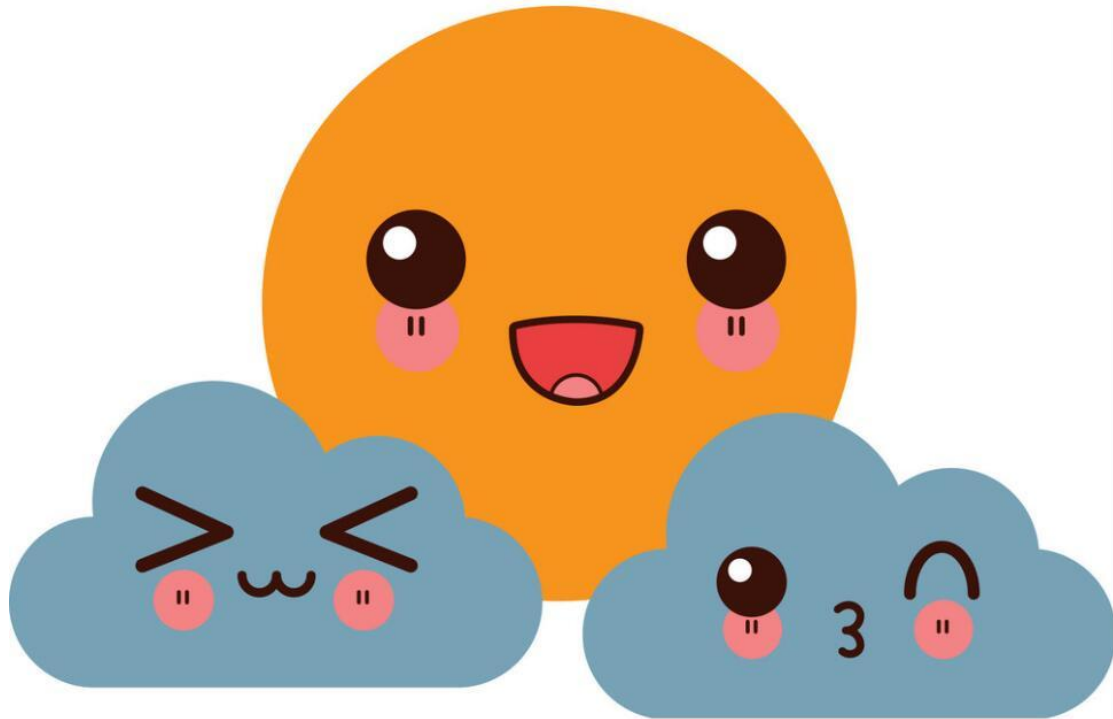


Project 27: Temperature Humidity Meters



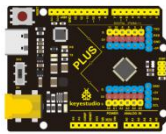
1. Project Introduction

DHT11 Temperature and Humidity Sensor features calibrated digital signal output with the temperature and humidity sensor complex. Its technology ensures high reliability and excellent long-term stability. A high-performance 8-bit microcontroller is connected.

This sensor includes a resistive element and a sense of wet NTC temperature measuring devices. It has the advantages of excellent quality, fast response, anti-interference ability and high cost performance.

We use DHT11 Temperature and Humidity Sensor to make a temperature humidity meters. The shape of this project is a cloud. Of course, we have to combine the 1602 screen to display the temperature and humidity values.

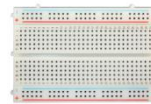
2.Project Hardware



Plus
Development
Board*1



Plus Board
Holder



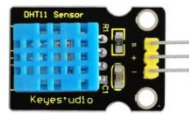
400-Hole
Breadboard



USB Cable*1



I2C 1602
LCD*1



DHT11
Sensor*1



Jumper
Wire*7



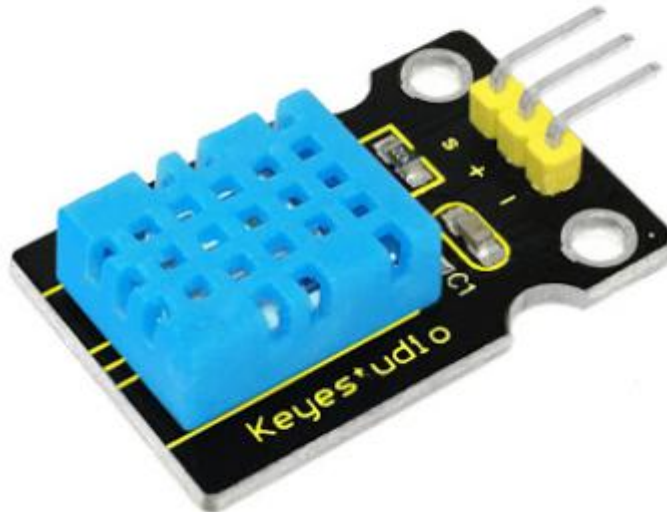
Cartoon
Cloud Paper
Card*1

3.DHT11 Specification

The DHT11 humidity and temperature sensor makes it really easy to add humidity and temperature data to your DIY electronics projects. It's perfect for remote weather stations,

