LS Cable & System
Leading Solution

RailSol™-Saflex

LS Total Solution for Rolling Stock

IRIS Certification


Energy Cables & Systems
LS Cable & System-setting the standards in power solution business
Industrial Materials
Realizing a convenient future with cutting-edge materials
Telecommunications
Providing cutting-edge, innovative technologies for a ubiquitous network
Integrated Modules & Cable Systems
Providing the best customized cable solutions for all environments

Total Solution Provider for Electric Power and Telecommunication Industries

LS Cable & System, the longtime de facto holding company of LS Group, officially transformed into a holding company in July of 2008. The company's operations now encompass a total solution for electric power and telecommunication industries.

The latest change in corporate structure comes as the company is accelerating efforts to improve management efficiency in rapidly expanding markets. The move also results from efforts to effect a more responsible and transparent management structure. Management is now prepared to take more aggressive action to enhance our businesses and to identify new growth engines. The holding company will take the lead in fostering new growth engines and in identifying lucrative investment opportunities, while the company's other business units will focus on improving management and on making operations more efficient. With the continued support of the holding company, LS Cable & System will spearhead efforts to strengthen our business expertise, corporate competitiveness and management.

Toward the Global Leading Cable Company

In August of 2008 LS Cable & System acquired Superior Essex, North America's largest wire and cable company, making LS Cable & System one of top players int the global cable industry. Superior Essex's flagship line of magnet wires and telecommunication cables further strengthened LS Cable & System's product lineup, which had focused on power cables, fiber optic cables and industrial materials. Superior Essex's extensive North America and European production and distribution networks will help LS Cable & System cement a presence in the region and bring the company one step closer to becoming a full-fledged global enterprise.

Superior Essex

Superior Essex Inc., a FORTUNE 1,000 company, is one of the largest wire and cable manufacturers in the world. The company manufactures and supplies a broad portfolio of wire and cable products for the communications, energy, automotive, industrial, and commercial & residential end-markets. It is a leading manufacturer of magnet wire, fabricated insulation products, and copper and fiber optic communications wire and cable. It is also a leading distributor of magnet wire, insulation and related products.

RailSol™-Saflex

LS Total Solution for Rolling Stock

Application Business

The Leading Solution Provider, LS Cable & System introduced a new marketing concept, which is providing collected items applicable to an industry as a package instead of separately providing a single item. These LS Cable & System's business solutions are applicable to following industries : Wind Power Generation, Railway & Rolling stock, Airport, Power Transmission & distribution, Marine & Offshore, and Automotive. The Application Business manages various departments and their products to satisfy our customers' specific needs and convenience.

RailSol™-Saflex

Rolling stock technology has been developed in the last few years and this development has been driven by high speed train network. Rolling stock for metro, commute and regional line are covered by this development.
To reduce both size and weight has been always required to cable manufacturers. LS Cable & System has developed products to meet our customer and offers a wide range of products for rolling stock.
LS Cable & System supplies cables which pass the fire tests relevant to rolling stock standard, and these cables have low toxicity and excellent flame resistance.
Moreover, thanks to compact construction and excellent material performance, LS Cable & System offers particularly space and weight saving.

RailSol™-Saflex which is LS Cable & System's rolling stock solution covers wide range of rolling stock product such as single and multi-core power cables, signal and control cables, multimedia and telecommunication cables, MV roof cable, winding wires for transformer and traction motor, rubber flooring, RF antenna and connector, components for harness and jumper cable in various versions customized with combinations of cores and cables.

LS Cable & System

Always with Our Customers

The enterprise that is together with human beings through
the information and energy transmission technology

Content

RailSol™-Saflex

LS Total Solution for Rolling Stock

Power Cables

IRIS Certification

Reduced Dimension Power Cables

HF-RMSG-RD 0.6/1kV EN50264-3-1

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN 50264-3-1

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free polyolefin(EI 109)

Technical Data

Voltage	0.6/1 kV
Temperature Range	-40 ~ +90 ℃
Wall Thickness	Reduced
Fire Performance	NFPA130 : 2010, BS6853 : Cat. Ia

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305
Toxicity Index — BS6853 Annex B.1, BSS 7239

Product List

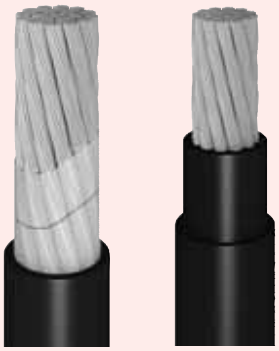
Conductor		Insulation	Overal	Cable
㎟	Φ(㎜)	Thickness(㎜)	Φ(㎜)	Weight(㎏/㎞)
1.0	1.2	0.6	2.5	12.1
1.5	1.5	0.7	3.0	17.6
2.5	1.9	0.7	3.4	26.9
4.0	2.4	0.7	3.9	40.4
6.0	3.0	0.7	4.5	57.6
10	3.9	0.7	5.4	95.2
16	5.0	0.7	6.6	152.8
25	6.4	0.9	8.4	236.6
35	7.7	0.9	9.7	322.3

Conductor		Insulation	Overal	Cable
㎟	Φ(㎜)	Thickness(㎜)	Φ(㎜)	Weight(㎏/㎞)
50	9.2	1.0	11.4	458.5
70	11.0	1.1	13.4	671.8
95	12.5	1.1	15.1	855.1
120	14.2	1.2	17.0	1110.6
150	15.8	1.4	19.0	1375.1
185	17.5	1.6	21.1	1670.4
240	20.1	1.7	23.9	2206.6
300	22.5	1.8	26.5	2729.2
400	25.8	2.0	30.3	3917.9

Other range on request.

Reduced Dimension Power Cables

HF-RMSG-RD 1.8/3kV EN50264-3-1



Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN 50264-3-1

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free polyolefin(EI 109)
Sheath	Cross-linked halogen-free polyolefin(EM 104)

Technical Data

Voltage	1.8/3 kV
Temperature Range	-40 ~ +90℃
Wall Thickness	Reduced
Fire Performance	NFPA130 : 2010, BS6853 : Cat. Ia

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305
Toxicity Index — BS6853 Annex B.1, BSS 7239

Product List

Unsheathed					Sheathed					
Conductor		Insulation	Overal	Cable	Conductor		Insulation	Sheath		Cable
㎟	Φ(㎜)	Thickness(㎜)	Φ(㎜)	Weight(㎏/㎞)	㎟	Φ(㎜)	Thickness(㎜)	Thickness(㎜)	Φ(㎜)	Weight(㎏/㎞)
1.5	1.5	2.0	5.7	45.1	1.5	1.5	1.3	0.8	5.9	47.7
2.5	1.9	2.0	6.2	57.2	2.5	1.9	1.3	0.8	6.4	60.0
4.0	2.4	2.0	6.7	74.1	4.0	2.4	1.3	0.8	6.9	77.1
6.0	3.0	2.0	7.2	94.5	6.0	3.0	1.3	0.8	7.4	98.2
10	3.9	2.0	8.1	138.2	10	3.9	1.5	0.8	8.8	150.1
16	5.0	2.0	9.3	204.0	16	5.0	1.5	0.8	9.9	216.5
25	6.4	2.0	10.7	289.9	25	6.4	1.8	1.0	12.4	331.7
35	7.7	2.0	12.0	382.9	35	7.7	1.8	1.0	13.7	429.4
50	9.2	2.0	13.5	522.9	50	9.2	1.8	1.0	15.2	574.8
70	11.0	2.0	15.3	725.5	70	11.0	1.8	1.0	17.0	785.0
95	12.5	2.2	17.4	929.4	95	12.5	2.2	1.0	19.5	1012.7
120	14.2	2.2	19.0	1181.8	120	14.2	2.2	1.0	21.2	1276.9
150	15.8	2.2	20.6	1437.0	150	15.8	2.2	1.2	23.2	1536.1
185	17.5	2.4	22.8	1743.9	185	17.5	2.4	1.2	25.3	1847.9
240	20.1	2.4	25.4	2278.9	240	20.1	2.4	1.2	27.9	2394.3
300	22.5	2.4	27.8	2797.6	300	22.5	2.4	1.2	30.3	2923.4
400	25.8	2.6	31.5	3995.8	400	25.8	2.6	1.4	34.5	4165.1

Other range on request.

Reduced Dimension Power Cables

HF-RMSG-RD 3.6/6kV EN50264-3-1

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN 50264-3-1

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free polyolefin(EI 109)
Sheath	Cross-linked halogen-free polyolefin(EM 104)

Technical Data

Voltage	3.6/6kV
Temperature Range	-40 ~ +90 ℃
Wall Thickness	Reduced
Fire Performance	NFPA130 : 2010, BS6853 : Cat. Ia

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305
Toxicity Index — BS6853 Annex B.1, BSS 7239

Product List

Conductor		Insulation	Sheath		Cable
mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
2.5	1.9	2.6	0.8	9.1	105.5
4.0	2.4	2.6	0.8	9.6	125.6
6.0	3.0	2.6	0.8	10.1	149.4
10	3.9	2.6	0.8	11.1	199
16	5.0	2.6	0.8	12.3	272.2
25	6.4	2.9	1.0	14.7	399
35	7.7	2.9	1.0	16	503.2
50	9.2	2.9	1.0	17.5	656.1

Conductor		Insulation	Sheath		Cable
mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
70	11.0	2.9	1.0	19.3	868.5
95	12.5	2.9	1.0	21.0	1071.9
120	14.2	2.9	1.2	23.0	1332.9
150	15.8	2.9	1.2	24.6	1599.8
185	17.5	3.2	1.2	27.0	1934.1
240	20.1	3.4	1.4	30.4	2564.8
300	22.5	3.4	1.4	32.8	3080.4
400	25.8	3.4	1.4	36.1	4282.4

Other range on request.

