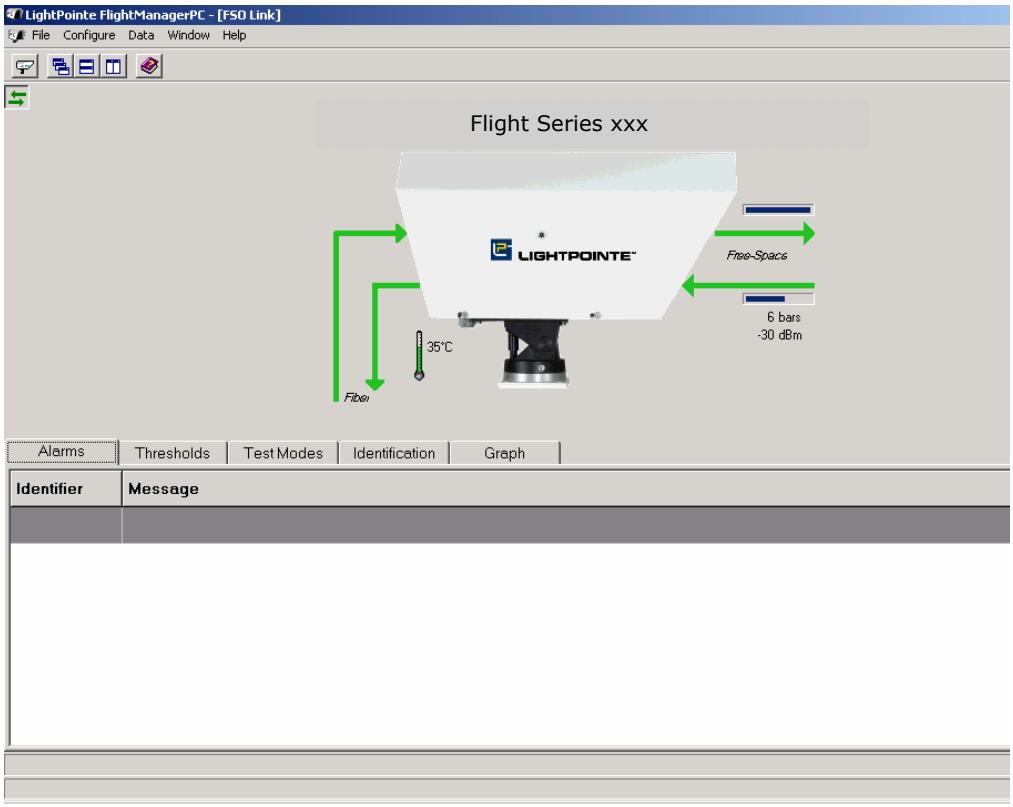
# FlightTransport™ Systems




# FlightManagerPC Software

## User's Guide

LIGHTPOINTE™

*505-003098-00000 Rev G* *2005-08*

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## Using This Manual

This document describes how to install and use the FlightManagerPC software.

Step-by-step procedures describe:

- Test setup
- Software installation
- Operating procedures
- Troubleshooting procedures

## Additional Resources

Refer to the current version of the following documents for additional information about the LightPointe system.

| Document Number | Title |
|---|---|
| 505-002032-00000 | FlightPath/FlightSpectrum 52 Mbps Installation and Maintenance Manual |
| 505-002000-0001M | FlightPath/FlightSpectrum 155 Mbps 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 |
| 505-004148-00000 | FlightStrata 52 and 155, FlightStrata 52E and 155E and FlightStrata 52EW Installation and Maintenance Manual |

# 1. Introduction, Setup, and Installation

This chapter covers the following main topics:

- Software introduction
- Test setup procedure
- Software installation procedure

## 1.1. Introduction

The FlightManagerPC software is used to monitor and test Flight Transport communication systems from a remote location. The status information sent from the link head to the management software can be used to monitor system performance or diagnose system problems.

### Connectivity

The data is transferred from the link head to a standalone PC-based platform through fiber optic cables back to the link head. The optical signal is transformed into an electrical RS-232 signal by a V.24 Optical to Electrical converter (supplied with system) that plugs into the RS-232 port of a PC. The maximum fiber length between the link head and the management system computer is 2 km under ideal circumstances, but the actual distance for effective communication is usually a much shorter distance.

### OMI (Optical Management Interface) Software

FlightManagerPC software can support multiple link heads by using a separate serial port for each device. FlightManagerPC can be installed under Windows 95/98/ME/2000/XP/NT.

### Data Logging

FlightManagerPC software automatically samples any connected link head(s) once per second and plots and records information on receive power levels and all alarm states in real-time.

### Optional Simple Network Management Protocol (SNMP) Interface to the Client Network

The link heads can also be connected to the SNMP monitoring system by using a FlightManager LDX or HDX SNMP Proxy Agent instead of the RS-232 PC interface. More detailed information on SNMP management support can be found in the *FlightManager LDX or HDX SNMP Proxy Agent Installation and Maintenance Manuals (refer to page iv).*

## 1.2. Test Setup

The following items are required to set up a physical test connection:

- FlightManagerPC Application Software
- A Windows 95/98/ME/2000/XP/NT Workstation, PC or Laptop
- RS232 to Optical Cable media converter (provided with system)
- Two optical fiber cables with SC connectors

The FlightManagerPC software requires the physical connections shown in Figure 1-1 in order to manage, test, and monitor a link head from your PC.

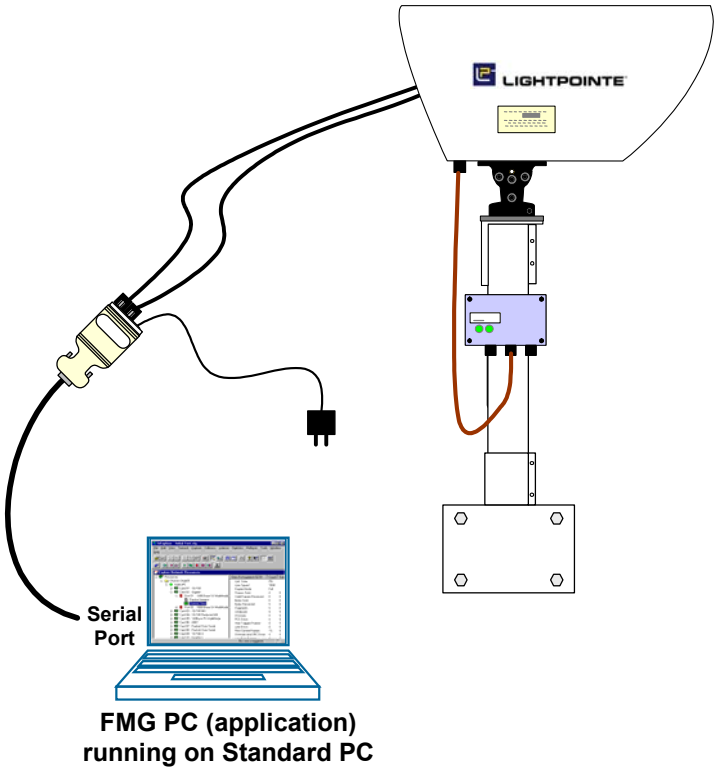



*Figure 1-1: FlightManagerPC Test Setup*

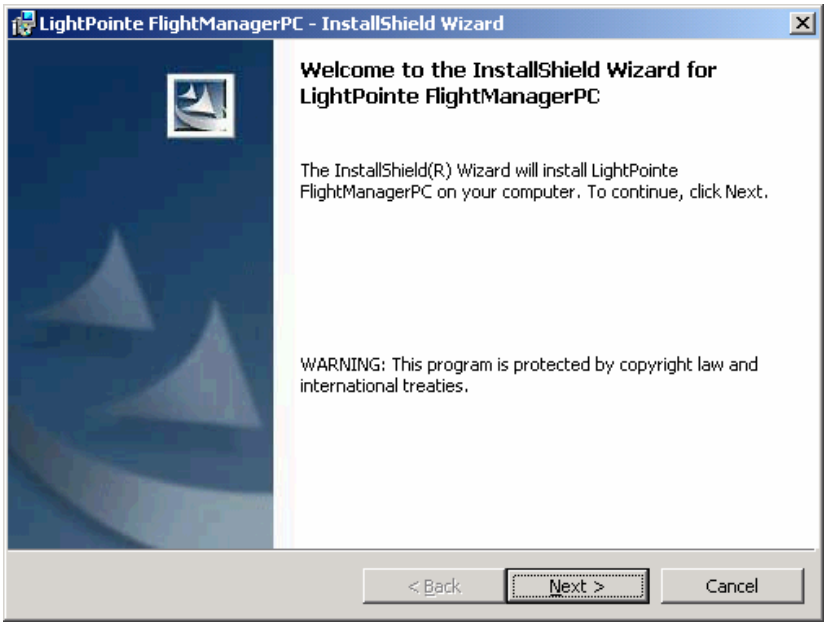
## 1.3. Installing the FlightManagerPC Software

**Step 1** Place the LightPointe FlightManagerPC install disk into your computer.

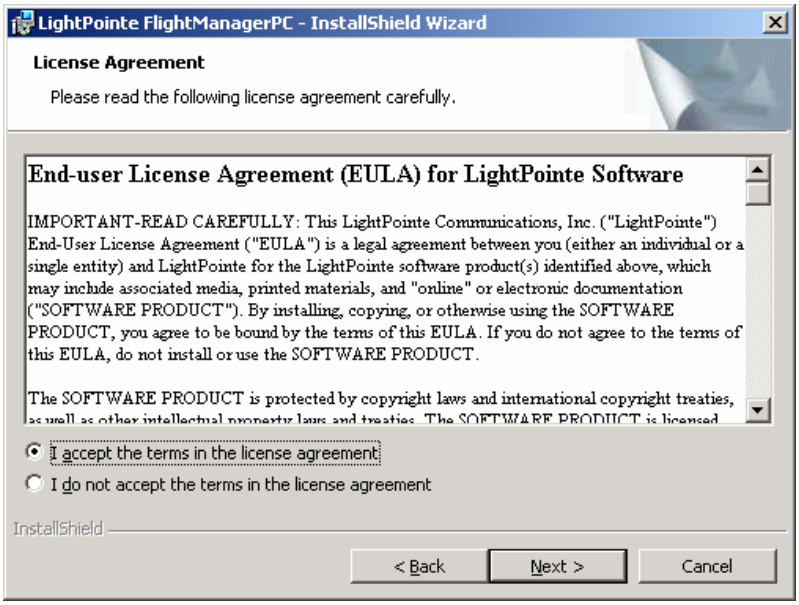
**Step 2** Copy the setup.exe file to your hard drive root directory.

C:\setup.exe

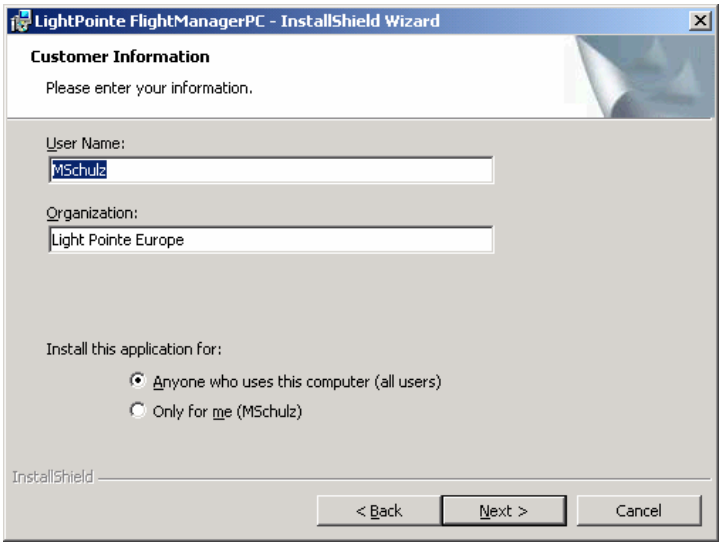
**Step 3** Double-click the **Setup.exe** file.
The FlightManagerPC setup window appears.



