Single-mode fiber optic module 40g

Overview

The Cisco 40GBASE-LR4 QSFP module supports link lengths of up to 10 kilometers over a standard pair of G.652 single-mode fiber with duplex LC connectors.

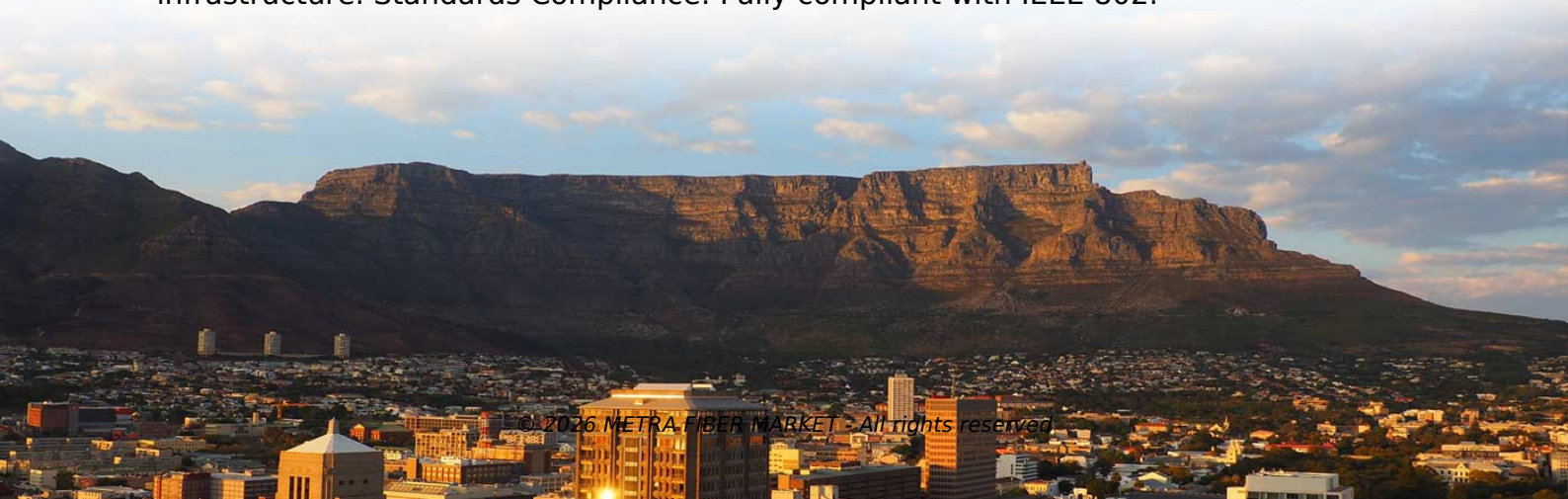
Key Takeaways

Single-mode 40G fiber optic solutions, such as QSFP-40G-LR4, enable high-speed 40Gbps transmission over single-mode fiber for distances up to 10km, ideal for data center interconnects and enterprise backbone networks. OverviewSingle-mode 40G fiber optic modules are high-speed optical transceivers designed to transmit and receive data at 40Gbps over a single strand of single-mode fiber. They typically operate at 1310nm using CWDM technology and are standardized under 40GBASE-LR4.

These modules split the 40Gbps signal into four 10Gbps lanes, each carried on a different wavelength, which are multiplexed and demultiplexed inside the transceiver for efficient long-distance transmission.

Key Features

Transmission Distance: Up to 10km over standard single-mode fiber, making them suitable for medium-range backbone and interconnect applications. Connector Types: Commonly use LC duplex or MPO connectors for easy integration into existing fiber infrastructure. Standards Compliance: Fully compliant with IEEE 802.



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3ba, MSA, and other QSFP standards, ensuring interoperability across different vendors. Deployment Flexibility: Single-mode 40G modules are more cost-effective and easier to deploy than ultra-long-reach options like 40G ER4, while exceeding the reach of multimode SR4 modules. Space and Cost Efficiency: Using a single fiber strand reduces cabling complexity and saves rack space, which is critical in high-density data centers.

Applications

Data Center Interconnects (DCI): Connecting multiple data centers or high-performance computing clusters. Enterprise Backbone Networks: Supporting high-speed aggregation and core layers. Service Provider Networks: Aggregation and metro networks where multimode fiber cannot meet distance requirements.

Popular ModulesQSFP-40G-LR4: Supports 10km over single-mode fiber, LC duplex interface, CWDM at 1310nm, widely used for backbone and aggregation layers.

Cisco-

Compatible Options: Third-party modules like FluxLight QSFP-40G-LR4-S-FL offer full compatibility with Cisco and other OEM switches, pre-programmed for seamless integration. AdvantagesHigh-Speed Transmission: 40Gbps over long distances. Ease of Deployment: Standard connectors and MSA compliance simplify upgrades.

Cost-

Effective: Balances distance, performance, and price compared to ultra-long-reach solutions. Scalable: Supports future network growth without major infrastructure changes. Single-mode 40G fiber optic modules are the preferred choice when longer reach, high reliability, and cost efficiency are required, bridging the gap between short-reach multimode solutions and ultra-long-reach optics.

Article Content

Cisco 40GBASE QSFP Modules Data Sheet

The Cisco 40GBASE-LR4 QSFP module supports link lengths of up to 10 kilometers over a standard pair of G.652 single-mode fiber with duplex LC connectors. The 40 Gigabit Ethernet

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Each module is optimized for different media and reach (ranging from 0.5 meters to 80 kilometers). All interface speeds, from 1G to 400GE have connectivity options that include Direct Attach copper

QSFP 40G LR4 Transceiver: 10km Single-Mode Optical Solution

This guide focuses on how QSFP 40G LR4 works, where it fits best, how it compares to other 40G QSFP options, and how to choose the right module for your network, with an emphasis on

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Confused by LC, SC, MPO, UPC, and APC? This complete fiber optic patch cable guide covers connector types, single-mode vs multimode,

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A fiber optic transceiver is a hot-pluggable hardware module that converts electrical network data into light pulses (transmit) and incoming optical signals back into electrical data (receive). It bridges

QSFP-40GB Transceivers Guide and Compatibility

40GBase-ER4 The 40GBase-ER4 module can handle long distance transmission of data up to 40kms over SMF fiber with duplex LC connectors. It works by converting four 10G input channels to four

Overview of the YXFiber QDD 400G DR4 Connectivity Solution

Three Connectivity Solutions The Simplest Connectivity Solution: Direct Interconnection of Two 400G DR4 Ports This is the most straightforward application of the YXF-QDD-400G-DR4

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