



FTX-S1XG-B32Y-020D

XFP 10Gbps, BiDi, 1330/1270nm, single-mode, 20km



Description

FTX-S1XG-B32Y-020D series XFP transceiver can be used to setup a reliable, high speed serial data link over single-mode fiber. Maximum link span can reach 20km. This transceiver is based on WDM (BiDi) technology thus it is possible to send (TX:1330nm) and receive (RX:1270nm) data simultaneously in both directions over single strain of fiber. To establish working connection this transceiver should be matched with companion module (FTX-S1XG-B23Y-020D). Device is fully compliant with XFP MSA specifications and it is available in four hardware versions

| Model | Operating case temperature |
|---------------------|----------------------------|
| FTX-S1XG-B32Y-020D | 0~70°C |
| FTX-S1XG-B32Y-020DI | -40~85°C |

Host device can access module internal EEPROM memory and DDMI via I²C interface.

Built-in digital diagnostic interface (DOM, DDMI) allows a network administrator to monitor module parameters such as: transmitted and received optical power, temperature, supply voltage and laser current. Those information and data are very helpful e.g. in prediction and prevention of connection failures. A module is available in various dedicated versions, which can be compatible with devices from vendors such as Cisco, HP, Juniper, Extreme Networks, Alcatel-Lucent, 3Com, Linksys and more.

Applications

- 10G Ethernet
- Fiber Channel (10G FC)
- SONET/SDH (OC-192/STM64)



Key features

- LC Simplex receptacle
- Transmission distance up to 20km*
- DFB laser diode (1330nm) transmitter, PIN photodiode receiver (1270nm)
- Throughput up to 11.3Gb/s
- Fully compliant with XFP MSA INF-8077i and INF-8472 rev. 11.3
- Hot-Pluggable
- RoHS compliant
- Class 1 laser safety
- Low power dissipation (<1W)
- Metal case for low EMI
- Operating case temperature* : 0~70°C / -40~85°C

Specification

Supported transmission technology

10G Ethernet, Fibre Channel

Speed supported for Ethernet technology

10.25Gbps, 1.25Gbps

Speed supported for Fibre Channel technology

10.51875Gbps

Transmission medium

Single-mode fiber 9/125µm

Transmission distance**

20km

Receptacle type

LC Simplex

Wavelength

1330/1270nm

Output power

-4~0dBm

Receiver sensitivity

-14.6dBm

Power supply voltage

3.3V

Total power consumption

< 1W

Operating environment – temperature*

0~70°C / -40~+85°C

Operating environment - humidity

5~95% non-condensing

Dimensions

Compliant with XFP Multi-Source Agreement

* - standard / industrial version

** - transmission distance depends on optical link attenuation



Detailed technical specification

Pin Description

| Pin | Name | Function/Description | Logic | Notes |
|-----|------------------|---|------------|-------|
| 1 | GND | Module Ground | | 1 |
| 2 | V _{EE5} | Optional -5.2V Power Supply - Not Required | | - |
| 3 | Mod_DeSel | Module De-select; When held low allows module to respond to 2-wire serial interface | LVTTTL-I | - |
| 4 | Interrupt | Interrupt; Indicates presence of an important condition | LVTTTL-0 | 2 |
| 5 | TX_DIS | Transmitter Disable; Turns off transmitter laser output | LVTTTL-I | - |
| 6 | V _{CC5} | +5V Power Supply - Not Required | | - |
| 7 | GND | Module Ground | | 1 |
| 8 | V _{CC3} | +3.3V Power Supply | | - |
| 9 | V _{CC3} | +3.3V Power Supply | | - |
| 10 | SCL | 2-Wire Serial Interface Clock | LVTTTL-I/O | 2 |
| 11 | SDA | 2-Wire Serial Interface Data Line | LVTTTL-I/O | 2 |
| 12 | Mod_Abs | Indicates Module is not present. Grounded in the Module | LVTTTL-0 | 2 |
| 13 | Mod_NR | Module Not Ready; Indicating Module Operational Fault | LVTTTL-0 | 2 |
| 14 | RX_LOS | Receiver Loss Of Signal Indicator | LVTTTL-0 | 2 |
| 15 | GND | Module Ground | | 1 |
| 16 | GND | Module Ground | | 1 |
| 17 | RD- | Receiver Inverted Data Output | CML-0 | - |
| 18 | RD+ | Receiver Non-Inverted Data Output | CML-0 | - |
| 19 | GND | Module Ground | | 1 |
| 20 | V _{CC2} | +1.8V Power Supply - Not Required | | - |
| 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. Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle. | LVTTTL-I | - |
| 22 | V _{CC2} | +1.8V Power Supply - Not Required | | - |
| 23 | GND | Module Ground | | 1 |
| 24 | RefCLK+ | Reference Clock Non-Inverted Input, AC coupled on the host board - Not Required | PECL-I | 3 |
| 25 | RefCLK- | Reference Clock Inverted Input, AC coupled on the host board - Not Required | PECL-I | 3 |
| 26 | GND | Module Ground | | 1 |
| 27 | GND | Module Ground | | 1 |
| 28 | TD- | Transmitter Inverted Data Input | CML-1 | - |
| 29 | TD+ | Transmitter Non-Inverted Data Input | CML-1 | - |
| 30 | GND | Module Ground | | 1 |

Notes:

1. Module ground pins GND are isolated from the module case.
2. Shall be pulled up with 4.7KΩ to 10KΩ to a voltage between 3.15V and 3.45V on the host board.
3. Reference Clock is not required. If present, it will be ignored.