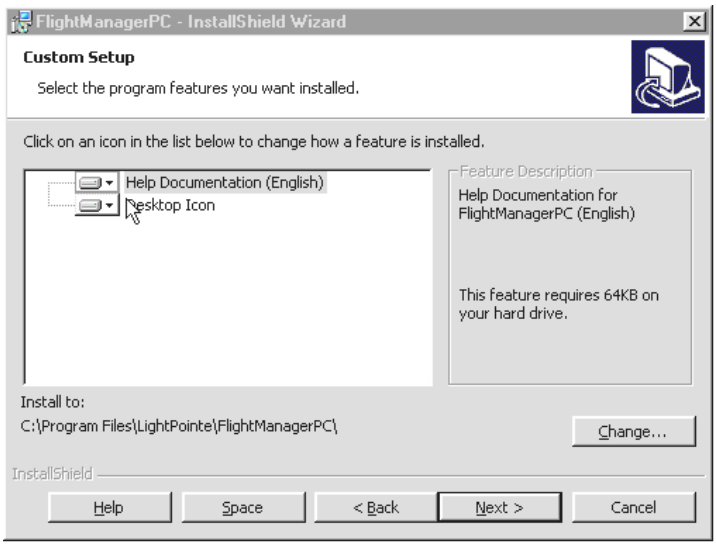

**Step 4** Click **Next**.
The License Agreement window appears.



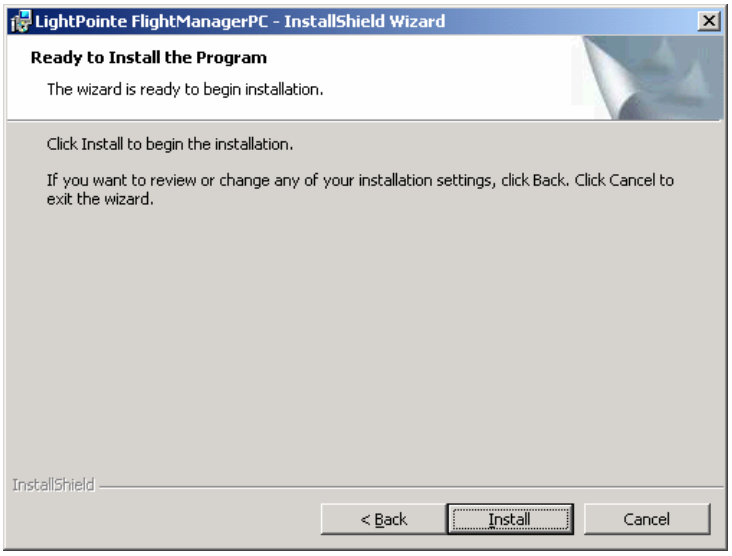
**Step 5** Click **I accept the terms in this license agreement**. The Customer Information window appears.



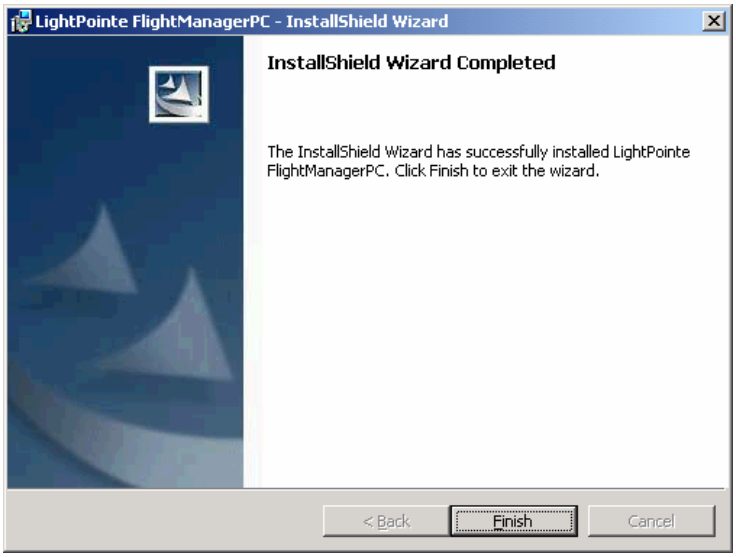

**Step 6** Enter Customer Information into the text boxes. Click **Next**. The Custom Setup window appears.



**Step 7** Click **Next** to accept the default installation features (recommended).
The **Ready to Install the Program** window appears.




**Step 8** Click **Install** to install the FlightManagerPC program. After the program has been installed the **InstallShield Wizard Completed** window appears.




**Step 9** Click **Finish** to complete the installation and exit the InstallShield Wizard.

The software installation procedures are now completed.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# 2. Operating Procedures

This chapter covers the following main topics:

- Starting the FlightManagerPC program
- FlightManagerPC operational procedures
- Troubleshooting using the FlightManagerPC FSO Link Head Window Display Indicators

## 2.1. Starting the FlightManagerPC Program

To start the FlightManagerPC program, click the **Start** button on the lower left hand side of the screen, select **Programs** and then locate the LightPointe FlightManagerPC program.

The FlightManagerPC program files are normally located in the following folder:

C:\Programs\LightPointe\FlightManagerPC

## 2.2. FlightManagerPC User Windows

The FlightManagerPC program allows you to manage, test, and monitor one or more link heads from your PC.

### 2.2.1. Ready Window

When you start the program the **FlightManagerPC Ready** window is displayed. To physically connect to a link head you must select a Transport.

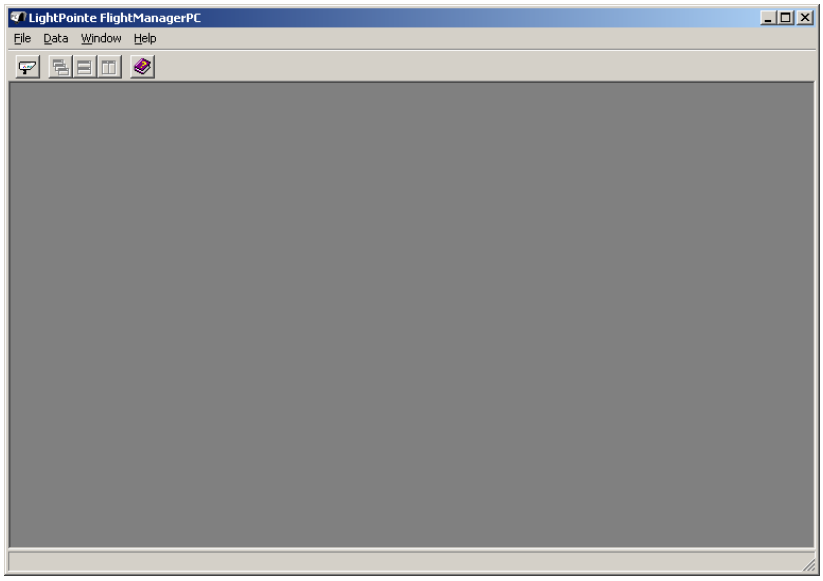
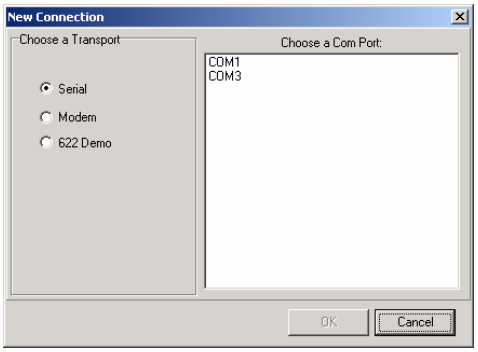



*Figure 2-1: FlightManagerPC Ready Window*

### To select a Transport (Link Head)

**Step 1** Click on the **Link Head** button or choose **New Link Head** from the File menu. The **New Connection** window appears.



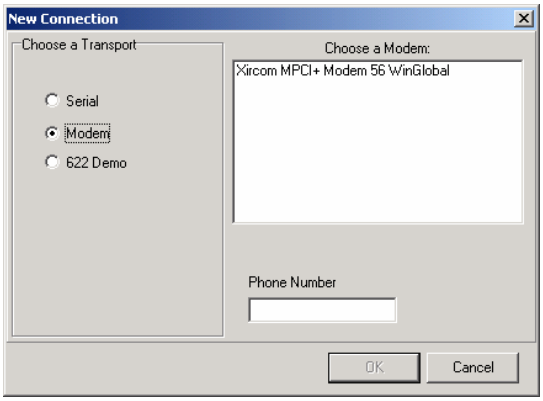

**Step 2** Select a **Choose a Transport** button.

Serial (for COM port serial communications)

Modem (if dial-up capability will be used)

622 Demo (for a demonstration of the functionality of FlightManagerPC; note this is not a valid connection to a link head

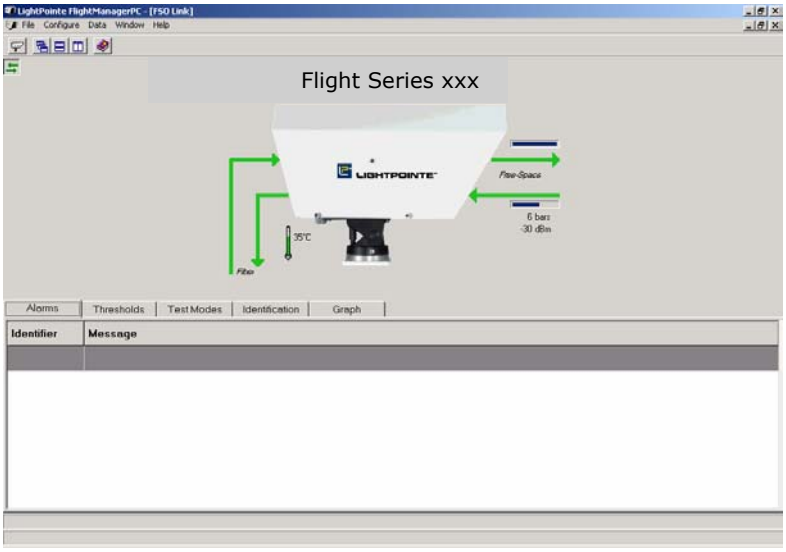
**Step 3** Select the PC COM port (normally Com 1 or Com 2) or modem. If modem is selected, enter the proper phone number at the prompt and click **OK**.




The modem status window should then appear. Once a successful modem connection is made, then the **FSO Link** window shown in the next step should appear.

**Note**: The FlightManagerPC software normally automatically detects and displays the Communication ports available on your PC.

**Step 4** If a COM port has been selected, click **OK**. The **FSO Link** window appears.




## 2.2.2. Main Program Window

After a Transport is selected the Main Program window is displayed. Any indicator, menus, or buttons that are not accessible are grayed-out.

