

## HX711 GREEN

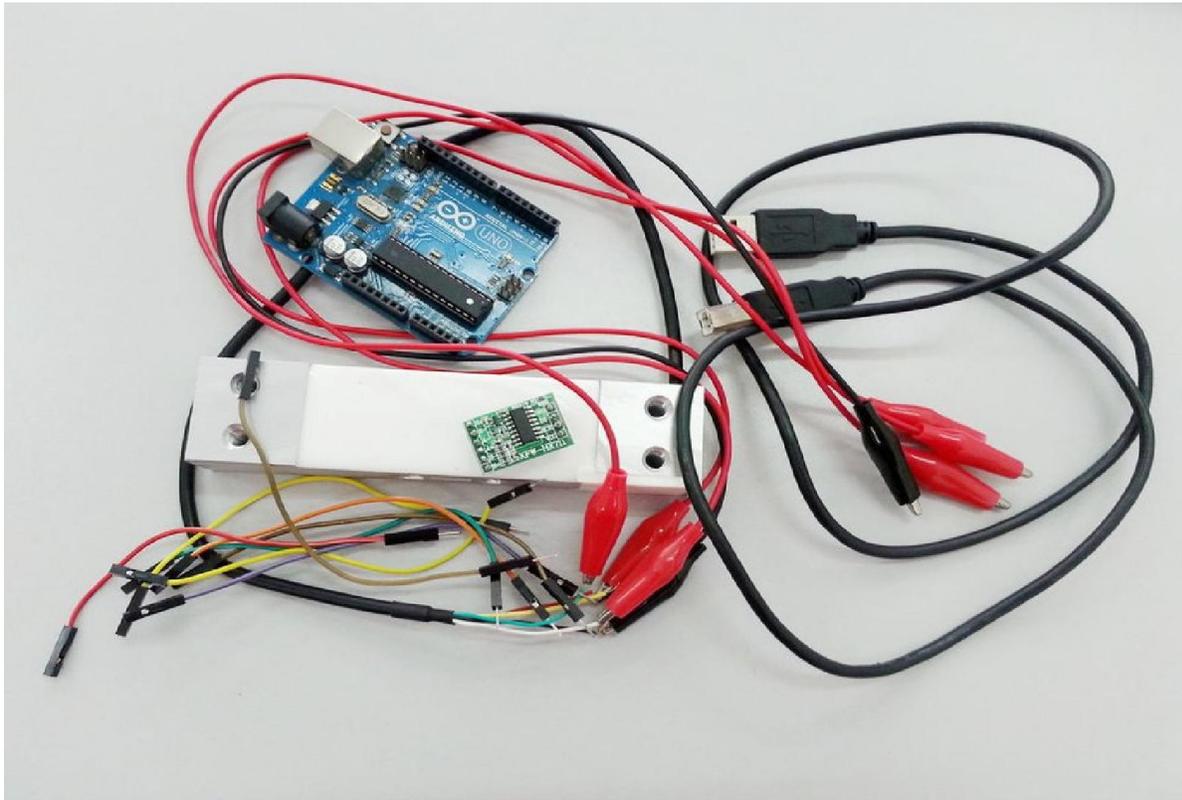
### Description

This module uses 24 high-precision A / D converter. This chip is designed for high-precision electronic scale and design, has two analog input channels, programmable gain of 128 integrated amplifier. The input circuit can be configured to provide a bridge voltage electrical bridge (such as pressure, load) sensor model is an ideal high-precision, low-cost sampling front-end module.

### Specification

- Two selectable differential input channels
- On-chip power supply regulator for load-cell and ADC analog power supply
- On-chip oscillator requiring no external component with optional external crystal
- On-chip power-on-reset
- Data Accuracy: 24 bit (24 bit analog-to-digital converter chip)
- Refresh Frequency: 10/80 Hz
- Operation supply voltage range: 4.8 ~ 5.5V
- Operation supply Current: 1.6mA
- Operation temperature range: -20 ~ +85°C
- Demension: Approx. 36mm x 21mm x 4mm / 1.42" x 0.83" x 0.16"

### Step 1: Material Preparation



In this tutorial, you will need :

