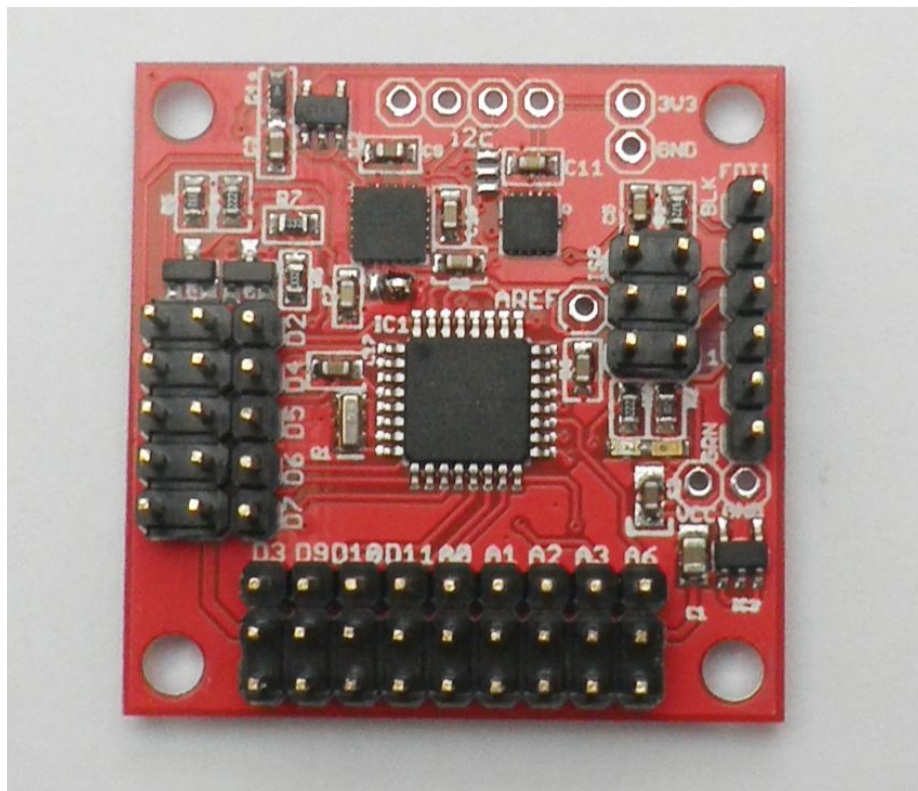
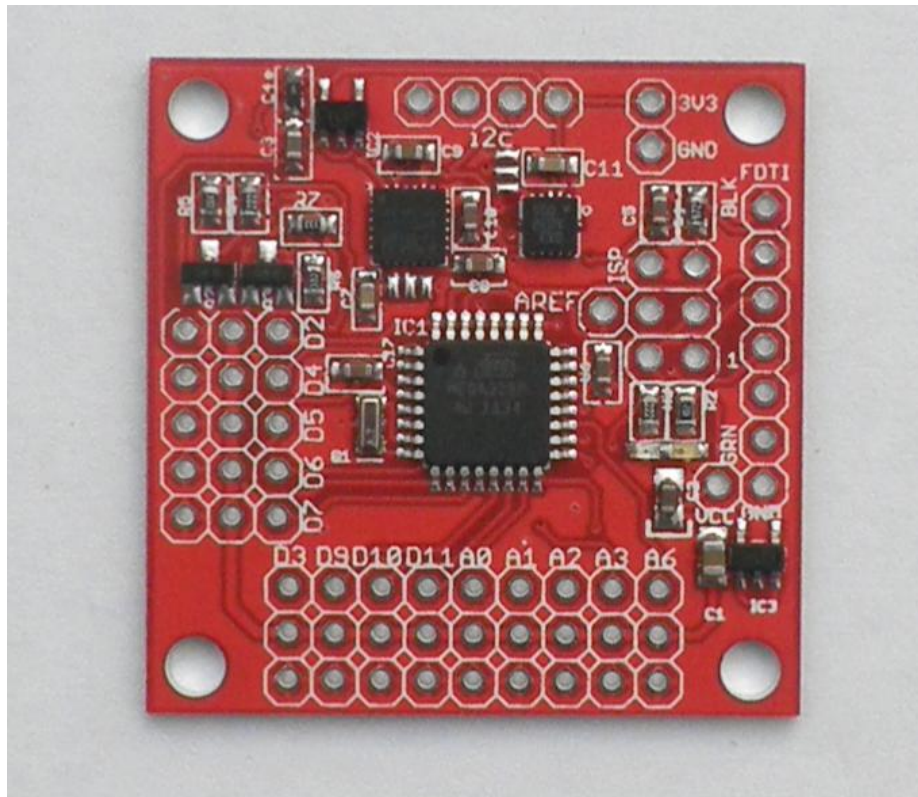
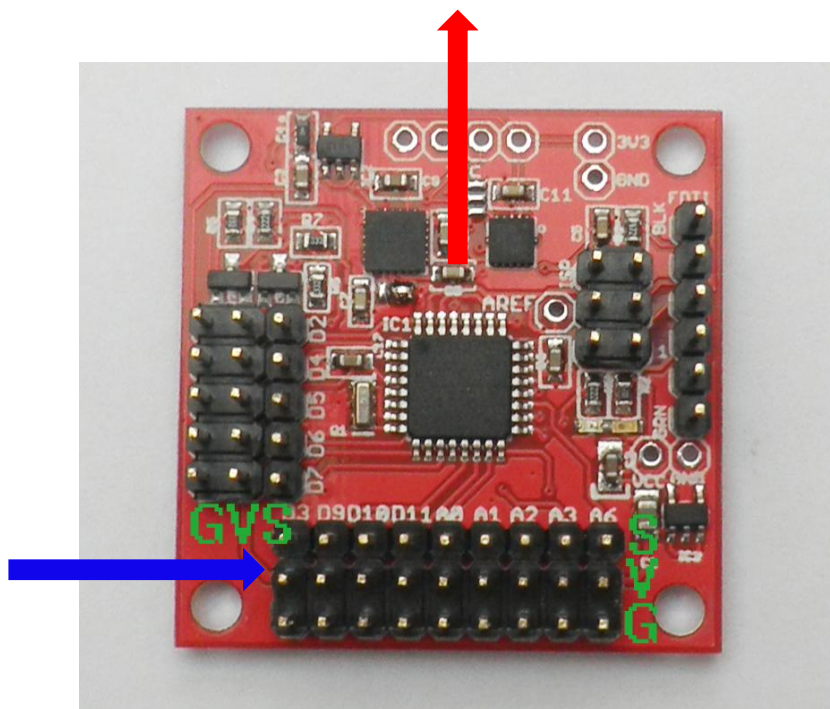


# MWC Flying Control Board



## Section 1 : Wiring your hardware

1. Rotation direction of motors and the connection between flying control board and motors



The direction of setting up the flying control board showing as the red arrow, it should always forward to the front of 4-axis flight!!!

