



CHINA GATE GENERAL TRADING

WIRES & CABLE

CATALOGUE

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CHINA GATE GENERAL TRADING



**ADVANCED
FACILITIES**





CHINA GATE GENERAL TRADING

OPGW OPPC ADSS

Type of Special Optical Fiber Cables for electrical power lines

- **OPGW (Optical Fiber Composite Overhead Ground Wire)**

OPGW cables have the dual functions of ground wire with communication capabilities.

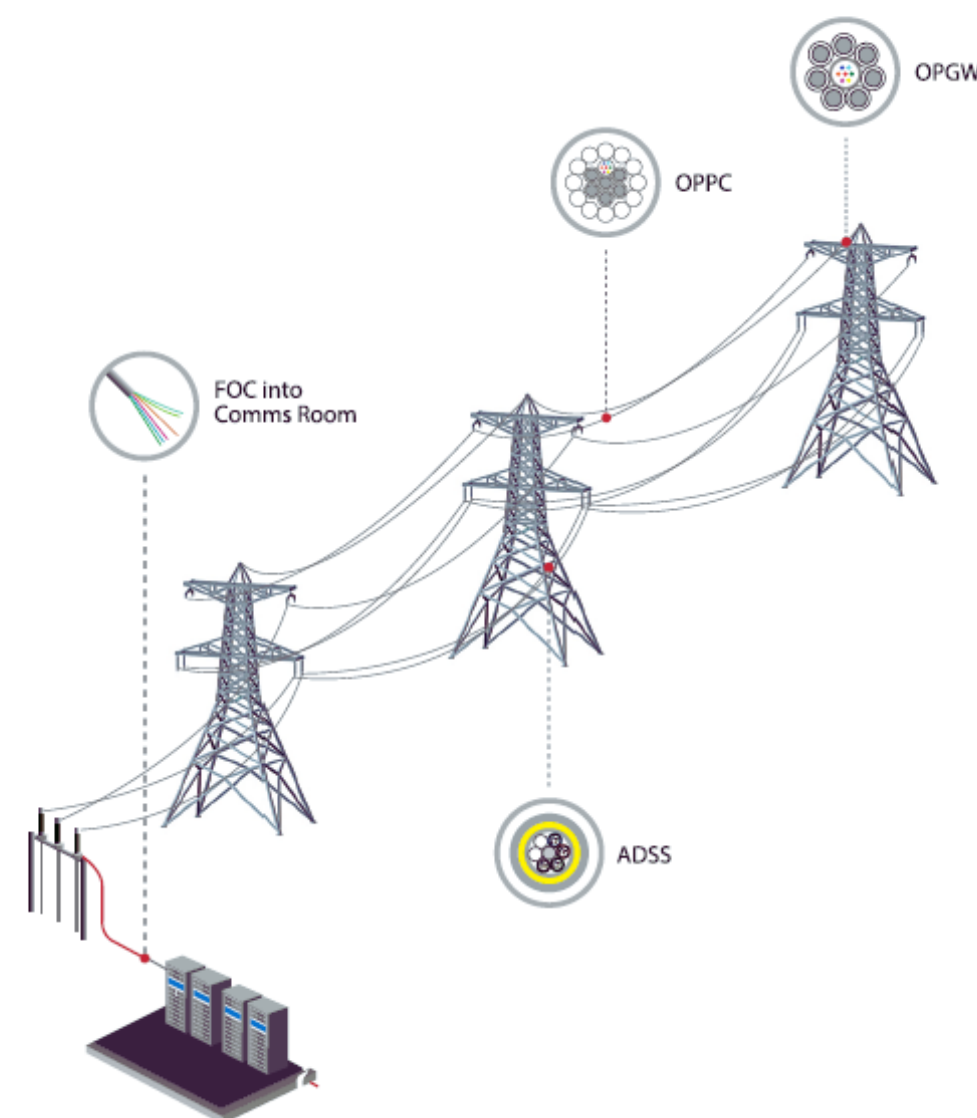
- **OPPC (Optical Fiber Composite Phase Conductor)**

OPPC cables have the dual functions performance functions of phase conductors with communication capabilities.

- **ADSS (All-dielectric self-supporting cable)**

ADSS cables are kind of non-metallic optical fiber cables suspended directly between two points without any supporting elements.

Fiber-Optical Aerial Cables





Power Optical Cable



Main Products OPGW、ADSS、OPPC、Other power optical cables



Advantage

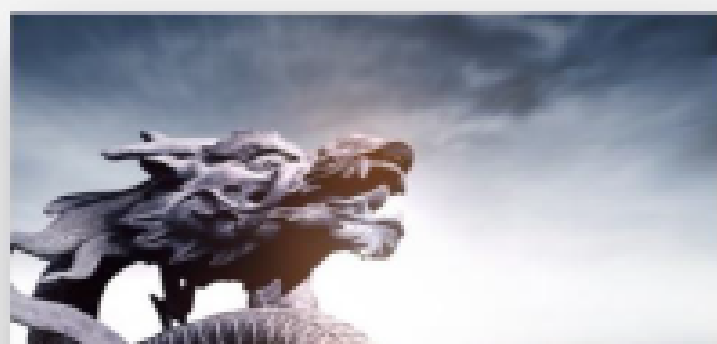
- Total supply:
560,000km OPGW | 280,000km ADSS |
22,400km OPPC
- Used in 1000 kV, ± 800 kV, 500kV, 220kV
Transmission Line



Conductor



Main Products ACSR, AAAC, High-capacity conductor etc.



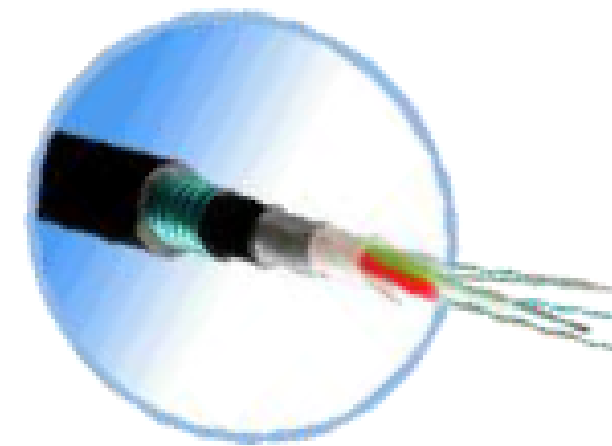
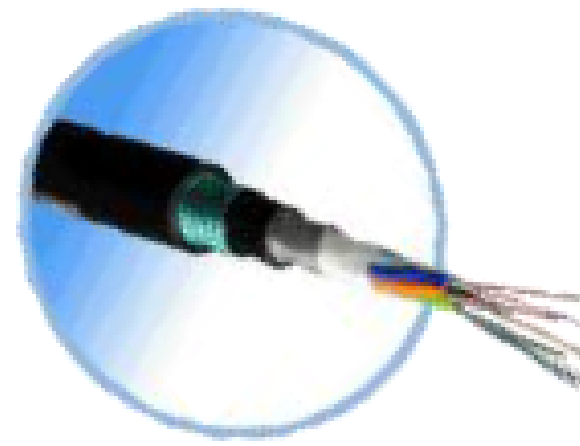
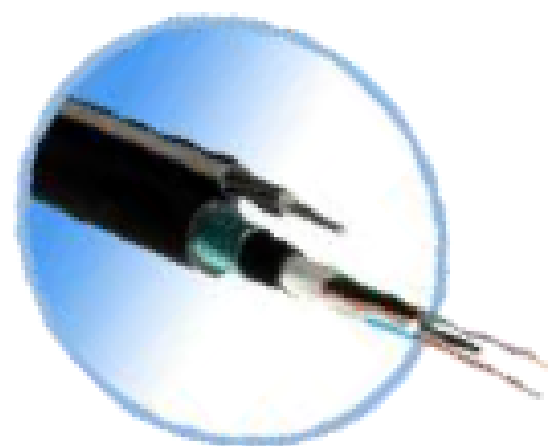
Advantage

- Annual capacity 50,000 Ton
- Develop the 1st Stress-transfer type conductor
- Supply over 200,000 Ton to State Grid of China and China Southern Power Grid



CHINA GATE GENERAL TRADING

Communication Optical Cable



Main Products

Outdoor optical cable, indoor optical cable,
drop optical cable, special optical cable series



Advantage

- The pioneer of optical cable manufacturer in China since 1993
- Optical fiber annual drawing capacity 10 million core km and future 30 million
- Optical cable annual capacity 20,000,000 core km
- Top 10 most competitive enterprise in China optical cable industry
- Long-term cooperation with CMCC, UNICOM and China Telecom

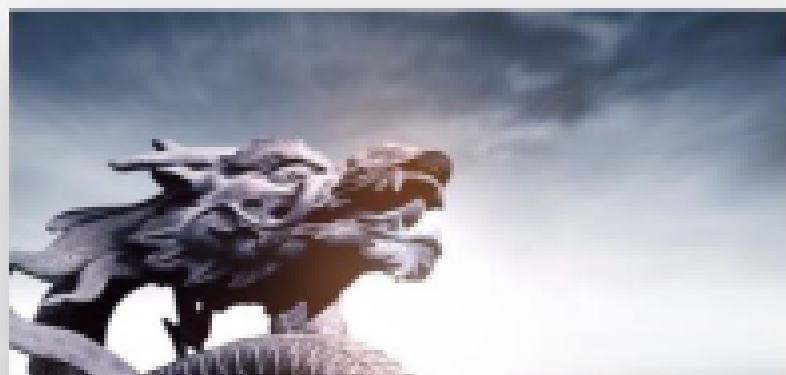


Submarine Cable



Main Products

No relay submarine optical cable, relay submarine optical cable, submarine cable, submarine photoelectric composite cable, split phase lead sheathed submarine composite cable series, etc



Advantage

- Have deep-water dock and advanced testing equipment
- Passed UJ/UQJ certification
- Continuous length of submarine optical cable can reach 100km+
- Have many invention patents and utility model patents
- Capability of 500kV submarine power cable

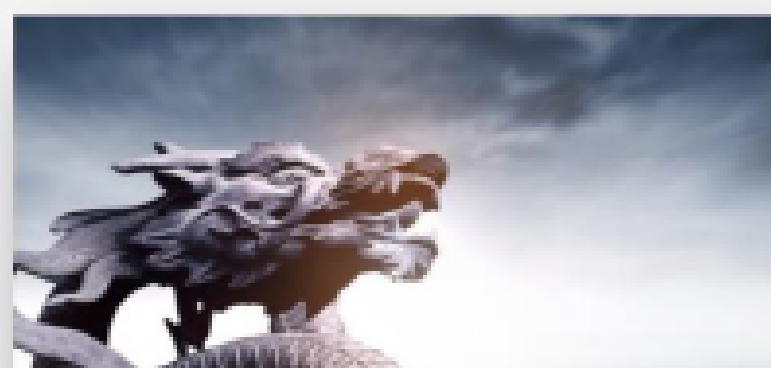


Aluminum Alloy Cable



Main Products

Medium-voltage, low-voltage aluminum alloy cables, photoelectric composite cables

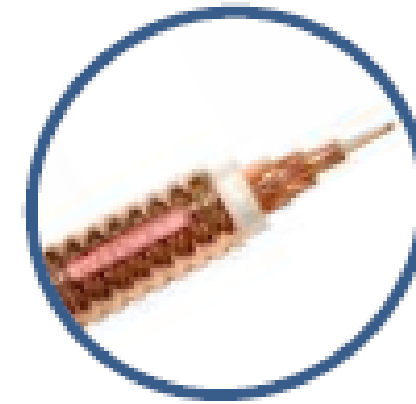
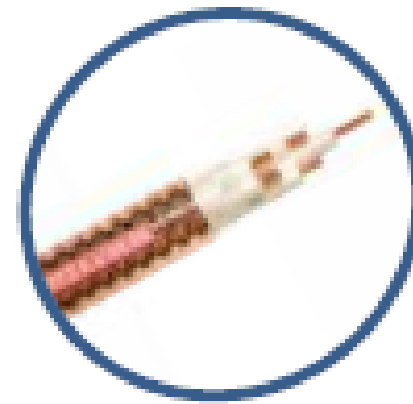


Advantage

- better creep resistance and more safe and reliable
- Lighter weight, easier to lay, and lower labor costs
- resistant to salt spray and acid mist corrosion, and has a longer service life than copper core cables ;
- natural anti-theft

