ELECTRONICA, MECANICA Y CONTROL, S.A.

RealSimulator

User Guide

F16SGRH

F16SGRH - User Guide v1.00.3

Contents

EMYCSA RealSimulator	Overview
	Date: 13/09/2019 **Version:** 1.0

PICTURE

DESCRIPTION

The F16SGRH as well as the RS grip family come in two lines, professional and home use.

Professional range uses its own software and real military switches as well as custom socket and connector, under client specification.

Home version is a supersede of professional unit, same dimensions, same high grade fixation system, same high density resin in one piece body construction, but with the addition of:

a) Upgradeable electronic module

b) **Rotary switch,** installed under **TRIM** hat switch cap, to easily hot swapping between 8 configurable memory slots; so, with a single thumb movement you can reconfigure the whole system in a fraction of a second.

ROTARY SWITCH

TRIM HAT SWITCH

c) 5-way switches in all the hat switches (**CMS**, **TMS**, **DMS** and **TRIM**), with the possibility to disable center position.

d) 5-way switches where in real life there is 1 (**WR**, **NWS** and **PINKY**), with the possibility to disable the additional ways.

e) **Three status LEDs** used for BLE information and Slot number in use.

f) Realistic **Trigger** movement.

g) Independent Bluetooth communications, so you can use it alone, or with an X/Y base.

h) **Three Analog axes** in the standard configuration for **Roll, Pitch and Yaw**. These axes are independent of the standard axes in the X/Y base.

i) Lightweight focused in use with VR goggles in standup position or out of the base.

j) Mini-DIN to USB cable, to let you connect the grip to any power bank and use it at your convenience.

k) The same mini-DIN to USB cable can be used to install the grip in any rod with no necessity of X/Y electronic or sensor, the F16SGRH has its own 3 axes sensor integrated.

l) Firmware upgradeable through BLE, so you could need a 4.0 or higher BLE dongle if your PC doesn't have BLE included.

The F16SGRH is a wireless device connected by Bluetooth (BLE), so no available USB port is necessary; the computer only need a BLE connection, integrated in the mother board or by a dongle.

The computer must run under Windows 8.1 or higher because windows 7 and 8.0 do not support BLE devices and with these OS versions the device is not full operative, it is just a standard stick not configurable or upgradeable. **We suggest using Windows 10**, in this OS we have fully tested the device functionality and software tools supplied.

NOTE: F16SGRH can be used without losing functionality in Windows 7 and 8.0 platforms if it is connected to a FSSB-R3 Lighting with the new firmware developed for this device. You can find more information in the **Firmware MJF_FW_F16_SG_3_20_X** section.

The F16SGRH can be used with an USB wire as a standalone system or connected to a TM$^{©}$ system (Cougar or Warthog) or any R1, R2 or R3 RealSimulator system.

When the F16SGRH is connected to a FSSB-R3 base, the latter offers the following additional features: slot number goes from 4 to 8, no SMM system just as you have 8 different configurations with hot swap (fast change), and 64 buttons to achieve the center position and center + up, down, right, left, and additional keyboard functions.

The F16SGRH is supplied with a firmware update tool (DCC) that can be used to install new versions of firmware and a GUI application (RS_HID_DEV_TOOL) used to configure the device. Both tools can be extracted from the same from the download's website.

http://www.realsimulator.com/html/downloads.html

The RS_HID_DEV_TOOL program allows you to fully configure the device, allowing

you to perform the device pairing, axes calibration, analog control and keystrokes assignation in each memory slot, light intensity of status LEDs, etc.

The analog control of each axis can be used to independent adjust roll, pitch and yaw to anyone´s liking for each memory slot. In every slot you can configure:

- Full Scale Control
- Roll Sensibility
- Pitch Sensibility
- Yaw Sensibility
- Roll Control Assistance
- BFA Roll level
- BFA Pitch level
- Precision mode

Other additional features are:

- HAT as POV or TRIM
- Keystrokes ON/OFF
- DX Buttons ON/OFF
- DX Center Buttons in four modes: native (ON), basic (COMP), center removed (OFF) and double click (DClick).
- Test window called Output
- 64 DX buttons can be enabled or disabled for every slot.
- 64 keystrokes can be enabled or disabled for every slot, and of course can be different in every slot
- SWled function to enable/disable showing switches activation in status LEDs when pressed.
- Adjustable LEDs lighting level.
- Slot name over the desired application with the Overlay function.

EMYCSA RealSimulator	Package Content and Technical Data
	Date: 13/09/2019 **Version:** 1.0

PICTURE

DESCRIPTION

Package content

The package, shown in the picture above, contains the following components:

- F16SGRH device.
- USB wire (USB type A to mini-DIN 5 pin female).

F16SGRH is supplied as a plug and play device with no drivers.

IMPORTANT NOTE: communications for configuration, upgrading and full device information are made by BLE, so you will need a computer running Windows 8.1 or 10 preferably and a BLE connection. If your computer does not have BLE included, you will need a BLE dongle. We suggest the models SVEON STC400 or CSR 4.0, they are tested and work fine.

Technical data

- F16 grip true replica with correct inclination.
- One piece body manufactured in high density resin.
- High grade fixation system with knurled nut.

- Wireless communications by Bluetooth Low Energy (BLE).
- Composite device: joystick (axes and buttons) and keyboard (keystrokes).
- Integrated sensors for Pitch, Roll and Yaw.
- Hot swap 8 memory slots.
- 5-way switches in all switches.
- Functional as standalone or with FSSBs (R1, R2 and R3) or Thrustmaster bases (Cougar or Warthog) or compatibles.
- Three red status LEDs with light intensity adjust.
- HAT as POV or TRIM.
- Full scale control with 4 levels, 1:1, 3:4, 1:2 & 1:4.
- Sensibility control for Roll, Pitch and Yaw (0 – 100%).
- Roll Control Assistance (ON - OFF).
- BFA Pitch and Roll level (Off – Min - Med - High - Full).
- Precision mode (ON - OFF).
- Keystrokes (ON - OFF).
- DX Buttons (ON - OFF).
- DX Center Buttons in four modes: native (ON), basic (COMP), center removed (OFF) and double click (DClick).
- SWled function to enable/disable showing switches position in status LEDs when pressed.
- Adjustable LEDs lighting level.
- 8 Memory Slots for quick custom configuration
- Configuration and firmware upgrade by Bluetooth (BLE).
- Power cable for standalone use included (1,8 m).
- Weight. 340 gr.

| EMYCSA RealSimulator	Installation	
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DESCRIPTION

The F16SGRH grip can be used in two ways, as a standalone device or connected to a stick base like the FSSBs (R1, R2 and R3), Thrustmaster (Cougar or Warthog) or compatibles.

In any way, to install the device in the computer and use it, two steps are necessary: power it and attach it to the computer

Powering in standalone mode

This way, the 5-pin mini-DIN connector is used to power the device, for this, you must use the cable supplied to connect the grip to a USB type A connector in a PC, a power bank, a USB wall socket, etc.

All the buttons and axes information will be sent by the BLE comms.
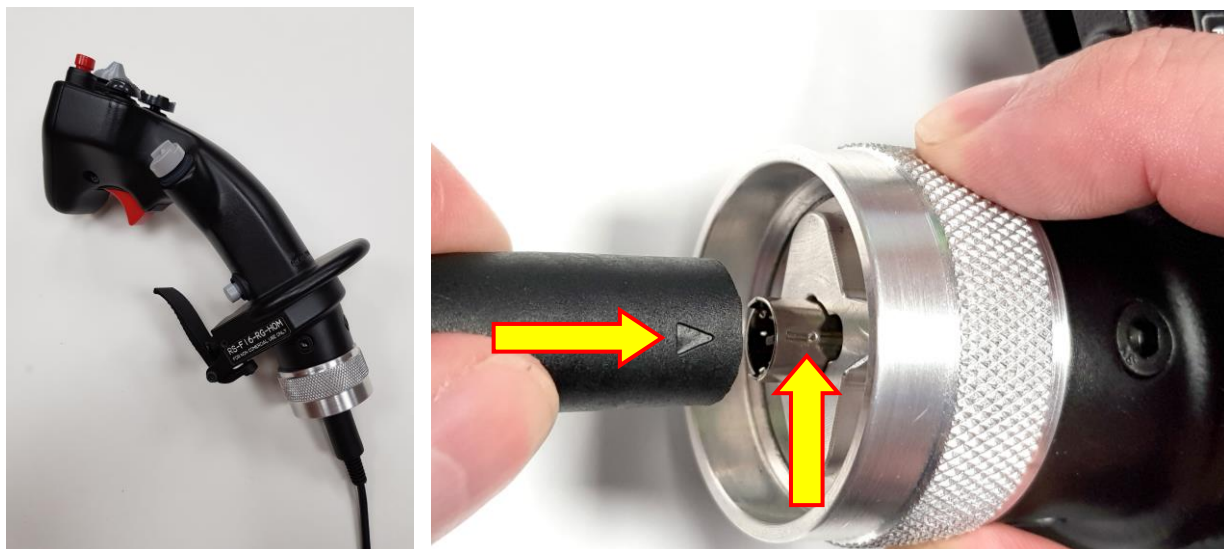
Please, when connect the cable to the grip pay especial attention to align correctly the two connectors to prevent damage in pins or connectors. For that, both connectors have visible marks as you can see in the above image.

Powering from a stick base

The F16SGRH grip can be connected to a stick base, like the FSSBs (R1, R2 and R3), Thrustmaster (Cougar or Warthog) or compatibles.

This way, the 5-pin mini-DIN connector is used to power the grip and to read the grip buttons status, just like a standard grip. This way, the F16SGRH sends the standard 18 buttons and hat switch information to the stick base.

If the grip is connected to a FSSB-R3 base with the firmware "MJF_FW_F16_SG_x_xx_x.FSSB_R3", it can get the 64 buttons and rotary switch information. This way, the R3 slots are increased from 4 to 8, the SMM is disabled and the change between slots is made with the rotary switch.

Up to this point, the stick functions like a standard grip, but additionally, as the F16SGRH has wireless communications by Bluetooth, we can continue getting all the extra information from it, as for example the use of keystrokes, the other 46 extra buttons, etc.

In Windows 7 and 8.0 platforms where BLE devices are not supported; if you use the

F16SGRH with the FSSB-R3 Lighting you do not lose the extra information and functionality of F16SGRH with the new firmware developed for the FSSB-R3L. You can find more information in the **Firmware MJF_FW_F16_SG_3_20_X** section

Attaching the device to the computer

As the grip is a wireless device by Bluetooth (BLE), no USB port is necessary, the computer only need a BLE connection, integrated in the mother board or by a dongle.

Also, there are requirements with the operating system because **Windows 7 and 8.0 do not support BLE devices**, so in these OS versions the F16SGRH is not full operative, it is just a standard stick not configurable or upgradeable. Only windows 8.1 and higher OS support these devices. **We suggest using Windows 10**. In this OS we have fully tested the device functionality and software tools supplied.

To determine whether your computer has Bluetooth BLE hardware, check the Device Manager for Bluetooth by following the steps:

1. Press "**Windows + X**" to **open** the menu, and choose **Device Manager** on it.
2. Check for **Bluetooth** and verify if the item **Microsoft Bluetooth LE Enumerator** is present.
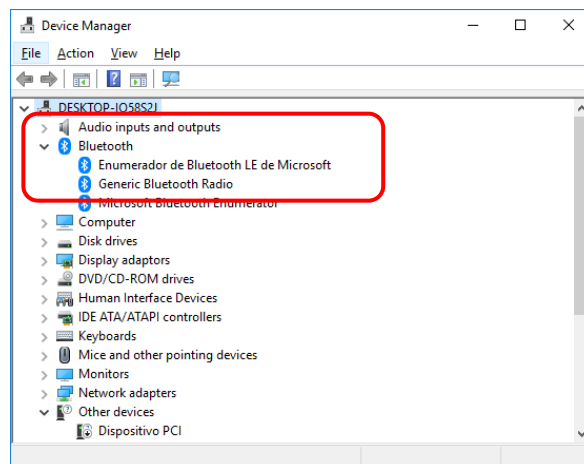
To turn on your Bluetooth follow the next steps:

1. Press "**Windows + X**" to **open** the menu, and choose **Settings** on it.
2. Click "**Devices**".
3. Click "**Bluetooth**" and move the **Bluetooth toggle** to the **On setting**.
4. Click the "**X**" in the top right corner to save the changes and close the settings window.
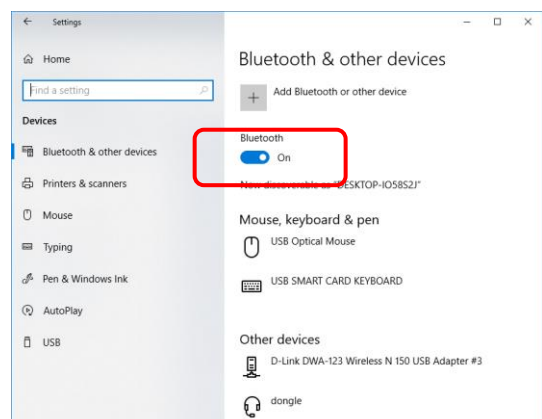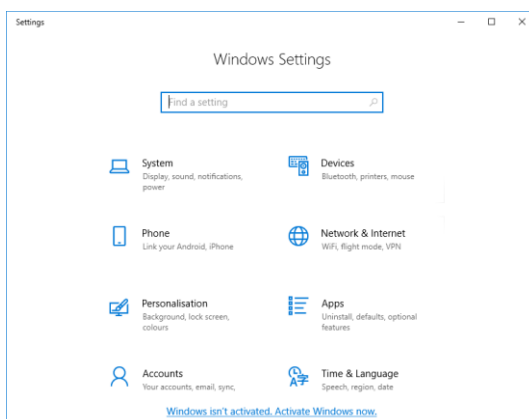
If your computer has BLE connection, you are ready to attach the stick to the computer.

First, make sure the stick is on (through the USB wire supplied or connected to a powered base) and the left status led is blinking. If it is not blinking, unplug and plug the power or press the **TMS center + DMS center** buttons simultaneously in the stick to restart the blinking.


Now, open in the **Control Panel** the **Devices and Printers** window, and click with the right mouse button over the window and select the **Add devices and printers** option,
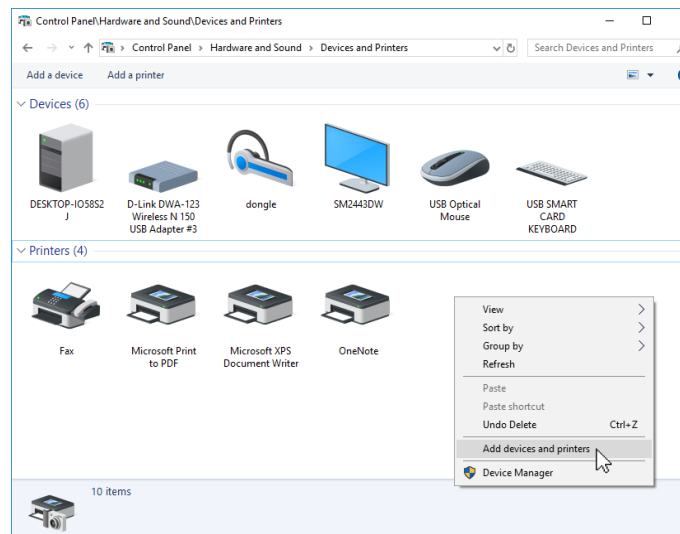

and then a new window will open to **Choose a device or printer to add to this PC**.
Wait until the system finds the device and show it in the window. Then select the '**RS-F16-SGR Home**' icon and press **Next** to install it.
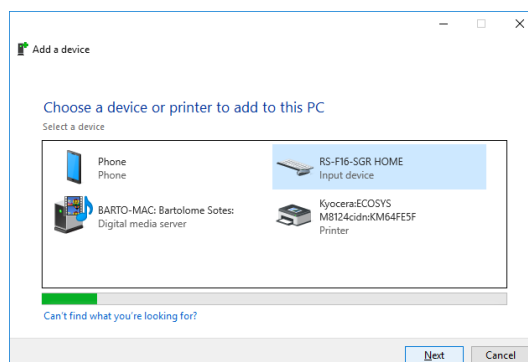
A new window for installation will be opened showing an installation progress bar and it will be closed automatically when the device is installed.
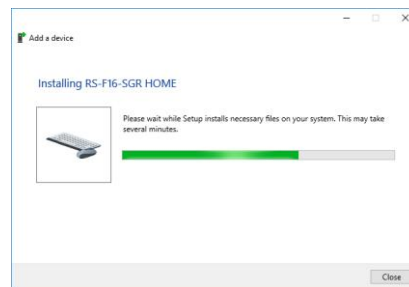
Now the device is displayed in the **Device and Printers** window and if you click with the right mouse button over it you can see it has two devices associated: a keyboard to send programmable keystrokes and a game controller.
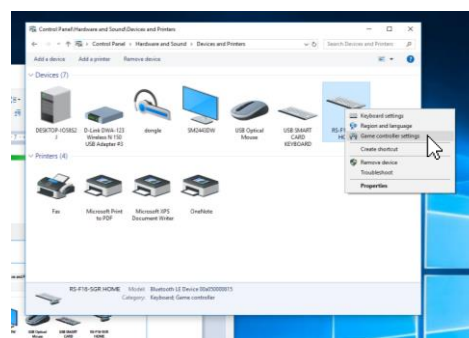
If you click with the right mouse button over the **Game Controller** option, it will open the Game Controller window and then you will see the two new devices named "**RS-F16-SGR Home**". The first one has the axes (at this moment only three are operatives for roll, pitch and yaw), 32 buttons and hat POV, and the second one has only the other 32 buttons.
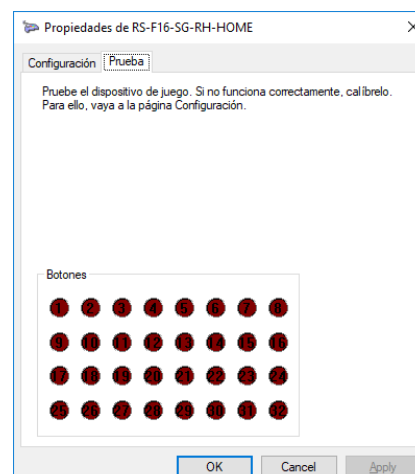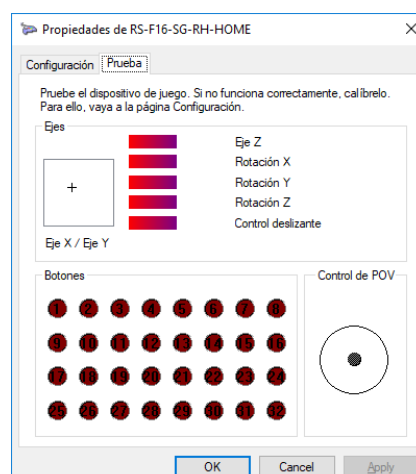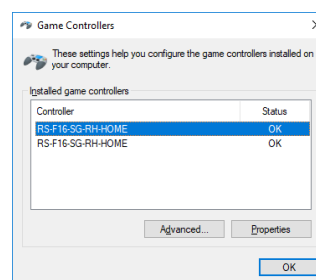
IMPORTANT: this connection procedure needs to be performed only once, when you receive the device, or also after a remove action (for upgrade for example). It will be connected automatically every time you turn on the computer.

