Quick Setup of 2NFOV instrument

MAN(2NFOV)-001.000

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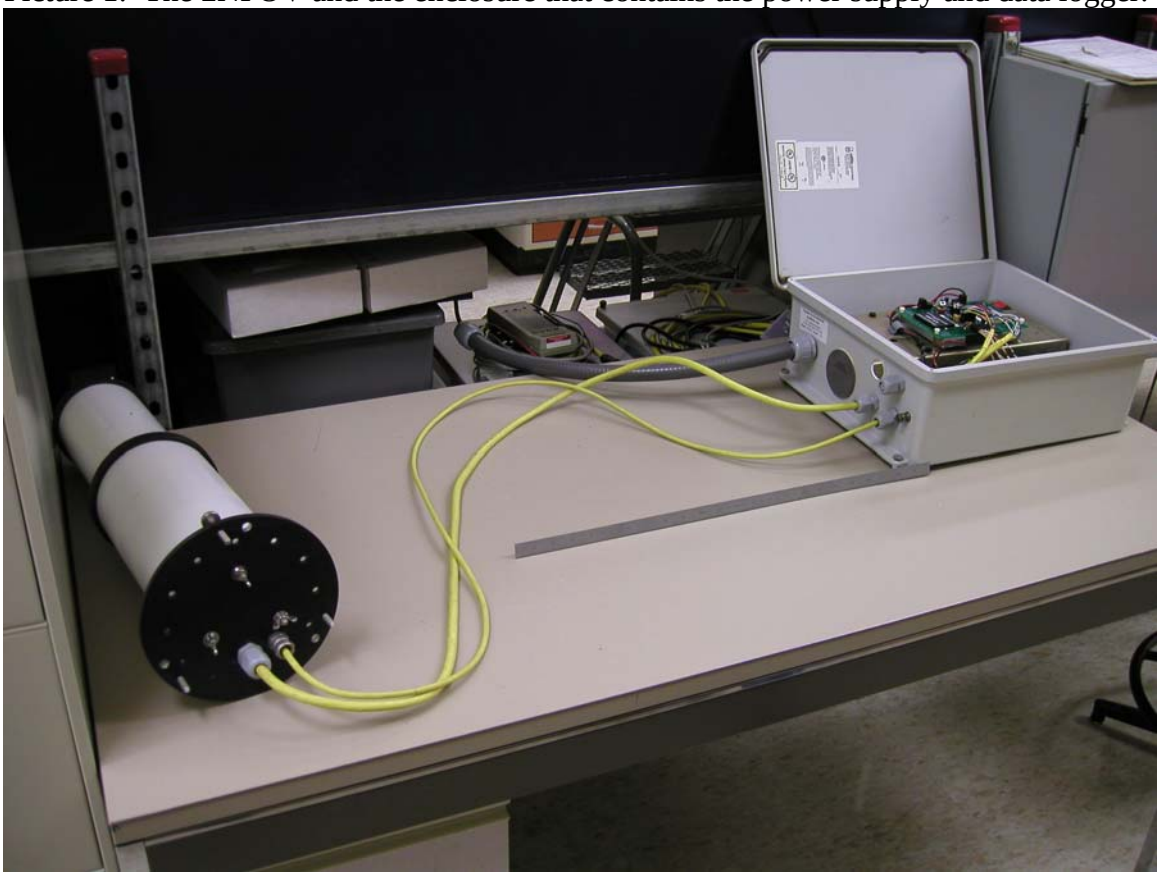
I. The 2NFOV instrument and its power supply/data logger

Hello! Here's a brief description of the setup procedure for the 2-channel NFOV. The instrument consists of two modules; see Picture 1 below. The instrument on the left is the 2NFOV, while the grey enclosure on the right holds the power supply, the head/tube heater controller, and the Campbell data logger.

In Picture 1, note the two yellow cables that connect between the 2NFOV and the enclosure. The small cable carries current to the window heater, while the large cable carries the signal, and current to heat the head. The fat grey cable coming out of the side of the grey box is the power cord – you just plug this into a normal power socket. (In some versions the grey shielding has been removed and just the power cord will show – it's blue.)

