kSA BandiT

Installation and Getting Started Guide

Version 1.9

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03/29/08 Rev 9

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1. Computer Requirements

The *k*SA BandiT temperature sensor can run on a PC laptop computer using a single USB cable connection. Below follows a list of computer requirements and recommendations.

Required:

- *Windows XP* operating system.
- USB port *Note: while BandiT system requirements include at least one USB1.1/2.0 compatible connection, system speed is not limited by USB1.0.*

Recommended:

- 2GHz or faster CPU (dual core preferred for optimum performance and highly recommended for Multi-wafer)
- 1Gb RAM (*or more*)
- 10Gb free hard disk space

2. Precautions and Care

To keep the BandiT system operational and keep those who use it from harm, please take the following precautions:

- ***Water and Moisture*** — The system should not be used near water, or in any area where excessive moisture or condensation may come in contact with system components.

- ***Ventilation*** — System components should be mounted in well-ventilated areas. Ensure that there is adequate airflow above the rack controller (intake) and to the fan side (exhaust) of the rack controller. Also ensure that there are no obstructions to the lamp housing air intake fan or the exhaust vents.

- ***Heat*** — Do not place flammable materials on or near the lamp housing at any time. Always allow time for the lamp and all surfaces surrounding the bulb to cool before attempting to replace lamp.

- ***Lamp*** — Never stare into the lamp output. The lamp output contains focused infrared radiation and long-term exposure to the lamp output should be avoided.

- ***Power*** — Connect all cables before plugging in the BandiT system. Ensure the unit is plugged into a properly grounded outlet. The system uses a high current supply to power the lamp, so never connect or disconnect the lamp power cable or service the lamp in any manner unless the system power is OFF. As a further safety precaution, always unplug the rack controller when replacing or servicing the lamp.

- ***Laser*** — Never look directly at the focused beam from the detector and always use laser goggles when aligning the system. The alignment laser used in the BandiT system is a CLASS IIIA laser (*only CLASS I lasers present no eye hazard*). The laser interlock should always be set to OFF when the laser is not in use.

- ***Servicing*** — Do not service the unit beyond that which described in this manual. ***The rack controller contains no user-serviceable parts.***

- ***I/O Interface*** — Before making connections, refer to *Section 4.4* for a complete functional description of each pin in the BNC and DB-15 I/O connectors found on the BandiT rack controller.

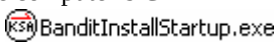
3. Software Installation

The BandiT software application and 3rd party device drivers are all located on the BandiT installation CD. Follow the installation instruction below to ensure that the software and device drivers install properly. If you come across any errors during the software installation, please contact k-Space Associates for technical assistance.

If you have already attached cables between the BandiT rack controller and the computer, please detach them and be sure the rack controller power is off. Several device drivers should be loaded before the hardware is detected.

3.1 Software Installation: Install Third Party Drivers

Before beginning the software installation, please close all other applications. Then insert the CD into the computer's CD-drive. Installation should begin automatically. If it does not, double click on the CD-ROM icon to open it and then run *BanditInstallStartup.exe* from the CD. Doing so will bring up the following dialog.



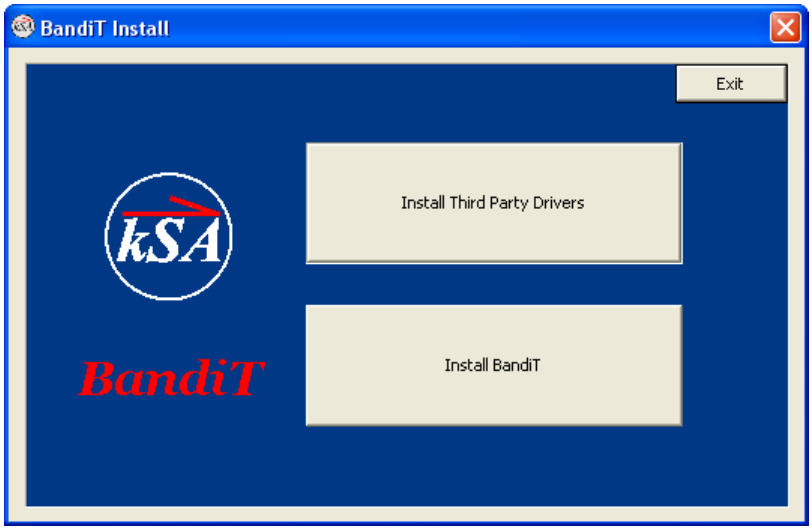


Figure 1: Install Third Party Drivers, then Install BandiT software

When the screen above appears, first select ***Install Third Party Drivers*** (*This installation will automatically load all the drivers needed for the BandiT system).* A new dialog will appear. Click *OK* to start. Then *please be patient* as many screens will appear and you may hear system alerts: do *not* click anything until the following pop-up window appears:

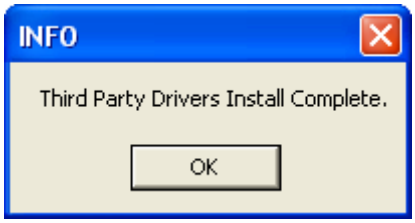


Figure 2: First part of software installation complete

Click *OK* to close that pop-up window.

3.2 Software Installation: Install BandiT

After the third party device drivers are installed, the next step is to load the BandiT application software. Follow through the installation instructions to load the BandiT software properly. Click the *Install BandiT* button to begin (Figure 1).

Important note: do not insert the USB Sentinel Key until after the *BandiT* software has been loaded and the computer has been restarted. This is so important that we have built in a prompt during the installation of the BandiT software:

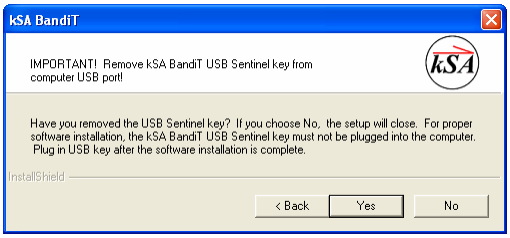


Figure 3: Ensure USB Sentinel Key is not plugged in.

During the installation, you will be asked to choose among three setup types:

Typical – installs all components (this is the recommended choice)
Compact – installs only the application (no help manual, no samples, etc.)
Custom – installs components as selected by user

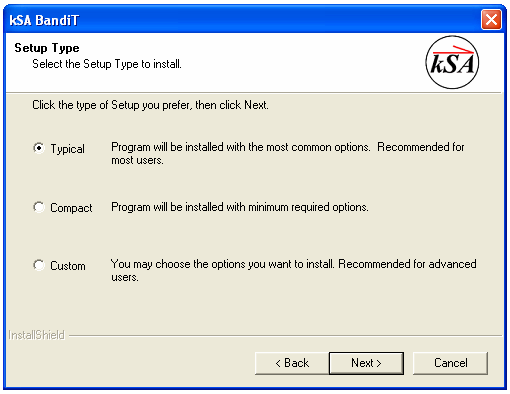


Figure 4: Select Installation Type

When installation is complete, the computer needs to be restarted for changes to take effect. Restart the computer.

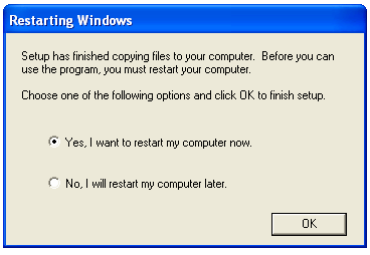


Figure 5: Restart computer for changes to take effect.

Now the BandiT software installation is complete.

4. Hardware Installation

This section addresses setting up the light source, detector housing, controller, and cables. Throughout this section, please refer to ***Figure 1*** (or ***Figure 1a*** for a two rack-mount system) for a schematic representation of the BandiT system setup.

