



**FIBER OPTICAL CABLES
FOR ELECTRICAL POWER LINES
CATALOG**

High Quality is Our Obligation



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先进的生产设备和工艺流程 ADVANCED FACILITIES AND TECHNICAL FLOW

先进的设备是保证产品质量的前提条件。该公司已三次延长它的年生产能力。许多先进的制造设备和测量仪器被引进到瑞士、美国、法国、日本、英国、意大利等国家的公司，并取得了持续的技术改进,以确保领先的技术和一流的产品质量。

Advanced facilities are the precondition of assuring production Quality. The company had three times of extending its annual production capability. Many advanced manufacturing equipments and measurement instrument have been introduced to the company from Switzerland, USA, France, Japan, UK, Italy, etc, and has made continual technical improvement, so as to ensure the leading technology and first-class Quality of the products.



Main Production Equipment	Equipment Type	Manufactuier	Quantity
Laser Welding Line For Stainless Steel Tube Fiber Unit	LCF809	SWISSCAB	1
	WT304	Watson, America	1
	APS	APSWISSTECH	3
Planetary Strander	630/8+16	Pourtier, France	2
	800/6+12+24	Hefei Smarter, China	1
	630/8+16 630/6+12+18	Hefei Smarter, China	9
Tubular Strander	500&630	Hefei Smarter, China	2
Optical Fiber Coloring Machine	OFC52 LINX2000	NORKIA, Finland SWISSCAB	5
Continuous Clad & Extruder	CONFORM® 2000	Holton and BWE, England	4



用于ADSS光缆的芳纶纱层绞机器
Aramid Yarn Stranding Machine of ADSS Cable



持续性包覆和挤出机
Continuous Clad & Extruder



先进的生产设备和工艺流程

EXCELLENT MANUFACTURE FACILITIES AND PROCESS



光时域反射仪
OTDR



电-张力计
Electro-tension Meter



光纤色散和应变仪
CD400 Optical Fiber Dispersion & Strain Instrument

Main Test Instrument	Measurable Items	Quantity	Manufacturer
OTDR	Attenuation, Length, Attenuation Unevenness, Splice Attenuation	20	PK Technology, EXFO, Tektronix, Agilent
Fiber Splice Machine	Fiber Ribbon Splice Fiber Splice	20	Japan Fujikura, Sumitomo
Optical Fiber Dispersion & Strain Inspection Instrument	Fiber Dispersion, Cable's Tension Strain and Mechanical Performance Monitoring	2	UK EG&G, Perkin Elme
Temperature Cycling Test Box	Temperature Cycling Test and Seepage of Compound Test	2	Chongqing Test Equipment Factory
Computer-control Fiber Cable Horizontal Tension Machine	Cable Breaking Strength Test, Tension Test, Stress-strain Test, Etc	1	Shanghai Hualong Test Instrument Factory
Sheave Test Machine	Stimulate the Influence to ADSS, OPGW Cable During Installation	1	Shanghai Electric Cable Research Institute
Salty Fog Lab	ADSS Outer Sheath Anti-tracking Test	1	Shanghai Electric Cable Research Institute



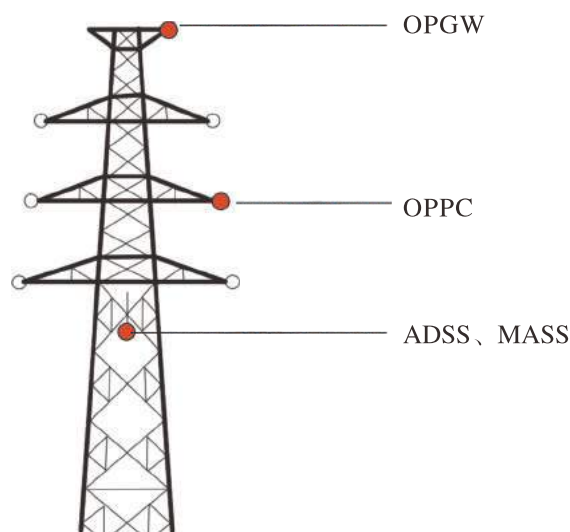
电力光缆类型

TYPE OF SPECIAL OPTICAL FIBER CABLES FOR ELECTRICAL POWER LINES

特殊光纤电力电线电缆的光纤电缆安装在架空输电线路的塔或杆上。IEC 60794 – 4:2003,第4部分:部门规范应用在电力线路的光学电缆,由下列部分组成。

Special optical fiber cables for electrical power lines is the optical fiber cables which are installed at the towers or poles of the aerial power transmission lines.

IEC 60794-4:2003, Optical fibre cables Part 4:sectional Specification-Aerial optical cables along electrical power lines, consists of the following parts.



应用在电力线路上的架空光缆
(应用在电力线路上的特种光缆)
Aerial optical cables along electrical power lines
(Special optical fiber cables for electrical power lines)

OPGW

OPPC

ADSS

MASS

- OPGW光缆拥有接地线功能与通信能力的双重性能
OPGW cables have the dual performance functions of ground wires with communication capabilities.
- OPPC 电缆拥有相线导电与通信的双重功能
OPPC cables have the dual performance functions of phase conductors with communication capabilities.
- ADSS光缆是一种直接应用于塔之间的非金属自承式的光缆
ADSS cables are a kind of non-metallic self-supporting optical fiber cables directly between two power towers.
- MASS光缆是一种直接应用于塔之间的非金属自承式的光缆
MASS cables are a kind of metallic self-supporting optical fiber cables directly between two power towers.



设计标准和规格

DESIGN STANDARD AND SPECIFICATION

COMPANY	
ISO 9001	Quality Management Systems
ISO 14001	Environmental Management Systems
RAW MATERIAL	
ITU-T G.650	Definition and Test Methods for The Relevant Parameters of Single-mode Fibers
ITU-T G.652	Characteristics of A Single-mode Optical Fiber Cable
ITU-T G.655	Characteristics of A Non-zero Dispersion Shifted Single-mode Optical Fiber Cable
IEC 60793-1	Optical Fiber Part 1: Generic Specifications
IEC 60793-2	Optical Fiber Part 2: Product Specifications
IEC 61232	Aluminum Clad Steel Wire for Electrical Purposes
IEC 60104	Aluminum Magnesium-silicon Alloy Wire for Over-head Line Conductors
ASTM 415	Standard Specification for Hard-Drawn Aluminum-Clad Steel Wire
PRODUCT	
IEEE Std 1138	IEEE Standard Construction of Composite Fiber Optic Overhead Ground Wires (OPGW) for Use on Electric Utility Power Lines
IEC Std 1222	IEEE Standard for All-Dielectric Self-Supporting Fiber Optic Cable
IEC 60794-4	Optical Fiber Cables Part 4: Sectional Specification Aerial Optical Cables along Electrical Power Lines
IEC 60395	Overhead Electrical Conductors Creep Test Procedures for Stranded Conductors
EIA/TIA 598	Color Code of Fiber Optic Cables

Design Performances	OPGW	OPPC	MASS	ADSS
Fiber Count and Type	●	●	●	●
Structure of Cable	●	●	●	●
Overall Diameter(mm)	●	●	●	●
Calculated Sectional Area(mm ²)	●	●	●	●
Calculated Mass(kg/km)	●	●	●	●
RTS-rated Tensile Strength(kN)	●	●	●	●
Elastic Modulus(N/mm ²)	●	●	●	●
Linear Expansion Coefficient(1/°C)	●	●	●	●
DC Resistance(Ω/km)	●	●	—	—
Short Current Capacity(KA ² s)	●	—	—	—
Current Carrying Capacity(A)	—	●	—	—
MAT-Max Allowable Tensile Strength(kN)	●	●	●	●
Storage and Operating Temperature(°C)	●	●	●	●
Strain Margin(%)	●	●	●	●
Outer Layer Stranding Direction	●	●	●	—



主要原材料的性能 PERFORMANCE OF MAIN RAW MATERIALS

光纤种类和性能
Fiber Types and Properties

Items	Fiber Type	ITU-T G652Fiber(B1)	ITU-T G655Fiber(B4)
Mode Field Diameter	1310nm	9.2 ± 0.4 μm	/
	1550nm	10.04 ± 0.8 μm	8~11 μm ± 0.7 μm
Cladding Diameter		125 ± 1.0 μm	125 ± 1.0 μm
Cladding Non-circularity		≤ 1%	≤ 1%
Proof Test Strength		0.69GPa	0.69GPa
Cut-off Wavelength		≤ 1260nm	≤ 1480nm
Attenuation	1310nm	≤ 0.36dB/km	/
	1550nm	≤ 0.22dB/km	≤ 0.22dB/km
Zero-dispersion Wavelength		1300~1324nm	/
Zero-dispersion Slope		≤ 0.092ps/nm ² · km	/
Dispersion	1285~1330nm	≤ 3.5 ps/nm · km	/
	1550nm(1530~1565nm)	≤ 18 ps/nm · km	1~6 ps/nm · km
	1550nm(1565~1625nm)	/	4.5~11.2 ps/nm · km

铝包钢线的物理和电力性能(IEC 61232-1993)
Mechanical and Electric Performance of Aluminum Clad Steel Wire(IEC 61232-1993)

Class	Type	Nominal Diameter mm		Min. Tensile Strength MPa	Min.Stress of 1% Elongation MPa	Max.Resistivity at 20°C nΩ.m
		>	≤			
14SA		1.24	3.00	1590	1410	123.15
		3.00	3.50	1520	1350	123.15
		3.50	4.10	1450	1280	123.15
		4.10	4.80	1400	1240	123.15
20SA	A	1.24	3.25	1340	1200	84.80
		3.25	3.45	1310	1180	84.80
		3.45	3.65	1270	1140	84.80
		3.65	3.95	1250	1100	84.80
		3.95	4.10	1210	1100	84.80
		4.10	4.40	1180	1070	84.80
	B	4.40	4.60	1140	1030	84.80
		4.60	4.75	1100	1000	84.80
		4.75	5.50	1070	1000	84.80
		1.24	5.50	1320	1100	84.80
LB23		2.50	5.00	1220	980	74.96
LB27		2.50	5.00	1080	800	63.86
LB30		2.50	5.00	880	650	57.47
LB35		2.50	5.00	810	590	49.26
LB40		2.50	5.00	680	500	43.10

