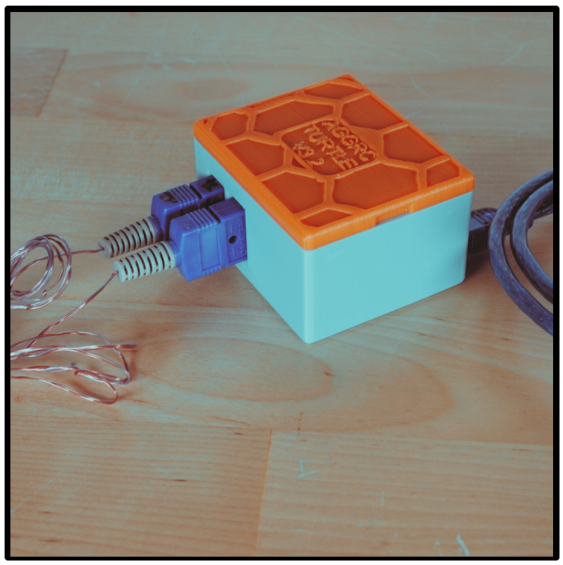
Aquatic Germplasm and Genetic Resources Center	**INSTITUTION** LSU AgCenter	**PROCEDURE ID:**
	MANUAL Open Hardware	**EFFECTIVE DATE:**
	SUBJECT TURTLE V3.6.4 User Manual	**REVISED/REVIEW:**

TURTLE V3.6.4 User Manual (Preassembled TURTLE)

AGGRC



Technical Support:

Cole Brumfield, (CBrumfield@agcenter.lsu.edu)

Please send us your comments and suggestions!

Scan to learn more about the AGGRC!

NIH National Institutes of Health
Office of Research Infrastructure Programs

LSU AgCenter
Research · Extension · Teaching

Table of Contents

TURTLE App Setup

Step 1: Download the Files

Navigate to the GitHub:
https://github.com/aggrc/TURTLE/releases/tag/V3.6.3

From there download:

1. **TURTLE.App.Installer.exe**
2. **Source code (zip)**

Extract the downloaded folder named TURTLE-3.6.3

Step 2: Download the Driver

Navigate to the folder you just extracted, then extract the folder named Windows-CH340-Driver. Open that extracted folder, and inside you will find a file named SETUP. Double-click SETUP to install the driver, which allows your laptop or PC to connect to the TURTLE device.

Step 3: Run the App

Run **TURTLE.App.Installer.exe**. Make sure to check the "**create desktop shortcut**" check box. This will download the files needed for the app as well as a desktop shortcut on your device. Once complete you can delete the installer.

Regular Use

*__Note:__ The TURTLE must be connected to a laptop/pc at all times to function. The TURTLE has no on board memory or power yet.

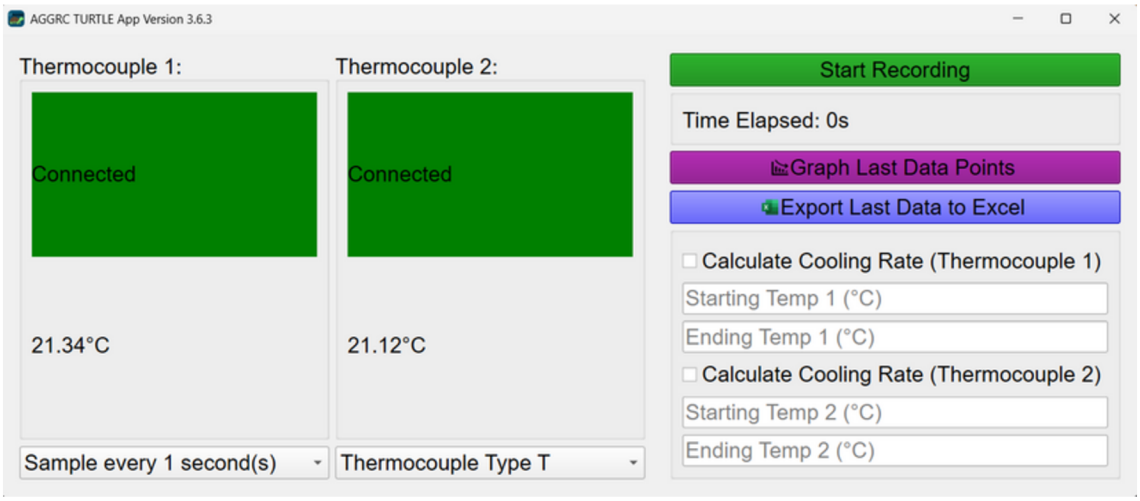
Regular Use:

