

Article Overview

Single-mode dual-core fiber with LC interface uses two fibers for transmit and receive, optimized for long-distance, high-bandwidth communication with compact LC connectors.

Overview

Single-mode dual-core fiber, also known as duplex single-mode fiber, consists of two separate fibers: one for transmitting data (Tx) and one for receiving data (Rx). This separation ensures clear, uninterrupted communication and prevents signal collision, making it ideal for high-speed networks and long-distance links . The fiber typically has a 9-micron core and 125-micron cladding, which allows light to propagate in a single mode, minimizing dispersion and signal loss over long distances .

LC Connector Features

The LC (Lucent Connector) interface is a small form factor connector with a 1.25 mm ceramic ferrule, designed for high-density applications . Key features include:

- o Duplex configuration: Two fibers housed side-by-side for simultaneous Tx/Rx communication .
- o Push-pull latch: Easy to connect and disconnect, even in crowded panels.
- o Low insertion loss: Optimized for minimal signal loss and high bandwidth.
- o Compact design: Supports high port density in data centers and telecom racks.
- o Polish types: UPC (Ultra Physical Contact) for general use, APC (Angled Physical Contact) for applications sensitive to reflections, such as DWDM .

Applications

Single-mode dual-core LC fiber is widely used in:

- o Data centers: Connecting switches, servers, and storage devices over long distances.
- o Telecommunications: High-speed backbone links and metro networks.
- o SFP+ modules: Optical transceivers using 10G or higher speeds, often supporting distances up to 80 km at 1550 nm wavelength .
- o Enterprise networks: Reliable point-to-point connections between buildings or campuses.

Cable Specifications

- o Core/Cladding: 9/125 um (single-mode OS2 standard)
- o Jacket: Typically yellow for single-mode, PVC or OFNR rated

Single-mode LC dual-core fiber

- o Connector: LC duplex with ceramic ferrules
- o Length: Available in various lengths, commonly 2-20 meters for patch cables
- o Performance: Supports 10 Gbps or higher, low attenuation, and high signal fidelity over long distances

Advantages

- o High bandwidth and long-range transmission: Single-mode fiber supports minimal signal loss over kilometers .
- o Compact and space-efficient: LC connectors allow dense port arrangements in racks and panels .
- o Reliable duplex communication: Separate fibers for Tx and Rx prevent interference and maintain signal integrity .
- o Durable and stable: Ceramic ferrules and robust construction ensure long-term performance . In summary, single-mode dual-core fiber with LC interface is a high-performance solution for long-distance, high-speed optical networks, combining the benefits of single-mode transmission with compact, reliable LC duplex connectors. It is suitable for data centers, telecom infrastructure, and enterprise networking where low loss, high bandwidth, and reliable duplex communication are critical.

FS offers single mode duplex fibre patch leads & cables for 1G/10G/40G/100G/400G Ethernet fibre connections that can transport

LC F LC Fiber Optic Connectors provide a rugged solution for high-density telecommunication rooms, LANs, public networks and

Learn the key differences between single mode vs multimode fiber cables and choose the right one for your fiber optic

Duplex LC single-mode fiber optic patch cord (Courtesy of Corning Optical

Choosing the right fiber optic cable is essential for optimizing your network setup. In this

Fiber type & distance (MMF/SMF; budget vs reach) Optical interface type (simplex LC for BiDi, duplex LC for dual-fiber) Protocol

When planning a fiber optic network, one key decision is choosing between single-fiber (BiDi) and dual-fiber optical transceivers. This

Optical fiber connector LC (top) and ST (bottom) optical fiber connectors, both with protective caps in place

Discover the differences between simplex and duplex fiber optic cables, their pros, cons, and best applications

Single-mode lc dual-core fiber

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Learn what a single mode SFP transceiver is, how it works, key specs, common types, and real-world use cases for long-distance

LC vs. Duplex LC: LC is a single connector, while duplex LC is a dual connector configuration. The difference between LC and

2-core: Look for "2core" or "Dual Channel." Mode (Fiber Type): Single Mode (SM): Product

Single Mode Fiber Optic cables feature a narrow core (about 9 microns), allowing only one mode of light to transmit. This design

While single-core fibers offer efficiency and simplicity for long-distance transmission, dual-core fibers excel in high

How do you choose between single mode and multimode fiber? Compare their differences in core size, light source,

Single Mode fibers have a smaller core, allowing light to travel in a single, straight path,

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