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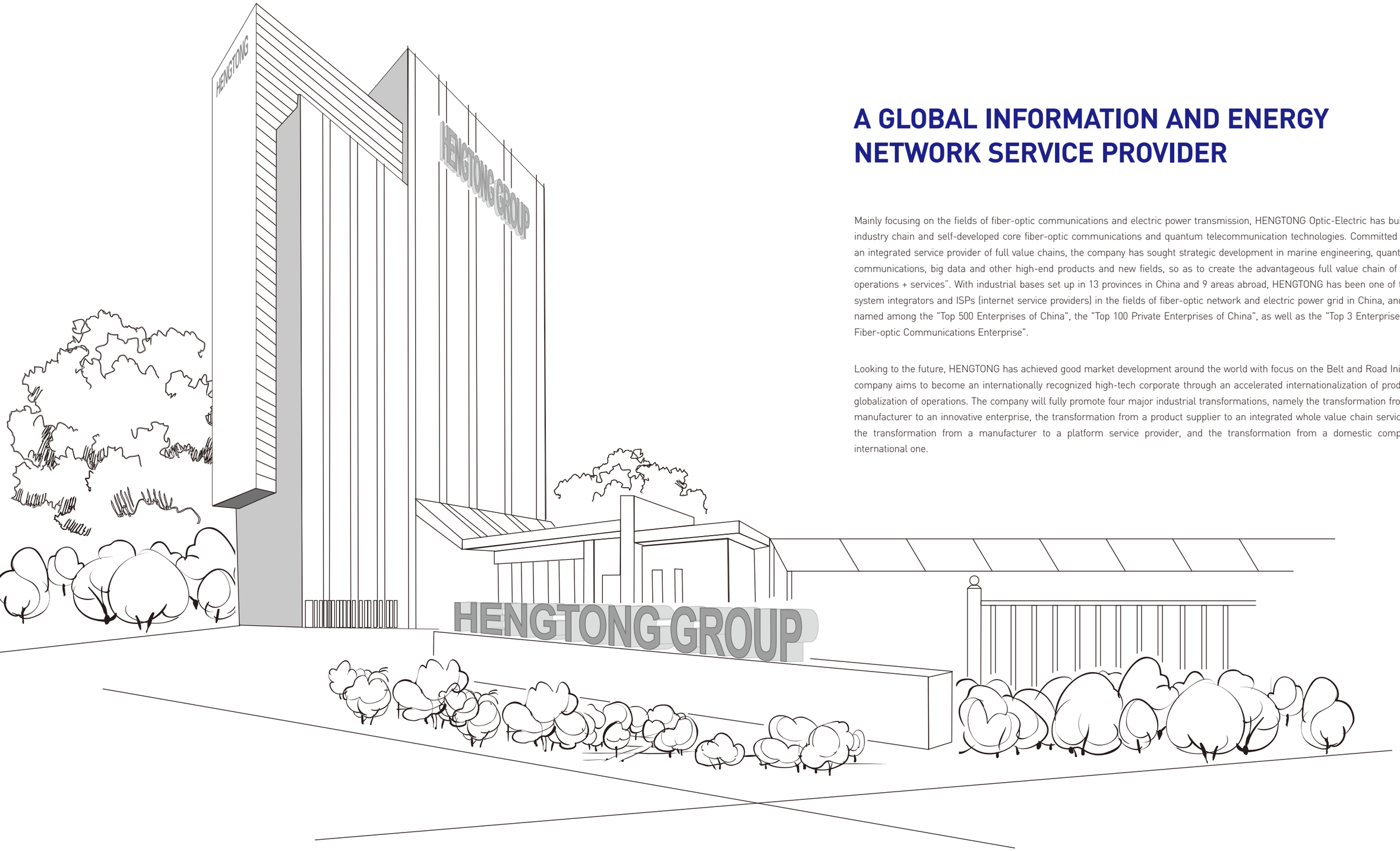
WIND POWER CABLES

HENGTONG OPTIC-ELECTRIC
A Global Information and Energy Network Service Provider

Introduction



A GLOBAL INFORMATION AND ENERGY NETWORK SERVICE PROVIDER

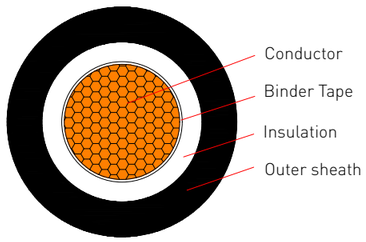
Mainly focusing on the fields of fiber-optic communications and electric power transmission, HENGTONG Optic-Electric has built up a full industry chain and self-developed core fiber-optic communications and quantum telecommunication technologies. Committed to building an integrated service provider of full value chains, the company has sought strategic development in marine engineering, quantum secure communications, big data and other high-end products and new fields, so as to create the advantageous full value chain of "product + operations + services". With industrial bases set up in 13 provinces in China and 9 areas abroad, HENGTONG has been one of the leading system integrators and ISPs (internet service providers) in the fields of fiber-optic network and electric power grid in China, and has been named among the "Top 500 Enterprises of China", the "Top 100 Private Enterprises of China", as well as the "Top 3 Enterprises of Global Fiber-optic Communications Enterprise".

