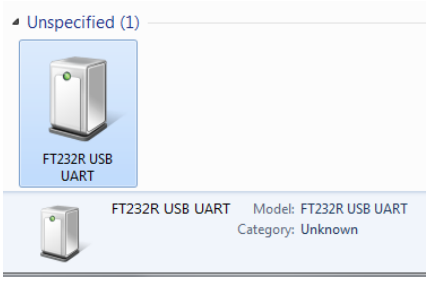
Brushless Gimbal

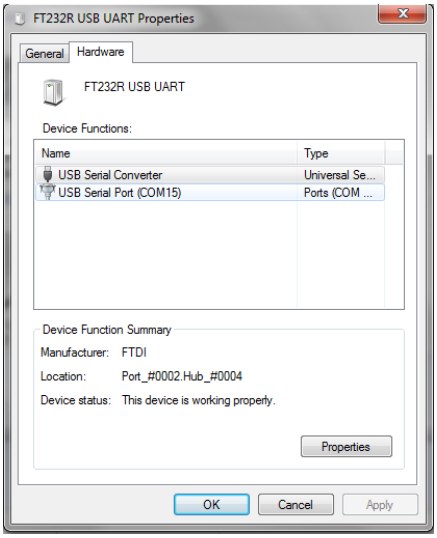
Worldwide first Open Source Brushlessgimbal Controller

Brushlessgimbal.de

when you receive any Brushless Gimbal Controller that is running the Open source project, you might run into some of the following problems when connecting to the computer. when connecting windows will install all the drivers for you but if it set's the com port above 9 when you go to connect to the GUI configuration software it will not connect.

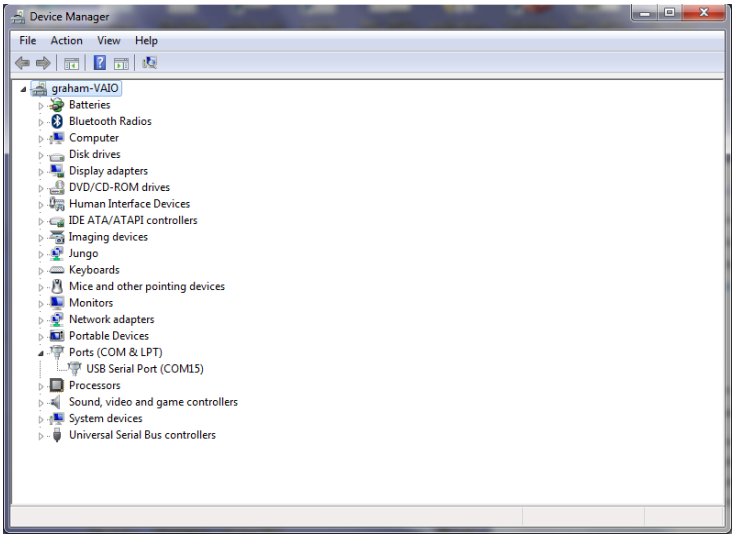


if you right click and go to properties you will see this next image



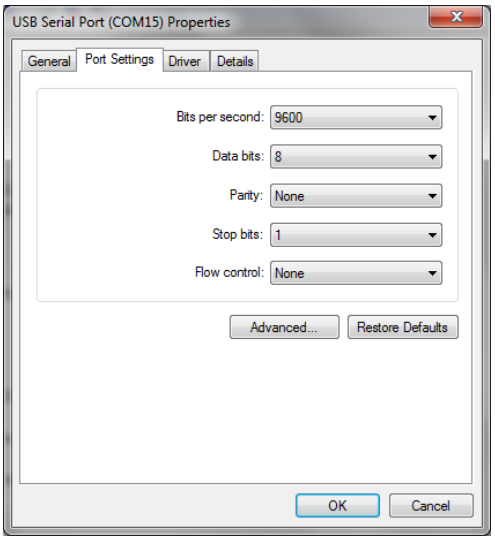
as you can see in this image windows has assigned COM 15, so this will not allow you to connect to the GUI So you need to change this to between COM 1 to 9
then you will be able to connect.

To change the COM port go to your computer icon on your desktop and right click and go to properties then click on device manager this will open

