



Launching Thermographs for the  
David Tsao Continental Thermograph Array

December 2018

## Launching Thermographs for the David Tsao Continental Thermograph Array

We typically do not calibrate the temperature readings from the Onset Computer thermographs, relying on the factory to have properly calibrated the devices. We do occasional checks as described in the appendix.

Programming a thermograph for deployment is referred to as launching it. A launch requires the following:

- 1) Hoboware Application on computer



Figure 1. Thermographs, white boot, cap for boot and thermograph black cap-only

- 2) Thermograph (Figure 1) Hobo U22-001
- 3) Optical base station with appropriate connector (Figure 2)



Figure 2. Reader, connector and computer

- 4) Desired sampling time
- 5) Date and time to begin recording
- 6) Optional, name of deployer and site

The procedure is:

- 1) Connect Optic USB base Station to USB port on computer
- 2) Plug connector into optical reader



Figure 3. Thermograph, connector and reader connected to computer

- 3) Plug thermograph onto connector Figure 3
- 4) Invoke Hoboware application  
At the bottom right corner, the Application should indicate “1 device detected” see Figure 4. This may take a while if the thermograph is new.

- 5) Check thermograph “status” (Figure 4), by clicking “Status” in the “Device” menu
- 6) Stop recording if thermograph is recording by clicking “Stop” in Device menu  
Make sure data are downloaded if necessary
- 7) After recording is stopped check “Status”
- 8) Verify battery is good

