

RIVO MULTITRADE OPTICAL SYSTEMS

10 Gigabit 10km Optical Module Receiver Sensitivity



Overview

10GBASE-LR SFP+ 1310nm 10km DOM Transceiver. 10-Gigabit Ethernet links up to 10km over Single Mode fiber.

Key Takeaways

Standard 10GBASE-LR SFP+ modules have a receiver sensitivity of approximately -14 to -15 dBm for reliable 10 km single-mode fiber links. Receiver Sensitivity and Optical Power

The receiver sensitivity of a 10GBASE-LR SFP+ transceiver, which operates at 1310 nm over single-mode fiber (SMF), is typically -14 to -15 dBm. This means the module can reliably detect optical signals down to this power level, ensuring stable 10 Gb/s data transmission over distances up to 10 km . The maximum received optical power is usually around -1 dBm, beyond which the receiver may saturate and signal integrity could degrade .

Optical Power Budget

The optical power budget—the difference between the transmitter output and the receiver sensitivity—typically ranges from 8 to 11 dB, depending on fiber quality, connector losses, and splices . This margin accounts for real-world factors such as fiber aging, temperature variations, and additional interconnect losses, ensuring reliable link performance.

Dispersion and Fiber Considerations

10GBASE-LR modules tolerate chromatic dispersion up to 1.0 ns/nm, which is sufficient for standard SMF deployments over 10 km . Proper LC duplex connector alignment and polarity compliance are essential to maintain signal integrity. Modules often include Digital Diagnostic Monitoring (DDM/DOM) to monitor Tx/Rx power, voltage, and temperature in real time .

Summary

For a 10 km 10G optical link using 10GBASE-LR SFP+ modules:

- Receiver Sensitivity: –14 to –15 dBm
- Maximum Rx Power: –1 dBm
- Optical Power Budget: 8–11 dB
- Dispersion Tolerance: 1.0 ns/nm
- Connector Type: LC duplex, with proper polarity
- Monitoring: Optional DDM/DOM support for real-time diagnostics By adhering to these specifications, network engineers can ensure reliable 10G connectivity over 10 km of single-mode fiber, minimizing signal degradation and maintaining interoperability across devices from different vendors .

Article Content

10GBASE-LR SFP+ 1310nm 10km Transceiver Datasheet | FS

10GBASE-LR SFP+ 1310nm 10km DOM Transceiver. 10-Gigabit Ethernet links up to 10km over Single Mode fiber. They are

10GBASE-LR XFP 1310nm 10km Transceiver Datasheet | FS

10G XFP transceiver module is individually tested on corresponding equipment such as Cisco, Arista, Juniper, Dell, Brocade and

SFP-10G-ER Explained: Powering 40km 10Gbps Optical Links

The SFP-10G-ER transceiver module is the proven, standards-based workhorse for extending 10 Gigabit Ethernet up

MEASUREMENT OF RECEIVER SENSITIVITY LIMITS

Wavelength and source dependence of sensitivity Variation in sensitivity of receivers observed versus sources in different

Minimum Receiver Power vs. Receiver Sensitivity: A Guide to Optical ...

Learn the key differences between Minimum Receiver Power and Receiver Sensitivity in optical modules. Discover

Accurate estimation of receiver sensitivity for 10 Gb/s optically ...

The amplified spontaneous emission (ASE) noise of EDFA added to total noise of optical receiver results in complicated

Cisco 10GBASE SFP+ Modules Data Sheet

Product overview The Cisco® 10GBASE SFP+ modules (Figure 1) give you a wide variety of 10 Gigabit Ethernet connectivity options

10GBASE-LR SFP+ | From €12 | EDGE Optical Solutions

10GBASE-LR SFP+ transceiver compatible with 80+ brands. 1310nm, 10km SMF, 6dB budget. IEEE 802.3ae, DDM, CE/RoHS.

1310nm 10km SFP+ Transceivers

The TPP5XGFLRx000E2A transceiver connects to standard 20-pad SFP+ connectors for hot plug capability. This allows the system

1000BASE-LX: Complete Technical and Deployment Guide

1000BASE-LX is a Gigabit Ethernet optical standard designed for reliable fiber transmission over extended distances. It remains one

10Km SFP+ Optical Module

This is a standard SFP+ optical module. It uses two single mode optical fibers and the speed rate can up to 10Gbps, transmission

Measurements on IEEE 802.3ae 10 Gb/s Ethernet

This prominence is well reflected when discussing measurement issues. 10 Gigabit Ethernet (GbE) introduces several measure

Data Diode 10-Gigabit SFP Module | Unidirectional Network

Overview The FiberPlex SFX-10DD Data Diode provides a unidirectional network connection with 10-gigabit optics. Featuring data

10 Gigabit Ethernet

10 Gigabit Ethernet (10GE, 10GbE, or 10 GigE) is a group of computer networking technologies for transmitting Ethernet frames at a

3G-SDI 1310nm 10km Digital Video SFP Dual Channel Receivers

Buy 3G-SDI 1260~1610nm 10km Digital Video SFP Single Channel Optical Receivers Module (MSA) from manufacturer at Affordable

Optical Receiver Front-End Integrated Circuit Design

The optical receivers have key roles in high-speed optical fiber communications, in high-speed chip-to-chip interconnections in

10 Gigabit Fiber SFP+ Optical Transceiver Module

10 Gigabit Connectivity Intellinet Network Solutions 10GBase-LR Fiber SFP+ Optical Transceiver Module, model 507479, is the right

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

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