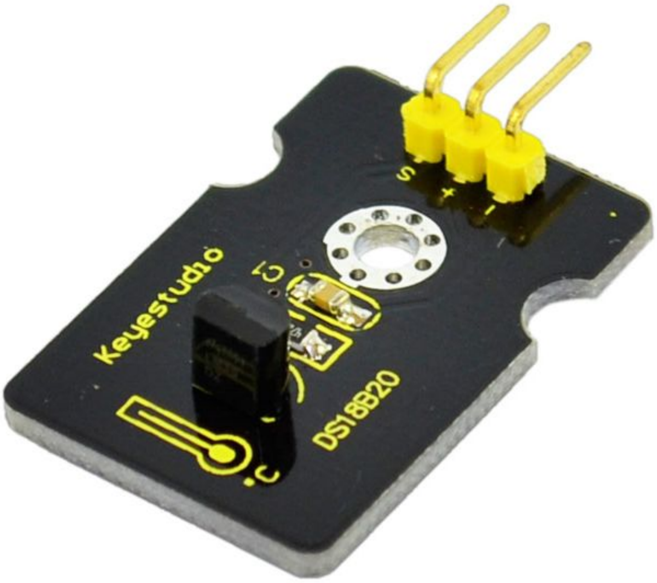
18B20 Temperature Sensor



Introduction

DS18B20 is a digital temperature sensor. It can be used to quantify environmental temperature testing.

The temperature range is -55 ~ +125 ℃, inherent temperature resolution 0.5 ℃. It also support multi-point mesh networking. Three DS18B20 can be deployed on three lines to achieve multi-point temperature measurement. It has a 9-12 bit serial output.

Specification

Supply Voltage: 3.3V to 5V

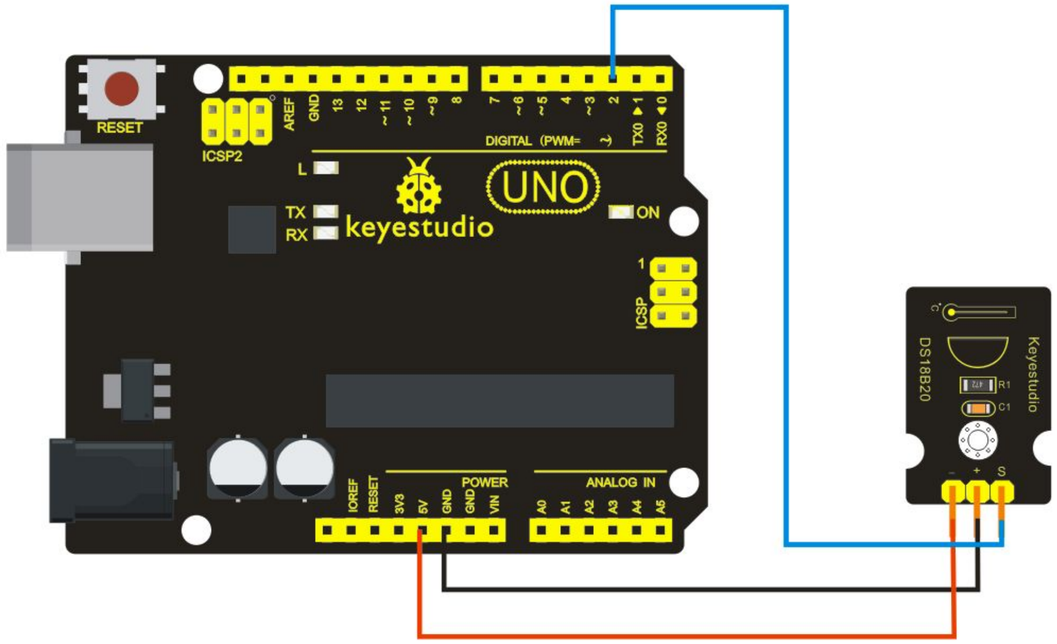
Temperature range: -55 °C ~ +125 °C

Interface: Digital

Size: 30*20mm

Weight: 3g

Connection Diagram



Sample Code

```
// http://www.pjrc.com/teensy/arduino_libraries/OneWire.zip
#include <OneWire.h>
 int DS18S20_Pin = 2; //DS18S20 Signal pin on digital pin 2
 //Temperature chip i/o
OneWire ds(DS18S20_Pin);   // on digital pin 2
 void setup(void) {
  Serial.begin(9600);
}
 void loop(void) {
  float temperature = getTemp();
  Serial.println(temperature);

  delay(100); //to slow down the output so it is easier to read

}

float getTemp(){
  //returns the temperature from one DS18S20 in DEG Celsius

  byte data[12];
  byte addr[8];

  if ( !ds.search(addr)) {
    //no more sensors on chain, reset search
    ds.reset_search();
    return -1000;
  }

  if ( OneWire::crc8( addr, 7) != addr[7]) {
    Serial.println("CRC is not valid!");
    return -1000;
  }

  if ( addr[0] != 0x10 && addr[0] != 0x28) {
    Serial.print("Device is not recognized");
    return -1000;
  }

  ds.reset();
  ds.select(addr);
  ds.write(0x44,1); // start conversion, with parasite power on at the end

  byte present = ds.reset();
  ds.select(addr);
  ds.write(0xBE); // Read Scratchpad


  for (int i = 0; i < 9; i++) { // we need 9 bytes
   data[i] = ds.read();
  }
  ds.reset_search();

  byte MSB = data[1];
  byte LSB = data[0];

  float tempRead = ((MSB << 8) | LSB); //using two's compliment
  float TemperatureSum = tempRead / 16;

  return TemperatureSum;

}
```