AERIAL CABLE

AR-1-2FRPU-PE
120M-xxF-G652D

OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

1. Scope

This Specification covers the design requirements and performance standard for the supply of optical fibre cable in the industry. ARTIC ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and ROHS.

Cable type	Application
AR-1-2FRPU-PE-120M-xxF-G652D	Self-supporting aerial installation

120 represents the span.
xx represents the fibre count.

1.1 Cable Description

- Optical fibres are housed a mono tube that is made of high-modulus plastic and filled with waterproof compounds.
- Mono tube and FRP are SZ stranded together.
- Water blocking yarns are used in the cable core to prevent it from water ingress.
- Polyethylene outer sheath is extruded around the cable.
- One rip cord is used under the cable sheath to open it.

1.2 Reference

The cable offered by ARTIC are designed, manufactured and tested according to the standards as follows:

ITU-T G.652	Characteristics of a single-mode optical fibre YOFC.
IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General.
IEC 60794-1-2	Optical fibre cables-part 1-2: Generic specification-Basic optical cable test procedure.
IEC 60794-3	Optical fibre cables-part 3: Sectional specification-Outdoor cables.
IEC 60794-3-20	Optical fiber cables-part 3-20: Outdoor cables-Family specification for optical self-supporting aerial communication cables.

1.3 Life Time

Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of twenty-five (25) years without detriment to the operation characteristics of the cable.

2. Optical Fibre

Optical Fibres supplied in this specification meet the requirements of ITU-T G.652.D.

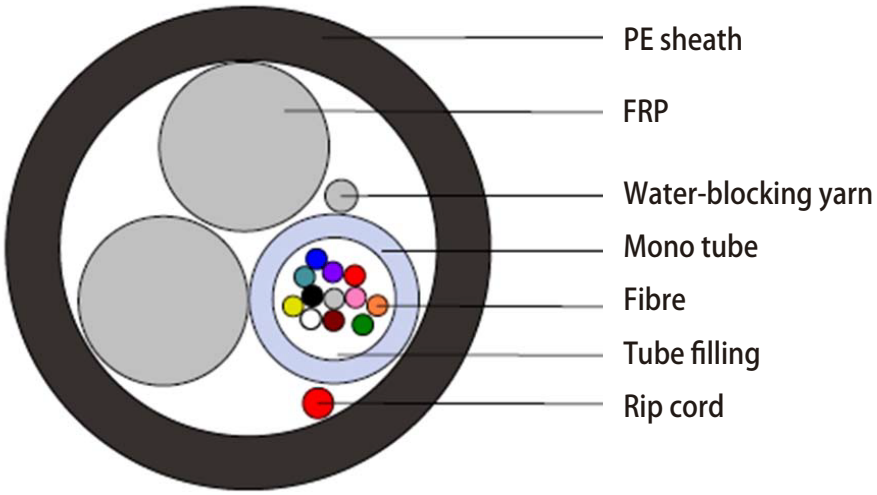
Category	Description	Specification	
		Before cable	After cable
Geometrical Characteristics	Cladding diameter	125.0 ±1 um	
	Cladding non-circularity	≤ 1.0 %	
	Core concentricity error	≤ 0.6 um	
	Coating diameter	245± 7 um(Before Colored) 250 ± 15 um (Colored)	
	Coating/cladding concentricity error	≤ 12 um	
	Mode field diameter at 1310 nm	9.1 ± 0.4 um	
	Point discontinuity	≤ 0.05dB	
	Attenuation at 1310 nm	≤ 0.34 dB/km	≤ 0.36 dB/km
	Attenuation at 1550 nm	≤ 0.20 dB/km	≤ 0.22 dB/km
	Dispersion in 1285 – 1340 nm	≥-3.4 ≤ 3.4 ps/(nm·km)	
	Dispersion at 1550 nm	≤18 ps/(nm·km)	
	Dispersion at 1625 nm	≤ 22 ps/(nm·km)	
	Zero dispersion wavelength	1300 – 1324 nm	
Optical Characteristics	Zero dispersion slope	≤ 0.091 ps/(nm2·km)	
	Cable cut-off wavelength	≤ 1260 nm	
	Polarization mode dispersion individual fibre	≤ 0.2 ps/$\sqrt{}$km	
Mechanical Specification	Polarization mode dispersion design link value (M=20, Q=0.01%)	≤ 0.1 ps/$\sqrt{}$km	
	Macro-bend loss (100 turns, 30mm radius, 1550/1625nm)	≤ 0.05 dB	
	Proof stress level	≥100kpsi (0.69 GPa)	
	Coating strip force(peak value)	1.3~8.9N	
	Fibre curl (Radius)	≥ 4 m	

