



LI6400XTerm

A Terminal for LI-6400 / LI-6400XT

LI6400XTerm is a cross-platform application (Windows™, Mac OS X, and Linux) that acts as a terminal for an LI-6400 or LI-6400XT Photosynthesis System.

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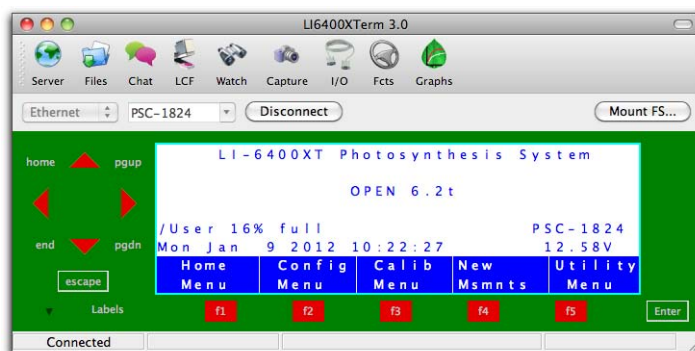
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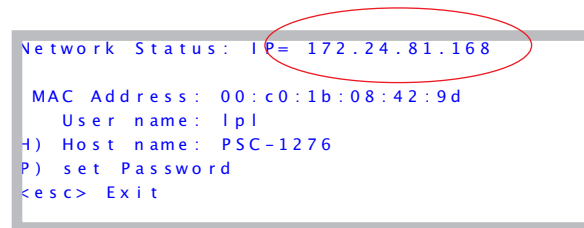
How to Connect Locally

Connect With Ethernet

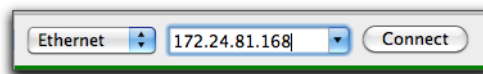
Plug the LI-6400XT into a LAN that includes the PC to be used. You should see the LI-6400XT's host name in the drop down box next to the connect button. Select it, and press Connect.

If the host name is not there, here are some things to try:

1. Make sure the LI-6400XT is connected. Go to Network Status in OPEN's Utility menu, and make sure there is an IP address.



2. If the LI-6400XT has an IP address, try entering that in LI6400XTerm.

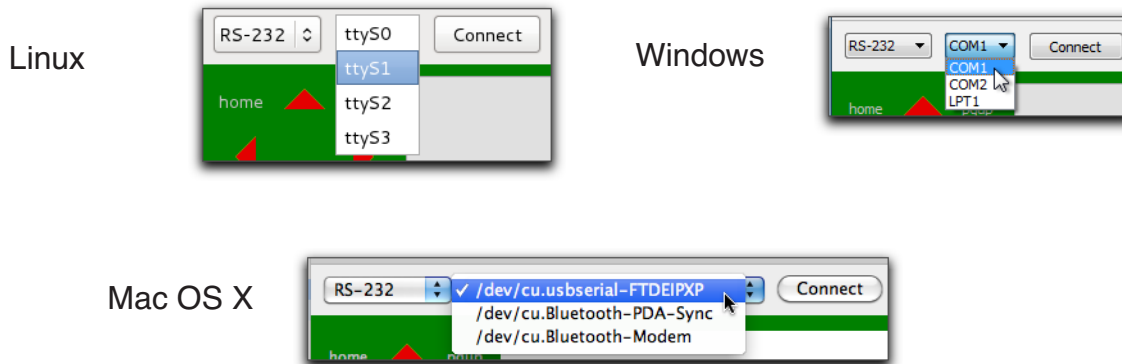


3. If you are doing a direct connection between the LI-6400XT and your PC, but the two just don't see each other, try connecting both to an Ethernet switch box or hub.

Connect with RS-232

Connect the LI-6400's comm port to a serial port or USB/serial adapter on your computer.

Set the LI6400XTerm combo box to RS-232.



The drop down menu next to the Connect button will then show all available serial ports on your computer. If you are using a USB/Serial adapter, you'll have to identify which port belongs to that adapter.

To do an RS-232 terminal connection, the LI-6400 must be in LTerm mode. This is done from OPEN's main screen by pressing **L**. A label will appear on the screen.



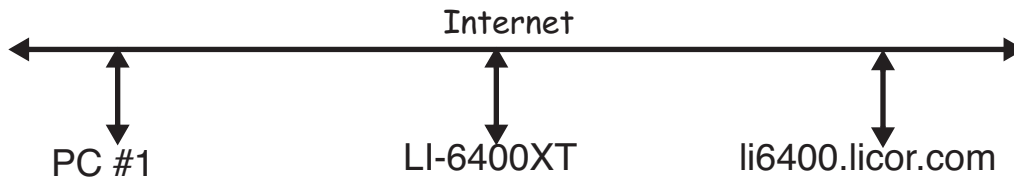
Once all that is done, press Connect.

Note: LTerm is only needed for an RS-232 connection. It is not needed for Ethernet.

How to Connect over the Internet

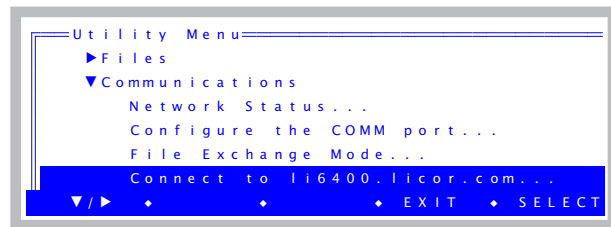
LI6400XT + Remote PC

This method connects an LI-6400XT directly to the server. This requires one PC running LI6400XTerm.

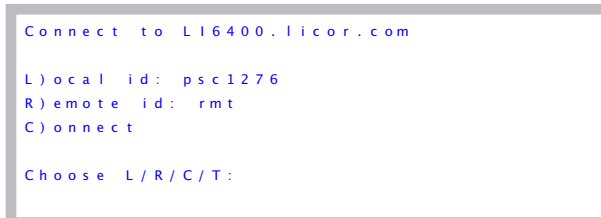


Connect an LI-6400XT with Ethernet to a LAN with access to the Internet. Then do the following:

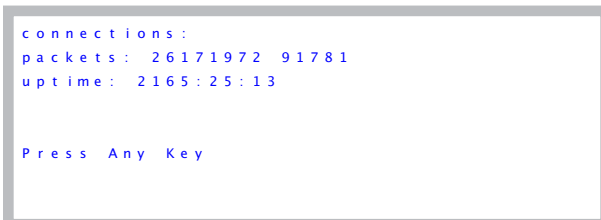
In the utility Menu, select
Connect to li6400.licor.com,



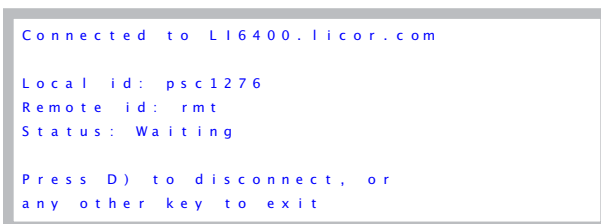
(optional) Press **L** and **R** to set
a local and remote ID,



(optional) You can test the
connection to the server by
pressing **T**.



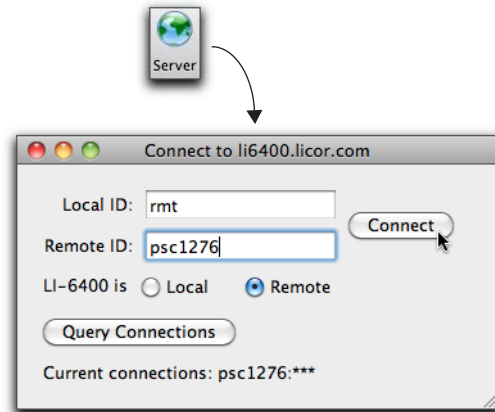
To make the connection, press
C.