Connect motors and ESCs following the relevant number to the area showing with blue arrow of flying control board

**In example of 4 axis mode:**

**4 axis + mode:**

**Front motor, routing on clockwise, reverse propeller(1045R etc.) connect to D3**

**Back motor, routing on clockwise, reverse propeller(1045R etc.) connect to D9**

**Left motor, routing on anticlockwise, normal propeller(with out R) connect to D11**

**Right motor, routing on anticlockwise, normal propeller(with out R) connect to D10**

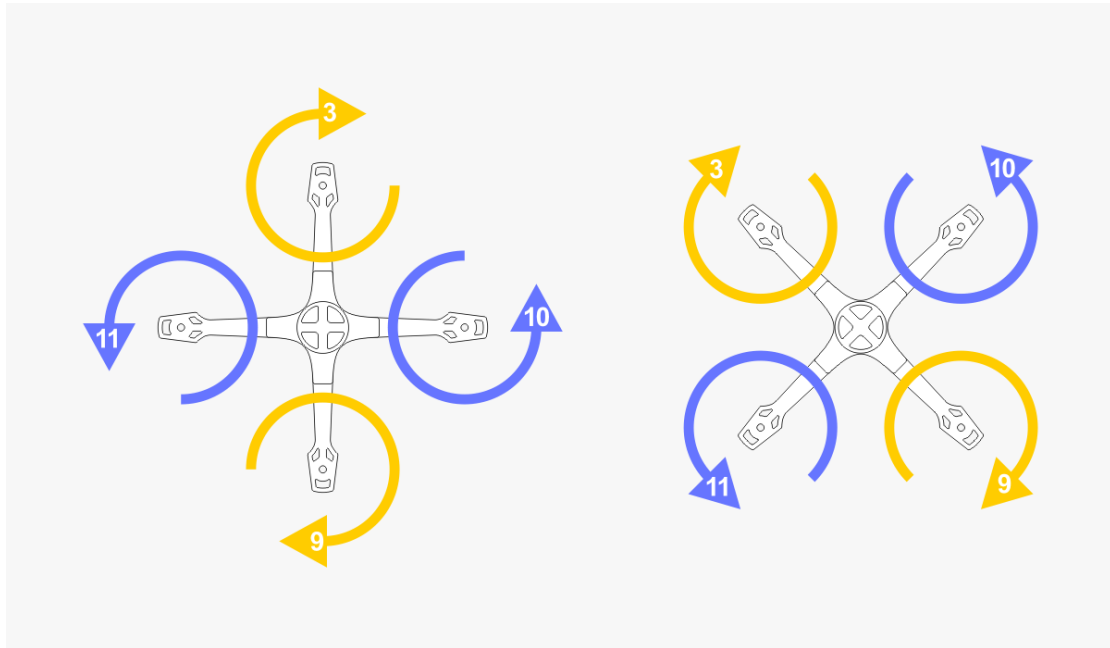
**4 axis x mode:**

**Left-front motor, routing on clockwise, reverse propeller(1045R etc.) connect to D3**

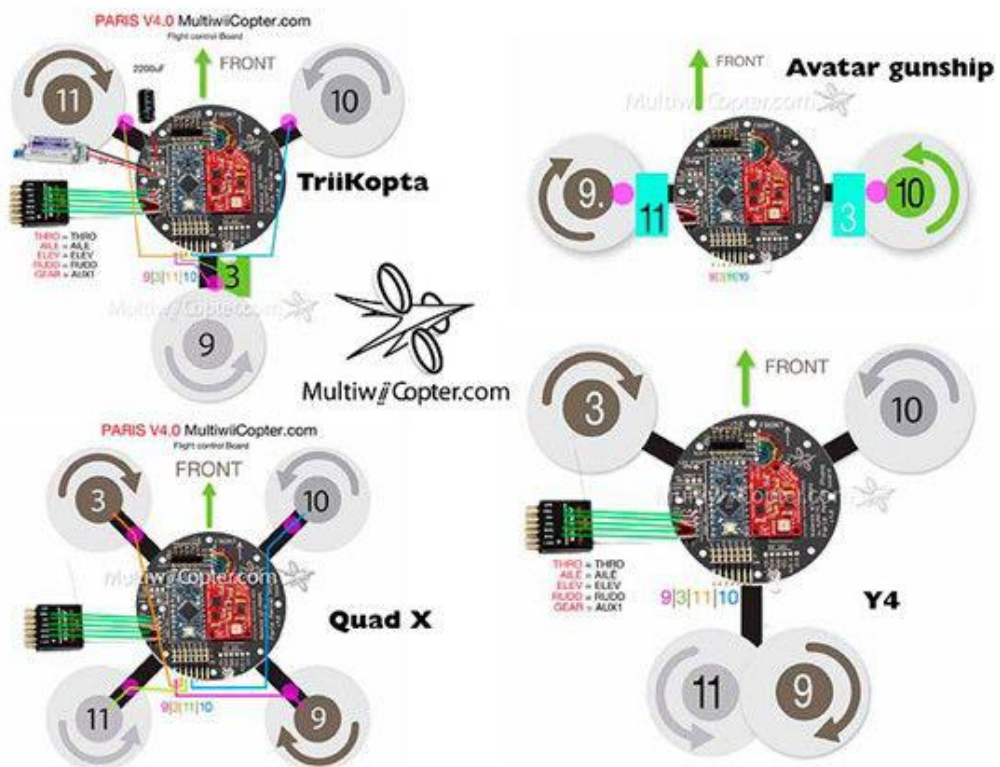
**Right-front motor, routing on anticlockwise, normal propeller(with out R) connect to D10**

**Left-back motor, routing on anticlockwise, normal propeller(with out R) connect to D11**

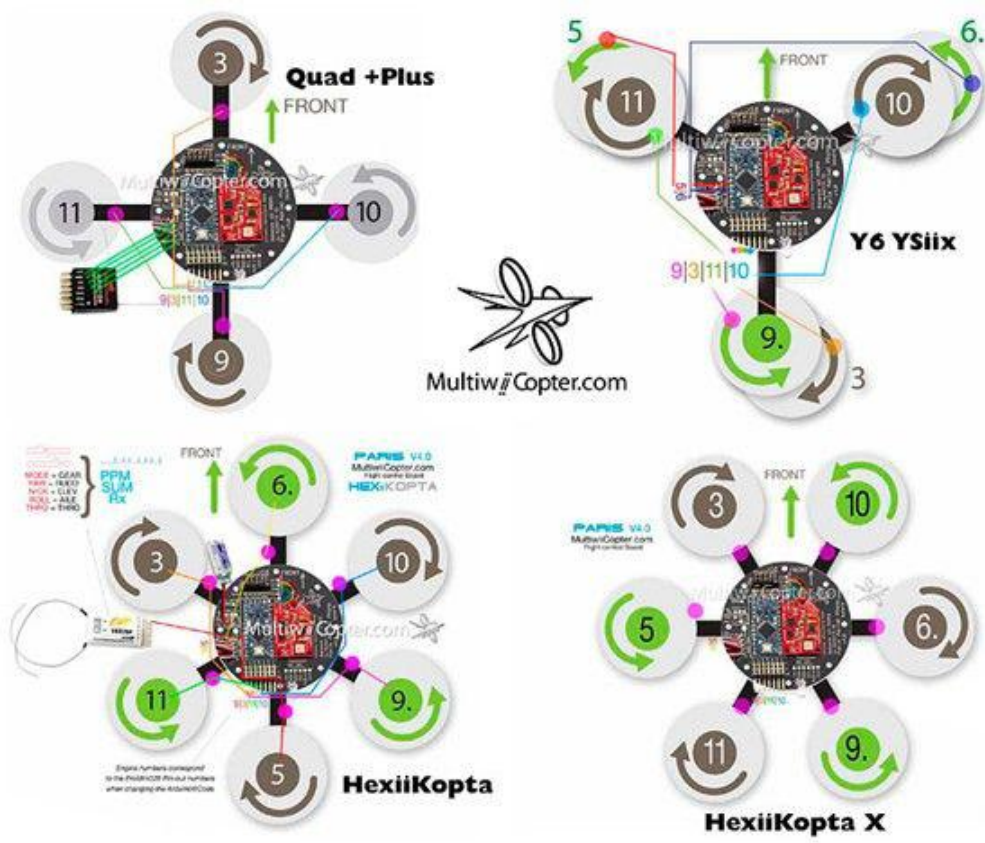
**Right-back motor, routing on clockwise, reverse propeller(1045R etc.) connect to D9**



