

Article Overview

40G single-mode optical modules enable high-speed 40Gbps data transmission over long distances using single-mode fiber, typically with LC or MPO connectors and wavelengths of 1310nm or 1550nm.

Overview

40G single-mode optical modules, such as QSFP-40G-LR4, are designed for long-distance 40 Gigabit Ethernet (40GbE) connections over single-mode fiber (SMF) networks . Unlike short-range multimode modules (e.g., 40GBASE-SR4), single-mode modules can transmit data over distances up to 10 km or more, making them ideal for data center interconnects, enterprise networks, and telecom applications .

Key Features

- o Data Rate: 40Gbps per module, often split into four 10Gbps channels internally .
- o Fiber Type: Single-mode fiber (SMF), which supports long-distance transmission with minimal signal loss .
- o Wavelengths: Typically operate at 1310nm or 1550nm, using CWDM technology to combine multiple channels .
- o Connectors: Commonly use LC duplex or MPO/MTP connectors for easy integration into existing fiber infrastructure .
- o Form Factor: QSFP+ (Quad Small Form-Factor Pluggable), hot-swappable, and compliant with MSA standards for broad device compatibility .

Advantages

- o Long-Distance Transmission: Supports links up to 10 km or more, suitable for inter-building or campus networks .
- o High-Speed Performance: Maintains 40Gbps throughput, supporting high-bandwidth applications like cloud computing and high-performance computing .
- o Space Efficiency: Single-core fiber modules reduce cabling requirements, saving rack and conduit space .
- o Ease of Deployment: Standardized connectors and MSA compliance allow plug-and-play installation with compatible network devices .

Applications

- o Data Center Interconnects (DCI): Connecting multiple data centers over long distances.
- o Enterprise Networks: High-speed backbone links between core and distribution layers.
- o Telecommunications: Long-haul optical links for service providers.
- o High-Performance Computing: Low-latency, high-bandwidth connections for compute clusters.

40G Single-Mode Optical Module

Considerations

- o Compatibility: Ensure the module is compatible with your network equipment (Cisco, D-Link, Zyxel, Mikrotik, Ubiquity, etc.), .
- o Connector Type: Choose LC or MPO based on existing cabling infrastructure.
- o Distance Requirements: Verify the module's maximum reach matches your network design.
- o Cost: Single-mode modules are generally more expensive than multimode modules due to longer reach and CWDM technology. In summary, 40G single-mode optical modules are essential for high-speed, long-distance network connections, offering reliable 40GbE performance with standardized form factors and connectors, making them suitable for modern data centers, enterprise networks, and telecom infrastructures .

Cisco QSFP-40G-LR4-S Compatible QSFP+ Module - 40GBASE-LR4 - 40GbE Single Mode Fiber SMF Optic Transceiver - 40GE

FS 40G QSFP+ optical transceiver module solutions offer a full range of QSFP+ modules from 150m to 80km reach, and used for

40G QSFP+ Transceiver Module Series include SR4, BIDI, CSR4, PIR4, LX4, IR4, LR4,PLR4 and ER4. The series of product adopts

This guide focuses on how QSFP 40G LR4 works, where it fits best, how it compares to other 40G QSFP options, and how to

40G QSFP+ (Quad Small Form-factor Pluggable Plus) & BIDI Transceiver Modules enable a maximum of 40km optical transmission

This QSFP+ is a transceiver module for 40Gbps and conforms to the QSFP+ MSA and IEEE 802.3ba

The QSFP+ 40G LR4 PSM and QSFP+ 40G SR4 optical module transceivers work on the same principle, using laser arrays and

The Cisco 40GBASE-ER4 QSFP Module supports link lengths up to 40km over G.652 single-mode fiber with duplex

This module can be used for native 40G optical links over 12-fiber ribbon cables with MPO/MTP connectors or in

A 40G QSFP+ (Quad Small Form-factor Pluggable Plus) module is a compact, hot-pluggable optical/electrical

40G Single-Mode Optical Module

transceiver that

QSFP 40G LR4 is the preferred 40G optical transceiver for single-mode links up to 10km, offering a balanced solution between

A 40G transceiver module is an optical that supports data rates of up to 40 Gigabits per

QSFP 40G 1310nm 10km LC Transceiver GLQ3L0C31 is designed to operate over single-mode fiber system using 4X10 CWDM

02311HNP - Genuine Huawei QSFP-40G-LX4 40GBase-LX4 Optical Transceiver, QSFP+, 40GE, Single-mode Module (1310nm,

Each module is optimized for different media and reach (ranging from 0.5 meters to 80 kilometers). All interface speeds, from 1G to

40G QSFP+ optical transceivers available in multimode (100m & 300m) and single mode options (2km, 10km, 40km) and DAC

Web: <https://www.morwarreconst.co.za>

