Prisma Strand Mounted Optical Amplifier
Installation and Operation Guide

For Your Safety

Explanation of Warning and Caution Icons

Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions.

The following warning and caution icons alert you to important information about the safe operation of this product:

You may find this symbol in the document that accompanies this product. This symbol indicates important operating or maintenance instructions.

You may find this symbol affixed to the product. This symbol indicates a live terminal where a dangerous voltage may be present; the tip of the flash points to the terminal device.

You may find this symbol affixed to the product. This symbol indicates a protective ground terminal.

You may find this symbol affixed to the product. This symbol indicates a chassis terminal (normally used for equipotential bonding).

You may find this symbol affixed to the product. This symbol warns of a potentially hot surface.

You may find this symbol affixed to the product and in this document. This symbol indicates an infrared laser that transmits intensity-modulated light and emits invisible laser radiation or an LED that transmits intensity-modulated light.

Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

Notices

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Important Safety Instructions

Read and Retain Instructions

Carefully read all safety and operating instructions before operating this equipment, and retain them for future reference.

Follow Instructions and Heed Warnings

Follow all operating and use instructions. Pay attention to all warnings and cautions in the operating instructions, as well as those that are affixed to this equipment.

Terminology

The terms defined below are used in this document. The definitions given are based on those found in safety standards.

Service Personnel - The term *service personnel* applies to trained and qualified individuals who are allowed to install, replace, or service electrical equipment. The service personnel are expected to use their experience and technical skills to avoid possible injury to themselves and others due to hazards that exist in service and restricted access areas.

User and Operator - The terms *user* and *operator* apply to persons other than service personnel.

Ground(ing) and Earth(ing) - The terms *ground(ing)* and *earth(ing)* are synonymous. This document uses ground(ing) for clarity, but it can be interpreted as having the same meaning as earth(ing).

Electric Shock Hazard

This equipment meets applicable safety standards.

> ⚠ **WARNING:**
>
> **Avoid electric shock! Opening or removing the equipment cover may expose you to dangerous voltages. Refer all servicing to qualified service personnel only.**

Electric shock can cause personal injury or even death. Avoid direct contact with dangerous voltages at all times.

Know the following safety warnings and guidelines:

- Only qualified service personnel are allowed to perform equipment installation or replacement.
- Only qualified service personnel are allowed to remove equipment covers and access any of the components inside the chassis.

Equipment Placement

> ⚠ **WARNING:**
>
> **Avoid personal injury and damage to this equipment. An unstable mounting surface may cause this equipment to fall.**

To protect against equipment damage or injury to personnel, comply with the following:

- Install this equipment in a restricted access location (access restricted to service personnel).
- Make sure the mounting surface or rack is stable and can support the size and weight of this equipment.

Continued on next page

Strand (Aerial) Installation

⚠ **CAUTIONS:**

- **Be aware of the size and weight of strand-mounted equipment during the installation operation.**
- **Ensure that the strand can safely support the equipment's weight.**

Pedestal, Service Closet, Equipment Room or Underground Vault Installation

⚠ **WARNING:**

Avoid the possibility of personal injury. Ensure proper handling/lifting techniques are employed when working in confined spaces with heavy equipment.

- Ensure this equipment is securely fastened to the mounting surface or rack where necessary to protect against damage due to any disturbance and subsequent fall.
- Ensure the mounting surface or rack is appropriately anchored according to manufacturer's specifications.
- Ensure the installation site meets the ventilation requirements given in the equipment's data sheet to avoid the possibility of equipment overheating.
- Ensure the installation site and operating environment is compatible with the equipment's International Protection (IP) rating specified in the equipment's data sheet.

Connecting to Utility AC Power

Important: If this equipment is a Class I equipment, it must be grounded.

- If this equipment plugs into an outlet, the outlet must be near this equipment, and must be easily accessible.
- Connect this equipment only to the power sources that are identified on the equipment-rating label, which is normally located close to the power inlet connector(s).
- This equipment may have two power sources. Be sure to disconnect all power sources before working on this equipment.
- If this equipment **does not** have a main power switch, the power cord connector serves as the disconnect device.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.

Connection to Network Power Sources

Refer to this equipment's specific installation instructions in this manual or in companion manuals in this series for connection to network ferro-resonant AC power sources.

Continued on next page

AC Power Shunts

AC power shunts may be provided with this equipment.

Important: The power shunts (where provided) must be removed before installing modules into a powered housing. With the shunts removed, power surge to the components and RF-connectors is reduced.

> ⚠ **CAUTION:**
>
> **RF connectors and housing seizure assemblies can be damaged if shunts are not removed from the equipment before installing or removing modules from the housing.**

Grounding (Utility AC Powered Equipment in Pedestals, Service Closets, etc.)

This section provides instructions for verifying that the equipment is properly grounded.

Safety Plugs (USA Only)

This equipment is equipped with either a 3-terminal (grounding-type) safety plug or a 2-terminal (polarized) safety plug. The wide blade or the third terminal is provided for safety. Do not defeat the safety purpose of the grounding-type or polarized safety plug.

To properly ground this equipment, follow these safety guidelines:

- **Grounding-Type Plug** - For a 3-terminal plug (one terminal on this plug is a protective grounding pin), insert the plug into a grounded mains, 3-terminal outlet.

  Note: This plug fits only one way. If this plug cannot be fully inserted into the outlet, contact an electrician to replace the obsolete 3-terminal outlet.

- **Polarized Plug** - For a 2-terminal plug (a polarized plug with one wide blade and one narrow blade), insert the plug into a polarized mains, 2-terminal outlet in which one socket is wider than the other.

  Note: If this plug cannot be fully inserted into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to replace the obsolete 2-terminal outlet.

Grounding Terminal

If this equipment is equipped with an external grounding terminal, attach one end of an 18-gauge wire (or larger) to the grounding terminal; then, attach the other end of the wire to a ground, such as a grounded equipment rack.

Continued on next page

Safety Plugs (European Union)

- **Class I Mains Powered Equipment –** Provided with a 3-terminal AC inlet and requires connection to a 3-terminal mains supply outlet via a 3-terminal power cord for proper connection to the protective ground.

  Note: The equipotential bonding terminal provided on some equipment is not designed to function as a protective ground connection.

- **Class II Mains Powered Equipment –** Provided with a 2-terminal AC inlet that may be connected by a 2-terminal power cord to the mains supply outlet. No connection to the protective ground is required as this class of equipment is provided with double or reinforced and/or supplementary insulation in addition to the basic insulation provided in Class I equipment.

  Note: Class II equipment, which is subject to EN 50083-1, is provided with a chassis mounted equipotential bonding terminal. See the section titled **Equipotential Bonding** for connection instructions.

Equipotential Bonding

If this equipment is equipped with an external chassis terminal marked with the IEC 60417-5020 chassis icon (⏚), the installer should refer to CENELEC standard EN 50083-1 or IEC standard IEC 60728-11 for correct equipotential bonding connection instructions.

General Servicing Precautions

⚠ **WARNING:**

Avoid electric shock! Opening or removing this equipment's cover may expose you to dangerous voltages.

⚠ **CAUTION:**

These servicing precautions are for the guidance of qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

Be aware of the following general precautions and guidelines:

- **Servicing** - Servicing is required when this equipment has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into this equipment, this equipment has been exposed to rain or moisture, does not operate normally, or has been dropped.
- **Wristwatch and Jewelry** - For personal safety and to avoid damage of this equipment during service and repair, do not wear electrically conducting objects such as a wristwatch or jewelry.

Continued on next page

- **Lightning** - Do not work on this equipment, or connect or disconnect cables, during periods of lightning.
- **Labels** - Do not remove any warning labels. Replace damaged or illegible warning labels with new ones.
- **Covers -** Do not open the cover of this equipment and attempt service unless instructed to do so in the instructions. Refer all servicing to qualified service personnel only.
- **Moisture** - Do not allow moisture to enter this equipment.
- **Cleaning** - Use a damp cloth for cleaning.
- **Safety Checks** - After service, assemble this equipment and perform safety checks to ensure it is safe to use before putting it back into operation.

Electrostatic Discharge

Electrostatic discharge (ESD) results from the static electricity buildup on the human body and other objects. This static discharge can degrade components and cause failures.

Take the following precautions against electrostatic discharge:

- Use an anti-static bench mat and a wrist strap or ankle strap designed to safely ground ESD potentials through a resistive element.
- Keep components in their anti-static packaging until installed.
- Avoid touching electronic components when installing a module.

Fuse Replacement

To replace a fuse, comply with the following:

- Disconnect the power before changing fuses.
- Identify and clear the condition that caused the original fuse failure.
- Always use a fuse of the correct type and rating. The correct type and rating are indicated on this equipment.

Lithium Battery

For equipment with a lithium battery, observe the following rules:

- Do not dispose of used batteries through the regular garbage collection system, but follow the local regulations. The batteries may contain substances that could be harmful to the environment.
- Replace batteries with the same or equivalent type recommended by Scientific-Atlanta.
- Insert batteries correctly. There may be a risk of explosion if the batteries are incorrectly inserted.
- When disposing of this equipment, remove the batteries and dispose of them separately in accordance with local regulations.
- Do not recharge the batteries or expose them to temperatures above 100°C (212°F).

Continued on next page

EMC

Where this equipment is subject to USA FCC and/or Industry Canada rules, the following statements apply:

FCC Statement for Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Industry Canada – Industrie Canadienne Statement

This apparatus complies with Canadian ICES-003.
Cet appareil est confome à la norme NMB-003 du Canada.

CENELEC/CISPR Statement with Respect to Class A Information Technology Equipment

This is a Class A equipment. In a domestic environment this equipment may cause radio interference in which case the user may be required to take adequate measures.

Modifications

This equipment has been designed and tested to comply with applicable safety, laser safety, and EMC regulations, codes, and standards to ensure safe operation in its intended environment.

Do not make modifications to this equipment. Any changes or modifications could void the user's authority to operate this equipment.

Modifications have the potential to degrade the level of protection built into this equipment, putting people and property at risk of injury or damage. Those persons making any modifications expose themselves to the penalties arising from proven non-compliance with regulatory requirements and to civil litigation for compensation in respect of consequential damages or injury.

Accessories

Use only attachments or accessories specified by the manufacturer.

Laser Safety

Introduction

This equipment contains an infrared laser that transmits intensity-modulated light and emits invisible radiation.

Warning: Radiation

WARNINGS:

- **Avoid personal injury! Use of controls, adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.**
- **Avoid personal injury! The laser light source on this equipment emits invisible laser radiation. Avoid direct exposure to the laser light source.**

- Do not apply power to this equipment if the fiber is unmated or unterminated.
- Do not stare into an unmated fiber or at any mirror-like surface that could reflect light that is emitted from an unterminated fiber.
- Do not view an activated fiber with optical instruments (e.g., eye loupes, magnifiers, microscopes).
- Use safety-approved optical fiber cable to maintain compliance with applicable laser safety requirements.

Warning: Fiber Optic Cables

WARNING:

Avoid personal injury! Qualified service personnel may only perform the procedures in this manual. Wear safety glasses and use extreme caution when handling fiber optic cables, particularly during splicing or terminating operations. The thin glass fiber core at the center of the cable is fragile when exposed by the removal of cladding and buffer material. It easily fragments into glass splinters. Using tweezers, place splinters immediately in a sealed waste container and dispose of them safely in accordance with local regulations.

Continued on next page

Safe Operation For Software Controlling Optical Transmission Equipment

If this manual discusses software, the software described is used to monitor and/or control Scientific-Atlanta and other vendors' electrical and optical equipment designed to transmit video, voice, or data signals. Certain safety precautions should be observed when operating equipment of this nature.

For equipment specific safety requirements, refer to the appropriate section of the equipment documentation.

For safe operation of this software, refer to the following warnings.

⚠ **WARNINGS:**

- **Ensure that all optical connections are complete or terminated before using this equipment to remotely control a laser device. An optical or laser device can pose a hazard to remotely located personnel when operated without their knowledge.**
- **Allow only personnel trained in laser safety to operate this software. Otherwise, injuries to personnel may occur.**
- **Restrict access of this software to authorized personnel only.**
- **Install this software in equipment that is located in a restricted access area.**

Continued on next page

Product Specific Laser Information

The following laser safety precautions are applicable to this equipment. Information about the optical transmitter installed inside this equipment is available on this equipment identification label. A laser label that clearly indicates the laser aperture is affixed to this equipment's front panel.

The unit bears the following labels.

CLASS 1 LASER PRODUCT

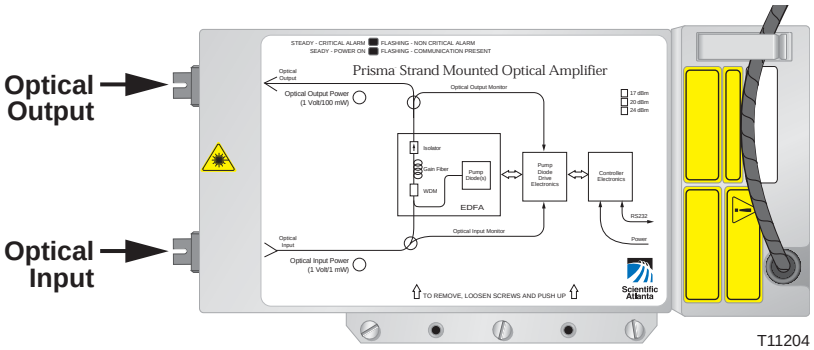
THIS PRODUCT CONFORMS TO THE APPLICABLE REQUIREMENTS OF 21 CFR SUBCHAPTER J AT THE DATE OF MANUFACTURE.

LASER CLASS APPLIES ONLY WHEN FIBERS ARE ATTACHED OR BEAM ATTENUATORS ARE IN PLACE.

T9855

T10149

The following illustrations display the location of the laser apertures.



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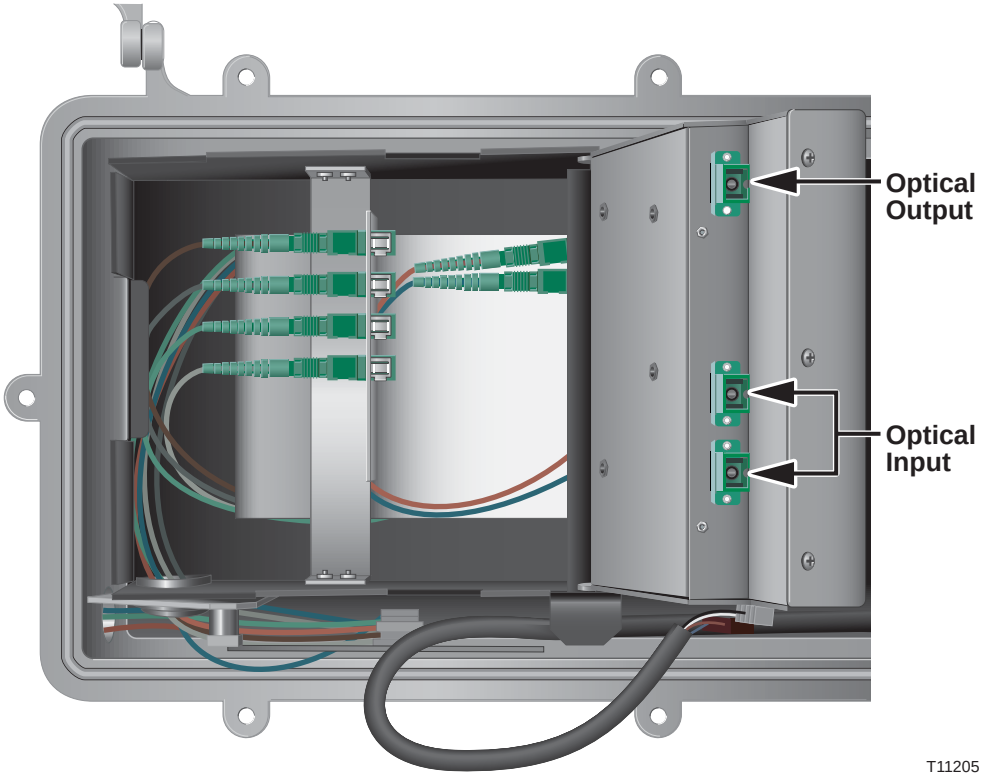


Maximum Laser Power

The maximum laser power that can be produced in this family of amplifiers, due to misadjustment or component failure, is 300 mW.

Chapter 1
Introducing the Prisma Strand Mounted Optical Amplifier

Overview

Chapter Contents

This chapter introduces you to the Prisma® Strand Mounted Optical Amplifier and contains the following topics.

Topic	See Page
Description of the Strand Mounted Optical Amplifier	1-2
The Housing	1-4
The Power Section	1-6
The Optical Section	1-9
The Optical Amplifier Module	1-10
Block Diagrams	1-13

Description of the Strand Mounted Optical Amplifier

Introduction

The Prisma Strand Mounted Optical Amplifier (SMOA) is designed for field-based optical amplification. The Strand Mounted Optical Amplifier can be installed on a strand, pedestal, or in an underground enclosure, thus eliminating the need for costly environmental cabinets. Encased in a rugged enclosure and optimized to operate from –40°C to +65°C, the amplifier features optional redundant power supplies and a modular design that allows easy field upgrades of the amplifier and other modules.

Features of the Strand Mounted Optical Amplifier

The following are the basic features of the Strand Mounted Optical Amplifier.

- Available in +17, +20, and +24 dBm optical output powers
- Operates over broad temperature range: -40°C to +65°C
- Modular design for easy field upgrades
- Available with redundant power supplies
- User setup through Local Craft Interface (LCI) software

Options include:

- Optical switch for increased reliability
- 1x2, 1x3, or 1x4 internal splits
- Remote monitoring via Transmission Network Control System (TNCS)
- Test points for measuring input and output optical power (V DC)

Continued on next page

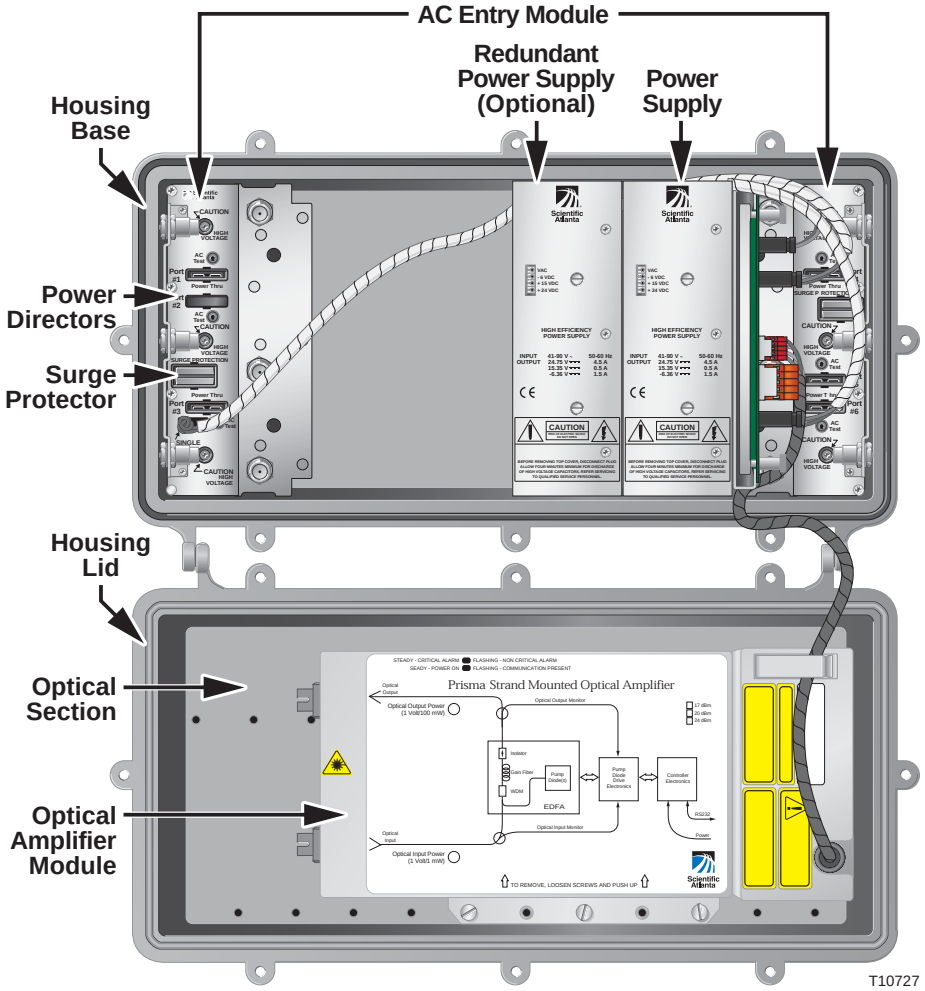
Main Components of the Strand Mounted Optical Amplifier

The main components of the Strand Mounted Optical Amplifier are:

- The Housing Lid
- The Housing Base
- The Power Section
- The Optical Section
- The Optical Amplifier Module

Illustration of the Main Components

The following illustration displays the main components of the Strand Mounted Optical Amplifier.



The Housing

Overview

The housing is made up of the housing lid and the housing base and provides a rugged, watertight, and RF shielded enclosure for the internal electronics. It is constructed of cast aluminum with zinc chromate plating (standard), and the design provides good convective heat dissipation in any mounting position.

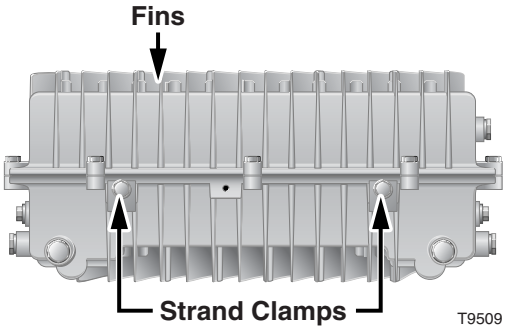
Features of the Housing

The following are the important features of the housing.

- Watertight enclosure for internal electronics.
- Six available 41 V minimum/90 V maximum AC input ports and one fiber entry port.
- The housing lid has an RFI gasket, and the housing base has a weather seal gasket.

Front View of the Housing

This illustration shows the front view of the Strand Mounted Optical Amplifier housing.



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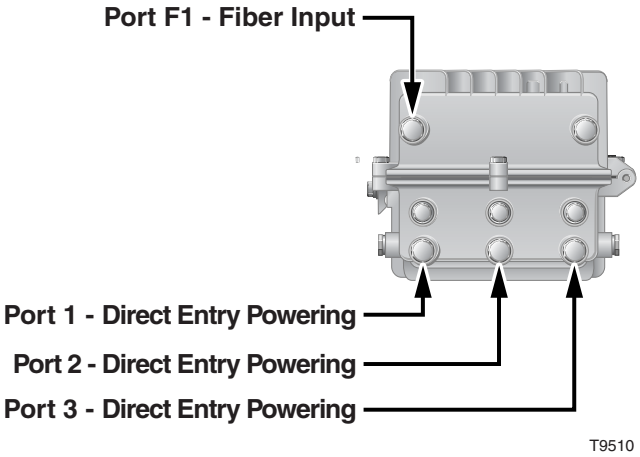
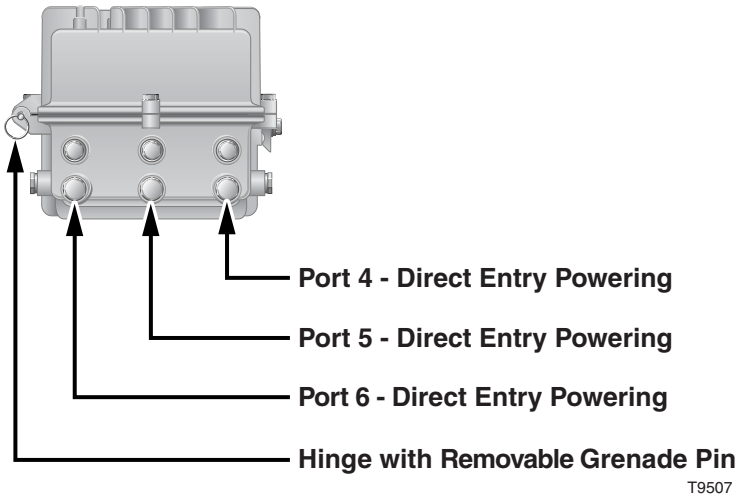
Housing View of Ports 1, 2, and 3

This illustration shows the view of ports 1, 2, and 3 in the Strand Mounted Optical Amplifier housing.



Housing View of Ports 4, 5, and 6

This illustration shows the view of ports 4, 5, and 6 in the Strand Mounted Optical Amplifier housing.



The Power Section

Overview

The power section includes the power-related components of the Strand Mounted Optical Amplifier, which includes the AC entry modules, DC power supplies, and the interface board. The power section has features for the safe input of power to the unit, and power supplies necessary for conversion of AC to DC power.

Features of the Power Section

The following are the important features of the power section.

- Power can be supplied to port 2 without a power inserter. Power can be applied to any of the other ports with a power inserter.
- Surge protection is provided to protect the Strand Mounted Optical Amplifier from lightning or sheath currents.
- A power director is provided. When used, the power director enables the flow of AC current through the port.
- The power supply converts AC power (41 V minimum to 90 V maximum) from the AC entry section of the housing to the DC voltages necessary for the optical amplifier and other modules.
- Every Strand Mounted Optical Amplifier contains at least one power supply.

  Note: At the customer's option, a second power supply can be ordered to enhance DC power reliability.
- The power supply is an AC switch mode that provides efficient conversion of AC power to DC power.
- The housing allows power to pass at 15 amps continuously through any port. The total current is split between the selected AC passing ports to provide power downstream from the Strand Mounted Optical Amplifier.

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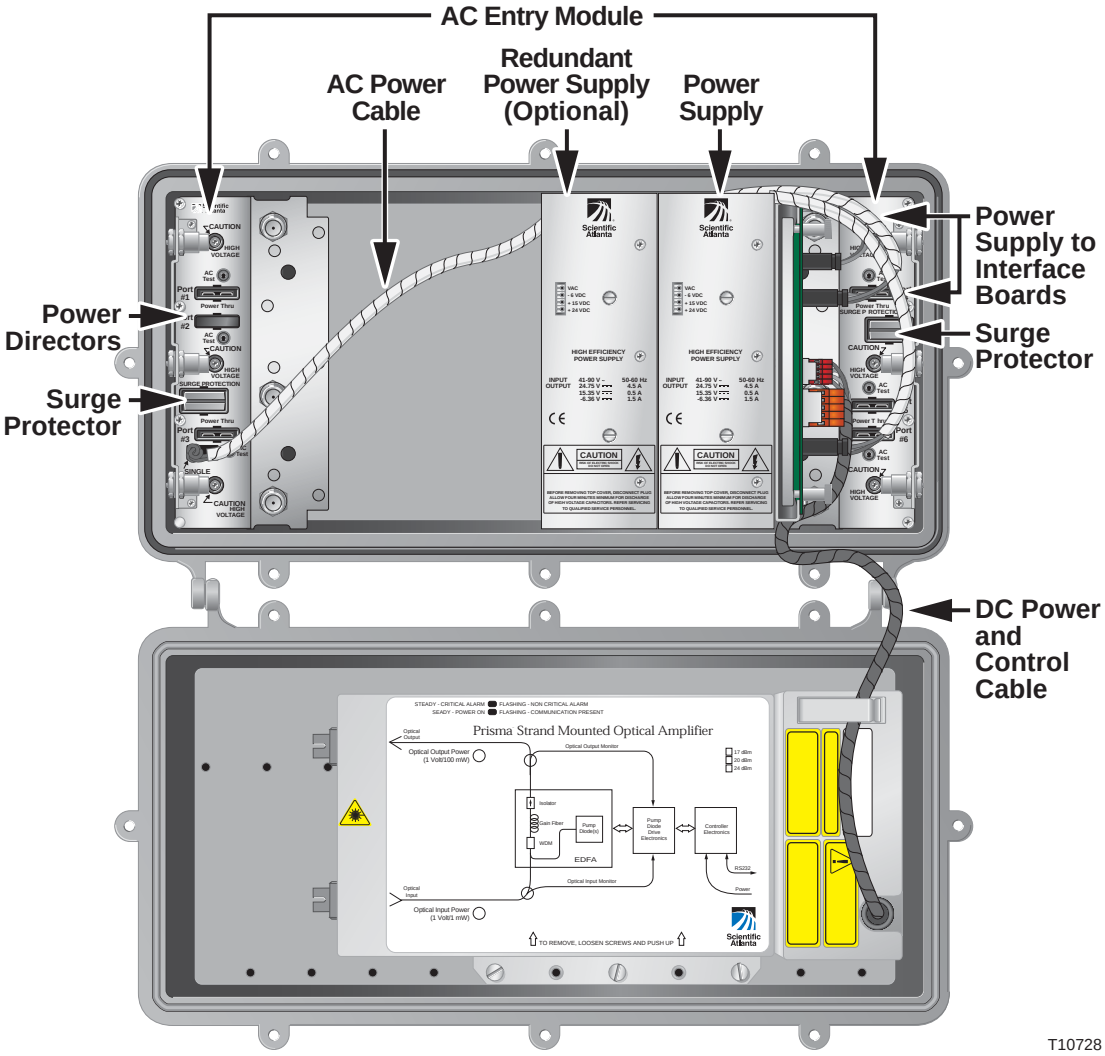
Illustration of the Power Section Components

This illustration displays the components that make up the power section of the Strand Mounted Optical Amplifier.



