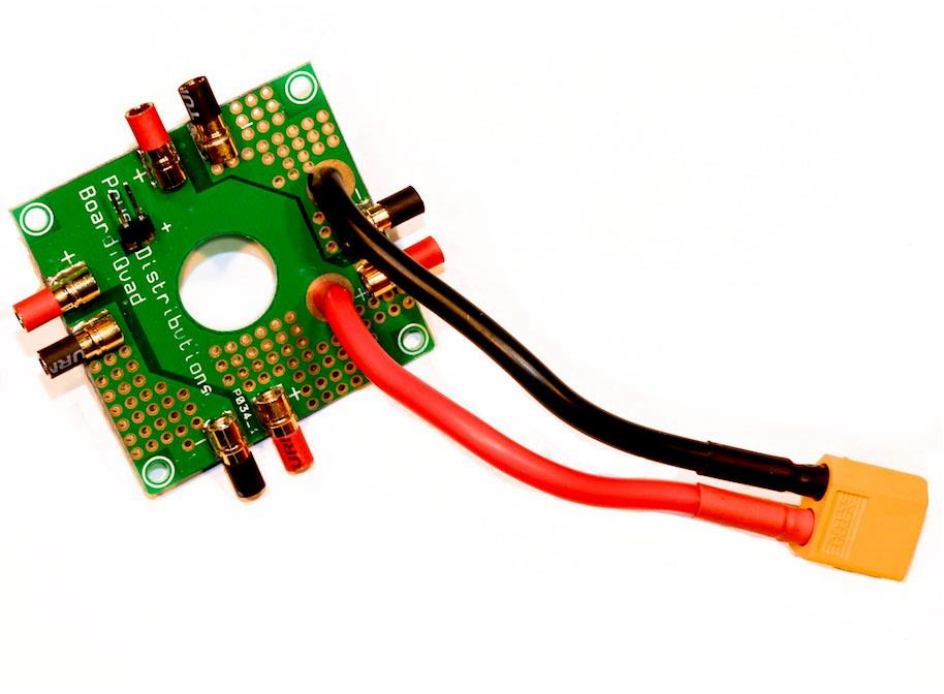
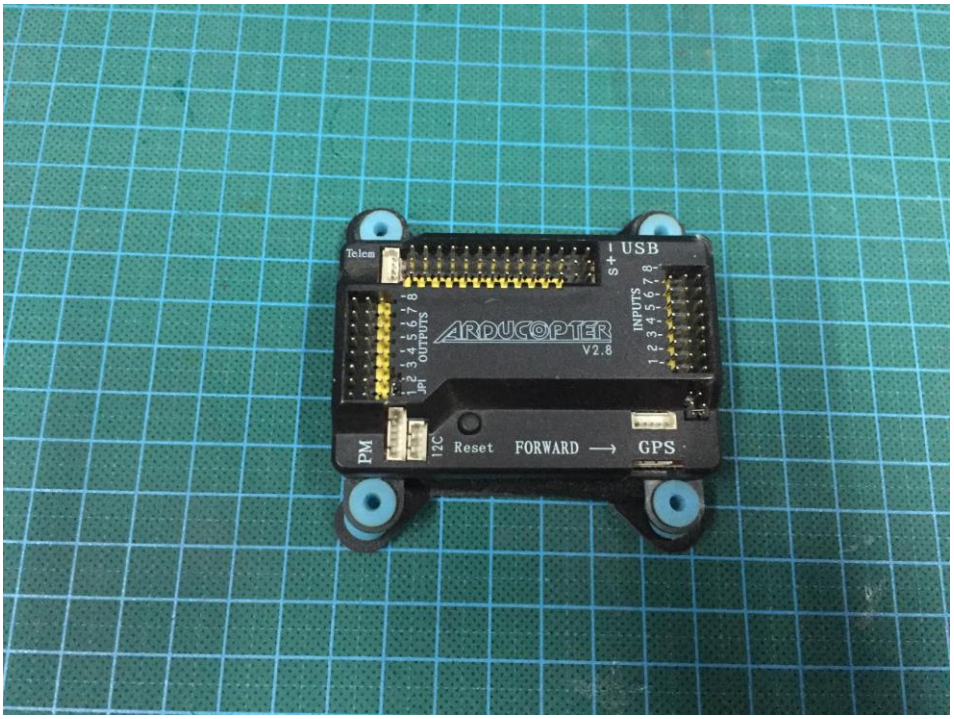
Chapter 1: Things to Know Before You Build a Drone

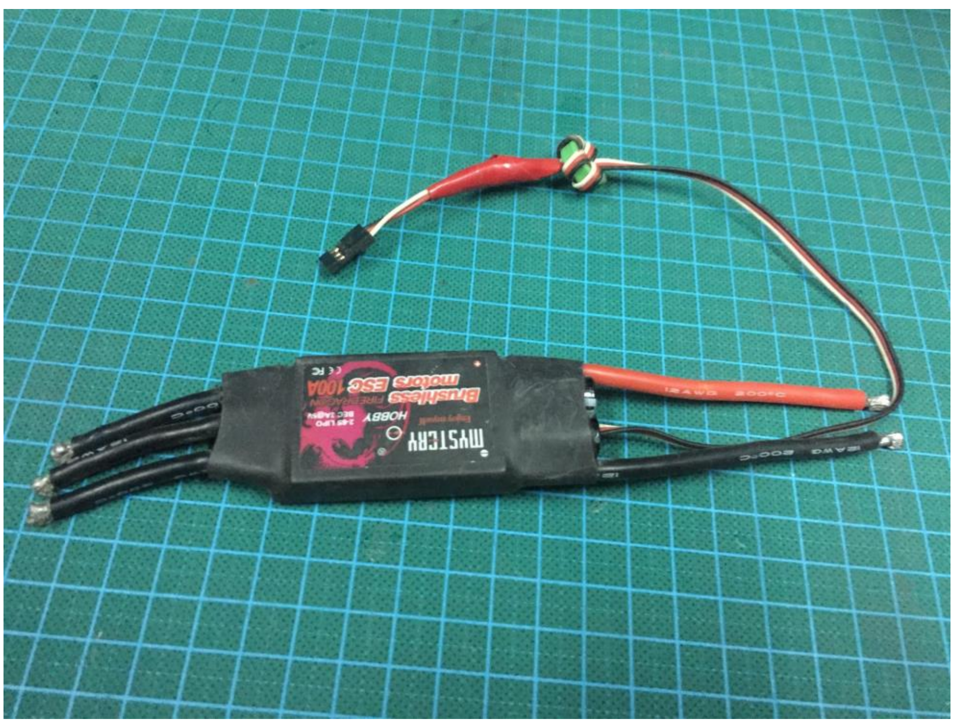

DISPLAY
LiPo CHARGE
5.0A 22.2V(6S)
Li-ion/polymer Balance Charger
INPUT
1 cell
2 cell
3 cell
4 cell
5 cell
6 cell
auto/man
TYPE
STOP
DEC
INC
ENTER
START
Output

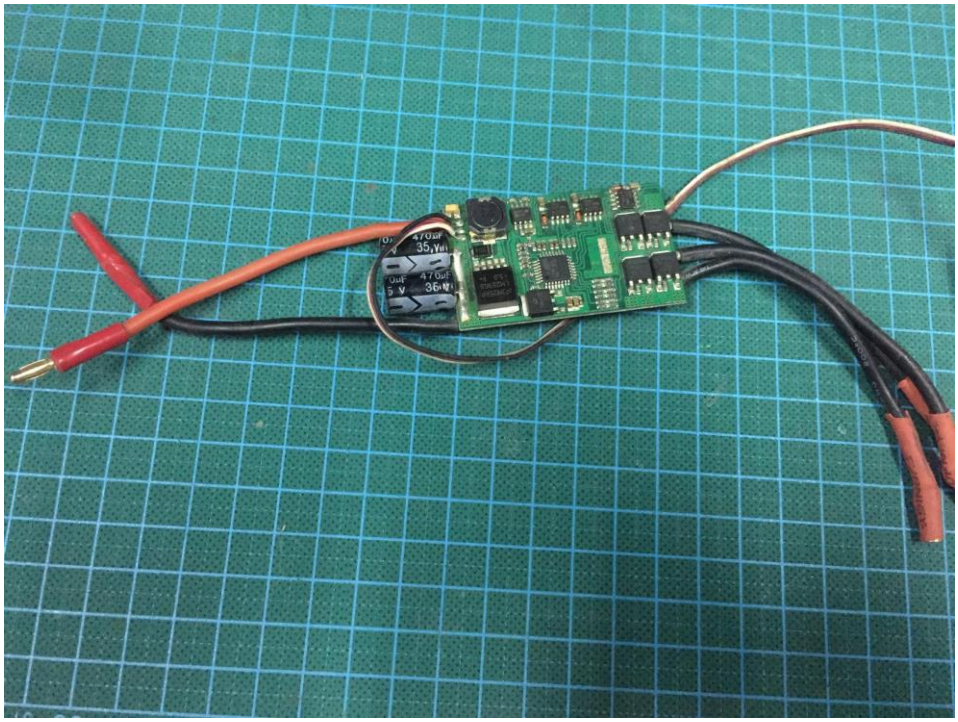

XT60 Male
XT60 Female
Deans/Tplug Female
Deans/Tplug Male
Deans/Tplug Male
Deans/Tplug Female


Power Distribution Board for Quad


Telem
USB
S+
INPUTS
1 2 3 4 5 6 7 8
OUTPUTS
1 2 3 4 5 6 7 8
JP1
ARDUCOPTER
V2.8
PM
I2C
Reset
FORWARD
GPS

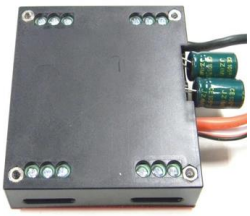

High Discharge
Li-Po Battery
3300
3S1P
Rechargeable
1500
LITHIUM POLYMER


MYSTERY
HOBBY
Brushless
motors ESC 100A

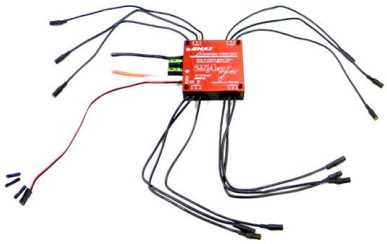


Chapter 2: Assembling Your Drone

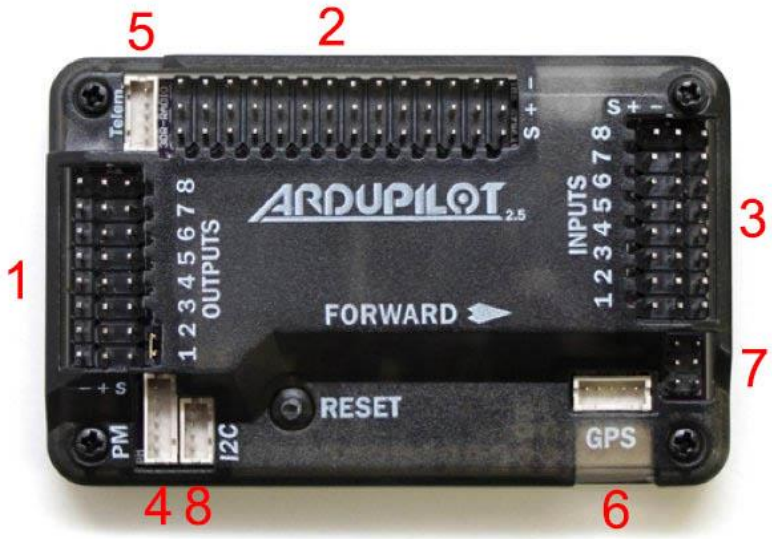
Inside the box

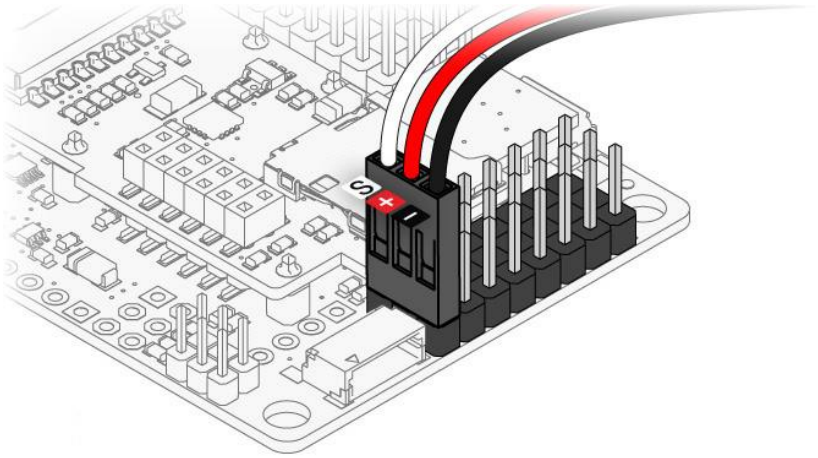


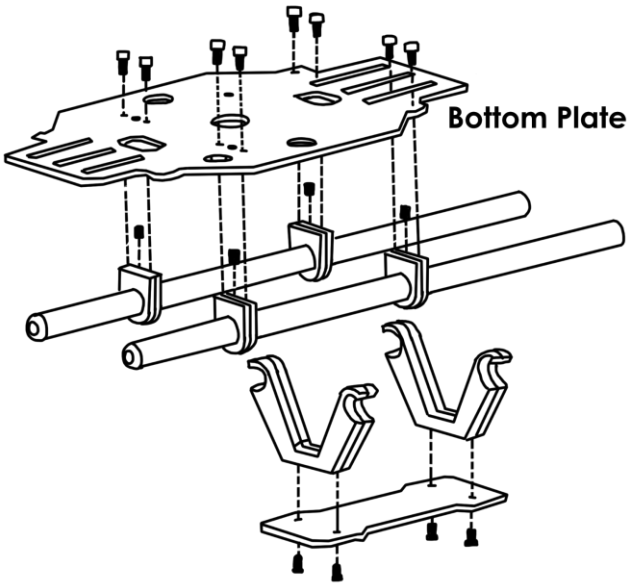
Back View

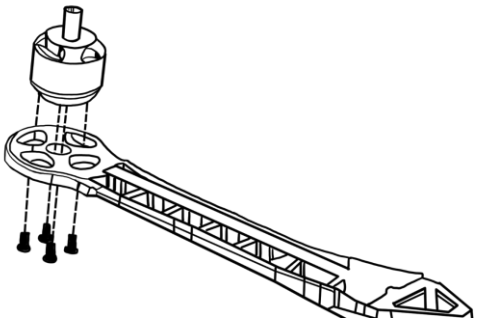


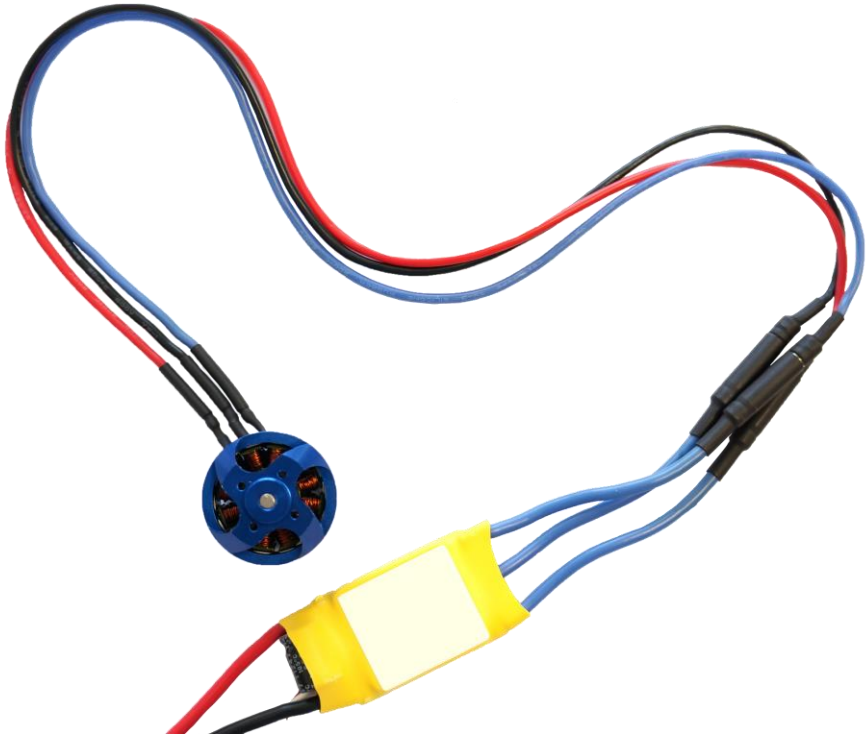
After connecting the wires

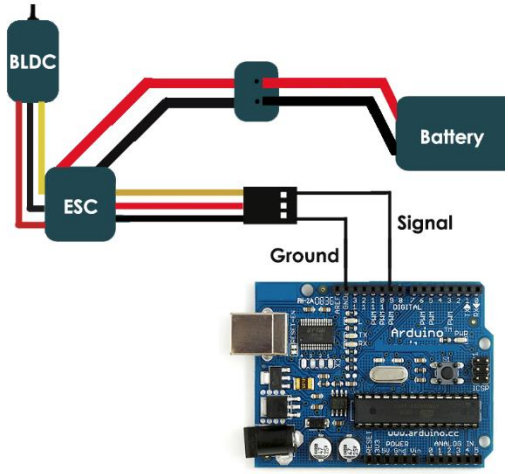


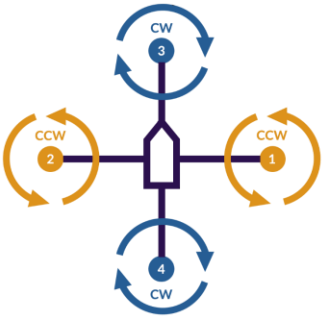

S
+
-


Bottom Plate

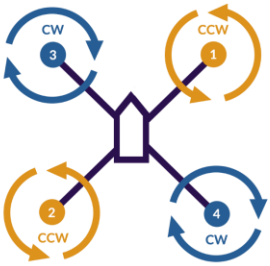





BLDC
Battery
ESC
Signal
Ground
Arduino
www.arduino.cc



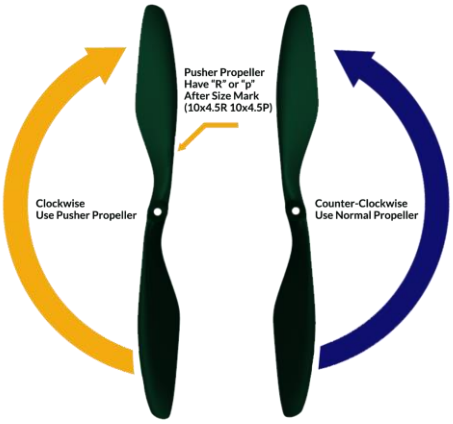
QUAD +

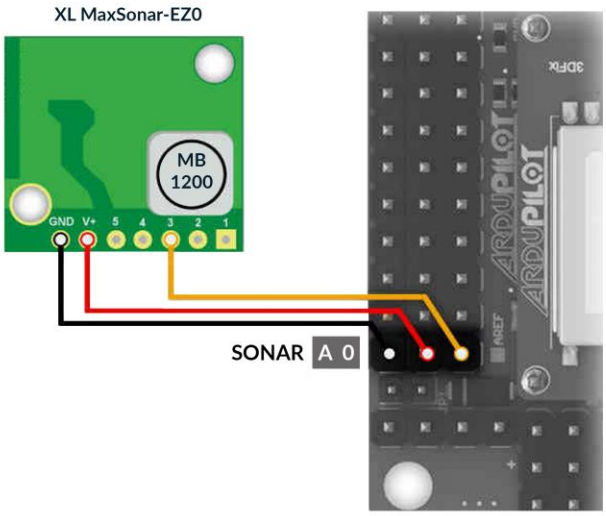


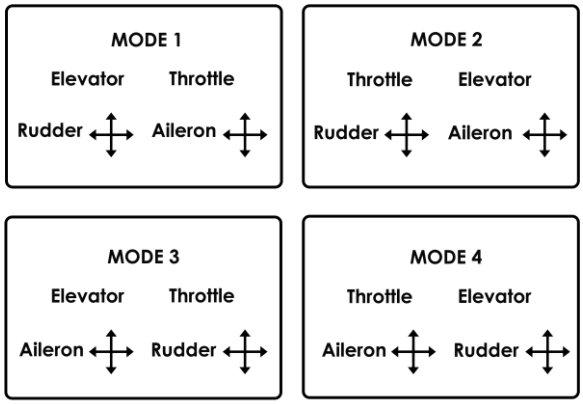
QUAD x

Clockwise Rotation
Use Pusher Propeller

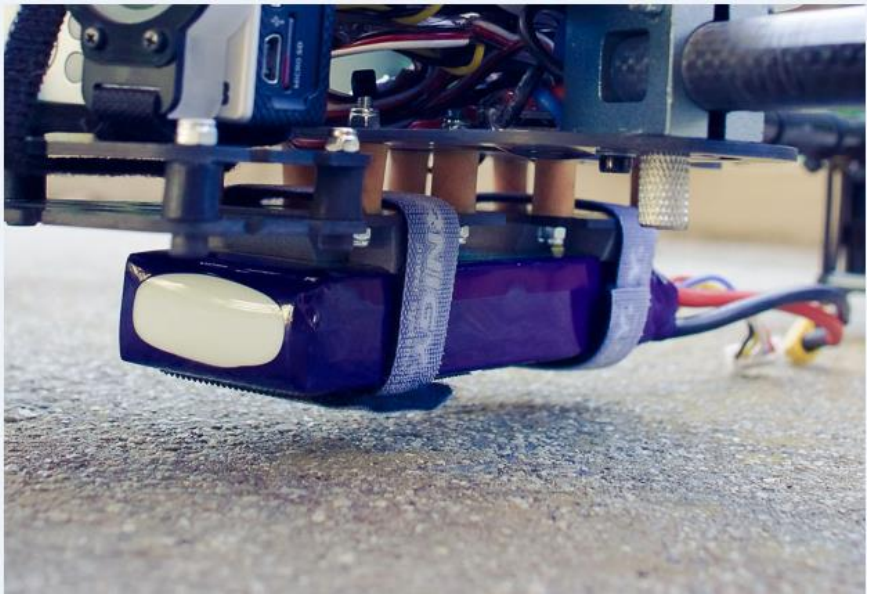
Counter-clockwise Rotation
Use Normal Propeller

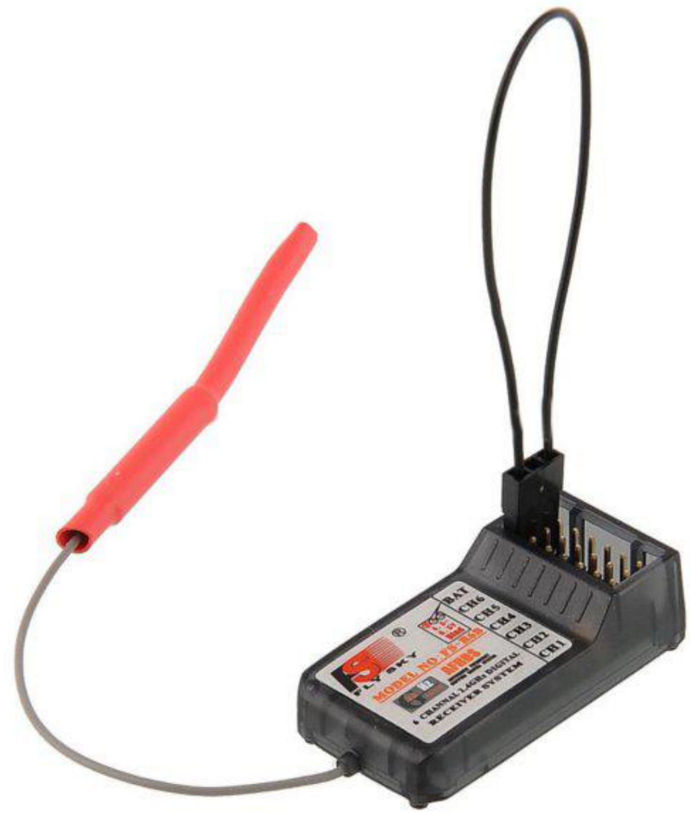

Pusher Propeller
Have "R" or "p"
After Size Mark
(10x4.5R 10x4.5P)
Clockwise
Use Pusher Propeller
Counter-Clockwise
Use Normal Propeller

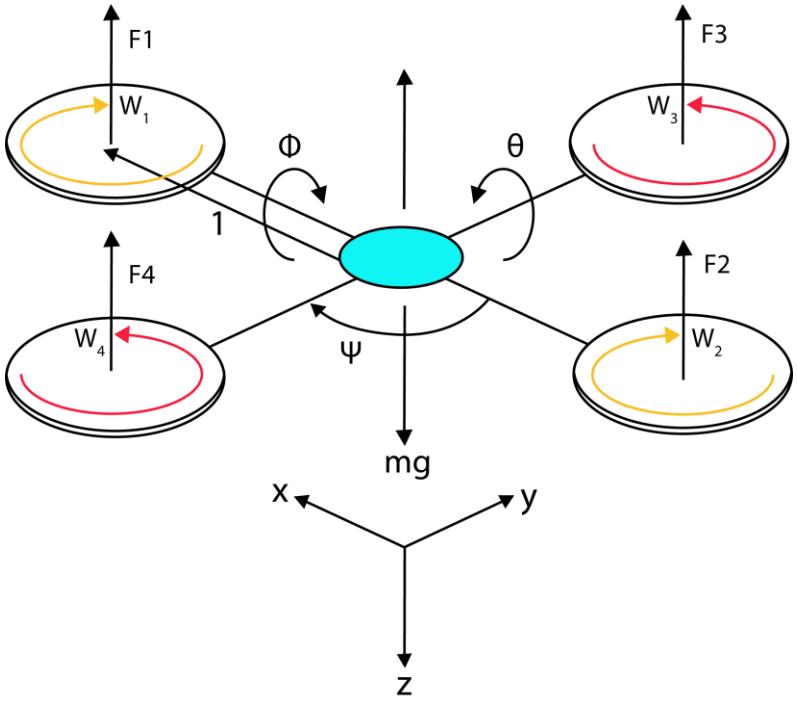

XL MaxSonar-EZ0
MB
1200
GND
V+
5
4
3
2
1
SONAR
A 0
ARDUPILOT
3DFix

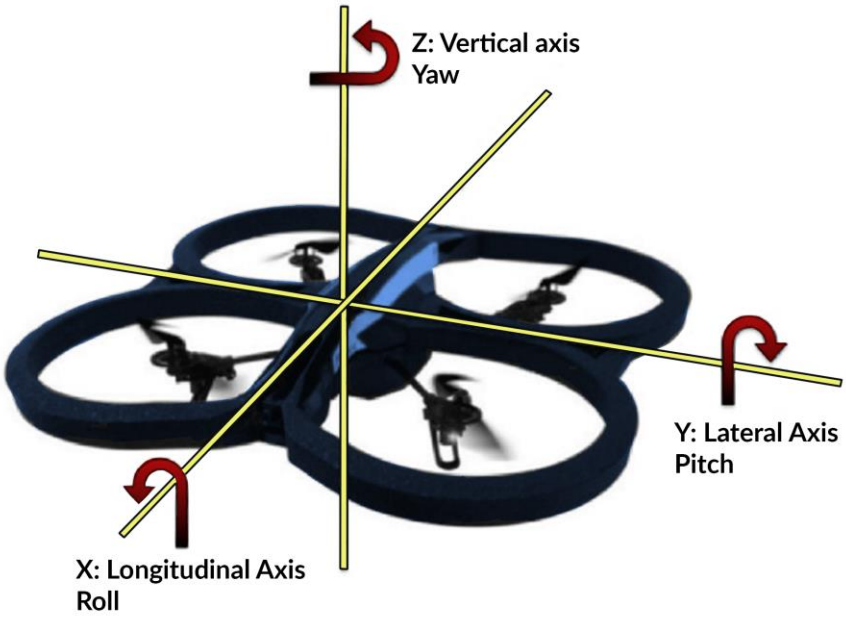

MODE 1
Elevator
Throttle
Rudder
Aileron
MODE 2
Throttle
Elevator
Rudder
Aileron
MODE 3
Elevator
Throttle
Aileron
Rudder
MODE 4
Throttle
Elevator
Aileron
Rudder


CH 1
CH 2
CH 3
CH 4
CH 5
CH 6
ID SET
Roll / Aileron
Pitch / Elevator
Throttle
Yaw / Rudder
Auxiliary Channel 1 (e.g. Mode Switch)
Auxiliary Channel 2

