

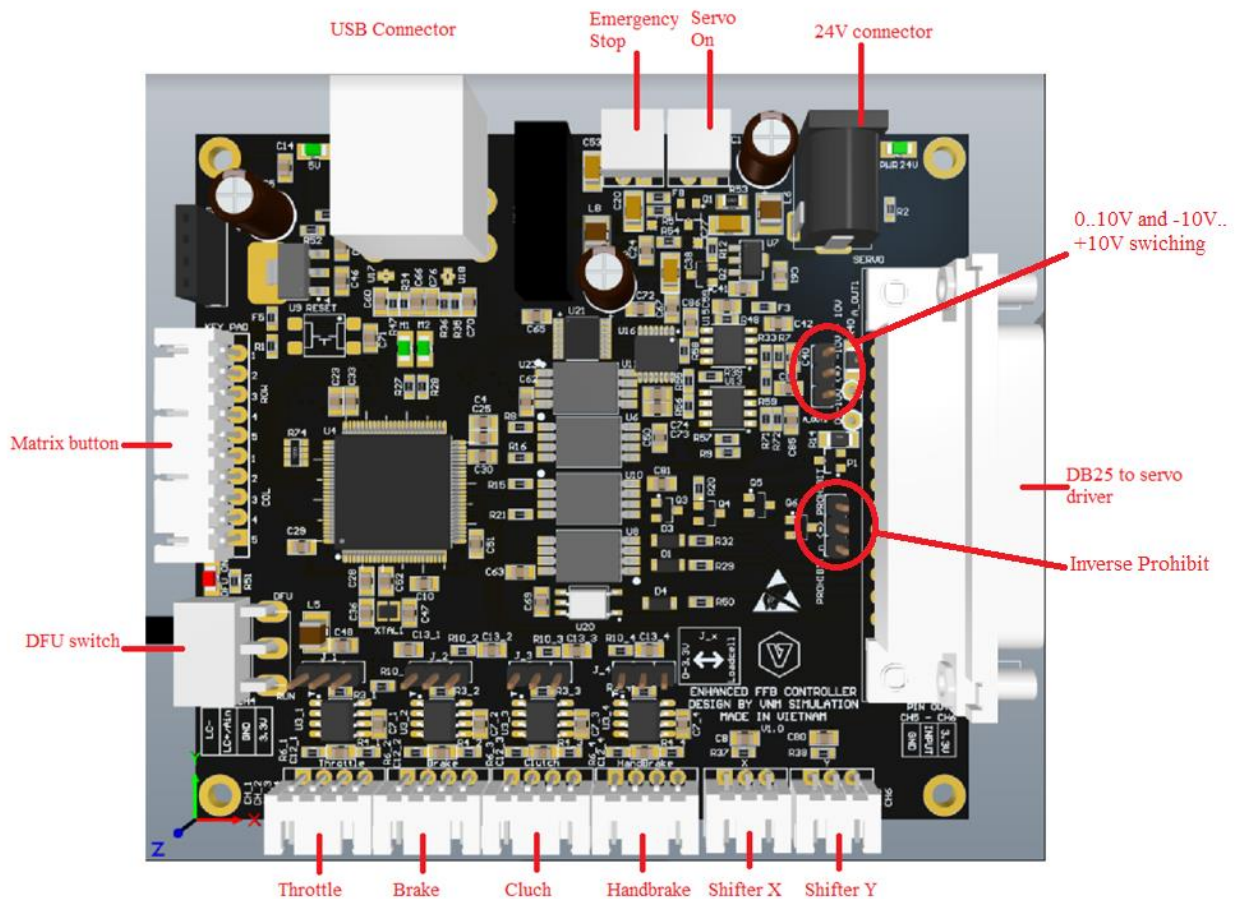
# VNM FORCE FEEDBACK CONTROLLER USER MANUAL

