

User Guide

TN-SFP-10G-xx and TN-CWDM-10G-xxx Series Cisco Compatible 10G Small Form Factor Pluggable (SFP+)



Transceiver Modules

- SFP+ Optical Transceiver with LC connector
- 10G small Form-Factor Pluggable (SFP+) MSA compatible
- Compliant with IEEE 802.3ae 10GBASE-SR/LR/LW
- SFF-8472 Digital Diagnostic Function (DDMI)
- Single +3.3 V Power Supply
- RoHS Compliant (all models)
- Class 1 Laser International Safety Standard IEC 60825 Compliant

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Introduction

Transition Networks' TN-SFP-10G-xx and TN-CWDM-10G-xxx TN-SFP-10G-xx and TNCWDM-10G-xxx series Cisco Compatible 10G Small Form Factor Pluggable (SFP+) transceiver modules are designed to install in any SFP+ port. These SFP+ modules allow an interface to the network through the SFP+ connector, and are designed for bi-directional, serial-optical data communications, at speeds up to 10.5 Gbps.

Description

The Transition Networks TN-SFP-10G-xx series 10G SFP+ transceiver modules are designed to install in any SFP+ port allowing for 10GBase-X interfaces to the network through the SFP+ connector. The TN-SFP-10Gxx transceivers are Cisco compatible and are designed for bi-directional serial-optical data communication such as 10G Ethernet at speeds up to 10.3 Gbps.

Transition Networks' SFP and SFP+ modules fully comply with the Multi-Sourcing Agreement (MSA). This compliance allows our SFP+ modules to be used in all other MSA compliant SFP+ platforms. In addition, Transition Networks SFP modules are also compatible with all Cisco SFP+ based routers and switches, as well as Cisco's IOS software. Transition Networks SFP and SFP+ modules ARE NOT Cisco OEM brand modules.

TN-CWDM-10G-1xx0-40 Series: The Transition Networks TN-CWDM-40G-1xx0-40 10G modules are Cisco Compliant* and are designed for bi-directional serial-optical data communications such as 10G Ethernet. Each X2/XFP/SFP+ operates at a nominal CWDM wavelength. There are 8 wavelengths available in 20nm steps from 1470nm to 1610nm.

TN-SFP-10G-xR Series: The Transition Networks TN-SFP-10G-xR series 10G SFP+ transceiver modules are designed to install in any SFP+ port allowing for 10GBase-X interfaces to the network through the SFP+ connector. The TN-SFP-10G-xR transceivers are Cisco Compliant* and are designed for bi-directional serial optical data communication such as 10G Ethernet at speeds up to 10.3 Gbps.

Specifications and Standards

The TN-SFP-10G-xxx and TN-CWDM-10G-xxx are designed to meet these standards and specifications:

Standards	IEEE 802.3z, IEEE 802.3ae, 10GBASE-SR/LR/LW, 10GBase-ER/EW, SFF-8472 Digital Diagnostic function (DMI). IEEE 802.3az (TN-SFP-10G-T)
Compliance	RoHS Compliant (all models) Class 1 Laser International Safety Standard IEC 60825 Compliant FDA 21; CFR 1040.10 and 1040.11
Dimensions	Width: 0.52" [13 mm] x Depth: 2.18" [55 mm] x Height: 0.33" [8 mm]
Power Input	3.3V
Output Wavelength	-5.5nm < λ_c < +7.5nm
Shipping Weight	1 lb (16 oz) approximately
Voltage	3.3V,
Operating Temp	0°C to +70°C (32°F to 158° F)
Storage Temp	-40°C to +85°C (-40° to 185°F)
Humidity	5% to 95%, non-condensing
Warranty	Lifetime

Optical Specifications

The Optical Specs for all Transition Networks' SFPs are listed on the Transition Networks [SFP Specifications](https://www.transition.com/wp-content/uploads/2016/05/SFP-Specifications.pdf) page at <https://www.transition.com/wp-content/uploads/2016/05/SFP-Specifications.pdf>.