LI6400XTerm

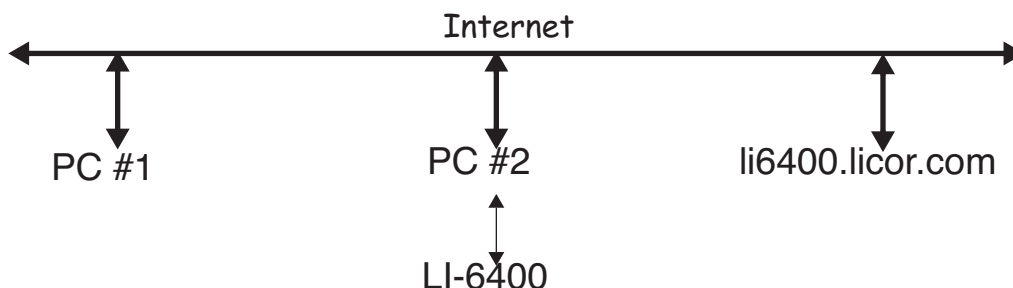
On the PC, click the Server tool bar button, and set the Connect setup box as shown above left, with Local and Remote IDs (reversed from the LI-6400XT), and the Remote radio button clicked. If the LI-6400XT is already connected to the server, you will see it if you click the Query Connections button. When set, click the Connect button.

How to Connect over the Internet

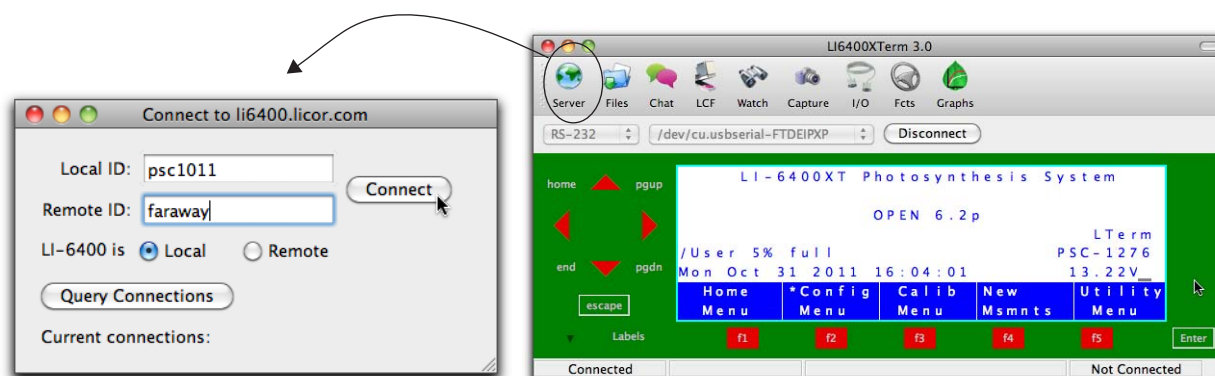


Any LI-6400 + 2 PCs

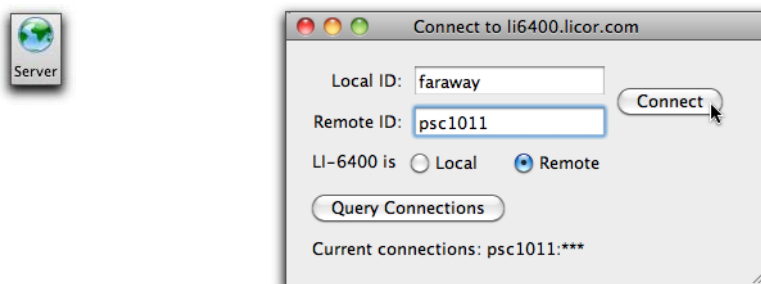
This method will work with any LI-6400, but requires a PC on each end, each running LI6400XTerm.



On PC #2, connect to the LI-6400 using the serial port, if it is not an XT, or else Ethernet. Then, click the Server button, and connect to li6400.licor.com. Set the connection dialog as shown on the right, with the Local radio button checked. Click Connect when done.

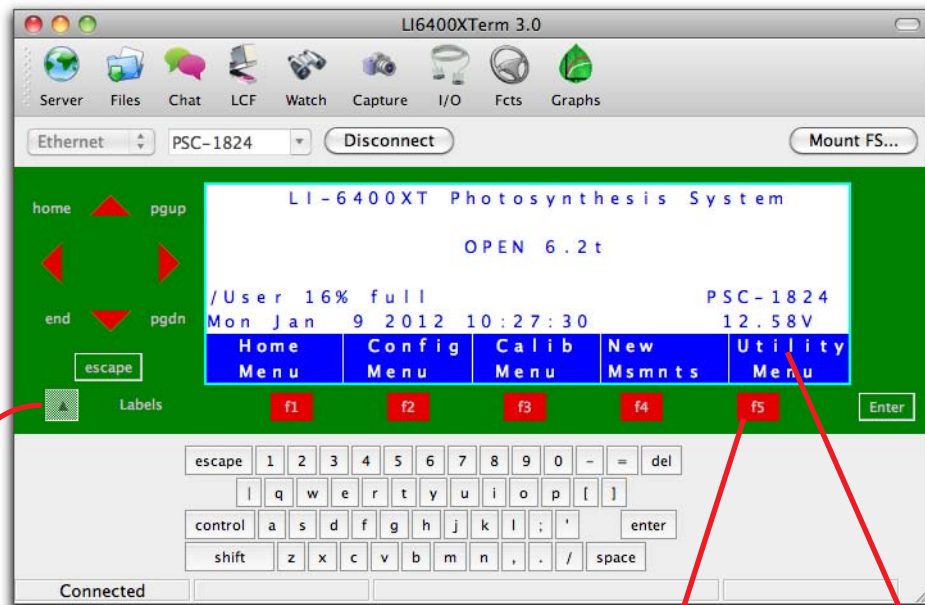


On PC #1, click the Server tool bar button, and configure the connection dialog as shown below. Note the interchanged Remote and Local IDs. The Remote radio button should be checked. Click connect when ready.



How to do Basic Remote Operations

Once a connection is made, controlling the LI-6400 remotely is very much like controlling it locally. You can use your computer's keyboard, or the build-in one around the display.



Show/hide the keyboard

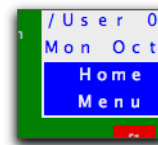
For fct keys, you can click the key...

...or the label on the display

The terminal will send keyboard input whenever there is a cyan border around the display. The border will be there when LI6400XTerm is the active window.




Border



No border

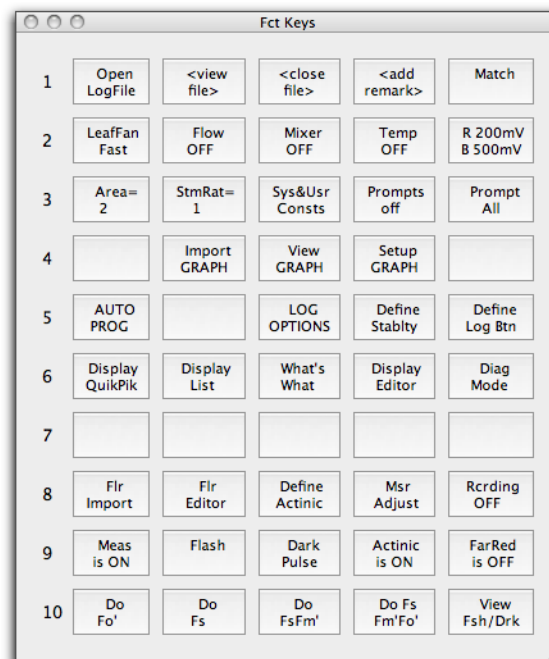
How to Use the Fct Key Palette

While communicating with an LI-6400, you can get the currently defined Fct keys displayed in a tool window by pressing the Fcts tool bar button. 



(If you are communicating with an LI-6400 with software < 6.2, this window may be blank until the Fct key definitions change or the Fct keys are redisplayed, such as in response to pressing the Labels key).

This tool window will show the currently defined Fct keys, even if the keys are not actually displayed on the LI-6400 display. The window automatically adjusts with each Fct key definition change.