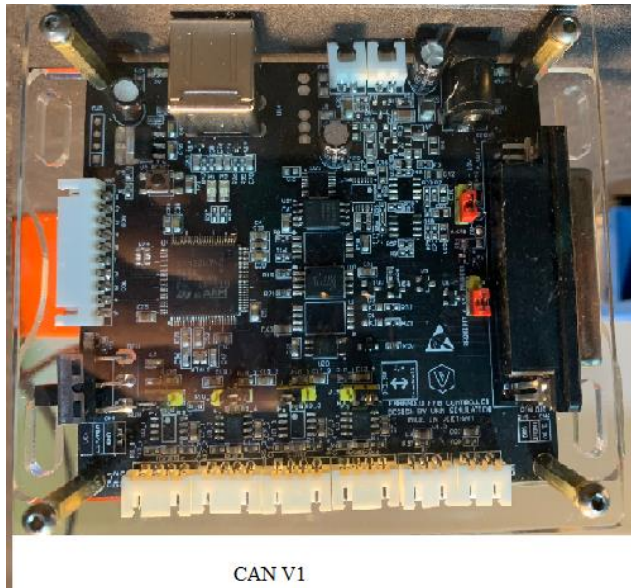
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## 1. Function Overview

VNM FFB Controller Analog V1 and VNM FFB Controller CAN V1 have same PCB just has different control module. VNM FFB Controller Analog V1 has an external DAC while VNM FFB Controller CAN V1 has isolated CAN transceiver. It uses VNM WHEELBASE FIRMWARE V2. It need an adapter 24V  $\geq$  1A to isolate signal from servo and controller.





CAN V1



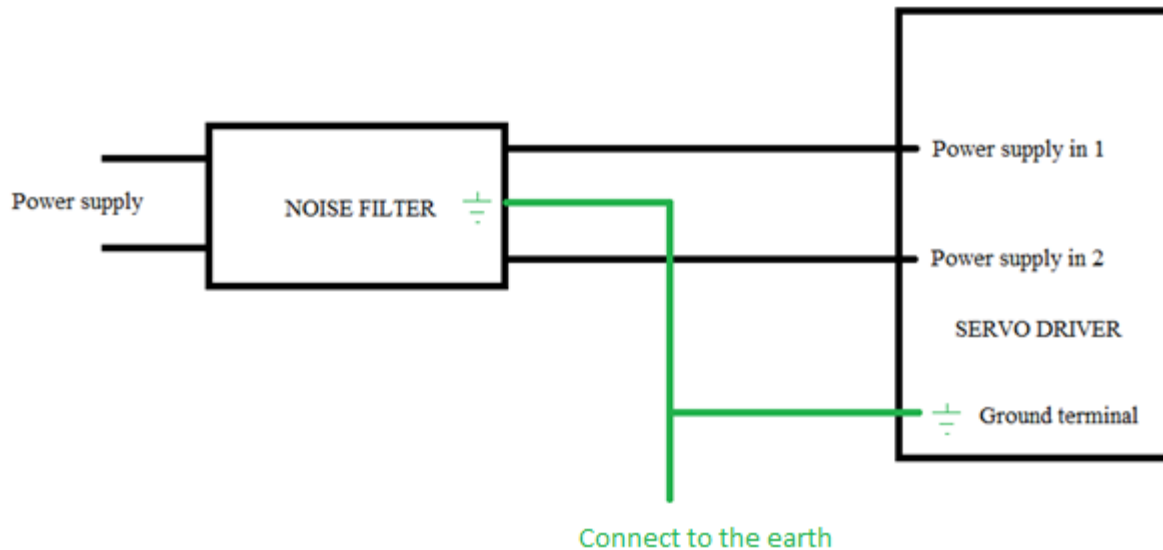
Analog V1

No	Feature	VNM FFB Controller Analog V1	VNM FFB Controller CAN V1
1	Read incremental encoder	yes	No
2	Analog control	yes	No
3	CAN control	no	yes
4	prohibit	yes	yes (some servo doesn't accept input from DI after enabling CAN)
5	Emergency stop	yes	yes (some servo doesn't accept input from DI after enabling CAN)
6	Servo on	yes	yes (some servo doesn't accept input from DI after enabling CAN)
7	Analog throttle	yes	yes
8	Analog clutch	yes	yes
9	analog brake	yes	yes
10	loadcel brake	yes	yes
11	analog handbrake	yes	yes
12	loadcel brake	yes	yes
13	XY shifter	yes	yes
14	matrix button	yes	yes

