



Cisco QSFP28 100G ZR High TX Power Coherent Optics Module

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Cisco® QSFP28 100G ZR High TX Power coherent optics help operators extend 100 Gigabit Ethernet (100G) connectivity into access, aggregation, campus, and legacy Reconfigurable Optical Add-Drop Multiplexer (ROADM)-based networks by delivering up to 0 dBm transmit power within a 6W QSFP28 power profile. Built as a vertically integrated product, the module combines Cisco Digital Signal Processor (DSP), photonics, firmware, and pluggable module design to bring tunable 100G Dense Wavelength-Division Multiplexing (DWDM) transmission to widely deployed QSFP28 ports. The compact QSFP28 pluggable form factor replaces legacy transponder shelves in traditional access and aggregation architectures, driving CapEx and OpEx savings. Support for both Staircase Forward Error Correction (SC-FEC) and Generic Forward Error Correction (GFEC) enables interoperability with modern coherent links and legacy Optical Transport Network (OTN) transponders, while dual management capability based on the Storage Networking Industry Association (SNIA) Short-Device Form Factor (SFF) specification and Optical Internetworking Forum (OIF) Common Management Interface Specification (CMIS) gives operators deployment flexibility across installed routers, switches, and newer host platforms.

Product overview

The Cisco QSFP28 100G ZR High TX Power Coherent Optics Module is a 100G DWDM pluggable module designed for edge, access, aggregation, enterprise/campus, cable/fiber deep, 5G wireless x-haul, and legacy ROADM-based network applications. It combines a tunable C-band laser, dual-polarization Quadrature Phase Shift Keying (QPSK) coherent modulation, intradyne coherent detection, advanced electronic link equalization, and up to 0 dBm transmit power in an industry-standard QSFP28 form factor with a 6W high-power operating profile.

The module is designed to make coherent transmission practical in 100G network segments where customers need greater reach and higher fiber efficiency. It enables simplified IP over DWDM deployments in Cisco Routed Optical Networking architectures while preserving compatibility with existing optical infrastructure. Its 0 dBm high-transmit-power capability helps support engineered deployments through legacy ROADM paths and other higher-loss DWDM environments. SC-FEC support enables high-performance 100ZR operation, and GFEC support provides interoperability with legacy OTN transponders. The module also supports both SFF-based management for installed-base routers and switches and CMIS-based management for platforms adopting the latest module management standard. Actual reach depends on fiber type, optical path loss, Optical Signal-to-Noise Ratio (OSNR), dispersion, channel plan, ROADM cascade, and other link engineering conditions.

The Cisco QSFP28 100G ZR High TX Power Coherent Optics Module is intended for engineered optical links. Link design should account for transmit power, receiver input power, optical path loss, OSNR, chromatic dispersion, polarization effects, connector loss, amplifier noise figure, filter narrowing, and channel loading. Reach values are representative of supported application spaces and are not a substitute for optical path engineering.



Features and benefits

Table 1. Features and benefits

Feature	Benefit
QSFP28 coherent pluggable form factor	Enables 100G coherent DWDM connectivity in widely deployed QSFP28 ports and helps preserve existing platform investment.
Tunable C-band operation	Simplifies sparing and supports flexible DWDM channel planning across the C-band.
0 dBm transmit power within a 6W profile	Helps support engineered deployments across legacy ROADM-based networks and higher-loss DWDM dark fibers while staying within a compact QSFP28 power envelope.
Integrated SC-FEC and GFEC options	Supports high-performance 100ZR operation and interoperability with legacy OTN transponders.
SFF-based and CMIS-based management	Supports familiar management for installed-base routers and switches while also supporting newer CMIS-based host platforms.
Cisco platform validation	Cisco host platforms qualification for performance, and for reliability and robustness.
Extended temperature	Supports an extended temperature range that enables operation in harsh outdoor environments.

Prominent feature

The Cisco QSFP28 100G ZR High TX Power Coherent Optics Module supports up to 0 dBm high TX power with less than 6W power consumption in extended temperature conditions. Built as a vertically integrated product, the module combines Cisco DSP, photonics, firmware, and pluggable module design to bring tunable 100G DWDM transmission to widely deployed QSFP28 ports. The compact QSFP28 pluggable form factor replaces legacy transponder shelves in traditional access and aggregation architectures. The module can be managed using legacy SNIA SFF management as well as OIF CMIS management specifications.

