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Using DHT22 Digital Temperature & Humidity Sensor

Module with Arduino

Introduction:



The DHT sensors are made of two parts, a capacitive humidity sensor and a thermistor. There is also a very basic chip inside that does some analog to digital conversion and spits out a digital signal with the temperature and humidity. The digital signal is fairly easy to read using any microcontroller.

In this tutorial, the DHT22 sensor will be used along side with Arduino to take a temperature and humidity reading. This sensor are suitable to use for basic data logging.

Feature/Details:-

- Type: AM2302
- Accuracy resolution: 0.1
- Humidity range: 0-100%RH
- Temperature range: -40~80°C
- Humidity measurement precision: ±2%RH
- Temperature measurement precision: ±0.5°C



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Pin-out differences between DHT22 sensor and DHT22 Sensor Module:-





	DHT22 W	ithout Module/		DHT22 V	Vith Module
Pin	Name	Description	Pin	Name	Description
1	VDD	Power (3.3v - 5V)	1	GND	Ground
2	SDA /	Serial Data /	2	VCC	Power (3.3v - 5V)
	DATA	Bidirectional Port			
3	NC	Empty	3	SDA /	Serial Data /
				DATA	Bidirectional Port
4	GND	Ground			·

Objective:-

The DHT22 sensor will sense the Temperature & Humidity level and the reading values will be displayed at the Serial Monitor tab.

Component Needed:-

- Arduino UNO (Mega & Nano compatible)
- DHT22 Digital Temperature & Humidity Sensor Module
- Few Jumper Wires
- Breadboard



Procedure:-

 Connect the DHT22 sensor with Arduino based on Picture and Table below.





Arduino UNO	DHT22 Sensor
2	SDA / Data
3.3v	VDD
GND	GND
-	NC

 <u>Download</u> the library from given link below. Open Arduino IDE install the library by clicking on Sketch > Include Library > Add .ZIP Library.... Then navigate to the downloaded library and click on Open.

CO DHT22	Arduino 1.8.5	
File Edit	Sketch Tools Help	
OHT22	Verify/Compile Ctrl+R Upload Ctrl+U Upload Using Programmer Ctrl+Shift+U	Q •
1 #in 2 3 DHT	Export compiled Binary Ctrl+Alt+S	
4 5 voi	Include Library Add File	∆ Manage Libraries
6 { 5 7 Se 8 Se 9 Se 10	erial.begin(9600); erial.println(); erial.println("Status\tHumidity	Add .ZIP Library Arduino libraries Bridge
11 dł	nt.setup(2); // data pin 2	EEPROM



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 Copy and Paste the following provided program code into Arduino IDE. Connect the Arduino to the PC then click on Verify and after that click on Upload button.

```
#include "DHT.h"
DHT dht;
void setup()
{
  Serial.begin(9600);
  Serial.println();
  Serial.println("Status\tHumidity (%)\tTemperature (C)\t(F)");
  dht.setup(2); // data pin 2
}
void loop()
{
  delay(dht.getMinimumSamplingPeriod());
  float humidity = dht.getHumidity();
  float temperature = dht.getTemperature();
  Serial.print(dht.getStatusString());
  Serial.print("\t");
  Serial.print(humidity, 1);
  Serial.print("\t\t");
  Serial.print(temperature, 1);
  Serial.print("\t\t");
}
```



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4) After finish uploading the program code to the Arduino, Open the SerialMonitor tab to see the Temperature & Humidity value reading. Done!!!

lit Sketch 1	Fools Help				
				Serial Monitor 👂	
00 COM2			_	E .	
Status	Humidity (%)	Temperature (C)	(F)		
OK	45.0	30.4	86.7		
OK	44.4	30.4	86.7		
OK	44.1	30.4	86.7		
OK	43.4	30.4	86.7		
OK	42.8	30.4	86.7		
OK	42.3	30.3	86.5		
OK	42.1	30.3	86.5		
OK	42.0	30.3	86.5		
OK	41.8	30.3	86.5		
OK	41.8	30.3	86.5		
OK	41.8	30.3	86.5		
OK	41.5	30.3	86.5		
OK	41.2	30.3	86.5		

Sample Pictures

