XFG10-W04 (NB2710-40/ NB3310-40)

10Gbps / 1270nm/1330nm / 1-Fiber SM LC XFP Transceiver

Description

General

The XFG10-W04 series transceivers are designed for bi-directional serial optical data communications such as IEEE 802.3ae 10GBASE-BX. These modules are designed for single mode fiber with high performance by using 1270 / 1330 nm wavelength. It is with the XFP 30-pin connector to allow hot plug capability.

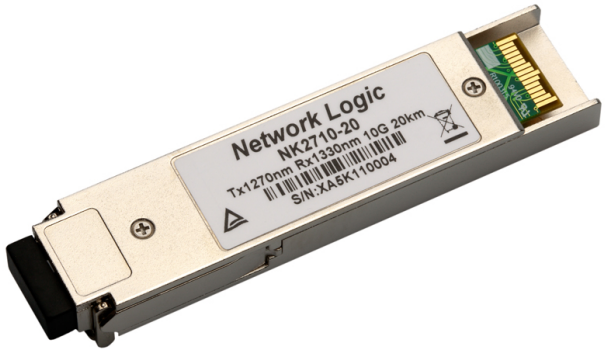
A serial EEPROM in the transceiver allows the user to access transceiver digital diagnostic monitoring via a 2-wire serial interface, which allows real-time access to the following operating parameters:

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

Transmitter / Receiver Section

The transmitter section uses a multiple quantum well 1270 or 1330 nm DFB laser. In addition, this component is also class 1 laser compliant with according to International Safety Standard IEC-825.

The receiver section uses an integrated 1330 or 1270 nm detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC.



Features

- Supports 9.95Gbps to 10.3Gbps data rates
- Bi-directional Linking Distance Up to 40 km
- Small From Factor Pluggable (XFP) MSA Compliant
- Compliant with IEEE 802.3ae 10GBASE-BX
- Type A: 1270nm DFB Transmitter/ 1330nm Receiver
- Type B: 1330nm DFB Transmitter/ 1270nm Receiver
- Built-in digital diagnostic functions (DDMI)
- Simplex LC Connector
- Single + 3.3 V power Supply
- Power Consumption < 2 W
- Temperature: 0 to 70℃ or -10 to +85℃ (Extended)

Applications

- 10GBASE-BX at 10.3Gbps
- 10GBASE-BX at 9.95Gbps

Absolute Maximum Ratings					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Storage Temperature	T_S	-40	-	85	℃
Power Supply Voltage	V_{CC}	0	-	3.6	V
Power Supply Current	I_{CC}	-	-	580	mA
General Specifications					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units**
Operating Temperature (Standard)	T_{OP}	0	-	+70	℃
Operating Temperature (Extended)	T_{OPI}	-10	-	+85	℃
Data Rate	B	9.95	-	10.3	Gbps
Supported Link Length on 9/125μm SMF	L	-	40	-	Km