TN-SFP-10G-x-xx Series

Cisco Compatible 10GBase SFP+ Modules; 10GBase-X, SFP+ With DMI (LC).

#	SKU	Description
1	TN-SFP-10G-D-10	10GBase-BX, SFP+ w/ DMI 1330 TX/1270 RXnm (LC) [10 km/6.2 mi.] Link Budget: 5.9 dB
2	TN-SFP-10G-D-20	10GBase-BX, SFP+ w/ DMI 1330 TX/1270 RXnm (LC) [20 km/12.4 mi.] Link Budget: 12.1 dB
3	TN-SFP-10G-D-40	10GBase-BX, SFP+ w/ DMI 1330 TX/1270 RXnm (LC) [40 km/24.9 mi.] Link Budget: 16.0 dB
4	TN-SFP-10G-D-60	10GBase-BX, SFP+ w/ DMI 1330 TX/1270 RXnm (LC) [60 km/27.3 mi.]
5	TN-SFP-10G-D-80	10GBase-BX, SFP+ with DMI 1550nm TX/1490nm RX single mode (LC) [80 km/49.7 mi.] Link Budget: 22.0 dB
6	TN-SFP-10G-ER	10GBase-ER, SFP+ w/ DMI 1550nm (LC) [40 km/24.9 mi.] Link Budget: 15.8 dB
7	TN-SFP-10G-LR	10GBase-LR, SFP+ w/ DMI 1310nm (LC) [10 km/6.2 mi.] Link Budget: 9.0 dB
8	TN-SFP-10G-LRM	10GBase-LRM, SFP+ w/ DMI 1310nm (LC) [220m; 722 ft.] Link Budget: 1.5 dB
9	TN-SFP-10G-SR	10GBase-SR, SFP+ w/ DMI 850nm (LC) [300/82/33 m; 985/269/108 ft.] Link Budget: 4.0 dB
10	TN-SFP-10G-U-10	10GBase-BX, SFP+ w/ DMI 1270 TX/1330 RXnm (LC) [10 km/6.2 mi.] Link Budget: 5.9 dB
11	TN-SFP-10G-U-20	10GBase-BX, SFP+ w/ DMI 1270 TX/1330 RXnm (LC) [20 km/12.4 mi.] Link Budget: 12.1 dB
12	TN-SFP-10G-U-40	10GBase-BX, SFP+ w/ DMI 1270 TX/1330 RXnm (LC) [40 km/24.9 mi.] Link Budget: 16.0 dB
13	TN-SFP-10G-U-60	10GBase-BX, SFP+ w/ DMI 1270 TX/1330 RXnm (LC) [60 km/37.3 mi.]
14	TN-SFP-10G-U-80	10GBase-BX, SFP+ with DMI 1490nm TX/1550nm RX single mode (LC) [80 km/49.7 mi.] Link Budget: 23.0 dB
15	TN-SFP-10G-ZR	10GBase-ZR, SFP+ w/ DMI 1550nm (LC) [80 km/49.7 mi.] Link Budget: 24.0 dB
16	TN-SFP-10G-ZR-10	10GBase-ZR, SFP+ with DMI 1550nm single mode (LC) [100 km/62.1 mi.] Link Budget: 26.0 dB
17	TN-SFP-10G-T	Cisco compatible Copper SFP+, designed for 10 Gigabit Ethernet bidirectional communication. Supports 100M/1G/10G. maximum 30m reach over Cat6a/Cat 7 cable. Maximum 3.0W power consumption needed; 0 – 70 C temperature range. Auto- negotiates with other 10G-Base-T Phys. Auto-sense MDI/MDIX.

