

10Gbps DWDM XFP Transceiver Module, SMF, 40km

P/N: AE-XFP-D40-XX

Features

- Supports 9.95 to 11.3Gb/s bit rates
- Duplex LC connector
- Hot-pluggable XFP footprint
- Temperature-stabilized DWDM EML transmitter and PIN receiver
- 100GHz ITU Grid, C-Band
- Applicable for 40km SMF connection
- Low power consumption, <3.5W
- Digital Diagnostic Monitor Interface
- Operating Case Temperature: Standard 0~70°C, Industrial -40~85°C

Applications

- DWDM 10G SONET/SDH
- DWDM, IEEE 10GBASE-ER based Ethernet
- ITU G.709 / OTN FEC applications
- 10G Fibre Channel
- Other optical link

Description

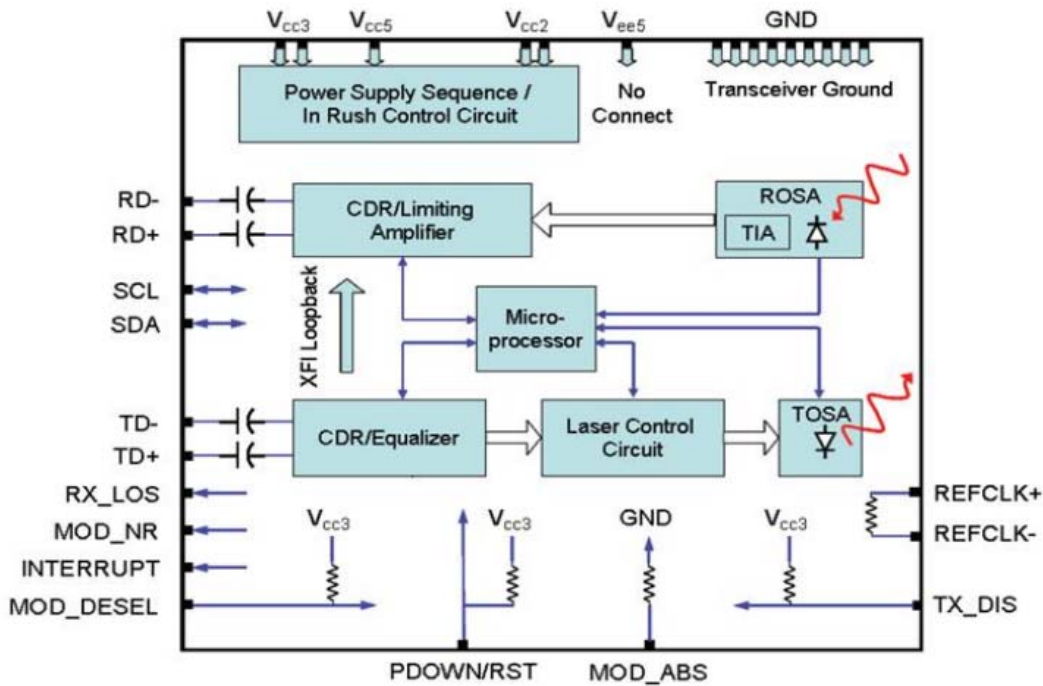
AERECH's AE-XFP-D40-XX is a high performance and cost effective 10Gb/s DWDM (Dense Wavelength-Division Multiplexing) XFP ER optical transceiver module, which provides extended high capacity, high bandwidth communication solutions for multiplexed optical networks. This DWDM XFP transceiver module is designed for 10Gigabit Ethernet links up to 40km over single-mode fiber. It features a highly performance DWDM EML transmitter and PIN receiver into a duplex LC optical connector. This DWDM XFP module operates on a nominal wavelength of 100GHz ITU Grid, C Band DWDM wavelength.

The DWDM XFP transceiver module is comply with XFP MSA specifications, 10 Gigabit Ethernet specifications (10GBASE-ER/EW per IEEE 802.3ae and 10G Fibre Channel. It's suitable for use with 10G Ethernet switches, routers, network interface cards (NICs), fiber media converters and storage networking equipment in DWDM networks usage. Additionally, the DWDM XFP module has been integrated with a digital diagnostic monitoring interface (DDMI), which providing real-time monitoring of the transceiver temperature, laser bias current, optical power, received optical power and transceiver supply voltage.