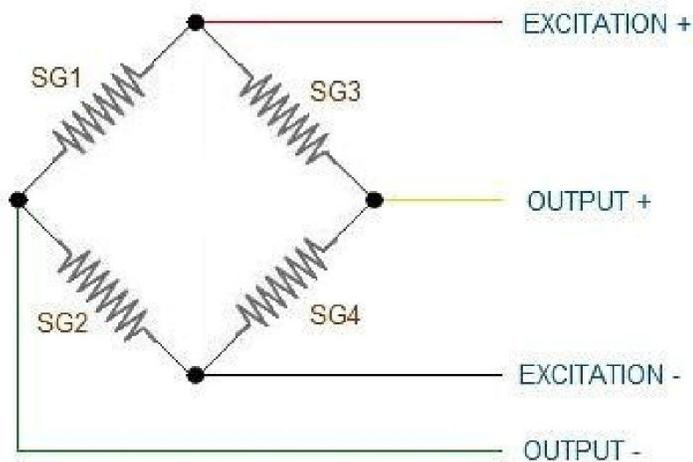
1. Arduino Uno Board and USB
2. HX711 Balance Sensor
3. Load Cell (can be any weight of load cell ie 20KG, 60KG or 100KG)
4. Male Female Jumpers
5. Crocodile Clip Wires
5. Arduino IDE

## **Step 2: HX711 Pin Description**

t	VSUP	1	16	DVDD	Digital Power
t	BASE	2	15	RATE	Output Data
r	AVDD	3	14	XI	Crystal I/O a
t	VFB	4	13	XO	Crystal I/O
t	AGND	5	12	DOUT	Serial Data (
s	VBG	6	11	PD_SCK	Power Down
t	INNA	7	10	INPB	Ch. B Positi
t	INPA	8	9	INNB	Ch. B Negat

