Single-mode dual-fiber transceiver



Overview

The Difference Between Single/Dual Fiber and As a global supplier of high-quality magnetic and optical connectivity solutions, LINK-PP offers a wide range.

Key Takeaways

A single-mode dual-fiber transceiver uses two separate fibers—one for transmitting and one for receiving data—over long distances with high stability and reliability.

Overview

A single-mode dual-fiber transceiver is an optical module designed to transmit and receive data over single-mode fiber (SMF), which has a core diameter of 9 microns and supports long-distance communication, typically ranging from 2 km up to 120 km depending on the module type and wavelength (1310 nm or 1550 nm). Unlike single-fiber (BiDi) transceivers, dual-fiber modules use two separate fiber strands: one dedicated to transmission (TX) and the other to reception (RX). This duplex configuration ensures minimal signal interference and robust performance, making it ideal for high-capacity networks.

Key Features

Port Configuration: Dual-fiber transceivers have two ports—TX and RX—connected via a duplex LC patch cable. Transmission Mode: Operates on a single wavelength per fiber, unlike BiDi transceivers that use WDM to send and receive on a single fiber. Distance and Performance: Supports long-haul communication with stable signal strength, suitable for backbone networks, data centers, and metropolitan area networks.

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Compatibility: Works with standard duplex LC interfaces and does not require matched pairs like BiDi modules, offering flexibility in deployment. Cost Consideration: Generally less expensive per unit than single-fiber BiDi transceivers, but requires two fibers per link, which may increase cabling costs.

Applications

Data Center Interconnectivity: Ensures high throughput and reliability for large-scale data centers.

Long-

Distance Backbone Networks: Ideal for networks where fiber resources are abundant and high stability is required.

High-

Bandwidth Applications: Suitable for enterprise networks, telecom backhaul, and 10G/40G Ethernet links. Comparison with Single-Fiber (BiDi) TransceiversFeatureSingle-Fiber (BiDi)Dual-FiberFiber UsageOne fiber for both TX and RX using WDMTwo fibers: one TX, one RXWavelengthUses two wavelengths (e.g., 1310/1550 nm)Single wavelength per fiberCablingSimplex LCDuplex LCCostHigher per unit but saves fiberLower per unit but uses more fiberDeploymentRequires matched A/B pairsFlexible, any two compatible modules can connectIdeal ForLimited fiber availability, metro networks, 5G fronthaulHigh-capacity, long-distance, backbone networks In summary, single-mode dual-fiber transceivers are the preferred choice for networks requiring long-distance, high-bandwidth, and stable communication, while single-fiber BiDi transceivers are more suitable for scenarios with limited fiber infrastructure or where minimizing fiber usage is critical.

Choosing between them depends on fiber availability, network distance, budget, and performance requirements.

Article Content

The Difference Between Single/Dual Fiber and

As a global supplier of high-quality magnetic and optical connectivity solutions, LINK-PP offers a wide range of transceiver modules that support both

What Is A Single-Fiber BiDi Transceiver?--ETU-LINK

When planning a fiber optic network,one key decision is choosing between single-fiber (BiDi) and dual-fiber optical transceivers. This guide from ETU-Link explains their differences,advantages,and how to

Luminex Transceivers

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Their wide temperature range ensures reliable operation in the most diverse applications. Available in Single mode (SMF), Multi mode (MMF), Copper RJ45

Single Mode vs. Multimode Fiber: Core Differences and Selection Guide

How do you choose between single mode and multimode fiber? Compare their differences in core size, light source, bandwidth, transmission distance, and cost to identify the right application.

optical transceiver sfp+ 10g single mode module

The 1310nm LC Interface 10G Singlemode Dual-fiber Optical Module is the workhorse of the modern network. It combines speed, distance, and reliability

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

For many campus and metro use cases, a single-mode BiDi pair is extremely attractive because it halves fiber usage, critical where duct space is

10Gtek Gigabit SingleMode Fiber to Ethernet Media Converter

The converter is completely transparent when connected so the network performs exactly the way it did before - only now, it allows the co-existence of both copper and fiber mediums.

Single-mode vs Multimode SFP: What''s the Difference?

Discover the differences between single-mode and multimode SFP transceivers. Learn which one suits your network needs for optimal performance and connectivity.

Difference Between Single and Dual Fiber Optical Transceivers

Know the key differences between Single and dual-fiber optical transceivers for efficient network deployment and optimization.

HTF DWDM equipment,OTN Solution,QSFP28 OSFP

HTFuture offers industry-leading fiber optic products and WDM system solutions with global recognition for excellence and innovation.

1.6T OSFP 2xDR4/DR8, 1310nm, 500m, DDM, CDR,

The MJ-OSFP1.6TB-DR8 is a cost-effective, high-performance OSFP module tailored for AI datacenter applications, delivering an aggregate throughput of 1.6

155m Sfp Transceiver 1310nm Single Mode Dual Fiber Lc Ddm 20km

155m Sfp Transceiver 1310nm Single Mode Dual Fiber Lc Ddm 20km Sfp Optical Fiber Module No reviews yet $450 10 - 499 pieces

Difference Between Single and Dual Fiber Optical Transceivers

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Fiber optic technology has seen incredible growth over the past several years and will likely experience even more expansion over time. There are numerous benefits associated with

100G QSFP28 ER4 30KM LC Optical Transceiver (EML)

The 100G QSFP28 ER4 optical transceiver delivers carrier-class performance for long-haul data transmission, supporting 100G Ethernet over single-mode fiber up to 30km.

SFP Optical Transceiver | SFP Optical Module | Perle

Perle Protocol and Rate-transparent Media Converters provide conversion between different wavelengths, multimode and single-mode, and dual and single-fiber.

Xi''an FiberHome OL100CL 100Mbps/Gigabit Series Transceiver

OL100CL series 100Mbps fiber optic transceiver It is an independent, highly reliable, and low-cost Ethernet optical port converter launched by FiberHome, which efficiently converts between 1 channel

100G QSFP28 ER4 60KM LC Optical Transceiver (EML)

100G QSFP28 ER4 60KM LC Optical Transceiver (EML) Product Model: EQP29Y-60D Data Rate: 100G Wavelength: 1296, 1300, 1305, and 1309 nm Distance: 60KM Connector: LC Fiber Type: SM DDM:

75M/246FT Outdoor Armored LC to LC Fiber Optic Cable, 4 Core

About This 1 dustrial-Grade Durability: Engineered with a rugged 5.0mm industrial TPU jacket and dual-layer armor (steel tube + stainless mesh), this LC to LC fiber optic cable resists water, UV,

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