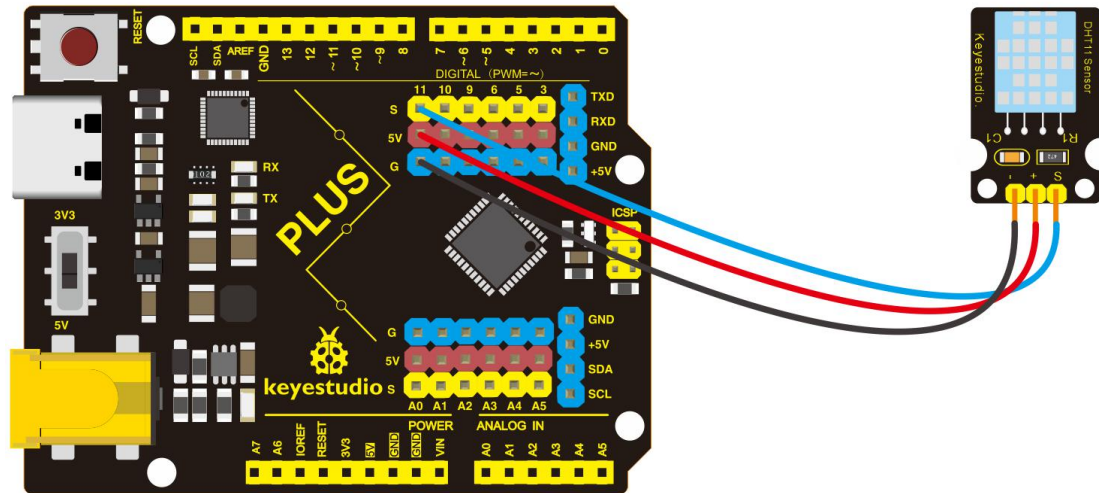
home environmental control systems, and farm or garden monitoring systems.

- Supply Voltage +5 V
- Temperature Range 0-50 °C error of ± 2 °C
- Humidity 20-90% RH $\pm 5\%$ RH error
- Interface digital



4.Read Temperature and Humidity Value

Firstly we learn how to use serial monitor to print the value of the DHT11 sensor. Follow the wiring diagram below.



Please download the DHT11Lib firstly. Or see the website

/*

keyestudio STEM Starter Kit

Project 27.1

Read Temperature And Humidity Value

<http://www.keyestudio.com>

*/

```
#include <dht11.h>
```

```
dht11 DHT11;
```

```
#define DHT11PIN 11
```

```
void setup()
```

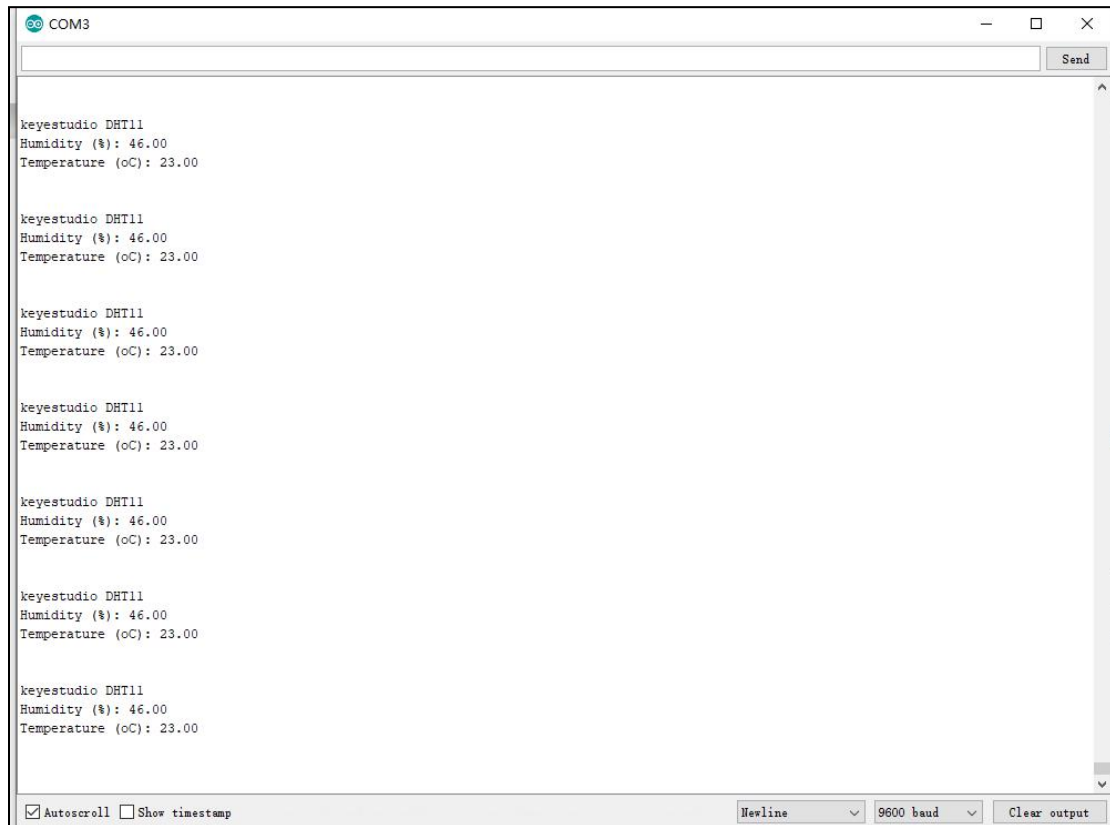
```
{
```

```
    Serial.begin(9600);
```

```
}
```

```
void loop()
{
  Serial.println("¥n");
  int chk = DHT11.read(DHT11PIN);
  Serial.println("keyestudio DHT11 ");
  Serial.print("Humidity (%): ");
  Serial.println((float)DHT11.humidity, 2);
  Serial.print("Temperature (oC): ");
  Serial.println((float)DHT11.temperature, 2);
  delay(2000);
}
```

