OXIMETER AND PULSE METER WITH LCD

INTRODUCTION TO THE INTERNET OF THINGS

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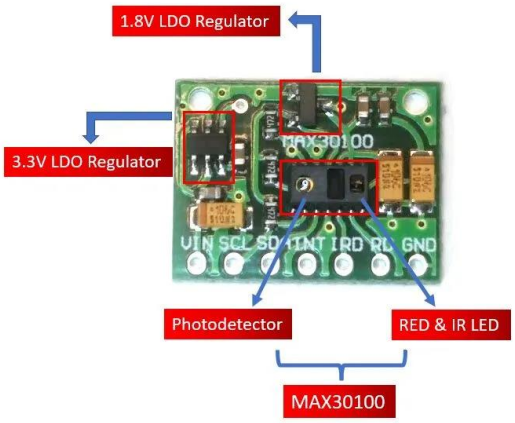
Oximeter and pulse meter:

The MAX30100 sensor is used as both a heart rate monitor and a pulse oximeter. These features are enabled by the construction of this sensor which consists of two LEDs, a photodetector, optimized optics, and low noise signal processing components. It is a multipurpose sensor used for multiple applications. So, it is a heart rate monitoring sensor along with a pulse oximeter.

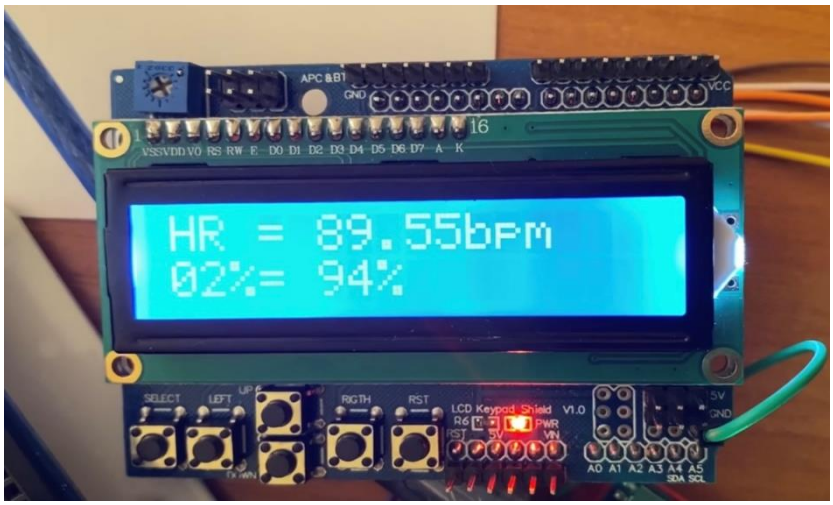


The output of this Arduino project is an LCD display that let us to see the results of the oximeter and pulse meter.

We will see:

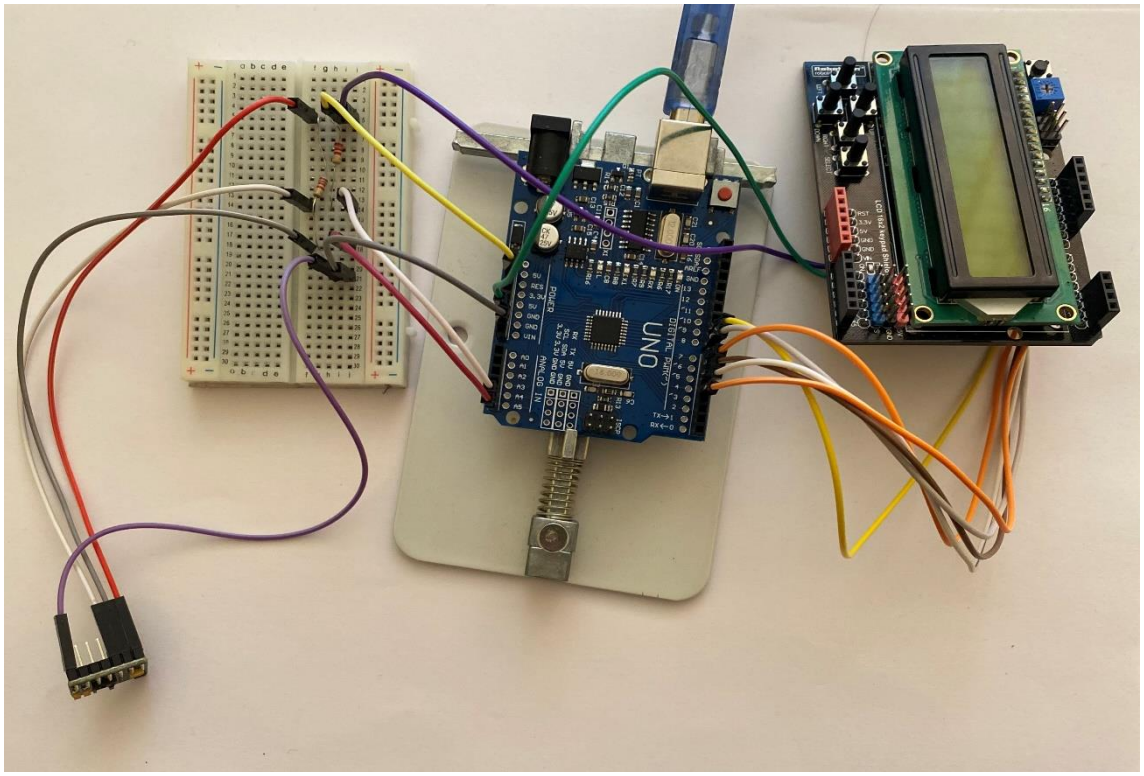
HR= ___bpm (heart rate, beats per minute)

O2% = ___% (oxygen saturation).

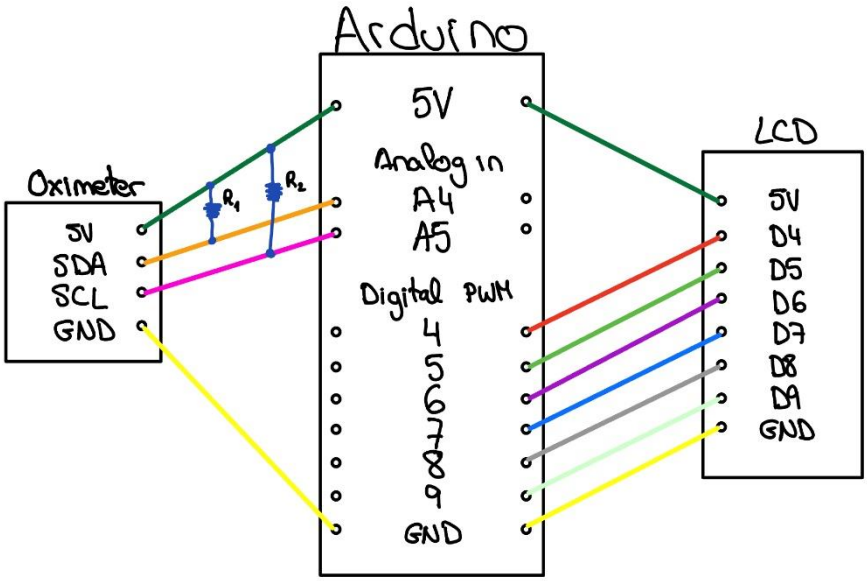


Connections:

This are the connections I have done:



In this scheme the connexions are more specific:

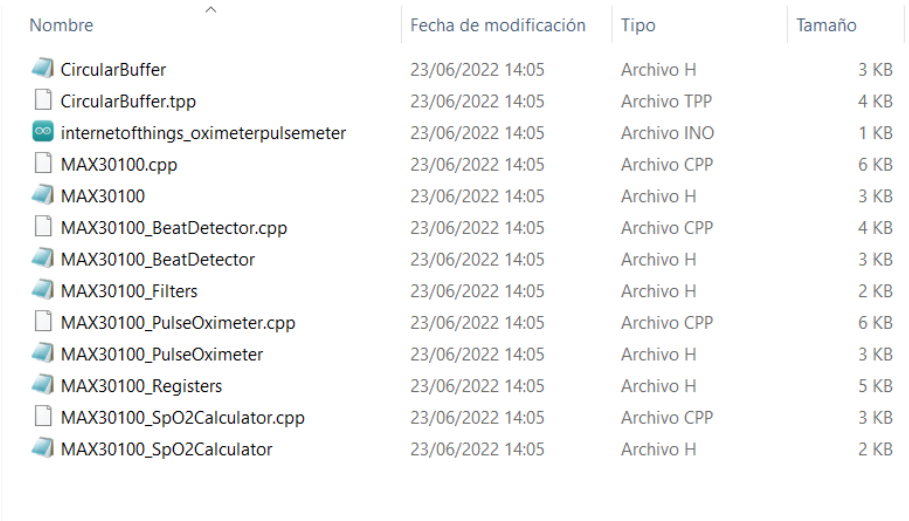


Code:

```
#include <Wire.h>
#include "MAX30100_PulseOximeter.h"
#define REPORTING_PERIOD_MS     1000
PulseOximeter pox;
uint32_t tsLastReport = 0;
void onBeatDetected(){
    Serial.println("Beat!"); }
#include <LiquidCrystal.h>
const int rs = 8, en = 9, d4 = 4, d5 = 5, d6 = 6, d7 = 7;
const int sensor=A1;
int tempc;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);
void setup() {
  lcd.begin(16, 2);
  pinMode(sensor,INPUT);
  if (!pox.begin()) {
      for(;;);
  } else {}
    pox.setOnBeatDetectedCallback(onBeatDetected);}
void loop() {
  pox.update();
  if (millis() - tsLastReport > REPORTING_PERIOD_MS) {
    lcd.setCursor(0,0);
    lcd.print("HR =");
    lcd.print(" ");
    lcd.print(pox.getHeartRate());
    lcd.print("bpm    ");
    lcd.setCursor(0,1);
    lcd.print("02%=");
    lcd.print(" ");
    lcd.print(pox.getSpO2());
    lcd.print("%  ");
    tsLastReport = millis(); } }
```

That was the main.

There are other files .h and .cpp which makes the sensor work correctly. These files I took them from this page: https://github.com/oxullo/Arduino-MAX30100/tree/master/src



Nombre	Fecha de modificación	Tipo	Tamaño
CircularBuffer	23/06/2022 14:05	Archivo H	3 KB
CircularBuffer.tpp	23/06/2022 14:05	Archivo TPP	4 KB
internetofthings_oximeterpulsemeter	23/06/2022 14:05	Archivo INO	1 KB
MAX30100.cpp	23/06/2022 14:05	Archivo CPP	6 KB
MAX30100	23/06/2022 14:05	Archivo H	3 KB
MAX30100_BeatDetector.cpp	23/06/2022 14:05	Archivo CPP	4 KB
MAX30100_BeatDetector	23/06/2022 14:05	Archivo H	3 KB
MAX30100_Filters	23/06/2022 14:05	Archivo H	2 KB
MAX30100_PulseOximeter.cpp	23/06/2022 14:05	Archivo CPP	6 KB
MAX30100_PulseOximeter	23/06/2022 14:05	Archivo H	3 KB
MAX30100_Registers	23/06/2022 14:05	Archivo H	5 KB
MAX30100_SpO2Calculator.cpp	23/06/2022 14:05	Archivo CPP	3 KB
MAX30100_SpO2Calculator	23/06/2022 14:05	Archivo H	2 KB

Bibliography:

I took the information from different web page, that are the followings:

https://microcontrollerslab.com/max30100-pulse-oximeter-heart-rate-sensor-arduino-tutorial/

https://www.circuitschools.com/diy-pulse-oximeter-by-interfacing-max30100-sensor-with-arduino/#What_is_Pulse_Oximeter_and_how_do_they_work

https://components101.com/sensors/max30100-heart-rate-oxygen-pulse-sensor-pinout-features-datasheet

https://peppe8o.com/oximeter-and-hearth-rate-sensor-with-arduino-max30100-wiring-setup-and-code/

https://www.teachmemicro.com/max30100-arduino-heart-rate-sensor/

https://how2electronics.com/interfacing-max30100-pulse-oximeter-sensor-arduino/

https://lastminuteengineers.com/max30100-pulse-oximeter-heart-rate-sensor-arduino-tutorial/

https://github.com/oxullo/Arduino-MAX30100/tree/master/src