

Armored Optical Fiber Patchcord Specification

(4~12 Fibers)

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1. Introduction

- (1) This specification describes the optical performance and mechanical characteristics of the “Armored Optical Fiber Patchcord”
- (2) Compare with the traditional optical fiber patchcords , the mechanical characteristics of Kaiphone’s armored optical fiber patchcords are much stronger, electric cable –like handling and easy to install.
- (3) This latest “Armored Optical Fiber Patchcord” is different from the traditional patchcord in the characteristics that it has been developed with a micro diameter stainless flexible metal tube with flame-resistance PVC or PE coating to protect these fragile optical fibers. In order to ensure the firmly conjunction, we also offer relative strong connectors. This unique design reduce the difficulties of installation and extend the fiber’s life.
- (4) Like the traditional patchcord, Kaiphone’s “Armored Optical Fiber Patchcord” can be used as the connection between the ODF (Optical Distribution Frame) and equipments, connection between floor and floor or emergency testing connection.
- (5) The “Armored Optical Fiber Patchcord” can be a multi-core fibers patchcord contain 4,6,8,to maximum 12 core fibers per cable.

2.Product Specification

The specification of armored optical fiber patchcord described in the following sections.

2-1 Description

The armored optical fiber patchcord was mainly constructed of armored optical fiber cables and connectors. It's advantages are anti-tensile , anti-pressure and easy to install. The armored optical fiber patchcord can be used in the connection between the optical equipments in the indoor central office or outdoor testing filed. It's detailed specifications was described in the following section:

2-2 Structure

As shown in fig.1.The armored optical fiber patchcord was constructed of the following parts: optical fibers ,stainless metal tube with jacket ,branching connectors ,branching stainless metal tube with jacket and optical connectors. The followings are their detailed specification description.

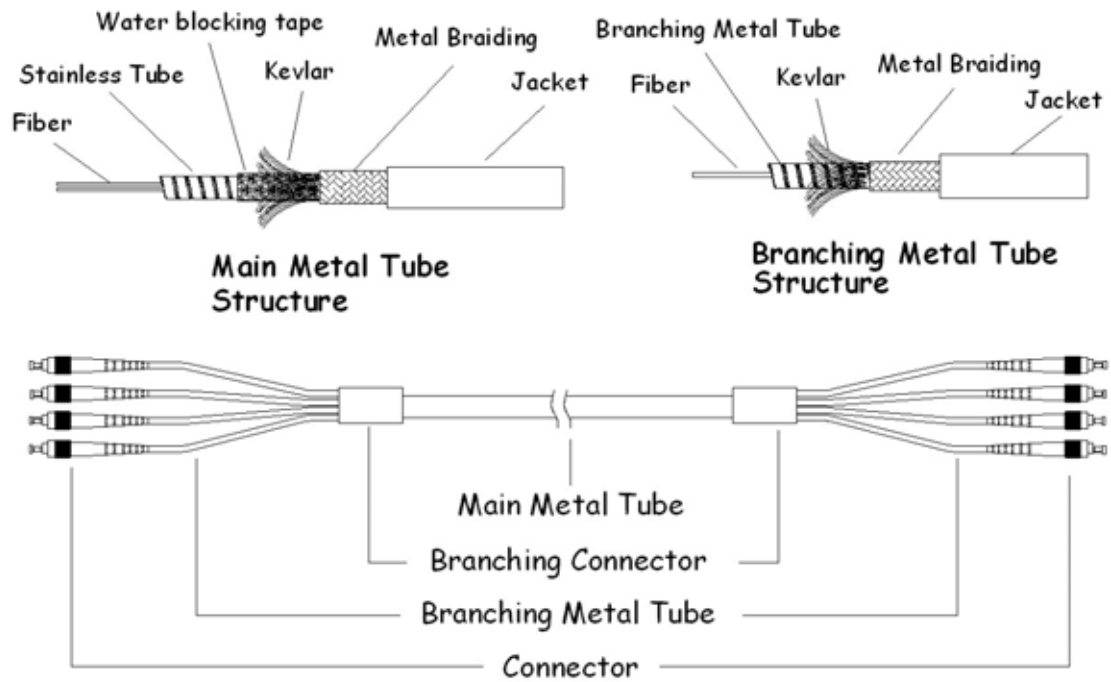


Fig.1 The schematic diagram of armored optical fiber patchcord.

2-2-1 Optical fiber

The geometric characteristics, optical performance and mechanical properties of optical fiber must meet the table 1.

