

Fiber Optic Cable Connector Specifications and Models



Overview

Choosing the correct connector type ensures ideal performance of the fiber optics cables and devices.

Key Takeaways

Fiber optic connectors are precision devices that join optical fibers, with models like SC, LC, ST, FC, and MPO/MTP offering varying ferrule sizes, coupling mechanisms, and performance specifications for different applications. Overview of Fiber Optic Connectors

Fiber optic connectors are mechanical devices designed to align and join optical fibers, allowing light to pass with minimal loss. Unlike permanent splicing, connectors enable easy connection and disconnection, making them ideal for maintenance, upgrades, and flexible network configurations. Key performance metrics include insertion loss, return loss, and physical compatibility with patch panels, transceivers, and other equipment .

Common Connector Models and Specifications

1. SC (Subscriber Connector)

- Shape & Coupling: Square body with push-pull mechanism.
- Ferrule Size: 2.5 mm.
- Applications: FTTH deployments, legacy Gigabit Ethernet, and GPON networks.

- Performance: SC/APC variants provide low return loss for RF video and high-precision applications .

2. LC (Lucent Connector)

- Shape & Coupling: Small form factor with latch mechanism similar to RJ45.
- Ferrule Size: 1.25 mm.
- Applications: High-density data centers, telecom, and duplex connections.
- Advantages: Compact design allows more ports per patch panel, suitable for single-mode and multimode fibers .

3. ST (Straight Tip)

- Shape & Coupling: Round body with bayonet-style lock.
- Applications: Enterprise LANs, campus networks, and legacy systems.
- Notes: Less common in modern installations but still used in educational labs and maintenance .

4. FC (Ferrule Connector)

- Shape & Coupling: Threaded screw-on mechanism.
- Applications: High-vibration environments, industrial networks, and precision measurement setups.
- Advantages: Provides secure, stable connections in demanding conditions .

5. MPO/MTP (Multi-Fiber Push-On / Multi-Fiber Termination Push-On)

- Shape & Coupling: Rectangular ferrule with push-pull latch and guide pins.
- Fiber Count: Up to 24 fibers per connector.
- Applications: High-density, high-bandwidth data centers, ribbon cables, and industrial environments.
- Notes: MPO and MTP are functionally similar; MTP is a branded version with enhanced performance. Proper alignment is critical to minimize signal loss .

Key Specifications to Consider

- Ferrule Material: Ceramic, stainless steel, or plastic, affecting durability and precision.
- Insertion Loss: Typically 0.1–0.5 dB for high-quality connectors.
- Return Loss: Higher in APC (Angled Physical Contact) connectors, often >60 dB.
- Operating Temperature: Ranges from -40°C to 85°C for ruggedized connectors, or -15°C to 70°C for standard types .
- Mounting Types: Cable mount (free-hanging) or panel mount.

- **Fiber Compatibility:** Single-mode (SM) or multimode (MM), with ferrule angle and polish type affecting performance.
- Applications and Selection Criteria
- **Data Centers:** LC and MPO/MTP for high-density, high-speed connections.
 - **Telecom Networks:** SC/APC for low return loss in GPON and RF video.
 - **Industrial Environments:** FC or ruggedized connectors for vibration and temperature resilience.
 - **Legacy Systems:** ST and SC for existing infrastructure compatibility. Choosing the right connector depends on fiber type, network density, environmental conditions, and performance requirements. Proper selection ensures minimal signal loss, reliable connections, and long-term network stability .

Article Content

List of Fiber Optic Connectors Models & Products | TE Connectivity

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FIBER OPTIC CONNECTORS

Our broad portfolio of optical fiber connectors includes several connector types including standard fiber connectors, LC connectors,

Fiber Optic Connectors Information

When selecting a fiber optic connector, it is important to consider alignment accuracy, ruggedness, repeatability, and loss

Fiber Optic Connector Types

Fiber optic cable connectors come in many configurations and usages, and simplify fiber optic cable installation and maintenance

Types of Fiber Optic Cable Connectors and Their Uses

Choosing the correct connector type ensures ideal performance of the fiber optics cables and devices. Learn more about the types of

Fiber Optic Cable Types - Multimode and Single Mode

Application Fiber Optic connectors and cables are present in nearly every communications project that we might sell into, be it a DAS

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Fiber Optic Cable Types Explained

Our comprehensive guide to types of fiber optic cables. Learn all about the differences between single mode and multimode cables,

Fibre Optic Cable & Connector Guide

Proper selection of fibre optic cables and connectors for specific uses are becoming more and more important as fibre optic systems

Fiber Optic Connectors Specifications

Find Fiber Optic Connectors on GlobalSpec by specifications. Fiber optic connectors are used to align and join two or more fibers

Fiber Optic Connector Types Explained | FiberCablesDirect

Fiber optic connectors are an essential component of any fiber optic network, allowing for the connection and transmission of optical

Fiber Optic Connectors Information

****Researching Fiber Optic Connectors? Start with this definitive resource of key specifications and things to consider when choosing**

Fiber Optic Connectors

Whether you are installing a brand new fiber optic network or you are repairing a legacy system, using this fiber optic connector

Fiber Optic Connectors and Adapters

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