



MAINTRONICS

Specification

All-Dielectric Self-Supporting Fiber Cable

1. GENERAL

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 premium designed cable with optical, mechanical and geometrical characteristics.

Cable type	Application
ADSS-URBANO- xG.652D	Self-supporting aerial installation cable

1.2 CABLE DESCRIPTION

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

1.3 QUALITY

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

1.4 RELIABILITY

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

1.5 REFERENCE

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

ITU-T G.652	Characteristics of a single-mode optical fiber and cable
IEC 60794-1-1	Fiber optic cables, part 1-1: Generic General Specification
IEC 60794-1-2	Fiber optic cables, part 1-2: Generic specification: basic optical cable test procedure.
IEC 60794-3	Fiber optic cables, part 3: Sectional specifications: outdoor cables.
IEC 60794-4-20	Optical fiber cables-Part 4-20: Aerial optical cables along electrical power lines-Family specification for ADSS(All Dielectric Self Supported) optical cables

2. OPTICAL FIBER

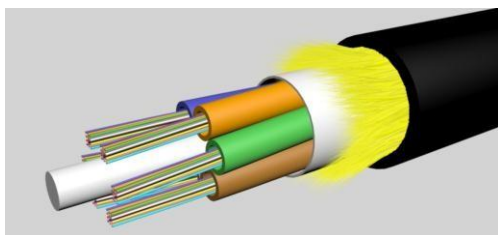
The optical fiber is made of high pure silica and germanium doped silica. UV curable acrylate material is applied over fiber cladding as optical fiber primary protective coating. The detail data of optical fiber performance are shown in the following table.

G.652D Fiber in Cable

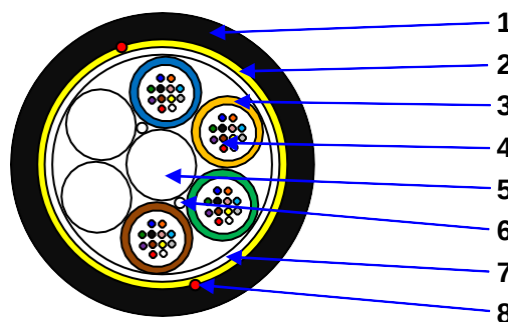
Category	Description	Specifications
Optical Specifications	Attenuation @1310 nm	≤ 0.35 dB/km
	Attenuation @1550 nm	≤ 0.21 dB/km
	Attenuation @1625 nm	≤ 0.25 dB/km
	Point discontinuity @1310&1550nm	≤ 0.05 dB
	Attenuation uniformity @1310&1550nm	≤ 0.05 dB/km
	Zero Dispersion Wavelength	1300~1324 nm
	Zero Dispersion Slope	≤ 0.091 ps/nm ² ·km
	Chromatic Dispersion @1285~1340nm @1550 nm @1625 nm	≤ 3.2 ps/nm·km ≤ 18 ps/nm·km ≤ 22 ps/nm·km
	PMD (Polarization Mode Dispersion)	Individual value ≤ 0.2 ps/√km Link value ≤ 0.1 ps/√km
	Cable Cutoff Wavelength (λ_{cc})	≤ 1260 nm
	Macro bending Loss (100 turns; $\Phi 60$ mm) @1310 nm (100 turns; $\Phi 60$ mm) @1550 nm (10 turns; $\Phi 50$ mm) @1310 nm (10 turns; $\Phi 50$ mm) @1550 nm (1 turn; $\Phi 32$ mm) @1550 nm	≤ 0.05 dB ≤ 0.05 dB ≤ 0.05 dB ≤ 0.05 dB ≤ 0.05 dB
	Mode Field Diameter @1310 nm @1550 nm	$9.1 \pm 0.4 \mu\text{m}$ $10.4 \pm 0.5 \mu\text{m}$
Dimensional Specifications	Cladding Diameter	$125 \pm 1 \mu\text{m}$
	Core/clad Concentricity Error	$\leq 0.6 \mu\text{m}$
	Cladding Non-Circularity	$\leq 1.0\%$
	Coating Diameter	Uncolored: $245 \pm 7 \mu\text{m}$ Colored: $250 \pm 15 \mu\text{m}$
	Coating/cladding Concentricity Error	$\leq 12 \mu\text{m}$
	Fiber Curl	$\geq 4\text{m}$
Mechanical Specifications	Proof stress	$\geq 0.69\text{Gpa}$

