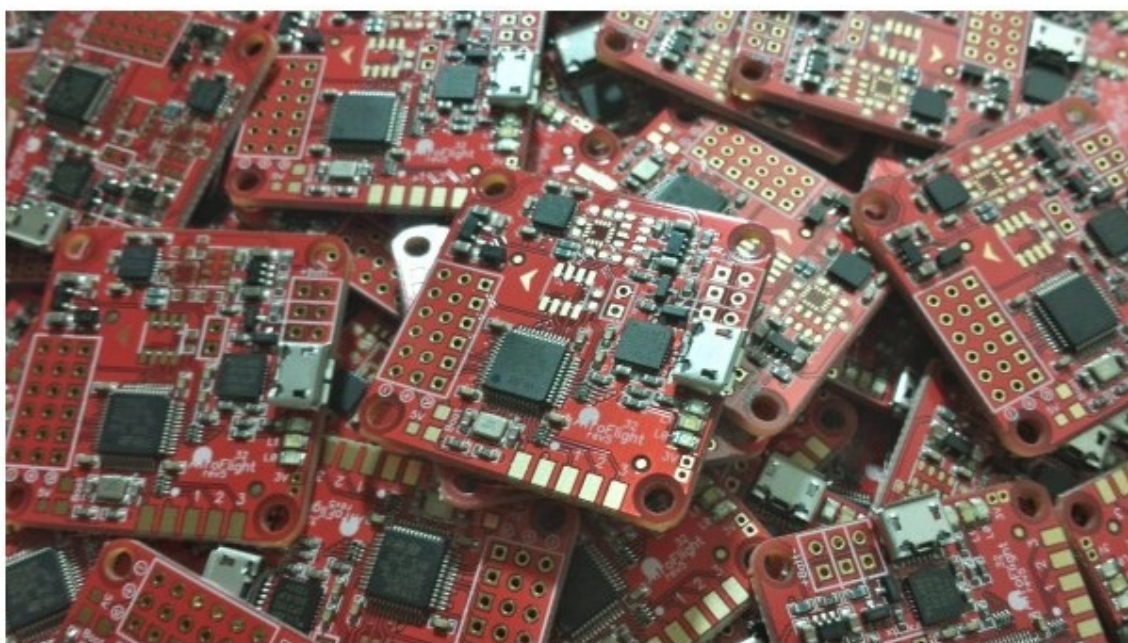

Acro Naze32 (rev 5)

basic guide



by **Dlearnt**

20 August 2014

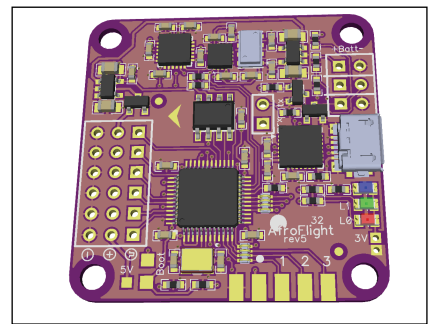
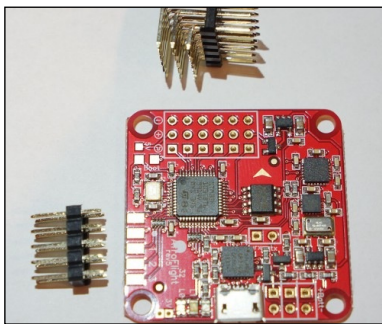


Introduction

I came to this board from a KK (trying a cc3d in between), and wished there was a guide like this to make things a bit easier. This guide is based on my experience, such that it is, and is really for noobs and people uninitiated to the multiwii sect. It's also for Naze32 virgins unwilling to be sacrificed before its Lord and Master, timecop.

1. Take your props off

For those with an undeveloped prefrontal cortex.



2. Chrome Baseflight Configurator

For hipsters with macbook airs, like me.

Get it [here](#).

3. USB drivers

Get them [here](#).