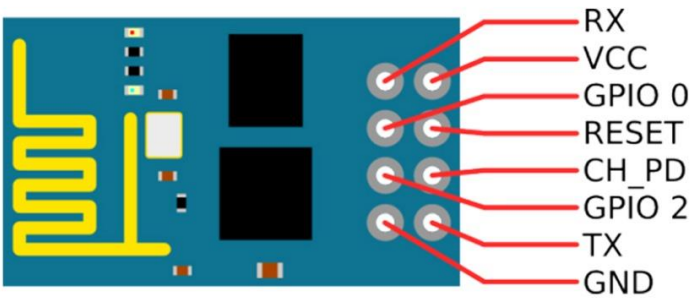


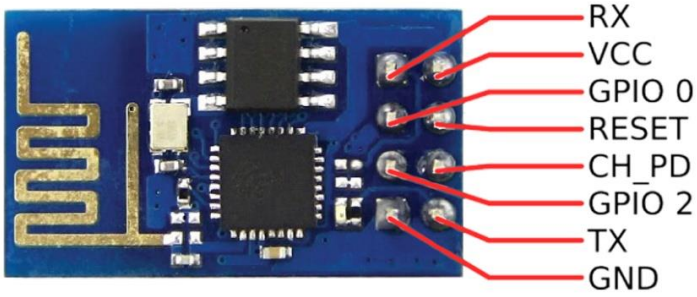

FLYSKY
BAT
CH6
CH5
CH4
CH3
CH2
CH1
RECEIVER SYSTEM

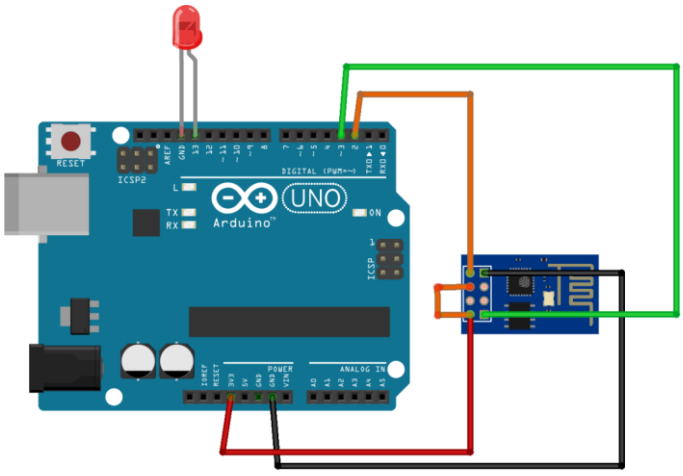

F1
W1
F3
W3
Φ
θ
1
F4
W4
F2
W2
ψ
mg
x
y
z

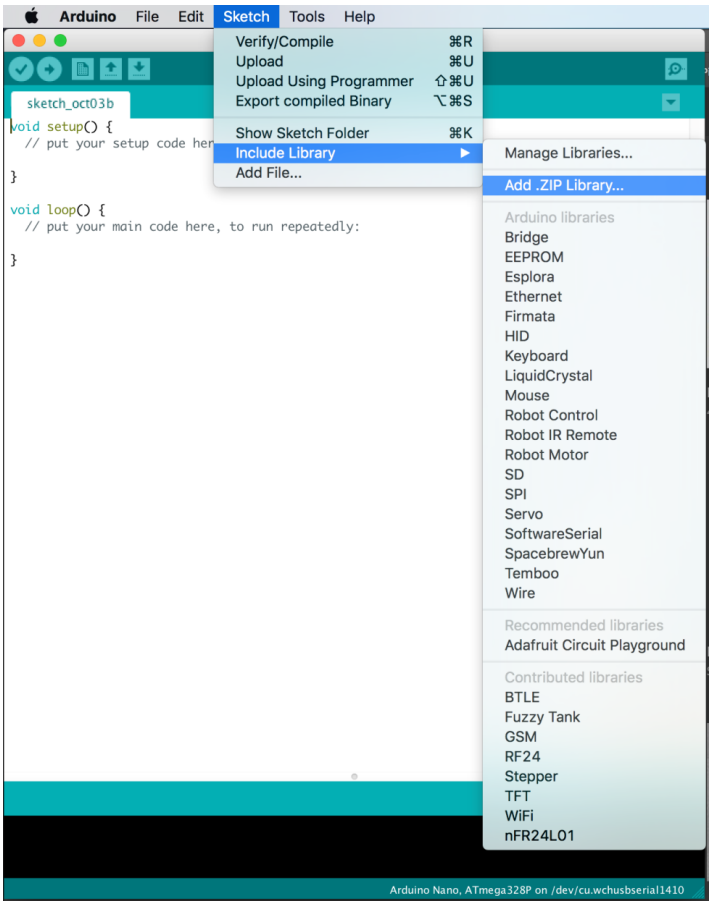

Z: Vertical axis
Yaw
Y: Lateral Axis
Pitch
X: Longitudinal Axis
Roll

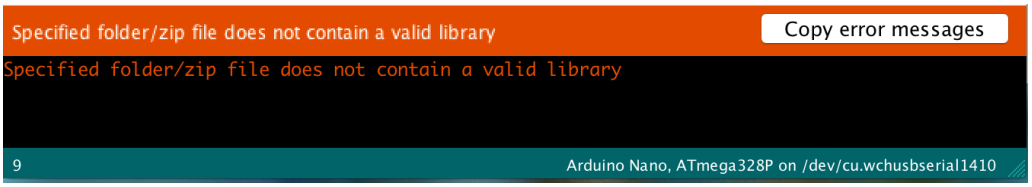
Chapter 3: Preparing Your Drone for Flying

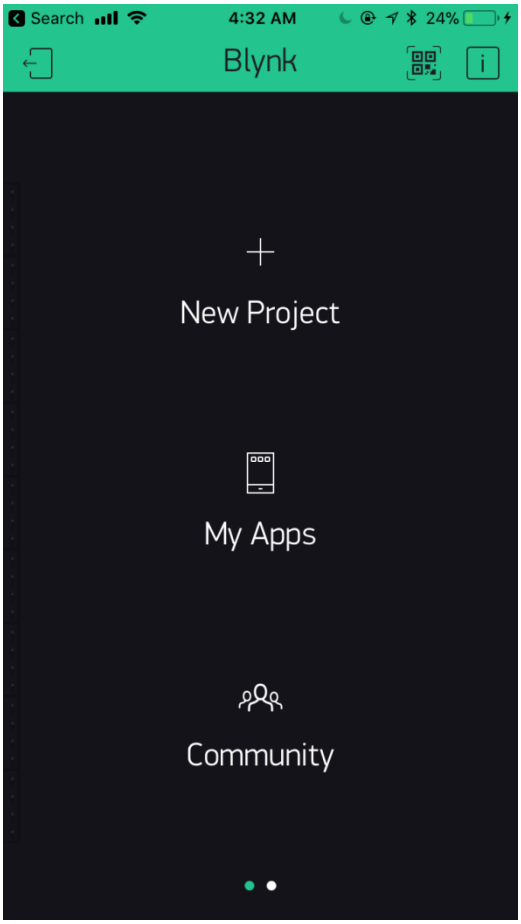


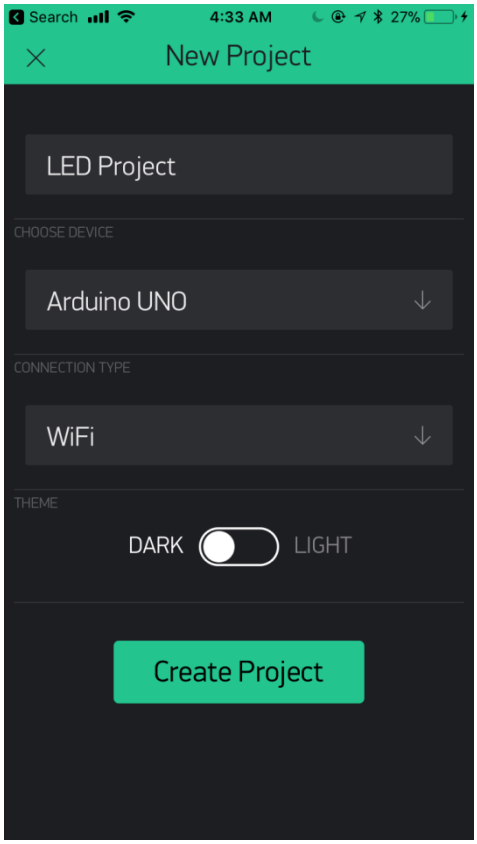


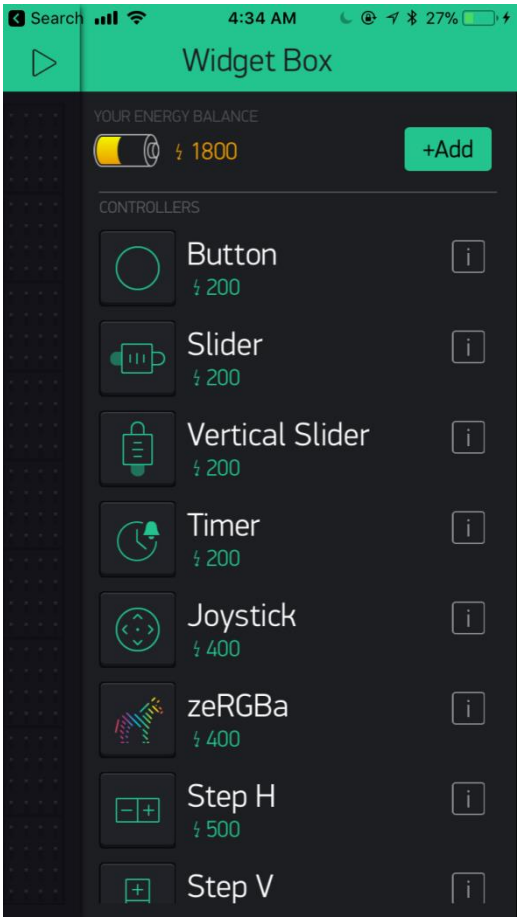


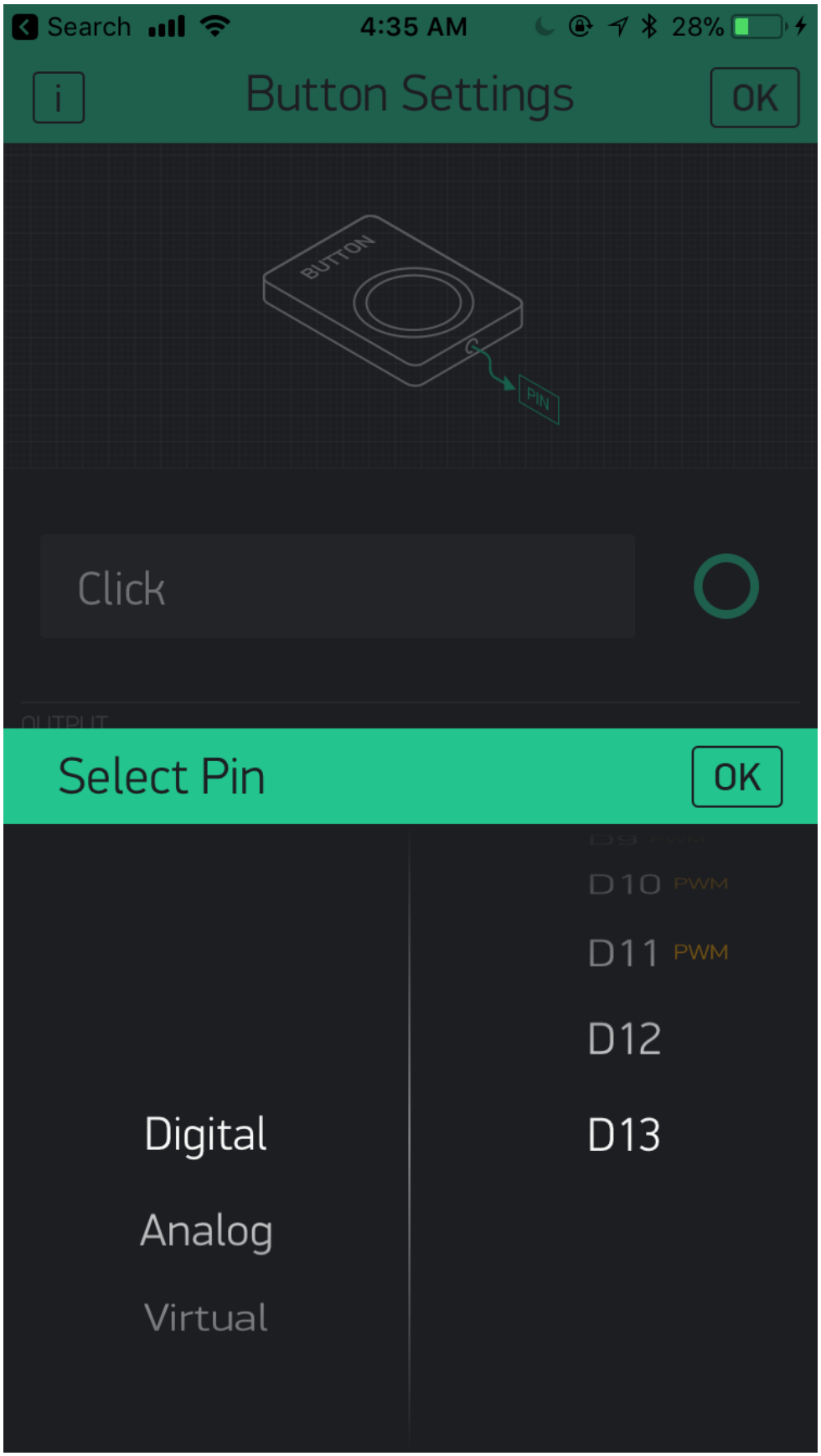

Arduino File Edit Sketch Tools Help
Verify/Compile ⌘R
Upload ⌘U
Upload Using Programmer ⇧⌘U
Export compiled Binary ⌥⌘S
Show Sketch Folder ⌘K
Include Library
Add File...
Manage Libraries...
Add .ZIP Library...
Arduino libraries
Bridge
EEPROM
Esplora
Ethernet
Firmata
HID
Keyboard
LiquidCrystal
Mouse
Robot Control
Robot IR Remote
Robot Motor
SD
SPI
Servo
SoftwareSerial
SpacebrewYun
Temboo
Wire
Recommended libraries
Adafruit Circuit Playground
Contributed libraries
BTLE
Fuzzy Tank
GSM
RF24
Stepper
TFT
WiFi
nFR24L01
sketch_oct03b
void setup() {
// put your setup code here
}
void loop() {
// put your main code here, to run repeatedly:
}
Arduino Nano, ATmega328P on /dev/cu.wchusbserial1410

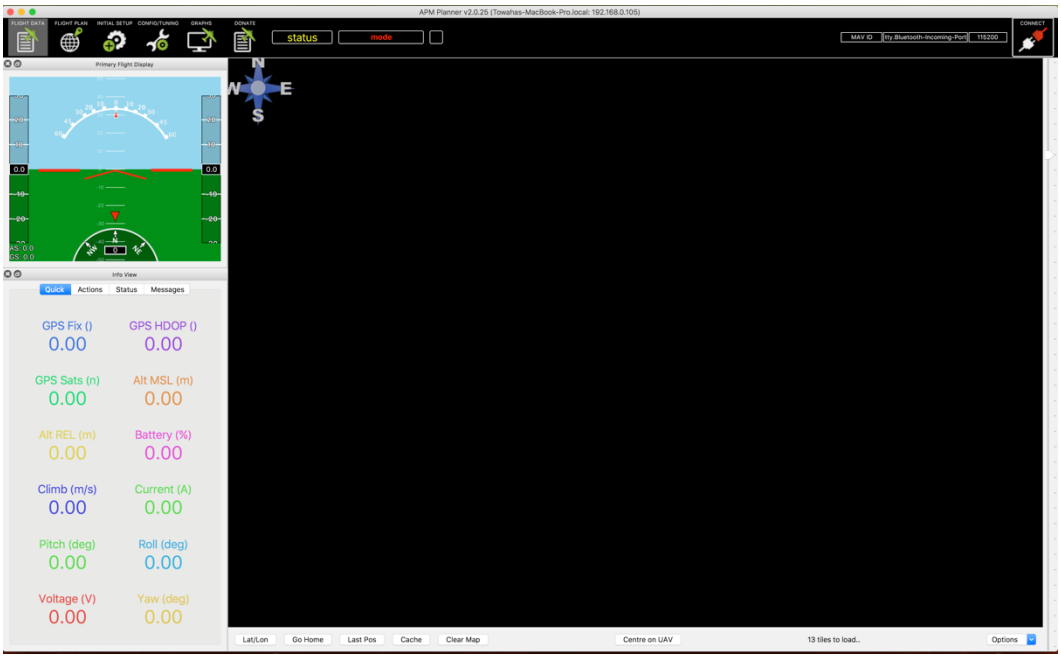

Specified folder/zip file does not contain a valid library
Copy error messages
Specified folder/zip file does not contain a valid library
9
Arduino Nano, ATmega328P on /dev/cu.wchusbserial1410

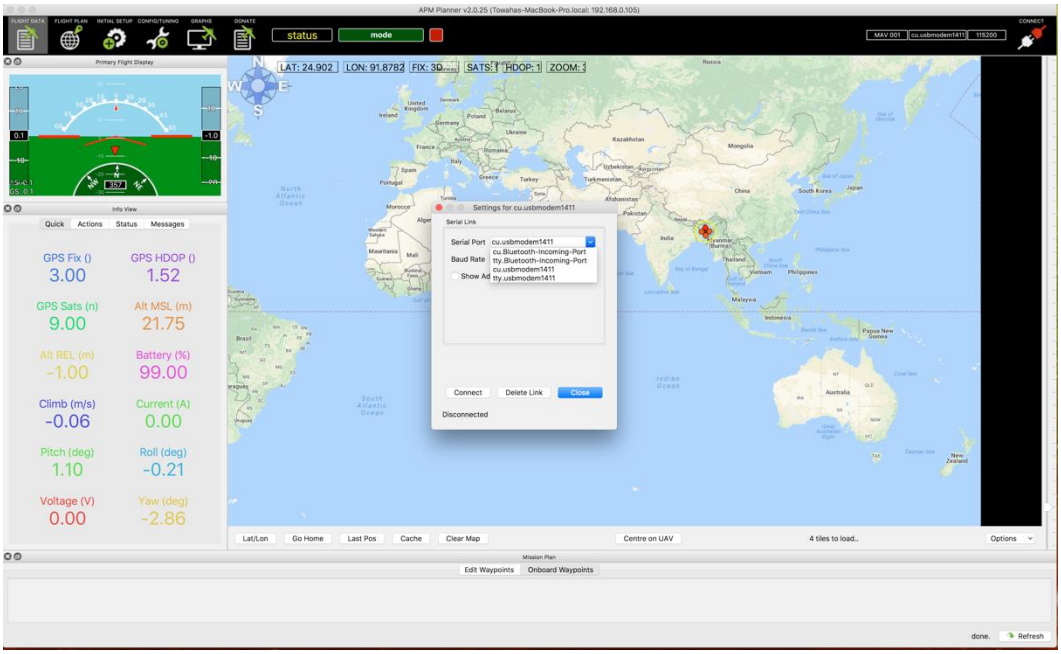

Search
4:32 AM
24%
Blynk
New Project
My Apps
Community

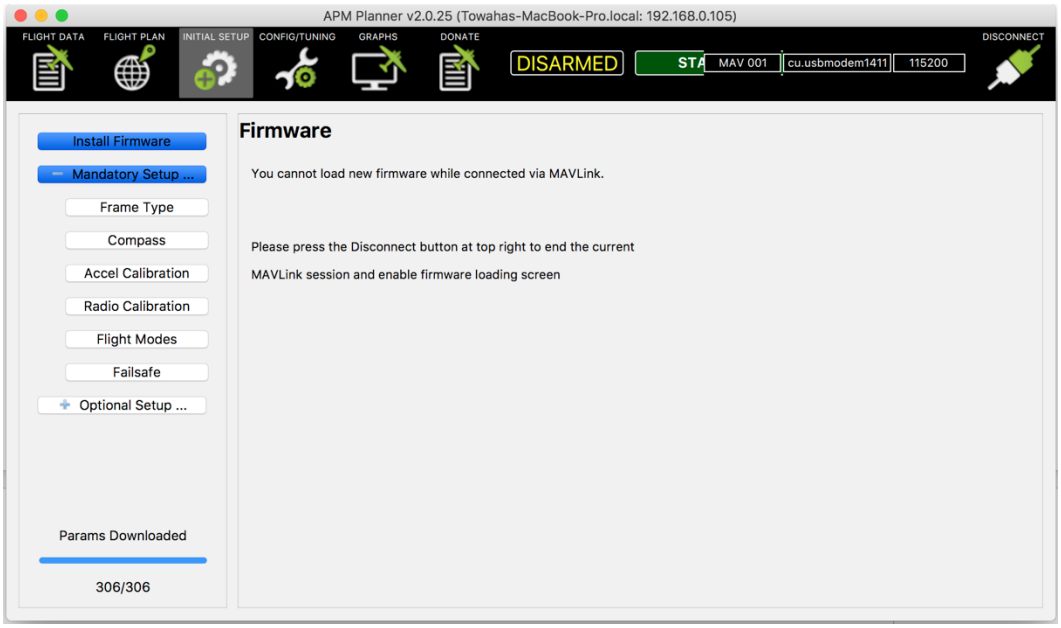

Search
4:33 AM
27%
New Project
LED Project
CHOOSE DEVICE
Arduino UNO
CONNECTION TYPE
WiFi
THEME
DARK
LIGHT
Create Project

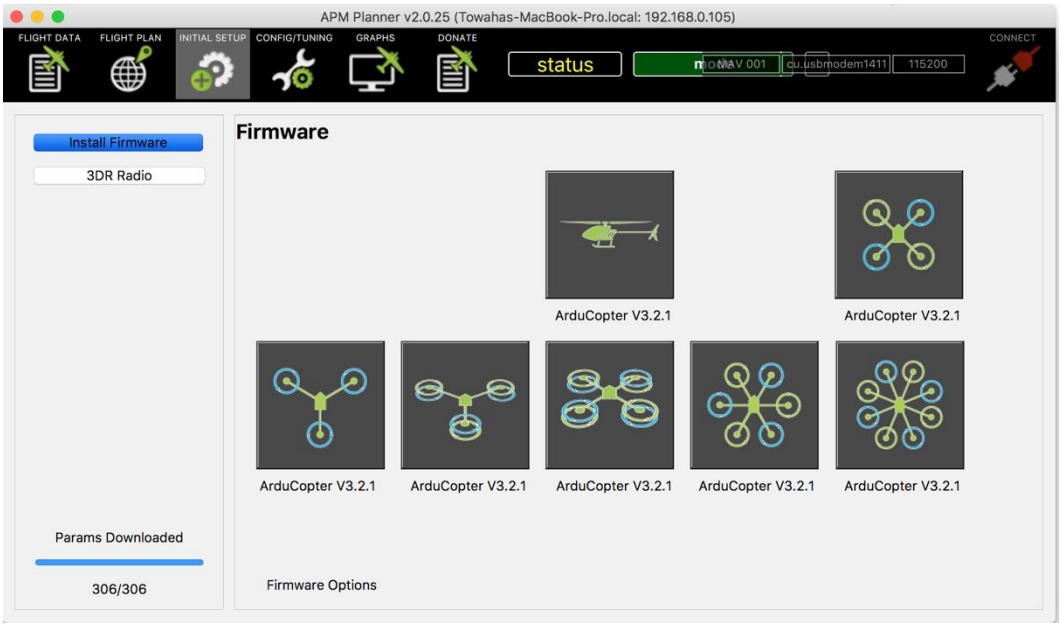

Search
4:34 AM
27%
Widget Box
YOUR ENERGY BALANCE
1800
+Add
CONTROLLERS
Button
200
Slider
200
Vertical Slider
200
Timer
200
Joystick
400
zeRGBa
400
Step H
500
Step V

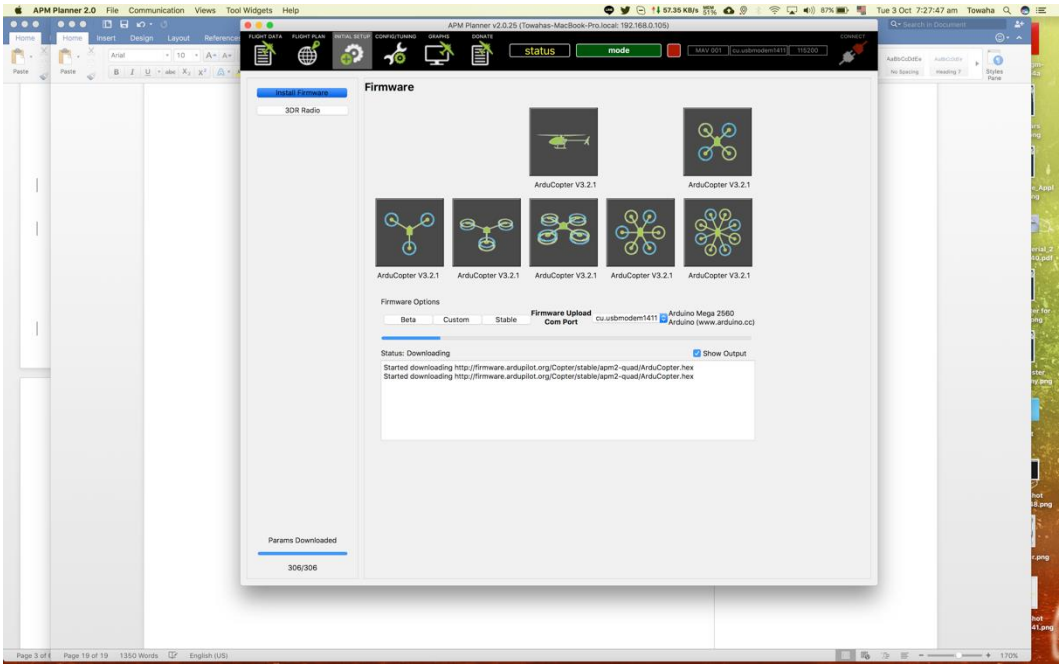

Search
4:35 AM
28%
i
Button Settings
OK
BUTTON
PIN
Click
OUTPUT
Select Pin
OK
D10 PWM
D11 PWM
D12
D13
Digital
Analog
Virtual

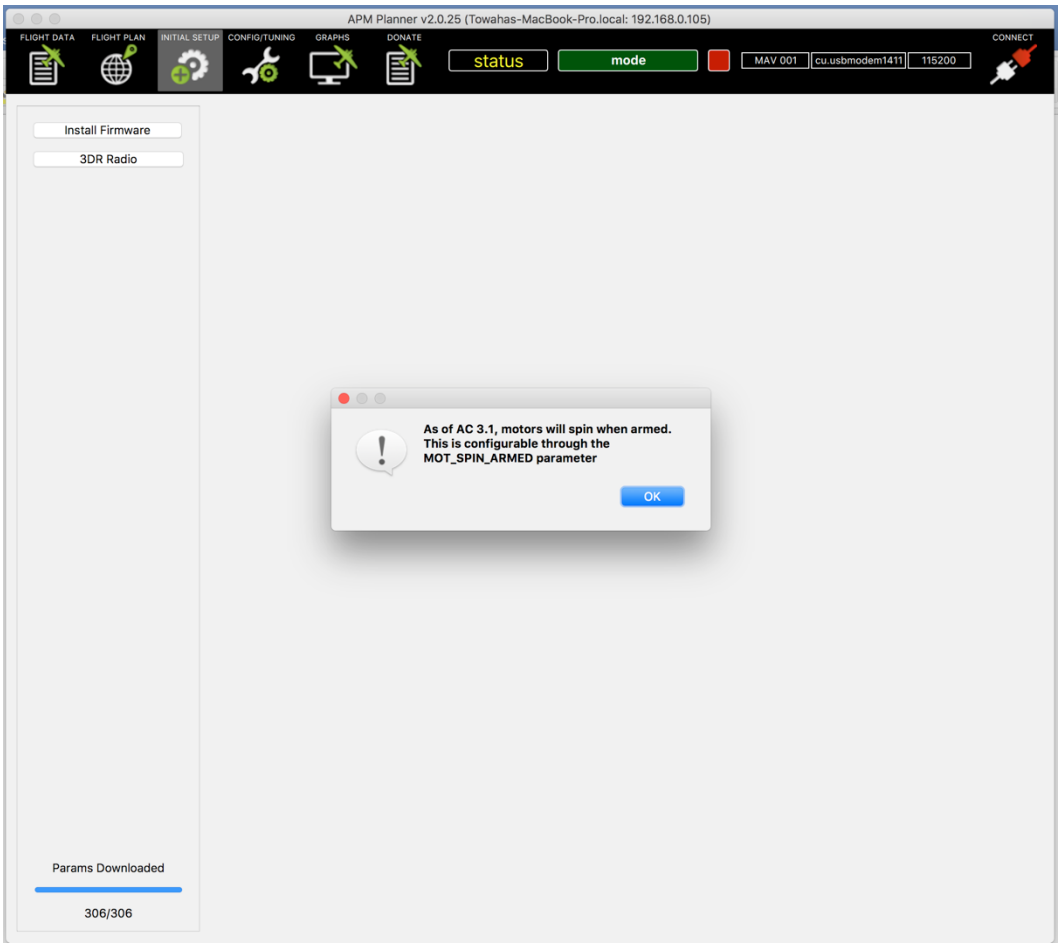

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
status
mode
CONNECT
Primary Flight Display
Info View
Quick
Actions
Status
Messages
GPS Fix ()
0.00
GPS HDOP ()
0.00
GPS Sats (n)
0.00
Alt MSL (m)
0.00
Alt REL (m)
0.00
Battery (%)
0.00
Climb (m/s)
0.00
Current (A)
0.00
Pitch (deg)
0.00
Roll (deg)
0.00
Voltage (V)
0.00
Yaw (deg)
0.00
Lat/Lon
Go Home
Last Pos
Cache
Clear Map
Centre on UAV
13 tiles to load..
Options

