

# XFCxx04010xD – XFP CWDM Dual Fibre Transceiver

## ITU CWDM / 40km / 10 Gigabit Ethernet

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 Class 1 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.

### 1. Overview

XFCxx04010xD is a high performance XFP transceiver module for 10 Gigabit Ethernet data links over a single mode fibre pair. The maximum reach<sup>1</sup> is 40km, with 12dB end of life (EOL) power budget. The transmitter is a CWDM EML, the receiver is a PIN photodiode.

This transceiver module is compliant with the Small Form-factor Pluggable (XFP) Multisource Agreement (MSA) and hot pluggable. Always contact Skylane Optics® commercial agents for compatibility with different equipment platforms.

### 2. Features

- XFP Multi-Source Agreement compliant (INF-8077)
- Hot pluggable XFP footprint
- Serial ID functionality supported according to (INF-8077)
- Class 1 laser safety standard IEC 60825 compliant
- Dual LC connector
- CWDM EML transmitter
- 40km point-to-point transmission on single mode fibre
- Operating temperature range 0°C to 70°C or -40°C to 85°C
- Low power dissipation (<3.5W)
- Digital diagnostics monitoring (DDM)

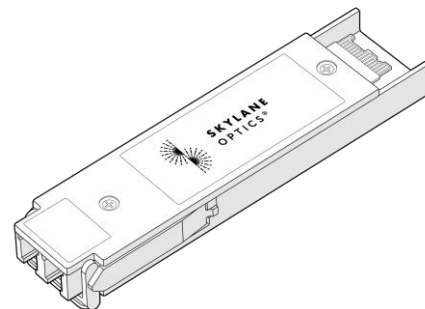


Figure 1. XFP Dual Fiber (non-binding illustration)

### 3. Applications

- 10GBASE-ER/-EW
- 10×Fiber Channel

### 4. Optical Interface

P/N	Wavelength [nm]	Optical Output Power <sup>2</sup> [dBm]	Optical Receiver Sensitivity <sup>3</sup> [dBm]	Optical Receiver Overload <sup>4</sup> [dBm]	Transmitter Dispersion Penalty [dB]	Power Budget <sup>2</sup> [dB]
XFCxx04010xD	ITU CWDM	-3 to 4	≤ -15	0	3	≥ 12

1. Distance is estimated assuming typical optical losses after decent quality fibre deployment; Only optical budget value is guaranteed

2. EOL, over operating temperature range

3. Measured at 10.3125Gbps, PRBS 2<sup>31</sup>-1, BER≤10<sup>-12</sup>

4. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers (optical loop back) before ensuring that proper optical attenuation is used

## 5. Technical Parameters

5.1. Recommended Operating Conditions					
Parameter	Min	Typ	Max	Unit	Notes
Storage temperature	-40		85	°C	
Operating temperature	0		70	°C	XFCxx040100D
	-40		85		XFCxx040102D
Relative Humidity	5		95	%	Non condensing
Power Supply Voltage, VCC5	4.75	5.0	5.25	V	
Power Supply Current, ICC5			300	mA	
Power Supply Voltage, VCC3	3.15	3.3	3.45	V	
Power Supply Current, ICC3			750	mA	
Total Power Consumption			3.5	W	

5.2. Transmitter Optical Specifications					
Parameter	Min	Typ	Max	Unit	Notes
Average Output Power	-3		4	dBm	5
Centre Wavelength Range	1470		1610	nm	
Centre Wavelength	$\lambda_T - 6$	$\lambda_T$	$\lambda_T + 7.5$	nm	6
Transmitter and Dispersion Penalty			3	dB	
Extinction Ratio	8.2			dB	
Spectral Width (-20dB)			1	nm	

5. Output power coupled into a 9/125  $\mu$ m single-mode fibre

6.  $\lambda_T$  according to the ITU-T CWDM grid, see section 9 for details

5.3. Receiver Optical Specifications					
Parameter	Min	Typ	Max	Unit	Notes
Sensitivity			-15	dBm	7
Receiver Overload	0			dBm	7
Wavelength of Operation	1260		1620	nm	