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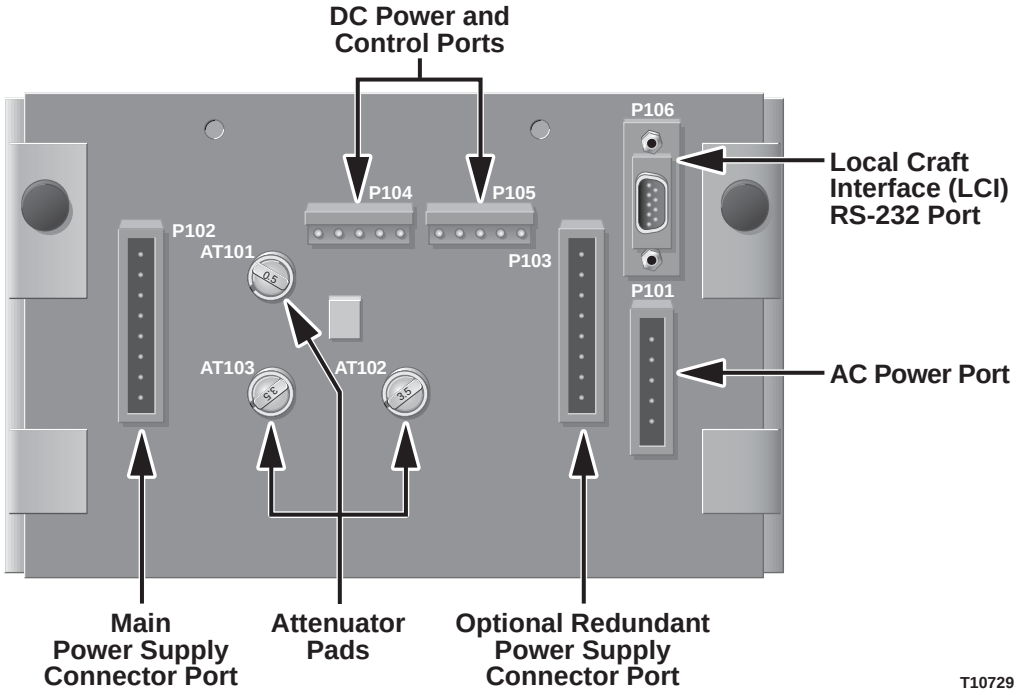
Interface Board

This illustration displays the components that make up the interface board.



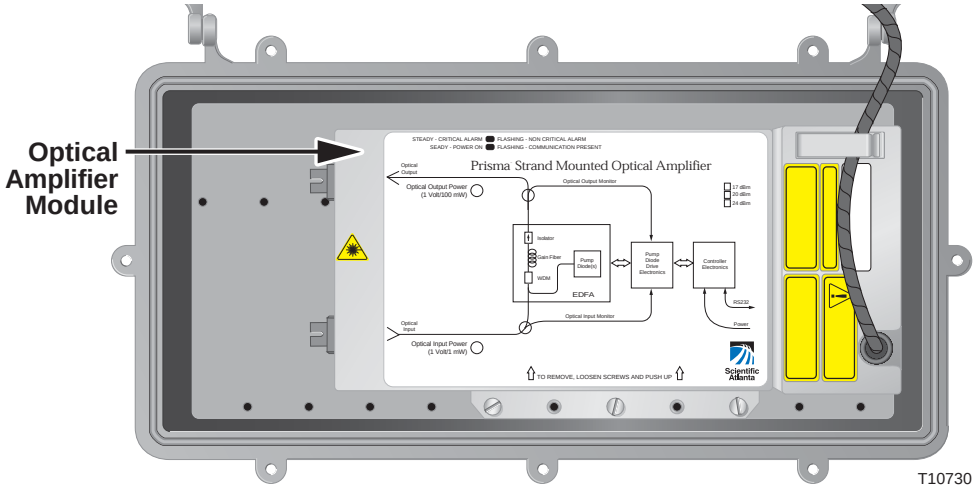
The Optical Section

Overview

The optical section supports the optical amplifier module, optional optical switch, optional splitter tray, and all fiber management. The optical section features modular design for easy upgrade or replacement of the optical amplifier module or other modules.

Illustration of the Optical Components

This illustration displays the optical section.



The Optical Amplifier Module

Overview

The Prisma Strand Mounted Optical Amplifier module operates over a wide range of input power from an upstream system to provide high-performance transmission of voice, video, and data signals for optical networking.

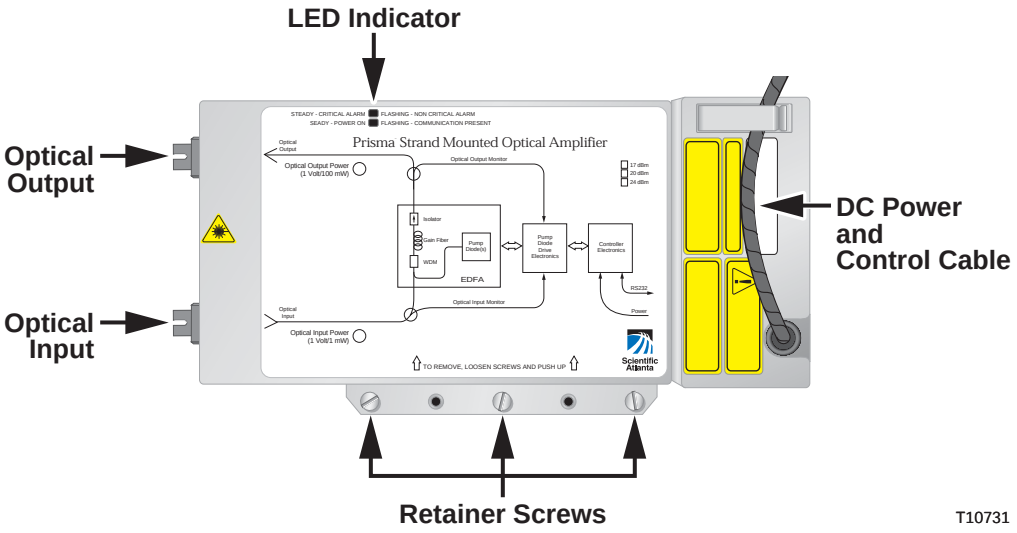
Features of the Optical Amplifier Module

The following are the basic features of the optical amplifier module.

- +17 dBm, +20 dBm, or +24 dBm optical output options
- Adjustable output power
- Optical input and output connectors
- Plug-and-play capability
- Compatible with Scientific-Atlanta LCI software
- Scientific-Atlanta's proprietary cladding pump technology on higher output levels
- Modular design for easy field upgrades
- LEDs for monitoring

Illustration of the Optical Amplifier Module

This illustration displays the optical amplifier module.



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Optical Connectors

The standard optical input and output connectors are SC/APC.

> ⚠ **WARNING:**
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Performance Specifications

Optical	Units	
Output power options (at +5.0 dBm input power) **Notes:** • Contact Applications Engineering for performance at other input power levels. • Represents total output power prior to optical splitter.	dbm	+17.0 ± 0.5 +20.0 ± 0.5 +24.0 ± 0.5
Wavelength	nm	1530 to 1565
Operational Input Power Full Specifications Functional	 dBm dBm	 >0 >-10

Electrical	Units	
Operational Temperature Range	°C °F	-40 to +65 -40 to +149
Storage Temperature	°C °F	-40 to +85 -40 to +185
Relative Humidity	%	5 to 95
Power Requirements @ 60 Hz	V AC	41 to 90
Power Consumption (maximum)	W	< 50

Continued on next page

LED Indicators

The optical amplifier module has two LED indicators on the top of the module that identifies the status of the amplifier.

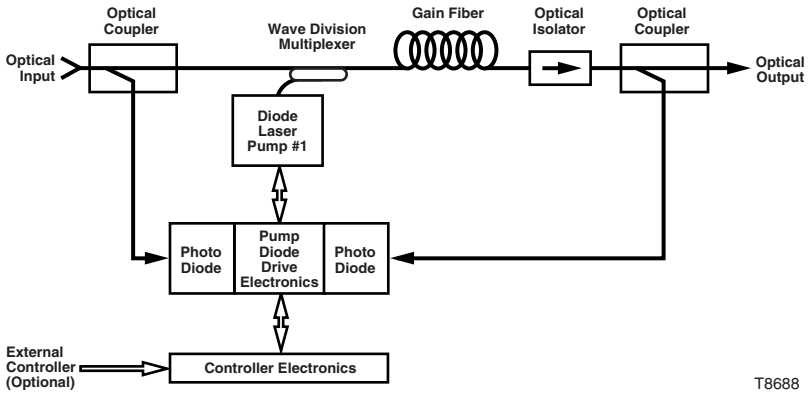
Indicator	Status
Flashing Red LED	Minor Alarm
Solid Red LED	Major Alarm
Flashing Green LED	Module is communicating
Solid Green LED	DC power is on

Block Diagrams

Optical Amplifier Power Levels

The following block diagrams show the +17 dBm, +20 dBm, and +24 dBm power levels for the Strand Mounted Optical Amplifier.

+17 dBm Power Level



Chapter 2
Installing the Prisma Strand Mounted Optical Amplifier

Overview

Chapter Contents

This chapter provides instructions for installing the Prisma Strand Mounted Optical Amplifier. This chapter is divided into two sections and contains the following topics.

Section	Topic	See Page
A	Preparing for Installation	2-2
B	Installing the Prisma Strand Mounted Optical Amplifier	2-9

Section A
Preparing for Installation

Overview

Section Contents

This section provides instructions for preparing the Prisma Strand Mounted Optical Amplifier for installation. The following topics are covered in this section.

Topic	See Page
Before You Begin	2-3
Inspecting the Outside	2-4
Opening the Housing	2-5
Inspecting the Inside	2-6
Closing the Housing	2-8

Before You Begin

Overview

Before you start the installation procedure, make sure you have all the tools ready.

Tools

The following tools are needed to configure and install the Strand Mounted Optical Amplifier:

- ½-inch hex driver or ratchet
- Two adjustable wrenches for coaxial connectors
- Standard straight blade screwdriver
- Sidecutters
- Torque wrench, capable of settings up to 100 in-lbs (11.3 Nm)
- Ruler
- File

Inspecting the Outside

Overview

The Prisma Strand Mounted Optical Amplifier is shipped in a heavy-duty cardboard box. Before you open the box, check the outside of the box for signs of damage.

The box contains:

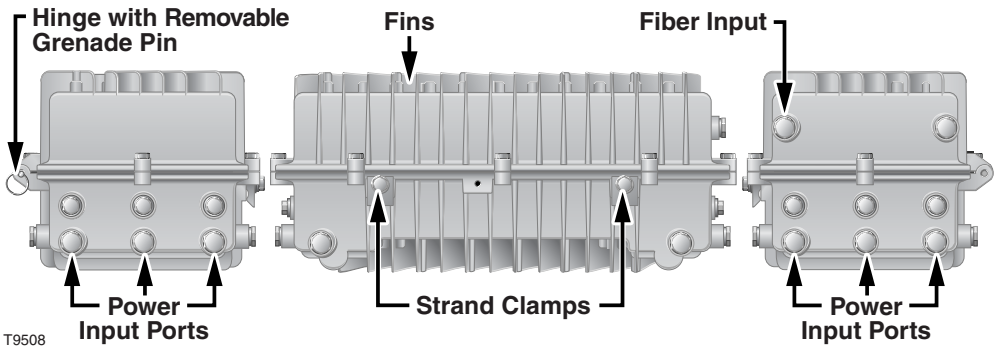
- The Strand Mounted Optical Amplifier
- Plastic bag containing the power directors stored inside the housing
- *Prisma Strand Mounted Optical Amplifier Installation and Operation Guide,* part number 744012

> ⚠ **CAUTION:**
>
> **Do not install the power directors until you are ready to test the Strand Mounted Optical Amplifier. For safety reasons, the amplifier is shipped without the power directors. It eliminates the hazards associated with manipulating an amplifier that is unknowingly powered.**

Inspecting the Outside of the Strand Mounted Optical Amplifier

This checkout procedure lets you verify that the Strand Mounted Optical Amplifier has not been damaged during shipment.

1. Check that the eight ½-in. closure bolts holding the two parts of the housing together are secure. Refer to the illustration in **Opening the Housing** for location of the closure bolts.



2. Check that the two hinges are intact and undamaged.
3. Check that the grenade pin is in the appropriate hinge.
4. Check that the fins are not damaged.
5. Check that the strand clamps are in place.

Opening the Housing

Overview

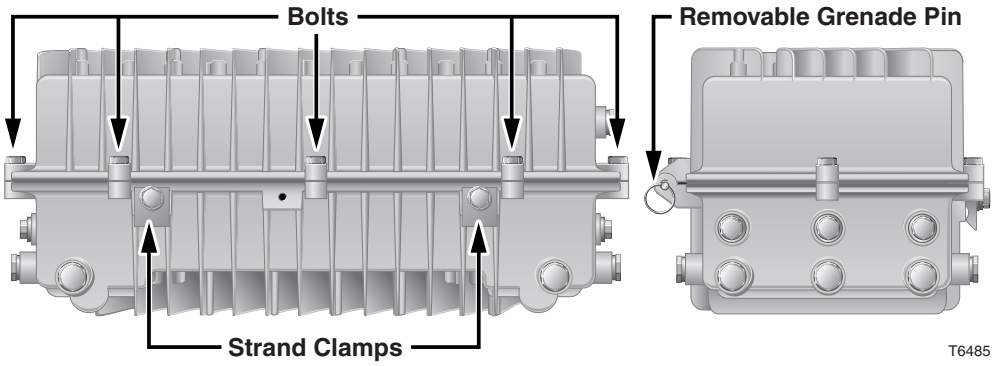
After inspecting the outside of the housing, follow these instructions to open the housing.

Opening the Strand Mounted Optical Amplifier Housing

Follow these steps to open the Strand Mounted Optical Amplifier housing.

Important: Before unscrewing the housing bolts, make sure the grenade pin in the hinge is in place. It prevents separation of the lid from the base.

1. Unscrew the eight ½-in. closure bolts until they are loose.



2. Open the housing.

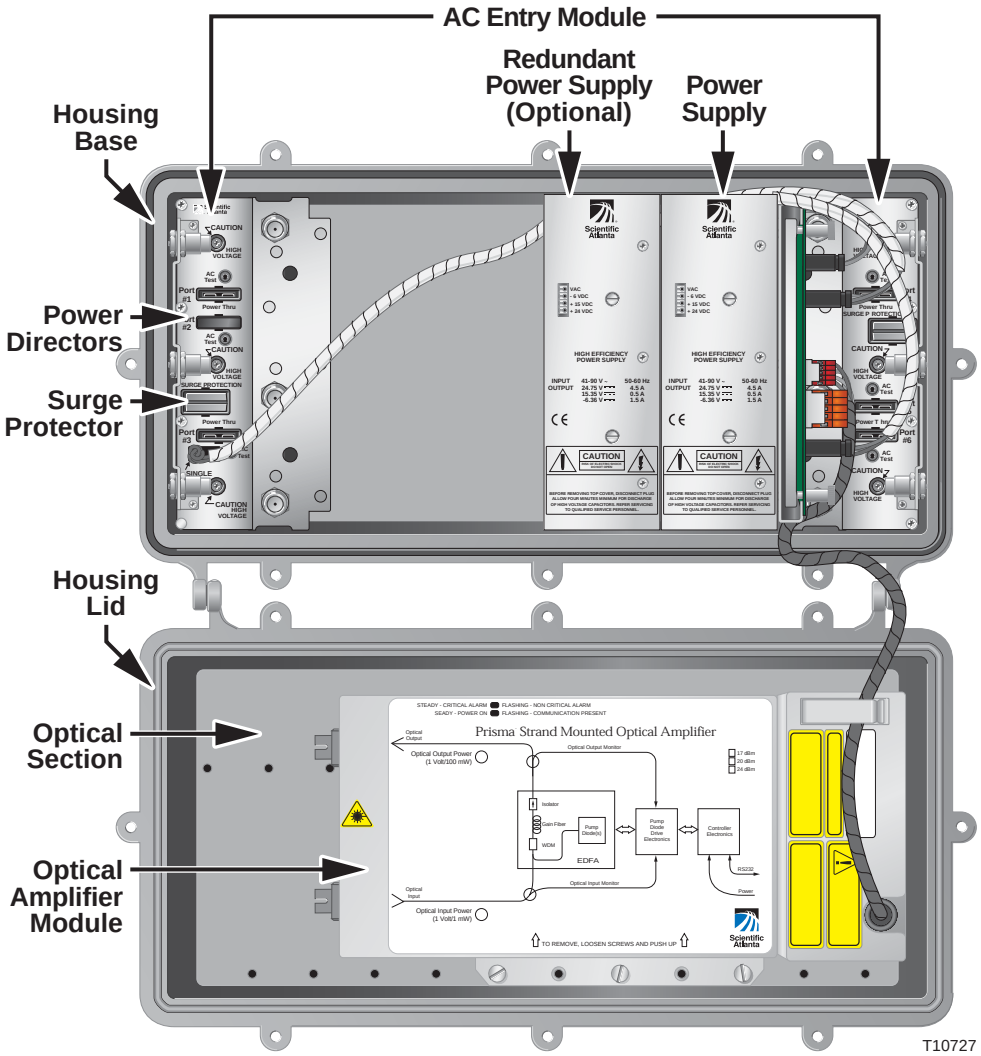
   Note: The closure bolts will remain attached to the housing.

Inspecting the Inside

Inspecting the Inside of the Strand Mounted Optical Amplifier

Follow these checkout instructions to inspect the inside of the Strand Mounted Optical Amplifier.

1. Verify that the surge protectors are in place.



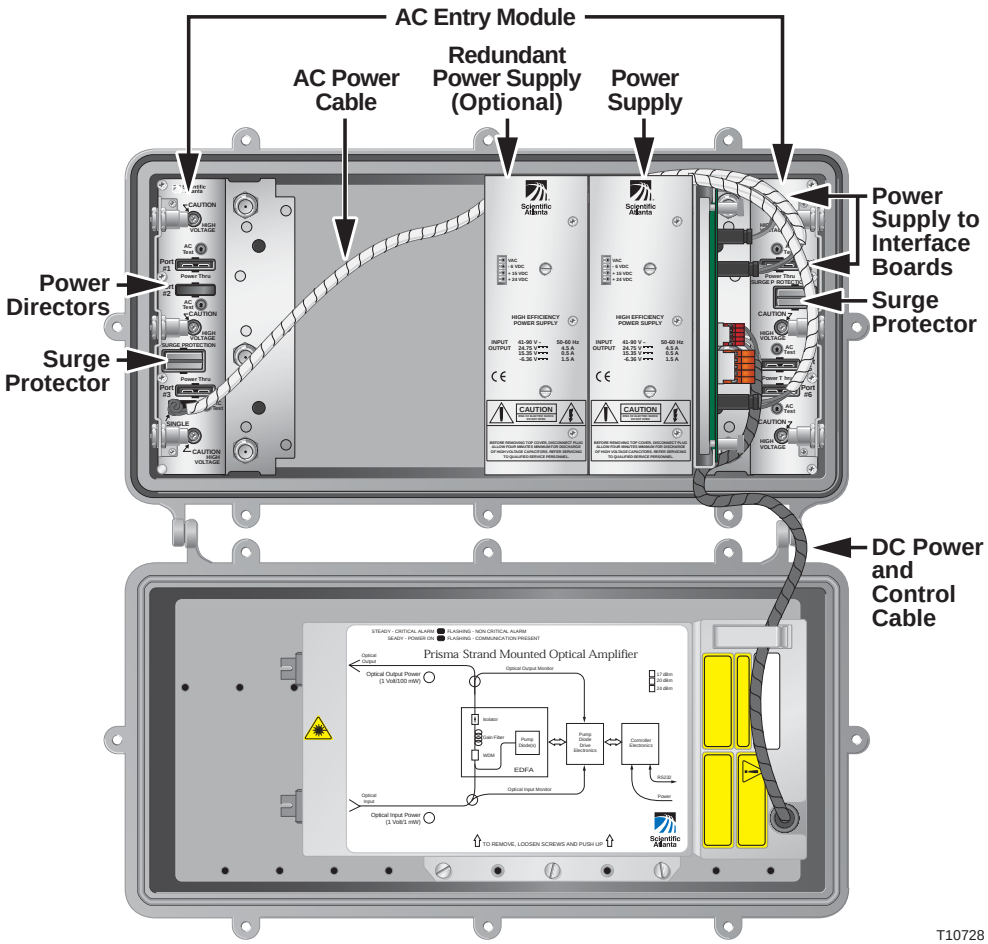
2. Verify that the optical amplifier module and power supply(ies) are in place. Refer to **Removing and Installing the Power Supply Module.**

Continued on next page

Checking the Interconnect Cabling

Follow these instructions to verify that all interconnect cables are securely connected. Refer to **Interface Board** section in Chapter 1 for details about the interface board.

1. Check the AC power cable that runs from the AC entry module to the interface board.



Note: The cable should be securely connected to the interface board.

2. Check the cable(s) connecting the power supply(ies) to the interface board.

3. Check the optical amplifier DC power and control cable that runs from the interface board to the optical amplifier.

Continued on next page

Closing the Housing

Closing the Strand Mounted Optical Amplifier Housing

Follow these steps to close the housing.

1. Make sure the housing gaskets are clean and in the correct position.
2. Close the Strand Mounted Optical Amplifier housing.

> ⚠ **CAUTION:**
>
> **Make sure all cables and optical fibers are out of the way when closing the Strand Mounted Optical Amplifier housing.**

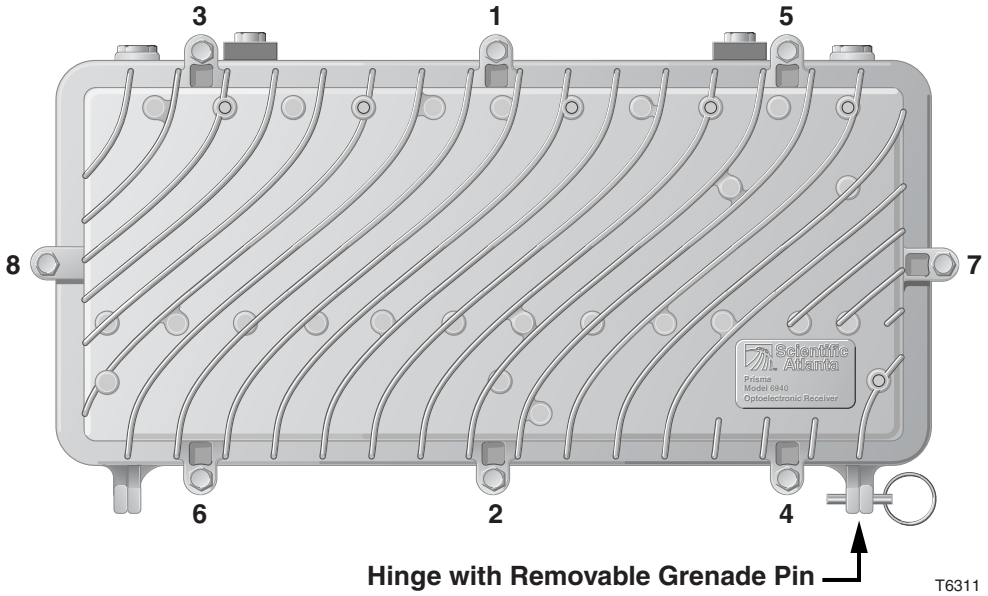
3. Lightly secure the eight closure bolts with a hex driver or ratchet.
4. Using a torque wrench, tighten the eight closure bolts to 25 in-lb (2.8 Nm).

   Important: Refer to **Torquing Sequence** for the proper torquing sequence.

5. Using the same torquing sequence, tighten the closure bolts from 60 in-lb to 70 in-lb (6.8 Nm to 7.9 Nm).

Torquing Sequence

The following diagram shows the proper torquing sequence for closing the housing. The torque sequence is also integrated into the housing casting.



Section B
Installing the Prisma Strand Mounted Optical Amplifier

Overview

Section Contents

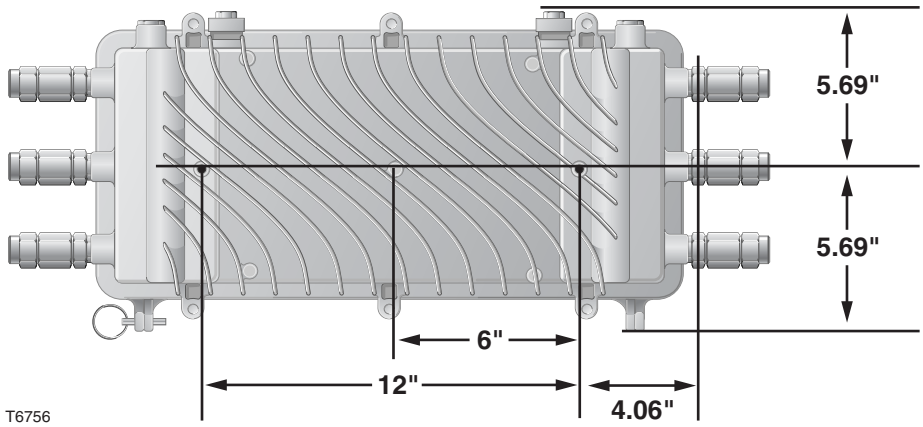
This section provides instructions for installing the Prisma Strand Mounted Optical Amplifier. The following topics are covered in this section.

Topic	See Page
Dimensions of the Housing	2-10
Mounting the Strand Mounted Optical Amplifier	2-12
Attaching the Coaxial Connectors	2-15
Attaching the Fiber Connectors	2-17

Dimensions of the Housing

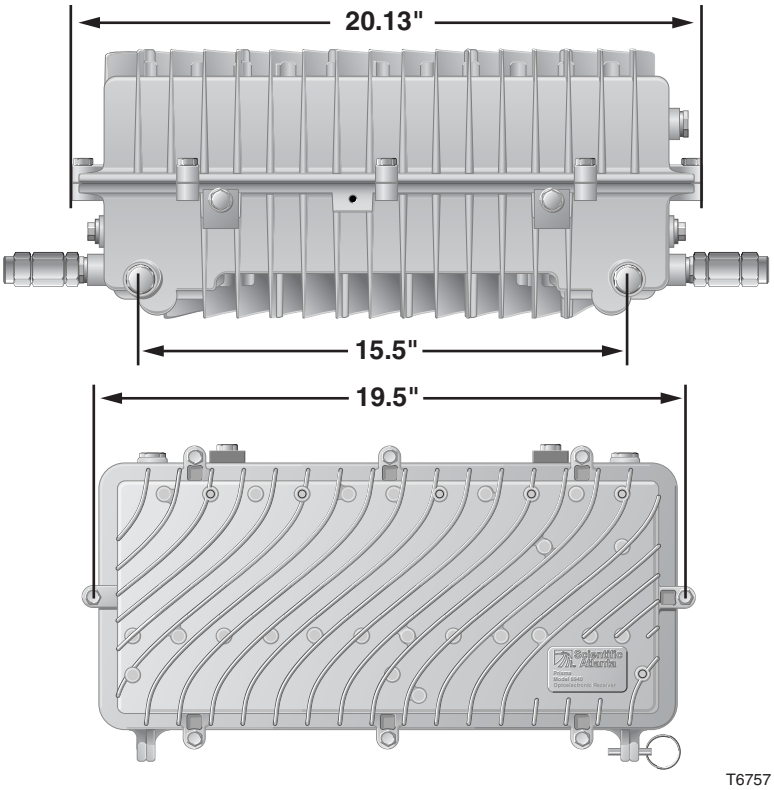
Illustration

This illustration shows the dimensions of the back of the Strand Mounted Optical Amplifier housing.



Illustration

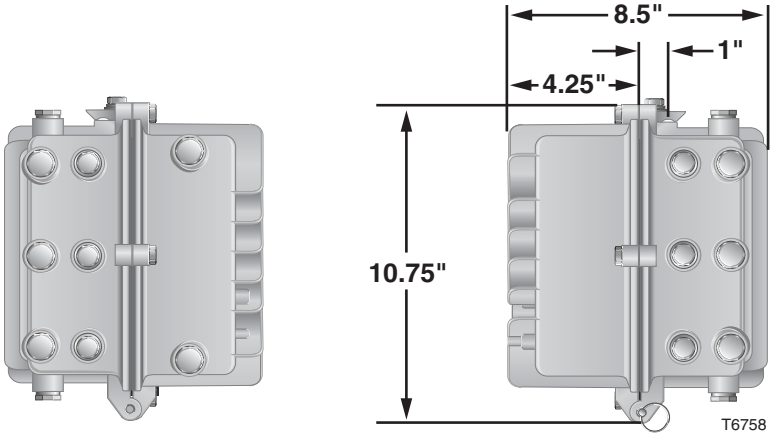
This illustration shows the dimensions of the top and front of the Strand Mounted Optical Amplifier housing.



Continued on next page

Illustration

This illustration shows the dimensions of either end of the Strand Mounted Optical Amplifier housing.



Measurements

The following table shows the measurements of the housing in inches and centimeters.

