SimTools v3

USER MANUAL v1.0

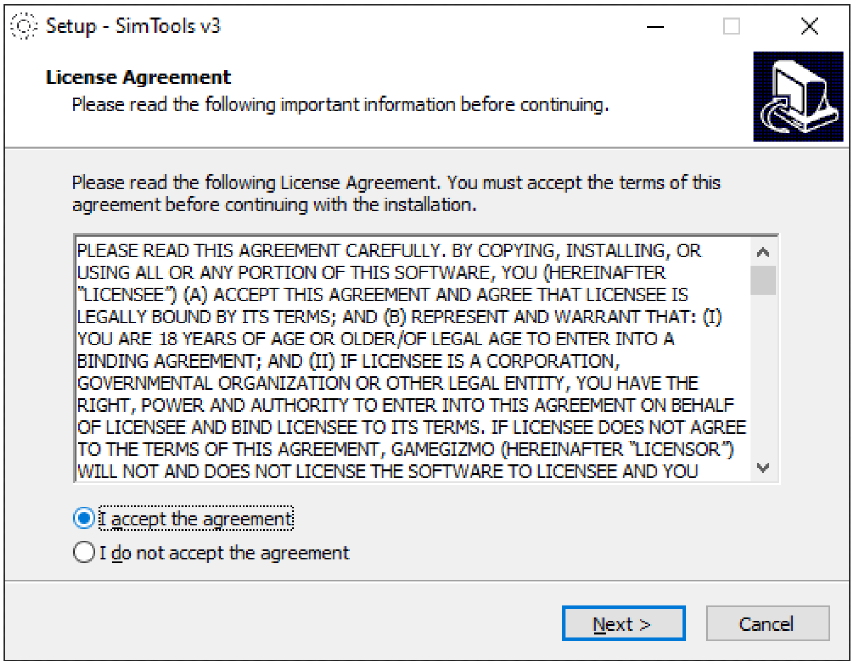
Table of Contents

Installing SimTools

Installing SimTools – You can download SimTools Installer directly from our website here: **https://simtools.us/downloads-links/.** The SimTools installer will always grab the latest version of SimTools for the installation.

NOTE: SimTools has the ability to capture the telemetry data we need from the memory space of a running game. Because of this ability, it may wrongly get detected as a problem by some antiviruses. If you run into any issues, please add SimTools as an exception to your antivirus.

1) Launch the SimTools installer by double clicking the file you downloaded. Read through the license agreement, accept the agreement and click “Next”.



License Agreement

Please read the following important information before continuing.

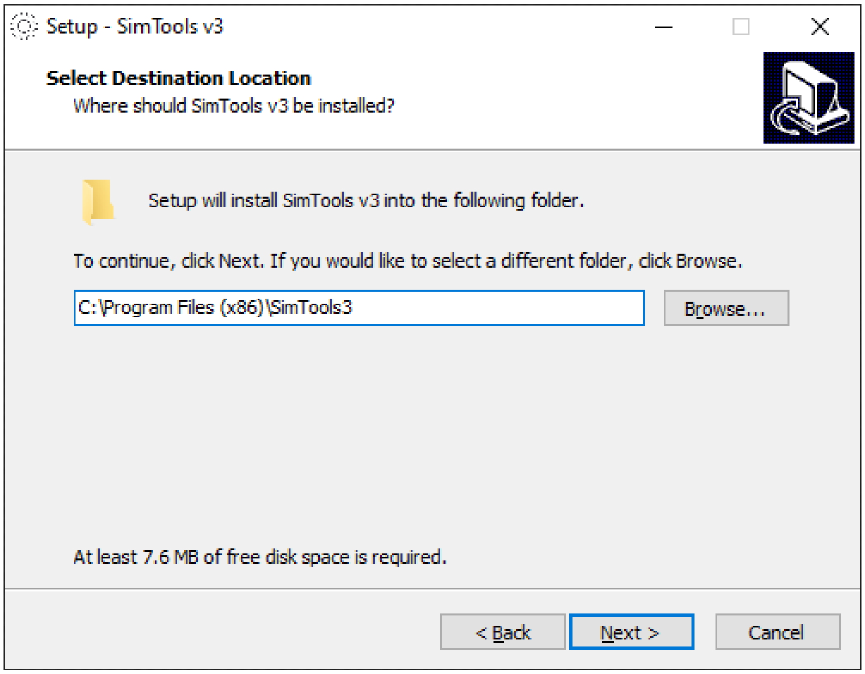
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

PLEASE READ THIS AGREEMENT CAREFULLY. BY COPYING, INSTALLING, OR USING ALL OR ANY PORTION OF THIS SOFTWARE, YOU (HEREINAFTER "LICENSEE") (A) ACCEPT THIS AGREEMENT AND AGREE THAT LICENSEE IS LEGALLY BOUND BY ITS TERMS; AND (B) REPRESENT AND WARRANT THAT: (I) YOU ARE 18 YEARS OF AGE OR OLDER/OF LEGAL AGE TO ENTER INTO A BINDING AGREEMENT; AND (II) IF LICENSEE IS A CORPORATION, GOVERNMENTAL ORGANIZATION OR OTHER LEGAL ENTITY, YOU HAVE THE RIGHT, POWER AND AUTHORITY TO ENTER INTO THIS AGREEMENT ON BEHALF OF LICENSEE AND BIND LICENSEE TO ITS TERMS. IF LICENSEE DOES NOT AGREE TO THE TERMS OF THIS AGREEMENT, GAMEGIZMO (HEREINAFTER "LICENSOR") WILL NOT AND DOES NOT LICENSE THE SOFTWARE TO LICENSEE AND YOU

● I accept the agreement

○ I do not accept the agreement

2) Use the default installation folder, or select where to install SimTools by clicking “Browse” and then click “Next”.



Setup - SimTools v3

Select Destination Location

Where should SimTools v3 be installed?

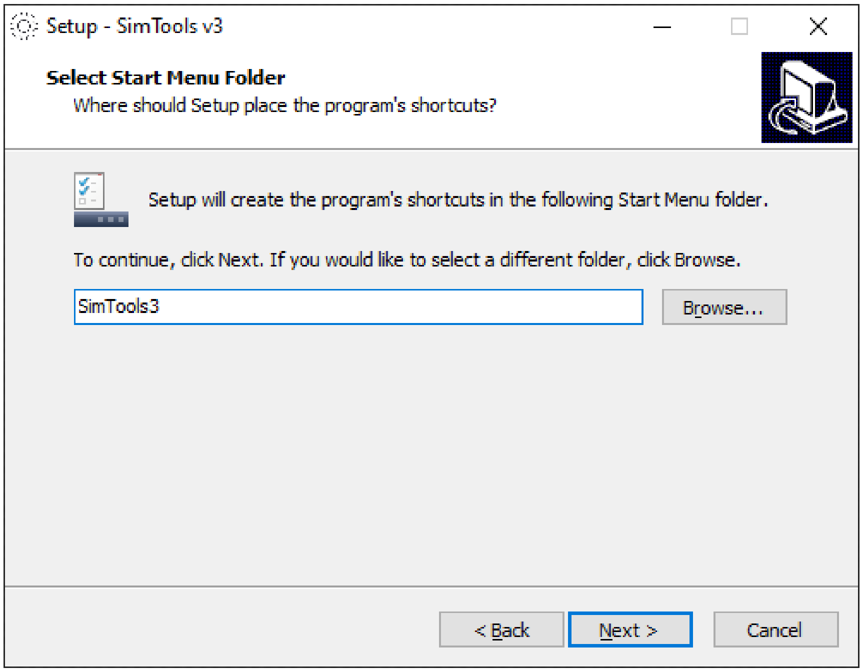
Setup will install SimTools v3 into the following folder.

To continue, click Next. If you would like to select a different folder, click Browse.

C:\Program Files (x86)\SimTools3

At least 7.6 MB of free disk space is required.

3) Use the default Start Menu folder, or select a Start Menu folder to install the SimTools shortcuts in by clicking “Browse” and then click “Next”.



Setup - SimTools v3

Select Start Menu Folder

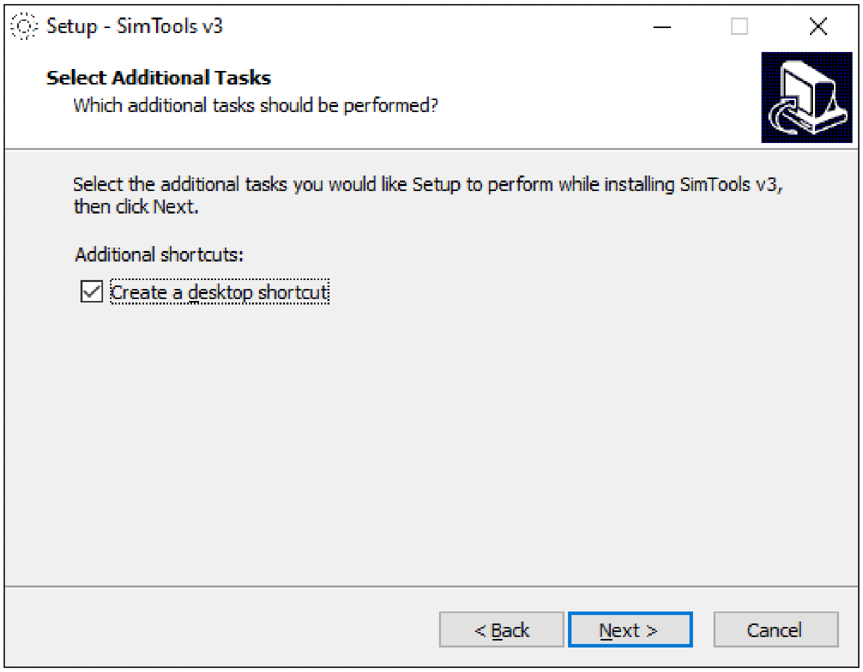
Where should Setup place the program's shortcuts?

Setup will create the program's shortcuts in the following Start Menu folder.

To continue, click Next. If you would like to select a different folder, click Browse.

SimTools3

4) Choose to add a shortcut to your desktop or not, and then click “Next”.



Setup - SimTools v3

Select Additional Tasks

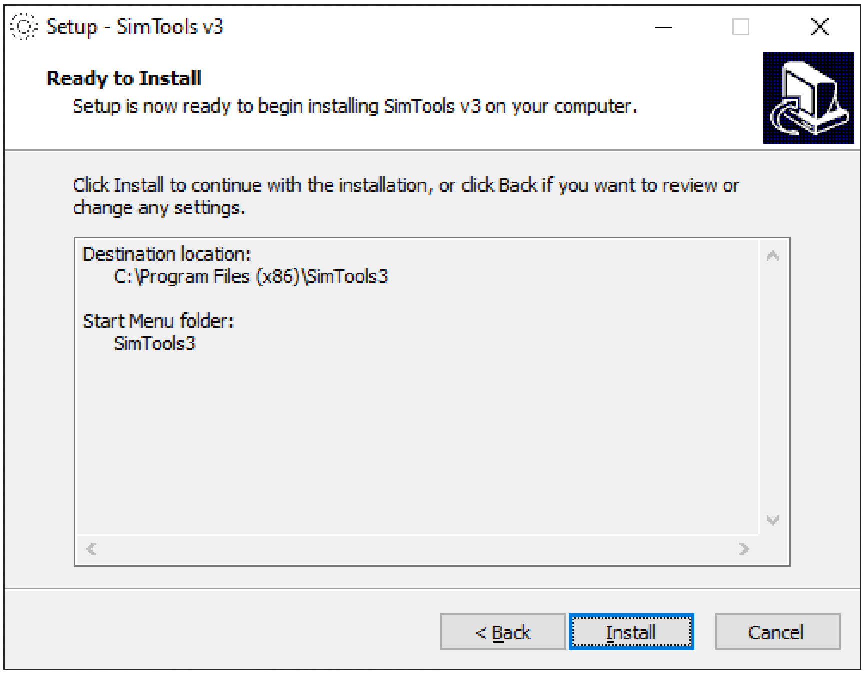
Which additional tasks should be performed?

Select the additional tasks you would like Setup to perform while installing SimTools v3, then click Next.

Additional shortcuts:

☑ Create a desktop shortcut

5) Click “Install” when you are ready to proceed with the installation of SimTools.



Setup - SimTools v3

Ready to Install

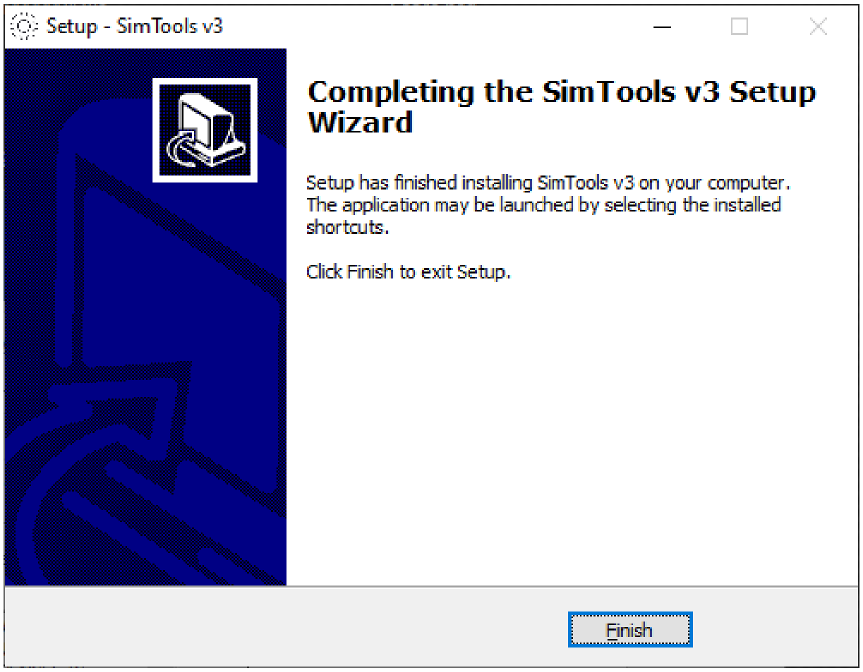
Setup is now ready to begin installing SimTools v3 on your computer.

Click Install to continue with the installation, or click Back if you want to review or change any settings.

Destination location:
C:\Program Files (x86)\SimTools3

Start Menu folder:
SimTools3

6) Press finish when the installation is complete.



Completing the SimTools v3 Setup Wizard

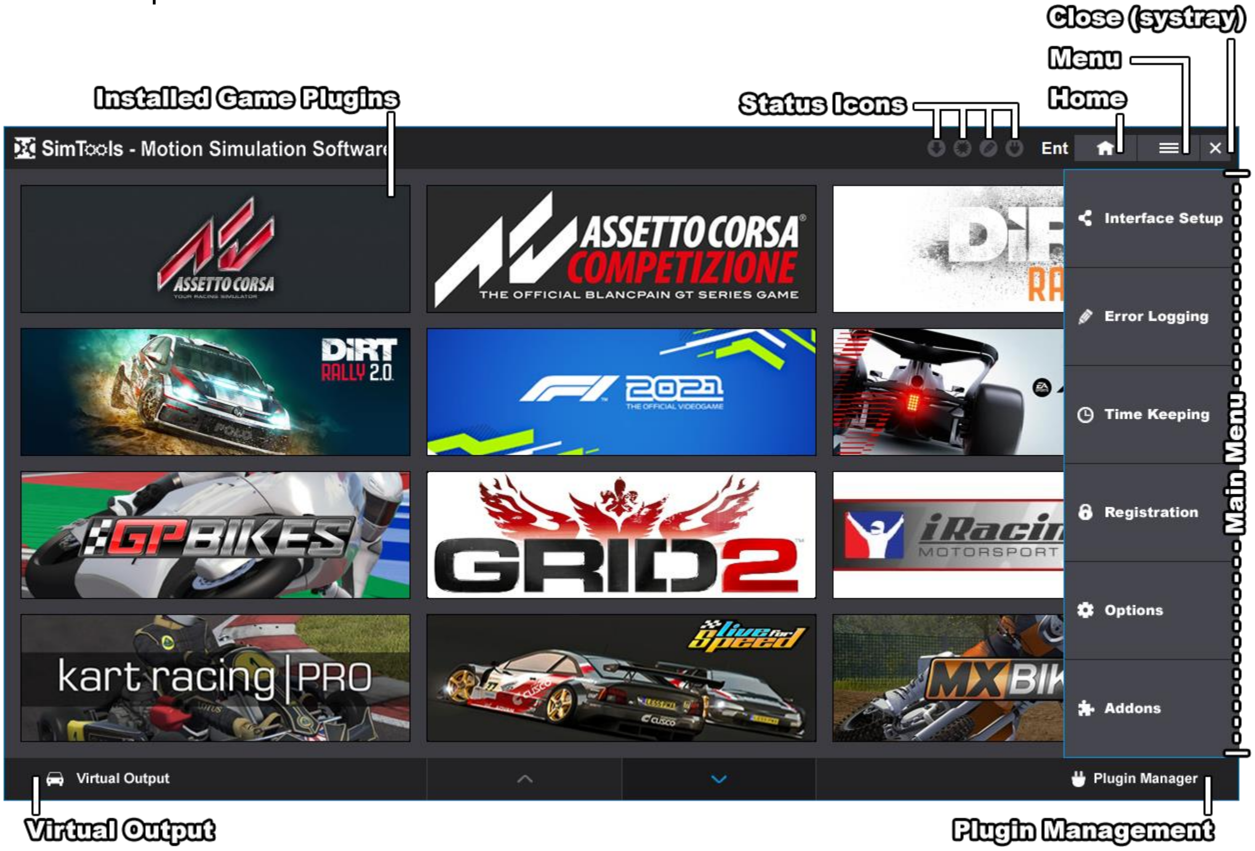
Setup has finished installing SimTools v3 on your computer. The application may be launched by selecting the installed shortcuts.

Click Finish to exit Setup.

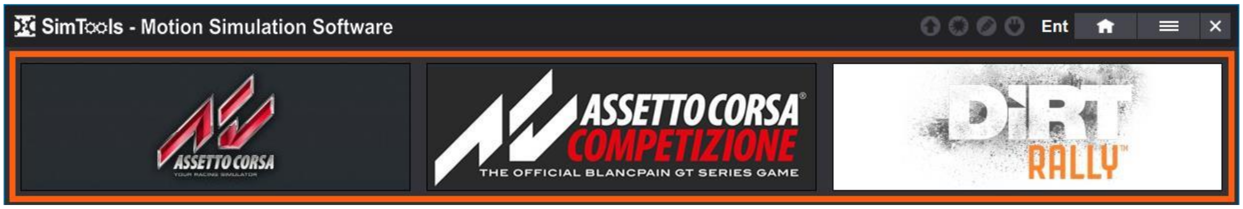
Back to Table of Contents

GUI Overview

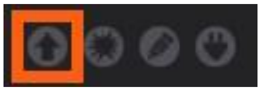
Here is a quick overview of the new GUI found in SimTools v3.



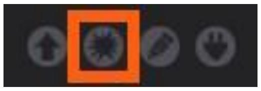
Installed Game Plugins – Game plugins that you have installed will be visible on your home screen.



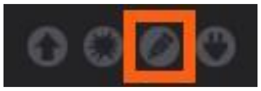
Updates Available – This will turn a color when there are updates available.



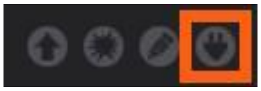
Crash Detected – This will turn a color when a crash in a game is detected.



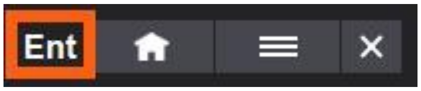
Errors Detected – This will turn a color when an error in SimTools is detected. You can view the Error Logging to see the error message.



New Plugins Available – This will turn a color when a new plugin is detected in the repo you have selected in the Plugin Manager.



License Type – This will tell you what type of license you have registered in SimTools. There are four different types that can display here.



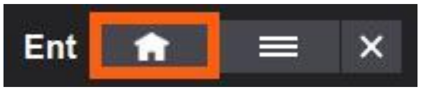
i. **Demo** means you do not have a license registered. The Demo version of SimTools has a fully operational copy of the Live for Speed plugin specifically for the purpose of testing. Make sure you race around a track in LFS before patching it for motion, because that generates some required files for patching. You can use the Demo version of LFS too, so you do not need to purchase either to test it out. You can download LFS at **https://www.lfs.net/**.

ii. **DIY** means you have the DIY license registered. The DIY version fully supports Motion for game plugins, but does not support Dash or Vibe.

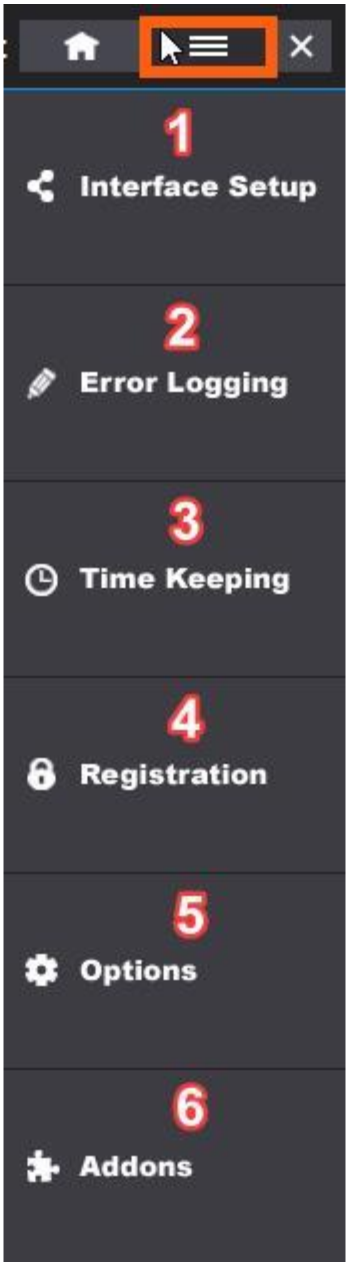
iii. **Pro** means you have the Professional license registered. The Pro license fully supports Motion, Dash and Vibe. The Pro version includes everything SimTools has to offer except for Time Keeping and License Scrambling.

iv. **Ent** means you have the Entertainment license registered. The Entertainment license includes everything SimTools has to offer including Time Keeping and License Scrambling.

Home – This is the home button. When clicked it will return you to your home screen.



Main Menu – This is the Main Menu button. When clicked it will display the navigation menu shown below.



Reference the image directly above for the following:

1 - **Interface Setup –** All interfaces for Motion, Dash and Vibe are setup here.

2 - **Error Logging –** If you see the errors detected icon blink and turn on, you can go here to see what has been reported as the error.

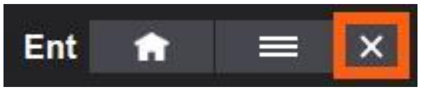
3 - **Time Keeping –** Ever wanted to know exactly how much ride time you have had per game on your simulator between two dates? Now you can. Ride Time is only counted when at least one interface is running and the game is reported as active from the plugin.

4 - **Registration –** This is where you enter your license to unlock SimTools v3.

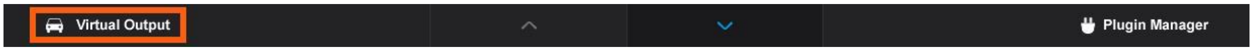
5 - **Options –** This is where the options are for SimTools v3. Plugin exports are also available from this page.

6 - **Addons –** This is where addons will be displayed and accessed in SimTools v3.

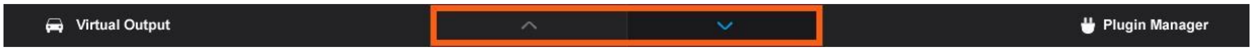
Minimize SimTools – Click this button to minimize SimTools to your System Tray down by the clock displayed in Windows.



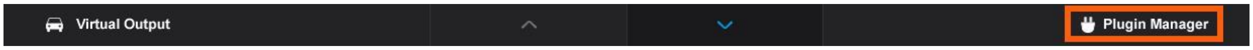
Virtual Output – This is where you can get a visual representation of the output from SimTools v3.



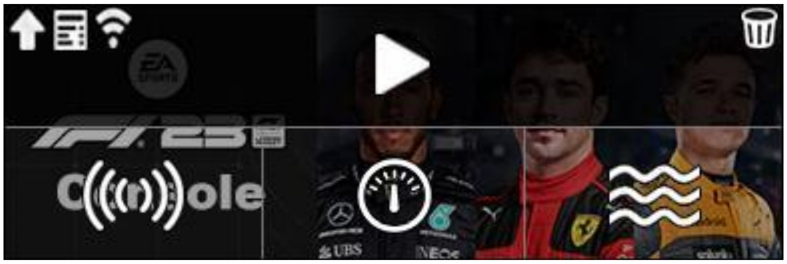
Page Up or Down – Click the up arrow to navigate up through your installed game plugins. Click the down arrow to navigate down through your installed game plugins.



Plugin Management – This is where you can add and remove plugins.



Plugin Menu – Any action that is directly related to a specific game can be done under its own menu.

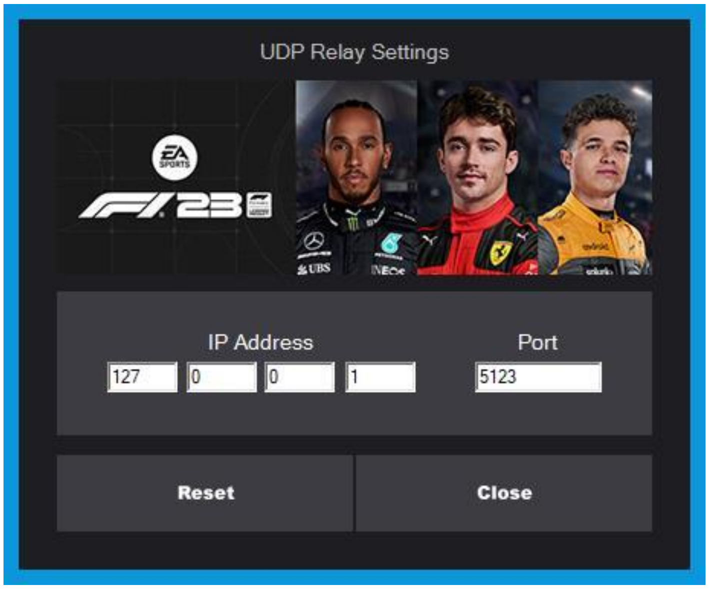


Updates Available – Click the up arrow to view update options for this plugin.

Data Page – Click this button to navigate to the plugins data page on SimTools.us.

UDP Relay – This allows you to set a UDP Relay, so you can pass UDP packets to any other software that also requires them to run during a game.

Once you press this button, you will be presented with the UDP Relay Settings screen below. You will enter the IP Address of the computer that is running the other software and the Port the software is listening on. Note: You do not want to relay the game data back to SimTools, or you will make an endless loop. Therefore, the SimTools port (usually 4123) should not be used for UDP relay.



UDP Relay Settings

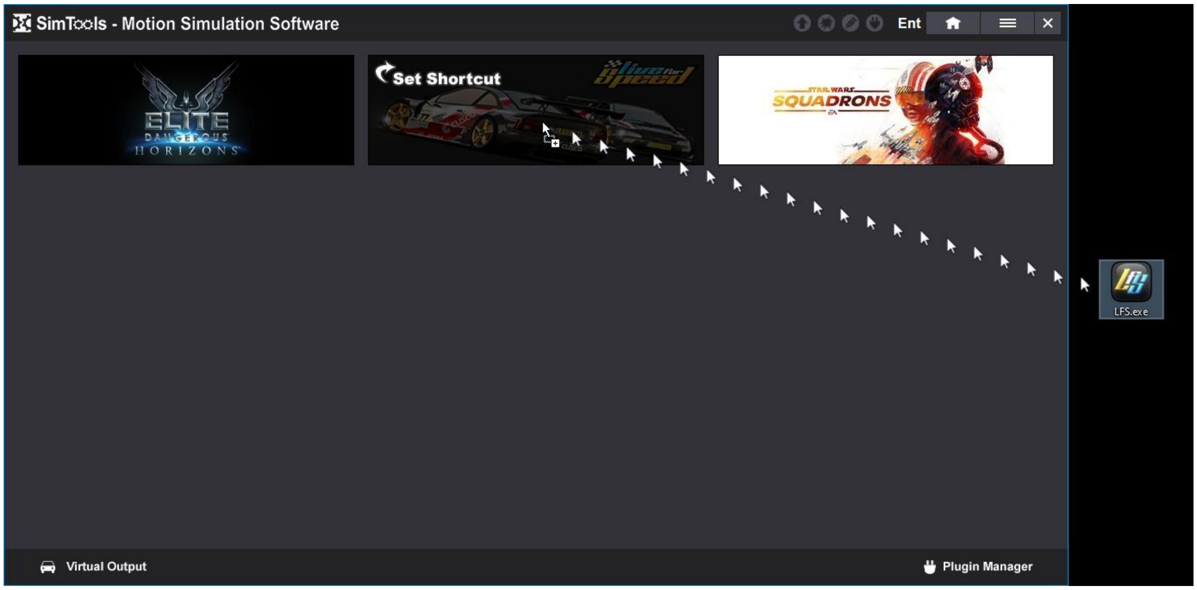
IP Address: 127 . 0 . 0 . 1

Port: 5123

When you are done entering your data, click the Close button. The UDP Relay button should now be green. This does not necessarily mean it is configured correctly, it just means there is something configured in UDP Relay Settings.

Launch Game – Double click the play button to launch the game from SimTools. Game plugins marked as console will not launch the game, but will launch the game plugin.

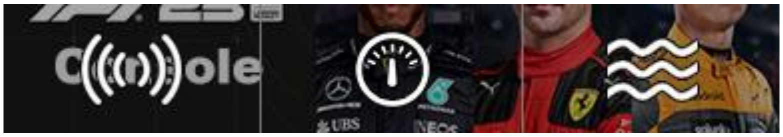
If this button is white, the game's launch path is set and the game is ready to be launched from SimTools. If this button is gray, you need to set a launch path for the game. Some game plugins do not set a launch path, or the path is setup for a different version of the game than what you are running. To update a launch path for a game plugin, drag and drop the game’s exe or shortcut onto the banner for that game plugin. Double Click to launch a game.



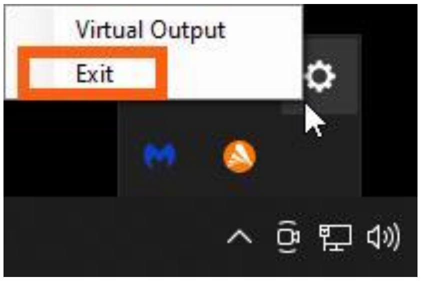
Remove Plugin – Click this icon to remove the installed plugin.

🗑

Vibe / Dash / Motion Settings – If any of these buttons are red, then that section is temporarily disabled and will not be started when the game is launched. If any of these buttons are gray, then it means there is no interface setup for that given section. If any of these buttons are white, then it means the section has valid settings and the section is ready to run.



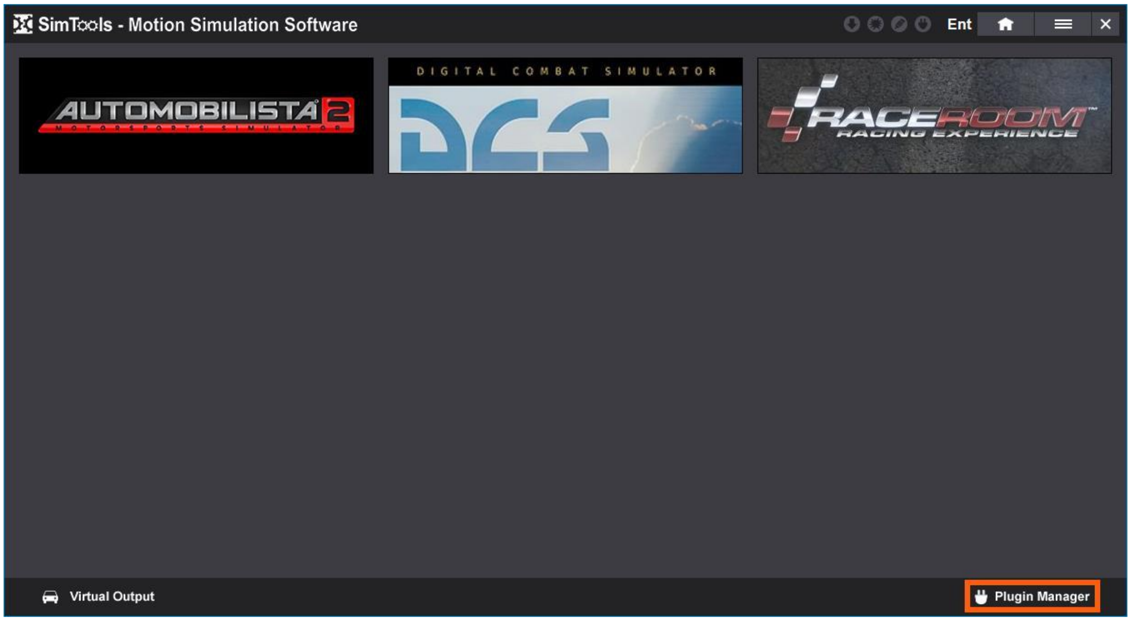
Close SimTools – To close SimTools, you need to right click on the gear icon in the System Tray in Windows and select Exit.



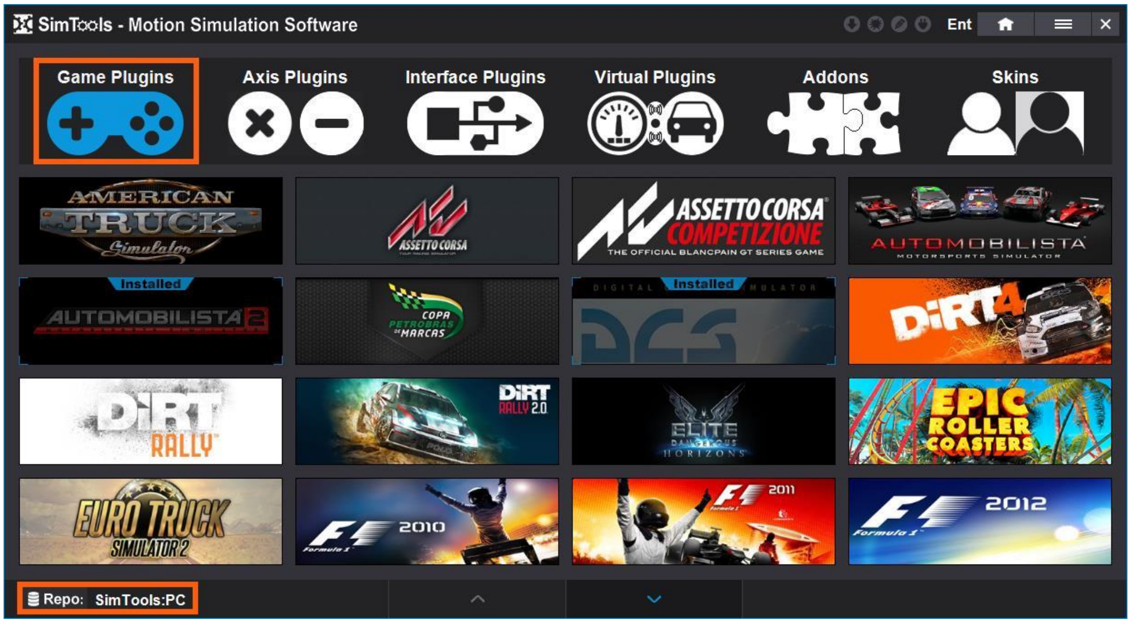
Back to Table of Contents

Plugin Repository System

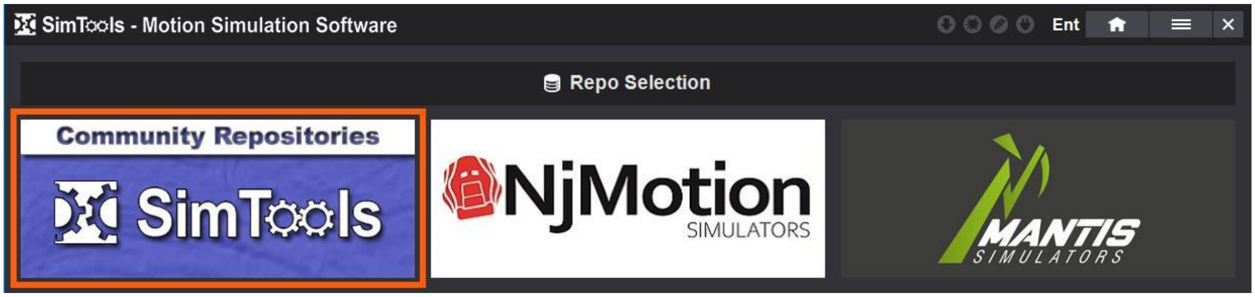
SimTools v3 has a **Plugin Repository System** built in. You can view plugins by going to the Plugin Manager within SimTools v3. Note: The SimTools PC repo is displayed by default until you change repos. If you installed a setup plugin or a custom installation, then that repo will display by default until you change repos.

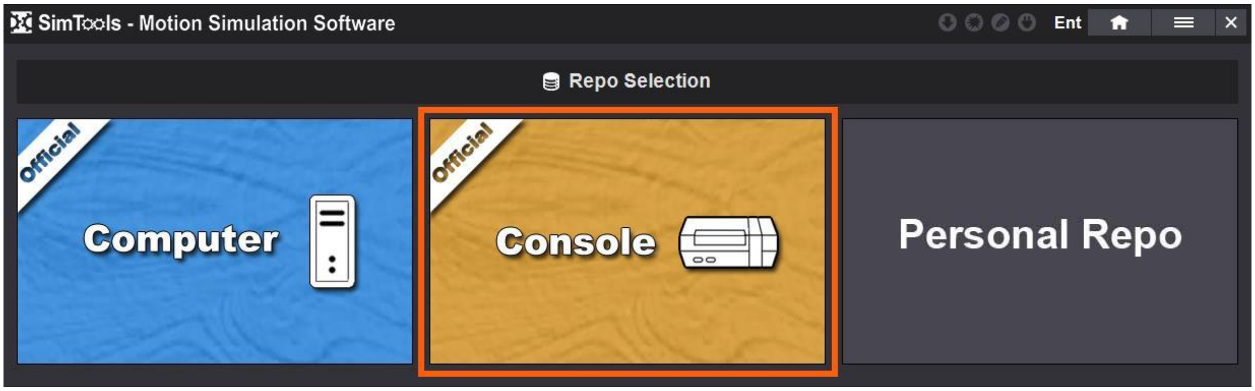


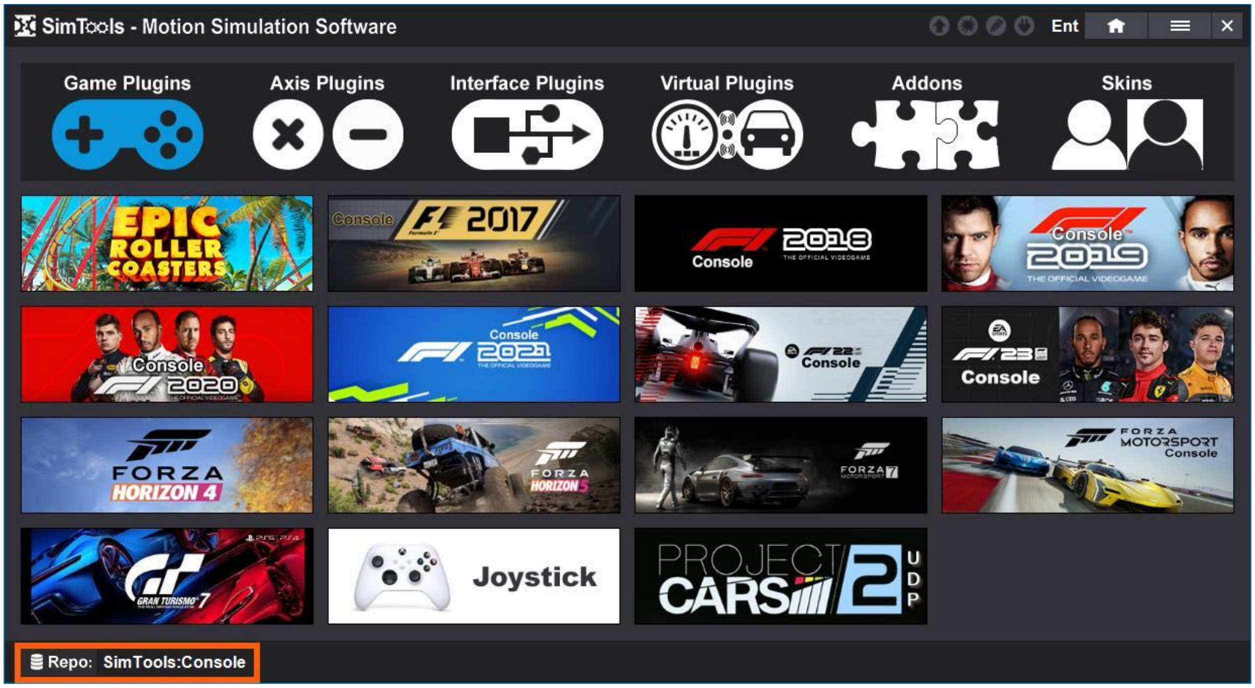
When you click the Plugin Manager button from the home screen, the SimTools PC repo plugins will be displayed. These are community game plugins and they have no axis configurations included in them, so you will need to configure the axis assignments for these game plugins once installed.



You can change to the SimTools Console Repo by clicking on the Repo button seen in the image above, selecting SimTools and then selecting the Console Repo.

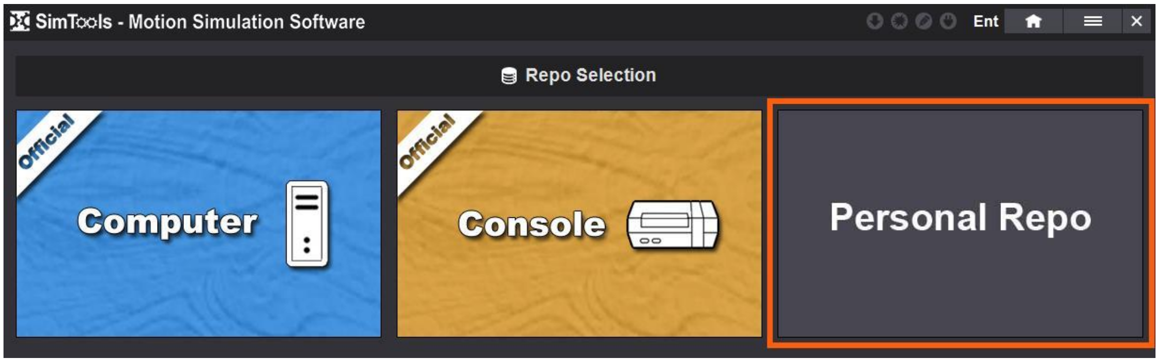




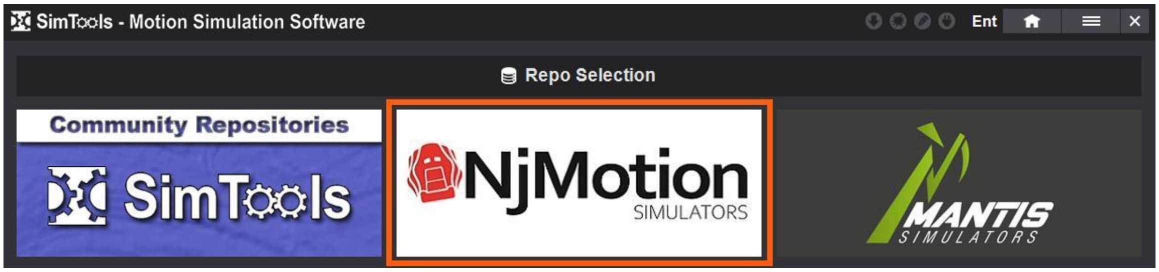


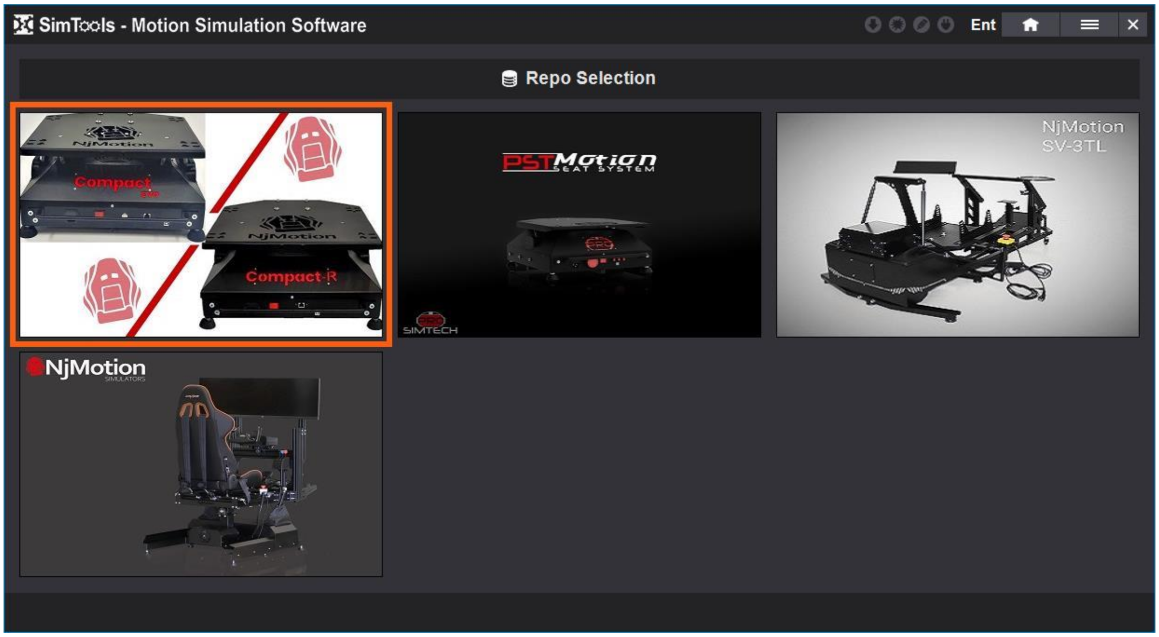
Repo: SimTools:Console

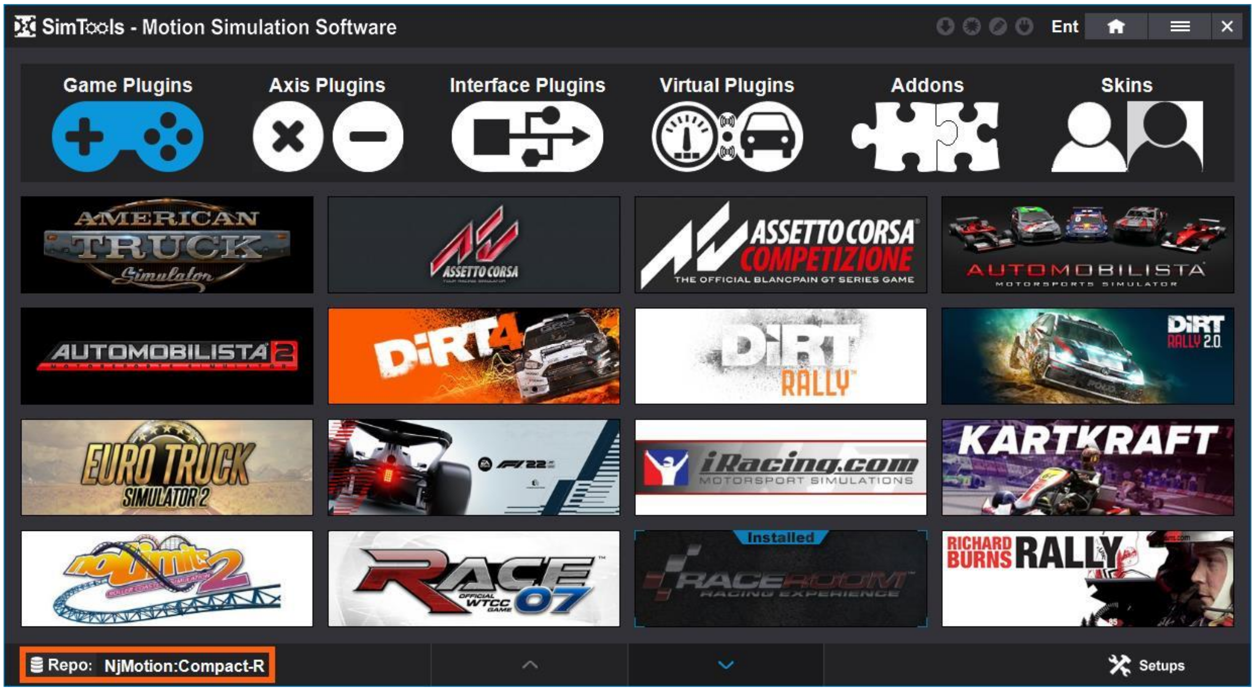
Additionally, anyone who has a SimTools license can request to create a **Personal Repository**. This would be for someone who has a simulator that other users might also own or have something similar. The plugins in these repos would be configured for those simulators. You would find these repos in the SimTools Home Directory next to the PC and Console repos.



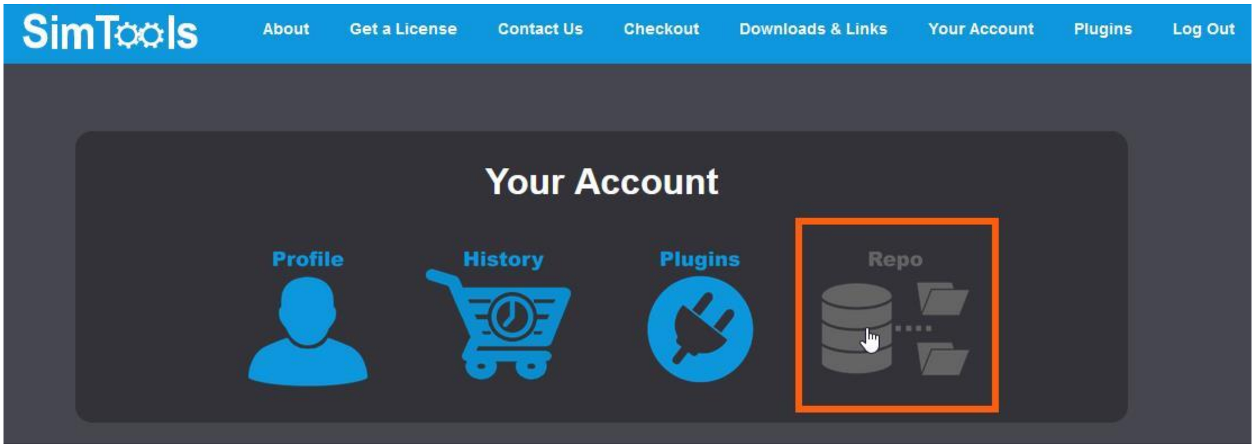
A Home Directory includes all repos for a company or simulator builder. The repos would include available plugins that are required or preconfigured for their specific simulators. For example: If you buy a Compact-R simulator from NjMotion, they have a repository setup for that simulator. You would be able to install their Setup Plugin for the simulator, and then install a game plugin and click play with no other settings required.







You can request to create a repository by logging into your account on SimTools.us and clicking on the Repo button as seen in the image below.



There will be a form to fill out to identify yourself and provide a brief description of what you plan to do with the repo. You will receive a response to your request within a few days. Once you have been approved, you will use the same link above to create your repo.

If do not have an account and are interested in creating a repository, then you can use our Contact Us form to make a request.

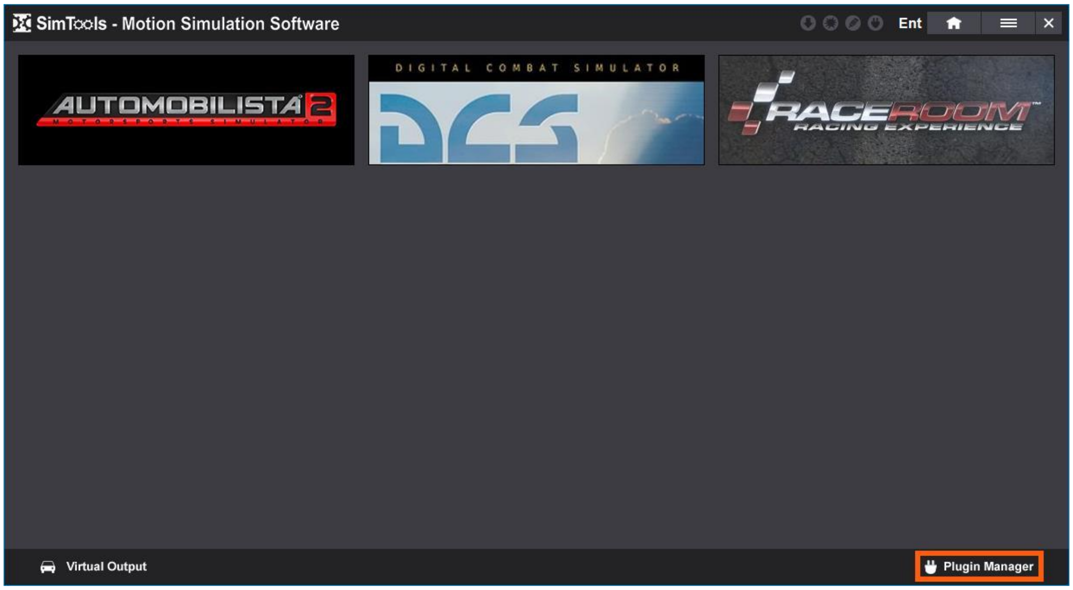
Back to Table of Contents

Installing Plugins

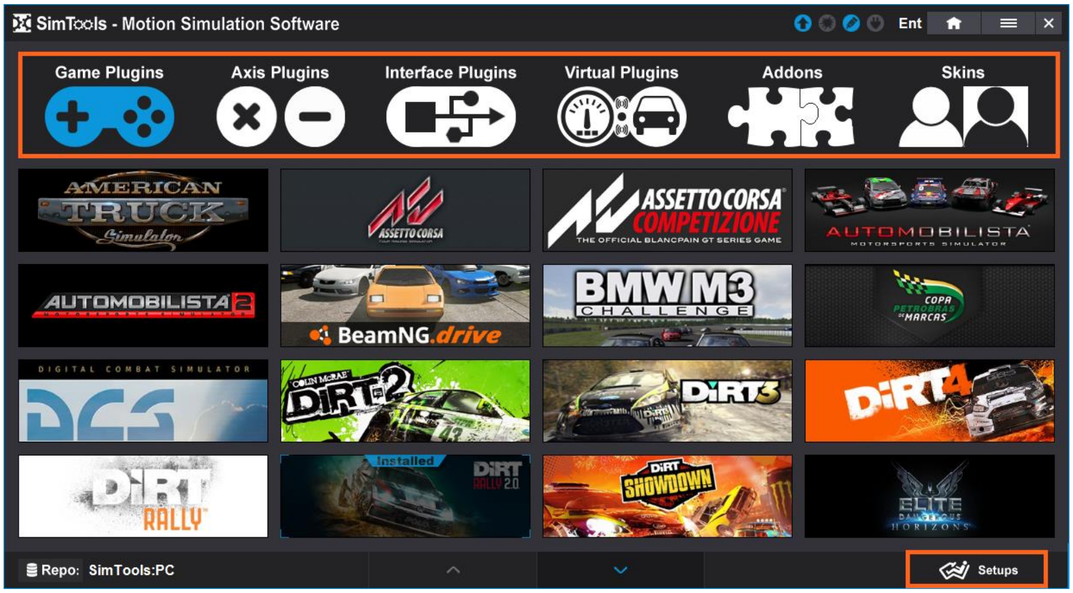
There are two ways to install a SimTools plugin. You can install a plugin using the built in **Plugin Repository System** within SimTools itself, or you can download them online and then drag and drop the plugin onto the home screen of SimTools.

Repo Install – Install plugins through the Plugin Manager within SimTools.

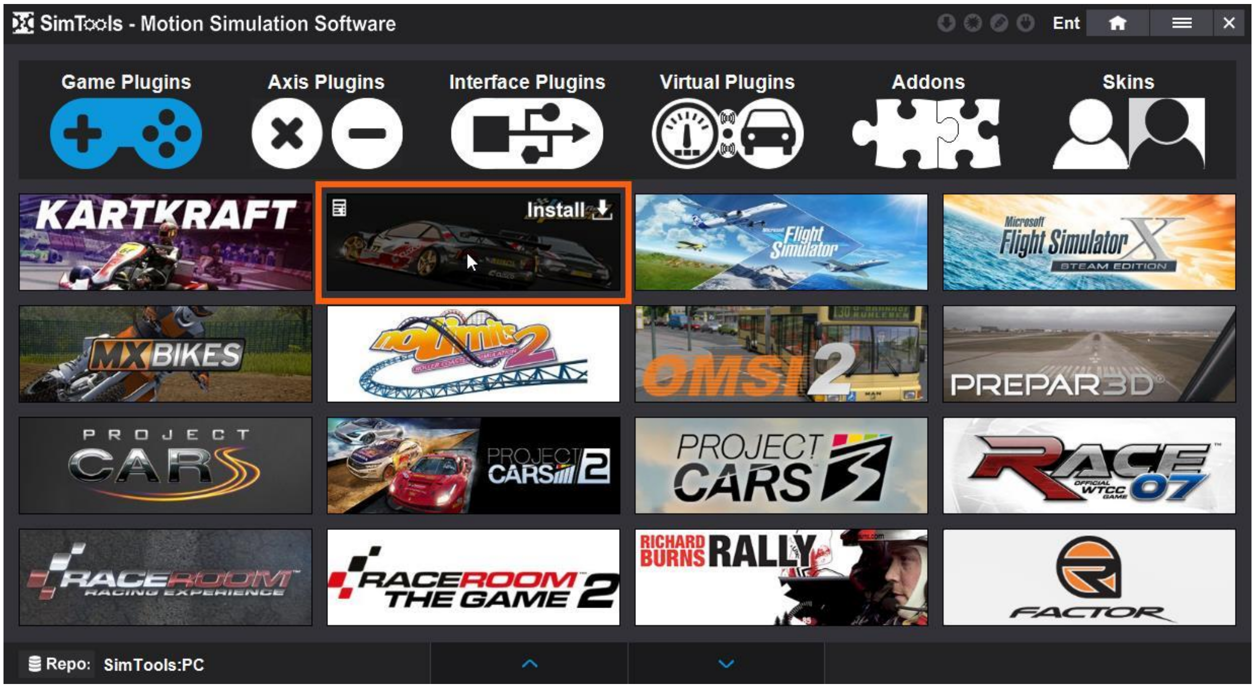
1) Start SimTools and click on the Plugin Manager button on the bottom right of the home screen.



