# 1   Introduction

The whole concept of this CG Scale is based on the project of https://github.com/olkal/CG_scale.

A really good explanation, how to build the Scale in general and to start with Arduino can be found here https://github.com/adesandr/CG_Scale_OlkalBreakout/tree/master/Documentation.


Why then changing existing stuff?

- I missed an automated calibration of the Scale

- Changing the reference weight for calibration was not possible without flashing the Arduino again

- Writing values to EEPROM after calibration will be implemented.

- Exchanged Adafruit lib to u8g which seems to work better.

- Using Arduino Nano as it needs no separate Programmer Board

- Guidance by adequate screens

2   Schematic
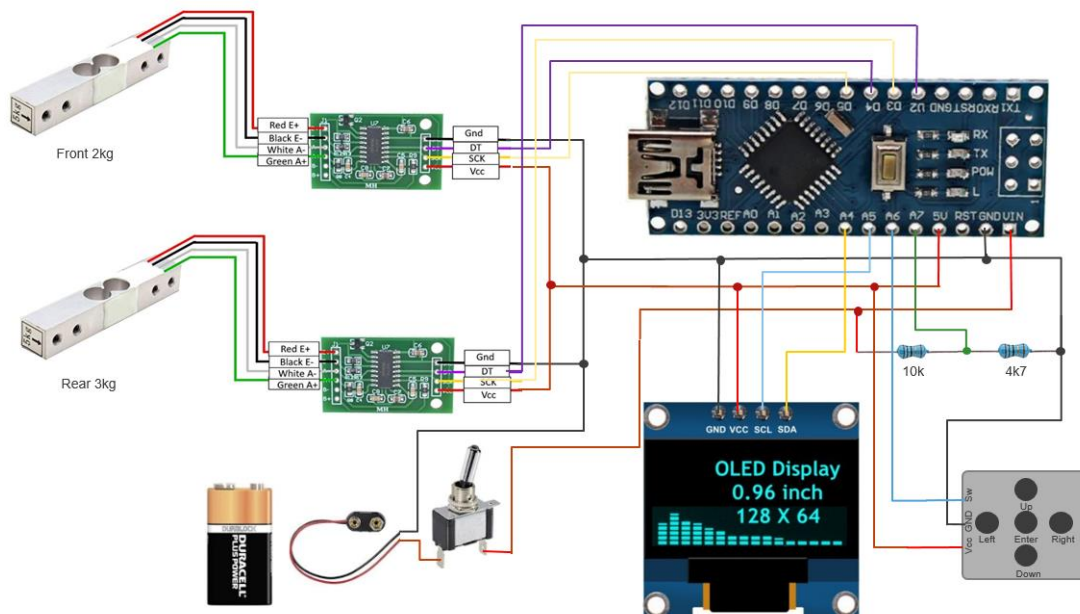
3   Using CG scale modified
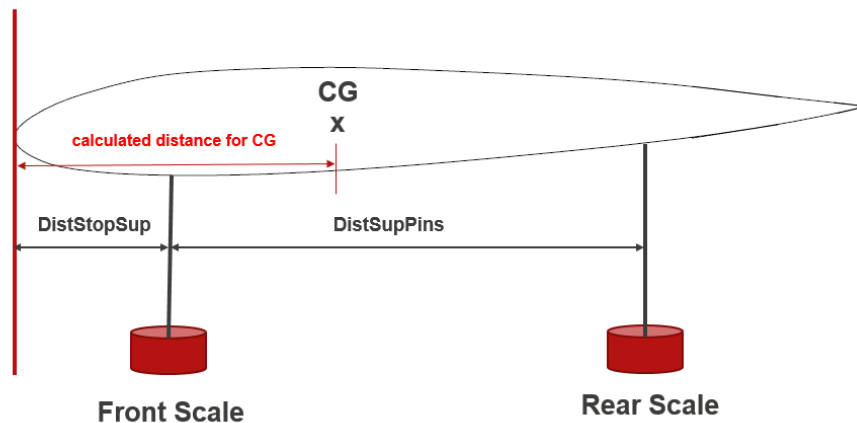
Every Scale is a bit different and some figures have to be adapted in the code.

const long DistSupPins = 1450; //calibration value in 1/10mm, between the support pins
const long DistStopSup = 285; //calibration value 1/10mm, projected distance from front wing support point to
//stopper pin

Measure the value for DisStopSup and DistSupPins of your Scale model and enter them accordingly. These values are also the right ones for fine tune the calculated distance of the CG.