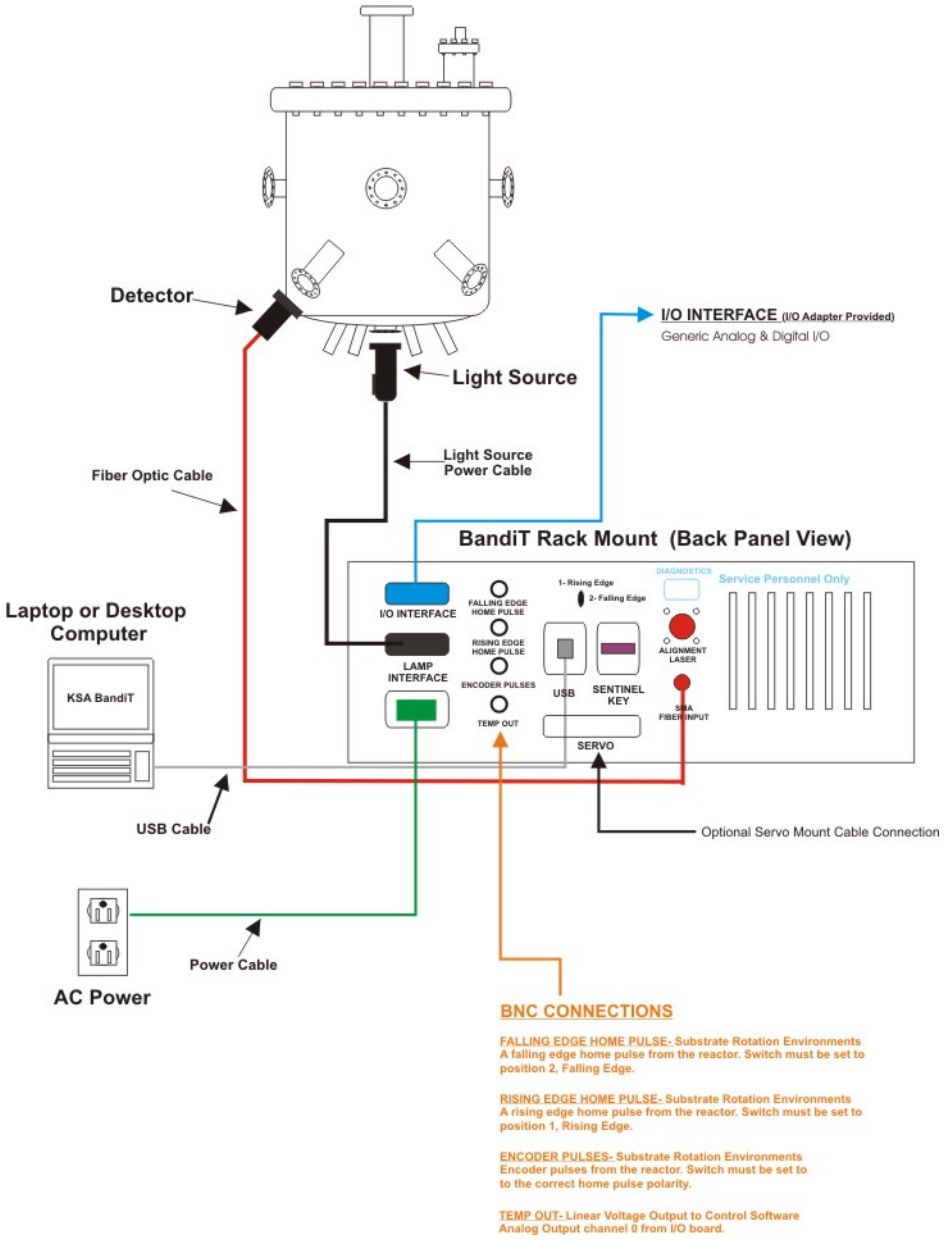


Figure 1: Schematic Diagram of BandiT System on Deposition Chamber

Important note: main power on the rack should be off before making any of the cable connections.

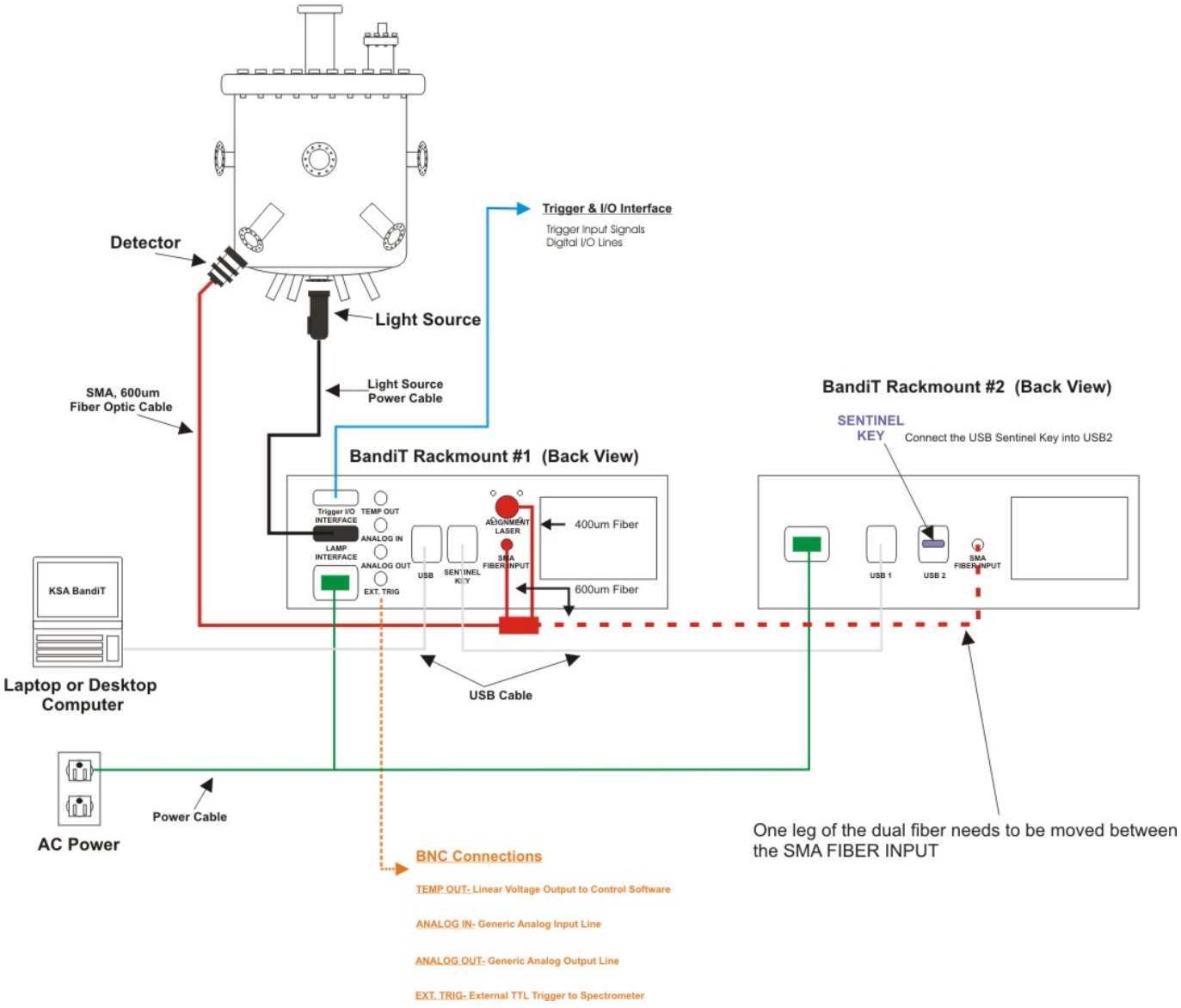


Figure 1a: Schematic Diagram of BandiT System on Deposition Chamber with 2nd rack unit and bifurcated optical fiber

Important note: main power on the rack should be off before making any of the cable connections.

System recommendations:

- Although the BandiT system is not sensitive to changes in transmission from coated view ports, it cannot measure the temperature when ports become so coated that it cannot detect the signal. So, to keep the ports in operation as long as possible, we suggest heated view ports to minimize the rate of coating.
- To ensure the most accurate temperature measurement, use a shutter on the detector port to block chamber light from entering the spectrometer during BandiT Dark Background calibration (described in further detail later in this guide).

4.1 Standard Light Source

BandiT has a few different light source options, including a liquid light guide. The most common is a halogen bulb (Figure 2).

The standard light source is shipped fully assembled (including halogen bulb). Before mounting the light source to the view port, please follow these steps to make sure the bulb is seated correctly:

1. Carefully unpack the light-source housing and inspect it for any damage caused by shipping.
2. Next, remove the cover and inspect the optics.
3. The socket connector lever should be in the forward position. The lever allows removal of the lamp.