Inch	Centimeter
1	2.54
4.06	10.31
4.25	10.80
5.69	14.45
6	15.24
8.5	21.59
10.75	27.31
12	30.48
15.5	39.37
19.5	49.53
20.13	51.13

Mounting the Strand Mounted Optical Amplifier

Introduction

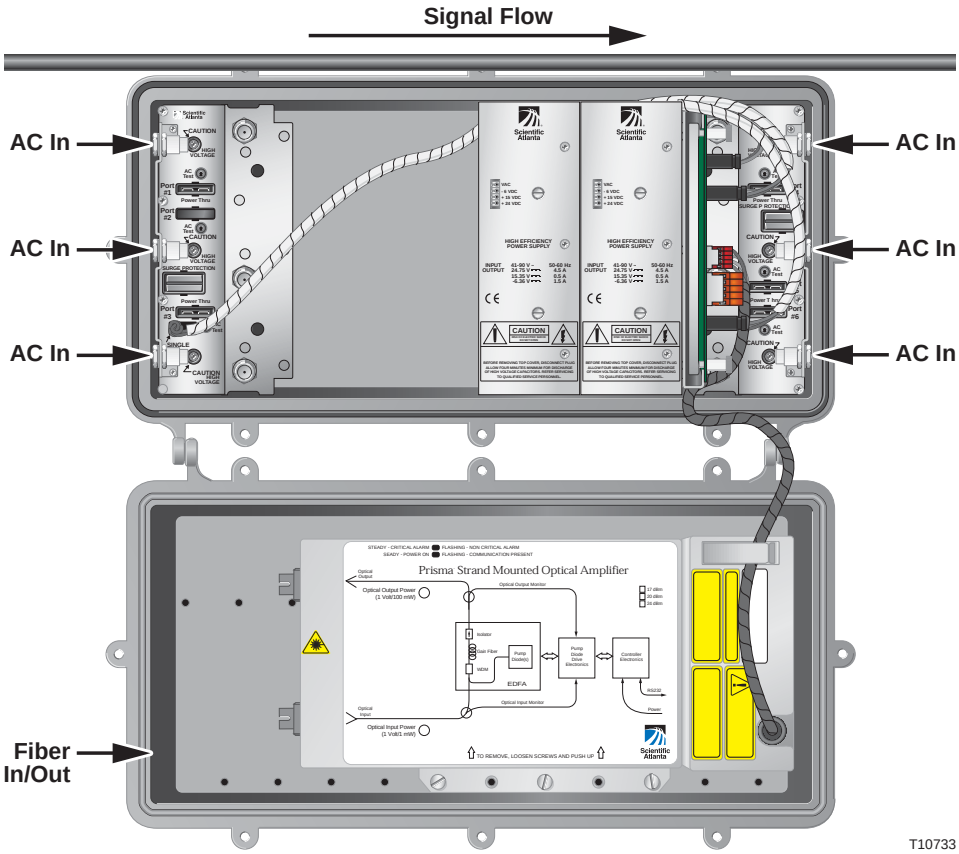
The following procedures detail how to install the Strand Mounted Optical Amplifier on a strand (aerial) or in a pedestal.

Strand (Aerial) Installation

Follow these steps to install the amplifier on a strand (aerial).

Note: The housing does not need to be opened for a strand (aerial) installation.

1. Loosen the strand clamp bolts.
2. Place the housing into proper position on the strand.



3. Slip the strand clamps over the strand and finger-tighten the strand clamp bolts. This allows additional movement of the housing as needed.

   Note: A slight tilt of the face of the housing is normal. Cable tension will cause the housing to hang more closely to vertical.

4. Proceed to **Attaching the Coaxial Connectors** later in this section.

Continued on next page

Pedestal Installation

Follow these steps to install the Strand Mounted Optical Amplifier in a pedestal.

1. Remove the cover of the pedestal.
2. Remove the self-tapping strand clamp bolts and strand clamps.
3. Align the housing to the brackets on the pedestal frame.
4. Attach the housing to the pedestal bracket by screwing the self-tapping strand-clamp bolts into the holes in the base of the housing.

   Note: The strand clamps are used as spacers.
5. Tighten the bolts from 20 in-lb to 30 in-lb (2.3 Nm to 3.4 Nm).

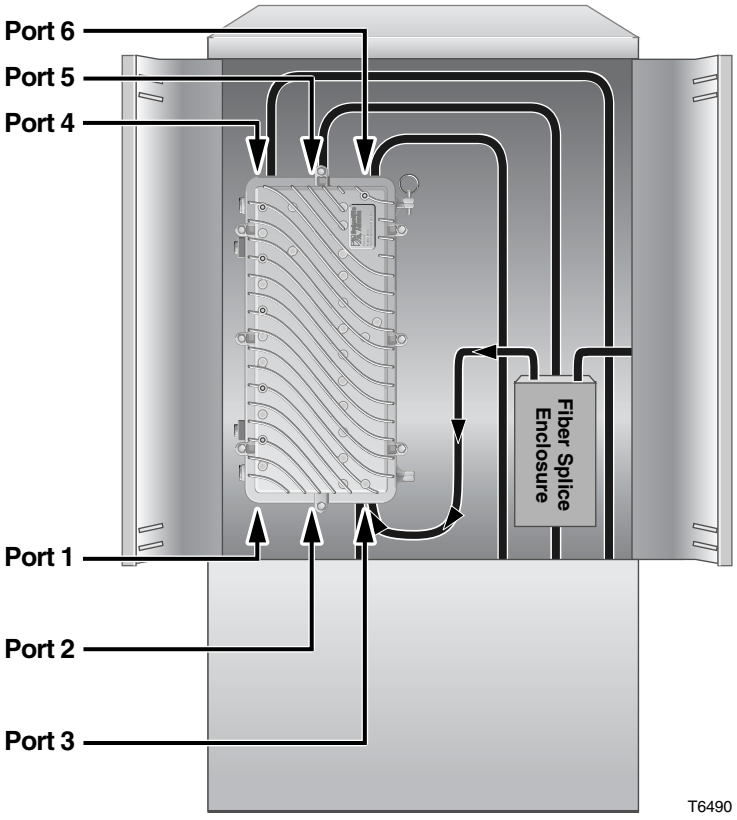
   ⚠ **CAUTION:**

   In order to protect the Strand Mounted Optical Amplifier, be sure to properly ground the housing.
6. Proceed to **Attaching the Coaxial Connectors** later in this section.
7. Replace the pedestal cover after attaching the connectors.

Continued on next page

Illustration

This is a diagram of the Strand Mounted Optical Amplifier installed in a pedestal.



Attaching the Coaxial Connectors

Overview

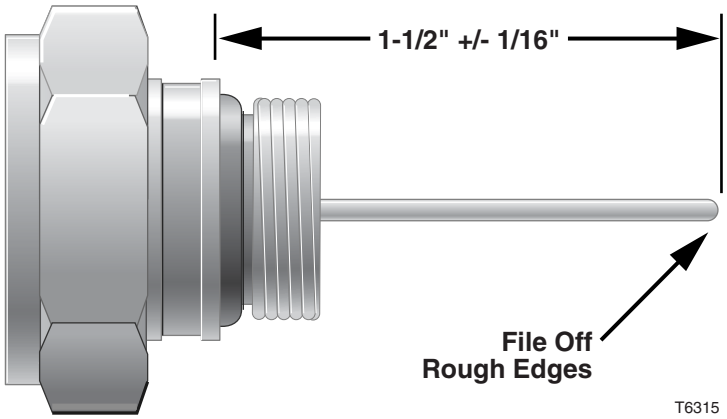
The Strand Mounted Optical Amplifier uses an auto-grip seizure mechanism, which accepts pin type connectors with a pin diameter from 0.065 inches to 0.075 inches (0.16 cm to 0.19 cm). The required pin length is 1½ inches ± 1/16 inch (3.8 cm ± 0.16 cm).

> ⚠ **CAUTION:**
>
> - **Do not use connectors with broader pin sizes. It can damage the AC power port.**
> - **Before you install the coaxial connectors, be aware of which port will supply power to the Strand Mounted Optical Amplifier. Always be aware of the status of live power.**

Preparing the Coaxial Connector

Follow these steps to prepare the coaxial connector for installation.

1. Use side cutters to cut the coaxial connector pin on the first coaxial connector to the proper length of 1½ inches ± 1/16 inch (3.8 cm ± 0.16 cm).



2. File the tip of the coaxial connector pin to smooth the rough edges.

   Notes:

   - Pin length gauge located on housing.
   - Filing the tip of the coaxial connector pin to smooth the rough edges is a safety and signal-quality precaution.
   - For proper connection, the pin must not be bent.

Procedure for Attaching the Coaxial Connectors

Follow these steps to install the coaxial connectors to the Strand Mounted Optical Amplifier housing.

Important: Before you install the coaxial connectors, be aware of which port will supply power to the amplifier. If the Strand Mounted Optical Amplifier is equipped with the TNCS option, or if you anticipate upgrading to TNCS capabilities at a later time, AC power must be brought into port 5.

1. Insert the connector into the port.
2. Screw the connector into the port finger tight.

   Important: The Strand Mounted Optical Amplifier uses an auto-grip seizure mechanism, which accepts pin type connectors with a pin diameter from 0.065 inches to 0.075 inches (0.16 cm to 0.19 cm). The required pin length is 1½ inches ± 1/16 inch (3.8 cm ± 0.16 cm).
3. Use a torque wrench to tighten the connector from 90 in-lb to 100 in-lb (10.2 Nm to 11.3 Nm).

   ⚠ **CAUTION:**

   Do not overtorque the connectors. It may damage the housing.
4. If this is a strand (aerial) installation, tighten the strand clamp bolts (using a 1/2-in. torque wrench) from 20 in-lb to 30 in-lb (2.3 Nm to 3.4 Nm).

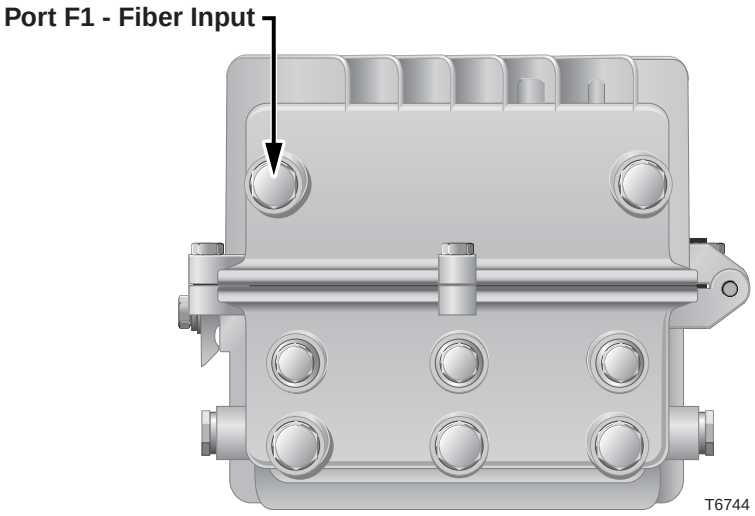
Attaching the Fiber Connectors

Preparing the Fiber Connectors for Installation

Follow these steps to prepare the fiber connectors for installation. Perform these steps with the housing open.

1. Insert your fiber pigtails through port F1.

   Note: Be careful not to damage the connected fibers.



2. Pull the fiber the rest of the way through the port into the housing.

   Note: You will need 32 inches (81 cm) of fiber in the housing.

3. Screw the connector into the fiber port finger tight.
4. Use a torque wrench to tighten the connector from 90 in-lb to 100 in-lb (10.2 Nm to 11.3 Nm).

   ⚠ **CAUTION:**
   Do not overtorque the connectors. It may damage the housing.

5. Connect the output signal fiber to the optical output port of the amplifier module.
6. Connect the input signal fiber to the optical input port of the amplifier module.

   ⚠ **CAUTION:**
   Make all optical connections with the optical power off. Optical connections made with the optical power on may damage the connectors.

   Note: If the optical input power is present and AC power is applied, the lasers will emit optical power at this point.

Chapter 3
Configuring the Prisma Strand Mounted Optical Amplifier

Overview

Chapter Contents

This chapter provides procedures for installing and removing the modules required to configure the Prisma Strand Mounted Optical Amplifier.

Topic	See Page
Detaching the Housing Lid	3-2
Re-Attaching the Housing Lid	3-3
Removing and Re-installing the Optical Amplifier Module	3-4
Removing and Re-installing the Power Supply Module	3-6
Removing and Inserting the Power Director	3-8
Removing and Inserting the Surge Protector	3-9

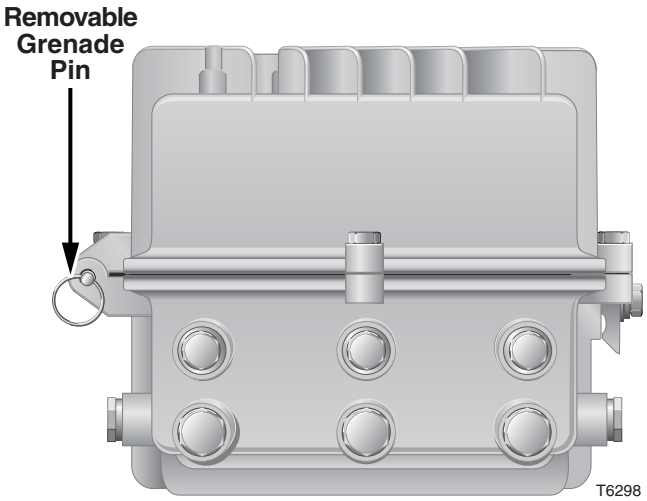
Detaching the Housing Lid

Detaching the Strand Mounted Optical Amplifier Housing Lid

Follow these steps to detach the housing lid.

> ⚠ **CAUTION:**
>
> **Be sure that the Strand Mounted Optical Amplifier housing lid is adequately supported while detaching and re-attaching the grenade pin. Dropping the lid will damage the fibers and the equipment contained in the lid.**

1. Open the housing. Refer to **Opening the Housing** in Section A of Chapter 2.
2. Disconnect the cables that connect the housing base and the optical section in the housing lid.
3. Support the lid.
4. Remove the grenade pin.



5. Shift or lift the lid in the direction of the separated hinge to detach the fixed pin holding the hinge together.
6. Detach the lid.

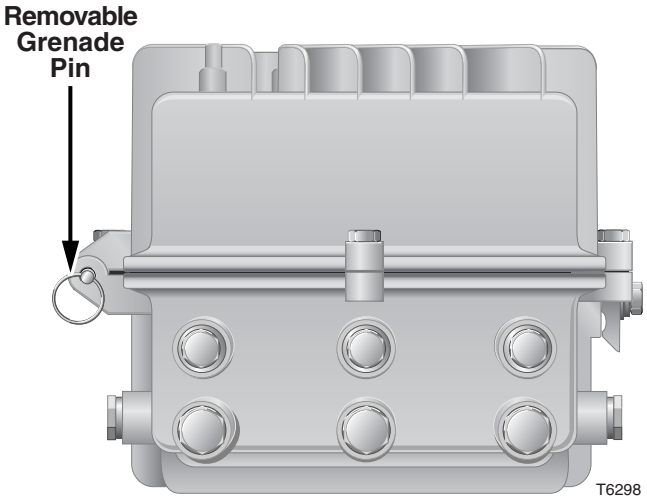
Re-Attaching the Housing Lid

Re-attaching the Strand Mounted Optical Amplifier Housing Lid

Follow these steps to re-attach the housing lid.

1. Align the base with the lid.
2. Fit the fixed grenade pin on one side of the hinge and into the hole on the housing base.
3. Adjust the lid to align the side of the hinge that houses the grenade pin.
4. While holding the lid, push firmly to replace the grenade pin.

   Important: You must replace the grenade pin.



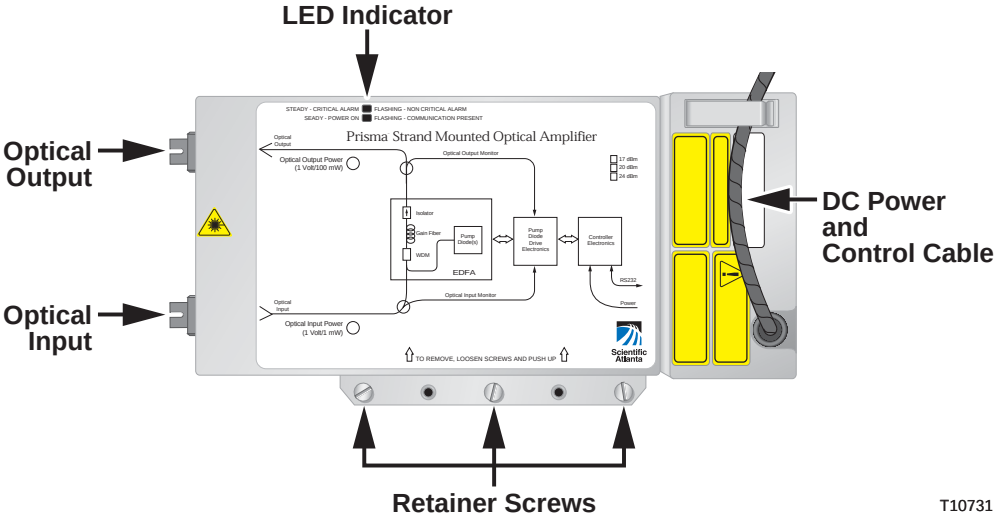
5. Connect the cables that connect the housing base and the optical section in the housing lid.
6. Close the housing. Refer to **Closing the Housing** in Section A of Chapter 2.

Removing and Re-installing the Optical Amplifier Module

Removing the Optical Amplifier Module

Follow these steps to remove the optical amplifier module located in the optical section of the housing lid.

1. Open the Strand Mounted Optical Amplifier housing. Refer to **Opening the Housing** in Section A of Chapter 2.
2. If you are working with an amplifier station where AC is present, remove the power directors from the amplifier before you remove the optical amplifier module from the housing.
3. Disconnect the DC power and control cable from the interface board.
4. Disconnect the input and output fibers from the optical input and output ports of the optical amplifier module.
5. Using a straight blade screwdriver, loosen the three retainer screws from the optical amplifier module mounting plate.



6. Slide the optical amplifier module upward and remove the module from the lid.

Continued on next page

Re-installing the Optical Amplifier Module

Follow these steps to re-install the optical amplifier module.

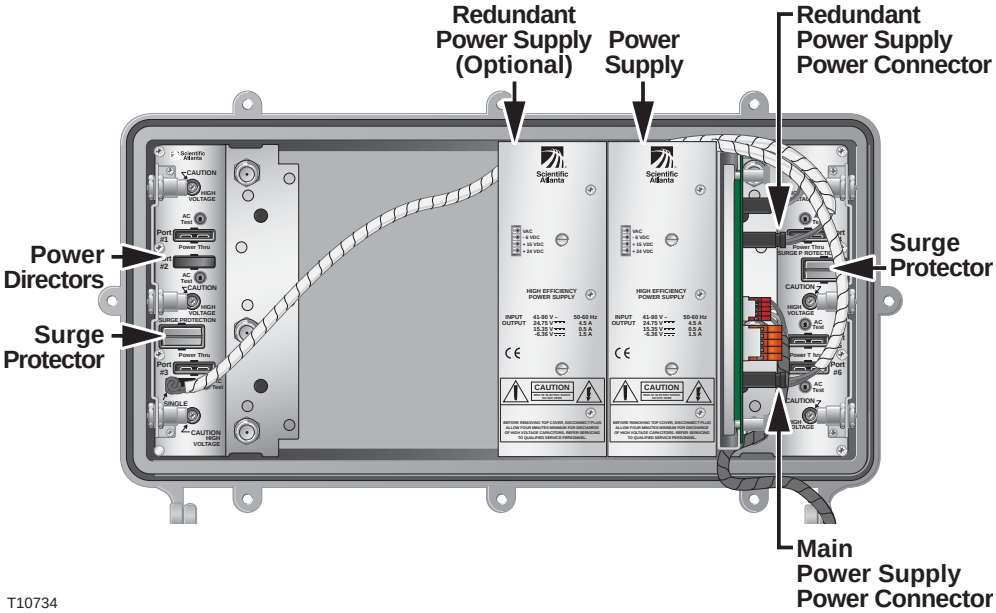
1. Position the optical amplifier module over the mounting plate on the housing lid. Refer to the illustration on previous page.
2. Place the optical amplifier module on the mounting plate until it is firmly seated on the plate.
3. Slide the optical amplifier module downward until the module locks into place.
4. Re-connect the DC power and control cable to the interface board.
5. Re-connect the input and output fibers to the optical input and output ports of the optical amplifier module.
6. Using a straight blade screwdriver, secure the amplifier to the housing by tightening the three module screws with a screwdriver from 6 in-lb to 9-in-lb (0.7 Nm to 1.0 Nm).
7. If you are working with an amplifier station where AC is present, install the power directors in the Strand Mounted Optical Amplifier after you install the optical amplifier module in the housing.

Removing and Re-installing the Power Supply Module

Removing the Power Supply Module

Follow these steps to remove the power supply module from the power section of the housing lid.

1. Open the Strand Mounted Optical Amplifier housing. Refer to **Opening the Housing** in Section A of Chapter 2.
2. Disconnect the power supply cable from the appropriate power connector on the interface board.



3. Using a straight blade screwdriver, loosen the hold down screws on the power supply module.
4. Remove the power supply module.
5. Repeat steps 2 through 4 to remove the optional secondary power supply module.
6. Close the housing. Refer to **Closing the Housing** in Section A of Chapter 2.

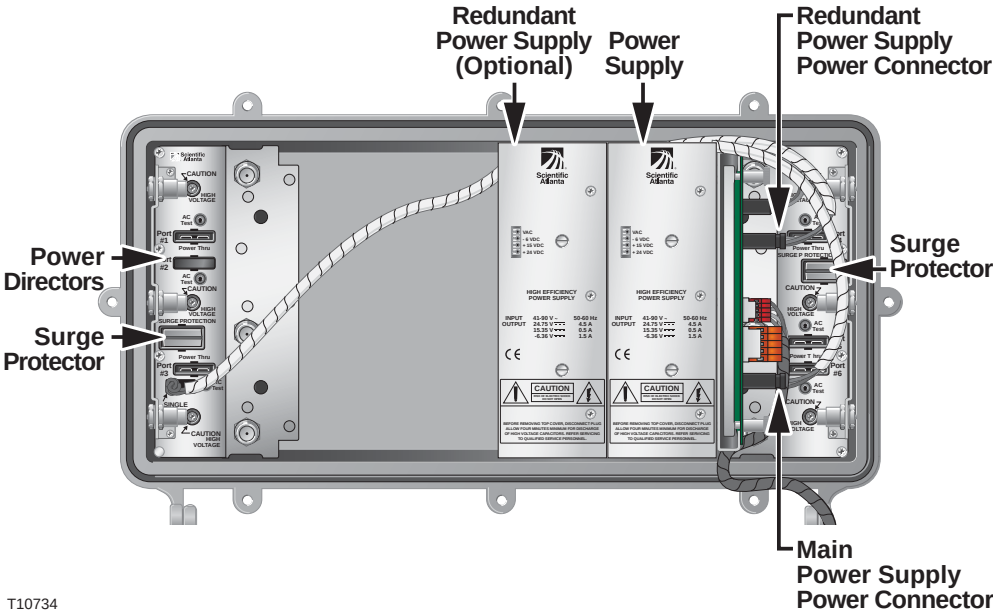
Continued on next page

Re-Installing the Power Supply Module

Follow these steps to re-install the power supply module in the power section of the housing base.

Important: The Strand Mounted Optical Amplifier uses up to two power supply modules.

1. Open the Strand Mounted Optical Amplifier housing. Refer to **Opening the Housing** in Section A of Chapter 2.
2. Insert the power supply module into the appropriate position.



3. Using a straight blade screwdriver, tighten the hold down screws on the power supply module. Ensure that the power supply is seated properly.
4. Connect the power supply cable to the appropriate power connector on the interface board.
5. Repeat steps 2 through 4 to install the optional secondary power supply module.
6. Close the Strand Mounted Optical Amplifier housing. Refer to **Closing the Housing** in Section A of Chapter 2.

Removing and Inserting the Power Director

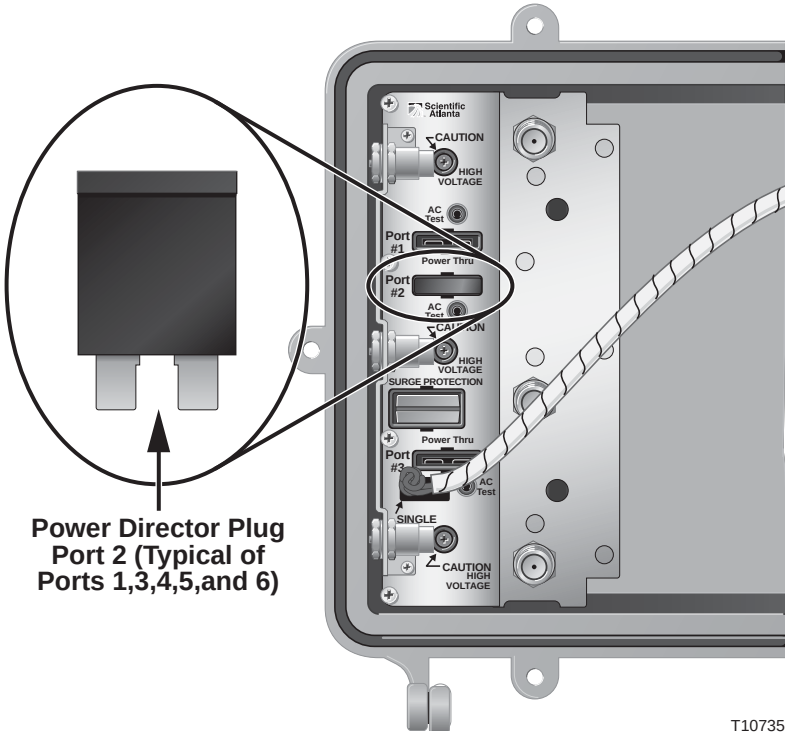
Removing and Inserting the Power Director Procedure

Follow these steps to remove and insert power directors.

> ⚠ **CAUTION:**
>
> **Do not install the power directors until you are ready to test the operation of the Strand Mounted Optical Amplifier.**

1. Open the housing. Refer to **Opening the Housing** in Section A of Chapter 2.
2. To remove a power director, pull it straight out from the AC entry module.

   Note: This illustration shows an inserted power director in Port 2.



3. To insert a power director, align the plugs and push it straight in.
4. Close the housing. Refer to **Closing the Housing** in Section A of Chapter 2.

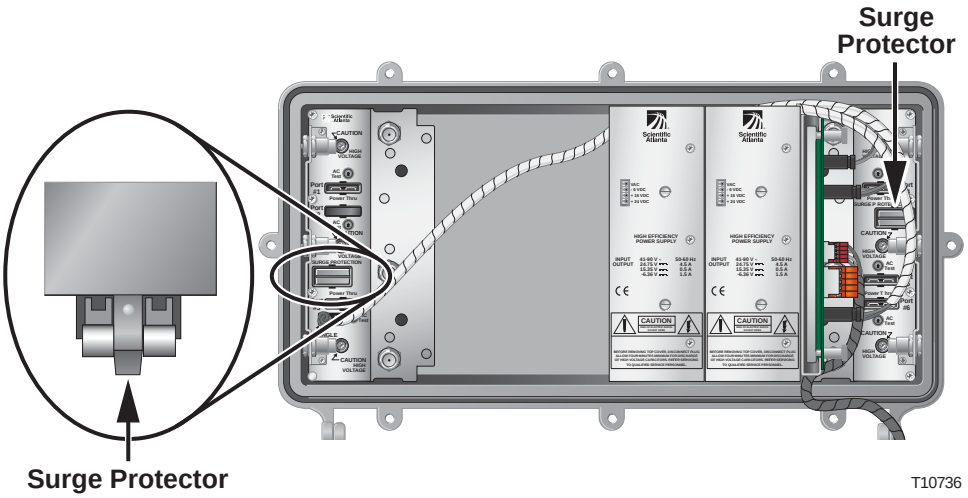
Removing and Inserting the Surge Protector

Removing and Inserting the Surge Protector Procedure

Follow these steps to remove and insert surge protectors.

1. Open the housing. Refer to **Opening the Housing** in Section A of Chapter 2.
2. To remove a surge protector, pull it straight out from the AC entry module.

   Note: There can be 2 surge protectors in the housing. This illustration shows one inserted surge protector.



3. To insert a surge protector, align the plugs and push it straight in until it clicks into place.
4. Close the housing. Refer to **Closing the Housing** in Section A of Chapter 2.

Chapter 4
Monitoring the Strand Mounted Optical Amplifier Using LCI

Overview

Introduction

The installation steps and procedures in this chapter apply if you are using the Local Craft Interface (LCI) to operate the Prisma Strand Mounted Optical Amplifier.

Chapter Contents

This chapter contains LCI software installation instructions and detailed descriptions of how to use the LCI software to view and modify information for the optical amplifier module of the Strand Mounted Optical Amplifier. This chapter contains the following topics.

Topic	See Page
Introduction to the LCI Software	4-2
System Requirements	4-3
Installing the LCI Software	4-4
Connecting Your Computer to the Strand Mounted Optical Amplifier	4-7
Starting the LCI Software	4-8
LCI Module Tree Overview	4-11
Checking the Operating Status	4-13
Configuring the Optical Amplifier Module	4-15
Checking the Optical Amplifier Module Alarms	4-18
Modifying the Optical Amplifier Module Alarm Limits	4-20
Checking the Manufacturing Data	4-23

⚠ **WARNING:**

Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.

Introduction to the LCI Software

The LCI Software Function

The LCI software functions as a user interface for the Prisma II or Strand Mounted Optical Amplifier platform. The LCI software is installed on a computer, which is then connected to a Strand Mounted Optical Amplifier. Using the LCI software, you can configure and monitor the modules in the unit the computer is connected to.

System Requirements

Introduction

You will need the following computer software and hardware to run the LCI software.

Computer Requirements

- Pentium II 300 MHz processor or equivalent
- 128 MB RAM
- 10 MB available hard drive space
- 1.44 MB floppy drive
- CD-ROM Drive
- Windows 98 or later operating system software

Connecting the Computer to the Strand Mounted Optical Amplifier

The required cable is a standard "off the shelf" DB9 Female to DB9 Male serial extension cable. The connectors are a serial 9-pin D-shell (EIA 574/232).