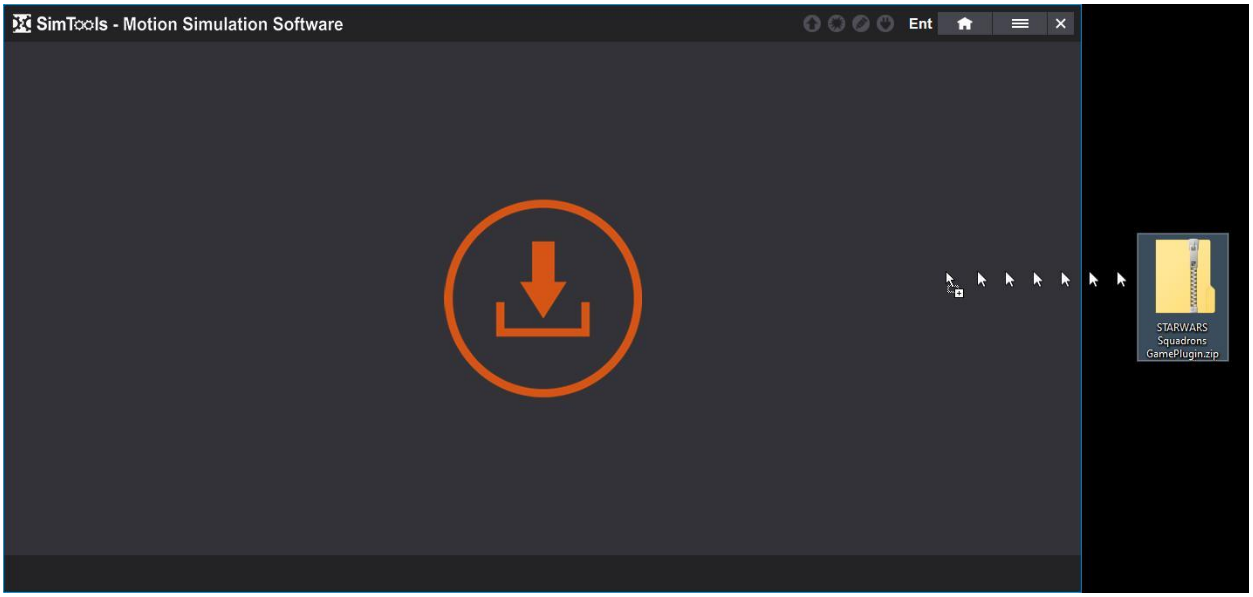
2) You can select the type of plugin you want to install by clicking on any of the six top menu items, or the lower right "Setups" button if available.



3) You can install a plugin by hovering over the plugins banner and then clicking on the banner to install.



Drag and Drop Install – Install plugins by dragging and dropping them onto the home page of SimTools v3.

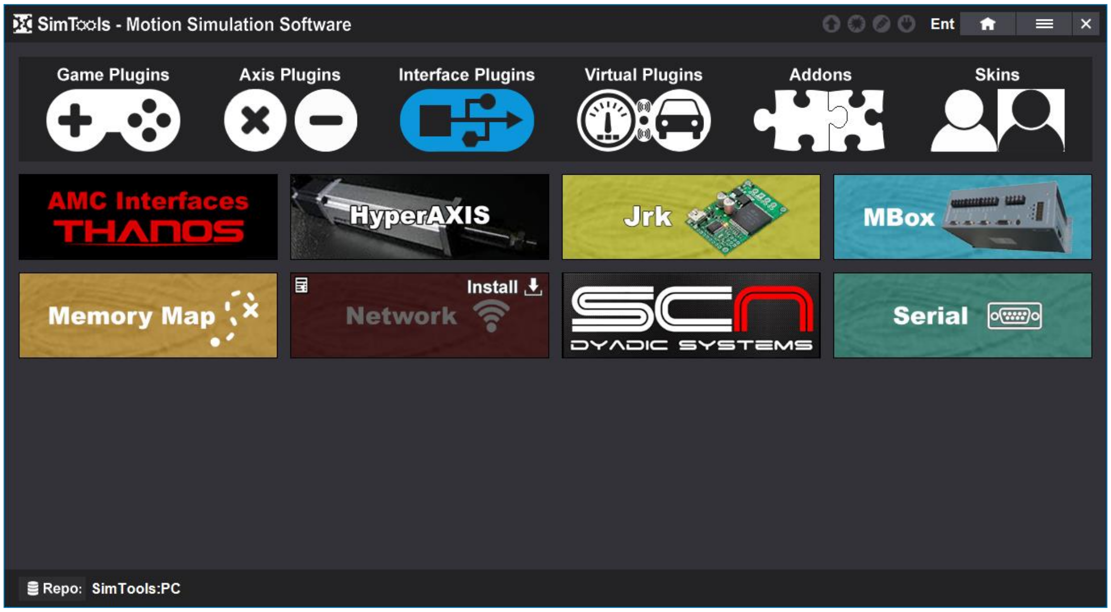

SimTools - Motion Simulation Software
Ent
STARWARS Squadrons GamePlugin.zip

Back to Table of Contents

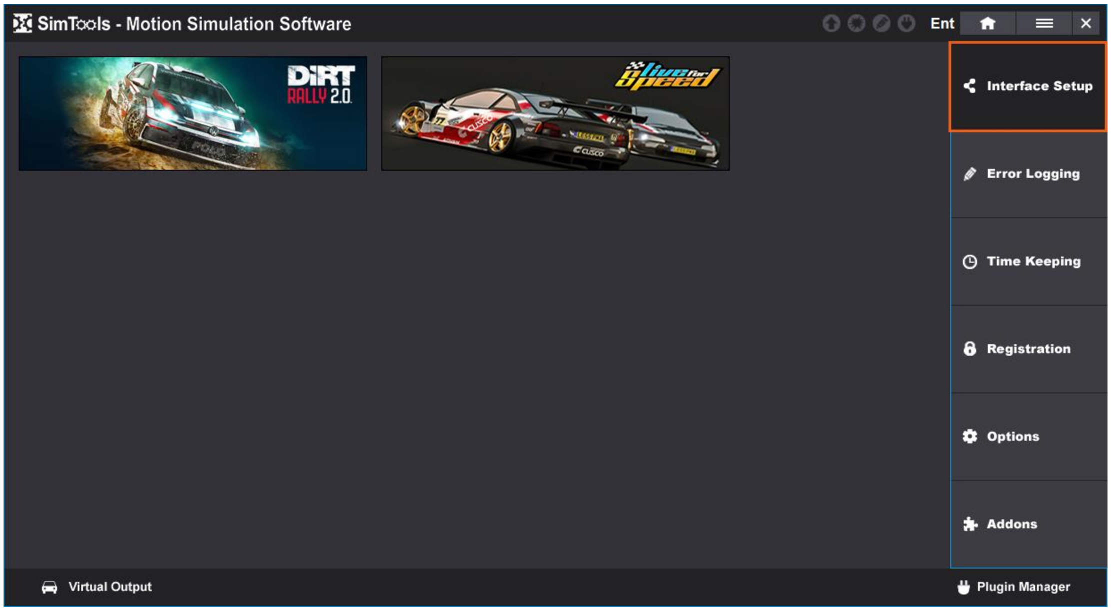
Interface Plugins

Interface Plugins allows SimTools to communicate with many different types of hardware. The interface plugin allows SimTools to communicate with your hardware. You should install an interface plugin and test it for movement before you move on.

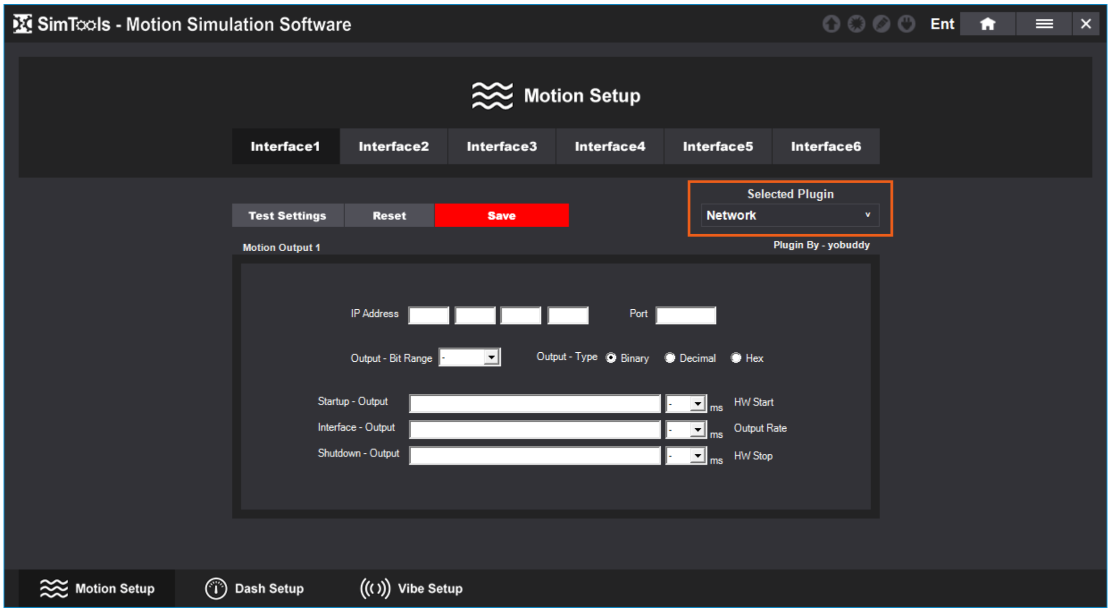
You can access the available interface plugins by going to the **Plugin Manager** and then clicking interface plugins. You can install an Interface plugin by hovering over the plugin banner you want to install and clicking install.



Once an interface plugin is installed, you can get to the interface settings from the main menu Interface Setup item.



You can then select and configure the plugin for any of the motion interfaces available in SimTools. Currently there are six.



Selected Plugin: Network

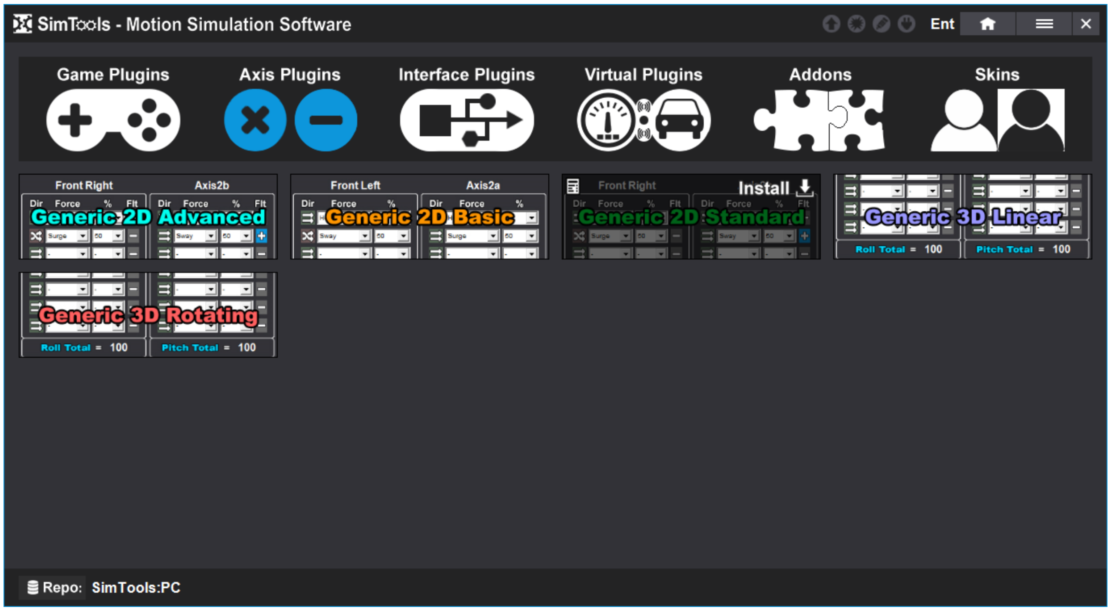
Plugin By - yobuddy

Output - Type: ● Binary ○ Decimal ○ Hex

Axis Plugins

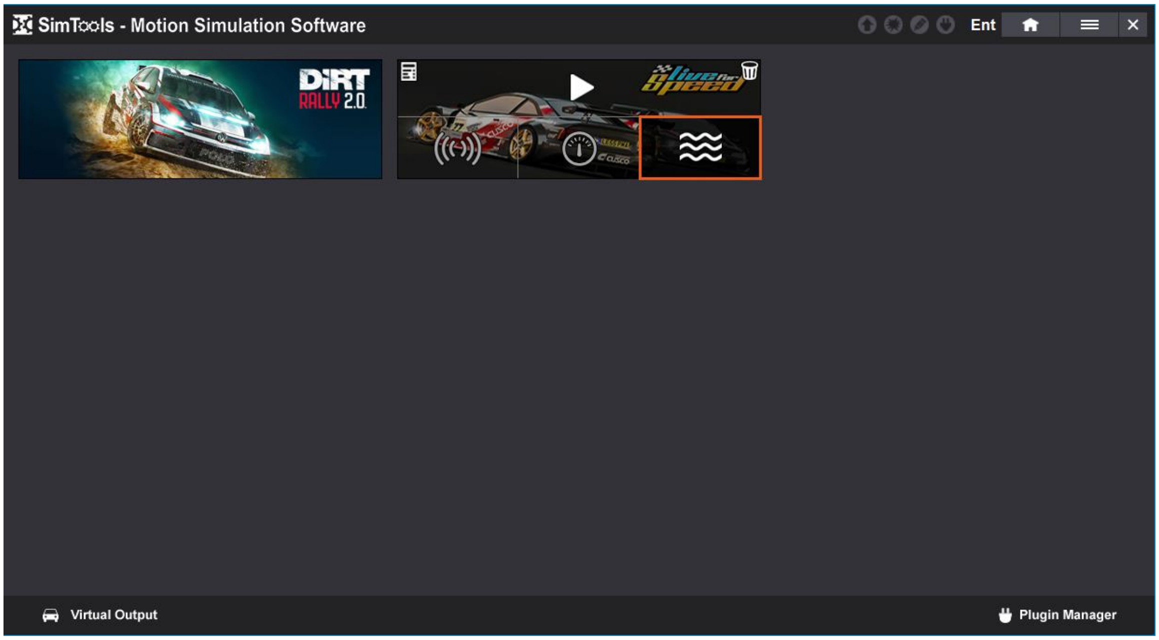
Axis Plugins allows you to configure the output from any game into logical motion for your simulator.

You can access the available axis plugins by going to the Plugin Manager and then clicking axis plugins. You can install an axis plugin by hovering over the plugin banner you wish to install and clicking install.

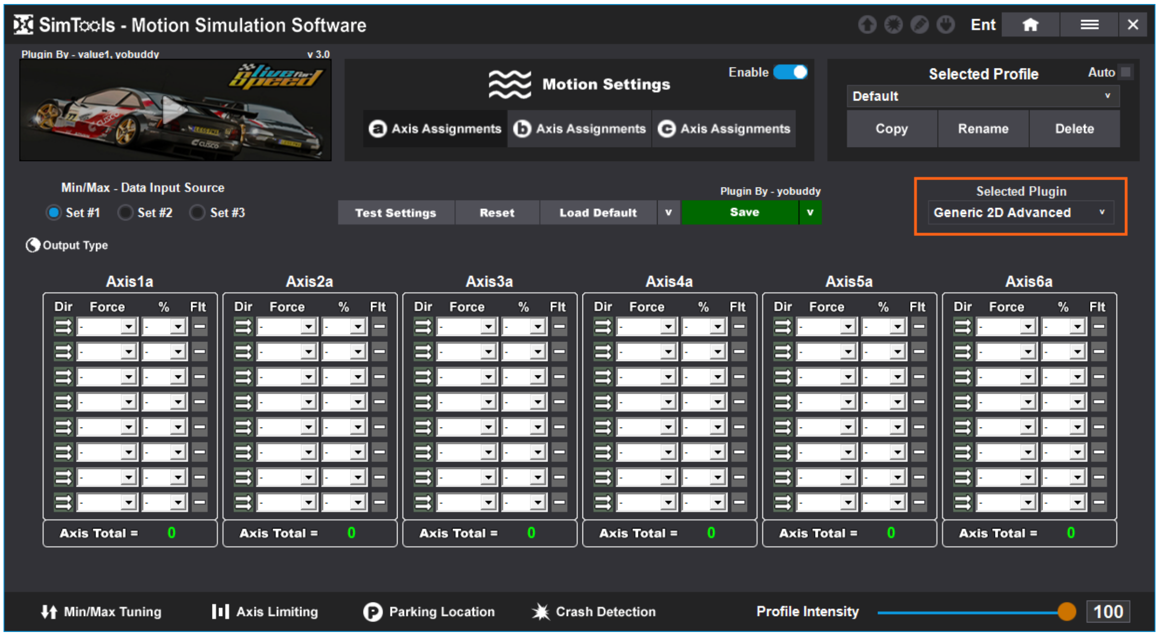


Note: You will not be able to see or modify any Axis Assignments until you install an Axis Plugin, a Game Plugin and then select an Axis Plugin from the drop-down menu as shown below.

Once the plugin is Installed, the Axis Assignments are located in the Motion Settings of a Game Plugin.



Once an axis plugin is installed, you can get to the axis assignments from the motion settings of any game plugin.



Selected Profile: Default

Selected Plugin: Generic 2D Advanced

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Axis Total = 0 | Axis Total = 0 | Axis Total = 0 | Axis Total = 0 | Axis Total = 0 | Axis Total = 0

Profile Intensity 100

The (a) Axis Assignments, (b) Axis Assignments and (c) Axis Assignments pages each have six axes that can be configured. There are a total of 18 axes that can be configured as needed for your simulator, but most simulators will only use (a) Axis Assignments.

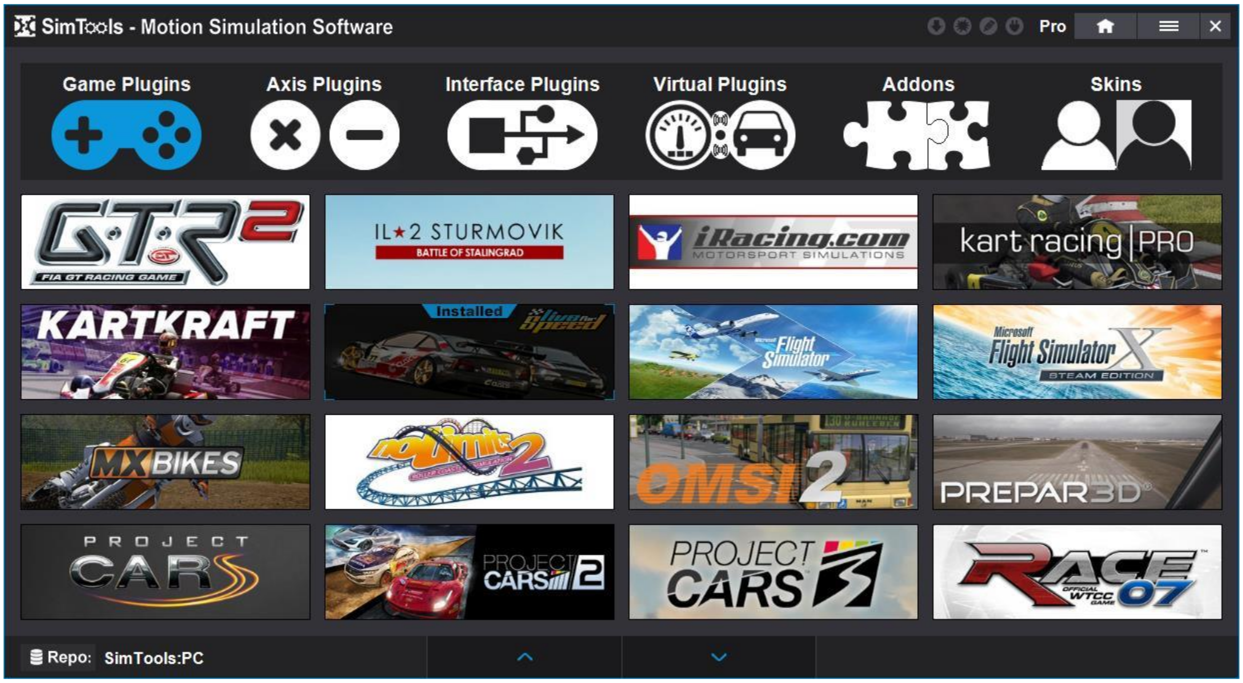
Back to Table of Contents

Game Plugins

Game Plugins collect data from the game and sends the data to SimTools to translate into movement for your simulator. SimTools currently has two public repositories for game plugins.

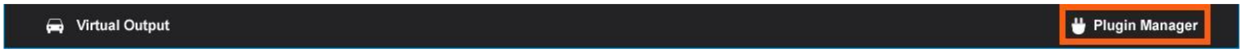
The **PC** repo is a collection of game plugins for your computer.

The **Console** repo holds all of the manual start plugins, and will have a collection of game plugins for consoles like PS5 and Xbox. The Console repo will also hold unique plugins like the Joystick plugin, because it is a manual start plugin.

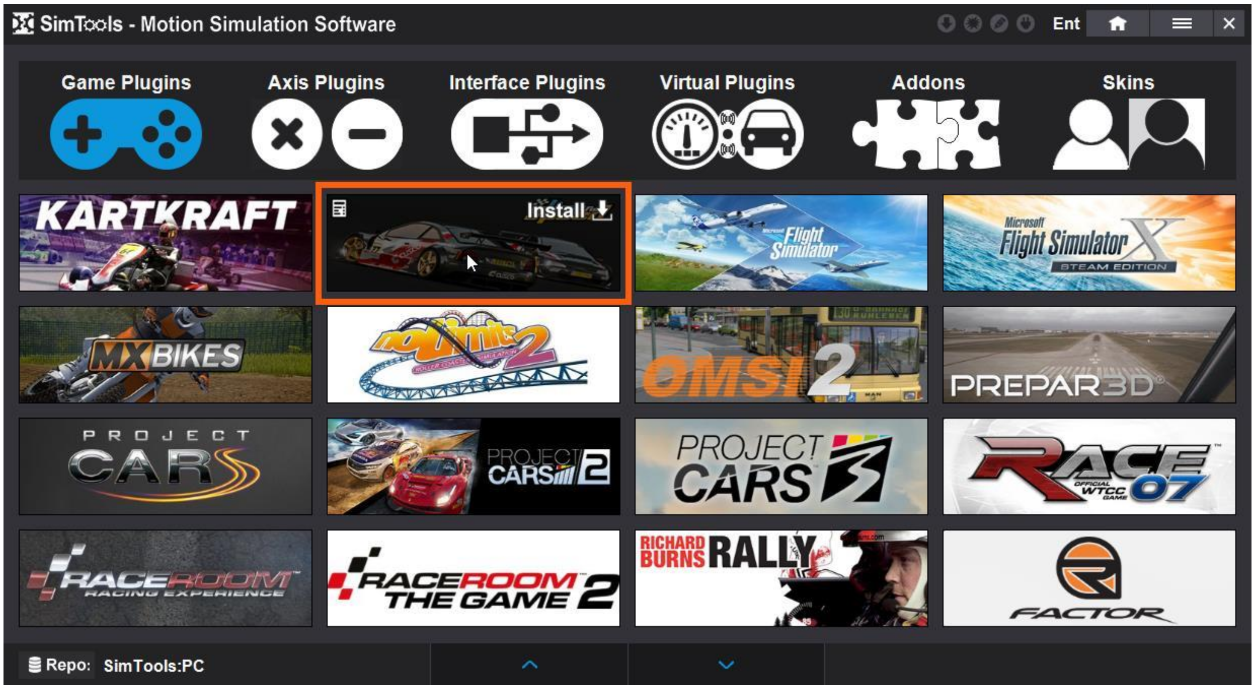


How to install a game plugin

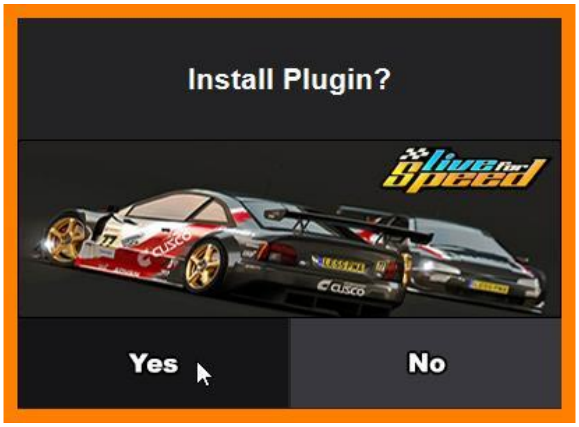
1) Start SimTools and click on the Plugin Manager button on the bottom right of the home screen.



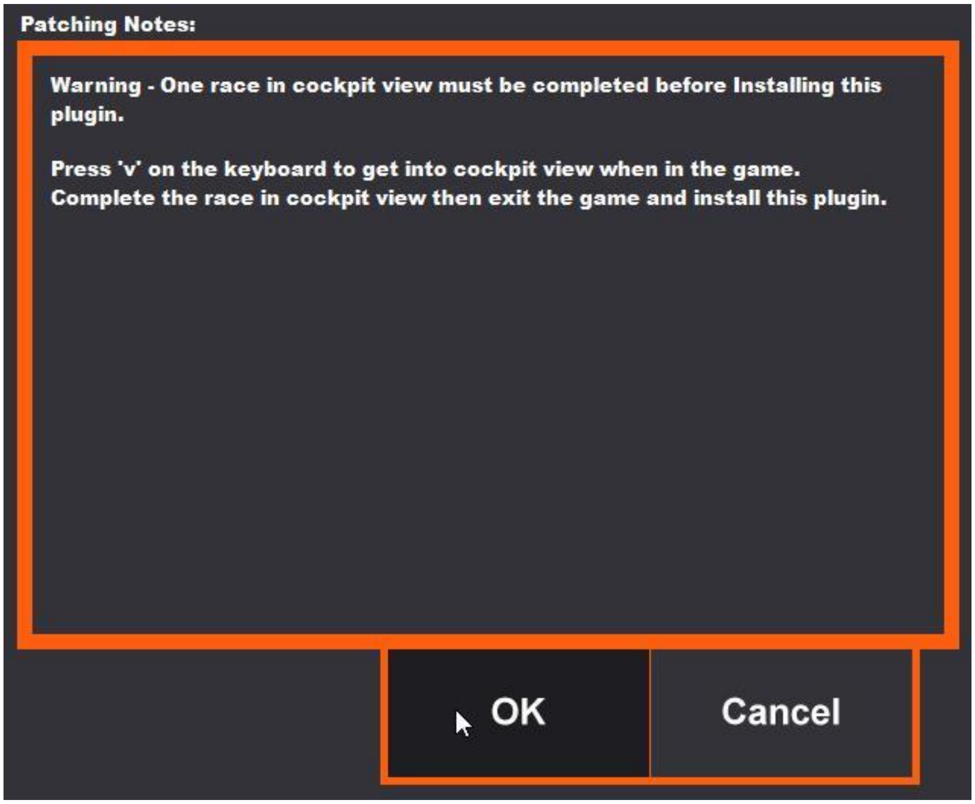
2) Select “Game Plugins” from the top menu if not already selected. Then hover over the plugin you want to install, and click “Install”.



3) Click “Yes” when prompted.



4) Some game plugins have installation instructions and some do not. Read all the popups during installation and follow the directions. Live for Speed requires you to drive around the track in the cockpit view of a car and then exit the game before you install the plugin. Doing this creates the files needed to patch the game.

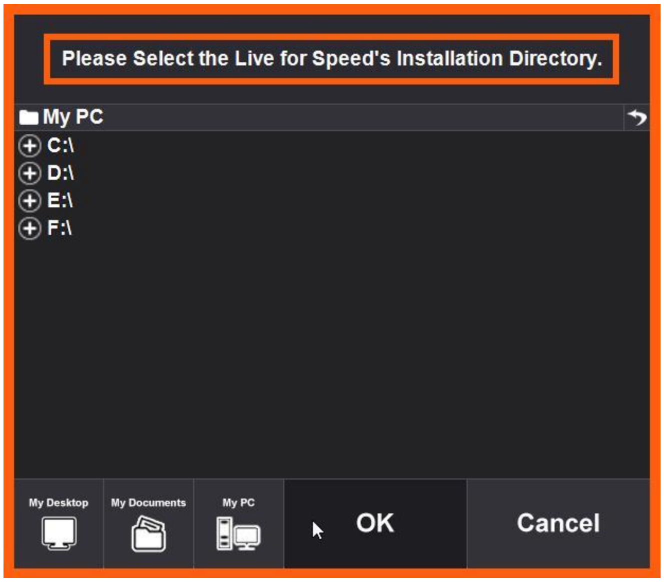


Patching Notes:

Warning - One race in cockpit view must be completed before Installing this plugin.

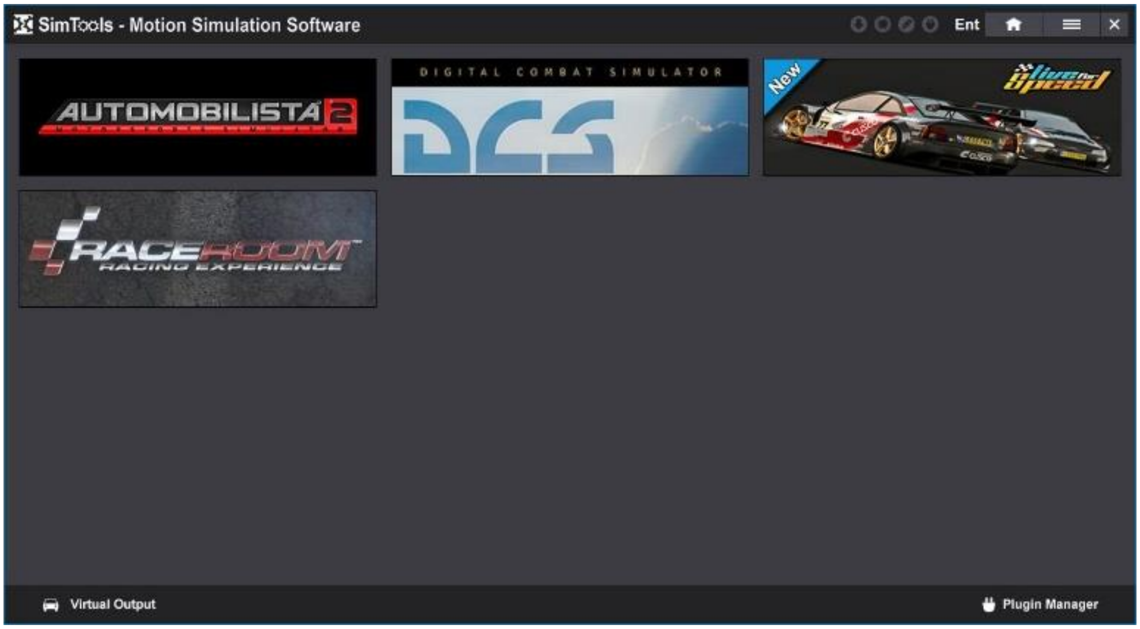
Press 'v' on the keyboard to get into cockpit view when in the game.
Complete the race in cockpit view then exit the game and install this plugin.

5) The Live for Speed plugin also requires you to identify the game's installation folder, so it can patch the game. Note: some game plugins have a suggested folder location in the top area of popup. Others tell you to locate the installation folder.



Please Select the Live for Speed's Installation Directory.

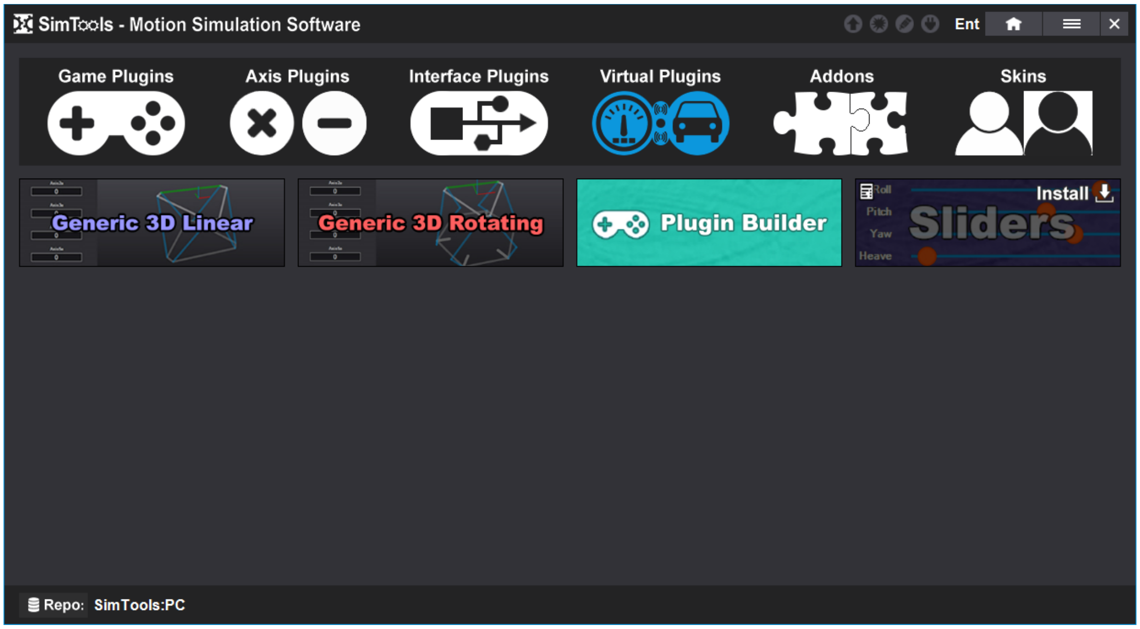
6) Your newly installed game plugin will now show up on the SimTools Home screen identified as "New" in the top left corner.



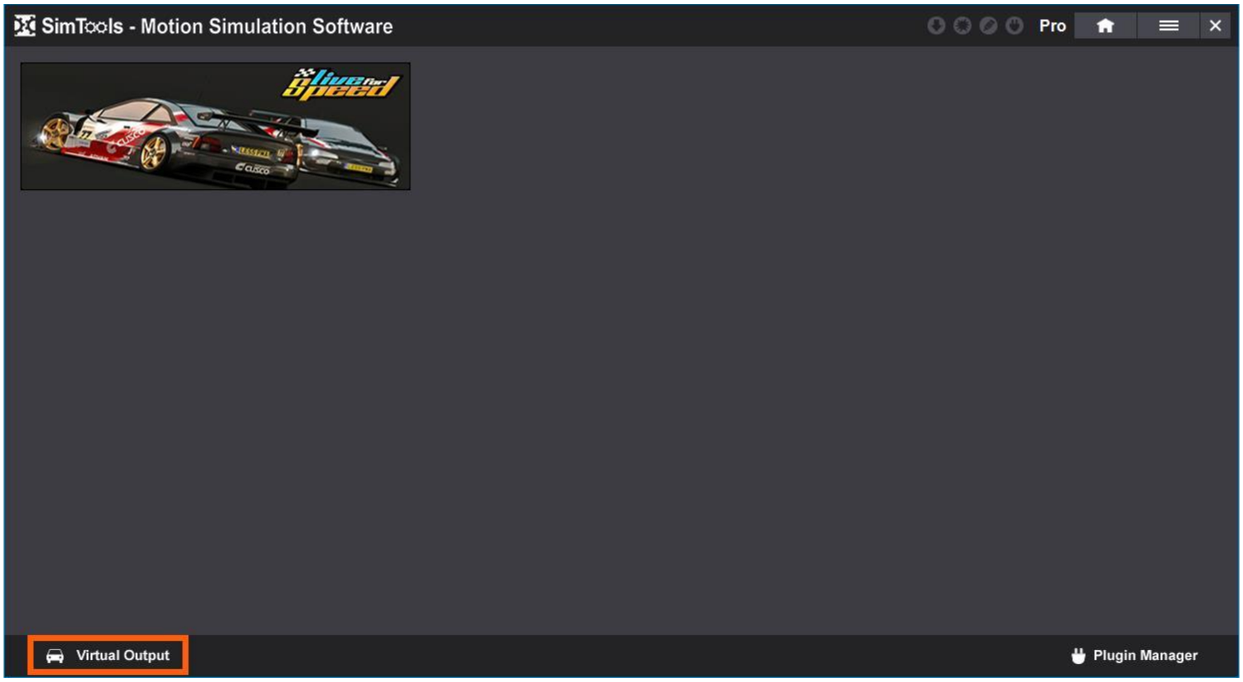
Virtual Plugins

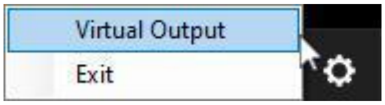
Virtual Plugins allow you to verify that the data coming from a game plugin is actually moving your axes and axis assignments correctly. Virtual Output works with a running game, Interface Testing and Axis Testing. Once a game is running, you will be able to drive or fly in the game and see corresponding movements for each axis and DOF.

You can access the available virtual plugins by going to the Plugin Manager and then clicking virtual plugins. You can install a virtual plugin by hovering over the plugin banner you want to install and clicking install.

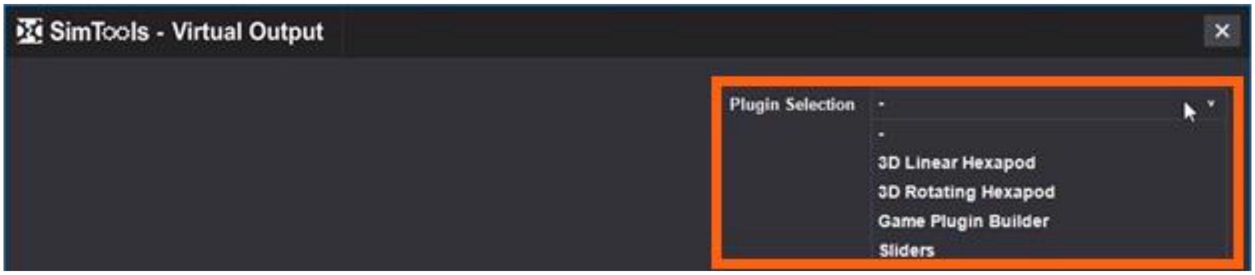


Once the virtual plugin is installed, you can view the Virtual Plugin by selecting it from the drop-down menu on the Virtual Output window. To get to the Virtual Output window, click the Virtual Output button at the bottom left of the main page, or by right clicking on the SimTools gear icon in the system try of Windows and selecting Virtual Output.





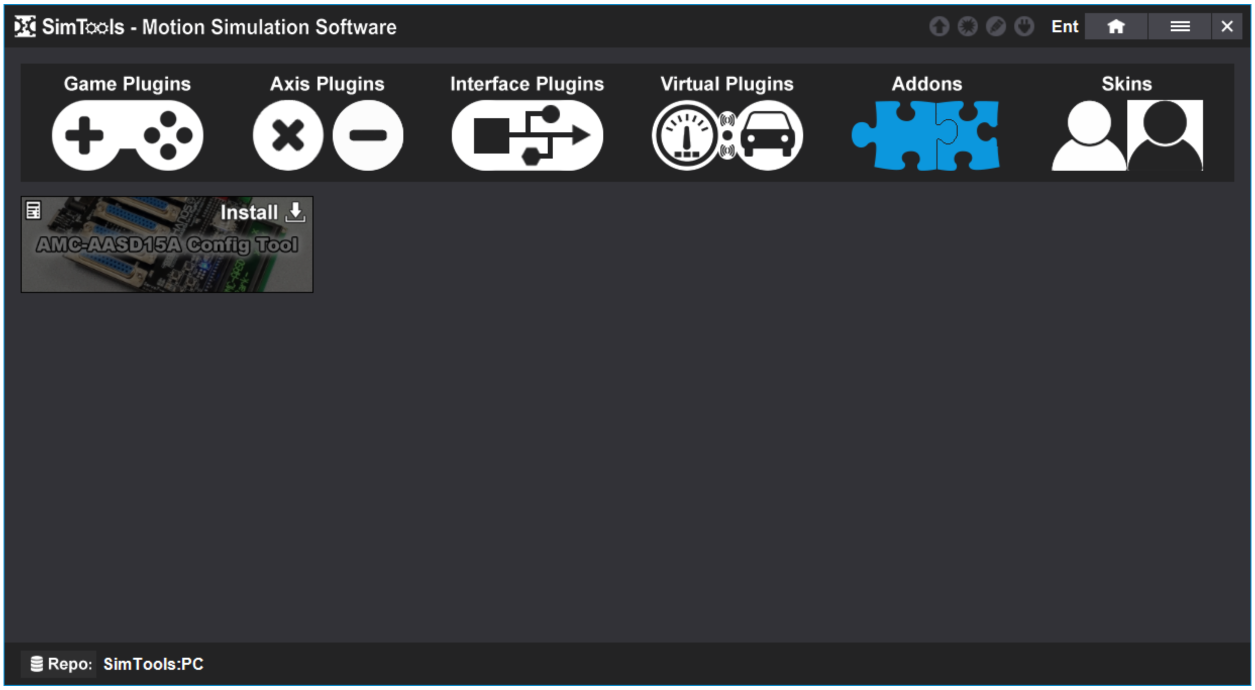
Then select the virtual plugin you want to use from the drop-down menu shown below.



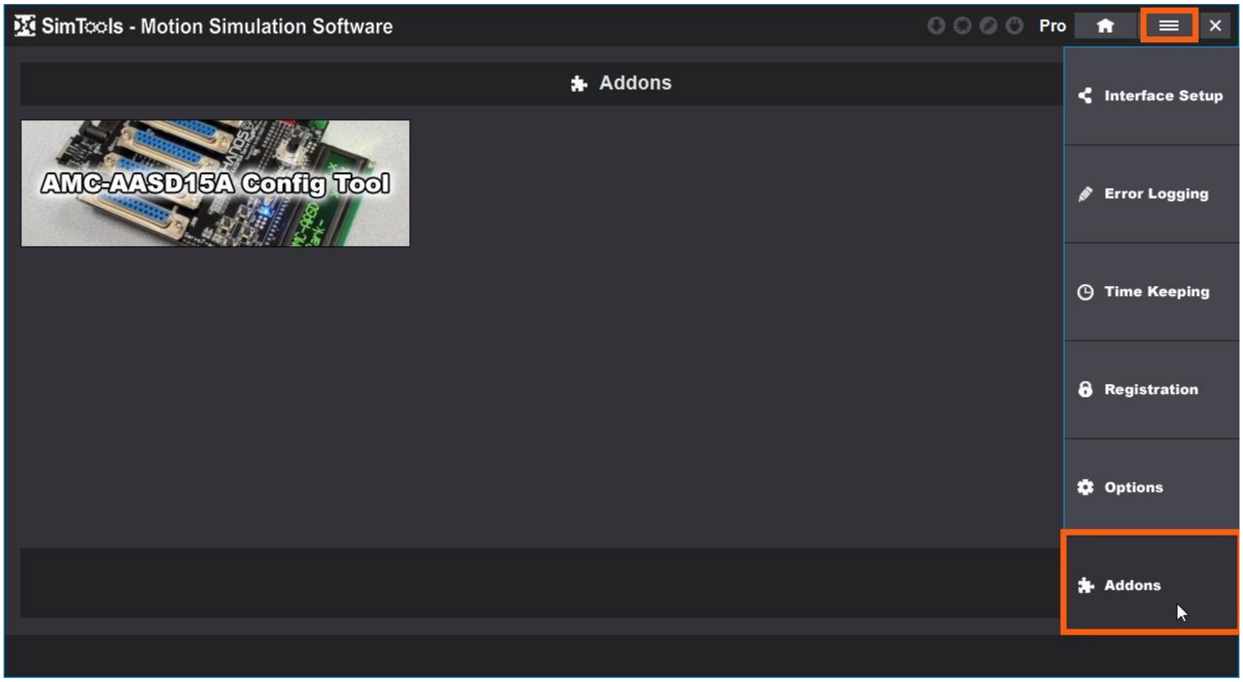
Addon Plugins

Addon Plugins are plugins that do not fit in any of the other categories. An example of an Addon Plugin is a configuration tool. After you install an Addon Plugin, you can access it by navigating to the Main Menu and selecting Addons at the bottom. From there, select the Addon to access its menu.

You can access the available addon plugins by going to the Plugin Manager and then clicking addons. You can install an addon by hovering over the plugin banner you want to install and then clicking install.



All of the Addon Plugins that are installed can be found in the addons section of the main menu.



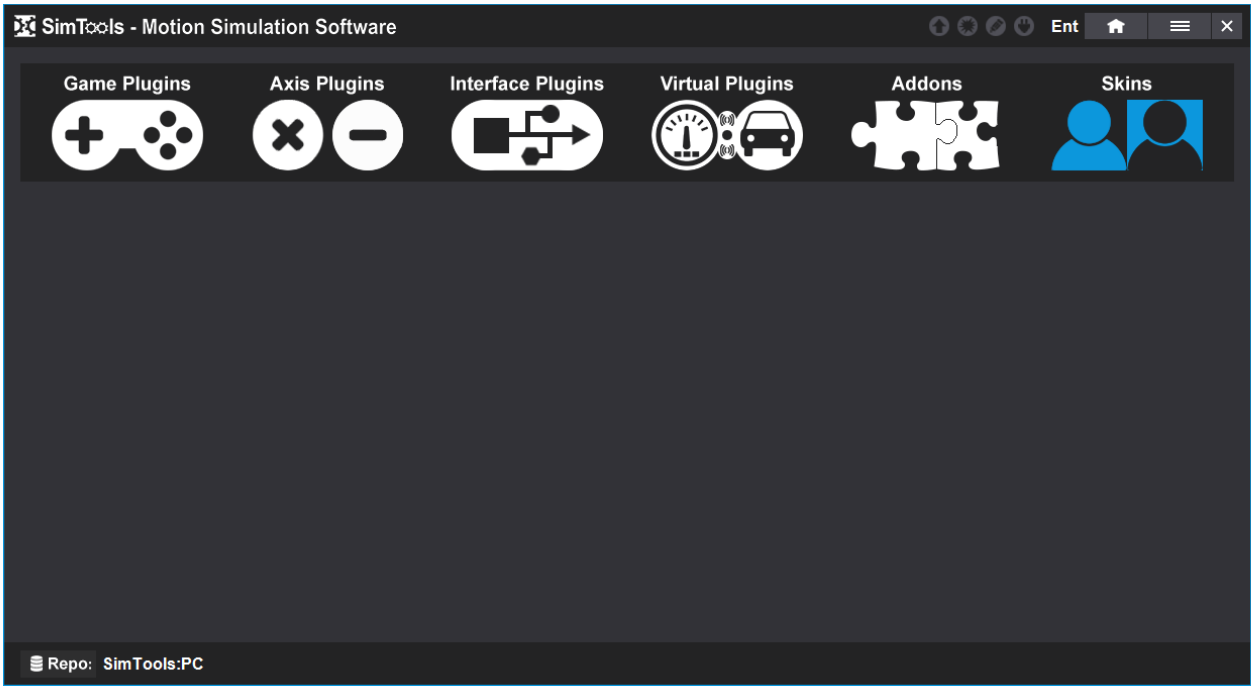
Back to Table of Contents

Skin Plugins

Skin Plugins allow you to modify the colors, text and images within SimTools and allows for some customization to the look of your SimTools installation. You can load Skin Plugins the same way you load any other plugin.

You can access the available skin plugins by going to the Plugin Manager and then clicking Skins. You can install a skin plugin by hovering over the plugin banner you want to install and then clicking install.

Note: Skin Plugins are not available yet. We will update this section when skinning has been completed.

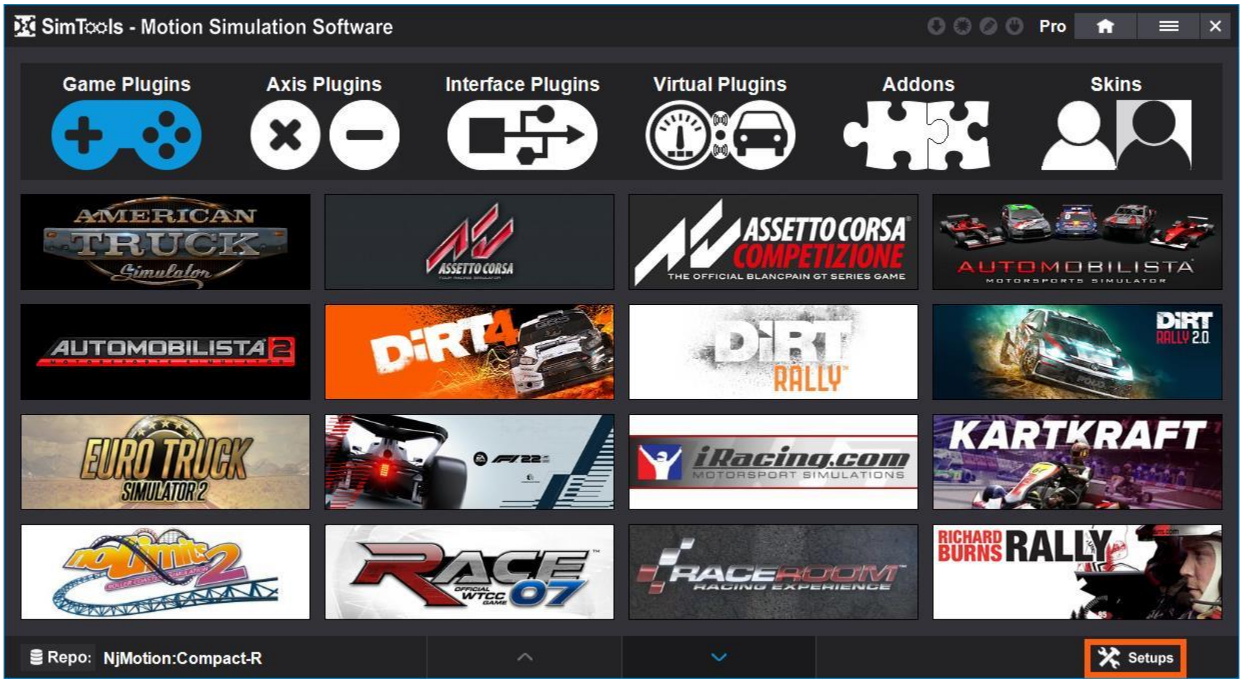


Setup Plugins

A **Setup Plugin** is a clone of the configurations for a simulator. This can be used as a backup, or to hand out to users with the same simulator. You can configure the SimTools installation with everything you want to be pre-configured including Motion, Dash, Crash and Vibe.

When a Setup Plugin is installed on a simulator using the same hardware, it will install the Axis and Interface plugins and everything else that was pre-configured. The end user will only need to install a game plugin and click play with no other settings required.

You can access the available setup plugins by going to the Plugin Manager and then clicking “Setups”. You can install a setup plugin by hovering over the setup plugin you want to install and then clicking install.



Back to Table of Contents

Interface Setup

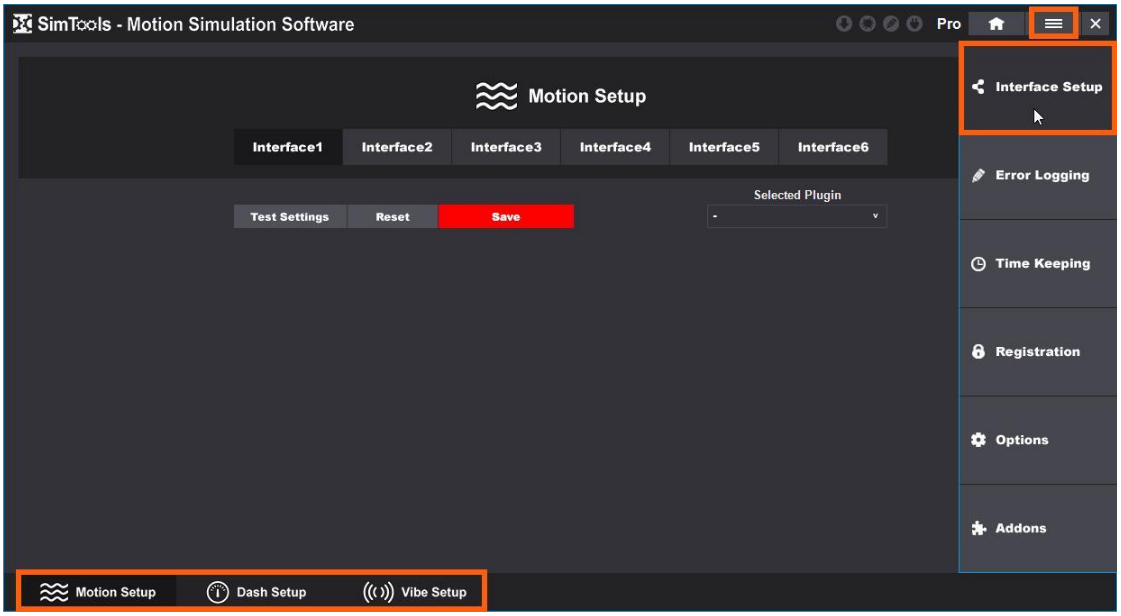
The **Interface Setup** is a good place to start. For Motion, you can configure up to six interfaces to run hardware at the same time. Although, most people will only need one or two. For Dash and Vibe, you can configure up to three interfaces each. These allow your hardware to communicate with SimTools.

SimTools provides the following Motion interfaces to be used with different hardware you might want to run with your simulator.

If the provided interfaces do not run the hardware you have, or you wish to build your own custom hardware for your project; you can learn about building a custom interface plugin with the SimTools Interface API here: https://www.xsimulator.net/community/threads/how-to-write-an-interface-plugin-for-simtools-3-0-api-documentation.17765/.

We will go over all of the interfaces provided with SimTools below. Please note that anyone can build and share an interface plugin for SimTools, so there may be more interface plugins posted that SimTools can use to connect to different types of equipment. You can look for more interface plugins for SimTools by looking in the interface plugin section on XSimulator.net found here: https://www.xsimulator.net/community/marketplace/categories/interface-plugins.35/.

There are three Interface Setup sections: Motion, Dash and Vibe. You can access all three by clicking on the Main Menu and selecting Interface Setup. You can change between the three by clicking on the corresponding button at the bottom.

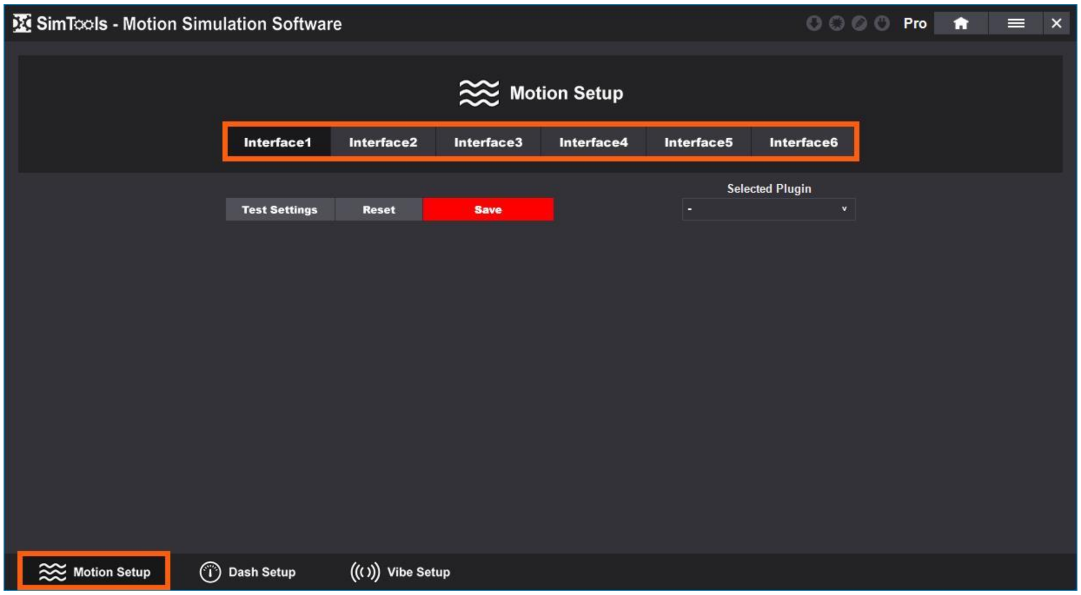


Back to Table of Contents

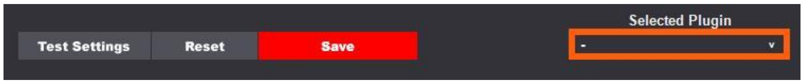
Motion Interfaces

An explanation of each motion interface plugin available in SimTools v3 at the time of release is available below.

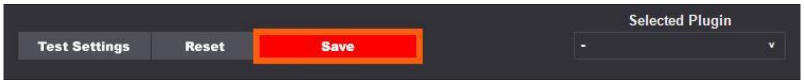
Motion Setup is displayed by default when you access Interface Setup. There are six different motion interfaces that you can configure to run at the same time.



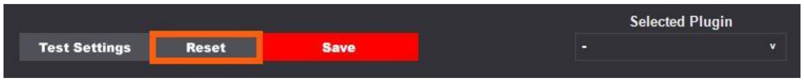
Selected Plugin – Select the Interface Plugin that you want to configure.