We made a video guide called "**F16SGRH Installation**" where you can watch step by step how to install the F16SGRH in your computer. You can find this video guide on the RealSimulator product's website:

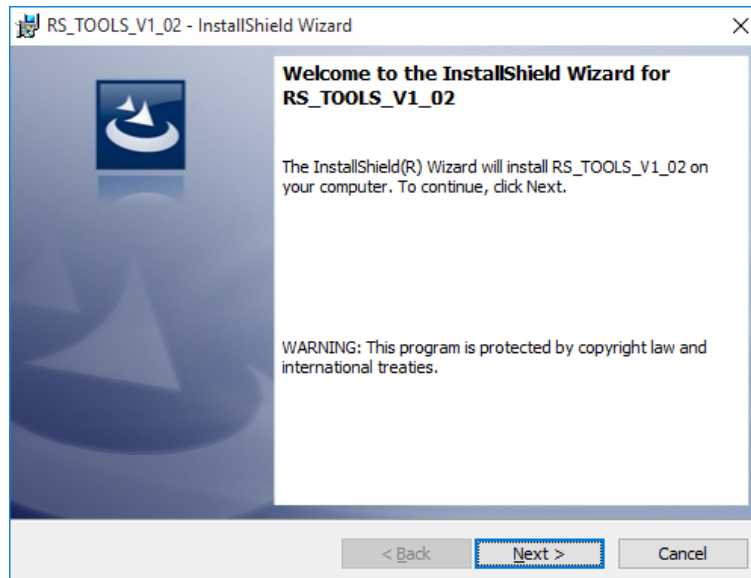(http://www.realsimulator.com/html/f16sgrh.html)

or, directly clicking the next image or hyperlink

F16SGRH Installation

EMYCSA RealSimulator	Tools Installation
	Date: 13/09/2019 **Version:** 1.0

PICTURE

DESCRIPTION

The product is supplied with two software tools, a firmware update (DCC) to allow installing new versions of firmware in the device and a GUI application (RS_HID_DEV_TOOL) to configure the device.

Both tools can be downloaded from the download's website inside the same package. The package also includes the RealSimulator device metadata files, latest firmwares and the product User Guide.

To download the tools, please, go to the RealSimulator download's website by clicking the next hyperlink:

<p align="center">http://www.realsimulator.com/html/download.html</p>

and download the latest version of **RS_TOOLS** and save it in a location of your choice.

NOTE: If you have a previous version installed in your computer, please, uninstall the older version before installing the new one, although the last installers remove automatically previous versions of RS_TOOLS.

System requirements are Microsoft .NET Framework 4.5.2 and Microsoft Visual C++ 2017 Redistributable (x86).

In platforms with Windows 8.1 or higher it will be installed the DCC v1.06 (with support for BLE devices) and in lower the DCC v1.05.

To start the installation, run the downloaded program by double-clicking the file icon.

Presently, the file is named "setup_RS_Tools_V1_02.rar", but the procedure will be identical with any new version.

In any case, you should have a window like this one.
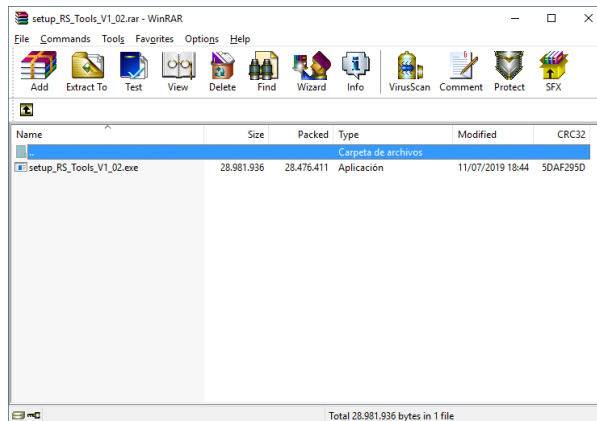

where **setup_RS_Tools_V1_02.exe** is the tools installer. To install it, please, run the file with a double click on the file name.

After some seconds extracting and decompressing the package the installation wizard will launch, then select **Next** to continue.
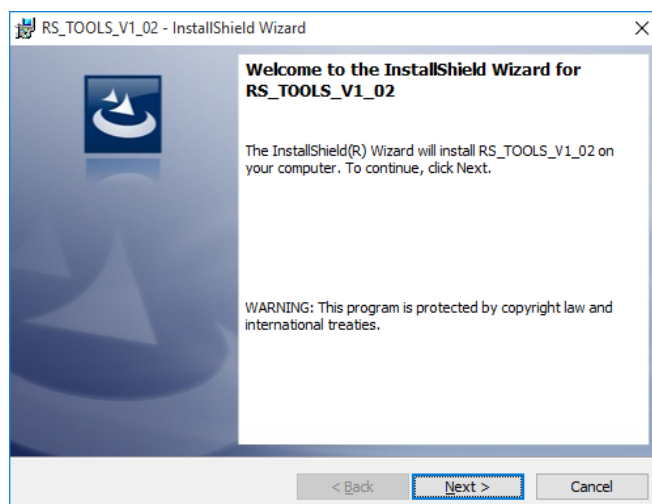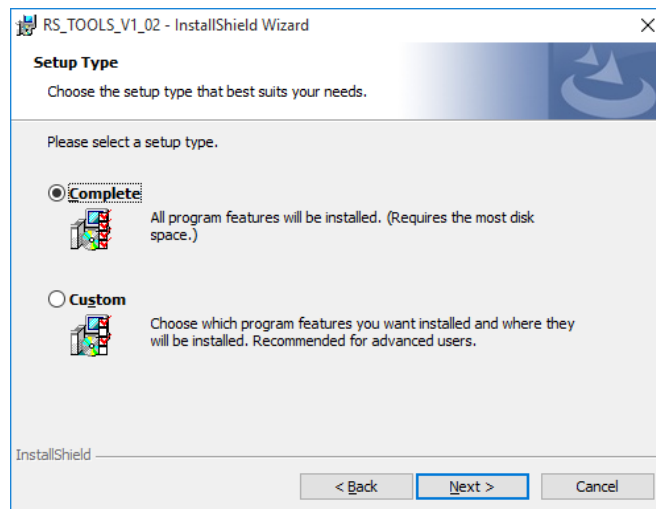

A standard licensing agreement must be accepted before moving on. Choose **I accept the terms of the license agreement** and click **Next**.
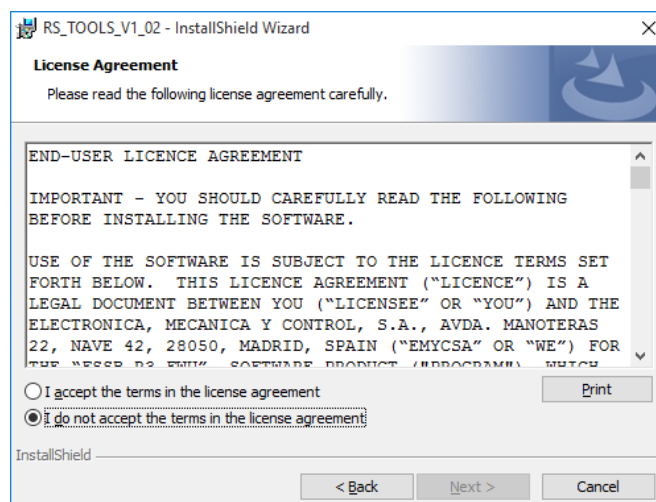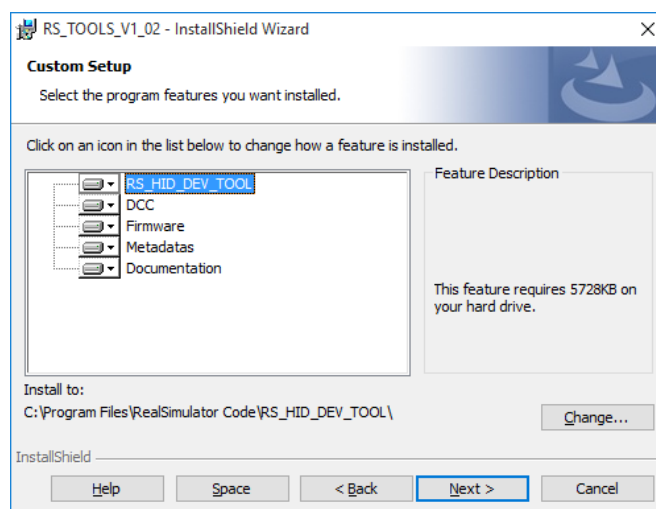

If you want to install all program features (DCC, RS_HID_DEV_TOOL, Metadata files, firmwares and User Guide) select the **Complete** setup type and click **Next** to continue.
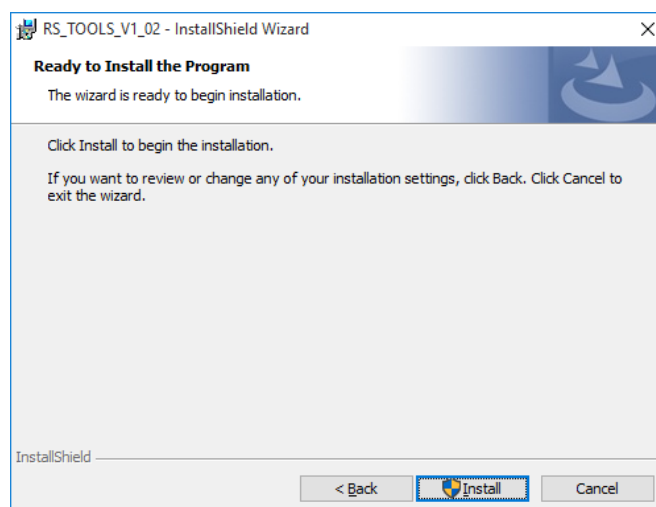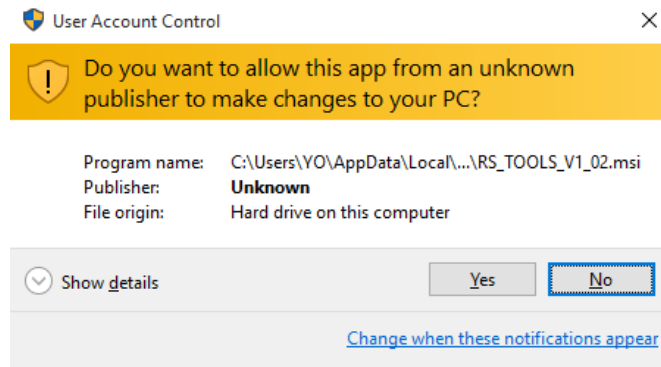
Or select **Custom** if you want to choose the features to install and click **Next** to continue. Select the features to install and click **Next**.
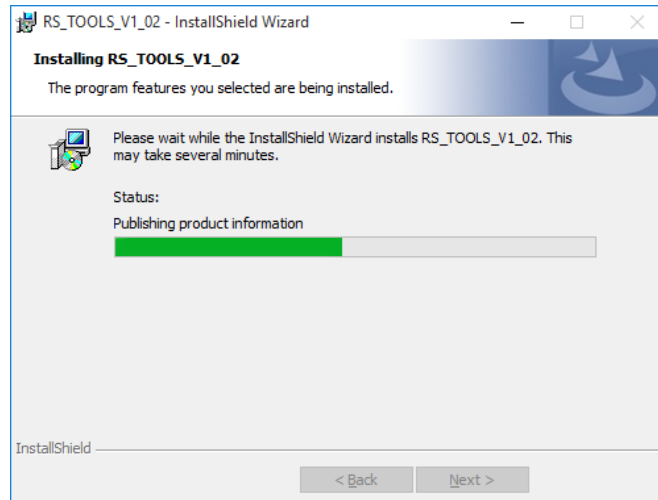

The wizard is now ready to start the installation process. Please, click on **Install**.

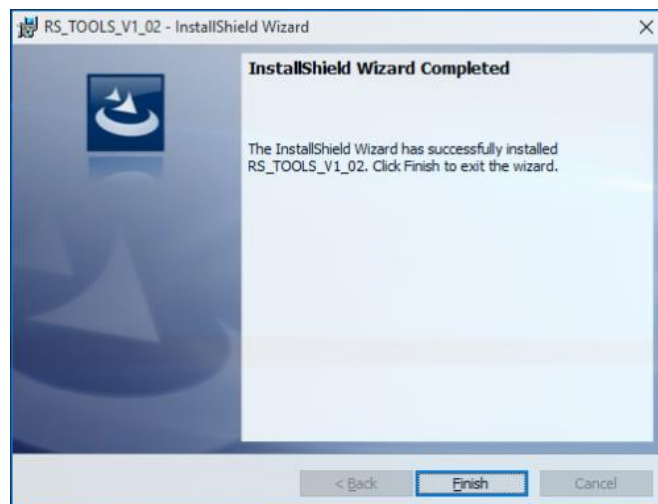If the User Account Control window appears click the **Yes** button to continue.

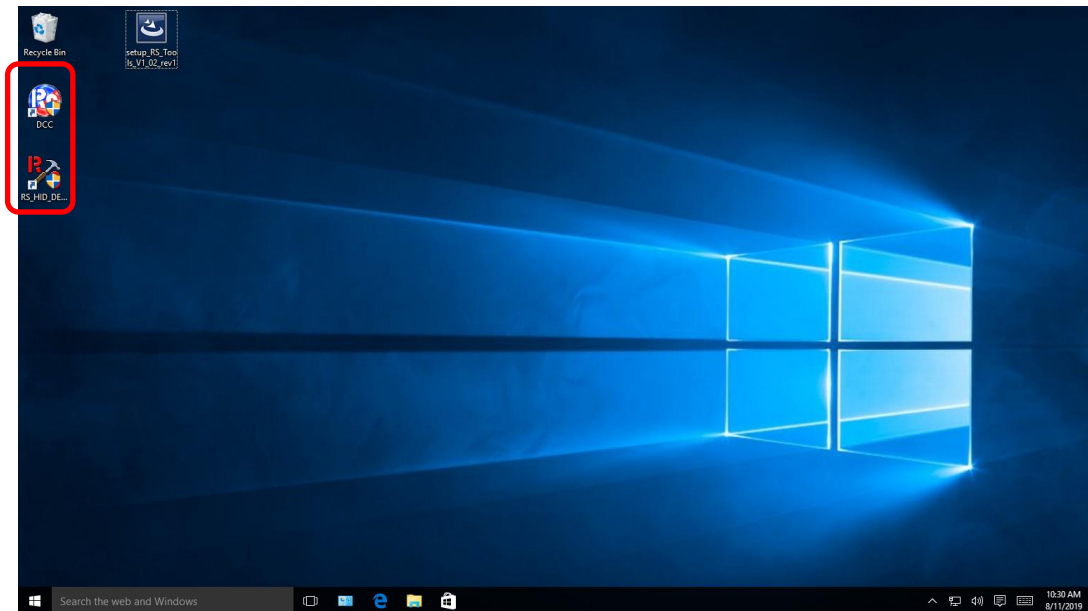The installation of RS_TOOLS_V1_02 may take several minutes to complete.

Wait until the wizard finishes the installation and click **Finish**.

The installation is now finished and the programs are ready to use.

Also, after the installation you will find two new icons on your desktop: DCC and RS_HID_DEV_TOOL application shortcuts.

Finally, if you press the windows **START** button and look the **All Apps** section in the R letter you will find in the Realsimulator folder shortcuts to the DCC and RS_HID_DEV_TOOL programs, RealSimulator devices User Guide and the FSSB R3 BluePrint.
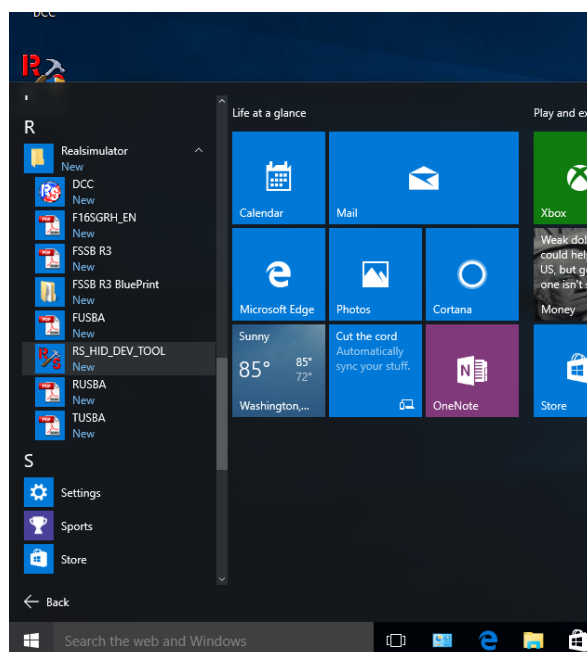
As general information, here it is the default directories where the installer saves programs:
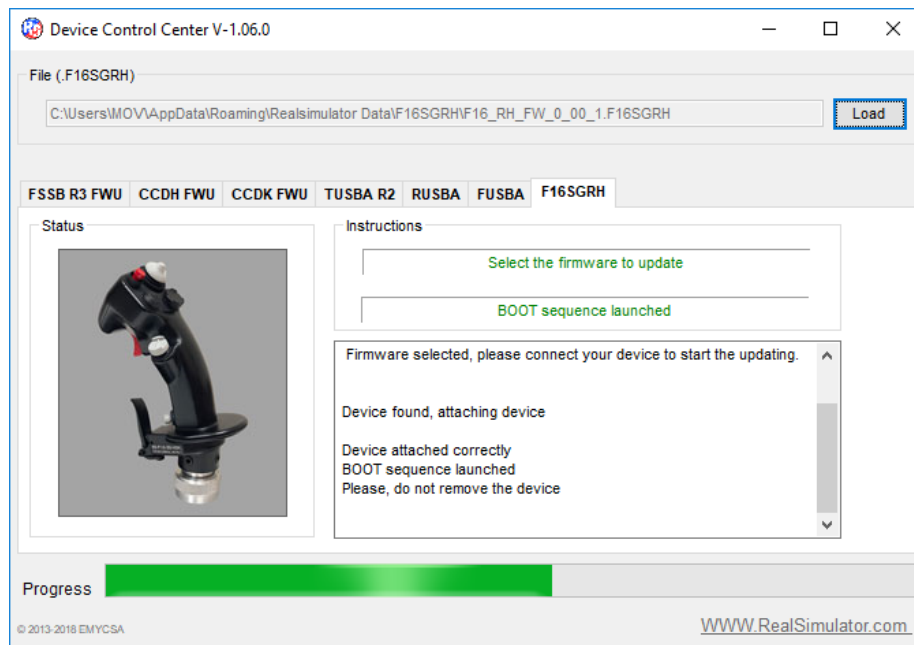
C:\Program Files (x86)\RealSimulator Code\DCC
C:\Program Files (x86)\RealSimulator Code\RS_HID_DEV_TOOL

And, the User Guide, Metadata, Firmware, BluePrint files and Templates on:

%APPDATA%\Realsimulator Data\

EMYCSA RealSimulator	**Firmware Update**
	Date: 13/09/2019 **Version:** 1.0

PICTURE

DESCRIPTION

Usually you will receive your RealSimulator device with the last firmware version installed, so it will not be necessary to use DCC to update your device immediately after its reception.

