

# TECHNICAL SPECIFICATION

## ALANTEK OPTICAL FIBER

### FIG8 SERIES FTTH DROP CABLE

#### 1. GENERAL DESCRIPTION

##### 1.1 SCOPE

This specification covers the design and performance requirements for the supply of optical fiber cable which include optical, mechanical and geometrical characteristics.

Cable type	Application
FTTH	Self-Supporting Covered Wire cable

##### 1.2 CABLE DESCRIPTION

Cable is a design that has high tensile strength and flexibility in a compact cable size. Our loose tube cable provides excellent optical transmission and physical performance.

##### 1.3 QUALITY

Our ensures a continuing level of quality in our cable products through several quality control programs including ISO 9001.and all the materials have passed REACH and ROHS.

##### 1.4 RELIABILITY

Our ensures product reliability through rigorous qualification testing of each product family. Both initial and periodic qualification testing are performed to assure the cable's performance and durability in the field environments.

## 1.5 REFERENCE

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

IEC 60794-1-1	Optical fiber cables. Part 1: Generic specification
IEC 60794-1-2	Generic specification- basic optical cable test procedures
IEC 60793-3	Outer cables- sectional specification
IEC 60794-3-20	Outdoor cables- family specification for optical self-supporting aerial
EIA/TIA 598 B	Color code of fiber optic cables
ITU-T G.650	Definition and test methods for the relevant parameters of single-
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

## 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.

This fiber use special spun device successfully controlled the value of PMD, and make sure that it keeps stable in cabling.

Approved by optical communication products ministry of quality supervision and inspection center, the connection between OFS fiber in and outside is good .The single-end connect-loss won't be over 0.1 dB and the double-end connect-loss is all little than 0.05dB.

Apply to non-relay communication network. Features: proof test >1%

### G657A1 In cable

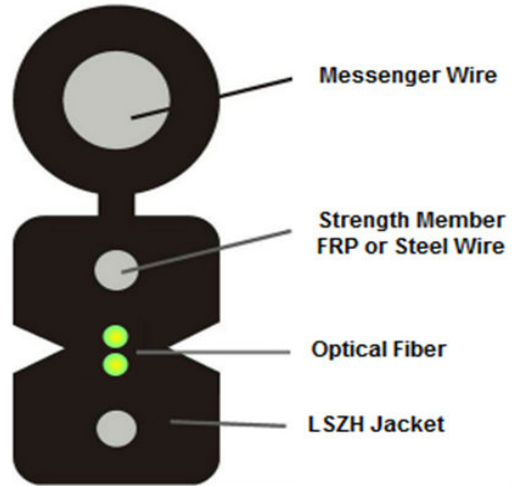
CATEGORY	DESCRIPTION	SPECIFICATIONS	
		BEFORE BENDING	AFTER BENDING
Optical Specification	Attenuation @ 1310 nm	≤0.34 dB/km (max.)	≤0.36 dB/km (max.)
	Attenuation @ 1550 nm	≤0.20 dB/km (max.)	≤0.22 dB/km (max.)
	Attenuation @ 1625 nm	≤0.23dB/km	≤ 0.25 dB/km
	Zero Dispersion Wavelength	1300~1324 nm	
	Zero Dispersion Slope	≤ 0.090 ps/nm <sup>2</sup> ·km	
	PMD Link value (M=20cables Q=0.01% ) max. PMD <sub>Q</sub>	0.2 ps/√km	
	Cable Cutoff Wavelength (λ <sub>cc</sub> )	≤1260 nm	
	Macro bending Loss (1 turn; Φ32 mm) @1550 nm	≤ 0.05 dB	
	(100 turns; Φ60 mm) @1625 nm	≤ 0.05 dB	
	(100 turns; Φ50 mm) @1310 &@1625 nm	≤ 0.05 dB	
Mode Field Diameter	@1310 nm	9.2±0.4μm	
	@1550 nm	10.4±0.5μm	
Dimensional Specifications	Cladding Diameter	125 ±0.7μm	
	Core/clad concentricity error	≤0.5μm	
	Cladding Non-Circularity	≤1.0%	
Mechanical Specifications	Proof stress	≥0.69Gpa	



