Installation Manual

N2U-OA200 Series EDFA

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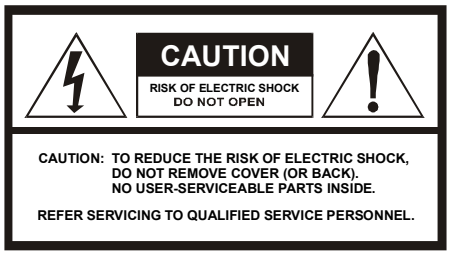
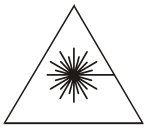


Caution

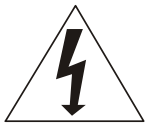
These servicing instructions are for use by qualified personnel only. To reduce the risk of electrical shock, do not perform any servicing other than that contained in the Installation and Troubleshooting Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

Special Symbols That Might Appear on the Equipment

This is a class 1 product and is intended for operation in a closed environment with fiber attached. Do not look into the optical connector of the transmitter with power applied. Laser output is invisible, and eye damage can result. Do not defeat safety features that prevent looking into optical connector.

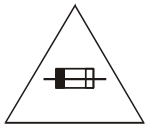


This product is considered a class IM product and is intended for operation in a closed environment with fiber attached. Do not look into the optical connector of the transmitter with power applied. Laser output is invisible, and eye damage can result. Do not defeat safety features that prevent looking into optical connector.



This symbol indicates that dangerous voltage levels are present within the equipment. These voltages are not insulated and may be of sufficient strength to cause serious bodily injury when touched. The symbol may also appear on schematics.

The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important installation, servicing, and operating instructions in the documents accompanying the equipment.



For continued protection against fire, replace all fuses only with fuses having the same electrical ratings marked at the location of the fuse.

Electrostatic discharge (ESD) can damage the unit and circuit card assemblies. Wear an antistatic wrist strap attached to a chassis ground to prevent ESD damage.

This equipment operates over the marked Voltage and Frequency range without requiring manual setting of any selector switches. Different types of line cord sets may be used for connections to the mains supply circuit and should comply with the electrical code requirements of the country of use. This equipment requires a grounding conductor in the line cord. The line cord provided with the equipment is acceptable for use with NEMA Style 5-15R ac receptacles supplying nominal 120 Volts.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

CAUTION: TO PREVENT ELECTRICAL SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE, OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

CAUTION: TO ENSURE REGULATORY AND SAFETY COMPLIANCE, USE ONLY THE PROVIDED POWER CABLES FOR AC UNITS.

FCC Compliance

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 the 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 Installation 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 the user will be required to correct the interference at his/her own expense. Any changes or modifications not expressly approved by Motorola could void the user's authority to operate this equipment under the rules and regulations of the FCC.

Canadian Compliance

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la classe A est conforme _ la norme NMB-003 du Canada.

International Declaration of Conformity

We

Motorola, Inc.
101 Tournament Drive
Horsham, PA 19044, U.S.A

declare under our sole responsibility that the

N2U-OA200 Series AC

to which this declaration relates is in conformity with one or more of the following standards:

EMC Standards

EN55022 EN55024 EN55013 EN50083-2 CISPR-22 CISPR-24 CISPR-13

Safety Standards

EN60065 EN60825 EN50083-1 EN60950 IEC 60950 + A1: 1992 + A2: 1993 + A3: 1995 + A4: 1996

IEC60065

following the provisions of the Directive(s) of the Council of the European Union:

EMC Directive 89/336/EEC Directive 93/68/EEC Low Voltage Directive 73/23/EEC

NOTE TO CATV SYSTEM INSTALLER: This reminder is provided to call CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close as possible to the point of cable entry as practical.

Contents

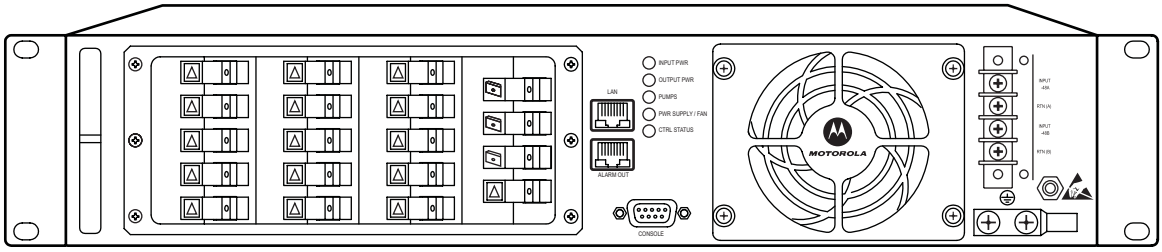
Tables

Figures

Section 1
Introduction

This manual describes how to install and operate the N2U-OA200*-*/SCA. The N2U-OA200 is a low-noise, C-band optical erbium-doped fiber amplifier (EDFA) for PON applications. The N2U-OA200 complements high-performance analog transmitters in topologies requiring amplification of 1550-nm optical signals.

Figure 1-1: N2U-OA200 Series EDFA



Using This Manual

The following sections provide information and instructions to install and operate the N2U-OA200:

Section 1	**Introduction** provides a product description, the technical help line, and repair/return information.
Section 2	**Overview** provides general information on the N2U-OA200 and describes the front panel features.
Section 3	**Installation** provides instructions on how to install and operate the N2U-OA200.
Section 4	**Configuration** provides instructions on how to configure the N2U-OA200.
Section 5	**Troubleshooting** describes basic fault investigation and diagnostic (troubleshooting) procedures for the N2U-OA200.
Section 6	**Specifications** provides the technical specifications for the N2U-OA200.
Section 7	**Pinouts** describes the connector pinout sequences.
Section 8	**Commands** alphabetically lists and describes the N2U-OA200 commands.
Section 9	**Alarms** lists alarms for the N2U-OA200.
Section 10	**Warnings** contains the translations of safety warnings.
Section 11	**Glossary** contains the full spelling of the short forms used in this manual.

Related Documentation

Although these documents provide information that may be of interest to you, they are not required to install or operate the N2U-OA200:

- Element Management System Manual

Document Conventions

Before you begin using the N2U-OA200, familiarize yourself with the stylistic conventions used in this manual:

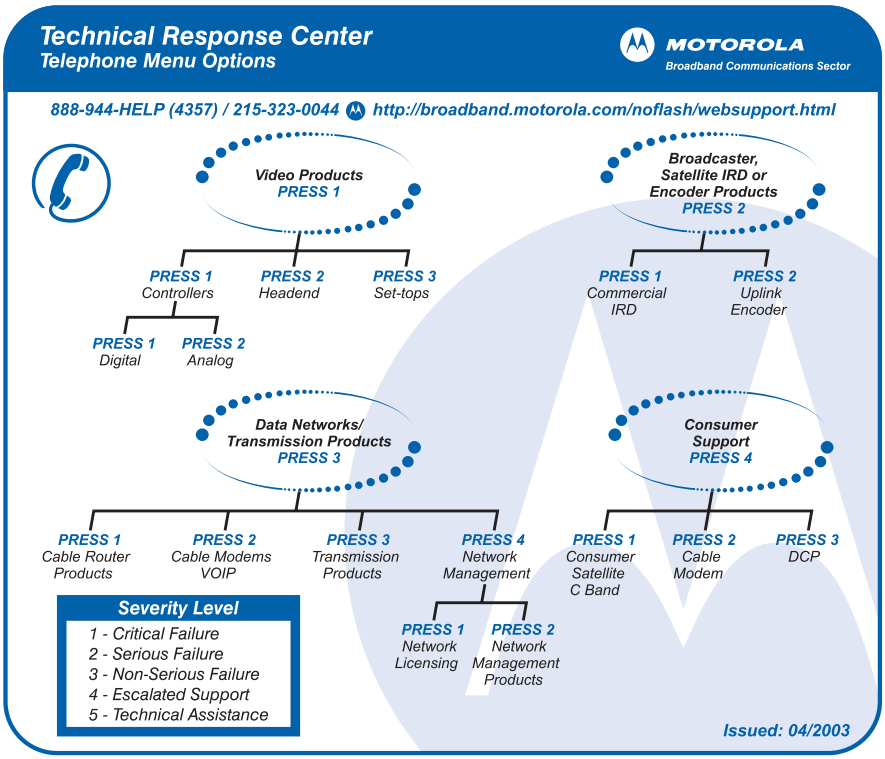
Bold type	Indicates text that you must type exactly as it appears or indicates a default value
SMALL CAPS	Denotes silk screening on the equipment, typically representing front- and rear-panel controls and input/output (I/O) connections, and LEDs
* (asterisk)	Indicates that several versions of the same model number exist and the information applies to all models; when the information applies to a specific model, the complete model number is given
Italic type	Denotes a displayed variable, a variable that you must type, or is used for emphasis

If You Need Help

If you need assistance while working with the N2U-OA200 Series EDFA, contact the Motorola Technical Response Center (TRC):

- In the U.S.A.: **1-888-944-HELP (1-888-944-4357)**
- Outside the U.S.A.: **1-215-323-0044**
- Online: http://broadband.motorola.com/noflash/websupport.html

The TRC is open from 8 AM to 7 PM Eastern Time, Monday through Friday and 10 AM to 5 PM Eastern Time, Saturday. When the TRC is closed, emergency service *only* is available on a call-back basis. Web Support offers a searchable solutions database, technical documentation, and low priority issue creation/tracking 24 hours per day, 7 days per week.



