



AERIAL CABLE

AR-1FATDPE-ADSS

200M xxF-G652D

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-1FATDPE-ADSS-200M xxF-G652D	Self-supporting aerial installation

200 represents the span.

xx represents the fibre count.

1.2. CABLE DESCRIPTION

Optical fibres are housed in loose tubes that are made of high-modulus plastic and filled with water blocking yarns.

FRP is applied as central strength member.

Loose tubes are SZ stranded around the central strength member.

Water blocking tape and yarns are used in and over the cable core to prevent it from water ingress.

Aramid yarn is used as the strength member.

Polyethylene outer sheath is extruded around the aramid yarns.

1.3. 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
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 60794-4-20	Aerial optical cables along electrical power lines – Family specification for ADSS (All Dielectric Self Supported) optical cables

1.4. 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

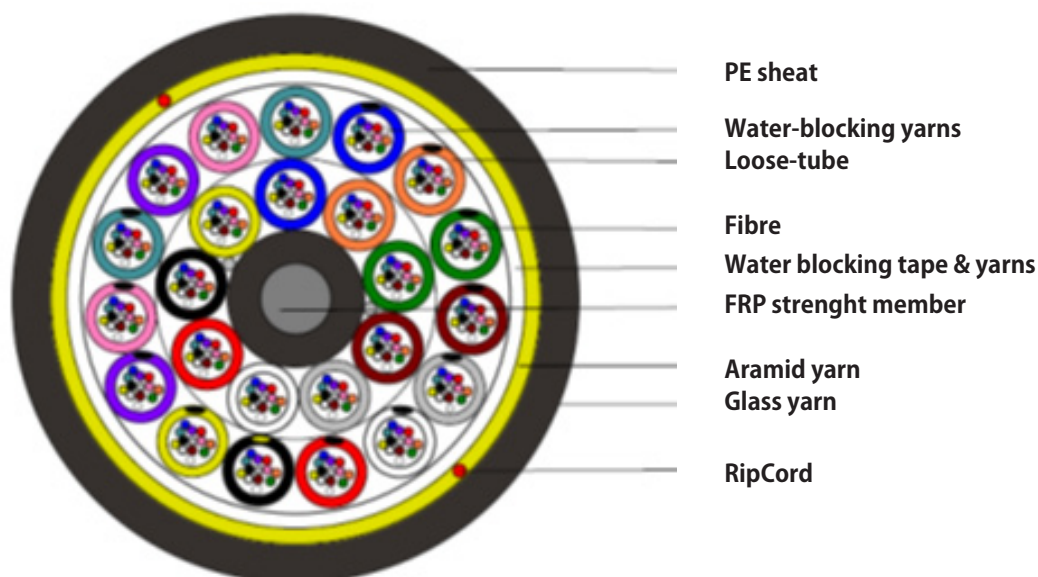
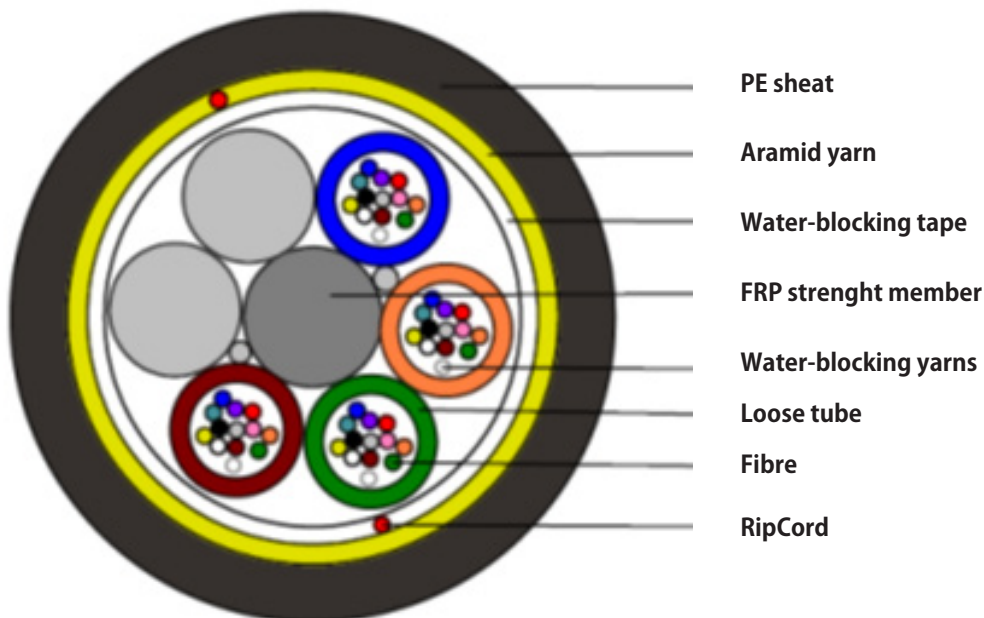
Category	Description	Specification After cable
Geometrical Characteristics	Cladding diameter	$125.0 \pm 1 \mu\text{m}$
	Cladding non-circularity	$\leq 1.0\%$
	Core concentricity error	$\leq 0.6 \mu\text{m}$
	Coating diameter	$245 \pm 7 \mu\text{m}$ (Before Colored) $250 \pm 15 \mu\text{m}$ (Colored)
	Coating/cladding concentricity error	$\leq 12 \mu\text{m}$
Optical Characteristics	Mode field diameter at 1310 nm	$9.1 \pm 0.4 \mu\text{m}$
	Point discontinuity	$\leq 0.05 \text{ dB}$
	Attenuation at 1310 nm	$\leq 0.36 \text{ dB/km}$
	Attenuation at 1550 nm	$\leq 0.22 \text{ dB/km}$
	Dispersion in 1285 – 1340 nm	$\geq 3.4 \leq 3.4 \text{ ps}/(\text{nm}\cdot\text{km})$
	Dispersion at 1550 nm	$\leq 18 \text{ ps}/(\text{nm}\cdot\text{km})$
	Dispersion at 1625 nm	$\leq 22 \text{ ps}/(\text{nm}\cdot\text{km})$
	Zero dispersion wavelength	1300 – 1324 nm
	Zero dispersion slope	$\leq 0.091 \text{ ps}/(\text{nm}^2\cdot\text{km})$
	Cable cut-off wavelength	$\leq 1260 \text{ nm}$
	Polarization mode dispersion individual fibre	$\leq 0.15 \text{ ps}/\sqrt{\text{km}}$
	Polarization mode dispersion design link value (M=20, Q=0.01%)	$\leq 0.1 \text{ ps}/\sqrt{\text{km}}$
Macro-bend loss (100 turns, 30mm radius, 1550/1625nm)	$\leq 0.05 \text{ dB}$	
Mechanical Specification	Proof stress level	$\geq 100 \text{ kpsi}$ (0.69 GPa)
	Coating strip force(peak value)	1.3~8.9N
	Fibre curl (Radius)	$\geq 4 \text{ m}$