Looking to the future, HENGTONG has achieved good market development around the world with focus on the Belt and Road Initiative. The company aims to become an internationally recognized high-tech corporate through an accelerated internationalization of production and globalization of operations. The company will fully promote four major industrial transformations, namely the transformation from an R&D manufacturer to an innovative enterprise, the transformation from a product supplier to an integrated whole value chain service provider, the transformation from a manufacturer to a platform service provider, and the transformation from a domestic company to an international one.

Contents

FD-EF 0.6/1kV Power Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0207, VDE0282, IEC60502



Application

This cable is designed for use and installation in wind turbines at rated voltage 0.6/1kV(690V)fixed wiring.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special EPR rubber compound
Core identification: Natural color
Outer sheath: Special CPE rubber compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 0.6/1kV
Test voltage: AC 3500V/5 min
Minimum bending radius (fix inst.): 4×OD;
Minimum bending radius (mobile service): 6×OD.
Operating temperature: -40～90℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

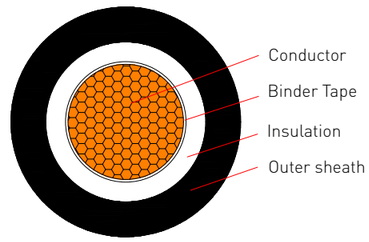
★**Salt spray resistant:** Test according to GB/T 2423.17
★**UV resistant:** Test according to GB/T 29631
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

Specification	Overall diameter		Approx. Weight	DC Resistance at 20℃(Ω/km)	
	Nom.	Max.		Plain copper	Tinned copper
No.× mm²	mm	mm	kg/km	Ω/km	Ω/km
1×70	19.4	20.5	942	0.272	0.277
1×95	22.1	23.1	1220	0.206	0.210
1×120	24.6	25.2	1520	0.161	0.164
1×150	27.4	27.9	1874	0.129	0.132
1×185	29.6	30.4	2256	0.106	0.108
1×240	33.4	34.0	2896	0.0801	0.0817
1×300	38.0	39.7	3586	0.0641	0.0654
1×400	42.5	44.8	4610	0.0486	0.0495

Note: other specifications can be produced to meet customer requirements.

FDWL-EY 0.6/1kV Power Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0207, VDE0282, IEC60502



Application

This cable is designed for fixed installations suitable for connection inside the nacelle and designed to connect the generator with LV panels.
The cable is halogen-free and is able to withstand high temperature.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special EPR rubber compound
Core identification: Natural color
Outer sheath: Low smoke halogen-free compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 0.6/1kV
Test voltage: AC 3500V/5min
Minimum bending radius (fix inst.): 4×OD;
Minimum bending radius (mobile service): 6×OD.
Operating temperature: -40～90
Fire performance: Flame retardant IEC 60332-1
Smoke density: IEC61034-1.2
Halogen free: IEC60754-1
Acid and Corrosive gases: IEC60754-2 PH≥4.3, C≤10μs/mm.
Oil resistance: Test according to IEC 60811-2-1
Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

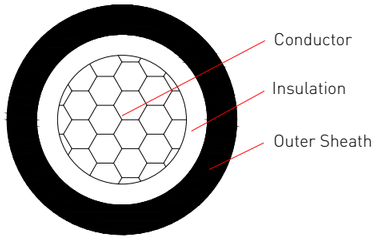
★**Salt spray resistant:** Test according to GB/T 2423.17
★**UV resistant:** Test according to GB/T 29631
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

Specification	Overall diameter		Approx. Weight	DC Resistance at 20℃(Ω/km)	
	Nom.	Max.		Plain copper	Tinned copper
No.× mm²	mm	mm	kg/km	Ω/km	Ω/km
1×70	17.4	18.4	848	0.272	0.277
1×95	19.7	20.6	1090	0.206	0.210
1×120	21.8	22.3	1351	0.161	0.164
1×150	24.2	24.5	1659	0.129	0.132
1×185	26.2	26.9	2008	0.106	0.108
1×240	29.8	30.2	2599	0.0801	0.0817
1×300	34.6	36.2	3265	0.0641	0.0654
1×400	39.1	41.2	4250	0.0486	0.0495

Note: other specifications can be produced to meet customer requirements.

FD-YJLHBV 0.6/1kV XLPE Insulated Aluminum alloy Power Cable for Wind Power Engine Group

Standards: Refer to IEC60228, IEC60502



Application

The cable is connected with the switching equipment in the base of tower and the switching equipment on the top platform of tower, fixed installed and transmission power.