The Scientific-Atlanta part number for a six-foot DB9 Female to DB9 Male serial extension cable is 180143.

Installing the LCI Software

Introduction

This section describes how to install your LCI software.

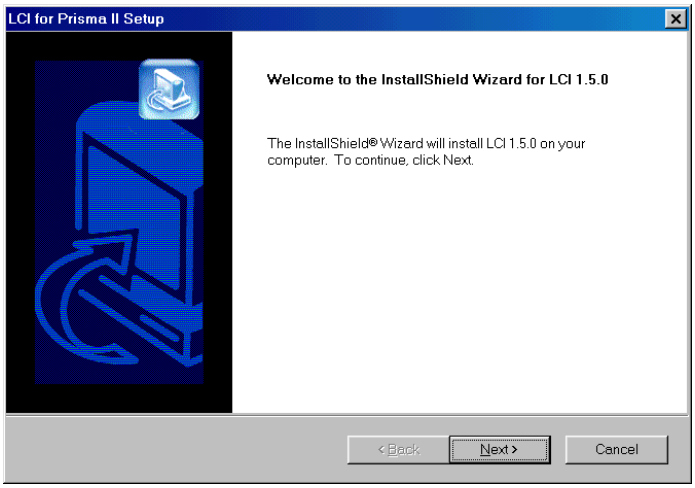
Procedure for Installing the LCI Software

Follow these steps to install the LCI software.

1. Close all programs that are running on your computer.
2. Insert the LCI CD-ROM into your CD-ROM drive.

   Results:

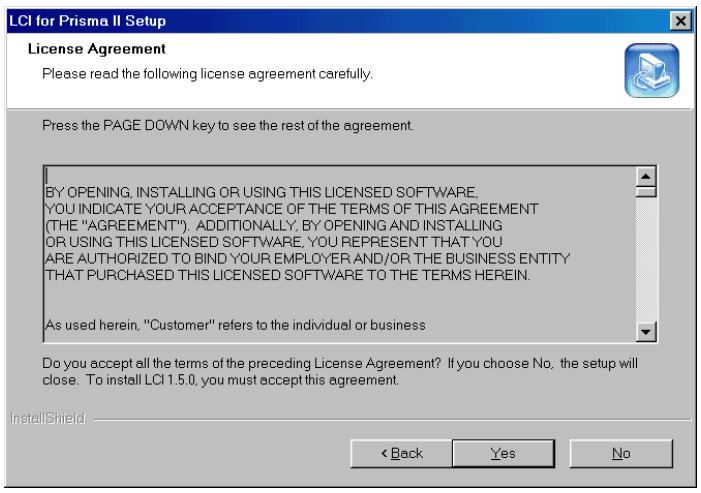
   - The LCI software installation program starts automatically. If the installation program does not start automatically, open Windows Explorer and double-click the file **setup.exe** on the LCI CD-ROM.
   - The Welcome screen displays.



Continued on next page

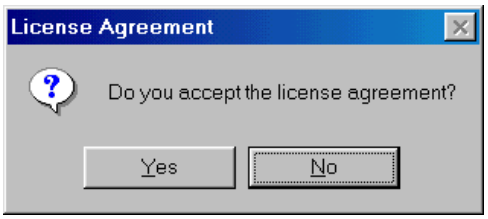
3. Click **Next.**

   Result: The License Agreement screen displays.



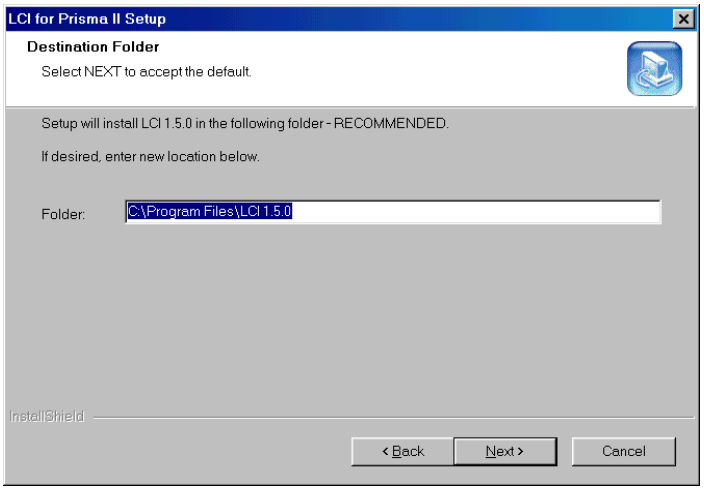
4. Click **Yes** if you accept the license agreement.

   Result: The **License Agreement** dialog box displays.



5. Click **Yes.**

   Result: The Destination Folder window displays.



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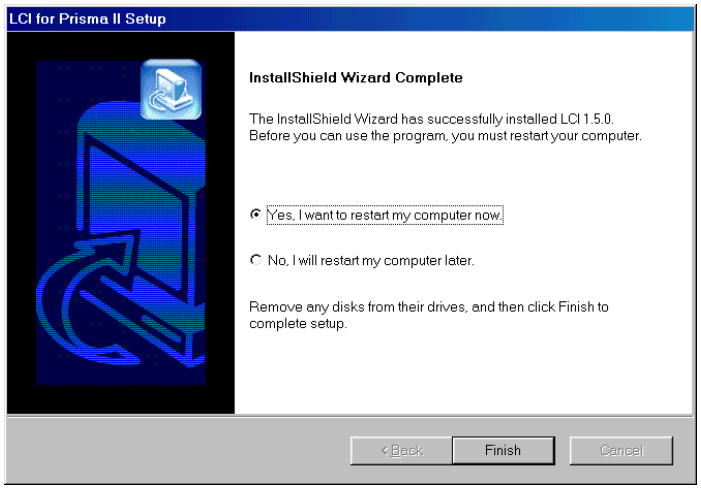
6. Do you want to install the LCI software in the folder displayed in the **Folder** box?
   - If **yes,** click **Next** to begin the installation, and proceed to step 9.
   - If **no,** proceed to step 7.
7. To specify where you want the LCI software to be installed, type the path in the **Folder** box.
8. Click **Next** to begin the installation.

   Result: The last installation wizard window displays after the installation is complete.



9. Before you can use the LCI software, you must restart your computer. Choose whether to restart your computer now or later by selecting the appropriate option button.
10. Click **Finish.** After your computer is restarted, you can use the LCI software.

Connecting Your Computer to the Strand Mounted Optical Amplifier

Introduction

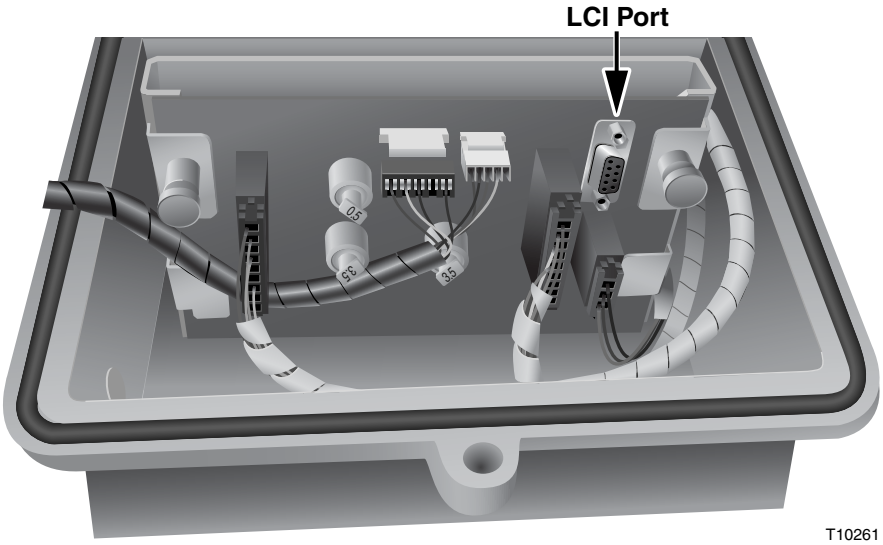
Before you start the LCI software, you must first connect your computer to the Strand Mounted Optical Amplifier that contains the module(s) you want to check.

Important: The LCI software communicates only with those modules located in the Strand Mounted Optical Amplifier your computer is connected to. To check another Strand Mounted Optical Amplifier unit, you must connect your computer directly to that unit.

Procedure for Connecting to the Strand Mounted Optical Amplifier

To connect your computer to the Strand Mounted Optical Amplifier, follow these steps.

1. Plug one end of a nine-pin RS-232 cable into your computer.
2. Plug the other end of the cable into the LCI port on the interface board.



Starting the LCI Software

Introduction

When the LCI software is started, it polls the module(s) located in the Strand Mounted Optical Amplifier your computer is connected to. For each module it finds, the LCI software does the following:

- Represents the module in the device tree of the main LCI window and represents the module in a graphical format.
- Makes the polling information available so you can check and configure various parameters.

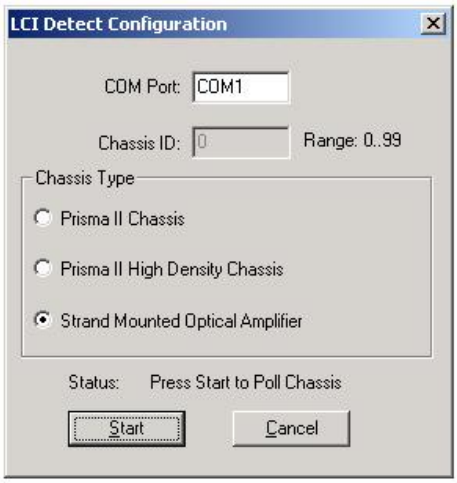
Important: Your computer must be connected to the Strand Mounted Optical Amplifier before you start the LCI software. For instructions, refer to **Connecting Your Computer to the Strand Mounted Optical Amplifier** earlier in this chapter.

Procedure for Starting the LCI Software

To start the software, perform these steps.

1. Double-click the LCI icon on your Windows desktop.

Result: The LCI Detect Configuration Window opens and displays the various platforms available for monitoring.



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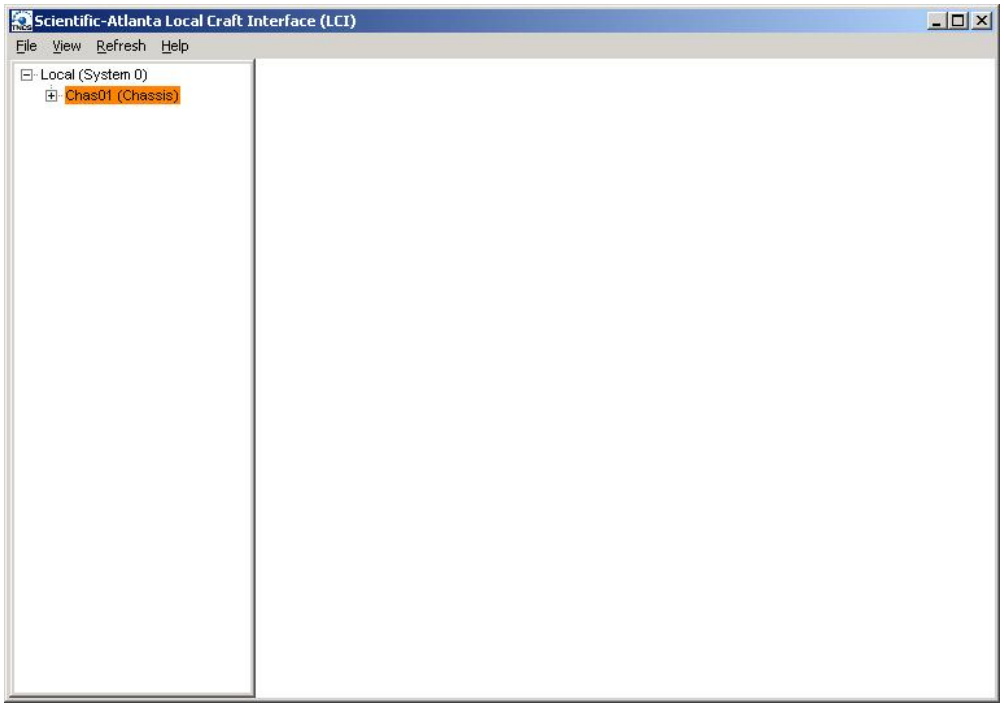
2. Verify the communication port displayed in the Port box. This is the port on your computer that the amplifier is connected to.

   To change the com port, type the word "com" and then the port number.

   Example: To specify com port 2, type **COM2**.

3. Select **Strand Mounted Optical Amplifier**, and then click **Start**.

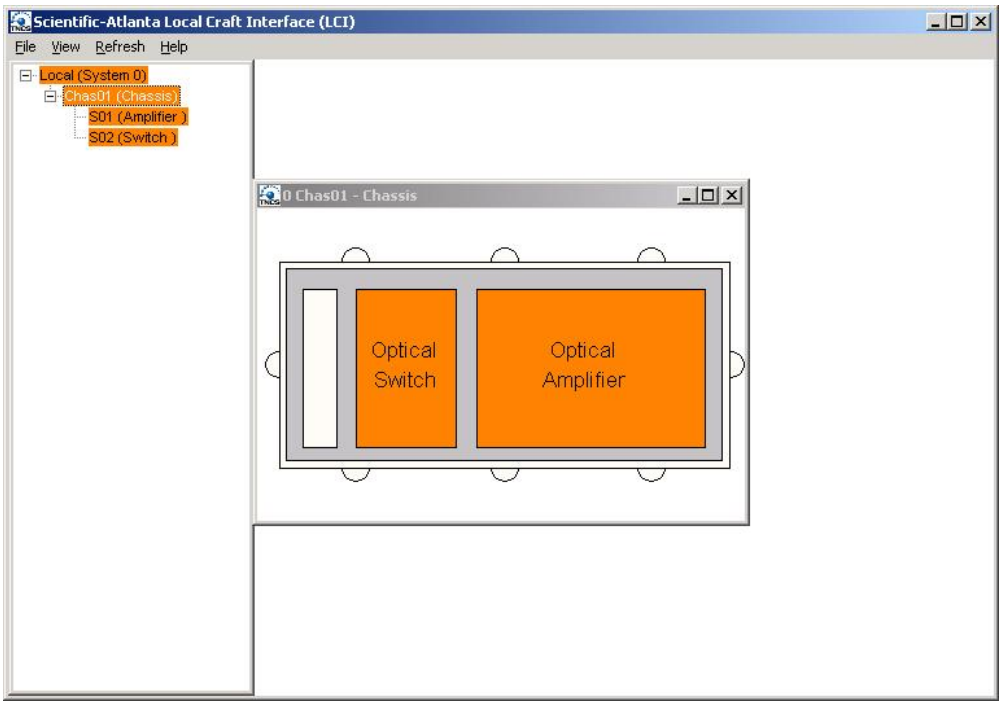
   Result: The chassis appears in the device tree of the main window of the LCI software.



Continued on next page

4. Click **Chassis.**

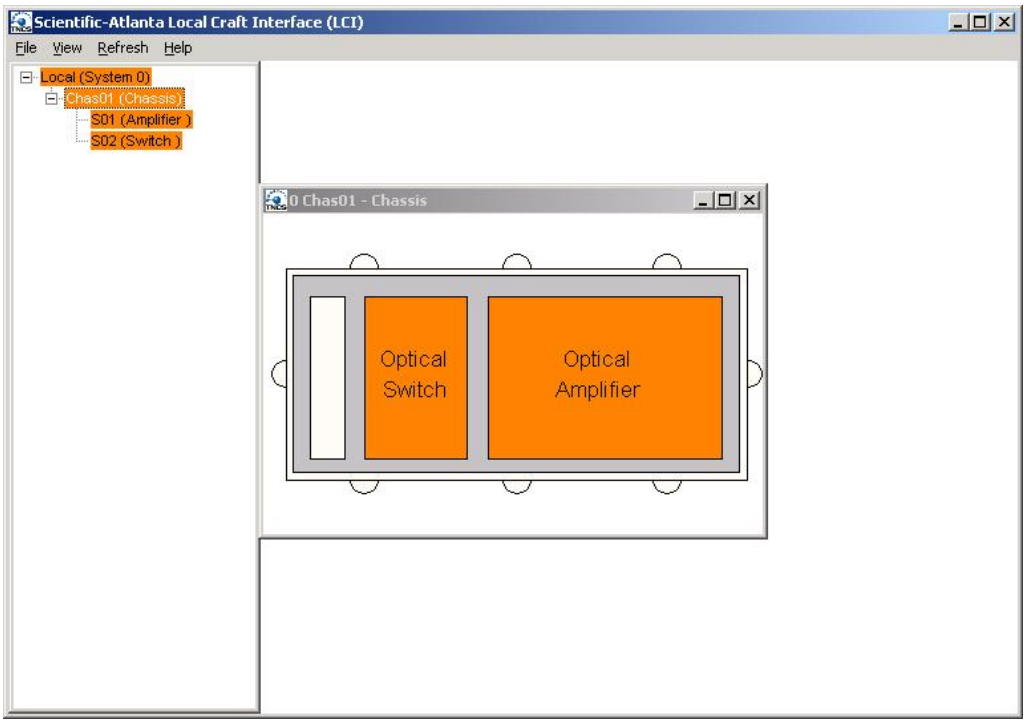
Result: LCI polls the modules in the Strand Mounted Optical Amplifier and the main LCI window displays.



LCI Module Tree Overview

Introduction

The main window of the LCI software contains a tree that represents your system in a hierarchical manner and a graphical representation of the Strand Mounted Optical Amplifier.



Module Tree

In the graphic above, the module tree represents an optical switch connected to a Strand Mounted Optical Amplifier. The three tree levels are described in the following table.

Module Tree Level	Description
Local (System 0)	Computer being used.
Chass01 (Amplifier)	Strand Mounted Optical Amplifier the computer is connected to
Sxx (Module name)	Module(s) located within the Strand Mounted Optical Amplifier. Each module is of the format *amplifier slot location (module name).* **Note:** The amplifier module is always shown as Slot 1; the optional Optical Switch module, if installed, is shown as Slot 2.

Continued on next page

Module Information

Information about a module (its parameters, alarms and status) is located in the Module Details window. Within the module tree or graphic, you can access the Module Details window using one of the following four methods.

- Double-click the module name in the module tree
- Right-click the module name in the module tree and select **Open** from the menu that opens
- Double-click the module in the graphic
- Right-click the module in the graphic and select **Details** from the menu that opens

Note: Although you can use the method that's most convenient for you, the procedures throughout this chapter are described using the right-click module technique.

Checking the Operating Status

Introduction

Using the LCI software, you can check the status of all operating parameters of the optical amplifier module.

Note: Not all parameters pertain to every optical amplifier. Depending on the power level, some optical amplifier modules have multiple lasers and have multiple laser temperatures, limits, bias, etc. These multiples are designated in numeric order. For example, Laser Bias Current 1, Laser Bias Current 2, Laser Bias Current 3; Laser Temperature 1, Laser Temperature 2, Laser Temperature 3, etc.

Monitored Parameters

The table below describes the monitored parameters for the optical amplifier module.

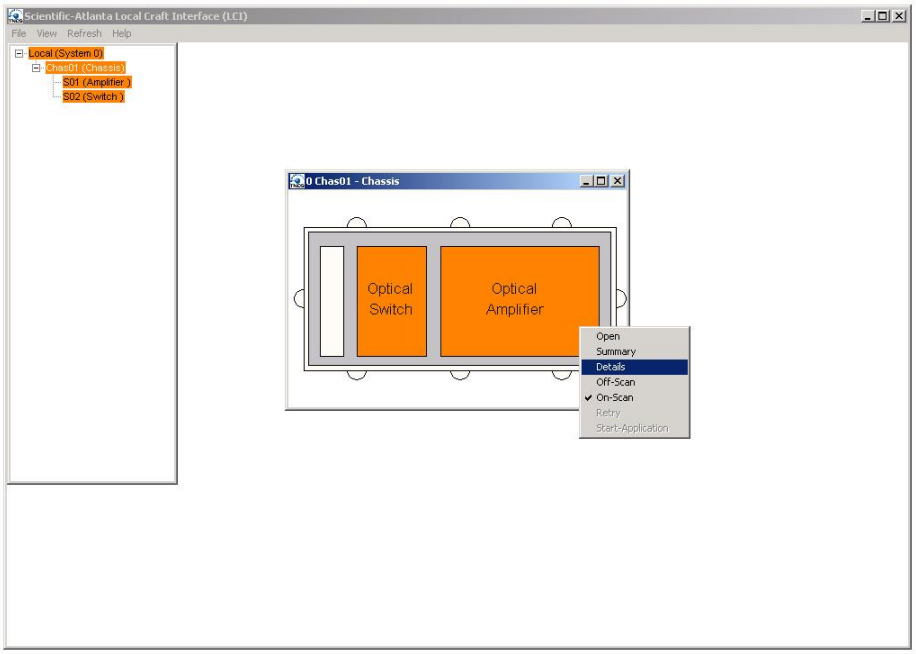
Parameter Name	Units	Function
Optical Input Power	dBm	Laser Input Power
Optical Output Power	dBm	Laser Output Power
Laser 1 Temperature	deg C	Laser Temperature
Laser 2 Temperature	deg C	Laser Temperature
Laser 1 Bias Current	A	Laser Operating Limit
Laser 2 Bias Current	A	Laser Operating Current
Laser 1 TEC Current	A	Thermoelectric Cooler Current
Laser 2 TEC Current	A	Thermoelectric Cooler Current
Module Temperature	deg C	Module Temperature
Laser On Time	hrs	Laser in service hours

Continued on next page

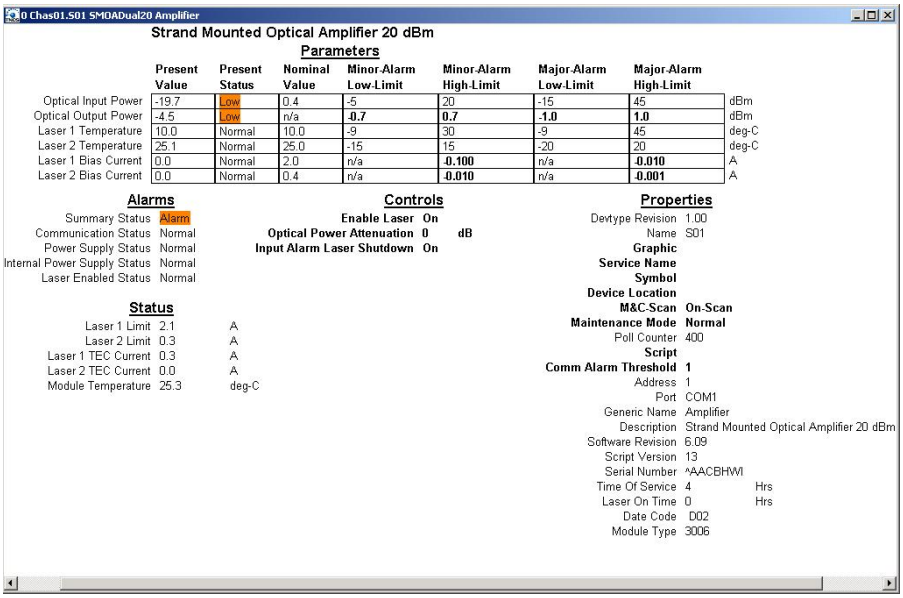
Procedure for Checking the Operating Status

To monitor the optical amplifier operating parameters, follow these steps.

1. In the module tree or graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Amplifier, and then click **Details.**



Result: The Module Details window displays. The monitored parameters are displayed under **Parameters** and **Status.**



2. Proceed with checking the operating parameters.

Configuring the Optical Amplifier Module

Introduction

Using the LCI software, you can configure the parameters of the optical amplifier module as listed below.

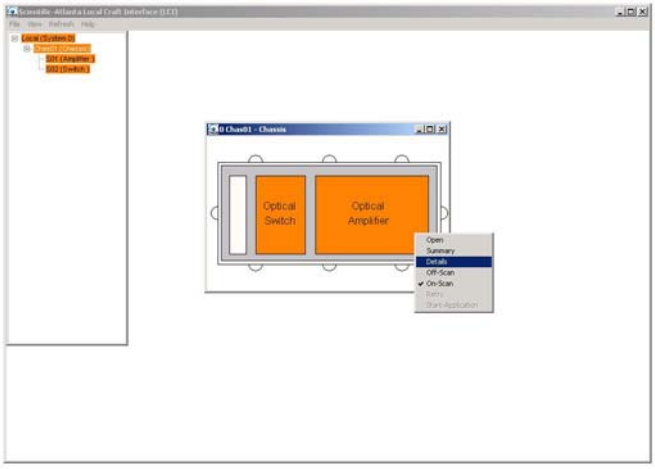
Control	Function	Values	Default
Enable Laser	Turns optical amplifier On/Off	On = Enabled Off = Disabled	Enabled
Optical Power Attenuation	Optical Power Attenuation	0 dB to 3.0 dB in 1.0 dB steps	0 dB
Input Alarm Laser Shutdown	Turns input alarm laser On/Off	On = Alarm Enabled Off = Alarm Disabled	Enabled

Continued on next page

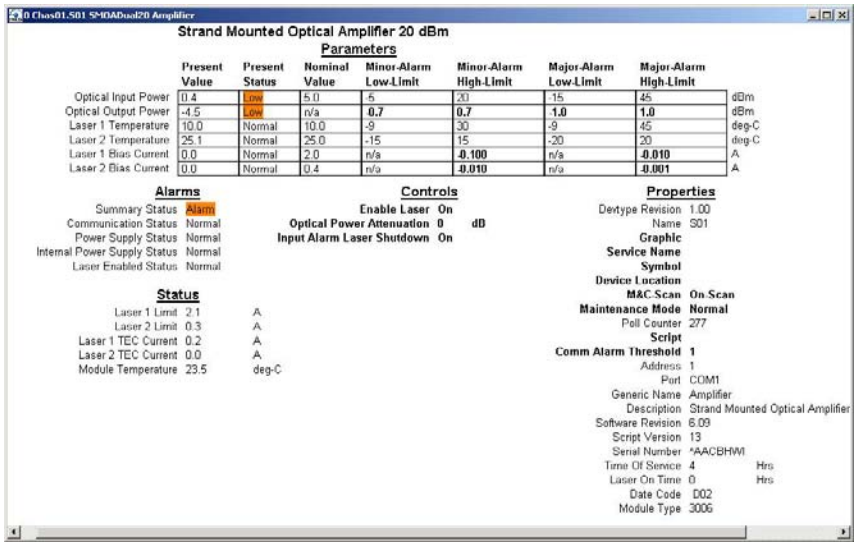
Configuring Parameters for the Optical Amplifier Module

To configure the parameters for the optical amplifier module, follow these steps.

1. In the module tree, or graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Amplifier, and then click **Details**.



Result: The Module Details window displays.



Strand Mounted Optical Amplifier 20 dBm

Parameters

	Present Value	Present Status	Nominal Value	Minor-Alarm Low-Limit	Minor-Alarm High-Limit	Major-Alarm Low-Limit	Major-Alarm High-Limit	
Optical Input Power	0.4	Low	5.0	-5	20	-15	45	dBm
Optical Output Power	-4.5	Low	n/a	0.7	0.7	1.0	1.0	dBm
Laser 1 Temperature	10.0	Normal	10.0	-9	30	-9	45	deg-C
Laser 2 Temperature	25.1	Normal	25.0	-15	15	-20	20	deg-C
Laser 1 Bias Current	0.0	Normal	2.0	n/a	0.100	n/a	0.010	A
Laser 2 Bias Current	0.0	Normal	0.4	n/a	0.010	n/a	0.001	A

Alarms

Summary Status	Alarm
Communication Status	Normal
Power Supply Status	Normal
Internal Power Supply Status	Normal
Laser Enabled Status	Normal

Controls

Enable Laser	On	
Optical Power Attenuation	0	dB
Input Alarm Laser Shutdown	On	

Properties

Devtype Revision	1.00
Name	S01
Graphic	
Service Name	
Symbol	
Device Location	
M&C Scan	On-Scan
Maintenance Mode	Normal
Poll Counter	277
Script	
Comm Alarm Threshold	1
Address	1
Port	COM1
Generic Name	Amplifier
Description	Strand Mounted Optical Amplifier
Software Revision	6.09
Script Version	13
Serial Number	*AACBHWI
Time Of Service	4 Hrs
Laser On Time	0 Hrs
Date Code	D02
Module Type	3006

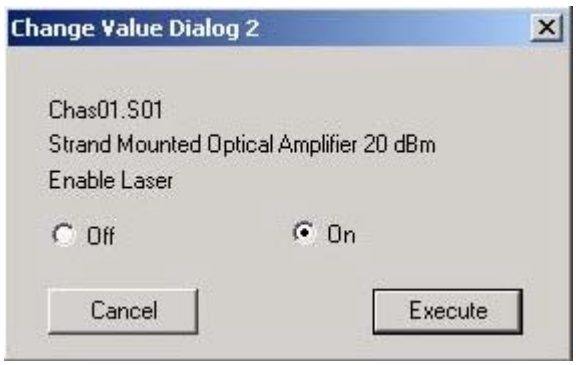
Status

Laser 1 Limit	2.1	A
Laser 2 Limit	0.3	A
Laser 1 TEC Current	0.2	A
Laser 2 TEC Current	0.0	A
Module Temperature	23.5	deg-C

Continued on next page

2. Under **Controls,** double-click the parameter you want to configure.

   Result: The Change Value dialog box displays. The graphic below shows the dialog box for the Enable Laser parameter.



3. Depending on the parameter chosen, select or type a new value.
4. Click **Execute.**

   Result: The new value displays next to the parameter.

