QSMEE Axle load Scales

QSMEE axle weighing scales by Bob Campbell.
Using the HX711 ADC SPI module and I2c 7 segment display from e-bay.
Processor is Arduino Uno

Libraries used are LedControl-master from git-hub.
https://github.com/wayoda/LedControl

HX711_ADC-master from git-hub.
https://github.com/olkal/HX711_ADC & https://github.com/bogde/HX711

The load cells are two LC4103-K100 in parallel supporting a track segment.

User Guide

POWER ON :

Push the Power switch down and hold until the display lights up with “8888” then release. This will power the scales up for approx 30 minutes and then power it self down.

Zero Reading:

Pressing this button down while there is no weight on the measuring part of the track will set the tare weight to zero. Use this switch when ever the weight display does not read 0.0 on the right hand end of the display when there is no load on the scales.

Mem +

Pressing the right hand Mem + switch down will cause the current weight displayed on the right hand end of the display to be added to the MEMORY part of the display on the left hand side.

Mem Clr

Pressing the right hand Mem Clr button up will reset the value in MEMORY back to zero.

Calibration

Attach a serial monitor to the usb port of the Arduino processor using a USB A type to USB B type cable. The baud rate is 38400, 8 bits no parity 1 stop bit.

When the processor starts you should see the software announce its self and display the software version number. It then continuously displays the tare weight and the load on the scales about 2 times per second. While doing this it is also waiting for keyboard input commands as shown below.

Commands are entered from the keyboard as follows:-

```
"  Calibration Usage "
"  H or h Print this page "
"  l move value down by 1 "
"  L move value down by 10 "
"  u move value up by 1 "
"  U move value up by 10 "
"  r Reset Calibration factor to default"
"  s or S save new Calibration factor "
```

By placing a known weight on the scales and using the commands above get the display to read the value of the known weight. Finally when satisfied use the “s” save command to write the new calibration factor to permanent memory.

Construction

Figure 2: The installation of the load cells on the dual gauge 7.25” 5.00” track.

Figure 1: The weather proof enclosure holding the electronics.

Figure 3: The door of the ip66 box open down to reveal user instructions.

Figure 4: View of installation with solar panel at top of pipe mast.

Figure 5: Front panel view of electronics box holding which contains the Arduino processor, batteries and supporting electronics.

Figure 6: View of both the above from a distance.

Figure 7: Front panel showing current axle weight

Figure 8: Front panel of an axle and a total weight in memory.

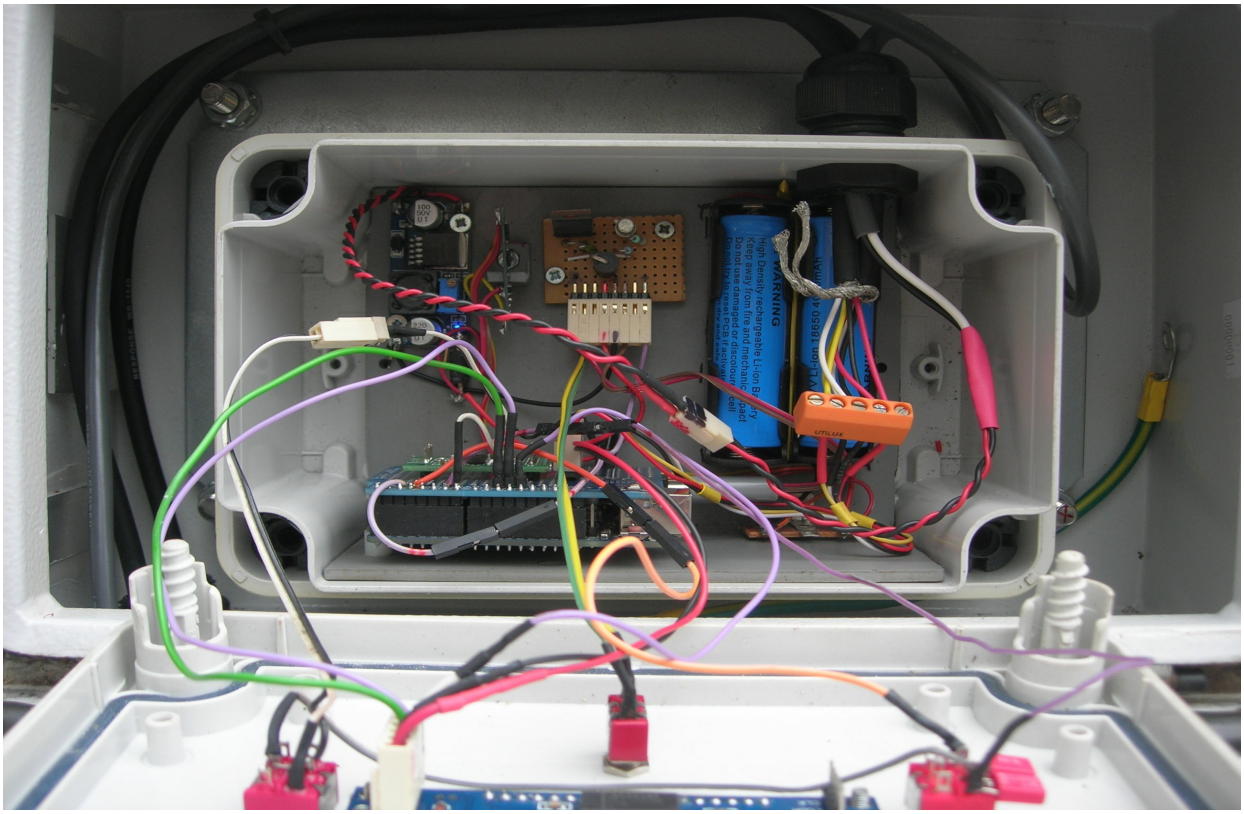

Figure 9: nside the electronics and 18650 batteries.