

981/60-80-AO

LAWO® 981/60-80 Compatible TAA OC-3 MADI SFP Audio/Video Transceiver (MMF, 1310nm, 2km, LC, DOM, 0 to 70C)

Features

- SFF-8472 MSA Compliant
- Duplex LC Connector
- Data Rate up to 155Mbps
- 1310nm FP Laser Transmitter
- 2km with 50/125 μm MMF@500MHz.km
- 2km with 62.5/125 μm MMF@500MHz.km
- Single 3.3V Power Supply and TTL Logic Interface
- Support Hot Pluggable
- Metal with lower EMI
- Commercial Temperature 0 to 70 Celsius
- Class 1 FDA and IEC60825-1 Laser Safety Compliant
- RoHS compliant and Lead Free



Applications:

- SDH/SONET
- Fast Ethernet
- Other Optical Links

Product Description

This LAWO® 981/60-80 compatible MADI audio/video SFP transceiver provides OC-3 throughput up to 2km over multi-mode fiber (MMF) using a wavelength of 1310nm via a duplex LC connector. It can operate at temperatures between 0 and 70C. This product is in compliance with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's 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."



Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4.
- ESD to the LC Receptacle: compatible with IEC 61000-4-3.
- EMI/EMC: compatible with FCC Part 15 Subpart B Rules, EN55022:2010.
- Laser Eye Safety: compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1, 2.
- RoHS: compliant with EU RoHS 2.0 directive 2015/863/EU.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Humidity	RH			95	%
Data Rate	OC-3/STM-1		155		Mbps
	100M		100		Mbps

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.15	3.3	3.45	V	
Power Supply Current	Icc			300	mA	
Transmitter						
LVPECL Inputs (Differential)	VIN	400		2000	mVp-p	AC Coupled Inputs, 1
Input Impedance (Differential)	ZIN	85	100	115	Ω	RIN > 100kΩ @ DC
Tx_Disable	Disable	2		Vcc+0.3	V	
	Enable	0		0.8	V	
Tx_Fault	Fault	2		Vcc+0.3	V	
	Normal	0		0.5	V	
Receiver						
LVPECL Outputs (Differential)	VOUT	400		2000	mVp-p	AC Coupled Outputs, 1
Output Impedance (Differential)	ZOUT	85	100	115	Ω	
Rx_LOS	LOS	2		Vcc+0.3	V	
	Normal	0		0.8	V	
MOD_DEF (0:2)	VOH	2.5			V	With Serial ID
	VOL	0		0.5	V	With Serial ID

Notes:

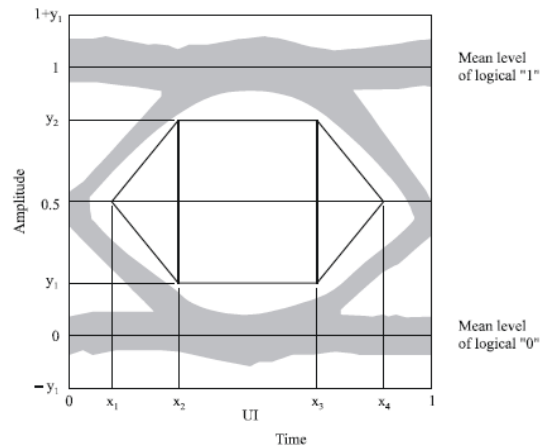
1. LVPECL logic. Internally AC coupled.