Checking the Optical Amplifier Module Alarms

Introduction

Using the LCI software, you can check the alarm status of various parameters. Alarms that you can check are listed below.

Alarm	Function	Major Low Limit	Minor Low Limit	Minor High Limit	Major High Limit	Hysteresis
LasBias	Laser bias current	-32A	-32A	-.1A	-.01A	.001A
InPwr	Optical input power	-15 dBm	-5 dBm	20 dBm	45 dBm	1 dBm
OutPwr	Optical Output	-1 dBm	-0.7 dBm	0.7 dBm	1.0 dBm	0.1 dBm
LasTemp	Laser Temperature	-9.0°C	-9.0°C	30.0°C	45°C	1°C

Alarm limits fall into one of the following categories.

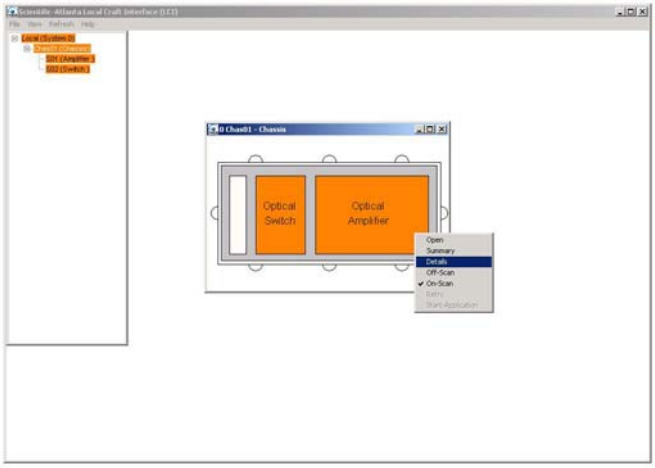
- Major low
- Minor low
- Minor high
- Major high

Continued on next page

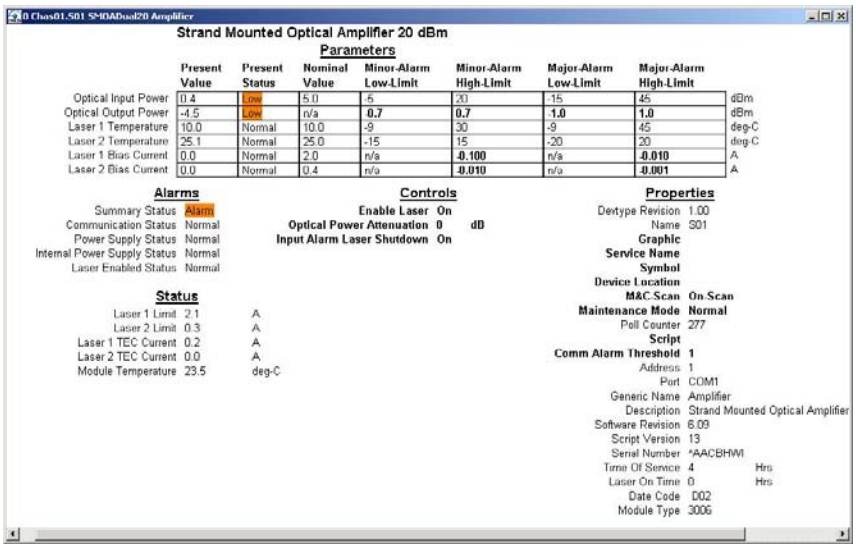
Checking Alarms

To check a parameter's alarm status, perform these steps.

1. In the graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Amplifier, and then click **Details.**



Result: The Module Details window displays. The alarms are shown under **Parameters** and **Alarms.**



Strand Mounted Optical Amplifier 20 dBm

Parameters

	Present Value	Present Status	Nominal Value	Minor-Alarm Low-Limit	Minor-Alarm High-Limit	Major-Alarm Low-Limit	Major-Alarm High-Limit	
Optical Input Power	0.4	Low	5.0	-5	20	-15	45	dBm
Optical Output Power	-4.5	Low	n/a	-0.7	0.7	-1.0	1.0	dBm
Laser 1 Temperature	10.0	Normal	10.0	-9	30	-9	45	deg-C
Laser 2 Temperature	25.1	Normal	25.0	-15	15	-20	20	deg-C
Laser 1 Bias Current	0.0	Normal	2.0	n/a	-0.100	n/a	-0.010	A
Laser 2 Bias Current	0.0	Normal	0.4	n/a	-0.010	n/a	-0.001	A

Alarms

Summary Status	Alarm
Communication Status	Normal
Power Supply Status	Normal
Internal Power Supply Status	Normal
Laser Enabled Status	Normal

Controls

Enable Laser	On	
Optical Power Attenuation	0	dB
Input Alarm Laser Shutdown	On	

Properties

Devtype Revision	1.00	
Name	S01	
Graphic		
Service Name		
Symbol		
Device Location		
M&C Scan	On Scan	
Maintenance Mode	Normal	
Poll Counter	277	
Script		
Comm Alarm Threshold	1	
Address	1	
Port	COM1	
Generic Name	Amplifier	
Description	Strand Mounted Optical Amplifier	
Software Revision	6.09	
Script Version	13	
Serial Number	*AACBHWI	
Time Of Service	4	Hrs
Laser On Time	0	Hrs
Date Code	D02	
Module Type	3006	

Status

Laser 1 Limit	2.1	A
Laser 2 Limit	0.3	A
Laser 1 TEC Current	0.2	A
Laser 2 TEC Current	0.0	A
Module Temperature	23.5	deg-C

2. If any of the parameters are in alarm, take the necessary corrective action.

Modifying the Optical Amplifier Module Alarm Limits

Introduction

Using the LCI software, you can modify alarm limits for several parameters. Parameters whose alarm limits you can change are listed below. Alarm limits are dependant on module type and configuration.

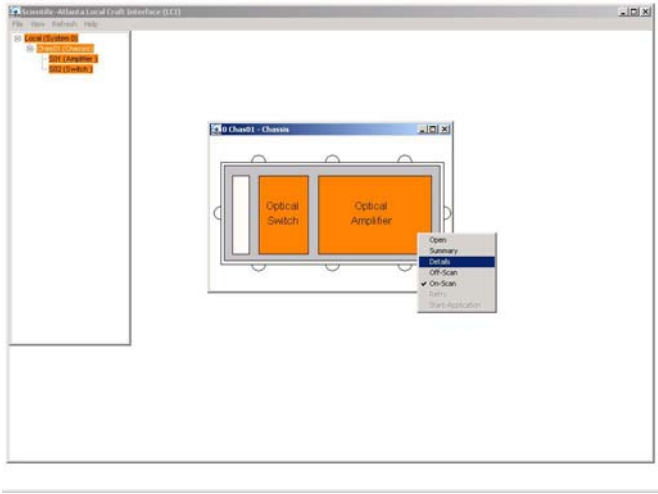
Alarm	Function	Major Low Limit	Minor Low Limit	Minor High Limit	Major High Limit	Hysteresis
Laser Bias Current	Laser Bias Current	-1.0mA	-2.0mA	-10.0mA	-1.0mA	1.0
Output Power	Optical Output	-1 dBm	-7 dBm	.7 dBm	1 dBm	1 dBm

Continued on next page

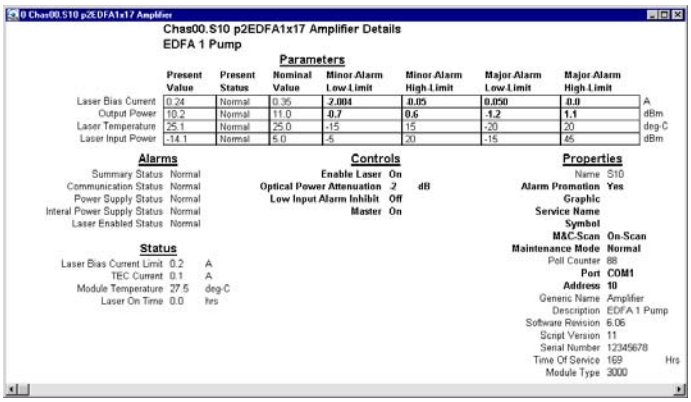
Modifying Alarm Limits

To modify a parameter's alarm limit, follow these steps.

1. In the module tree, or graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Amplifier, and then click **Details.**



Result: The Module Details window displays. The alarm limits are shown under **Parameters.**



Chas00.S10 p2EDFA1x17 Amplifier Details
EDFA 1 Pump

Parameters

	Present Value	Present Status	Nominal Value	Minor Alarm Low Limit	Minor Alarm High Limit	Major Alarm Low Limit	Major Alarm High Limit	
Laser Bias Current	0.24	Normal	0.35	0.004	0.05	0.050	0.0	A
Output Power	10.2	Normal	11.0	-0.7	0.6	-1.2	1.1	dBm
Laser Temperature	25.1	Normal	25.0	-15	15	-20	20	deg-C
Laser Input Power	-14.1	Normal	5.0	-5	20	-15	45	dBm

Alarms

Summary Status	Normal
Communication Status	Normal
Power Supply Status	Normal
Interal Power Supply Status	Normal
Laser Enabled Status	Normal

Status

Laser Bias Current Limit	0.2	A
TEC Current	0.1	A
Module Temperature	27.5	deg-C
Laser On Time	0.0	hrs

Controls

Enable Laser	On	
Optical Power Attenuation	2	dB
Low Input Alarm Inhibit	Off	
Master	On	

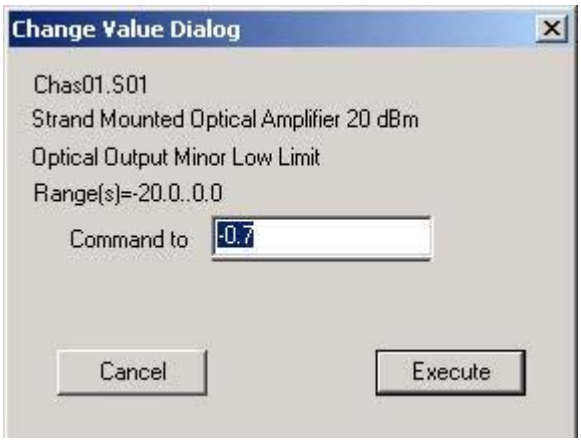
Properties

Name	S10
Alarm Promotion	Yes
Graphic	
Service Name	
Symbol	
M&C-Scan	On-Scan
Maintenance Mode	Normal
Poll Counter	88
Port	COM1
Address	10
Generic Name	Amplifier
Description	EDFA 1 Pump
Software Revision	6.06
Script Version	11
Serial Number	12345678
Time Of Service	169 Hrs
Module Type	3000

Continued on next page

2. Double-click the limit you want to change.

   Result: The Change Value dialog box displays. The graphic below shows the dialog box for the Minor Low Limit of the Output Power parameter.



3. In the **Command to** box, type the value to use for the limit.

4. Click **Execute.**

   Result: The new value displays in the alarm limit column.

Continued on next page

Checking the Manufacturing Data

Introduction

Using the LCI software, you can check the manufacturing data of the Optical Amplifier.

Manufacturing Data

The table below describes the manufacturing data available for this module. Manufacturing data is dependant on module type and configuration.

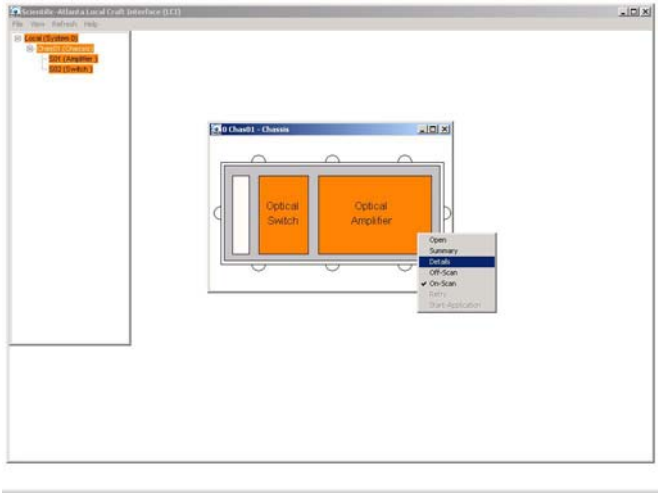
Manufacturing Data	Typical Values
Description	Strand Mounted Optical Amplifier
Module Type	3006
Serial Number	12345678
Software Revision	6.09
Script Version	13
Time of Service	1

Continued on next page

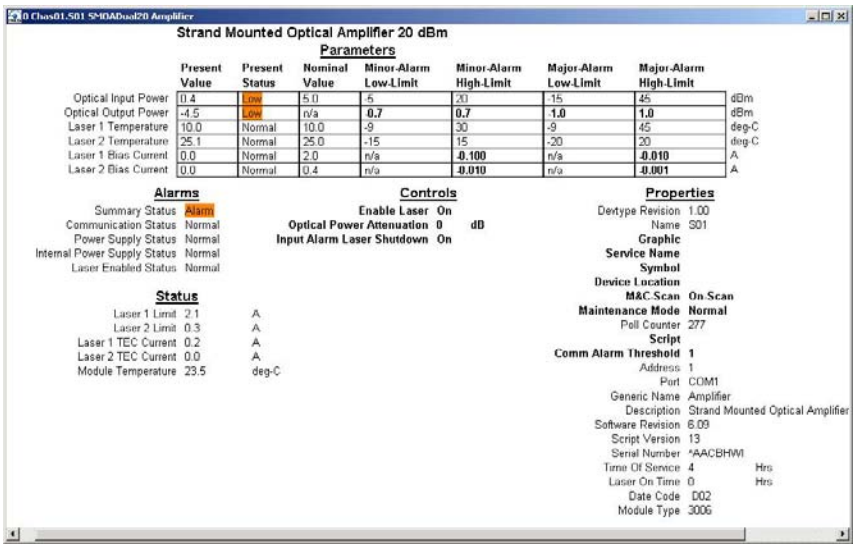
Procedure for Checking the Manufacturing Data

To access the module's manufacturing data, perform these steps.

1. In the graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Amplifier, and then click **Details.**



Result: The Module Details window displays. The manufacturing data is displayed under **Properties.**



2. Proceed with viewing the manufacturing data.

Chapter 5
Testing the Prisma Strand Mounted Optical Amplifier

Overview

Chapter Contents

The Prisma Strand Mounted Optical Amplifier exhibits optimum noise and distortion characteristics that complement other segments of the cable system architecture. This chapter gives testing instructions for the Prisma Strand Mounted Optical Amplifier and contains the following topics.

Topic	See Page
Before You Begin	5-2
Verifying Electrical Power	5-3
Checking the Optical Input Level	5-6
Checking the Optical Output Level	5-7
Checking the Screws	5-8

Before You Begin

Test Equipment

The following instruments are required for the testing sequence:

- True RMS Voltmeter
- Optical power meter with proper interfaces to accept the fiber connector type used. It must be capable of accurately measuring the output of the amplifier.

Verifying Electrical Power

Overview

The Strand Mounted Optical Amplifier requires a power source of 41 V AC to 90 V AC, 50/60 Hz. Any of its six coaxial ports can serve as a power input source. However, if the TNCS option is installed, port 5 must be used as the power input port.

> ⚠ **CAUTION:**
>
> **Do not install the power directors until the Strand Mounted Optical Amplifier is ready to be powered.**

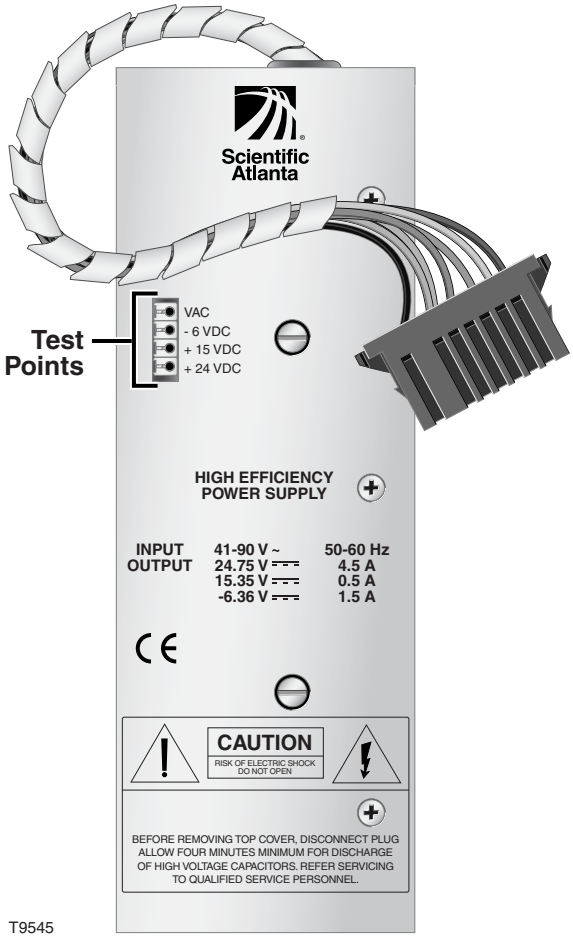
Continued on next page

Checking the Power Supply

Once the coaxial connections are attached, follow these steps to verify that the unit powers correctly.

Important: Make sure the power directors are installed in the ports corresponding to the power port.

1. Apply AC power to the unit using its intended source.
2. Set the true RMS voltmeter to VAC mode and a full-scale reading of 100 V to 200 V.



Continued on next page

3. Check the AC power to the power supply by inserting the positive probe into the test point on the power supply labeled VAC.

   Note: The negative probe should be grounded on the Strand Mounted Optical Amplifier chassis.

   Result: The True RMS voltmeter should read the appropriate AC voltage between 41 V and 90 V.

   ⚠ **WARNING:**

   Dangerously high voltages exist. Failure to follow proper procedures can result in serious personal damage.

4. Remove the probe after checking AC power.
5. Set the True RMS Voltmeter to VDC mode.
6. Check the 24 VDC power from the power supply by inserting the positive probe into the port on the power supply labeled +24 VDC.

   Result: The True RMS Voltmeter should read approximately 24 VDC.

7. Check the 15 VDC power from the power supply by inserting the positive probe into the test point on the power supply labeled +15 VDC.

   Result: The True RMS Voltmeter should read approximately 15 VDC.

8. Check the -5 VDC power from the power supply by inserting the positive probe into the test point on the power supply labeled -6 VDC.

   Result: The True RMS Voltmeter should read approximately -6 VDC.

9. Repeat the above voltage checks if a second power supply is also installed.

Checking the Optical Input Level

Procedure to Check Optical Input Level

Follow these steps to verify if there is sufficient optical input power.

1. If an optical power meter is available, clean the optical input connector on the cable stub and place it into the optical power meter. Verify power.

   Note: The amplifier has a built-in optical input monitor. If the Local Craft Interface (LCI) software is used, the input can be measured by the amplifier and monitored by the LCI software.

2. Clean the optical input connector on the cable stub fiber and place it into the optical input port of the amplifier module.

3. Turn on the input signal. Enable amplifier if necessary.

   ⚠ **CAUTION:**

   All optical connections and cleaning should be done with the amplifier in the disabled state. Failure to do so increases the risk of damage to the optical connectors.

   ⚠ **CAUTION:**

   If the optical input signal is greater than the input fail threshold and the amplifier is enabled, the pump lasers will come on and the amplified 1550 nm light (typically +17 to +24 dBm) will be emitted from the output port.

4. Using the LCI software, check to make sure the optical input power signal level is satisfactory.

Checking the Optical Output Level

Procedure to Check Optical Output Level

Follow these steps to verify if there is sufficient optical output power.

1. Clean the optical output connector on the cable stub and place it into the optical output port of the amplifier module. If an optical power meter is available, place the other end of the cable stub fiber into the power meter.
2. Clean the optical input connector on the cable stub fiber and place it into the optical input port of the amplifier module.
3. Turn on the input signal. Enable the amplifier module if necessary.

   ⚠ **CAUTION:**

   All optical connections and cleaning should be done with the input signal off and with the amplifier in the disabled state. Failure to do so increases the risk of damage to the optical connectors.

   ⚠ **CAUTION:**

   If the optical input signal is greater than the input fail threshold and the amplifier is enabled, the pump lasers will come on and the amplified 1550 nm light (typically +17 to +24 dBm) will be emitted from the output port.

4. Using the LCI software, check to make sure the optical output power signal level is satisfactory.
5. Verify output power using the optical power meter.

   Note: Be certain that the optical power meter is capable of accurately measuring the output power of the amplifier.

Checking the Screws

Securing Screws

Follow these steps to ensure that the screws are secure.

1. Using a straight blade screwdriver, verify that the following screws are secure and tight:
   - Three hold-down screws on the optical amplifier module
   - Two screws on each power supply

   ⚠ **CAUTION:**

   Do not overtorque the screws. It may damage the Strand Mounted Optical Amplifier.

2. Close the housing. Refer to **Closing the Housing** in Section A of Chapter 2.

Chapter 6
Maintenance and Troubleshooting

Overview

Introduction

This chapter provides information to assist you in maintaining and troubleshooting the Prisma Strand Mounted Optical Amplifier.

Qualified Personnel

Only appropriately qualified and trained personnel should attempt to troubleshoot this product.

> ⚠ **WARNING:**
>
> **Allow only qualified personnel to install, operate, maintain, or service this product. Otherwise, personal injury or equipment damage may occur.**

Chapter Contents

This chapter contains the following topics.

Topic	See Page
Module Maintenance	6-2
General Troubleshooting Information	6-3
Troubleshooting Alarm Conditions	6-4
Cleaning Fiber-Optic Connectors	6-5

Module Maintenance

Maintaining the Strand Mounted Optical Amplifier

To ensure optimal performance, the following maintenance is recommended.

Frequency	Maintenance Required
Monthly	• Visually inspect the Strand Mounted Optical Amplifier housing for any signs of damage • Check the optical input power on the next active component (i.e., amplifier, receiver) downstream in your system
Quarterly	• Inspect cables and service cable for stress • Make sure exterior plugs and fasteners are tight and torqued to specifications

Maintenance Record

It may be helpful to establish a maintenance record or log for this unit.

Large variations in any of the parameters above should be investigated.

General Troubleshooting Information

Introduction

This troubleshooting information describes the most common alarms and gives typical symptoms, causes, and items to check before consulting Scientific-Atlanta.

Additional Assistance

If you need additional assistance, telephone one of our Technical Service Centers or your local sales subsidiary. The Customer Support section in Chapter 7 contains a list of telephone numbers.

Troubleshooting

⚠ **WARNING:**

Avoid electric shock to personnel and damage to this product! Do not open the individual modules of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.

Refer to the following section, **Troubleshooting Alarm Conditions**, to identify and correct optical amplifier module faults.

Troubleshooting Alarm Conditions

Alarm Conditions

With the Strand Mounted Optical Amplifier open, connect the communication cable to the interface board. Refer to **Operation Using LCI** in Chapter 4. If the red ALARM indicator on the optical amplifier module is illuminated or blinking, use the LCI software to determine the cause of the alarm. For help, refer to the chart below.

Alarm	Parameter	Possible Causes	Possible Solutions
LasBias	Laser Current	Internal Problem	Telephone SciCare™ Broadband Services for assistance.
		Low input signal	Increase input signal.
InPwr	Optical Input	Dirty or loose connector, or Low input	Check input source.
Outpwr	Optical Output	Low input, Internal problem, or	Check input. Telephone SciCare Broadband Services for assistance.
		Module disabled Dirty connectors	Enable module. Clean connectors and re-check
LasTemp	Laser Temperature	Internal Problem	Telephone SciCare Broadband Services for assistance.
IntPs	Input Power Supply	Internal Problem	Telephone SciCare Broadband Services for assistance.

Cleaning Fiber-Optic Connectors

Introduction

Clean fiber-optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched. The goal of cleaning the fiber-optic connectors is to remove all dust and contaminants without leaving any residue behind.

Required Equipment

The following equipment is required to clean the ends of fiber-optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint free wipes
- Compressed air (also called “canned air”)

Tips for Optimal Fiber-Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber-optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use “Kleenex-type” tissues.
- If you have any degraded signal problems, clean the fiber-optic connector.

Continued on next page

Procedure for Cleaning Optical Connectors

Follow these steps to clean an optical connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Chapter 7
Customer Information

Overview

Introduction

This chapter contains information on obtaining product support and returning damaged products to Scientific-Atlanta.

In This Chapter

This chapter contains the following topics.

Topic	See Page
Customer Support	2
Return Product for Repair	4

Customer Support

Obtaining Support

IF…	THEN…
you have general questions about this product	contact your distributor or sales agent for product information or refer to product data sheets on www.scientificatlanta.com.
you have technical questions about this product	call the nearest Technical Service center or Scientific Atlanta office.
you have customer service questions or need a return material authorization (RMA) number	call the nearest Customer Service center or Scientific Atlanta office.

Support Telephone Numbers

This table lists the Technical Support and Customer Service numbers for your area.

Region	Centers	Telephone and Fax Numbers
North America	SciCare™ Services Atlanta, Georgia United States	For *Technical Support*, call: ■ Toll-free: 1-800-722-2009 ■ Local: 678-277-1120 (Press **2** at the prompt) For *Customer Service* or to request an RMA number, call: ■ Toll-free: 1-800-722-2009 ■ Local: 678-277-1120 (Press **3** at the prompt) ■ Fax: 770-236-5477 ■ E-mail: customer.service@sciatl.com
Europe, Middle East, Africa	Belgium	For *Technical Support*, call: ■ Telephone: 32-56-445-197 or 32-56-445-155 ■ Fax: 32-56-445-053 For *Customer Service* or to request an RMA number, call: ■ Telephone: 32-56-445-133 or 32-56-445-118 ■ Fax: 32-56-445-051 ■ E-mail: elc.service@sciatl.com
Japan	Japan	■ Telephone: 81-3-5908-2153 or +81-3-5908-2154 ■ Fax: 81-3-5908-2155 ■ E-mail: yuri.oguchi@sciatl.com
Korea	Korea	■ Telephone: 82-2-3429-8800 ■ Fax: 82-2-3452-9748 ■ E-mail: kelly.song@sciatl.com
China (mainland)	China	■ Telephone: 86-21-2401-4433 ■ Fax: 86-21-2401-4455 ■ E-mail: xiangyang.shan@sciatl.com

Continued on next page

Region	Centers	Telephone and Fax Numbers
All other Asia-Pacific countries & Australia	Hong Kong	■ Telephone: 852-2588-4746 ■ Fax: 852-2588-3139 ■ E-mail: support.apr@sciatl.com
Brazil	Brazil	For *Technical Support*, call: ■ Telephone: 55-11-3845-9154 ext 230 ■ Fax: 55-11-3845-2514 For *Customer Service* or to request an RMA number, call: ■ Telephone: 55-11-3845-9154, ext 109 ■ Fax: 55-11-3845-2514 ■ E-mail: luiz.fattinger@sciatl.com
Mexico, Central America, Caribbean	Mexico	For *Technical Support*, call: ■ Telephone: 52-3515152599 ■ Fax: 52-3515152599 For *Customer Service* or to request an RMA number, call: ■ Telephone: 52-55-50-81-8425 ■ Fax: 52-55-52-61-0893 ■ E-mail: karla.lugo@sciatl.com
All other Latin America countries	Argentina	For *Technical Support*, call: ■ Telephone: 54-23-20-403340 ext 109 ■ Fax: 54-23-20-403340 ext 103 For *Customer Service* or to request an RMA number, call: ■ Telephone: 770-236-5662 ■ Fax: 770-236-5888 ■ E-mail: veda.keillor@sciatl.com

Return Product for Repair

Introduction

You must have a return material authorization (RMA) number to return a product. Contact the nearest customer service center and follow their instructions.

Returning a product to Scientific Atlanta for repair includes the following steps:

- ***Obtaining an RMA Number and Shipping Address***
- ***Completing the Scientific Atlanta Transmission Networks Repair Tag***
- ***Packing and Shipping the Product***

Obtaining an RMA Number and Shipping Address

You must have an RMA number to return products.

RMA numbers are valid for 60 days. RMA numbers older than 60 days must be revalidated by calling a customer service representative before the product is returned. You can return the product after the RMA number is revalidated. Failure to comply with the above may delay the processing of your RMA request.

Complete the following steps to obtain an RMA number and shipping address.

1 Contact a customer service representative to request a new RMA number or revalidate an existing one.

Refer to ***Support Telephone Numbers*** to find a customer service telephone number in your area.

2 Provide the following information to the customer service representative:

- Your company name, contact, telephone number, email address, and fax number
- Product name, model number, part number, serial number (if applicable)
- Quantity of products to return
- A reason for returning the product and repair disposition authority
- Any service contract details

3 A purchase order number or advance payment to cover estimated charges will be requested at the time a customer service representative issues an RMA number.

Notes:

- For credit card or cash in advance customers, a proforma invoice will be sent to you upon completion of product repair listing all charges incurred.
- Customer service must receive a purchase order number within 15 days after you receive the proforma invoice.

Continued on next page

- In-warranty products can accrue costs through damage or misuse, cosmetics, or if no problem is found. Products incurring costs will not be returned to you without a valid purchase order number.

4 Once an RMA number has been issued, a confirmation e-mail or fax will be sent to you detailing the RMA number, product and product quantities authorized for return, together with shipping address details and RMA terms and conditions.

Note: Alternatively, you may obtain an RMA fax request form, complete and fax it to a customer service representative, or e-mail your completed request form to: customer.service@sciatl.com.