TN-SFP-10G-T

#	SKU	Description
1	TN-SFP-10G-T	Cisco compatible 10GBase-T SFP+ transceiver; maximum 30m; operating temp 0-70° C; SFF-8431 and SFF-8432 compliant (except power consumption 2.5 - 3W). Only transmit on Cat6a/Cat7 cable, only work on verified devices. Verified Host devices: Cisco Catalyst 9300/9500/4500/3750/2960x, Nexus 3064/5020/93180, ASR9001. Transition Networks: SISPM1040-3xxx-L, SM24DP4xA, SM12DP2xA, SM48TAT4XA-RP, SM24TAT4xB.

Transition Networks Verified Host Devices (TN-SFP-10G-T)

Transition Networks SKU	Max # of TN-SFP-10G-T supported on 10G SFP+ Slots	Support
SISPM1040-3248-L	4	Each 10G SFP+ port can support a 2.5W copper SFP+ module. Each of 4 SFP+ ports can support 2.5W copper SFP+ modules at the same time.
SISPM1040-3166-L	2	Each 10G SFP+ port can support a 2.5W copper SFP+ module. Each of 2 SFP+ ports can support 2.5W copper SFP+ modules at the same time.
SM24DP4XA	4	Each 10G SFP+ port can support a 2.5W copper SFP+ module. Each of 4 SFP+ ports can support 2.5W copper SFP+ modules at the same time.
SM12DP2XA	2	Each 10G SFP+ port can support a 2.5W copper SFP+ module. Each of 2 SFP+ ports can support 2.5W copper SFP+ module at the same time.
SM24TAT4XB	1	Each 10G SFP+ port can support a 2.5W copper SFP+ module. With 4 SFP+ ports, only 1 SFP+ port can use a 2.5W copper SFP+ module.
SM48TAT4XA-RP	1	Each 10G SFP+ port can support a 2.5W copper SFP+ module. With 4 SFP+ ports, only 1 SFP+ port can use a 2.5W copper SFP+ module.
SM24TAT4XA	1	Each 10G SFP+ port can support 2.5W copper SFP+ module. With 4 SFP+ ports, only 1 SFP+ port can use a 2.5W copper SFP+ module.

TN-CWDM-10G-1xx0-40 Series

Cisco Compatible CWDM SFP+ Modules; 10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI Single Mode (LC).
See the series [online datasheet](#).

#	SKU	Description
1	TN-CWDM-10G-1270-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1270nm [40 km/24.9 mi.] Link Budget: 14.1 dB
2	TN-CWDM-10G-1290-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1290nm [40 km/24.9 mi.] Link Budget: 14.1 dB
3	TN-CWDM-10G-1310-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1310nm [40 km/24.9 mi.] Link Budget: 14.1 dB
4	TN-CWDM-10G-1330-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1330nm [40 km/24.9 mi.] Link Budget: 14.1 dB
5	TN-CWDM-10G-1350-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1350nm [40 km/24.9 mi.] Link Budget: 14.1 dB
6	TN-CWDM-10G-1370-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1370nm [40 km/24.9 mi.] Link Budget: 14.1 dB
7	TN-CWDM-10G-1470-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1470nm [40 km/24.9 mi.] Link Budget: 14.1 dB
8	TN-CWDM-10G-1490-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1490nm [40 km/24.9 mi.] Link Budget: 14.1 dB
9	TN-CWDM-10G-1510-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1510nm [40 km/24.9 mi.] Link Budget: 14.1 dB
10	TN-CWDM-10G-1530-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1530nm [40 km/24.9 mi.] Link Budget: 14.1 dB
11	TN-CWDM-10G-1550-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1550nm [40 km/24.9 mi.] Link Budget: 14.1 dB
12	TN-CWDM-10G-1570-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1570nm [40 km/24.9 mi.] Link Budget: 14.1 dB
13	TN-CWDM-10G-1590-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1590nm [40 km/24.9 mi.] Link Budget: 14.1 dB
14	TN-CWDM-10G-1610-40	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1610nm [40 km/24.9 mi.] Link Budget: 14.1 dB

TN-CWDM-10G-1xx0-80 Series

Cisco Compatible CWDM SFP+ Modules; 10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI Single Mode (LC). See the series [online datasheet](#).

