**280-0142-00-AO**

Cyan® 280-0142-00 Compatible TAA 10GBase-DWDM XFP Transceiver 100GHz (SMF, 1554.13nm, 80km, LC, DOM)

**Features:**

- INF-8077i Compliance
- Temperature-stabilized EML transmitter and APD 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:**

- 8x/10x Fibre Channel
- 10x Gigabit Ethernet over DWDM
- Access, Metro and Enterprise

**Product Description**

This Cyan® 280-0142-00 compatible XFP transceiver provides 10GBase-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1554.13nm via an LC connector. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Cyan®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply 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."

TAA COMPLIANT

**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

**Wavelength Guide (100GHz ITU-T Channel)**

| Channel # | Frequency (THz) | Center Wavelength (nm) |
|---|---|---|
| **34** | 193.4 | 1550.12 |
| **35** | 193.5 | 1549.32 |
| **36** | 193.6 | 1548.51 |
| **37** | 193.7 | 1547.72 |
| **38** | 193.8 | 1546.92 |
| **39** | 193.9 | 1546.12 |
| **40** | 194.0 | 1545.32 |
| **41** | 194.1 | 1544.53 |
| **42** | 194.2 | 1543.73 |
| **43** | 194.3 | 1542.94 |
| **44** | 194.4 | 1542.14 |
| **45** | 194.5 | 1541.35 |
| **46** | 194.6 | 1540.56 |
| **47** | 194.7 | 1539.77 |
| **48** | 194.8 | 1538.98 |
| **49** | 194.9 | 1538.19 |
| **50** | 195.0 | 1537.40 |
| **51** | 195.1 | 1536.61 |
| **52** | 195.2 | 1535.82 |
| **53** | 195.3 | 1535.04 |
| **54** | 195.4 | 1534.25 |
| **55** | 195.5 | 1533.47 |
| **56** | 195.6 | 1532.68 |
| **57** | 195.7 | 1531.90 |
| **58** | 195.8 | 1531.12 |
| **59** | 195.9 | 1530.33 |
| **60** | 196.0 | 1529.55 |
| **61** | 196.1 | 1528.77 |

## Absolute Maximum Ratings

| Parameter | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| **Maximum Supply Voltage** | Vcc3 | -0.5 | 3.6 | V |
| | Vcc5 | -0.5 | 6 | V |
| **Storage Temperature** | TS | -40 | 85 | °C |
| **Operating Temperature** | TO | 0 | 70 | °C |
| **Operating Humidity** | RH | 5 | 95 | % |
| **Receiver power** | $R_{MAX}$ | | -8 | dBm |
| **Maximum bitrate** | $B_{max}$ | | 11.3 | Gbps |

## Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Power Supply Voltage** | Vcc3 | 3.135 | 3.30 | 3.465 | V | |
| | Vcc5 | 4.75 | 5.0 | 5.25 | V | |
| **Power Supply Current** | Icc | | | 1061 | mA | |
| **Power Consumption** | $P_{Diss}$ | | | 3.5 | W | |
| **Transmitter** | | | | | | |
| **Differential data input swing** | Vin,pp | 120 | | 850 | mV | |
| **Input differential impedance** | Zin | 80 | 100 | 120 | Ω | |
| **Receiver** | | | | | | |
| **Differential data output swing** | Vout, pp | 300 | | 850 | mV | |
| **Output differential impedance** | Zin | 80 | 100 | 120 | Ω | |

**Optical Characteristics**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| **Optical Power (average)** | $P_{AVE}$ | 0 | | 5 | dBm | 1 |
| **Transmitter and Dispersion Penalty** | TDP | | | 3 | dB | |
| **Optical Extinction Ratio** | ER | 9 | | | dB | |
| **Optical Wavelength** | Tλ | x-0.1 | X | X+0.1 | nm | |
| **Insertion loss** | IL | | 0.35 | | | |
| **Receiver** | | | | | | |
| **Receiver Sensitivity (average)** | $R_{AVE}$ | | | -23 | dBm | 2 |
| **Receiver overload** | $P_{max}$ | -8 | | | dBm | 3 |
| **Receiver wavelength** | Rλ | 1260 | | 1620 | nm | |

