

**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.

A screenshot of a computer

Description automatically generated

Click more to view extra settings

|  |  |  |
| --- | --- | --- |
| **Items** | **Description** | **Default Value** |
| **Base Status** | | |
| A logo with a green circle and a white letter in it  Description automatically generated | 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 |
| **Force Settings** | | |
| 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 |
| **Wheel Settings** | | |
| Steering Angle | Lock to lock rotation. Can increase the max rotation to 7200 degree in Preferences -> WheelBase -> Wheel max angle | 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 |
| **User Effects**  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 |
| **Game Settings** | | |
|  | Ffb gain of each effects that game want the base simulates. See description of each effect bellow to understand what effects are. | 100 |
| **Smoothness**  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: 1st to 4th profile are saved to the base. From 5th profile is saved to PC.

2 – Rename selected profile

3 – Add new Profile

4 - Delete a selected profile, only from 5th profile

5. Import profile from other users

6. Export profile to share with other users

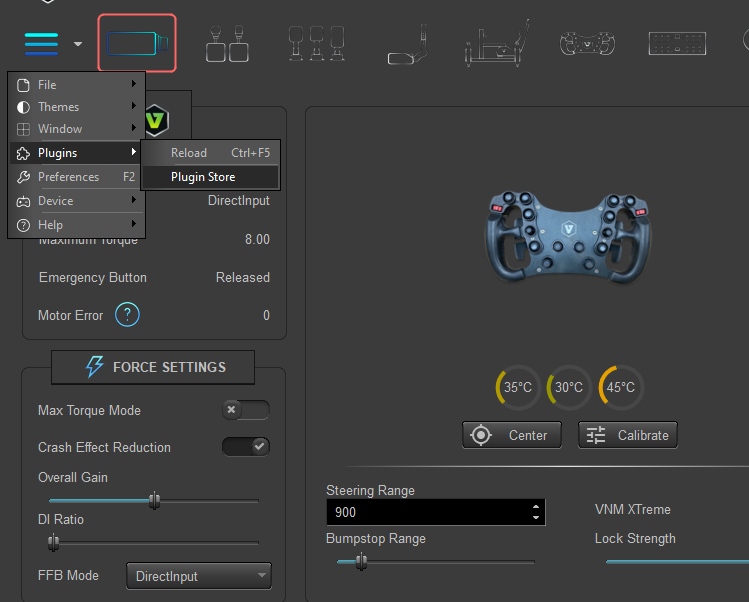
7– Load profile from the base in case you want rollback a configuration hasn’t been applied to the base.

8 - Apply the configuration to the base.

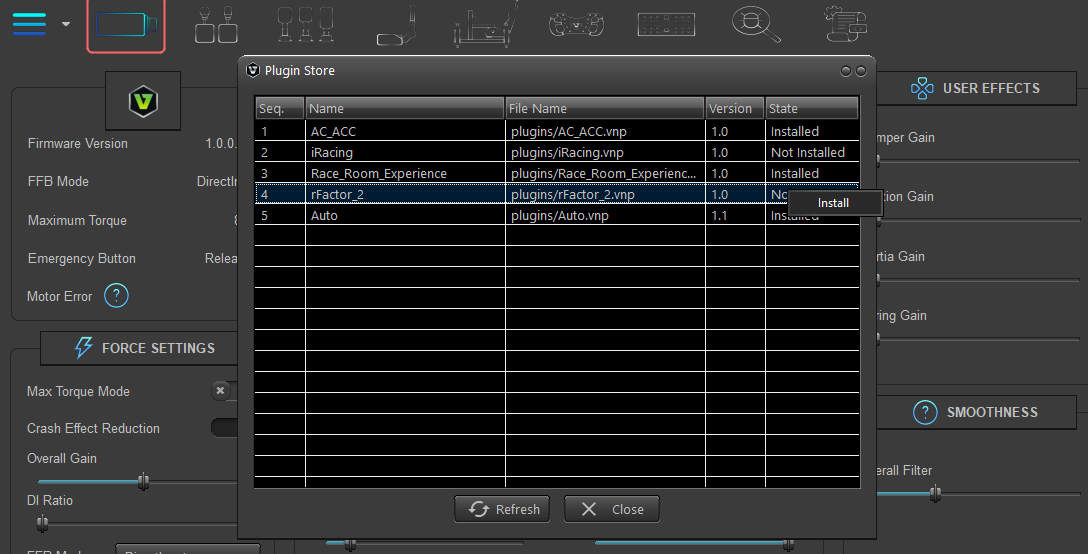
9 – Save Configuration permanently to base or PC.

## **1.3. Telemetry Settings**

* Download plugin:



* Install plugin by right-click and choose to install.



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.

A screenshot of a computer

Description automatically generated

* 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.

A diagram of a line graph

Description automatically generated

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 of 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 Tunning**

## **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 Tunning**

|  |  |  |
| --- | --- | --- |
| 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

A blue and white rectangular object

Description automatically generated

Other issues, you can send messages in discord channel.

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