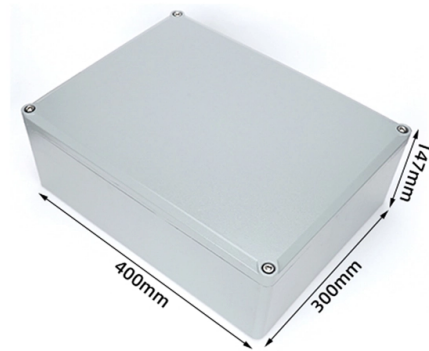


Single-mode fiber optic 10 Gigabit specifications



Overview

The L-com FXC-SFP1G-31-10 is an SFP form-factor transceiver, supporting Gigabit Ethernet data rates.

Key Takeaways

Single-mode 10 Gigabit Ethernet (10GbE) fiber uses SFP+ transceivers with LC connectors, supporting data rates up to 10.31 Gbps over distances typically up to 10 km.

Key Specifications

Data Rate: Single-mode 10GbE transceivers support 10 Gbps full-duplex operation, with some modules capable of slightly higher rates up to 10.31 Gbps for enhanced performance . **Wavelength:** Standard single-mode 10GbE modules operate at 1310 nm for 10GBASE-LR (Long Reach) and 1550 nm for extended reach variants. These wavelengths are optimized for low attenuation over long distances . **Maximum Distance:** Typical 10GBASE-LR single-mode modules support distances up to 10 km over standard single-mode fiber (SMF) with LC connectors . Extended reach modules (10GBASE-ER) can reach 40 km or more, depending on fiber quality and network design . **Connector Type:** Single-mode 10GbE modules commonly use LC duplex connectors, which provide reliable, low-loss connections suitable for high-density deployments . **Form Factor:** Most single-mode 10GbE transceivers use the SFP+ form factor, which is hot-swappable and compatible with a wide range of switches and routers . SFP+ modules allow for flexible deployment and easy upgrades without powering down equipment. **Optical Power and Sensitivity:** Typical transmit power ranges from -8 dBm to 0 dBm, and receiver sensitivity is around -14 dBm, ensuring reliable signal integrity over the specified distances . **Standards Compliance:** Single-mode 10GbE modules comply with IEEE 802.3ae 10GBASE-LR and related standards, ensuring interoperability across vendors and network devices .

Practical Considerations

- **Fiber Type:** Use OS1 or OS2 single-mode fiber for optimal performance over long distances. OS2 is preferred for new installations due to lower attenuation.
- **Distance Limitations:** While 10 km is standard for 10GBASE-LR, environmental factors, splices, and connectors can reduce effective reach.
- **Compatibility:** Ensure the SFP+ module is compatible with the switch or router vendor, as some platforms require certified modules for full functionality .
- **Monitoring:** Many SFP+ modules support Digital Optical Monitoring (DOM) for real-time diagnostics of optical power, temperature, and transceiver status . Single-mode 10GbE fiber is ideal for long-distance, high-speed network backbones, data center interconnects, and enterprise campus networks where multi-mode fiber's distance limitations are insufficient.

Article Content

Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco® 10GBASE SFP+ modules (Figure 1) give you a wide variety of 10 Gigabit Ethernet connectivity options for

What Is 10GBASE-LR? SMF 1310nm 10km SFP+ Explained

A practical, engineer-grade guide to 10GBASE-LR: what it is, 1310nm single-mode SFP+ specs, optical budget examples,

10GBASE-LR SFP+ 1310nm 10km Transceiver Datasheet | FS

10-Gigabit Ethernet links up to 10km over Single Mode fiber. They are compliant with SFF-8431, SFF-8432 and IEEE 802.3ae

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,

Cisco SFP Modules for Gigabit Ethernet Applications Data Sheet

This data sheet describes the benefits, specifications, and ordering information for the Cisco SFP Modules for Gigabit

Single-mode Fiber

Note again that the IEEE 802.3ae specification for 10 Gigabit Ethernet assumes standard single-mode fiber (IEC types B1.1 and

Cisco 10GBASE SFP+ Modules Data Sheet

It supports link lengths of up to 70 kilometers on standard Single-Mode Fiber (SMF, G.652), assuming a fiber chromatic

Recommendation ITU-T G.652 (08/2024)

This document outlines the specifications for a single-mode optical fiber and cable designed for use around the 1310 nm zero

Multimode Fiber Types: OM1 vs OM2 vs OM3 vs OM4 vs OM5

Identified by ISO 11801 standard, multimode fiber optic cables can be classified into OM1 fiber, OM2 fiber, OM3 fiber,

U®Fiber Modules and FiberCable Datasheet

For long-distance single-mode runs, use the UF-SM-10G for distances of up to 10 km at 10 Gbps, or use the UF-SM-1G for distances

SINGLE-MODE OPTICAL FIBER IN LOOSE TUBE AND

7.0 Single-Mode (Dispersion Un-shifted) Low Loss and Bend Improved Fiber This ultra-low-loss single-mode fiber with advanced

Solo10G SFP+ (10Gb Ethernet Thunderbolt Adapter)

Additional SFP+ Transceiver Choices With Solo10G SFP+ adapter, Sonnet includes an interchangeable short-range multi-mode fiber

10 Gigabit Fiber SFP+ Optical Transceiver Module

That's a 10 Gbps connection up to a distance of 10 km (or 6.2 miles). The transceiver comes in a mini-GBIC form factor, making it

SFP 10G LR: High-Speed Long-Reach Fiber Transceivers

Designed to deliver stable 10Gbps performance over single-mode fiber up to 10 kilometers, SFP 10G LR modules form the backbone

Fiber Optic Transceiver SFP Gigabit Ethernet, 10 km reach, 1310

The L-com FXC-SFP1G-31-10 is an SFP form-factor transceiver, supporting Gigabit Ethernet data rates. The L-com FXC-SFP1G-31

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