Construction

Conductor: Aluminum alloy stranded conductor
Insulation: Special XLPE compound
Core identification: Natural color
Outer sheath: Special PVC compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 0.6/1kV
Test voltage: AC 3500V/5min
Minimum bending radius during installation: 7×OD
Operating temperature (fixed inst.): -40～90℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

★**Salt spray resistant:** Test according to GB/T 2423.17
★**UV resistant:** Test according to GB/T 29631
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

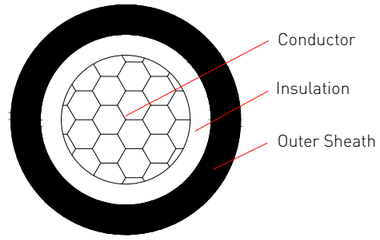
Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃
No.× mm^2	mm	kg/km	Ω/km
1×70	20.5	942	0.277
1×95	23.1	1220	0.210
1×120	25.2	1520	0.164
1×150	27.9	1874	0.132
1×185	30.4	2256	0.108
1×240	34.0	2896	0.0817
1×300	39.7	3586	0.0654
1×400	44.8	4610	0.0495

Note: other specifications can be produced to meet customer requirements.

Wind power cables

FDLHEH 1.8/3kV EPR Insulated Aluminum alloy Power Cable for Wind Power Engine Group

Standards: Refer to IEC60228, IEC60502



Application

The cable is connected with the switching equipment in the base of tower and the switching equipment on the top platform of tower, fixed installed and transmission power.

Construction

Conductor: Aluminum alloy stranded conductor
Insulation: Special EPR compound
Core identification: Natural color
Outer sheath: Special CSP compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 1.8/3kV
Test voltage: AC 6500V/5min
Minimum bending radius during installation: 7×OD
Operating temperature (fixed inst.): -40～90℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

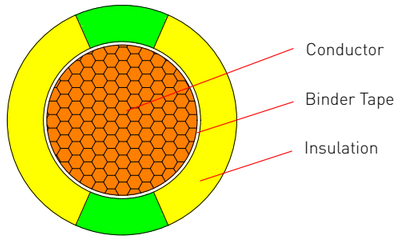
★**Salt spray resistant:** Test according to GB/T 2423.17
★**UV resistant:** Test according to GB/T 29631
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃
No.× mm^2	mm	kg/km	Ω/km
1×240	27.0	1100	0.125
1×300	29.4	1320	0.100
1×400	32.8	1652	0.0778

Note: other specifications can be produced to meet customer requirements.

FD-JDRV Earthing Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0281, IEC 60227



Application

This cable is designed for use and installation in wind turbines at rated voltage 450/750V as earthing cable.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: PVC compound
Insulation identification: Green/yellow

Technical indictors

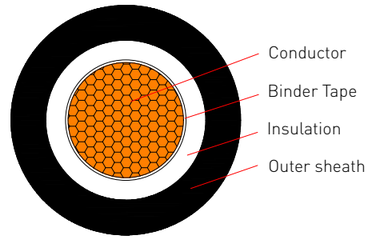
Rated voltage: 450/750V
Test voltage: AC 2500V/5min
70℃ Insulation Resistance: ⩾0.2 MΩ.km
Minimum bending radius during installation: 6×OD
Operating temperature (fixed inst.): -40～70℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
★**UV resistant:** Test according to GB/T 29631
★**Salt spray resistant:** Test according to GB/T2423.17
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃
Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
1×1.5	3.0	21	13.3	13.7
1×2.5	3.7	33	7.98	8.21
1×4	4.3	49	4.95	5.09
1×6	4.9	36	3.30	3.39
1×10	6.2	116	1.91	1.95
1×16	8.0	179	1.21	1.24
1×25	9.6	276	0.780	0.795
1×35	11.5	380	0.554	0.565
1×50	12.8	537	0.386	0.393
1×70	13.9	689	0.272	0.277
1×95	16.2	908	0.206	0.210
1×120	18.3	1148	0.161	0.164
1×150	20.7	1431	0.129	0.132
1×185	22.6	1748	0.106	0.108
1×240	26.2	2301	0.0801	0.0817

Note: other specifications can be produced to meet customer requirements.