**Notes:**

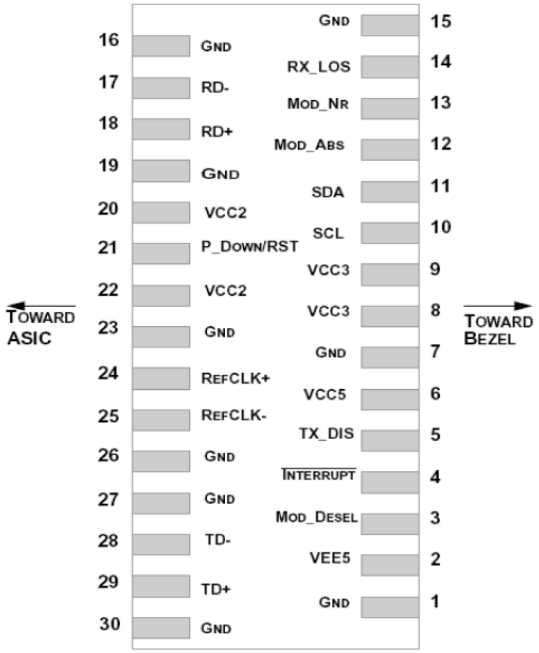
1. Coupled into a Single mode fibre
2. Average power, back-to-back, @10.31Gbps, BER 1E-12, PRBS 231-1.
3. Exceeding the Receiver overload can physically damage the module. Please use appropriate attenuation.

**Pin Descriptions**

| Pin | Symbol | Name/Descriptions | Ref. |
|---|---|---|---|
| **1** | GND | Module Ground | |
| **2** | Vee5 | (not required) | |
| **3** | MOD_DESEL | Module De-select; When Held low allows the module to respond to 2-wire serial interface. LVTTL-I | |
| **4** | /INTERRUPT | Interrupt; Indicates presence of an important condition which can be read via the 2-wire serial interface. LVTTL-O | 2 |
| **5** | TX_DIS | Transmitter Disable. Logic1 indicates laser output disabled, LVTTL-I | |
| **6** | VCC5 | +5V Power Supply (Not required) | |
| **7** | GND | Module Ground | 1 |
| **8** | VCC3 | +3.3V Power Supply | |
| **9** | VCC3 | +3.3V Power Supply | |
| **10** | SCL | 2-Wire Serial Interface Clock. LVTTL-I | 2 |
| **11** | SDA | 2-Wire Serial Interface Data Line. LVTTL-I/O | 2 |
| **12** | MOD_Abs | Indicates Module is not present. Grounded in the Module. LVTTL-O | 2 |
| **13** | MOD_NR | Module Not Ready; Indicating Module Operational Fault. Open-collector. LVTTL-O | 2 |
| **14** | RX_LOS | Loss of Signal indication. Logic 1 indicates loss of Signal. Open-collector. LVTTL-O | 2 |
| **15** | GND | Module Ground | 1 |
| **16** | GND | Module Ground | 1 |
| **17** | RD- | Receiver Inverted Data Output. CML-O | |
| **18** | RD+ | Receiver Non-Inverted Data Output. CML-O | |
| **19** | GND | Module Ground | 1 |
| **20** | VCC2 | +1.8V Power Supply (Not required). | 3 |
| **21** | P_DOWN/RST | Power down; When high, requires the module to limit power consumption to 1.5W or below. 2-Wire serial interface must be functional in the low power mode. LVTTL-I<br>Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle. LVTTL-I | |
| **22** | VCC2 | +1.8V Power Supply (Not required) | 3 |
| **23** | GND | Module Ground | 1 |
| **24** | REFCLK+ | Reference Clock (Not required) | |
| **25** | REFCLK- | Reference Clock (Not required) | |
| **26** | GND | Module Ground | 1 |
| **27** | GND | Module Ground | 1 |
| **28** | TD- | Transmitter Inverted Data Input. CML-I | |
| **29** | TD+ | Transmitter Non-Inverted Data Input. CML-I | |
| **30** | GND | Module Ground | 1 |

