Tutorial to Interface HX711 Balance Module with Load Cell

by **mybotic** on October 9, 2016

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Intro: Tutorial to Interface HX711 Balance Module with Load Cell

Description

This module uses 24 high-precision A/D converter. This chip is designed for high-precision electronic scale. It 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-resetData 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 ~ +85â„ƒ
- 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

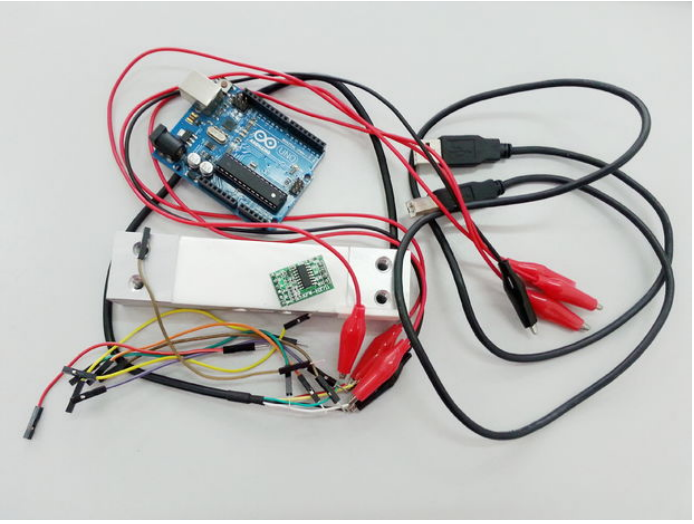
2. HX711 Balance Sensor

3. Load Cell (can be any weight of load cell ie 20KG, 60KG or 100KG)

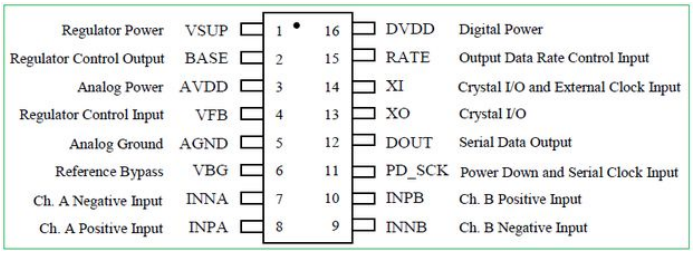
4. Male Female Jumpers

5. Crocodile Clip Wires

5. Arduino IDE



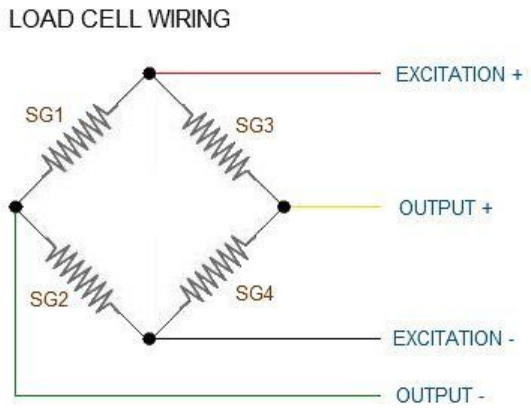
Step 2: HX711 Pin Description



Step 3: Load Cell Wire Connection

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

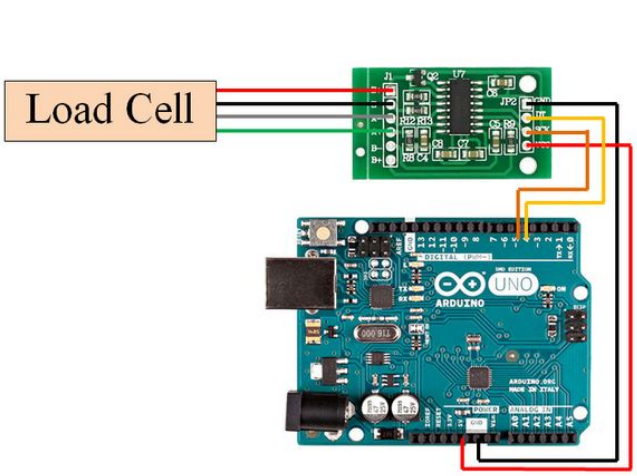
HX711 to Arduino Uno :

