The Drone Overview

Overview

- Arduino Introduction
- Drone PCB Overview
- Motor installation
- Blade and bump installation
- Arduino IDE software
- Coding for Drone
- Wireless Connection

Arduino Introduction

Platform

Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. It is like the brain of a project.

Because it is so flexible and open source, Arduino is the best solution if you are interested in creating interactive objects or environments no matter you are artists, designers or hobbyists.

THE DRONE FOR THE COMPEITION

PCB Overview

Power Supply

Main component，3.7V Li-Po Battery Module, Voltage Regulator and battery indicator.

System Board

ATmage 328p microcontroller（Arduino ProMini board）。LED indicator.

Sensor

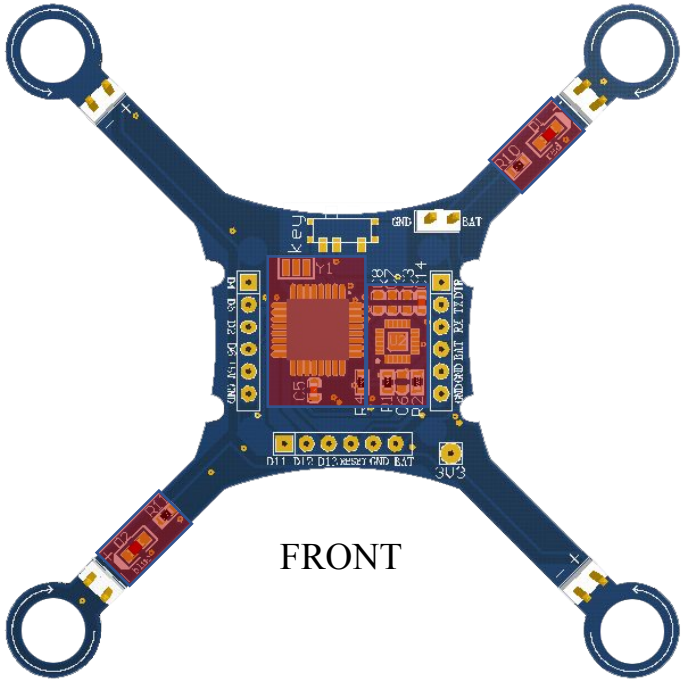
MPU6050 6-DOF accelerometer.

Motor Driver

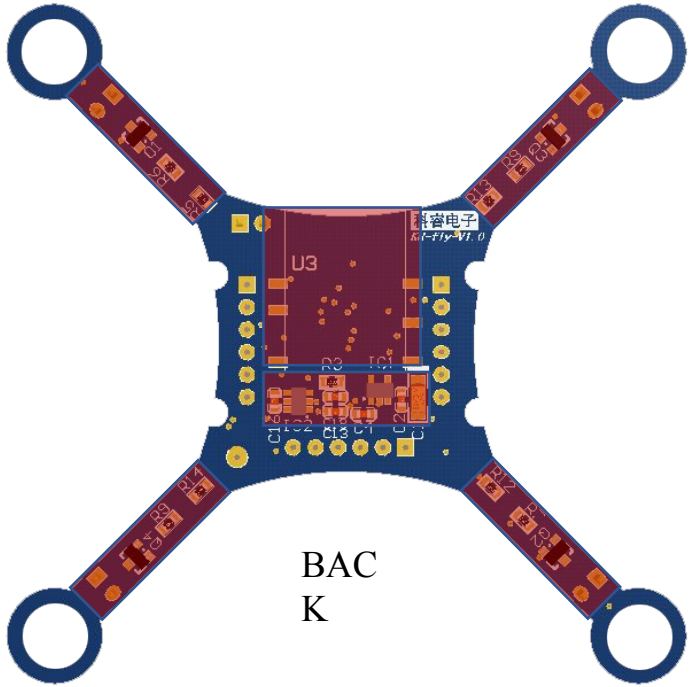
IRLML2502 N-Mos motor controller.

Bluetooth Module

Bluetooth 4.0 wireless module.



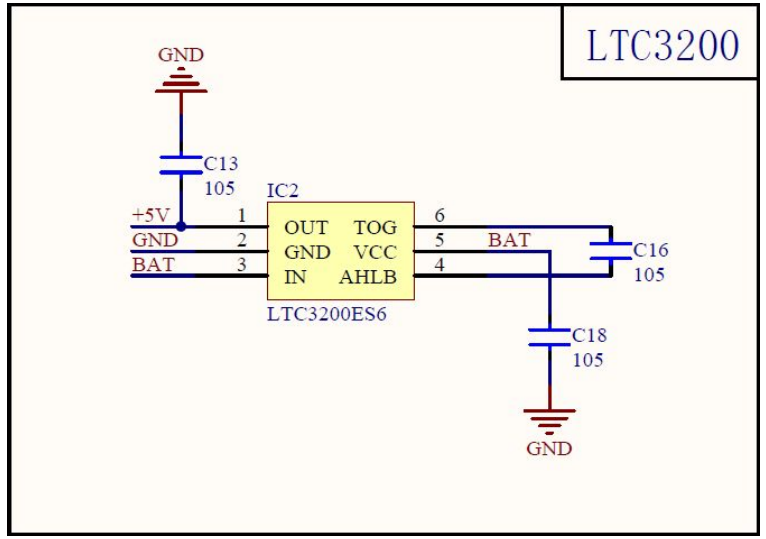
FRONT

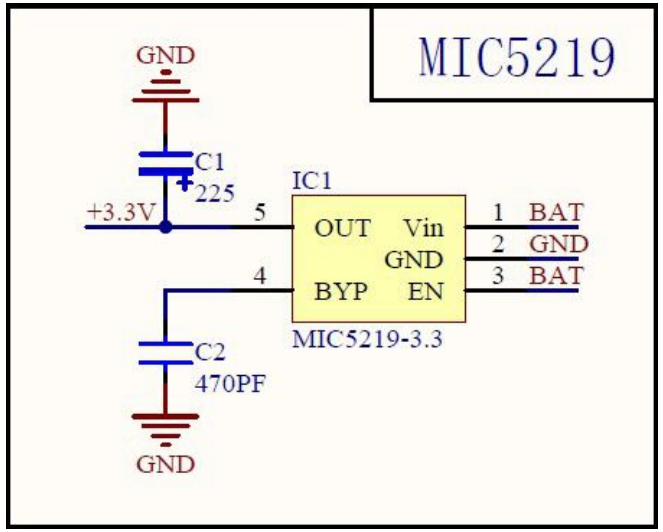


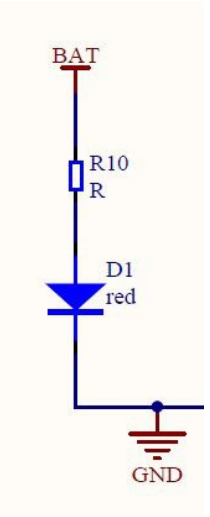
BAC
K

Power Chip

- **LTC3200：**Regulated Charge Pump DC/DC Converters, Input Voltage 2.7-4.5V，output voltage 5V，output currect 100mA.
- **MIC5219：** linear voltage regulator , Input Voltage 4.3-12V， output voltage 3.3V， output currect 500mA.
- **LED indicator：**red LED to indication the power source

