

FlightManager Alarm Interface Control Low Density Chassis (FMG AIC LDX) SNMP Proxy Agent



Installation, Operation and Maintenance



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Safety

Cautions and Warnings

The following symbols used in this manual indicate that the installer should take particular caution to prevent injury or damage to the equipment.



Exercise caution when you see this symbol. It indicates actions that could be harmful to the installer or to the equipment.



Exercise extreme caution when you see this symbol. It indicates potentially lethal voltages!

Observe Standard Precautions

Persons having access to this equipment must observe standard precautions as defined in applicable national health and safety legislation and regulations.

- Protect from strong vibrations and shocks.
- Avoid contact with water, dirt, and dust.
- Avoid direct exposure to sunlight.
- Observe indicated operating temperature range.
- Use only the supplied AC adapter to supply power to the device.
- The power supply must meet the device specifications (page 2-4).



The FlightManager FMG AIC LDX complies with the following standards per § 4 of the EC Council Guideline on Electromagnetic Compatibility for IT equipment:

- DIN EN 55022 (Emission)
- DIN EN 50082-1 (Immunity)

Qualified Personnel

There are hazardous circuits within this product. Only qualified personnel who understand and are trained to work with these hazards must carry out all repair, modification, reconfiguration, and upgrading operations.

Note: There are no user-serviceable parts inside the FMG AIC LDX, and the user should not open the device.

Warranty

LightPointe warrants this product against faulty materials or workmanship under the terms of our current Standard Warranty And Support Agreement provided that the product was purchased directly from us or from one of our authorized resellers. Please contact LightPointe Customer Service for additional information or to obtain a copy of the Warranty Agreement.

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1. General Information

1.1. About this Guide

This manual describes the installation, setup and use of the LightPointe FlightManager Alarm Interface Control Low Density Chassis Simple Network Management Protocol (FMG AIC LDX SNMP) Proxy Agent. This manual is written for installers with fiber optic experience and for network operations personnel who are familiar with SNMP.

1.2. The LightPointe System

LightPointe Free Space Optical (FSO™) systems transmit and receive data in protocol-agnostic, full-duplex mode, in any format, at fiber optic speeds.

Link heads are positioned in a series of line of sight locations to route data within the network. The link heads can be monitored and managed through LightPointe's Optical Management Interface, and can be more precisely controlled and monitored through the use of the FlightManager SNMP Proxy Agent and your Network Management System (NMS).

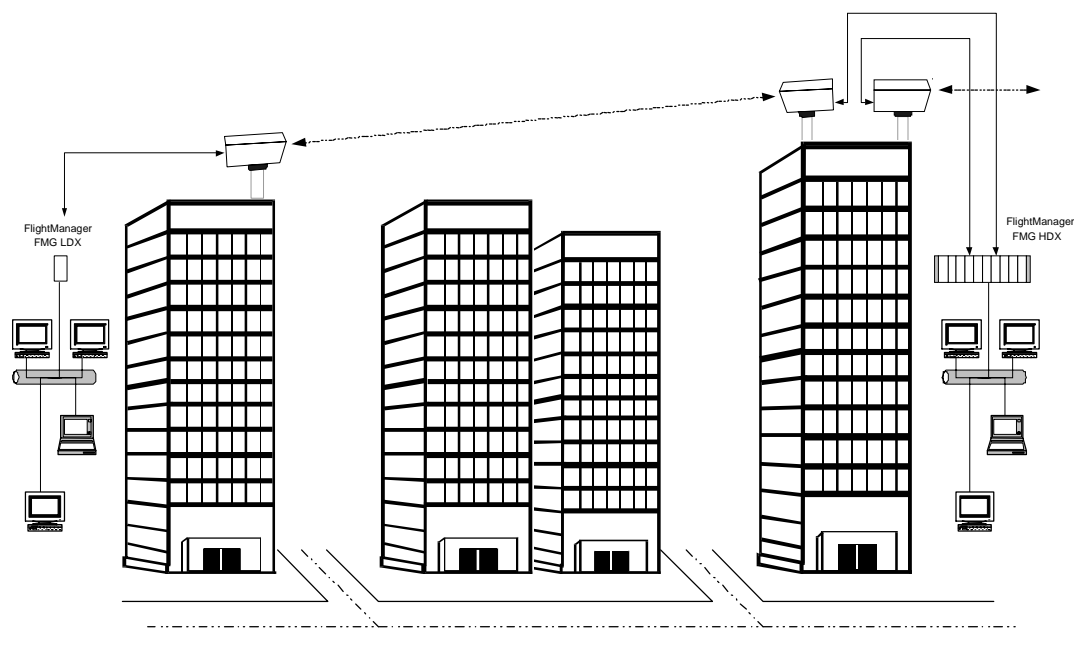


Figure 1-1: Typical LightPointe Metro System

The FlightManager SNMP proxy agent also transmits alarm messages (traps) to the NMS if connection problems occur, supporting the early detection, analysis, and correction of potential system problems. The FlightManager SNMP proxy agent can be integrated into OpenView, SunNet, or any other standards-based NMS.

1.2.1. FlightManager FMG AIC LDX Function

LightPointe free space optical communication systems are typically used to connect two physically separated network segments. Monitoring network components is therefore of great importance to the overall value of the system.

The FMG AIC LDX provides important status information to the network administrator through your existing Network Management System (NMS) over a fiber optic interface. The FMG AIC LDX allows you to monitor the operating parameters of the link heads and to modify the FMG AIC LDX configuration via SNMP (Simple Network Management Protocol).

Using the FMG AIC LDX in the LightPointe System

The FMG AIC LDX provides a twisted-pair Ethernet connection for network integration and two sets of optical connectors (OMI1 and OMI2 In/Out) for direct connection of up to two link heads using standard multimode optical fibers. Additionally, 9 output only dry contact alarms are provided. The recommended distance from the link head to the FMG AIC LDX is 500 feet (150 meters), although the FMG AIC LDX is capable of monitoring link head performance at greater distances.

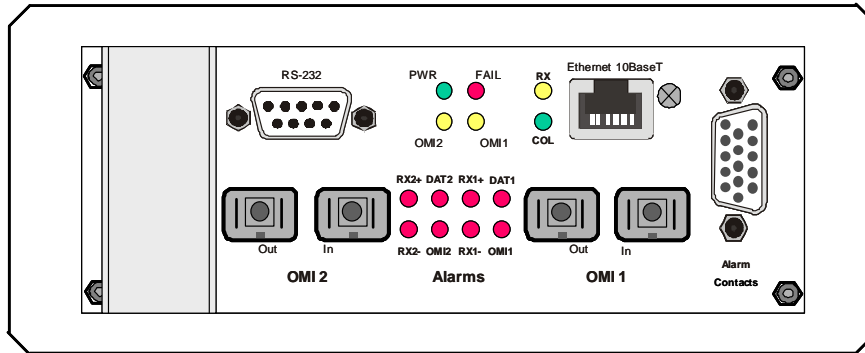


Figure 1-2: FlightManager FMG AIC LDX Connections

The FlightManager FMG AIC LDX functions as a proxy agent between the NMS and each connected link head. The link status information provided through the FMG AIC LDX can be used to make rapid, online checks of the quality of the connection and to pinpoint the cause of system problems.

1.3. Using This Manual

This manual provides directions for installing, configuring and operating the FMG AIC LDX SNMP Proxy Agent.

1.3.1. Section overviews

Chapter	Contents
2 Installation	Physical connection of the FMG AIC LDX to the network.
3 Configuring the FMG AIC LDX	Setting the operational parameters of the FMG AIC LDX, loading the MIBs, SNMP status checking.
4 Using SNMP with the FMG AIC LDX	Getting and Setting OMI variables, FMG AIC LDX configuration, and FMG AIC LDX system events.
5 Maintenance	Maintaining the FMG AIC LDX.
6 Troubleshooting	Resolving FMG AIC LDX operating problems.

1.3.2. Additional Resources

Refer to the following documents for additional information about the LightPointe system. You can also refer to any standard text on the use of SNMP.

Document Number	Title
505-002032-0001M	FlightPath/FlightSpectrum 52 Mbps Installation and Maintenance Manual
505-002000-0001M	FlightPath/FlightSpectrum 155 Mbps Installation and Maintenance Manual
505-002008-0001M	FlightPath/FlightSpectrum 622 Mbps and 1.25 Gbps Installation and Maintenance Manual
505-015282-00000	FlightSpectrum 2.5 Gbps Installation and Maintenance Manual
505-003686-00000	FlightLite 52E & EW and 155E Mbps Installation and Maintenance Manual
505-002014-00000	FlightManager LDX SNMP Proxy Agent Installation, Operation and Maintenance Manual
505-002532-00000	FlightManager HDX SNMP Proxy Agent Installation, Operation and Maintenance Manual
505-004148-00000	FlightStrata 52 and 155, FlightStrata 52E and 155E and FlightStrata 52EW Installation and Maintenance Manual
505-015152-00000	FlightSpectrum 1.42G Installation and Maintenance Manual
505-015408-00000	FlightLite 622 and FlightLite 1.25G Installation and Maintenance Manual

505-015494-00000	FlightStrata 622 and 1.25G Installation and Maintenance Manual
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2. Installation

This chapter covers the following main topics:

- Site preparation
- Tools and equipment
- Unpacking
- Device overview
- System specifications
- Network connections

2.1. Site preparation

The FlightManager FMG AIC LDX can be located at any point in the network, but should be placed within 500 feet (150 meters) of the link heads it is connected to.

2.1.1. Installation considerations

Factor	Requirements
<i>Space</i>	The FMG AIC LDX requires minimal space, and can be placed on any flat surface in a room with other network support devices.
<i>Environmental</i>	Indoors, 0-50° C, controlled environment
<i>Power</i>	110-220 VAC
<i>Network</i>	Ethernet connection via RJ-45

2.2. Specialized Tools and Equipment Needed

A laptop PC or terminal connection is required for FMG AIC LDX configuration.

The FMG AIC LDX installation requires one (622, 1.25G and 2.5G) or two (52 and 155) SC connectors (see Figure 2-1) per link head. These connectors are plugged into the FMG AIC LDX OMI ports.

LightPointe's link heads have SC fiber connectors installed on the back panel. The installer will require one or two of these connectors per link head to connect to the SNMP Proxy Agent.

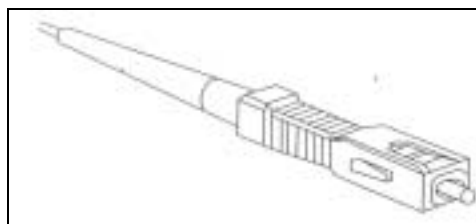


Figure 2-1: SC Connector

Note: LightPointe recommends that all fiber connection work be completed and tested prior to arriving at the installation site. We also recommend that you bring additional connectors that may be needed to connect fiber to your existing network.

If the alarm contact connector will be used and any alarm indications are going to be monitored remotely, then a cable will be needed to provide a connection for the dry contact alarms cable. The parts needed for the cable are as follows:

1. 15 Pin HDSUB Male shell (AMP/TYCO 748364-1 or equivalent)
2. Male Pin crimp type for HD Shell (AMP/TYCO 748333-7 or equivalent; note that up to 15 pins may be required, depending upon application)
3. Hood for 9 pin Dsub connector (AMP/TYCO 748676-1 or equivalent)

Please refer to Table 2-1, Alarm Contact Connector and LED/Pinout Definitions, in Section 2.4 for connection information. Refer to Section 6 for information on how to test the dry contact alarms.

