

10g Single-Mode Optical Module Sensitivity



AI Overview

Typical receiver sensitivity for 10G single-mode SFP+ modules ranges from approximately -8.2 dBm for 10GBASE-LR to around -14.4 dBm for 10GBASE-ER modules. 10GBASE-LR (10 km, 1310 nm) 10GBASE-LR modules operate at 1310 nm over single-mode fiber (SMF) and support link distances up to 10 km. They typically use a DFB transmitter and a PIN photodiode receiver. The receiver sensitivity for these modules is generally around -8.2 dBm, which ensures reliable 10Gbps transmission over the specified distance while maintaining a bit error rate (BER) of 10^{-12} . These modules comply with IEEE 802.3ae, SFF-8431, and SFF-8472 standards and are widely used in enterprise backbones, data centers, and metro networks. 10GBASE-ER (40 km, 1310 nm) 10GBASE-ER modules are designed for longer distances, up to 40 km over SMF, also operating at 1310 nm. They feature higher optical transmit power and improved receiver sensitivity compared to LR modules. Typical receiver sensitivity for 10GBASE-ER SFP+ modules is around -14.4 dBm, allowing compensation for higher fiber attenuation over extended distances. These modules support an optical link budget of approximately 17 dB and are compatible with SFF-8431, SFF-8432, and IEEE 802.3ae standards.

Practical Considerations

Optical Budget: The receiver sensitivity, combined with transmitter power, determines the maximum achievable link distance. For LR modules, the optical budget is sufficient for 10 km, while ER modules can reach 40 km under ideal conditions.

Fiber Type: Both LR and ER modules are designed for G.652 single-mode fiber. Fiber attenuation and connector losses must be considered to ensure the received power remains above the sensitivity threshold.

Compatibility: LR and ER modules cannot be mixed on opposite ends due to differences in wavelength and s...

Article Content

UniFi 10G Single-Mode Optical Module

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

10 Gbit/s SFP+ Optical Module

10 Gbit/s SFP+ Optical Module You can use different levels of 10 Gbit/s SFP+ optical modules only with 10 GE interfaces. The wavelength of these 10 Gbit/s SFP+ optical modules can be

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

10GE SFP+ Optical Modules

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

XG-SFP-LR-SM1310 10GBASE-LR SFP+ 1310-nm 10-km DOM

The XG-SFP-LR-SM1310 is aligned to IEEE 10GBASE-LR optical specifications and supports a link length of up to 10 kilometers over a single-mode fiber (SMF) with an LC connector.

10G single-mode OSX010000: a reliable solution for

The 10G single-mode optical module OSX010000 plays a key role in optical fiber transmission between 5G communication base stations, supporting high-speed

10 Gbit/s SFP+ Optical Modules

10 Gbit/s SFP+ optical modules apply to 10 GE optical ports. The wavelength can be 850 nm, 1310 nm, or 1550 nm, and the transmission distance ranges from 0.5 km (0.31 mi) to 80 km (49.71 mi).

Huawei SFP-10G-iLR Optical Transceiver Best price in Duba

Basic Information Module name SFP-10G-iLR Part Number 02311BJJ Model SFP-10G-iLR Form factor SFP+ Application standard 10GBASE-iLR (non-standard) Connector type LC Optical fiber type SMF

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

Confused by SFP vs SFP+? Read the definitive 2026 guide on SFP modules. We explain Single Mode vs Multimode, DDM diagnostics, and how to choose the

FR 10 Gigabit SFP+ 10G Optical Module Single-Mode 1310nm Multi-Mode ...

FR 10 Gigabit SFP+ 10G Optical Module Single-Mode 1310nm Multi-Mode 850nm Dual-Fiber LC 300m SR 3Y Warranty Factory Direct Sales

1.6T OSFP 2xDR4/DR8, 1310nm, 500m, DDM, CDR,

The MJ-OSFP1.6TB-DR8 is a cost-effective, high-performance OSFP module tailored for AI datacenter applications, delivering an aggregate throughput of 1.6

10G BiDi SFP+ 20km Tx1270/Rx1330 | €16.33 | EDGE Optical Solutions

10GBASE-BX20 10G BiDi SFP+, 20km single fiber, Tx1270/Rx1330nm, 9dB budget, DOM. Matched-pair module. EU stock + lifetime warranty. €16.33.

Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco SFP-10G-LR10-I supports a link length of 10 kilometers on standard Single-Mode Fiber (SMF, G.652). The SFP-10G-LR10-I is for industrial operating temperature range.

OPTICAL MODULES FOR HUAWEI S SERIES SWITCHES

Single-mode optical modules are used with single-mode fibers. Single-mode fibers support a wide band and large transmission capacity, and are used for long-distance transmission.

Huawei 02318170 Datasheet

Optical fiber type: SMF Working case temperature [°C(°F)]: 0°C to 70°C (32°F to 158°F) Transmission rate [bit/s]: 10 Gbit/s Target transmission distance : Single-mode fiber: 10 km

GIANTECH SFP+ Fiber Optical Module BIDI Simplex 10G LC 3.3V

Q3 How to use and purchase single-fiber optical modules in pairs? A: The purchase of single-fiber modules need to pay attention to the need to use in pairs, Tx1310/Rx1550NM must be purchased

SFP-10G-LR Specifications: Optical, Electrical & Link Params

SFP-10G-LR remains one of the most widely deployed 10G optical transceivers because its specifications are well-defined, mature, and predictable. When selected and deployed correctly, it

Cisco 40GBASE QSFP Modules Data Sheet

This module can be used for native 40G optical links over 12-fiber ribbon cables with MPO/MTP connectors or in 4x10G mode with parallel-to

Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco® 10GBASE SFP+ modules (Figure 1) give you a wide variety of 10 Gigabit Ethernet connectivity options for data center, enterprise

MikroTik 10G Single-Mode SFP+ Module Pair, 10 km | Getic

The MikroTik S+2733LC10D is a pair of industrial-grade 10G SFP+ modules designed for single-mode fiber links over distances of up to 10 km. The modules are intended for networks that need 10G

Contact Us

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