There are two versions of the series 10G XFP DWDM 40km transceiver for different applications. The Standard grade(0~70°C) is for commonly commercial application and the Industrial grade (-40~85°C) is made with robust and reliable components to meet the needs of Industrial Ethernet application under harsh environmental conditions.

The DWDM XFP 40km transceiver need use with DWDM Multiplexer/Demultiplexer (DWDM Mux/Demux) that is separately sold by Aerech.

Functional Diagram



Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%

Any stress beyond the maximum ratings can result in permanent damage. The device specifications are guaranteed only under the recommended operating conditions.

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Power Supply Current	Icc			500	mA	
Case Operating Temperature	Tc	0		70	°C	Standard
		-40		85	°C	Industrial
Data Rate	DR	9.95	10.3125	11.3	Gbps	
Maximum supported distance	L _{max}			40	km	

Optical and Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Operating Data Rate	BR	9.95		11.3	Gb/s	
Bit Error Rate	BER			10^{-12}		
Maximum Launch Power	P_{MAX}	-1		+4	dBm	1
Optical Wavelength-End Of Life	λ	X-100	X	X+100	pm	
Optical Wavelength-Beginning Of Life	λ	X-25	X	X+25	pm	
Optical Extinction Ratio	ER	8.2			dB	
Spectral Width@-20dB	$\Delta\lambda$			1	nm	
Side mode Suppression ratio	$SMSR_{min}$	30			dB	
Rise/Fall Time (20%~80%)	T_r/T_f			35	ps	
Average Launch power of OFF Transmitter	P_{OFF}			-30	dBm	
Tx Jitter	T_{xj}	Compliant with each standard requirements				
Optical Eye Mask		IEEE802.3ae				2
Receiver						
Operating Data Rate	BR	9.95		11.3	Gb/s	
Receiver Sensitivity	S_{en}			-16	dBm	2
Maximum Input Power	P_{MAX}	0			dBm	2
Optical Center Wavelength	λ_c	1260		1600	nm	
Receiver Reflectance	R_{rx}			-27	dB	

Notes:

1. Average power figures are informative only, per IEEE 802.3ae.
2. Measured with worst ER=8.2@10.3125G; BER< 10^{-12} ; $2^{31} - 1$ PRBS.