### Main Window Menu Bar and Buttons

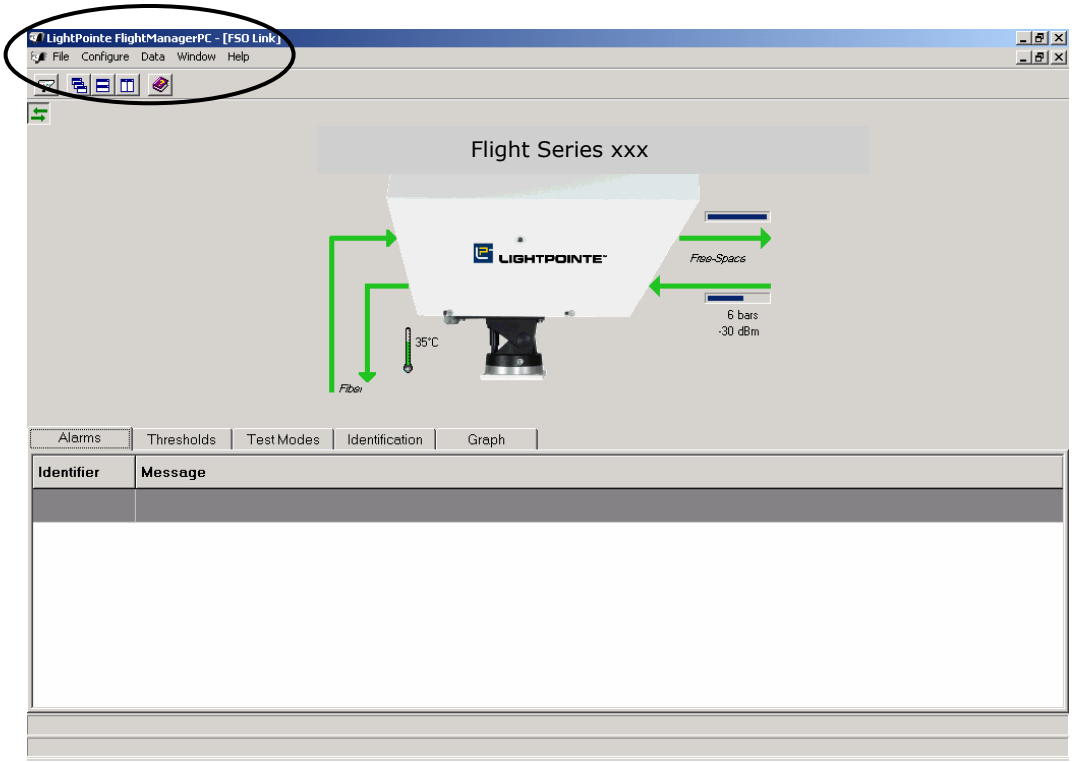



*Figure 2-2: Main Program Window*

The Main window menu bar contains five menus and five buttons.

**Table 2-1: Main Window Menus and Buttons**

| Option | | Description |
|---|---|---|
| *File Menu* | File | Select a new link head, close a link head, exit the program |
| *Configure Menu* | Configure | Select a link head test mode |
| *Data Menu* | Data | Open saved link head data log files |
| *Window Menu* | Window | View and manage FSO Link Head windows inside the Main window |
| *Help Menu* | Help | View FlightManagerPC Help information |
| *New Link Head Button* |  | Create a connection to a new link head |
| *Window Display Buttons* |  | View and manage FSO Link Head windows inside the Main window |
| *Help Button* |  | View FlightManagerPC help information |

### 2.2.3. FSO Link Head Window

Link head status is displayed in the center of the FSO Link Head window. The graphical image of the link head displays network input and output signal status, Free Space signal status, Free Space receive signal level and link head internal temperature.

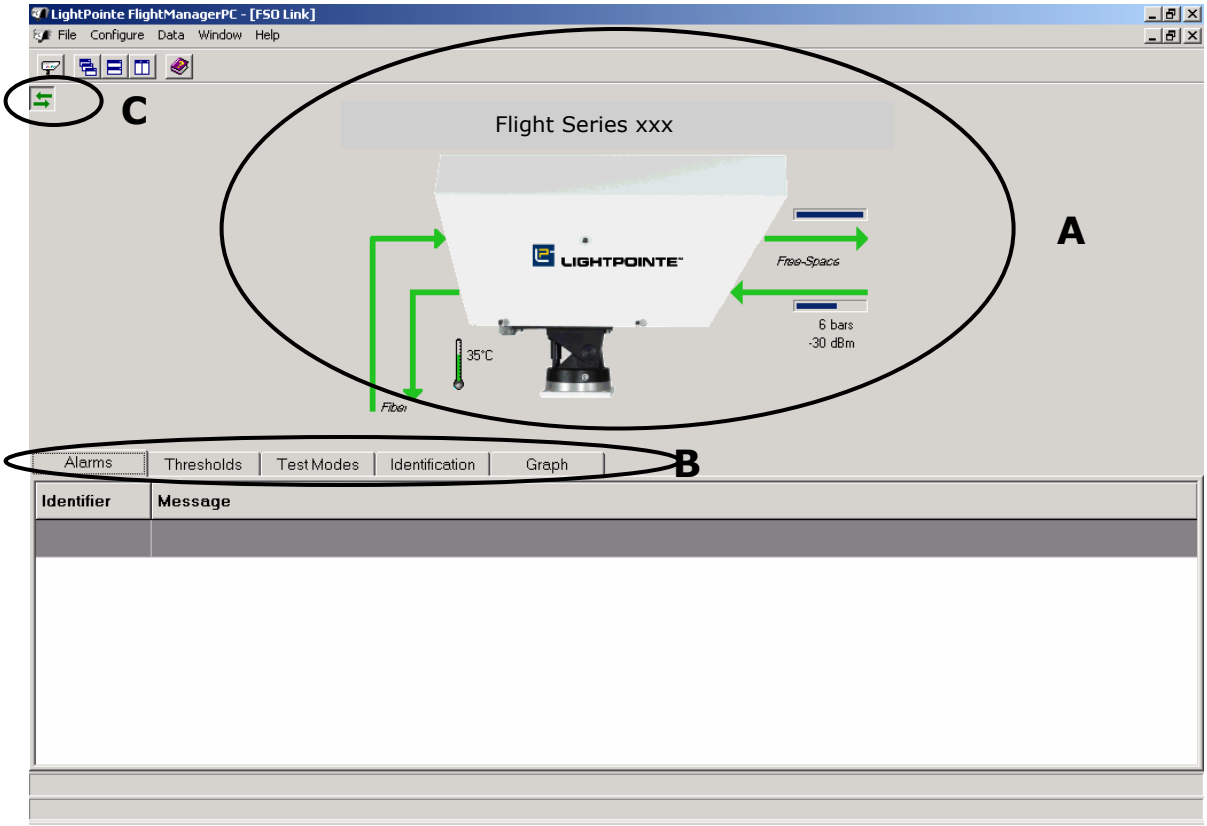



*Figure 2-3: Typical FSO Link Head Window*

**Table 2-2: FSO Link Head Indicators**

| Indicators (A) | Description |
|---|---|
| *Network Signal indicators* | Display status of network signal using color coded arrows<br>❑ Green – Good signal<br>❑ Red – No signal<br>❑ Yellow – Warning message issued<br>❑ Blue – Test signal or other data |
| *Free Space Signal Arrow Indicators* | Display status of free space signal using color coded arrows (same color code as above) |
| *Free Space Signal Bar Graph Power Level Indicators* | Top bar graph represents transmit signal power level<br>❑ Half full graph – Low power transmit setting data<br>❑ Full graph – High power transmit setting data<br>Bottom bar graph shows the receive signal strength and provides text display on the number of receive bars and the dBm power level. |

| | |
|---|---|
| *Link Head Internal Temperature* | Display internal temperature of the link head. |

**Table 2-3: FSO Link Head Window Tabs**

| Tabs (B) | Description |
|---|---|
| *Alarms Tab* | Display system alarms |
| *Thresholds Tab* | Display the receive signal level, set low power alarm threshold |
| *Test Modes Tab* | Select one of five operational test modes. |
| *Identification Tab* | Display link head serial number, build string, and flash revision. |
| *Graph Tab* | Display a plot of link head input signal level and alarm level (color coded) relative to time |

**Table 2-4: FSO Link Head Window Button**

| Button (C) | Description |
|---|---|
| *Normal Button* | Exit test mode, return to normal operation. |

## 2.3. FSO Link Head Window Tabs

The FSO Link Head window is a tabbed page. The tab dialog boxes contain options through which you can perform a particular FlightManagerPC command or task.

**Note**: Any indicator, menus, or buttons not accessible are grayed-out.

### To select a tab

From the FSO link Head window, click the desired tab.

### 2.3.1. Alarms Tab

Whenever an abnormal system event occurs, a system alarm is generated. Active alarm messages are displayed in the Alarms tab. The color of the alarm indicates the alarm category.

**Table 2-5: Alarm Color Codes**

| Alarm Color | Category |
|---|---|
| *Red* | Critical alarms |
| *Yellow* | Warning alarms |
| *Blue* | Informational alarms |

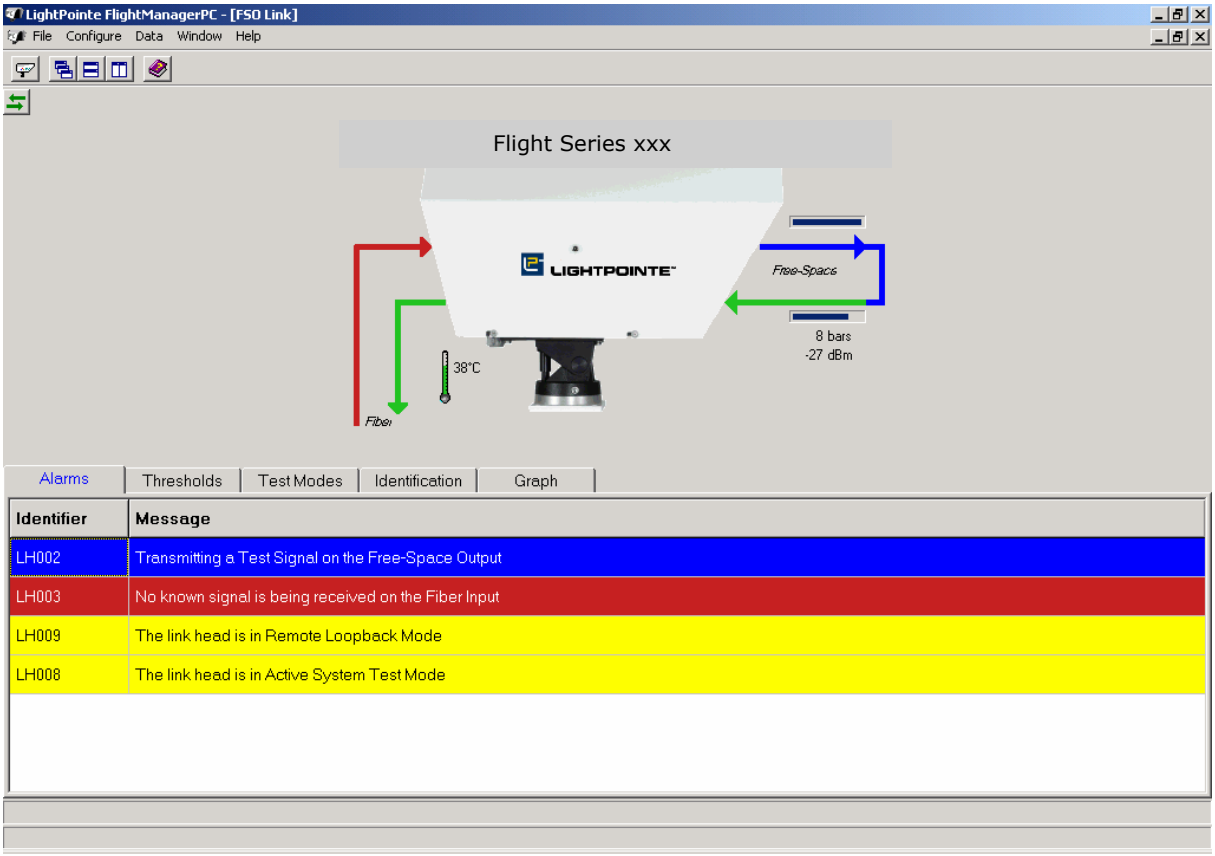



*Figure 2-4: Alarms Tab*

#### To view active alarms

From the FSO link Head window (refer to Figure 2-4), click the **Alarms** tab. A list of active alarms is displayed.