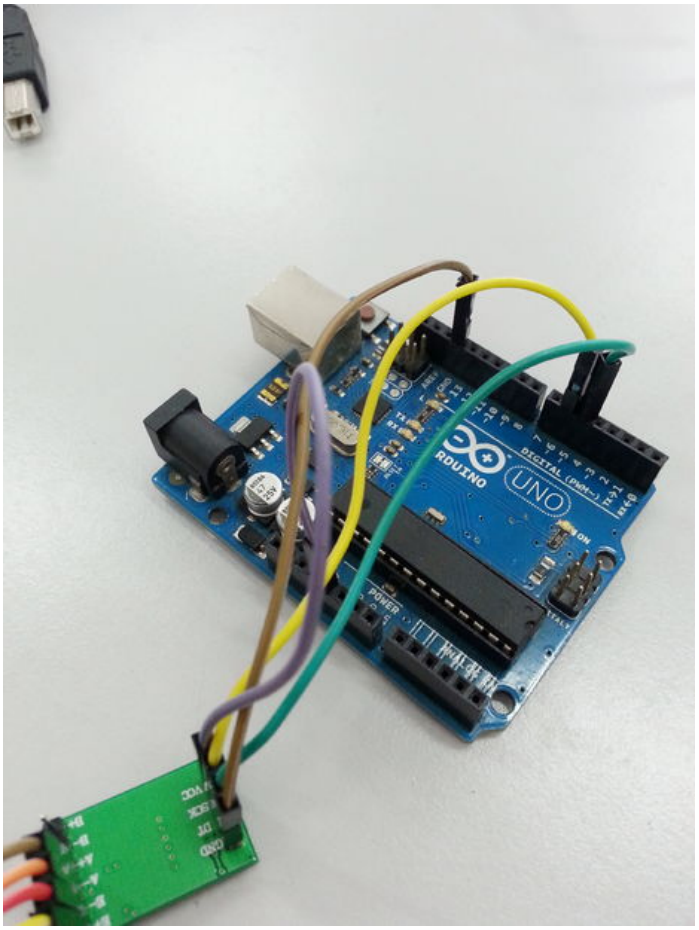
- VCC to 5V
- GND TO GND
- SCK to D5
- DT TO D6

