10GBASE-LX4-C

Enterasys® 10GBASE-LX4 Compatible TAA Compliant 10GBase-LX4 XENPAK Transceiver (MMF, 1310nm, 300m, SC)

Features:

- INF-8474 Compliance
- Duplex SC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

Applications:

- 10GBase Ethernet
- Access and Enterprise

Product Description

This Enterasys® 10GBASE-LX4 compatible XENPAK transceiver provides 10GBase-LX4 throughput up to 300m over multi-mode fiber (MMF) using a wavelength of 1310nm via a SC connector. It is guaranteed to be 100% compatible with the equivalent Enterasys® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. It is built to meet or exceed the specifications of Enterasys®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")

TAA COMPLIANT

Rev. 100225

Absolute Maximum Ratings

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Ambient Temperature Range		Tstg	-40		+85	°C	
Powered Case Temperature Range					+70	°C	
Supply Voltage APS		Vaps			1.5	V	
Supply Voltage Range @ 3.3V		Vcc3	-0.5		4.0	V	
Operating Case Temperature		Tc			+70	°C	
Power Supply Voltage		Vcc3	3.13	3.3	3.47	V	
		Vaps	1.152	1.2	1.248		
Power Dissipation		PD		3.5	4	W	
Operating Range	**Single-Mode Fiber**	Lop	2		10,000	m	
Data Rate	**10GBASE-LR Module**	DR		10.3125		Gbps	

Electrical DC Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
1.2V CMOS (1.8V CMOS Compatible) I/O DC Characteristics (PRTAD;LASI;RESET;TX_ONOFF)						
Output High Voltage	VOH	1			V	1
Output Low Voltage	VOL			0.15	V	
Input High Voltage	VIH	0.84		1.5	V	
Input Low Voltage	VIL			0.36	V	
Input Pull-Down Current	IPD	20		120	uA	
XAUI I/O DC Characteristics (TXLANE[0..3]; RXLANE[0..3])						
Differential Input Amplitude (Pk-Pk)		220		1600	mV	4
Differential Output Amplitude (Pk-Pk)		800		1600		4
MDIO I/O DC Characteristics (MDIO; MDC)						
Output Low Voltage	VOL	–0.3		0.2	V	
Output Low Current	IOL			20	mA	
Input High Voltage	VIH	0.84		1.5	V	
Input Low Voltage	VIL	–0.3		0.36	V	

Notes:

1. For 1.8V CMOS, VOH=1.65V (minimum), VOL=0.15V (maximum), VIH=1.17V (minimum), and VIL = 0.63V (maximum).
2. Rpull-up=10kΩ to 1.86V.
3. VIN=1.8V.
4. AC coupled.

Electrical AC Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
XAUI Input AC Characteristics (TXLANE[0..3])						
XAUI Baud Rate	DRin		3.125		Gbps	
Differential Input Impedance	ZIN	80	100	120	Ω	
XAUI Output AC Characteristics (RXLANE[0..3])						
XAUI Baud Rate	DRout		3.125		Gbps	
XAUI Eye Mask (Far-End)	According to IEEE 802.3ae					3
Output Differential Impedance	ZO	80	100	120	Ω	
Total Jitter	TJXAUI			0.35	UI	4
Deterministic Jitter	DJXAUI			0.37	UI	4
Power-On Reset AC Characteristics						
Power-On Reset AC Characteristics	According to XENPAK MSA Issue 3.0, 2002-9-18					
MDIO I/O AC Characteristics (MDIO; MDC)						
MDIO Data Hold Time	tHOLD	10			ns	
MDIO Data Set-Up Time	tSU	10			ns	
Delay from MDC Rising Edge to MDIO Data Change	tDELAY			300	ns	2
MDC Clock Rate	ƒMAX			2.5	MHz	1

Notes:

1. 100MHz to 2.5GHz.
2. At crossing point.
3. Per IEEE Std 802.3ae.
4. At near-end, no pre-equalization, 1UI = 320ps.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Average Launch Power	Pavg	–8.2		–0.5	dBm	
Transmitter and Dispersion Penalty	TDP			3.2	dB	
Center Wavelength Range	λ	1260	1310	1355	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	4.0	6		dB	
$RIN_{12}OMA$	RIN			–128	dB/Hz	
Eye Mask Definition	According to IEEE 802.3ae					1
Optical Return Loss Tolerance	ORLT			12	dB	
Average Launch Power of Off Transmitter	Poff			–30	dBm	
Receiver						
Stressed Receiver Sensitivity in OMA	Psen			–10.3	dBm	2
Receiver Sensitivity in OMA	Psen			–12.6	dBm	2
Power Overload	Po	0.5			dBm	
Signal Detect Assert Level	PSD			-13	dBm	
Signal Detect Hysteresis	PSD	1			dB	
Center Wavelength Range	λ	1260		1355	nm	

Notes:

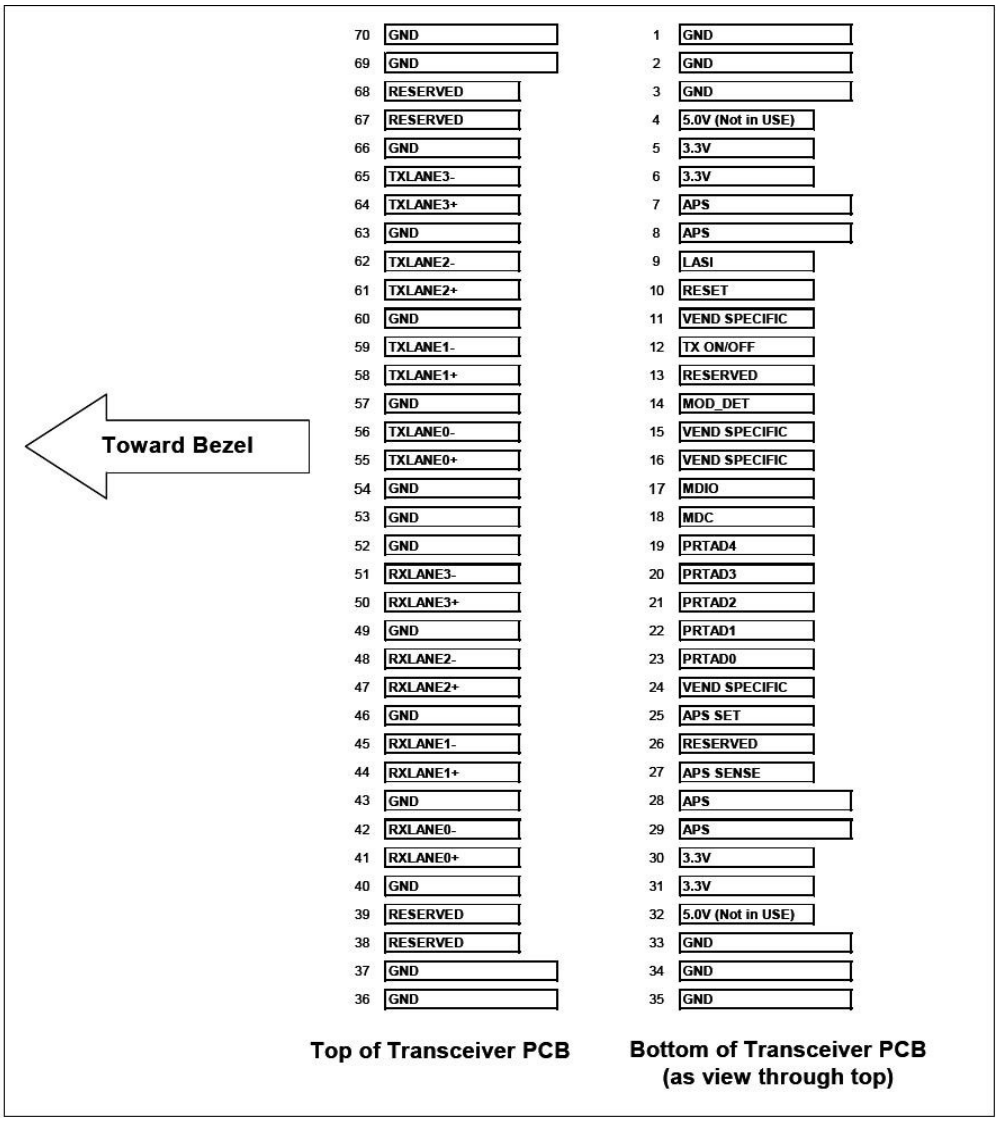
1. Conforms to IEEE triple trade-off between center wavelength, RMS spectral width, and minimum OMA.
2. Receiver sensitivity, which is defined for an ideal input signal, is informative only.