### Step 3: Load Cell Wire Connection

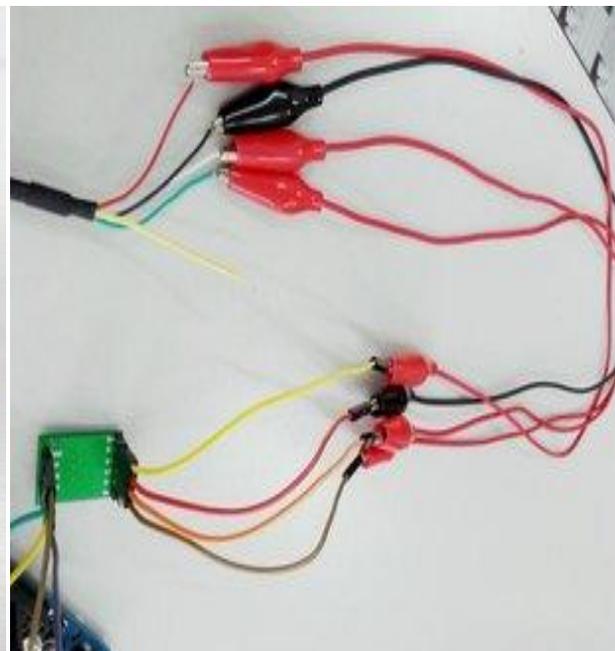
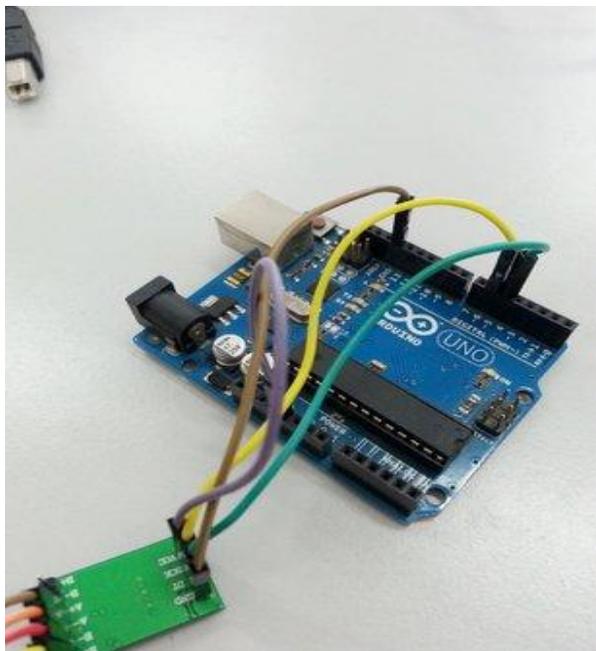
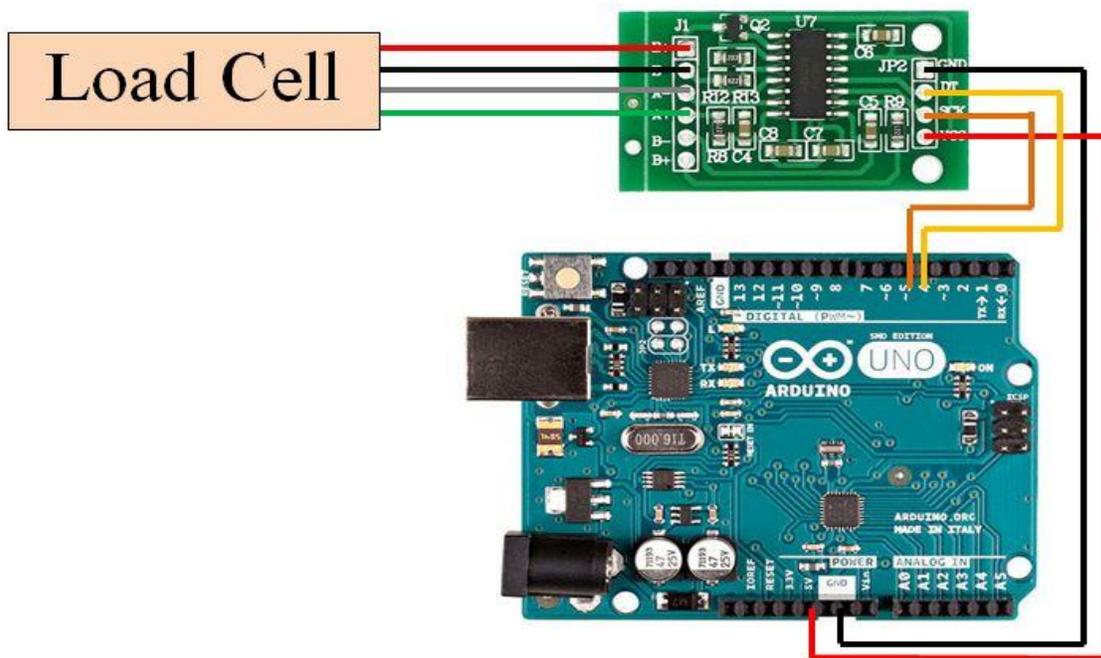
LOAD CELL WIRING



The four wires coming out from the wheatstone bridge on the load cell are usually :

- Excitation+ (E+) or VCC is red
- Excitation- (E-) or ground is black
- Output+ (O+), Signal+ (S+) or Amplifier+ (A+) is white
- Output- (O-), Signal- (S-) or Amplifier- (A-) is green

### Step 4: Hardware Installation



HX711 to Arduino Uno :