Calling for Repairs

If repair is necessary, call the Motorola Repair Facility at **1-800-642-0442** for a Return for Service Authorization (RSA) number before sending the unit. The RSA number must be prominently displayed on all equipment cartons. The Repair Facility is open from 7:00 AM to 4:00 PM Pacific Time, Monday through Friday.

When calling from outside the United States, use the appropriate international access code and then call **631-311-1100** to contact the Repair Facility.

When shipping equipment for repair, follow these steps:

1 Pack the unit securely.

2 Enclose a note describing the exact problem.

3 Enclose a copy of the invoice that verifies the warranty status.

4 Ship the unit *prepaid* to the following address:

Motorola, Inc.
Broadband Communications Sector
Attn: RSA #_____
55 Las Colinas Lane
San Jose, CA 95119

Section 2

Overview

The N2U-OA200 contains erbium-doped optical fiber, optical couplers, pump lasers, and isolators. An optical signal (in a wavelength range of 1545 to 1565 nm) arrives at the input connector. The 1550 nm signal travels through a length of erbium-doped fiber cable. Inside the amplifier, light from a laser (called the pump laser) at wavelengths of 980 nm and 1480 nm is used to amplify the 1550 nm signal. The amplified signal is coupled to the output ports for transmission.

The N2U-OA200 uses both 980 nm and 1480-nm pump lasers that are built to meet Bellcore TR-NWT-000468 and MIL-883D standards. It is polarization, modulation, and frequency independent, and operates in saturation mode. It is optimized for different input and output powers. The unit provides excellent noise figures for PON applications.

The N2U-OA200 fits on a 19-inch, 23-inch, or ETSI equipment rack, with front, middle, or rear mounting capability. It is equipped with connectors for optional local or remote monitoring.

Key Features

The key N2U-OA200 features are:

- Constant flat gain over the 1545 to 1565 nm band
- Optimized for PON architectures
- Low noise figure of <5.5 dB for input powers of 3 dBm to 10 dBm
- Network management

Network Management

The N2U-OA200 supports SNMP and has a console port to facilitate setup and monitoring. With a customer-supplied network monitor and the provided MIB file, all monitorable and settable parameters are available remotely.

Applications

The N2U-OA200 supports the following applications:

- PON
- Analog transport with high distribution

Front Panel

The front panel provides an all-front access interface (fibers, power, alarm contact, and management) that complies with international standards:

Figure 2-1: Front panel

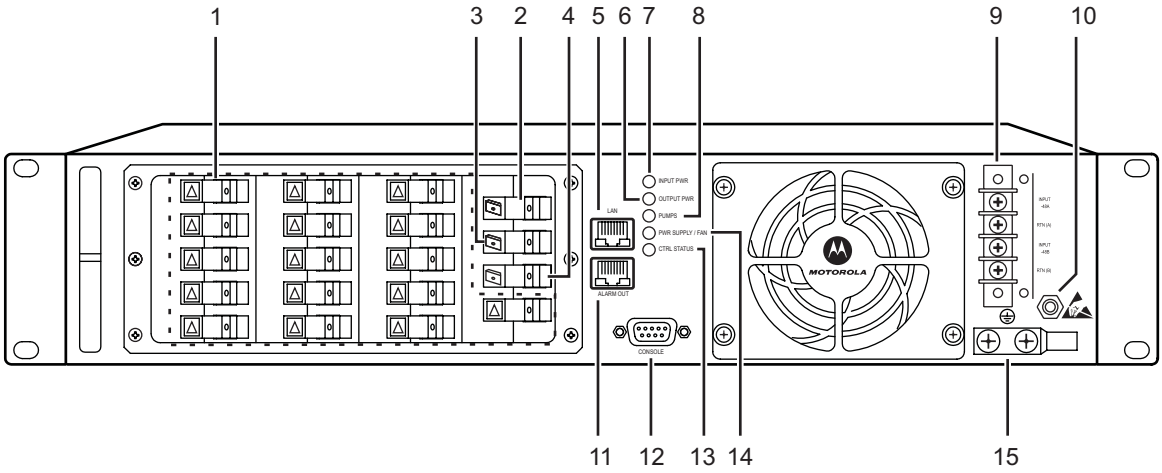


Table 2-1: Front panel features

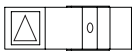
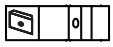
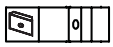
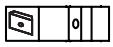
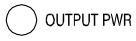
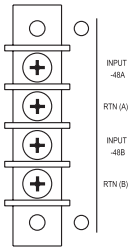
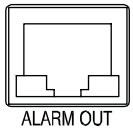
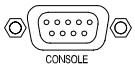
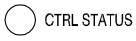
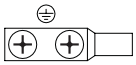
Key	Name	Item	Description
1	OPTICAL OUTPUTS		These connectors provide optical fiber cable access to the outputs of the N2U-OA200. They use a SC/APC type standard connector. (A shutter automatically closes when the cable is removed.)
2	OPTICAL INPUT		This nonshuttered connector provides optical fiber cable access to the input of the N2U-OA200. It uses a SC/ACP type standard connector.
3	INPUT MONITOR		This connector provides spectrum monitoring of the N2U-OA200 input. It uses a SC/APC type standard connector.
4	OUTPUT MONITOR		This connector provides spectrum monitoring of the N2U-OA200 output. It uses a SC/APC type standard connector.
5	ETHERNET LAN		This connector provides Ethernet access for connecting to a remote SNMP monitoring location, and contains two LEDs. The left LED (green) indicates that an Ethernet connection is established. The right LED (yellow) indicates that a signal is being transmitted to the Ethernet. It uses an RJ-45 type connector.
6	OUTPUT POWER		Green: Normal operation. There are no output power alarms. Red: A major alarm has been detected and immediate intervention is required. The output power and/or gain are outside their alarm limits. Off: If the LED is off, verify that system power is available.
7	INPUT POWER		Green: Normal operation. There are no input power alarms. Yellow: A minor alarm has been detected. There is a Loss of Signal (LOS) or the input is above the high alarm limit. Off: If the LED is off, verify that system power is available.

Table 2-1: Front panel features

Key	Name	Item	Description
8	PUMPS		Green: Normal operation. There are no pump alarms. Red: A major alarm has been detected and immediate intervention is required. The pump laser bias current, pump laser temperature, TEC current, and/or laser power are outside their alarm limits. Off: If the LED is off, verify that system power is available.
9	DUAL DC POWER INPUT		This connector provides two sets of DC input barrier strip terminals: • The top terminal is for the primary DC power wiring. • The bottom terminal is for an optional backup DC power source. The top screw terminal of each strip is for –48 VDC; the bottom terminal of each set is for the return path.
10	GROUNDING LUG		Lug for grounding the chassis. See “Grounding the Chassis” on page 3-6.
11	ALARM OUT		This connector provides two pairs of dry contacts for an optional external alarm-monitoring system. Normally has open contacts and uses an RJ-45 type connector. (See “Connector Pinouts” on page B-1)
12	RS-232 CONSOLE		This connector provides a port for local monitoring of the N2U-OA200 and uses a DB-9 female connector. (See “Connector Pinouts” on page B-1) This port should only be used for the evaluation of the unit by a trained technician. It is not designed for permanent connection.
13	CONTROL STATUS		Green: Normal operation. There are no control alarms. Blinking Green: The N2U-OA200 is booting. Yellow: A minor alarm has been detected. Red: A major alarm has been detected and immediate intervention is required. The module temperate is outside the alarm limits. Off: If the LED is off, verify that system power is available.
14	POWER		Green: Normal operation. There are no power supply or fan alarms. Red: A major alarm has been detected and immediate intervention is required. The fan or the DC power supply has failed or the DC power supply is in over-current. Off: If the LED is off, verify that system power is available.
15	GROUND ATTACHMENT		This connector provides tapped-screw mounting holes for attaching a frame ground lug and wiring.

Section 3
Installation

This section describes installing the N2U-OA200 chassis and its components. The tasks include:

Before You Begin

Before beginning any of the procedures in this document:

- Review the *Regulatory Compliance and Safety Information for the* N2U-OA200 document to avoid injury to yourself or damage to the equipment.
- Obtain the following tools and parts required to install the N2U-OA200:
  - Phillips screwdriver
  - Wire cutters, as needed (for DC power wiring)
  - Wire strippers, as needed (for DC power wiring)
  - Crimp tool (for grounding wire)
  - Digital voltmeter (with ohmmeter function)
  - Grounding wire (8 AWG)
  - Power supply connection wire (18 AWG)
  - Listed two-hole copper grounding lug (0.25 in. [0.635 cm] diameter bolt hole size, 0.625 in. [1.5875 cm] center-to-center hole spacing)
- Ensure that your equipment configuration meets the minimum requirements for the installation you will perform.

Caution!

Only trained and qualified personnel should install, replace, or service this equipment.

Creating a Site Log

We recommend keeping a site log (or a section of a larger site log) to record ongoing system maintenance and all actions related to the N2U-OA200. The log should be kept near the chassis where anyone who works on the equipment can access it. Site log entries might include:

- Background information
- Installation progress
- Maintenance procedures

Copy the "Installation Checklist" on page 3-2 and insert it in the site log. Mark on the checklist as you complete each procedure.

Each time a procedure is performed on the N2U-OA200, update the site log to reflect situations such as maintenance schedules and requirements, intermittent problems, changes and updates, configuration changes, and related comments and notes.

Installation Checklist

The installation checklist includes the procedures for initial hardware installation of the N2U-OA200. Mark the entries as you complete each procedure. Copy this checklist, as needed, for the site log.