Standard Dimension Power Cables

750V HF-RMSG

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 105°C for 20,000 working hours

Design standard

BS 3G 230 / NF F 63-826

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free polyolefin
Sheath	Cross-linked halogen-free polyolefin

Technical Data

Voltage	0.6/1kV
Temperature Range	-40 ~ +90℃
Wall Thickness	Standard

Properties

Halogen Free
IEC 60754-2
IEC 60684-2

Flame Retardant
NF C 32-070
IEC 60332-1/2/3

Low Smoke
NF F 16-101

UV Resistant
ASTM G53

Oil Resistant
BS 2G 230 29

Ozone Resistant
UIC 895 OR

Toxicity Index
BS6853 Annex B.1
BSS 7239

Product List

Nominal cross-sectional	Overall diameter D		Approx. Weight
	min.	max.	
㎟	㎜	㎜	kg/㎞
1.0	3.6	4.0	22
1.5	3.6	4.0	29
2.5	4.1	4.5	41
4.0	4.4	4.9	55
6.0	5.1	5.6	79
10	6.2	6.9	125
16	7.6	8.5	192
25	9.2	10.3	284
35	10.7	11.9	408

Nominal cross-sectional	Overall diameter D		Approx. Weight
	min.	max.	
㎟	㎜	㎜	kg/㎞
50	12.9	14.1	583
70	14.9	16.3	786
95	17.4	18.8	1049
120	19.1	20.5	1345
150	21.1	22.9	1652
185	23.5	25.3	1968
240	26.9	28.7	2562
300	30.1	32.3	3062
400	34.1	36.3	3981

Other range on request.

Standard Dimension Power Cables

1500V HF-RMSG

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 105°C for 20,000 working hours

Design standard

BS 3G 230 / NF F 63-826

Construction

Conductor	Flexible stranded tinned copper Class 5, Class6
Insulation	Halogen-free polyolefin
Sheath	Cross-linked halogen-free polyolefin

Technical Data

Voltage	1.8/3kV
Temperature Range	-40 ~ +90℃
Wall Thickness	Standard

Properties

Halogen Free — IEC 60754-2, IEC 60684-2
Flame Retardant — NF C 32-070, IEC 60332-1/2/3
Low Smoke — NF F 16-101
UV Resistant — ASTM G53
Oil Resistant — BS 2G 230 29
Ozone Resistant — UIC 895 OR
Toxicity Index — BS6853 Annex B.1, BSS 7239

Product List

Flexible (Copper Class5)				Ultra Flexible (Copper Class6)			
Nominal cross-sectional	Overall diameter D		Approx. Weight	Nominal cross-sectional	Overall diameter D		Approx. Weight
	min.	max.			min.	max.	
㎟	㎜	㎜	kg/㎞	㎟	㎜	㎜	kg/㎞
1.5	4.4	4.7	36	1.5	3.20	4.91	30.19
2.5	4.9	5.3	49	2.5	5.43	5.99	54.02
4.0	5.4	5.9	68	4.0	5.80	6.41	70.85
6.0	5.9	6.4	90	6.0	6.57	7.52	97.77
10	7.0	7.6	138	10	7.69	8.47	142.80
16	8.4	9.2	208	16	8.76	9.66	208.08
25	10.0	11.0	302	25	10.67	11.76	308.22
35	11.2	12.3	416	35	12.00	13.23	415.79
50	12.9	14.1	579	50	13.71	15.12	574.42
70	18.8	16.3	860	70	15.70	17.30	787.09
95	17.3	18.6	1043	95	18.29	20.16	1039.48
120	19.1	20.5	1307	120	20.48	22.58	1305.12
150	20.8	22.3	1591	150	21.28	23.46	1567.16
185	22.7	24.2	1915	185	23.52	25.93	1884.50
240	26.6	28.2	2536	240	27.33	30.14	2538.28
300	31.7	33.6	3171	300	30.10	33.18	3150.89
400	36.1	38.1	4143				

Other range on request.

Standard Dimension Power Cables

3000V HF-RMSG

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 105°C for 20,000 working hours

Design standard

BS 3G 230 / NF F 63-826

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free polyolefin
Sheath	Cross-linked halogen-free polyolefin

Technical Data

Voltage	3.6/6kV
Temperature Range	-40 ~ +90℃
Wall Thickness	Standard

Properties

Halogen Free
IEC 60754-2
IEC 60684-2

Flame Retardant
NF C 32-070
IEC 60332-1/2/3

Low Smoke
NF F 16-101

UV Resistant
ASTM G53

Oil Resistant
BS 2G 230 29

Ozone Resistant
UIC 895 OR

Toxicity Index
BS6853 Annex B.1
BSS 7239

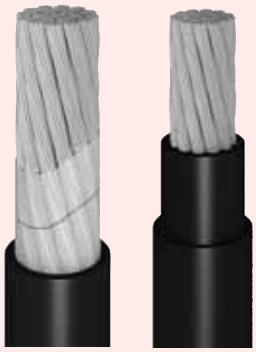
Product List

Nominal cross-sectional	Overall diameter D		Approx. Weight
	min.	max.	
mm²	mm	mm	kg/km
10	10.6	11.8	210
16	12.5	13.9	300
25	14.1	15.5	400
35	15.5	17.1	520
50	17.4	19.2	690
70	19.5	21.5	920
95	21.4	23.6	1160
120	23.4	25.8	1440
150	25.4	28.0	1740
185	27.7	30.7	2100
240	30.4	33.6	2700

Other range on request.

High Temperature Power Cables

HF-RMSG-HT 1.8/3kV, 3.6/6kV EN50382 (Unsheathed)



Application
High Voltage Power cable for installations inside and outside of Rolling Stock in high temperature conditions motor connection application

Design standard
EN 50382-2

Construction

Conductor	Flexible stranded copper class 5 or class6 *tinned copper for 120 ℃ class *plain copper for 150 ℃ class
Insulation	Halogen-free silicone rubber(EI 111)
Sheath	Halogen-free silicone rubber (BK)(EM 107)

Technical Data

Voltage	1.8/3kV, 3.6/6kV
Temperature Range	-40 ~ +150 ℃
Wall Thickness	Standard

Properties

Halogen Free	Flame Retardant	Low Smoke	Ozone Resistant	Oil Resistant	Cold Resistant @-40°C
IEC 60754-2	IEC 60332-1/2/3	IEC 61034	EN 50382	EN 50382	EN 60811-1-4

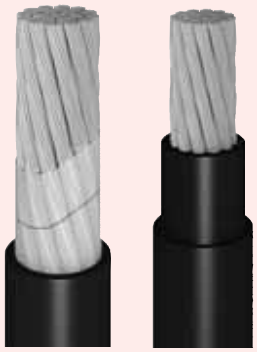
Product List

1.8/3 kV					3.6/6 kV				
Conductor		Insulation	Overal	Cable	Conductor		Insulation	Overal	Cable
㎟	Φ(㎜)	Thickness(㎜)	Φ(㎜)	Weight(㎏/㎞)	㎟	Φ(㎜)	Thickness(㎜)	Φ(㎜)	Weight(㎏/㎞)
1.5	1.5	2.5	6.7	53.7	2.5	1.9	3.0	8.1	81.7
2.5	1.9	2.5	7.1	66.2	4.0	2.4	3.0	8.7	100.1
4.0	2.4	2.5	7.6	83.6	6.0	3.0	3.0	9.2	122.1
6.0	3.0	2.5	8.2	104.9	10	3.9	3.0	10.1	168.5
10	3.9	2.5	9.1	149.5	16	5.0	3.0	11.3	237.8
16	5.0	2.5	10.2	215.4	25	6.4	3.0	12.7	327.7
25	6.4	2.5	11.7	303.2	35	7.7	3.0	14.0	424.6
35	7.7	2.5	13.0	397.5	50	9.2	3.0	15.5	569.0
50	9.2	2.5	14.5	538.9	70	11.0	3.0	17.3	773.0
70	11.0	2.5	16.3	742.2	95	12.5	3.0	18.9	967.3
95	12.5	2.7	18.3	946.7	120	14.2	3.0	20.5	1222.9
120	14.2	2.7	20.0	1204.7	150	15.8	3.1	22.3	1489.5
150	15.8	2.7	21.6	1461.6	185	17.5	3.2	24.4	1790.7
185	17.5	2.7	23.3	1746.6	240	20.1	3.4	27.4	2350.8
240	20.1	2.7	25.9	2281.6	300	22.5	3.4	29.8	2875.8
300	22.5	2.7	28.3	2800.3	400	25.8	3.4	33.1	4056.4
400	25.8	2.9	32.0	3995.8					

Other range on request.

High Temperature Power Cables

HF-RMSG-HT 1.8/3kV, 3.6/6kV EN50382 (Sheathed)



Application
High Voltage Power cable for installations inside and outside of Rolling Stock in high temperature conditions motor connection application

Design standard
EN 50382-2

Construction

Conductor	Flexible stranded copper class 5 or class6 *tinned copper for 120℃ class *plain copper for 150℃ class
Insulation	Halogen-free silicone rubber(EI 111)
Sheath	Halogen-free silicone rubber (BK)(EM 107)

Technical Data

Voltage	1.8/3kV, 3.6/6kV
Temperature Range	-40 ~ +150℃
Wall Thickness	Standard

Properties

Halogen Free	Flame Retardant	Low Smoke	Ozone Resistant	Oil Resistant	Cold Resistant @-40℃
IEC 60754-2	IEC 60332-1/2/3	IEC 61034	EN 50382	EN 50382	EN 60811-1-4

Product List

1.8/3 kV						3.6/6 kV					
Conductor		Insulation	Sheath		Cable	Conductor		Insulation	Sheath		Cable
mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)	mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
1.5	1.5	1.3	1.4	7.1	59.3	2.5	1.9	2.6	1.4	10.2	118.9
2.5	1.9	1.3	1.4	7.5	72.2	4.0	2.4	2.6	1.4	10.7	139.3
4.0	2.4	1.3	1.4	8.0	89.9	6.0	3.0	2.6	1.4	11.2	163.4
6.0	3.0	1.3	1.4	8.6	111.7	10	3.9	2.6	1.4	12.2	213.6
10	3.9	1.5	1.4	9.9	164.9	16	5.0	2.6	1.4	13.4	287.5
16	5.0	1.5	1.4	11.1	232.6	25	6.4	2.9	1.4	15.4	401.3
25	6.4	1.8	1.4	13.1	338.1	35	7.7	2.9	1.4	16.7	504.9
35	7.7	1.8	1.4	14.4	436.0	50	9.2	2.9	1.5	18.4	664.4
50	9.2	1.8	1.4	15.9	581.6	70	11.0	2.9	1.5	20.2	879.1
70	11.0	1.8	1.5	17.9	800.8	95	12.5	2.9	1.6	22.0	1091.5
95	12.5	2.2	1.5	20.4	1027.4	120	14.2	2.9	1.6	23.6	1356.7
120	14.2	2.2	1.6	22.3	1301.2	150	15.8	2.9	1.7	25.4	1634.8
150	15.8	2.2	1.6	23.9	1565.3	185	17.5	3.2	1.8	28.1	1980.2
185	17.5	2.4	1.7	26.2	1887.9	240	20.1	3.4	1.9	31.3	2601.3
240	20.1	2.4	1.8	29.0	2449.2	300	22.5	3.4	1.9	33.7	3118.7
300	22.5	2.4	1.9	31.6	2995	400	25.8	3.4	2.0	37.2	4338.2
400	25.8	2.6	2.0	35.5	4228.8						

Other range on request.