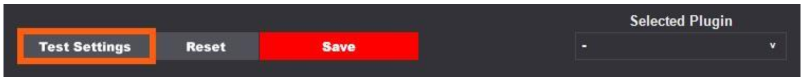
Save – Configure the Interface Plugin and click Save to save your entries. The button will turn green once you fill out every section that is required by the plugin.



Reset – Select to reset the plugin values.

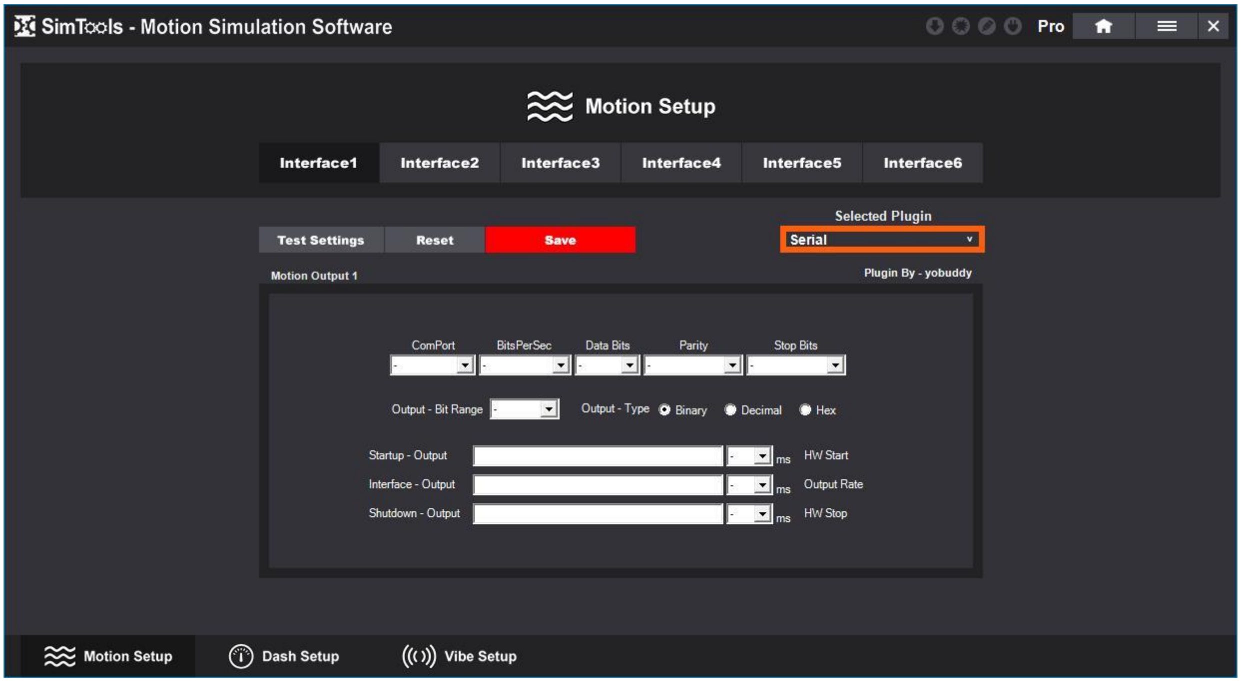


Test Settings – After configuring and saving the interface plugin, select Test Settings to test your configurations before moving on.

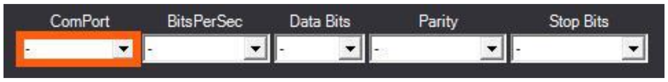


Serial Interface

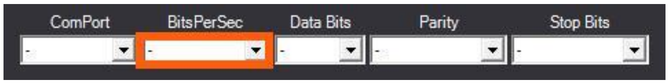
The **Serial Interface** can be configured for many types of interfaces on the market where a serial connection is required. It can be configured to work with many interfaces whether they are a DIY solution or an off the shelf part like an Arduino.



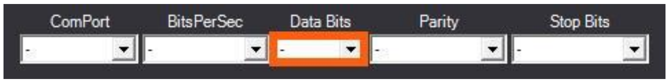
ComPort – Select the com port the interface is connected to.



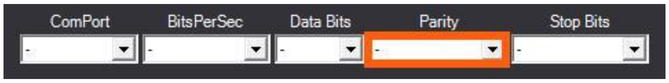
BitsPerSec – Select the speed that the interface runs at. This is frequently set to “115200” bits per second.



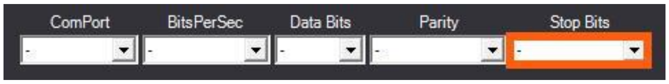
DataBits – Select the number of data bits in each character. This is frequently set to “8” bits.



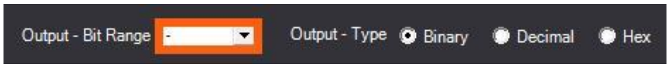
Parity – Select a parity bit. This is a method of detecting errors in data transmission and is frequently set to "None".



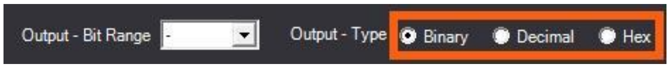
StopBits – Select the number of bits that will allow the hardware to detect the end of a character. This is frequently set to "1" bit.



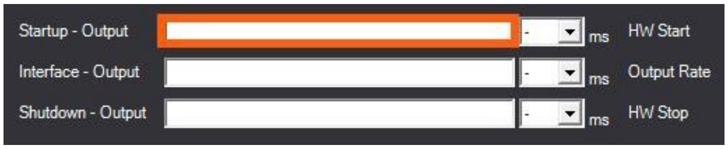
Output - Bit Range – Select the number of bits the interface is expecting when setting a new target point. Most interfaces at this time use 8 bit or 0 to 255. The Output - Bits settings allow for interface target points to be from 8 to 32 bits.



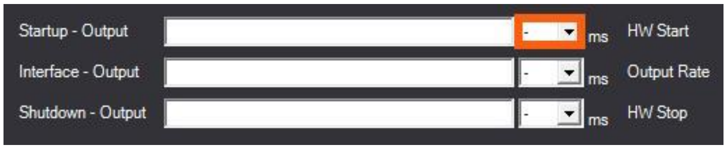
Output - Type – Select the format in which the new target points are presented to the interface. (Note: More information on Output - Type can be found in **Appendix A** of this manual.)



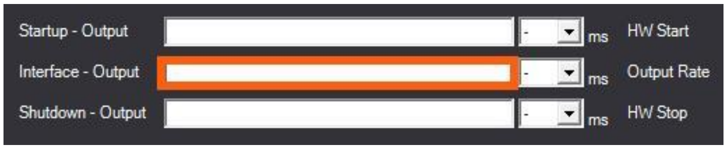
Startup - Output – You may use <x> anywhere in the output string where x = 0 through 255 to send an ASCII char for the value of <x>. Other than that, what you type here is exactly what is sent to the controller. This area can be left blank if no commands are needed before Interface output begins.



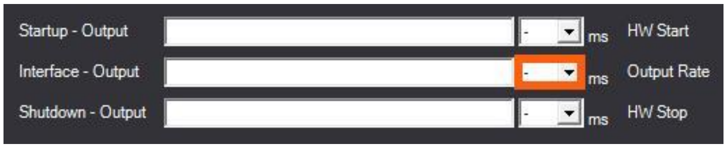
HW Start – The number of milliseconds after the Startup output has been sent to continue with Interface Output. This selection is not needed if Startup Output is not used.



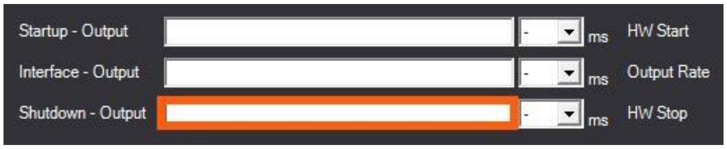
Interface - Output – This is where you enter user formatted output. You are able to define a formatted output string of what the output will consist of. You can use the following to get any of the axis values: <Axis1a>, <Axis2a>, <Axis3a>, <Axis4a>, <Axis5a>, <Axis6a>, <Axis1b>, <Axis2b>, <Axis3b>, <Axis4b>, <Axis5b>, <Axis6b>, <Axis1c>, <Axis2c>, <Axis3c>, <Axis4c>, <Axis5c>, <Axis6c> anywhere in the output string you want. You can also use <x> anywhere in the output string where x = 0 through 255 to send an ASCII char for the value of <x>.



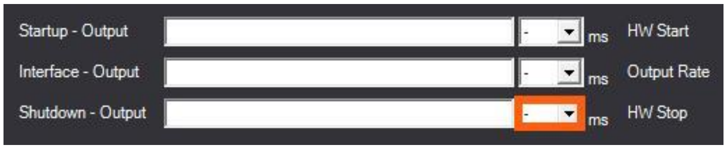
Output Rate – Select how often to send Interface Output data in milliseconds.



Shutdown - Output – You may use <x> anywhere in the output string where x = 0 through 255 to send an ASCII char for the value of <x>. Other than that, what you type here is exactly what is sent to the controller. This area can be left blank if no commands are needed after Interface output shuts down.

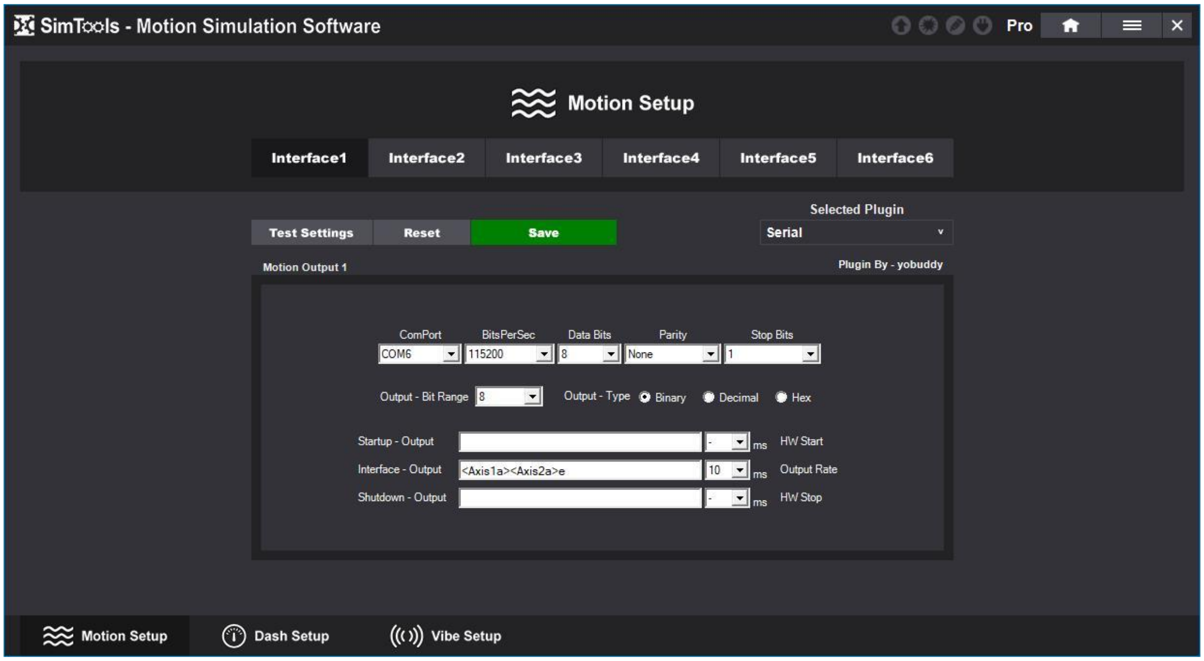


HW Stop – Select the number of milliseconds after the Interface Output stops to continue with Shutdown Output. This selection is not needed if Shutdown Output is not used.



Example

In the picture below you can see that we use "<Axis1a><Axis2a>e" as the string for our Interface - Output. We have “Binary” selected for Output - Type and “8” bit selected for Output - Bit Range. We can expect our output to look like "cde" when Axis1a = 99 and Axis2a = 100. Remember Binary = one character between 0 and 255. When the interface receives this string "cde" it recognizes the "c" as 99 and the "d" as 100. Then finds the trailing "e", which in this example tells the interface it is a valid update.



Selected Plugin: Serial

ComPort: COM6 | BitsPerSec: 115200 | Data Bits: 8 | Parity: None | Stop Bits: 1

Output - Bit Range: 8 | Output - Type: ● Binary ○ Decimal ○ Hex

Startup - Output: | - ms HW Start

Interface - Output: <Axis1a><Axis2a>e | 10 ms Output Rate

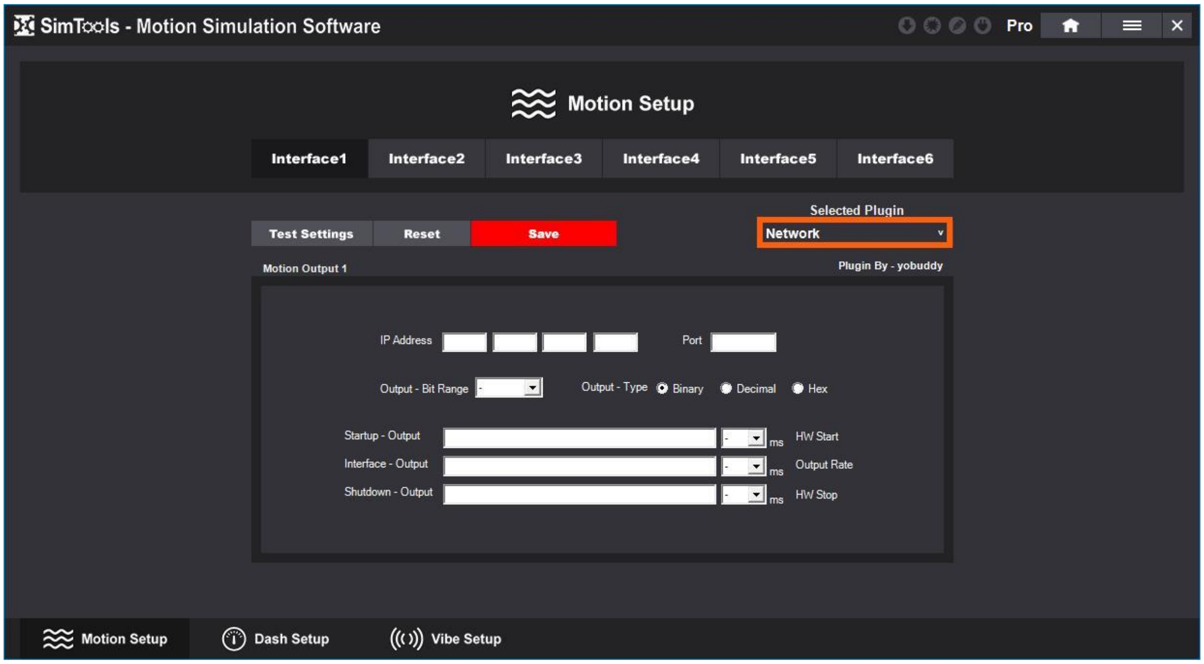
Shutdown - Output: | - ms HW Stop

More information on User Formatted Output can be found in Appendix B of this manual.

Back to Table of Contents

Network Interface

The **Network Interface** can be configured for many types of interfaces on the market where a UDP connection is required.



Selected Plugin: Network

IP Address: | Port:

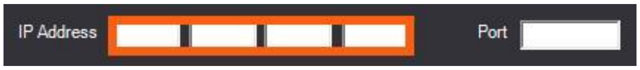
Output - Bit Range: - | Output - Type: ● Binary ○ Decimal ○ Hex

Startup - Output: | - ms HW Start

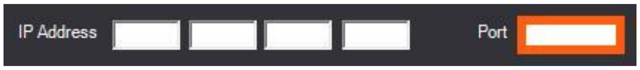
Interface - Output: | - ms Output Rate

Shutdown - Output: | - ms HW Stop

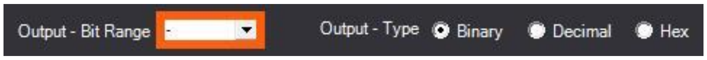
IP Address – Enter the IP address of the target device you are trying to send data to.



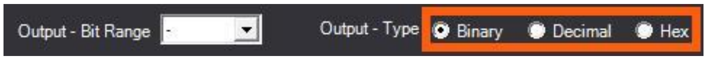
Port – Enter the port of the target device you are trying to send data to.



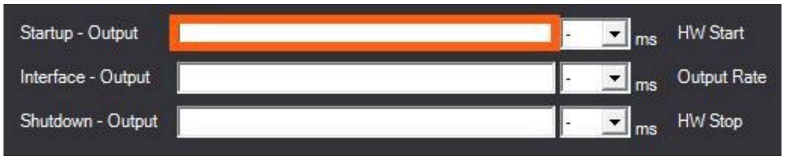
Output - Bit Range – Select the number of bits the interface is expecting when setting a new target point. Most interfaces at this time use 8 bit or 0 to 255. The Output - Bits settings allow for interface target points to be from 8 to 32 bits.



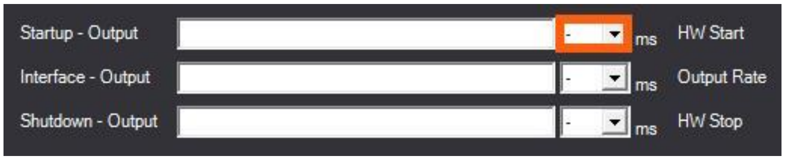
Output - Type – Select the format in which the new target points are presented to the interface. Note: More information on Output - Type can be found in Appendix A of this manual.



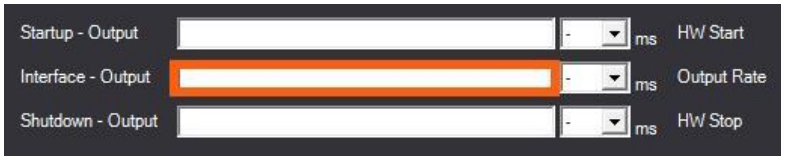
Startup - Output – You may use <x> anywhere in the output string where x = 0 through 255 to send an ASCII char for the value of <x>. Other than that, what you type here is exactly what is sent to the controller. This area can be left blank if no commands are needed before Interface output begins.



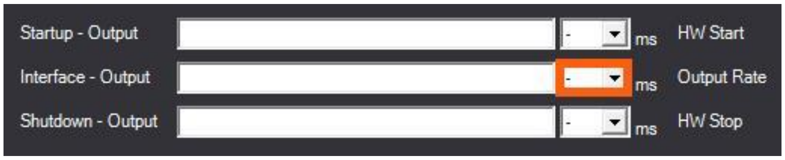
HW Start – The number of milliseconds after the Startup output has been sent to continue with Interface Output. This selection is not needed if Startup Output is not used.



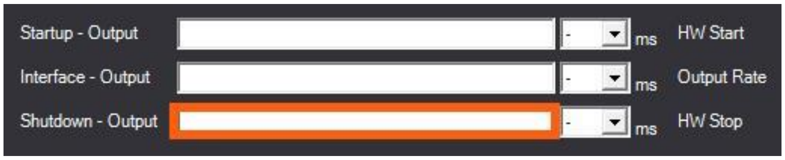
Interface - Output – This is where you enter user formatted output. You are able to define a formatted output string of what the output will consist of. You can use the following to get any of the axis values: <Axis1a>, <Axis2a>, <Axis3a>, <Axis4a>, <Axis5a>, <Axis6a>, <Axis1b>, <Axis2b>, <Axis3b>, <Axis4b>, <Axis5b>, <Axis6b>, <Axis1c>, <Axis2c>, <Axis3c>, <Axis4c>, <Axis5c>, <Axis6c> anywhere in the output string you want. You can also use <x> anywhere in the output string where x = 0 through 255 to send an ASCII char for the value of <x>.



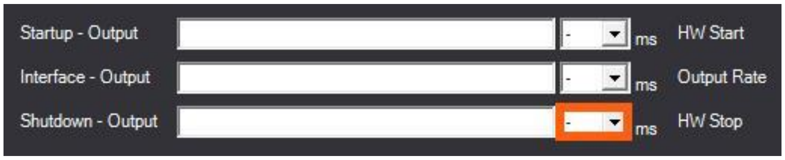
Output Rate – Select how often to send Interface Output data in milliseconds.



Shutdown - Output – You may use <x> anywhere in the output string where x = 0 through 255 to send an ASCII char for the value of <x>. Other than that, what you type here is exactly what is sent to the controller. This area can be left blank if no commands are needed after Interface output shuts down.

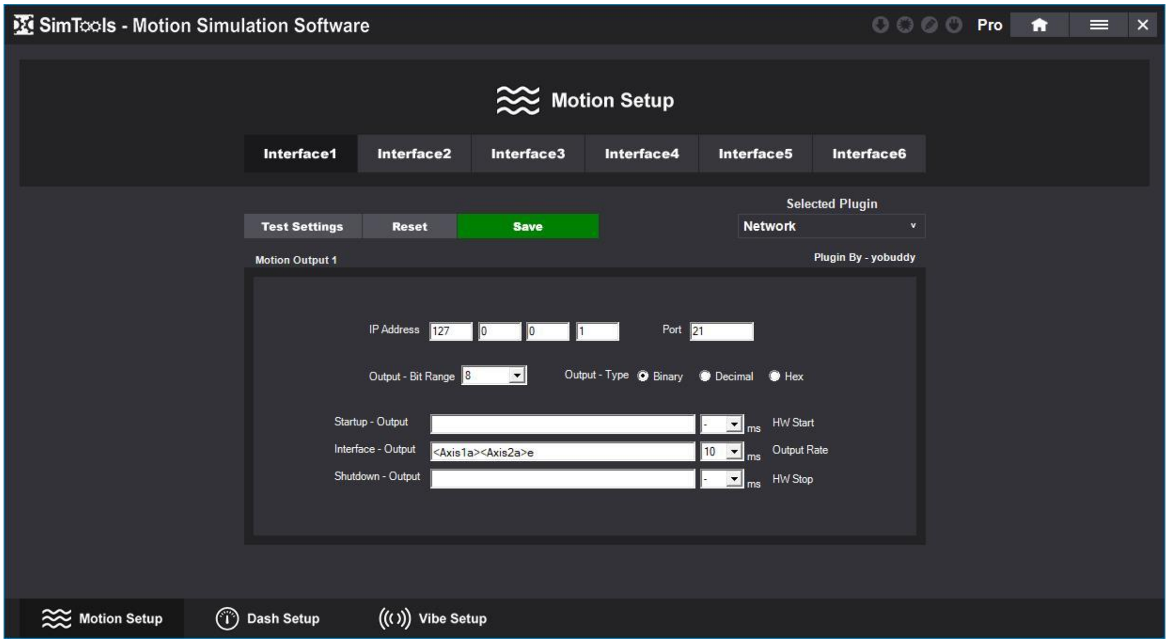


HW Stop – Select the number of milliseconds after the Interface output Stops to continue with Shutdown Output. This selection is not needed if Shutdown Output is not used.



Example

In the picture below you can see that we use "<Axis1a><Axis2a>e" as the string for our Interface - Output. We have “Binary” selected for Output - Type and “8” bit selected for Output - Bit Range. We can expect our output to look like "cde" when Axis1a = 99 and Axis2a = 100. Remember Binary = one character between 0 and 255. When the interface receives this string "cde" it recognizes the "c" as 99 and the "d" as 100. Then finds the trailing "e", which for this example tells the interface it is a valid update.



Selected Plugin: Network

Plugin By - yobuddy

Motion Output 1

IP Address 127 . 0 . 0 . 1   Port 21

Output - Bit Range 8   Output - Type ● Binary ○ Decimal ○ Hex

Startup - Output   - ms HW Start

Interface - Output <Axis1a><Axis2a>e   10 ms Output Rate

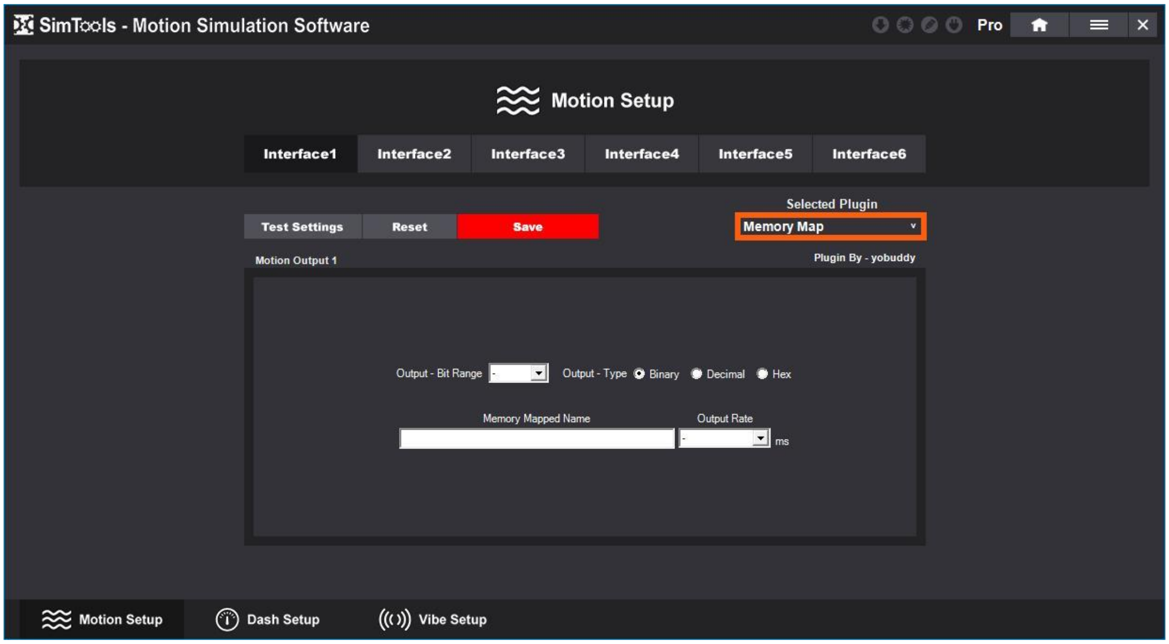
Shutdown - Output   - ms HW Stop

More information on User Formatted Output can be found in Appendix B of this manual.

Back to Table of Contents

Memory Map Interface

The **Memory Map Interface** can be configured to place a string in memory that contains all 12 of the axis outputs from SimTools. The output placed in memory will be located at the Memory Mapped Name configured below.



Selected Plugin: Memory Map

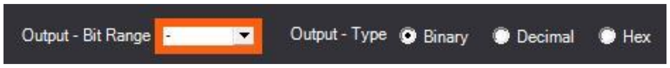
Plugin By - yobuddy

Motion Output 1

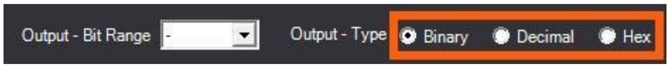
Output - Bit Range -   Output - Type ● Binary ○ Decimal ○ Hex

Memory Mapped Name   Output Rate - ms

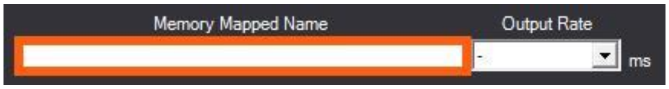
Output - Bit Range – Select the number of bits the interface is expecting when setting a new target point. Most interfaces at this time use 8 bit or 0 to 255. The Output - Bits settings allow for interface target points to be from 8 to 32 bits.



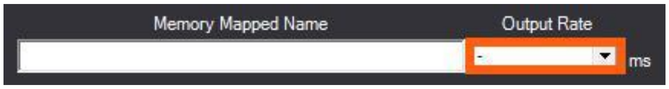
Output - Type – Select the format in which the new target points are presented to the interface. Note: More information on Output - Type can be found in Appendix A of this manual.



Memory Mapped Name – The name of the Memory Mapped file in memory.



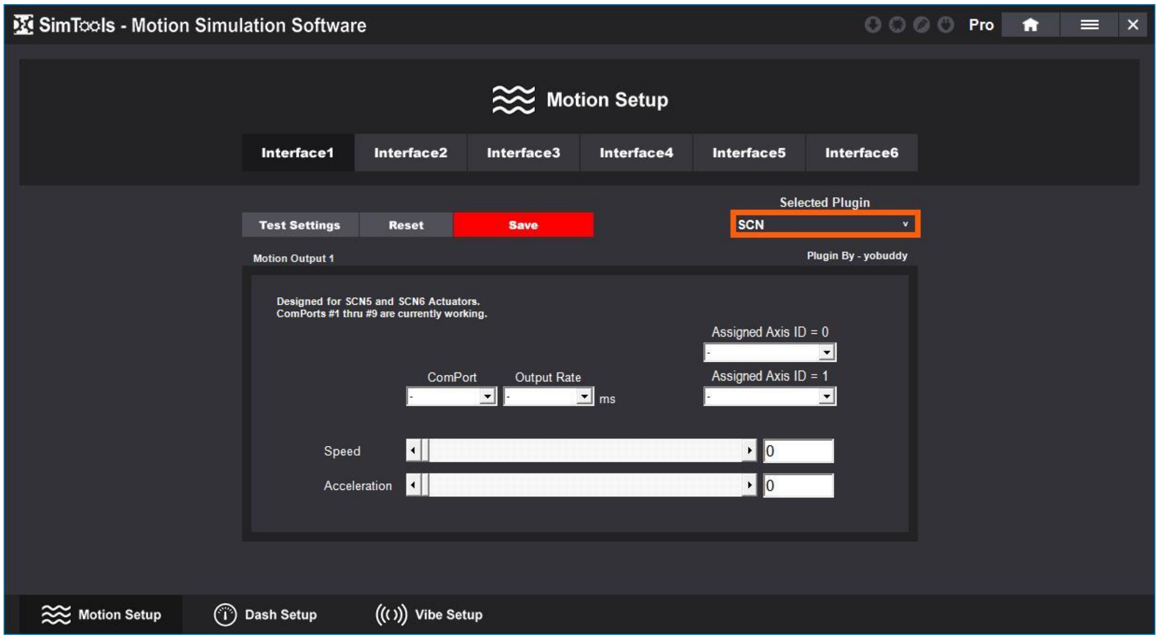
Output Rate – How often to send Interface Output data in milliseconds.



Back to Table of Contents

SCN Interface

The **SCN Interface** can be configured to drive two SCN actuators. All of the SCN actuators we have seen come from the factory with the ID = 0. If you change an actuator to be ID = 1 with the manufacturers provided tools, you can drive two SCN actuators per SimTools interface.



Selected Plugin: SCN

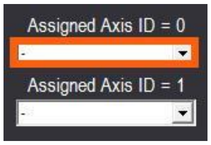
Plugin By - yobuddy

Designed for SCN5 and SCN6 Actuators.
ComPorts #1 thru #9 are currently working.

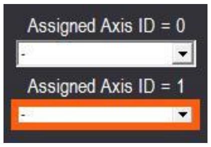
Speed: 0

Acceleration: 0

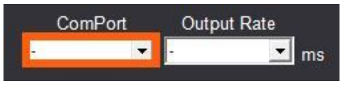
Assigned Axis ID = 0 – Select the output axis you want to tie to the actuator that has its ID equal to zero.



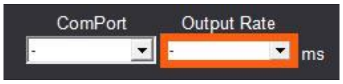
Assigned Axis ID = 1 – Select the output axis you want to tie to the actuator that has its ID equal to one.



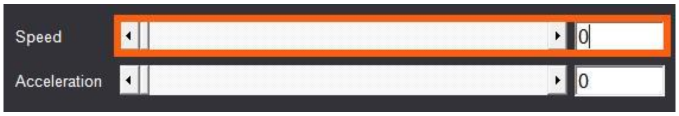
ComPort – Select the COM port the interface is connected to.



Output Rate – Select how often to send interface output data in milliseconds.



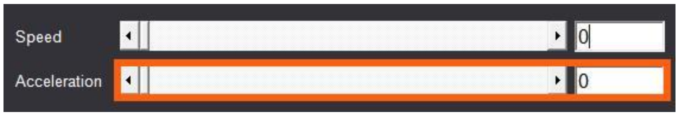
Speed – The top speed of the actuator, how quickly we try to follow our set target.



Speed: 0

Acceleration: 0

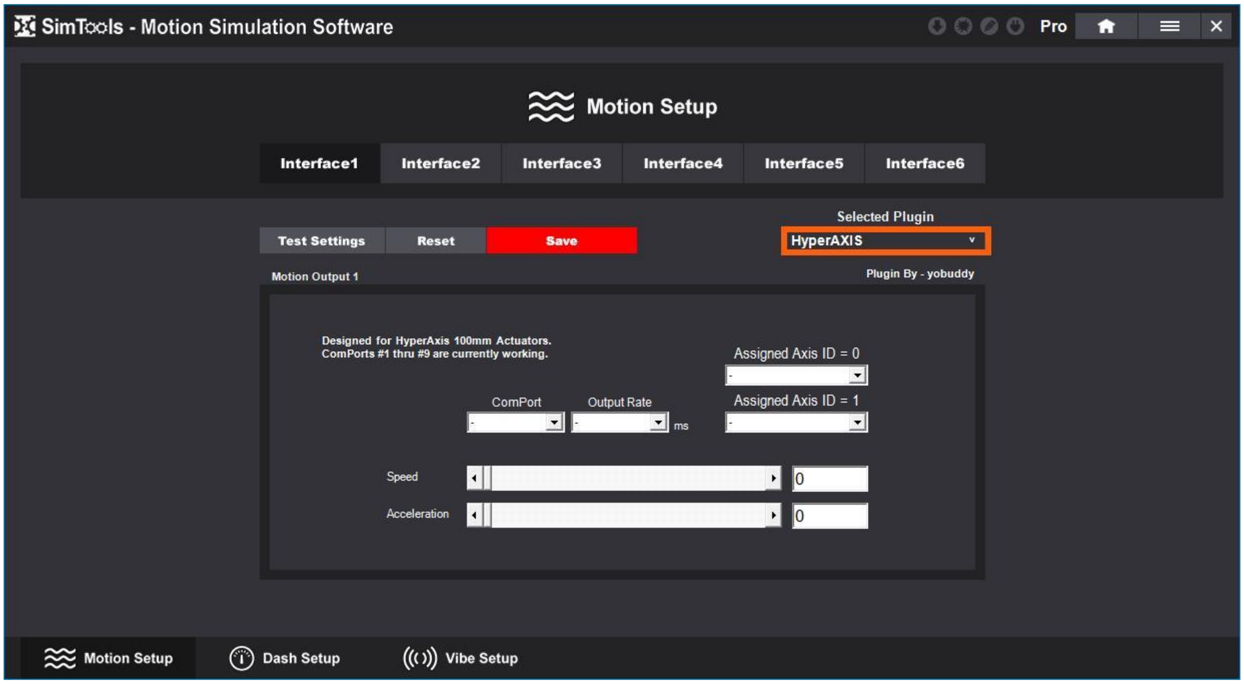
Acceleration – How quickly the actuators react to changes to its target location.


Speed 0
Acceleration 0

[Back to Table of Contents]

HyperAxis Interface

The **HyperAXIS Interface** is for fixed length HyperAXIS 100mm actuators. This Interface can be configured to drive up two HyperAXIS actuators. All of the HyperAXIS actuators we have seen come from the factory with the ID = 0. If you change an actuators ID = 1 with the manufacturers provided tools, you can drive two HyperAXIS actuators per SimTools interface.



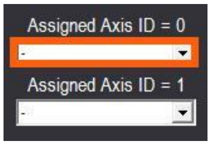
Selected Plugin: HyperAXIS

Plugin By - yobuddy

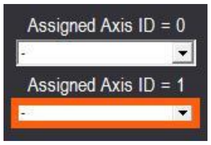
Designed for HyperAxis 100mm Actuators.
ComPorts #1 thru #9 are currently working.

Assigned Axis ID = 0: -
Assigned Axis ID = 1: -
ComPort: -
Output Rate: - ms
Speed 0
Acceleration 0

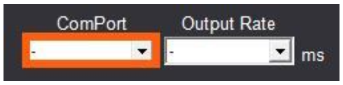
Assigned Axis ID = 0 – Select the output axis you want to tie to the actuator that has its ID equal to zero.


Assigned Axis ID = 0: -
Assigned Axis ID = 1: -

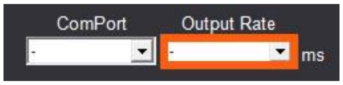
Assigned Axis ID = 1 – Select the output axis you want to tie to the actuator that has its ID equal to one.



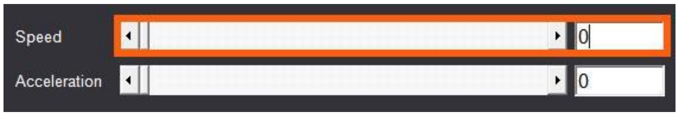
ComPort – Select the COM port the interface is connected to.



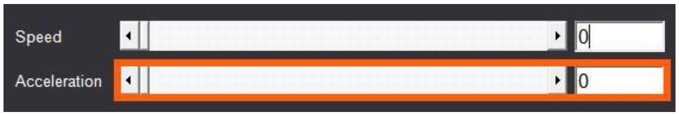
Output Rate – Select how often to send interface output data in milliseconds.



Speed – The top speed of the actuator, how quickly we try to follow our set target.



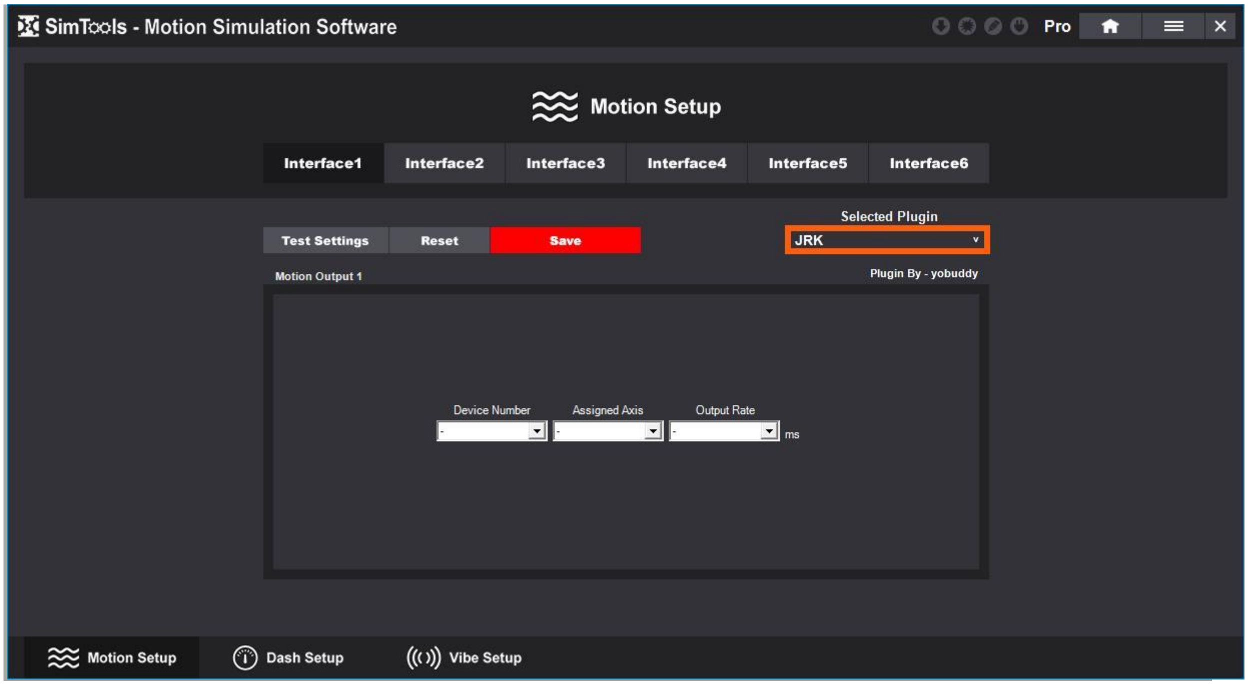
Acceleration – How quickly the actuators react to changes to its target location.



Back to Table of Contents

JRK Interface

The **JRK Interface** can be configured to run many of the JRK line of motor driver/controllers. SimTools v3 will also run the new G2 line of motor driver/controllers from this manufacturer.



Selected Plugin: JRK

Plugin By - yobuddy

Device Number – Select the device number of an attached JRK device. Note: JRKs will be listed in the dropdown box for easy user selection.

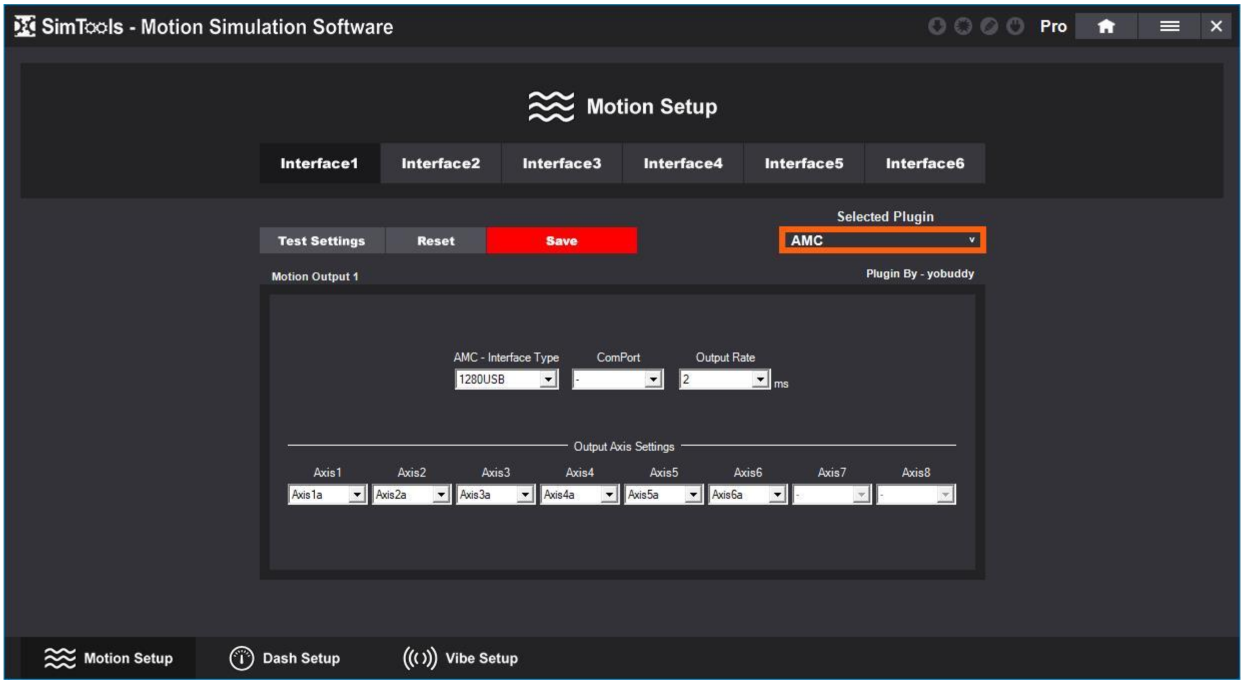
Assigned Axis – Select the output axis you want to tie to your equipment.

Output Rate – Select how often to send interface output data in milliseconds.

Back to Table of Contents

AMC Interface

The **AMC Interface** is **designed** to run all of Thanos’s AMC interfaces. Depending on the “AMC – Interface Type” you select, the number of “Output Axis Settings” that are available will be configurable.



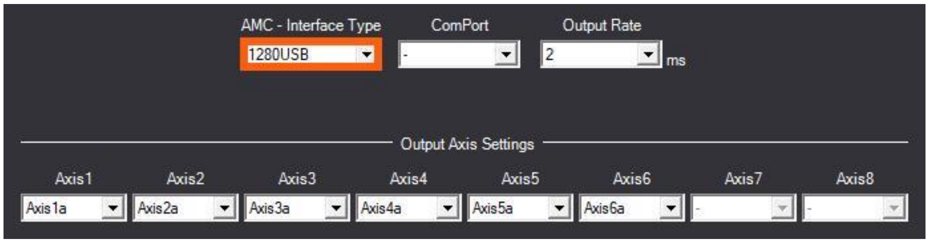
Selected Plugin: AMC
Plugin By - yobuddy

AMC - Interface Type: 1280USB
ComPort: -
Output Rate: 2 ms

Axis1	Axis2	Axis3	Axis4	Axis5	Axis6	Axis7	Axis8
Axis1a	Axis2a	Axis3a	Axis4a	Axis5a	Axis6a	-	-

AMC - Interface Type – Select the AMC interface type that you are configuring the interface for. All options are shown below.

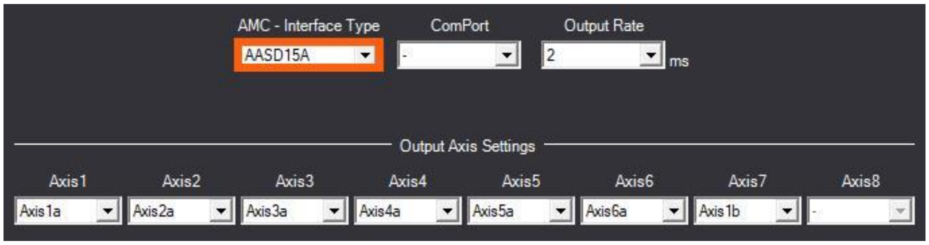
1280 USB – This interface is designed to run Thanos's AMC 1280 USB.



AMC - Interface Type: 1280USB
ComPort: -
Output Rate: 2 ms

Axis1	Axis2	Axis3	Axis4	Axis5	Axis6	Axis7	Axis8
Axis1a	Axis2a	Axis3a	Axis4a	Axis5a	Axis6a	-	-

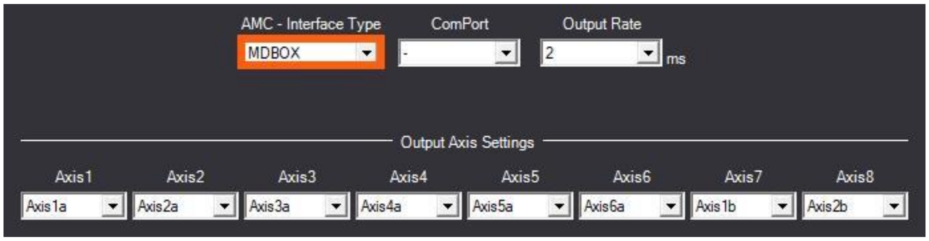
AASD15A – This interface is designed to run Thanos's AMC AASD15A.



AMC - Interface Type: AASD15A
ComPort: -
Output Rate: 2 ms

Axis1	Axis2	Axis3	Axis4	Axis5	Axis6	Axis7	Axis8
Axis1a	Axis2a	Axis3a	Axis4a	Axis5a	Axis6a	Axis1b	-

MDBOX – This interface is designed for Thanos’s AMC MDBOX.

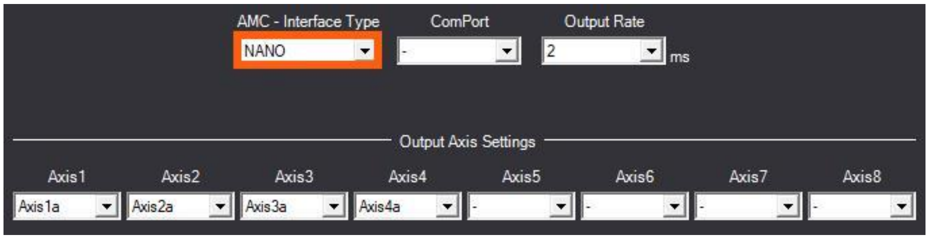


AMC - Interface Type	ComPort	Output Rate
MDBOX	-	2 ms

Output Axis Settings

Axis1	Axis2	Axis3	Axis4	Axis5	Axis6	Axis7	Axis8
Axis1a	Axis2a	Axis3a	Axis4a	Axis5a	Axis6a	Axis1b	Axis2b

NANO – This interface is designed for Thanos’s AMC NANO.

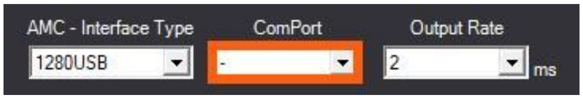


AMC - Interface Type	ComPort	Output Rate
NANO	-	2 ms

Output Axis Settings

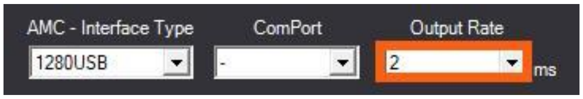
Axis1	Axis2	Axis3	Axis4	Axis5	Axis6	Axis7	Axis8
Axis1a	Axis2a	Axis3a	Axis4a	-	-	-	-

ComPort – Select the COM port the interface is connected to.



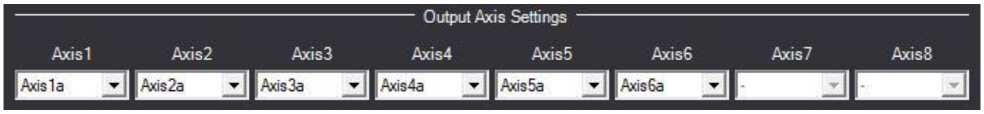
AMC - Interface Type	ComPort	Output Rate
1280USB	-	2 ms

Output Rate – Select how often to send interface output data in milliseconds. The AMC default setting is 2 ms, so this setting is already selected for you.



AMC - Interface Type	ComPort	Output Rate
1280USB	-	2 ms

Output Axis Settings – Reconfigure the output axis in any order needed for your simulator build.



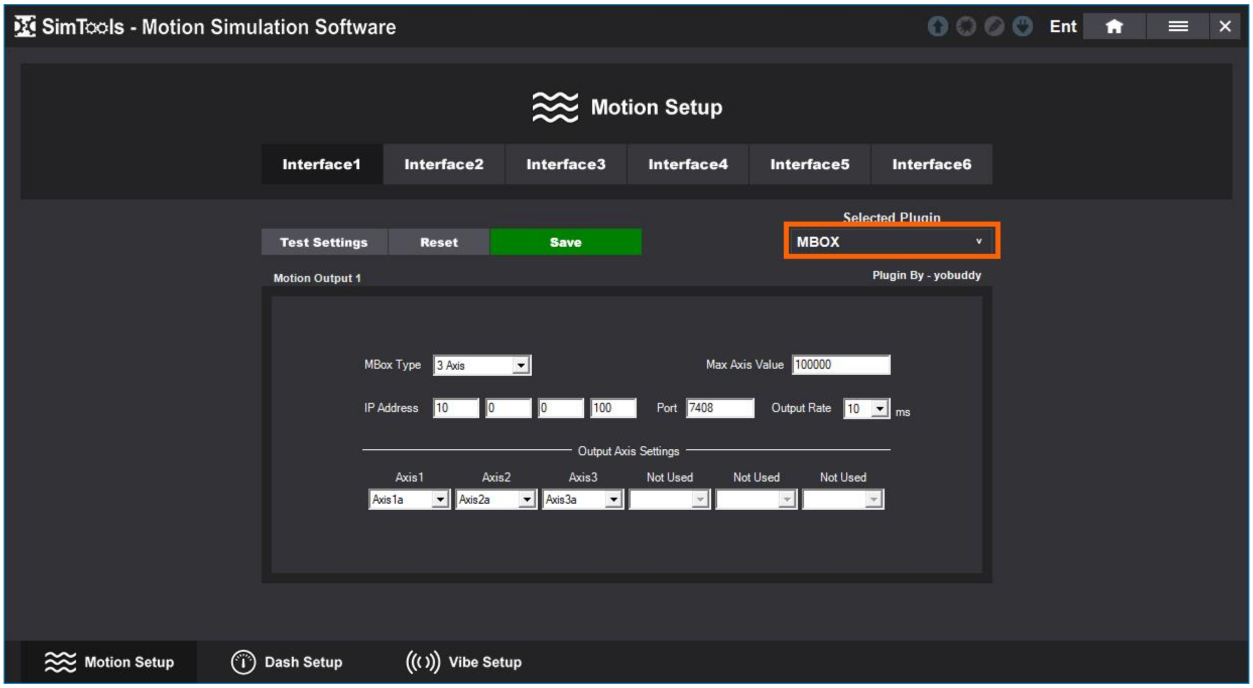
Output Axis Settings

Axis1	Axis2	Axis3	Axis4	Axis5	Axis6	Axis7	Axis8
Axis1a	Axis2a	Axis3a	Axis4a	Axis5a	Axis6a	-	-

Back to Table of Contents

MBox Interface

The **Mbox Interface** can be configured to control Mbox devices over a network connection.



Selected Plugin: MBOX

Plugin By - yobuddy

MBox Type: 3 Axis

Max Axis Value: 100000

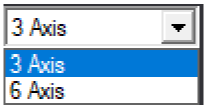
IP Address: 10 . 0 . 0 . 100

Port: 7408

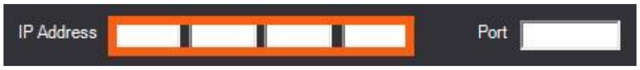
Output Rate: 10 ms

Axis1	Axis2	Axis3	Not Used	Not Used	Not Used
Axis1a	Axis2a	Axis3a			

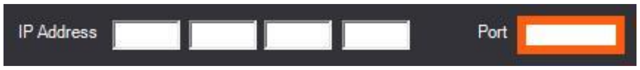
Mbox Type – You can select whether you have an Mbox that controls 3 or 6 axes.



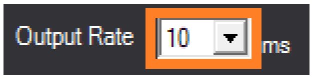
IP Address – Enter the IP address of the Mbox device you are sending the data too.



Port – Enter the port of the target device you are trying to send the data to.



Output Rate – Select how often to send Interface data in milliseconds.



Output Rate: 10 ms

Max Axis Value – We believe 100000 is the default Max Axis Value, so we suggest not changing this one unless it is absolutely necessary for your setup. If you change this value and send a value that is too large for your Mbox resulting in an error, a restart of you Mbox if highly suggested.

Mbox Hardware Setup

IP address settings are required to be setup in the Mbox unit itself. See the example settings in the picture below. Note: The IP address will vary depending on your network configuration.

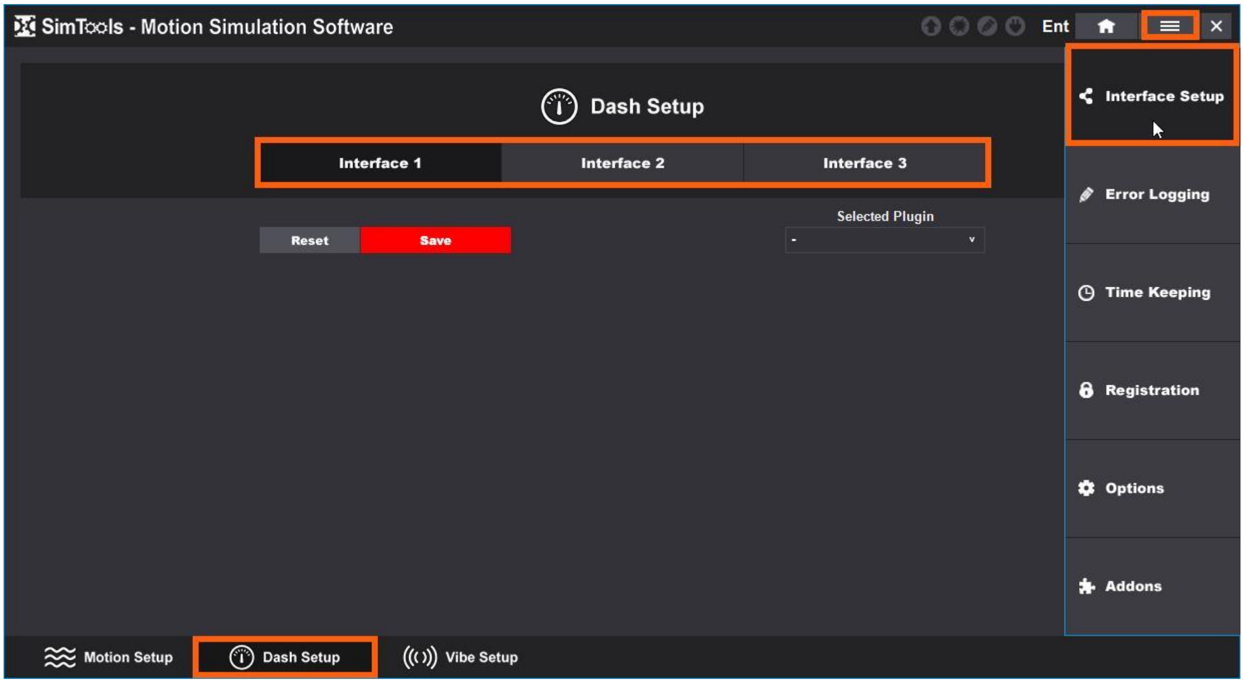
IP Address: Device might not show in your router or switch network map.
Fn 020 = **192.**168.0.200
Fn 021 = 192**.168**.0.200
Fn 022 = 192**.**168.**0**.200
Fn 023 = 192**.**168.0.**200**

Port:
Fn 025 = 7408 (Mbox receiving UDP port)

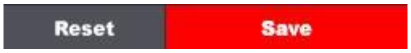
Back to Table of Contents

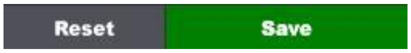
Dash Interfaces

Dash Interfaces – Allow you to configure a piece of hardware like a dash board with SimTools. You can replicate something like speed for a speedometer or wind for speed fans. There are currently three interface types for Dash: Network, Serial and Virtual.

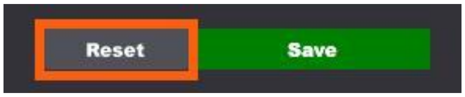


Save – Click Save to save your configurations. The Save button will turn green when all the required fields have values in them.