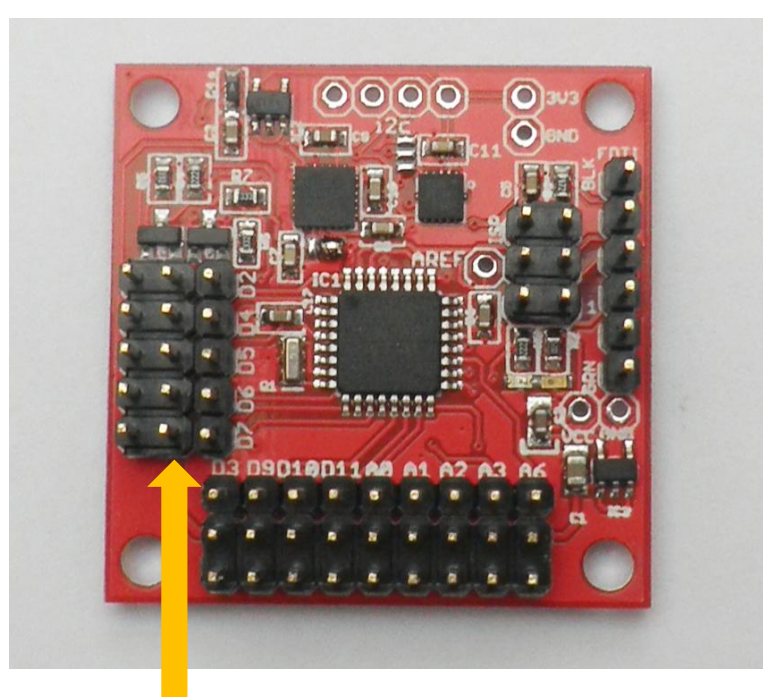
please check the following pictures as reference for other modes







## 2.Connections of flying control board and your receiver



**Connect your receiver to flying control board with Dupont wire showing with the orange arrow**

**D2: Throttle channel of your receiver(channel 3)**

**D4: Aileron(routing) channel of your receiver(channel 1)**

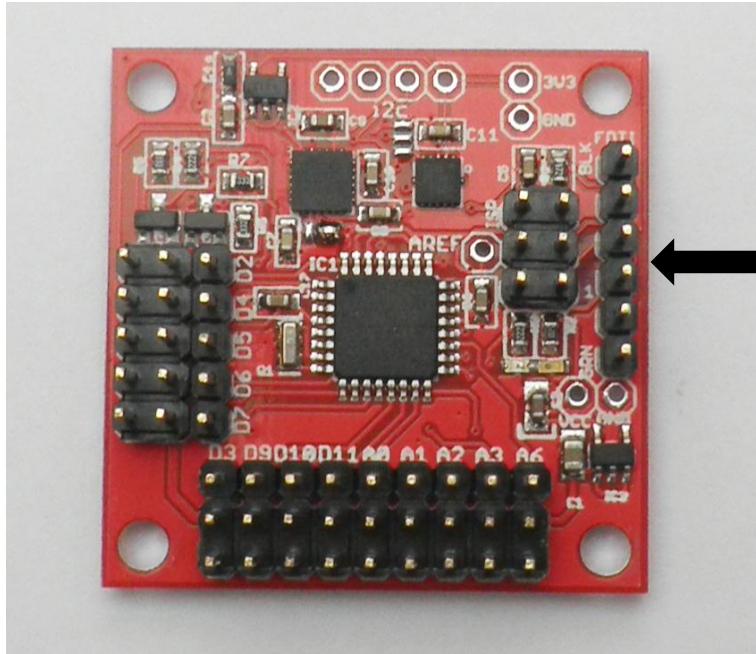
**D5: Elevator(pitch) channel of your receiver(channel 2)**

**D6: Rudder channel of your receiver(channel 4)**

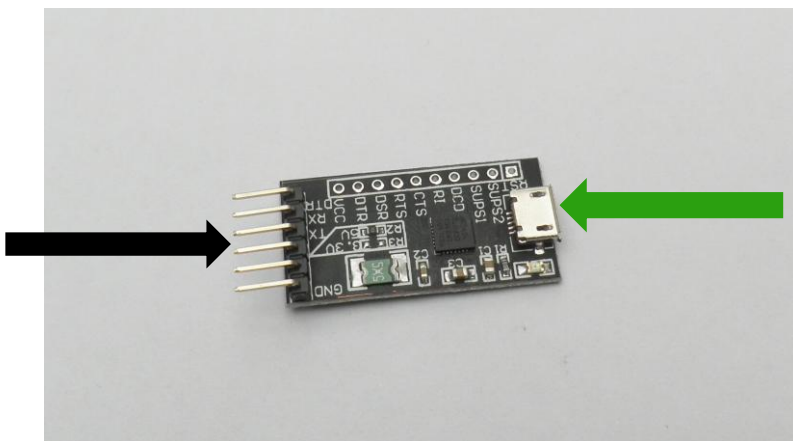
**D7:AUX channel, for custom the mode of flying control board, for example: altitude control with air pressure, autostable on/off.**

**Note:Channel no. could be different in different vender of receivers, please check manual of your receive.**

**3.Connections of USB-RS232 card to flying control board**



Use 6P Dupont wire connect the USB config card to the black area(showing with black arrow) of your flying control board (please check the mark on the config card and flying control board, never connect inversed)



Connect config card to your computer with usb-mini usb cable

## Section 2: burning firmware of the flying control board

1.Connect your flying control board-config card to your computer

showing on section 1

2.Open the software



Download link of the software for firmware burning:

<http://arduino.googlecode.com/files/arduino-0022.zip>

The driver of usb config board is also in the package \drivers\cp210x

**Note: connect usb config card to your computer and then search for the driver.**

Download link of software for config and firmware:

<http://code.google.com/p/multiwii/downloads/list>

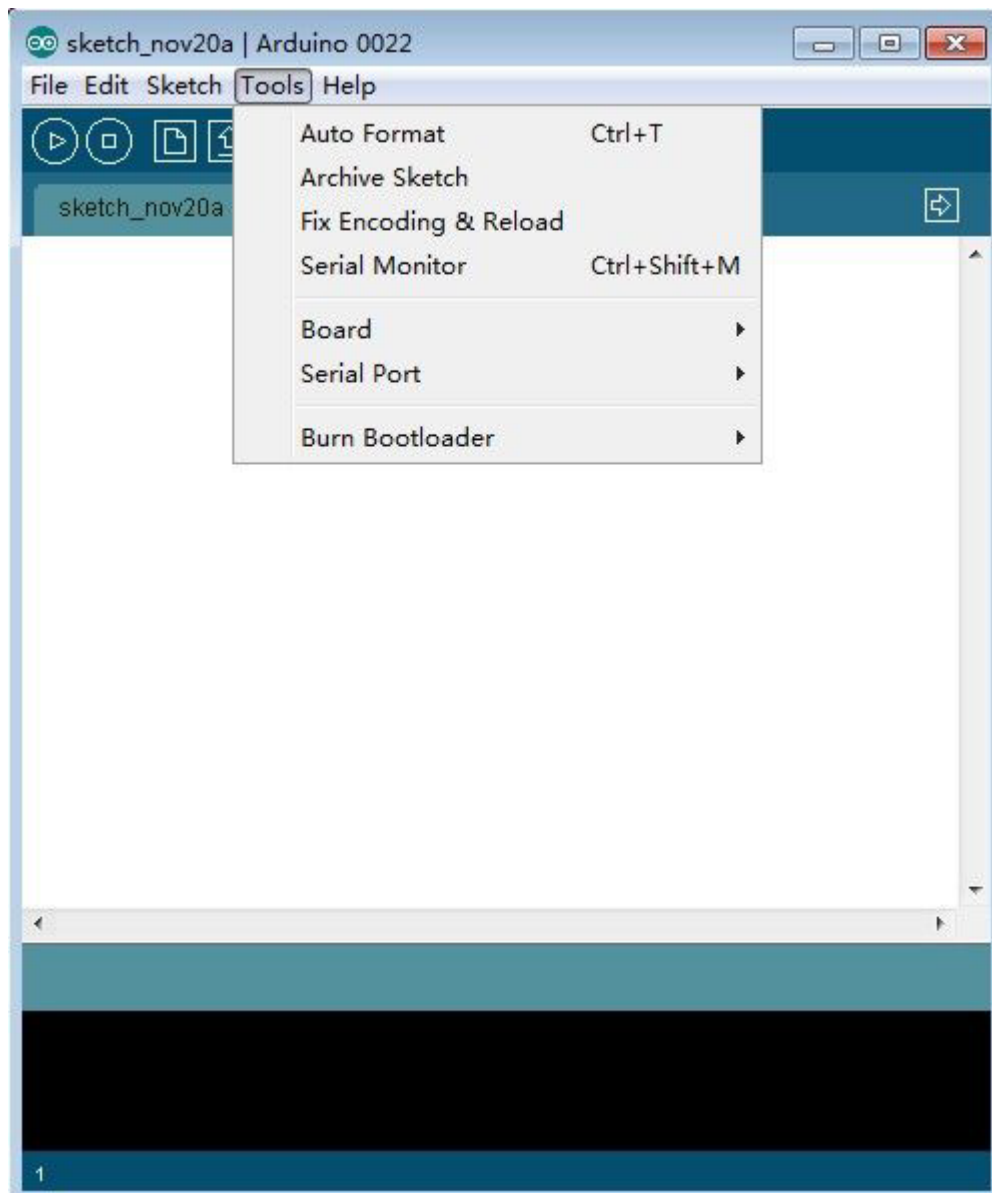
3.Burning firmware of your flying control board

