Product Specification Sheet

RoHS Compliant 10Gbps XFP Optical Transceiver, 10km Reach

SHENZHEN HAILI LINK CO., LTD

www.hilinktech.com

Product Features

●Supports 9.95 to 10.5Gb/s bit rates
●Duplex LC connector
●Hot-pluggable XFP footprint
●Uncooled 1310nm DFB laser ,PIN photo-detector
●Applicable for 10km SMF connection
●Low power consumption, <1.5W
●Digital Diagnostic Monitor Interface
●No Reference Clock required
●Operating case temperature:
Commerical:0 to 70 °C
Industrial:-40 to 80°C

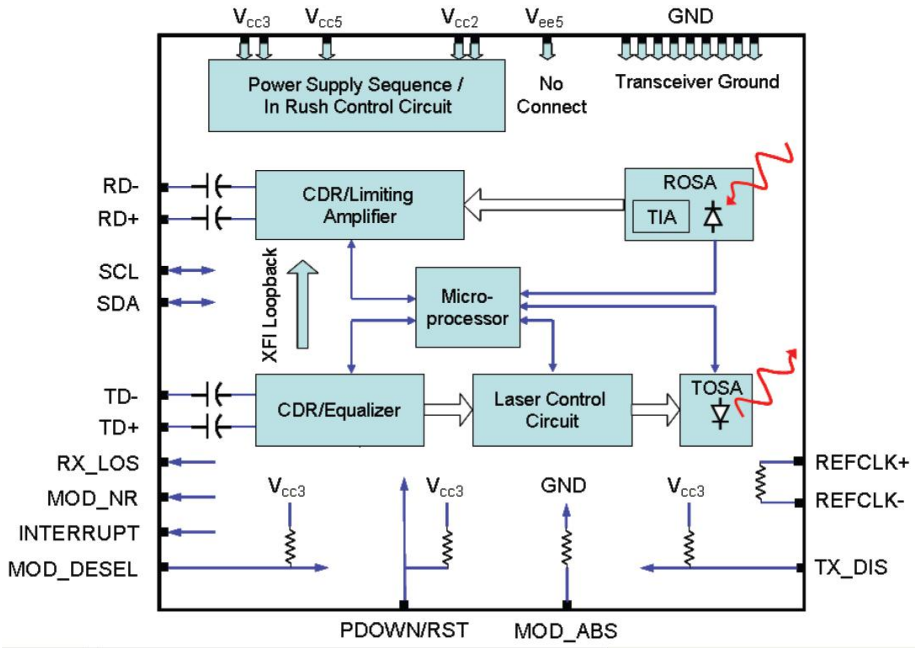
Applications

●10GBASE-LR/LW 10G Ethernet
●10G Fibre Channel
●10G CPRI
●Other optical link

Product Descriptions

Hilink HLXP311XL-C(I)D10 Small Form Factor 10Gb/s (XFP) transceivers are compliant with the current XFP Multi-Source Agreement (MSA) Specification, now available with Commerical Temperature Range of Operation(0 °C to 70°C) and Industrial Temperature Range of Operation (-40°C to +80°C). They comply with 10-Gigabit Ethernet 10GBASE-LR/LW per IEEE 802.3ae, 10G Fibre Channel and 10G CPRI request. Digital diagnostics functions are available via a 2-wire serial interface, as specified in the XFP MSA.

Functional Diagram



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Supply Voltage	Vcc	-0.5	4.0	V	
Storage Temperature	Ts	-40	85	℃	
Relative Humidity	RH	0	85	%	

Note: Stress in excess of the maximum absolute ratings can cause permanent damage to the transceiver.

General Operating Characteristics

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Data Rate	D_R	9.95		10.5	Gb/s	
Supply Voltage	Vcc	3.13	3.3	3.47	V	
Supply Current	Icc_s			450	mA	
Operating Case Temp.	Tc	0		70	℃	
	T_I	-40		80	℃	

Electrical Characteristics ($T_{OP(C)}$ = 0 to 70 ℃, $T_{OP(I)}$ = -40 to 80 ℃ V_{CC} = 3.13 to 3.47 V)

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Transmitter						
Differential data input swing	$V_{IN,PP}$	120		820	mV_{pp}	