Upload the code to Plus board. Then open the serial monitor and set the baud rate to 9600, you will see the current temperature and humidity value.



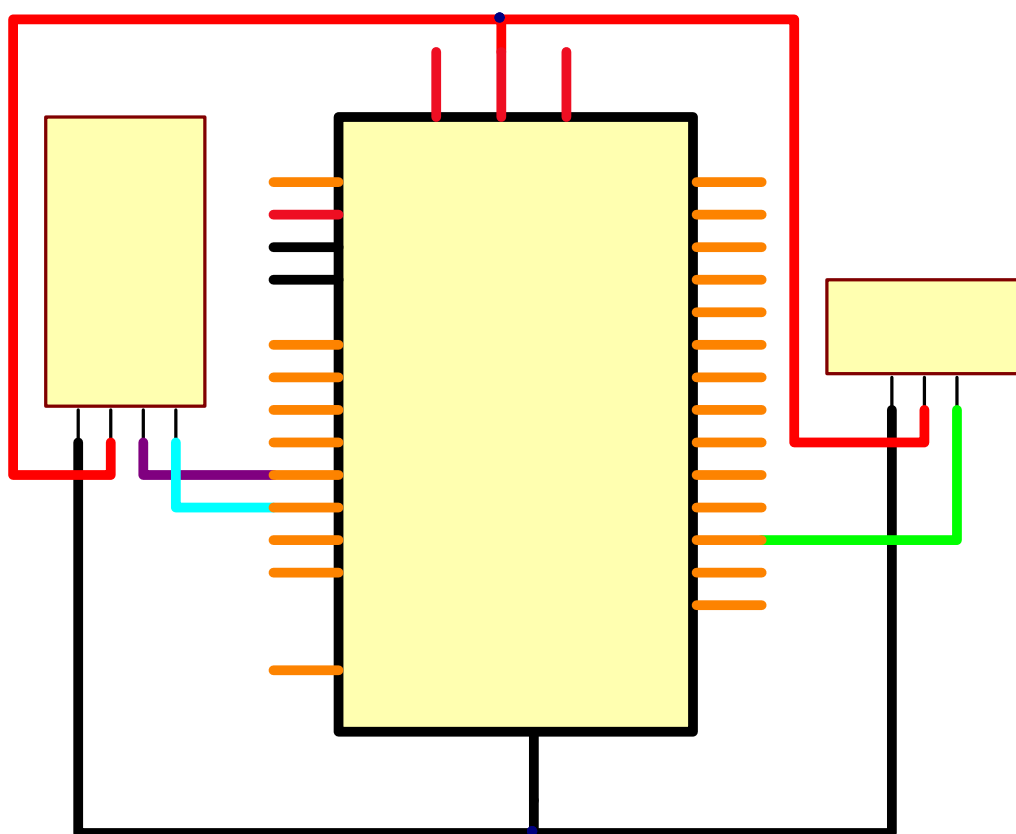
The screenshot shows a serial monitor window with the title bar 'COM3'. The main area displays the following text repeated seven times:

```
keyestudio DHT11  
Humidity (%): 46.00  
Temperature (oC): 23.00
```

At the bottom of the window, there are several controls: a checkbox for 'Autoscroll' (checked), a checkbox for 'Show timestamp' (unchecked), a dropdown menu set to 'Newline', a dropdown menu set to '9600 baud', and a 'Clear output' button.

