SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong 1/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my

Using Weight Sensor (Load Cell) 0-5000g 5kg 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 120Ω, 350Ω, and 1,000Ω.

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 load 5kg

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

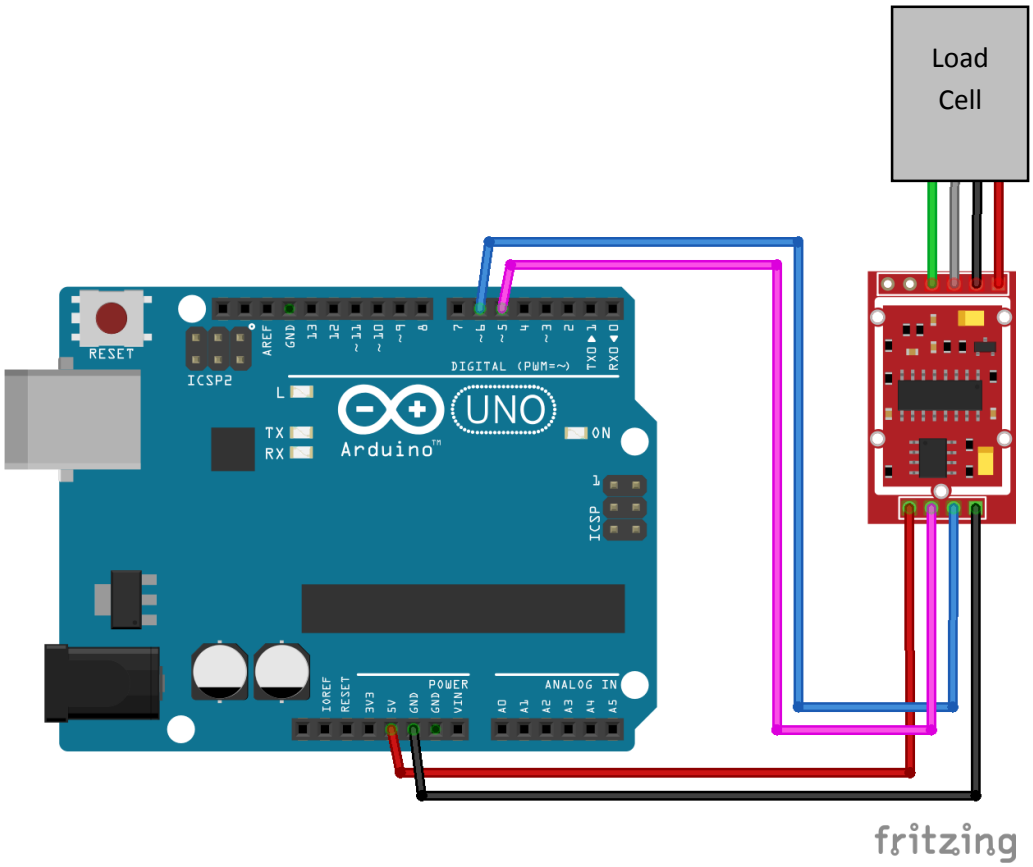
Objectives:

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.

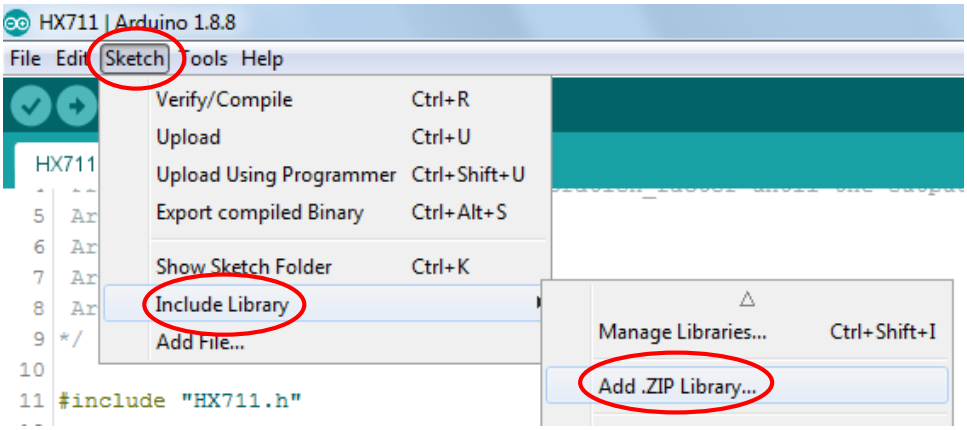
Procedure:

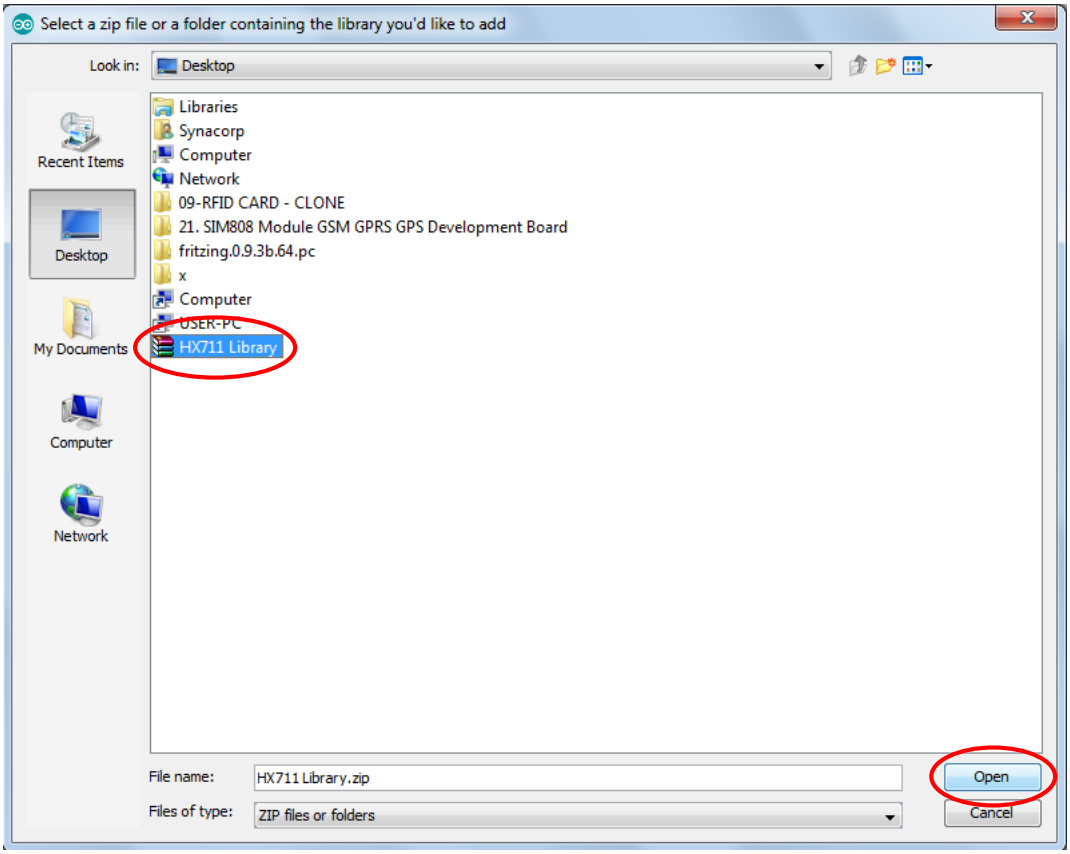
1. Connect the sensors and Arduino same as picture and table provided below.

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



2. 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.

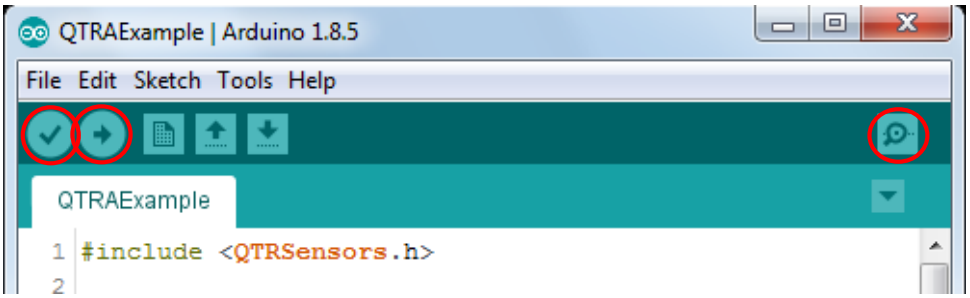




3. Insert the following coding in the Arduino IDE **(Copy & Paste).** Connect the Arduino board to PC. Click **Verify** and **Upload**.

```
/*
 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.