For additional information, please contact LightPointe Technical Support.

2.3. Unpacking the System

The FMG AIC LDX is shipped with the following components:

- FMG AIC LDX unit
- AC power adapter
- Serial port cable (6 ft.) RS-232, Male DB9/Female DB9
- Software disk

2.4. Device Overview

All FMG AIC LDX connections and controls are provided on a single front panel.

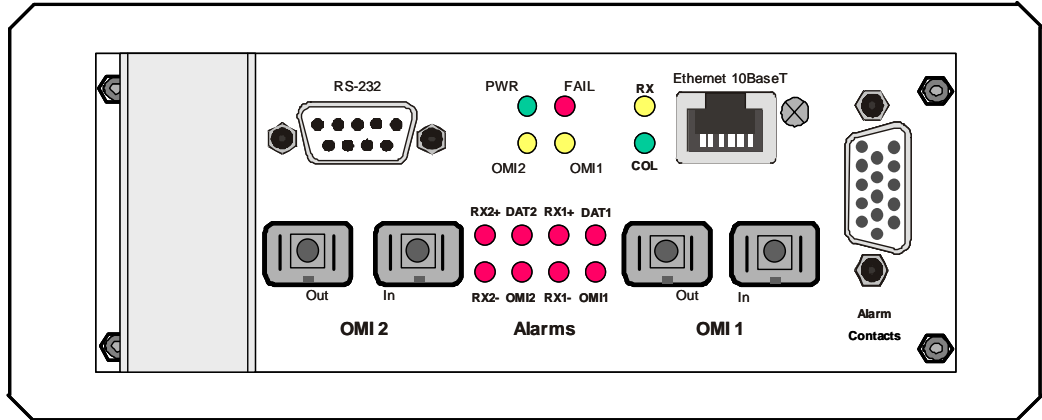


Figure 2-2: FMG AIC LDX Front Panel

<i>RS-232</i>	Provides a connection to a laptop or terminal to configure the Proxy Agent
<i>PWR LED</i>	When illuminated Green in a steady state, indicates the FMG AIC LDX is powered on
<i>FAIL LED</i>	When illuminated Red in a steady state, indicates an internal device failure
<i>OMI 1 and OMI 2 LEDs</i>	Indicates information has been sent or received to/from link head 1 and/or link head 2 when illuminated
<i>RX LED</i>	Indicates packet transmission on the network has been detected
<i>COL LED</i>	Indicates a collision was detected on the network; does NOT indicate a major problem or issue unless illuminated continuously
<i>Ethernet 10BaseT</i>	RJ-45 connection to the Network Management System via the Local Area Network (half-duplex)
<i>OMI 1/2 In</i>	Link head input to the FMG AIC LDX (SC connector)
<i>OMI 1/2 Out</i>	FMG AIC LDX output (SC connector) to the link head. Functional only on 52 and 155 products
<i>Alarm Contacts</i>	Provides a connection for the dry contact alarms cable
<i>Alarms</i>	When illuminated Red in a steady state, indicates a specific alarm condition <ul style="list-style-type: none"> ▪ RXx+ = FSO link receiver power overload ▪ DATx = Data at optical input to the FSO link is absent ▪ RXx- = FSO link receiver power below threshold ▪ OMIx = Optical management data is absent NOTE: "x" = FSO link head (1 and/or 2)

Table 2-1: Alarm Contact Connector and LED/Pinout Definitions

PIN	OUTPUT	DESCRIPTION
1	RX1+	FSO Link 1 receiver power overload
2	RX1-	FSO Link 1 receiver power below threshold
3	DAT1	Data at optical input to FSO Link 1 absent
4	OMI1	Link 1 optical management data absent
5	RX2+	FSO Link 2 receiver power overload
6	RX2-	FSO Link 2 receiver power below threshold
7	DAT2	Data at optical input to FSO Link 2 absent
8	OMI2	Link 2 optical management data absent
9	COM1	Common Signal for Alarm RX1+ and RX1- on PIN1,2
10	COM2	Common Signal for Alarm DAT1 on PIN3
11	COM3	Common Signal for Alarm OMI1 on PIN4
12	COM4	Common Signal for Alarm RX2+ and RX2- on PIN5,6
13	COM5	Common Signal for Alarm DAT2 on PIN7
14	COM6	Common Signal for Alarm OMI2 on PIN8 and PWR Pin 14
15	PWR	Normally Closed Relay for power fault

2.5. System Specifications

2.5.1. General System Specifications

<i>Power supply</i>	5 VDC
<i>Max. power consumption</i>	1.5 W
<i>Temperature range</i>	0-50° C (32-120° F)
<i>Weight</i>	Approx. 1.2 Kg (2.65 lbs)
<i>Housing</i>	Opti-Box
<i>Dimensions (WxDxH)</i>	60 x 260 x 160 mm 2.36 x 10.24 x 6.29 in
<i>AC Power adapter: Primary</i>	110 or 230 ± 10% VAC
<i>Secondary</i>	5.0 V ± 5% VDC stabilized
<i>Current consumption at 5.0 V</i>	< 250 mA
<i>OMI Fiber Connectors</i>	SC Connectors (two per link head connected to the FMG AIC LDX)

2.5.2. AIC Functional Specifications

<i>Connector Type</i>	D-Type 15-pin
<i>Number of Inputs</i>	0
<i>Number of Outputs</i>	15
<i>Relay Type</i>	Dry Contacts
<i>Nominal Switching Power</i>	2A 30VDC, 0.5A 125VAC
<i>Maximum Switching Power</i>	60W, 62.5 VA
<i>Maximum Switching Current</i>	2 A
<i>Contact Resistance</i>	75 milliohm
<i>Nominal Operating Power</i>	Single Side Stable, 140 mW (1.5 to 12 VDC)
<i>Contact Material</i>	Gold-Clad Silver Alloy
<i>Electrical Life</i>	500,000 operations (2A @ 30VDC)
<i>Temperature range</i>	0° to 60° C (32° to 144° F)
<i>Humidity</i>	0% to 95% non-condensing
<i>Compliance</i>	<ul style="list-style-type: none"> ▪ UL File No: E43149 ▪ CSA File No: LR2650 ▪ FCC Part 68: Surge Voltage (1,500 V)
<i>LED Definition</i>	Alarm LEDs normally off; LEDs are RED when asserted; alarm condition clears when trigger event is removed

2.6. Network Connections

Before making connections to the FMG AIC LDX, make sure that AC power and the appropriate fiber connections have been routed to the location. Refer to Figure 2-2 to make the connections.

Note: Basic FMG AIC LDX configuration should be completed before connecting to the network. Please refer to Section 3.3 for configuration instructions.

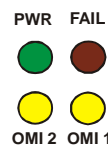
- Step 1** Connect the FMG AIC LDX to the network via the RJ-45 Ethernet port.
- Step 2** Connect the supplied AC power adapter to the back panel of the FMG AIC LDX and to an AC power outlet. The unit will go through a self-test and initially all of the **Alarms** lights as well as other indicator lights will periodically be illuminated. During the initial self-test, the **Fail** light will also illuminate and will flash on several occasions. Finally, with the **Fail** light illuminated, the **Alarms** lights will cycle through. Once the self-test is completed, the ready state will be:
- Power – Illuminated Green
 - Ethernet RX – Illuminated Yellow
 - OMI 1 – Illuminated Red
 - OMI 2 – Illuminated Red

All other lights will not be illuminated. This self-test cycle can take up to 25 seconds.

- Step 3** The RX and PWR LEDs should be lit. The RX LED should blink intermittently with network traffic. All other LEDs should be off. If these conditions are not observed, check Troubleshooting (page 6-1).
- Step 4** Connect the OMI optical fiber from each monitored link head to the FMG AIC LDX OMI1 and OMI2 connectors.
- Your network management system should recognize the FMG AIC LDX when it polls the network for SNMP system variables.

2.6.1. Testing the connection

Verify the correct pairing of the fiber connection to the link head:



If the link head is powered on, the yellow OMI LED for the connected link head (OMI 1 or 2) should blink to indicate communication between the link head and the FMG AIC LDX.

If the OMI 1 or OMI 2 LED does *not* blink, switch the OMI In/Out fiber connections from the link head to the FMG AIC LDX.

If the OMI LED still does *not* blink, make sure the fiber connection from the link head to the OMI port is good.

3. Configuring the FlightManager FMG AIC LDX

This chapter covers the following main topics:

- Loading the FlightManager Proxy Agent Configuration (PAC) software
- Parameter input
- Using the FlightManager Configuration software
- Upgrading FMG AIC LDX software

LightPointe FlightManager software must be used to configure the FMG AIC LDX. The initial FMG AIC LDX configuration must be performed through the serial (RS-232) interface, however later configuration may be performed over an IP network. Certain network specific parameters must be configured before the FMG AIC LDX can be connected to the network: at a minimum, the IP address of the FMG AIC LDX must be supplied.

Parameters can be input to the FMG AIC LDX off-line (before network installation), or after the device is connected to the network and the link heads.

Note: All parameter settings will affect *both* link heads attached to the FMG AIC LDX.

3.1. Installing the FMG PAC Software

Step 1 Place the LightPointe install disk into your computer. The following screen should appear:

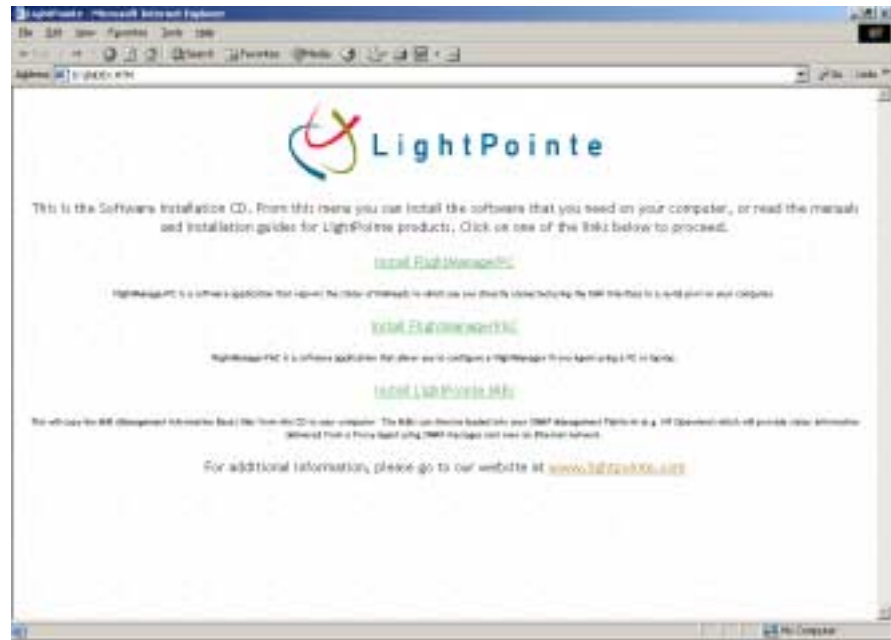


Figure 3-1: Software Installation Screen

- Step 2** Select the **Install FlightManagerPAC**, which will load the software application on your computer and present the InstallShield Wizard window.



Figure 3-2: Installation Wizard Screen

Click the **Next** button to continue loading the software.

- Step 3** The License Agreement screen will then appear.