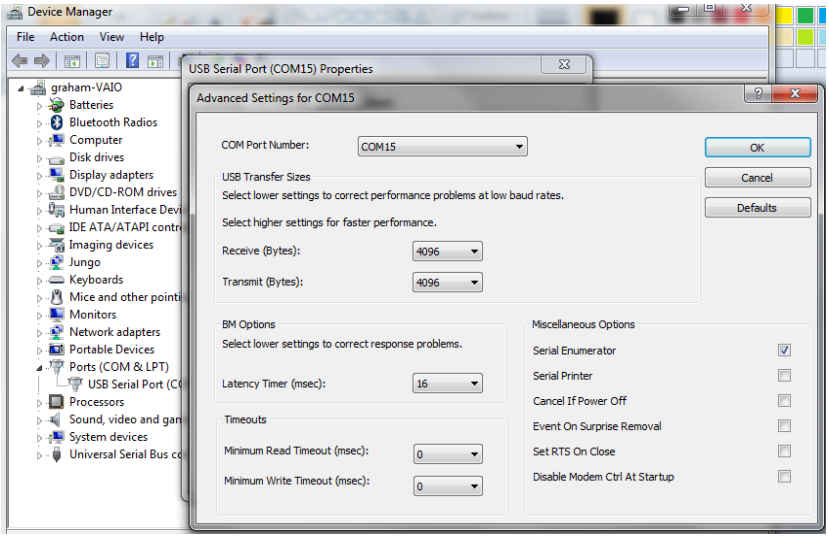


click on the USB Serial Port (COM15) and this will open

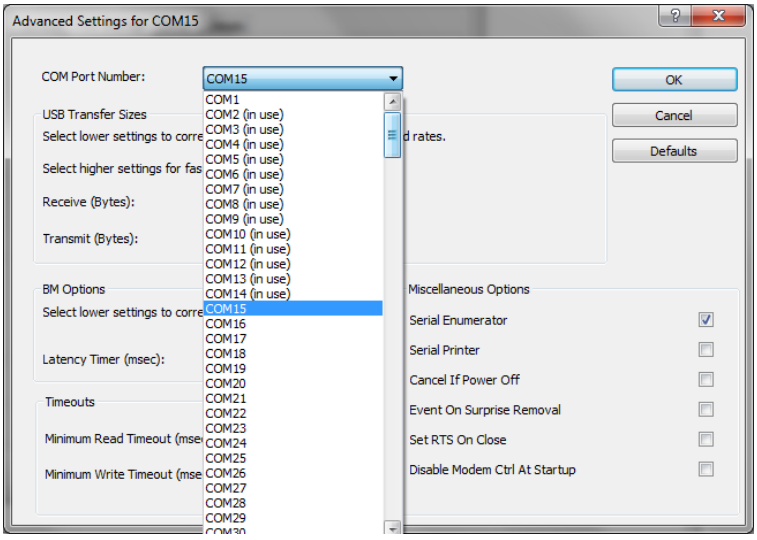
click on the Port Settings and you will see this image



this will open this image next



click on the com port settings tab and this will open



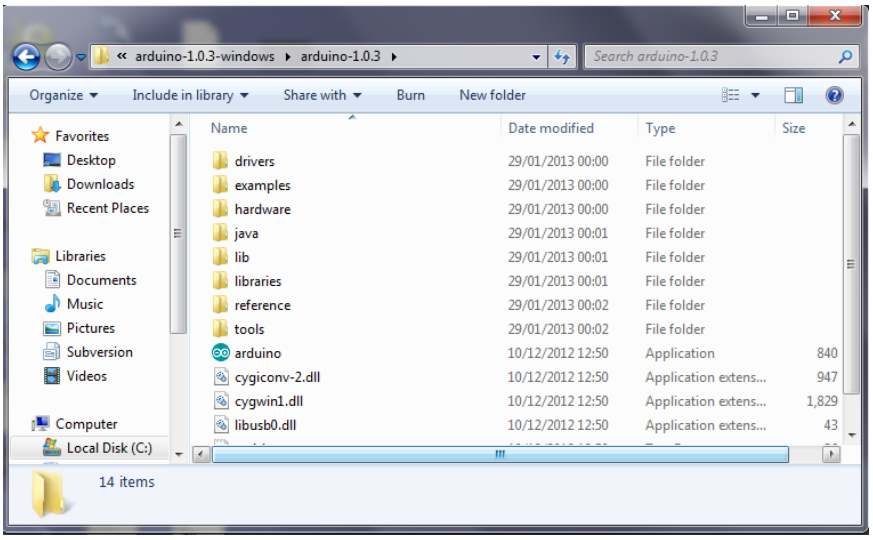
change this to a com port that is not in use (if you find that they are all in use) then select one that is between (1 to 9) and click OK.

Arduino

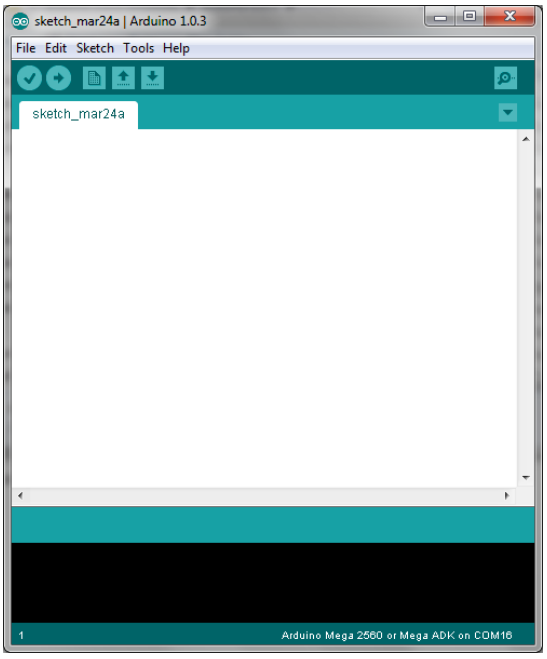
Now that you have got connected we need to load the code that can be found here https://code.google.com/p/brushless-gimbal/downloads/list

when you have down loaded the software and unzipped it you will also need Arduino this can be found here http://arduino.cc/en/Main/Software