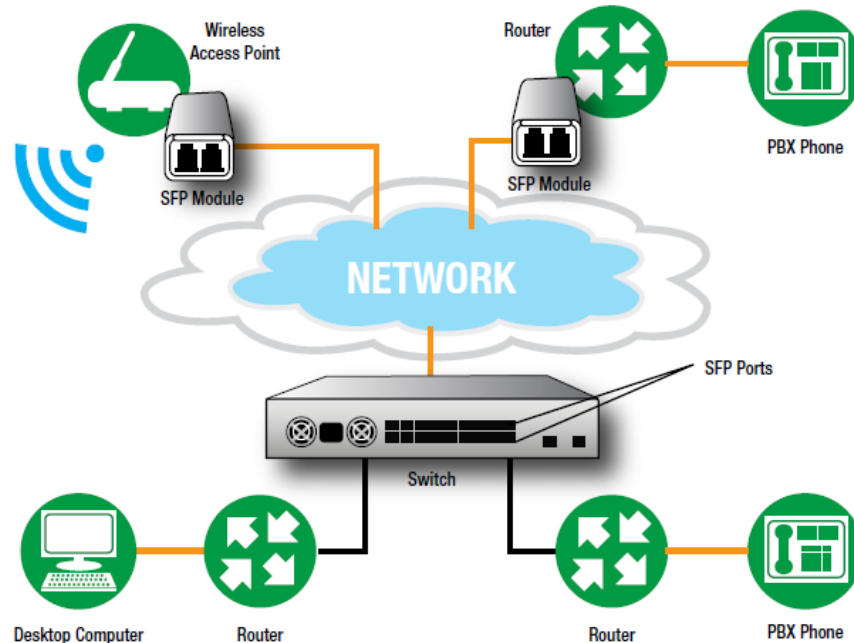
#	SKU	Description
1	TN-CWDM-10G-1470-80	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1470nm [80 km/49.8 mi.] Link Budget: 24.0 dB
2	TN-CWDM-10G-1490-80	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1490nm [80 km/49.8 mi.] Link Budget: 24.0 dB
3	TN-CWDM-10G-1510-80	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1510nm [80 km/49.8 mi.] Link Budget: 24.0 dB
4	TN-CWDM-10G-1530-80	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1530nm [80 km/49.8 mi.] Link Budget: 24.0 dB
5	TN-CWDM-10G-1550-80	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1550nm [80 km/49.8 mi.] Link Budget: 24.0 dB
6	TN-CWDM-10G-1570-80	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1570nm [80 km/49.8 mi.] Link Budget: 24.0 dB
7	TN-CWDM-10G-1590-80	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1590nm [80 km/49.8 mi.] Link Budget: 24.0 dB
8	TN-CWDM-10G-1610-80	10GBase-LR/LW/10G Fiber Channel, SFP+ with DMI single mode (LC) 1610nm [80 km/49.8 mi.] Link Budget: 24.0 dB

TN-SFP-10G-xx and TN-CWDM-10G-xxx Series



Application: Fiber Connections with SFPs

SFPs are used with 10G Ethernet Switches and Routers, Metro Edge Switching, etc.



SFP Unpacking

SFPs can be packaged and shipped in a Single package or in a Pack (e.g., TN-SFP-10G-LR-PK is a Pack of 20 TN-SFP-10G-LR SFPs). Before you start installing the TN-SFP-xxx, verify that the package contains the following items:

- One TN-SFP-xxx device
- One printed Documentation Postcard
- One printed Caution statement

Please notify your sales representative immediately if any of the above items is missing or damaged. Save the packaging for possible future use.



