

# Cisco QSFP-DD800 Transceiver Modules

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The Cisco family of QSFP-DD800 modules leverages the cornerstone of high-speed, high-density pluggable form factors, QSFP. The QSFP-DD800 provides the industry's highest bandwidth density of any transceiver module and backward compatibility to lower-speed QSFP pluggable modules and cables.

## Product overview

The Cisco QSFP-DD800 modules introduce 8x100G and 2x400GGBASE Quad Small Form-Factor Pluggable Double-Density (QSFP-DD) modules, offering customers super-high-density pluggable transceivers along with the flexibility of 400 Gigabit Ethernet and 100 Gigabit Ethernet connectivity options for data centers, high-performance computing networks, enterprise core and distribution layers, and service provider applications. The QSFP-DD800 modules are Cisco's new generation of 2x400G pluggable transceiver modules based on a QSFP-DD form factor.

**Table 1.** Feature and benefits of Cisco QSFP-DD800 modules

| Feature                            | Benefit                                                                                                                                                    |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hot-swappable</b>               | Input/output device that plugs into 2x400G Ethernet Cisco QSFP port                                                                                        |
| <b>Interoperable</b>               | Interoperable with other IEEE-compliant 400GBASE and 100GBASE interfaces where applicable                                                                  |
| <b>Certified on Cisco platform</b> | Certified and tested on Cisco QSFP-DD 2x400G ports for superior performance, quality, and reliability                                                      |
| <b>Compatible with IEEE 802.3</b>  | High-speed electrical compliant to IEEE 802.3                                                                                                              |
| <b>Compatible with MSA</b>         | Optical and coding compliant to QSFP-DD MSA CMIS Rev 5, OIF 112G PAM4, and 100G Lambda MSA                                                                 |
| <b>Backward compatibility</b>      | QSFP-DD port is backward compatible with QSFP+, QSFP28, QSFP56, and QSFP-DD 400G modules                                                                   |
| <b>Breakout capability</b>         | The 2x400G QSFP-DD modules have the capability to interface to multiple 100G and 400G modules, providing higher port density for 100G and 400G interfaces. |

**Table 2.** Cisco QSFP-DD800 portfolio

| Product ID            | Description                                                        | Max power consumption (W) | Optical connector |
|-----------------------|--------------------------------------------------------------------|---------------------------|-------------------|
| <b>QDD-8X100G-FR</b>  | QSFP-DD Transceiver, 8x100GBASE-FR, Dual MPO-12, 2-km parallel SMF | 17                        | Dual MPO-12       |
| <b>QDD-2X400G-FR4</b> | 400G QSFP-DD Transceiver, 2x400G-FR4, 2-km Duplex SMF              | 17                        | Dual Duplex LC    |

**Note:** Except for QDD-8X100G-FR, only connections with patch cords with PC or Ultra-Physical Contact (UPC) connectors are supported. QDD- 8X100G-FR requires patch cords with Angled Physical Contact (APC) MPO connectors. All cables and cable assemblies used must be compliant with the standards specified in the standards section of this data sheet. For more information and references on QSFP-DD cable guides, please click on the following link: [Cisco Transceiver Modules - Brochures - Cisco](#)

## Cisco QSFP-DD800 transceiver prominent features and differentiators

### QDD-8X100G-FR



**Figure 1.**  
QDD-8X100G-FR

The Cisco QDD-8X100G-FR module (**Figure 1**) supports 100G breakout link lengths of up to 2 km. The module has eight pairs of single-mode fiber with MPO-12 APC connectors. It is compliant to the IEEE 802.3cu for 100GBASE-FR1. The 400 Gigabit Ethernet signal is carried over eight parallel lanes by one wavelength per lane. It can be used as 8x100G breakout to QSFP28 100G-DR (up to 500 m), 100G-FR (up to 2 km), and 100G-LR (up to 2 km). It may also be used as two independent 400GBASE-DR4 transceivers in a single port. FEC is performed on the host platform.

### QDD-2X400G-FR4



**Figure 2.**  
QDD-2X400G-FR4

The Cisco QDD-2X400G-FR4 module (**Figure 2**) supports link lengths of up to 2 km SMF with two duplex LC connectors. It is compliant to IEEE 802.3cu for 400GBASE-FR4 requirements and 100G Lambda MSA group. The 400 Gigabit Ethernet signal is carried over four CWDM grid optical wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. FEC is performed on the host platform.

**Table 3.** QSFP port and cabling specifications

| Cisco 2X 400G QSFP-DD | Nominal wavelength (nm) | Cable type | Core size (microns) | Modal bandwidth | Cable distance | Pull tab color |
|-----------------------|-------------------------|------------|---------------------|-----------------|----------------|----------------|
| QDD-8X100G-FR         | 1310                    | SMF        | G.652               |                 | 2 km           | Green          |
| QDD-2X400G-FR4        | 1270, 1290, 1310,       | SMF        | G.652               |                 | 2 km           | Green          |

| Cisco 2X 400G QSFP-DD | Nominal wavelength (nm) | Cable type | Core size (microns) | Modal bandwidth | Cable distance | Pull tab color |
|-----------------------|-------------------------|------------|---------------------|-----------------|----------------|----------------|
|                       | 1330                    |            |                     |                 |                |                |

## Platform support

Cisco QSFP-DD<sup>800</sup> modules are supported on Cisco switches and routers. For more details, refer to the [Cisco Transceiver Modules Compatibility Matrix](#).