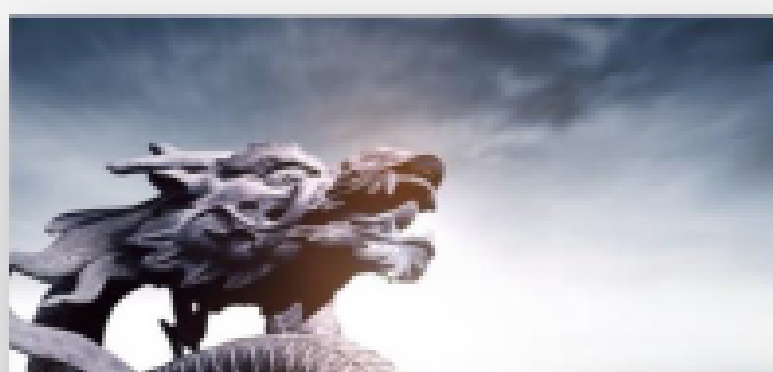


Mineral Insulated Fire-resistant Cables



Main Products

BTTZ, BTTVZ, BTTYZ, BTTQ, BYYVQ, BTTYQ, RTTZ, RTTVZ, RTTYZ

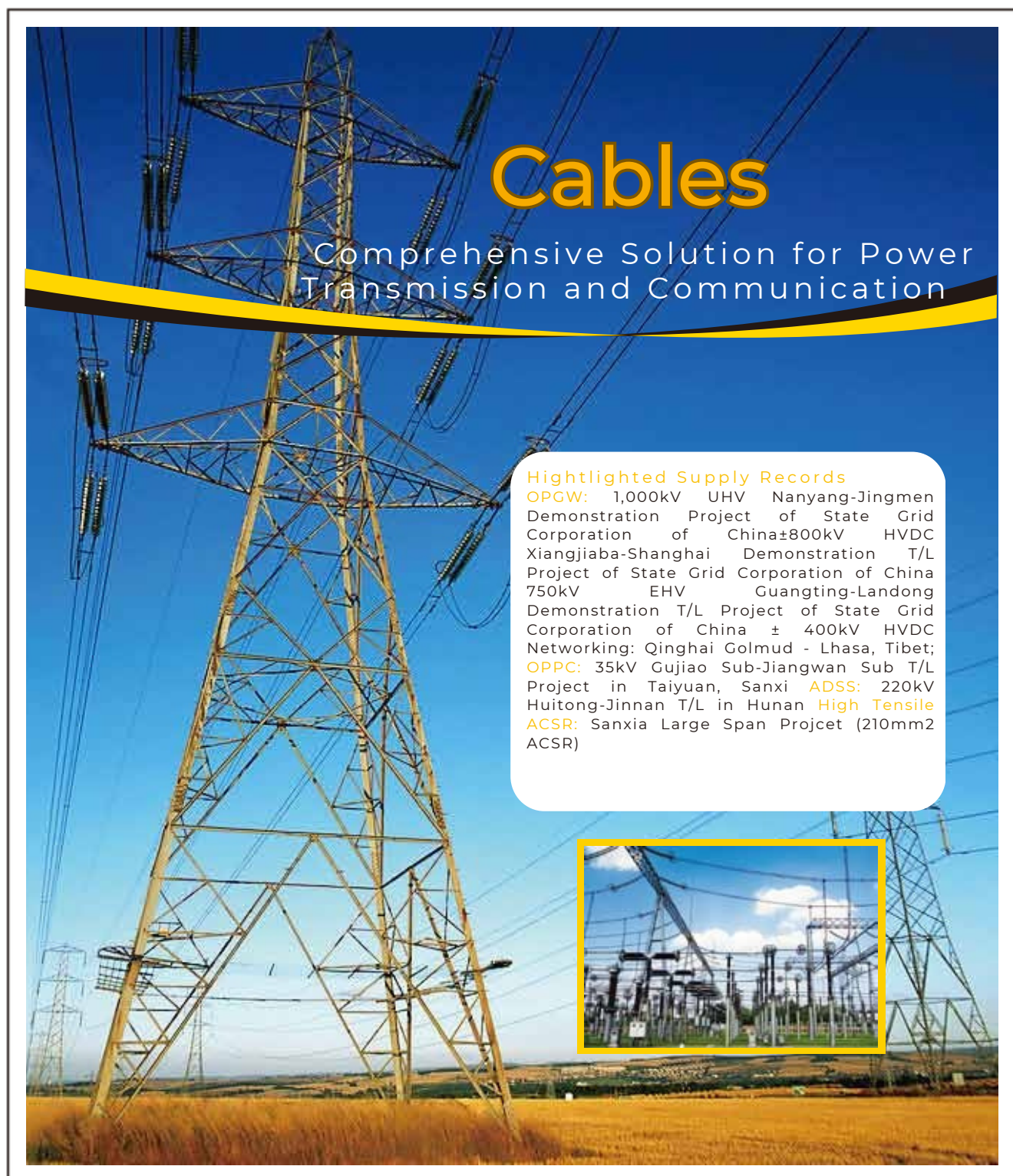


Advantage

- High temperature resistance and high performance, and the silicone oil is more hydrophobic and moisture-proof
- Lightweight and easy to lay, and the multi-core combination is of any length, and the performance-to-price ratio is the highest.



1 Fiber Optic Cables for Use on Electric Utility Power Lines



Aerial Optical Cables Along Electrical Power Lines

Introduction

Aerial optical cables along electrical power lines include: OPGW (optical fibre composite overhead ground wires), OPPC (optical phase conductor), MASS (metallic armoured self supporting cable), ADSS (all dielectric self supporting cable) and OPAC (optical attached cable).

In this introduction, OPGW, OPPC and ADSS, will be mainly introduced.

OPGW cables, installed on the top of power poles or towers, have the dual performance functions of standard ground wires with communication capabilities.

ADSS cables, installed at proper positions of power poles or towers, are a kind of non-metal optical cables suspended directly between two points without need of other supporting elements.

If you are interesting in or have any request on MASS and OPAC, please contact us without any hesitations, you will get a quick response.





Stock code：300265

Standards And Specifications

Our products are complied with relevant international standards and national and industrial standards of China, including but not limited to following standards: GB/T: national standard of PRC；DL/T: electrical power industrial standards of PRC；YD/T：post and telecom industrial standard of PRC；JB/T：mechanical industrial standard of PRC (PRC: the People’s Republic of China).

Relevant standards about optical fibre:

ITU-T G.650	Definition and test methods for the relevant parameters of single-mode fibres
ITU-T G.651	Characteristics of a 50/125 um multimode graded index optical fibre cable
ITU-T G.652	Characteristics of a single-mode optical fibre cable
ITU-T G.653	Characteristics of a dispersion-shifted single mode optical fibre cable
ITU-T G.654	Characteristics of a cut-off shifted single-mode optical fibre and cable
ITU-T G.655	Characteristics of a non-zero dispersion-shifted single-mode optical fibre and cable
ITU-T G.656	Characteristics of a fibre and cable with non-zero dispersion for wideband optical transport
GB/T 9771	Single mode fiber series for communication
GB/T 12357 Multi mode fiber series for communication GB/T 15972.1 General specification of optical fibers, Part 1: General specification (eq. IEC793-1-1: 1995) GB/T 15972. 2 General specification of optical fibers, Part 2: Test methods of size parameter (eq. IEC793-1-2: 1998) GB/T 15972.3 General specification of optical fibers, Part 3: Test methods of mechanical properties (eq. IEC793-1-3: 1995) GB/T 15972.4 General specification of optical fibers, Part 4: Test methods of transmission and optical characteristics (eq. IEC 793-1-4: 1995) GB/T 15972.5 General specification of optical fibers, Part 5: Test methods of environment characteristics (eq. IEC793-1-5: 1995)	

Relevant standards about optical cables:

IEC 60794-4	Optical fibre cables -Part 4: Sectional Specification--Aerial optical cables along electrical power lines
IEC 60794-4-1	Optical fibre cables - Part 4-1: Aerial optical cables for high- voltage power lines
IEEEStd P1222	IEEE standard for all-dielectric self-supporting fiber optic cable
IEEE 1138	IEEE standard construction of composite fiber optic overhead ground wire (OPGW) for use on electric utility power lines
GB/T 18899	All dielectric self supporting optical fiber cables
GB/T 7424.4	Optical cables, Part 4：Sectional specification-Optical fiber composite overhead ground wires
DL/T 788	All dielectric self supporting optical fiber cables
DL/T 832	Optical fiber composite overhead ground wires
DL/T 767	Technical specification and test methods for ADSS preforming fittings
DL/T 766	Technical specification and test methods for OPGW preforming fittings

Relevant standards about raw materials:

IEC 60888	Zinc-coated steel wires for stranded conductors
IEC 61232	Aluminium-clad steel wires for electrical purposes
IEC 60104	Aluminium-magnesium-silicon alloy wire for over-head line conductors
IEC 60889	Hard-drawn aluminium wire for overhead line conductors
IEC 61394	Overhead lines - characteristics of greases for aluminium, aluminium alloy and steel bare conductors
DIN 48200 T8	Specification for materials of aluminum clad steel wires
DIN 48200 T6	Specification for materials of aluminum alloy wires.
ASTM B416	Standard specification for concentric-lay-stranded aluminum-clad steel conductors
GB/T 17937	Aluminum-clad steel wires for electrical purposes (idt. IEC 61232, 1993)
GB/T 17048	Hard-drawn aluminum wire for overhead line conductors (eqv. IEC 60889, 1993)
GB/T 4239	Stainless steel and heat resist cold-rolled steel strip
JB/T 8134	Aluminum-magnesium-silicon alloy wire for over-head line conductors (ist IEC 60104)
YD/T 839.3	Filling and flooding compound for communication cables and optical cables.



General Design Requirements

No.	Design performances	OPGW	OPPC	ADSS
1	Fiber count and type	●	●	●
2	Detail description of optical cables designing	●	●	●
3	Overall diameter (mm)	●	●	●
4	Calculating cross section area for RTS (mm2)	●	●	●
5	Calculated mass (kg/km)	●	●	●
6	RTS—(kN)	●	●	●
7	MAT—Max allowable tensile strength (kN)	●	●	●
8	Average tension in a year(N/mm2)[or average stress in a year (N/mm2)]	●	●	●
9	Yang's modulus(Elastic modulus)(N/mm2)	●	●	●
10	Linear expansion coefficient(1/°C)	●	●	●
11	DC resistance (Ω/km)	●	●	—
12	Short current capacity I2t/kA ² ·s)	● ⁽¹⁾	—	—
13	Safe continual current-carrying capacity (A)	—	●	—
14	Storage and operating temperature range (°C)	●	●	●
15	Strain margin (%)	●	●	●
16	Outer layer stranding direction	●	●	—
17	Tracking resistant sheath (if applicable)	—	—	●
(1) Operation temperature range of optical cable under short-circuit current will be decided by supplier.				



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OPGW/OPPC Structure Design

Description

According to position of optical fiber unit, it could be classified into central tube type and eccentric tube type.

-- Optical unit is classified into stainless steel tube with optical fibers, and aluminum clad stainless steel tube.

-- According to customer’s requirements or requirements of optical transmission system, determine fiber type and count in the optical tube

-- According to customer’s detail requirements to optical fiber type and count, determine quantity of optical unit, it could be 1, 2 or 3 (maximum at present).