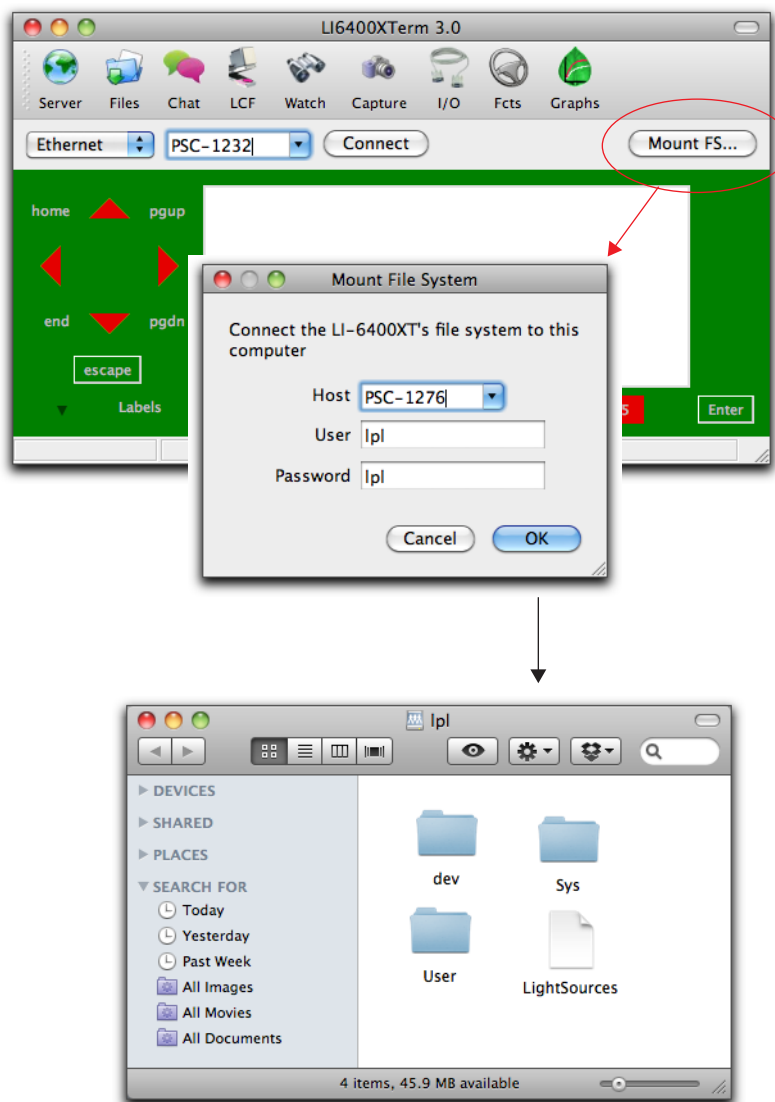
The keys are live buttons; if you click one, the LI-6400 will respond accordingly.

How to Move Files

Sharing the File System

With Ethernet, the simplest method is to mount the instrument's file system to your PC, then you can move files back and forth and using Finder (Mac OS) or Windows Explorer (Windows) or Nautilus (Linux).

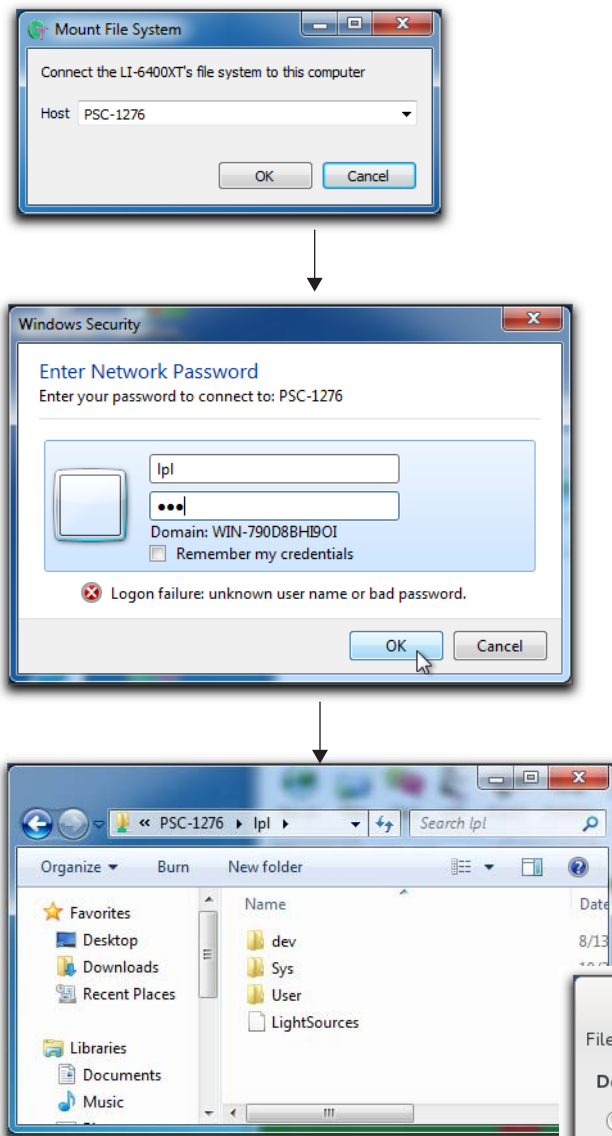
LI6400XTerm facilitates that a bit with the Mount FS button. (You do NOT have to be communicating to an LI-6400XT to use this button).



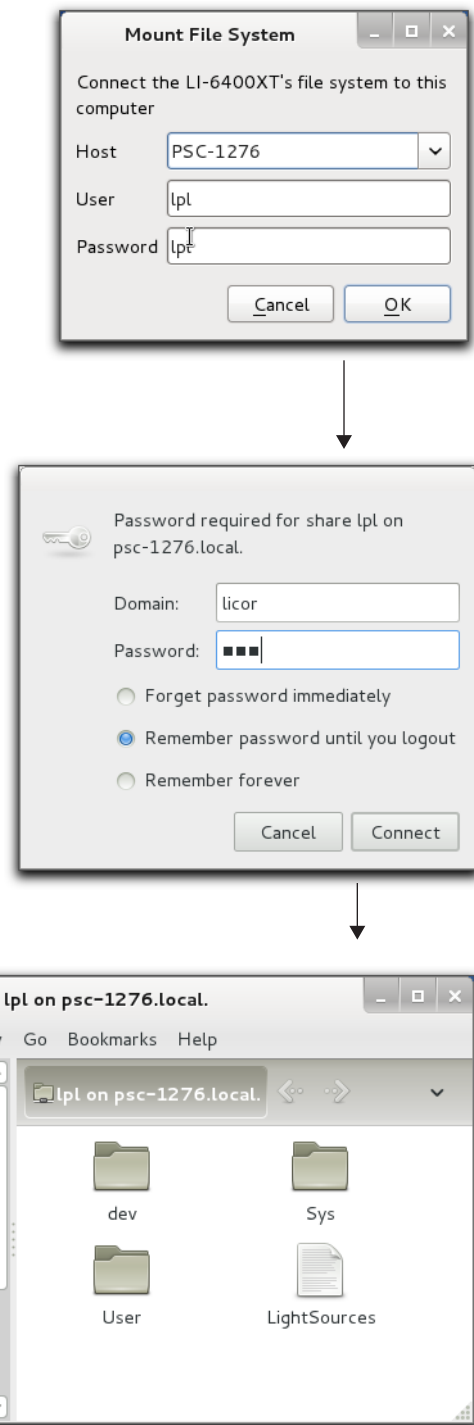
Just remember that the User and Password are lpl, and (if needed) the domain is licor.

On Windows and Linux, it goes like this:

Windows



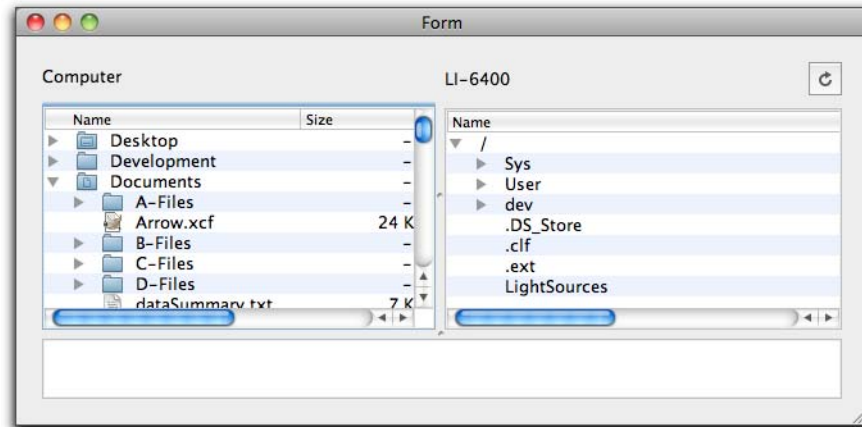
Linux



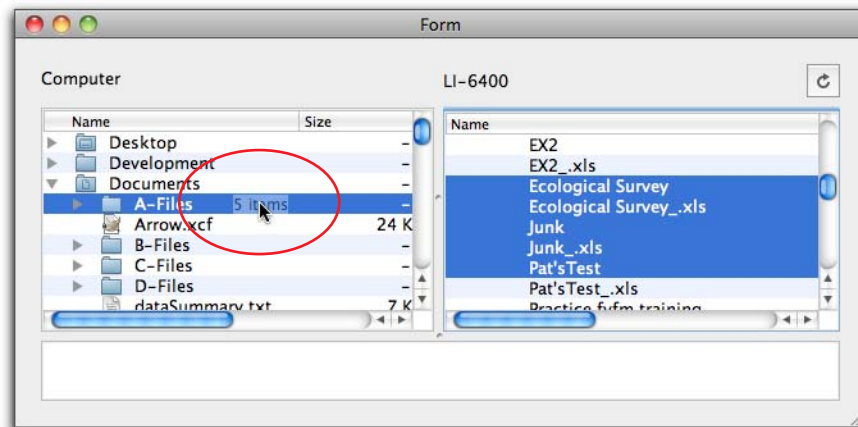
Using the File Exchange Window

1. Connect to the LI-6400. (See [How to Connect Locally](#). Note that this file transfer method will work for either RS-232 or Ethernet.)