### 2.3.2. Thresholds Tab

The **Thresholds** tab displays in graphic form the number of power bars being displayed on the link head and graphically shows the relative strength of the Free Space signal in dBm. This information is also shown with a text entry just below the receive Free Space Arrow Indicator.

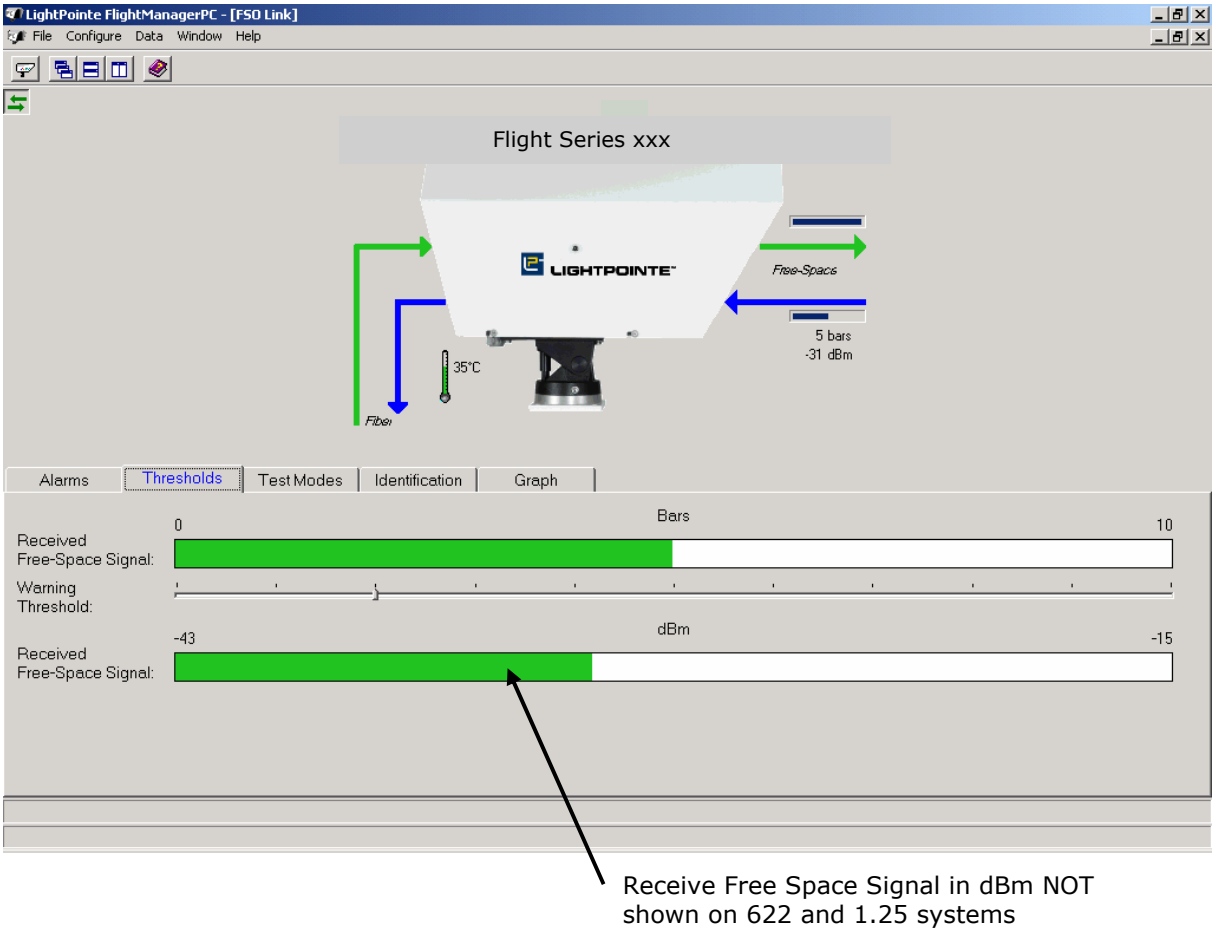



*Figure 2-5: Thresholds Tab*

The **Received Free Space Signal Bars** graphs the number of power bars from 0 (zero) to 10 (ten). The **Received Free Space Signal dBm** graphs the strength of the received signal from its lowest point (loss of signal) to the point where the receiver begins to saturate (Overload light is lit). In the example in Figure 2-5, this Flight Series 155 product would experience a loss of signal if the Free Space signal input fell below –43 dBm, and the link head would indicate an Overload condition if the Free Space signal input was above –15 dBm. There is normally a range between 4 and 5 dBm from the time the Overload light is lit until the receiver is actually saturated. In the Flight Series 155 products, for example, the saturation point is –11 dBm. The dBm low and high values will be different based on the LightPointe product being used. Note that the relationship between the Bars graph and the dBm graph is NOT necessarily linear.

A receiver Overload condition exists and the Overload light will be illuminated when the **Received Free Space Signal dBm** graph reaches its maximum displayed value. It is possible to have all 10 of the **Received Free Space Signal Bars** illuminated without the system actually being in an Overload condition. If an Overload condition exists, the **Thresholds** tab will show both graphs at the maximum level and the graph bars will be illuminated Yellow. The text entry just below the receive Free Space Arrow Indicator will display a value greater than the maximum value of the **Received Free Space Signal dBm** graph. Note in the example below, indicating an Overload condition, that the text entry shows a Received Free Space Signal of –14 dBm, while the graph shows a maximum of –15 dBm.

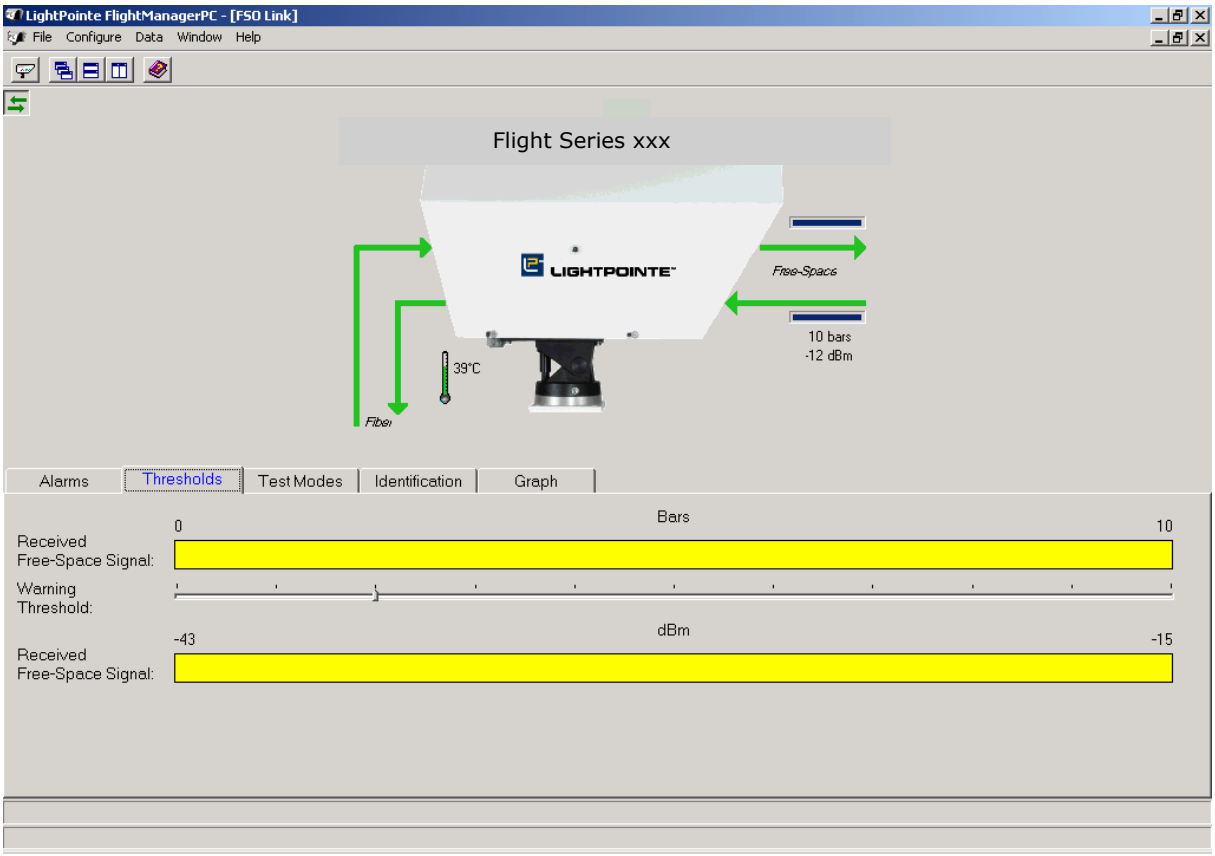



Figure 2-6: Thresholds Tab Showing Overload

The threshold for the received free-space signal low power alarm is set from the FSO Link Head window **Thresholds** tab. The Warning Threshold alarm level slider is below the **Received Free Space Signal Bars** and the alarm level can be set at any whole number between 0 (zero) and 10 (ten). The default setting for the Flight Series 52 and 155 products is 2 bars, and the default setting for all other series products is 3 bars. LightPointe recommends setting the value between 2 and 4 depending on system needs, although higher or lower values may be selected. An alarm is generated whenever the Received Free-Space Signal value falls below the selected threshold setting. The figure below illustrates the

Warning Threshold tab set at 2 bars, and shows the system display when the receive power has fallen to this 2 bar level.

