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Arduino Thermistor Data Collector

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Instructions:

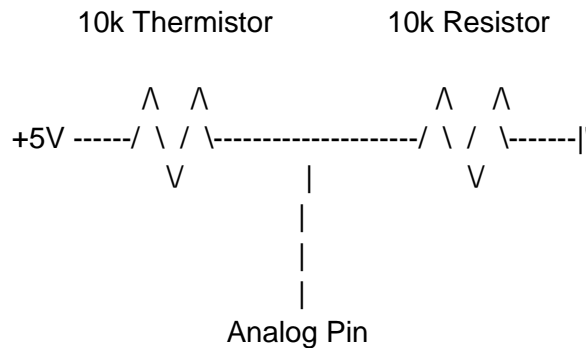
For Windows:

- Download the Arduino drivers and install the Arduino Environment
 - Go to: <http://www.arduino.cc/en/Guide/Windows> steps 1-4
- Connect the Arduino Board to the Computer using a USB cable
- Download the sourceforge .zip file
 - <https://sourceforge.net/projects/thermistordatas/>
- Extract the folder
- Open and upload the “Arduino_Thermistor_Data_Collector.ino” file in the “Program for Arduino” folder
 - <http://www.arduino.cc/en/Guide/Windows#toc5> steps 5-9
- Attach the thermistor(s) to a 5v power supply and to the analog pins
 - see circuit diagram
- Run “Arduino Thermistor Data Collector.jar”
- Click on the Auto Connect checkbox
- Click on the Auto Connect Button
- It is recommended to use Duration mode and input a very long sample duration time (like 3 hours)
 - Set the sample duration as well as the sample rate and press start
- If want to stop data collection when the temperature plateaus but you do not know the approximate amount of time it will take, you can also use Threshold mode to set the data collection to stop when the data plateaus over the set number of readings (currently in development)
 - Set the threshold parameters as well as the sample rate press start
- Use the graph for visualizing real time data
- Data will be saved automatically in a text file in the main folder

NOTE:

- Data sampling can only be started if Arduino is on and plugged into the computer.
- The “Arduino_Thermistor_Data_Collector.ino” file must have been uploaded to the Arduino for the data to be received.

Circuit Diagram:



Source of thermistors:

<http://www.hacktronics.com/Sensors/Thermistor-Temperature-Sensor/flypage.tpl.html>

<http://www.hacktronics.com/Tutorials/arduino-thermistor-tutorial.html>

NOTE:

Thermistor probes must be connected to the first successive analog inputs on the Arduino
ex: when using three thermistors, they must be connected to pins A0, A1, and A2.

Glossary:

Duration Mode: Allows you to run the experiment for a set period of time.

Threshold Mode: Runs the experiment until the data reaches a plateau.

Sample Duration (Duration Mode): The temporal duration of data collection.

Number of Readings (Threshold Mode): Analyses this number of the most recent temperature readings for the plateau.

Range Threshold (Threshold Mode): If the data in the latest readings has a range (maximum minus minimum reading) that is less than this number, the data collection will stop. This is how the program recognizes when the data has reached a plateau.

Sample Rate: The frequency of data collection.

Number of Thermoresistors: Indicates the number of temperature sensors that will be collecting data.

Auto Connect: If checked, allows you to connect automatically by scanning every port for the Arduino.

Auto Name File: If checked, the program names the output text file with the time that the data collection started, otherwise the text file can be named manually.

Output Filename: The name of the text file which the data will be written to.

Baud Rate: A number related to the speed of data transmission in a system. The rate indicates the number of electrical oscillations per second that occurs within a data transmission. The higher the baud rate, the more bits per second that are transferred. **APA: Dictionary.com**

Port: The specific place where the Arduino is physically connected to the computer.

Log: Displays text saved into the output file containing collected data.

Thermistor: A resistor whose output depends upon changes of its resistance material with changes in temperature.

Arduino: The central processing unit of the circuit.

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