加强铝合金线的物理和电力性能(IEC 60104-1987)
Mechanical and Electrical Performance of High Strength Al-alloy Wire(IEC 60104-1987)

Item		Unit	LHA1	LHA2
Tensile Strength ≥	3.50mm ≤ 3.50mm	MPa	325	295
	3.50mm > 3.50mm		315	295
Elongation Rate (250mm) ≥		%	3.0	3.5
Resistivity (20 °C) ≤		nΩ.m	32.840	32.530
Density		Kg/dm	2.703	2.703
Linear Expansion Coefficient		1/°C	23 × 10 ⁻⁶	23 × 10 ⁻⁶
Resistance Temperature Coefficient		1/°C	0.0036	0.0036



光纤单元的结构设计 STRUCTURE DESIGN OF OPTICAL UNIT

不锈钢管光纤单元在气体保护技术,激光焊接生产的图纸画的线具有过程和在线涡流检测中发挥重要的作用。

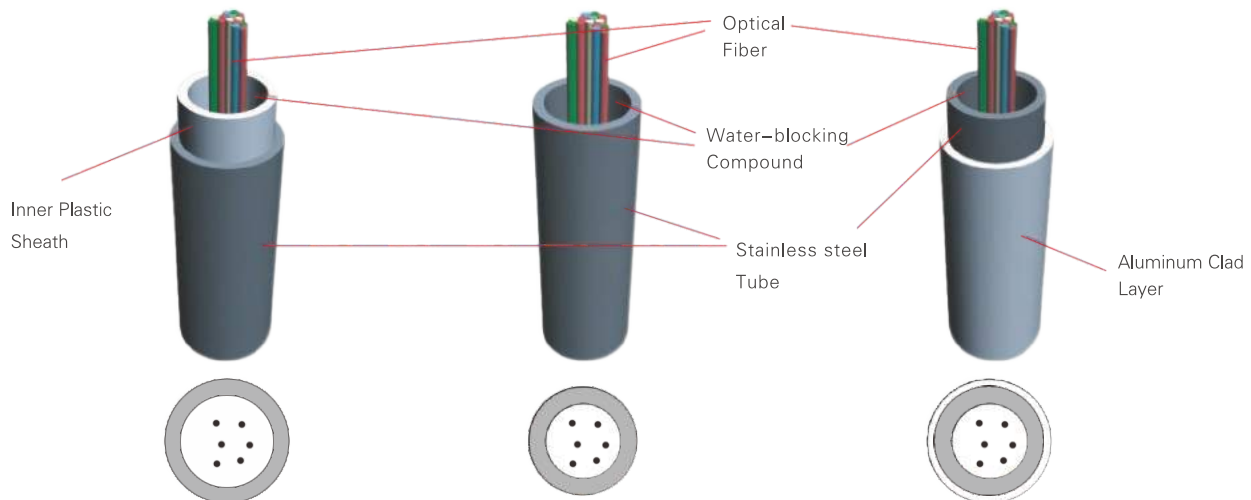
不锈钢管内衬塑料护套光学单元制造的理想结合全面光纤第二涂层工艺与先进的激光焊接钢管技术。它可以有效地防止纤维毛刺和锯齿波等,精确地控制纤维长度过剩,并增加不锈钢管的横向流体渗透特性。

铝包不锈钢管光纤单元制造的理想结合先进的激光焊接钢管技术和持续的挤压与包层铝管技术,可以有效提高电气特性如短路电流和闪电,和明显增加腐蚀和抗压。

The stainless steel tube optical unit is manufactured by laser welding—drawing at gas protecting technique, the line possesses of drawing process and on—line eddy—current detection which play an importance of defects screen to get rid of dummy wedding, leak welding etc.

The stainless Steel tube with inner plastic sheath optical unit is manufactured by ideally combining the well—rounded optical fiber second coating craftwork with the advanced laser welding steel tube technique. It could effectively protect fibers from burr and sawtooth etc. and precisely control the fibers excess length, and increase the horizontal fluid penetration characteristic of stainless steel tube.

The Al—covered stainless steel tube optical unit is manufactured by ideally combining the advanced laser welding steel tube technique with continual extrusion & cladding Al tube technology. It could effectively increase the electric characteristics such as short—circuit current and lightning, and evidently increase corrosion and crush resistance.



带有塑料内护套光纤单元的不锈钢管
Stainless Steel Tube With Inner
Plastic Sheath Optical Unit

不锈钢光纤单元
Stainless steel Optical Unit

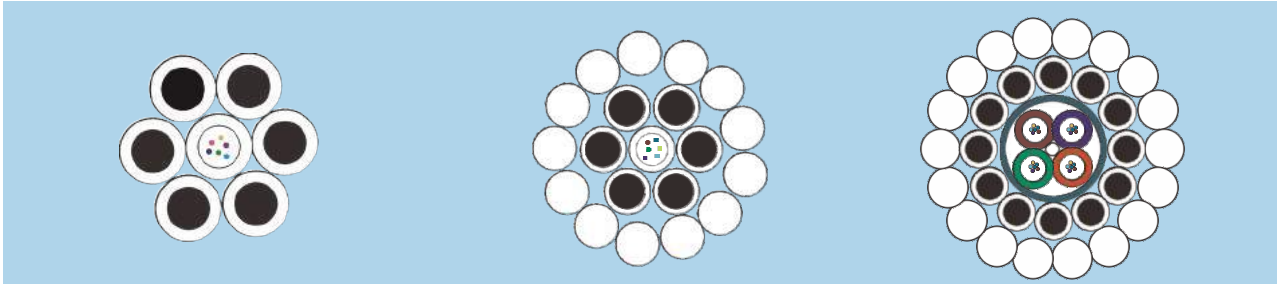
铝包不锈钢管光纤单元
Al-covered Stainless Steel Tube
Optical Unit

Diameter of Steel Tube	Central Type(Max . Cores)	Stranded Type(Max. Cores)
Φ2.4	--	24
Φ2.5	--	24
Φ2.7	18	28
Φ3.0	24	36
Φ3.2	30	48
Φ3.3	30	48
Φ3.4	36	48
Φ3.5	40	48
Φ3.6	48	48
Φ3.7	50	--
Φ3.8	54	--
Φ4.0	60	--



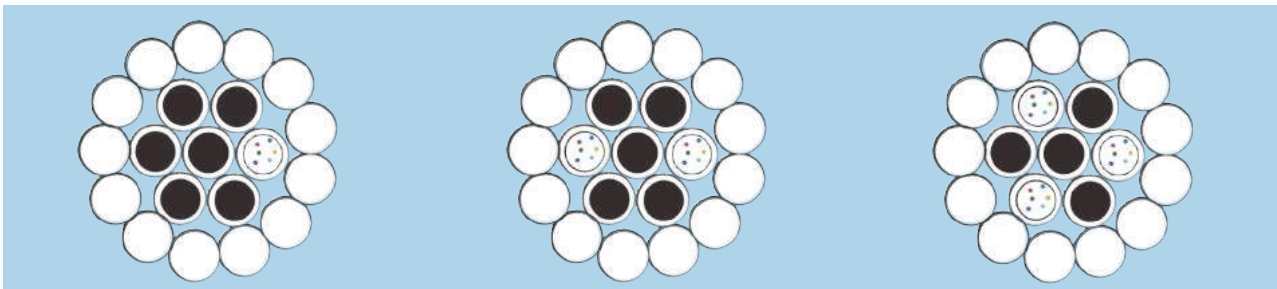
OPGW/OPPC/MASS 的结构类型和图形 STRUCTURE TYPE & DRAWING OF OPGW / OPPC / MASS

中心光学单元类型(光学单元电缆的中心)
Central Optical Unit Type (Optical Unit in the Center of Cable)

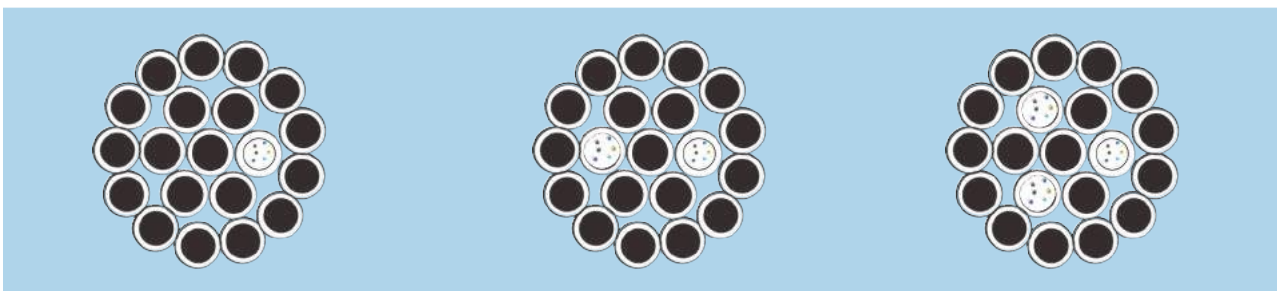


绞合光学单元类型(光学单元电缆偏心内层的)
Stranded Optical Unit Type (Optical Unit in the Eccentric Inner Layer of Cable)

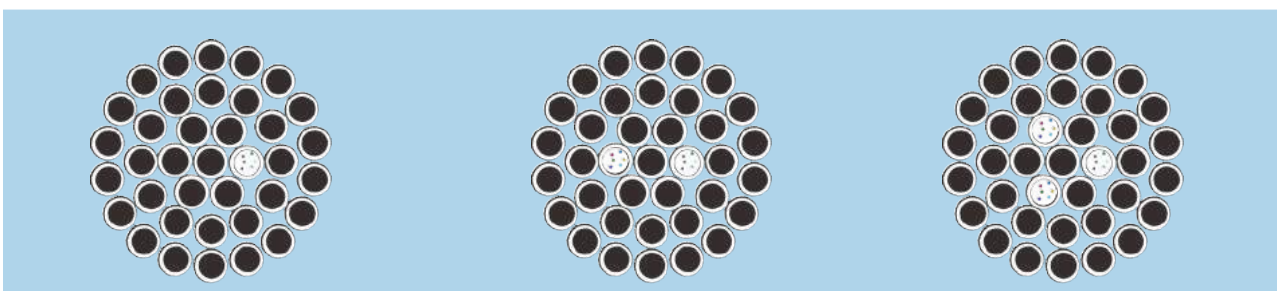
- AS电线和AA电线混合绞合的双层结构
Double Layers Structure of AS Wires and AA Wires Mixed Stranded