5. Temperature Humidity Meters Circuit Connection

Now we start to use LCD screen to print the value of DHT11 sensor, we will see the value on the LCD screen. so let's start the project. Connect according to the connection diagram below.



6. Project Code


```
#include <dht11.h>

dht11 DHT11;

#define DHT11PIN 11

#include <Wire.h>

#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27,16,2); // set the LCD address to
0x27 for a 16 chars and 2 line display

void setup()
{
    lcd.init();                      // initialize the lcd
    lcd.init();

    // Print a message to the LCD.
    lcd.backlight();
}

void loop()
{
    int chk = DHT11.read(DHT11PIN);

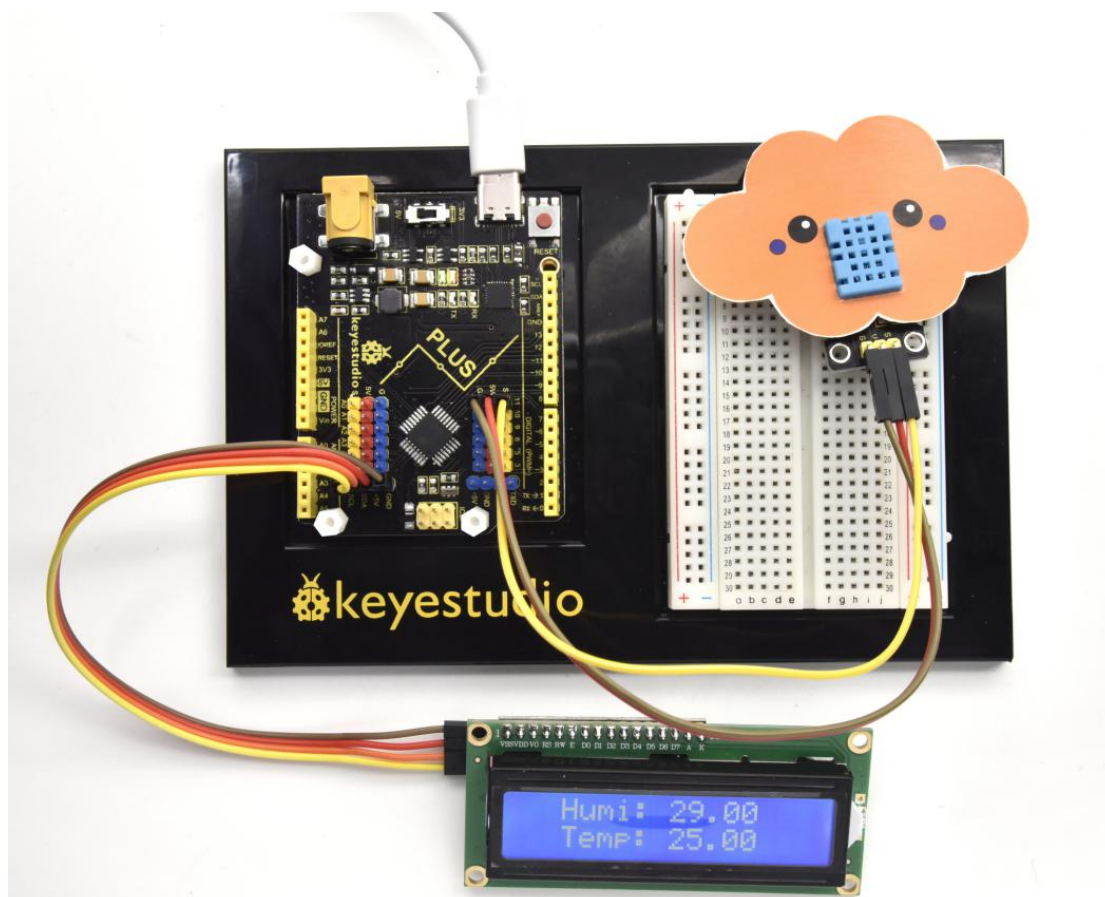
    lcd.setCursor(2,0);
    lcd.print("Humi: ");
    lcd.print((float)DHT11.humidity, 2);

    lcd.setCursor(2,1);
    lcd.print("Temp: ");
```

```
lcd.print((float)DHT11.temperature, 2);  
  
delay(2000);  
  
}  
  
////////////////////////////////////
```

7.Project Result

Upload the code to Plus development board. 1602 display shows the current temperature and humidity. We can use it as a real-time environmental monitoring tool.



*****next

project*****