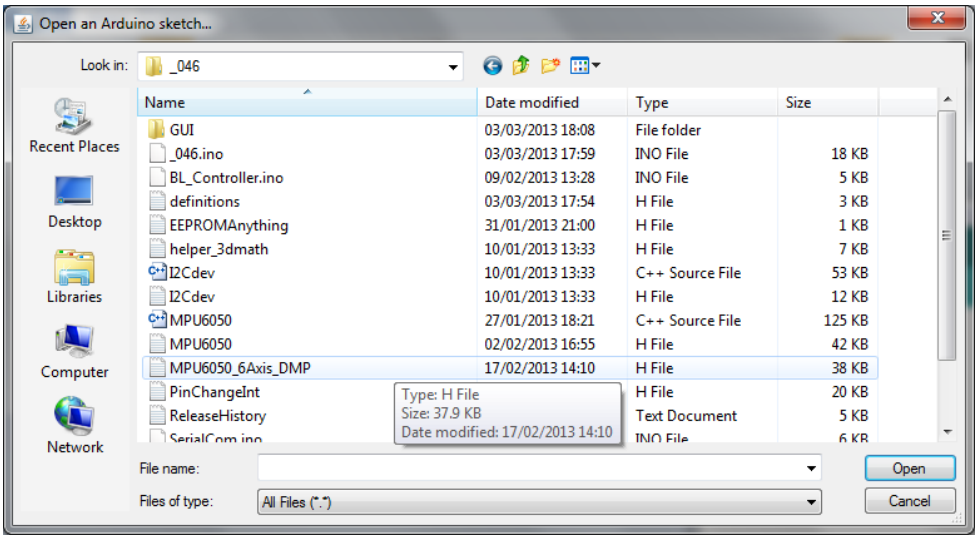
Ok now that you have the software that is needed we will load the code, to do this you need to start up Arduino. Go to the folder that you have unzipped Arduino and look for the Ardunio.exe file as in the picture