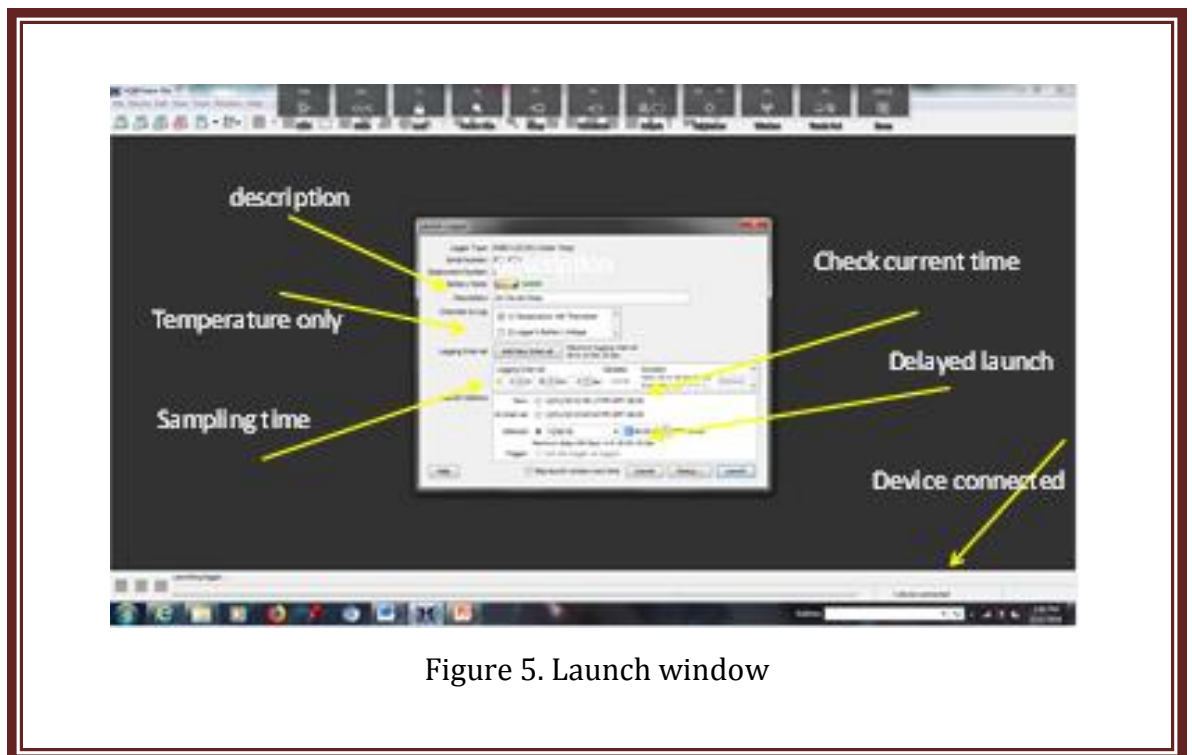


Figure 5. Launch window

- 9) Click “Launch” and view screen as shown in Figure 5

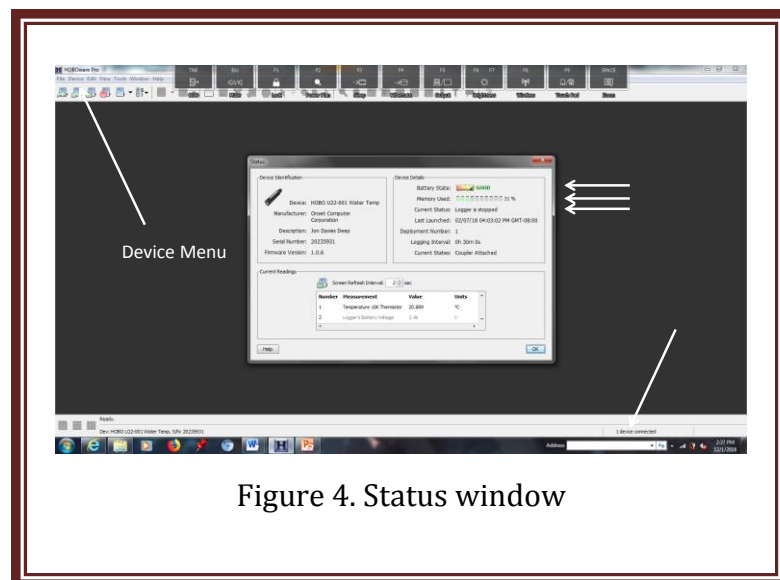


Figure 4. Status window

- 10) Input description
- 11) Input channels to log as temperature only, not battery voltage
- 12) Check thermograph time by comparing to cell phone time
- 13) Check thermograph temperature to verify it is sensible
- 14) Set logging interval (sampling time)
- 15) Select “Delayed” as launch option and set launch date and time
- 16) Click “Launch” at bottom right  
Window pops up indicating information is being sent to device
- 17) After window closes click “Status” and verify settings including battery, memory and launch parameters. If settings are not correct, launch again.
- 18) If settings are correct, remove thermograph, quit application

## **Appendix.**

We do not have the laboratory equipment to calibrate the thermographs, but when we have a large number of sensors, we will test that they have consistent measurements. Typically, we will launch the thermographs to begin recording at the same time and at a rapid rate perhaps 1 to 5 minutes. Then we will place them in a mixture of ice and water that has been well stirred to produce a uniform temperature. The thermographs will be retrieved after the ice/water mixture has returned to ambient temperature, thereby providing a large range of temperature measurements. Two examples of data from such experiments are shown below in Figure A, with one indicating a problem. Note that 654544 consistently measures 2 degrees less than the other thermographs. We have noted no problems with thermographs used in the DTCTA.

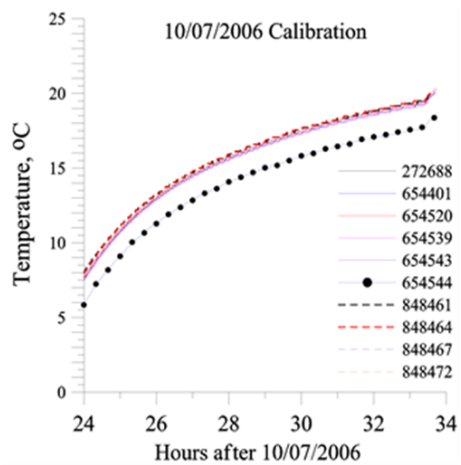
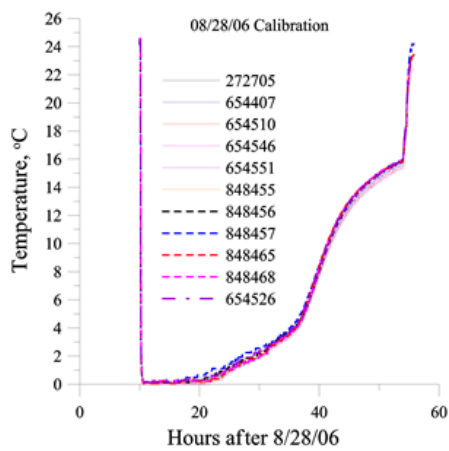


Figure A. Examples of thermograph tests.