- 所有AS线绞合的双层结构
Double Layers Structure of All AS Wires Stranded



- 所有AS线绞合的三层结构
Three Layers Structure of All AS Wires Stranded

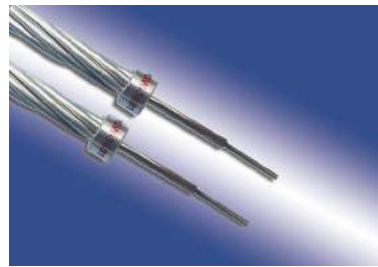
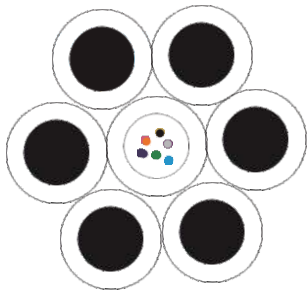




单层中心不锈钢管OPGW的典型规格系列

TYPICAL SERIES OF CENTRAL STAINLESS STEEL TUBE OPGW WITH SINGLE STRANDED LAYER

结构图
Structure Drawing



结构属性和应用
Structure Characteristic and Application

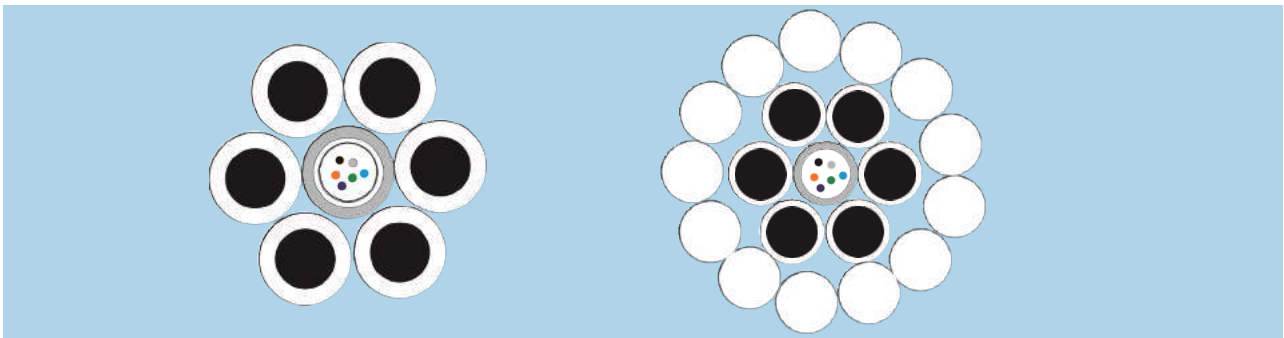
- 小的线径和轻的重量
Small cable diameter and light weight
- 在不锈钢管里能获得准确的主要的光纤余长
Obtaining appropriate primary fiber excess length within stainless steel tube
- 有良好的拉伸和挤压性能
The OPGW has good tensile, impact and crush resistance performance
- 匹配不同的地线
Matching with the different ground wire

Cable Type	Structure (no.XD/Conductivity)		Sectional Area (mm ²)			Diameter mm	Weight Kg/km	RTS kN	R(20°C) Ω/km	FT (40-200°C) kA ² S	E-Modulus Gpa	Ther-expansion Coefficient × 10 ⁻⁶ /°C6	Ratio of RTS/W km
	Central Unit (Max.Cores)	Outer Layer	AA	AS	total								
OPGW-1C 1/24B1 (0/42-8.4)	1X3.0/24B1	6X3.0/20AS	0.00	42.41	42	9.00	313	54.0	2.03	8.4	162	13	17.6
OPGW-1C 1/24B1 (0/42-10.6)		6X3.0/27AS	0.00	42.41	42	9.00	284	43.5	1.53	10.6	140	13.4	15.6
OPGW-1C 1/24B1 (0/42-11.5)		6X3.0/30AS	0.00	42.41	42	9.00	271	35.5	1.37	11.5	132	13.8	13.3
OPGW-1C 1/30B1 (0/48-10.9)	1X3.2/30B1	6X3.2/20AS	0.00	48.25	48	9.60	352	61.4	1.78	10.9	162	13	17.8
OPGW-1C 1/30B1 (0/48-13.7)		6X3.2/27AS	0.00	48.25	48	9.60	319	49.5	1.34	13.7	140	13.4	15.8
OPGW-1C 1/30B1 (0/48-14.9)		6X3.2/30AS	0.00	48.25	48	9.60	304	40.3	1.21	14.9	132	13.8	13.5
OPGW-1C 1/30B1 (0/51-12.3)	1X3.3/30B1	6X3.3/20AS	0.00	51.32	51	9.90	373	63.9	1.68	12.3	162	13	17.5
OPGW-1C 1/30B1 (0/51-15.5)		6X3.3/27AS	0.00	51.32	51	9.90	338	52.7	1.26	15.5	140	13.4	15.9
OPGW-1C 1/30B1 (0/51-16.8)		6X3.3/30AS	0.00	51.32	51	9.90	322	42.9	1.14	16.8	132	13.8	13.6
OPGW-1C 1/30B1 (0/51-20.8)	1X3.4/36B1	6X3.3/40AS	0.00	51.32	51	9.90	271	33.2	0.85	20.8	109	15.5	12.5
OPGW-1C 1/36B1 (0/54-13.9)		6X3.4/20AS	0.00	54.48	54	10.20	394	67.8	1.58	13.9	162	13	17.6
OPGW-1C 1/36B1 (0/54-17.5)		6X3.4/27AS	0.00	54.48	54	10.20	356	55.9	1.19	17.5	140	13.4	16.0
OPGW-1C 1/36B1 (0/54-19.0)	1X3.5/40B1	6X3.4/30AS	0.00	54.48	54	10.20	340	45.5	1.07	19.0	132	13.8	13.7
OPGW-1C 1/36B1 (0/54-23.4)		6X3.4/40AS	0.00	54.48	54	10.20	286	35.2	0.80	23.4	109	15.5	12.5
OPGW-1C 1/40B1 (0/58-15.6)		6X3.5/20AS	0.00	57.73	58	10.50	416	69.6	1.49	15.6	162	13	17.1
OPGW-1C 1/40B1 (0/58-19.6)	1X3.6/48B1	6X3.5/27AS	0.00	57.73	58	10.50	376	59.2	1.12	19.6	140	13.4	16.1
OPGW-1C 1/40B1 (0/58-21.3)		6X3.5/30AS	0.00	57.73	58	10.50	358	48.3	1.01	21.3	132	13.8	13.7
OPGW-1C 1/40B1 (0/58-26.3)		6X3.5/40AS	0.00	57.73	58	10.50	302	37.3	0.76	26.3	109	15.5	12.6
OPGW-1C 1/48B1 (0/61-17.5)	1X3.7/50B1	6X3.6/20AS	0.00	61.07	61	10.80	438	73.7	1.41	17.5	162	13	17.2
OPGW-1C 1/48B1 (0/61-22.0)		6X3.6/27AS	0.00	61.07	61	10.80	396	62.7	1.06	22.0	140	13.4	16.1
OPGW-1C 1/48B1 (0/61-23.8)		6X3.6/30AS	0.00	61.07	61	10.80	377	51.1	0.95	23.8	132	13.8	13.8
OPGW-1C 1/48B1 (0/61-29.5)	1X3.8/54B1	6X3.6/40AS	0.00	61.07	61	10.80	317	39.5	0.72	29.5	109	15.5	12.7
OPGW-1C 1/50B1 (0/65-19.5)		6X3.7/20AS	0.00	64.51	65	11.10	461	76.6	1.33	19.5	162	13	17.0
OPGW-1C 1/50B1 (0/65-24.5)		6X3.7/27AS	0.00	64.51	65	11.10	417	66.2	1.00	24.5	140	13.4	16.2
OPGW-1C 1/50B1 (0/65-26.6)	1X4.0/60B1	6X3.7/30AS	0.00	64.51	65	11.10	397	53.9	0.90	26.6	132	13.8	13.9
OPGW-1C 1/50B1 (0/65-32.9)		6X3.7/40AS	0.00	64.51	65	11.10	334	41.7	0.68	32.9	109	15.5	12.8
OPGW-1C 1/54B1 (0/68-21.7)		6X3.8/20AS	0.00	68.05	68	11.40	485	80.8	1.26	21.7	162	13	17.0
OPGW-1C 1/54B1 (0/68-27.3)	1X4.0/60B1	6X3.8/27AS	0.00	68.05	68	11.40	438	69.8	0.95	27.3	140	13.4	16.3
OPGW-1C 1/54B1 (0/68-29.6)		6X3.8/30AS	0.00	68.05	68	11.40	417	56.9	0.86	29.6	132	13.8	13.9
OPGW-1C 1/54B1 (0/68-36.6)		6X3.8/40AS	0.00	68.05	68	11.40	350	44.0	0.64	36.6	109	15.5	12.6
OPGW-1C 1/60B1 (0/75-26.6)	1X4.0/60B1	6X4.0/20AS	0.00	75.40	75	12.00	534	86.7	1.14	26.6	162	13	16.6
OPGW-1C 1/60B1 (0/75-33.5)		6X4.0/27AS	0.00	75.40	75	12.00	482	77.4	0.86	33.5	140	13.4	16.4
OPGW-1C 1/60B1 (0/75-36.3)		6X4.0/30AS	0.00	75.40	75	12.00	459	63.0	0.77	36.3	132	13.8	14.0
OPGW-1C 1/60B1 (0/75-44.9)		6X4.0/40AS	0.00	75.40	75	12.00	385	48.7	0.58	44.9	109	15.5	12.9



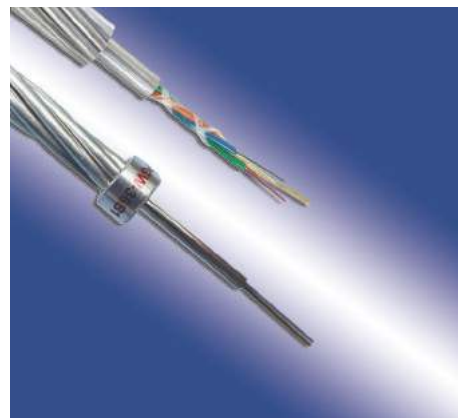
中心铝包不锈钢管OPGW的典型规格系列 TYPICAL SERIES OF CENTRAL AL-COVERED STAINLESS STEEL TUBE OPGW

结构图
Structure Drawing



结构属性和应用 Structure Characteristic and Application

- 铝覆钢管设计增加了铝截面积，防故障电流与闪电能力更强
AL-covered steel tube design increasing Al sectional area, the better fault current and lightning resistance performance.
- 超强的防腐蚀能力
Extremely good corrosion resistance.
- 用于输电线路指定小电缆直径和更大的故障电流
Used in the transmission line which specifies the small cable diameter and bigger fault current.
- 可用于极强的腐蚀调价下，如：海滨、化工区域
Extremely corrosion condition, such as littoral, chemical areas.

