LS Cable
Leading Solution

WindSol™

LS Total Solution for Windmill & Windfarm


Energy Cables & Systems
LS Cable-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, 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 will spearhead efforts to strengthen our business expertise, corporate competitiveness and management.

Toward the Global Leading Cable Company

In August of 2008 LS Cable acquired Superior Essex, North America's largest cable company, making LS Cable the third-largest player in the global cable industry. Superior Essex's flagship line of magnet wires and telecommunication cables further strengthened LS Cable'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 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.

Application Business

The Leading Solution Provider, LS Cable introduced a new maketing concept, which is providing collected items applicable to an industry as a package instead of separately providing a single item.
These LS Cable'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.

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LS Total Solution for Windmill & Windfarm

The Cable Solution for Wind Power Generation

Eco-Friendly company, LS Cable, brings a total cable solution for wind power generation business, which is in the core of the renewable energy industry. The importance of wind power generation is significantly increased related to green growth. LS Cable provides the right solution for the wind power generation with a broad range of cable related products and perfect quality. We provide every component for your wind farm : every cable and electrical accessory from its power grid connection to control panel cables for a nacelle. According to continuous innovation of technology, the reliability of cables of LS Cable guarantees wind power generations' safe and stable operation even in a tough environment such as extremely high/low temperature, harmful chemicals or offshore locations.

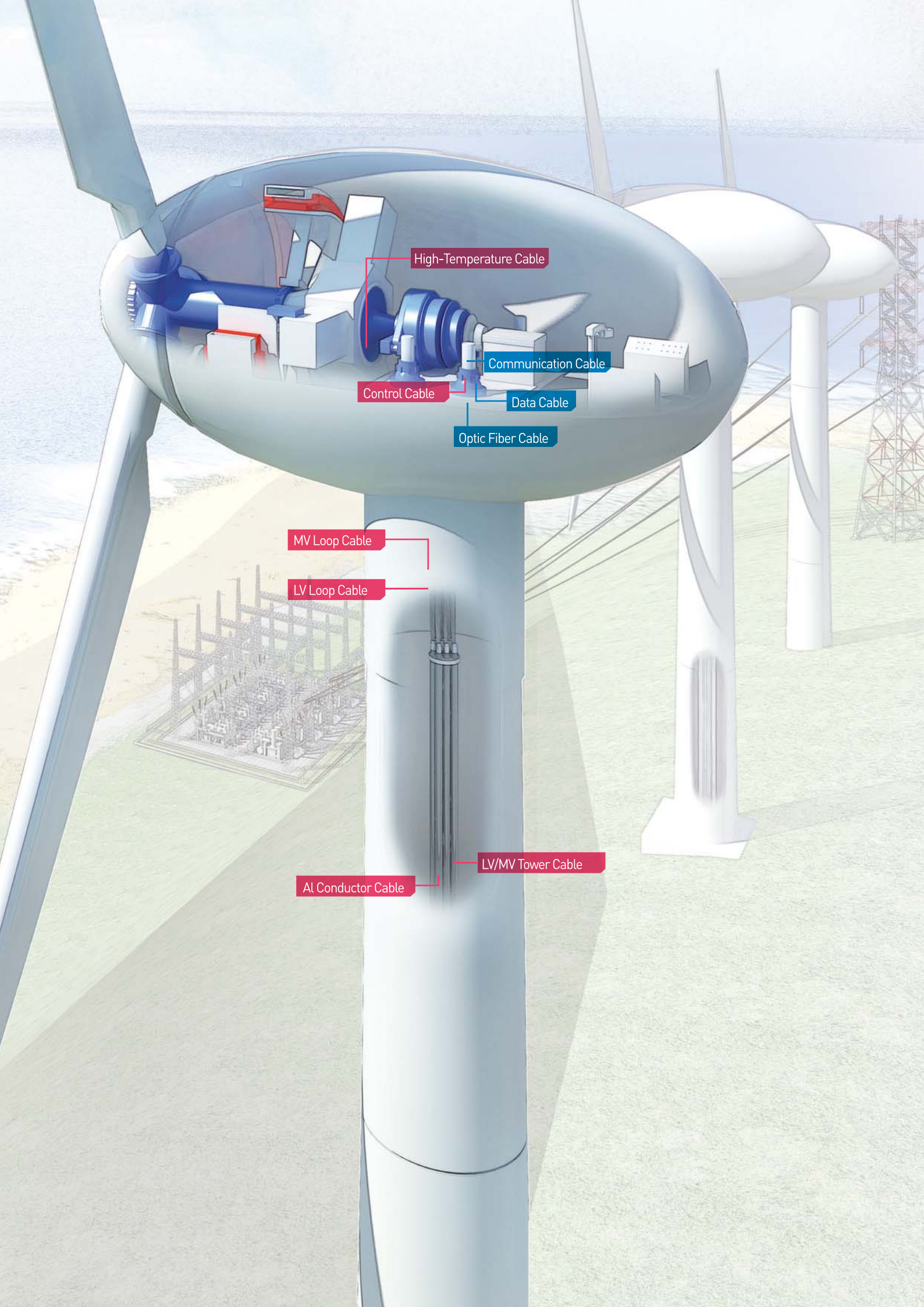
Content

Nacelle Pod
Cables and components for
generator, gearbox, hydraulic equipment,
control system, pitch control,
transformer and various electrical equipment

Loop Section
Cables and components with
rotation resistance due to the nacelle's
constant rotation

Tower Base
Cables and components for switchgear, transformer,
power cabinet and earthing parts

1. Windmill


High-Temperature Cable
Communication Cable
Control Cable
Data Cable
Optic Fiber Cable
MV Loop Cable
LV Loop Cable
LV/MV Tower Cable
Al Conductor Cable

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LS Total Solution for Windmill & Windfarm

Power Cable
for Windmill

LS Cable offers a full range of power cables having torsion resistant, good bending and halogen free for the windmill. LS Cable produces LV cables up to 1kV and MV cables up to 35kV which connect the generator to transformer or switchgear. Especially, loop cables reliably resist repeated torsion stress due to the nacelle's rotation. In addition, LS Cable have flexible silicone-insulated cables to meet severe requirements for high temperature. LS Cable aluminum cables are good alternatives for conventional tower cables, which offer less expensive and light weight for our customers. All power cables cover a wide range of operating temperature and are available in halogen-free and oil resistant version.

Product	Rated Voltage	Core	Cross Section (mm²)	Temp. Range (℃)	Halogen Free	Oil Resistant	UV Resistant	Torsion Resistant	Page
WT-PX 1.8/3.0kV	1.8/3.0kV	Single	25 ~ 400	-40 ~ +125℃	■	■	■	■	9
WT-PXX 0.6/1.0kV	0.6/1.0kV	3/4	25 ~ 120	-40 ~ +90℃	■	■	■	■	10
WT-PX 20/35kV	12/20, 18/30, 20/35kV	3/4	25 ~ 70	-40 ~ +90℃	■	■	■	■	11
WT-XP 0.6/1.0kV	0.6/1.0kV	Single	6 ~ 240	-55 ~ +145℃	■	■	■		12
WT-SPB 3.3/4.2kV	1.1, 3.3/4.2kV	Single	1.5 ~ 300	-50 ~ +180℃	■	■	■		13
WT-CO(AL) 0.6/1.0kV	0.6/1.0kV	Single (AL)	185 ~ 400	-30 ~ +90℃	■		■		14
WT-CO(AL) 0.6/1.0kV	0.6/1.0kV	Multi (AL)	25 ~ 150	-30 ~ +70℃	■		■		15
WT-H07RH	300/500V, 450/750V	Single/Multi	0.75 ~ 240	-25 ~ +60℃		■		■	16
WT-H07V	300/500V, 450/750V	Single	0.5 ~ 240	-30 ~ +80℃					18
WT-NYY	0.6/1.0kV	Single/Multi	1.5 ~ 240	-40 ~ +70℃					19
WT-NAYY	0.6/1.0kV	4	35 ~ 240	-30 ~ +70℃		■			21
WT-DLO 2kV	2kV	Single	14 ~ 1111AWG	-40 ~ +90℃	■	■	■	■	22
WT-FSFU	24V	4	0.75	-50 ~ +90℃	■			■	23

WindSol™ WT-PX 1.8/3.0kV

Singlecore, Torsion Resistant, 1.8/3.0kV

Application
This product is specifically designed for the torsion applications in wind turbines. Especially, these cables transmit energy from the generator to the transformer, which is usually located at the base of the tower.

Design Standard
IEC 60502

Construction

Conductor	Flexible tinned copper, finely stranded, Class 5 or Class 6 according to IEC 60228
Cross Section	25 ~ 400mm²
Insulation	EPR (Ethylene-Propylene-Rubber)
Sheath	HF XL EVA

Technical Data

Rated Voltage	U_0/U 1.8/3.0kV
Test Voltage	6.5kV
Temperature Range	-40 ~ +125℃
Torsional Stress for Free Hanging	±15,000 Twist Cycles @±180⁰/m
Min. Bending Radius	6 X D*

* D : Cable Diameter

Properties

Halogen Free	Corrosivity of Fire Effluent	Low Smoke	Flame Retardant	Cold Resistant @-40℃	UV Resistant	Oil Resistant	Ozone Resistant
IEC 60754-1	IEC 60754-2	IEC 61034	IEC 60332-3	CSA C22 2			

Product List

No. Cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
1 X 25	12.9	240	516
1 X 35	14.3	336	670
1 X 50	16.5	480	840
1 X 70	18.6	672	1,112
1 X 95	21.6	912	1,520
1 X 120	23.7	1,152	1,880
1 X 150	26.2	1,440	2,513
1 X 185	29.9	1,776	3,272
1 X 240	32.1	2,304	3,534
1 X 300	34.5	2,880	4,020
1 X 400	39.3	3,840	5,640

Other dimensions available on enquiry. / EMI Shielded type available on enquiry.

WindSol™ WT-PXX 0.6/1.0kV

Multicore, Torsion Resistant, 0.6/1.0kV

Application
This product is specifically designed for the torsion application in wind turbines. Especially, these cables transmit energy from the generator to the transformer.

Design Standard
IEC 60502

Construction

Conductor	Flexible tinned copper, finely stranded, Class 5 or Class 6 according to IEC 60228
Cross Section	25 ~ 120mm²
No. Cores	3 or 4
Insulation	EPR (Ethylene-Propylene-Rubber), HF-XLPE
Sheath	HF XL EVA

Technical Data

Rated Voltage	U_0/U 0.6/1.0kV
Test Voltage	3.5 kV
Temperature Range	-40 ~ +90℃
Torsional Stress for Free Hanging	±2,000 Twist Cycles ±144°/m, @-40℃, No Crak
Min. Bending Radius	6 X D*

* D : Cable Diameter

Properties

Halogen Free	Corrosivity of Fire Effluent	Low Smoke	Flame Retardant	Cold Resistant @-40℃	UV Resistant	Oil Resistant	Ozone Resistant
IEC 60754-1	IEC 60754-2	IEC 61034	IEC 60332-3	CSA C22.2			

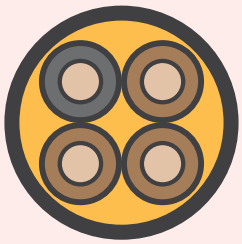
Product List

No. Cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
3 X 25	27.5	1,500
3 X 35	31.0	1,960
3 X 50	36.0	2,640
3 X 70	40.5	3,150
3 X 95	46.5	4,575
3 X 120	50.5	5,490
4 X 25	30.5	1,870
4 X 35	34.5	2,320
4 X 50	39.0	3,100
4 X 70	43.5	4,240
4 X 95	51.5	5,716
4 X 120	56.0	6,950

Other dimensions available on enquiry.

WindSol™ WT-PX 20/35kV

Multicore, Torsion Resistant, 12/20kV, 18/30kV, 20/35kV



Application
These cables is used for carrying medium voltage energy from the transformer in the nacelle to the bottom of the tower.

Design Standard
IEC 60502

Construction

Conductor	Flexible tinned annealed copper, Class 5 according to IEC 60228
Cross Section	25 ~ 70mm²
Insulation	Cold and heat-resistant EPR
Screen	Tinned copper wire braid (option)
Inner sheath	HF EVA (option)
Sheath	HF XL EVA

Technical Data

Rated Voltage	U_0/U 12/20kV, 18/30kV, 20/35kV
Max. Permissible Operating Voltage	13.9/24kV, 20.8/36kV, 24.3/42kV
Temperature Range	-40 ~ +90℃
Torsional Stress for Free Hanging	2,000 Twist Cycles ±100°/m, @-40℃
Min. Bending Radius	9 X D*

* D : Cable Diameter

Properties

Halogen Free	Corrosivity of Fire Effluent	Low Smoke	Flame Retardant	Cold Resistant @-40℃	UV Resistant	Oil Resistant	Ozone Resistant
IEC 60754-1	IEC 60754-2	IEC 61034	IEC 60332-3	CSA C22 2			

Product List

No. Cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
Rated Voltage : 12/20 kV		
3 X 25/25	59.7	4,780
3 X 35/35	62.8	5,700
3 X 50/50	66.8	6,630
3 X 70/70	71.1	7,840
Rated Voltage : 18/30 kV		
3 X 25/25	71.9	7,520
3 X 35/35	75.1	8,050
3 X 50/50	78.9	8,920
3 X 70/70	83.3	10,600
Rated Voltage : 20/35 kV		
3 X 25/25	76.8	8,820
3 X 35/35	80.0	10,000
3 X 50/50	83.8	10,830
3 X 70/70	88.2	12,050

Other dimensions available on enquiry.

WindSol™ WT-XP 0.6/1.0kV

Singlecore, High-Temperature Resistant, +145℃, 0.6/1.0kV

Application
This product is specifically designed for connecting generator output of thermal class (B), motor, transformer and relays requiring for high temperature resistant.

Design Standard
IEC 60502

Construction

Conductor	Flexible tinned copper, finely stranded, Class 5 or Class 6 according to IEC 60228
Cross Section	6 ~ 240mm²
Insulation	XLPO

Technical Data

Rated Voltage	U_0/U 0.6/1.0kV
Test Voltage	3.5kV
Temperature Range	-55 ~ +145℃
Min. Bending Radius	6 X D*

* D : Cable Diameter

Properties

Halogen Free	Corrosivity of Fire Effluent	Low Smoke	Flame Retardant	Cold Resistant @-40℃	UV Resistant	Oil Resistant	Ozone Resistant
IEC 60754-1	IEC 60754-2	IEC 61034	IEC 60332-3	CSA C22 2			

Product List

No. Cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
1 X 6	5.4	70
1 X 10	6.8	119
1 X 16	8.5	180
1 X 25	10.3	270
1 X 35	11.8	373
1 X 50	13.9	528
1 X 70	16.0	728
1 X 95	18.5	966
1 X 120	20.5	1,230
1 X 150	22.1	1,530
1 X 185	24.8	1,880
1 X 240	27.7	2,500

Other dimensions available on enquiry.

WindSol™ WT-SPB 3.3/4.2kV

Singlecore, Silicone Insulated, High-Temperature Resistant, +180℃, 1.1 kV, 3.3/4.2 kV

Application

This product is specifically designed for applications requiring for high temperature and oil resistant. Especially, these cables are used for linking generators to transformers positioned up in the nacelle.

Design Standard

IEC 60092-350, -353, -354

Construction

Conductor	Flexible tinned annealed copper, Class 5 according to IEC 60228
Cross Section	1.5 ~ 300mm²
Separate tape	Polyester film (If necessary)
Insulation	Silicone
Braid	PUR vanished synthetic yarn braid

Technical Data

Rated Voltage	U_0/U 1.1kV, 3.3/4.2kV
Test Voltage	3.5kV for 1.1kV, 24kV for 3.3/4.2kV
Temperature Range	-50 ~ +180℃
Min. Bending Radius	6 X D* for 1.1kV, 12 X D* for 3.3/4.2kV

* D : Cable Diameter

Properties

Halogen Free	Corrosivity of Fire Effluent	Low Smoke	Flame Retardant	Cold Resistant @-40℃	UV Resistant	Oil Resistant	Ozone Resistant
IEC 60754-1	IEC 60754-2	IEC 61034	IEC 60332-3	CSA C22 2			

Product List

No. Cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
Rated Voltage : 1.1 kV		
1 X 1.5	6.2	27
1 X 2.5	6.7	48
1 X 4	7.2	76
1 X 6	7.9	109
1 X 10	8.9	169
1 X 16	10.6	311
1 X 25	12.1	464
1 X 35	13.4	635
1 X 50	15.2	871
1 X 70	17.1	1,189
1 X 95	18.9	1,539
1 X 120	21.2	2,050
1 X 150	23.1	2,546
1 X 185	25.4	3,184
1 X 240	27.7	3,930
1 X 300	27.9	4,094
Rated Voltage : 3.3/4.2 kV		
1 X 10	9.7	179
1 X 16	11.5	325
1 X 25	12.9	482
1 X 35	14.3	657
1 X 50	16.0	897
1 X 70	17.9	1,219
1 X 95	19.7	1,573
1 X 120	22.0	2,088
1 X 150	24.0	2,590
1 X 185	26.2	3,234
1 X 240	28.5	3,990

Other dimensions available on enquiry.

WindSol™ WT-CO(AL) 0.6/1.0kV

Singlecore, AL Conductor, 0.6/1.0 kV

Application
This product is specifically designed for main power lines of permanent routing in wind tower installation.

Design Standard
IEC 60502

Construction

Conductor	Aluminum conductor, Class 2 according to IEC 60228
Cross Section	185 ~ 400mm²
Insulation	XLPE
Sheath	HF-PO

Technical Data

Rated Voltage	U_0/U 0.6/1.0kV
Test Voltage	3.5kV
Temperature Range	-30 ~ +90℃
Min. Bending Radius	6 X D*

* D : Cable Diameter

Properties

Halogen Free	Corrosivity of Fire Effluent	Low Smoke	Flame Retardant	Cold Resistant @-30℃	UV Resistant	Ozone Resistant	Weathering Resistant
IEC 60754-1	IEC 60754-2	IEC 61034	IEC 60332-3	CSA C22 2			

Product List

No. Cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
1 X 185	22.0	960
1 X 240	24.2	1,208
1 X 300	26.9	1,342
1 X 400	29.9	1,843

Other dimensions available on enquiry.

WindSol™ WT-CO(AL) 0.6/1.0kV

Sector Shaped, AL Conductor, 0.6/1.0 kV

Application
This product is specifically designed for tower cables in wind tower.
This cable is made with sector shaped aluminum conductors for light-weight and compact size.

Design Standard
IEC 60502

Construction

Conductor	Aluminum conductor, sector-shaped solid
Cross Section	25 ~ 150mm²
Insulation	XLPE
No. Cores	3
Sheath	HFFR, HF-PO

Technical Data

Rated Voltage	U_0/U 0.6/1.0kV
Test Voltage	3.5kV
Temperature Range	-30 ~ +70℃

Properties

Halogen Free	Corrosivity of Fire Effluent	Low Smoke	Flame Retardant	Cold Resistant @-30℃	UV Resistant	Ozone Resistant	Weathering Resistant
IEC 60754-1	IEC 60754-2	IEC 61034	IEC 60332-3	CSA C22 2			

Product List

No. Cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
3 X 25	27.0	780
3 X 50	32.0	1,230
3 X 95	41.0	2,150
3 X 150	48.0	3,200

Other dimensions available on enquiry.

WindSol™ WT-H07RN

Single/Multicore, Torsion Resistant, H05RR-F, H05RN-F, H07RN-F

Application

- Dry and damp interiors, as well as for temporary outdoor use
- Lighting equipment

Construction

H05RR-F	Copper wire (HAR bare or tinned) Core Insulation : Rubber type Outer Jacket of Rubber type
H05RN-F	Copper wire (HAR bare or tinned) Core Insulation : Rubber type EI4 Outer Jacket of Rubber type
H07RN-F	Copper wire (HAR bare or tinned) Core Insulation : Rubber type EI 4 Outer Jacket of Rubber type

Technical Data

Range of Temperature	-25 ~ +60℃
Rated Voltage	H05RR-F : U_0/U 300/500V H05RN-F : U_0/U 300/500V H07RN-F : U_0/U 450/750V In Protected and Fixed Installation : U_0/U 600/1000V
Test Voltage	H05RR-F : 2000V H05RN-F : 2000V H07RN-F : 2500V
Min. Bending Radius	Flexible 6 X D*

* D : Cable Diameter

Properties

Flame Retardant

Oil Resistant

IEC 60332-3

Product List

No. Cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
H05RR-F U_0/U : 300/500V			
2 X 0.75	5.7 ~ 7.4	14.4	61
3 G 0.75	6.2 ~ 8.1	21.6	75
2 X 1	6.1 ~ 8.0	19.0	73
3 G 1	6.5 ~ 8.5	29.0	86
4 G 1	7.1 ~ 9.3	38.0	105
2 X 1.5	7.6 ~ 9.8	29.0	115
3 G 1.5	8.0 ~ 10.4	43.0	135
4 G 1.5	9.0 ~ 11.6	58.0	165
5 G 1.5	9.8 ~ 12.7	72.0	190
2 X 2.5	9.0 ~ 11.6	48.0	160
3 G 2.5	9.6 ~ 12.4	72.0	190
4 G 2.5	10.7 ~ 13.8	96.0	235
5 G 2.5	11.9 ~ 15.3	120.0	285
H05RN-F U_0/U : 300/500V			
2 X 0.75	5.7 ~ 7.4	14.4	80
3 G 0.75	6.2 ~ 8.1	21.6	95
4 G 0.75	6.8 ~ 8.8	30.0	105
2 X 1	6.1 ~ 8.0	19.0	95
3 G 1	6.5 ~ 8.5	29.0	115

Other dimensions available on enquiry.

WindSol™ WT-H07RN

Single/Multicore, Torsion Resistant, H05RR-F, H05RN-F, H07RN-F

Product List

No. Cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
H07RN-F U_0/U : 450/750V			
3 G 1	8.3 ~ 10.7	29	130
2 X 1.5	8.5 ~ 11.0	29	135
3 G 1.5	9.2 ~ 11.9	43	165
4 G 1.5	10.2 ~ 13.1	58	200
5 G 1.5	11.2 ~ 14.4	72	240
7 G 1.5	14.0 ~ 17.5	101	385
12 G 1.5	17.6 ~ 22.4	173	516
19 G 1.5	20.7 ~ 26.3	274	800
24 G 1.5	24.3 ~ 30.7	346	882
2 X 2.5	10.2 ~ 13.1	48	195
3 G 2.5	10.9 ~ 14.0	72	235
4 G 2.5	12.1 ~ 15.5	96	290
5 G 2.5	13.3 ~ 17.0	120	345
7 G 2.5	16.5 ~ 20.0	168	520
12 G 2.5	20.6 ~ 26.2	288	810
19 G 2.5	25.5 ~ 31.0	456	1,200
24 G 2.5	28.8 ~ 36.4	576	1,650
2 X 4	11.8 ~ 15.1	77	270
3 G 4	12.7 ~ 16.2	115	320
4 G 4	14.0 ~ 17.9	154	395
5 G 4	15.6 ~ 19.9	192	485
7 G 4	21.0 ~ 21.8	268	681
3 G 6	14.1 ~ 18.0	173	495
4 G 6	15.7 ~ 20.0	230	610
5 G 6	17.5 ~ 22.2	288	760
3 G 10	19.1 ~ 24.2	288	880
4 G 10	20.9 ~ 26.5	384	1,060
5 G 10	22.9 ~ 29.1	480	1,300
3 G 16	21.8 ~ 27.6	461	1,090
4 G 16	23.8 ~ 30.1	614	1,345
5 G 16	26.4 ~ 33.3	768	1,680
4 G 25	28.9 ~ 36.6	960	1,995
5 G 25	32.0 ~ 40.4	1,200	2,470
3 G 35	29.3 ~ 37.1	1,008	1,900
4 G 35	32.5 ~ 41.1	1,344	2,645
5 G 35	37.0 ~ 45.0	1,680	2,810
4 G 50	37.7 ~ 47.5	1,920	3,635
5 G 50	40.0 ~ 50.8	2,400	4,050
4 G 70	42.7 ~ 54.0	2,688	4,830
4 G 95	48.4 ~ 61.0	3,648	6,320
4 G 120	53.0 ~ 66.0	4,608	6,830
4 G 150	58.0 ~ 73.0	5,760	8,320
4 G 185	64.0 ~ 80.0	7,104	9,800
4 G 240	72.0 ~ 91.0	9,216	12,100
Single core rubber cable H07RN-F U_0/U : 450/750V			
1 X 1.5	5.7 ~ 7.1	14	59
1 X 2.5	6.3 ~ 7.9	24	72
1 X 4	7.2 ~ 9.0	38	99
1 X 6	7.9 ~ 9.8	58	130
1 X 10	9.5 ~ 11.9	96	230
1 X 16	10.8 ~ 13.4	154	320
1 X 25	12.7 ~ 15.8	240	450
1 X 35	14.3 ~ 17.9	336	605
1 X 50	16.5 ~ 20.6	480	825
1 X 70	18.6 ~ 23.3	672	1,090
1 X 95	20.8 ~ 26.0	912	1,405
1 X 120	22.8 ~ 28.6	1,152	1,745
1 X 150	25.2 ~ 31.4	1,440	1,887
1 X 185	27.6 ~ 34.4	1,776	2,274
1 X 240	30.6 ~ 38.3	2,304	2,955
1 X 300	33.5 ~ 41.9	2,880	3,479

Other dimensions available on enquiry.

WindSol™ WT-H07V

Internal Wiring, PVC Insulated, H05V-K, H07V-K

Application

- Internal wiring of devices
- Protected laying in and on lights
- Laying in tubes, exposed and buried in plaster and in closed installation ducts
- For direct laying on racks, troughs and tubes only as equipotential binding conductor

Construction

Conductor	Finely stranded, Class 5 according to IEC60228
Insulation	PVC

Technical Data

Rated Voltage	H05V-K : U_0/U 300/500V H07V-K : U_0/U 450/750V
Test Voltage	H05V-K : 2000V H07V-K : 2500V
Range of Temperature	H05V-K : -30 ~ +80℃ H07V-K : -30 ~ +80℃

Product List

No. Cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
H05V - K			
0.5	2.1	5	9
0.75	2.4	7	12
1	2.6	10	15
H07V - K			
1.5	3.0	14	24
2.5	3.7	24	35
4	4.3	38	51
6	4.9	58	71
10	6.5	96	118
16	8.0	153	180
25	9.8	240	278
35	11.0	336	375
50	13.0	480	560
70	15.5	672	780
95	17.0	912	952
120	19.7	1,152	1,200
150	21.3	1,440	1,505
185	23.5	1,776	1,845
240	27.4	2,304	2,400

Other dimensions available on enquiry.

WindSol™ WT-NYY

NYY-J, NYY-O

Application
This product is specially designed for power lines of fixed routing in wind tower installation

Design Standard
DIN VDE 0276 Part 603, IEC 60502-1

Construction

Conductor	Finely stranded, Class 5 according to IEC60228
Insulation	PVC
Filling	Filling compound over the core assembly
Sheath	PVC

re : round conducter, single wire
rm : round conducter, multi wire
sm : sectional conductor

Technical Data

Rated Voltage	0.6/1.0kV
Test Voltage	4.0kV
Range of Temperature	Fixed : -40~ +70℃ Flexing : -5~ +50℃
Min. Bending Radius	Singlecore : 15 X D* Multicore : 12 X D*

* D : Cable Diameter

Product List

No. Cores X Cross Section (mm^2)	Outer Diameter (mm)	Approx. Weight (kg/km)
NYY-J		
1 X 25 rm	13	380
1 X 35 rm	14	447
1 X 50 rm	15	650
1 X 70 rm	17	864
3 X 1.5 re	12	223
4 X 1.5 re	13	256
5 X 1.5 re	14	293
7 X 1.5 re	15	360
10 X 1.5 re	18	520
12 X 1.5 re	19	560
14 X 1.5 re	20	620
16 X 1.5 re	21	680
19 X 1.5 re	22	760
24 X 1.5 re	24	900
30 X 1.5 re	26	1,100
3 X 2.5 re	13	272
4 X 2.5 re	14	316
5 X 2.5 re	15	323
7 X 2.5 re	16	450
10 X 2.5 re	20	630
12 X 2.5 re	20	680
14 X 2.5 re	21	790
19 X 2.5 re	23	990

Other dimensions available on enquiry.

