

Article Overview

100G optical modules, typically QSFP28 transceivers, use MPO or LC optical ports to deliver 100Gbps connectivity, often via four parallel 25Gbps lanes that can be split into lower-speed channels using breakout cables.

Overview of 100G Optical Modules

100G optical modules are hot-pluggable transceivers designed to provide high-speed Ethernet connectivity in data centers, enterprise networks, and telecom environments . The most common form factor is QSFP28 (Quad Small Form-factor Pluggable 28), which aggregates four 25Gbps lanes to achieve a total throughput of 100Gbps . These modules are compatible with IEEE 802.3bm standards and support various link distances depending on the module type and fiber used .

Optical Ports and Connectors

- o MPO (Multi-fiber Push-On) connectors: Typically used for parallel fiber connections, carrying 12 or 24 fibers. MPO ports are common in SR4, LR4, and CWDM4 modules for short- and long-reach applications .
- o LC connectors: Used in duplex fiber connections, often for breakout or single-lane applications, allowing one 100G port to connect to multiple 25G or 10G devices via breakout cables .

Breakout Functionality

Breakout-capable 100G modules allow a single 100G port to split into multiple lower-speed channels, such as four 25Gbps or 10Gbps links . This is implemented using:

- o Breakout DACs (Direct Attach Cables)
- o Breakout AOCs (Active Optical Cables)
- o Breakout transceivers connecting to SFP+/SFP28 modules This functionality improves port utilization and network flexibility without requiring additional 100G ports .

Module Types and Applications

- o SR4: Short-reach multimode fiber, typically up to 100m over OM4 fiber .
- o LR4: Long-reach single-mode fiber, up to 10km.
- o CWDM4: Coarse Wavelength Division Multiplexing for 2km-10km links.
- o ZR4 / ZR: Coherent optics for metro or long-haul links, up to 80km over dark fiber or 300km over DWDM networks . These modules are widely used in data center interconnects, enterprise core networks, and metro networks, providing high-density, low-power, and scalable 100G connectivity .

Summary

A 100G optical module connects to a 100G optical port using MPO or LC connectors, supporting either a single 100Gbps link or multiple lower-speed links via breakout. QSFP28 modules are the industry standard, offering flexibility for short- and long-reach applications, high port density, and compatibility with IEEE standards. Proper selection depends on fiber type, distance, breakout requirements, and network architecture.

Discover the benefits, features, and applications of 100G PAM4 DWDM optical modules, and learn how they compare

A 100G optical module is an optical module with a 100Gbps optical signaling rate. Before discussing optical modules,

Overview Arista's Optical Modules and Cable portfolio offer a wide variety of high-density and low-power 800G (dual 400G), 400G,

This compact hot-swappable optical module usually has 4 transmission channels, and the data rate of each channel is

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A complete guide to 100G QSFP28 transceivers covering types, specs, reach, compatibility, and how to choose the right module for

Some 100G optical transceivers, such as SR4 modules, use four parallel lanes each running at 25G NRZ,

100g optical module optical port

directly

Compared to legacy 100G form factors (CFP/CFP2/CFP4), QSFP28 modules offer a smaller footprint, lower power consumption, and

Our QSFP28-SR Multi-Mode-Fiber (MMF) Optical Modules integrate a 12-lane MTP/MPO fiber receptacle (port) for 100G Ethernet

In this guide, we provide a comprehensive, practical overview of 100G QSFP28 modules, covering their working principles, module

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