AS5600 sensor reading to Flap calibration

Having assembled the sensor and installed it in your glider/plane, you will need to record the sensor angular output (0 to 4096) for each of the flap positions you wish to display. The following table is for an ASG29, create a similar table for your installation.

Lower and upper limits are a fudge factor due to the highly accurate sensor output. The sensor will register 0.1 degree increments, therefore we add a value range to the actual reading to ensure that the flap setting is displayed even when any slack or looseness is present in the installation.

Having created this table, the values are inserted into the Flaps Arduino code prior to compilation and upload to the Nano. Refer to the code block example below, this code block is repeated for each flap setting you require.

If the values in the table do NOT wrap round, ie, all values increment and do not cross the 4096 threshold you will not need to use the corr value, set it to zero 0 in the flaps sketch.

If the value does cross the 4096 threshold and wraps round as the example table shows then we will need to use the corr value. Aim for a Land flap value of 100, to calculate the corr value use this;

Corr value = actual reading – 100, which comes to 3650 with a little rounding. Change the corr value in flaps as shown here

```
void loop()
{
  static uint32_t lastTime = 0; // loop timer
  int pos = 0;                  // init vars
  int corr = 3650;               // init var set corr value
  int maxsensorval = 4096;      // max possible sensor value of 4096 points
per revolution
```

Actual sensor values as installed – calibrate sketch

Flap position Display text	Actual
Land	3756
Flap 6	100
Flap 5	400
Flap 4	600
Flap 3	800
Flap 2	900
Flap 1	1000

Re run Calibrate with corr value and calculate the Lower and Upper limits

Flap position Display text	Lower limit Calculated	Pos value after corr applied Value	Upper limit Calculated
Land	50	100	150
Flap 6	250	300	350
Flap 5	450	500	550
Flap 4	650	700	750
Flap 3	850	900	950
Flap 2	1050	1100	1150
Flap 1	1250	1300	1350

* Upper limit will not exceed 4096 due to wrapping, sensor reads from 0 to 4096 and then resets to counting from zero. Numbers above are just examples, yours will be different.
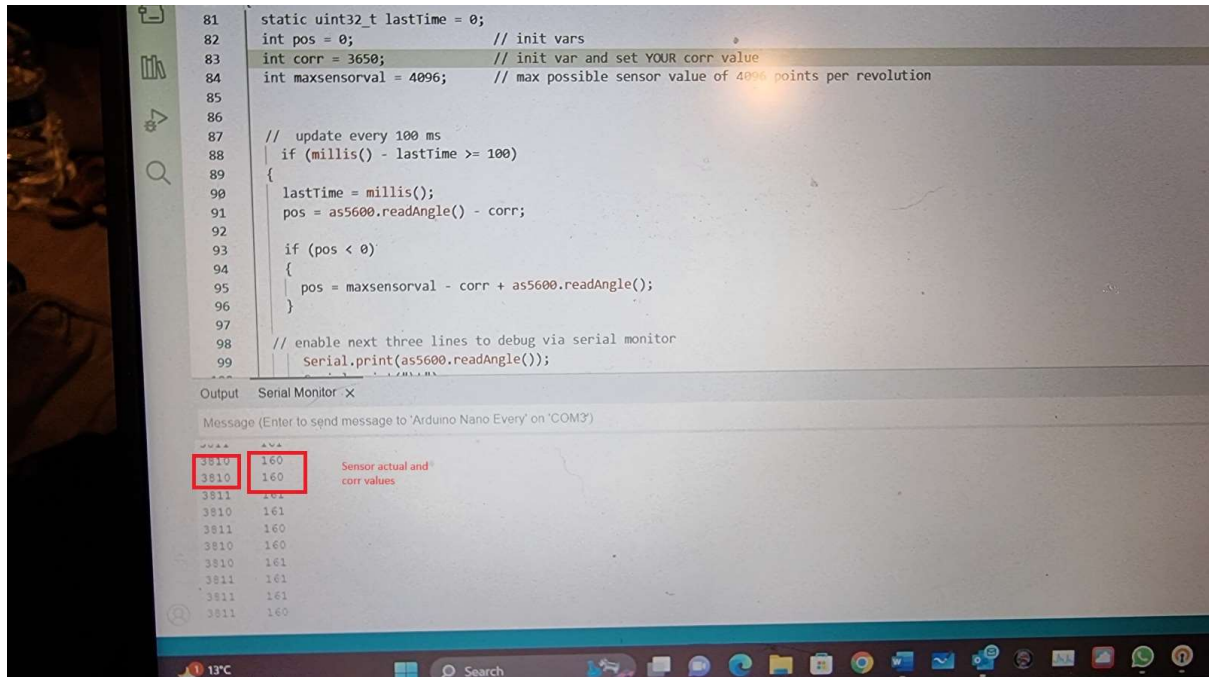
Use +- 50 as upper limits and change vales in the code block for each flap setting. +- 50 is an example, yours may need different ranges set.

Code block example

This block shows the settings necessary to show "LAND" on the display

```
if (pos > 50 && pos  < 150) // land flap

 {
      display.clearDisplay();
      display.setTextSize(2);
      display.setTextColor(SH110X_WHITE);
      display.setCursor(0, 50);
      display.println("Land"); // Oled text display
      display.display();

 }
```

Use of calibrate sketch

```
81      static uint32_t lastTime = 0;
82      int pos = 0;                    // init vars
83      int corr = 3650;                // init var and set YOUR corr value
84      int maxsensorval = 4096;        // max possible sensor value of 4096 points per revolution
85
86
87      //  update every 100 ms
88      if (millis() - lastTime >= 100)
89      {
90          lastTime = millis();
91          pos = as5600.readAngle() - corr;
92
93          if (pos < 0)
94          {
95              pos = maxsensorval - corr + as5600.readAngle();
96          }
97
98          // enable next three lines to debug via serial monitor
99          Serial.print(as5600.readAngle());
```

Output   Serial Monitor ×

Message (Enter to send message to 'Arduino Nano Every' on 'COM3')

```
3810    160
3810    160          Sensor actual and
3811    161          corr values
3810    161
3811    160
3810    160
3810    161
3811    161
3811    161
3811    160
```

Zeroing the AS5600 without use of corr

The sensor will read some random value, ie, not zero when installed. It is very difficult to overcome this BUT it can be done. Please use Rob's code and instructions found here

[AS5600/examples/AS5600_burn_zpos at master · RobTillaart/AS5600 (github.com)](AS5600/examples/AS5600_burn_zpos)

Note this code is destructive and can only be run 3 times on a sensor, use at your own risk !