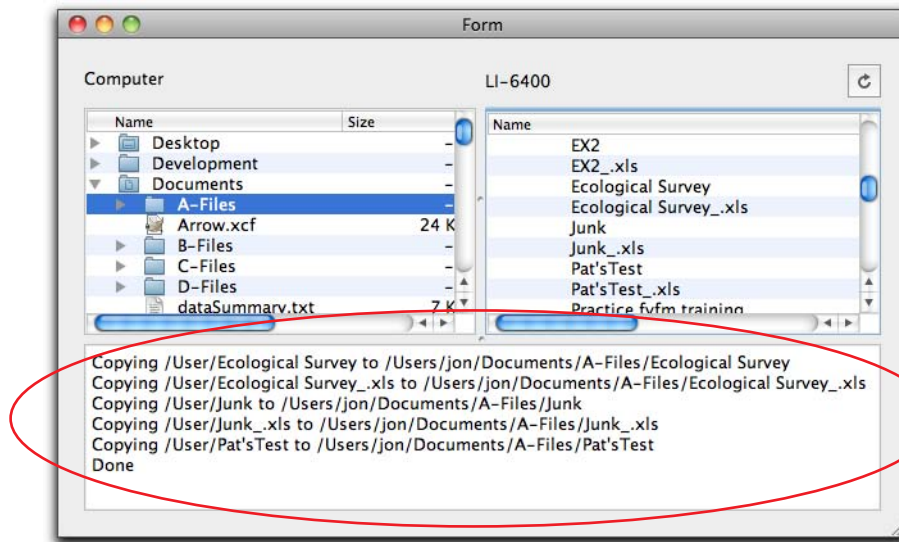
2. Press the Files tool bar button  to open the File Exchange window.



4. Use drag and drop to move files or directories.



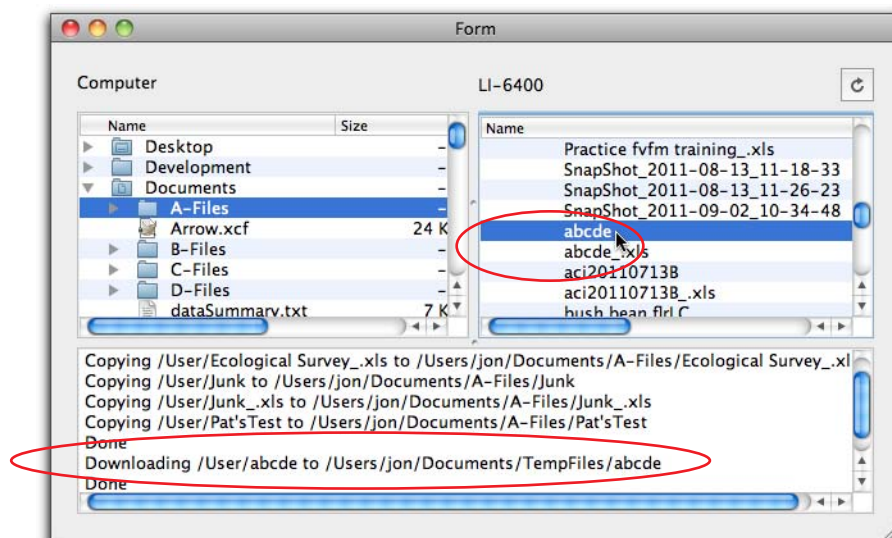
5. As files are moved, a log of the actions is written in the bottom window.



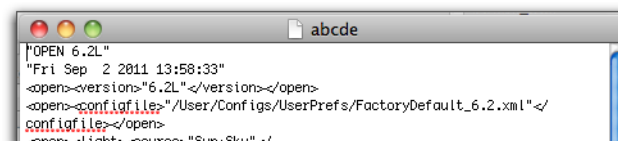
One other note: if you double click a file on the LI-6400 side of the window, it will (1) download it and (2) open it with the appropriate application.

Double click

The file is
downloaded...



...then opened



Double clicked files are always downloaded to a folder named TempFiles that is created by LI6400XTerm in your documents folder.

How to Monitor Variables

LI6400XTerm lets you monitor and plot any system or user variable in the LI-6400 to which you are connected.

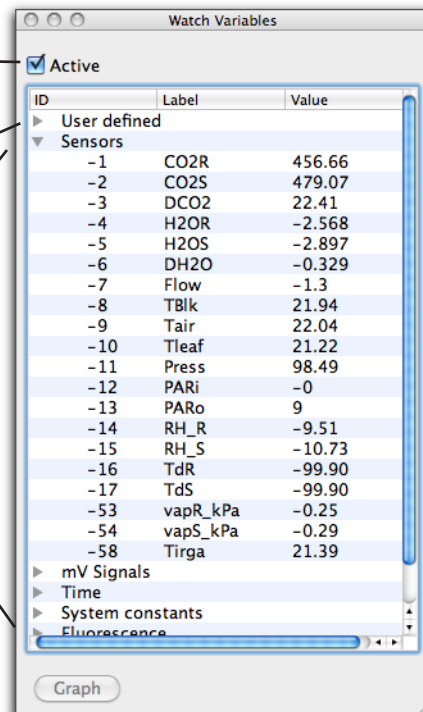
Press the Watch tool bar button  to open the Watch Variables window.

This window updates when:

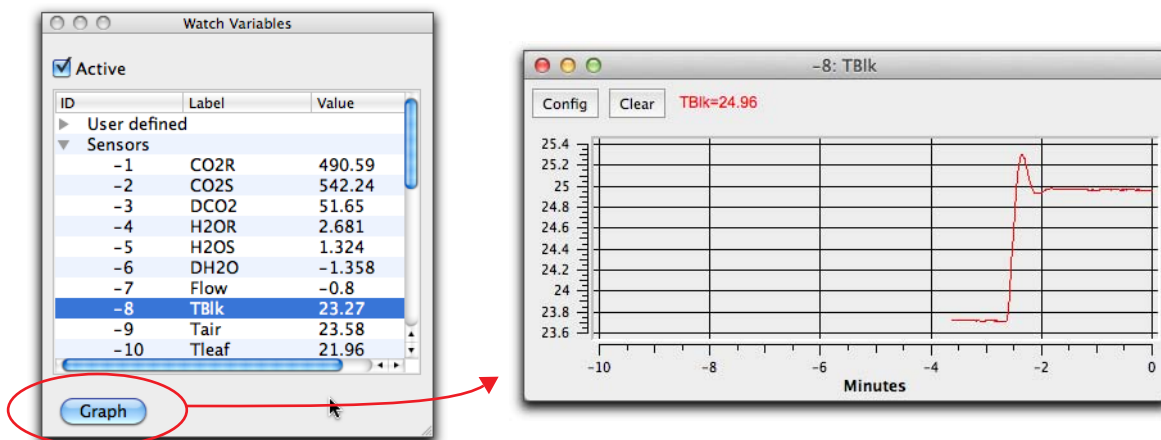
1. This box is checked
2. The Instrument is in New Measurements mode.

User variables are here.

