

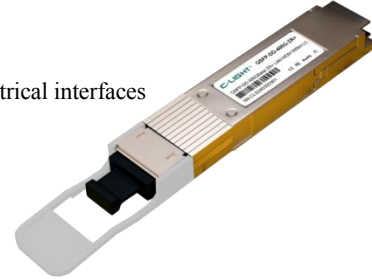


400G ZR+ High Power Coherent QSFP-DD Transceiver

CL400GQDDZR+HP

Product Features

- 400GBASE-ZR+ DCO QSFP-DD
- IEEE 400GE or n×100GE (n = 1, 2, 4) Ethernet compliant host interface
- Coherent 400G/200G/100G optical interface based on ZR+ MSA
- Tx power= 0dBm, OSNR tolerance> 23.5 dB/0.1nm
- QSFP-DD form factor, Type 2A (compact size: 93.26 mm × 18.35 mm × 8.5 mm)
- 400GAUI-8, 4×100GAUI-2, 2×100GAUI-2, 2×CAUI-4, 100GAUI-2 and CAUI-4 electrical interfaces
- Compliant with "QSFP-DD Hardware Specification Rev 6.2"
- Compliant with "QSFP-DD Common Management Interface Specification Rev 5.2"
- Full C-band tunable, flex grid
- Compatible with LC duplex connectors
- Maximum power consumption: 23 W
- Operating case temperature: 0°C to 70°C
- 3.3 V power supply



Optical Characteristics

Table 1 – Transmitter Optical Specifications

Parameter	Conditions	Symbol	Default	Min.	Max.	Unit
Channel spacing	Flexible grid	$\Delta\nu_C$	75	6.25	-	GHz
Channel frequency range	-	ν_C	193.1	191.3	196.1	THz
Frequency accuracy	-	-	$\delta\nu_C$	-1.5	1.5	GHz
Laser frequency fine tuning range	-	ν_{adj}	-	-6.25	6.25	GHz
Fine tuning resolution	-	-	-	-	0.1	GHz
Symbol rate	-	Rbaud	-	30.07	60.14	GBd
Modulation formats	-	-	16QAM			-
Laser intrinsic line width	Calculated based on FM noise power spectral density (PSD) measurement	LW	-	-	300	KHz
Side-mode suppression ratio	No modulation	SMSR	-	40	-	dB

Table 2 Transmitter Characteristics

Parameter	Conditions	Symbol	Default	Min.	Max.	Unit	Notes
Transmitter output power	Standard C-band	Ptx,out	-1.5	-	-	dBm	1
			-6.5				2
Tx output power adjustment resolution	-	-	-	-	0.1	dB	-



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FTTx



DWDM



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Tx output power tolerance	BOL	$\delta P_{Tx,out}$	-	-1	+1	dBm	3
Tx output power monitor accuracy	-	$\delta P_{Tx,mon}$	-	-1.5	+1.5	dB	4
Tx output power during tuning or when Tx disabled	-	$P_{Tx,dark}$	-	-	-35	dBm	-
Transmitter reflectance	-	-	-	-	-27	dB	-
Mean I-Q amplitude imbalance	-	-	-	-	1	dB	-
Tx output power imbalance between X- and Y-polarizations	-	$\Delta P_{X/Y}$	-	-	1	dB	-

Note1. For a module with higher Tx optical power.

Note2. For a module with lower Tx optical power.

Note1. Deviation from target value under closed loop control, over all operating conditions and life.

Note1. Tx optical output power monitor reading relative to actual Tx output power.

Table 3 Receiver Characteristics

Parameter	Conditions	Symbol	Min.	Max.	Unit	Notes
Rx signal input power	-	$PR_{x,sig}$	-12	0	dBm	-
OSNR tolerance	400G 16QAM ZR+	-	23.5	-	dB/0.1nm	-
CD tolerance (OSNR penalty < 0.5 dB)	400G 16QAM ZR+	-	-	9	ns/nm	-
PMD tolerance (OSNR penalty < 0.5 dB)	400G 16QAM ZR+	-	-	23	ps	-
Tolerance to change in SOP	-	-	-	60	krad/s	-
Rx signal input power transient amplitude	Peak excursion from steady state (within Rx signal input power range)	-	-7	+7	dB	-
Rx reflectance	-	-	-	-27	dB	-
Rx signal input power monitor range	-	$PR_{x,mon(s)}$	-22	1	dBm	-
Rx signal input power monitor accuracy	-	$\delta PR_{x,mon(s)}$	-2	+2	dB	-

Ordering Information

Table 4 - Ordering Information

Part No.	Application	Data Rate	Laser Source	Fiber Type
CL400GQDDZR+HP	400G DCO QSFP-DD	425Gb/s	EML C-Band Tunable	Single Mode Fiber

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