

Function of the two wires in a fiber optic patch cord



Overview

Fiber Optic Patch Cords Guide | Types, Connectors & Applications
In simple words: A patch cord is the “bridge” that connects two fiber devices and lets them.

Key Takeaways

A standard duplex fiber optic patch cord contains two optical fibers: one for transmitting data and one for receiving data.

A fiber optic patch cord, also called a fiber jumper, is a cable used to connect optical devices such as switches, transceivers, and patch panels, enabling data transmission via light signals. The two fibers inside a duplex patch cord allow simultaneous bidirectional communication, with one fiber dedicated to sending signals and the other to receiving them.

Structure of the Fibers

Each fiber in the patch cord consists of:

- **Core:** The central part of the fiber where light travels. Single-mode fibers have a core around 9 μm , while multimode fibers have larger cores (50 μm or 62.5 μm) for short-distance, high-speed transmission.
- **Cladding:** Surrounds the core and reflects light back into the core to maintain signal integrity.

- **Protective Coating:** Includes aramid yarn (Kevlar) and a polymer jacket to provide mechanical strength and protect the delicate fibers from bending or breaking .

Function of Each Fiber

In a duplex patch cord:

- **Transmit Fiber (TX):** Carries the outgoing optical signal from the source device to the destination.
- **Receive Fiber (RX):** Carries the incoming optical signal from the destination back to the source. This arrangement ensures that data can flow in both directions simultaneously, which is essential for network devices that require full-duplex communication .

Additional Notes

- **Simplex vs Duplex:** Simplex cords have a single fiber for one-way transmission, while duplex cords have two fibers for bidirectional communication .
- **Connector Types:** Common connectors include LC, SC, ST, and MPO, which house the fibers and ensure precise alignment for minimal signal loss .
- **Color Coding:** Typically, the fibers are color-coded to distinguish TX and RX, with yellow jackets for single-mode and orange or aqua for multimode fibers . In summary, the two wires in a fiber optic patch cord are two optical fibers designed for transmitting and receiving light signals, enabling efficient bidirectional communication in optical networks.

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