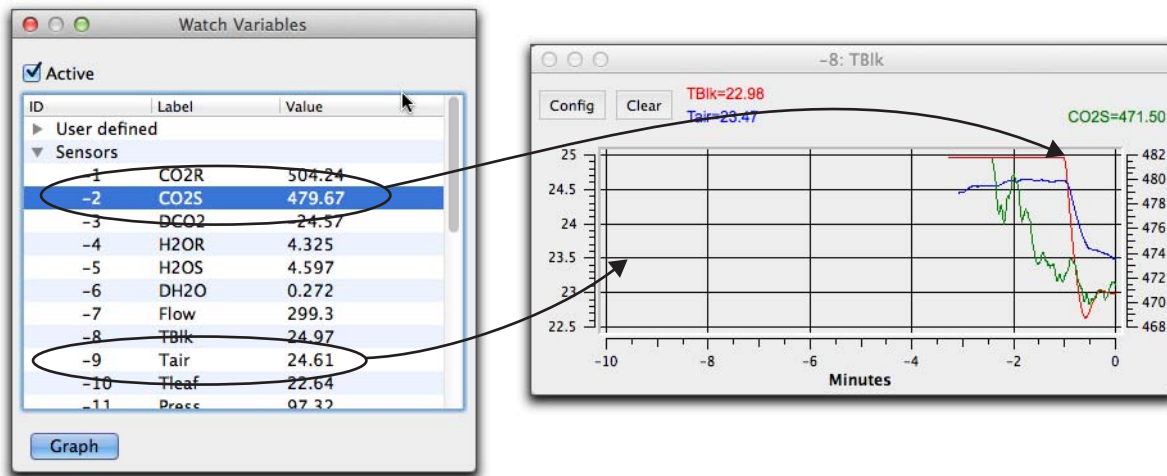
User variables are here.
System variables, by group



To graph a variable, highlight it and click the Graph button.

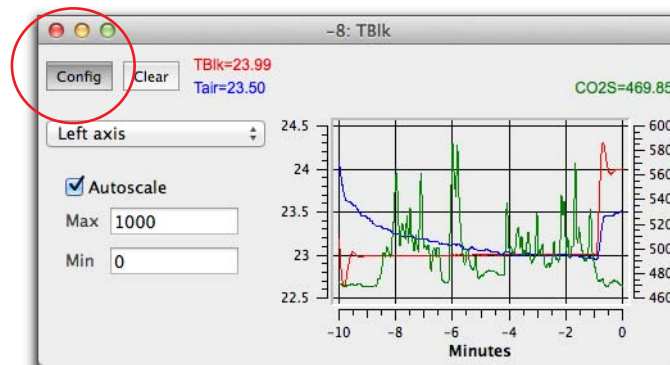


Multiple variables can be added to a graph by dragging from the Watch Variables list and dropping on the left or right vertical axis.

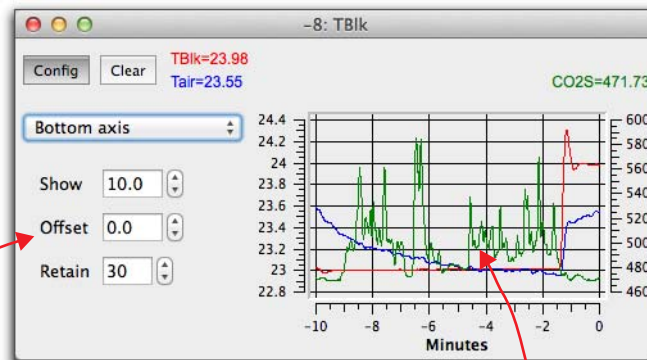


Axes scaling and other behavior is set by clicking the Config button.

Either vertical axis can be autoscaled, or have explicit min and max values.



The bottom axis configuration allows you to set the min and max of displayed data, and set how many minutes of data to retain.



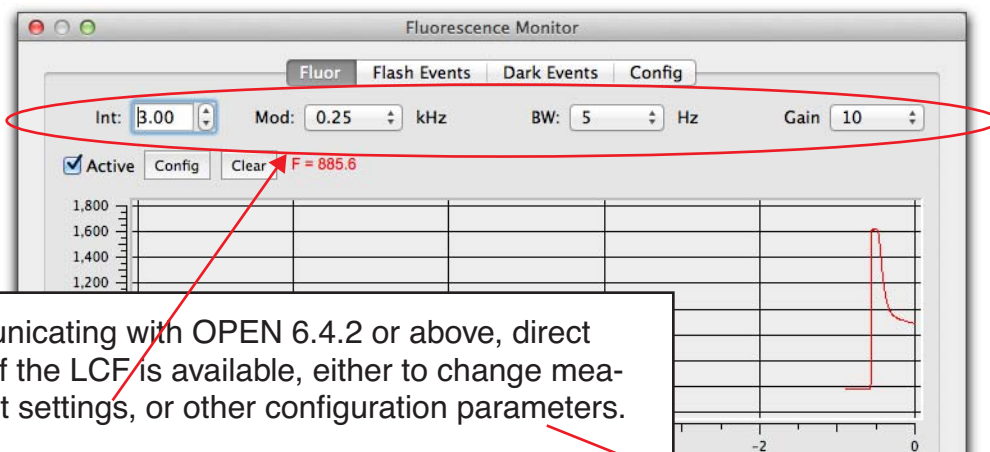
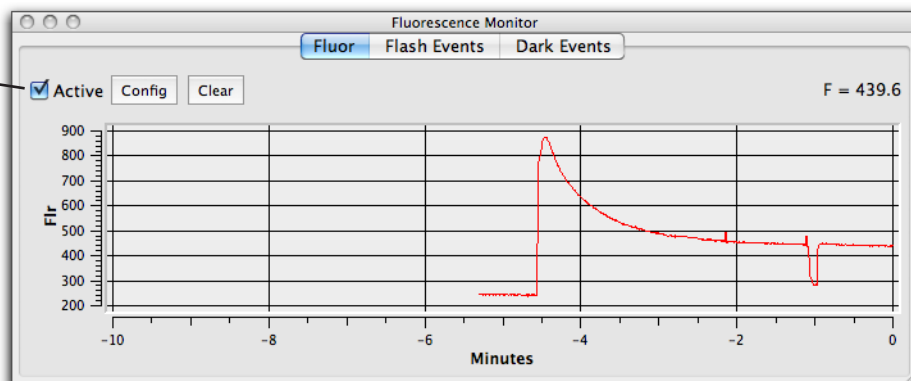
Panning back through time can be done by changing the value of the offset control, or by clicking and dragging horizontally in the plot.

How to View and Capture LCF Events

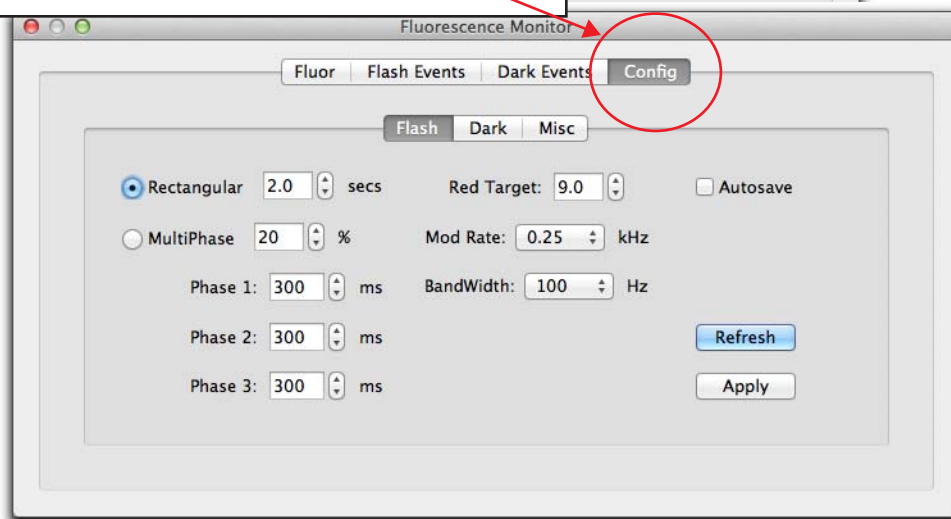
Bring up the Fluorescence Monitor window by pressing the LCF tool bar button.



The Flr trace updates (if checked) in New Measurements mode and OPEN's main screen.

