



RoHS compliant
CL-SFP-TX-E1/155
Fiber optic/ electrical Transceiver and Fast Ethernet to E1
MSA (Multi-Source Agreement) compliance



Description

- Ethernet Over PDH WAN link
- Single unframed E1 support
- Effective transport of broadband traffic
- HDLC Encapsulation/De-capsulation Protocol
- Hot-pluggable SFP footprint
- Low power dissipation(1.35W typical)
- Compact RJ-48c (RJ45) connector assembly
- Fully metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Single +3.3V power supply
- 100BASE-FX operation in host systems with LVPECL interface
- Ambient Operating temperature: -20°C to +75°C
- support E1 balance signal (120 ohm RJ48c TP)
- comply with ITU G.823 standard

Applications

- IP DSLAM
- Router
- Mobile/WiMax Backhaul

Ordering Information

PART NUMBER	Monitor	INPUT/OUTPUT	SIGNAL DETECT	TEMPERATURE
CL-SFP-TX-E1/155	X	AC/AC	TTL	-20°C to 75 °C

Product selection



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SFP to Host Connector Pin Out

PIN	SYMBOL	Name/ Description	Ref.
1	V _{EET}	Transmitter Ground (Common with Receiver Ground)	1
2	T _{FAULT}	Transmitter Fault. Not supported.	
3	T _{DIS}	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	V _{EEER}	Receiver Ground (Common with Transmitter Ground)	1
10	V _{EEER}	Receiver Ground (Common with Transmitter Ground)	1
11	V _{EEER}	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	V _{EEER}	Receiver Ground (Common with Transmitter Ground)	1
15	V _{CCR}	Receiver Power Supply	
16	V _{CCT}	Transmitter Power Supply	
17	V _{EET}	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	V _{EET}	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. Circuit ground is connected to chassis ground
2. PHY disabled on TDIS > 2.0V or open, enabled on TDIS < 0.8V
3. Should be pulled up with 4.7k - 10k Ohms on host board to a voltage between 2.0 V and 3.6 V.
MOD_DEF(0) pulls line low to indicate module is plugged in



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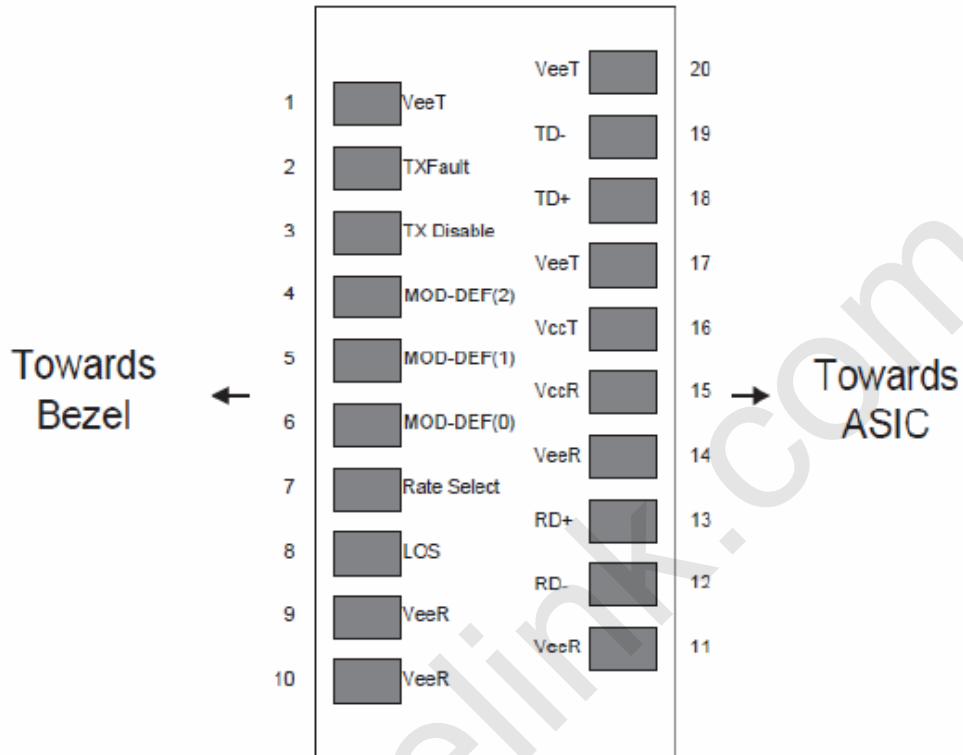
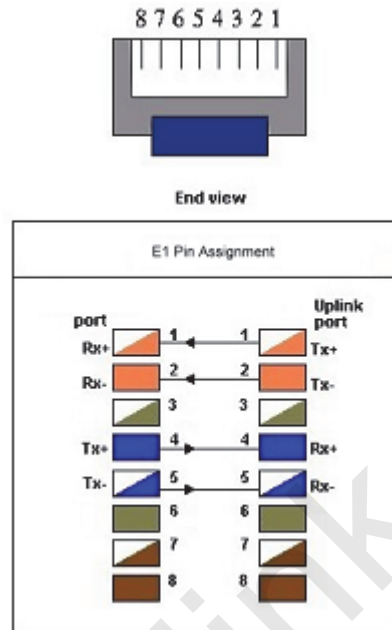