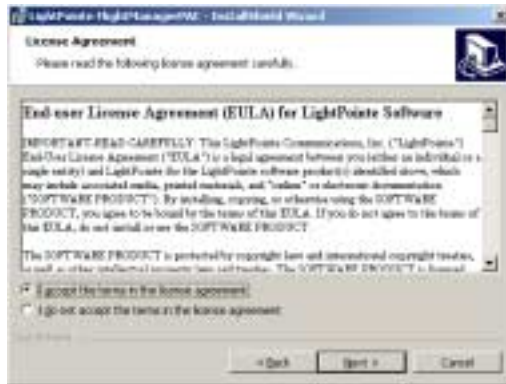


Figure 3-3: License Agreement

Click the **I accept the terms in the license agreement** button and then click the **Next** button to continue. Not accepting the license agreement will terminate the software loading process.

- Step 4** The **Customer Information** screen will then appear.

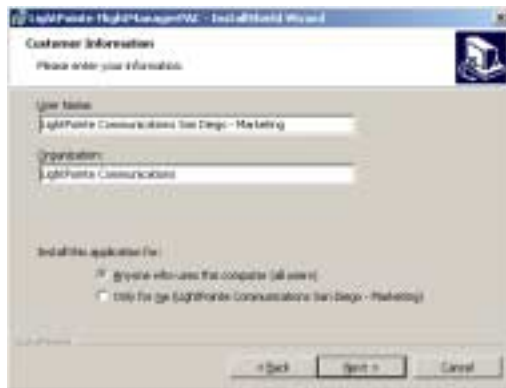


Figure 3-4: Customer Information Screen

Enter a user name and organization in the spaces provided and identify who may access the application, then click the **Next** button to continue.

Step 5 The **Destination Folder** screen will then appear.



Figure 3-5: Software Destination Folder Screen

The selection default will place the folder in the Program Files. Clicking the Change button and identifying the desired location can change the destination. After identifying the destination, click the **Next** button to continue.

Step 6 The **Ready to Install** screen will then appear

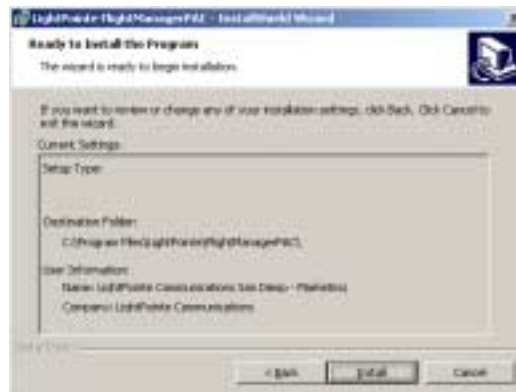


Figure 3-6: Ready to Install Screen

The installation settings information is displayed. Click the **Back** button if any changes need to be made, the **Cancel** button to exit the Wizard or the **Install** button to complete the software installation on the computer.

Step 7 Click **Finish** to complete the installation and exit the InstallShield Wizard.



Figure 3-7: InstallShield Wizard Complete Screen

3.2. FMG AIC LDX Connection (Port and Device Tabs)

- Step 1** Connect the PC to the RS-232 connector on the FMG AIC LDX using the supplied serial cable. Plug the FMG AIC LDX into the power outlet.

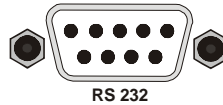



Figure 3-8: RS-232 Connector

If at any time the FlightManager PAC configuration process is stopped at the computer (software shut down, computer powered off, etc.), only those values saved into non-volatile memory will be present when the system is reconnected. After any changes are made to any information in any of the display taps, the Green “check mark” button must be clicked to save the information into non-volatile memory.



Figure 3-9: Green “Check Mark”

The shutting down of the software or the configuring computer will NOT have any impact on the display lights on the FlightManager AIC.

- Step 2** Start the FlightManager software from the **Start** button on the workstation. The normal path and default for the program is Start/LightPointe/FlightManagerPAC. Choose the appropriate RS-232 port in the **Port** tab (e.g. COM1). Establish the connection by clicking the **Store and Activate** button  next to the port block.

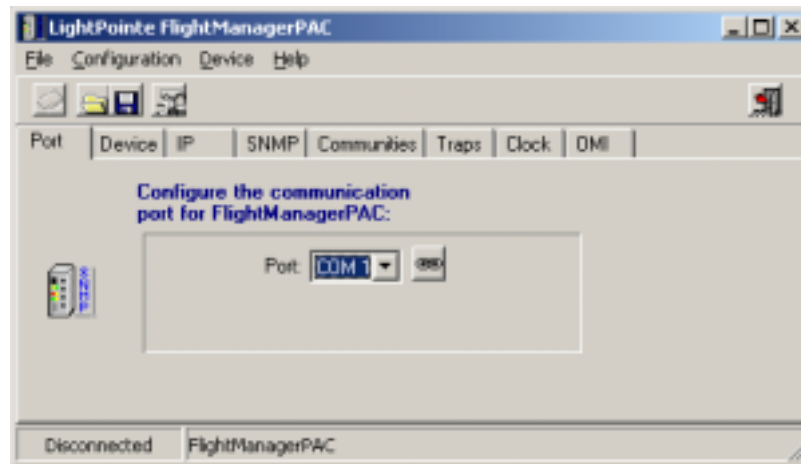


Figure 3-10: Port Setting Tab

Until a valid COM port is selected, none of the other tabs will be available. If invalid port is selected, an error message is received indicating **“Cannot open desired COM port, please choose another one”**.

- Step 3** When the valid COM port is selected the **Device** tab automatically

appears with the following typical display:



Figure 3-11: Device Information Tab

This information can also be retrieved by pressing the **Re-read** button (yellow circular arrow). If you request support from Customer Service, you will need to provide the FMG AIC LDX software version listed on the **Device** tab.

Note: If "Device not for sale" appears instead of the serial number, the device needs service. Please contact your supplier or LightPointe.

If the **Reset** button is pushed, the FMG AIC will re-start, which will cause lights to cycle again and the re-start process could take up to 25 seconds. After the re-start, the same window will appear.

3.3. FMG AIC LDX Settings

Parameters that can be configured on the FMG AIC LDX are described in the following sections.

Note: All inputs only become valid to the device after pressing the green check button on each FlightManager software page.

Every parameter modification will be stored automatically in the FMG AIC LDX nonvolatile memory. This process is acknowledged with a short flashing of the red Fail LED.

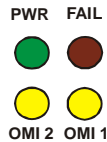


Figure 3-12: Fail LED

If the Fail LED remains lit, check the configuration and perform the steps indicated in Section 3.2. If you continue experiencing difficulties, contact Customer Service.

If desired, your supplier can perform the initial configuration for you. Please contact your supplier's Customer Service department to make the appropriate arrangements.

3.3.1. IP Settings Tab

- Step 1** The most important parameter for the FMG AIC LDX is its IP Address. Define a unique address in the local network and enter it in standard decimal dotted notation with four number sets as shown in Figure 3-13.
- Step 2** The *Subnet Mask* is an IP address mask (see Figure 3-13). For any destination address, the FMG AIC LDX masks source and destination address with the *Subnet Mask*. If the results are equal, then the destination address is within the local network. Otherwise the IP frame has to be sent to a gateway if it is defined.
- Step 3** Set the IP address of the *Default Gateway* that is to be used if the destination address is outside the local network. Enter the address in dotted decimal notation. The address 0.0.0.0 deconfigures the *Default Gateway* and all non-local IP addresses are suppressed.
- Step 4** *Type of Service* is a decimal number to classify the local network traffic for routers. The valid range is 0–255, but only the four most significant bits are used. Normally, the value 0 is correct. For more information ask your network administrator.
- Step 5** The *Time to Live* value defines how many routers can be passed with the IP frame. The maximum is 255, and the minimum is 1. Every router reduces the value. If the value reaches 0, the frame will be discarded. This counter is necessary to avoid endless loops between routers.

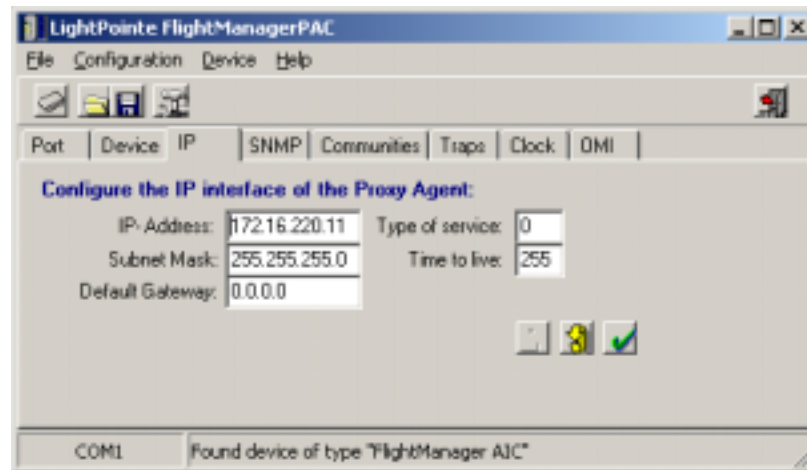


Figure 3-13: IP Address Tab

- Step 6** After making changes to any of the fields on the **IP** tab, click the **OK** (Green “check mark”) to store the values into non-volatile memory in the Proxy Agent. The red light on the **Fail** LED will momentarily illuminate, indicating that the change has been made. Verification of the change status can be accomplished by clicking the **Reload** button, which will refresh the values on the screen with the Proxy Agent’s internal values.

3.3.2. SNMP Tab

- Step 1** Use the SNMP Tab to set standard MIB entry strings. These strings are also accessible through SNMP in the system tree in MIB-II (RFC 1213).

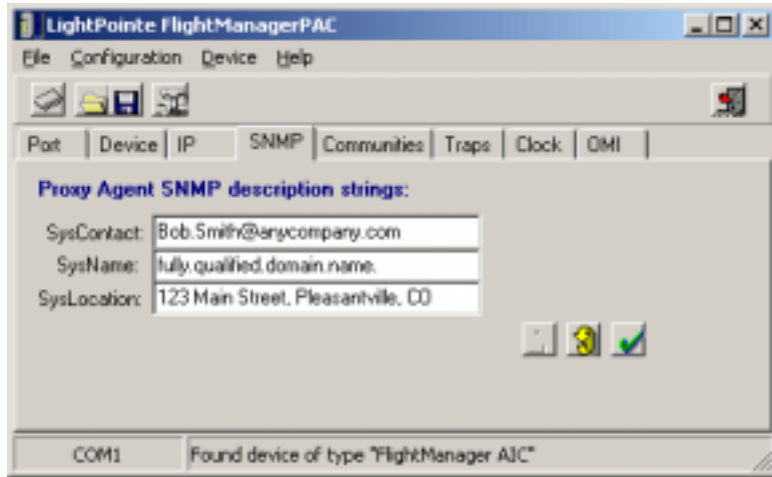


Figure 3-14: SNMP Tab

SysContact is normally a text identification of the contact person responsible for the proxy agent and information on how to contact this individual. The example shows a contact person's email address, but the entry could include a phone number, pager, etc. This field is limited to 255 characters.

SysName is, by convention, normally an administratively assigned, fully qualified domain name for the proxy agent. The screen in Figure 3-14 shows an example of this naming convention. Note there should be a "period" at the end of the name given **SysName**. Since not all companies will assign a fully qualified domain name to their proxy agents, this field could be used for any type of text entry that would help to identify the unit and/or its location. This field is limited to 255 characters.

SysLocation is a text entry to identify the physical location of the Proxy Agent. This field is limited to 255 characters.