WindSol™ WT-NYY

NYY-J, NYY-O

Product List

No. Cores X Cross Section (mm^2)	Outer Diameter (mm)	Approx. Weight (kg/km)
NYY-J		
24 X 2.5 re	26	1,300
30 X 2.5 re	28	1,400
3 X 4 re	15	373
4 X 4 re	16	439
5 X 4 re	17	510
3 X 6 re	16	466
4 X 6 re	17	547
5 X 6 re	19	640
3 X 10 re	18	629
4 X 10 re	19	743
5 X 10 re	21	899
3 X 16 re	20	850
4 X 16 re	22	1,039
5 X 16 re	23	1,240
3 X 25 rm / 16 re	25	1,595
4 X 25.0 rm	27	1,620
3 X 35 sm / 16 re	27	1,718
4 X 35 sm	27	1,916
3 X 50 sm / 25 sm	31	2,383
4 X 50 sm	31	2,639
3 X 70 sm / 35 sm	33	3,196
4 X 70 sm	35	3,576
3 X 95 sm / 50 sm	38	4,271
4 X 95 sm	40	4,746
3 X 120 sm / 70 sm	41	5,281
4 X 120 sm	43	5,813
3 X 150 sm / 70 sm	46	6,408
4 X 150 sm	48	7,263
3 X 185 sm / 95 sm	50	7,909
4 X 185 sm	53	8,905
3 X 240 sm / 120sm	57	10,162
4 X 240 sm	60	11,430
NYY-O		
1 X 10 re	10	176
1 X 16 re	11	239
1 X 25 re	13	380
1 X 35 re	14	447
1 X 50 rm	15	650
1 X 70 rm	17	864
1 X 95 rm	19	1,132
1 X 120 rm	21	1,405
1 X 150 rm	22	1,710
1 X 185 rm	24	2,086
1 X 240 rm	27	2,669
1 X 300 rm	30	3,305
1 X 500 rm	39	5,400
2 X 1.5 re	11	210
2 X 2.5 re	12	250
4 X 2.5 re	14	316
2 X 4 re	14	360
4 X 4 re	16	439
2 X 6 re	15	400
4 X 6 re	17	547
2 X 10 re	17	500
4 X 10 re	19	743
4 X 16 re	22	1,039
4 X 25 rm	27	1,620
4 X 35 sm	27	1,916
4 X 50 sm	31	2,639
4 X 70 sm	35	3,576
4 X 95 sm	40	4,746

Other dimensions available on enquiry.

WindSol™ WT-NAYY

Power/Control, Fixed Installation, NAYY-J

Application

This product is specially designed for power lines of fixed routing in wind tower installation

Construction

Conductor	Aluminium
Core Insulation	PVC
Outer Sheath	PVC

re : round conductor, single wire
rm : round conductor, multi wire
sm : sectional conductor

Technical Data

Rated Voltage	0.6/1.0kV
Test Voltage	4.0kV
Range of Temperature	Fixed : -30~ +70℃ Flexing : -5~ +50℃
Min. Bending Radius	Fixed : 12 X D*
Max. Tensile Load	30 N/mm²

* D : Cable Diameter

Properties

Fire Resistant

Oil Resistant

IEC 60331-25

Product List

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
4 X 35 re	28.2	1,170
4 X 50 re	29.8	1,305
4 X 70 se	34.2	1,730
4 X 95 se	38.6	2,205
4 X 120 se	41.9	2,655
4 X 150 se	45.6	3,150
4 X 185 se	50.8	3,925
4 X 240 se	59.6	4,880

Other dimensions available on enquiry.

WindSol™ WT-DLO 2kV

Singlecore, FT4, UV-Resistant, Torsion Resistant, UL 44, 90℃

Application

This product is used for main power layout from the nacelle to the base of the wind tower

Construction

Conductor	Special stranded copper wires
Insulation	EPR or XLPO
Sheath	CPE or XLPO

Technical Data

Temperature Range	Flexing : -40~ +90 ℃
Nominal Voltage	DLO 2kV
Torsion Resistant	10,000 Twist Cycles 90° /m, ±180° /m,
Specification	RHW -2 / CPE RHW -2 / XL EVA XHHW -2 / XL EVA

Properties

Flame Retardant
IEEE 1202

Compressive Load
IEC 60794-1-2-E3

Cold Resistant @-40℃
CSA C22 2

Oil Resistant

UV Resistant

Product List

Cross Section (AWG)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
14	5.9	22	37
12	6.3	33	69
10	7.2	61	100
8	8.2	83	142
6	10.1	140	200
4	11.5	237	286
2	12.6	339	370
1	16.1	510	637
1/0	17.5	465	715
2/0	18.5	656	830
3/0	20.2	930	1,104
4/0	21.7	1,103	1,298
262	24.8	1,280	1,590
313	26.4	1,590	1,872
373	28.2	1,900	2,176
444	30.0	2,272	2,570
535	32.2	2,608	3,046
646	34.8	3,300	3,600
777	37.0	3,970	4,290
929	39.5	4,780	5,144
1111	44.4	5,690	6,070

WindSol™ WT-FSFU

Fire Alarm, Halogen-Free

Application
This fire alarm cable was designed for the torsion applications in the loop section of wind turbines

Design Standard
IEC 60502

Construction

Conductor	Special stranded copper wires, Class 6 according to IEC 60228
Insulation	Fluorine polymer
Sheath	Flame retardant halogen-free TPU
Braiding	Tinsel braid or spiral shield

Technical Data

Rated Voltage	24V
Temperature Range	-50 ~ +90 ℃
Min. Bending Radius	7.5 X D
Torsion Application	±1,080° / 5m

* D : Cable Diameter

Properties

Halogen Free — IEC 60754-1

Flame Retardant — IEC 60332-3

Abrasion Resistant

Product List

No of Cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
4 X 0.75	6.6	82

WindSol™
LS Total Solution for Windmill & Windfarm

Control Cable
for Windmill

LS Cable provides various control cables for wind power system. These cables transit both low voltage power and signal between sensors and control panels to control electric motors or generator for yawing, optimal rotor speed, temperature, breaking or positioning. Control cables are flexible and shielded products containing up to 100 cores. In addition, these cover a wide range of operating temperature and cross section. In addition, to help install wind turbine more easily, LS Cable offers pre-assembly harness, which is precut or pre-fitted cables with optimal connectors, for easy and fast installation. All LS Cable control cables for wind turbines are available in halogen-free, flame retardant or low toxicity and smoke emission. In addition, LS Cable has international qualifications, standards and interconnectivity.

Product	Rated Voltage	Core	Cross Section (mm²)	Temp. Range (℃)	Halogen Free	Oil Resistant	UV Resistant	Flame Retardant	Page
WT-COVV 300/500V	300/500V	2 ~ 100	0.5 ~ 6	-40 ~ +80℃		■		■	25
WT-COHFU 300/500V	300/500V	2 ~ 65	0.5 ~ 120	-40 ~ +80℃	■			■	27
WT-CHTPEU 300/500V	300/500V	2 ~ 65	0.5 ~ 150	-40 ~ +90℃	■	■	■	■	32
WT-COVV 0.6/1kV	0.6/1kV	2 ~ 100	0.5 ~ 180	-40 ~ +80℃		■	■	■	37
WT-COHFU 0.6/1kV	0.6/1kV	2 ~ 25	0.5 ~ 120	-40 ~ +80℃	■	■		■	42
WT-COVV (UL/CSA)	0.6/1kV	2 ~ 25	0.5 ~ 25	-40 ~ +80℃		■	■	■	45
WT-HCOVV 600V	600V	2 ~ 41	0.5 ~ 120	-40 ~ +90℃	■	■	■	■	48
WT-ROTPEU	300/500V	2 ~ 61	0.5 ~ 2.5	-40 ~ +90℃		■		■	52
WT-COHF	0.6/1kV	1 ~ 37	0.25 ~ 95	-55 ~ +145℃	■	■	■	■	55
WT-WTTC	1kV	2 ~ 12	18AWG ~ 4AWG	-40 ~ +90℃		■	■	■	61

WindSol™ WT-COVV 300/500V

Flexible, Special PVC Insulated, Non-shielded, 300/500V

Application
Control and measuring cables in the wind tower

Design standard
IEC 60502

Construction

Conductor	Bare copper, fine wire conductors, IEC 60228 Class 5
Insulation	Special PVC-based compound
Sheath	Special PVC based compound

Technical Data

Temperature Range	Fixed : -40 ~ +80℃
Rated Voltage	300 / 500V
Test Voltage	3.0kV
Breakdown Strength	Min. 6.0kV
Insulation Resistance	Min. 20 ㏁ X km
Min. Bending Radius	Fixed : 4 X D* Flexing : 7.5 X D*

*D : Cable Diameter

Properties

Oil Resistant — IEC 60811

PVC Self-Extinguishing — IEC 60332-1

Flame Retardant — IEC 60332-3

Chemical Resistant

Product List

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	5.1	9.6	40
3 G 0.5	5.4	14.4	46
4 G 0.5	6.0	19.0	56
5 G 0.5	6.5	24.0	65
7 G 0.5	7.7	33.6	80
8 G 0.5	8.3	38.0	97
12 G 0.5	9.4	58.0	135
14 G 0.5	9.8	67.0	150
18 G 0.5	11.0	86.0	196
20 G 0.5	11.5	96.0	215
21 G 0.5	12.1	96.0	240
25 G 0.5	13.3	120.0	270
30 G 0.5	13.8	144.0	310
32 G 0.5	14.3	154.0	323
34 G 0.5	14.8	163.0	362
61 G 0.5	19.7	293.0	625
100 G 0.5	24.0	480.0	980

Other dimensions available on enquiry.

WindSol™ WT-COVV 300/500V

Flexible, Special PVC Insulated, Non-shielded, 300/500V

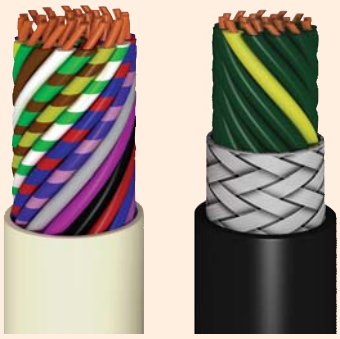
Product List

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.75	5.5	14.4	46
3 G 0.75	5.8	21.6	54
4 G 0.75	6.5	29.0	66
5 G 0.75	7.1	36.0	80
7 G 0.75	8.4	50.0	110
10 G 0.75	9.9	72.0	162
12 G 0.75	10.2	86.0	179
14 G 0.75	10.9	101.0	214
18 G 0.75	12.2	130.0	257
20 G 0.75	12.9	144.0	286
21 G 0.75	13.6	151.0	320
25 G 0.75	14.8	180.0	365
32 G 0.75	15.9	230.0	455
34 G 0.75	16.7	245.0	510
2 X 1	5.8	19.2	60
3 G 1	6.3	29.0	72
4 G 1	6.9	38.4	72
5 G 1	7.5	48.0	104
7 G 1	5.4	67.0	141
12 G 1	5.7	115.0	230
16 G 1	6.3	154.0	300
18 G 1	6.8	173.0	343
20 G 1	8.0	192.0	375
25 G 1	8.6	240.0	485
34 G 1	9.7	326.0	650
41 G 1	10.1	394.0	770
2 X 1.5	6.6	29.0	70
3 G 1.5	7.0	43.0	90
4 G 1.5	7.6	58.0	109
5 G 1.5	8.5	72.0	131
7 G 1.5	10.1	101.0	184
8 G 1.5	10.9	115.0	216
12 G 1.5	12.4	173.0	309
14 G 1.5	13.2	202.0	345
16 G 1.5	13.9	230.0	386
18 G 1.5	14.8	259.0	440
20 G 1.5	15.5	288.0	490
25 G 1.5	18.1	360.0	620
2 X 2.5	7.9	48.0	112
3 G 2.5	8.6	72.0	148
4 G 2.65	9.4	96.0	178
5 G 2.5	10.5	120.0	221
7 G 2.5	12.4	168.0	306
3 G 4	10.2	115.0	230
4 G 4	11.3	154.0	295
5 G 4	12.4	192.0	361
3 G 6	12.0	173.0	355
4 G 6	13.3	230.0	424
5 G 6	14.8	288.0	525
7 G 6	16.3	403.0	625

Other dimensions available on enquiry.

WindSol™ WT-COHFU 300/500V

Flexible, Halogen-free, Fire Resistant, 300/500V



Application
Control and measuring cables in the wind tower

Design standard
IEC 60502

Construction

Conductor	Bare copper, fine wire conductors, IEC 60228 Class 5
Insulation	Halogen-free compound
Shield	Screen braid of tinned copper wires (-SB)
Sheath	Halogen-free compound

Technical Data

Temperature Range	Fixed : -40 ~ +80℃ Flexing : -30 ~ +70℃
Rated Voltage	300 / 500V
Test Voltage	3.0kV
Min. Bending Radius	Fixed : 4 X D* Flexing : 12.5 X D*

*D : Cable Diameter

Properties

Flame Retardant	Self-Extinguishing	Non-Corrosive	Halogen Free	Low Smoke
IEC 60332-3	IEC 60332-1	IEC 60754-2	IEC 60754-1	IEC 61034

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	5.1	9.6	43
3 G 0.5	5.4	14.4	50
3 X 0.5	5.4	14.4	50
4 G 0.5	6.0	19.0	60
4 X 0.5	6.0	19.0	60
5 G 0.5	6.5	24.0	71
5 X 0.5	6.5	24.0	71
7 G 0.5	7.7	33.6	84
8 G 0.5	8.3	38.0	101
10 G 0.5	9.1	48.0	121
12 G 0.5	9.4	58.0	142
16 G 0.5	10.3	76.0	183
18 G 0.5	11.0	86.0	204
20 G 0.5	11.5	96.0	227
25 G 0.5	13.0	120.0	283
30 G 0.5	13.8	144.0	324
34 G 0.5	14.8	163.0	367
37 G 0.5	15.3	178.0	381
41 G 0.5	16.1	197.0	417
42 G 0.5	16.1	202.0	454
50 G 0.5	17.6	240.0	519
61 G 0.5	19.7	293.0	635
65 G 0.5	19.7	312.0	694

Other dimensions available on enquiry.

WindSol™ WT-COHFU 300/500V

Flexible, Halogen-free, Fire Resistant, 300/500V

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.75	5.5	14.4	47
3 G 0.75	5.8	21.6	56
3 X 0.75	5.8	21.6	56
4 G 0.75	6.5	29.0	69
4 X 0.75	6.5	29.0	69
5 G 0.75	7.1	36.0	83
5 X 0.75	7.1	36.0	83
7 G 0.75	8.4	50.0	114
7 X 0.75	8.4	50.0	114
8 G 0.75	9.2	58.0	136
10 G 0.75	9.9	72.0	172
12 G 0.75	10.2	86.0	183
16 G 0.75	11.8	115.0	241
18 G 0.75	12.2	130.0	266
20 G 0.75	12.9	144.0	291
25 G 0.75	14.4	180.0	374
30 G 0.75	15.7	216.0	450
34 G 0.75	16.7	245.0	517
37 G 0.75	17.5	260.0	541
41 G 0.75	17.9	296.0	611
42 G 0.75	17.9	302.0	621
50 G 0.75	20.1	360.0	742
61 G 0.75	21.2	439.0	853
65 G 0.75	21.8	468.0	909
2 X 1	5.8	19.2	63
3 G 1	6.3	29.0	74
3 G 1	6.3	29.0	74
4 G 1	6.9	38.4	90
4 X 1	6.9	38.4	90
5 G 1	7.5	48.0	109
7 G 1	8.9	67.0	151
8 G 1	9.7	77.0	184
10 G 1	10.7	96.0	224
12 G 1	11.0	115.0	243
16 G 1	12.3	154.0	314
18 G 1	13.0	173.0	361
20 G 1	13.8	192.0	387
25 G 1	15.5	240.0	496
34 G 1	17.7	326.0	670
37 G 1	18.7	355.0	713
41 G 1	19.2	394.0	784
42 G 1	19.2	403.0	824
50 G 1	21.3	480.0	952
61 G 1	22.5	586.0	1,140
65 G 1	23.1	62.8	1,201
2 X 1.5	6.6	29.0	70
3 G 1.5	7.0	43.0	94
3 X 1.5	7.0	43.0	94
4 G 1.5	7.6	58.0	112
5 G 1.5	8.5	72.0	141
7 G 1.5	10.0	101.0	191
8 G 1.5	10.9	115.0	224
10 G 1.5	12.0	144.0	282
12 G 1.5	12.4	173.0	311
16 G 1.5	13.9	230.0	392
18 G 1.5	14.8	259.0	450
20 G 1.5	15.5	288.0	497
25 G 1.5	18.1	360.0	630
34 G 1.5	20.1	490.0	842
37 G 1.5	20.5	533.0	897
50 G 1.5	24.0	720.0	1,277
61 G 1.5	25.6	878.0	1,460

Other dimensions available on enquiry.

WindSol™ WT-COHFU 300/500V

Flexible, Halogen-free, Fire Resistant, 300/500V

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
65 G 1.5	26.3	936.0	1,612
2 X 2.5	7.9	48.0	118
3 G 2.5	8.6	72.0	151
4 G 2.5	9.4	96.0	181
5 G 2.5	10.5	120.0	224
7 G 2.5	12.4	168.0	316
8 G 2.5	13.5	192.0	370
10 G 2.5	15.0	240.0	451
12 G 2.5	15.5	288.0	499
16 G 2.5	17.8	384.0	720
18 G 2.5	18.4	432.0	769
20 G 2.5	19.0	480.0	911
25 G 2.5	22.5	600.0	1,047
30 G 2.5	24.0	720.0	1,280
2 X 4	9.5	77.0	199
3 G 4	10.2	115.0	247
4 G 4	11.3	154.0	299
5 G 4	12.4	192.0	369
7 G 4	13.6	269.0	463
8 G 4	16.2	307.0	601
10 G 4	17.6	384.0	698
12 G 4	18.6	461.0	790
16 G 4	20.5	614.0	1,130
18 G 4	22.1	691.0	1,280
2 X 6	11.1	11.5	266
3 G 6	12.0	173.0	360
4 G 6	13.3	230.0	429
5 G 6	14.8	288.0	529
7 G 6	16.3	403.0	631
2 X 10	14.3	192.0	440
3 G 10	15.3	288.0	550
4 G 10	17.1	384.0	708
5 G 10	19.0	480.0	862
7 G 10	20.9	672.0	1,124
2 X 16	16.8	307.0	642
3 G 16	17.9	461.0	830
4 G 16	20.0	614.0	1,060
5 G 16	22.2	768.0	1,270
7 G 16	24.7	1,075.0	1,794
3 G 25	22.8	720.0	1,190
4 G 25	25.5	960.0	1,594
5 G 25	28.2	1,200.0	2,014
3 G 35	25.5	1,008.0	1,590
4 G 35	28.3	1,344.0	2,200
5 G 35	31.3	1,680.0	2,693
3 G 50	29.8	1,440.0	2,571
4 G 50	33.7	1,920.0	3,087
5 G 50	37.5	2,400.0	3,980
3 G 70	37.3	2,016.0	3,207
4 G 70	41.5	2,688.0	4,077
5 G 70	46.3	3,360.0	5,501
3 G 95	41.3	2,736.0	4,708
4 G 95	46.3	3,648.0	5,590
5 G 95	50.8	4,560.0	6,972
3 G 120	46.0	3,456.0	5,515
4 G 120	50.6	4,608.0	7,100

Other dimensions available on enquiry.

WindSol™ WT-COHFU 300/500V

Flexible, Halogen-free, Fire Resistant, 300/500V

Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	6.0	32.1	46
3 G 0.5	6.3	39.2	56
3 X 0.5	6.3	39.2	56
4 G 0.5	6.8	6.1	62
4 X 0.5	6.8	46.1	62
5 G 0.5	7.3	52.1	75
7 G 0.5	8.2	68.3	98
12 G 0.5	9.9	117.0	158
18 G 0.5	11.5	156.2	216
25 G 0.5	13.7	205.5	315
2 X 0.75	6.4	39.3	60
3 G 0.75	6.7	49.4	68
3 X 0.75	6.7	49.4	68
4 G 0.75	7.2	57.2	78
4 X 0.75	7.2	57.2	78
5 G 0.75	7.7	69.0	95
5 X 0.75	7.7	69.0	95
7 G 0.75	8.9	87.1	130
7 X0.75	8.9	87.1	130
12 G 0.75	10.7	151.2	203
18 G 0.75	12.7	207.5	290
25 G 0.75	15.1	275.8	413
2 X 1	6.7	46.3	66
3 G 1	7.0	56.4	80
3 X 1	7.0	56.4	80
4 G 1	7.6	56.4	80
4 G 1	7.6	69.7	100
5 G 1	8.1	85.4	130
7 G 1	9.4	107.3	160
12 G 1	11.5	187.0	260
18 G 1	13.5	253.5	382
25 G 1	16.1	342.6	540
2 G 1.5	6.9	63.3	88
3 G 1.5	7.2	76.2	100
3 X 1.5	7.2	76.2	100
4 G 1.5	7.8	96.2	125
5 G 1.5	8.7	111.5	158
7 G 1.5	10.3	148.0	210
12 G 1.5	12.4	254.5	340
18 G 1.5	14.9	367.7	480
25 G 1.5	17.9	492.4	702
2 X 2.5	8.6	96.4	132
3 G 2.5	9.3	148.0	168
4 G 2.5	10.1	174.2	195
5 G 2.5	11.2	200.8	222
7 G 2.5	13.2	235.6	345
12 G 2.5	16.2	441.0	572
2 X 4	10.1	135.5	184
3 G 4	10.9	178.1	238
4 G 4	11.8	220.3	305
5 G 4	13.0	328.0	388
7 G 4	14.3	355.2	504
2 G 6	11.8	175.3	270
3 G 6	12.7	240.0	328
4 G 6	14.1	305.7	416
5 G 6	16.0	441.8	510
7 G 6	16.9	506.0	670
2 X 10	15.2	265.2	420
3 G 10	16.2	370.05	495
4 G 10	18.1	486.0	785
5 G 10	19.9	611.2	855
7 G 10	21.9	820.5	1,308

Other dimensions available on enquiry.

WindSol™ WT-COHFU 300/500V

Flexible, Halogen-free, Fire Resistant, 300/500V

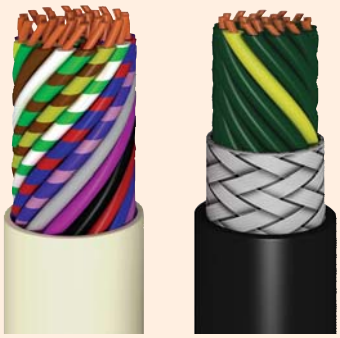
Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
4 G 16	21.1	810.2	882
5 G 16	23.2	1,050.7	1,293
7 G 16	25.3	1,183.0	2,149
3 G 25	23.5	792.0	1,432
4 G 25	26.5	1,280.0	1,911
5 G 25	29.7	1,440.0	2,414
3 G 35	26.0	1,110.0	1,914
4 G 35	30.7	1,690.0	2,542
5 G 35	34.1	1,930.0	3,180
3 G 50	30.3	1,584.0	3,080
4 G 50	34.9	2,315.0	3,555
5 G 50	39.1	2,694.0	4,753
3 G 70	37.9	2,218.0	3,840
4 G 70	41.6	3,020.0	4,939
5 G 70	46.4	3,696.0	6,572
3 G 95	41.5	3,010.0	5,651
4 G 95	46.5	4,013.0	6,690
5 G 95	51.5	5,016.0	8,370
3 G 120	46.8	3,802.0	6,342
4 G 120	51.3	5,067.0	8,453

Other dimensions available on enquiry.

WindSol™ WT-COTPEU 300/500V

Flexible, Halogen-free, Oil Resistant, +90℃, 300/500V



Application

Control cables requiring halogen-free and flexible in wind turbines

Construction

Conductor	Bare copper, super fine wire conductors, IEC 60228 Class 5
Insulation	Halogen-free special polymer
Shield	Screen braid of tinned copper wires (-SB)
Separator	Separating foil (Shielded type)
Sheath	Halogen-free special polymer

Technical Data

Temperature Range	Fixed : -40 ~ +90℃ Flexing : -30 ~ +90℃
Rated Voltage	300 / 500V
Test Voltage	3.0kV
Min. Bending Radius	Fixed : 4 X D* Flexing : 10 X D*

*D : Cable Diameter

Properties

Halogen Free	Flame Retardant	Oil Resistant	Flexible	Self-Extinguishing	UV Resistant	Weathering Resistant	Abrasion Resistant	Ozone Resistant
IEC 60754-1	IEC 60332-3	IEC 60811	IEC 60794-1-2-E6	IEC 60332-1				

Product List (Non-shieleded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	5.1	9.6	43
3 G 0.5	5.4	14.4	50
3 X 0.5	5.4	14.4	50
4 G 0.5	6.0	19.0	60
4 X 0.5	6.0	19.0	60
5 G 0.5	6.5	24.0	71
5 X 0.5	6.5	24.0	71
7 G 0.5	7.7	33.6	84
8 G 0.5	8.3	38.0	101
10 G 0.5	9.1	48.0	121
12 G 0.5	9.4	58.0	142
16 G 0.5	10.3	76.0	183
18 G 0.5	11.0	86.0	204
20 G 0.5	11.5	96.0	227
25 G 0.5	13.0	120.0	283
30 G 0.5	13.8	144.0	324
34 G 0.5	14.8	163.0	367
37 G 0.5	15.3	178.0	381
41 G 0.5	16.1	197.0	417
42 G 0.5	16.1	202.0	454
50 G 0.54	18.0	240.0	519
61 G 0.5	19.7	293.0	635
65 G 0.54	19.7	312.0	694

Other dimensions available on enquiry.

