



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





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	SDA
4	White	SCL

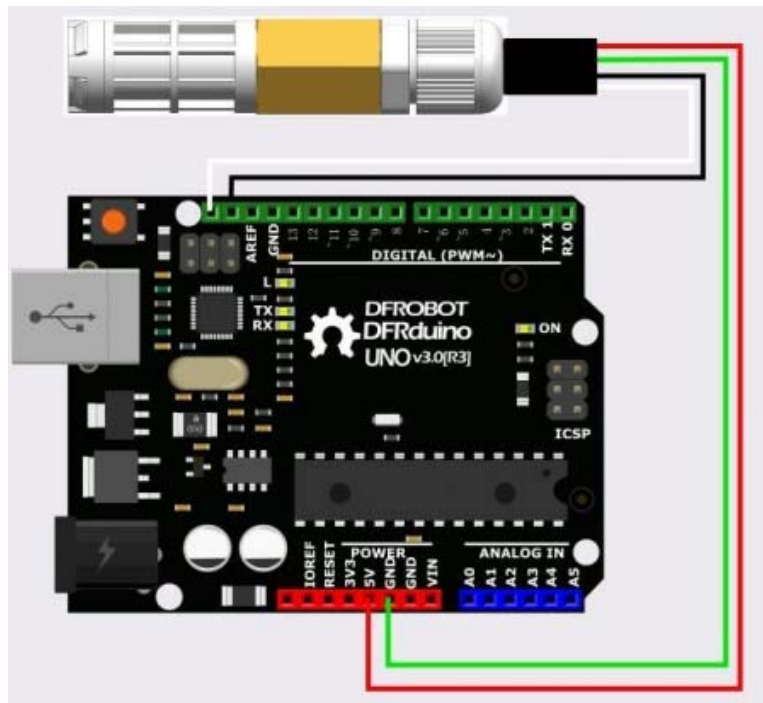
Tutorial

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, Click to Download Arduino IDE from Arduino®
<https://www.arduino.cc/en/Main/Software%7C>

Connection Diagram



Arduino SHT20 Temperature & Humidity Sensor Connection

Sample Code

Download the DFRobot Arduino SHT20 library

How to install Libraries in Arduino IDE <https://www.arduino.cc/en/Main/Software%7C>

```
/*!
 * @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 temperat
ure.
 *
 *     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"

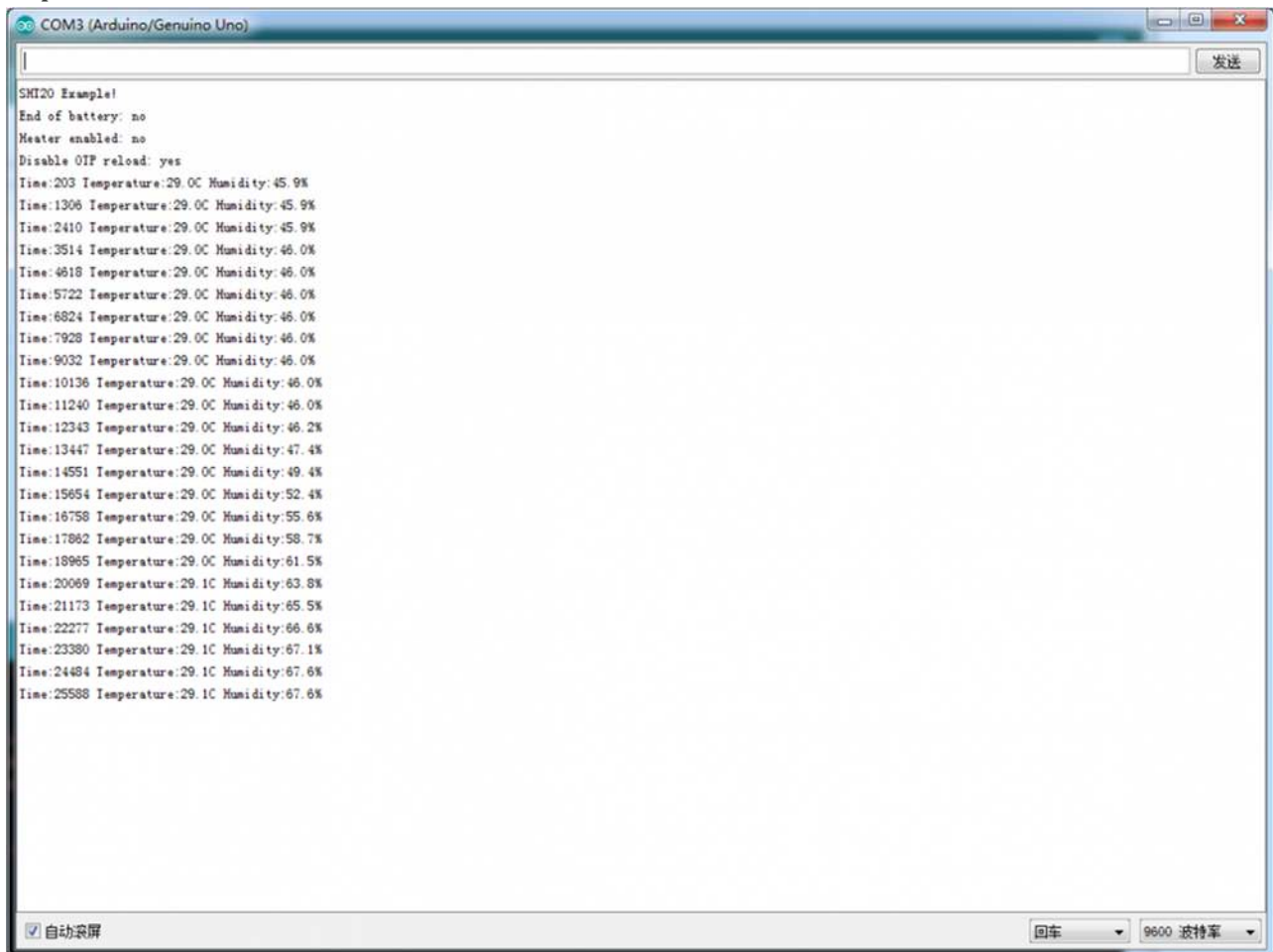
DFRobot_SHT20    sht20;

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

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 window contains the following text:

```
SHT20 Example!  
End of battery: no  
Heater enabled: no  
Disable OTP 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 for "波特率" (Baud rate) set to "9600".

Arduino SHT20 Serial port Result

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.