3. Optical Cable

3.1 Technical Characteristics

- The unique second coating and stranding technology provide the fibres with enough space and bending endurance, which ensure good optical property of the fibres in the cable.
- Accurate process control ensures good mechanical and temperature performance.
- High quality raw material guarantees the long service life of cable.

3.2 Cross Section of Cable



3.3 Dimensions and Descriptions

The standard structure of cable is shown in the following table, other structure and fibre count are also available according to customer requirements.

Item	contents	120M SPAN Value
		2~12
Loose tube	Number	1
	Diameter (mm)	2.3
FRP	Number	2
	Diameter (mm)	2.25
Water Blocking Material	Material	Water Blocking Yarn

Item	contents	120M SPAN Value
		2~12
Sheath	Material	PE
	Color	Black
	Thickness (mm)	Minimum 0.8
Ripcord	Number	1
Cable diameter(mm) Approx. 7.2		7.2
Cable weight(kg/km) Approx.		50

3.4 Fibre and Loose Tube Identification

The color code of fibres and loose tube will be identification in accordance with the following color sequence. The color of the tube will be natural.

Color code	1	2	3	4	5	6
	Blue	Orange	Green	Brown	Grey	White
	7	8	9	10	11	12
	Red	Black	Yellow	Violet	Pink	Aqua

The color of the fillers will be natural.

3.5 Mechanical and Environmental Performance

Span(M)	Tensile performance(N)	Crush(N/100mm)
	Short term	Short term
120	2G	1000

"G" is the weight of cable per kilometer, the unit is Newton (N).

4. Mechanical, Physical and Environmental Test Characteristics

The mechanical and environmental performance of the cable are in accordance with the following table. Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm.

Items	Test Method	Requirements
Tension	**IEC 60794-1-2-E1** Load: According to 3.5 Sample length: Not less than 25m. Duration time: 1min	Additional attenuation: ≤0.1dB after test. No damage to outer jacket and inner elements.
Crush	**IEC 60794-1-2-E3** Load: According to 3.5 Duration of load: 1min	Additional attenuation: ≤0.1dB after test. No damage to outer jacket and inner elements.
Impact	**IEC 60794-1-2-E4** Radius: 300 mm. Impact energy: 4.5J Impact number: 1. Impact points:3	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements.
Bend	**IEC 60794-1-2-E11A** Mandrel radius:10*D Turns:5. Cycles:5	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements.
Repeated bending	**IEC 60794-1-2-E6** Bending radius: 20*D Cycles: 30. Load: 150N	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements.
Torsion	**IEC 60794-1-2-E7** Cycles:10. Length under test: 1m Turns: ±180°. Load: 150N	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements.
Temperature cycling	**IEC 60794-1-2-F1** Sample length: at least 1000m. Temperature range: -20℃→+65℃ Cycles: 2. Temperature cycling test dwell time: 12 hours.	The change in attenuation coefficient shall be less than 0.05 dB/km.
Water Penetration	**IEC 60794-1-2-F5B** Time : 24 hours. Sample length : 3m. Water height : 1m	No water leakage.
Other parameters	According to **IEC 60794 -1**	

5. Packaging and Drum

5.1 Cable Sheath Marking

Unless otherwise specified, the cable sheath marking shall be as follows:

- Color: white.
- Interval: 1±1% m.
- Outer sheath marking legend can be changed according to user's requests.

5.2 Reel Length

Standard reel length: 4Km/reel, other length is also available.

5.3 Cable Drum

The cables are packed in fumigated wooden drums.

5.4 Cable Packing

Both ends of the cable will be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage. The inner end is available for testing.