

Article Overview

An LC single-mode optical module is a compact transceiver designed for long-distance fiber communication using single-mode fiber and LC connectors, commonly deployed in enterprise, data center, and telecom networks.

Overview

An LC single-mode optical module is a small form-factor transceiver that enables high-speed data transmission over single-mode fiber using an LC connector interface. These modules are widely used in switches, routers, firewalls, media converters, and optical transport equipment to establish reliable fiber links between buildings, server rooms, or remote infrastructure locations . The compact size and hot-swappable design make them ideal for scalable network deployments.

Key Features

- o Connector Type: LC (Lucent Connector) with a 1.25 mm ferrule, providing high-density, space-efficient connections .
- o Fiber Type: Single-mode fiber, which allows light to propagate in a single mode, minimizing signal loss and enabling long-distance transmission .
- o Transmission Distance: Varies by module, typically ranging from 10 km to 20 km for standard 1.25G modules, and up to 10 km for 25G SFP28 modules .
- o Wavelength: Modules operate at specific wavelengths, such as 1310 nm or 1550 nm, depending on the transceiver type .
- o Data Rates: Commonly available in 1.25G, 10G, 25G, and higher speeds, supporting modern high-bandwidth applications .
- o Hot-Swappable: Can be inserted or removed without powering down the network device, allowing flexible upgrades and maintenance .
- o Digital Diagnostics Monitoring (DDM): Some modules support DDM for real-time monitoring of optical power, temperature, and signal quality .

Applications

LC single-mode optical modules are used in:

- o Enterprise Networks: Connecting switches and routers across campus or data center backbones.
- o Telecom Infrastructure: Long-haul fiber links between central offices or telecom cabinets.
- o Industrial Networking: Reliable fiber connections in harsh environments requiring stable performance.
- o High-Speed Data Centers: Supporting 10G, 25G, or higher-speed uplinks for servers and storage systems .



Single-mode lc interface optical module

Selection Considerations

When choosing an LC single-mode module, consider:

- o Transmission Distance: Ensure the module supports the required link length.
- o Wavelength Compatibility: Match the module wavelength with the fiber and other transceivers.
- o Switch/Device Compatibility: Verify the module is compatible with the network equipment.
- o Environmental Conditions: Check operating temperature ranges for industrial or outdoor deployments.
- o Power Consumption and Performance: Ensure the module meets network efficiency and stability requirements .

Conclusion

LC single-mode optical modules provide high-performance, long-distance fiber connectivity with compact, hot-swappable designs. They are essential for modern networking environments where reliability, scalability, and high bandwidth are critical. Selecting the right module requires careful consideration of distance, wavelength, compatibility, and environmental factors to ensure stable and efficient network operation .

Most SFP fiber optic modules use LC connectors, while SC connectors are mainly found in legacy networks and MPO/MTP

The OPTCORE(TM) single mode LC fiber loopback effectively tests the transmitter capability and receiver

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

Single-Mode MiniGBIC module, Supports full-duplex Wave Length: 1310nm. Data Rate: 1.25Gbps. Port Type: LC/UPC Max. Cable

Compatibility in your network is everything, and this industrial SFP Transceiver Module delivers. Use it with

TRENDnet"s single mode fiber SFP, model TEG-MGBS20, features a duplex LC fiber interface, supporting high-speed data rates for

SFP Single Mode LC Module (80km) TEG-MGBS80 (Version V5) Transmission distance of up to 80km (49.7 mi.) Duplex LC optical

Duplex LC optical interface Supports data rates of up to 10.31Gbps Supports 1310nm single mode network

Single-mode LC interface optical module

This guide will explain their functions, discuss the role of single-mode LC connectors in modern fiber optic systems, and

By carefully selecting a single-mode fiber SFP+ module with proper LC connectors, distance planning, and switch

1000Base-LX/LH Module: Gigabit Ethernet SFP Transceiver, 1.25 Gb/s Singlemode Dual LC interface, 1310nm wavelength, link OS2

About this item Seamless Conversion of LC Fiber to Copper - This fiber optic to ethernet media

Explore the features, applications, and selection guide for optical transceiver SFP+ 10G single-mode 1310nm 10km

TP-Link SFP+ Module: Ultra-Fast & Reliable Fiber Connections The TL-SM5110-LR perfect to create high-speed

This industrial SFP module works with standard SFP slots found on industrial switches and fiber media

Single Mode LC Fiber Loopback Module (9/125 OS2, UPC) The LC fiber Loopback is also known as an LC

Web: <https://millstraining.co.za>