## 2. Connection

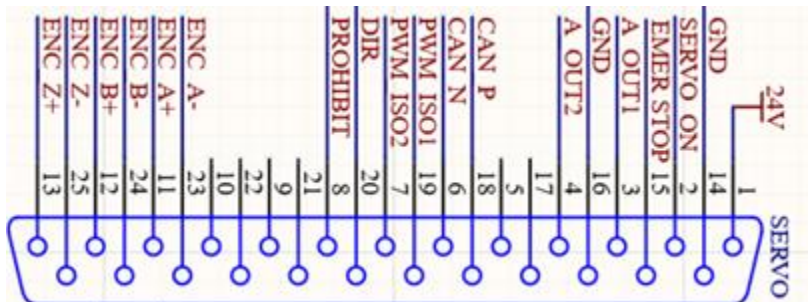
### 2.1. Connect Power supply for servo driver

There are 2 ways can cause noise (EMI) to PC. The 1<sup>st</sup> one is from power supply and the second one is from Servo Signal Connection. With Servo signal connection, VNM FFB controller isolates servo driver and PC. To reduce the noise, you need a Noise Filter on the power supply cable for servo driver too. Connection as the following image. This is importance to reduce all noise.



### 2.2. DB25

This connector is used to connect to servo driver only



Here is example for Mige and AASD driver. An example for HNC is in “HNC Configuration CANOPEN”.

VNM FFB Controller DB25 pin number	description	Mige servo driver DB36 pin number	AASD servo driver DB25 pin number
1	24V	18	9
2	Servo On	10	6

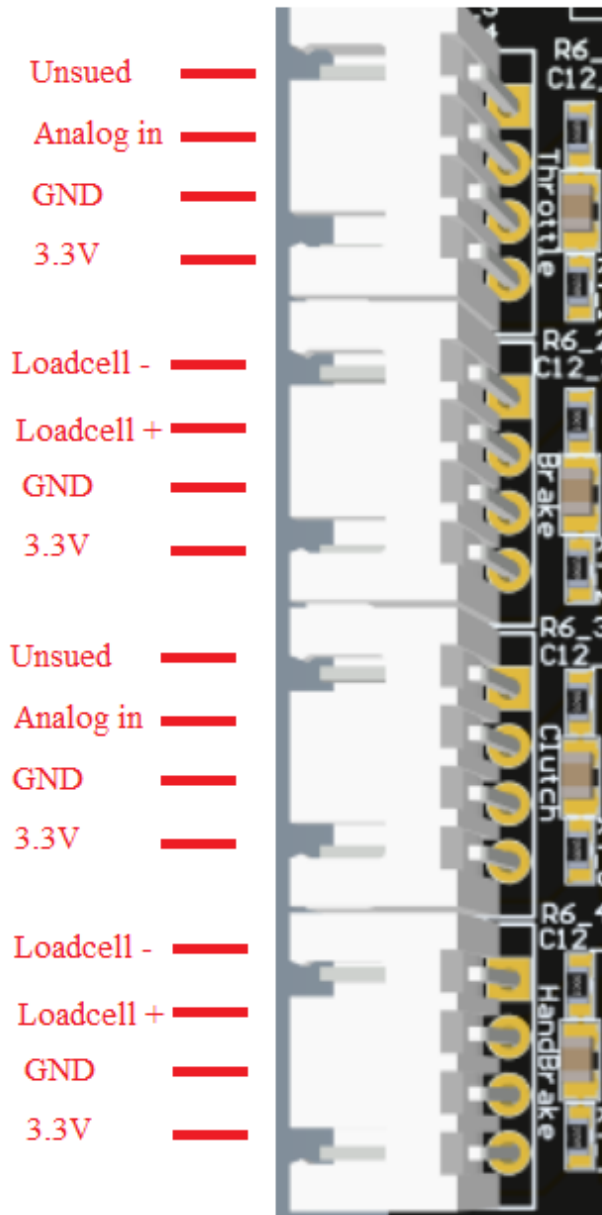
3	Analog Out 1	19	25
4	Analog Out 2	20	
5			
6	CAN LOW		
7	PWM2		
8	Prohibit	13,14	8,24
9			
10			
11	Encoder A+	1	20
12	Encoder B+	3	18
13	Encoder Z+	5	15
14	GND	23	13
15	Emergency Stop		
16	GND		10
17			
18	CAN HIGH		
19	PWM1		
20	DIR		7
21			
22			
23	Encoder A-	2	19
24	Encoder B-	4	17
25	Encoder Z-	6	16

### 2.3. USB Connector

The upper USB connection is used for debug.

