

**CL-SFP-E100**

**Fiber optic/ electrical Transceiver and Fast Ethernet to E1  
MSA ( Multi-Source Agreement) compliance**



**Features:**

- 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)

**Application**

- IP DSLAM
- Router
- Mobile/WiMax Backhaul

**Ordering Information**

PART NUMBER	INPUT/OUTPUT	MONITOR	VOLTAGE	TEMPERATURE
CL-SFP-E100	AC/AC	X	3.3V	-20°C to 75 °C



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SFP to Host Connector Pin Out

PIN	SYMBOL	Name/ Description	Ref.
1	V <sub>EET</sub>	Transmitter Ground (Common with Receiver Ground)	1
2	T <sub>FAULT</sub>	Transmitter Fault. Not supported.	
3	T <sub>DIS</sub>	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 <sub>EER</sub>	Receiver Ground (Common with Transmitter Ground)	1
10	V <sub>EER</sub>	Receiver Ground (Common with Transmitter Ground)	1
11	V <sub>EER</sub>	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 <sub>EER</sub>	Receiver Ground (Common with Transmitter Ground)	1
15	V <sub>CCR</sub>	Receiver Power Supply	
16	V <sub>CCT</sub>	Transmitter Power Supply	
17	V <sub>EET</sub>	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 <sub>EET</sub>	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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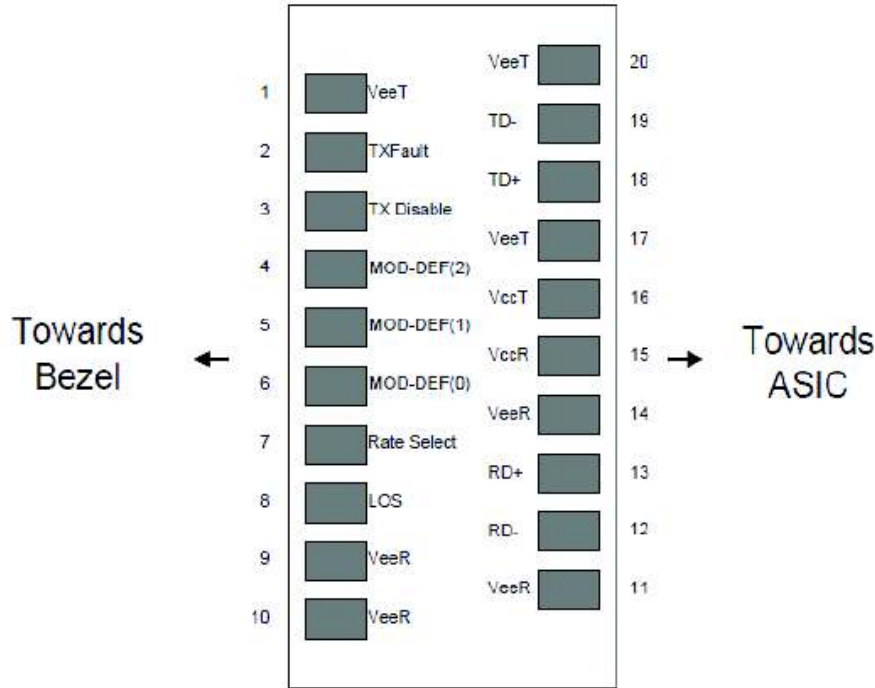
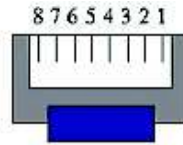


Figure 1. Diagram of host board connector block pin numbers and names

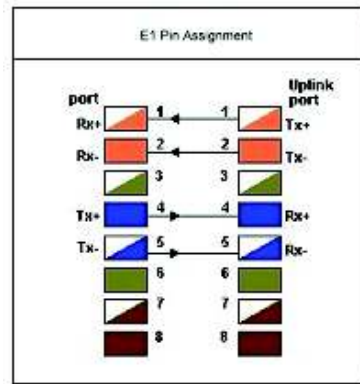


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E1 Pin Assignment / RJ48C (RJ45)



End view



CL\_SFP\_E100 side

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.

<b>+3.3 Volt Electrical Power Interface</b>						
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

<b>Low-Speed Signals, Electronic Characteristics</b>						
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	



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**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
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 <sub>insing</sub>	250		1200	mV	Single ended
Single ended data output swing	V <sub>outsing</sub>	350		800	mV	Single ended
Rise/Fall Time	T <sub>r</sub> , T <sub>f</sub>		175		psec	20%-80%
Tx Input Impedance	Z <sub>in</sub>		50		Ohm	Single ended
Rx Output Impedance	Z <sub>out</sub>		50		Ohm	Single ended



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**V. General Specifications**

General						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
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

**VI. Environmental Specifications**

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 <sup>2</sup> C Clock Rate		0		100,000	Hz	

