



# User Guide

## What's in the Box?



Jaz Unit



Mini-USB Cord



SD Memory Card



Ethernet Cable



Power Cable

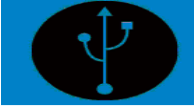
[www.oceanoptics.com/jaz.asp](http://www.oceanoptics.com/jaz.asp) | [Info@oceanoptics.com](mailto:Info@oceanoptics.com) | +1 727-733-2447

## PACKAGE CHECKLIST

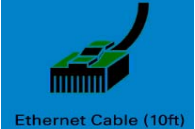
Verify that your package contains the following:



Ocean Optics Jaz system consisting of JAZ-S (spectrometer module), JAZ-DPU (CPU module), JAZ-B (battery/memory module), and JAZ-E (Ethernet/SD module).



USB cable (Type B): Connects your spectrometer to a computer's USB port.



Ethernet cable (10 ft)



SD card (up to 2 GB)



5V DC Power supply

Wavelength Calibration Data Sheet: SpectraSuite Operating Software reads this calibration data from your spectrometer when it interfaces to a computer via the USB port.


### Additional Modules Available

- JAZ-L450: LED light source

## INSTALLING SPECTRASUITE SOFTWARE

You must uninstall SpectraSuite from your computer, then install the updated version of SpectraSuite from the Ocean Optics website (<http://www.oceanoptics.com/technical/softwaredownloads.asp>) before SpectraSuite will recognize your Jaz unit. The default location for SpectraSuite is C:\Program Files\Ocean Optics\ SpectraSuite. Also download the Jaz Wavelength Calibration Utility from the Jaz Beta site <http://www.oceanoptics.com/jazclub/>

**Caution! : Install the software BEFORE connecting the spectrometer to your PC. The SpectraSuite software installs the drivers required for spectrometer installation. If you do not install SpectraSuite first, the system will not properly recognize the spectrometer.**

1. Close all other applications running on the computer.
2. Double-click on the SpectraSuite.exe file located in SpectraSuite | bin folder (or SpectraSuiteMac.sh for Mac users) to run the software executable. For a destination, navigate to the C:\Program Files\OceanOptics folder.
3. Connect your Jaz unit to your computer (see p.4).
4. Power-on your Jaz unit by pressing the Power button (see p. 5). 
5. For Windows PC users: The PC will launch the New Hardware Wizard. Follow instructions in the Wizard so that your PC will properly recognize the Jaz unit.
6. Reboot your computer when requested.
7. **To install on a Windows PC:** Navigate to **Install Ocean Optics Software | SpectraSuite | Windows OS**. The installation process begins.

**To install on a Mac:** Double-click on the CD icon and open the OceanOptics.html file to launch the CD. Then, navigate to Install Ocean Optics Software | SpectraSuite | Mac OS. Double-click on the newly selected .dmg file, and copy the SpectraSuite icon to Desktop or Applications.



**To install on a Linux Platform:** See the SpectraSuite Installation and Operation Manual for full instructions.

8. Follow the prompts on the Installation Wizard.
9. Click OK to restart your computer. You have now installed the SpectraSuite software.

## INSTALLING YOUR JAZ UNIT

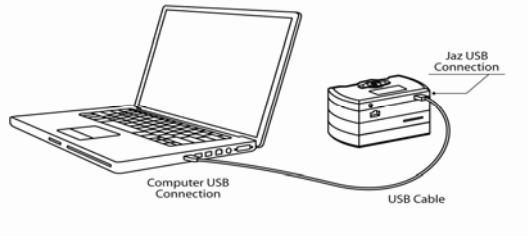
Your Jaz unit is field-portable and can collect data as a free-standing unit from the battery embedded in the stack. You also have two options for connecting Jaz to a computer to process the data you have collected:

- A USB connection directly to a computer running SpectraSuite.
- An Ethernet connection to a computer network.