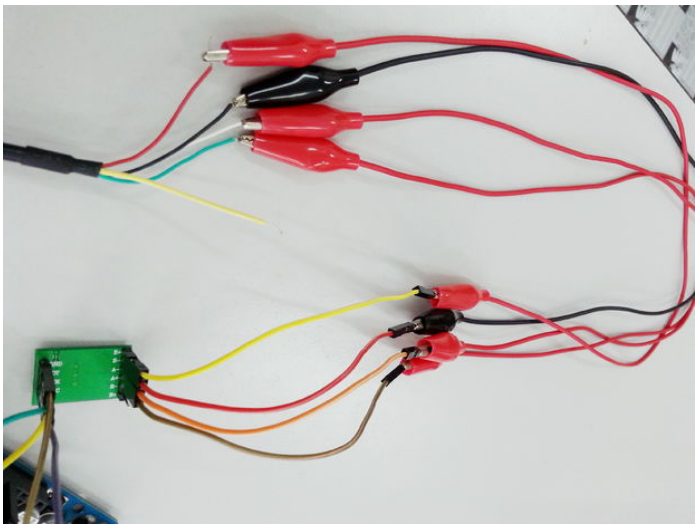
Load Cell to HX711

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

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

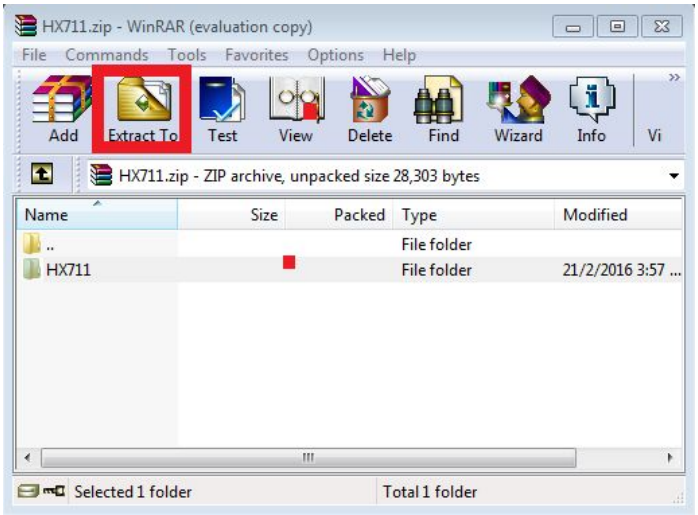


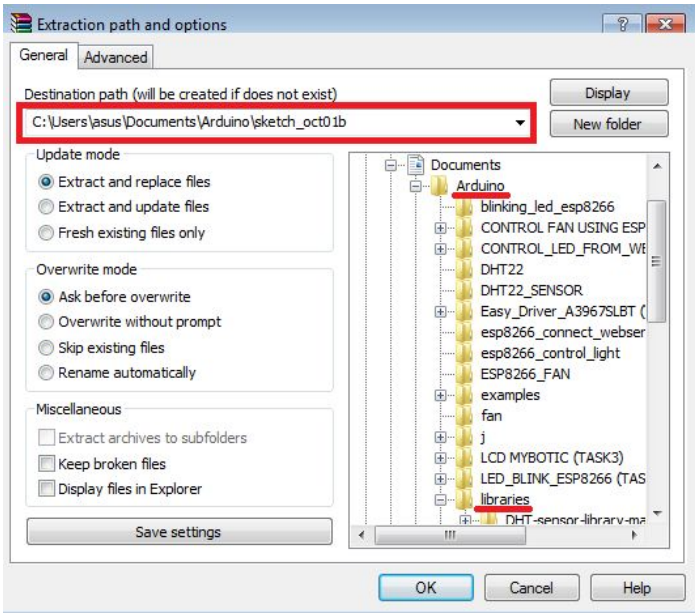




Step 5: HX711 Library

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.





File Downloads

HX711.zip (12 KB)
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'HX711.zip']

Step 6: Sample Source Code

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.

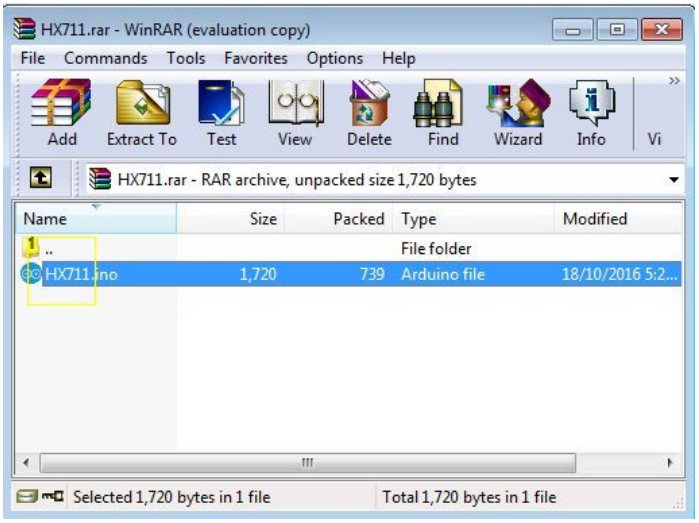
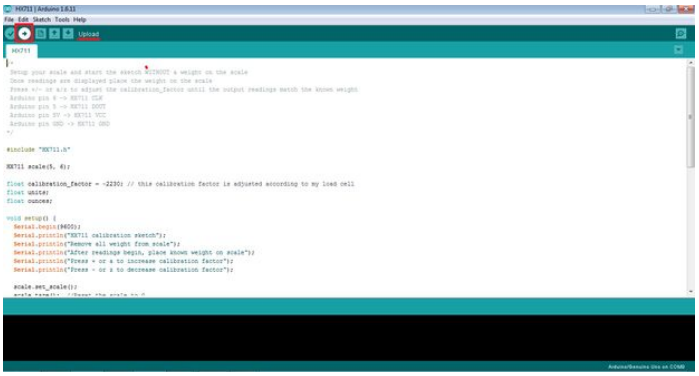