Site: _____

Product name: _____

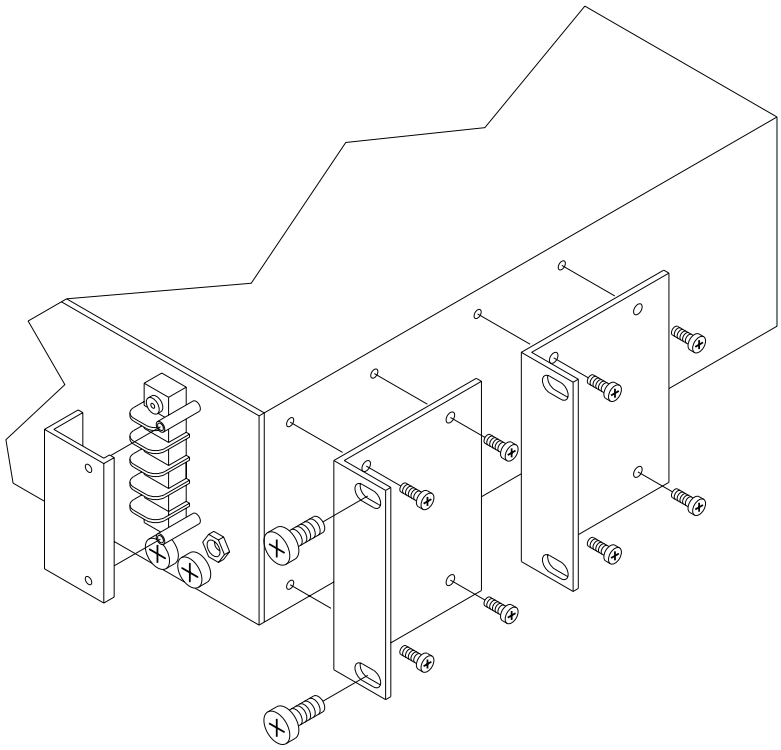
Serial number: _____

Task	Verified By	Date
Background information recorded in site log	_____	_____
Printed documentation received	_____	_____
N2U-OA200 received	_____	_____
Accessories received	_____	_____
Required tools available	_____	_____
Additional equipment available	_____	_____
Site power voltages verified	_____	_____
Initial electrical connections established	_____	_____
N2U-OA200 fully installed	_____	_____
Operation verified	_____	_____

Rack-Mounting the Chassis

The N2U-OA200 mounts in a standard 19-inch, 23-inch, or ETSI equipment rack and occupies 2 RU (one rack unit is 1.75 inches) of vertical space. The unit is designed for front, middle, or rear mounting. It is attached to the rack as shown in Figure 3-1.

Figure 3-1: Rack-Mounting the N2U-OA200



Caution!

Use only the hardware provided with the N2U-OA200. Failure to use the provided hardware may result in unintended damage. If the hardware is lost, contact Motorola as described in “If You Need Help” on page 1-2.

To rack mount the N2U-OA200:

1. Turn the N2U-OA200 chassis so that the front panel is facing you.
2. Determine the desired point of mounting and position the two mounting brackets accordingly.
3. Attach the mounting brackets to the unit with the supplied screws using a Phillips screwdriver.
4. Attach the unit to the rack with the supplied rack mounting screws using a Phillips screwdriver.

Optical Connection

Warning!

To avoid potential damage to the eyes, do not look directly into an optical fiber cable or a connector (whether shuttered or not). Infra-red laser energy may be present on the cable connected to the receiving (input) connector. The transmitting (output) optical fiber connectors are equipped with shutters that automatically close when a cable is removed. When an optical cable is not attached, place the supplied protective cap over the cable's connector. The output monitor output connector should be capped when not in use.

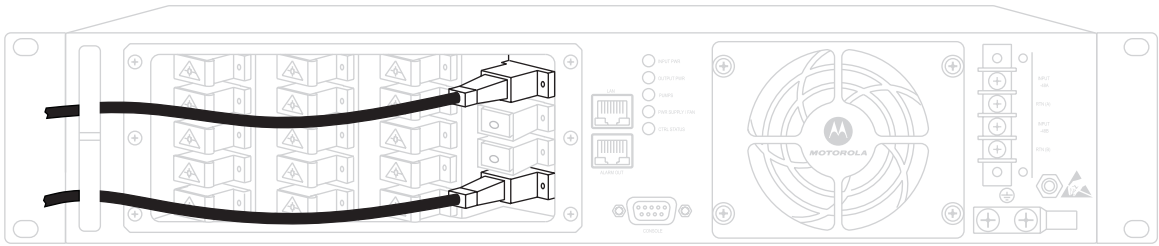
Warning!

Do not stare into the beam or view directly with optical instruments. Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Use of controls or adjustments or performance of procedures other than those specified may result in hazardous radiation exposure.

To connect the optical fiber cable to the SC/ACP optical ports:

1 Connect the input optical fiber cable to the input connector as shown in Figure 3-2. Avoid making sharp bends in the cable.

Figure 3-2: Optical connections



2 Connect the output optical fiber cable to the output connector. Avoid making sharp bends in the cable.

Caution!

Check the power at your site to ensure that you are receiving clean power (free of spikes and noise). Install a power conditioner, if necessary, to ensure proper voltages and power levels in the source voltage.

Caution!

Use only the hardware provided with the N2U-OA200. Failure to use the provided hardware may result in unintended damage. If hardware is lost, contact Motorola for a replacement.

Caution!

The protective cover for the DC power terminals should be installed at all times when the equipment is energized, except for any necessary maintenance or troubleshooting.

Warning!

When installing or replacing the unit, the ground connection must always be made first and disconnected last.

DC Power Connection

The following subsections describe grounding the chassis and connecting DC power to it.

Grounding the Chassis

To connect the provided grounding lug to the tapped frame grounding holes and connect the customer-supplied grounding wire to the DC power terminal connectors:

1 Verify that the primary and user-optional redundant external DC power circuits are disconnected at the source.

2 Remove the cover from the DC power terminal connectors. Identify the two tapped frame grounding holes at the lower right side of the N2U-OA200 front panel as shown in Figure 3-3:

Figure 3-3: Grounding and connecting the power to the DC powered N2U-OA200

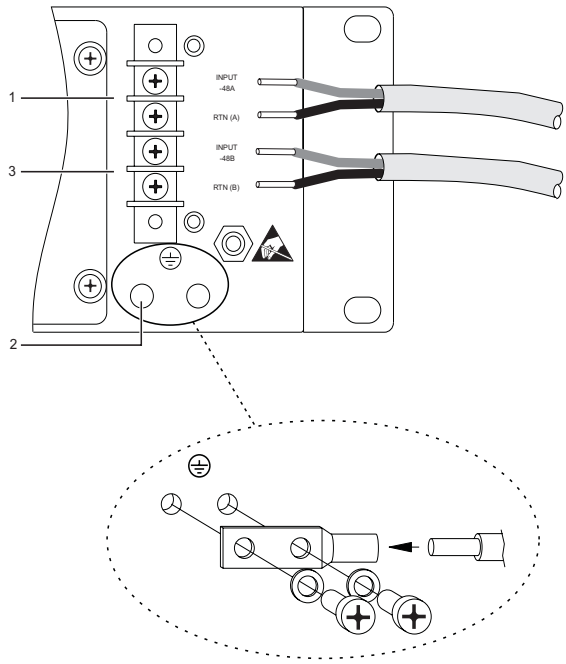


Table 3-1: Grounding and power connections

Key	Description
1	Primary DC power connections
2	Tapped frame grounding holes
3	Redundant DC power connections

3 Remove the two screws provided for securing the ground lug to the N2U-OA200.

4 Connect the 8 AWG grounding wire to the grounding lug. The other end of the wire should be suitably grounded.

5 Install the grounding lug on the N2U-OA200, using the two provided screws and washers.

6 Test for proper frame ground using the ohmmeter section of a digital voltmeter. Place one prod on the N2U-OA200 and the other on the frame grounding bus to which the grounding lug and grounding wire are connected. Observe for a zero-resistance ground.

There is an alternate grounding point on the chassis on the left side of the rear panel.

Connecting the DC Power

To connect the power wiring to the DC power terminal connectors:

1 Cut and strip the customer-supplied 8 AWG primary and redundant power supply wires, if necessary. Identify the -48 VDC wire and power return wire for the primary and redundant circuit.

2 Install the primary DC power wiring to the top barrier strip as shown in Figure 3-3. The top screw is the -48 V connection. The bottom screw, marked "RTN," is the ground connection.

3 Install the redundant DC power wiring to the bottom barrier strip.

4 Replace the power connector cover.

5 Apply power to the primary and redundant DC circuits.

AC Power Connection

1 Refer to the DC Power Connection "Grounding the Chassis" on page 3-6, as the grounding procedure for the chassis is the same.

2 Verify the Primary AC Power Source is available within an input voltage range of 90V to 240V and frequency range of 50 Hz to 60 Hz.

3 Ensure that only the specified rating fuses are installed in the power entry module. The power entry module includes 6A field replaceable fusing, AC line filtering, and a recessed power switch.

4 Plug in the specified line cord to the power source and connect to the power entry module on the EDFA back panel.

5 Turn the power switch on the power entry module to the on position.

Note: The AC power supply has short circuit protection with auto recovery.

Communication Connections

The N2U-OA200 communicates in three ways:

- SNMP (through Ethernet)
- Alarm contacts (through RJ-45 connector)
- Console port (through RS-232)

See "Connector Pinouts" on page B-1 for the RJ-45 and RS-232 connector wiring layouts.