If you check the product's website periodically you could find new versions with enhancements and issues fixed, so you will need to use the DCC program.

To understand better the next explanation you must imagine the F16SGRH as a device with two internal modules: a main module to work normally with the features we explain in this user guide and other named bootloader to allow changing (update) the main module. So you will see in the update procedure, we need to follow a sequence to change between modules.

Follow the steps explained in detail below:
1. Make sure the F16SGRH is active.
2. In Control Panel, Device and Printers, remove the RS-F16-SGR Home device.
3. Launch with the grips buttons (Trigger 2 + TMS center + DMS center simultaneously) the sequence to start the bootloader device.
4. Add the new device F16SGRH Bootloader.
5. Start the DCC program
6. Select the tab labelled F16SGRH.
7. Select the firmware to update.

8. The DCC program updates the device
9. When the update is completed, the device goes automatically to the RS-F16-SGR Home device.
10. Remove the device F16SGRH Bootloader
11. Add the new device RS-F16-SGR Home.

As we explained above it is absolutely necessary to have the F16SGRH connected, through the USB wire or connected to a base. To check it, verify that the status LEDs are on.
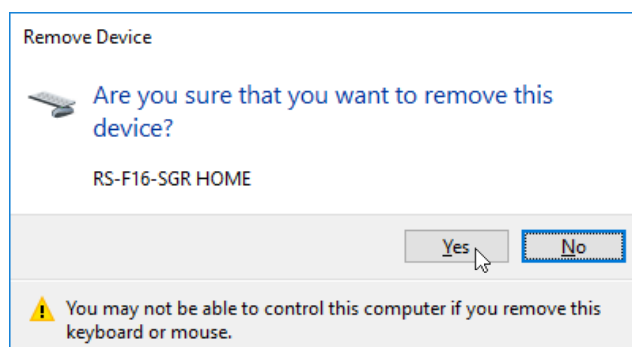
Next open the **Device and printers** window in the **Control Panel** and check if the **RS-F16-SGR Home** is present.
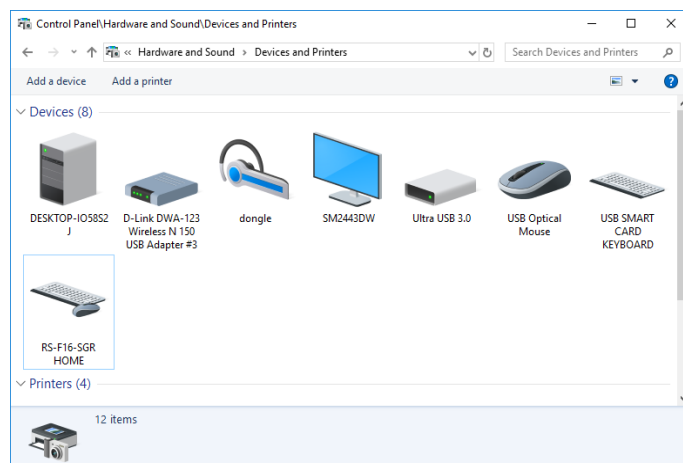
If the device is present we need remove it. For that, press with the right mouse button over the **RS-F16-SGR Home** and click on **Remove device**
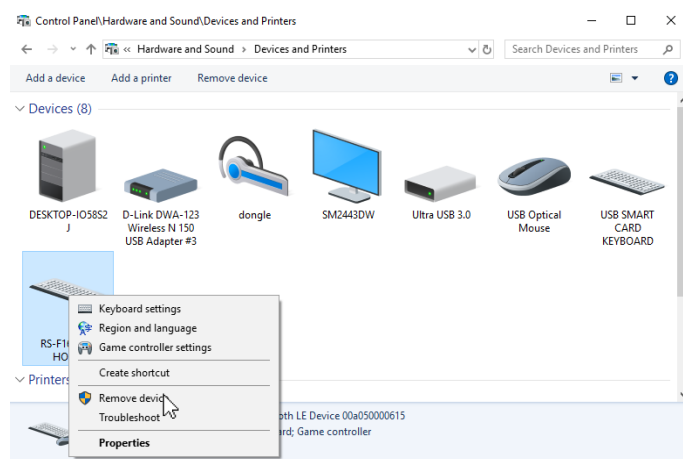
Next, the system will ask confirmation, press Yes.

When completed, the **RS-F16-SGR Home** icon will disappear from **Devices and Printers** window**.**

Now it is the moment to launch the <u>**sequence to start the Bootloader**</u>, so press the **Trigger 2 + DCS center + TMS center** buttons simultaneously, and the center status led will light.

IMPORTANT: this combination of buttons pressed simultaneously is not usual, so it is very, very difficult to accidentally launch this sequence, but if you launch it, the only way to exit of this status is updating the device.

Afterwards, the new device, **F16SGRH Bootloader** needs to be added. For this, click with the right mouse button over the **Devices and Printers** window and select the **Add devices and printers** option.
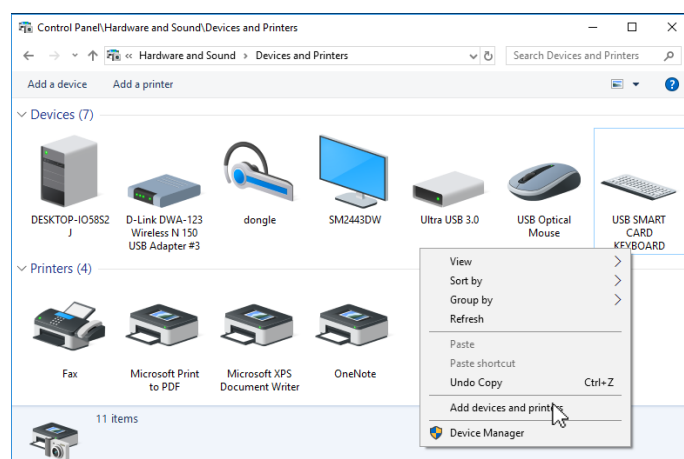
and then a new window will open to **Choose a device or printer to add to this PC**. Wait until the system finds the new device "**F16SGRH Bootloader**" and displays it in the window. Then select it by clicking on the icon and press **Next** to install it.
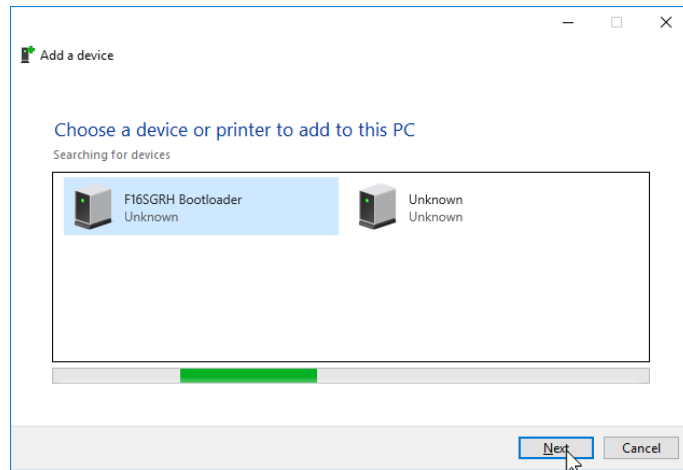
A new window for installation will be opened showing an installation progress bar and it will be closed automatically when the device is installed.
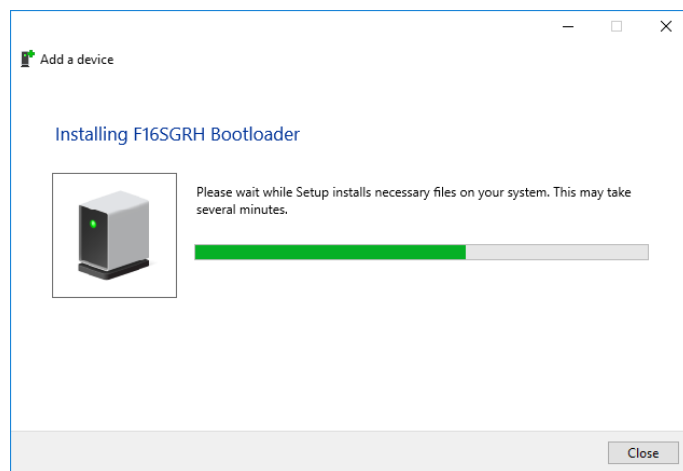
You can find the new device installed in the **Device and Printers** window.
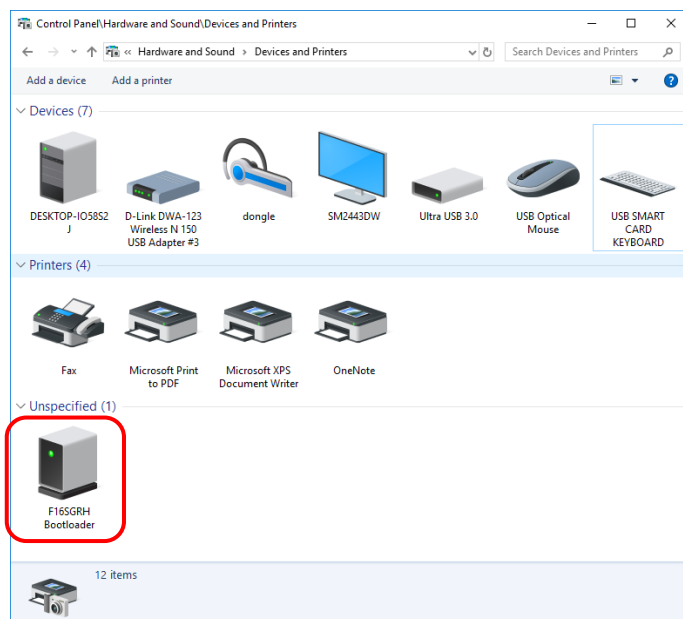
Now we can start the DCC program. Launch it by double click the DCC desktop icon or click in the windows **START** button and select **All Program > Realsimulator > DCC > DCC V1.06.** If the User Account Control window appears click **YES** to continue.
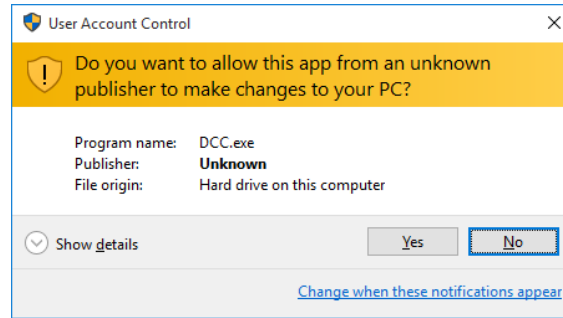
Select the tab labelled as **F16SGRH** and follow the instructions given in the groupbox **Instructions** to update the device.

As you can see in the picture above, **Status** groupbox shows a grey device image, it is normal, this image will only be in normal colour when the device starts the update.

First, the **Select the firmware to update** message will blink in red, so click the **Load** button to open the **Open Firmware File** window to select the new firmware to install, select the desire file clicking the filename and click the **Open** button to close the window.
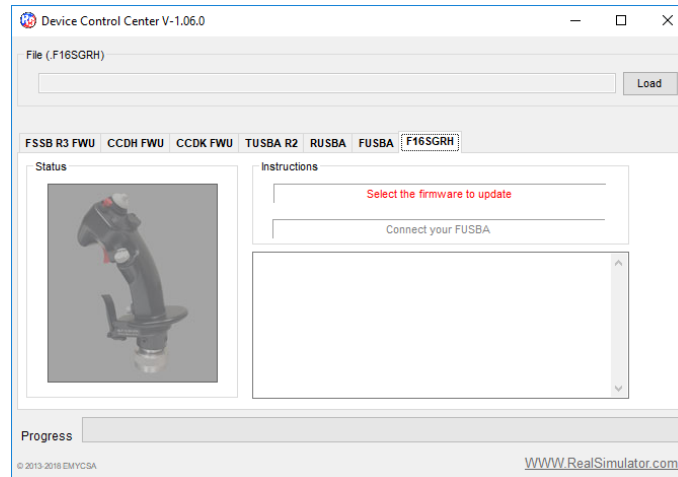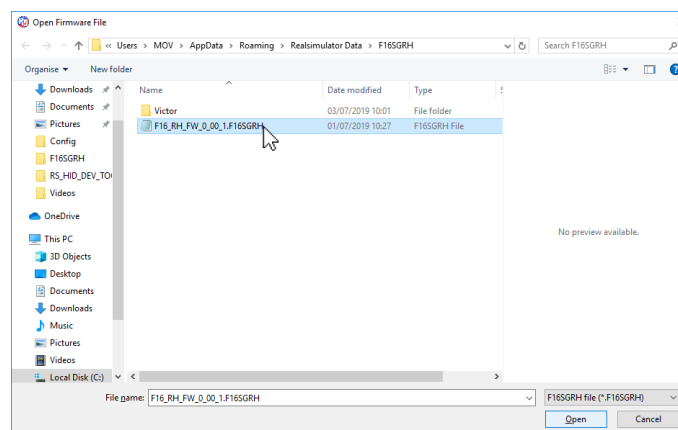

As soon as the system closes the window the bootload process starts. During this data transfer we can see the progress in the Progress bar and the status image in normal colour.
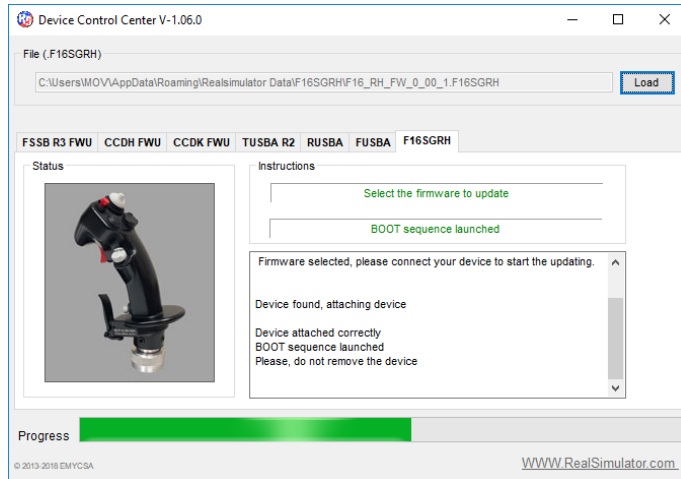
When the update is complete, the DCC program will show a new window to confirm the firmware update completed successfully and it will ask you to continue with other device or exit.

Click **Yes** to exit.
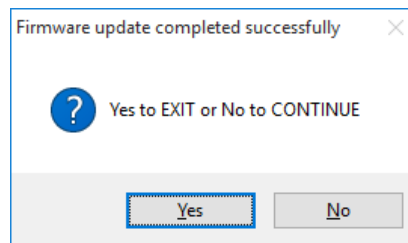
Finally, the device will exit from the bootloader module automatically and will run the new firmware.

