

LR optical module wavelength



AI Overview

LR (Long Reach) optical modules typically operate at a wavelength of 1310nm over single-mode fiber. LR modules are designed for long-distance data transmission, generally up to 10 kilometers, making them suitable for campus backbones, inter-building links, or metropolitan network connections. The 1310nm wavelength is ideal for single-mode fiber (SMF) because it minimizes signal attenuation and dispersion, ensuring stable transmission over extended distances. This contrasts with SR (Short Reach) modules, which operate at 850nm over multimode fiber and are limited to a few hundred meters.

Key Characteristics of LR Modules

- Wavelength:** 1310nm
- Fiber Type:** Single-mode fiber (SMF)
- Typical Maximum Distance:** ~10 km (can vary slightly depending on module and fiber quality)
- Use Cases:** Campus networks, data center interconnects, and long-haul enterprise links
- Advantages:** Reduced signal loss, minimal modal dispersion, and reliable long-distance performance

Comparison with Other Modules

- SR (Short Reach):** 850nm, multimode fiber, up to 300–400 meters
- ER (Extended Reach):** 1550nm, single-mode fiber, up to 40 km
- ZR (Zettabyte Range):** 1550nm, single-mode fiber, up to 80 km

Using the correct wavelength and fiber type is critical. Mismatching LR modules with multimode fiber or using SR modules for long distances can result in signal degradation, unstable connections, or link failure. In summary, LR optical modules operate at 1310nm, optimized for single-mode fiber to achieve reliable long-distance transmission, distinguishing them from short-range or extended-range modules in both wavelength and deployment scenarios.

Article Content

Co Packaged Optics (CPO) – Scaling with Light for the Next Wave of ...

Co-Packaged Optics (CPO) has long promised to transform datacenter connectivity, but it has taken a long time for the

What's so great about LR compared to LR4 optics?

So that's the sequence of events in a nutshell. As for what's so great about 100G LR from the network operator perspective: Like all Single-Lambda

What Is 10GBASE-LR? SMF 1310nm 10km SFP+ Explained

A practical, engineer-grade guide to 10GBASE-LR: what it is, 1310nm single-mode SFP+ specs, optical budget examples, deployment best practices and troubleshooting.

What are the differences between 10G SR, LR, ER, and ZR optical modules?

10G SR, LR, ER, and ZR modules are respectively for short, medium, long, and ultra-long distance applications, and are important basic components for building efficient and stable

SFP+ transceiver BlueOptics SPP-10E-LR-CDFF | AiO.lv

Description The BlueOptics SPP-10E-LR-CDFF 10000 Mbit/s 1310 nm is an SFP+ transceiver module engineered for fiber optic networks requiring high data throughput and long-reach transmission.

Understanding SR/LR Optical Designations and Distances

In general, SR modules are optimized for shorter distances and are most often associated with 850nm operation over multimode fiber (MMF). LR modules are optimized for longer distances and are most

Alcatel-Lucent (Nokia) 3HE00564CA 01 10GBASE-LR XFP Optical

Product Description The Alcatel-Lucent (Nokia) 3HE00564CA 01 is a genuine original 10GBASE-LR XFP optical transceiver, manufactured by Finisar for Nokia/Alcatel-Lucent. Designed for carrier-grade

Choosing the Right 10GBASE-LR Optical Module

The 10GBASE-LR module operates at a wavelength of 1310 nm, offering reliable and stable performance over greater distances. Choosing the

LR4 vs LR1 Transceivers – MapYourTech

Wavelength Architecture: LR4 distributes the 100G signal across four CWDM wavelengths (approximately 1295, 1300, 1305, and 1310 nm), whereas

Guide to Optical Transceiver Standards

Guide to Optical Transceiver Standards – What do SR, LR, FX, LX, etc. stand for?
Transceiver part codes are typically made up of a set of technical and logical

10G Optical Module Guide: Compare LRM, SR, LR, ER, ZR for the

10G Optical Module Guide: Compare LRM, SR, LR, ER, ZR for the Right Choice As 10G Ethernet continues to be widely deployed in data centers, enterprise networks, and telecom

Introduction To The Differences Between Gray Light Modules And

As shown in the figure, optical communication wavelengths range mainly from 850 nm to 1625 nm, while visible light (red, orange, yellow, green, blue, indigo, violet) falls between 380 nm and

100G LR4 vs. Single Lambda 100G LR, What's the Difference?

This article explores the key differences between 100GBASE-LR4 and Single Lambda 100GBASE-LR optical modules. It covers their transmission technologies, wavelengths, complexity,

How to Choose the Right 10G SFP+ Module: SR, LR, or

And what is the difference between SFP-10G-LRM optical module and SFP-10G-LR optical module? In this article, I will introduce the differences

Meaning of SR, LR, LRM, ER, and ZR in Transceiver Modules

LR means Long Reach, these transceivers support distance up to 10km over single-mode fiber and use 1310nm lasers. There is no minimum distance for LR, either, so it is suitable for short

What is the difference between LR and SR transceiver?

LR (Long Range) and SR (Short Range) are terms commonly associated with optical transceiver modules, particularly in the context of fiber-optic communication. These designations help

100GBASE QSFP-100G Modules Data Sheet

QSFP-100G Optical modules Features and benefits of Cisco QSFP modules Hot-swappable input/output device that plugs into a 100G Gigabit

What Is 10GBASE-LR? SMF 1310nm 10km SFP+ Explained

Optical Specifications: 10GBASE-LR uses 1310 nm wavelength, DFB lasers, and supports optical power budgets of 8-11 dB, enabling 10 km links over standard G.652 SMF.

10G Optical Module Selection Guide: LRM,SR,LR,ER,ZR

In the construction of high-speed networks, 10G optical modules are core components of data centers, enterprise networks, and telecommunication networks. However, facing the numerous

100Gbps QSFP28 LR4 Optical Transceiver Module for Data Centers

TKQS28-100G-LR4 is a 100Gbps transceiver module designed for optical communication applications compliant to 100GBASE-LR4 of the IEEE P802.3ba standard. The module converts 4x 25Gbps

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. It adopts the

Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco SFP-10G-LR-X is a multirate 10GBASE-LR, 10GBASE-LW, and OTU2/OTU2e module for extended operating temperature range. It supports

Inventory Of 10G Optical Modules

The 10G SFP+ LR optical module operates at a wavelength of 1310nm. Its maximum transmission distance over single-mode fiber is 10km, and

What is the difference between LX and LR SFP?

The terms "LX" and "LR" in the context of SFP (Small Form-Factor Pluggable) modules refer to different types of optical transceivers designed for specific applications and operating over

Guide to Optical Transceiver Standards

LR – Long Range Transceivers – are optimized for longer distances from 10 km to 40 km over singlemode fiber using the 1310 nm wavelength and are used for

Understanding SR/LR Optical Designations and Distances

Understanding SR/LR is essential for making the right choices in cabling, cost, and deployment. These designations affect not only transmission distance, but also wavelength, fiber type, and overall

Comparing SFP28 25G SR and LR: Key Differences and Applications

SFP-25G-LR is an optical module designed for long-distance data transmission, supporting a data transfer rate of 25Gbps. It uses single-mode fiber (SMF) and transmits signals at a

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

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