



SHT20 I2C Temperature & Humidity Sensor Waterproof Probe SKU SEN0227

Introduction

This is a SHT20 I2C temperature & humidity sensor with waterproof probe. It comes with the 4C CMOSens® SHT20 temperature & humidity sensor chip, and the probe has gone through dual waterproof protection. The SHT20 I2C temperature & humidity sensor adopt Sensirion new technique. Besides the capacitive type humidity sensor and the band gap temperature sensor, the chip contains an amplifier, A/D converter, OTP memory and a digital processing unit. To compare with early SHT1x series and SHT7x series, SHT20 shows better reliability and long-term stability. It can measure surrounding environment temperature and relative air humidity precisely. The Arduino SHT20 waterproof temperature & humidity sensor adopts dual waterproof protection. The inner PCB has perfusion and encapsulation protection, and the probe enclosure is made of PE waterproof materials. This is a special waterproof breathable material that allows water molecules to seep in, blocking water droplets from seeping in. The sensor won't be damaged even if it is submerged in water for a long time. There is a built-in 10k Pull-up resistor and 0.1uf filter capacitor, so It can be used directly with the microcontroller such as Arduino. Recommend [DFRobot Gravity 4Pin Sensor Adapter](#), it is quite convenient.'

Specification

- Operating Voltage: 3.3V/5V
- Communication Interface: I2C / IIC
- Protection Class: waterproof anti-condensation
- RH Response Time: 8s ($\tau_{63\%}$)
- Accuracy: $\pm 3\%$ RH / ± 0.3 °C
- Measuring Range: 0-100% RH / -40-125 °C
- Dimension: 73mm * 17mm / 2.87 * 0.67 inches
- Weight: 44g

Board Overview



Num	Label	Description
1	Red	VCC
2	Green	GND
3	Black (Blue)	SDA
4	White (Yellow)	SCL

