

10Gbps SFP+ CWDM 1471~1611nm 40km Transceiver

Product Features:

- Supports 1.0 to 11.3Gb/s bit rates
- Hot-Pluggable SFP+ form factor
- Duplex LC connector
- 1471~1611nm CWDM EML transmitter, PIN photo-detector
- 16dB optical link budget
- Built-in digital diagnostic functions
- Single +3.3V Power Supply
- Operating case temperature: 0~ 70°C
- Power dissipation: <1.5W
- RoHS compliant



Applications:

- 10G Ethernet
- SDH/SONET
- Fibre Channel

Description:

The 10Gbps SFP+ CWDM transceivers convert a 10Gb/s serial electrical data stream to 10Gb/s optical output signal and a 10Gb/s optical input signal to 10Gb/s serial electrical data streams. The high speed 10Gb/s electrical interface is fully compliant with SFI specification.

The high performance CWDM EML transmitter and high sensitivity PIN receiver provide superior performance for Multiple applications.

The SFP+ Module compliant with SFF-8431, SFF-8432. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

The fully SFP compliant form factor provides hot pluggability, easy optical port upgrades and low EMI emission.

● Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Power Supply Voltage	VCC	0		3.6	V
Storage Temperature	Ts	-40		85	°C
Operating Case Temperature	TA	0		70	°C
Relative Humidity	RH	0		85	%

● Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Supply Voltage	Vcc	3.135		3.465	V	
Supply Current	Icc			455	mA	
Power Consumption	P			1.5	W	
Transmitter Section:						
Input differential impedance	Rin		100		Ω	1
Differential input voltage swing	Vin,pp	100		1000	mV	
Transmit Disable Voltage	VD	2		Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
Receiver Section:						
Differential output voltage swing	Vo	120		800	mV	
LOS Fault	Vlosfault	2		VCC_host	V	2
LOS Normal	Vlos norm	Vee		Vee+0.8	V	2

Notes:

1. Connected directly to TX data input pins. AC coupling from pins into laser driver IC.
2. LOS is an open collector output. Should be pulled up with 4.7k – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1.

● Optical Parameters

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter Section:						
Center Wavelength	λ_t	$\lambda-6.5$	λ	$\lambda+6.5$	nm	
Spectral width	$\Delta\lambda$			0.4	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	Pavg	0		+5.5	dBm	
Laser Off Power	Poff			-30	dBm	
Extinction Ratio	ER	6			dB	

Receiver Section:						
Center Wavelength	λ_r	1260		1620	nm	
Receiver Sensitivity	Sen			-16	dBm	1
Input Saturation Power(Overload)	Sat	0			dBm	
Los Assert	LOSA	-30		-	dBm	
Los Dessert	LOSD			-17	dBm	
Los Hysteresis	LOSH	0.5			dB	

Notes:

1. Measured with a PRBS $2^{31}-1$ test pattern, @10.3125Gb/s, BER < 10^{-12} .

Pin Assignment:

