Simplex Armored Optical Fiber Patchcord

Specification

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1. Introduction

(1) This specification describes the optical performance and mechanical characteristics of the " Simplex Armored Optical Fiber Patchcord"

(2)Compare with the traditional optical fiber patchcords ,The mechanical characteristics of Kaiphone's " Simplex Armored Optical Fiber Patchcords" are much stronger, electric cable –like handling and easy to install.

(3)This latest " Simplex Armored Optical Fiber Patchcord " is different from the traditional patchcord for the characteristics that it has been developed with a micro diameter stainless flexible metal tube with flame-resistance PVC coating to protect this fragile optical fiber.. In order to ensure the firmly conjunction, we also offer relative strong connector. This unique design reduce the difficulties of installation and extend the fiber's life.

(4)Like the traditional patchcord, Kaiphone's "Simplex 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) For the trend of using small form factor (SFF) connectors, like LC, MU type connectors, we also develop one kind of smaller simplex armored optical cable for those SFF connectors. We named this kind of patchcord as Type III armored optical fiber patchcord.

2.Product Specification

The specification of simplex armored optical fiber patchcord described in the following

2-1 Description

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

2-2 Structure

As shown in fig.1.The simplex armored optical fiber patchcord was constructed of the following parts: optical fiber ,stainless metal tube with Kevlar, stainless metal braiding, jacket and optical connectors. Fig.2 is a newly developed simplex armored optical fiber cable for small form factor(SFF) connectors.

The followings are their detailed specification description.

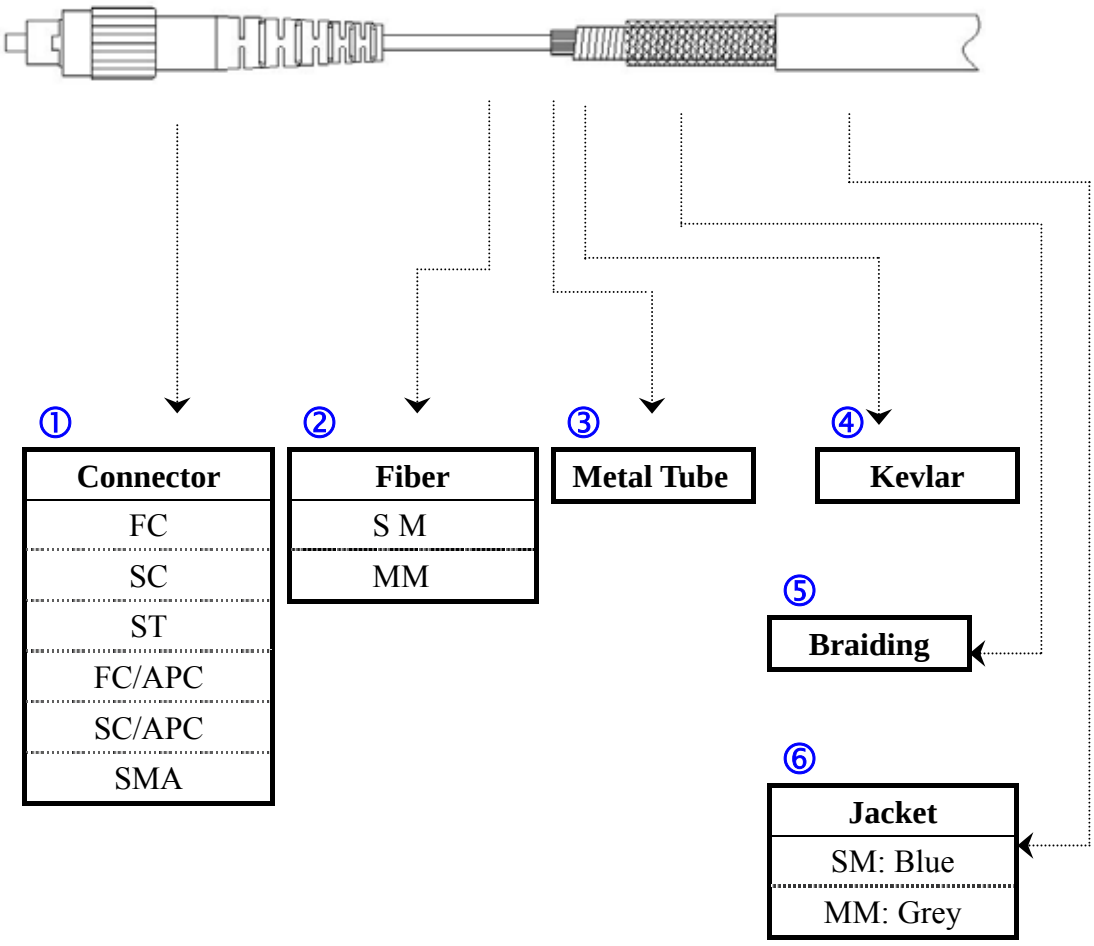

Fig.1 The schematic diagram of armored optical fiber patchcord -Type I.