Transmit Disable Voltage	V_D	2.0		Vcc	V	1
Transmit Enable Voltage	V_{EN}	Vee		Vee+0.8		
Input differential impedance	Rin		100		Ω	2
Transmit Disable Assert Time	T_{da}			10	us	
Receiver						
Differential data output swing	$V_{out,pp}$	340		850	mV_{pp}	3
Output rise time and fall time	T_r, T_f			38	Ps	4
LOS Fault	V_{LOS_F}	V_{CC}-0.5		Vcc	V	5
LOS Normal	V_{LOS_N}	Vee		Vee+0.5	V	5

Notes:

1. Or open circuit.
2. After internal AC coupling.
3. Into 100 ohms differential termination.
4. 20 – 80 %.
5. Loss Of Signal is open collector to be pulled up with a 4.7k~ 10k resistor to 3.15 – 3.6V.
   Logic 0,indicates normal operation; logic 1 indicates no signal detected.

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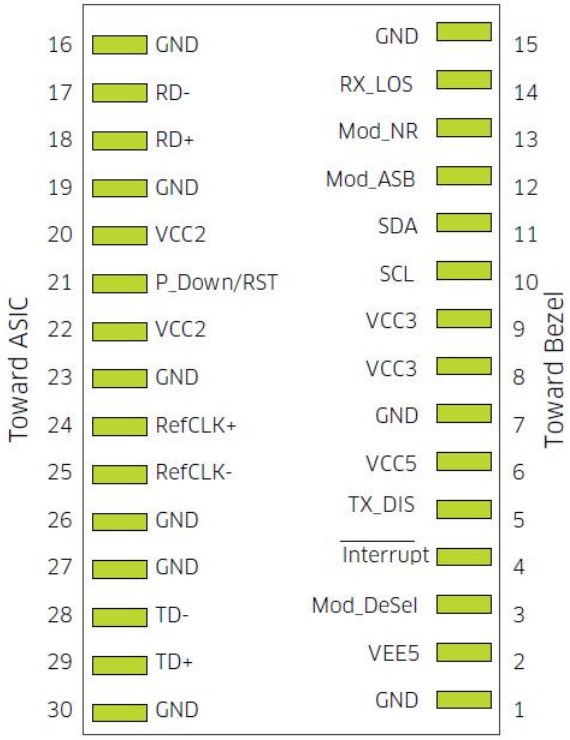
Optical Characteristics ($T_{OP(C)}$ = 0 to 70 ℃, $T_{OP(I)}$ =-40 to 80 ℃,V_{CC} = 3.13 to 3.47 V)

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Transmitter						
Operating Wavelength	λ	1260	1310	1355	nm	
Ave. output power	P_{AVE}	-6		1	dBm	1
Optical Modulation Amplitude	P_{OMA}	-4.8		0	dB	OMA
Extinction Ratio	ER	4.5	5.5		dB	
RMS spectral width	Δλ			0.45	nm	
Dispersion penalty	T_{DP}			3.2	dB	
Relative Intensity Noise	R_{IN}			-130	dB/Hz	
Tx Jitter	T_J	Compliant with IEEE 802.3ae				
Receiver						
Operating Wavelength	λ	1260		1620	nm	
Receiver Sensitivity(ER=4)	P_{SEN1}			-12.6	dBm	2
Receiver Sensitivity(ER=6)	P_{SEN2}			-14.4	dBm	2
Overload	P_{max}	0.5		-	dBm	
Receiver Reflectance	R_{rx}			-12	dB	
LOS Assert	Pa	-30			dBm	
LOS De-assert	Pd			-14	dBm	
LOS Hysteresis	Pd-Pa	0.5			dB	

Notes:

1. Average power figures are informative only, per IEEE 802.3ae.
2. Measured w at 10.3125G; BER<10^{-12}; 2^{31-1} PRBS.

Pin Definitions And Functions



PIN #	Name	Function	Name/Description	Notes
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply (Not requireed)	
3	LVTTL-I	MOD_DESEL	Module De-select; When held low allows the module to respond to 2-wire serial interface	
4	LVTTL-O	Interrupt	Interrupt; Indicates presence of an important condition which can be read via the 2-wire 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	2-Wire Serial Interface Clock	2
11	LVTTL-I/O	SDA	2-Wire Serial 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	RDN	Receiver Inverted Data Output	
18	CML-O	RDP	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, the module limits power consumption to 1.5 W or below. Serial interfaceis functional in the low power mode. Reset: the falling edge initiates a complete reset of the module including the serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply (Not required)	
23		GND	Module Ground	1