See "Configuring Local Serial Communication" on page 4-1 for information about the RS-232 console port.

Setting Up Alarm Contacts

To set up alarm contacts:

1 Obtain an 8-conductor, 8 AWG solid-wire cable and terminate one end with an RJ-45 connector.

2 Connect the stub end of the alarm cable to the alarm system contacts, either to miscellaneous discrete inputs on terminal equipment or to a central office alarm panel.

3 Connect the RJ-45 connector to the N2U-OA200.

See "Alarm Contact Closures" on page 4-4 and "Front Panel" on page 2-2.

Installation Commands

You can connect to a N2U-OA200 locally using a serial connection or remotely through SNMP. See "Configuring Local Serial Communication" on page 4-1 for instructions to set up either one. After you establish a connection, use the following commands to complete the hardware installation. The Command Reference contains complete descriptions of all commands.

You can use the following commands to establish communication with the N2U-OA200 and to access additional information about the amplifier:

- **help —** Displays a list of all available commands.
- **fwinfo —** Displays the basic information on the N2U-OA200, including active firmware bank, firmware CRC, and firmware revision.
- **devinfo —** Displays the basic information on the N2U-OA200, including hardware version, firmware version, serial number, date code, part number, manufacturing location, number of inputs, number of outputs, number of pumps, and the Common Language Equipment Identifier (CLEI) code.
- **getmacadd** — Displays the MAC address.

You can use the following commands to review the overall status of the N2U-OA200.

- **alarms —** Displays a list of system alarms.
- **status —** Displays the N2U-OA200 status.
- **gettempdata —** Displays the N2U-OA200 temperature, alarm limits, hysteresis, and alarm state.
- **getindata —** Displays the N2U-OA200 input, alarm limits, hysteresis, and alarm state.
- **getoutdata —** Displays the N2U-OA200 output power and gain, alarm limits, hysteresis, and alarm state.
- **getpumpdata —** Displays the N2U-OA200 pump data, alarm limits, hysteresis, and alarm state.

Section 4
Configuration

The N2U-OA200 supports:

- Remote monitoring using SNMP or Telnet through TCP/IP over Ethernet
- Monitoring using command line interface (CLI) commands from the console port

This section describes the following procedures to set up communications with an N2U-OA200:

Configuring Local Serial Communication

To establish a serial communication link with an N2U-OA200, the unit must first be properly installed and powered up. The equipment needed to make this link includes:

Hardware	Comments
PC or laptop	Customer-supplied
RS-232 cable with DB-9 connectors (see "Connector Pinouts" on page B-1)	Customer-supplied

Setting Up the Software

To set up the software on the N2U-OA200 for local serial communication:

1. Connect the DB-9 end of the RS-232 data cable to the **COM** port on the PC or laptop.
2. Connect the other end of the RS-232 data cable to the **CONSOLE** port on the N2U-OA200 Front Panel (see page 2-2).
3. Launch a serial port communication utility such as Hyperterminal on the PC or laptop and configure it to communicate at 38400 baud, no parity, 8 bit data, 1 stop bit, and no flow control.
4. Press **ENTER** to display the login prompt. The N2U-OA200 is now ready for basic system configuration.

Configuring a Basic System

For complete documentation of the commands used in this procedure, see Appendix C, "Command Reference."

To configure a basic system:

1 Log in to the N2U-OA200 using the default master password **oa200**.

2 Type **setname *string*** to set the host name. The maximum allowed length for *hostname* is 32 characters.

3 Use the commands **setipadd** to set the IP address, **setipmask** to set the subnetmask, and **setgateipadd** to set the gateway address.

4 To set the current date and time, use the **date** and **time** command.

5 Use the command **setpassword** to set the master login password.

Configuring the Ethernet Port

The N2U-OA200 Ethernet port may require configuration before you install it into the network. You can do this through the software that connects to the network Ethernet port.

Setting Up the Address Values

The following information enables you to set up the address values:

- Network Ethernet Port Address - This is the IP address of the Ethernet port. The default value is 168.84.213.132.
- Network Ethernet Subnet Mask - This is the mask that enables the N2U-OA200 to identify to what subnet the Ethernet port is assigned. The default value is 255.255.000.000.
- Default Gateway Address - This is the default gateway IP address. The N2U-OA200 sends any message addressed to an unrecognized IP address to the default gateway, which forwards the data toward the destination.

After you configure the Ethernet port, you must reset the N2U-OA200 for the new settings to be effective. This can be done through the **reset** command.

Downloading New Firmware

The N2U-OA200 can store up to two sets of firmware programs that you can download through the Element Management System or CLI. When download is complete, the N2U-OA200 uses the new firmware for each subsequent boot up. You also have the option of selecting and using any stored set of firmware code at each boot up. The N2U-OA200 continues to operate normally during a firmware download, which is transparent to you and the Element Management System.

The Element Management System and the CLI enable you to view the following information about the firmware programs stored in the N2U-OA200:

- Firmware revision level in each bank
- Firmware code CRC in each bank
- Which bank of firmware will run at the next boot up

To download firmware through the Element Management System, refer to the Element Management System Manual. To download firmware through the CLI, perform the following steps:

1 Program the download file name using the **setdlfile** command. For example:

```
$ setdlfile oa200_A.gx2
```

2 You will need the IP address of the N2U-OA200 to perform the file transfer. If you do not know the IP address of your N2U-OA200, use the **getipadd** command. For example:

```
$ getipadd
Network IP Address: 168.084.213.132
```

3 Open a DOS window and change directories to where the download file is located.

4 At the DOS prompt, open an FTP session to the IP address of the N2U-OA200. For example:

```
C:\> FTP 168.84.213.132
```

5 Enter the ***username*** and ***password***. The default username and password are “oa200”.

6 At the prompt type “**binary**”.

7 At the prompt type “**put oa200_A.gx2**”. You will be prompted when the file transfer is complete.

8 At the prompt type “**bye**” and then close the DOS window.

9 Program the N2U-OA200 download auto reset state using the **setdlautorst** command. Use the **getdlautorst** command to get the current download auto reset state. If download auto reset is “on,” the unit will automatically reset after download is complete. If download auto reset is “off,” the unit will be configured to boot from the new firmware when a reset is issued at a later time. The default mode from the factory is on. For example:

```
$ setdlautorst off
```

10 Start the firmware download to the N2U-OA200 using the **dl** command. For example:

```
$ dl start
```

You can use the **dlstat** command to display the N2U-OA200 download status. Traps will also be issued to indicate the download status.

Monitoring Alarms and Traps

To configure the software on the N2U-OA200 for console port-based monitoring:

1 Type **traps on** to display the N2U-OA200 traps on the CLI.

2 Type **alarms** to display the N2U-OA200 alarms.

3 Type **status** to check the optical and environmental status of the N2U-OA200.

Configuring Remote Communication

To establish a remote communication link with a N2U-OA200 through Telnet, the unit must first be properly installed and powered up.

Configuring for Telnet

All commands supported by the N2U-OA200 through the console port are also supported in a Telnet session.

To configure the N2U-OA200 for Telnet:

1 Connect the **LAN** port on the N2U-OA200 front panel to an Ethernet LAN using a standard RJ-45 cable.

2 Ensure that network is properly set up using a ping to the N2U-OA200 IP address.

3 Type **telnet** *target-ip-address* to log in remotely to the N2U-OA200. Enter the username and password when prompted.

Alarm Contact Closures

The N2U-OA200 provides a front panel, single form C, discrete external alarm output. (See "Front Panel" on page 2-2 for more information.) The external alarm output is through the eight wires of an RJ-45 connector.

The following events are reported by the discrete external alarms through individual alarm contacts:

- Alarm 1 — Major
- Alarm 2 — Minor

The default alarm contact state is normally open. Depending on which fault condition occurs, specific alarm contacts are closed. The corresponding N2U-OA200 LEDs turn on or off, as described in "Front Panel" on page 2-2.

Pinout	Alarm
1	Alarm 1+ (major)
2	Alarm 1-
3	Alarm 2+ (minor)
4	Alarm 2-

Section 5
Troubleshooting

This section describes basic fault investigation and diagnostic (troubleshooting) procedures for the N2U-OA200: If the problem exists after you review the N2U-OA200 status and attempt to reprovision the amplifier, contact the Motorola TRC as described in "If You Need Help" on page 1-2 or:

- In the U.S.A.: 1-888-944-HELP (1-888-944-4357)
- Outside the U.S.A.: 1-215-323-0044
- Online: http://broadband.motorola.com/noflash/websupport.html

Basic Diagnostic Procedures

When a problem occurs over the network, use the following basic diagnostic procedures to determine if the N2U-OA200 is the source of the problem:

- Verify the power connection.
- Verify the Ethernet connection.
- Verify the alarm connection.

Verifying the Power Connection

To verify the power connection:

1. Ensure that power is securely connected to the unit and that external DC power is being applied.
2. Check for LED lamp activity on the front panel. Disregard the color or number of LEDs illuminated at this time. Verify only that one or more is on, indicating that the chassis is receiving power.
3. Check the following areas for possible problems if no LEDs are on:
    - Verify that the power connection to the chassis is firmly made.
    - Verify that the circuit power switch(es) are in the on position.
    - Verify that the external source power circuit breaker(s) are on.
    - Verify that the external power wires are delivering power correctly.