**Note:** Your Jaz unit receives power from either connection.

## Connecting Jaz to a Computer via USB

1. Connect the USB (B) cable that you received with your Jaz unit from the Jaz unit to your computer.



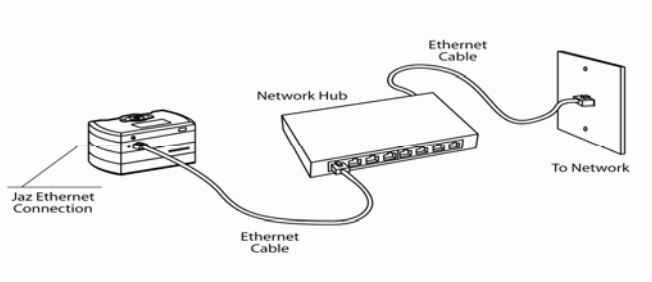
2. When first connecting Jaz to your computer, you must run the Hardware Wizard for your computer to recognize the new hardware. For Mac users, this step is not necessary.

3. In SpectraSuite, select **Spectrometer | Rescan Devices**. Your Jaz unit should be recognized in SpectraSuite's Data Sources pane as indicated by this icon:



## Connecting Jaz to a Computer via Ethernet

1. Connect the Ethernet cable that you received with your Jaz unit from the Jaz unit's Ethernet connector to a Power Over Ethernet (POE) bridge or a switch to the network (e.g., an 8-port network hub).



2. In SpectraSuite, select **Spectrometer | Rescan Devices**. Your Jaz unit should be recognized in SpectraSuite's Data Sources pane as indicated by this icon:



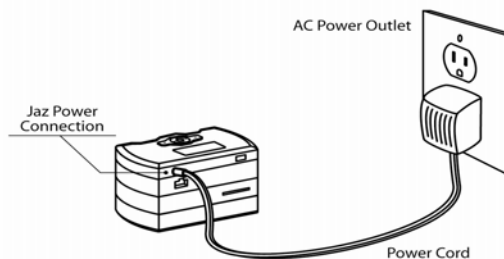
## POWERING YOUR JAZ UNIT


The Jaz unit can be powered from the USB connection as well as from the Ethernet connection. You can also power Jaz using the power supply cable and transformer that came with your unit.

**Note:** You can plug the power supply into your Jaz unit concurrently with the USB or Ethernet connection without harming the equipment. This may even be necessary if the USB connection does not supply sufficient power to drive the Jaz stack, or your Ethernet connection is not over a POE-enabled switch/hub.

The Jaz unit contains a battery module that should allow for several hours of field operation before the unit must be recharged. A power save feature dims the screen to 50% intensity, then darkens the screen totally after 3 minutes of inactivity.

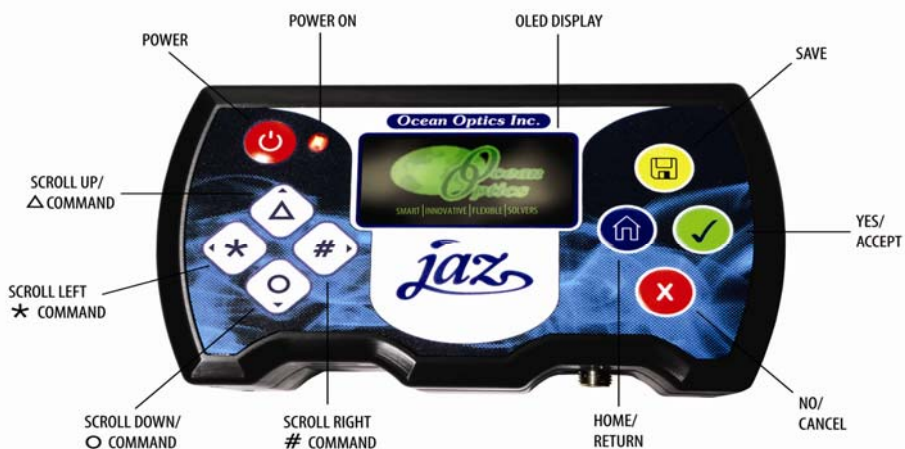
Connect the power supply cable that you received with your Jaz unit from the unit's power connector to a wall outlet.



Press the Power button in the center of the Jaz unit to power up the Jaz stack. 

It can take the Jaz unit 2 – 3 seconds to power up.

