



XFC59040100D732

Brocade® (Formerly) 10G-XFP-ER-CW59 Compatible 10GBase-CWDM XFP Transceiver (SMF, 1590nm, 40km, LC, DOM)

Product Description

This Brocade® (Formerly) 10G-XFP-ER-CW59 compatible XFP transceiver provides 10GBase-CWDM throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1590nm via an LC connector. It can operate at temperatures between 0 and 70C. The listed reach has been determined using a link budget calculation and tested in a standard environment. Actual link distances achieved will be dependent upon the deployed environment. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Brocade® (Formerly). It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

Features:

- INF-8077i Compliance
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



Applications:

- 10x Gigabit Ethernet over CWDM
- Access, Metro and Enterprise
- 8x/10x Fibre Channel
- Mobile Fronthaul CPRI/OBSAI

For your product safety, please read the following information carefully before any manipulation of the transceiver:



ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

CWDM Available Wavelengths

Wavelengths	Min.	Typ.	Max.
47	1463.5	1471	1476.5
49	1483.5	1491	1496.5
51	1503.5	1511	1516.5
53	1523.5	1531	1536.5
55	1543.5	1551	1556.5
57	1563.5	1571	1576.5
59	1583.5	1591	1596.5
61	1603.5	1611	1616.5

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc3	-0.5		4.0	V
	Vcc5	-0.5		6.0	V
Storage Temperature	Ts	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Relative Humidity	RH	5		95	%
Data Rate		9.95		11.3	Gbps

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc3	3.135	3.3	3.465	V	
	Vcc5	4.75	5.00	5.25	V	
Power Supply Current	Icc3			750	mA	
	Icc5			500	mA	
Power Dissipation	PD			3500	mW	
Transmitter						
Differential data input swing	V _{in,p-p}	120		1000	mVp-p	
Input differential impedance	Z _{in}		100		Ω	
Tx_Disable, P_Down/RST	V _{IH}	2.0		Vcc3+0.3	V	
	V _{IL}	-0.3		0.8	V	
Transmit Disable Assert Time				10	us	
Receiver						
Differential data output swing	V _{out, p-p}	340		850	mVp-p	1
Output differential impedance	Z _o		100		Ω	
Data Output Rise Time, Fall Time	t _r , t _f	24			ps	2
Rx_LOS, Mod_NR, Interrupt	V _{OH}	V _{CCHOST} -0.5		V _{CCHOST} +0.3	V	3
	V _{OL}	0		0.4	V	3

Notes:

1. Internally AC coupled, but requires an external 100Ω differential termination.
2. 20–80%.
3. Loss of Signal is an open collector output. Should be pulled up with a 4.7kΩ-10kΩ resistor on the host board.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Launch Average Optical Power	P _O	-1		4	dBm	1
Center Wavelength Range	λ _c	1464.5		1617.5	nm	
Center Wavelength Tolerance	Δλ _c	-6.5		6.5	nm	
Extinction Ratio	EX	8.2			dB	2
Spectral Width (-20dB)	Δλ			0.3	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Dispersion Penalty @ 800ps/nm	DP			2	dB	2
Average Optical Power (Laser Off)	P _{OFF}			-30	dBm	1
Eye Diagram	ITU-T G.691 SDH STM S-64.2b compatible					2
Receiver						
Center Wavelength	λ _c	1460		1620	nm	
Receiver Sensitivity (P _{avg})	S			-16	dBm	3
Receiver Overload (P _{avg})	P _{OL}	-1.0			dBm	3
Optical Return Loss	ORL	27			dB	
LOS De-Assert	LOS _D			-20	dBm	
LOS Assert	LOS _A	-27			dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. The optical power is launched into 9/125 μ m SMF.
2. Measured with a PRBS 2³¹-1 test pattern @ 9.953Gbps.
3. Average received power; BER less than 1E-12 and PRBS 231-1 test pattern.

Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Notes
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply - Not Required	
3	LVTTL-I	MOD_DESEL	Module De-select; When held low allows module to respond to 2-wire serial interface	
4	LVTTL-O	Interrupt	Interrupt; Indicates presence of an important condition which can be read via the 2-wire serial interface.	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Turns off transmitter laser output	
6		VCC5	+5V Power Supply	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I/O	SCL	2-Wire Serial Interface Clock.	2
11	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
12	LVTTL-O	MOD_Abs	Indicates Module is not present. Grounded in the Module.	2
13	LVTTL-O	MOD_NR	Module Not Ready; Indicating Module Operational Fault	2
14	LVTTL-O	RX_LOS	Receiver Loss of Signal Indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RD-	Receiver Inverted Data Output	
18	CML-O	RD+	Receiver Non-Inverted Data Output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply (Not required).	
21	LVTTL-I	P_DOWN/RST	Power down; When high, requires the module to limit power consumption to 1.5W or below. 2-Wire serial interface must be functional in the low power mode. Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply (Not required)	
23		GND	Module Ground	1
24	PECL-I	REFCLK+	Reference Clock Non-Inverted Input, AC coupled on the host board - Not Required	3
25	PECL-I	REFCLK-	Reference Clock Inverted Input, AC coupled on the host board – Not Required	3
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TD-	Transmitter Inverted Data Input	
29	CML-I	TD+	Transmitter Non-Inverted Data Input	
30		GND	Module Ground	1

Notes:

1. Module ground pins Gnd are isolated from the module case.
2. Shall be pulled up with 4.7KΩ to 10KΩ to a voltage between 3.15V and 3.45V on the host board.
3. Reference Clock is not required. If present, it will be ignored.



Pin-out of connector Block on Host board

Recommended Host Board Power Supply Filter Network

Recommended Application Interface Block Diagram



Mechanical Specifications



About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

