



**CENTRAL TUBE
ARMORED STEEL WIRE
SUBMARINE CABLE
130 KN 48 FO G652D**

AR-SUB-SA-130KN-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-SUB-SA-130KN-xxF-G652D	Under the River/Lake/Sea

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:

IEC 60793-1-1	Optical fibres - Part 1-1: Measurement methods and test procedures - General and guidance
IEC 60793-2	Optical fibres - Part 2: Product specifications - General
IEC 60793-2-50	Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres
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 procedures - General guidance
IEC 60794-1-21	Optical fibre cables - Part 1-21: Generic specification - Basic optical cable test procedures - Mechanical tests methods
IEC 60794-1-22	Optical fibre cables - Part 1-22: Generic specification - Basic optical cable test procedures - Environmental tests methods
IEC 60794-1-23	Optical fibre cables - Part 1-23: Generic specification- Basic optical cable test procedures - Cable element test methods
GB/T 18480-2001	Submarine fiber optic cable specification
GJB 4489-2021	General Specification for Submarine Fiber Optic Cables
YD/T 2283-2020	Submarine fiber optic cable
ITU-T G976	Test methods applicable to optical fibre submarine cable systems
ITU-T G978	Characteristics of submarine fiber optic cable
EIA/TIA 598	Optical fiber cable color coding
ITU-T G.652	Characteristics of a single-mode optical fibre and cable
GB/T 9771.3-2020	Single-mode fiber for communications

1.3 Life Time

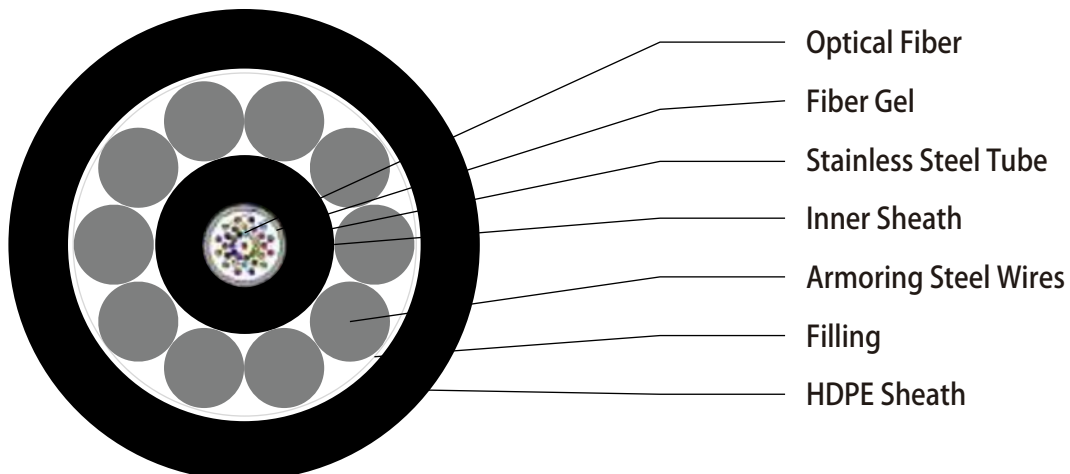
Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of twenty-five (25) years without detriment to the operation characteristics of the cable.

2. Optical Cable

2.1 Technical Characteristics

- The unique tube welding and wire armoring 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.

2.2 Cross Section of Cable



AR-SUB-SA-130KN-xxF-G652D

2.3 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	Physical Characteristics	Unit	Nominal Value
Structure & Parameter	Optical Fiber	No.	48
	FIMT O.D.	mm	Φ3.7
	Cable O.D.	mm	Φ21,5
	Weight in air, approximately.	kg/m	1.03
	Weight in seawater, approximately.	kg/m	0.66

2.4 Main Mechanical And Electrical Performance













Item	Physical Characteristics	Unit	Nominal Value
Nominal Specification	Minimum Breaking Load (UTS)	kN	130
	Nominal Transient Tensile Load (NTTS)	kN	100
	Nominal Operating Tensile Load (NOTS)	kN	70
	Nominal Permanent Tensile Load (NPTS)	kN	50
	Minimum Bending Radius without Tension	m	0.5
	Operation temperature	°C	-40 °C~+70 °C
	Installation temperature	°C	-15 °C~+60 °C
	Storage temperature	°C	-40 °C~+70 °C
	Crush, (IEC-60794-1-21E3A)	kN/100mm	10
	Impact, (IEC-60794-1-21E4)	J	200
	Water depth (max)	m	3000













3. Optical Fibre













3.1 Fibre Identification













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

Fibre color code

Fibre No. 1-12	1	2	3	4	5	6
	 Blue	 Orange	 Green	 Brown	 Grey	 White
	7	8	9	10	11	12
	 Red	 Black	 Yellow	 Violet	 Pink	 Aqua

Fibre No. 13-24	13	14	15	16	17	18
	 S60 Blue	 S60 Orange	 S60 Green	 S60 Brown	 S60 Grey	 S60 White
	19	20	21	22	23	24
	 S60 Red	 S60 Black	 S60 Yellow	 S60 Violet	 S60 Pink	 S60 Aqua

Fibre No. 25-36	25	26	27	28	29	30
	 S100 Blue	 S100 Orange	 S100 Green	 S100 Brown	 S100 Grey	 S100 White
	31	32	33	34	35	36
	 S100 Red	 S100 Black	 S100 Yellow	 S100 Violet	 S100 Pink	 S100 Aqua

Fibre No. 37-48	37	38	39	40	41	42
	 D150 Blue	 D150 Orange	 D150 Green	 D150 Brown	 D150 Grey	 D150 White
	43	44	45	46	47	48
	 D150 Red	 D150 Black	 D150 Yellow	 D150 Violet	 D150 Pink	 D150 Aqua

Note:**S:** Single Ring**D:** Double Ring**60-100-150:** Distance Between Adjacent Rings (mm)

3.2 Fibre Characteristic

G.652.D Non-dispersion shifted single-mode fibre with extended wavelength.

Description	Unit	Specification
Cladding diameter	μm	125.0 ± 0.7
Core/cladding concentricity error	μm	≤ 0.6
Cladding non circularity	%	≤ 1
Coating diameter (uncoloured)	μm	245 ± 10
Coating/cladding concentricity error	μm	≤ 12
Mode field diameter @1550nm	μm	10.4 ± 0.5
Attenuation coefficient at 1550nm (cabled)	dB/km	≤ 0.22
Zero-dispersion wavelength (λ_0)	nm	1300-1324
Zero Dispersion Slope (S0) at λ_0	ps/(nm ² ·km)	≤ 0.092
Dispersion coefficient at 1550 nm	ps/(nm·km)	≤ 18
Cable cutoff wavelength (λ_{cc})	nm	≤ 1260
Proof stress level	kpsi	200

4. Packaging and Drum

4.1 Cable Sheath Marking

HDPE sheath Color: black;

Contents: Name of company, the year of manufacture, the type of cable, fiber number, length marking; Interval: 1m;

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

4.2 Cable-end package

Both ends of the cable will be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage.

4.3 Reel Length

Determined according to customer needs.

4.4 Delivery Method

According to the length of each segment, The cables are packed in steel drums, pallets, containers, cabin of laying Ship, or according to customers' reasonable requirements.