Verifying the Ethernet Connection

To verify the Ethernet connection:

1. Ensure that the RJ-45 connector is in good working condition; then plug it into the LAN port.
2. Check for LED activity on the LAN port. The left LED is green when an Ethernet connection is established. The right LED flickers yellow when a signal is being transmitted to the Ethernet.
3. Check the following areas for possible problems if no LEDs are on:
    - Verify that the RJ-45 connection to the chassis is firmly made.
    - Verify that the RJ-45 connector is in good working condition.
    - Verify that the external Ethernet source is on and delivering a signal.

Verifying the Alarm Connection

To verify the alarm connection, connect an ohmmeter to the Alarm Out port using an RJ-45 connector.

If the ohmmeter shows a reading of any kind, a connection is present. A very high resistance reading indicates that there are no alarm conditions; a low resistance reading indicates that alarm conditions exist. See "Connector Pinouts" on page B-1.

Isolating the Problem

The key to troubleshooting the N2U-OA200 is to isolate the problem to *one* of the following N2U-OA200 components:

- Power supply — Includes the power input wiring and associated switches and fuses.
- Cooling system — Includes the fan, which should go on when power is supplied. The air intake vents and exhaust vents must have adequate ventilation.
- Front panel indicators — Includes the LEDs on the front panel, which help to identify a failure.
- Connecting cables — Includes all of the interface cables that connect the equipment to any transmission circuit or external device.

Reading the Front Panel LEDs

The front panel LEDs provide the activity or alarm status of the corresponding interfaces or internal circuitry. If an LED is connected to an active circuit and registers an alarm condition or is not on, a problem may exist. Contact the TRC immediately for assistance as described in "If You Need Help" on page 1-2.

Table 5-1: Front Panel LEDs and conditions

LED	Status	Description
Input Power	Green	Normal operation. There are no input power alarms.
	Yellow	There is a loss of signal (LOS) or the input is above the high alarm limit: • Ensure that the input optical cable is securely seated in its connector. • Connect an optical power meter or an optical spectrum analyzer to the Input Monitor optical connector and check for the proper level on the incoming signal. • Check the transmitting end to determine if the signal leaves the site at the proper level. • Clean the connector.
Output Power	Green	Normal operation. There are no output power alarms.
	Red	A major alarm has been detected and immediate intervention is required. The output power and/or gain are outside their alarm limits. • Ensure that the input optical cable is securely seated in its connector. • Connect an optical power meter or an optical spectrum analyzer to the Output Monitor optical connector and check for the proper level on the outgoing signal. • Check the transmitting end to determine if the signal leaves the site at the proper level. • Clean the connector.
Pumps	Green	Normal operation. There are no pump alarms.
	Red	A major alarm has been detected and immediate intervention is required. The pump laser bias current, pump laser temperature, TEC current, and/or laser power are outside their alarm limits.
Pwr Supply/Fan	Green	Normal operation. There are no power supply or fan alarms.
	Red	A major alarm has been detected and immediate intervention is required. The power supply or fan have failed, or the DC power supply is in over-current. • Check to see that external power is available and that the wiring is properly and firmly connected to the appropriate screw terminals. • Check to see that the fan is operational.

Table 5-1: Front Panel LEDs and conditions

LED	Status	Description
CTL Status	Green	Normal operation. There are no control alarms.
	Blinking Green	The N2U-OA200 is booting.
	Yellow	A minor alarm has been detected.
	Red	A major alarm has been detected and immediate intervention is required. The module temperature is outside the alarm limits.

If all LEDs on the front panel are off:

- Check that primary (AC and DC) and user-optional external power (DC only) is available and that the DC wiring is properly and firmly connected to the appropriate screw terminals.
- Check that the external supply power switch is turned to the on position.

Warning!

To avoid potential damage to the eyes, do not look directly into this connector or cable. Infra-red laser energy may be present on the cable connected to the receiving (Input) connector, at the transmitting (Output) optical fiber connector, or the monitoring (Optical Monitor) connector. When an optical cable is not attached, place the supplied protective cap over the connector and the optical fiber cable.

Appendix A
Specifications

Information That Applies to All Models

Optical

Wavelength Range	1545 nm to 1565 nm 1560-1565 is ideal for narrowcast wavelength insertion.
Noise Figure	100mW, 200mW, 300mW, 600mW
Maximum	5.5 dB
Typical	5.0 dB at 6.0 dBm input
Noise Figure	750mW
Maximum	6.5 dB
Typical	6.0 dB at 6.0 dBm input
Optical Input Monitor Port	-20 +/-1 dB from main input port
Optical Output Monitor Port	-20 +/-1 dB from main output port
Backward Spontaneous Emission	<-25 dBm
Input and Output Isolation	>30 dB
Optical Return Loss	>40 dB
Polarization Sensitivity	<0.5 dB
Optical Connector	SC/APC

General

Source Power Voltage	DC Version -48 VDC, 2 Amps maximum
Range	-40 to -60 VDC
AC Version	90-240 VAC, 1.5 Amps maximum
Power Consumption	100 Watts maximum for 750 mW EDFA
	50 Watts maximum for 600 mW EDFA
	30 Watts maximum for 300 mW EDFA
	25 Watts maximum for 200 mW EDFA
	20 Watts maximum for 100 mW EDFA
Operating Temperature	0 to +55° C
Storage Temperature	-40° to + 70° C

Dimensions	3.5” (2RU) H x 19.0” W x 11.0” D
Weight	14.5 lbs (6.6 kgs)

Communications

Local Interface	RS-232 Port
Network Interface	RF-45 Port, 10 Base-T
Alarm Contact	RJ-45 Port

Safety

UL 1950

CAN/CSA-S22.2 No. 950

EN60950

IEC 60950

TS001

AS/NZS 3260

IEC 60825-1

IEC 60825-2

EN 60825-1

EN 60825-2

21 CFR 1040

EMC

FCC Part 15 (CFR 47) Class A

ICES-003 Class A

EN 55022 Class A

CISPR22 Class A

AS/NZS 3548 Class A

VCCI Class A

EN 55024

ETS 300 386

EN 50082-1

EN 61000-3-2

EN 61000-3-3

NEBS and ETSI Specifications (Applies to DC-powered units)

GR-63 Core NEBS Level 3 Requirements

GR-1089-Core NEBS Level 3 Requirements

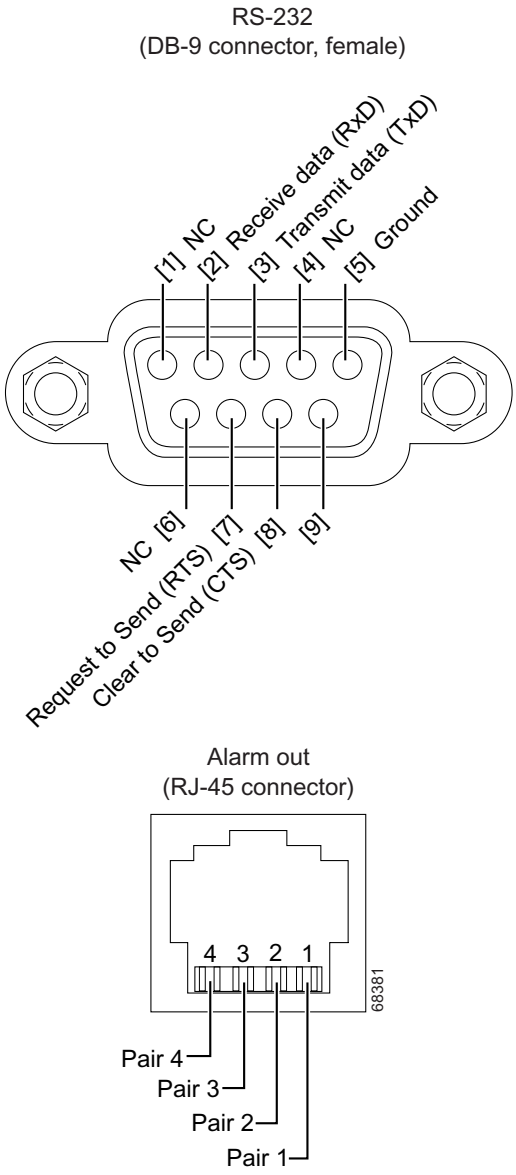
ETS 300 019 Storage Class 1.1

ETS 300 019 Transportation Class 2.3

ETS 300 019 Stationary Use Class 3.1

Appendix B
Connector Pinouts

Figure B-1: RS-232 DB-9 CONSOLE connector and RJ-45 ALARM OUT connector pinouts



Pair 1 (pins 1 and 2): Shorted if a major alarm exists

Pair 2 (pins 3 and 4): Shorted if a minor alarm exists

Pair 3 (pins 5 and 6): Uncommitted (always open)

Pair 4 (pins 7 and 8): Uncommitted (always open)

Appendix C

Command Reference

This appendix alphabetically lists and describes the N2U-OA200 commands. *All commands are case insensitive.*

To display a list of available commands, type **help**. To display the syntax for a command, type **help** [*command*].