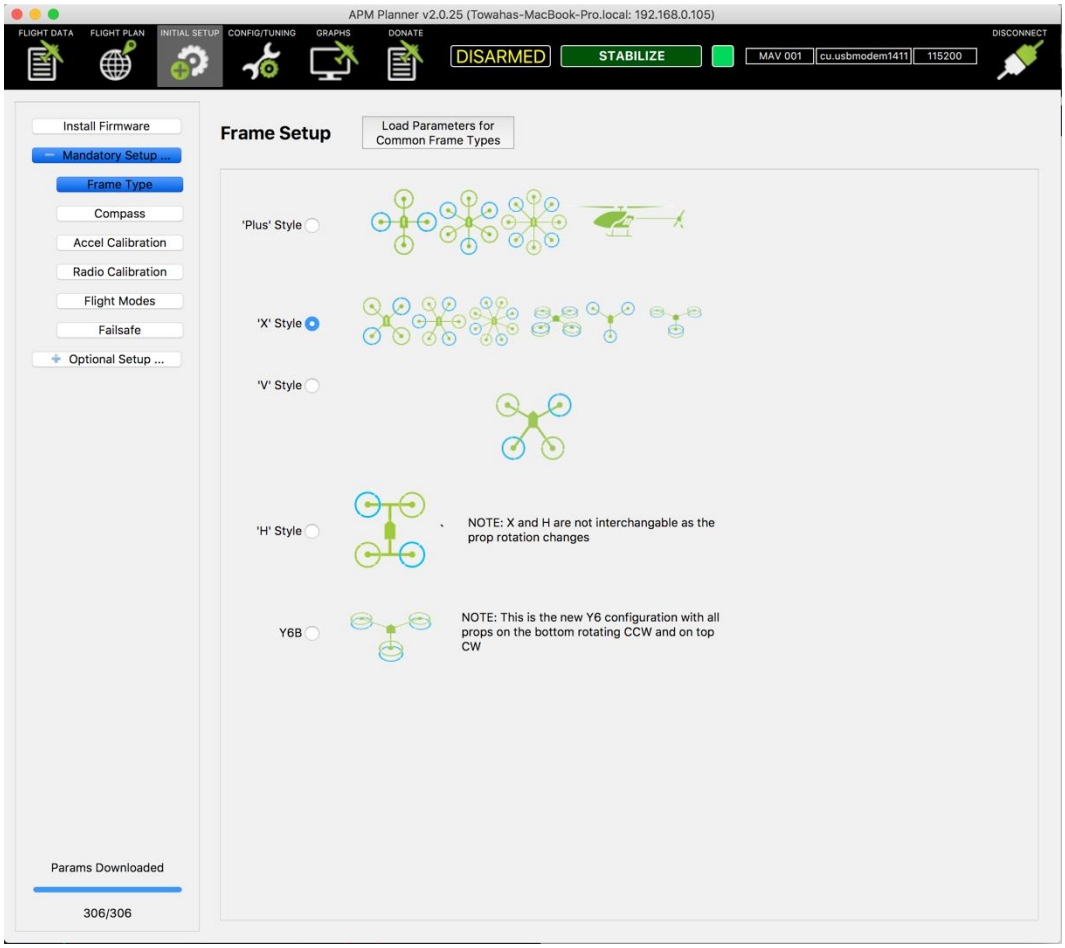

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
status
mode
LAT: 24.902
LON: 91.8782
FIX: 3D
SATS: 1
HDOP: 1
ZOOM:
Settings for cu.usbmodem1411
Serial Link
Serial Port
Baud Rate
Connect
Delete Link
Close
Disconnected
GPS Fix ()
3.00
GPS HDOP ()
1.52
GPS Sats (n)
9.00
Alt MSL (m)
21.75
Alt REL (m)
-1.00
Battery (%)
99.00
Climb (m/s)
-0.06
Current (A)
0.00
Pitch (deg)
1.10
Roll (deg)
-0.21
Voltage (V)
0.00
Yaw (deg)
-2.86
4 tiles to load..
Edit Waypoints
Onboard Waypoints
done.
Refresh

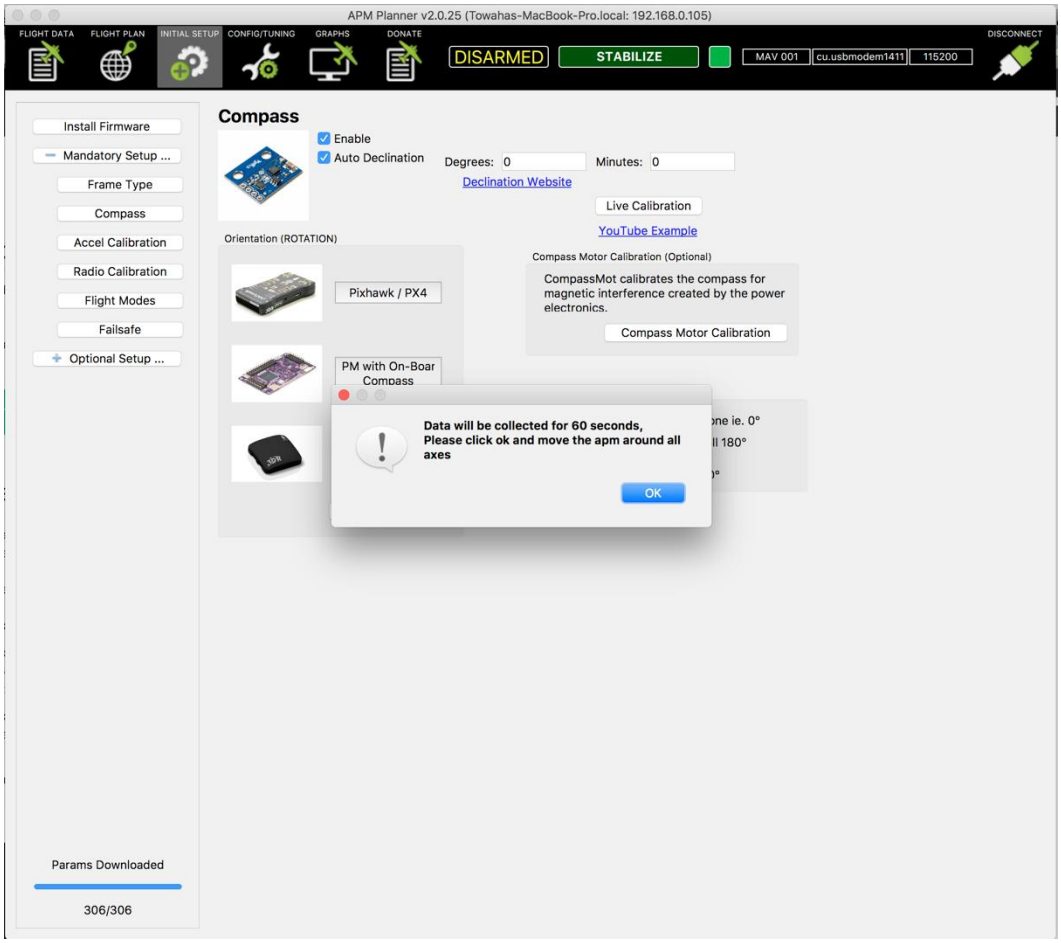

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
DISARMED
MAV 001
cu.usbmodem1411
115200
DISCONNECT
Install Firmware
Mandatory Setup ...
Frame Type
Compass
Accel Calibration
Radio Calibration
Flight Modes
Failsafe
Optional Setup ...
Params Downloaded
306/306
Firmware
You cannot load new firmware while connected via MAVLink.
Please press the Disconnect button at top right to end the current
MAVLink session and enable firmware loading screen

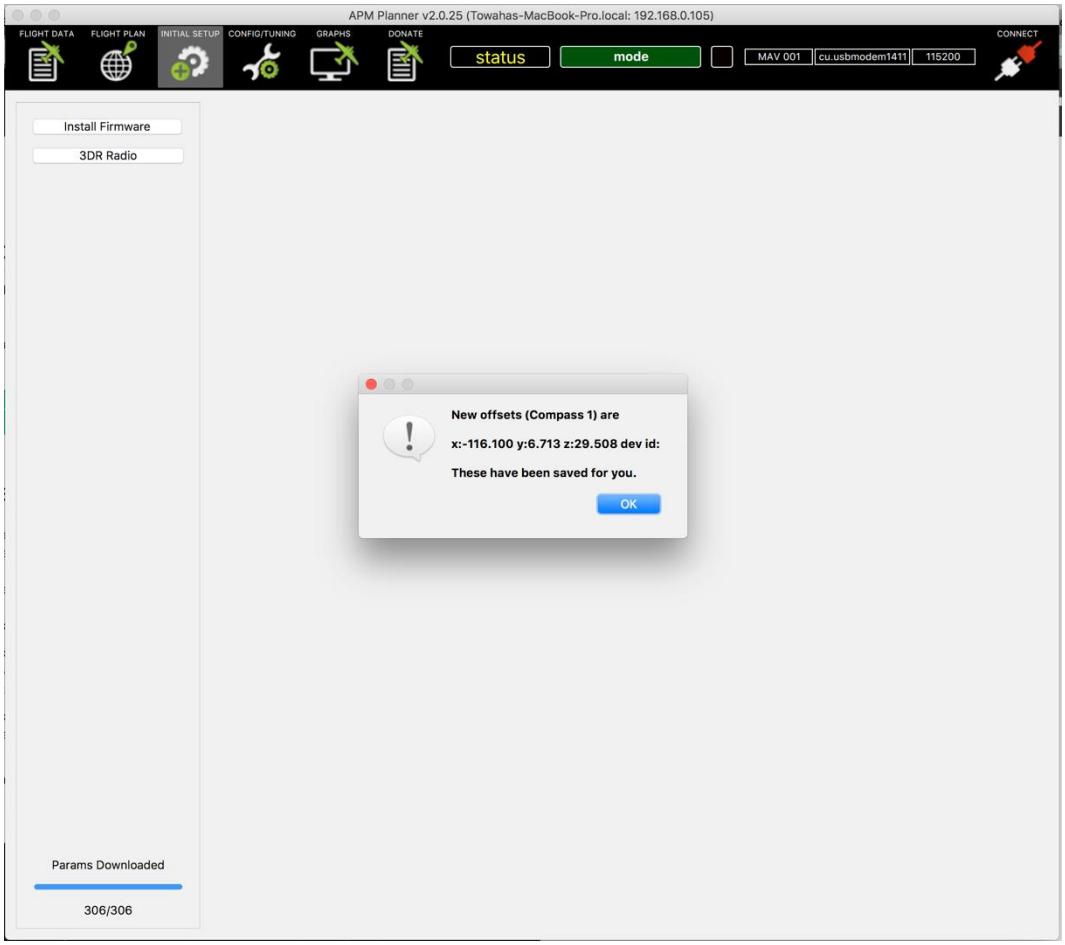

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
status
MAV 001
cu.usbmodem1411
115200
CONNECT
Install Firmware
3DR Radio
Params Downloaded
306/306
Firmware
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
Firmware Options

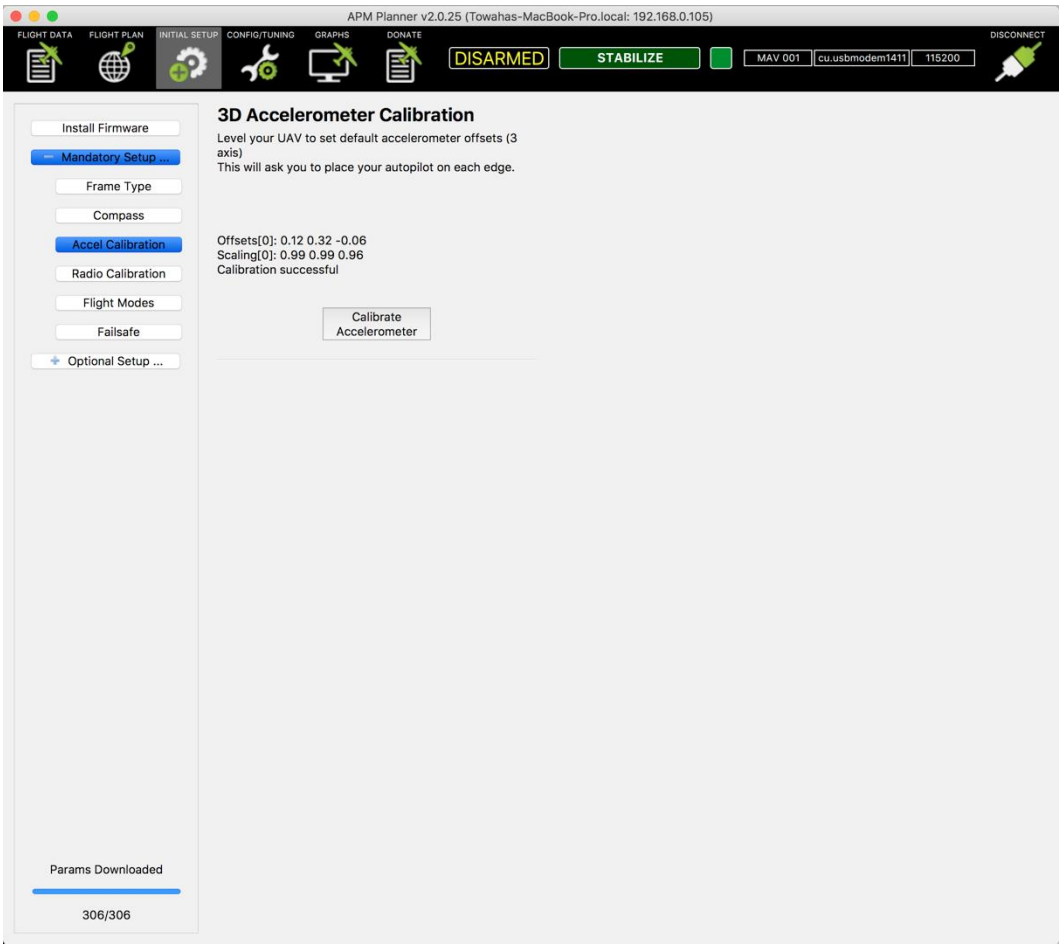

APM Planner 2.0
File
Communication
Views
Tool Widgets
Help
APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
status
mode
CONNECT
Install Firmware
3DR Radio
Firmware
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
Firmware Options
Beta
Custom
Stable
Firmware Upload
Com Port
cu.usbmodem1411
Arduino Mega 2560
Arduino (www.arduino.cc)
Status: Downloading
Show Output
Started downloading http://firmware.ardupilot.org/Copter/stable/apm2-quad/ArduCopter.hex
Started downloading http://firmware.ardupilot.org/Copter/stable/apm2-quad/ArduCopter.hex
Params Downloaded
306/306

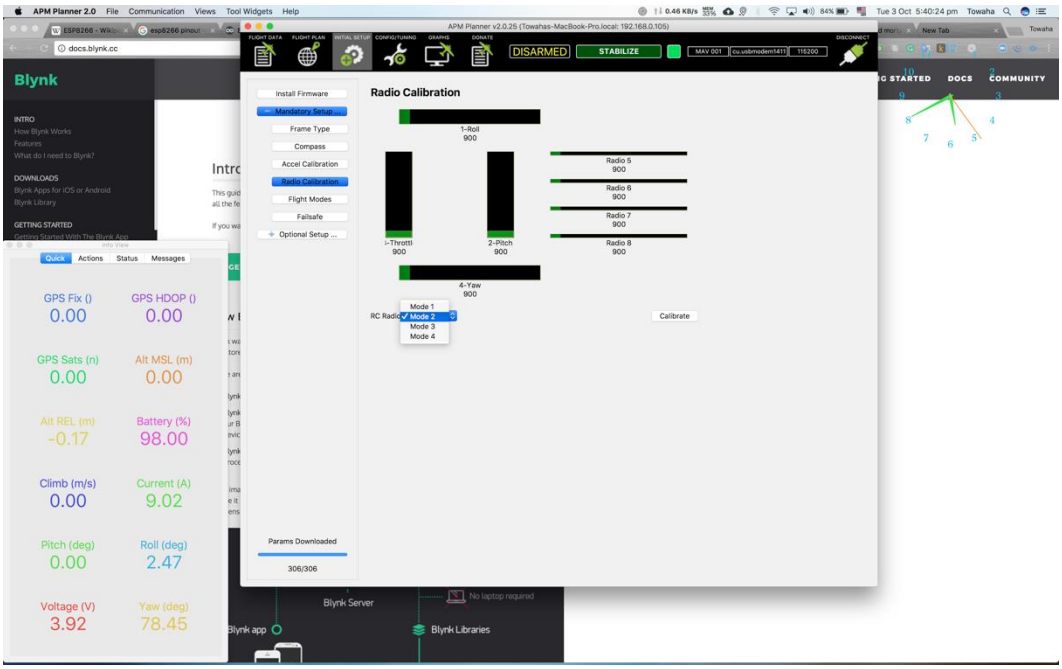

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
status
mode
MAV 001
cu.usbmodem1411
115200
CONNECT
Install Firmware
3DR Radio
As of AC 3.1, motors will spin when armed.
This is configurable through the
MOT_SPIN_ARMED parameter
OK
Params Downloaded
306/306

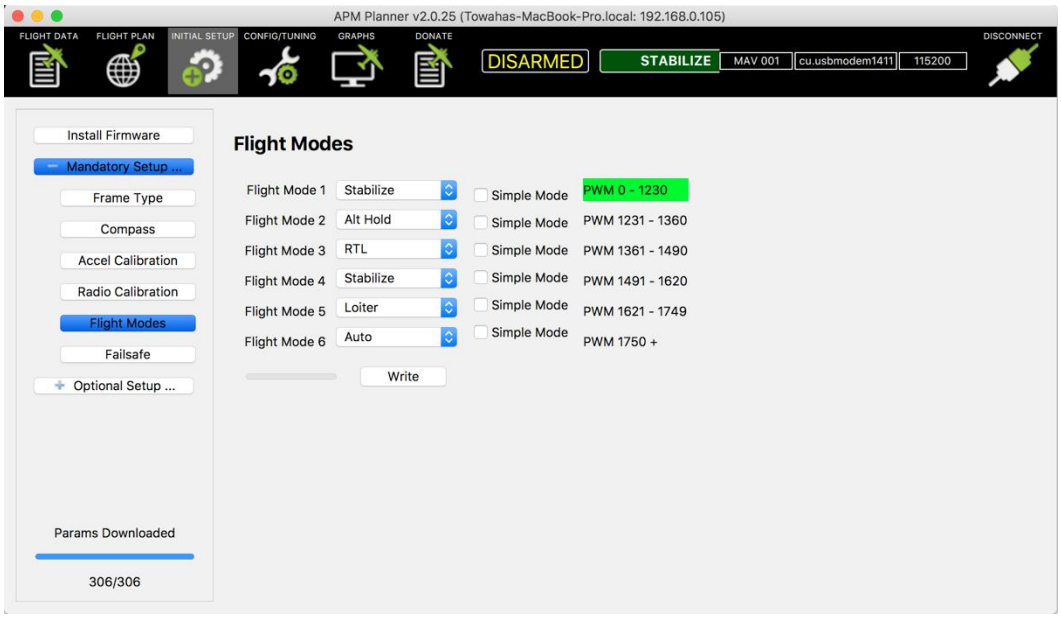

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
DISARMED
STABILIZE
MAV 001
cu.usbmodem1411
115200
DISCONNECT
Install Firmware
Mandatory Setup ...
Frame Type
Compass
Accel Calibration
Radio Calibration
Flight Modes
Failsafe
Optional Setup ...
Frame Setup
Load Parameters for Common Frame Types
'Plus' Style
'X' Style
'V' Style
'H' Style
NOTE: X and H are not interchangable as the prop rotation changes
Y6B
NOTE: This is the new Y6 configuration with all props on the bottom rotating CCW and on top CW
Params Downloaded
306/306

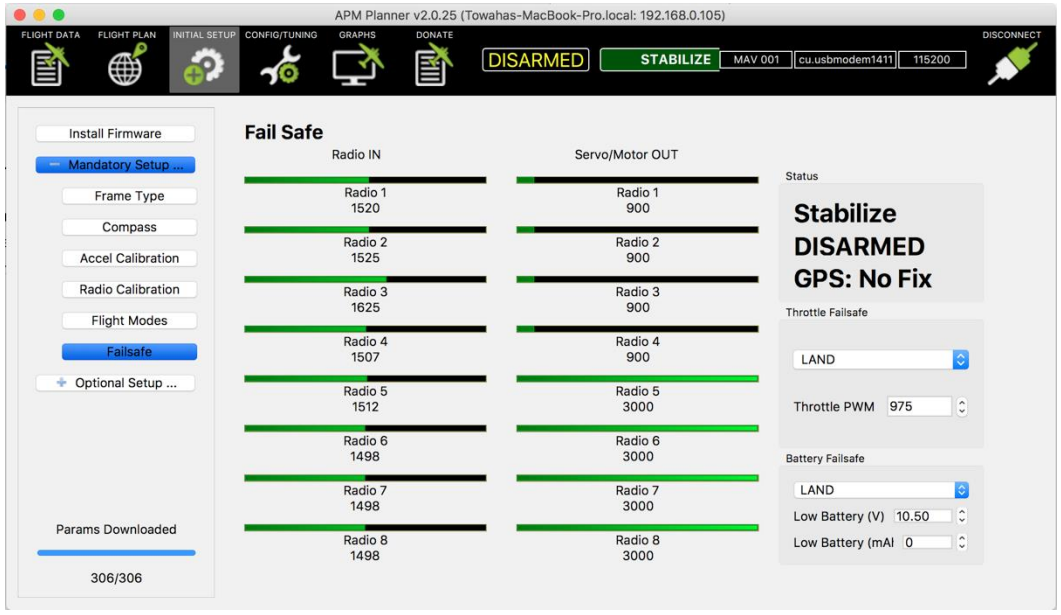

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
DISARMED
STABILIZE
MAV 001
cu.usbmodem1411
115200
DISCONNECT
Install Firmware
Mandatory Setup ...
Frame Type
Compass
Accel Calibration
Radio Calibration
Flight Modes
Failsafe
Optional Setup ...
Compass
Enable
Auto Declination
Degrees: 0
Minutes: 0
Declination Website
Live Calibration
YouTube Example
Orientation (ROTATION)
Pixhawk / PX4
PM with On-Boar Compass
Compass Motor Calibration (Optional)
CompassMot calibrates the compass for magnetic interference created by the power electronics.
Compass Motor Calibration
Data will be collected for 60 seconds, Please click ok and move the apm around all axes
OK
Params Downloaded
306/306

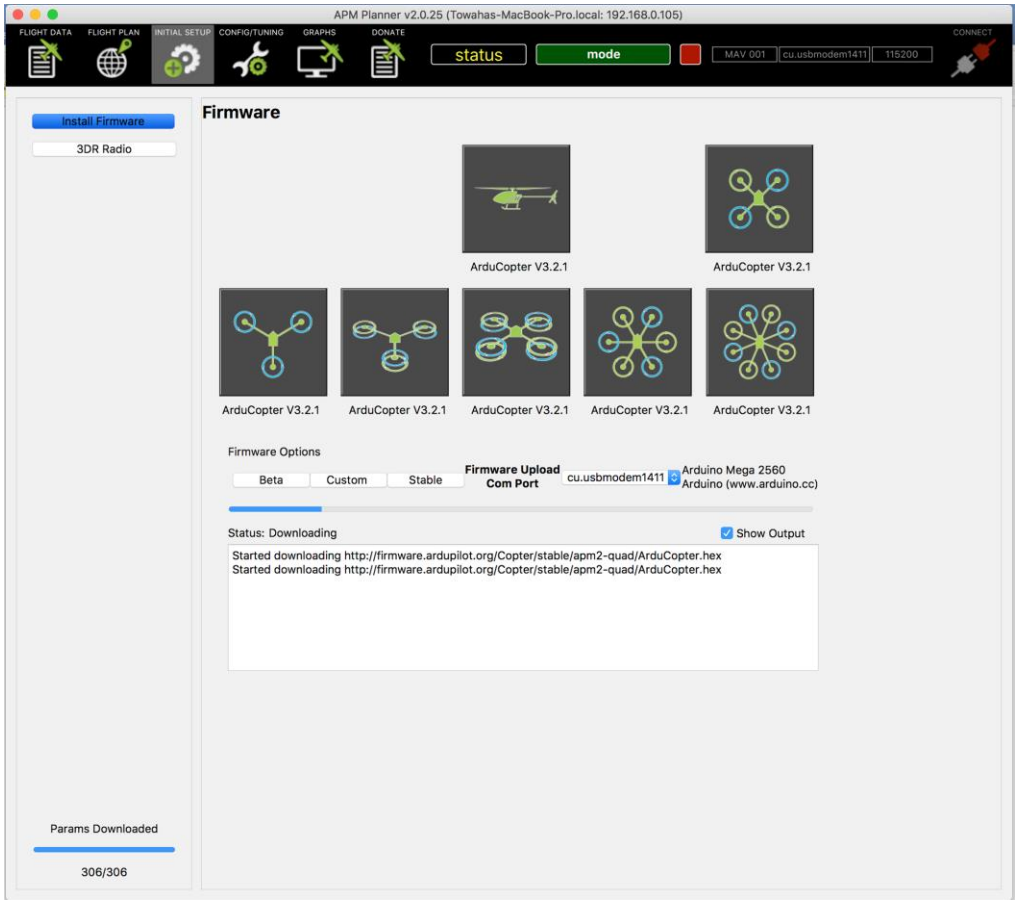

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
status
mode
MAV 001
cu.usbmodem1411
115200
CONNECT
Install Firmware
3DR Radio
New offsets (Compass 1) are
x:-116.100 y:6.713 z:29.508 dev id:
These have been saved for you.
OK
Params Downloaded
306/306

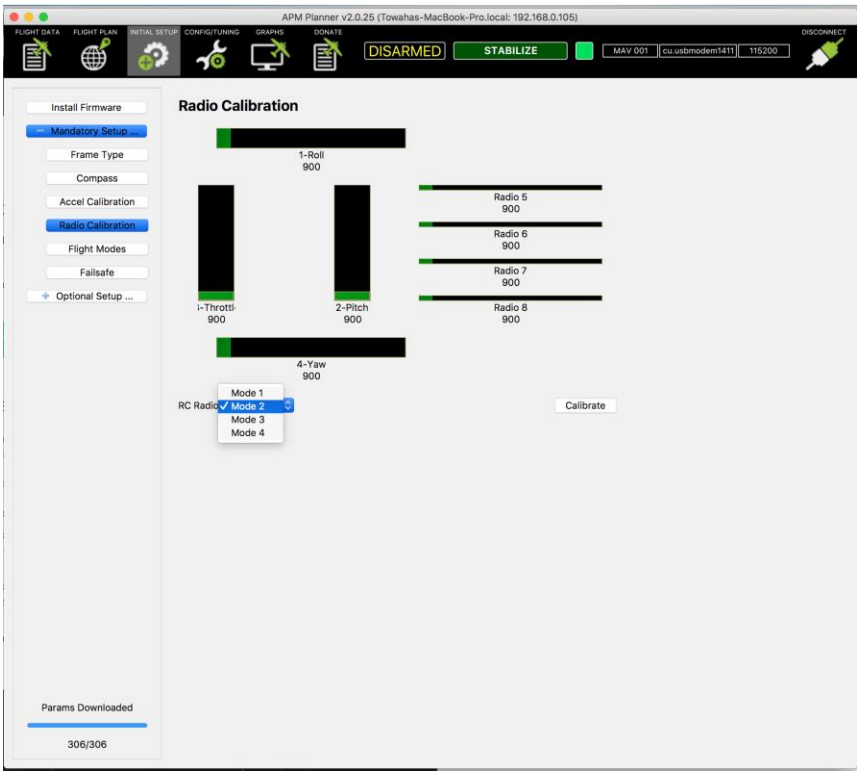

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
DISARMED
STABILIZE
MAV 001
cu.usbmodem1411
115200
DISCONNECT
Install Firmware
Mandatory Setup ...
Frame Type
Compass
Accel Calibration
Radio Calibration
Flight Modes
Failsafe
Optional Setup ...
3D Accelerometer Calibration
Level your UAV to set default accelerometer offsets (3 axis)
This will ask you to place your autopilot on each edge.
Offsets[0]: 0.12 0.32 -0.06
Scaling[0]: 0.99 0.99 0.96
Calibration successful
Calibrate Accelerometer
Params Downloaded
306/306


APM Planner 2.0
File
Communication
Views
Tool Widgets
Help
Tue 3 Oct 5:40:24 pm
Towaha
docs.blynk.cc
Blynk
INTRO
How Blynk Works
Features
What do I need to Blynk?
DOWNLOADS
Blynk Apps for iOS or Android
Blynk Library
GETTING STARTED
Getting Started With The Blynk App
Radio Calibration
1-Roll
900
3-Throttl
900
2-Pitch
900
Radio 5
900
Radio 6
900
Radio 7
900
Radio 8
900
4-Yaw
900
Mode 1
Mode 2
Mode 3
Mode 4
Calibrate
Params Downloaded
306/306
GPS Fix ()
0.00
GPS HDOP ()
0.00
GPS Sats (n)
0.00
Alt MSL (m)
0.00
Alt REL (m)
-0.17
Battery (%)
98.00
Climb (m/s)
0.00
Current (A)
9.02
Pitch (deg)
0.00
Roll (deg)
2.47
Voltage (V)
3.92
Yaw (deg)
78.45
Blynk Server
No laptop required
Blynk app
Blynk Libraries


APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
DISARMED
STABILIZE
MAV 001
cu.usbmodem1411
115200
DISCONNECT
Install Firmware
Mandatory Setup ...
Frame Type
Compass
Accel Calibration
Radio Calibration
Flight Modes
Failsafe
Optional Setup ...
Params Downloaded
306/306
Flight Modes
Flight Mode 1 Stabilize Simple Mode PWM 0 - 1230
Flight Mode 2 Alt Hold Simple Mode PWM 1231 - 1360
Flight Mode 3 RTL Simple Mode PWM 1361 - 1490
Flight Mode 4 Stabilize Simple Mode PWM 1491 - 1620
Flight Mode 5 Loiter Simple Mode PWM 1621 - 1749
Flight Mode 6 Auto Simple Mode PWM 1750 +
Write


APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
DISARMED
STABILIZE
MAV 001
cu.usbmodem1411
115200
DISCONNECT
Install Firmware
Mandatory Setup ...
Frame Type
Compass
Accel Calibration
Radio Calibration
Flight Modes
Failsafe
Optional Setup ...
Params Downloaded
306/306
Fail Safe
Radio IN
Radio 1 1520
Radio 2 1525
Radio 3 1625
Radio 4 1507
Radio 5 1512
Radio 6 1498
Radio 7 1498
Radio 8 1498
Servo/Motor OUT
Radio 1 900
Radio 2 900
Radio 3 900
Radio 4 900
Radio 5 3000
Radio 6 3000
Radio 7 3000
Radio 8 3000
Status
Stabilize
DISARMED
GPS: No Fix
Throttle Failsafe
LAND
Throttle PWM 975
Battery Failsafe
LAND
Low Battery (V) 10.50
Low Battery (mAl 0

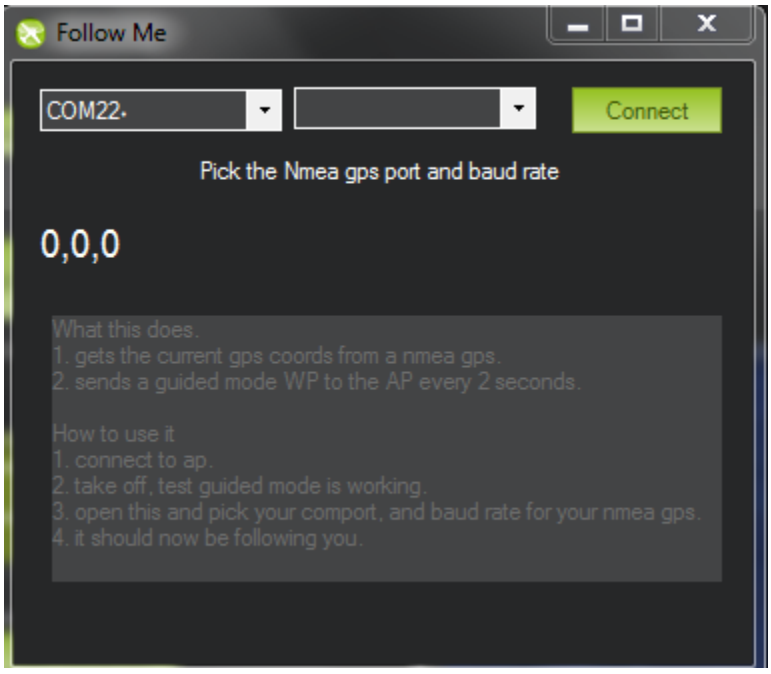

APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
status
mode
MAV 001
cu.usbmodem1411
115200
CONNECT
Install Firmware
3DR Radio
Firmware
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
ArduCopter V3.2.1
Firmware Options
Beta
Custom
Stable
Firmware Upload Com Port
cu.usbmodem1411
Arduino Mega 2560
Arduino (www.arduino.cc)
Status: Downloading
Show Output
Started downloading http://firmware.ardupilot.org/Copter/stable/apm2-quad/ArduCopter.hex
Started downloading http://firmware.ardupilot.org/Copter/stable/apm2-quad/ArduCopter.hex
Params Downloaded
306/306


APM Planner v2.0.25 (Towahas-MacBook-Pro.local: 192.168.0.105)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
GRAPHS
DONATE
DISARMED
STABILIZE
MAV 001
cu.usbmodem1411
115200
DISCONNECT
Install Firmware
Mandatory Setup ...
Frame Type
Compass
Accel Calibration
Radio Calibration
Flight Modes
Failsafe
Optional Setup ...
Radio Calibration
1-Roll
900
Radio 5
900
Radio 6
900
Radio 7
900
Radio 8
900
i-Throttl
900
2-Pitch
900
4-Yaw
900
Mode 1
Mode 2
Mode 3
Mode 4
Calibrate
Params Downloaded
306/306

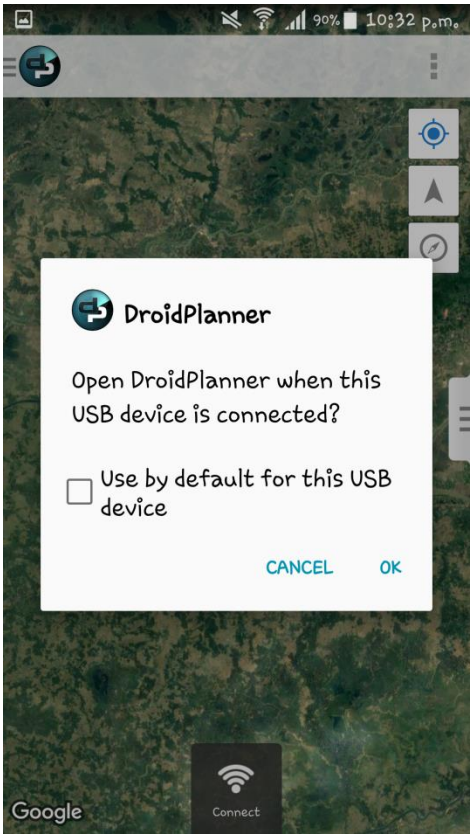
Chapter 4: Building a Follow Me Drone

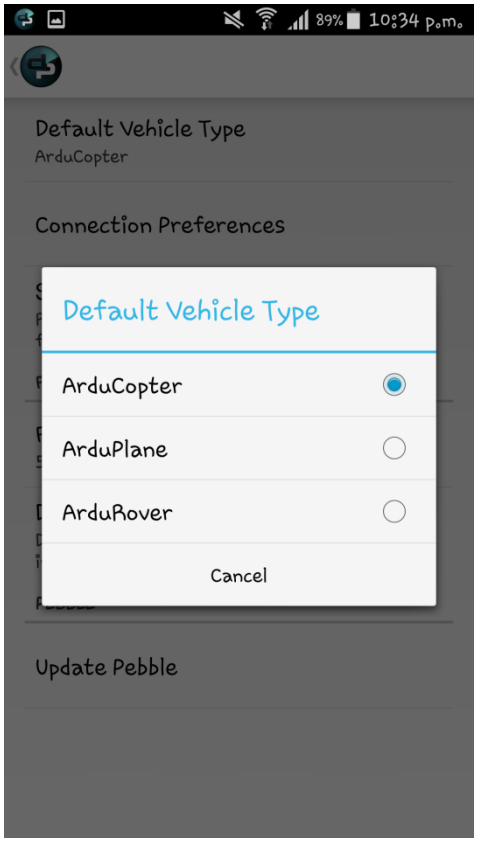
GlobalSat ND-100S USB GPS Dongle

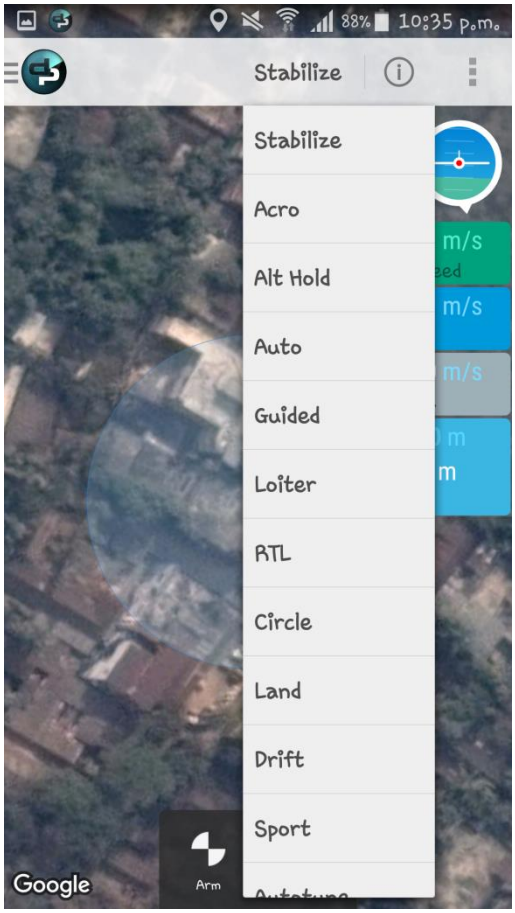
GlobalSat BT-368i Bluetooth GPS Receiver

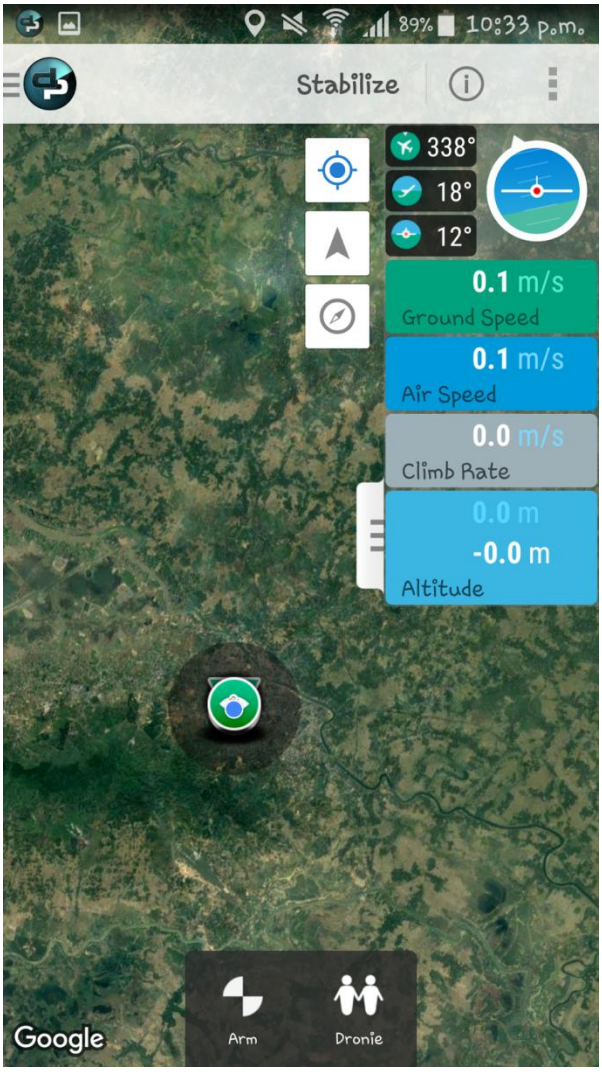



90%
10:31 p.m.
Google
Connect

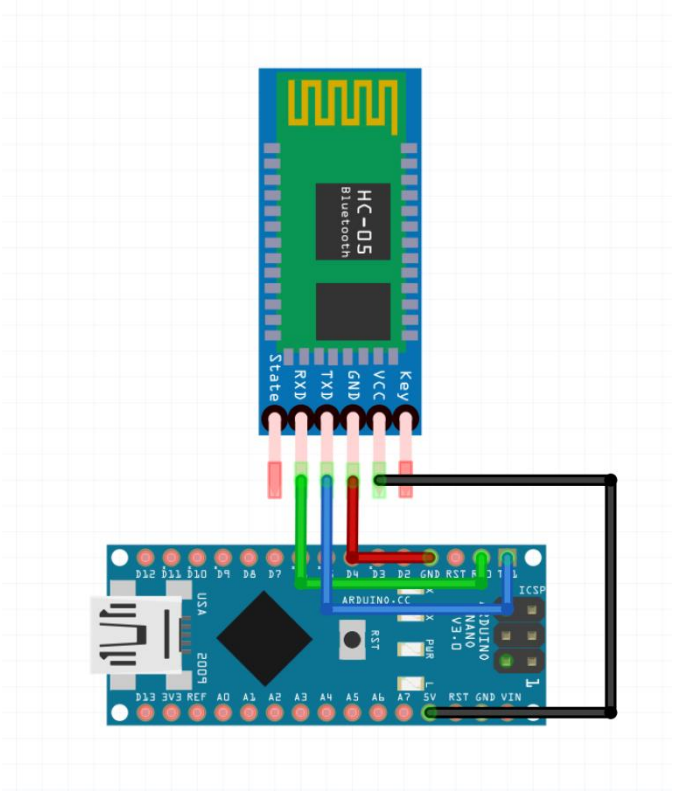

90% 10:32 p.m.
DroidPlanner
Open DroidPlanner when this USB device is connected?
Use by default for this USB device
CANCEL
OK
Google
Connect

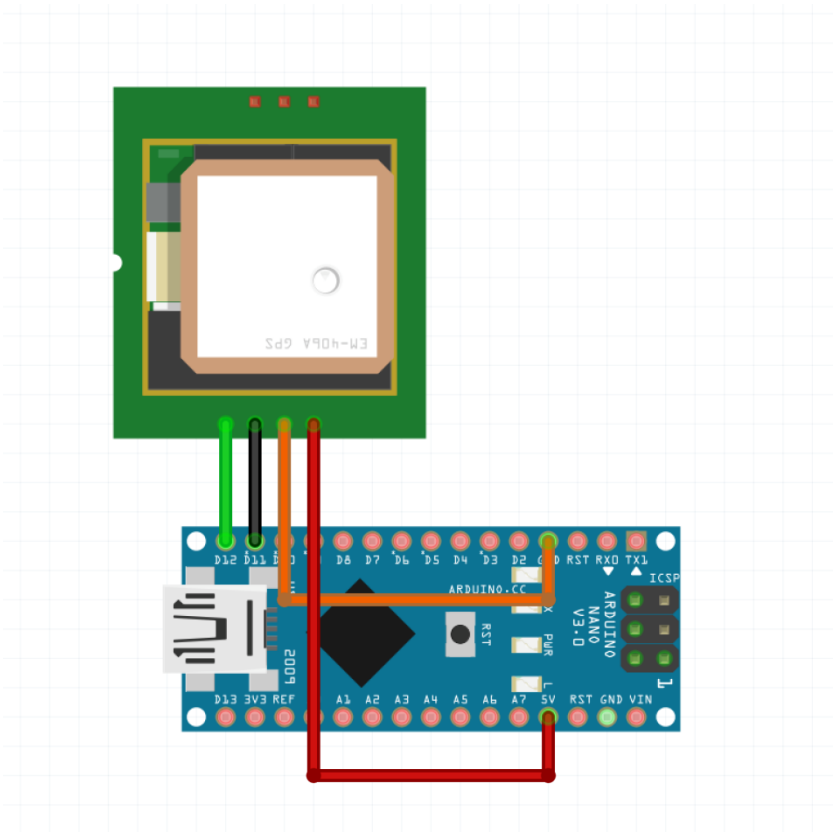

89% 10:34 p.m.
Default Vehicle Type
ArduCopter
Connection Preferences
Default Vehicle Type
ArduCopter
ArduPlane
ArduRover
Cancel
Update Pebble

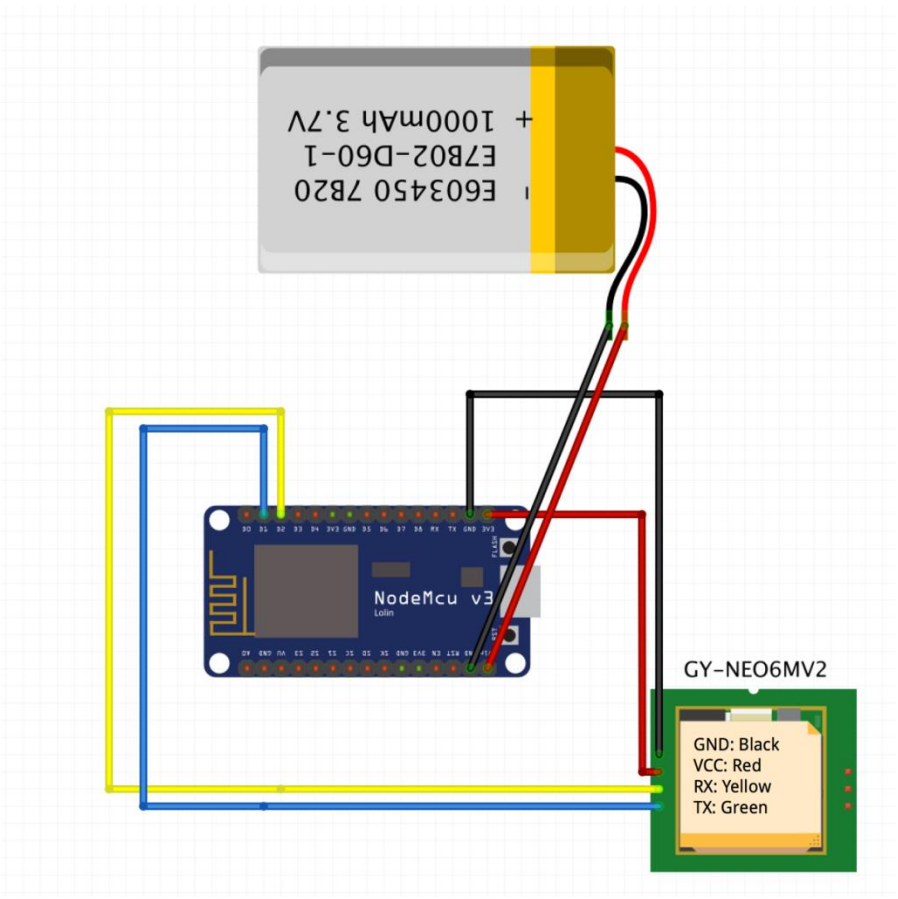

88% 10:35 p.m.
Stabilize
Stabilize
Acro
Alt Hold
Auto
Guided
Loiter
RTL
Circle
Land
Drift
Sport
m/s
m/s
m/s
m
m
Arm
Google

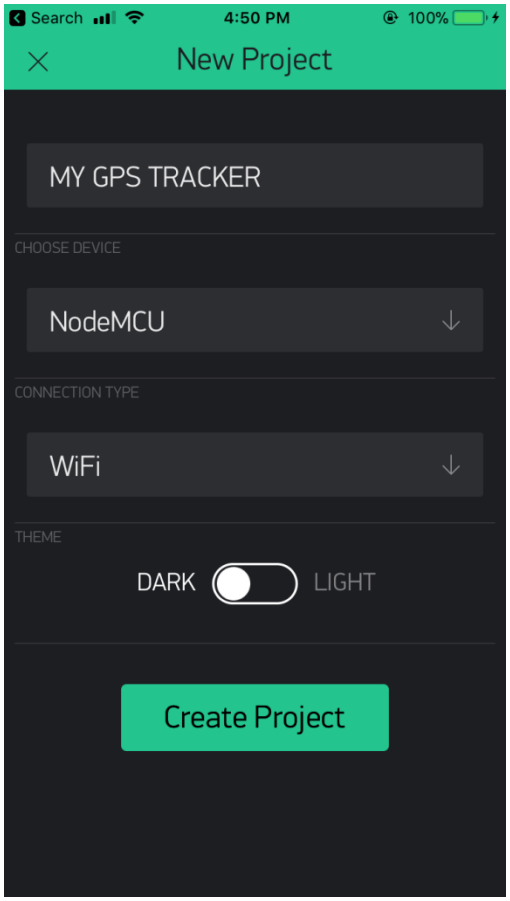

89% 10:33 p.m.
Stabilize
338°
18°
12°
0.1 m/s
Ground Speed
0.1 m/s
Air Speed
0.0 m/s
Climb Rate
0.0 m
-0.0 m
Altitude
Google
Arm
Dronie

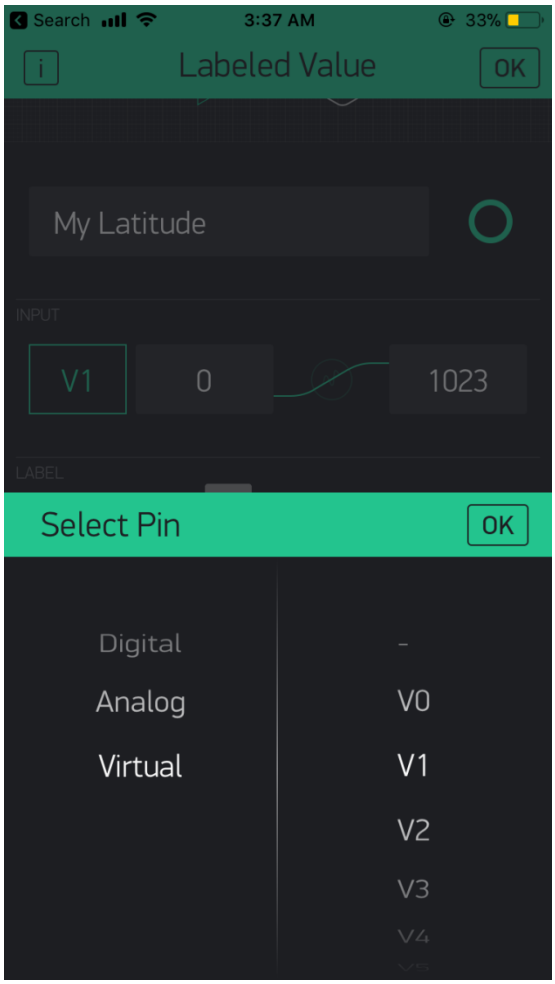

81% 10:51 p.m.
15,0 V
STABILIZE
--
-0,3 M
3D
00:00
NO VIDEO AVAILABLE
349°
24°
3°
hs: 0.1 m/s
vs: 0.0 m/s
Google
Arm
Dronie

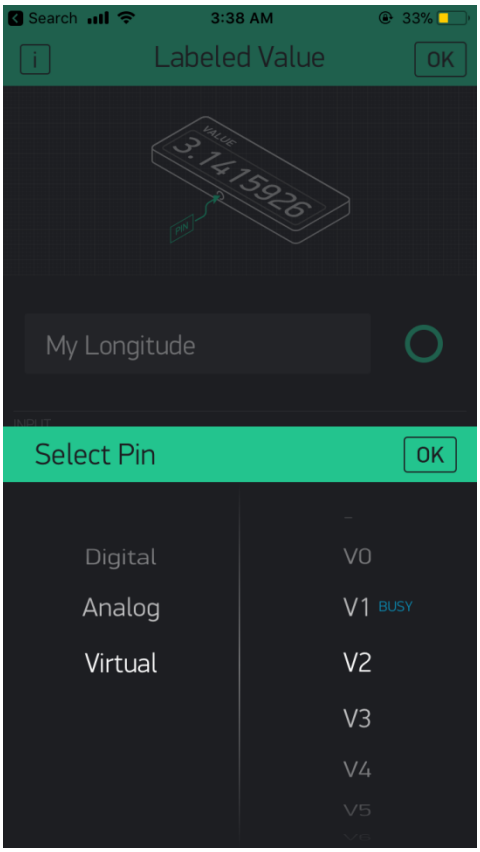

HC-05
Bluetooth
State
RXD
TXD
GND
VCC
Key
ARDUINO.CC
ICSP
D13 3V3 REF A0 A1 A2 A3 A4 A5 A6 A7 5V RST GND VIN

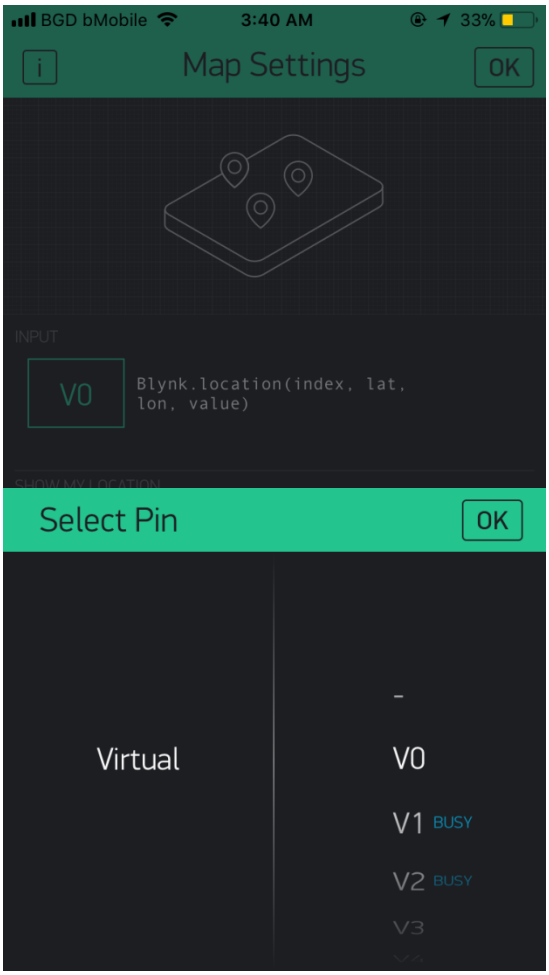

D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 GND RST RX0 TX1
ICSP
ARDUINO.CC
ARDUINO NANO V3.0
RST
PWR
L
2009
D13 3V3 REF A1 A2 A3 A4 A5 A6 A7 5V RST GND VIN

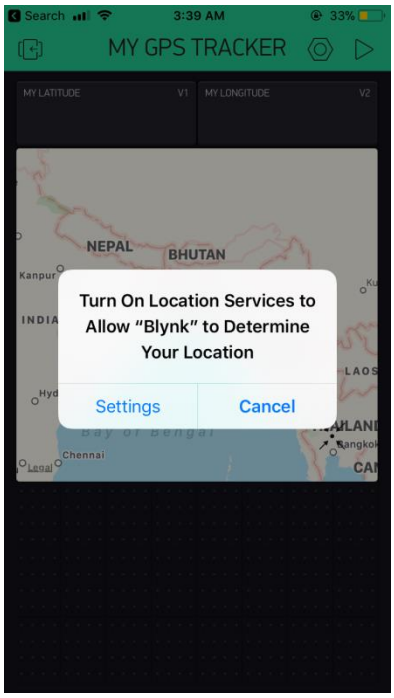

+ 1000mAh 3.7V
E603450 7B20
E7B02-D60-1
NodeMcu v3
Lolin
GY-NEO6MV2
GND: Black
VCC: Red
RX: Yellow
TX: Green


Search
4:50 PM
100%
New Project
MY GPS TRACKER
CHOOSE DEVICE
NodeMCU
CONNECTION TYPE
WiFi
THEME
DARK
LIGHT
Create Project

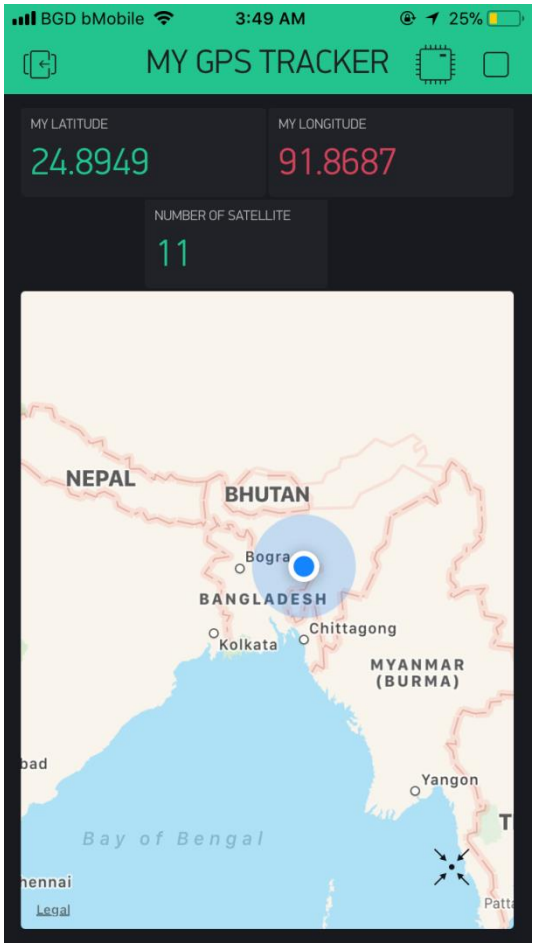

Search
3:37 AM
33%
i
Labeled Value
OK
My Latitude
INPUT
V1
0
1023
LABEL
Select Pin
OK
Digital
Analog
Virtual
-
V0
V1
V2
V3
V4

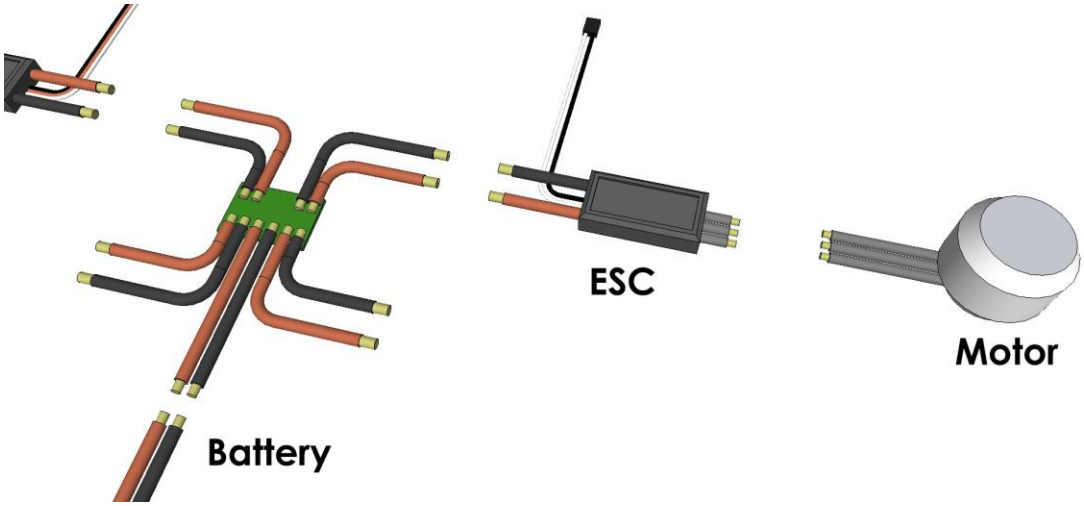

Search
3:38 AM
33%
i
Labeled Value
OK
VALUE
3.1415926
PIN
My Longitude
INPUT
Select Pin
OK
Digital
Analog
Virtual
V0
V1
BUSY
V2
V3
V4
V5


BGD bMobile
3:40 AM
33%
i
Map Settings
OK
INPUT
V0
Blynk.location(index, lat, lon, value)
Select Pin
OK
Virtual
-
V0
V1 BUSY
V2 BUSY
V3

