

SFP-1000BASE-LX-20-PRO

MSA and TAA Compliant 1000Base-LX SFP Transceiver (SMF, 1310nm, 20km, DOM, 0 to 70C, LC)

Features

- INF-8074 and SFF-8472 Compliance
- Fabry Perot transmitter and PIN receiver
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



Applications:

- 1000Base-LX Ethernet
- 1x Fibre Channel
- Access and Enterprise

Product Description

This MSA Compliant SFP transceiver provides 1000Base-LX throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. Digital optical monitoring (DOM) support is also present to allow 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.

Proline'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. | Max. | Unit |
|----------------------------|------------------|------|------|------|
| Maximum Supply Voltage | V _{CC} | -0.5 | 4.0 | V |
| Storage Temperature | T _S | -40 | 85 | °C |
| Operating Case Temperature | T _C | 0 | 70 | °C |
| Operating Humidity | RH | 5 | 85 | % |
| Receiver Power | R _{MAX} | | 0 | dBm |
| Maximum Bitrate | B _{max} | | 1.25 | Gbps |

Electrical Characteristics (TOP=25°C, V_{CC}=3.3Volts)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--------------------------------|----------------------|------|------|------|------|-------|
| Power Supply Voltage | V _{CC} | 3.15 | 3.30 | 3.43 | V | |
| Power Supply Current | I _{CC} | | | 303 | mA | |
| Power Consumption | P _{DISS} | | | 1 | W | |
| Transmitter | | | | | | |
| Differential data input swing | V _{in,pp} | 120 | | 850 | mV | |
| Input differential impedance | Z _{in} | 80 | 100 | 120 | Ω | |
| Receiver | | | | | | |
| Differential data output swing | V _{out, pp} | 300 | | 850 | mV | |
| Output differential impedance | Z _{in} | 80 | 100 | 120 | Ω | |

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--------------------------------|------------|------|------|------|------|-------|
| Transmitter | | | | | | |
| Optical Power (average) | P_{AVE} | -9.5 | | -3 | dBm | 1 |
| Optical Extinction Ratio | ER | 9 | | | dB | |
| Optical Wavelength | $T\lambda$ | 1290 | 1310 | 1335 | nm | |
| Insertion loss | IL | | 0.6 | | | |
| Receiver | | | | | | |
| Receiver Sensitivity (average) | R_{AVE} | | | -24 | dBm | 3 |
| Receiver overload | P_{max} | 0 | | | dBm | 4 |
| Receiver wavelength | $R\lambda$ | 1260 | | 1565 | nm | |

Notes:

1. Coupled into a Single-mode fibre
2. Per IEEE 802.3ah specification
3. Average power, back-to-back, @1.25Gbps, BER 1E-12, PRBS 231-1.
4. Exceeding the Receiver overload can physically damage the module. Please use appropriate attenuation.

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 Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O. | |
| 5 | SCL | 2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I. | |
| 6 | MOD_ABS | Module Absent, Connect to VeeT or VeeR in 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 Vcc_Host with resistor in the range 4.7K Ω to 10K Ω . 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 +0.5.V.
3. Tx_Disable is an input contact with a 4.7K Ω to 10K Ω 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 Vcc_Host with a resistor in the range from 4.7K Ω to 10K Ω . 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 Host board

Recommended Circuit Schematic



Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



EEPROM Information

EEPROM memory map specific data field description is as below:



About Us:

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.



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