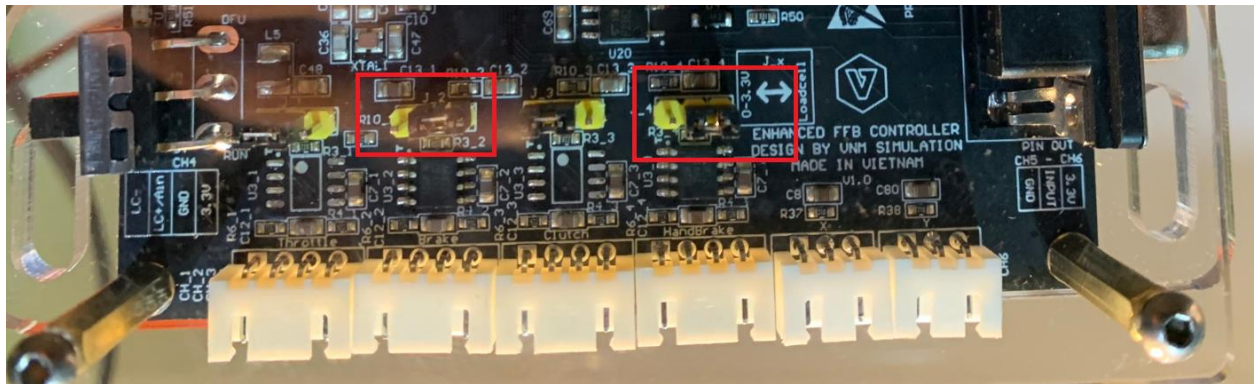
The lower USB connection is used for FFB controller.

## 2.4. Pedal/handbrake connector

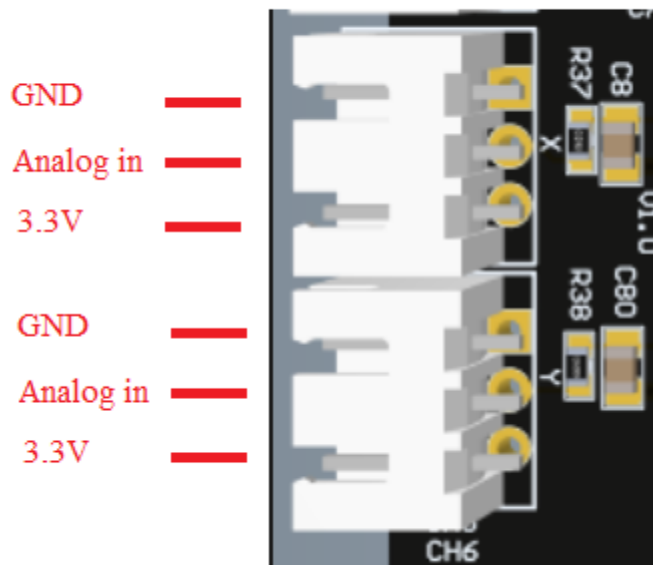


VNM FFB controller uses potentiometers for throttle and clutch only. Brake and handbrake can be loadcells or potentiometers by changing jumps (loadcell as default)



