

# XFDxx040100D – XFP DWDM Dual Fibre Transceiver

## ITU DWDM / 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 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.

## 1. Overview

XFDxx040100D is a high performance XFP transceiver module for 10 Gigabit Ethernet data links over a single mode fibre pair. The maximum reach is 40km, with 11dB end of life (EOL) power budget. The transmitter is a DWDM 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
- DWDM EML transmitter
- 100 GHz channel spacing
- 40km point-to-point transmission on single mode fibre
- Operating temperature range 0°C to 70°C
- Low power dissipation (<3.5W)
- Digital diagnostics monitoring (DDM)

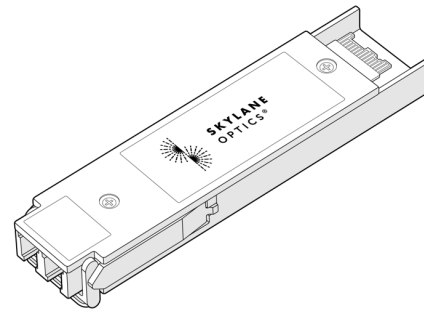


Figure 1. XFP Dual Fibre (non-binding illustration)

## 3. Applications

- 10GBASE-ER/-EW
- 10×Fiber Channel

## 4. Optical Interface

P/N	Wavelength [nm]	Output Optical Power <sup>2</sup> [dBm]	Optical Receiver Sensitivity <sup>3</sup> [dBm]	Transmitter Dispersion Penalty [dB]	Optical Receiver Overload <sup>4</sup> [dBm]	Power Budget <sup>2</sup> [dB]
XFDxx040100D	ITU DWDM	-3 to 4	≤ -15	3	0	≥ 11

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 231-1, BER≤10-12

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	
Relative Humidity	5		95	%	Non condensing
Power Supply Voltage, VCC5	4.75	5.0	5.25	V	
Power Supply Current, ICC5			500	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	Units	Notes
Average Output Power	-3		4	dBm	5
Centre Wavelength, Range	1528.77		1563.86	nm	
Centre Wavelength	$\lambda_c - 100$	$\lambda_T$	$\lambda_c + 100$	pm	6
Transmitter and Dispersion Penalty			3	dB	
Optical Extinction Ratio	8.2			dB	
Spectral Width (-20dB)			1	nm	

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

6.  $\lambda_T$  according to the ITU-T 100GHz grid

5.3. Receiver Optical Specifications					
Parameter	Min	Typ	Max	Units	Notes
Sensitivity			-15	dBm	7
Receiver Overload	0			dBm	7
Wavelength of Operation	1270		1600	nm	

