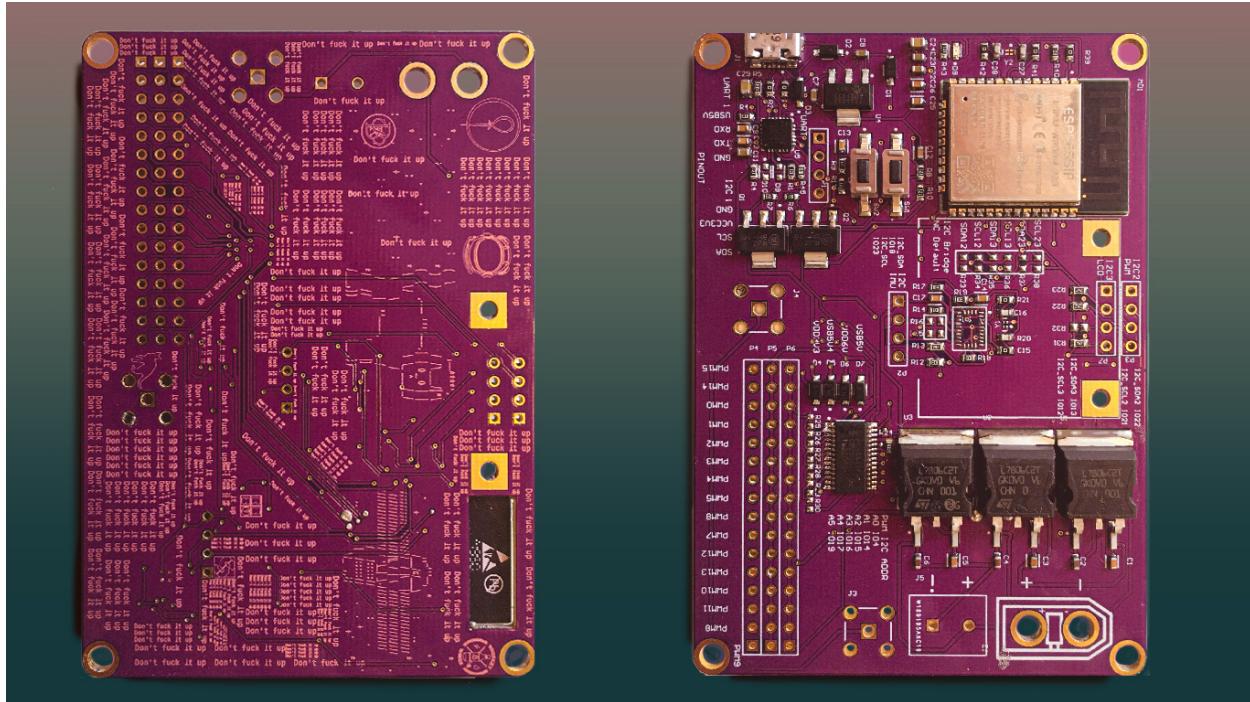
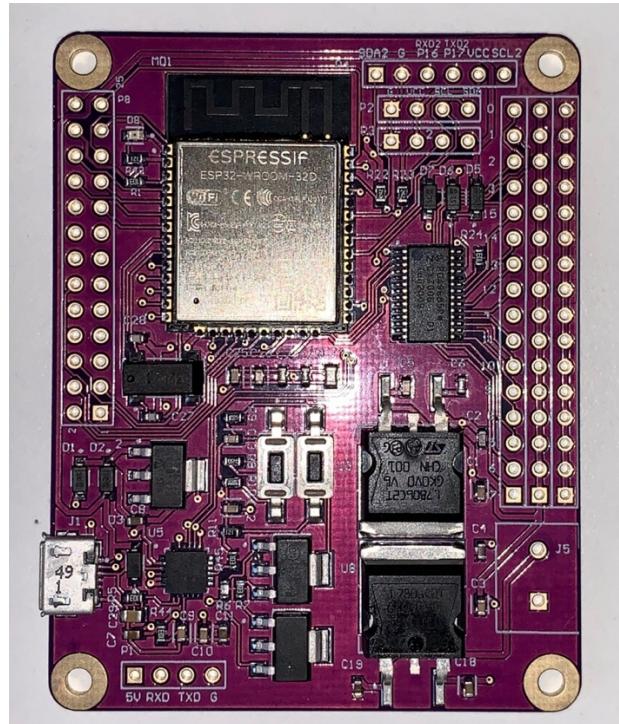


## Getting Started

In the package you will receive an Antenny Board. We have Antenny v1 and Antenny v2 out there. Antenny v2 board fixed the I2C\_3 channel pull up bugs and break out all the unused pins on the board.