All commands are protected by the master password (see **setpassword**).

alarms

This command displays the N2U-OA200 alarms. To display the alarms, use the **alarms** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the alarms.

```
$ alarms
Optical Input Power Minor Alarm
```

date

This command prints or changes the N2U-OA200 date. To get or change the date, use the **date** command:

date *[[yyyy-]mm-dd]*

Syntax

yyyy-mm-dd Enter the date in year (optional), month, and day.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to change the date.

```
$ date 2003-10-01
```

The following example shows how to get the date.

```
$ date
2003-October-1
```

devinfo

The N2U-OA200 uses this command to display device information. To display the firmware information, use the **devinfo** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the device information.

```
$ devinfo
Device Information
-----------------------
Unit Name      : OA200
HW Version     : A
FW Version     : A
Serial Number  : 0001
Date Code      : 01012003
Part Number    : 496903-001
Man Location   : NO
Num Inputs     : 1
Num Outputs    : 16
Num Pumps      : 5
Clei Code      : 1122AA34
```

Related Commands

setname	Changes the unit name.
getname	Displays the unit name.

dl

This command changes the N2U-OA200 download process. To change the download, use the **dl** command:

```
dl start/stop
```

Syntax

`start/stop`	Specifies start or stop for the download process. If download state is set to "start" the unit will begin the download.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to change the download auto reset state.

```
$ dl start
```

Related Commands

setdlfile	Changes the download file name.
getdlautorst	Displays the download auto reset state.
setdlautorst	Changes the download auto reset state.
dlstat	Displays the download status.

dlstat

This command displays the N2U-OA200 download status. To display the status, use the **dlstat** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the download status. The N2U-OA200 status will be one of the following.

```
$ dlstat
Download Off
Download Started
Get download file information
Verify current firmware bank
Unlock firmware bank
Verify firmware bank unlocked
Erase firmware bank
Verify firmware bank erased
Programming firmware bank
Verify programmed firmware bank
Verify auto reset state
Download halted
```

Related Commands

setdlfile	Changes the download file name.
getdlfile	Displays the download file name.
setdlautorst	Changes the download auto reset state.
dl	Starts/Stops the download process.

fwinfo

This command displays the firmware information. The active boot bank is the flash bank from which the N2U-OA200 was booted. The next boot bank is the flash bank from which the N2U-OA200 will next be booted.

To display the firmware information, use the **fwinfo** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the firmware information.

```
$ fwinfo
Firmware Information
-----------------------
Next boot bank: Bank 0
Bank 0 state  : Programmed
Bank 1 state  : Not Programmed
Active bank   : Bank 0
Bank 0 status : Pass
Bank 1 status : Pass
Bank 0 CRC    : 5ADE
Bank 1 CRC    :
Bank 0 REV    :  A
Bank 1 REV    :
```

getcomstr

This command displays the N2U-OA200 community string. To display, use the **getcomstr** command.

getcomstr *operator/monitor*

Syntax

operator/monitor	Specifies operator or monitor for the community. The default operator community string from the factory is private. The default monitor string from the factory is public.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the unit name.

```
$ getcomstr operator
Community String Operator: private
```

Related Commands

setcomstr	Changes the community string.

getdlautorst

This command displays the N2U-OA200 download auto reset state. If download auto reset is “on” the unit will automatically reset after download is complete. If download auto reset is “off” the unit will be configured to boot from the new firmware when a reset is issued at a later time. To display the auto reset state, use the **getdlautorst** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the download file name.

```
$ getdlautorst
Download Auto Reset: on
```

Related Commands

setdlfile	Changes the download file name.
getdlfile	Displays the download file name.
setdlautorst	Changes the download auto reset state.
dl	Starts/Stops the download process.
dlstat	Starts/Stops the download process.

getdlfile

This command displays the N2U-OA200 download file name. To display the, use the **getdlfile** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the download file name.

```
$ getdlfile
Download File name: oa200_A.gx2
```

Related Commands

setdlfile	Changes the download file name.
getdlautorst	Displays the download auto reset state.
setdlautorst	Changes the download auto reset state.
dl	Starts/Stops the download process.
dlstat	Starts/Stops the download process.

getgateipadd

This command displays the N2U-OA200 Gateway IP address. To display, use the **getgateipadd** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the Gateway IP address.

```
$ getgateipadd
Gateway IP Address: 168.084.213.129
```

Related Command

setgateipadd Changes the Gateway IP address.

getindata

This command displays the N2U-OA200 input, alarm limits, hysteresis and alarm state. To display, use the **getindata** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the data.

```
$ getindata

Input (dBm)     Low Limit     High Limit    Hysteresis    Alarm
                                                          State

-----------     ---------     ----------    ----------    ---------

10.00           6.00          12.00         .25           No Alarm
```

Related Command

setinlim Changes the N2U-OA200 input alarm limits.

getipadd

This command displays the N2U-OA200 Network IP address. To display, use the **getipadd** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the data.

```
$ getipadd
Network IP Address: 168.084.213.132
```

Related Commands

setipadd	Changes the Network IP address.

getipmask

This command displays the N2U-OA200 Network IP mask. To display, use the **getipmask** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the Network IP Mask.

```
$ getipadd
Network IP Mask: 255.255.000.000
```

Related Command

setipmask	Changes the Network IP mask.

getlowpwrmode

This command displays the N2U-OA200 Low Power Mode. If the mode is “on”, the output power is reduced by 1 dB. To display, use the **getlowpwrmode** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the power mode.

```
$ getlowpwrmode
Low Power Mode: off
```

Related Command

setlowpwrmode Changes the low power mode.

getmacadd

This command displays the Network MAC address. To display the firmware information, use the **getmacadd** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the Network MAC address.

```
$ getmacadd
Network MAC Address: 1A1518171918
```

getname

This command displays the N2U-OA200 Unit name. To display the N2U-OA200 unit name, use the **getname** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the unit name.

```
$ getname
Unit Name: OA200
```

Related Commands

setname	Changes the unit name.
devinfo	Displays all device information on the N2U-OA200 including unit name.

getoutdata

This command displays the N2U-OA200 output gain and power, alarm limits, hysteresis and alarm state. To display, use the **getoutdata** command.

getoutdata *1-16/all*

Syntax

1-16/all Specifies a single output 1 through 16 or all outputs. The range of outputs is limited to the total number of outputs.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the output 8.

```
$ getoutdata 8

Output #        Output       Low Limit    High Limit   Hysteresis   Alarm
                                                                    State
-----------     ---------    ---------    ---------    ---------    ---------
8 gain (dB)     1.00         --           --           --           --
8 pwr (dBm)     10.00        6.00         12.00        .25          No Alarm
```

Related Commands

setoutlim Changes the N2U-OA200 output alarm limits.

getpumpdata

This command displays the N2U-OA200 pump data, alarm limits, hysteresis and alarm state. The pump data includes laser temperature, laser bias current, TEC current and optical power. To display, use the **getpumpdata** command.

getpumpdata *1-5/all*

Syntax

1-5/all Specifies a single pump 1 through 5 or all pumps. The range of pumps is limited to the total number of pumps.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the pump 1 data.

```
$ getpumpdata 1

Pump #              Value       Low         High Limit    Hysteresis    Alarm
                                Limit                                   State

-----------         ---------   ---------   ---------     ---------     ---------

1 lsr temp (C)      23.00       22.00       24.00         .25           No Alarm

1 bias curr (mA)    10.00       --          12.00         .25           No Alarm

1 tec curr (mA)     10.00       --          --            --            --

1 opt pwr (mW)      10.00       6.00        12.00         .25           No Alarm
```

gettempdata

This command displays the N2U-OA200 temperature, alarm limits, hysteresis and alarm state. To display, use the **gettempdata** command.

Syntax

This command has no arguments or keywords.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display temperature data.

```
$ gettempdata

Mod Temp        Low Limit     High Limit    Hysteresis    Alarm
                                                          State

-----------     ---------     ---------     ---------     ---------

25.00           -25.00        75.00         2.00          No Alarm
```

Related Commands

settemplim Changes the N2U-OA200 temperature alarm limits.

gettrapdest

This command displays the N2U-OA200 Trap destination address. To display, use the **gettrapdest** command.

gettrapdest *1-10/all*

Syntax

1-10/all	Specifies a single trap destination address 1 through 10 or all destinations.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to display the trap destination address.

```
$ gettrapdest all

Dest #          Trap Address
-------         ---------------
1               168.084.213.134
2               000.000.000.000
3               000.000.000.000
4               000.000.000.000
5               000.000.000.000
6               000.000.000.000
7               000.000.000.000
8               000.000.000.000
9               000.000.000.000
10              000.000.000.000
```

Related Command

settrapdest	Changes the Trap destination address.

reset

This command resets the N2U-OA200. To display the alarms, use the **reset** command.

Syntax

This command has no arguments.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to reset the N2U-OA200.

```
$ reset
```

rstalarmlims

This command resets the N2U-OA200. To display the alarms, use the **rstalarmlims** command. A reset is required after the command is issued to use the alarm limits.

Syntax

This command has no arguments.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to reset the alarm limits on the N2U-OA200.

```
$ rstalarmlims
```

rstalarms

This command resets the N2U-OA200. To display the alarms, use the **rstalarms** command.