WindSol™ WT-COTPEU 300/500V

Flexible, Halogen-free, Oil Resistant, +90°C, 300/500V

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.75	5.5	14.4	47
3 G 0.75	5.8	21.6	56
3 X 0.75	5.8	21.6	56
4 G 0.75	6.5	29.0	69
4 X 0.75	6.5	29.0	69
5 G 0.75	7.1	36.0	83
5 X 0.75	7.1	36.0	83
7 G 0.75	8.4	50.0	114
7 X 0.75	8.4	50.0	114
5 G 0.75	9.2	58.0	136
10 G 0.75	9.9	72.0	172
12 G 0.75	10.2	86.0	183
16 G 0.75	10.8	115.0	241
18 G 0.75	12.2	130.0	266
20 G 0.75	12.9	144.0	291
25 G 0.75	14.4	180.0	374
30 G 0.75	15.7	216.0	450
34 G 0.75	16.7	245.0	517
37 G 0.75	17.5	260.0	541
41 G 0.75	17.9	296.0	611
42 G 0.75	17.9	302.0	621
50 G 0.75	20.1	360.0	742
61 G 0.75	21.2	439.0	853
65 G 0.75	21.8	468.0	909
2 X 1	5.8	19.2	63
3 G 1	6.3	29.0	74
3 G 1	6.3	29.0	74
4 G 1	6.9	38.4	90
4 X 1	6.9	38.4	90
5 G 1	7.5	48.0	109
7 G 1	8.9	67.0	151
8 G 1	9.7	77.0	184
10 G 1	10.7	96.0	224
12 G 1	11.0	115.0	243
16 G 1	12.3	154.0	314
18 G 1	13.0	173.0	361
20 G 1	13.8	192.0	387
25 G 1	15.5	240.0	496
34 G 1	17.7	326.0	670
37 G 1	18.7	355.0	713
41 G 1	19.2	394.0	784
42 G 1	19.2	403.0	824
50 G 1	21.3	480.0	952
61 G 1	22.5	586.0	1,140
65 G 1	23.1	628.0	1,201
2 X 1.5	6.6	29.0	70
3 G 1.5	7.0	43.0	94
3 X 1.5	7.0	43.0	94
4 G 1.5	7.6	58.0	112
5 G 1.5	8.5	72.0	141
7 G 1.5	10.1	101.0	191
8 G 1.5	10.9	115.0	224
10 G 1.5	12.0	144.0	282
12 G 1.5	12.4	173.0	311
16 G 1.5	13.9	230.0	392
18 G 1.5	14.8	259.0	450
20 G 1.5	15.5	288.0	497
25 G 1.5	18.1	360.0	630
34 G 1.5	20.1	490.0	842
37 G 1.5	20.5	533.0	897
50 G 1.5	24.0	720.0	1,277
61 G 1.5	25.6	878.0	1,460
65 G 1.5	26.3	936.0	1,612

Other dimensions available on enquiry.

WindSol™ WT-COTPEU 300/500V

Flexible, Halogen-free, Oil Resistant, +90°C, 300/500V

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 2.5	7.0	48	118
3 G 2.5	8.6	72	151
4 G 2.5	9.4	96	181
5 G 2.5	10.5	120	224
7 G 2.5	12.4	168	316
8 G 2.5	13.5	192	370
10 G 2.5	15.0	240	451
12 G 2.5	15.5	288	499
16 G 2.5	17.8	384	720
18 G 2.5	18.4	432	769
20 G 2.5	19.0	480	911
25 G 2.5	22.5	600	1,047
30 G 2.5	24.0	720	1,280
2 X 4	9.5	77	199
3 G 4	10.2	115	247
4 G 4	11.3	154	299
5 G 4	12.4	192	369
7 G 4	13.6	269	463
8 G 4	16.2	307	601
10 G 4	17.6	384	698
12 G 4	18.6	461	790
16 G 4	20.5	614	1,130
18 G 4	22.1	691	1,280
2 X 6	11.1	115	266
3 G 6	12.0	173	360
4 G 6	13.3	230	429
5 G 6	14.8	288	529
7 G 6	16.3	403	631
2 X 10	14.3	192	440
3 G 10	15.3	288	550
4 G 10	17.1	384	708
5 G 10	19.0	480	862
7 G 10	20.9	672	1,124
2 X 16	16.8	307	642
3 G 16	17.9	461	830
4 G 16	20.0	614	1,060
5 G 16	22.2	768	1,270
7 G 16	24.7	1,075	1,794
3 G 25	22.8	720	1,190
4 G 25	25.5	960	1,594
5 G 25	28.2	1,200	2,014
3 G 35	25.5	1,008	1,590
4 G 35	28.3	1,344	2,200
5 G 35	31.3	1,680	2,693
3 G 50	29.8	1,440	2,571
4 G 50	33.7	1,920	3,087
5 G 50	37.5	2,400	3,980
3 G 70	37.3	2,016	3,207
4 G 70	41.5	2,688	4,077
5 G 70	46.3	3,360	5,501
3 G 95	41.3	2,736	4,708
4 G 95	46.3	3,648	5,590
5 G 95	50.8	4,560	6,972
3 G 120	46.0	3,456	5,515
4 G 120	50.6	4,608	7,100
3 G 150	52.5	4,320	6,279
4 G 150	57.3	5,760	7,781

Other dimensions available on enquiry.

WindSol™ WT-COTPEU 300/500V

Flexible, Halogen-free, Oil Resistant, +90℃, 300/500V

Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	6.0	32.1	46
3 G 0.5	6.3	39.2	56
3 X 0.5	6.3	39.2	56
4 G 0.5	6.8	46.1	62
4 X 0.5	6.8	46.1	62
5 G 0.5	7.3	52.1	75
5 X 0.5	7.3	52.1	75
7 G 0.5	8.2	68.3	98
8 G 0.5	8.8	80.0	116
10 G 0.5	9.6	93.0	135
12 G 0.5	9.9	117.0	158
16 G 0.5	11.0	129.0	210
18 G 0.5	11.5	156.2	216
20 G 0.5	12.2	173.1	240
25 G 0.5	13.7	205.5	315
2 X 0.75	6.4	39.3	60
3 G 0.75	6.7	49.4	68
3 X 0.75	6.7	49.4	68
4 G 0.75	7.2	57.2	78
4 X 0.75	7.2	57.2	78
5 G 0.75	7.7	69.0	95
5 X 0.75	7.7	69.0	95
7 G 0.75	8.9	87.1	130
7 X 0.75	8.9	87.1	130
8 G 0.75	9.7	110.0	145
10 G 0.75	10.3	140.0	180
12 G 0.75	10.7	151.2	203
16 G 0.75	11.9	183.0	275
18 G 0.75	12.7	207.5	290
20 G 0.75	132	238.0	320
25 G 0.75	15.1	275.8	413
2 X 1	6.7	46.3	66
3 G 1	7.0	56.4	80
3 X 1	7.0	56.4	80
4 G 1	7.6	69.7	100
4 X 1	7.6	69.7	100
5 G 1	8.1	85.4	130
7 G 1	9.4	107.3	160
8 G 1	10.2	130.0	197
10 G 1	11.1	140.0	232
12 G 1	11.5	187.0	260
16 G 1	12.6	218.0	346
18 G 1	13.5	253.5	382
20 G 1	14.1	267.0	440
25 G 1	16.1	342.6	540
2 X 1.5	6.9	63.3	88
3 G 1.5	7.2	76.2	100
3 X 1.5	7.2	76.2	100
4 G 1.5	7.8	96.2	125
5 G 1.5	8.7	111.5	158
7 G 1.5	10.3	148.0	210
8 G 1.5	11.4	172.0	244
10 G 1.5	12.3	193.0	315
12 G 1.5	12.4	254.5	340
16 G 1.5	14.7	285.1	424
18 G 1.5	14.9	367.7	480
20 G 1.5	16.2	407.1	545
25 G 1.5	17.9	492.4	702
34 G 1	17.7	326.0	670
37 G 1	18.7	355.0	713
41 G 1	19.2	394.0	784
42 G 1	19.2	403.0	824

Other dimensions available on enquiry.

WindSol™ WT-COTPEU 300/500V

Flexible, Halogen-free, Oil Resistant, +90°C, 300/500V

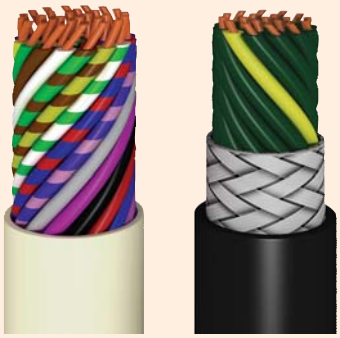
Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
50 G 1	21.3	480.0	952
61 G 1	22.5	586.0	1,140
65 G 1	23.1	6,268.0	1,201
2 X 2.5	8.6	96.4	132
3 G 2.5	9.3	148.0	168
4 G 2.5	10.1	174.0	195
5 G 2.5	11.2	200.8	256
7 G 2.5	13.2	235.6	345
8 G 2.5	13.4	260.0	390
10 G 2.5	15.5	335.1	482
12 G 2.5	16.2	441.0	572
2 X 4	10.1	135.5	220
3 G 4	10.9	178.1	251
4 G 4	11.8	220.3	305
5 G 4	13.0	328.0	388
7 G 4	14.3	355.2	504
2 X 6	11.8	175.3	270
3 G 6	12.7	240.0	351
4 G 6	14.1	305.7	464
5 G 6	16.0	441.8	546
7 G 6	16.9	506.0	670
2 X 10	15.2	265.2	461
3 G 10	16.2	370.5	574
4 G 10	18.1	486.0	785
5 G 10	19.9	611.2	914
7 G 10	21.9	820.5	1,308
2 X 16	17.5	331.0	670
3 G 16	19.3	497.0	911
4 G 16	21.1	810.0	1,105
5 G 16	23.2	1,050.7	1,293
7 G 16	25.3	1,183.0	2,149
4 G 25	26.5	1,280.0	1,911
4 G 35	30.7	1,690.0	2,542
4 G 50	34.9	2,315.0	3,550
4 G 70	41.6	3,020.0	4,939
4 G 95	46.5	4,013.0	6,690
4 G 120	51.3	5,067.0	8,453
4 G 150	59.5	5,792.0	9,104

Other dimensions available on enquiry.

WindSol™ WT-COVV 0.6/1kV

Flexible, Special PVC Insulated, Oil Resistant, 0.6/1 kV



Application

Wiring cable for measuring and controlling purposes in wind turbines.
The black, special PVC outer sheath is resistant to the ultra violet radiation

Construction

Conductor	Bare copper, fine wire conductors, IEC 60228 Class 5
Insulation	Special PVC
Shield	Screen braid of tinned copper wires (-SB)
Sheath	Special PVC

Technical Data

Temperature Range	Fixed : -40 ~ +80℃ Flexing : -5 ~ +80℃
Rated Voltage	0.6 / 1kV
Test Voltage	4.0kV
Breakdown Strength	Min. 8.0kV
Min. Bending Radius	Fixed : 4 X D* Flexing : 7.5X D*

*D : Cable Diameter

Properties

Oil Resistant — IEC 60811
PVC Self-Extinguishing — IEC 60332-1
Flame Retardant — IEC 60332-3
Chemical Resistant
UV Resistant

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	6.7	9.6	56
3 G 0.5	7.1	14.4	68
3 X 0.5	7.1	14.4	68
4 G 0.5	7.9	19.0	100
4 X 0.5	7.9	19.0	100
5 G 0.5	8.5	24.0	117
5 X 0.5	8.5	24.0	117
6 G 0.5	9.4	29.0	126
7 G 0.5	10.1	33.6	138
7 X 0.5	10.1	33.6	138
8 G 0.5	11.0	38.0	150
8 X 0.5	11.0	38.0	150
10 G 0.5	11.9	48.0	176
12 G 0.5	12.5	58.0	200
12 X 0.5	12.5	58.0	200
14 G 0.5	13.1	67.0	230
16 G 0.5	14.0	76.0	250
18 G 0.5	14.7	86.0	276
20 G 0.5	15.6	96.0	293
21 G 0.5	16.3	96.0	305
25 G 0.5	17.5	120.0	335
30 G 0.5	18.3	144.0	348
32 G 0.5	19.2	154.0	355

Other dimensions available on enquiry.

WindSol™ WT-COVV 0.6/1kV

Flexible, Special PVC Insulated, Oil Resistant, 0.6/1 kV

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
34 G 0.5	20.1	163.0	520
40 G 0.5	21.5	192.0	590
42 G 0.5	21.5	202.0	595
50 G 0.5	23.7	240.0	715
52 G 0.5	24.6	252.0	740
61 G 0.5	26.3	293.0	840
65 G 0.5	27.1	312.0	880
80 G 0.5	29.2	384.0	960
100 G 0.5	33.8	480.0	1,050
2 X 0.75	7.1	14.4	66
3 G 0.75	7.5	21.6	74
3 X 0.75	7.5	21.6	74
4 G 0.75	8.3	29.0	126
4 X 0.75	8.3	29.0	126
5 G 0.75	9.1	36.0	140
5 X 0.75	9.1	36.0	140
6 G 0.75	10.0	43.0	170
6 X 0.75	10.0	43.0	170
7 G 0.75	11.0	50.0	190
7 X 0.75	11.0	50.0	190
8 G 0.75	11.8	58.0	212
8 X 0.75	11.8	58.0	212
9 G 0.75	12.8	65.0	227
10 G 0.75	13.0	72.0	238
12 G 0.75	13.4	86.0	257
12 X 0.75	13.4	86.1	257
14 G 0.75	14.2	101.0	286
15 G 0.75	15.0	108.0	319
18 G 0.75	15.9	130.0	362
20 G 0.75	16.9	144.0	394
21 G 0.75	17.6	151.0	422
25 G 0.75	19.2	180.0	486
32 G 0.75	20.8	230.0	595
34 G 0.75	21.8	245.0	638
37 G 0.75	21.8	260.0	696
40 G 0.75	23.5	288.0	726
41 G 0.75	23.5	296.0	750
42 G 0.75	23.5	302.0	770
50 G 0.75	25.9	360.0	895
61 G 0.75	28.5	439.0	1,070
65 G 0.75	29.3	468.0	1,110
80 G 0.75	31.7	576.0	1,500
100 G 0.75	36.5	720.0	1,889
2 X 1	7.7	19.2	80
3 G 1	8.3	29.0	96
3 X 1	8.3	29.0	96
4 G 1	9.1	38.4	100
4 X 1	9.1	38.4	100
5 G 1	10.1	48.0	130
5 X 1	10.1	48.0	130
6 G 1	11.1	58.0	150
7 G 1	12.0	67.0	170
7 X 1	12.0	67.0	170
8 G 1	13.1	77.0	230
9 G 1	14.2	86.0	250
10 G 1	14.4	96.0	270
10 X 1	14.4	96.0	270
12 G 1	14.8	115.0	290
12 X 1	14.8	115.0	290
14 G 1	15.8	134.0	320
16 G 1	16.8	154.0	360
18 G 1	17.6	173.0	405

Other dimensions available on enquiry.

WindSol™ WT-COVV 0.6/1kV

Flexible, Special PVC Insulated, Oil Resistant, 0.6/1kV

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
18 X 1	17.6	192	405
20 G 1	18.7	192	480
20 X 1	18.7	205	510
21 G 1	19.7	236	550
24 G 1	20.6	240	570
25 G 1	21.4	240	570
25 X 1	21.4	252	590
26 G 1	21.4	308	650
30 X 1	22.3	326	750
34 G 1	24.3	346	790
36 G 1	26.2	384	850
40 G 1	26.2	384	350
41 G 1	26.2	394	890
42 G 1	26.2	403	900
50 G 1	28.8	480	1,100
56 G 1	29.6	538	1,190
61 G 1	31.7	586	1,266
65 G 1	32.8	628	1,560
80 G 1	35.1	768	1,810
100 G 1	40.4	960	1,950
2 X 1.5	8.7	29	95
3 G 1.5	9.4	43	112
3 X 1.5	9.4	4	112
4 G 1.5	10.2	58	139
4 X 1.5	10.2	58	139
5 G 1.5	11.3	72	170
5 X 1.5	11.3	72	170
6 G 1.5	12.6	86	190
7 G 1.5	13.6	101	225
7 G 1.5	13.6	101	225
8 G 1.5	14.8	115	250
9 G 1.5	16.0	130	280
10 G 1.5	16.2	144	300
11 G 1.5	16.9	158	330
12 G 1.5	16.9	173	370
12 X 1.5	16.9	173	370
14 G 1.5	17.7	202	400
16 G 1.5	18.8	230	450
18 G 1.5	20.0	259	520
19 G 1.5	21.2	279	550
20 G 1.5	21.2	288	600
21 G 1.5	22.3	302	600
25 G 1.5	24.2	360	730
32 G 1.5	26.3	461	880
34 G 1.5	27.5	490	950
40 G 1.5	29.6	576	990
42 G 1.5	29.8	605	1,120
50 G 1.5	32.8	720	1,400
56 G 1.5	33.8	806	1,530
61 G 1.5	36.0	878	1,700
65 G 1.5	37.1	936	1,900
80 G 1.5	40.2	1,152	2,300
100 G 1.5	45.9	1,440	2,700
2 X 2.5	9.7	48	160
3 G 2.5	10.2	72	175
3 X 2.5	10.2	72	175
4 G 2.5	11.4	96	203
4 X 2.5	11.4	96	203
5 G 2.5	12.7	120	251
5 X 2.5	12.7	120	251
7 G 2.5	15.3	168	330
7 X 2.5	15.3	168	330

Other dimensions available on enquiry.

WindSol™ WT-COVV 0.6/1kV

Flexible, Special PVC Insulated, Oil Resistant, 0.6/1kV

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
8 G 2.5	16.4	192	400
12 G 2.5	18.7	288	553
14 G 2.5	19.9	336	630
18 G 2.5	22.3	432	795
21 G 2.5	24.9	504	930
25 G 2.5	27.2	600	1,110
34 G 2.5	30.7	816	1,450
42 G 2.5	33.3	1,008	1,750
50 G 2.5	36.5	1,200	2,100
61 G 2.5	40.4	1,464	2,540
100 G 2.5	49.3	2,400	3,850
2 X 4	11.7	77	180
3 G 4	12.6	115	230
4 G 4	14.1	154	310
5 G 4	15.6	192	410
7 G 4	17.1	269	540
8 G 4	20.3	307	710
12 G 4	23.2	461	860
3 G 6	14.4	173	370
4 G 6	15.9	230	430
5 G 6	17.6	288	650
7 G 6	19.6	403	860
3 G 10	16.8	288	660
4 G 10	18.7	384	790
5 G 10	20.8	480	960
7 G 10	22.8	672	1,300
3 G 16	19.4	461	700
4 G 16	21.5	614	1,100
5 G 16	23.9	768	1,600
7 G 16	26.1	1,075	1,300
3 G 25	24.3	720	1,450
4 G 25	27.2	960	1,600
5 G 25	29.6	1,200	2,050
7 G 25	32.9	1,680	2,900
3 G 35	26.5	1,008	1,900
4 G 35	29.7	1,344	2,400
5 G 35	33.1	1,680	2,900
3 G 50	30.8	1,440	2,700
4 G 50	34.5	1,920	3,400
5 G 50	38.3	2,400	4,361
3 G 70	37.0	2,016	3,300
4 G 70	41.3	2,688	4,400
5 G 70	46.0	3,360	5,807
3 G 95	41.5	2,736	5,050
4 G 95	46.5	3,648	6,010
5 G 95	51.0	4,560	7,752
4 G 120	50.6	4,608	7,500
4 G 150	58.1	5,760	8,640
4 G 180	65.1	7,104	1,038

Other dimensions available on enquiry.

WindSol™ WT-COVV 0.6/1kV

Flexible, Special PVC Insulated, Oil Resistant, 0.6/1kV

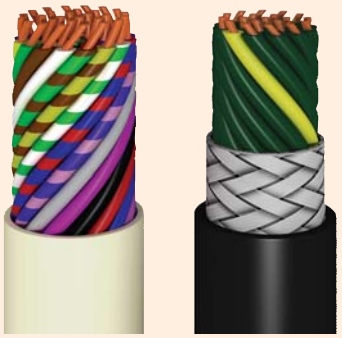
Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	8.6	30	129
3 G 0.5	8.9	39	150
4 G 0.5	9.7	61	199
5 G 0.5	10.4	61	199
7 G 0.5	12.4	75	235
12 G 0.5	15.0	130	320
18 G 0.5	17.6	170	428
25 G 0.5	20.9	230	503
2 X 0.75	9.0	39	143
3 G 0.75	9.3	57	155
4 G 0.75	10.2	68	190
5 G 0.75	11.1	79	228
7 G 0.75	13.3	96	323
12 G 0.75	16.1	169	410
18 G 0.75	18.2	224	560
25 G 0.75	23.1	292	730
2 X 1	9.7	58	293
3 G 1	10.1	67	305
4 G 1	11.1	78	335
5 G 1	12.4	94	348
7 G 1	14.8	122	355
12 G 1	17.7	201	520
18 G 1	21.0	275	590
25 G 1	25.1	364	595
2 X 1.5	10.5	68	162
3 G 1.5	11.2	84	187
4 G 1.5	12.5	104	240
5 G 1.5	13.6	123	289
7 G 1.5	16.3	180	383
12 G 1.5	19.9	284	592
18 G 1.5	23.7	390	806
25 G 1.5	28.5	521	1,241
2 x 2.5	11.8	99	272
3 G 2.5	12.5	124	298
4 G 2.5	13.7	170	345
5 G 2.5	15.2	202	427
7 G 2.5	18.2	268	561
12 G 2.5	22.2	423	857
18 G 2.5	26.4	572	1,355
25 G 2.5	32.2	740	1,995
2 X 4	14.6	156	306
3 G 4	15.4	191	391
4 G 4	17.0	236	527
5 G 4	18.9	303	700
7 G 4	20.3	394	920
3 G 6	17.3	251	629
4 G 6	19.0	319	731
5 G 6	21.0	421	1,105
7 G 6	23.3	561	1,465
3 G 10	19.9	371	1,125
4 G 10	22.2	576	1,345
5 G 10	24.4	620	1,635
7 G 10	27.1	842	2,210
3 G 16	23.8	540	1,395
4 G 16	26.7	807	1,870
5 G 16	29.1	1,394	2,720
7 G 16	32.2	1,605	3,213
3 G 25	28.3	820	2,465
4 G 25	32.8	1,169	2,750
5 G 25	36.0	1,850	3,490
7 G 25	39.3	2,140	4,980

Other dimensions available on enquiry.

WindSol™ WT-COHFU 0.6/1kV

Flexible, Halogen-free, Fire Resistant, Oil Resistant, 0.6/1 kV



Application

Halogen-free, flame retardant cables are used as measuring and control cable in wind turbines, This cables is suitable for the application in dry and wet conditions and outdoors

Construction

Conductor	Bare copper, fine wire conductors, IEC 60228 Class 5
Insulation	Halogen-free polymer
Shield	Screen braid of tinned copper wires (-SB)
Sheath	Halogen-free polymer

Technical Data

Temperature Range	Fixed : -40 ~ +80 ℃ Flexing : -15 ~ +70 ℃
Rated Voltage	0.6/1.0kV
Test Voltage	4.0kV
Permanent Bending	Fixed : 6 X D* Flexing : 15 X D*

*D : Cable Diameter

Properties

Flame Retardant	Self-Extinguishing	Non-Corrosive	Halogen Free	Low Smoke
IEC 60332-3	IEC 60332-1	IEC 60754-2	IEC 60754-1	IEC 61034

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	6.7	9.6	57
3 G 0.5	7.1	14.4	69
3 X 0.5	7.1	14.4	69
4 G 0.5	7.9	19.0	104
4 X 0.5	7.9	19.0	104
5 G 0.5	8.5	24.0	121
5 X 0.5	8.5	24.0	121
7 G 0.5	10.1	33.6	145
10 G 0.5	11.9	48.0	186
12 G 0.5	12.5	58.0	224
18 G 0.5	14.7	86.0	292
25 G 0.5	17.5	120.0	357
2 X 0.75	7.1	14.4	68
3 G 0.75	7.5	21.6	77
3 X 0.75	7.5	21.6	77
4 G 0.75	8.3	29.0	136
4 X 0.75	8.3	29.0	136
5 G 0.75	9.1	36.0	152
5 X 0.75	9.1	36.0	152
7 G 0.75	11.0	50.0	208
10 G 0.75	13.0	72.0	250
12 G 0.75	13.4	86.0	271
18 G 0.75	15.9	130.0	387

Other dimensions available on enquiry.

WindSol™ WT-COHFU 0.6/1kV

Flexible, Halogen-free, Fire Resistant, Oil Resistant, 0.6/1kV

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
25 G 0.75	19.2	180.0	498
2 X 1	7.7	19.2	82
3 G 1	8.3	29.0	99
3 X 1	8.3	29.0	99
4 G 1	9.1	38.4	140
4 X 1	9.1	38.4	140
5 G 1	10.1	48.0	160
5 X 1	10.1	48.0	160
7 G 1	12.0	67.0	217
10 G 1	14.4	96.0	271
12 G 1	14.8	115.0	301
18 G 1	17.6	173.0	417
25 G 1	21.4	240.0	576
2 X 1.5	8.7	29.0	97
3 G 1.5	9.4	43.0	119
3 X 1.5	9.4	43.0	119
4 G 1.5	10.2	58.0	148
4 X 1.5	10.2	58.0	148
5 G 1.5	11.3	72.0	172
5 X 1.5	11.3	72.0	172
7 G 1.5	13.6	101.0	243
10 G 1.5	16.2	144.0	311
12 G 1.5	16.9	173.0	392
18 G 1.5	20.0	259.0	529
25 G 1.5	24.2	360.0	741
2 X 2.5	9.7	48.0	160
3 G 2.5	10.2	72.0	177
3 X 2.5	10.2	72.0	177
4 G 2.5	11.4	96.0	209
4 X 2.5	11.4	96.0	209
5 G 2.5	12.7	120.0	272
5 X 2.5	12.7	120.0	272
7 G 2.5	15.3	168.0	340
10 G 2.5	18.7	288.0	561
12 G 2.5	22.3	432.0	799
18 G 2.5	24.9	480.0	940
25 G 2.5	27.2	600.0	1,121
3 G 4	12.6	115.0	255
4 G 4	14.1	154.0	319
5 G 4	15.6	192.0	423
3 G 6	14.4	173.0	380
4 G 6	15.9	230.0	441
5 G 6	17.6	288.0	657
3 G 10	16.8	288.0	668
4 G 10	18.7	384.0	796
5 G 10	20.8	480.0	972
3 G 16	19.4	461.0	832
4 G 16	21.5	614.0	1,122
5 G 16	23.9	768.0	1,604
3 G 25	24.3	720.0	1,457
4 G 25	27.2	960.0	1,611
5 G 25	29.6	1,200.0	2,070
3 G 35	26.5	1,008.0	1,914
4 G 35	29.7	1,344.0	2,424
5 G 35	33.1	1,680.0	2,970
4 G 50	34.5	1,920.0	3,467
4 G 70	41.3	2,688.0	4,491
4 G 95	46.5	3,648.0	6,170
4 G 120	50.6	4,608.0	7,618

Other dimensions available on enquiry.

WindSol™ WT-COHFU 0.6/1kV

Flexible, Halogen-free, Fire Resistant, Oil Resistant, 0.6/1kV

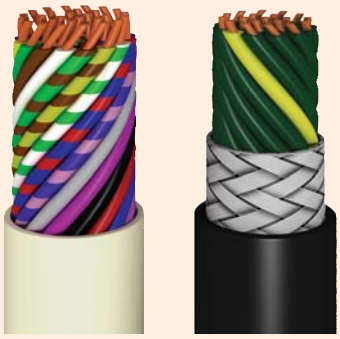
Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
3 G 0.5	8.9	38.9	150
4 G 0.5	9.7	51.3	170
5 G 0.5	10.4	64.9	199
7 G 0.5	12.4	94.1	235
12 G 0.5	15.0	168.2	320
18 G 0.5	17.6	266.5	428
25 G 0.5	20.9	372.0	503
3 G 0.75	9.3	58.3	155
4 G 0.75	10.2	78.3	190
5 G 0.75	11.1	97.2	228
7 G 0.75	13.3	135.0	323
12 G 0.75	16.1	249.0	410
18 G 0.75	18.2	357.0	560
25 G 0.75	23.1	458.0	730
3 G 1	10.1	78.3	163
4 G 1	11.1	103.7	200
5 G 1	12.4	129.6	239
7 G 1	14.8	187.6	289
12 G 1	17.7	333.5	464
18 G 1	21.0	501.7	628
25 G 1	25.1	644.0	855
3 G 1.5	11.2	116.1	187
4 G 1.5	12.5	156.6	240
5 G 1.5	13.6	194.4	289
7 G 1.5	16.3	282.8	383
12 G 1.5	19.9	501.7	592
18 G 1.5	23.7	751.1	806
25 G 1.5	28.5	1,016.0	1,241
3 G 2.5	12.5	194.4	298
4 G 2.5	13.7	259.2	345
5 G 2.5	15.2	324.0	427
7 G 2.5	18.2	470.4	561
12 G 2.5	22.2	777.6	857
18 G 2.5	26.4	1,152.8	1,355
25 G 2.5	32.2	1,760.0	1,995
3 G 4	15.4	310.5	391
4 G 4	17.0	415.8	527
5 G 4	18.9	518.4	700
3 G 6	17.3	467.1	629
4 G 6	19.0	621.0	731
5 G 6	21.0	777.6	1,105
3 G 10	19.9	806.4	1,125
4 G 10	22.2	1,036.8	1,345
5 G 10	24.4	1,296.0	1,635
4 G 16	23.8	1,244.7	1,395
5 G 16	26.7	1,657.8	1,870
7 G 16	29.1	2,073.6	2,720
3 G 25	28.3	1,944.0	2,465
4 G 25	32.8	2,592.0	2,750
5 G 25	36.0	3,240.0	3,490
3 G 35	33.0	2,520.0	3,230
4 G 35	36.0	3,360.0	4,100
5 G 35	40.3	4,200.0	4,950
4 G 50	41.4	4,800.0	5,780
4 G 70	48.3	6,720.0	7,480
4 G 95	51.5	9,120.0	10,220
4 G 120	56.3	11,520.0	13,750

Other dimensions available on enquiry.