5 Go to ***Completing the Scientific Atlanta Transmission Networks Repair Tag***.

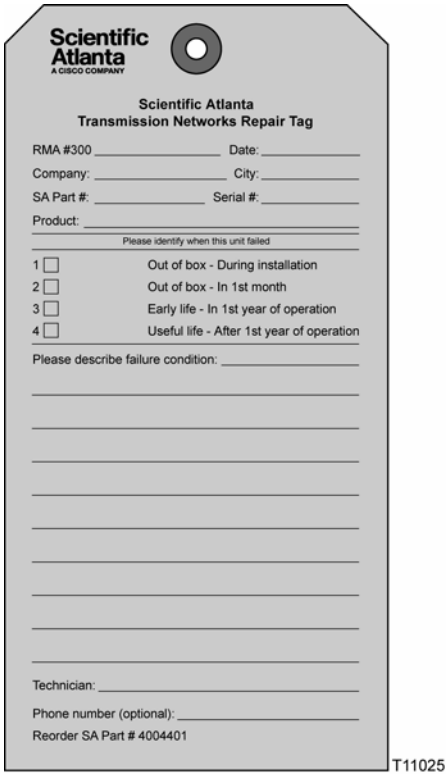
Completing the Scientific Atlanta Transmission Networks Repair Tag

Product returned for repair, both in-warranty and out-of-warranty, should have a repair tag attached to the product detailing the failure mode. A supply of tags can be obtained free of charge by calling a customer service representative.

The Scientific Atlanta Transmission Networks repair tag provides important failure information to the Scientific Atlanta repair department. This information will reduce the amount of time needed to repair the unit and return it to you. This information can also reduce the cost of out-of-warranty repairs.

It is best to have the Scientific Atlanta Transmission Networks repair tag completed by a person knowledgeable about the failure symptoms of the unit to be returned for repair. The tag should be securely attached to the failed unit with the elastic string, tape, or another method and returned to Scientific Atlanta.

Continued on next page



Complete the following steps to complete the Scientific Atlanta Transmission Networks repair tag.

1 Complete header information.

- RMA Number: Enter the RMA number provided by the Scientific Atlanta customer service representative. All RMA numbers start with “30” and are followed by 6 additional digits. An RMA number is required to return products to Scientific Atlanta.
- If you are the technician who is filling out this tag, you may not have the RMA number. Leave it blank for now. Someone else in your organization, who has the number, can fill it in later.

Continued on next page

- Date: Enter the date the unit was removed from service. If this date is unknown, enter the date you are completing the repair tag.
- Company and City: Enter the company name and city of the customer who owns the unit to be returned for repair.
- SA Part # and Serial #: Enter the part number and serial number of the unit you are returning for repair. The part number and serial number can usually be found on a bar code label on the outside of the unit. If this information can't be found leave this blank.
- Product: Enter the model description of the unit you are returning for repair. For example, Model 6940/44 Node, Multimedia Tap, RF Signal Manager, etc.

2 Complete time of failure information.

Please identify when this unit failed

1 ☐ Out of box - During installation
2 ☐ Out of box - In 1st month
3 ☐ Early life - In 1st year of operation
4 ☐ Useful life - After 1st year of operation

T11027

This information will help the repair technician understand the failure mode. If the time to failure is unknown, leave this information blank.

3 Complete the failure description and technician information:

Please describe failure condition: _____

Technician: _____

Phone number (optional): _____

Reorder SA Part # 4004401

T11028

- Failure Description: Include as much information as possible. For example:
  - Which feature is not working or which specification is not being met? For example, does the problem affect audio, video, status monitoring and control, forward path, reverse path, cosmetics, all functions, etc.

Continued on next page

- If it is a multi-port product, which port is not working or if all ports are not working?
- If the unit has degraded performance or is completely failed.
- If the failure happens only at specific environmental conditions (i.e., at hot temperature).
- If the failure is intermittent or constant.
- How you were powering the unit when it failed? (DC vs. AC, voltage levels, etc.)

Important: Descriptions like "bad unit", "failed", or "no HBO" are not specific enough to be helpful.

- Technician and Phone Number: Enter the name and phone number of the technician completing the failure description information. A Scientific Atlanta representative may want to call this person to better understand the problem.

4 Attach the repair tag to the unit you are returning for repair. Use the elastic string provided, tape, or another method to securely attach the tag.

5 Go to ***Packing and Shipping the Product***.

Packing and Shipping the Product

Follow these steps to pack the product and ship it to Scientific Atlanta.

1 Are the product's original container and packing material available?

- If yes, pack the product in the container using the packing material.
- If no, pack the product in a sturdy, corrugated box, and cushion it with packing material.

Important: You are responsible for delivering the returned product to Scientific Atlanta safely and undamaged. Shipments damaged due to improper packaging may be refused and returned to you at your expense.

Note: PLEASE DO NOT RETURN ANY POWER CORDS, ACCESSORY CABLES, OR OTHER ACCESSORY PRODUCTS. Instructions for ordering replacement power cords, accessory cables, or other accessories can be provided by a customer service representative.

2 Write the following information on the outside of the shipping container:

- RMA number
- Your name
- Your complete address

Continued on next page

- Your telephone number
- "Attention: Factory Service"

Important: The RMA number should be clearly marked on all returned product, boxes, packages, and accompanying paperwork. RMAs received by the factory service receiving department that are not clearly marked may experience delays in the processing of RMA requests. All returned product should be marked to the attention of Factory Service.

3 Ship the product to the address provided by the customer service representative in the confirmation e-mail or fax.

Note: Scientific Atlanta does not accept freight collect. Be sure to prepay and insure all shipments. For both in-warranty and out-of-warranty repairs, you are responsible for paying your outbound freight expense, any applicable import and/or export duties and taxes. Scientific Atlanta will pay the return freight expense for in-warranty repairs.

International Shipments: International shipments should be consigned to Scientific-Atlanta, Inc. with the notified party on the Airway Bill stated as "Expeditors International for Customs Clearance".

4 On receipt of product returned under an RMA number, a receipt notification e-mail or fax will be sent to you by Repair Receiving confirming receipt of product and quantities received. Please check the receipt notification to assure the product and quantity of product received by Scientific Atlanta matches what you shipped.

Appendix A
Optional Modules of the Strand Mounted Optical Amplifier

Overview

In This Chapter

This chapter provides instructions for operating the optional modules of the Prisma Strand Mounted Optical Amplifier. This section contains the following topics.

Topic	See Page
Section A Fiber Tray	A-2
Section B Operating the Optical Splitter Module	A-8
Section C Operating the Optical Switch Module	A-10
Section D Removing of the Optical Amplifier Module with Optional Modules Installed	A-35
Section E Transponder	A-37

Section A
Fiber Tray

Overview

Introduction

The fiber tray provides fiber routing and management capabilities. The fiber tray is installed in the Strand Mounted Optical Amplifier when an optical splitter module (option) and/or optical switch module (option) is ordered. The internal splitter module is mounted inside the fiber tray. If chosen as an option, the optical switch module is mounted on top of the fiber tray in place of the plexiglass cover.

Section Contents

This section provides instructions for operating and routing optical fiber in the fiber tray of the Prisma Strand Mounted Optical Amplifier. This section contains the following topics.

Topic	See Page
Operating the Fiber Tray	A-3
Routing Optical Fiber in the Fiber Tray	A-5

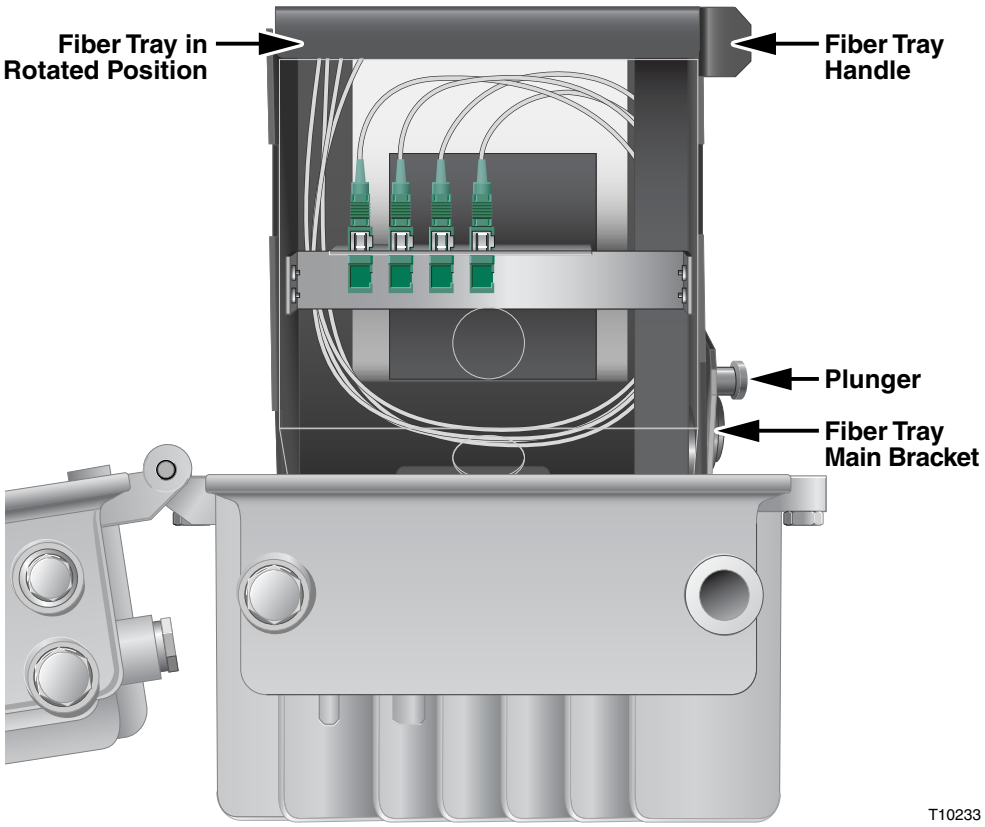
Operating the Fiber Tray

Procedure for Operating the Fiber Tray

The fiber tray has a two position-locking feature which allows access to the optical input and output bulkhead ports of the amplifier module.

Follow these steps to operate the fiber tray.

1. To rotate the fiber tray, pull out the plunger located on the main bracket.
2. Grasp the handle of the fiber tray and rotate the tray 90° until the second detent is engaged. See the illustration below.



3. To return the fiber tray to its resting position, grasp the handle of the fiber tray and pull out the plunger.

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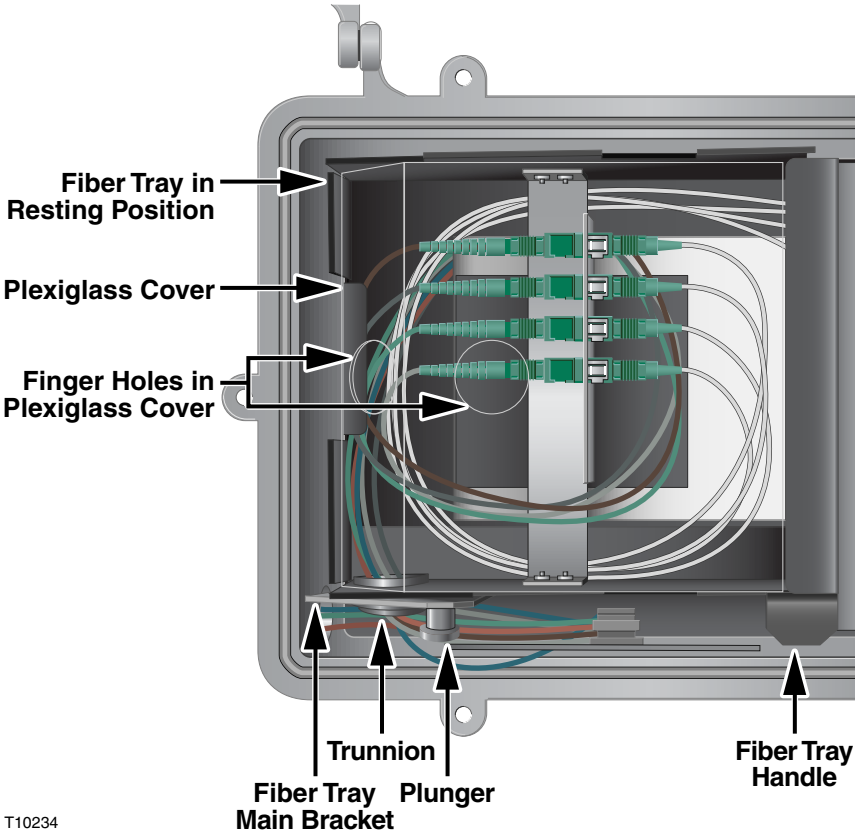
4. Rotate the tray 90° until the detent is engaged. There will be an audible click.



Opening the Plexiglass Cover

The fiber tray for the Strand Mounted Optical Amplifier has a hinged plexiglass cover to protect the incoming fibers from damage. The plexiglass cover can be opened to access the bulkhead bracket and fiber routing area of the fiber tray.

Note: The plexiglass cover is not included when an optical switch module is chosen as an option.

Follow these steps to open the plexiglass cover.

1. Place your index finger and thumb into the two finger holes of the cover.
2. Pinch the two holes, flexing the cover, and lift up. The two tabs on the cover will disengage and the cover can be rotated open.

   Note: To avoid damage to the plexiglass cover, open the cover when the fiber tray is in the resting position.

Routing Optical Fiber in the Fiber Tray

Overview

The fiber tray of the Prisma Strand Mounted Optical Amplifier provides fiber routing and management capabilities.

Routing Optical Fiber in the Fiber Tray

Follow these steps to properly route optical fiber from the service cable through the fiber tray.

1. Rotate the fiber tray to its tilted position.
2. Route the connectorized optical fibers of the service cable through the fiber port of the Strand Mounted Optical Amplifier housing.

   ⚠ **CAUTION:**
   A maximum of eight incoming 2.5 mm SC/APC connectorized fibers can be fed through the Strand Mounted Optical Amplifier housing fiber port. To avoid damage to the optical fiber, feed only one fiber through the fiber port at a time. The minimum length of fiber needed for proper routing is 32 inches (81 cm).

3. Route the incoming fiber under the fiber clip located on the main bracket and secure fibers under the clip.
4. Route the fibers into the fiber tray through the trunnion.
5. Rotate the fiber tray to its resting position and open the plexiglass cover.
6. Gently pull the incoming fibers into the fiber tray and route the optical input fibers in a counterclockwise direction and the optical output fibers in a clockwise direction.

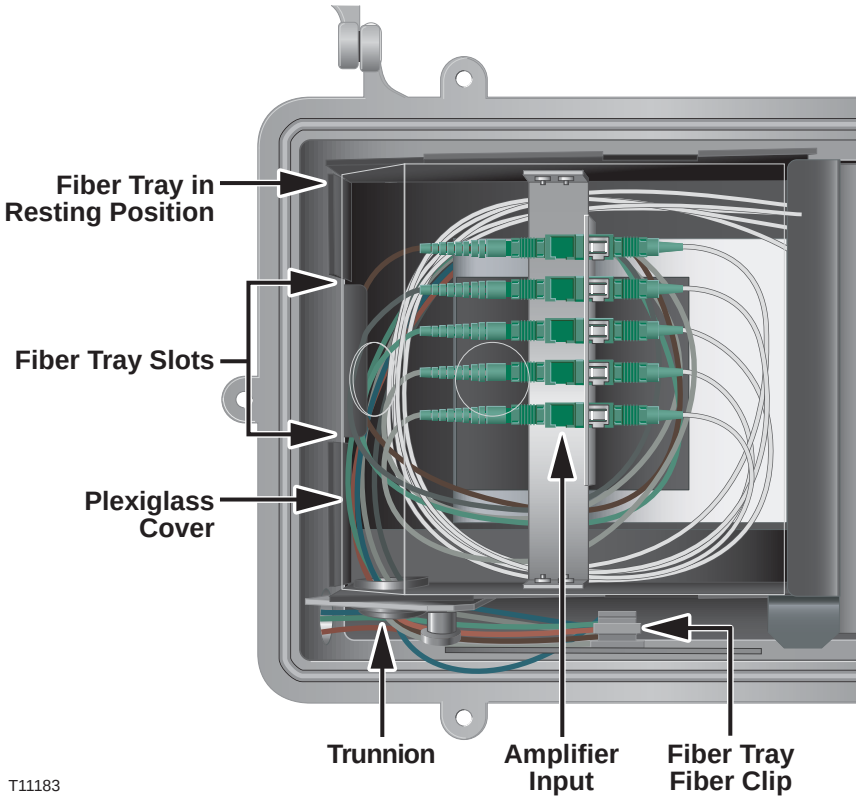
   Note: Additional (dark) fibers can also be routed and stored in the fiber tray.

   ⚠ **CAUTION:**

   When rotating the fiber, avoid sharp bends in the fiber to prevent unwanted loss of light or damage to the fiber.

Continued on next page

7. Route the optical input fiber(s) through the slots in the fiber tray. The following illustration shows the fibers properly routed in the fiber tray.



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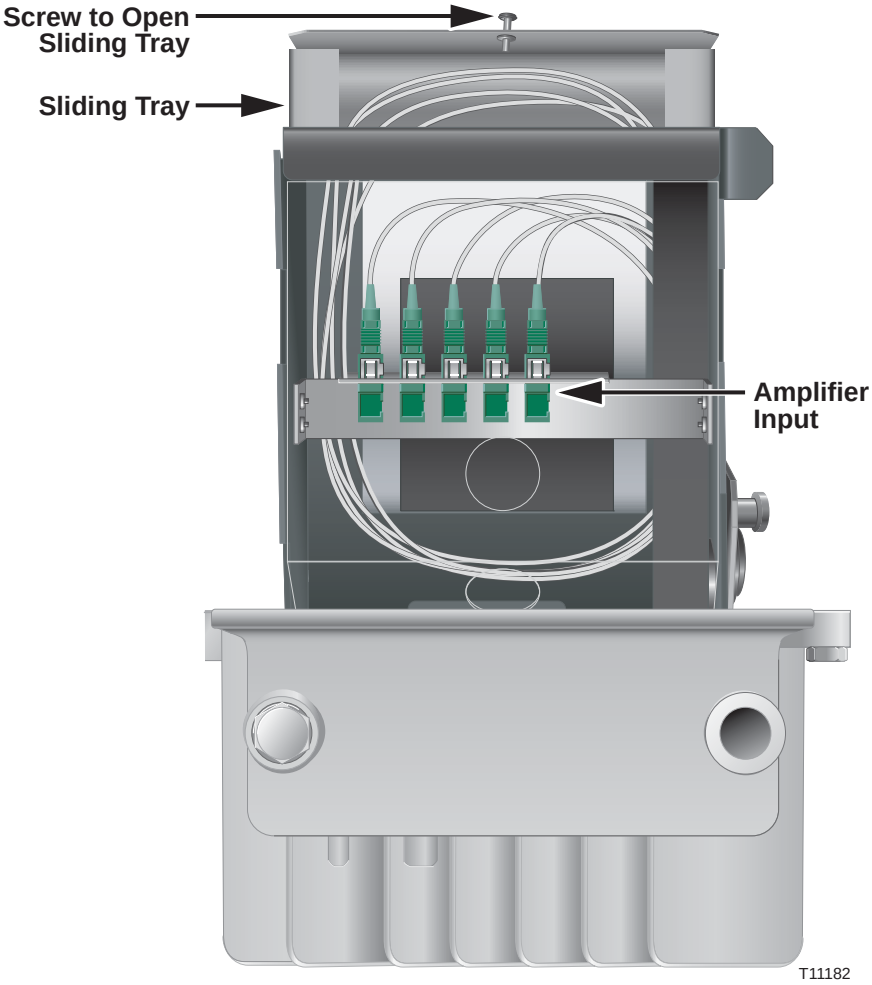
Routing Fiber in the Sliding Tray

If additional fiber routing space is required and the optical splitter module was not chosen as an option, the fiber can be routed in the base of the fiber tray in the removable sliding tray.

Note: If chosen as an option, the optical splitter module would be mounted in the removable sliding tray.

Follow these steps to route fiber in the removable sliding tray.

1. Open the sliding tray by turning the screw on the side of the tray ¼ turn.



2. Slide the tray outward and spool any extra fiber in the tray. Route any input/output fibers through the openings on the front of the sliding tray.
3. Slide the tray back into place at the base of the fiber tray and turn the screw ¼ turn.

Section B
Operating the Optical Splitter Module

Overview

Introduction

The optical splitter module (option) provides multiple optical outputs from the Strand Mounted Optical Amplifier. The optical splitter module is mounted in the fiber tray with SC/APC bulkhead ports for easy fiber connections. The output of the optical amplifier is connected to the optical splitter module via an optical jumper cable.

Section Contents

This section contains the following topic.

Topic	See Page
Connecting Optical Fibers to the Optical Splitter Module	A-9

Connecting Optical Fibers to the Optical Splitter Module

Procedure for Connecting Optical Fibers to the Optical Splitter Module

Follow these steps to connect the optical fibers to the optical splitter module.

1. Route connectorized service cable fibers coming into the Strand Mounted Optical Amplifier into the fiber tray as described in the previous section.
2. If no optical switch module is installed in the Strand Mounted Optical Amplifier, proceed to step 3. If an optical switch is installed, proceed to step 8.
3. Route the optical input fiber through the slot in the fiber tray. Connect the fiber jumper to the input connector in the fiber tray.
4. After cleaning the end of the fiber, connect the optical input fiber to the optical amplifier module. Refer to **Cleaning Fiber-Optic Connectors** in Chapter 6.
5. Check the optical jumper cable located between the optical splitter module and the optical amplifier module to ensure the connectors are seated properly.
6. Rotate the fiber tray to its resting position and open the plexiglass cover to gain access to the fiber tray bulkhead ports.
7. After cleaning the end of the fibers, connect the optical output fibers to the bulkhead ports on the optical splitter module.
8. Rotate the optical switch module to gain access to the bulkhead ports. Refer to **Operating the Optical Switch Module** in the next section.
9. After cleaning the end of the fibers, connect the optical output fibers to the bulkhead ports on the optical splitter module.
10. Route the two optical input fibers through the slots in the fiber tray to the input bulkhead ports on the optical switch module.
11. Return the optical switch module to its resting position. Refer to **Operating the Optical Switch Module.**
12. After cleaning the ends of the fibers, connect the optical input fibers to the optical switch.
13. Check the optical jumper cable between the optical splitter and the optical amplifier to ensure the connectors are seated properly.

Section C
Operating the Optical Switch Module

Overview

Introduction

The optical switch option is intended for Strand Mounted Optical Amplifier installations where redundant optical inputs to the amplifier are required. The optical switch module is located on top of the fiber tray assembly and is hinged for easy access to the incoming fibers below.

Section Contents

This section provides instructions for operating the optical switch module.

Topic	See Page
Rotating the Optical Switch Module	A-11
Connecting the Optical Input Fiber to the Optical Switch Module	A-12
LED Indicators for the Optical Switch Module	A-15
Removing the Optical Switch Module	A-16
Operating the Optical Switch Module Using LCI	A-17
Starting the LCI Software	A-18
LCI Module Tree Overview	A-21
Checking the Optical Switch Module Operating Status	A-23
Configuring the Optical Switch Module	A-25
Checking the Optical Switch Module Alarms	A-28
Modifying the Optical Switch Module Alarm Limits	A-30
Checking the Manufacturing Data	A-33

Rotating the Optical Switch Module

Introduction

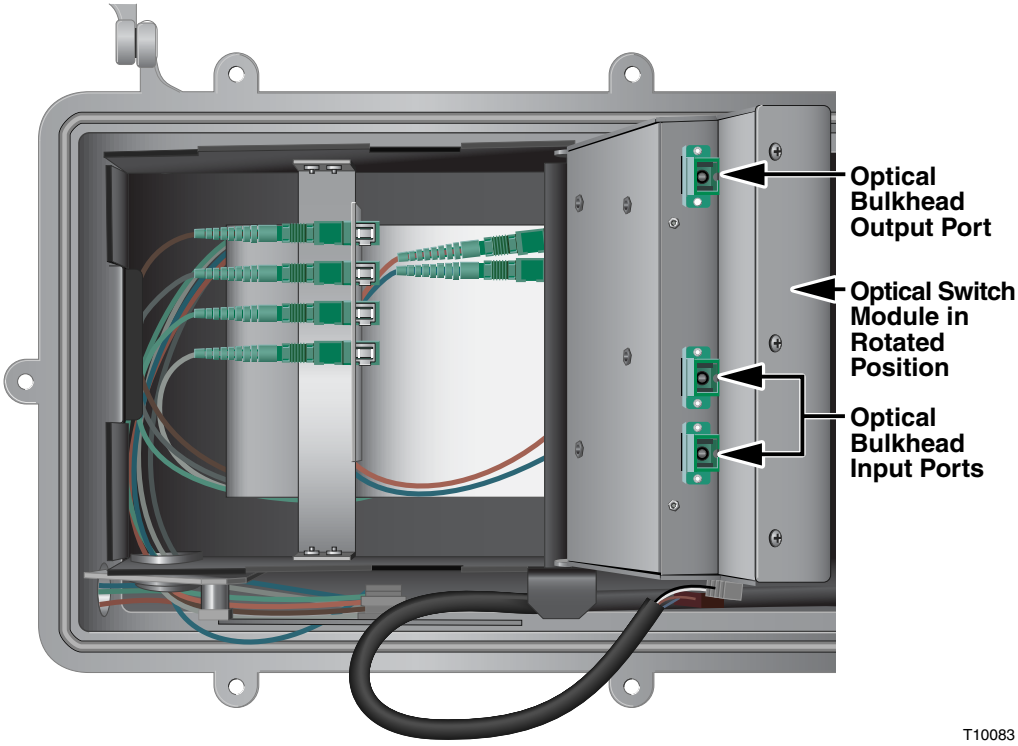
The optical switch module has three SC/APC optical bulkhead ports. The bulkhead ports are labeled Optical Input 1 & 2 and Optical Output. The output bulkhead port is connected to the input of the optical amplifier module via an optical jumper cable.

Procedure for Rotating the Optical Switch Module

Follow these steps to rotate the optical switch module to gain access to the fiber tray bulkhead ports.

Note: The optical switch module can only be rotated to the tilted position when the fiber tray is in the resting position. To gain access to the optical amplifier below the fiber tray, leave the optical switch module in its resting position and rotate **only** the fiber tray. Refer to **Operating the Fiber Tray**.

1. Loosen the captive fastener on the outside of the optical switch module.
2. Rotate the optical switch module to access the bulkhead ports.



3. To return the optical switch module to its resting position, rotate the module until it rests on the fiber tray, and then tighten the captive fastener.

> ⚠ **CAUTION:**
>
> **Be careful not to overtighten the fastener. Overtightening the fastener could damage both the fiber tray and the optical switch module.**

Connecting the Optical Input Fiber to the Optical Switch Module

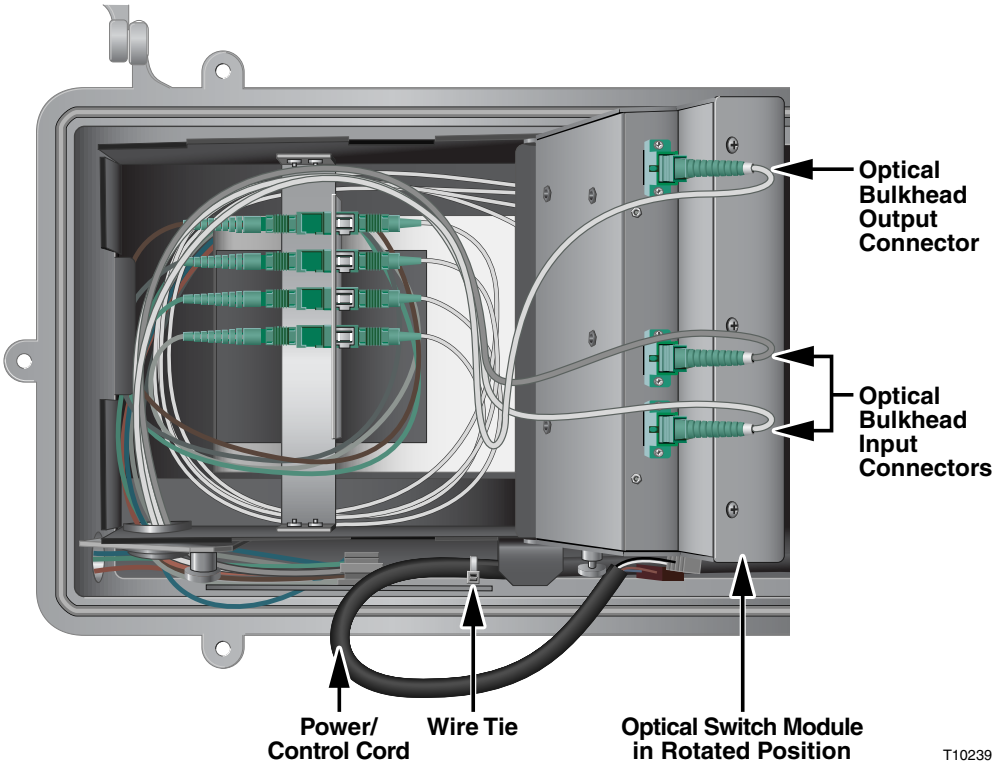
Procedure for Connecting the Optical Input Fiber to the Optical Switch Module

Follow these steps to connect the optical input fiber to the optical switch module.

