

SFCxx160GExD – SFP Dual Fibre CWDM

ITU CWDM / 160km / 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

SFCxx160GExD is a high performance transceiver module for Gigabit Ethernet data links over a single mode fibre pair. The maximum reach is 160km, with 40dB end of life (EOL) power budget. The transmitter is a CWDM DFB laser, the receiver is an APD photodiode.

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
- APD receiver
- 160km point-to-point transmission on single mode fibre
- Operating temperature range 0°C to 70°C or -20°C to 85°C
- Low power dissipation (<1W)
- Digital diagnostics monitoring (DDM)

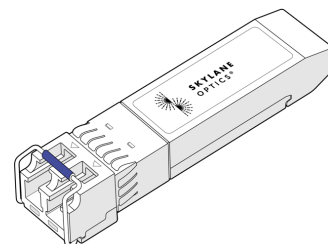


Figure 1. SFP Dual Fiber CWDM (non-binding illustration)

3. Applications

- Gigabit Ethernet
- 1x Fiber Channel

4. Optical Interface

P/N	Wavelength [nm]	Output Optical Power ² [dBm]	Optical Receiver Sensitivity ³ [dBm]	Optical Receiver Overload ⁴ [dBm]	Power Budget ² [dB]
SFCxx160GExD	ITU CWDM	4 to 7	≤ -36	-10	≥ 40

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 1.25Gbps, PRBS 27-1, ER=9dB, 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 Case Temperature	0		70	°C	SFCxx160GE0D
	-20		85	°C	SFCxx160GE1D
Relative Humidity			95	%	Non condensing
Power Supply Voltage	3.15	3.3	3.45	V	
Power Supply Current			300	mA	

5.2. Transmitter Optical Specifications

Parameter	Min	Typ	Max	Units	Notes
Optical Output Power	4		7	dBm	5
Centre Wavelength Range	1470		1610	nm	
Wavelength	$\lambda_T - 6$	λ_T	$\lambda_T + 7.5$	Nm	6
Spectral Width (-20dB)			1	nm	
Extinction Ratio	8.2			dB	

5. Output power coupled into a 9/125 μm single-mode fibre

6. ITU-T G.694.2 CWDM. For available wavelengths, see section 9.

5.3. Receiver Optical Specifications

Parameter	Min	Typ	Max	Units	Notes
Receiver Sensitivity			-36	dBm	7
Receiver Overload	-10			dBm	7
Receiver Operating Range	1260		1630	nm	

7. Measured at 1.25Gbps, PRBS 2⁷-1, ER=9dB, BER \leq 10⁻¹²

6. Transceiver Electrical Pad Layout

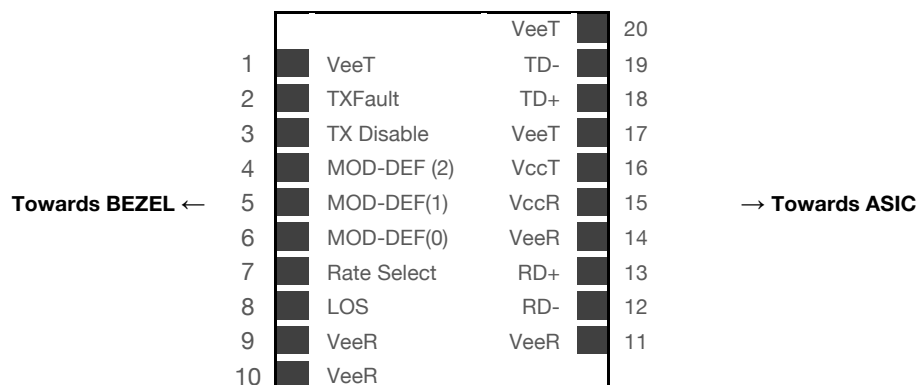


Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

SFP MSA [INF-8074i]

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 Out
13	RD+	Received Data Out
14	VeeR	Receiver Ground
15	VccR	Receiver Power
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground
18	TD+	Transmit Data In
19	TD-	Inverted Transmit Data In
20	VeeT	Transmitter Ground

8. EEPROM

SFP MSA [SFF-8472]

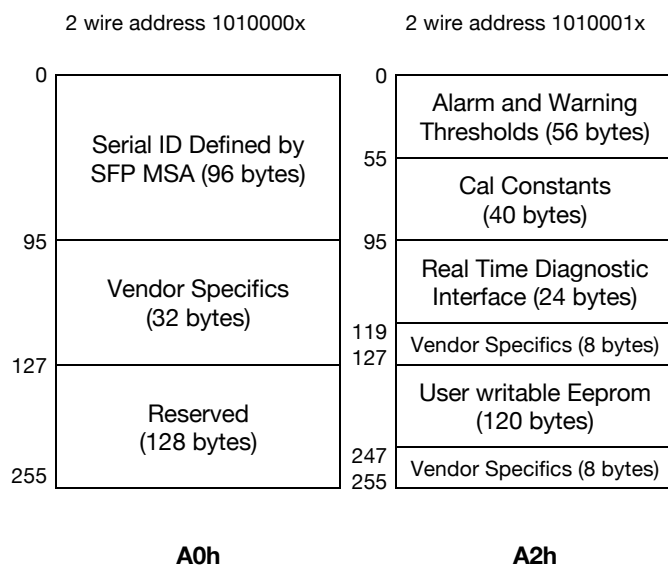


Figure 3. EEPROM of a an SFP



9. Ordering Information

Part Number	Description
SFC47160GE0D	SFP dual fibre CWDM, Tx 1470nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
SFC49160GE0D	SFP dual fibre CWDM, Tx 1490nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
SFC51160GE0D	SFP dual fibre CWDM, Tx 1510nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
SFC53160GE0D	SFP dual fibre CWDM, Tx 1530nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
SFC55160GE0D	SFP dual fibre CWDM, Tx 1550nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
SFC57160GE0D	SFP dual fibre CWDM, Tx 1570nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
SFC59160GE0D	SFP dual fibre CWDM, Tx 1590nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
SFC61160GE0D	SFP dual fibre CWDM, Tx 1610nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
SFC47160GE1D	SFP dual fibre CWDM, Tx 1470nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, -20°C to 85°C , DDM
SFC49160GE1D	SFP dual fibre CWDM, Tx 1490nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, -20°C to 85°C , DDM
SFC51160GE1D	SFP dual fibre CWDM, Tx 1510nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, -20°C to 85°C , DDM
SFC53160GE1D	SFP dual fibre CWDM, Tx 1530nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, -20°C to 85°C , DDM
SFC55160GE1D	SFP dual fibre CWDM, Tx 1550nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, -20°C to 85°C , DDM
SFC57160GE1D	SFP dual fibre CWDM, Tx 1570nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, -20°C to 85°C , DDM
SFC59160GE1D	SFP dual fibre CWDM, Tx 1590nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, -20°C to 85°C , DDM
SFC61160GE1D	SFP dual fibre CWDM, Tx 1610nm (CWDM DFB) , Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, -20°C to 85°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

**Beyond
Quality**

**Reliable
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