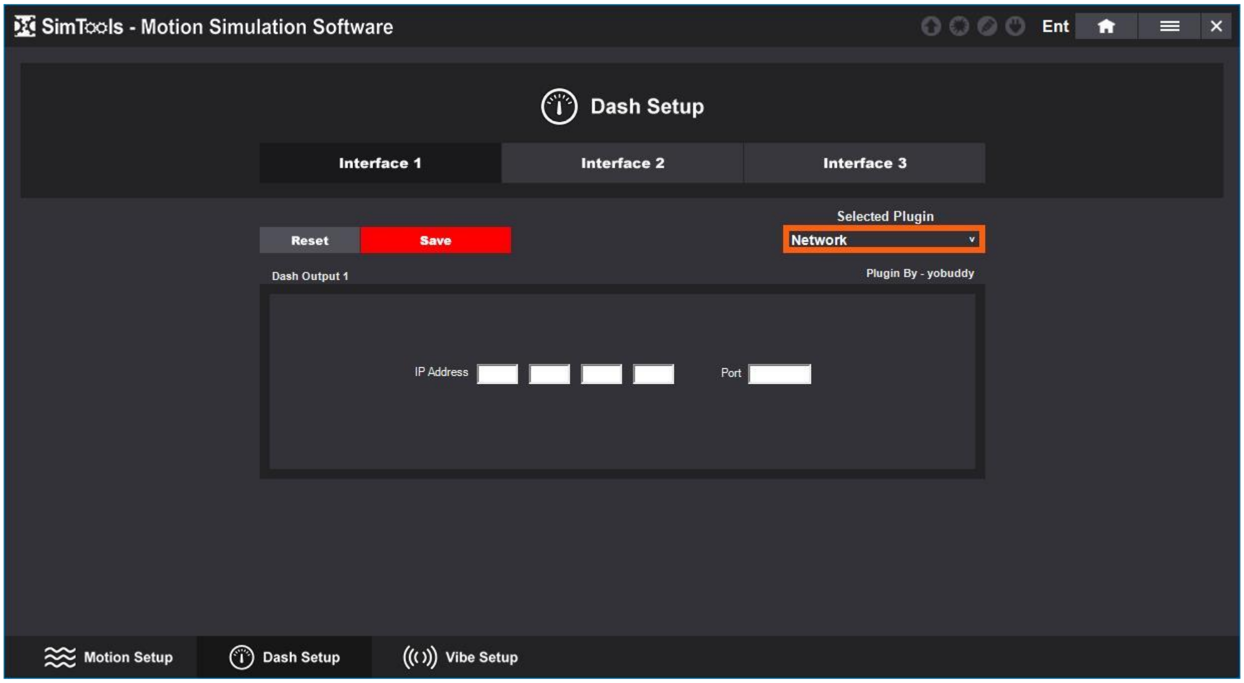




Reset – Click Reset to clear all the fields.

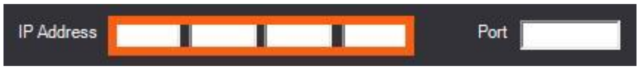


The **Network Interface** can be configured for many types of interfaces on the market where a UDP connection is required.

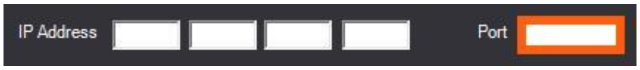


Selected Plugin: Network

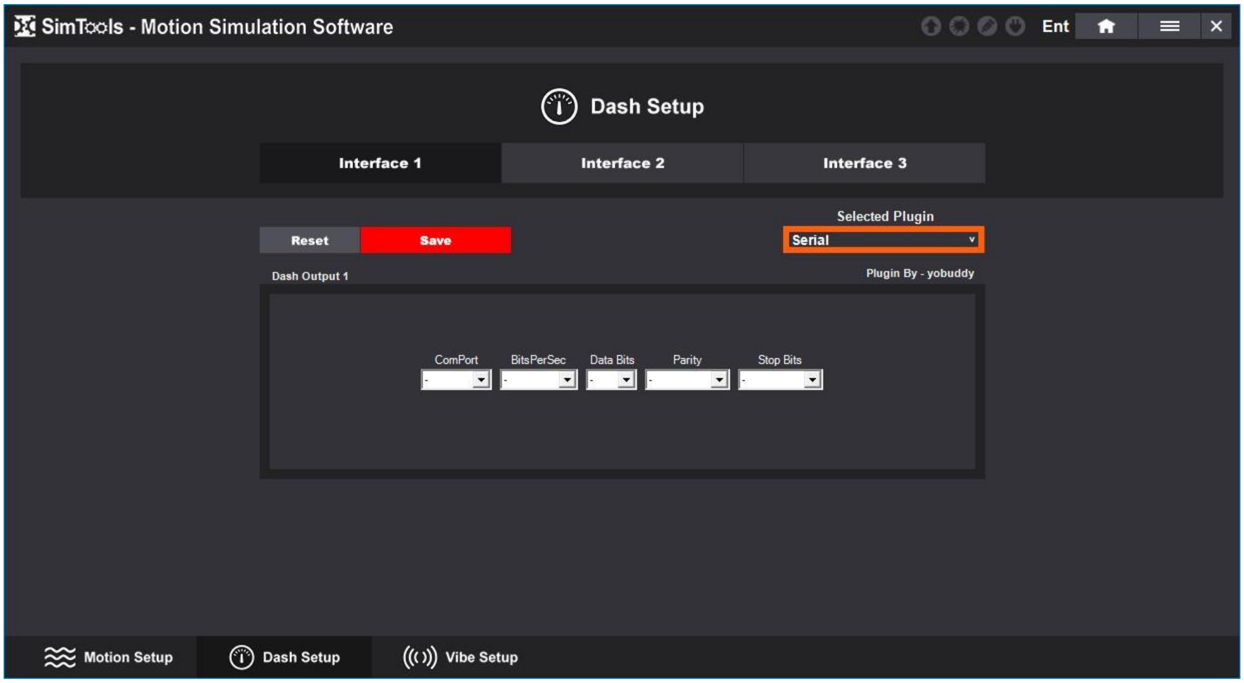
IP Address – Enter the IP address of the target device you are trying to send data to.



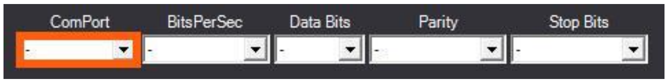
Port – Enter the port of the target device you are trying to send data to.



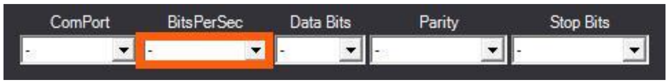
The **Serial Interface** can be configured for many types of interfaces on the market where a serial connection is required. It can be configured to work with many interfaces whether they are a DIY solution or an off the shelf part like an Arduino.



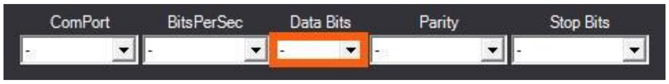
ComPort – Select the com port the interface is connected to.



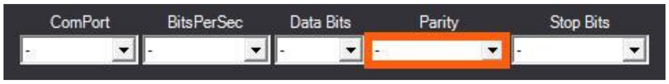
BitsPerSec – Select the speed that the interface runs at. This is frequently set to “115200” bits per second.



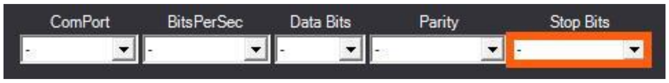
DataBits – Select the number of data bits in each character. This is frequently set to “8” bits.



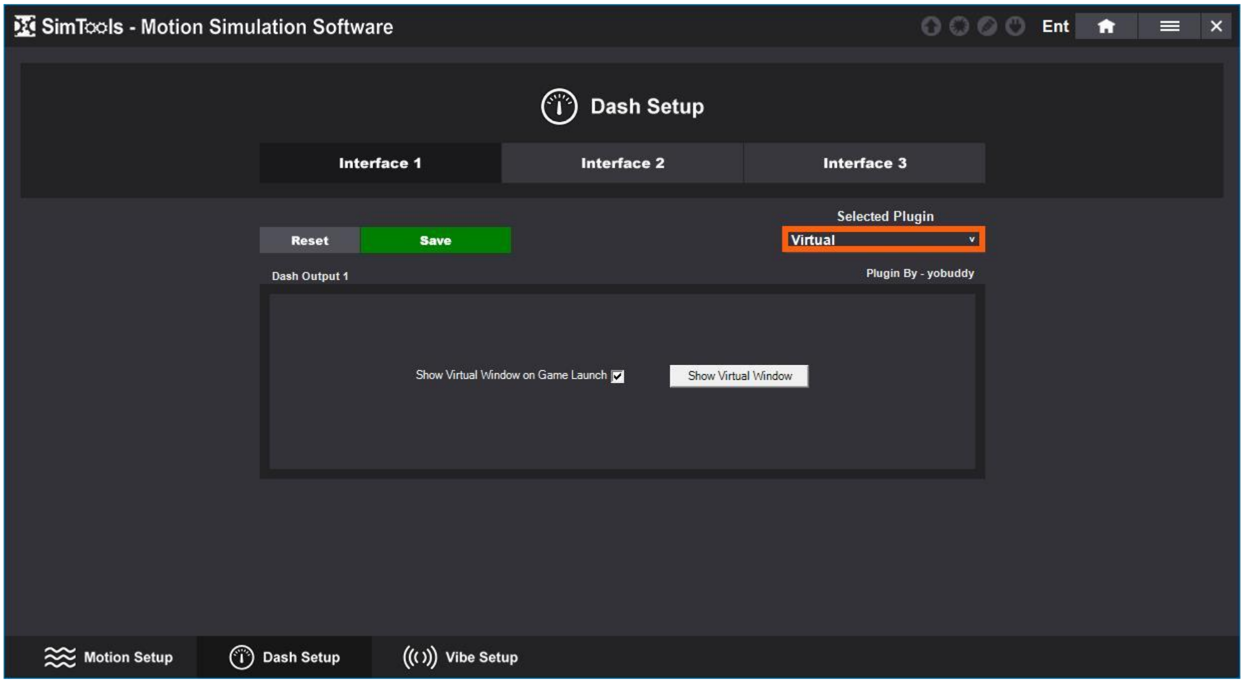
Parity – Select a parity bit. This is a method of detecting errors in data transmission and is frequently set to "None".



StopBits – Select the number of bits that will allow the hardware to detect the end of a character. This is frequently set to "1" bit.



The **Virtual Interface** can be selected to visually test how Dash works. If selected and the Interface – Output is configured correctly in Dash for the values you want to use, then you will see values display from the game in a virtual output window.

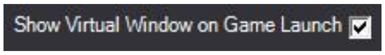


Selected Plugin: Virtual

Plugin By - yobuddy

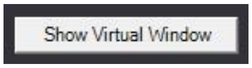
Show Virtual Window on Game Launch ☑

Show Virtual Window on Game Launch – Check this box if you want to launch a virtual window when you start a game.

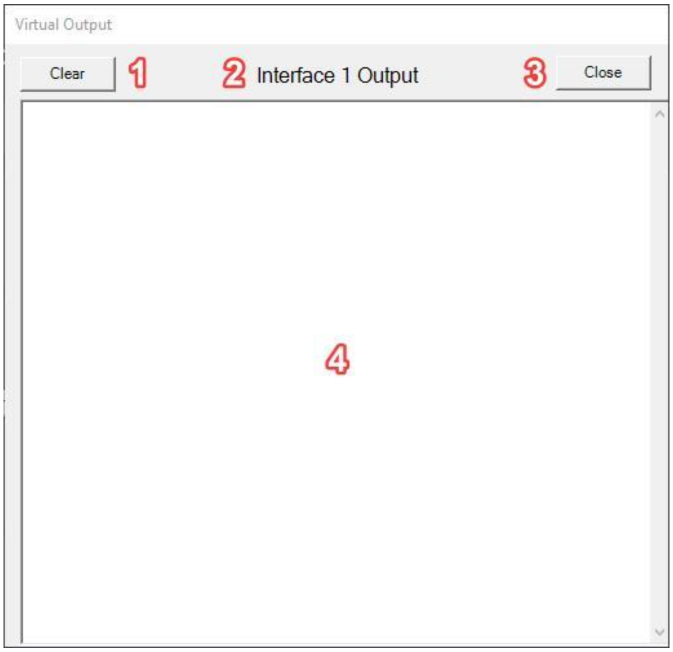


Show Virtual Window on Game Launch ☑

Show Virtual Window – Click this button to show a virtual window.



Virtual Output – This is the virtual output window. It will display values if Dash is configured correctly in a game plugin and the game is launched.



Reference the image directly above for the following:

1 - **Clear –** Click this button to clear the text area.

2 - **Interface Name –** This is the name of the interface the output is for.

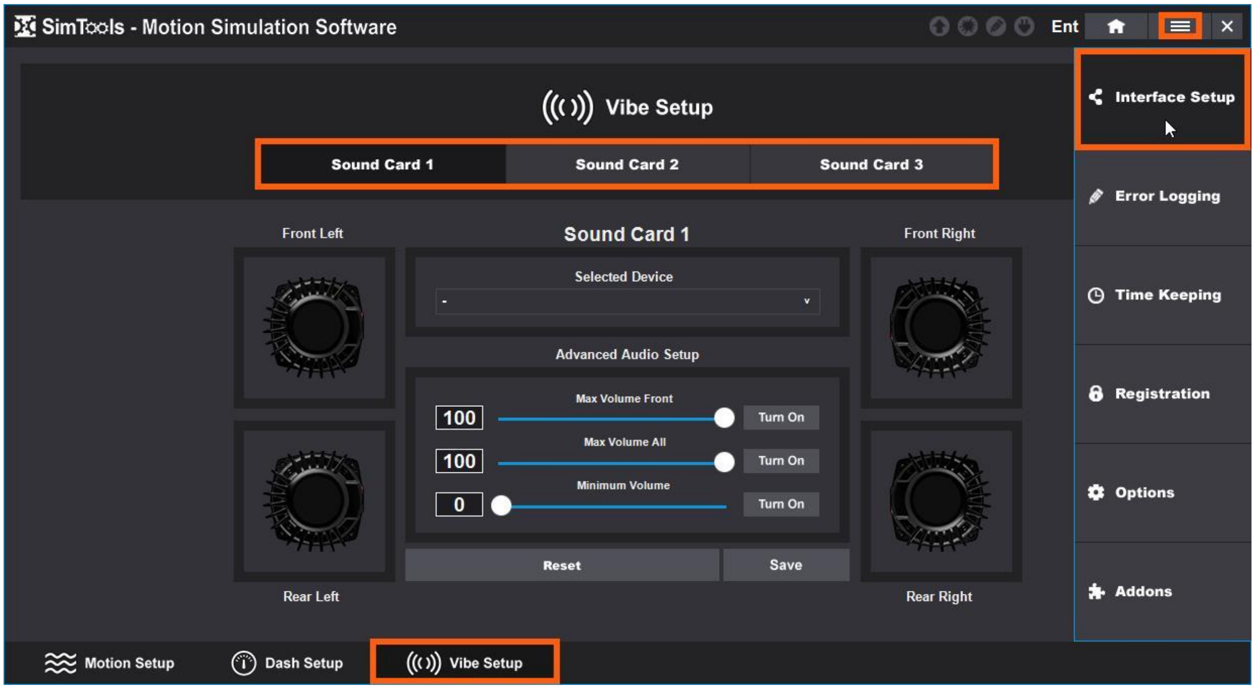
3 - **Close –** Click this button to close the window.

4 - **Text Area –** This is the text area where the data will display.

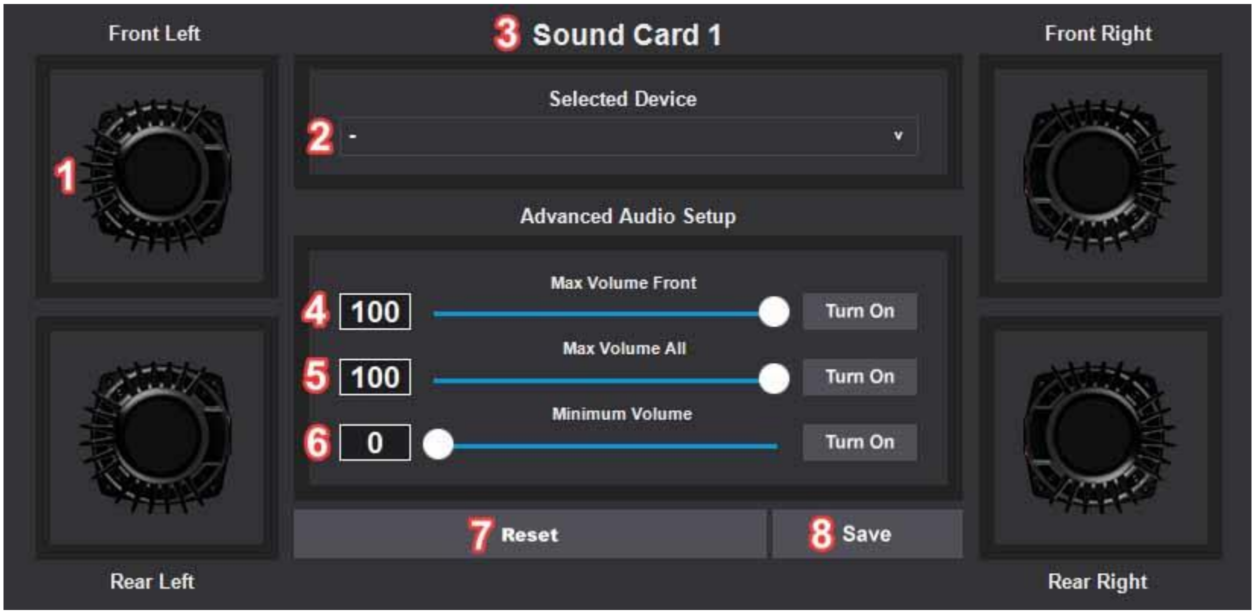
Back to Table of Contents

Vibe Interfaces

Vibe Interfaces – Allow you can configure transducers or butt-kickers with SimTools. You can replicate something like the revving of an engine or the RPM of a car. You can configure up to three sound cards and each card can have up to four independent transducer locations for your setup. You can access Vibe Interfaces by selecting the Main Menu → Interface Setup → Vibe Setup.



Configure the sound card and remember to click save to save your settings.



Reference the image directly above for the following:

1 - **Speakers –** There are four speakers you can setup for each sound card: Front Left, Front Right, Rear Left and Rear Right.

2 - **Selected Device –** This is the sound card for the speakers you are configuring.

3 - **Sound Card –** This is the sound card you are configuring.

4 - **Max Volume Front –** This slider allows you to adjust the volume between the Front vs Rear volume output from the Sound Card. Only do this if you are not able to do it with your built-in sound card settings. If you were not able to balance out the Rear vs the Front output volume with your built-in sound card settings, then "Turn On" the vibration tester and set the "Max Volume Front" slider, so the front and rear vibrations feel even.

5 - **Max Volume All –** This slider allows you to adjust the volume between when all transducers are playing a single vibration vs a single left or right side playing it. To adjust, simply "Turn On" the vibration tester for the "Max Volume All", then adjust the slider to where the total output vibration feels the same no matter where the vibe is being played.

6 - **Minimum Volume –** This slider allows you to adjust what is considered the Minimum volume used for Vibe. To adjust the Minimum volume, simply "Turn On" the vibration tester for the "Minimum Volume", then adjust the slider to where you cannot tell anything is playing. Here you are setting what you want Vibe to consider the Minimum volume for output. If it takes a certain volume to achieve a minimum vibration for your transducer, you can adjust it here.

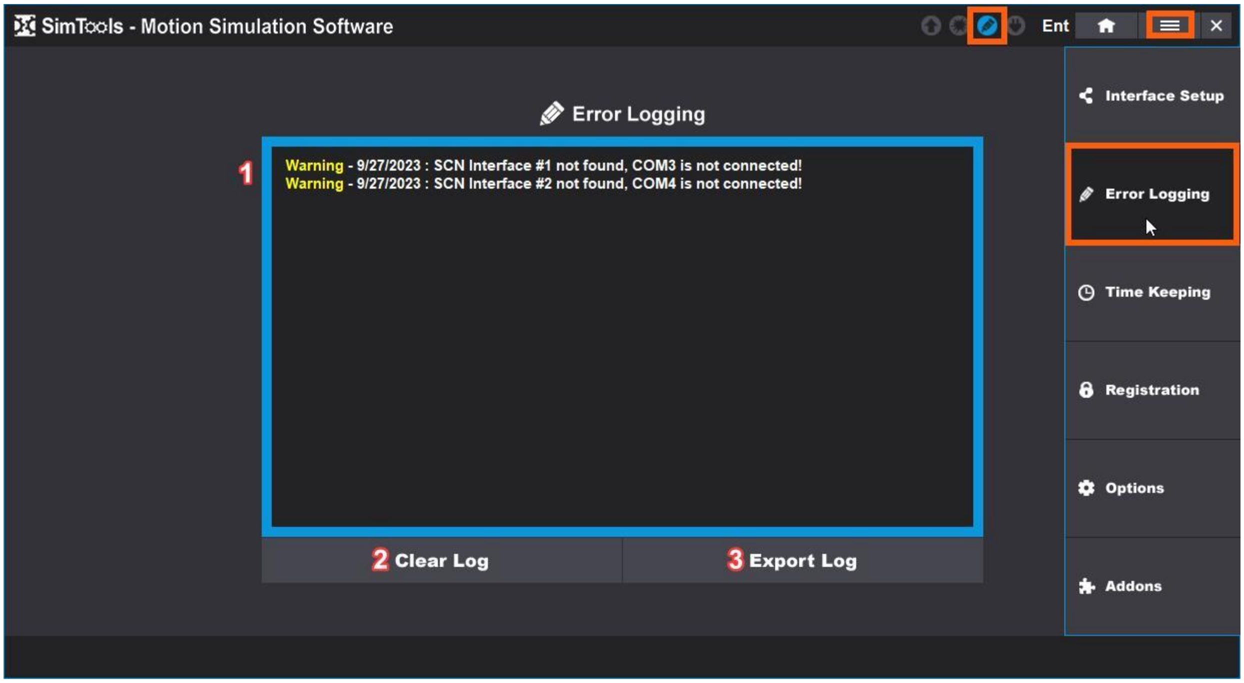
7 - **Reset –** Click this to reset the configurations.

8 - **Save –** Click this to save your configurations.

Back to Table of Contents

Error Logging

Error Logging – This is where you can view error logs for your installation of SimTools. The error log pencil icon in the upper right will turn blue if you have errors. You can navigate to Error Logging by clicking on the main menu and selecting Error Logging.



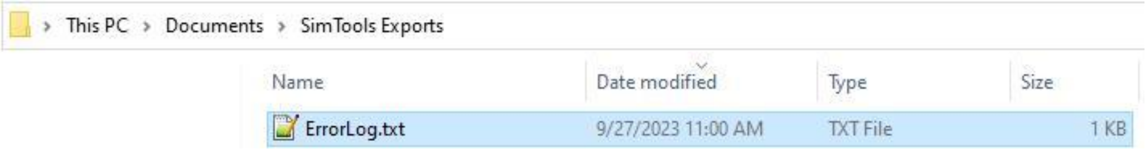
```
Warning - 9/27/2023 : SCN Interface #1 not found, COM3 is not connected!
Warning - 9/27/2023 : SCN Interface #2 not found, COM4 is not connected!
```

Reference the image directly above for the following:

1 - **Log Display –** This will display any errors.

2 - **Clear Log –** Click this button to clear the log display.

3 - **Export Log –** Click this button to export the log to a ErrorLog.txt file in the SimTools Exports folder in your Documents folder.



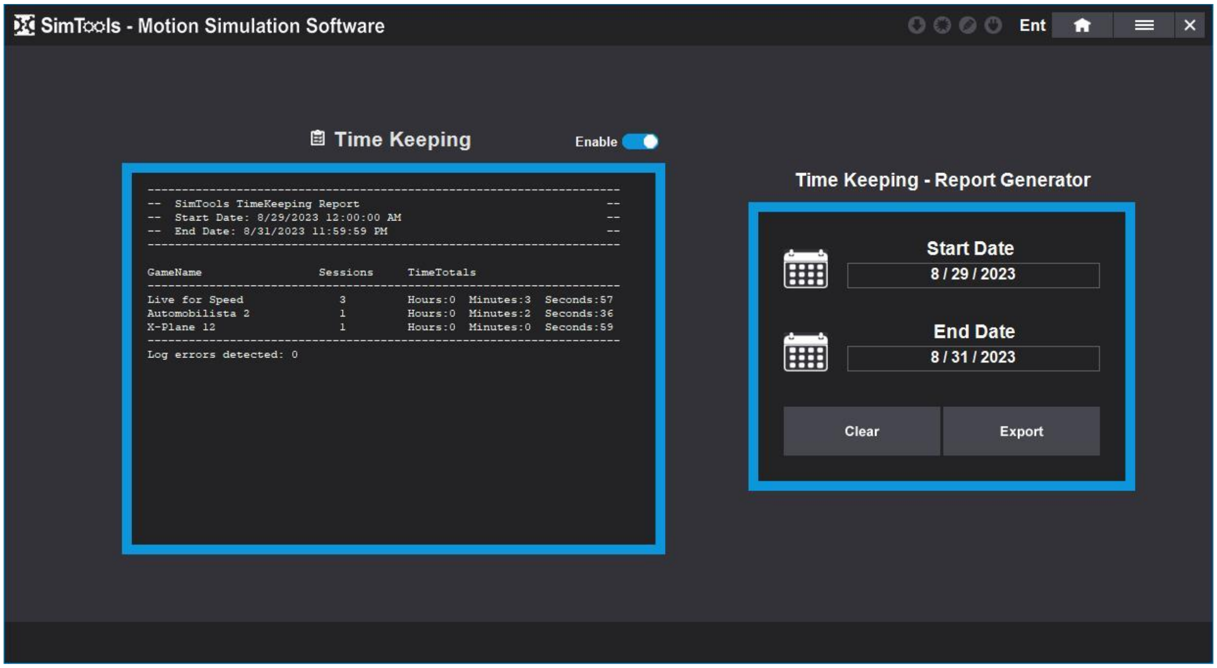
This PC › Documents › SimTools Exports

Name	Date modified	Type	Size
ErrorLog.txt	9/27/2023 11:00 AM	TXT File	1 KB

Time Keeping

Time Keeping is only available with an Entertainment License for SimTools. The Logging system is smart enough to only log ride time when the game is actually sending data and the simulator is connected and running.

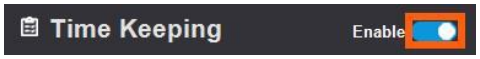
You need to Enable Time Keeping and use your simulator with a game plugin before you can generate reports.



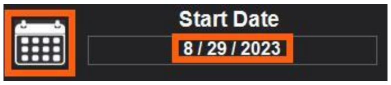
```
----------------------------------------------------------------------
--  SimTools TimeKeeping Report                                     --
--  Start Date: 8/29/2023 12:00:00 AM                               --
--  End Date: 8/31/2023 11:59:59 PM                                 --
----------------------------------------------------------------------

GameName                 Sessions    TimeTotals
----------------------------------------------------------------------
Live for Speed              3        Hours:0  Minutes:3  Seconds:57
Automobilista 2             1        Hours:0  Minutes:2  Seconds:36
X-Plane 12                  1        Hours:0  Minutes:0  Seconds:59
----------------------------------------------------------------------
Log errors detected: 0
```

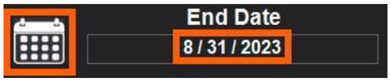
Enable – This allows you to turn the logging system on or off.



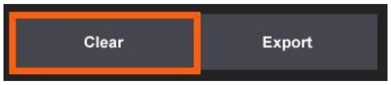
Start Date – This is the start date you desire for your report.



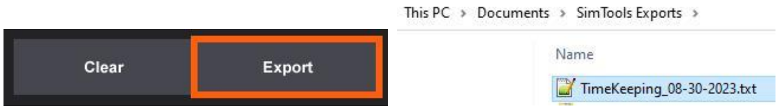
End Date – This is the end date you desire for your report.



Clear – Press the Clear button to clear the displayed logging information.



Export – Press the Export button to export the current report in the logging window to the “Documents\SimTools Exports” folder as a text file with the prefix TimeKeeping.


Clear
Export
This PC › Documents › SimTools Exports ›
Name
TimeKeeping_08-30-2023.txt

Back to Table of Contents

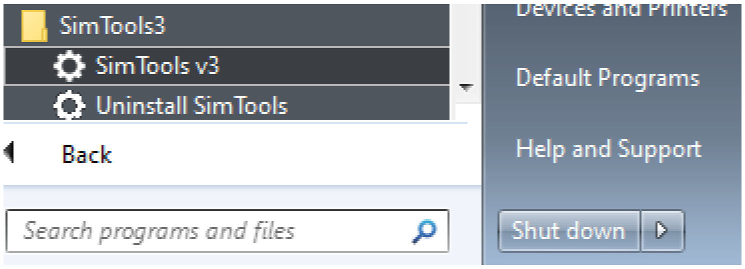
SimTools Registration

SimTools will run in “Demo” mode until a valid license has been registered.
The plugin for Live for Speed is fully operational for testing while SimTools is in demo mode. The demo of Live for Speed will work for testing SimTools too. You can find more information and download Live for Speed at https://www.lfs.net/

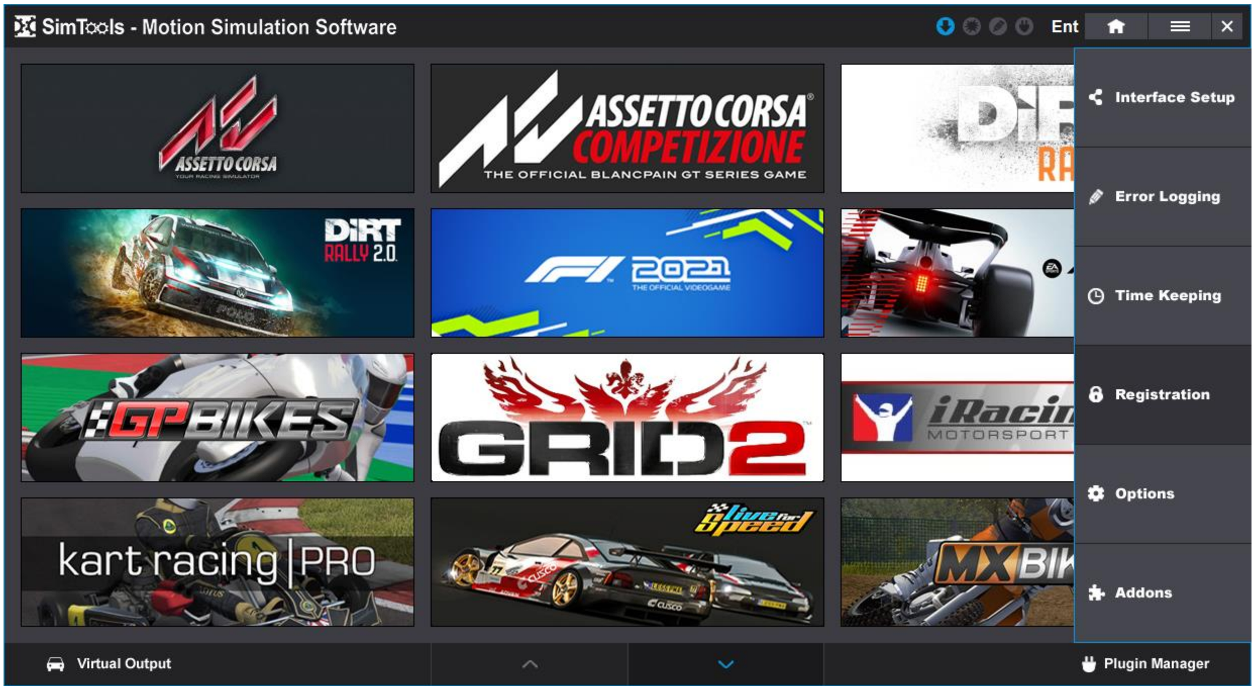
You can learn more about the different SimTools licenses and prices at https://simtools.us/license/

Here is how to register SimTools v3.

1) Launch “SimTools v3”. You can find the default location by navigating to Start → All Programs → SimTools3 → SimTools v3.

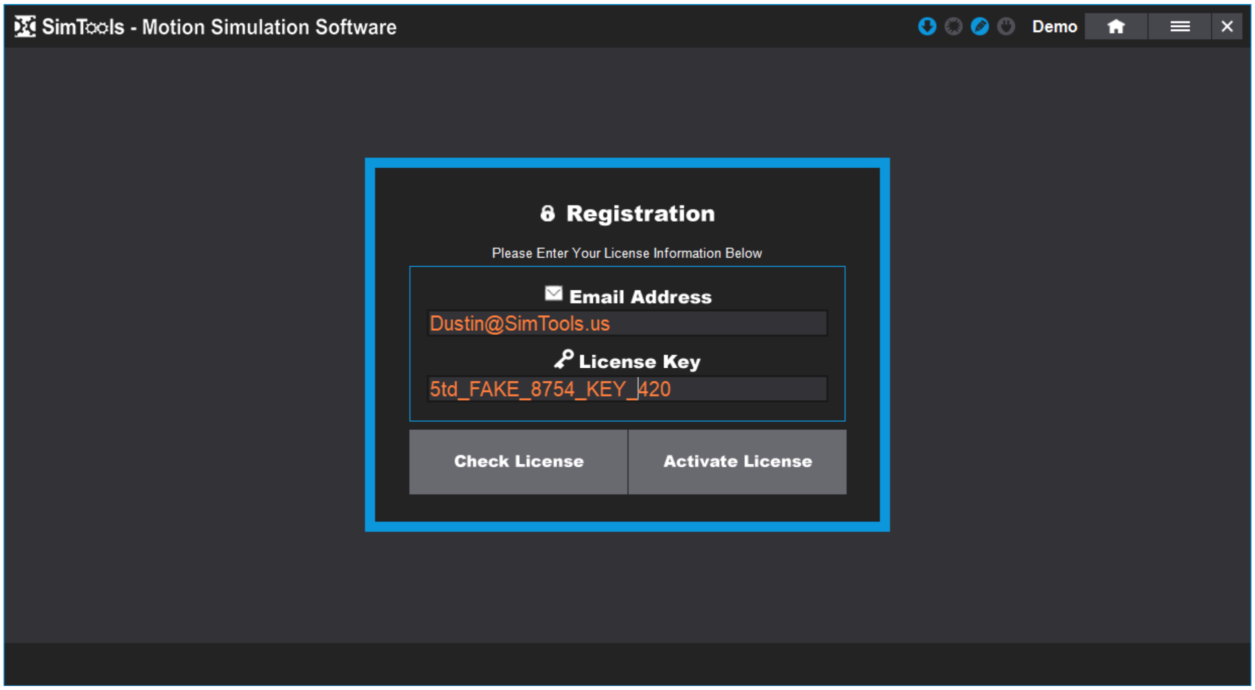


2) Click the hamburger (main menu) button on the top right of the GUI and select Registration from the Main Menu.



3) Enter the email address you purchased your license with into the Email Address text box.

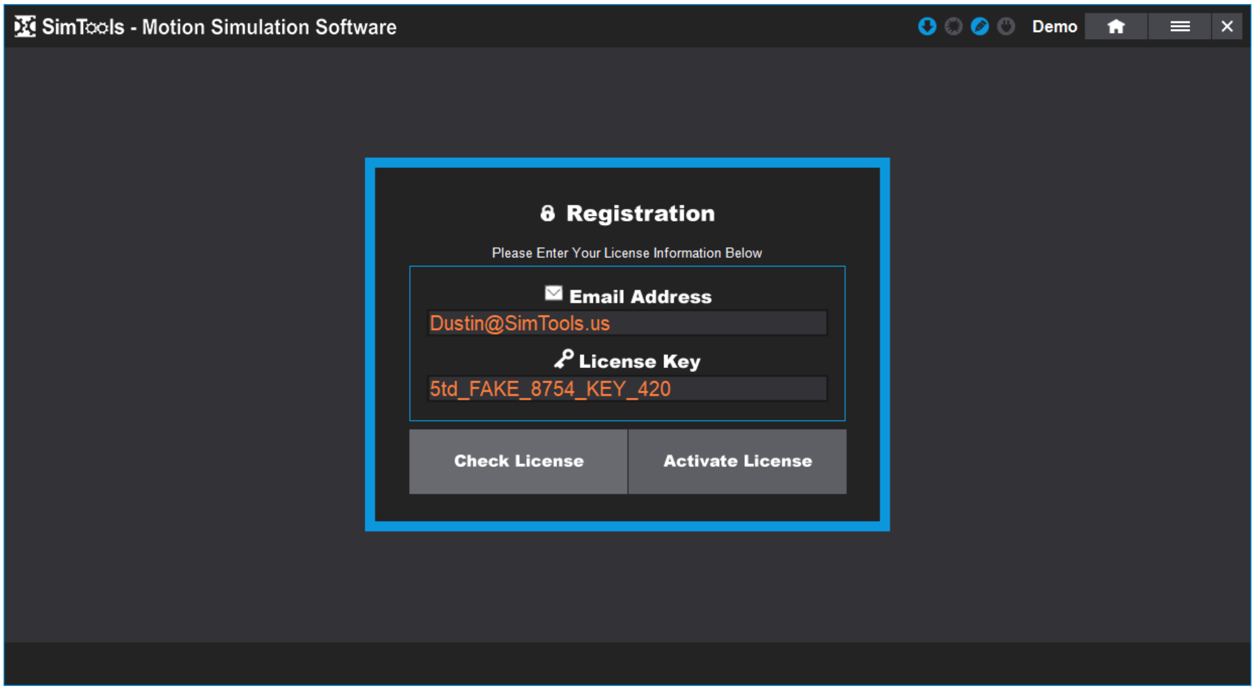
4) Enter the license you received into the License Key text box.


SimTools - Motion Simulation Software
Demo
Registration
Please Enter Your License Information Below
Check License
Activate License

Email Address: Dustin@SimTools.us

License Key: 5td_FAKE_8754_KEY_420

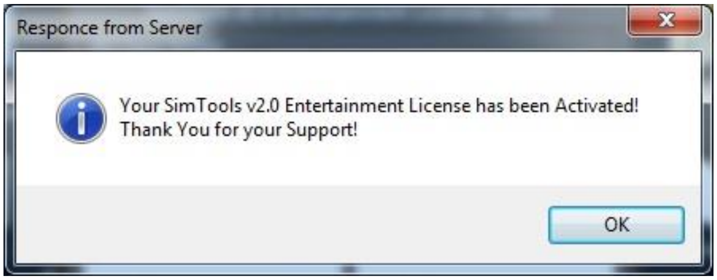
5) Click "Activate License" to activate your license.


SimTools - Motion Simulation Software
Demo
Registration
Please Enter Your License Information Below
Check License
Activate License

Email Address: Dustin@SimTools.us

License Key: 5td_FAKE_8754_KEY_420

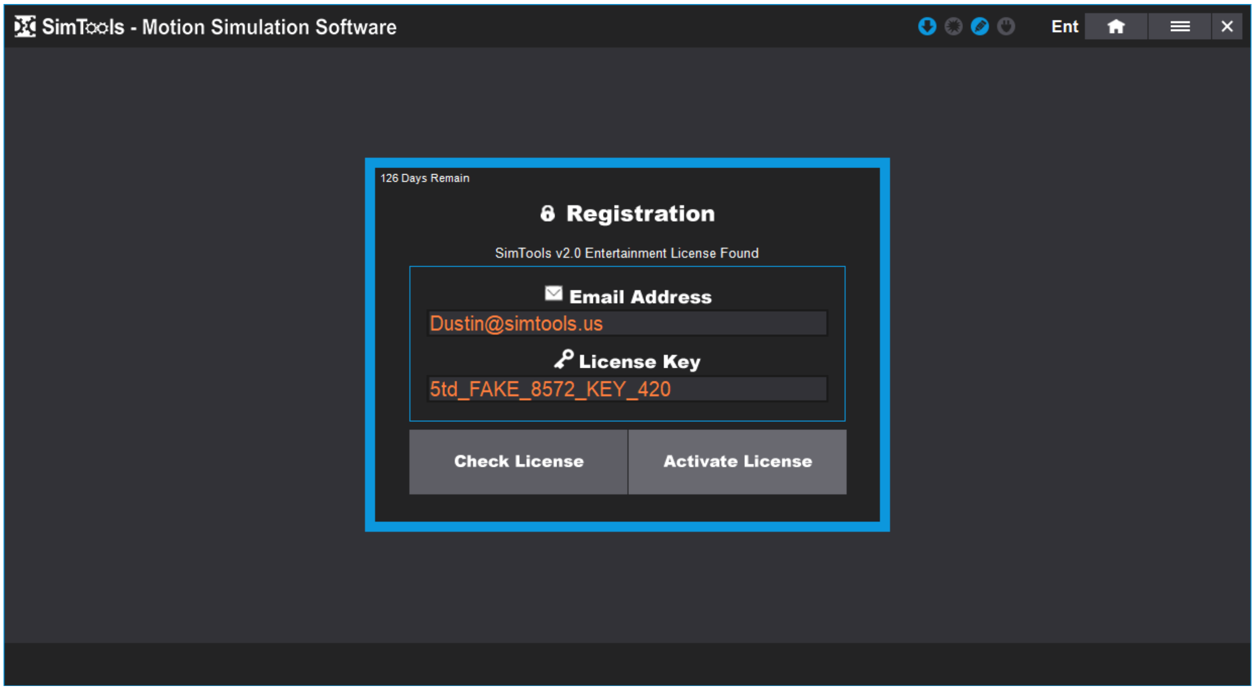
A message will appear confirming your license has been activated.



Responce from Server

Your SimTools v2.0 Entertainment License has been Activated!
Thank You for your Support!

You can also check to see if your license is valid by clicking “Check License”.



SimTools - Motion Simulation Software

126 Days Remain

Registration

SimTools v2.0 Entertainment License Found

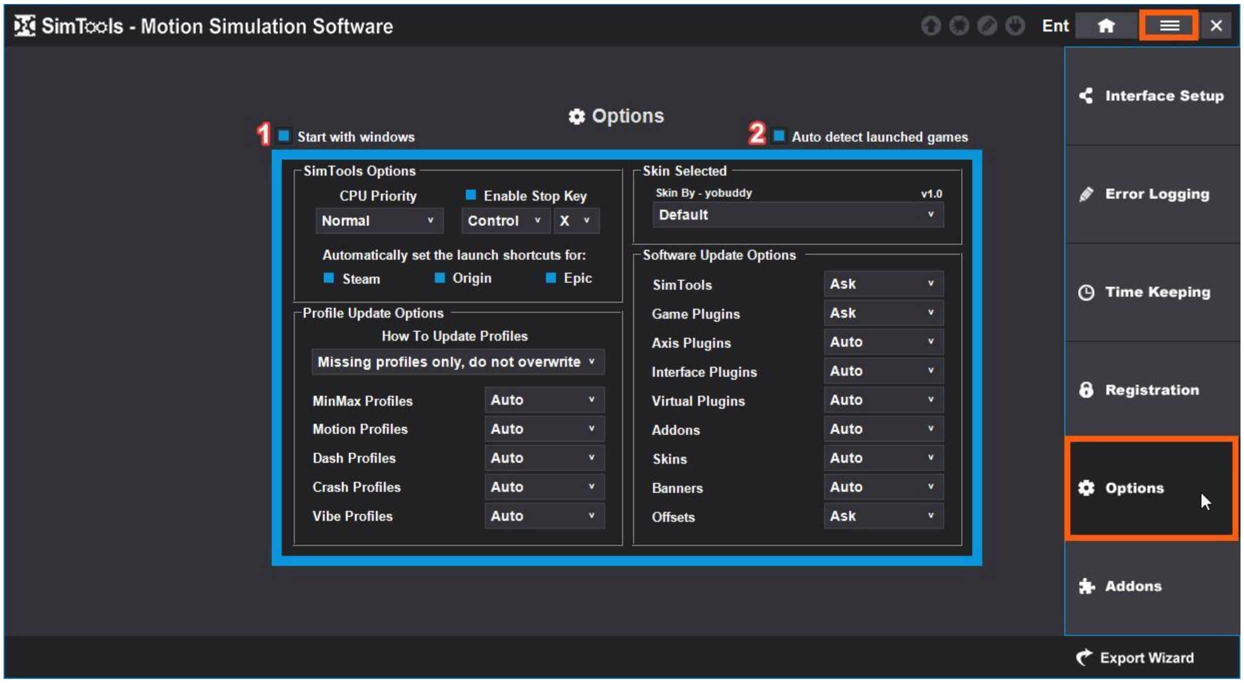
Email Address: Dustin@simtools.us

License Key: 5td_FAKE_8572_KEY_420

Back to Table of Contents

Options

The **Options** page allows the user full control of the updating options for the software including profiles and plugins. Select the Main Menu and then Options to access the page. Below you will find a detailed list of all of the options in SimTools v3.



Options

1 Start with windows

2 Auto detect launched games

SimTools Options

CPU Priority: Normal

Enable Stop Key: Control X

Automatically set the launch shortcuts for: Steam, Origin, Epic

Profile Update Options

How To Update Profiles: Missing profiles only, do not overwrite

MinMax Profiles	Auto
Motion Profiles	Auto
Dash Profiles	Auto
Crash Profiles	Auto
Vibe Profiles	Auto

Skin Selected

Skin By - yobuddy v1.0

Default

Software Update Options

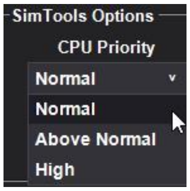
SimTools	Ask
Game Plugins	Ask
Axis Plugins	Auto
Interface Plugins	Auto
Virtual Plugins	Auto
Addons	Auto
Skins	Auto
Banners	Auto
Offsets	Ask

Reference the image directly above for the following:

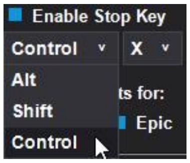
1 - Select **Start with windows** to start SimTools when Windows is started.

2 - Select **Auto detect launched games** to start SimTools when a game is launched.

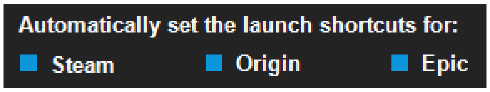
CPU Priority – This is the priority you want to assign SimTools for your CPU usage. You can set this to Normal, Above Normal or High.



Enable Stop Key – Select the Enable Stop Key option to enable a keyboard shortcut that will allow you to toggle the System On or Off. You can configure the Stop Key shortcut with Alt, Shift or Control and a key from the alphabet.



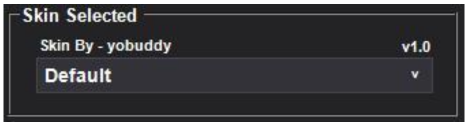
Automatically set the launch shortcuts for: Steam, Origin and Epic. If selected when a game is launched from SimTools, SimTools will try to launch the game from those default folder locations. You can always update where the game launches from by dragging and dropping the game's .exe launch executable over the game banner in SimTools. Then, the next time you launch the game in SimTools, it will launch from that location.



Automatically set the launch shortcuts for:

■ Steam ■ Origin ■ Epic

Skin Selected – This is the selected skin used for the SimTools GUI. This is a new and exciting feature! It will allow you to customize the look and feel of your SimTools GUI. We are still working on completing this section. Keep an eye out for updates.

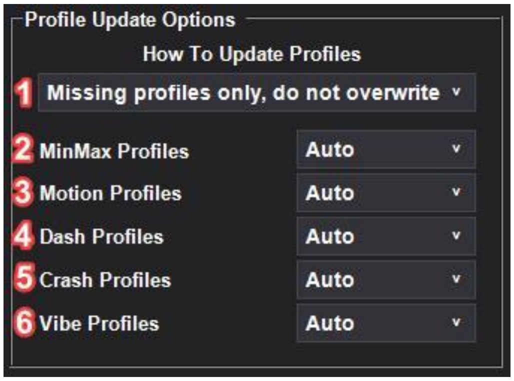


Skin Selected

Skin By - yobuddy v1.0

Default ˅

Profile Update Options – These are the different profiles that can be updated and you can select how they will update. Auto, Ask or Never. **Auto** will update the profiles for a game when the plugin is updated. **Ask** will prompt a popup asking you if you want to update. **Never** will not update the profile when the plugin is updated.



Profile Update Options

How To Update Profiles

1 Missing profiles only, do not overwrite ˅

2 MinMax Profiles Auto ˅

3 Motion Profiles Auto ˅

4 Dash Profiles Auto ˅

5 Crash Profiles Auto ˅

6 Vibe Profiles Auto ˅

Reference the image directly above for the following:

1 - **How to Update Profiles** refers to how you want profiles updated. There are two options:

a) **Missing profiles only, do not overwrite –** This option will keep already created profiles and create missing profiles.

b) **Update all profiles, allow overwrite –** This will update all profiles overwriting current profiles.

2 - **MaxMin Profiles –** Configure how you want your Max/Min Profiles updated.

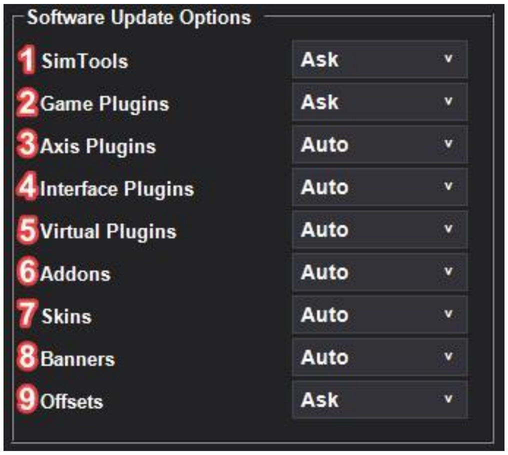
3 - **Motion Profiles –** Configure how you want your Motion Profiles updated.

4 - **Dash Profiles –** Configure how you want your Dash Profiles updated.

5 - **Crash Profiles –** Configure how you want your Crash Profiles updated.

6 - **Vibe Profiles –** Configure how you want your Vibe Profiles updated.

Software Update Options – Here you can set what you want to get updated when updates are pushed out. You can set them to Auto, Ask or Never. **Auto** will update the option when updates are pushed out without notice. **Ask** will prompt a popup when updates are available. **Never** will not update the option or notify you when updates are available. We suggest setting all of these to auto to ensure you receive all updates. Updates fix issues and increase performance.



Software Update Options

1 SimTools Ask

2 Game Plugins Ask

3 Axis Plugins Auto

4 Interface Plugins Auto

5 Virtual Plugins Auto

6 Addons Auto

7 Skins Auto

8 Banners Auto

9 Offsets Ask

Reference the image directly above for the following:

1 - **SimTools** is the SimTools software itself.

2 - **Game Plugins** are the game plugins you have installed.

3 - **Axis Plugins** are the axis plugins you have installed.

4 - **Interface Plugins** are the interface plugins you have installed.

5 - **Virtual Plugins** are the virtual plugins you have installed.

6 - **Addons** are the addon plugins you have installed.

7 - **Skins** are the skin plugins you have installed.

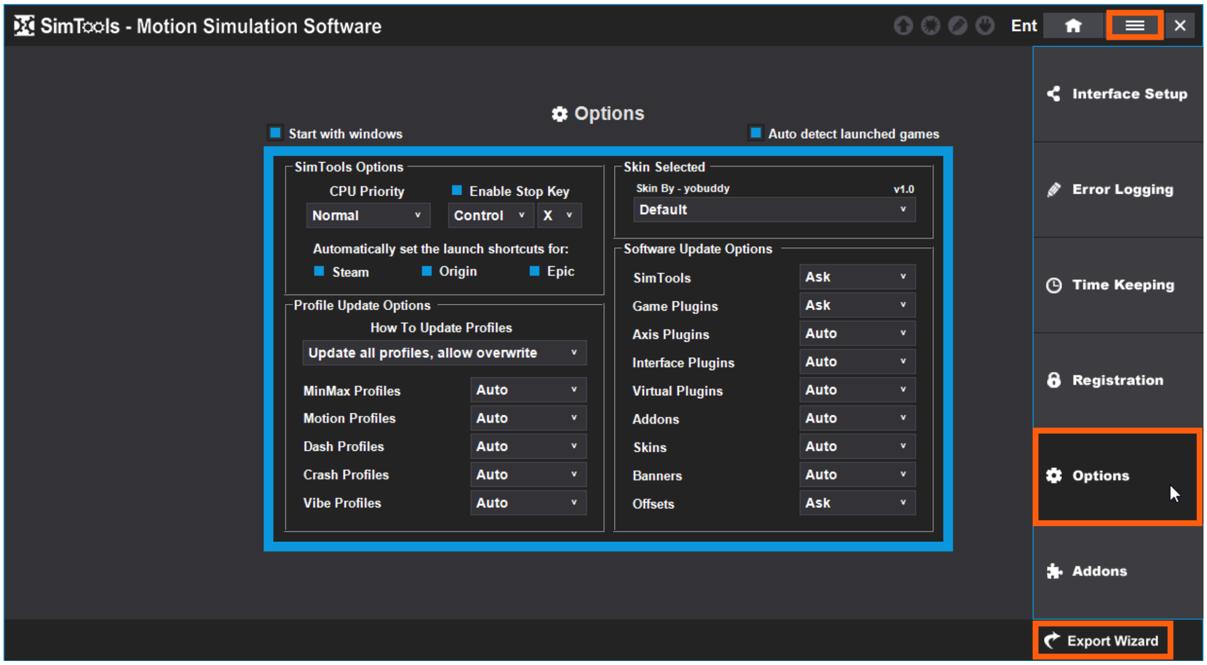
8 - **Banners** are the plugin banners you have installed.

9 - **Offsets** are the offsets files you have installed.

Back to Table of Contents

Export Wizard (Export a plugin)

Export Wizard – The Export Wizard will step you through the process of exporting a plugin. Each type of export will be listed below with any steps required. Plugins can be exported for the community, or a custom repo, or backup purposes, or to pass to others who have a similar setup as you. Configure the plugin you want to export and then navigate to Main Menu → Options → Export Wizard and follow the steps.



Options

■ Start with windows

■ Auto detect launched games

SimTools Options

CPU Priority: Normal

■ Enable Stop Key: Control X

Automatically set the launch shortcuts for: ■ Steam ■ Origin ■ Epic

Profile Update Options

How To Update Profiles: Update all profiles, allow overwrite

MinMax Profiles	Auto
Motion Profiles	Auto
Dash Profiles	Auto
Crash Profiles	Auto
Vibe Profiles	Auto

Skin Selected

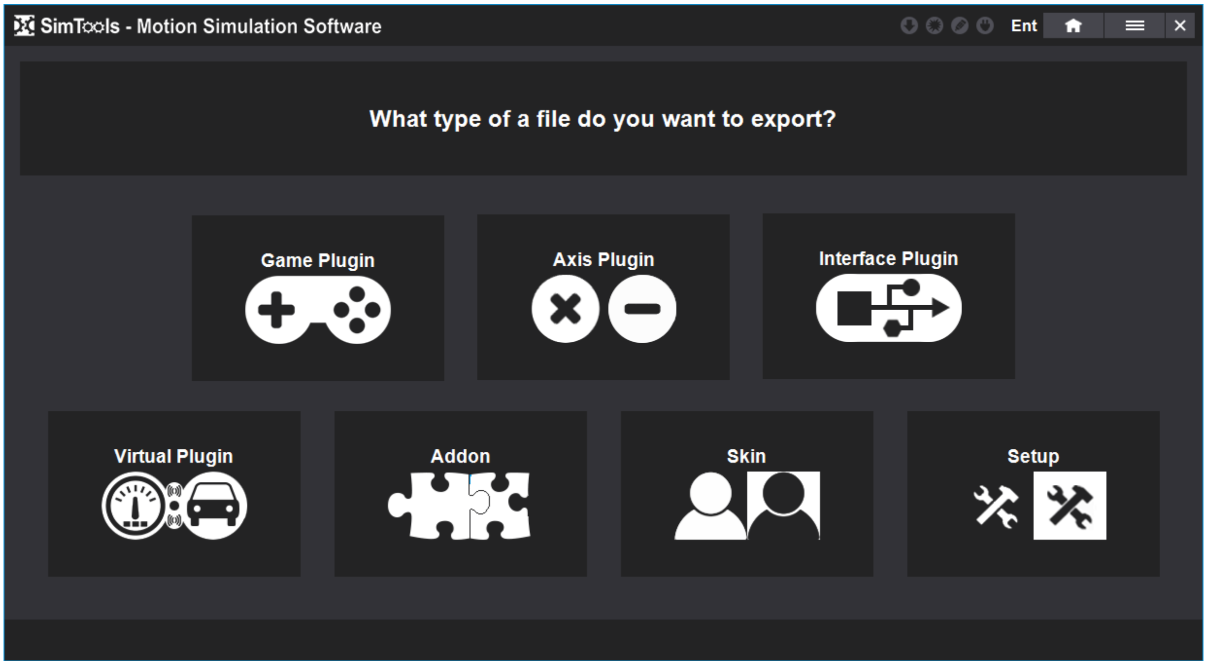
Skin By - yobuddy v1.0

Default

Software Update Options

SimTools	Ask
Game Plugins	Ask
Axis Plugins	Auto
Interface Plugins	Auto
Virtual Plugins	Auto
Addons	Auto
Skins	Auto
Banners	Auto
Offsets	Ask

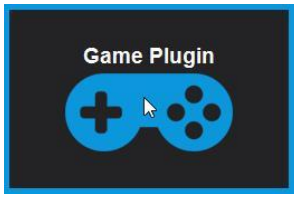
Select the plugin you want to export.



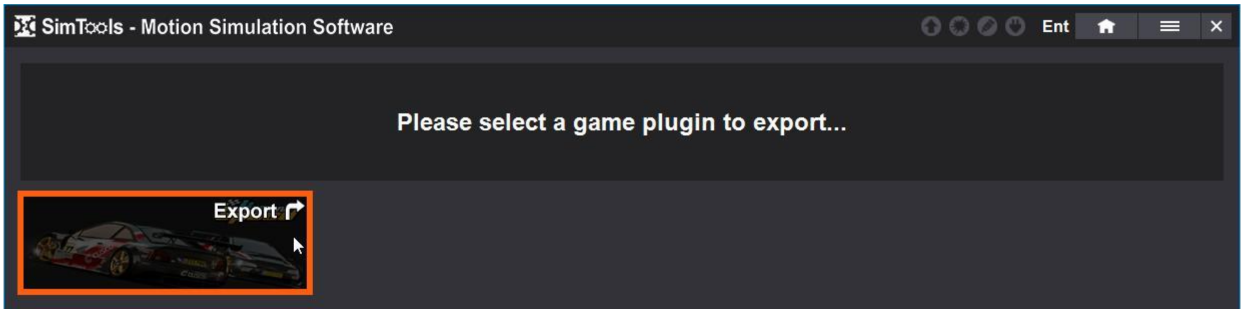
What type of a file do you want to export?