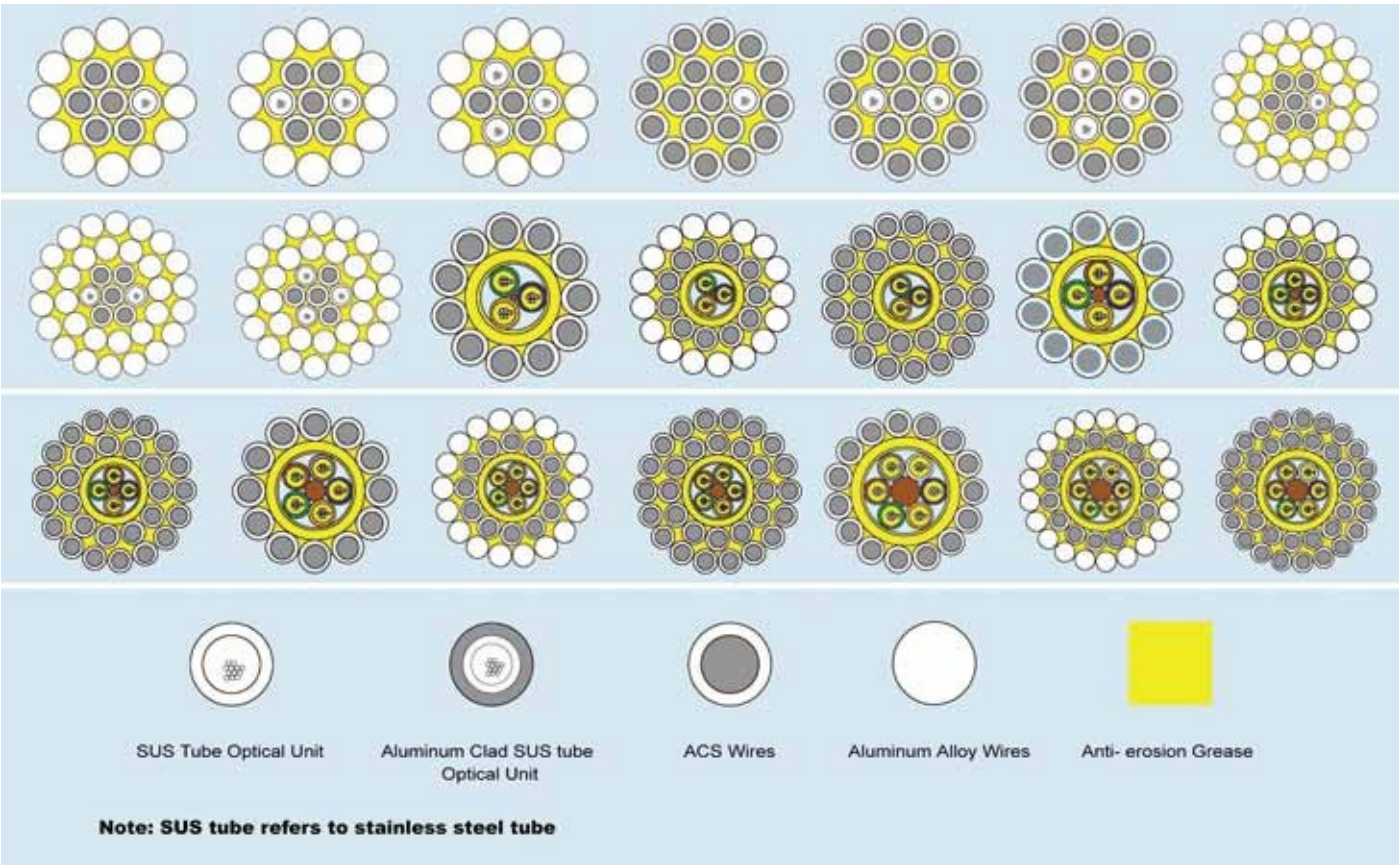
-- According to customer’s detail requirements to cable mechanical , electrical performance and span, tensile strength, sag and weather condition, the stranded layer could be one layer or multi layers, stranded wires could be ACS (aluminium clad steel) wires or composition of ACS wires with aluminium or aluminium alloy wires.

-- In order to ensure the operation life, the interstice of stranded wires should be covered with anti-erosion grease(IEC 60394).

Structure Drawing of Central Optical Fiber Unit Type



Structure Drawing of Eccentric (Stranded) Optical Fiber Unit Type

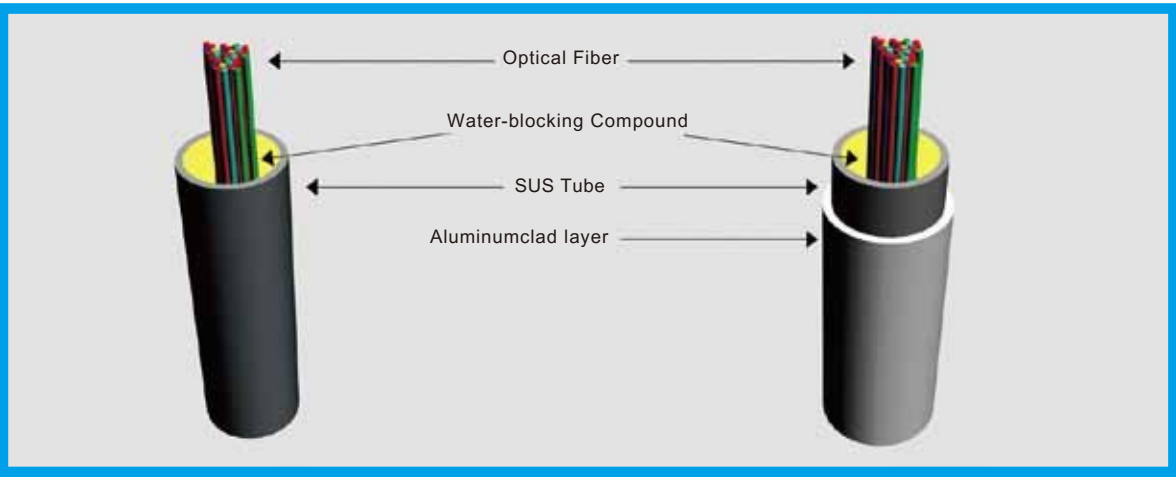


Optical Fiber Unit

Optical Fiber Unit

Types of optical fiber unit of OPGW/OPPC could be classified into two types, they are SUS tube type and aluminum clad SUS tube type. The SUS tube is manufactured by laser welding-drawing technique, and optical fibers and water-blocking compound are introduced into tube at the same time of welding-drawing in process, forming optical unit. -- The CO2 gas laser of line is driven by RF, and the output beam has single mode pattern with good energy concentration, makes the best weld seam quality. -- The welding-drawing process plays a roll of defects screen, passing through an on-line eddy-current detection, defects such as dummy welding, leaky welding etc could be completely gotten rid of. -- Adopt Tongguang’s unique technique, excess length of optical fibers in tube could be controlled precisely, uniformity of excess length is better than $\pm 0.2\%$. -- With unique excellent water block performance. For 1m of optical unit, under 3m of water height, after 1 hr., no water will be penetrated at another end of optical unit. -- Maximum fiber count of a tube is depended on size of SUS tube and structure of OPGW, it could be optimized by careful design -- According to customer’s requirement, proper thickness of aluminum could be covered to SUS tube optical fiber unit, forming aluminum clad stainless steel tube optical unit.

Structure Drawing of Optical Fiber Unit



Optical Fiber Unit Specification

Size of SUS tube (mm)	Central optical fiber unit type		Stranded optical fiber unit type	
	Max. fiber count	Max. excess length	Max. fiber count	Max. excess length
2.5	12	5.0%	24	2.6%
2.7	20	5.0%	30	2.7%
3.0	30	5.0%	36	3.3%
3.2	36	5.0%	48	3.0%
3.3	40	5.0%	48	3.9%
3.4	40	6.0%	48	4.0%
3.6	48	6.0%	48	4.7%
3.8	48	6.5%	48	5.2%



Typical Structure and Parameter of OPGW

Some structures and characteristics of typical representative OPGW are shown in the below list, however, they do not represent the whole products of the company. If you have any requests, please contact local representative office or directly contact the company.

Central Optical Fiber SUS Tube Structure (Parts)

Structure Drawing 	Structure：central optical fiber SUS tube structure with single stranded layer		
	Optical Cables Type Model	OPGW-1C1/36 (M48/R60-13)	OPGW-1C1/48 (M68/R85-25)
	Max. fiber count	36	48
	Tube size	φ3.2 mm	φ3.8mm
	Cable diameter	φ9.6 mm	Φ11.4 mm
	Cross-section carry area	48.25 mm2	68.05 mm2
	Cable weight	342 kg/km	475kg/km
	Rated Tensile Strength （RTS）	60 kN	85 kN
	DC resistance at 20°C	1.782 Ω/km	1.264Ω/km
	Short current capacity (40~200°C)	12 kA2 . s	25 kA2 .s
	Linear expansion coefficient	13.0× 10-6/C	13.0× 10-6°C
	Young’s modulus	162.0 kN/mm2	162.0 kN/mm2

Structure Drawing 	Structure : central optical fiber SUS tube structure with double stranded layers		
	Optical Cables Type Model	OPGW-2C1/30(M12 7/R160-80)	OPGW-2C1/40(M163 /R205-132)
	Max. fiber count	30	40
	Tube size	φ3.00 mm	φ3.40 mm
	Cable diameter	φ15.00 mm	φ17.00 mm
	Cross-section carry area	127.23 mm2	163.43 mm2
	Cable weight	874 kg/km	1116 kg/km
	Rated Tensile Strength （RTS）	159 kN	205 kN
	DC resistance at 20°C	0.678Ω/km	0.528Ω/km
	Short current capacity (40~200°C)	80 kA2·s	132 kA ² ·s
	Linear expansion coefficient	13.0× 10-6/C	13.0× 10-6°C
	Young’s modulus	162.0 kN/mm2	162.0 kN/mm2

Typical Structure and Parameter of OPGW(L)

Some structures and characteristics of typical representative OPGW are shown in the below list, however, they do not represent the whole products of the company. If you have any requests, please contact local representative office or directly contact the company.

Central Optical Fiber Aluminum Clad SUS Tube Structure (Parts)

Structure Drawing 	Structure：central optical fiber aluminum clad SUS tube structure with single stranded layer		
	Optical Cables Type Model	OPGW(AL-Tube)-1 S36(M75/R68-33)	OPGW(AL-Tube)-1 S 36(M88/R83-43)
	Max. fiber count	36	36
	Tube size	φ6.20 mm	φ6.20 mm
	Cable diameter	φ11.40 mm	φ12.30 mm
	Cross-section carry area	75.24 mm2	87.90 mm2
	Cable weight	430 kg/km	513 kg/km
	Rated Tensile Strength （RTS）	67 kN	83 kN
	DC resistance at 20°C	0.714Ω/km	0.646 Ω/km
	Short current capacity (40~200°C)	32 kA2 . s	43 kA2 .s
	Linear expansion coefficient	14.3 × 10-6/C	14.0 × 10-6°C
	Young’s modulus	130.8 kN/mm2	135.3 kN/mm2

Structure Drawing 	Structure : central optical fiber aluminum clad SUS tube structure with double stranded layers		
	Optical Cables Type Model	OPGW(AL-Tube)-2S 36(M160/R170-130)	OPGW(AL-Tube)-2S 36(M171/R183-147)
	Max. fiber count	36	36
	Tube size	φ6.20 mm	φ6.20 mm
	Cable diameter	φ16.60 mm	φ17.00 mm
	Cross-section carry area	160.19 mm2	171.01 mm2
	Cable weight	990 kg/km	1061 kg/km
	Rated Tensile Strength （RTS）	170 kN	183 kN
	DC resistance at 20°C	0.420Ω/km	0.399Ω/km
	Short current capacity (40~200°C)	129 kA2·s	146 kA2·s
	Linear expansion coefficient	13.5× 10-6°C	13.5× 10-6°C
	Young’s modulus	147.3 kN/mm2	148.3 kN/mm2



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Typical Structure and Parameter of OPGW

Some structures and characteristics of typical representative OPGW are shown in the below list, however, they do not represent the whole products of the company. If you have any requests, please contact local representative office or directly contact the company.

Stranded Optical Fiber SUS Tube Structure (Parts)

Structure Drawing 	Structure : stranded optical fiber SUS tube structure with double stranded layers		
	Optical Cables Type Model	OPGW-2S1/24(M89/R111-39)	OPGW-2S1/48(M150/R189-111)
	Max. fiber count	24	48
	Tube size	φ2.50 mm	φ3.40 mm
	Cable diameter	φ12.60 mm	φ16.40 mm
	Cross-section carry area	88.76 mm2	150.11 mm2
	Cable weight	615 kg/km	1026 kg/km
	Rated Tensile Strength (RTS)	111 kN	188 kN
	DC resistance at 20°C	0.972Ω/km	0.575Ω/km
	Short current capacity (40~200 °C)	39 kA2 `s	111 kA·s ²
	Linear expansion coefficient	13.0 × 10 ⁻⁶ /°C	13.0×10 ⁻⁶ /°C
	Young’s modulus	162.0 kN/mm2	162.0 kN/mm2

Structure Drawing 	Structure： stranded optical fiber SUS tube structure with double stranded layers		
	Optical Cables Type Model	OPGW-2S1/24(M107/R133-57)	OPGW-2S1/48(M150/R92-190)
	Max. fiber count	24	48
	Tube size	φ2.50 mm	φ3.20 mm
	Cable diameter	φ12.60 mm	φ16.40 mm
	Cross-section carry area	88.76 mm2	150.11 mm2
	Cable weight	381 kg/km	631 kg/km
	Rated Tensile Strengt(RTS)	54 kN	92 kN
	DC resistance at 20°C	0.471Ω/km	0.279Ω/km
	Short current capacity (40~200°C)	66 kA2. `s	190 kA2·s
	Linear expansion coefficient	17.4× 10 ⁻⁶ /°C	17.4× 10 ⁻⁶ /°C
	Young’s modulus	97.6 kN/mm2	97.7 kN/mm2



Typical Structure and Parameter of OPGW

Some structures and characteristics of typical representative OPGW are shown in the below list, however, they do not represent the whole products of the company. If you have any requests, please contact local representative office or directly contact the company.