Standard Dimension Power Cables

HF-RMSG-SD 0.6/1kV EN50264-2-1

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN50264-2-1

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free polyolefin(EI 104)

Technical Data

Voltage	0.6/1 kV
Temperature Range	-40 ~ +90 ℃
Wall Thickness	Standard

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305

Product List

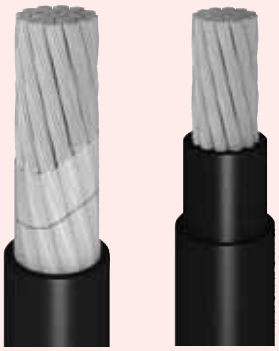
Conductor		Insulation	Overal	Cable
㎟	Φ(㎜)	Thickness(㎜)	Φ(㎜)	Weight(㎏/㎞)
1	1.2	0.8	2.9	14.2
1.5	1.5	0.8	3.2	18.8
2.5	1.9	0.8	3.6	28.3
4.0	2.4	0.8	4.1	42.0
6.0	3.0	0.9	4.9	61.3
10	3.9	1.1	6.2	104.6
16	5.0	1.1	7.3	164.1
25	6.4	1.3	9.2	251.1
35	7.7	1.3	10.5	339

Conductor		Insulation	Overal	Cable
㎟	Φ(㎜)	Thickness(㎜)	Φ(㎜)	Weight(㎏/㎞)
50	9.2	1.5	12.4	483.2
70	11.0	1.5	14.2	694.8
95	12.5	1.6	16.1	887.6
120	14.2	1.6	17.8	1139.7
150	15.8	1.9	20.0	1415.9
185	17.5	1.9	21.7	1697.3
240	20.1	2.1	24.7	2247.4
300	22.5	2.2	27.3	2774.5
400	25.8	2.3	30.8	3956.5

Other range on request.

Standard Dimension Power Cables

HF-RMSG-SD 1.8/3kV EN50264-2-1



Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN50264-2-1

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free polyolefin(EI 104)
Sheath	Cross-linked halogen-free polyolefin(EM 104)

Technical Data

Voltage	1.8/3 kV
Temperature Range	-40 ~ +90℃
Wall Thickness	Standard

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305

Product List

Unsheathed					Sheathed					
Conductor		Insulation	Overal	Cable	Conductor		Insulation	Sheath		Cable
mm²	Φ(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)	mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
1.5	1.5	2.5	6.7	52.0	1.5	1.5	1.3	1.4	7.1	65.5
2.5	1.9	2.5	7.1	64.7	2.5	1.9	1.3	1.4	7.5	79.0
4.0	2.4	2.5	7.6	82.1	4.0	2.4	1.3	1.4	8.0	97.5
6.0	3.0	2.5	8.2	103.2	6.0	3.0	1.3	1.4	8.6	120.0
10	3.9	2.5	9.1	148.0	10	3.9	2.2	1.4	11.4	209.8
16	5.0	2.5	10.3	215.2	16	5.0	2.2	1.4	12.5	282.7
25	6.4	2.5	11.7	302.7	25	6.4	2.2	1.4	13.9	379.5
35	7.7	2.5	13.0	397.2	35	7.7	2.2	1.4	15.2	481.9
50	9.2	2.5	14.5	539.0	50	9.2	2.2	1.4	16.7	632.8
70	11.0	2.5	16.3	758.3	70	11.0	2.2	1.5	18.7	855.7
95	12.5	2.7	18.3	966.5	95	12.5	2.4	1.6	21.0	1084.9
120	14.2	2.7	19.9	1222.3	120	14.2	2.4	1.6	22.7	1355.1
150	15.8	2.7	21.5	1480.9	150	15.8	2.4	1.7	24.5	1634.7
185	17.5	2.7	23.3	1772.9	185	17.5	2.4	1.7	26.2	1932.8
240	20.1	2.7	25.9	2311.2	240	20.1	2.4	1.8	29.0	2500.9
300	22.5	2.7	28.3	2833.0	300	22.5	2.4	1.9	31.6	3053.5
400	25.8	2.9	32.0	4035.9	400	25.8	2.6	2.0	35.5	4299.7

Other range on request.

Standard Dimension Power Cables

HF-RMSG-SD 3.6/6kV EN50264-2-1

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN50264-2-1

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free polyolefin(EI 104)
Sheath	Cross-linked halogen-free polyolefin(EM 104)

Technical Data

Voltage	3.6/6kV
Temperature Range	-40 ~ +90 ℃
Wall Thickness	Standard

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305

Product List

Conductor		Insulation	Sheath		Cable
mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
2.5	1.9	2.6	1.4	10.2	131.9
4.0	2.4	2.6	1.4	10.7	153.4
6.0	3.0	2.6	1.4	11.2	178.6
10	3.9	2.6	1.4	12.2	230.8
16	5.0	2.6	1.4	13.4	307.2
25	6.4	2.9	1.4	15.4	426.3
35	7.7	2.9	1.4	16.7	532.9
50	9.2	2.9	1.5	18.4	696.8

Conductor		Insulation	Sheath		Cable
mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
70	11.0	2.9	1.5	20.2	913.3
95	12.5	2.9	1.6	22.0	1130.5
120	14.2	2.9	1.7	23.8	1410.0
150	15.8	2.9	1.7	25.4	1682.3
185	17.5	3.2	1.8	28.1	2037.4
240	20.1	3.4	1.9	31.3	2669.6
300	22.5	3.4	1.9	33.7	3193.4
400	25.8	3.4	2.0	37.2	4423.5

Other range on request.

Standard Dimension Power Cables

Y500S, Y1000S, Y1500S, Y3000S NF F 63-826

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 105°C for 20,000 working hours

Design standard

NF F 63-826

Construction

Conductor	Flexible stranded tinned copper Class 5 (Option : separator tape)
Insulation	Halogen-free compound (BK)

Technical Data

Voltage	0.5, 1, 1.5, 3 kV
Temperature Range	-25 ~ +90 ℃
Wall Thickness	Standard

Properties

Halogen Free	Flame Retardant	Low Smoke	Oil Resistant	Ozone Resistant	Chemical Resistant
IEC 60754-1	NF C 32-070 IEC 60332-1/2/3	NF F16-101	NF C32-028	NF C32-028	NF C32-021

Product List

Cross Section (㎟)	Core Dia. (㎜)	Y500S		Y1000S		Y1500S		Y3000S	
		Max.Dia.(㎜)	Weight(㎏/㎞)	Max.Dia.(㎜)	Weight(㎏/㎞)	Max.Dia.(㎜)	Weight(㎏/㎞)	Max.Dia.(㎜)	Weight(㎏/㎞)
10	3.9	8.1	135	8.3	154	9.7	16	11.3	200
16	5.0	9.2	210	9.4	218	10.8	235	12.4	265
50	9.2			14.3	580	15.5	610	17.2	680
70	11.0			16.3	830	17.7	860	19.1	930
95	12.5			18.4	1040	19.8	1070	21.4	1066
120	14.2			20.5	1310	21.9	1340	23.5	1530
150	15.8					23.8	1620	25.5	1740
185	17.5					25.9	1940	27.6	2100
240	20.1					29.1	2550	31.7	2460
300	22.5					31.9	2950	35.0	3050

Other range on request.

Standard Dimension Power Cables

Y1500S Aluminum NF F 63-826

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application

Design standard

NF F 63-826

Construction

Conductor	Flexible aluminum (Option : separator tape)
Insulation	Halogen-free compound (BK)

Technical Data

Voltage	1.5 kV
Temperature Range	-25 ~ +90 ℃
Wall Thickness	Standard

Properties

Halogen Free — IEC 60754-1
Flame Retardant — NF C 32-070, IEC 60332-1/2/3
Low Smoke — NF F16-101
Oil Resistant — NF C32-028
Ozone Resistant — NF C32-028
Chemical Resistant — NF C32-021

Product List

Cross Section (㎟)	Core Dia. (㎜)	Insulation Thickness (㎜)	Overall Diameter (㎜)	Weight (kg/㎞)	Max. Current (A)
50	9.6	2.5	14.2	297	189
70	11.8	2.7	16.1	413	237
95	13.2	2.7	18.0	491	281
120	15.3	2.8	20.0	593	324
150	16.7	2.8	21.8	697	371
185	19.1	2.9	23.7	850	433
240	21.7	3.0	26.6	1059	523

Other range on request.