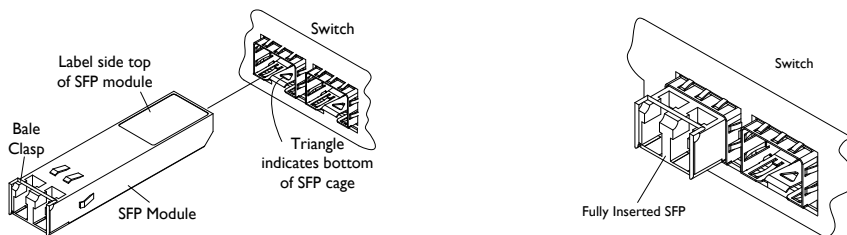
SFP Installation

Cautions

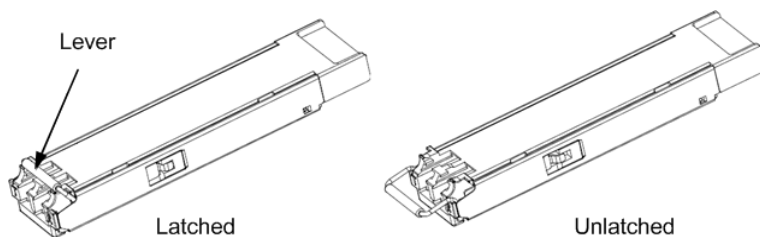
- The SFP module is keyed to only be installed one way. If forced the wrong way, damage may occur.
- Avoid getting dust or other contaminants into the fiber bore of the SFP transceiver module, as this will cause the optics to not operate properly.
- Clean the optic surfaces of the optical fiber before you plug them back in to the optical bores of another SFP module. See Fiber Optic Association [Cleaning Fiber Optic Connections](#) page.
- Each port must match the wavelength specifications on the other end of the cable, and the cable must not exceed the specified cable length for reliable communications.

Installing an SFP Module

1. Attach an ESD-preventive wrist strap to your wrist and to the ESD ground connector or a bare metal surface on your chassis.
2. Remove the SFP transceiver module from its protective packaging. Note: Do not remove the optical bore dust plugs until directed to do so in a later procedure.
3. Check the slot orientation. Note that for some devices (e.g., S4224) some slots are “upside down” compared to other slots.
4. Position the SFP device at the desired installation slot, with the label facing correctly.
5. Carefully slide the SFP device into the slot, aligning it with the internal installation guides.



6. Ensure that the SFP device is firmly seated against the internal mating connector. To verify that the SFP is seated and latched properly. **a)** Grasp the SFP by the sides and try to remove it without releasing the latch. **b)** If the SFP can not be removed, it is installed and seated properly. If the SFP can be removed, reinsert it and press harder with your thumb; repeat if necessary until it is latched securely into the socket.



7. Connect the fiber cable to the fiber port connector of the SFP device. Make sure the SFP release latch is in the up (closed) position when you insert the cable connector into the SFP.
8. Remove the dust plug from the connector. Save the dust plug for future use.
9. Attach an appropriate cable into the SFP module port.
10. Attach the other end of the cable into the other device.
11. Observe the status LED(s). See the related manual for details.

Fiber Cable Physical Characteristics

The fiber cable physical characteristics must meet or exceed IEEE 802.3ae specifications:

- Single mode fiber (recommended): 9 μm
- Multimode fiber (recommended): 62.5/125 μm
- Multimode fiber (optional): 100/140, 85/140, 50/125 μm

Warning: Visible and invisible laser radiation when open. DO NOT stare into laser beam or view directly with optical instruments. Failure to observe this warning could result in damage to your eyes or blindness.

Recommended Cable Type for TN-SFP-10G-T

- Common Industry Acronym: FFTP (not SSTP or SFTP)
- ISO/IEC 11801 Name: F/FTP
- Cable Shielding Type: Foil
- Twisted Pair Shielding Type: Foil



Typical TN-SFP-10G-T Power Consumption at Various Distances

- 10m :2.4W
- 20m : 2.5W
- 30m : 2.6W

TN-SFP-10G-T Power Consumption/Surge Current Caution

CAUTION: Power consumption and surge current are higher than the specified values in the SFP MSA. Contact host device manufacturer before plugging TN-SFP-10G-T into the SFP+ slot.