Step 1:open your burning software

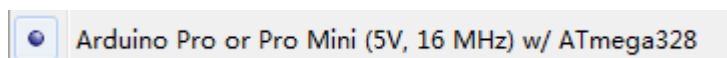


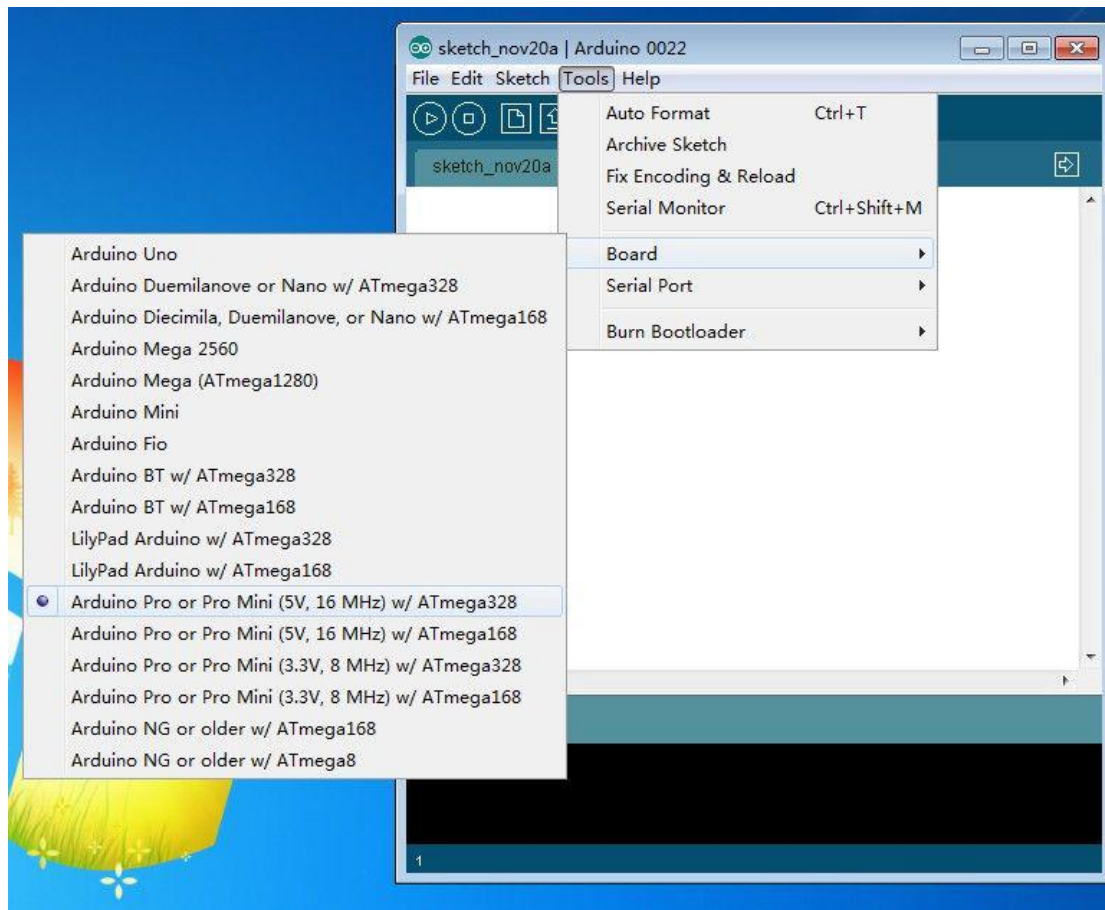


**Step 2: click Tools and select port no. of burning card and the mode of flying control board**

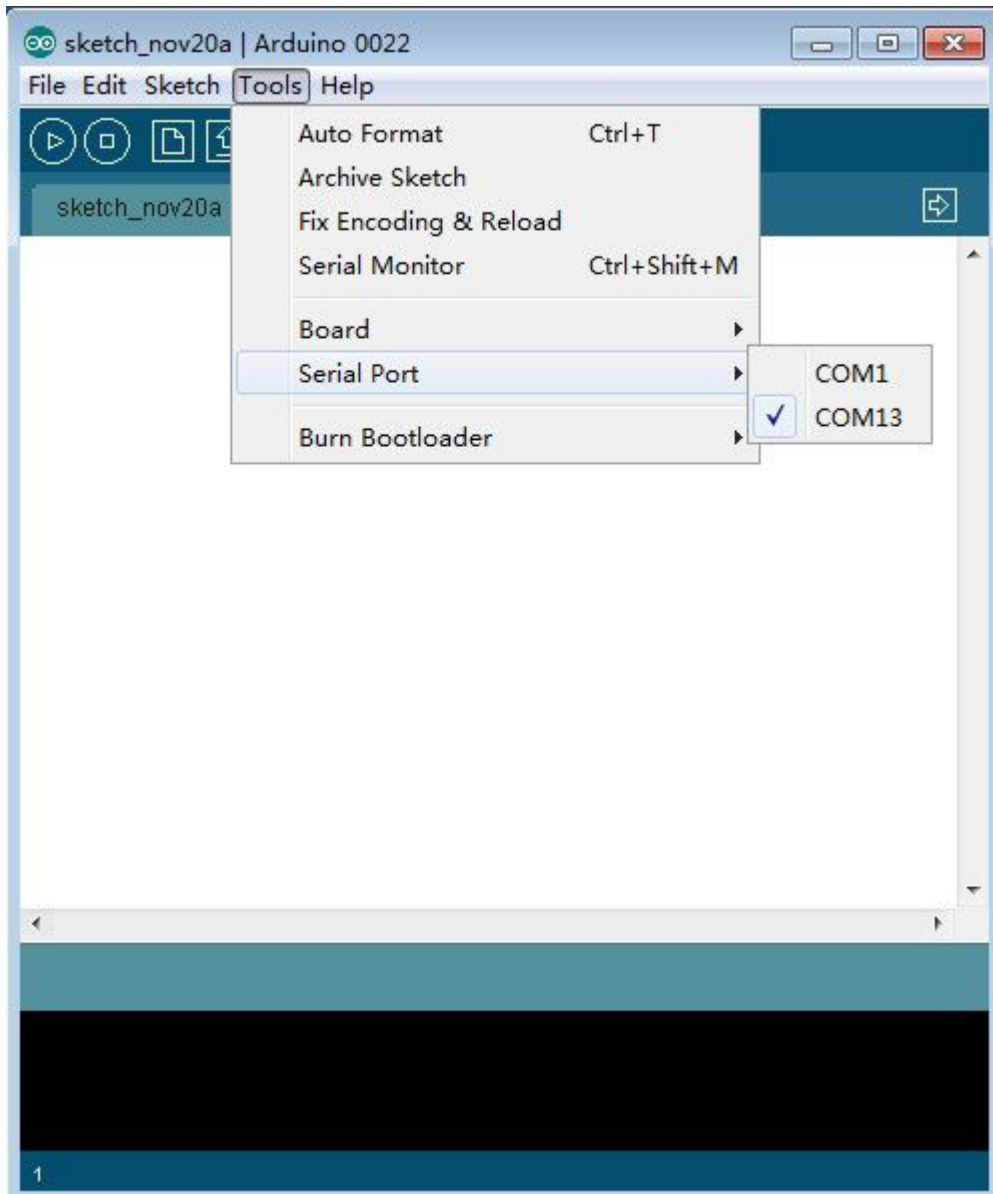


click Board to choose the type of your flying control **Board**

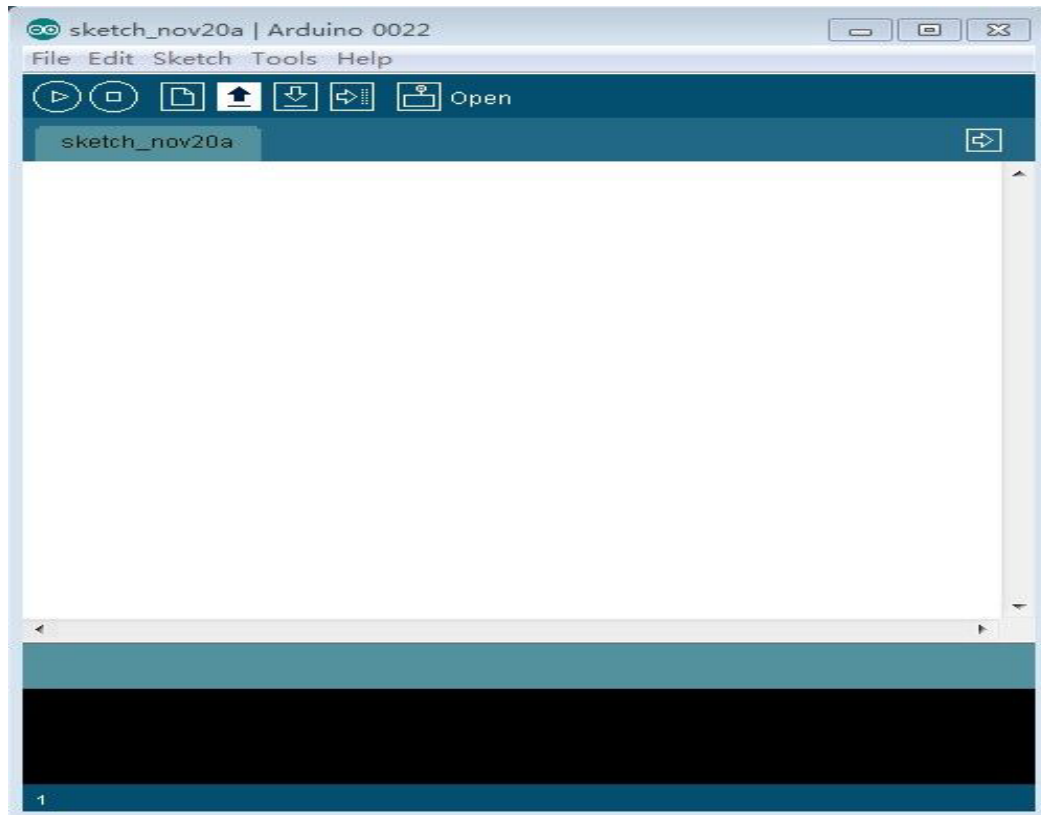




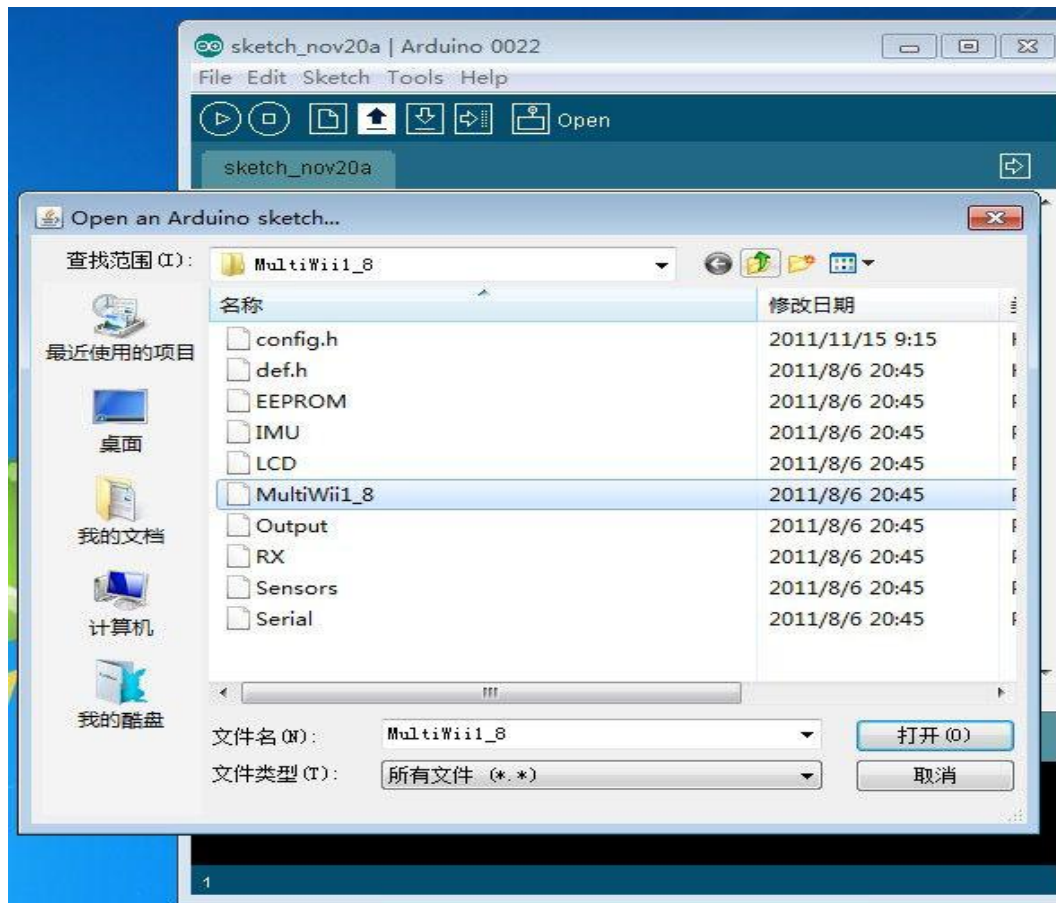
Click **Serial Port** to choose the port of config card(you can check and found it on your device manager)