Flexible Multicore Power Cables

HF-RMSG-RD 300/500V EN50264-3-2 (Unscreened)

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN50264-3-2

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free compound (BK)(EI 109)
Separating tape	Polyester tape
Sheath	Halogen-free compound (BK)(EM 104)

Technical Data

Voltage	300/500V
Temperature Range	-40 ~ +90℃
Wall Thickness	Reduced

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305

Product List

# of Cores	Conductor		Sheath		Cable
	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
2	1	1.26	0.6	5.86	38.5
4	1	1.26	0.6	6.78	71.9
7	1	1.26	0.7	8.3	120.2
9	1	1.26	0.7	9.69	152.1
12	1	1.26	0.7	10.87	196.9
19	1	1.26	0.8	12.98	304.1
24	1	1.26	1	15.63	394
32	1	1.26	1	17.19	510.2
37	1	1.26	1	17.86	581.4
40	1	1.26	1	18.56	625.5
4	1.5	1.49	0.7	8.03	93.1
7	1.5	1.49	0.7	9.61	167.3
9	1.5	1.49	1	11.88	227.2
12	1.5	1.49	1	13.3	293
19	1.5	1.49	1	15.57	441.6
24	1.5	1.49	1.2	18.66	568.5
32	1.5	1.49	1.2	20.53	736.6
37	1.5	1.49	1.2	21.33	839.7
4	2.5	1.93	0.7	9.09	133.7
7	2.5	1.93	0.8	11.14	252.9
9	2.5	1.93	1	13.48	332.9
12	2.5	1.93	1	15.13	432.6
24	2.5	1.93	1.2	21.3	845.3

Other range on request.

Flexible Multicore Power Cables

HF-RMSG-RD 300/500V EN50264-3-2 (Screened)

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN50264-3-2

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free compound (BK)(EI 109)
Screen	Tinned copper braid
Sheath	Halogen-free compound (BK)(EM 104)

Technical Data

Voltage	300/500V
Temperature Range	-40 ~ +90 ℃
Wall Thickness	Reduced

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305

Product List

# of Cores	Conductor		Insulation	Sheath		Cable
	mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
2	1.0	1.26	0.4	0.6	6.7	57.4
4	1.0	1.26	0.4	0.6	7.7	87.0
7	1.0	1.26	0.4	0.7	9.2	134.6
9	1.0	1.26	0.4	0.7	10.8	179.1
12	1.0	1.26	0.4	0.7	12.0	224.3
19	1.0	1.26	0.4	0.8	14.4	343.1
24	1.0	1.26	0.4	1.0	17.0	437.5
32	1.0	1.26	0.4	1.0	18.6	548.5
37	1.0	1.26	0.4	1.0	19.2	614.5
40	1.0	1.26	0.4	1.0	19.9	657.3
4	1.5	1.49	0.5	0.7	8.9	119.0
7	1.5	1.49	0.5	0.7	10.7	192.7
9	1.5	1.49	0.5	1.0	13.0	255.7
12	1.5	1.49	0.5	1.0	14.4	320.8
19	1.5	1.49	0.5	1.0	16.9	480.5
24	1.5	1.49	0.5	1.2	20.0	611.2
32	1.5	1.49	0.5	1.2	21.9	770.2
37	1.5	1.49	0.5	1.2	22.7	865.2
4	2.5	1.93	0.5	0.7	10.2	173.9
7	2.5	1.93	0.5	0.8	12.3	273.0
9	2.5	1.93	0.5	1.0	14.9	369.4
12	2.5	1.93	0.5	1.0	16.5	466.4
24	2.5	1.93	0.5	1.2	22.7	863.6

Other range on request.

Flexible Multicore Power Cables

HF-RMSG-RD 0.6/1kV EN50264-3-2 (Unscreened)

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN50264-3-2

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free compound (BK)(EI 109)
Separating tape	Polyester tape
Sheath	Halogen-free compound (BK)(EM 104)

Technical Data

Voltage	0.6/1kV
Temperature Range	-40 ~ +90℃
Wall Thickness	Reduced

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305

Product List

# of Cores	Conductor		Sheath		Cable
	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
2	1.5	1.49	0.7	7.76	62.6
2	2.5	1.93	0.7	8.64	84.9
2	4.0	2.44	0.7	9.66	116.3
2	6.0	2.97	0.8	10.93	159.4
2	10.0	3.91	1.0	13.22	254.5
2	16.0	5.00	1.0	15.40	380.9
2	25.0	6.40	1.2	19.44	584.5
2	35.0	7.70	1.2	22.04	772.1
2	50.0	9.20	1.4	25.86	1088.5
3	1.5	1.49	0.7	8.22	83.9
3	2.5	1.93	0.7	9.17	116.1
3	4.0	2.44	0.7	10.27	161.7

# of Cores	Conductor		Sheath		Cable
	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
3	6.0	2.97	0.8	11.61	222.9
3	10.0	3.91	1.0	14.05	357.6
3	16.0	5.00	1.0	16.39	543.0
3	25.0	6.40	1.2	20.70	834.0
3	35.0	7.70	1.2	23.49	1109.4
3	50.0	9.20	1.4	27.57	1566.3
4	1.5	1.49	0.7	9.030	106.4
4	2.5	1.93	0.7	10.09	148.6
4	4.0	2.44	0.8	11.52	213.6
4	6.0	2.97	1.0	13.21	299.4
4	10.0	3.91	1.0	15.48	463.6
4	25.0	6.40	1.4	23.29	1108.4

Other range on request.

Flexible Multicore Power Cables

HF-RMSG-RD 0.6/1kV EN50264-3-2 (Screened)

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Design standard

EN50264-3-2

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free compound (BK)(EI 109)
Screen	Tinned copper braid
Sheath	Halogen-free compound (BK)(EM 104)

Technical Data

Voltage	0.6/1kV
Temperature Range	-40 ~ +90 ℃
Wall Thickness	Reduced

Properties

Halogen Free — EN 50264-1
Flame Retardant — EN 60332-1, EN 50266-2, NF F 16-101
Low Smoke — EN 61304-2
Oil Resistant — EN 60811-2-1
Ozone Resistant — EN 50305

Product List

# of Cores	Conductor		Insulation	Sheath		Cable
	mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
2	1.5	1.49	0.7	0.7	8.6	87.9
2	2.5	1.93	0.7	0.7	9.5	113.4
2	4.0	2.44	0.7	0.7	10.8	159.6
2	6.0	2.97	0.7	0.8	12.1	207.9
2	10.0	3.91	0.7	1.0	14.3	312.1
2	16.0	5.00	0.7	1.0	16.8	466.8
2	25.0	6.40	0.9	1.2	20.8	692.6
2	35.0	7.70	0.9	1.2	23.7	921.4
2	50.0	9.20	1.0	1.4	27.5	1262.7
3	1.5	1.49	0.7	0.7	9.1	110.8
3	2.5	1.93	0.7	0.7	10.0	146.4
3	4.0	2.44	0.7	0.7	11.4	207.8

# of Cores	Conductor		Insulation	Sheath		Cable
	mm²	Φ(mm)	Thickness(mm)	Thickness(mm)	Φ(mm)	Weight(kg/km)
3	6.0	2.97	0.7	0.8	12.7	274.5
3	10.0	3.91	0.7	1.0	15.4	435.0
3	16.0	5.00	0.7	1.0	17.8	634.5
3	25.0	6.40	0.9	1.2	22.1	949.3
3	35.0	7.70	0.9	1.2	25.1	1268.7
3	50.0	9.20	1.0	1.4	29.2	1752.4
4	1.5	1.49	0.7	0.7	9.9	136.1
4	2.5	1.93	0.7	0.7	11.2	193.8
4	4.0	2.44	0.7	0.8	12.6	264.7
4	6.0	2.97	0.7	1.0	14.3	356.7
4	10.0	3.91	0.7	1.0	16.9	549.5
4	25.0	6.40	0.9	1.4	24.9	1263.1

Other range on request.

Flexible Multicore Power Cables

NY500SO

Application

Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 105°C for 20,000 working hours

Design standard

NF F 63-826

Construction

Conductor	Flexible stranded tinned copper Class 5
Insulation	Halogen-free compound (BK)
Separating tape	Polyester tape
Sheath	Halogen-free compound (BK)

Technical Data

Voltage	500V
Temperature Range	-25 ~ +90℃
Wall Thickness	Standard

Properties

Halogen Free	Flame Retardant	Low Smoke	Oil Resistant	Ozone Resistant	Chemical Resistant
IEC 60754-1	NF C 32-070 IEC 60332-1/2/3	NF F16-101	NF C32-028	NF C32-028	NF C32-021

Product List

Cables (mm²)	Conductor Diameter (mm)	Max. Diameter (mm)	Weight (kg/km)
2 x 1.5	1.50	9.9	115
4 x 1.5	1.50	11.4	160
7 x 1.5	1.50	13.3	245
13 x 1.5	1.50	18.0	425
19 x 1.5	1.50	19.9	675
37 x 1.5	1.50	27.1	1170
2 x 2.5	1.95	11.3	185
4 x 2.5	1.95	13.1	275
13 x 2.5	1.95	21.1	750
19 x 2.5	1.95	23.4	980

Other range on request.

Jumper Cables

Application

Mobile links between cars or car-bogie
Power cable for installations inside and outside of Rolling Stock
Auxiliary and main circuit wiring application
Thermal endurance temperature is 120°C for 20,000 working hours

Construction

Conductor	Extra flexible tinned copper Class 6 (Option : separator tape)
Insulation	Halogen-free compound (BK)

Technical Data

Voltage	0.6/1kV, 1.8/3kV, 3.6/6kV
Temperature Range	-40 ~ +90℃

Properties

Halogen Free	Flame Retardant	Low Smoke	Oil Resistant	Ozone Resistant
EN 50264-1	EN 60332-1 EN 50266-2 NF F 16-101	EN 61304-2	EN 60811-2-1	EN 50305

Product List

Cross Section (㎟)	Core Dia. (㎜)	Insulation Thickness (㎜)	Overall Diameter (㎜)	Weight (kg/㎞)
10	3.9	2.3	9.5	187
16	5.0	2.3	10.8	266
25	6.4	2.3	12.2	354
35	7.7	2.4	13.7	440
50	9.2	2.5	15.5	613
70	11.0	2.7	17.7	875
95	12.5	2.7	19.8	1045
120	14.2	2.8	21.9	1350
150	15.8	2.8	23.8	1650
185	17.5	2.9	25.9	2130

Other range on request.