- VCC to 5V
- GND TO GND
- SCK to D5
- DT TO D6

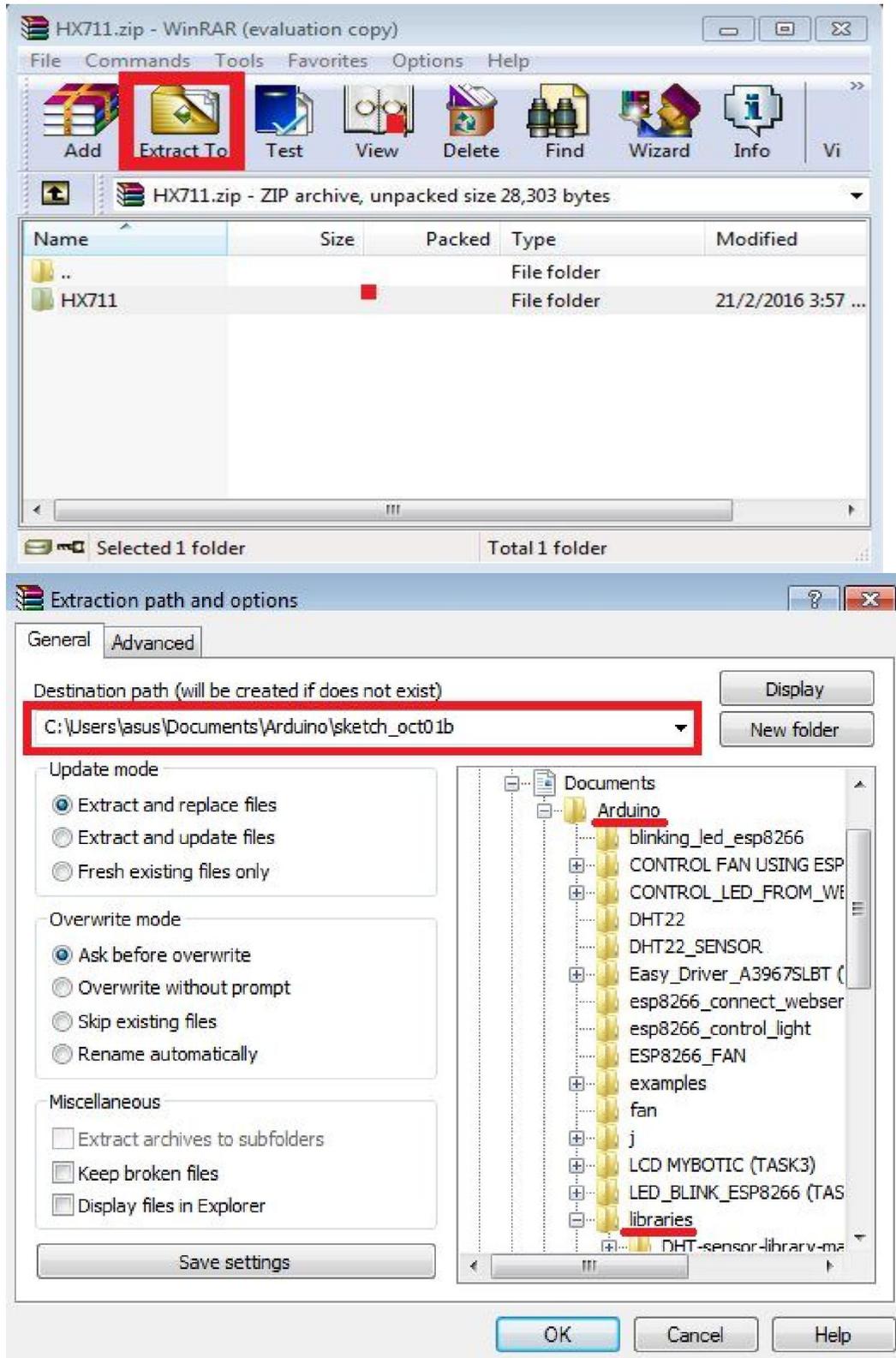
Load Cell to HX711

- E+ : RED

- E- : BLACK
- A- : WHITE
- A+ : GREEN

Then, connect your Arduino Uno Board to your Computer via USB.

## Step 5: HX711 Library



Communicating with the Balance Module requires a driver for the HX711 sensor. The simplest way to install the driver is to download the HX711 library. Download the ZIP file below > Open Zip File > Extract to your Arduino Uno Library folder. Refer the image above for your references.

## Attachments

-  [HX711.zip](#)

## Step 6: Sample Source Code



The screenshot shows a WinRAR window titled "HX711.rar - WinRAR (evaluation copy)". The interface includes a menu bar (File, Commands, Tools, Favorites, Options, Help) and a toolbar with icons for Add, Extract To, Test, View, Delete, Find, Wizard, Info, and Vi. The main pane displays the contents of the RAR archive, which is "HX711.rar - RAR archive, unpacked size 1,720 bytes". A table lists the files:

Name	Size	Packed	Type	Modified
..			File folder	
HX711.ino	1,720	739	Arduino file	18/10/2016 5:2...