FDN-EU 0.6/1kV Torsional Power Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0207, IEC60502, GB/T 29631



Application

This cable is designed for use and installation in wind turbines at rated voltage 0.6/1kV (690V) fixed wiring. In the case of free-hanging operation the cables are twistable.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special EPR rubber compound
Core identification: Natural color
Outer sheath: Special TPU compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

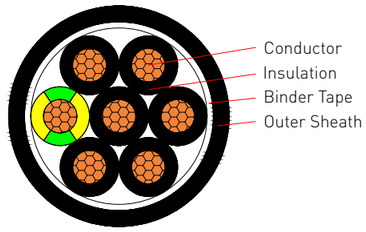
Rated voltage: 0.6/1kV
Test voltage: AC 3500V/5min
Minimum bending radius (fix inst.): 4×OD;
Minimum bending radius (mobile service): 6×OD.
Operating temperature: -40～90℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Max permissible tensile load: 15 N/mm²
Torsional performance: Test according to GB/T 29631
★**Salt spray resistant:** Test according to GB/T 2423.17
★**UV resistant:** Test according to GB/T 29631
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃
Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

Specification	Overall diameter		Approx. Weight	DC Resistance at 20℃	
	Nom.	Max.		Plain copper	Tinned copper
No.× mm²	mm	mm	kg/km	Ω/km	Ω/km
1×70	20.1	21.1	905	0.272	0.277
1×95	22.7	23.8	1170	0.206	0.210
1×120	24.8	26.0	1450	0.161	0.164
1×150	27.4	28.7	1784	0.129	0.132
1×185	29.9	31.4	2159	0.106	0.108
1×240	33.4	35.0	2772	0.0801	0.0817
1×300	39.1	41.1	3469	0.0641	0.0654
1×400	44.1	46.3	4480	0.0486	0.0495

Note: other specifications can be produced to meet customer requirements.

FD-KVV up to 450/750V Control Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0281, VDE0207, GB/T 9330



Application

This cable is designed for use and installation in control system in wind turbines at rated voltage 450/750V fixed wiring as a control, monitoring or protection circuit control loop.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special PVC compound
Core identification: Black insulation printed with numbers, (cables with 3 cores and above, have a yellow-green grounding wire)
Outer sheath: Special PVC compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 450/750V Nom. cross sectional area＞1.5mm²
300/500V Nom. cross sectional area ≤1.0mm²
Test voltage: AC 2500V/5min Nom. cross sectional area＞1.5mm²
AC 2000V/5min Nom. cross sectional area ≤1.0mm²
Operating temperature (fixed inst.): -40～70℃
Minimum bending radius during installation: 6×OD
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Note: data with ★ refers to the special requirements of customer (mainly apply to the offshore wind turbine).

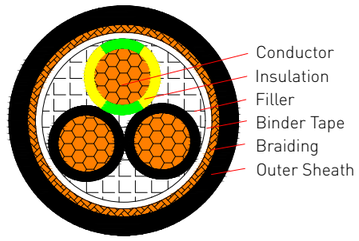
★**UV resistant:** Test according to GB/T 29631
★**Salt spray resistant:** Test according to GB/T2423.17
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40°C

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
2×0.5	6.2	45	39.0	40.1
3G0.5	6.5	54	39.0	40.1
4G0.5	7.3	70	39.0	40.1
5G0.5	8.1	87	39.0	40.1
7G0.5	9.0	107	39.0	40.1
12G0.5	11.9	192	39.0	40.1
18G0.5	13.8	263	39.0	40.1
25G0.5	16.2	359	39.0	40.1
2×0.75	6.8	57	26.0	26.7
3G0.75	7.2	69	26.0	26.7
4G0.75	7.8	85	26.0	26.7
5G0.75	8.9	110	26.0	26.7
7G0.75	10.1	140	26.0	26.7
12G0.75	13.4	254	26.0	26.7
18G0.75	15.7	354	26.0	26.7
25G0.75	18.3	480	26.0	26.7
2×1.0	7.2	65	19.5	20.0
3G1.0	7.6	80	19.5	20.0
4G1.0	8.4	103	19.5	20.0
5G1.0	9.2	123	19.5	20.0
7G1.0	10.6	163	19.5	20.0
12G1.0	14.2	295	19.5	20.0
18G1.0	16.3	407	19.5	20.0
25G1.0	18.9	546	19.5	20.0
2×1.5	8.1	85	13.3	13.7
3G1.5	8.8	111	13.3	13.7
4G1.5	9.8	142	13.3	13.7
5G1.5	10.9	176	13.3	13.7
7G1.5	12.0	218	13.3	13.7
12G1.5	16.2	397	13.3	13.7
18G1.5	18.8	554	13.3	13.7
25G1.5	22.2	769	13.3	13.7
3G2.5	10.7	169	7.98	8.21
4G2.5	11.7	210	7.98	8.21
5G2.5	12.9	260	7.98	8.21
7G2.5	14.7	338	7.98	8.21
12G2.5	19.0	580	7.98	8.21
18G2.5	22.1	820	7.98	8.21
28G2.5	26.3	1140	7.98	8.21

Note1: other specifications can be produced to meet customer requirements.
Note2: ×: without yellow-green grounding wire G: with yellow-green grounding wire

FD-KVVP up to 450/750V Control Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0281, VDE0207, GB/T 9330