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

## 6. Transceiver Electrical Pad Layout

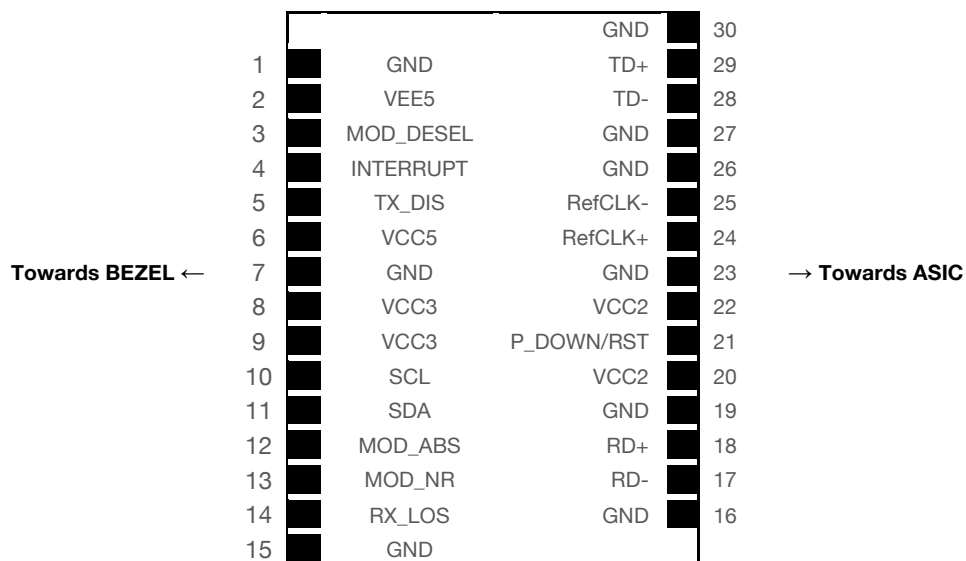


Figure 2. Transceiver Electrical Pad Layout

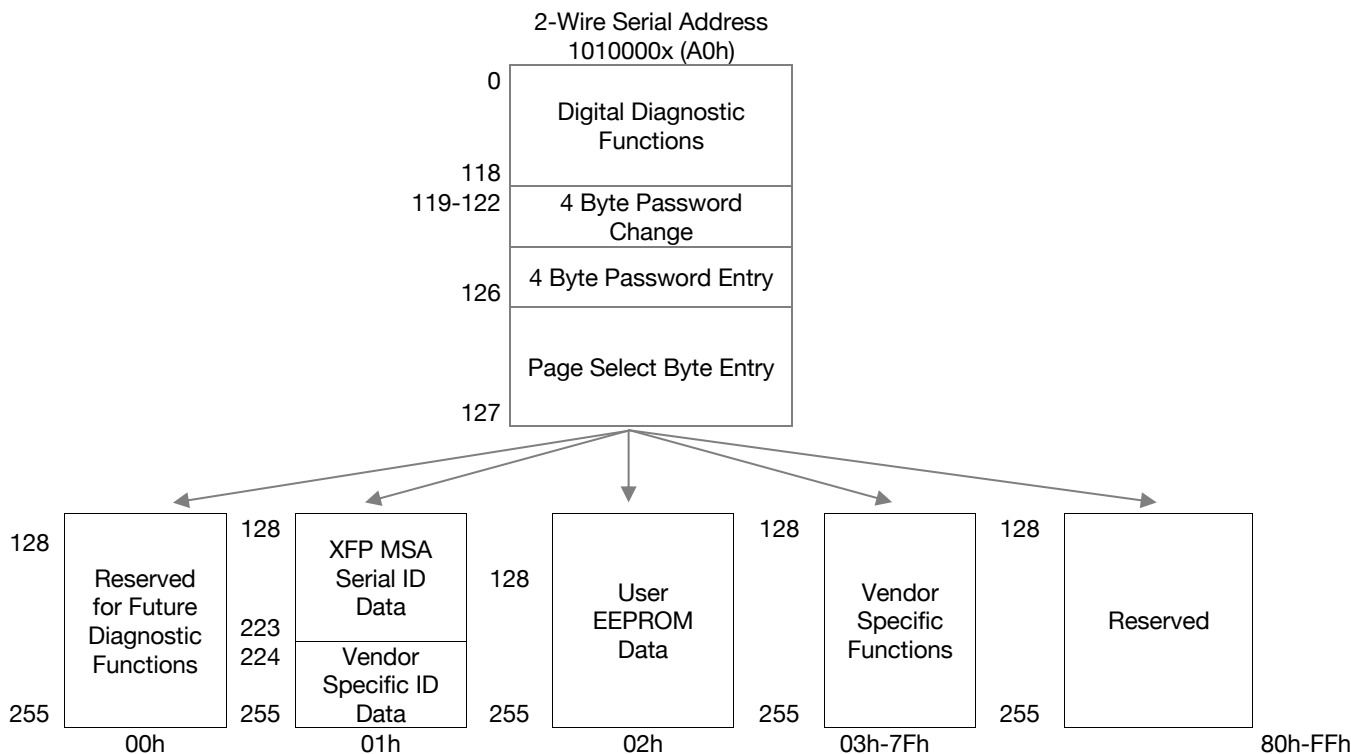


## 7. Pin Functions Definitions

Pin Number	Name	Description
1	GND	Ground
2	VEE5	<b>Not Used</b> (Optional – 5.2V Power Supply)
3	MOD_DESEL	Module de-select
4	Interrupt	Indicator of important condition
5	TX_Disable	Transmitter Disable
6	VCC5	+5V Power Supply
7	GND	Ground
8	VCC3	+3.3V Power Supply
9	VCC3	+3.3V Power Supply
10	SCL	2-Wire Serial Interface Data
11	SDA	2-Wire Serial Interface Clock
12	Mod-Abs	Indicates module is not present
13	Mod_Nr	Module Not Ready
14	RX_LOS	Loss of Signal
15	GND	Ground
16	GND	Ground
17	RD-	Receiver Inverted Data Output
18	RD+	Receiver Non-Inverted Data Output
19	GND	Ground
20	VCC2	<b>Not Used</b> (+1.8V Power Supply)
21	P_DOWN/RST	Power Down / Reset
22	VCC2	<b>Not Used</b> (+1.8V Power Supply)
23	GND	Ground
24	RefCLK+	<b>Not Used</b> (Ref. Clock Non-Inverted Input)
25	RefCLK-	<b>Not Used</b> (Ref. Clock Inverted Input)
26	GND	Ground
27	GND	Ground
28	TD-	Transmitter Inverted Data Input
29	TD+	Transmitter Non-Inverted Data Input
30	GND	Ground

## 8. EEPROM

XFP MSA (INF-8077)



## 9. Ordering Information

Part Number	Description
XFD17040100D	XFP DWDM dual fibre, Tx <b>1563.86nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD18040100D	XFP DWDM dual fibre, Tx <b>1563.05nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD19040100D	XFP DWDM dual fibre, Tx <b>1562.23nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD20040100D	XFP DWDM dual fibre, Tx <b>1561.42nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD21040100D	XFP DWDM dual fibre, Tx <b>1560.61nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD22040100D	XFP DWDM dual fibre, Tx <b>1559.79nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD23040100D	XFP DWDM dual fibre, Tx <b>1558.98nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD24040100D	XFP DWDM dual fibre, Tx <b>1558.17nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD25040100D	XFP DWDM dual fibre, Tx <b>1557.36nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD26040100D	XFP DWDM dual fibre, Tx <b>1556.56nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD27040100D	XFP DWDM dual fibre, Tx <b>1555.75nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD28040100D	XFP DWDM dual fibre, Tx <b>1554.94nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD29040100D	XFP DWDM dual fibre, Tx <b>1554.13nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD30040100D	XFP DWDM dual fibre, Tx <b>1553.33nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD31040100D	XFP DWDM dual fibre, Tx <b>1552.52nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
XFD32040100D	XFP DWDM dual fibre, Tx <b>1551.72nm</b> (DWDM EML), Rx (PIN), maximum distance 40km, power budget 11dB, 10 Gigabit Ethernet, LC connector, 0°C to 70°C, DDM



## 10. Document Revision Information

Revision	Description
A	Initial release

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**

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