Now to finish the procedure, it is necessary to remove the device "**F16SGRH Bootloader**" and to add the main device "**RS-F16-SGR Home"** following the procedures used previously.
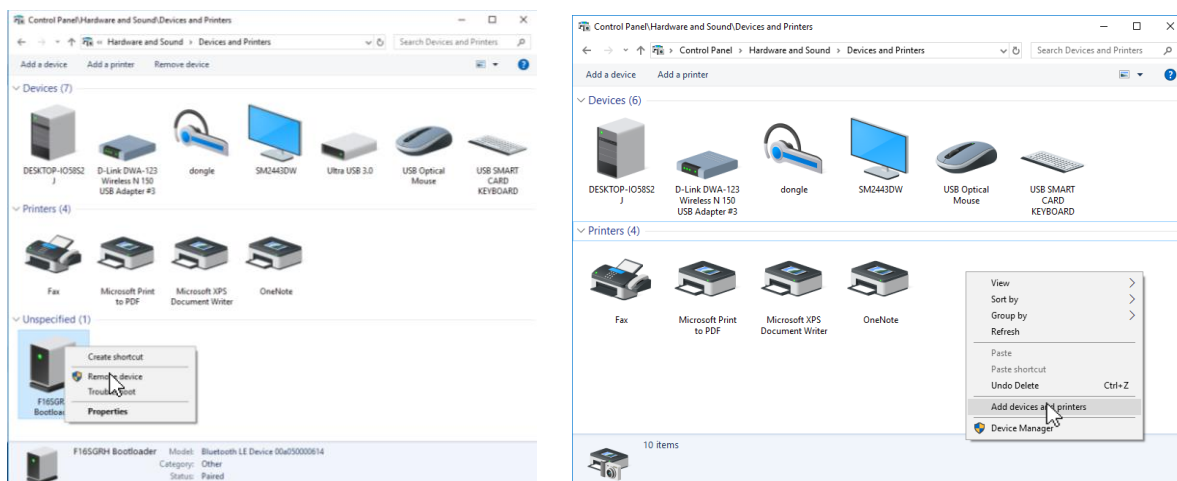
We made a video guide called "**F16SGRH Upgrading**" where you can watch step by step how to upgrade the F16SGRH in your computer. You can find this video guide on the RealSimulator product's website:

(http://www.realsimulator.com/html/f16sgrh.html)

or, directly clicking the next image or hyperlink

[F16SGRH Upgrading](#)

EMYCSA	**RS_HID_DEV_TOOL and F16SGRH**
RealSimulator	**Date:** 13/09/2019 **Version:** 1.0

PICTURE
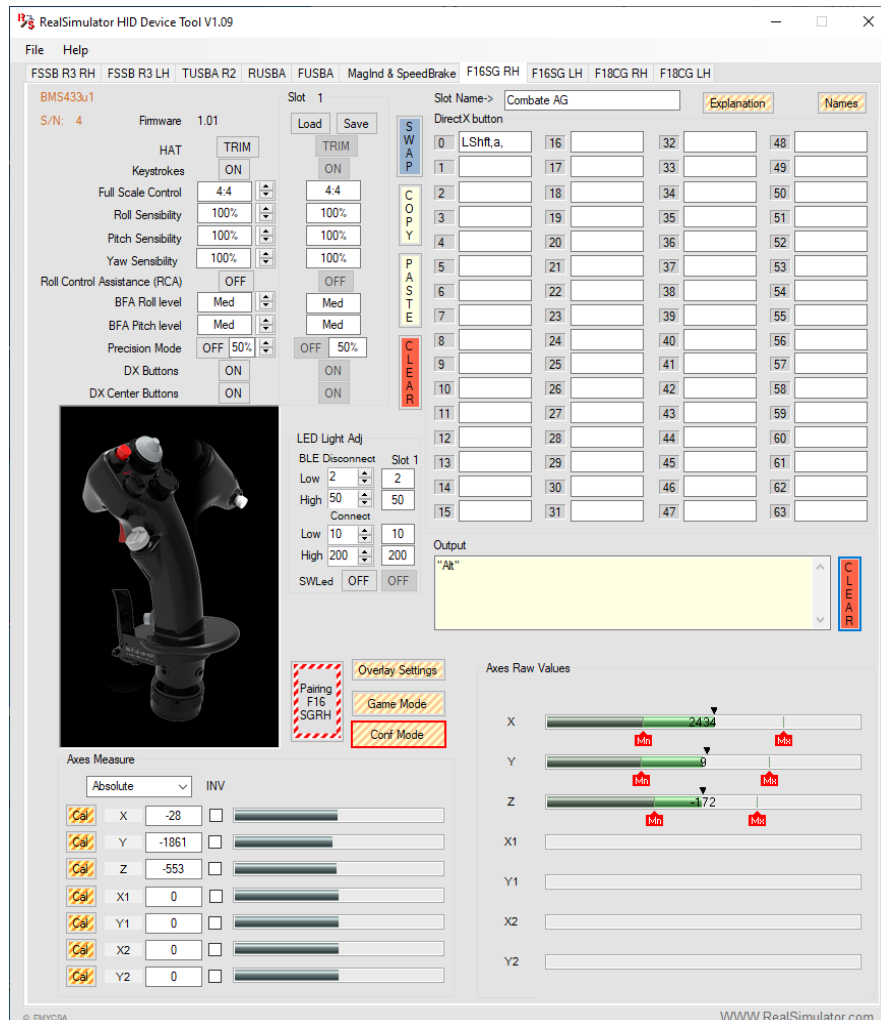
DESCRIPTION

Overview

The F16SGRH, like other devices manufactured by RealSimulator, is shipped without configuration, it is necessary to do this by yourself when you receive the device.

RS_HID_DEV_TOOL is a GUI developed by RealSimulator to facilitate this task. In general, it allows easily calibrate, customize and adjust the different options offered by the device to get the maximum performance from your hardware.

Since the pairing and calibration process is done through the exchange of parameters between the **RS_HID_DEV_TOOL** program and the device, **we only suggest using this tool to configure and calibrate the F16SGRH** and do not use the standard tool of Windows, the Game Controllers window.

If you have used any time this tool to calibrate the F16SGRH we suggest you using the "**Reset to Default**" button of **Settings** tab of **RS-F16-SG-RH-HOME properties** window to delete the calibration made and set the calibration values to default.
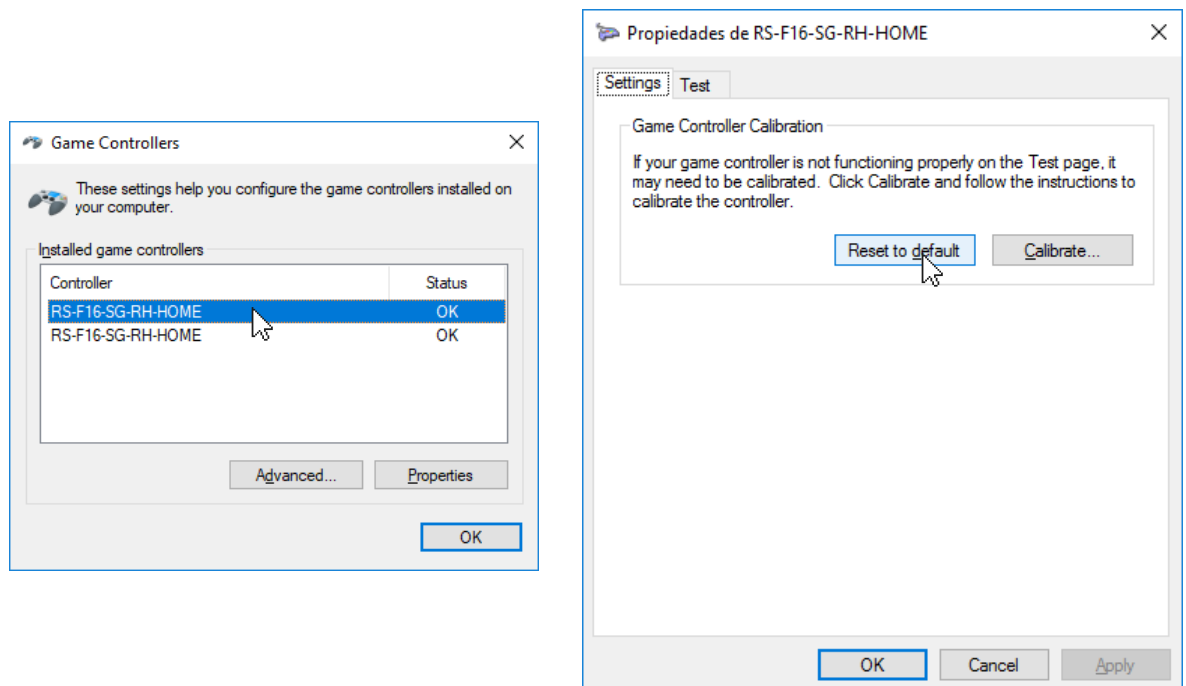
Next, we will give you a general vision of RS_HID_DEV_TOOL program with the F16SGRH.

To start, we will launch the RS_HID_DEV_TOOL program by double clicking the RS_HID_DEV_TOOL desktop icon or click the Windows **START** button and select **All Apps > Realsimulator > RS_HID_DEV_TOOL > RS_HID_DEV_TOOL V1.09.**

If the User Account Control window appears, click **YES** to continue.
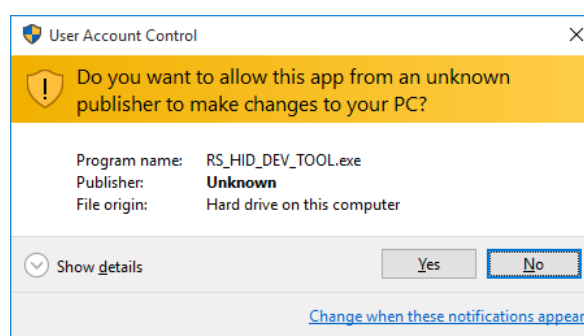
Select the "**F16SG RH**" tab and you should see a window like this, where we have identified with numbers the different information and configuration areas.
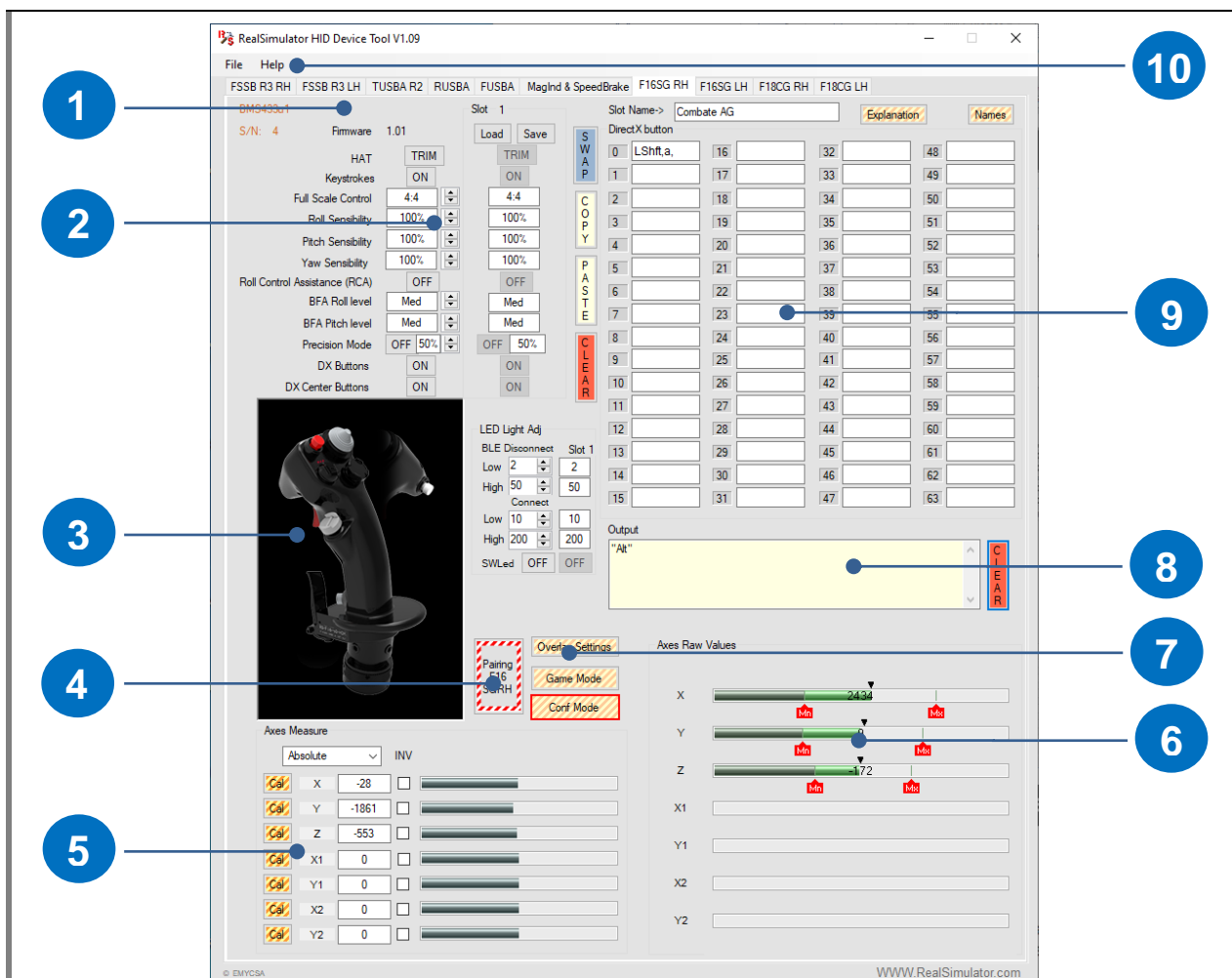
1. Area showing the **firmware version** installed in the device, the device **serial number** and the **name of .xml file** with the configuration and keystrokes.
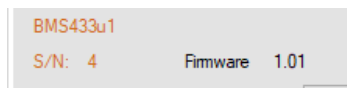
2. Informative area with the settings for the presently active configuration and slot configuration. Slot 2 is shown in this picture. User can only modify the settings in the presently active configuration, in the left column. Below you will find a complete explanation about how they work.
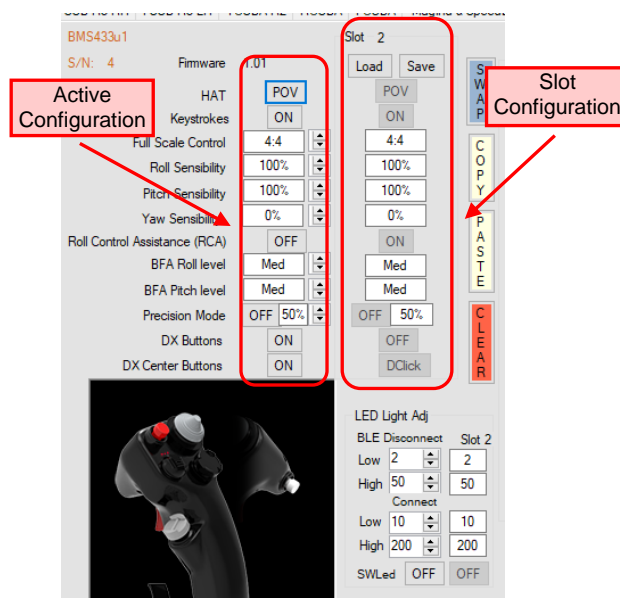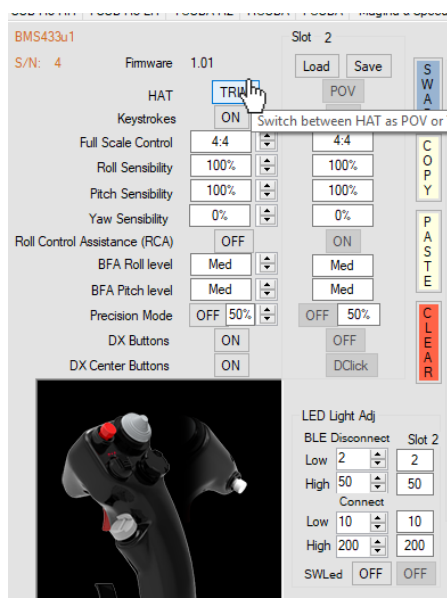
The buttons with a grey background have, in most cases, two options. The active option is shown in the button, while the alternative option will be displayed when the button is pressed. In the image above the **HAT** button shows the "**TRIM**" option, if you press the button it will change to the another possible state "**POV**".

To change the information shown in the white texboxes, you have to clik the numeric Up/Down control associated, the values will change between the max and min values asigned to that setting.

3. Animated area where the program graphically shows the buttons and hats actions of the stick.

4. **Pairing** button to lunch the pairing action. In this device, it is absolutely necessary achieve a pairing to make sure the axes work correctly. Below you will find a complete explanation about its operation.

5. Groupbox with the Direct X information for analog axes named **Axes Measure**. Here we can see the axes measure as graphical in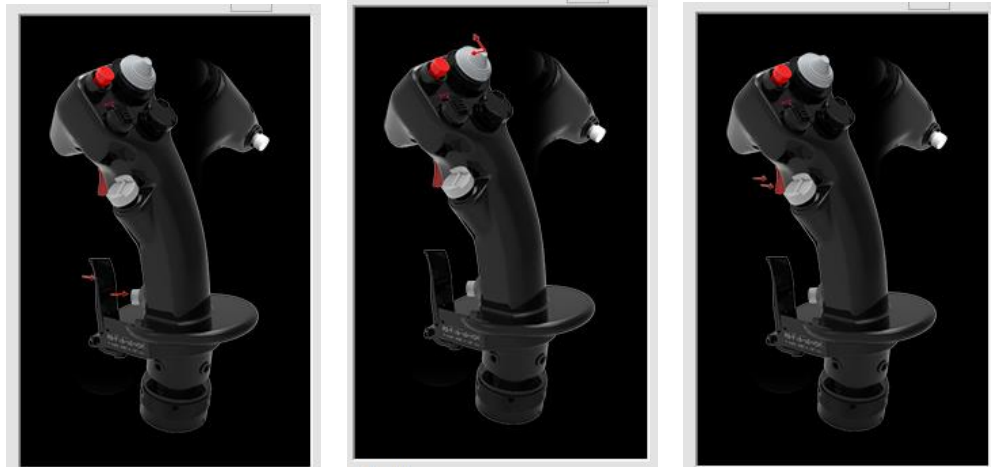formation in progress bars and text boxes for numerical information, buttons to calibrate each axis individually and check boxes to invert the axes. The information shown in this groupbox for the different axes is the same that we can see in the Microsoft Game Controllers window.

6. Groupbox with the Raw information for each analog axes named **Axes Raw Values**. Here we can see the measure of each axis numerically and graphically in a progress bar, red icons for the maximum and minimum values of each axis and black icons for the zero position. Additionally the user can see and adjust the value of each icon manually clicking on the icon and writing the desired value manually (see section **Manually configure Raw Axes**).

7. Buttons to select the **Configuration** or **Game** mode and button to launch and configure the **Overlay**. Below you will find a complete explanation about how they work.

8. Text window named **Output** to test the keystrokes.

9. Configuration area for keystrokes and explanations assigned to each slot and DX button status. When you press a button the assigned DX button light and the keystroke will be shown in the Output box. In this area we have a textbox for the name of slot, buttons to **SWAP, COPY, PASTE** and **CLEAR** slot information and two buttons to show Keystrokes/Explanations and buttons names.

10. Menu strip with functionality to **Save** and **Read** configuration .xml files, **Print** the keystrokes templates and **DOC** to access to the pdf documentation.

In general, every button, groupbox or numeric Up/Down control in the window has a small pop-up box (tooltip) with basic information about it. This information will appear when the mouse pointer is over the control.
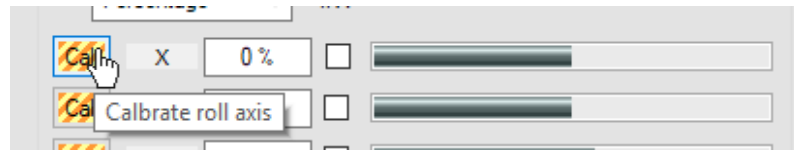
Connecting RS_HID_DEV_TOOL and F16SGRH

There are two important concepts that you need to know before starting with the explanation of how the F16SGRH and RS_HID_DEV_TOOL work.

