

Guide-mounted fiber optic transceiver single-mode dual-fiber



Overview

1.25G SFP Module Transceiver, 1000Base-LX, 1310nm 1.25G SFP MODULE- 1.25Gbps SFP Optical Transceiver, Dual Single Mode SFP Transceiver: Complete Guide Expla.

Key Takeaways

Guide-mounted single-mode dual-fiber transceivers are optical modules that transmit and receive data over two separate single-mode fibers, supporting long-distance, high-speed communication with minimal signal loss.

Single-mode dual-fiber transceivers are designed to convert electrical signals into optical signals and vice versa using two separate fibers—one for transmitting and one for receiving data. These modules are commonly used in network switches, routers, servers, and industrial automation systems to enable reliable, long-distance communication over single-mode fiber (SMF) with a small core diameter of approximately $9/125\mu\text{m}$.

Key Features

- **Transmission Distance:** Typically supports distances from 10 km up to 80 km or more, depending on optical power and module type. Industrial models like the SEL-2829 can reach up to 23 km for serial data applications.
- **Data Rates:** Standard dual-fiber SFP transceivers support Gigabit Ethernet, while specialized industrial transceivers may handle lower serial data rates (e.g., 0–40 kbps) for automation systems.

- Wavelengths: Operate at 1310 nm or 1550 nm, optimized for long-distance, low-attenuation transmission .
- Connector Types: Commonly use ST, SC, or LC connectors for fiber termination .
- Hot-Swappable: Many SFP modules are hot-swappable, allowing installation or replacement without powering down the host device .
- Electrical Isolation: Fiber optic links provide immunity to EMI/RFI and ground potential differences, enhancing safety and signal integrity .

Applications

- Enterprise Networks: Backbone and uplink connections between switches and routers across campuses or buildings .
- Industrial Automation: Serial data communication between devices over long distances with high reliability and electrical isolation .
- Telecom and Metro Networks: Long-haul data transmission requiring minimal signal loss and high bandwidth .
- Data Centers: High-speed interconnects between servers and storage systems.

Comparison with Single-Fiber Bidirectional Transceivers

While dual-fiber transceivers use two fibers (one for transmit, one for receive), single-fiber bidirectional transceivers use one fiber for both directions, effectively doubling bandwidth on a single fiber. Single-fiber bidirectional modules can support data rates up to 4 Gbps and distances up to 160 km . The choice depends on fiber availability, distance, and network design requirements.

Installation Considerations

- Guide-Mounted Design: These transceivers can be mounted in standard SFP slots or industrial guide rails, simplifying integration into existing systems .
- Power Supply: Many modules draw power directly from the host device, eliminating the need for separate power wiring .
- Testing: Continuous light output allows easy testing with optical meters to verify link integrity . Guide-mounted single-mode dual-fiber transceivers provide a robust, long-distance, and electrically isolated solution for high-performance networking and industrial communication applications. They are ideal for environments where reliability, safety, and scalability are critical.

Article Content

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1.25G SFP MODULE- 1.25Gbps SFP Optical Transceiver, Dual

Single Mode SFP Transceiver: Complete Guide Explained

In this guide, you will learn what a single mode SFP transceiver is, how it works, the key specifications and types available, and

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Discover high-performance single mode SFP modules for your network. Compatible with major brands like Cisco, Ubiquiti, and more.

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10Pack 10GBase-LR SFP+ Transceiver, 10G Dual LC Single Mode Module | Compatible for Cisco SFP-10G-LR, Meraki, Ubiquiti,

SEL-2829 Single-Mode Fiber-Optic Transceiver/Modem

Improve safety, signal integrity, and reliability by using two optical fibers instead of wire to transfer bidirectional serial data using

Cisco SFP Modules for Gigabit Ethernet Applications Data Sheet

The 1000BASE-ZX SFP operates on standard single-mode fiber-optic link spans of up to approximately 70 km in

The Difference Between Single/Dual Fiber and Single/Multi-Mode

As a global supplier of high-quality magnetic and optical connectivity solutions, LINK-PP offers a wide range of