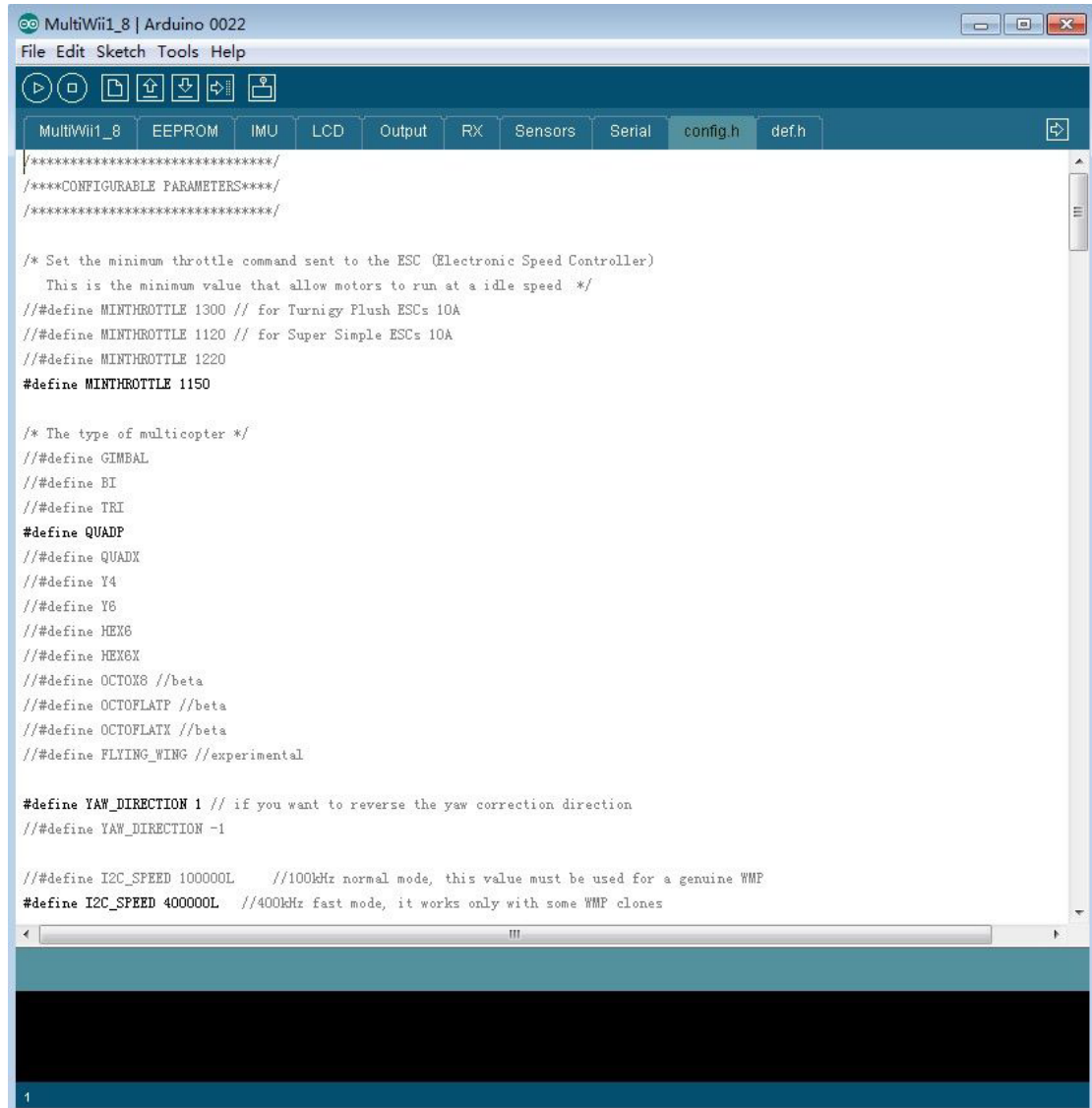
### Step 3: open firmware and modify







Click **config.h**



```
MultiWii_8 | Arduino 0022
File Edit Sketch Tools Help
MultiWii_8 EEPROM IMU LCD Output RX Sensors Serial config.h def.h

/*****
****CONFIGURABLE PARAMETERS****
*****/

/* Set the minimum throttle command sent to the ESC (Electronic Speed Controller)
   This is the minimum value that allow motors to run at a idle speed */
#define MINTHROTTLE 1300 // for Turnigy Plush ESCs 10A
#define MINTHROTTLE 1120 // for Super Simple ESCs 10A
#define MINTHROTTLE 1220
#define MINTHROTTLE 1150

/* The type of multicopter */
#define GIMBAL
#define BI
#define TRI
#define QUADP
#define QUADX
#define Y4
#define Y6
#define HEX6
#define HEX6X
#define OCTOX8 //beta
#define OCTOFLATP //beta
#define OCTOFLATX //beta
#define FLYING_WING //experimental

#define YAW_DIRECTION 1 // if you want to reverse the yaw correction direction
#define YAW_DIRECTION -1

#define I2C_SPEED 100000L //100kHz normal mode, this value must be used for a genuine WMP
#define I2C_SPEED 400000L //400kHz fast mode, it works only with some WMP clones
```

Choose your flying mode in this section (remove the // of the mode what you need)

```

/* The type of multicopter */
//#define GIMBAL 云台（独立自稳模式）
//#define BI 2轴阿凡达
//#define TRI Y3模式
#define QUADP 四轴十字模式
//#define QUADX 四轴X模式
//#define Y4 Y4模式
//#define Y6 Y6模式
//#define HEX6 H6模式
//#define HEX6X
//#define OCTOX8 //beta
//#define OCTOFLATP //beta
//#define OCTOFLATX //beta
//#define FLYING_WING //exp 固定翼模式

```

## Choose your sensors in this section( #define FREEIMUv035\_BMP // FreeIMU v0.3.5\_MS )

```

/* if you use a specific sensor board:
   please submit any correction to this list.
   Note from Alex: I only own some boards
   for other boards, I'm not sure, the info was gathered via rc forums, be cautious */
//#define FFIMUv1 // first 9DOF+baro board from Jussi, with HMC5843 <- confirmed by Alex
//#define FFIMUv2 // second version of 9DOF+baro board from Jussi, with HMC5883 <- confirmed by Alex
//#define FREEIMUv1 // v0.1 @ v0.2 @ v0.3 version of 9DOF board from Fabio
//#define FREEIMUv035 // FreeIMU v0.3.5 no baro
//#define FREEIMUv035_MS // FreeIMU v0.3.5_MS
#define FREEIMUv035_BMP // FreeIMU v0.3.5_MS
//#define PIPO // 9DOF board from erazz
//#define QUADRINO // full FC board 9DOF+baro board from witespy <- confirmed by Alex
//#define ALLINONE // full FC board or standalone 9DOF+baro board from CSG_EU
//#define AEROQUADSHIELDv2
//#define ATAVRSBIN1 // Atmel 9DOF (Contribution by EOSBandi). The board requires 3.3V power.