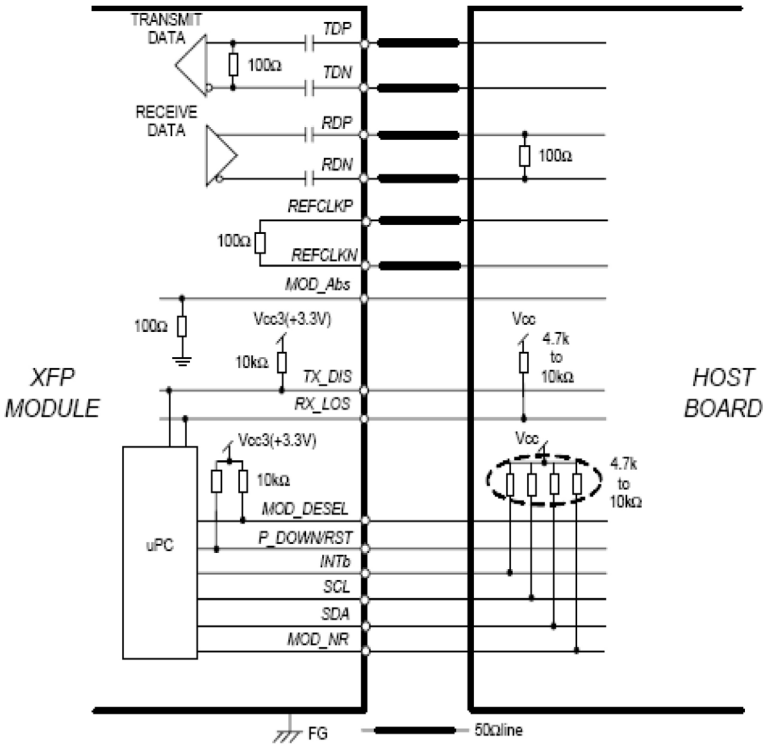
**Notes:**

1. Module ground pins GND are isolated from the module case and chassis ground within the module.
2. Open collector; should be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.6V on the host board.
3. The pins are open within module.



