Single-fiber bidirectional optical fiber module

AI Overview

Single-fiber bidirectional (BiDi) optical modules enable simultaneous transmit and receive over a single fiber using two different wavelengths, effectively doubling fiber efficiency and reducing network costs.Overview and Working PrincipleSingle-fiber bidirectional optical modules, commonly called BiDi transceivers, use Wavelength Division Multiplexing (WDM) technology to achieve full-duplex communication over a single fiber strand . Each module transmits data at one wavelength while receiving data at a different wavelength. For example, one end may transmit at 1310 nm and receive at 1550 nm, while the opposite end transmits at 1550 nm and receives at 1310 nm . This setup allows a single fiber to carry traffic in both directions simultaneously, similar to a two-lane road for optical signals. Inside the module, a BOSA (Bi-Directional Optical Sub-Assembly) integrates a transmitter (TOSA) and receiver (ROSA) with an optical filter to separate the wavelengths, preventing crosstalk and maintaining signal integrity . The modules must be deployed in matched pairs to ensure proper wavelength alignment and successful communication .Types and ApplicationsBiDi modules are available in various speeds and form factors:155M BiDi SFP for legacy SONET/SDH networks1G BiDi SFP for Gigabit Ethernet10G BiDi SFP+ for high-bandwidth enterprise and metro networks These modules are widely used in fiber-constrained environments, such as campus networks, metro rings, and data center interconnects, where reducing fiber usage is critical . By using BiDi modules, network operators can save up to 50% of fiber resources, lower installation and maintenance costs, and simplify cabling management .AdvantagesFiber Efficiency: Only one fiber is needed for bidirectional communication, reducing the need for additional fiber deployment .Cost Reduction:...

Article Content

OFC 2026 New Launches Roundup Part II: Photonics Market Highlights

Coherent unveils a dual-laser QSFP28-DCO for bidirectional 100G over a single fiber Coherent introduced a dual-laser QSFP28-DCO module that enables bidirectional 100G coherent

Photon Flight: Fiber-Optic Autonomous UAV | Design

Photon Flight: Fiber-Optic Autonomous UAV Summary The Photon Flight (Autonomous UAV) project focuses on creating a high-performance tethered

1000Base-BX WDM Bi-Directional SFP Module

TP-LINK´s TL-SM321B-2 and TL-SM321A-2 is designed to work in a pair to create an on-site gigabit fiber communication up to 2km (2,000 meters). With one single

OPTICAL MODULES FOR HUAWEI S SERIES SWITCHES

Single-mode optical modules are used with single-mode fibers. Single-mode fibers support a wide band and large transmission capacity, and are used for long-distance transmission.

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

Simplex LC: single fiber port. Used for BiDi (Bidirectional) modules where data is sent and received on the same strand using different wavelengths. B. SC

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

Short description CBO SFP-10G-BX-D is a fiber optic SFP+ transceiver module supporting 10G data rates for single-fiber bidirectional links. Designed for use in compatible switches and routers, it

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

Learn everything about BiDi SFP and BiDi fiber, including working principles, 1310nm/1550nm wavelength design, single fiber advantages, wiring diagrams, and key differences

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

Short description CBO SFP-10G-BX-D is an SFP+ fiber optic transceiver module for 10 Gigabit Ethernet. Designed for single-fiber bidirectional links, it supports high-speed data transmission in network

BiDi Optical Modules: Unlocking Single-Fiber

BiDi modules deliver a powerful approach to fiber savings and cost reductions through full-duplex communication over a single fiber strand. BiDi

12G-SDI over Fiber Transceiver, Bi-Directional 12G-SDI

Panel & Size System Diagram Frequently Asked Questions Q): What is the transmission distance of this 12G-SDI over Fiber Transceiver? Does it support multi-mode fiber? A): This device is equipped with

Is Your Network Ready for 800G? Key Fiber Optic Trends Shaping

BiDi Optical Transceivers BiDi technology enables bidirectional communication over a single fiber strand, helping organizations maximize existing fiber resources. These technologies

Optical Fiber: Single-Mode Multimode Single-Fiber Dual

Single-fiber vs. dual-fiber refers to how many fiber strands are used to send and receive data. In this guide, we''ll explain each of these clearly and

World''s First Demonstration of Single-Fiber Bidirectional ...

Compared to conventional optical fibers, signal deterioration can be more easily suppressed, making it suitable for wideband and low-latency transmission. The transmission delay is

Bidirectional SFP Modules/Transceivers

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

The Most Comprehensive Guide Of Optical Modules

Explore the ultimate guide to optical modules. Learn types, functions, performance metrics & how to choose the right module for your fiber network.

BiDi SFP Module: A Complete Guide for Fiber Networks

Learn what a BiDi SFP module is, how it works, key types, benefits, and when to use BiDi optics in fiber networks.

Single Fiber (BiDi)

Teroline single fiber bidirectional SFP module for Gigabit Ethernet applications over single mode optical fiber. The module can be used with any network device that accepts standard MSA transceivers -

The Essential Guide to BiDi Transceivers: Everything

BiDi transceiver, a compact optical transceiver with WDM (wavelength division multiplexing) technology and SFP multi-source protocol

10G BiDi SFP+ Transceivers. Single-Fiber Bidirectional Transmission ...

Tags : SFP+ 10G BiDi 70KM SFP Module SFP+ BIDI Transceiver 10Gb/s Single-Fiber Bidirectional 10Gbe SFP BIDI Optical 10Gbps Ethernet Transceiver 10G BiDi SFP+ Single-Fiber Bidirectional

Bidirectional SFP Selection Guide for Single-Fiber Links

Learn how to choose the right bidirectional SFP for single-fiber links. Compare wavelengths, distances, and compatibility to optimize your optical network.

SFP Module Buying Guide: How to Choose the Right

SFP modules (Small Form-factor Pluggable) are the standard interface for connecting fiber optic or copper cables to network switches, routers,

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

Short description CBO SFP-10G-BX-U is an SFP+ transceiver module supporting 10 Gbps transmission at 1310 nm wavelength. Designed for single-mode, bidirectional fiber links, it enables compact 10G

Understanding BIDI SFP Optical Transceiver Modules

A BIDI optical module is a single-fiber bidirectional optical module, or BiDi (Bidirectional). Conventional modules are dual-fiber modules (connected by

World''s First Demonstration of Single-Fiber Bidirectional ...

By combining a prototype of a next-generation optical line system developed by OKI with the hollow-core fiber (*2) developed by the Lightera Group, we succeeded, for the first time in the

The Complete Guide to BiDi Transceiver

Unlike traditional optical modules that use separate fibers for transmitting and receiving data, BiDi modules accomplish this bidirectional data

Contact Us

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