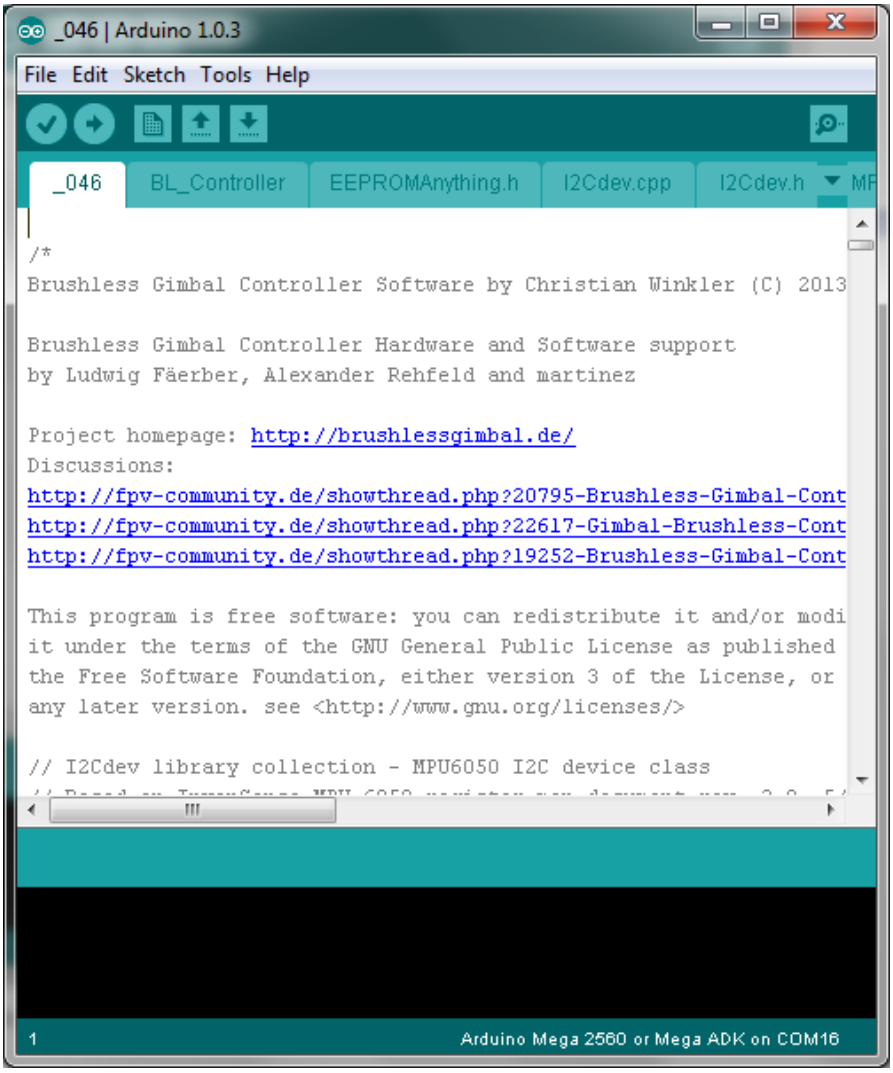
click the icon to start the programme



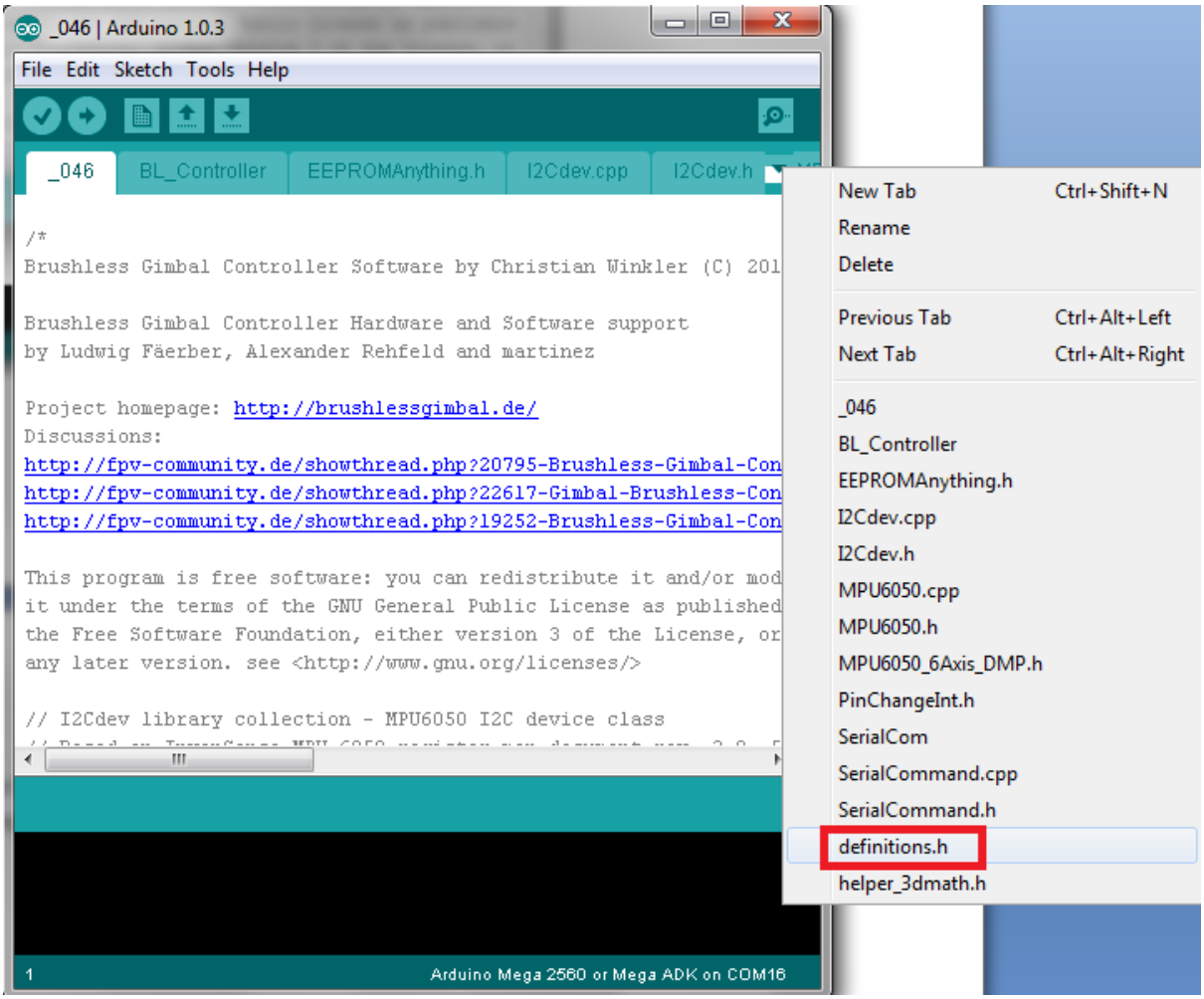
now we need to load the code for the brushless gimbal, click on file then open and then navigate to the folder were you have your gimbal software saved as seen here



click on the 046.ino (just for this example) to open the code



now that you have the code open there is at the time of writhing this manual only 1 thing that you might have to change and this is under the Definitions.h tab



when loaded you will see at the top there is the following code

// MPU Address Settings

#define MPU6050_ADDRESS_AD0_LOW 0x68 // default for InvenSense evaluation board

#define MPU6050_ADDRESS_AD0_HIGH 0x69 // Drotek MPU breakout board

#define MPU6050_DEFAULT_ADDRESS MPU6050_ADDRESS_AD0_HIGH

if you find that when you have loaded th code that your sensor is not working and you are NOT getting any readings from this then you must reload this code and change the

