



CHAPTER 5

Communicating with the ONS 15216 EDFA3

This chapter contains information about communicating with the ONS 15216 EDFA3. The sections in this chapter contain the following information:

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5.1 Alarm Out Relay Interface (RJ-45)

The ONS 15216 EDFA3 Alarm Out (RJ-45) port reports alarm status for the following:

- Loss or degradation of electrical power
- Laser pump overheating or excessive pump current, output power, gain, or case temperature
- Loss or degradation of optical input signal

These alarms can be connected to a network operations center (NOC) using the following methods:

- Cisco ONS 15454 miscellaneous discrete input (See [Chapter 13, “Network Access to the ONS 15216 EDFA3 Using the ONS 15454”](#) for more details about the ONS 15454.)
- Central office (CO) alarm panel/system

[Table 5-1](#) provides the ONS 15216 EDFA3 RJ-45 alarm pinout and alarm definitions.

Table 5-1 Alarm Pinout and Definitions (RJ-45)

Relay	Pinout	Description
0	1 (0+)	HW failure.
	2 (0-)	
1	3 (1+)	Laser pump temperature or bias is out of range.
	4 (1-)	
2	5 (2+)	Loss of optical input signal or input signal is below threshold.
	6 (2-)	
3	7 (3+)	Loss of electrical power or out of range for Bus A or Bus B while in duplex mode.
	8 (3-)	

The following procedure describes how to set up alarm contacts. In order to accomplish this, you must:

- Connect the RJ-45 cable to the panel of the ONS 15454 shelf
- Connect the alarm cable to the alarm system contacts

To set up alarm contacts, follow these steps:

Step 1 Connect the RJ-45 cable to the stub-end connector using a #22 AWG solid wire.



Note Note that the cable and connector are not provided.

Step 2 Connect the alarm cable to the alarm system contacts:

- a. Cisco ONS 15454 medium-dependent interface (MDI) wire wrap pins, located on the rear panel of the ONS 15454 shelf
- b. CO alarm panel

Refer to [Table 5-1](#) for information concerning alarm contacts. Refer to the “5.2 Alarm LEDs” section for information about the ONS 15216 EDFA3 alarm LEDs.

5.2 Alarm LEDs

The ONS 15216 EDFA3 has seven LEDs:

- POWER
- FAIL
- LOS
- Ethernet socket (two sockets with two LEDs on each socket)

Three of these LEDs, POWER, FAIL, and loss of signal (LOS), are located at the left side of the front panel of the ONS 15216 EDFA3. The two Ethernet LEDs are located at the top left and right sides of the Ethernet socket. When the module is powered on, an LED test is performed.

The following table summarizes the external alarms LEDs and contacts.

Table 5-2 LED Indicators of Normal and Fault States

LED	LED Normal State	LED Fault State	Fault Description	ALARM OUT Pair	ALARM OUT Contact Normal State	ALARM OUT State	Serial Alarms
Power	ON	OFF	Both A and B DC Power have failed.	1	Open	Closed	None
		Flash	A or B power has failed.	4	Open	Closed	Either “A Power Fail” or “B Power Fail”

Table 5-2 LED Indicators of Normal and Fault States (continued)

LED	LED Normal State	LED Fault State	Fault Description	ALARM OUT Pair	ALARM OUT Contact Normal State	ALARM OUT State	Serial Alarms
Fail	OFF	ON	High pump laser current	2	Open	Closed	Fail
LOS	OFF	ON	Input optical signal is below provisioned threshold.	3	Open	Closed	LOS

5.2.1 POWER LED (Green)

The POWER LED is green. This LED functions as follows:

- ON: –48 VDC power is within tolerance. (Power Bus A and Power Bus B are powered normally.)
- OFF: No –48 VDC power, or power is out of tolerance from the internal power supply. (Power Bus A and Power Bus B are not powered.)
- Flashing: In duplex mode, Power Bus A or Power Bus B has failed or is out of tolerance. In simplex mode, Power Bus A is out of tolerance.

In the OFF condition, the first pair of alarm relay contacts in the RJ-45 connector changes from a normally open condition to a closed condition. The LED and alarm automatically reset when the condition clears. (For additional alarm contact closure information, see the [“Alarm Out Relay Interface \(RJ-45\)”](#) section on page 5-1.)

5.2.2 FAIL LED (Red)

The FAIL LED is red. This LED has two states:

- ON: The laser pump bias, laser pump temperature, output power, gain, or case temperature is out of tolerance. (A major internal failure has occurred.)
- OFF: The laser pump bias or laser pump temperature is in the specified range (or no –48 VDC power is present).

In the ON condition, the second pair of alarm relay contacts in the RJ-45 connector changes from a normally open to a closed condition. If an invalid input optical signal is applied to the ONS 15216 EDFA3, the FAIL LED is illuminated. The LED and alarm automatically reset when the condition clears.