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Table 1 The geometric, optical and mechanical characteristics of optical fiber

Item	Single Mode	Multi-Mode	
Core/Mode Diameter	9.2±0.4µm @1310nm 10.4±0.8µm @1550nm	50±2.5µm	62.5±2.5µm
Cladding Diameter	125±1µm	125±1µm	125±1µm
Attenuation	0.4 db/km @1310nm 0.3 db/km @1550nm	3.0dB/km @850nm 1.0dB/km @1300nm	3.2dB/km @850nm 1.0dB/km @1300nm
Bandwidth	---	≥200Mhz-km @850nm ≥400Mhz-km @1300nm	≥160Mhz-km @850nm ≥200Mhz-km @1300nm
Zero –dispersion shift	0.092 ps/ nm ² -km.	0.101 ps/ nm ² -km.	0.097 ps/ nm ² -km.
Cut-off wavelength	λ cutoff 1260nm	---	---
Numerical Aperture	0.13	0.200±0.015	0.275±0.015
Coating	245±10µm	245±10µm	245±10µm
Working Temperature	-40 ~+85	-40 ~+85	-40 ~+85

2-2 Stainless metal tubes with jacket

The optical fibers (4,6,8,12 core fibers) were protected by the stainless flexible metal tube. The material of this tube is 304 stainless metal. Its corresponding diameters and mechanical characteristics are as table 2.

Table 2. Diameter and mechanical characteristic of stainless metal tube with jacket

Fiber cores	4	6	8	12
Inner diameter (mm)	3 +/- 0.05	3 +/- 0.05	3.6 +/- 0.05	3.9 +/- 0.05
Outer diameter (mm)	3.8 +/- 0.05	3.8 +/- 0.05	4.5 +/- 0.05	5.0 +/- 0.05
Overall diameter with jacket	6.0 +/- 0.05	6.0 +/- 0.05	6.9 +/- 0.05	6.9 +/- 0.05
Tensile strength (Kgf)	100	100	120	120
Anti-pressure (Kgf/50mm)	300	300	350	350

2-2-3 Branching connector

As shown in fig.1, the branching connector connects and fixes the main stainless metal tube and the branching metal tube. As shown in table 3, the different sizes of branching connectors correspond to the different fiber cores. The materials of branching connectors are copper with nickel plating, stainless or plastic housing designed by Kaiphone as shown in fig.2. Customers can also provide the branching connectors for reference.

Table 3.The dimensions of the metal branching connector

Fiber cores	4	6	8	12
Maximum outer diameter (mm)	13+/-1 mm	16+/-1mm	16+/-1mm	24+/-1mm
Length (mm)	40+/-1mm	60+/-1mm	60+/-1mm	70+/-1mm

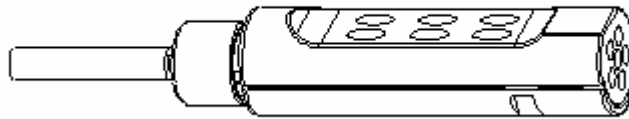


Fig2. Kaiphone’s plastic branching connector

2-2-4 Branching stainless metal tube with jacket

As shown in fig.1,the branching metal tube was constructed of metal tube ,metal braiding and the outer jacket. Just like the main metal tube, the branching metal tube protect the fragile optical fibers and it’s diameters are as table 4.

Table 4.Diameters of the branching stainless metal tube

	Type I	Type II	Type III
Inner diameter	1.5+/-0.05mm	1.2+/-0.05mm	1.0+/-0.05mm
Outer diameter	2.1+/-0.05mm	1.8+/-0.05mm	1.5+/-0.05mm
Overall diameter with jacket	3.3+/-0.1mm	3.0+0/-0.2mm	2.5+/-0.1mm

In the normal situation ,we use Type II metal tubes as the branching tubes.

2-2-5 Optical connectors

We use the traditional optical connectors as our armored optical connectors ,and the optical connector characteristics is shown in table 5.

Table 5 The characteristics of optical connectors

Fiber type	Single mode		Multi mode
Connector Type	SC/FC/ST/LC/MU/MTRJ (UPC)	SC/FC (APC)	SC/FC/ST/LC/MTR
Insertion Loss (I.L.)	0.2dB	0.2dB	0.3dB
Return Loss (R.L.)	55dB	65dB	----
Repeatability	0.1dB	0.1dB	0.1dB

2-3.Mechanical Characteristics:

The mechanical characteristics of armored optical fiber patchcord are shown in table 6.

Table 6 The mechanical characteristics of armored optical fiber patchcord

No	Item	Specification
1	Main stainless metal tube tensile strength(Kgf)	100Kgf
2	Branching stainless metal tube tensile strength(Kgf)	20KG
3	Anti-pressure (Kgf/100mm)	300Kgf
4	Operating temperature	-40~+75

3.Lable and Package

3-1 We distinguish each fibers by the colors of the branching metal tube jacket. Each different colors of jackets correspond to every different optical fiber. There are maximum 12 colors used at the moment.

3-2 Each armored optical fiber patchcord should have marking on the outer jacket of the main metal tube or adhere to an additional tape.

The marking on the outer jacket or tape shall appear the following details :

- (a)Manufacturer’s name
- (b)Type and counts of optic fiber e.g .SM-12C
- (c)Date of manufacture

The marked intervals are not less than 1 m throughout the cable length

4.Reference

1. GR-326-CORE Generic Requirements for Single mode Optical Connectors and Jumper Assemblies.
2. GR-409_CORE Generic Requirements for Premises Fiber Cable.

Notice:

All above specifications may be adjusted according to customer requirements .The manufacturer also reserves the right to make improvements to the products.