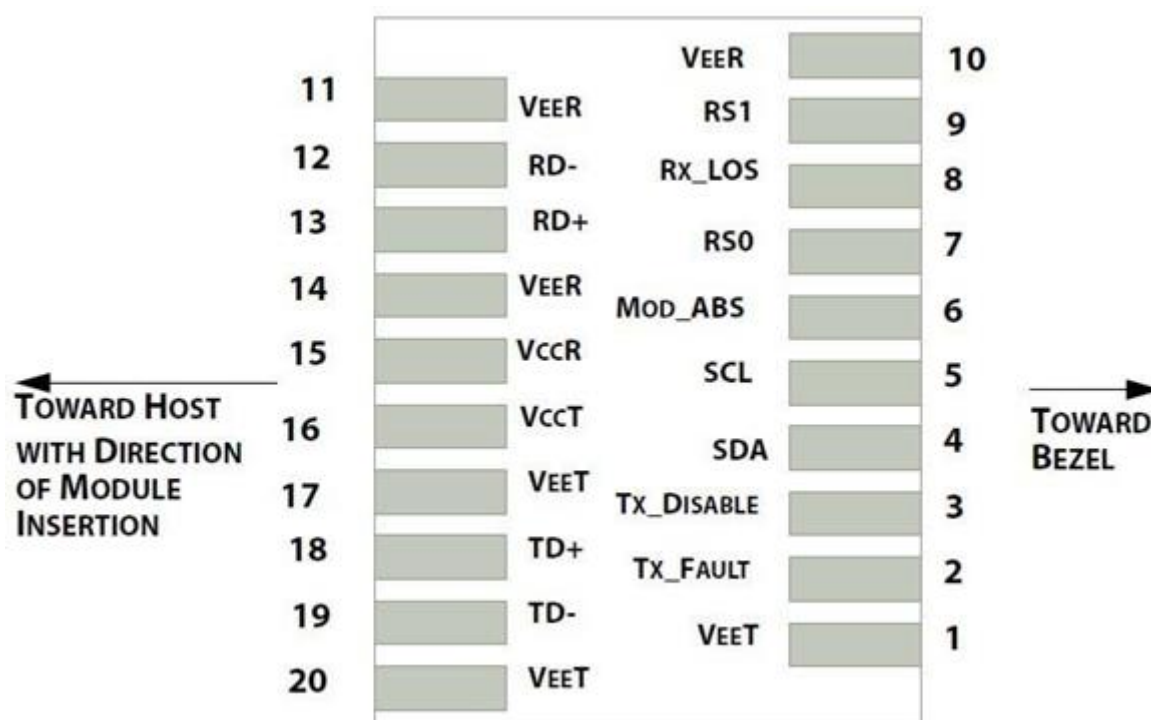


Diagram of Host Board Connector Block Pin Numbers and Names

● Pin Function Definitions

PIN #	Name	Function	Notes
1	VeeT	Module transmitter ground	1
2	Tx Fault	Module transmitter fault	2
3	Tx Disable	Transmitter Disable; Turns off transmitter laser output	3
4	SDA	2 wire serial interface data input/output (SDA)	
5	SCL	2 wire serial interface clock input (SCL)	
6	MOD-ABS	Module Absent, connect to VeeR or VeeT in the module	2
7	RS0	Rate Select 0. Not Used	

8	LOS	Receiver Loss of Signal Indication	4
9	RS1	Rate Select 1. Not Used	
10	VeeR	Module receiver ground	1
11	VeeR	Module receiver ground	1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non-inverted data out put	
14	VeeR	Module receiver ground	1
15	VccR	Module receiver 3.3V supply	
16	VccT	Module transmitter 3.3V supply	
17	VeeT	Module transmitter ground	1
18	TD+	Transmitter non-inverted data out put	
19	TD-	Transmitter inverted data out put	
20	VeeT	Module transmitter ground	1

Notes:

1. The module ground pins shall be isolated from the module case.
2. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host_Vcc on the host board.
3. This pin shall be pulled up with 4.7K-10Kohms to VccT in the module.
4. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host_Vcc on the host board.

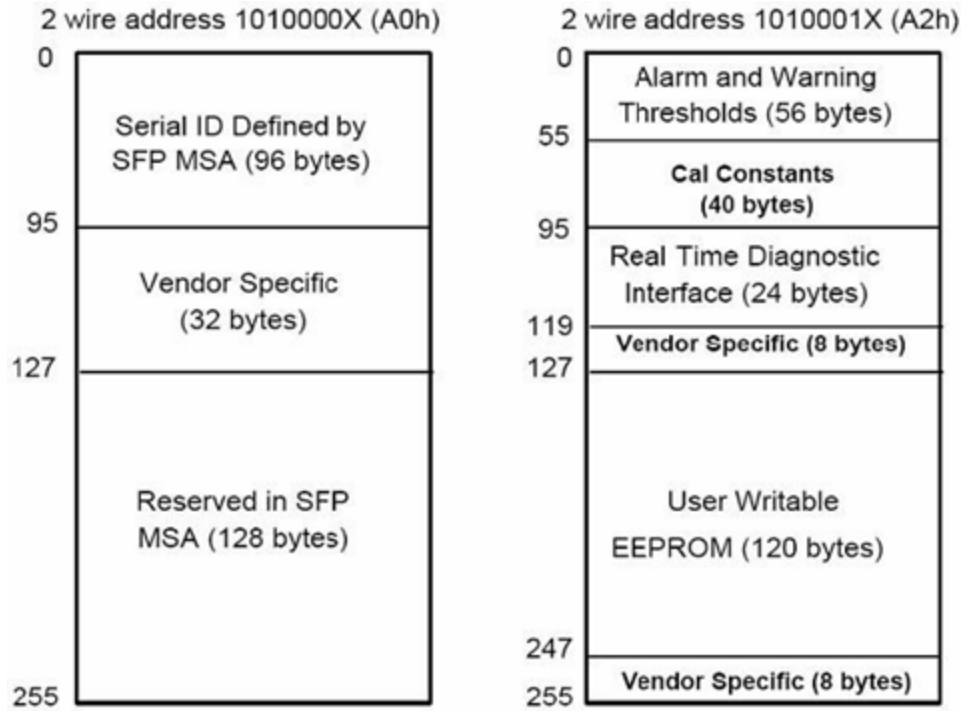
SFP Module EEPROM Information and Management

The SFP modules implement the 2-wire serial communication protocol as defined in the SFF -8472. The serial ID information of the SFP modules and Digital Diagnostic Monitor parameters can be accessed through the I2C interface at address A0h and A2h.