### 3. CABLE STRUCTURE

#### 3.1 CABLE TYPE : FTTH AERIAL SELF-SUPPORT

3.1.1 DIMENSION AND PROPERTIES			
GENERAL PROPERTIES		UNIT	NOM VALUE
Fiber count (G.657A1)		PC	2 -4
Fiber color		Blue / Orange	
Cable diameter		mm	
Messenger Wire	Material		Steel
	Diameter	mm	1.0
Strength Member	Material		FRP
	Diameter	mm	0.45
Outer sheath	Thickness	mm	
	Material		LSZH
Tensile		N	300/600
Crash		N/100mm	2200/1100



Remark: The weight of zinc coating of steel wire surface shall be no less than 20 g/m<sup>2</sup>. Strand shall have a left lay.

3.1.2 WORKING CONDITIONS		
Temperature range	Transport and storage:- 30°C to +60°C	Min Bending Radius
	Installation:-30°C to +60°C	Installation: 20 x OD
	Operation:-40°C to +60°C	Operation: 10 x OD

Note: 1. the nominal outer diameter may vary by ± 5%. 2. The nominal cable weight may vary by ±10%.

3.1.3 FIBERS AND TUBE COLOR CODE SCHEME: according to EIA/TIA 598B						
Fiber color	Blue	Orange	Green	Brown	Grey	White
Tube color	Blue	Orange	Green	Brown	Grey	White
Fiber color	Red	Black	Yellow	Violet	Pink	Aqua
Tube color	Red	Black	Yellow	Violet	Pink	Aqua

#### 3.1.4. MAX REEL LENGTH: 4000m / DRUM.



## 4. TEST REQUIREMENTS

The cable is tested in accordance with applicable standard of cable and requirement of customer.

The following test items are carried out according to corresponding reference.

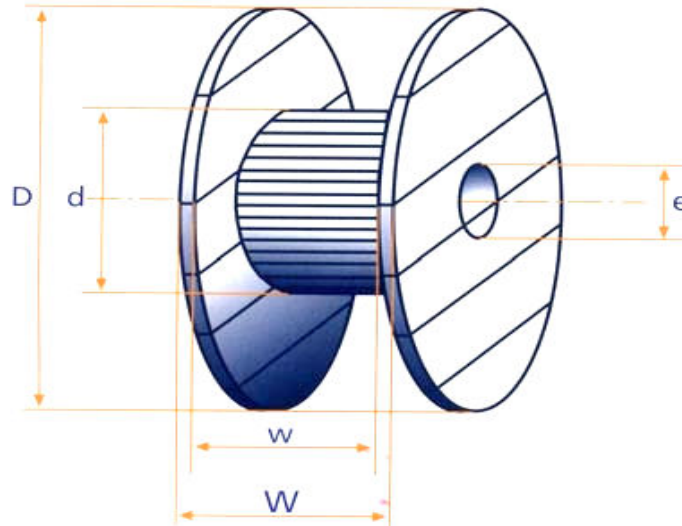
ITEM	PERIMETER	REFERENCE
1.0	Attenuation coefficient	IEC 60793-1-40
2.0	Chromatic dispersion	IEC 60793-1-42
3.0	Mode field diameter	IEC 60793-1-45
4.0	Cladding diameter	IEC 60793-1-20
5.0	Cladding non-circularity	IEC 60793-1-20
6.0	Cable cutoff wavelength	IEC 60793-1-44