Pin Descriptions

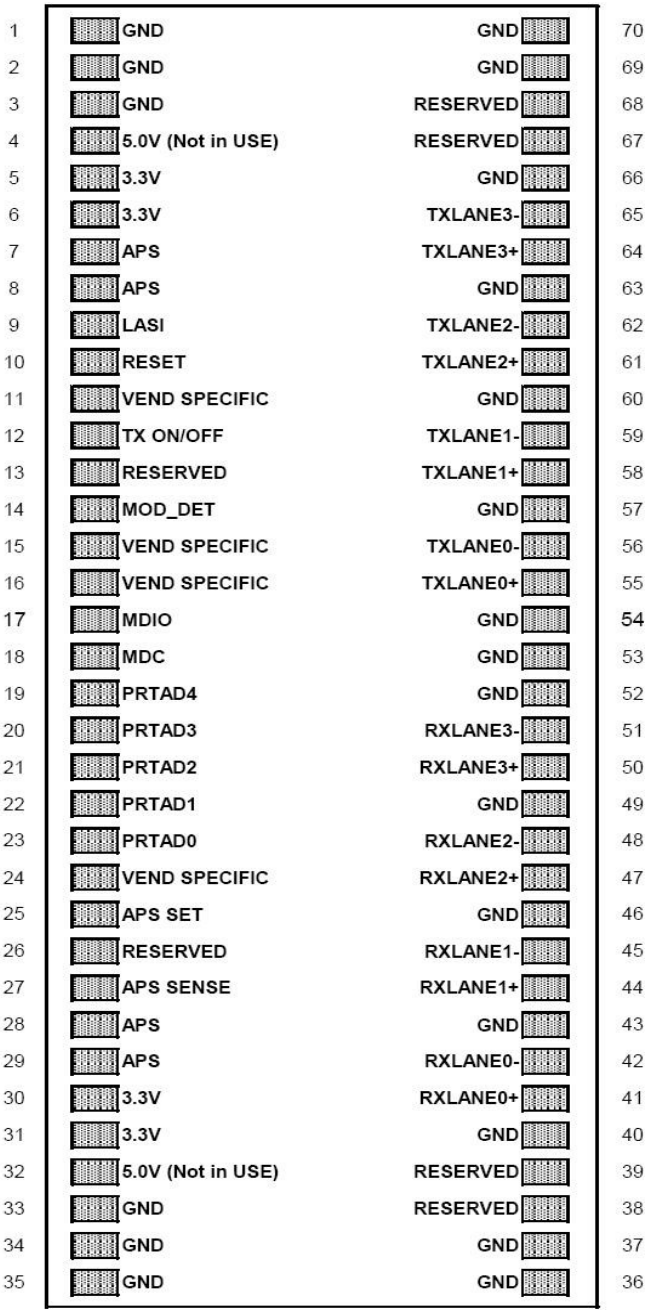
Item #	Signal Name	Level	I/O	Pin	Name/Description
1	GND			1, 2, 3, 33, 34, 35, 36, 37, 40, 43, 46, 49, 52, 53, 54, 57, 60, 63, 66, 69, 70	Ground connection for signal ground on the module.
2	APS	+1.2V		7, 8, 28, 29	Input from Adaptive Power Supply.
3	APS SENSE	+1.2V		27	APS Sense Output. Connected to the APS sense output. Connected to the APS input from APS.
4	APS SET			25	Feedback Input from APS. Connected to the GND through a 1.18kΩ resistor inside the transponder.
5	3.3V	+3.3 V DC		5, 6, 30, 31	DC Power Input,+5.0V DC, Nominal.
6	Reserved			25	Reserved for APD.
7	Reserved			13	Reserved.
8	MDIO	Open Drain	I/O	17	Management Data I/O. Requires external 10-22kΩ pull-up to the APS on the host.
9	MDC	1.2V CMOS	I	18	Management Data Clock Input.
10	PRTAD4	1.2V CMOS	I	19	Port Address Input Bit 4.
11	PRTAD3	1.2V CMOS	I	20	Port Address Input Bit 3.
12	PRTAD2	1.2V CMOS	I	21	Port Address Input Bit 2.
13	PRTAD1	1.2V CMOS	I	22	Port Address Input Bit 1.
14	PRTAD0	1.2V CMOS	I	23	Port Address Input Bit 0.
15	LASI	Open Drain	O	9	Link Alarm Status Interrupt Output. Open drain compatible output with 10 - 20kΩ pull-up on the host. Logic high = normal operation. Logic low = status flag triggered.
16	RESET	Open Drain	I	10	Reset Input. Open drain compatible input with 22kΩ pull-up to APS internal to the transponder. Logic high = normal operation. Logic low = reset.
17	Vendor-Specific			11, 15, 16, 24	Vendor-Specific Pins. Leave unconnected when not used.
18	TX ON/OFF	Open Drain	I	12	TX ON/OFF Input. Open drain compatible input with 22kΩ pull-up to APS internal to the transponder. Logic high = transmitter on. Logic low = transmitter off.
19	MOD DETECT		O	14	Pulled low inside the transponder through a 1kΩ resistor to the ground.
20	Reserved		I	67, 68, 38, 39	Reserved for future use.
21	TX LANE 3– TX LANE 3+		I	65 64	Module XAUI Input Lane 3– Module XAUI Input Lane 3+
22	TX LANE 2– TX LANE 2+		I	62 61	Module XAUI Input Lane 2– Module XAUI Input Lane 2+
23	TX LANE 1– TX LANE 1+		I	59 58	Module XAUI Input Lane 1– Module XAUI Input Lane 1+

