

PRODUCT SPECIFICATION

FLXF-BL2396-20D(I)

FLXF-BL3296-20D(I)

10Gb/s Tx1270/Rx1330nm XFP 20Km

10Gb/s Rx1330/Tx1270nm XFP 20Km

■ Features:

- ★ Supports 9.95Gb/s to 11.3Gb/s bit rates
- ★ Hot Pluggable XFP Footprint
- ★ 1270/1330nm DFB Laser and PIN photo detector
- ★ Up to 20km transmission on SMF
- ★ Power dissipation < 2W
- ★ Single Power Supply: 3.3V
- ★ No Reference Clock Required
- ★ Temperature range -40°C to 85°C
- ★ Compatible with RoHS
- ★ Built-in Digital Diagnostic Functions



■ Application

- ★ 10GBASE-LR/LW 10G Ethernet
- ★ SONET OC-192 SR-1
- ★ SDH STM I-64.1
- ★ 1200-SM-LL-L 10G Fibre Channel
- ★ 10GBASE-LR/LW with FEC
- ★ 1200-SM-LL-L 10G Fibre Channel with FEC

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T _{st}	-40	+85	°C
Supply Voltage	V _{cc}	0	+3.6	V
Operating Relative Humidity	RH	0	85	%

Operation Environment

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V _{cc}	3.14	3.3	3.47	V
Operating Case Temperature	T _c	0		+70	°C
Power Dissipation				2	W
Data Rate		9.95		11.3	Gbps

Optical Characteristics

(Ambient Operating Temperature 0°C to +70°C, V_{cc} = 3.3 V)

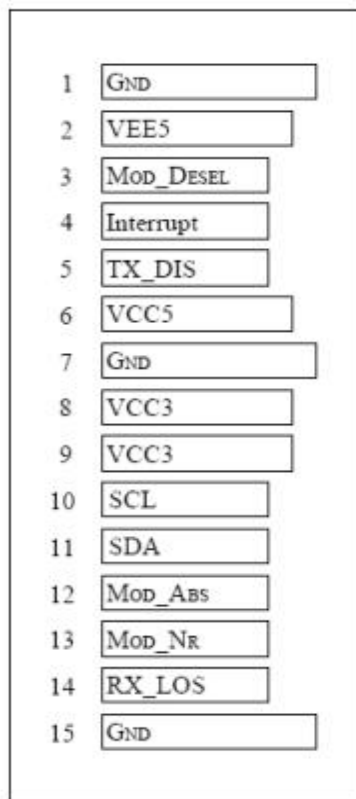
Parameter		Symbol	Min.	Typ.	Max.	Unit
Transmitter Section						
Center Wavelength	Tx 1270	λ_o	1250	1270	1290	nm
	Tx 1330		1130	1330	1530	
Spectral Width(-20dB)	Tx 1270	$\Delta\lambda$			1	nm
	Tx 1330				1	
Average Output Power	Tx 1270	P_o	-3		3	dBm
	Tx 1330		-3		3	
Extinction Ratio		E_r	3.5			dB
Side-Mode Suppression Ratio		SMSR	35			dB
Total jitter		T_j	IEEE 802.3ae			
Receiver Section						
Center Wavelength	Rx 1330	λ_o	1130	1330	1530	nm
	Rx 1270		1250	1270	1290	
Receiver Sensitivity		R_{sen}			-14	dBm
Receiver Overload		R_{ov}	-3			dBm
Return Loss			12			dB
LOS Assert		LOS_A	-30			dBm
LOS Dessert		LOS_D			-18	dBm
LOS Hysteresis			0.5		4	

■ Electrical Characteristics

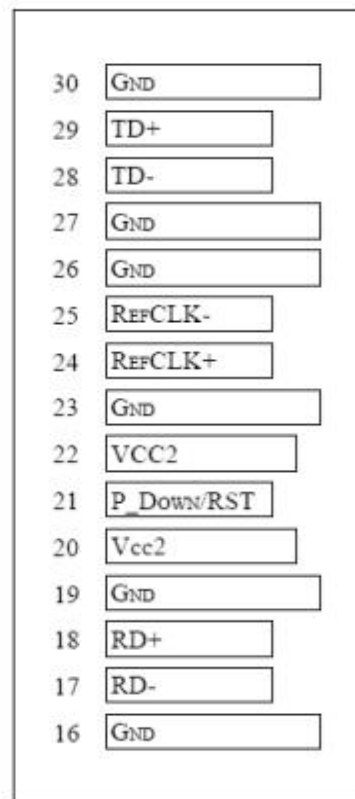
(Ambient Operating Temperature 0°C to +70°C, V_{cc} =3.3 V)