Image Notes
1. Double click to open

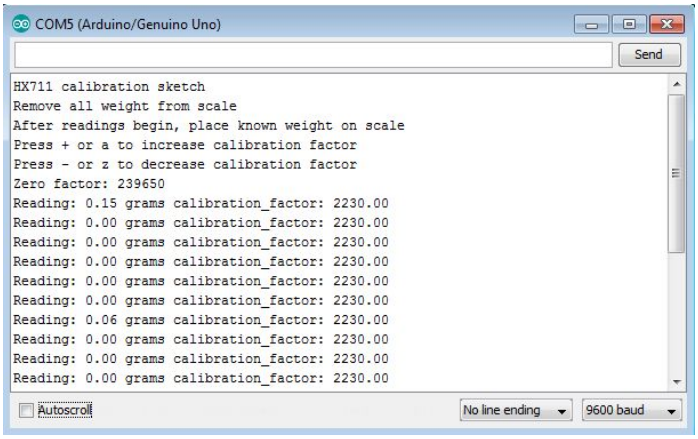


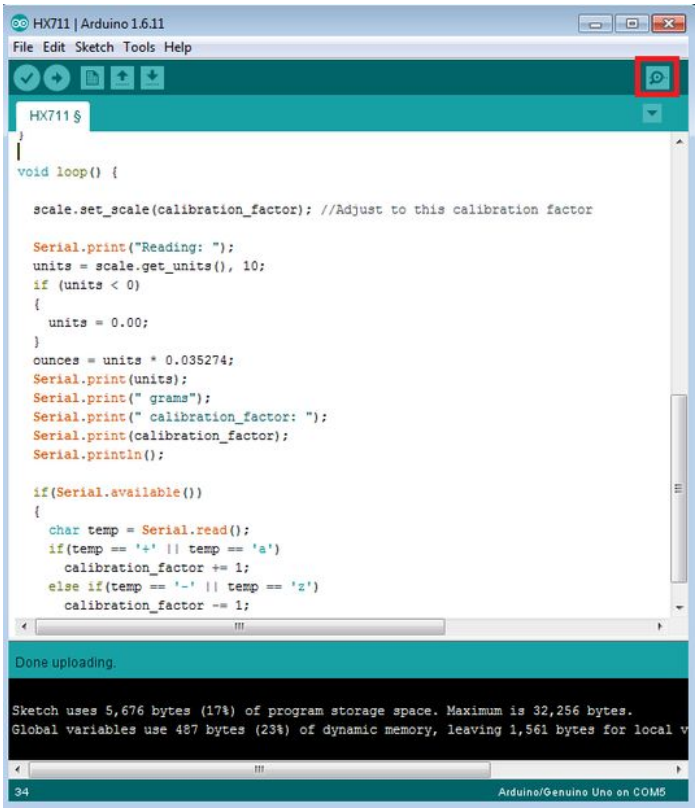
File Downloads

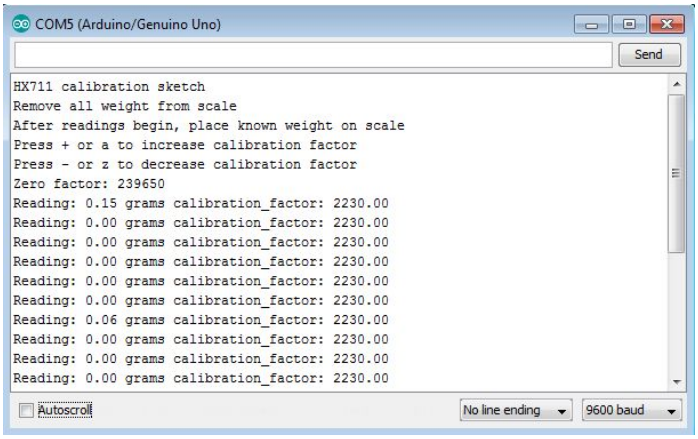
HX711.rar (814 bytes)
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'HX711.rar']

Step 7: Serial Monitor

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



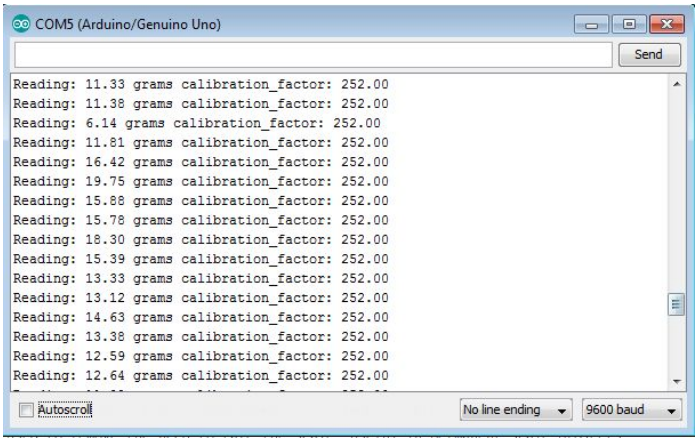




Step 8: Result

when the serial monitor give u a value for reading, it means that u has succesfully interface 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

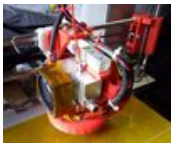
This video shows how to interface HX711 Balance Module with Load Cell.

Related Instructables

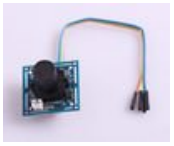
How to interface with 5kg Balance Module or Load Cell by mybotic

Arduino Nano and Visuino: Measure Weight with HX711 Load Cell Amplifier and ADC by BoianM

Make your weighing scale hack using arduino and hx711 by SohamG



Reprap Load Cell Z-Probe by palmerr23



How to use OV7670 Camera Module with Arduino? by ElecFreaks

SmartCityZen Recycle with HX711 by rickhank

Comments