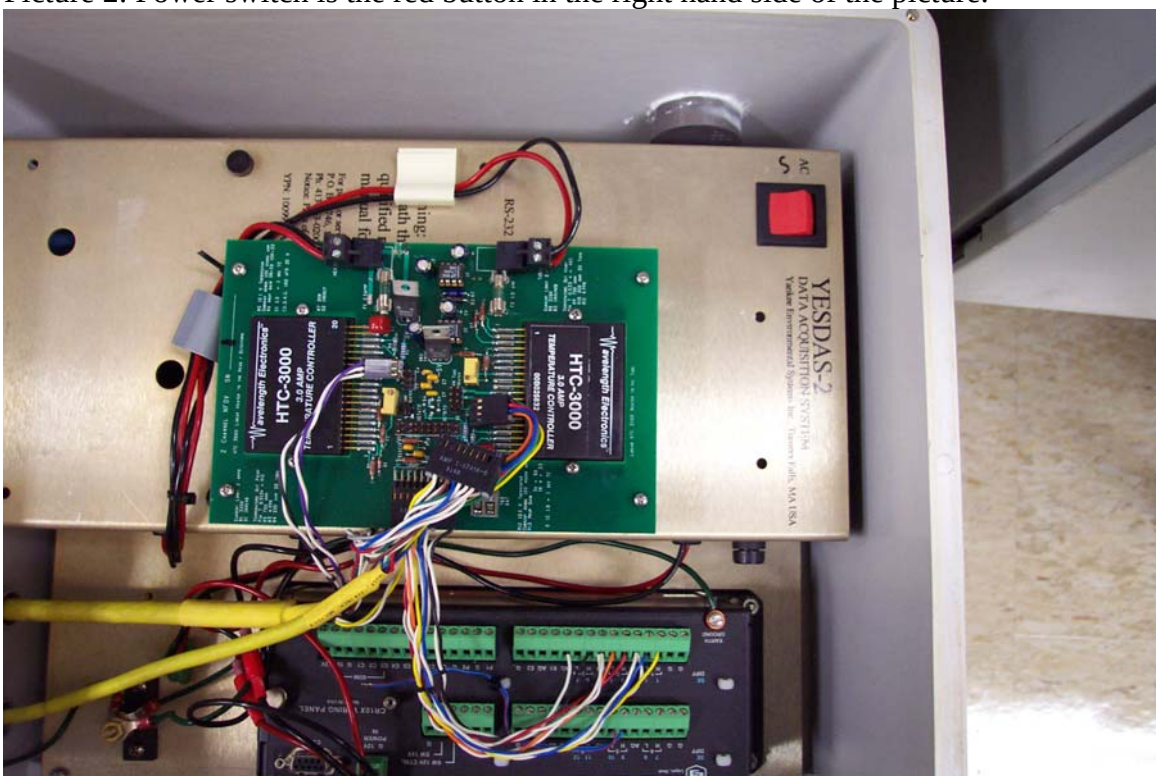
Picture 1: The 2NFOV and the enclosure that contains the power supply and data logger.



II. Make sure the power if off!

Before doing anything, make sure the power is turned off using the red power switch; see Picture 2 below. If the unit is plugged in, the power switch will glow red when the power is on; otherwise it will not glow. It's best to make sure the switch is off and the power cable is unplugged. (Belt and suspenders approach).

