

# DHT22 - AM2303 temperature and humidity sensor library for Arduino

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This is an optimized AM2303 digital temperature and relative humidity sensor on a DHT22 breakout PCB.



## Library features

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- Read 16-bit temperature (synchronous blocking)
- Read 16-bit relative humidity (synchronous blocking)

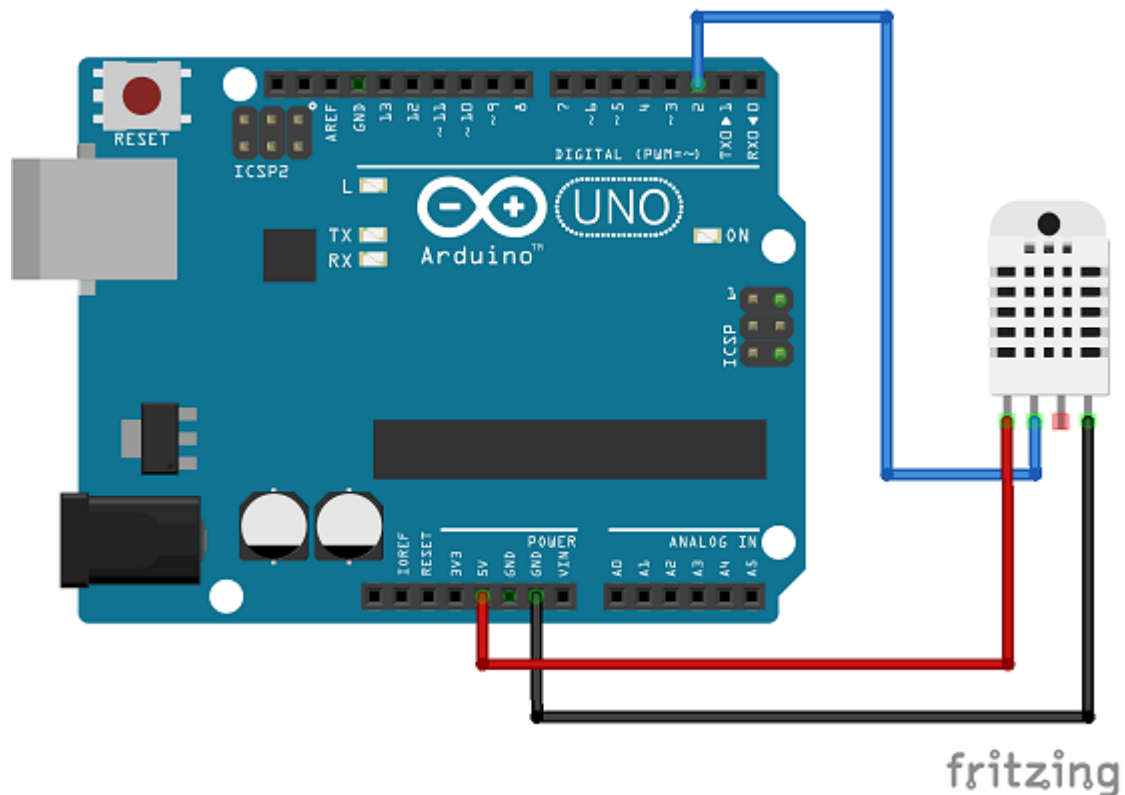
## AM2303 sensor specifications

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- Voltage: 3.3 .. 5V
- Ultra-low power:
  - Typical 15uA dormancy
  - Typical 500uA measuring
- Single wire digital serial interface
- Calibrated digital signal
- Outstanding long term stability
- No additional electronic components needed
- Humidity:
  - Range: 0 .. 99.9 %RH (Relative Humidity)
  - Resolution: 0.1 %RH
  - Accuracy: +/- 2 %RH (at 25 degree Celsius)
- Temperature:
  - Range: -40 .. +125 degree Celsius
  - Resolution: 0.1 degree Celsius
  - Accuracy: +/- 0.4 degree Celsius
- Minimum read interval: 2000 ms

- 31ms to synchronous read humidity and temperature data from sensor

## Hardware



### Connection DHT22 - Arduino

DHT22	Arduino UNO/Nano/Leonardo/Mega2560
GND	GND
VCC	5V (or 3.3V)
DAT	D2

### Connection DHT22 - ESP8266

Some ESP8266 boards uses Arduino pin 2 -> GPIO4 which is D4 text on the board. Make sure you're using the right pin.

DHT22	ESP8266 / WeMos D1 R2 / ESP12E / NodeMCU
GND	GND
VCC	3.3V
DAT	Arduino pin 2 -> GPIO4 = D4

### Connection DHT22 - Lolin32

DHT22	WeMos Lolin32
GND	GND
VCC	3.3V
DAT	2

## Supported Arduino Boards

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- All ATmega328P MCU's:
  - Arduino UNO
  - Arduino Nano
- All ATmega32U4 MCU's:
  - Arduino Leonardo
  - Pro Micro
- All ATmega2560 MCU's:
  - Arduino Mega2560
- All ESP8266 boards:
  - WeMos D1 R2
  - NodeMCU
- All Lolin32 boards:
  - WeMos Lolin32
- Other MCU's may work, but are not tested.

## Library dependencies

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- None

## Documentation

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[Doxygen PDF](#) (Documentation source code)

[AM2303 datasheet](#)

[DHT22 datasheet](#)

## Examples

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Examples | ErriezDH22 | [Example](#)

## Usage

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### Initialization

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```

1  #include <DHT22.h>
2
3  // Connect DHT22 data pin to Arduino DIGITAL pin
4  #define DHT22_PIN 2
5
6  DHT22 sensor = DHT22(DHT22_PIN);
7
8  void setup()
9  {
10     // Initialize serial port
11     Serial.begin(115200);
12     Serial.println(F("DHT22 temperature and humidity sensor example\n"));
13
14     // Initialize sensor
15     sensor.begin();
16 }

```

## Read temperature and humidity

```

1  void loop()
2  {
3     // Check minimum interval of 2000 ms between sensor reads
4     if (sensor.available()) {
5         // Read temperature from sensor
6         int16_t temperature = sensor.readTemperature();
7
8         // Read humidity from sensor
9         int16_t humidity = sensor.readHumidity();
10
11         if (temperature == ~0) {
12             // Print error (Check hardware connection)
13             Serial.print(F("Temperature: Error"));
14         } else {
15             // Print temperature
16             Serial.print(F("Temperature: "));
17             Serial.print(temperature / 10);
18             Serial.print(F("."));
19             Serial.print(temperature % 10);
20             Serial.println(F(" *C"));
21         }
22
23         if (humidity == ~0) {
24             // Print error (Check hardware connection)
25             Serial.print(F("Humidity: Error"));
26         } else {
27             // Print humidity
28             Serial.print(F("Humidity: "));
29             Serial.print(humidity / 10);
30             Serial.print(F("."));
31             Serial.print(humidity % 10);
32             Serial.println(F(" %"));
33         }
34     }
35 }

```

```
34  
35     Serial.println();  
36 }  
37 }
```

## Serial output

```
1 DHT22 temperature and humidity sensor example  
2  
3 Temperature: 17.7 *C  
4 Humidity: 41.0 %  
5  
6 Temperature: 17.8 *C  
7 Humidity: 41.1 %  
8  
9 ...
```