

AERIAL CABLE

AR-1FD-FIG8-PE
xxF-G652D

OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

1. General

1.1 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-1FD-FIG8-PE xxF-G652D	Self-supporting aerial installation

xxF in represents the fibre counts of the cable

1.2 Reference

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

ITU-T G.652.D	Characteristics of a single-mode optical fibre ARTIC.
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.

1.4 Application

Item	Value	
Max. pole distance	8	12~48
	60m	80m
Operation temperature	-40 °C~+70 °C	
Storage temperature	-40 °C~+70 °C	
Static bending radius	10 times the cable diameter	
Dynamic bending radius	20 times the cable diameter	

2. Optical Fibre

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

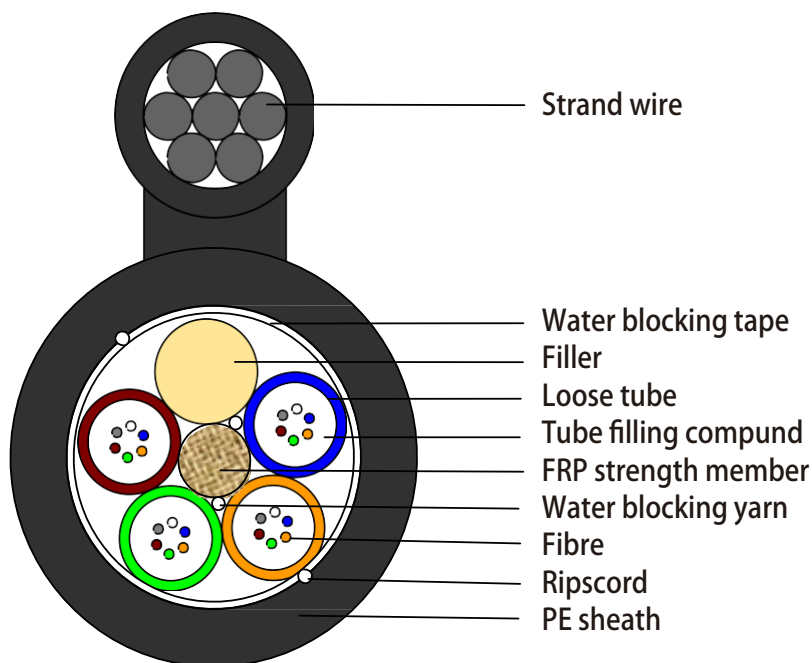
Parameter	Specification
MFD (1310nm)	$9.2 \pm 0.4 \mu\text{m}$
MFD (1550nm)	$10.4 \pm 0.5 \mu\text{m}$
Cladding diameter	$125 \pm 1.0 \mu\text{m}$
Fiber diameter	$245 \pm 7 \mu\text{m}$, with UV coating, and colored to : $250 \pm 15 \mu\text{m}$
Core/cladding concentricity error	$\leq 0.6 \mu\text{m}$
Coating/cladding concentricity error	$\leq 12.0 \mu\text{m}$
Cladding non circularity	$\leq 1.0\%$
Cut off wavelength	$\lambda_{cc} \leq 1260 \text{nm}$
Attenuation coefficient	1310nm: 0.35dB/km
	1550nm: 0.21dB/km
Bending-loss performance of optical fiber @1310nm&1550nm	$\leq 0.05 \text{dB}$ (100 turns around a mandrel of 50mm diameter)
Polarization mode dispersion maximum individual fibre	$\leq 0.1 \text{ps}/\sqrt{\text{km}}$
Polarization mode dispersion link value	$\leq 0.06 \text{ps}/\sqrt{\text{km}}$
Zero-dispersion wavelength	$1312 \pm 12 \text{nm}$
Zero-dispersion slope	$\leq 0.091 \text{ps}/\text{nm}^2 \cdot \text{km}$

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



3.3 Fibre and Loose Tube Identification

The color code of fibres and loose tube will be identification in accordance with the following color sequence, other sequence also is available.

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

3.4 Dimensions and Descriptions

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

Item	contents	Value			
		8	12	24	48
Structure	Type	1+5	1+5	1+5	1+5
Loose tube	Fiber counts/tube	8	6	6	12
	Outer diameter (mm)	1.9	1.8	1.8	2.1
Central strength member	Material	FRP			
	Diameter (mm)	1.5	1.5	1.5	1.5
Water blocking	Material	Water blocking tape & yarn			
Messenger wire	Material	Stranding wire			
	Type	7×1.0mm	7×1.32mm	7×1.32mm	7×1.32mm
Cable core part sheath	Material	PE			
	Color	Black			
	Thickness (mm)	Nominal: 1.5			
Messenger part sheath	Material	PE			
	Color	Black			
	Thickness (mm)	Nominal: 1.0			
Ripcord	Number	2			
	Color	Red			
Cable diameter(mm) Approx.		8.8×16.2	8.6×17.0	8.6×17.0	9.2×17.6
Cable weight(kg/km) Approx.		125	155	155	165

3.5 Main Mechanical and Environmental Performance

Main mechanical performance

Item	Max allowable tension(N)	Crush(N/100mm)	
		Short term	Long term
8	4000	1000	300
12~48	7000	1000	300

Environmental and installation condition

Max. wind speed	Max. ice thickness	Initial Installation sag	Temperature
25 m/s	0	1.0%	-40 °C~+70 °C

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 50m. Duration time: 1min	Additional attenuation: ≤ 0.05 dB 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: ≤ 0.1 dB after test. No damage to outer jacket and inner elements.
Impact	IEC 60794-1-2-E4 Radius: 300 mm Impact energy: 10 J Impact number: 1 Impact points: 3	Additional attenuation: ≤ 0.1 dB No damage to outer jacket and inner elements.
Repeated bending	IEC 60794-1-2-E6 Bending radius: 20*D. Cycles: 25 Load: 150N	Additional attenuation: ≤ 0.05 dB No damage to outer jacket and inner elements.
Torsion	IEC 60794-1-2-E7 Cycles:10 Length under test: 1m Turns: $\pm 180^\circ$. Load: 150N	Additional attenuation: ≤ 0.1 dB No damage to outer jacket and inner elements.
Water Penetration	IEC 60794-1-2-F5B Time : 24 hours Sample length : 3m Water height : 1m	No water leakage, except the part of stranded wire
Temperature cycling	IEC 60794-1-2-F1 Sample length: at least 1000m Temperature range: -40 ~+70 °C Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.05 dB/km.
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.
- Contents: ARTIC, the year of manufacture, the type of cable, cable number, length marking.
- Interval: 1 m.

Outer sheath marking legend can be changed according to user's requests.

5.2 Reel Length

Standard reel length: 4 km/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.