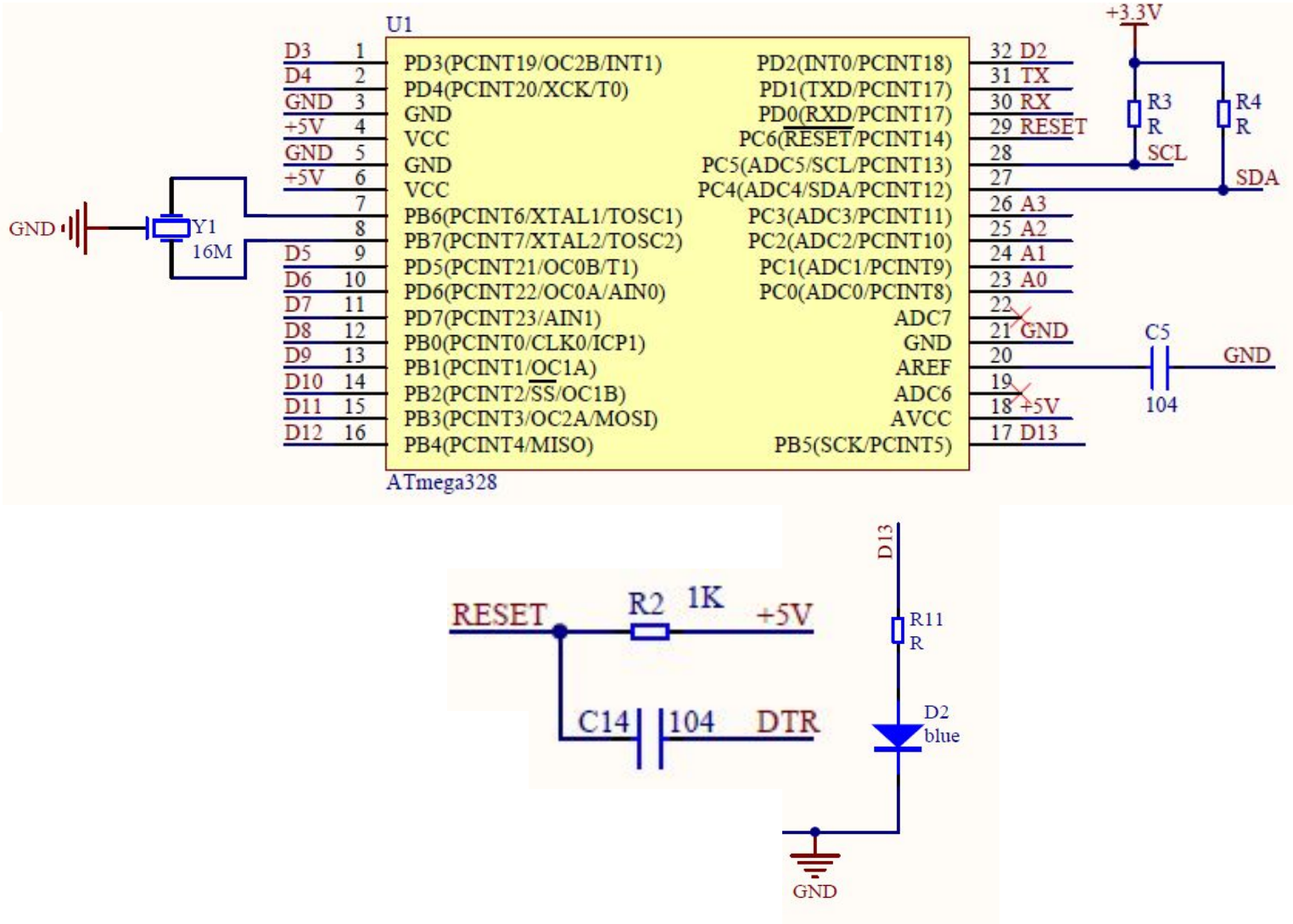






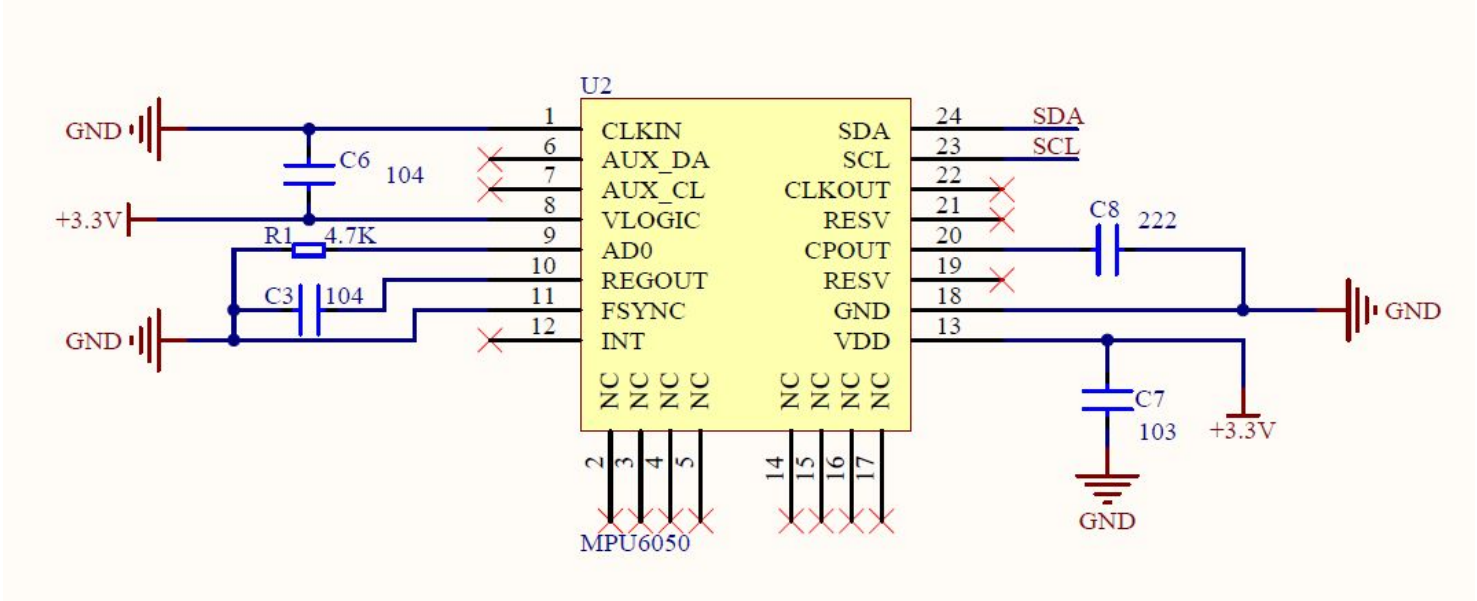
System Board

- **ATmega328:** high performance, low power 8 bit microcontroller
- **16M crystal oscillator**
- **LED:** Blue LED on pin 13.



