

Single-mode optical interface module



AI Overview

Single-mode optical modules typically use LC connectors and operate over a 9 μm core fiber at 1310 nm or 1550 nm wavelengths for long-distance transmission. Fiber and Core Characteristics Single-mode optical modules are designed for long-distance, high-speed communication. They use a narrow fiber core of about 9 μm with a 125 μm cladding, allowing light to travel in a single mode with minimal dispersion and attenuation. This enables transmission distances ranging from 2 km up to 120 km, depending on the module type and wavelength. Common wavelength standards include 1310 nm and 1550 nm, with some modules supporting CWDM or DWDM wavelengths for extended reach. Connector Types The physical interface of single-mode modules is most commonly the LC connector, which is compact and supports high-density deployments. Legacy networks may use SC connectors, while MPO/MTP connectors are reserved for high-density backbone applications. The connector type determines how the fiber physically couples with the transceiver and affects patch cable selection, insertion loss, and network scalability. Module Form Factors Single-mode modules are available in various SFP form factors, including SFP, SFP+, and QSFP, which are hot-pluggable and compatible with switches, routers, and other network devices. Each form factor supports different data rates, such as 1G, 10G, 25G, 40G, and 100G, and must match the device port for proper operation. Transmission Types Single-mode modules can be dual-fiber (separate fibers for TX and RX) or single-fiber bidirectional (BIDI), which uses two wavelengths on a single fiber for transmit and receive. Dual-fiber modules are widely supported and standard in most networks, while BIDI modules are useful for reducing fiber usage in constrained environments. Summary Fiber type: Single-mode (9 μm core, 125 μm cladding) Wavelengths: 1310 nm, 1550 nm, CWDM/DWDM options Connector type: LC (standard), SC (legacy), MPO/MTP (high-density) Form factors: SFP, SFP+, QSFP Trans...

Article Content

Lightera Optical Fiber & Connectivity Solutions

Lightera isn't just about connectivity, it's about empowering industries, advancing technology, and improving lives with the power of optical technology.

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

Read the definitive 2026 guide on SFP modules. We explain Single Mode vs Multimode, DDM diagnostics, and how to choose the right transceiver for Cisco,

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 connector.

SFP Single Mode LC Module (80km)

TRENDnet's SFP Single Mode LC Modules are compatible with standard SFP slots found on network switches and fiber converters. Each single mode SFP transceiver is equipped with a duplex LC fiber

The Key Differences Between 1-core, 2-core, Single

Understanding 1-core, 2-core, Single Mode, and Multi-mode optical modules helps you design efficient networks. Whether you're working on long

10G CWDM Single-Mode Optical Module

SFP+ transceiver for CWDM that supports 10G connections up to 20 km using single-mode fiber with a duplex LC UPC connector.

Optical fiber connector

Optical fiber connectors are categorized into single-mode and multimode types based on their distinct characteristics. Industry standards ensure compatibility

100G QSFP28 Single Fiber (BiDi) Modules: Technology, Benefits ...

Single fiber QSFP28 modules (commonly called BiDi transceivers) enable full-duplex 100G communication over a single optical strand. They do this by using Wavelength Division

H+S Polatis

Software Defined Networking enabled All Optical Switches. Industry leading performance - optical loss below 1dB. Customized MxN configurations up to

OREI 1G SFP Single-Mode Optical Module (1000BASE-EX, 1310nm,

Built using the industry-standard SFP (Small Form-factor Pluggable) design, this module enables stable Gigabit Ethernet transmission over single-mode fiber at a wavelength of 1310nm, supporting

XFP transceiver

XFP are available with a variety of transmitter and receiver types, allowing users to select the appropriate transceiver for each link to provide the required optical

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

QSFP-DD Optical Transceivers for High-Speed

Cisco's comprehensive portfolio of QSFP-DD modules support 400G and 800G data rates across copper, multimode fiber, and single-mode fiber, and

800G Optical Modules Explained: Standards, Types

Discover everything about 800G optical modules—standards, packaging, types & applications. Learn how they power AI, HPC & next-gen data

MI0D000MPF01

03030DTF H80-GICD0 4-port GE Optical Interface Card 2 03051786 KW-MR01MRM0
MultiMedia Resource Module 1 03051912 KW-MR01NIU0 Network Interface Unit 1
03052239 MI0D000MPF01

Recommendation ITU-T G.652 (08/2024)

This document outlines the specifications for a single-mode optical fiber and cable designed for use around the 1310 nm zero-dispersion wavelength, suitable for

Industrial GbE Fiber SFP Optical Transceiver Module

Compatibility in your network is everything, and this industrial SFP Transceiver Module delivers. Use it with any Intellinet SFP equipped network switch or any

NVIDIA/Mellanox MMS4A00 Compatible 1.6T 2 x DR4/DR8 OSFP224

Dual MPO-12/APC Connectivity: Each of the two 800G ports utilizes a dedicated MPO-12/APC interface for connection to single-mode fiber infrastructure. Silicon Photonics Technology: Implements a SiPh

SFP Optical Transceiver | SFP Optical Module | Perle

Multimode and single-mode fiber Gigabit Ethernet, Fast Ethernet, Fiber channel, ATM/SONET, SDH Hot-pluggable with durable metal enclosure Can be installed

Know Your 400G Transceiver | Juniper Networks

Fiber type and reach—The fiber type specifies the type of optical fiber (single-mode or multimode) compatible with 400G transceivers. The reach provides the maximum supported distance or range

The Fiber Optic Association

Other groups may have fiber optic standards also: ANSI is the governing bodies for standards in the US, NIST provides primary standards, IEEE has standards for

Select The Right Fiber Patch Cables For 1G/10G/25G

Deploying optical modules requires the right fiber patch cable. It directly affects network connection stability, performance, and maintenance. This

Global Leader in Materials, Networking, and Lasers

Silicon photonics-based 1.6T-DR8 transceiver module using a Marvell® Ara 3 nm optical digital signal processor (DSP), featuring 200 Gbps electrical and optical

100GBASE QSFP-100G Modules Data Sheet

QSFP-100G Optical modules Features and benefits of Cisco QSFP modules Hot-swappable input/output device that plugs into a 100G Gigabit

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.

Contact Us

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