7. Measured at 10.3125Gbps, PRBS 2<sup>31</sup>-1, BER $\leq$ 10<sup>-12</sup>

## 6. Electrical Connector

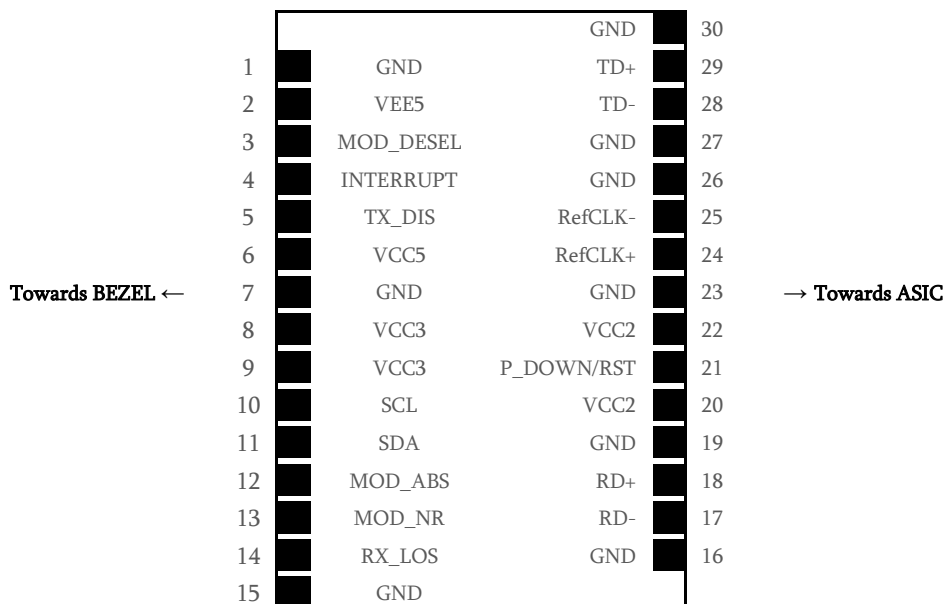


Figure 2. Transceiver Electrical Pad Layout



## 7. Module Electrical Pin Definition

XFP MSA (INF-8077i)

Pin Number	Name	Description
1	GND	Module Ground
2	VEE5	Not Used
3	Mod_DeSeL	Module De-select
4	Interrupt	Indicator of important condition
5	TX_DIS	Transmitter Disable
6	VCC5	Not Used
7	GND	Module Ground
8	VCC3	+3.3V Power Supply
9	VCC3	+3.3V Power Supply
10	SCL	2-Wire Serial Interface Clock
11	SDA	2-Wire Serial Interface Data
12	Mod_Abs	Indicates Module is not present
13	Mod_NR	Module Not Ready
14	RX_LOS	Receiver Loss of Signal Indicator
15	GND	Module Ground
16	GND	Module Ground
17	RD-	Receiver Inverted Data Output
18	RD+	Receiver Non-Inverted Data Output
19	GND	Module Ground
20	VCC2	Not Used
21	P_Down/RST	Power Down / Reset
22	VCC2	Not Used
23	GND	Module Ground
24	RefCLK+	Not Used
25	RefCLK-	Not Used
26	GND	Module Ground
27	GND	Module Ground
28	TD-	Transmitter Inverted Data Input
29	TD+	Transmitter Non-Inverted Data Input
30	GND	Module Ground