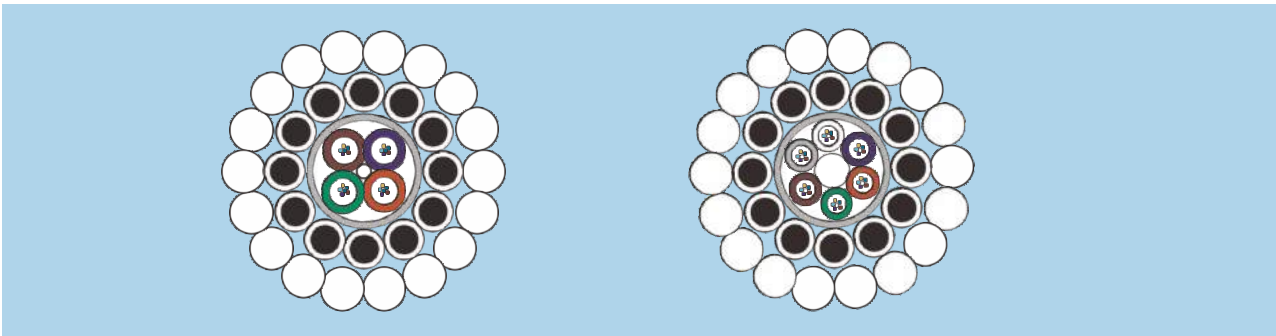


Cable Type	Structure (no.XD/Conductivity)		Sectional Area (mm ²)			Diameter mm	Weight Kg/km	RTS kN	R(20°C) Ω/km	P T (40-200°C) kA ² S	E-Modulus Gpa	Ther-expansion Coefficient × 10 ⁻⁶ /°C	Ratio of RTS/W km
	CentralAl-SUS Unit (Max.Cores)	Outer Layer	AA	AS	total								
OPGW-L-30B1-69[70.2:28.0]	IX 3.2/5.0 (30B1)	8X3.0/20AS	11.59	56 55	68	11.00	439	70.2	0.935	28.0	144	13.7	16.3
OPGW-L-30B1-73[75.1:33.0]	IX 3.2/5.2 (30B1)	8X3.1/20AS	13. 19	60 38	74	11.40	469	75.1	0.854	33.0	143	13.7	16.3
OPGW-L-30B1-81[83.1:37.5]	1X3.2/4.8 (30B1)	7X3.6/20AS	10. 05	71 25	81	12.00	533	83.1	0.843	37.5	149	13.5	15.9
OPGW-L-30B1-97[96 3:54.1]	1X3.2/5.2 (30B1)	7X3.9/20AS	13. 19	83 62	97	13.00	624	96.3	0.694	54 1	148	13.5	15.7
OPGW-L-48B1-71[74.7:30.2]	IX 3.6/5.2 (48B1)	8X3.1/20AS	11.06	60 38	71	11.40	463	74.7	0.913	30.2	146	13.6	16.4
OPGW-L-48B1-65[85.6:43.5]	1X3.6/5.6 (48B1)	8X3.35/20AS	14.45	70.51	85	12.30	540	85.6	0.75	43.5	144	13.7	16.2
OPGW-L-48B1-95[96.0:50.4]	IX 3.6/5.2 (48B1)	7X3.9/20AS	11.06	83 62	95	13.00	619	96.0	0.732	50.4	150	13.4	15.8
OPGW-L-60B1-80[79 4:39.2]	1X4.0/6.0 (60B1)	9X3.0/20AS	15 71	63 62	79	12.00	498	79.4	0.771	39 2	141	13.8	16.3
OPGW-L-60B1-83[85 2:39.8]	1X4.0/5.6 (60B1)	8X3.35/20AS	12. 06	70.51	83	12.30	534	85.2	0.801	39.8	147	13.6	16.3



铝管结构OPGW的典型规格系列 TYPICAL SERIES OF AL TUBE STRUCTURE OPGW

结构图
Structure Drawing



结构属性和应用 Structure Characteristic and Application

- 外部直径小，重量轻，不需要额外的承载塔或杆
Small outer diameter and light weight, no additional load for tower or pole.
- 高载荷，适用于沿海及其它恶劣区域
High Breaking load, applicable in coastal area and other terrible environment.
- 不同颜色的套管，易于区分多芯OPGW和拼接光纤
Different coloring loose tube, easy to distinguish multi-core OPGW and splice optical fiber.
- 合理的结构和多余的纤维长度确保在最大承载下不会发生光纤应变
Reasonable structure and secondary fiber excess length ensures there is no fiber strain under maximum allowable load.

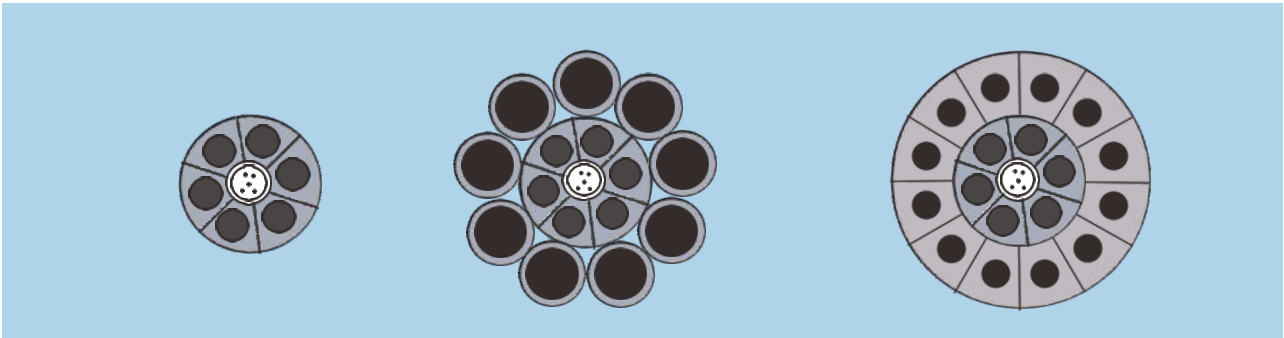


Cable Type	Structure (no.XD/Conductivity)		Sectional Area (mm ²)			Diameter mm	Weight Kg/km	RTS kN	R(20°C) Ω/km	FT (40-200°C) kA ² S	E-Modulus Gpa	Ther-expansion Coefficient × 10 ⁻⁶ /°C6	Ratio of RTS/W km
	Al Tube	Layer	AL	AS	total								
OPGW-24B1/65[62.34.8]	1X7.2	13x2.16	29.72	35.7	65.5	11.4	389	62.2	0.847	40.2	133.1	14.3	16.3
OPGW-24B1/70[71.41.0]	1X7.2	12x2.40	31.38	40.7	72.1	12	429	70.7	0.79	47.6	135.5	14.2	16.8
OPGW-24B1/70[57.46.0]	1X7.2	12x2.40	37.9	34.2	72.1	12	392	57.3	0.68	53.6	119.3	14.7	14.9
OPGW-24B1/80[82.50.1]	1X7.2	11x2.70	33.56	47.2	80.8	12.4	492	81.8	0.736	58.0	138.0	14.0	17.0
OPGW-24B1/80[66.56.9]	1X7.2	11x2.70	41.12	39.7	80.8	12.4	448	66.2	0.626	66.0	121.2	14.5	15.1



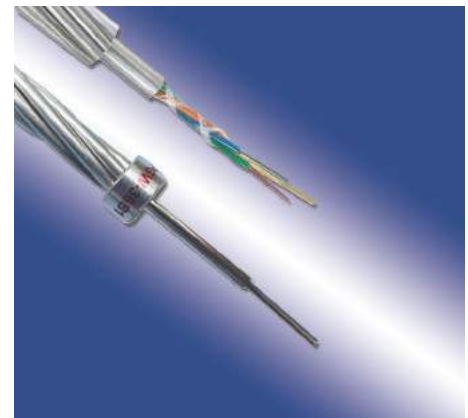
梯形中心不锈钢管OPGW的典型规格系列 TYPICAL SERIES OF TRAPEZOID CENTRAL STAINLESS STEEL TUBE OPGW WITH COMPRESSED WIRES

结构图
Structure Drawing



结构属性和应用
Structure Characteristic and Application

- 压缩钢丝绞合成股
Compressing round AS wires as sector AS wires during stranding
- 在相同缆线直径条件下，增加了缆线的截面积和电流承载容量
Increasing cable cross sectional area and fault current capacity at the same cable diameter
- 在相同缆线直径条件下，通过增加外部钢丝直径，极大地增加了抗闪电能力
Extremely increasing lightning resistant performance for increasing the outer wires diameter at the same cable diameter
- 相同截面区域，减少了缆线的直径
Decreasing cable diameter at the same cable cross sectional area
- 用于输电线路指定小电缆直径和更大的故障电流
Used in the transmission line which specifies the small cable diameter and bigger fault current.
- 适用闪电风暴频发区域
Used in high lightning storm areas

