ZITHA TECH SPECIALTY CABLES (Pty) Ltd

Components of Fiber Optic Patch Cords



Overview

The majority of our customers manufacture fiber optic cable assemblies, which are widely known as patch cords.

Key Takeaways

Fiber optic patch cords consist of four main components: the optic fiber, buffer coating, aramid strength members, and the outer jacket.1. Optic Fiber

The core of a patch cord is the optic fiber, which is made of glass or plastic and acts as the optical waveguide. It consists of a light-carrying core surrounded by cladding, which traps light within the core through total internal reflection, enabling efficient signal transmission over distances . Single-mode fibers have a small core (~9µm) for long-distance transmission, while multimode fibers have larger cores (50–62.5µm) for shorter distances .

2. Buffer Coating

Surrounding the optic fiber is a buffer coating, which protects the delicate glass or plastic fiber from mechanical stress, abrasion, and environmental factors. The buffer can be made from various materials depending on the application, including fire-resistant or high-temperature-resistant coatings. It also acts as a seal for the fiber before splicing or connectorization .

3. Aramid Strength Members

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Aramid yarns (e.g., Kevlar®) are embedded within the patch cord to provide tensile strength. These fibers protect the optic fiber from breaking during handling, pulling, or connector installation. They are heat-resistant and ensure the cable maintains integrity under mechanical stress .

4. Outer Jacket

The outer jacket is the external protective layer that holds all internal components together. It provides physical protection, flexibility, and environmental resistance. Jacket materials vary based on installation requirements: PVC for basic indoor use, LSZH (Low Smoke Zero Halogen) for fire safety in enclosed spaces, OFNR/OFNP for riser or plenum applications, and armored or waterproof jackets for outdoor or harsh environments .

Additional Considerations
• Connectors: Patch cords have connectors on both ends (e.g., LC, SC, FC, MPO) to ensure precise optical alignment and compatibility with network devices .

• Simplex vs Duplex: Simplex cords have one fiber for one-way transmission, while duplex cords have two fibers for bidirectional communication .

• Color Coding: Jackets are often color-coded to indicate fiber type or application, aiding in network management . Understanding these components is essential for selecting the right patch cord for specific network environments, ensuring low signal loss, durability, and compliance with safety standards.

Article Content

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This guide will help you quickly understand the main types of fiber patch cords and how to choose the right solution

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A fiber-optic patch cord is constructed from a core with a high refractive index, surrounded by a coating with a low refractive index,

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Fiber optic patch cord is a length of optical cable that connects optical fiber equipment. It

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Fiber Optic Patch Cord Types

Fiber optic patch cords, as one of the fundamental components of optical network cabling, are widely used in the

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Key components of Fiber Optic Connectors and Key Specifications of Connectors This article series introduces

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