

# QSFP-DD 400G DCO 0dBm ZR+

## 400G Ethernet DCO Transceiver

### DESCRIPTION

The QSFP-DD 400G Digital Coherent Optical (DCO) 0dBm Open ZR+ transceiver is a 400 Gbit/s multirate pluggable module for 100/200/300/400GBASE Ethernet optical data communication. The transceiver operates with dual polarization quadrature amplitude modulation (DP-16QAM) and oFEC to achieve up to 120 km reach without the requirement of EDFA (Erbium-Doped Fiber Amplifier) or DCM (Dispersion Compensation Module).

The module is fully compliant with QSFP-DD related MSA standards and CMIS. Digital Diagnostic functions are available through an I2C interface. QDD-400G-DCO-0ZRP complies with OIF OpenZRplus.



### APPLICATIONS

- 100/200/300/400GBASE-ZR
- Data Center Interconnection

### FEATURES

- Up to 80-120 km transmission on singlemode fiber
- Up to 500 km transmission on singlemode fiber with EDFA
- Hot-Pluggable QSFP-DD footprint
- Duplex LC UPC interface for fiber pair operation
- QSFP-DD MSA compatible
- CMIS 5.0 compatible
- C-band Flex-grid Tunable DWDM channel spacing
- Digital Diagnostic monitoring interface
- Operating Case Temperature: Standard: 0°C to 70°C
- Power dissipation < 22 W

### LASER SAFETY

This transceiver is a Class 1 laser product. It complies with IEC-60825 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated within the specified temperature and voltage limits. The optical ports of the module need to be terminated with an optical connector or a dust plug.

**TECHNICAL DATA**

Parameter	Unit	Value
Fiber type		Singlemode
Wavelength grid		C-band DWDM Flex-grid
Transmitter frequency range	THz	191.3 to 196.1
Center wavelength accuracy	nm	+/- 0.02
Baud Rate (ZR400/ZR300/ZR200/ZR100)	GBaud	60.14/60.14/60.14/30.07
Transceiver start up time	s	< 120
Channel Tuning speed	s	< 60
Optical output power (programmable)	dBm	-5 to +3
Output power stability	dB	+/- 0.5
Output power accuracy	dB	+/- 2
Modulation type		DP-16QAM, DP-8QAM, DP-QPSK
Transmitter OSNR (Inband)	dB/0.1nm	> 34
OSNR Sensitivity (ZR400)	dB/0.1nm	24
OSNR Sensitivity (ZR300)	dB/0.1nm	21
OSNR Sensitivity (ZR200)	dB/0.1nm	16
OSNR Sensitivity (ZR100)	dB/0.1nm	12.5
Optical receiver sensitivity (ZR400)	dBm	-24
Optical receiver sensitivity (ZR300)	dBm	-26
Optical receiver sensitivity (ZR200)	dBm	-28
Optical receiver sensitivity (ZR100)	dBm	-32
RX Optical Maximum Input Power	dBm	+10
Power budget	dB	23
OSNR sensitivity	dB/0.1nm	24
Chromatic Dispersion Tolerance (ZR400)	ps/nm	12 000
Chromatic Dispersion Tolerance (ZR300)	ps/nm	20 000
Chromatic Dispersion Tolerance (ZR200)	ps/nm	30 000
Chromatic Dispersion Tolerance (ZR100)	ps/nm	50 000
FEC type		oFEC
OSNR penalty tolerance	dB	0.5
Power dissipation	W	< 22
Operating temperature	°C	0 to +70
Storage temperature	°C	-40 to +85
Mechanical form factor		QSFP-DD Type 2A (w/external heat sink)

**ORDERING INFORMATION**

Product number	Description
QDD-400G-DCO-0ZRP	QSFP-DD, 400G ZR+, 80-120km, DCO Tunable, C-band DWDM Flex-grid, 23dB, SM