The first one is that the RS_HID_DEV_TOOL program can work in two modes selectable by buttons: the **Configuration** and the **Game Mode**. The active mode is shown with a red box in the button of active mode and clicking on the alternative button change the mode.
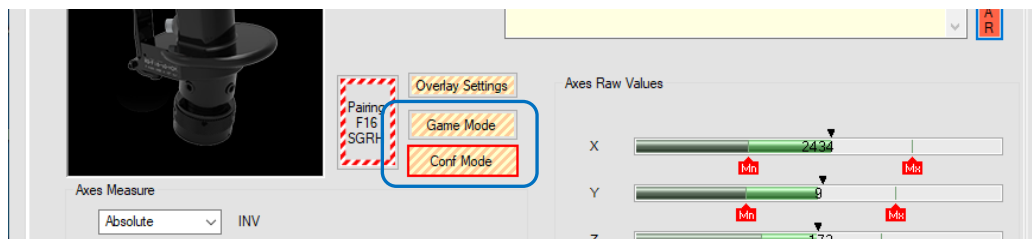
The **Configuration Mode** is the standard mode to configure the F16SGRH and as we explain in the next section (**How the F16SGRH works**), changes of slots with the rotary switch don't change the active configuration.

The **Game Mode** simulates when the RS_HID_DEV_TOOL is closed, and then changes of slots with the rotary switch change the active configuration.
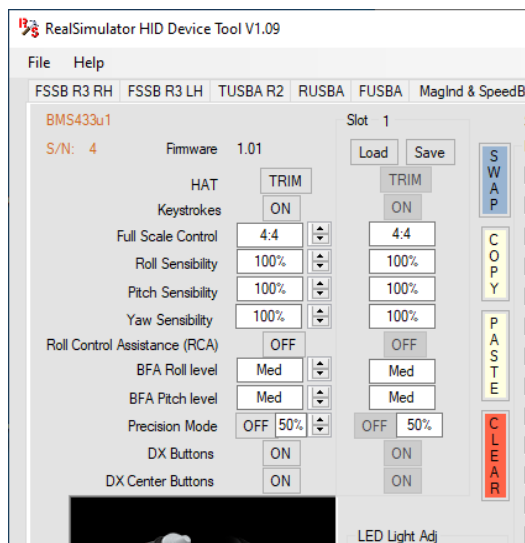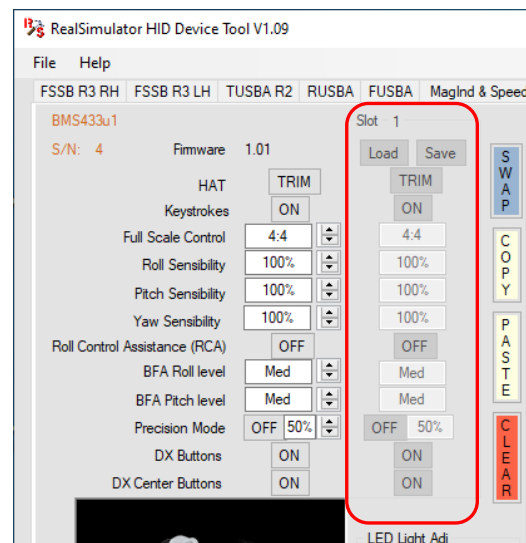
Configuration Mode	Game Mode

In this mode the **Load** and **Save** buttons are disable and directly the active slot information is shown in the actual configuration.

If you want to use the **Overlay** feature (you will find more information in the section **Overlay Settings**) to show the name of active slot over the game window, it is necessary to change the mode to the **Game mode**, so changes of slots with the rotary switch will update the active configuration settings with the RS_HID_DEV_TOOL opened (in configuration mode it does not occur). If you don't change the mode to Game mode, the slot names will be changed but the active configuration settings won't be uploaded.

The second important concept is that **you must to know what configuration data is saved and where** to understand how the program works.

The program saves the information in two places:

a) In the computer in an .xml file, in the folder %APPDATA%\Realsimulator Data\F16SGRH. Here, it saves the configuration settings, the keystrokes and explanation associated of all slots.

b) In the own device (in flash memory). Here it saves the configuration settings and the keystrokes of all slots and the file name. Please, pay attention to this, in the device are not saved the explanation.

Now we can start to describe how the connection between the program and the device is.

As soon as the user clicks on the tab **F16SGRH**, the program fills the slot configuration data with the information stored in the file F16SGRH_BACKUP.xml. This file is an automatic backup of last saved information to the device or file. So you can always recover the information.

Next, it checks if there is already attached by Bluetooth a F16SGRH to the computer. In affirmative case, change the stick image to colour and load all the slots configuration data from the F16SGRH.

NOTE 1: If you have not attached it yet, in the chapter "**Installation**" you can find the how to do it method.

NOTE 2: The program allows working in offline, without the F16SGRH, to configure the slots, save the information and recover it later when the F16SGRH is attached. You can see more information about in the section "**Working offline with the F16SGRH**".

As we explain above, the program loads from the F16SGRH all the slots information except the keystrokes, but as it loads also the .xml file name, the program search in the data folder the .xml file and extract from it the explanation data. And finally, with all the information fills the slots configuration data and put in the left upper corner the file name.

As the data stored in the backup file is the last saved generally you don't detect changes in the presentation, unless you forgot to save to the modifications in the stick or in the file. In this case, load the backup file and save it in the computer with the name you choose and in the stick.
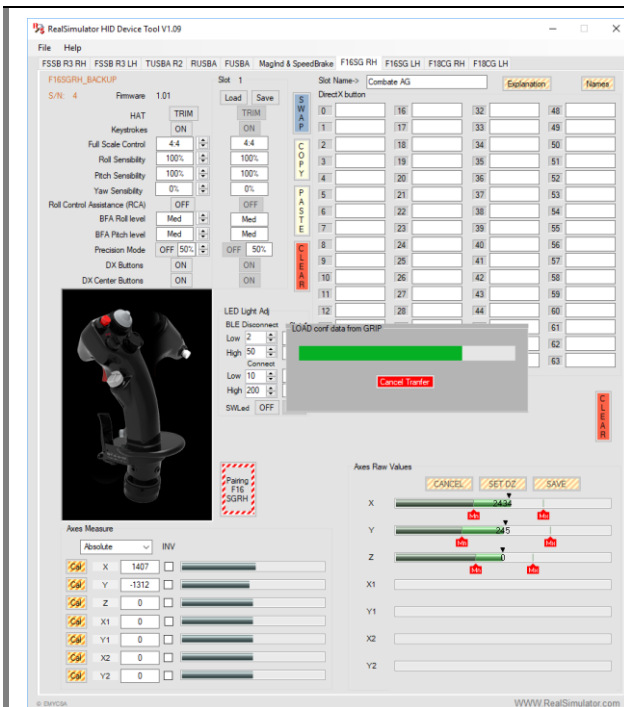
| Loading data from the F16SGRH | Updated info after loading |
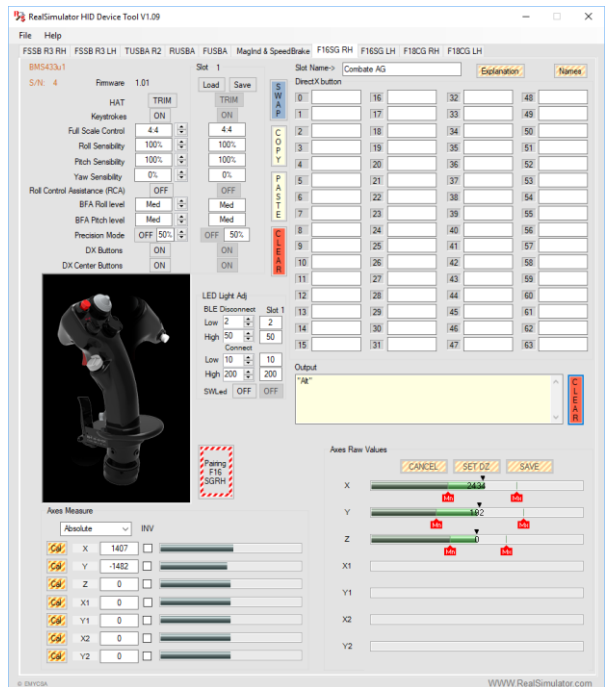
In the section "**Load, Save and Print a .xml configuration file**" you can find more information about how to save and load the configuration files.

How the F16SGRH works

The F16SGRH is a stick with buttons and hats, analog sensors for pitch, roll and yaw and a rotary switch.

The **Rotary switch** is placed under the **TRIM** hat switch cap, as a black ring with rotary movement, and it allows with a single thumb movement, to swap between the 8 configurable memory slots that the F16SGRH has, allowing to reconfigure your whole system in fraction of a second.

FSSB-R3 users are used to have four programmable configurations and to change individual settings in the configuration of side stick by the SMM. **Now with the F16SGRH the concept is different**, the SMM launcher has disappeared and the user has 8 configurable slots, which allows configure the settings for 8 different flight situations; so, for example, you can assign one slot for an A-A combat, other slot for

refueling, other for NAV, other for A-G, etc. so until 8 different situations. This is equivalent to have 8 different joysticks, each one tight for a different situation and the change between them is done with a single thumb movement reconfiguring the whole system in fraction of a second.

The integration with the R3 is explained below in the **F16SGRH and FSSB-R3** chapter.

The user is informed about the slot active by the **status LEDs**; information is shown in binary code.

Slot 1: off – off- off
Slot 2: on – off- off
Slot 3: off – on- off
Slot 4: on – on- off
Slot 5: off – off- on
Slot 6: on – off- on
Slot 7: off – on- on
Slot 8: on – on- on

Slot 2   Slot 6

The information from device is sent by Bluetooth and by the 5 pin mini-Din connector. By Bluetooth is sent all the information and by the mini-Din only the buttons status and the rotary. All the information sent by one or other way is affected by the configuration associated to the slot selected by the rotary.

The configurations you prepare with the RS_HID_DEV_TOOL are saved in different memory areas, and they are accessed in function of what the device needs. The working of these memory areas is explained below.

a) **Instant area**: this area always contains the information presently in use. It is on volatile memory and it is loaded with the slot 1 configuration of memory area each time the stick is turned on.

In normal operation (with the RS_HID_DEV_TOOL closed) you can change its settings immediately with the rotary switch, selecting another slot.

With the RS_HID_DEV_TOOL opened its operation change. Now the user can change the settings of this area with the buttons and numeric Up/down controls. The rotary does not change the area information, only the slot shown. If you need to load the info of a slot, select the desired slot with the rotary and press the **Load** button, the information in the instant area will be overwritten with the new information of that slot. On the contrary, if you want to save the active settings in a slot, select the desired slot with the rotary and press the **Save** button.

Please, pay attention and understand the previous explanation, it is very important to configure the F16SGRH.

b) **Memory area**: this area has the slots information to use (in normal operation) or show and load/save when the RS_HID_DEV_TOOL is launched. This is on volatile memory and it is loaded with the information of flash area when the stick is turned on. This information is always available to save it in the Flash area, to load in the Instant area the selected slot or to save in the selected slot the information of instant area.

c) **Flash area**: it is in non-volatile memory and it stores the information to load after

the power on. This information only can be modified voluntarily with the memory area information after a change in the memory area information. In that moment an alert button will appear over the animated area to inform about.


Let's see with an example the interaction between the different areas and the notices received when for example we modify the slot 7 to adjust the Roll sensitivity to 75%:

1. We launch the **RS_HID_DEV_TOOL** and select the "**F16SG RH**" tab. We wait until the system load the configuration stored in the stick.
   (**Instant** = unchanged, **Memory** = unchanged, **Flash** = unchanged)
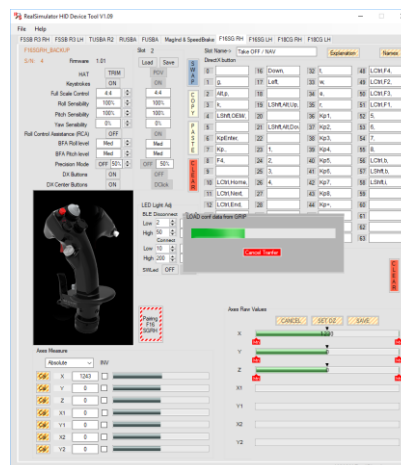
2. With the rotary switch we change the slot to 7 and click the **Load** button to transfer the information to the Instant area.
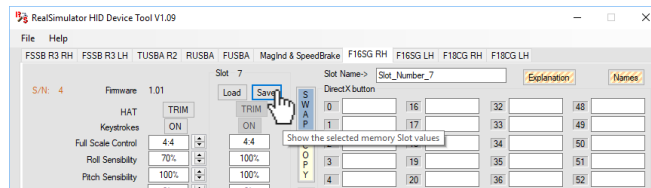   (**Instant** = changed, **Memory** = unchanged, **Flash** = unchanged)
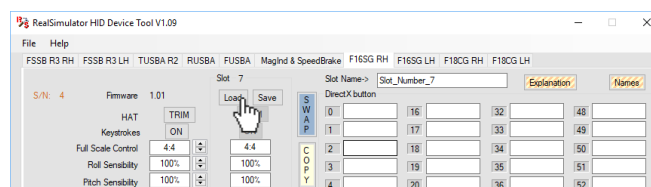
3. We change the Roll sensibility to 70%
   (**Instant** = changed, **Memory** = unchanged, **Flash** = unchanged)
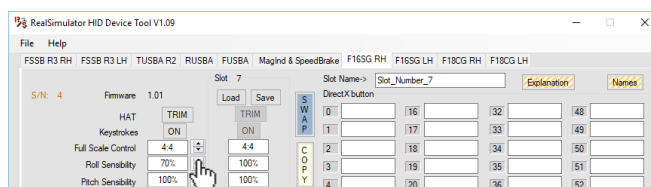
4. Click the **Save** button to pass the information from Instant area to the slot

memory in Memory area. At this moment the system will show an alert button to inform us that the memory area has different information than the flash area, so if we do not save to flash we will lose the modification when the system is shut down.

(**Instant** = unchanged, **Memory** = changed, **Flash** = unchanged)


5. Press the alert button to store the Memory area information in the Flash area.

(**Instant** = unchanged, **Memory** = unchanged, **Flash** = changed)
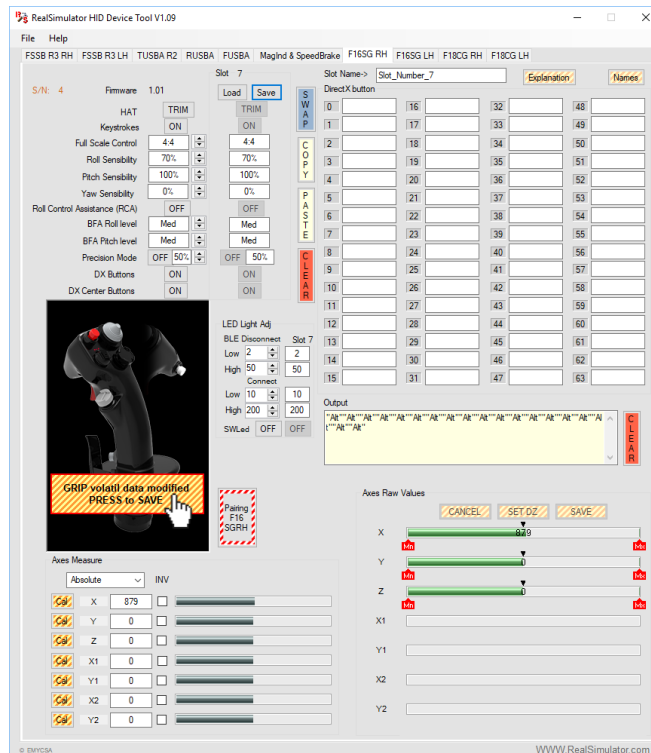
6. Finally, you should save the configuration in a file on your computer to restore it when you want, or to share it with your friends. To do this, click **File** in the upper menu bar and select **Save** to keep the file name or **Save As** to change it, and press **Save** in the folder dialog to finish.
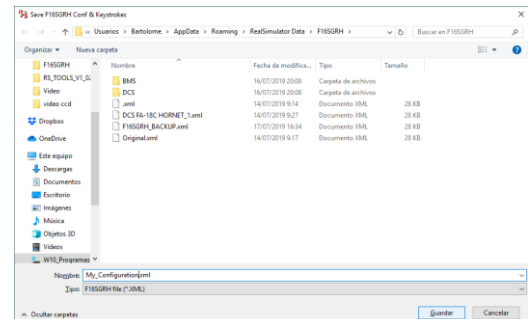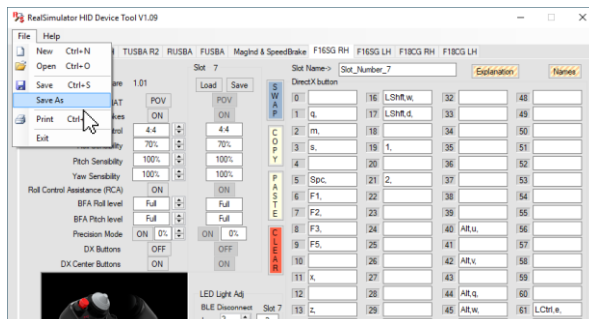
The normal operation of the device with the slots is simple and without complications, it is only necessary to change the slot with the rotary and with that simple action to change the settings and reconfigure the system operation. This way, the status LEDs show the active slot number in binary and the configuration active is loaded in the Instant area.

When you are configuring the slots with the RS_HID_DEV_TOOL program, the process is different as we have just explained and rotary only change the slot shown but does not have any impact over the setting in use.

Finally I would like to comment that just when you are writing a letter you do not save the file each time you write a character, here you do not need to press the alert button to save in the flash memory each time you change a feature, it is only an alert to inform. Save from time to time in order not to lose the changes.

Pairing F16SGRH

Pairing is a preliminary action necessary to optimize the axes response. For that the system must register different spatial positions. In this device it is absolutely necessary to proceed with pairing before using the analog axes. Concretely, to be configured correctly, the Z axis needs precise information from the room where it is used. If you change the work area for example when you change the game room, you will need to make other pairing to adjust the device to the new zone.