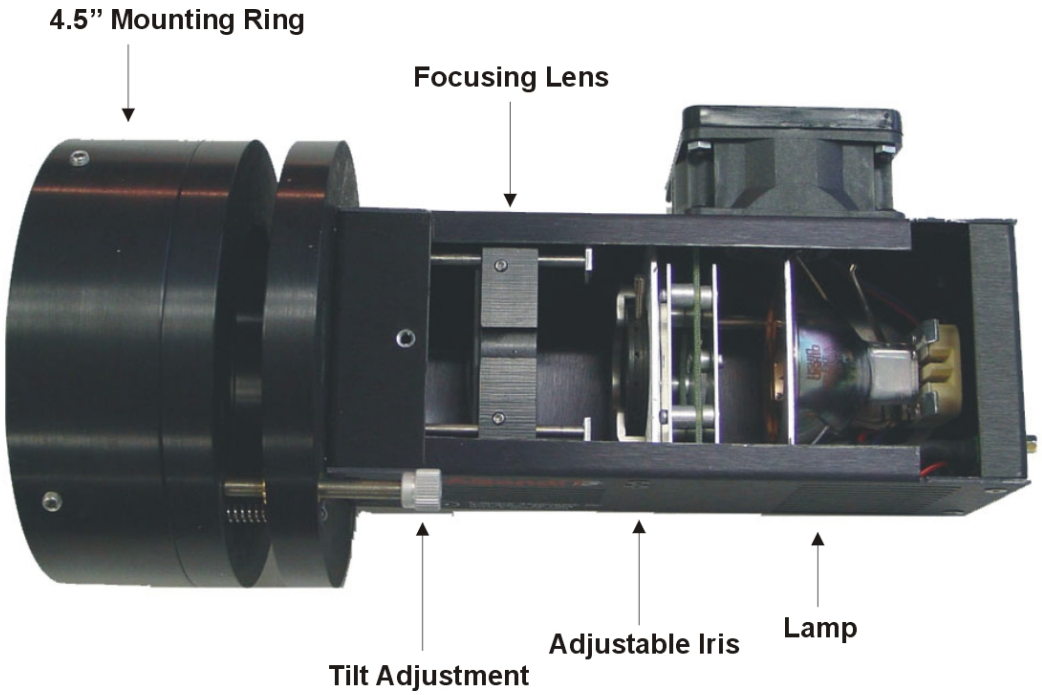


Figure 2: Light Source with cover removed

4. The lamp should be seated in the lamp assembly (refer to Figure 2 for how it looks when inserted correctly). Be sure to press down firmly so that the bulb is completely seated in the socket.
5. Replace the cover.

Signal strength is best if BandiT's light source is mounted on a ***normal incidence view port***. If such a port is not available, then please choose another port with the smallest angle from normal as possible. Bench tests have shown that signal strength is reduced only by 30% at angles as large as 60 degrees from normal, which is sufficient for accurate temperature measurement. But, of course, the greater the range of signal strength, the greater the precision in temperature measurement.

Mounting to the view port:
Typically, BandiT comes supplied with both 4.5" and 2.75" mounting rings. A 4.5" ring comes attached to the light source, so if mounting the light source to a 2.75" view port, change the mounting ring. Then, using the four 10-32 set screws located around the 4.5" mounting ring, secure the light-source housing to the view port. Exact alignment and focus of the light source on the view port will be covered later in this guide.

4.2 Detector Housing (Tilt and Rotate Detector)

The tilt and rotate detector effectively collects light and its design allows users the ability to adjust where the detector is collecting light reflected from or transmitted through the sample.

1. Carefully unpack the detector and inspect it for any damage caused by shipping.
2. Next, remove the covers and inspect the lens. The curved side of the lens should be facing towards the front of the detector.

Figure 3: Tilt/Rotate Housing (with & without covers)

Before mounting the detector on the view port, you will want to install the optical fiber into the fiber mount. In order to attach the fiber, the detector first must be partially disassembled. Please follow these steps to attach the optical fiber into the detector:

1. With covers removed, unscrew the back plate from the rails.
2. Loosen the set screws from the fiber mount and slide the mount off the rails.
3. Locate the optical fiber in the accessories packaging and remove the end cap on one end.
4. Taking care not to scratch the end of the optical fiber, guide the fiber into the SMA fitting (located in the Fiber Mount) and rotate the mount until the fiber is flush to the front of the mount (see example picture to the right side).
5. Connect all the components back onto the rails of the detector. Finally, connect the top and bottom housing covers to the detector.

Figure 4: Fiber in SMA Fitting

Mounting to the view port:
Typically, BandiT comes supplied with both 4.5” and 2.75” mounting rings. A 2.75” ring comes attached to the detector, so if mounting the light source to a 4.5” view port, change the mounting ring. Then, using the four 6-32 set screws located around the 2.75” mounting ring, secure the detector housing to the view port. Exact alignment and focus of the detector on the view port will be covered later in this guide.

4.3 Detector Housing (CAR Port Unit)

Design for use specifically on Veeco's GEN II and GEN III reactors configured with a light pipe facing the backside of the wafer, the CAR port detector unit is used for transmission mode only. Because the light source unit must be mounted on the pyrometer port—illuminating the wafer at all times—the substrate heater cannot be used as a light source.

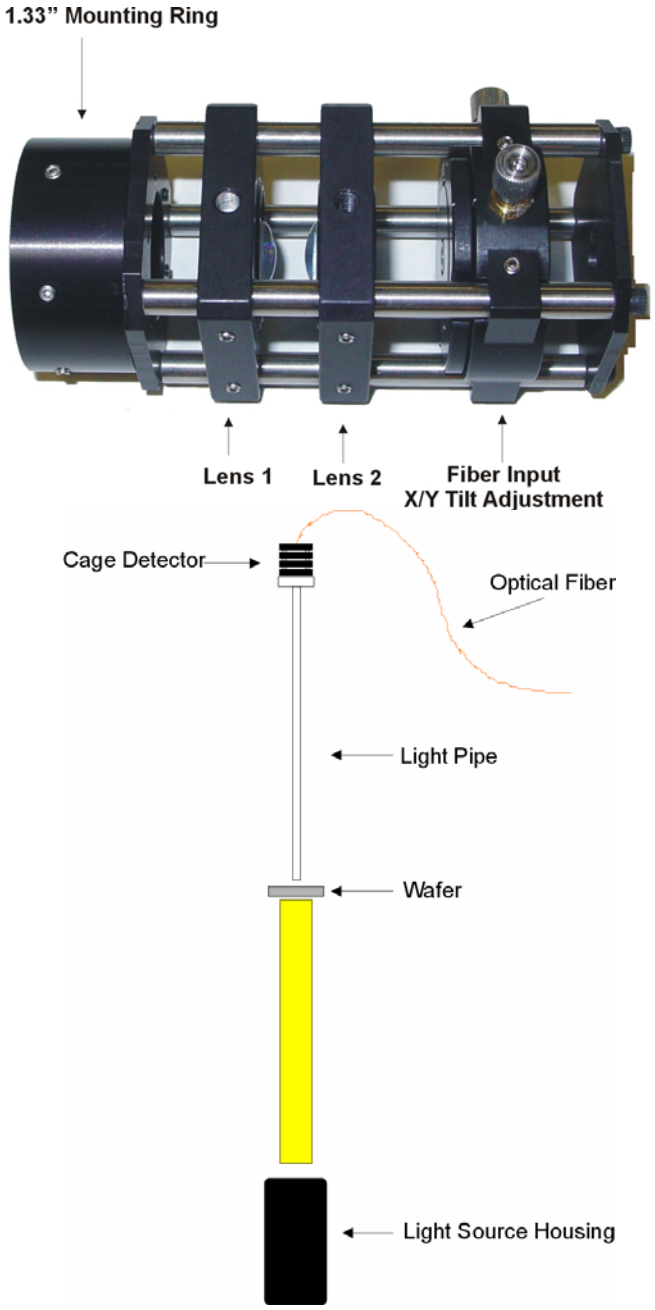


Figure 6: CAR port unit and layout schematic

Included in the shipment for the CAR port single-axis tilt detector assembly, please find:

2……12mm acromat lens
1……x/y fiber translation stage
1……optical fiber

Carefully unwrap the cage detector and inspect the unit. If the lens needs to be cleaned, do so before mounting it on the chamber. ***Use only clean alcohol and dry with clean laboratory-grade compressed air, argon, or nitrogen.***

Next, please find in the accessories box the 10-meter dual optical fiber. Carefully unpack it and ***do not remove the end caps***. Taking care not to scratch the end of the fiber, feed the single end into the SMA connector in the x/y translation stage.

Finally, mount the complete assembly to the CAR port flange and secure it using the four set screws around the perimeter of the mini adapter.

