How to Use the MAX30100 as Arduino Heart Rate Sensor
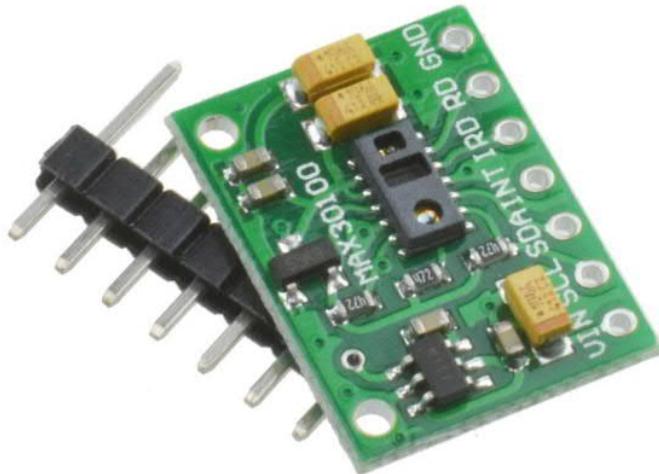
I'm afraid you have more work to do. This cheaper module has some serious design problems

You see, this module uses this schematic:
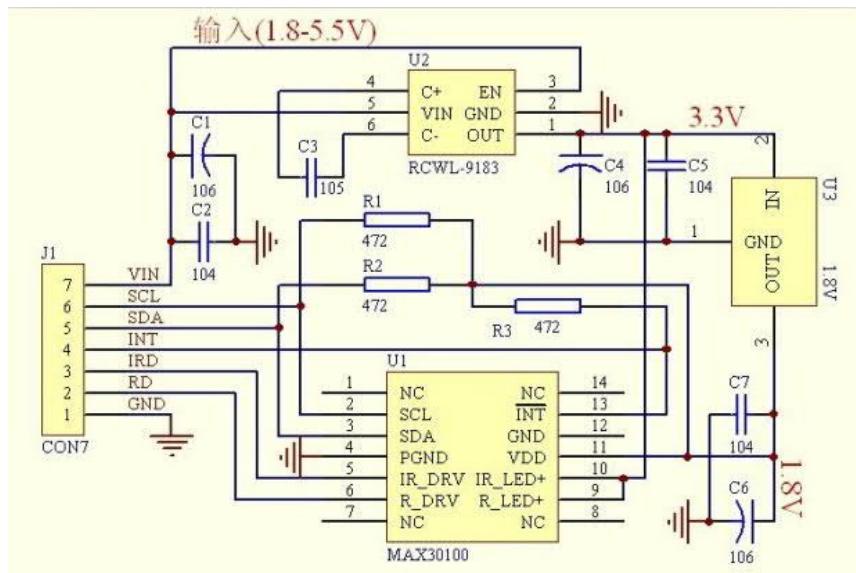
The MAX30100 IC uses 1.8V for VDD and this particular module uses two regulators to achieve this voltage. Nothing wrong with that. However, if you look closely, the SCL and SDA pins are pulled-up via the 4.7k ohm resistors to 1.8V! This means it won't work well with microcontrollers with higher logic levels. The Arduino can detect a minimum HIGH voltage of 2 V!

The solution is to remove the resistors from the board (encircled on the image below) and attach external 4.7k ohms resistors instead.
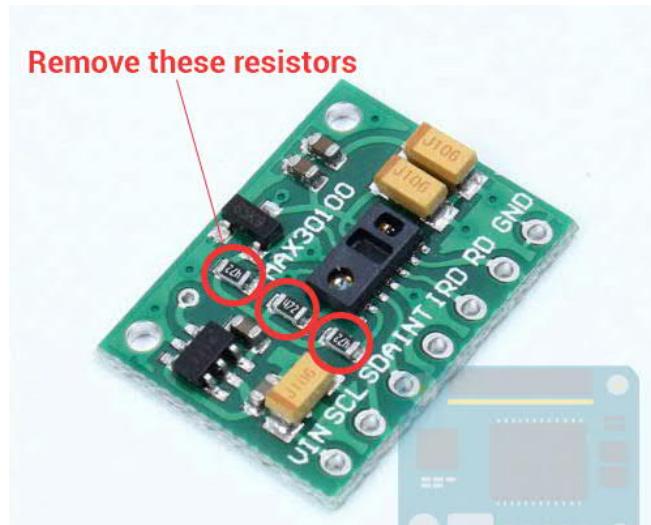
Here's my board with the resistors removed:

After removing the resistors, you can now connect this module to the Arduino UNO using this wiring diagram:
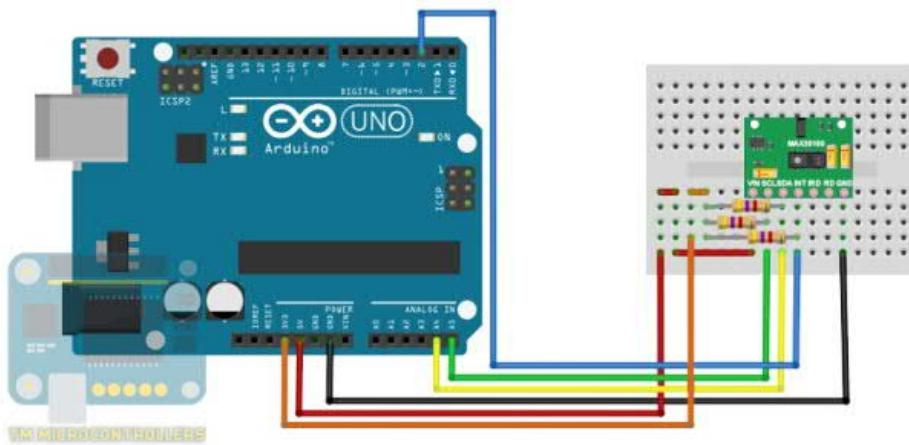
Here, the SCL, SDA and INT pull to 3.3V via the 4.7k ohms resistor. This ensures that the Arduino UNO can detect the HIGH logic level while not oversupplying the MAX30100.

Coding the RCWL-0530 with Arduino

```
1  #include <Wire.h>
2  #include "MAX30100_PulseOximeter.h"
3
4  #define REPORTING_PERIOD_MS     1000
5
6  // PulseOximeter is the higher level interface to the sensor
7  // it offers:
8  //  * beat detection reporting
9  //  * heart rate calculation
10 //  * SpO2 (oxidation level) calculation
11 PulseOximeter pox;
12
13 uint32_t tsLastReport = 0;
14
15 // Callback (registered below) fired when a pulse is detected
16 void onBeatDetected()
17 {
18    Serial.println("Beat!");
19 }
20
21 void setup()
22 {
23    Serial.begin(115200);
24
25    Serial.print("Initializing pulse oximeter..");
26
27    // Initialize the PulseOximeter instance
28    // Failures are generally due to an improper I2C wiring, missing power supply
29    // or wrong target chip
30    if (!pox.begin()) {
31       Serial.println("FAILED");
32       for(;;);
33    } else {
34       Serial.println("SUCCESS");
35    }
36
37    // The default current for the IR LED is 50mA and it could be changed
38    //  by uncommenting the following line. Check MAX30100_Registers.h for all the
39    //  available options.
40    // pox.setIRLedCurrent(MAX30100_LED_CURR_7_6MA);
41
42    // Register a callback for the beat detection
43    pox.setOnBeatDetectedCallback(onBeatDetected);
44 }
45
46 void loop()
47 {
48    // Make sure to call update as fast as possible
49    pox.update();
50
51    // Asynchronously dump heart rate and oxidation levels to the serial
52    // For both, a value of 0 means "invalid"
53    if (millis() - tsLastReport > REPORTING_PERIOD_MS) {
54       Serial.print("Heart rate:");
55       Serial.print(pox.getHeartRate());
56       Serial.print("bpm / SpO2:");
57       Serial.print(pox.getSpO2());
58       Serial.println("%");
59
60       tsLastReport = millis();
61    }
62 }
```