1. Route connectorized optical fiber incoming to the Strand Mounted Optical Amplifier through the fiber tray. Refer to **Routing Optical Fiber in the Fiber Tray.**
2. If an optical splitter module is installed in the Strand Mounted Optical Amplifier, connect the optical fibers to *both* the optical splitter and the optical switch modules. Refer to **Procedure for Connecting Optical Fibers to the Optical Splitter Module** earlier in this section.
3. Rotate the optical switch module to gain access to the routed fiber in the fiber tray.
4. Route the optical input fibers and the optical output fiber through the slots in the fiber tray.
5. Rotate the optical switch module to its resting position.
6. Rotate the fiber tray to the tilted position and route the optical output fiber under the tray to the optical amplifier module.
7. After cleaning the end of the fiber, connect the optical output connector to the output port of the optical amplifier. Refer to **Cleaning Fiber-Optic Connectors** in Chapter 6.
8. Return the fiber tray to its resting position.

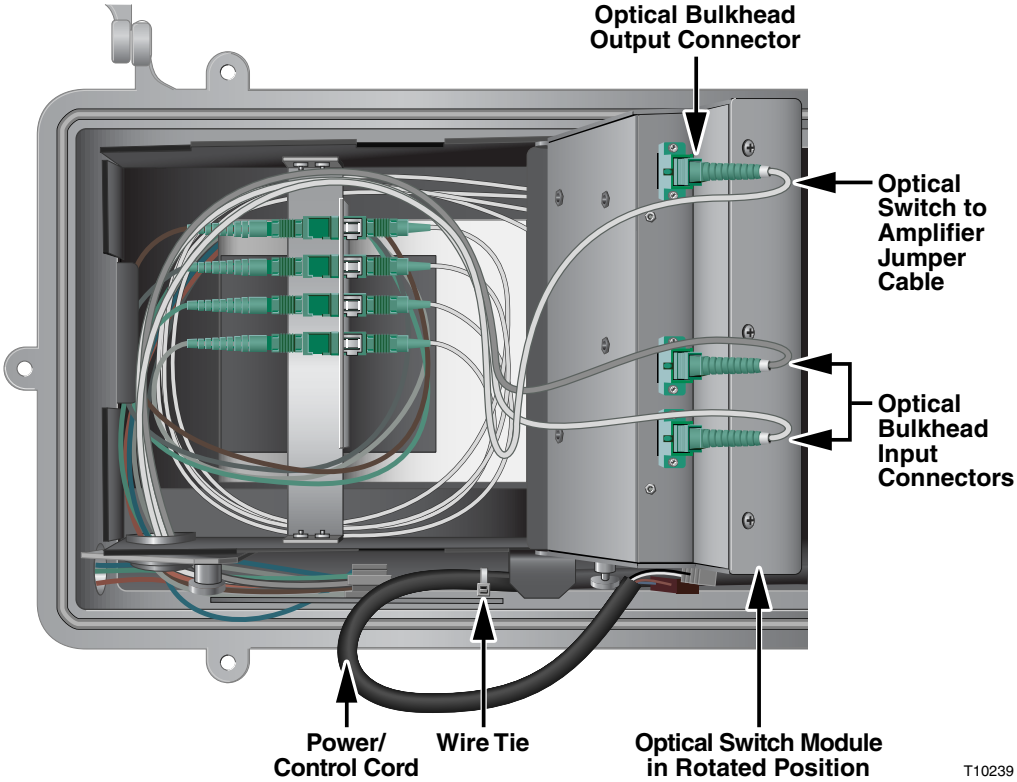
Continued on next page

9. After cleaning the ends of the fiber, connect the two optical input connectors into the bulkhead ports in the optical switch module.



Continued on next page

10. Check the optical jumper cable located between the optical switch module and the input port of the optical amplifier module to ensure the connectors are seated properly. Below is an illustration of the optical switch module fully connected.



Note: The optical switch module has a flexible power/control cord that is connected to the optical amplifier module. The power cord is routed to the optical switch module and secured to the main bracket of the fiber tray with a wire tie (see illustration above). The location of the wire tie is critical to the proper rotation of the optical switch module and the fiber tray.

LED Indicators for the Optical Switch Module

LED Indicators

The optical switch module has two LEDs that identify the module's status.

Indicator	Status
Solid Green LED	Optical Switch Module is on
Flashing Green LED	Optical Switch Module is communicating
Solid Red LED	Critical Alarm
Flashing Red LED	Minor Alarm

Removing the Optical Switch Module

Procedure for Removing the Optical Switch Module

The optical switch module can be removed from the Strand Mounted Optical Amplifier. Follow these steps to remove the module.

1. Disconnect the two 5-pin connectors from the optical switch module.
2. Loosen the captive fastener on the optical switch module and rotate the module to the tilted position.
3. Remove the optical input and output bulkhead connectors from the optical switch module.
4. Rotate the fiber tray to the tilted position.
5. Grasp the side wall of the fiber tray and flex slightly (approx ½"). With the other hand, hold the optical switch module and lift up. This disengages one of the two pivot pins on the fiber tray and allows the optical switch module to be removed.
6. Slide the optical switch module from the remaining pivot pin.

Operating the Optical Switch Module Using LCI

Introduction

The installation steps and procedures in the following sections apply if you are using the Local Craft Interface (LCI) software to operate the optical switch module of the Prisma Strand Mounted Optical Amplifier. Included in these sections are LCI software installation instructions and detailed descriptions of how to use the LCI software to view and modify information for the optical switch module of the Strand Mounted Optical Amplifier. For LCI instructions for the Optical Amplifier Module, refer to Chapter 4, **Monitoring the Strand Mounted Optical Amplifier Using LCI.**

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

LCI Software Function

The LCI software functions as a user interface for the Strand Mounted Optical Amplifier platform. The LCI software is installed on a laptop computer, which is then connected to the Strand Mounted Optical Amplifier to configure and monitor the unit the computer is connected to.

For system requirements, installation, and instructions on connecting your laptop computer to the Strand Mounted Optical Amplifier, refer to Chapter 4, **Monitoring the Strand Mounted Optical Amplifier Using LCI.**

Starting the LCI Software

Introduction

When the LCI software is started, it polls the module(s) located in the Strand Mounted Optical Amplifier your computer is attached to. For each module it finds, the LCI software does the following:

- Represents the module in the module tree of the main LCI window and represents the modules in a graphical format.
- Makes the polling information available so you can check and configure various parameters.

Important: Your computer must be connected to the Strand Mounted Optical Amplifier before you start the LCI software. For instructions, refer to **Connecting Your Laptop Computer to the Strand Mounted Optical Amplifier** in Chapter 4.

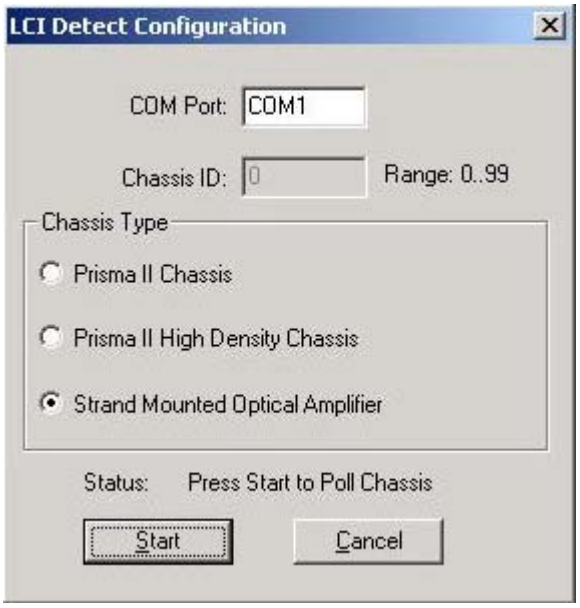
Starting the LCI Software

To start the software, perform these steps.

1. Double-click the LCI icon on your Windows desktop.

LCI

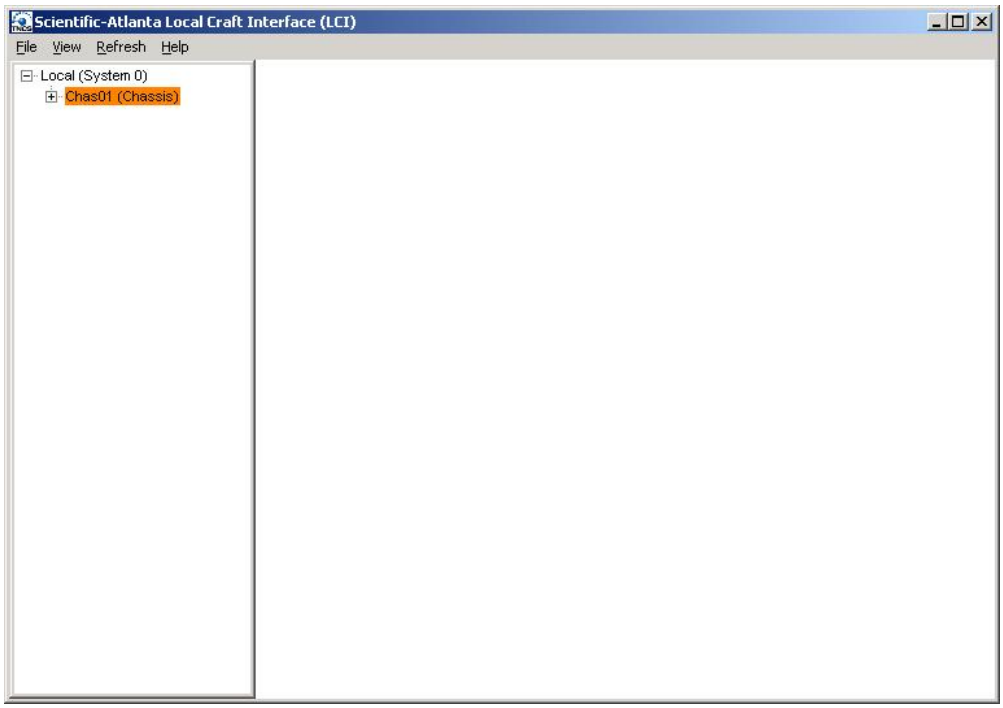
Result: The LCI Detect Configuration Window opens and displays the various platforms available for monitoring.



Continued on next page

2. Select **Strand Mounted Optical Amplifier**, and then click **Start**.

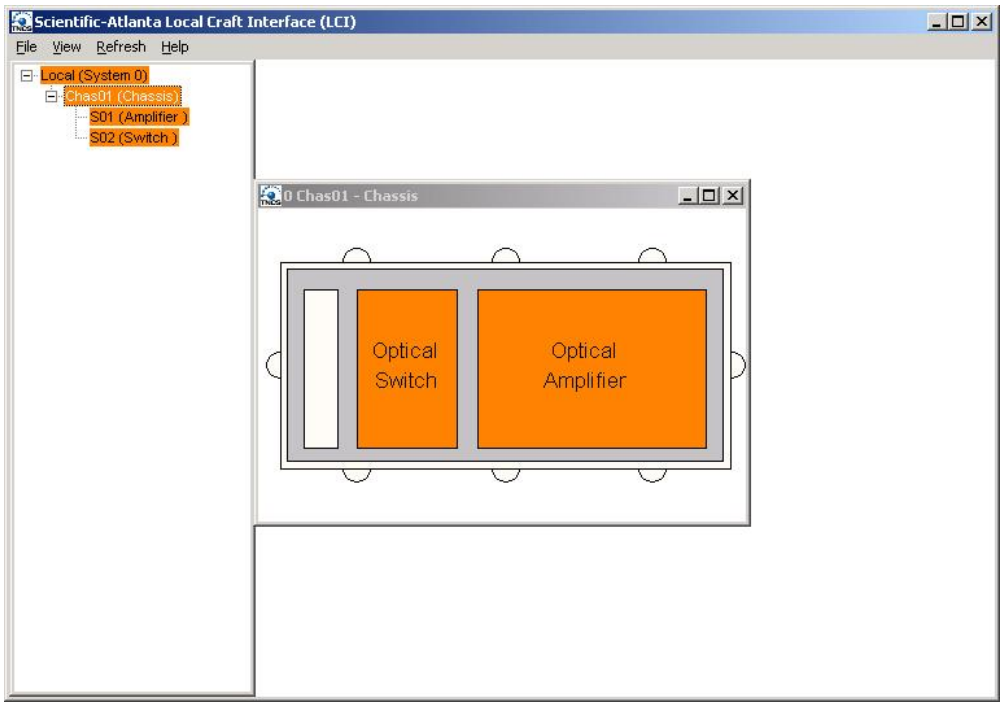
   Result: The chassis appear in the device tree of the main window of the LCI software.



Continued on next page

3. Click **Chassis.**

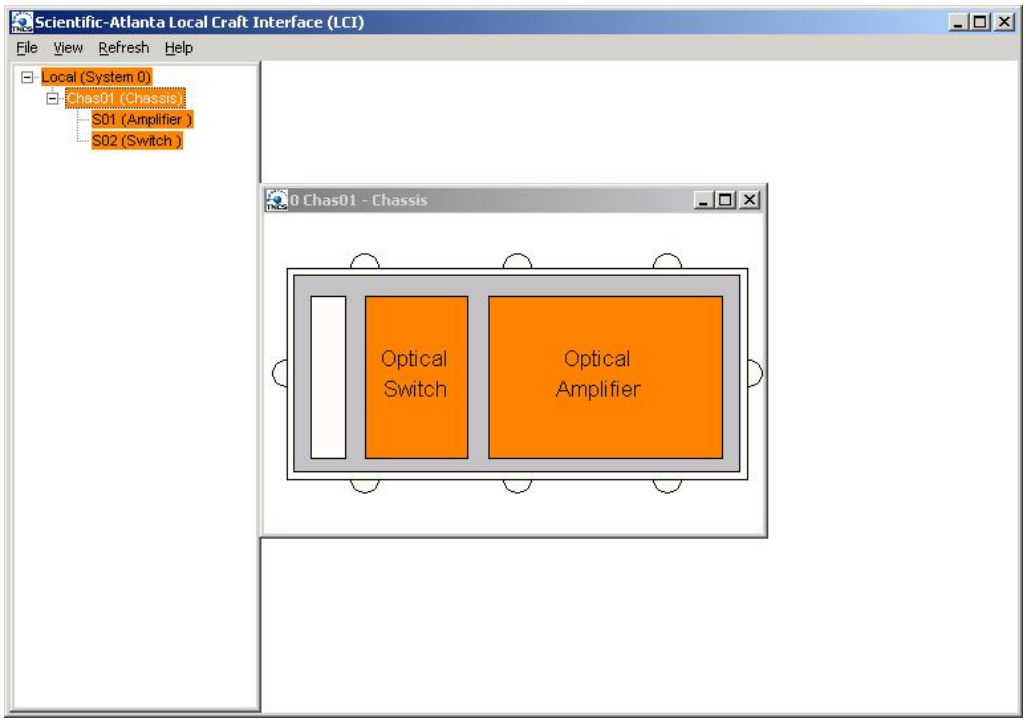
Result: The LCI software polls the modules in the Strand Mounted Optical Amplifier and the main LCI window displays.



LCI Module Tree Overview

Introduction

The main window of the LCI software contains a tree that represents your system in a hierarchical manner and a graphical representation of the Strand Mounted Optical Amplifier.



Module Tree

In the graphic above, the module tree represents a laptop connected to a Strand Mounted Optical Amplifier. The three tree levels are described in the following table.

Module Tree Level	Description
Local (System 0)	Laptop computer being used
Chass00 (Amplifier)	Strand Mounted Optical Amplifier the computer is connected to
Sxx (Module name)	Module(s) located within the SMOA. Each module is of the format *module slot location (module name).* **Note:** The amplifier module is always shown as Slot 1; the optional Optical Switch module, if installed, is shown as Slot 2.

Continued on next page

Module Information

Information about a module (its parameters, alarms and status) is located in the Module Details window. Within the module tree or graphic, you can access this window using one of the following four methods:

- Double-click the module name in the module tree
- Right-click the module name in the module tree and select **Open** from the menu that displays
- Double-click the module in the graphic
- Right-click the module in the graphic and select **Details** from the menu that displays

Note: Although you can use the method that's most convenient for you, the procedures throughout this chapter are described using the right-click module technique.

Checking the Optical Switch Module Operating Status

Introduction

Using the LCI software, you can check the status of all operating parameters of the optical switch module.

Monitored Parameters

The table below describes the monitored parameters for the optical switch module.

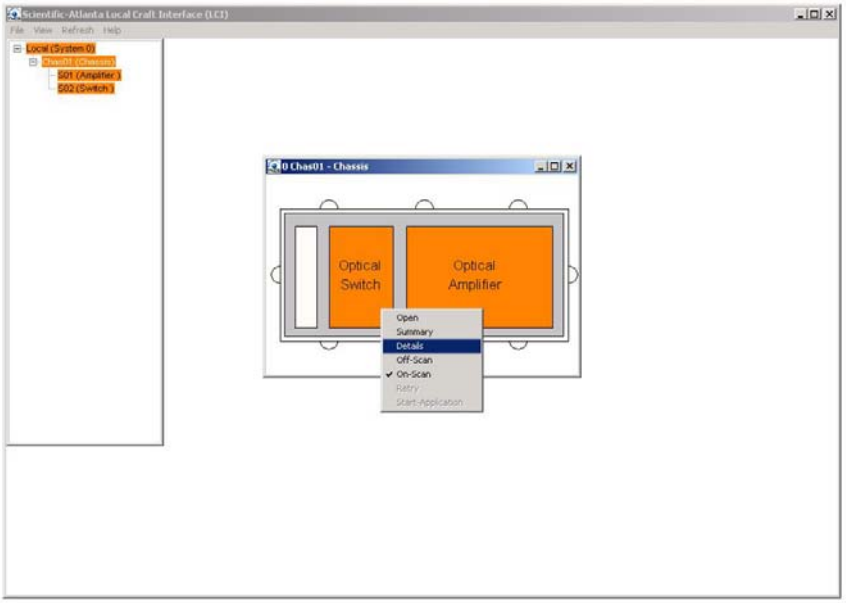
Parameter	Units	Function	Typical Value
Port 1 Optical Power	dBm	Optical input power on Port 1	-8 dBm to +10 dBm
Port 2 Optical Power	dBm	Optical input power on Port 2	-8 dBm to +10 dBm
Switch Position	Integer	Read switch position	Norm/cross
Switch Module Temperature	deg C	Module temperature	T_{amb} + 7˚C
Switch Temperature	deg C	Switch temperature	T_{amb} + 13˚C

Continued on next page

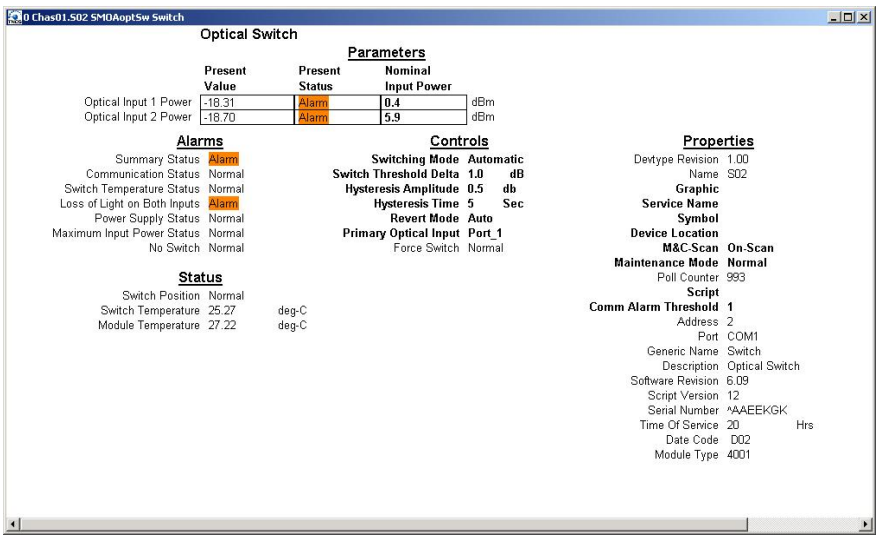
Procedure for Checking the Optical Switch Module Operating Status

To monitor the optical switch module operating parameters, follow these steps.

1. In the graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Switch, and click **Details.**



Result: The Module Details window displays. The monitored parameters are displayed under **Parameters** and **Status.**



2. Proceed with checking the operating parameters.

Configuring the Optical Switch Module

Introduction

Using the LCI software, you can configure the following parameters of the optical switch module.

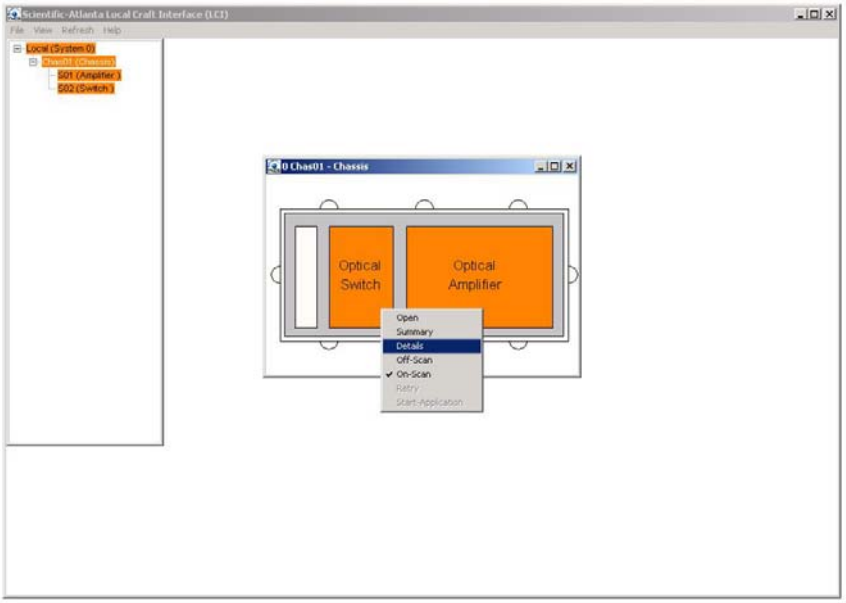
Parameters	Function	Values	Default
Port 1 Optical Power	Nominal input optical power at Input 1 in dBm	8 dBm to 10.0 dBm, increments of 0.1 dBm	0.0 dBm
Port 2 Optical Power	Nominal input optical power at Input 2 in dBm	-8 dBm to 10.0 dBm, increments of 0.1 dBm	0.0 dBm
Mode Status	Selects automatic or manual mode	Manual Automatic	Automatic
Delta	Delta: the value (in dB relative to nominal) below which the input optical power must fall for the switch to operate	1.0 to 10.0 dB, increments of 0.1 dB	1.0 dB
Hysteresis Amplitude	Hysteresis Amplitude: the value (in dB relative to switching threshold) above which the input optical power must rise for the switch to begin the hysteresis timer before restoring original switch position. Only applies if Revert is True	0.5 to 9.5 dB, increments of 0.1 dB	0.5 dB
Revert	In Auto, allows switch to revert to primary position after optical power is restored. In Manual, switch will remain in backup position	Manual Automatic	Automatic
Hysteresis Time	The length of time, in seconds, that primary optical power must remain above the restore threshold value before switch is allowed to revert to Primary	Integer, seconds between 0 and 720 (0 to 12 minutes)	1
Primary Optical Input (PrimInp)	Selects the primary optical input	Port 1 Port 2	Port 2
Switch	Selects switch position	Norm Switch	Norm
Nominal Input 1	Optical power on Input 1 at set-up	-8 to +10 dBm	+5 dBm
Nominal Input 2	Optical power on Input 2 at set-up	-8 to +10 dBm	+5 dBm

Continued on next page

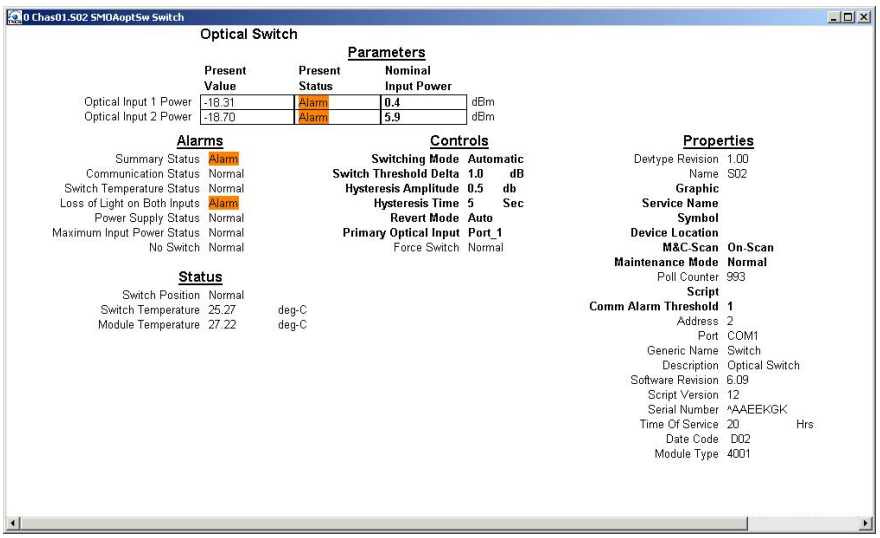
Configuring Parameters of the Optical Switch Module

To configure the optical switch module parameters, follow these steps.

1. In the graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Switch, and click **Details.**



Result: The Module Details window displays.



Continued on next page

2. Under **Controls,** double-click the parameter you want to configure.

   Result: The Change Value dialog box displays. The graphic below shows the dialog box for the Switching Mode parameter.

3. Depending on the parameter chosen, select or type a new value.
4. Click **Execute.**

   Result: The new value displays next to the parameter.

Checking the Optical Switch Module Alarms

Introduction

Using the LCI software, you can check the alarm status of various parameters. Alarms that you can check are listed below.

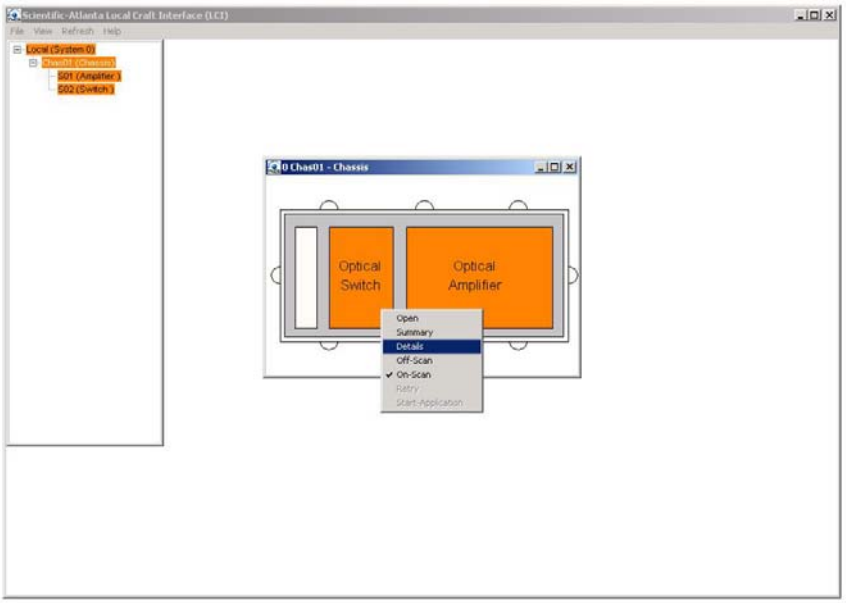
Alarm	Function	Possible Cause
Loss of Light Status	Detects loss of light	Input dark
Module Temperature	Module Temp above high threshold or below low threshold	Temp Alarm

Continued on next page

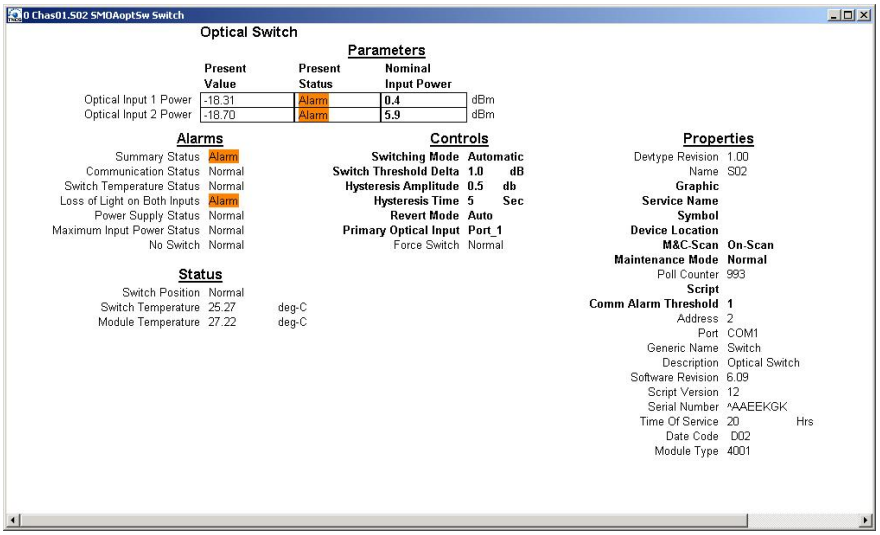
Procedure for Checking the Optical Switch Module Alarms

To check a parameter's alarm status, perform these steps.

1. In the graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Switch, and click **Details.**



Result: The Module Details window displays. The alarms are shown under **Parameters** and **Alarms.**



2. If any of the parameters are in alarm, take the necessary corrective action.

Modifying the Optical Switch Module Alarm Limits

Introduction

Using the LCI software, you can modify alarm limits for several parameters. Parameters whose alarm limits you can change are listed below. Alarm limits are dependant on module type and configuration.

