ADTRAN Pluggable Optics

# QSFP+

QSFP+ 40G SR4

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61445500F1C-13A

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# Quick Start

## DESCRIPTION

The QSFP+ 40G SR4 (QSFP+) transceiver is specifically designed for 40 Gbps links over multimode fiber. It integrates a four channel VCSEL array and a four channel PIN photodiode array. Each channel can operate at 10.3125 G/s up to 100 m using OM3 or 150 m using OM4 Multimode fiber. The QSFP is compliant with the QSFP+ MSA and IEEE 802.3ba 40GBASE-SR4.

### NOTE
To ensure compatibility, refer to the documentation provided with the host module.
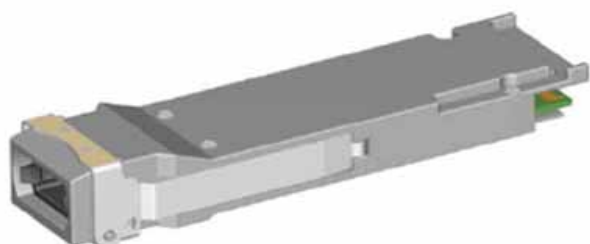


## FEATURES

The following features are supported on the QSFP+:

- 4 channels 850 nm VCSEL array
- 4 channels PIN photo detector array
- Compliant with IEEE Standard 802.3ba, 40G Ethernet SR4
- Compliant with QSFP+MSA
- Management interface specifications per SFF-8436

### CAUTION!
Due to compliance certification requirements, only Pluggable Optics supplied by ADTRAN are to be used with the host module. ADTRAN cannot certify system integrity with other Pluggable Optics.

## INSTALLATION

Before installing the equipment, inspect the QSFP+. 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 QSFP+ into an appropriate module, complete the following steps:

### CAUTION!
Do not remove the protective end cap from the QSFP+ until the fiber optic cable is ready to be connected.

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

### NOTICE
The latch handle on the QSFP+ is for removal only. When removing the QSFP+, rotate the latch away from the QSFP+, the QSFP+ should easily slide out of the cage.

### NOTICE
It is recommended that the protective end cap remain on whenever the transceiver optical fiber connector is not inserted.

2. Continue the installation and turn-up of the host module using the instructions in the documentation provided with the module or other system-level documentation available online at www.adtran.com.

## SPECIFICATIONS

The following is a list of the specifications for the QSFP+:

**General:**

- Module type: QSFP+
- Fiber/Copper: Fiber
  - Multimode
- Signal data rate:
  - Maximum: 10.3 Gbps per channel
- Optical Connector: MTP/MPO
- Applications: 40 GBASE-SR4, 40 G Ethernet
- Diagnostic Monitoring: Supported
- Distance: 100 m on OM3 Multimode Fiber

**Optical:**

- **Transmitter**
  - Laser Diode Type: VCSEL Array (4 channels)
  - Tx Wavelength: 850 nm
  - Tx Power: –7.6 to +2.4 dBm at each lane
  - Tx Spectral width: 0.65 nm Max (RMS)

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- ♦ Output Eye:QSFP+ MSA and IEEE 802.3ba 40 GBASE-SR4
- ♦ Extinction Ratio: 3 dB
- ♦ Optical Rise time (tr): 40 ps (20% - 80%)
- ♦ Optical Fall time (tf): 40 ps (20% - 80%)
- **Receiver**
  - ♦ Rx Type: PIN Array
  - ♦ Rx Central wavelength: 850 nm
  - ♦ Rx Power: +2.5 to –9.5dBm

**Environmental:**

- **Controlled Protected Environment (Inside)**
  - ♦ Operational temperature range: –5°C to + 55°C
  - ♦ Storage temperature range: –40°C to +85 °C
  - ♦ Relative humidity 5% to 85%

## MAINTENANCE

The QSFP+ does not require routine hardware maintenance for normal operation. ADTRAN does not recommend that repairs be attempted in the field. Repair services may be obtained by returning the defective unit to ADTRAN. Refer to the warranty for further information.

## SAFETY AND REGULATORY

### ENGLISH

⚠ **WARNING!**

Read all warnings and cautions before installing or servicing this equipment.