WindSol™ WT-COVV (UL/CSA)

Flexible, Special PVC Insulated, Oil Resistant, 0.6/1 kV



Application
Wiring cable for measuring and controlling purposes in wind turbines

Design standard
IEC 60502

Construction

Conductor	Bare copper, fine wire conductors, IEC 60228 Class 5
Insulation	Special PVC (UL-Std, 1581 Class3)
Shield	Screen braid of tinned copper wires (-SB)
Sheath	Special PVC

Technical Data

Temperature Range	Fixed : -40 ~ +80℃ Flexing : -5 ~ +80℃
Rated Voltage	0.6/1.0kV
Test Voltage	4.0kV
Min. Bending Radius	Fixed : 4 X D* Flexing : 7.5 X D*

*D : Cable Diameter

Properties

Oil Resistant — IEC 60811

Self-Extinguishing — IEC 60332-1

Chemical Resistant

UV Resistant

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	6.7	9.6	56
3 G 0.5	7.1	14.4	68
4 G 0.5	7.9	19.0	100
5 G 0.5	8.5	24.0	117
7 G 0.5	10.1	33.6	138
12 G 0.5	12.5	58.0	200
18 G 0.5	14.7	86.0	276
25 G 0.5	17.5	120.0	35
2 X 0.75	7.1	14.4	66
3 G 0.75	7.5	21.6	74
4 G 0.75	8.3	29.0	126
5 G 0.75	9.1	36.0	140
7 G 0.75	11.0	50.0	190
12 G 0.75	13.4	86.0	257
18 G 0.75	15.9	130.0	362
25 G 0.75	19.2	180.0	486
2 X 1	7.7	19.2	80
3 G 1	8.3	29.2	96
4 G 1	9.1	38.4	100
5 G 1	10.1	48.0	130
7 G 1	12.0	67.0	170
12 G 1	14.8	115.0	290
18 G 1	17.6	173.0	405

Other dimensions available on enquiry.

WindSol™ WT-COVV (UL/CSA)

Flexible, Special PVC Insulated, Oil Resistant, 0.6/1 kV

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
25 G 1	21.4	240	570
2 X 1.5	8.7	29	97
3 G 1.5	9.4	43	119
4 G 1.5	10.2	58	148
5 G 1.5	11.3	72	172
7 G 1.5	13.6	101	243
12 G 1.5	16.9	173	392
18 G 1.5	20.0	259	529
25 G 1.5	24.2	360	741
2 X 2.5	9.7	48	160
3 G 2.5	10.2	72	175
4 G 2.5	11.4	96	203
5 G 2.5	12.7	120	251
7 G 2.5	15.3	168	330
12 G 2.5	22.3	432	553
18 G 2.5	24.9	480	795
25 G 2.5	27.2	600	1,110
2 X 4	11.7	77	180
3 G 4	12.6	115	230
4 G 4	14.1	154	310
5 G 4	15.6	192	410
7 G 4	17.1	269	540
12 G 4	23.2	461	860
3 G 6	14.4	173	370
4 G 6	15.9	230	430
5 G 6	17.6	288	650
7 G 6	19.6	403	860
3 G 10	16.8	288	668
4 G 10	18.7	384	796
5 G 10	20.8	480	960
7 G 10	22.8	672	1,300
3 G 16	19.9	288	660
4 G 16	22.0	614	1,100
5 G 16	24.5	768	1,600
7 G 16	26.0	1,075	1,890
3 G 25	24.3	720	1,450
4 G 25	27.2	960	1,600
5 G 25	29.6	1,200	2,050
7 G 25	32.9	1,680	2,900

Other dimensions available on enquiry.

WindSol™ WT-COVV (UL/CSA)

Flexible, Special PVC Insulated, Oil Resistant, 0.6/1 kV

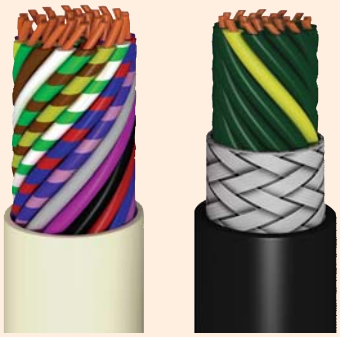
Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	8.6	30	129
3 G 0.5	8.9	39	150
4 G 0.5	9.7	52	170
5 G 0.5	10.4	61	199
7 G 0.5	12.4	75	235
12 G 0.5	15.0	130	320
18 G 0.5	17.6	170	428
25 G 0.5	20.9	230	503
2 X 0.75	9.0	39	143
3 G 0.75	9.3	57	155
4 G 0.75	10.2	68	190
5 G 0.75	11.1	79	228
7 G 0.75	13.3	96	323
12 G 0.75	16.1	169	410
18 G 0.75	18.2	224	560
25 G 0.75	23.1	292	730
2 X 1	9.7	58	293
3 G 1	10.1	67	305
4 G 1	11.1	78	335
5 G 1	12.4	94	348
7 G 1	14.8	122	355
12 G 1	17.7	201	520
18 G 1	21.0	275	590
25 G 1	25.1	364	595
2 X 1.5	10.5	68	162
3 G 1.5	11.2	84	187
4 G 1.5	12.5	104	240
5 G 1.5	13.6	123	289
7 G 1.5	16.3	180	383
12 G 1.5	19.9	284	592
18 G 1.5	23.7	390	806
25 G 1.5	28.5	521	1,241
2 X 2.5	11.8	99	272
3 G 2.5	12.5	124	298
4 G 2.5	13.7	170	345
5 G 2.5	15.2	202	427
7 G 2.5	18.2	268	561
12 G 2.5	22.2	423	857
18 G 2.5	26.4	572	1,355
25 G 2.5	32.2	740	1,995
2 X 4	14.6	156	306
3 G 4	15.4	191	391
4 G 4	17.0	236	527
5 G 4	18.9	303	700
7 G 4	20.3	394	920
3 G 6	17.3	251	629
4 G 6	19.0	319	731
5 G 6	21.0	421	1,105
7 G 6	23.3	561	1,465
3 G 10	19.9	371	1,125
4 G 10	22.2	576	1,345
5 G 10	24.4	620	1,635
7 G 10	27.1	842	2,210
3 G 16	23.8	540	1,395
4 G 16	26.7	807	1,870
5 G 16	29.1	1,394	2,720
7 G 16	32.2	1,605	3,213
3 G 25	28.3	820	2,465
4 G 25	32.8	1,169	2,750
5 G 25	36.0	1,850	3,490
7 G 25	39.3	2,140	4,980

Other dimensions available on enquiry.

WindSol™ WT-HCOVV (UL/CSA)

Flame Retardant, Oil Resistant, UL/CSA, 90℃, 600V



Application

UL-listed and CSA certified flexible control cable rated at 600V

Construction

Conductor	Bare copper, fine wire conductors, IEC 60228 Class 5
Insulation	Heat resistant special PVC
Shield	Screen braid of tinned copper wires (-SB)
Sheath	Heat resistant special PVC

Technical Data

Temperature Range	Fixed : -40 ~ +90℃ Flexing : - 5 ~ + 90℃
Rated Voltage	600V
Test Voltage	3.0kV
Breakdown Voltage	Min. 6.0kV
Min. Bending Radius	Fixed : 4 X D* Flexing : 15 X D*

*D : Cable Diameter

Properties

Halogen Free — IEC 60754-1

Flame Retardant — IEC 60332-3

Cold Resistant @-40℃ — CSA C22 2

Torsion Tested

UV Resistant

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	6.2	9.6	49
3 G 0.5	6.6	14.0	58
4 G 0.5	7.6	24.0	84
7 G 0.5	8.8	34.0	123
8 G 0.5	9.9	38.4	140
9 G 0.5	10.7	43.2	177
12 G 0.5	11.2	58.0	192
18 G 0.5	13.2	86.0	256
25 G 0.5	15.8	120.0	358
34 G 0.5	18.0	163.0	487
41 G 0.5	20.2	197.0	580
2 X 1	6.6	19.2	53
3 G 1	7.0	27.0	61
3 X 1	7.0	27.0	61
4 G 1	7.6	38.4	74
5 G 1	8.2	48.0	90
7 G 1	9.5	67.0	130
8 G 1	10.3	76.8	144
9 G 1	11.4	86.4	180
12 G 1	12.1	115.2	198
18 G 1	14.4	173.0	274
25 G 1	17.4	240.0	384
34 G 1	19.6	326.0	494
41 G 1	21.5	394.0	508

Other dimensions available on enquiry.

WindSol™ WT-HCOVV (UL/CSA)

Flame Retardant, Oil Resistant, UL/CSA, 90℃, 600V

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 G 1.5	7.2	28.8	73
3 G 1.5	7.8	44.0	94
4 G 1.5	9.4	58.0	117
5 G 1.5	9.0	72.0	140
7 G 1.5	10.9	101.0	186
9 G 1.5	13.1	129.0	244
12 G 1.5	13.7	173.0	319
18 G 1.5	16.1	260.0	451
25 G 1.5	19.2	360.0	625
34 G 1.5	22.0	490.0	840
41 G 1.5	24.0	590.0	1,032
2 X 2.5	8.5	48.0	115
3 G 2.5	9.0	72.0	143
4 G 2.5	10.4	96.0	185
5 G 2.5	11.2	120.0	221
7 G 2.5	13.4	168.0	293
9 G 2.5	15.9	216.0	429
12 G 2.5	17.0	288.0	563
18 G 2.5	19.9	432.0	854
19 G 2.5	20.0	456.0	914
25 G 2.5	24.3	600.0	1,188
3 G 4	11.5	115.0	232
4 G 4	12.8	154.0	298
5 G 4	14.1	192.0	358
7 G 4	16.6	269.0	460
3 G 6	13.2	173.0	360
4 G 6	14.5	231.0	402
5 G 6	16.2	288.0	484
7 G 6	19.7	403.0	630
3 G 10	17.2	288.0	535
4 G 10	18.8	384.0	653
5 G 10	20.6	480.0	786
7 G 10	22.6	672.0	1,100
2 X 16	19.7	307.0	640
3 X 16	21.0	461.0	810
4 G 16	23.5	615.0	1,045
5 G 16	26.0	768.0	1,260
7 G 16	28.7	1,075.0	1,760
3 G 25	25.3	720.0	1,180
4 G 25	28.4	960.0	1,507
5 G 25	31.2	1,200.0	1,858
7 G 25	35.8	1,680.0	2,830
3 G 35	28.9	1,008.0	1,590
4 G 35	32.0	1,344.0	2,123
5 G 35	35.5	1,680.0	2,612
3 G 50	31.5	1,440.0	2,652
4 G 50	36.1	1,920.0	3,058
5 G 50	39.0	2,400.0	4,093
3 G 70	39.5	2,016.0	3,307
4 G 70	41.9	2,688.0	4,254
5 G 70	48.7	3,360.0	5,661
3 G 95	42.4	2,736.0	4,867
4 G 95	46.3	3,648.0	5,762
5 G 95	51.5	4,560.0	7,208
3 G 120	48.1	3,456.0	5,580
4 G 120	53.1	4,608.0	7,280
5 G 120	59.3	5,760.0	8,692

Other dimensions available on enquiry.

WindSol™ WT-HCOVV (UL/CSA)

Flame Retardant, Oil Resistant, UL/CSA, 90℃, 600V

Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	8.1	40	93
3 G 0.5	8.4	45	124
4 G 0.5	9.0	52	133
5 G 0.5	9.6	68	153
7 G 0.5	10.9	93	191
9 G 0.5	12.7	134	243
12 G 0.5	13.4	163	322
18 G 0.5	16.0	191	374
25 G 0.5	18.6	223	436
34 G 0.5	20.5	284	560
41 G 0.5	22.7	336	663
2 X 1	8.5	51	107
3 G 1	8.8	56	130
4 G 1	9.5	81	155
5 G 1	10.4	90	181
7 G 1	11.7	101	209
9 G 1	13.7	161	321
12 G 1	14.2	175	341
18 G 1	16.6	241	473
25 G 1	19.9	342	650
34 G 1	22.9	434	781
41 G 1	24.7	499	892
2 X 1.5	9.1	70	136
3 G 1.5	9.6	89	165
4 G 1.5	10.4	97	192
5 G 1.5	11.2	111	224
7 G 1.5	13.3	147	273
9 G 1.5	15.2	193	340
12 G 1.5	16.0	256	461
18 G 1.5	18.7	380	674
25 G 1.5	22.7	544	950
34 G 1.5	25.6	674	1,203
41 G 1.5	27.8	881	1,588
2 X 2.5	10.7	73	173
3 G 2.5	11.2	111	220
4 G 2.5	12.2	141	270
5 G 2.5	13.6	169	329
7 G 2.5	16.0	251	428
9 G 2.5	18.5	326	580
12 G 2.5	19.6	430	761
18 G 2.5	23.5	639	1,140
25 G 2.5	28.8	892	1,551
2 X 4	12.9	116	209
3 G 4	13.5	198	310
4 G 4	14.9	232	456
5 G 4	16.2	275	532
7 X 4	19.4	395	737
2 G 6	14.6	183	318
3 G 6	15.6	242	411
4 G 6	17.0	316	572
5 G 6	18.8	411	732
7 G 6	22.5	570	961
3 G 10	19.5	416	741
4 G 10	21.6	571	988
5 G 10	24.2	690	1,202
7 G 10	27.0	971	1,743
3 G 16	24.7	660	1,088
4 G 16	27.7	821	1,662
5 G 16	31.1	1,127	2,021
7 G 16	34.1	1,512	2,720

Other dimensions available on enquiry.

WindSol™ WT-HC0VV (UL/CSA)

Flame Retardant, Oil Resistant, UL/CSA, 90℃, 600V

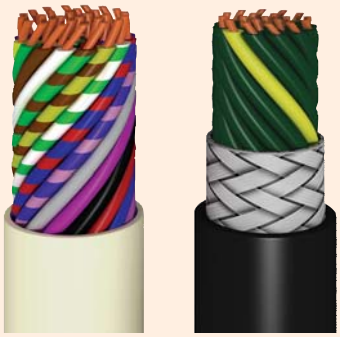
Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
3 G 25	30.7	1,091	1,947
4 G 25	33.8	1,443	2,591
5 G 25	40.3	1,802	3,197
7 G 25	41.1	2,520	4,530
3 G 35	34.4	1,501	2,701
4 G 35	38.2	1,889	3,277
5 G 35	42.0	2,532	4,530
3 G 50	35.3	1,621	2,870
4 G 50	40.8	2,474	3,960
5 G 50	44.7	2,794	4,371
3 G 70	41.7	2,288	3,647
4 G 70	46.4	3,120	4,882
5 G 70	50.9	3,705	5,876
3 G 95	46.5	3,094	4,751
4 G 95	51.0	4,043	6,368
5 G 95	56.4	5,026	7,843
3 G 120	52.3	3,812	5,899
4 G 120	57.3	5,069	8,010
5 G 120	63.0	5,877	9,205

Other dimensions available on enquiry.

WindSol™ WT-ROTPEU

Flexible, PUR Sheathed, Oil Resistant, UL/CSA , 300/500V



Application

UL-CSA-HAR approved cables,
Wiring cables for control and measuring control in widn turbines

Construction

Conductor	Bare copper, super fine wire conductors, IEC 60228 Class 6
Insulation	Halogen free TPE compound
Shield	Screen braid of tinned copper wires (-SB)
Sheath	Halogen free PUR

Technical Data

Temperature Range	Fixed : -40 ~ +90℃ Flexing : -5 ~ +90℃ (UL/CSA)
Rated Voltage	600V (UL/CSA)
Test Voltage	3.0kV
Min. Bending Radius	Fixed : 4X D* Flexing : 7.5 X D*

*D : Cable Diameter

Properties

Oil Resistant
IEC 60811

PVC
Self-Extinguishing
IEC 60332-1

Flame Retardant
IEC 60332-3

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	6.0	9.6	52
3 G 0.5	6.4	14.0	63
4 G 0.5	7.0	19.0	69
5 G 0.5	7.6	24.0	87
7 G 0.5	9.1	34.0	119
12 G 0.5	11.4	58.0	198
18 G 0.5	13.2	86.0	266
25 G 0.5	16.3	120.0	380
34 G 0.5	18.0	163.0	508
41 G 0.5	19.8	197.0	594
50 G 0.5	21.6	240.0	715
61 G 0.5	24.1	293.0	840
2 G 0.75	6.3	14.4	66
3 G 0.75	6.8	22.0	76
4 G 0.75	7.4	29.0	85
5 G 0.75	8.2	36.0	113
7 G 0.75	9.8	50.0	144
12 G 0.75	11.9	86.0	245
18 G 0.75	14.2	130.0	327
25 G 0.75	17.4	180.0	466
34 G 0.75	19.4	245.0	626
41 G 0.75	21.2	296.0	747
50 G 0.75	23.3	360.0	896
61 G 0.75	25.6	439.0	1,070

Other dimensions available on enquiry.

WindSol™ WT-ROTPEU

Flexible, PUR Sheathed, Oil Resistant, UL/CSA , 300/500V

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 1	6.6	19.2	70
3 G 1	7.1	29.0	88
4 G 1	7.8	39.0	99
5 G 1	8.7	48.0	132
7 G 1	10.3	67.0	170
12 G 1	12.8	115.0	285
18 G 1	15.0	173.0	405
25 G 1	18.3	240.0	570
34 G 1	20.6	326.0	742
41 G 1	22.7	394.0	885
50 G 1	24.7	480.0	1,071
61 G 1	27.1	586.0	1,265
2 X 1.5	7.7	28.8	91
3 G 1.5	8.3	43.0	110
4 G 1.5	9.0	58.0	141
5 G 1.5	10.1	72.0	167
7 G 1.5	12.2	101.0	225
12 G 1.5	14.8	173.0	361
18 G 1.5	17.7	259.0	518
25 G 1.5	21.6	360.0	730
34 G 1.5	24.4	490.0	945
41 G 1.5	26.5	591.0	1,135
50 G 1.5	29.1	720.0	1,381
61 G 1.5	31.8	878.0	1,640
2 X 2.5	9.5	48.0	125
3 G 2.5	10.2	72.0	169
4 G 2.5	11.3	96.0	209
5 G 2.5	12.3	120.0	256
7 G 2.5	14.9	168.0	340
12 G 2.5	18.4	288.0	579
18 G 2.5	22.4	432.0	851
25 G 2.5	26.8	600.0	1,175
34 G 2.5	30.2	916.0	1,529
50 G 2.5	35.5	1,200.0	2,290
61 G 2.5	38.7	1,464.0	2,724

Other dimensions available on enquiry.

WindSol™ WT-ROTPEU

Flexible, PUR Sheathed, Oil Resistant, UL/CSA , 300/500V

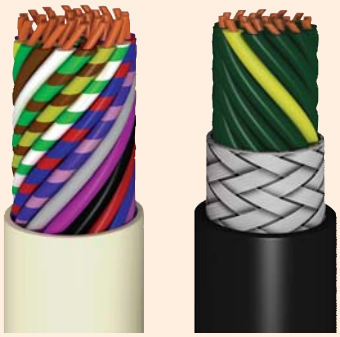
Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.5	8.0	30	90
3 G 0.5	8.6	42	105
4 G 0.5	9.2	51	123
5 G 0.5	10.0	56	147
7 G 0.5	11.5	75	195
12 G 0.5	13.9	124	276
18 G 0.5	15.7	166	418
25 G 0.5	18.9	196	504
34 G 0.5	21.1	242	632
41 G 0.5	22.9	351	750
50 G 0.5	25.1	398	968
61 G 0.5	26.3	447	1,068
2 X 0.75	8.3	41	101
3 G 0.75	8.9	50	127
4 G 0.75	9.7	61	155
5 G 0.75	10.4	73	180
7 G 0.75	12.2	93	225
12 G 0.75	14.5	155	326
18 G 0.75	16.9	211	457
25 G 0.75	20.3	278	635
34 G 0.75	22.7	360	805
41 G 0.75	24.3	454	908
50 G 0.75	26.5	541	1,155
61 G 0.75	30.3	628	1,400
2 X 1	8.8	48	113
3 G 1	9.5	61	144
4 G 1	10.1	76	178
5 G 1	11.0	85	205
7 G 1	12.8	113	263
12 G 1	15.4	195	424
18 G 1	17.6	356	560
25 G 1	21.4	342	760
34 G 1	23.8	447	945
41 G 1	25.8	575	1,151
50 G 1	27.9	666	1,300
61 G 1	32.7	780	1,500
2 X 1.5	9.7	69	144
3 G 1.5	10.4	80	160
4 G 1.5	11.3	94	210
5 G 1.5	12.6	114	240
7 G 1.5	14.5	143	305
12 G 1.5	17.4	254	482
18 G 1.5	20.3	314	611
25 G 1.5	24.3	477	950
34 G 1.5	27.4	671	1,200
41 G 1.5	30.0	777	1,400
50 G 1.5	32.1	911	1,665
61 G 1.5	34.9	1,079	1,852
2 X 2.5	11.4	81	189
3 G 2.5	12.3	115	244
4 G 2.5	13.7	141	296
5 G 2.5	14.9	188	367
7 G 2.5	17.5	241	478
12 G 2.5	21.5	397	622
18 G 2.5	25.1	556	1,010
25 G 2.5	30.1	790	1,375
34 G 2.5	34.7	1,007	1,893
50 G 2.5	39.3	1,498	2,666
61 G 2.5	41.3	1,794	3,077

Other dimensions available on enquiry.

WindSol™ WT-COHF 0.6/1kV

Flexible, Halogen-free, +125℃, 0.6/1kV



Application

Halogen-free, temperature resistant wiring and control cables with enhanced fire-behavior properties

Construction

Conductor	Bare copper, fine wire conductors, IEC 60228 Class 5
Insulation	Polyolefin copolymer
Shield	Screen braid of tinned copper wires (-SB)
Sheath	Polyolefin copolymer

Technical Data

Temperature Range	Fixed : -55 ~ +125℃ Flexing : -35 ~ +120℃
Rated Voltage	450/750V (0.75㎟ ↓), 600/1000V (1.0㎟ ↑)
Test Voltage	4.0kV
Min. Bending Radius	Fixed : 4 X D* Flexing : 12 X D*

*D : Cable Diameter

Properties

Halogen Free	Non-Corrosive	Flame Retardant	Oil Resistant	Cold Resistant @-50℃	Abrasion Resistant	Weathering Resistant
IEC 60754-1	IEC 60754-2	IEC 60332-3	IEC 60811	CSA C22.2		

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
1 X 0.25	3.1	2.4	11.4
2 X 0.25	4.9	4.8	28.7
3 G 0.25	5.2	7.2	33.7
4 G 0.25	5.8	9.6	41.8
5 G 0.25	6.1	12.0	47.0
6 G 0.25	6.8	14.4	58.0
7 G 0.25	7.2	16.8	64.0
8 G 0.25	7.6	19.2	71.0
10 G 0.25	8.4	24.0	84.0
12 G 0.25	8.4	28.8	90.0
14 G 0.25	8.9	33.63	102.0
16 G 0.25	9.2	38.4	114.0
19 G 0.25	10.4	45.6	132.0
21 G 0.25	10.8	50.4	145.0
1 X 0.5	3.5	4.8	15.7
2 G 0.5	5.6	9.6	39.6
3 G 0.5	6.0	14.4	48.1
4 G 0.5	6.5	19.2	51.0
5 G 0.5	7.3	24.0	64.0
6 G 0.5	7.7	28.8	74.0
7 G 0.5	8.4	33.6	88.0
8 G 0.5	9.3	38.4	102.0
10 G 0.5	10.3	48.0	123.0
12 G 0.5	10.3	57.6	135.0

Other dimensions available on enquiry.

WindSol™ WT-COHF 0.6/1kV

Flexible, Halogen-free, +125°C, 0.6/1kV

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
14 G 0.5	10.8	67.2	153.0
16 G 0.5	11.6	76.8	176.0
19 G 0.5	12.7	91.2	213.0
21 G 0.5	13.3	100.8	234.0
24 G 0.5	14.3	115.2	263.0
25 G 0.5	14.3	120.0	269.0
27 G 0.5	14.3	129.0	280.0
30 G 0.5	14.9	144.0	311.0
33 G 0.5	15.7	158.4	343.0
37 G 0.5	16.8	177.6	392.0
1 X 0.75	3.8	7.2	19.8
2 X 0.75	6.3	14.4	40.0
3 G 0.75	6.7	21.6	53.0
4 G 0.75	7.3	28.8	69.0
5 G 0.75	8.2	36.0	86.0
6 G 0.75	8.8	43.2	101.0
7 G 0.75	9.4	50.4	117.0
8 G 0.75	10.6	57.6	140.0
10 G 0.75	11.7	72.0	167.0
12 G 0.75	11.7	86.4	183.0
14 G 0.75	12.4	100.8	212.0
16 G 0.75	13.1	115.2	239.0
19 G 0.75	14.4	136.8	290.0
21 G 0.75	15.2	151.2	323.0
24 G 0.75	16.4	172.8	364.0
25 G 0.75	16.4	180.0	371.0
27 G 0.75	16.4	194.0	387.0
30 G 0.75	17.1	216.0	429.0
33 G 0.75	17.8	237.6	468.0
37 G 0.75	19.4	266.4	550.0
1 X 1	4.2	9.6	25.2
2 X 1	6.9	19.2	50.0
3 G 1	7.3	28.8	66.0
4 G 1	8.0	38.4	86.0
5 G 1	8.7	48.0	106.0
6 G 1	9.5	57.6	127.0
7 G 1	10.5	67.2	155.0
8 G 1	11.6	76.8	187.0
10 G 1	12.8	96.0	214.0
12 G 1	12.8	115.2	230.0
14 G 1	13.5	134.4	266.0
16 G 1	14.2	153.6	301.0
19 G 1	16.0	182.0	377.0
21 G 1	16.8	201.6	419.0
24 G 1	16.8	201.6	419.0
24 G 1	18.0	230.4	464.0
25 G 1	18.0	240.0	472.0
27 G 1	18.0	259.2	488.0
30 G 1	18.6	288.0	536.0
33 G 1	19.7	316.8	605.0
37 G 1	21.5	355.2	690.0
1 X 1.5	4.6	14.4	32.3
2 X 1.5	8.1	28.8	69.0
3 X 1.5	8.6	43.2	93.0
4 G 1.5	9.4	57.6	120.0
5 G 1.5	10.4	72.0	152.0
6 G 1.5	11.5	86.4	187.0
7 G 1.5	12.4	100.8	222.0
8 G 1.5	13.8	115.2	263.0
10 G 1.5	15.3	144.0	308.0
12 G 1.5	15.3	172.8	330.0
14 G 1.5	16.2	201.6	383.0

Other dimensions available on enquiry.