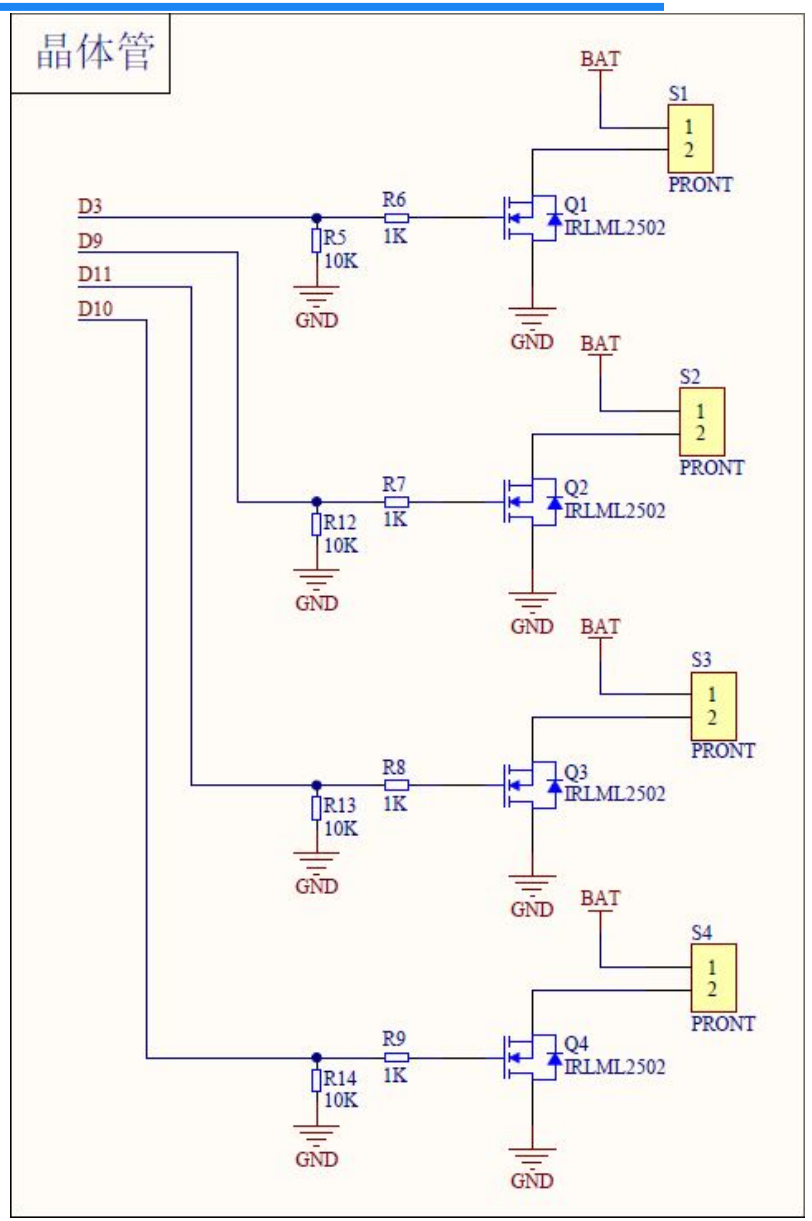
Accelerometer and Gyro

- **MPU6050:** The MPU-6050 is a serious little piece of motion processing tech! By combining a MEMS 3-axis gyroscope and a 3-axis accelerometer on the same silicon die together with an onboard Digital Motion Processor™ (DMP™) capable of processing complex 9-axis MotionFusion algorithms, the MPU-6050 does away with the cross-axis alignment problems that can creep up on discrete parts.

