

OC-3/OC-12 Optical Multiplexer Module

CLEI: SOUIBPRL_ _ _
Product P/N: 1184571G1V

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

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The following documents provide additional information for this product:

OPTI-6100 Installation and Turn-Up Guide

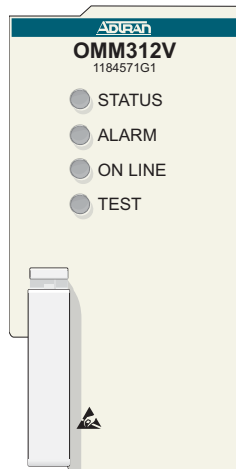
OPTI-6100 Maintenance and Troubleshooting Guide

OPTI-6100 Overview, Engineering, Applications, and Ordering Guide

OPTI-6100 TL1 Reference Guide

SFP/XFP/SFP+ Compatibility Matrix and Engineering Guide

DESCRIPTION



The OPTI-6100® OC-3/OC-12 Optical Multiplexer Module (OMM312V) terminates a SONET OC-3 or OC-12 fiber circuit to feed the OPTI-6100 MX or SMX chassis. It converts optical signals into digital electrical signals for distribution through the backplane to the tributary modules.

The OMM312V requires OPTI-6100 System Release 5.2 or higher, plus a small form-factor pluggable (SFP) to provide the optical interface.

FEATURES

The OMM312V supports the following features:

- SONET rates:
 - ◆ OC-3 (155.52 Mbps)
 - ◆ OC-12 (622.08 Mbps)
- Operational modes:
 - ◆ Terminal mode: 1+1 Unidirectional
 - ◆ Terminal mode: 1+1 Bi-directional
 - ◆ Add/Drop Multiplexer (ADM) mode: Unidirectional Path Switched Ring (UPSR)
 - ◆ Optical Y-cable
- Redundant (1+1) or non-redundant operation
- Hot swap capability
- Timing/synchronization options:

- ◆ External BITS timing (In/Out from chassis)
- ◆ Stratum 3 clock
- ◆ Timing derived from tributary module
- ◆ Receive fiber timing
- Integrated, non-blocking, any-to-any STS-3, STS-1, and VT cross-connect
- Supports 155 Mbps and 622 Mbps backplane rates
- Centrally managed by the System Controller Module (SCM, P/N 1184500Lxx)
- Bridges all DCC channels between high-speed (HS) and mid-speed (MS) interfaces and the SCM

Connections/Compatibilities

The OMM312V plugs directly into the OPTI-6100 chassis as follows:

- MX (P/N 1184501x1): **HS1** or **HS2**
- SMX (P/N 1184514x1): **HS1** or **HS2**
- LMX (P/N 1184555L1): **Not supported**

The data rates delivered to MS slots are as follows:

- OC-3 operation: Delivers 155 Mbps to all MS slots
- OC-12 operation:
 - ◆ Delivers 622 Mbps to MS slots 1 and 3
 - ◆ Delivers 155 Mbps to all other MS slots

SFPs

The table below lists the SFPs supported on the OMM312V.

Part Number	Optics/Type	Wavelength	Max. Span
OC-3 SFPs			
1184543P1	Long Reach 1	1310 nm	40 km
1184543PG1	Long Reach 1	1310 nm	40 km
1184543P2	Intermediate Reach 1	1310 nm	15 km
1184543PG2	Intermediate Reach 1	1310 nm	15 km
1184543P3	Short Reach	1310 nm	2 km
1184543PG3	Short Reach	1310	2 km
1184543P5	Long Reach 2	1550 nm	80 km
1184543PG5	Long Reach 2	1550 nm	80 km
1442702PG1	Single-fiber, bi-directional	1310 nm	20 km
1442702PG2	Single-fiber, bi-directional	1550 nm	20 km
OC-12 SFPs			
1184544P1	Long Reach 1	1310 nm	40 km
1184544PG1	Long Reach 1	1310 nm	40 km
1184544P2	Intermediate Reach 1	1310 nm	15 km
1184544PG2	Intermediate Reach 1	1310 nm	15 km
1184544P5	Long Reach 2	1550 nm	80 km
1442704PG1	Single-fiber, bi-directional	1310 nm	15 km
1442704PG2	Single-fiber, bi-directional	1550 nm	15 km

INSTALLATION

Before installation, inspect the OMM312V. If damage has occurred during shipping, file a claim with the carrier, and then contact ADTRAN Customer Support.

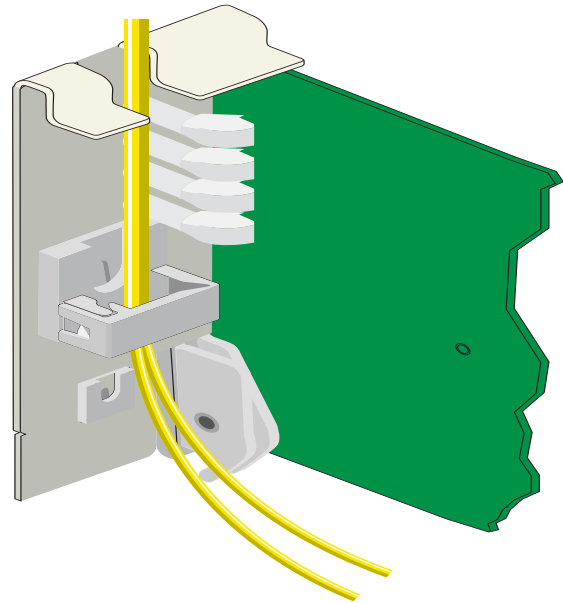
Installation Guidelines

The following are guidelines for this installation.

