Quick Start

ADTRAN Pluggable Optics

SFP+

SFP+ 10G 850nm Multi-mode Fiber

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Description

The Small Form-factor Pluggable 10 Gigabit Multi-Mode SFP+ (SFP+) optical transceiver is a fully duplex serial electric, serial optical device with both transmit and receive functions contained in a single module that provides a high speed serial link at 10 Gbs. Installed into an appropriate host module, the MMF SFP+ provides a 10 Gigabit interface to the supporting system.

The transmit side of the SFP+ converts serial NRZ electrical data at the 10 Gbs line rate to a standard compliant optical signal. The receive side of the SFP+ converts the incoming DC balanced serial NRZ optical data at the 10 Gbs line rate into serial electrical data.

The following features are supported on the SFP+:

- 850 nm optical signals for up to 0.3 km reach
- Low power consumption (<1 W max)
- Bit error rate (<$1x10^{-12}$)
- Excellent EMI performance

CAUTION!
Due to compliance certification requirements, only SFPs supplied by ADTRAN are to be used with ADTRAN modules. ADTRAN cannot certify system integrity with other SFPs.

Installation

Before installing the equipment, inspect the SFP+. If damage has occurred during shipping, file a claim with the carrier, and then contact ADTRAN Customer Support. For more information, refer to the warranty.

To install the SFP+ into an appropriate module, complete the following steps:

NOTE
It is recommended that the protective dust cover remain on whenever the transceiver optical fiber connector is not inserted.

1. Insert the SFP+ into the optical transceiver cage on the module. Ensuring that the latch handle on the optical transceiver is facing upward, slide the SFP+ all the way into the optical transceiver cage until there is an audible “click”.

NOTE
The latch on the SFP+ is for removal only. When removing the SFP+, rotate the latch away from the optical transceiver, the SFP+ should easily slide out of the cage.

2. Do not remove the protective dust cover until the optical fiber connection is made.
3. Continue the installation and turn-up of the host module using the instructions in the Quick Start provided with the module or other system-level documentation available online at www.adtran.com.

Specifications

General

- Module Type: SFP+
  - Fiber/Copper: Fiber
  - Single/Dual: MM/Dual
  - Direction: Duplex
- Signal Data Rate
  - Minimum: 9.953 Gbps
  - Maximum: 11.317 Gbps
- Optical Connector: LC
- Applications:
  - 10G Base-SR/SW
  - 10G Fiber Channel
- Distance: 0.3 km maximum
- Power: 1W max

Optical

- Transmitter

WARNING!
WARNING indicates a hazard which, if not avoided, could result in death, injury or serious property damage.

CAUTION!
CAUTION indicates a hazard which, if not avoided, could result in service interruption, damage to the equipment, or minor property damage.

NOTE
NOTES inform the user of additional, but important, information or features.

- Laser Diode Type: VCSEL
- Tx Central Wavelength: 850 nm
- TX Output Optical Power: –5.0 dBm to –1.0 dBm
- TX Spectral Width: 0.45 nm, Max
- Extinction Ratio: 3 dB

- Receiver
  - Rx Type: PIN/TIA CW Mode
  - Rx Central Wavelength: 850 nm
  - Output Eye: IEEE802.3ae
  - Receiver Overload: +0.5 dBm
  - Receiver Sensitivity: –11.0 dBm

Environmental

- Controlled Protected Environment (Indoor)
  - System Ambient Operational temperature range: –5°C to +55°C
  - Storage temperature range: –40°C to +85°C
  - Relative humidity: 5 to 95%, non-condensing

Safety and Regulatory

English

WARNING!

- Read all warnings, cautions, notes and installation instructions before installing or servicing this equipment.
- The host product must be connected to a known, reliable common bonding point or bar for protective earth (PE) ground at all times during installation, operation, and servicing to ensure that the exposed metal on this product is properly grounded.

CAUTION!

This product is a Class 1 Laser module that complies with FDA 21 CFR 1040.10, 1040.11 and IEC 60825-1. The product is NRTL Listed and CB Certified to all applicable American and European safety standards. ADTRAN cannot certify system integrity with other laser modules. Refer to the ADTRAN Pluggable Optics Compatibility Matrix (online tool, go to http://www.adtran.com/pluggableoptics).

