NEX1 Technologies Co., Ltd

Simplex Armored Optical Fiber Cable Specifications

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Approved by	Checked by	Written by
Vincent Tsao	Jimmy Chon	Michael Lewis

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NO 6, Lane 252, Min-Tsu E. Road, Taipei 104, Taiwan
Tel:886-2-2518-1300 Fax:886-2-2501-4209 http://www.nex1.com.tw

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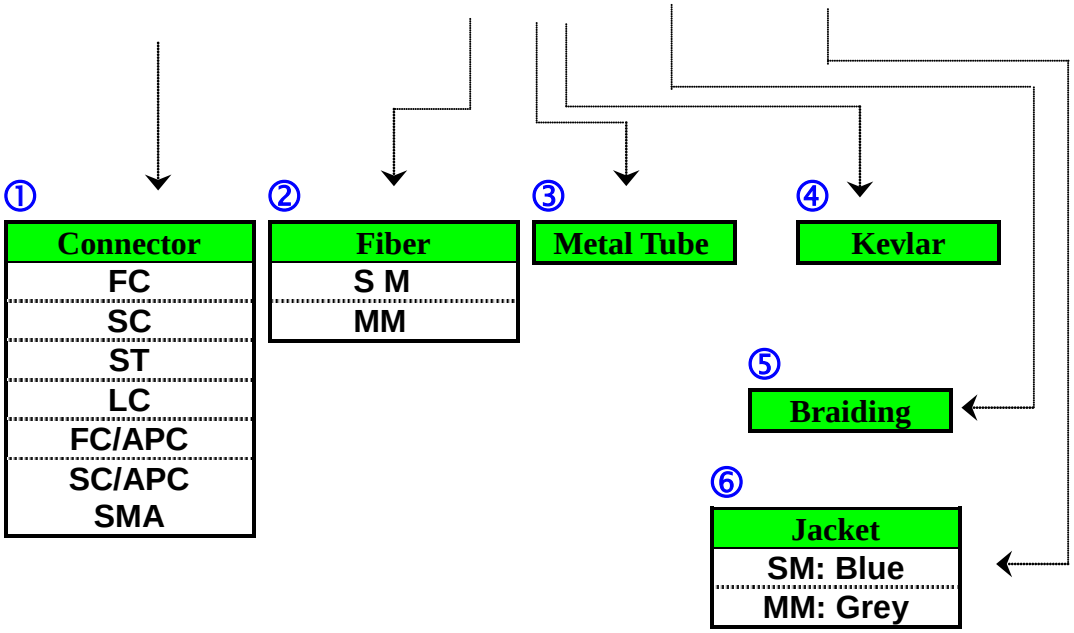

Fig.1

1. Introduction

(1) These specifications describe the optical performance and mechanical characteristics of the " Simplex Armored Optical Fiber Cable".

(2) Comparing with traditional optical fiber cables, the mechanical characteristics of NEX1's "Simplex Armored Optical Fiber Cable" is much stronger, electric cable–like handlings and easy to installations.

(3) This latest "Simplex Armored Optical Fiber Cable" is different from the traditional cables in several characteristics. The most obvious advantages are the micro diameter stainless flexible metal tube with flame-resistance PVC or PE jacket to protect this fragile optical fiber. In order to ensure the firmly conjunctions, relatively strong connectors are also applied. This unique design greatly reduces the installation difficulties while extending the fiber's life.

(4) Like traditional cables, NEX1's "Simplex Armored Optical Fiber Cable" can be used as the connections between the ODF (Optical Distribution Frame) equipments, connections between floors or/and emergency field-testing connections.

(5) With the trend of pursuing small form factor (SFF) connectors such as LC, MU type connectors, we also developed one typed of smaller simplex armored optical cable for these SFF connectors.

2.Product Specification:

The specifications of simplex armored optical fiber cable are described in the following sections.

2-1 Descriptions:

The simplex armored optical fiber cable is mainly constructed of stainless metal tube with jacket and optical fiber. The advantages include anti-tensile, anti-pressure and easy installations. The simplex armored optical fiber cable can be used in the connections between the optical equipments in the indoor central offices, outdoor field-testing, or as a temperature sensor cable. The detailed specifications are shown in the following sections:

2-2 Structures:

As shown in Fig.1. The simplex armored optical fiber cable is mainly constructed of the following parts :optical fiber, stainless metal tube, Kevlar, metal braiding and outer jacket. We also developed small diameter simplex armored optical fiber cables for small form factor (SFF) connectors.

