PRODUCT SPECIFICATION

Part No.:	AC-XP-8G10-01	
Description:	10G SFP+ Transceiver, MMF 850nm 300m	
Release Date	**Rev.**	**Revision Change Description**
2017/06/07	**A0**	New Release
2020/12/28	**A1**	Template Update
2021/03/02	**A2**	Update the Industrial Temp.

Features

- ✧ Up to 10.3125 Gbps data rate
- ✧ 850nm VCSEL Laser and PIN photo detector
- ✧ Duplex LC receptacle optical interface compliant
- ✧ Single +3.3V power supply
- ✧ Hot-pluggable
- ✧ AC coupling of LVPECL signals
- ✧ International Class1 laser safety certified
- ✧ Operating temperature range:
- ✧ Commercial: 0℃~+70℃,Industrial -40~+85 ℃
- ✧ RoHS Compliant
- ✧ DDMI function available with internally calibrated mode

Application

- ✧ 10G BASE-SR
- ✧ Fiber Channel

Standard

- ✧ Compliant with SFP+ MSA
- ✧ Compliant with SFF-8472
- ✧ Compatible with IEEE802.3ae 10GBASE-SR
- ✧ 10GFC

Add: 2-4# Building, Tongfuyu Industrial Zone, Ai qun Road, Shiyan street, Baoan District, Shen zhen, China.
Tel: +86-755-8891 4745 Fax: +86-755-2946 6959 E-mail: sales@lonte.com.cn www. lonte.com.cn

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Specification

Absolute Maximum Ratings				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Storage temperature	TS	-40	85	℃
Power Supply Voltage	Vcc	-0.5	+4	V
Relative Humidity	RH	5	95	%

Recommended Operating Conditions					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Operating Case Temperature (Commercial)	Tc	0		70	℃
Operating Case Temperature (Industrial)	Tc	-40		85	℃
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Supply Current	Icc			300	mA
Data Rate		-	10.3125	-	Gbps
Fiber Length 50μm core MMF		-	-	300	m

Electrical Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Transmitter differential input voltage		180		700	mV	
Receiver differential output Voltage		300		850	mV	
Transmit Fault (TX_Fault)	Voh	2		Vcc	V	LVTTL
	Vol	0		0.8	V	LVTTL
Loss of Signal (LOS)	Voh	2		Vcc	V	LVTTL
	Vol	0		0.8	V	LVTTL
TX Disable	Vih	2		Vcc	V	LVTTL
	Vil	0		0.8	V	LVTTL

Optical transmitter Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Launched Power (avg.)	Pout	-6		-1	dBm	
Operating Wavelength Range	λc	840	850	860	nm	
Spectral Width (RMS)	Δλ			0.45	nm	
Extinction Ratio	ER	3			dB	2
Relative Intensity Noise	RIN			-128	dB/Hz	

Optical Rise/Fall Time	Tris/Tfall		50		PS	3
Optical Tx Output disable	P_{dis}			-45	dBm	
Output Eye Diagram	Complies with IEEE802.3z eye masks when filtered					

Optical receiver Characteristics							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Receiver Sensitivity		S			-10	dBm	4
Wavelength Range		λc	840		860	nm	
Optical Power Input Overload		P_{in-max}	-3			dBm	4
LOS	Optical De-assert	Pd			-15	dBm	4
	Optical Assert	Pa	-25				
LOS hysteresis			0.5		5	dB	5

Notes:

1) The supply current is SFP+ module's working current.
2) For the measurements, the device was driven with10Gbps data pattern with 2^{31}-1 PRBS payload.
3) Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels
4) Measured with a PRBS 2^{31}-1 test pattern, @10Gbps, ER=4dB, BER<10^{-12}
5) The LOS Hysteresis minimizes 'chatter' on the output line. In principle, Hysteresis alone does not guarantee chatter-free operation.