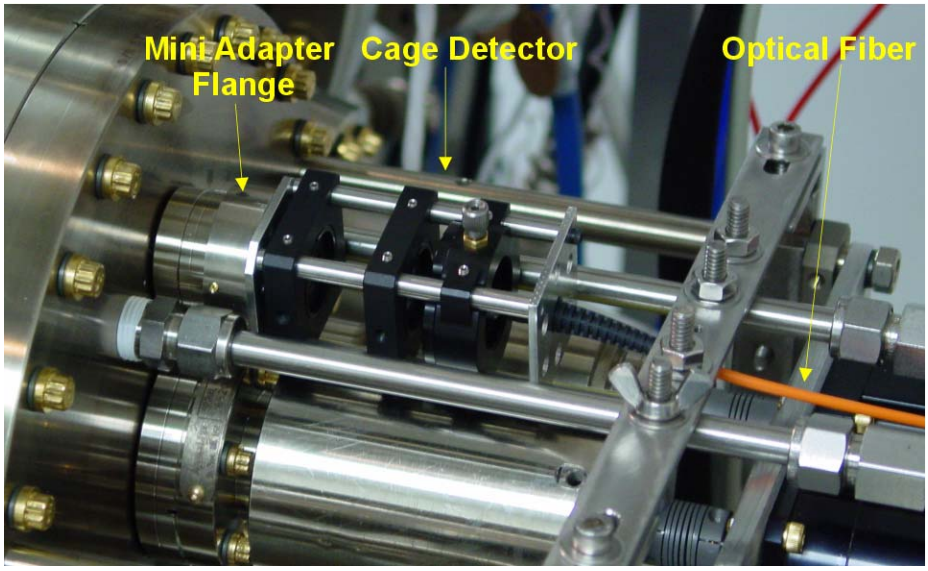


Figure 7: CAR port assembly mounted

4.4 Rack Mount Controller

The BandiT controller is a standard 19-inch, 5.25-inch height rack mount. Install the controller in a well-ventilated rack and ensure that the top cover vents are not obstructed. To ensure proper airflow, please also install a spacer between the top of the BandiT controller and any other equipment in the rack.

Important note: turn off main power before making the next set of connections.

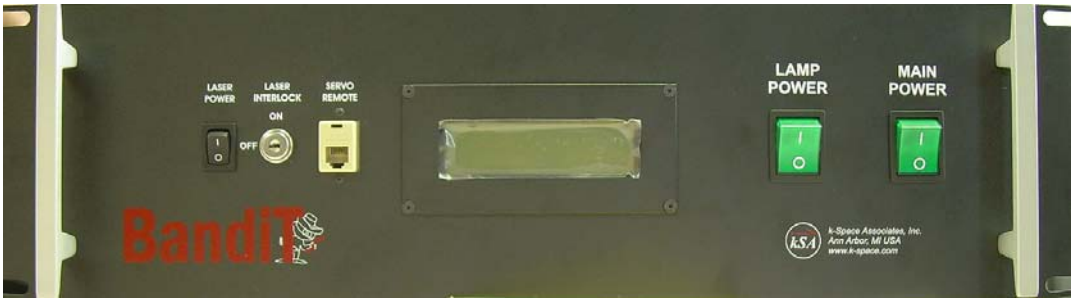


Figure 8: Front Panel with all switches in the off position

Follow these steps to install the controller:

1. Install the laser interlock key on the front of the controller.
2. For those using a light source, connect the black lamp power interface cable to the back of the controller (labeled *Lamp Interface*) and to the light source housing.
3. Connect the supplied USB cable to the back of the controller (labeled *USB*) and to the computer's USB port.

4. 

5. **Figure 9: Rear Panel**

6. Connect the optical fiber from the detector housing to the SMA fiber input on the back of the controller.
7. Connect the I/O Adapter Cable to the back of the controller (labeled *I/O-Interface*).
8. Connect the USB sentinel key to the back of the controller (labeled *Sentinel Key*.

*Note: **the USB Sentinel Key is your software license**. It is important not to lose it. It may be inserted into a USB hub, but do not connect more than one computer to the hub, or, if having more than one system, then installing more than two keys to the same hub. It will not work and/or may disable some of the functionality because the options on one USB Security Key will override the other.*

9. Ensure that the *Main Power*, *Laser Interlock*, *Laser Power*, and the *Lamp Power* switches on the front of the controller are all in the OFF position (rocker switch down), then plug in the AC power cord.

Figure 10: Rear Panel Cables Connected

I/O Interface and BNC Connections:

The BandiT system can be configured to read and output a variety of analog and digital signals. Most users will use the analog voltage output BNC labeled "Temp Out" to send a linear voltage output to MBE control software. Alternatively BandiT can generate a TC voltage output on the I/O interface connector. But ***it is not generally a good idea to use BandiT as a direct feedback control to the substrate temperature controller.*** When the BandiT system is unable to detect a band edge and is unable to make a temperature measurement, then the output will be 0 volts and 0°C (unless *Disregarded data below threshold* is selected, which is in the Spectra Processing Advanced Acquisition Option).

I/O Interface (DB-15 female):

Pin	**Signal**
1	Analog Input High (Channel 0)
2	Analog Input Low (Channel 0)
3	Analog Output 1 High
4	Analog Output 1 Low
5	Digital Input 0
6	Digital Input 1
7	Digital Output 0
8	Digital Output 1
9	Digital GND
10-15	N/C

** I/O Adapter Cable provided with each system*

Figure 11: I/O Adapter Cable

BNC Connections:

The remaining three BNC connections (Falling Edge H.P., Rising Edge H.P. Encoder Pulese) are for BandiT user's using the multi-wafer software option. The reactor's home pulse and encoder pulses (if available) connect to the appropriate BNC.

- **Falling Edge Home Pulse -** Used for timing with substrate rotation. A falling edge (5V-0V) pulse from the reactor.
- **Rising Edge Home Pulse -** Used for timing with substrate rotation. A rising edge (0V-5V) pulse from the reactor.
- **Encoder Pulses -** Used for timing with substrate rotation. Pulse polarity does not matter.

Switch Setting:

To the right of the BNC connections there is a switch for controlling the correct home pulse polarity received into the BandiT rack. This switch is only to be used if the system is being triggered for substrate rotation applications. The switch setting will correspond to the same home pulse (rising or falling) connected to one of the BNC connectors.

Servo Connector:

The SERVO connector supplies power and controls the BandiT servo detector mount. This is only used if the Multi-Wafer Scanning option is purchased.

Diagnostic Connector:

The DIAGNOSTIC connector is to be used only by properly trained k-Space Associates, Inc. personnel. No connections should be made to this connector, unless instructed by a k-Space Associates representative.

4.5 Power on the BandiT Rack

Turn on the BandiT's MAIN POWER switch on the front of the rack, but do not yet start the software. The computer will recognize the new devices and ask you to load drivers. At this point, you may want to open the Device Manager (Control Panels / System / Hardware / Device Manager). Before the drivers are loaded, it will look like Figure 7:

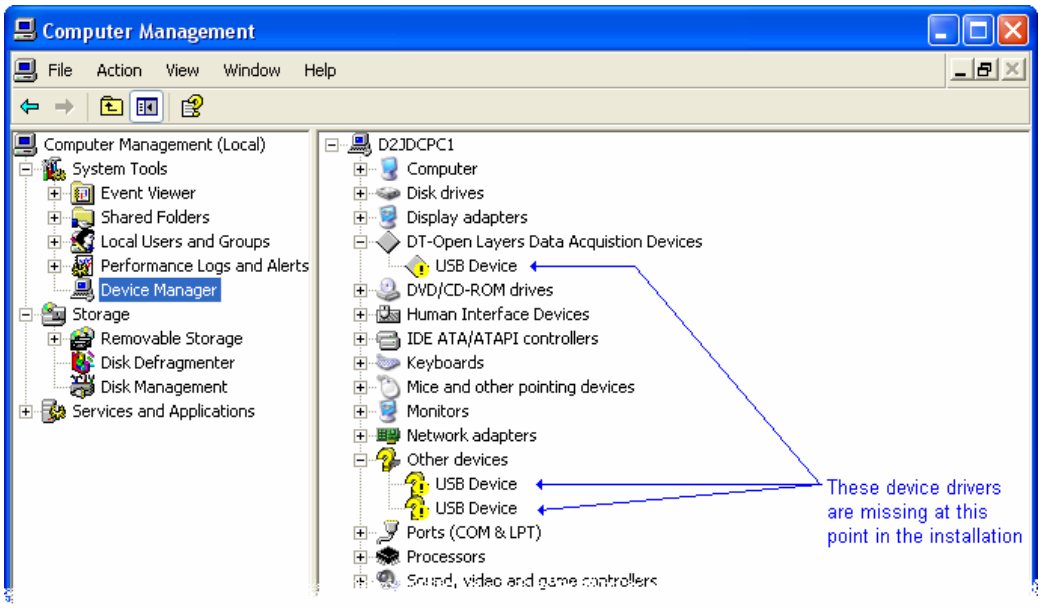


Figure 1: Device drivers to be installed

Windows Hardware Wizard will start up. Because there are many components within the BandiT rack, this will happen many times. Whenever the dialog shown in Figure 8 appears during the installation process, please select "No, not this time" and then click *Next*.