As you will need to move spatially the F16SGRH during the pairing this operation has to be done with the supplied USB to mini-Din cable.
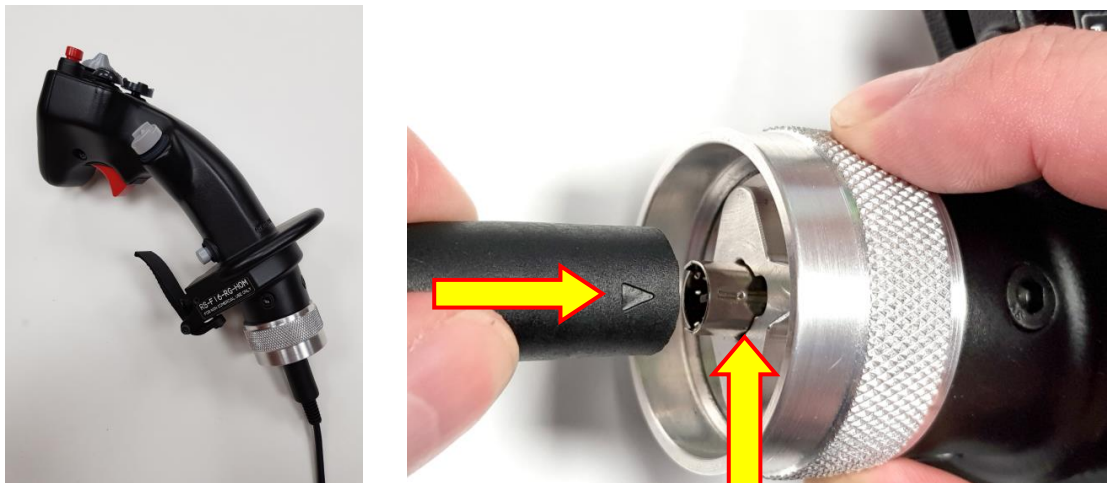

NOTE: please, when connect the cable to the grip pay especial attention to align correctly the two connectors to prevent damage in pins or connectors. For that, both connectors have visible marks as you can see in the above image.

To start the pairing process, click the **Pairing F16SGRH** button. A new window will appear to instruct us to move the grip slowly in all directions to capture information of different spatial positions.

For our experience, we suggest next actions, the result works fine for us:

1. Put the grip vertically taking it with one hand by the nut.
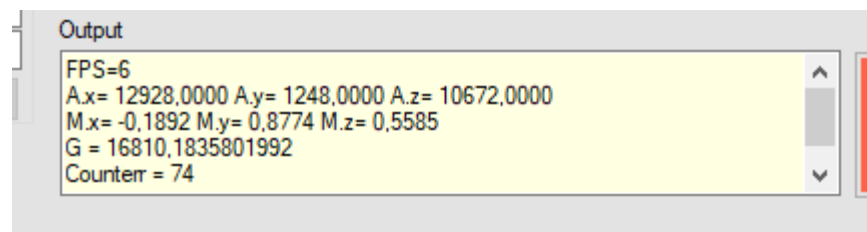2. Press the OK button in the window to start the pairing.
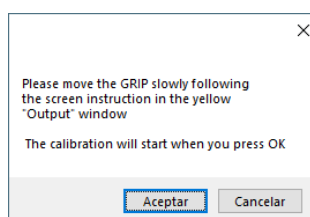
3. With the other hand help yourself to rotate it 360 degrees

4. The text box "Output" will be showing information about the information acquired and a counter that is increasing. Normally the counter will be around 60-70 units


```
Output
FPS=6
A.x= 12928,0000 A.y= 1248,0000 A.z= 10672,0000
M.x= -0,1892 M.y= 0,8774 M.z= 0,5585
G = 16810,1835801992
Counterr = 74
```

5. Move freely the stick the rest of time until the counter reaches to 100. Move to positions that you will use when move it flying in a game.

6. At this moment the pairing has finished and you can verify in the Axes Raw Values area how the measure bars work. Please, don't put your attention in the centers positions, only in the bars movements and keep in mind that when a measure reaches the maximum the next value is the minimum and vice versa.

7. If the movements suit you, accept the pairing by clicking in the alert button displayed on the top of the animation area. If you are not satisfied, repeat the procedure. With this action you save the new settings of pairing in the Flash area, so when you turn on the system next time this settings will be active. If you don't click and save the settings, they remain active until shut down (they are in the Memory area) new time you turn on the system, the old settings will be loaded.


8. Finally to complete the pairing action you need calibrate the axes, so let's proceed with the next section.

NOTE: It is absolutely necessary to make the pairing action at the first time when you

receive F16SGRH, but it could be also advisable after a firmware update.

On the RS product's website (http://www.realsimulator.com/html/f16sgrh.html) you can find a video we made called "**Pairing**" where you can watch and follow step by step the procedure explained above. Also you can access to the video directly clicking the next image or hyperlink
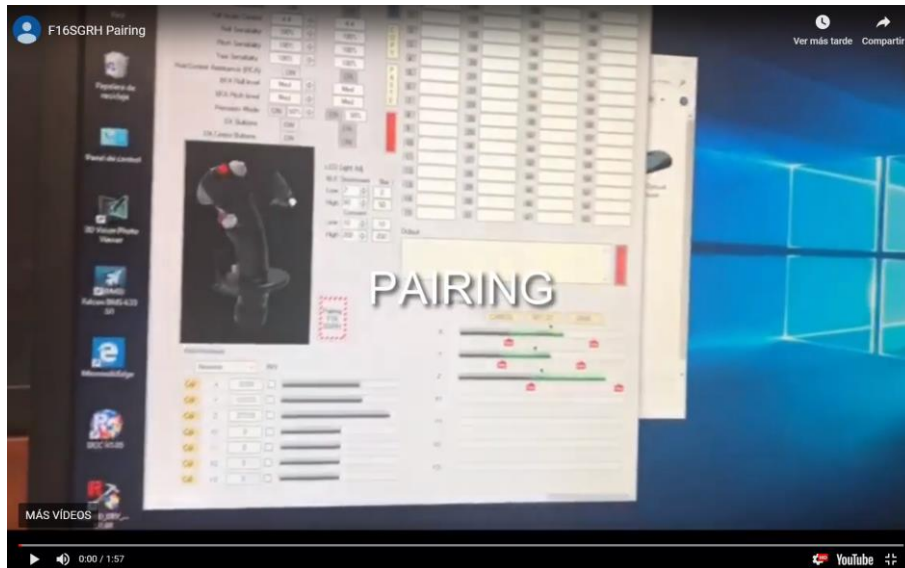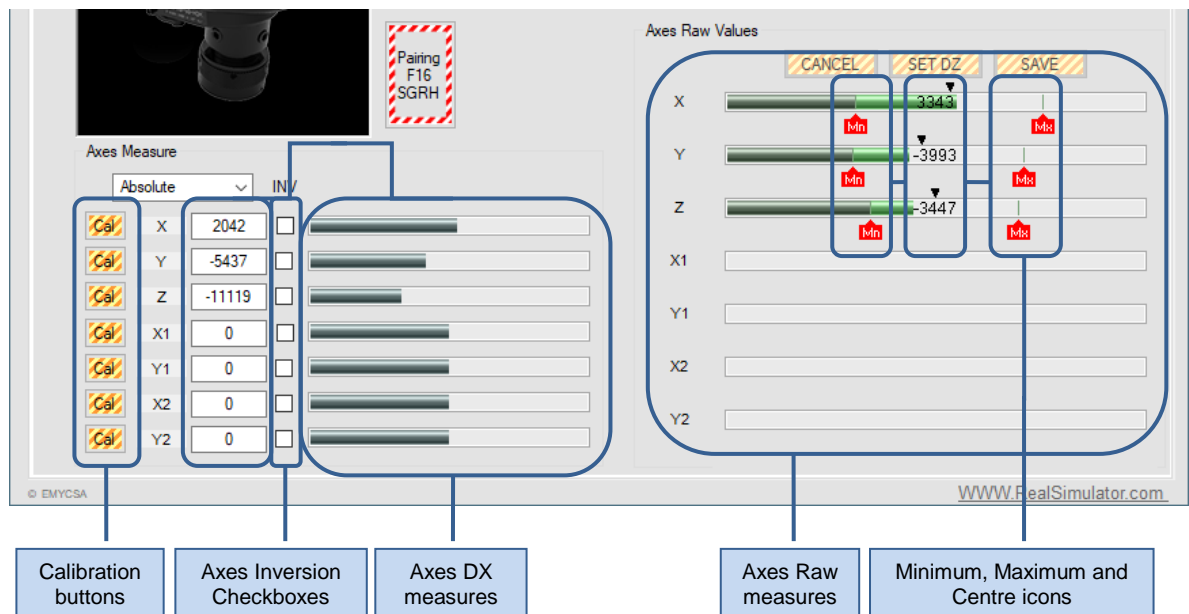

F16SGRH Pairing

Axes calibration overview

As we informed at the end of pairing procedure, after the pairing it is necessary to calibrate each analog axis.

With this calibration we will adjust some internal settings and inform Windows about the maximum, minimum and central position of each axis. This procedure is similar to the Game Controllers calibration wizard of Windows with the following differences:

- With the RS_HID_DEV_TOOL we can individually calibrate the axes, only the axis that we need.
- This tool allows you to center the raw values to get a maximum operational range in the axes.
- You can also invert individual axes to adapt the hardware to the simulation program requirements.
- See the Raw and DX values graphically and numerically.

So, **we strongly suggest using ONLY this tool to configure and calibrate the F16SGRH**.

The image below shows the different informative areas related with the axes calibration.

| Calibration buttons | Axes Inversion Checkboxes | Axes DX measures | | Axes Raw measures | Minimum, Maximum and Centre icons |

Axes Raw Values groupbox shows the internal measures of each F16SGRH analog axis, numerically and graphically through a green progress bar with the numeric value in the centre. Each axis has two red icons to identify the maximum and minimum positions and a black icon for the centre position.

Values of associated icons (Maximum, Minimum and Centre) can be visualized putting the mouse over the icon and modified manually by the user by double-clicking the icon. For an explanation about how to do this, please see the section **Manually configure Raw Axes**.
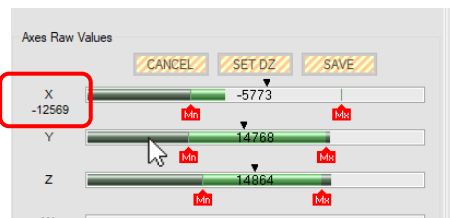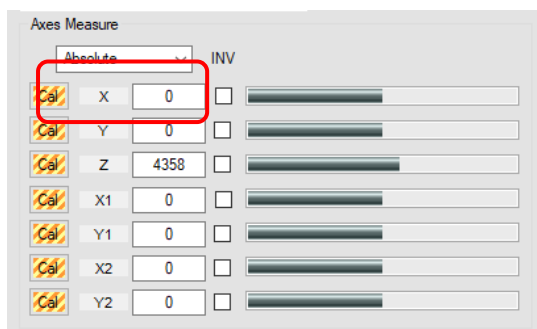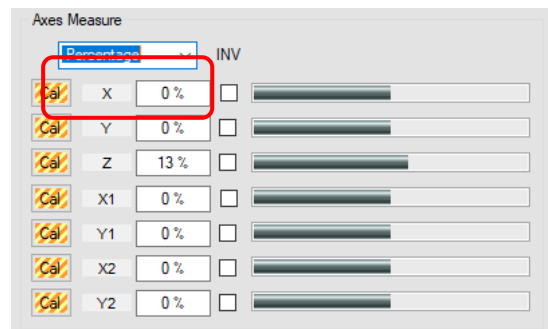

X axis Minimum value
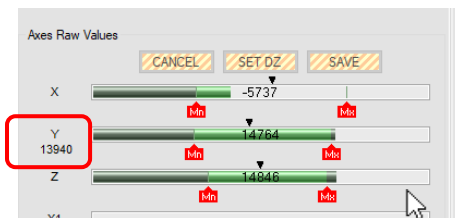
Y axis Maximum value

Axes Measure groupbox shows the Direct X information. This information is shown numerically on text boxes and graphically in progress bars. The numeric information can be shown in **Absolute** or **Percentage** format. To change it, select the preferred option in the combo box.

Absolute format

Percentage format

The axes calibration procedure is very easy and is guided with instructions on the screen; however, we are going to show you step by step how to do it.

The axes calibration is grouped in two paragraphs:

- Calibration of X and Y axes.
- Calibration of Z axis.

X and Y axes calibration

The procedure to calibrate X and Y axes is similar, so here we will show how to do it only with the X axis.

As we explained before, to calibrate an axis in Windows we need to inform it about the maximum, central and minimum positions of that axis. For that, we will move the stick until those positions over the selected axis, following the sequence the system indicates.

To start the calibration, click the **Cal** button associated to the axis in the **Axis Measure** groupbox.
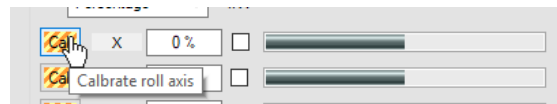

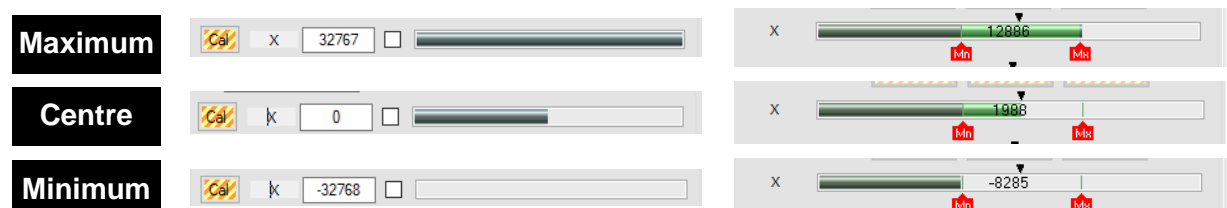A new small window will appear with instructions for the axis calibration.
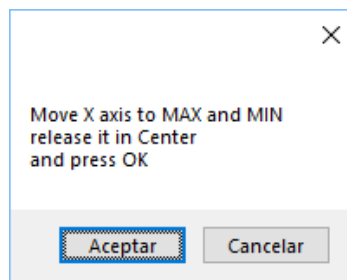
Following the instructions, move the stick to the left and right to achieve the minimum and maximum positions and release it in the center position. Then click **OK** to continue.

After closing the window, RS_HID_DEV_TOOL will save the new calibration values in Windows. It will also relocate the associated icons of minimum, centre and maximum, as we can see here.
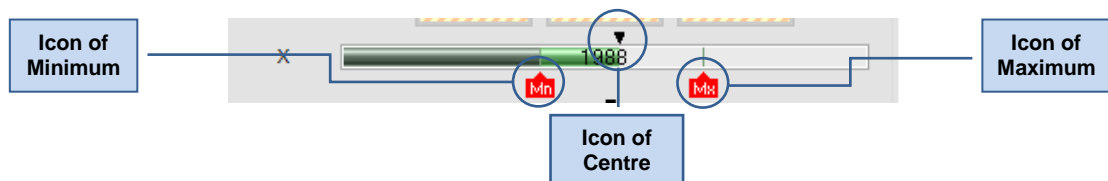

Now, with the calibration finished we can check that there is a direct correlation between the maximum, centre and minimum positions of our hardware shown with the red and black icons and the maximum, centre and minimum DX values.

Z axis calibration

As we mentioned before, to calibrate an axis for windows we need to inform it about the maximum, central and minimum positions of that axis, this is all the information Windows needs. For that, we will move the stick until those positions over the selected axis, following the sequence the system indicates. In this case the calibration is made in two phases, first the system will request the center position and after the extreme positions.

To start the calibration, click the **Cal** button associated to the axis in the **Axis Measure** groupbox.
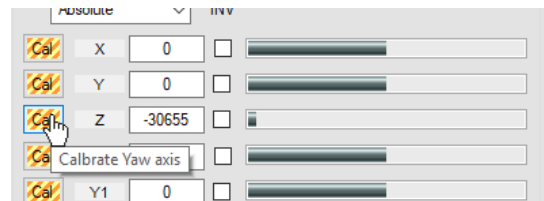
A new small window will appear with instructions for the axis calibration.
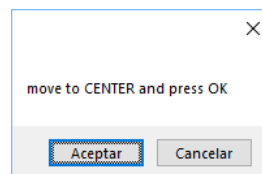
Following the instructions, move the stick to the center position and then click **OK** to continue. The system will do an auto-zero action over the axis measures, as you can see in the next pictures.
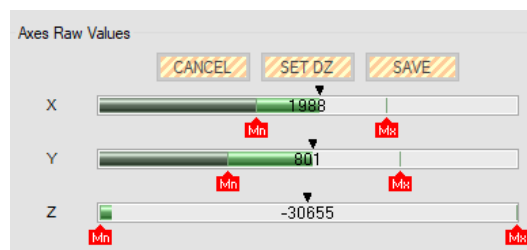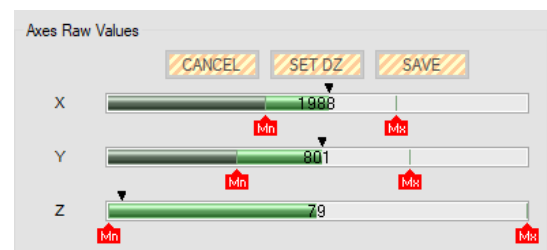
Before auto-zero   After auto-zero

And a new window will be shown to inform about the action. Click **OK** to continue.

And finally a new window will ask us to move the stick over the **Z axis** to the maximum and minimum desired positions. When done, please click **OK** to finish.

After closing the window, RS_HID_DEV_TOOL will save the new calibration values in

Windows. It will also relocate the associated icons of minimum, centre and maximum, as we can see here.

Now, with the calibration finished we can check there is a direct correlation between the maximum, centre and minimum positions of our hardware shown with the red and black icons and the maximum, centre and minimum DX values.
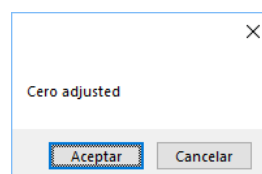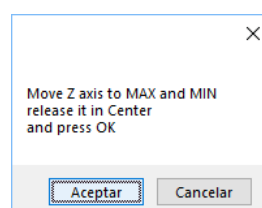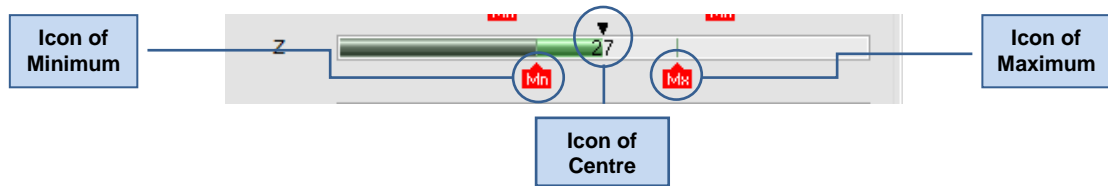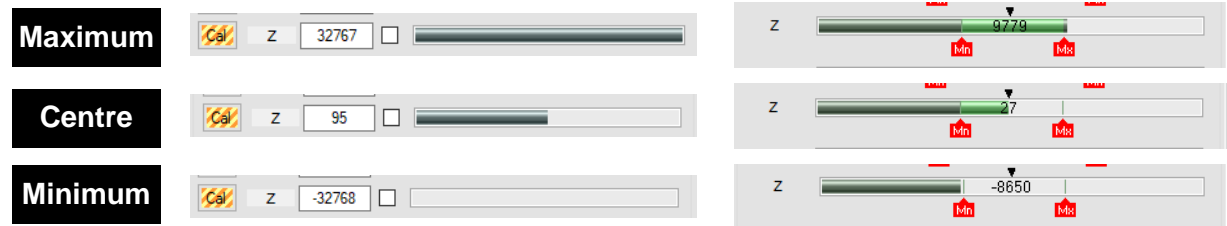

Manually configure Raw Axes

With the RS_HID_DEV_TOOL it is possible see and adjust manually the value of each parameter associated to the raw axes progress bars, as the Maximum, Minimum and Center positions.