After connecting the scale to PWR, some internal calibrations and taring is done. Then, you can choose between entering a new reference weight or working with the existing configuration. (Please be aware that the reference weight has to be determined at least once).

3.1   Entering reference weight

After choosing the option to enter a reference weight (LEFT button), following screen will be displayed.
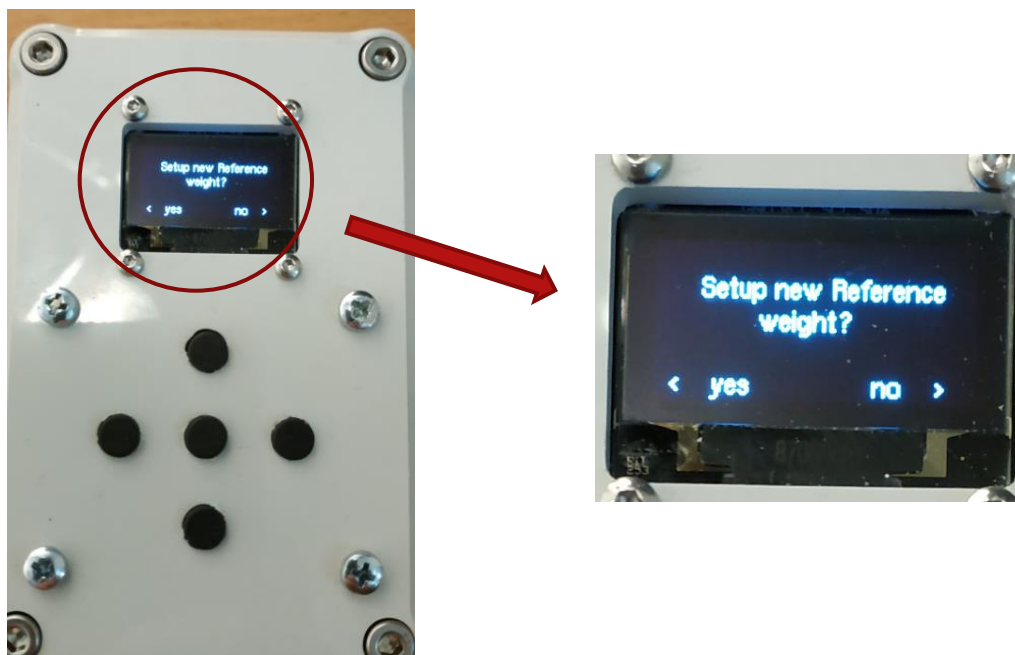
You can use reference weights up to 2kg. For changing the value, UP and DOWN buttons will be used. To confirm each value, press ENTER.
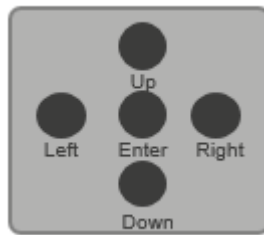

After confirming the last value, the display shows you your selected reference weight.

Next step:Put the reference weight on the front scale. After done, please press ENTER as displayed on the screen. Afterwards the scale starts calibrating (depending on the weight, this can take some time). After the scale is finished, you will be asked to remove the weight and put it to the REAR Scale. Same procedure as before.