Digital Diagnostic Monitoring Information

Parameter	Accuracy	Calibration	Range
Temperature	±3°C	internal	0~70
Voltage	±3%	internal	Vcc=3.3V±5%
Bias Current	±10%	internal	Specified by normal value
TX Power	±3dB	internal	-6~-1dBm
RX Power	±3dB	internal	-10~-1dBm

Pin Descriptions

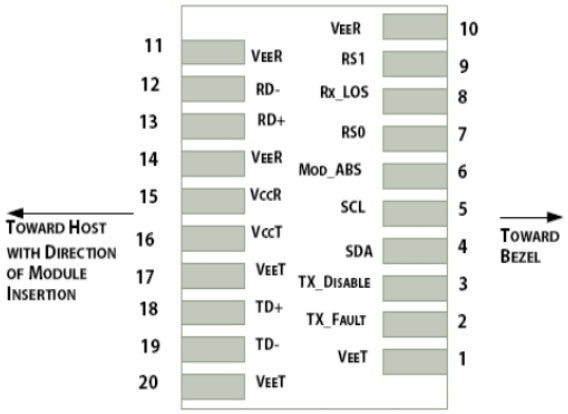


Figure 1: SFP+ Pad assignment Top View

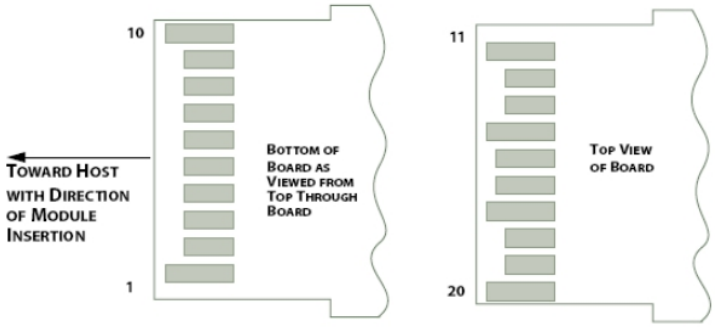


Figure 2: SFP+ Module Contact Assignment

Pin Assignment

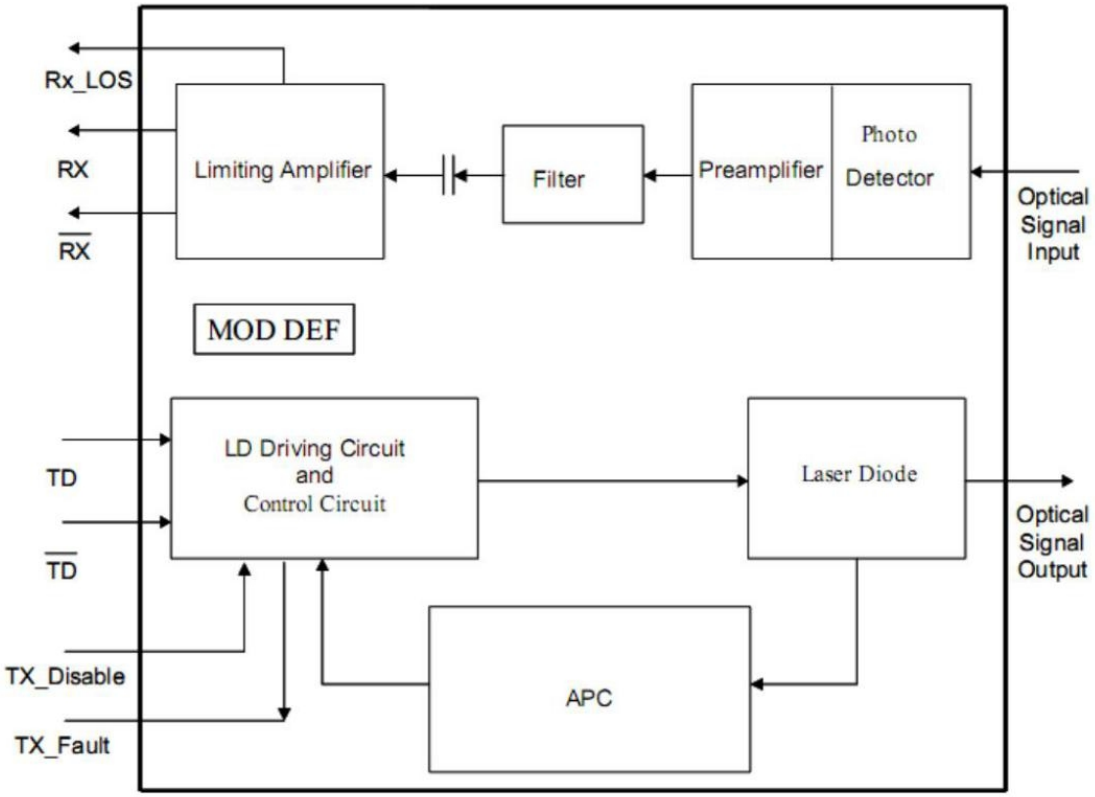
Pin	Name	Function/Description	Engage-ment	Order
1	VeeT	Transmitter Ground (Common with Receiver Ground)	1st	1
2	TX_Fault	Transmitter Fault, Low: normal ; High: abnormal	3rd	2
3	TX_Disable	Transmitter Disable. High: Transmitter off; Low: Transmitter on	3rd	3
4	SDA	2-Wire Serial Interface Data Line(Same as MOD-DEF2 in INF-8074i)	3rd	4
5	SCL	2-Wire Serial Interface Data Line(Same as MOD-DEF2 in INF-8074i)	3rd	4
6	Mod_ABS	Module Absent, Connect to VeeT or VeeR in Module	3rd	5
7	RS0	Rate Select 0, optionally controls SFP+ module receiver	3rd	6
8	RX_LOS	Receiver Loss of Signal indication. High: loss of signal; Low: signal detected	3rd	7
9	RS1	Rate Select 1, optionally controls SFP+ module transmitter	3rd	8
10	VeeR	Receiver Ground	1st	1
11	VeeR	Receiver Ground	1st	1
12	RD-	Receiver Inverted DATA out. AC Coupled. CML-O	3rd	9
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O	3rd	9
14	VeeR	Receiver Ground	1st	1
15	VccR	Receiver Power Supply	2nd	10
16	VccT	Transmitter Power Supply	2nd	10
17	VeeT	Transmitter Ground	1st	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled. CML-I	3rd	11
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-I	3rd	11
20	VeeT	Transmitter Ground	1st	1