Stranded Optical Fiber SUS Tube Structure (Parts)

Structure Drawing 	Structure： stranded optical fiber SUS tube structure with three stranded layers	
	Optical Cables Typ e Model	OPGW-3S1/36(M281/R128-714)
	Max. fiber count	36
	Tube size	φ3.00 mm
	Cable diameter	φ22.10 mm
	Cross-section carry area	280.80 mm 2
	Cable weight	980 kg/km
	Rated Tensile Strength (RTS)	128 kN
	DC resistance at 20°C	0.132 Ω/km
	Short current capacity (40~200°C)	714 kA2·s
	Linear expansion coefficient	19.7×10 ⁻⁶ /°C
	Young’s modulus	81.2 kN/mm

Structure Drawing 	Structure: stranded optical fiber SUS tube structure with three stranded layers	
	Optical Cables Type Model	OPGW-3S1/24(M214/R269-227)
	Max. fiber count	24
	Tube size	φ2.70 mm
	Cable diameter	φ19.35 mm
	Cross-section carry area	214.26 mm 2
	Cable weight	1462 kg/km
	Rated Tensile Strength (RTS)	269 kN
	DC resistance at 20°C	0.404 Ω/km
	Short current capacity (40~200°C)	227 kA·s ²
	Linear expansion coefficient	13.0× 10 ⁻⁶ /°C
	Young’s modulus	162.0 kN/mm2



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Typical Structure and Parameter of OPGW

Some structures and characteristics of typical representative OPGW are shown in the below list, however, they do not represent the whole products of the company. If you have any requests, please contact local representative office or directly contact the company.

Stranded loose tube aluminum optical unit structure (part)

Structure Drawing 	Structure :: double layer stranded loose tube aluminum optical unit structure		
	Optical Cables Type Model	OPGW(L-AL_Tube) – 2S 48(M107/R95-85)	OPGW(L-AL_Tube) – 2S 48(M125/R117-111)
	Max. fiber count	48	48
	Tube size	φ10.0 mm	φ10.0 mm
	Cable diameter	φ15.10 mm	φ16.1 mm
	Cross-section carry area	107.18 mm2	125.44 mm2
	Cable weight	605 kg/km	726 kg/km
	Rated Tensile Strength （RTS）	94.5 kN	116.5 kN
	DC resistance at 20°C	0.489Ω/km	0.443Ω/km
	Short current capacity (40~200°C)	84 kA2. s	111 kA ² s
	Linear expansion coefficient	14.4× 10- ⁶ /°C	14.1×10- ⁶ /°C
	Young’s modulus	128.8 kN/mm2	133.6 kN/mm2

Structure Drawing 	Structure： double layer stranded loose tube aluminum optical unit structure		
	Optical Cables Type Model	OPGW(L-AL_Tube) – 2S 48(M210/R219-277)	OPGW(L-AL_Tube) – 2S 48(M260/R278-407)
	Max. fiber count	48	48
	Tube size	φ10.0 mm	φ10.0 mm
	Cable diameter	φ20.10 mm	φ22.1 mm
	Cross-section carry area	210.27 mm2	259.75 mm2
	Cable weight	1285 kg/km	1611 kg/km
	Rated Tensile Strength （RTS）	218.8 kN	278.5 kN
	DC resistance at 20°C	0.309Ω/km	0.263Ω/km
	Short current capacity (40~200°C)	277 kA ² s	406 kA ² s
	Linear expansion coefficient	13.6× 10- ⁶ /°C	13.5×10- ⁶ /°C
	Young’s modulus	145.0 kN/mm2	148.3 kN/mm2

Typical Structure and Parameter of OPPC

Some structures and characteristics of typical representative OPGW are shown in the below list, however, they do not represent the whole products of the company. If you have any requests, please contact local representative office or directly contact the company.

Stranded Optical Fiber SUS Tube Structure (Parts)

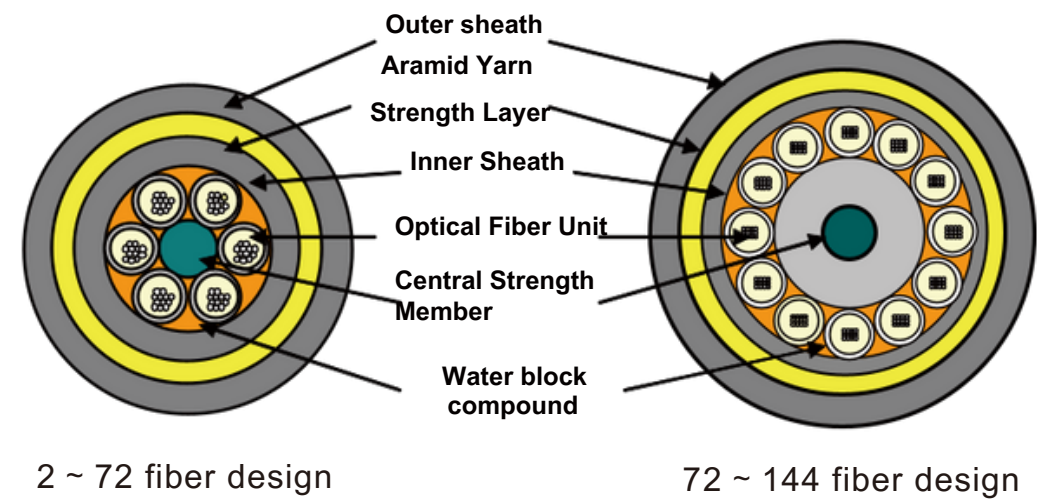
Structure Drawing 	Str uc tur e： stranded optical fiber SUS tube structure with double stranded layers		
	Optical Cables Type Model	OPPC-2S 1/24(M88/R47-257)	OPPC-2S 1/48(M155/R82-362)
	Max. fiber count	24	48
	Tube size	φ2.50 mm	φ3.20 mm
	Cable diameter	φ12.60 mm	φ16.70 mm
	Cross-section carry area	29.85	52.39
	Section area of electrical Aluminum	58.90	102.64
	Total cross section area	88.76 mm2	155.02 mm2
	Cable weight	381 kg/km	652 kg/km
	Rated Tensile Strength （RTS）	47 kN	82 kN
	DC resistance at 20°C	0.418Ω/km	0.240Ω/km
	Safe current-carrying capacity	257 A	362 A
	Linear expansion coefficient	17.1 ×10-6 /°C	17.0×10-6/°C
	Young’s modulus	91.7 kN/mm2	91.8 kN/mm2

Structure Drawing 	Str uc tur e： stranded optical fiber SUS tube structure with three stranded layer s		
	Optical Cables Type Model	OPPC-3S 1/30(M238/R83-502)	OPPC-3S 1/30(M287/R87-363)
	Max. fiber count	30	30
	Tube size	φ 2.80 mm	φ 2.70 mm
	Cable diameter	φ 20.40 mm	φ 22.45 mm
	Cross-section carry area	40.09	37.17
	Section area of electrical Aluminum	198.16	250.15
	Total cross section area	238.25 mm2	287.32 mm2
	Cable weight	835 kg/km	960 kg/km
	Rated Tensile Strength （RTS）	83 kN	87 kN
	DC resistance at 20°C	0.137 Ω/km	0.110 Ω/km
	Safe current-carrying capacity	502 A	572 A
	Linear expansion coefficient	19.3 ×10-6 /°C	20.0 ×10-6 /°C
	Young’s modulus	73.8 kN/mm2	69.7 kN/mm2



Stock code: 300265

ADSS Cable Structure Design



Description

ADSS design is a kind of typical stranded loose tube design, which including two typical structures with maximum (but not limited to) fiber count of 72 and 144. Tongguang could make special design according to customer's requirement.

-- Central strength member, normally adopt FRP (YD/T 1181.1) , also plays the role of anti bend break member. For maximum 144 fiber design, proper materials could be covered on outside of the FRP.

-Adopting loose tube design as fiber unit, normally, PBT (GB/T118.12001) is used as tube materials. Optical fibers with proper excess length and filling compound with excellent water-block performance are put or filled into the tubes.

-- Black PE (GB/T 15065) is placed outside of stranded optical units, forms cable core, water-block compound (YD/T 839.9) is placed in the interstice of the cable core.

-- Maximum operation tensile strength could be calculated according to customer's requirement to cable strength or according to weather condition and span-sag requirement, thus the quantity of aramid yarn should be used could be determined. The yarn is applied with balanced- torque, could also play the role of bullet-proof.

-- According to international and national standards, the outer sheath of ADSS could be classified into class-A and class-B, which is suited for spatial potential environments of below and above 12kV respectively.



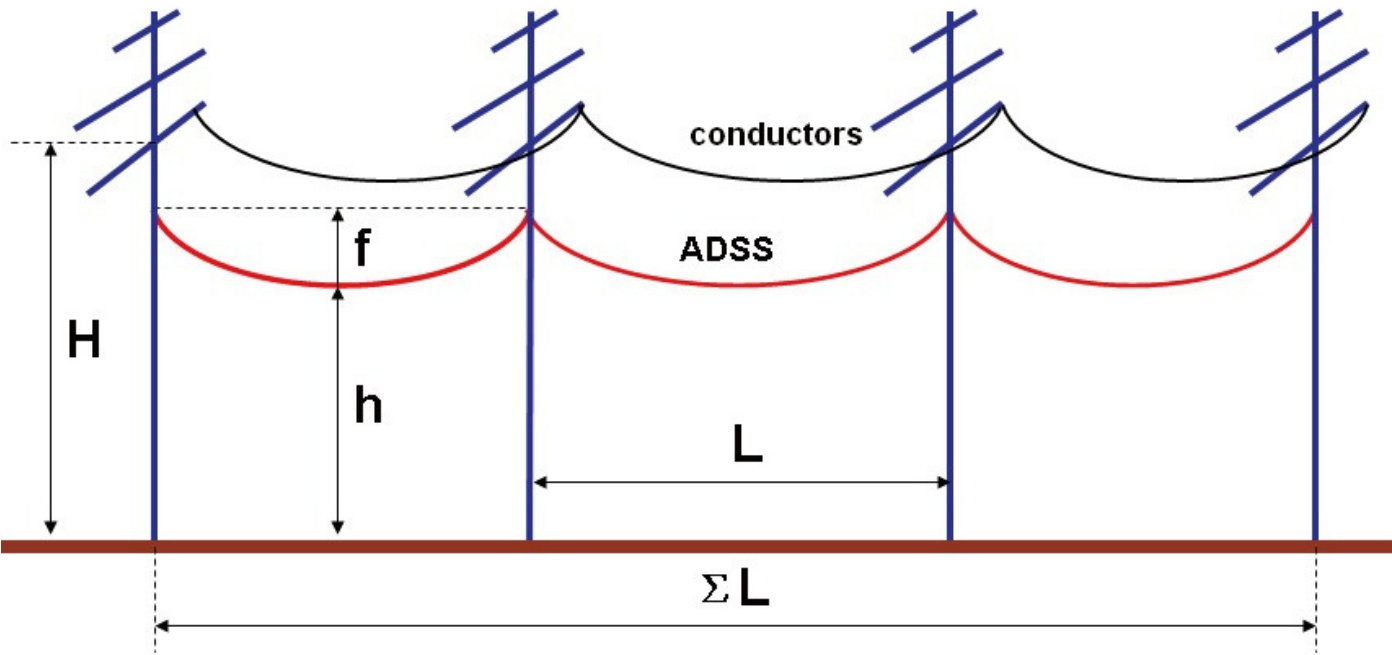
ADSS Cable Application Design

Description

In most instances, ADSS cables are installed at existing power lines. The only way for ADSS installation is to suit existing poles/tower condition to find limited available space for installation.