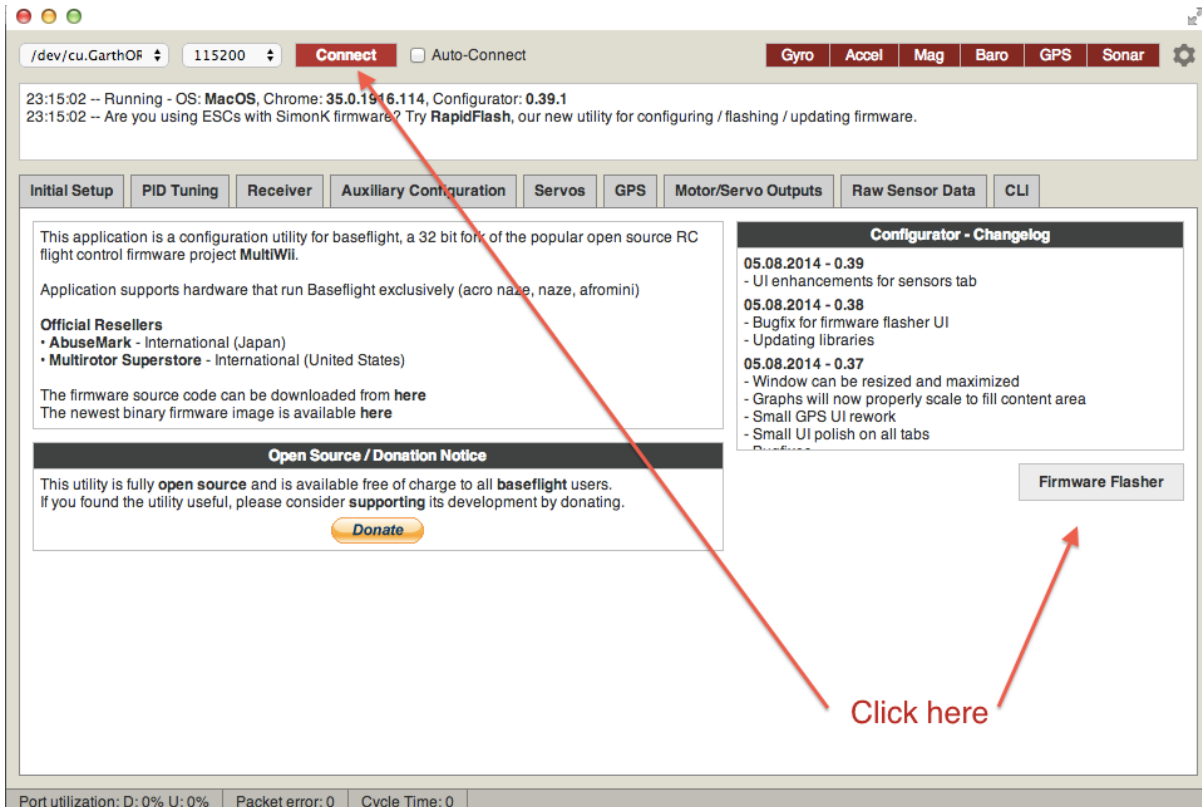
4. Solder your header pins to the board

Have a go. Watch [Bruce do it](#).

5. Connect your board to the Baseflight app via USB

See step 3 if you are having trouble. Don't connect your battery just yet.

6. Flash your firmware



7. Enter your CLI commands in the CLI tab

I used these for a 400 sized quad with a standard receiver:

```
set mincheck = 1020
set maxcheck = 1980
set looptime =3000
set mincommand = 1000
set maxthrottle = 2000
set minthrottle = 1100
set midrc=1500
set acc_lpf_factor = 100
feature MOTOR_STOP
feature FAILSAFE
map AETR1234
failsafe_throttle = 1000
save
```

You may wish to change your 'map' [Aileron, Elevator, Throttle, Rudder, Aux 1, etc] depending on your receiver setup.