Figure 2: Found New Hardware Wizard – select "No, not this time."

Each time this screen appears, select "Install the software automatically" and then click *Next*.

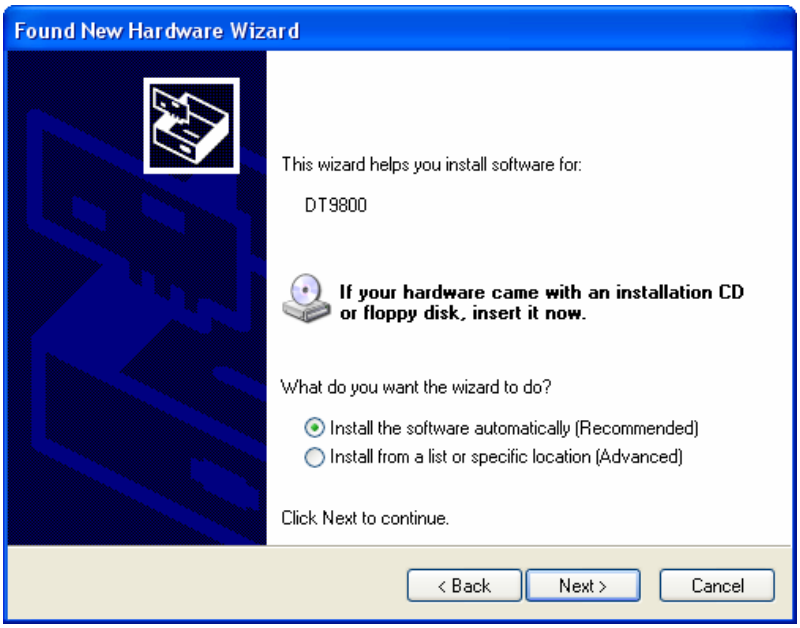


Figure 3: Found New Hardware Wizard – select "Install the software automatically"

After each hardware device driver has loaded, click Finish. This process will be repeated several times, and may include the dialog in Figure 4 as well.

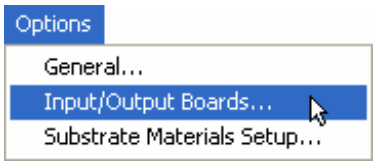
Figure 4: Click "Continue Anyway"

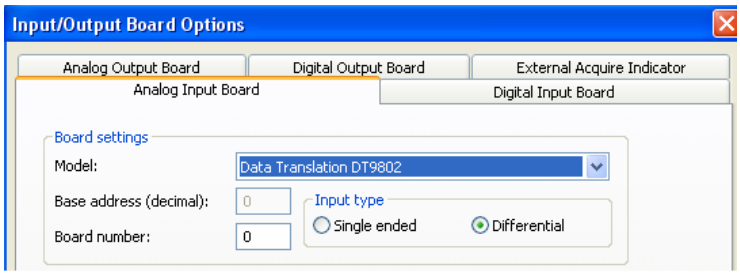
Each time the dialog in Figure 4 appears, select "Continue Anyway." k-Space Associates has thoroughly tested the hardware's compatibility. When all the BandiT hardware has been installed, the Device Manager should no longer have any question marks or exclamation points as is did before (Figure 7). If not, then please contact k-Space Associates.

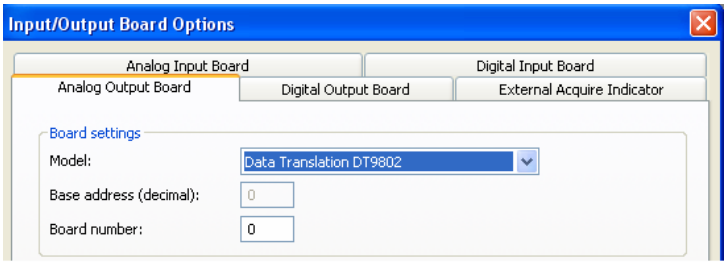
4.6 Configuring Input/Output Boards, DT9802

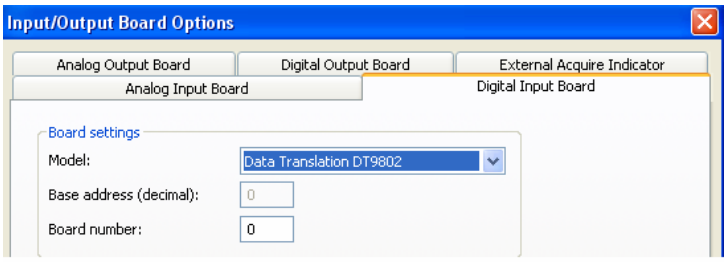
Installed in the BandiT Rack Mount Controller is a USB Input/Output Board (Model, DT9802). This board allows the software to send/receive analog and digital signals. Now that the board is properly installed on the host computer; it will need to be configured in the BandiT software.

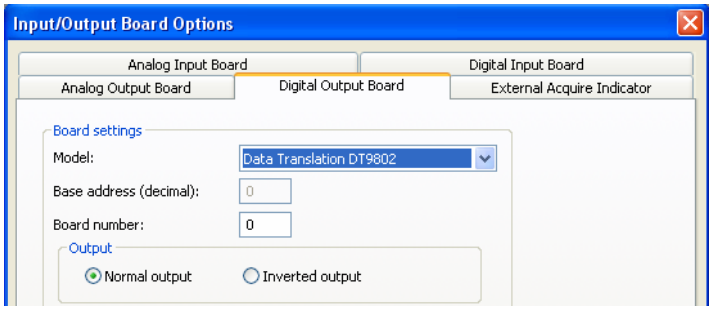
1. Open the BandiT software by double-clicking on the desktop icon.
2. Select Options / Input/Output Boards. This will open the *Input/Output Boards Options* dialog.
3. Configure each tab for the *DT9802*. The *Board Number* should be 0.









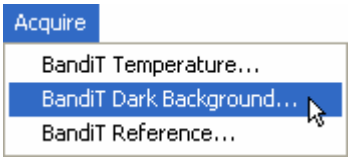


4. Once each tab is configured, select *Apply* and then close the BandiT program.

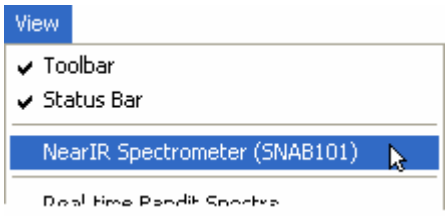
4.7 Starting BandiT Software: Collect Dark Background

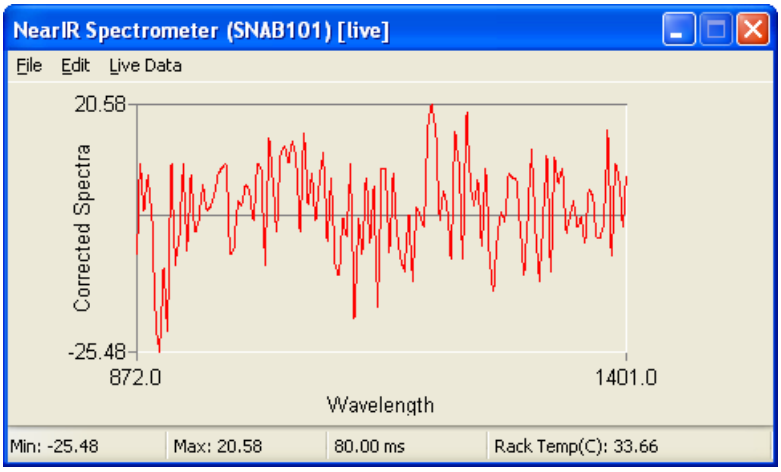
1. With the BandiT rack mount still on and the back of the unit still accessible, double-click the kSA BandiT icon to start up the software. If you have deleted the alias (shown here) from your desktop, the program is typically installed here: Program Files / kSA / kSA BandiT / PROGRAM / BandiT.exe

2. At first run, the software should prompt you to acquire a dark background. If your computer was supplied by k-Space, this may already have been done, but it needs to be done again anyway. Many users do this before each temperature acquisition, or at least once a day. Select BandiT Dark Background from the Acquire menu.