#define MPU6050_DEFAULT_ADDRESS MPU6050_ADDRESS_AD0_HIGH

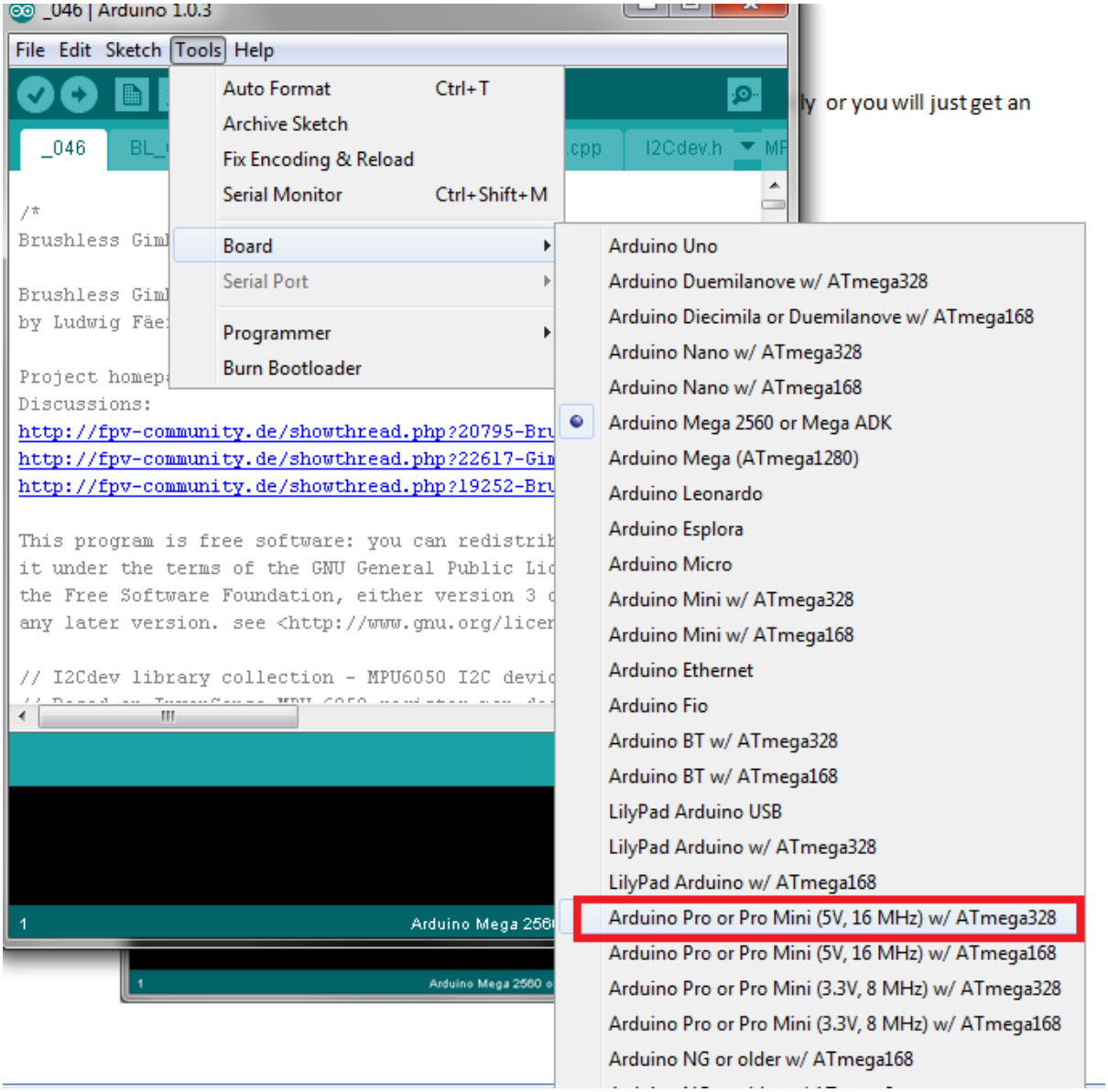
to

#define MPU6050_DEFAULT_ADDRESS MPU6050_ADDRESS_AD0_LOW

re upload the code and you should find that this will fix the sensor error.

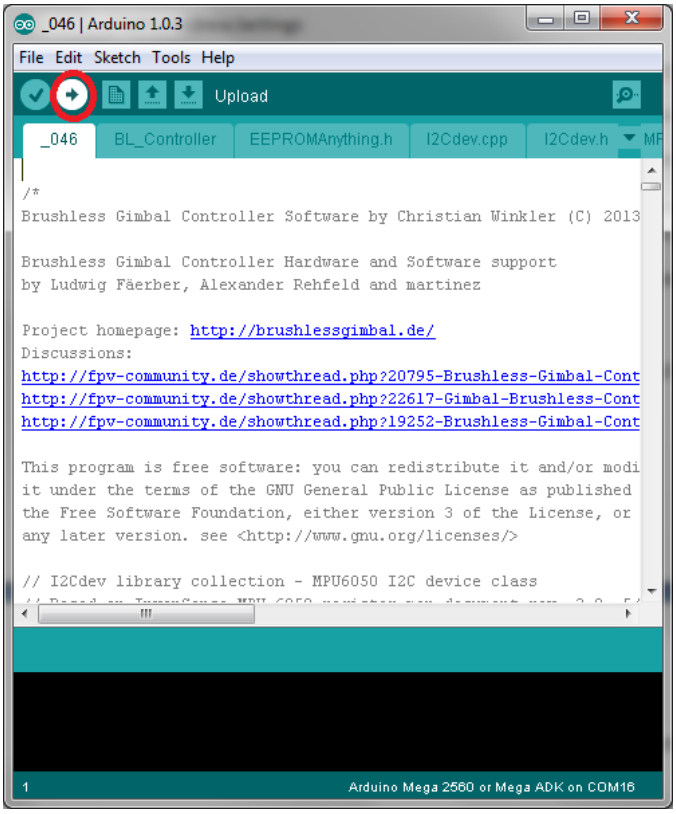
To load the code to your board you need to select the following correctly or you will just get an error

click on the Tools tab in the top menu and select the correct board that you have (**this is just an example**)

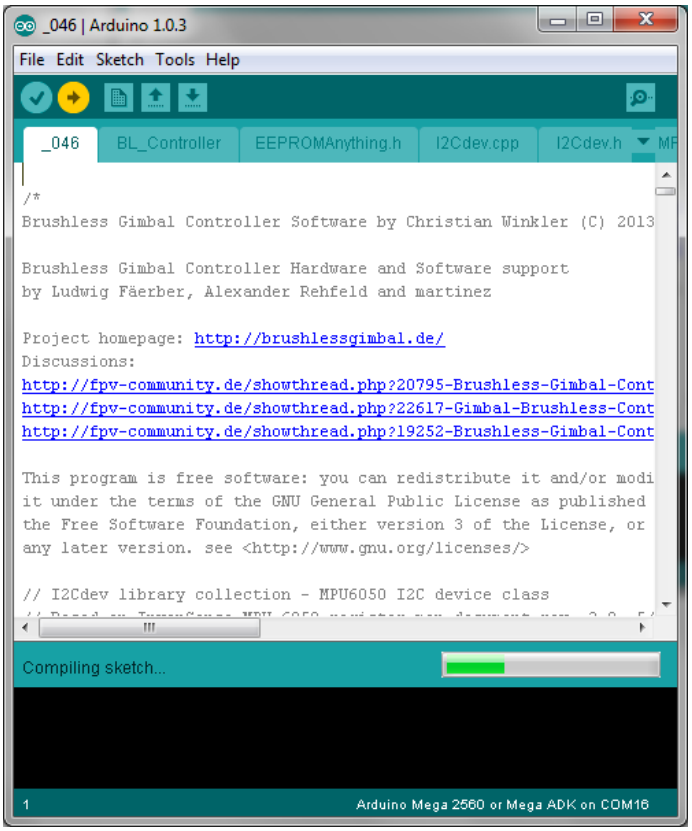


next you must select the correct com port this have normally only one listed, click on this to select the com port, Now we can upload the code