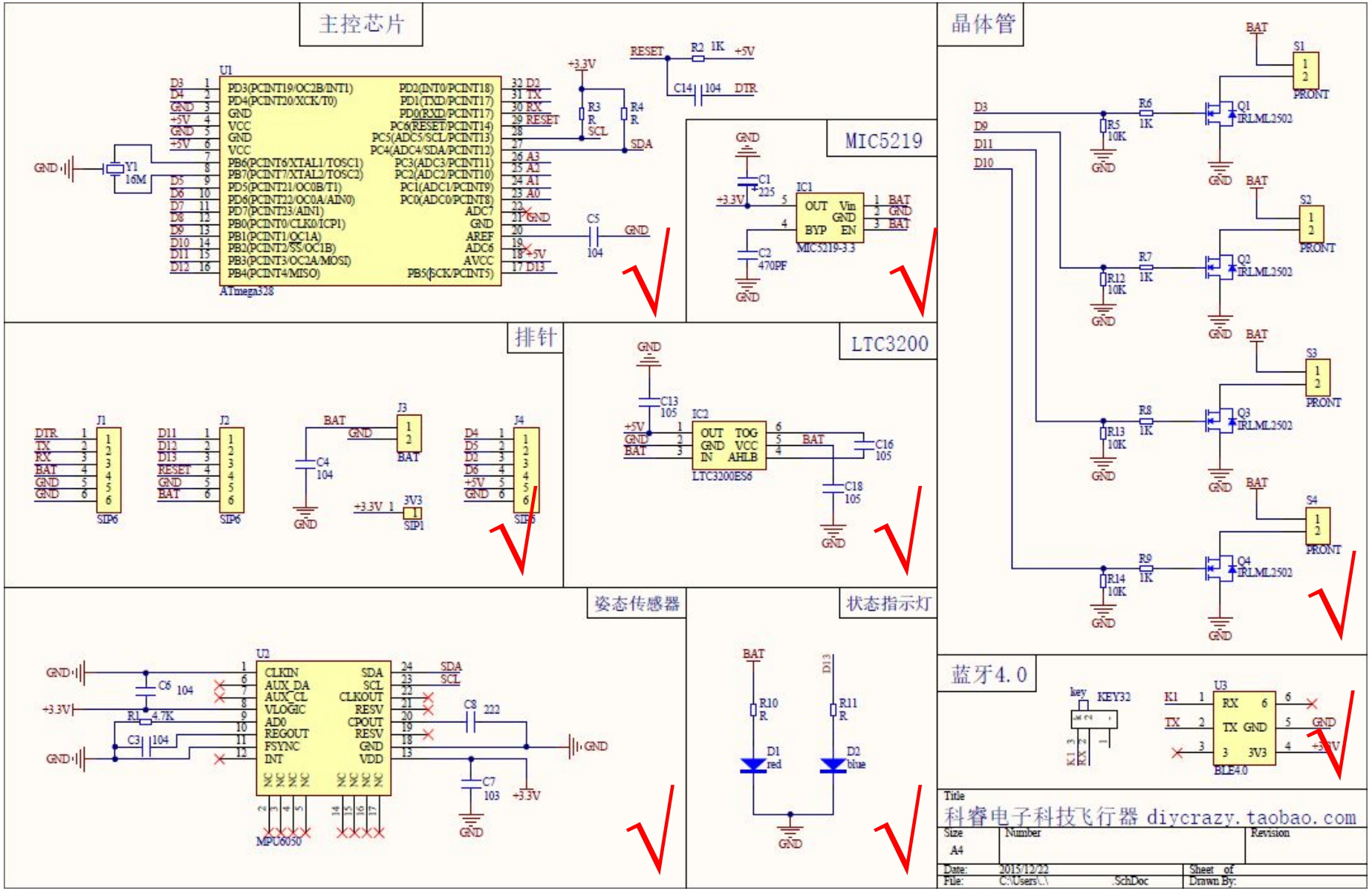


Motor Driver

- **IRLML2502 :** Mosfet as motor driver controller.

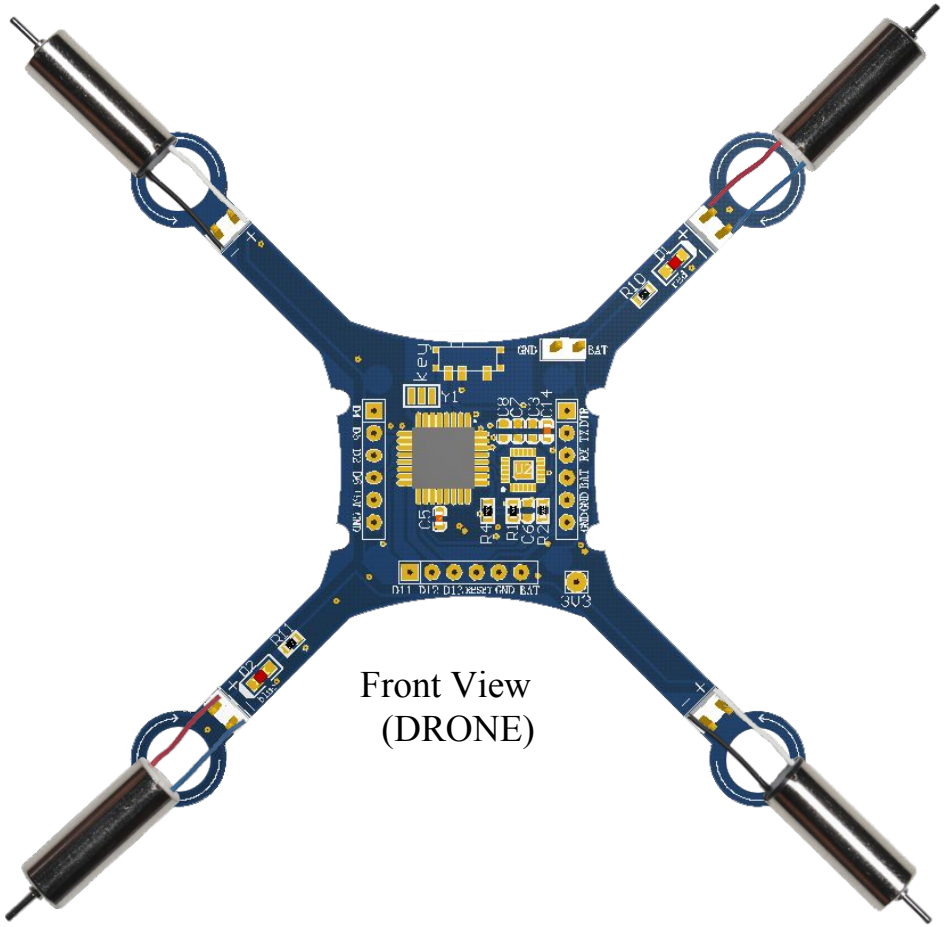


Diagram



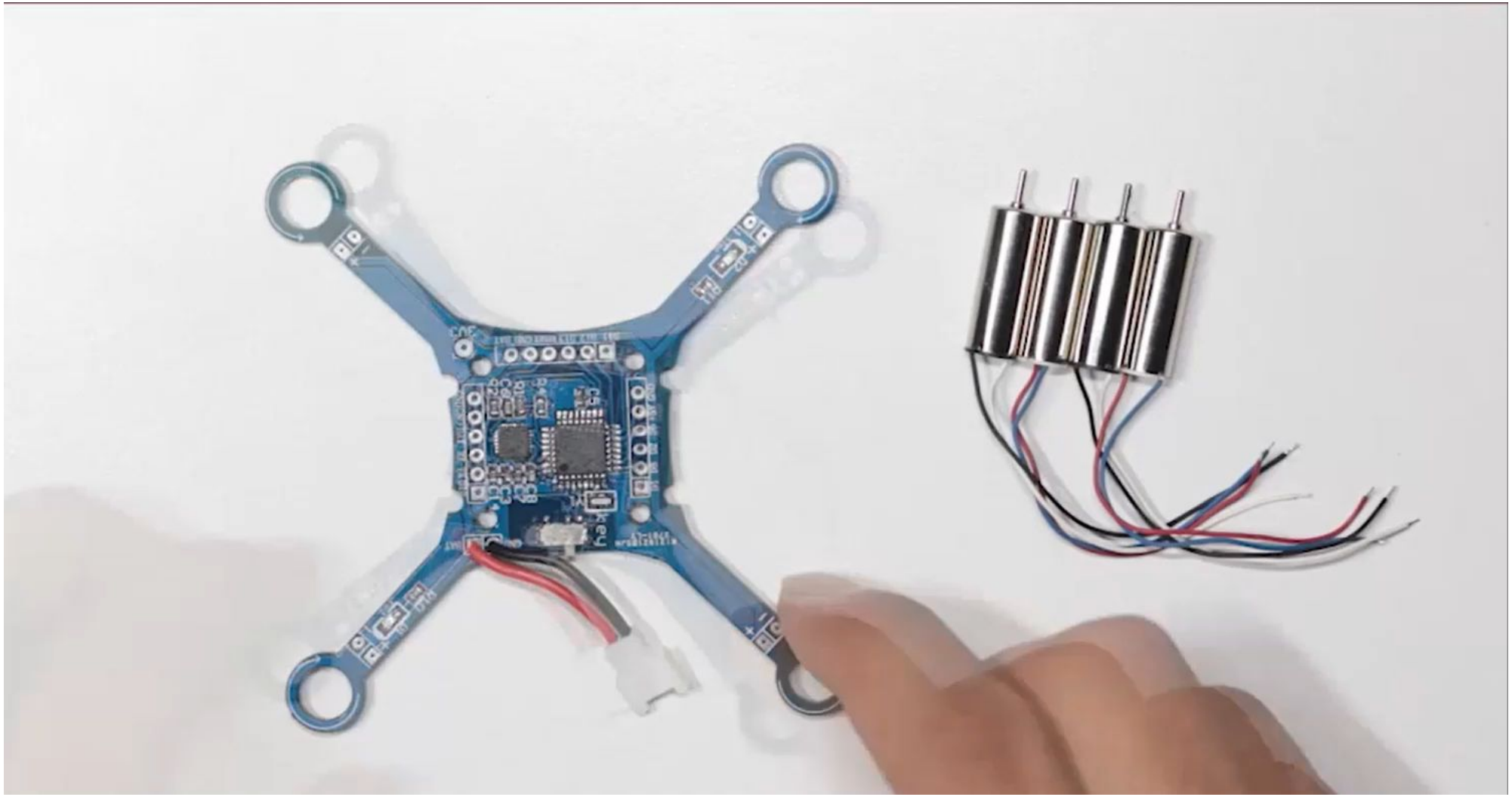
1. Power Chip
2. System Board
3. MPU6030
4. Motor Driver
5. Bluetooth 4.0
6. Pin Header