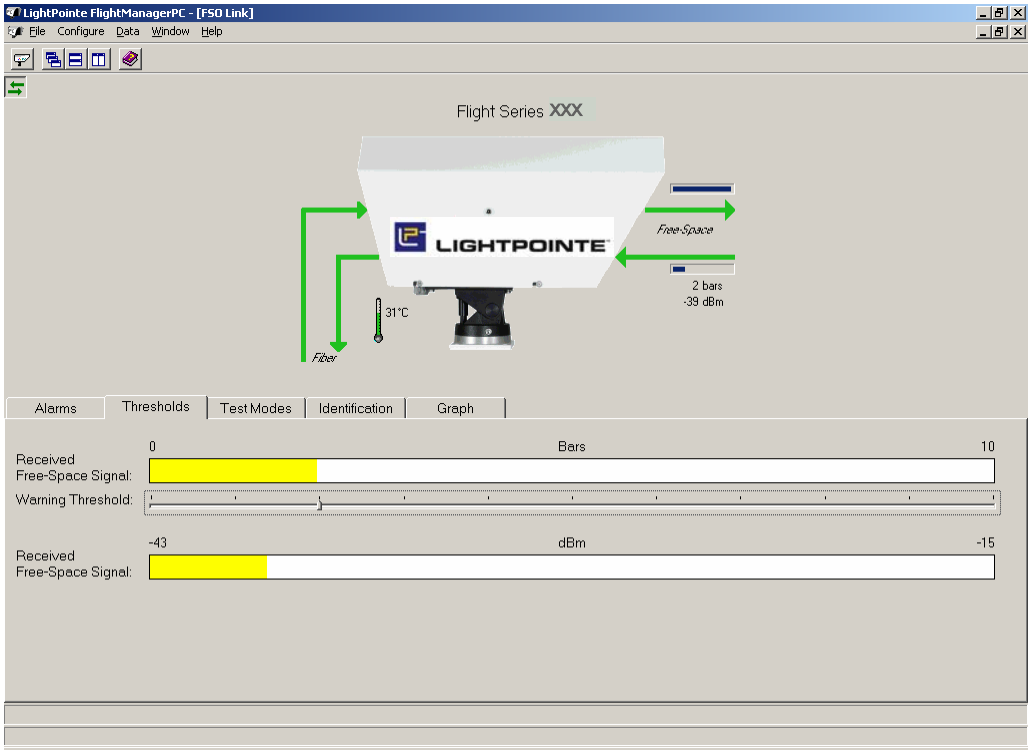



Figure 2-7: Thresholds Tab Warning Threshold Slider

### To set new threshold level

**Step 1** From the FSO Link Head window (refer to Figure 2-5 and Figure 2-6), click the **Threshold tab**. The Threshold page is displayed.

**Step 2** Click and hold the left mouse button on the **Warning Threshold slider**. Position the slider to the desired Received Free-Space Signal low power threshold level.

**Step 3** Release the mouse button to activate the new Warning Threshold level.

- An alarm message will be generated whenever the Received Free-Space Signal value drops to or below the threshold setting. The Free Space Signal graphs will change colors from Green to Yellow when the Warning Threshold is reached.

### 2.3.3. Test Modes Tab

The Test Modes tab is used to select and run local and remote loop transmission and receive tests. When a test is selected, normal traffic service on the link is interrupted until you return the link head to the normal operation mode.

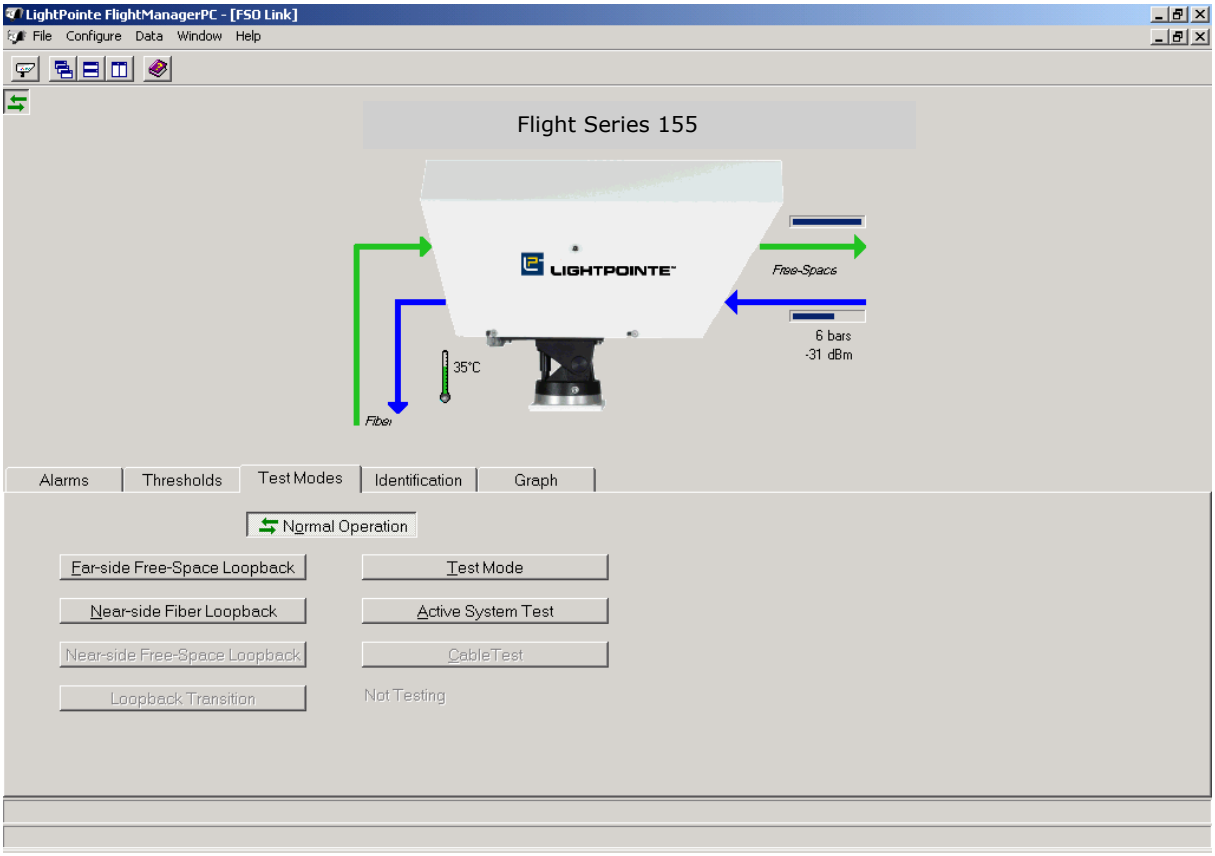
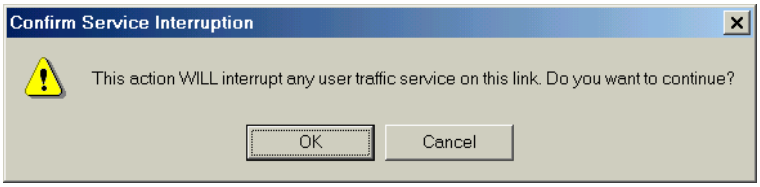



*Figure 2-8: Test Modes Tab*

**To start a test**

**Step 1** From the FSO Link Head window (refer to Figure 2-8), click the **Test Modes** tab. The Test Modes tab is displayed.

**Step 2** Click on the desired test button. A caution message is displayed.



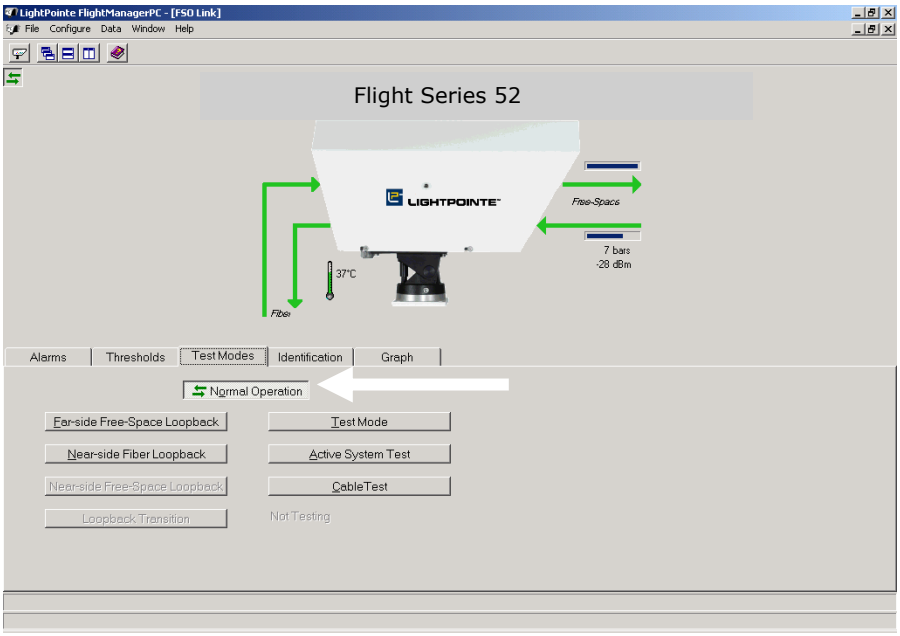

**Step 3** Click on the **OK** button to start the desired test or Click the **Cancel** button to return to the Test Modes tab.

### To return to the normal operation mode

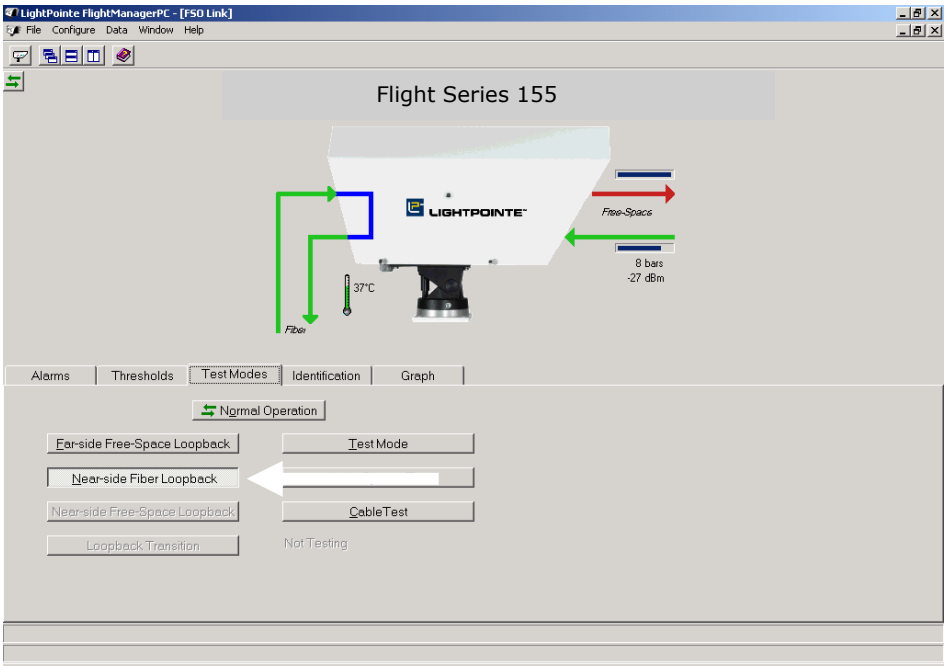
Click on the **Normal** button.