Notes:

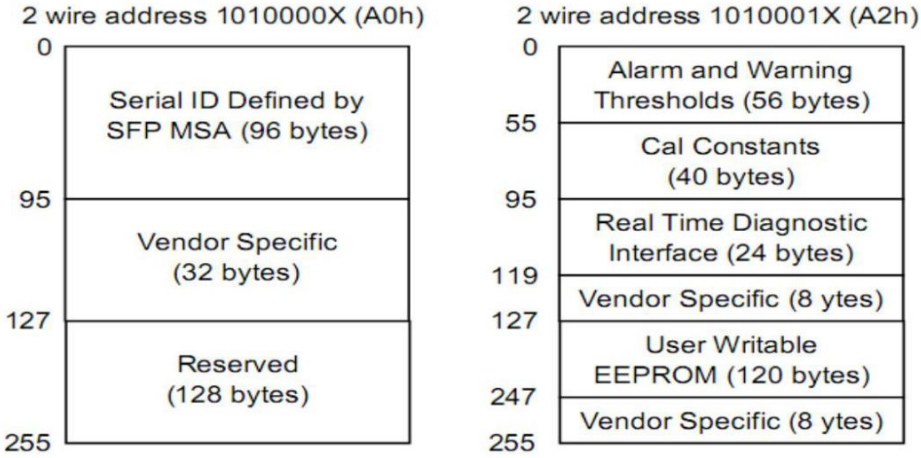
1) The module signal ground contacts.

2) This pin is an open drain/collector and should be pulled up to Vcc-host in the host with a 4.7k~10k Ohm resistor.
3) This pin should be pulled up to Vcct with a 4.7k~10k Ohm resistor in modules.
4) SDA&SCL(IIC) are need pull up 4.7k~10k Ohm resistor on host board.
5) Mod_ABS is connected to VeeT or VeeR in the SFP+ module.
6) Rate Select 0,Optionally controls SFP+ module receiver , High:RX input signaling rate＞4.25GBd and Low: RX input signaling rate≤4.25GBd.
7) Module RX_Los of signal indication , need pull up 4.7k~10k Ohm resistor on host board.
8) Rate Select 1,Optionally controls SFP+ module transmitter, High: Tx input signaling rate＞4.25GBd and Low : Tx input signaling rate≤4.25GBd.
9) RD -/+: These are the differential receiver outputs. They are CML AC-coupled with 100 Ohm terminal resistor matching internal.
10) VccR and VccT are the receiver and transmitter power supplies.
11) TD-/+: These are the differential transmitter inputs. They are CML AC-coupled with 100 Ohm terminal resistor matching internal.