- Step 2** After making changes to any of the fields on the **SNMP** tab, click the **OK** (Green "check mark") to store the values into non-volatile memory in the Proxy Agent. The red light on the **Fail** LED will momentarily illuminate, indicating that the change has been made. Verification of the change status can be accomplished by clicking the **Reload** button, which will refresh the values on the screen with the Proxy Agent's internal values.

3.3.3. Communities Settings Tab

- Step 1** The **Communities** tab is used to enter community names for read access, write access, and traps (alarms). Community strings are like passwords for SNMP access; the user must have the correct read and write community name to be able to access SNMP variables. Following are the default values for the FlightManager PAC; these names should be changed to conform to the requirements of the network management system in which the Proxy Agent resides.

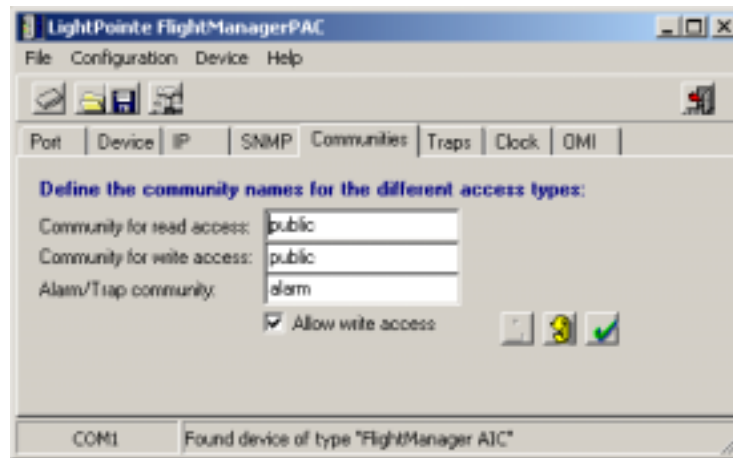


Figure 3-15: Communities Tab

Community for read access is set to allow operators that have this access to submit Get-requests and read a value from the Proxy Agent.

Community for write access normally will have a community name that differs from the read access community. Operators with this access can submit Set-requests to the Proxy Agent.

The **Alarm/Trap community** name defined in this tab would be included in any traps generated by the Proxy Agent if an alarm condition occurs.

Allow write access defaults to allow SNMP Set-requests. If the FMG AIC LDX SNMP variables need to be protected against illegal write access, un-checking the **Allow write access** block will prevent any operators from performing Set-requests.

- Step 2** After making changes to any of the fields on the **Communities** tab, click the **OK** (Green "check mark") to store the values into non-volatile memory in the Proxy Agent. The red light on the **Fail** LED will momentarily illuminate, indicating that the change has been made. Verification of the change status can be accomplished by clicking the **Reload** button, which will refresh the values on the screen with the Proxy Agent's internal values

3.3.4. Traps Settings Tab

Step 1 If a link head connected to the FMG AIC LDX changes its operational state, the FMG AIC LDX can generate alarm messages (traps) on its behalf. Up to 10 trap destination IP addresses may be entered in the **Traps** tab.

- Enter the destination address(es) (decimal dotted IP address) that should receive trap messages in the **Edit address** line below the IP list box.
- After a valid IP address is entered in standard decimal dotted notation, click the **Store trap IP address** button (page and Blue checkmark box or "Set" button) next to the IP address. If the IP address is displayed in red in the **Edit address** field, the syntax for the address is wrong and must be corrected.
- The **Send traps** default value is checked (on). If this value is un-checked (turned off), then traps will no longer be sent to any of the **Trap destination IP address** destinations. This feature should be disabled only after consulting with the Network Management System Administrator to ensure that NOT receiving traps is consistent with the overall network management policy.

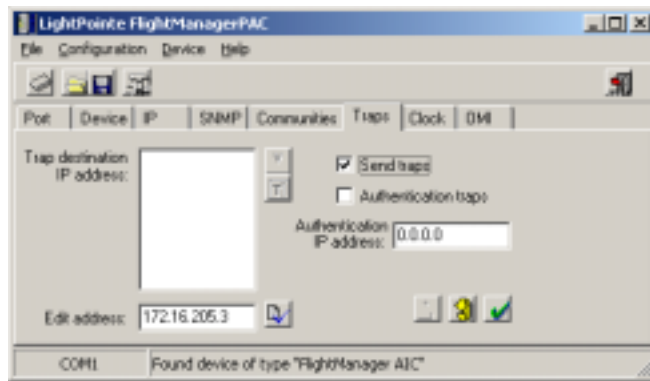


Figure 3-16: Traps Tab

When the **Store trap IP address** is checked, the value will appear in the **Trap destination IP address** window as illustrated below.

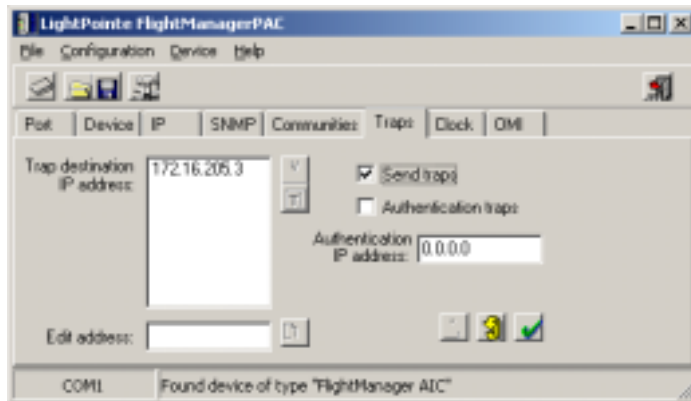


Figure 3-17: Traps Tab With Trap Destination

Step 2 The default value for **Authentication traps** is un-checked (off). If an authentication trap is desired, then a valid **Authentication traps IP address** must be entered. Enabling **Authentication traps** and providing a valid address will result in an authentication trap being sent if a "Get-" or "Set-request" is made on the proxy agent when a network user attempts to access the FMG AIC LDX with wrong community strings. If the address is set to 0.0.0.0 or the box is unchecked, no authentication traps will be generated.

Note: Communities act as passwords; authorized users should know the correct password and should configure their SNMP browsers with the correct names. If an unauthorized user tries to access or modify data, he starts with a password like "public". With authentication traps enabled, the network administrator will receive information about this attack.

Step 3 Once one or more **Trap destination IP address** entries are displayed, each entry can be erased or edited by selecting the "erase" button (scissors) or "edit" button ("T"). If the "erase" button is selected, the value will be deleted. If the "edit" button is selected, the selected value will display in the **Edit address** field, where it can then be modified. After modifying the entry click the **Store trap IP address** button (page and Blue checkmark box or "Set" button) next to the IP address.

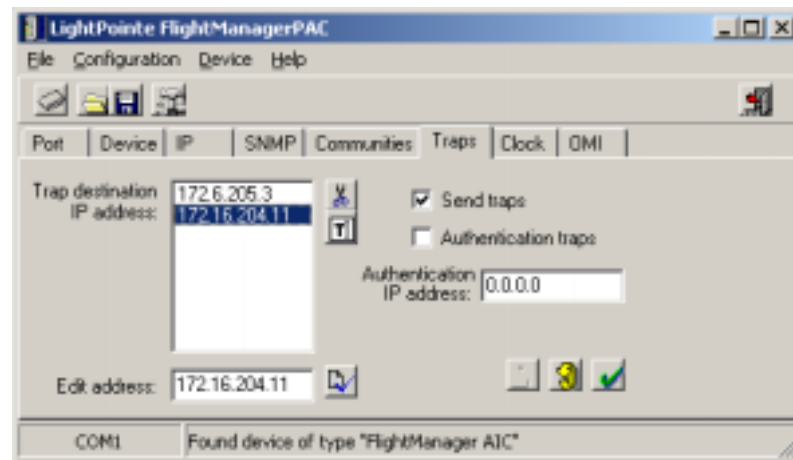


Figure 3-18: Editing the Traps Tab

Step 4 After making changes to any of the fields on the **Traps** tab, click the **OK** (Green "check mark") to store the values into non-volatile memory in the Proxy Agent. This is particularly important on this tab, as The red light on the **Fail** LED will momentarily illuminate, indicating that the change has been made. Verification of the change status can be accomplished by clicking the **Reload** button, which will refresh the values on the screen with the Proxy Agent's internal values.

3.3.5. Clock Settings Tab

- Step 1** The **Clock** tab is used to set date and time information. The Proxy Agent contains a Real Time Clock to provide date and time information with any trap notification. The clock is buffered with a 10-year life, 3 Volt lithium cell battery. When the **Clock** tab is selected, the following screen will appear:

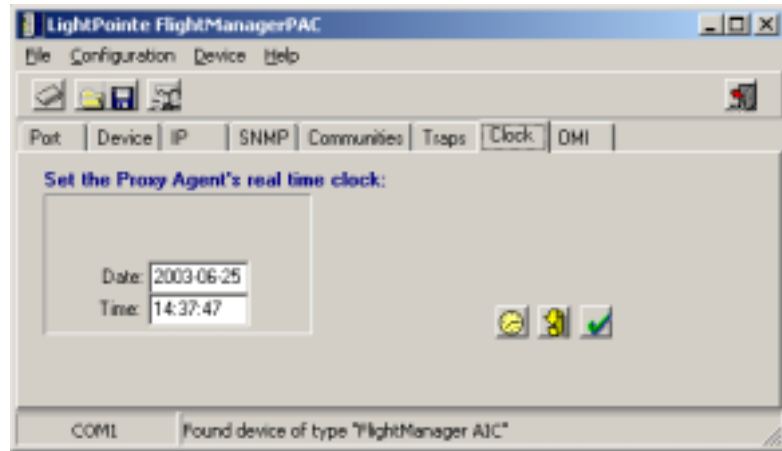


Figure 3-19: Clock Tab

When this tab is first selected, the current time on the Proxy Agent's real time clock is displayed. If the time and/or date are not accurate, they can be manually set in this window. Once this time is set accurately the **OK** (Green "check mark") button should be clicked to update the Proxy Agent real time clock. Once the clock time is set accurately or if it is accurate when initially displayed, the **Reload** button should be selected. On this tab, the **Reload** button can be kept in the selected state. After clicking this button, the clock information is read from the Proxy Agent and displayed on the screen. Clicking the button again stops the polling operation. Please see the following for an example of the Proxy Agent real time clock display. Note that the Date and Time are "grayed out", which means they are NOT available to be adjusted manually when the **Reload** button is selected.

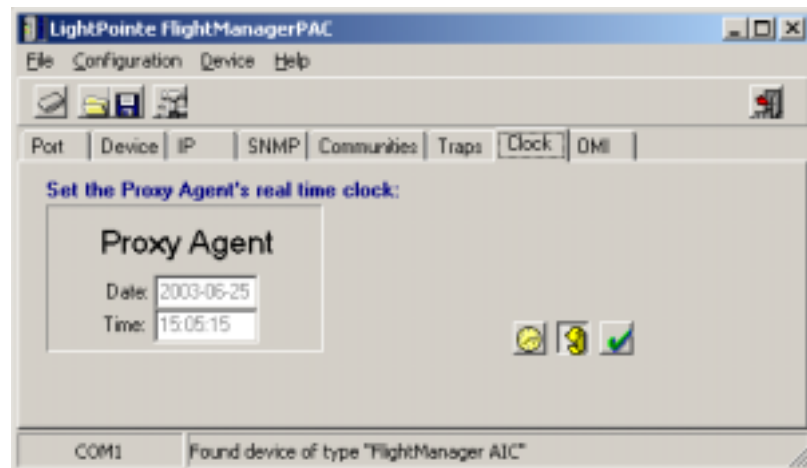


Figure 3-20: Proxy Agent Clock Tab after being set

- Step 2** To set the Proxy Agent's real time clock to the current time on the PC or workstation that is being used to configure the device, select the **Clock** button. This will cause clock polling from the PC clock to be displayed. To store this value into the Proxy Agent's real time clock, click the **OK** (Green "check mark") button. If the **Reload** button is then selected, it will display and poll the Proxy Agent real time clock that has been updated with the PC clock display. Following is the **Clock** tab with the **Clock** button selected.

