

AUTODESK
Instructables

How to Make a Drone Using Arduino UNO | Make a Quadcopter Using Microcontroller

By [Indian DIYers](#) in [CircuitsArduino](#)



Introduction: How to Make a Drone Using Arduino UNO | Make a Quadcopter Using Microcontroller

Introduction

[Visit My Youtube Channel](#)

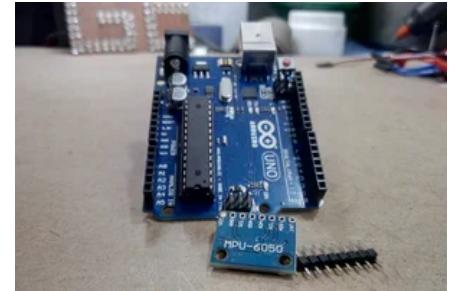
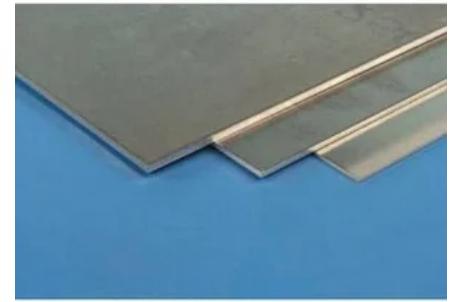
A Drone is a very expensive gadget(product) to buy. In this post I am going to discuss, how I make it at cheap?? And How can you make your own like this at cheap price...Well in India all the materials(motors, ESCs etc.) are very expensive(at least for me). So I decided to make it on, as cheapest as possible.

The frame and the Flight Controller is DIY. The frame is made up of scraped aluminium antenna(bar), aluminium ceiling fan blade and Woods. Arduino UNO along with MPU6050(gyro+Accle) is used as a flight Controller.

At first Check The VIDEOS From my Youtube Channel....

Part-1 & Part-2.....

Step 1: Step-1:-Materials Used



These are the materials Used for my Drone You can use any parts/materials as your requirement. If you want to make it as cheap as possible then you can go with the material list below.

- 1) 1000KV Brushless motor*4pcs
- 2) 30 Amp ESCs*4pcs
- 3) 1045 Propeller*4pcs
- 4) Arduino UNO + MPU6050
- 5) Perfboard (verroboard)
- 6) 1.5k,1k and 300E resistors and 1pcs LED.
- 7) Heat Shrink tube (I am using Electrical Insulation Tape)
- 8) Double Sided Tape, Soldering Iron, Soldering Wire etc.

9) A plastic Box (for Electronics)

10) 2200 mah or Higher li-po battery.(minimum 30C recommended)

11) Aluminium bar(hollow), Aluminium plate and Woods(soft).

12) Transmitter and receiver (Mine is Flysky-i6x with X6B receiver)

>>>**Buy From link below-----**Please use link below to buy stuff.... Don't worry you don't have to pay more.....if you bought the stuffs from link below...I will get small kick back...(commission).....

[Link for India....](#)

[Motor+ESC+prop](#)

[Balance Charger. For lipo](#) or [Better to buy this one](#)

[Lipo battery](#)

[Arduino UNO](#)

[MPU6050](#)

[Berg Strip+perf board](#)

[Xt60 Connector](#)

[Transmitter and receiver](#)

[Li-Po Voltage checker](#)

For Out of India.....(Banggood)

[Transmitter and receiver](#)

[Brushless motor](#)

[30 Amp ESC](#)

[Li-Po Battery](#)

[Li-Po Battery Charger](#)

[Lipo voltage Checker](#)

[Arduino uno](#)

[MPU6050](#)

[XT60 Connector](#)

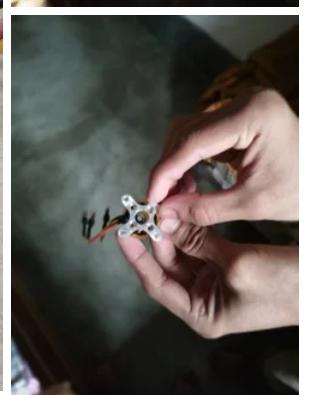
[1045 propeller](#)

Gearbest...

[Flysky fs-i6x with X6B receiver](#)

[Li-po battery 11.1v](#)[Lipo voltage checker](#)[Li-Po Battery Charger](#)[Arduino UNO](#)[Mpu6050 Gyro+Accelerometer](#)[XT60 Connector](#)[Brushless motor CW](#)[Brushless Motor CCW](#)[4*30Amp ESCs](#)[1045 Propeller](#)[Heat shrink tube](#)

Step 2: Step-2:-Motor Mounting



When you bought the Motors the Motor mount and some screws comes with it. mount the aluminium motor mount using the screws comes with it. (see picture). Mount that to motor Using Screws...

