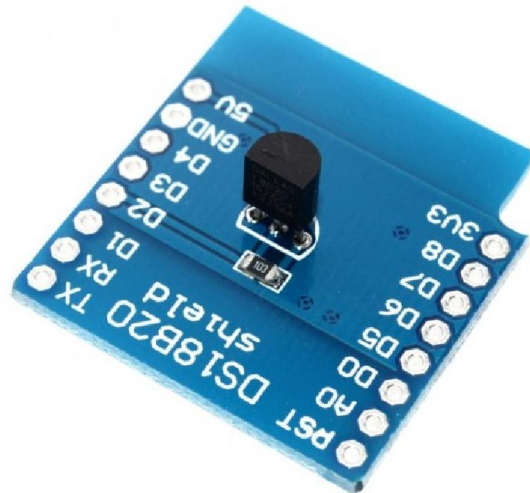


Wemos D1 18B20 Shield for Wemos D1 ESP8266



This shield is mounted with DS18B20 digital thermometer that provides 9-bit to 12-bit Celsius temperature measurements and has an alarm function with non-volatile user-programmable upper and lower trigger points. This sensor can be interfaced using 1-Wire bus that by definition requires only one data line and ground for communication. The pin used for this sensor is D2 pin of WeMos D1 Mini and Mini PRO, which rendered this shield to be not I2C compatible.

Quick Spec

- 1-Wire Interface
- Measures Temperatures from -55°C to $+125^{\circ}\text{C}$ (-67°F to $+257^{\circ}\text{F}$)
- $\pm 0.5^{\circ}\text{C}$ Accuracy from -10°C to $+85^{\circ}\text{C}$
- Programmable Resolution from 9 Bits to 12 Bits
- Parasitic Power Mode Requires Only 2 Pins for Operation (DO and GND)

Code

```
#include <OneWire.h>

// OneWire DS18S20, DS18B20, DS1822 Temperature Example

OneWire ds(D2); // on pin D4 (a 4.7K resistor is necessary)

void setup(void)
{
  Serial.begin(9600);
}

void loop(void)
{
  byte i;
  byte present = 0;
  byte type_s;
  byte data[12];
  byte addr[8];
  float celsius, fahrenheit;

  if ( !ds.search(addr))
  {
    ds.reset_search();
    delay(250);
    return;
  }

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

```
}  
  
// the first ROM byte indicates which chip  
switch (addr[0])  
{  
  case 0x10:  
    type_s = 1;  
    break;  
  case 0x28:  
    type_s = 0;  
    break;  
  case 0x22:  
    type_s = 0;  
    break;  
  default:  
    Serial.println("Device is not a DS18x20 family device.");  
    return;  
}  
  
ds.reset();  
ds.select(addr);  
ds.write(0x44, 1);    // start conversion, with parasite power on at the end  
delay(1000);  
present = ds.reset();  
ds.select(addr);  
ds.write(0xBE);    // Read Scratchpad  
  
for ( i = 0; i < 9; i++)  
{  
  data[i] = ds.read();  
}
```

```
// Convert the data to actual temperature

int16_t raw = (data[1] << 8) | data[0];

if (type_s) {

    raw = raw << 3; // 9 bit resolution default

    if (data[7] == 0x10)

    {

        raw = (raw & 0xFFFF0) + 12 - data[6];

    }

}

else

{

    byte cfg = (data[4] & 0x60);

    if (cfg == 0x00) raw = raw & ~7; // 9 bit resolution, 93.75 ms

    else if (cfg == 0x20) raw = raw & ~3; // 10 bit res, 187.5 ms

    else if (cfg == 0x40) raw = raw & ~1; // 11 bit res, 375 ms

}

celsius = (float)raw / 16.0;

fahrenheit = celsius * 1.8 + 32.0;

Serial.print(" Temperature = ");

Serial.print(celsius);

Serial.print(" Celsius, ");

Serial.print(fahrenheit);

Serial.println(" Fahrenheit");

}
```