24	PECL-I	REFCLK+	Not used, internally terminated to 50ohm (100ohm diff).	3
25	PECL-I	REFCLK-	Not used, internally terminated to 50ohm (100ohm diff).	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:

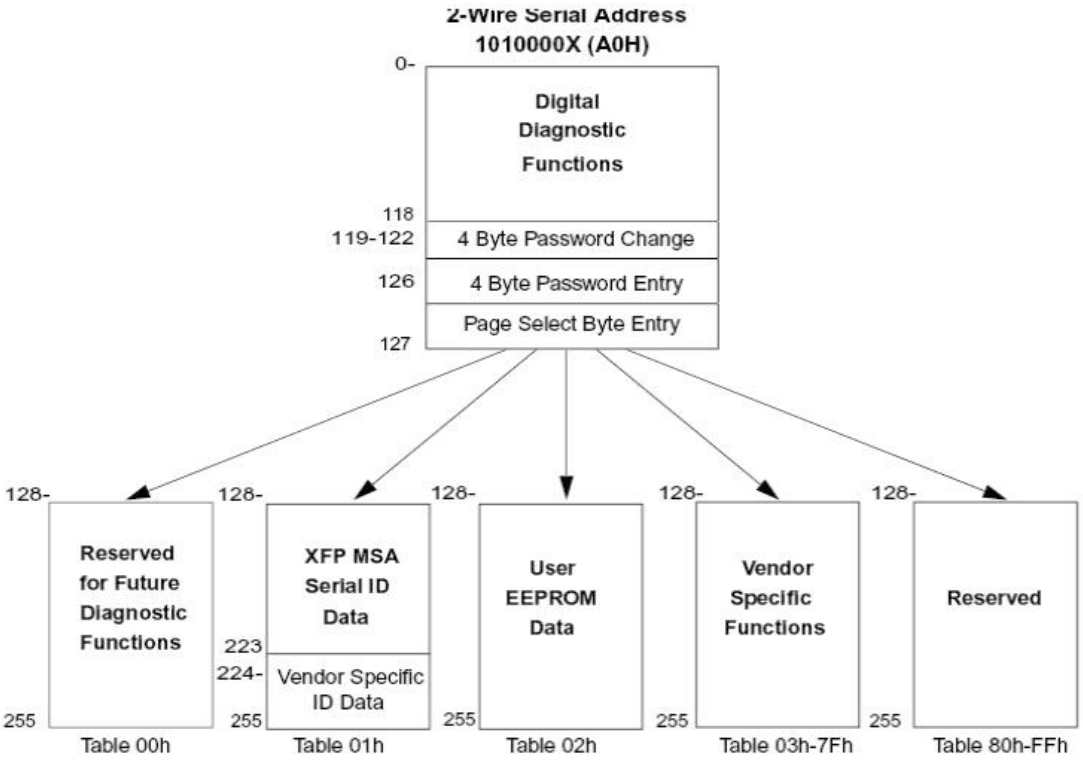
1. Module circuit ground is isolated from module chassis ground within the module.

2. Open collector; should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.

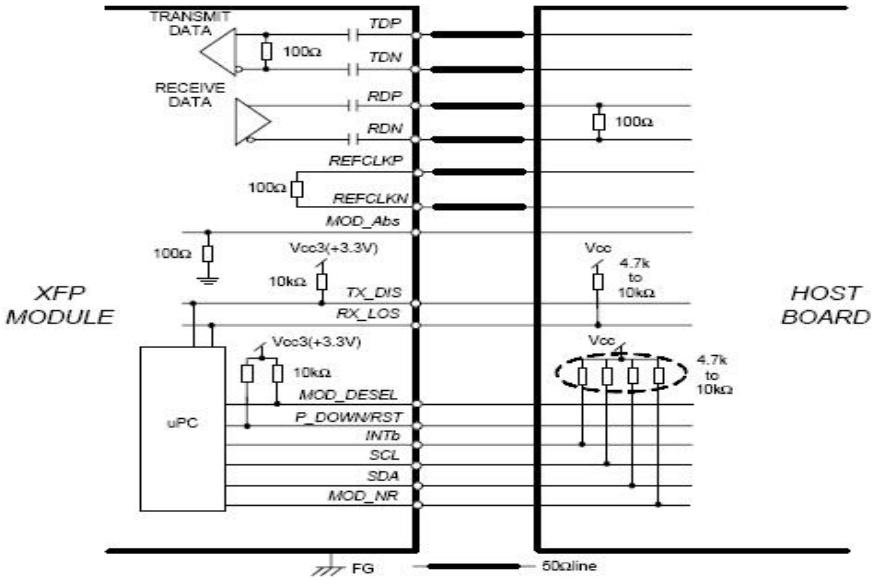
3. Reference Clock input is not required.