Step 3: Step-3:-How to Make a Frame...



I am using old aluminium (yagi) antenna, Soft Wood, and aluminium plate(fan Blade) to make frame. Cut 4 pcs of aluminium bar each of 20cm. Centre plate Dimension is about 11*18cm....The wooden Motor mount is about 10cm long and Diameter of 4.5cm (where motor mounted).

Fix the bars of aluminium with Center plate using screws(as your Requirement) and slide in the motor mount under the aluminium bars and.....Here your frame is ready....(check Pictures) also a [video of frame Work](#) is on my Youtube Channel.....Check that out..

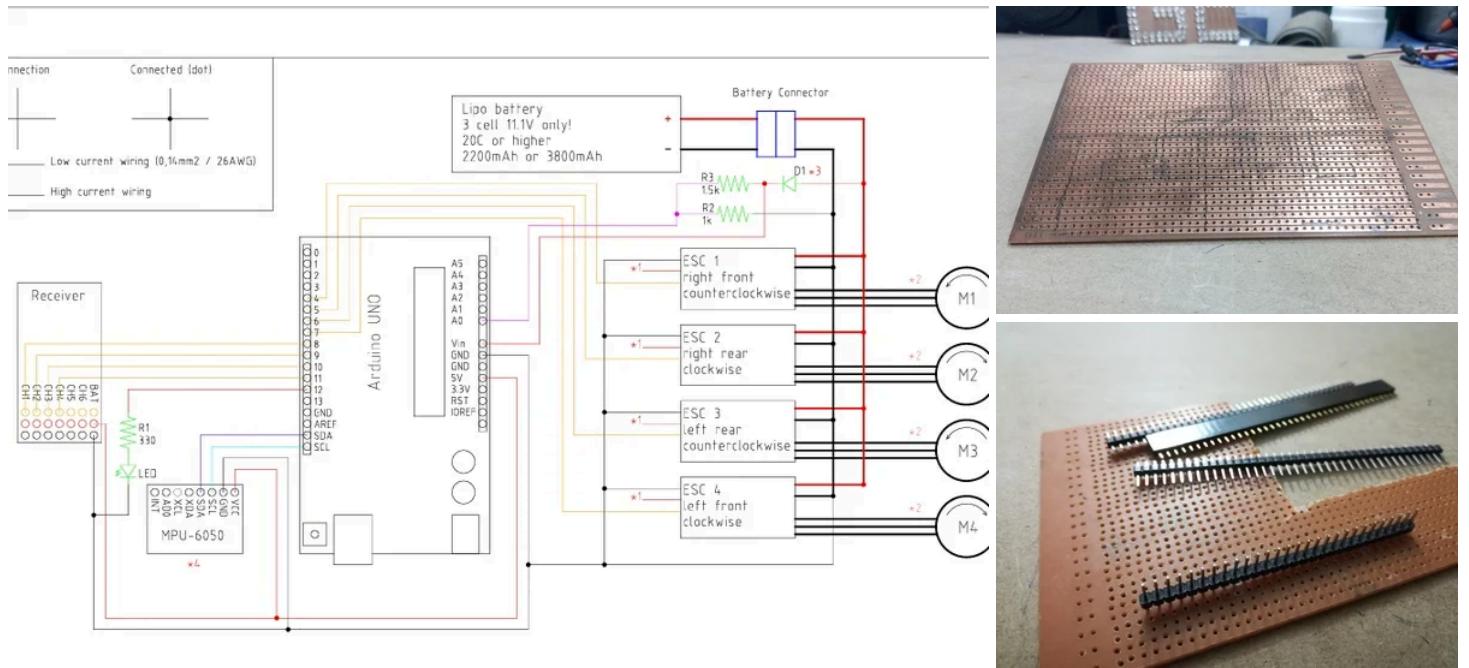
Step 4: Step-4:-Mounting All Things (ESCs and Motors to Frame)



Now mount the motors to it's wooden motor mount using screws and Nuts (any types) and connect the ESC wire with it (Randomly) and fix the ESCs using Electrical tape or zip ties in my case it's Electrical tape (it's cheaper than Zip ties). After connecting all Motors and ESCs cut the +ve and –ve Wire of ESCs and connect all ESCs using Wires or PDB as your setup..I am Using Wires Because there is no space in my frame for ESCs.....And you're Done.....

