SKU:SEN0497 (https://www.dfrobot.com/product-2391.html)

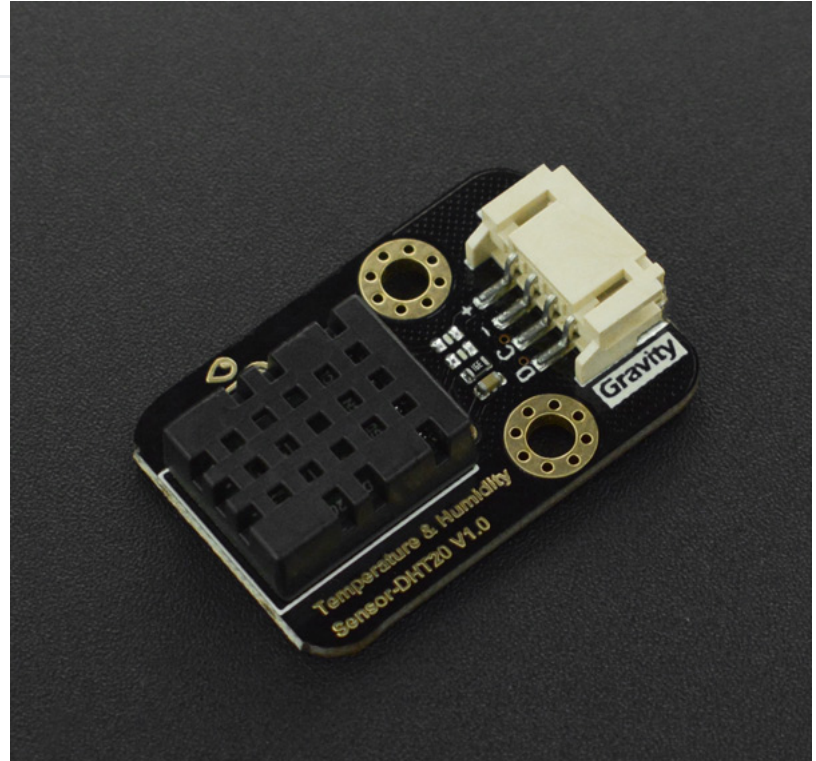(https://www.dfrobot.com/product-
2391.html)

Introduction

The DHT20 temperature & humidity sensor is the newly upgraded version of the DHT11. The
DHT20 features a brand-new ASIC dedicated chip, an improved MEMS semiconductor capacitive
humidity sensor element and a standard on-chip temperature element. All sensors are factory
calibrated and characterized by low power, high precision & stability, fast response, and strong
anti-interference. Moreover, the DHT20 performance parameters of accuracy, power supply
voltage, measurement range and response time have been enhanced greatly over the previous
generation, making it more cost-effective. Besides that, the DHT20 temperature & humidity

sensor employs I2C digital output protocol, which is very suitable for HVAC, automobiles, data loggers, weather stations, home appliances, and other related temperature and humidity detection and controlled areas.

Features

- Compatible with 3.3~5.5 V main controller.
- Factory calibration
- I2C digital output
- An excellent long-term stability
- Quick response, strong anti-interference ability
- Low power, low cost
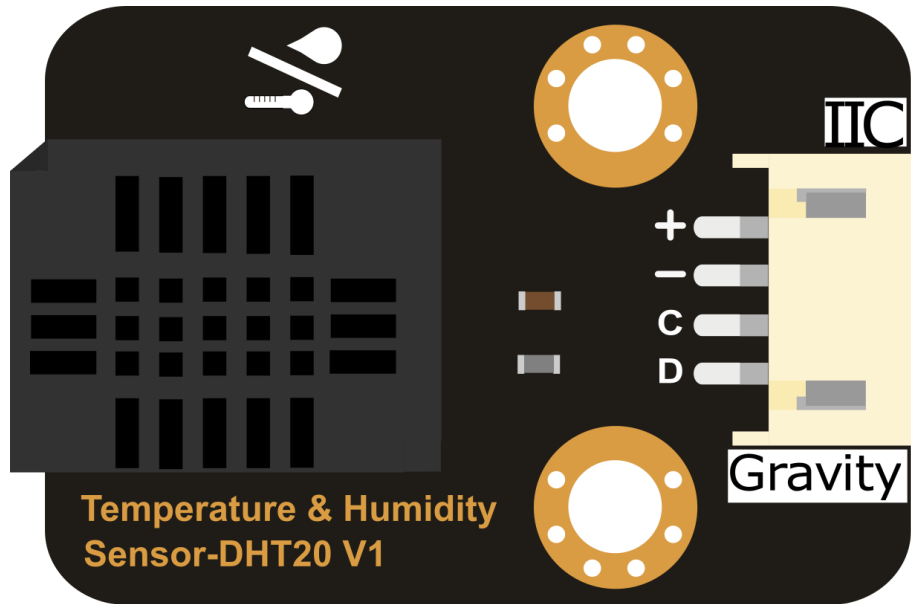- Compatible with mainboards like Arduino, micro:bit, ESP-32, control board and Raspberry Pi.