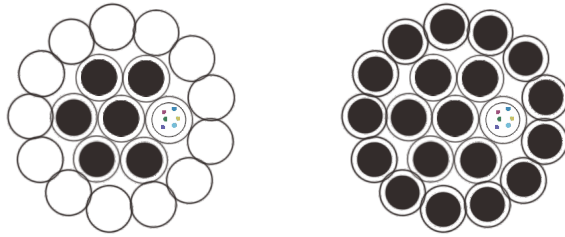


Cable Type	Structure (no.XD/Conductivity)			Sectional Area (mm ²)			Diameter mm	Weight Kg/km	RTS kN	R(20°C) Ω/km	fT (40-200°C) kA ² S	E-Modulus Gpa	Ther-expansion Coefficient × 10 ⁻⁶ /°C	Ratio of RTS/W km
	Central Unit (Max.Cores)	Inner Layer	Outer Layer	AA	AS	Total								
OPGW-YS-2C 1/30B1(0/138-147.9)	1X3.2/30B1	6x3.0SB/40AS	12X3.0/40AS	0.0	137.71	138	15.20	680	89.0	0.319	147.9	109	15.5	13.3
OPGW-YS-2C 1/30B1(0/159-196.3)		6x3.0SB/40AS	11X3.5/40AS	0.0	158.72	159	16.20	780	102.5	0.276	196.3	109	15.5	13.4
OPGW-YS-2C 1/36B1(0/115-97.1)	1X3.4/36B1	6x23SB/30AS	11X3.0/40AS	0.0	114.96	115	14.00	610	81.3	0.415	97.1	116.4	14.9	13.6
OPGW-YS-2C 1/36B1(0/128-121.0)		6x23SB/30AS	10X3.4/40AS	0.0	128.00	128	14.80	671	89.8	0.370	121.0	115.7	14.9	13.6
OPGW-YS-2C 1/36B1(0/150-168.1)	1X3.6/48B1	6x23SB/30AS	9X4.0/40AS	0.0	150.31	150	16.00	777	104.2	0.311	168.1	114.7	15.0	13.7
OPGW-YS-2C 1/48B1(0/132-135.2)		6x25SB/40AS	11X3.2/40AS	0.0	131.73	132	15.00	652	86.1	0.333	135.2	109	15.5	13.3
OPGW-YS-2C 1/48B1(0/151-177.0)	1X3.6/48B1	6x25SB/40AS	10X3.7/40AS	0.0	150.78	151	16.00	742	97.4	0.291	177.0	109	15.5	13.4
OPGW-YS-2C 1/48B1(0/133-138.1)		6x27SB/40AS	12X3.0/40AS	0.0	133.08	133	15.00	658	86.0	0.330	138.1	109	15.5	13.3
OPGW-YS-2C 1/48B1(0/145-164.3)	1X3.6/48B1	6x27SB/40AS	11X3.35/40AS	0.0	145.21	145	15.70	716	93.8	0.302	164.3	109	15.5	13.4



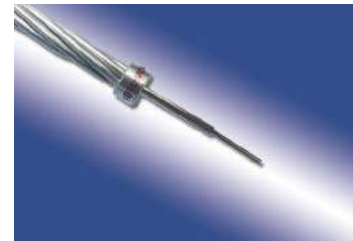
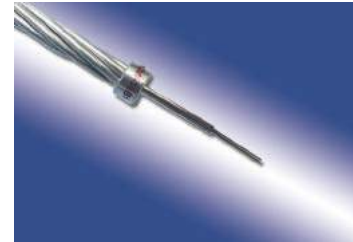
两层层绞不锈钢管OPGW的典型规格系列 TYPICAL SERIES OF STRANDED STAINLESS STEEL TUBE STRUCTURE OPGW WITH DOUBLE STRANDED LAYERS

结构图
Structure Drawing



结构属性和应用 Structure Characteristic and Application

- 更大的缆线直径和更大的芯数
Bigger cable diameter and higher fiber count.
- 作为更大的RTS与电流承载能力在电力与机械性能方面的最好平衡
The best balance of electric and mechanic performance for the bigger RTS and fault current capacity.
- 钢管数量单元可以是1, 2或者3个 (目前最多)
Quantity of steel tube OP-Unit could be 1,2 or 3 (max. at present).
- 最佳成股设计可使初级、次级光纤有多余长度
Optimum stranding design, making primary and secondary fiber excess length.
- 绞层可以是单层、双层或者三层, 绞线可以是AS, AA, AI
The stranded layer could be single, double layers or three layers, the stranded wire could be AS wires with/or AA and AI wires.

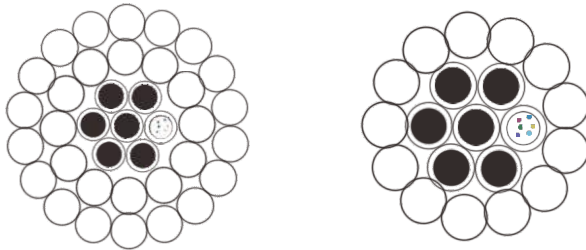


Cable Type	Structure (no.XD/Conductivity)				Sectional Area (mm ²)			Diameter mm	Weight Kg/km	RTS kN	R(20°C) Ω/km	FT (40-200°C) kA ² S	Modulus Gpa	Ther-expansion Coefficient x10 ⁻⁶ /°C6	Ratio of RTS/W km
	Central	Inner Layer	Steel unit	Outer Layer	AA	AS	Tota								
OPGW-2S 1/24B1(0/103-62.5)	1x2.4/27AS	5x2.4/27AS		10x3.1/27AS	0.0	103.0	103	13.5	640	105.7	0.63	62.5	140	13.4	16.9
OPGW-2S 1/24B1(0/103-75.9)	1x2.5/20AS	5x2.4/20AS	1x2.4/24B1	10x3.1/40AS	0.0	103.0	103	13.5	561	83.8	0.49	75.5	123	14.6	15.3
OPGW-2S 1/24B1(75/28-87.4)	1x2.5/20AS	5x2.4/20AS		10x3.1/AA	75.5	27.5	103	13.5	412	57.3	0.39	87.5	91	18.2	14.2
OPGW-2S 1/24B1(0/89-46.4)	1x2.6/27AS	5x2.5/27AS		12x2.5/27AS	0.0	88.8	89	12.6	554	91.1	0.73	46.5	140	13.4	16.8
OPGW-2S 1/24B1(0/89-46.4)	1x2.6/30AS	5x2.5/30AS	1x2.5/24B1	12x2.5/30AS	0.0	88.8	89	12.6	526	74.2	0.66	50.3	132	13.8	14.4
OPGW-2S 1/24B1(0/89-50.3)	1x2.6/20AS	5x2.5/20AS		12x2.5/AA	58.9	29.9	89	12.6	381	55.4	0.47	62.9	98	17.4	14.8
OPGW-2S 1/24B1(0/30-62.9)	1x2.6/30AS	5x2.5/30AS		11x2.8/30AS	0.0	97.6	98	13.2	577	81.6	0.60	60.9	132	13.8	14.4
OPGW-2S 1/24B1(68/30-77.1)	1x2.6/20AS	5x2.5/20AS		11x2.8/AA	67.7	29.9	98	13.2	406	58.0	0.42	77.1	95	17.8	14.6
OPGW-2S 1/24B1(0/110-71.7)	1x2.6/27AS	5x2.5/27AS		10x3.2/27AS	0.0	110.3	110	14.00	683	113.1	0.59	71.7	140	13.4	16.9
OPGW-2S 1/24B1(0/110-77.7)	1x2.6/30AS	5x2.5/30AS	1x2.5/24B1	10x3.2/30AS	0.0	110.3	110	14.00	650	92.2	0.53	77.7	132	13.8	14.5
OPGW-2S 1/24B1(0/110-86.9)	1x2.6/20AS	5x2.5/20AS		10x3.2/40AS	0.0	110.3	110	14.00	600	90.0	0.46	86.9	123	14.6	15.3
OPGW-2S 1/24B1(80/30-100.0)	1x2.6/20AS	5x2.5/20AS		11x2.8/AA	80.4	29.9	110	14.00	441	61.7	0.36	100.0	91	18.2	14.3
OPGW-2S 1/28B1(0/112-80.6)	1x2.7/30AS	5x2.7/30AS		11x3.0/30AS	0.0	112.3	112	14.15	661	93.9	0.52	80.6	132	13.8	14.5
OPGW-2S 1/28B1(0/112-80.7)	1x2.7/20AS	5x2.7/20AS	1x2.7/28B1	11x3.0/40AS	0.0	112.3	112	14.15	618	94.2	0.46	88.7	125	14.5	15.5
OPGW-2S 1/28B1(78/35-102.1)	1x2.7/20AS	5x2.7/20AS		11x3.0/AA	77.8	34.6	112	14.15	465	66.9	0.36	102.1	95	17.7	14.7
OPGW-2S 1/28B1(0/103-68.4)	1x2.8/30AS	5x2.7/30AS	1x2.7/28B1	12x2.7/30AS	0.0	103.5	103	13.60	611	86.5	0.56	68.4	132	13.8	14.5
OPGW-2S 1/28B1(69/35-85.6)	1x2.8/20AS	5x2.7/20AS		12x2.7/AA	68.7	34.8	103	13.60	441	64.6	0.40	85.6	98	17.4	14.9
OPGW-2S 1/28B1(0/131-110.0)	1x2.85/30AS	5x2.7/30AS		10x3.5/30AS	0.0	131.2	131	15.25	769	109.7	0.45	110.0	132	13.8	14.6
OPGW-2S 1/28B1(0/131-123.2)	1x2.85/20AS	5x2.7/40AS	1x2.7/28B1	10x3.5/40AS	0.0	131.2	131	15.25	709	106.7	0.39	123.2	123	14.6	15.4
OPGW-2S 1/28B1(96/35-141.8)	1x2.85/20AS	5x2.7/20AS		10x3.5/AA	96.2	35.0	131	15.25	519	72.9	0.30	141.8	91	18.2	14.4
OPGW-2S 1/28B1(0/120-92.3)	1x2.85/30AS	5x2.8/30AS		11x3.1/30AS	0.0	120.2	120	14.65	706	100.5	0.49	92.3	132	13.8	14.5
OPGW-2S 1/28B1(0/120-114.1)	1x2.85/40AS	5x2.8/40AS	1x2.7/28B1	11x3.1/40AS	0.0	120.2	120	14.65	587	77.6	0.36	114.1	109	15.5	13.5
OPGW-2S 1/28B1(83/37-116.8)	1x2.85/20AS	5x2.8/20AS		11x3.1/AA	83.0	37.2	120	14.65	497	71.8	0.34	116.8	95	17.7	14.8
OPGW-2S 1/28B1(0/126-112.0)	1x3.0/30AS	5x2.8/30AS		11x3.2/30AS	0.0	126.3	126	15.00	741	105.6	0.46	102.0	132	13.8	14.5
OPGW-2S 1/28B1(0/126-126.0)	1x3.0/40AS	5x2.8/40AS	1x2.7/28B1	11x3.2/40AS	0.0	126.3	126	15.00	616	81.6	0.35	126.0	109	15.5	13.5
OPGW-2S 1/28B1(88/38-129.6)	1x3.0/20AS	5x2.8/20AS		11x3.2/AA	88.5	37.9	126	15.00	516	74.3	0.32	129.6	94	17.8	14.7
OPGW-2S 1/36B1(0/128-105.0)	1x3.2/30AS	5x3.0/40AS		12x3.0/40AS	0.0	128.2	128	15.20	752	107.2	0.46	105.0	132	13.8	14.6
OPGW-2S 1/36B1(0/128-129.8)	1x3.2/40AS	5x3.0/40AS	1x3.0/36B1	12x3.0/40AS	0.0	128.2	128	15.20	625	82.8	0.34	129.8	109	15.5	13.5
OPGW-2S 1/36B1(85/43-131.2)	1x3.2/20AS	5x3.0/20AS		12x3.0/AA	84.8	43.4	128	15.20	543	80.3	0.33	131.2	98	17.4	15.1
OPGW-2S 1/36B1(0/143-162.1)	1x3.2/40AS	5x3.0/40AS	1x3.0/36B1	11x3.4/40AS	0.0	143.3	143	16.00	696	92.5	0.31	162.1	109	15.5	13.6
OPGW-2S 1/36B1(100/43-166.4)	1x3.2/20AS	5x3.4/20AS		11x3.4/AA	99.9	43.4	143	16.00	585	84.7	0.28	166.4	94	17.8	14.8
OPGW-2S 1/36B1(0/136-118.8)	1x3.2/30AS	5x3.1/30AS	1x3.0/36B1	12x3.1/30AS	0.0	136.4	136	15.60	798	114.0	0.43	118.8	132	13.8	14.6
OPGW-2S 1/36B1(0/136-146.8)	1x3.2/40AS	5x3.1/40AS		12x3.1/40AS	0.0	136.4	136	15.60	664	88.1	0.32	146.8	109	15.5	13.5
OPGW-2S 1/48B1(0/145-134.9)	1x3.3/30AS	5x3.2/30AS		12x3.2/30AS	0.0	145.3	145	16.10	849	121.4	0.40	134.9	132	13.8	14.6
OPGW-2S 1/48B1(0/145-166.6)	1x3.3/40AS	5x3.2/40AS	1x3.2/48B1	12x3.2/40AS	0.0	145.3	145	16.10	706	93.8	0.30	166.6	109	15.5	13.6
OPGW-2S 1/48B1(0/155-189.8)	1x3.5/30AS	5x3.3/40AS		12x3.3/40AS	0.0	155.0	155	16.70	752	100.1	0.28	189.8	109	15.5	13.6
OPGW-2S 1/48B1(103/52-191.3)	1x3.5/20AS	5x3.3/20AS	1x3.2/48B1	12x3.3/AA	102.6	52.4	155	16.70	652	95.1	0.27	191.3	98	17.4	14.9
OPGW-2S 1/48B1(0/165-173.0)	1x3.6/30AS	5x3.4/30AS		12x3.4/30AS	0.0	164.5	165	17.20	959	137.5	0.36	173.0	132	13.8	14.6
OPGW-2S 1/48B1(0/165-213.7)	1x3.6/40AS	5x3.4/40AS	1x3.4/48B1	12x3.4/40AS	0.0	164.5	165	17.20	796	106.3	0.27	213.7	109	15.5	13.6
OPGW-2S 1/48B1(0/174-194.2)	1x3.7/30AS	5x3.5/30AS		12x3.5/30AS	0.0	174.3	174	17.70	1015	145.7	0.34	194.2	132	13.8	14.7
OPGW-2S 1/48B1(0/174-239.9)	1x3.7/40AS	5x3.5/40AS	1x3.4/48B1	12x3.5/40AS	0.0	174.3	174	17.70	843	112.6	0.25	239.9	109	15.5	13.6
OPGW-2S 1/48B1(115/59-242.5)	1x3.7/20AS	5x3.5/20AS		12x3.5/AA	115.5	58.9	174	17.70	731	104.9	0.24	242.5	98	17.4	14.6