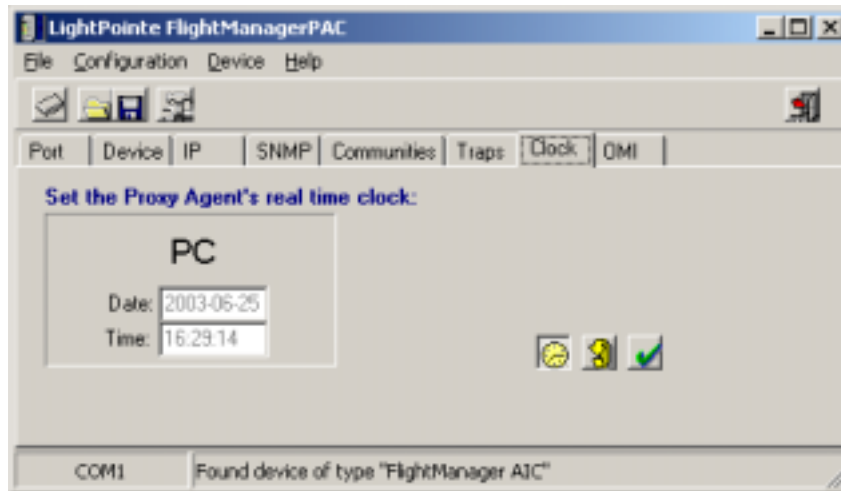


Figure 3-21: Proxy Agent Clock Tab set to PC Clock Time

3.3.6. OMI Settings Tab

Step 1 The **OMI** tab provides **Slot, Port, Connection State** and **Description** information in table format. The **Slot, Port** and **Connection State** are reported information. The **Description** is the only field on this tab that can be edited. The OMI tab provides a field to enter a description for the link heads connected to the OMI ports of the FMG AIC LDX. The description is stored in the FMG AIC LDX and is also accessible through SNMP.

If an OMI connection has been established, the recognized device type is displayed in the **Connection** fields ("Not connected" in this image).

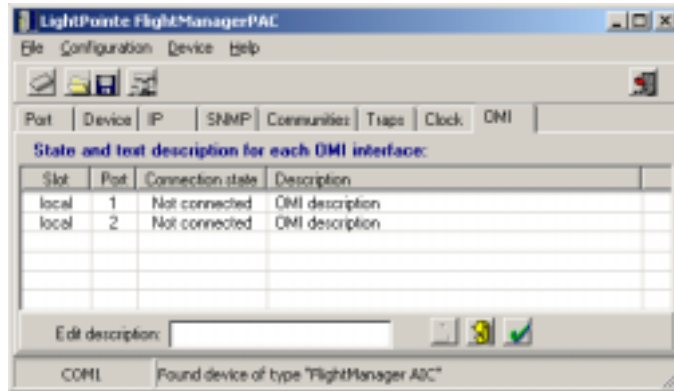


Figure 3-22: OMI Tab

- **Slot** – Under the present software design, this will always report "local"
- **Port** – Identifies the two ports on the FMG AIC
- **Connection state** – If a link head is connected to the port, its type will be listed here, otherwise this value will report "Not connected"
- **Description**– A text description that may be entered to assist in identification of the link head.

Step 2 When a table row is selected, the value in the **Description** field for that row will be displayed in the **Edit Description** and the description can be modified to present information that may be helpful in identification of the link head.

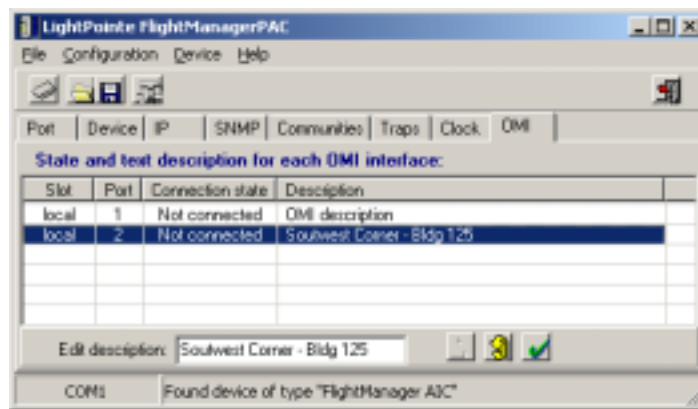


Figure 3-23: OMI Tab Edit Description

Step 3 After making changes to any of the fields on the **OMI** tab, click the **OK** (Green "check mark") to store the values into non-volatile memory in the Proxy Agent. This is particularly important on this tab, as The red light on the **Fail** LED will momentarily illuminate, indicating that the change has been made. Verification of the change status can be accomplished by clicking the **Reload** button, which will refresh the values on the screen with the Proxy Agent's internal values.

3.3.7. Help Command

The FlightManager software has a *Help* command on the main menu. This command will provide basic information (contents page). For context sensitive help press *the F1* key.

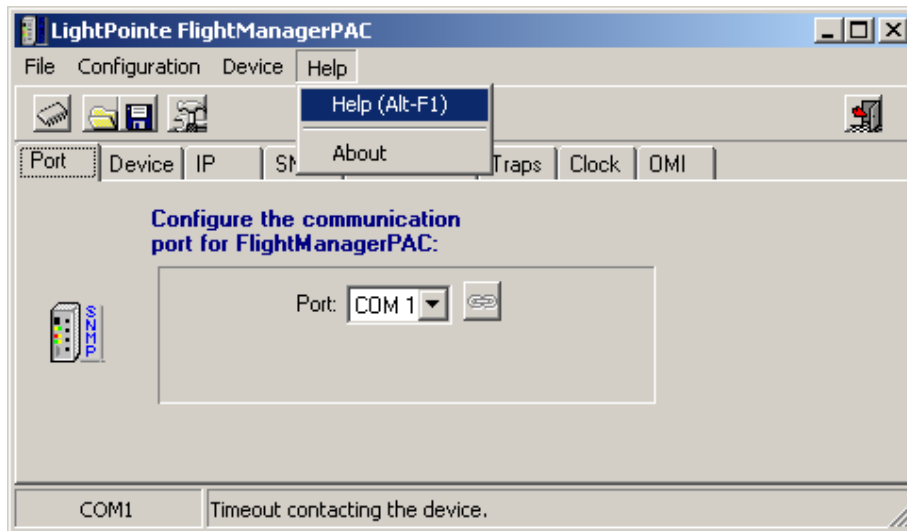


Figure 3-24: Main Menu Help

3.4. Using the Configuration Database

The PC software stores the current configuration values in a database. Use File/Store Configuration (Figure 3-25) or the Save button to store the current configuration as a file.

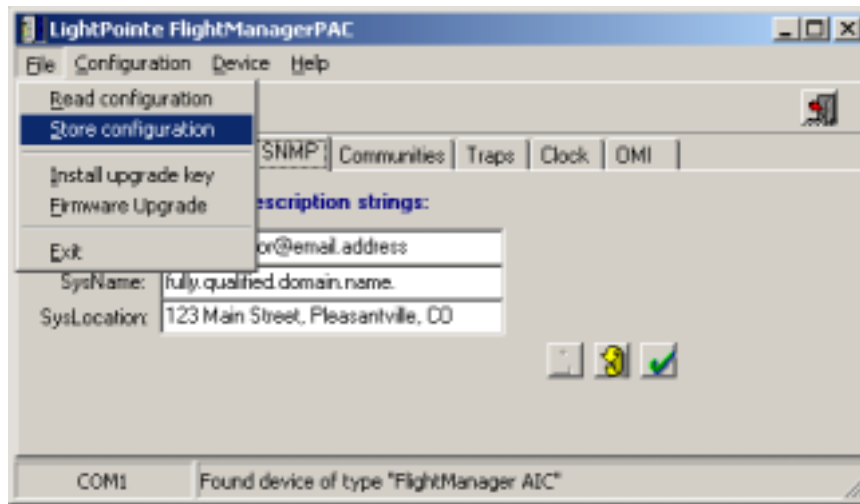




Figure 3-25 Store Configuration

Press the Load button or select File/Read Configuration (Figure 3-26) to load the configuration values into the Management Rack application.

- Once you have successfully loaded a configuration, the  button will be available on each configuration page.
- Press  to display stored configuration values in the data fields of any Management Rack page.

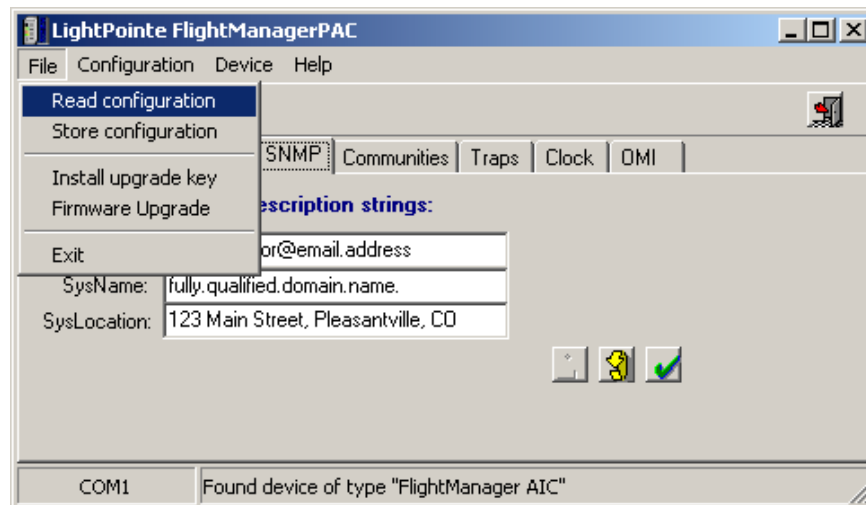


Figure 3-26 Read Configuration

3.5. Firmware Download

The FMG AIC LDX allows a firmware download to update the device firmware with new features. The download files are provided in a binary packed and encrypted format with a **.TD1** file extension. Contact Customer Service or your supplier to acquire current firmware in the correct data format for your site.

Before you start to download the new firmware, please check your upgrade key. The FMG AIC LDX may be shipped with a limited upgrade key that will only allow the download of any FMG AIC LDX firmware with a date prior the expiration date of the key. You may not be able to download firmware to the FMG AIC LDX without a valid key.

3.5.1. Download Firmware File

Select **File/Firmware Upgrade** from the main menu, and the available TD1 file(s) will be displayed. The integrated circuit icon button on the top menu bar has the same effect. A file load dialog appears to select the file.

After selecting a TD1 file the file will be checked for encryption and checksum. If both are valid, the FMG AIC LDX is asked to accept the firmware download. If the FMG AIC LDX accepts the file (the upgrade key is valid), the old firmware in the FMG AIC LDX non-volatile memory is cleared and replaced by the new firmware.

Note: Try to avoid aborting the download process once it begins. If you need to abort the process, click the LED button in the download dialog.