To ensure the TURTLE operates smoothly, follow these steps in order when using the device:

1. Connect the thermocouple(s) to the TURTLE.
2. Connect the TURTLE to your laptop or PC using a mini-USB to USB cable.
3. Double-click the TURTLE application to launch it.

If the device and software are connected correctly, the program window will appear as shown below. All connected thermocouples will automatically begin displaying live temperature readings.

*__Note__: Data is not recorded until you click Start Recording.

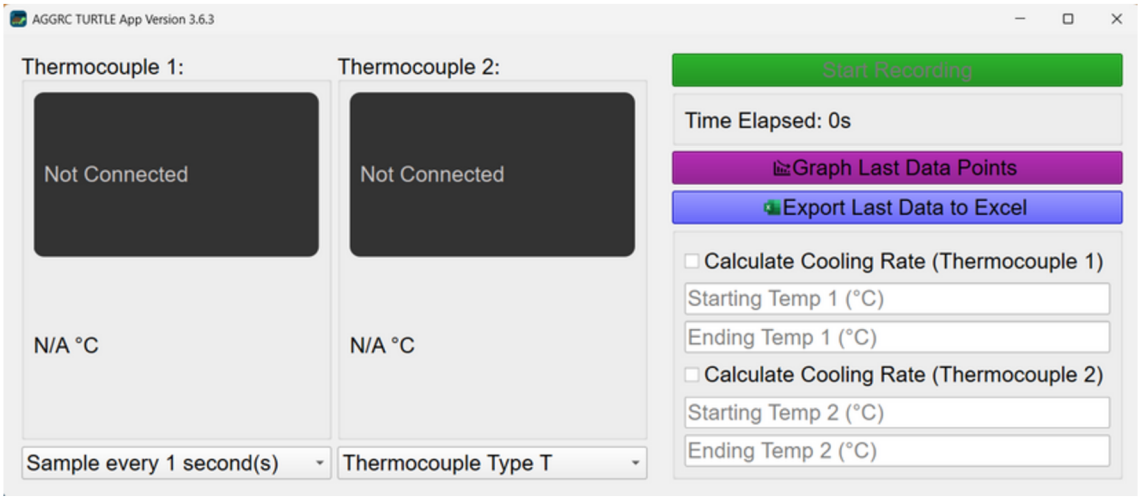


Regular Use Troubleshooting

Regular Use Troubleshooting:

If the program appears as shown below, even though the TURTLE and thermocouples are connected, try the following steps:

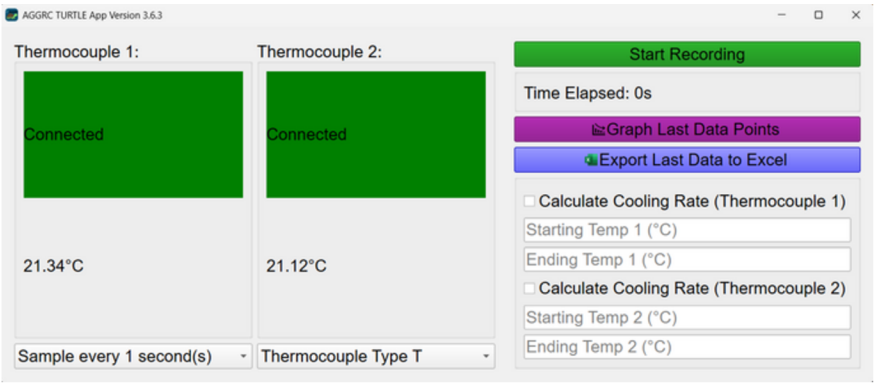
1. Unplug the TURTLE from your laptop/PC.
2. Disconnect the thermocouples.
3. Reconnect the thermocouples, ensuring they are fully inserted.
4. Plug the TURTLE back into your laptop/PC.
5. Restart the TURTLE application.