CAUTION

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Contact host device manufacturer before plugging TN-SFP-10G-T into the SFP+ slot

Connecting Fiber Cables

To install the fiber cable, do the following:

1. Locate the appropriate fiber cable.
2. Install the cable as shown below.



Removing an SFP Module

Caution: Be careful when removing the SFP or SFP+ from a device. Some SFP transceiver module temperatures may exceed 160°F (70°C) and be too hot to touch with bare hands. **Note:** Do not remove and replace the SFP modules more often than necessary; excessive SFP removing and replacing can shorten the SFPs useful life.

1. Attach an ESD-preventive wrist strap to your wrist and to the ESD ground connector or a bare metal surface on your chassis.
2. For future reattachment of fiber-optic cables, note which connector plug is send (TX) and which is receive (RX).
3. Remove the SFP transceiver module:
 - a. If the SFP transceiver module has an **actuator button latch**, gently press the actuator button on the front of the SFP transceiver module until it clicks, and the latch mechanism releases the SFP transceiver module from the socket connector. Grasp the actuator button between your thumb and index finger, and carefully pull the SFP transceiver module straight out of the module slot.
 - b. If the SFP transceiver module has a **bail clasp latch**, pull the latch out and down to eject the SFP transceiver module from the socket connector. If the bail clasp latch is obstructed and you cannot use your index finger to open it, use a small, flat-blade screwdriver or other long, narrow instrument to open the bail clasp latch. Grasp the SFP transceiver module between your thumb and index finger, and carefully remove it from the socket.
4. Replace the Dust Plug.
5. Place the removed SFP/SFP+ transceiver module in an antistatic bag or other protective package.

Diagnostic Monitoring Interface (DMI)

The following DMI port screen and explanation table contains brief definitions of the DMI support offered on some (SFP Transceiver Modules). For further information, see the help option on Transition Networks Focal Point ION System, and other GUIs. **Note:** This feature is not available on all devices and may vary between products. See the related manual for more information.

DMI RX Power 210 μ W -6.778 dBm	DMI RX Power Alarm <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Low Warn <input type="checkbox"/> High Warn <input type="checkbox"/> Low Alarm <input type="checkbox"/> High Alarm
DMI Temp 30.1 $^{\circ}$ C 86.2 $^{\circ}$ F	DMI Temp Alarm <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Low Warn <input type="checkbox"/> High Warn <input type="checkbox"/> Low Alarm <input type="checkbox"/> High Alarm
DMI Bias Current 20 μ A	DMI Bias Alarm <input type="checkbox"/> Normal <input checked="" type="checkbox"/> Low Warn <input type="checkbox"/> High Warn <input type="checkbox"/> Low Alarm <input type="checkbox"/> High Alarm
DMI TX Power 0 μ W 0.000 dBm	DMI TX Power Alarm <input type="checkbox"/> Normal <input type="checkbox"/> Low Warn <input type="checkbox"/> High Warn <input checked="" type="checkbox"/> Low Alarm <input type="checkbox"/> High Alarm
Rx Power Intrusion Threshold 1000 μ W 0.000 dBm	<input checked="" type="checkbox"/> Intrusion Detected

DMI Parameter	Description
DMI Rx Power	Measured receive optical power in microwatts and in decibels relative to 1mW.
DMI Rx Power Alarm	Alarm status of measured receive optical power.
DMI Temp	Internally measured temperature of transceiver in degrees Celsius and Fahrenheit.
DMI Temp Alarm	Alarm status for internally measured temperature of the transceiver.
DMI Bias Current	Measured transmit bias current in microamperes.
DMI Bias Alarm	Alarm status for measured transmit bias current for the interface.
DMI Tx Power	Measured transmit power in microwatts and in decibels relative to 1mW.
DMI Tx Power Alarm	Alarm status of measured transmit power.
Rx Power Intrusion Threshold	Tells the converter to stop passing traffic when the receive power drops below the new threshold. This feature is sometimes referred to as 'Intrusion Detection', since tapping into a fiber to intercept traffic leads to a reduction in receive power. This value can be entered in microwatts or in decibels relative to 1mW.

