

What is a DR4 optical module



Article Overview

A DR4 optical module is a 400G transceiver designed for medium-short distance transmission (up to 500 meters) over single-mode fiber using four parallel 100G PAM4 lanes.

Overview

The DR4 (Distance Range 4) optical module is part of the 400G Ethernet family, optimized for inter-data center connections and short-range high-speed links. It uses single-mode fiber and supports transmission distances of up to 500 meters with PAM4 (4-level Pulse Amplitude Modulation) signaling, which allows each optical lane to carry 100Gbps, totaling 400Gbps across four lanes .

Key Features

- Transmission Distance: Up to 500 meters on single-mode fiber .
- Fiber Type: Single-mode fiber (SMF), suitable for interconnects between data centers or within large-scale data center campuses .
- Channels: 4 optical channels, each carrying 100Gbps, aggregated to 400Gbps .
- Modulation: PAM4, which doubles the data rate per lane compared to traditional NRZ signaling .
- Connector Type: Typically uses MPO-12 connectors, with some variants supporting SN connectors for breakout applications .
- Transmitter Type: 1310nm EML (Electro-absorption Modulated Laser) for high-speed optical transmission .
- Compatibility: Can interoperate with 100G DR1 modules via MPO-to-LC breakout c...

Article Content

Nov 10, 2025

A Complete Guide to 400G QSFP-DD SR8, DR4, FR4, and LR4

Learn the differences between 400G QSFP-DD SR8, DR4, FR4, and LR4 optical transceivers, including transmission

Mar 20, 2026

A Comprehensive Guide to 800G DR4/DR8 Transceivers

The 800G DR4/DR8 modules are available in both OSFP and QSFP-DD form factors, with the OSFP type featuring

May 31, 2026

FR4 vs DR4: What Are the Differences in 400G Optics

Learn the differences between FR4 and DR4 400G optical modules, including distance, fiber type, connectors, and deployment

Apr 02, 2026

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

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

Aug 08, 2025

FR4 vs DR4: What Are the Differences in 400G Optics

DR4 modules are designed primarily for short-distance, high-density optical connections within a single data center environment.

Aug 02, 2025

Understanding the 400G DR4/DR4+ and FR4 Optical Transceivers

In this field, the 400G DR4/DR4+ and FR4 optical transceivers have attracted widespread attention. These

Oct 30, 2025

400G DR4 Transceiver Guide: Specification, Uses and Benefits

Optical transceivers capable of delivering reliable short-reach connectivity are therefore essential for building efficient 400G network

Jun 14, 2026

Understanding the 400G DR4/DR4+ and FR4 Optical Transceivers

This blog will delve into the principles of the 400G DR4/DR4+ and FR4 optics, as well as their key technologies. By

May 18, 2026

400G SR4 vs DR4 vs FR4 vs LR4: What Are the Differences and How

As DR4 also adopts a parallel optics architecture, its core optimization lies in introducing single-mode fiber, reducing

Mar 28, 2026

400G ZR, DR4, FR4, LR4, SR8 QSFP-DD Optical Transceiver

400G DR4 is an optical transceiver module designed for 400G Ethernet data center interconnect in QSFP-DD (Quad

Dec 05, 2025

400G DR4 QSFP-DD DR4-Si Optical Transceivers: The Ultimate

The 400G QSFP-DD DR4-Si optical transceiver is a module designed specifically for 400G Ethernet data center

Mar 16, 2026

Understanding the 400G DR4/DR4+ and FR4 Optical Transceivers

Discover the innovations and technology behind 400G DR4/DR4+ and FR4 optical transceivers. Explore their applications and

Jun 01, 2026

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

Key differences between SR4, DR4, FR4, and LR4 400G optical modules. Expert advice from Asterfusion engineers

May 15, 2026

Understanding the QDD 400G DR4: Optical Transceiver Modules

Discover the QDD 400G DR4 optical transceiver modules, compatible with Cisco and Juniper. Enjoy 500m link

Nov 14, 2025

Overview of 400G OSFP Optical Module Types and Connection

The 400G OSFP DR4+ optical module is equivalent to an upgraded version of the 400G OSFP DR4 optical module, with a longer

May 15, 2026

Difference Between DR and FR in Optical Transceivers

DR (Direct Reach) and FR (Far Reach) are commonly used terms in Ethernet optical transceivers, referring

Dec 19, 2025

400GBASE-DR4 Transceiver Guide |400G DR4 Optical Transceiver

Introduction to 400GBASE-DR4 In the era of ever-increasing data demands, the 400GBASE-DR4 transceiver has emerged as a

May 17, 2026

Intel® Silicon Photonics 400G DR4 QSFP-DD Optical Transceiver

Intel® Silicon Photonics 400G DR4 QSFP-DD Optical Transceiver quick reference with specifications, features, and technologies.

Apr 25, 2026

OSFP 400G DR4 Optical Modules Explained: Standards, Cabling,

Among the different optical standards that enable 400G, the OSFP 400G DR4 stands out for its parallel single-mode

May 22, 2026

400G QSFP-DD DR4 Explained: The Complete Guide to 400GBASE-DR4 Optical ...

400G DR4 vs FR4 vs LR4: What's the Difference? When comparing different 400G optical modules, the primary differences lie in

Sep 17, 2025

Overview of 400G QSFP-DD DR4 Optical Module and Connection

The 400G QSFP-DR4 optical module uses a 1310nm EML transmitter type, with signals modulated via PAM4 (Pulse

Mar 21, 2026

400G PAM4 QSFP-DD DR4/DR4+ Transceiver

400 Gb/s DR4+ (Data Center Reach 4-lane) QSFP-DD Optical Transceiver is a small form-factor, high speed, and low power

Nov 08, 2025

400G QSFP-DD Transceiver Types and Fiber Connections

400G QSFP has become one of the most popular form factors in the next-generation network. And different types of

Jun 10, 2026

400G Optical Modules 2026 Guide: DR4 vs. FR4 vs. LR8 Lab

Our CCIE/HCIE team shares lab-tested benchmarks for DR4, FR4, and LR8, focusing on power efficiency, latency,

Oct 27, 2025

400G ZR, DR4, FR4, LR4, SR8 QSFP-DD Optical Transceiver

FiberMall 400G DR4 QSFP-DD Optical Transceiver Module The 400G QSFP-DD DR4 fiber module achieves the

Feb 02, 2026

Understanding 400G DR4 Optical Transceiver: A Complete Guide

A complete guide to 400G DR4 optical transceivers, covering principles, connectivity, key features, and real

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://khanimamboguesthouse.co.za>

Email: sales@khanimamboguesthouse.co.za

Phone: +27 64 852 1973

Address: Unit 7, Greenway Business Park, 8 Innovation Drive, Centurion, 0157, South Africa

This document is for informational purposes only. Specifications subject to change without notice.