*****Caution:-Remove all Props while setup...and Don't Try to Fly Inside the Home....

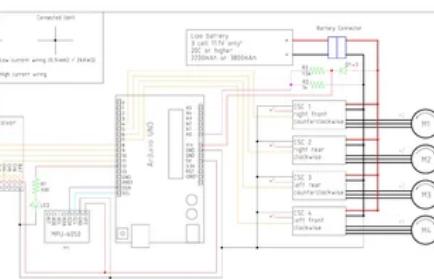
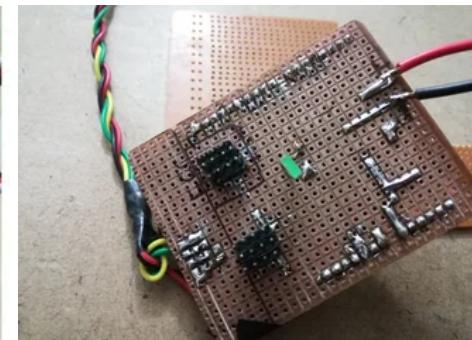
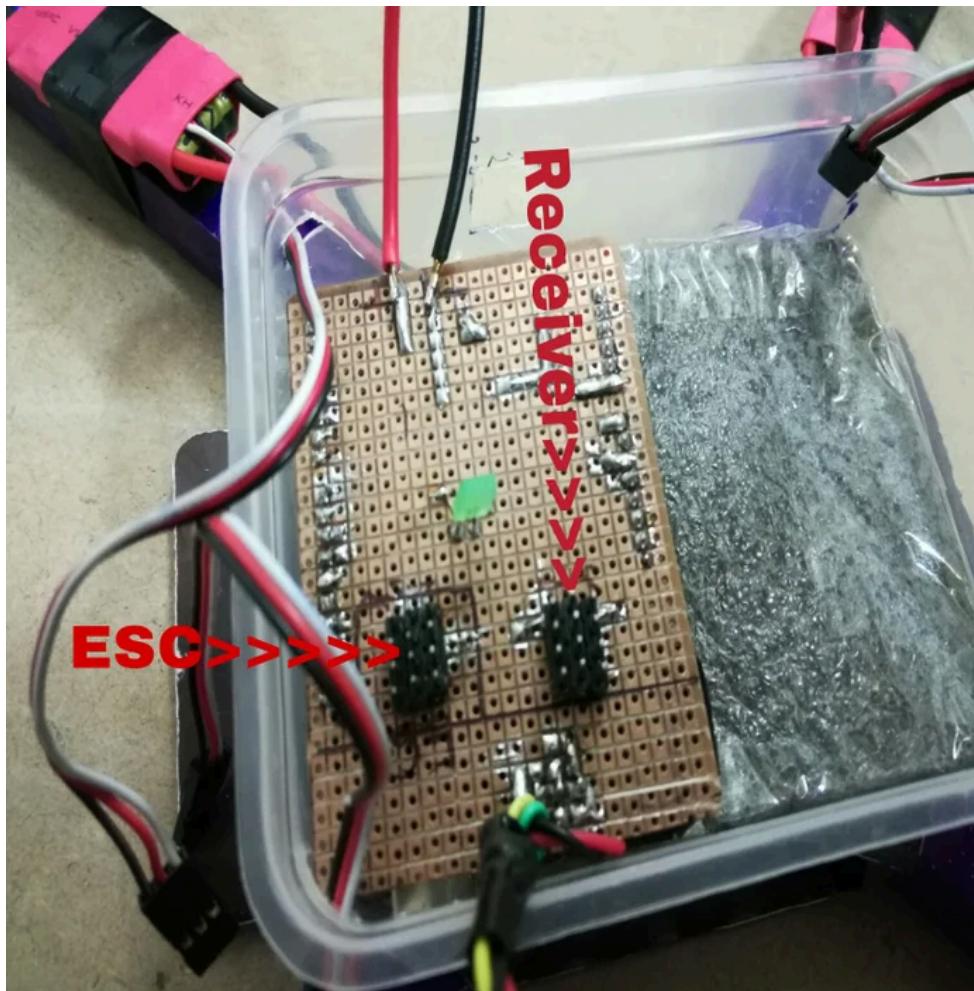
Step 5: Step-5:- Flight Controller



Make a Flight Controller using Arduino UNO and MPU6050...My flight controller is based on the [Joop Brokking's YMFC-AL](#) and it's a Auto leveling Quad...make the connections as Diagram below.....

****Special Thanks to Joop Brokking for the Arduino Sketch**** Check his video.....

Step 6: Step-6:- Connecting the ESCs and Receiver to FC



*****Don't Connect ESCs BEC wire(5 volt)...only connect signal wire*****

*****And power the receiver using Arduino's 5 volt supply*****

Now connect the signal wires of ESCs as Describe Below....also shown in the Diagram...

ESC connection.....

Digital pin-4 to ESC1 (Right Front CCW)

Digital pin-5 to ESC2 (Right rear CW)

Digital pin-6 to ESC3 (Left rear CCW)

Digital pin-7 to ESC4 (Left front CW)

Receiver Connection....