RailSol™-Saflex

LS Total Solution for Rolling Stock

1.2

Thin Wall Insulated Cables

IRIS Certification

Standard Wall Sheathed Multicore Cables

Screened Type

LSRS-SB 0.6/1kV EN50306-4

Application

Compact system wiring in restricted space and weight
Cable ducts or cabinets or conduits in a Rolling Stock
Thermal endurance temperature is 125°C for 20,000 working hours

Design standard

EN50306-4

Construction

Conductor	Stranded tinned copper
Insulation	Thin wall halogen-free compound
Screen	Tinned copper braid (Option : polyestertape)
Sheath	Standard wall halogen-free compound

Technical Data

Voltage	0.6/1kV (300V acc. to EN50306)
Temperature Range	-40 ~ +105 ℃
Minimum Bending	10D (Dynamic Use), 5D (Static Use)
Fire performance	NFPA130 : 2010 BS6853 : Cat. Ia

* D : Cable diameter

Properties

Halogen Free
EN 50267-2-1
IEC 60684-2

Flame Retardant
IEC 60332-1-2
IEC 60332-3-24
UL 1685

Low Smoke
IEC 61034-2

Oil Resistant
IRM 902
IRM 903

Chemical Resistant
EN 50305

Toxicity Index
BS6853 Annex B.1
BSS 7239

Product List

Base Core

Cross Section (㎟)	Construction (n x Ø)	Max. Conductor Dia. (㎜)	Max. Insulation Dia. (㎜)
0.50	19 x 0.18	0.95	1.45
0.75	19 x 0.23	1.15	1.65
1.00	19 x 0.25	1.30	1.80
1.50	37 x 0.23	1.65	2.21
2.50	37 x 0.30	2.15	2.75

Product

Cables	Max. Dia. (㎜)	Weight (kg/㎞)
2 x 2 x 0.5	7.40	66
3 x 2 x 0.5	7.70	79
4 x 2 x 0.5	8.60	103
7 x 2 x 0.5	10.00	152

Other range on request.

Cables	Max. Dia. (㎜)	Weight (kg/㎞)
2x0.50	10.0	112
3x0.50	10.6	139
4x0.50	11.7	163
7x0.50	14.0	252
2x0.75	10.8	135
3x0.75	11.5	170
4x0.75	12.6	195
7x0.75	15.4	307
2x1.00	11.4	143
3x1.00	11.9	185
4x1.00	13.1	212
7x1.00	16.0	355
2x1.50	13.2	210
3x1.50	14.1	270
4x1.50	15.7	307
7x1.50	19.0	515

Thin Wall Multi Core Cable

Screened Type

LSRS-SB 0.6/1kV EN50306-3

Application

Compact system wiring in restricted space and weight
Cable ducts or cabinets or conduits in a Rolling Stock
Thermal endurance temperature is 125°C for 20,000 working hours

Design standard

EN 50306-3

Construction

Conductor	Stranded tinned copper
Insulation	Thin wall halogen-free compound
Screen	Tinned copper braid (Option : polyester tape)
Sheath	Thin Wall halogen-free compound

Technical Data

Voltage	0.6/1kV (300V acc. to EN50306)
Temperature Range	-40 ~ +105℃
Minimum Bending	10D (Dynamic Use), 5D (Static Use)
Fire performance	NFPA130 : 2010 BS6853 : Cat. Ia

* D : Cable diameter

Properties

Halogen Free
EN 50267-2-1
IEC 60684-2

Flame Retardant
IEC 60332-1-2
IEC 60332-3-24
UL 1685

Low Smoke
IEC 61034-2

Oil Resistant
IRM 902
IRM 903

Chemical Resistant
EN 50305

Toxicity Index
BS6853 Annex B.1
BSS 7239

Product List

Base Core

Cross Section (㎟)	Construction (n x Ø)	Max. Conductor Dia. (㎜)	Max. Insulation Dia. (㎜)
0.50	19 x 0.18	0.95	1.45
0.75	19 x 0.23	1.15	1.65
1.00	19 x 0.25	1.30	1.80
1.50	37 x 0.23	1.65	2.21
2.50	37 x 0.30	2.15	2.75

Product

Cables	Max. Dia. (㎜)	Weight (kg/㎞)
2 x 0.5	5.1	28
3 x 0.5	5.3	37
4 x 0.5	5.7	49

Other range on request.

Cables	Max. Dia. (㎜)	Weight (kg/㎞)
2x0.50	4.3	31
3x0.50	4.5	41
4x0.50	5.0	49
2x0.75	4.7	39
3x0.75	5.0	51
4x0.75	5.5	53
2x1.00	5.2	44
3x1.00	5.5	58
4x1.00	6.0	72
2x1.50	6.1	58
3x1.50	6.4	79
4x1.50	7.0	98
2x2.50	7.4	85
3x2.50	7.8	115
4x2.50	8.5	155

Thin Wall Multi Core Cable

Unscreened Type
LSRS 0.6/1kV EN50306-3

Application
Compact system wiring in restricted space and weight
Cable ducts or cabinets or conduits in a Rolling Stock
Thermal endurance temperature is 125°C for 20,000 working hours

Design standard
EN 50306-3

Construction

Conductor	Stranded tinned copper
Insulation	Thin wall halogen-free compound
Sheath	Standard wall halogen-free compound

Technical Data

Voltage	0.6/1kV (300V acc. to EN50306)
Temperature Range	-40 ~ +105℃
Minimum Bending	10D (Dynamic Use), 5D (Static Use)
Fire performance	NFPA130 : 2010 BS6853 : Cat. Ia

* D : Cable diameter

Properties

Halogen Free
EN 50267-2-1
IEC 60684-2

Flame Retardant
IEC 60332-1-2
IEC 60332-3-24
UL 1685

Low Smoke
IEC 61034-2

Oil Resistant
IRM 902
IRM 903

Chemical Resistant
EN 50305

Toxicity Index
BS6853 Annex B.1
BSS 7239

Product List

Base Core

Cross Section (㎟)	Construction (n x Ø)	Max. Conductor Dia. (㎜)	Max. Insulation Dia. (㎜)
0.50	19 x 0.18	0.95	1.45
0.75	19 x 0.23	1.15	1.65
1.00	19 x 0.25	1.30	1.80
1.50	37 x 0.23	1.65	2.21
2.50	37 x 0.30	2.15	2.75

Product

Cables	Max. Dia. (㎜)	Weight (kg/㎞)
2 x 0.5	4.55	24
3 x 0.5	4.75	30
4 x 0.5	5.10	37
2 x 0.75	5.00	30

Other range on request.

Cables	Max. Dia. (㎜)	Weight (kg/㎞)
2x0.50	3.8	21
3x0.50	4.0	30
4x0.50	4.5	37
2x0.75	4.2	29
3x0.75	4.5	39
4x0.75	5.0	40
2x1.00	4.7	32
3x1.00	5.0	46
4x1.00	5.5	58
2x1.50	5.6	43
3x1.50	5.9	63
4x1.50	6.5	81
2x2.50	6.9	67
3x2.50	7.3	95
4x2.50	8.0	133

RailSol™-Saflex

LS Total Solution for Rolling Stock

Multimedia & Data Transmission Cables

IRIS Certification

Coaxial Cable

RG/KX Type

Application

Data and video signal transmission in on-board equipments

Construction

Conductor	Stranded bare or tinned or silvered copper
Insulation	PE
Screen	Single or double braided bare or tinned or silvered copper
Sheath	Halogen-free compound (BK)

Technical Data

Impedance	50 Ω (Capacity : ＜ 106 pF/m) , 75 Ω (Capacity : ＜ 72.2 pF/m)
Temperature Range	-30 ~ +80 ℃
Compatible with standard connector (BNC, SMA, SMB, TNC etc.)	

Properties

Halogen Free — IEC 60754-1

Flame Retardant — IEC 60332-1/2/3

Low Smoke — IEC 61034

Product List

Product : 50Ω

Type	Conductor		Insulation (㎜)	Shield		Cable Dia. (㎜)	Weight (kg/㎞)	Voltage (V_{ac})
	Construction	Dia.(㎜)		1st	2nd			
KX 3B	7 x 0.16CCS	0.48	1.50 ± 0.10	0.10TPC	-	2.54 ± 0.13	10	1100
RG 58	19 x 0.18TPC	0.90	2.95 ± 0.10	0.10TPC	-	4.95 ± 0.10	41	1400
RG 174	7 x 0.16CCS	0.48	1.52 ± 0.08	0.10TPC	-	2.79 ± 0.13	12.5	1100
RG 213	7 x 0.75 BC	2.25	7.24 ± 0.18	0.18BC	-	10.30 ± 0.18	165	3700
RG 214	7 x 0.75 BC	2.25	7.24 ± 0.18	0.16SPC	0.16 SPC	10.80 ± 0.18	198	3700

Product : 75Ω

Type	Conductor		Insulation (㎜)	Shield		Cable Dia. (㎜)	Weight (kg/㎞)	Voltage (V_{ac})
	Construction	Dia.(㎜)		1st	2nd			
KX 6A	7 x 0.20BC	0.6	3.70 ± 0.12	0.16BC	-	6.10 ± 0.15	57	1700
KX 8	7 x 0.40BC	1.20	7.25 ± 0.15	0.18BC	-	10.30 ± 0.20	145	3700
RG 11	7 x 0.40TPC	1.20	7.24 ± 0.18	0.18BC	-	10.30 ± 0.18	146	3700
RG 59	1 x 0.57CCS	0.57	3.71 ± 0.10	0.16BC	-	6.15 ± 0.10	58	1700
RG 216	7 x 0.40TPC	1.20	7.24 ± 0.18	0.16BC	0.16 BC	10.80 ± 0.18	185	3700

Other range on request.