Besides optical transmission performance design, two aspects of ADSS application design are:

- Span-tension-sag design of ADSS
- Installation position consideration of ADSS



H: The name height of pole or tower , namely the distance between lowest horizontal structure to the foundation of the pole or tower.;

h: Required minimum distance of ADSS cable to ground ;

f: Maximum vertical sag of ADSS cable ;

L: Span;

ΣL: Total length between two tension fittings

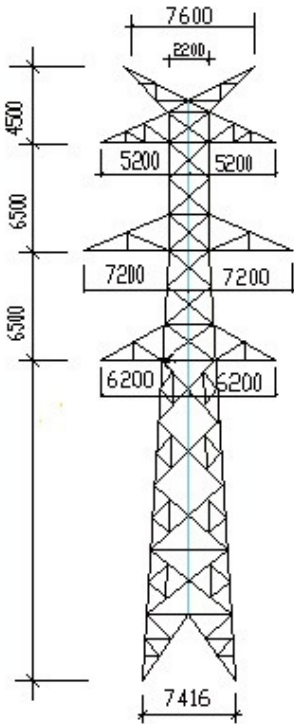
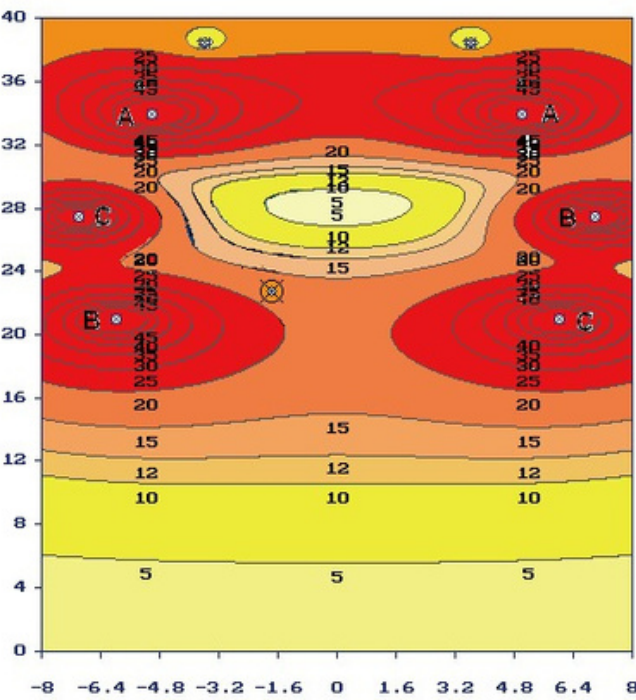


Stock code: 300265

ADSS Cable Application Design



ADSS Installation Position Design



Description

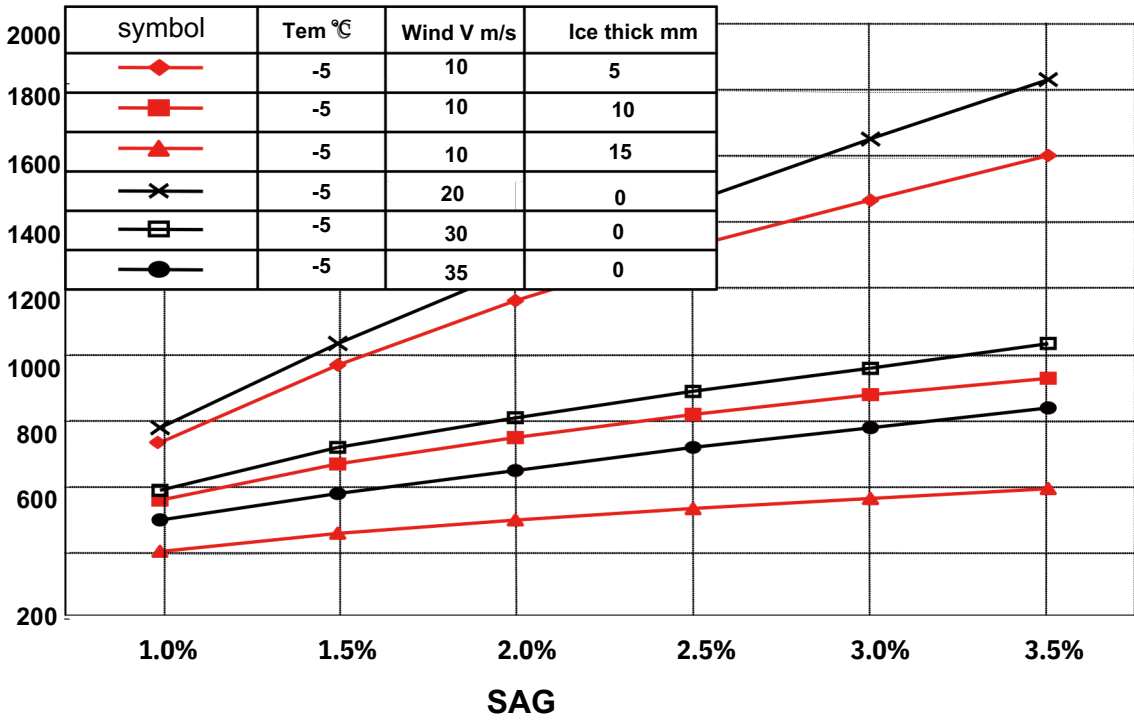
To one individual pole or tower, the detail installation position design of ADSS cable is of great importance. An installation position not rightly suitable will influence cable operation life at least, or even leads a quick electric erode to cable.
Tongguang could provide spatial potentials distribution around the poles and towers, if it is required by customers.

- In such case, following information should be available at least:
- Voltage of the system and its possible maximum value;
 - Main structure size drawing of the pole or tower;
 - Diameter or type model of conductors and overhead ground wires;
 - Phase arrangement of conductors on the pole or tower;
 - The spacing size of split conductors (if it is the case);
 - The length of Insulator string



ADSS Cable Application Design

Span-tension-sag design for ADSS cables



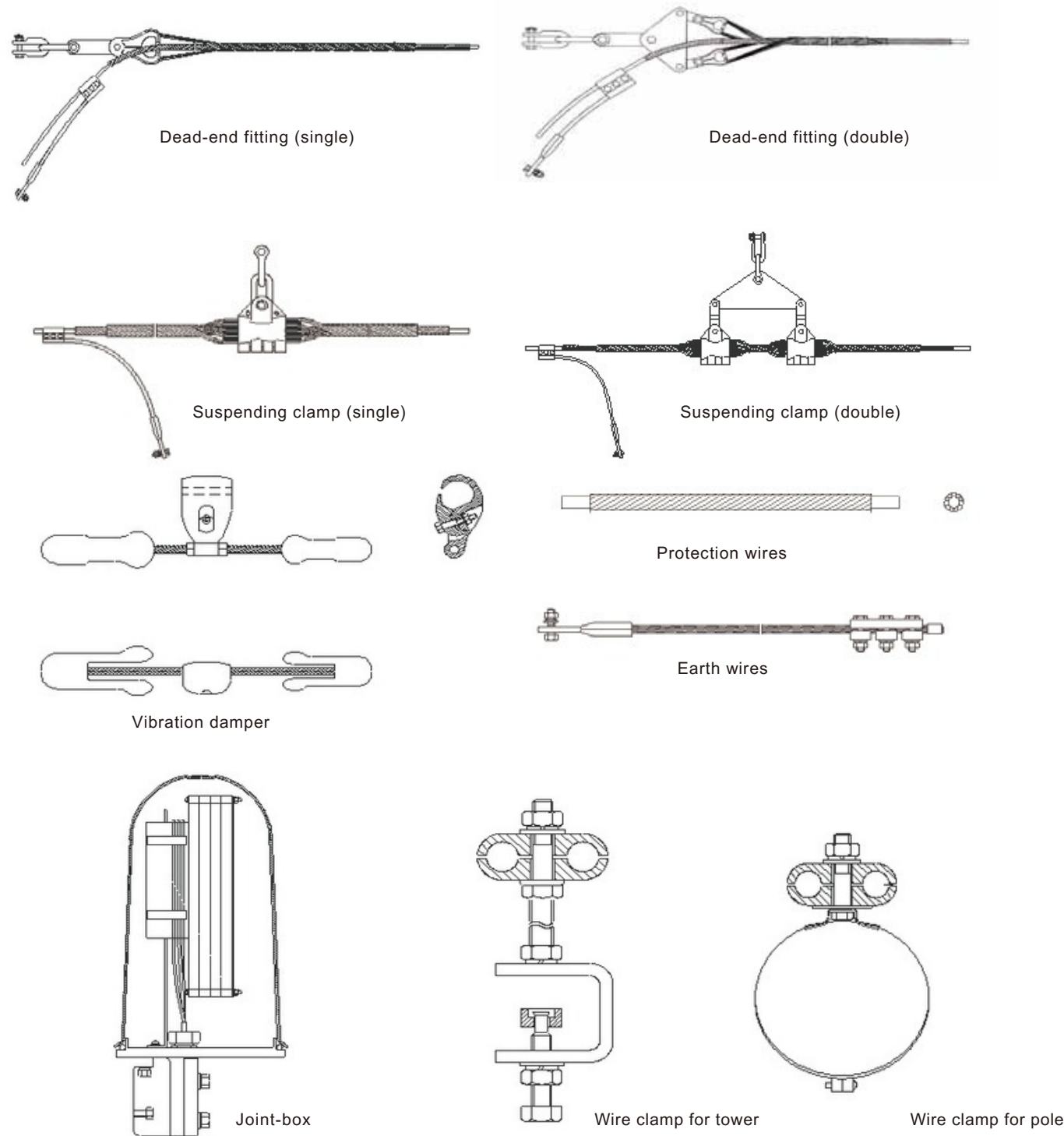
ADSS cables have so-called “variable span” characteristics.
-- In case of fixed operational tension at two cable ends is required, allowable span for ADSS cables will increase along with increasing of allowable sag;
-- Under different weather conditions, the allowable span of same ADSS cable will reduce along with increasing of weather load to the cable.
On request, We could provide span-tension-sag characteristics of ADSS cable for customers.



Stock code: 300265

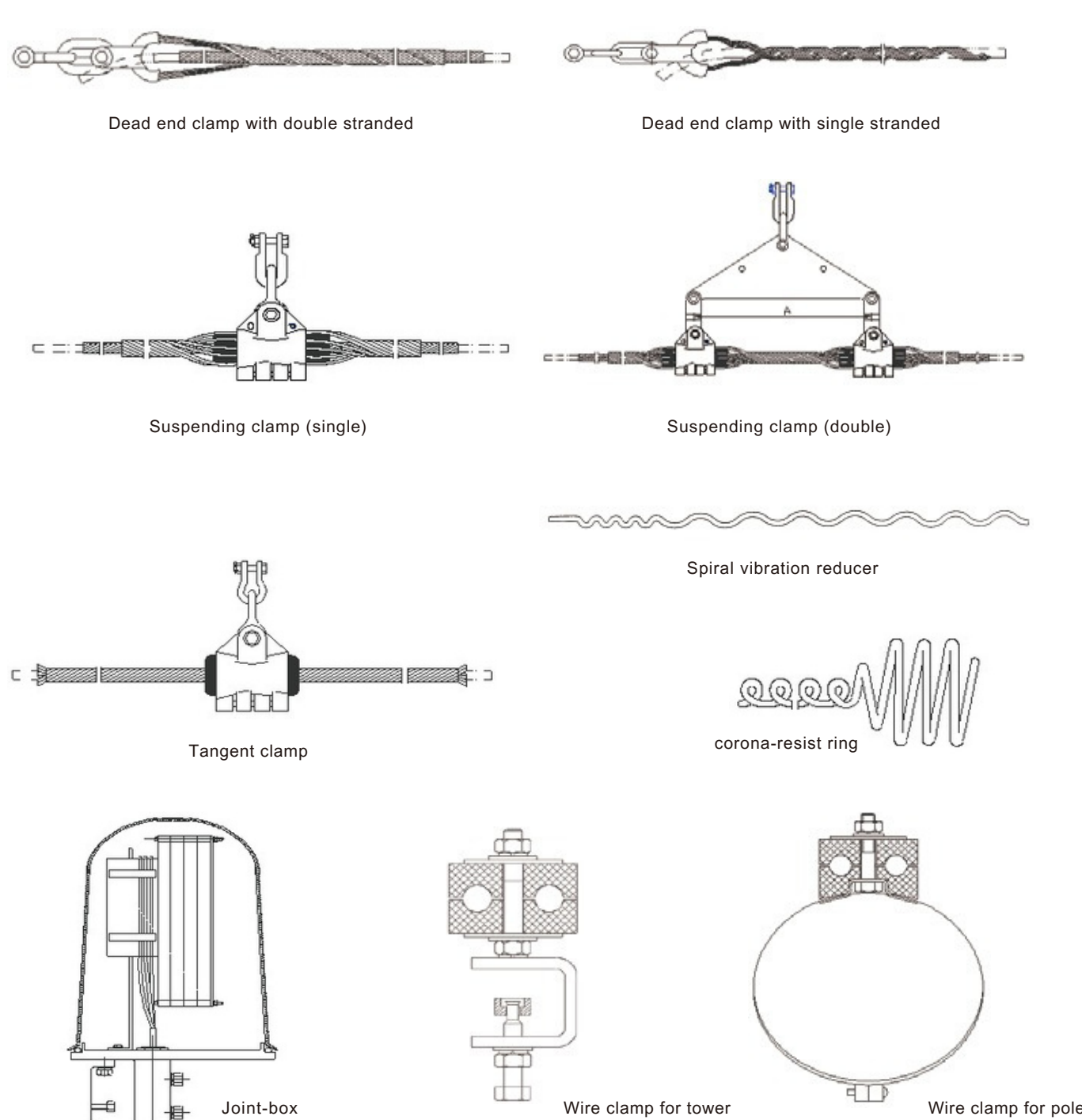
Hardware and Fittings for OPGW

The drawings below are shown with no detail size. If you have any requests, please contact local representative office or contact the company directly.



Hardware and Fittings for ADSS

The drawings below are shown with no detail size. If you have any requests, please contact local representative office or contact the company directly.

