



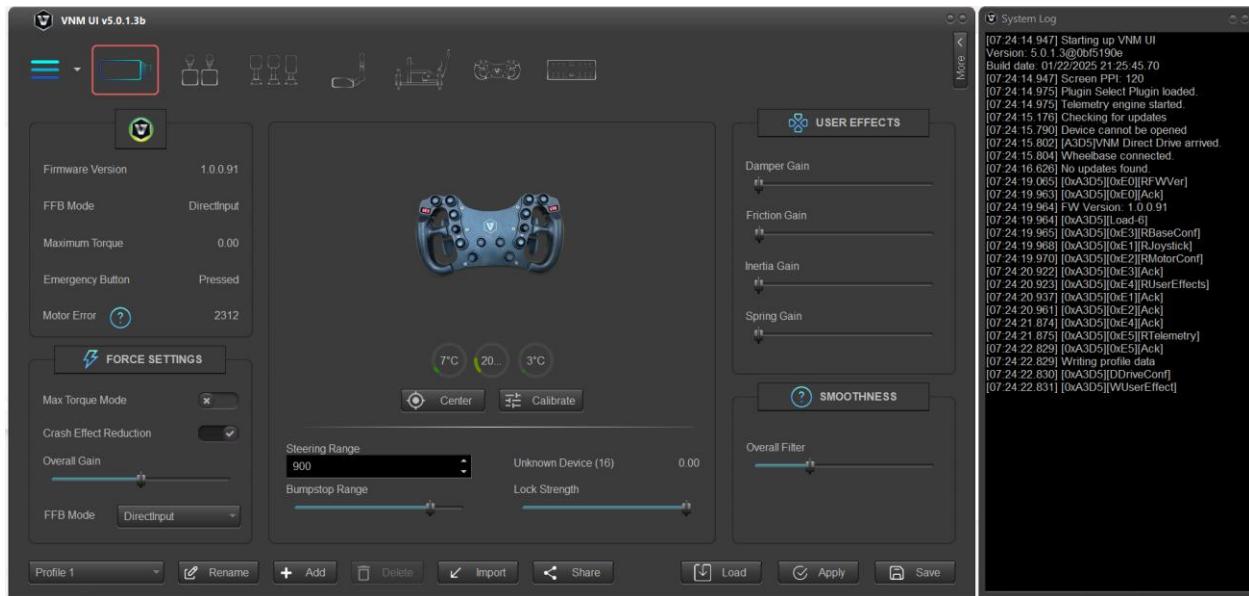
VNM SIMULATION., JSC

## VNM DIRECT DRIVE CONFIGURATION MANUAL

### 1. UI Configuration

#### 1.1. Basic Setting

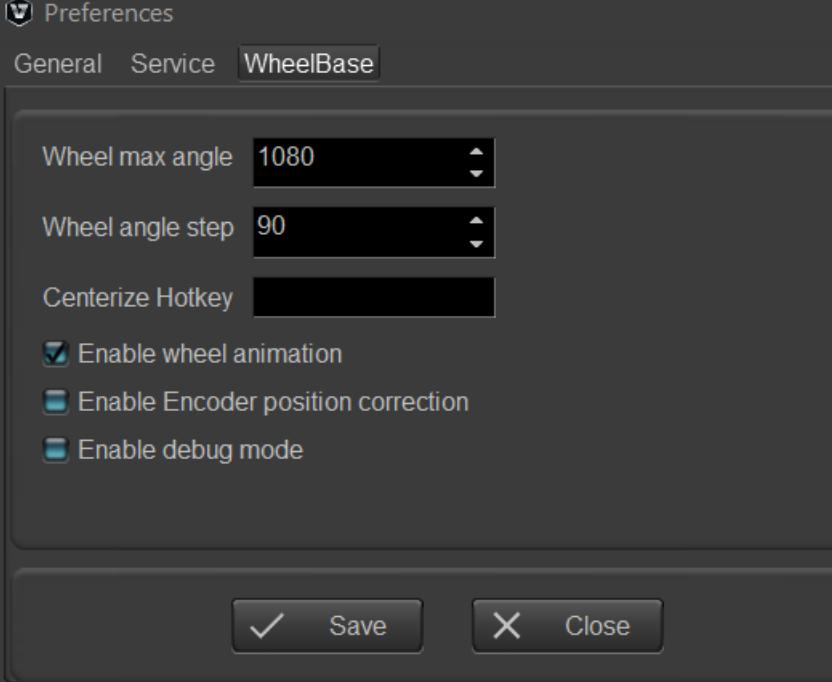
In the manual the UI uses the black theme. User can change the theme.



