
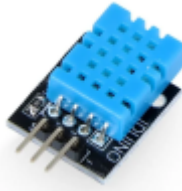






LamaPLC: DHT Temperature /Humidity sensors with 1-wire / I²C communication

The DHT is a popular, low-cost digital sensor that measures both temperature and humidity. DHT22 offers higher accuracy than its predecessor, the DHT11. It is suitable for a wide range of applications, including weather stations and smart home systems.

Type of measurement	Model	Power voltage	Measurement, range, accuracy	Communication	Note
 Temperature Humidity	DHT11 	3.3 / 5 V (3.3 .. 5.5V)	Temperature measurement range: 0 .. +50 °C Temperature measurement accuracy: ±2°C Humidity measurement range: 20..90% RH Humidity measurement accuracy: ±5%	1-Wire	8 bit resolution, response time 10 sec
 Temperature Humidity	DHT20 	3.3 / 5 V (2.2 .. 5.5V)	Temperature measurement range: -40 .. +80 °C Temperature measurement accuracy: ±0.5°C (-40..80) Humidity measurement range: 0..100% RH Humidity measurement accuracy: ±3%	I ² C default addr.: 0x38	-
 Temperature Humidity	DHT22 AM2302 	3.3 / 5 V (2.2 .. 5.5V)	Temperature measurement range: -40 .. +80 °C Temperature measurement accuracy: ±0.5°C (-40..80) Humidity measurement range: 0..100% RH Humidity measurement accuracy: ±2%	single-bus	-

Operation and Usage

The DHTs use a single bus for communication, which requires careful timing; this is typically handled by libraries in microcontroller environments. A 4.7kΩ to 10kΩ pull-up resistor is needed between the data line and VCC for proper communication.

The sensors are available in two main forms: a 4-pin bare sensor and a 3-pin module with the pull-up resistor integrated.

The BME/BMP sensors can be integrated with the [Tasmota](#) system. For more details, see here:

- DHT11 sensors: <https://tasmota.github.io/docs/DHT11/>



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Arduino & DHT22

To read a DHT22 sensor with an Arduino, you typically use the **Adafruit DHT Sensor Library** along with the Adafruit Unified Sensor Library.

Wiring Details

The wiring depends on whether you have a bare sensor or a module:

- **VCC:** 3.3V to 5V.
- **GND:** Ground.
- **Data (DQ):** Digital pin (e.g., Pin 2).
- **Pull-up Resistor:** Bare 4-pin sensors require a 4.7kΩ to 10kΩ pull-up resistor from VCC to Data. Modules with 3 pins usually have this resistor built-in.

Arduino Example Code

This sketch reads temperature (in Celsius) and humidity every 2 seconds.

```
#include "DHT.h"

#define DHTPIN 2      // Digital pin connected to the DHT sensor
#define DHTTYPE DHT22 // DHT 22 (AM2302), AM2321

// Initialize DHT sensor.
DHT dht(DHTPIN, DHTTYPE);

void setup() {
  Serial.begin(9600);
  Serial.println(F("DHT22 test!"));
  dht.begin();
}

void loop() {
  delay(2000); // Wait 2 seconds between measurements

  // Read humidity and temperature
  float h = dht.readHumidity();
```

```

float t = dht.readTemperature();
float f = dht.readTemperature(true); // Temperature in Fahrenheit

// Check for read failures
if (isnan(h) || isnan(t) || isnan(f)) {
  Serial.println(F("Failed to read from DHT sensor!"));
  return;
}

// Print results
Serial.print(F("Humidity: "));
Serial.print(h);
Serial.print(F("% Temperature: "));
Serial.print(t);
Serial.print(F("°C "));
Serial.print(f);
Serial.println(F("°F"));
}

```

1-wire, I2C topics on lamaPLC

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