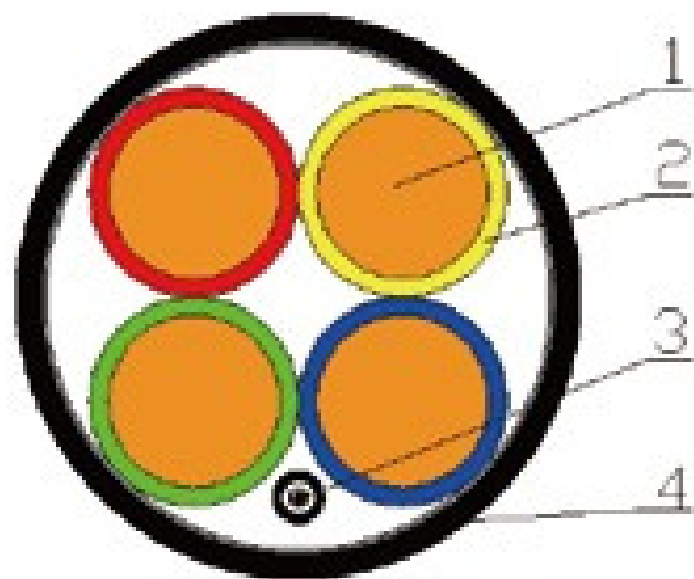




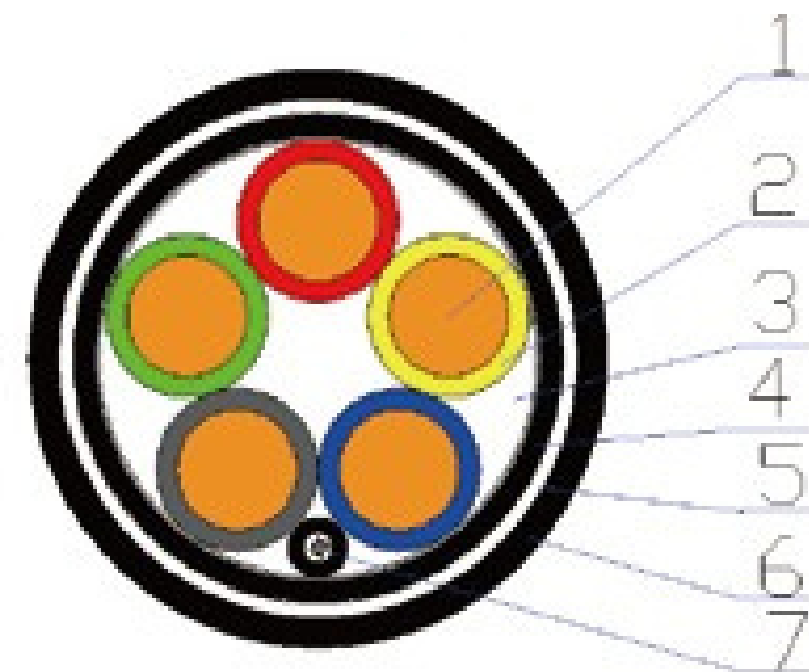
Stock code: 300265

2 Optical Composite Cable

Optical Composite Low-voltage Cable
Cross Section Drawing:



OPLC without armor



Armored OPLC

Figure 1 1—conductor 2—insulation 3—optical unit 4— sheath

Figure 2 1—conductor 2—insulation 3—filling material 4—inner bedding
5—steel armored layer 6—sheath 7—optical unit

Features of OPLC (optical fiber composite low voltage cable):

- ① Integration of optical fiber and power cable, avoid twice cabling, decrease construction cost for network;
- ② Providing multi-kinds transmission means, high-flexibility, high-expandability, and wide applicability
- ③ Broadband accessible
- ④ Excellent shock resistance and crush resistance performance.
- ⑤ Without electric-magnetic interference between optical unit and power cable, has long term compatibility under operating temperature.

Application field:

Used for construction of electricity and fiber to the home (FTTH) for intelligent community and intelligent building, realize synchronous transmission of power and communication.



Stock code: 300265

3 Conductor

Conductors

Energy saving and Environmental Friendly, Reach beyond thousands of miles

Highlighted Supply Records

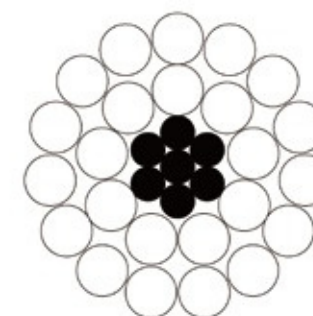
- Capacity increasing T/L Projects (Customer: State Grid Corporation of China)**
- 500kV Longyan-Sanming T/L in Fujian Province
- 220kV Heling-Wuzhongyan Double Circuit T/L in Hunan Province
- First Anti-ice TL in China (Customer: State Grid Corporation of China)**
- 220kV Dianling T/L in Jilin Province
- 110kV Jinxi T/L in Zhejiang Province
- 1,000mm² Large cross-section Conductor**
- ±660KV Ningdong-Shandong D.C. TL, A Demonstration Project of State Grid Corporation of China
- Capacity expanding T/L Projects**
- 110kV Dongluo T/L in Guangdong Province (Customer: China Southern Power Grid)
- 66kV Bei-Jing T/L in Liaoning (Customer: State Grid Corporation of China)
- First Corrosion resistant conductor T/L in China (Customer: State Grid Corporation of China)**
- 110kV Pingtaglongnan-Beicuo T/L in Fujian Province
- International Supply Record**
- 230kV Hydropower Station TL Project in Cambodia

We are dedicated in development and production of energy-saving capacity expanding conductor, power transmission line, ground wire, electric wire and cable, aluminum rod and aluminum alloy rod, fittings and accessories and other non ferrous metal products. Supported by a fully integrated manufacturing facility that converts ingots to bare overhead conductors, TGC range of standard and custom-designed power conductors deliver superior performance in transmission and performance reliability.

We strictly implements requirements and standards of ISO 9001: 2000 Quality Management System and ISO14001 environmental management system, implements 6S on-site management and OA system, and forms a comprehensive management system integrated function of R&D, QA and information processing.

Power conductors

Structure diagram: TGC - ACSR



Aluminum conductor steel reinforced (ACSR) cable is a specific type of high-capacity, high-strength stranded cable typically used in overhead power lines. The outer strands are aluminum, chosen for its excellent conductivity, low weight and low cost. The center strand is of steel for the strength required to support the weight without stretching the aluminum due to its ductility. This gives the cable an overall high tensile strength.

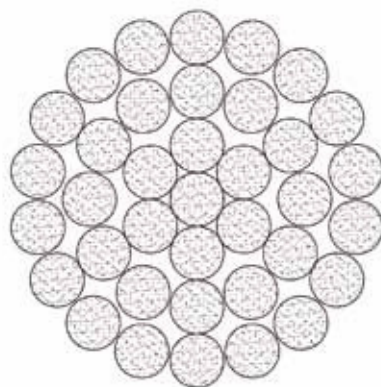


Stock code: 300265

AAAC Power conductors

Structure diagram: AAAC

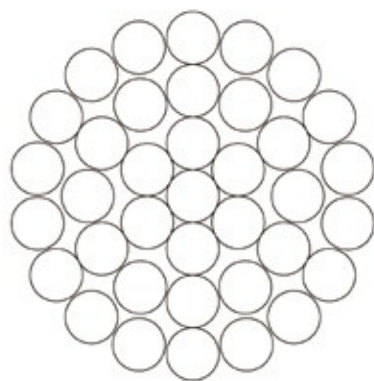
All Aluminium Alloy Conductor is a specific type of high-capacity, high-strength stranded cable typically used in overhead power lines. The outer strands are Aluminium Alloy wires, chosen for its high strength, low weight, low attenuation and long service life. Which can be used in common power transmission lines.



AAC Power conductors

Structure diagram: AAC

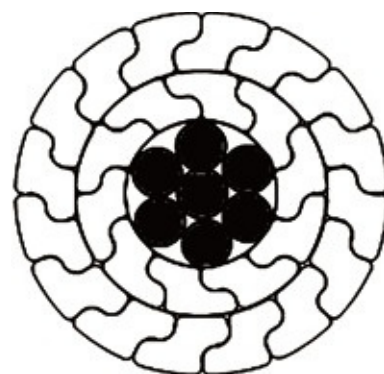
All Aluminium Conductor is a specific type of high conductivity, low weight cable. The outer strands are Aluminium wires, power transmission lines, typically used in overhead power lines with short span.



3S ACSR Power conductors

Structure diagram: 3S ACSR

STRESS&SHIFT&SOFT ALUMINUM - ACSR is a specific type of high-ampacity, high-strength stranded cable typically used in overhead power lines. Which invented by TGC and own its patent, specially applied to transform old transmission lines for increase ampacity, chosen for its excellent energy saving, materials savings, low sag, long service life and high cost performance!

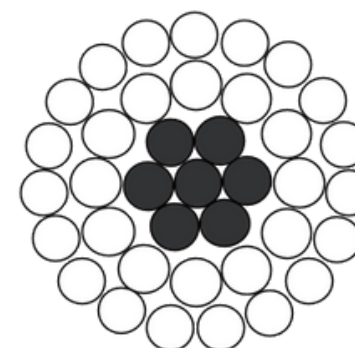


Our conductors comply with or exceed IEC, BS, ASTM, NFC, Din, AS, JIS & CSA International Standards.



Low Loss low creep conductors

Structure diagram: A+SxA



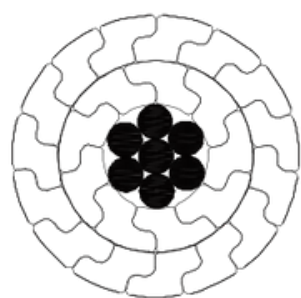
Main Features:

The conductors are made of annealed aluminum, could save about 2% of energy consumption during operation;
Allowable continuous operational temperature is about 100°C, could increase about 50% of current carrying capacity of conductor during operation;
Use high tensile steel with low creep as reinforcing core, could reduce sag to a smaller value; The sag of it at 100°C is almost the same as sag of ordinal conductors at 70°C;
Easy to get fittings and other accessories;
Excellent cost performance ratio.



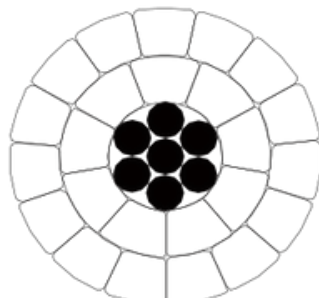
Stock code: 300265

High capacity increasing conductors



AF(SZ) + SxA

X=3,4



AF(TT) + SxA

Main Features:

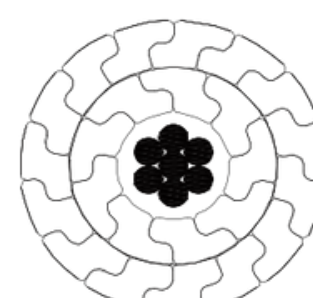
The conductors are made of annealed aluminum, could reduce about 2% of energy consumption during operation;
Allowable continuous operational temperature is about 120°C, could increase about 80% of current carrying capacity of conductor during operation;
Use stress transferred high tensile steel as reinforcing core, could reduce sag to a smaller value; The sag of it at 120°C is almost the same as sag of ordinal conductors at 70°C;
The conductors are smooth in surface, compact in structure, with layer gaps, thus have excellent self-damping performance and better anti-vibration capability; besides, the formed strands are tightly interlocked with each other, could avoiding the risk of strand break or loose;
Easy to get fittings and other accessories;
Excellent cost performance ratio.

Application field:

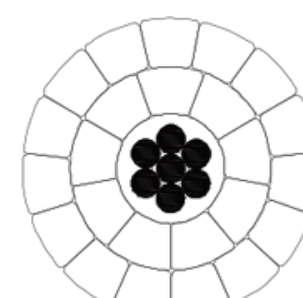
It could be applicable to bottleneck projects of capacity increasing reconstruction projects and new line construction of power transmission, could be used in most of construction and reconstruction projects of lines, and is one of the main types of conductors for new line construction.



High capacity expanding conductors



AF(SZ)Gg+S4A



AF(TT)Gg+S4A

Main Features:

The conductors are made of annealed aluminum, could save about 2% of energy consumption during operation ;
Allowable continuous operational temperature is about 150°C, could increase about 100% of current carrying capacity of conductor during operation;
Use stress transferred high tensile steel as reinforcing core, could reduce sag to a smaller value; The sag of it at 140~150°C is almost the same as sag of ordinal conductors at 70°C;
The conductors are smooth in surface, compact in structure, with layer gap, have excellent self-damping performance and better anti-vibration capability; besides, the formed strands are tightly interlocked with each other, avoid the risk of strand break or loose;
Easy to get fittings and other accessories;
Excellent cost performance ratio.

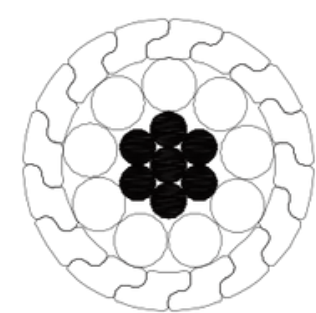
Application field:

It could be applicable to bottleneck projects of capacity increasing reconstruction projects and new line construction with severe vibration, could be applicable to most of construction and reconstruction projects of lines, is one of the main types of conductors for new line construction.