Syntax

This command has no arguments.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to reset the alarms N2U-OA200.

```
$ rstalarms
```

setcomstr

This command changes the N2U-OA200 community string. To change the community string, use the **setcomstr** command:

```
setcomstr operator/monitor string
```

Syntax

operator/monitor	Specifies operator or monitor for the community.
string	Specifies the community string. The string can contain any alphanumeric combination of up to 32 characters with no blank spaces.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Example

The following example shows how to change the unit name.

```
$ setcomstt operator edfa
```

Related Command

getcomstr	Displays the community string.

setdlautorst

This command changes the N2U-OA200 download auto reset state. To change the reset state, use the **setdlautorst** command:

```
setdlautorst on/off
```

Syntax

on/off Specifies on or off for the download auto reset. If download auto reset is “on” the unit will automatically reset after download is complete. If download auto reset is “off” the unit will be configured to boot from the new firmware when a reset is issued at a later time. The default mode from the factory is on.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the download auto reset state.

```
$ setdlautorst off
```

Related Commands

getdlfile Displays the download file name.

setdlfile Changes the download file name.

getdlautorst Displays the download auto reset state.

dl Starts/Stops the download process.

dlstat Displays the download status.

setdlfile

This command changes the N2U-OA200 download file name. This command starts the transfer of the download file from the FTP server into the N2U-OA200. To change the file name, use the **setdlfile** command:

```
setdlfile string
```

Syntax

string	Specifies the name of the download file.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the download file name.

```
$ setdlfile oa200_A.gx2
```

Related Commands

getdlfile	Displays the download file name.
getdlautorst	Displays the download auto reset state.
setdlautorst	Changes the download auto reset state.
dl	Starts/Stops the download process.
dlstat	Displays the download status.

setgateipadd

This command changes the N2U-OA200 Gateway IP address. To change the address, use the **setgateipadd** command:

```
setgateipadd string
```

Syntax

string	Specifies the Gateway IP address. The default address from the factory is 168.084.213.129. Format: xxx.xxx.xxx.xxx

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the Gateway IP address.

```
$ setgateipadd 168.084.213.130
```

Related Commands

getgateipadd	Displays the Gateway IP address.

setinlim

This command changes the N2U-OA200 input alarm limits. To change the alarm limits, use the **setinlim** command:

```
setinlim low/high value
```

Syntax

low/high	Specifies low or high alarm limit for the unit input.
value	Specifies the value to change the alarm limit.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the input low alarm limit.

```
$ setinlim low 4.0
```

Related Commands

getindata	Displays the N2U-OA200 input, alarm limits, hysteresis and alarm state.

setipadd

This command changes the N2U-OA200 Network IP address. To change the address, use the **setipadd** command:

```
setipadd string
```

Syntax

string	Specifies the IP address. The default address from the factory is 168.084.213.132. Format: xxx.xxx.xxx.xxx

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the Network IP address.

```
$ setipadd 168.084.213.133
```

Related Commands

getipadd	Displays the network IP address.

setipmask

This command changes the N2U-OA200 Network IP mask. To change the address, use the **setipmask** command:

```
setipmask string
```

Syntax

string	Specifies the IP address. The default address from the factory is 255.255.000.000. Format: xxx.xxx.xxx.xxx

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the Network IP mask.

```
$ setipmask 255.255.255.000
```

Related Command

getipmask	Displays the network IP mask.

setlowpwrmode

This command changes the N2U-OA200 Low Power Mode. To change, use the **setlowpwrmode** command:

```
setlowpwrmode on/off
```

Syntax

on/off Specifies on or off for the unit low power mode. This mode is not available for 100 mW or 200 mW versions. The default mode from the factory is off.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the low power mode.

```
$ setlowpwrmode on
```

Related Commands

getlowpwrmode Displays the N2U-OA200 low power mode.

setname

This command changes the N2U-OA200 Unit name. To change the unit name, use the **setname** command:

setname *string*

Syntax

string Specifies the unit name string to add. The string can contain any alphanumeric combination of up to 32 characters with no blank spaces. If blank spaces are used, the string must be contained in quotation marks.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the unit name.

```
$ setname OA200-1
$ setname "OA200 1"
```

Related Command

getname Displays the unit name.

devinfo Displays all device information on the N2U-OA200 including unit name.

setoutlim

This command changes the N2U-OA200 output gain or power alarm limits. To change the alarm limits, use the **setoutlim** command:

```
setoutlim 1-16 low/high gain/pwr value
```

Syntax

1-16	Specifies a single output 1 through 16. The range of outputs is limited to the total number of outputs.
low/high	Specifies low or high alarm limit for the unit output.
value	Specifies the value to change the alarm limit.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the output power low alarm limit.

```
$ setoutlim 1 low 4.0
```

Related Command

getoutdata	Displays the N2U-OA200 output gain and power, alarm limits, hysteresis and alarm state.

setpassword

This command changes the N2U-OA200 login password. To change the password, use the **setpassword** command:

setpassword *passwd newpasswd*

Syntax

passwd Enter the current password.

newpasswd Enter new password.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the download auto reset state.

```
$ setpassword oa200 myoa200
```

settemplim

This command changes the N2U-OA200 temperature alarm limits. To change the alarm limits, use the **settemplim** command:

```
settemplim high/low value
```

Syntax

high/low Specifies high or low alarm limit for the unit temperature.

value Specifies the value to change the alarm limit.

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the temperature high alarm limit.

```
$ settemplim high 70.0
```

Related Command

gettempdata Displays the N2U-OA200 temperature, alarm limits, hysteresis and alarm state.

settrapdest

This command changes the N2U-OA200 Trap destination address. To change the address, use the **settrapdest** command:

settrapdest *1-10 string*

Syntax

1-10 1-10Specifies a single trap destination address 1 through 10.

string Specifies the IP address. The default address from the factory is 000.000.000.000. Format: xxx.xxx.xxx.xxx

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the Trap destination address.

```
$ settrapdest 2 168.084.213.134
```

Related Command

gettrapdest Displays the trap destination address.

status

This command displays the N2U-OA200 status. To display the status, use the **status** command.

Syntax

This command has no arguments.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to display the status.

```
$ status

Status
-------------------------------------

Device          :   Severity OK

EEPROM          :   Severity OK

CAL Data        :   Severity OK

Flash           :   Severity OK

Boot            :   Severity OK

Alarm Limit     :   Severity OK

Power Supply    :   Severity OK

LD              :   Severity OK
Overcurrent

Fan             :   Severity OK

Thermal         :   Severity OK
Shutdown

Reduce Power    :   Severity OK
```

switchbk

This command changes the N2U-OA200 active firmware bank if there is another valid bank of firmware. To change the firmware bank, use the **switchbk** command.

Syntax

This command has no arguments.

Types

Does not change configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to display the status.

```
$ switchbk
```

time

This command prints or changes the N2U-OA200 time. To get/change the time, use the **time** command:

time *[hh:mm[:ss]]*

Syntax

hh:mm:ss Enter the time in hours, minutes, and seconds (optional).

Types

Changes configuration.

Modes

Master password protected.

History

Rev A: This command was introduced.

Examples

The following example shows how to change the time.

```
$ time 08:12:00
```

The following example shows how to get the time.

```
$ time
8:12:00.16
```

Appendix D
Alarms

The following alarms are defined for the N2U-OA200:

Alarm Code	Description
1	No alarms present
2	Module Temperature Major Alarm
3	Module Temperature No Alarm
4	Optical Input Power Major Alarm
5	Optical Input Power No Alarm
6	Optical Output Signal Power Major Alarm
7	Optical Output Signal Power No Alarm
8	Optical Gain Major Alarm
9	Optical Gain No Alarm
10	Laser Temperature Major Alarm
11	Laser Temperature No Alarm
12	TEC Current Major Alarm
13	TEC Current No Alarm
14	Laser Bias Current Major Alarm
15	Laser Bias Current No Alarm
16	Power Supply Major Alarm
17	Power Supply No Alarm
18	Fan Major Alarm
19	Fan No Alarm
20	Thermal Shutdown Major Alarm
21	Thermal Shutdown No Alarm
22	Reduce Power Major Alarm
23	Reduce Power No Alarm
24	FLASH Error Minor Alarm
25	FLASH Error No Alarm
26	Boot Error Minor Alarm
27	Boot Error No Alarm
28	Alarm Data CRC Minor Alarm
29	Alarm Data CRC No Alarm
30	Call Data CRC Minor Alarm

Alarm Code	Description
31	Calibration Data CRC Minor Alarm
32	Calibration Data CRC No Alarm
33	Factory Data CRC Error Minor Alarm
34	Factory Data CRC Error No Alarm
10	Re-initializing EEPROM
13	Bad Download File
14	Download File Not Found
15	Download Complete
34	Download Failed
56	Download Started
75	Server Not Found Alarm
76	Transfer Complete
77	Transfer EFS Error
78	Server Error
79	Transfer Timeout

Appendix E

Translated Safety Warnings

This appendix contains the translations of the following safety warnings:

Wrist Strap Warning

Warning During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.

Waarschuwing Draag tijdens deze procedure aardingspolsbanden om te vermijden dat de kaart beschadigd wordt door elektrostatische ontlading. Raak het achterbord niet rechtstreeks aan met uw hand of met een metalen werktuig, omdat u anders een elektrische schok zou kunnen oplopen.

Varoitus Käytä tämän toimenpiteen aikana maadoitettuja rannesuojia estääksesi kortin vaurioitumisen sähköstaattisen purkauksen vuoksi. Älä kosketa taustalevyä suoraan kädelläsi tai metallisella työkalulla sähköiskuvaaran takia.

Attention Lors de cette procédure, toujours porter des bracelets antistatiques pour éviter que des décharges électriques n'endommagent la carte. Pour éviter l'électrocution, ne pas toucher le fond de panier directement avec la main ni avec un outil métallique.

Warnung Zur Vermeidung einer Beschädigung der Karte durch elektrostatische Entladung während dieses Verfahrens ein Erdungsband am Handgelenk tragen. Bei Berührung der Rückwand mit der Hand oder einem metallenen Werkzeug besteht Elektroschockgefahr.

Avvertenza Durante questa procedura, indossare bracciali antistatici per evitare danni alla scheda causati da un'eventuale scarica elettrostatica. Non toccare direttamente il pannello delle connessioni, né con le mani né con un qualsiasi utensile metallico, perché esiste il pericolo di folgorazione.

Advarsel Bruk jordingsarmbånd under prosedyren for å unngå ESD-skader på kortet. Unngå direkte berøring av bakplanet med hånden eller metallverktøy, slik at di ikke får elektrisk støt.