Parameter		Symbol	Min.	Typ.	Max.	Unit
Transmitter Section						
Input Differential Impedence		Z _{in}	90	100	110	Ohm
Data Input Swing Differential		V _{in}	120		850	mV
TX Disable	Disable		2.0		V _{cc}	V
	Enable		0		0.8	V
TX Fault	Assert		2.0		V _{cc}	V
	Deassert		0		0.8	V
Receiver Section						
Output differential impedance		Z _{out}		100		Ohm
Data output Swing Differential		V _{out}	340	650	850	mV
Rx_LOS	Assert		2.0		V _{cc}	V
	Deassert		0		0.8	V

■ Pin Assignment



Bottom of Board
(As view through top of board)



Top of Board

Diagram of Host Board Connector Block Pin Numbers and Names

■ Pin Description

Pin No	Name	Function Plug Seq	Notes
1	GND	Module Ground	1
2	VEE5	Optional -5.2 Power Supply – Not required	
3	Mod-Desel	Module De-select; When held low allows the module to,respond to 2-wire serial interface commands	
4	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6	VCC5	+5 Power Supply	
7	GND	Module Ground	1
8	VCC3	+3.3V Power Supply	
9	VCC3	+3.3V Power Supply	
10	SCL	Serial 2-wire interface clock	2
11	SDA	Serial 2-wire interface data line	2
12	Mod_Abs	Module Absent; Indicates module is not present. Grounded inthe module.	2
13	Mod_NR	Module Not Ready;	2
14	RX_LOS	Receiver Loss of Signal indicator	2
15	GND	Module Ground	1
16	GND	Module Ground	1
17	RD-	Receiver Inverted Data Output. CML-O	
18	RD+	Receiver Non-Inverted Data Output. CML-O	
19	GND	Module Ground	1
20	VCC2	+1.8V Power Supply (Not required).	3
21	P_DOWN/ RST	Power down; When high, requires the module to limit power consumption to 1.5W or below. 2-Wire serial interface must be functional in the low power mode. LVTTL-I Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle. LVTTL-I	
22	VCC2	+1.8V Power Supply (Not required)	
23	GND	Module Ground	1
24	REFCLK+	Reference Clock (Not required)	3
25	REFCLK-	Reference Clock (Not required)	3
26	GND	Module Ground	1
27	GND	Module Ground	1
28	TD-	Transmitter Inverted Data Input. CML-I	
29	TD+	Transmitter Non-Inverted Data Input. CML-I	

30	GND	Module Ground	1
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Notes:

- 1. Module ground pins GND are isolated from the module case and chassis ground within the module.
- 2. Open collector, Should be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.6V on the host board.
- 3. The pins are open within module.

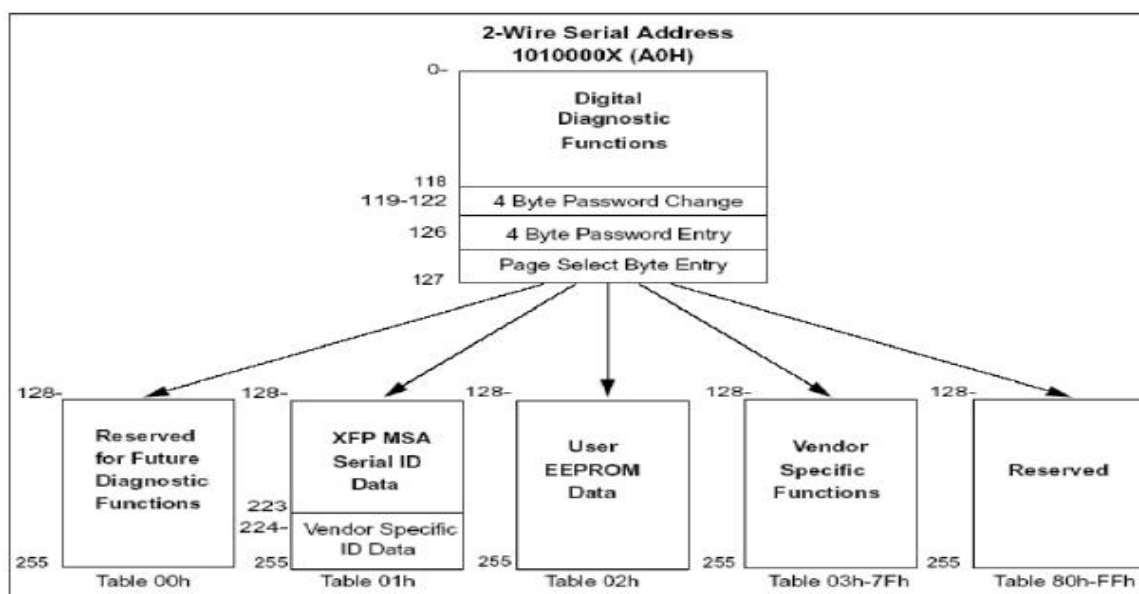
■ XFP Module EEPROM Information and Management