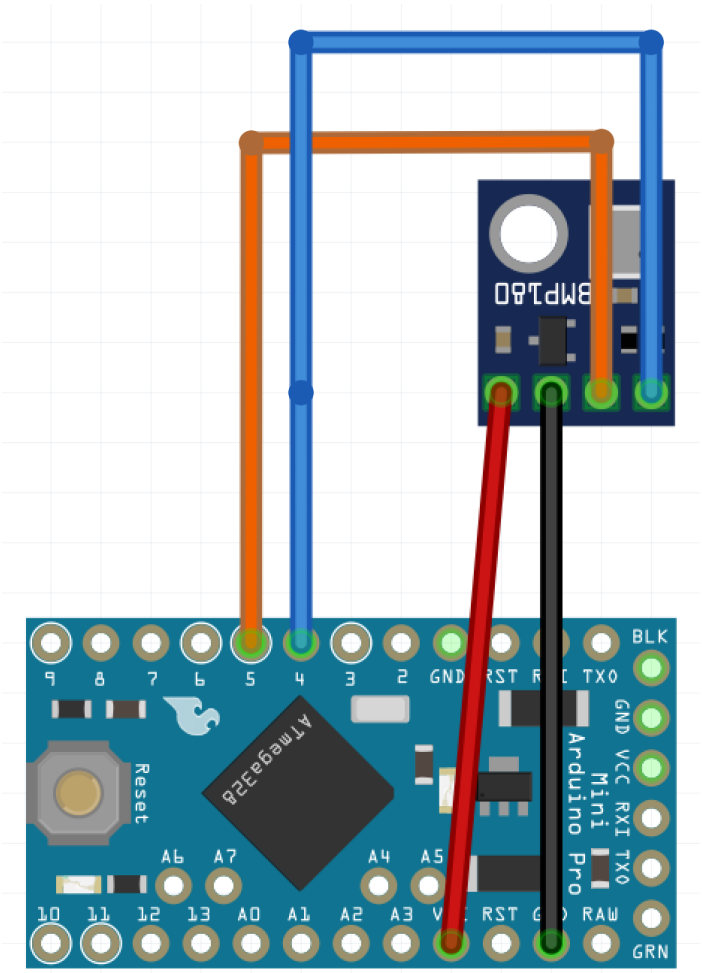

Search
3:39 AM
33%
MY GPS TRACKER
MY LATITUDE
V1
MY LONGITUDE
V2
NEPAL
BHUTAN
Kanpur
INDIA
Turn On Location Services to Allow "Blynk" to Determine Your Location
Settings
Cancel
LAOS
Chennai
Legal

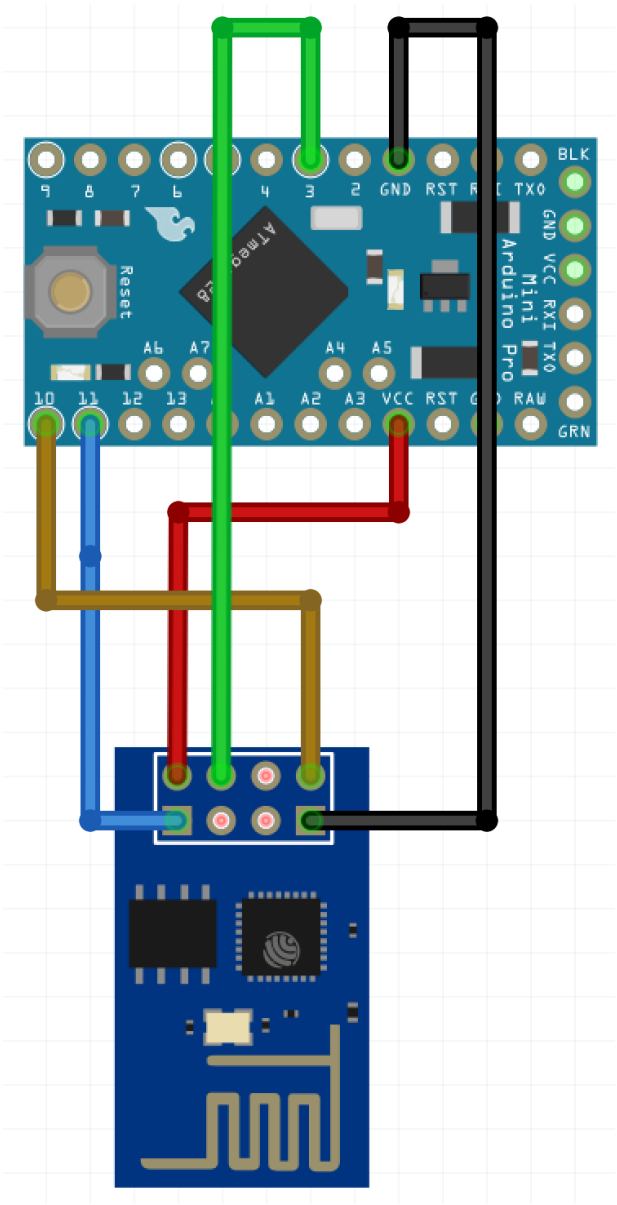

BGD bMobile
3:49 AM
22%
MY GPS TRACKER
MY LATITUDE
V1
MY LONGITUDE
V2
NUMBER OF SATELLITE
V3
NEPAL
BHUTAN
Bogra
BANGLADESH
Chittagong
Kolkata
MYANMAR
(BURMA)
Yangon
Bay of Bengal
Legal

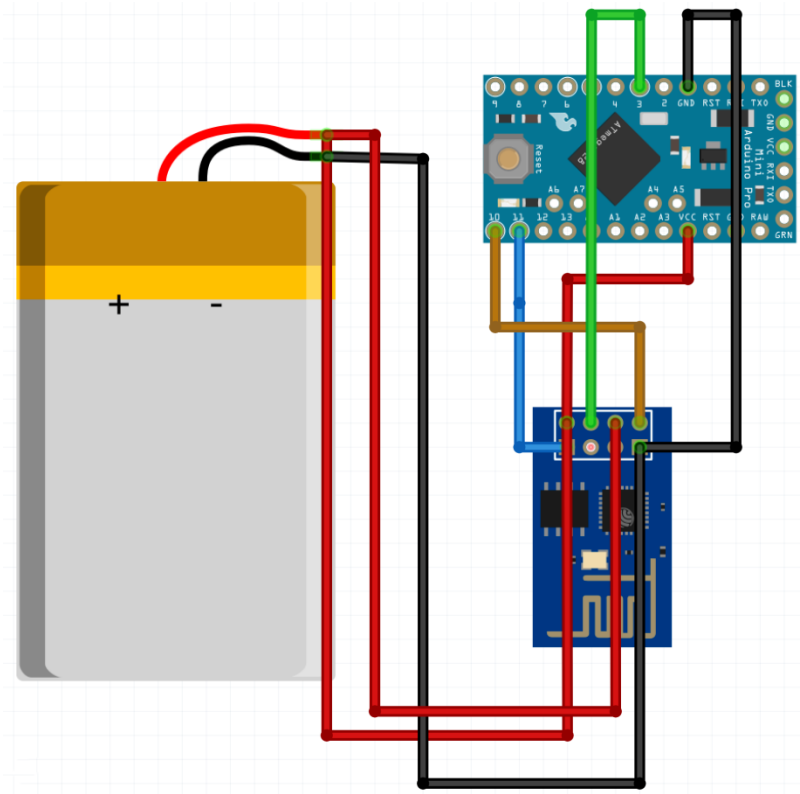

BGD bMobile
3:49 AM
25%
MY GPS TRACKER
MY LATITUDE
24.8949
MY LONGITUDE
91.8687
NUMBER OF SATELLITE
11
NEPAL
BHUTAN
Bogra
BANGLADESH
Chittagong
Kolkata
MYANMAR
(BURMA)
Yangon
Bay of Bengal
Legal

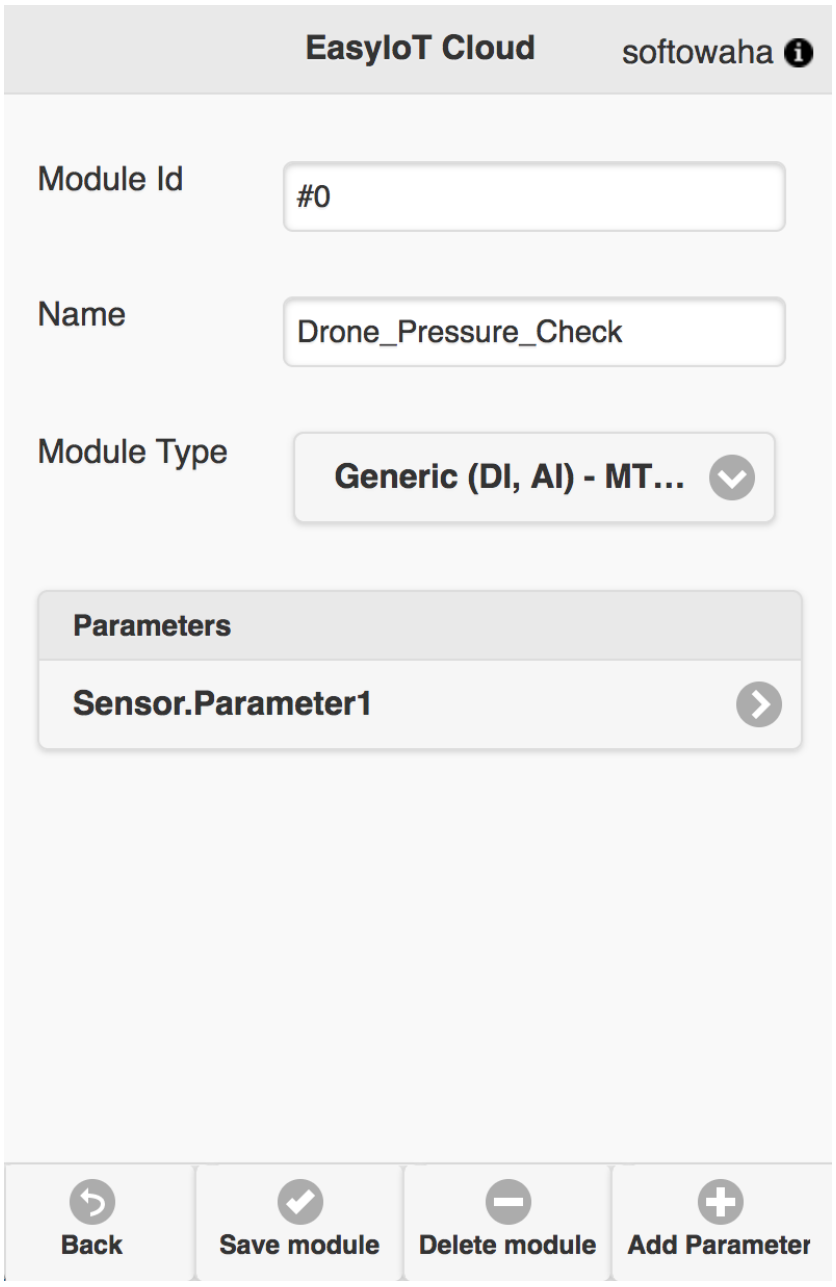

Battery
ESC
Motor

Chapter 5: Building a Mission Control Drone


BMP180
9 8 7 6 5 4 3 2 GND RST TXO
BLK
GND VCC RXI TXO
GRN
Reset
ATmega328
Arduino Pro Mini
A6 A7 A4 A5
10 11 12 13 A0 A1 A2 A3 RST RAW

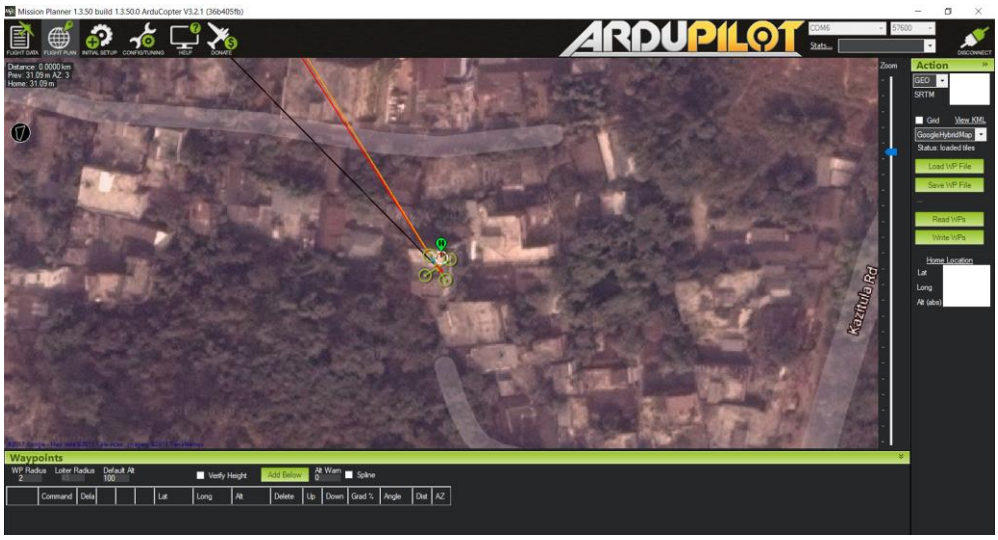

BLK
GND VCC RXI TXO
Arduino Pro
Mini
Reset
GND RST
TXO
A6 A7
A4 A5
10 11 12 13
A1 A2 A3 VCC RST
RAW
GRN

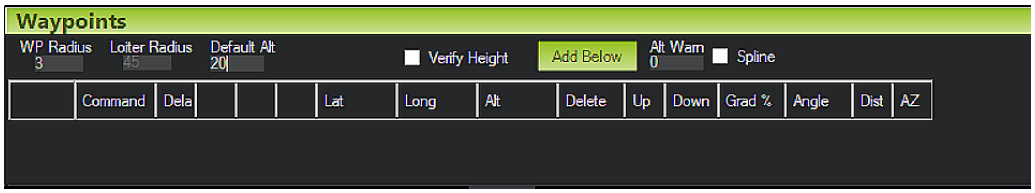

+
-
Reset
GND
RST
TX0
GND
VCC
RXI
TX0
RAW
GRN
Arduino Pro
Mini
A1
A2
A3
VCC
RST
A4
A5
A6
A7

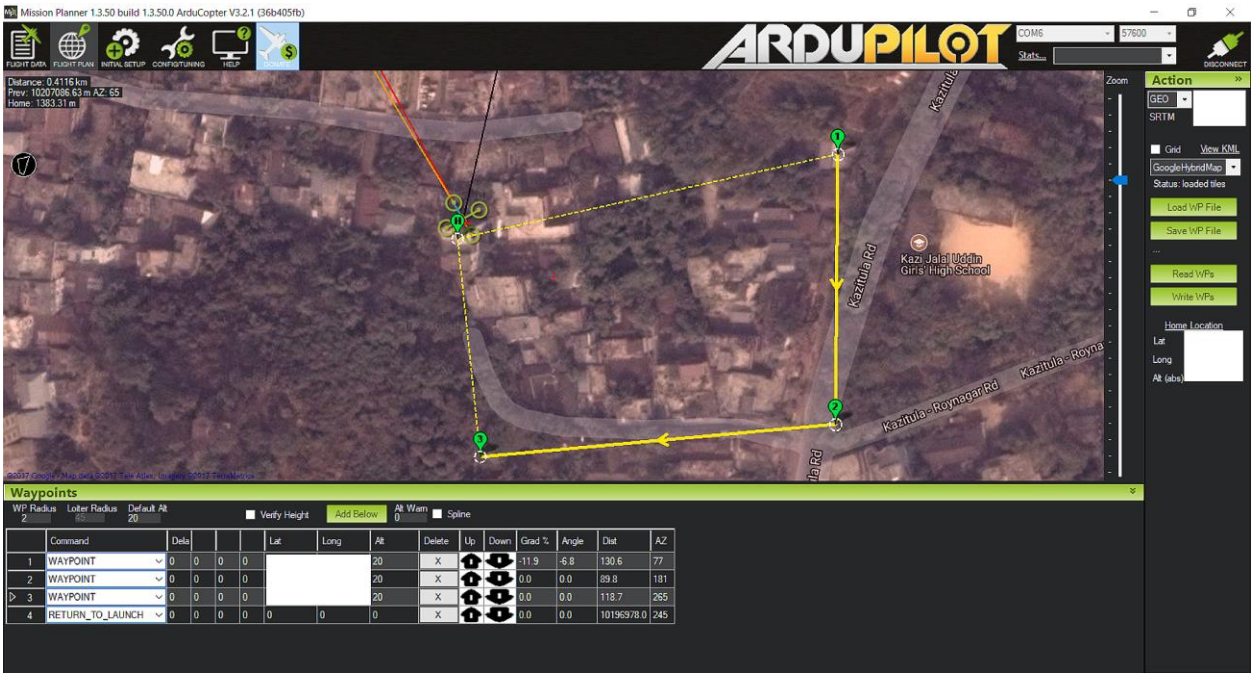

EasyIoT Cloud
softowaha
Module Id
#0
Name
Drone_Pressure_Check
Module Type
Generic (DI, AI) - MT...
Parameters
Sensor.Parameter1
Back
Save module
Delete module
Add Parameter


Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
ARDUPILOT
Flight Modes
GeoFence
Basic Tuning
Extended Tuning
Standard Params
Planner
Video Device
Video Format
OSD Color
Speech
UI Language
Joystick
Dist Units
Speed Units
Telemetry Rates
APM Reset
Track Length
Waypoints
HUD
Map Follow
Log Path
Theme
Layout
Start
Stop
Enable HUD Overlay
Enable Speech
Joystick Setup
Meters
kph
NOTE: The Configuration Tab will NOT display these units, as those are raw values.
Reset APM on USB Connect
Load Waypoints on connect?
GDI+ (old type)
Map is rotated to follow the plane
Browse
Custom
Basic
Password Protect Config
Show Airports
ADSB
OptOut Anon Stats
Beta Updates
No RC Receiver
TFRs
Mavlink Message Debug
Testing Screen


Mission Planner 1.3.50 build 1.3.50.0
ARDUPILOT
Allied Seed
West River
Washakie Ten
Worland
Zoom
Action
Grid
View KML
GoogleHybridMap
Status: loaded tiles
Load WP File
Save WP File
Read WPs
Write WPs
Home Location
Waypoints
Verify Height
Add Below
Spline
Command
Delete
Up
Down
Angle
Dist
AZ

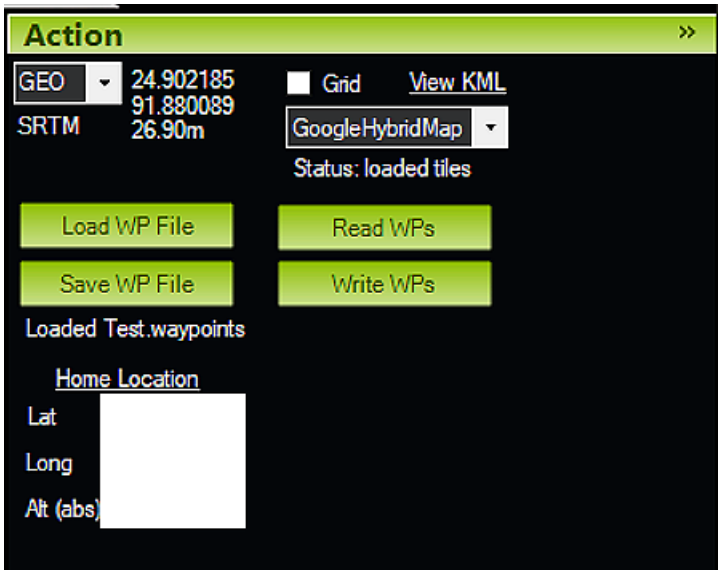

Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
ARDUPILOT
Action
Waypoints
Kaziula Rd


Waypoints
WP Radius
3
Loiter Radius
45
Default Alt
20
Verify Height
Add Below
Alt Warn
0
Spline
Command
Dela
Lat
Long
Alt
Delete
Up
Down
Grad %
Angle
Dist
AZ


Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
ARDUPILOT
Distance: 0.4116km
Prev: 10207086.6 m AZ: 65
Home: 1383.31 m
Kaziula Rd
Kazi Jalal Uddin Girls' High School
Kaziula - Roynagar Rd
Action
Waypoints
WP Radius 2
Loiter Radius 45
Default Alt 20
Verify Height
Add Below
Alt Warn 0
Spline
Command
Dela
Lat
Long
Alt
Delete
Up
Down
Grad %
Angle
Dist
AZ
1 WAYPOINT 20 -11.9 -6.8 130.6 77
2 WAYPOINT 20 0.0 0.0 89.8 181
3 WAYPOINT 20 0.0 0.0 118.7 265
4 RETURN_TO_LAUNCH 0 0 0 10196978.0 245

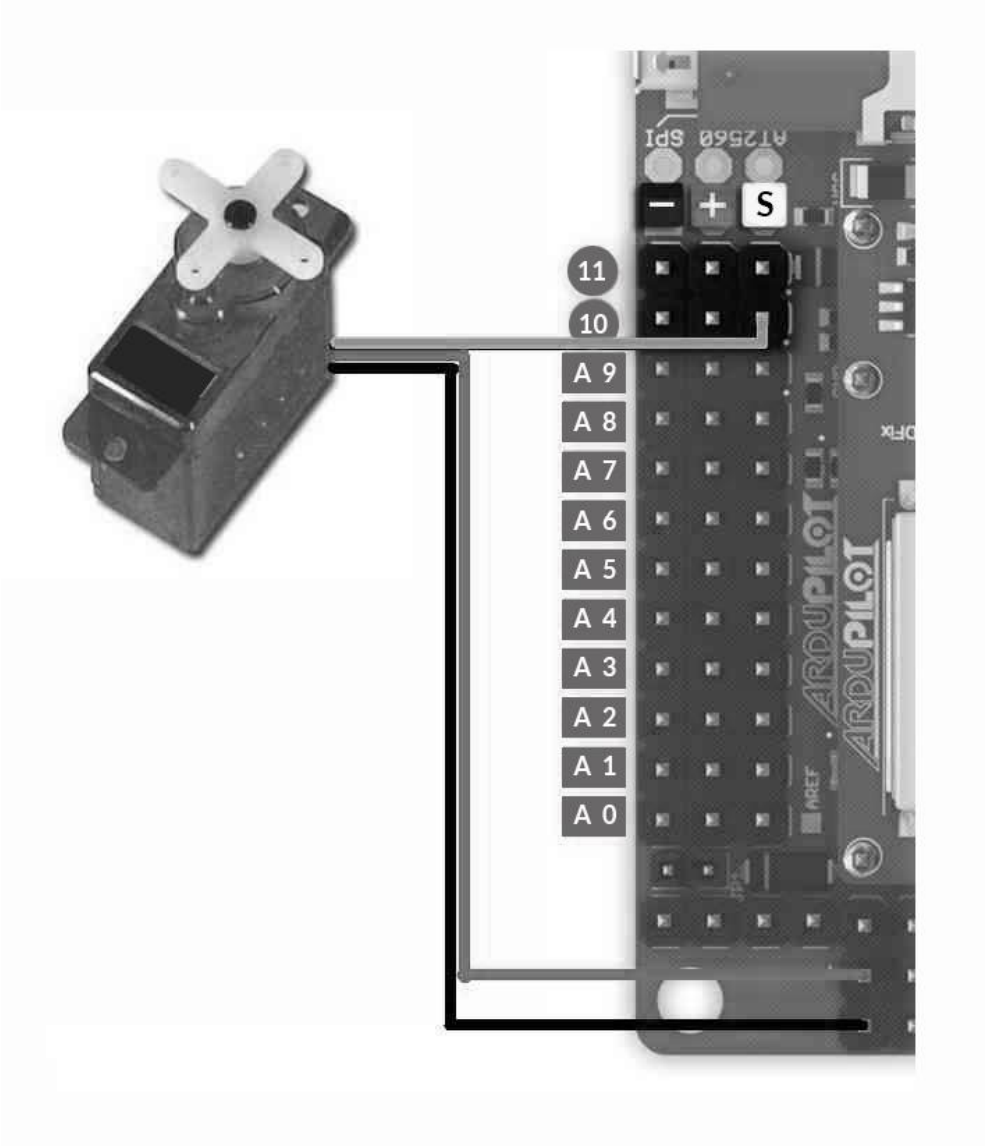

Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
ARDUPILOT
Distance: 0.4117 km
Prev: 11606308.87 m AZ: 68
Home: 1445702.88 m
Kazi Jalal Uddin Girls' High School
Kazitula Rd
Kazitula - Roynagar Rd
WAYPOINT
SPLINE_WAYPOINT
LOITER_TURNS
LOITER_TIME
LOITER_UNLIM
RETURN_TO_LAUNCH
LAND
TAKEOFF
DELAY
GUIDED_ENABLE
PAYLOAD_PLACE
DO_GUIDED_LIMITS
DO_SET_ROI
CONDITION_DELAY
CONDITION_CHANGE_ALT
CONDITION_DISTANCE
CONDITION_YAW
DO_JUMP
DO_CHANGE_SPEED
DO_GRIPPER
DO_PARACHUTE
DO_SET_CAM_TRIGG_DIST
DO_SET_RELAY
DO_REPEAT_RELAY
DO_SET_SERVO
DO_REPEAT_SERVO
DO_DIGICAM_CONFIGURE
DO_DIGICAM_CONTROL
DO_MOUNT_CONTROL
UNKNOWN
Verify Height
Add Below
Spline
Delete
Up
Down
Grad %
Angle
Dist
AZ
RETURN_TO_LAUNCH
Action
Load WP File
Save WP File
Read WPs
Write WPs
Home Location

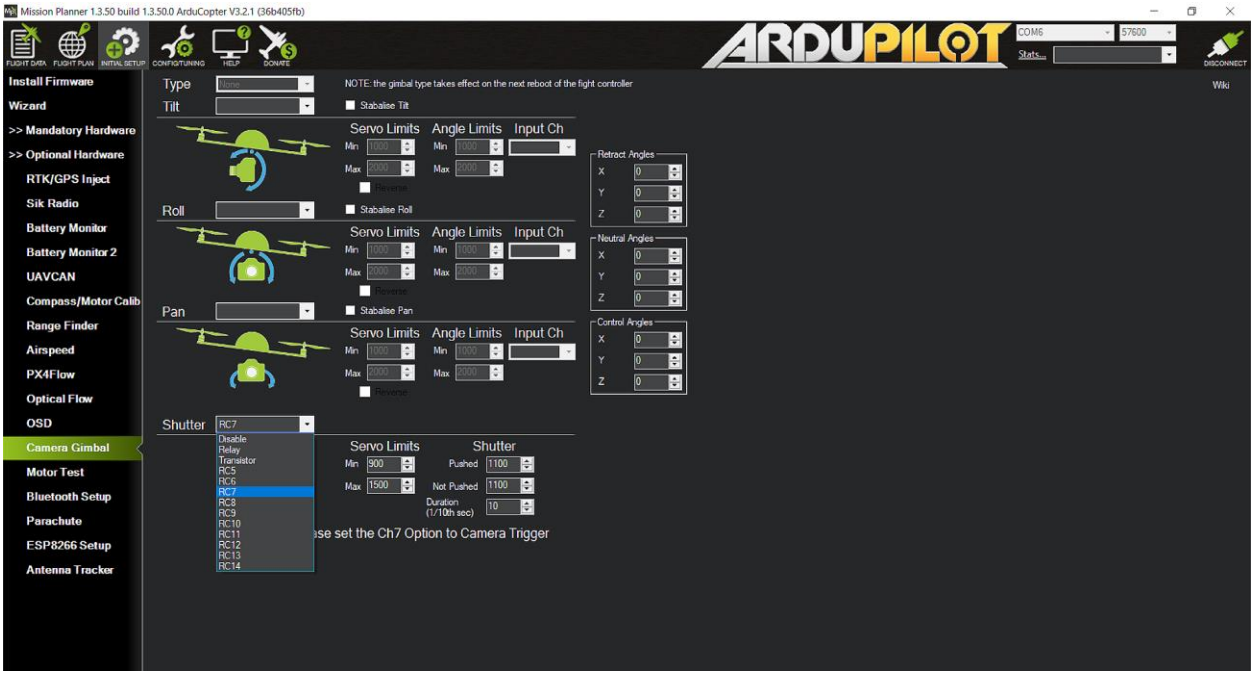

Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
ARDUPILOT
Distance: 0.4117 km
Prev: 82.22 m AZ: 28
Home: 45.79 m
Kazi Jalal Uddin Girls' High School
Kazitula Rd
Kazitula - Roynagar Rd
Waypoints
Verify Height
Add Below
Spline
Delete WP
Insert Wp
Insert Spline WP
Loiter
Jump
RTL
Land
Takeoff
DO_SET_ROI
Clear Mission
Draw Polygon
Rally Points
Geo-Fence
Auto WP
Map Tool
File Load/Save
POI
Tracker Home
Modify Alt
Enter UTM Coord
Switch Docking
Set Home Here
Load WP File
Load and Append
Save WP File
Load KML File
Load SHP File
Action
Load WP File
Save WP File
Read WPs
Write WPs
Home Location


Action
GEO
SRTM
24.902185
91.880089
26.90m
Grid
View KML
GoogleHybridMap
Status: loaded tiles
Load WP File
Read WPs
Save WP File
Write WPs
Loaded Test.waypoints
Home Location
Lat
Long
Alt (abs)