click on the upload button



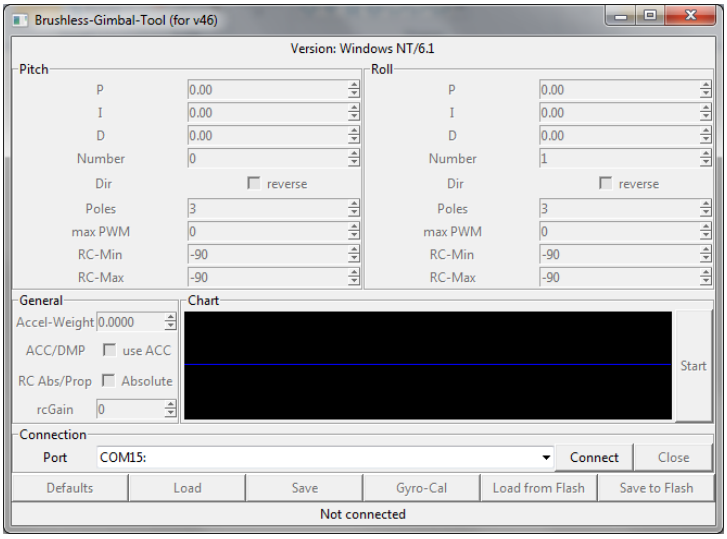
The next screen shows the code being compiled and then uploaded to your controller board



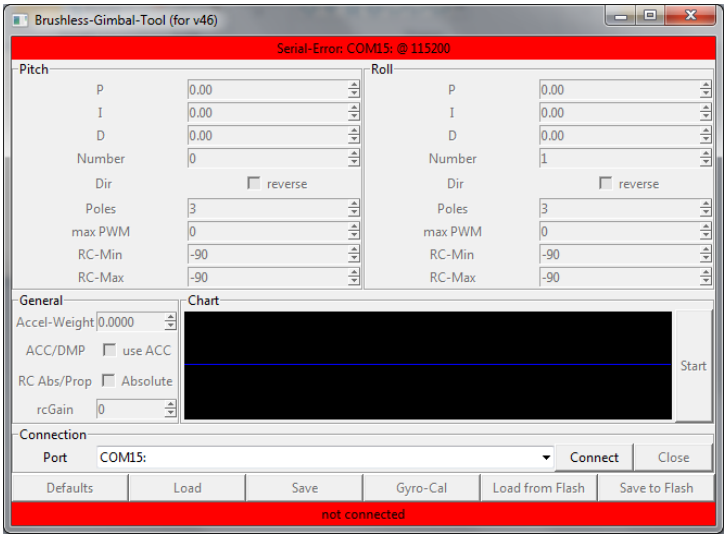
Now its time to connect to your Brushless Gimbal and start tuning your settings

The GUI

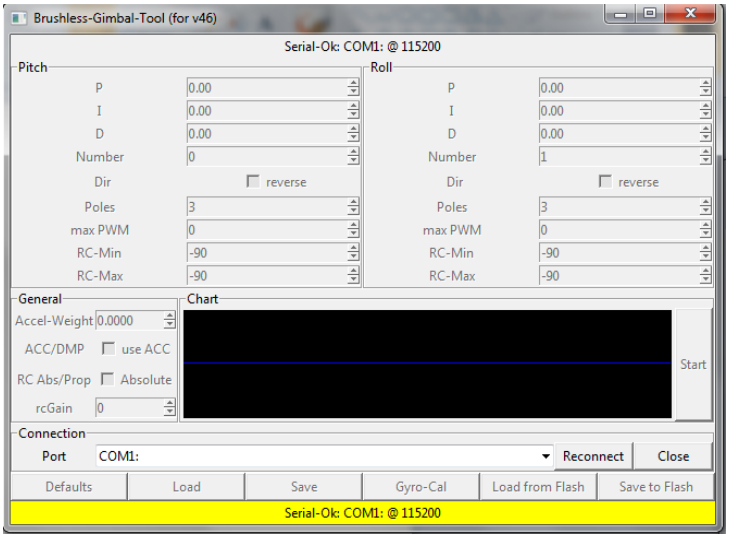
This is the software that you will use to adjust the setting on your Brushless Gimbal Controller