WindSol™ WT-COHF 0.6/1kV

Flexible, Halogen-free, +125°C, 0.6/1kV

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
16 G 1.5	17.1	230.4	438.0
19 G 1.5	19.3	273.6	554.0
21 G 1.5	20.3	302.4	614.0
24 G 1.5	22.0	345.6	791.0
25 G 1.5	22.0	360.0	701.0
27 G 1.5	22.0	388.8	723.0
30 G 1.5	22.8	42.0	796.0
33 G 1.5	23.8	475.2	880.0
37 G 1.5	25.8	532.8	1,026.0
1 X 2.5	5.3	24.0	46.9
2 G 2.5	9.4	48.0	99.0
3 G 2.5	10.2	72.0	140.0
4 G 2.5	11.2	96.0	183.0
5 G 2.5	12.5	120.0	231.0
6 G 2.5	13.6	144.0	280.0
7 G 2.5	14.9	168.0	336.0
8 G 2.5	16.5	192.0	397.0
10 G 2.5	18.2	240.0	460.0
12 G 2.5	18.2	288.0	500.0
14 G 2.5	19.5	336.0	593.0
16 G 2.5	20.7	384.0	675.0
19 G 2.5	23.1	456.0	835.0
21 G 2.5	24.5	504.0	939.0
24 G 2.5	26.4	476.0	1,047.0
25 G 2.5	26.4	600.0	1,067.0
27 G 2.5	26.4	648.0	1,107.0
30 G 2.5	27.3	720.0	1,219.0
33 G 2.5	28.7	792.0	1,349.0
37 G 2.5	31.1	8,880.0	1,565.0
1 X 4	5.9	38.4	96.0
2 X 4	11.0	76.8	159.0
3 G 4	11.8	115.2	197.0
4 G 4	13.1	153.6	260.0
5 G 4	14.5	192.0	329.0
6 G 4	15.7	230.4	398.0
7 G 4	17.3	268.0	478.0
8 G 4	18.5	307.2	553.0
10 G 4	20.9	384.0	663.0
12 G 4	20.9	460.8	725.0
14 G 4	21.3	537.6	797.0
1 X 6	6.5	57.6	88.0
2 X 6	12.4	115.2	216.0
3 G 6	13.2	172.8	285.0
4 G 6	14.7	230.4	375.0
5 G 6	16.1	288.0	465.0
6 G 6	17.7	345.6	544.0
7 G 6	19.7	403.2	664.0
1 X 10	8.2	96.0	144.0
2 X 10	15.7	192.0	351.0
3 G 10	16.8	288.0	475.0
4 G 10	18.9	384.0	630.0
5 G 10	20.7	480.0	782.0
6 G 10	22.9	576.0	914.0
7 G 10	25.0	672.0	1,092.0
1 X 16	9.2	153.6	205.0
2 X 16	17.8	307.2	495.0
3 G 16	19.4	460.8	691.0
4 G 16	21.5	614.4	905.0
5 G 16	23.9	768.0	1,129.0
6 G 16	26.2	921.6	1,327.0
7 G 16	28.9	1,075.2	1,590.0
1 X 25	11.8	240.0	336.0

Other dimensions available on enquiry.

WindSol™ WT-COHF 0.6/1kV

Flexible, Halogen-free, +125°C, 0.6/1kV

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 25	23.0	480	833
3 G 25	24.7	720	1,139
4 G 25	27.6	960	1,489
5 G 25	30.7	1,200	1,863
6 G 25	33.9	1,440	2,275
7 G 25	37.3	1,680	2,633
1 X 35	13.1	336	454
2 X 35	25.4	672	1,104
3 G 35	27.3	1,008	1,513
4 G 35	30.5	1,344	1,992
5 G 35	33.7	1,680	2,488
1 X 50	15.6	480	638
2 X 50	30.6	960	1,573
3 G 50	32.8	1,440	3,154
4 G 50	36.9	1,920	2,819
5 G 50	40.6	2,400	3,505
1 X 70	17.7	672	875
2 X 70	35.0	1,344	2,157
3 G 70	37.5	2,016	2,946
4 G 70	42.1	2,688	3,888
5 G 70	46.9	3,360	4,864
1 X 95	20.4	912	1,149
2 X 95	39.8	1,824	2,763
3 G 95	42.9	2,736	3,835
4 G 95	48.0	3,648	5,052
5 G 95	53.2	4,560	6,307

Other dimensions available on enquiry.

WindSol™ WT-COHF 0.6/1kV

Flexible, Halogen-free, +125°C, 0.6/1kV

Product List (Shielded type, -SB)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.25	5.3	16.0	36
3 G 0.25	5.8	21.0	44
5 G 0.25	6.7	29.0	68
7 G 0.25	7.8	37.0	95
1 X 0.5	4.0	15.0	24
2 X 0.5	6.3	29.0	55
3 X 0.5	6.6	38.0	64
4 X 0.5	7.2	45.0	78
5 X 0.5	8.0	51.0	95
6 X 0.5	8.4	66.0	106
7 X 0.5	9.0	68.0	122
8 X 0.5	9.7	80.0	138
10 X 0.5	10.7	93.0	161
12 X 0.5	10.7	107.0	170
14 X 0.5	11.3	122.0	193
16 X 0.5	12.0	129.0	216
19 X 0.5	13.1	158.0	253
21 X 0.5	13.8	167.0	281
1 X 0.75	4.3	18.0	29
2 X 0.75	7.0	38.0	71
3 X 0.75	7.4	50.0	82
4 X 0.75	8.0	58.0	100
5 X 0.75	8.8	70.0	117
6 X 0.75	9.4	85.0	135
7 X 0.75	10.2	90.0	158
8 X 0.75	10.9	110.0	178
10 X 0.75	12.0	140.0	207
12 X 0.75	12.0	148.0	220
14 X 0.75	12.7	167.0	250
16 X 0.75	13.5	183.0	282
19 X 0.75	14.8	212.0	335
21 X 0.75	15.6	230.0	370
1 X 1	4.6	1.7	33
2 X 1	7.5	31.0	78
3 X 1	8.0	56.0	92
4 X 1	8.6	66.0	112
5 X 1	9.3	95.0	134
6 X 1	10.3	105.0	164
7 X 1	11.2	109.0	192
8 X 1	11.9	130.0	219
10 X 1	13.1	138.0	254
12 X 1	13.1	164.0	270
14 X 1	13.8	198.0	308
16 X 1	14.6	203.0	350
19 X 1	16.5	235.0	447
21 X 1	17.3	257.0	492
1 X 1.5	5.1	22.0	42
2 X 1.5	8.7	58.0	105
3 X 1.5	9.2	71.0	121
4 X 1.5	10.2	86.0	156
5 X 1.5	11.0	104.0	188
6 X 1.5	12.1	118.0	225
7 X 1.5	13.0	136.0	264
8 X 1.5	14.1	172.0	308
10 X 1.5	15.7	193.0	361
12 X 1.5	15.7	222.0	383
14 X 1.5	16.8	272.0	458
16 X 1.5	17.6	285.0	515
19 X 1.5	19.8	331.0	639
21 X 1.5	20.8	367.0	705
1 X 2.5	5.9	28.0	59
2 X 2.5	10.2	96.0	148

Other dimensions available on enquiry.

WindSol™ WT-COHF 0.6/1kV

Flexible, Halogen-free, +125°C, 0.6/1kV

Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
3 X 2.5	10.8	146	183
4 X 2.5	11.8	150	221
5 X 2.5	13.1	200	273
6 X 2.5	14.2	227	326
7 X 2.5	15.8	235	397
8 X 2.5	17.1	265	475
10 X 2.5	18.7	325	542
12 X 2.5	18.7	376	582
14 X 2.5	20.0	428	681
16 X 2.5	21.4	480	778
19 X 2.5	23.8	557	948
21 X 2.5	25.0	606	1,042
1 X 4	6.7	56	86
2 X 4	11.4	135	196
3 X 4	12.1	178	248
4 X 4	13.5	220	316
5 X 4	14.8	259	376
6 X 4	16.1	302	452
7 X 4	17.8	355	555
8 X 4	19.4	392	655
10 X 4	21.6	480	767
12 X 4	21.6	557	829
14 X 4	22.8	636	948
1 X 6	7.3	81	108
2 X 6	12.7	175	255
3 X 6	13.6	240	330
4 X 6	15.2	305	429
5 X 6	16.6	441	536
6 X 6	18.2	473	624
7 X 6	20.2	505	751
1 X 10	8.9	124	170
2 X 10	16.2	265	409
3 X 10	17.3	370	550
4 X 10	19.4	485	715
5 X 10	21.4	610	882
6 X 10	23.6	715	1,026
7 X 10	25.5	820	1,195

Other dimensions available on enquiry.

WindSol™ WT-WTTC

Multicore, Oil Resistant, 1.0kV, UL/CSA

Application

Control for wind turbine

UL certification & application : UL RHW-2 & cUL RW90 (UL44 & CSA C22.2 No. 38),
UL WTTC (UL subject 2277, ZGZN)

Construction

Conductor	Bare or tinned copper, fine wire conductors, UL1581 Class K
Insulation	Cross-linked PE(XLPE) core insulation in accordance with UL44 & CSA C22.2 No.38 EPR (Ethylene-Propylene-Rubber)
Shield	Tinned copper braid shield (Min. 80% coverage)
Sheath	Special XL compound (UL1277 Std)

Technical Data

Temperature Range	Fixed : -40 ~ +90℃ Flexing : -5 to +90℃
Rated Voltage	1.0kV
Test Voltage	6kV (18-10AWG), 7.5kV (8-2AWG)
Min. Bending Radius	Fixed : 4 X D* Flexing : 10 X D*
Flammability Rating	FT4 (Vertical Tray, UL1277)
Torsion Requirement	10,000 Cycle (±280~460° / 3~5m)

*D : Cable Diameter

Properties

Oil Resistant	Flame Retardant	Flexible	Cold Resistant @-40℃	Chemical Resistant	UV Resistant	Torsion Tested
UL 1277	IEC 60332-3	IEC 60794-1-2-E6	CSA C22 2			

Product List (Shielded type, -SB)

No. cores X Cross Sec. AWG (mm^2)	Outer Diameter (mm)	Copper Index (kg/km)
2 X 18AWG	10.5	15.2
3 X 18AWG	11.0	22.8
4 X 18AWG	12.0	30.4
5 X 18AWG	13.2	38.0
7 X 18AWG	16.0	53.2
10 X 18AWG	18.6	76.0
12 X 18AWG	19.0	91.2
2 X 12AWG	13.0	61.0
3 X 12AWG	13.8	91.5
4 X 12AWG	15.6	122.0
5 X 12AWG	17.1	152.5
7 X 12AWG	20.1	213.5
10 X 12AWG	24.7	305.0
12 X 12AWG	25.3	366.0

Other dimensions available on enquiry.

WindSol™ WT-WTTC

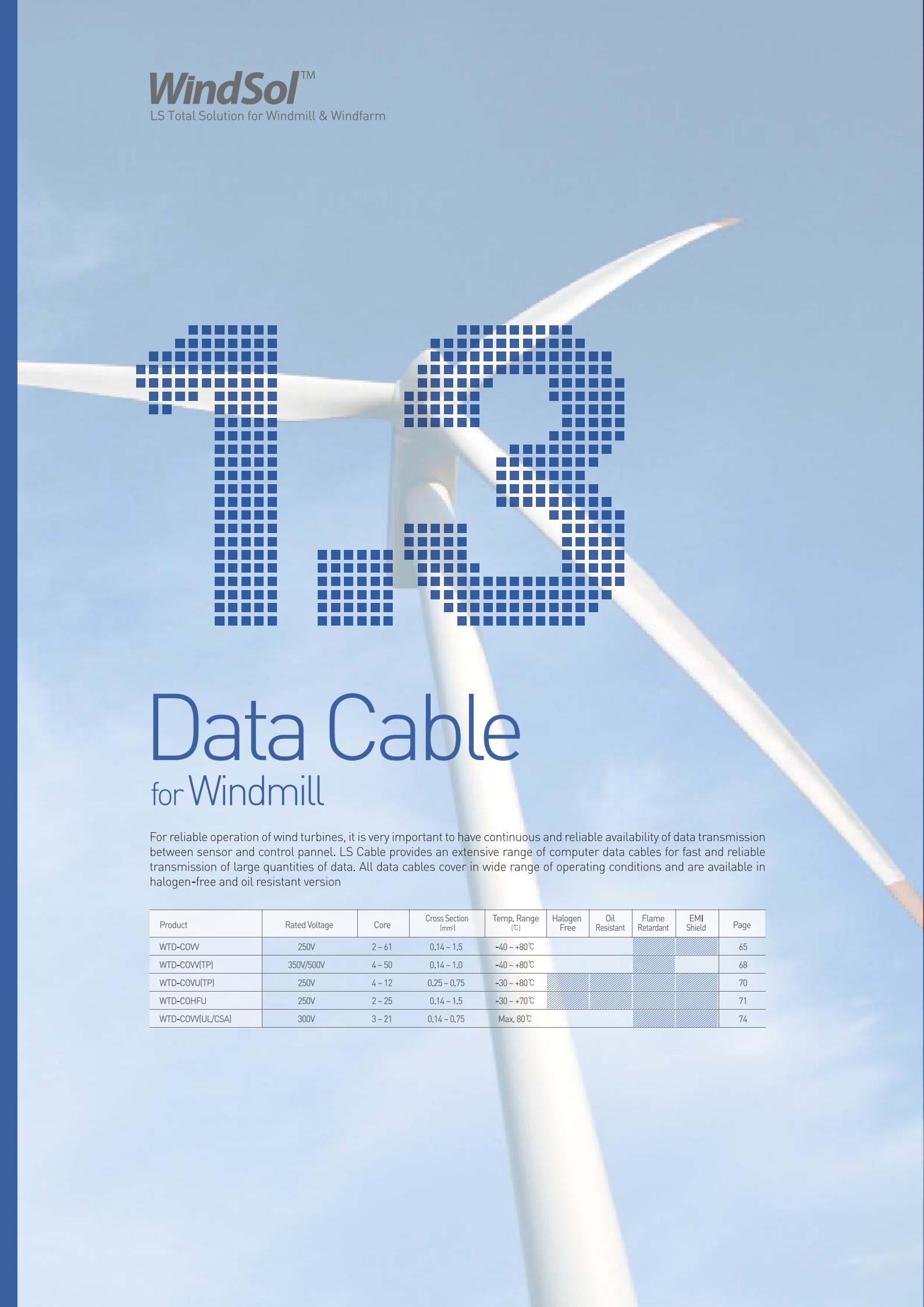
Multicore, Oil Resistant, 1.0kV, UL/CSA

Product List (Shielded type, -SB)

No. cores X Cross Sec. AWG (mm²)	Outer Diameter (mm)	Copper Index (kg/km)
2 X 6AWG	22.8	249.4
3 X 6AWG	24.0	374.1
4 X 6AWG	26.4	498.8
5 X 6AWG	29.0	623.5
7 X 6AWG	34.3	872.9
10 X 6AWG	40.7	1,247.0
12 X 6AWG	41.8	1,496.4
2 X 4AWG	25.7	393.6
3 X 4AWG	27.2	590.4
4 X 4AWG	29.8	787.2
5 X 4AWG	32.9	984.0
7 X 4AWG	39.2	1,377.6
10 X 4AWG	46.8	1,968.0
12 X 4AWG	48.0	2,361.6
2P X 18AWG	16.8	30.5
4P X 18AWG	19.4	61.0
6P X 18AWG	23.5	91.4
8P X 18AWG	27.2	121.9
10P X 18AWG	29.0	152.4

Other dimensions available on enquiry.

WindSol™
LS Total Solution for Windmill & Windfarm



Data Cable
for Windmill

For reliable operation of wind turbines, it is very important to have continuous and reliable availability of data transmission between sensor and control pannel. LS Cable provides an extensive range of computer data cables for fast and reliable transmission of large quantities of data. All data cables cover in wide range of operating conditions and are available in halogen-free and oil resistant version

Product	Rated Voltage	Core	Cross Section (mm²)	Temp. Range (℃)	Halogen Free	Oil Resistant	Flame Retardant	EMI Shield	Page
WTD-COVV	250V	2 ~ 61	0.14 ~ 1.5	-40 ~ +80℃			▨	▨	65
WTD-COVV(TP)	350V/500V	4 ~ 50	0.14 ~ 1.0	-40 ~ +80℃			▨		68
WTD-COVU(TP)	250V	4 ~ 12	0.25 ~ 0.75	-30 ~ +80℃	▨	▨	▨	▨	70
WTD-COHFU	250V	2 ~ 25	0.14 ~ 1.5	-30 ~ +70℃	▨	▨	▨	▨	71
WTD-COVV(UL/CSA)	300V	3 ~ 21	0.14 ~ 0.75	Max. 80℃			▨	▨	74

WindSol™ WTD-COVV

Multicore, PVC Insulated, LiYCY

Application

Electronic, computer, measurement and control sectors

Construction

Conductor	Bare copper wire stranded conductor
Insulation	PVC
Shielding	Screen made of tinned copper wire braid (-SB)
Outer Sheath	PVC

Technical Data

Mutual Capacitance	C/C approx. 140 nF/km, C/S approx. 150 nF/km
Peak Working Voltage	250 V
Specific Insulation Resistance	⟩20GΩX cm
Inductivity	Approx. 0.65 mH/km
Min. Bending Radius	Flexing : 15 X D* Fixed : 6 X D*
Test Voltage	At 0.14mm² : 1200V, ⟩0.14mm² : 1500V
Range of Temperature	Fixed : -40℃ ~ +80℃

*D : Cable Diameter

Properties

Flame Retardant

IEC 60332-3

Product List (Shielded type, -SB)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 x 0.14	3.9	12.0	20
3 x 0.14	4.1	13.0	28
4 x 0.14	4.3	14.3	33
5 x 0.14	4.6	15.5	38
6 x 0.14	4.9	18.2	38
7 x 0.14	4.9	19.0	49
8 x 0.14	5.8	21.2	56
10 x 0.14	6.1	28.5	66
12 x 0.14	6.3	30.4	78
14 x 0.14	6.7	32.0	80
15 x 0.14	6.9	37.8	86
16 x 0.14	7.0	43.0	90
18 x 0.14	7.3	48.8	104
20 x 0.14	7.7	53.9	116
21 x 0.14	7.9	55.5	121
25 x 0.14	8.4	63.0	149
28 x 0.14	8.5	66.1	153
30 x 0.14	8.7	69.0	158
32 x 0.14	9.0	73.6	164
36 x 0.14	9.3	83.0	183

Other dimensions available on enquiry.

WindSol™ WTD-COVV

Multicore, PVC Insulated, LiYCY

Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
40 x 0.14	10.4	87.5	210.0
44 x 0.14	10.7	110.5	225.0
50 x 0.14	11.1	122.5	253.0
2 x 0.25	4.5	16.0	32.0
3 x 0.25	4.7	21.0	37.0
4 x 0.25	5.0	24.0	41.3
5 x 0.25	5.6	29.0	51.2
6 x 0.25	6.0	30.0	58.0
7 x 0.25	6.0	37.0	65.0
8 x 0.25	7.1	42.0	73.0
10 x 0.25	7.5	46.0	82.0
12 x 0.25	7.7	53.0	145.0
14 x 0.25	8.0	59.0	99.0
15 x 0.25	8.3	61.0	111.0
16 x 0.25	8.4	64.0	124.0
18 x 0.25	8.8	83.0	143.0
20 x 0.25	9.3	88.0	152.3
21 x 0.25	9.6	93.0	161.0
25 x 0.25	10.7	114.0	172.0
28 x 0.25	10.8	126.0	181.1
30 x 0.25	11.0	132.0	189.0
32 x 0.25	11.4	138.0	203.0
36 x 0.25	11.8	148.0	220.0
40 x 0.25	12.7	157.0	248.0
50 x 0.25	13.8	178.0	318.0
61 x 0.25	15.0	205.0	365.2
2 x 0.34	4.9	21.0	37.0
3 x 0.34	5.1	27.0	49.0
4 x 0.34	5.7	28.0	59.0
5 x 0.34	6.2	30.0	66.0
6 x 0.34	6.8	45.0	79.0
7 x 0.34	6.8	48.0	83.0
8 x 0.34	7.8	52.0	94.0
10 x 0.34	8.3	74.0	129.2
12 x 0.34	8.5	80.0	142.0
14 x 0.34	8.9	86.0	154.0
15 x 0.34	9.2	90.0	155.0
16 x 0.34	9.4	94.0	160.0
18 x 0.34	10.2	103.0	173.0
20 x 0.34	10.7	112.0	192.0
21 x 0.34	11.1	116.0	199.2
25 x 0.34	11.9	135.0	259.0
28 x 0.34	12.0	153.0	280.0
30 x 0.34	12.3	159.0	291.1
32 x 0.34	13.0	165.0	305.0
36 x 0.34	13.4	179.0	331.0
40 x 0.34	14.8	200.0	365.0
50 x 0.34	15.9	235.0	431.0
2 x 0.50	5.6	29.0	54.0
3 x 0.50	5.9	38.0	67.0
4 x 0.50	6.3	43.0	77.0
5 x 0.50	7.0	51.0	90.0
6 x 0.50	7.6	59.0	104.0
7 x 0.50	7.6	65.0	112.0
8 x 0.50	8.7	70.0	135.0

Other dimensions available on enquiry.

WindSol™ WTD-COVV

Multicore, PVC Insulated, LiYCY

Product List (Shielded type, -SB)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
10 x 0.50	9.3	88.0	160
12 x 0.50	9.6	99.0	177
18 x 0.50	11.8	134.0	239
20 x 0.50	12.1	149.0	276
25 x 0.50	13.7	211.0	352
30 x 0.50	14.5	230.0	397
2 x 0.75	6.0	38.0	64
3 x 0.75	6.3	49.0	76
4 x 0.75	7.0	58.0	92
5 x 0.75	7.6	67.0	109
7 x 0.75	8.2	100.0	156
10 x 0.75	10.5	130.0	187
12 x 0.75	10.8	154.0	218
18 x 0.75	13.0	195.0	327
25 x 0.75	15.3	280.0	454
30 x 0.75	15.8	312.0	486
2 x 1.00	6.3	43.0	72
3 x 1.00	6.8	56.0	90
4 x 1.00	7.3	68.0	109
5 x 1.00	8.0	79.0	126
7 x 1.00	8.6	118.0	171
10 x 1.00	11.1	140.0	228
12 x 1.00	11.4	168.0	259
18 x 1.00	13.4	252.0	389
25 x 1.00	16.2	335.0	517
2 x 1.50	7.5	58.0	90
3 x 1.50	7.9	74.0	115
4 x 1.50	8.5	108.0	153
5 x 1.50	9.3	129.0	176
7 x 1.50	10.5	164.0	220
12 x 1.50	13.7	254.0	376
18 x 1.50	16.3	350.0	519
25 x 1.50	19.9	550.0	901

Other dimensions available on enquiry.

WindSol™ WTD-COVV(TP)

Multicore, PVC Insulated, LiYCY (Twisted Pair)

Application
Electronic, computer, measurement and control sectors.

Construction

Conductor	Bare copper wire stranded conductor
Insulation	PVC
Shielding	Screen made of tinned copper wire braid (-SB)
Outer Sheath	PVC

Technical Data

Mutual Capacitance	Approx. 120 nF/km
Peak Working Voltage	At 0.14mm² : 350V, ⩾0.14mm² : 500V
Specific Insulation Resistance	⩾20G ΩX cm
Inductivity	Approx. 0.65 mH/km
Min. Bending Radius	Flexing : 10 X D*
Test Voltage	At 0.14mm² : 1200V, ⩾0.14mm² : 1500V
Range of Temperature	Fixed : -40℃ ~ +80℃

*D : Cable Diameter

Properties

Flame Retardant

IEC 60332-3

Product List (Twisted Pair type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 x 2 x 0.14	5.7	18.5	39
3 x 2 x 0.14	5.8	23.0	48
4 x 2 x 0.14	6.2	26.6	54
6 x 2 x 0.14	7.1	48.5	85
8 x 2 x 0.14	8.2	53.7	97
10 x 2 x 0.14	8.7	59.0	110
12 x 2 x 0.14	8.9	66.0	142
16 x 2 x 0.14	10.2	79.0	154
20 x 2 x 0.14	11.3	97.0	184
25 x 2 x 0.14	12.5	113.0	238
2 x 2 x 0.25	7.0	28.0	54
3 x 2 x 0.25	7.1	39.6	66
4 x 2 x 0.25	7.6	44.9	81
6 x 2 x 0.25	8.5	69.5	115
8 x 2 x 0.25	10.3	76.9	130
10 x 2 x 0.25	11.0	102.0	158
12 x 2 x 0.25	11.3	120.0	190
16 x 2 x 0.25	12.5	146.5	238
25 x 2 x 0.25	16.1	205.0	344

Other dimensions available on enquiry.

WindSol™ WTD-COVV(TP)

Multicore, PVC Insulated, LiYCY (Twisted Pair)

Product List (Twisted Pair type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 x 2 x 0.5	8.6	48.1	93
3 x 2 x 0.5	8.7	73.7	129
4 x 2 x 0.5	9.4	82.0	146
6 x 2 x 0.5	11.1	110.0	198
8 x 2 x 0.5	13.1	139.0	259
12 x 2 x 0.5	14.9	198.3	354
16 x 2 x 0.5	16.5	240.0	459
2 x 2 x 0.75	8.5	58.0	106
3 x 2 x 0.75	9.4	84.0	140
4 x 2 x 0.75	10.7	108.0	179
5 x 2 x 0.75	11.1	126.0	215
6 x 2 x 0.75	12.1	146.0	246
8 x 2 x 0.75	14.7	180.0	305
12 x 2 x 0.75	16.2	261.0	456
2 x 2 x 1	10.3	84.0	142
3 x 2 x 1	10.4	96.0	173
4 x 2 x 1	11.3	121.0	212
5 x 2 x 1	11.8	161.0	266

Other dimensions available on enquiry.

WindSol™ WTD-COVU (TP)

Multicore, PUR Sheathed

Application

Everywhere, where robust and screened cables with small dimensions are necessary.

Construction

Conductor	Bare copper wire stranded conductor
Insulation	PVC
Shielding	Screen made of tinned copper wire braid
Outer Sheath	PUR

Technical Data

Mutual Capacitance	C/C approx. 140 nF/km, C/S approx. 150 nF/km
Peak Working Voltage	250V
Specific Insulation Resistance	⟩20GΩ X cm
Inductivity	Approx. 0.65 mH/km
Min. Bending Radius	Flexing : 15 X D* Fixed : 6 X D*
Test Voltage	At 0.14mm² : 1200V, ⟩0.14mm² : 1500V
Range of Temperature	Fixed : -30℃ ~ +80℃

*D : Cable Diameter

Properties

Flame Retardant — IEC 60332-3

Halogen Free — IEC 60754-1

Oil Resistant — IEC 60811

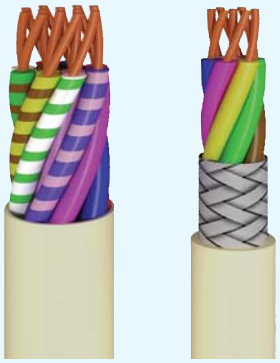
Product List (Twisted Pair type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 2 X 0.25	7.0	28.0	54
3 X 2 X 0.25	7.1	39.6	66
4 X 2 X 0.25	7.6	44.9	81
6 X 2 X 0.25	8.5	69.5	115
2 X 2 X 0.5	8.6	48.1	93
3 X 2 X 0.5	8.7	73.7	129
4 X 2 X 0.5	9.4	82.0	146
6 X 2 X 0.5	11.1	110.0	198
4 X 2 X 0.75	10.7	108.0	179
5 X 2 X 0.75	11.1	113.0	215

Other dimensions available on enquiry.

