What do 10 Gigabit single-mode optical modules use



Overview

10GBASE-LR transceivers typically use LC duplex optical connectors, which are optimized for single-mode fiber (SMF) applications and high-density port environments.

Key Takeaways

Yes, 10 Gigabit single-mode optical modules are available, supporting distances up to 10 km and including both standard duplex and BiDi (single-fiber) options.

Standard Single-

Mode SFP+ Modules10GBASE-LR SFP+ modules are designed for single-mode fiber (SMF) and can support link distances up to 10 km using duplex LC connectors. These modules are compatible with major brands like Cisco, HP, and Brocade, and operate at high speeds up to 10.31 Gbps while maintaining low power consumption. They are suitable for both LAN and MAN networks, providing reliable long-distance connectivity over single-mode fiber.

Bi

Di (Bidirectional) Single-Mode Modules10G BiDi SFP+ modules allow full-duplex communication over a single fiber strand using Wavelength Division Multiplexing (WDM). This technology uses two different wavelengths to separate transmit and receive signals, effectively halving fiber usage while maintaining 10G speeds.

Bi

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Di modules typically support distances up to 10 km, integrate DFB lasers and PIN photodiodes, and are hot-swappable and standards-compliant with SFP+ MSA, CPRI, and eCPRI protocols. They are ideal for fiber-constrained environments or high-density deployments.

Key Features

Speed: Up to 10–11.3 GbpsDistance: Up to 10 km on single-mode fiberConnector Type: Duplex LC for standard modules, simplex LC for BiDi modulesPower Consumption: Typically ≤1 WCompatibility: Works with a wide range of switches and NICs from major vendorsDeployment Benefits: BiDi modules reduce fiber usage, simplify cabling, and lower installation costs SummaryWhether you need traditional duplex 10G single-mode modules for standard long-distance links or BiDi modules for single-fiber full-duplex applications, there are multiple options available that support 10G speeds over single-mode fiber up to 10 km. These modules are widely used in enterprise, data center, and telecom networks to optimize fiber infrastructure and maintain high-speed connectivity.

Article Content

Cisco 10GBASE SFP+ Modules Data Sheet

Product overview 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

What Is 10GBASE-LR? SMF 1310nm 10km SFP+ Explained

10GBASE-LR transceivers typically use LC duplex optical connectors, which are optimized for single-mode fiber (SMF) applications and high-density port environments.

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

Guide to 10G BiDi SFP+ Optical Transceivers

In this guide, we dive into Fibrecross''s portfolio of 10G SFP+ Optical Transceivers, explain how BiDi optics work, compare module options, and share best practices

10GE SFP+ Optical Modules

Single-fiber bidirectional (BIDI) optical modules must be used in pairs. For example, SFP-10G-BXU1 must be used with SFP-10G-BXD1.

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SFP+ Single Mode LC Module (10km)

Each single mode 10G SFP+ transceiver is equipped with a duplex LC fiber connection interface, and supports high-speed data rates up to 10.31Gbps. All TRENDnet 10G SFP+ fiber modules support

Introduction of 10G SFP+ Optical Modules

10G SFP+optical module is a popular category widely used in data centers, enterprise networks, edge devices, and CPEs. Function: They''re transceiver modules used for 10 Gigabit

UniFi 10G Single-Mode Optical Module

SFP+ transceiver that supports 10G connections up to 10 km using single-mode fiber with a duplex LC UPC connector.

The Most Comprehensive Guide Of Optical Modules

The central wavelength of single mode optical module is generally 1310nm, 1550nm, which is used with single mode optical fibre. Single-mode

The Complete Guide to the Best Choice of 10G SFP+ Optical Modules

10GBASE-ZR (Ultra-Extended Range) modules offer the longest reach, up to 80 kilometers over single-mode fiber. They are primarily used in carrier networks and large-scale enterprise networks requiring

Understanding Single-mode and Multi-mode Optical Modules and Optical ...

Conclusion: In conclusion, single-mode and multi-mode optical modules and fibers serve distinct purposes in sfp optical module communication, offering compatibility with different transmission

SFP+ Single Mode LC Module (10km)

Duplex LC optical interface Supports data rates of up to 10.31Gbps Supports 1310nm single mode network transmissions Low Electromagnetic Interference (EMI) design Compliant with IEEE 802.3ae

Single-mode Fiber

Note again that the IEEE 802.3ae specification for 10 Gigabit Ethernet assumes standard single-mode fiber (IEC types B1.1 and B1.3) for all single-mode performance specifications. Additional fiber types

Everything You Need to Know About the SFP+ Module

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10GBASE-LR: For longer distances, this module works over single-mode fiber optic cables with the capability to transmit up to 10 kilometers of data traffic; hence, it is suitable for

100G Optical Module Selection Guide: Advantages and Types of

Explore the QSFP28 100G optical module, a vital component for high-speed network connections. Discover its unique features, advantages, and various types to meet diverse

Inventory Of 10G Optical Modules

When used with single-mode fiber, it supports a transmission distance of up to 40km. As a cost-effective ultra-long-distance optical module, it is currently widely used in data centers and

What is SFP Module and How to Choose it□

Commonly, 850nm SFP can reach up to 550 meters with multimode fiber optics, and the 1550nm SFP supports up to a maximum of 160km via single mode fiber cables. On the other hand,

Guide to 10G BiDi SFP+ Optical Transceivers

Our 10G BiDi SFP+ Optical Transceivers Modules deliver full 10 Gb/s over a single strand of single-mode fiber, halving fiber count and simplifying cable

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