Specification

Specification

- Operating Voltage: 3.3V ~ 5.5V DC

- Operating Current: <1mA

- Output Signal: I2C (0×38)

- Temperature Range: -40 ~ +80°C ± 0.5°C

- Humidity Range: 0 ~ 100%RH ± 3%RH (25°C)

- Resolution: 0.01 ℃, 0.024%RH

- Storage Condition: 10°C-50°C, 20-60%RH

- Circuit Board Dimension: 22×33mm/0.87×1.30"

- Mounting Hole Size: Inner diameter 3.1 mm (0.12")/Outer diameter 6mm (0.24")

Board Overview

Temperature & Humidity Sensor-DHT20 V1

Num	Label	Description
1	D	I2C data line SDA

Num	Label	Description
2	C	I2C clock line SCL
3	-	GND power negative

4	+	Power positive

Tutorial for Arduino

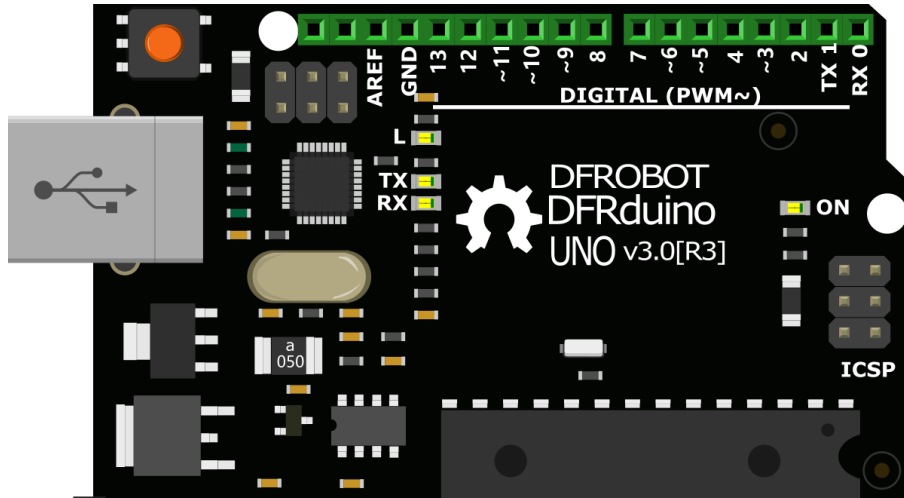Download the program to UNO, open the serial monitor to check temperature and humidity.

Requirements

- **Hardware**
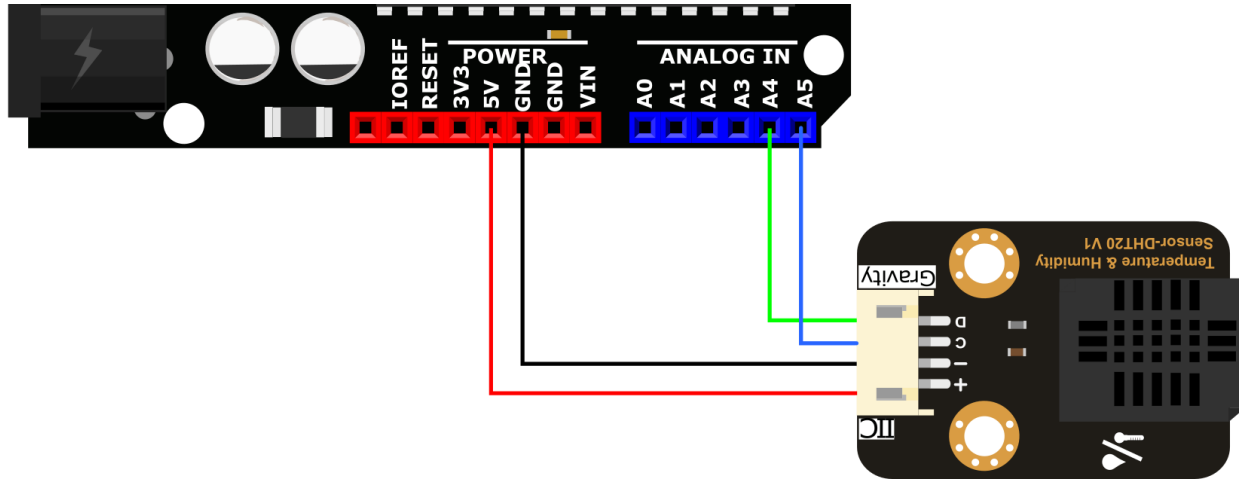   - DFRduino UNO R3 (https://www.dfrobot.com/product-838.html) (or similar) x 1
    - SEN0497 Temperature and Humidity Sensor - DHT20 ×1
    - Gravity 4Pin Sensor Connector ×1

- **Software**

- Arduino IDE (https://www.arduino.cc/en/Main/Software)
- Download and install the **DFRobot DHT20 Library** (https://github.com/cdjq/DFRobot_DHT20) (About how to install the library?