Pic 1. Antenny v1



Pic 2. Antenny v2

## Hardware setup for Antenny board

### 1. Requirement

#### a. Soldering kits

You need to prepare your own soldering kits for stable connection of through hole connectors.

#### b. Pin headers [[Amazon.com](#)]

We include some pin headers necessary for the Nyan-sat base station setup. But if you want to extend the function of the Antenny board, it is always good to have some more around.

#### c. Jumper wires [[Amazon.com](#)]

We also include some jumper wires in the kits for you to connect IMU board to the Antenny board. But in case you need more function, have some more around.

#### d. External power supply or lipo battery

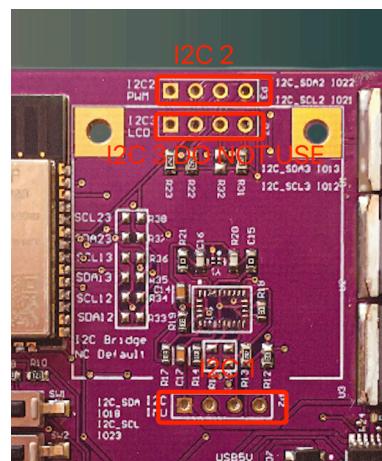
In order to drive the servo gimbal, you need an external 6v to 30v power supply or lipo battery. USB can only power the servo motor if there is only light load.

### 2. Hardware connections

#### a. I2C connections

ESP32 can only support 2 I2C channel at the same time. However, you can chain multiple devices in the same I2C channel. We have 3 I2C channel connectors on Antenny v1 Board and 2 I2C channel connectors on Antenny v2 Board. For IMU connection, we recommended to use I2C\_1 connector. You need to solder pin headers into the through holes. PWM driver is chained in to I2C\_2 Channel.

Antenny V1:



Pic 3. Antenny v1 I2C connectors

All the pinout for I2C connectors is the same:

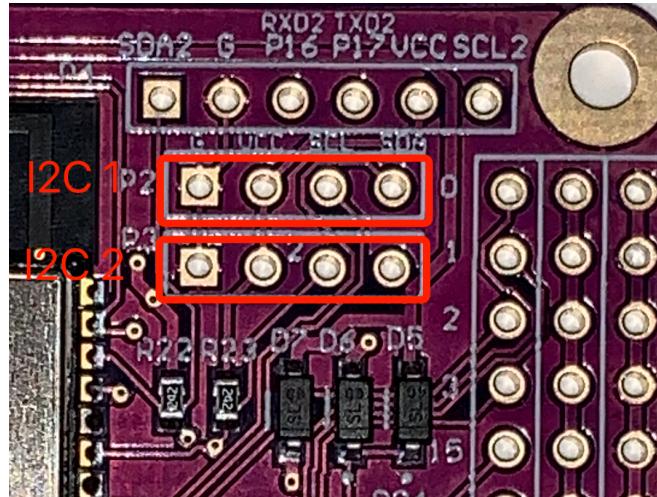
Pin1 Pin2 Pin3 Pin4

GND VCC SCL SDA

In Antenny v1 board I2C channel 3 is Not Recommended to use. IO12 need to be pulled down at boot time. Bug fixed in the Antenny v2 board.

I2C\_1 SDA IO18  
I2C\_1 SCL IO23  
I2C\_2 SDA IO22  
I2C\_2 SCL IO21  
I2C\_3 SDA IO13  
I2C\_3 SCL IO12

Antenny V2:



Pic 4. Antenny v2 I2C connectors

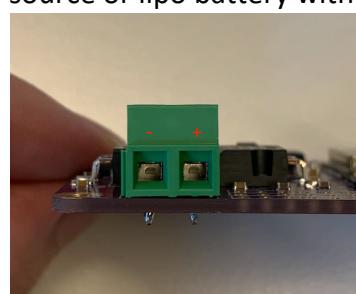
Pinout:

Pin1 Pin2 Pin3 Pin4  
GND VCC SCL SDA

I2C\_1 SDA IO19  
I2C\_1 SCL IO18  
I2C\_2 SDA IO22  
I2C\_2 SCL IO21

b. External Power connection

You need to solder the green block connectors on the board. Pin 1 of the block connector is Negative/GROUND, Pin2 of the block connector is Positive. You can connect to external power source or lipo battery with 6v to 30v.