To see a parameter value you must put the mouse over the parameter icon and the measure will be displayed for 4 second below the raw axis name. After this time the measure value disappears and it will be necessary to move the mouse and put the pointer over the icon to see it again.
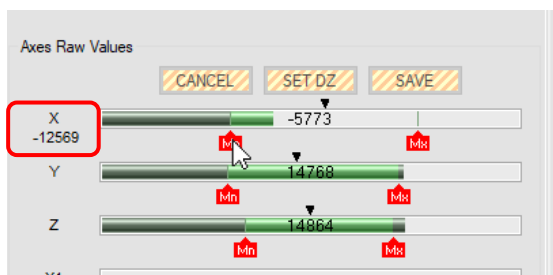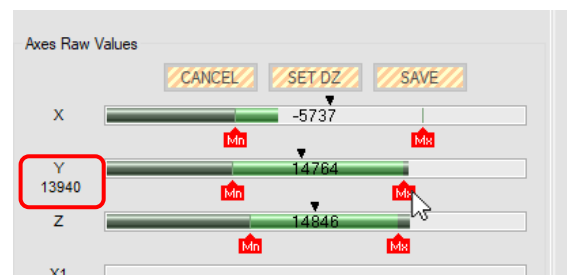
X axis Maximum value   Y axis Centre Dead Zone value

If you want to modify a value, put the mouse over the chosen icon and after a double-click on the icon the program will open a window showing the "minimum" (upper position) and "maximum" (lower position) admitted values for the selected parameter. The active value is shown in bold, in the centre position.

In this example we will modify the Minimum value of X axis. Now its value is "-8150" and we will change it to "-9000".

So, double-click over the Minimum icon of X axis and we will see the new window with the actual info "-8150". Clicking with the mouse in the test box we can write the new value "-9000".
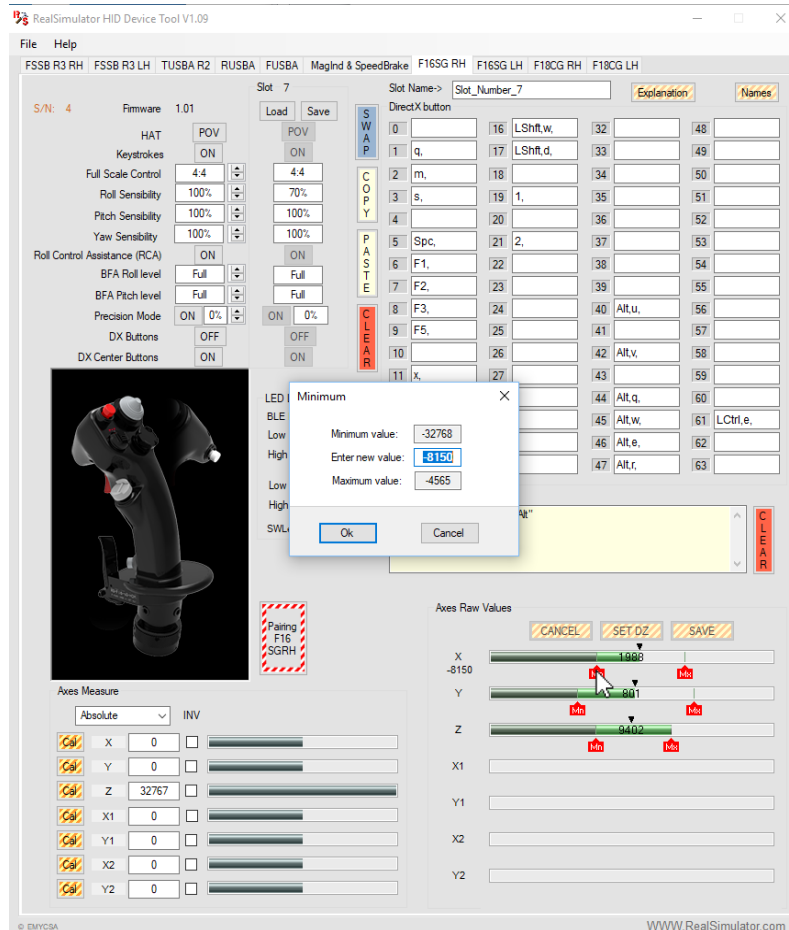
To finish the operation, click on the OK button to accept the written value.
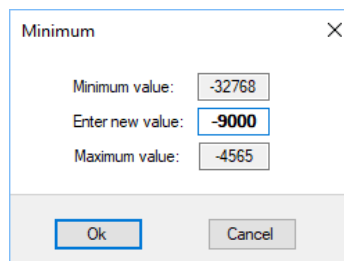
If the value is correct the window will close and the parameter and icon position in the progress bar will be modified.
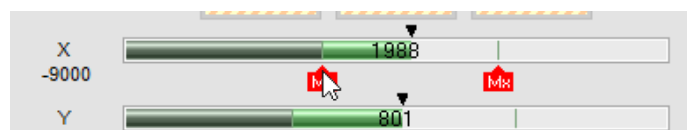
If the value written is incorrect an ERROR window will be shown to inform about the error and the operation will be cancelled after acknowledging the error.
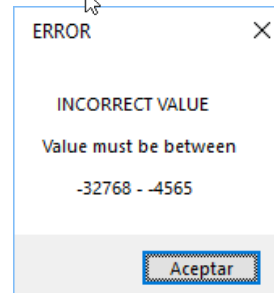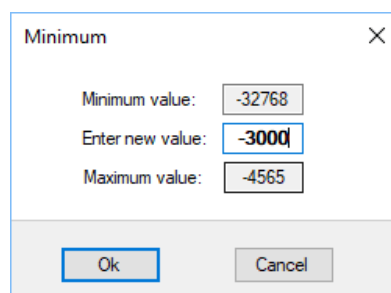
Slot Configuration

As we have mentioned above, there are 8 slots configuration selectable easily through the rotary switch action.

If you did not see the section "**How the F16SGRH works**" we suggest reading it before to know how to modify the settings and not to lose it.

In every slot you can configure:

a) Analog settings:

- Full Scale Control.
- Roll Sensibility.
- Pitch Sensibility.
- Yaw Sensibility.
- Roll Control Assistance.
- BFA Roll level.
- BFA Pitch level.
- Precision mode.

b) Digital settings

- HAT as POV or TRIM.
- Keystrokes ON/OFF.
- DX Buttons ON/OFF.
- DX Center Buttons mode.
- Keystrokes and explanations.
- Adjustable LEDs lighting level.
- SWled function.
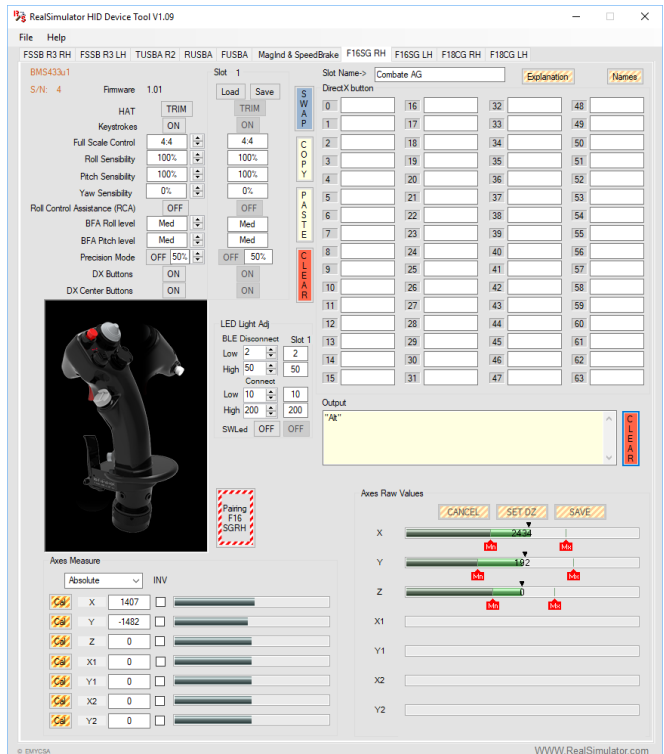
We will explain in detail each setting below.

FULL SCALE CONTROL (FSC)

This control allows adjusting the full scale of all axes in four levels. This setting is ideal to set the maximum joystick response in complex situations, such as a landing, refuelling manoeuvre or ground attack.

The indication is shown numerically on a text box and the selection is done with an Up/Down indicator. The setting values are: 4:4, 3:4, 2:4 and 1:4.

4:4 - Full range is 100%
3:4 - Full range is 75%
2:4 - Full range is 50%
1:4 - Full range is 25%
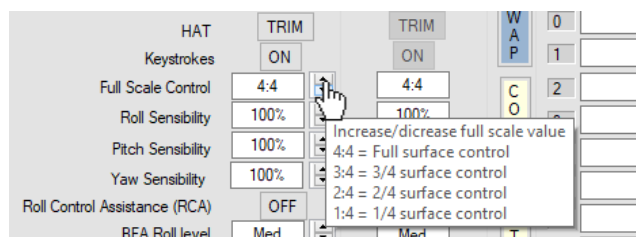
This feature allows configuring different response levels of the flight controls for the same movements. For example, if you select it to 2:4, now with the same movement as in the normal 4:4, you only get the 50% of signal. So, you improve the precision in manoeuvres that need small and precise movements, as we mentioned above.

ROLL, PITCH AND YAW SENSIBILITY

These controls allow individually changing the axes sensibility from 100% to 0% in discrete steps of 1% (except Roll sensibility in 2% steps to maintain capability with FSSB-R3), so it is possible to adapt the levels of axes individually to the requirements of each moment.

This setting is ideal to disable an axis in a slot, for example the Z axis, usually assigned to the Yaw axis. You only need to change the setting to 0% and the Z axis measure will be always "0" when that slot is active. Also it allows adjust the

Pay attention because this setting is applied together the Full Scale Control, so for example, if you set the FSC to 2:4 and the sensibility to 50%, now with these two settings the maximum level of response will be 25% respect the level in normal conditions (4:4 and 100%).
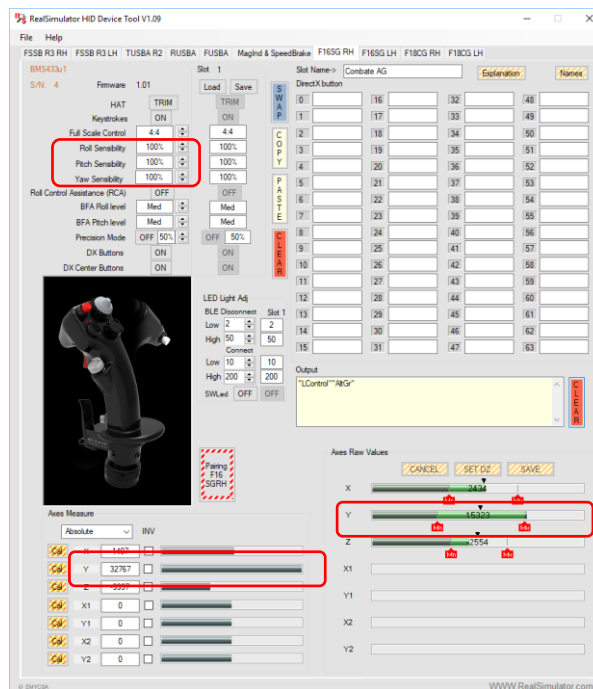
Maximum in Y with FSC 4:4 & Sensibility 100%   Maximum in Y with FSC 2:4 & Sensibility 50%
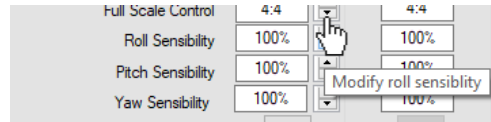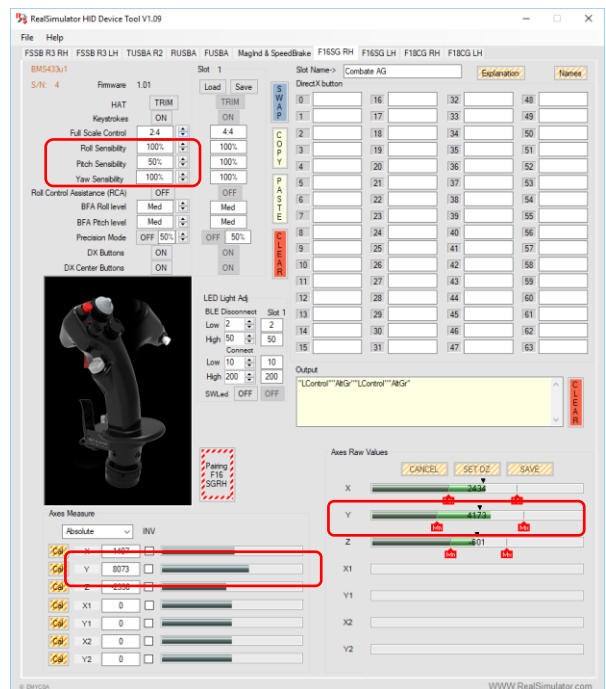
ROLL CONTROL ASSISTANCE (RCA)

This feature enables (ON) and disables (OFF) the Roll Control Assistance. The Roll Control Assistance (RCA) intends to compensate in maneuvers with high angle of attack and small or no roll, as looping maneuvers, the effect of roll introduced "unintentionally" by the pilot during the maneuver execution. With the feature enabled the roll value will be smaller the higher the pitch.
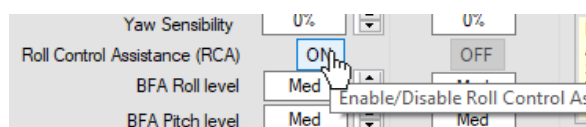
In the images below you can see how the RCA modify the roll value. A Roll value of

25% of input, with the feature enabled is 0% of output.
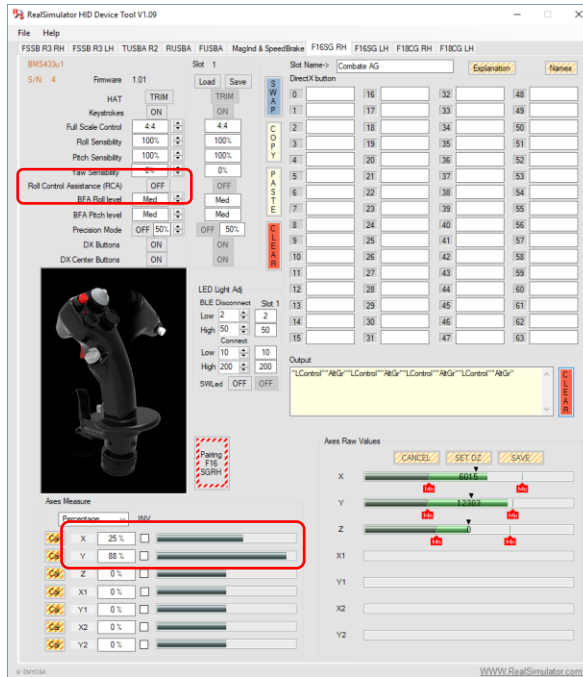
| RCA: OFF, Roll (X): 25%, Pitch (Y): 89% | RCA: ON, Roll (X): 0%, Pitch (Y): 90% |

BFA ROLL AND PITCH LEVEL

The Break Force Adjust (BFA) concept is to prevent that small movement applied to the stick in its neutral position that have a real manifestation in the axes of measure and as result that the pilot has changes in the flight path that hi will have to correct continuously.

With this feature the pilot can select the BFA level separately in Roll and Pitch in four steps to compensate from 0 to 10% of full scale and identified as: Off – Min - Med - High - Full.

The actual value is shown on a text box and the selection is done with the Up/Down indicator associated.
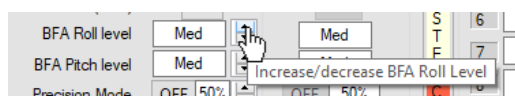
We suggest selecting almost the "Med" option for a center value stable.

PRECISION MODE

This feature allows the user to reduce the sensitivity of the axes to increase precision in manoeuvre that require precise or small inputs, such a refuelling.
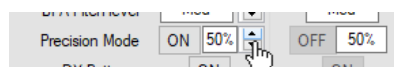
General habilitation is done through an ON/OFF button and the sensibility reduction is shown numerically on a text box and modified with an Up/Down indicator. "Trigger 1" enable/disable the feature while it is pressed, i.e. if you enable this feature by setting the button in ON, when you press the trigger button the axes measures will be reduced to the percent selected in the value textbox.

Let's see an example, if you select the button in ON, the value is 40% and the axis X has a value of 10000 when you press the trigger the value will change to 4000, when you release the trigger the value will change to 10000.

If the button is in OFF, no change will be produced in the measures.

HAT AS POV OR TRIM

This feature allows selecting how the TRIM hat switch of stick will work. The selection is made through a button with **POV** and **TRIM** options.

In **POV** mode the hat switch information is sent as a DX hat to be used in the simulation games as a point of view to control the views.

In **TRIM** mode the hat switch information is sent as four independent switches in DX buttons 27, 28, 28 and 30, to be used as TRIM, which is its function in real life.
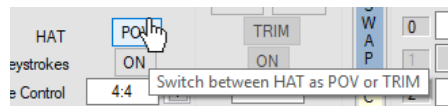
NOTE: in both modes the hat switch information is sent to the DX buttons 27 to 30.

KEYSTROKES ON/OFF

This feature allows enabling and disabling the keystrokes sending. The selection is made through an **ON/OFF** button.
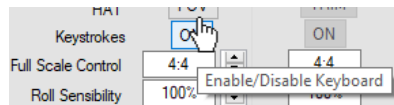
DX BUTTONS ON/OFF

This feature allows enabling and disabling the DX buttons sending. The selection is made through an **ON/OFF** button.