Application

This cable is designed for use and installation in control system in wind turbines at rated voltage 450/750V fixed wiring as a control, monitoring or protection circuit control loop. It can be used to resist external interference and to prevent external electromagnetic field generated pulse interference.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special PVC compound
Core identification: Black insulation printed with numbers, (cables with 3 cores and above, have a yellow-green grounding wire)
Braiding: Copper wire braiding
Outer sheath: Special PVC compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 450/750V Nom. cross sectional are＞a1.5mm²
300/500V Nom. cross sectional area ≤1.0mm²
Test voltage: AC 2500V/5min Nom. cross sectional area＞1.5mm²
AC 2000V/5min Nom. cross sectional area ≤1.0mm²
Operating temperature (fixed inst.): -40～70℃
Minimum bending radius during installation: 6×OD
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Note: data with ★ refers to the special requirements of customer (mainly apply to the offshore wind turbine).

★**UV resistant:** Test according to GB/T 29631
★**Salt spray resistant:** Test according to GB/T2423.17
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
2×0.5	7.1	70	39.0	40.1
3G0.5	7.5	82	39.0	40.1
4G0.5	8.0	96	39.0	40.1
5G0.5	8.9	116	39.0	40.1
7G0.5	9.8	139	39.0	40.1
12G0.5	12.8	234	39.0	40.1
18G0.5	14.7	312	39.0	40.1
25G0.5	17.5	433	39.0	40.1
27G0.5	17.9	455	39.0	40.1

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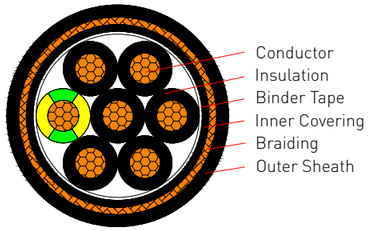
Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
2×0.75	7.5	80	26.0	26.7
3G0.75	7.9	94	26.0	26.7
4G0.75	8.8	116	26.0	26.7
5G0.75	9.5	136	26.0	26.7
7G0.75	10.6	169	26.0	26.7
12G0.75	13.6	280	26.0	26.7
18G0.75	15.3	345	26.0	26.7
25G0.75	16.1	394	26.0	26.7
27G0.75	18.8	527	26.0	26.7
2×1.0	7.8	95	19.5	20.0
3G1.0	8.2	105	19.5	20.0
4G1.0	8.5	111	19.5	20.0
5G1.0	9.3	139	19.5	20.0
7G1.0	10.2	160	19.5	20.0
12G1.0	11.2	194	19.5	20.0
18G1.0	14.6	331	19.5	20.0
25G1.0	19.9	615	19.5	20.0
27G1.0	20.5	658	19.5	20.0
2×1.5	9.1	118	13.3	13.7
3G1.5	9.6	142	13.3	13.7
4G1.5	10.6	177	13.3	13.7
5G1.5	11.7	214	13.3	13.7
7G1.5	12.9	260	13.3	13.7
12G1.5	16.9	447	13.3	13.7
18G1.5	19.9	632	13.3	13.7
25G1.5	23.5	861	13.3	13.7
27G1.5	24.2	921	13.3	13.7
2×2.5	10.7	165	7.98	8.21
3G2.5	11.3	202	7.98	8.21
4G2.5	12.5	252	7.98	8.21
5G2.5	13.8	306	7.98	8.21
7G2.5	15.3	382	7.98	8.21
12G2.5	20.1	658	7.98	8.21
18G2.5	24.0	946	7.98	8.21
25G2.5	28.2	1290	7.98	8.21
27G2.5	29.0	1378	7.98	8.21
2×4	13.1	246	4.95	5.09
4G4	15.5	386	4.95	5.09
5G4	17.1	469	4.95	5.09
7G4	18.7	575	4.95	5.09

Note1: other specifications can be produced to meet customer requirements.
Note2: ×: without yellow-green grounding wire G: with yellow-green grounding wire

FD-KVVPV up to 450/750V Control Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0281, VDE0207, GB/T 9330



Application

This cable is designed for use and installation in control system in wind turbines at rated voltage 450/750V fixed wiring as a control, monitoring or protection circuit control loop. It can be used to resist external interference and to prevent external electromagnetic field generated pulse interference.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special PVC compound
Core identification: Black insulation printed with numbers, (cables with 3 cores and above, have a yellow-green grounding wire)
Inner covering: Special PVC compound
Braiding: Copper wire braiding
Outer sheath: Special PVC compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 450/750V Nom. cross sectional area＞1.5mm²
300/500V Nom. cross sectional area ≤1.0mm²
Test voltage: AC 2500V/5min Nom. cross sectional area＞1.5mm²
AC 2000V/5min Nom. cross sectional area ≤1.0mm²
Operating temperature (fixed inst.): -40～70℃
Minimum bending radius during installation: 6×OD
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

