

Project Quotation 400G Coherent Optical Module



Overview

Use 400G High TX Power QSFP-DD DCO ZR+ transceivers on the 400G Switch, connected via Duplex OS2 LC-LC SMF Cable.

Key Takeaways

The cost of a 400G optical module varies widely, ranging from approximately \$1,400 for short-reach SR8 modules to over \$130,000 for long-haul coherent ZR+ modules, depending on type, transmission distance, and vendor.

- Short-Reach Modules (SR8): Typically used for in-rack or cross-row data center connections, priced between \$1,400 and \$1,800 from reputable third-party vendors .

- Medium-Reach Modules (DR4, FR4): Suitable for data center rows or campus links, prices are moderately higher, reflecting longer transmission distances and higher performance requirements .

- Long-Haul Modules (LR4, ZR, ZR+): Designed for data center interconnects (DCI) and long-distance telecom links, OEM LR4 modules can exceed \$10,000, while ZR+ coherent modules may reach \$130,000 .

Module Types and Form Factors

- QSFP-DD and OSFP: Common form factors for 400G deployment, enabling high-density, high-bandwidth interconnects .

- Transmission Technologies: Modules may use EML-based optics or silicon photonics, with EML dominating the market at over 50% share in 2025 .

- **Transmission Distance:** DR4 and DR4 Plus modules captured the largest market share at 34.2% in 2025, reflecting their widespread use in cloud and telecom networks .

Market Trends and Considerations

- The global 400G optical module market is growing rapidly, projected to expand from \$5.8 billion in 2025 to \$36.2 billion by 2034, driven by cloud computing, hyperscale data centers, and 5G network expansion .
- Cost drivers include module type, transmission distance, vendor (OEM vs third-party), and volume discounts. Third-party vendors often provide significant cost savings for standard short-reach modules .
- **Adoption Factors:** Enterprises and telecom operators are transitioning from 100G to 400G to maximize fiber utilization and reduce per-bit transmission costs, with silicon photonics and miniaturization lowering module costs over time .

Quotation Guidance

For a project quotation, consider the following:

- Define the required module type (SR8, DR4, FR4, LR4, ZR+) based on transmission distance and network topology.
- Select the form factor (QSFP-DD or OSFP) compatible with existing switches and routers.
- Determine vendor preference: OEM modules offer guaranteed performance and support, while third-party modules provide cost-effective alternatives for standard deployments.
- Estimate volume: Bulk purchases may qualify for tiered discounts, reducing the total cost of ownership.
- Include TCO considerations: Factor in power consumption, cooling, and replacement cycles for a comprehensive project budget . By aligning module selection with network requirements and budget constraints, a precise project quotation can be prepared, ranging from \$1,400 per short-reach module to over \$130,000 for high-end long-haul modules, with intermediate options available for medium-distance deployments.

Article Content

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Traditional fiber optic modules can hardly meet the demand of large bandwidth (over 100Gbps) and long distance (over 80km)

Cisco 400G QSFP-DD Ultra Long Haul Coherent Optics Module Data

The Cisco 400G QSFP-DD Ultra Long-Haul Coherent Optics Module enables 400G traffic anywhere over dense

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Ascent Optics' CP2-400COTU-80CL is a portfolio of digital coherent optical transceiver (or transponder) modules designed for 400G

400G Coherent High TX Power QSFP-DD DCO OpenZR+ Module

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400G ZR+ Modules: Selecting Long-Haul Coherent Solutions

Learn what 400G ZR+ modules are, how ZR+ differs from ZR, and how to choose the right long-haul coherent optics for real

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The emerging OIF 400ZR and Open ZR+ MSA coherent transceivers in QSFP-DD and OSFP form factors

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By plugging Coherent's high transmit output power 400G QSFP-DD-DCO transceivers directly into their switches or routers, network

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Learn how coherent optical modules work and when to choose 400G ZR/ZR+, QSFP-DD

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The 400G CFP2 DCO is a transformative solution for modern optical networks, delivering high-speed, energy-efficient,

OpenZR+

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Coherent Optical Module: 400G QSFP-DD ZR/ZR+ Optical Module

This type of optical module supports complex modulation and demodulation as well as signal processing operations, and it has a

400G Coherent Optical Devices: Architecture, Applications & Trends

400G Coherent Optics is a complex system that integrates key photonic and electronic components to enable high

400G ZR+ QSFP-DD DCO Coherent Fiber Transceiver | FiberMall

FiberMall QSFP-DD-400G-DCO-ZR+ is a QSFP-DD DCO 400G Coherent Optical Transceiver that features ZR+ reach and supports

400G Coherent Pluggable Optics Use Cases At a Glance

The Cisco ® portfolio of QSFP-DD coherent pluggable optics supercharges and simplifies transport networks for an

400G Coherent QSFP-DD Transceiver Modules | Optical Transceivers

FS 400G Coherent QSFP-DD optical transceiver module solutions offer a full range of QSFP-DD modules 120km reach, and used for

Growing the Network with 400 Gbps Coherent Pluggable Optics

Executive Summary The latest generation of Digital Coherent Optics (DCO) pluggable transceivers represents a breakthrough in the

400G DCO Optical Modules Market

Unveiling Critical Dynamics Shaping the Future Trajectory of 400G DCO Optical Modules Across Expanding Global Network

Signal AI: 400G and 800G Optical Module Shipments Quadruple

The demand for high-speed datacom optical modules has surged, with shipments of 400G and 800G units exceeding

400G Pluggable Coherent Modules: Getting Ready for the Real Work

Over the past few months, teams have been very busy developing 400G class pluggable optical modules. Both as

400G ZR/ZR+ Coherent Optical Module Growth Projections: Trends to

The 400G ZR/ZR+ Coherent Optical Module market projects 15% CAGR by 2025, driven by data center interconnect &

Coherent Optics at 400G, 800G, and Beyond

The divergence of coherent pluggable and embedded optics trajectories and the convergence of IP and optical in IPoDWDM

Introduction to 400G Optical Modules · KAD

A clear, engineer-friendly overview of 400G optical modules, including standards, packaging formats, functions, and

QSFP-DD Price Guide 2026: 400G/800G Costs & TCO Analysis

QSFP-DD Price by Module Type (2026) The 400G transceiver price spread between the most economical and the

Molex Ramps Production of 400G ZR QSFP-DD Coherent Optical

LISLE, IL – Molex, a global electronics leader and connectivity innovator, is ramping production of its commercially available 400G

Advancements and Applications of Coherent Pluggable

Innovation Leadership Coherent pluggable technology leader #1 in coherent module vendor worldwide¹ Diverse markets served DCI,

Market Analysis of 800G ZR/ZR+ Coherent Pluggable Modules

400G ZR: This was the first coherent optical communication technology to be deployed on a large scale in data

Demand for Datacom Optical Modules Reaches Record Levels in 1Q24

Telecom optical module shipment growth was concentrated in 400G coherent pluggables, which were up more than

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