  (https://www.arduino.cc/en/Guide/Libraries#.UxU8mdzF9H0))

Read Sensor Data

Connection Diagram

Sample Code

- Connect the module with Arduino according to the diagram above. Of course, you can also use it with Gravity I/O Expansion Shield (https://www.dfrobot.com/product-1009.html), which can complete the project prototype more conveniently and quickly.

- Download and install the **DFRobot DHT20 Library** (https://github.com/cdjq/DFRobot_DHT20) (About how to install the library? (https://www.arduino.cc/en/Guide/Libraries#.UxU8mdzF9H0))

- Open Arduino IDE, upload the code below to Arduino UNO.

- Open the serial monitor of Arduino IDE, set the baud rate to 115200, then observe the result printed by the serial port.

```
/*!
 *@file getData.ino
 *@brief Read ambient temperature and relative humidity and print them to serial port.
 *@copyright   Copyright (c) 2010 DFRobot Co.Ltd (http://www.dfrobot.com)
 *@licence     The MIT License (MIT)
 *@author [fengli](li.feng@dfrobot.com)
 *@version  V1.0
 *@date  2021-6-24
 *@get from https://www.dfrobot.com
 *@https://github.com/DFRobot/DFRobot_DHT20
*/

#include <DFRobot_DHT20.h>
/*!
 * @brief Construct the function
 * @param pWire IC bus pointer object and construction device, can both pass or not pass p
 * @param address Chip IIC address, 0x38 in default.
 */
DFRobot DHT20 dht20:
```

```
DFRobot_DHT20 dht20;
void setup(){

  Serial.begin(115200);
  //Initialize sensor

  while(dht20.begin()){
    Serial.println("Initialize sensor failed");
    delay(1000);
  }
}

void loop(){
  //Get ambient temperature
  Serial.print("temperature:"); Serial.print(dht20.getTemperature());Serial.print("C");
  //Get relative humidity
  Serial.print("  humidity:"); Serial.print(dht20.getHumidity()*100);Serial.println(" %RH"
  delay(1000);

}
```

Expected Results

Open the serial monitor and set the baud rate to 115000, then you can see the temperature and humidity data.


```
00 COM41                                                          —    □    ×

[                                                        ]         发送

15:29:34.493 -> temperature:28.65C  humidity:48.60 %RH
15:29:35.582 -> temperature:28.64C  humidity:48.62 %RH
15:29:36.693 -> temperature:28.64C  humidity:48.62 %RH
15:29:37.763 -> temperature:28.65C  humidity:48.56 %RH
15:29:38.838 -> temperature:28.64C  humidity:48.60 %RH
15:29:39.953 -> temperature:28.64C  humidity:48.71 %RH
15:29:41.026 -> temperature:28.65C  humidity:48.54 %RH
15:29:42.103 -> temperature:28.64C  humidity:48.38 %RH
15:29:43.175 -> temperature:28.66C  humidity:48.31 %RH
15:29:44.289 -> temperature:28.66C  humidity:48.35 %RH
15:29:45.363 -> temperature:28.64C  humidity:48.39 %RH
15:29:46.429 -> temperature:28.64C  humidity:48.37 %RH
15:29:47.551 -> temperature:28.63C  humidity:48.37 %RH
15:29:48.620 -> temperature:28.65C  humidity:48.31 %RH
15:29:49.690 -> temperature:28.63C  humidity:48.25 %RH

☑ 自动滚屏  ☑ Show timestamp       没有结束符 ∨   115200 波特率 ∨    清空输出
```

FAQ

Q1: After uploading the code, there is no data output or the output value is obviously wrong?

Q1: After uploading the code, there is no data output or the output value is obviously wrong?	A: Caused by power fluctuations first connect the sensor to the controller, and then supply power to the entire system to solve the problem

For any questions, advice or cool ideas to share, please visit the **DFRobot Forum** (https://www.dfrobot.com/forum/).

More Documents

- DHT20 DataSheet (https://dfimg.dfrobot.com/nobody/wiki/fee98e59eaf69be9fe079daaf8da3ebb.pdf)
- Schematics (https://dfimg.dfrobot.com/nobody/wiki/bbe14218e39cccf48f6050dcafa9e767.pdf)
- Dimension Drawings (https://dfimg.dfrobot.com/nobody/wiki/d303a9a8724d8cfa86f9bb07da398910.pdf)

DFshopping_car1.png Get **Gravity: I2C DHT20 Temperature and Humidity Sensor** (https://www.dfrobot.com/product-2391.html) from DFRobot Store or **DFRobot Distributor**. (https://www.dfrobot.com/index.php?route=information/distributorslogo)