Motor Soldering and installation



Front View
(DRONE)

Motor Installation



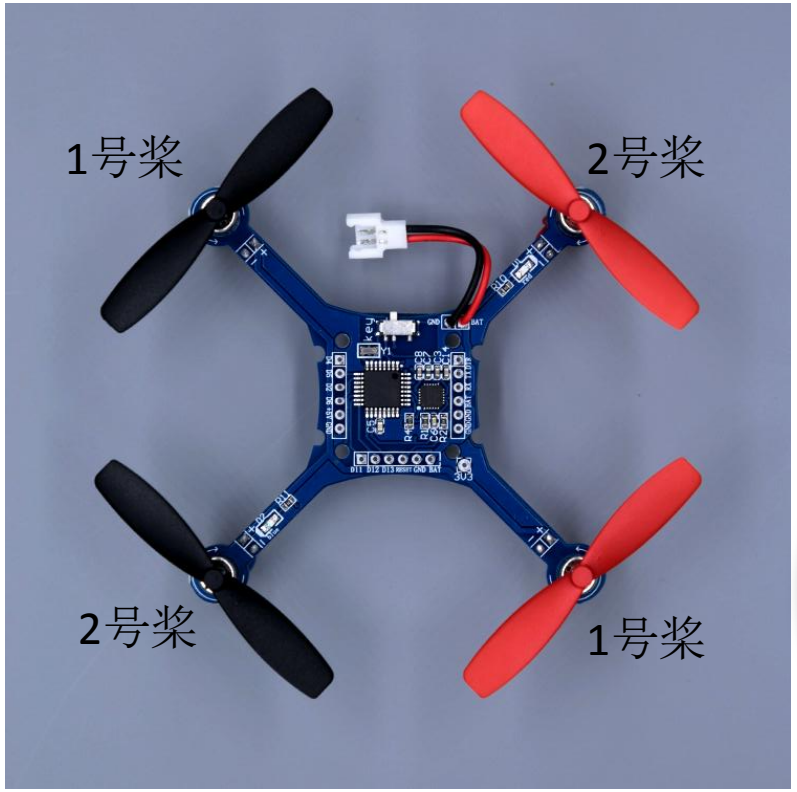
Blade and bump installtion

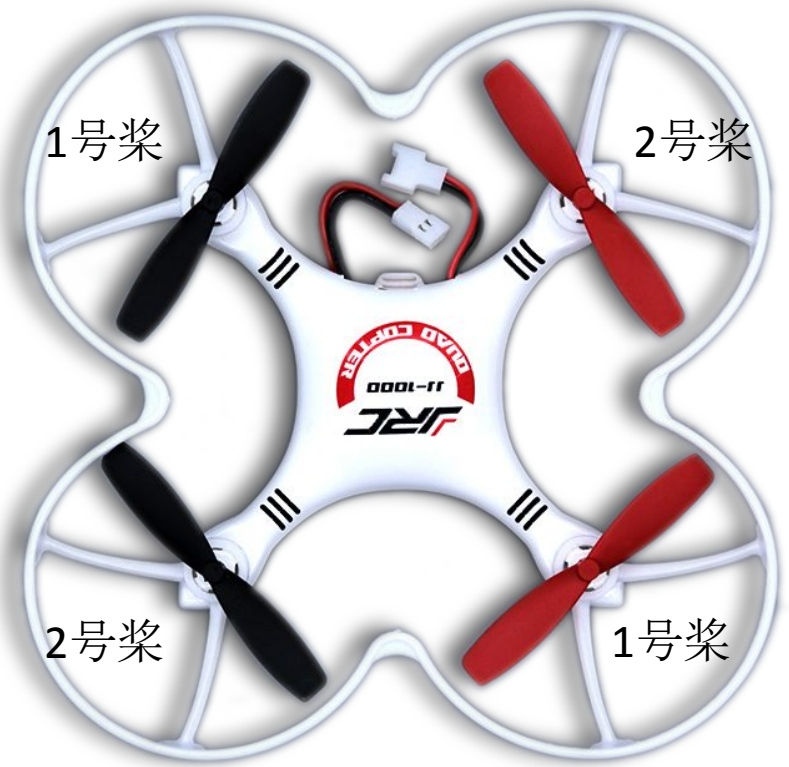
Casing Installtion

The Bluetooth and the battery connection are in the same direction. Close the case and screw it tightly

Blade Installation

red1号(blade lable 1) Motor 4
red2号(blade lable 2) Motor 1
black1号(blade lable 1) Motor 3
black2号(blade lable 2) Motor 2





Arduino IDE

Microsoft Store

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This product is installed.

Arduino IDE

Arduino LLC • Developer tools

★★★★☆ 180 Share

Arduino is an open-source electronics platform based on e
intended for anyone making interactive projects.

More

EVERYONE

Wish list

Overview System Requirements Reviews Re

Available on

PC

https://www.arduino.cc/en/Main/Software

bcitechcompetition

HOME STORE SOFTWARE EDU RESOURCES COMMUNITY HELP

Download the Arduino IDE

ARDUINO 1.8.9

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.
This software can be used with any Arduino board.
Refer to the Getting Started page for Installation instructions.