At the bottom of the window, it shows "Selected 1,720 bytes in 1 file" and "Total 1,720 bytes in 1 file".

```
Help
Upload

// do not start the sketch WITHOUT a weight on the scale
// displayed place the weight on the scale
// adjust the calibration_factor until the output readings match the known weight
HX711 CLK
HX711 DOUT
HX711 VCC
- HX711 GND

calFactor = -2230; // this calibration factor is adjusted according to my load cell

//:
HX711 calibration sketch";
remove all weight from scale";
after readings begin, place known weight on scale";
press + or a to increase calibration factor";
press - or z to decrease calibration factor");

}
// reset the scale to 0
```

Download the sample source code below, open and upload this sample source code into your Arduino IDE.

**NOTE :** You can change your calibration factor before uploading the code OR you can adjust it later in the serial monitor box since the code allow you to add and substract the value of calibration factor.

## Attachments

-  [HX711.rar](#)

## Step 7: Serial Monitor



The screenshot shows the Arduino IDE interface. The main window displays the following code:

```
HX711 $
}
void loop() {
    scale.set_scale(calibration_factor); //Adjust to this calibration factor

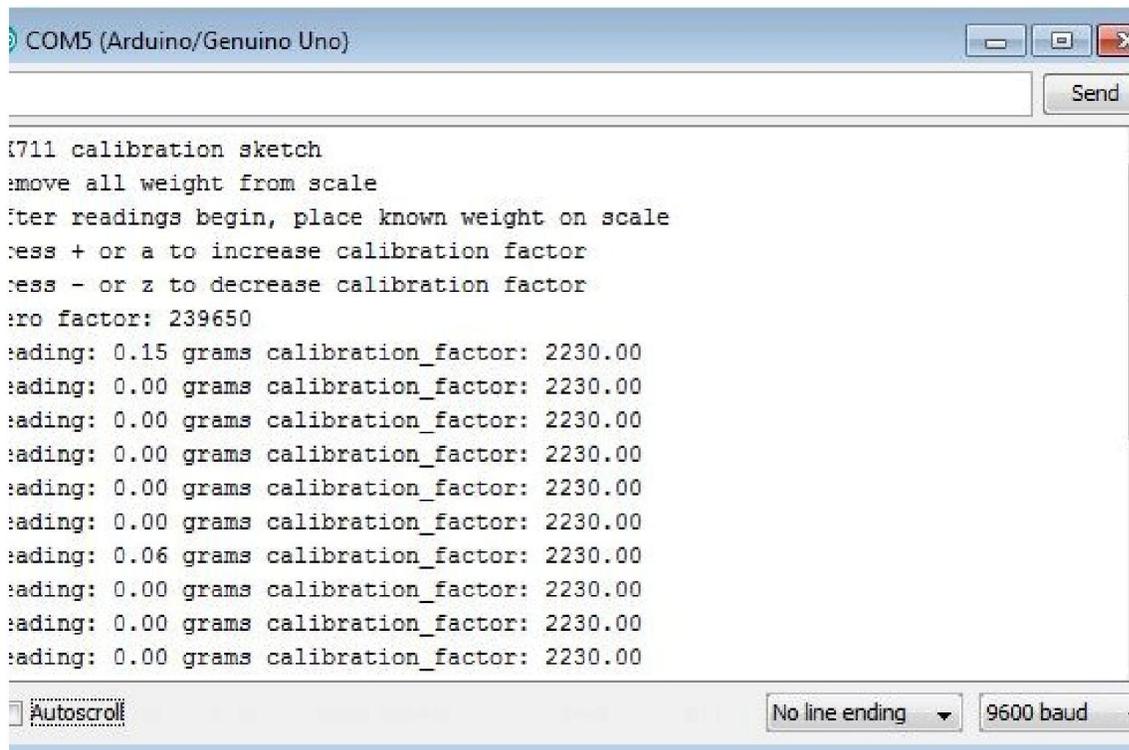
    Serial.print("Reading: ");
    units = scale.get_units(), 10;
    if (units < 0)
    {
        units = 0.00;
    }
    ounces = units * 0.035274;
    Serial.print(units);
    Serial.print(" grams");
    Serial.print(" calibration_factor: ");
    Serial.print(calibration_factor);
    Serial.println();

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