The memory is mapped in Table 1.

For more details of the memory map and byte definitions, please refer to the SFF-8472, "Digital Diagnostic Monitoring Interface for Optical Transceivers". The DDM parameters have been internally calibrated.

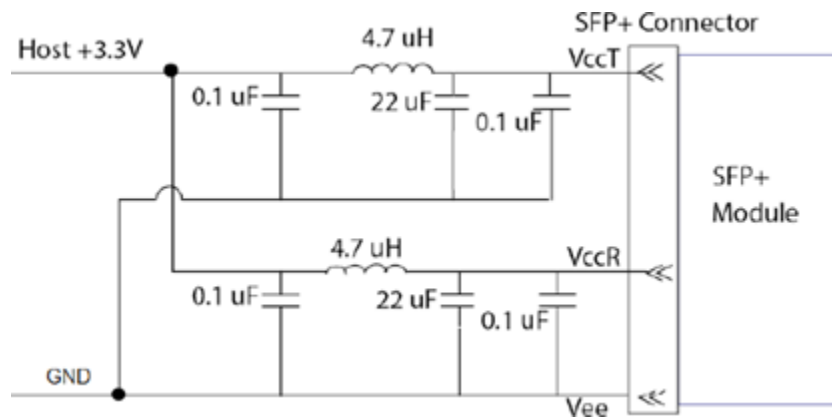
Table 1. Digital Diagnostic Memory Map (Specific Data Field Descriptions)



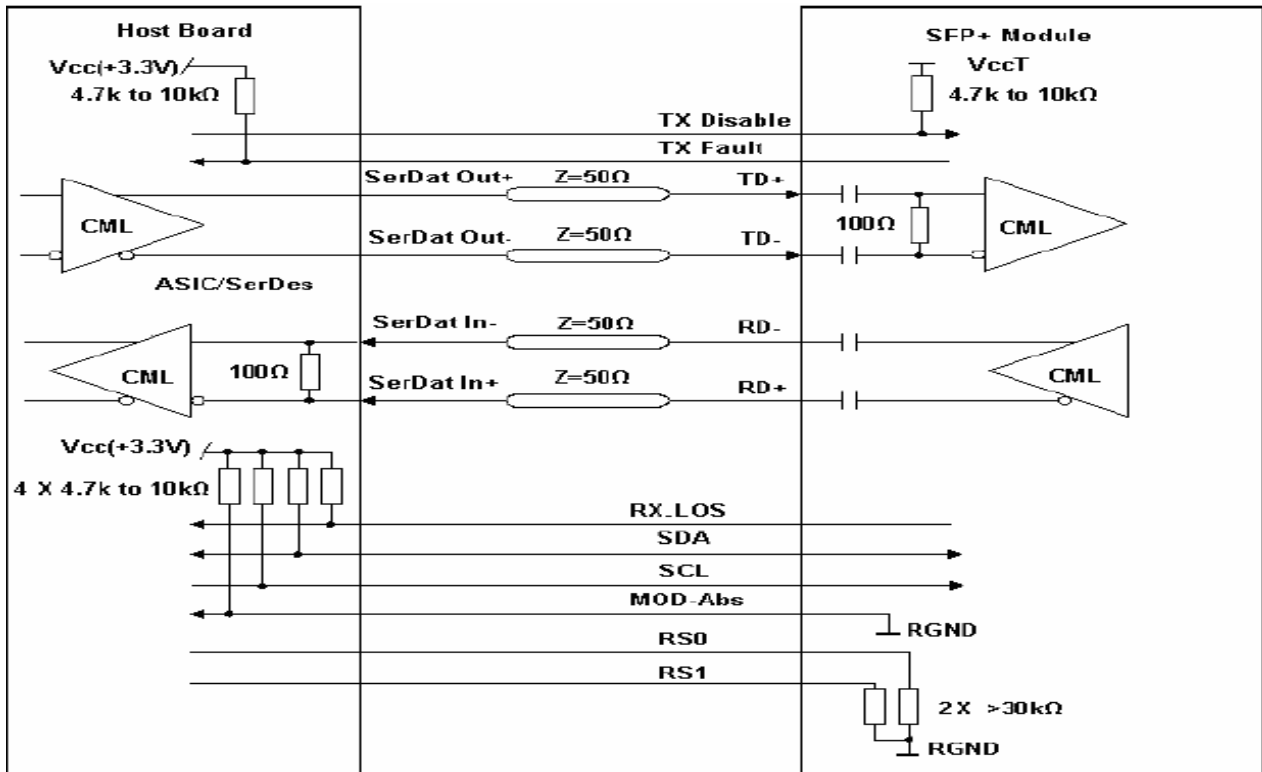
Digital Diagnostic Monitor Characteristics