Game Plugin – The game plugin can be exported with configurations as a Community Game Plugin or a Custom Game Plugin. To export a game plugin, you need to have the game plugin you want to export installed. It is a good idea to set up the Max/Min numbers so that the plugin will receive data once installed. If both the max and min values are at zero for an axis, you will not get movement from your simulator for that axis.

1) Select Game Plugin from the export wizard.

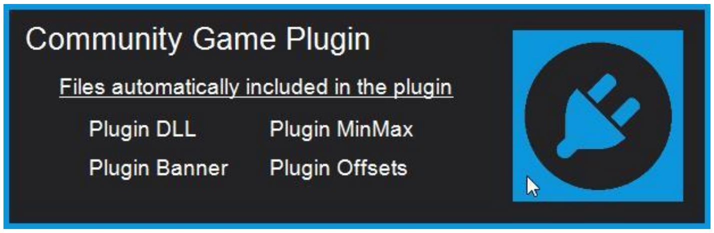


2) Select the game plugin you want to export.



Please select a game plugin to export...

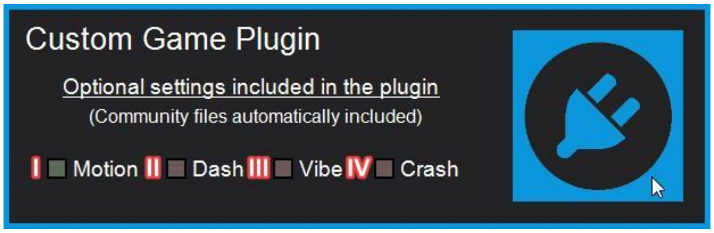
3) Select the type of game plugin you want to export.
The **Community Game Plugin** is a game plugin that is created with the following files: #_Banner.jpg, #_GamePlugin.dll, #_MaxMin.zip, and #_Web.xml. If a #_Offsets.txt file is available, it will also be included. The # represents the plugin name or number depending on how it was created. This is the type of plugin you would load to the SimTools public repos PC or Console. This type of plugin is not specific to a simulator.



Files automatically included in the plugin

Plugin DLL
Plugin MinMax
Plugin Banner
Plugin Offsets

The **Custom Game Plugin** is a game plugin that is created for a specific simulator or simulator type. You can load a game plugin from the public repo or one you created and then configure the Axis Assignments, Max/Min Tunning, Crash Detection, Dash and Vibe. Once this is all configured, you can select what you want to export.



Custom Game Plugin

Optional settings included in the plugin

(Community files automatically included)

I □ Motion II □ Dash III □ Vibe IV □ Crash

Reference the images directly above for the following:

I - **Motion –** Select Motion if you configured Axis Assignments and Max/Min Tunning for this plugin. Your Motion settings will be copied to the exported plugin.

II - **Dash –** Select Dash if you configured Dash for this plugin. Your Dash settings will be copied to the exported plugin.

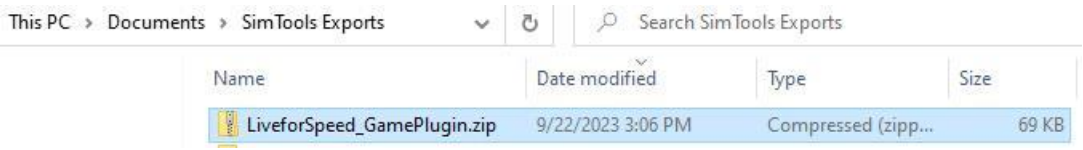
III - **Vibe –** Select Vibe if you configured Vibe for this plugin. Your Vibe settings will be copied to the exported plugin.

IV - **Crash –** Select Crash if you configured Crash Detection for this plugin. Your Crash Detection settings will be copied to the exported plugin.

The Custom Game Plugin can be used for companies or sim builders who want to fine tune game plugins for their simulators and then provide them to their users. If the custom plugin was exported from SimTools, then it can be uploaded to our website and shared to your users if you have a **Repository**. If your Custom Game Plugin was created from one of the SimTools Community Plugins and is uploaded to our website and there is an update to the public Community Game Plugin you created this from, then your plugin will also get updated if you have the option selected. This will keep your custom plugin up to date with any updates, but also keep your customizations intact.

The Custom Game Plugin can also be used for backup purposes. You can configure a game to your liking and then export a custom game plugin and you will have a backup of your configurations.

4) Locate your exported plugin. The default location for SimTools Exports is in your Documents folder in a folder called SimTools Exports as seen in the image below.



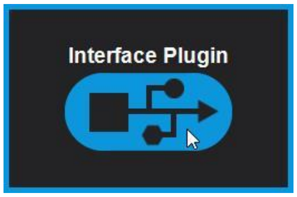
This PC › Documents › SimTools Exports

Search SimTools Exports

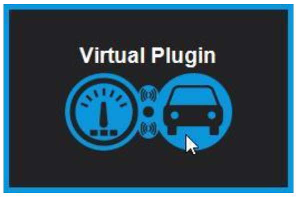
Name	Date modified	Type	Size
LiveforSpeed_GamePlugin.zip	9/22/2023 3:06 PM	Compressed (zipp...	69 KB

Axis Plugin – The Axis Plugin can be exported as is. No configurations will be saved when you export an Axis Plugin.

Interface Plugin – The Interface Plugin can be exported as is. No configurations will be saved when you export an Interface Plugin.



Virtual Plugin – The Virtual Plugin can be exported as is. No configurations will be saved when you export a Virtual Plugin.



Addon Plugin – The Addon Plugin can be exported as is. No configurations will be saved when you export an Addon Plugin.

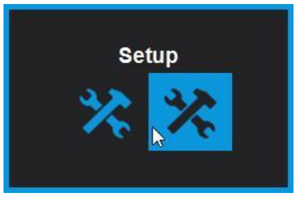
Skin Plugin – The Skin Plugin allows you to load a custom version of how SimTools looks. With SimTools v3, you can customize images, colors and text and then export a Skin Plugin that you can hand to someone else. When they install your custom Skin Plugin, the look and feel of SimTools will update to whatever you created. This is still in the build out phase, but when done, you will be able to create a fully customized looking SimTools.

Setup Plugin – The Setup Plugin is designed to be a complete setup for a simulator. If you install a Setup Plugin, then SimTools will install the required plugins and configure everything that was exported. After installation, the user should only need to install a game plugin and play.

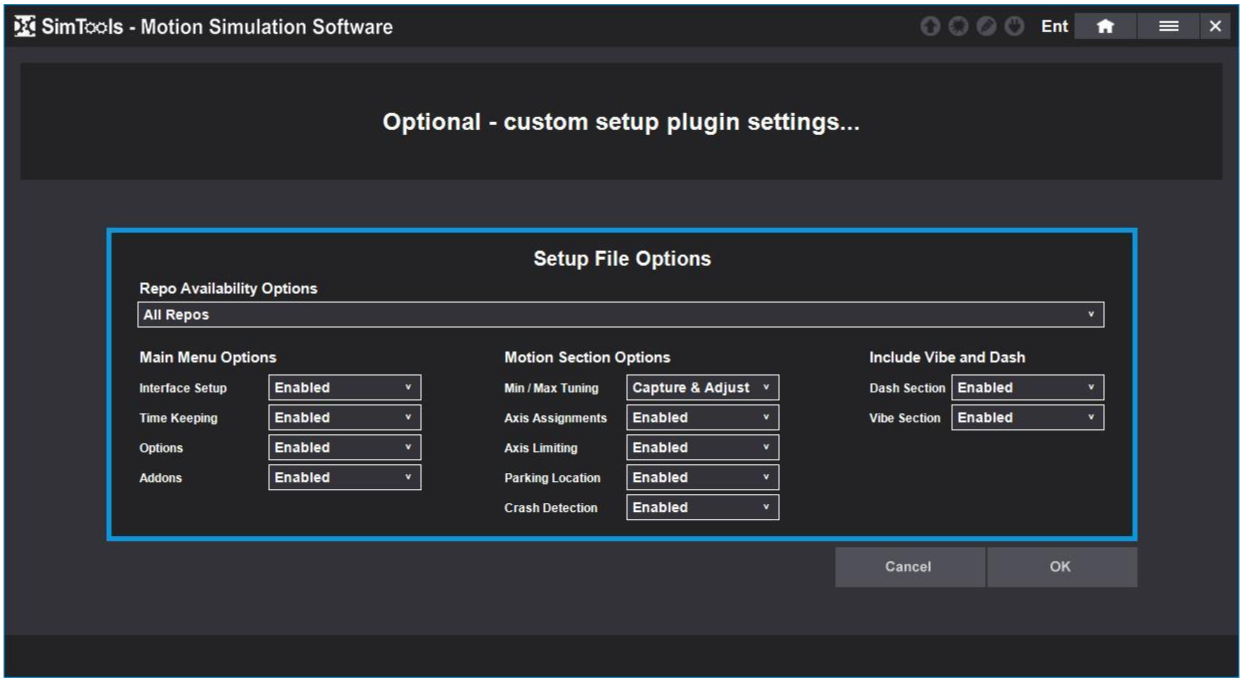
To create a Setup Plugin, you will want to install all the plugins required to get your simulator working. You will want to setup the simulator and fine tune it for the best ride. You will install an Axis Plugin, Interface Plugin and a Game Plugin, so you can configure Axis Assignments and any other motion setting you want exported. You can also include Virtual, Addon and Skin Plugins. These will all get loaded with the Setup Plugin. You can include Vibe and Dash configurations too.

There are Global Axis, Global Dash and Global Vibe Profiles that you can save to the Setup Plugin. After you install a game plugin, you can configure Dash or Vibe for that game and Save a Global Dash or Global Vibe Profile. There are three Global Axis Profiles: Air, Land and Sea. You can install a driving game plugin and save a Global Land Axis Profile. You can install a flying game plugin and save a Global Air Profile. You can install a boating game plugin and save a Global Sea Profile.

There are three Axis Assignments for each game plugin (a), (b) and (c) Axis Assignments. They each have a Global Profile that you can save. Those are specific to the Axis Assignment that they are saved from. This means that if you save a Global Profile for (a) Axis Assignments, then it will only be loaded for (a). You will need to configure and save one for (b) and/or (c) if you want those to have a Global Profile. This will all be saved to the Setup Plugin when exported.
The Global Profiles become the starting point for configurations when new game plugins are installed. This means that you should be able to install a new game plugin and have all of the saved Global Profiles loaded when installation is complete.



Once you click the Setup Plugin export button above, you will be presented with the Setup File Options page below. This is a list of options that you can configure for your Setup Plugin that allows you to control how the user will be able to interact with SimTools.



Optional - custom setup plugin settings...

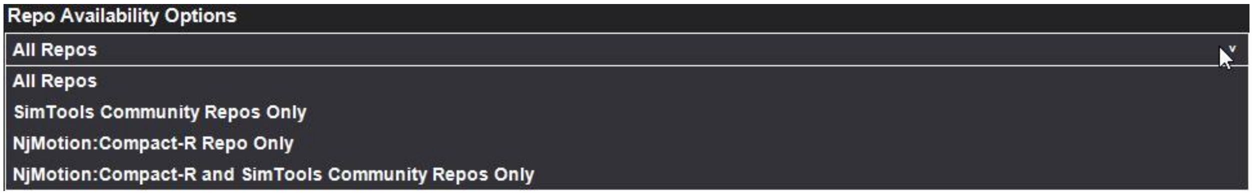
Setup File Options

Repo Availability Options: All Repos

Main Menu Options		Motion Section Options		Include Vibe and Dash	
Interface Setup	Enabled	Min / Max Tuning	Capture & Adjust	Dash Section	Enabled
Time Keeping	Enabled	Axis Assignments	Enabled	Vibe Section	Enabled
Options	Enabled	Axis Limiting	Enabled		
Addons	Enabled	Parking Location	Enabled		
		Crash Detection	Enabled		

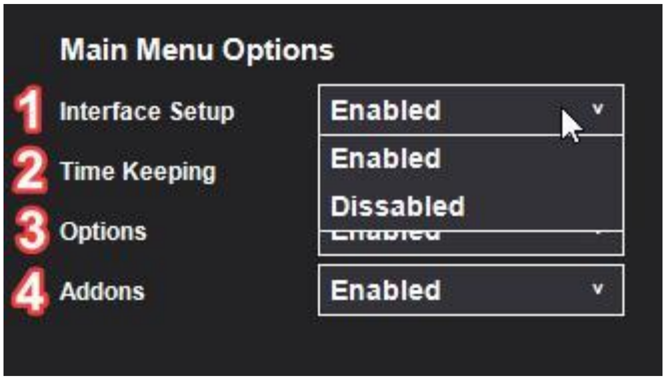
If you are configuring a Setup Plugin for a specific repository, then you will want to make sure you have that repo selected in the Plugin Manager prior to exporting the setup plugin. This will allow you to configure what repositories are available for the user when they enter the Plugin Manager. Below is a description of the options.

Repo Availability Options – We are using NjMotions's Compact-R repo as an example. You can see in the image below that you can select to have All Repos available, SimTools Community Repos Only, NjMotioin:Compact-R Repo Only, or NjMotion:Compact-R and SimTools Community Repos Only. This gives you control over which repositories will be available for the user to select from in the Plugin Manager.



Repo Availability Options
All Repos
All Repos
SimTools Community Repos Only
NjMotion:Compact-R Repo Only
NjMotion:Compact-R and SimTools Community Repos Only

Main Menu Options – This section lets you enable or disable access to main menu options in SimTools.



Main Menu Options

1 Interface Setup: Enabled

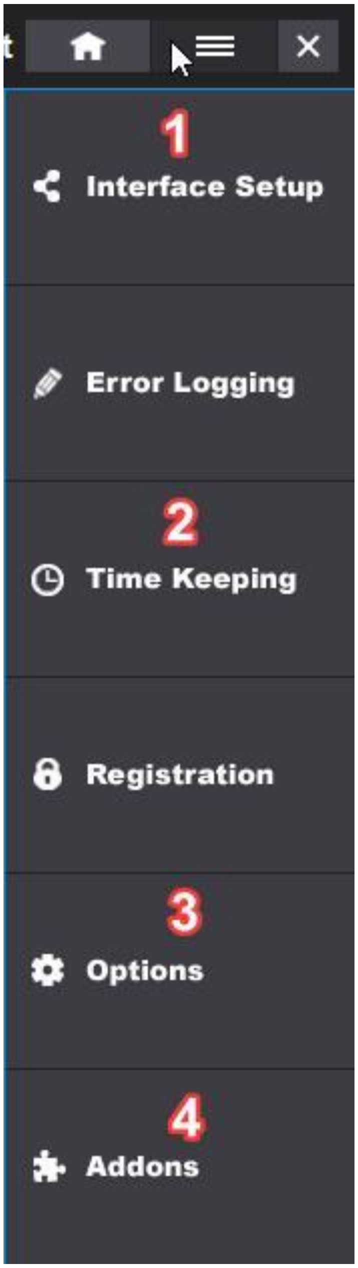
Enabled

Dissabled

2 Time Keeping

3 Options

4 Addons: Enabled



Reference the images directly above for the following:

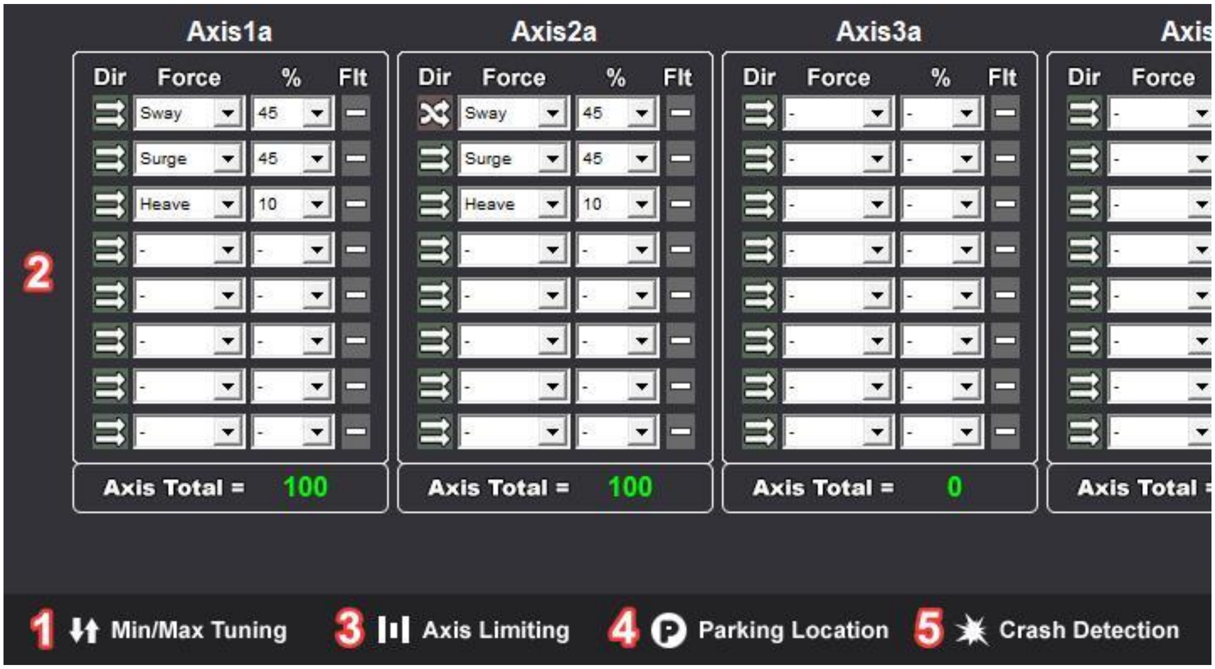
1 - **Interface Setup** if set to Enabled, will allow the user to access Interface Setup and adjust configurations. If set to Disabled, then Interface Setup will not be available.

2 - **Time Keeping** if set to Enabled, will allow the user to access Time Keeping and adjust configurations. If set to Disabled, then Time Keeping will not be available.

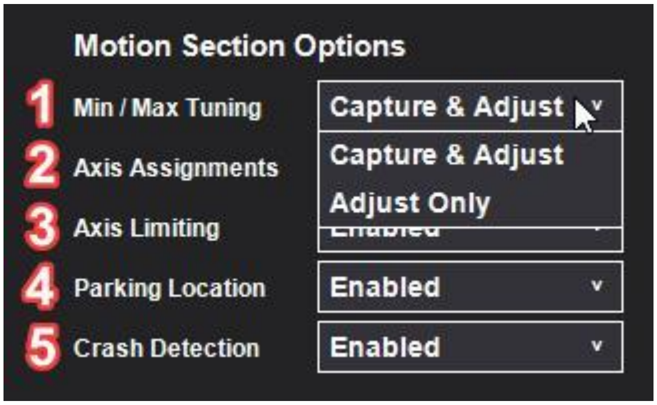
3 - **Options** if Enabled, will allow the user to access Options and adjust configurations. If Disabled, then Options will not be available.

4 - **Addons** if Enabled, will allow the user to access Addons and adjust configurations. If Disabled, then Addons will not be available.

Motion Section Options – This section lets you adjust what Motion Settings options are available.



Axis1a				Axis2a				Axis3a				Axis	
Dir	Force	%	Flt	Dir	Force	%	Flt	Dir	Force	%	Flt	Dir	Force
	Sway	45			Sway	45			-	-			-
	Surge	45			Surge	45			-	-			-
	Heave	10			Heave	10			-	-			-
	-	-			-	-			-	-			-
	-	-			-	-			-	-			-
	-	-			-	-			-	-			-
	-	-			-	-			-	-			-
	-	-			-	-			-	-			-
Axis Total =	100			Axis Total =	100			Axis Total =	0			Axis Total	



Motion Section Options

1 Min / Max Tuning: Capture & Adjust

2 Axis Assignments

3 Axis Limiting: Enabled

4 Parking Location: Enabled

5 Crash Detection: Enabled

Reference the images directly above for the following:

1 - **Max/Min Tuning** if set to Capture & Adjust, then the user will be able to capture and adjust Max/Min Settings like normal. If set to Adjust Only, then the user will only be able to make small adjustments with the slider bars.

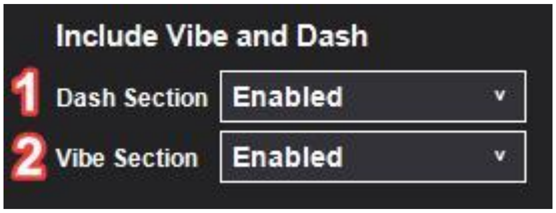
2 - **Axis Assignments** if set to Enabled, then the user will be able to adjust Axis Assignments like normal. If set to Disabled, then the user will not be able to adjust Axis Assignments.

3 - **Axis Limiting** if set to Enabled, then the user will be able to adjust Axis Limiting like normal. If set to Disabled, then the user will not be able to adjust Axis Limiting.

4 - **Parking Location** if set to Enabled, then the user will be able to adjust Parking Location like normal. If set to Disabled, then the user will not be able to adjust Parking Location.

5 - **Crash Detection** if set to Enabled, then the user will be able to adjust Crash Detection like normal. If set to Disabled, then the user will not be able to adjust Crash Detection.

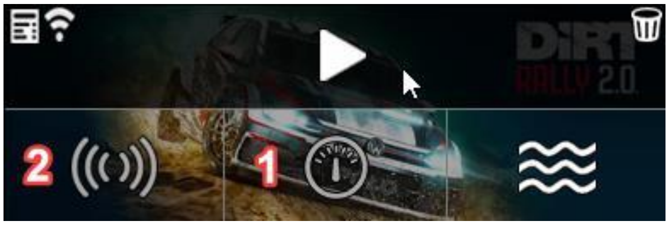
Include Vibe and Dash – This section lets you enable or disable Vibe and Dash.



Include Vibe and Dash

1 Dash Section: Enabled

2 Vibe Section: Enabled



Reference the images directly above for the following:

1 - **Dash Section** if set to Enabled, then the user will be able to add or adjust Dash items. If set to Disabled, then the user will not be able to use Dash.

2 - **Vibe Section** if set to Enabled, then the user will be able to add or adjust Vibe items. If set to Disabled, then the user will not be able to use Vibe.

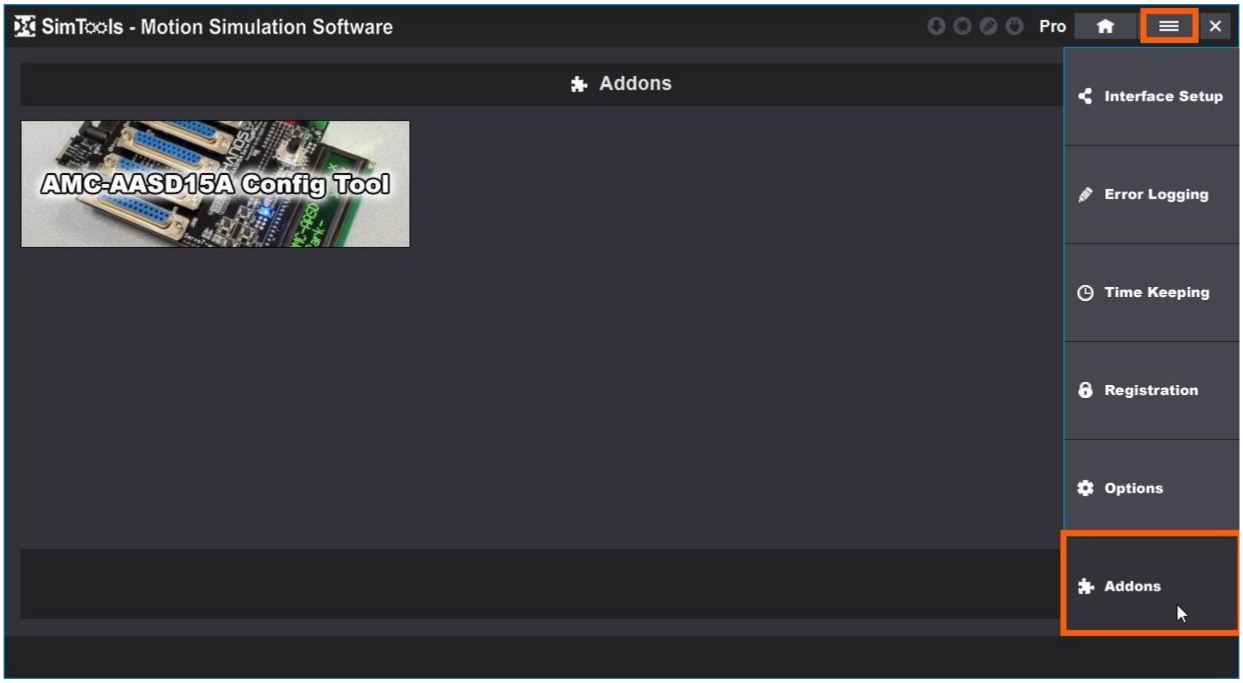
Back to Table of Contents

Addons

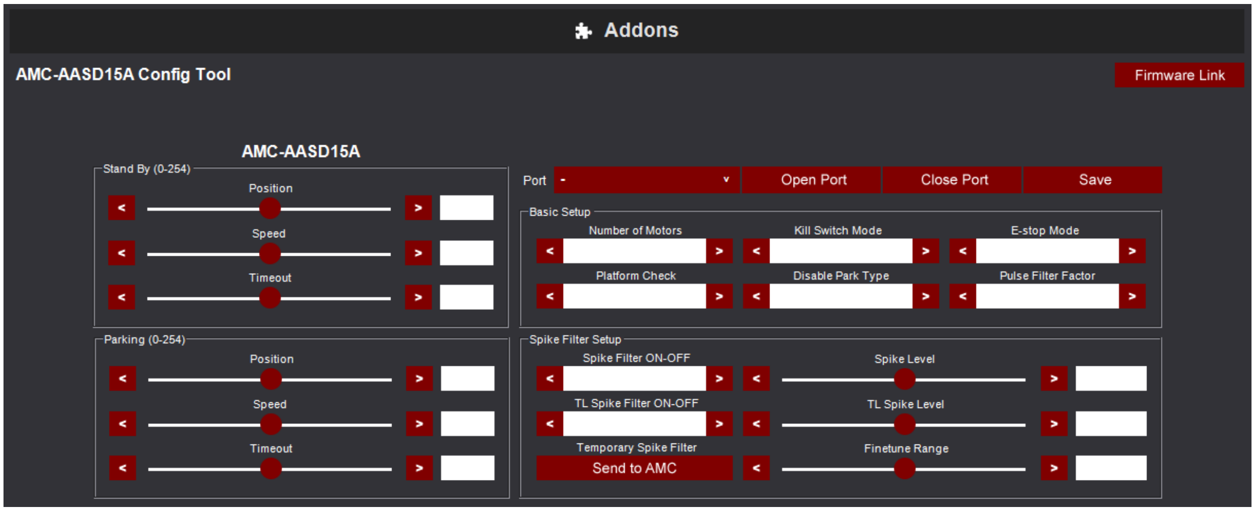
The SimTools **Addons** section allows separate apps and tools to be integrated into SimTools in a seamless way. The addon section enables you to extend SimTools functionality to things you might want to support in the future.

The only addons API currently in use is a basic Tools Addon API that allows for integration of Motion Interface tools. But, more addon APIs will be created and added in the future to add new functionality like Remote Profiling.

You can access the Addons section by navigating to the Main Menu and selecting Addons.



Here is a screenshot of the AMC AASD15A Interface tool for configuring the hardware.



Addons will have different functionalities, so there are no general directions
Please see the addon plugin’s **Data Page** for more information if you are interested in installing one.

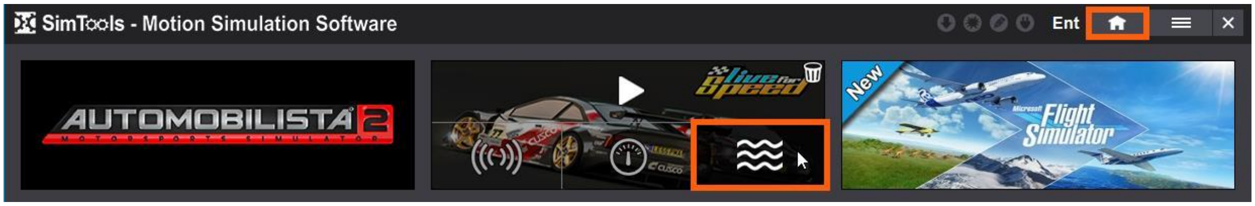
If you have a great Idea for an addon, and there is no addon API that can currently support it, please use our **Contact Us** form to make a request and we will see what we can do!

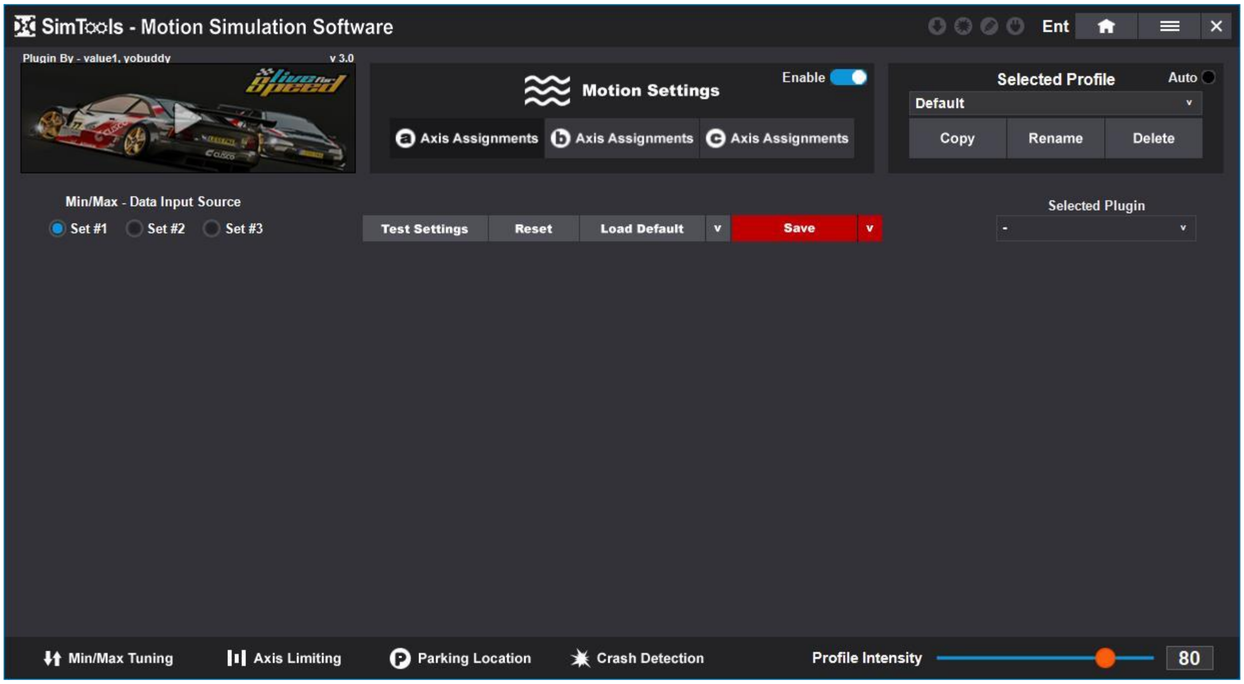
Back to Table of Contents

Motion Configuration

Motion Configuration takes place in the **Motion Settings** of game plugins for v3. You need to Install a Game Plugin before you can configure any motion.

You access the Motion Settings by clicking on the motion icon in the bottom right corner of a game plugin banner from your home screen in SimTools v3.



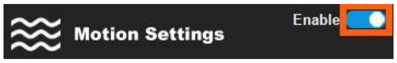


Selected Profile: Default

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Profile Intensity 80

Enable – Toggle this switch to enable or disable Motion Settings for the selected Game Plugin.

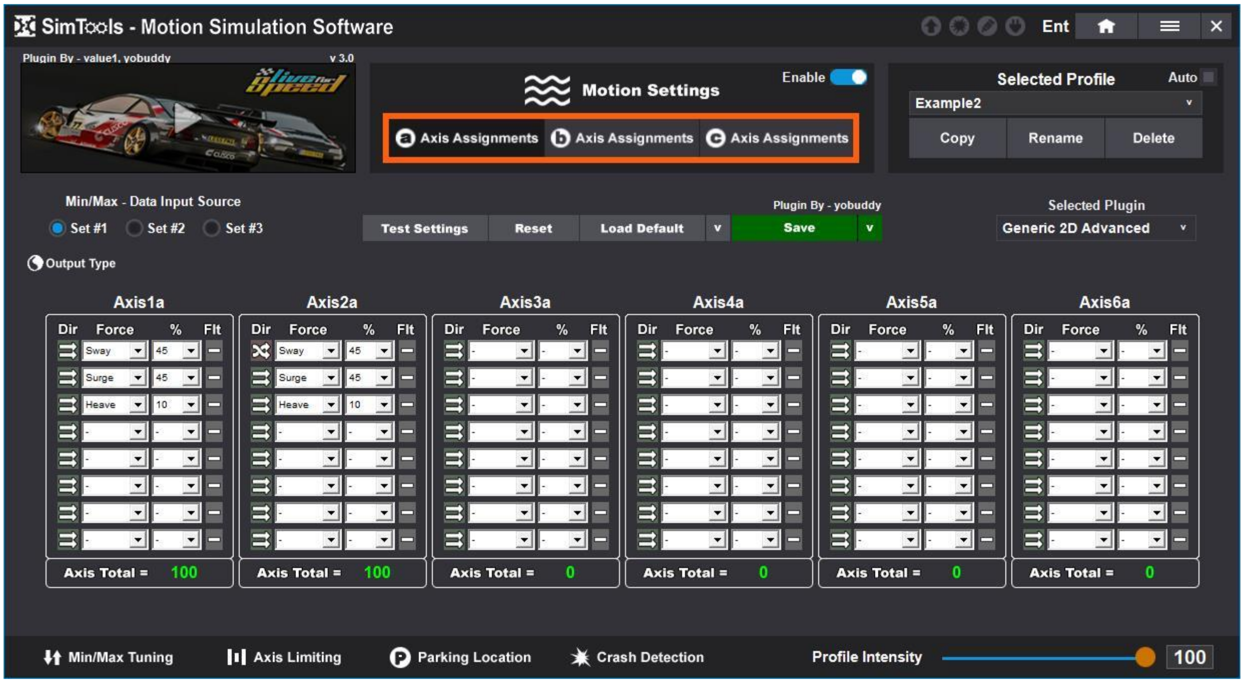


Back to Table of Contents

Axis Assignments

Axis Assignments allow you to configure the output from any game into logical motion for your simulator. There are three different sets of Axis Assignments that can be configured into logical motion for your simulator. (a) Axis assignments, (b) Axis

Assignments, and (c) Axis Assignments. There are a total of 18 axes that can be configured as needed. **Note:** Most simulators will only use (a) Axis Assignments.



Selected Profile: Example2

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

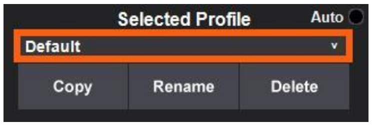
Plugin By - yobuddy

Selected Plugin: Generic 2D Advanced

	Force	%
Axis1a	Sway	45
	Surge	45
	Heave	10
	Axis Total =	100
Axis2a	Sway	45
	Surge	45
	Heave	10
	Axis Total =	100
Axis3a	Axis Total =	0
Axis4a	Axis Total =	0
Axis5a	Axis Total =	0
Axis6a	Axis Total =	0

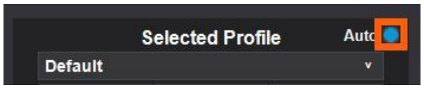
Profile Intensity: 100

Selected Profile – This is the currently selected profile. Default is the default profile for that game plugin. Any configurations saved in Motion Settings will be saved to the profile that is selected here. Selecting a profile from this list will load that profile's configurations.



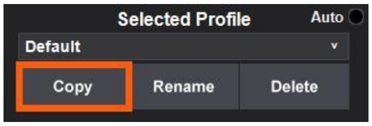
Default

Auto – Check this to auto select profiles you have configured for a game. If you have different profiles for different vehicles created for a game, this will load them in SimTools when you change vehicles in the game. **Warning:** You need to configure profiles before you select this, otherwise there are no profiles to auto select.

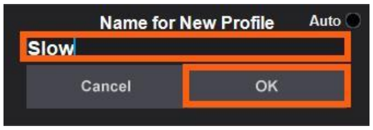


Default

Copy – This will create a copy of the selected profile and allow you to save it as a new profile.

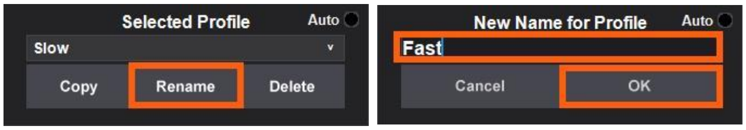


Default

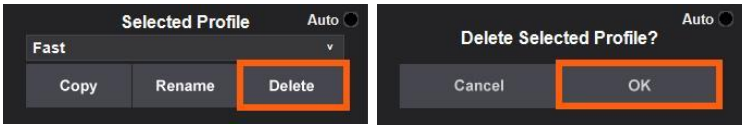


Slow

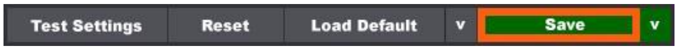
Rename – Rename the selected profile.



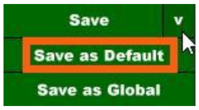
Delete – Delete the selected profile.



Save – Click Save to save your Axis Assignments. This will save to the select profile. This button will be red until you fill out everything that is required for that plugin.



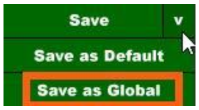
Save as Default – This will save your Axis Assignments to the Default Profile for that game.



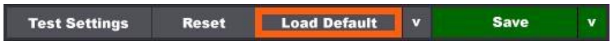
Save as Global – This will save your Axis Assignments to the Global Profile. There are three different Global profiles: Air, Land and Sea. The Air Global Profile is only for flying games. The Land Profile is only for driving games. The Sea Global Profile is only for water craft games.

There are three Axis Assignments for each game plugin (a), (b) and (c) Axis Assignments. They each have a Global Profile that you can save. Those are specific to the Axis Assignment that they are saved from. This means that if you save a Global Profile for (a) Axis Assignments, then it will only be loaded for (a). You will need to configure and save one for (b) and/or (c) if you want those to have a Global Profile.

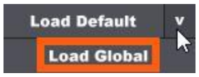
After a Global Profile is saved, those configurations will be loaded as a starting point for new installed game plugins in the Global Profile's category.



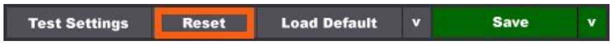
Load Default – This will load the Default Profile for the game.



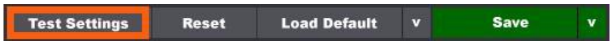
Load Global – This will load the Global Profile for the game plugin's category Air, Land or Sea.

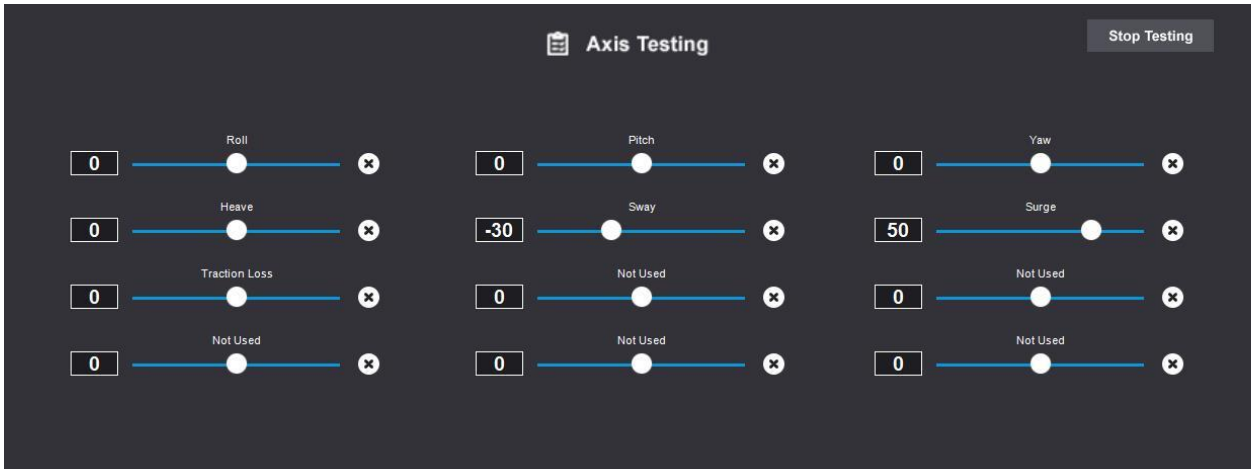


Reset – This will reset the values for the selected profile to the last saved values of that profile.



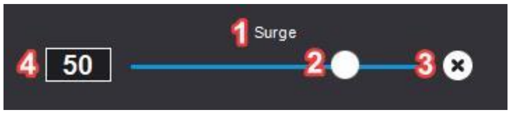
Test Settings – Test all of your configurations before you move on. This loads the Axis Testing page.





Roll 0
Pitch 0
Yaw 0
Heave 0
Sway -30
Surge 50
Traction Loss 0
Not Used 0
Not Used 0
Not Used 0
Not Used 0
Not Used 0

Axis Testing – You can test your configured axis assignments by moving the slider for that axis. Starting top left we have Roll, Pitch, Yaw, Heave, Sway, Surge, Traction Loss and the rest are Not Used in the image above. If they were used, they would have a name in them like the rest.



Surge 50

Reference the image directly above for the following:

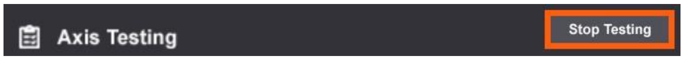
1 - **Name** of the axis.

2 - **Slider Adjuster** moves the axis.

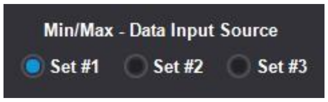
3 - **Reset** the slider to zero.

4 - The Slider Value as a **Percent**.

Stop Testing – Click this to stop testing and return to the Axis Assignments page.



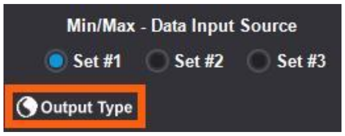
Max/Min – Data Input Source – There are three data input sources that you can configure in Max/Min Tunning. Select which set you want to use for the selected Axis Assignments: Set #1, Set #2 or Set #3. **Note:** Most people will only need to configure Set #1, which is the default.



Min/Max - Data Input Source

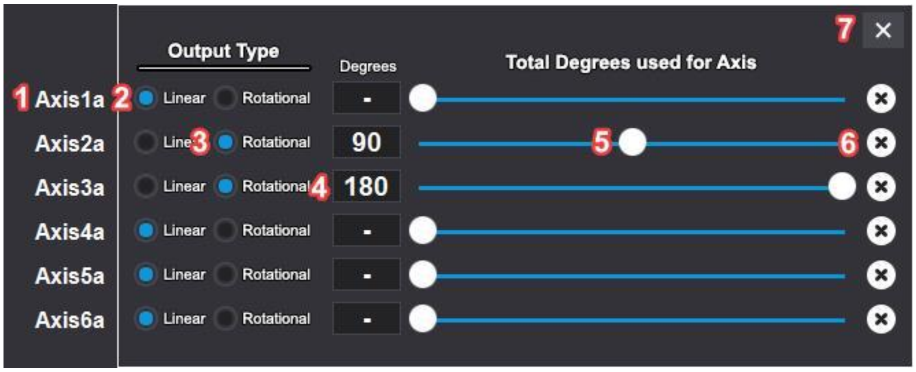
● Set #1 ○ Set #2 ○ Set #3

Output Type – Assign the type of output the axis requires. You can select between linear and rotational.



Min/Max - Data Input Source

● Set #1 ○ Set #2 ○ Set #3



	Output Type		Degrees	Total Degrees used for Axis
Axis1a	● Linear	○ Rotational	-	
Axis2a	○ Linear	● Rotational	90	
Axis3a	○ Linear	● Rotational	180	
Axis4a	● Linear	○ Rotational	-	
Axis5a	● Linear	○ Rotational	-	
Axis6a	● Linear	○ Rotational	-	

Reference the image directly above for the following:

1 - **Name** of the axis.

2 - **Linear Output** is for a motor arm that only goes out and back.

3 - **Rotational Output** is for a motor arm that rotates around an axis.

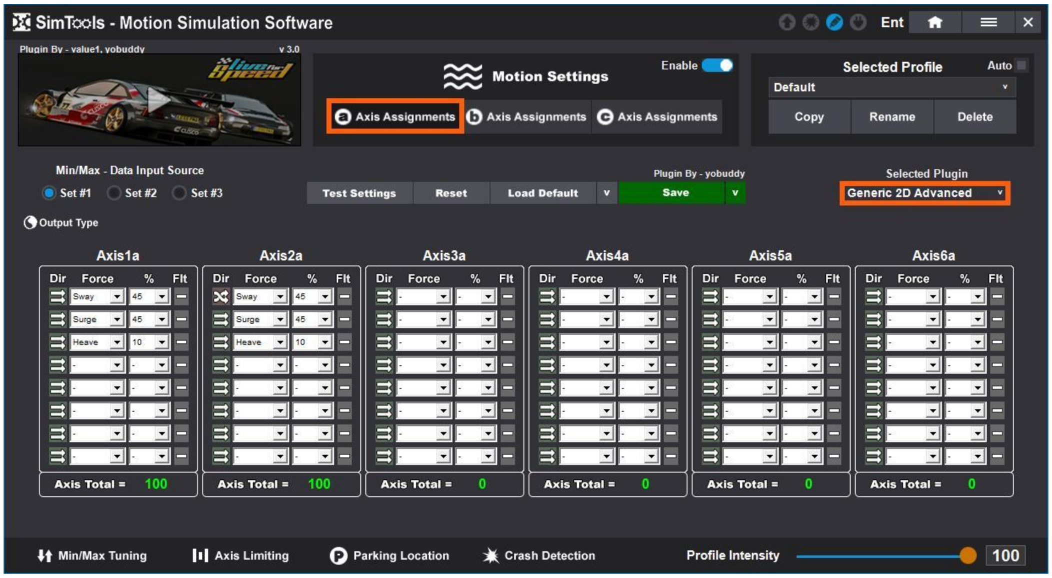
4 - **Degrees** are the number of degrees used for the axis. Only for Rotational.

5 - **Slider Adjuster** changes the total degrees used for the axis.

6 - **Reset** the slider to 180.

7 - **Exit** Output Type.

Selected Plugin – This is the Axis plugin you what to configure. You will not see Axis Assignments until you select a plugin from the Selected Plugin dropdown menu. Only installed Axis plugins will be displayed in the dropdown. If you do not see any in the list, you can Install One from the SimTools PC repo.



Selected Profile: Default

Selected Plugin: Generic 2D Advanced

Axis1a		Axis2a		Axis3a	Axis4a	Axis5a	Axis6a
Sway	45	Sway	45	-	-	-	-
Surge	45	Surge	45	-	-	-	-
Heave	10	Heave	10	-	-	-	-
Axis Total =	100	Axis Total =	100	Axis Total = 0	Axis Total = 0	Axis Total = 0	Axis Total = 0

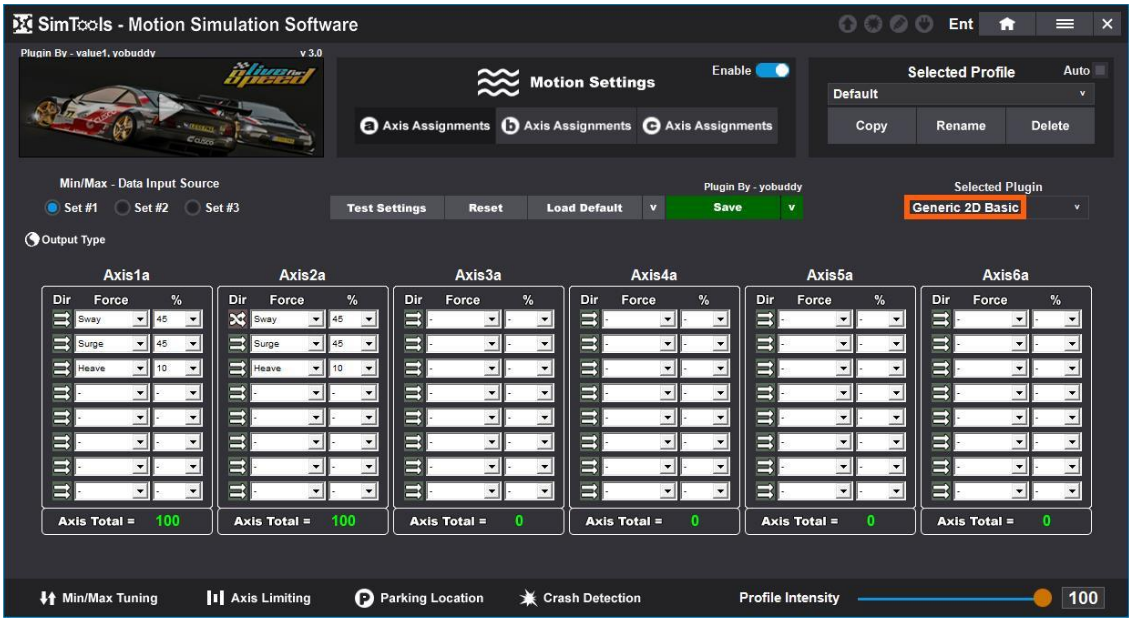
Profile Intensity: 100

Each axis plugin listed in this section builds upon itself. Generic 2D Standard includes all the functions of Generic 2D Basic, and Generic 2D Advanced includes all the functions of Generic 2D Standard. We will go through and explain what each setting does and show with examples how to configure each one.

Back to Table of Contents

Generic 2D Basic

The **Generic 2D Basic** axis plugin allows you to configure a combination of forces for each axis in order to produce sensible motion for your simulator. It is always a good idea to configure and Save a Global profile first, because these settings will be copied to any newly installed game plugin of the same type as a starting point.



Selected Profile: Default ☐ Auto

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

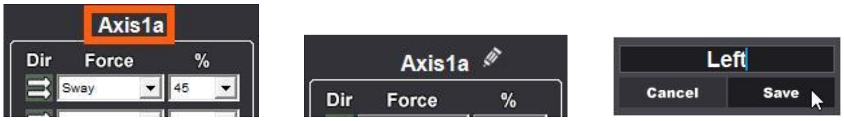
Plugin By - yobuddy

Selected Plugin: Generic 2D Basic

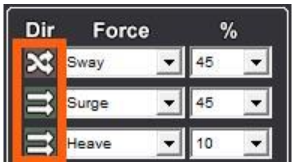
Axis1a			Axis2a			Axis3a			Axis4a			Axis5a			Axis6a		
Dir	Force	%	Dir	Force	%	Dir	Force	%	Dir	Force	%	Dir	Force	%	Dir	Force	%
⇉	Sway	45	⤮	Sway	45	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-
⇉	Surge	45	⇉	Surge	45	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-
⇉	Heave	10	⇉	Heave	10	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-
⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-
⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-
⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-
⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-
⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-	⇉	-	-
Axis Total =	100		Axis Total =	100		Axis Total =	0		Axis Total =	0		Axis Total =	0		Axis Total =	0	

Profile Intensity 100

Axis1a – This is the name of the axis. You can change it by hovering over it and double clicking when you see the edit pencil. Click “Save” when you are done.

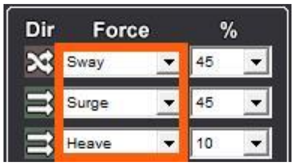


Dir – This is the direction the forces will be applied. Toggle this to change the direction of motion to the opposite direction for each DOF (degree of force).



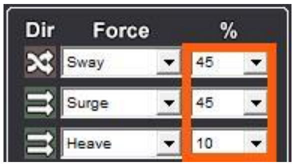
Dir	Force	%
⤮	Sway	45
⇉	Surge	45
⇉	Heave	10

Force – This is the source of the input for this DOF setting.



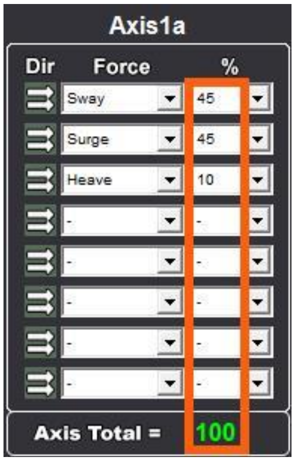
Dir	Force	%
⤮	Sway	45
⇉	Surge	45
⇉	Heave	10

% (Percent) – This is the amount of the selected force that will be combined into the final output for this axis.



Dir	Force	%
⤮	Sway	45
⇉	Surge	45
⇉	Heave	10

Axis Total – This is the total percentage of the axis being used.



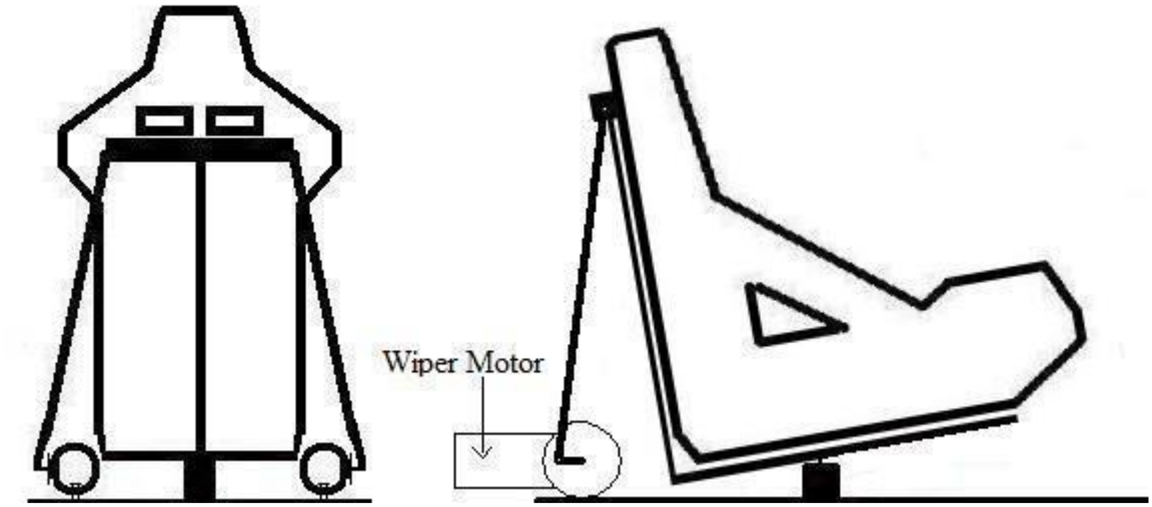
Axis1a

Dir	Force	%
⇉	Sway	45
⇉	Surge	45
⇉	Heave	10
⇉	-	-
⇉	-	-
⇉	-	-
⇉	-	-
⇉	-	-

Axis Total = 100

Example 1

The simulator below uses two motors to power the chair from the rear corners. It will provide for a 2 DOF simulator including roll (leaning side to side) and pitch (leaning front to back). Each motor gets assigned half of its total movement to roll and half of its total movement to pitch.



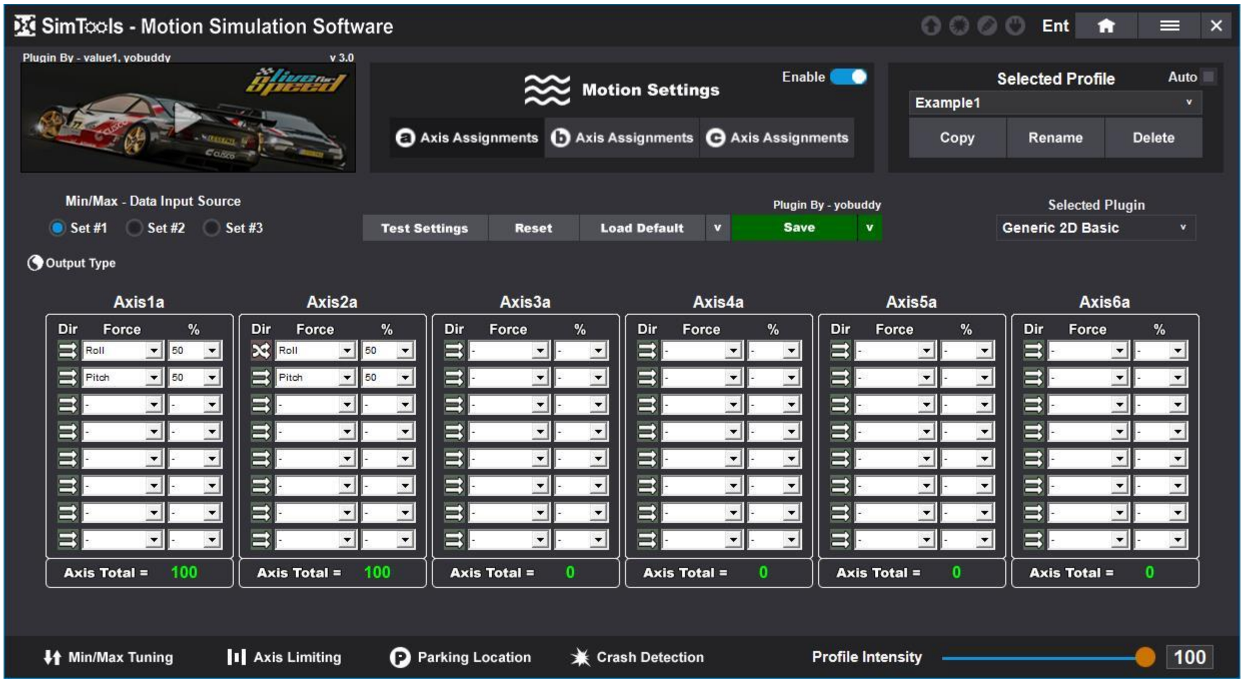
While the simulator itself can pitch and roll, we want to drive these actions from the G-Forces from a game. Therefore, we will drive the pitch of the simulator with the surge input from a game, and we will drive the roll of the simulator with the sway input from a game. Configuring the simulator this way will cause the simulator to lean back when stepping on the gas, and lean forward when braking. The simulator should also lean away from corners when you turn.

