FC type single-mode fiber optic connector



Overview

Differences Between ST, SC, FC, and LC Fiber Learn the differences between ST, SC, FC, and LC fiber connectors. Explore connector types, PC/UPC/APC polish.

Key Takeaways

The FC (Ferrule Connector) interface is a threaded, high-precision connector ideal for single-mode fibers, offering low insertion loss, high stability, and suitability for high-vibration environments.

Overview

The F

C connector is a fiber-optic connector with a threaded body designed to provide secure, stable connections for single-mode fibers and polarization-maintaining fibers in applications such as datacom, telecommunications, measurement equipment, and single-mode lasers. Its name stands for Ferrule Connector or Fiber Channel, and it was originally called a "Field Assembly Connector". The connector is standardized under TIA/EIA-604-4 for intermateability.

Design Features

Ferrule: The fiber end is embedded in a 2.5 mm ferrule, typically made of zirconia ceramic or stainless steel, which ensures precise alignment and low optical loss. Threaded Body: The screw-type design prevents accidental disconnection and provides mechanical stability, especially in high-vibration environments. Key Alignment: A key prevents the fiber from rotating during mating, which is critical for polarization-maintaining fibers and angled fiber ends.

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Spring-

Loaded Ferrule: The ferrule is spring-loaded to control contact force, ensuring consistent physical contact (PC) between fiber cores. Polish TypesFC connectors come in different polish grades to optimize performance: FC/PC (Physical Contact): Standard rounded fiber tip for low insertion loss. FC/SPC (Super Physical Contact): Higher polish quality for reduced back-reflection.

FC/UPC (Ultra Physical Contact): Ultra-polished tip for minimal insertion loss and back-reflection, ideal for high-precision single-mode applications.

Advantages for Single-

Mode Fiber

Low Insertion Loss: Typically below 0.5 dB without active alignment, thanks to the floating split sleeve in the adapter. High Stability: Threaded design and spring-loaded ferrule provide excellent mechanical isolation. Precision Alignment: Ceramic ferrules and keying allow precise fiber core alignment, critical for single-mode and polarization-maintaining fibers.

Durability: Suitable for repeated mating cycles and harsh environments. ApplicationsFC connectors are widely used in: Telecommunications and datacom networksSingle-mode laser systemsMeasurement and test equipmentPolarization-maintaining fiber systems Although FC connectors are gradually being replaced by SC and LC connectors in some applications due to faster connection speed, they remain preferred where mechanical stability and low back-reflection are critical.

Handling and Maintenance

Cleaning: Always clean the fiber tip before use to prevent permanent damage and increased coupling loss. Protection: Use dust caps when the connector is not in use. Alignment Care: Carefully align the ferrule key when screwing into the receptacle to avoid fiber end scratches.

In summary, the FC connector interface is a robust, high-precision solution for single-mode fiber systems, offering low loss, excellent mechanical stability, and precise alignment, making it ideal for demanding optical applications.

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Article Content

Differences Between ST, SC, FC, and LC Fiber

Learn the differences between ST, SC, FC, and LC fiber connectors. Explore connector types, PC/UPC/APC polish, single-mode vs multi-mode

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FC connector

The FC connector is a fiber-optic connector with a threaded body, which was designed for use in high-vibration environments. It is commonly used with both

Fiber Connectors

FC connectors (“ferrule connector”) are a popular type for single-mode fibers. They contain a floating ferrule with 2.5 mm diameter, into which the fiber is inserted (with the risk of scratching the fiber end).

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The fiber connector types, sometimes referred to as terminations, link fiber optic cables together through terminals, switches, adapters, and patch

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The Ideal Connector for Single-Mode Fibers

The FC Connector screw-design and alignment key make them ideal for single-mode fibers. FC Connectors pioneered low loss (below 0.5dB) for single-mode fibers without active

Fiber Connectors

The FC was the first optical fiber connector to use a ceramic ferrule, but unlike the plastic-bodied SC and LC, it utilizes a round screw-type fitment made from nickel

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Compare LC, SC, FC, ST, and MTP/MPO fiber connectors. Learn their structures, applications, advantages, and drawbacks to choose the right type for your network.

Fiber Connector Types: A Comprehensive Guide 2025

The FC connector features a threaded coupling, making it highly secure in high-vibration environments such as factories, railway networks, or

Fiber Connector Types

However, the widely used types are about a dozen of fiber optic connectors, which can be divided into single-fiber, duplex fiber connectors (such

FC Connector Explained

The FC Connector pioneered low loss (below 0.5dB) for single-mode fibers without active alignment by utilizing a floating split sleeve in the adapter.

The Ideal Connector for Single-Mode Fibers

FC Connectors pioneered low loss (below 0.5dB) for single-mode fibers without active alignment by utilizing a floating split sleeve in the adapter. This innovation, along with the transition to

Fiber Connector Types: LC, SC, ST, FC, MPO | PHILISUN

The FC (Ferrule Connector) is one of the earliest connector designs used for single-mode fiber. It features a threaded coupling mechanism, ensuring

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