### **DHT11 Sensor**

The DHT11 is a basic, ultra low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air and spits out a digital signal on the data pin (no analog input pins needed). Its fairly simple to use, but requires careful timing to grab data. The only real downside of this sensor is you can only get new data from it once every 2 seconds, the sensor readings can be up to 2 seconds old.

[Compared to the DHT22](http://www.adafruit.com/product/385), this sensor is less precise, less accurate, and works in a smaller range of temperature/humidity, but it is smaller and less expensive.

*Technical Details*

* Low cost
* 3 to 5V power and I/O
* 2.5mA max current use during conversion (while requesting data)
* Good for 20-80% humidity readings with 5% accuracy
* Good for 0-50°C temperature readings ±2°C accuracy
* No more than 1 Hz sampling rate (once every second)
* Body size 15.5mm x 12mm x 5.5mm
* 4 pins with 0.1" spacing

### **What is Relative Humidity?**

### **The DHT11 measures *relative humidity*. The relative humidity is the amount of water vapor in air vs. the saturation point of water vapor in the air. At the saturation point, water vapor starts to condense and accumulate on surfaces forming dew.**

### **The saturation point changes with air temperature. Cold air can hold less water vapor before it becomes saturated, and hot air can hold more water vapor before it becomes saturated.**

### **The formula to calculate relative humidity is:**

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The relative humidity is expressed as a percentage. At 100% RH, condensation occurs, and at 0% RH, the air is completely dry

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