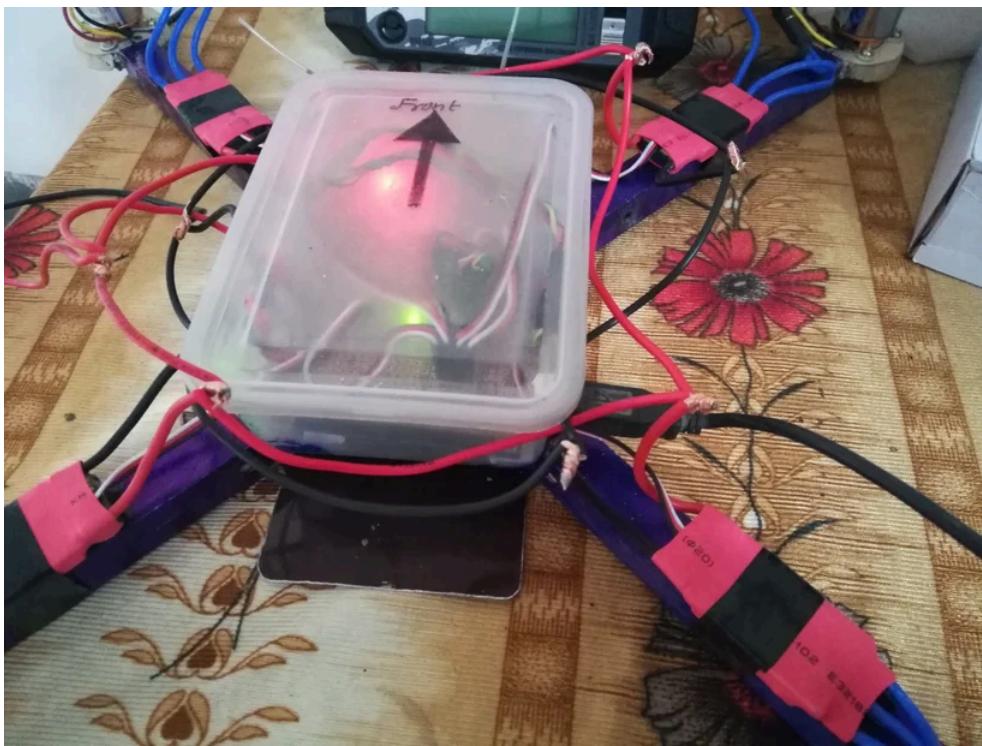
Digital pin-8 to Receiver Channel 1

Digital pin-9 to Receiver Channel 2

Digital pin-10 to Receiver Channel 3

Digital pin-11 to Receiver Channel 4

Step 7: Step-7:- Flight Controller Setup (Upload the Sketch)



*****Don't Connect the Flight Battery at This Time*****

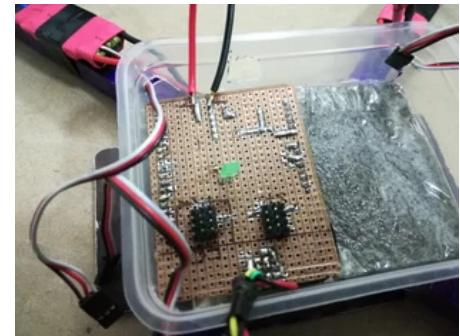
Now Download the Arduino IDE and Sketch below and extract the Zip file..you will find YMFC-AI schematics, Readme file, ESC calibration Code, Setup Code and Flight Controller Code.....

[Arduino IDE](#)

[Flight Controller sketch](#)

- 1)....At first Upload code and open Serial monitor at 56000b and follow the Steps in the Video below...
- 2) If no Error occurred then upload the ESC calibration Sketch after uploading the code...put Your transmitter at full throttle and connect the Flight Battery after some beeps put Down the throttle (I think this method not works on all types and brands of ESCs,,,But for mine it's works perfectly).....
- 3) After uploading the ESC calibration sketch...Upload the Flight Controller Sketch.....and Your FC is ready....

Step 8: Step-8:-Electronics Box Installing and Prop Mounting.



After completing all electronics works put the all electronics in the Electronics box and complete all wirings and stuffs.....Now mount the CCW propellers to CCW motors and CW prop to CW motors....And You are Ready to Fly.....

The Hardest part of making this quad is to Tune PIDs.....as your Design...

I've Broke 2 pairs of Prop and Electronics box while trying to fly it....

Soooooo,,,,,Have a Good Fly.....

If you like this project then please ... Please [Subscribe to my Channel](#)...Also consider Support my future Projects Through my [Patreon](#) campaign or Donate Through [Paypal](#)....Even an small amount can help a lot.

And if you have any confusion or suggestion about this project or my other projects then please Comment Below....