

100g coherent optical module wavelength



Overview

The innovative 100G coherent solutions enable transport of 100G data rate capacity over a single wavelength across long distances with higher optical performance than 10G solutions.

Key Takeaways

100G optical modules operate over wavelengths including 850 nm, 1310 nm, 1550 nm, and tunable C-band, depending on the module type and application. Common Wavelengths by Module Type

Short Reach (SR4): Uses 850 nm multimode fiber for distances up to 100 meters, typically in data center environments.

Long Reach (LR4) and FR/DR Single Lambda Modules: Use 1310 nm single-mode fiber, supporting distances from 2 km up to 10 km for FR and up to 500 m for DR in data center leaf-spine connections.

Extended Reach (ER4): Operates at 1550 nm, suitable for metro and long-haul networks, often reaching tens of kilometers.

Z

R Coherent Modules: Tunable across the C-band (approximately 1530–1565 nm), enabling long-distance DWDM transmission up to 300 km over amplified fiber.

Single Lambda vs Multi-Wavelength Modules

Single Lambda 100G Modules: Transmit 100G on a single wavelength using PAM4 modulation, simplifying optical design, reducing cost, and lowering power consumption. Examples include 100GBASE-DR and 100GBASE-FR modules.



Multi-

Wavelength Modules (e.g., LR4, CWDM4, SR4): Use four 25G channels either in parallel or via WDM, requiring more complex optical components and packaging.

Applications

Data Centers: Short-reach 850 nm and 1310 nm modules connect servers, switches, and leaf-spine layers efficiently. Telecommunications and Metro Networks: 1310 nm and 1550 nm modules support longer distances between data centers and network nodes.

High-

Performance Computing and Cloud: Single-lambda modules provide high-speed, low-latency connections for compute clusters and storage networks. In summary, the wavelength of a 100G optical module depends on its type and intended reach, ranging from 850 nm for short-reach multimode links to 1310 nm and 1550 nm for single-mode and long-haul applications, with C-band tunable options for coherent DWDM systems.

Article Content

Cisco QSFP28 100G ZR Digital Coherent Optics Module

Leveraging ITU-T standard compliant staircase FEC and different Quadrature Phase Shift Keying (QPSK) modulation, it can transmit a single wavelength of 100G traffic directly from a router port

WP-100G Coherent

The innovative 100G coherent solutions enable transport of 100G data rate capacity over a single wavelength across long distances with higher optical performance than 10G solutions. The coherent

Coherent Optics Explained: How 100G+ Transmission Works | CZT

Moving 100 gigabits — or 400, or 800 — over a single fiber strand across hundreds of kilometers requires more than just a fast laser. It requires coherent optics: a transmission technology

100G ZR | Juniper Networks

The 100G ZR is a coherent optical solution designed for transporting 100GbE over long distances through fiber-optic patch cables. This standard defines the technology required to transport

Optical Engines Data Sheet Coherent 100ZR

100Gbit/s flexible coherent interface Supports 50GHz, 100GHz and flexgrid frequency grids and is compatible with any open line system Hardened design for outdoor deployments I-temp variant

100G ZR QSFP28 Digital Coherent Optics Transceiver

In the QSFP28 module the DSP is paired with a highly efficient silicon photonics optical front-end and a power-optimized tunable laser, resulting in a typical

Optical Communications 100G MUX/DEMUX MODULE

100G MUX/DEMUX MODULE ilm filter-based 3-port cylindrical devices. Coherent's 100G mux/demux module enables simultaneous transmission of optical signals operating at different wavelengths over

100G DWDM QSFP28 Transceiver Modules | Optical Transceivers

FS 100G DWDM QSFP28 optical transceiver module solutions offer a full range of QSFP28 modules 80km reach. Purchase from nearby warehouses. 30-Day Free Return. Trusted by 260K+ Enterprise

A Deep Dive into the QSFP28-100G-ZR4 Optical Transceiver

The QSFP28-100G-ZR4 optical transceiver is more than just a transceiver; it's a gateway to expanding your network's reach. Its advanced coherent optics technology makes 80km 100G

PSE 100G/400G pluggable coherent optics

Our pluggable coherent modules are used across our optical network platforms, converged IP-optical routing and fixed network access solutions. They can also

EML vs VCSEL vs CW Laser: Optical Transceiver Guide (2025)

Compare EML, VCSEL, and CW laser technologies in optical transceivers. Covers cost, reach, speed, the 2025 EML shortage, and silicon photonics alternatives.

800G/600G/400G OSFP Digital Coherent Optics Transceiver

800G Digital Coherent Optics (DCO) transceivers are available to support various Dense Wavelength Division Multiplexing (DWDM) applications including Data Center Interconnect (DCI) up to 120km

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

3.100G BiDi SR Asterfusion QSFP28-100G-SR BiDi 850nm 910nm 100m Duplex LC MMF Transmission Distance: Up to 100m Transmission Mode: Multi-mode fiber (MMF) Wavelength:

Optical Transceiver Market Size, Growth Drivers

The Optical Transceiver Market worth USD 15.42 billion in 2026 is growing at a CAGR of 13.67% to reach USD 29.26 billion by 2031. Coherent

Optical networks

How is Nokia leading optical networks for the AI era? The Nokia optical network portfolio leverages highly vertically integrated coherent optical engines to build

200G Modules

GIGALIGHT provides 100G, 200G, 400G and 800G pluggable digital coherent optical transceiver modules (DCO) and non-coherent transceivers for data center interconnection (DCI), 5G backhaul,

Cisco DP04QSDD-HE0 Compatible 100-400GbE DCO

Cisco DP04QSDD-HE0 Compatible 100G-400G QSFP-DD High-Power (Bright) DCO ≤80km Unamplified SMF DOM LC Duplex DWDM Tunable Coherent

A Comprehensive Look at the QSFP28-100G-ZR4 Optical Module

The QSFP28-100G-ZR4 fiber-optic module goes beyond being a simple hardware component; it enables a significant extension of network coverage. Its sophisticated, coherent optical

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