层绞不锈钢管OPPC的典型规格系列 TYPICAL SERIES OF STRANDED STAINLESS STEEL TUBE STRUCTURE OPPC

结构图
Structure Drawing



结构属性和应用
Structure Characteristic and Application

- 用不锈钢管OP单元绞合OP单元与AS、Al/AA以后，来替代一条或数条传统钢丝
Replacing one or several steel wires of conventional conductor with stainless steel tube OP-Units, stranding OP-Units and AS/steel wires and Al/AA wires.
- 用OPPC（一个OPPC与两个导管组成的三相传输线系统）替代三相导体之一
Replacing one of three phase conductors with OPPC, the three-phase transmission line system consists of one OPPC and two conductors.
- 性能匹配：机械特征、电力特征与相邻两相导体性能匹配
Performance matching: mechanical characteristic, electric characteristic matching with border upon two phase conductors.
- 持续性恒定温度：温度循环与电流测试显示OPPC可以保证温度的持续性
Durative constant temperature: temperature cycling and current test demonstrate that OPPC can meet with durative constant temperature.
- 中高压电线，无地线，如：10 KV, 35 KV, 66 KV
Middle & high voltage power lines without ground wire such as 10kV, 35kV, 66kV.
- 适合在电线上安装OPGW与ADSS
Don't be suit to install OPGW & ADSS in the power lines.
- 乡镇与农村地区的中高压线路的通讯再建设；为建筑配电所自动化提供光缆
Rebuilding telecommunications for middle & high voltage power lines in town and rural areas. Providing optical cable for building distribution station automatization.

Cable Type	Matching Conductors	Structure					Sectional Area(mm ²)			Diameter mm	Weight Kg/km	RTS kN	R(20°C) Ω/km	Current Carrying Capacity		
		Central	Layer 1	steel unit	Layer2	Layer3	AL	AS	Total					40-70°C	40-80°C	40-90°C
OPPC-12B1-85/20	LGJ-95V15	1x2.5/20AS	3x2.4/20AS +2x2.4/AL	1x2.4/12B1	10x3.1/AL	/	84.52	18.48	103.0	13.50	376	34.4	0.32	254	308	353
OPPC-12B1-90/50	LGJ-95/55	1x3.5/14AS	5x3.3/14AS	1x3.2/12B1	13x3.0/AL	/	91.89	52.39	144.3	16.10	651	82.0	0.28	281	344	395
OPPC-12B1-110/25	LGJ-120/20	1x2.4/20AS	5x2.3/20AS	1x2.2/12B1	8x4.2/AL	/	110.84	25.30	136.1	15.40	494	45.7	0.24	299	364	418
OPPC-12B1-120/25	LGJ-120/25	1x2.5/20AS	5x2.4/20AS	1x2.4/12B1	8x4.35/AL	/	118.89	27.53	146.4	16.00	531	49.5	0.22	312	381	438
OPPC-12B1-150/25	LGJ-150/25	1x2.4/20AS	5x2.3/20AS	1x2.2/12B1	11x2.6/AL	17x2.6/AL	148.66	25.30	174.0	17.40	598	52.8	0.18	351	430	495
OPPC-12B1-150/30	L6J-150/35	1x2.6/14AS	5x2.5/14AS	1x2.5/12B1	12x2.5/AL	18x2.5/AL	147.26	29.85	177.1	17.60	641	64.5	0.19	34B	427	492
OPPC-12B1-185/25	LGJ-185/25	1x2.4/20AS	5x2.3/20AS	1x2.2/12B1	10x3.0/AL	16x3.0/AL	183.78	25.30	209.1	19.00	695	58.5	0.15	395	486	561
OPPC-12B1-185/40	LGJ-185/45	1x2.85/14AS	5x2.8/14AS	1x2.7/12B1	12x2.8/AL	18x2.8/AL	184.73	37.17	221.9	19.65	797	79.6	0.15	398	491	567
OPPC-12B1-210/30	LGJ-210/35	1x2.6/14AS	5x2.5/14AS	1x2.5/12B1	10x3.2/AL	16x3.2/AL	209.10	29.85	239.0	20.40	812	74.3	0.13	424	524	605
OPPC-12B1-230/45	LGJ-240/30	1x3.2/20AS	5x3.1/20AS	1x3.0/12B1	12x3.1/AL	18x3.1/AL	226.43	45.78	272.2	21.80	949	87.7	0.12	455	563	652
OPPC-12B1-240/50	L6J-240/55	1x3.3/14AS	5x3.2/14AS	1x3.2/12B1	12x3.2/AL	18x3.2/AL	241.27	48.77	290.0	22.50	1037	102.5	0.11	467	580	672



ADSS结构特征与应用

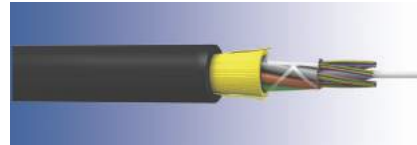
ADSS STRUCTURE 8c APPLICATION DESIGN DESCRIPTION



结构图



Sanded Layer Type



Central Tube Type

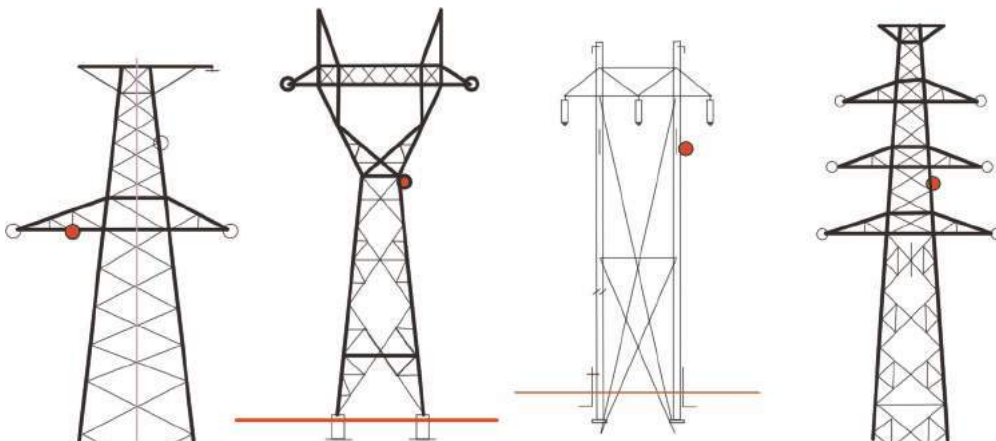
结构属性和应用 Structure Characteristic and Application

- 精确的光纤余长控制保证了当光缆承载最大设计容量时光纤可以不受压力变化而改变
Precise fiber excess length control ensuring the fibers free from stress when the cable is subject to the maximum design load.
- 精确控制张力并通过配置芳纶来提高光缆的强度
Precise control of pay-off tension and the stranding lay of aramid yarn enhancing the tensile strength of the cable.
- 放跟踪，提供高效安全的环境
Employing the material with excellent tracking resistance, offering more safety in high inductive potential environment.
- 特殊ADSS 光缆可以按照客户要求定做
Special ADSS cables can be designed on customers' request.

