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Optical Module Gigabit Single-Mode Module



Overview

Gigabit single-mode single-core fiber optic module Therefore, the 155M optical module is also called FE (100M) optical module, and the 1.25G optical module.

Key Takeaways

Gigabit single-mode optical modules are laser-based transceivers that transmit and receive data at gigabit speeds over long distances using single-mode fiber.Overview

Gigabit single-mode optical modules are hot-swappable transceivers used in networking equipment such as switches, routers, servers, and storage devices to enable high-speed data communication over single-mode fiber (SMF) networks . Unlike multimode modules, they are optimized for long-distance transmission, typically ranging from 10 km to over 80 km, depending on the module type and optical power budget .

Key Technical Features
• Transmission Rate: Standard gigabit modules operate at 1.25 Gbps, compatible with Gigabit Ethernet (1000BASE-X) and Fibre Channel networks .

• Wavelengths: Common operating wavelengths are 1310 nm for medium distances (up to 40 km) and 1550 nm for long-haul links (up to 120 km) due to lower attenuation and dispersion characteristics .

• Fiber Type: Single-mode fiber with a small core diameter (~9/125 µm) is used, allowing minimal signal loss over long distances .

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• Interface Types: Most modules use LC or SC connectors, with SFP modules typically using LC duplex interfaces .

• Laser Source: Modules employ laser diodes to generate optical signals, providing higher power and longer reach compared to LED-based multimode modules .

Types of Gigabit Single-Mode Modules

• 1000BASE-LX SFP: Standard gigabit module for up to 10 km over SMF, widely used in enterprise networks .

• 1000BASE-EX SFP: Extended reach module supporting distances up to 40 km .

• 1000BASE-ZX SFP: Long-haul module capable of spans up to 70–120 km, often requiring optical attenuators for shorter links .

• BiDi SFP: Transmits and receives over a single fiber using two wavelengths, ideal for fiber-limited environments .

• CWDM/DWDM SFP: Multiplexing modules that allow multiple signals over the same fiber for high-capacity networks .

Applications

Gigabit single-mode optical modules are commonly deployed in:

• Enterprise backbones and campus networks for inter-building connections .

• Data centers for server-to-switch and switch-to-switch links .

• Telecom and metro networks where long-distance, high-speed connectivity is required .

• Storage Area Networks (SANs) for high-speed fiber channel connections .

Advantages

• Long-distance transmission with minimal signal loss.

• High scalability for future network expansion.

• Compatibility with both Ethernet and Fibre Channel standards.

• Hot-swappable design for easy maintenance and upgrades . In summary, gigabit single-mode optical modules are essential components for high-speed, long-distance fiber optic networks, providing reliable, scalable, and efficient data transmission across enterprise, data center, and telecom infrastructures .

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Article Content

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Compatibility in your network is everything, and this industrial SFP Transceiver

Cisco SFP Modules for Gigabit Ethernet Applications

The 1000BASE-ZX SFP operates on standard single-mode fiber-optic link spans of up to approximately 70 km in length. The SFP

1G Bidirectional Single-Mode Optical Module

SFP transceiver that supports 1G connections up to 3 km using single-mode fiber with a simplex LC UPC

1 Gigabit Singlemode SFP Fiber Optic Transceivers

Our 1 Gigabit Singlemode SFP Transceivers offer high-performance, reliable connectivity for singlemode

1G BiDi SFP

GIGALIGHT''s 1G BiDi SFP series optical transceiver modules support a speed of 1.25Gbps, widely used in

Single-Mode Based Gigabit SFP

Small Form-Factor Pluggable (SFP) interfaces from DYMEC provide flexible, and secure high speed

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GSFP-1310R-20-SMF | Gigabit Optical Module

Industrial Optical Module Series is a hot-pluggable device with a unique sturdy design. Developed to adapt to even the harshest of

SFP Single Mode LC Module (20km)

TRENDnet''s SFP Single Mode LC Module, model TEG-MGBS20, is compatible with standard SFP slots found on network switches

H!Fiber 1.25G Single Mode SFP LC Module, 1000Base-LX/LH Fiber

About this item 1000Base-LX/LH SFP: Gigabit Single Mode SFP Module support 1.25 Gb/s data rates, 1310nm wavelength, SMF;

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The single fiber optical module is very suitable for long-distance backbone and man applications, and its wiring cost

Industrial Gigabit Fiber SFP Optical Transceiver

Also known as a mini-Gigabit Interface Converter (GBIC), this industrial SFP module''s metal housing offers

10G Single-Mode Optical Module

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

Overview of SFP Gigabit Optical Module

Usage of SFP Optical Modules To correctly use an SFP gigabit optical module, follow these

Gigabit Fiber SFP Optical Transceiver Module

One 1000Base-LX single-mode Fiber LC duplex port Distance support: up to 20 km (12.4 mi.) Wavelength:

1G Multi-Mode Optical Module

SFP transceiver that supports 1G connections up to 550 m using multi-mode fiber with a duplex LC UPC connector.

JT-COM 1.25G SFP Module Single Mode Single Fiber

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High-performance 1.25G SFP optical transceiver for reliable single-mode fiber transmission up to 80KM.

1G SFP LX 1310nm 20km Single mode Transceiver

Optimal Performance and Quality for 1G Networks Featuring a built-in Semtec chip and reliable FP laser /

Intellinet 10 Gigabit Fiber SFP + (LC) Single-Mode

10 Gigabit Fiber SFP + (LC) Single-Mode Optical Transceiver Module The new line of

SFP+ Single Mode LC Module (10km)

SFP+ Single Mode LC Module (10km) TEG-10GBS10 (Version V3) Transmission distance of up to 10km (6.21 mi.) Duplex LC optical

Optic Modules Datasheet

Optic Modules Data Sheet ... SFP (form factor) = small form-factor pluggable transceiver SMF (media) = single-mode fiber-optic

Fiber Modules

Grandstream Network offers a wide variety of fiber modules. All of them are hot-pluggable small-form factor transceiver modules

SFP-1GLXLC

Gigabit Ethernet SFP Modules Moxa''s small form-factor pluggable transceiver (SFP) Ethernet fiber modules for Gigabit Ethernet

Cisco SFP Modules for Gigabit Ethernet Applications

1000BASE-ZX SFP for long-reach single-mode fibers The 1000BASE-ZX SFP operates on standard single-mode fiber-optic link

Amazon : Single Mode Sfp

Discover high-performance single mode SFP modules for your network. Compatible with major brands like Cisco, Ubiquiti, and more.

DAHUA Gigabit Optical Module Fiber Transceiver LC/LC Single Mode

Gigabit Optical Module > Single mode double fiber > LC port > 1310nm sending, and 1310nm receiving > Transmission distance up

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