Figure-8 Aerial Installation Cable

OptoWire AM-L-OR

Fiber count	KN	Stell wire
1-4 FO	0.5 - 3 KN	1

Description

Fig 8 outdoor cable with messenger, suitable for pole and wall installation .

1.1 Scope

This listed specification covers the design requirements and performance standard for the supply of optical fiber cable in the industry. It also includes Optowire premium designed cable with optical, mechanical and geometrical characteristics

1.2 Cable name

OptoWire AM-L OR(A)(PA)(1-4)FO-0.5/1/1/3KN

1.3 Cable description

OptoWire cable possesses high tensile strength and flexibility in compact cable sizes. At the same time, it provides excellent optical transmission and physical performance.

1.4 Quality

Excellent quality control is achieved through intense in-house quality check and stringent audit acceptance by ISO 9001.

1.5 Reliability

Initial and periodic product qualification tests for performance and durability are performed rigorously to ensure product reliability.

1.6 Reference

The cable which OptoWire offered are designed, manufactured and tested according to international standards as follows:

IEC 60793-1	Optical fiber Part 1: Generic specifications
IEC 60793-2	Optical fiber Part 2: Product specifications
IEC 60794-2	Optical fiber cables-Part 4: Sectional specification-Aerial optical cables along electrical power lines
ITU-T G.652	Definition and test methods for the relevant parameters of single-mode fibers
ITU-T G.657	Characteristics of a bending-loss insensitive single-mode optical fiber
EIA/TIA 598-C	Color code of fiber optic cables

2. Optical Fiber

The optical fiber is made of high pure silica and germanium doped silica. UV curable acrylate material is applied over fiber cladding as optical fiber primary protective coating. The detail data of optical fiber performance are shown in the following table.

G.657A2

Category	Description	Specifications	
		Before cabling	After cabling
Optical Specifications	Attenuation @1310 nm	≤0.35dB/km	≤0.40dB/km
	Attenuation @1550 nm	≤0.21dB/km	≤0.30dB/km
	Zero Dispersion Wavelength	1300~1324 nm	
	Zero Dispersion Slope	≤0.092 ps/nm2·km	
	Macro bending Loss: (10 turns; Φ30 mm) @1550 nm (10 turns; Φ30 mm) @1625 nm (1 turns; Φ20 mm) @1550 nm (1 turns; Φ20 mm) @1625 nm (1 turns; Φ15 mm) @1550 nm (1 turns; Φ15 mm) @1625 nm	 ≤ 0.03 dB ≤ 0.10 dB ≤ 0.10 dB ≤ 0.20 dB ≤ 0.50 dB ≤ 1.00 dB	
	Mode Field Diameter @1310 nm	8.6±0.4μm	
Dimensional Specifications	Cladding Diameter	125±1μm	
	Core/cladding concentricity error	≤0.5μm	
	Cladding Non-Circularity	≤1.0 %	
Mechanical Specifications	Proof stress	≥1.05%	

3. Cable structure

OptoWire AM-L OR(A)(1-4)FO-0.5KN

Dimension and Properties:

Physical	Fiber count	1	2	4
	Messenger wire	(0.4±0.05mm)*7		
	Loss tube diameter	2.2±0.2mm		
	Aramid yarns content	Approx 6000D		
	Cable OD (W*H)	5.5*10.5mm±5%		
	Cable weight	55kg/km□15%		
	Operation temperature range	-20 deg C to + 70 deg C		
	Installation temperature range	0 deg C to + 40 deg C		
	Transport and storage temperature range	-20 deg C to + 70 deg C		
Mechanical	Max. tensile load	0.5KN		
	Crush resistance	800 N/10cm		
	Minimal installation bending radius	20 x OD		
	Minimal operation bending radius	15 x OD		

Note: The weight of zinc coating of uncoated wire surface shall be no less than 20g/m2

Color code scheme:

Fiber color	Blue	Orange	Green	Brown

3. Cable structure

OptoWire AM-L OR(PA)(1-4)FO-1KN

Dimension and Properties:

Physical	Fiber count	1	2	4
	Messenger wire	(0.6±0.05mm)*7		
	Loss tube diameter	2.2±0.2mm		
	Aramid yarns content	Approx 2840D		
	Cable OD (W*H)	5.4*11.0mm±5%		
	Cable weight	70Kg/km±15%		
	Operation temperature range	-20 deg C to + 70 deg C		
	Installation temperature range	0 deg C to + 40 deg C		
	Transport and storage temperature range	-20 deg C to + 70 deg C		
Mechanical	Max. tensile load	1KN		
	Crush resistance	800 N/10cm		
	Minimal installation bending radius	20 x OD		
	Minimal operation bending radius	15 x OD		

Note: The weight of zinc coating of uncoated wire surface shall be no less than 20g/m2

Color code scheme:

Fiber color	**Blue**	**Orange**	**Green**	**Brown**

Cable structure

OptoWire AM-L OR(A)(1-4)FO-1KN

Dimension and Properties:

Physical	Fiber count	1	2	4
	Messenger wire	(0.4±0.05mm)*7		
	Loss tube diameter	2.2±0.2mm		
	Aramid yarns content	Approx 8520D		
	Cable OD (W*H)	5.5*10.5mm±5%		
	Cable weight	57kg/km±15%		
	Operation temperature range	-20 deg C to + 70 deg C		
	Installation temperature range	0 deg C to + 40 deg C		
	Transport and storage temperature range	-20 deg C to + 70 deg C		
Mechanical	Max. tensile load	1KN		
	Crush resistance	800 N/10cm		
	Minimal installation bending radius	20 x OD		
	Minimal operation bending radius	15 x OD		