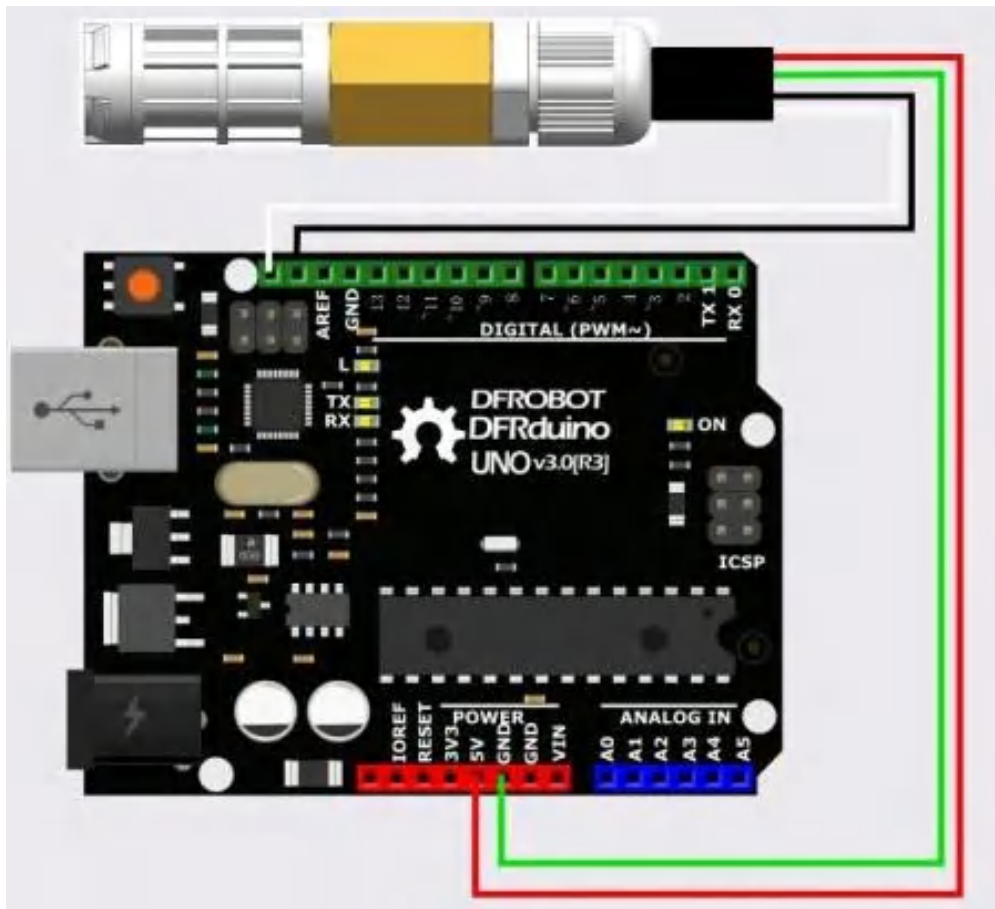
Tutorial

In this section, we'll use Arduino to drive SHT20 I2C Temperature & Humidity Sensor (Waterproof Probe)

Requirements

- Hardware
 - [DFRduino UNO](#) (or similar) x 1
 - SHT20 I2C Temperature & Humidity Sensor
 - M-M/F-M/F-F Jumper wires
- Software
 - Arduino IDE, [<https://www.arduino.cc/en/Main/Software>] Click to Download Arduino IDE from Arduino®]

Connection Diagram



Sample Code

Download the [DFRobot Arduino SHT20 library](#)

[How to install Libraries in Arduino IDE](#)

```
/*!
 * @file   DFRobot_SHT20_test.ino
 * @brief  DFRobot's SHT20 Humidity And Temperature Sensor Module
 * @n      This example demonstrates how to read the user registers to display
resolution and other settings.
 *      Uses the SHT20 library to display the current humidity and temperature.
 *      Open serial monitor at 9600 baud to see readings.
 *      Errors 998 if not sensor is detected. Error 999 if CRC is bad.
 * Hardware Connections:
 * -VCC = 3.3V
 * -GND = GND
 * -SDA = A4 (use inline 330 ohm resistor if your board is 5V)
 * -SCL = A5 (use inline 330 ohm resistor if your board is 5V)
 */

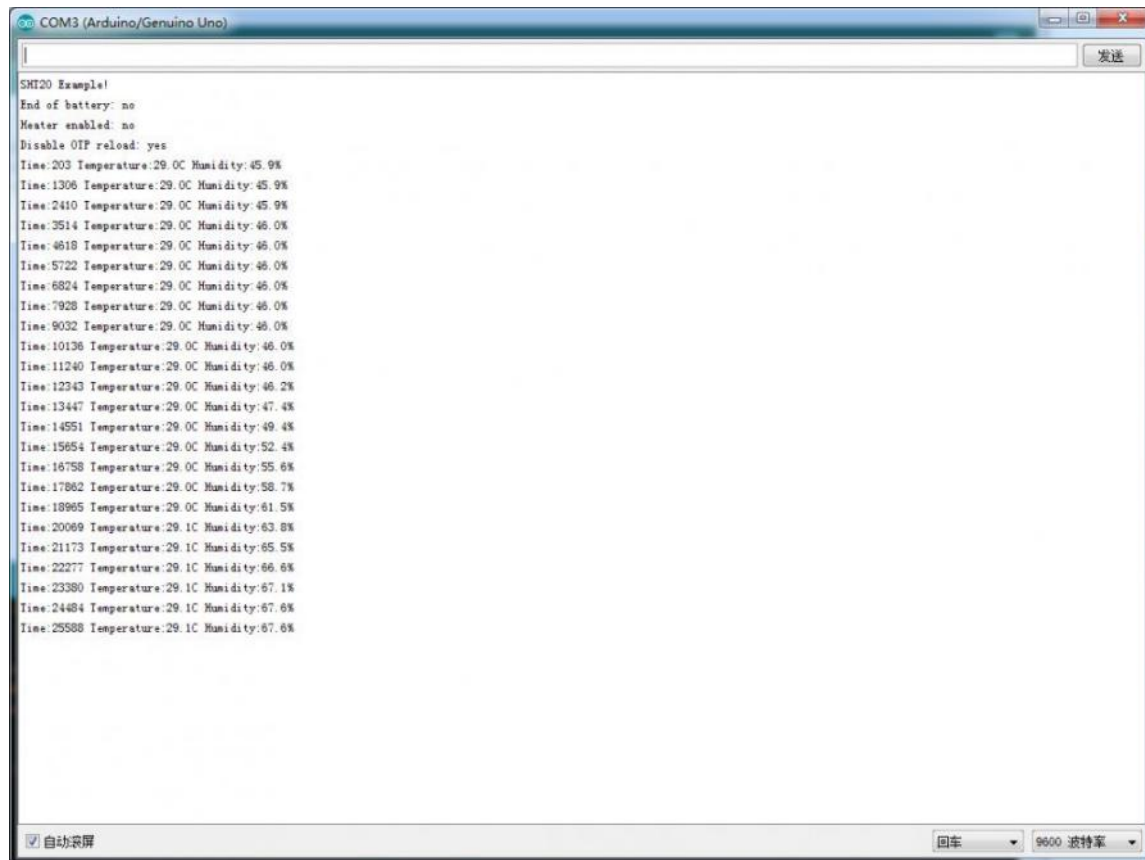
#include <Wire.h>
#include "DFRobot_SHT20.h"

DFRobot_SHT20  sht20;

void setup()
{
    Serial.begin(9600);
    Serial.println("SHT20 Example!");
    sht20.initSHT20();           // Init SHT20 Sensor
    delay(100);                 // Check SHT20 Sensor
    sht20.checkSHT20();
}

void loop()
{
    float humd = sht20.readHumidity();           // Read Humidity
    float temp = sht20.readTemperature();        // Read Temperature
    Serial.print("Time: ");
    Serial.print(millis());
    Serial.print(" Temperature: ");
    Serial.print(temp, 1);
    Serial.print("C");
    Serial.print(" Humidity: ");
    Serial.print(humd, 1);
    Serial.print("%");
    Serial.println();
    delay(1000);
}
```