24	TX LANE 0– TX LANE 0+		I	56 55	Module XAUI Input Lane 0– Module XAUI Input Lane 0+
25	RX LANE 0+ RX LANE 0–		O	41 42	Module XAUI Output Lane 0+ Module XAUI Output Lane 0–
26	RX LANE 1+ RX LANE 1–		O	44 45	Module XAUI Output Lane 1+ Module XAUI Output Lane 1–
27	RX LANE 2+ RX LANE 2–		O	47 48	Module XAUI Output Lane 2+ Module XAUI Output Lane 2–
28	RX LANE 3+ RX LANE 3–		O	50 51	Module XAUI Output Lane 3+ Module XAUI Output Lane 3–

Electrical Pad Layout

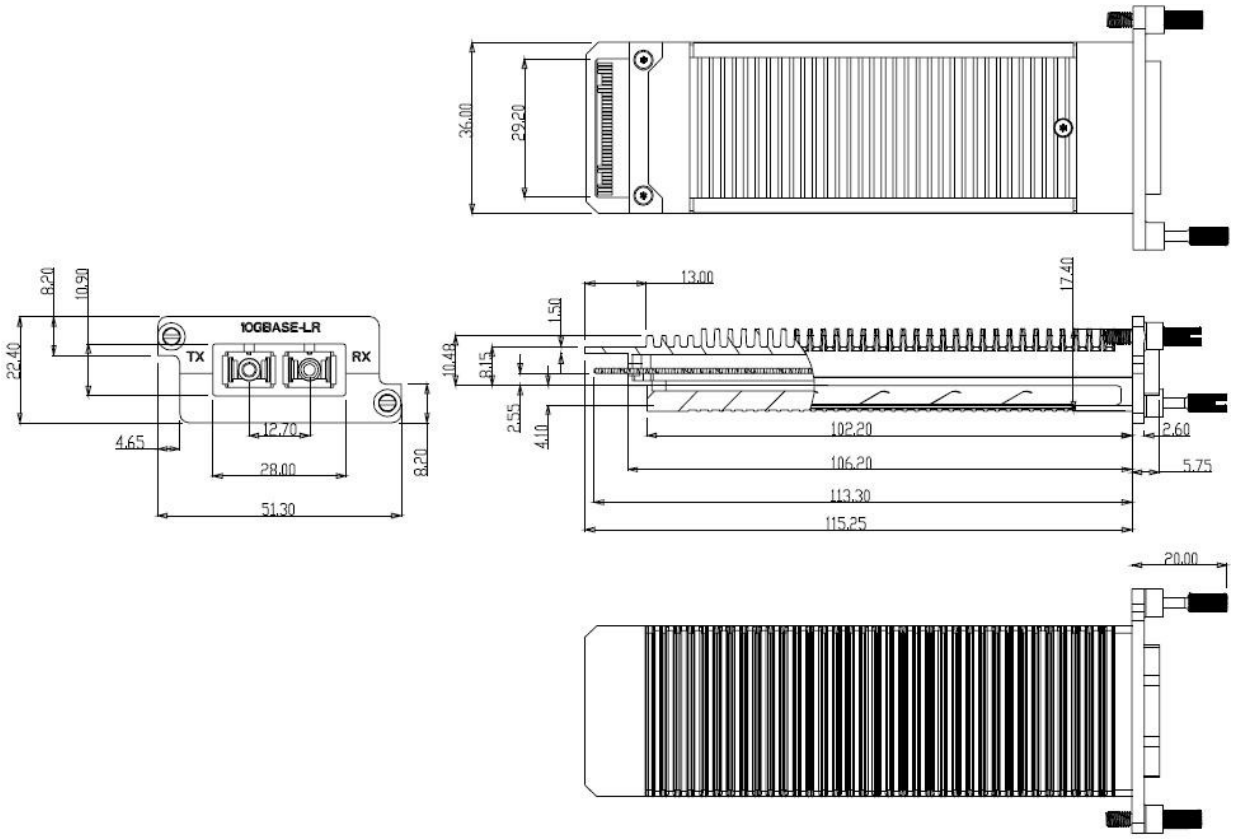


Host PCB Xenpak Pin-Out



1	GND	GND	70
2	GND	GND	69
3	GND	RESERVED	68
4	5.0V (Not in USE)	RESERVED	67
5	3.3V	GND	66
6	3.3V	TXLANE3-	65
7	APS	TXLANE3+	64
8	APS	GND	63
9	LASI	TXLANE2-	62
10	RESET	TXLANE2+	61
11	VEND SPECIFIC	GND	60
12	TX ON/OFF	TXLANE1-	59
13	RESERVED	TXLANE1+	58
14	MOD_DET	GND	57
15	VEND SPECIFIC	TXLANE0-	56
16	VEND SPECIFIC	TXLANE0+	55
17	MDIO	GND	54
18	MDC	GND	53
19	PRTAD4	GND	52
20	PRTAD3	RXLANE3-	51
21	PRTAD2	RXLANE3+	50
22	PRTAD1	GND	49
23	PRTAD0	RXLANE2-	48
24	VEND SPECIFIC	RXLANE2+	47
25	APS SET	GND	46
26	RESERVED	RXLANE1-	45
27	APS SENSE	RXLANE1+	44
28	APS	GND	43
29	APS	RXLANE0-	42
30	3.3V	RXLANE0+	41
31	3.3V	GND	40
32	5.0V (Not in USE)	RESERVED	39
33	GND	RESERVED	38
34	GND	GND	37
35	GND	GND	36

Mechanical Specifications



About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

Contact Information

ProLabs US

Email: sales@prolabs.com
Telephone: 952-852-0252

ProLabs UK

Email: salessupport@prolabs.com
Telephone: +44 1285 719 600