## Specifications

**Table 4.** Electrical specifications

| Product               | Description                                                           | Nominal data rate (Gbps) | High-speed electrical          | Link meter |
|-----------------------|-----------------------------------------------------------------------|--------------------------|--------------------------------|------------|
| <b>QDD-8X100G-FR</b>  | QSFP-DD Transceiver, 8X100GBASE-FR1, Dual MPO-12, 2-km parallel SMF   | 8x100GE                  | 100GAUI-1/400GAUI-4 Annex 120G | 2 km       |
| <b>QDD-2X400G-FR4</b> | 2X400G QSFP-DD Transceiver, 400G-FR4, Dual Duplex LC, 2-km Duplex SMF | 425                      | 400GAUI-4 Annex 120G           | 2 km       |

**Table 5.** Optical specifications

| Product               | Description                                                                 | Average transmit power per lane (dBm) min | Average transmit power per lane (dBm) max | Average receive power per lane (dBm) min <sup>1</sup> | Average receive power per lane (dBm) max | Maximum supported insertion loss (IL) (dB) | Wavelength (nm)        | Pre-FEC              |
|-----------------------|-----------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------------------|------------------------------------------|--------------------------------------------|------------------------|----------------------|
| <b>QDD-8X100G-FR</b>  | QSFP-DD Transceiver, 4X100GBASE-FR1, MPO-12, 2-km parallel SMF              | -3.1                                      | 4                                         | -7.1                                                  | 4                                        | 4                                          | 1310                   | 2.4x10 <sup>-4</sup> |
| <b>QDD-2X400G-FR4</b> | 2x400G QSFP-DD Transceiver, 2x400GBASE-FR4, Dual Duplex LC, 2-km Duplex SMF | -3.2                                      | 3.5                                       | -7.3                                                  | 3.5                                      | 4                                          | 1270, 1290, 1310, 1330 | 2.4x10 <sup>-4</sup> |

<sup>1</sup> Average receive power per lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.

**Table 6.** Mechanical specifications

| <b>Module dimension with pull tab</b> | (H x W x D) 8.5 x 18.4 x 78.3/93.3 mm |
|---------------------------------------|---------------------------------------|
| <b>Module weight (Max)</b>            | 100 g                                 |
| <b>Module operation temperature</b>   | 0 to 75° C                            |
| <b>Storage temperature</b>            | -40 to 85° C                          |

**Table 7.** Ordering information

| Part ID               | Product description                                                    |
|-----------------------|------------------------------------------------------------------------|
| <b>QDD-8X100G-FR</b>  | QSFP-DD Transceiver, 8x100GBASE-FR1, MPO-12, 2-km parallel SMF         |
| <b>QDD-2X400G-FR4</b> | 2x400G QSFP-D Transceiver, 2x400G-FR4, Dual Duplex LC, 2-km Duplex SMF |

## Regulatory and standards compliance

### Standards

- QSFP-DD MSA hardware Rev 6.01, QSFP-DD800 hardware specification
- GR-20-CORE: Generic Requirements for Optical Fiber and Optical Fiber Cable
- GR-326-CORE: Generic Requirements for Single-Mode Optical Connectors and Jumper Assemblies
- GR-468-CORE: Generic Requirements for Optoelectronic Devices Used in Telecommunications Equipment
- GR-1435-CORE: Generic Requirements for Multifiber Optical Connectors
- Common Management Specification (CMIS) Rev 5.0
- IEEE Std 802.3-2018 IEEE Standard for Ethernet
- IEEE 802.3ba CL88
- IEEE 802.3bs 400GAUI-8 Annex 120E
- IEEE 802.3cd CL136
- IEEE 802.3cu CL140

### Safety

- Laser Class 1 21CFR-1040 LN#50
- Laser Class 1 IEC60825-1
- Compliance with North American (FCC/ICES), European (CENELEC), Japanese (VCCI), and Telcordia NEBS standards
- GR-1089 EMC and Electrical Safety - Generic Criteria for Network Telecommunications Equipment
- EMI compliance on FCC Part 15 (30 MHz - 40 GHz) and CISPR32/CISPR22 (30-6000 MHz)

- RFI compliance on EN/IEC 61000-4-3 and GR-1089-CORE (10k to 10 GHz)
- ESD compliance on EN/IEC 61000-4-2 and GR-1089
- Certification to IEC/EN 60825-1 +A2
- RoHS 6 compliance

**Table 8.** Laser class for QSFP-DD modules

| Part ID        | Laser class |
|----------------|-------------|
| QDD-8X100G-FR  | 1           |
| QDD-2X400G-FR4 | 1           |

## Product sustainability

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

**Table 9.** Cisco environmental sustainability information

| Sustainability Topic |                                                                                                       | Reference                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| General              | Information on product-material-content laws and regulations                                          | <a href="#">Materials</a>                                                     |
|                      | Information on electronic waste laws and regulations, including our products, batteries and packaging | <a href="#">WEEE Compliance</a>                                               |
|                      | Information on product takeback and reuse program                                                     | <a href="#">Cisco Takeback and Reuse Program</a>                              |
|                      | Sustainability inquiries                                                                              | Contact: <a href="mailto:csr_inquiries@cisco.com">csr_inquiries@cisco.com</a> |
| Power                | QSFP-DD port cabling specifications                                                                   | <a href="#">Table 3</a>                                                       |
| Material             | Product packaging weight and materials                                                                | Contact: <a href="mailto:environment@cisco.com">environment@cisco.com</a>     |

## Warranty

Standard warranty: 5 years Expedited replacement available via a Cisco SMARTnet service support contract

## 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](#).

## Additional information

For more information about Cisco 400G QSFP-DD copper modules, contact your sales representative or visit [www.cisco.com/en/US/products/hw/modules/ps5455/prod\\_module\\_series\\_home.html](http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_module_series_home.html).

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