Optical Characteristics

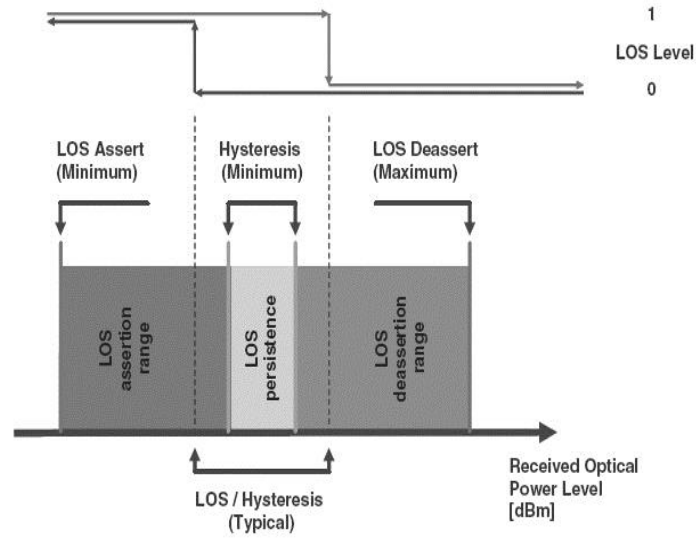
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Distance	L		2		km	
Data Rate			100/155		Mbps	
Transmitter						
Average Output Power	POUT	-19		-14	dBm	1
Extinction Ratio	ER	10			dB	2
Center Wavelength	λ_C	1260	1310	1360	nm	
Spectral Width (RMS)	$\Delta\lambda$			4	nm	
Total Jitter	TJ			1	ns	2
Rise/Fall Time (20-80%)	Tr/Tf			2	ns	
Tx_Disable Assert Time	t_off			10	us	
Output Optical Eye	Telcordia GR-253-CORE and IUT-T G.957 Compliant					2, 4
Receiver						
Receiver Sensitivity	Pmin			-31	dBm	3
Receiver Overload	Pmax	-12			dBm	
Return Loss		14			dB	
Center Wavelength	λ_C	1260		1600	nm	
LOS De-Assert	LOSD			-32	dBm	
LOS Assert	LOSA	-45			dBm	
LOS Hysteresis	LOSH	0.5			dB	5

Notes:

1. Output power is measured by coupling into a 62.5/125mm multi-mode fiber.
2. Filtered. Measured with a PRBS $2^{23}-1$ test pattern @155Mbps.
3. Minimum average optical power is measured by coupling into a 62.5/125mm multi-mode fiber. The BER is less than $1E^{-10}$ or lower, measured with a $2^{23}-1$ NRZ PRBS and ER=9dB.
4. Eye Pattern Mask.



5. LOS Hysteresis.

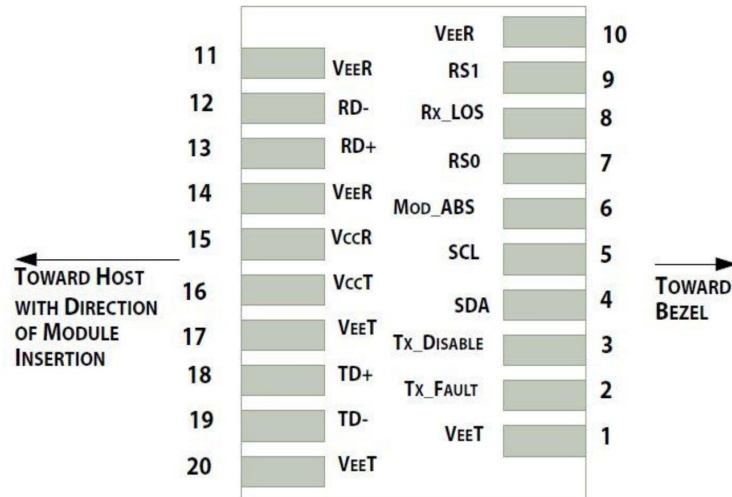


Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault. LVTTTL-O.	2
3	Tx_Disable	Transmitter Disable. Laser output disabled on "high" or "open." LVTT-I.	3
4	SDA	2-Wire Serial Interface Data. Same as MOD-DEF2 in INF-8074i. LVTTTL-I/O.	
5	SCL	2-Wire Serial Interface Clock. Same as MOD-DEF2 in INF-8074i. LVTTTL-I.	
6	MOD_ABS	Module Absent. Connect to VeeT or VeeR in the module.	4
7	RS0	Rate Select 0. Not Used.	5
8	LOS	Loss of Signal Indication. "Logic 0" indicates normal operation. LVTTTL-O.	2
9	RS1	Rate Select 1. Not Used.	5
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted Data Out. AC Coupled. CML-O.	
13	RD+	Receiver Non-Inverted Data Out. AC Coupled. CML-O.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted Data In. AC Coupled. CML-I.	
19	TD-	Transmitter Inverted Data In. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