Figure 1. Diagram of host board connector block pin numbers and names



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E1 Pin Assignment / RJ48C (RJ45)



E1 RJ48C Pin Assignments

PIN	SYMBOL	Name/ Description	Ref.
1	RX+	Receiver differential +	
2	RX-	Receiver differential -	
3		No use	
4	TX+	Transmitter differential +	
5	TX-	Transmitter differential -	
6		No use	
7		No use	
8		No use	



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II. +3.3V Volt Electrical Power Interface

Models have an input voltage range of 3.3 V +/- 5%. The 4V maximum voltage is not allowed for continuous operation.

+3.3 Volt Electrical Power Interface						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
Supply Current	Is		320	375	mA	1.2W max power over full range of voltage and temperature. See caution note below
Input Voltage	Vcc	3.13	3.3	3.47	V	Referenced to GND
Maximum Voltage	Vmax			4	V	
Surge Current	Isurge			30	mA	Hot plug above steady state current. See caution note below

Caution: Power consumption and surge current are higher than the specified values in the SFP MSA

III. Low-Speed Signals

MOD_DEF(1) (SCL) and MOD_DEF(2) (SDA), are open drain CMOS signals (see section VII, "Serial Communication Protocol"). Both MOD_DEF(1) and MOD_DEF(2) must be pulled up to host_Vcc

Low-Speed Signals, Electronic Characteristics						
Parameter	Symbol	Min	Max	unit	Notes/Conditions	
SFP Output LOW	VOL	0	0.5	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector	
SFP Output HIGH	VOH	host_Vcc-0.5	host_Vcc + 0.3	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector	
SFP Input LOW	VIL	0	0.8	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector	
SFP Input HIGH	VIH	2	Vcc + 0.3	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector	

IV. High-Speed Electrical Interface

All high-speed signals are AC-coupled internally.

WAN Electrical Interface						
E1 Interface						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions



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Line Frequency	fL		2.048		MHz	
Tx Output Impedance	Zout,TX		120		Ohm	
Rx Input Impedance	Zout,RX		120		Ohm	

High-Speed Electrical Interface, Host-SFP						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
Single ended data input swing	V _{in,avg}	250		1200	mV	Single ended
Single ended data output swing	V _{out,avg}	350		800	mV	Single ended
Rise/Fall Time	T _r ,T _f		175		psec	20%-80%
Tx Input Impedance	Z _{in}		50		Ohm	Single ended
Rx Output Impedance	Z _{out}		50		Ohm	Single ended

V. General Specifications

General						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditios
Data Rate	BR			2.048	Mbits	
Cable Length	L			TBD		Short haul

Notes:

1. Clock tolerance is +/- 50 ppm
2. By default, the CL-SFP-E100 is a full duplex device in preferred master mode
3. Automatic crossover detection is enabled. External crossover cable is not required
4. 100 BASE-FX operation with the NRZI signals across the LVPECL interface



