

Fiber Optic Cable LC Connector Fabrication



Overview

LC connectors play an integral yet often overlooked role in enabling high-speed fiber optic communications.

Key Takeaways

LC connectors are small-form-factor fiber optic connectors that require precise assembly using specialized tools to ensure low insertion loss and reliable performance.

Overview of LC Connectors

LC (Lucent Connector) is a 1.25 mm ferrule small-form-factor connector widely used in high-density applications such as data centers, telecom networks, and SFP/SFP+ transceivers. LC connectors are available in simplex, duplex, UPC, and APC configurations, with duplex LC connectors supporting bidirectional communication. The ferrule, typically ceramic, aligns the fiber core precisely to minimize insertion loss (55 dB, APC >65 dB). The connector body provides mechanical integrity and a push-pull latch for secure connections.

Components Required

- Ferrule: 1.25 mm ceramic or stainless steel, holds the fiber in precise alignment.
- Connector body: Provides structural support and coupling mechanism.
- Boot or strain relief: Protects the fiber from bending and mechanical stress.
- Adhesive or epoxy: Secures the fiber inside the ferrule.

- Polishing film or machine: Ensures a smooth fiber endface for optimal light transmission.

Tools and Equipment

- Fiber strippers: For removing the outer jacket, buffer, and coating (e.g., Ripley Miller FO 103-S, Jonard JIC-375), .
 - Kevlar cutters: To trim strength members without damaging the fiber .
 - Cleaver: Produces a clean, perpendicular fiber endface.
 - Epoxy dispenser or UV curing system: For bonding the fiber inside the ferrule .
 - Polishing puck and films: For finishing the ferrule endface to UPC or APC specifications.
 - Microscope or inspection scope: To verify fiber alignment and endface quality.
- #### Fabrication Process
- Cable Preparation: Strip the fiber optic cable to expose the bare fiber, remove the buffer coating, and trim Kevlar strength members .
 - Cleaving: Use a precision cleaver to create a flat, perpendicular fiber end.
 - Ferrule Insertion: Insert the cleaved fiber into the LC ferrule, ensuring proper alignment.
 - Epoxy or UV Bonding: Apply adhesive to secure the fiber inside the ferrule and cure as required.
 - Polishing: Polish the ferrule endface using the appropriate film or machine to achieve UPC or APC finish, ensuring minimal insertion loss and back reflection .
 - Assembly: Attach the connector body, boot, and strain relief to complete the LC connector.
 - Testing: Inspect the fiber endface under a microscope and test insertion loss and return loss to verify performance.

Best Practices

- Work in a clean, dust-free environment to prevent contamination.
- Use precision tools designed for 1.25 mm ferrules to avoid misalignment.
- Follow manufacturer specifications for epoxy curing and polishing techniques.
- Always inspect and test each connector before deployment to ensure network reliability . By following these steps and using the correct tools, LC connectors can be fabricated to provide high-performance, reliable connections suitable for modern high-speed fiber optic networks.

Article Content

LC Connector Assembly

LC fiber optic connectors require specific fixturing and tooling. See our materials and equipment designed

How LC Connectors Work: A Comprehensive Technical Guide

LC connectors play an integral yet often overlooked role in enabling high-speed fiber optic communications. This

LC Fiber Optics: Complete Guide 2026 to Patch Cables,

This guide provides a fully updated and industry-ready overview of LC fiber optics,

LC Fiber Optics: Guide to LC Connectors, ULL Cables,

LC (Lucent Connector) was created by Lucent Technologies (now part of Nokia/Alcatel

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We specialize in designing and manufacturing fiber optic connectors, fiber optic cable assemblies, and

Fiber Optic Connectors Explained: Design, Types

Interconnect history, design, types, applications, polishing considerations and properties

Fiber Optic Connector Types Explained

Make sure you're choosing the correct fiber optic connector for peak performance. Learn more about fiber

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LC Fiber Optic Connectors

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

Fiber Connectors

A fiber connector is a device used to terminate an optical fiber cable, enabling a non-permanent, removable connection to another

Fiber Connector Types: A Complete Guide (2024)

SC Connector The SC (Standard Connector, Subscriber Connector) is a fiber optic connector released by NTT in the

A Breakdown of Fiber Optic Patch Connectors and

A comprehensive guide to fiber optic connectors including FC, SC, LC, ST, and MPO/MTP

Fiber Optic Patch Cables: FC, SC, ST & LC Connector Guide 2026

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How to Install LC Fiber Optic Fast Connector

The fiber optic fast connector, also known as a fiber optic quick connector, is a type of

LC CONNECTOR TERMINATION PROCEDURE

LC CONNECTOR TERMINATION PROCEDURE 1.00 GENERAL 1.01 This document provides assembly instructions for LC style

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Learn how to select and test LC, SC, and ST connectors for reliable fiber

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Common Fiber Connector Types in Optical Transceivers

Key Takeaways Fiber optic connectors link transceivers to cables for data transfer. SC connector features a square,

LC Connector Explained

LC Connectors are most often used in pairs, clipped together for use with duplex tight-buffered fiber cable in both

LC Fiber Optics: A Comprehensive Guide

LC fiber connector products are robust optical solutions designed for telecom applications, encompassing LC fiber

Optical Fiber

Optic Fiber cleaving, and mechanical splicing through very simple processes in this short

A Breakdown of Fiber Optic Patch Connectors and Their Applications

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Mastering LC Fiber Connectors: A Practical Guide

Jumper LC connectors are available in simplex (single fiber) and duplex (two fibers) formats; their compact bodies are designed to

LC Fiber Optic Connectors | TE Connectivity

Our portfolio includes a connector kit with a 1.25mm single-fiber ferrule. Reduce costs with small diameter

LC Fiber Connectors: What They Are and Why You

Small, efficient, and nearly ubiquitous, LC connectors have become the de facto

LC connector Assembly Manual

Hold the cable in one hand and hold the connector in the other hand. Rest your hands on the table or against each other and

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