Windows Installer, for Windows XP and up
Windows ZIP file for non admin install

Windows app Requires Win 8.1 or 10
Get

Mac OS X 10.8 Mountain Lion or newer

Linux 32 bits
Linux 64 bits
Linux ARM 32 bits
Linux ARM 64 bits

Release Notes
Source Code
Checksums (sha512)

HOURLY BUILDS

Download a **preview of the incoming release** with the most updated features and bugfixes.

Windows

BETA BUILDS

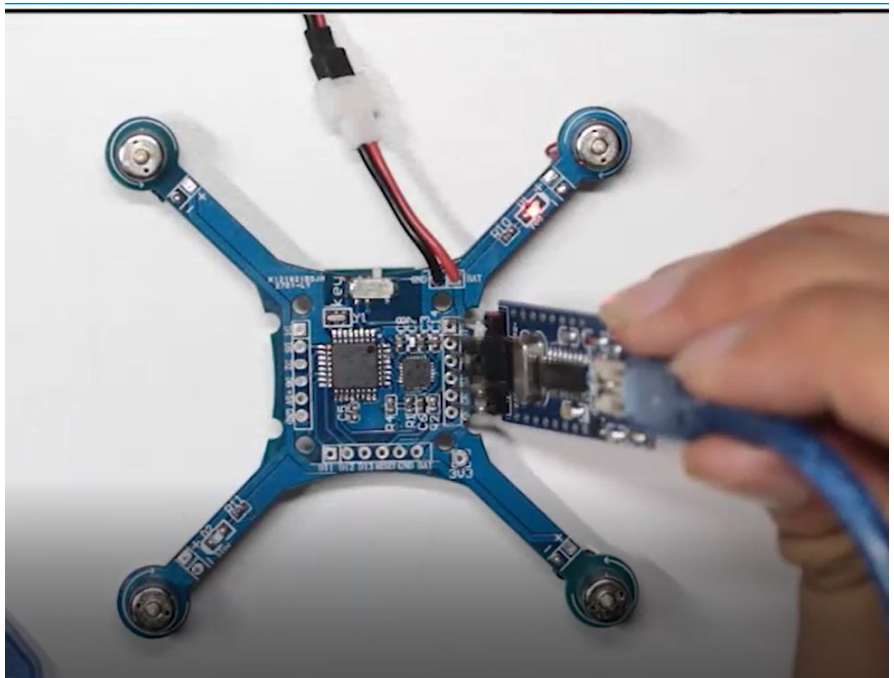
Download the **Beta Version** of the Arduino IDE with experimental features. This version should NOT be used in production.

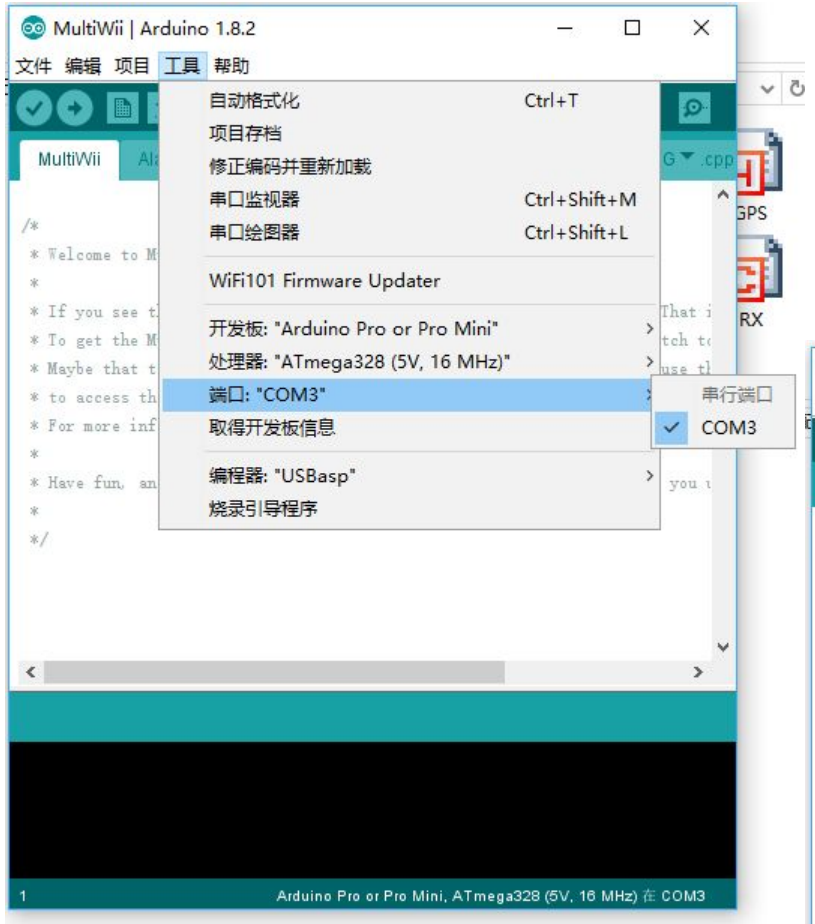
Windows
Mac OX (Mac OSX Mountain Lion or later)

Arduino IDE

Coding upload

1. Connect the UART to the PC and check the COM port.
2. Load the Arduino IDE software
3. Choose the correct board where for the drone is Arduino Pro or Pro Mini,ATmega328(5V,16Mhz), and the correct COM port.
4. Click on the upload button to load the code