3. If it is not already open, select your spectrometer from the View menu. That brings up the [live] spectrometer window, which should be updating continuously.





Figures 11-14: Double-click BandiT icon, Acquire BandiT Dark Background, Select Near IR Spectrometer, which brings up the [live] window that should be updating continuously.

4. remove the fiber out of the *SMA Fiber Input* and cover the SMA fitting or cover the detector so no light is getting into the spectrometer.
5. Configured the BandiT Dark Background Acquisition how it appears below.
6. Select, *Start* to run the acquisition.

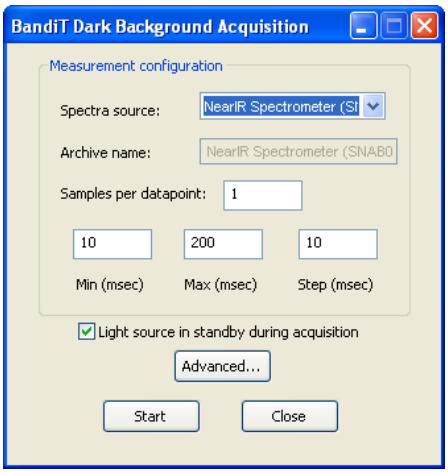


Figure 16: Typical BandiT Dark Background Parameters

7. When acquisition is complete, the Status Bar at the bottom of the kSA BandiT application window will read "Acquisition complete." Click the *Close* button on the acquisition window.

The next steps will be to configure and align the light source/detector, and collect a Band Edge temperature measurement

5. Configuring and Aligning the Light Source

(Note: those using BandiT exclusively in transmission mode may skip this section.)

Follow these steps to ensure the lamp interface is properly set up and to align the light source (at normal incidence).

5.1 Configure the Lamp Controller

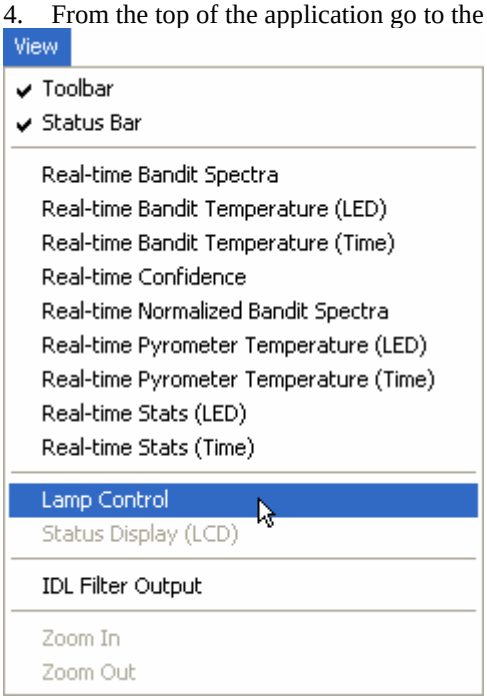
BandiT's light source is completely controlled through the software and—as an advanced acquisition option—can be controlled *by* the software. So it is important to ensure the interface is properly set up. Follow these steps:

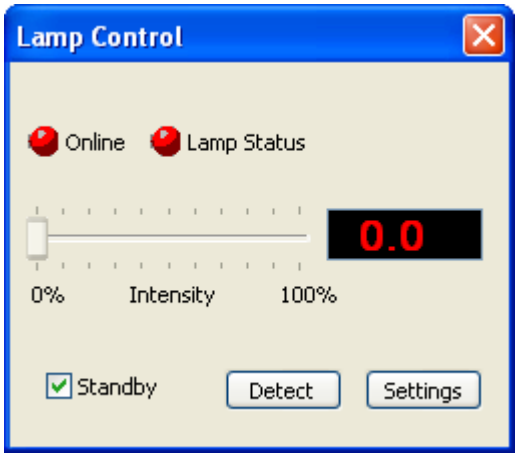
1. If the *Main Power* switch is not already *On* from the software installation procedure, verify that all cables are connected and then turn on the *Main Power*.

2. Turn *On* the *Lamp Power*. The lamp may come on depending on the default conditions of the lamp driver board.

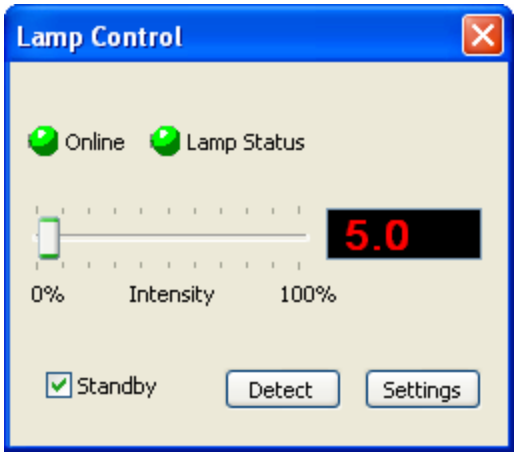
3. If the *BandiT* application is not already open from the software installation procedure, open it by double-clicking on the kSA BandiT icon on the desktop. The application should open in the default condition with no windows open. If it does not, then close all windows within the application.

4. From the top of the application go to the *View* menu and select *Lamp Control*.





5. Click the *Detect* button. The indicators should be green, intensity set at 5%, and the lamp placed in standby:



6. Take the light source out of Standby mode and use the slider to increase the intensity. Ensure the lamp's intensity is corresponding with the change in the slider.

7. Return the intensity slider to 5% and place the lamp in Standby mode. Now it is time to align the light source.

5.2 Light Source Alignment

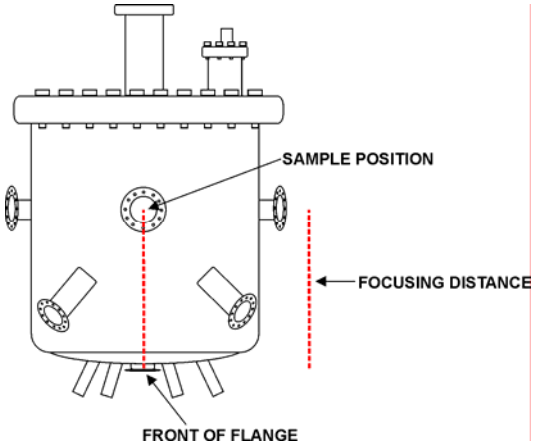
After the light source has been properly mounted and tested, focusing and aligning the unit is next.

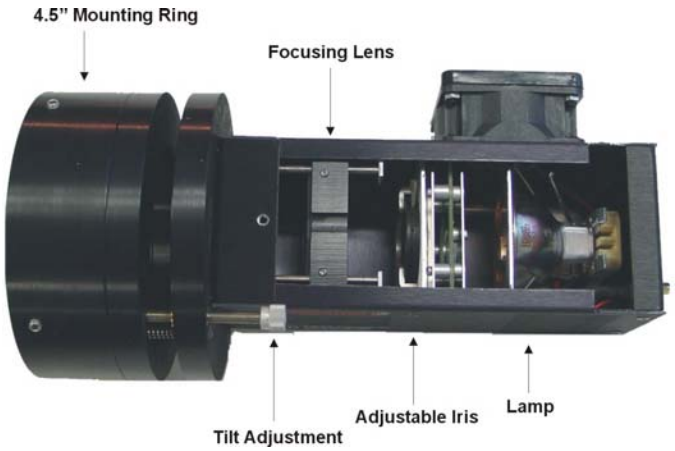
1. Remove the light source from the view port and set the unit on a workbench or flat surface facing a wall.

2. Determine what the *Focusing Distance* is from the light source to the sample. The *Focusing Distance* will be the distance from the front of the light source to the center of the sample (see diagram on right).

3. Using the lamp control window in the BandiT application, take the lamp off of standby mode and set the intensity to the minimum (5%).