The picture below shows the axis assignment needed to move the example simulator pictured above.

Axis1a is assigned to Sway at 50% and Surge at 50%. Axis2a is assigned to Sway at 50% with the “Dir” option selected to reverse the direction of output, and Surge at 50%.

Half of each axis will respond to Sway, with the axes responding in opposite directions to
one another. This gives us our roll output by moving our example simulator from side to side.

The other half of each axis will respond to Surge, with the axes responding in unison to one another. This gives us our pitch output by tipping the example simulator forward and back.



Enable: on

Selected Profile: Example1 (Auto □)

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Plugin By - yobuddy

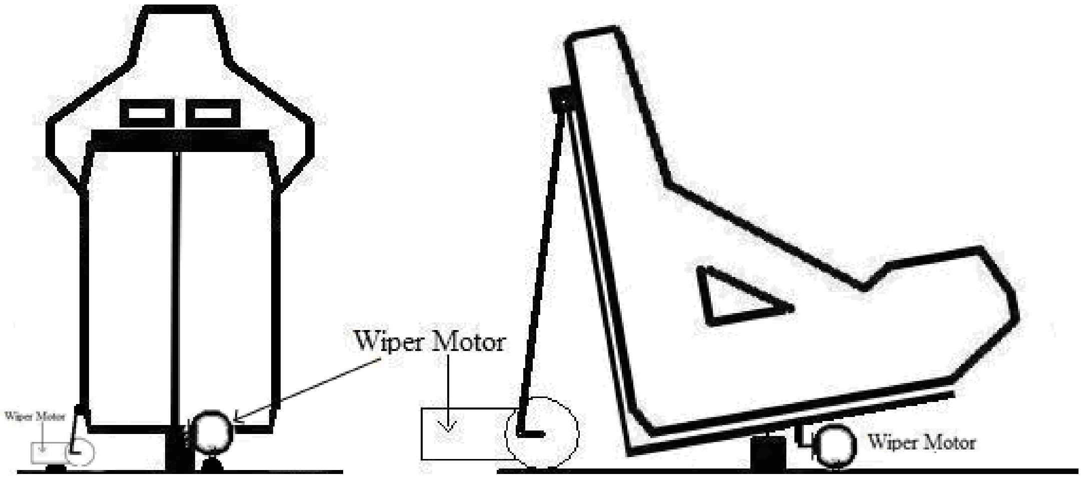
Selected Plugin: Generic 2D Basic

Axis	Force	%
Axis1a	Roll	50
	Pitch	50
	-	-
	-	-
	-	-
	-	-
	-	-
	-	-
	Axis Total =	100
Axis2a	Roll	50
	Pitch	50
	-	-
	-	-
	-	-
	-	-
	-	-
	-	-
	Axis Total =	100
Axis3a	-	-
	Axis Total =	0
Axis4a	-	-
	Axis Total =	0
Axis5a	-	-
	Axis Total =	0
Axis6a	-	-
	Axis Total =	0

Profile Intensity 100

Example 2

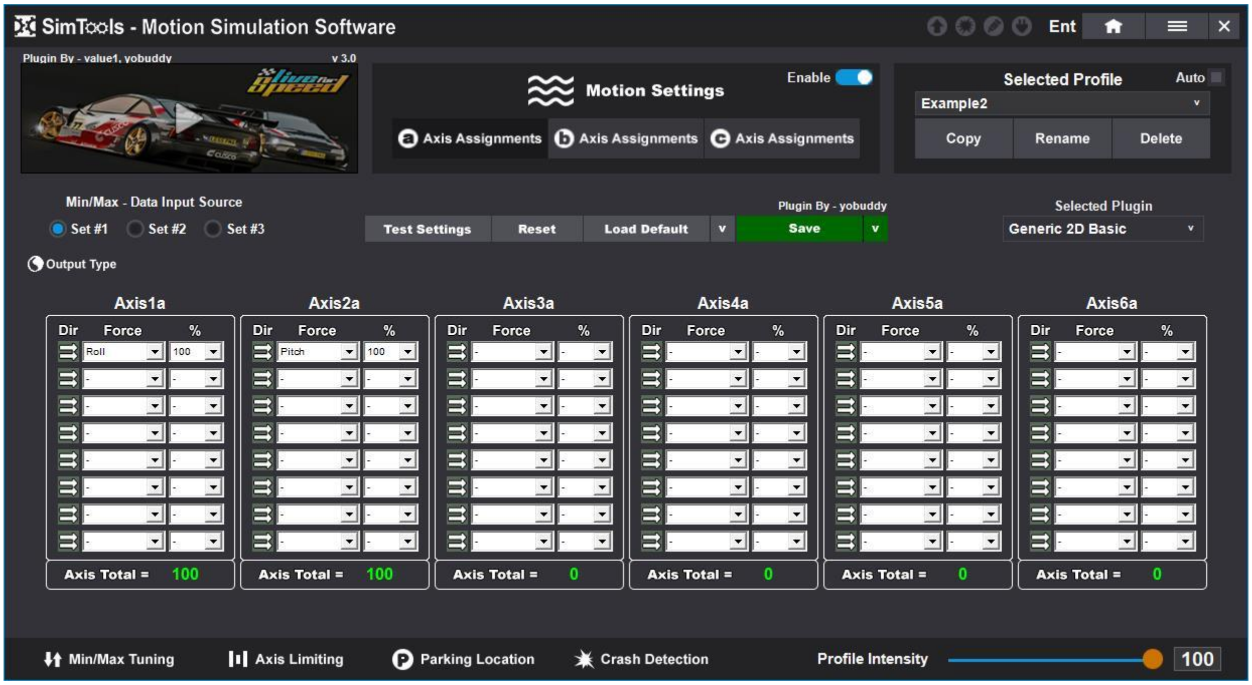
The simulator below uses two motors to power the motion simulator. One in the rear and one on the side. It will provide for a 2 DOF simulator including roll (leaning side to side) and pitch (leaning front to back).



While the simulator itself can pitch and roll, we want to drive these actions from the G-Forces from a game. Therefore, we will drive the pitch of the simulator with the surge input from a game, and we will drive the roll of the simulator with the sway input from a game. Configuring the simulator this way will cause the simulator to lean back when stepping on the gas, and lean forward when braking. The simulator should also lean away from corners when you turn.

The picture below shows the axis assignment needed to move the example simulator pictured above.

Axis1a is assigned to Sway at 100%. Axis2a is assigned to Surge at 100%. Each axis is only responsible for one force, so we suggest using the entire axis available for each one.



Selected Profile: Example2
Auto □

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Plugin By - yobuddy

Selected Plugin: Generic 2D Basic

Axis1a Force	Axis1a %	Axis2a Force	Axis2a %	Axis3a Force	Axis3a %	Axis4a Force	Axis4a %	Axis5a Force	Axis5a %	Axis6a Force	Axis6a %
Roll	100	Pitch	100	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
Axis Total =	100	Axis Total =	100	Axis Total =	0	Axis Total =	0	Axis Total =	0	Axis Total =	0

Profile Intensity 100

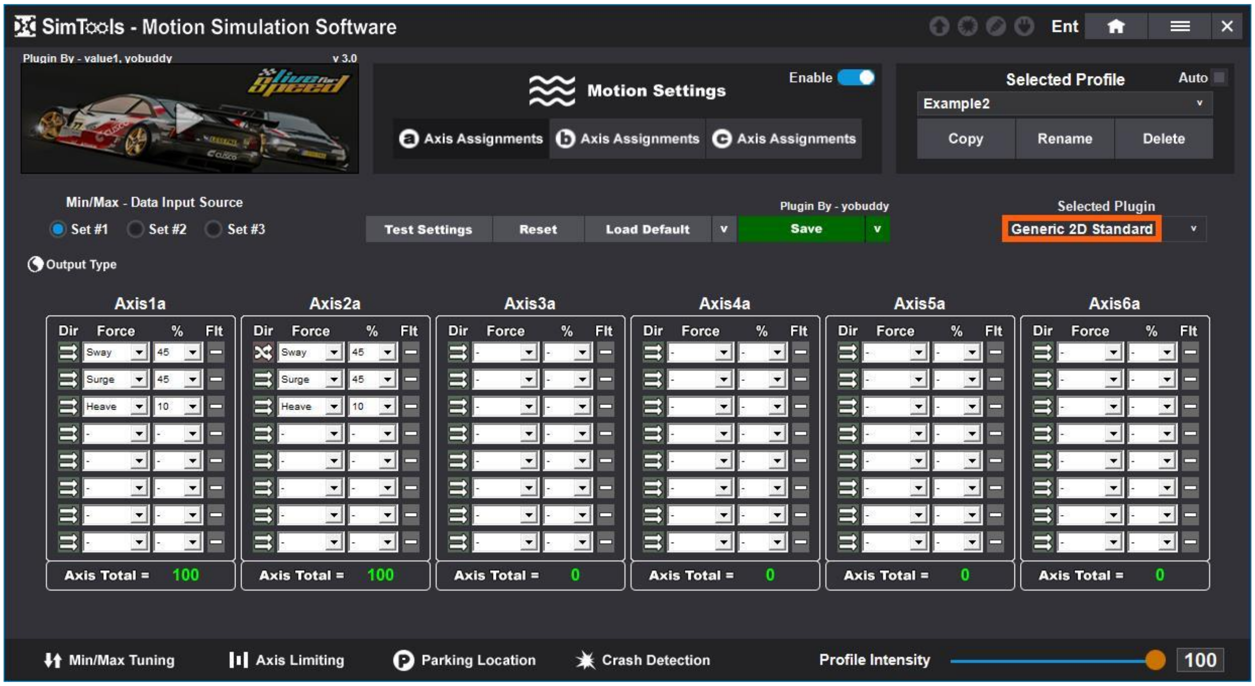
In many cases, it is easiest to setup one DOF at a time. Once the DOF is configured, you can click the “Test Settings” button and test that the new settings work the way they should. In both of the examples above, we suggest configuring and testing Surge, and then configuring and testing Sway.

Once you are all configured, you are ready to test in a game. When you run a game and a motion output feels backwards like Surge for example, then click the “Dir” direction boxes for all the Surge settings. This will flip the output when the game is running, and correct the issue.

Back to Table of Contents

Generic 2D Standard

The **Generic 2D Standard** axis plugin builds upon the Generic 2D Basic axis plugin adding independent filtering for each of the settings. If you do not see a function explained in this section, please refer to Generic 2D Basic.



Selected Profile: Example2

Selected Plugin: Generic 2D Standard

Axis1a: Sway 45, Surge 45, Heave 10 — Axis Total = 100

Axis2a: Sway 45, Surge 45, Heave 10 — Axis Total = 100

Axis3a: Axis Total = 0

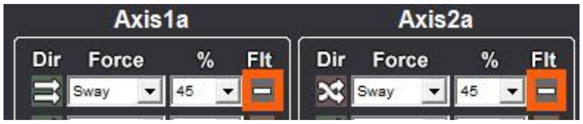
Axis4a: Axis Total = 0

Axis5a: Axis Total = 0

Axis6a: Axis Total = 0

Profile Intensity: 100

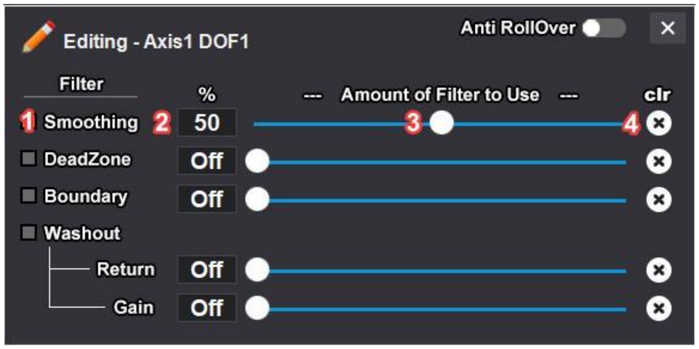
Flt – Click the “Flt” button next to any of the settings to pull up the filter options.



Axis1a: Sway 45

Axis2a: Sway 45

You will be presented with the following filter options.


Editing - Axis1 DOF1

Anti RollOver

Filter	%	--- Amount of Filter to Use ---	clr
1 Smoothing	2 50	3	4
DeadZone	Off		
Boundary	Off		
Washout			
Return	Off		
Gain	Off		

Reference the image directly above for the following:

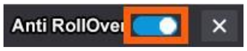
1 - **Name** of the filter.

2 - **Percent** of the filter being used.

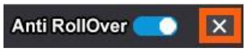
3 - **Slider Adjuster** changes the percent of filter being used.

4 - **Clear** turns the filter off.

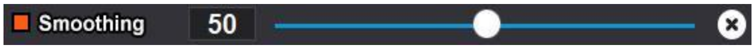
Anti RollOver – Toggle this to allow the simulator to roll over if you have one that will do this.



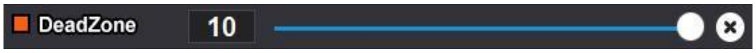
Exit – Click this to exit editing filter options.



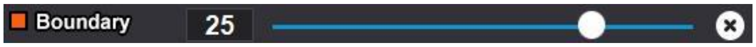
Smoothing – This filter is needed when you are experiencing a jumpy DOF input. Adjust the slider to increase or decrease the amount of smoothing.


Smoothing 50

Dead Zone – Is for setting a dead zone around the center of the axis. You can eliminate any small twitches you feel from a particular game. For example, say your Max and Min settings in the tuning center are set to Max 10 and Min -10. If you do not want to feel the jittery motion between Max 3 and Min -3, then you can set a percent to represent these values and remove them. This will result in a dead zone on the center of your axis movements.

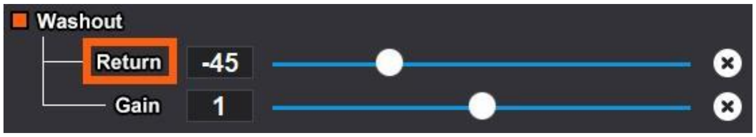

DeadZone 10

Boundary – Is to make sure the single DOF does not use more than X amount of the available axis. This allows you have a very sensitive axis while still making sure it does not take over the whole axis and leaves room for other DOFs.



Boundary 25

Washout Return – This is how fast you try to return to zero after a movement has occurred. If your simulator is not homing (re-centering) fast enough after a movement, increase this value.

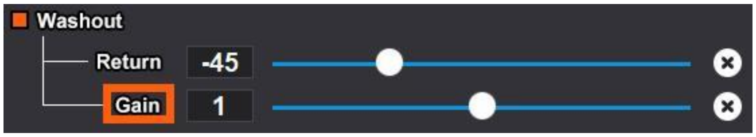


Washout

Return -45

Gain 1

Washout Gain – This is how much you will react to changes in the input from the game. If your simulator is not moving enough from the output from the game, increase this value. Gain can only be adjusted if you are using the Washout filter.



Washout

Return -45

Gain 1

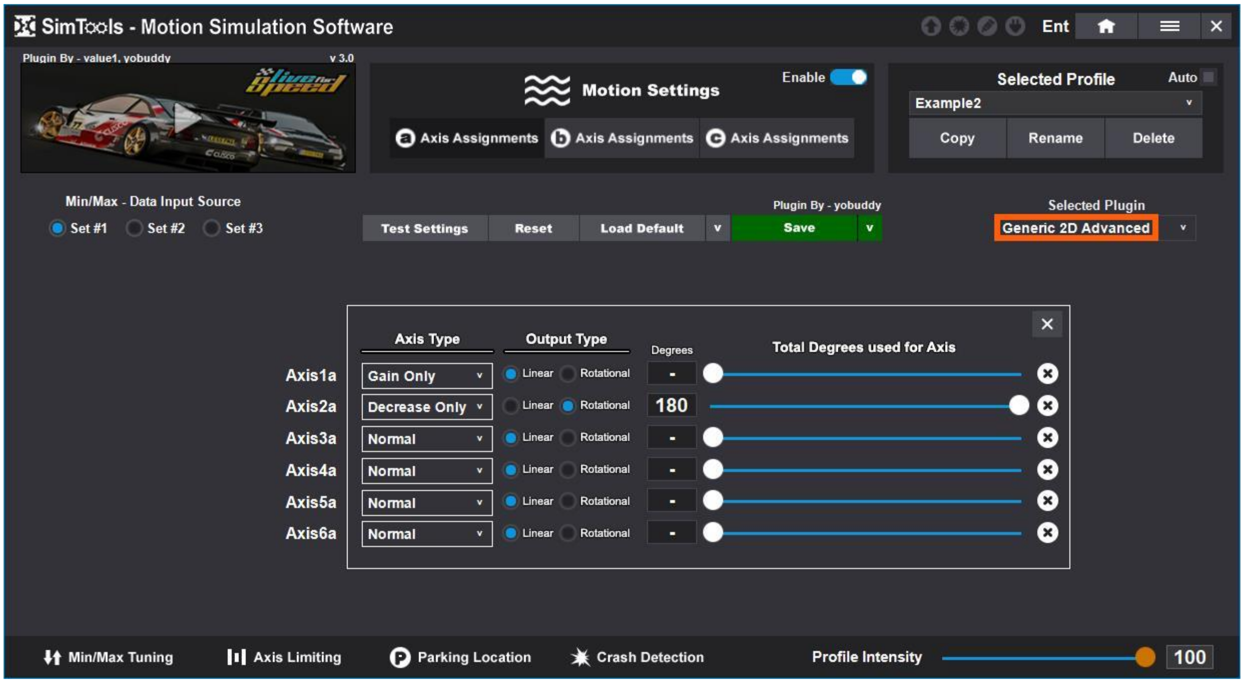
Example 3

When a car's rear end slides out, the axis is left in a non-centered position. If the car needs to slide out in the same direction again, there would be no room left for the needed travel. We use a washout filter to slowly move the axis back to center without the rider's knowledge of it occurring to overcome these circumstances. A gain of one or above must be used for the washout system to be considered active. A setting of 50% for both gain and return is a good place to start for any game.

Back to Table of Contents

Generic 2D Advanced

The **Generic 2D Advanced** axis plugin builds upon the Generic 2D Standard axis plugin adding a new Output Type option Axis Type. This can be used for something that only needs one range Gain or Decrease like a seatbelt tensioner. If you do not see a function explained in this section, please refer to Generic 2D Standard.



Selected Profile: Example2

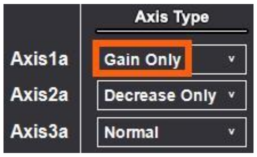
Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Selected Plugin: Generic 2D Advanced

	Axis Type	Output Type	Degrees	Total Degrees used for Axis
Axis1a	Gain Only	● Linear ○ Rotational	-	
Axis2a	Decrease Only	○ Linear ● Rotational	180	
Axis3a	Normal	● Linear ○ Rotational	-	
Axis4a	Normal	● Linear ○ Rotational	-	
Axis5a	Normal	● Linear ○ Rotational	-	
Axis6a	Normal	● Linear ○ Rotational	-	

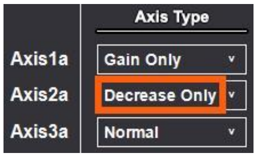
Profile Intensity: 100

Gain Only – This configures the axis to only use values that are increasing.



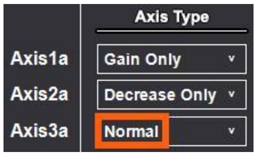
	Axis Type
Axis1a	Gain Only
Axis2a	Decrease Only
Axis3a	Normal

Decrease Only – This configures the axis to only use values that are decreasing.



	Axis Type
Axis1a	Gain Only
Axis2a	Decrease Only
Axis3a	Normal

Normal – This is the default and uses both increasing and decreasing values.



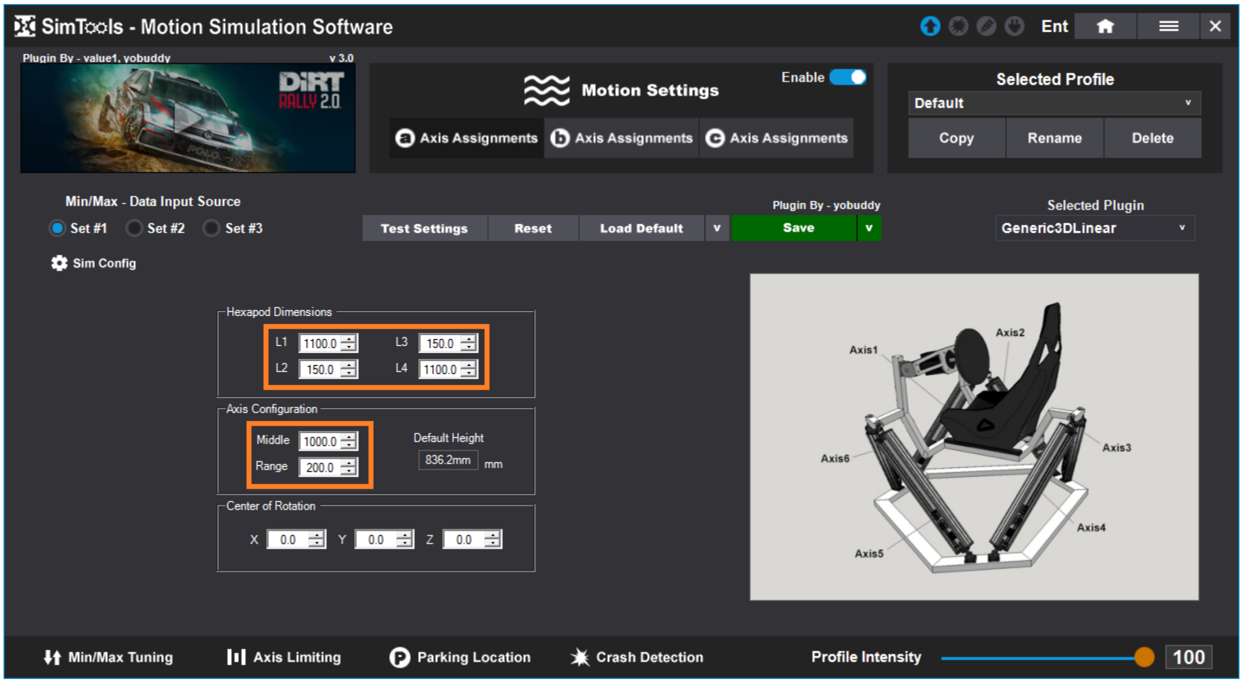
	Axis Type
Axis1a	Gain Only
Axis2a	Decrease Only
Axis3a	Normal

Back to Table of Contents

Generic 3D Linear

The **Generic 3D Linear** axis plugin was built to support linear type Stewart platforms. After selecting the axis plugin, click the "Sim Config" button to setup the axis plugin for your simulator's dimensions.

The boxes highlighted below need to be completed before using the axis plugin.



Selected Profile: Default

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Plugin By - yobuddy

Selected Plugin: Generic3DLinear

Hexapod Dimensions

L1	1100.0	L3	150.0
L2	150.0	L4	1100.0

Axis Configuration

Middle 1000.0

Range 200.0

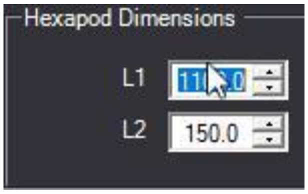
Default Height 836.2mm mm

Center of Rotation

X 0.0 Y 0.0 Z 0.0

Profile Intensity 100

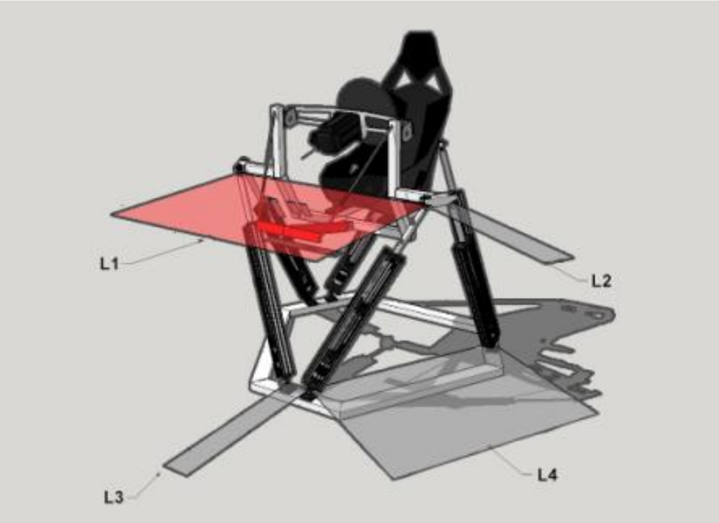
Hovering a setting will show you what to measure in the image to the right as seen in the pictures below. You will be measuring the distance between the actuator connectors. Hovering over the L1 setting illuminates the section you need to measure. In this example we are measuring the distance between the top connectors of the two actuators. Measure the distance between the two actuators of each required setting in millimeters and then update the values as needed.



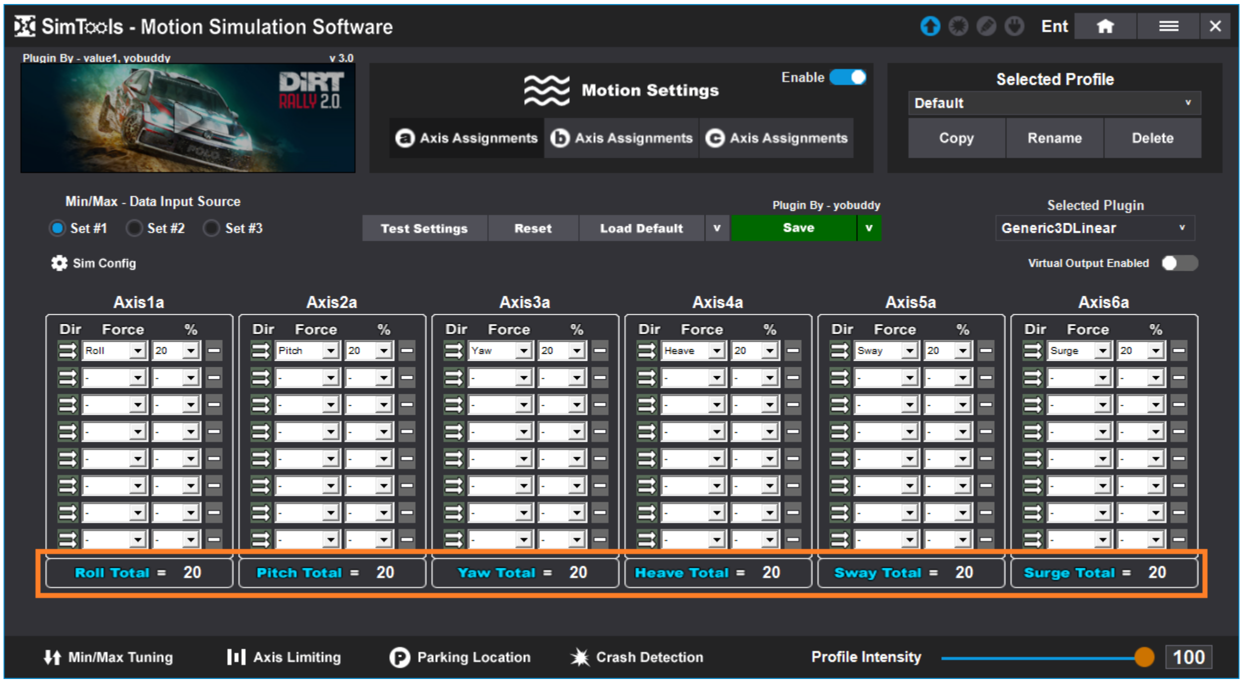
Hexapod Dimensions

L1 11[illegible].0

L2 150.0



The main axis settings work just like a lot of other axis plugins with a big difference being that each of the six axes you are configuring are for a specific output. The orange box below shows that Axis1a is set to be Roll, Axis2a is set to be Pitch, Axis3a is set to be Yaw, Axis4a is set to be Heave, Axis6a is set to be Sway, and Axis6a is set to be Surge.



Plugin By - value1, yobuddy v 3.0

Enable

Selected Profile: Default

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Plugin By - yobuddy

Selected Plugin: Generic3DLinear

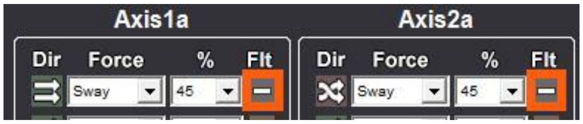
Virtual Output Enabled

	Axis1a	Axis2a	Axis3a	Axis4a	Axis5a	Axis6a
Force	Roll	Pitch	Yaw	Heave	Sway	Surge
%	20	20	20	20	20	20
Total	Roll Total = 20	Pitch Total = 20	Yaw Total = 20	Heave Total = 20	Sway Total = 20	Surge Total = 20

Profile Intensity 100

The Filters work just like they do in other axis plugins.

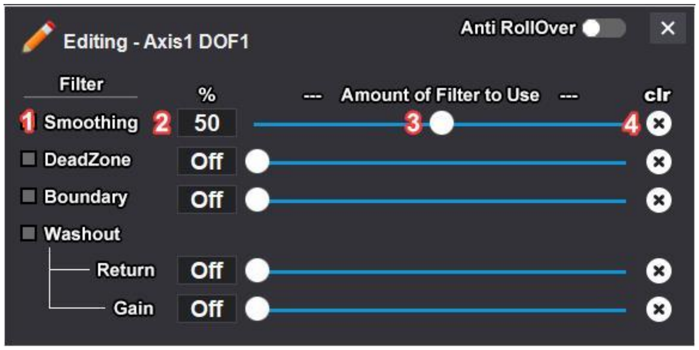
Flt – Click the “Flt” button next to any of the settings to pull up the filter options.



Sway 45

Sway 45

You will be presented with the following filter options.



Anti RollOver

Smoothing 50

DeadZone Off

Boundary Off

Washout

Return Off

Gain Off

Reference the image directly above for the following:

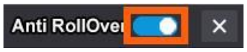
5 - **Name** of the filter.

6 - **Percent** of the filter being used.

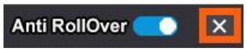
7 - **Slider Adjuster** changes the percent of filter being used.

8 - **Clear** turns the filter off.

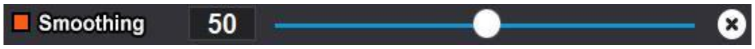
Anti RollOver – Toggle this to allow the simulator to roll over if you have one that will do this.



Exit – Click the X to exit editing filter options.

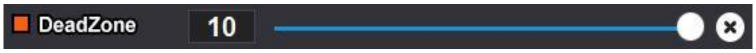


Smoothing – This filter is needed when you are experiencing a jumpy DOF input. Adjust the slider to increase or decrease the amount of smoothing.



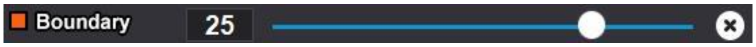
Smoothing 50

Dead Zone – Is for setting a dead zone around the center of the axis. You can eliminate any small twitches you feel from a particular game. For example, your Max and Min settings in the tuning center are set to Max 10 and Min -10. If you do not want to feel the jittery motion between Max 3 and Min -3, then you can set a percent to represent these values and remove them. This will result in a dead zone on the center of your axis movements.



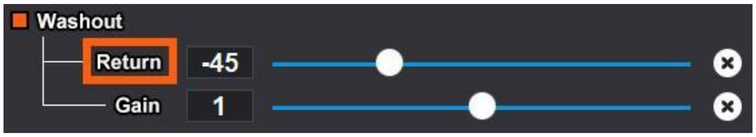
DeadZone 10

Boundary – Is to make sure the single DOF does not use more than X amount of the available axis. This allows you have a very sensitive axis while still making sure it does not take over the whole axis and leaves room for other DOFs.



Boundary 25

Washout Return – This is how fast you try to return to zero after a movement has occurred. If your simulator is not re-centering fast enough after a movement, increase this value.

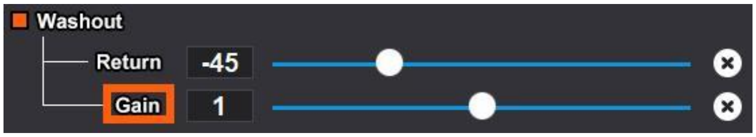


Washout

Return -45

Gain 1

Washout Gain – This is how much you will react to changes in the input from a game. If your simulator is not moving enough from the output from a game, increase this value. Gain can only be adjusted if you are using the Washout filter.



Washout

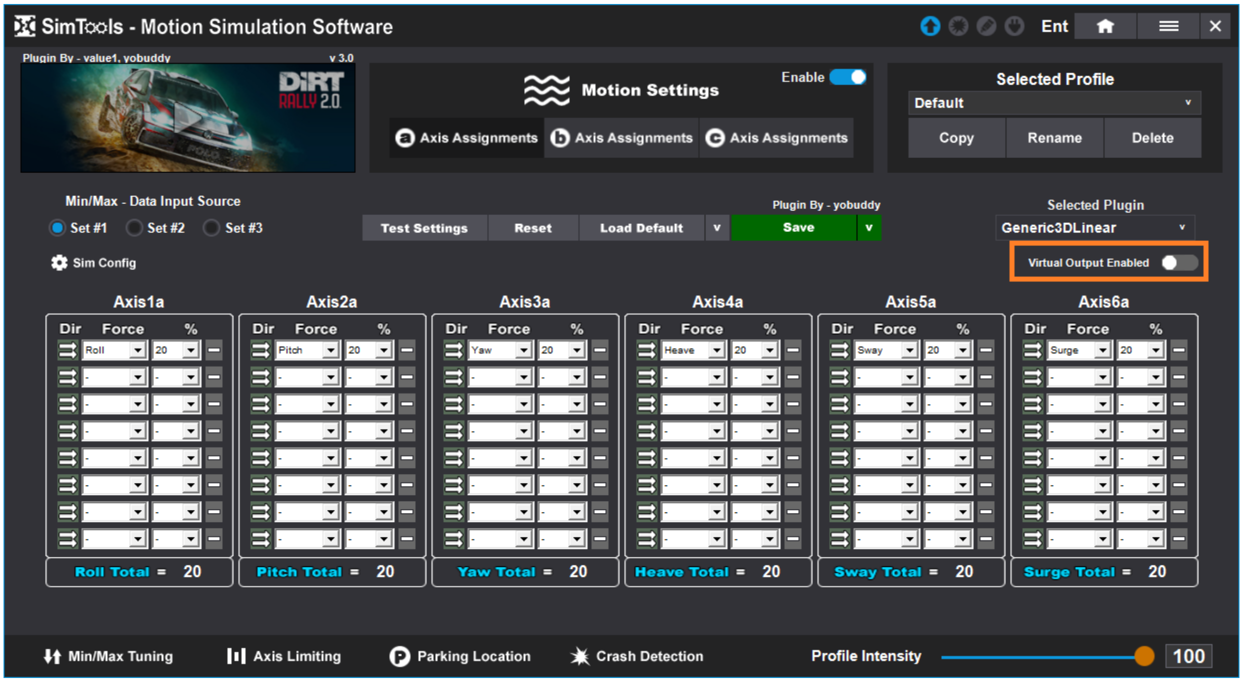
Return -45

Gain 1

Example

When a car's rear end slides out, the axis is left in a non-centered position. If the car needs to slide out in the same direction again, there would be no room left for the needed travel. We use a washout filter to slowly move the axis back to center without the rider's knowledge of it occurring to overcome these circumstances. A gain of one or above must be used for the washout system to be considered active. A setting of 50% for both gain and return is a good place to start for any game.

It is suggested to turn off the Virtual Output under normal use of the simulator. But for setup and configuring the simulator, you can install the corresponding Virtual Plugin and get a visual representation of your simulator. You will get faster output to your simulator with the Virtual Output off.



Enable: on

Selected Profile: Default

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Plugin By - yobuddy

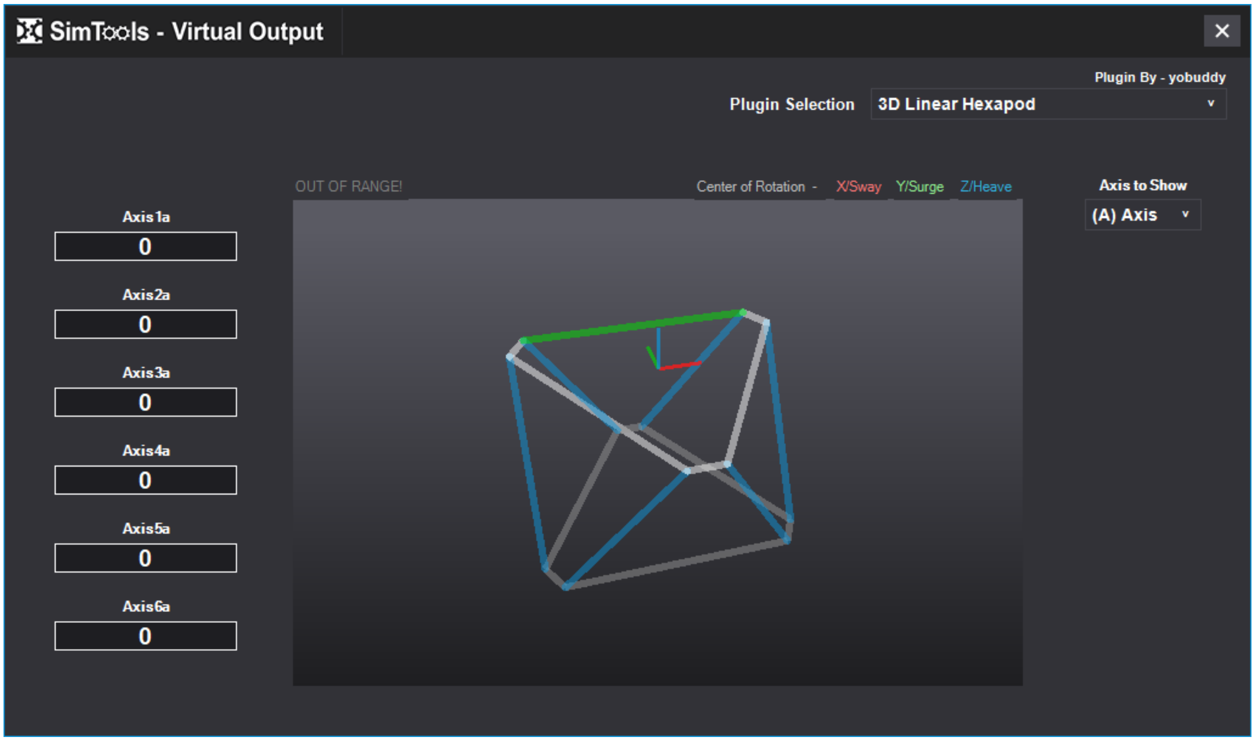
Selected Plugin: Generic3DLinear

Virtual Output Enabled: off

Axis1a	Axis2a	Axis3a	Axis4a	Axis5a	Axis6a
Roll 20	Pitch 20	Yaw 20	Heave 20	Sway 20	Surge 20
Roll Total = 20	Pitch Total = 20	Yaw Total = 20	Heave Total = 20	Sway Total = 20	Surge Total = 20

Profile Intensity: 100

Be sure to turn Virtual Output on in axis assignments when you want to use the virtual plugin.



Plugin By - yobuddy

Plugin Selection: 3D Linear Hexapod

Axis to Show: (A) Axis

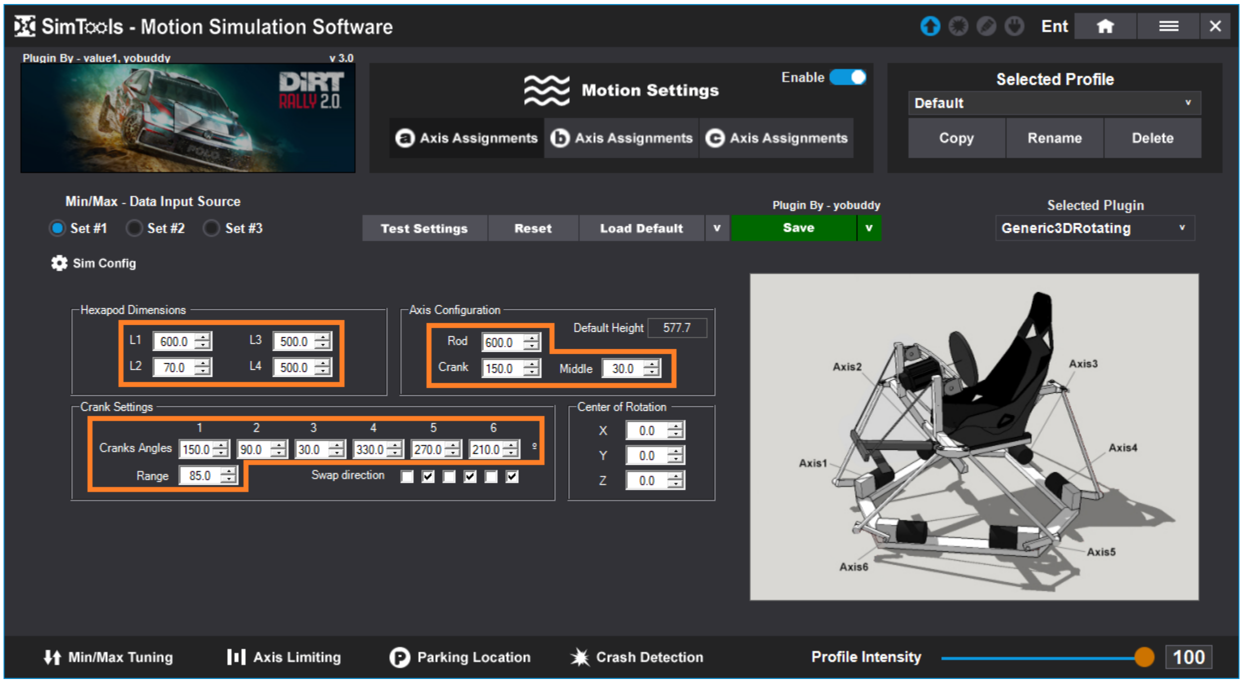
Axis	Value
Axis1a	0
Axis2a	0
Axis3a	0
Axis4a	0
Axis5a	0
Axis6a	0

[Back to Table of Contents]

Generic 3D Rotating

The **Generic 3D Rotating** axis plugin was built to support rotating type Stewart platforms. After selecting the axis plugin, click the “Sim Config” button to setup the axis plugin for your simulator’s dimensions.

The boxes highlighted below need to be completed before using the axis plugin.



Enable: ●
Selected Profile: Default
Selected Plugin: Generic3DRotating

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Hexapod Dimensions
L1 600.0 L3 500.0
L2 70.0 L4 500.0

Axis Configuration
Default Height 577.7
Rod 600.0
Crank 150.0 Middle 30.0

Crank Settings

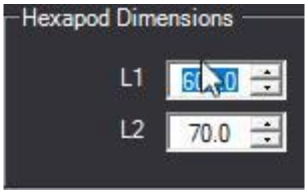
	1	2	3	4	5	6	
Cranks Angles	150.0	90.0	30.0	330.0	270.0	210.0	º
Swap direction	□	☑	□	☑	□	☑	

Range 85.0

Center of Rotation
X 0.0
Y 0.0
Z 0.0

Profile Intensity 100

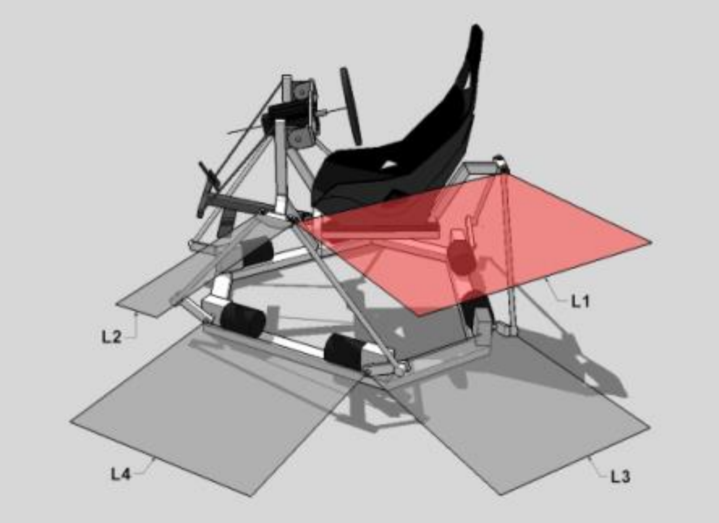
Hovering a setting will show you what to measure in the image to the right as seen in the pictures below. You will be measuring the distance between the top or bottom actuator connectors. Hovering over the L1 setting illuminates the section you need to measure. In this example we are measuring the distance between the top connectors of the two actuators. Measure the distance between the two actuators of each required setting in millimeters and then update the values as needed.



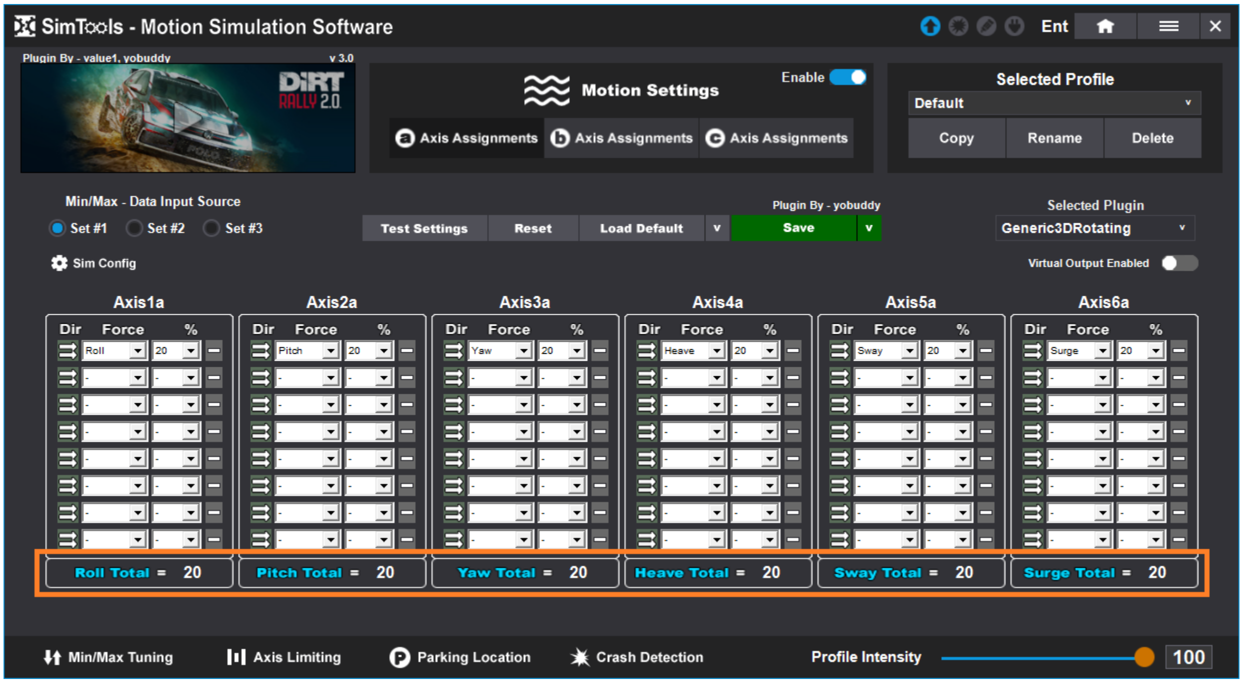
Hexapod Dimensions

L1 60.0

L2 70.0



The main axis settings work just like a lot of other axis plugins, with a big difference being that each of the 6 axis you are configuring are for a specific output. The orange box below shows that Axis1a is set to be Roll, Axis2a is set to be Pitch, Axis3a is set to be Yaw, Axis4a is set to be Heave, Axis6a is set to be Sway, and Axis6a is set to be Surge.



SimTools - Motion Simulation Software

Plugin By - value1, yobuddy v 3.0

Motion Settings — Enable

Selected Profile: Default

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Plugin By - yobuddy

Selected Plugin: Generic3DRotating

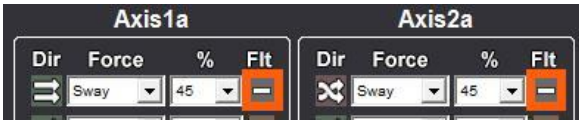
Virtual Output Enabled

Axis1a	Axis2a	Axis3a	Axis4a	Axis5a	Axis6a
Roll 20	Pitch 20	Yaw 20	Heave 20	Sway 20	Surge 20
Roll Total = 20	Pitch Total = 20	Yaw Total = 20	Heave Total = 20	Sway Total = 20	Surge Total = 20

Profile Intensity 100

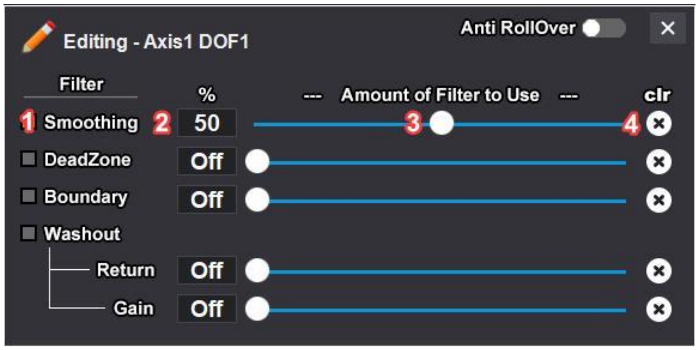
The Filters work just like they do in other axis plugins.

Flt – Click the “Flt” button next to any of the settings to pull up the filter options.



Axis1a				Axis2a			
Dir	Force	%	Flt	Dir	Force	%	Flt
	Sway	45			Sway	45	

You will be presented with the following filter options.



Editing - Axis1 DOF1

Anti RollOver ×

Filter	%	--- Amount of Filter to Use ---	clr
Smoothing	50		
□ DeadZone	Off		
□ Boundary	Off		
□ Washout			
Return	Off		
Gain	Off		

Reference the image directly above for the following:

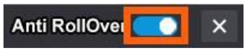
1 - **Name** of the filter.

2 - **Percent** of the filter being used.

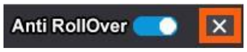
3 - **Slider Adjuster** changes the percent of filter being used.

4 - **Clear** turns the filter off.

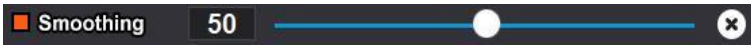
Anti RollOver – Toggle this to allow the simulator to roll over if you have one that will do this.



Exit – Click the X to exit editing filter options.

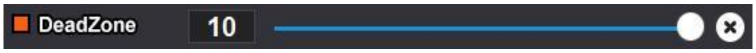


Smoothing – This filter is needed when you are experiencing a jumpy DOF input. Adjust the slider to increase or decrease the amount of smoothing.



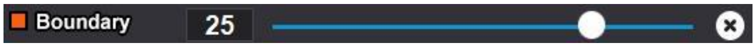
Smoothing 50

Dead Zone – Is for setting a dead zone around the center of the axis. You can eliminate any small twitches you feel from a particular game. For example, your Max and Min settings in the tuning center are set to Max 10 and Min -10. If you do not want to feel the jittery motion between Max 3 and Min -3, then you can set a percent to represent these values and remove them. This will result in a dead zone on the center of your axis movements.



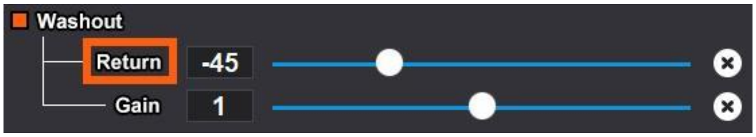
DeadZone 10

Boundary – Is to make sure the single DOF does not use more than X amount of the available axis. This allows you have a very sensitive axis while still making sure it does not take over the whole axis and leaves room for other DOFs.



Boundary 25

Washout Return – This is how fast you try to return to zero after a movement has occurred. If your simulator is not re-centering fast enough after a movement, increase this value.

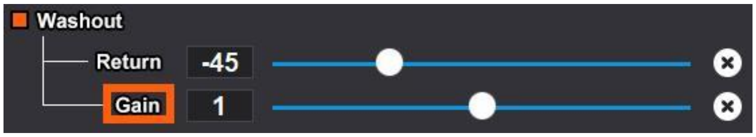


Washout

Return -45

Gain 1

Washout Gain – This is how much you will react to changes in the input from a game. If your simulator is not moving enough from the output from a game, increase this value. Gain can only be adjusted if you are using the Washout filter.



Washout

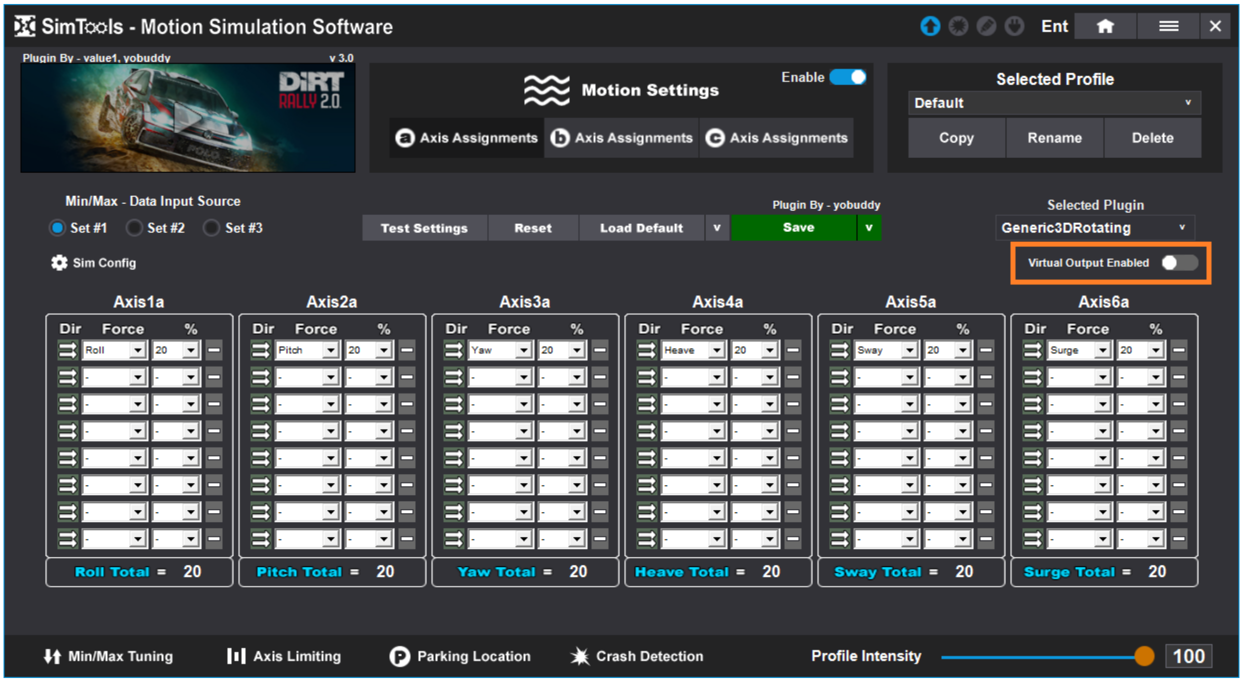
Return -45

Gain 1

Example

When a car's rear end slides out, the axis is left in a non-centered position. If the car needs to slide out in the same direction again, there would be no room left for the needed travel. We use a washout filter to slowly move the axis back to center without the rider's knowledge of it occurring to overcome these circumstances. A gain of one or above must be used for the washout system to be considered active. A setting of 50% for both gain and return is a good place to start for any game.

It is suggested to turn off the Virtual Output under normal use of the simulator. But for setup and configuring the simulator, you can install the corresponding Virtual Plugin and get a visual representation of your simulator. You will get faster output to your simulator with the Virtual Output off.



