1x4.0	56/0.30	1.6	8.2	120
FRA-DW-6S-OS-1G6	1x6.0	84/0.30	1.7	9.1	150
FRA-DW-6S-OS-1G10	1x10.0	80/0.40	1.8	10.4	220
FRA-DW-6S-OS-1G16	1x16.0	126/0.40	2.1	12.4	330
FRA-DW-6S-OS-1G25	1x25.0	196/0.40	2.2	14.3	390
FRA-DW-6S-OS-1G35	1x35.0	276/0.40	2.4	15.7	550
FRA-DW-6S-OS-1G50	1x50.0	396/0.40	2.6	17.7	740
FRA-DW-6S-OS-1G70	1x70.0	360/0.50	2.6	20.1	970
FRA-DW-6S-OS-1G95	1x95.0	475/0.50	2.8	22.0	1240
FRA-DW-6S-OS-1G120	1x120.0	608/0.50	2.9	24.7	1510
FRA-DW-6S-OS-1G150	1x150.0	756/0.50	3.1	27.1	1900
FRA-DW-6S-OS-1G185	1x185.0	925/0.50	3.3	29.1	2220
FRA-DW-6S-OS-1G240	1x240.0	1221/0.50	3.4	32.3	2830
FRA-DW-6S-OS-1G300	1x300.0	1525/0.50	3.6	35.6	3520



Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN 50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



300/500V Single Core Thin Wall Fire Resistant Traction Cables

Application

Single Core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.

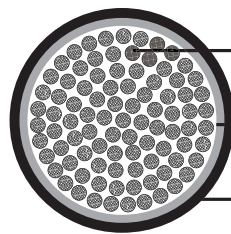
Standards

- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0
- BS 6387



Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.
- Flame Barrier: Mica tape.
- Insulation: Electron beam crosslinkable thin wall LSZH compound.



Stranded Plain/Tinned Copper Conductor

Mica Tape

Electron Beam Crosslinkable LSZH Insulation

Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	0.5	0.75	1.0	1.5	2.5
Maximum DC Conductor Resistance	Ω/km	40.1	26.7	20.0	13.7	8.21
Voltage Rating	KV	0.45/0.75				

Mechanical and Thermal Properties

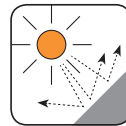
- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Operating Temperatures: -40 °C to +120°C



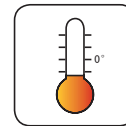
Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant

Dimensions and Weight

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-0.5SU-FR-1C0.5S	1×0.5	16/0.20	0.30	2.0	8
FRA-TW-0.5SU-FR-1C0.75S	1×0.75	24/0.20	0.30	2.25	11
FRA-TW-0.5SU-FR-1C1S	1×1.0	32/0.2	0.35	2.50	14
FRA-TW-0.5SU-FR-1C1.5S	1×1.5*	30/0.25	0.35	2.8	19
FRA-TW-0.5SU-FR-1C2.5S	1×2.5*	50/0.25	0.35	3.2	29

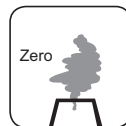
*earth cable (coloured yellow/green) can be offered as an option.



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



300/500V Multicore Thin Wall Fire Resistant Traction Cables

Application

Single Core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.



Standards

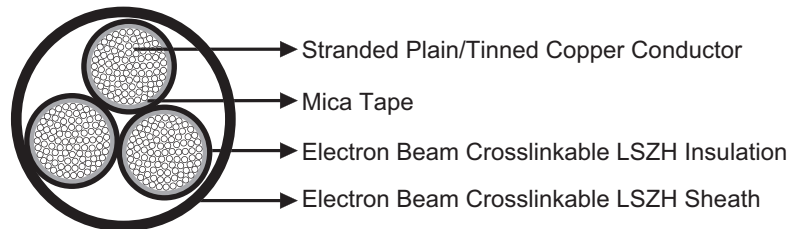
- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0
- BS 6387

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Flame Barrier: Mica tape.
- Insulation: Electron beam crosslinkable thin wall LSZH compound.

- Sheath: Electron beam crosslinkable LSZH compound.



Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	0.5	0.75	1.0	1.5	2.5
Maximum DC Conductor Resistance	Ω/km	40.1	26.7	20.0	13.7	8.21
Voltage Rating	KV	0.45/0.75				

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Operating Temperatures: -40°C to +120°C



Dimensions and Weight

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-TW-0.5M-FR-3C0.5S	3×0.5	16/0.20	0.56	5.8	41
FRA-TW-0.5M-FR-26C0.5S	26×0.5	16/0.20	0.56	14.7	297
FRA-TW-0.5M-FR-5P0.5S	5×2×0.5	16/0.20	0.56	12.9	178
FRA-TW-0.5M-FR-2C0.75S	2×0.75	24/0.20	0.58	5.9	40
FRA-TW-0.5M-FR-4C0.75S	4×0.75	24/0.20	0.58	7.05	75
FRA-TW-0.5M-FR-8C0.75S	8×0.75	24/0.20	0.58	9.3	125
FRA-TW-0.5M-FR-2C1S	2×1.0	32/0.20	0.63	6.5	61
FRA-TW-0.5M-FR-2C1.5S	2×1.5	30/0.25	0.66	7.1	81
FRA-TW-0.5M-FR-3C1.5S	3×1.5	30/0.25	0.66	7.7	99
FRA-TW-0.5M-FR-5C1.5S	5×1.5*	30/0.25	0.66	9.5	150
FRA-TW-0.5M-FR-6C1.5S	6×1.5	30/0.25	0.66	10.7	188
FRA-TW-0.5M-FR-7C1.5S(G/Y)	7 G 1.5	30/0.25	0.66	10.3	190
FRA-TW-0.5M-FR-12C1.5S(G/Y)	12 G 1.5	30/0.25	0.66	13.8	319
FRA-TW-0.5M-FR-20C1.5S	20×1.5	30/0.25	0.66	17.8	533
FRA-TW-0.5M-FR-25C1.5S	*25×1.5	30/0.25	0.66	19.6	630
FRA-TW-0.5M-FR-37C1.5S	37×1.5	30/0.25	0.66	22.6	889
FRA-TW-0.5M-FR-3C2.5S(G/Y)	3 G 2.5	50/0.25	0.63	8.5	135
FRA-TW-0.5M-FR-12C2.5S(G/Y)	12 G 2.5	50/0.25	0.63	15.9	460
FRA-TW-0.5M-FR-25C2.5S(G/Y)	25 G 2.5	50/0.25	0.63	22.2	900

*green/yellow cables can be offered as an option

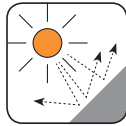
G: green/yellow cables



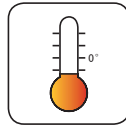
Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



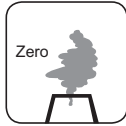
Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



0.6/1KV Single Core Medium Wall Fire Resistant Traction Cables

Application

Single Core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.

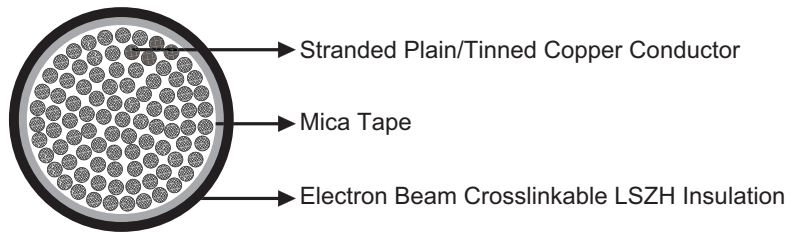


Standards

- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0
- BS 6387

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.
- Flame Barrier: Mica tape.
- Insulation: Electron beam crosslinkable medium wall LSZH compound.



Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.0	1.5	2.5	4.0	6.0	10	16
Maximum DC Conductor Resistance	Ω/km	20	13.7	8.21	5.09	3.39	1.95	1.24
Voltage Rating	KV	0.6/1						

Nominal Conductor Cross Section	mm ²	25	35	50	70	95	150
Maximum DC Conductor Resistance	Ω/km	0.795	0.565	0.393	0.277	0.210	0.132
Voltage Rating	KV	0.6/1					

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Operating Temperatures: -40°C to +120°C



Dimensions and Weight

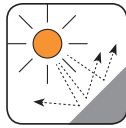
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No/mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-1SU-FR-1G1	1×1.0	32/0.2	0.55	3.15	18.8
FRA-MW-1SU-FR-1G1.5	1×1.5	30/0.25	0.55	3.40	24
FRA-MW-1SU-FR-1G2.5	1×2.5	50/0.25	0.60	4.05	36.6
FRA-MW-1SU-FR-1G4	1×4	56/0.3	0.65	4.60	52.5
FRA-MW-1SU-FR-1G6	1×6	84/0.3	0.70	5.30	73
FRA-MW-1SU-FR-1G10	1×10	80/0.4	0.80	6.35	121
FRA-MW-1SU-FR-1G16	1×16	126/0.4	0.90	8.15	181
FRA-MW-1SU-FR-1G25	1×25	196/0.4	1.00	9.65	261
FRA-MW-1SU-FR-1G35	1×35	276/0.4	1.10	10.80	365
FRA-MW-1SU-FR-1G50	1×50	396/0.41	1.20	12.80	530
FRA-MW-1SU-FR-1G70	1×70	360/0.50	1.30	15.10	730
FRA-MW-1SU-FR-1G95	1×95	475/0.50	1.40	17.00	930
FRA-MW-1SU-FR-1G150	1×150	756/0.50	1.60	21.30	1450