4. Remove the top cover of the light source.





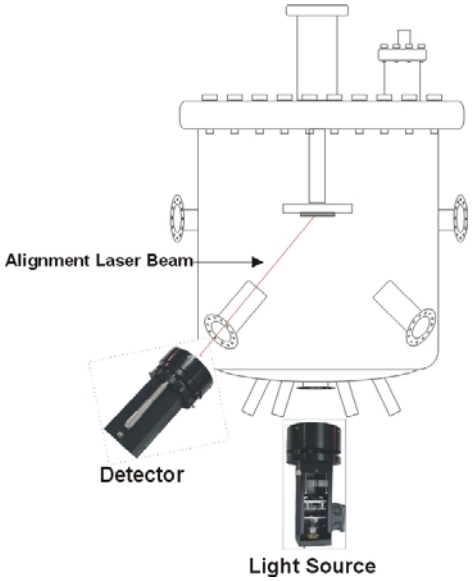
5. Move the light source so it is the same distance from the wall as the *Focusing Distance*.
6. Set the *Adjustable Iris* diaphragm to a desired position. Keep in mind that the larger the opening of the iris, the more the sample will heat up at lower temperatures.
7. Using the light spot on the wall as a guide, set the focus using the *Focusing Lens*.
8. To keep the focus from changing, tighten the set screws in the *Focusing Lens* to the guide rail.
9. Using the lamp control window in the BandiT application, return the lamp to standby mode.
10. Remount the light source to the view port.

6. Aligning and Configuring the Spectrometer

Follow these steps to align spectrometers (10º to 60º from normal) and focus the detectors.

(*Note: do not mount the detector in a specular geometry to a high temperature source. Doing so will saturate the detector, preventing BandiT from measuring the absorption edge that is needed for temperature measurement.)*

6.1 Alignment Laser



(Note: Users without optical access to the chamber should skip this section.) The alignment laser is a Class IIIA laser (wavelength 630-660nm, max. output 4 mW), so please follow all laser safety guidelines.

The BandiT system has an integrated laser inside the rack mount which helps users with optical access align the detector to the sample. The alignment laser illuminates the area of the sample where the detector is directed. It does not demonstrate the area of detection on a wafer.

At this point in the installation, the detector should be securely mounted to the flange and the optical fiber should be in place. If not, follow the steps in section 4.2 to install and mount it to the detector and controller.

(Note: If the optical fiber supplied does not have the second leg, you will need to move the fiber from the SMA Fiber Input to the Alignment Laser SMA fitting.)

After ensuring all the proper connections are made, turn *On* the *Laser Power* and turn the *Laser Interlock* to *On*. Both are found on the front of the BandiT rack:

On the wafer, look for a dim laser spot. If it is hard to locate, rotate the *Micrometer* on the detector so the spot moves to the platen's edge. It may be that the laser beam through the detector lens is too diffuse. Use the *Focusing Lens* on the detector to focus it. When finished, turn off the *Laser Interlock*, and then turn off the *Laser Power*.

6.2 Tilt and Rotate Detector

(Note: All Tilt/Rotate Detectors are pre-focused at a distance of 2 feet. If the sample-to-viewport distance is greater than 2 feet, focus adjustments for the detector may be needed.)

To align the detector and focus the input, follow these steps:

1. If you have not adjusted the *Micrometer* using the alignment laser or do not have optical access to the chamber, then adjust the *Micrometer* so there is no observable tilt between the detector and the mounting ring.

2. 

3. Using the lamp control window in the BandiT application, take the lamp off of standby mode and set the intensity to the minimum (5%).

4. Both the *Focusing Lens* mount and *Fiber Input* mount may need to be adjusted in order to focus the light coming into the detector. The goal is to have a sharply focused spot that is the same size (or *slightly* larger) than the fiber input (which is quite small).

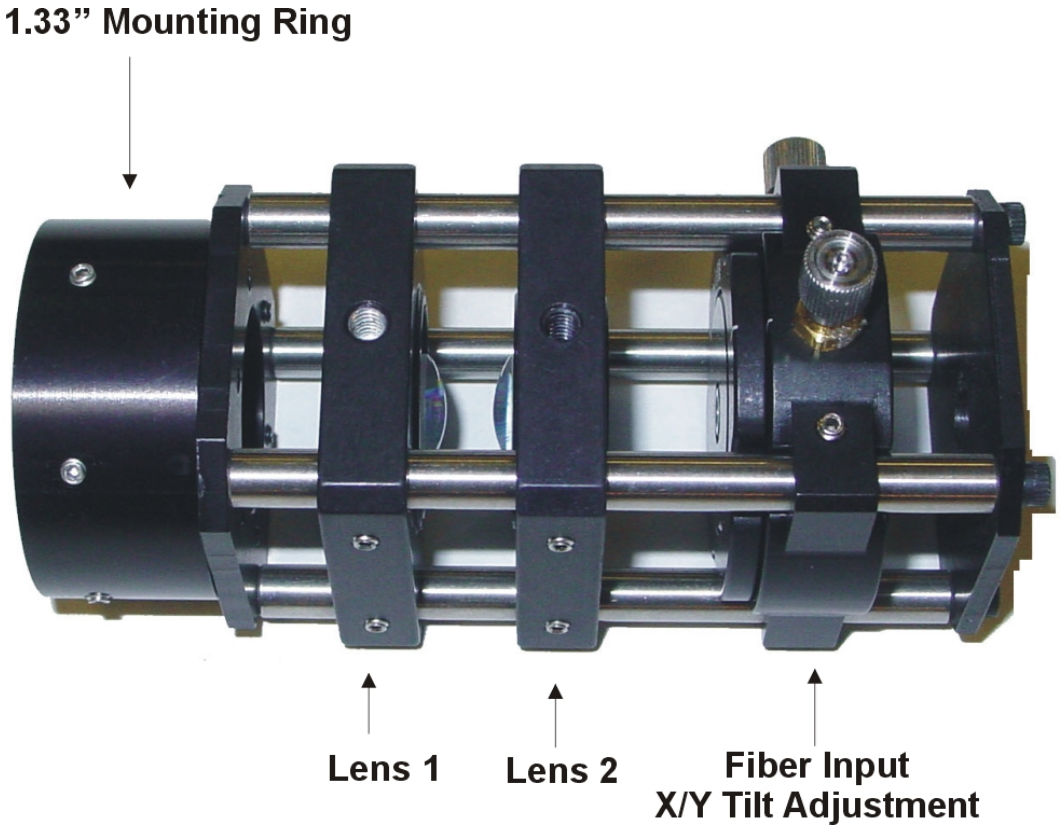
5. With the detector covers removed, place a business card or other small piece of paper flush with the *Fiber Input*. If the light coming through the focusing lens is too large or is not focused on the paper, then loosen the set screws around the *Focusing Lens* mount and slide them until the light is focused. Then, tighten all the set screws.

6. Once the light is focused, tighten all the set screws.

7. In the BandiT application under the *Acquire* menu, select *Real-time BandiT Spectra*. Use the fine adjustment on the sides of the *Fiber Input X/Y Tilt Adjustment* to maximize the signal detected in the *Real-time BandiT Spectra* window.

6.3 CAR Port Detector

At this point, the detector should be securely mounted to the view port and the optical fiber should be in place. If not, follow the steps in section 3.3 to install it. Then follow the steps below to align the detector.



1. Take whatever steps are necessary so that light is coming into the detector.
2. Loosen the 4 set screws around each lens.
3. Move *Lens 1* until it is positioned against the front mounting plate, then tighten its set screws.
4. Position *Lens 2* close to *Lens 1*, but do not allow the lenses to touch. The goal is to have a sharply focused spot that is the same size (or *slightly* larger) than the fiber input (which is quite small).
5. Place a business card or other small piece of paper flush with the *Fiber Input*. If the light coming through the *Lens 2* is too large or is not focused on the paper, then move *Lens 2* until the light is focused. If that is not possible, then pull *Lens 1* slightly back from the front mounting plate and try again until the light is focused.
6. Once the light is focused, tighten all the set screws.
7. In the BandiT application under the *Acquire* menu, select *Real-time BandiT Spectra*. Use the fine adjustment on the sides of the *Fiber Input X/Y Tilt Adjustment* to maximize the signal detected in the *Real-time BandiT Spectra* window.