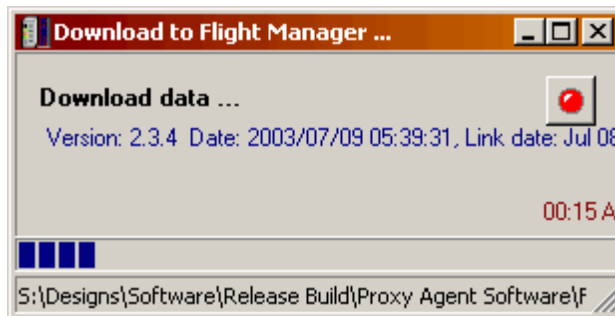


Figure 3-27: Download dialog

The download form displays the new firmware label, revision number and the hardware revision the firmware needs to run.

After downloading the file, the FMG AIC LDX re-boots with the new firmware.

3.5.2. Boot Process

When the FMG AIC LDX is turned ON or re-booted, the boot loader starts. The first task of the boot loader is to check the hardware and file system. While the boot loader is initializing, the yellow OMI LEDs on the FMG AIC LDX are ON for most of the time. The boot loader pauses for three seconds to allow the user to initiate a firmware download before the application firmware is started, if needed. During this pause, the red FAIL LED flashes.

The application firmware is then loaded. The yellow OMI LEDs on the FMG AIC LDX will be ON for most of the time. When the application firmware has been successfully loaded only the PWR LED, RX, OMI1 and OMI2 lights should remain on.

3.5.3. Upgrade Key

Before new software is accepted for download, its internal software creation date is checked against the upgrade key stored in the FMG AIC LDX. The FMG AIC LDX is allowed to download any software older than the expiration date of the key.

If the key has expired, please contact Customer Service to receive a new key. You must provide the serial number of your device. You will receive a new key that is only valid for a device with this serial number. Do not try to load it into other devices!

The load key is a binary file with a **.KEY** extension. Select **File/Install Upgrade Key** from the main menu to load the key file. An open file dialog appears for selection of the key file. When the new file is opened, the upgraded key information will be displayed. The serial number must match the serial number displayed in the FlightManager software for the current connected device. The new expiration date is displayed (e.g. 10/2001).

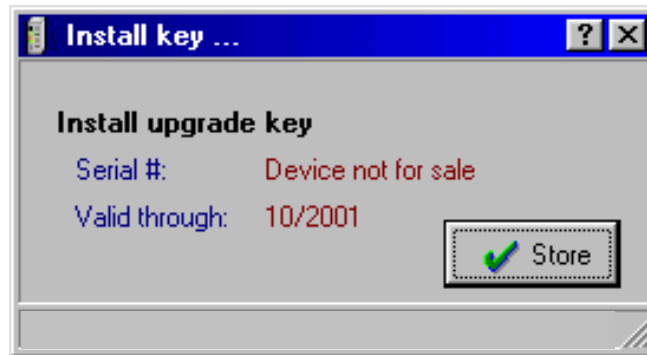


Figure 3-28: Upgrade Key dialog

It is not possible to modify file dates or to set the FMG AIC LDX and/or PC clock to an older date to keep an expired key valid. The key is an internal value of the FMG AIC LDX and of the software download file.

Note: Please contact your supplier to get a new key before the current key expires. It may take several days to generate a new key.

Note: Download via "IP-Net" is only available if the FMG AIC LDX is running normally. If it remains in boot loader mode (flashing Error LED), the serial port must be used for the software download.



4. Using SNMP with the FlightManager FMG AIC LDX

This chapter covers the following main topics:

- Loading the MIBs
- SNMP Status Checking
- Setting OMI Variables through SNMP
- FMG AIC LDX system events (traps)

4.1. Loading the MIBs

The FMG AIC LDX is supplied with a private MIB (Management Information Base) required for NMS communication with the link heads you have installed. The MIB describes the structure of the specific variables and traps for the link heads attached to the FMG AIC LDX.

Note: Each model of LightPointe link head will be shipped with the MIBs required for its operation.

To load the LightPointe MIB on your NMS:

Step 1 Upload the supplied FMG AIC LDX MIB to your network management system. Refer to your EMS/NMS documentation to complete the load procedure.

Step 2 Depending on your system, all resident MIBs may need to be recompiled. This process may take several minutes.



Open the MIB browser on your NMS. The MIB for the specific product will be located under the *private.enterprises.lightPointe* branch (see Figure 4-1).

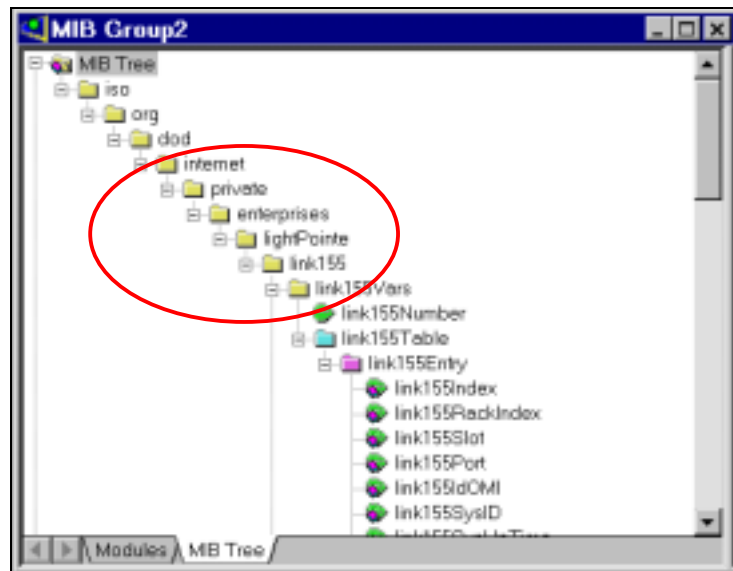


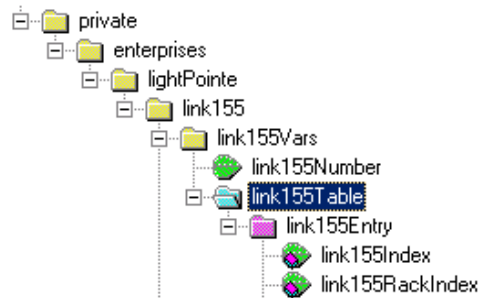
Figure 4-1: Typical MIB Browser View

Additional configuration files may be required, depending on the network management system that you are using. Please check with your network system administrator.

4.2. SNMP Status Checking

The configuration of the FMG AIC LDX appears under the *link155Vars* branch of the network tree.

Note: These are typical MIB browser views. Your view may vary.



Open the *omi1* or *omi2* tree in your browser. A secondary window may show the current FMG AIC LDX configuration settings.

Name	Syntax	Value
link155Index.1.0	int32	1
link155RackIndex.1.0	int32	0
link155Slot.1.0	int32	standAlone(0)
link155Port.1.0	int32	upper(1)
link155IdOMI.1.0	octets	Barnes Cyn <-> Tech Center
link155SysID.1.0	octets	Device: OMI FL 04.03, Ser #: Mu155F05..
link155SysUpTime.1.0	timeticks	68 days 21h:04m:47s.00th
link155SysTemperature.1.0	int32	31
link155SysHeater.1.0	int32	off(1)
link155SysTxTestGenerator...	int32	off(1)
link155AirRxLevel.1.0	int32	10
link155AirRxOverload.1.0	int32	no(1)
link155AirRx.1.0	int32	signal(1)
link155AirTx.1.0	int32	signal(2)
link155AirTxPower.1.0	int32	high(2)
link155AirLocalLoop.1.0	int32	off(1)
link155AirRemoteLoop.1.0	int32	off(1)
link155AirSystemTest.1.0	int32	fail(1)
link155NetRx.1.0	int32	signal(2)
link155NetTx.1.0	int32	signal(2)
link155NetLocalLoop.1.0	int32	off(1)
link155NetCableTest.1.0	int32	fail(1)

Figure 4-2: Typical MIB Browser View of Parameter Settings

Most MIB browsers will also allow you to verify the correct SNMP version, community, and port assignments, as shown in Figure 4-3.

Note: The SNMP Community settings on the NMS must agree with those on the FMG AIC LDX. Check this in your NMS.



Figure 4-3: Verifying SNMP, Community, and Port Settings

4.3. Checking and Setting OMI Variables through SNMP

The *microVars* branch contains private variables for each of the two OMIs.

Note: The SNMP variables available on your system will vary based on which model link head is attached to the FMG AIC LDX. The specific variables available on your system are contained in the MIB.

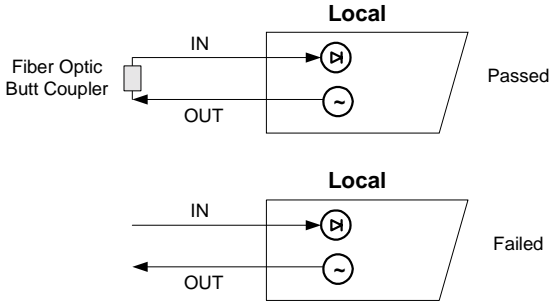
4.3.1. Status variables

The NMS can be used to view many of the link head and OMI settings. These variables are generated by the system and *cannot* be modified.

Table 4-1: LightPointe SNMP Status Variables

Note: Each variable name contains the speed of the link head located at the *###* string (e.g., 20, 52, 155, 622, 1.25G, 1.42G, 2.5G) in the variable name.

For (###)	Indicator	Description
52 and 155	link###AirSystemTest	<p>The active system test takes place when the link head is switched into remote air loopback mode and then into a concurrent test mode.</p> <p>This test succeeds if the transmitted test signal was looped back by the remote link head and received error-free at the local link head.</p> <p><i>OK</i> The active system test is successful.</p> <p><i>Fail</i> The active system test is failing.</p>
20, 52, 155, 622, 1.25G, 1.42G, 2.5G	link###Number	The number of OMI ports configured for the current SNMP agent. This value is two for the FMG AIC LDX.
20, 52, 155, 622, 1.25G, 1.42G, 2.5G	link###Index	A unique number assigned to each OMI. For the FMG AIC LDX, this value corresponds to the OMI number.

For (###)	Indicator	Description
20, 52, 155, 622, 1.25G, 1.42G, 2.5G	link###Slot	The Slot position in the rack. This value is zero for the FMG AIC LDX.
20, 52, 155, 622, 1.25G, 1.42G, 2.5G	link###RackIndex	A unique number for each card in the rack. This value is zero for the FMG AIC LDX. <i>Zero</i> Main Rack <i>Other</i> Expansion cards in FMG AIC LDX8 applications.
20, 52, 155, 622, 1.25G, 1.42G, 2.5G	link###Port	OMI port number on the FMG AIC LDX, or on the expansion card in FMG AIC LDX8 applications.
52 and 155	link###NetCableTest	The cable test takes place when the link head is placed into local loopback mode and then into a concurrent test mode.  <i>Ok</i> The cable test has succeeded. <i>Fail</i> The cable test has failed.
52 and 155	link###SysHeater	The link head heater turns on when the link head's internal temperature is low. <i>On</i> The heater is on. <i>Off</i> The heater is off.
20	Link###AirTxTest	Status of the link head's air interface test signal generator. <i>On</i> Link head is transmitting test data signal. <i>Off</i> Link head is not transmitting test data signal.
20, 52 and 155	link###NetRx	The status of the Data In LED on the link head.