Impact Resistant



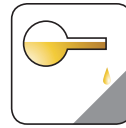
Highly Flexible



UV Resistant



Weather Resistant



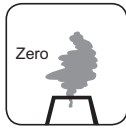
Oil Resistant



Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity



1.8/3KV Single Core Medium Wall Fire Resistant Traction Cables

Application

Single Core power and control cable designed for protected, fixed installation inside and outside railway vehicles for connecting fixed and moving parts.



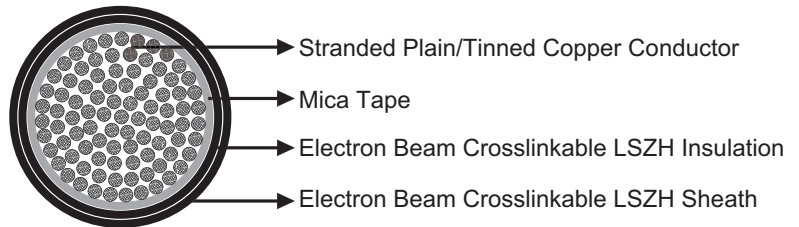
Standards

- BS 6853 -1a
- DIN 5510-1 1-4
- NFF 16-101 F0
- BS 6387

Construction

- Conductors: Circular Class 5 stranded plain or tinned copper to BS EN 60228: 2005 / BS 6360.

- Flame Barrier: Mica tape.
- Insulation: Electron beam crosslinkable medium wall LSZH compound.
- Sheath: Electron beam crosslinkable LSZH compound.



Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm ²	1.5	2.5	4.0	6.0	10	16
Maximum Conductor Resistance	Ω/km	13.7	8.21	5.09	3.39	1.95	1.24
Voltage Rating	KV	1.8/3					

Nominal Conductor Cross Section	mm ²	25	35	50	70	95	120
Maximum Conductor Resistance	Ω/km	0.795	0.565	0.393	0.277	0.21	0.164
Voltage Rating	KV	1.8/3					

Mechanical and Thermal Properties

- Minimum Bending Radius: 3×OD (OD<12mm); 4×OD (OD>12mm)
- Operating Temperatures: -40°C to +120°C



➤ Dimensions and Weight

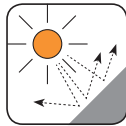
Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. x mm ²	Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
FRA-MW-3S-FR-1G1.5	1x1.5	30/0.25	0.8	3.7	26
FRA-MW-3S-FR-1G2.5	1x2.5	50/0.25	0.75	3.95	35
FRA-MW-3S-FR-1G4	1x4	56/0.3	0.95	4.95	55
FRA-MW-3S-FR-1G6	1x6	84/0.3	0.90	5.35	75
FRA-MW-3S-FR-1G10	1x10	80/0.4	1.05	6.80	130
FRA-MW-3S-FR-1G16	1x16	126/0.4	1.20	8.60	190
FRA-MW-3S-FR-1G25	1x25	196/0.4	1.35	10.2	280
FRA-MW-3S-FR-1G35	1x35	276/0.4	1.55	11.7	390
FRA-MW-3S-FR-1G50	1x50	396/0.4	1.85	13.8	550
FRA-MW-3S-FR-1G70	1x70	360/0.5	1.70	15.8	720
FRA-MW-3S-FR-1G95	1x95	475/0.5	1.90	17.6	960
FRA-MW-3S-FR-1G120	1x120	608/0.5	1.95	20.2	1180



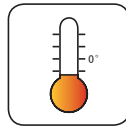
Impact Resistant



Highly Flexible



UV Resistant



Weather Resistant



Oil Resistant



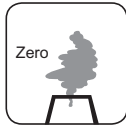
Flame Retardant

NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1



Fire Retardant

NF C32-070-2.2(C1)
IEC 60332-3/EN50266



Zero Halogen

IEC 60754-1/NF C20-454
EN 50267-2-1



Low Smoke Emission

IEC 61034/NFC20-902
EN 50268/NF C32-073



Low Corrosivity

EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453



Low Toxicity