☀ **CAUTION!**

This product is a Class 1 Laser module that complies with FDA 21 CFR 1040.10 and 1040.11 and IEC 60825-1. This product is NRTL Listed and CB Certified to all applicable American and European safety standards. For continued compliance with the above standards, install only ADTRAN-approved Class 1 Laser Modules in ADTRAN products. For a list of ADTRAN-approved SFPs and XFPs, see http://www.adtran.com/SFP. ADTRAN cannot certify system integrity with other laser modules.

⚠ **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.

- The SFP meets or exceeds all the applicable requirements of NEBS, Telcordia GR-63-CORE, and GR-1089-CORE. The product is intended for deployment in Central Office type facilities, EEEs, EECs, and locations where the NEC applies (for example, Customer Premises.

- Per GR-1089-CORE the ADTRAN system that the SFP is being deployed in is designed and intended for installation as part of a Common Bonding Network (CBN). The ADTRAN system that the SFP is being deployed in is not designed nor intended for installation as part of an Isolated Bonding Network (IBN).

- This product does not have an internal DC connection between battery return and frame ground. This product can be installed in a DC-I (isolated) or DC-C (common) configuration.

- The chassis frame ground terminal must be connected to an earth ground to ensure that the exposed metal (i.e., front panels, SFP/XFP modules) on the product is properly grounded by way of the backplane connector.

ℹ **NOTE**

- The 10 Gigabit Ethernet port(s) are optical and therefore are not classified as any type of port as defined in Appendix B of GR-1089-CORE.

- This product is designed to be deployed in GR-3108-CORE environmental class 1.

- This product is NRTL Listed to the applicable UL Standards. The product is designed to meet the applicable requirements of Telcordia GR-63-CORE and GR-1089-CORE.

- This product has also been evaluated to international safety standards EN 60950-1, AS/NZS 60950.1, and IEC 60950-1.

- This device complies with Part 15 of the US 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 300 019-2-1 "Classification of environmental conditions; Storage Class" 1.2
  - ♦ ETSI EN 300 019-2-2 "Classification of environmental conditions, Transportation", Class 2.3
  - ♦ ETSI EN 300 019-2-3 "Classification of environmental conditions, Stationary use at weather protected locations", Class 3.1E

- This product is designed to function without degradation during exposure to all test severities per Class 3.3 of ETSI EN 300 019-1-3.

- This product meets EU RoHS Directive. Refer to www.adtran.com for further information on RoHS/WEEE.

# FRANÇAIS

⚠️ **AVERTISSMENT!**

Lisez tous les avertissements et mises en garde avant l'installation de cet équipement ou la réalisation de toute opération de maintenance.

☀️ **ATTENTION!**

Ce produit est un module laser de classe 1 qui est conforme à la FDA 21 CFR 1040.10 et 1040.11 et IEC 60825-1. Ce produit est NRTL et Certifié CB à toutes les normes de sécurité applicables américains et européens. Pour maintenir la conformité avec les normes ci-dessus, installer des modules laser de classe 1 ne ADTRAN approuvés dans les produits d'ADTRAN. Pour une liste des SFP et XFP ADTRAN approuvés, voir http:/www.adtran.com/SFP. ADTRAN ne peut certifier l'intégrité du système avec d'autres modules laser.

⚠️ **ATTENTION!**

- L'ESD (décharge électrostatique) peut endommager les modules électroniques. Lors de la manipulation des modules, portez un bracelet de décharge antistatique pour éviter d'endommager les composants électroniques. Placez les modules dans un emballage antistatique lors du transport ou du stockage. Lorsque vous travaillez sur les modules, placez-les toujours sur un tapis antistatique certifié muni d'un branchement de mise à la terre.

- La borne de terre de châssis doit être connecté à une prise de terre pour assurer que le métal exposé (tels que les panneaux avant, des modules SFP / XFP) sur le produit est correctement mis à la terre via le connecteur de fond de panier.

- Ce produit ne dispose pas d'une connexion c.c. interne entre le courant de retour de la batterie et la masse du châssis. Ce produit peut être installé en configuration c.c.-I (isolé) ou c.c.-C (commun).