For (###)	Indicator	Description
		<p><i>Signal</i> Data is being received by the link head from the <i>Data In</i> fiber terminal.</p> <p><i>Loss</i> The link head is not receiving data.</p> <p><i>Test</i> The link head is in test mode.</p>
20, 52, 155, 622, 1.25G, 1.42G, 2.5G	link###AirRxLevel	The optical signal level at the link head receiver displayed in bars (as on the rear panel of the link head). This value ranges from 0 (low) to 10 (high).
20, 52, 155, 622, 1.25G, 1.42G, 2.5G	link###AirRx	The status of the free space optical reception on the link head. May indicate a loss of signal/synchronization condition.
		<p><i>Loss/syncloss</i> The optical signal received from the free space side is too weak or low in quality to recover data from it.</p> <p><i>Signal/sync</i> The signal received from the free space side is good.</p>
52 and 155	Link###SysID	The hardware and internal software versions and serial number of the link head.
52 and 155	link###SysUpTime	The time elapsed since the link head was turned on.
52 and 155	link###NetTx	The status of the Data Out LED on the link head.
		<p><i>Signal</i> Data received over the free space connection is being sent to the <i>Data Out</i> fiber terminal, or an Active System test is being conducted.</p> <p><i>Off</i> The link head is not transmitting data to the <i>Data Out</i> fiber terminal.</p>
52, 155, 622, 1.25G, 1.42G, 2.5G	link###AirRxOverload	The status of the Overload LED on the link head.
		<p><i>On/yes</i> The link head is receiving so much free space optical power that it cannot recover data from it.</p> <p><i>Off/no</i> The receiver is not overloaded.</p>
52 and 155	link###AirTxPower	The setting of the link head transmission power switch.

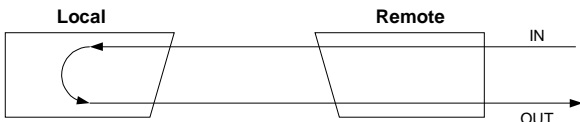

For (###)	Indicator	Description
(except Strata)		<p><i>Low</i> The link head is in its normal low power transmission mode.</p> <p><i>High</i> The link head is in its high power transmission mode.</p>
52 and 155	link###Temperature	<p>The internal temperature of the link head in °C. This value can be range from -127 to +128 °C.</p> <p>Note: The reportable temperature range is larger than the acceptable operating range of the link head.</p>
52 and 155	link###AirTx	<p>The status of the transmission laser. This should be On whenever the link head is receiving data from the fiber interface or when it is in Test mode.</p> <p><i>Signal</i> The laser is transmitting data or a test signal.</p> <p><i>Off</i> The laser is not transmitting a signal.</p>
20 622, 1.25G, 1.42G, 2.5G	link###AirTxSignal link###AirTxData	<p>The status of the link head's Tx Data LED.</p> <p><i>On</i> The link head is transmitting data across the free space link. This occurs when the link head is receiving data from the fiber interface.</p> <p><i>Off</i> The link head is not transmitting data across free space.</p>
622, 1.25G	link###AirTxIdle	<p>The status of the link head's Tx Idle LED.</p> <p>Note: This value is the inverse of the ledTxData# value.</p> <p><i>On</i> The link head is transmitting an idle signal across the free space link. This occurs when the link head does not receive data from the fiber interface.</p> <p><i>Off</i> The link head is not transmitting an idle signal across free space.</p>

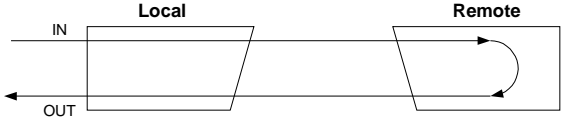
4.3.2. Setting variables

Your NMS can be used to modify some of the link head settings. These variables may also be queried for current settings.

Note: Each variable name contains the speed of the link head located at the ### string (e.g., 20, 52, 155, 622, 1.25G, 1.42G, 2.5G) in the variable name.

Table 4-2: FMG AIC LDX SNMP Settings

For	Indicator	Description
52 and 155	link###AirLocalLoop	<p>This variable can be used to check the status of the local air loop, where data received by the local link head's free space interface is transmitted back over free space.</p>  <p>This mode is switched on by turning on the remote air loopback mode from the remote link head.</p> <p><i>On</i> Local air loopback mode is On. Data received by the free space interface is sent back over free space.</p> <p><i>Off</i> Local air loopback mode is Off.</p>
52 and 155	link###NetLocalLoop	<p>This setting is used to switch the link head in and out of local loopback mode, where data received by <i>Data In</i> is looped back to <i>Data Out</i>.</p>  <p>This setting can only be controlled if the current status of the link head does not prohibit control of the local loop (Refer to your link head manual).</p> <p><i>On</i> Local loopback mode is On. Data received by the <i>Data In</i> fiber connection is sent back through <i>Data Out</i>.</p> <p><i>Off</i> Local loopback mode is Off.</p>
20, 52, 155, 622, 1.25G, 1.42G, 2.5G	link###IdOMI	<p>A user-defined system ID for the name and location of the connected link head. This ID can be up to 63 characters long.</p>

For	Indicator	Description
52 and 155	link###AirRemoteLoop	<p>This setting triggers the remote side to go into Local Air Loop, where data received by the remote link head's free space interface is transmitted back to the local link head.</p>  <p>This state can only be controlled if the current operating status of the link head does not prohibit control of the remote loop (Refer to your link head manual). Communication with the remote side to control the loop takes place over the free space path.</p> <p><i>On</i> Remote air loopback mode is on. The remote link head's free space interface is set to loop back data received from the local link head.</p> <p><i>Off</i> Remote air loopback mode is off.</p> <p><i>InProgress</i> The link head is in air loopback mode.</p>
52 and 155	link###TxTestGenerator	<p>Send a test signal from the link head. This signal consists of a pulse-width modulated 1kHz tone. With headphones, it can be used to accurately align the link heads (Refer to your FlightTransport User Manual).</p> <p><i>Running</i> The link head is in Test mode.</p> <p><i>Off</i> The link head is not in Test mode.</p>

4.4. FlightManager FMG AIC LDX System Events

If traps are turned on (page 3-9), the FMG AIC LDX transmits the traps defined in the link head MIB. See Table 4-3 for a description of the traps available on a typical FMG AIC LDX.

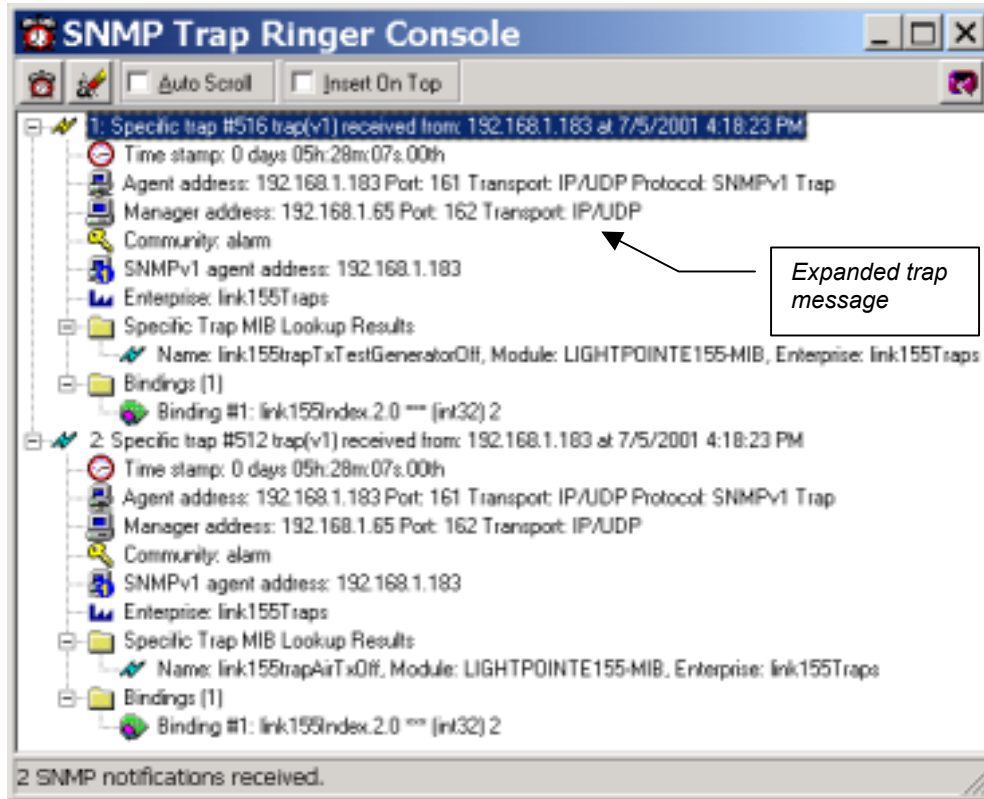


Figure 4-4: FMG AIC LDX Trap Messages

Expand the view in your NMS to see the details of any received FMG AIC LDX traps. An expanded trap typically shows the following information:

- Time stamp* When the trap occurred in time ticks
- Agent address* IP address of the agent which sent the trap
- Manager address* The destination IP address of the trap
- Enterprise* Identifies the type of object causing the trap
- Specific trap id* Information about the received trap

When a trap is triggered, take the appropriate action to resolve the indicated condition.

Table 4-3: FMG AIC LDX Traps

Trap Name	Trap Description
link###OMINot Connected	A link head was disconnected from an OMI port, or an OMI transmission error has occurred. If the link head was not disconnected from the OMI, this trap may indicate a fault in the OMI fiber optic cabling or a loss of link head power.
link###OMIConnectedTrap	A link head was connected to an OMI port and OMI communications are normal.

Table 4-4: Link Head Traps

Trap	Description	20	52	155	622	All Gigs
link###TrapAirLocalLoopOff	The link head has been switched out of local air loopback mode.		✓	✓		
link###TrapAirLocalLoopOn	The link head has been switched to local air loopback mode. Data received by the link head's free space interface is transmitted back through free space.		✓	✓		
link###TrapAirRemoteLoopOff	The link head has been switched out of the remote loopback mode.		✓	✓		
link###TrapAirRemoteLoopOn	The link head has been placed in remote loopback mode. Data received by the remote link head's free space interface is looped back to the local link head.		✓	✓		
link###TrapAirRxLevelEnough	The link head's received free space optical power has recovered to above the critical level.	✓	✓	✓	✓	✓
link###TrapAirRxLevelLow	The link head's received free space optical power has dropped below the critical level. This is a warning that the free space link is nearing failure, possibly because of fog or a beam alignment problem.	✓	✓	✓	✓	✓
link###TrapAirRxLoss	The link head has stopped receiving data from free space.	✓	✓	✓		

Trap	Description	20	52	155	622	All Gigs
link###TrapAirRxOverloaded	The link head's receiver has become overloaded. It is receiving too much free space optical power and cannot recover data from the signal.		✓	✓	✓	✓
link###TrapAirRxOverloadFinished	The link head's receiver has recovered from its overload condition.		✓	✓	✓	✓
link###TrapAirRxSignal	The link head has started receiving data from free space.	✓	✓	✓		
link###TrapAirRxSyncLoss	The link head has lost synchronization with the free space signal.				✓	✓
link###TrapAirSyncRecovered	The link head has regained synchronization with the free space signal.				✓	✓
link###TrapAirTxDataOff	Link head has stopped transmitting data over free space. This occurs when the link head stops receiving data from the network interface.				✓	✓
link###TrapAirTxDataOn	Link head has started transmitting data over free space.				✓	✓
link###TrapAirTxIdleOff	The link head has stopped transmitting the idle signal over free space. This occurs when it starts receiving data from the fiber interface.				✓	✓
link###TrapAirTxIdleOn	The link head has started transmitting the idle signal over free space. This occurs when it stops receiving data from the fiber interface.				✓	✓
link###TrapAirTxOff	Link head transmitter has switched off.	✓	✓	✓		
Link###TrapAirTxOn	Link head transmitter has switched on.	✓				
link###TrapAirTxPowerHigh	The link head has been switched to high power transmission mode.		✓	✓		
link###TrapAirTxPowerLow	The link head has been switched to normal low power transmission mode.		✓	✓		