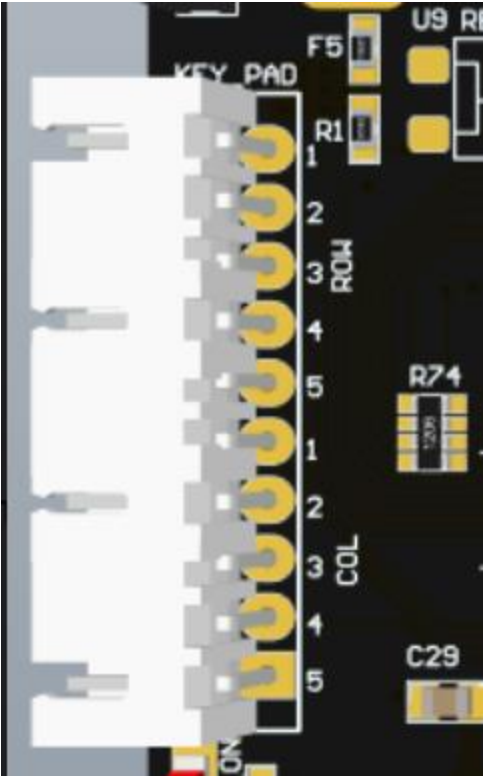


## 2.5. XY Shifter

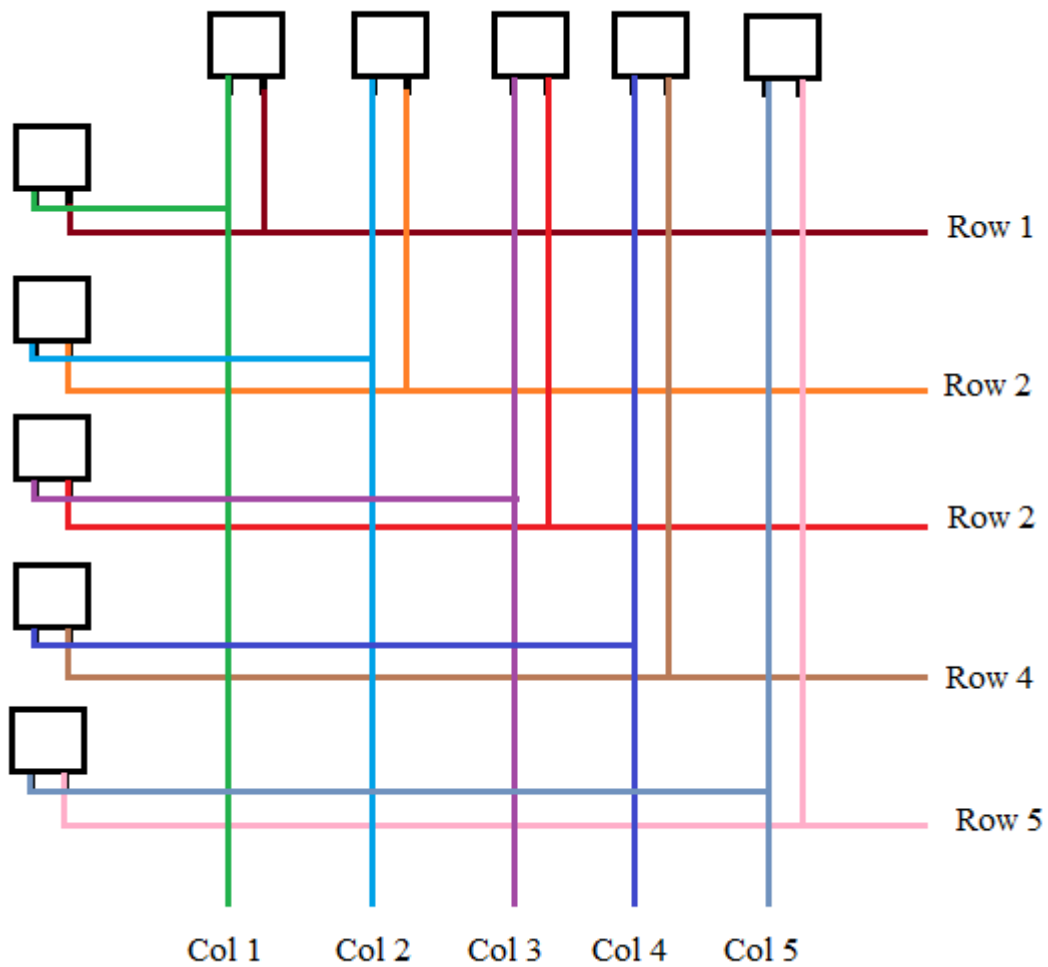


## 2.6. Matrix button

Matrix button can use for button box, steering wheel or event shifter.