★**UV resistant:** Test according to GB/T 29631
★**Salt spray resistant:** Test according to GB/T 2423.17
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
2×0.75	9.1	118	26.0	26.7
3G0.75	9.5	133	26.0	26.7
4G0.75	10.3	158	26.0	26.7
5G0.75	11.4	191	26.0	26.7
7G0.75	12.3	225	26.0	26.7
12G0.75	15.3	349	26.0	26.7
18G0.75	17.7	474	26.0	26.7
25G0.75	20.9	650	26.0	26.7
27G0.75	21.3	680	26.0	26.7

HENGTONG GROUP

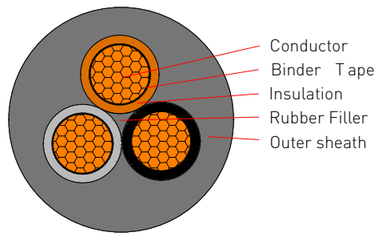
Wind power cables

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
2×1.0	9.3	124	19.5	20.0
3G1.0	10.1	152	19.5	20.0
4G1.0	10.9	181	19.5	20.0
5G1.0	11.9	214	19.5	20.0
7G1.0	12.9	253	19.5	20.0
12G1.0	16.0	397	19.5	20.0
18G1.0	18.9	553	19.5	20.0
25G1.0	21.6	723	19.5	20.0
27G1.0	22.4	783	19.5	20.0
2×1.5	10.5	160	13.3	13.7
3G1.5	11.5	198	13.3	13.7
4G1.5	12.5	238	13.3	13.7
5G1.5	13.6	281	13.3	13.7
7G1.5	14.9	340	13.3	13.7
12G1.5	18.9	549	13.3	13.7
18G1.5	21.9	751	13.3	13.7
25G1.5	25.5	1013	13.3	13.7
27G1.5	26.4	1089	13.3	13.7
2×2.5	12.8	233	7.98	8.21
3G2.5	13.8	285	7.98	8.21
4G2.5	14.8	336	7.98	8.21
5G2.5	15.8	390	7.98	8.21
7G2.5	17.4	475	7.98	8.21
12G2.5	22.1	778	7.98	8.21
18G2.5	25.8	1088	7.98	8.21
25G2.5	29.8	1442	7.98	8.21
27G2.5	30.8	1549	7.98	8.21
2×4	14.3	300	4.95	5.09
4G4	16.1	426	4.95	5.09
5G4	17.7	517	4.95	5.09
7G4	19.6	644	4.95	5.09

Note1: other specifications can be produced to meet customer requirements.
Note2: ×: without yellow-green grounding wire G: with yellow-green grounding wire

FDN- KEF 450/750V Torsional Control Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0207, VDE0282, GB/T 29631



Application

This cable is designed for use and installation in control system in wind turbines at rated voltage 450/750V fixed wiring as a control, monitoring or protection circuit control loop. In the case of free-hanging operation the cables are twistable.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special EPR rubber compound
Core identification: According to HD 308
Outer sheath: Special CPE rubber compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 450/750V
Test voltage: AC 2500V/5min
Minimum bending radius (fix inst.): 4×OD;
Minimum bending radius (mobile service): 6×OD.
Operating temperature: -40～90℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Max permissible tensile load: 15 N/mm²
Torsional performance: Test according to GB/T 29631
Note: data with ★ refers to the special requirements of customer (mainly apply to the offshore wind turbine).

★**Salt spray resistant:** Test according to GB/T 2423.17
★**UV resistant:** Test according to GB/T 29631
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

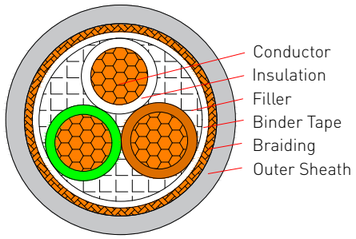
Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
2×4	13.3	241	4.95	5.09
3×4	14.2	305	4.95	5.09
4×4	15.6	382	4.95	5.09
5×4	17.4	473	4.95	5.09
6×4	20.3	624	4.95	5.09
12×4	27.0	1140	4.95	5.09
18×4	31.8	1623	4.95	5.09
2×6	14.9	316	3.30	3.39

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
3×6	15.9	403	3.30	3.39
4×6	17.7	514	3.30	3.39
5×6	19.6	635	3.30	3.39
2×10	19.9	570	1.91	1.95
3×10	21.4	723	1.91	1.95
4×10	23.3	893	1.91	1.95
5×10	25.6	1089	1.91	1.95
2×16	23.2	787	1.21	1.24
3×16	24.8	1006	1.21	1.24
4×16	27.1	1250	1.21	1.24
5×16	30.1	1542	1.21	1.24
2×25	27.1	1113	0.780	0.795
3×25	29.0	1434	0.780	0.795
4×25	32.1	1826	0.780	0.795
5×25	35.6	2248	0.780	0.795
3×35	32.2	1860	0.554	0.565
4×35	35.6	2372	0.554	0.565
5×35	39.2	2898	0.554	0.565
3×50	40.6	2709	0.386	0.393
4×50	45.0	3445	0.386	0.393
3×70	42.5	3421	0.272	0.277
4×70	47.3	4396	0.272	0.277