TN-SFP distances, TX power, RX power, and link budgets can be found on Transition Networks [website](https://www.transition.com/). The fiber optic transmitters on this device meet Class I Laser safety requirements per IEC-825/CDRH standards and comply with 21 CFR1040.10 and 21CFR1040.11. **WARNING:** Visible and invisible laser radiation when open. Do not stare into the beam or view the beam directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness. **IMPORTANT:** Copper based media ports such as Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are intended to be connected to intra-building (inside plant) link segments that are not subject to lightning transients or power faults. Copper-based media ports such as Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are NOT to be connected to inter-building (outside plant) link segments that are subject to lightning transients or power faults.

DDMI (Digital Diagnostics Monitoring Interface)

DDMI (Digital Diagnostics Monitoring Interface) provides enhanced digital DMI for optical transceivers which allows real time access to device operating parameters.

The following DMI port screen and explanation table contains brief definitions of the DDMI support offered on some Small Form Factor Pluggable (SFP) Transceiver Modules. For further information, see the help option or User Guide for the relate product4. **Note:** This feature is not available on all devices and may vary between products. See the related manual for more information.

The screenshot shows the web interface for a Transition Networks S4224 - Carrier Ethernet Network Interface Device. The interface includes a navigation menu on the left with options like System, Ports, Link OAM, DHCP, Security, LACP, Loop Protection, Spanning Tree, MVR, IPMC, LLD, Ethernet Services, Performance, Monitor, PTP, MAC Table, VLANs, DDMI (Overview, Detailed), UDLD, and Diagnostics. The main content area is divided into two sections: Transceiver Information and DDMI Information.

Transceiver Information

Vendor	Transition
Part Number	TN-10GSFP-LR1
Serial Number	8800022
Revision	0001
Date Code	2011-08-09
Transceiver	10G

DDMI Information

Type	Current	High Alarm Threshold	High Warn Threshold	Low Warn Threshold	Low Alarm Threshold
Temperature(C)	52.875	85.000	80.000	0.000	-5.000
Voltage(V)	3.2600	3.6000	3.5000	3.1000	3.0000
Tx Bias(mA)	38.896	90.000	80.000	4.000	2.000
Tx Power(mW)	0.5624	1.4125	1.1220	0.1585	0.1259
Rx Power(mW)	0.0000 --	1.4125	1.1220	0.0363	0.0229
Tx Power(dBm)	-2.50	1.50	0.50	-8.00	-9.00
Rx Power(dBm)	-inf	1.50	0.50	-14.40	-16.40

The Transceiver Information and DDMI Information sections are described below.

DDMI Parameter	Description
DDMI	Rx Power (uW) Intrusion Threshold; a level for Rx Power on the Fiber port. If the DDMI read value falls below the preset value, an intrusion is detected, and a trap is generated. The default is 0 uW. The range is 0 - 65,535 uW.
Port	The device's port number.
Vendor	The SFP vendor's name (e.g., <i>Transition</i>).
Part Number	The SFP vendor Part number provided by the SFP vendor (<i>TN-10GSFP-SR</i>).
Serial Number	The SFP Vendor Serial number provided by the SFP vendor (e.g., <i>8672105</i>).
Revision	The SFP vendor Revision level for part number provided by the SFP vendor.
Date Code	The vendor's manufacturing date code (e.g., <i>2011-08-09</i>).
Transeiver	The Transceiver compatibility (e.g., <i>1000BASE_SX</i> or <i>10G</i>).
Current	The current value of temperature, voltage, TX bias, TX power, and RX power.
High Alarm Threshold	The high alarm threshold value - temperature, voltage, TX bias, TX power, - RX power.
High Warn Threshold	The high warn threshold value of temperature, voltage, TX bias, TX power, RX power.
Low Warn Threshold	The low warn threshold value of temperature, voltage, TX bias, TX power, RX power.
Low Alarm Threshold	The low alarm threshold value - temperature, voltage, TX bias, TX power, RX power.