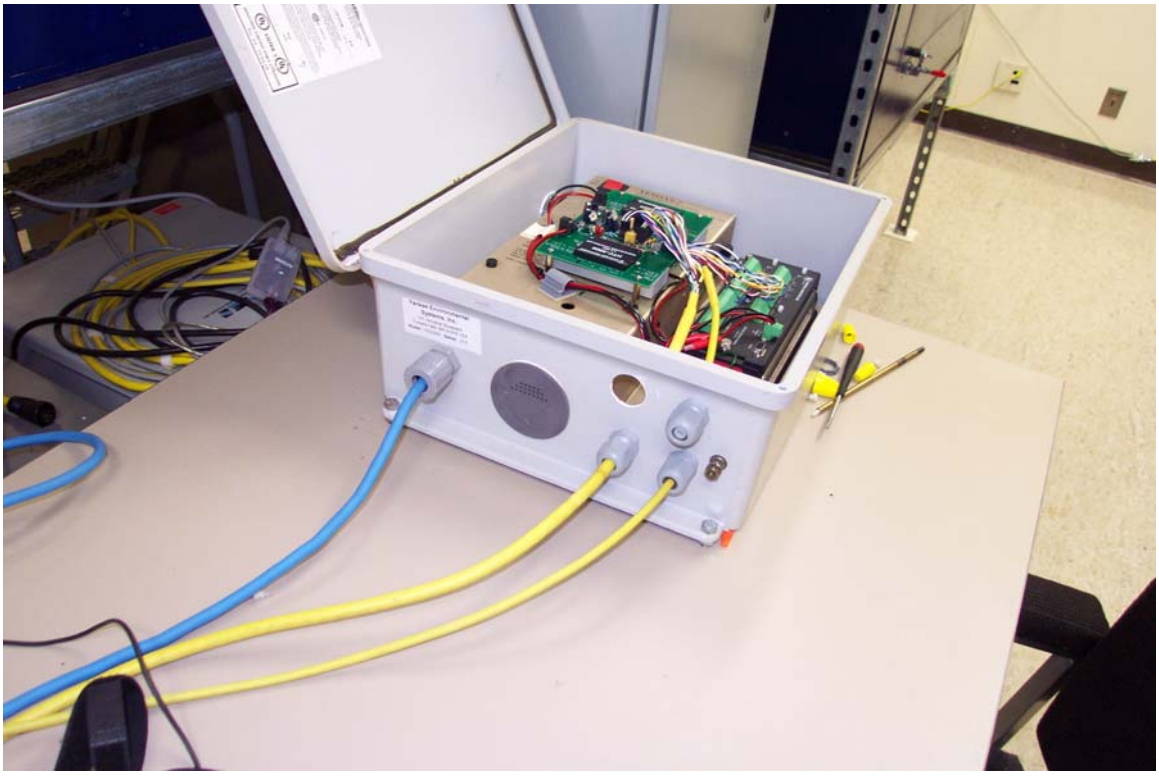
Picture 2: Power switch is the red button in the right hand side of the picture.



III. Connecting the yellow cables

Now you might be wondering how to connect the two yellow cables. This is easy. First, thread the two yellow cables through holes in the grey enclosure as shown in the Picture 3 below. The grey couplings can sit in the holes loosely, or you can use lock nuts to hold them in place. Note the blue cord in Picture 3. This is the power cord.