Note1: other specifications can be produced to meet customer requirements.
Note2: ×: without yellow-green grounding wire G: with yellow-green grounding wire

FD-SVVP/FD-SYVP 300/500V Screened Data Transmission Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE 0812, VDE 0814



Application

This cable is designed for use and installation in computer and instrument control system in wind turbines to resist the external electromagnetic interference for transmission of control, detection, alarm, and chain signal.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special PVC or PE compound
Core identification: According to DIN47100
Braiding: Copper wire braiding
Outer sheath: Special PVC compound
Outer sheath color: Grey or according to customer's requirement

Technical indictors

Rated voltage: 300/500V
Test voltage: Core – core 1200V/1min, Core – screen 800V/1min
Capacitance (800Hz): ⩽120nF/km
Impedance: ＜85Ω
Inductance: ＜0.7mH/km
Minimum bending radius during installation: 6×OD
Operating temperature (fixed inst.): -40℃～70℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1

★**UV resistant:** Test according to GB/T 29631
★**Salt spray resistant:** Test according to GB/T 2423.17
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

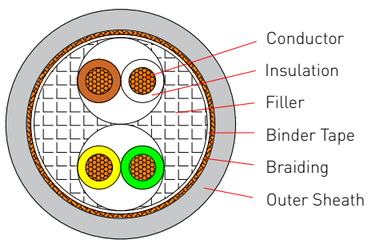
Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
2×0.25	4.4	27	79.0	82.0
3×0.25	4.6	32	79.0	82.0
4×0.25	5.0	38	79.0	82.0
5×0.25	5.4	45	79.0	82.0
6×0.25	5.9	52	79.0	82.0
7×0.25	5.9	56	79.0	82.0
8×0.25	6.3	63	79.0	82.0
10×0.25	7.4	79	79.0	82.0

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
12×0.25	7.6	88	79.0	82.0
14×0.25	8.0	98	79.0	82.0
16×0.25	8.4	110	79.0	82.0
18×0.25	8.9	121	79.0	82.0
2×0.34	5.1	35	57.0	59.0
3×0.34	5.4	43	57.0	59.0
4×0.34	5.9	52	57.0	59.0
5×0.34	6.4	61	57.0	59.0
6×0.34	7.0	71	57.0	59.0
7×0.34	7.0	76	57.0	59.0
8×0.34	7.5	86	57.0	59.0
10×0.34	8.8	109	57.0	59.0
12×0.34	9.1	122	57.0	59.0
14×0.34	9.6	138	57.0	59.0
16×0.34	10.1	154	57.0	59.0
18×0.34	10.7	171	57.0	59.0
2×0.50	5.5	42	39.0	40.1
3×0.50	5.8	51	39.0	40.1
4×0.50	6.4	63	39.0	40.1
5×0.50	7.0	74	39.0	40.1
6×0.50	7.6	87	39.0	40.1
7×0.50	7.6	94	39.0	40.1
8×0.50	8.2	107	39.0	40.1
10×0.50	9.6	135	39.0	40.1
12×0.50	10.0	152	39.0	40.1
14×0.50	10.5	172	39.0	40.1
16×0.50	11.2	198	39.0	40.1
18×0.50	11.8	220	39.0	40.1
2×0.75	6.5	57	26.0	26.7
3×0.75	6.9	71	26.0	26.7
4×0.75	7.5	87	26.0	26.7
5×0.75	8.3	104	26.0	26.7
6×0.75	9.0	122	26.0	26.7
7×0.75	9.0	133	26.0	26.7
8×0.75	9.8	152	26.0	26.7
10×0.75	11.6	192	26.0	26.7
12×0.75	12.1	224	26.0	26.7
14×0.75	12.7	254	26.0	26.7
16×0.75	13.5	285	26.0	26.7
18×0.75	14.2	316	26.0	26.7

Note: other specifications can be produced to meet customer requirements.

FD-SVVP (TP) /FD-SYVP (TP) 300/500V Screened Data Transmission Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE 0812, VDE 0814



Application

This cable is designed for use and installation in computer and instrument control system in wind turbines to resist the external electromagnetic interference for transmission of control, detection, alarm, and chain signal.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special PVC or PE compound
Core identification: According to DIN47100
Braiding: Copper wire braiding
Outer sheath: Special PVC compound
Outer sheath color: Grey or according to customer's requirement

Technical indictors

Rated voltage: 300/500V
Test voltage: Core – core 1200V/1min, Core – screen 800V/1min
Capacitance (800Hz) : ⩽120nF/km
Impedance: ＜85Ω
Inductance: ＜0.7mH/km
Minimum bending radius during installation: 6×OD
Operating temperature (fixed inst.): -40℃～70℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
★**UV resistant:** Test according to GB/T 29631
★**Salt spray resistant:** Test according to GB/T 2423.17
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃
Note: data with ★ refers to the special requirements of customer (mainly apply to the offshore wind turbine).