Contact Us

Technical Support: Technical support is available 24-hours a day: US and Canada: 1-800-260-1312;
International: 00-1-952-941-7600

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Minnetonka, MN 55343, U.S.A.

Web: <https://www.transition.com>

For More Information

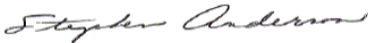
Technical information in this document is subject to change without notice. For more information see our online [Optical Devices Product Catalog](#) or our [SFP Specifications](#) page.

Compliance Information

Class I Laser Compliance

This product has been tested and found to comply with the limits for FDA Class I laser for IEC60825, EN60825, and 21CFR1040 specifications.

Declaration of Conformity

<i>Declaration of Conformity</i>			
<u>Transition Networks, Inc.</u>			
<small>Manufacture's Name</small>			
<u>10900 Red Circle Drive, Minnetonka, Minnesota 55343 U.S.A.</u>			
<small>Manufacture's Address</small>			
Declares that the product(s):			
TN-SFP-10G-xx and TN-CWDM-10G			
<i>Conform(s) to the following Product Regulations:</i>			
FCC Part 15 Class A, EN 55032:2012, EN 55024:2010			
Directive 2014/30/EU, Directive 2015/863/EU			
Low-Voltage Directive 2014/35/EU			
IEC /EN 60950-1:2006+A2:2013			
2011/65/EU EN 50581:2012			
With the technical construction on file at the above address, this product carries the			
CE Mark			
I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standards(s).			
<u>Minnetonka, Minnesota</u>	<u>July 29, 2020</u>		
<small>Place</small>	<small>Date</small>	<small>Signature</small>	
<u>Stephen Anderson</u>	<u>Vice President of Engineering</u>		
<small>Full Name</small>	<small>Position</small>		
			28141B

Translated Safety Warnings

Warning Class I laser product.

Waarschuwing Klasse-I laser produkt.

Varoitus Luokan I lasertuote.

Attention Produit laser de classe I

Warnung Laserprodukt der Klasse I.

Avvertenza Prodotto laser di Classe I.

Advarsel Laserprodukt av klasse I.

Aviso Produto laser de classe I.

¡Advertencia! Producto láser Clase I.

Varning! Laserprodukt av klass I.

Aviso Produto a laser de classe I.

Advarsel Klasse I laserprodukt.

FCC Regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

Warning : This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung ! : Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention ! :

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.



In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EGMitgliedstaaten verstößt gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

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UL Recognized

TN-SFP-10G-SR	TN-GLC-SX-MM-RGD	TN-GLC-FE-100FX	TN-SFP-OC3M
TN-SFP-10G-LR	TN-GLC-BX-U	TN-GLC-BX-U-20	TN-SFP-OC3S
TN-GLC-T-MG	TN-GLC-BX-D	TN-GLC-BX-D-20	TN-SFP-SX
TN-GLC-LH-SM	TN-GLC-LHX-SM	TN-GLC-LH-SMD	TN-SFP-LX1
TN-GLC-LX-SM-RGD	TN-SFP-GE-L	TN-GLC-T	TN-SFP-LXB11
TN-GLC-SX-MM	TN-SFP-GE-S	TN-GLC-FE-100LX	TN-SFP-LXB12

**Record of Revisions**

Rev	Date	Notes
A	9/30/13	Initial release.
B	3/29/18	Updated contact information and format. Added TN-SFP-10G-D-80, TN-SFP-10G-U-80, and TN-SFP-10G-ZR-10. Added TN-CWDM-10G-1xx0-40 and -80 Series.
C	6/12/19	Add TN-SFP-10G-T. Add UL information.
D	7/31/20	Add TN-SFP-10G-T, update specs, delete TN-SFP-10G-T-MG, add DoC and add TN-SFP-10G-T power consumption/surge current caution.

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