ℹ️ **REMARQUE**

- Ce produit a été conçu pour répondre aux normes internationales de sécurité EN 60950-1, AS / NZS 60950,1 et IEC 60950-1.

- Ce produit est conçu pour répondre aux classes environnementales suivantes:

  ◆ ETSI EN 300 019-1-1: "Classification des conditions d'environnement; Entreposage," classe  1.2

  ◆ ETSI EN 300 019-1-2: "Classification des conditions d'environnements; Transport," classe 2.3

  ◆ ETSI EN 300 019-1-3: "Classification des conditions d'environnements; l'utilisation à poste fixe dans des endroits protégés contre les intempéries," classe 3.1E

- L'équipement est conçu pour fonctionner sans degradation lors des tests à tous les niveaux de sévérité, suivant les spécifications de la classe 3.3 de l'ETSI EN 300 019-1-3.

- Ce produit est conforme à la directive. Reportez-vous à www.adtran.com pour de plus amples renseignements sur RoHS/WEEE.

# DEUTSCH

⚠️ **WARNUNG!**

Lesen Sie sich alle Warn- und Sicherheitshinweise durch, bevor Sie dieses Gerät installieren oder warten.

☀️ **VORSICHT!**

Dieses Produkt ist ein Klasse 1 Laser -Modul, das mit der FDA 21 CFR 1040.10 und 1040.11 und IEC 60825-1 entspricht. Dieses Produkt wurde NRTL gelistet und CB Certified allen geltenden amerikanischen und europäischen Sicherheitsstandards. Für die ständige Einhaltung der oben genannten Normen, installieren Sie nur ADTRAN zugelassene Klasse 1 Lasermodule in ADTRAN Produkte. Eine Liste der ADTRAN zugelassene SFPs und XFPs finden Sie unter http:/www.adtran.com/SFP. ADTRAN kann nicht die Unversehrtheit des Netzes mit anderen Laser-Module zertifizieren.

⚠️ **VORSICHT!**

- Elektrostatische Entladung (ESD) können elektronische Baugruppen beschädigt werden. Beim Umgang mit Modulen , tragen Sie eine Antistatikarmband, um Schäden an elektronischen Bauteilen zu verhindern. Ort -Module in antistatische Verpackung, beim Transport oder Lagerung. Bei Arbeiten an Modulen immer legen Sie sie auf einer zugelassenen antistatische Unterlage, die elektrisch geerdet ist.

- Der Fahrgestellrahmen Erdanschluß muß zu einer Erde verbunden werden, um sicherzustellen, dass das freiliegende Metall (dh Frontplatten, SFP / XFP-Module) auf dem Produkt richtig über den Backplane-Anschluss geerdet ist.

- Dieses Produkt hat keinen internen Gleichstromanschluss zwischen Batterierücknahme und Gehäusemasse. Dieses Produkt kann in einer DC-I (isoliert) oder DC-C (emeinsam)  Konfiguration installiert werden.

ℹ️ **HINWEIS**

- Dieses Produkt wurde entwickelt, um internationalen Sicherheitsnormen EN 60950-1 erfüllen, AS / NZS 60950,1 und IEC 60950-1.

- Dieses Produkt wurde entsprechend der folgenden Umweltklassen entwickelt:

  ◆ ETSI EN 300 019-2-1 "Klassifizierung von Umweltbedingunge"; Storage Class 1,2

  ◆ ETSI EN 300 019-2-2", Klassifizierung von Umweltbedingungen,Transportation", der Klasse 2.3

  ◆ ETSI EN 300 019-2-3 "Klassifizierung von Umweltbedingungen, Ortsfester Einsatz, wettergeschützten Standorten" Klasse 3.1E

- Dieses Gerät funktioniert ohne Leistungsabfall während aller für Klasse 3.3 von ETSI EN 300 019-1-3 vorgeschriebenen Belastungstests.

- Dieses Produkt erfüllt die EU RoHS Richtlinie. Bitte besuchen Sie www.adtran.com für ausführlichere Informationen zu RoHS/WEEE.

**ADTRAN**

**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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