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VI. Environmental Specifications

VII. Serial

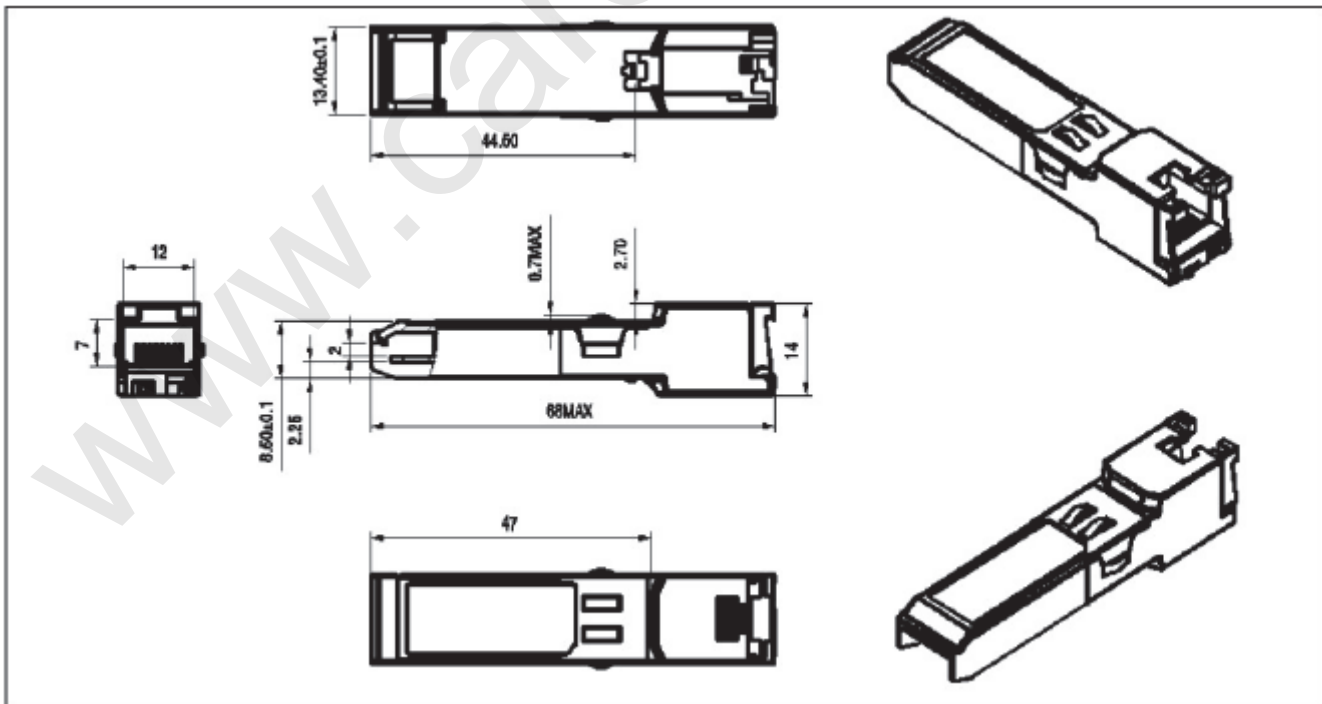
Environmental Specifications						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
Operating Temperature	Top	-20		75	°C	Case temperature
Storage Temperature	Tsto	-40		85	°C	Ambient temperature

VII. Serial Communication Protocol

Not support in this module in current stage.

Serial Bus Timing Requirements						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
I ² C Clock Rate		0		100,000	Hz	

VIII. Mechanical Specifications (Unit: mm)





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Eye Safety Mark

<p>The SFP series multimode transceiver is a class 1 laser product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements the transceiver shall be operated within the Absolute Maximum Ratings.</p> <p><u>Caution</u> All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.</p>	<p><u>Required Mark</u></p> <div data-bbox="794 501 1166 618" style="border: 1px solid black; padding: 5px; text-align: center;"><p>Class 1 Laser Product Complies with</p></div>
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Note : All information contained in this document is subject to change without notice.