Dual LC interface fiber optic



Overview

A duplex LC connector is a fiber optic connector configuration that combines two LC connectors in a single paired interface.

Key Takeaways

Dual LC fiber optic interfaces, also known as duplex LC connectors, enable bidirectional optical communication by integrating two fibers—one for transmit (TX) and one for receive (RX)—in a compact form factor.

Overview

A duplex LC connector is a small form-factor fiber optic interface that houses two fibers side-by-side, allowing simultaneous bidirectional data transmission.

L

C stands for Lucent Connector, and the duplex design is widely used in Ethernet, telecom, and data center networks due to its compact size, high port density, and low insertion loss. Each fiber is aligned using a 1. 25 mm ceramic ferrule, which ensures precise optical alignment and minimal signal loss.

Key Components

Ferrules: Two 1. 25 mm zirconia ceramic ferrules protect and align the fiber cores.



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Body/

Housing: Plastic shell securing ferrules and internal springs. Latch: Push-pull clip for easy mating/unmating. Boot: Reduces strain at the cable exit.

Duplex Clip: Holds two simplex LC connectors together in a duplex pair. Polish Types: UPC (Ultra Physical Contact) for flat polish, APC (Angled Physical Contact) for angled polish, critical in DWDM and CATV applications.

Applications

Duplex L

C connectors are commonly used in SFP, SFP+, and SFP28 transceivers, supporting 1G, 10G, and 25G Ethernet optics. They are compatible with both single-mode fiber (SMF) and multimode fiber (MMF) systems, making them versatile for data centers, enterprise backbones, and telecom networks. The dual-fiber design ensures full-duplex communication, which is essential for modern high-speed networks.

AdvantagesHigh-density deployment: Duplex LC connectors occupy half the space of SC connectors, allowing more ports per patch panel. Low insertion loss: Typical loss ≤0. 15 dB, supporting high-performance links.

Ease of installation: Push-pull latch and duplex clip simplify connection in crowded panels. Polarity management: Type-A (straight) and Type-B (cross) configurations maintain correct TX/RX alignment, with switchable uniboot options for field flexibility.

Best Practices

Ensure correct fiber polarity to avoid link failures. Handle connectors carefully to prevent contamination or damage to ferrules. Use duplex adapters or couplers for proper mating.

Follow manufacturer guidelines for insertion cycles and environmental conditions to maintain long-term reliability. In summary, dual LC fiber optic interfaces are essential for high-speed, high-density optical networks, providing reliable bidirectional communication in a compact and standardized form factor suitable for modern data centers and telecom infrastructure.

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Article Content

What Is an SFP Duplex LC Connector in Fiber Networks

A duplex LC connector is a fiber optic connector configuration that combines two LC connectors in a single paired interface. Each connector

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Expert guide covering LC duplex connector types, polarity reversal methods, cost-control checklists and 25-year procurement strategy for data

Understanding the Duplex LC Connector: The Go-To

A: A Duplex LC Connector is designed to connect two fiber optic cables using one modular plug. It is widely viewed as the best choice for fiber

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LC simplex and duplex connectors are used for equipment cross-connects or interconnects in backbone, horizontal and work area applications for high-speed data transmissions.

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Fiber Connector Types

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Next, this article will introduce the widely used fiber optical connector types in the past and present including FC SC LC ST and MTP/MPO connectors

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