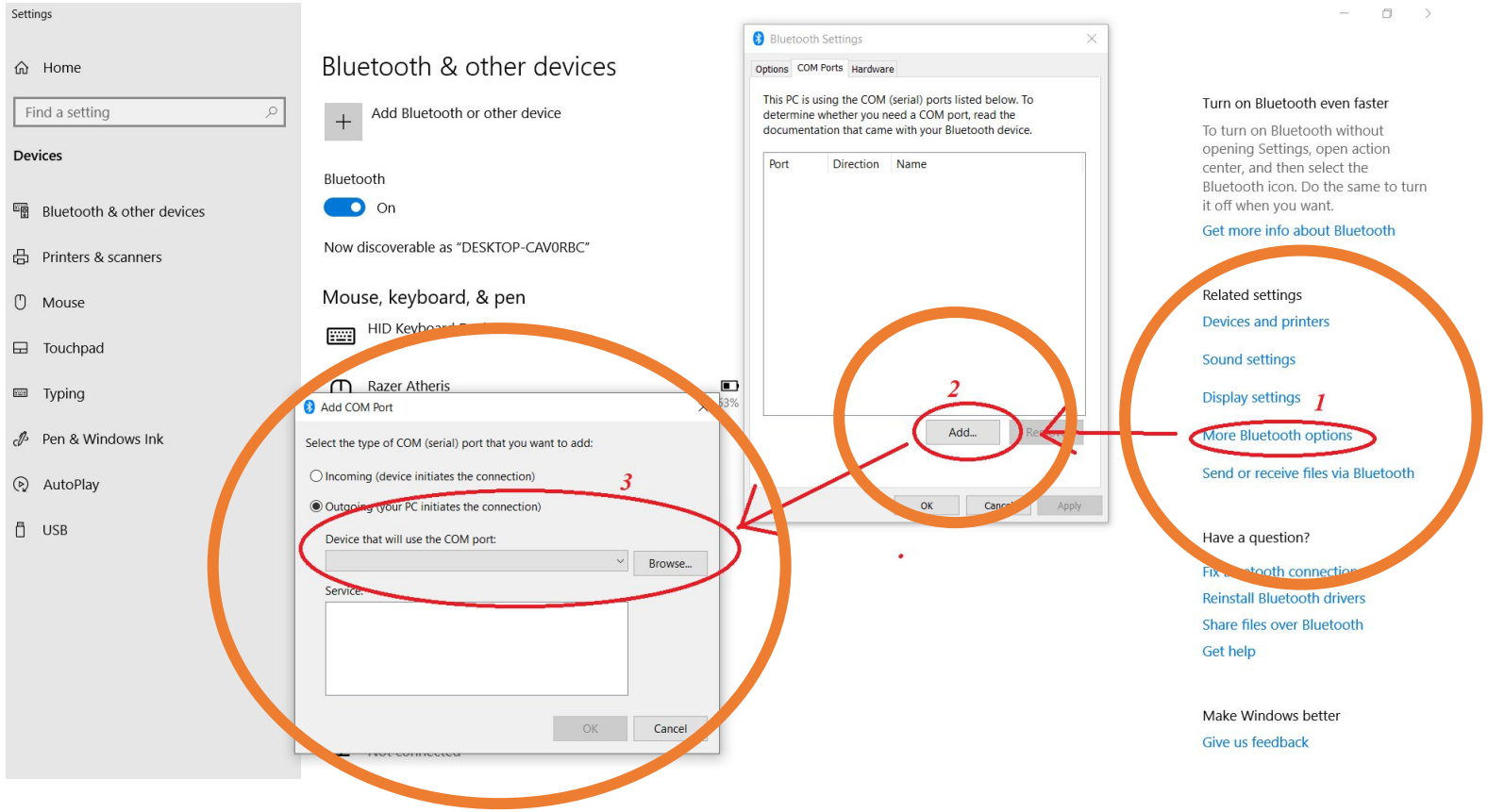


MultiWii Coding or Self Coding

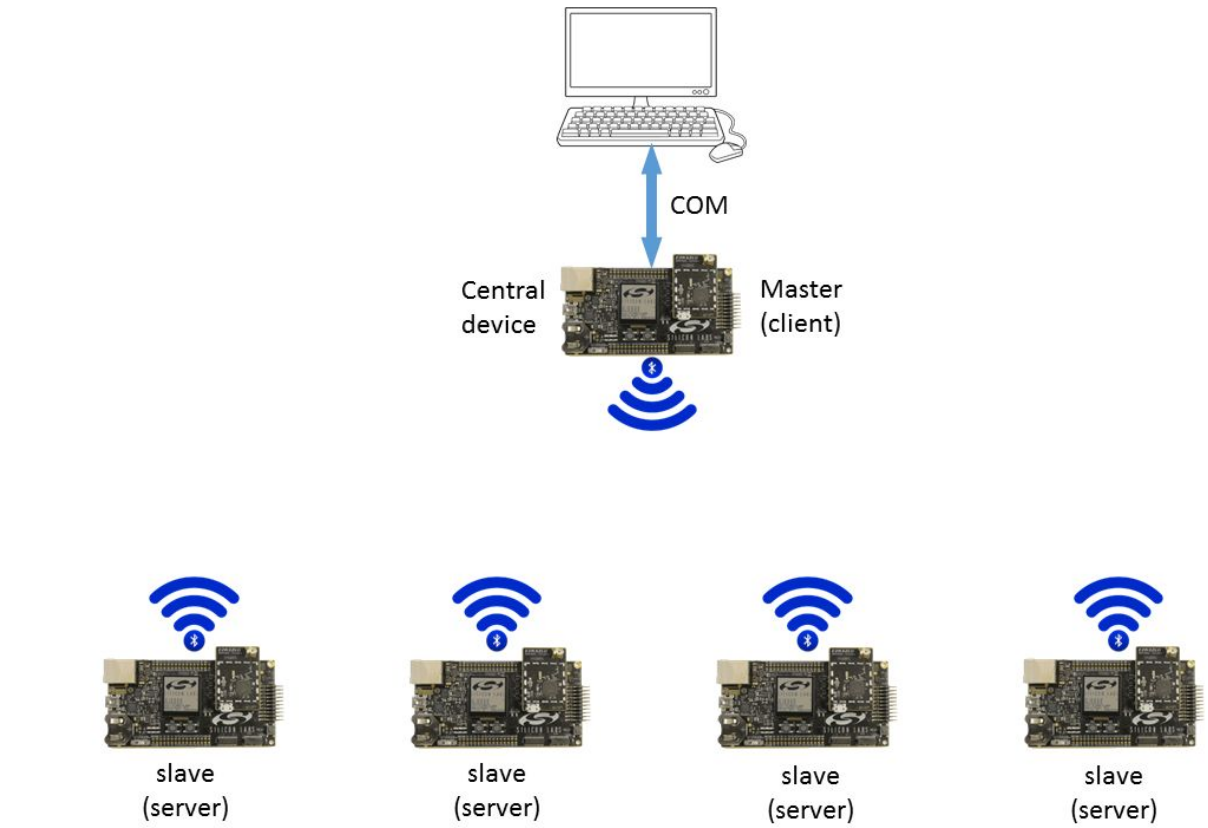
- The MultiWii Copter is historically based on a Wii Motion Plus extension and an Arduino pro mini board. From a very simple, cheap, minimalist flight controller the project has now matured and support all expected feature which including GPS navigation.