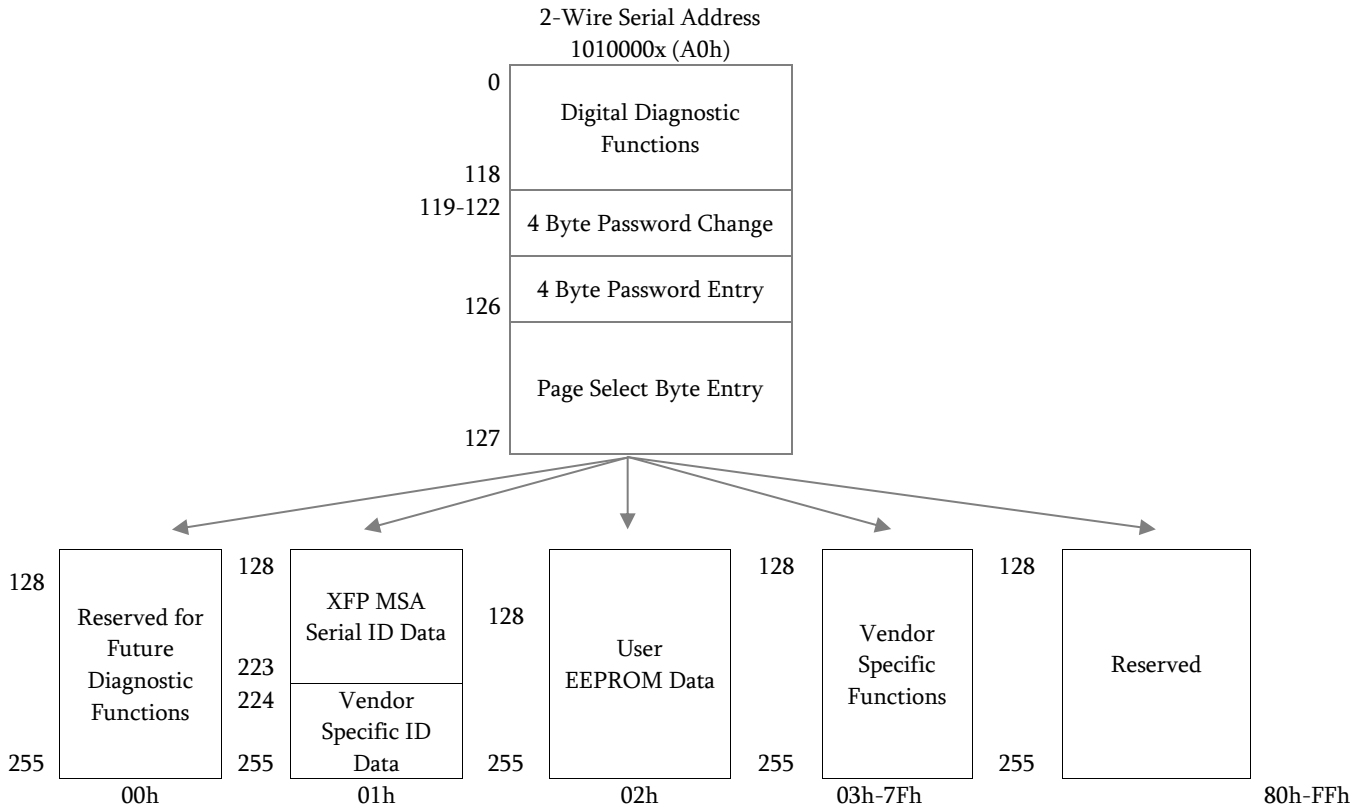
# Datasheet

XFCxx04010xD\_RevB.docx



## 8. EEPROM

XFP MSA (INF-8077)



## 9. Ordering Information

Part Number	Description
XFC47040100D	XFP CWDM dual fibre, Tx <b>1470nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>0°C to 70°C</b> , DDM
XFC49040100D	XFP CWDM dual fibre, Tx <b>1490nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>0°C to 70°C</b> , DDM
XFC51040100D	XFP CWDM dual fibre, Tx <b>1510nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>0°C to 70°C</b> , DDM
XFC53040100D	XFP CWDM dual fibre, Tx <b>1530nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>0°C to 70°C</b> , DDM
XFC55040100D	XFP CWDM dual fibre, Tx <b>1550nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>0°C to 70°C</b> , DDM
XFC57040100D	XFP CWDM dual fibre, Tx <b>1570nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>0°C to 70°C</b> , DDM
XFC59040100D	XFP CWDM dual fibre, Tx <b>1590nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>0°C to 70°C</b> , DDM
XFC61040100D	XFP CWDM dual fibre, Tx <b>1610nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>0°C to 70°C</b> , DDM
XFC47040102D	XFP CWDM dual fibre, Tx <b>1470nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>-40°C to 85°C</b> , DDM
XFC49040102D	XFP CWDM dual fibre, Tx <b>1490nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>-40°C to 85°C</b> , DDM
XFC51040102D	XFP CWDM dual fibre, Tx <b>1510nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>-40°C to 85°C</b> , DDM
XFC53040102D	XFP CWDM dual fibre, Tx <b>1530nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>-40°C to 85°C</b> , DDM
XFC55040102D	XFP CWDM dual fibre, Tx <b>1550nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>-40°C to 85°C</b> , DDM
XFC57040102D	XFP CWDM dual fibre, Tx <b>1570nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>-40°C to 85°C</b> , DDM
XFC59040102D	XFP CWDM dual fibre, Tx <b>1590nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>-40°C to 85°C</b> , DDM
XFC61040102D	XFP CWDM dual fibre, Tx <b>1610nm</b> (CWDM EML), Rx (PIN), maximum distance 40km, power budget 12dB, 10 Gigabit Ethernet, LC connector, <b>-40°C to 85°C</b> , DDM

## 10. Document Revision Information

Revision	Description
A	Initial release
B	Industrial temperature variant added

Skylane Optics® supplies a broad range of optical transceivers. Our engineers work closely with our customers to find the best solutions for every application. We are committed to provide high quality products and services to our customers.

For questions on this product please contact:  
[support@skylaneoptics.com](mailto:support@skylaneoptics.com)

Beyond  
Quality

Reliable  
Alliance

Performing  
Smartly