```

## You can choose any sensor what you need and set it on/off

```
//if you use independent sensors
//leave it commented if you already checked a specific board above
/* I2C gyroscope */
//#define ITG3200
//#define L3G4200D

/* I2C accelerometer */
//#define ADXL345
//#define BMA020
//#define BMA180
//#define NUNCHACK // if you want to use the nunchuk as a standalone I2C ACC without WMP
//#define LIS3LV02

/* I2C barometer */
//#define BMP085
//#define MS561101BA //non tested

/* I2C magnetometer */
//#define HMC5843
//#define HMC5883
//#define AK8975
```

**Sensors we choosed here are:**

**Gyro: ITG3200(3205)**

**Accelerometer: BMA180**

**Click the white button(upload) showing on the picture and burn your firmware, the red LED will flash 3 times when it's done.**



```
Uploading to I/O Board...  
Binary sketch size: 20198 bytes (of a 30720 byte maximum)  
78
```

```
Done uploading.  
Binary sketch size: 20198 bytes (of a 30720 byte maximum)  
78
```

### Section 3: config your flying control board

1. Connect your flying control board-config card to your computer showing on section 1.

2. open the config software:



Download link of config software:

<http://code.google.com/p/multiwii/downloads/list>

Here we have MultiWii\_1.9 as example, we can see 2 folders when we open it

MultiWii\_1\_9(**firmware**) and MultiWiiConf\_1\_9(**config software**)

Open MultiWiiConf\_1\_9/application.windows/MultiWiiConf\_1\_9

Please install java plugins first if needed

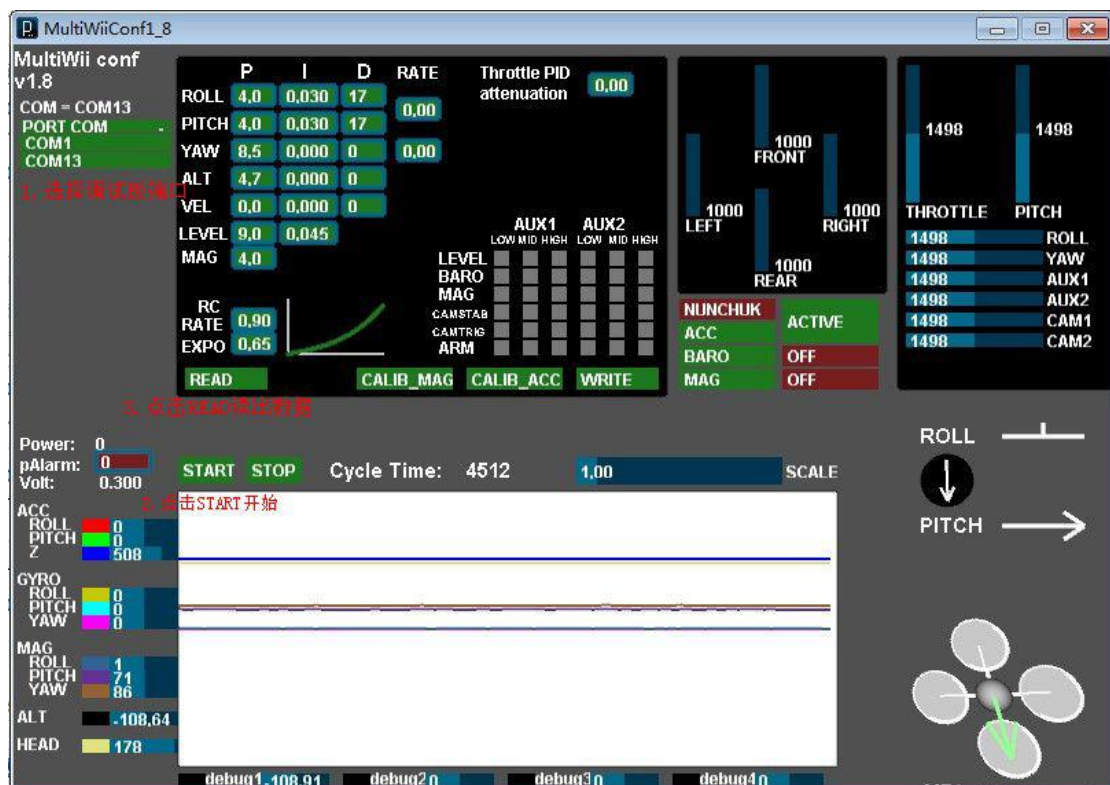


You can download it here:

[http://www.java.com/zh\\_CN/download/windows\\_ie.jsp?locale=zh\\_CN](http://www.java.com/zh_CN/download/windows_ie.jsp?locale=zh_CN)

N

3.You can see this window:



(1)Choose port of config board

(2)Click**START**, curve should shown on the blank form and it should be changed when you shake the flying control board

(3)Click **READ** to read the configuration of your flying control board



As the MWC flying control board has gyro and accelerometer, you can see the data of ACC and GRYO.

You can see the flying mode of current firmware on the right of this window.

4.first of all, check the direction of controls of your transmitter and config the travel.



- (1) Throttle up(state bar of throttle up) throttle down(state bar of throttle down)
- (2) Elevator up(state bar of pitch up) elevator down(state bar of pitch down)
- (3) Aileron left(state bar of Roll left) aileron right(state bar of Roll right)
- (4) Rudder left(state bar of YAW left) rudder right(state bar of YAW right)
- (5) Check your AUX switch if you connected AUX with your flying control board

**Please set the channel reverse if needed**

**Config the travel of your transmitter**

- (1) Center your controls and check GUI window to see if it is on 1500(+5)

(2)Down your controls and check GUI windows to see if it is on 1095(+5)

(3)Up your controls and check GUI windows to see if it is on 1905(+5)  
+ - 5)

**please config travel of your transimitter if it's not**

如果有些控，舵量无法同时满足最小小于 1100 和 最大大于 1900，那么请在主程序文件，如 multiwii\_1.8.pde 中修改 MINCHECK 和 MAXCHECK. 建议设置为：in some case you can not set the travel to 1100-1900,then you must modify MINCHECK and MAXCHECK on the file multiwii\_1.8.pde