TESTING OF CABLE AFTER INSTALLATION			
1.0	Tensile Test	IEC-60794-1-E1	Max. allowable pulling force: installation tensile; sample length: no less than 50 meters, time: 10 minutes; Fiber strain at max. load : max. 0.33 %  No damage to the outer jacket and inner elements. Reversible
2.0	Crush test	IEC-60794-1-E3	Load: short time crush strength, time: 5 minutes, length: 100 mm, number of tests: 3; No damage to the outer jacket and inner elements. Reversible
3.0	Impact test	IEC-60794-1-E4	Impact energy: 3J , radius: 10.0 mm, impact points: 3 Number of impacts: 1 No breakage of the optical fiber, No splits or cracks in the outer jacket. Attenuation increase $\leq 0.1\text{dB}$ , reversible
4.0	Repeated bending test	IEC-60794-1-E6	1m cable length, bending radius: 20 times cable's diameter. 25 cycles, duration of cycle: 2s. No damage to the outer jacket and inner elements. Reversible
5.0	Torsion test	IEC-60794-1-E7	2m cable length, $\pm 180$ degrees, 5cycles; no damage to the outer jacket Attenuation increase $\leq 0.1\text{dB}$ , reversible
6.0	Bending test	IEC-60794-1-E11	Diameter of mandrel: $20 \times D$ , number of turns/helix: 4 number of cycles: 3 , No damage to the outer jacket and inner elements (20 oC). reversible
7.0	Temperature cycling test	IEC-60794-1-F1	Temperature step: $+20\text{oC} \rightarrow -40\text{oC} \rightarrow +70\text{oC} \rightarrow -40\text{oC} \rightarrow +70\text{oC} \rightarrow +20\text{oC}$ , time per each step: 12 hrs, number of cycles: 2 cycles they shall be no change in attenuation variation for reference value (the attenuation to be measured before test at $+20 \pm 3 \text{ oC}$ ) - reversible
8	Water penetration test	IEC-60794-1-F5	Water height: 1 m, sample length: 3m, duration of test: 24 hrs. - No water leakage at the end of the sample Three 0.3m samples suspended vertically in a climate chamber, raised temperature to $+70^\circ\text{C}$ .
9.0	Drip test	IEC-60794-1-E14	no filling compound shall drip from tubes after 24 hr



## 5. PACKING AND DRUM

6.1 Our cables are packed in carton, coiled on Bakelite & wooden reel. During transportation, right tool should be used to avoid damaging the package, and handle carefully. Cables should be protected from moisture; Cables should be kept away from high temperature condition and spark; Cables should be protected from over bending and crushing; Cables should be protected from mechanical damage.



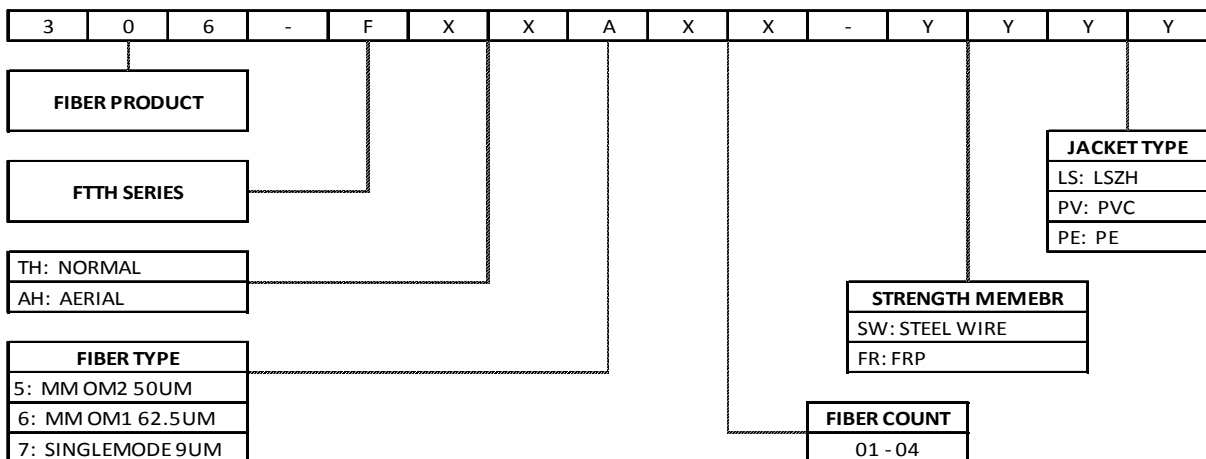
6.2 The color of marking is white.( At every meter, the outer sheath of the fiber cable shall be printed. The inner end of cable is sealed with heat shrinkable end cap to prevent ingress of water and is made available for testing. The outer end of the cable is also equipped with heat shrinkable end. outer sheath marking legend can be customised accordingly to user's request.

6.3 Outdoor cable packing

Bakelite & wooden drum

Strong wooden batten protection

## 5. ORDERING INFORMATION



306-FAH7XX-SWLS

XX-F Singlemode FTTH Aerial Self-Support Fiber Steel Wire Strength Member LSZH

306-FAH7XX-FRLS

XX-F Singlemode FTTH Aerial Self-Support Fiber FRP Strength Member LSZH