Data Address	Parameter	Accuracy	Unit
96-97	Transceiver Internal Temperature	±3.0	°C
98-99	VCC Internal Supply Voltage	±3.0	%
100-101	Laser Bias Current	±10	%
102-103	Tx Output Power	±3.0	dB
104-105	Rx Input Power	±3.0	dB

Recommended Circuit:

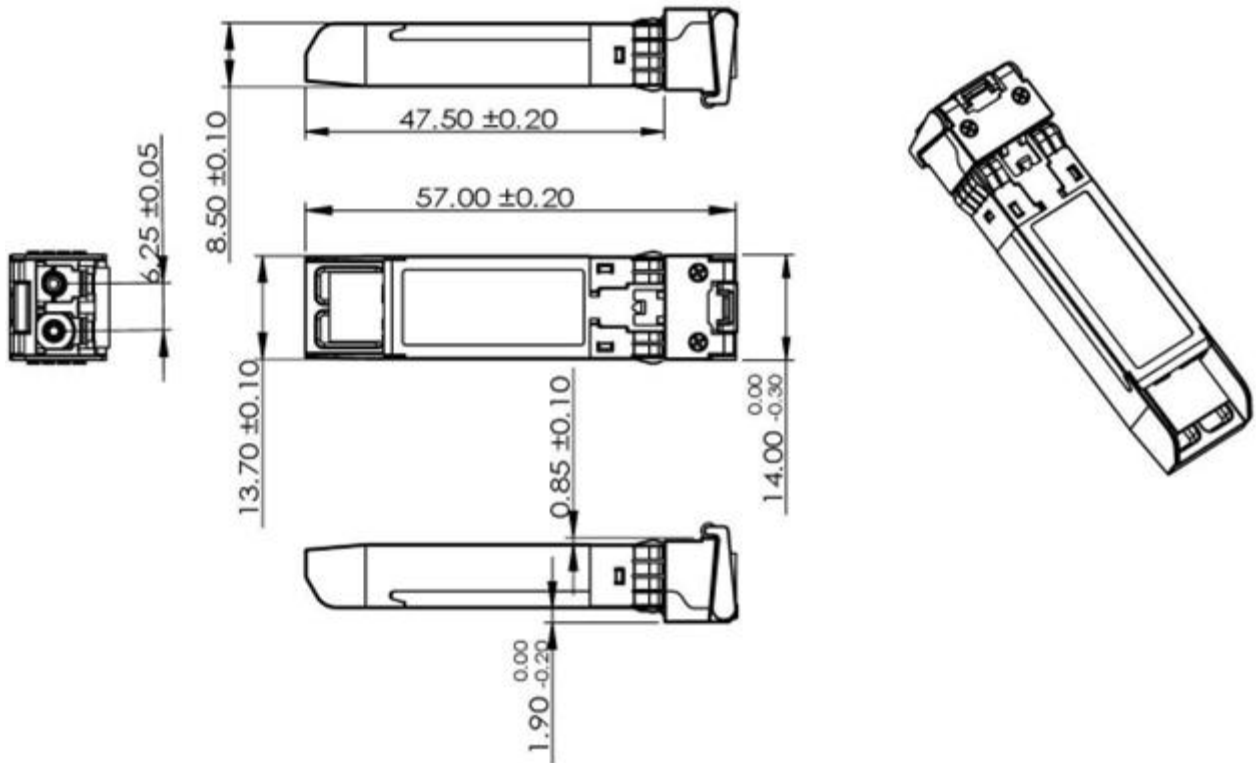


Recommended Host Board Power Supply Circuit



Recommended High-speed Interface Circuit

Mechanical Dimensions:



Ordering Information

Part No.	Data Rate	Wavelength	Optical Link budget	Recommend Distance
CWDM-SFP10G-47-80	10Gbps	1471nm	16dB	40km
CWDM-SFP10G-49-80	10Gbps	1491nm	16dB	40km
CWDM-SFP10G-51-80	10Gbps	1511nm	16dB	40km
CWDM-SFP10G-53-80	10Gbps	1531nm	16dB	40km
CWDM-SFP10G-55-80	10Gbps	1551nm	16dB	40km
CWDM-SFP10G-57-80	10Gbps	1571nm	16dB	40km
CWDM-SFP10G-59-80	10Gbps	1591nm	16dB	40km
CWDM-SFP10G-61-80	10Gbps	1611nm	16dB	40km

NOTICE:

Connlight reserves the right to make changes to this product in this specification without notice, in order to improve product performance.