Selected Profile: Default

Min/Max - Data Input Source: ● Set #1 ○ Set #2 ○ Set #3

Plugin By - yobuddy

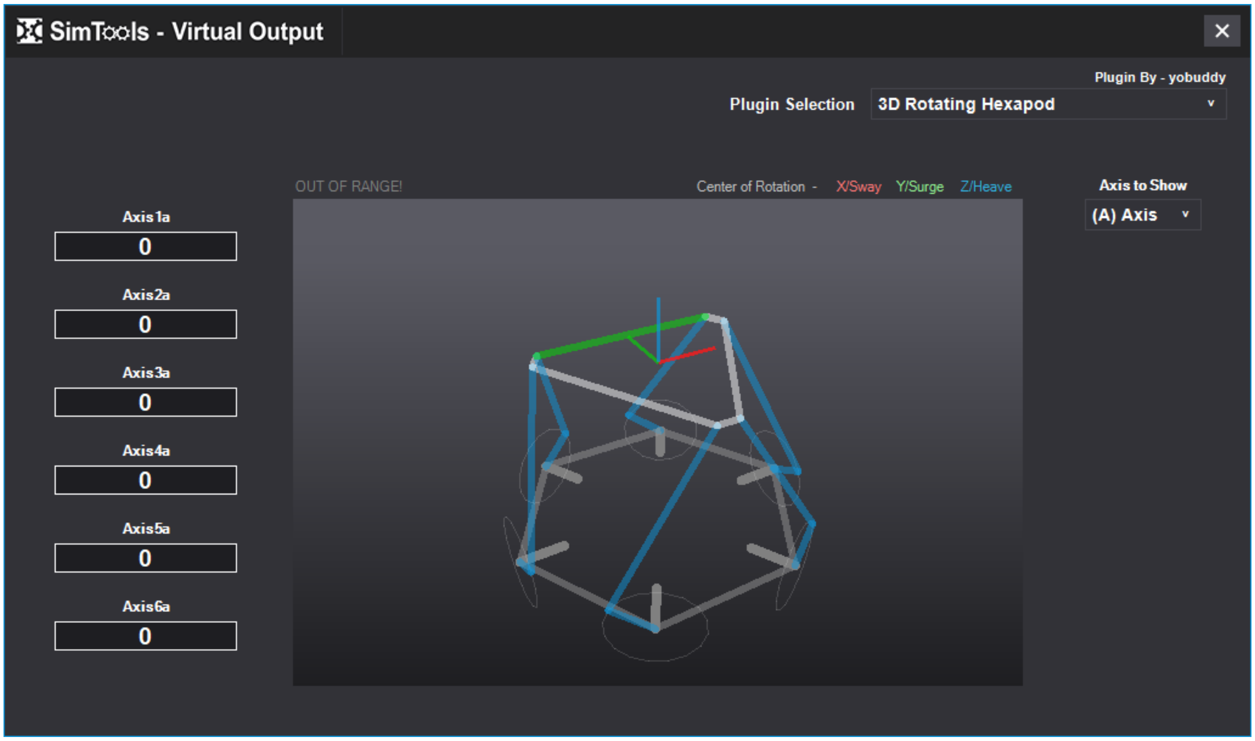
Selected Plugin: Generic3DRotating

Virtual Output Enabled

	Axis1a			Axis2a			Axis3a			Axis4a			Axis5a			Axis6a	
Dir	Force	%	Dir	Force	%	Dir	Force	%	Dir	Force	%	Dir	Force	%	Dir	Force	%
	Roll	20		Pitch	20		Yaw	20		Heave	20		Sway	20		Surge	20
	-	-		-	-		-	-		-	-		-	-		-	-
	-	-		-	-		-	-		-	-		-	-		-	-
	-	-		-	-		-	-		-	-		-	-		-	-
	-	-		-	-		-	-		-	-		-	-		-	-
	-	-		-	-		-	-		-	-		-	-		-	-
	-	-		-	-		-	-		-	-		-	-		-	-
	-	-		-	-		-	-		-	-		-	-		-	-
	Roll Total =	20		Pitch Total =	20		Yaw Total =	20		Heave Total =	20		Sway Total =	20		Surge Total =	20

Profile Intensity 100

Be sure to turn Virtual Output on in axis assignments when you want to use the virtual plugin.



Plugin By - yobuddy

Plugin Selection: 3D Rotating Hexapod

Axis to Show: (A) Axis

Axis1a: 0

Axis2a: 0

Axis3a: 0

Axis4a: 0

Axis5a: 0

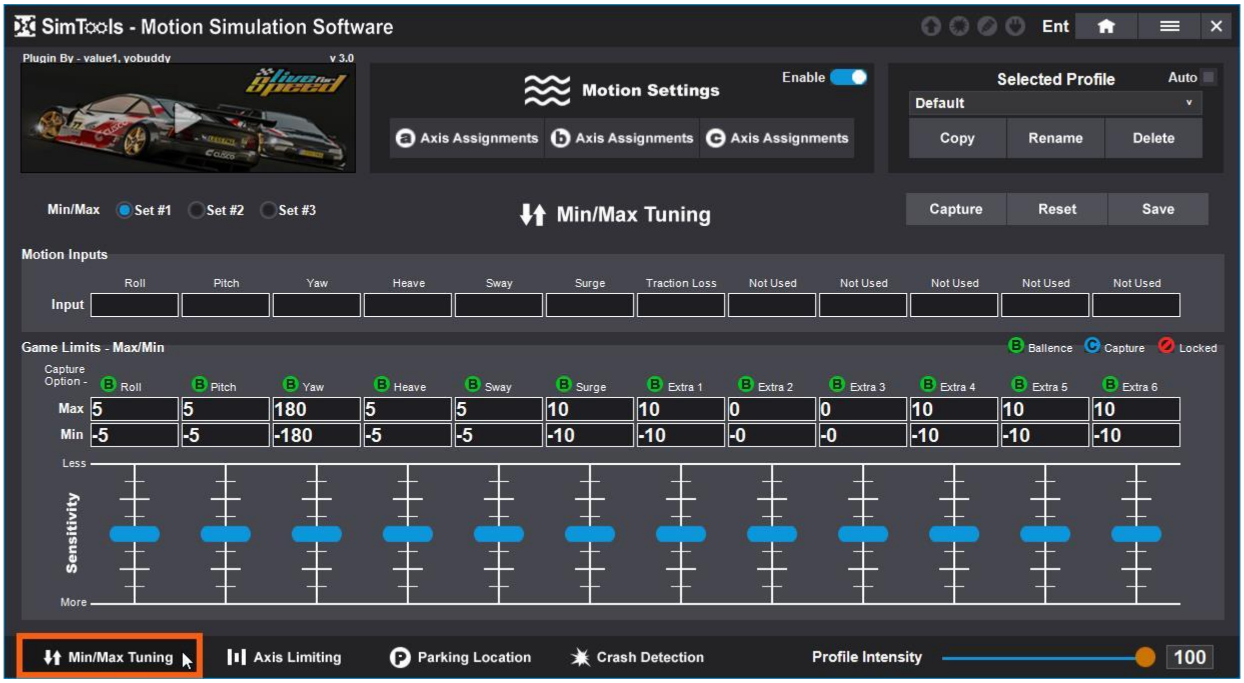
Axis6a: 0

Back to Table of Contents

Max/Min Tuning

Max/Min Tuning – Tuning the Max/Min values of a game ensures that the motion you output to your simulator is the best it can be! You only need to do this once per game and it can greatly improve the overall ride of your simulator.

You can access Max/Min Tunning in game plugins by clicking on the Max/Min Tuning button at the bottom of the motion page.



Selected Profile: Default

Min/Max ● Set #1 ○ Set #2 ○ Set #3

Motion Inputs

	Roll	Pitch	Yaw	Heave	Sway	Surge	Traction Loss	Not Used	Not Used	Not Used	Not Used	Not Used
Input												

Game Limits - Max/Min

Capture Option -	B Roll	B Pitch	B Yaw	B Heave	B Sway	B Surge	B Extra 1	B Extra 2	B Extra 3	B Extra 4	B Extra 5	B Extra 6
Max	5	5	180	5	5	10	10	0	0	10	10	10
Min	-5	-5	-180	-5	-5	-10	-10	-0	-0	-10	-10	-10

Profile Intensity 100

The tuning window allows you to set the max and min values that will be used by SimTools to calculate how much of the axis is used. It does this by comparing the incoming value with either the max or the min value and then calculating the correct percentage needed for output.

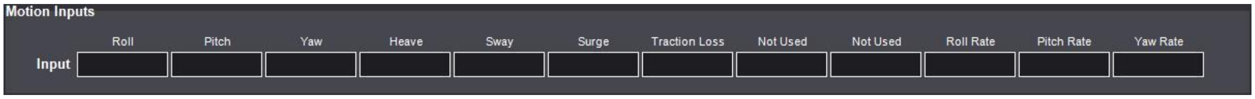
Each game plugin allows up to 12 DOFs (Degree of Force) to be sent and used for output to your simulator including: Roll, Pitch, Yaw, Heave, Sway, Surge, Extra1, Extra2, Extra3, Extra4, Extra5 and Extra6. Each of these 12 DOFs that are used for a game plugin should have a corresponding max/min value. If the min and max of an axis are set to zero, then no values will be sent to the simulator for that axis.

Increasing the max/min values to higher numbers will result in less movement. The game values will seldom reach their min or max values resulting in less overall movement, but they will in turn have more range overall for output.

Decreasing the max/min values to lower numbers will result in more movement. The game values will end up reaching those max/min settings a lot quicker resulting in faster and snapper movements, but they will have less overall range for output.

The primary goal of tuning the max/min values for a game is to have numbers that allow for enough range on the simulator to match what happens on the screen under normal circumstances, but not so much range that you lose all of the finer details from the game.

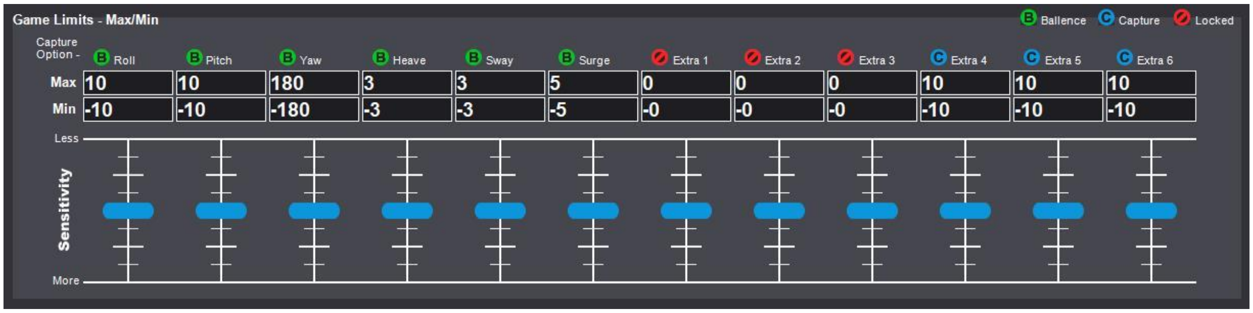
Motion Inputs – You are not able to modify these values, because they are coming from the game. Roll, Pitch and Yaw are in degrees. Heave, Sway and Surge are in g-force. Some game plugins also include Traction Loss, Roll Rate, Pitch Rate and Yaw Rate.



Motion Inputs

	Roll	Pitch	Yaw	Heave	Sway	Surge	Traction Loss	Not Used	Not Used	Roll Rate	Pitch Rate	Yaw Rate
Input												

Game Limits - Max/Min – This is where you can set and modify the min and max values for the game. You are able to modify the min and max values in this area after you select Capture.

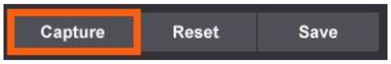


Game Limits - Max/Min

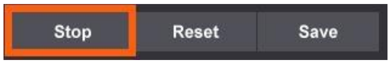
B Ballence C Capture ⊘ Locked

Capture Option -	B Roll	B Pitch	B Yaw	B Heave	B Sway	B Surge	⊘ Extra 1	⊘ Extra 2	⊘ Extra 3	C Extra 4	C Extra 5	C Extra 6
Max	10	10	180	3	3	5	0	0	0	10	10	10
Min	-10	-10	-180	-3	-3	-5	-0	-0	-0	-10	-10	-10

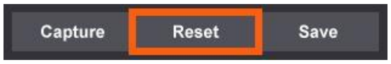
Capture – Select the Capture button to capture or modify min and max values for the selected game. Notice the Capture button turns into Stop and the Game Limits - Max/Min values become editable.



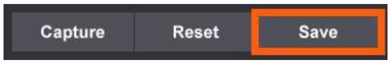
Stop – Select Stop to stop capturing data.



Reset – This resets the Game Limits - Max/Min values to zero.

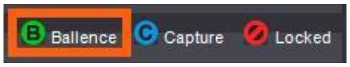


Save – Select the Save button to save your Max/Min settings.

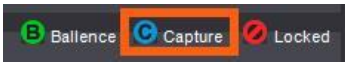


Capture Options – Select the color that correlates to the max/min option you want for each DOF.

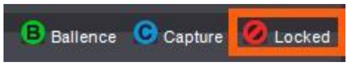
Balanced – Selecting green Balance makes your max value equal to the opposite min value.



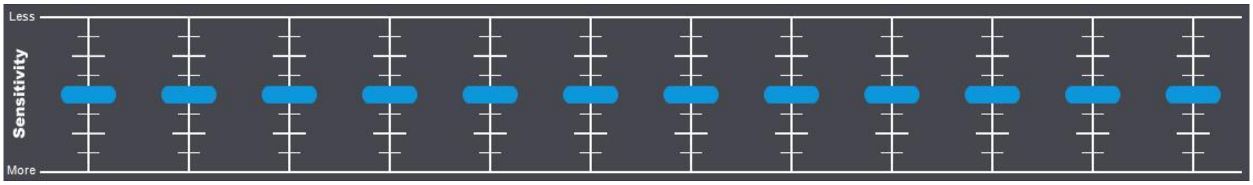
Capture – Selecting blue Capture captures the max/min values coming from the game.



Locked – Select red Locked if you do not want to change the DOF while capturing live data.



Sensitivity Sliders – While you are capturing data, you can adjust these sliders up or down to move the corresponding values up or down by small increments.

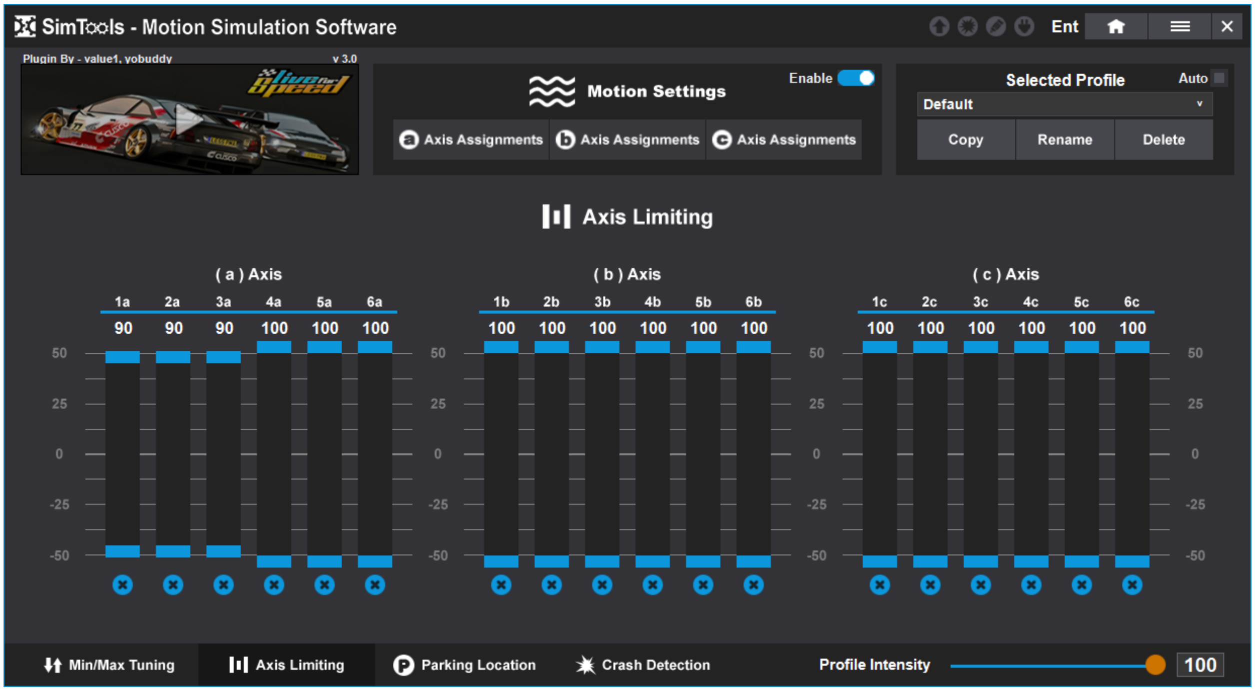


Back to Table of Contents

Axis Limiting

The Axis Limiting page allows the user to control how much of an axis gets used by SimTools. If you are worried your simulators actuators might be able to hit the end stops with high speed, quick movements or by any other means, you can add a safety buffer to your axis here.

Setting an axis to only use 90% of an axis creates a 5% un-used axis buffer on each end of the axis. Setting an axis to 80%, will make a 10% buffer on the ends of the axis, for a total of 20% of the axis that is not used.



1a	2a	3a	4a	5a	6a	1b	2b	3b	4b	5b	6b	1c	2c	3c	4c	5c	6c
90	90	90	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Profile Intensity 100

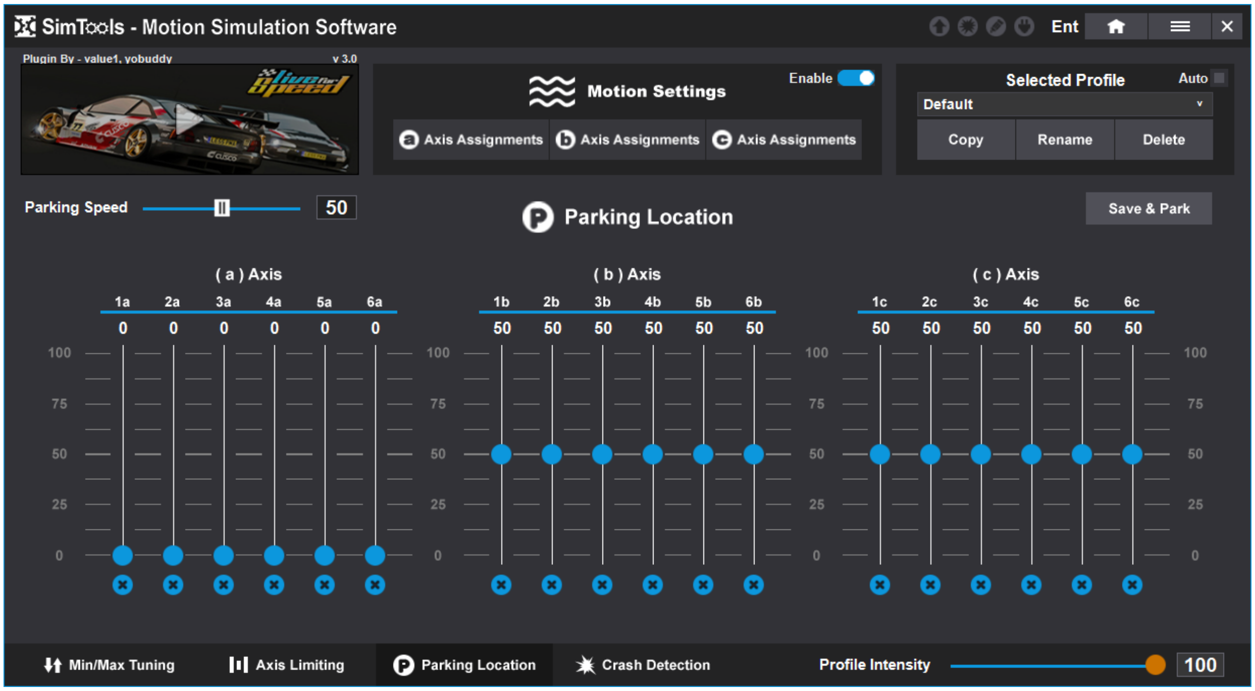
These settings are used for all game plugins and profiles. You set it one time and the axis limiting settings will be used for all game plugins and profiles no matter what game plugin you are configuring at the time.

Parking Location

The Parking Location page allows the user to set a location the simulator will be stored at when a game ends or SimTools is shutdown. Imagine a big 6DOF simulator that can be hard to get in and out of. With parking location, you can have the simulator starting and stopping in its lowest position. Making climbing in and out of the simulator much easier.

Caution should be used when setting the parking location, because the user has full control of the location of each axis. Meaning there could be some instances where the user could instruct the simulator into a position that may be physically impossible for the simulator.

The Parking Speed setting is the rate the simulator will move in and out of its parking location. After you have made a change to the parking location of any of the sliders shown in the pic below, click the “Save & Park” button to save your parking location settings, and move the simulator into the requested parking location.



Enable: on

Selected Profile: Default

Auto: □

Parking Speed: 50

1a	2a	3a	4a	5a	6a
0	0	0	0	0	0

1b	2b	3b	4b	5b	6b
50	50	50	50	50	50

1c	2c	3c	4c	5c	6c
50	50	50	50	50	50

Profile Intensity: 100

These settings are used for all game plugins and profiles. You set it one time and the parking location settings will be used for all game plugins and profiles no matter what game plugin you are configuring at the time.

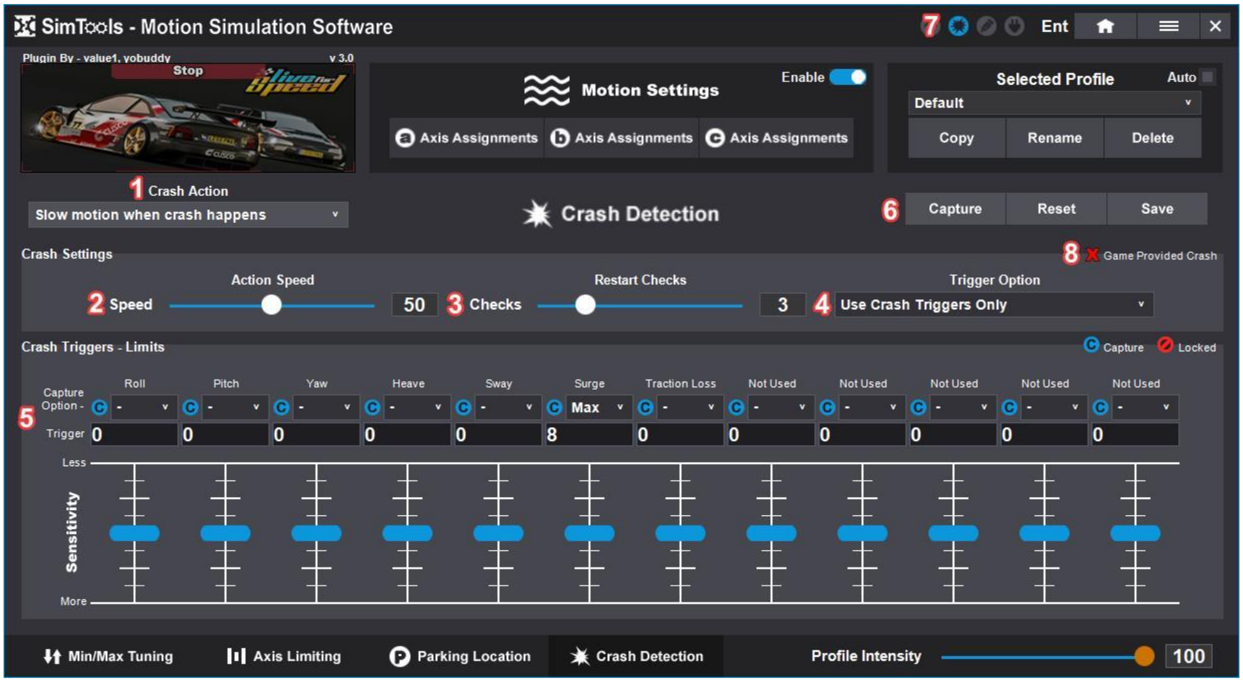
Back to Table of Contents

Crash Detection

Crash Detection allows the user to set limits to the motion inputs that can cause for a violent ride. The emphasis here is on crashing, but the system can be used for any instance where you want to protect the rider from any extreme movements cause buy motion inputs from a game.

Warning: Crash detection is not a replacement for an emergency stop for the simulator. There should always be an emergency stop button on the simulator itself.

Here is an overview of the Crash Detection page with more explanation of each item below.



Selected Profile: Default

Crash Action: Slow motion when crash happens

Action Speed: Speed 50

Restart Checks: Checks 3

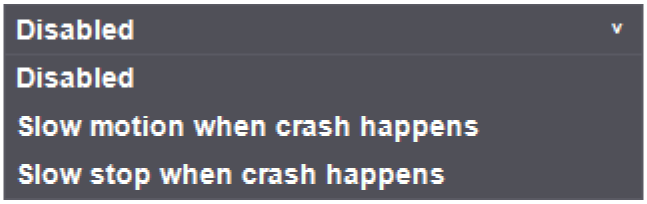
Trigger Option: Use Crash Triggers Only

	Roll	Pitch	Yaw	Heave	Sway	Surge	Traction Loss	Not Used	Not Used	Not Used	Not Used	Not Used
Capture Option -	-	-	-	-	-	Max	-	-	-	-	-	-
Trigger	0	0	0	0	0	8	0	0	0	0	0	0

Profile Intensity: 100

Reference the image directly above for the following:

1 - **Crash Action –** Options for when a crash is triggered.



Disabled – This means that the Crash Detection system is not used.

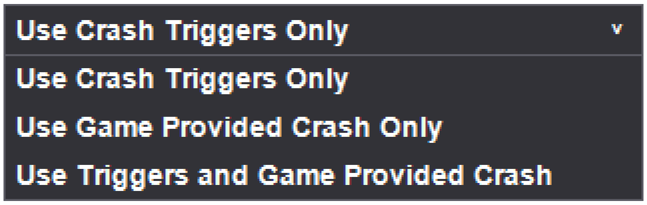
Slow motion when crash happens – This allows for a softer ride during extreme motion movements.

Slow stop when crash happens – This brings the ride to an end until the game has been restarted in SimTools.

2 - **Action Speed –** When “Slow motion when crash happens” is selected, this will be the strength of the axis in slow motion. The user can configure the slow-motion strength to make driving into a wall feel just a little less violent than it normally would, or any strength all the way down to driving into pillows.

3 - **Restart Checks –** When “Slow motion when crash happens” is selected, this will be the number of times it checks to see that the crash has ended before slowly bringing the sim back up to full speed.

4 - **Trigger Options –** This tells SimTools where to look for a crash to be triggered.


Use Crash Triggers Only
Use Crash Triggers Only
Use Game Provided Crash Only
Use Triggers and Game Provided Crash

Use Crash Triggers Only – This refers to the section found at the bottom of the Crash Detection page.

Use Game Provided Crash Only – This tells SimTools to only use the crash input provided by a game's telemetry.

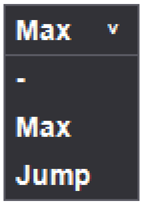
Use Triggers and Game Provided Crash – This option uses both options above to trigger a crash.

5 - **Capture Options –** Allow you to tell SimTools what you want to capture data for. The **Trigger** value is what value will trigger the crash.

⊘ Do not capture or change this input, this input is locked from auto capturing new values.

Ⓒ Capture this input when auto capturing new values. This input is unlocked and will auto capture new values.

The Drop-Down menu under each input tells SimTools how we want to capture and then look for the crash trigger limit.



Max – This is the Max value we will allow for this input from the game. Anything above this value will trigger a crash.

Jump – This is the change in value and is the biggest Jump in the value we will allow. Any jump above this value will trigger a crash.

6 - **Capture** will allow you to capture live data or adjust the trigger value. **Reset** will allow you to reset the trigger value to zero. **Save** will allow you to save the value you want to use for the trigger.

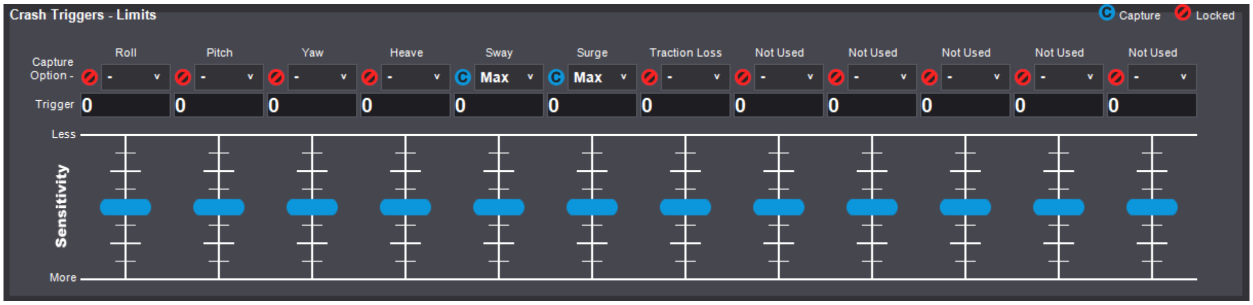
7 - **Crash Status Notification –** This will change color when a crash is triggered.

8 - **Game Provided Crash –** This will let you know if crash input is provided by a game’s telemetry.

How to use Crash Triggers

There are a lot of combinations that will work for any give game, but a simple solution that will work for almost any racing game will be detailed below.

In this example we are going to use Surge and Sway for our crash triggers. Please set your triggers up like the picture below. Notice we are using Max value for both Surge and Sway.



Crash Triggers - Limits

Capture Locked

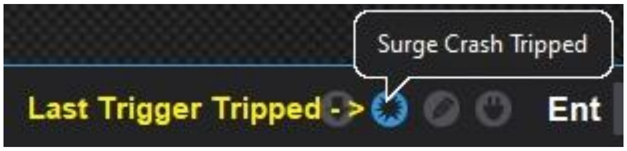
	Roll	Pitch	Yaw	Heave	Sway	Surge	Traction Loss	Not Used	Not Used	Not Used	Not Used	Not Used
Capture Option -	-	-	-	-	Max	Max	-	-	-	-	-	-
Trigger	0	0	0	0	0	0	0	0	0	0	0	0

If you already have Max/Min values in the Tuning Center for a game, you can double these values as a place to start for the Surge and Sway crash triggers. Or, just like in Tuning Center, we can capture live values for our inputs directly from the game.

You can put the game in “windowed mode”, so you can see to adjust the triggers easily.

1) With the game started and in a car driving, press the “Capture” button.
2) Click the “Reset” button.
3) Now gas and break hard a few times and swerve from side to side. This is trying to get close to what the max input can be for Surge and Sway without hitting anything. You should notice values being captured for both surge and sway when driving on the track.
4) Now Pause the game and then double the values captured for both surge and sway. When you are happy with your values, click the “Save” button.
5) Press “Stop”, when you are finished adjusting the triggers.

Now when crashing you should get a notification from the Crash Status Icon at the top of the screen that will tell you what has been tripped.



Surge Crash Tripped

Last Trigger Tripped ->

If the feeling is too violent or too soft, you can adjust the Action Speed to your liking.

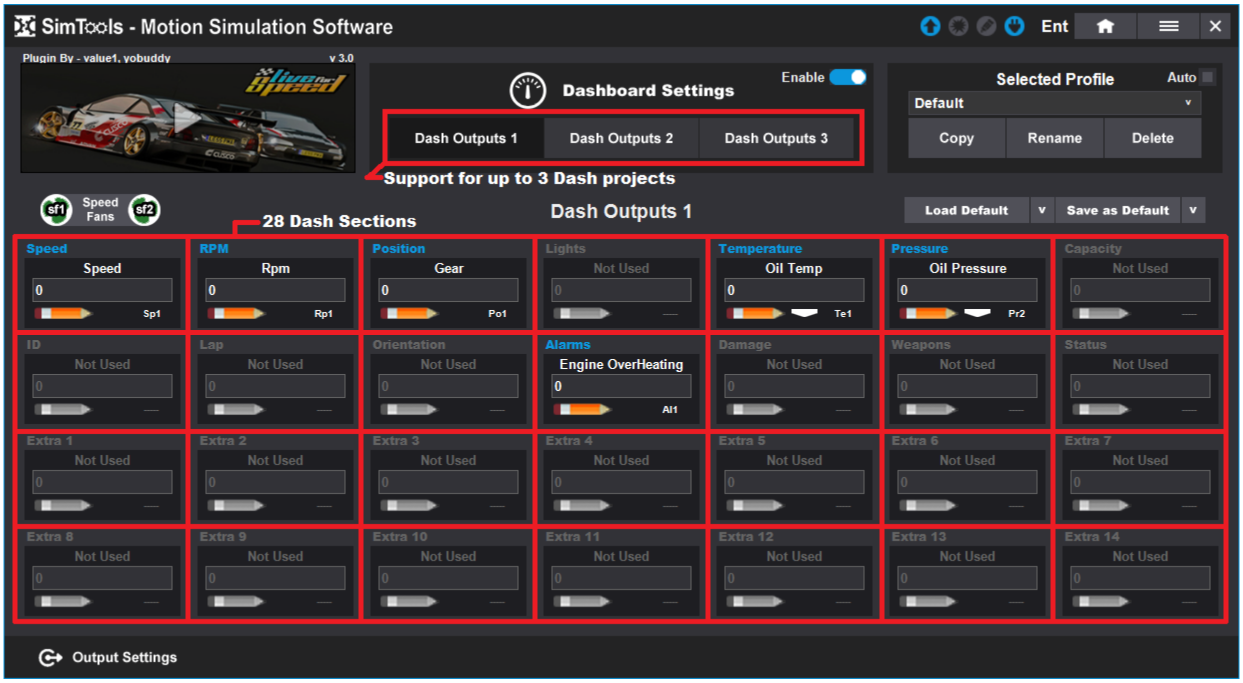
If you find that a trigger is being tripped to easily or not being tripped when needed, you can increase or lower the value with the corresponding blue slider. You can also use the Capture, Reset and Save buttons like we did above to change the value as needed.

Back to Table of Contents

Dash Configuration

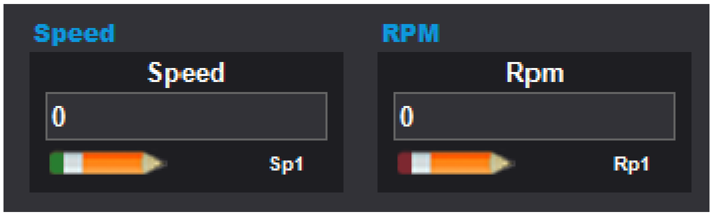
The Dash section of SimTools is designed to allow the user to format and send data from the dash telemetry SimTools receives from a game plugin. The Dash section is also able to drive three completely separate dash projects at the same time, without having to combine projects together. There are 28 sections the dash inputs are sorted into, and all of the 28 sections work the same way.

Dash Gui Overview

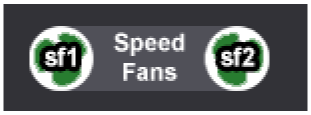


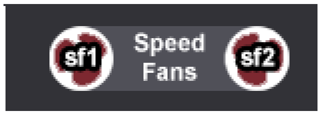
Speed Speed 0 Sp1	RPM Rpm 0 Rp1	Position Gear 0 Po1	Lights Not Used 0	Temperature Oil Temp 0 Te1	Pressure Oil Pressure 0 Pr2	Capacity Not Used 0
ID Not Used 0	Lap Not Used 0	Orientation Not Used 0	Alarms Engine OverHeating 0 Al1	Damage Not Used 0	Weapons Not Used 0	Status Not Used 0
Extra 1 Not Used 0	Extra 2 Not Used 0	Extra 3 Not Used 0	Extra 4 Not Used 0	Extra 5 Not Used 0	Extra 6 Not Used 0	Extra 7 Not Used 0
Extra 8 Not Used 0	Extra 9 Not Used 0	Extra 10 Not Used 0	Extra 11 Not Used 0	Extra 12 Not Used 0	Extra 13 Not Used 0	Extra 14 Not Used 0

You can see a section has been edited by the pencil icon in each section. A green eraser means commands are configured in that section. A red eraser means you have no commands configured in that section.

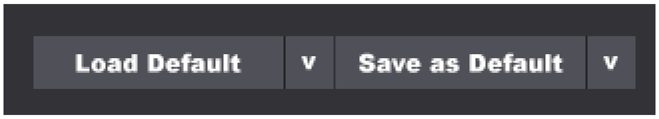


You can also see if a game plugin supports 3D Speed Fans the same way. A green Speed Fans icon means that 3D speed fans are supported and red means they are not.

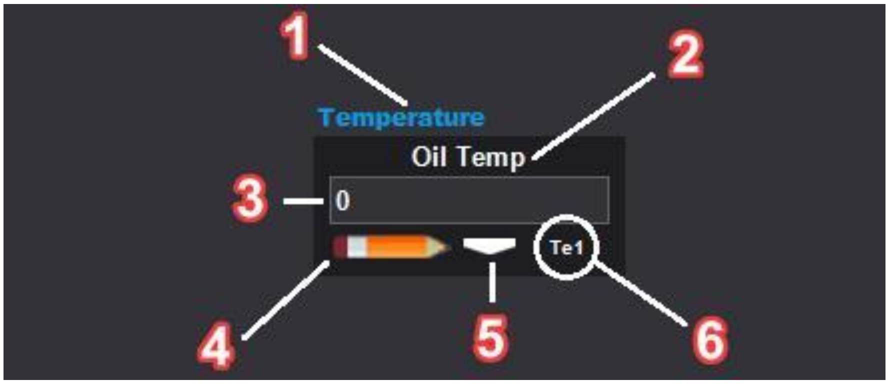




Like other pages in SimTools, you can load from and save to the Default or Global profile.



Section Overview



Reference the image directly above for the following:

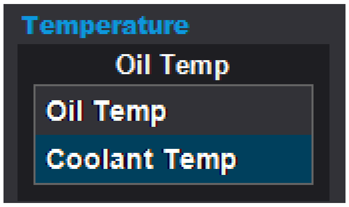
1 - **Section Title –** This is the types of values that will be found in this section. For example, in the pic above, you will find dash data that deals with temperatures.

2 - **Output Selection –** The current output displayed to the screen for this section. If a section has one of these icons, then there is more than one output to configure.

3 - **Current Value –** This is the current value of this output. This output value includes any output rules you have configured for this dash output.

4 - **Edits Button –** Clicking this takes you to the edits page where you can configure the Output Rules you want to use for this output. There is an image of this in Dash Edits below.

5 - **Output Selection –** Clicking the Output Selection button allows the user to decide what output is displayed on screen for this section.

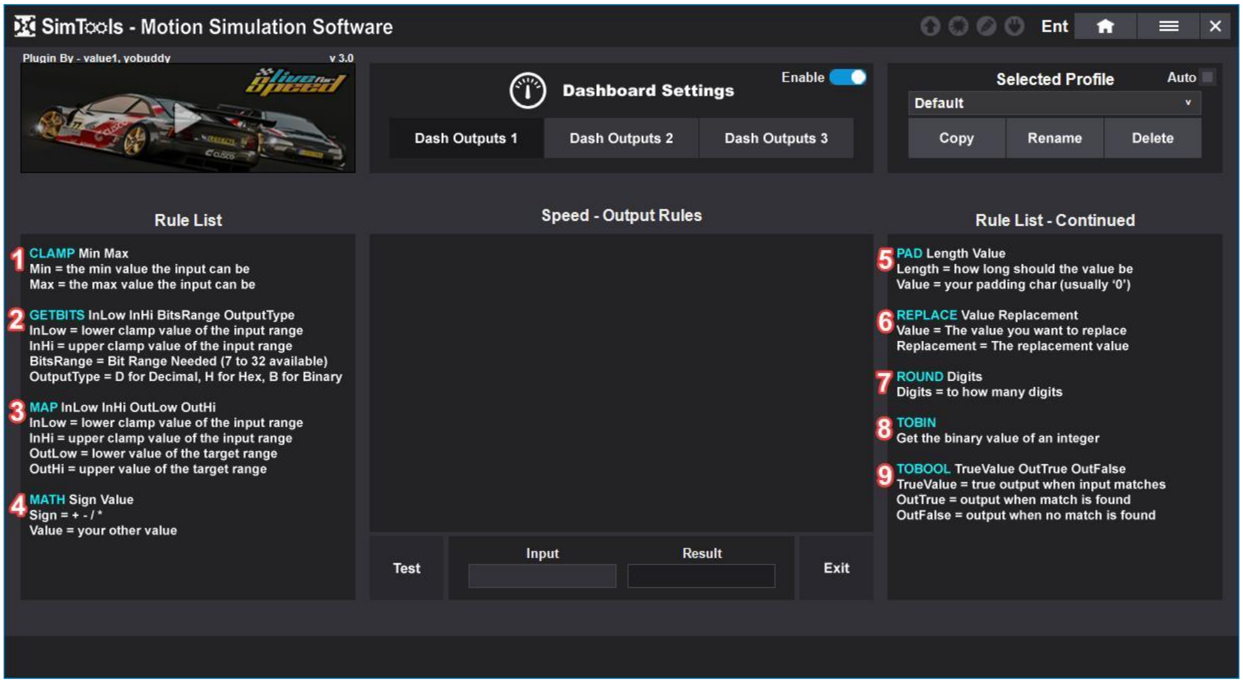


6 - **Dash Code** – This is the dash code you will use in Output Settings to configure a value for modified output. For example, in the Oil Temp picture above, we would use the dash code Te1 in brackets like this: <Te1> to reference the output value.

Dash Outputs

Clicking the pencil in any section will take you to the command editor for the output that is currently selected in that section. Commands are processed in the order they are entered.

Dash Gui Overview



1 CLAMP Min Max
Min = the min value the input can be
Max = the max value the input can be

2 GETBITS InLow InHi BitsRange OutputType
InLow = lower clamp value of the input range
InHi = upper clamp value of the input range
BitsRange = Bit Range Needed (7 to 32 available)
OutputType = D for Decimal, H for Hex, B for Binary

3 MAP InLow InHi OutLow OutHi
InLow = lower clamp value of the input range
InHi = upper clamp value of the input range
OutLow = lower value of the target range
OutHi = upper value of the target range

4 MATH Sign Value
Sign = + - / *
Value = your other value

5 PAD Length Value
Length = how long should the value be
Value = your padding char (usually ‘0’)

6 REPLACE Value Replacement
Value = The value you want to replace
Replacement = The replacement value

7 ROUND Digits
Digits = to how many digits

8 TOBIN
Get the binary value of an integer

9 TOBOOL TrueValue OutTrue OutFalse
TrueValue = true output when input matches
OutTrue = output when match is found
OutFalse = output when no match is found

The following is a brief overview of the dash commands

Reference the image directly above for the following:

1 - **Clamp –** Keeps a value within a specific range with a defined minimum and a maximum value.

2 - **GetBits –** Gets the output value in a specific bit range. The output can be in Hex, Decimal or Binary(chr) output.

3 - **Map –** This will re-map a number from one range to another. A value of InLow would get mapped to OutLow, and a value of InHigh to would get mapped to OutHigh. All the values between get mapped to the new range accordingly.

4 - **Math –** Execute a math problem on the current value.

5 - **Pad –** This is used to pad the output to a given length.

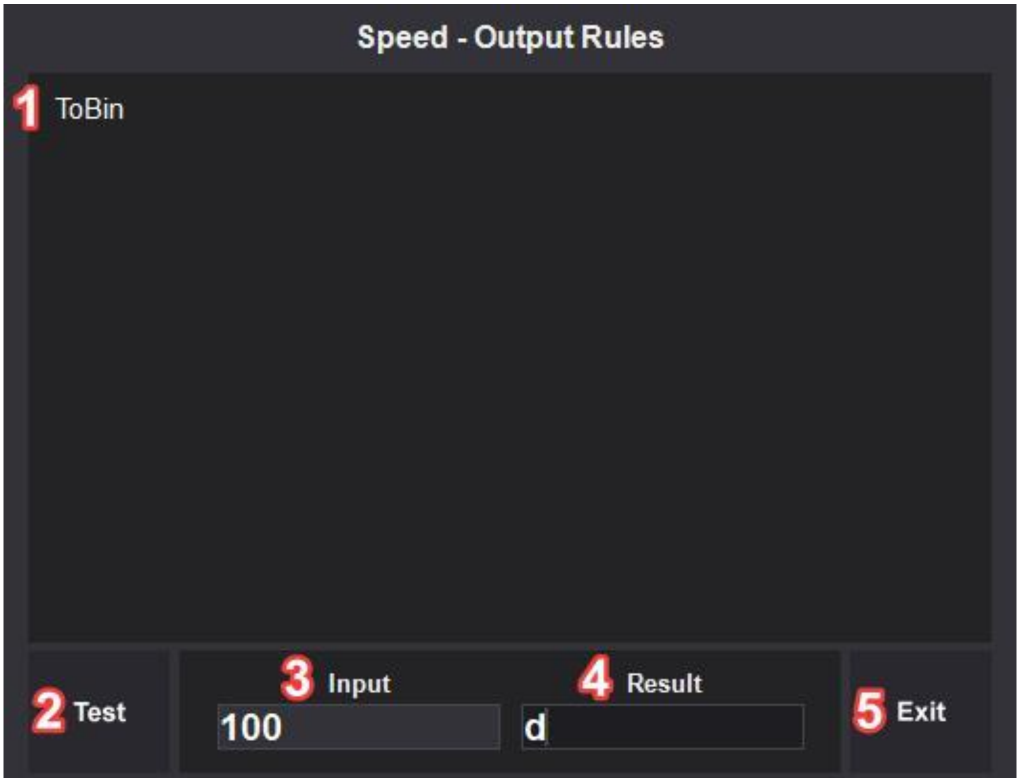
6 - **Replace –** Finds an alphabetic character in a string and then replaces it with another character

7 - **Round –** Rounds the current value to a user defined number of digits.

8 - **ToBin –** Gets an Ascii character of the current value.

9 - **ToBool –** Turns the value into a True or False for output.

You can test your commands using the output tester found at the bottom of the Output Rules command window.



Speed - Output Rules

ToBin

Input: 100

Result: d

Reference the image directly above for the following:

1 - **Text Area –** This is where you type your rules.

2 - **Test –** Click the Test button when you are done entering your rules and Input value.

3 - **Input –** Enter your Input value here.

4 - **Results –** This displays the result after the Input value is converted by the rule.

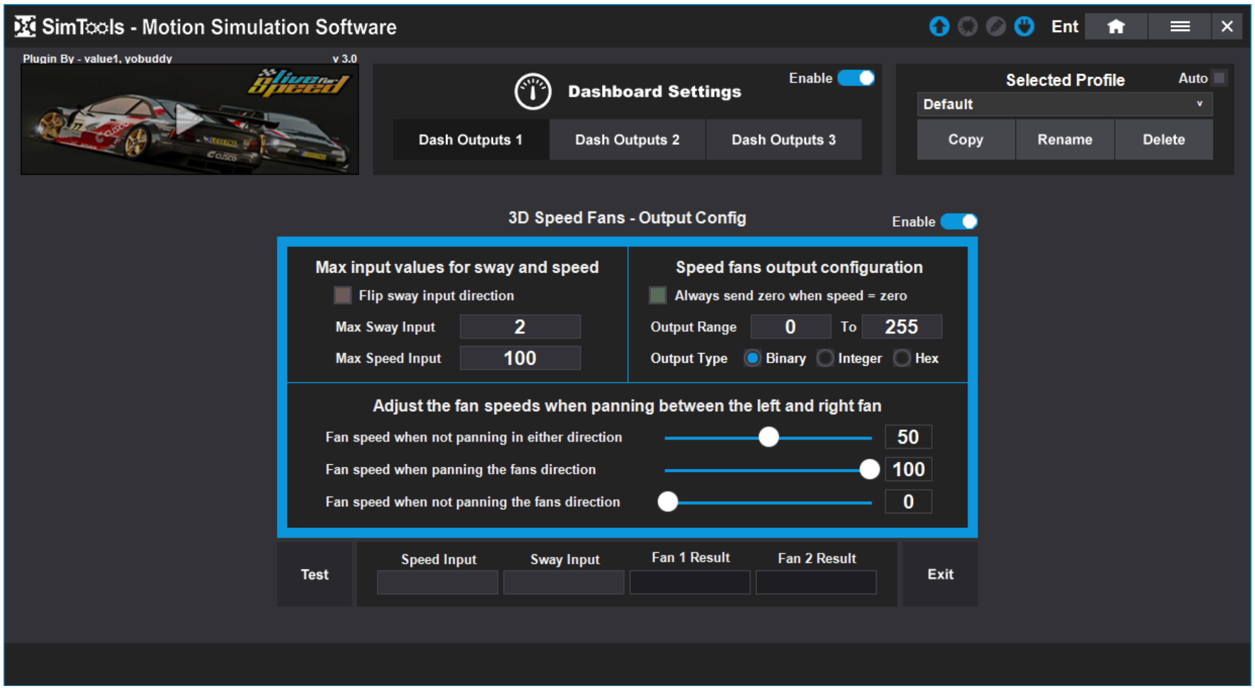
5 - **Exit –** Click the Exit button when you are done testing.

The output tester is a good way to see what all the commands can do and is a great way to verify the commands you have entered are working as expected. Note: Not all Ascii chr binary outputs are text readable.

Back to Table of Contents

3D Speed Fans

The 3D Speed Fans page allows you to control fans to simulate head and cross winds. These two fan outputs are calculated from the speed and sway inputs from a game plugin.



Enable ●
Selected Profile: Default
Auto □

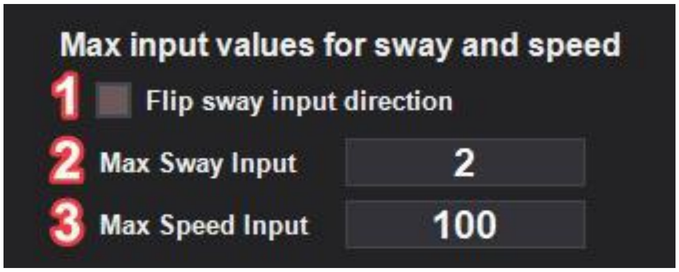
3D Speed Fans - Output Config
Enable ●

Max input values for sway and speed
□ Flip sway input direction
Max Sway Input: 2
Max Speed Input: 100

Speed fans output configuration
□ Always send zero when speed = zero
Output Range: 0 To 255
Output Type: ● Binary ○ Integer ○ Hex

Adjust the fan speeds when panning between the left and right fan
Fan speed when not panning in either direction: 50
Fan speed when panning the fans direction: 100
Fan speed when not panning the fans direction: 0

The configuration for the 3D speed output is separated into three sections. The first section allows you to set the limits you want to use for Sway and Speed. These values for Sway and Speed are used to calculate the 3D speed outputs for the fans.



Max input values for sway and speed
1 □ Flip sway input direction
2 Max Sway Input: 2
3 Max Speed Input: 100

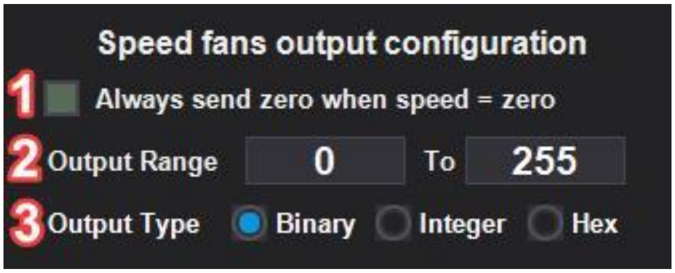
Reference the image directly above for the following:

1 - **Flip sway input direction –** This flips the sway input. You can check this box if the panning of the fans is backwards when going around corners.

2 - **Max Sway Input –** This value is what tells SimTools to either pan left or right. If your fans are not fully panning then lower this number, if your fans are panning to easily, then raise this number. A good place to start for this value is 2/3 of the Max/Min value configured for sway in Max/Min Tuning.

3 - **Max Speed Input –** This value tells SimTools when the fans should be spinning at max output. If your fans reach full speed to easily, then raise this value. If your fans never get to full speed or they barley ever get there, then lower this value.

The next section allows us to configure how we want to send data.



Speed fans output configuration

1 □ Always send zero when speed = zero

2 Output Range 0 To 255

3 Output Type ● Binary ○ Integer ○ Hex

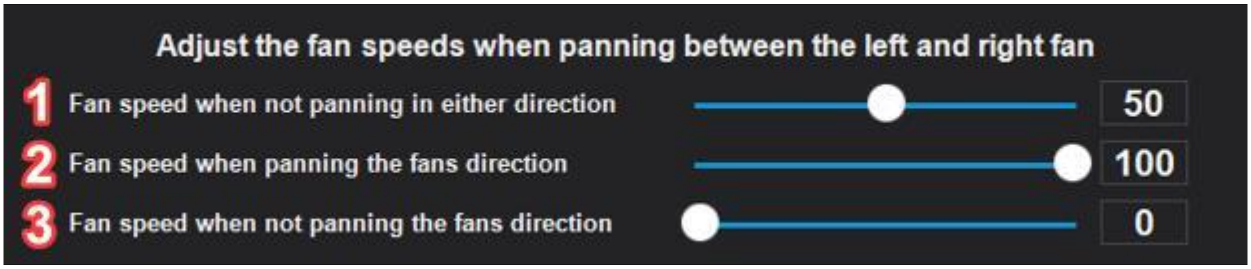
Reference the image directly above for the following:

1 - **Always send zero when speed = zero –** This allows SimTools to turn the fans off when the speed input is zero even though our minimum value may not start at zero.

2 - **Output Range –** This allows you to adjust your output bit range. You can increase the low value from zero if the fans require more power to get started. You can decrease the top end if the fans are too loud or blow too hard.

3 - **Output Type –** There are three output types: Binary, Integer and Hex.

The last section allows us to completely customize the panning of the fans to our liking.



Adjust the fan speeds when panning between the left and right fan

1 Fan speed when not panning in either direction 50

2 Fan speed when panning the fans direction 100

3 Fan speed when not panning the fans direction 0

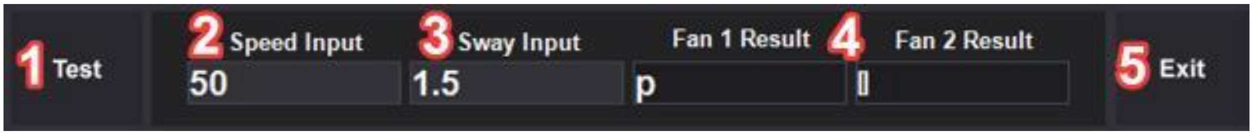
Reference the image directly above for the following:

1 - **Fan speed when not panning in either direction** – When the output is centered and the fans are spinning at the same speed, you can adjust their speed.

2 - **Fan speed when panning the fans direction** – When the direction is fully panned toward a fan, you can set how fast you want it to blow.

3 - **Fan speed when not panning the fans direction** - When the direction is fully panned away from a fan, you can set how slow you want it to blow.

Lastly, there is a 3D speed fan output tester at the bottom of the page. You can test with different inputs and check that the output is doing what you want it to.



Speed Input: 50

Sway Input: 1.5

Fan 1 Result: p

Fan 2 Result: [illegible]

Reference the image directly above for the following:

1 - **Test –** Click the Test button after you have entered your test data.

2 - **Speed Input –** Enter a speed value for testing.

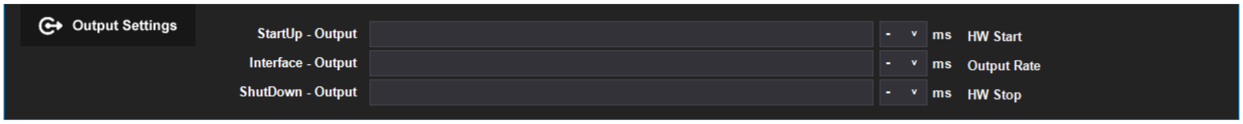
3 - **Sway Input –** Enter a Sway value for testing.

4 - **Results –** Your fan results will display here after clicking the Test button.

5 - **Exit –** Click the Exit button when you are done testing.

Output Settings

You can get to the main output settings of each of the three dash sections, by clicking the Output Settings button. Doing this will bring up the output settings shown below.



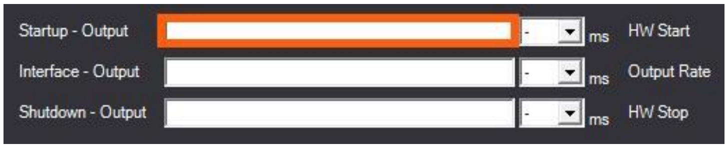
StartUp - Output: - ms HW Start

Interface - Output: - ms Output Rate

ShutDown - Output: - ms HW Stop

Details on each Output Settings item

Startup - Output – You can use <x> anywhere in the output string where x = 0 through 255 to send an ASCII char for the value of <x>. Other than that, what you type here is exactly what is sent to the controller. This area can be left blank if no commands are needed before Interface output begins.

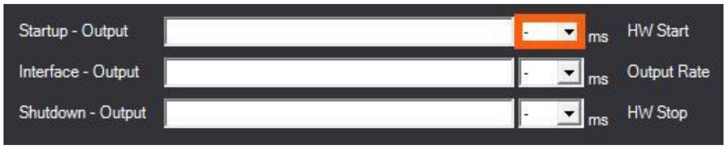


Startup - Output: - ms HW Start

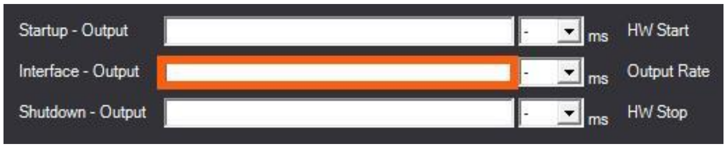
Interface - Output: - ms Output Rate

Shutdown - Output: - ms HW Stop

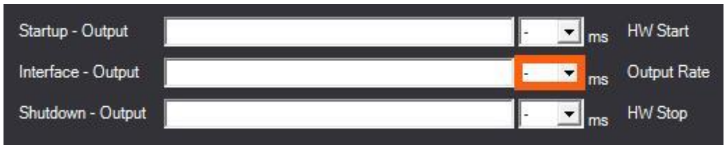
HW Start – The number of milliseconds after the Startup Output has been sent to continue with Interface Output. This selection is not needed if Startup Output is not used.



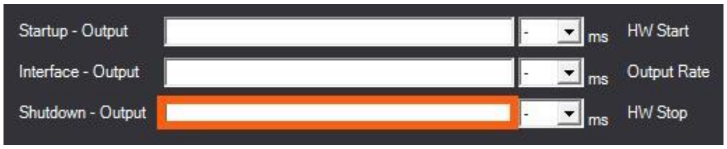
Interface - Output – Here you are able to define a formatted output string of what the output will consist of. You can use any of the dash outputs <DashCode> anywhere in the output string you want. You can also use <x> anywhere in the output string (where x = 0 through 255) to send an ASCII char for the value of <x>.



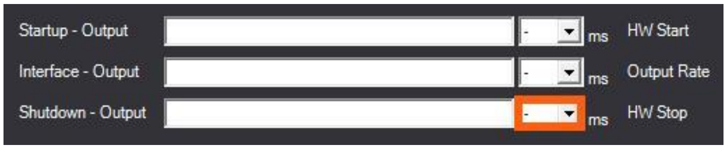
Output Rate – Select how often to send Interface Output data in milliseconds.



Shutdown - Output – You may use <x> anywhere in the output string where x = 0 through 255 to send an ASCII char for the value of <x>. Other than that, what you type here is exactly what is sent to the controller. This area can be left blank if no commands are needed after Interface output shuts down.



HW Stop – Select the number of milliseconds after the Interface Output stops to continue with Shutdown Output. This selection is not needed if Shutdown Output is not used.



Below are a two links that show the dash section in action.