Click more to view extra settings

Items	Description	Default Value
<b>Base Status</b>		
	Connection status of VNM Direct Drive Wheelbase. Green color means “connected”	
Firmware version	Firmware version of the base	0.0.0.0

FFB Mode	Actual ffb mode in the base	Direct Input
Maximum Torque	Actual current max torque of the base	0.0
Emergency Button	The Emergency Stop Button must be connected to the base and the EMC Stop Button released for the base to operate. The EMC Stop button attempts to stop the base immediately when it is pressed	Pressed
Motor Error	Click on  to read the description and solution of the error.	0
<b>Force Settings</b>		
Max Torque Mode	It is disabled by default, enable it for double ffb torque.	Disable
Crash Effect Reduction	In some cases of crashes, the base will move slower.	Enable
FFB Mode	There are some modes like: - Direct Input: This is a legacy API - Telemetry - Iracing 360Hz: Not yet implemented TDI: Telemetry + Direct Input, Not yet implemented	Direct Input
Force Range	Increase minimum force and reduce max force	0-10000
Reverse force	Reverse ffb	disable
<b>Wheel Settings</b>		

Steering Angle	<p>Lock to lock rotation. Can increase the max rotation to 7200 degree in Preferences -&gt; WheelBase -&gt; Wheel max angle</p> 	900
Bumpstop Range	The locking force increases from 0 to maximum locking force corresponding to the steering angle to bumpstop range	920
Lock Strength	locking force strength.	10000
	Recenter the wheel	NA
	The base will perform a calibration process (1 turn left and 1 turn right). Do not touch the steering wheel during calibration. Normally, this process will happen automatically after flashing the firmware.	NA
Temperature	Base's temperatures	NA
Device name	Name of the base and maximum torque	NA
<b>User Effects</b>		
User can add some effect to simulate nature of steering wheel movement, only active when a game runs. The value is ffb gain.		
Spring	Make the steering wheel try to center all time.	0
Damper	Make the steering wheel less oscillation	0
Inertia	Simulate the steering wheel weight	0
Friction	Simulate the friction of steering wheel	0
<b>Game Settings</b>		

	Ffb gain of each effects that game want the base simulates. See description of each effect below to understand what effects are.	100
<b>Smoothness</b>		
The smaller smoothness value, the smoother force feedback. 0 means don't use this feature.		
Overall	Smooth total force	150
Damper	Only smooth damper force	0
Inertia	Only smooth inertia force	0
Friction	Only smooth friction force	0