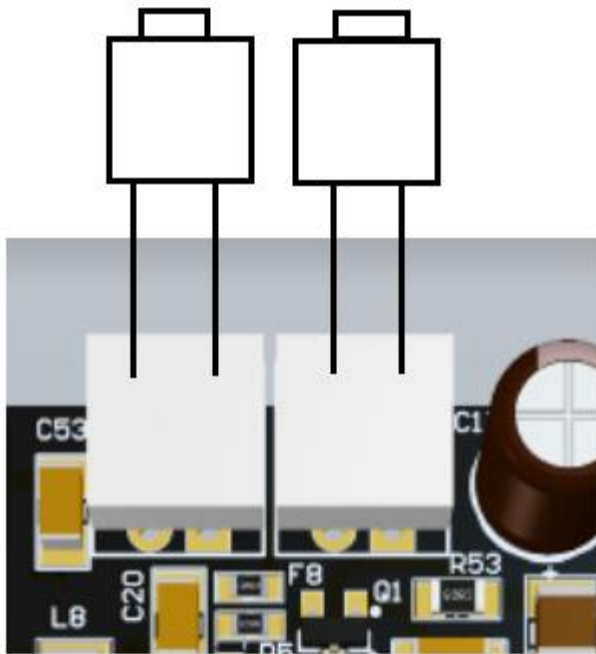






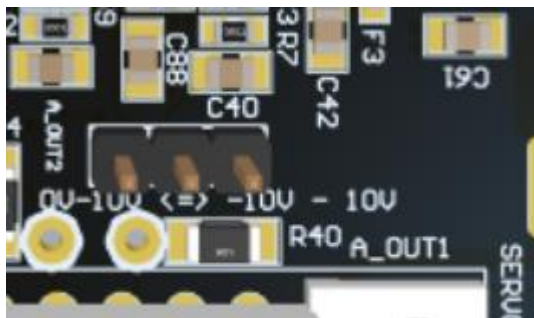
## 2.7. Servo on-Emergency

Base on each type of servo driver, you can choose the button is Normal Open (NO) or Normal Close (NC) button.



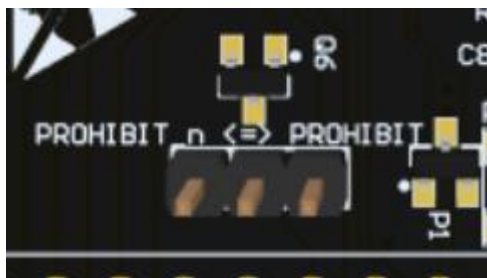
## 2.7. Switch 0..10V and -10V..10V

Default it is 0..10V mode, if your server use +- 10v to control, change jump to +-10V.



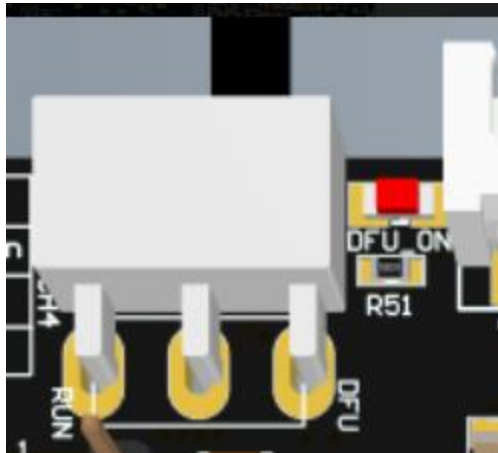
## 2.8. Inverse prohibit

This is used to inverse signal from high to low and vice versa. Some servo use high to prohibit servo turn, some use low to prohibit.