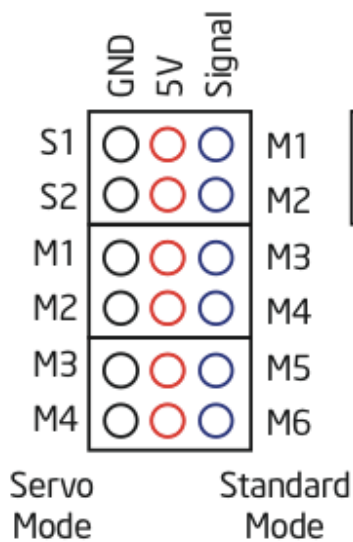
If you use a Futaba radio see para. 5 on page 11 of [timecop's manual](#)

See [mochaboy's video](#) if you want to know more.

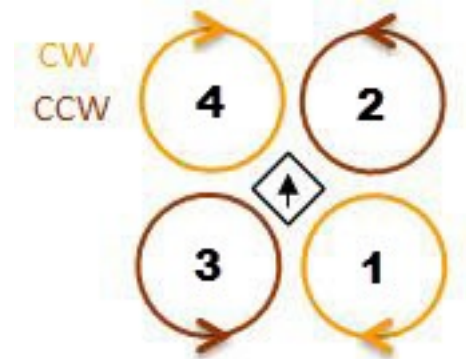
Click on the Initial Setup tab

8. Fix the Naze32 to your quad

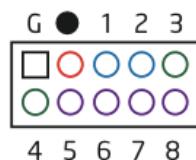
And hook your receiver and ESCs up to the board.



For ESCs, only one ESC needs to have its signal, ground and voltage wires connected to the board. All others need only their signal wires connected.



WARNING Incorrect or reverse connection to these pins will instantly destroy the hardware.



Receiver connections

For standard (non-PPM) receivers,¹ connect all three wires (ground, 5V, and signal) from Channel 1 from your receiver onto the top left three pins (ground on the left, 5V, then signal on right). Yes, ground is the brown wire. Channels 2-8 only need the signal wires from the receiver.

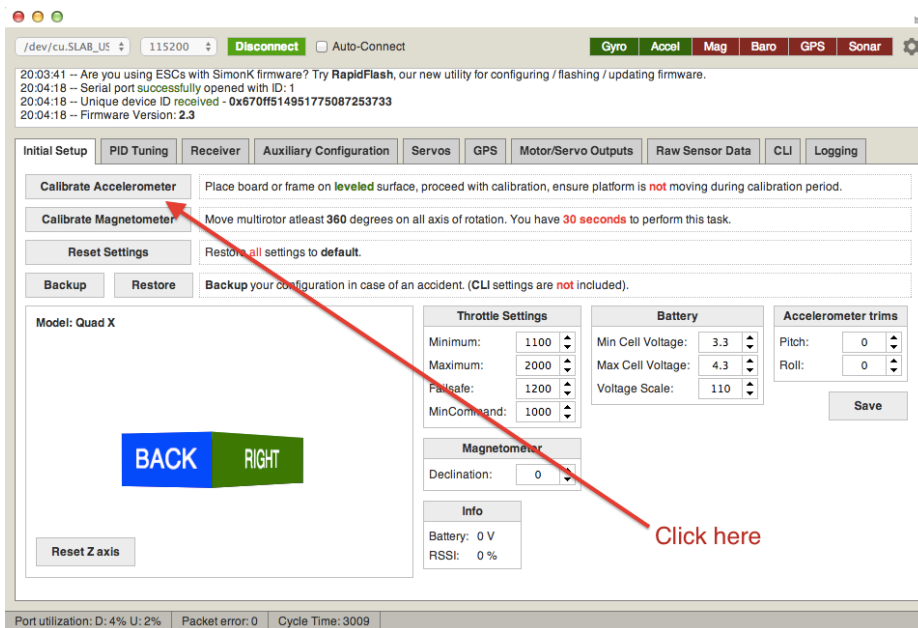
For PPM receivers use the top left three pins on the board only. For PPM receivers, you will also need to type "feature ppm" in the CLI tab, then type "save", then exit the CLI tab.

9. Connect a buzzer to the buzzer pins on the board

You'll need this to hear the beeps for various settings, and to use as a lost model alarm. You may have one from an old KK board like I did.