安装模式 Installation mode

- 松套光纤 Loose tube fiber
- 非金属中心加强元件 Non-metallic central strength member
- 管内填充胶冻 Jelly filling in the tube and core
- PE内套 PE inner sheath
- 均匀分布的芳纶和防跟踪外套 Well-distributed stranding aramid yarn and anti-track outer sheath
- 安装在同一输电线杆/塔上 Installed on the same poles/towers of the electric power transmission line
- 可以与地线捆扎起来或者包裹 Also can be lashed to the ground wire or wrapped around it

典型杆/塔安装位置图 Typical pole & tower installation position drawing





ADSS技术参数 TECHNICAL SPECIFICATION FOR ADSS

Items		unit	F3	F6	F8	F10	F12	F16
Span		m	100	200	300	400	500	600
Outer Dia.		mm	11.6	12.0	12.3	12.5	12.8	13.8
Weight	PE Sheath	Kg/km	124.2	131.1	136.3	141.4	146.5	165.9
	AT Sheath		132.6	139.9	145.3	150.7	156.0	176.3
Cross Area		mm ²	105.68	112.70	117.90	123.07	128.19	150.21
Area of Strength Member		mm ²	5.67	10.20	13.62	17.02	20.43	26.10
RTS		KN	8.50	15.30	20.40	25.50	30.60	39.10
MOTS		KN	3.40	6.12	8.16	10.20	12.24	15.64
EDS		KN	2.13	3.83	5.10	6.38	7.65	9.78
Ultimate Exceptional Stress		KN	5.10	9.18	12.24	15.30	18.36	23.46
Modulus		KN/ mm ²	8.44	12.52	15.27	17.79	20.11	21.71
Thermal Expansion Coefficient		10 ⁻⁶ /°C	9.32	5.28	3.78	2.80	2.12	1.42
Crush Strength	Operation	N/10cm	1000	1000	1000	1000	1000	1000
	Installation	N/10cm	2200	2200	2200	2200	2200	2200
Safety Factor			2.5	2.5	2.5	2.5	2.5	2.5
Min Bending Radius	Operation	mm	174	180	185	188	192	207
	Installation	mm	290	300	308	313	320	345
Temperature	Installation	°C	-10~+60	-10~+60	-10~+60	-10~+60	-10~+60	-10~+60
	Transport	°C	-40~+70	-40~+70	-40~+70	-40~+70	-40~+70	-40~+70
	Operation	°C	-40~+70	-40~+70	-40~+70	-40~+70	-40~+70	-40~+70
Sag(5mm Lce Load, Average 20°C)	PE	%	0.72	0.84	1.06	1.28	1.47	1.57
	AT		0.76	0.90	1.12	1.35	1.54	1.63

Items		unit	F18	F21	F24	F24	F27	F31
Span		m	700	800	900	1000	1100	1200
Outer Dia.		mm	14.2	14.5	14.8	15.1	15.3	15.5
Weight	PE Sheath	Kg/km	172.6	179.2	185.8	192.3	197.3	202.1
	AT Sheath		183.2	190.1	197.0	203.8	208.9	214.0
Cross Area		mm ²	157.40	164.55	171.65	178.70	183.96	189.20
Area of Strength Member		mm ²	30.64	35.18	39.72	44.26	47.67	51.07
RTS		KN	45.90	52.70	59.50	66.30	71.40	76.50
MOTS		KN	18.36	21.08	23.08	26.52	28.56	30.60
EDS		KN	11.48	13.18	14.88	16.58	17.85	19.13
Ultimate Exceptional Stress		KN	27.54	31.62	35.70	39.78	42.84	45.90
Modulus		KN/ mm ²	24.02	26.13	28.07	29.86	31.12	32.21
Thermal Expansion Coefficient		10 ⁻⁶ /°C	0.99	0.67	0.41	0.20	0.07	-0.05
Crush Strength	Operation	N/10cm	1000	1000	1000	1000	1000	1000
	Installation	N/10cm	2200	2200	2200	2200	2200	2200
Safety Factor			2.5	2.5	2.5	2.5	2.5	2.5
Min Bending Radius	Operation	mm	213	218	222	227	230	233
	Installation	mm	355	363	370	378	283	388
Temperature	Installation	°C	-10~+60	-10~+60	-10~+60	-10~+60	-10~+60	-10~+60
	Transport	°C	-40~+70	-40~+70	-40~+70	-40~+70	-40~+70	-40~+70
	Operation	°C	-40~+70	-40~+70	-40~+70	-40~+70	-40~+70	-40~+70
Sag(5mm Lce Load, Average 20°C)	PE	%	1.63	1.71	1.78	1.87	2.03	2.18
	AT		1.70	1.78	1.85	1.94	2.10	2.26

其他参数达到或超过IEC 60794 – 4的要求
Other Parameters Meet or Exceed the Requirement of IEC 60794-4.

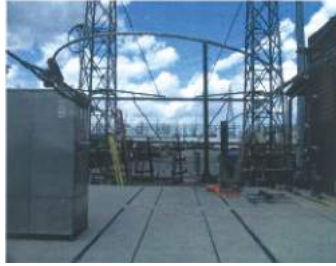


权威资格测试 AUTHORITATIVE QUALIFICATION TEST

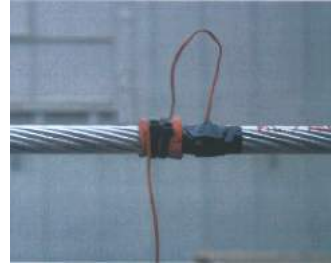
Test Item	Cable Type			Test Standard	Test Laboratory
	OPG	OPPC	ADSS		
Appearance and Structure	●	●	●		
Color of Fiber	●	●	●		
Optical Fiber Characteristics	●	●	●		
Stranding wire	●	●	/		
Tensile Performance	●	●	●	ITU-T G652	Beijing Electric Power Construction Research Institute
Stress-strain	●	●	●	ITU-T G655	
Sheave Test	●	●	●	IEC 60793	China Electric Power Research Institute
Repeated Bending	●	●	●		Shanghai Electric Cable Research Institute
Impact Test	●	●	●	IEC 61232	Wuhan High Voltage Research Institute
Crush Test	●	●	●	IEC 60104	
Aeolian Vibration	●	●	●		
Galloping Test	●	●	●	IEC 60794-1	Canada KINECTRICS Lab.
Creep Test	●	●	●	IEC 60794-4	America PLP Lab.
Temperature Cycling	●	●	●	IEEE 1138	Holland KEMA Lab.
Seepage of Compound	●	●	●	IEEE 1222	
Water Penetration Test	●	●	●		Japan Hitachi Cables Lab.
Salty Spray Corrosion	●	●	/		Poland JEN Lab."
Heat Ageing	/	/	●		
DC Restistance	●	●	/		
Short Circuit	●	/	/		
Carrying Capacity	/	●	/		
Lightning	●	/	/		
Anti-tracking Resistance	/	/	●		
UV Resistance	/	/	●		
Shotgun Resistance	/	/	●		



OPGW短路电流测试 OPGW SHORT CURRENT TEST



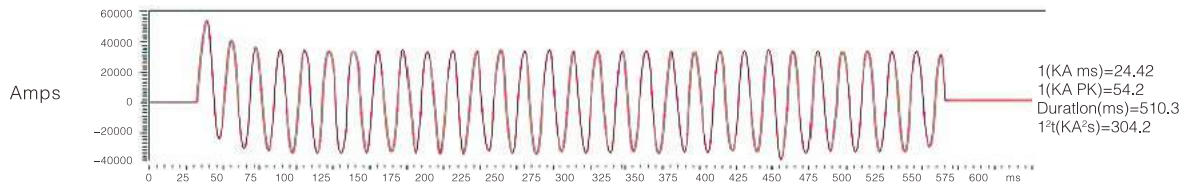
在高压电厂短路测试
 Typical Set-up for Short Circuit Test In High Yard



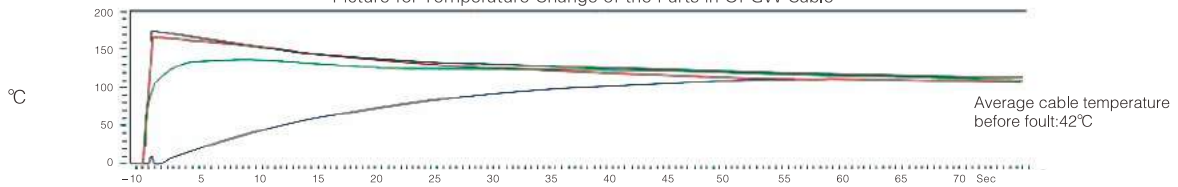
典型设备的热电偶温度样品
 Typical Installation of Thermocouple on Temperature Sample

Canada Kinectrics

测试电流值
 Test Current Value



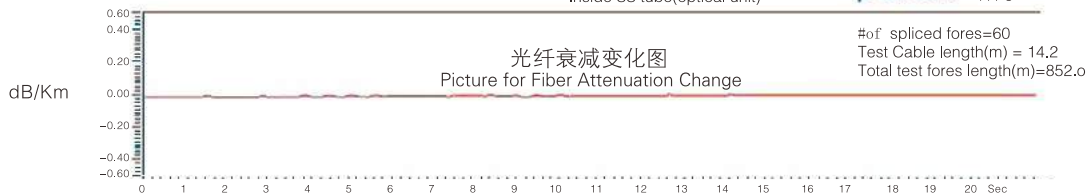
OPGW电缆里面温度变化图
 Picture for Temperature Change of the Parts in OPGW Cable



