D.CO164HG.16.yTN – Extended Datasheet

400G QSFP-DD ZR/ZR+ High Power Coherent Pluggable Optical Transceiver
480 km, C-Band, Tx 1dBm, LC-Duplex, Singlemode

Link to product page: D.CO164HG.16.yTN

Product Description

The 400G QSFP-DD ZR/ZR+ HP (high power) transceiver is a high performance, high output power, cost effective module for optical data communication applications from 100G to 400G. The 400GQSFP-DD ZR+ HP is designed for 100G/200G long haul and 300G/400G Metro IP over DWDM applications without inline chromatic dispersion compensation.

The 400G QSFP-DD ZR/ZR+ HP is a C-Band optical frequency tunable coherent optical module, combines 7nm coherent DSP ASIC functionality with ultra-narrow line-width tunable lasers, highspeed siliconphotonics coherent modulators and high responsivity coherent receivers to deliver high performance at 100G DP-QPSK, 200G DP-QPSK, 300G DP-8QAM, and 400G DP-16QAM modulation formats. With integrated EDFA and VOA the TX output optical power is adjustable from -10dBm to +1dBm over the whole C-band.

The 400G QSFP-DD ZR/ZR+ HP coherent transceiver is compliant with the OIF 400ZR and OpenZR+ standards. Digital diagnostic functions are available via I2C interface as specified by the QSFP-DD MSA. Mechanical dimensions, connectors, and footprint conform to QSFP-DD MSA.

FLEXOPTIX

Table 1 – General Parameter

CMIS Version	Application Code	Host Interface	Baud Rate [GBd]	Modulation	Bandwidth	FEC	Media Lane Reach	Power Consumption
5.2	AppCode 1	400GAUI-8	59.843	DP-16QAM	400GbE	cFEC	120 km (amplified)	22.5 W (max) 22 W (typ)
5.2	AppCode 2	400GAUI-8	59.843	DP-16QAM	400GbE	cFEC	80km (unamplified)	22.5 W (max) 22 W (typ)
5.2	AppCode 3	4x100GAUI-2	59.843	DP-16QAM	4x100GbE	cFEC	120km (amplified)	23.5 W (max) 23 W (typ)
5.2	AppCode 4	4x100GAUI-2	59.843	DP-16QAM	4x100GbE	cFEC	80km (unamplified)	23.5 W (max) 23 W (typ)
5.2	AppCode 5	400GAUI-8	60.138	DP-16QAM	400GbE	oFEC	480km (amplified)	23.5 W (max) 23 W (typ)
5.2	AppCode 6	4x100GAUI-2	60.138	DP-16QAM	4x100GbE	oFEC	480km (amplified)	23.5 W (max) 23 W (typ)
5.2	AppCode 7	3x100GAUI-2	60.138	DP-8QAM	3x100GbE	oFEC	600km (amplified)	23,5 W (max) 23 W (typ)
5.2	AppCode 8	2x100GAUI-2	60.138	DP-QPSK	2x100GbE	oFEC	1000km (amplified)	23,5 W (max) ~23 W (typ)
5.2	AppCode 9	1x100GAUI-2	30.069	DP-QPSK	1x100GbE	oFEC	2000km (amplified)	23,5 W (max) ~23 W (typ)
5.2	AppCode 10	400GAUI-8	60.138	DP-16QAM	400GbE	cFEC	90km (unamplified)	22.5 W (max) 22 W (typ)
5.2	AppCode 11	4x100GAUI-2	60.138	DP-16QAM	4x100GbE	cFEC	90km (unamplified)	23.5 W (max) 23 W (typ)