5.2.3 LOS LED (Yellow)

The loss of signal (LOS) LED is yellow. This LED has two states:

- ON: The optical input power to the ONS 15216 EDFA3 is below the loss of input threshold. (A LOS threshold decision occurs.)
- OFF: The optical input power is within the input threshold (or no –48 VDC power is present).

In the ON condition, the third pair of alarm relay contacts in the RJ-45 connector changes from a normally open condition to a closed condition. The LED and alarm automatically reset when the condition clears.

5.2.4 Ethernet Socket LEDs

Two Ethernet socket LEDs are located at the top left and right sides of the Ethernet socket. These LEDs are both green. These LEDs function as follows:

- If the left Ethernet socket LED is on, the link is up.
- If the right Ethernet socket LED is on or flashing, there is Ethernet traffic.

5.3 Communicating with the EDFA3 Through a Serial EIA/TIA-232 (RS-232) Interface

This section describes communication with the ONS 15216 EDFA3 using a serial connection. Establishing a serial communications link with a ONS 15216 EDFA3 requires the equipment listed in [Table 5-3](#).

Table 5-3 **Equipment Checklist**

Hardware	Comments
Laptop or VT100, running HyperTerminal.	User-provided. HyperTerminal can be found in the Microsoft Windows Accessories menu.
EIA/TIA-232 (RS-232) cable with DB-9F/DB-9M connectors wired.	Provides EIA/TIA-232 (RS-232) link to ONS 15216 EDFA3.

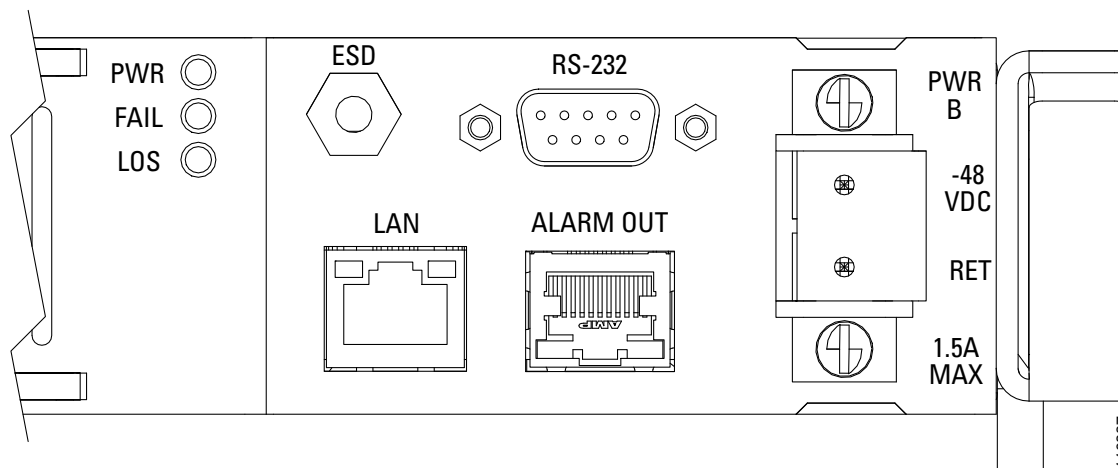
To set up an EIA/TIA-232 (RS-232) link to the ONS 15216 EDFA3, use the following procedure. (The procedure uses HyperTerminal and a connection through the COM1 port on the PC.)

This procedure consists of:

- Physically connecting the ONS 15216 EDFA3 to a laptop
- Opening HyperTerminal
- Using HyperTerminal to set up communications between the PC and the ONS 15216 EDFA3
- Configure the port settings
- Configure the ASCII settings

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- Step 1** Connect the DB-9F end of the EIA/TIA-232 (RS-232) data cable (straight cable, user provided) to the laptop COM1 port.
- Step 2** Connect the DB-9M end of the EIA/TIA-232 (RS-232) data cable to the EIA/TIA-232 (RS-232) serial port connection on the front panel of the ONS 15216 EDFA3 ([Figure 5-1](#)).

Figure 5-1 EIA/TIA-232 (RS-232) Serial Port Connector on the ONS 15216 EDFA3



- Step 3** To configure a connection, open HyperTerminal. (HyperTerminal can be found in the Microsoft Windows **Accessories > Communications** menu.)
- Step 4** A Connection Description dialog box appears (Figure 5-2). Type “Optical Amplifier” in the **Name** field and select an icon to use for the connection, for example the telephone icon at the bottom left of the dialog box.