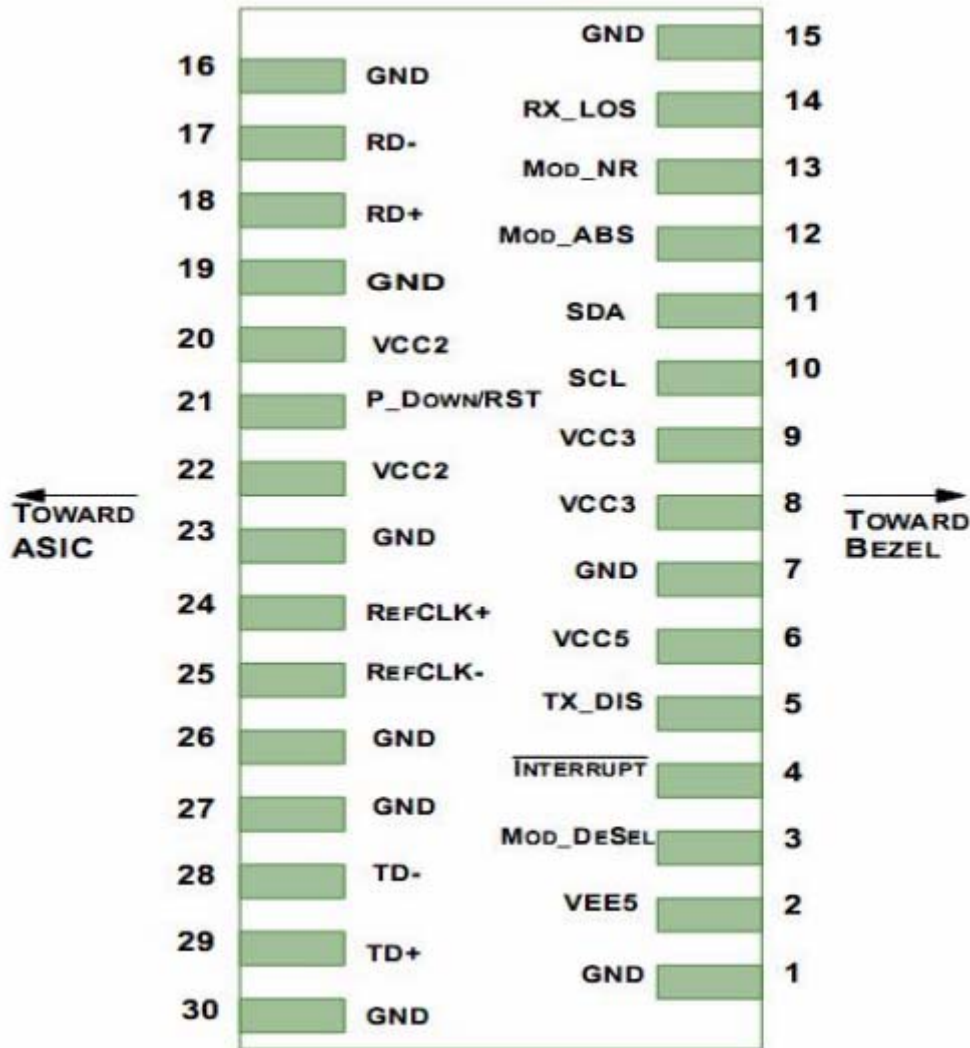
Pin Descriptions

Pin	Logic	Symbol	Name/Description	Ref
1		GND	Module Ground	1
2		VEE5	Optional –5.2 Power Supply – Not required	
3	LVTTL-I	Mod-Desel	Module De-select; When held low allows the module to, respond to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6		VCC5	+5 Power Supply – Not required	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTL-O	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module	2
13	LVTTL-O	Mod_NR	Module Not Ready;	2
14	LVTTL-O	RX_LOS	Receiver Loss of Signal indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RD-	Receiver inverted data output	
18	CML-O	RD+	Receiver non-inverted data output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply – Not required	
21	LVTTL-I	P_Down/ RST	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset	
			Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply – Not required	
23		GND	Module Ground	1
24	PECL-I	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – Not required	3
25	PECL-I	RefCLK-	Reference Clock inverted input, AC coupled on the host board – Not required	3
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TD-	Transmitter inverted data input	
29	CML-I	TD+	Transmitter non-inverted data input	
30		GND	Module Ground	1

Notes:

1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector, should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.
3. A Reference Clock input is not required.