CCS : Copper Clad Steel, SPC : Silver Plated Copper, TPC : Tin Plated Copper, BC : Bare Copper

Databus Cable

MVB, 120Ω

Application

Communication system in a Rolling Stock

Construction

Conductor	Stranded tinned copper
Insulation	Special compound
Screen	Al/Mylar tape + tinned copper braid
Sheath	Halogen-free compound

Technical Data

Impedance	120Ω ±12Ω @ 0.5 ~ 3MHz
Temperature Range	-40 ~ +90℃
Attenuation	≤15dB/km @ 1.5 MHz ≤20dB/km @ 3MHz)
Minimum Bending	6D (Single bending), 12D (Multi bending)

* D : Cable diameter

Properties

Halogen Free — IEC 60754-1

Flame Retardant — IEC 60332-1

Low Smoke — IEC 61034

Product List

Conductor	Cross-Section (㎟)	Overall Dia. (㎜)	Screen	Approx. Weight (kg/㎞)
Tinned copper	4 x 0.5	7.4	Al/Mylar tape + tinned copper braid	90

Databus Cable

WTB, 120Ω

Application

Communication system in a Rolling Stock

Construction

Conductor	Stranded tinned copper, Special compound
Insulation	Foam PE (Quad), halogen-free compound (Cores)
Screen	Al / Mylar tape + tinned copper braid
Sheath	Halogen-free compound

Technical Data

Impedance	120Ω ±12Ω @ 0.5 ~ 2MHz
Temperature Range	-30 ~ +85℃
Attenuation	≤11dB/km @ 1MHz ≤17dB/km @ 2MHz
Minimum Bending	6D (Single bending), 12D (Multi bending)

* D : Cable diameter

Properties

Halogen Free — IEC 60754-1

Flame Retardant — IEC 60332-1

Low Smoke — IEC 61034

Product List

Conductor	Cross-Section (㎟)	Overall Dia. (㎜)	Screen	Approx. Weight (kg/㎞)
Tinned copper	2 x 0.75	8	Al/Mylar tape + tinned copper braid	100

MM Glass Fiber Cables

Application

Communication system in a Rolling Stock

Construction

Simple x unit	
- Core	Φ62.5 ± 3 ㎛
- Cladding	Φ125 ± 3 ㎛
- Coating	Φ245 ± 10 ㎛
- Buffer	Φ900 ± 50 ㎛
- Strength member	Aramid yarns
- Simplex unit jacket	LSZH Φ2.00 ± 0.15
Outer sheath	LSZH (BK)

Technical Data

Attenuation	≤3.5dB/km @ 850m ≤1.5dB/km @ 1300m
Temperature Range	-30 ~ +70 ℃

Properties

Halogen Free — IEC 60754-1

Flame Retardant — IEC 60332-1/2/3

Low Smoke — IEC 61034

Product List

No. Fiber	Cable Diameter (㎜)	Cable Weight (kg/㎞)	Max. Loading		Min. Bending Radius	
			Static (N)	Dinamic (N)	Static (㎜)	Dinamic (㎜)
4	8.5	75	2000	1000	85	170
6	9.5	95	2000	1000	95	190
8	11.0	120	2000	1000	110	220

Databus Cable

CAT 5e

Application

Communication system in a Rolling Stock
Ethernet based network : infotainment, multimedia, PIS etc.

Design standard

EN 50288-2-2

Construction

Conductor	Stranded tin plated copper (22AWG)
Insulation	Special compound
Screen	Al/Mylar tape + tinned copper braid
Separator	Plastic tape (Option)
Sheath	Halogen-free compound

Technical Data

Voltage	300 V
Impedance	100 ± 15Ω @ 1~100 MHz
Temperature Range	-40 ~ +90℃
Attenuation	2.4 dB/100m @ 1MHz 4.9 dB/100m @ 4 MHz 7.8 dB/100m @ 10 MHz 14.0 dB/100m @ 31.25 MHz 26.4 dB/100m @100 MHz
Next	65.3 dB/100m @ 1MHz 56.3 dB/100m @ 4 MHz 50.3 dB/100m @ 10 MHz 42.9 dB/100m @ 31.25 MHz 35.3 dB/100m @100 MHz
Return loss	23 dB/100m @ 4 MHz 25 dB/100m @ 10 MHz 25 dB/100m @ 20 MHz 23.6 dB/100m @ 31.25 MHz 20.1 dB/100m @100 MHz

Properties

Halogen Free — IEC 60754-1

Flame Retardant — IEC 60332-1

Low Smoke — IEC 61034

Product List

Conductor	Cross-Section (㎟)	Overall Dia. (㎜)	Screen	Approx. Weight (kg/㎞)
Tinned copper	4 x 22 AWG	6.5	Al/Mylar tape + tinned copper braid	65

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LS Total Solution for Rolling Stock

Winding Wires

IRIS Certification

Polyimide Tape Covered Winding Wire

Application
Traction motor in a Rolling Stock

Design standard
IEC 60172 / NEMA MW 1000 / IEC 60317-44

Construction

Insulation type	Polyimide foil coated on one Sides with an FEP (Teflon ®) Adhesive, e.g. Kapton FN, FCR or FWR
Insulation option	- 1 or 2 wrapped fused tape layers - Wrapped tape layers in same direction or cross-wrapped - Overlap up to 66%

Technical Data

Temperature Range	Up to 240℃

Product List

Product : Standard Type

Construction	Increase due to Insulation
1 layer One side FEP-coated PI film, thickness 0.04㎜ 50% overlap	0.16 ± 0.03㎜
1 layer One side FEP-coated PI film, thickness 0.04㎜ 66% overlap	0.24 ± 0.03㎜
2 layer One side FEP-coated PI film, thickness 0.04㎜ 50% overlap	0.32 ± 0.04㎜
1 layer One side FEP-coated PI film, thickness 0.06㎜ 50% overlap	0.25 ± 0.03㎜

Product : Water-Resistant Type

Construction	Increase due to Insulation
1 layer One side FEP-coated Special PI film [Kapton® FWR], thickness 0.04㎜ 50% overlap	0.16 ± 0.03㎜
1 layer One side FEP-coated Special PI film [Kapton® FWR], thickness 0.04㎜ 66% overlap	0.24 ± 0.03㎜

Product : Corona-Resistant Type

Construction	Increase due to Insulation
1 layer One side FEP-coated Special PI film [Kapton® FCR], thickness 0.04 ㎜ 50% overlap	0.16 ± 0.03㎜
1 layer One side FEP-coated Special PI film [Kapton® FCR], thickness 0.04 ㎜ 51% ~ 53% overlap	0.24 ± 0.03㎜

Other range on request.

Continuously Transposed Cable (CTC)

Application
Transformer in a Rolling Stock

Design standard
IEC 60317, 60851

Construction

Number of conductors	5 ~ 84
Width	3.4 ~ 14 mm
Thickness	1.1 ~ 3.2 mm
Insulation material	Kraft paper, Thermally upgraded kraft paper, Crepe paper PET, PPS, Nomex

Technical Data

Made by Superior Essex

Product List

Suggested Dimension Range

Strand Dimension	Soft Annealed, CPR1 (mm)	CPR2, CPR3 (mm)
Width	3,00 ... 12, 50	5,00 ... 12,50
Thickeness	1,00 ... 3, 15	1,40 ... 3,15

Proposed Minimum Strand Dimensions

No. of Strands	Minimum Strand Dimension (mm)
up to 39	3,00 x 1,00
up to 49	4,00 x 1,20
up to 69	5,00 x 1,20
up to 83	6,00 x 1,30

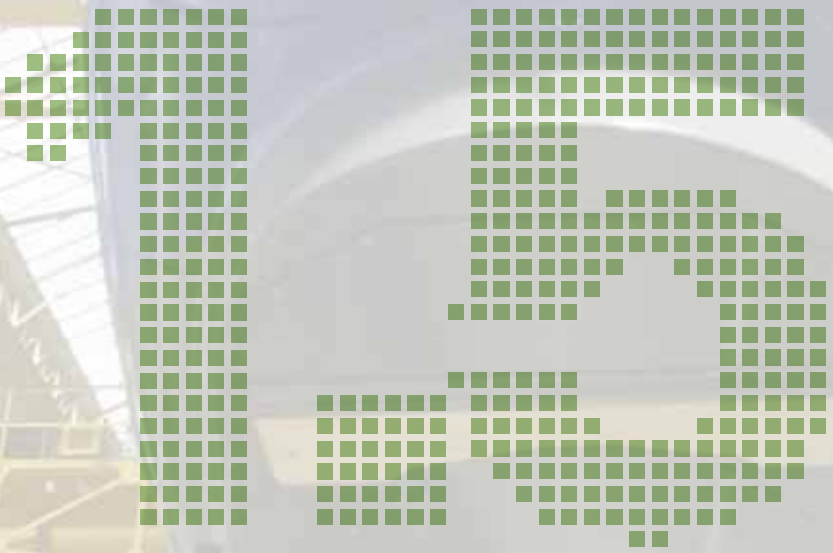
Other range on request.

Wrapping Material	Special Feature, Application
Kraft	5A2-1H1, general purpose with high purity
Calendered kraft	5A4-1M2, high density and dielectric strength
Upgraded	5A2-1M2, high thermal properties
Upgraded, calendered	5A3-M, high density, thermal and dielectric characteristics
Calendered, upgraded, creped	Outer layers with very high mechanical strength
Epoxy coated kraft	Bondable outer layers
Epoxy coated upgraded kraft	Bondable outer layers
Aramide	Very high thermal resistance, for traction transformers
Epoxy coated aramide	Bondable outer layers, for traction transformers
Perforated paper	CTC with Improved cooling of LV windings
Glass fabric tape	External protection for cast resin transformers


RailSol™-Saflex
LS Total Solution for Rolling Stock

RailSol™-Saflex

LS Total Solution for Rolling Stock



Rubber Flooring

IRIS Certification

Rubber Flooring

Application

Rubber Flooring for Rolling Stock

Construction

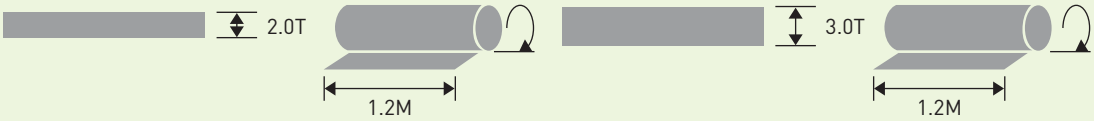
Homogeneous rubber flooring	
Appearance	roll(sheet) type
Thickness	2㎜~3㎜
Width	1.2m
Length	12~15m

Various design is available	
Halogen-free compound	
Leading countries' standard	DIN 5510-2, NFPA 130, BS 6853 (Flammability, smoke density, toxicity)
Slip resistance	R9
Residual indentation of static loading	≤0.1㎜
Resistance to cigarettes	Good
Resistance to stainning	Good
Static electrical propensity	≤2kV
Abrasion resistance	≤200㎟

Product List

Product : SAFEGUARD

· Standard Size



· Standard Color

SOLID 8000	CHIP 5043	CHIP 8098
SOLID 4100	CHIP 4043	CHIP 8191
SOLID 1000	CHIP 4143	CHIP 8228
SOLID 3000	CHIP 9091	CHIP 1021
SOLID 5000	CHIP 9121	CHIP 3021
SOLID 9000	CHIP 9221	CHIP 2031

Other range on request.