Picture 3: Yellow cables enter enclosure

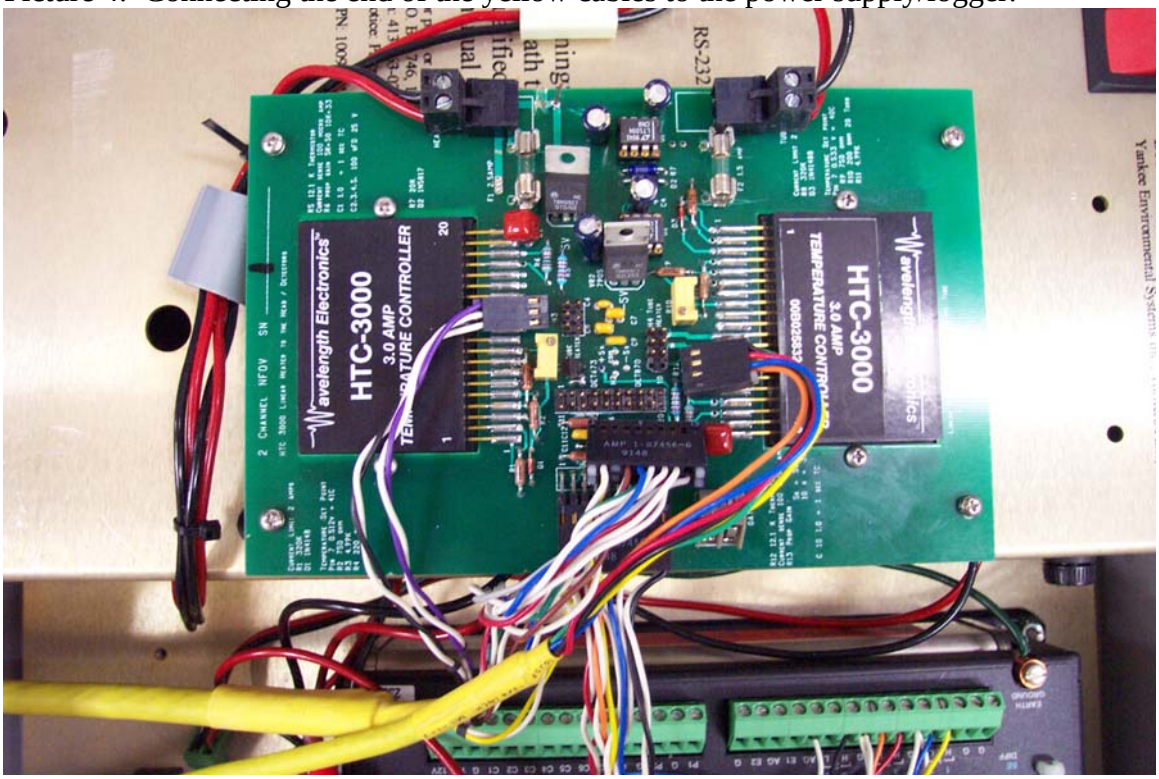


Now that the cables ends are in the box, it's time to connect them to the power supply. There are three ends to connect, as shown in Picture 4. One of the cables terminates in a big 20-pin connector, which plugs right into a 20-pin header. You can only attach this plug in one particular way. In Picture 4 below, the 20-pin socket has been placed very close to the header into which it should be plugged.

Next there's an 8-pin socket (attached to red, blue, yellow, green and orange wires), and this should be plugged into the 8-pin header (although only 6 pins are sticking out of the header). Again, there is only one way of pushing the socket onto the header. If you're finding yourself applying a lot of pressure, you're probably not putting it on properly. In the picture below, the 8-pin socket has been placed close to where it should be plugged in

Finally, the 6-pin socket (attached to 2 white and one purple wire) gets plugged into the the 6-pin header; see Picture 4 below.

Picture 4: Connecting the end of the yellow cables to the power supply/logger.



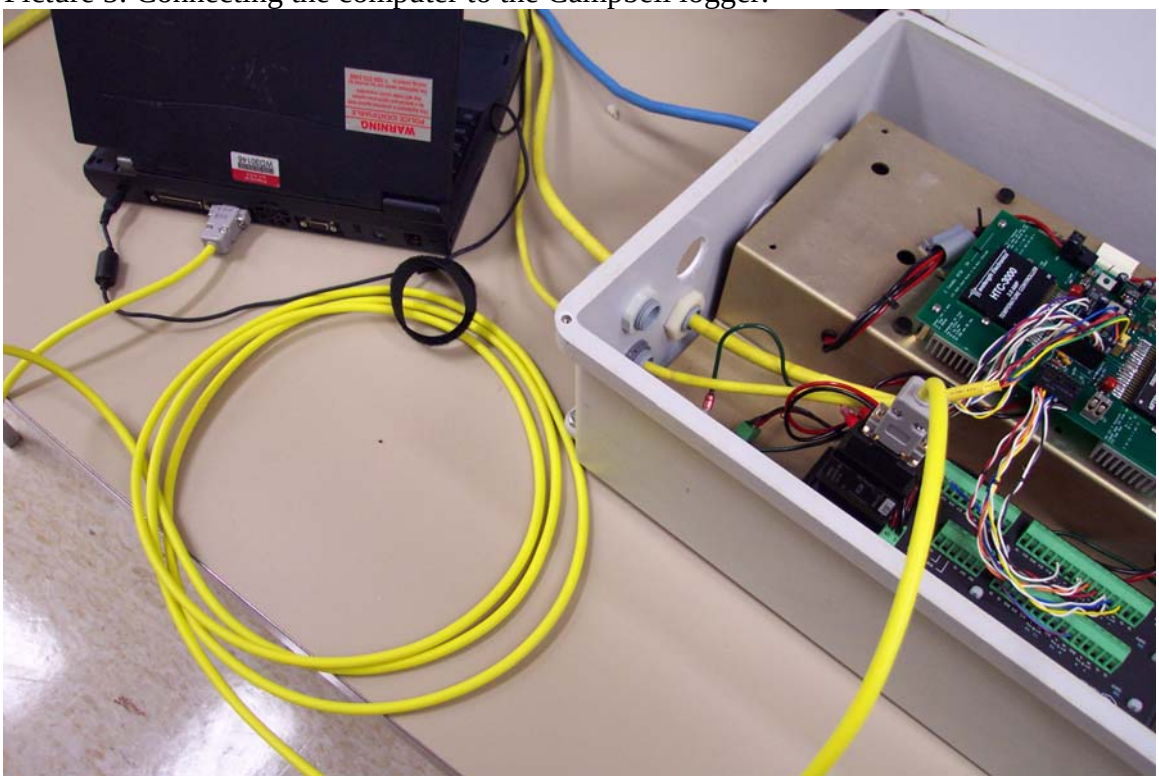
IV. Fire up 2NFOV instrument

Once the yellow cables are connected, you can turn on the power. Of course, make sure that the power cord has been plugged in. Turn on the power by pressing the red power switch shown in Picture 1. As soon as you turn the power on, the unit starts collecting data. Now you're ready to attach the computer, which is used to transfer that data from the Campbell logger to the computer. It is a good idea to wait 10 minutes before collecting any data to allow the head and tube heaters to reach their operating temperatures.