**suggestion:**

**#define MINCHECK 1120**

**#define MAXCHECK 1850**

```
MultiWii1_8 | Arduino 0022
File Edit Sketch Tools Help
MultiWii1_8 § EEPROM IMU LCD Output RX Sensors Serial
static uint32_t pMeter[PMOTOR_SUM + 1]; //we use [0:7] for eight motors, one
static uint8_t pMeterV; // dummy to satisfy the paramStruct
static uint32_t pAlarm; // we scale the eeprom value from [0
static uint8_t powerTrigger1 = 0; // trigger for alarm based on power

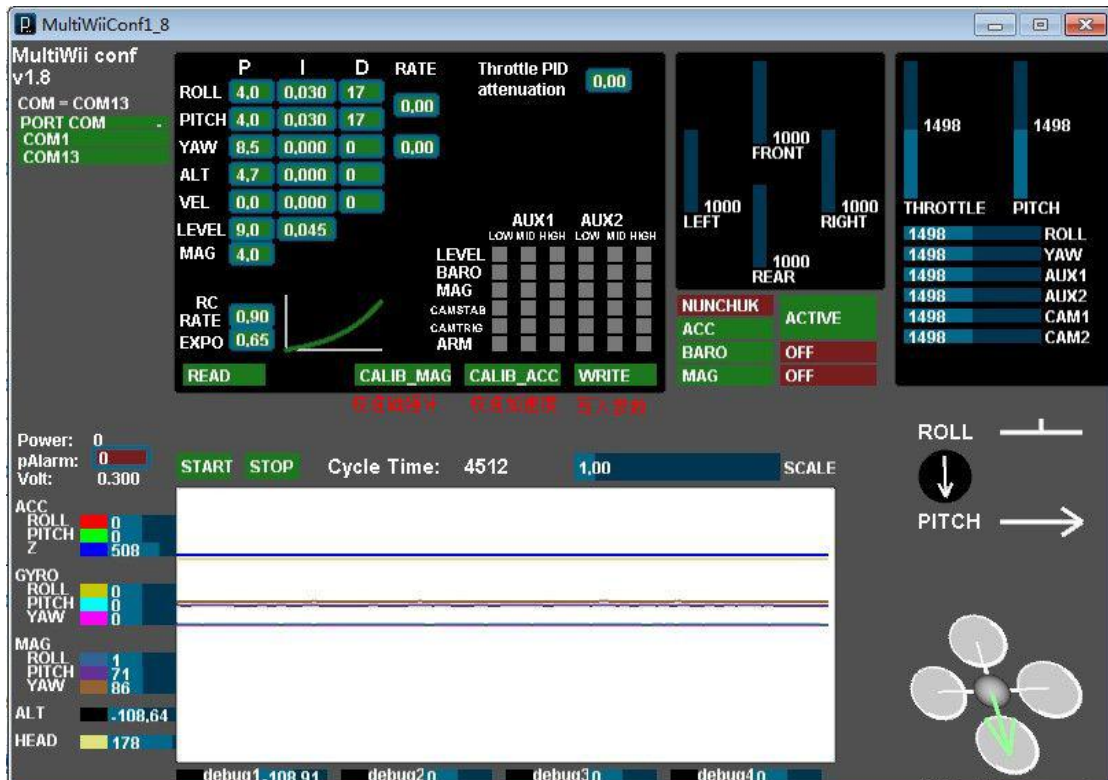
// *****
// telemetry
// *****
static uint8_t telemetry = 0;
static uint8_t telemetry_auto = 0;

// *****
// rc functions
// *****
#define MINCHECK 1120
#define MAXCHECK 1850

volatile int16_t failsafeCnt = 0;
```

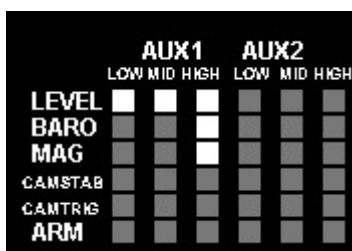
## 5. calibrate sensors





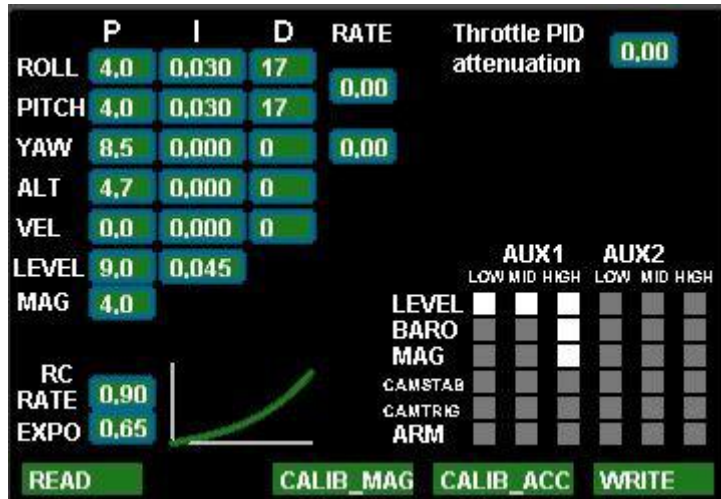
Celibrate each sensor you have(put your flying control board horizontal and click CALIB\_ACC CALIB\_MAG) after 10 seconds, it's done.

## 6.set AUX1



**LEVEL:** auto balance **BARO:** air pressure **MAG:** magnetometer **CAMSTA0:** camera auto stable **CAMTRIG:** shutter trigger **ARM:** lock/unlock

## 7.PID and others



(1) RC RATE: sensitivity of PITCH and roll

RC EXPO: EXP travel of PITCH and ROLL, you can set it on your transmitter or here.

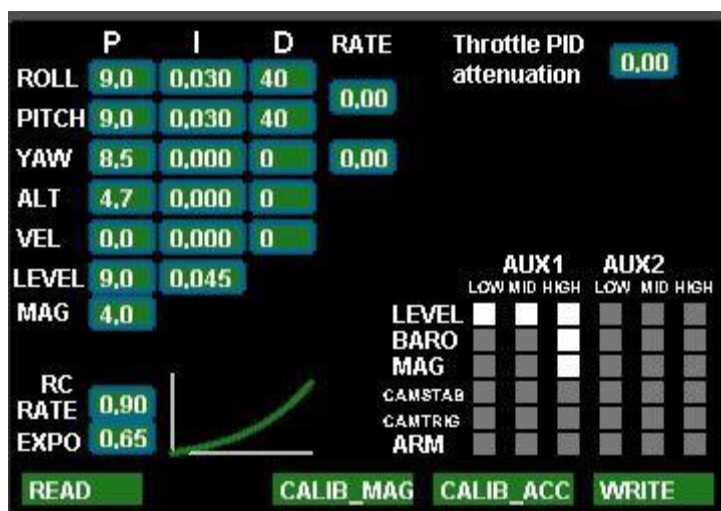
(2)RATE:sensitivity of controls

0.00 for beginner 0.40-0.70 for stunt flying 1.00 for loop  
default as 0.00

(3)Throttle PID: stable your flight when it is on climb with full throttle

default as 0.00

(4)PID



## Section 4: lock/unlock and sensors calibration

Put your flight on the floor horizontal, green LED on flying control board on, red LED flashing, please wait for the red LED off.

### Unlock the flying control board



Red LED always on, unlock successfully.

### Lock the flying control board



**Red LED off, lock successfully.**

### Calibrate GYRO





Red LED flashing, when red LED always on, GYRO calibrate successfully.

### Celibrate ACC



Red LED flashing, when red LED always on, ACC calibrate successfully.

### Config ACC



8.



9.



10.



11.



Red LED flashing when you config operation

Lock/unlock on 3 axis mode

Unlock

1.







Red LED always on, unlock successfully.

Lock



Red LED always off, lock successfully.

**Ok, enjoy it!**