Certificate

IRIS

IRIS Certification

C E R T I F I C A T E

awarded to

LS Cable LTD
1686 Songjeong-dong,
240-806 Donghae, Gangwon-do,
Korea, Republic of

DQS GmbH

confirms, as an IRIS approved certification body, that the Management System of the above organization has been assessed and found to be in accordance with the

International Railway Industry Standard (IRIS)
Revision 02, May 2009

for the activity of Manufacturing & Design and development & Maintenance

for the scope of certification 12 (Cabling and cabinets)

of cables for railway industry

Date of the audit: 14.05.2011
Date of issue of the certificate: 18.05.2011
Certificate valid until: 17.05.2014

Current date 17.06.2011
Certificate-Register-No.: 488752 IRIS

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IRIS

Certificate

ISO9001, ISO14001, OHSAS 18001

ISO9001

ISO14001

OHSAS 18001

Dong-hea Plant

Rolling Stock Cable Manufacturing Site – IRIS Qualified

LS Cable and System Ltd. has been operating plant for industrial & specialty cables in Donghae city in eastern coast of Korea.
Rolling stock cables are manufacuted in Dong-hae plant and Dong-hae plant has been IRIS (International Railway Industrial Standard) Certificated in 2010, and its certification successfully renewed in 2011 and 2012.

Area	Area: 220,000 m2 No. of employee: 220
Main Product	Industrial & Specialty Cable - Rolling stock - Marine / Off-shore - Military / Nuclear power Submarine Cable - MI cable - XLPE cable - EPR cable

IRIS Certification

Products & Systems of LS Cable & System

A Convenient World through the Use of Cable

Energy Cables & Systems

LS Cable & System-setting the standards in power solution business

LS Cable & System provides highly customized electric power systems from power transmission & distribution solutions to marine, ship vessels, nuclear power and wind power systems.
Our turnkey solutions encompass the entire power transmission & distribution system from architecture, provision of raw materials, and installation, to maintenance and repair. We also lead the industry in developing cutting-edge products, such as superconducting cables, submarine cables and IT solutions for electric power.
We provide customized total solutions for a wide array of industries from nuclear power plants, manufacturing plants, railways, marine and ship vessel systems to wind power generation systems. Busduct system, which efficiently and effectively delivers high-capacity electricity, and the fire-retardant low toxic cables are a result of our decades-long commitment to creating eco-friendly products.

• Extra High Voltage Cable • Overhead Transmission Line • Submarine Cable • Medium & Low Voltage Cable
• Industrial & Speciality Cable • Bus duct

Telecommunications

Providing cutting-edge, innovative technologies for a ubiquitous network

Amid the convergence of broadcasting and telecommunications, and accelerating growth of broadband and wireless networks, the telecommunications industry is undergoing a major transformation. In this rapidly evolving landscape, LS Cable & System leads the industry with customized solutions and services that meets the demanding needs of our clients worldwide. We have developed the following solutions with the scalability to serve both the private and public sector: ① NI (Network Integration) / SI (System Integration), ② ITS (Intelligent Transport Solution), and ③ UTS (Ubiquitous Total Solution).
Our quest to remain at the forefront of network technology and trends has led us to develop the following cutting-edge products: fiber-optic telecom solution, 10G Ethernet-level converged integrated cabling system, RF coaxial cable system, G-PON-based FTTH solution and LS-HFC (Hybrid Fiber Coaxial), which is 200-Mbps high-speed cable TV network system. Our broad product portfolio and technical prowess have made us a market leader in the global telecommunications industry.

• Optical Cable • LAN Cable • RF Feeder System • FTTH(Fiber To The Home) • SI(System Integration) • LS HFC

Integrated Modules & Cable Systems

Providing the best customized cable solutions for all environments

Our dedication to meeting our clients need for faster, smaller, safer and more convenient products has kept us ahead of our peers on the technology curve. As such, our cables and modules are widely used in industrial installations, electronic devices, automobiles, aircrafts, and even military equipments and installations.
We have also maintained our commitment to developing a wide array of eco-friendly products that are safer, more efficient, and produce fewer pollutants.
Our technological breakthroughs have led us to the development of the following innovative products: MCX (Micro-Coaxial cables) for internal wiring of mobile phones, FA (Factory Automation) cables for plant automation systems, eco-friendly cables for LCDs, eco-friendly PP (Polypropylene) cables for automobiles, electric solutions for hybrid vehicles, and heat shrinkable tubes that can endure temperatures up to 135℃

• Industrial Cable & Module • Automotive Wire & Cable Solution • Tube Components

Industrial Materials

Realizing a convenient future with cutting-edge materials

Based on LS Cable & System's production know-how and technologies in copper, aluminum and rubber treatment, the company is ramping up production of high value-added products, such as high-purity 8mm copper rods for vehicle wires and 0.03mm copper rod for ultra-fine wires.
The cutting-edge technologies of our precision rectangular winding wires, suitable for hybrid vehicle motors and car generators, and eXtra Thermal Aluminum Alloy (XTAL) are bolstering LS Cable & System's brand power here and abroad. Our continuous efforts to develop innovative new materials have also led us to produce oxide free copper (OFC), alternative to copper alloy, and so on. Furthermore, all these new developments are coming about as the company makes inroads in the global cable market through its localization efforts.
With years of experience and technologies in compounding treatment, LS Cable & System produces industrial rubber products and rubber tiles, the flooring material used in construction. Global demand for our flocking-based carpet tiles, featuring excellent convenience and sanitary engineering, is booming.

• Copper Rod • Magnet Wires • Aluminum Materials • Industrial Rubber

Global Network

Branches

Singapore Office
300 Beach Road #25-07 The Concourse Singapore 199555
Tel. +65-6342-9162~3

New Delhi Office
12th Floor, IFCI Tower 61 Nehru Place, 110019 New Delhi
Tel : +91-4167-1588

Mumbai Office
#209, 2rd Floor, Dynasty "A" Wing, Andheri-Kurla Road, Mumbai, 400069 India
Tel : +91-22-4030-9525

Bangalore Office
#111, 1st Floor B Tower, Millenia Towers, Ulsoor, Bangalore, 560008 India
Tel : +91-80-4022-4053

Abu Dhabi Office
Office No.133, Al Bateen Towers C6, Bainunah St.34, Al Bateen, P.O.Box 113 100, Abu Dhabi, U.A.E
Tel : +971-2-406-9856

Moscow Office
Park Place Tower E711, 113/1 Leninsky Prospect, Moscow, 117198 Russia
Tel : +7-495-662-3811~14

Riyadh Office
Room #7, 2nd Fl. Olaya Street B/D #28, Riyadh, KSA
Tel : +966-1-201-3515

Sao Paulo Office
11th fl, Itavera Building, Rua Arandu, 1544 Conj 111 e 112 Brookline Paulista, Sao Paulo, Brazil, CEP 04562-031
Tel : +55-11-2872-4838

Jakarta Office
Graha Mustika Ratu, 11th Floor, Jl.Jenderal Gatot Subroto Kav.74-75, Jakarta Selatan 12870, Indonesia
Tel. +62-21-830-6733

Cairo Office
Flat No.36, El-Zeini Tower, 25 Misr Helwan Road, Maadi, Cairo, Egypt
Tel. +20-19-966-2810

Sydney Office
Level 35, Suite 35.02 Northpoint 100 Miller Street North Sydney NSW 2060
Tel. +61-2-9460-0255

Johannesburg Office
3rd Floor, South Tower at Nelson Mandela Square,Corner 5th Avenue and Maude Street, Sandton, Johannesburg, South Africa
Tel. +27-11-783-6320