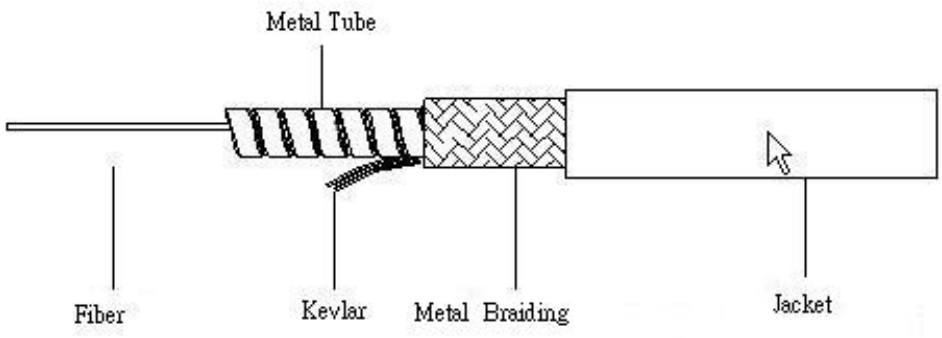

Fig.1 The schematic diagram of armored optical fiber cable

The differences between the above mentioned simplex armored optical fiber cables in Fig.1 are the inner and outer diameters of stainless metal tube are reduced for these newly developed armored optical fiber cables, and the Kevlar is surrounded outside the metal tube rather than inside the metal tube.

In doing so, the diameter of these two newly developed armored optical fiber cables are the same in thickness as the traditional patch cord cables plus the Type III is suitable for SFF connectors. Below are the detailed specifications.

2-2-1 Optical fiber

The geometric characteristics, optical performance and mechanical properties of optical fiber must meet the conditions listed in the Table 1.

Table 1: The geometric, optical and mechanical characteristic of the 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	---	≥500Mhz-km @850nm ≥500Mhz-km @1300nm	≥160Mhz-km @850nm ≥200Mhz-km @1300nm
Zero – dispersion shift	0.092 ps/ nm2-km.	0.101 ps/ nm2-km.	0.097 ps/ nm2-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 is 600um in diameter and is coated with tight or semi-tight PVC jacket. This 600um optical fiber is securely protected by the stainless flexible metal tube as described in the following sections.

2-2-2 Stainless metal tubes with Kevlar, metal braiding and jacket

Based on the different sizes of the metal tubes, we classify the armored fiber optical cable into three types. The material of this tube is 304 stainless metal. The corresponding diameters and mechanical characteristics are listed in Table 2.

Table 2. Diameters and mechanical characteristics 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
Inner diameter (I.D.) of metal tube (mm)	1.5 +/- 0.05	1.2 +/- 0.05	1.0 +/- 0.05
Outerdiameter (O.D.) 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/- 0.1	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, stainless metal is wrapped with Kevlar and metal braiding as shown in Fig.1. The diameter of this metal braiding

wire is 0.07mm and its material is 304 stainless metal.

The differences between Type I, II and III simplex armored optical fiber cables are their inner and outer diameters of stainless metal tubes. The Kevlar plus the metal braiding 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. Under normal situation, PVC material is applied as the metal tube jacket. The jacket color is blue for single-mode fiber and grey for multi-mode fiber.

2-3.Mechanical Characteristics:

The mechanical characteristics of armored optical fiber cable are shown in Table 3.

Table 3. The mechanical characteristics of armored optical fiber Cable:

		Type I	Type II	Type III
1	Cable tensile strength (Kgf.)	≧20Kgf	≧20Kgf	≧15Kgf
2	Anti-pressure (Kgf/100mm)	≧300Kgf	≧300Kgf	≧250Kgf
3	Weight	22.5 Kg/Km	20 Kg/Km	18 Kg/Km
4	Operating temperature	-40~+85℃	-40~+85℃	-40~+85℃

3. Labeling and Package

3-1 We distinguish each armored optical fiber cables with the colors of their jacket. Different color coatings correspond to each different optical fibers. For simplex armored optical fiber cable, the jacket color is blue for single-mode fiber and grey for multi-mode fiber .It is easy for customer's identification.

3-2 Each armored optical fiber is printed with markings on the outer jacket or adhered to an additional tape. The markings on the outer jacket or tapes show the following information:

(a)Manufacturer's name
(b)Type and numbers of optic fiber e.g. : SM-1C
(c)Date code of production

The marked intervals are no less than 1-m throughout the cable length

4.References:

GR-326-CORE Generic Requirements for Single mode Optical Connectors and Jumper Assemblies.

GR-409-CORE Generic Requirements for Premises Fiber Cables.

Notice:

All above specifications are subjected to change without prior notice. Customized specifications are possible upon request. The manufacturer also reserves the right to make improvements to the

products.