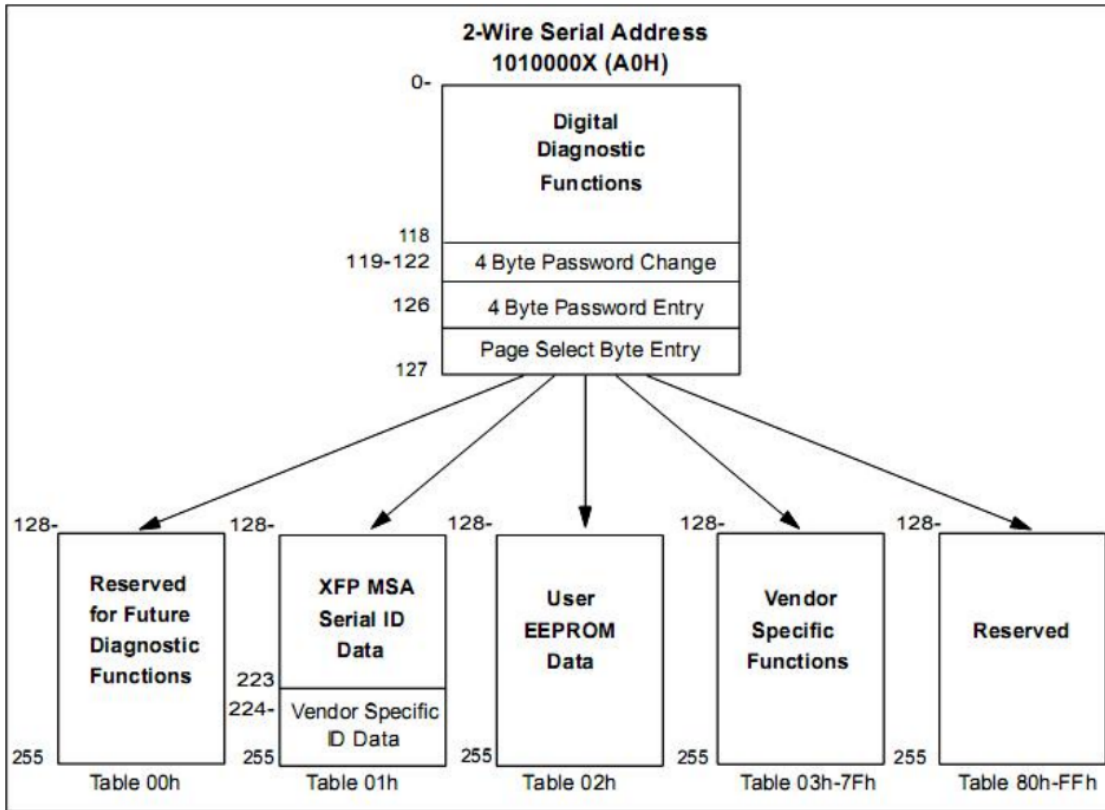
Pin Definitions



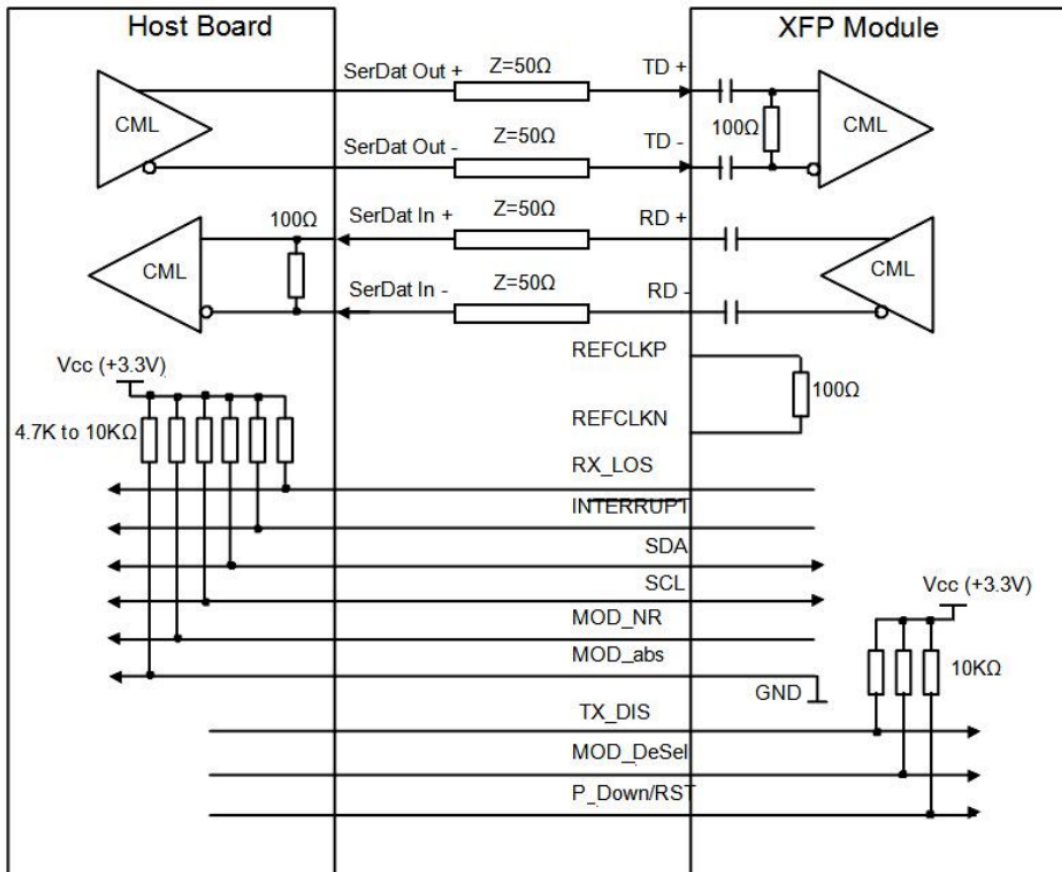
Management Interface

The 10G DWDM XFP transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA). The Module provides diagnostic information about the present operating conditions. The transceiver generates this diagnostic data by digitization of internal analog signals. Alarm/warning threshold data is written during device manufacture. Received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring all are implemented.