Table 2 – Optical Parameter

Application Code	Frequency Range DWDM Grid	Grid Spacing	Flexible DWDM Grid	Tx Power (adjustable)	Rx Overload	Rx Input Range
AppCode 1	191.3 - 196.1 THz (C-band)	100 / 75 / 50 GHz	6.25 GHz	-10 dBm to +1 dBm	+10 dBm	-12 dBm to 0 dBm
AppCode 2	193.7 THz (fixed)	N/A (single λ)	N/A (single λ)	+3 dBm to +5 dBm	+10 dBm	-21 dBm to 0 dBm
AppCode 3	191.3 - 196.1 THz (C-band)	100 / 75 / 50 GHz	6.25 GHz	-10 dBm to +1 dBm	+10 dBm	-12 dBm to 0 dBm
AppCode 4	193.7 THz (fixed)	N/A (single λ)	N/A (single λ)	+3 dBm to +5 dBm	+10 dBm	-21 dBm to 0 dBm
AppCode 5	191.3 - 196.1 THz (C-band)	100 / 75 / 50 GHz	6.25 GHz	-10 dBm to +1 dBm	+10 dBm	-12 dBm to 0 dBm
AppCode 6	191.3 - 196.1 THz (C-band)	100 / 75 / 50 GHz	6.25 GHz	-10 dBm to +1 dBm	+10 dBm	-12 dBm to 0 dBm
AppCode 7	191.3 - 196.1 THz (C-band)	100 / 75 / 50 GHz	6.25 GHz	-10 dBm to +1 dBm	+10 dBm	-15 dBm to 0 dBm
AppCode 8	191.3 - 196.1 THz (C-band)	100 / 75 / 50 GHz	6.25 GHz	-10 dBm to +1 dBm	+10 dBm	-18 dBm to 0 dBm
AppCode 9	191.3 - 196.1 THz (C-band)	100 / 75 / 50 GHz	6.25 GHz	-10 dBm to +1 dBm	+10 dBm	-18 dBm to 0 dBm
AppCode 10	193.7 THz (fixed)	N/A (single λ)	N/A (single λ)	+3 dBm to +5 dBm	+10 dBm	-22 dBm to 0 dBm
AppCode 11	193.7 THz (fixed)	N/A (single λ)	N/A (single λ)	+3 dBm to +5 dBm	+10 dBm	-22 dBm to 0 dBm

Table 3 – Coherent Parameter

Application Code	Coherent Standard	Rx OSNR Tolerance	Rx Sensitivity @ OSNR	CD Tolerance max @0.5 dB OSNR Penalty	DGD Max (PMD tolerance)	Pre-FEC BER Limit	Post-FEC BER
AppCode 1	400G ZR DWDM	>26 dB/0.1 nm	-12 dBm OSNR >26dB	±2,400 ps/nm	33 ps	~1.22E-2	<1E-15
AppCode 2	400G ZR Grey, unamplified	>26 dB/0.1 nm	-20 dBm (400ZR) OSNR >34dB	±2,400 ps/nm	33 ps	~1.22E-2	<1E-15
AppCode 3	4*100G ZR DWDM	>26 dB/0.1 nm	-12 dBm OSNR >26dB	±2,400 ps/nm	33 ps	~1.22E-2	<1E-15
AppCode 4	4*100G ZR Grey, unamplified	>26 dB/0.1 nm	-20 dBm (400ZR) OSNR >34dB	±2,400 ps/nm	33 ps	~1.22E-2	<1E-15
AppCode 5	400G ZR+ DWDM	>24 dB/0.1 nm	-12 dBm OSNR >24dB	±20,000 ps/nm	66 ps	1.7E-2 – 2.0E-2	<1E-15
AppCode 6	4*100G ZR+ DWDM	>24 dB/0.1 nm	-12 dBm OSNR >24dB	±20,000 ps/nm	66 ps	1.7E-2 – 2.0E-2	<1E-15
AppCode 7	3*100G ZR+ DWDM	>21 dB/0.1 nm	-15 dBm OSNR >21dB	±40,000 ps/nm	83 ps	1.7E-2 – 2.0E-2	<1E-15
AppCode 8	2*100G ZR+ DWDM	>16 dB/0.1 nm	-18 dBm OSNR >16dB	±50,000 ps/nm	83 ps	1.7E-2 – 2.0E-2	<1E-15
AppCode 9	1*100G ZR+ DWDM	>12.5 dB/0.1 nm	-18 dBm OSNR >12.5dB	±100,000 ps/nm	100 ps	1.7E-2 – 2.0E-2	<1E-15
AppCode 10	400G ZR+ grey, unamplified	>34 dB/0.1 nm	-22 dBm OSNR >34dB	±20,000 ps/nm	66 ps	1.7E-2 – 2.0E-2	<1E-15
AppCode 11	4*100G ZR+ grey, unamplified	>34 dB/0.1 nm	-22 dBm OSNR >34dB	±20,000 ps/nm	66 ps	1.7E-2 – 2.0E-2	<1E-15

Ordering Information

Part No.	Mode	λ	Max Data Rate	Output Power	Max Distance	Case Temp Range
D.CO164HG.16.yTN	OIF 400ZR	C-band Tunable	400Gbps	-10 to +1dBm	120km	0°C to 70°C
	OpenZR+				480km	

Revision History

Revision	Release Date
V1	12.03.2026

Contact Information

Flexoptix GmbH

Tel: +49 (0) 6151 62904 - 0

Fax: +49 (0) 6151 62904 - 99

Email: info@flexoptix.net

Address: Mühltalstraße 153

64297 Darmstadt

GERMANY