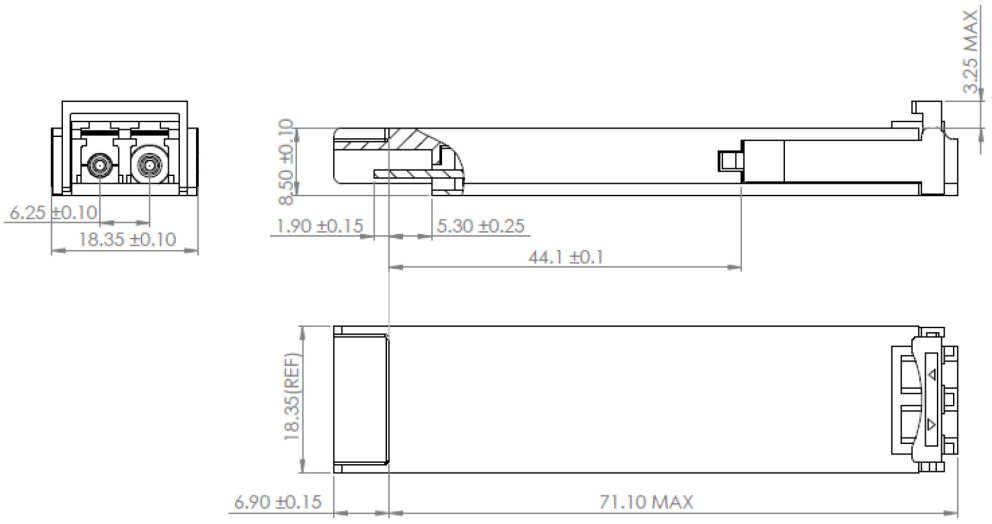

Pin-out of connector Block on Host board

**Recommended Circuit Schematic**




**Mechanical Specifications**

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



**EEPROM Information**

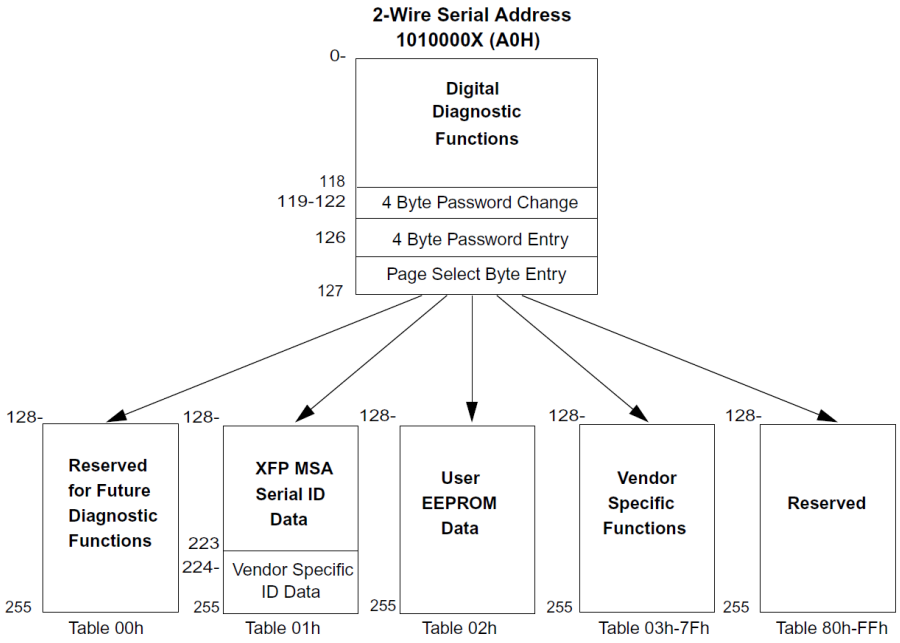
**Management Interface**

XFP 2-wire serial interface is specified in the Chapter 4 of the XFP MSA specification. The XFP 2-wire serial interface is used for serial ID, digital diagnostics, and certain control functions. The 2-wire serial interface is mandatory for all XFP modules. The 2-wire serial interface address of the XFP module is 1010000X(A0h). In order to access to multiple modules on the same 2-wire serial bus, the XFP has a MOD_DESEL(module deselect pin). This pin (which is pull high or deselected in the module) must be held low by the host to select of interest and allow communication over 2-wire serial interface. The module must not respond to or accept 2-wire serial bus instructions unless it is selected.

**XFP Management Interface**

XFP Management interface is specified in the Chapter 5 of the XFP MSA specification. The Figure 1 shows the structure of the memory map. The normal 256 Byte address space is divided into lower and upper blocks of 128 Bytes. The lower block of 128 Byte is always directly available and is used for the diagnostics and control functions that must be accessed repeatedly. Multiple blocks of memories are available in the upper 128 Bytes of the address space. These are individually addressed through a table select Byte which the user enters into a location in the lower address space. The upper address space tables are used for less frequently accessed functions and control space for future standards definition.

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 ingrained 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 ranging from NEBS Level 3 to ISO 9001:2015 with every new development while maintaining the signature reliability of its products.




**U.S. Headquarters**

Email: sales@addonnetworks.com

Telephone: +1 877.292.1701

Fax: 949.266.9273

**Europe Headquarters**

Email: salesemea@addonnetworks.com

Telephone: +44 1285 842070