**Table 2-6: Test Mode Tab – Buttons**

| Button | Description |
|---|---|
| Normal Operation | Stop testing and return to normal operation mode (restore traffic service). |



| Button | Description |
|---|---|
| Near-side Fiber Loopback | Start a near-side Loopback transmission test using the attached network signal. |

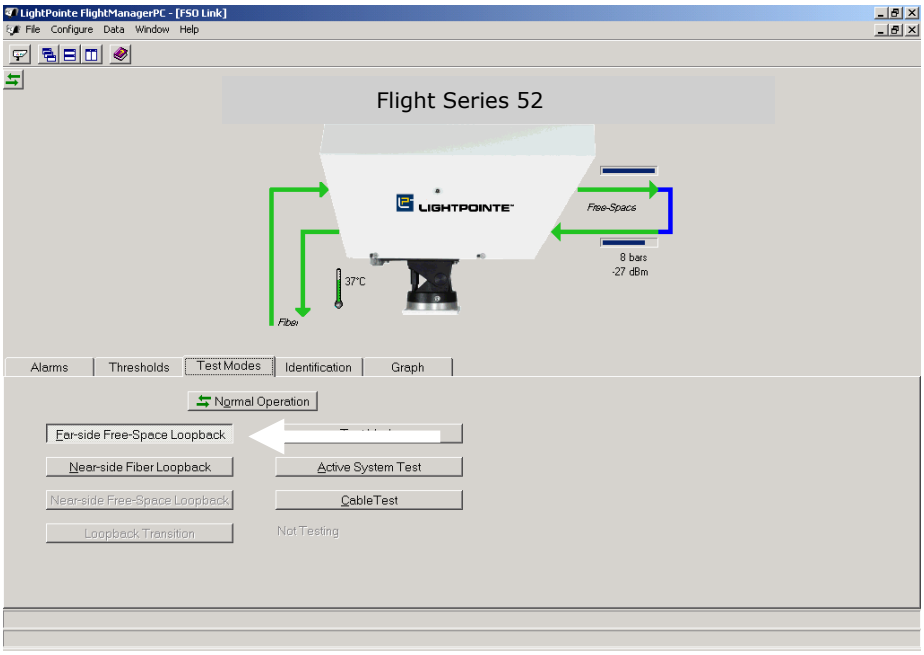



**Test near-side loop using network signal**

The data signal from the attached network equipment is internally looped back. This test is used to validate the fiber between the link head and the network equipment.

**Note:** The near-side network receive equipment must be able to evaluate the looped back signal.

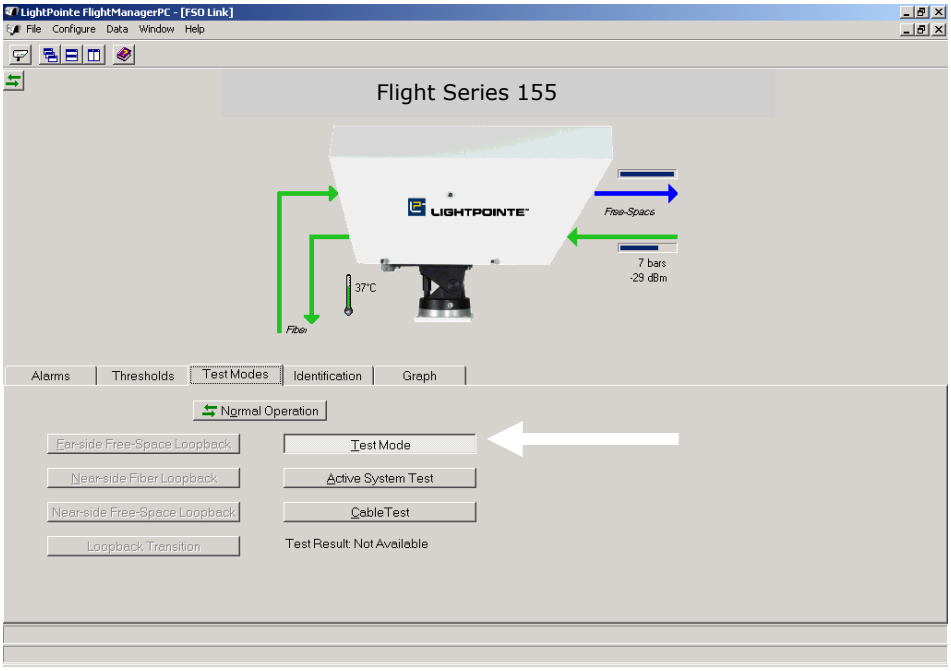
| Button | Description |
|---|---|
| Far-side Free-Space Loopback | Start a far-side loopback test using the attached network signal. |




**Test far-side loop using network signal**

After checking and verifying the functionality of the near-side loop (Near-side Fiber Loopback test), the far-side system can be tested using this test procedure. In this test mode the link head at the far-side sends back the network signal it receives from the near-side link head. This test procedure evaluates the free-space transmission path.

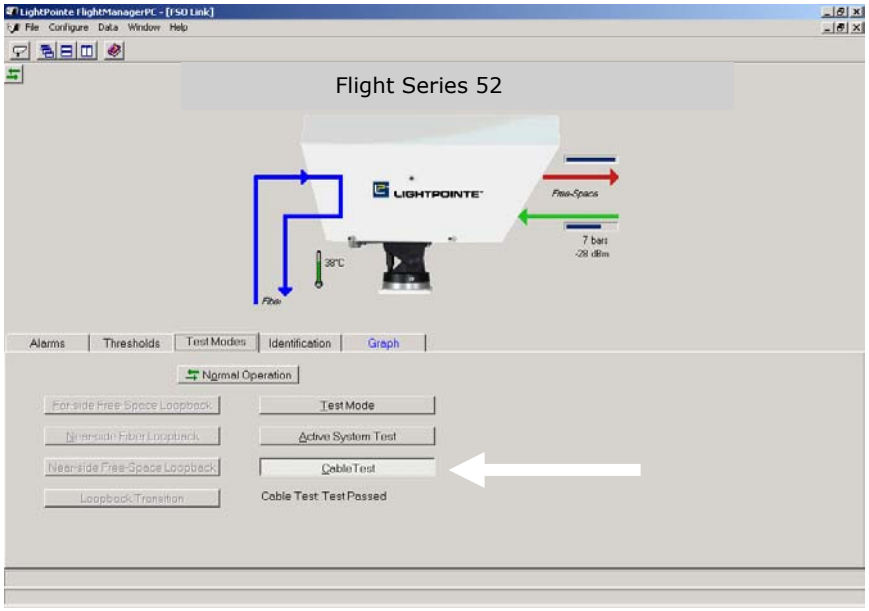
| Button | Description |
|---|---|
| Test Mode | Transmits an internally generated 1 kHz signal from the near-side link head. |




**System alignment**

The transmitted signal can be used to align the near-side and far-side link heads.

| Button | Description |
|---|---|
| Cable Test | Start a near-side Loopback test using an internally generated test signal.<br>**Note:** The Cable Test function will **NOT** work with single mode fiber systems. |

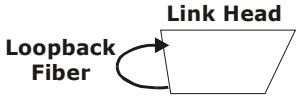



**Test near-side loop using internal test signal**

A number of tests can be performed to validate the link head and the Singlemode fiber between the link head and the network equipment.

- **Link head Data In and Data Out ports**

  This test requires a multimode fiber loopback cable with SC connectors.

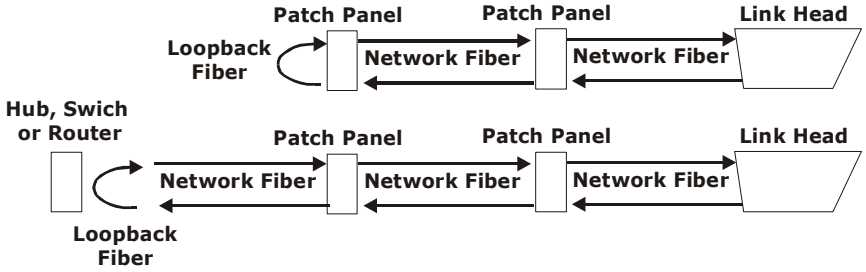



- **Patch panel(s)**

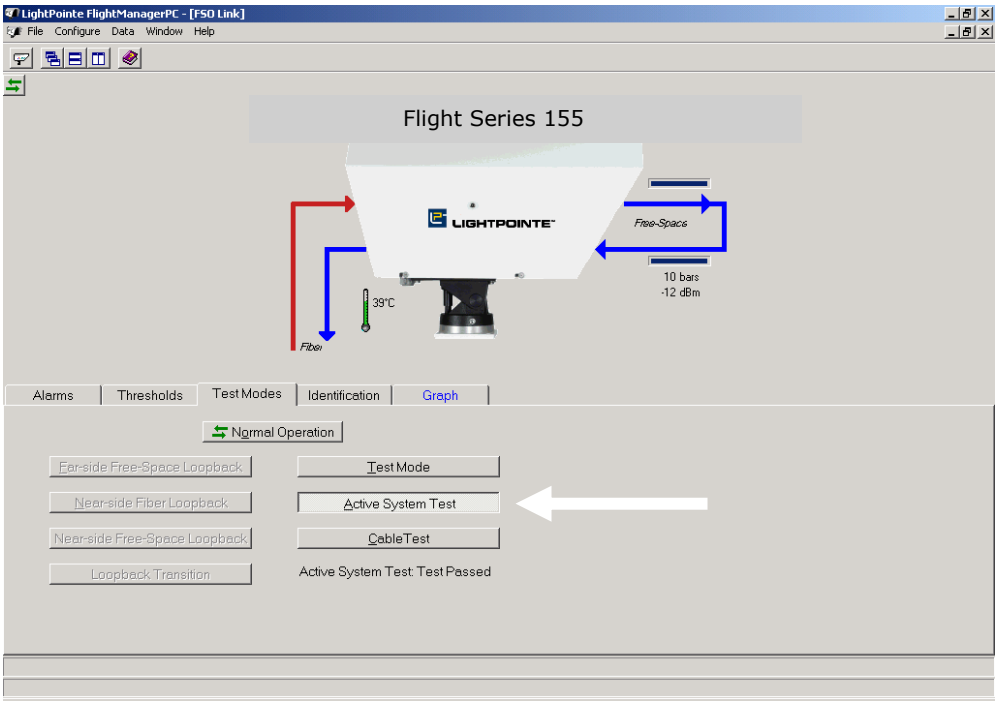
  This test requires a multimode fiber loopback cable with connectors that are compatible with your patch panel(s).


- **Full fiber run**

  This test requires a multimode fiber loopback cable with connectors that are compatible with your network equipment. The test can be performed at the last patch panel or just before the network equipment to test the full fiber run.