Order Information

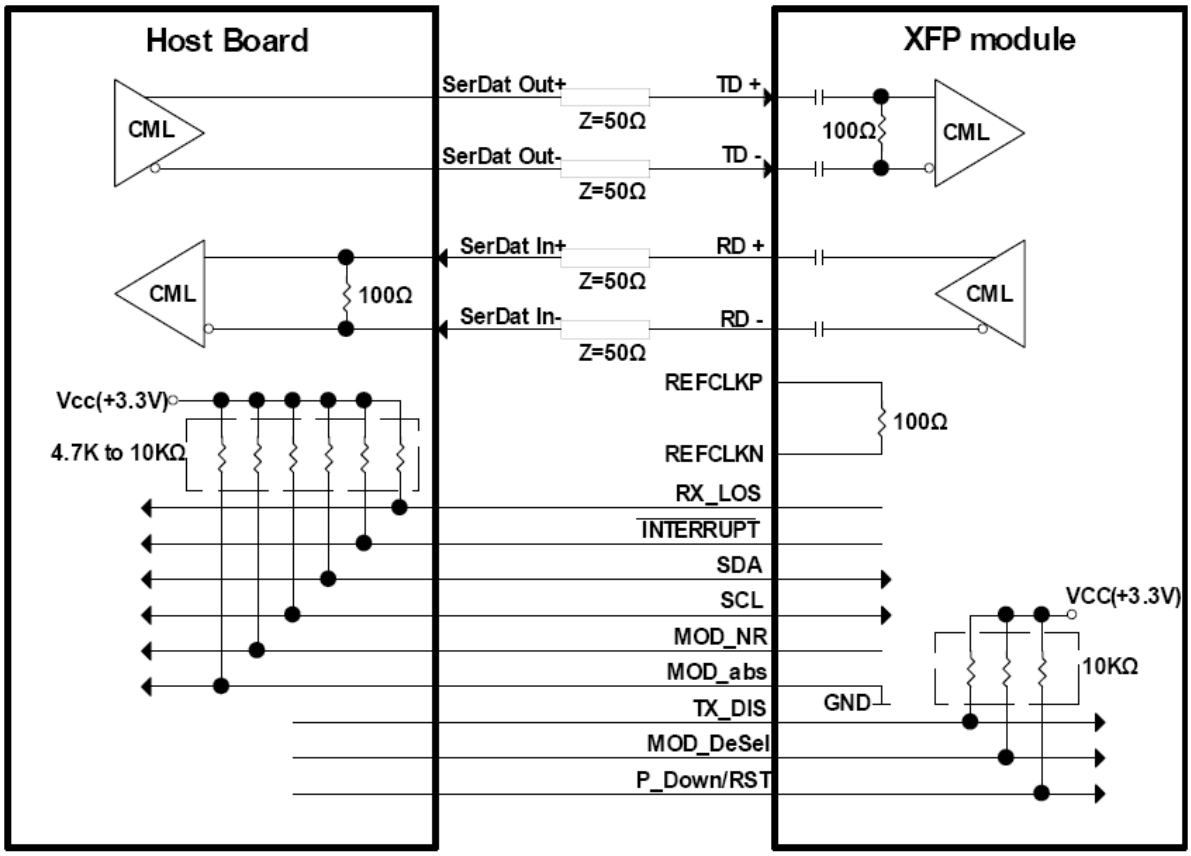
Models	P/No.	Bit Rate (Gbps)	Distance (km)	Wavelength (nm)	Fiber Single/Dual	Package	Temp	TX Power (dBm)	RX Sens. (dBm)
XFG10-W04/A	NB2710-40	10.3	40	Tx-1270/ Rx-1330	Single	LC SFP	0 to 70	2 to 7	-14
XFG10-W04/B	NB3310-40	10.3	40	Tx-1330/ Rx-1270	Single	LC SFP	0 to 70	2 to 7	-14
XFG10-W04/A-I	NB2710-40-I	10.3	40	Tx-1270/ Rx-1330	Single	LC SFP	-10 to 85	2 to 7	-14
XFG10-W04/B-I	NB3310-40-I	10.3	40	Tx-1330/ Rx-1270	Single	LC SFP	-10 to 85	2 to 7	-14

Optical and Electrical Characteristics

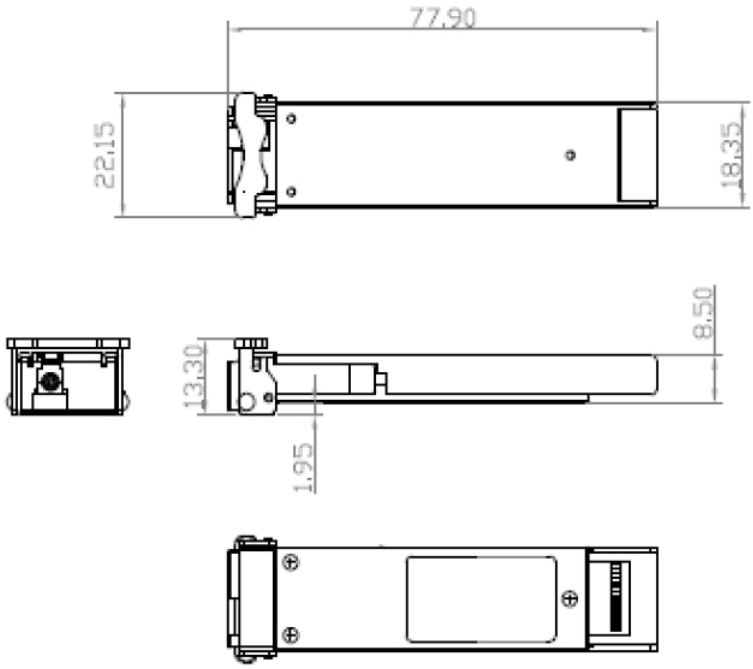
Transmitter Electrical and Optical Characteristics						
Parameter		**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Operating Data Rate			9.95	10.31		Gbps
Average Output Power		P_O	2	-	7	dBm
Center Wavelength	NB2710-20	λ_C	1260	1270	1280	nm
Center Wavelength	NB3310-20	λ_C	1320	1330	1340	nm
Spectral Width	NB2710-20	$\triangle\lambda$	-	-	1	nm
Spectral Width	NB3310-20	$\triangle\lambda$	-	-	1	nm
Extinction Ratio		ER	3.5	-	-	dB
Side Mode Suppression Ratio		SMSR	30	-	-	dB
Relative Intensity Noise		RIN	-	-	-128	dB/Hz
Average Output Power of OFF Transmitter					-30	dBm
Differential Input Impedance		R_{IN}		100		Ω
TX_DIS Assert Time		t_off			10	μs
Transmitter Disable Voltage		V_D	2.0	-	V_{CC}	V
Transmitter Enable Voltage		V_{EN}	GND	-	0.8	V