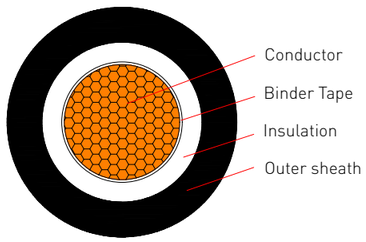
Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
2×2×0.25	6.3	55	79.0	82.0
3×2×0.25	7.2	72	79.0	82.0
4×2×0.25	8.0	87	79.0	82.0
5×2×0.25	8.7	102	79.0	82.0
6×2×0.25	9.3	116	79.0	82.0
8×2×0.25	10.4	144	79.0	82.0

Specification	Approx. overall diameter	Approx. Weight	DC Resistance at 20℃	
			Plain copper	Tinned copper
No.× mm²	mm	kg/km	Ω/km	Ω/km
10×2×0.25	11.4	171	79.0	82.0
12×2×0.25	12.3	197	79.0	82.0
2×2×0.34	7.3	72	57.0	59.0
3×2×0.34	8.5	96	57.0	59.0
4×2×0.34	9.4	118	57.0	59.0
5×2×0.34	10.3	139	57.0	59.0
6×2×0.34	11.1	159	57.0	59.0
8×2×0.34	12.5	199	57.0	59.0
10×2×0.34	13.7	237	57.0	59.0
12×2×0.34	14.8	275	57.0	59.0
2×2×0.50	7.8	85	39.0	40.1
3×2×0.50	9.1	114	39.0	40.1
4×2×0.50	10.2	141	39.0	40.1
5×2×0.50	11.2	167	39.0	40.1
6×2×0.50	12.0	193	39.0	40.1
8×2×0.50	13.6	242	39.0	40.1
10×2×0.50	14.9	291	39.0	40.1
12×2×0.50	16.1	338	39.0	40.1

Note1: other specifications can be produced to meet customer requirements.
Note2: ×: without yellow-green grounding wire G: with yellow-green grounding wire

FDN- EF 0.6/1kV Torsional Power Cable for Wind Power Engine Group

Standards: Refer to IEC60228, VDE0207, VDE0282, GB/T 29631



Specification	Overall diameter		Approx. Weight	DC Resistance at 20℃	
	Nom.	Max.		Plain copper	Tinned copper
No.× mm²	mm	mm	kg/km	Ω/km	Ω/km
1×70	20.1	21.1	958	0.272	0.277
1×95	22.7	23.8	1235	0.206	0.210
1×120	24.8	26.0	1526	0.161	0.164
1×150	27.4	28.7	1875	0.129	0.132
1×185	29.9	31.4	2265	0.106	0.108
1×240	33.4	35.0	2897	0.0801	0.0817
1×300	39.1	41.1	3622	0.0641	0.0654
1×400	44.1	46.3	4665	0.0486	0.0495

Note: other specifications can be produced to meet customer requirements.

Application

This cable is designed for use and installation in wind turbines at rated voltage 0.6/1kV (690V) fixed wiring. In the case of free-hanging operation the cables are twistable.

Construction

Conductor: Flexible plain or tinned copper conductor, finely stranded
Insulation: Special EPR rubber compound
Core identification: Natural color
Outer sheath: Special CPE rubber compound
Outer sheath color: Black or according to customer's requirement

Technical indictors

Rated voltage: 0.6/1kV
Test voltage: AC 3500V/5min
Minimum bending radius (fix inst.): 4×OD;
Minimum bending radius (mobile service): 6×OD.
Operating temperature: -40～90℃
Fire performance: Flame retardant IEC 60332-1
Oil resistance: Test according to IEC 60811-2-1
Max permissible tensile load: 15 N/mm²
Torsional performance: Test according to GB/T 29631
Note: data with ★refers to the special requirements of customer (mainly apply to the offshore wind turbine).

★**Salt spray resistant:** Test according to GB/T 2423.17
★**UV resistant:** Test according to GB/T 29631
★**Resistance to erosion of sea water:** 14 days of sea water erosion in 40℃

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Uganda

Zambia

America Region

Argentina

Bolivia

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Colombia

Ecuador

Mexico

Peru

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Malaysia

Myanmar

Nepel

Pakistan

Philippines

Singapore

Sri Lanka

Taiwan, China

Thailand

Vietnam

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Brazil

Middle East and North Africa Region

Algeria

Dubai (Bay sea area)

Egypt

Jordan

Lebanon

Morocco (West Africa&North Africa Region)

Europe Region

Baltic

Georgia

Italy

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Serbia

Turkey

Ukraine

Russia Region

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