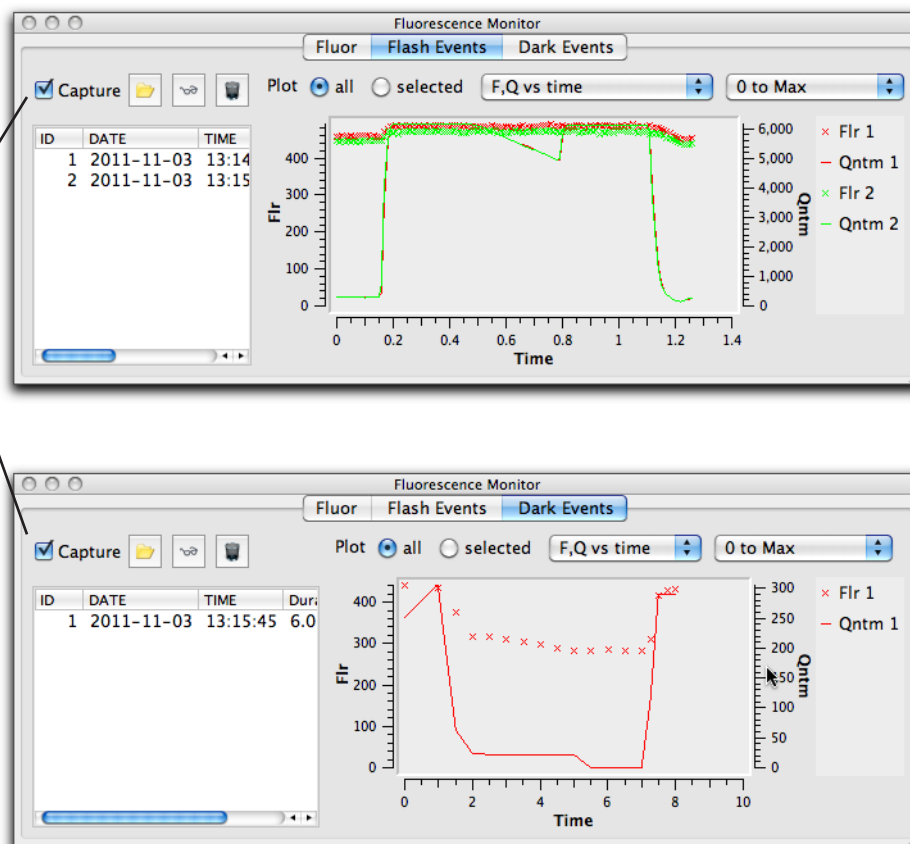


If communicating with OPEN 6.4.2 or above, direct control of the LCF is available, either to change measurement settings, or other configuration parameters.



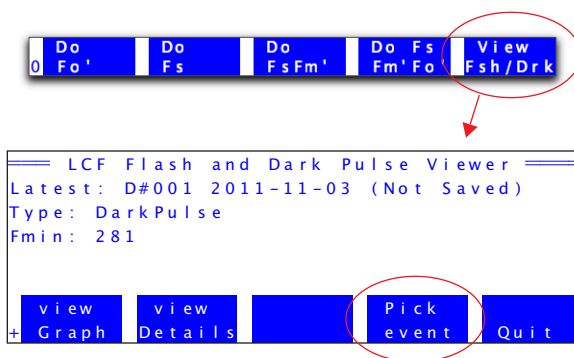
To capture fluorescence events is shown below.

If Capture is checked, all flashes and dark pulses are captured as they occur.



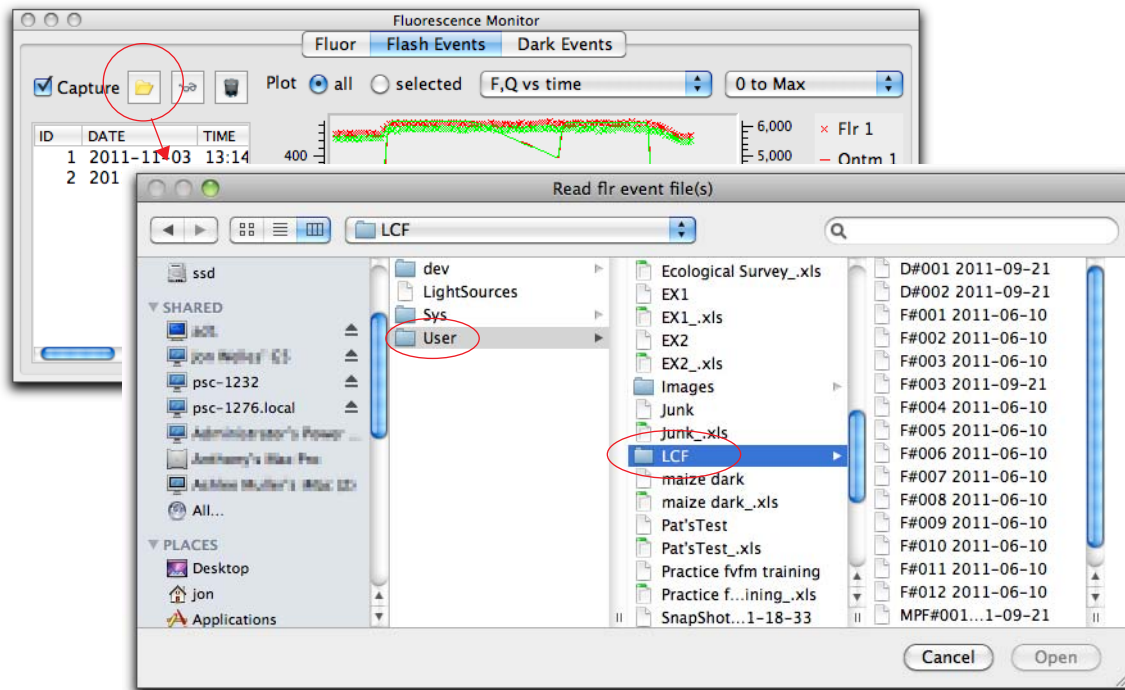
There are two methods to plot previously stored flash and dark pulse events:

1. Use the Flash/Dark event viewer in New Measurements mode to pick the event.



Then, do ctrl + c to send the event to LI6400XTerm, as if it had just occurred.

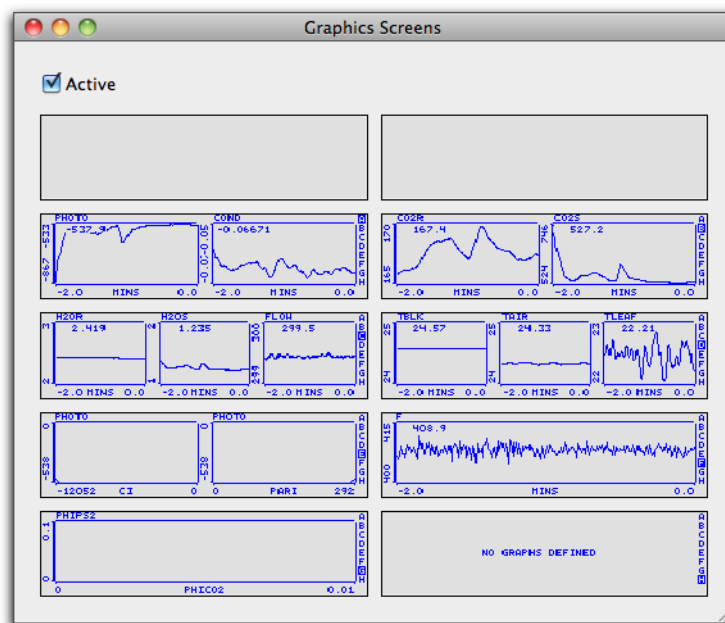
2. The other method (LI-6400XT only) is to attach the instrument's file system (see [How to Move Files](#)), and use the read button to access the files. Note: with this method, LI6400XTerm does not need to be communicating with the instrument, or could be communicating with a different instrument. Hint: you'll find the flash and dark pulse files in /User/LCF.



How to View All Graphs

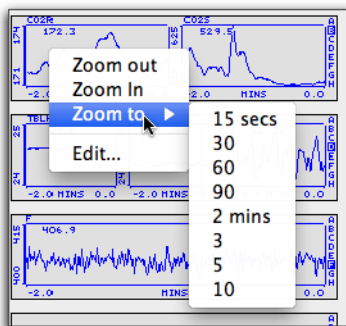
(For LI-66400XTs with OPEN 6.2 or above). Press the Graphs tool bar but-

ton  to bring up the Graphs monitor.