V. Connecting the computer

This is easy. You have been supplied with a long yellow cable that connects the computer to the Campbell logger. Picture 5 shows one end of cable plugged into the usual RS-232 port on the computer, and the other is attached to the Campbell logger. However, there's a big black connector that sits between the Campbell output port and the yellow cable; this device converts Campbell digital signals to a form compatible with RS-232. (You can see this big black "thingy" in the picture below with the yellow cable attached to the top). Now you're ready to take data.

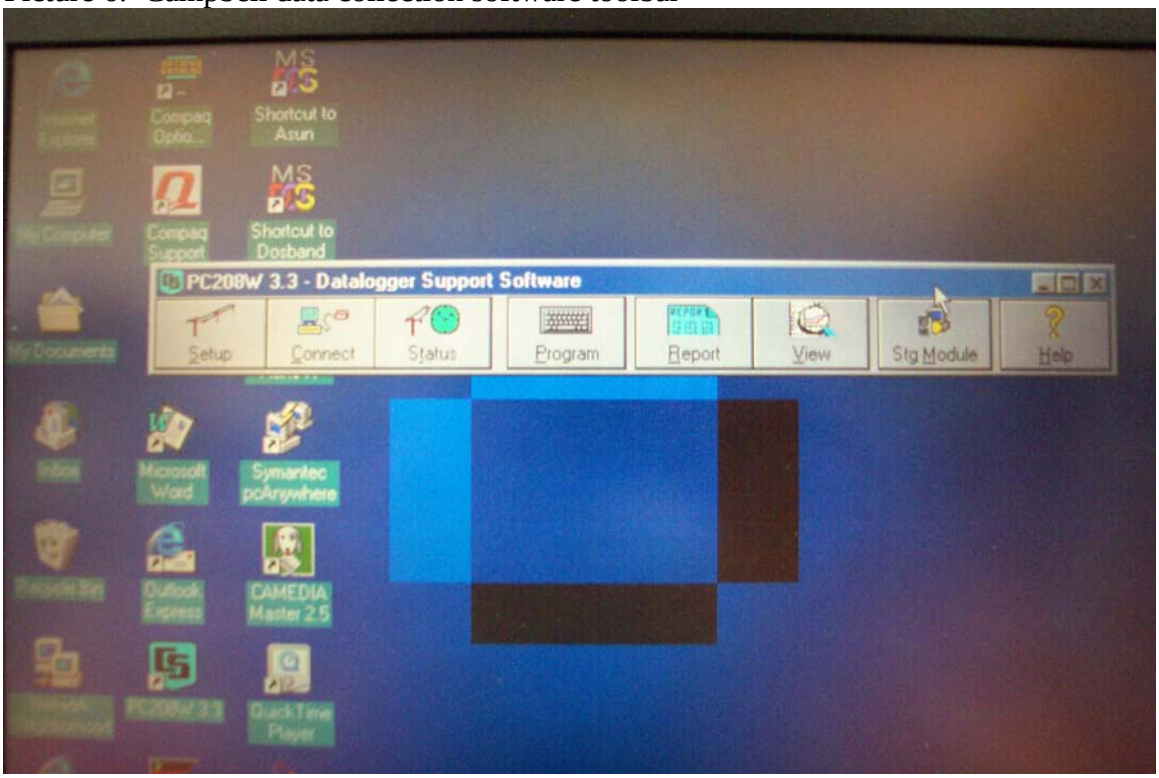
Picture 5: Connecting the computer to the Campbell logger.