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 CABLE



3.3. FIBRE AND LOOSE TUBE IDENTIFICATION

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

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

	1	2	3	4	5	6
Loose tube	 Blue	 Orange	 Green	 Brown	 Grey	 White
	7	8	9	10	11	12
	 Red	 Black	 Yellow	 Violet	 Pink	 Aqua
	13	14	15	16	17	18
	 Blue whit black strip	 Orange whit black strip	 Green whit black strip	 Brown whit black strip	 Grey whit black strip	 White whit black strip
	19	20	21	22	23	24
 Red whit black strip	 Black whit yellow strip	 Yellow whit black strip	 Violet whit black strip	 Pink whit black strip	 Aqua whit black strip	

3.4. DIMENSIONS AND DESCRIPTIONS

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

Parameter	Contents	200 M SPAN							
		12	24	36	48	72	96	144	288
Loose tube	Number	1	2	3	4	6	8	12	24
	Outer diameter (mm)	2.5							
	Material	PP							
Filler	Number	5	4	3	2	0	0		
Max. fiber count per tube	G.652D	12							
Central strength member	Material	FRP							
	Diameter (mm)	2.8					3.0	3.5	
	PE layer diameter (mm)	-					4.2	7.4	4.8

Parameter	Contents	200 M SPAN							
		12	24	36	48	72	96	144	288
Water Blocking Material	Material	Water blocking yarn & tape							
Strength member	Material	Aramid yarn							
Sheat	Material	MDPE, with UV protection							
	Color	Black							
	Thickness (mm)	Nominal: 1.5							
Ripcord	Number	2							
Cable diameter (± 0.5 mm)		11.8			13.1	16.4	18.8		
Cable weight(kg/km) Approx.		80			115	170	220		

3.5 MAIN MECHANICAL AND ENVIRONMENTAL PERFORMANCE

Main mechanical performance:

Max pole distance (M)	12~72	96	144	288
	MAT (KN)			
200	3.23	3.72	4.56	5.27

Max pole distance (M)	Crush(N/100mm)	
	Short term	Long term
200	2200	1100

Environmental and installation condition:

Max pole distance (M)	Max. wind speed	Max. ice thickness	Initial Installation sag	Temperature
200	25m/s	0	2.5%	-40~+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: ≤ 0.1 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: 4.5 J Impact number: 1 Impact points: 3	Additional attenuation: ≤ 0.1 dB No damage to outer jacket and inner elements
Bend	IEC 60794-1-2-E11A Mandrel radius: 10*D Turns: 4 Cycles: 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: 150 N	Additional attenuation: ≤ 0.1 dB No damage to outer jacket and inner elements
Torsion	IEC 60794-1-2-E7 Cycles: 10 Length under test: 1m Turns: +/-180° Load: 150 N	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
Temperature cycling	IEC 60794-1-2-F1 Sample length: at least 1000m Temperature range: -40 °C~+70 °C Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.1 dB/km at 1310 and 1550nm.
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:

- Method: inkjet
- Color: white
- Contents: ARTIC, the year of manufacture, the type of cable, cable number, length marking
- Interval: $1 \pm 1\% \text{ m}$

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.