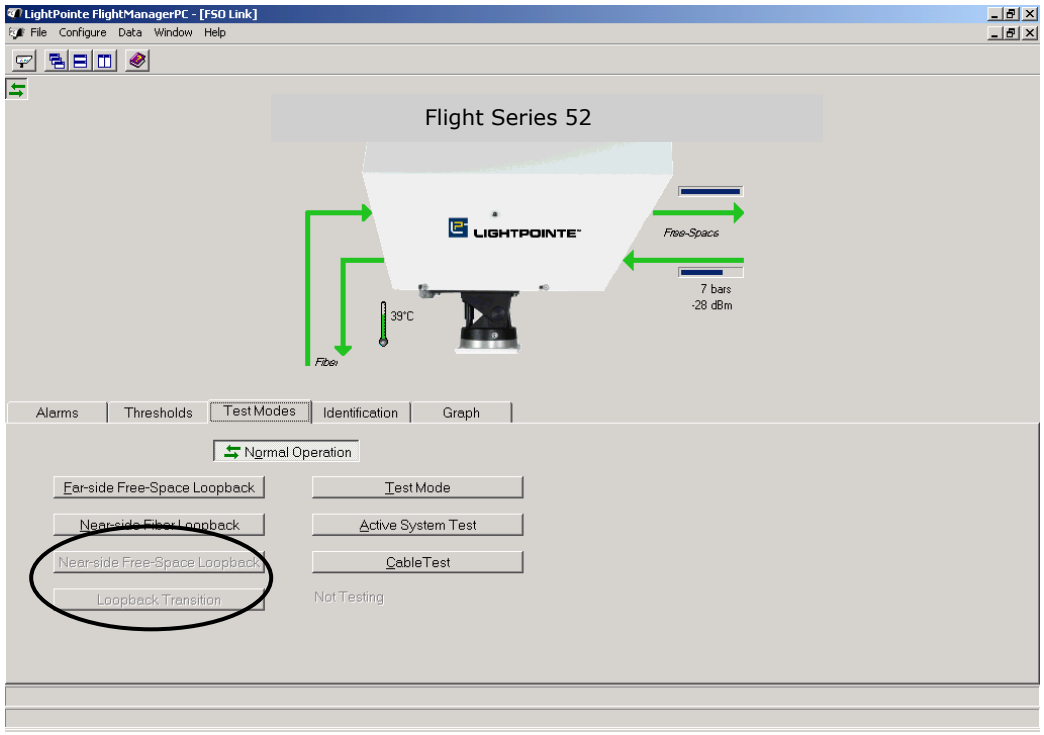
| Button | Description |
|---|---|
| Active System Test | Start a far-side loopback transmission test using a test signal generated by the near-side link head. |



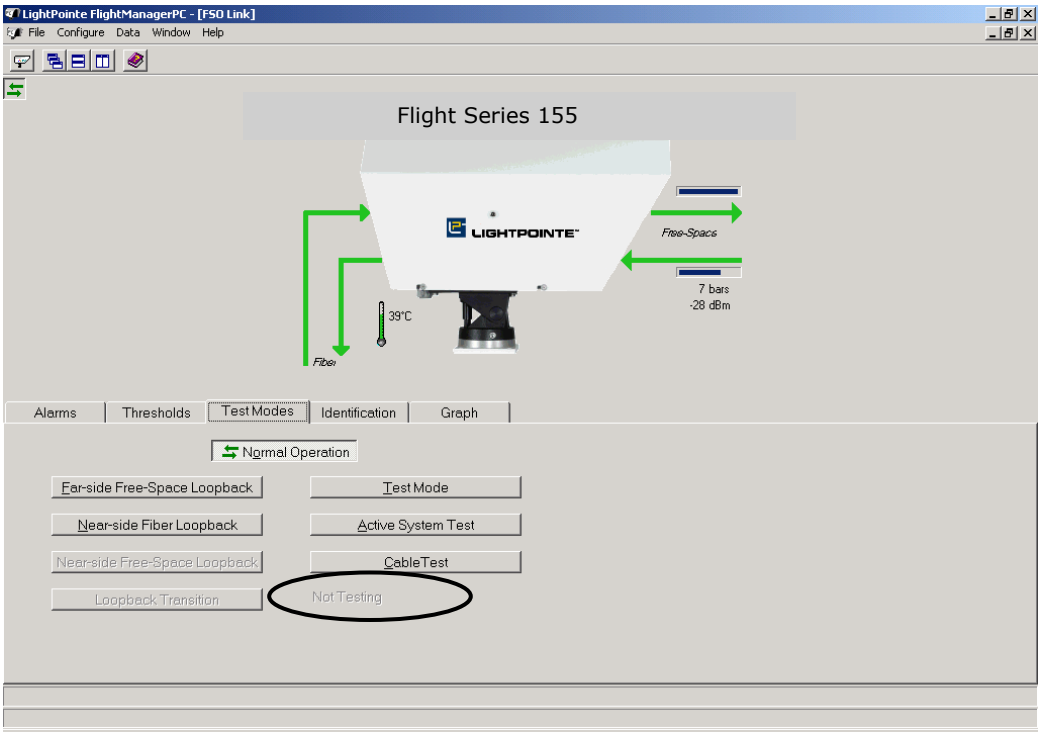

**Test far-side loop using internal test signal**

This test function checks the free-space transmission path. A test signal is transmitted from the near-side link head. If the signal is not received back by the near-side link head, the test fails.

**Table 2-7: Test Mode Tab – Indicators**

| Indicator | Description |
|---|---|
| Near-side Free-Space Loopback and Loopback Transition | These indicators will flash "active" momentarily when switching to some test modes.<br>  |

| Indicator | Description |
|---|---|
| Test Results | This area displays current test results when a valid test has been executed. |




For additional troubleshooting information refer to the *FlightSpectrum/FlightStrata/FlightLite Installation and Maintenance Manuals.*

### 2.3.4. Identification Tab

The currently selected link head identification data is displayed from the FSO Link Head window Thresholds tab.

- Serial number
- Build string
- Flash revision

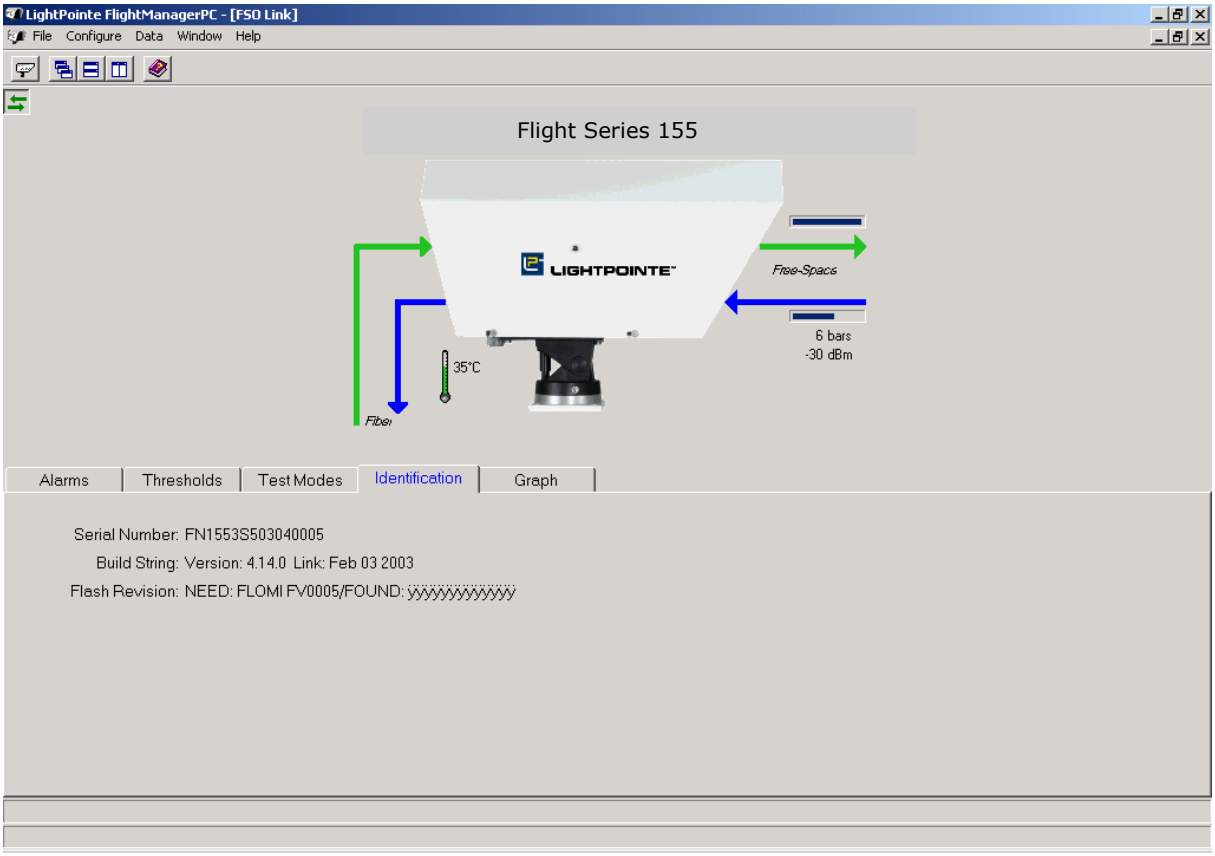



*Figure 2-9: Identification Tab*

## 2.3.5. Graph Tab

When a connection to a link head is initiated, a new data plot is automatically started. Link head parameters are sampled and plotted at one-minute intervals. When the connection to the link head is closed, parameters are automatically stored in a data file on the PC hard drive.

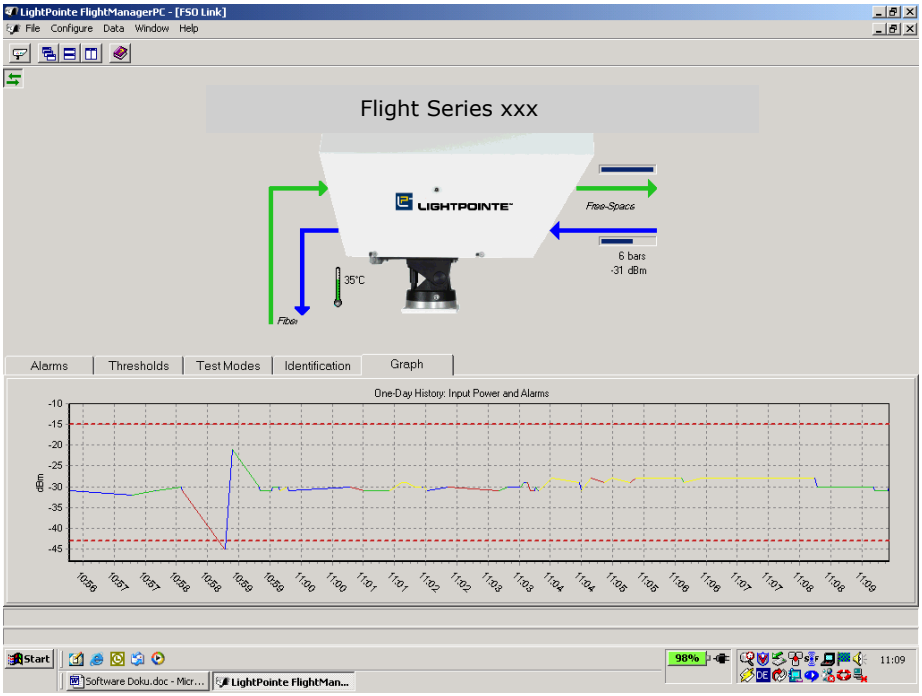



*Figure 2-10: Graph Tab*

### Plot description

The vertical axis represents the input signal level, shown in dBm (the vertical axis displays the power level in bars). There are dashed lines showing these upper and lower bounds so that the power relative to overload or loss of signal can be observed. The horizontal axis units represent time displayed in automatically scaled increments. Under normal conditions a new point is plotted once each minute, although the link head parameters are sampled once a second. Whenever an alarm state change is detected, the plot is immediately updated. The maximum width of the plot window is 24 hours. After the first 24 hours, as new data is plotted the oldest data is no longer displayed (first in, first out).