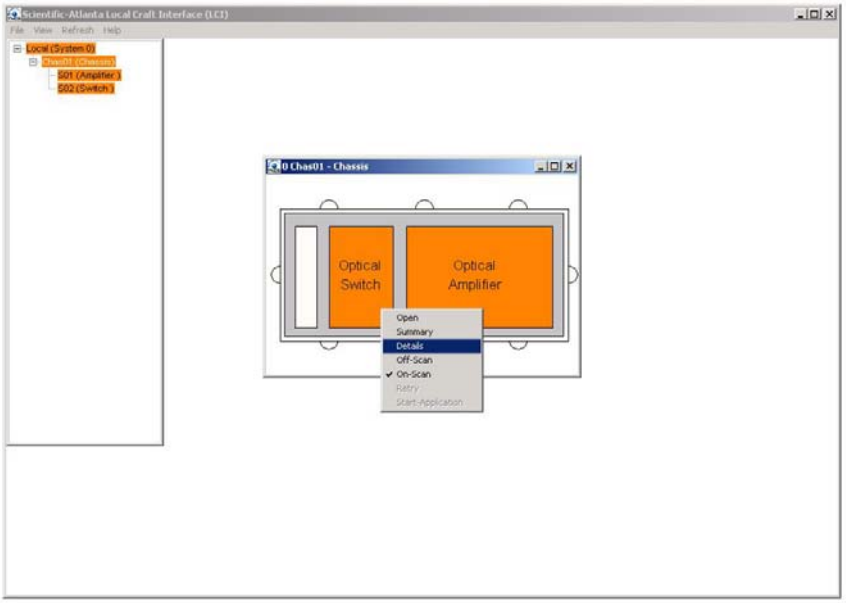
Alarm	Function	Nominal Input Power Range
Port 1 Optical Power	Nominal input optical power at Input 1, in dBm	-8.0 to +10.0 dBm, increments of 0.1 dBm
Power 2 Optical Power	Nominal input optical power at Input 2, in dBm	-8.0 to +10.0 dBm, increments of 0.1 dBm

Continued on next page

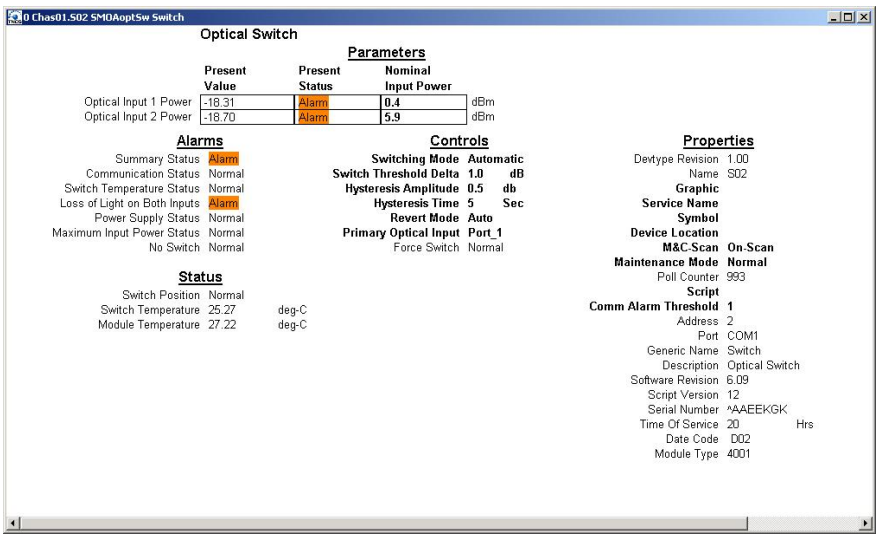
Procedure for Modifying the Optical Switch Module Alarm Limits

To modify a parameter's alarm limit, follow these steps.

1. In the graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Switch, and click **Details.**



Result: The Module Details window displays. The alarm limits are shown under **Parameters.**



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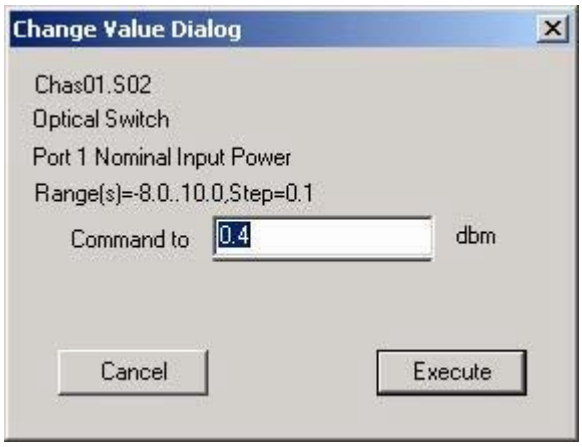
2. Double-click the limit you want to change.

   Result: The Change Value dialog box displays. The graphic below shows the dialog box for the major low limit of the Nominal Input Power parameter.



3. In the **Command to** box, type the value to use for the limit.

4. Click **Execute.**

   Result: The new value displays in the alarm limit column.

Checking the Manufacturing Data

Introduction

Using the LCI software, you can check the manufacturing data of the optical switch module of the Strand Mounted Optical Amplifier.

Manufacturing Data

The table below describes the manufacturing data available for this module. Manufacturing data is dependant on module type and configuration.

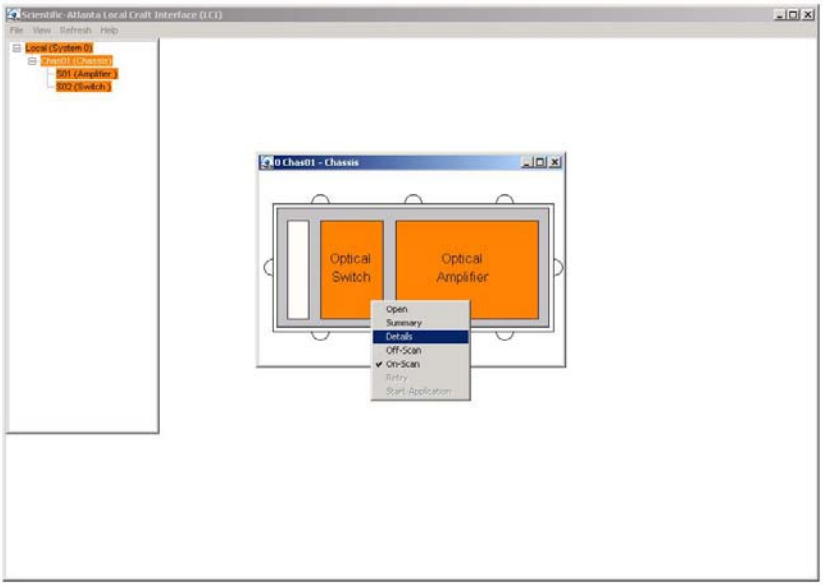
Manufacturing Data	Typical Values
Description	Optical Switch
Module Type	4001
Serial number	12345678
Software Revision	6.09
Script Version	2
Time of Service	1

Continued on next page

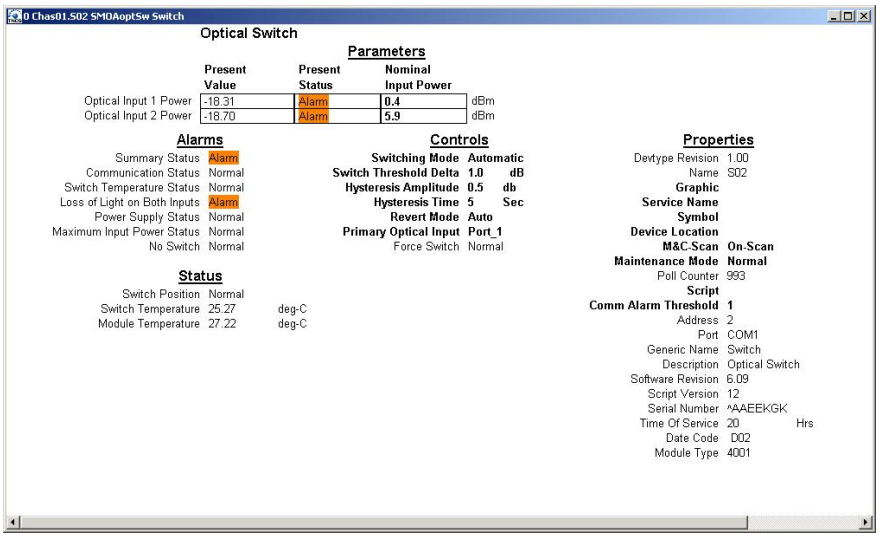
Procedure for Checking the Manufacturing Data

To access the module's manufacturing data, perform these steps.

1. In the graphical representation of the Strand Mounted Optical Amplifier, right-click the Optical Switch, and click **Details.**



Result: The Module Details window displays. The manufacturing data is displayed under **Properties.**



2. Proceed with viewing the manufacturing data.

Section D
Removing of the Optical Amplifier Module with Optional Modules Installed

Overview

Introduction

The optical amplifier module can be removed from the Strand Mounted Optical Amplifier for repair or upgrade. This section provides instructions for removing the optical amplifier module from the Strand Mounted Optical Amplifier when optional modules are installed.

Section Contents

This section contains the following topic.

Topic	See Page
Removing the Optical Amplifier Module with Optional Modules Installed	A-36

Removing the Optical Amplifier Module with Optional Modules Installed

Procedure for Removing the Optical Amplifier Module with Optional Modules Installed

When the optical splitter and/or optical switch modules are present in the Strand Mounted Optical Amplifier, follow the steps below to remove the optical amplifier module.

1. Loosen the three mounting screws on the optical amplifier module.
2. Rotate the fiber tray to the tilted position.
3. With the fiber tray in the tilted position, disconnect the optical input and output fibers from the optical amplifier module.
4. Disconnect the DC power and control cables from the interface board.
5. With all connections disconnected **except** the power cord to the optical switch (if applicable), push the optical amplifier module up and lift the module out.
6. If applicable, disconnect the 10-pin electrical connector for the optical switch power/control cord located near the rear of the optical amplifier module.

   Note: To remove the optical amplifier module, it is not necessary to remove the wire tie for the optical switch power/control cord from the main bracket of the fiber tray.

Section E
Transponder

Overview

Introduction

The Prisma Strand Mounted Optical Amplifier (SMOA) offers remote status monitoring provided by an optional transponder. The monitoring is provides by RF carriers and requires access to the RF HFC plant. The SMOA can be ordered with the transponder installed or an optional transponder upgrade kit can be ordered separately.

Important: Installing the optional transponder requires temporary removal of the interface board. Service will be interrupted.

Transponder Upgrade Kit

The transponder upgrade kit, part number 730169, consists of the following items.

- Transponder board
- Software
- RS-232 cable

Section Contents

This section provides instructions for installing and setting up the optional transponder. This section contains the following topics.

Topic	See Page
Installation of the Optional Transponder	A-38
Transponder Settings	A-40
SetXPond Window	A-42
SetXPond Menu Bar	A-45
Other Features	A-47

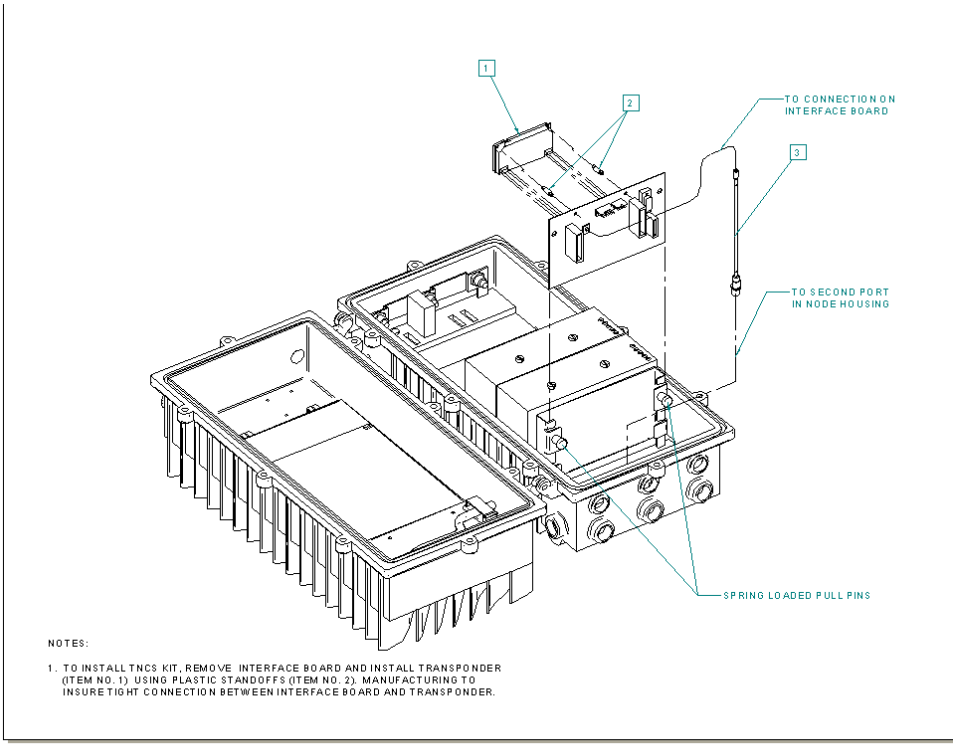
Installation of the Optional Transponder

Installing the Transponder

Follow these steps to install the optional transponder upgrade kit.

> ⚠ **WARNING:**
>
> **Minimize the risk of electrical shock. Disconnect fuse shunts to the SMOA prior to beginning any work on the SMOA.**

1. Disconnect fuse shunts.
2. Disconnect all cable connectors on the interface board.
3. Pull the two thumbscrews on the edges of the interface board and turn approximately 1/2 turn to lock the screws to the open position.
4. Slide the interface board from its mounting bracket.
5. Install the transponder board as shown below. Be sure to insert the standoffs as shown.



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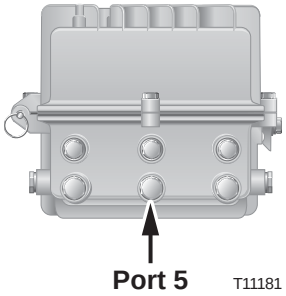
6. Install the RF cable into the RF port on the interface board.
7. Slide the interface board back into the mounting bracket. Then twist and release the lock-pins.
8. Install the other side of the RF cable into Port 5 of the housing.



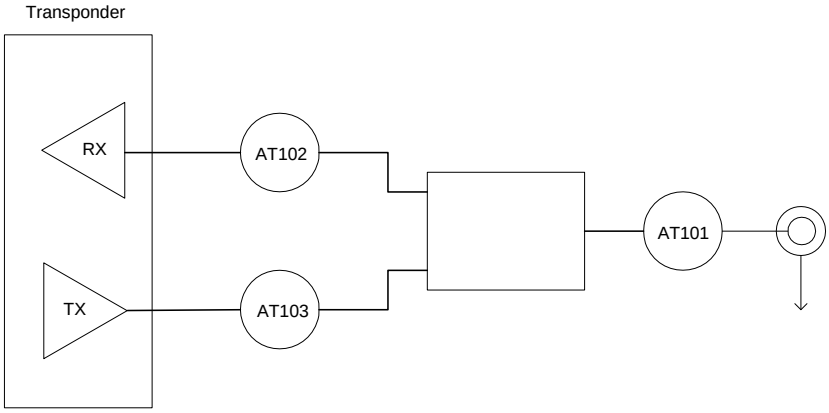
9. With the interface board reinstalled, connect all cables.
10. Reinstall the fuse shunts to power the SMOA back on.
11. Refer to **Transponder Settings** later in this document for information about setting the SMC address and frequencies.

Attenuator Pads

Attenuator pads are included on the interface board from the factory. These attenuator pads can be used to change the transmit level and receive level into the transponder as necessary but this is not usually required.

Three attenuator pads are provided for maximum user flexibility. AT102 allows independent control of transponder RX levels, AT103 allows for independent control of transponder TX levels, and AT101 provides common control of both levels. AT101 would be used, for example, when RF cable length to SMOA changes.

A block diagram of the transponder circuit is shown below.



Transponder Settings

Introduction

In addition to the contents of this transponder upgrade kit, a personal computer (PC) is required to configure the transponder. Using the PC and kit software, it is possible to program the transponder with the required transmission and reception frequency as well as all other essential parameters.

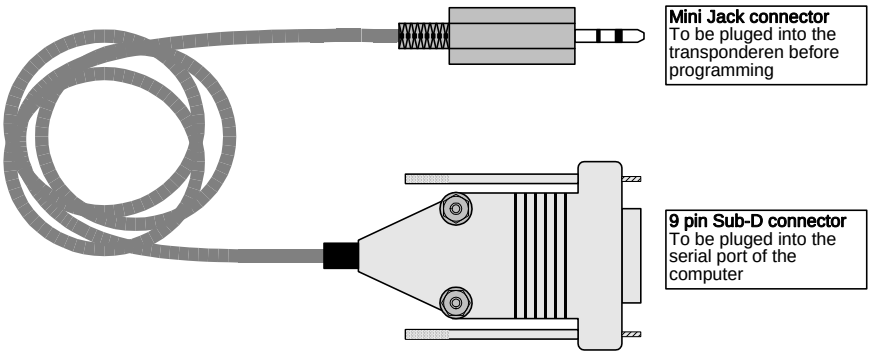
Installation of SetXPond

To install the software, simply run the **Setup.exe** program from drive A:\. The installation program will create a folder on drive C:\Program Files\SetXPond by default, but these folders can be renamed.

Start

Perform the following steps.

1. Connect the cable to the serial port COM1 or COM2 on the PC.



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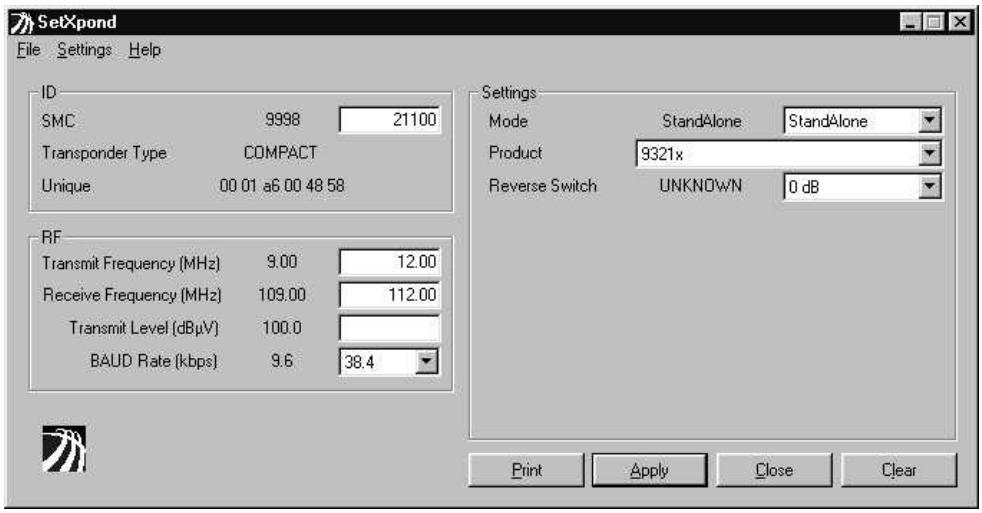
2. On the Windows taskbar, click **Start**, click **Programs**, and then click **SetXPond**.

   Result: The following appears.



3. Enter new data in the white fields and press **Apply**.

   All data in the white fields will be downloaded to the transponder, and the value will highlight in red.

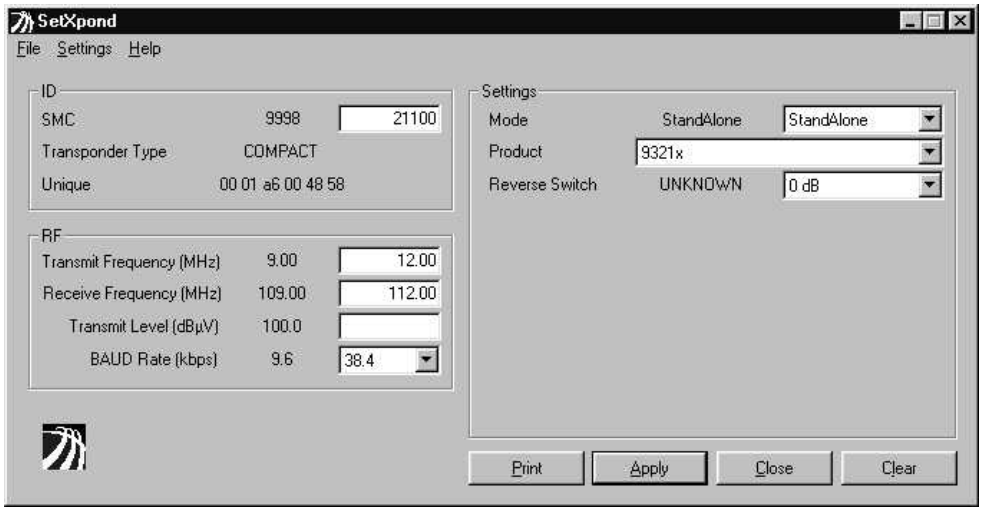
4. Click **Settings**, click **Options**, and then in the Com# box, type in **1** or **2**.

   Result: The following appears.

5. Click **OK**.

SetXPond Window

SetXPond



SetXPond Parameters

The SetXPond parameters are listed below.

Parameter	Function
ID	
SMC (0001-65535)	The SMC address is the address that is used to identify the transponders in the network. Each transponder must have its own address. The factory setting is 9998. The address 9999 has been reserved for test purposes. Do not use the 9999 address.
Transponder Type	Set at COMPACT.
Unique	The unique number is the identification number of this transponder. The number cannot be changed.
RF	
Transmit Frequency (5-65 MHz)	The transmit frequency is the frequency that is transmitted from the transponder to the RF modem. The factory setting is 9 MHz, but it can be changed from 5-65 MHz in 50 kHz or 200 kHz steps depending on the transponder version.

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Receive Frequency (45-174 MHz)	The receive frequency is the frequency that the transponder receives data from the HFC modem at the headend. The factory setting is 109 MHz, but it can be changed from 45-174 MHz in 50 kHz or 200 kHz steps depending on the transponder version.
Transmit Level (84-110 dBµV)	The transmit level is the carrier level transmitted by the transponder. The factory setting is 100 dBµV (40 dBmV). This level can be changed in 2 dB steps from 84-110 dBµV (24-50 dBmV).
Baud Rate (kbps) 9.6, 19.2 or 38.4	The baud rate is the communication speed that is used by the TNCS server together with the HFC modem. The factory setting is 9.6 kbps.
Settings	
Mode (StandAlone, IEP, 9006x)	Mode tells the transponder in which product it must function: • **StandAlone** is used in most products. (e.g., 9321x, 9322x, 6940, 6944, GainMaker). • **IEP** is used for products with internal microprocessor (e.g., 9320x, 9007x). • **9006x** is used for optical receivers type 9006x.
Product (StandAlone)	If the **StandAlone** mode is selected, a list of supported products appears. Select the right product (e.g., 9321x). If a new amplifier is not in the list, it is not supported by the program and the program has to be updated – see the section titled **Update** later in this section.
Reverse Switch	UNKNOWN
Buttons	
Print	Print a label with actual data

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Apply	Download data to the transponder Enter new data in the white fields and press **Apply**. All data in the white fields will be downloaded to the transponder, and the value will highlight in red.
Close	Close SetXPond
Clear	Clear data fields
Scientific-Atlanta Logo	
No Frame around logo	Communication between PC and transponder is OK.
Yellow frame around logo	No communication between PC and transponder.

SetXPond Menu Bar

There are three selections available on the menu bar:

- File
- Settings
- Help

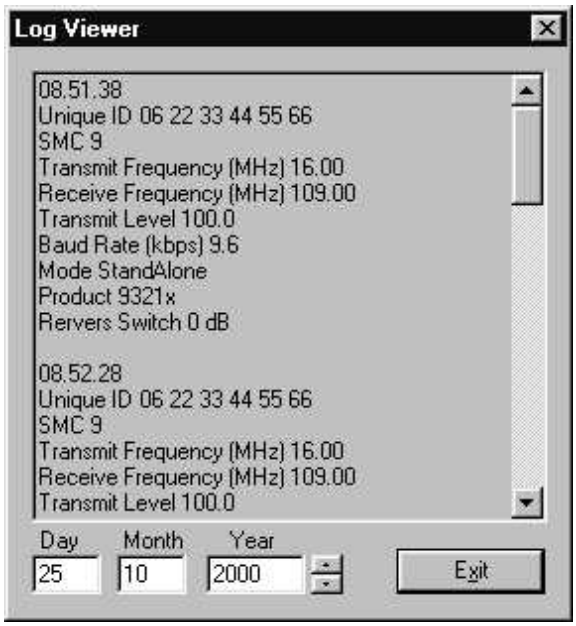
File

File > Save Proof, Restore Proof

Use the File > Save Proof, Restore Proof options to save and restore the setting of the transponder. This feature allows transponder settings to be saved, and later downloaded to another transponder.

File > View Log

Under the File > View Log menu, it is possible to see the changes made on a specific date. In order to have a log file, this function must be activated under **Settings.** It is possible to scroll all of the log from date to date by pressing the small arrows up or down. See the following figure.



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Setting

Settings > Options

Under the Settings > Options menu, it is possible to select the COM port used and to tick 3 boxes.

- Check the first box if a label shall be printed when data are loaded to the transponder.
- Check the second box to save the data that have been transmitted to the transponder in a log file.
- Check the third box to automatically delete log files after user settable amount of days.

The following appears.

Help

Select Help to display the software part number and the Patch number. The Patch number indicates how many products the software supports.

Other Features

Update

The Patch number increases when new products are added to the software. A new **SetXPond.bin** file (is called a new Patch) is copied into the directory, and the software is updated to the latest version.

Failures- Unable to Access Device

The Failures- Unable to Access Device message appears if the selected serial port is not available. Possible reasons may be that the port is in use by another device (e.g., mouse) or it has not been set up in Windows.

If a second SetXPond are opened at the same time, the following message appears.

Access Denied

The Access Denied message appears if a log file cannot be created. The reason for this failure may be that the log directory has not been created, that the directory has been deleted or that the diskette is write protected.

Glossary

Term, Acronym, Abbreviation	Meaning
A	Ampere (amp) is the unit of measure for electrical current.
AC	Alternating current
Attenuation	A decrease in signal magnitude occurring in transmission from one point to another or in passing through a loss medium.
Attenuator	A device designed to reduce signal strength by an amount specified in dB.
Baseband	The total signal before it is modified for transmission or otherwise manipulated.
Baud (Bd)	A measure of signaling rate based on the number of signaling events per unit of time
BNC	A coaxial connector that uses a bayonet type attachment to secure the cable. It is also known as Baby N connector.
bps	Bits per second - The total number of bits sent in a second of time.
BW	Bandwidth
C/N or CNR	Carrier-to-noise ratio
dBc	Decibels relative to a reference carrier
dBm	Decibels relative to 1 milliwatt
dBuV	Decibels relative to 1 microvolt
dBW	Decibels relative to 1 watt
dBmV	Decibels relative to 1 millivolt
DC	Direct current
DWDM	Dense Wave Division Multiplexing
EIA	Electronics Industry Association
EQ	Equalizer

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Forward path	Signal direction from the headend to the set-top terminal.
FP	Fabry-Perot laser
Fiber	A single strand of glass used as an optical transmission medium; or a bundle of glass strands in a CATV system.
Frequency	The number of similar shapes in a unit of time. For example, the number of sine waves moving past a fixed point in a second.
Frequency Agile	The ability to change from one frequency to another without changing components.
Frequency Modulation (FM)	A system of modulation where the instantaneous radio frequency of the carrier varies in proportion to the instantaneous amplitude of the modulating signal while the amplitude of the radio frequency carrier is independent of the amplitude of the modulating signal.
Frequency Response	The effect that changing the frequency has on the magnitude of a signal.
Frequency Reuse	A technique in which independent information is transmitted on orthogonal polarizations to "reuse" a given band of frequencies.
Frequency Stability	A measure of the departure from nominal frequency value of a signal, with respect to time, temperature, or other influence.
ft-lb	Foot-pound
Gain	An increase in signal relative to a reference
Hertz	A unit of frequency equal to one cycle per second.
I/O	Input/output
ICIM	Intelligent Communications Interface Module
IEC	International Electrotechnical Commission
IF	Intermediate frequency
IP	Internet protocol
Kbps	Kilobits per second

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in-lb	Inch-pound
LCD	Liquid crystal display
LCI	Local craft interface
LED	Light-emitting diode
Mbps	Megabits per second
Nanosecond	1 thousandth of a microsecond
Nm	Newton meter
Node	A branching or exchange point
OEM	Original equipment manufacturer
PCB	Printed circuit board
PWB	Printed wiring board
Reverse path	Signal flow direction toward the headend.
RF	Radio frequency
RMA	Return material authorization
RMS	Root Mean Square
Router	A data communications device which examines a packet and routes the packet to an output port appropriate to the packet destination
RS	Remote Sensing
RX	Receive or reciever
SA	Spectrum analyzer
SAM	Signal analysis meter
Scattering	Random directional change of a wave or part of a wave caused by an irregular reflecting surface or by passing through an inhomogeneous transmission medium.
SLM	Signal level meter
SMC	Status monitoring and control

Continued on next page

SMOA	Strand Mounted Optical Amplifier
S/N or SNR	Signal-to-noise ratio
SNMP	Simple Network Management Protocol
Spurious	Anything other than the desired result
Sweep generator	A signal source that can automatically vary its frequency continuously from one frequency to another.
Synchronous transmission	A method of sending information over a path and separating discrete characters and symbols by a precise separation in time.
TCP/IP	Transmission control protocol/internet protocol
TDM	Time division multiplexing
TNCS	Transmission Network Control System
Torque	Force applied to bolt or screw to tighten the device.
TX	Transmit or transmitter
Upstream	Signal transmission toward the headend
V	Volt
V AC	Volts alternating current
V DC	Volts direct current
W	Watts

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