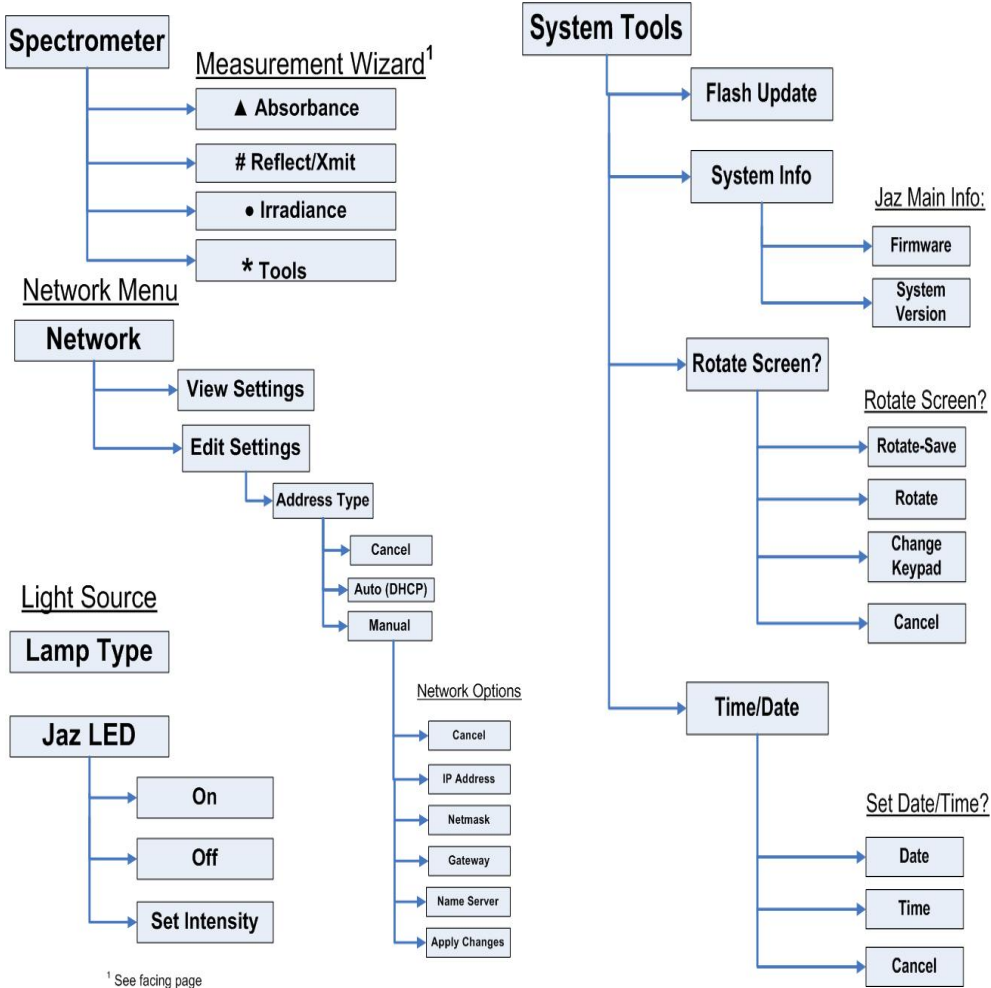
## JAZ BUTTONS



# JAZ MENU

Your Jaz unit is unique in that it offers you an interactive menu screen to perform the following functions:

- Spectrometer: Displays the Measurement Wizard (see facing page).
- System Tools: Download an update to the Jaz flash memory and rotate the display screen orientation. Rotate-Save rotates the screen display 180 degrees and saves the screen orientation as the default, while Rotate rotates the screen display until Jaz is rebooted.
- Light Source: Provides control over the light source module, if included.
- Network: View and set the Jaz IP address, net mask Gateway, and Name Server address.