## 2.9. DFU switch

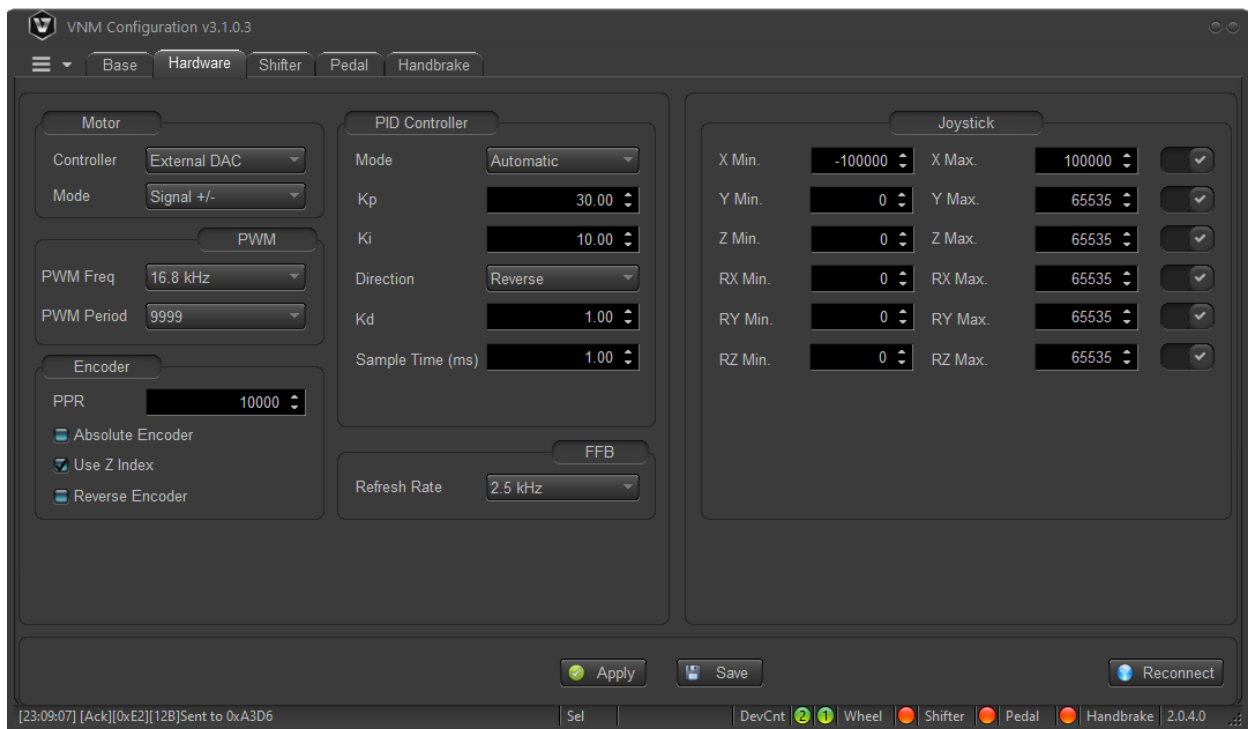
This switch to you enable DFU mode to upgrade firmware. If the light near switch turn on that show it is in DFU mode.