3. CABLE STRUCTURE

3.1 CABLE TYPE: ADSS-SS-URBANO-12/24/48G.652D



Picture is only for reference



Technical Characteristics

- The unique extruding technology provides the fibers in the tube with good flexibility and bending endurance
- The unique fiber excess length control method provides the cable with excellent mechanical and environmental properties
- Multiple water blocking material filling provides dual water blocking function
- Provide good tension performance

Construction :

1. Outer sheath (HDPE)
2. Strength member (Aramid yarns)
3. Loose tube
4. Fiber and jelly
5. Central strength member (FRP)
6. Water blocking yarns
7. Water blocking tape
8. Rip cord (*2, red)

Dimension and Properties

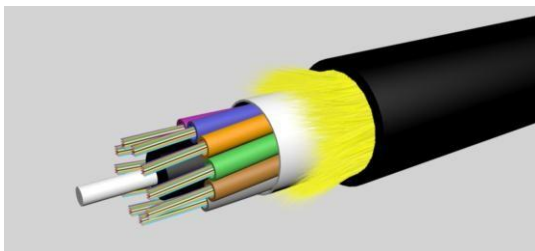
Physical	Fiber count (G.652D)	12	24	48
	No of loose tube / filler	2/4	4/2	4/2
	Fiber No. per tube	6	6	12
	Loose tube diameter	2.4 ± 0.2mm		
	Central strength member diameter	2.6 ± 0.05mm		
	Outer sheath thickness	Nom 1.5mm		
	Cable OD (±5%)	11.0mm		
	Cable weight (±15%)	95kg/km		
	Operation temperature range	-40 deg C to + 70 deg C		
	Installation temperature range	-10 deg C to + 60 deg C		
	Transport and storage temperature range	-40 deg C to + 70 deg C		
Mechanical	Max. span length	120m		
	Installation SAG	1.0%		
	Climate condition	Max. wind speed: 25m/s, ice coating: 0mm		
	Max. tensile load	2900N		
	Crush resistance	2200N/10cm		
	Minimal installation bending radius	20 x OD		
	Minimal operation bending radius	10 x OD		

Color code scheme:

Fiber color	blue	orange	green	brown	gray	white	red	black	yellow	violet	pink	aqua
Tube color	blue	orange	green	brown	/	/	/	/	/	/	/	/

Remark: the sheath thickness is not including the rip cord position.

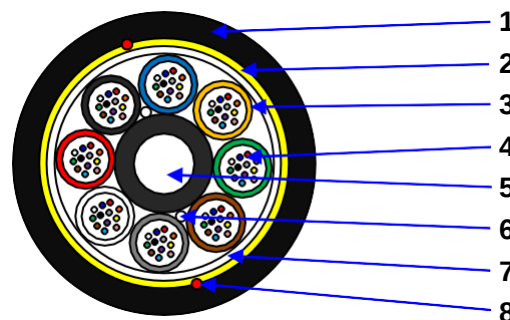
3.2 CABLE TYPE: ADSS-SS-URBANO-96/144G.652D



Picture is only for reference

Technical Characteristics

- The unique extruding technology provides the fibers in the tube with good flexibility and bending endurance
- The unique fiber excess length control method provides the cable with excellent mechanical and environmental properties
- Multiple water blocking material filling provides dual water blocking function
- Provide good tension performance



Construction :

1. Outer sheath (HDPE)
2. Strength member (Aramid yarns)
3. Loose tube
4. Fiber and jelly
5. Central strength member (Coated FRP)
6. Water blocking yarns
7. Water blocking tape
8. Rip cord (*2, red)

