

## XFP

### EXBxxX-3LCD60

#### 10Gbps XFP Bi-Directional Transceiver, 60KM Reach Tx1270/1330nm / Rx1330/1270nm

- Supports 9.95Gb/s to 10.5Gb/s bit rates
- Hot-pluggable XFP footprint
- Maximum link length of 60KM with SMF
- 1270/1330nm DFB laser Transmitter and 1330/1270nm APD Receiver
- XFP MSA package with LC connector
- No reference clock required
- Loop Back Support.
- +3.3V, +1.8V power supply
- Power dissipation <2W
- Compatible with RoHS
- Built-in digital diagnostic functions
- Temperature range 0°C to 70°C



## Applications

- 10GBASE-ER 10G Ethernet at 10.3125Gbps
- 10GBASE-EW 10G Ethernet at 9.953Gbps
- 1200-SM-LL-L 1-0G Fiber Channel at 10.51875Gbps

## Product Description

ETU-Link EXBxxX-3LCD60 is compliant with the IEEE803.3ae 10Gbase-Bx. and transmission distance up to 60km on SMF.

The transceiver module comprises a transmitter with a 1270/1330nm DFB laser transmitter and the receiver section consists of a APD photodiode integrated with a TIA Transmitter and receiver are separate within a wide temperature range of 0°C to +70°C and offers optimum heat dissipation and excellent electromagnetic shielding thus enabling high port densities for 10GbE systems.

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40	-	85	°C	
Storage Ambient Humidity	HA	5	-	95	%	
Operating Relative Humidity	RH	-	-	85	%	
Power Supply Voltage	VCC	-0.3	-	4	V	
Signal Input Voltage	VCC	Vcc-0.3	-	Vcc+0.3	V	

## Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Ambient Operating Temperature	TA	0	-	70	°C	Without air flow
Power Supply Voltage	VCC	3.14	3.3	3.47	V	
Power Supply Current	ICC	-	-	450	mA	
Data Rate	BR		10.3125		Gbps	
Transmission Distance	TD	2	-	60	km	Note (1)
Coupled fiber	Single mode fiber					ITU-T G.652

**Note:**

Measured with SMF

## Specification of Transmitter

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Average Launched Power	PO	2	-	6	dBm	
Average Launched Power(Laser Off)	POUT-OF F	-	-	-30	dBm	Note (1)
Optical Modulation Amplitude	OMA	-3	-	-	dBm	Note (1)
Center Wavelength Range	$\lambda$ C		1270/1330		nm	
Side mode suppression ratio	SMSR	30	-	-	dB	
Spectrum Bandwidth(-20dB)	$\sigma$	-	-	1	nm	
Extinction Ratio	ER	3.5	6	-	dB	Note (2)
Output Eye Mask	Compliant with FC_PI_4 REV 7.0					Note (2)

**Note:**

- 1) The optical power is launched into SMF
- 2) Measured with RPBS 2^31-1 test pattern @10.3125Gbs

## Specification of Receiver

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Optical Wavelength	$\lambda_{IN}$		1330/1270		nm	
Receiver Sensitivity in average	PIN	-	-	-20	dBm	Note (1)
Input Saturation Power (Overload)	PSAT	0.5	-	-	dBm	Note (1)
LOS Assert	PA	-30	-	-	dBm	
LOS De-Assert	PD	-	-	-25	dBm	
LOS -Hysteresis	PHys	0.5	-	4	dB	

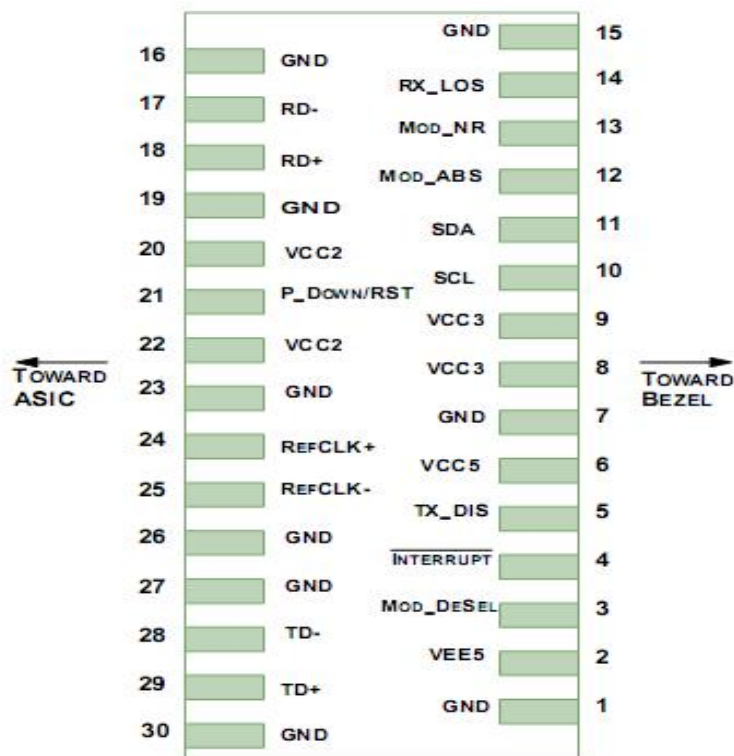
### Note:

- 1) Measured with RPBS 2^31-1 test pattern @10.3125Gbs BER= $<10^{-12}$  ER=6DB

## Electrical Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Total power supply current	Icc	-	-	350	mA	
<b>Transmitter</b>						
Differential Data Input Voltage	VDT	120	-	820	mVp-p	
Differential line input Impedance	RIN	85	100	115	Ohm	
Transmitter Fault Output-High	VFaultH	2.4	-	Vcc	V	
Transmitter Fault Output-Low	VFaultL	-0.3	-	0.8	V	
Transmitter Disable Voltage- High	VDisH	2	-	Vcc+0.3	V	
Transmitter Disable Voltage- low	VDisL	-0.3	-	0.8	V	
<b>Receiver</b>						
Differential Data Output Voltage	VDR	300	-	850	mVp-p	
Differential line Output Impedance	ROUT	80	100	120	Ohm	
Receiver LOS Pull up Resistor	RLOS	4.7	-	10	KOhm	
Data Output Rise/Fall time	tr/tf	20	-	-	ps	
LOS Output Voltage-High	VLOSH	2	-	Vcc	V	
LOS Output Voltage-Low	VLOSL	-0.3	-	0.4	V	

## Pin Description



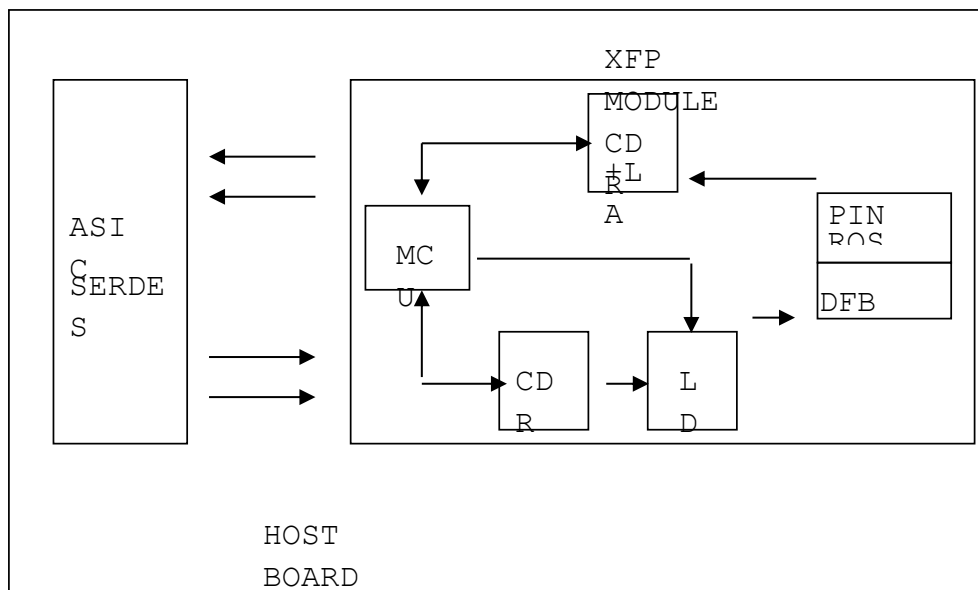
Pin	Logic	Symbol	Name/Description	Note
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply – Not required	
3	LVTTL-I	Mod-Desel	Module De-select; When held low allows the module to respond to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important 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	
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	LVTTLI/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; XGIGA defines it as a logical OR between RX_LOS and Loss of Lock in TX/RX.	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	LVTTTL-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