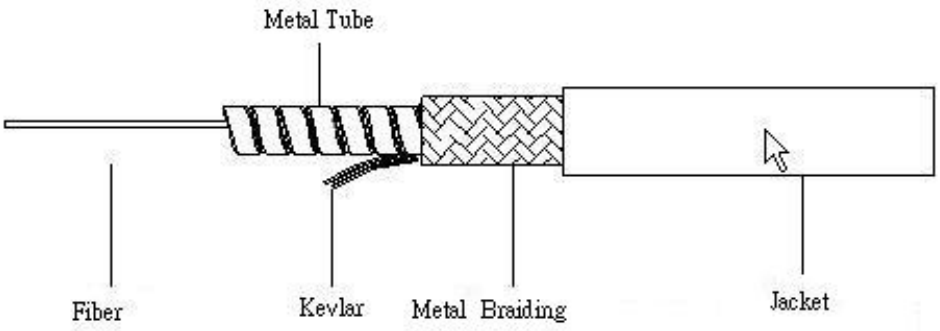

Fig.2 The schematic diagram of armored optical fiber cable-Type II and Type III for SFF connector.

The difference between the above mentioned simplex armored optical fiber cables in fig.1 and fig .2 are the newly developed armored optical fiber cable (Type II and III) reduce it's inner and outer diameter of stainless metal tube. Therefore, this newly developed armored optical fiber cable(Type II) is the same diameter as the traditional patchcords and Type III cable is especially suitable for SFF connectors. The followings are their detailed specification description.

2-2-1 Optical fiber

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

Table 1 The geometric ,optical and mechanical characteristic 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℃

This 250um bare fiber coated with tight or semi-tight PVC jacket and it's outer diameter is 600um.This 600um optical fiber was protected by the stainless flexible metal tube as described in the following sections.

2-2 Main stainless metal tubes with jacket

According to the size of the metal tube, we classify the armored fiber optical cable into three types. The material of this tube is 304 stainless metal. It's corresponding diameters and mechanical characteristics are as table 2.

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

Type of cable	Type I	Type II	Type III (For SFF connector)
Number of fiber	1	1	1
(I.D.) Inner Diameter of metal tube (mm)	1.5 +/- 0.05	1.2 +/- 0.05	1.0 +/- 0.05
(O.D.) Outer Diameter of metal tube (mm)	2.1 +/- 0.05	1.8 +/- 0.05	1.5 +/- 0.05
Overall diameter with jacket (mm)	3.3 +/- 0.1	3.0 +0/- 0.2	2.5 +/- 0.1
Tensile strength (Kgf)	≧20	≧20	≧15
Anti-pressure (Kgf/100mm)	≧300	≧300	≧250

In order to increase the tensile strength of this main stainless metal tube, we surround the stainless metal with Kevlar and stainless metal braiding as shown in fig.1 and 2.The diameter of this metal braiding wire is 0.07mm and it's material is 304 stainless metal.
The Kevlar and stainless metal braiding are in the outside of the stainless metal tube and this increase the anti-tensile strength of this cable. We coat this braiding metal tube with PVC or PE jacket according to the customer's requirements. In the normal situation, we use the PVC material as the metal tube jacket and the jacket color is blue for single mode fiber and grey for multi-mode fiber.

2-2-3 Optical connectors

We use the traditional optical connectors as our armored optical connectors and the optical connectors characteristics are shown in table 3.

Table 3 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/MTRJ**
Insertion Loss (I.L.)	≦0.2dB	≦0.3dB	≦0.3dB
Return Loss (R.L.)	≧55dB	≧65dB	----
Repeatability	≦0.1dB		
Operating Temperature	-40~+85℃		

3.Lable and Package

3-1 We distinguish each fibers with the colors of the outer jacket. Each different color of jacket corresponds to different optical fibers. In the normal situation, we use the PVC material as the metal tube jacket and the jacket color is blue for single mode fiber and grey for multi-mode fiber.

3-2 Each armored optical fiber cable should have marking on the outer jacket of the main metal tube or adhered to an additional tape.
The marking on the outer jacket or tapes shall appear the following details :

(a)Manufacturer's name
(b)Type and counts of optic fiber e.g .SM-1C
(c)Date of manufacture: e.g.2002.3.1

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.