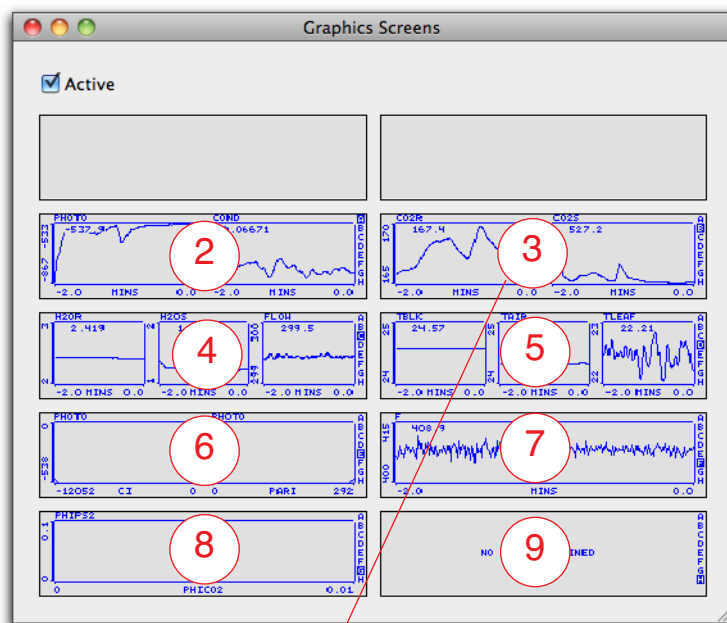


You can interact with the instrument's RTG graphics from LI6400XTerm. Right click on the graph you wish to modify

Any zooming option will affect all 1, 2, or 3 strip charts that might be on the graph in question.



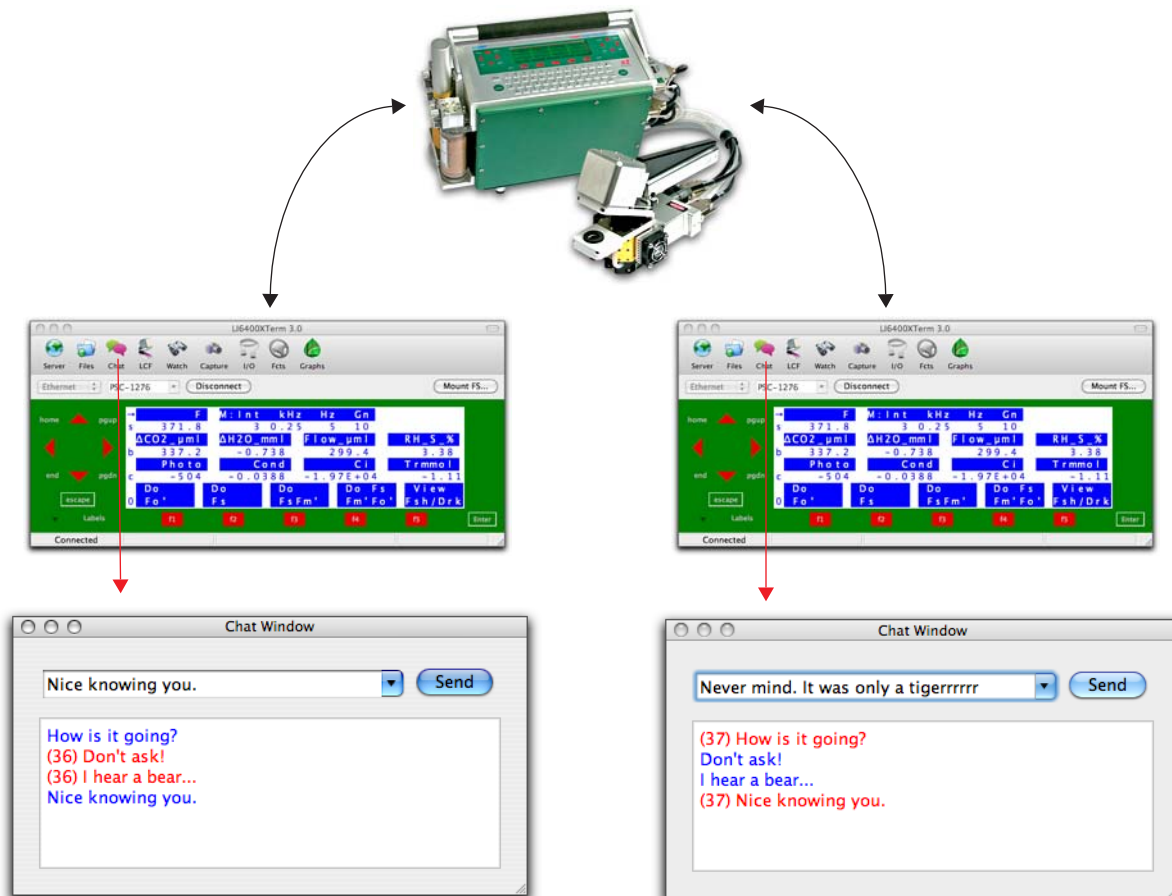
If you pick the Edit... option for a graph, you will get a dialog in which you can redefine the entire graph.



The "Plots for Graphics Window 3" dialog box is used to configure the "CO2R, CO2S" chart. It features a "Chart Name" field, tabs for "Chart 1", "Chart 2", and "Chart 3", and checkboxes for "Active" and "StripChart". The "Horizontal Axis" section includes fields for "ID" (0 "Time"), "Min" (0), "Max" (1), "Inc" (1), and "Scaling" (Auto Min, Auto Max). The "Vertical Axis" section includes fields for "ID" (-1 "CO2R"), "Min" (0), "Max" (1), "Inc" (1), and "Scaling" (Auto Min, Auto Max). An "Apply" button is located at the bottom right.

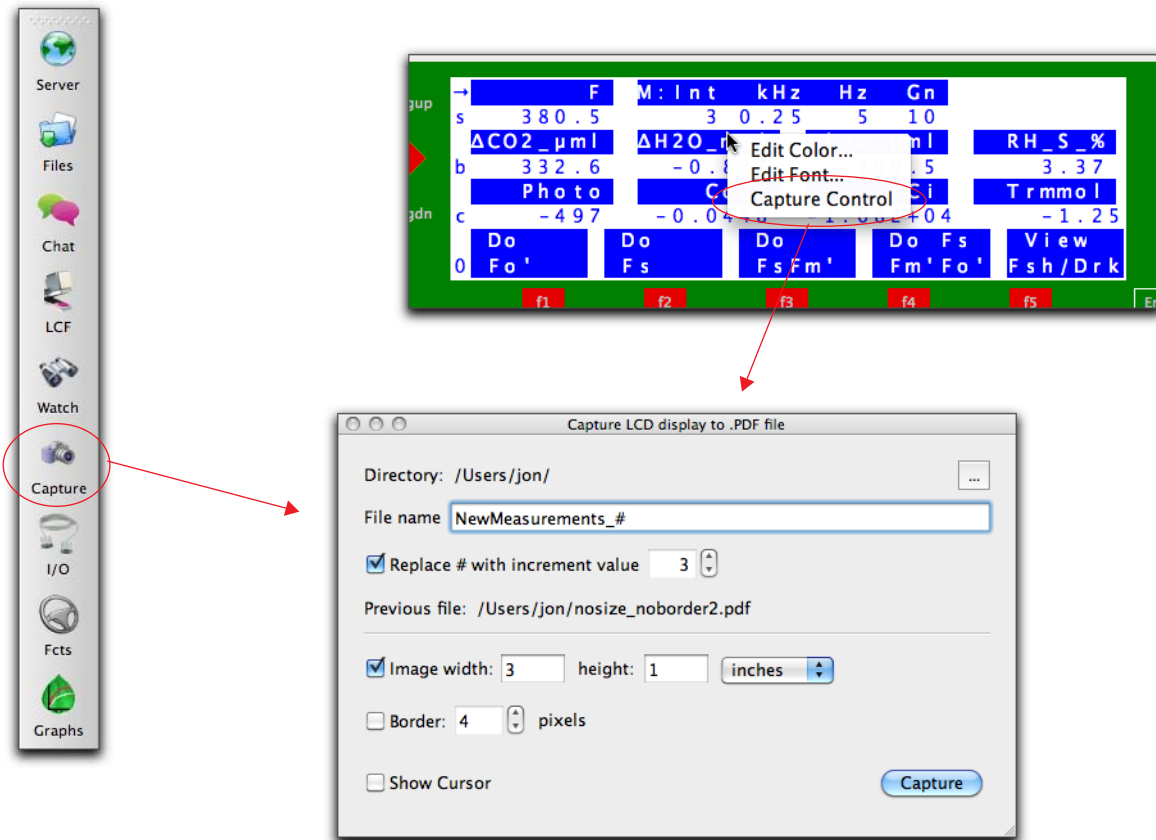
How to use the Chat Window

Chat is a mechanism whereby terminal devices (LI6400XTerm, LI6400Group, and the iPad App) can communicate with each other through an LI-6400.