This is a 3D Speed Fans example.
https://www.xsimulator.net/community/threads/simtools-v3-3d-wind-dash-example-with-arduino-sketch.17963/

This is a custom RPM led strip example.
https://www.xsimulator.net/community/threads/simtools-v3-rpm-dash-example-with-arduino-sketch.17871/

Back to Table of Contents

Vibe Configuration

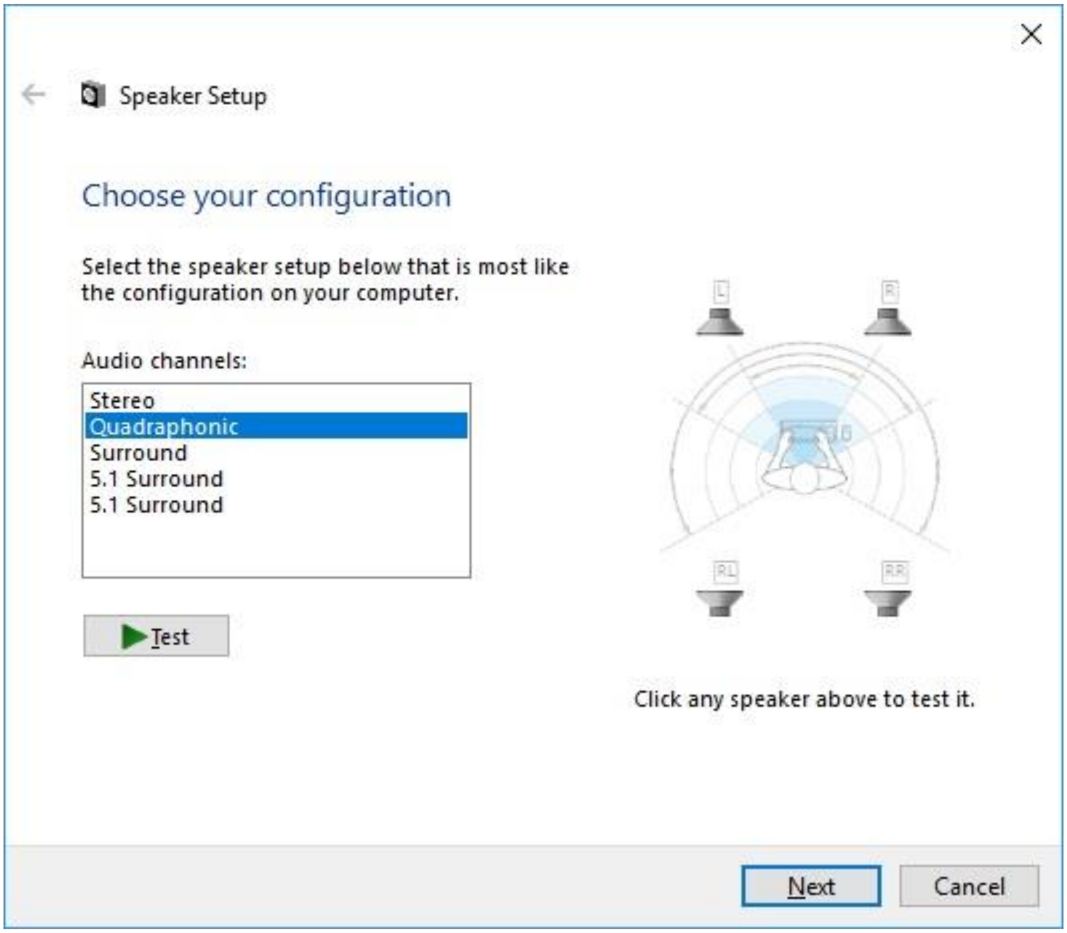
The Vibe section of SimTools v3 is designed to drive transducers (butt-kickers) from the telemetry SimTools receives from game plugins. Vibe is able to drive up to three sound cards, where each sound card can have up to four independent transducer locations. Vibe also allows you to hand craft the sounds effect used to drive the transducers from to the telemetry data received.

Sound Card Configuration

Vibe works by manipulating a quadraphonic speaker setup. There are a couple of ways to configure a setup.

Option 1) Use "quadraphonic" mode for output. Here are screen shots of the settings needed to setup your sound card with quadraphonic speaker output.

Select quadraphonic from the Audio Channels selection box.



Speaker Setup

Choose your configuration

Select the speaker setup below that is most like the configuration on your computer.

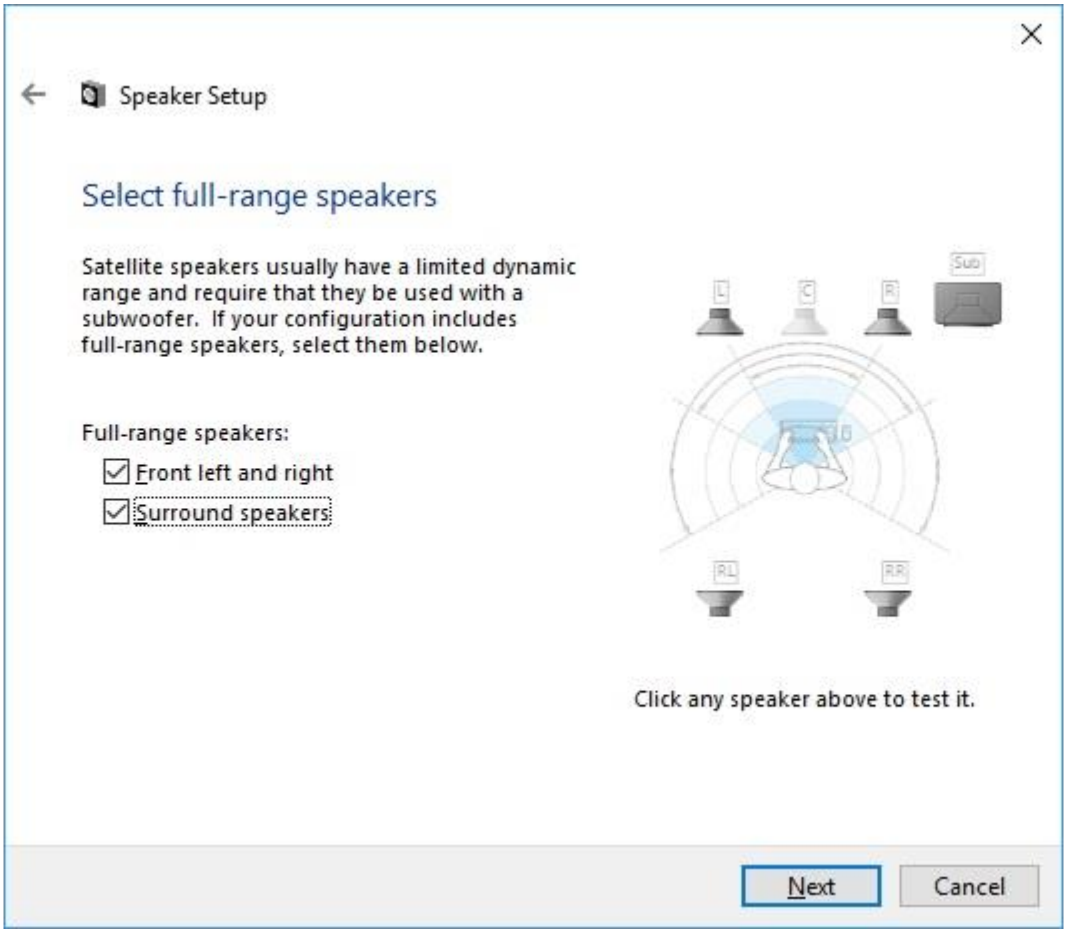
Audio channels:

- Stereo
- Quadraphonic
- Surround
- 5.1 Surround
- 5.1 Surround

Click any speaker above to test it.

Make sure the checkboxes are checked "Full Range Speakers". You do not want Windows to filter the low frequencies, because you are not running book shelf speakers.

You are driving a form of subwoofer and you do not want the low frequencies to get clipped out of the audio stream. Please make sure those options are on.



Speaker Setup

Select full-range speakers

Satellite speakers usually have a limited dynamic range and require that they be used with a subwoofer. If your configuration includes full-range speakers, select them below.

Full-range speakers:

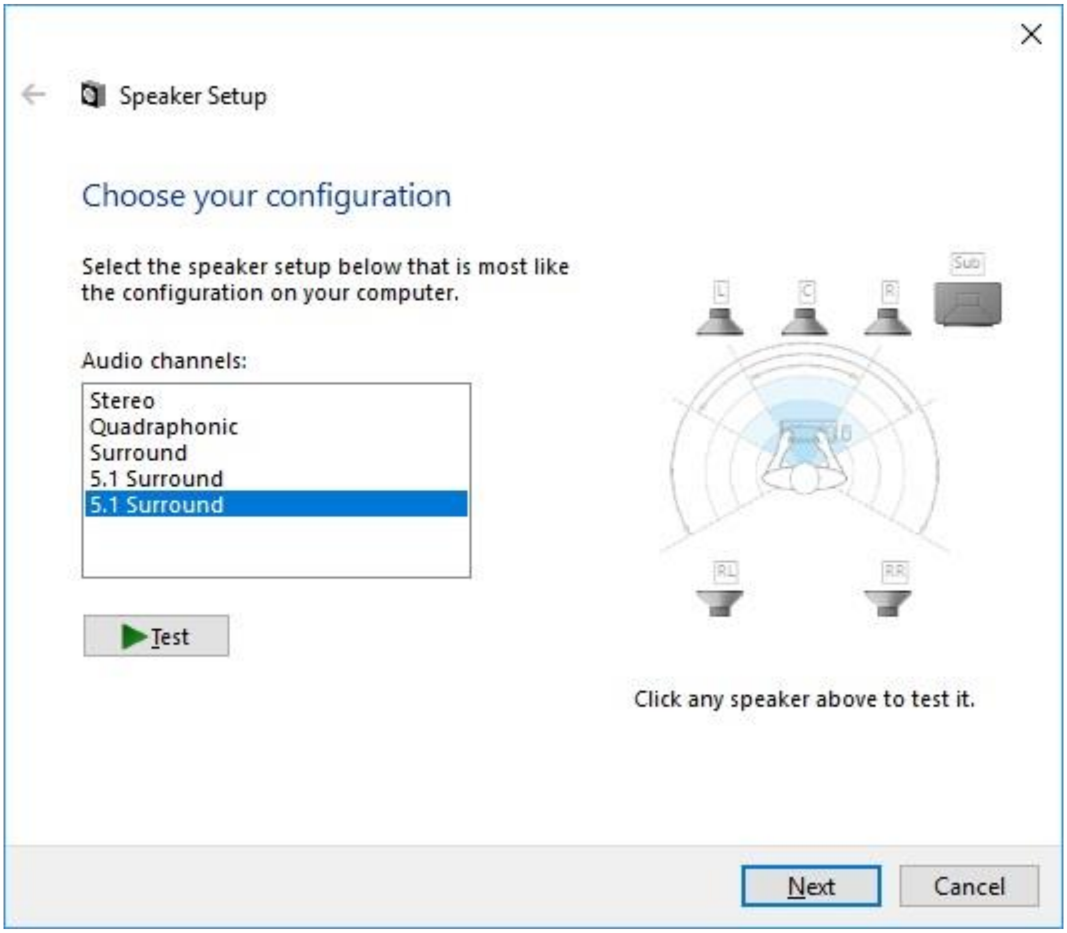
☑ Front left and right

☑ Surround speakers

Click any speaker above to test it.

Option 2) Use 5.1 the surround mode with no base or center speaker. Essentially configured for quadraphonic mode. We find that when you put your sound card in quadraphonic mode, sometimes the rear speakers are not as loud as the front speakers.

With our sound card, we were not able to make the rear speakers any louder in Quadraphonic mode. So, we switched to 5.1 and removed the center and subwoofer speaker from the setup. Essentially giving us Quadraphonic mode again, but also unlocking the room correction tab.



Speaker Setup

Choose your configuration

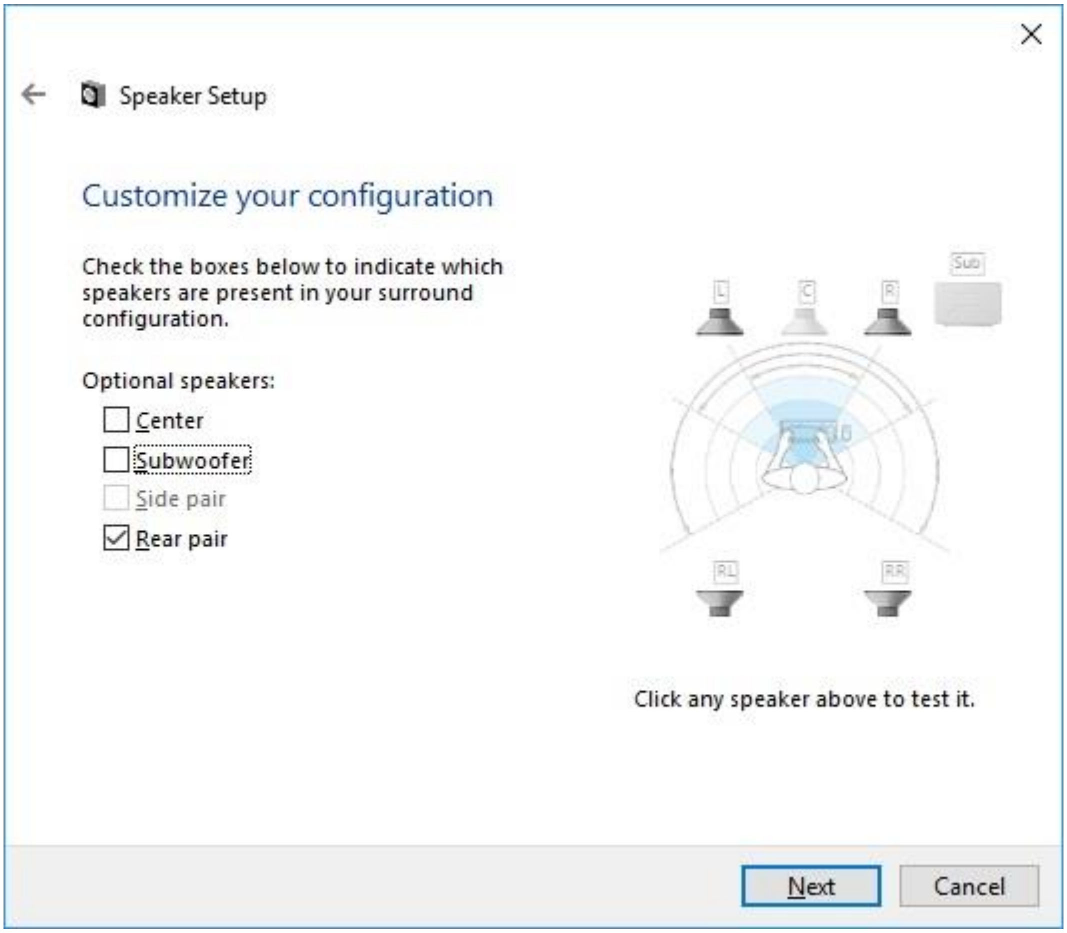
Select the speaker setup below that is most like the configuration on your computer.

Audio channels:

- Stereo
- Quadraphonic
- Surround
- 5.1 Surround
- 5.1 Surround

Click any speaker above to test it.

Re-configure the 5.1 output mode for a Quadraphonic sound system.



Speaker Setup

Customize your configuration

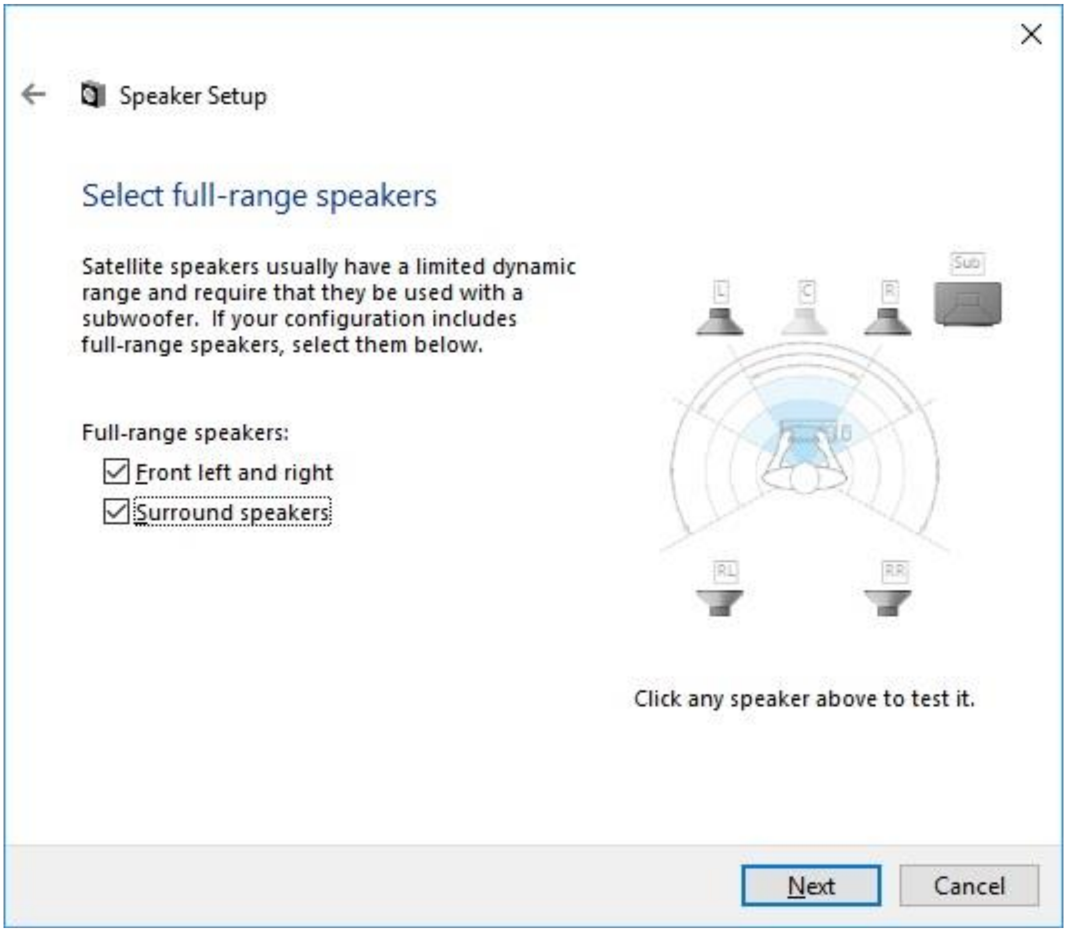
Check the boxes below to indicate which speakers are present in your surround configuration.

Optional speakers:

☐ Center
☐ Subwoofer
☐ Side pair
☑ Rear pair

Click any speaker above to test it.

Make sure the checkboxes are checked “Full Range Speakers”.



Speaker Setup

Select full-range speakers

Satellite speakers usually have a limited dynamic range and require that they be used with a subwoofer. If your configuration includes full-range speakers, select them below.

Full-range speakers:

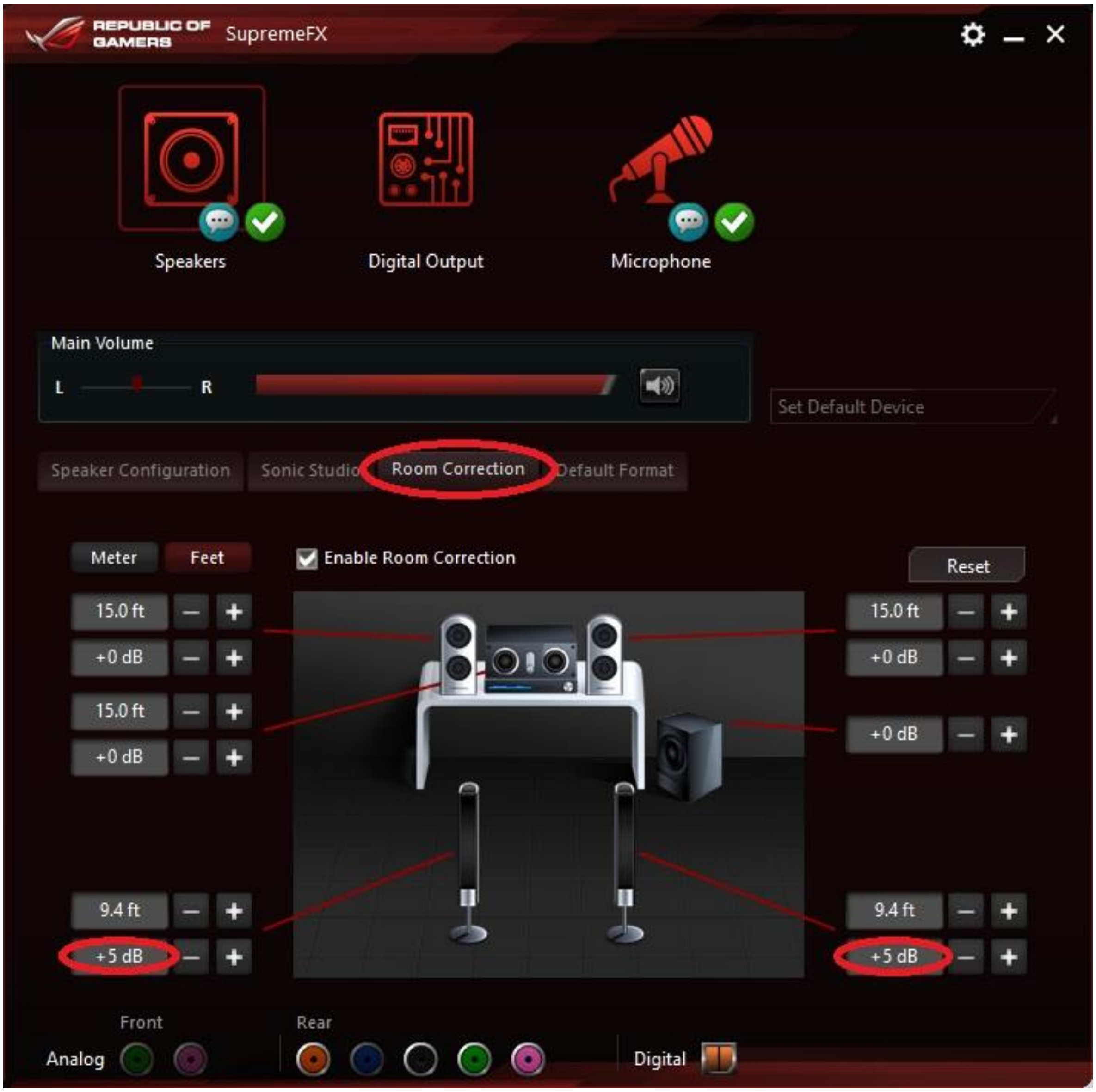
☑ Front left and right

☑ Surround speakers

Click any speaker above to test it.

There you go. Back to a Quadraphonic sound system with possibly more options available for sound balancing. For our setup, we then went into the Room Correction tab and boosted our rear outputs +5db.

This sounded pretty even when a tune was played over speakers or transducers.



☑ Enable Room Correction

Depending on your sound card settings, you may or may not be able to even out the sound levels of the Front vs the Rear speakers or transducers. It is better to find a resolution to this problem in the sound card settings. Vibe will allow you to address this problem in its settings, but be aware that you will lose some output volume when notes are played in some locations. (More on this later)

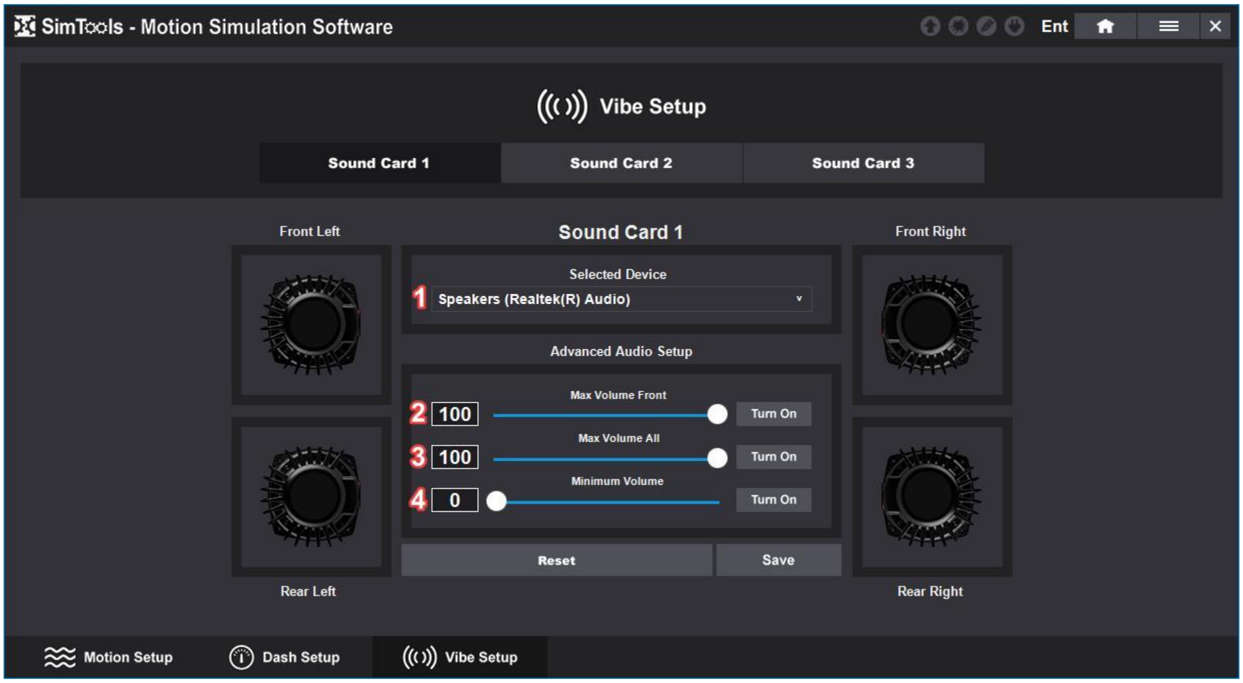
Using the Volume Balancer on the Sound Card Settings page is a great way to test your transducers for equal output volumes. It will cycle through different sounds in all output locations.

It can be pretty helpful, because most test sounds from the sound card setup are a high tone you cannot hear on the transducer.

Back to Table of Contents

Sound Card Setup

We will show you how to setup Sound Card #1 for Vibe in this section. Click “Interface Setup” from the upper right main menu. Then, select “Vibe Setup” at the bottom of the screen to get to the screen shown in the picture below.



Sound Card 1

Selected Device
1 Speakers (Realtek(R) Audio)

Max Volume Front
2 100

Max Volume All
3 100

Minimum Volume
4 0

Reference the image directly above for the following:

1 - **Selected Device** is where you select the sound card you want to use for Sound Card #1. For your first time setting up Vibe, do not worry about the rest of the settings for now. Click “Save” and continue to the next section.

2 - The **Max Volume Front** slider allows you to adjust the volume between the Front and Rear volume output from the Sound Card. Only do this if you are not able to do it with your built-in sound card settings.

If you are not able to balance the Rear and Front output volume with your built-in sound card settings, then click the “Turn On” button next to the slider to turn on the vibration tester. Now adjust the slider so the front and rear vibrations feel even.

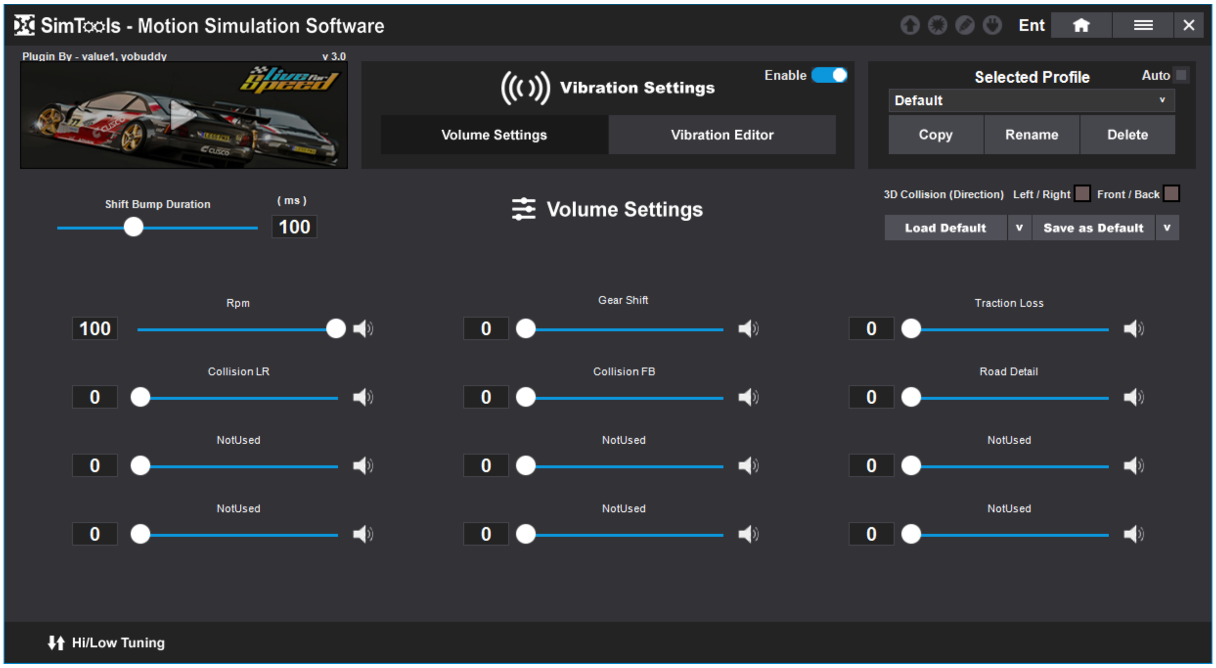
3 - The **Max Volume All** slider allows you to adjust the volume when all transducers are playing a single vibration vs a single left or right side playing it. To make adjustments, click the “Turn On” button next to the slider to turn on the vibration tester. Then, adjust the slider to a position where the total output vibration feels the same no matter where the vibration is being played.

4 - The **Minimum Volume** slider allows you to adjust the minimum volume used for Vibe. To make adjustments, click the “Turn On” button next to the slider to turn on the vibration tester. Then, adjust the slider to a position where you cannot tell anything is playing. You are setting what you want Vibe to consider the minimum volume for output. If it takes at a certain volume to achieve a minimum vibration for your transducer, you can adjust it here.

After making adjustments, click “Save” to save your configurations. Your sound setup is now complete!

Volume Settings

To access **Volume Settings**, hover over a game plugin banner on your home screen in SimTools and click on the Vibe icon located at the bottom left corner.



Enable: on

Selected Profile: Default

Auto □

3D Collision (Direction) Left / Right □ Front / Back □

Shift Bump Duration (ms) 100

Rpm 100	Gear Shift 0	Traction Loss 0
Collision LR 0	Collision FB 0	Road Detail 0
NotUsed 0	NotUsed 0	NotUsed 0
NotUsed 0	NotUsed 0	NotUsed 0

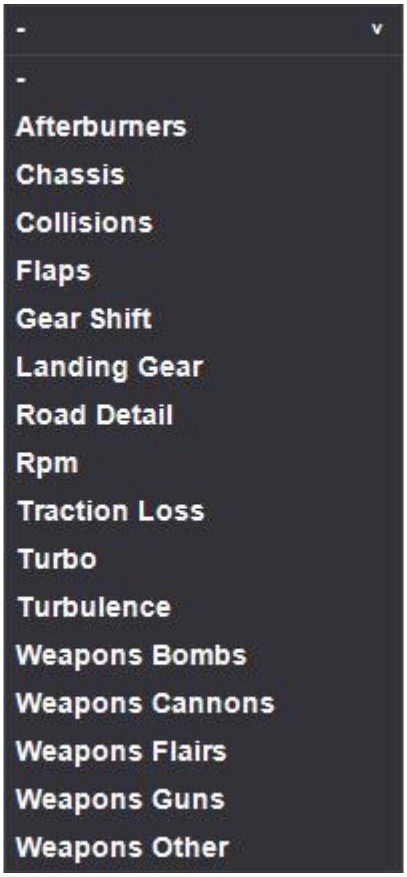
On the Volume Settings page, you can adjust the output volumes of each of the effects that you can use with a plugin. You might be tempted to run them all at 100%, but finding a good balance provides for the best overall experience. Fortunately, this can be done live while the game is being played.

This section also provides you with the ability to flip the Collision sound directions if they play in the opposite direction than what you expect when played in 3D. You can also adjust the length of the “Shift Bump” note that is played, depending on the type of vehicle you are controlling in the game.

Back to Table of Contents

Vibration Editor

The Vibration editor allows you to design exactly how a sound plays and where it is played from when it is used. Below is a brief overview of the included Vibes in SimTools v3. They are listed in the same order they are found in SimTools.



Afterburners – Used to simulate vibrations from Afterburners being ignited.

Chassis – Can be run in 2D or in 3D when used with multiple transducers.
When in 3D with a 4 transducers setup, each corner plays as a “shock” on the vehicle. Creating a pretty cool 3D effect that is better to experience than be told about.

Collision – Can be run in 2D or in 3D when used with multiple transducers.
When in 3D with a 4 transducers setup, each Collision effect jumps to the side it gets struck from. This creates a nice 3D effect when you collide with another object.

Flaps – Can be used to simulate the flaps on an aircraft.

Gear Shift – Used to simulate a Gear Shifting Effect for a vehicle.

Landing Gear – Can be used to simulate landing gear on an aircraft.

Road Detail – Can be used to simulate a nice road noise effect or even to simulate bumps on the road. It just depends on how you tune it in the Tuning Center.

RPM – Used to Simulate RPM vibrations for a vehicle.

Traction Loss – Can be used to simulate vibrations from traction loss of a vehicle.

Turbo – Can be used to simulate vibrations from Turbo chargers.

Turbulence – Can be used to simulate a wind turbulence effect.

Weapons Bombs – Can be used to simulate a fired weapon effect.

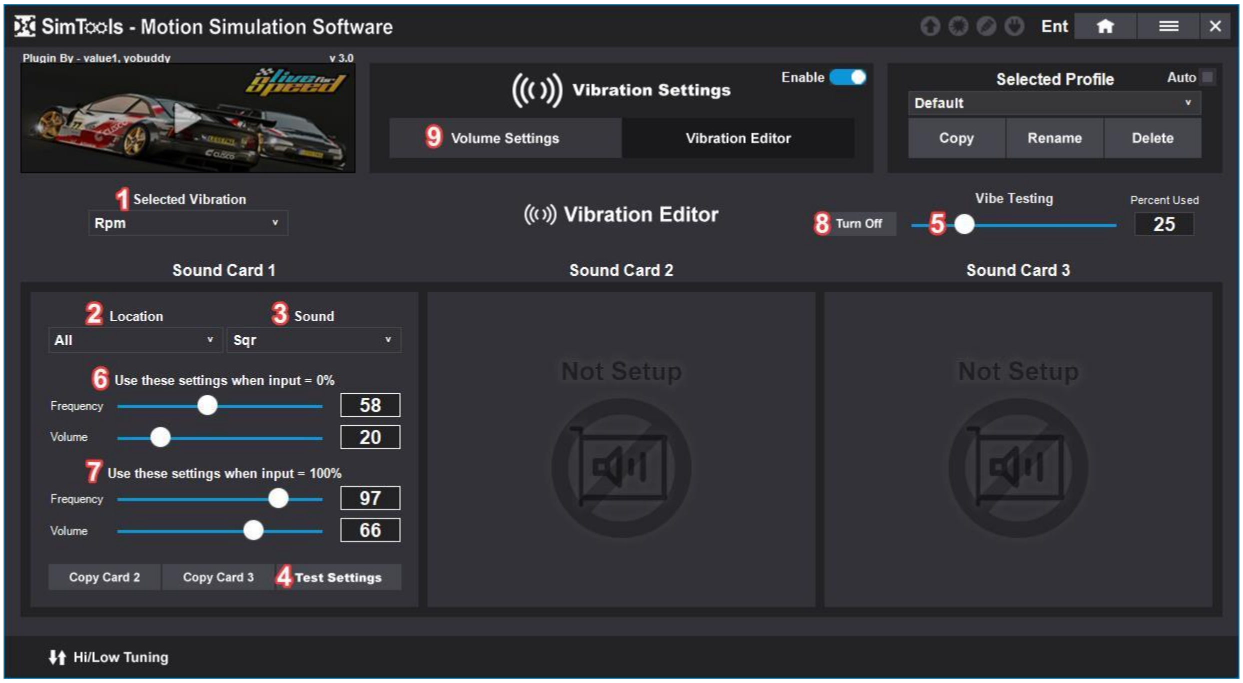
Weapons Cannons – Can be used to simulate a fired weapon effect.

Weapons Flairs – Can be used to simulate a fired weapon effect.

Weapons Guns – Can be used to simulate a fired weapon effect.

Weapons Other – Can be used to simulate a fired weapon effect.

Below is an example for the RPM Vibe settings.



Enable: on

Selected Profile: Default

Auto: □

1 Selected Vibration: Rpm

Vibe Testing — Percent Used: 25

2 Location: All

3 Sound: Sqr

6 Use these settings when input = 0%

Frequency: 58

Volume: 20

7 Use these settings when input = 100%

Frequency: 97

Volume: 66

Configure and adjust how it sounds when it is played.

Reference the image directly above for the following:

1 - Select Rpm from the “Selected Vibration” dropdown menu. This will display configuration options for Sound Card 1.

2 - Select a location for the sound to be played from. In this example we will use “All”.

3 - Select a Sound. We will use a Square (Sqr) WAV to create its noise.

4 - Click the “Test Settings” button to display Vibe Testing.

5 - Move the Percent Used slider to 0%.

6 - Under “Use these settings when input = 0%” adjust the Frequency and Volume sliders to how the sound should play when input is as low as possible.

5 - Slide the Percent Used slider to 100%.

7 - Under “Use these settings when input = 100%” adjust the Frequency and Volume sliders to how the sound should play when input is as high as possible.

5 - Slide the Percent Used slider back and forth to see how it sounds.

8 - When you are done testing, click the “Turn Off” button to stop testing.

9 - Click the “Volume Settings” button to return to that page and click “Save as Default” to save your configurations.

Back to Table of Contents

High/Low Tuning

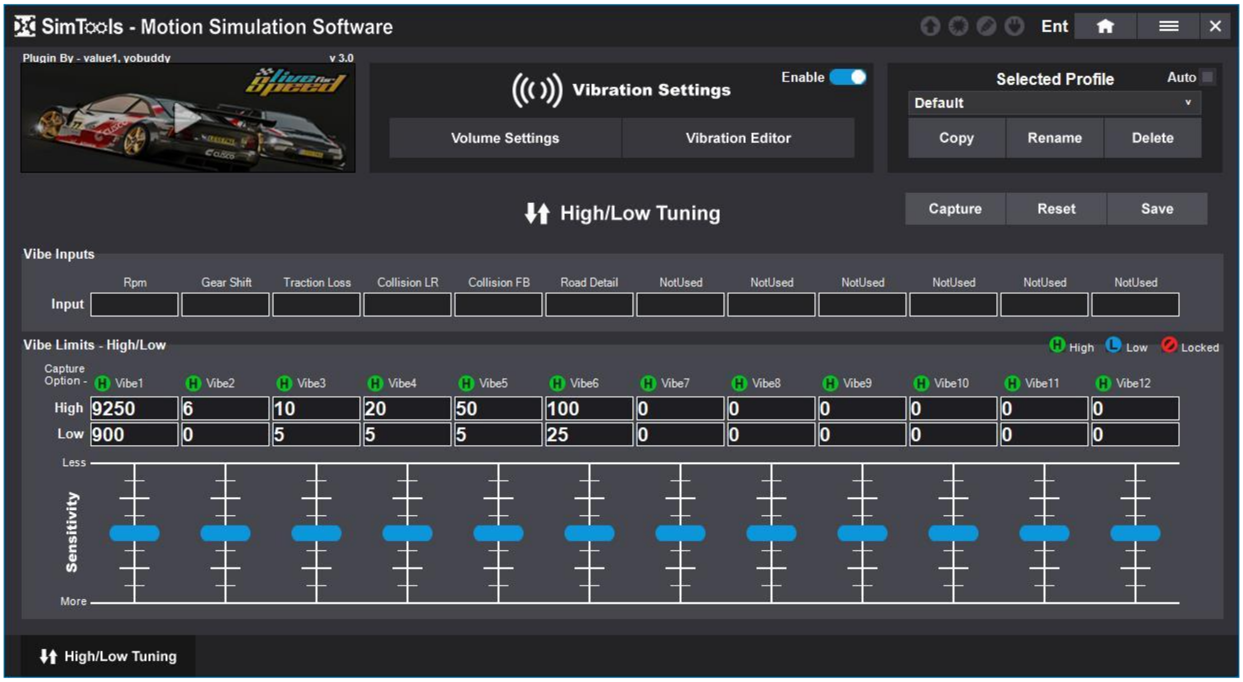
The tuning center for Vibe works like it does in Motion, with a couple of exceptions. You are capturing High / Low values, instead of Max / Min values. The High / Low values tell Vibe when and how to play your Vibration effect.

Any incoming value that is below the Low value is equal to 0%. Anything equal to or above the High value translates to 100%. You will not hear anything form Vibe when the incoming value is below the Low value, and it will be maxed when the incoming values equals or exceeds the High value.

Look at RPM for Live for Speed below. We have a 900 for Low and a 9250 for High. This means that the note will start to play when the input reaches 900. It will be maxed when the incoming values equals or exceeds the High value of 9250.

All cars in the game will top out at a bit different frequency and volume. This provides nice settings for the whole game with a bit of a Vibe difference between vehicles.

Note: If we were capturing Turbo, we would set the Low to 1, so the sound would turn off when it is not active.



Vibe Inputs

	Rpm	Gear Shift	Traction Loss	Collision LR	Collision FB	Road Detail	NotUsed	NotUsed	NotUsed	NotUsed	NotUsed	NotUsed
Input												

Vibe Limits - High/Low

Capture Option -	H Vibe1	H Vibe2	H Vibe3	H Vibe4	H Vibe5	H Vibe6	H Vibe7	H Vibe8	H Vibe9	H Vibe10	H Vibe11	H Vibe12
High	9250	6	10	20	50	100	0	0	0	0	0	0
Low	900	0	5	5	5	25	0	0	0	0	0	0

These numbers can be captured and/or edited live while that game is running. It even has some options for capturing. You have the option to capture the High values, the Low values or No values at all.

How to tune in each Vibe

Here are some Insights on how to tune in each Vibe's High / Low values in the High/Low Tuning for Vibe. This is some of the thought process behind each one and how to get them working.

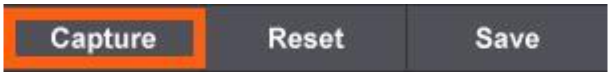
This will explain them in ways that should work for all vehicles in a game including some profiling when switching vehicles in a game.

Running the game live and capturing the limits is by far the easiest way to tune in a Vibe for Vibe. We always suggest using a "medium" car in the game for best results. Things can be adjusted as you go along if it is not possible at the time.

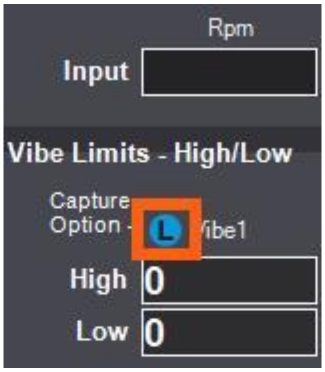
Here is an example on how it works. We will use RPM in this example.

First, put the game in "windowed mode", so you can see and easily adjust High/Low Tuning.

1) Before launching the game, press the "Capture" button.



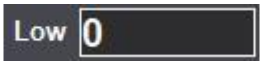
2) Set the RPM column to capture the Low values of the incoming Vibe data. Notice that the Vibe Input RPM correlates to the Vibe Limit Vibe1 directly below it. All Vibe Inputs correlate to the Vibe Limits directly below them.



High 0

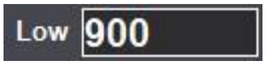
Low 0

3) Change the Current low values of RPM to zero. Highlight the current Low value with your mouse and press “0” on the keyboard.

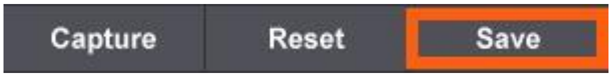


Low 0

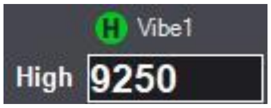
4) Now launch the game and as soon as you are on the track, pause the game. Press “P” on the keyboard for LFS. You should see that the Low value for RPM has been adjusted. Subtract 200 from the value and click “Save” to save the new Low value for RPM.



Low 900

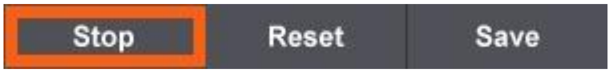


5) Now switch to capturing RPM High values. Un-pause the game pressing “P” on the keyboard and rev the car up as hi as it will go. Now Pause the game again and look at the new High value for RPM. We suggest bumping it up a bit if in a slow car and visa-versa for a fast one. Click “Save” to save the new High value for RPM.



High 9250

6) Press “Stop”, because we are finished with the High/Low limits for RPM.



The examples below we will be using different Vibe inputs, but the basic capturing procedure is about the same. There are a few basic differences, but they will be listed under the Vibe you are trying to tune in below.

Vibe Effects Tuning Theory

Rpm – You want a Low cutoff value below the minimum RPM of any vehicle in the game, so output is always on. You also want a High value that is around the top end of the best vehicle in the game. We used a value of 9250 for LSF, which works pretty well for any vehicle played in the game.

An important thing to notice here is that we use a Low value that is below any actual RPM output from the game. This ensures that RPM is always on and making a sound.

Tip: If sound is cutting off and on when the vehicle is idling, lower the Low cutoff value.

Turbo, Afterburners and Traction Loss – These three work just like RPM above with the only difference being that you want them to completely turn off when the input is zero.

Assume the incoming values for turbo are a value of 0 to 1000. You would want to set the Low cutoff to 1 since you want it to turn off whenever the data hits zero for input, and a High value of 1000.

Tip: It you have volume for Turbo when no turbo is used in the game, increase the Low cutoff value.

Turbulence – This one is manly here for the flight sim guys to simulate air rushing over the craft at higher speeds. Tune the Low value to be at a point where you think the craft should start making a slight vibration in the cockpit. Then, go as fast as you can to set the High value for turbulence. A number that is a little less than the top number is just fine for this Vibe.

Tip: The white noise sound does not react to frequency changes. This is just the nature of white noise. But the pink and the brown do. Just be careful with the brown note.

Gear Shift – This is the easiest one. Set the low to 0, reverse -1 will be seen the same as 1 in Vibe, and the High value to the highest gear in the game for any vehicle. Start with 6 for LFS. It does not matter too much for this one. You can set the High value to 6 and adjust as needed if a vehicle has more gears.

Road Detail – Road Detail can be used in two different ways. The preferred way is to use it for road surface feedback, but you can also tune it in for bumps. For bumps tune it like you would for chassis.

For this one “live capture” driving the car at about 50% as hard as you normally would. Pause and take a peek at the Low values. It should be a number that the car does not have a hard time hitting. For High values go hit a jump or some bumps. Now take the High value and multiply it by five and click “Save”.

The idea here is you are looking at making road surface noises and not a huge bang from a bump or a jump. Adjusting the sliders live during a game for Road Detail can really help tune it in nicely once you have some of your High/Low values setup.

Collision – For this Vibe, set the capture for the Low value and then drive the car on the track at about 80% strength swerving back and forth, gassing and breaking. You do not need to do it for long.
Pause the game and multiply the Low value by three. Then take your new low value and multiply that by 10 for the High value. It a good place to start.

Tip: Raise the Low value if you do not get collision thumps when you should.
Tip: Lower the Low value if you are getting collision thumps when you should not.
Tip: Increase the High value if all collision thumps sound maxed out with every collision.

Chassis – For this Vibe, set the capture for the Low value and then drive the car on the track at about 80% strength trying not to hit anything. Be sure to swerve back and forth, while also giving it gas and breaking a few times.

Now pause the game and save the setting for the low value. Set capture to the High value and find a nice curb or two to run over. Maybe cross a field or drive in the grass a bit. You are trying to find the limits of what a normal bump would be when racing. Pause the game and click “Save”.

Tip: Concentrate on what one corner is doing for setup on a 3D setup. If you get one corner working correctly, then they will all work.
Tip: If you are getting a lot of bumps from normal driving, Increase the Low value.
Tip: If all of your bump sound maxed out, increase the High value.

Back to Table of Contents

Appendix A: Output Type

There are three different output formats you can select from to send to an Interface. Decimal output is straight forward. For example, if an axis value equals "1127", then “1127" will be the output for that axis. No formatting change is done when Decimal Output Type is selected.

Binary Output Represented as a Char - Range of 0 to 255				
Char's Used to Represent the Axis Value	Char 4	Char 3	Char 2	Char 1
Char Weight (Value x Weight)	16777216	65536	256	1
Number of Bit's Used for Axis Output	32 to 25	24 to 17	16 to 9	8

Hex Output Range of 0 to 15								
Hex	8	7	6	5	4	3	2	1
Hex Weight	268435456	16777216	1048576	65536	4096	256	16	1
Bit's Used	32	28	24	20	16	12	8	-

Back to Table of Contents

Appendix B: User Formatted Output

User Formatted Output allows you to send both the axis information along with any additional information you need to send to your interface.

Take this interface for example; it requires a "Hello" to be sent at the beginning of every message to the interface. An "End" is also required to be sent at the end of every message. If you were using Axis1a for your output, it would look like this.
Hello<Axis1a>End

If the value of Axis1 is "1123", and Decimal Type output is selected, the output would look like this "Hello1123End". The "1123" gets substituted for "<Axis1a>" when the string is sent to the interface.

Back to Table of Contents

Appendix C: Bit Resolution Chart

Axis Resolution, or the number of “stop points” you have on your axis is based on the number of bits your interface accepts for an axis input. If your interface accepts 8 bits of resolution, then you will have 256 stop points on your axis with a range of 0 to 255. See chart below.

Bits Used	18	17	16	15	14	13	12	11	10	9	8
Stop Points	262144	131072	65536	32768	16384	8192	4096	2048	1024	512	256
Range 0 to n	262143	131071	65535	32767	16383	8191	4095	2047	1023	511	255

Bits Used	26	25	24	23	22	21	20	19
Stop Points	67108864	33554432	16777216	8388608	4194304	2097152	1048576	524288
Range 0 to n	67108863	33554431	16777215	8388607	4194303	2097151	1048575	524287

Bits Used	32	31	30	29	28	27
Stop Points	4294967296	2147483648	1073741824	536870912	268435456	134217728
Range 0 to n	4294967295	2147483647	1073741823	536870911	268435455	134217727

The formula for the center location for any bit range is: (Stop Points / 2) – 1

Example

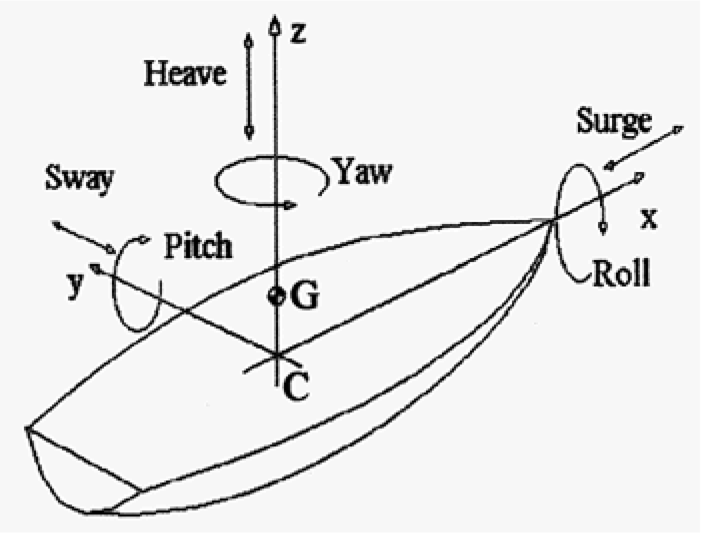
For 8 bits: (256 / 2) – 1 = 127
The value sent to the interface for 8bit mode would be the value 127 when roll is equal to zero in SimTools.

Back to Table of Contents

Appendix D: Conventions for Game Plugins

Roll is how much the vehicle is dipped to the left or right in degrees [°]
Pitch is the tilt of the vehicle forwards or backwards in degrees [°]
Yaw is the heading of the vehicle north, east, south, or west in degrees [°]

Heave is the acceleration up and down in g-force [g]
Surge is the acceleration of the vehicle in longitudinal direction in g-force [g]
Sway is the acceleration of the vehicle in lateral direction in g-force [g]

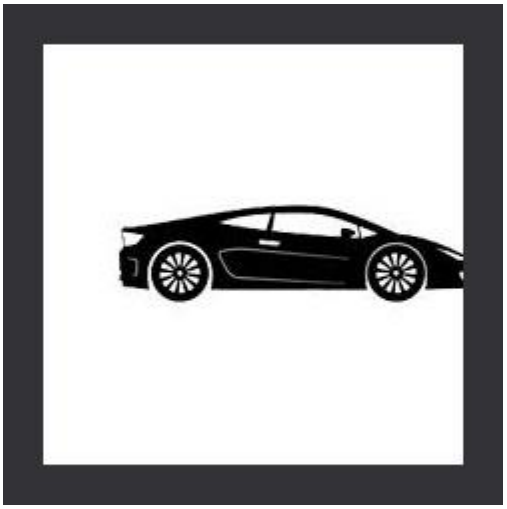


Back to Table of Contents

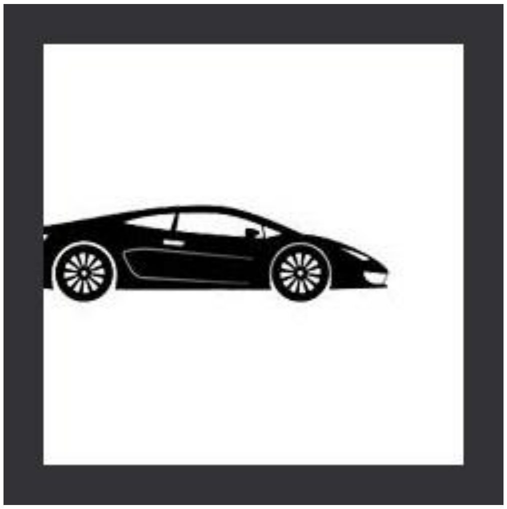
Appendix E: Directions of Movement in SimTools

Below are example car movements and the corresponding direction each car image moves in the Game Plugin Builder virtual plugin.

Acceleration – The Surge car image should move to the right simulating the car moving forward.



Deceleration (braking) – The Surge car image should move to the left simulating the car slowing down.



Right turn – The Sway car image should move to the right simulating the car moving to the right.

Left turn – The Sway car image should move to the left simulating the car moving to the left.

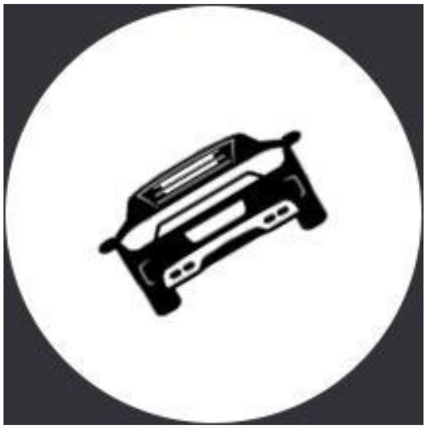
Right turn – The Yaw car image should turn to the right simulating the direction the car is turning.

Left turn – The Yaw car image should move to the left simulating the direction the car is turning.

Driving Downhill – The Pitch car image should point down simulating the car driving down a hill.

Driving Uphill – The Pitch car image should point up simulating the car driving up a hill.

Tilted Left – The Roll car image should tilt to the left simulating the car tilted on hill.

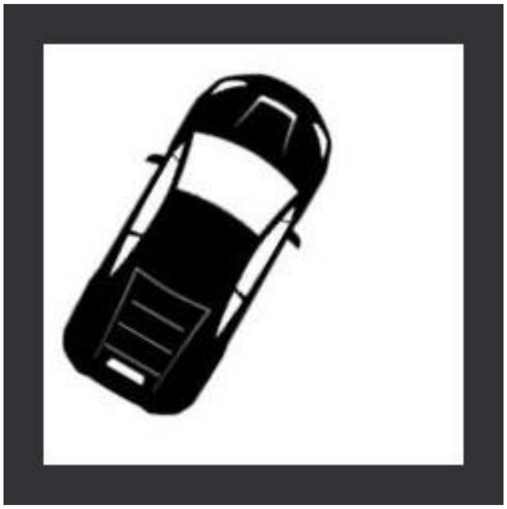


Tilted Right – The Roll car image should tilt to the right simulating the car tilted on hill.

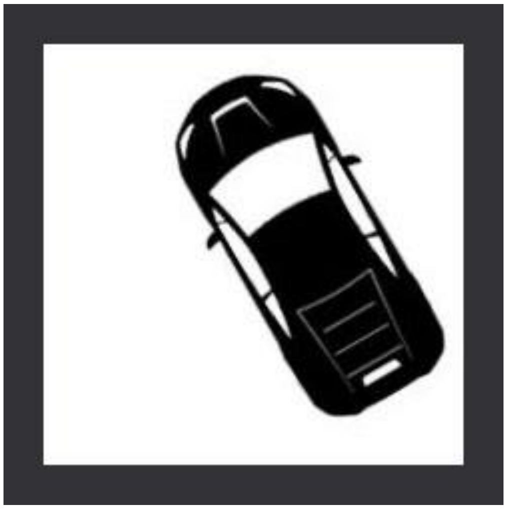
Bump Up – The Heave car image should move up simulating hitting a bump.

Bump Down – The Heave car image should move down simulating coming down from a bump.

Traction Loss Right Turn – The back end of the Traction Loss car image should slide out to the left when sliding around a right turn.



Traction Loss Left Turn – The back end of the Traction Loss car image should slide out to the right when sliding around a left turn.



Back to Table of Contents