7. Quick Start

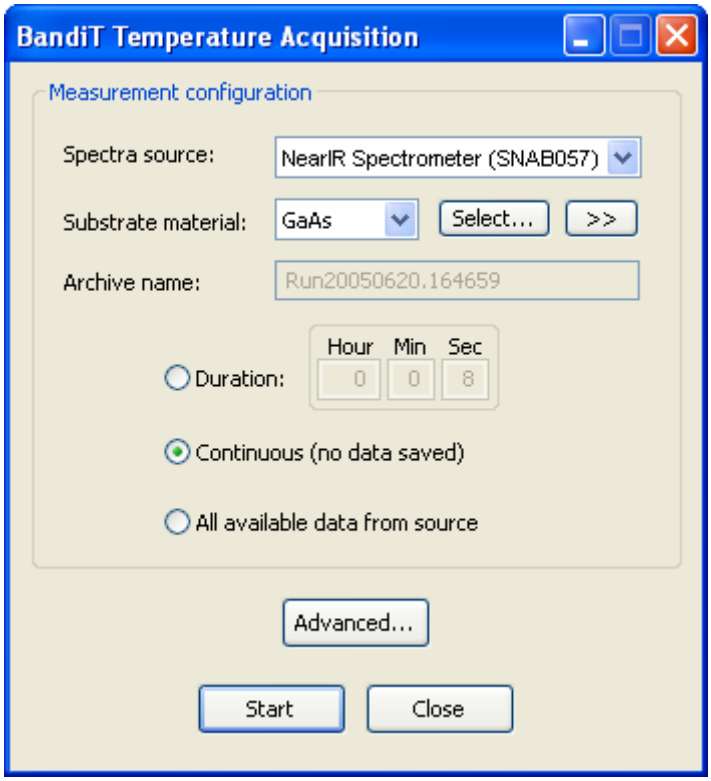
Now that the system is fully set up, learn how to start acquiring temperature.

7.1 Configure BandiT Temperature Acquisition

There are three ways to acquire temperature using BandiT (NearIR, Visible spectrometer, and Pyrometry). Consequently, there are many advanced acquisition options for acquiring temperature. The on-line context-specific Help manual available within the software details out how to measure temperature with each method and has an exhaustive list of all the advanced acquisition options. Below follows a general set-up procedure to ensure that the system is configured correctly before beginning temperature acquisition.

From the *Acquire* menu, select *BandiT Temperature*.

That brings up the *BandiT Temperature Acquisition Window*:



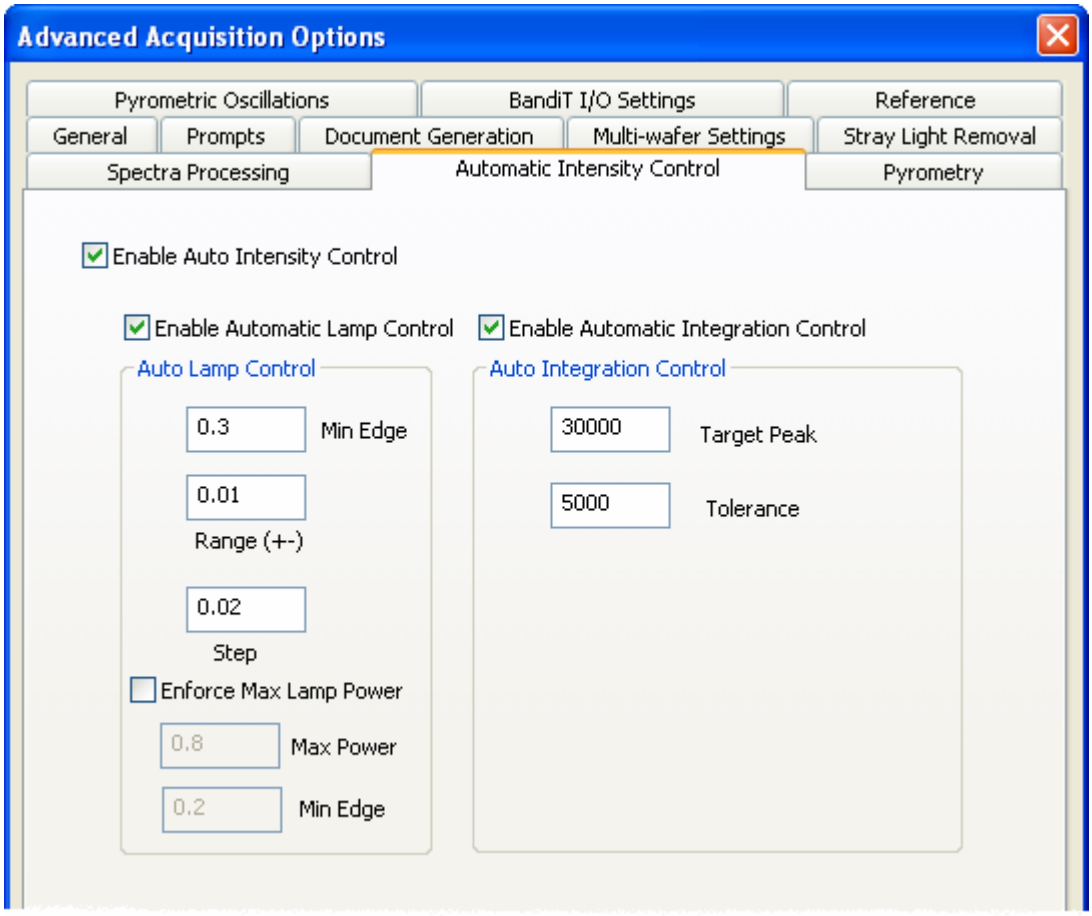
Ensure the *Spectra source* has defaulted to your type of spectrometer.

Select the proper substrate material, and then click the *Select* button to choose the proper calibration file.

Click the *Continuous (no data saved)* button.

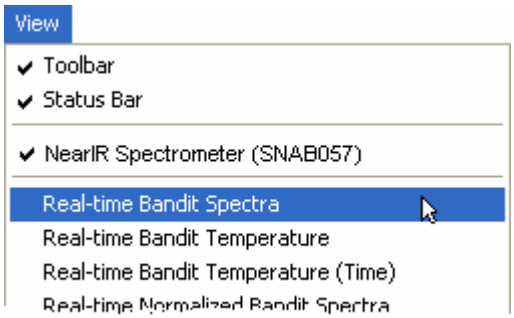
Before clicking *Start*, click the *Advanced* button.
Within the *Advanced Acquisition Options*, choose the *Automatic Intensity Control* tab.

Click the *Enable Auto Intensity Control* and use the defaulted values, as pictured below.



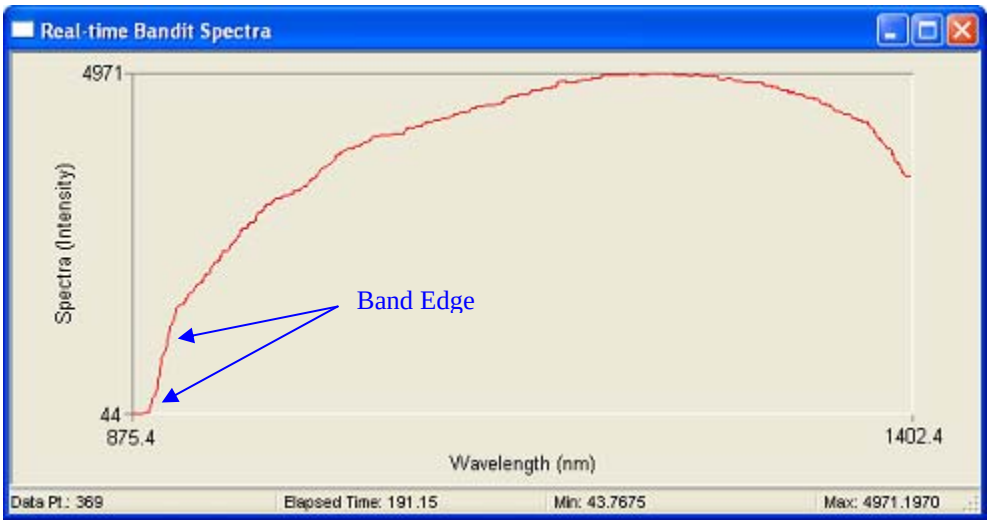
Then click *OK* at the bottom of the window and the *Advanced Acquisition Options* dialog will close.

Under the View menu, select *Real-time BandiT Spectra*.



Then click the *Start* button in the *BandiT Temperature Acquisition* window.

In the *Real-time Bandit Spectra* window, a shape similar to this below should appear, with a "Band Edge" extending up about 20% from the bottom, as pictured below.



Now the system is all set up and ready to go because BandiT is acquiring a "Band Edge."

(Note: users often keep many Real-Time Charts open (including Real-time BandiT Temperature) during acquisition.)

For further details about using the BandiT software, please refer to the on-line context-specific Help Manual from within the BandiT application. As always, please contact us if you have any questions.