DFRobot

DHT11 Temperature and Humidity Sensor

(SKU: DFR0067)

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This *DHT11 Temperature and Humidity Sensor* features a calibrated digital signal output with the temperature and humidity sensor complex. Its technology ensures the 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 excellent quality, fast response, anti-interference ability and high cost performance advantages.

Each DHT11 sensors features extremely accurate calibration of humidity calibration chamber. The calibration coefficients stored in the OTP program memory, internal sensors detect signals in the process, we should call these calibration coefficients. The single-wire serial interface system is integrated to become quick and easy. Small size, low power, signal transmission distance up to 20 meters, making it a variety of applications and even the most demanding applications. The product is 4-pin single row pin package. Convenient connection, special packages can be provided according to users need.

Specification

- Supply Voltage: +5 V
- Temperature range :0-50 °C error of ± 2 °C
- Humidity :20-90% RH ± 5% RH error
- Interface: Digital

Sample Code

```
//Arduino Sample code

#define DHT11_PIN 0        // ADC0

byte read_dht11_dat()
{
  byte i = 0;
  byte result=0;
  for(i=0; i< 8; i++)
  {
    while(!(PINC & _BV(DHT11_PIN)));  // wait for 50us
    delayMicroseconds(30);
    if(PINC & _BV(DHT11_PIN))
      result |=(1<<(7-i));
    while((PINC & _BV(DHT11_PIN)));  // wait '1' finish
    }
    return result;
}


void setup()
{
  DDRC |= _BV(DHT11_PIN);
  PORTC |= _BV(DHT11_PIN);
  Serial.begin(9600);
  Serial.println("Ready");
}

void loop()
{
  byte dht11_dat[5];
  byte dht11_in;
  byte i;// start condition
        // 1. pull-down i/o pin from 18ms
  PORTC &= ~_BV(DHT11_PIN);
  delay(18);
  PORTC |= _BV(DHT11_PIN);
  delayMicroseconds(40);
  DDRC &= ~_BV(DHT11_PIN);
  delayMicroseconds(40);

  dht11_in = PINC & _BV(DHT11_PIN);
  if(dht11_in)
  {
    Serial.println("dht11 start condition 1 not met");
    return;
  }
  delayMicroseconds(80);
  dht11_in = PINC & _BV(DHT11_PIN);
  if(!dht11_in)
  {
    Serial.println("dht11 start condition 2 not met");
    return;
  }

  delayMicroseconds(80);// now ready for data reception
  for (i=0; i<5; i++)
    dht11_dat[i] = read_dht11_dat();
  DDRC |= _BV(DHT11_PIN);
  PORTC |= _BV(DHT11_PIN);
  byte dht11_check_sum = dht11_dat[0]+dht11_dat[1]+dht11_dat[2]+dht11_dat[3];// check
check_sum
  if(dht11_dat[4]!= dht11_check_sum)
  {
    Serial.println("DHT11 checksum error");
  }
  Serial.print("Current humdity = ");
  Serial.print(dht11_dat[0], DEC);
  Serial.print(".");
  Serial.print(dht11_dat[1], DEC);
```

```
  Serial.print("%  ");
  Serial.print("temperature = ");
  Serial.print(dht11_dat[2], DEC);
  Serial.print(".");
  Serial.print(dht11_dat[3], DEC);
  Serial.println("C  ");
  delay(2000);
}
```