



## DESCRIPTION

The OC-48 DWDM, 1558.98 nm, 80 km SFP (DWDM SFP) is a full duplex serial electric, serial optic device with both transmit and receive functions contained in a single module that provides a high speed serial link at SONET OC-3, OC-12, OC-48, and GigE rates. The DWDM SFP operates on Optical Channel 23 (1558.98 nm). When installed in the appropriate host module, the DWDM SFP provides a SONET OC-3, OC-12, OC-48, or GigE interface to the supporting system.

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

### NOTE

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

The DWDM SFP supports the following features:

- 1558.98 nm optical signals for up to 80 km reach
- Low power consumption (<1.5 W max)
- Bit error rate  $10^{-12}$

### CAUTION

Due to compliance certification requirements, use only SFPs/XFPs supplied by ADTRAN with the host module. ADTRAN cannot certify system integrity with other SFP/XFPs.

## OPERATIONAL SPECIFICATIONS

- Channel Spacing: 100 GHz
- Data Rate: SONET OC-3/OC-12/OC-48 or GigE
- Optical distance: 80 km nominal
- Transmit Wavelength: 1558.98 nm (Channel 23)
- Receive Wavelength: 1525 to 1565 nm
- Optical transmit levels: 0.0 to +5.0 dBm
- Spectral Width: 0.4 nm (20 dB spectral width)
- Extinction Ratio: 8.2 dB
- Optical receive level: -29.0 to -8.0 dBm
- Receiver Damage Threshold: -5.0 dBm
- Optical Path Penalty: 2.0 dB max
- Minimum Span Attenuation: 13 dB
- Optical Budget: -27 dB
- Dispersion Tolerance: 1600 ps/nm
- Optical connectors: LC
- Environmental Support:
  - ◆ Operational temperature range: -40°C to +65°C
  - ◆ Storage temperature range: -40°C to +85°C
  - ◆ Relative humidity: up to 85%, noncondensing

## INSTALLATION

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

1. Inspect the DWDM SFP. If damaged, file a claim with the carrier and then contact ADTRAN Customer Support.

### CAUTION

Do not remove the protective end cap from the SFP until the fiber optic cable is ready to be connected.

2. Insert the DWDM SFP into the SFP cage on the module. Ensure that the manufacturer label on the SFP is facing upward for correct installation.
3. Slide the DWDM SFP all the way into the receptacle until there is an audible "click".

### NOTE

Use the latch on the DWDM SFP to remove the SFP from the SFP cage mounted on the printed circuit board.

## SAFETY AND REGULATORY COMPLIANCE

### CAUTION

The OC-48 DWDM, 1558.98 nm, 80 km SFP is a Class 1 Laser Product and complies with the Laser Safety requirements of FDA 21 CFR 1040.11, EN60825-1, and EN60825-2. The DWDM SFP is NRTL Listed and CB Certified to all applicable American and European safety standards.

### 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 the ADTRAN system that the DWDM SFP is being deployed in is designed and intended for installation as part of a Common Bonding Network (CBN). The ADTRAN system that the DWDM SFP is being deployed in is not designed nor intended for installation as part of an Isolated Bonding Network (IBN).
- Per GR-1089-CORE Section 9, the DWDM SFP does not have an internal DC connection between battery return and frame ground. The DWDM SFP can be installed in a DC-I (isolated) or DC-C (common) installation. For installations where other cards or the host system have internal connections between battery return and frame ground, the system would be intended for deployment only in a DC-C installation.
- The ADTRAN system chassis frame ground terminal must be connected to a reliable earth ground to ensure that the metal enclosure of the DWDM SFP is properly grounded through the backplane connector.

### NOTE

- The 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 Issue 5.
- This DWDM SFP is compliant with SFF-8472 "Digital Diagnostics Monitoring Interface for Optical Transceivers," Revision 9.3.
- This DWDM SFP is compliant with the XFP Multi-Source Agreement (MSA).
- This DWDM SFP is designed to be deployed in GR-3108-CORE environmental class 1 or 2 as defined in GR-3108-CORE Issue 2.

The DWDM SFP meets or exceeds all the applicable requirements of NEBS, Telcordia GR-63-CORE, GR-1089-CORE, and ETSI EN 300368. The DWDM SFP is intended for deployment in Central Office type facilities, EEs, EECs, and locations where the NEC applies (for example, Customer Premises).

The DWDM SFP is to be installed in ADTRAN products in Restricted Access Locations only, and installed by trained service personnel.

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.

The DWDM SFP 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 3.3

The equipment is designed to function without degradation during exposure to all test severities per Class 3.3.

The OC-48 DWDM, 1558.98 nm, 80 km SFP meets EU RoHS Directive 2002/95/EC and/or applicable exemptions. Refer to [www.adtran.com](http://www.adtran.com) for further information on RoHS/WEEE.

**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](http://www.adtran.com/warranty).

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