## 1.2. Profile Settings



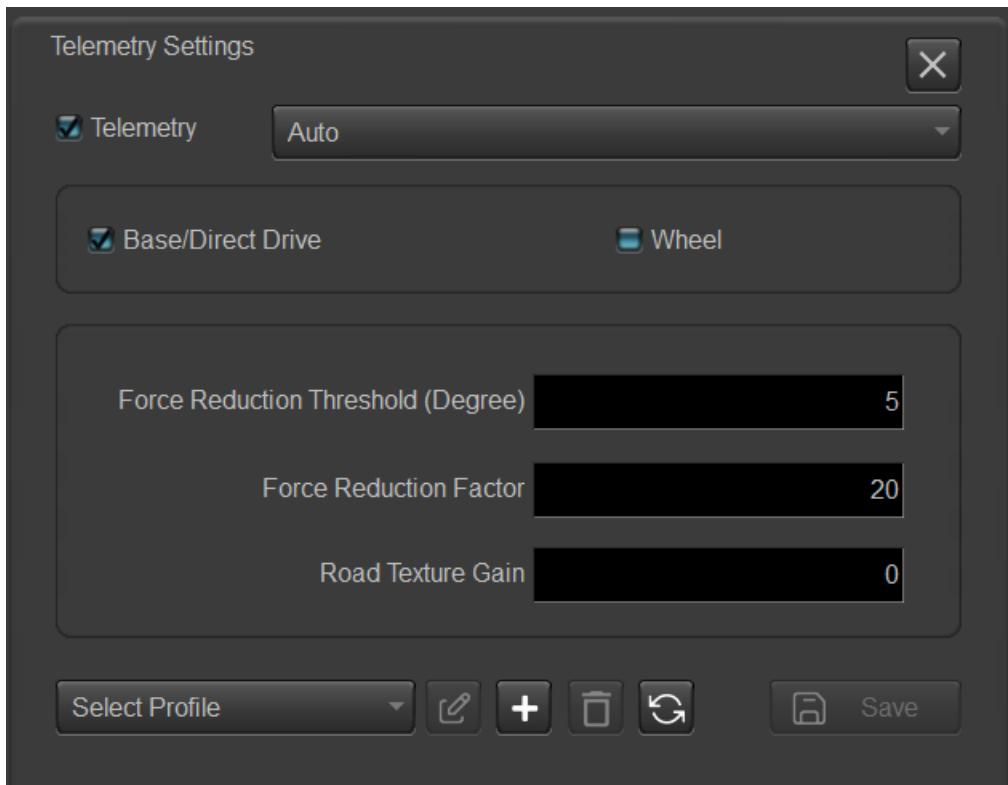
- 1 – Select profile: 1<sup>st</sup> to 4<sup>th</sup> profile are saved to the base. From 5<sup>th</sup> profile is saved to PC.
- 2 – Rename selected profile
- 3 – Add new Profile
- 4 - Delete a selected profile, only from 5<sup>th</sup> profile
5. Import profile from other users
6. Export profile to share with other users
- 7 – Load profile from the base in case you want rollback a configuration hasn't been applied to the base.
- 8 - Apply the configuration to the base.
- 9 – Save Configuration permanently to base or PC.

## 1.3. Telemetry Settings

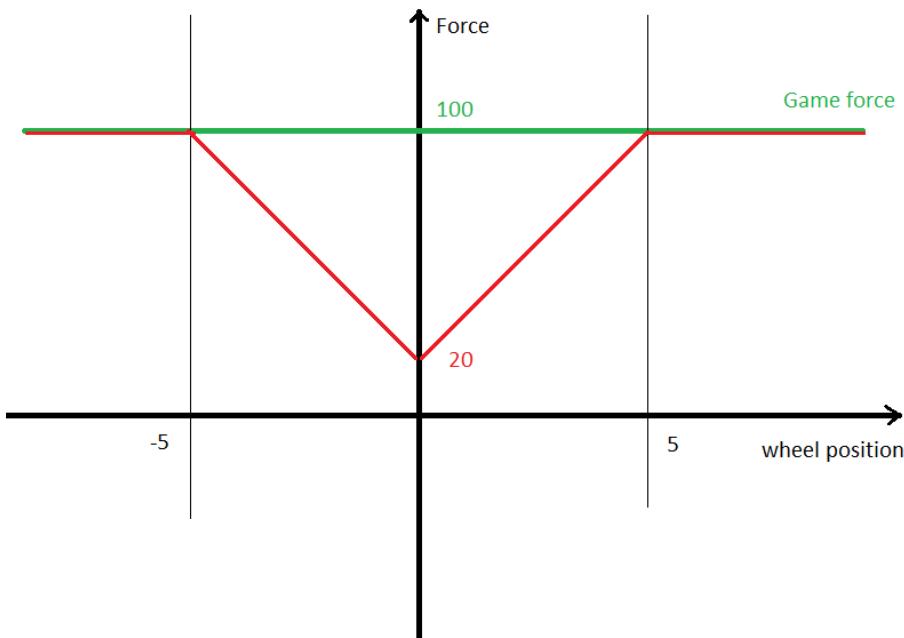
User can active Telemetry setting by press CTRL+T (For iRacing, set irsdkLog360Hz=1 in file app.ini which is located in C:/Users/<account>/Documents/iRacing folder)

- Telemetry is being developed. If it is complicated for you, pls use Direct Input. It works out of the box.
- Plugins
  - + Auto plugin automatically detects game (AC, ACC, iRacing, RF2, LMU).
  - + AC/ACC plugin can use for ACE

+ RaceRoom plugin can use for raceroom but not stable to get data from RaceRoom.