Electrical parameters

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-------------------------------------|-----------------------|-----------------|------|-----------------|--------|-------|
| Transmitter Differential Input Volt | +/-TX_DAT | 120 | | 1000 | mV p-p | 1 |
| Receiver Differential Output Volt | +/-RX_DAT | 400 | | 800 | mV p-p | 2 |
| Tx_Disable, P_Down/RST | Input Voltage – Low | V _{IL} | 0 | 0.8 | V | |
| | Input Voltage - High | V _{IH} | 2.0 | V _{CC} | V | |
| RX_LOS, Mod_NR, Interrupt | Output Voltage – Low | V _{OL} | 0 | 0.8 | V | 3 |
| | Output Voltage - High | V _{OH} | 2.0 | V _{CC} | V | 3 |
| Throughput | B | | | 11.3 | Gb/s | |
| Total current requirement | | | | 570 | mA | 3.3V |

Transmitter parameters

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-------------------------------|--------------------------------------|------|------|------|------|-------|
| Central wavelength | λ_c | 1320 | 1330 | 1340 | nm | |
| Spectral width | $\Delta\lambda$ | | | 1 | nm | |
| Launch optical power | P _o | -4 | | 0 | dBm | 4 |
| Extinction ratio | EX | 4 | | | dB | |
| Dispersion penalty | | | | 1 | dB | |
| Optical Return Loss Tolerance | ORLT | 14 | | | dB | |
| Optical rise/fall time | T _{rise} /T _{fall} | | | 30 | ps | 5 |
| Eye diagram | Compliant with IEEE802.3-2005 10Gbps | | | | | |

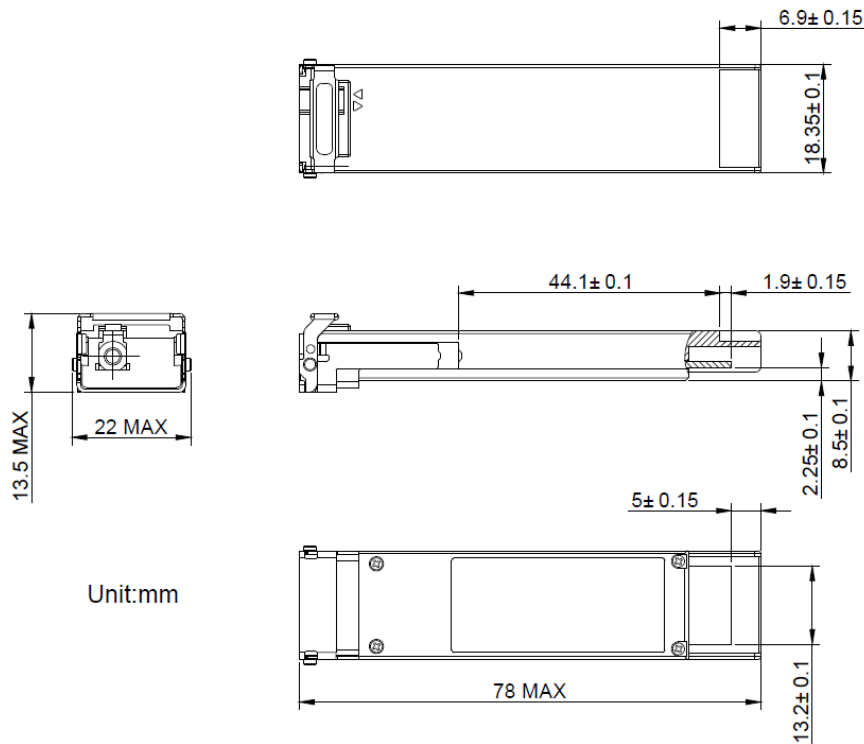
Receiver parameters

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|----------------------------|------------------|------|------|-------|------|-------|
| Sensitivity | P _{min} | | | -14.6 | dBm | 6 |
| Stressed Sensitivity (OMA) | | | | -12.3 | dBm | |
| Central wavelength | λ_c | 1260 | | 1280 | nm | |
| Receiver overload | P _{MAX} | 0 | | | dBm | 6 |
| RX_LOS Asserted | S _A | -30 | | | dBm | |
| RX_LOS De-Asserted | S _D | | | -17 | dBm | |
| RX_LOS Hysteresis | - | | 3.0 | | dB | |

- Notes:**
- Internally AC coupled and terminated to 100Ω differential load.
 - Internally AC coupled, but requires a 100Ω differential termination or internal to Serializer/Deserializer.
 - It is open collector/drain output which should be pulled up externally to V_{CC} with a 4.7KΩ-10KΩ resistor on the host board. LOS: logic 0 indicates normal operation; logic 1 indicates no signal detected.
 - Optical power is launched into SMF
 - 20-80%
 - Measured with PRBS 2³¹-1 at test pattern @10.3125Gbps.



Mechanical specification



Recommended environment conditions

| Parameter | Symbol | Min | Typ | Max | Unit |
|--|-----------------|-------|-----|-------|------|
| Operating Temperature Range (industrial) | T | -40 | - | 85 | °C |
| Operating Temperature Range (standard) | T | 0 | 25 | 70 | °C |
| Supply Voltage | V _{CC} | 3.135 | 3.3 | 3.465 | V |
| Relative Humidity | RH | 5 | - | 95 | % |

Ordering information

FTX-S1XG-B32Y-020**D** – 1330/1270nm, 20km, single-mode, LC simplex, **DDMI**, commercial temperature (0~70°C)

FTX-S1XG-B32Y-020**DI** – 1330/1270nm, 20km, single-mode, LC simplex, **DDMI, extended temperature** (-40~85°C)

For further information regarding host device PCB layout recommendation, power supply requirements, EEPROM memory map, DDMI specification please check:

[SFF-8472 - Description of EEPROM and Digital Diagnostic Monitoring Interface](#) and [INF-8077i - Technical specification for XFP transceiver](#)

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