10. Calibrate Accelerometer

Make sure your quad is level and click on the calibrate accelerometer button.



11. Calibrate ESCs

See my short [video](#).

¹ CPPM or PPM=1 cable for 'all' channels (total=8 channels with Acro Naze32); PWM=1 cable for 'each' channel (total=8 channels with Acro Naze32).

12. Set up profiles & PIDs

Go to the PID Tuning tab and select profile 2 (you're leaving profile 1 in the default settings in case it works for you). For a 400 sized quad you may wish to change profile 2 in accordance with my settings (remember to press the save button on each page - **each profile will have to have the CLI commands entered again separately**):

*Note the RC Rate, RC Expo, Pitch & Roll Rate and Yaw Rate. (Remember to press the save button on each page for each profile. For each profile, you will have to set up again the Receiver tab, and the Auxilliary Configuration tab.)

20:22:45 -- Serial port successfully opened with ID: 6
20:22:45 -- Unique device ID received - 0x66aff555451715087255419
20:22:45 -- Firmware Version: 2.3
20:22:52 -- EEPROM saved

Name	Proportional	Integral	Derivative	ROLL & PITCH rate	YAW rate	TPA
ROLL	4.2	0.035	29	0.65	1.30	0.00
PITCH	4.2	0.035	32			
YAW	13.1	0.050	8			
ALT	5.0	0.000	0			
VEL	12.0	0.045	1			
Pos	0.11	0.00				
PosR	2.0	0.08	0.045			
NavR	1.4	0.20	0.080			
LEVEL	9.0	0.010	100			
MAG	4.0					

Profile
2

Refresh Save

Port utilization: D: 0% U: 0% Packet error: 0 I2C error: 0 Cycle Time: 2900

/dev/cu.SLAB_US 115200 Disconnect Auto-Connect Gyro Accel Mag Baro GPS Sonar

20:18:12 -- Loaded Profile: 2
 20:18:37 -- EEPROM saved
 20:19:38 -- EEPROM saved
 20:20:35 -- EEPROM saved

Initial Setup PID Tuning Receiver Auxiliary Configuration Servos GPS Motor Testing Raw Sensor Data CLI Logging

Roll [1500]
 Pitch [1500]
 Yaw [1500]
 Throttle [1500]
 AUX 1 [1500]
 AUX 2 [1500]
 AUX 3 [1500]
 AUX 4 [1500]

Throttle MID: 0.20 Throttle EXPO: 0.00
 RC Rate: 1.75 RC Expo: 0.40

50 ms

2200
2000
1800
1600
1400
1200
1000
800

250 300 350 400 450 500

Refresh Save

Port utilization: D: 4% U: 1% Packet error: 0 I2C error: 0 Cycle Time: 2908

/dev/cu.SLAB_US 115200 Disconnect Auto-Connect Gyro Accel Mag Baro GPS Sonar

20:28:42 -- Loaded Profile: 1
 20:28:47 -- Loaded Profile: 2
 20:29:01 -- Loaded Profile: 1
 20:29:04 -- Loaded Profile: 2

Initial Setup PID Tuning Receiver Auxiliary Configuration Servos GPS Motor/Servo Outputs Raw Sensor Data CLI Logging

Name	AUX 1			AUX 2			AUX 3			AUX 4		
	LOW	MED	HIGH	LOW	MED	HIGH	LOW	MED	HIGH	LOW	MED	HIGH
ARM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ANGLE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HORIZON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MAG	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HEADFREE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HEADADJ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BEEPER	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OSD SW	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Save

Port utilization: D: 4% U: 1% Packet error: 0 Cycle Time: 2999

Auxilliary Configuration tab:

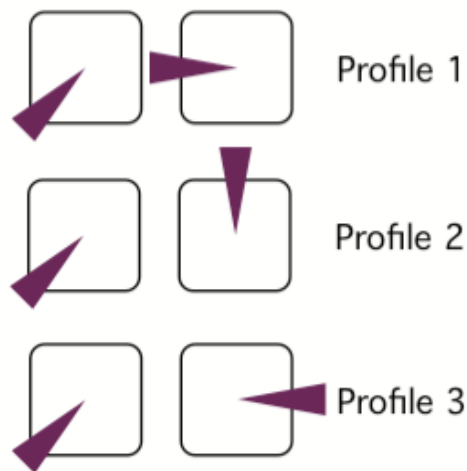
Rate = No auto level [no boxes checked]

Angle = limited to 45 degrees with auto level [Angle box checked]

Horizon = beyond 45 degrees but still auto level [Horizon box checked]

see [Hadriez's PIDs](#) for his ADS 400Q. For mini quads, check the forums.

Sticks action for profile selection:



13. Set up your transmitter

Props off.

Turn on your transmitter.

Plug in your battery.

Leave your USB in.

Go to the Receiver tab in Baseflight Configurator.

Sub trim

You must set your sub trims on your transmitter until you see in the Receiver tab that the value for each is at 1500 for Throttle, Pitch, Roll and yaw. If you get values between 1495 to 1505, it should be ok.

For a Turnigy 9xR

The sub trims are in the Limits screen. Sub trim sets the channel's centre point. The values can be -100 to 100 with increments of 0.1 You use your sticks to set the centre point by looking at the value on Baseflight Configurator while you are moving your sticks. Use the left hand pads on your radio to select the channel you wish to sub trim, and highlight it by pressing the MENU button.

While the channel to be sub trimmed on the transmitter is highlighted on the transmitter, move the stick so it reads as centred on 1500 on Baseflight Configurator. Once centred, press and hold the MENU button and the position will be recorded as the centre position.

End Point Adjustment (EPA)

In my understanding, it helps account for the differences in stick travel for different radios.

The EPA should correspond to your mincommand and maxthrottle in the CLI tab - in most cases, 1000 and 2000 respectively.

Turnigy 9xR

EPA is adjusted from the Limits screen on your transmitter. E.g., to set the end points for aileron on the left end, move the aileron stick left, and edit with +/- on your transmitter while watching the readout on the Receiver tab in Baseflight Configurator. When it gets to 1000 (or as close as you can), press MENU on the transmitter. To edit the right side, move the stick right and repeat until it reads 2000 (or as close as you can).

Dual rates and expos

Be sure to set your transmitter dual rates and expos to nil to let the Naze32 handle them via the Baseflight Configurator.

Yaw issues

I experienced really slow yaw on the default settings, and I'm not the only one.

See [timecop's suggestion](#) for snappier yaw.

See also a good explanation on [how PIDs work](#).

Channel direction

You may or may not need to reverse the channels in your transmitter. I suggest testing directions of your sticks by listening to the beeps the board makes for changes of profiles.

13. Test failsafe

Test your failsafe with your props off. You'll notice that the "failsafe_throttle = 1000" command you entered in in CLI is equal to the "set mincommand = 1000", and less than the set minthrottle = 1100.

The CLI command "Feature -FAILSAFE" means the fail safe is disabled (note the "-" sign). Type in "feature FAILSAFE" then "save" to enable and then do another CLI 'dump' by typing "set". You should see "feature FAILSAFE" listed without the "-" sign.

Now failsafe is enabled so test to ensure that it does work.

Transmitter on.

Plug your battery in.

Arm and throttle up slightly.

Turn your transmitter off.