Receiver Electrical and Optical Characteristics						
Parameter		**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Sensitivity					-14	dBm
Center Wavelength	NB2710-20	λ_C	1320	1330	1340	nm
Center Wavelength	NB3310-20	λ_C	1260	1270	1280	nm
Receiver Overload		P_{MAX}	0.5	-	-	dBm
LOS – De-asserted		LOS_D	-	-	-18	dBm
LOS -- Asserted		LOS_A	-30	-	-	dBm
Differential Output Impedance		R_{OUT}		100		Ω
LOS High Voltage			2.0	-	V_{CC}	V
LOS Low Voltage			GND	-	0.8	V

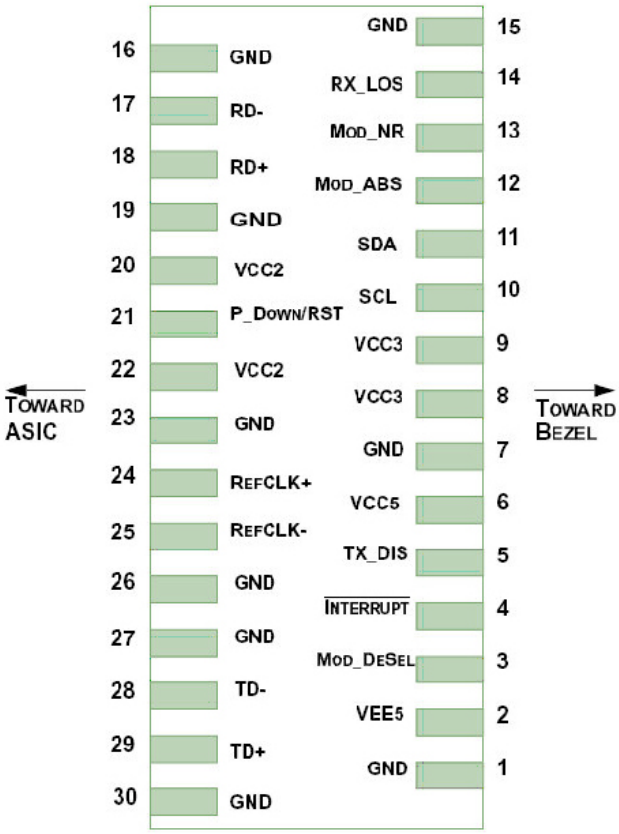
Recommended Interface Circuit



Mechanical Specification (Units in mm)



Connection Diagram



PIN Description

Pin	Logic	Symbol	Name/Description	Ref.
1		GND	Module Ground	1
2		VEE5	-5.2V Power Supply (Not required)	
3	LVTTL-I	Mod_Desel	Module De-select; When held low allows module to respond to 2-wire serial interface	
4	LVTTL-O	Interrupt	Indicates presence of an important condition which can be read over the 2wire serial interface	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Turns off transmitter laser output	
6		VCC5	+5V Power Supply (Not required)	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I/O	SCL	Serial 2-wire interface clock	2
11	LVTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTL-O	Mod_Abs	Indicates Module is not present. Grounded in the Module	2
13	LVTTL-O	Mod_NR	Module Not Ready; Indicating Module Operational Fault	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 / Reset: The falling edge initiates a complete reset of the module	
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)	
25	PECL-I	RefCLK+	Reference Clock Non-Inverted Input, AC coupled on the host board (Not required)	
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

1. Module ground pins GND are isolated from the module case and chassis ground within the module
2. Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.