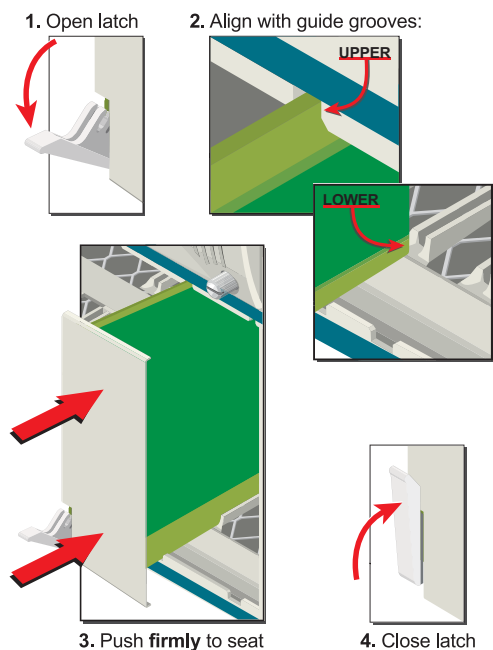
- Remove the MS Module Blank(s) (P/N 1184505x1) from the appropriate slot(s) of the OPTI-6100 chassis, if present.
- Install the required SFP.
- Identify the fiber conductors or Cat-5 cables to be terminated on the module. Insert the connectors into the appropriate jacks.
- Do not pinch the fibers against the edge of the chassis.
- Route optical fibers along the chassis fiber tray.

Installation Steps

1. Identify the fiber conductors to be terminated on the module. Insert the connectors into the appropriate jacks. Route the fibers according to the fiber routing diagram, above right.



2. To Install the OMM312V, refer to the figure below.



This module performs a self-test at power-up. After testing, the LEDs indicate the current status of the module, as described in Front Panel LEDs.

Front Panel LEDs

Label	Status	Indication
STATUS	○ Off	Lack of power or power failure
	● Red	Hardware or firmware failure
	● Yellow	Module Out of Service-Unassigned (OOS-UAS)
	★ Flashing Yellow	Module Out of Service-Maintenance (OOS-MA)
	● Green	Power up and initialization OK; Module is In Service (IS)
	★ Flashing Green	Firmware download in progress
ALARM	○ Off	LED failure or power failure
	● Red	Facility or Path error, such as Loss of Signal
	● Yellow	Alerts present
	● Green	Module operational with no alarms
ON LINE	○ Off	Module offline
	● Yellow	Module protection inhibited
	● Green	Module online
TEST	○ Off	Module not in test mode
	● Yellow	Module is in loopback

PROVISIONING

There are no switches or jumpers on the OMM312V module. Provisioning is done through the craft port or through remote access.

This module can also be remotely provisioned through TL1.

System Access

The OPTI-6100 SCM has a front-panel DB-9 connector, supplying an RS-232 interface to a controlling terminal. The supported terminal type is VT100 or compatible, set for:

- 9600 bps
- 8 data bits
- No parity
- No flow control
- 1 stop bit

After connection to the OPTI-6100 system, the Login screen is displayed. To log in, enter the default Account Name (**ADMIN**) and Password (**PASSWORD**).

To enter a menu or screen, select the desired option, and press ENTER. To return to the previous menu, press ESC.

Factory Defaults

To access OMM312V provisioning, complete the following steps:

1. Log in to the OPTI-6100
2. From the OPTI-6100 Main menu, select the OMM312V, and press ENTER.
3. From the OMM312V menu, select **Provisioning**, and press ENTER.

MAINTENANCE

The OMM312V 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. Field support for software is provided through upgrade facilities.

SPECIFICATIONS

Specifications for the OMM312V are as follows:

- Operates from A, B, or A and B input voltage feeds:
 - ◆ ±24 VDC Nominal (±20.0 VDC to ±28.3 VDC), or
 - ◆ -48 VDC Nominal (-40.0 VDC to -56.7 VDC)
- Extended environmental support:
 - ◆ Operational temperature range: -40°C to +55°C
 - ◆ Storage temperature range: -40°C to +85°C
 - ◆ Relative humidity to 95%, noncondensing

SAFETY AND REGULATORY COMPLIANCE

WARNING

Read all warnings and cautions before installing or servicing this equipment

CAUTION

This product is a Class 1 Laser that complies with FDA 21 CFR 1040.10 and 1040.11 and IEC 60825-1 and -2. The product 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 this product is being deployed in is designed and intended for installation as part of a Common Bonding Network (CBN). The ADTRAN system that this product is being deployed in is not designed nor intended for installation as part of an Isolated Bonding Network (IBN).
- This product is NRTL listed to all applicable UL standards. The product meets or exceeds applicable requirements of NEBS, Telcordia GR-63-CORE, GR-78-CORE, and GR-1089-CORE. This product is intended for deployment in Central Office type facilities, EEs, EECs, and locations where the NEC applies (e.g., Customer Premises).
- This product should be installed by qualified Service Personnel only, in an OPTI-6100 in a restricted access location.
- Per GR-1089-CORE Section 9, 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) 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 this product is properly grounded via the backplane connector.

Configuration Code	Input	Output
Power Code (PC)	F	C
Telecommunication Code (TC)	-	-
Installation Code (IC)	A	-

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.

NOTE

- This product is designed to operate with a nominal operating voltage of -48 or ± 24 VDC. The product will not be damaged by any steady state voltage below -56.7 VDC.
- When the chassis is wired for -48 VDC, the product will power itself down if it encounters steady state voltages below (approximately) -38 VDC.

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 3.3

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

This product complies with ETSI EN 300 386 *Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; Electromagnetic Compatibility (EMC) requirements*.

This product meets EU RoHS Directive 2002/95/EC and/or applicable exemptions. Refer to 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.



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