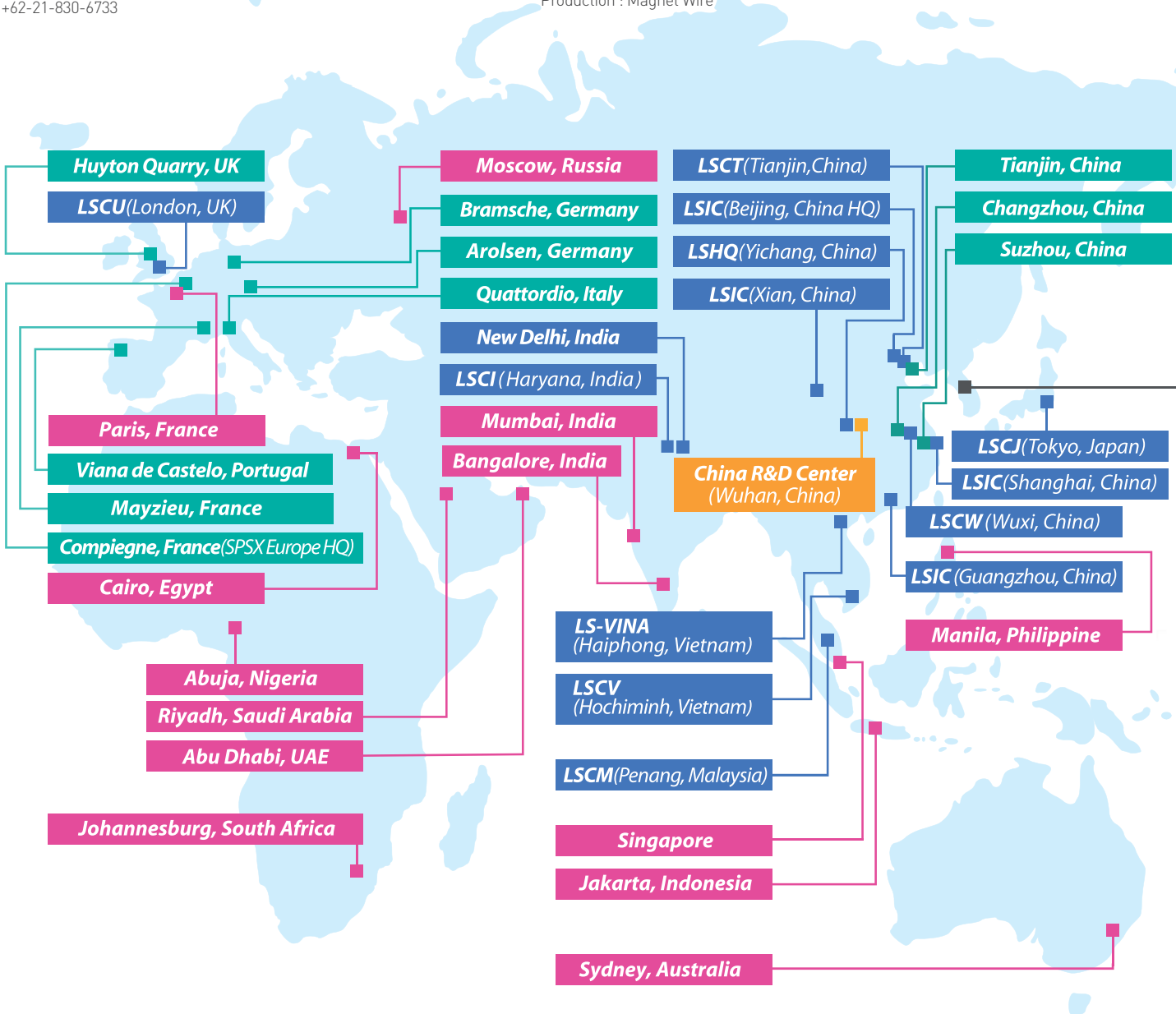
Manila Office
S-1903 B, West Tower, Philippine Stock Exchange Centre Exchange Road, Ortigas Center, Pasig City, Philippines
Tel: +63-2-6875028

Houston Office
22126 Manor Estates Dr. Katy, TX77449, USA
Tel: +1-713-202-8003

Subsidiaries

LSCW
LS Industrial Park, Xin Mei Rd. National High-tech Industrial Development Zone Wuxi, Jiangsu Province, 214028 China
Tel : +86-510-8534-5943
Production : Automotive Wire & Cable, Bus Duct, Electroncic Wire & Cable, Tube, ACF, Accessories for EHV Cable System

LSCT
East of Jing-jin Express, Yixingbu Entrance, Beichen Tianjin, China
Tel : +86-22-2699-7618
Production : Magnet Wire



LSIC-Marketing and sales

Beijing, China HQ
#B-2301, Landgent Center, No. 20, Dongsanhuanzhong, Chaoyang,
Beijing 100022, China
Tel. +86-10-5761-3166

Shanghai
Room 3105, 31st fl. International Corporate City, No.3000 Zhongshan North Rd.
Shanghai, 200060,China
Tel. +86-21-5237-3399

Guangzhou
Room 1403, 14th Fl. Xinbaoli Mansion No.2 Zhongshanliu Rd. Guangzhou,
518040, China
Tel. +86-20-8326-6251

Xian
18C, A Wing, HuaRong International, #21 South 2nd Ring Rd. Xi'an City,
710048,China
Tel. +86-29-8230-9188

LS-VINA(Haiphong)
South of Binh Bridge Str. So Dau Precinct, Hong Bang Dt, Haiphong, Vietnam
Tel. +84-31-540750

LSCV(Hochiminh)
Nhon Trach II-Lockhang IZ, Nhon Trach Dt, Dong Nai province, Hochiminh, Vietnam
Tel. +84-61-356-9037

LSCM(Penang)
Lot 1192, Mukim 14, Permatang Tinggi, 1400 Bukit Mertajam, Penang, Malaysia
Tel. +60-4-588-9609(Ext.34)

LSCI(Haryana)
#101, 1st Fl. Park Center, Sector-30, Gurgaon, Haryana-122 002, India
Tel : +91-124-4285800~4
Production : RF Feeder Cable, Power cable, OPGW

LSCA-Marketing and sales
920 Sylvan Avenue, Englewood Cliffs, NJ 07632, USA
Tel. +1-201-816-2253

LSCU-Marketing and sales
#109, Building 3, Chiswick Busuness Park 566 Chiswick High Rd.,
London, W4 5YA, UK
Tel. +44-20-8899-6671

LSCJ-Marketing and sales
E 16th Fl. Akasaka Twin Tower 17-22, 2-Chome Akasaka, Minato-ku, Japan
Tel. +81-3-3582-9129

China R&D Center(Wuhan)
4808.New World International Trade Tower 568 Jianshe Avenue, Wuhan, China
Tel. 070-8650-2188

Korea Operations

Headquarters
LS Tower 1026-6 Hogye-dong, Dongan-gu, Anyang, Gyeonggi-do 431-830 Korea
Tel. +82-2-2189-9114

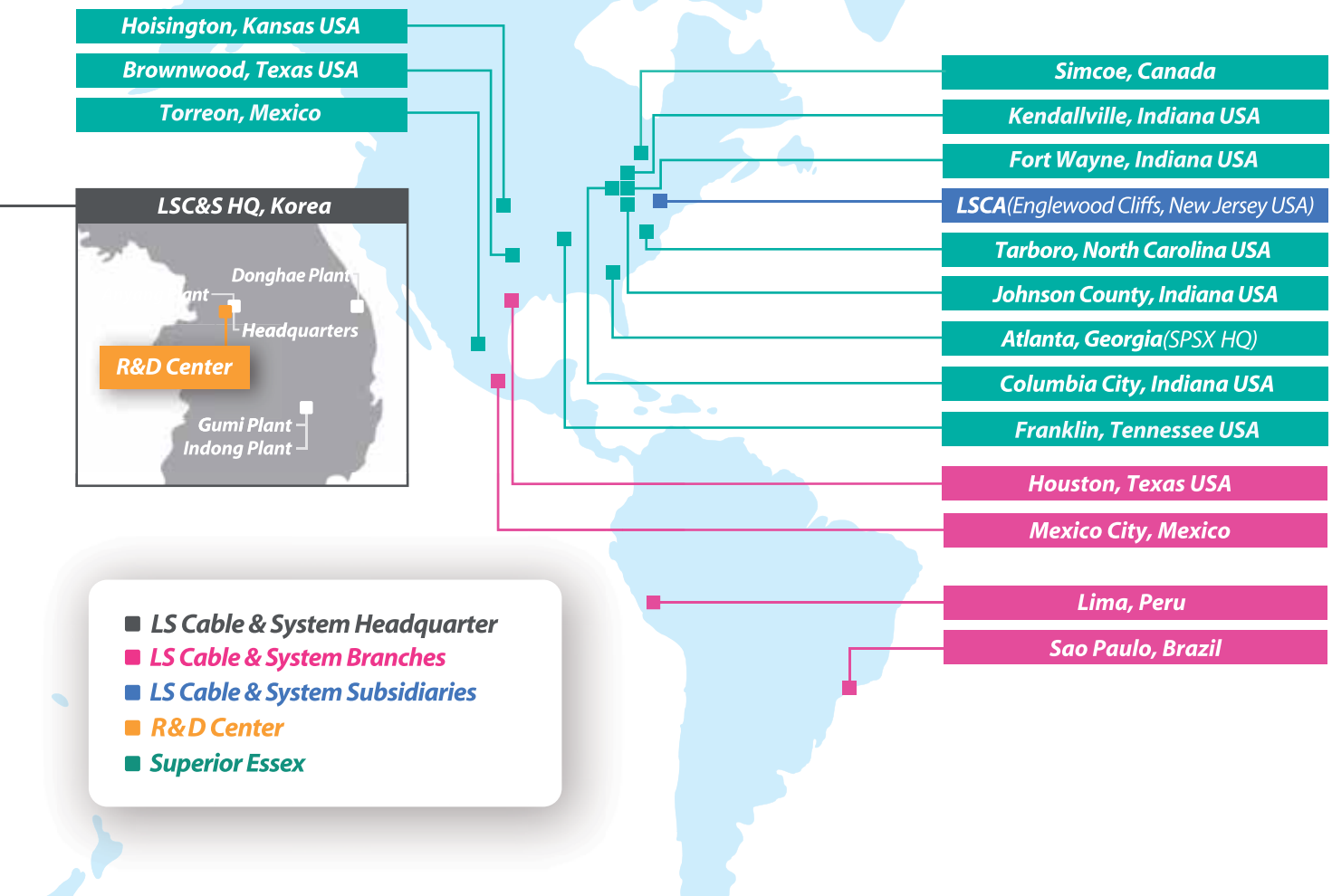
Anyang Plant
555 Hogye-dong, Dongan-gu, Anyang, Gyeonggi-do 431-830 Korea
Tel. +82-31-428-4114

Gumi Plant
190 Gongdan-dong, Gumi, Gyengsangbuk-do 730-708 Korea
Tel. +82-54-469-7114

Indong Plant
643 Jinpyeong-dong, Gumi, Gyengsangbuk-do 730-735 Korea
Tel. +82-54-469-7763

Donghae Plant
1377 Songjeong-dong, Donghae, Gangwon-do 240-806 Korea
Tel. +82-33-820-3114

R&D Center
200, Dangjeong-dong, Gunpo-si, Gyeonggi-do, 431-831 Korea
Tel : +82-31-450-8114



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www.lscns.com

LS RailSol™-Saflex
12F~17F, LS Tower, 127 LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, 431-848, Korea
Tel. 82-2-2189-9114