- Self Coding using Arduino IDE C-Programming

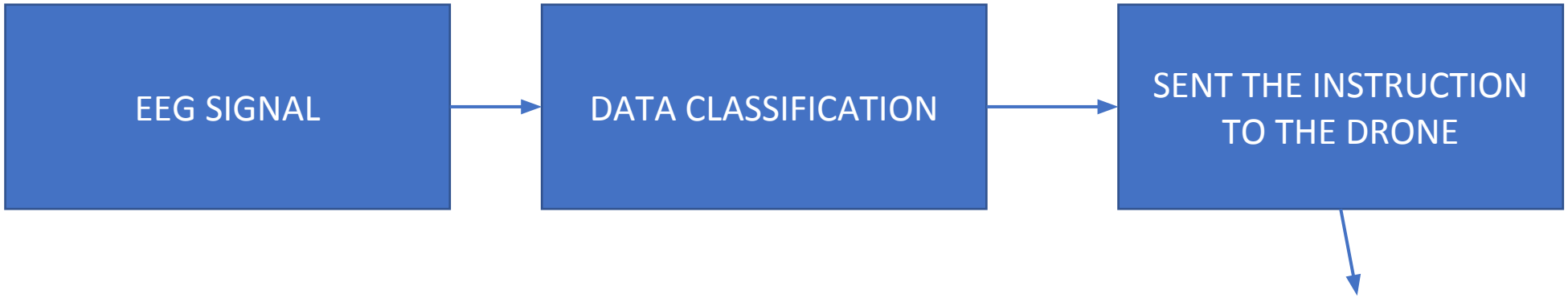
Bluetooth Connection (Direct PC)

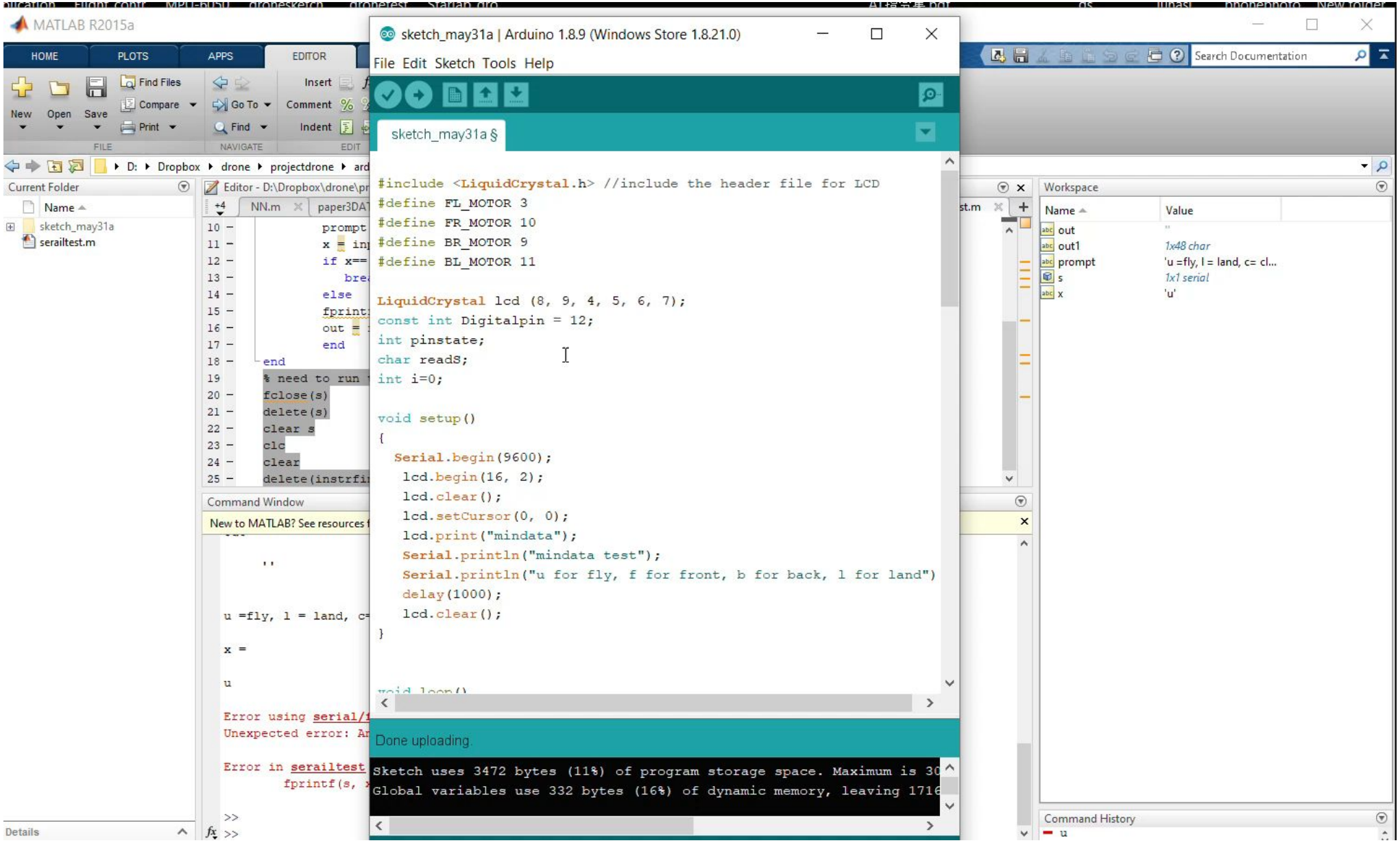


Bluetooth External (AT CMD)



OVERVIEW HOW THE DRONE WORK




MATLAB R2015a
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Go To
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Insert
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D: ▸ Dropbox ▸ drone ▸ projectdrone
Current Folder
Name
sketch_may31a
serailtest.m
Editor - D:\Dropbox\drone\pr
NN.m
paper3DA
prompt
x = inp
if x==
bre
else
fprint
out =
end
end
% need to run
fclose(s)
delete(s)
clear s
clc
clear
delete(instrfi
Command Window
New to MATLAB? See resources
u =fly, l = land, c=
x =
u
Error using serial/
Unexpected error: Ar
Error in serailtest
fprintf(s, x
>>
Details
Workspace
Name
Value
out
out1
1x48 char
prompt
'u =fly, l = land, c= cl...
s
1x1 serial
x
'u'
Command History
u
sketch_may31a | Arduino 1.8.9 (Windows Store 1.8.21.0)
File Edit Sketch Tools Help
sketch_may31a §
#include <LiquidCrystal.h> //include the header file for LCD
#define FL_MOTOR 3
#define FR_MOTOR 10
#define BR_MOTOR 9
#define BL_MOTOR 11
LiquidCrystal lcd (8, 9, 4, 5, 6, 7);
const int Digitalpin = 12;
int pinstate;
char readS;
int i=0;
void setup()
{
Serial.begin(9600);
lcd.begin(16, 2);
lcd.clear();
lcd.setCursor(0, 0);
lcd.print("mindata");
Serial.println("mindata test");
Serial.println("u for fly, f for front, b for back, l for land")
delay(1000);
lcd.clear();
}
Done uploading.
Sketch uses 3472 bytes (11%) of program storage space. Maximum is 30
Global variables use 332 bytes (16%) of dynamic memory, leaving 1716