Platform support

Cisco QSFP28 100G ZR High TX Power Coherent Optics Modules are supported on Cisco switches and routers. For more details, refer to the [Cisco Transceiver Modules Compatibility Matrix](#).

Product specifications

Table 2. Detailed product specifications

Parameter	Specification
Line-side application	100ZR SC-FEC (IEEE 802.3ct / ITU-T G.709.2) and Optical Transport Unit level 4 (OTU4) GFEC (ITU-T G.709)
Client formats	100G OTU4
Host electrical interface	100GBASE-R: CAUI-4 RS-FEC and CAUI-4 without FEC OTU4: Optical Transport Lane 4.4 (OTL4.4)
Modulation	Dual-polarization QPSK
Line bit rate	111.8 Gbps
Symbol rate	27.95 Gbaud
Wavelength range	Tunable C-band, 191.3 to 196.2 THz
Channel spacing	Supports flexible grid operation with 6.25 GHz tuning granularity; 50 GHz grid operation supported
Transmit power	Up to 0 dBm within a 6W high-power operating profile
Reach	Up to 160 km point-to-point unamplified links; up to 500 km amplified DWDM links; actual reach depends on link conditions
Receiver sensitivity	-32 dBm with SC-FEC -28 dBm with G.709 FEC
Optical connector	Duplex LC
Fiber type	Single-mode fiber
Management interface	SFF-based I2C module management and CMIS-based module management
FEC support	IEEE 802.3ct / ITU-T G.709.2 SC-FEC; ITU-T G.709 GFEC/RS-FEC
Synchronous Ethernet (SyncE)	Supported
Operating case temperature	-20° to +80° C (-4° to 176° F)
Power consumption	Up to 6W in high-power operation
Supply voltage	3.3 V nominal



Ordering information

Table 3. Ordering information

Component	Specification
DP01QS28-MX1-A1	QSFP28 100G DCO -5 dBm o/p power C-Band Flex Grid Extended Temperature
DP01QS28-MX1-A1=	QSFP28 100G DCO -5 dBm o/p power C-Band Flex Grid Extended Temperature
QSFP100GMX1-2-BUN	Routed Optical Networking 2x100G C-Band MX1-A1 QSFP Bundle
QSFP100GMX1-20-BUN	Routed Optical Networking 20x100G C-Band MX1-A1 QSFP Bundle
DP01QS28-MX2-A1	QSFP28 100G DCO 0dBm o/p power C-Band Flex Grid Extended Temperature
DP01QS28-MX2-A1=	QSFP28 100G DCO 0dBm o/p power C-Band Flex Grid Extended Temperature
QSFP100GMX2-2-BUN	Routed Optical Networking 2x100G C-Band MX2-A1 QSFP Bundle
QSFP100GMX2-20-BUN	Routed Optical Networking 20x100G C-Band MX2-A1 QSFP Bundle

Warranty information

Product warranty terms and other information applicable to Cisco products are available at www.cisco.com/go/warranty.

Product sustainability

Information about Cisco’s Environmental, Social, and Governance (ESG) initiatives and performance is provided in Cisco’s CSR and sustainability [reporting](#).

Table 4. Cisco environmental sustainability information

Sustainability topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries, and packaging	WEEE Compliance
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Sustainability Inquiries	Contact: csr_inquiries@cisco.com
Material	Product packaging weight and materials	Contact: environment@cisco.com

Cisco and partner services

Services from Cisco and our certified partners can help you transform the WDM system setup experience and accelerate business innovation and growth. We have the depth and breadth of expertise to create a clear, replicable, optimized coherent transport footprint across technologies. Planning and design services align technology with business goals and can increase the accuracy, speed, and efficiency of your deployment. Technical services can help you improve operational efficiency, save money, and mitigate risk. Optimization services are designed to continuously improve performance and help your team succeed with new technologies. For more information, please visit www.cisco.com/go/services.

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital® makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more](#).

For more information

For more information about Cisco QSFP28 100G ZR High TX Power Coherent Optical Modules, please visit the Cisco Product Information Matrix at <https://copi.cisco.com/>.