

Using Weight Sensor (Load Cell) 0-1000g 1kg with Arduino



Introduction:

A strain gauge is a device that measures electrical resistance changes in response to, and proportional of, strain (or pressure or force or whatever you so desire to call it) applied to the device. The most common strain gauge is made up of very fine wire, or foil, set up in a grid pattern in such a way that there is a linear change in electrical resistance when strain is applied in one specific direction, most commonly found with a base resistance of 120 Ω , 350 Ω , and 1,000 Ω .

Notes:

- If 5-10V supplied to the Load Cell, any force that applied on Load Cell will be converted as voltage signal output (analog).
- HX711 will be used to convert the output from Load Cell analog to digital output into Arduino.
- **MAX 1kg**

Dimensions:

- Length: 8 cm Width: 1.2 cm Height: 1.2 cm
- Hole 1 to Hole 2: 1.5 cm
- Hole 2 to Hole 3: 4 cm
- Hole 3 to Hole 4: 1.5 cm

Components Needed:

- [HX711 Dual Channel Weighing Sensor Module](#)
- [Weight Sensor \(Load Cell\) 0-5000g 5kg](#)
- [Arduino Uno](#)
- Jumper Wires
- Breadboard

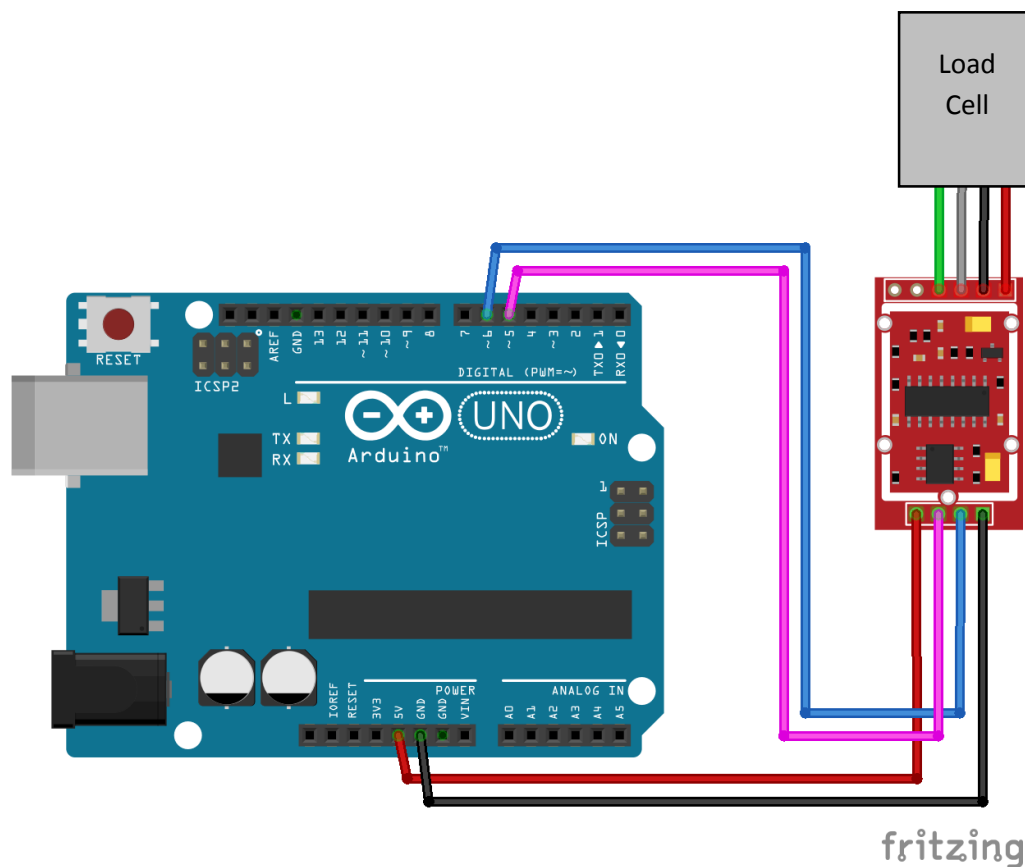
Objectives:

In this experiment, we will measure weigh using Weight Sensor (Load Cell) 5kg and monitor the data by using a HX711 Dual Channel Weighing Sensor Module.

