

# SFCxx120PAxD – SFP Dual Fibre CWDM

ITU CWDM / 120km / OC-48 / STM-16 Multirate

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

SFCxx120PAxD is a high-performance transceiver module for up to 2.67Gbps data links over a single mode fibre pair. The maximum reach<sup>1</sup> is 120km, with 33dB end of life (EOL) power budget. The transmitter is a CWDM Distributed Feedback laser (DFB), the receiver is an Avalanche Photodiode (APD).

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

## 2. Features

- SFP Multi-Source Agreement compliant (INF-8074)
- Hot pluggable SFP footprint
- Serial ID functionality supported according to (SFF-8472)
- Class 1 laser safety standard IEC 60825 compliant
- Dual LC connector
- CWDM DFB transmitter
- Data Rate up to 2.67Gbps
- 120km point-to-point transmission on single mode fibre
- Operating temperature range 0°C to 70°C or -20°C to 85°C
- Power dissipation <1W
- Digital Diagnostics Monitoring (DDM)

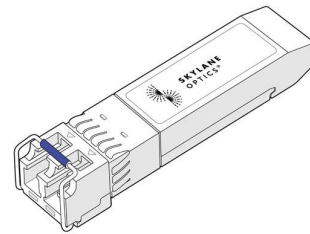


Figure 1. SFP Dual Fibre (non-binding illustration)

## 3. Applications

- Fast Ethernet / Gigabit Ethernet
- 1x Fiber Channel / 2x Fiber Channel
- SONET OC-48/SDH STM-16, SONET OC-12/SDH STM-4, SONET OC-3/SDH STM-1

## 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]	Power Budget <sup>2</sup> [dB]
SFCxx120PAxD	ITU CWDM	4 to 7	≤ -29	-9	≥ 33

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

2. EOL, over operating temperature range

3. Measured at 2.488Gbps, PRBS 2<sup>31</sup>-1, ER=8.2dB, 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	Units	Notes
Storage temperature	-40		85	°C	
Operating Case Temperature	0		70	°C	SFCxx120PA0D
	-20		85		SFCxx120PA1D
Relative Humidity	5		95	%	Non condensing
Power Supply Voltage	3.15	3.3	3.45	V	
Power Supply Current			300	mA	

5.2. General Specifications					
Parameter	Min	Typ	Max	Unit	Notes
Data Rate	0.1		2.67	Gbps	

5.3. Transmitter Optical Specifications					
Parameter	Min	Typ	Max	Units	Notes
Average Output Power	4		7	dBm	5
Centre Wavelength Range	1464.5		1617.5	nm	
Centre Wavelength	$\lambda_c - 6.5$	$\lambda_c$	$\lambda_c + 6.5$	nm	6
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. ITU-T G.694.2 CWDM. For available wavelengths, see section 9

5.4. Receiver Optical Specifications					
Parameter	Min	Typ	Max	Units	Notes
Receiver Sensitivity			-29	dBm	7
Receiver Overload	-9			dBm	7
Wavelength of Operation	1260		1630	nm	

- 7. Measured at 2.488Gbps, PRBS 2<sup>23</sup>-1, ER=8.2dB, BER=10<sup>-12</sup>