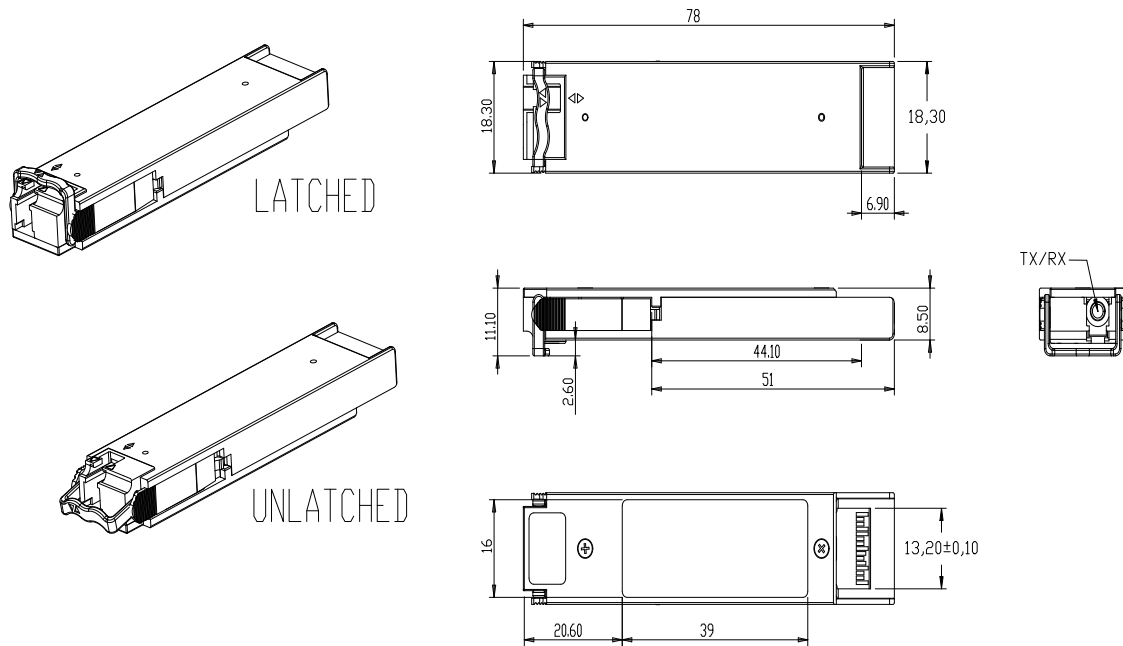
**Notes:**

- 1) Module circuit ground is isolated from module chassis ground within the module.
- 2) Open collector; should be pulled up with 4.7k – 10kohms on host board to a voltage between 3.15V and 3.6V.
- 3) A Reference Clock input is not required by the XFP-10GER. If present, it will be ignored.

## Recommended Block Circuit



## Outline Dimensions



## Regulatory Compliance

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

## Compatibility Test

In order to ensure the product compatibility, our products will be tested on the switch before shipment. Our modules can compatible with many mainstream brand switches, such as Cisco, Juniper, Extreme, Brocade, IBM, H3C, HP, Huawei, D-Link, Mikrotik, ZTE, TP-Link...

Our test equipment: VOLKTEK MEN-4110, HP 2530-8G, CRS226-24G-25+RM, Catalyst 2960G Series, Catalyst 3850 XS 10G SFP+, Catalyst 3750-E Series, HUAWEI S5700Series, H3C S3100V2 Series, Juniper-EX4200, etc.



**Cisco Catalyst 3850**



**HUAWEI S5700**



**H3C S3100V2**



**HP J9264AR**



**Juniper EX 4200**



**Alcatel 6850E-U24X**



**Mikrotik CR5226-24G-25+RM**



**Cisco Catalyst 2960G**



**Volktek MEN-4110**

## Product Production Process

# Quality Assurance

Continuous introduction of new equipment, produced by strict standards, strict quality inspection, to guarantee the high quality standard of each product.



**Standardized  
Production Line**



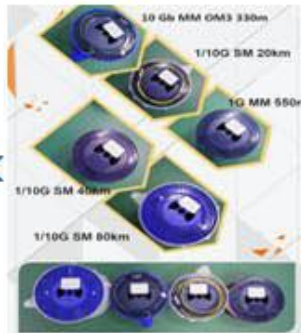
**Professional  
Welding**



**Assembling**



**Aging Testing**



**Distance Testing**



**Cleaning end face**



**Product Initial Test**



**Switch Testing**



**Product Final Test**



## Packaging

ETU-Link provides two kinds of packaging, 10pcs/Tray and individual package.



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