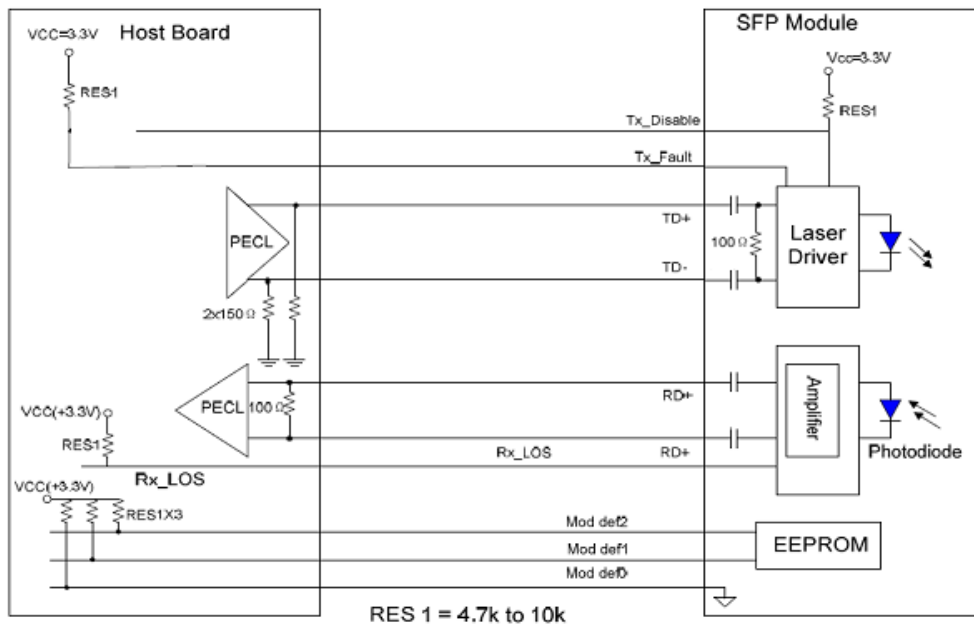
Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Host_Vcc with resistor in the range 4.7kΩ-10kΩ. Pull-ups can be connected to one or several power supplies; however, the host board design shall ensure that no module contract has voltage exceeding module VccT/R+0.5V.
3. Tx_Disable is an input contact with a 4.7kΩ-10kΩ pull-up resistor to VccT inside module.
4. MOD_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Host_Vcc with a resistor in the range from 4.7kΩ-10kΩ. MOD_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431.

