Single-fiber optical modules are available



Overview

The Difference Between Single/Dual Fiber and As fiber optic networks continue to evolve, selecting the right optical transceiver becomes increasingly impor.

Key Takeaways

Yes, single-fiber optical modules, also known as BiDi SFPs, exist and enable bidirectional data transmission over a single optical fiber using different wavelengths. OverviewSingle-fiber optical modules, often called BiDi (Bidirectional) SFPs, are designed to transmit and receive data over a single strand of optical fiber. Unlike traditional SFP transceivers that require two fibers—one for transmitting (TX) and one for receiving (RX)—single-fiber modules use wavelength division multiplexing (WDM) to send and receive signals simultaneously on different wavelengths, effectively halving fiber usage while maintaining full-duplex communication.

How They Work

A single-fiber SFP module typically transmits data at one wavelength (e.g., 1310nm) and receives data at another (e.g., 1550nm). The corresponding module at the other end uses the opposite wavelength configuration. Inside the module, a WDM optical component, such as a thin-film filter or prism, combines and separates the wavelengths, allowing simultaneous bidirectional communication without interference.

© 2026 DOLPHIN FIBER SYSTEMS - All rights reserved

These modules are always deployed in matched pairs to ensure proper wavelength alignment. ApplicationsSingle-fiber SFPs are widely used in scenarios where fiber resources are limited or expensive, including: Metropolitan Area Networks (MANs)Telecom access networksEnterprise campus links They provide a cost-effective alternative to dual-fiber SFPs without compromising link speed, distance, or reliability.

Single-

Mode vs MultimodeSingle-fiber modules are generally implemented on single-mode fibers (SMF), which have a small core (9 microns) and support long-distance transmission, typically ranging from 2 km to over 100 km depending on the module type. Multimode fibers (MMF) are less common for single-fiber modules due to their larger core and shorter transmission distances.

Advantages

Reduces fiber usage by 50%Simplifies network expansionMaintains full-duplex speeds (1G, 10G, or higher)Compatible with standard SFP form factors and LC connectors In summary, single-fiber optical modules are a practical solution for efficient fiber utilization, leveraging WDM technology to enable bidirectional communication over a single strand of fiber while supporting long-distance, high-speed network applications.

Article Content

The Difference Between Single/Dual Fiber and

As fiber optic networks continue to evolve, selecting the right optical transceiver becomes increasingly important. Whether you''re designing a short

SFP modules – transceivers for 1/2/4G fibre channel

SFP transceivers are valued for their flexibility, low power consumption and ability to support both single-mode and multimode fiber, making them ideal for short-range

What Is a Single Fiber SFP? A Complete Guide for Beginners

Learn what a single fiber SFP is, how it works, key differences from dual fiber SFPs, common applications, and how to choose the right BiDi SFP.

Single-Lambda 100G Pluggable Optics Solution Overview

With fewer components in the pluggable module, we can scale manufacturing volume and cost to the level of today''s 10G SFP+ optics. Through silicon photonics and signal processing

Comprehensive Guide to FS 10G BiDi SFP Modules

© 2026 DOLPHIN FIBER SYSTEMS - All rights reserved

10G BiDi SFP+ modules utilize a unique optical mechanism that enables full-duplex data transmission over a single strand of single-mode fiber (SMF). This is achieved using two different

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

BiDi SFP (Bidirectional Small Form-Factor Pluggable) transceivers have emerged as a powerful solution, enabling full-duplex communication over a single optical fiber. By using

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

Read the definitive 2026 guide on SFP modules. We explain Single Mode vs Multimode, DDM diagnostics, and how to choose the right transceiver for Cisco, Juniper, and more.

Buy Transceivers – SFP, SFP+, and QSFP Modules

Transceivers (=SFP) are plug-in modules that can be inserted into converters, multiplexers or switches, thereby providing the input and output for the fibre optic cable.

The Key Differences Between 1-core, 2-core, Single Mode, and

Single Mode fibers have a smaller core, allowing light to travel in a single, straight path, ideal for long distances with less signal loss. Multi-mode fibers have a larger core, allowing...

Single Mode SFP Fiber Module

For horizontal shorter-length run, the Fastcabling modules are available with single mode fiber to suit your fiber connectivity applications. It can transmit data up to 20 KM with 1.25 Gigabit network speed.

Cisco QSFP-DD 400G ZR/ZR+ Low Power Consumption Coherent Optics Module ...

Cisco® QSFP-DD 400G ZR/ZR+ low-power coherent optical modules provide power savings in high-port-density switch/router platforms for 400 Gigabit Ethernet (400GE) traffic over amplified

Cisco QSFP-DD 400G ZR/ZR+ Low Power Consumption Coherent Optics Module

The 400ZR+ module is ideal for metro/regional data centers, service provider interconnects with Reconfigurable Optical Add-Drop Multiplexer (ROADM) infrastructure, and AI scale-across

Bidirectional SFP Modules/Transceivers

© 2026 DOLPHIN FIBER SYSTEMS - All rights reserved

What are Bidirectional SFP Modules? Bidirectional SFP modules are advanced optical transceivers designed to enhance network infrastructure by enabling data transmission and reception over a

Fiber optical module and common knowledge of optical interfaces

However, to make full use of fiber optic technology, it is important to have a basic understanding of fiber optics, optical modules, and the different types of optical interfaces available.

SFP+ Transceiver CBO SFP-10G-BX-D 10G | AiO.lv

Short description CBO SFP-10G-BX-D is an SFP+ fiber optic transceiver module for 10 Gigabit Ethernet. Designed for single-mode bidirectional (BX) links, it enables 10G data transmission over a single

Fiber Optic Patch Cable, LC to LC, Single Mode 9/125, Duplex

These high speed single-mode 9/125µm duplex fiber optic patch cables are terminated with LC fiber optic connectors on both ends (LC-LC). Called Lucent Connectors, Little Connectors or Local

FS Transceivers | Premium Optical Transceivers

FS Transceivers offers high-performance optical transceivers, fiber optic modules, and data center connectivity solutions. Compatible with Cisco, Arista, Juniper.

How to Connect Multiple Ethernet Switches Using Fiber Optic Cables ...

Posted on June 24, 2024 by FC — Leave a comment How to Connect Multiple Ethernet Switches Using Fiber Optic Cables? If you have multiple Ethernet switches that need to be connected over long

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

© 2026 DOLPHIN FIBER SYSTEMS - All rights reserved

Contact Us

Continue your research online:

Website: https://dolphinspreschool.co.za
Technical inquiry: https://dolphinspreschool.co.za/project-desk.html
African project coordination: Waterfall City, Midrand, Gauteng, South Africa

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 DOLPHIN FIBER SYSTEMS - All rights reserved