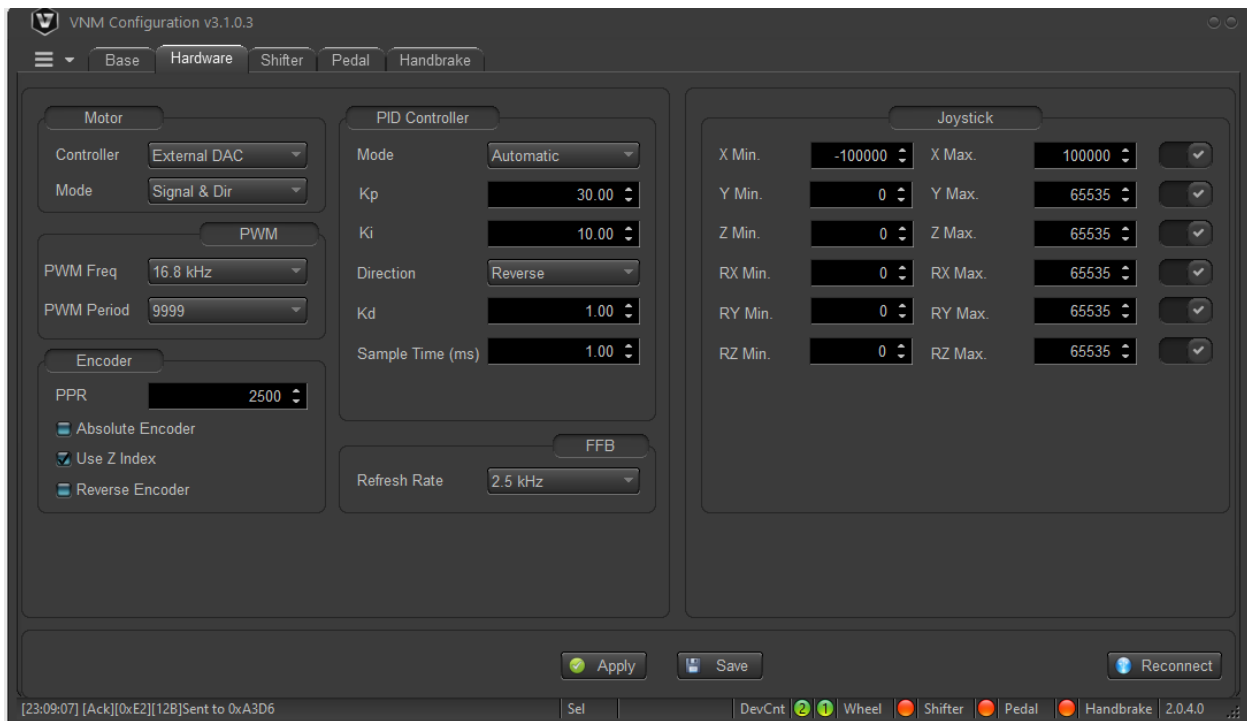
## 3. Hardware configuration example

### 3.1. Mige Driver

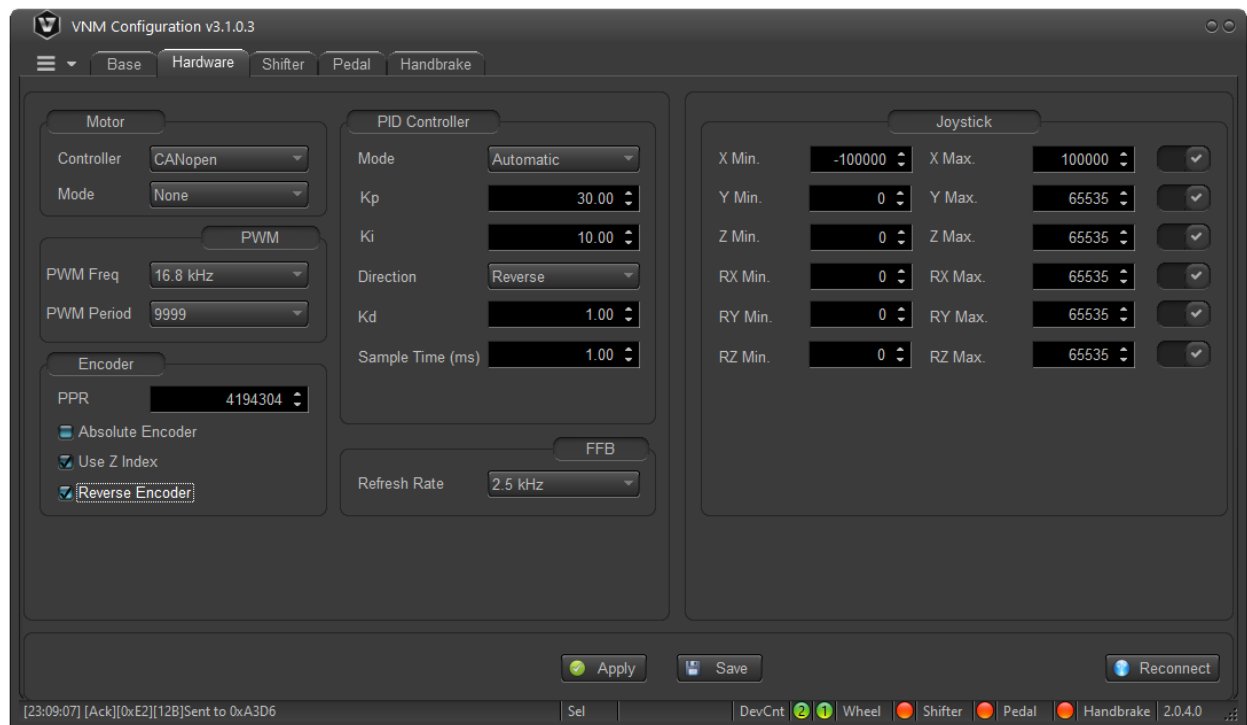
Can use for mg13i, EP100



### 3.2. AASD



### 3.3. HNC



## 4. Update firmware

Pls this a doc and download tool from this repo

[https://github.com/hoantv/VNM\\_UPDATE\\_TOOL](https://github.com/hoantv/VNM_UPDATE_TOOL)