Some example screens below
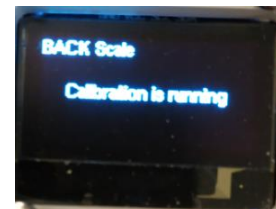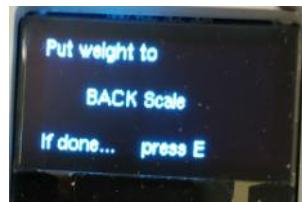
When this is finished as well, please remove the weight. Confirm with ENTER and after some seconds the scale is ready to use.

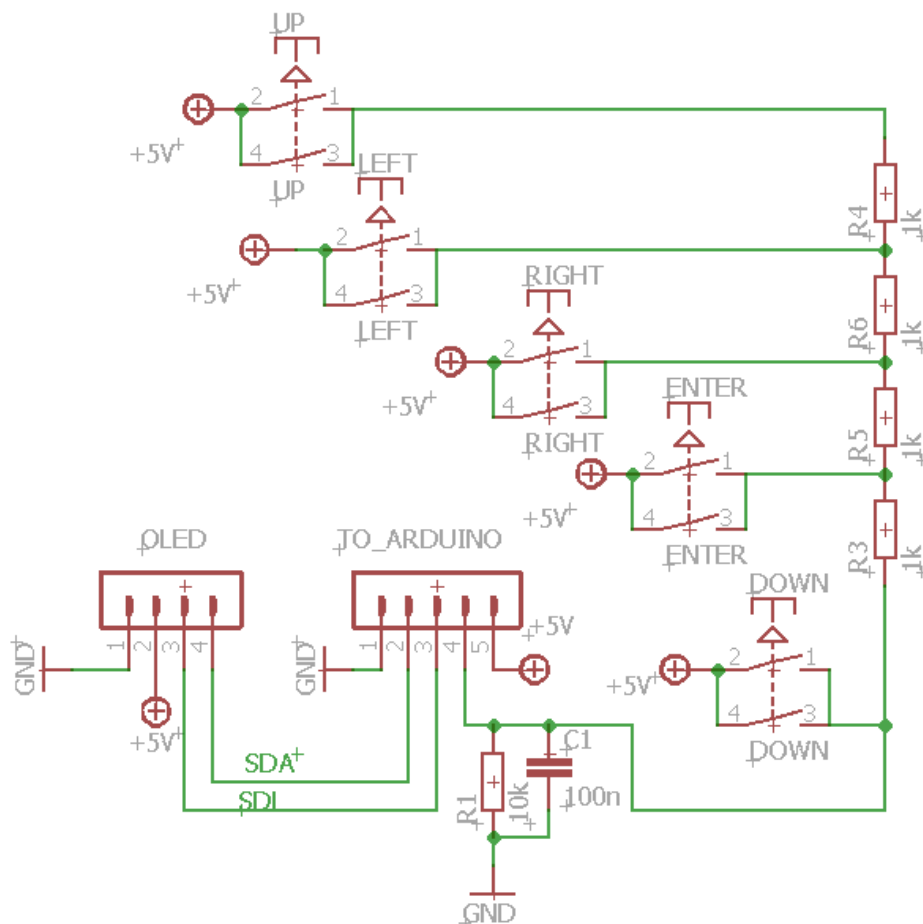Example screen after putting a plane on the scale.

3.2   Using Scale without entering reference weight modus

In this case, please hit the RIGHT button, after some seconds the Scale is ready to use.

4   Additional Stuff

Gerber and Eagle files for the Pushbutton PCB as well as for the Arduino Nano can be in the respective directory.

The subroutine *char buttonhit(int value)* is responsible to detect which button was hit. Due to different influences like temperature, voltage, resistors and so on, a range for the different buttons has to be determined. It might be that you have to adapt these values as well.

```
char buttonhit(int value) {
        if (value >= 785 && value <= 790) {
                return ('L');
        }
        if (value >= 850 && value <= 854) {
                return ('R');
        }
        if (value >= 728 && value <= 732) {
                return ('U');
        }
        if (value >= 1020 && value <= 1025) {
                return ('D');
        }
        if (value >= 928 && value <= 932) {
                return ('E');
        }
}//end buttonhit
```