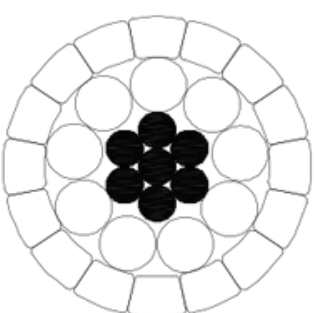


Stock code: 300265

High capacity increasing conductors



AF(SZ) + SxA



AF(TO)+SxA

X=3,4

Main Features:

The conductors are made of annealed aluminum, could save about 2% of energy consumption during operation ;

Allowable continuous operational temperature is about 100°C, could increase about 50% of current carrying capacity of conductor during operation ;

Smaller value for installation. The sag of it at 100°C is almost the same as sag of ordinal conductor at 70°C;

The conductors are smooth in surface, compact in structure;

Easy to get fittings and other accessories;

Excellent cost performance ratio.

Application field:

It could be applicable to bottleneck projects, mainly applicable to new line construction and capacity increasing reconstruction projects with lesser capacity increasing requirement.

Formed aluminum wire, steel reinforced, stranded conductors

Main Features:

Reduction of wind load: Thanks for small size and smooth conductor surface, the wind load at wind speed of 30m/s is much lower than that of round wire concentric lay stranded conductor with same cross area;

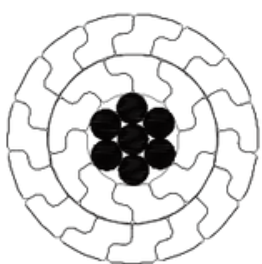
Excellent self-damping characteristics: Because there is more contact surface among formed wires, especially among S-shape and Z-shape formed wires, the self-damping characteristics of the conductor is much better than that of round wire concentric lay stranded conductor, and have good aeolian vibration resistant performance.

Excellent corrosion resistant capability: Especially the conductor with S and Z shape formed wire is a good way for improving corrosion resistant performance of conductors; greatly extend operational life time.

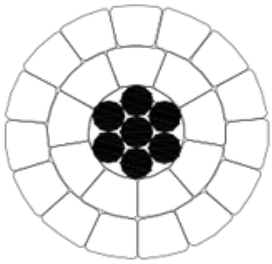
Small risk for individual wire break: due to adopting S-Z shape formed wires in structure, every individual wire is interlocked with together, when break it will never jump out as that for round strand, the conductor could keep original shape as undamaged.

Anti-ice conductor: Due to compact structure and sooth outer surface, super cold water drops, ice and snow will be difficult to get together on conductor surface; effectively reduce the probability of conductor galloping. For conductor with super high tensile steel core, the over load resistant capability will be much better, thus improve performance of conductor operated under ice and snow condition.

Requirements for poles and towers remain not change, not need fittings and other accessories of special structure, easy for construction.



A1F(SZ)+SxA



A1F(TT)+SxA

(X=1.2.3.4)

Application field:

Because the comprehensive performances of the conductor are better than ordinal aluminum conductors steel reinforced product, in all occasions it is a good replacement to ordinal aluminum conductor steel reinforced product. The product could also be applied in harsh environments and special areas such as the areas with frequently typhoon, storm, strong wind, sand storm and area easy to cover ice.



Stock code: 300265

Formed aluminum wire, aluminum-clad steel reinforced, stranded conductors (Conductors with super corrosion resistant performance)

Main Features:

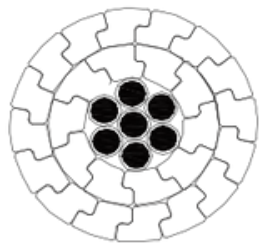
Excellent corrosion resistant capability: Adopt aluminum-clad steel wires as reinforcing core, and covered with grease. Especially the conductor with S and Z shape formed wire structure is a good solution to chemical corrosion, electro chemical corrosion and gap corrosion of conductors; greatly extend operational life time of the conductors.

Excellent self-damping characteristics: Because there is more contact surface among formed wires, especially among S-shape and Z-shape formed wires, the self-damping characteristics of the conductor is far more better than round wire concentric lay stranded conductor, and have good aeolian vibration resistant performance and capability of anti-vibration caused by storm.

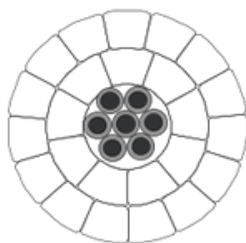
Reduction of wind load: Thanks for small size and smooth conductor surface, the wind load at wind speed of 30m/s is much lower than that of round wire concentric lay stranded conductor with same cross area;

Small risk for individual wire break: due to adopting S-Z shape formed wires in structure, each of individual wire is interlocked together. When break it will never jump out as that for round wire, thus the conductor could keep original shape as undamaged. Especially suitable for application in moist heat area, island and coast area in southern part of China.

The requirements for poles and towers remain not change, not need fittings and other accessories of special structure, easy for construction.



A1F(SZ)+SA1A



A1F(TT)+SA1A

Application field:

Compare with round wire concentric lay stranded conductor, the S-Z shape formed aluminum wire, concentric lay, stranded conductor has the features of small diameter, compact structure, low DC resistance, save energy at operation, larger current carrying capacity, excellent self damping capability and better performance in the environments of chemical corrosion, electro chemical corrosion and gap corrosion, low cost in whole life period; could be used in areas of field, hills, mountains, forests, cities etc, especially suitable for application in island and coast area.

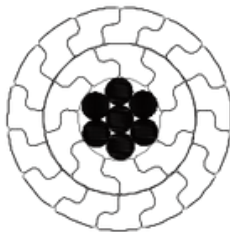
Formed aluminum alloy wire, steel reinforced, stranded conductors (Anti-ice conductors)

Main Features:

With high tensile strength, excellent tension to weight ratio, and good ice over- load capability;

With small diameter, results small ice load and wind load;

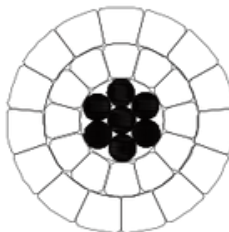
With smooth outer surface, difficult for icing.



A1F(SZ)+SxA

Y=2,3;

x=1,2,3



AyF(TT)+SxA

Application field:

It could be used in areas with ice load and coastal region with strong wind, also could be used for large span application.

Formed aluminum wire, steel reinforced, stranded conductors with one or more gaps (self-damping conductors)

Main Application Field:

Due to gaps in the structure, the conductor has excellent self damping performance, could be used in areas prone to typhoon, storm and sand storm.



conductor with one gap



conductor with two gaps



Stock code: 300265

4 Fluorinated High Temperature Cable



- Qualification** We are qualified to manufacture Military Standarded cables
- Techniques** Our innovative semi-soft coaxial RF cable for mobile substation fulfils the industry's blank page in China; Two of TGC's products listed in Military QPL list; TGC's XETFE cable for aero industry has replaced imported product in massive use. TGC is the one and only private enterprise engaged in the Research of Seamlessly Wrapped Wire
- Standards** TGC participated in the formation of five IEC standards, e.g. IEC 61196-8-1: Coaxial communication cables - Part 8-1: Blank detail specification for semi-flexible cables with polytetrafluoroethylene (PTFE) insulation. TGC also participated in the formation of two industrial standard: SFX-50-1(047), SFX-50-2(086) core coaxial communication cable with PTFE insulation.
- Equipments** World class manufacturing equipments and measurement instruments such as hydraulic Extruders from Jennings(USA), precise high speed weave machine from SPIRKA (Germany), ink jet coding from WIEDENBACH (Germany), a line combined from two extruder in-series for X-ETFE insulation, HP8753E and N5230A Network Analyzer from USA , high and low temperature test chamber, RoHS tester etc.

Product Series



Polytetrafluoroethylene insulation wires High temperature radio frequency coaxial cables

High temperature wires for aircraft purposes Multi core F46 insulation shield wires Polytetrafluoroethylene film insulation wires

MEET CHINA GATE – MEET THE FUTURE



CHINA GATE GENERAL TRADING

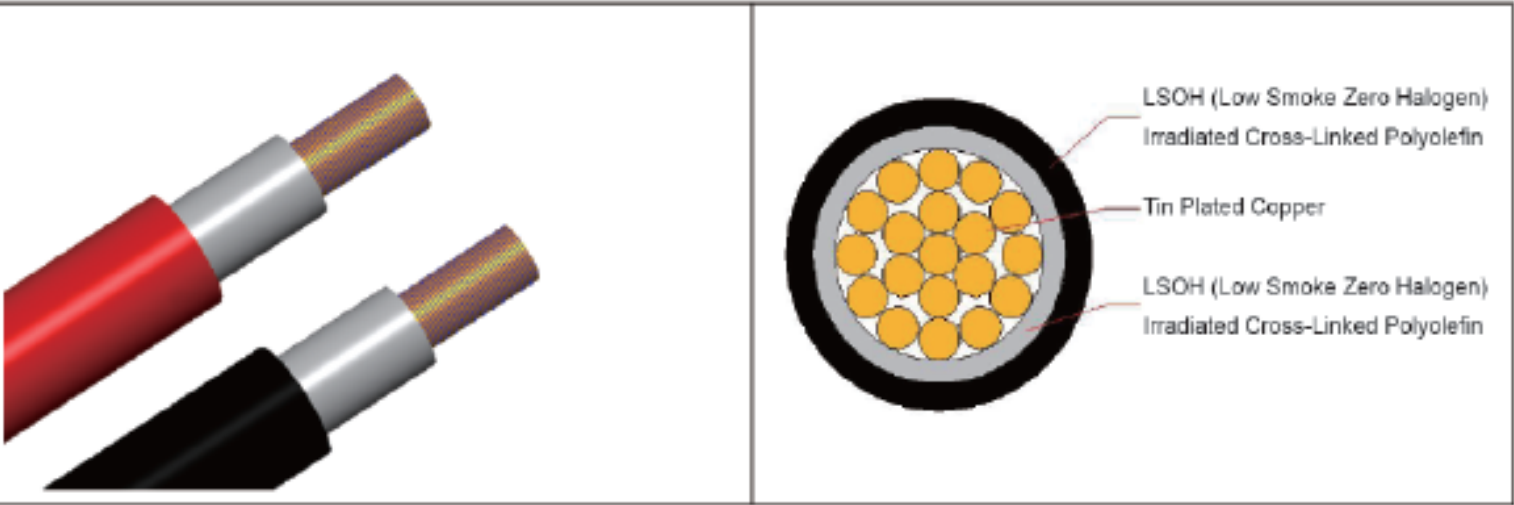
POWER CABLE

CATALOGUE

STOCK CODE: 300265



>> PV1-F Photovoltaic Electric Cable



Application:

Photovoltaic cable is mainly used in photovoltaic systems. The maximum working temperature of cable conductor is 120℃, suitable for ambient temperature: -40℃~+90℃.

Characteristic:

The conductor used in This cable is the fifth kind of soft conductor with the surface of the single wire Tin-plated. The insulation layer and the sheath use LSOH (Low Smoke Zero Halogen) Irradiated Cross-Linked Polyolefin material.

Standard: 2pfg1169:2007

Nominal Cross Section mm²	Maximum Diameter Of Single Wire Within a Conductor mm	Conductor Diameter mm	Minimum Insulation Thickness mm	Insulation Outer Diameter mm	Minimum Sheath Thickness mm	Cable Diameter mm	Cable Weight kg/km	Maximum Allowable Current /A		
								Single-Core Cable Suspended In Air	Single-Core Cable Placed On The Surface Of An Object	Several Cables Placed On The Surface Of An Object
2.5	0.26	2.2	0.5	3.8	0.5	5.4	54.4	41	39	33
4	0.31	2.85	0.5	4.45	0.5	6.05	73.5	55	52	44
6	0.31	3.66	0.5	5.26	0.5	6.86	98.6	70	67	57
10	0.41	4.88	0.5	6.48	0.5	8.08	145.3	98	93	79
16	0.41	5.89	0.5	7.49	0.5	9.09	208.6	132	125	107

>> 30kV and Below Rated Voltage Power Cable



Application:

The cable is suitable for power lines with a rated voltage of 1kv~30kv, mainly used for power transmission in distribution network or for industrial equipment.

Features:

1. The minimum allowable bending radius of the cable is: The minimum allowable bending radius of the cable: 20 times times the diameter of the cable for single core cable; 15 times times the diameter of the cable for multi-core cable.
2. When laying the cables under an ambient temperature higher than 0℃, no prior heating of the cables is required. The laying is not subject to any drop limit.
3. The maximum long-term allowable operating temperature of the cable conductor: 70℃ for PVC sheath, 90℃ for XLPE insulation.
4. When the cable is under short circuit (no more than 5 seconds), the highest temperature of the cable: 160℃ for PVC sheath, 250℃ for XLPE insulation.