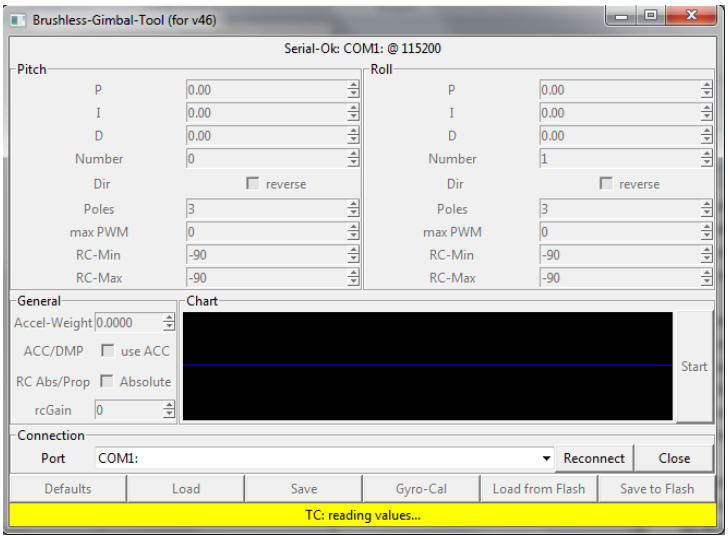


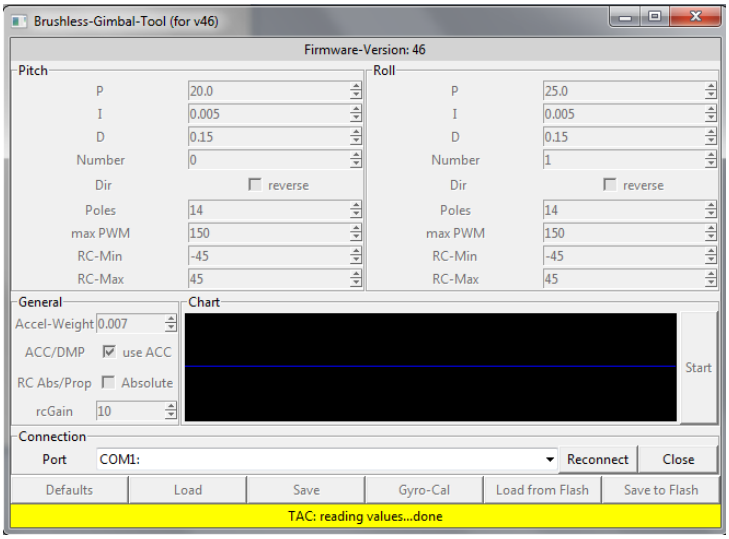
NOW if you have not changed the COM port as above then you will get this error

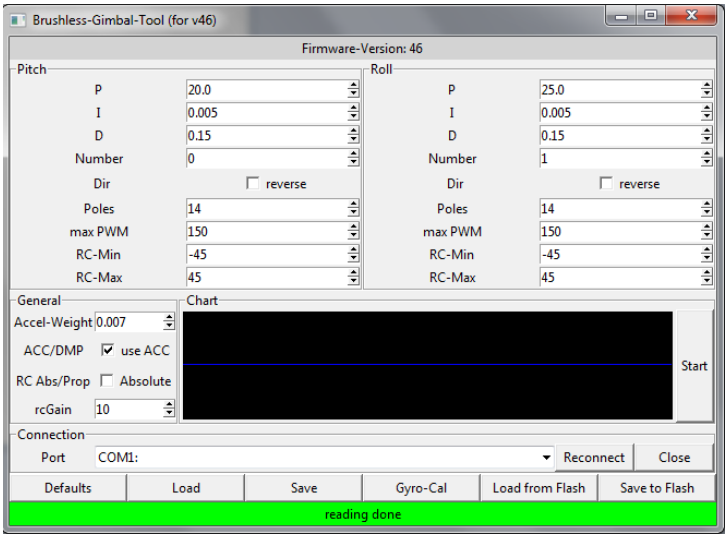


When you have made the changes to the Com Port then you should see the following images when you click Connect