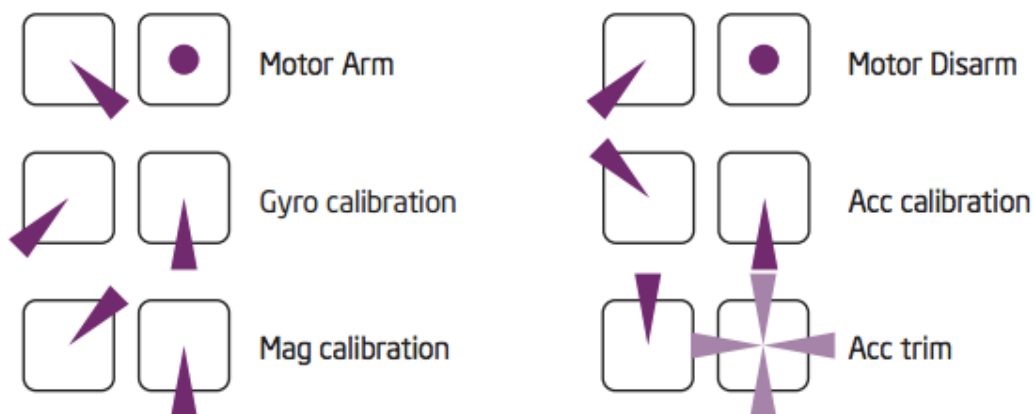
Failsafe should stop the motors spinning.

Broken quads are better than broken people.

14. Test flight

Props on.

Flat surface - Acc and Gyro calibration



Change your profiles using the stick commands at step 12 to test your 3 PID settings.

Do not move the model while plugging in the battery and during the first few seconds after power-up. Gyro must be idle, or else initial calibration will be wrong. Alternatively, make sure to execute the "Gyro Calibration" stick sequence prior to arming.

This is about the extent of my knowledge. If you need to know more, unfortunately I am not the person to inform you.

This guide is really only for Acro Naze32 users, not the full Naze32 board, so I don't intend to include instructions on enabling the other options like mag. baro. and headless. Check the forums for those.

14. Timecop Axioms

Re: Naze32 hardware discussion thread

by **timecop** » Mon May 19, 2014 6:04 am

Having designed the hardware and written 95% of the firmware (of the "new" code, not stuff transplanted from multwii), I think I'm qualified to determine what's user error and what's not.

timecop

Posts: 1552
Joined: Fri Sep 02, 2011 4:48 pm

ONLINE

Re: Naze32 hardware discussion thread

by **timecop** » Sun May 18, 2014 2:06 pm

“ CoolID wrote:

Is it possible to make naze32 climb and return to launch ?

also the gps coordinates in baseflight coordinates are off by a decimal, is this what naze32 is seeing as well ? if so then it might try flying to center of the planet on failsafe RTL

I think you're posting this in the wrong forum, you probably meant dji.com/forums

timecop

Posts: 1552
Joined: Fri Sep 02, 2011 4:48 pm

ONLINE

Re: Naze32 hardware discussion thread

by **timecop** » Sun May 18, 2014 2:06 pm

“ rank wrote:

Ok, narrowed down the problem to the physical conflict of the gps and ppm inputs. When either of them is unplugged everything gets normal. Here's a vide of how the channels are jumping. Please somebody help!

<http://www.youtube.com/watch?v=kaZBYiNy...e=youtu.be>

either your GPS or your receiver is shit, or you hooked it up wrong.

timecop

Posts: 1552
Joined: Fri Sep 02, 2011 4:48 pm

ONLINE

Re: Naze32 hardware discussion thread

“ **timecop** wrote:

“ **Batch1** wrote:

Since we cannot link failsafe to RTH and RTH is not reliable why buy FunFly Controller "Naze 32"
Robert

Nobody is forcing you to buy anything.

Infact, if GPS is what you want, look no further than DJI Phantom Vision V2+, and stay the fuck away from opensource projects.

Timecop I didn't say I want to buy it

I asked why people buy it since it is not very usefull and I have smart answer from people, except you !

Your are a conceited person

Robert

by **Batch1**
Sun May 25, 2014 3:24 pm

Forum: Boards
Topic: Naze32 hardware discussion thread
Replies: 2206
Views: 125824

Re: Naze32 hardware discussion thread

by **timecop** » Mon May 19, 2014 12:31 am

“ rank wrote:

[Goy ya mate, my fifth naze board and my last one. Good luck with your attitude.

By all means, Phantom Vision V2+ is waiting for you.

timecop

Posts: 1552
Joined: Fri Sep 02, 2011 4:48 pm

ONLINE

*use this guide at your own risk.