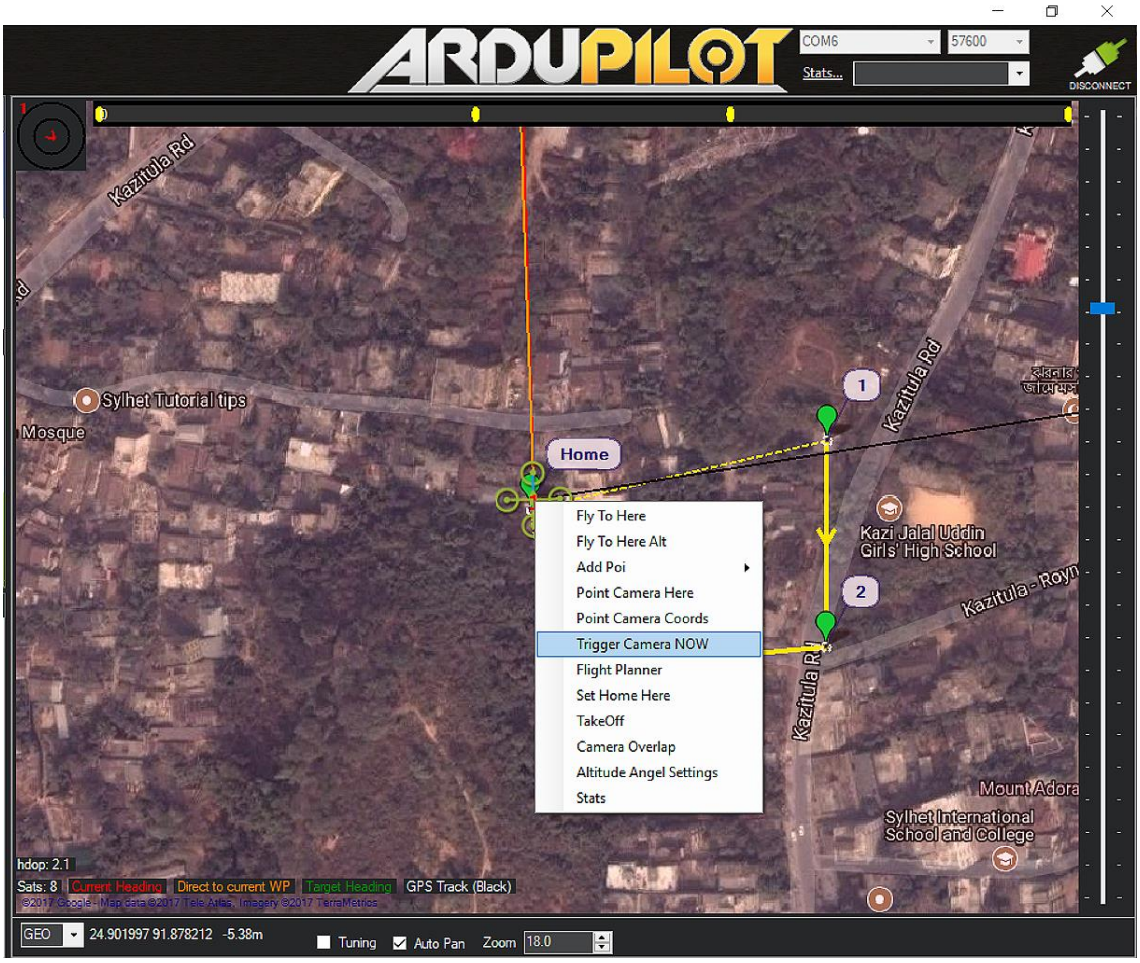

ARDUPILOT
Alt Mode
Absolute Alt is selected are you sure?
Yes
No
Waypoints
Kazitula
Kazitula Rd
Kazi Jalal Uddin Girls' High School
Kazitula - Roynagar Rd
Action
Load WP File
Save WP File
Read WPs
Write WPs
Home Location
Lat
Long
Alt (abs)


Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
HELP
DONATE
ARDUPILOT
COM6
57600
Stats...
DISCONNECT
Flight Modes
GeoFence
Basic Tuning
Extended Tuning
Standard Params
Planner
Current Mode: Stabilize
Current PWM: 5: 900
Flight Mode 1
Flight Mode 2
Flight Mode 3
Flight Mode 4
Flight Mode 5
Flight Mode 6
Stabilize
Stabilize
Acro
AltHold
Auto
Guided
Loiter
RTL
Circle
Land
Drift
Sport
Flip
AutoTune
PosHold
Brake
Throw
Avoid_ADSB
Guided_NoGPS
Simple Mode
Super Simple
PWM 0 - 1230
PWM 1231 - 1360
PWM 1361 - 1490
PWM 1491 - 1620
PWM 1621 - 1749
PWM 1750 +
Simple and Super Simple description

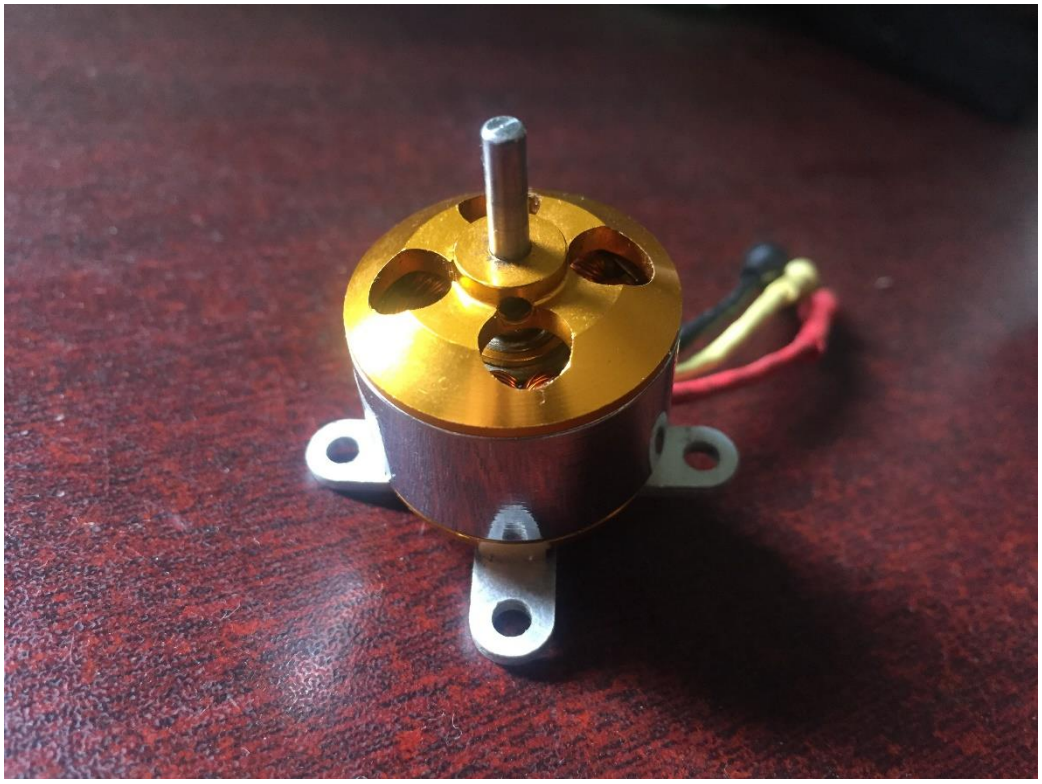

SPI
−
+
S
11
10
A 9
A 8
A 7
A 6
A 5
A 4
A 3
A 2
A 1
A 0
AREF
ARDUPILOT


Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
ARDUPILOT
Install Firmware
Wizard
>> Mandatory Hardware
>> Optional Hardware
RTK/GPS Inject
Sik Radio
Battery Monitor
Battery Monitor 2
UAVCAN
Compass/Motor Calib
Range Finder
Airspeed
PX4Flow
Optical Flow
OSD
Camera Gimbal
Motor Test
Bluetooth Setup
Parachute
ESP8266 Setup
Antenna Tracker
Type
Tilt
Roll
Pan
Shutter
NOTE: the gimbal type takes effect on the next reboot of the flight controller
Stabalise Tilt
Stabalise Roll
Stabalise Pan
Servo Limits
Angle Limits
Input Ch
Retract Angles
Neutral Angles
Control Angles
Disable
Relay
Transistor
RC5
RC6
RC7
RC8
RC9
RC10
RC11
RC12
RC13
RC14
Pushed
Not Pushed
Duration (1/10th sec)
se set the Ch7 Option to Camera Trigger


Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
ARDUPILOT
Distance: 20417.0229 km
Prev: 138.93 m AZ: 247
Home: 66.34 m
Zoom
Action
Load WP File
Save WP File
Read WPs
Write WPs
Home Location
Lat
Long
Alt (abs)
WAYPOINT
SPLINE_WAYPOINT
LOITER_TURNS
LOITER_TIME
LOITER_UNLIM
RETURN_TO_LAUNCH
LAND
TAKEOFF
DELAY
GUIDED_ENABLE
PAYLOAD_PLACE
DO_GUIDED_LIMITS
DO_SET_ROI
CONDITION_DELAY
CONDITION_CHANGE_ALT
CONDITION_DISTANCE
CONDITION_YAW
DO_JUMP
DO_CHANGE_SPEED
DO_GRIPPER
DO_PARACHUTE
DO_SET_CAM_TRIGG_DIST
DO_SET_RELAY
DO_REPEAT_RELAY
DO_SET_SERVO
DO_REPEAT_SERVO
DO_DIGICAM_CONFIGURE
DO_DIGICAM_CONTROL
DO_MOUNT_CONTROL
UNKNOWN
Verify Height
Add Below
Spline
Lat
Long
Alt
Delete
Up
Down
Grad %
Angle
Dist
AZ

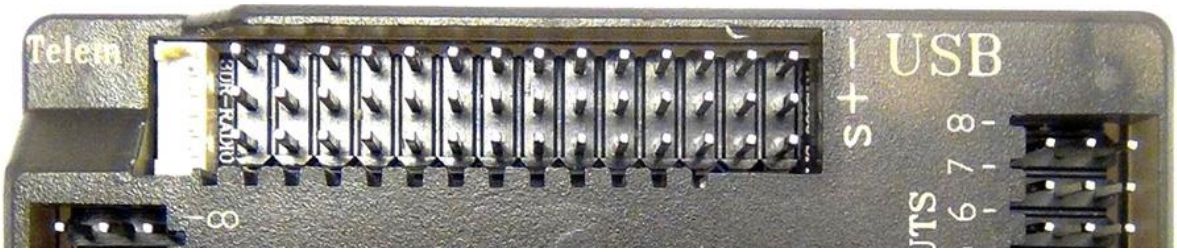

ARDUPILOT
COM6
57600
Stats...
DISCONNECT
Kazitula Rd
Sylhet Tutorial tips
Mosque
Home
1
2
Kazitula Rd
Kazi Jalal Uddin
Girls' High School
Kazitula - Roy
Kazitula Rd
Mount Adora
Sylhet International
School and College
Fly To Here
Fly To Here Alt
Add Poi
Point Camera Here
Point Camera Coords
Trigger Camera NOW
Flight Planner
Set Home Here
TakeOff
Camera Overlap
Altitude Angel Settings
Stats
hdop: 2.1
Sats: 8
Current Heading
Direct to current WP
Target Heading
GPS Track (Black)
©2017 Google - Map data ©2017 Tele Atlas, Imagery ©2017 TerraMetrics
GEO
24.901997 91.878212 -5.38m
Tuning
Auto Pan
Zoom
18.0

Chapter 6: Building a Drone to Take Selfies and Record Videos

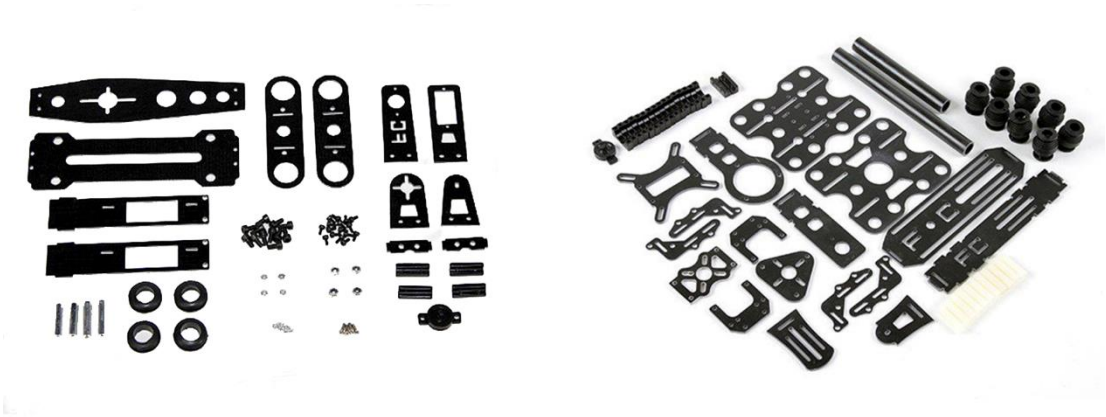


TBS Buletproof 30A

Opto 25A

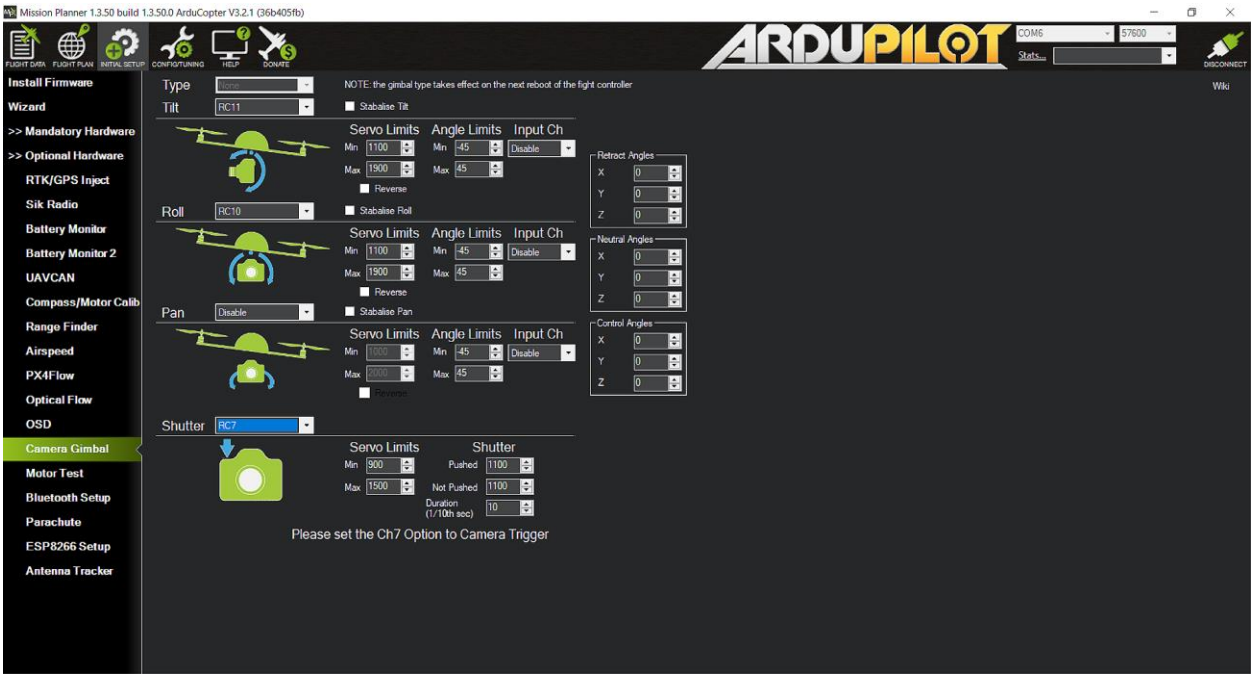

Telem
3DR RADIO
USB

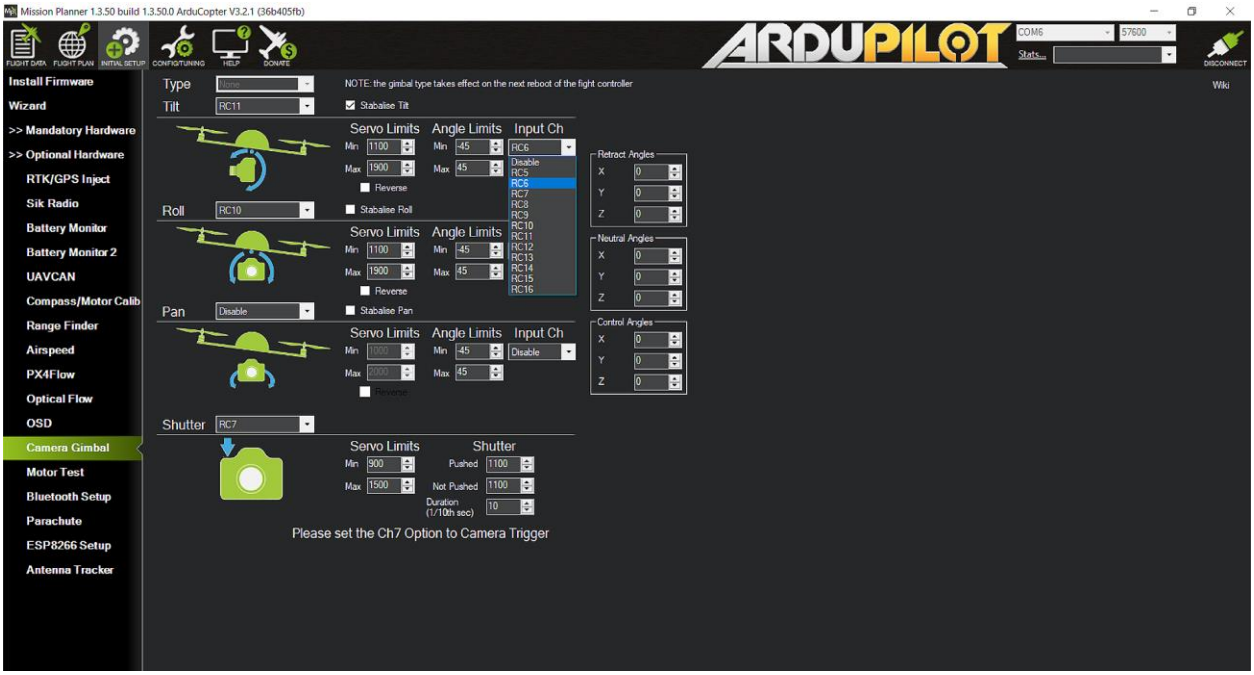

Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
ARDUPILOT
Flight Modes
GeoFence
Basic Tuning
Extended Tuning
Standard Params
Planner
Stabilize Roll (Error to Rate)
Stabilize Pitch (Error to Rate)
Stabilize Yaw (Error to Rate)
Position XY (Dist to Speed)
Lock Pitch and Roll Values
Rate Roll
Rate Pitch
Rate Yaw
Velocity XY (Vel to Accel)
Throttle Accel (Accel to motor)
Throttle Rate (VSpd to accel)
Altitude Hold (Alt to climbrate)
WPNav (cm's)
Ch6 Opt
Ch7 Opt
Ch8 Opt
None
Write Params



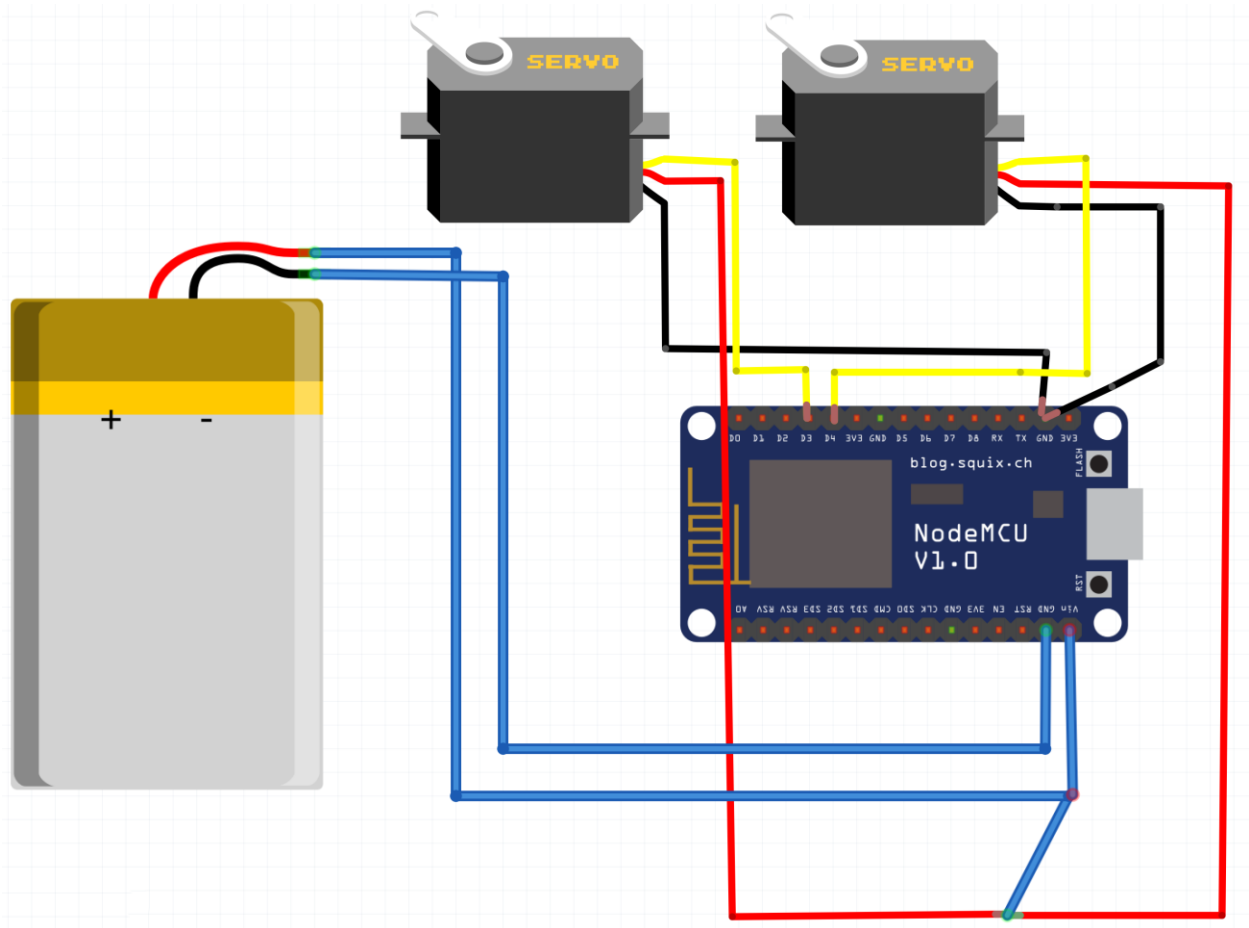
A standard Gimbal
(2 Axis Servo Gimbal FC-T12)

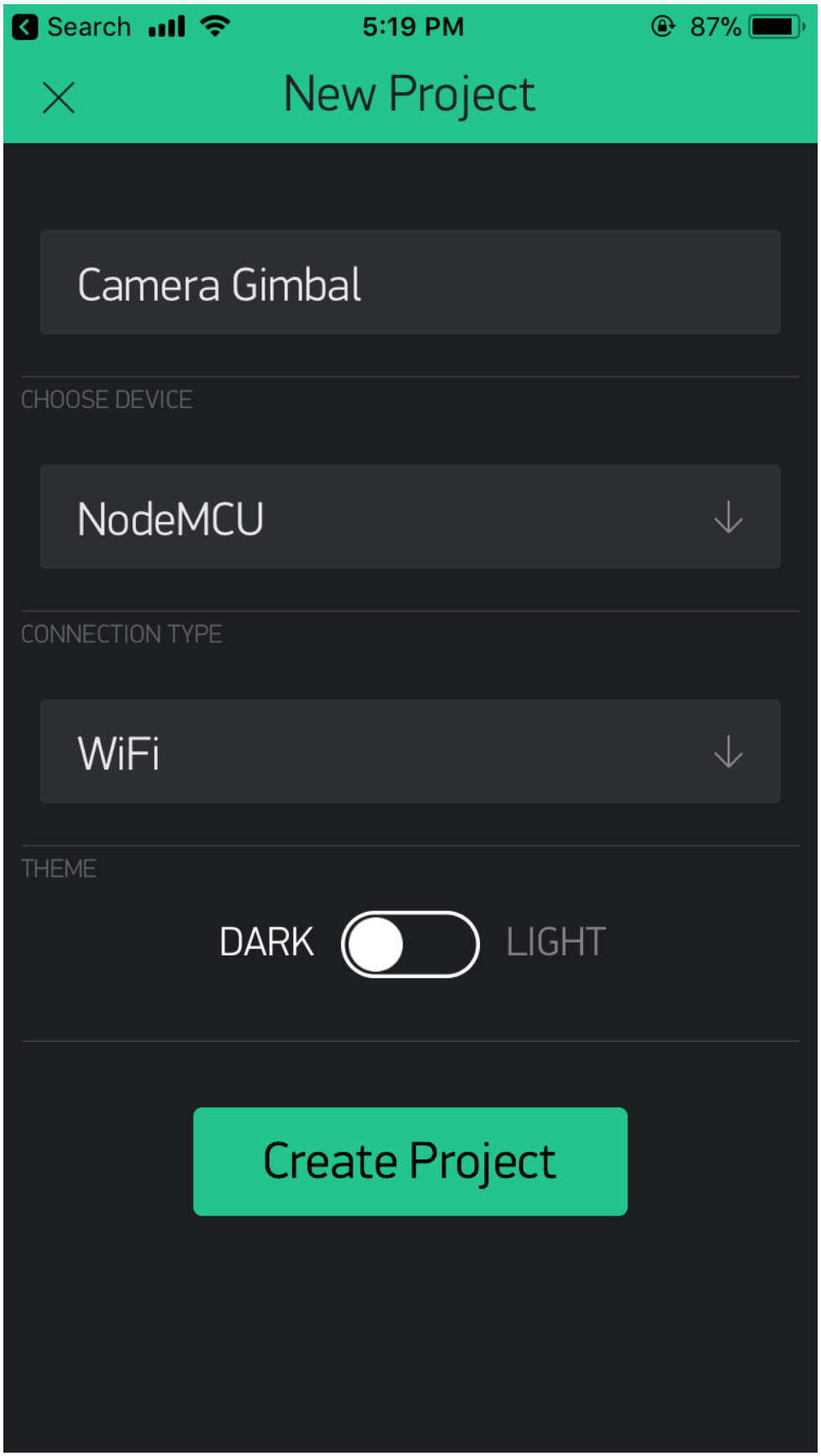
A Brushless Gimbal
(Shock Absorbing 2 Axis Brushless Gimbal)

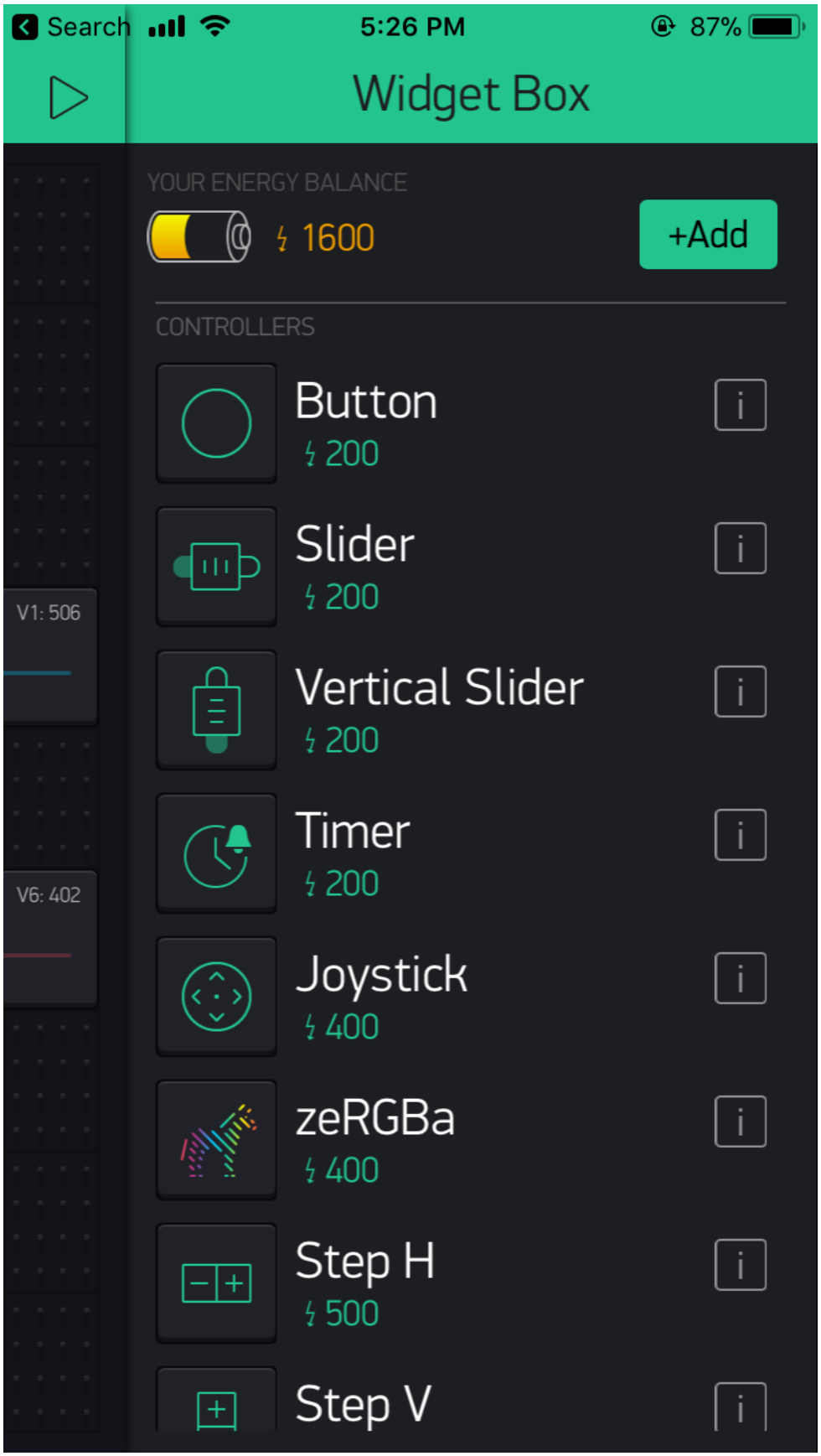



Mission Planner 1.3.50 build 1.3.50.0 ArduCopter V3.2.1 (36b405fb)
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
HELP
DONATE
ARDUPILOT
COM6
57600
Stats...
DISCONNECT
Install Firmware
Wizard
>> Mandatory Hardware
>> Optional Hardware
RTK/GPS Inject
Sik Radio
Battery Monitor
Battery Monitor 2
UAVCAN
Compass/Motor Calib
Range Finder
Airspeed
PX4Flow
Optical Flow
OSD
Camera Gimbal
Motor Test
Bluetooth Setup
Parachute
ESP8266 Setup
Antenna Tracker
Wiki
Type
None
NOTE: the gimbal type takes effect on the next reboot of the fight controller
Tilt
RC11
Stabalise Tilt
Servo Limits
Angle Limits
Input Ch
Min 1100
Max 1900
Min -45
Max 45
RC6
Disable
RC5
RC6
RC7
RC8
RC9
RC10
RC11
RC12
RC13
RC14
RC15
RC16
Reverse
Roll
RC10
Stabalise Roll
Pan
Disable
Stabalise Pan
Min 1000
Max 2000
Shutter
RC7
Shutter
Min 900
Max 1500
Pushed 1100
Not Pushed 1100
Duration (1/10th sec) 10
Please set the Ch7 Option to Camera Trigger
Retract Angles
Neutral Angles
Control Angles
X 0
Y 0
Z 0