Color code scheme:

Fiber color	Blue	Orange	Green	Brown

OptoWire AM-L OR(A)(1-4)FO-3KN

Physical	Fiber count	1	2	4
	Messenger wire	(1.0±0.05mm)*7		
	Loss tube diameter	2.2±0.2mm		
	Aramid yarns content	Approx 6000D		
	Cable OD (W*H)	5.5*12.3mm±5%		
	Cable weight	105kg/km□15%		
	Operation temperature range	-20 deg C to + 70 deg C		
	Installation temperature range	0 deg C to + 40 deg C		
	Transport and storage temperature range	-20 deg C to + 70 deg C		
Mechanical	Max. tensile load	3KN		
	Crush resistance	800N/10cm		
	Minimal installation bending radius	20 x OD		
	Minimal operation bending radius	15 x OD		

Note: The weight of zinc coating of uncoated wire surface shall be no less than 20g/m2

Color code scheme:

Fiber color	Blue	Orange	Green	Brown

4. Test Requirements

Approved by various professional optical and communication product institution, OptoWire also conduct various in-house testing in its own Laboratory and Test Center. OptoWire also conduct test with special arrangement with the Chinese Government Ministry of Quality Supervision & Inspection Center of Optical Communication Products (QSICO). OptoWire possess the technology to keep its fiber attenuation loss within Industry Standards.

The cable is in accordance with applicable standard of cable and requirement of customer. The following test items are carried out according to corresponding reference.

Routine tests of optical fiber	
Mode field diameter	IEC 60793-1-45
Core/clad concentricity	IEC 60793-1-20
Cladding diameter	IEC 60793-1-20
Cladding non-circularity	IEC 60793-1-20
Attenuation coefficient	IEC 60793-1-40
Chromatic dispersion	IEC 60793-1-42
Cable cut-off wavelength	IEC 60793-1-44

4.1 Tension Loading test	
Test Standard	IEC 60794-1-21 E1
Sample length	No less than 50 meters
Load	Max. tension load
Duration time	1 minute
Test results	Fiber strain:≤0.6%
	Additional attenuation is reversible

4.2 Crush/Compression Test	
Test Standard	IEC 60794-1-21 E3
Load	1000N/10cm
Duration time	1 minute
Test number	1
Test results	Additional attenuation:≤0.1dB
	No damage to outer jacket and inner elements

4.3 Impact Resistance Test	
Test Standard	IEC 60794-1-21 E4
Impact energy	1J
Radius	300mm
Impact points	3
Impact number	1
Test result	Additional attenuation:≤0.1dB
	No damage to outer jacket and inner elements

4.4 Bend Test	
Test Standard	IEC 60794-1-21 E6
Mandrel diameter	20 X diameter of cable
Turn number	25 cycles
Test result	Additional attenuation:≤0.1dB
	No damage to outer jacket and inner elements

4.5 Temperature cycling Test	
Test Standard	IEC 60794-1-22 F1
Temperature step	-20 C to +70 C
Time per each step	12 hrs
Cycles	2
Test result	"Attenuation variation for reference value (the attenuation to be

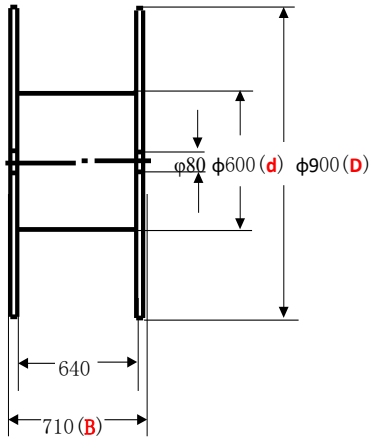
4.6 Water penetration Test	
Test Standard	IEC 60794-1-22 F5 (except the messenger part)
Height of water column	1m
Sample length	3m
Test time	24 hrs
Test result	No water leakage from the opposite of the sample

5. Packing and Drum

5.1 OptoWire cables are coiled on bake lite, wooden or ironwood drum. During transportation, right tools should be used to avoid damaging the package and to handle with ease. Cables should be protected from moisture; kept away from high temperature and fire sparks; protected from over bending and crushing; protected from mechanical stress and damage.

Wooden drum

OptoWire Cable	D*d*B mm （weights kg） D: including seal plate thickness	
Length Type	2Km/reel	4Km/reel
AM-L-OR(A)/(PA)-(0.5-1)KN	900*600*710	1000*500*710
AM-L-OR(A)-3KN	900*500*710	1150*600*710



Description	Value
Flange diameter (mm)	900 （0~+10）
Barrel diameter (mm)	600 （±10）
Outer diameter width (mm)	710 （-10~0）
Inner diameter width (mm)	640 （±10）
Shaft hole diameter (mm)	80 （0~+3）

Note: The drum size & cable weight as above is estimated and final size & weight shall be confirmed before Shipment.

The plywood drum should be stored in a dry condition and no raining area

5.2 The color of cable marking is black or other colors. (The printing shall be carried out at interval of 1 meter on the outer sheath of cable) The inner end of cable is then sealed with heat shrinkable end cap to prevent ingress of water and is made available for testing. The outer end of cable is equipped with heat shrinkable end cap. Outer sheath marking legend can be changed according to user's requests.

5.3 Outdoor cable packing Bakelite, wooden or ironwood drum. Strong wooden batten protection