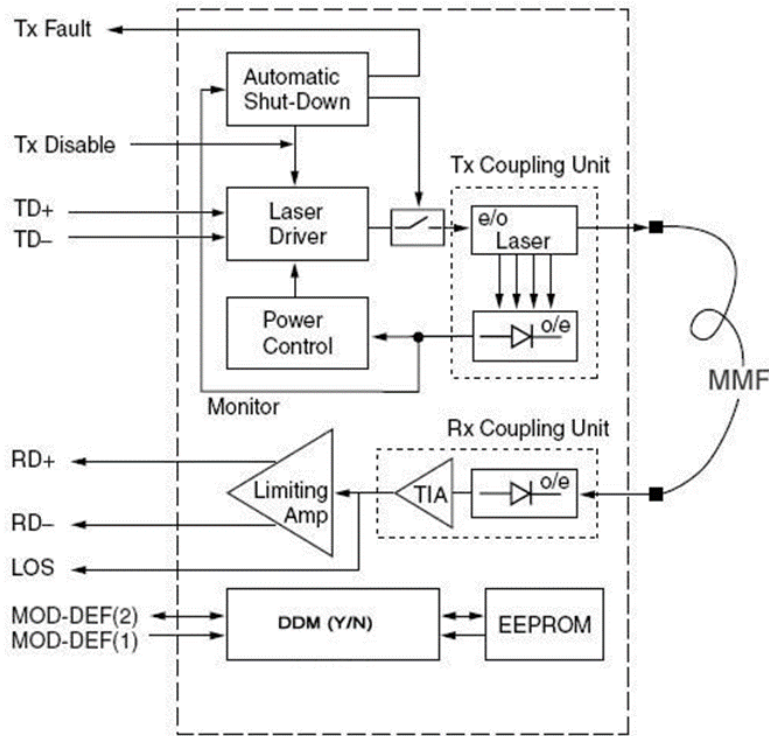


Pin-Out of Connector Block on the Host Board

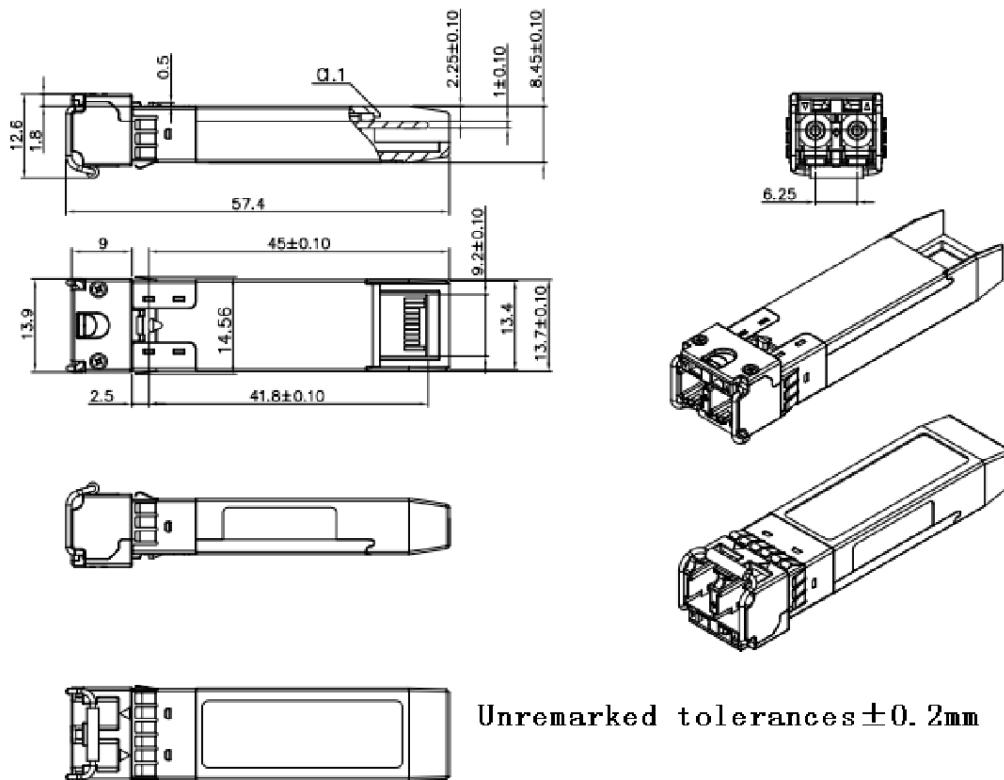
Recommended Circuit Schematic



Functional Description of Transceiver

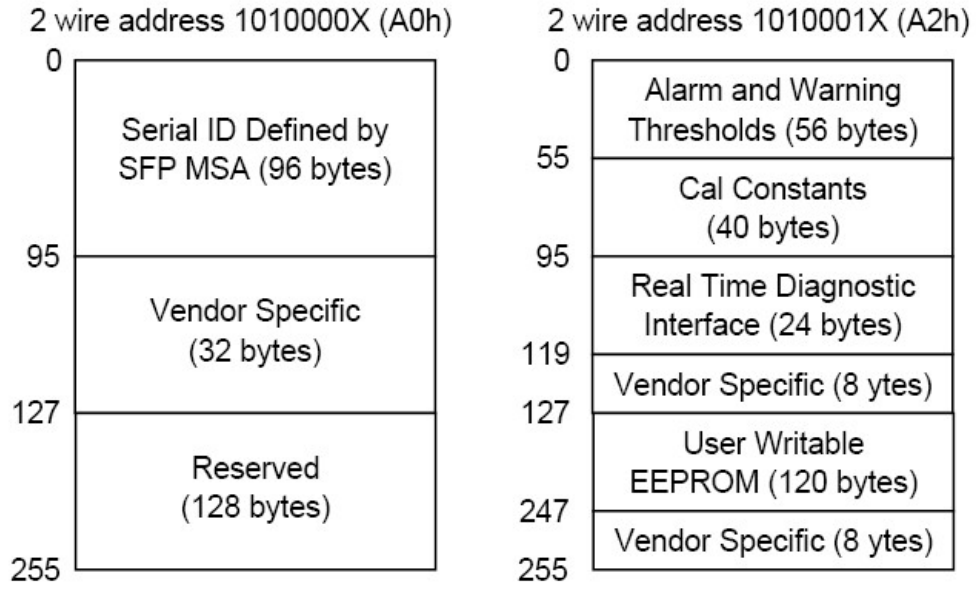


Mechanical Specifications



EEPROM Information

EEPROM memory map-specific data field description is as below:



About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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