CAUTION!

- Electrostatic Discharge (ESD) can damage electronic modules. When handling modules, wear an antistatic discharge wrist strap to prevent damage to electronic components. Place modules in antistatic packing material when transporting or storing. When working on modules, always place them on an approved antistatic mat that is electrically grounded.
- Per GR-1089-CORE, this system is designed and intended for installation as part of a Common Bonding Network (CBN). The system is not designed nor intended for installation as part of an Isolated Bonding Network (IBN).

NOTE

- This product does not have an internal DC connection between battery return (BR) and Protective Earth (PE). This product can be installed in a DC-I (isolated) or DC-C (common) configuration. For installations where other cards or the host system have internal connections between BR and PE, the system would be intended for deployment only in a DC-C configuration.
- When deployed in a DC-C configuration, the bonding conductor between the PE terminal and battery return of the product must be of equal or greater ampacity than the PE conductor.
- This product is designed to be deployed in GR-3108-CORE environmental class 1 or 2 as defined in GR-3108-CORE, issue 2.
- The product meets or exceeds all applicable requirements of NEBS, Telcordia GR-63-CORE, and GR-1089-CORE.
- This product is intended for deployment in Central Office type facilities, EEEs, EECs, and locations where the NEC applies (e.g., Customer Premises).
- This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

- Changes or modifications not expressly approved by ADTRAN could void the user's authority to operate this equipment.
- This product is designed to meet the following environmental classes:
  - ETSI EN 300 019-1-1: "Classification of environmental conditions; Storage", Class 1.2
  - ETSI EN 300 019-1-2: "Classification of environmental conditions; Transportation", Class 2.3
  - ETSI EN 300 019-1-3: "Classification of environmental conditions; Stationary use at weather-protected locations", Class 3.2 or 3.3
- The equipment is designed to function without degradation during the exposure to all test severities per Class 3.2 of ETSI EN 300 019-1-3."
- This product meets EU RoHS Directive. Refer to www.adtran.com/environmental for further information on RoHS/WEEE

FRANÇAIS

AVERTISSMENT!

- Lisez toutes les mentions de danger et de prudence et les remarques, ainsi que la notice d'installation, avant d'effectuer l'installation ou l'entretien de cet équipement.
- Ce produit doit être raccordé à un point ou une barre de liaison commun(e), connu(e) et fiable pour la mise à terre de protection (PE), d'une façon permanente lors de son installation, son exploitation et son entretient, afin d'assurer que le métal à découvert du produit est correctement mis à terre.

DEUTSCH

WARNUNG!

- Lesen Sie alle Warnungen, Gefahrenhinweise, Anmerkungen und Installationsanweisungen bevor Sie dieses Gerät installieren oder warten.
- Dieses Produkt muss während der Installation, des Betriebs und der Wartung jederzeit an einen bekannten, zuverlässigen, gemeinsamen Anschlusspunkt oder einer -leiste für die Schutzerdung (PE) angeschlossen sein, um sicherzustellen, dass das freiliegende Metall am Produkt ordnungsgemäß geerdet ist.

Documentation for ADTRAN Network Solutions products is available for viewing and download directly from the ADTRAN Support Community website.

Go to: https://supportforums.adtran.com/welcome

Registration is required.

ADTRAN offers training courses on our products, including customized training and courses taught at our facilities or at customer sites.

For inquiries, go to: http://adtran.com/training

The following online documents and resources provide additional information for this product:

ADTRAN Pluggable Optics Compatibility Matrix (online tool, go to: http://www.adtran.com/pluggableoptics)

Warranty: ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found online at www.adtran.com/warranty.

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CAUTION!

SUBJECT TO ELECTROSTATIC DAMAGE OR DECREASE IN RELIABILITY

HANDLING PRECAUTIONS REQUIRED

ADTRAN CUSTOMER CARE:

From within the U.S. 1.888.423.8726
From outside the U.S. +1 256.963.8716

PRICING AND AVAILABILITY 1.800.827.0807

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