SEL-2831 Single-Mode Fiber-Optic Transceiver/Modem

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Single Mode SFP Transceiver: Complete Guide Explained

Learn what a single mode SFP transceiver is, how it works, key specs, common types, and real-world use cases for long-distance

The Difference Between Single/Dual Fiber and

As fiber optic networks continue to evolve, selecting the right optical transceiver becomes

Single Fiber vs Dual Fiber Transceivers Understanding

A dual fiber optical transceiver uses two separate fibers—one for transmitting and the other

100BASE FX SFP: Complete Guide to 100Mbps Fiber Transceivers

A 100BASE FX SFP is a 100Mbps Fast Ethernet optical transceiver designed to transmit data over multimode fiber using the

SEL-2829 Single-Mode Fiber-Optic Transceiver/Modem

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Bi-Directional (BiDi) Transceivers Explained

Fiber optic Cabling technology is the backbone of modern networks, transmitting massive amounts of data at the

Understanding Fiber Optics – Your Quick Guide to SFP Transceivers

Let's explore them in detail Single Mode vs. Multimode SFP Transceivers Based on the types of optical fibers SFP transceivers

Ethernet-to-Fiber Media Converters

Moxa's Ethernet to Fiber media converters feature innovative remote management, industrial-grade reliability, and a flexible, modular

Gigabit SFP Module: A Complete Guide to 1G SFP

A gigabit SFP module is a hot-pluggable transceiver designed to deliver 1Gbps Ethernet connectivity over

What is BiDi Transceiver: A Beginner's Guide

Advantages of BiDi Transceiver 1. Save half of the fiber resources BiDi transceivers require

The Ultimate Guide to SFP Modules (2026): Types, Speeds

Confused by SFP vs SFP+? Read the definitive 2026 guide on SFP modules. We explain Single Mode vs Multimode, DDM

The Ultimate Guide to BiDi Transceiver

The full name of BiDi is Bi-Directional. BiDi transceiver (Bi-Directional transceiver) is a kind of special optical

Single Mode Fiber Transceivers – Fiber Savvy

Single Mode Fiber Optic Transceivers are essential components in high-speed, long-distance data transfer networks. Their ability to

Ethernet over fiber optic converter, Gigabit Ethernet Fiber

Single Mode 20, 40, 80 or 120Km, or 3000 feet over Multimode, 850nm, 1310nm, 1550nm, or any CWDM or DWDM SFP can be

Understanding BiDi SFP Optical Transceiver Modules

The user connects the switch and the fiber optic converter using a network cable. This enables Ethernet-to-fiber

Optical Transceiver Guide: Types, Specs & How to Choose | CZT

Learn optical transceiver types: SFP, SFP+, QSFP28, and QSFP-DD. Covers single-mode vs multimode fiber, reach

Single-fiber Transceiver & Dual-fiber Transceiver

Single-fiber optical modules and dual-fiber optical modules are two common types of optical modules. They all play an important role

[Product Hub] Single Mode SFP Transceiver | Optcore

Single Mode SFP Module The single mode SFP module is one of the most common SFP transceiver types; sometimes, we refer to it

BiDi SFP: The Complete Guide to Bidirectional SFP Transceivers and ...

A BiDi SFP is a specialized optical transceiver that enables bidirectional communication over a single strand of optical

Understanding Single-mode and Multi-mode Optical Modules and Optical ...

A single-mode optical module is a type of transceiver designed to transmit data over a single mode of light through an optical fiber.

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10G SFP+ LR 20Km 1310nm Single-Mode Transceiver

Buy the SFP-1020-LR, a 10G SFP+ LR transceiver with 1310nm wavelength, 20Km range on single-mode fiber, dual LC connector,

SFP Single Mode DUAL Fiber Transceiver 1.25Gbps 20KM

The transceiver consists of three sections: a laser transmitter, a PIN photodiode integrated with a trans-impedance preamplifier (TIA)

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