The optical module uses LC fiber which is SC fiber



Overview

SFP Fiber Optic Connector Types: LC, SC, MPO ExplainedMost SFP fiber optic modules use LC connectors, while SC connectors are mainly found in legacy networ.

Key Takeaways

To connect SC fiber to an LC SFP module, you need an SC-to-LC fiber patch cable or an adapter to bridge the connector types.

Understanding SC and L

C ConnectorsSC (Standard Connector) is a larger, square-shaped connector with a 2. 5 mm ferrule, commonly used in legacy networks, enterprise, and FTTH deployments. It features a push-pull coupling mechanism, making it durable and easy to handle, but it occupies more space and is less suitable for high-density applications.

L

C (Lucent Connector) is smaller, with a 1. 25 mm ferrule, and is the standard for modern SFP, SFP+, and QSFP modules. Its compact size allows high port density in patch panels and transceiver cages, making it ideal for modern data centers and high-speed networks.



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Options for Connecting SC Fiber to L

C ModulesSC-to-LC Patch CableThe simplest solution is a pre-terminated SC-to-LC fiber patch cable. One end has an SC connector to plug into the existing fiber infrastructure, and the other end has an LC connector to interface with the SFP module. Ensure the fiber type (single-mode OS2 or multimode OM3/OM4) and polish type (UPC or APC) match the SFP module specifications to minimize insertion loss and maintain signal quality.

SC-to-LC AdapterIf you already have SC patch cords, you can use an SC-to-LC adapter in a patch panel or media converter. This allows the SC fiber to connect to an LC SFP module without replacing existing cables. Adapters may introduce slight insertion loss, so high-quality components are recommended for long-distance or high-speed links.

Media Converters or Hybrid Modules

In some cases, especially for legacy networks, a media converter or hybrid SFP module with SC input and LC output can bridge the connection while maintaining optical performance.

Practical Considerations

Insertion Loss and Return Loss: Using adapters or hybrid cables can slightly increase insertion loss. Always check the optical budget of your link to ensure reliable performance. Fiber Mode Compatibility: Single-mode SC fiber should connect to single-mode LC modules, and multimode SC fiber to multimode LC modules.

Mixing modes can cause signal degradation. Space and Management: LC connectors save space in high-density racks, while SC connectors are bulkier. Using SC-to-LC cables or adapters helps modernize legacy networks without full rewiring.

Summary

To connect SC fiber to an LC SFP module, the most common and practical solution is a SC-to-LC patch cable. Alternatively, SC-to-LC adapters or hybrid modules can be used depending on existing infrastructure. Always ensure fiber type, polish, and optical budget compatibility to maintain signal integrity and network performance.

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