

Single-mode 10 Gigabit optical modules all have dual cores



AI Overview

Not all single-mode 10 Gigabit optical modules require dual cores; standard modules use two fibers, but BiDi modules can operate over a single fiber using wavelength-division multiplexing. Standard Single-Mode 10G Modules Most traditional single-mode 10G SFP+ modules, such as 10GBASE-LR, operate using duplex fiber, meaning they require two fiber cores: one for transmitting (TX) and one for receiving (RX) signals. These modules typically use LC connectors and support link lengths up to 10 km over single-mode fiber (SMF) while maintaining full-duplex communication. This dual-core setup is standard for conventional 10G SFP+ optics in data centers and enterprise networks. BiDi (Bidirectional) Single-Mode Modules Single-mode 10G BiDi modules are designed to transmit and receive over a single fiber core by using two different wavelengths—one for TX and one for RX. An internal wavelength division multiplexer (WDM) separates the signals, allowing full-duplex communication on a single strand of fiber. For example, one module may transmit at 1270 nm and receive at 1330 nm, while the paired module uses the reverse wavelength combination. BiDi modules are particularly useful in fiber-constrained environments, reducing cabling requirements by 50% compared to standard duplex modules.

Key Differences	Feature	Standard Duplex 10G SMF	BiDi 10G SMF
Fiber cores		2 (TX + RX)	1 (TX and RX via WDM)
Connector type		Duplex LC	Simplex LC
Wavelength usage		Single wavelength per fiber	Two wavelengths on one fiber
Typical use		Data centers, enterprise backbones	Fiber-limited networks, metro links

Conclusion While traditional single-mode 10G SFP+ modules require dual fiber cores, BiDi single-mode modules provide a single-core alternative using wavelength-division multiplexing. Therefore, it is incorrect to say that all single-mode 10G optical modules have dual cores; the choic...

Article Content

10G SFP+ Optical Transceivers | Transceiver Module

FS 10GbE SFP+ module solutions provide a wide variety of 10 Gigabit Ethernet connectivity options for data centers, enterprise wiring closets, Internet Service

Cisco SFP Modules for Gigabit Ethernet Applications

This data sheet describes the benefits, specifications, and ordering information for the Cisco SFP Modules for Gigabit Ethernet Applications.

Inventory Of 10G Optical Modules

The 10G SFP+ series optical modules include SR, LR, ER, ZR, BIDI, CWDM, DWDM and electrical port modules. All of them adopt LC duplex

How to Convert Multimode to Single-mode Fiber or vice

In different cabling environments, optical fiber communication may require multimode to single-mode conversion or single-mode to multimode

100GBASE QSFP-100G Modules Data Sheet

The Cisco® 100GBASE Quad Small Form-Factor Pluggable (QSFP) portfolio offers customers a wide variety of high-density and low-power 100

SFP+ BiDi 10G Guide: Single Fiber 10G Optical Transceivers

Learn what SFP+ BiDi 10G is, how single-fiber 10G transceivers work, key specs, use cases, and how to choose the right BiDi module.

Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco® 10GBASE SFP+ modules (Figure 1) give you a wide variety of 10 Gigabit Ethernet connectivity options for data center, enterprise wiring closet, and service provider transport applications.

Optical Fiber: Single-Mode Multimode Single-Fiber Dual

Understanding the difference between single-mode, multimode, single-fiber, and dual-fiber is important when designing or managing a fiber optic

Comprehensive Guide to FS 10G BiDi SFP Modules

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

Optical Transceiver Market Size, Growth Drivers

Optical Transceiver Market Size & Share Analysis - Growth Trends and Forecast (2026 - 2031) The Optical Transceiver Market Report is

Fibre Channel

Fibre Channel typically runs on optical fiber cables within and between data centers, but can also run on copper cabling. Supported data rates include 1, 2, 4, 8,

H!Fiber 10G Single Mode SFP+ LC Module, 10GBase

H!Fiber offers one-stop Datacenter solution and products, including SFP Transceivers, DAC Cables, Network Card, Media Converters, Fiber Optical

K6097: Specifications of the Fiber Gigabit Ethernet SFP, XFP, SFP+ ...

Topic The following specifications are for the available Fiber Gigabit Ethernet modules and the platforms that support those modules. Important: The end user must ensure suitability of

10G Gigabit Single Mode SFP+ LC Module, 10G 1310nm

Up to 10Gb/s, works well with switch, router, media converter and more gigabit SFP optic ports. The power consumption is only less than 1watt,

Alcatel-Lucent (Nokia) 3HE00564CA 01 10GBASE-LR XFP Optical

This module features a standard XFP form factor, complies with IEEE 802.3ae 10GBASE-LR standards, and supports 10.3Gbps full-duplex data rate over single-mode fiber (SMF). With its industrial-grade

Cisco QSFP-DD800 Transceiver Modules Data Sheet

The Cisco QSFP-DD800 modules introduce 8x100G and 2x400GGBASE Quad Small Form-Factor Pluggable Double-Density (QSFP-DD)

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.

Arista Optics Modules and Cables

Arista's Optical Modules and Cable portfolio offer a wide variety of high-density and low-power 800G (dual 400G), 400G, 200G, 100G, 50G, 40G, 25G, 10G, 1G, and 100M Ethernet connectivity options

Cisco SFP and SFP+ Transceiver Module Installation

This installation note provides the installation instructions for the Cisco small form-factor pluggable (SFP) and SFP+ transceiver modules. These

Cisco 40GBASE QSFP Modules Data Sheet

The Cisco® 40GBASE QSFP (Quad Small Form-Factor Pluggable) portfolio offers customers a wide variety of high-density and low-power 40

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

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

Cisco 400G QSFP-DD Cable and Transceiver Modules

The Cisco® family of QSFP-DD modules provide the industry's highest bandwidth density while leveraging the backward compatibility to lower

Berns gigabit sfp transceiver ✗ Lc photoelectric conversion ...

Last month, i helped the school's it center upgrade their surveillance network, and i almost cried from suffocation in the electrical well.—the three old switches all have rj45 ports, while

Optic Modules Datasheet

These platforms support multiple interface types and technologies such as Ethernet, ATM, and SONET. Depending on the deployment scenario, they support different pluggable optic modules that can be

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