

Fiber optic cable specifications fc



Overview

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 single-mode optical fiber and polarization-maintaining optical fiber. FC connectors are used in datacom, telecommunications, measurement equipment, and single-mode lasers. They are becoming less common, displaced by SC and LC connectors.

Key Takeaways

FC connectors are threaded fiber optic connectors designed for high-precision, low-loss, and vibration-resistant applications, typically using a 2.5 mm ceramic ferrule. Mechanical and Structural Features

FC connectors feature a threaded coupling mechanism that prevents accidental disconnection and ensures stability in high-vibration environments, making them suitable for telecom, industrial, and measurement applications. The ferrule, typically 2.5 mm in diameter, is made of zirconia ceramic or stainless steel, and the fiber end is polished to a physical contact (PC) surface, with variants including FC/PC, FC/SPC, and FC/UPC for increasing polish quality and lower back-reflection. Some connectors, like Radiall's FC, allow tuning in six positions to optimize insertion loss by rotating the ferrule to align fiber cores precisely.

Optical Performance

FC connectors are designed for low insertion loss and high return loss, with typical maximum insertion loss around 0.3–0.5 dB depending on polish type and fiber quality . The spring-loaded ferrule ensures consistent contact force, reducing signal degradation. Advanced designs, such as Diamond SA's Active Core Alignment (ACA) technology, minimize core eccentricity for superior optical alignment .

Standards and Compliance

FC connectors comply with IEC 61754-13 and JIS C 5970 (type F01) standards, and intermateability has been certified by NTT and other organizations . They are compatible with single-mode (SM), multimode (MM), polarization-maintaining (PM), and specialty fibers including VIS/NIR and high-temperature types .

Environmental and Reliability Specifications

FC connectors are engineered to withstand vibration, shock, and tensile stress. For example, insertion loss fluctuation under vibration (10–55 Hz, 0.75 mm amplitude) or shock (981 m/s², 6 ms half-sine pulse) is typically ≤ 0.2 dB, with no visible damage to the connector or cable . Crimping reliability is enhanced with protective metallic tubes to reduce fiber stress and ensure excellent cable retention .

Applications

FC connectors are ideal for high-precision or high-vibration environments, including:

- Telecommunications and CATV networks
- LAN, MAN, and WAN systems
- Test and measurement equipment
- Industrial and medical optical systems
- Single-mode lasers and polarization-maintaining fiber setups

Assembly and Accessories

FC connectors are available as terminated assemblies, field termination kits, or splice-on connectors. Accessories include straight boots, dust caps, and crimping sleeves, with some “level 0” kits allowing user customization . Proper assembly and handling are critical to maintain optical performance and longevity. In summary, FC connectors provide robust, precise, and low-loss fiber connections, particularly suited for demanding optical systems where vibration resistance and high alignment accuracy are essential.

Article Content

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FC connector

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FC Series

The FC connector is a fiber optic connector with a screw thread locking mechanism to withstand high-vibration environments

Fiber Connectors

Fiber connectors are connectors used as terminations of optical fiber cables. They are widely used in optical fiber communications

Optical Fiber Connectors: FC, SC, ST, LC, and DIN Explained

Fiber connectors come in different types, each with its own performance characteristics and technical specifications. Common types

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,

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Connector Type Common connector types for fiber optic cable include biconic, D4, ESCON, FC, FDDI, LC, loopback, MTP, MT-RJ,

3M Fibre Optic Cable

3MTM Fibre Optic Cable Assemblies 3M provides a variety of single mode and multimode cable assemblies that are compliant with

FC Connectors

FC Connectors Optic Fiber Connectors An Optic fiber Connector terminates the end of an optic fiber cable and enables quicker

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Standard Fiber Patch Cables Fiber optic patch cables are ideal for supporting high speed telecommunication network fiber

Fibre Channel Connectivity

Fibre Channel standards define the links and protocols that form storage area networks (SANs). The Fibre Channel protocol runs on

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Fiber optic patch cables are ideal for supporting high speed telecommunication network fiber applications. They are manufactured

FC Connector Standards

The FC/PC (Physical Contact) and FC/APC (Angled Physical Contact) fiber optic connectors are standardized under

Standard Fiber Patch Cables Datasheet

They have the characteristics of low insertion loss, high return loss, bending resistance, and strong stability, which

Fiber Optic Cable Standards: IEC/TIA/ITU Complete Guide

Definition: Fiber optic cable standards — primarily governed by IEC 60793/60794, ITU-T G.650-G.657, and TIA-568.3-D — define

FC Type Fiber Optic Connectors

FC Type Fiber Optic Connectors HRFC Series Features JIS, IEC standard compliant and intermateability test certified. Comply with

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