The Flowlink XFP transceivers provide digital diagnostic functions via a 2-wire serial interface, which allows real-time access to the following operating parameters:

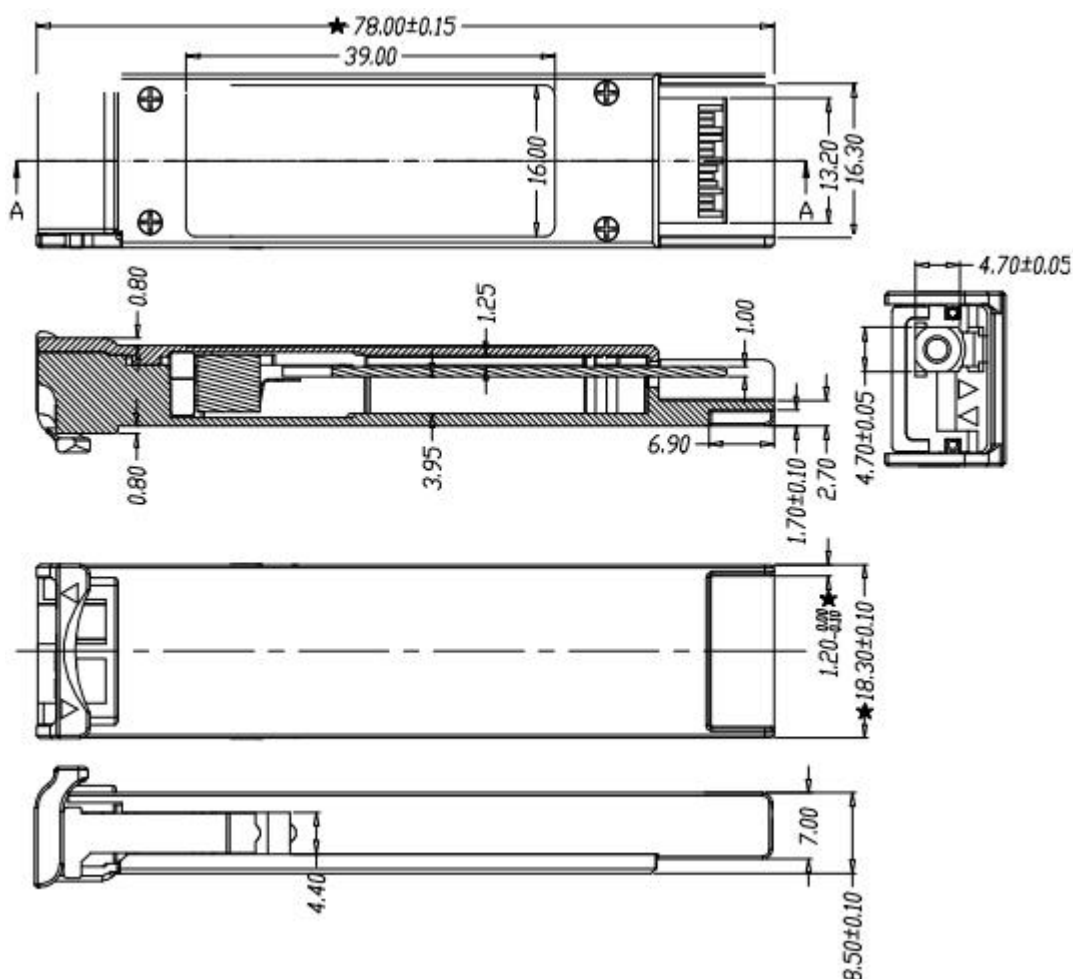
- ★ Transceiver temperature
- ★ Laser bias current
- ★ Transmitted optical power
- ★ Received optical power
- ★ Transceiver supply voltage

It also provides a sophisticated system of alarm and warning flags, which may be used to alert end-users when particular operating parameters are outside of a factory-set normal range. The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller (DDTC) inside the transceiver, which is accessed through the 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL pin) is generated by the host. The positive edge clocks data into the XFP transceiver into those segments of its memory map that are not write-protected. The negative edge clocks data from the XFP transceiver. The serial data signal (SDA pin) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially. The 2-wire serial interface provides sequential or random access to the 8 bit parameters, addressed from 000h to the maximum address of the memory.

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



■ Outline Dimensions (mm)



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