

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

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The Cisco 400G QSFP-DD Ultra Long-Haul Coherent Optics Module enables 400G traffic anywhere over dense wavelength division multiplexing amplified networks, and is available in both C-band and L-band.

## Product overview

Cisco has expanded the range of 400G digital coherent QSFP-DD transceivers with the 400G QSFP-DD Ultra Long Haul (ULH) Coherent Optics Module.

The high performance and low power of the 400G QSFP-DD ULH module make it an optimal choice to extend Routed Optical Networking use cases to regional and ultra-long-haul DWDM applications previously dominated by high-power Layer 1 transponder solutions without sacrificing spectral efficiency.

The 400G QSFP-DD ULH module is mechanically compliant with the Quad Small Form Factor Pluggable Double Density (QSFP-DD) Type 2A Module Specification and works within the 24W power envelope supported on all existing 400G-capable Cisco® routers. The module contains a printed circuit board with a 76-contact card-edge electrical interface to external host-side logic. The media interface is a duplex LC connector over single-mode fiber coupled to a 1550-nm and 1595-nm optical fiber carrying coherent signals at up to 118 Gbaud in OpenROADM 7.0 compliant mode. In addition, the module offers multiple 400G application select codes optimized for 75 GHz to 112.5 GHz channel spacing for higher spectral efficiency or longer reach, as well as a backward-compatible application select code with 400G QSFP-DD ZR+ High-TX power in OpenZR+ Multi-Source Agreement (MSA)-compliant mode. The signaling operates in both C-band and L-band.

The 400G QSFP-DD ULH module is compliant with Common Management Interface Specification (CMIS) 5.3 and Coherent CMIS (C-CMIS) 1.3, and is available for both on Cisco and third-party host platforms.

## Features and benefits

**Table 1.** Features and benefits

Feature	Benefit
<b>QSFP-DD form factor</b>	Compatible with all 400G-capable Cisco routers, switches, and transponders.
<b>Low power consumption</b>	Reduced operating costs due to lower power and cooling requirements.
<b>Extended reach</b>	Over 3000 km across amplified DWDM links.
<b>Interoperability</b>	OpenROADM-compliant 400G QPSK, OpenZR+ interoperability.
<b>Spectral efficiency</b>	Multiple 400G application select codes allow 400G transmission between 75 GHz to 150 GHz channel spacing.
<b>High Tx power and Optical Signal-to-Noise Ratio (OSNR)</b>	Compatible with any DWDM photonic network.
<b>C-band and L-band support</b>	Allows network operators to double the existing long-haul network capacity.

## Prominent feature

The 400G QSFP-DD ULH module delivers high performance and low power in a QSFP-DD form factor, making it an optimal choice to extend Routed Optical Networking use cases to regional and ultra-long-haul DWDM applications previously dominated by high-power Layer 1 transponder solutions without sacrificing spectral efficiency.



**Figure 1.**  
Cisco 400G QSFP-DD ULH Coherent Optics Module

## Product specifications

**Table 2.** Product specifications

<b>Nominal DWDM reach</b>	<ul style="list-style-type: none"><li>• 400G 118 Gbaud QPSK: &gt;3000km</li><li>• 400G/112.5 GHz spacing: 2,800km</li><li>• 400G/100 GHz spacing: 2,400km</li><li>• 400G/87.5 GHz spacing: 2,000km</li><li>• 400G/75 GHz spacing: 1,500km</li></ul>
<b>Tx power</b>	> +1 dBm
<b>Client formats</b>	100G/200G/400E/FOIC (FOIC mode is available only on transponders)
<b>Data rate, modulation</b>	400G QPSK, 16-QAM and PCS-QAM
<b>Wavelength Standard compliance</b>	Tunable, 1528.58 nm to 1567.34 nm for C-band, 1570.21 nm to 1610.49 nm for L-band OpenROADM 7.0, OpenZR+ MSA
<b>Connector</b>	LC
<b>Case Temperature</b>	-5° C to 75° C

<b>Fiber</b>	SMF
<b>Power consumption</b>	QSFP-DD type 2A compliant

## Ordering information

**Table 3.** Ordering information

Part #	Product description
<b>DP04QSDD-ULH-A1</b>	400G Coherent QSFP-DD Ultra Long Haul reach C-band
<b>DP04QSDD-LLH-A1</b>	400G Coherent QSFP-DD Ultra Long Haul reach L-band

## Warranty information

Product warranty terms and other information applicable to Cisco products are available at [www.cisco.com/go/warranty](http://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
<b>General</b>	Information on product-material-content laws and regulations
	Information on electronic waste laws and regulations, including our products, batteries, and packaging
	<a href="#">Materials</a>
	<a href="#">WEEE Compliance</a>

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### For more information

For more information about the Cisco 400G QSFP-DD ULH optical module please visit the Cisco Product Information Matrix at <https://copi.cisco.com/>.

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