Below the code editor, the Serial Monitor window is open, showing the message "Done uploading." and the following memory usage information:

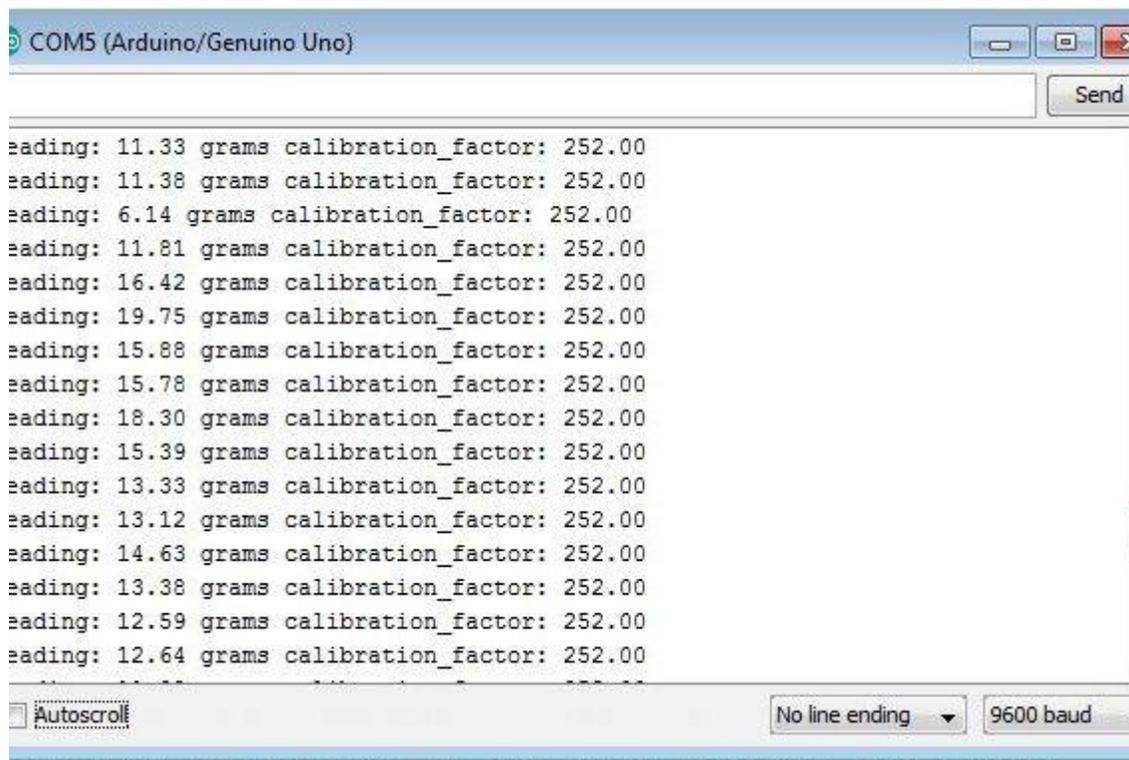
```
Sketch uses 5,676 bytes (17%) of program storage space. Maximum is 32,256 bytes.
Global variables use 487 bytes (23%) of dynamic memory, leaving 1,561 bytes for local v
```

The status bar at the bottom indicates "34" and "Arduino/Genuine Uno on COM5". A red box highlights the Serial Monitor icon in the top right corner of the IDE window.



When you have successfully uploaded the sample source code into your Arduino Uno Board. Open Serial Monitor and it will show you as shown in the picture above.

## Step 8: Result



When the serial monitor gives you a value for reading, it means that you have successfully interfaced your load cell. Now, you can set your own calibration factor by adjusting the value using the '+' or 'a'

to increase the value OR '-' or 'z' to decrease the value. You have to calibrate only once for each load cell.

**NOTE** : This tutorial only show you on how to interface HX711 with load cell. We did not use the correct calibration factor. You have to set your own calibration factor for your load cell. Check on this [video](#) and [tutorial](#) to learn on how to set the calibration factor for load cells. Remember that each load cell with different weight ie. load cell 20KG, 60Kg and 100KG have different value of calibration factor. Thus, you will have to set calibration factor for each load cell with different weight.

## **Step 9: Videos**

This video shows how to interface HX711 Balance Module with Load Cell.