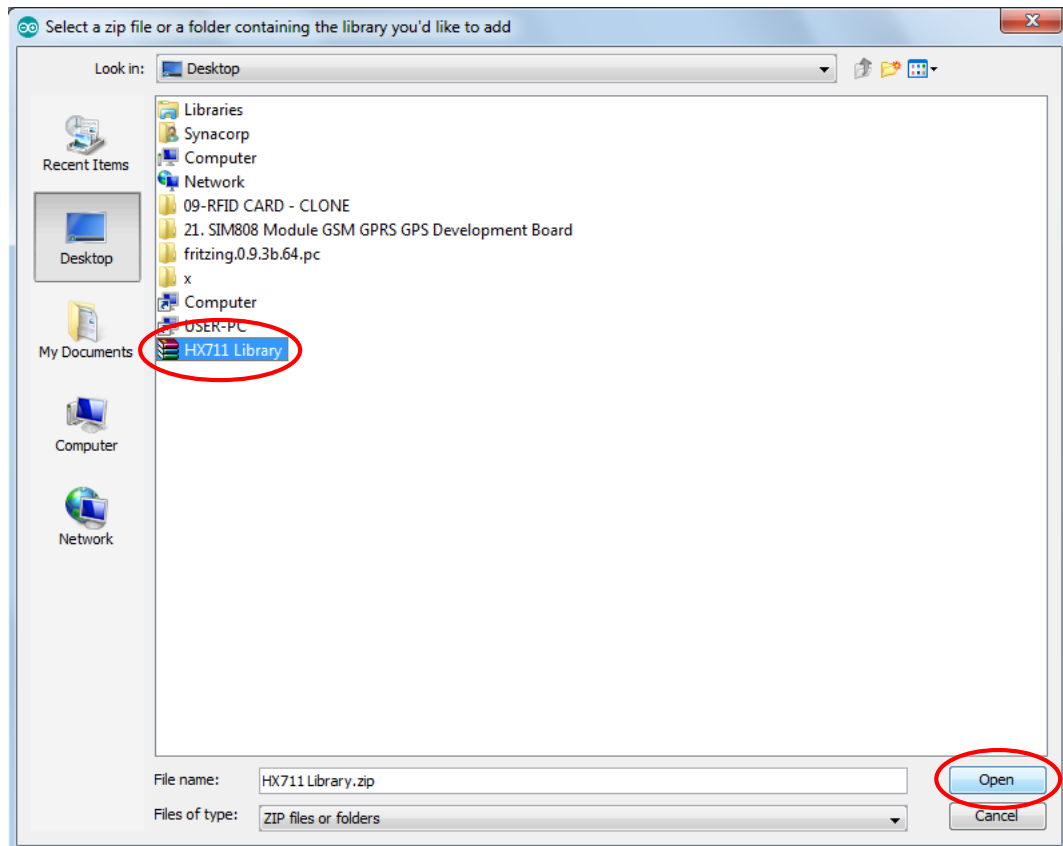
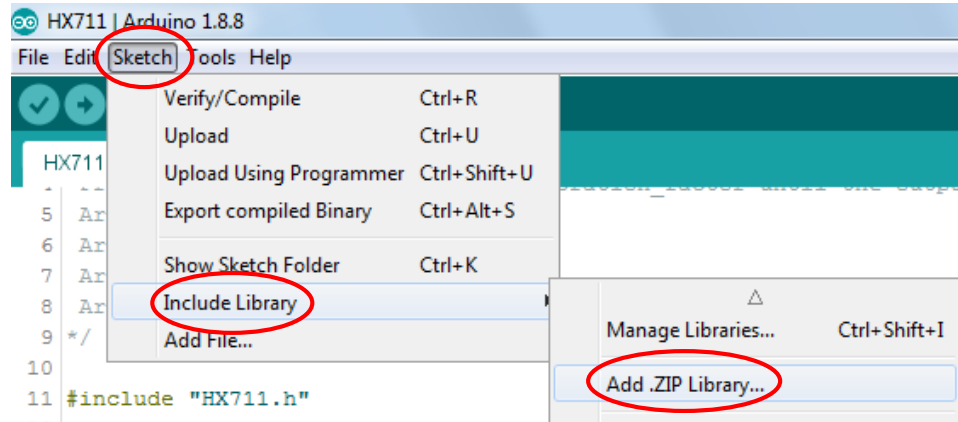
Procedure:

1. Connect the sensors and Arduino same as picture and table provided below.

Arduino Uno	HX711	Load Cell
5V	VCC	E+
GND	GND	E-
D5	SCK	A-
D6	DT	A+



- Download the library provided below and install it by clicking on **Sketch > Include Library > Add .ZIP Library...** Navigate to the downloaded library, select it and click on **Open** to install the library.



3. Insert the following coding in the Arduino IDE (**Copy & Paste**). Connect the Arduino board to PC. Click **Verify** and **Upload**.

```
/*
  Setup your scale and start the sketch WITHOUT a weight on the scale
  Once readings are displayed place the weight on the scale
  Press +/- or a/z to adjust the calibration_factor until the output readings match the known weight
  Arduino pin 6 -> HX711 CLK
  Arduino pin 5 -> HX711 DOUT
  Arduino pin 5V -> HX711 VCC
  Arduino pin GND -> HX711 GND
*/

#include "HX711.h"

HX711 scale(5, 6);

float calibration_factor = 2230; // this calibration factor is adjusted according to my load cell
float units;
float ounces;

void setup() {
  Serial.begin(9600);
  Serial.println("HX711 calibration sketch");
  Serial.println("Remove all weight from scale");
  Serial.println("After readings begin, place known weight on scale");
  Serial.println("Press + or a to increase calibration factor");
  Serial.println("Press - or z to decrease calibration factor");

  scale.set_scale();
  scale.tare(); //Reset the scale to 0

  long zero_factor = scale.read_average(); //Get a baseline reading
  Serial.print("Zero factor: "); //This can be used to remove the need to tare the scale. Useful in
  permanent scale projects.
  Serial.println(zero_factor);
}

void loop() {

  scale.set_scale(calibration_factor); //Adjust to this calibration factor

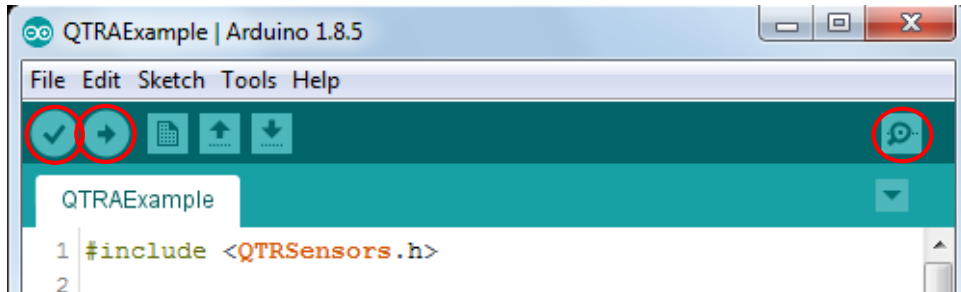
  Serial.print("Reading: ");
  units = scale.get_units(), 10;
  if (units < 0)
  {
    units = 0.00;
  }
  ounces = units * 0.035274;
  Serial.print(units);
  Serial.print(" grams");
  Serial.print(" calibration_factor: ");
  Serial.print(calibration_factor);
  Serial.println();

  if(Serial.available())
```

```

{
  char temp = Serial.read();
  if(temp == '+' || temp == 'a')
    calibration_factor += 1;
  else if(temp == '-' || temp == 'z')
    calibration_factor -= 1;
}

```



4. Open the serial monitor to observe the result as shown below.

