

LR4 in the optical module



Article Overview

LR4 stands for "Long Reach 4," indicating an optical module designed for long-distance transmission using four separate channels.

Definition and Meaning

LR4 is a designation used in optical transceivers to indicate long-reach transmission over single-mode fiber (SMF) using four optical channels. The "LR" stands for Long Reach, and the "4" denotes the four-channel architecture that splits the total data rate across multiple wavelengths or lanes to achieve high-speed transmission efficiently .

How LR4 Works

- **Channel Structure:** LR4 modules divide the total data rate into four separate channels. For example, a 100G LR4 module uses four 25G channels, while a 400G LR4 module uses four 100G channels or eight 50G channels depending on the design .
- **Fiber Type:** LR4 modules use single-mode fiber (SMF), which supports long-distance transmission with minimal signal loss .
- **Modulation:** 100G LR4 typically uses NRZ (Non-Return-to-Zero) modulation, while 400G LR4 modules use PAM4 (4-Level Pulse Amplitude Modulation) combined with wavelength division multiplexing (CWDM4 or LWDM) to achieve higher data rates over long distances .
- **Transmission Distance:** LR4 modules are designed for long-reach applications, typically supporting distances up to 10 km for 100G and 400G modules, making them suitable for inter-campus or data center interconnects .

Article Content

What is the difference between LR4 and FR4?

LR4 (Long Range 4) and FR4 (Fiber Range 4) refer to different types of optical transceivers used in high-speed data

100G Optical Module Mainstream Model Analysis-fiber -

In today's era of data explosion, high-speed and stable data transmission has become a demand of various industries.

What Is QSFP28 LR4? In-Depth Analysis of Long-Distance 100G Optical Modules

QSFP28 LR4 modules enable reliable long-distance 100G fiber optic links up to 10km, combining 4x25G lanes with

QSFP 100G LR4: 1310nm Single Mode Fiber Module Explained

What is QSFP 100G LR4 Optical Module. As one of the most popular transceiver types in 100G Ethernet applications, the QSFP

SR4 vs LR4 vs ER4 vs ZR4: Which 100G QSFP28

Confused between SR4, LR4, ER4, and ZR4? We break down 100G QSFP28 modules by

40G QSFP+ SR4 vs LR4: Key Differences in Optical Modules

Compare 40G QSFP+ SR4 and 40G QSFP+ LR4 optical modules to make an informed purchasing decision. Learn key

A Complete Guide to Selecting 100G QSFP28 Optical Transceivers:

Choose the best 100g qsfp28 optical transceiver for your network by comparing compatibility, distance, fiber type, and

100G SR4 vs LR4: Which Optical Transceiver Is Best for Your Network?

Introduction As 100G Ethernet becomes the standard for modern data centers and enterprise backbone networks,

100GBASE-SR4 vs. 100GBASE-LR4 | QSFP28 Modules in Direct

This article presents a direct comparison of the two Blueoptics 100G QSFP28 transceivers, SR4 and LR4, highlighting

Overview of 400G QSFP-DD Mid-Range Optical Modules

QSFP-DD LR4 Optical Module The "LR" in QSFP-DD LR4 optical module denotes long-distance transmission of

40G QSFP+ SR4 vs LR4 Optical Modules: Key Differences & How to

40G QSFP+ SR4 vs LR4 Optical Modules: Key Differences Explained When deploying a 40G network, choosing the

What Is QSFP28 LR4? In-Depth Analysis of Long-Distance 100G

This article thoroughly reviews the core technologies of LR4, provides clear selection criteria, offers helpful tips for

Functionality & Cabling Solutions for 100GBASE-LR4 QSFP28 Modules

Read this comprehensive guide to 100G QSFP28 LR4 optical transceivers, their functionality, connectivity options

100G ER4 vs. LR4: A Transceiver Selection Guide for Long-Haul ...

100G optical transceivers are core components of high-speed networks, with ER4 and LR4 being two mainstream

100G Optical Module: How to Choose Between SR4,

Long-distance modules (e.g., LR4/ER4) may have higher costs but offer reliable

LR4 vs LR1 Transceivers — MapYourTech

LR4 vs LR1: Comprehensive Guide to 100G Optical Transceivers LR4 vs LR1: Complete Guide to 100G Optical Transceivers

100G LR vs LR4: Key Differences & Applications Guide

Compare 100G LR vs LR4 optical modules. Learn about NRZ vs PAM4 modulation, channel differences, and which

Everything You Need to Know About QSFP28 LR4

QSFP28 LR4 optical transceiver module is a highly advanced technology used for visual

400G Optical Modules Explained: SR4 Vs. DR4 Vs. FR4 Vs. LR4

The main difference between the 400G SR4 and 400G SR4.2 optical modules lies in their wavelength division

400G QSFP-DD LR4/ER4-30 : Optical Transceiver Module | NEC

400G QSFP-DD LR4/ER4-30 The NEC's 400G QSFP-DD optical transceiver is a cost-effective optical transceiver that achieves

100G Optical Module: How to Choose Between SR4, DR4, FR4, LR4,

Continuing our discussion on 100G optical modules, let's explore the essential 100G transmission standards—SR4,

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.

One Minute to Understand: What Do SX, LX, EX, ZX, SR, LR, ER,

At Sate Optics, we often get asked what those abbreviations like SX, LX, SR, LR4 actually mean when it comes to

100 Gb LR4 10 km QSFP28 Module

The LR4 QSFP28 module provides a 100 Gb optical Ethernet connection using LC duplex optical connectors over SMF (single-mode

Specifications of the Fiber Gigabit Ethernet SFP, XFP, SFP+, QSFP+ ...

Topic The following specifications are for the available Fiber Gigabit Ethernet modules and the platforms that support

QSFP28 100GBASE-LR4 and 100GBASE-SR4 Optical

The QSFP28 100GBASE-SR4 transceiver, based on the QSFP28 from factors, is a parallel

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