Management Interface

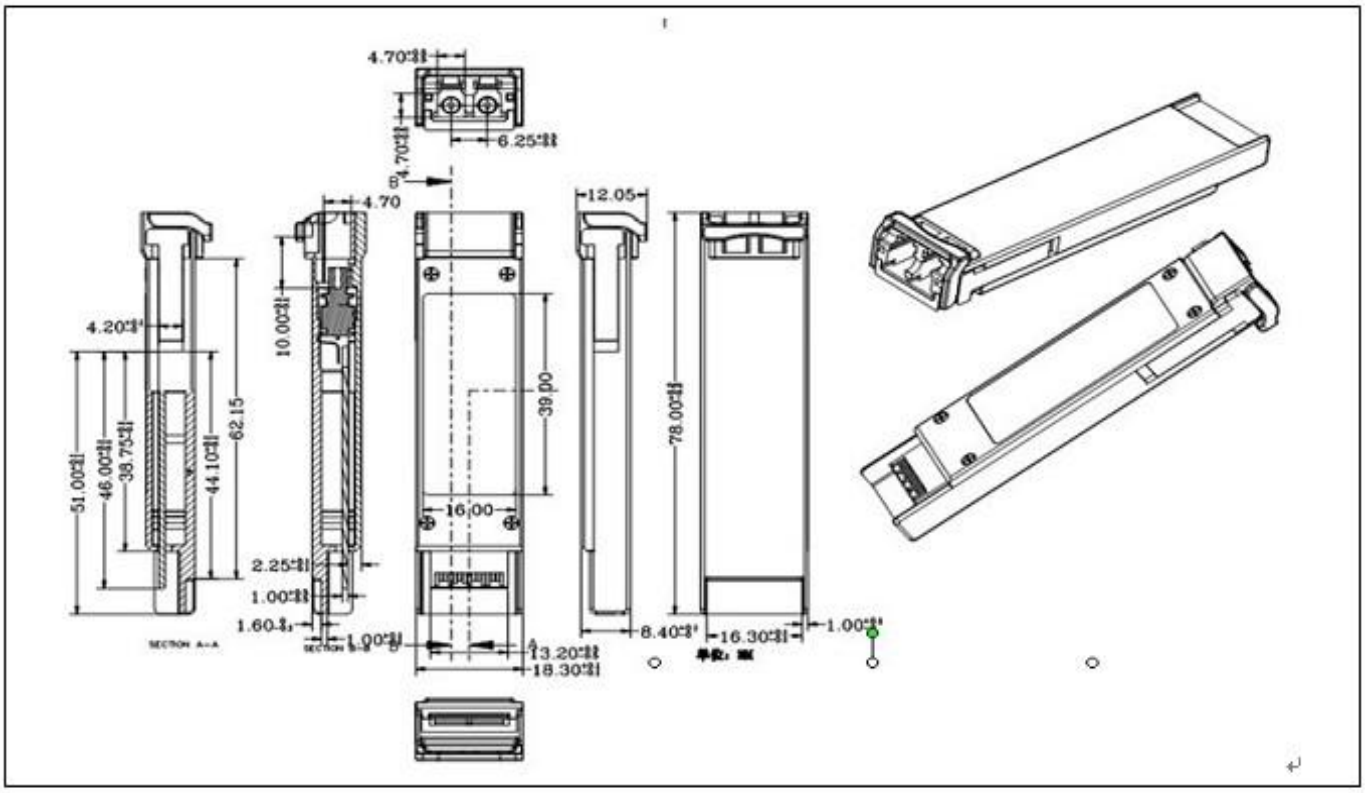
The HLXP311XL-C(I)D10,incorporates an XFP-compliant, two-wire management interface which is used for serial ID, digital diagnostics, and certain control functions. It is modeled on the SFF-8472 specification modified to accommodate a single two-wire interface address. In addition to the basic I^2C read/write functionality, the modules support packet error checking that, when enabled, allows the host system to confirm the validity of any read data. Details of the protocol and interface are explicitly described in the MSA. Please refer to the MSA for design reference.The digital diagnostic memory map specific data field defines as following:



Typical Interface Ciruit



Package Dimensions



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