Trap	Description	20	52	155	622	All Gigs
link###TrapAirTxSignal	The link head transmitter has switched on and is transmitting a signal.		✓	✓		
link###TrapAirTxTestOff	Link head has stopped transmitting the test signal over free space.	✓				
link###TrapAirTxTestOn	Link head has started transmitting a test signal over free space.	✓				
link###TrapHeaterOff	The link head's internal heater has turned off.		✓	✓		
link###TrapHeaterOn	The link head's internal heater has turned on.		✓	✓		
link###TrapNetLocalLoopOff	The link head has been switched out of local loopback mode.		✓	✓		
link###TrapNetLocalLoopOn	The link head's fiber interface has been switched to local loopback mode. The data sent to the link head's <i>Data In</i> fiber terminal is sent directly back through <i>Data Out</i> .		✓	✓		
link###TrapNetRxLoss	The link head has stopped receiving data from the fiber interface.	✓	✓	✓		
link###TrapNetRxSignal	The link head has started receiving data from the fiber interface.	✓	✓	✓		
link###TrapNetTxSignal	The link head has started transmitting data out to the fiber interface. This occurs when it receives data over free space.		✓	✓		
link###TrapNetTxSignalOff	The link head has stopped transmitting data out to the fiber interface. This occurs when it stops receiving data over free space.		✓	✓		
link###TrapTxTestGeneratorOff	The link head has been switched out of test mode.		✓	✓		

Trap	Description	20	52	155	622	All Gigs
link###TrapTxTestGeneratorOn	<p>The link head has been switched to test mode. In test mode the link head transmits a 1kHz pulse-width-modulated tone over free space, which can be used for link head alignment.</p> <p>Test mode is used in conjunction with remote air loopback for an active system test and with local loopback for a cable test.</p>		✓	✓		

5. Maintenance

The FMG AIC LDX requires minimal maintenance.

- Check the connections on a periodic basis to make sure they are snug and that the fiber connections have not suffered external damage.
- Wipe the case with a soft cloth on a regular basis if the FMG AIC LDX is operated in a dusty environment.



Exercise extreme caution when working with the FMG AIC LDX. There are hazardous circuits within this product. All repair, modification, reconfiguration, and upgrading operations must be carried out only by qualified personnel who understand and are trained to work with these hazards.



6. Troubleshooting and Diagnostics

This chapter covers the following main topics:

- Operational Check
- Contact Alarm Tests
- RMA Procedure

6.1. Operational Check

Indicator	Recommendation
<p>Link LED not lit</p> <p>ACT</p> <p>Ethernet 10-Base-T</p>	<ol style="list-style-type: none"> 1. Make sure the FMG AIC LDX and link head are turned on. 2. Make sure the twisted-pair cable is firmly connected to the appropriate jacks on both sides. 3. Make sure the hub that the FMG AIC LDX is connected to, is turned on. 4. The normal connection to a hub port is made with an <i>uncrossed</i> twisted-pair cable. Check whether the hub port that you are using requires a <i>crossed</i> cable. 5. Use a known good cable.
<p>Activity LED not lit or lit constantly</p>	<ol style="list-style-type: none"> 1. Make sure the hub is connected to the rest of the network. 2. Reset the FMG AIC LDX (page 3-1)
<p>Fail LED lit</p> <p>PWR FAIL</p> <p>OMI 2 OMI 1</p>	<p>Repeat the steps listed in section 3, <i>Configuring the FlightManager FMG AIC LDX</i>.</p> <p>If the <i>Fail LED</i> continues to light, there is an internal error. In this case, contact LightPointe or your supplier.</p>

6.2. FMG Contact Alarm Tests

The FlightManager FMG AIC LDX tests progress in steps from simple power supply checks through functional performance testing when the system is connected to LightPointe FlightTransport link heads. All steps are to be performed in order. Each test step is PASS/FAIL. In most cases testing should stop once a test fails and resumed when the condition causing the failure has been corrected.

These test descriptions are based on having two link heads connected to the FlightManager FMG AIC LDX. If only one link head is connected, the test information will only apply to the alarm indicator lights for the OMI port (either OMI1 or OMI2) that is being used.

6.2.1. Power-On LED Test

This test verifies that all alarm LEDs and relays are functioning correctly at power up. When power is applied to the unit, all alarm LEDs will be lit simultaneously and then individually cycled. The steady state condition following power on and the initial self-test cycle should result in only the two OMI alarms being asserted (OMI1 and OMI2). No OMI or data input/output

cables are attached from the FMG AIC LDX to the LightPointe FlightTransport equipment for this test.

- Step 1** Disconnect the FMG AIC LDX from all interfaces for the OMI and the RS-232 Console interface as well as the RJ-45 connection.
- Step 2** Connect the unit to the power supply.
- Step 3** As the unit begins its initial cycle, verify that all of the **Alarms** indicator lights illuminate during the start up process.
- Step 4** At the completion of the start up cycle, verify that the OMI1 and OMI2 lights are illuminated.

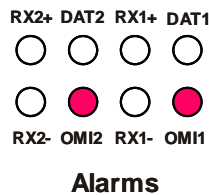


Figure 6-1: Power On Test Completed LED Alarms

6.2.2. OMI1 and OMI2 Test

This test verifies that the OMI1 and OMI2 alarm LEDs function correctly when connected to a FlightTransport OMI interface. Note that the 52 and 155 Mbps FlightTransport systems must have both OMI connections (OMI In and OMI Out) in order to accomplish this test.

- Step 1** Connect the SC OMI Out connector from the FlightTransport system to the FMG AIC LDX SC OMI1 IN port. For FlightTransport 52 and 155 Mbps systems, both the OMI In and OMI Out ports must be connected between the FlightTransport system and FMG AIC LDX.
- Step 2** Verify that the OMI1 light goes out after the FMG AIC LDX is connected to the link head. Depending on the link head being tested, it can take between 5 and 15 seconds for the light to go out.
- Step 3** Repeat Steps 1 and 2 for the OMI 2 port on the FMG AIC LDX.

Note: With no cables connected to the Data Input ports on the link heads, it is expected that the DAT1 and or DAT2 alarm LEDs will illuminate. Additionally, it is expected that the RX1- and RX2- alarm LEDs will also illuminate since there is no receiver power present. □

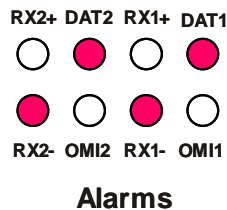


Figure 6-2: OMI1 and OMI2 Connected Alarms

6.2.3. DAT1 and DAT2 Test

This test verifies that, when valid input is made to the Data In ports on the link heads, the DAT1 and DAT2 lights function correctly.

- Step 1** Verify that the OMI1 LED is not illuminated and that the DAT1 alarm LED is illuminated, which indicates the FlightManager FMG AIC LDX is properly connected to the OMI port at the link head.
- Step 2** Connect a valid input signal (test or active signal) to the Data In port on the link head.
- Step 3** Verify that the DAT1 alarm LED goes out when a proper input signal is supplied to the link head.
- Step 4** Repeat Steps 1, 2 and 3 for the OMI 2 port on the FMG AIC LDX.

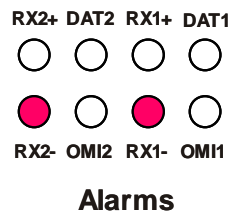
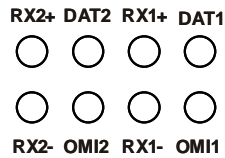


Figure 6-3: DAT1 and DAT2 Connected Alarms

6.2.4. RX1- and RX2- Test

This test verifies that when valid input is made to the Data In port on the link head and the link head is aligned with another operating link head, the RX1- and RX2- lights function correctly. For this test it is necessary to have two LightPointe link heads that can be aligned with one another and that a valid signal of 3 power bars or more are showing on the FlightTransport link head being tested with the FlightManager AIC LDX.

- Step 1** Verify that the RX1- alarm LED is illuminated on the FMG AIC LDX.
- Step 2** Align a FlightTransport system so that at least 3 power bars are illuminated on the Receive Signal Strength Indicator on the FlightTransport link head connected to the FlightManager AIC LDX.
- Step 3** Verify that the RX1- alarm LED goes out when 3 or more power bars are reached on the link head connected to the FlightManager AIC LDX.
- Step 4** Repeat the procedure for the RX2- port on the FMG AIC LDX. If it is not possible to have two systems (4 link heads) properly deployed to complete this test, repeat the procedure for the RX2- port on the FMG AIC LDX by changing the OMI1 connections on the FMG AIC LDX to the OMI2 ports. Disregard the fact that the OMI1 alarm LED will be illuminated for the remainder of this test. The illustration of the Alarms in Figure 6-4 represents the test with two systems (4 link heads) being used in the test. Note that in this test the system is functioning as expected and NO alarm lights are illuminated.



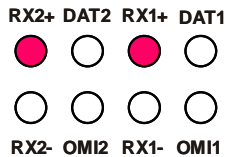
Alarms

Figure 6-4: RX1- and RX2- Alarms

6.2.5. RX1+ and RX2+ Test

This test verifies that when the strength of the signal through Free Space is greater than the ability of the receiver on the link head under test to process the signal (saturation or overload condition), the RX1+ and RX2+ lights function correctly. For this test it is necessary to have at least two LightPointe link heads that can be aligned with one another and that a very strong signal can be transmitted to the FlightTransport link head being tested with the FlightManager AIC LDX. Placing the transmitting and receiving link heads close together and/or aligning two link heads so that they transmit into the link head that is being tested with the FlightManager AIC LDX can achieve the strength of the signal to create a saturation or overload condition.

- Step 1** Verify that the RX1+ alarm LED is NOT illuminated on the FMG AIC LDX.
- Step 2** Align the FlightTransport link head being tested with the FlightManager AIC LDX in a manner that will achieve overload level power on the FlightTransport link head being tested with the FlightManager AIC LDX. The overload light on the link head should be illuminated.
- Step 3** Verify that the RX1+ alarm LED illuminates when the overload light is illuminated on the link head connected to the FlightManager AIC LDX.
- Step 4** Repeat the procedure for the RX2+ port on the FMG AIC LDX. If it is not possible to have systems properly deployed to complete this test, repeat the procedure for the RX2+ port on the FMG AIC LDX by changing the OMI1 connections on the FMG AIC LDX to the OMI2 ports. Disregard the fact that the OMI1 alarm LED will be illuminated for the remainder of this test. The illustration of the Alarms tab in Figure 6-5 represents the test with two separate receiving link heads being used in the test.



Alarms

Figure 6-5: RX1+ and RX2+ Alarms

6.3. RMA (Return Material Authorization) Procedure

Please gather the following information before contacting LightPointe for return material authorization.

General Information

- Document results from operational checks (page 6-1).
- Note the Application (Protocol)
- How long has the system been in operation?

How does the error show up?

- Temporary/permanent error?
- Is error observed for the first time?

Status of FMG AIC LDX LEDs

- Which LEDs were lit?
- What were the operational circumstances?

What level of system is installed?

- Model number?
- Serial number?

Contact your distributor or LightPointe Customer Service for packing, shipping, and replacement part information.



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