Dimension and Properties

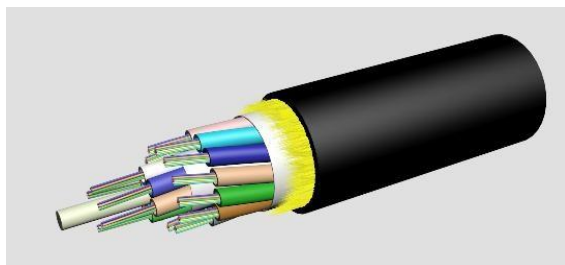
Physical	Fiber count (G.652D)	96	144
	No of loose tube / filler	8/0	12/0
	Fiber No. per tube	12	
	Loose tube diameter	2.4 ± 0.2mm	
	Central strength member diameter	4.1 ± 0.2mm (FRP 2.8 ± 0.05mm)	7.2 ± 0.2mm (FRP 3.0 ± 0.05mm)
	Outer sheath thickness	Nom 1.5mm	
	Cable OD (± 5%)	12.4mm	15.5mm
	Cable weight (± 15%)	121kg/km	186kg/km
	Operation temperature range	-40 deg C to + 70 deg C	
	Installation temperature range	-10 deg C to + 60 deg C	
	Transport and storage temperature range	-40 deg C to + 70 deg C	
Mechanical	Max. span length	120m	
	Installation SAG	1.0%	
	Climate condition	Max. wind speed: 25m/s, ice coating: 0mm	
	Max. tensile load	2900N	
	Crush resistance	2200N/10cm	
	Minimal installation bending radius	20 x OD	
	Minimal operation bending radius	10 x OD	

Color code scheme:

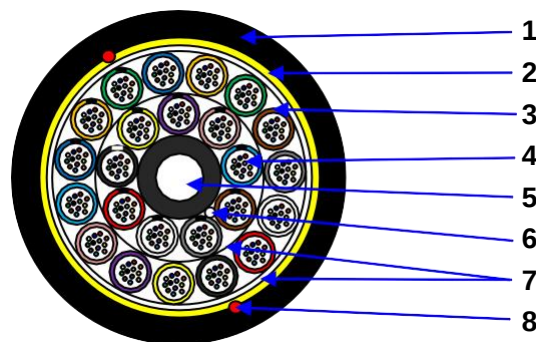
Fiber color	blue	orange	green	brown	gray	white	red	black	yellow	violet	pink	aqua
Tube color	blue	orange	green	brown	gray	white	red	black	yellow	violet	pink	aqua

Remark: the sheath thickness is not including the rip cord position.

3.3.CABLE TYPE: ADSS-SS-URBANO-288G.652D



Picture is only for reference



Technical Characteristics

- The unique extruding technology provides the fibers in the tube with good flexibility and bending endurance
- The unique fiber excess length control method provides the cable with excellent mechanical and environmental properties
- Multiple water blocking material filling provides dual water blocking function
- Provide good tension performance

Construction :

1. Outer sheath (HDPE)
2. Strength member (Aramid yarns)
3. Loose tube
4. Fiber and jelly
5. Central strength member (Coated FRP)
6. Water blocking yarns
7. Water blocking tape
8. Rip cord (*2, red)

Dimension and Properties

Physical	Fiber count (G.652D)	288
	No of loose tube / filler	Inner later:9/0, outer layer:15/0
	Fiber No. per tube	12
	Loose tube diameter	2.4±0.2mm
	Central strength member diameter	4.7±0.2mm (FRP 3.0±0.05mm)
	Outer sheath thickness	Nom 1.7mm
	Cable OD (±5%)	18.4mm
	Cable weight (±15%)	250kg/km
	Operation temperature range	-40 deg C to + 70 deg C
	Installation temperature range	-10 deg C to + 60 deg C
	Transport and storage temperature range	-40 deg C to + 70 deg C
Mechanical	Max. span length	120m
	Installation SAG	1.0%
	Climate condition	Max. wind speed: 25m/s, ice coating: 0mm
	Max. tensile load	2900N
	Crush resistance	2200N/10cm
	Minimal installation bending radius	20 x OD
	Minimal operation bending radius	10 x OD

Color code scheme:

Fiber color	blue	orange	green	brown	gray	white	red	black	yellow	violet	pink	aqua
Inner tube layer	brown with black stripe	gray with black stripe	white with black stripe	red with black stripe	black with white stripe	yellow with black stripe	violet with black stripe	pink with black stripe	aqua with black stripe			
1~12 th tube of outer layer	blue	orange	green	brown	gray	white	red	black	yellow	violet	pink	aqua
13~15 th tube of outer layer	blue with black stripe				orange with black stripe				green with black stripe			

Remark: the sheath thickness is not including the rip cord position.