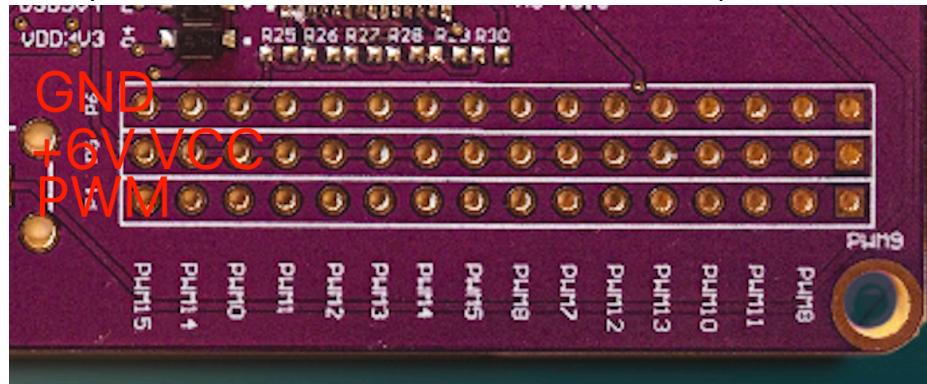


Pic 5. Antenny v2 Power block

### c. PWM driver

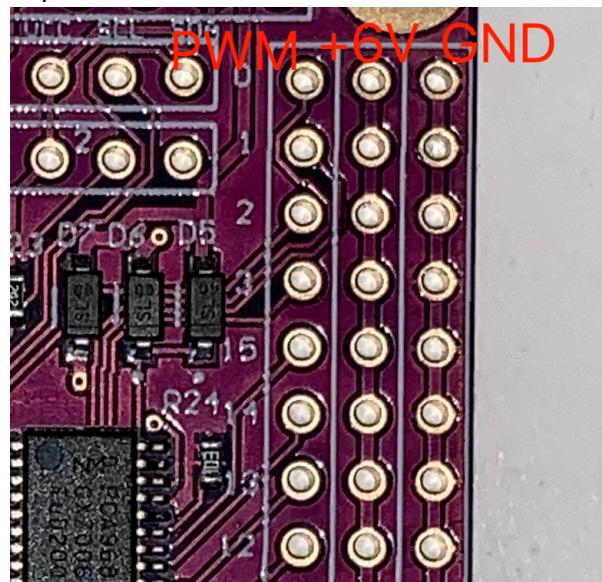
PWM driver provides 16 Channels. You can use any two of the channels to drive the servo gimbal.

For Antenny v1, the PWM channels are Labeled around the pins.



Pic 6. Antenny v1 PWM pinout

For Antenny v2 Board. PWM pinout shows in the pic blow. The PWM channels are Labeled around the pins.



Pic 7. Antenny v2 PWM pinout

You can change the PWM driver's IDcode in I2C channel by setting the IO pins connected to the A\* pins. Usually we set All A\* pins to low.

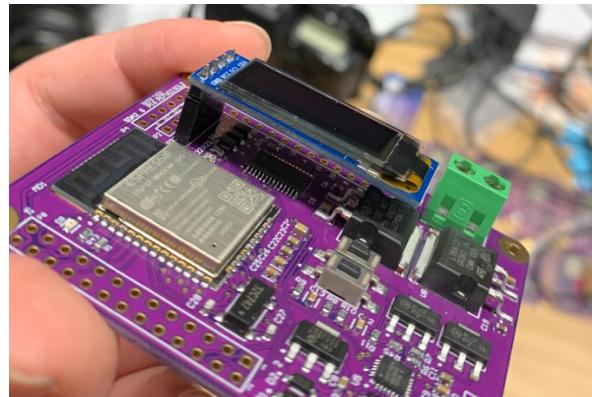
	Antenny v1	Antenny v2
A0	IO4	IO23
A1	IO14	IO25
A2	IO15	IO26
A3	IO16	IO27
A4	IO17	IO2
A5	IO19	IO4

Example micro python code to set pins:

```
import machine
from machine import Pin
pin = machine.Pin(4, machine.Pin.OUT)
pin.value(0)
```

d. OLED screen (optional) [[Amazon.com](#)]

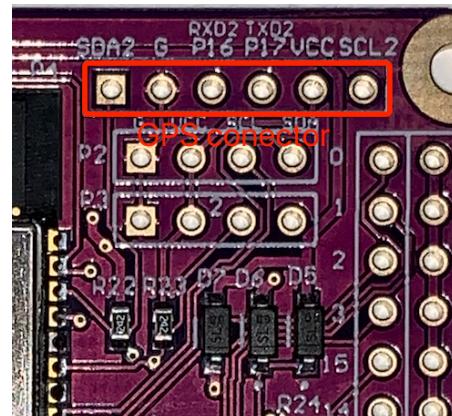
The OLED is optional and does NOT come with the kits. You can easily plug the screen to the Antenny v2 Board to extend its capability.



Pic 8. Antenny v2 with OLED

e. GPS module (optional) [[Aliexpress](#)]

The GPS module connectors can be found on Antenny v2 board. The pinout is labeled on the board.



Pic 9. Antenny v2 GPS connector

f. Unused breakout pins

Antenny v2 board breakout all unused pins on ESP32 and labeled on the back of the board. You can use them for future development.