WindSol™ WTD-COHFU

Multicore, Halogen-free, LiHH / LiHCH



Application

Everywhere, where robust and screened cables with small dimensions are necessary

Construction

Conductor	Stranded bare conductor
Insulation	Halogen-free compound
Shielding	Screen made of tinned copper wire braid (-SB)
Outer Sheath	Halogen-free compound

Technical Data

Mutual Capacitance	Approx. 80 nF/km
Peak Working Voltage	250V
Specific Insulation Resistance	›20GΩx cm
Inductivity	Approx. 0.65 mH/km
Min. Bending Radius	Flexing : 10 X D*
Test Voltage	1200V
Range of Temperature	Fixed : -30℃ ~ +70℃

*D : Cable Diameter

Properties

Flame Retardant — IEC 60332-3

Halogen Free — IEC 60754-1

Oil Resistant — IEC 60811

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 X 0.14	3.4	2.7	12
3 X 0.14	3.6	4.0	15
4 X 0.14	3.8	5.4	17
5 X 0.14	4.1	6.7	22
6 X 0.14	4.4	8.1	25
7 X 0.14	4.4	9.4	26
8 X 0.14	5.1	10.8	29
10 X 0.14	5.4	13.4	35
12 X 0.14	5.8	16.1	43
20 X 0.14	7.2	26.8	71
25 X 0.14	8.0	34.6	91
2 X 0.25	4.0	4.8	22
3 X 0.25	4.2	7.2	25
4 X 0.25	4.5	9.6	28
5 X 0.25	4.9	12.0	34
6 X 0.25	5.3	14.4	39
7 X 0.25	5.3	16.8	42
8 X 0.25	6.4	19.2	50
10 X 0.25	7.0	24.0	60
12 X 0.25	7.2	28.8	67

Other dimensions available on enquiry.

WindSol™ WTD-COHFU

Multicore, Halogen-free, LiHH / LiHCH

Product List (Non-shielded type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
16 X 0.25	7.9	38.4	85
2 X 0.34	4.4	6.5	28
2 X 0.34	4.6	9.8	30
4 X 0.34	5.0	40.0	40
5 X 0.34	5.7	44.0	44
7 X 0.34	6.1	60.0	60
10 X 0.34	7.8	80.0	80
12 X 0.34	8.0	97.0	97
2 X 0.5	4.9	31.0	31
3 X 0.5	5.2	37.0	37
4 X 0.5	5.8	45.0	45
5 X 0.5	6.3	58.0	58
7 X 0.5	7.0	72.0	72
12 X 0.5	9.1	117.0	117
2 X 0.75	5.3	41.0	41
4 X 0.75	6.3	60.0	60
5 X 0.75	7.1	70.0	70
7 X 0.75	7.7	85.0	85
12 X 0.75	10.4	165.0	165
3 X 1	6.1	57.0	57
4 X 1	6.6	67.0	67
3 X 1.5	7.4	72.0	72
4 X 1.5	8.0	87.0	87

Other dimensions available on enquiry.

Product List (Shielded type-SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 x 0.14	4.1	12.0	22
3 x 0.14	4.3	14.1	25
4 x 0.14	4.5	15.9	29
6 x 0.14	5.1	22.0	35
7 x 0.14	5.1	24.0	38
8 x 0.14	6.0	26.0	41
12 x 0.14	6.5	30.4	78
16 x 0.14	7.2	43.0	90
25 x 0.14	8.7	63.0	149
2 x 0.25	4.7	15.0	25
3 x 0.25	4.9	18.0	30
4 x 0.25	5.2	22.0	35
6 x 0.25	6.2	30.0	49
7 x 0.25	6.2	32.0	52
8 x 0.25	7.3	35.0	58
10 x 0.25	7.7	42.0	81
25 x 0.25	10.9	114.0	172
2 x 0.34	5.1	17.0	30
3 x 0.34	5.3	21.0	35
4 x 0.34	5.9	25.0	42
5 x 0.34	6.4	30.0	53
7 x 0.34	7.0	42.0	73
8 x 0.34	8.0	45.0	84

Other dimensions available on enquiry..

WindSol™ WTD-COHFU

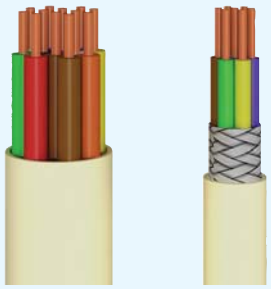
Multicore, Halogen-free, LiHH / LiHCH

Product List (Shielded type, -SB)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
10 x 0.34	8.5	63	101
16 x 0.34	9.6	94	160
25 x 0.34	12.1	144	259
2 x 0.5	5.8	29	38
3 x 0.5	6.1	35	47
4 x 0.5	6.5	45	67
5 x 0.5	7.2	50	76
6 x 0.5	7.8	59	84
7 x 0.5	7.8	68	91
8 x 0.5	8.9	75	135
10 x 0.5	9.5	93	131
12 x 0.5	9.8	99	177
18 x 0.5	11.7	134	239
25 x 0.5	13.9	211	352
2 x 0.75	6.2	35	45
3 x 0.75	6.5	46	69
4 x 0.75	7.2	56	80
5 x 0.75	7.8	80	99
7 x 0.75	8.3	90	120
2 x 1	6.5	43	72
3 x 1	7.0	56	90
4 x 1	7.5	68	109
7 x 1	8.8	118	171
2 x 1.5	7.7	58	90
3 x 1.5	8.1	74	115
5 x 1.5	9.5	129	176

WindSol™ WTD-COVV (UL/CSA)

Multicore, PVC Insulated, UL/CSA Approval



Application
Data cables for low frequency signals

Construction

Conductor	Stranded bare conductor
Insulation	PVC compound
Shielding	Screen made of tinned copper wire braid (-SB)
Outer Sheath	PVC compound

Technical Data

Peak Working Voltage	300V
Specific Insulation Resistance	⟩20GΩX cm
Inductivity	Approx. 0.65 mH/km
Min. Bending Radius	Flexing : 15 X D* Fixed : 6 X D*
Test Voltage	At 0.14mm² : 1200V, ⟩0.14mm² : 1500V
Range of Temperature	Max. +80℃

Properties

Flame Retardant

IEC 60332-3

Product List (Non-shielded type)

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
3 x 0.14	3.8	4.0	19.7
4 x 0.14	4.0	5.3	23.0
5 x 0.14	4.3	7.0	25.0
8 x 0.14	5.1	11.2	34.0
12 x 0.14	5.7	17.0	47.0
16 x 0.14	6.3	22.4	58.0
21 x 0.14	7.1	29.4	63.0
2 x 0.23	4.0	4.1	26.2
5 x 0.23	4.8	10.3	39.4
8 x 0.23	5.7	16.5	52.5
12 x 0.23	6.6	24.7	72.2
2 x 0.34	4.8	6.7	32.8
3 x 0.34	5.0	10.2	35.0
4 x 0.34	5.4	13.3	45.9
5 x 0.34	5.9	16.6	55.8
7 x 0.34	6.4	23.3	68.9
8 x 0.34	7.0	26.6	75.5
12 x 0.34	8.5	40.8	103.0
16 x 0.34	9.5	53.2	131.2
24 x 0.34	11.3	81.6	190.0
2 x 0.5	5.3	11.2	29.0
2 x 0.75	5.9	15.0	48.0

Other dimensions available on enquiry.

WindSol™ WTD-COVV (UL/CSA)

Multicore, PVC Insulated, UL/CSA Approval

Product List (Shielded type, -SB)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 x 0.14	4.3	15.6	29.5
4 x 0.14	4.7	20.6	39.4
2 x 0.23	4.7	17.9	36.1
5 x 0.23	5.5	28.5	55.8
8 x 0.23	6.4	38.4	72.2
12 x 0.23	7.3	51.8	98.4
2 x 0.34	5.5	14.9	32.0
3 x 0.34	5.7	18.5	38.0
4 x 0.34	6.1	24.8	44.0
5 x 0.34	6.6	30.8	53.0
7 x 0.34	7.1	40.2	71.0
12 x 0.34	9.2	66.5	120.0
16 x 0.34	10.2	82.7	145.0
21 x 0.34	11.4	102.2	170.0
2 x 0.5	6.0	21.7	41.0
3 x 0.5	6.2	27.3	47.0
5 x 0.5	7.4	39.3	72.0
8 x 0.5	8.7	68.3	102.0
7 x 1	9.2	92.8	160.8
10 x 1	11.7	130.9	200.0
12 x 1.5	13.9	248.6	375.0

Other dimensions available on enquiry.

Product List (Twisted Pair type)

No. cores X Cross Section (mm^2)	Outer Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
2 x 2 x 0.14	5.7	25.3	45.9
4 x 2 x 0.14	6.4	34.4	52.5
5 x 2 x 0.14	7.0	39.5	68.9
8 x 2 x 0.14	7.9	53.0	95.1
10 x 2 x 0.14	8.8	71.4	111.6
12 x 2 x 0.14	9.1	78.2	124.7
16 x 2 x 0.14	10.1	118.3	150.9
2 x 2 x 0.23	6.1	24.5	57.0
3 x 2 x 0.23	6.4	26.8	62.0
4 x 2 x 0.23	6.9	33.5	70.0
5 x 2 x 0.23	7.5	46.3	91.0
2 x 2 x 0.34	7.4	24.7	45.0
3 x 2 x 0.34	7.8	34.4	64.0
4 x 2 x 0.34	8.7	41.5	75.0
2 x 2 x 0.5	8.2	49.7	93.0
3 x 2 x 0.5	8.9	58.4	102.0
4 x 2 x 0.5	9.8	71.5	120.0
2 x 2 x 0.75	9.0	64.2	140.0

Other dimensions available on enquiry.

WindSol™
LS Total Solution for Windmill & Windfarm

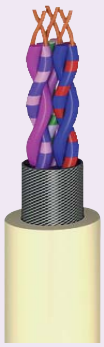
Communication Cable
for Windmill

For reliable operation of wind turbines, it is very important to have continuous and reliable availability of data transmission between sensor and control panel. Ls Cable provides computer data cables, various bus cable and optic fiber cable, which are used for monitoring wind speed and performance parameters. Especially, prifibus cable can deliver up to 12 Mbits/s and have superiormechanical and dynamic properties. In addition, this cable reduces your cabling work. Fieldbus cables are only two cores and reduce save the spaces.

Product	Core	Insulation	Sheath	Temp. Range(℃)	Impedance (Ω)	BUS Type	Location	Page
WT-LIREV-SB	AWG 24/7	PE	PVC	-30 ~ +70	120	CANBUS	Nacelle	77
WT-LIREU-SB	AWG 24/19	PE	PUR	-30 ~ +80℃	120			78
WT-PRFEV-AMSB	AWG 22/1	Foam PE	PVC	-30 ~ +80℃	150	PROFIBUS		79
WT-PRFEU-AMSB	AWG 22/1	Foam PE	PUR	-40 ~ +80℃	150			80
WT-LIREV-AMSB	AWG 22/1	PE	PVC PUR	-30 ~ +80℃ -40 ~ +80℃	100	PROFInet	Tower	81
WT-STPF	AWG 26/19	PO	PUR	-20 ~ +80℃	100	S-FTP		82

WindSol™ WT-LIREV-SB

CAN BUS AWG 24/7



Application

Blade speed, pitch, temperature, position, oil monitor, indoor, network.

Construction

Conductor	Copper, bare (AWG 24/7) 1 X 2 X 0.22mm², 4 X 1 X 0.22mm²
Insulation	Irradiated cross-linked PE
Stranding Element	Double Core, Star Quad
Shielding	Polyester foil over stranded bundle
Total Shielding	Cu braid, tinned
Sheath	PVC

Technical Data

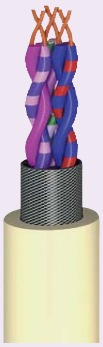
Characteristic Impedance	120Ω±10%
Conductor Resistance	87Ω/km max. (20℃)
Insulation Resistance	1.00 GΩ X km. min
Mutual Capacitance	60nF/km max.
Test Voltage	1.5 kVdc
Weight (approx.)	30 V
Min. Bending Radius	88mm, 105mm
Operating Temperature	-40 ~ +70℃

Product List

Structure	Cable Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
1 X 2 X 0.22	5.9 ± 0.3	16.0	35
4 X 1 X 0.22	6.9 ± 0.3	21.0	60

WindSol™ WT-LIREU-SB

CAN BUS AWG 24/19



Application

Blade speed, pitch, temperature, position, oil monitoring, indoor and network.

Construction

Conductor	Copper, bare (AWG 24/19) 1 X 2 X 0.25mm², 4 X 1 X 0.25mm²
Insulation	Irradiated cross-linked PE
Stranding Element	Double Core, Star Quad
Shielding	Polyester foil over stranded bundle
Total Shielding	Cu braid, tinned
Sheath	PUR

Technical Data

Characteristic Impedance	120 Ω ±10%
Conductor Resistance	85 Ω/km max. (20 ℃)
Insulation Resistance	1.00 G ΩX km. min
Mutual Capacitance	50nF/km max.
Test Voltage	1.5 kV_{dc}
Min. Bending Radius	90mm, 95mm (Flexible used)
Operating Temperature	-20 ~ +70 ℃

Product List

Structure	Cable Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
1 X 2 X 0.25	6.2 ± 0.3	18.0	40
4 X 1 X 0.25	6.5 ± 0.3	25.0	45

WindSol™ WT-PRFEV-AMSB

PROFIBUS, PVC/PE sheathed, Indoor/Outdoor, +70℃

Application

Blade speed, pitch, temperature, position, oil monitor, indoor, network.

Construction

Conductor	Copper, bare (AWG 22/1) 1 X 2 X 0.64mm
Insulation	Foam-skin-PE
Stranding Element	2 Core + Filler
Shielding	Polyester foil over stranded bundle
Total Shielding	Polyester foil, aluminum-lined
Sheath	PVC, PE

Technical Data

Characteristic Impedance	150 Ω ±10%
Conductor Resistance	57.1 Ω/km max
Insulation Resistance	1.00 GΩ X km. min
Mutual Capacitance	35 nF/km nom.
Test Voltage	1.5 kV_{dc}
Min. Bending Radius	120mm
Operating Temperature	-40 ~ +70℃

Product List

Structure	Cable Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
1 X 2 X 0.64	8.0 ± 0.4	24.0	75
4 X 1 X 0.64	8.0 ± 0.4	24.0	65

WindSol™ WT-PRFEU-AMSB

PROFIBUS, PUR Sheathed, Halogen-free, +80℃

Application

Blade speed, pitch, temperature, position, oil monitor, indoor, network.

Construction

Conductor	Copper, bare (AWG 22/1) 1 X 2 X 0.64mm
Insulation	Foam-skin-PE
Stranding Element	2 Core + Filler
Shield 1	Polyester foil over stranded bundle
Shield 2	Polyester foil, aluminum-lined
Total Shielding	Cu braid, tinned
Sheath	LSZH, PUR

Technical Data

Characteristic Impedance	150 Ω±10%
Conductor Resistance	57.1Ω/km max
Insulation Resistance	1.00GΩkm X km. min
Mutual Capacitance	35 nF/km nom.
Test Voltage	1.5 kV_{dc}
Min. Bending Radius	145mm, 120mm
Operating Temperature	-40 ~ +80℃

Product List

Structure	Cable Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
1 X 2 X 0.64	8.0 ± 0.4	24.0	75
4 X 1 X 0.64	8.0 ± 0.4	24.0	71

WindSol™ WT-LIREV-AMSB

PROFInet AWG 22/1

Application

Blade speed, pitch control, temperature, position, oil monitor, indoor, network.

Construction

Conductor	Copper, bare (AWG 22/1) 2 X 2 X 0.64mm
Insulation	PE
Stranding Element	Star Quad
Shield 1	Polyester foil over stranded bundle
Shield 2	Polyester foil, aluminum-lined
Total Shielding	Cu braid, tinned
Sheath	Inner : PVC, Outer : PVC

Technical Data

Characteristic Impedance	100 Ω ±15 Ω at 1~100MHz
Conductor Resistance	62.0 Ω/km max. (20℃)
Insulation Resistance	0.50 GΩ X km. min.
Mutual Capacitance	50 nF/km nom.
Min. Bending Radius	100mm, 65mm
Operating Temperature	-40 ~ +70 ℃

Product List

Structure	Cable Diameter (mm)	Copper Content (kg/km)	Sheath	Approx. Weight (kg/km)
2 X 2 X 0.64	6.5 ± 0.3	32.0	PVC/PVC	67
2 X 2 X 0.64	6.5 ± 0.3	32.0	PVC/PUR	64

WindSol™ WT-SFTP

S-FTP, PUR Sheathed, AWG 26/19

Application

Blade speed, pitch control, temperature, position, oil monitor, indoor, network.

Construction

Conductor	Copper, bare (AWG 26/19) 4 X 2 X AWG 26/19
Insulation	PO
Stranding Element	Double Core
Shielding	Polyester foil over stranded bundle
Screen 1	Polyester foil copper, bare
Screen 2	Cu braid
Sheath	PUR

Technical Data

Characteristic Impedance	100Ω±15Ω at 1~100MHz
Mutual Capacitance	50 nF/km nom.
Min. Bending Radius	80mm
Operating Temperature	-40 ~ +70℃
Category	Cat 5, 100T

Properties

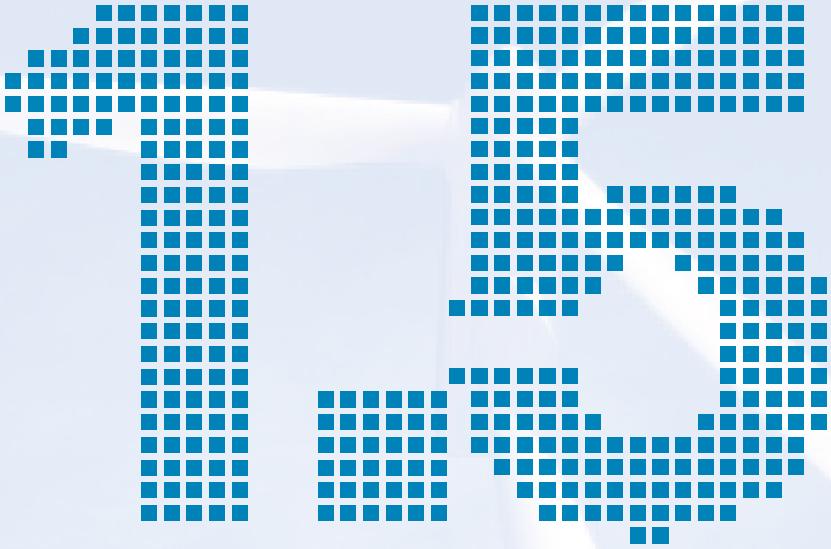
Oil Resistant — IEC 60811

Halogen Free (Br F Cl) — IEC 60754-1

Product List

Structure	Cable Diameter (mm)	Copper Content (kg/km)	Approx. Weight (kg/km)
4 X 2 X 0.64	7.5	29.5	79

WindSol™
LS Total Solution for Windmill & Windfarm

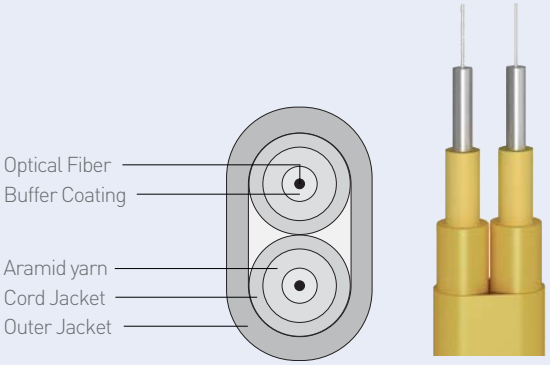


Fiber Optic Cable
for Windmill

Product	Fiber	Core / Cladding	Mode	Sheath	Max Tensile Force, N	Temp. Range(℃)	Min Bending Radius for Laying(mm)	Page
Duplex Flat	GOF	9/125,62.5/125,50/125	SM, MM	LSZH	400	-10~60	35	85
POF Cord	POF	900/1000	MM	PE	Simplex:70, Duplex:140	-20~80	25	86
POF Breakout	POF	900/1000+2×1mm²/Cu	MM	PE	200	-20~+80	75	87
PCF Breakout	HCS	200/230	MM	PUR	800	-20~+70	75	88
QFCI	GOF	9/125,62.5/125,50/125	SM, MM	LSZH	1500	-40~+70	350	89
Distribution 4C	GOF	9/125,62.5/125,50/125	SM, MM	PUR	800	-30~+70	90	90

WindSol™ Duplex Flat

Fiber Optic Cable



Application
Remote control of rotor speed, pitch angle and temperature in the nacelle.

Standards
IEC60332-1, IEC 60794-1, EN 187000

Construction

Fiber	SM 9/125, MM 50/125, MM 62.5/125
Buffer	900 ± 50 ㎛
Sub unit Cord Jacket	LSZH
Sub unit Cord Diameter	Nom. 2.8mm
Outer Jacket	LSZH
Cable Diameter	Nom. 3.8mm X 6.6mm

Technical Data

Tensile Strength	400 N
Operating Temperature	-10 ~ +60℃

Properties

Halogen Free (IEC 60754-1)

Flame Retardant (IEC 60332-3)

Chemical Resistant

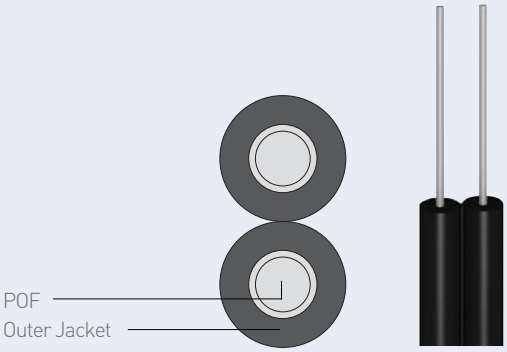
Product List

Part No.	Fiber	Core/Cladding Diameter (㎛)	Tensile Strength Max. (N)	Bending Radius (mm)	Approx. Weight (kg/km)
DFSEZ02YL28	2	9 / 125	400	35	25
DFMGZ02OR28	2	62.5 / 125	400	35	25
DFHGZ02OR28	2	50 / 125	400	35	25

Other dimensions available on enquiry.

WindSol™ POF Cord

POF Simplex Cord, POF Duplex Zipcord



Application

Remote control of rotor speed, pitch angle and temperature in the nacelle.

Construction

Fiber	POF 900/1000
Sheath	PE
Cable Diameter	1F Nom. 2.2mm 2F Nom. 2.2mm x 4.4mm

Technical Data

Tensile Strength	70N for Simplex Cord 140N for Duplex Zipcord
Operating Temperature	-10 ~ +60℃

Properties

Chemical Resistant

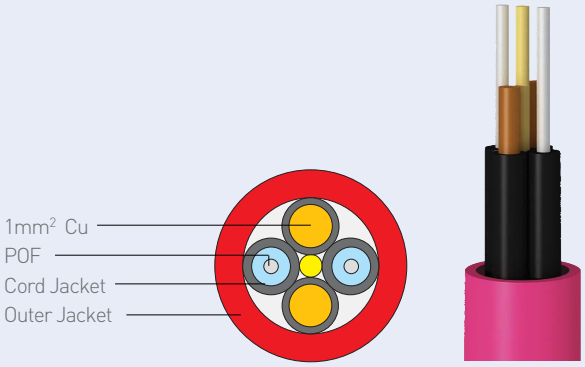
Product List

Part No.	Fiber	Core/Cladding Diameter (㎛)	Tensile Strength Max. (N)	Bending Radius (mm)	Approx. Weight (kg/km)
SCPOFE01BK22	1	900 / 1000	70	25	5
DCPOFE02BK22	2	900 / 1000	140	25	10

Other dimensions and materials available on enquiry.

WindSol™ POF Breakout

POF Breakout 2C + Copper 2C



Application

Remote control of rotor speed, pitch angle and temperature in the nacelle.

Construction

Fiber	POF 900/1000 + Copper 2x1mm²
Sub unit Cord Jacket	PE
Sub unit Cord Diameter	Nom. 2.2mm
Outer Jacket	PE
Cable Diameter	Nom. 7.5mm

Technical Data

Tensile Strength	200 N
Bending Radius	75mm
Operating Temperature	-20 ~ +80 ℃

Properties

Chemical Resistant

Product List

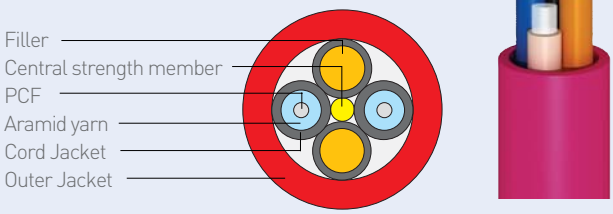
Part No.	Fiber	Core/Cladding Diameter (㎛)	Tensile Strength Max. (N)	Bending Radius (mm)	Approx. Weight (kg/km)
BTPOFE02BK22+CU02	2	900 / 1000	200	75	60

Other dimensions available on enquiry..

WindSol™ PCF Breakout

PCF Breakout 2C

Application
Data transmission in wind tower.



Construction

Fiber	HCS 200/230
Strength Member	Aramid yarn
Sub unit Cord Jacket	PE
Sub unit Cord Diameter	Nom. 2.2mm
Outer Jacket	PUR
Cable Diameter	Nom. 7.5mm

Technical Data

Tensile Strength	800 N
Operating Temperature	-20 ~ +70℃

Properties

Flame Retardant
IEC 60332-3

Chemical Resistant

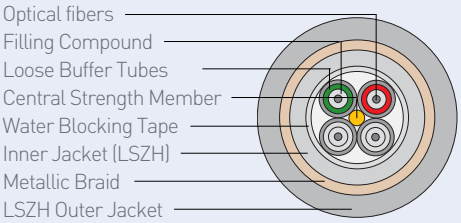
Product List

Part No.	Fiber	Core/Cladding Diameter (㎛)	Tensile Strength Max. (N)	Bending Radius (mm)	Approx. Weight (kg/km)
BTPCFU02BK22	2	200 / 230	800	75	43

Other dimensions available on enquiry..

WindSol™ QFCI

Loose tube type, Fire Resistant



Application

Data transmission in the Tower.

Construction

Fiber	SM 9/125, MM 50/125, MM 62.5/125
Inner Jacket	LSZH
Braiding	Galvanized steel wire braid (GSWB)
Outer Jacket	SHF1, LSZH
Cable Diameter	Nom. 16.5mm

Technical Data

Tensile Strength	1500 N
Operating Temperature	-40 ~ +70℃

Properties

Fire Resistant	Low Smoke	Flame Retardant	No-Fire Propagation	Halogen Free
IEC 60331-25	IEC 61034	IEC 60332-3	IEC 60331-3-24	IEC 60754-1

Product List

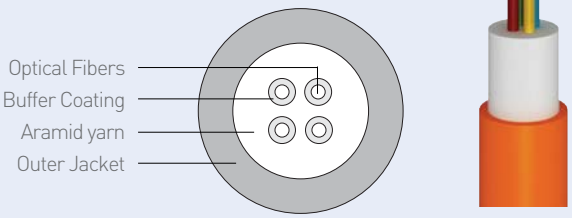
Part No.	Fiber	Core/Cladding Diameter (㎛)	Tensile Strength Max. (N)	Bending Radius (mm)	Approx. Weight (kg/km)
SM 9/125 12C : QFCISE12BK	2~48	9 / 125	16.5	350	-
MM 50/125 12C : QFCIMG12BK	2~48	62.5 / 125	16.5	350	350
MM 62.5/125 12C : QFCIHG12BK	2~48	50 / 125	16.5	350	350

Other dimensions available on enquiry..