Expected Results



The screenshot shows a serial monitor window titled "COM3 (Arduino/Genuino Uno)". The text displayed is as follows:

```
SHT20 Example!  
End of battery: no  
Heater enabled: no  
Disable OUF reload: yes  
Time:203 Temperature:29.0C Humidity:45.9%  
Time:1306 Temperature:29.0C Humidity:45.9%  
Time:2410 Temperature:29.0C Humidity:45.9%  
Time:3514 Temperature:29.0C Humidity:46.0%  
Time:4618 Temperature:29.0C Humidity:46.0%  
Time:5722 Temperature:29.0C Humidity:46.0%  
Time:6824 Temperature:29.0C Humidity:46.0%  
Time:7928 Temperature:29.0C Humidity:46.0%  
Time:9032 Temperature:29.0C Humidity:46.0%  
Time:10136 Temperature:29.0C Humidity:46.0%  
Time:11240 Temperature:29.0C Humidity:46.0%  
Time:12343 Temperature:29.0C Humidity:46.2%  
Time:13447 Temperature:29.0C Humidity:47.4%  
Time:14551 Temperature:29.0C Humidity:49.4%  
Time:15654 Temperature:29.0C Humidity:52.4%  
Time:16758 Temperature:29.0C Humidity:55.6%  
Time:17862 Temperature:29.0C Humidity:58.7%  
Time:18965 Temperature:29.0C Humidity:61.5%  
Time:20069 Temperature:29.1C Humidity:63.8%  
Time:21173 Temperature:29.1C Humidity:65.5%  
Time:22277 Temperature:29.1C Humidity:66.6%  
Time:23380 Temperature:29.1C Humidity:67.1%  
Time:24484 Temperature:29.1C Humidity:67.6%  
Time:25588 Temperature:29.1C Humidity:67.6%
```

At the bottom of the window, there is a checkbox labeled "自动滚屏" (Auto scroll) which is checked, and a dropdown menu showing "9600 波特率" (9600 baud rate).

FAQ

Q1. How to measure the soil moisture?.

**** A. **** Soil moisture is defined as: Get 1 kg soil samples, thoroughly dry it, the ratio between reduced weight (water weight) and 1 kg weight is soil moisture. It totally different to the air humidity.

For any questions, advice or cool ideas to share, please visit the [DFRobot Forum](https://wiki.dfrobot.com/SHT20_I2C_Temperature_%26_Humidity_Sensor__Waterproof_Probe__SKU__SEN0227/12-10-20).