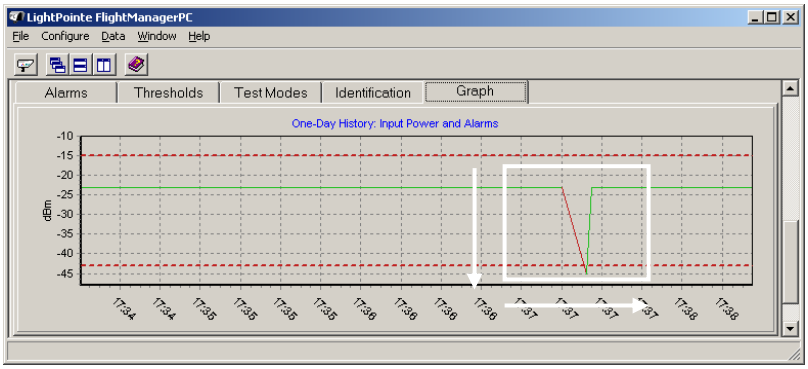
**Table 2-8: Plot Color Codes**

| Plot Color | Description |
|---|---|
| *Green* | Normal operation |
| *Red* | Critical alarm(s) active |
| *Yellow* | Warning alarm(s) active |
| *Blue* | Informational alarm(s) active (52 and 155 only) |

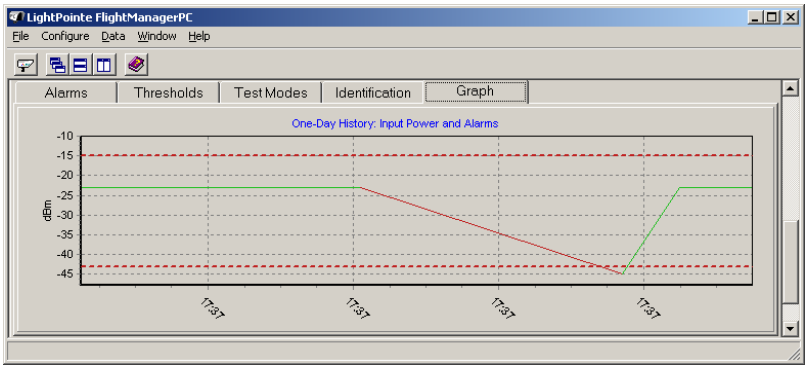
### To magnify an area of the plot

**Step 1** From the FSO link head window (Figure 2-10), Click on the **Graph** tab.

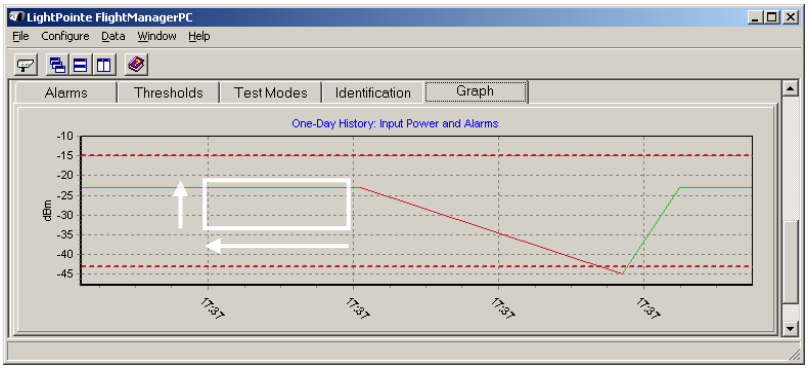
**Step 2** While holding down the left mouse button, drag the mouse from the upper-left corner to the lower-right corner of the area you desire to magnify. Multiple magnifications are possible.



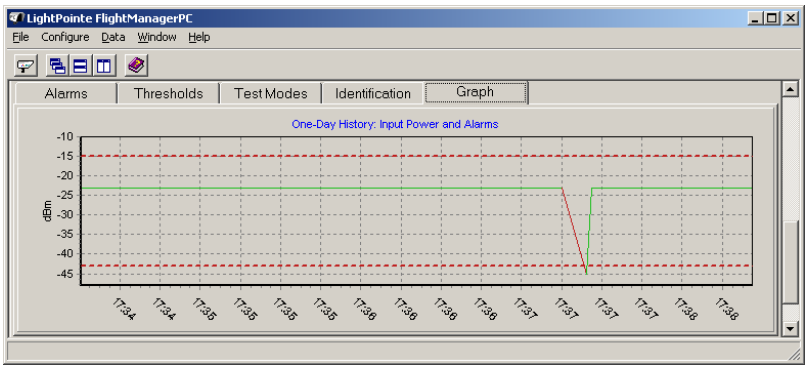

**Step 3** Release the left mouse button. The boxed plot area is magnified and displayed.




**Step 4** To return to the unmagnified plot view, hold down the left mouse button and drag the mouse from the lower-right corner to the upper-left corner of a box (size and location not important).



**Step 5** Release the left mouse button. The unmagnified plot is displayed.




### To start the graphing function

The graphing function is automatically started when the connection to the link head is opened.

### To view the current graph

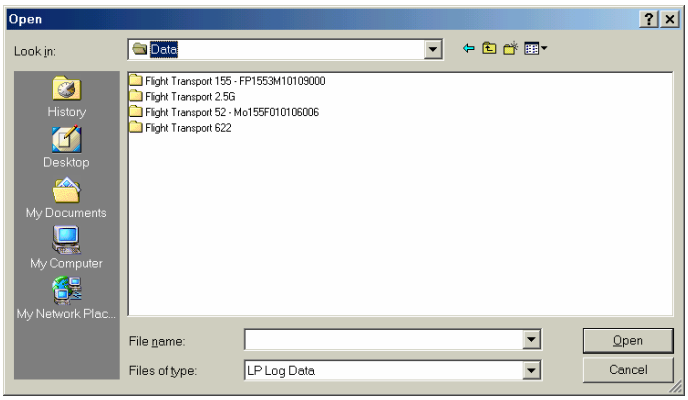
From the FSO Link Head window (Figure 2-10) click the Graph tab. The current link head parameter graph is displayed.

### To de-activate the graphing function

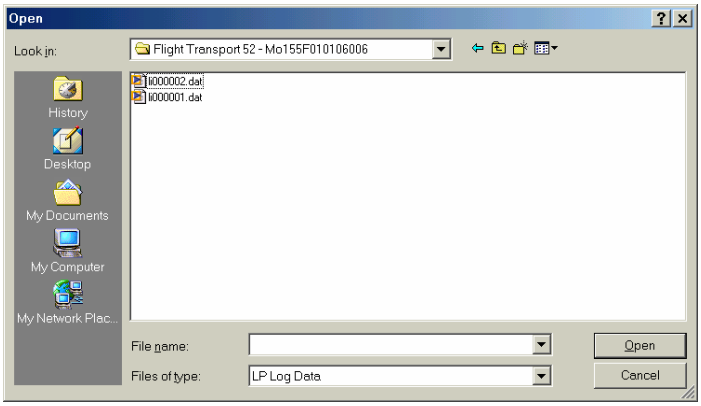
Close the connection to the FSO Link Head window. The current graphing function is de-activated and the graph file is saved to disk and closed.

### To view a saved graph window

**Step 1** From the Main Program window select the **Data** menu. Click on the **Visualize** option. The **Data folder** content is displayed.




**Step 2** Select the appropriate folder. In this case the **Flight Transport 52** folder has been selected. The folder content is displayed.




**Step 3** Select the desired data file. Click the **Open** button. The saved graph is displayed. Multiple graph files may be opened in the current window.

## 2.4. Troubleshooting using the FSO Link Head Window Display Indicators

The color of the data stream arrows in the center of the FSO Link Head window can be used to identify data transmit and receive problems.

- Green – Good signal
- Red – No signal
- Yellow – Warning message issued
- Blue – Test signal (52 and 155 only)

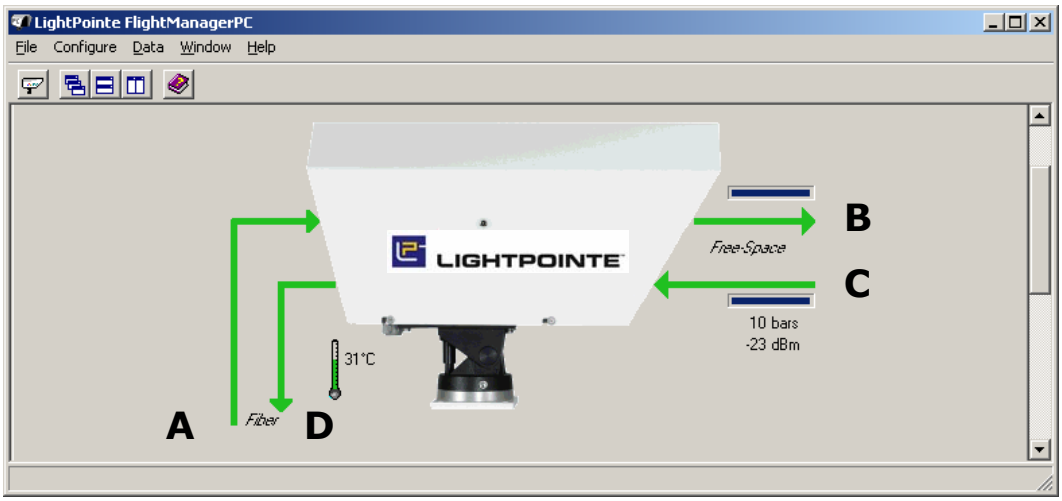



*Figure 2-11: FSO Link Head Window Display Indicators*

**Table 2-9: FSO Link Head Window Operational Checks**

| A | B | C | D | Description |
|---|---|---|---|---|
| G | G | G | G | Good transmit and receive signal |
| R | R | - | - | No signal received from the network |
| - | - | R | R | No free-space signal received, no idle signal<br>❑ Blocked signal<br>❑ Alignment problem<br>❑ No network signal on the far-side |
| - | - | R | R | Overload condition (Overload alarm generated, Free-Space receive power bar graph full) |
| - | - | Y | G | Low receive power, Based on free-space signal low power alarm threshold setting (refer to section 2.3.2)<br>❑ Fog<br>❑ Misalignment<br>❑ Threshold alarm setting to high |
| - | B | - | - | Near-side link head transmitting a test signal |
| - | - | B | B | Receiving a test signal from the far-side link head |

**Note: G = Green, R = Red, Y = Yellow, - = Any color**

If the connection between the link head and the workstation is lost, the **Connection Lost** alert window will appear. If this window appears, check the cable connection to the workstation, the cable connection to the V.24 device, the power connection to the V.24 device and the OMI fiber connections at the V.24 device and the link heads to ensure there is a valid connection.

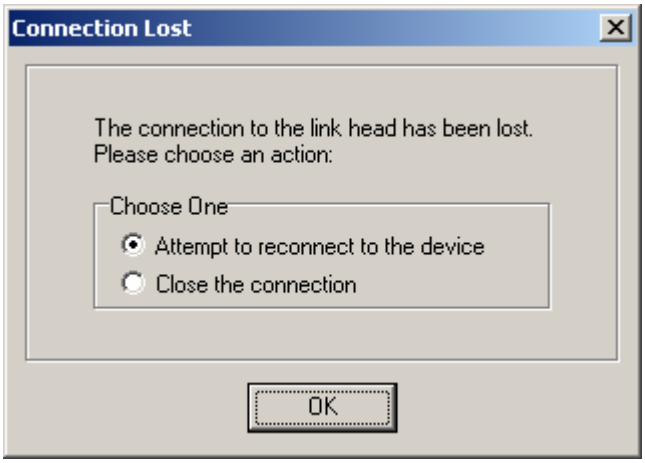



Figure 2-12: Connection Lost Alert Window

For additional troubleshooting information refer to the *FlightSpectrum/FlightStrata/FlightLite Installation and Maintenance Manuals.*

# 3. Index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