



**SINGLE JACKET
METALLIC ARMOR
RIBBON DUCT CABLE
288 TO 864 FO**

AR-1FSPE-RB-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-1FSPE-RB-xxF-G652D	Duct installation and aerial installation together with tension strand wire.

xx 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.652D	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 60794-3-10	Optical fibre cables-part 3-10: Outdoor cables-Family specification for duct and direct buried optical communication cables.
IEC 60794-3-11	Optical fibre cables-Part 3-11: Outdoor cables-Detailed specification for duct and directly buried single-mode optical fibre telecommunication 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
Operation temperature	-40 °C~+70 °C
Installation 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.652D.

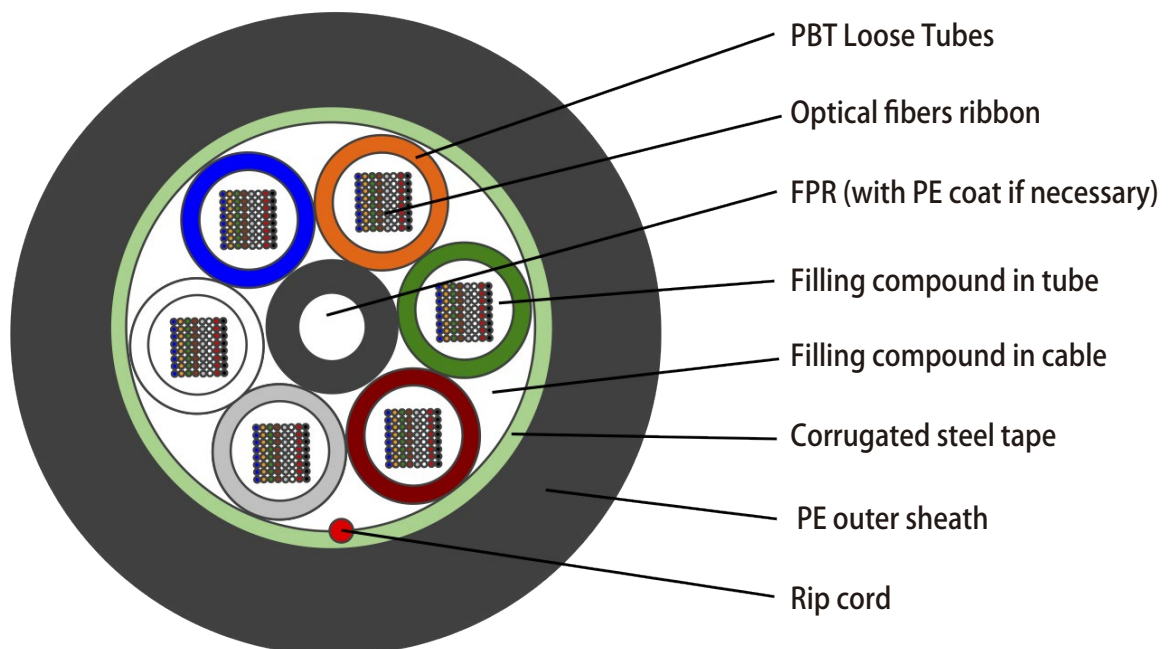
Parameter	Specification
MFD (1310nm)	$9.1 \pm 0.4 \mu\text{m}$
MFD (1550nm)	$10.4 \pm 0.5 \mu\text{m}$
Cladding diameter	$125 \pm 1.0 \mu\text{m}$
Fiber diameter	$245 \pm 7 \mu\text{m}$, with UV coating, and colored to: $250 \pm 15 \mu\text{m}$
Core/cladding concentricity error	$\leq 0.6 \mu\text{m}$
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: $\leq 0.38 \text{ dB/km}$ 1383nm: $\leq 0.36 \text{ dB/km}$ 1550nm: $\leq 0.25 \text{ dB/km}$
Bending-loss performance of optical fiber @1310nm&1550nm	$\leq 0.1 \text{ dB}$ (100 turns around a mandrel of 50mm diameter)
Polarization mode dispersion maximum individual fibre	$\leq 0.2 \text{ ps}/\sqrt{\text{km}}$
Polarization mode dispersion link value	$\leq 0.1 \text{ ps}/\sqrt{\text{km}}$
Zero-dispersion wavelength	1300~1324nm
Zero-dispersion slope	$\leq 0.092 \text{ ps}/\text{nm}^2 \cdot \text{km}$

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 Cable



Schematic for reference only. Structure of other fibre counts refer to 3.4.

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.

Buffer Tube Number Color code	1	2	3	4	5	6
	● Blue	● Orange	● Green	● Brown	● Grey	○ White
AR-1FSPE-RB-288F-G652D	6*12F	6*12F	6*12F	6*12F	Natural Filler	/
AR-1FSPE-RB-360F-G652D	6*12F	6*12F	6*12F	6*12F	6*12F	/
AR-1FSPE-RB-432F-G652D	6*12F	6*12F	6*12F	6*12F	6*12F	6*12F
AR-1FSPE-RB-720F-G652D	12*12F	12*12F	12*12F	12*12F	12*12F	/
AR-1FSPE-RB-864F-G652D	12*12F	12*12F	12*12F	12*12F	12*12F	12*12F

The color code of fibers in each ribbon 12F: blue, orange, green, brown, grey, white, red, black, yellow, violet, pink and aqua. The fiber ribbon shall be marked with black sequence number every 200mm for identification.

3.4 Main Mechanical and Environmental Performance

Item	Tension(N)		Crush(N/100mm)	
	Short term	Long term	Short term	Long term
AR-1FSPE-RB-xxF-G652D	1500	600	1000	300

3.5 Diameter and Weight of Cable

Item	Outer Diameter (±0.5) mm	Approx. Weight kg/km
AR-1FSPE-RB-288/360-G652D	18.4	320
AR-1FSPE-RB-432-G652D	19.8	370
AR-1FSPE-RB-720-G652D	22.8	480
AR-1FSPE-RB-864-G652D	24.8	560

4. Main 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.

Item	Test Method	Requirements
Tension	IEC 60794-1-2-E1 Diameter of chuck drums: $\geq 30 \cdot OD$ - Length of test: $\geq 50m$ Velocity of transfer: 10mm/min Load: see clause 3.2 - Duration: 1 min	Additional attenuation: $\leq 0.1dB$ after test. No damage to outer jacket and inner elements.
Crush	IEC 60794-1-2-E3 Load: According to 3.2. Duration of load: 1 min.	Additional attenuation: $\leq 0.1dB$ after test. No damage to outer jacket and inner elements.
Impact	IEC 60794-1-2-E4 Energy of impact: 450g Highness of impact: 1m Number of impacts: at least 5 times	Additional attenuation: $\leq 0.1dB$ No damage to outer jacket and inner element.s
Repeated bending	IEC 60794-1-2-E6 Bending radius: $30 \cdot D$. Cycles: 30 Load: 150 N.	Additional attenuation: $\leq 0.1dB$. No damage to outer jacket and inner elements.
Torsion	IEC 60794-1-2-E7 Cycles:10. Length under test: 1m. Turns: $\pm 90^\circ$. Load: 150N	Additional attenuation: $\leq 0.1dB$. 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.
Temperature cycling	IEC 60794-1-2-F1 Sample length: at least 1000m. Temperature range: $-20^\circ C \sim +60^\circ C$. Cycles: 2. Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than $\Delta \alpha < 0.2dB/km$.
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: 2 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.