Standards:

IEC60502

Xlpe Insulated Pvc Sheath Middle-Voltage Copper Conductor Cable With Double Tape Armors								
Nominal Voltage	8.7/10kV				18/30kV			
	Single Core		Three Core		Single Core		Three Core	
Cross-Sectional Area Of Conductor mm²	Outer Diameter Mm	Weight Kg/Km	Outer Diameter Mm	Weight Kg/Km	Outer Diameter Mm	Weight Kg/Km	Outer Diameter Mm	Weight Kg/Km
25	25.7	1011	50.2	3611	-	-	-	-
35	26.8	1148	52.7	4105	-	-	-	-
50	28.1	1314	55.9	4730	37.5	2227	74.1	6955
70	30.9	1574	59.2	5593	39.5	2539	78.2	8008
95	32.7	1896	63.2	6679	41.3	2904	82.0	9203
120	34.1	2173	66.6	7670	42.7	3215	86.8	11275
150	35.7	2477	69.8	8715	44.7	3609	90.5	12505
185	37.4	3271	73.5	10091	46.3	4051	94.3	14059
240	39.6	3927	78.8	12218	48.7	4740	99.7	16357
300	41.8	4602	83.7	15313	51.3	5484	104.8	18806
400	45.3	5578	92.2	18520	54.7	6491	112.5	22235
500	48.3	6735	98.4	22229	-	-	-	-

NOTE : Armor tape for single core product use non-magnetic stainless steel strip; armor tape for three core product use ordinary galvanized steel

Xlpe Insulated Pvc Sheath Middle-Voltage Aluminum Conductor Cables With Double Tape Armors								
Nominal Voltage	8.7/10kV				18/30kV			
	Single Core		Three Core		Single Core		Three Core	
Cross-Sectional Area Of Conductor mm²	Outer Diameter mm	Weight kg/km	Outer Diameter mm	Weight kg/km	Outer Diameter mm	Weight kg/km	Outer Diameter mm	Weight kg/km
25	25.7	853	50.2	3136	-	-	-	-
35	26.8	929	52.7	3446	-	-	-	-
50	28.1	1022	55.9	3848	37.5	1935	74.1	6073
70	30.9	1152	59.2	4320	39.5	2117	78.2	6736
95	32.7	1309	63.2	4909	41.3	2317	82.0	7433
120	34.1	1439	66.6	5457	42.7	2481	86.8	9062
150	35.7	1577	69.8	6000	44.7	2709	90.5	9791
185	37.4	2145	73.5	6898	46.3	2926	94.3	10665
240	39.6	2440	78.8	7735	48.7	3252	99.7	11873
300	41.8	2737	83.7	9691	51.3	3620	104.8	13184
400	45.3	3193	92.2	11330	54.7	4106	112.5	15044
500	48.3	3689	98.4	13046	-	-	-	-

NOTE : Armor tape for single core product use non-magnetic stainless steel strip; armor tape for three core product use ordinary galvanized steel



>> **URD**



Application:

URD cable is designed to be used for secondary distribution and underground service at 600 volts or less, either direct burial or in ducts. URD maximum conductor temperature is 90°C.

Features:

Aluminum Alloy AA-8030

Insulation is a moisture and heat-resistant black cross-linked polyethylene.

Standards:

URD cable meets or exceeds all applicable requirements of ICEA S-105-692 for cross-linked polyethylene insulated conductors and UL Standard 854 for Type USE-2.

Code	Phase Conductor			Neutral Conductor			Final Diameter		Final Approx. Weight	Ampacity	
Name	AWG or mils	Strands	Insulation Thickness (mils)	AWG or mils	Strands	Insulation Thickness (mils)	inch	mm	lb/ft	Direct Burial	In Duct
Duplex 600V URD											
Bard	8	7	60	8	7	60	0.53	13.5	76	70	55
Clafin	6	7	60	6	7	60	0.60	15.3	102	95	70
Delgado	4	7	60	4	7	60	0.69	17.5	140	125	90
Everett	2	7	60	2	7	60	0.80	20.3	198	187	100
Triplex 600V URD											
Erksine	6	7	60	6	7	60	0.65	16.5	153	95	70
Vassar	4	7	60	4	7	60	0.74	18.9	211	125	90
Stephens	2	7	60	4	7	60	0.85	21.6	269	165	120
Ramapo	2	7	60	2	7	60	0.86	21.9	298	165	120
Brenau	1/0	18	80	2	7	60	1.09	27.7	420	215	160
Bergen	1/0	18	80	1/0	18	80	1.11	28.2	481	215	160
Converse	2/0	18	80	1	18	80	1.18	30.0	520	245	180
Hunter	2/0	18	80	2/0	18	80	1.20	30.4	574	245	180
Hollins	3/0	18	80	1/0	18	80	1.32	33.4	624	280	205
Sweetbriar	4/0	18	80	2/0	18	80	1.40	35.6	749	315	240
Monmoth	4/0	18	80	4/0	18	80	1.41	35.8	836	315	240
Pratt	250	36	95	3/0	18	80	1.57	40.0	912	345	265
Wesleyan	350	36	95	4/0	18	80	1.80	45.8	1181	415	320
Rider	500	36	95	350	36	95	2.04	51.9	1670	495	395
Fairfield	750	58	110	500	36	95	2.48	63.0	2415	615	525
Quadruplex 600V URD											
Tulsa	4	7	60	4	7	60	21.2	0.83	277	125	90
Dyke	2	7	60	4	7	60	28.4	1.12	363	165	120
Wittenberg	2	7	60	2	7	60	29.2	1.15	392	165	120
Notre	1/0	18	80	2	7	60	37.6	1.48	586	215	160
Syracuse	2/0	18	80	1	18	80	40.5	1.60	717	245	180
Davidson	3/0	18	80	3/0	18	80	44.6	1.75	938	280	205
Wake	4/0	18	80	2/0	18	80	47.0	1.85	1040	315	240
Earlham	4/0	18	80	4/0	18	80	47.7	1.88	1127	315	240

>> **XHHW-2**



Applications:

XHHW-2 is designed to be used in air conduit or other recognized raceways for services, feeders and branch circuit wiring as specified in the National Electrical.

XHHW-2 maximum conductor temperature is 90°C.

Features:

AA-8030 Series aluminum alloy conductor

Insulation is a moisture and heat resistant black cross-linked polyethylene.

Standards:

UL44

Conductor Size	Strands	Insulation Thickness		Nominal Diameter		Approx. Net Weight		Ampacity		
(AWG/kcmil)		mils	mm	inch	mm	lb/ft	kg/km	60°C	75°C	90°C
8	7	45	1.14	0.23	5.79	29	44	25	35	40
6	7	45	1.14	0.26	6.68	41	61	40	50	55
4	7	45	1.14	0.31	7.79	60	89	55	65	75
2	7	45	1.14	0.36	9.19	87	129	75	90	100
1	18	55	1.40	0.42	10.64	113	168	85	100	115
1/0	18	55	1.40	0.45	11.54	136	202	100	120	135
2/0	18	55	1.40	0.49	12.54	165	245	115	135	150
3/0	18	55	1.40	0.54	13.68	201	299	130	155	175
4/0	18	55	1.40	0.59	15.04	247	367	150	180	205
250	36	65	1.65	0.66	16.67	297	443	170	205	230
300	36	65	1.65	0.71	17.97	349	520	195	230	260
350	36	65	1.65	0.75	19.07	400	596	210	250	280
400	36	65	1.65	0.79	20.17	452	672	225	270	305
500	36	65	1.65	0.87	22.22	553	823	255	310	350
600	58	80	2.03	0.98	24.86	677	1007	280	340	385
700	58	80	2.03	1.04	26.49	778	1157	300	360	405
750	58	80	2.03	1.07	27.26	828	1233	320	385	435



>> **RHH/RHW-2/USE-2**



Applications:
USE-RHH-RHW-2 is designed to be used in air conduit or other recognized raceways and for direct burial in circuits. Maximum conductor temperature is 90°C.Voltage rating of the conductors is 600V.

Features:
AA-8030 Series aluminum alloy conductor
Insulation is a moisture and heat resistant black cross-linked polyethylene.

Standards:
UL44 for RHH/RHW-2
UL854 for USE-2

Conductor Size (AWG/kcmil)	Strands	Insulation Thickness		Nominal Diameter		Approx.Net Weight		Ampacity		
		mils	mm	inch	mm	lb/ft	kg/km	60℃	75℃	90℃
8	7	60	1.52	0.26	6.60	36	53	25	35	40
6	7	60	1.52	0.29	7.49	48	72	40	50	60
4	7	60	1.52	0.34	8.60	69	102	55	65	75
2	7	60	1.52	0.39	10.00	97	144	75	90	100
1	18	80	2.03	0.47	11.97	133	198	85	100	115
1/0	18	80	2.03	0.51	12.87	156	233	100	120	135
2/0	18	80	2.03	0.55	13.87	187	279	115	135	150
3/0	18	80	2.03	0.59	15.01	226	336	130	155	175
4/0	18	80	2.03	0.64	16.37	274	407	150	180	205
250	36	95	2.41	0.72	18.27	334	496	170	205	230
300	36	95	2.41	0.77	19.57	388	578	190	230	265
350	36	95	2.41	0.81	20.67	442	657	210	250	290
400	36	95	2.41	0.86	21.77	495	737	225	270	305
500	36	95	2.41	0.94	23.82	600	894	255	310	350
600	58	110	2.79	1.04	26.47	729	1085	280	340	385
700	58	110	2.79	1.11	28.07	833	1240	305	365	410
750	58	110	2.79	1.14	28.87	888	1318	320	385	435

>> **Service Entrance (SER)**



Applications:
SE cable is designed to be used as an above ground service entrance cable, a panel feeder and in branch circuits. Maximum conductor temperature is 90°C.Voltage rating of the conductors is 600V.

Features:
AA-8030 Series aluminum alloy conductor
Insulation is a moisture and heat resistant black cross-linked polyethylene.
Can be used in wet and dry locations.
Sunlight resistant.

Standards:
UL44 for type XHHW-2 conductions
UL854 for SER

Conductor Size	Stranding		Nominal Diameter		Approx.Net Weight		Ampacity			
	Phas	Neutral	inch	mm	lb/ft	kg/km	dwelling	60℃	75℃	90℃
Two-conductor with bare neutral										
8-8-8	7	7	0.51	13.0	109	162		30	40	45
6-6-6	7	7	0.59	14.9	147	218		40	50	60
4-4-6	7	7	0.65	16.5	187	278		55	65	75
4-4-4	7	7	0.68	17.3	204	303		55	65	75
2-2-4	7	7	0.76	19.4	264	392	100	75	90	100
2-2-2	7	7	0.80	20.4	289	430	100	75	90	100
1-1-1	18	18	0.91	23.1	367	546	110	85	100	115
1/0-1/0-2	18	18	0.94	23.8	397	591	125	100	120	135
1/0-1/0-1/0	18	18	0.99	25.1	437	651	125	100	120	135
2/0-2/0-1	18	18	1.02	25.9	478	711	150	115	135	150
2/0-2/0-2/0	18	18	1.07	27.2	527	785	150	115	135	150
4/0-4/0-2/0	18	18	1.21	30.8	703	1045	200	150	180	205
4/0-4/0-4/0	18	18	1.28	32.6	780	1161	200	150	180	205
Three-conductor with bare neutral										
8-8-8-8	7	7	0.58	14.8	144	215		30	40	45
6-6-6-6	7	7	0.67	17.0	195	290		40	50	60
4-4-4-6	7	7	0.75	19.0	265	379		55	65	75
2-2-2-4	7	7	0.87	22.2	360	535	100	75	90	100
1/0-1/0-1/0-2	18	7	1.08	27.4	545	811	125	100	120	135
2/0-2/0-2/0-1	18	18	1.17	29.7	655	975	150	115	135	150
3/0-3/0-3/0-1/0	18	18	1.27	32.3	793	1180	175	130	155	175
4/0-4/0-4/0-2/0	18	18	1.39	35.4	965	1436	200	150	180	205
250-250-250-3/0	36	18	1.54	39.1	1162	1730	225	170	205	230
300-300-300-4/0	36	18	1.66	42.3	1369	2037	250	190	230	255
Four-conductor with bare neutral										
2-2-2-2-4	7	7	0.99	25.1	456	678	100	75	90	100
2/0-2/0-2/0-2/0-1	18	7	1.32	33.6	833	1240	150	115	135	150
4/0-4/0-4/0-4/0-2/0	18	18	1.58	40.0	1228	1827	200	150	180	205
250-250-250-3/0	36	18	1.74	44.2	1478	2199	225	170	205	230
300-300-300-4/0	36	18	1.88	47.7	1738	2586	250	190	230	255



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