<sup>1</sup> See facing page

## MEASUREMENT WIZARDS

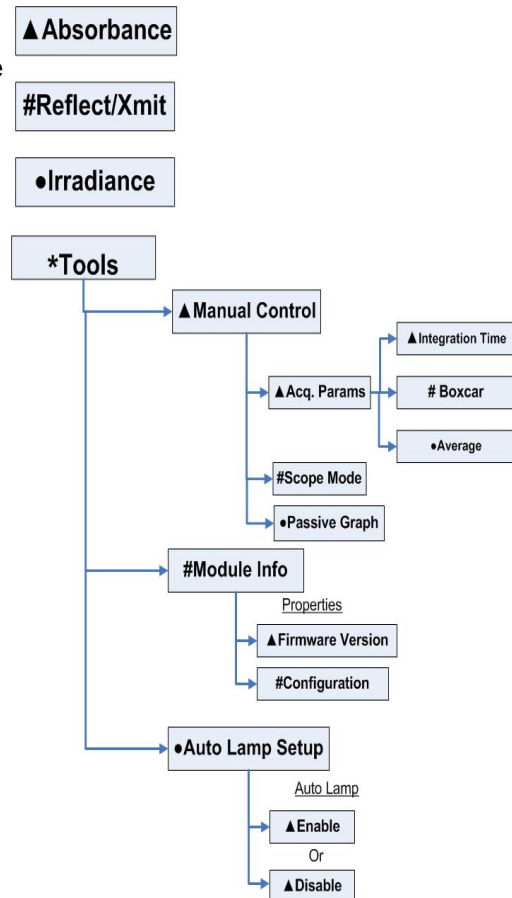
Jaz features shortcut wizards that are accessible via the Jaz keypad (icons on the navigation keys) for the following measurements:

- ▲ Absorbance
- # Reflection/Transmittance
- Irradiance

Press the button on the keypad that corresponds to the icon for the desired measurement (▲, #, or ●).

### \* Tools

The Tools menu item provides additional functionality for manual setting of acquisition parameters, retrieving information about the spectrometer module properties, and lamp set-up (if applicable).



## GRAPH OPTIONS

Pressing the √ key while viewing a graph on the display allows you to perform the following functions:

- ▲ Auto Y-axis: Autoscale the Y-axis
- # Set Limits: Set minimum and maximum values for both the X and Y axes.
- Single Value: Monitor a single chosen wavelength

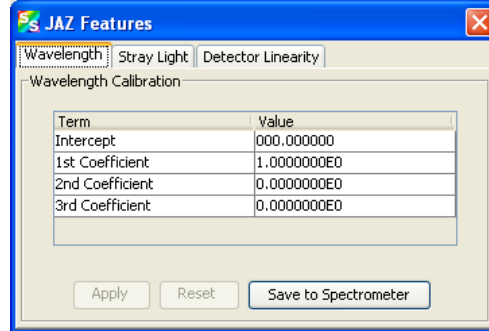
## JAZ SET-UP IN SPECTRASUITE

You must enter the Spectrometer Features for Jaz in SpectraSuite.

1. Either right-click on the Jaz icon in the Data Sources pane and select Spectrometer Features, or select Spectrometer | Spectrometer Features. The Spectrometer Features dialog box differs, depending on whether you are running Jaz over an Ethernet or USB connection.
2. For an Ethernet connection, you must enter the IP address as displayed on your Jaz unit. Then click Connect. It takes 10-15 seconds to connect.
3. Set the integration time, scans to average, box, reference and dark parameters, as required.



*Spectrometer Features for Ethernet*



*Spectrometer Features for USB Connection*

## VIEWING JAZ IN SPECTRASUITE

If you click on the + sign to the left of the spectrometer image shown on your screen, the following information appears:

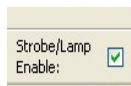
- Acquisition parameters that you set (integration time, scans-to-average, boxcar smoothing).
- Whether dark and/or reference spectra have been stored, the graph (A, B, C, etc.) associated with this spectrometer that appears in the right pane (important if you have installed more than one spectrometer).
- Spectrometer's properties (serial number, firmware level, number of pixels, and wavelengths).



## REFERENCE READING

A reference reading is a spectrum that is stored for mathematical comparison with sample readings to be taken. Reference readings are normally taken with an attached lamp such as the UV-VIS light source module included with your Jaz unit.

1. Switch on the lamp by checking the Strobe/Lamp Enable box.



2. Adjust the integration time so that the greatest amount of light that you anticipate for your application causes a signal of about 85% of spectrometer's capability (for example, 3500 for spectrometers with a total of 4096 counts, 14000 counts for spectrometers with a total of 16384 counts, 50000 for spectrometers with a total of 65535 counts).



3. Click on the Store Reference Spectrum icon.

## DARK READING

The trendline in Scope mode does not drop to zero. The dark reading in this example is about 160.

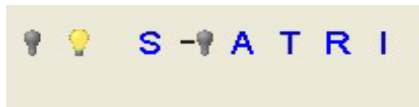
To perform quantitative experiments the dark reading must be recorded and subtracted from the Scope mode values.