VI. Collecting data

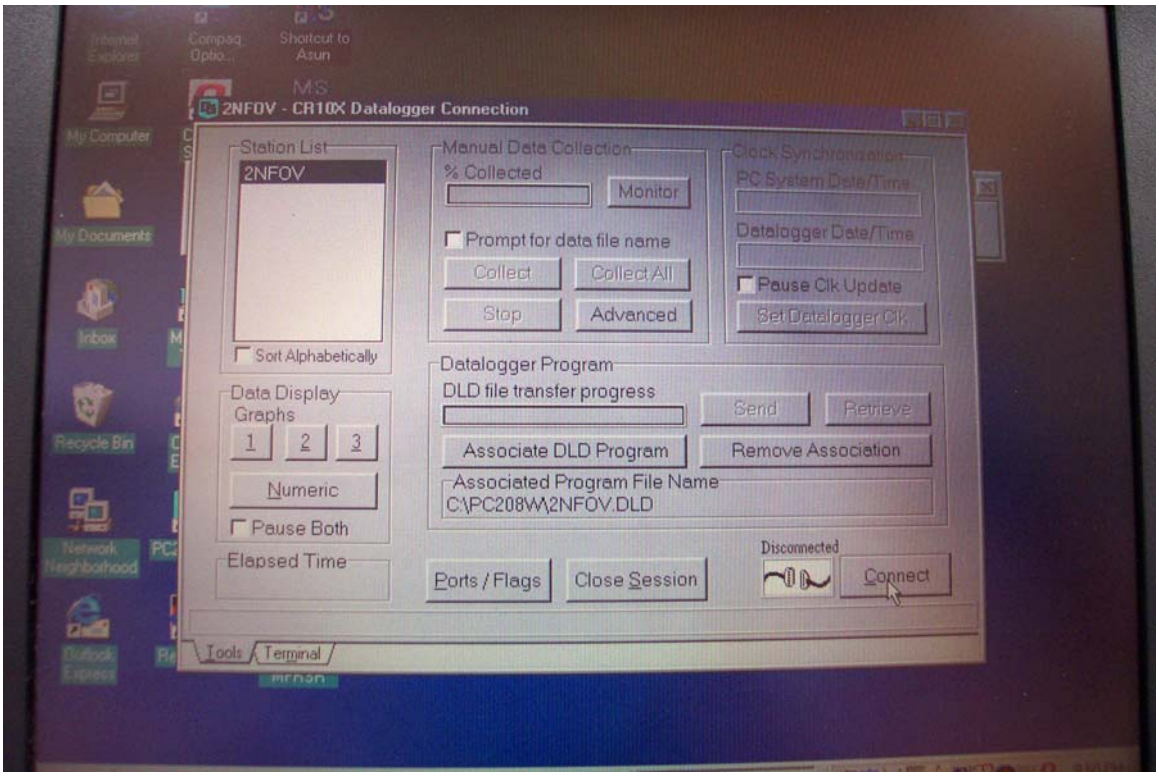
(This is a very brief description on how to collect data; it is advisable to get help from someone knowledgeable with the Campbell system). Turn on the computer, click on the PC208W 3.3 icon, and the Campbell data collection software will be activated. A toolbar will appear on the screen; see Picture 6. Click on the "connect" button and a window will appear; see Picture 7.

Picture 6: Campbell data collection software toolbar



In the "connect" window, Picture 7, make sure that 2NFOV is highlighted, and once you press the connect button in the lower right-hand corner, the computer will be connected to the data logger. To collect the data, put a check in "prompt for data file name" check box, and locate the file where you want the data to reside. Then click on collect, and the Campbell buffer will be moved to the data file. When you press collect again, the new data will be appended to the end of the original data file. When you're done, collect that data for the last time, and click "disconnect", and power down the 2NFOV by turning the power switch off. To be on the safe side, disconnect the power cord. (More belt and suspenders).

Picture 7: the data collection window



Have fun collecting data!

VII. Tips on calibration

Remove the sunshield (3 allen screws) and clean the window before calibration. Calibrate with the sunshield in place.

When calibrating the instrument, cover the instrument with black “optical cloth” or other obscuring device to collect the “dark count” signals. This should be done prior, during, and after the calibration procedure.

The format of the data file is:

Column 1: line number of Campbell code that produces the output (not relevant)
Column 2: 4 digit year: e.g., 2005
Column 3: Julian day number: e.g., 100 means April 10, 2005
Column 4: time in HHMM format: e.g., 1911 means 19 hours, 11 minutes (this time should be UT)
Column 5: time in seconds: e.g., 13 means 13 seconds
Column 6: 870 output in millivolts (mV)
Column 7: 673 output in mV
Column 8: head temperature in mV, should be about 1450
Column 9: tube temperature in mV, should be about 1400

Once some data have been collected, you can bring the data up on, for example, an Excel spread sheet and look at it.

You can derive a calibration coefficient by subtracting the dark counts, DC, from the signal, S, at a specified radiance, R; the calibration coefficient is R/(S-DC).

It might be a good idea to collect some data, and send it to us so we can look at it.