Aviso Durante este procedimento e para evitar danos ESD causados à placa, use fitas de ligação à terra para os pulsos. Para evitar o risco de choque eléctrico, não toque directamente na parte posterior com a mão ou com qualquer ferramenta metálica.

¡Advertencia! Usartiras conectadas a tierra en las muñecas durante este procedimiento para evitar daños en la tarjeta causados por descargas electrostáticas. No tocar el plano posterior con las manos ni con ninguna herramienta metálica, ya que podría producir un choque eléctrico.

Varning! Använd jordade armbandsremmar under denna procedur för att förhindra elektrostatisk skada på kortet. Rör inte vid baksidan med handen eller metallverktyg då detta kan orsaka elektrisk stöt.

Restricted Area Warning

Warning This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

Waarschuwing Dit toestel is bedoeld voor installatie op plaatsen met beperkte toegang. Een plaats met beperkte toegang is een plaats waar toegang slechts door servicepersoneel verkregen kan worden door middel van een speciaal instrument, een slot en sleutel, of een ander veiligheidsmiddel, en welke beheerd wordt door de overheidsinstantie die verantwoordelijk is voor de locatie.

Varoitus Tämä laite on tarkoitettu asennettavaksi paikkaan, johon pääsy on rajoitettua. Paikka, johon pääsy on rajoitettua, tarkoittaa paikkaa, johon vain huoltohenkilöstö pääsee jonkin erikoistyökalun, lukkoon sopivan avaimen tai jonkin muun turvalaitteen avulla ja joka on paikasta vastuussa olevien toimivaltaisten henkilöiden valvoma.

Attention Cet appareil est à installer dans des zones d'accès réservé. Ces dernières sont des zones auxquelles seul le personnel de service peut accéder en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité. L'accès aux zones de sécurité est sous le contrôle de l'autorité responsable de l'emplacement.

Warnung Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Ein Bereich mit beschränktem Zutritt ist ein Bereich, zu dem nur Wartungspersonal mit einem Spezialwerkzeugs, Schloß und Schlüssel oder anderer Sicherheitsvorkehrungen Zugang hat, und der von dem für die Anlage zuständigen Gremium kontrolliert wird.

Avvertenza Questa unità deve essere installata in un'area ad accesso limitato. Un'area ad accesso limitato è un'area accessibile solo a personale di assistenza tramite un'attrezzo speciale, lucchetto, o altri dispositivi di sicurezza, ed è controllata dall'autorità responsabile della zona.

Advarsel Denne enheten er laget for installasjon i områder med begrenset adgang. Et område med begrenset adgang gir kun adgang til servicepersonale som bruker et spesielt verktøy, lås og nøkkel, eller en annen sikkerhetsanordning, og det kontrolleres av den autoriteten som er ansvarlig for området.

Aviso Esta unidade foi concebida para instalação em áreas de acesso restrito. Uma área de acesso restrito é uma área à qual apenas tem acesso o pessoal de serviço autorizado, que possua uma ferramenta, chave e fechadura especial, ou qualquer outra forma de segurança. Esta área é controlada pela autoridade responsável pelo local.

¡Advertencia! Esta unidad ha sido diseñada para instalarse en áreas de acceso restringido. Área de acceso restringido significa un área a la que solamente tiene acceso el personal de servicio mediante la utilización de una herramienta especial, cerradura con llave, o algún otro medio de seguridad, y que está bajo el control de la autoridad responsable del local.

Varning! Denna enhet är avsedd för installation i områden med begränsat tillträde. Ett område med begränsat tillträde får endast tillträdas av servicepersonal med ett speciellt verktyg, lås och nyckel, eller annan säkerhetsanordning, och kontrolleras av den auktoritet som ansvarar för området.

Qualified Personnel Warning

Warning	Only trained and qualified personnel should install or replace this equipment.
Waarschuwing	Installatie en reparaties mogen uitsluitend door getraind en bevoegd personeel uitgevoerd worden.
Varoitus	Ainoastaan koulutettu ja pätevä henkilökunta saa asentaa tai vaihtaa tämän laitteen.
Avertissement	Tout installation ou remplacement de l'appareil doit être réalisé par du personnel qualifié et compétent.
Achtung	Gerät nur von geschultem, qualifiziertem Personal installieren oder auswechseln lassen.
Avvertenza	Solo personale addestrato e qualificato deve essere autorizzato ad installare o sostituire questo apparecchio.
Advarsel	Kun kvalifisert personell med riktig opplæring bør montere eller bytte ut dette utstyret.
Aviso	Este equipamento deverá ser instalado ou substituído apenas por pessoal devidamente treinado e qualificado.
¡Atención!	Estos equipos deben ser instalados y reemplazados exclusivamente por personal técnico adecuadamente preparado y capacitado.
Varning	Denna utrustning ska endast installeras och bytas ut av utbildad och kvalificerad personal.

DC Protection Warning

Warning This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a Listed and Certified fuse or circuit breaker 25A, minimum 60VDC, is used on all current-carrying conductors.

Waarschuwing Dit product moet worden beveiligd tegen kortsluiting (overstroom) door de installatie van het gebouw. Zorg dat er een goedgekeurde zekering of stroomonderbreker (25 A, minimaal 60 V gelijkstroom) op alle stroomdragende geleiders staat.

Varoitus Tämä laite käyttää rakennuksen oikosulkusuojausta (ylivirtasuojausta). Varmista, että kaikissa virtajohtimissa käytetään hyväksyttyjä sulakkeita tai katkaisijoita (25 A, vähintään 60 V tasavirtaa).

Attention La protection de ce produit contre les courts-circuits (surtensions) doit être assurée par la configuration électrique du bâtiment. Vérifiez que tous les conducteurs de courant sont équipés d'un fusible ou d'un disjoncteur de 25 A et d'un minimum de 60 V cc, normalisé et homologué.

Warnung Dieses Produkt erfordert Gebäude-Absicherung gegen Kurzschlüsse (Überstrom). Achten Sie darauf, daß auf allen stromführenden Leitern eine anerkannte, zugelassene Sicherung oder ein Stromkreisunterbrecher 25A, Minimum 60VDC, verwendet wird.

Avvertenza Questo prodotto fa affidamento sulla protezione dell'edificio contro i cortocircuiti. Accertarsi che un fusibile o interruttore di circuito omologato da 25 A, 60 V c.c. minimo, venga utilizzato su tutti i conduttori sotto tensione.

Advarsel Dette produktet er avhengig av bygningens installasjon for beskyttelse mot kortslutning (overspenning). Påse at en oppført og godkjent sikring eller strømbryter, på 25 A, minimum 60 volt likestrøm, brukes på alle strømførende ledere.

Aviso Este produto depende da instalação existente no edifício para a protecção contra curto-circuito (sobrecarga). Certifique-se de que um fusível ou disjuntor listado e certificado de 25 A, mínimo 60 VDC, seja utilizado em todos os condutores de transporte de corrente.

Advertencia Este producto cuenta con la instalación del edificio para la protección de cortocircuitos (sobrecorriente). Asegúrese de usar un fusible listado y certificado o cortacircuitos 25A, mínimo 60 V cc, en todos los conductores de corriente.

Varning! Denna produkt förlitar sig på byggnadens installation för skydd mot kortslutning (överström). Se till att en registrerad och certifierad säkring eller ett överspänningsskydd på 25 A, minst 60 V likström, används på alla strömförande ledare.

Laser Radiation Warning

Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

Waarschuwing Losgekoppelde of losgeraakte glasvezels of aansluitingen kunnen onzichtbare laserstraling produceren. Kijk niet rechtstreeks in de straling en gebruik geen optische instrumenten rond deze glasvezels of aansluitingen.

Varoitus Irrotetuista kuiduista tai liittimistä voi tulla näkymätöntä lasersäteilyä. Älä tuijota säteitä tai katso niitä suoraan optisilla välineillä.

Attention Les fibres ou connecteurs débranchés risquent d'émettre des rayonnements laser invisibles à l'œil. Ne regardez jamais directement les faisceaux laser à l'œil nu, ni d'ailleurs avec des instruments optiques.

Warnung Unterbrochene Fasern oder Steckerverbindungenkönnen unsichtbare Laserstrahlung abgeben.. Blicken Sie weder mit bloßem Auge noch mit optischen Instrumenten direkt in Laserstrahlen.

Avvertenza Le fibre ottiche ed i relativi connettori possono emettere radiazioni laser. I fasci di luce non devono mai essere osservati direttamente o attraverso strumenti ottici.

Advarsel Det kan forekomme usynlig laserstråling fra fiber eller kontakter som er frakoblet. Stirr ikke direkte inn i strålene eller se på dem direkte gjennom et optisk instrument.

Aviso Radiação laser invisível pode ser emitida de conectores ou fibras desconectadas. Não olhe diretamente para os feixes ou com instrumentos ópticos.

¡Advertencia! Es posible que las fibras desconectadas emitan radiación láser invisible. No fije la vista en los rayos ni examine éstos con instrumentos ópticos.

Varning! Osynlig laserstrålning kan avges från frånkopplade fibrer eller kontaktdon. Rikta inte blicken in i strålar och titta aldrig direkt på dem med hjälp av optiska instrument.

Abbreviations and Acronyms

AGC automatic gain control

ASE amplified spontaneous emission

CLEI Common Language Equipment Identifier

CLI command line interface

EDFA erbium-doped fiber amplifier

FTP File Transfer Protocol

IP Internet Protocol

MAC media access control

NE network element

PMD polarization mode dispersion

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