To do this, block any light entering the spectrometer and then click on the Store Dark Spectrum icon.



The Subtract Dark Spectrum icon will go live. Clicking on it will subtract the dark value and the trendline will drop to the x-axis. Zero is now zero and the math will work.

**A - Absorbance**  
**T - Transmission**  
**R - Reflectance**  
**I - Irradiance**



When both dark and reference readings have been taken, all the experiment modes go live.

## INTEGRATION TIME

Integration time is the “exposure time” for the CCD array. The default value is 100ms. If the integration time is too high the trendline will “saturate” by exceeding the maximum count. No harm is done, but to see the full trace the integration time must be reduced, or the light source attenuated.

## SCANS TO AVERAGE

SpectraSuite can average consecutive scans to smooth out noise. This is normally not required but can be useful for low intensity sources.

## BOXCAR WIDTH

Boxcar is the averaging of the counts from adjacent groups of pixels. The effect of increasing the boxcar width is to reduce the wavelength resolution.

## GRAPH CONTROLS

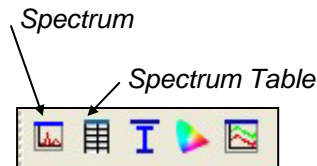
These icons all have tool tips. Hold the cursor over each to see its function.

1. Zoom to maximum. Useful “home” control if you get lost.
2. Scale graph to fill window.
3. Scale graph height to fill window. Useful for magnifying small y-axis detail.
4. Set axes ranges manually. Useful if you just want to study a limited waveband.
5. Zoom in.
6. Zoom out.
7. Zoom to a selected region. Useful for looking at fine detail.
8. Graph panning.



## ACQUISITION CONTROLS

Use the Spectrum Graph icon to create a new graph in Scope mode. Until you do this all the tools are grayed out. Spectrum Table launches a live numeric data table for export to spreadsheet applications.



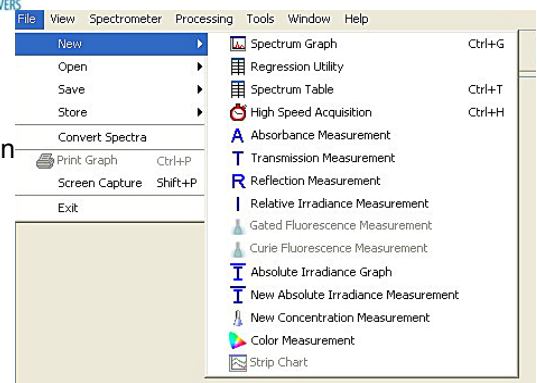
### Note:

If Spectrum Graph is clicked when an active graph is already running, you will have a choice of running two active graphs simultaneously. This should not be done with one spectrometer; it causes pulsing of the strobe-lamp and data will be corrupted.

## USING SPECTRASUITE WIZARDS



The **File | New** command opens wizards for Absorbance, Transmission, Reflection, Relative Irradiance, Gated Fluorescence, Absolute Irradiance, Concentration, Color and Strip Charts. The wizards guide you through the process of taking reference and dark readings. This can also be done in the main chart window using the toolbar icons.



## CHANGING X-AXIS UNITS

The default X-axis unit is nanometers.

Go to **Processing > X-axis units** to change the units

**Note:** The trace usually disappears when you change units. To recover it, click the zoom to maximum icon (see Graph Controls on facing page).

Note that the trendline is reversed when the X-axis unit is an inverse of wavelength (GHz and wave number).

## SOFTWARE UPDATES

### SpectraSuite

SpectraSuite is updated frequently. You can download the latest version from the Ocean Optics website [www.oceanoptics.com](http://www.oceanoptics.com) or use the Update Center in SpectraSuite (**Tools | Update Center**).

### Jaz

Select **Tools | Flash Update** from the Jaz menu to download Jaz updates.

## OTHER RESOURCES

This document is designed to get you up and running with your Jaz unit and SpectraSuite software.

Please check our special Jaz site dedicated to you, our Beta Tester for frequent updates and other important information: <http://www.oceanoptics.com/jazclub/>.

To speak to a Technical Support representative or an Ocean Optics Applications Scientist, please call **(727) 733-2447**. Our office hours are 8 a.m.– 8 p.m. (Mon-Thu), 8 a.m.– 6 p.m. (Fri) EST.

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