10 Gigabit Single-Mode Optical Module Parameters

Article Overview

10G single-mode optical modules typically use SFP+ form factor, operate at 1310-1550nm wavelengths, support link lengths from 10 km up to 40 km, and use LC duplex connectors.

Key Specifications

Form Factor: SFP+ (hot-pluggable, compact design for high port density) Data Rate: 10 Gbps full-duplex Ethernet Wavelength:

o 1310 nm for 10GBASE-LR modules (up to 10 km)
o 1550 nm for 10GBASE-ER modules (up to 40 km) over standard single-mode fiber (G.652) Maximum Transmission Distance:
o 10 km for LR modules
o 40 km for ER modules Connector Type: Duplex LC UPC Fiber Type: Single-mode fiber (SMF, G.652) Compliance Standards: IEEE 802.3ae 10GBASE-LR/ER, SFP+ MSA Power Budget: Typically sufficient to overcome standard SMF attenuation for the specified distances Monitoring Features: Many modules support digital diagnostics monitoring (DDM) for real-time monitoring of optical power, temperature, and voltage

Special Variants

BIDI (Bidirectional) Modules:

o Use a single fiber for both transmit and receive, requiring paired modules with complementary wavelengths (e.g., 1270 nm TX / 1330 nm RX)
o Useful for fiber-constrained environments Deployment Considerations:
o Ensure wavelength compatibility between modules; mismatched wavelengths reduce maximum distance (e.g., connecting a 1310 nm module to a 1550 nm module may limit reach to 20 km)
o ER modules are preferred for long-haul metro or DCI links, while LR modules are suitable for campus or short-distance interconnects
o Hot-pluggable SFP+ design allows easy upgrades and high port density in data centers

Summary

10G single-mode optical modules provide flexible, high-speed connectivity for enterprise, data center, and telecom networks. Choosing the right module depends on required distance, fiber type, and network topology, with ER modules offering the longest reach (up to 40 km) and LR modules supporting standard 10 km links. BIDI modules offer single-fiber solutions for constrained deployments, while all modules maintain IEEE

802.3ae compliance and LC duplex connectivity for interoperability.

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

A broad range of industry-compliant SFP+ modules for 10 Gigabit Ethernet deployments in diverse networking

Generic SFP-1G-LX Compatible 1000BASE-LX/LH SFP 1310nm 10km-20km Transceiver supports 1G

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

Choose the 1310-nm Singlemode SFP (LC) 10G optical transceiver, which transmits and receives optical data over singlemode

The 100 Gigabit Singlemode Optical Module SFP-FE-LX is an optoelectronic converter module with SFP interface,

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

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

OPticAl chArActeriSticS The following optical characteristics are defined over the Recommended Operating Environment unless

Cisco Transceiver Modules - Learn product details such as features and benefits, as well as hardware and software specifications.

10GBase-LR SFP+: 10 Gigabit Ethernet Single Mode SFP+ Module, 10 Gb/s, 1310nm wavelength, Duplex Dual LC,

TRENDnet"s SFP+ Single Mode LC Modules are compatible with standard SFP+ slots found on network switches and fiber

Enhance your network with the Ubiquiti 10G Single-Mode Optical Module, featuring LC connectors and 10 Gbps data rate for reliable

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

The SFP Single Mode LC Modules are SFP transceivers compatible with standard SFP slots on network

8. Digital Diagnostics / Digital Optical Monitoring The transceiver provides serial ID memory contents and diagnostic information

Web: https://www.kremgroup.co.za