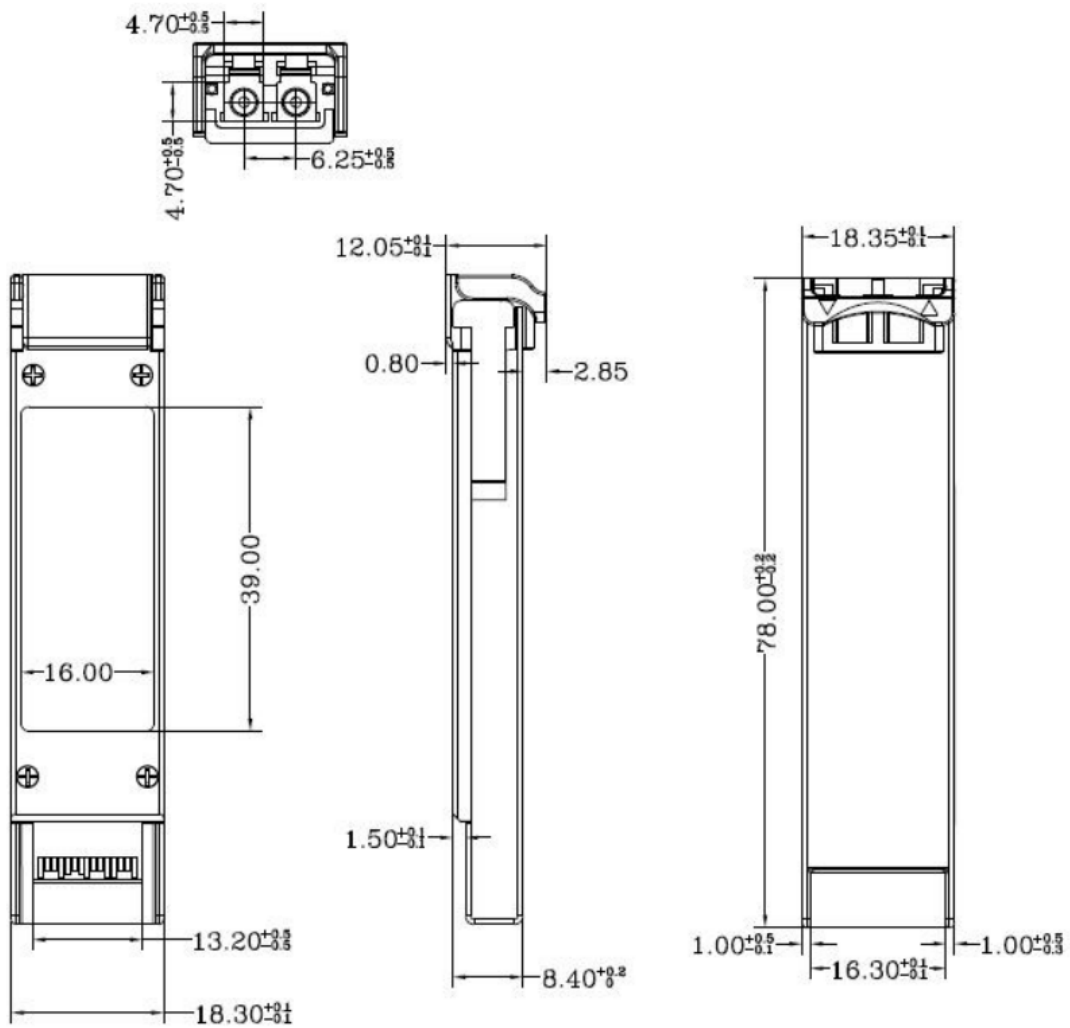
The digital diagnostic memory map specific data field defines as following.



Recommended High-speed Interface Circuit



Mechanical Specifications



Ordering information

Part Number	Description
AE-XFP-D40-XX	10G DWDM XFP Transceiver, SMF, C17-C61nm, 40km, LC, DDM, 0°C~+70°C