

## RHT03 Sensor How To Guide

\*Anyone may use this guide

### RHT03 Sensor Connections

#### 1. What you need:

- 3 male to male wires
- 3 female to male wires
- 1 breadboard
- 1 RHT03 sensor
- 1 10K resistor

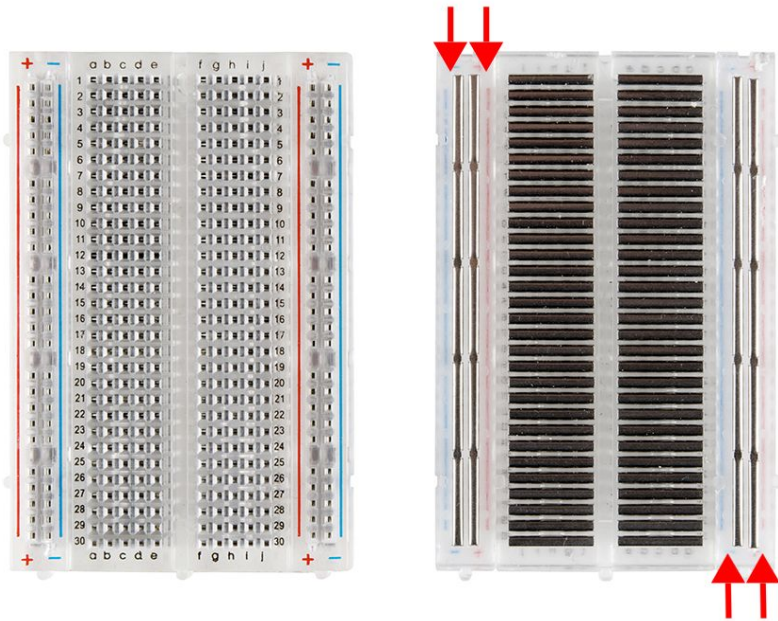
#### 2. Connecting the Breadboard

Pins on the sensor, from left to right:

1. First pin is power
2. Second pin is the data pin used to connect to the beaglebone
3. Third pin is **UNUSED**
4. Fourth pin is ground



The breadboard connections are shown as depicted below. Wires need to be connected between each numbered row, but the ground and power pins are all connected. The + symbol indicates power, and the - symbol indicates ground. **DON'T MISTAKE THESE!** You can easily break your components if you accidentally mistake these two columns.

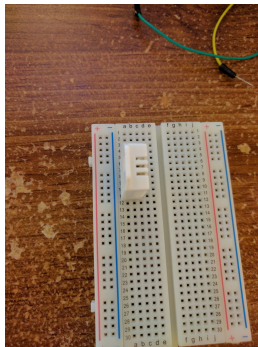


\*Image courtesy of sparkfun.com

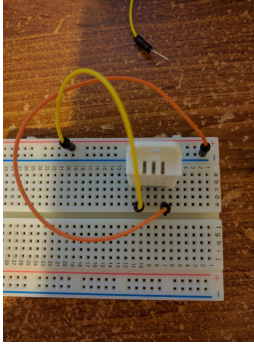
Notice how there's a clear distinction with the left side and the right side of the board. We're only going to be using one side of it, in our case, only worry about rows a to e. If you have access to more wires and are familiar with breadboarding, feel free to use the rest of the board for more space.

## **2.1. Connections**

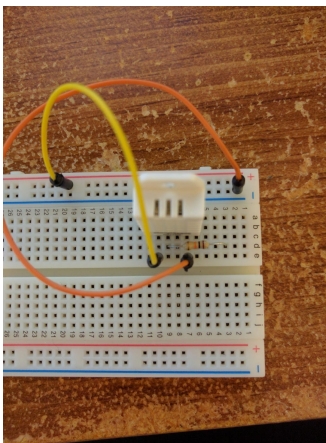
1. Connect the sensor between any rows (such as rows 2, 3, 4, 5). Connect the sensor to the outer edge column a, for more room to work with. If you wish, you can flip the sensor so that the front is not facing inwards, for more room.



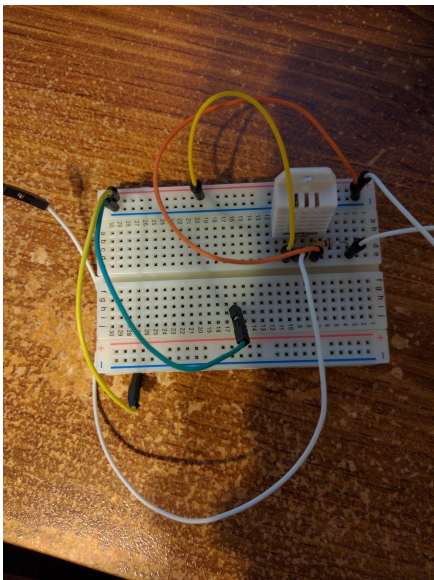
2. Using the 2 male to male pins, connect each respective pins to the power and ground grids.



3. The data pin also requires power, but we are going to use a 10K pull-up resistor so that it doesn't get too much of it. Connect the resistor to any slot in the data pin row and then to an unused row:



4. Using the last male to male wire, connect one end to the empty resistor row (in this case, row 3) with the power grid.
5. Connect 1 female to male wire in the unused slot in the data row
6. Connect the rest of the 2 female to male pins in any slot on the ground and power grids.
7. The board should look something like this:

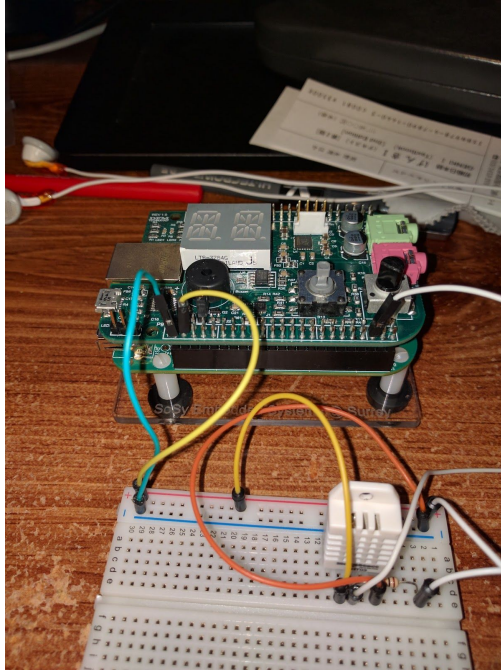


### **3. Connecting the beaglebone**

The sensor uses the Ground pin, the 3.3 Volt pin, and GPIO\_20 (41)

<http://www.cs.sfu.ca/CourseCentral/433/bfraser/other/GPIOGuide.pdf>

1. Orient the beaglebone so that the Ethernet Port is facing the left
2. Connect each female to male pin to their respective pins. End result:



### **4. Testing the sensor**

1. Download the files from [https://github.com/adafruit/Adafruit\\_Python\\_DHT](https://github.com/adafruit/Adafruit_Python_DHT)
2. Install any necessary dependencies on the target.
  - a. Follow the instructions on the README.md included in the github repo
3. Run the python program and look at the output
4. The terminal should display the current temperature and humidity from the air.
5. Test it out by blowing on it and see the numbers rise!

### **5. Troubleshooting:**

1. If the program doesn't return a value, check that each connection is secured properly. Even the slightest movement can dislodge the wires from their pins or slots.
2. Check that you have the correct resistor attached.

3. When reading sensor values in a loop, you might sometimes get invalid values. We believe this is a hardware limitation (as we haven't managed to find anything wrong with the code we used); create code robust enough to handle invalid values.