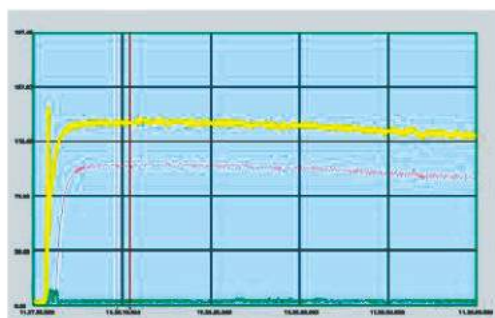
Maximum temperature rise

- Between AA/AA wires outside layer: 165°C
- Between AA/AA wires outside layer: 173°C
- Between AA/AA wires and SS tube: 135°C
- Inside SS tube(optical unit): 111°C

光纤衰减变化图
 Picture for Fiber Attenuation Change

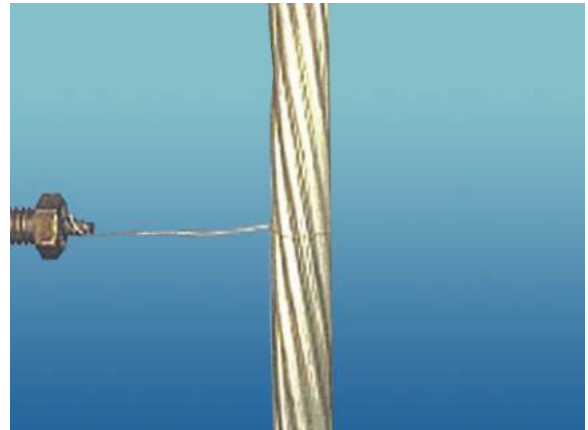
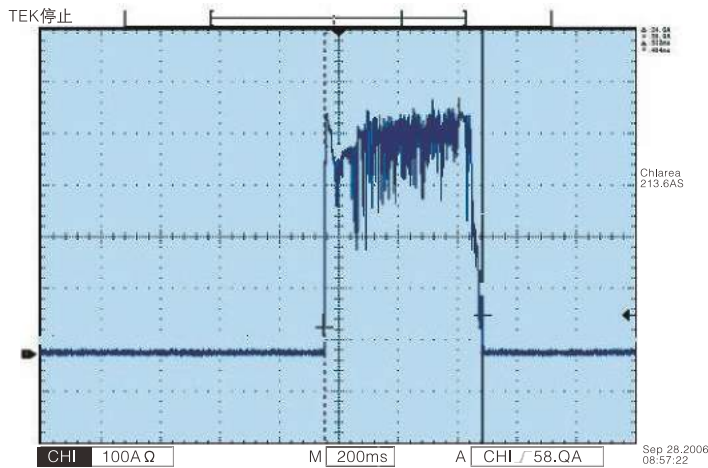


CEPRI





OPGW闪电弧测试 OPGW LIGHTNING ARC TEST



闪电弧测试结果总结 Summary of Results of Lightning Arc Test

Canada Kinectrics

Test No	Initial Temp (°C)	Initial Tension (kgf)	Mean Current of Component "B" (KA)	Charge(C)	Charge of Attn (dB)	Remaining RTS
N1	44	801	2.28	-197	0.0	93%
N2	39	801	2.26	-146	0.0	98%
N3	40	816	2.12	-165	0.0	86%
N4	44	811	2.14	-142	0.0	97%
N5	37.5	812	2.10	-136	0.0	85%

CEPRI

No.	Continial Current	Duration	Charge Transfer	Amount of Outer Layer Broken Wire	Additional Attenuation	Remaining Strength
1	400A	532ms	213.6As	0	0.00dB	100%RTS
2	400A	576ms	210.8As	0	0.00dB	100%RTS
3	400A	532ms	208.8As	0	0.00dB	100%RTS
4	400A	528ms	211.5As	0	0.00dB	100%RTS
5	400A	528ms	206.5As	0	0.00dB	100%RTS














金具 PREFORMING FITTINGS

OPGW 配件
OPGW Fittings

ADSS 配件
ADSS Fittings

OPPC 配件
OPPC Fittings

 <p>耐张线夹(单) Dead-end fitting(single)</p>	 <p>耐张线夹 Dead-end fitting</p>	 <p>耐张线夹(单) Dead-end fitting(single)</p>
 <p>悬垂线夹 (单) Suspending clamp(single)</p>	 <p>悬垂线夹 (单) Suspending clamp(single)</p>	 <p>悬垂线夹 (单) Suspending clamp(single)</p>
 <p>悬垂线夹 (双) Suspending clamp(double)</p>	 <p>悬垂线夹 (双) Suspending clamp(double)</p>	 <p>悬垂线夹 (双) Suspending clamp(double)</p>
 <p>耐张线夹(双) Dead-end fitting(double)</p>	 <p>切夹 Tangent clamp</p>	



附件和工具 ACCESSORIES AND TOOLS



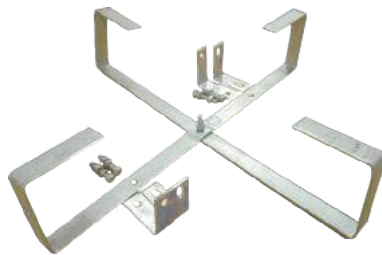
ADSS OPGW 接头盒
Joint Box For AdSS、OPGW Cable



OPPC 接头盒
Joint Box For OPPC Cable



OPPC 分离器
Separator for OPPC Cable



塔用余缆架
Cable Tray for Tower



杆用余缆架
Cable Tray for Pole



电晕抑制环
Corona-resist Ring



螺旋震动减速器
Spiral Vibration Reducer



防震锤
Vibration Damper



杆用引下线夹
Downlead Clamp for Pole



塔用引下线夹
Downlead Clamp for Tower



退扭器
Torsion Releaser



钢管切割刀
Steel Tube Cutter



牵引网套
Pull-off Net



典型工程案例

TYPICAL REFERENCE LIST FOR RECORD PROJECTS

Model of product	Name of project	Quantity	Time of year	Structure Drawing
OPGW	江苏省东台风电三期 Jiangsu Province Dongtai wind&power third term	90公里 90 kilometer	2014年 2014 year	
OPGW-2S-1/24B1-90	赵家山和长房山风电场项目 Zhaojiashan and Changfangshan Wind&Power Site	70公里 70 kilometer	2014年 2014 year	
OPGW-14.6-120-3-24B OPGW-14.6-120-3-12B	宁夏花石山110KV输电线路 Ningxia huashishan 110KV transmission line	30公里 30 kilometer 50公里 50 kilometer	2014年 2014 year	
OPGW-16B-50	新疆疏勒县金杨万华木业35伏 输电变电工程 Xinjiang shule county jinyang wanhua wood industry 35V transmission line	150公里 150 kilometer	2014年 2014 year	
OPGW-24B1-90	普洱昆钢嘉华水泥厂供电工程 Puer Kungang Jiahua cement plant supply power project	15公里 15 kilometer	2014年 2014 year	
OPGW-12B-42	内蒙古通辽市奈曼镇送变电工程 Neimenggu Tongliao city Naiman town transmission line project	200公里 200 kilometer	2014年 2014 year	
OPGW-100-12B1	定西华家岭风电110KV施工项目 Dingxi huajialing wind&power 110KV construction project	45公里 45 kilometer	2014年 2014 year	









工程现场 Engineering site





典型工程案例

TYPICAL REFERENCE LIST FOR RECORD PROJECTS

Model of product	Name of project	Quantity	Time of year	Structure Drawing
ADSS-PE-16B-300M	大庆风云风电场通信工程 Daqing fengyun wind&power site project	60公里 60 kilometer	2014年 2014 year	
ADSS-PE-16B-300M	达茂旗协合200MW风电场工程 Damao qixiehe 200MW wind&power site project	150公里 150 kilometer	2015年 2015 year	
ADSS-PE-16B-300M	内蒙古包头达茂巴音5号风电场 Mongolia Baotou damaobayin NO.5 Wind power plant	100公里 100 kilometer	2015年 2015 year	
ADSS-PE-24B1-400M	湖南华能苏宝顶风电项目 Hunan huaneng subaoding wind&power project	100公里 100 kilometer	2014年 2014 year	
ADSS-PE-16B-300M	宁夏中卫市香山风电场二期 Ningxia zhongwei city xiangshan wind&power site second term	80公里 80 kilometer	2014年 2014 year	
ADSS-PE-16B-300M	辽宁阜新风电工程项目 Liaoning fuxin wind&power project project	50公里 50 kilometer	2014年 2014 year	
ADSS-PE-24B1-500M	贵州六盘水煤电公司通信工程 Guizhou liupanshui coal power company telecommunication project	50公里 50 kilometer	2014年 2014 year	
OPGW-100-12B1	甘肃省会宁县城110kv变电项目 Gansu province huining county 110KV transmission project	48公里 48 kilometer	2015年 2015 year	



优质服务 PERFECT SERVICES

光缆结构设计和 服务选择 Cable structure design and type choice services

如果你能提供下面的信息，我们能为你提供光缆设计，种类和最优的价格服务。
If you can provide the following information, we can supply cable structure design, type and primary price services for you.

Required Information	OPGW	OPPC	ADSS/MASS
Length(km)			
System Voltage(kv)			
Type of Ground Wire			
Type of Conductors			
Fiber Count&Type			
Cable Diameter(mm)			
Cable Mass(kg/km)			
Rts(kn)			
Short Circuit Current(ka)			
Short Circuit Time(s)			
Representative Span			
Max.Span(m)			
Installation Sag(m)			
Sheath Grade			

Customer information

Company:

Name:

Tel:

Fax:

完美中间服务 Perfect-Mid-sales Services

- 拉力计算 Tension-sag calculation
- 桶设计 Designed drum
- 配件和防震设计 Fitting and anti-vibration design
- 技术规格 Technical specification
- 设计联络会议和工厂测试 Contacting meeting of design and factory test
- 技术培训和研讨班 Technical training and seminar

完美售后服务 Perfect After-sales Services

- 光纤和电缆性能测试网站 Optical fiber and cable performance testing in site
- 接受配件和配件光纤拼接 Acceptance of the fitting & accessories Optical fiber splicing
- 完成项目最终验收 Final acceptance of completed project
- 跟踪和拜访客户 Tracking and visiting the client



For more information, please visit us at:
www.zion-communication.com



■ CONNECT US



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