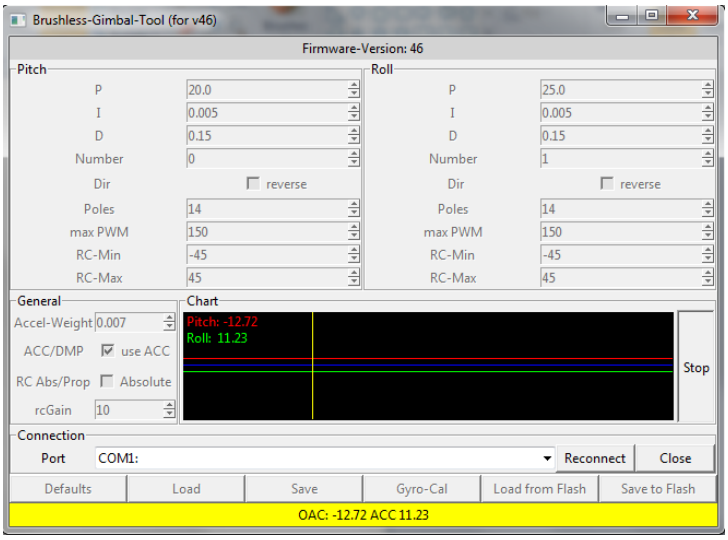


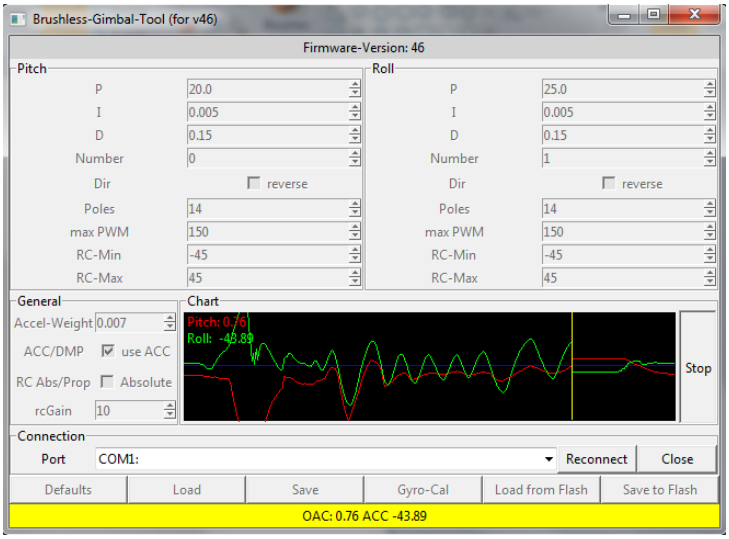






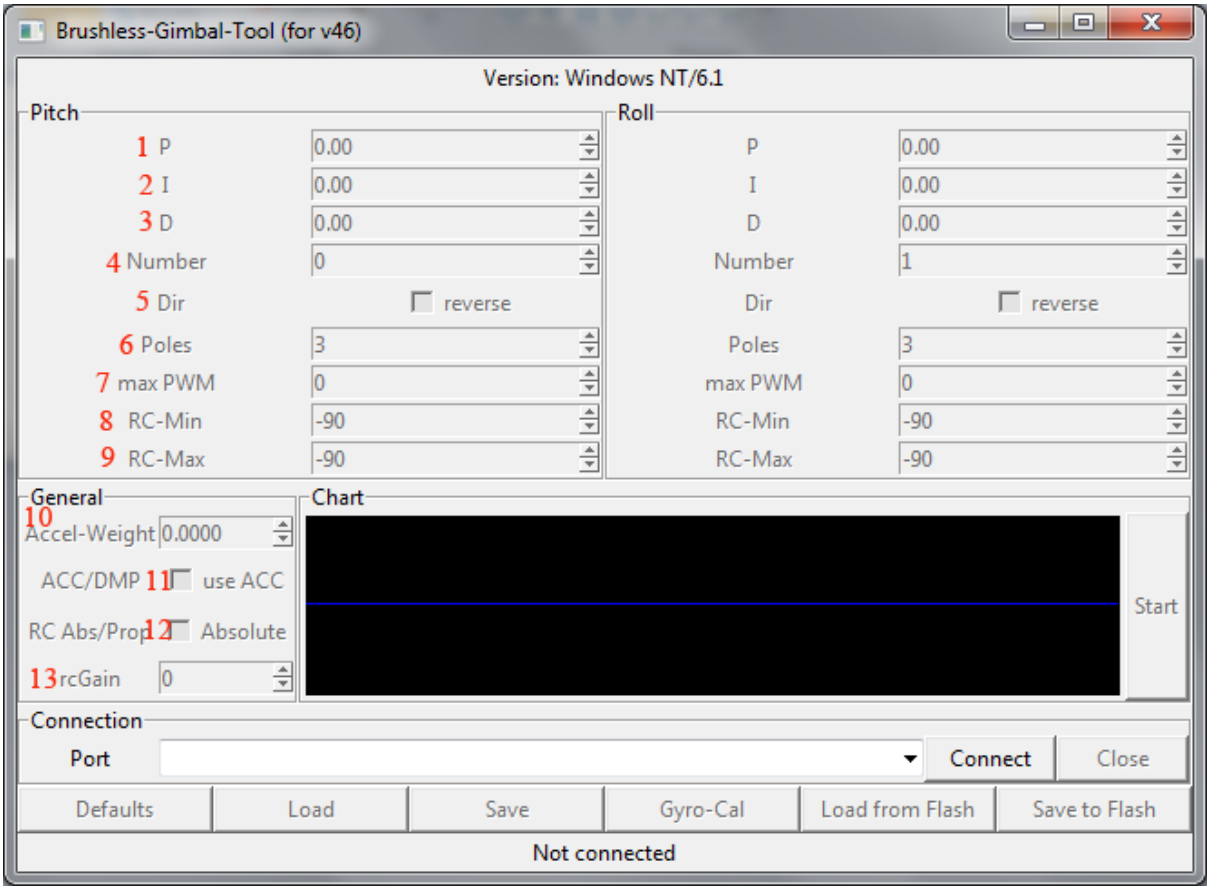
YES your connected to your Brushless Gimbal Controller. Now to check your Sensor reading please click on the Start button and you will see the following screens





Tuning your Gimbal

when you have uploaded the software and connect to your board, the software will load the default settings. You will need to change these to suit your gimbal and motors



1. First thing to do is to set the ACC-Weight to Zero (**Number 10**)
2. Next start to make it in 0,0005 steps high until the Gimbal does no more drift
   (what is drift)
   when you set the ACC-Weight to Zero , the gimbal begin to move slowly to one side
   that is drift it will not sit level.

3. Next , adjust (increase) the P Term in 1.0 Steps (**Number 1**) stop when the movement is perfect if you go too far the motor will start to vibrate

4. minimize the MAX PWM Steps (**Number 7**) as much as possible this will also help to stop the vibration in the motor, when you have got NO vibration you are ready

5. If you still have some problems start to adjust the D Term in 0,005 steps higher until the motor stops vibrating.
6. (**Number 10**) is the ACC weight this is to eliminate the Drift from the Gyro.

7. (**Number 11**) is to switch between ACC and DMP Mode
   ACC Mode is the better one , DMP is only to test it.

8. (**Number 12**) Absolute or Proportional mode is for RC Channel,
   Proportional is when you are using a second RC Transmitter to control your Gimbal
   Absolute for normal Pot control on your RC Transmitter.

9. (**Number 13**) Is the RC Gain , how fast it react when you are change you RC channel you have it connected to.

Please note: (**Number 4**) is the motor, if you find that the wrong motor is connected you can just change the 0 to the 1 and this will save unplugging your motors.

(**Number 5**) is for reversing your motor if it is rotating in the wrong direction.

(**Number 6**) is the amount of poles your motor has.

(**Number 8 & 9**) is the amount or rotation your motor will make on that axis.

Software License :

http://www.gnu.org/licenses/

Arduino software:

http://arduino.cc/en/Main/Software

Latest Software:

http://code.google.com/p/brushless-gimbal/downloads/list

Credits

Manual: By Graham Miller

Brushless Gimbal: By Ludwig Faerber

GUI: By Meister

Software: By

Christian Winkler , Ludwig Faerber and Alexander Rehfeld