How to Capture Screen Shots

You can right-click on the simulated display to access the Capture Control panel, or select it from the tool bar.

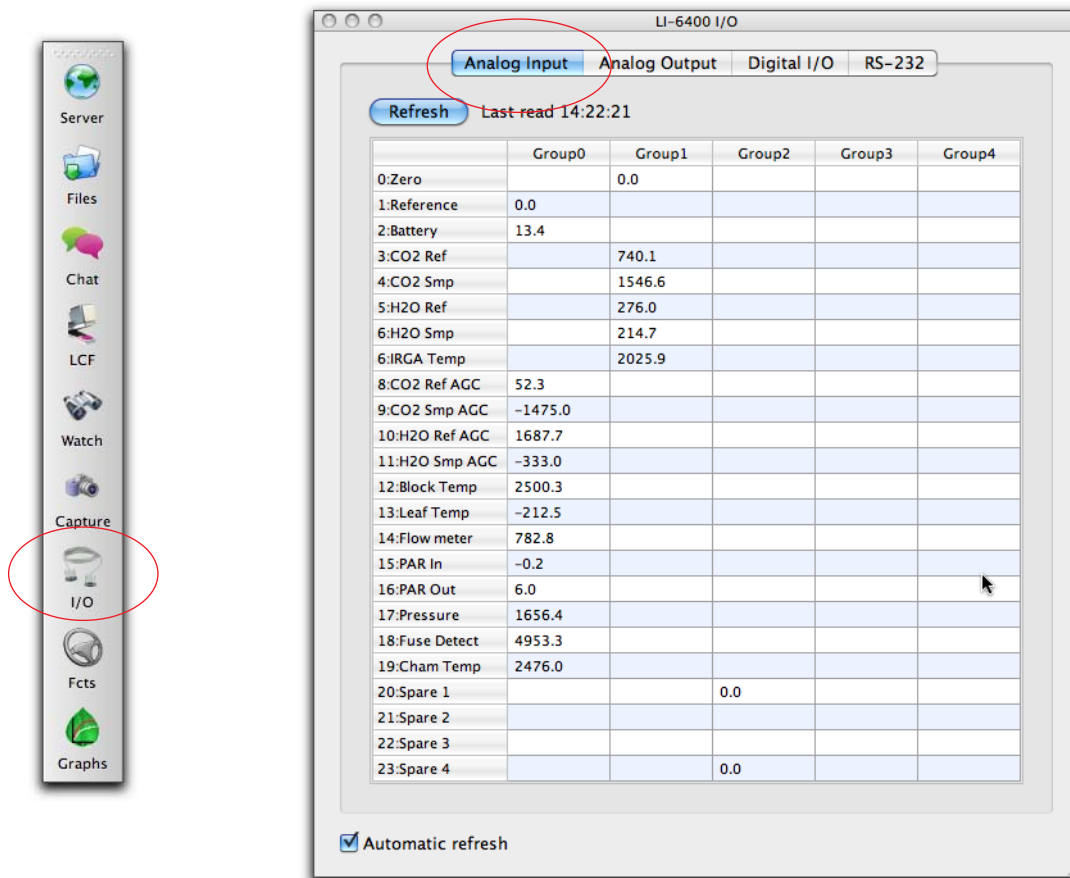


This window allows you to capture whatever is on the simulated display (text or graphics) as a .pdf file. The window allows you to specify the final physical size of the image (inches), the border size (pixels), and whether or not the cursor is shown. The file name can be made to auto-increment, making capturing a rapid succession of events easy.

The I/O Window

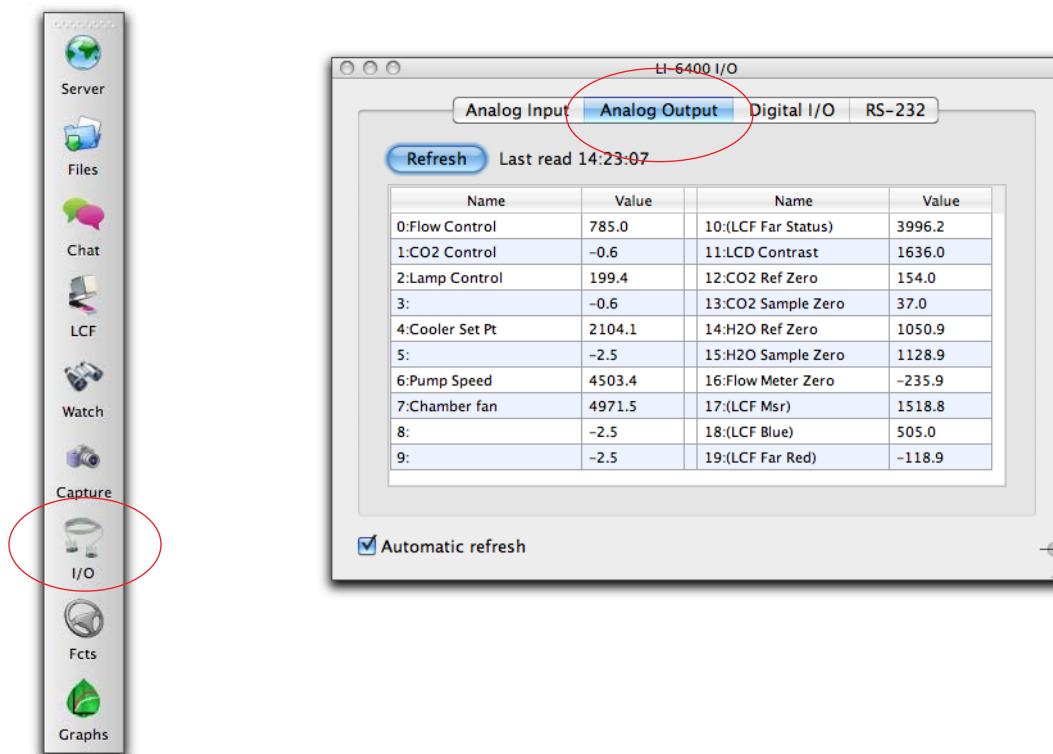
Analog Inputs

The current state of all of the analog inputs in the LI-6400 is visible as a tab in the I/O window.



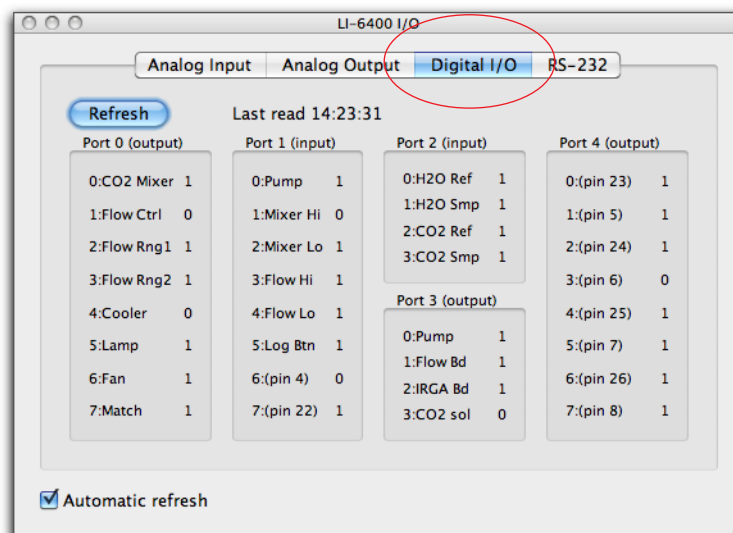
Analog Outputs

The state of the 20 digital to analog outputs are available of the Analog Outputs tab of the I/O window.



Digital I/O

The digital I/O status is available on the tab with that name in the I/O window.



Comm Monitor

Comm port activity can be monitored on the RS-232 tab in the I/O window. Data can also be sent to the comm port by typing in the edit box and pressing the Send button.