Starting & Ongoing Data Collection

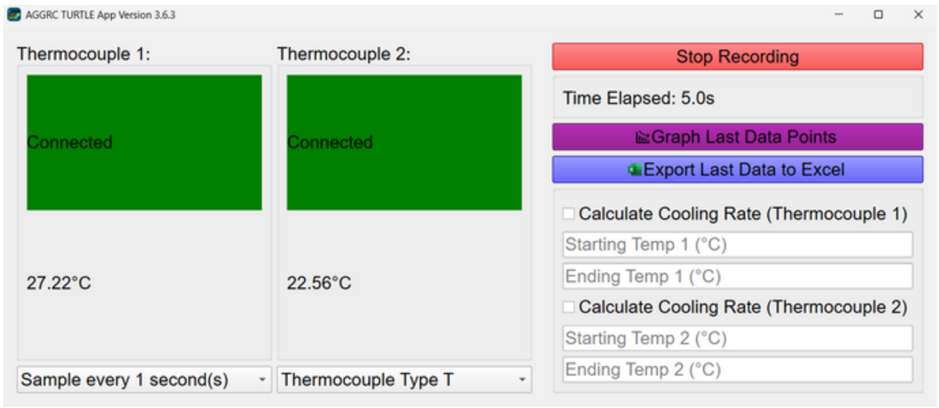
Starting Data Collection:

Before beginning an experiment, adjust the sampling rate and thermocouple type using the dropdown menus located beneath each thermocouple display. Once these settings are configured, you can begin saving temperature data by clicking the green **Start Recording** button in the top-right corner of the program window.



Ongoing Data Collection:

While data is being collected, the **Time Elapsed** counter will begin, showing the total duration of the recording. Although it is possible to change the sampling rate and thermocouple type during recording, this is not recommended, as it may cause inconsistencies in the saved data.



Ending Data Collection & Exporting Options

Ending Data Collection:

When you have completed an experiment, click the red Stop Recording button in the top-right corner. You can then export your data as either a picture graph or an Excel file.

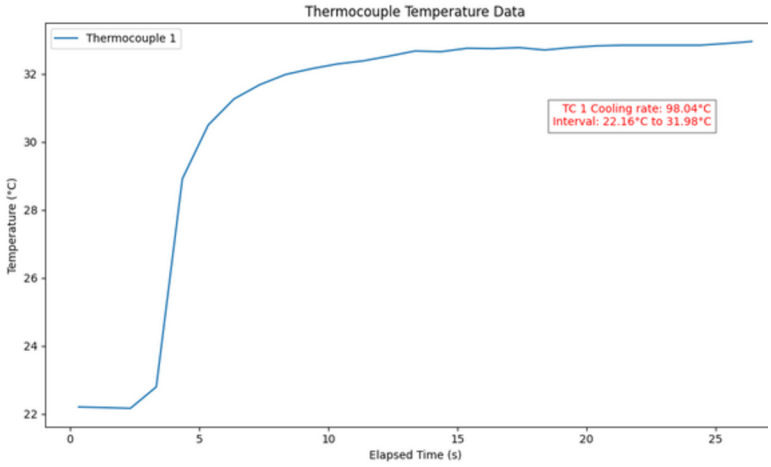
*__Note:__ If you press Start Recording again before exporting, your previous data will be overwritten and cannot be recovered.

Exporting Options:

Data can be exported either as an excel or picture graph. When saving as a graph push the **Graph Last Data Points** button and then push the save icon in the top left. When saving as an excel file push the **Export Last Data to Excel** button. Then choose where to save the file.

Calculating Cooling Rate:

The check box next to “Calculate Cooling Rate” must be checked in order for graphs and excel documents to display cooling rate. Use the start temp and ending temp entry boxes to enter the interval in question. The resulting cooling rate will be in C/min.



With “Calculate Cooling Rate” checked