WindSol™ Distribution 4C

Distribution 4C

Application
Data transmission in the tower.



Construction

Fiber	SM 9/125, MM 50/125, MM 62.5/125
Strength Member	Aramid yarn
Outer Jacket	PUR
Cable Diameter	Nom. 6.0mm

Technical Data

Operating Temperature	-30 ~ +70℃

Properties

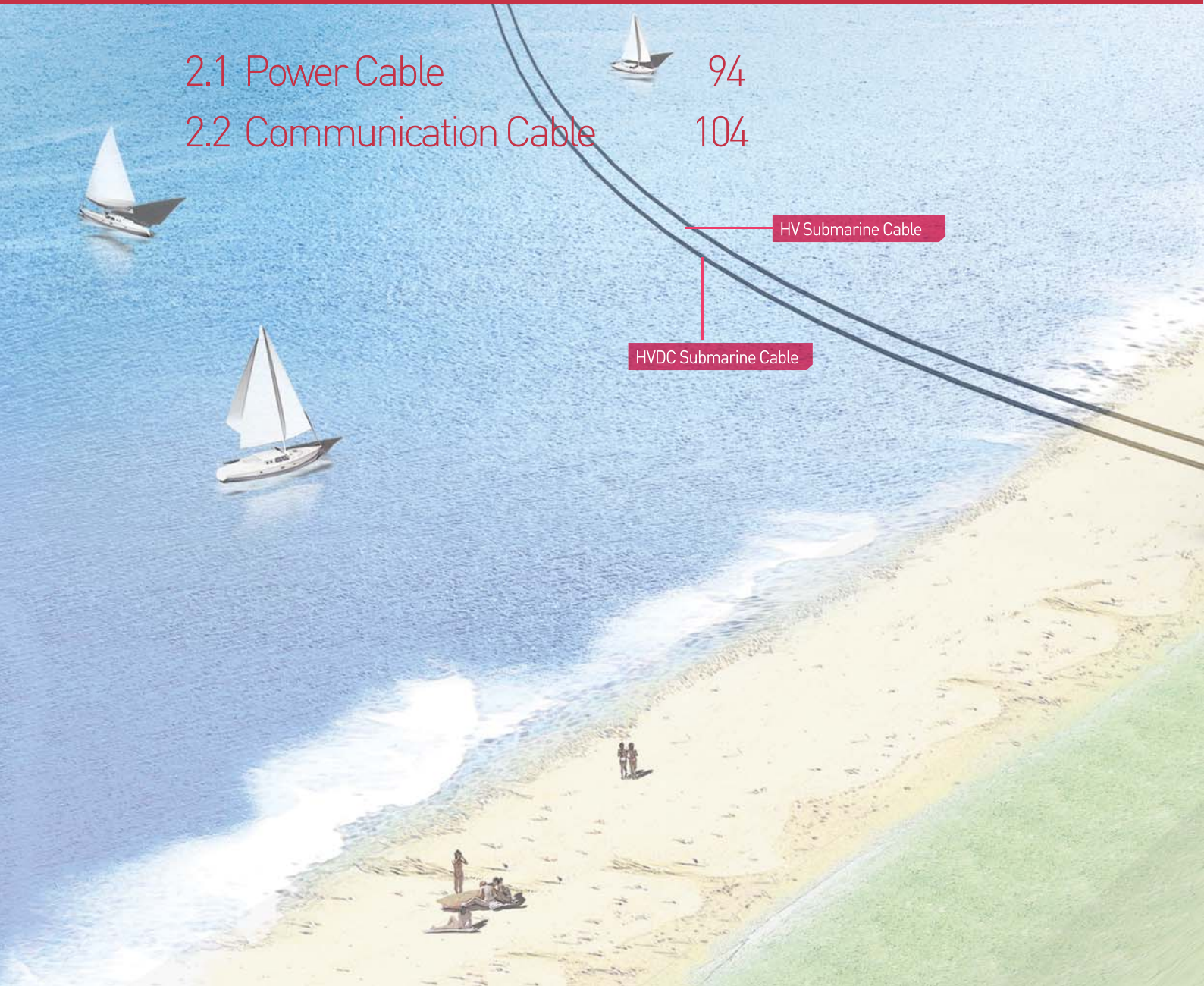
Flame Retardant IEC 60332-3 | Compressive Load IEC 60794-1-2-E3 | Flexible IEC 60794-1-2-E6 | Flame Retardant IEC 60332-3

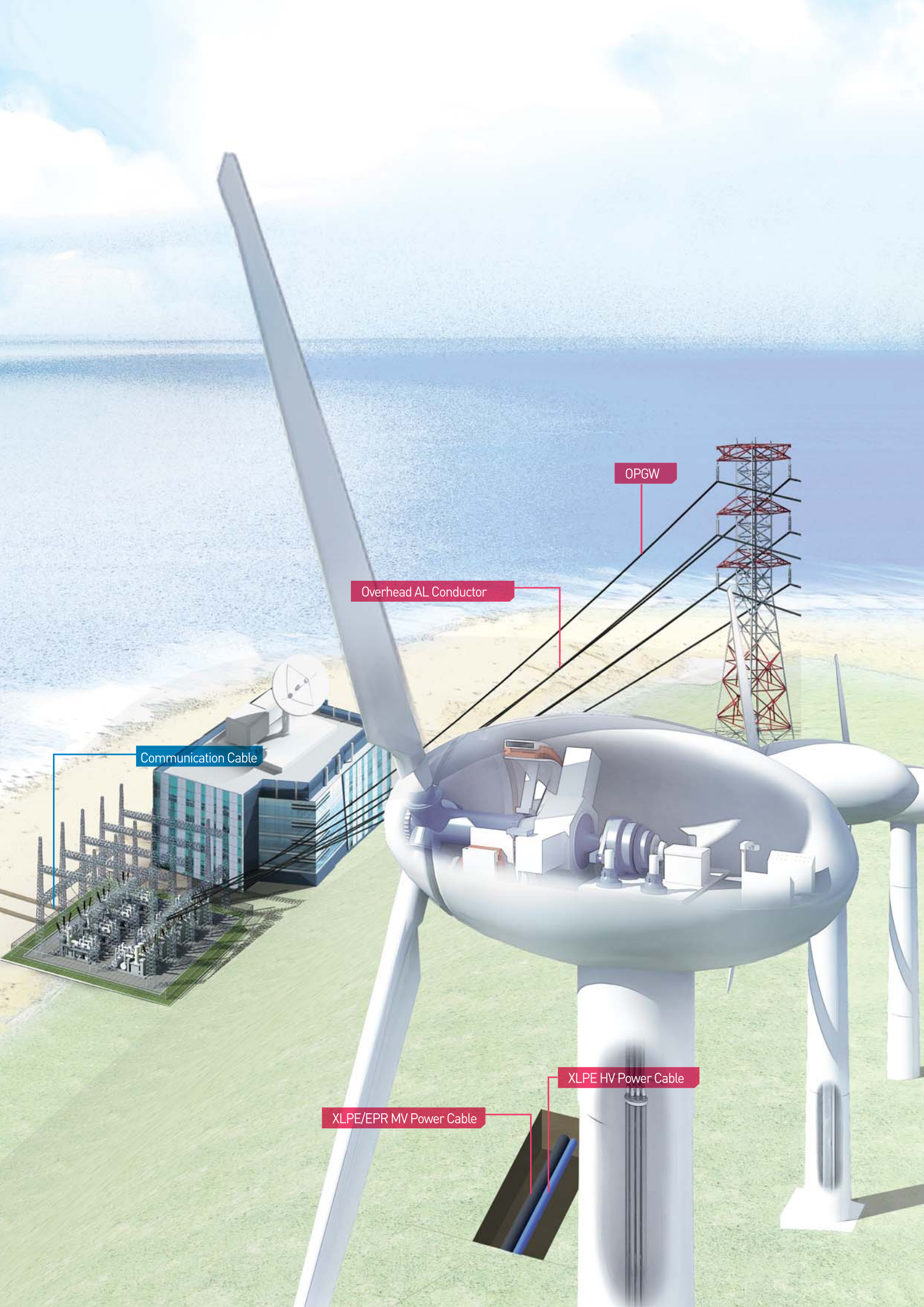
Product List

Part No.	Fiber	Core/Cladding Diameter (㎛)	Tensile Strength Max. (N)	Bending Radius (mm)	Approx. Weight (kg/km)
SM 9/125 4C : BTSEZ04BK20	4	50 / 125	800	90	31
MM 50/125 4C : BTMGZ04BK20	4	62.5 / 125	800	90	31
MM 62.5/125 4C : BTHGZ04BK20	4	9 / 125	800	90	31

Other dimensions available on enquiry.

2. Windfarm




OPGW
Overhead AL Conductor
Communication Cable
XLPE HV Power Cable
XLPE/EPR MV Power Cable

WindSol™

LS Total Solution for Windmill & Windfarm

Power Cable
for Windfarm

LS Cable is one of the world's leading manufacturers of extra high voltage cable and accessories and also one of a few total solution providers of underground transmission system. We are prominently capable and facilitated in researching, designing, developing, and manufacturing products and solutions with a heritage of decades as a cable manufacturer and ceaseless invest on quality control.

LS Cable provides total solutions for turbine interconnecting and grid connection both on onshore and offshore wind farm. This includes XLPE/OF/MI cables, terminations, joints and other related products for AC and DC transmission system. For offshore windfarm , we provide the submarine MV/HV cables, which are usually 3 core and fiber optic integration. In addition, we produce overhead aluminium alloy conductor and OPGW.

Product	Application	Rated Voltage	Cross-section (mm²)	Conductor	Insulation	Page
XLPE MV Power Cable	Onshore	12/20kV, 18/30kV	1core (35~630㎟) / 3core(35~300㎟)	Cu, AL	XLPE, TR-XLPE	95
EPR MV Power Cable	Onshore	8/15kV	1core (25~300㎟) / 3core(25~185㎟)	Cu	EPR	96
XLPE, Submarine MV Power Cable	Offshore	Max. 45kV	1core (Max. 2500㎟) / 3core (Max. 1000㎟)	Cu, AL	XLPE	97
XLPE HV Power Cable	Onshore	66 ~ 500kV	Max. 3000㎟	Cu	XLPE	98
XLPE, Submarine HV Power Cable	Offshore	66 ~ 500kV	1core (Max. 2500㎟) / 3core (Max. 1000㎟)	Cu, AL	XLPE	99
MI, Submarine HVDC Cable	Offshore	± 250kV	Max. 3000㎟	Cu	MI	100

Product	Application	Core Material	Conduct Material	Conductor Size (mm²)	Max. Operating Temp. (℃)	Page
Overhead AL Conductor	Onshore/Offshore	Steel, INVAR	HAL, TAL, Hi-TAL, STAL	160 ~ 480	+90 ~ 210	101

Product	Application	Fiber	No. Fiber	Tube	Amour	Page
OPGW	Onshore/Offshore	SM 9/125	Max. 144	Plastic Loose/Stainless Steel	Al Clad Steel or Al alloy wire	102

WindSol™ XLPE, MV Power Cable

XLPE Insulated, Copper/Aluminum Conductor, 12/20kV, 18/30kV, Onshore Windfarm

Application
Connection of arrays of wind turbines and linkage them to an onshore power grid.

Design Standard
IEC 60502-2, 61034, 60754

Construction

Rated Voltage	12/20kV, 18/30kV
Conductor	Annealed copper, hard aluminum Stranded wires (concentric, compacted circular and segmental compacted circular) •
Conductor Shield	Semi-conducting tape Semi-conducting compound
Cross Section	1 Core (35~630mm²), 3 Core (35 ~ 300mm²)
Insulation	XLPE, TR-XLPE (TR : Tree-Retardant)
Insulation Shield	Semi-conducting compound, strippable
Metallic Screen	Copper type or wire
Jacket	PVC (ST2), PE (ST7), Halogen-Free (ST8)

Product List

12/20kV

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
1 X 35	27	860
1 X 50	28	1,010
1 X 70	30	1,250
1 X 95	31	1,530
1 X 120	33	1,790
1 X 150	34	2,090
1 X 185	36	2,470
1 X 240	39	3,060
1 X 300	41	3,680
1 X 400	44	4,540
1 X 500	47	5,620
1 X 630	52	7,040
3 X 35	55	3,110
3 X 50	58	3,640
3 X 70	62	4,470
3 X 95	65	5,430
3 X 120	69	6,320
3 X 150	72	7,310
3 X 185	76	8,630
3 X 240	81	10,580
3 X 300	86	12,680

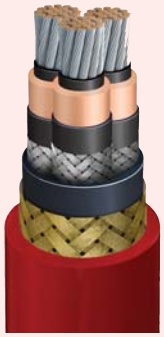
18/30kV

No. cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
1 X 70	35	1,540
1 X 95	37	1,840
1 X 120	38	2,110
1 X 150	40	2,420
1 X 185	41	2,810
1 X 240	44	3,430
1 X 300	46	4,070
1 X 400	49	4,960
1 X 500	53	6,060
1 X 630	57	7,520
3 X 70	75	5,700
3 X 95	79	6,200
3 X 120	82	7,670
3 X 150	85	8,710
3 X 185	89	10,070
3 X 240	94	12,150
3 X 300	100	14,350

Other dimensions available on enquiry.

WindSol™ EPR, MV Power Cable

EPR Insulated, 8/15kV, Onshore Windfarm



Application

This product is used as onshore AC transmission from the onshore windfarm substation to the central grid, and connection between wind turbines.

Design Standard

IEC 60092-350, -354, -359, IEC 60332-1, -3

Construction

Conductor	Tinned annealed copper
Cross Section	25mm² ~ 300mm²
Conductor Screen	Semi conductive tape and compound
Insulation	EPR (IEC 60092-351)
Insulation Screen	Semi conductive tape and compound
Inner Covering	High modulus PVC
Metallic Screen	Annealed copper tape
Sheath	Enhanced PVC

Product List

No. Cores X Cross Section (mm²)	Outer Diameter (mm)	Approx. Weight (kg/km)
1 X 25	25.8	800
1 X 35	27.1	930
1 X 50	28.7	1,130
1 X 70	30.6	1,370
1 X 95	33.4	1,720
1 X 120	35.1	1,930
1 X 150	37.0	2,350
1 X 185	38.9	2,650
1 X 240	41.5	3,340
1 X 300	44.6	4,040
3 X 25	51.6	2,690
3 X 35	54.8	3,200
3 X 50	58.4	3,850
3 X 70	62.3	4,660
3 X 95	67.6	5,740
3 X 120	71.7	6,510
3 X 150	75.6	7,880
3 X 185	79.7	8,880

Other dimensions available on enquiry.

WindSol™ XLPE, Submarine MV Power Cable

XLPE Insulated, ~ 45kV, Offshore Windfarm

Application
Linkage of offshore wind turbines and grid connection.

Design Standard
IEC 60502-1,-2
ICEA S-93-639
Cigre recommendations for mechanical tests on submarine cables – Electra No. 171
Cigre recommendations for testing of long AC submarine cables – Electra No. 189

Construction

Conductor	Annealed copper or aluminum, longitudinal water tight
Conductor Screen	Extruded semi-conducting compound
Insulation	XLPE extruded by triple common head
Insulation Screen	Extruded semi-conducting compound (easy strippable type, bonded type)
Metallic Sheath	Extruded lead alloy, longitudinal and radial water tight
Anti-Corrosion Layer	Extruded PE or fabric tape
Bedding	Polypropylene yarn
Armor	Single or Double layer's galvanized steel wires with bitumen coating
Outer Serving	Polypropylene yarn with barber pole stripe
Optical Fiber Unit (Optional)	Stainless steel loose tube type or ribbon slot type Laid-up together with power cables

Properties
- Max. operating temperature of conductor
  - Normal : 90℃
  - Emergency : 105℃

Product
- Applicable Voltage(phase to phase) : Up to AC 45kV
- Conductor size
  - Max. 2,500mm² for single core cables
  - Max. 1,000mm² for multi-core cables
- Accessories
  - Terminations (outdoor type, SF6 gas type, oil immersed type)
  - Flexible factory joint for long length cable
  - Transition joint to connect offshore cable and land cable
  - Repair joint
  - Anchoring device for fixing offshore cable

Packing
- Movable drum or cable tank for short delivery length (up to 5km)
- Cable tank or turntable constructed on barge or cable ship for long length

WindSol™ XLPE, HV Power Cable

XLPE Insulated, 66kV ~ 500kV , Onshore Windfarm

Application
Power transmission connection between the onshore substation and power grid network.

Design standard
IEC 60840, IEC 62067

Construction

Rated voltage	66kV ~ 500 kV
Conductor	Concentric, compacted circular (less than 800mm^2) or segmental compacted circular (over 1000mm^2)
Conductor Screen	Semi-conducting compound
Insulation	XLPE (Cross-linked polyethylene)
Insulation Screen	Semi-conducting compound
Metallic Screen	Wire shield, corrugated aluminum sheath or lead sheath
Outer Sheath	PE or PVC

Features
High transmission capacity
Superior physical and mechanical characteristics
Easy maintenance
Easy handling

Product List

For 154kV CAE 1200 SQ

Description	Unit	Dimension
Rated voltage	kV	154
Conductor size	mm^2	1,200
Diameter of conductor	mm	41.8
No. cores	-	1
Thickness of insulation	mm	17.0
Material of metallic sheath	-	Aluminum
Thickness of metallic sheath	mm	2.5
Material of outer sheath	-	PE
Thickness of outer sheath	mm	4.5
Diameter of completed cable	mm	Approx. 109
Weight of completed cable	kg/m	Approx. 18.5

Other dimensions available on enquiry.

WindSol™ XLPE, Submarine HV Power Cable

XLPE Insulated, 66 ~ 500kV, Offshore Windfarm

Application
Offshore power transmission from the offshore windfarm to the onshore power grid.

Design standard
IEC 60840
IEC 62067
ICEA S-108-720
Cigre recommendations for mechanical tests on submarine cables – Electra No. 171
Cigre recommendations for testing of long AC submarine cables – Electra No. 189

Construction

Conductor	Annealed copper or aluminum, longitudinal water tight
Conductor Screen	Extruded semi-conducting compound
Insulation	Super cleanliness XLPE extruded by triple common head
Insulation Screen	Extruded semi-conducting compound (bonded type)
Metallic Sheath	Extruded lead alloy, longitudinal and radial water tight
Anti-Corrosion Layer	Extruded (semi-conductive) PE or semi-conductive tape
Bedding	Polypropylene yarn
Armor	Single or Double layer's galvanized steel wires with bitumen coating
OuterServing	Polypropylene yarn with barber pole stripe
Optical Fiber Unit (Optional)	Stainless steel loose tube type or ribbon slot type Laid-up together with power cables

Properties
- Max. operating temperature of conductor
  - Normal : 90℃
  - Emergency : 105℃

Product
- Applicable voltage(phase to phase) : AC 66kV ~ 500kV
- Conductor size
  - Max. 2,500mm² for single core cables
  - Max. 1,000mm² for multi-core cables
- Terminations
  - Outdoor termination with polymer (or porcelain) insulator
  - Outdoor termination with insulators taking polluted conditions IEC 60815
  - SF6 gas type termination based on IEC 60859
  - Oil immersed type
- Splice
  - Flexible factory joint for long length cable
  - Transition joint to connect offshore cable and land cable
  - Repair joint
  - Anchoring device for fixing offshore cable
  - Link box (cross bonding type, earthing type, with or without SVL, gantry mounted or buried type)

Packing
- Movable drum or cable tank for short delivery length (up to 5km)
- Cable tank or turntable constructed on barge or cable ship for long length

WindSol™ MI, Submarine HVDC Cable

Mass-Impregnated, DC ±250kV, Offshore Windfarm

Application
Offshore power transmission from the offshore windfarm to the onshore power grid.

Design standard
IEC 60055
Cigre recommendations for mechanical tests on submarine cables – Electra No. 171
Cigre recommendations for testing of long AC submarine cables – Electra No. 189

Construction

Conductor	Keystone shaped annealed copper
Conductor Screen	Semi-conducting paper tapes
Insulation	Impregnated insulation paper tapes with high viscosity insulating compound
Insulation Screen	Semi-conducting paper tapes with intercalated metalized paper tape)
Metallic Sheath	Extruded lead alloy
Anti-corrosion Layer	Extruded PE
Reinforced Layer	Galvanized steel tapes
Bedding	Fabric tape
Armor	Single or Double layer's galvanized steel wires with bitumen coating
Outer Serving	Polypropylene yarn with barber pole stripe

Properties
- Max. operating temperature of conductor : 55℃
- Applicable converter type : VSC (Voltage Source Converter) and LCC(Line Commutated Converter)

Product
- Applicable voltage : Up to DC 250kV
- Conductor size
  - Max. 3,000mm²
- Terminations
  - Outdoor termination with porcelain insulator
  - Outdoor termination with insulators taking polluted conditions into account (based on IEC 60815)
- Splice
  - Flexible factory joint for long length cable
  - Transition joint to connect offshore cable and land cable
  - Repair joint (Flexible type)
  - Anchoring device for fixing offshore cable

Packing
- Movable drum or cable tank for short delivery length (up to 5km)
- Cable tank or turntable constructed on barge or cable ship for long length

WindSol™ Overhead AL Conductor

Overhead Line, ACSR, TACSR, Hi-TACSR, STACIR

Application
MV/HV grid connection (Onshore/Offshore).

Design Standard
IEC, BS, DIN, ASTM, JCS, JEC

Main specification

Conductor	Material		Max. Operating Temp.	Max. Current Ratio	Application
	Core*	Conductor			
ACSR	Steel	HAL	90℃	x 1.0	-
TACSR	Steel	TAL	150℃	x 1.6	Uprating : with Increased Sag
Hi-TACSR	Steel	Hi-TAL	150℃	x 1.5	Uprating : for River-Crossing, Sea-Crossing & Long Span Area with High Tensile Strength
STACIR	INVAR	STAL	210℃	x 2.0	Uprating with Equivalent Sag & Tension Properties to Conventional ACSR

Aluminum-clad core is applicable to improve rustless characteristics.

Product List

Conductor Size	Structure		Dia	ACSR		TACSR		HI-TACSR		STACIR	
	Core	Al		Mass	RTS	Mass	RTS	Mass	RTS	Mass	RTS
mm^2	No/mm	No/mm	mm	kg/km	kgf	kg/km	kgf	kg/km	kgf	kg/km	kgf
160	7 / 2.6	30 / 2.6	18.2	733	6980	733	6,980	733	9,640	707	6,500
240	7 / 3.2	30 / 3.2	22.4	1,110	10,210	1,110	10,210	1,110	14,480	1,071	9,700
330	7 / 3.1	26 / 4.0	25.3	1,320	10,950	1,320	10,950	1,320	15,710	1,282	10,500
410	7 / 3.5	26 / 4.5	28.5	1,673	13,890	1,673	13,890	1,673	19,420	1,626	13,300
480	7 / 2.47	45 / 3.7	29.61	1,599	11,800	1,599	11,800	1,599	16,140	1,580	11,000

Conductor Size	Structure		ACSR		TACSR		HI-TACSR		STACIR	
	Core	Al	DCR @20℃	Current	DCR @20℃	Current	DCR @20℃	Current	DCR @20℃	Current
mm^2	No/mm	No/mm	Ω/km	A	Ω/km	A	Ω/km	A	Ω/km	A
160	7 / 2.6	30 / 2.6	0.182	454	0.185	706	0.202	675	0.175	909
240	7 / 3.2	30 / 3.2	0.120	593	0.122	932	0.134	889	0.116	1,203
330	7 / 3.1	26 / 4.0	0.087	714	0.090	1,128	0.098	1,082	0.087	1,452
410	7 / 3.5	26 / 4.5	0.070	829	0.071	1,322	0.078	1,268	0.069	1,708
480	7 / 2.47	45 / 3.7	0.060	891	0.061	1,425	0.066	1,362	0.060	1,812

Other conductor size is available in accordance with applicable standard.

WindSol™ OPGW

Optical Ground Wire

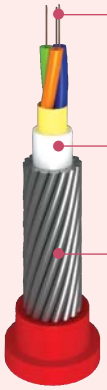
Application
Lightning protection and optical fiber communication for overhead power line.

Design Standard
IEC 60794, IEEE 1138, ITU-T G.652~G.655

Construction

Fiber	SM 9/125
Type	Plastic loose tube or stainless steel tube with water blocking compound
Amour	Aluminum-clad steel and/or aluminum-alloy wire
No of Fibers	Up to 144

Plastic Loose-Tube OPGW

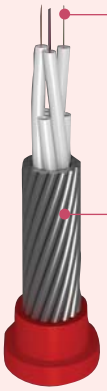


Optical Fiber Unit
- Low optical attenuation
- Protection from moisture / vibration
- Stress free structure to temperature & tension

Aluminum-Alloy Tube
- Impact resistance & crushing stability
- Second protection from moisture & hydrogen

Aluminum-Clad Steel Wire / Aluminum-Alloy Wire
- Protection from lightning & fault current
- High strength & anti-corrosion

Stainless-Steel Tube OPGW



Optical Fiber Unit
- Low optical attenuation
- Protection from moisture & vibration
- High fiber count to 144fibers
- Stress free structure to temperature & tension
- Impact resistance & crushing stability
- Compactness and light weight

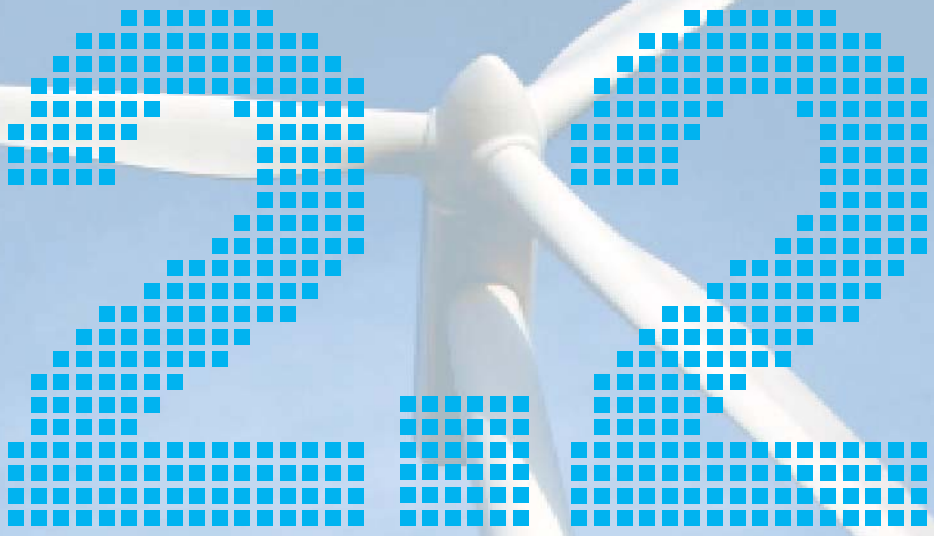
Aluminum-Clad Steel / Aluminum-Alloy Wire
- Protection from lightning & fault current
- High strength & anti-corrosion

Product List

No. Fiber	Core / Cladding Diameter (㎛)	Tensile Strength (kN)	Bending Radius (mm)	Weight (kg/km)	No. Fiber / Tube
~144	9/125	35~200	20 X Dia.	200~1,400	~48

Other dimensions available on enquiry.