Block Diagram

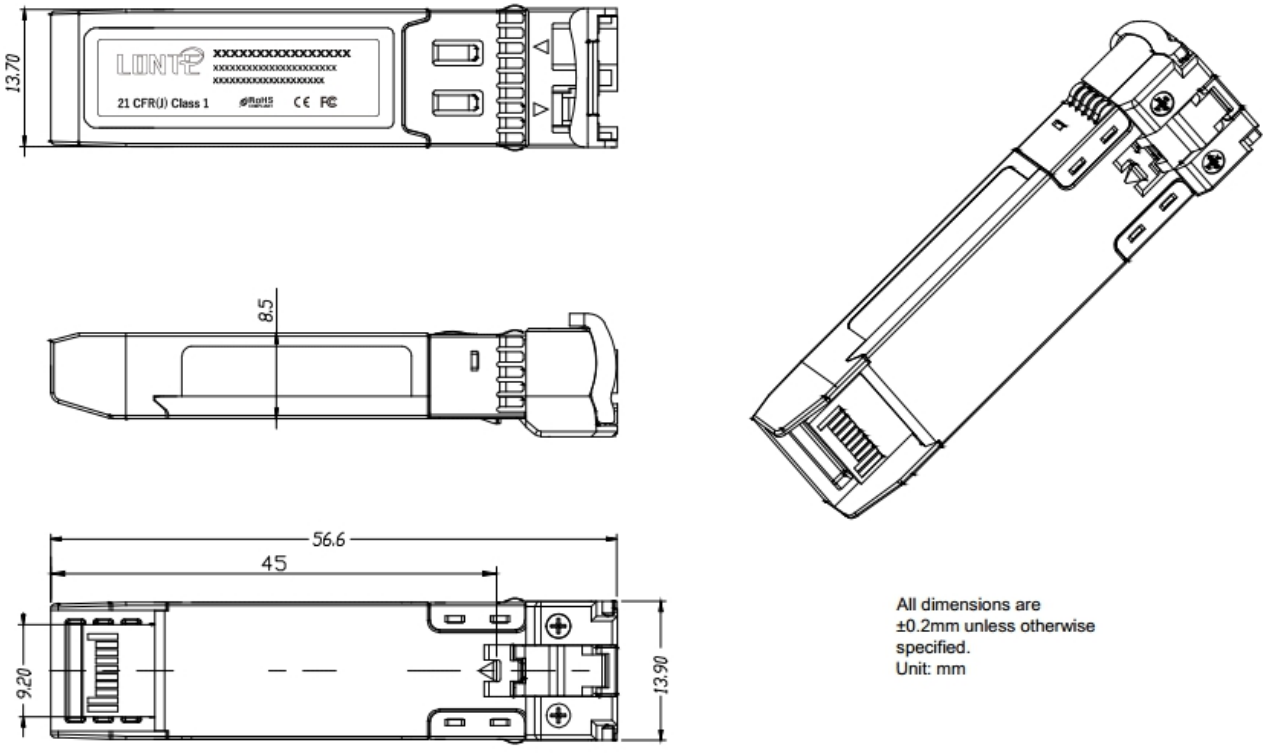


Digital Diagnostic Memory Map



Package Outline

Dimensions are in millimeters. All dimensions are ±0.2mm unless otherwise specified. (Unit: mm)



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Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1 (>1.5kV) – Human Body Model
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product

Ordering information

Part. No	Specifications								
	Pack	Rate (Gbps)	Tx (nm)	Po (dBm)	RX	Sen (dBm)	Temp (℃)	Reach (m)	DDM
AC-XP-8G10-01	SFP+	10.3125	850	-6~-1	PIN	<-10	0~70	300	Y
AC-XP-8G10-01F	SFP+	10.3125	850	-6~-1	PIN	<-10	-40~85	300	Y