TURNIGY
power systems
RECEIVER CONTROLLED
ON/OFF SWITCH
Max Volt: 30V Max Amp: 10Amp
GND
VCC
Signal


SERVO
SERVO
+
-
blog.squix.ch
NodeMCU
V1.0
FLASH
RST


Search
5:19 PM
87%
New Project
Camera Gimbal
CHOOSE DEVICE
NodeMCU
CONNECTION TYPE
WiFi
THEME
DARK
LIGHT
Create Project

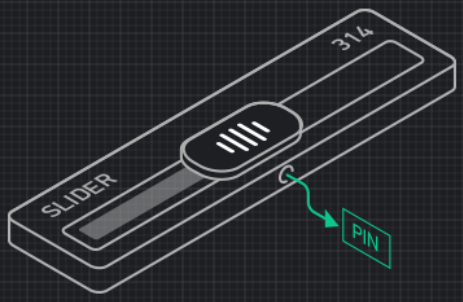

Search
5:26 PM
87%
Widget Box
YOUR ENERGY BALANCE
1600
+Add
CONTROLLERS
Button
200
Slider
200
Vertical Slider
200
Timer
200
Joystick
400
zeRGBa
400
Step H
500
Step V
V1: 506
V6: 402

Search 5:21 PM 87%

i

Slider Settings

OK



Servo 2

OUTPUT

V6 | 0 | 1023

SEND VALUES ON RELEASE ONLY

1 2 3 4 5 6 7 8 9 0

- / : ; ( ) £ & @ "

#+= . , ? ! '

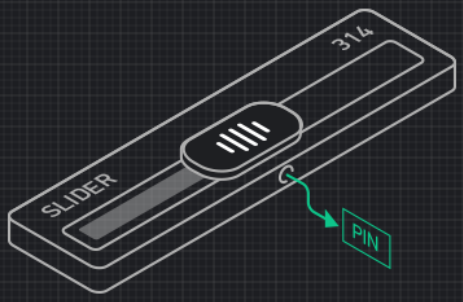
ABC space return

Search 5:21 PM 87%

i

Slider Settings

OK



Servo 2

OUTPUT

V6 | 0 | 1023

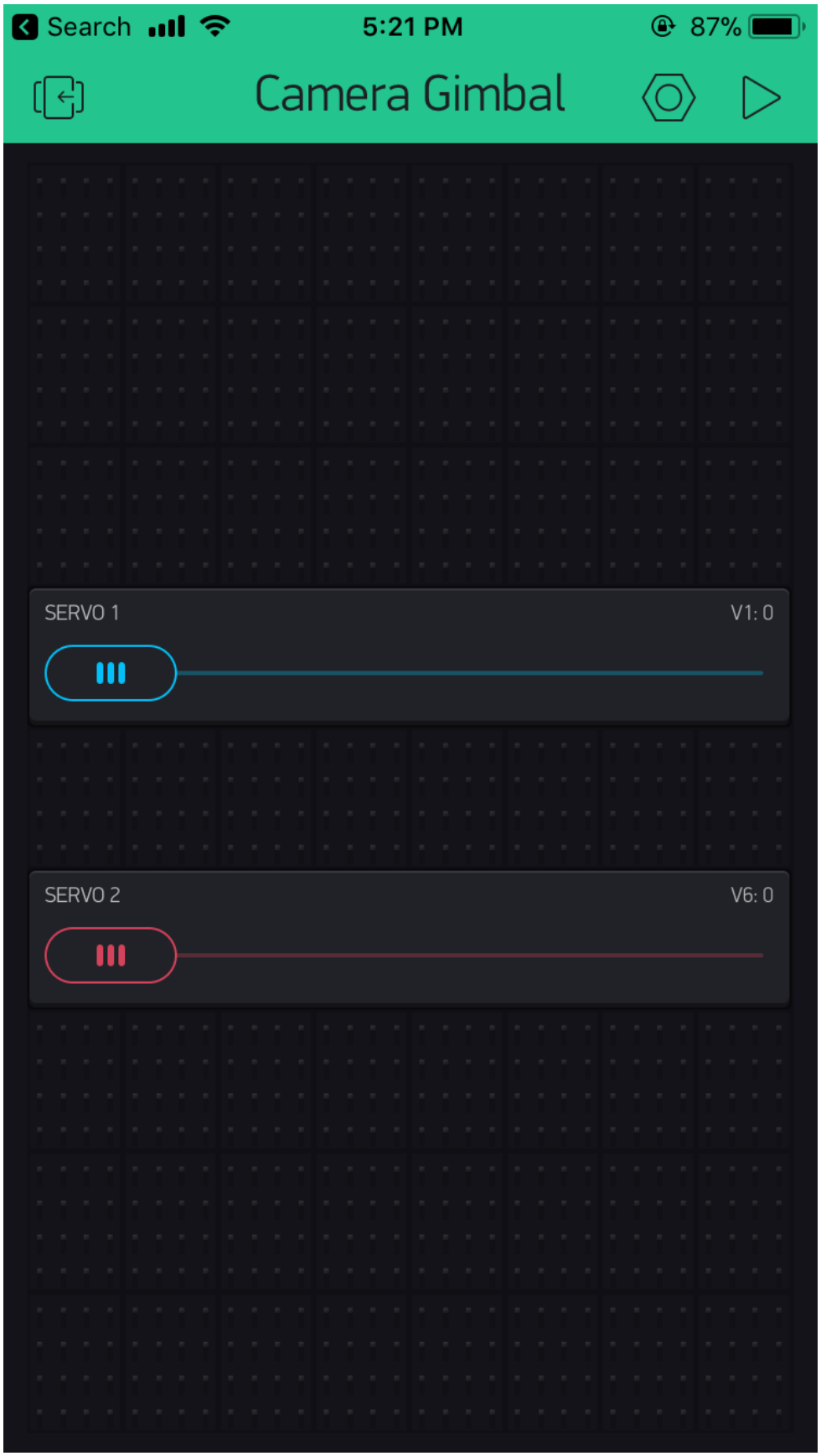
SEND VALUES ON RELEASE ONLY

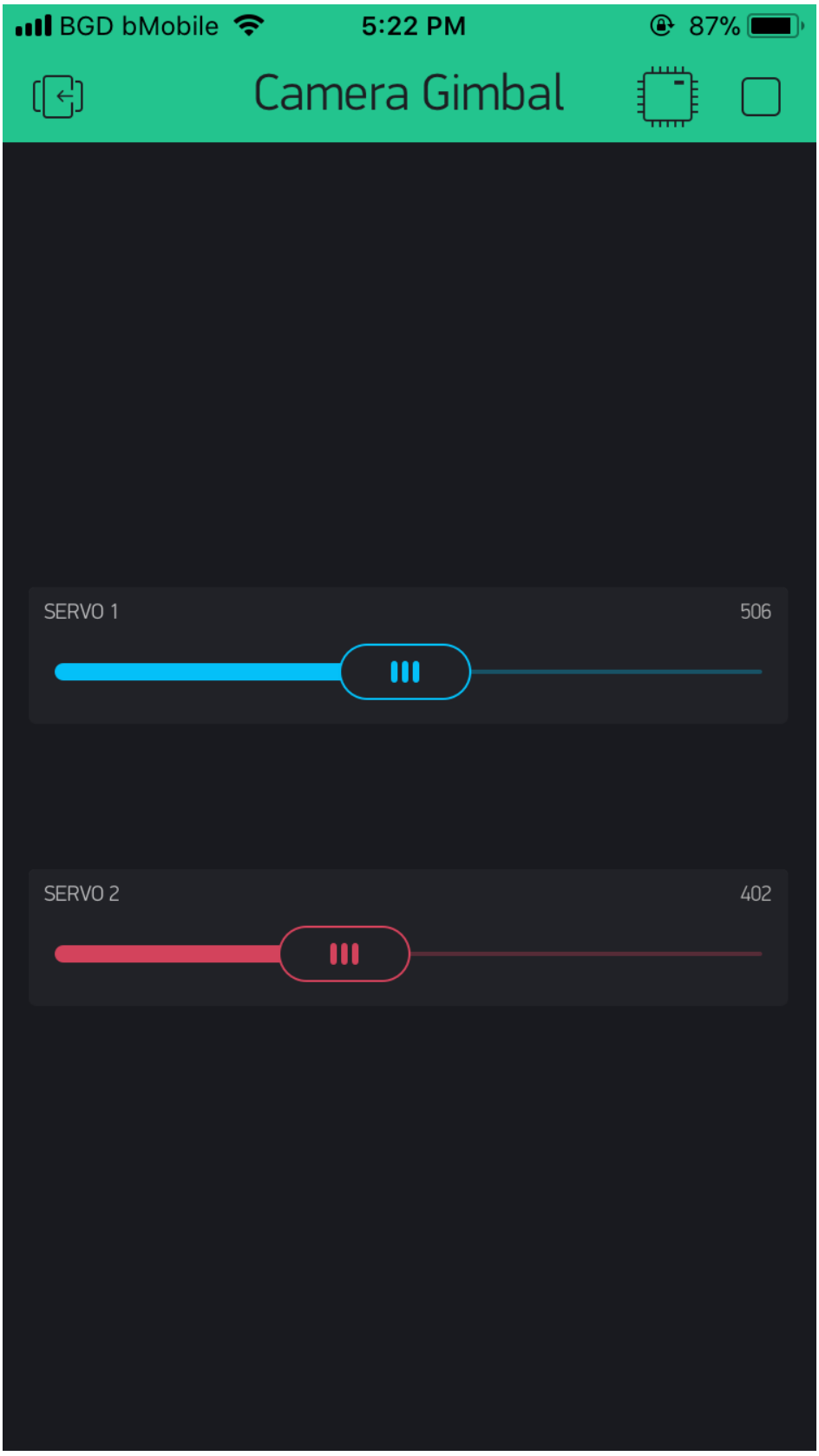
1 2 3 4 5 6 7 8 9 0

- / : ; ( ) £ & @ "

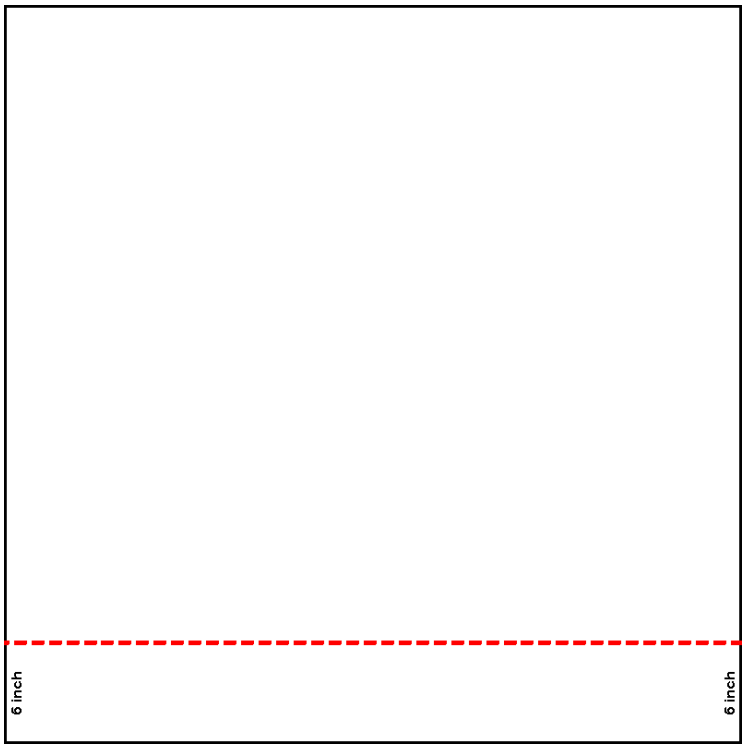
#+= . , ? ! '

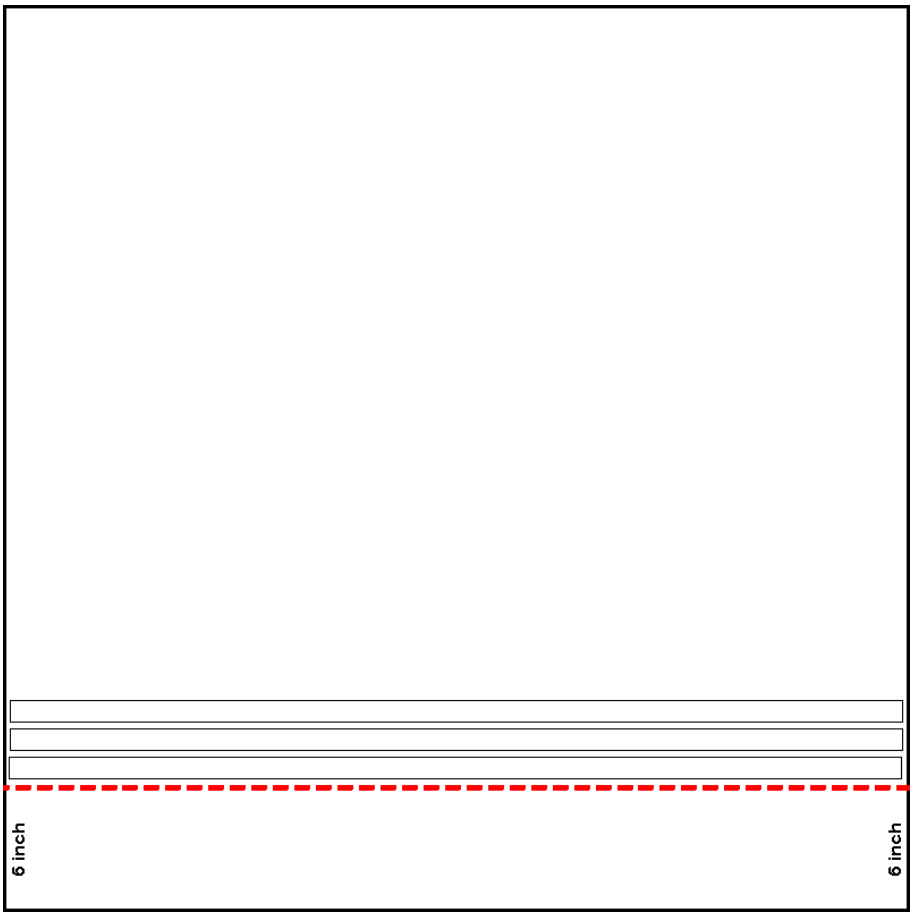
ABC space return

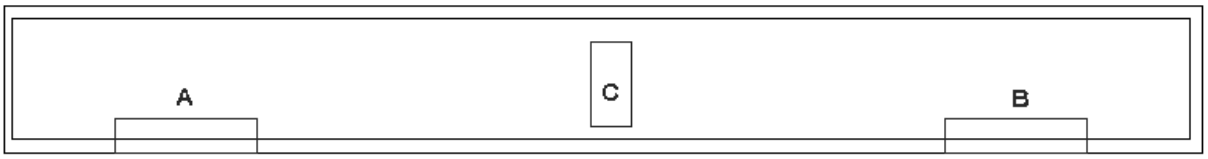

Search
5:21 PM
87%
Camera Gimbal
SERVO 1
V1: 0
SERVO 2
V6: 0

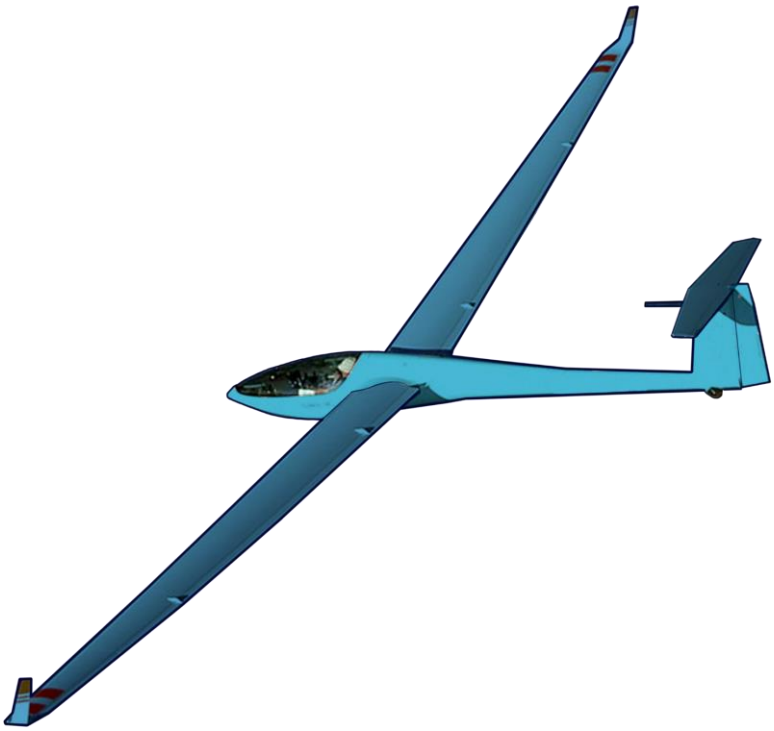

BGD bMobile
5:22 PM
87%
Camera Gimbal
SERVO 1
506
SERVO 2
402

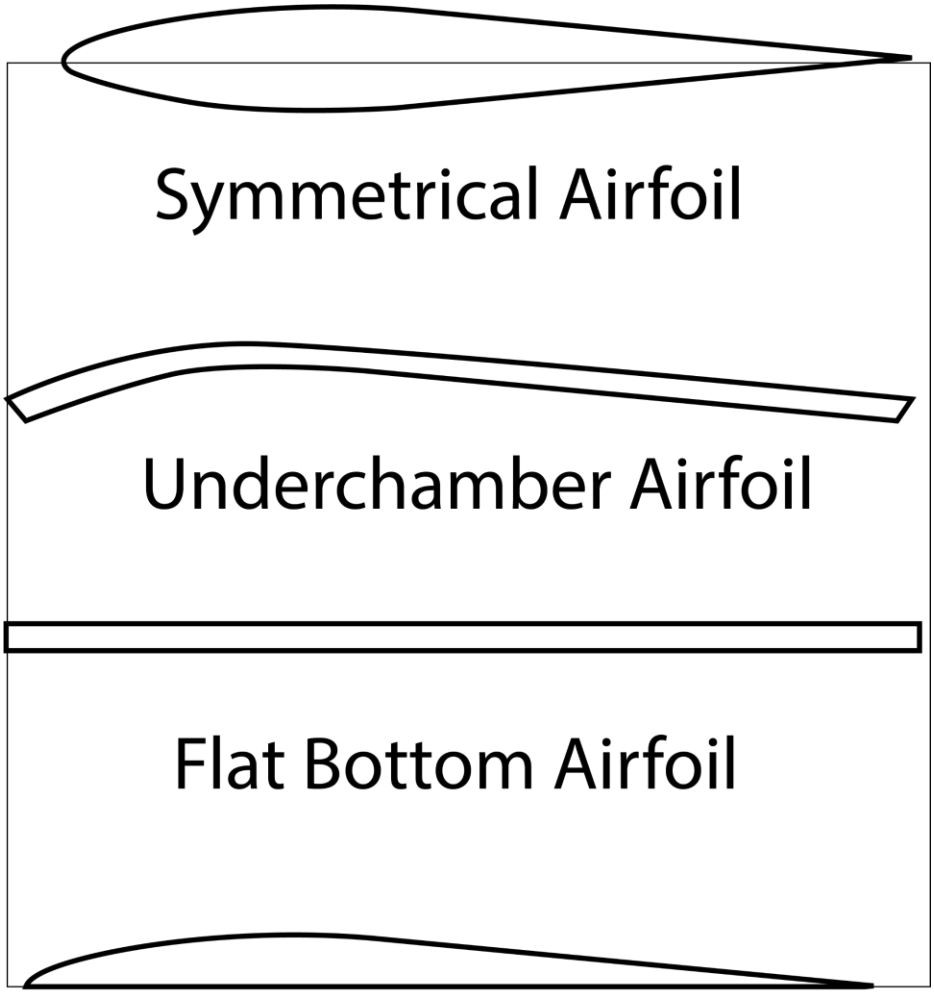
Chapter 7: Building Prototype Drones – Gliding Drones



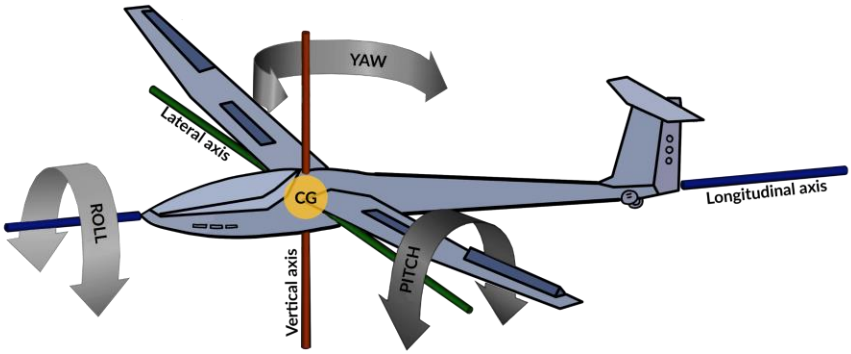

6 inch
6 inch

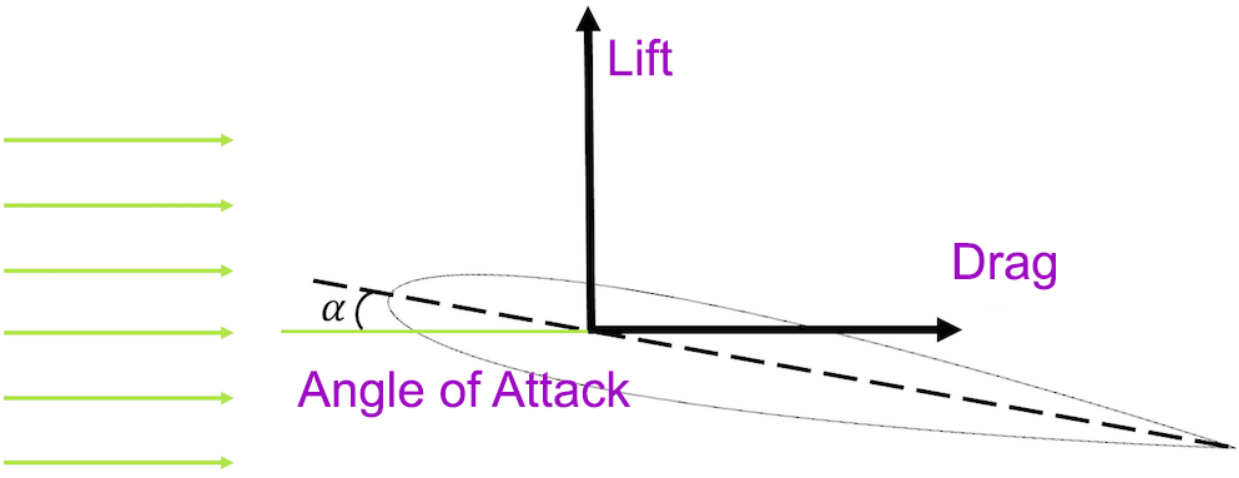

A
C
B

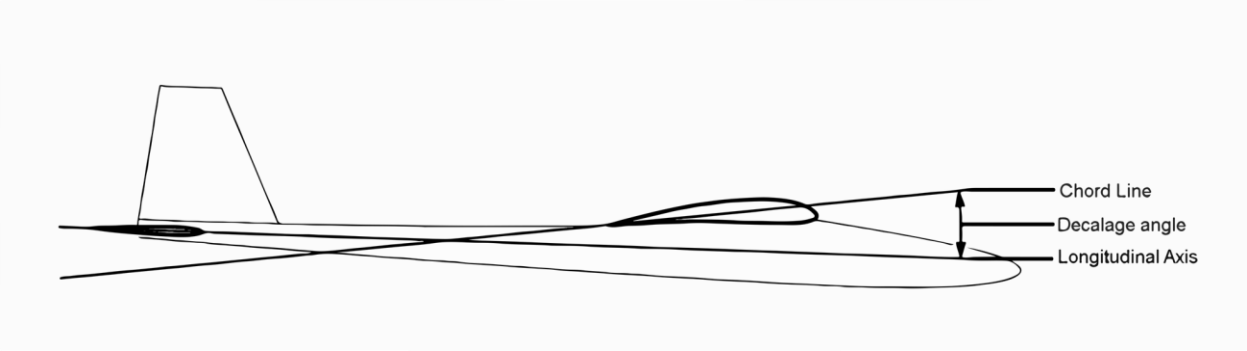




Clark Y Type Airfoil

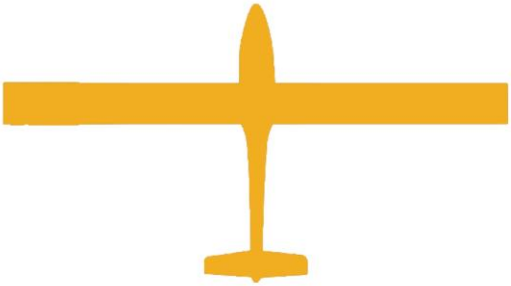

YAW
Lateral axis
CG
ROLL
Longitudinal axis
Vertical axis
PITCH


Lift
Drag
α
Angle of Attack


Chord Line
Decalage angle
Longitudinal Axis

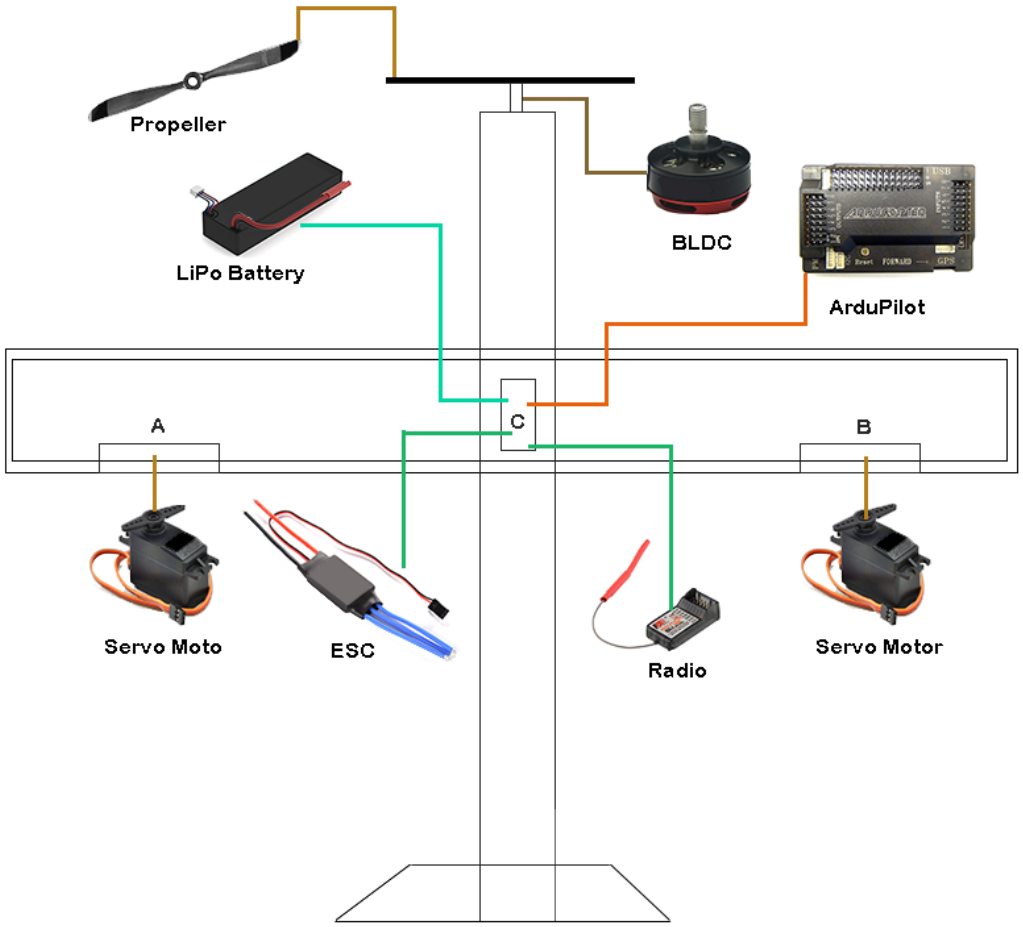
Elliptical Wing

Tapered Wing



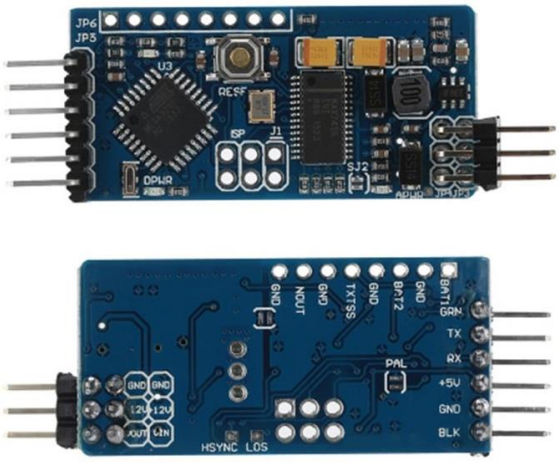
Rectangular Wing

Swept-Forward Wing

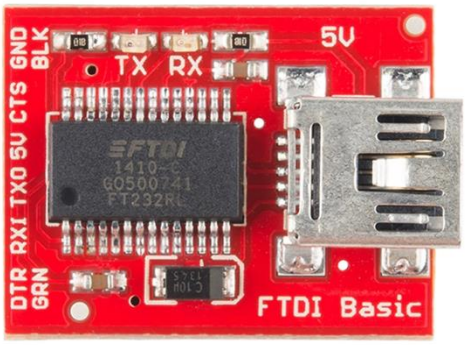

Propeller
LiPo Battery
BLDC
ArduPilot
A
C
B
Servo Moto
ESC
Radio
Servo Motor

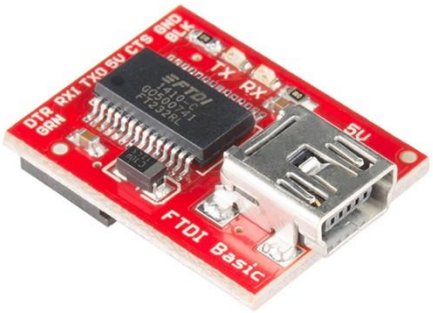
Chapter 8: Building Prototype Drones – Racing Drones