- Telemetry can be sent to Base, Wheel...
- Force Reduction Threshold(degree): the force will be reduced from [- Force Reduction Threshold, Force Reduction Threshold] degrees.
- Force Reduction Factor: the lowest force will be reduced to.
- Road Texture Gain: add more road texture effect.



After changing value, click save. You can save your profile for each game/car.

#### 1.4. Motor code Error translation

Bit	Severity	Description	Solution
0	Critical	Internal Error	Reset direct drive
1	Critical	Over Voltage Protection	Reset direct drive
2	Critical	Over Current Protection	Reset direct drive
3	Critical	No response from Encoder	Reset direct drive, check encoder connection
4	Critical	Encoder value is abnormal	Reset direct drive, check encoder connection
5	Critical	Encoder internal error	Reset direct drive
6	Critical	Brake temperature is too high	Turn off DD 30 minutes
7	NA	Reversed	
8	Major	EMC Stop Pressed	Release EMC Stop Button
9	Major	USB disconnected	Connect USB cable to PC
10	Major	Over Voltage Protection	Press and release EMC Stop Button
11	Major	Under Voltage Protection	Press and release EMC Stop Button
12	Major	Mosfet temperature is high	Turn off DD at least 5 minutes
13	Major	Driver temperature is high	Turn off DD at least 60 minutes
14	Major	Brake temperature is high	Turn off DD at least 5 minutes

### 2. Game Tuning

#### 2.1. Effects description

Effect Name	Description	Picture of effects
Constant force	A steady force in a single direction	
Ramp force	A force that steadily increases or decreases in magnitude	
Square force	Create a square wave form force	

Triangle force	Create a triangle wave form force	
Sine force	Create a sine wave form force	
Sawtooth Up force	Create a sawtooth up/down form force	
Sawtooth Up force		
Spring force	The force increases in proportion to the distance of the steering wheel from center.	
Damper force	The force increases in proportion to the speed with which the user moves the steering wheel	
Inertia force	The force increases in proportion to the acceleration of steering wheel	
Friction force	The force is applied when the steering is moved and depends on the defined friction coefficient.	

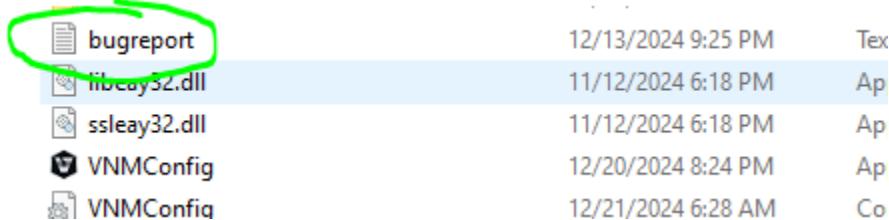
Depends on each game user can increase/decrease gain of each force

## 2.2. Game Tuning

Game	Game effect	User Effect
AC/ACC/iRacing/ F1 2020	Constant gain, damper gain	All
AMS2	Constant gain	All
Dirt4/Rally 2.0	Constant gain, friction gain	All
Project car 2	Constant gain, sine gain	All
Raceroom	Sine gain	All
RF 2	Sine gain, damper gain	All
WRC Generation	Ramp gain, square gain, sine gain, spring gain, damper gain	All
WRC 10	Constant gain, sine gain, spring gain, damper gain	All
To be updated		

## 3. Bug report

If software is crash. Send me bugreport.txt via discord channel



Other issues, you can send messages in discord channel.

VNM Simulation is always willing to listen from community. Welcome any recommendations to improve features 😊