

Single-fiber bidirectional and single-fiber single-mode



AI Overview

Single-fiber single-mode bidirectional (BiDi) technology enables simultaneous two-way data transmission over a single strand of single-mode fiber using different wavelengths.

Overview

Single-fiber bidirectional transmission allows both transmitting (TX) and receiving (RX) signals to travel on the same fiber strand, unlike traditional duplex systems that require two fibers—one for each direction . This is achieved using wavelength division multiplexing (WDM), where each direction is assigned a distinct wavelength, such as 1310 nm for TX and 1550 nm for RX, with the complementary module on the other end reversing the wavelengths .

How It Works

Inside a BiDi SFP module, a WDM filter separates incoming and outgoing signals spectrally. The module converts electrical signals from a switch or router into optical signals at a specific wavelength for transmission, while simultaneously filtering and directing incoming optical signals at a different wavelength to the receiver . This allows full-duplex communication over a single fiber without interference.

Advantages...



Article Content

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Single Fiber vs Dual Fiber Transceivers Understanding

Single fiber transceivers, like the Bidi Transceiver, use one fiber for bidirectional data, while

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

Ever wonder how data zooms across cities and continents at lightning speed? The secret lies in fiber optic technology,

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The Merits of Single-Mode vs. Multimode Fiber Optics

Multimode vs. single-mode fiber Multimode fiber optic cables have a large diametral core that allows multiple modes of light to

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ClearCurve Single-mode Optical Fibers | Bend

Corning's ClearCurve bend-improved single-mode fibers provide lower cost, superior installation speed

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BiDi Optical Modules: Unlocking Single-Fiber Bidirectional Connectivity

Comprehensive guide on BiDi Optical modules, detailing single-fiber bidirectional connectivity, deployment tips,

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FAQ: What Is Single-Fiber Bidirectional

In Single-Fiber bidirectional mode, multi-wavelength optical signals are transmitted through only one fiber in both

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Single Fiber vs Dual Fiber Transceivers Understanding

Among these devices, single-fiber modules (BiDi) and dual-fiber modules (standard duplex)

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One-Way vs Bidirectional Transmission in Optical Fiber

One-way transmission uses a dedicated optical path for a single direction of data flow. In contrast,

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Singlemode vs Multimode Fiber Optic Cable

We breakdown the differences between single mode and multimode fiber optic cable,

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Single-Mode Optical Fiber

ITU Standards for Single-mode Fibers: To facilitate fiber optic communications, the International Telecommunications

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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

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The Difference Between Single/Dual Fiber and

Whether you're designing a short-range data center network or a long-distance metro

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Single-Fiber Bidirectional Transmission and Single-Fiber

This mode saves half of the fiber resources compared to the single-fiber unidirectional transmission mode, but it has a more complex

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Single-mode vs Multimode SFP 2026: Fiber Types and distances

A guide to single-mode vs multimode SFP modules. Covers fiber types, wavelengths, distances, BiDi, CWDM/DWDM,

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What is the difference between single mode single fiber and

Choosing between Single Mode Single Fiber and Dual Fiber depends on the specific requirements of a communication system,

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The Complete Guide to BiDi Transceiver

What Is BiDi Transceiver? BiDi transceivers have become synonymous with reliable and high-performance

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Single Mode vs Multimode Fiber: A Complete Comparison Guide

Understand the difference between fibers: single mode offers long-distance, high bandwidth, while multimode suits

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Single-Fiber Bidirectional Transmission and Single-Fiber

Single-Fiber Unidirectional Transmission In this mode, the WDM system transmits multi-wavelength optical signals in receive and

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Single Mode Fiber: Types and Applications

Single mode fiber (SMF) is a type of fiber optic cable that only allows one light mode to transmit at a time. Generally,

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Single vs Dual Fiber Media Converters (2025): A/B Pairing and WDM

Whether you choose single-fiber BiDi for fiber savings or dual-fiber for simplicity, the fundamentals are the same: match speeds and

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Single Mode vs Multimode Fiber Cable: Guide to Fiber Optic Cable

Single Mode vs Multimode Fiber Cable: Compare core size, bandwidth, distance, cost, and best use cases to help you

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Single Mode and Multimode Fiber: What's the Difference?

Learn more about Single Mode and Multimode Optical Fibers - their design, key differences, and intended fiber optic systems

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Bidirectional OTDR Testing: Multimode VS. Singlemode Fibers

One of the OTDR's principal attractions is that it can provide detailed analysis with a single-ended test, requiring just one technician

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Bidirectional OTDR Testing: Multimode vs. Singlemode Fibers

As competition heats up among Europe's new and established telecommunications companies, network reliability is emerging as the

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Simplex vs Duplex Fiber Cable: Key Differences and How to Choose

Simplex fiber cable contains a single fiber strand and is designed to transmit data over one fiber path. While it uses

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Bi-Directional (BiDi) Transceivers Explained

Understanding fiber types and using Bi-Directional (BiDi) transceivers can significantly boost

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What is the Difference Between SFP and BiDi SFP?

Overview: Understanding the difference between SFP (Small Form-factor Pluggable) and

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Introduction About BiDi SFP and BiDi Fiber

How Does BiDi SFP Work? As the above-mentioned introduction about BiDi SFP, we have learned the modules

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The Complete Guide to BiDi Transceiver

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

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://ntmmgroup.co.za>

Email: sales@ntmmgroup.co.za

Phone: +27 82 471 2596

Address: Unit 7, Optic Park, 24 High-Tech Lane, Century City, Cape Town,
7441, South Africa

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