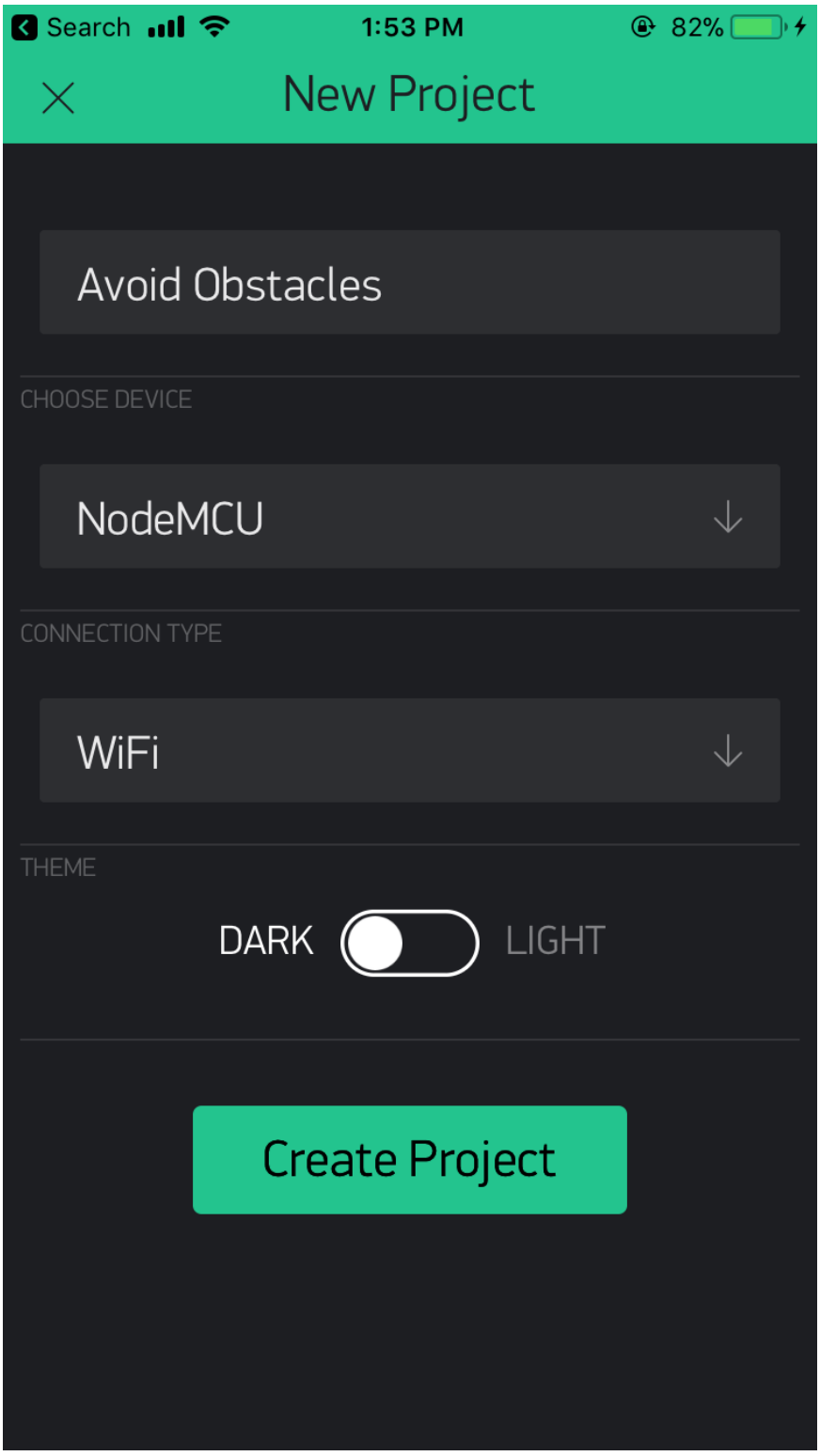
Mini CMOS 600TVL
FPV Camera 505M

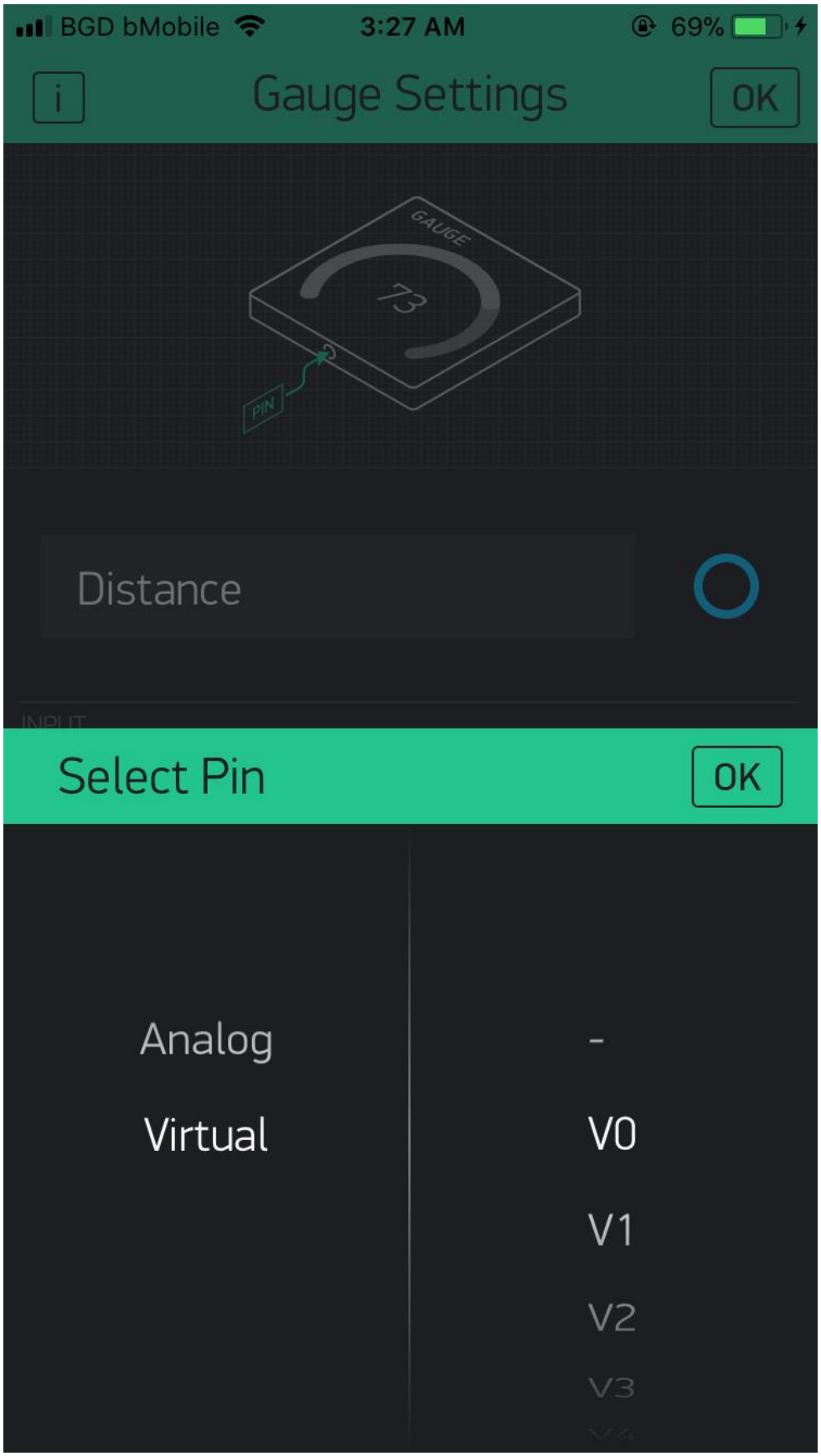


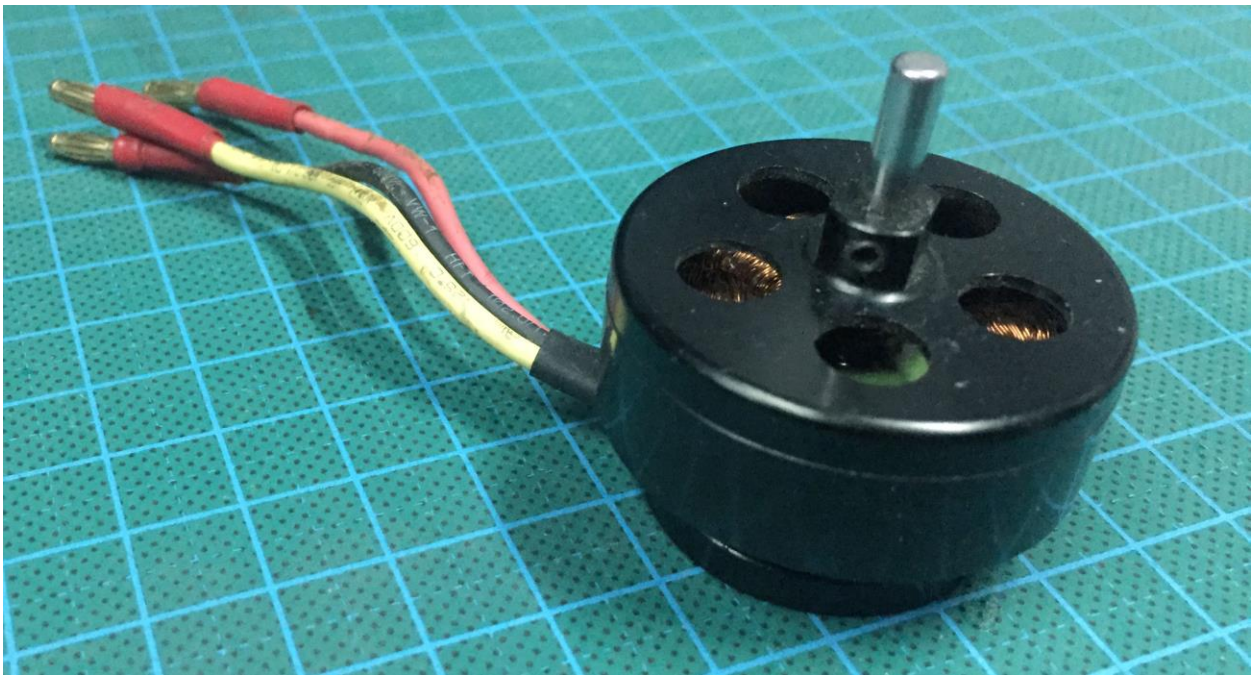
Mini OSD to APM

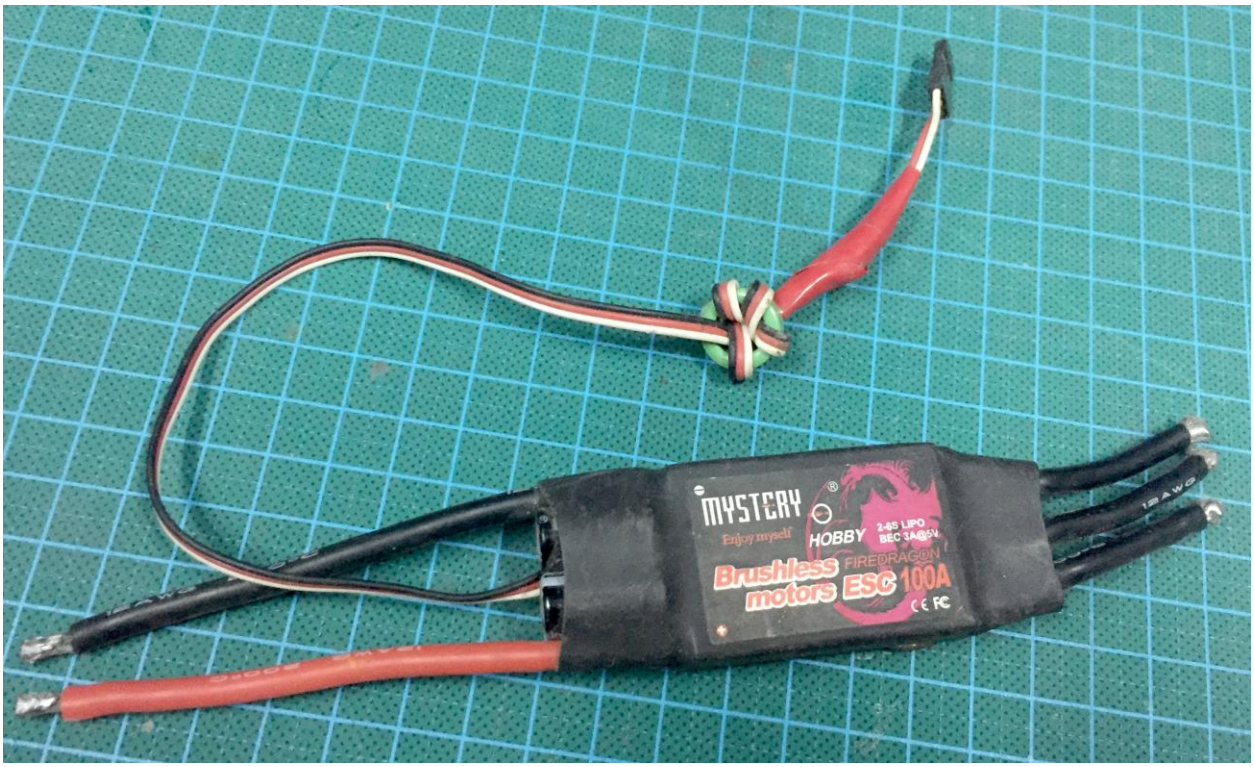

GND
BLK
5V
CTS
5V
TXO
RXI
DTR
GRN
TX RX
FTDI
1410-C
GO500741
FT232RL
FTDI Basic


GND
BLK
CTS
5V
TXO
RXI
DTR
GRN
TX RX
FTDI
FTDI Basic

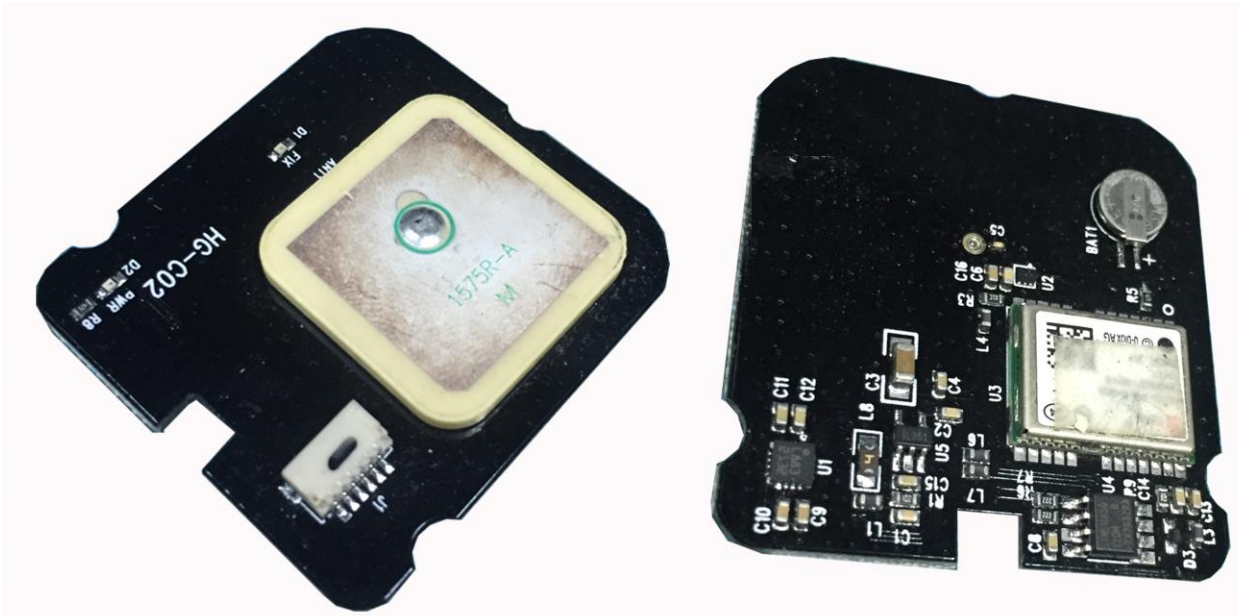

Search
1:53 PM
82%
New Project
Avoid Obstacles
CHOOSE DEVICE
NodeMCU
CONNECTION TYPE
WiFi
THEME
DARK
LIGHT
Create Project


BGD bMobile
3:27 AM
69%
i
Gauge Settings
OK
GAUGE
73
PIN
Distance
INPUT
Select Pin
OK
Analog
Virtual
-
V0
V1
V2
V3




MYSTERY
Enjoy myself
HOBBY
2-6S LIPO
BEC 3A@5V
Brushless motors
FIREDRAGON
ESC 100A
CE FC


Gens ace
3300
mAh
High Discharge
Li-Po Battery
3S1P
11.1V 25C
Rechargeable


HG-C02
1575R-A
BAT1

arducam-osd

Arduino based Camera Control and OSD for UAVs.

http://arducam-osd.googlecode.com/svn/wiki/images/ArduCamOSD_wiki.jpg'>

http://arducam-osd.googlecode.com/svn/wiki/images/banner.jpg

The project is about providing camera solutions for UAV projects as telemetry over OSD and/or camera control, etc. As the project is based on Arduino, it could be hacked to fit many other applications.

Welcome to the ArduCam OSD Project!

Downloads of Firmware and Tools HERE and HERE TOO!

Donate

Your support is highly appreciated:

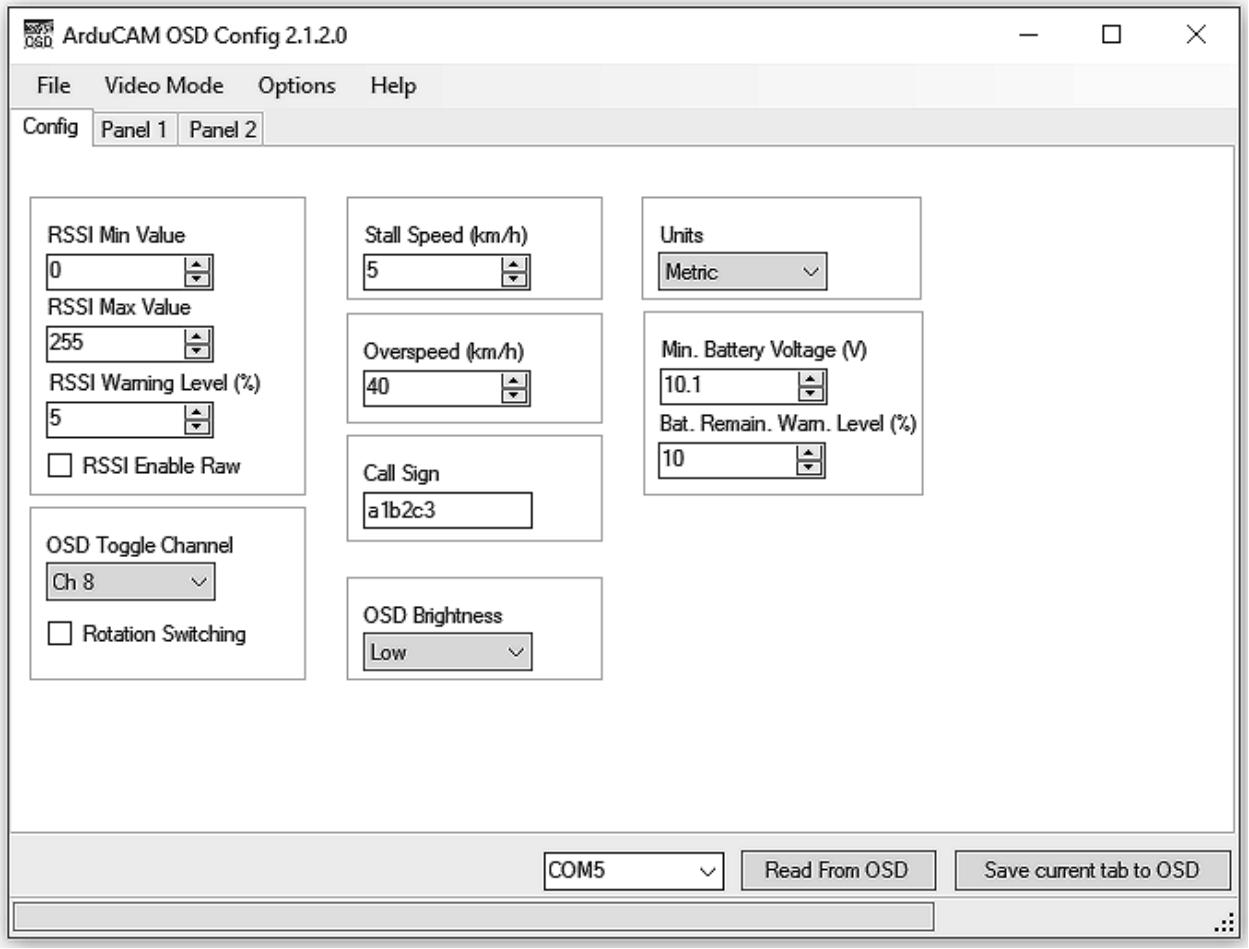
Sandro Benigno.

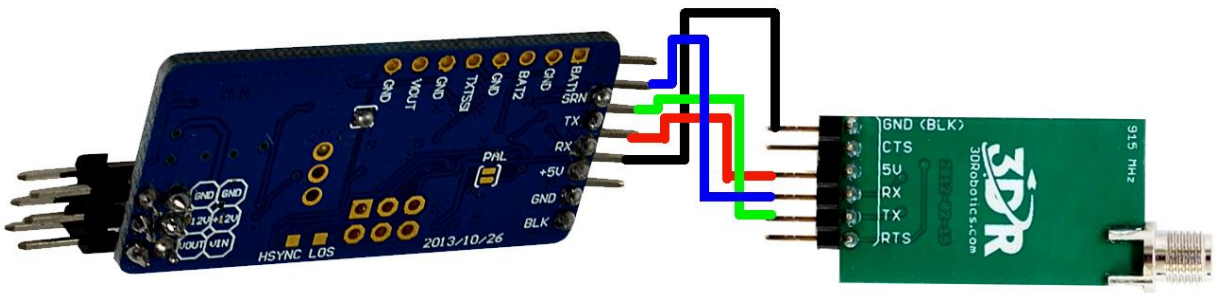
Project Information

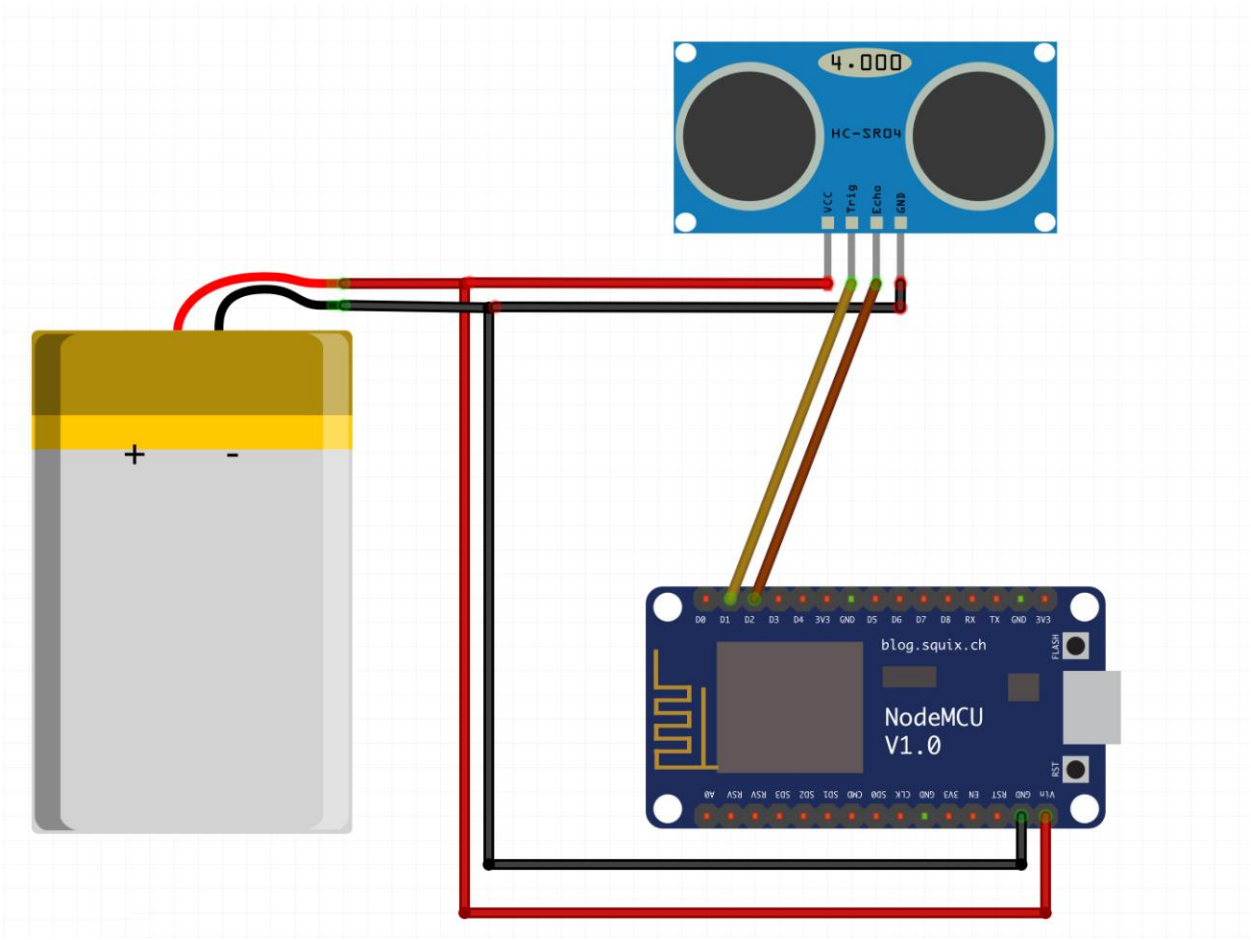
- License: GNU Lesser GPL
- Content License: Creative Commons 3.0 BY-SA
- 132 stars
- svn-based source control

Labels:

Arduino camera-control UAV OSD USB-host remote-controlling RC DIY Max-7456 Max-3421E Atmega-328P


ArduCAM OSD Config 2.1.2.0
File
Video Mode
Options
Help
Config
Panel 1
Panel 2
RSSI Min Value
0
RSSI Max Value
255
RSSI Warning Level (%)
5
RSSI Enable Raw
OSD Toggle Channel
Ch 8
Rotation Switching
Stall Speed (km/h)
5
Overspeed (km/h)
40
Call Sign
a1b2c3
OSD Brightness
Low
Units
Metric
Min. Battery Voltage (V)
10.1
Bat. Remain. Warn. Level (%)
10
COM5
Read From OSD
Save current tab to OSD


GND
VOUT
GND
TX/SS
GND
BAT2
GND
BAT1
SRN
TX
RX
+5V
GND
BLK
PAL
GND
GND
+12V
+12V
VOUT
VIN
HSYNC
LOS
2013/10/26
GND (BLK)
CTS
5V
RX
TX
RTS
915 MHz
3DR
3DRobotics.com


4.000
HC-SR04
VCC
Trig
Echo
GND
+
-
blog.squix.ch
NodeMCU
V1.0
FLASH
RST