WindSol™
LS Total Solution for Windmill & Windfarm



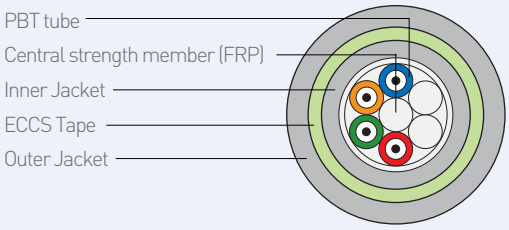
Communication Cable
for Windfarm

For large scale offshore wind farms, LS Cable provides an extensive range of optic fiber solutions for communication connection between the wind farm and local grid. To provide a professional solution to the most demanding applications in wind farm management, we have continually developed optical fiber cables, such as armoured or steel loose tube typ.

Product	Fiber Type	No. Fiber	Tensile Strength (N)	Bending Radius (mm)	Temp. Range (℃)	Page
DJSA	GOF	6 ~ 36	2,700	270	-40 ~ +70℃	105
Dielectric Armour	GOF	6 ~ 36	5,000	300	-40 ~ +70℃	106
SJNA-CT	GOF	2 ~ 24	1,200	130	-20 ~ +60℃	107
SJNA	GOF	12 ~ 72	2,700	240	-20 ~ +60℃	108
QFCB	GOF	2 ~ 48	1,500	370	-40 ~ +70℃	109

WindSol™ DJSA Cable

Double Jacket, Single Amour Type



Application

Communication, monitoring
and data transmission in interconnection
of wind turbines and linkage
land based wind turbines.

Design Standards

IEC 60793-1, IEC60794-1

Construction

Fiber	SM 9/125, MM 50/125, MM 62.5/125
Core Number	Max. 6 fiber/tube
Centeral Strength Member	FRP
Inner Jacket	PE or LSZH
Amour	Corrugated steel tape
Outer Jacket	PE or LSZH

Technical Data

Waterproof	Sample 3m X 24 h
Operating Temp.	-40 ~ +70℃
Compressive Load	2200N/10cm

Properties

Halogen Free — IEC 60754-1

Low Smoke — IEC 61034

UV Resistant

Product List

No. Fiber	Core / Cladding Diameter (㎛)	Tensile Strength Max (N)	Bending Radius (mm)	Cable Weight (kg/km)
6 ~ 36	9 / 125	2,700	300	190
6 ~ 36	50 / 125	2,700	300	190
6 ~ 36	62.5 / 125	2,700	300	190

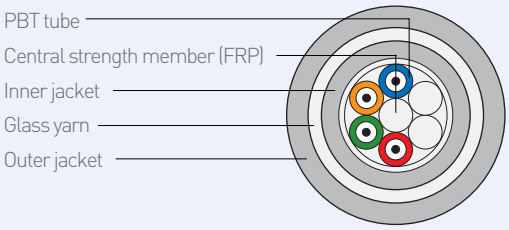
High fiber counts available upon request.

WindSol™ Dielectric Armour Cable

Double Jacket, Non-Amour Type

Application

Communication, monitoring and data transmission in interconnection of wind turbines and linkage land based wind turbines.



Design Standards

IEC 60793-1, IEC60794-1

Construction

Fiber	SM 9/125, MM 50/125, MM 62.5/125
Core Number	Max. 6 fiber/tube
Centeral Strength Member	FRP
Inner Jacket	LSZH or PE
Strength Member	Glass yarn
Outer Jacket	LSZH or PE

Technical Data

Waterproof	Sample 3m x 24hr
Operating Temp.	-40 ~ +70℃
Compressive Load	2200N/10cm
Tensile Strength	5000N

Properties

Halogen Free — IEC 60754-1

Low Smoke — IEC 61034

UV Resistant

Product List

No. Fiber	Core / Cladding Diameter (㎛)	Tensile Strength Max (N)	Bending Radius (mm)	Cable Weight (kg/km)
6 ~ 36	9 / 125	5,000	300	160
6 ~ 36	50 / 125	5,000	300	160
6 ~ 36	62.5 / 125	5,000	300	160

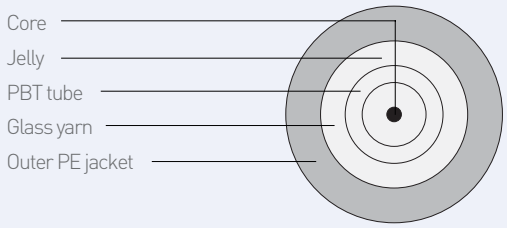
High fiber counts available upon request.

WindSol™ SJNA-CT Cable

Central Loose Tube, Sing Jacket, Non-Amour Type

Application
Communication, monitoring and data transmission in interconnection of wind turbines and linkage land based wind turbines.

Design Standards
IEC 60793-1, IEC60794-1



Construction

Fiber	SM 9/125, MM 50/125, MM 62.5/125
Strength Member	Glass yarn
Outer Jacket	PE or LSZH

Technical Data

Waterproof	Sample 3m x 24hr
Operating Temp.	-20 ~ +60℃
Compressive Load	1100N/10cm
Tensile Strength	1200N

Properties

Halogen Free — IEC 60754-1

Low Smoke — IEC 61034

UV Resistant

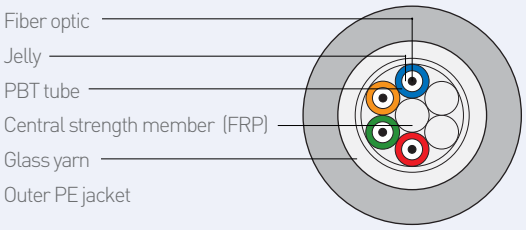
Product List

No. Fiber	Core / Cladding Diameter (㎛)	Tensile Strength Max (N)	Bending Radius (mm)	Cable Weight (kg/km)
2 ~ 24	9 / 125	1,200	130	40
2 ~ 24	50 / 125	1,200	130	40
2 ~ 24	62.5 / 125	1,200	130	40

Other dimensions available on enquiry.

WindSol™ SJNA Cable

Single Jacket, Non-Amor Type



Application

Communication, monitoring and data transmission in interconnection of wind turbines and linkage land based wind turbines.

Design Standards

IEC 60793-1, IEC60794-1

Construction

Fiber	SM 9/125, MM 50/125, MM 62.5/125
Core Number	Max. 12 fiber/tube
Centeral Strength Member	FRP
Strength Member	Glass yarn
Outer Jacket	PE

Technical Data

Waterproof	Sample 3m x 24hr
Operating Temp.	-20 ~ +60℃
Compressive Load	1,100N/10cm
Tensile Strength	2700N

Properties

Halogen Free

IEC 60754-1

Low Smoke

IEC 61034

UV Resistant

Product List

No. Fiber	Core / Cladding Diameter (㎛)	Tensile Strength Max (N)	Bending Radius (mm)	Cable Weight (kg/km)
12 ~ 72	9 / 125	2,700	240	100
12 ~ 72	50 / 125	2,700	240	100
12 ~ 72	62.5 / 125	2,700	240	100

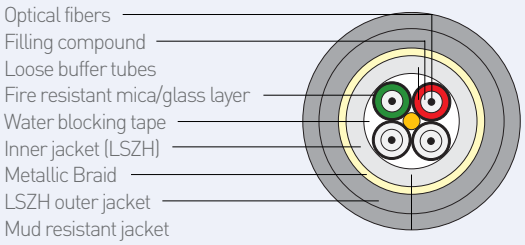
High fiber counts available upon request.

WindSol™ QFCB Cable

Loose Tube Type, Fire Resistant, Mud Resistant

Application

Communication, monitoring and data transmission in interconnection of wind turbines and linkage land based wind turbines.



Construction

Fiber	SM 9/125, MM 50/125, MM 62.5/125
Inner Jacket	LSZH
Braid	Galvanized steel wire braid (GSWB) Other material available upon request
Outer Jacket	SHF1, LSZH

Technical Data

Tensile Strength	1500N
Operating Temp.	-40 ~ +70℃

Properties

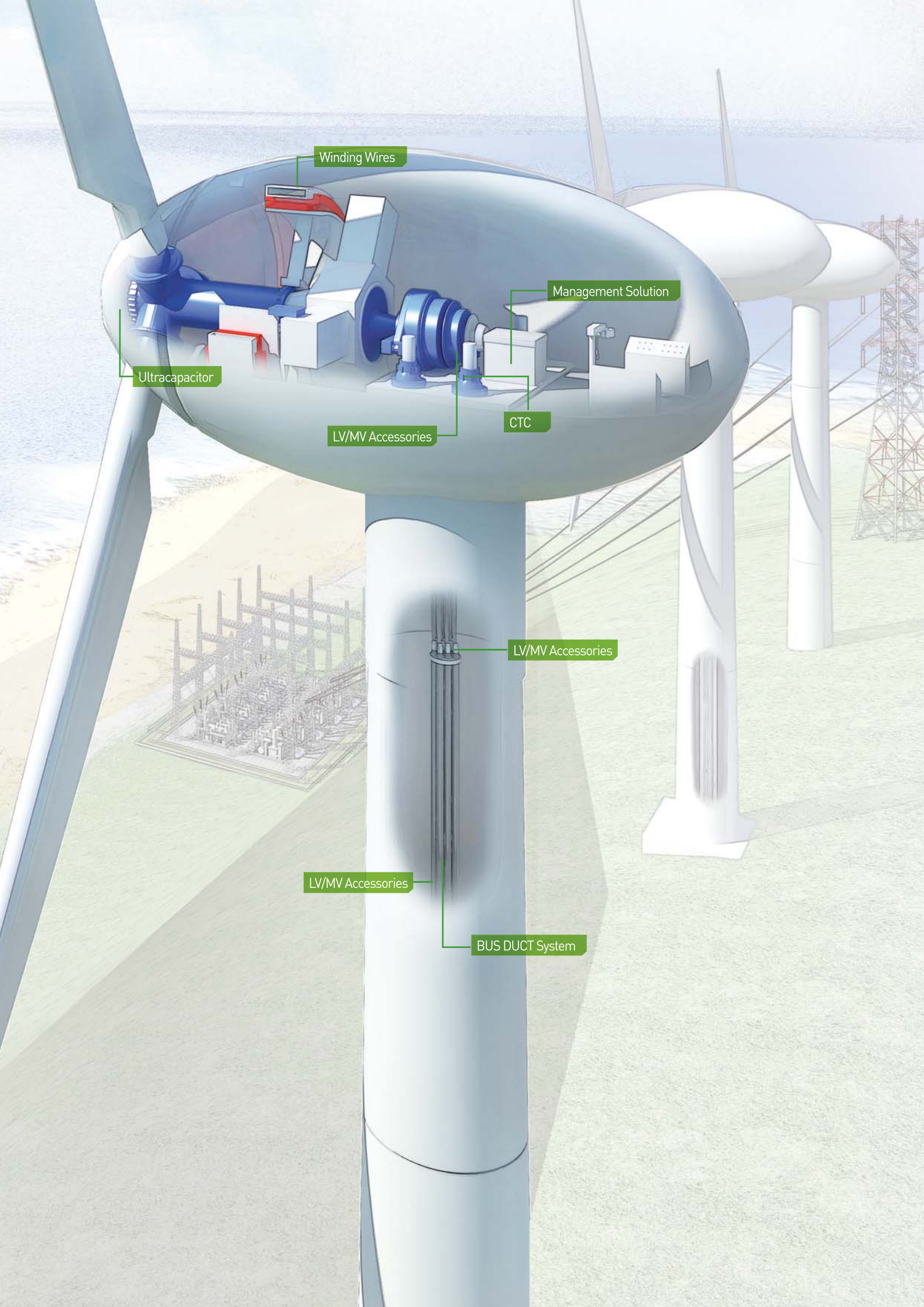
Fire Resistant — IEC 60331-25
Low Smoke — IEC 61034
Flame Retardant — IEC 60332-3
No-Fire Propagation — IEC 60331-3-24
Halogen Free — IEC 60754-1

Product List

Part No.	No. Fiber	Core / Cladding Diameter (μm)	Tensile Strength Max (N)	Bending Radius (mm)	Cable Weight (kg/km)
SM 9/125 12C : QFCBSE12BK	2 ~ 48	9 / 125	1,500	370	400
MM 50/125 12C : QFCBMG12BK	2 ~ 48	62.5 / 125	1,500	370	400
MM 62.5/125 12C : QFCBHG12BK	2 ~ 48	50 / 125	1,500	370	400

High fiber counts available upon request.

3. Components


Winding Wires
Management Solution
Ultracapacitor
CTC
LV/MV Accessories
LV/MV Accessories
LV/MV Accessories
BUS DUCT System

3.1 Winding Wire

At the heart of the energy conversion system between electrical, electromagnetic, mechanical and other forms of energy, which system corresponds to the nerves and blood vessels of the electrical equipment and their properties, LS Cable products show high performance with great reliablity. Our ceaseless effort to research, design, develop, and manufacture the products has been keeping our position as a leading company in customer satisfaction level in the industry.
For wind power, LS Cable produces a full range of winding wires for motors and generators, including special winding wires like fine and ultrafine wires. LS Cable products are divided into three categories. Single-Coated, Double-Coated and Litz Wires.

Application

Motors, generators and transformers

Product type

Type	Code(Commercial Name)	
Single-Coated Enameled Wires	PEW	Polyester Enameled Wire (UL)
	UEW	Polyurethane Enameled Wire (UL)
	UEW-N	No-Crazing Polyurethane Enameled Wire
	EIW	Polyesterimide Enameled Wire (UL)
	EIW(F)	Polyesterimide Enameled Wire (UL)
	AIW	Polyamideimide Enameled Wire (UL)
	PVF	Polyvinylformal Enameled Wire
	SEW	Solderable Polyesterim
Double-Coated Enameled Wires	SBH-EIW	Polyesterimide Overcoated With Self-bonding Enameled Wire (UL, Bondable by Heating)
	SBL-EIW	Polyesterimide Overcoated With Self-bonding Enameled Wire (Bondable by Alcohol)
	AMSW	Polyesterimide Overcoated With Polyamideimide Self-bonding Enameled Wire (Bondable by Heating, High Resoftening Temperature Type)
	SMUW	Urethane Overcoated With Self-bonding Enameled Wire
	SB-SEW	Solderable Polyesterimide Overcoated With Self-bonding Enameled Wire
	RRW-H	Refrigerant Resistance Enameled Wire (UL)
	SLRW, SLAW	Self-Lubricated Refrigerant Resistance Enameled Wire (UL)
	NY-UEW	Nylon overcoated Polyurethane Enameled Wire (UL)
	NY-EIW(F)	Nylon overcoated Polyesterimide Enameled Wire (UL)
	NY-PEW	Nylon overcoated Polyester Enameled Wire
	GADW	Double-Coated Aluminium Enameled Wire (UL) (Aluminium Conductor, 200℃)
	GADWC	Double-Coated Aluminium Enameled Wire (UL (Aluminium Conductor, 220℃)
	AI-EIW	Polyamideimide Overcoated Polyesterimide Enameled Wire (UL, Thermal Index : 200℃)
	MRW	Polyamideimide Overcoated Polyesterimide Enameled Wire (UL, Thermal Index : 220℃)
	EXLW-C	Polyamideimide Enameled Wire
	EXLW-N	Polyamideimide Overcoated Polyesterimide Enameled Wire
	EXLW-P	Polyamideimide Overcoated Polyesterimide Enameled Wire (UL, Thermal Index : 200℃)
Litz Wires	LZSW	H Class Litz Wire
	SLZSW	Solderable Litz Wire

For further detailed information, refer to the LS Magnet Wire catalog.

3.2 CTC

Continuously Transposed Cable

Application
Transformer for a windmil

Design standard
IEC 60317, 60851

Construction

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

Product List

Suggested Dimension Range

Standard Dimensions	Sofr Annealed, CPR1 (㎜)	CPR2, CPR3 (㎜)
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 (㎜)
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.

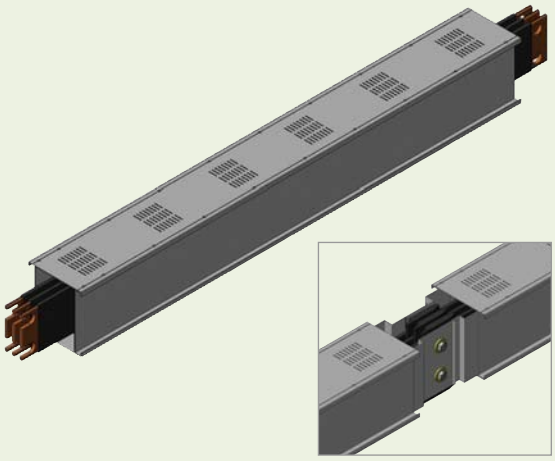
Wrapping Material	Special Feature, Application
Kraft	5A2-1H1, General Purpose with High Punity
Calendered Kraft	5A4-1M2, High Density and Dielectric Strength
Upgraded	5A2-1M2, High Thermal Properties
Upgraded, Calendared	5A3-M, High Density, Thermal and Dielectric Characteristics
Calendered, Upgraded, 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

3.3 BUS DUCT System

LS Bus Duct has a very compact design, and uses an effective heat-radiating aluminum housing profile to protect the conductors from the environment. The light weight construction allows for easier installation and maintenance.

High Current Density

LS Bus Duct can carry up to 7500A with reduced loss. It is ideal for both high-rise buildings and industrial applications, and performs with a safe, flexible, reliable and economical efficiency. The simplified design of the LS Bus Duct system allows for easy routing, extension, relocation, replacement and maintenance of power loads. These features are well suited to the needs modern architecture.



Service Conditions

- Ambient Temperature -15℃ ~ 55℃
- Relative Humidity 95% or Below

Bus Bar

- Copper bus bars have a conductivity of 99% or more.
- Aluminum bus bars have a conductivity of 61% or more.
- Electrical contact surfaces are :
  - Tin-plated (copper bus duct)
  - Tin or Silver-plated (aluminum bus duct)
- The plating reduces contact resistance and prevents contact surface corrosion.

Temperature Rise Stability

Temperature rise limits are within 55℃ or less on the external duct surface, as specified in IEC 60439-1, -2.

Insulation Properties

Class B (130℃) is applied to the conductors. Epoxy, PET and mica (1200℃, for fire resistance) are available options.

FRP (fiber reinforced plastic) is used as a spacer between conductors or between the conductor and the duct housing.
These insulating materials have very high dielectric properties.

LS Bus Duct systems are rated up to 1000V service capacity.

3.4 Management Solution

LS Management Solution for windmill provides systems for monitoring and analyzing the conditions of wind turbine components. Automatic condition reports increase the reliability and availability of your wind turbines. In addition, generated power can be monitored and it'll be used for improving grid management.

Key features

Condition Monitoring System

- 16 analog channels and 4 digital channels
- Extensibility by module type inputs
- Vibration signal analysis
- Trend management
- Analysis tools support
- Report generation
- Adaptive alarm level control

Power Quality Monitoring System

- 16 MDAQ input channels
- Local data storage or on-line datatransfer via Ethernet
- Event detection and report
  -Sag,
  -Swell
  -Flicker
  -Harmonics

Technical data

Condition Monitoring System

Temperature Range	Operating : -20 to +60 ℃ Storage : -40 to + 70 ℃
Time Waveform	
FFT	Up to 52,000 lines
Sensor, Cable, Network Fault Detection	
Ethernet 2 ports	

Power Quality Monitoring System

Temperature Range	Operating : -20 to +50 ℃ Storage : -20 to + 70 ℃
Power supply	8 to 24 VDC, external AC power supply adapter
Communication : 2x10/100/1000 BaseT	
USB Interfaces	

3.5 Ultracapacitor Cell & Module

LS Ultracapacitor Module provides leading solution for high voltage and current required application by connecting 3000F Ultracapacitor unit cell in series. Higher voltage and capacitance module can be built simply by connecting the modules. Low internal resistance and high working voltage features of module maximize its available energy while keeping maintenance free, high reliability and wide operating temperature features of LS Ultracapacitor unit cell.

Features

Low internal resistance
Balancing and overvoltage protection of individual cell
Easy build-up design for high voltage module
Efficient heat transfer to outside
Pressure / moisture control

Application

Emergency power for wind power generation

LS Ultra-capacitor Module

Item \ Type	6 Series	12 Series	18 Series	Custom Module
Rated Capacitance (F)	500	250	166	Depend on specification
Max. Voltage (V)	16.8	33.6	50.4	12 ~ 600V
ESR, DC (mm)	3	6	9	Depend on specification
Dimension-W (mm)	404	404	404	Depend on requirement
Dimension-D (mm)	66	132	198	
Dimension-H (mm)	195	195	195	

※ Specification of LS Ultracapacitor cell/module may change without prior notice for production improvement. Please contact LS Mtron Ultracapacitor team for further details.
※ Module design specialists in LS Ultracapacitor team are ready to prepare custom module for you.

Custom Module Examples

60V / 125F

157.5V / 50F

3.6 Accessories

**LS Cable covers a full range of accessories needed for cable assemblies and installation of wind turbines.
Our products contain MV separable connector, terminations & joints, heat shrinkable joint and so on.**

MV Separable Connectors

- Separable connection system for switchgear and transformer
- Technical data
  - Cross-section : 25 ~ 630mm²
  - Elbow, tee and coupling type available
  - CENELEC HD 506 Std.

MV Termination & Joint

- MV joints and terminations for various cables (~36kV)
- Technical data
  - Cross-section : 25 ~ 500mm²
  - Indoor and Outdoor usage available
  - Heat shrinkable and cold shrinkable type available
  - Mechanical and compression connector

LV Heat Shrinkable Joints

- Heat shrinkable joints for muti-core and small cross-section control cables
- Technical data
  - No. Cores range : 4 ~ 75 cores
  - Cross-section : 25 ~ 500mm²

Cable Grip

- Cables route with high tensile force
- Technical data
  - Self-tightening under tension load
  - Back-woven
  - Thimble and press clamp type

Cable Gland

- Metal and plastic fittings with positive sealing against liquids and dust
- Technical data
  - Material : Plastic and Bass/Stainless
  - Operating temp. : -30 ~ +80 ℃ (Plastic), -40 ~ +100℃ (Metal)

Lug Type Terminal

- Permanent joining of wires and cables to connector and connection panels
- Technical data
  - Material : Copper, tinned surface
  - Operating temp. : Up to 120℃
  - Ring, 45° and 90° bending type available

Shrink-on Tube with Adhesive

- Protection for cable joints and terminations at low voltage
- Technical data
  - Material : Crosslinked Polyolefin
  - Operating temp. : -55 ~ +90℃
  - Shrinking temp. : +120℃

Shrink-on Tube

- Protection against moisture, corrosion, and abrasion
- Technical data
  - Thin, mediun and thick wall type available
  - Material : Crosslinked Polyolefin
  - Operating temp. : -55 ~ +135℃

Cable Ties

- Bundling and mounting cables and lines
- Technical data
  - Material : Polyamide 6.6
  - Temperature range : -40 ~ +85℃
  - Color : Natural or UV-resistant black
  - Flammability rating : UL94 V-2
  - Properties : Halogen-free, Silicone free

Cable Conduit

- Cable corrugated tube protecting for mechanical load or vibrations
- Technical data
  - Material : Special Polyamide PA 6
  - Temperature range : -40 ~ +120℃
  - Properties : UV resistant, Flammability (UL94 V-2)

Mounting Parts

- Mounting Bases, Cable Clamps & Other Fastening Accessories
- Technical data
  - Material : Polyamide PA 6
  - Operating temp. : -40 ~ +110℃
  - Properties : Halogen-free, Flammability (UL94 V-2)

Tools

- Manually or hydraulic tools for cable connection
- Product list
  - Cable cutter
  - Crimping pliers for un insulated barrel lugs
  - Auto feed tools

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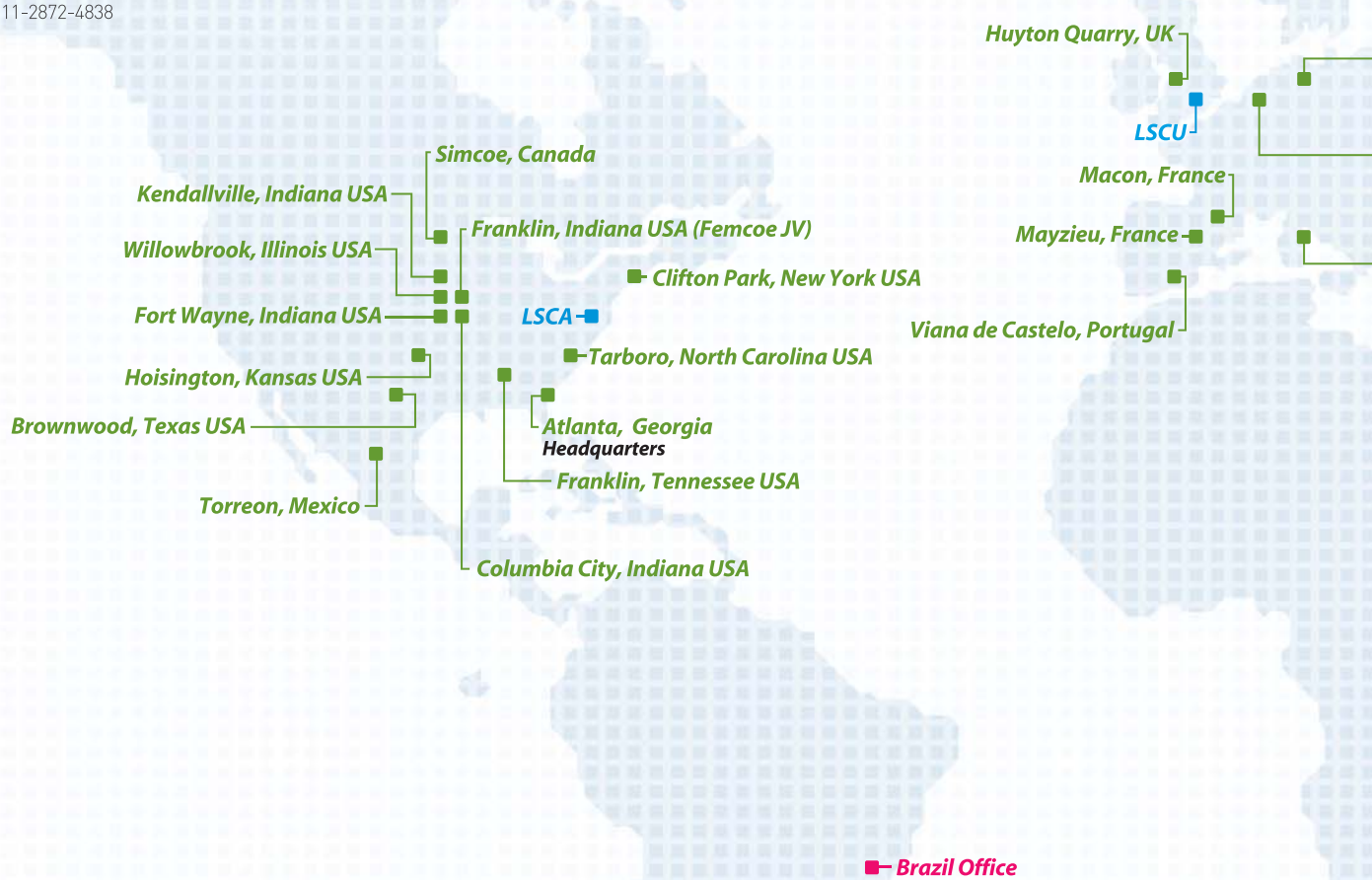

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Korea
Japan Office
LSIC(Chendu Office)
LSCW
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