Figure 5-2 Hyper Terminal Connection Description Dialog Box



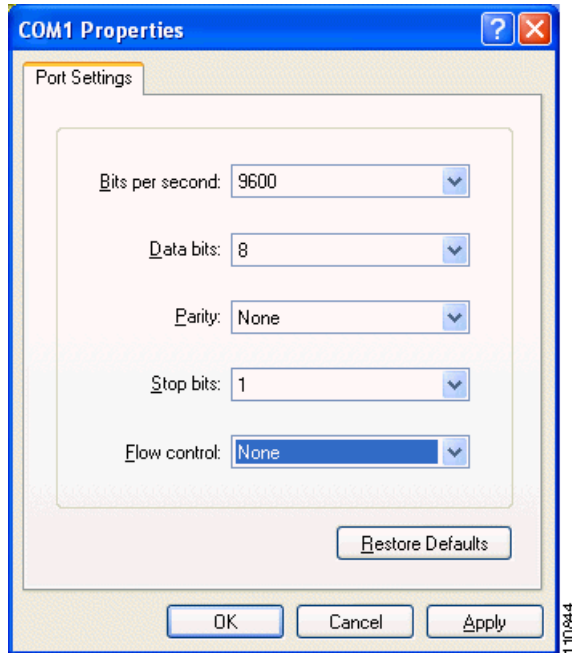
- Step 5** Click **OK**.
- Step 6** In the Connect To dialog box (Figure 5-3), click **COM1** in the Connect using field.
- Step 7** Click **OK**.

Figure 5-3 HyperTerminal Connect To Dialog Box



Step 8 Configure the Port Settings in the COM1 Properties dialog box as shown in [Figure 5-4](#).

Figure 5-4 HyperTerminal COM1 Properties Dialog Box



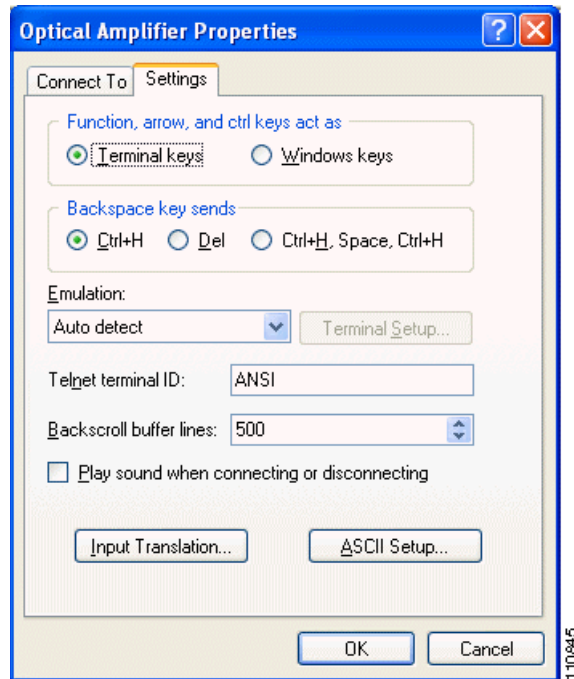
Step 9 Click **OK** when done.

Step 10 In the HyperTerminal main window, select **File > Properties**.

Step 11 Make sure that the **Connect To** tab in the Optical Amplifier Properties dialog box is selected.

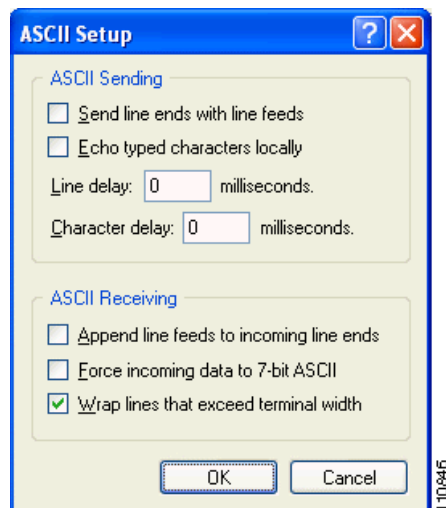
Step 12 Ensure that **Direct to Com1** is selected in the Connect using field.

Step 13 Click the **Settings** tab. The dialog box shown in [Figure 5-5](#) appears.

Figure 5-5 Optical Amplifier Properties Dialog Box (Settings Tab)

Step 14 Click the **ASCII Setup** button.

Step 15 Configure the selections in the ASCII Setup dialog box as shown in [Figure 5-6](#).

Figure 5-6 HyperTerminal ASCII Setup Dialog Box

Step 16 Click **OK** when done.

Step 17 Click **OK** in the Optical Amplifier Properties dialog box to return to the main HyperTerminal window. The ONS 15216 EDFA3 default TL1 login screen appears.

Table 5-4 shows the Windows HyperTerminal configuration.

Table 5-4 *Windows HyperTerminal Configuration Summary*

Parameter	Value
Emulation	ANSI, 9600 bps
Data Bits	8
Parity	None
Stop Bit	1
Flow Control	None