## 6. Transceiver Electrical Pad Layout

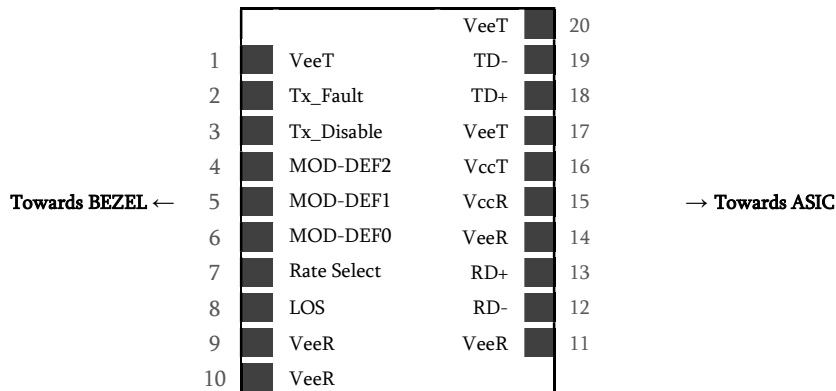


Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

Pin Number	Name	Function
1	VeeT	Transmitter Ground
2	TX_Fault	Transmitter Fault Indication
3	TX_Disable	Transmitter Disable
4	MOD-DEF2	2-Wire Serial Interface Data
5	MOD-DEF1	2-Wire Serial Interface Clock
6	MOD-DEF0	Grounded in Module
7	Rate Select	Not Connected
8	LOS	Loss of Signal
9	VeeR	Receiver Ground
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Inverted received data output
13	RD+	Received data output
14	VeeR	Receiver Ground
15	VccR	Receiver Power
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground
18	TD+	Transmit data input
19	TD-	Inverted transmit data input
20	VeeT	Transmitter Ground

8. EEPROM

SFP MSA (INF-8074 & SFF-8472)

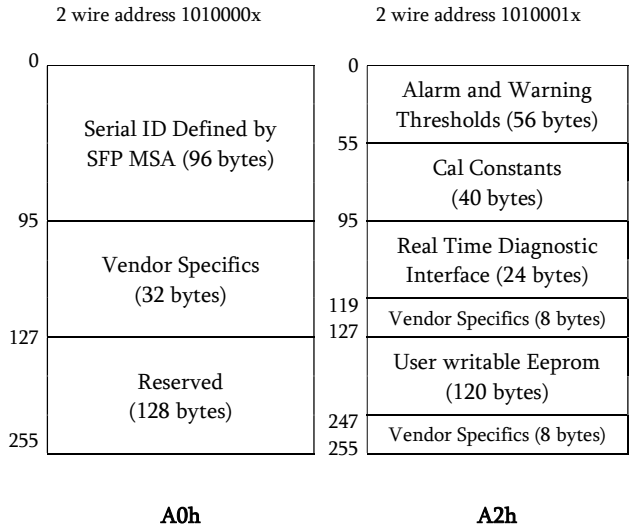


Figure 3. EEPROM of a an SFP

## 9. Ordering Information

Part Number	Description
SFC47120PA0D	SFP dual fibre CWDM, <b>Tx 1470nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>0°C to 70°C</b> , DDM
SFC49120PA0D	SFP dual fibre CWDM, <b>Tx 1490nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>0°C to 70°C</b> , DDM
SFC51120PA0D	SFP dual fibre CWDM, <b>Tx 1510nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>0°C to 70°C</b> , DDM
SFC53120PA0D	SFP dual fibre CWDM, <b>Tx 1530nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>0°C to 70°C</b> , DDM
SFC55120PA0D	SFP dual fibre CWDM, <b>Tx 1550nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>0°C to 70°C</b> , DDM
SFC57120PA0D	SFP dual fibre CWDM, <b>Tx 1570nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>0°C to 70°C</b> , DDM
SFC59120PA0D	SFP dual fibre CWDM, <b>Tx 1590nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>0°C to 70°C</b> , DDM
SFC61120PA0D	SFP dual fibre CWDM, <b>Tx 1610nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>0°C to 70°C</b> , DDM
SFC47120PA1D	SFP dual fibre CWDM, <b>Tx 1470nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>-20°C to 85°C</b> , DDM
SFC49120PA1D	SFP dual fibre CWDM, <b>Tx 1490nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>-20°C to 85°C</b> , DDM
SFC51120PA1D	SFP dual fibre CWDM, <b>Tx 1510nm</b> (CWDM DFB), Rx (APD), maximum distance 120km, power budget 33dB, OC-48 multi-rate, LC connector, <b>-20°C to 85°C</b> , DDM
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## 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](mailto:support@skylaneoptics.com)

Beyond  
Quality

Reliable  
Alliance

Performing  
Smartly