4. TEST REQUIREMENTS

Approved by various professional optical and communication product institution, We also conduct various in-house testing in its own Laboratory and Test Center. She also conduct test with special arrangement with the Chinese Government Ministry of Quality Supervision & Inspection Center of Optical Communication Products (QSICO). We 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
Mode field 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

TEST LIST

4.1 Tension Test

Test Standard	IEC 60794-1-2 E1
Sample length	No less than 50 meters
Load	Max. tension load
Duration time	1 minute
Test results	Additional attenuation: ≤0.05dB
	No damage to cable elements

4.2 Crush Test

Test Standard	IEC 60794-1-2 E3
Load	Crush load
Duration time	1minute
Test results	Additional attenuation: ≤0.05dB
	No damage to cable elements

4.3 Impact Test

Test Standard	IEC 60794-1-2 E4
Impact energy	10J
Radius	300mm
Impact points	3
Impact number	1
Test result	Additional attenuation: ≤0.1dB
	No damage to cable elements

4.4 Repeated Bending Test

Test Standard	IEC 60794-1-2 E6
Bending radius	20 X diameter of cable
Cycles	25
Load:	15kg
Test result	Additional attenuation: ≤0.05dB
	No damage to cable elements

4.5 Torsion/Twist Test

Test Standard	IEC 60794-1-2 E7
Sample length	1m
Angles	±180 degree
Load	15kg
Cycles	10
Test result	Additional attenuation: ≤0.1dB
	No damage to cable elements

4.6 Temperature cycling Test

Test Standard	IEC 60794-1-2 F1
Temperature step	+20°C → -40°C → +70°C → +20°C
Time per each step	12 hrs
Cycles	2
Test result	Attenuation variation for reference value (the attenuation to be measured before test at $+20 \pm 3^\circ\text{C}$) $\leq 0.05\text{dB/km}$

4.7 Water penetration Test

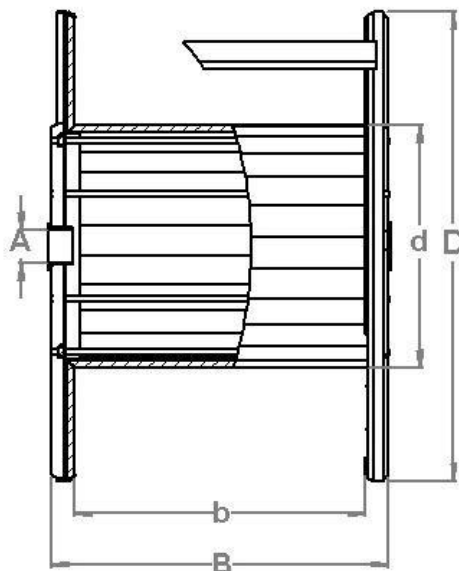
Test Standard	IEC 60794-1-2 F5B
Height of water column	1m
Sample length	3m
Test time	1 hour
Test result	No water leakage from the opposite of the sample

5. PACKING AND DRUM

5.1 the cables are coiled on bakelite, 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



Cable		D*d*B cm (weights kg) D: including seal plate thickness
Type	Length	4Km/reel
ADSS-SS-URBANO-12/24/48G.652D		Wooden drum 125*50*75 (462)
ADSS-SS-URBANO-96G.652D		Wooden drum 125*60*110 (590)
ADSS-SS-URBANO-144G.652D		Wooden drum 175*80*75 (915)
ADSS-SS-URBANO-288G.652D		Iron-Wooden drum 185*90*105 (1247)

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

5.2 The color of cable marking is white. (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