

QSFP

QSFP28 100G LR4 10KM

P/N: 1445510F2C

Quick Start

DESCRIPTION

QSFP28 LR4 transceivers are designed for use in 100 Gbps links over single mode fiber. QSFP28 LR4 integrates four channel LAN WDM optical signals and multiplexes them into a single channel for 100Gb/s optical transmission. Each channel operate at 25 Gbps and the module can operate at 100 Gbps up to 10 km using 9/125 μ m SMF. They are compliant with the QSFP+ MSA and IEEE 802.3ba 100GBASE-LR4.

INSTALLATION

To install the QSFP28 LR4 into an appropriate module, complete the following steps:

1. Inspect the QSFP28 LR4. If damaged, file a claim with the carrier and then contact ADTRAN Customer Service.
2. Do not remove the protective end cap from the QSFP until the fiber optic cable is ready to be connected.
3. Insert the QSFP28 LR4 into the QSFP cage on the module. Ensure the manufacturer's label on the QSFP is facing upward for correct installation.
4. Slide the QSFP28 LR4 all the way into the receptacle until there is an audible "click."

**CAUTION!**

Due to compliance certification requirements, use only QSFPs supplied by ADTRAN. ADTRAN cannot certify system integrity with other QSFPs.

**NOTICE**

The loop on the QSFP is used to remove the QSFP from the cage on the circuit card.

OPERATIONAL SPECIFICATIONS

General

- Module type: QSFP28
- Fiber/Copper: Fiber
- SM/MM: Single Mode Fiber
- Single/Dual-Fiber: Dual Fiber
- Lanes/Channels: 4 Transmit and 4 Receive
- Signal data rate: Up to 25.78 Gbps per channel
- Optical Connector: LC

- Applications: 100 GBASE-LR4 Ethernet
- Distance: 10 km over single-mode Fiber

Optical

Transmitter

- Laser Diode Type: LWDM/LAN WDM
- Tx Wavelengths:
 - ◆ Lane -1: 1294.53 - 1296.59nm
 - ◆ Lane -2: 1299.02 - 1301.09nm
 - ◆ Lane -3: 1303.54 - 1305.63nm
 - ◆ Lane -4: 1308.09 - 1310.19nm
- Tx Output optical power: -4.3 to +4.5 dBm at each lane
- Extinction Ratio: 4 dB

Receiver

- Rx Type: PIN Array
- Rx wavelengths:
 - ◆ Lane -1: 1294.53 - 1296.59nm
 - ◆ Lane -2: 1299.02 - 1301.09nm
 - ◆ Lane -3: 1303.54 - 1305.63nm
 - ◆ Lane -4: 1308.09 - 1310.19nm
- Receive Over load: +4.5 dBm at each lane
- Receiver Sensitivity: -8.6 dBm at each lane

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%

SAFETY AND REGULATORY

ENGLISH



WARNING!

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



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 cable 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).
- This product and the host system are designed and intended for installation as part of a Common Bonding Network (CBN). This product and the host system are 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.
- This product contains or uses a Class 1 Laser module that complies with FDA 21 CFR 1040.10, 1040.11 and IEC 60825-1. For continued compliance with the above standards, only approved Class 1 laser modules from an ADTRAN approved vendor list (located on the ADTRAN website) should be installed in this product. ADTRAN cannot certify system integrity with other laser modules.



NOTE

- 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 been evaluated to international safety standards EN 60950-1, AS/NZS 60950.1, and IEC 60950-1. This product meets the requirements for CE marking under the EMC Directive and Low Voltage Directive. Standards used to demonstrate Compliance are EN 300 386 and EN 60950.
- 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 300 019-2-1 "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 300 019-2-3.
- This product meets EU RoHS Directive. Refer to www.adtran.com for further information on RoHS/WEEE.

FRANÇAIS

AVERTISSEMENT!

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

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 contient ou utilise un module Laser de classe 1 qui est conforme avec la FDA 21 CFR 1040.10, 1040.11 et IEC 60825-1. Pour le maintien de la conformité avec les normes ci-dessus, seulement approuvé classe 1 modules laser d'un ADTRAN approuvés liste des fournisseurs (situé sur le site ADTRAN) doit être installé dans ce produit. ADTRAN ne peut certifier l'intégrité du système avec d'autres modules laser.

REMARQUE

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

DEUTSCH

WARNUNG!

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

VORSICHT!

- Elektrostatische Entladung können elektronische Module beschädigen. Tragen Sie beim Umgang mit Modulen ein Erdungsarmband, um Schäden an den elektronischen Komponenten zu vermeiden. Transportieren oder lagern Sie Module in antistatischem Verpackungsmaterial. Bei der Arbeit an den Modulen, achten Sie darauf, diese stets auf antistatische, elektrisch geerdete Matten zu legen
- 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 enthält oder verwendet einen Klasse 1 Laser-Modul, das mit der FDA 21 CFR 1040.10, 1040.11 und IEC 60825-1 entspricht. Für die ständige Einhaltung der oben genannten Normen, nur zugelassene Klasse 1 Lasermodule aus einem ADTRAN zugelassenen Anbieter-Liste (auf der Website befindet sich ADTRAN) sollte in diesen Artikel eingebaut werden. ADTRAN kann nicht bestätigen, die Systemintegrität mit anderen Lasermodule.

HINWEIS

Dieses Produkt erfüllt die EU RoHS Richtlinie. Sie www.adtran.com für ausführlichere Informationen zu RoHS.

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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