If **DX buttons** is enabled, when press a button, its DX button number is shown in green; when disable it is shown in gold.
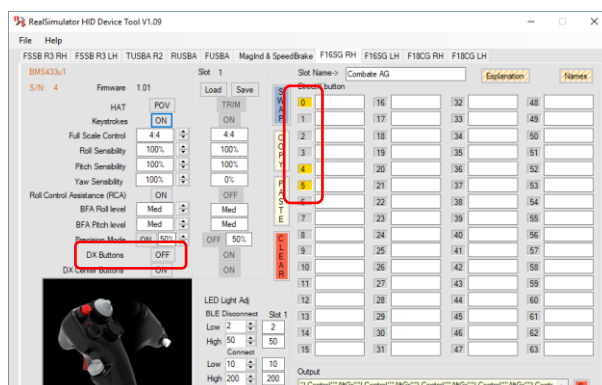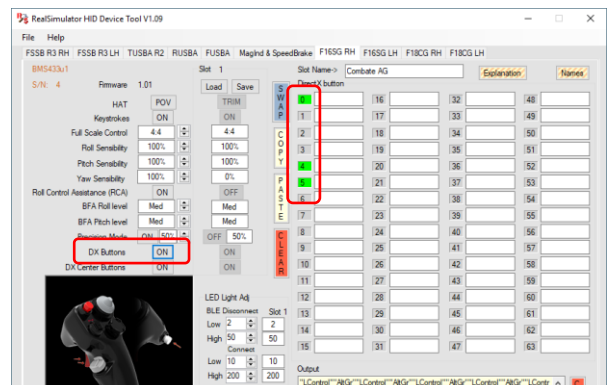
DX buttons in OFF   DX buttons in ON

Finally, the animated area with the joystick does not show actions when disabled.

DX CENTER BUTTONS MODE

The F16SGRH has hat switches in TRIM, RW, NWS, TMS, DMS, CMS, PADLE and PINKY switches as we can see in the image below. Each hat switch has 5 positions: up, right, down, left and centre, although some of them don't use the 5 positions; PINKY only has available left, right and centre and PADLE only centre.

In the right image we can see the DX buttons assigned to each hat switch position or combination of them.

DirectX button

| | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0 | Trigger 1 | 16 | CMS Down | 32 | Trim C + No | 48 | WR C + UP |
| 1 | WR Weapor | 17 | CMS Left | 33 | Trim C + Lef | 49 | WR C + Rigl |
| 2 | Pinky | 18 | CMS C | 34 | Trim C + No | 50 | WR C + Dov |
| 3 | Paddle | 19 | WR UP | 35 | Trim C + Rig | 51 | WR C + Left |
| 4 | NWS Nosev | 20 | WR Right | 36 | TMS C + Up | 52 | NWS C + UI |
| 5 | Trigger 2 | 21 | WR Down | 37 | TMS C + Ric | 53 | NWS C + Ri |
| 6 | TMS Up | 22 | WR Left | 38 | TMS C + Do | 54 | NWS C + Dc |
| 7 | TMS Right | 23 | NWS UP | 39 | TMS C + Lef | 55 | NWS C + Le |
| 8 | TMS Down | 24 | NWS Right | 40 | DMS C + Up | 56 | Pinky Left |
| 9 | TMS Left | 25 | NWS Down | 41 | DMS C + Ric | 57 | Pinky Right |
| 10 | DMS Up | 26 | NWS Left | 42 | DMS C + Do | 58 | Pinky C + Le |
| 11 | DMS Right | 27 | Trim Nose E | 43 | DMS C + Le' | 59 | Pinky C + Ri |
| 12 | DMS Down | 28 | Trim Left Wi | 44 | CMS C + Up | 60 | Trim C |
| 13 | DMS Left | 29 | Trim Nose L | 45 | CMS C + Ric | 61 | DMS C |
| 14 | CMS Up | 30 | Trim Right V | 46 | CMS C + Do | 62 | TMS C |
| 15 | CMS Right | 31 | Trim C | 47 | CMS C + Le' | 63 | |

The **DX Button Centre** feature allows selecting how the center position of hat switches will work. The selection is made through a button with four options: OFF, ON, COMP and DClick.

In **OFF** mode, the center position of hat switches is disabled. As we can see in the image below all DX buttons related with center position of hats are removed (boxes in grey) and when pressed no DX button is activated, for this, this mode is also named **Center removed** mode.
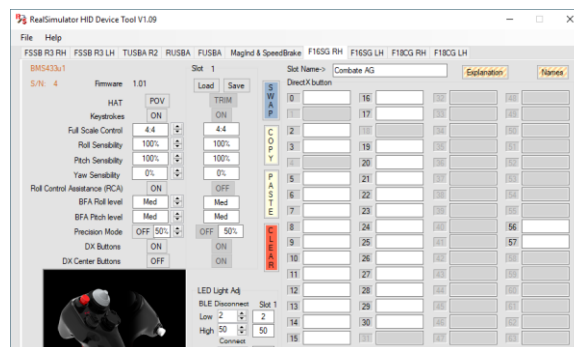
In **ON** mode, all center positions are enabled; it is the also named **Native** mode because all assigned combinations are available.
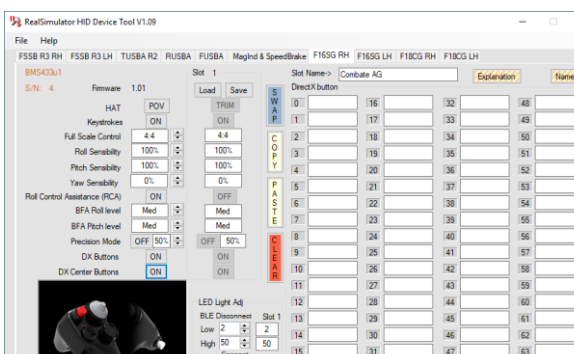
In **COMP** mode, all hat switches work as in real stick, i.e. when you press the NWS switch only the DX button 1 is enabled, it does not matter in what direction you press the hat switch, only the DX button 1 is enabled.

This mode is also named **Basic** because we have available the standard 19 DX buttons of compatible TM sticks, more the 5-way TRIM hat switch positions.

No valid DX buttons are shown in grey boxes.

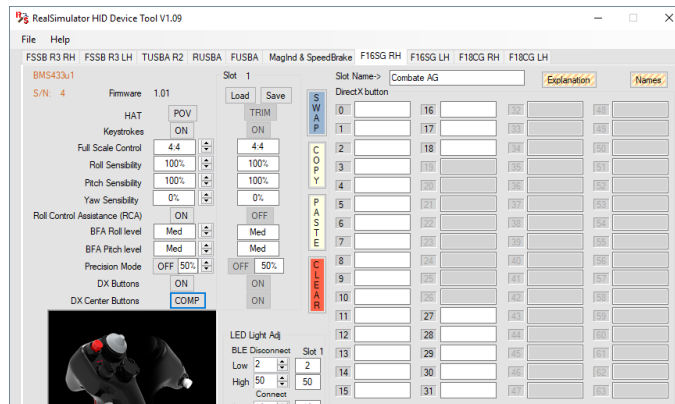In **DCLICK** mode, all center positions are enabled but they are available by double button press. In the image below we can see in orange color the center positions available only by double click.
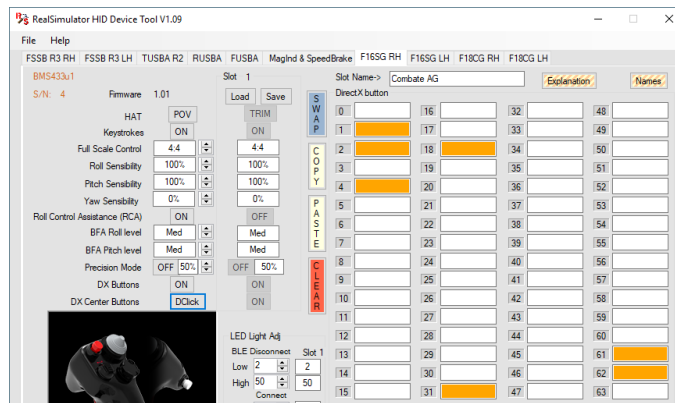
This mode corrects the problem of send false DX buttons that happen in **ON** mode when we press a combined action of center + another position. For example, in **ON** mode when press to achieve the DX button 48 (WR Center + Up) the DX buttons 1 and 48 are active. In DCLICK mode, with this sequence we will only get active the DX button 48. To active the DX button 1 we need to press the button with a double click and although we move the button with the center pressed the state will not change.

So, we **<u>SUGGEST USING MAINLY THIS MODE</u>**.

KEYSTROKES AND EXPLANATIONS

As we mentioned previously the F16SGRH is a composite device with a **Game Controller** for the DX axes and DX buttons and a **Keyboard** to send programmable keystrokes.

We have seen before how to configure and adjust the DX axes and buttons of Game Controller and now we will see how to configure the keystrokes. The program window has an area reserved for this purpose where we can configure the 64 keystrokes of each slot.

In the picture below we can see inside the squared area in red the controls to configure and manipulate the keystrokes. The information shown changes in function of slot selected; in the picture, the Slot 1.
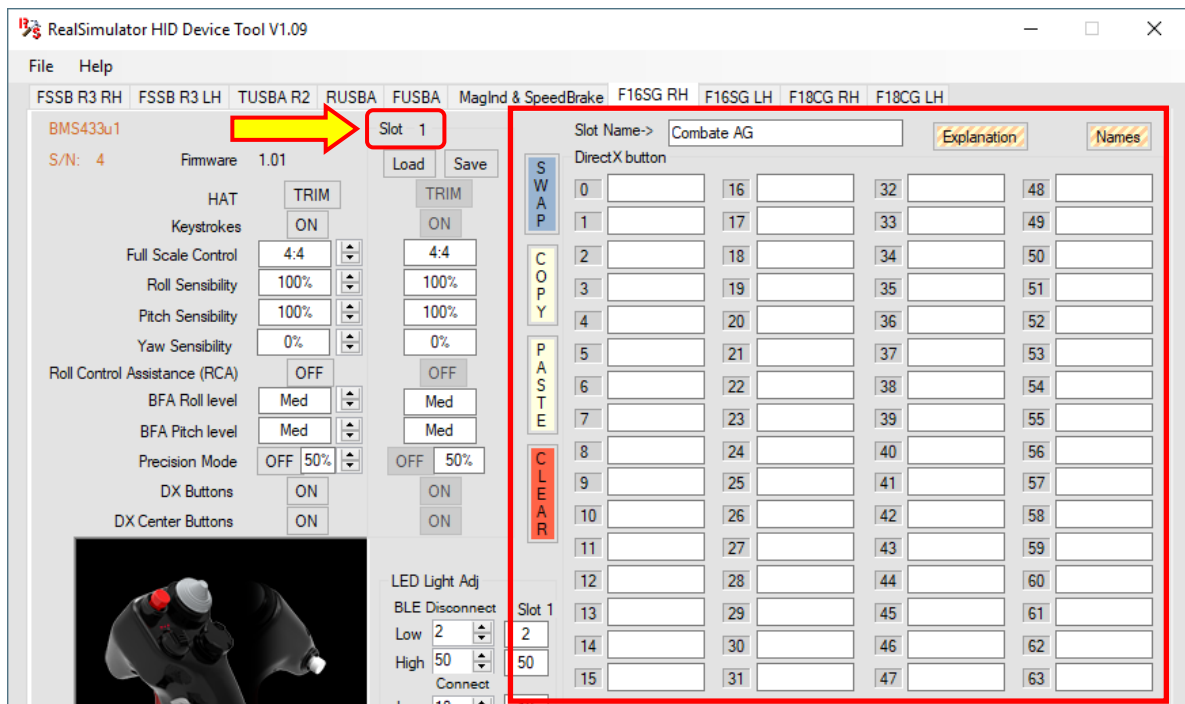
In the left upper corner of squared area is the **Slot Name** field, in the picture "Combate AG", where the user can write the slot name, so it will be easier remember the slot function. To modify the content, click with the mouse on the text box and write the name you want.

NOTE: remember that each time we change a parameter, it is immediately active and it is saved in volatile memory, but it is only saved in flash memory when you press the alert button (for a more detailed explanation, please visit the section "**How the F16SGRH works**") and saved to a file when press **File** > **Save**. As in other sections of User Guide we say, remember to save in both parts regularly.

To the right of Slot Name text box we can find the buttons "**Explanation/Keystrokes**" and "**Names**". The first one allows changing the keystrokes test boxes information between keystrokes and explanations, as you can see in the image below. Pay attention to this button, because it indicates the option to show if pressed, no the actual option shown.
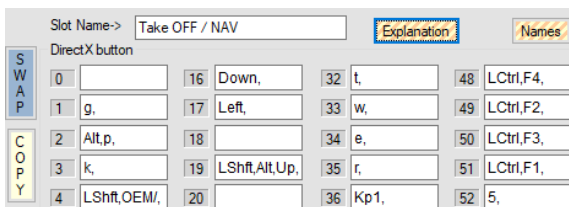

| Keystrokes text box with Keystrokes info | Keystrokes text box with Explanation info |
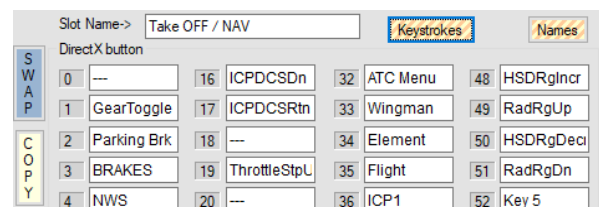
With explanation information we have a place where to write the action assigned in the game of keystroke. For example, in the **DX button 1** that is enabled when press "**Weapon Release**", the stick will send the keystroke "**g**" that is the action "**Gear Toggle**" in the simulation game.

The second button, "**Names**", it allows while is pressed shows the position where each

DX button is placed in the stick. So, in an easy and quick way you can check to which button you are assigning the keystroke.

S W A P	DirectX button							
	0	Trigger 1	16	CMS Down	32	Trim C + No	48	WR C + UP
	1	WR Weapor	17	CMS Left	33	Trim C + Lef	49	WR C + Rigl
C O P Y	2	Pinky	18	CMS C	34	Trim C + No	50	WR C + Dov
	3	Paddle	19	WR UP	35	Trim C + Rig	51	WR C + Left
	4	NWS Nosev	20	WR Right	36	TMS C + Up	52	NWS C + UF
P A S T E	5	Trigger 2	21	WR Down	37	TMS C + Rig	53	NWS C + Ri
	6	TMS Up	22	WR Left	38	TMS C + Do	54	NWS C + Dr
	7	TMS Right	23	NWS UP	39	TMS C + Lef	55	NWS C + Le
C L E A R	8	TMS Down	24	NWS Right	40	DMS C + Up	56	Pinky Left
	9	TMS Left	25	NWS Down	41	DMS C + Rig	57	Pinky Right
	10	DMS Up	26	NWS Left	42	DMS C + Do	58	Pinky C + Le
	11	DMS Right	27	Trim Nose D	43	DMS C + Le'	59	Pinky C + Ri
	12	DMS Down	28	Trim Left Wi	44	CMS C + Up	60	Trim C
Slot 1	13	DMS Left	29	Trim Nose L	45	CMS C + Rig	61	DMS C
2	14	CMS Up	30	Trim Right V	46	CMS C + Do	62	TMS C
50	15	CMS Right	31	Trim C	47	CMS C + Le'	63	

Slot Name-> Combate AG   Explanation   Names

To assign a keystroke to a button action, first chose in the stick what button will send the keystroke; for an easy location, press the button and see what DX button is lighted. In this explanation we chose the DX button 0 (Trigger 1).

Next with the button "**Explanation/Keystrokes**" in Explanation, click the text box assigned to the DX button lighted and a new window will be displayed to enter the key codes sequence.

In the window we find the standard buttons "**CANCEL**" to cancel the action, "**CLEAR**" to clear the text box content, "**OK**" to accept and validate the key codes sequence, two buttons "**LWin**" and "**RWin**" to manually enter theses key codes if it is necessary because some keyboards don't have these keys, and the text box where enter the key codes.

The textbox admits until five keys (normally we only use one key) and a modifier, that can be composed by none, one or a combination of these 8 keys: **LWin**, **RWin**, **LShft**, **RShft**, **LCtrl**, **RCtrl**, **LAlt** and **AltGr**.

To enter the key codes press the keys sequence you want to compose the keystroke event and maintain always almost one key pressed, because the sequence is finished when release the last key.

Finally press "**OK**" to validate.

NOTE 1: some key code sequences with keypad keys need to press first the keypad

key and after the modifier.

NOTE 2: although the textbox support the entry of until 5 keys, at this moment only the two first keys are sent as keystrokes, the rest are ignored.

When the window closes the key codes entered appear in the keystroke text box, as we can see in picture below.
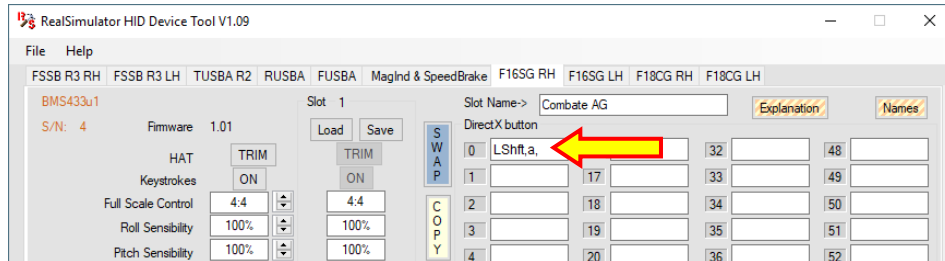

To enter the explanation of this keystroke press the button "**Explanation/Keystrokes**" to change it to Keystrokes and then click the keystroke text box where entered the key codes and write the comment you want. The explanation is not necessary information, it is only a help to remember in the future the keystroke action.
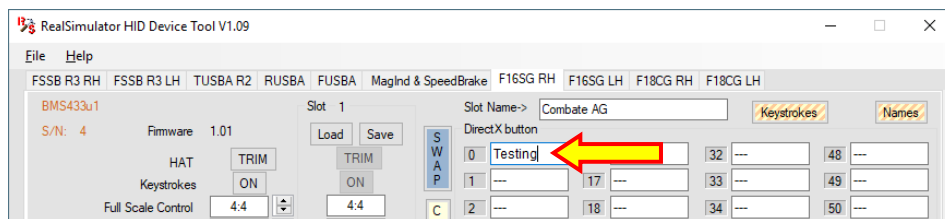
Finally, we can check the keystroke operation. For that, click the **CLEAR** button associated to the **Output** text box to clear its content and press the "**Trigger 1**" switch in the stick and check the key codes entered are shown on the text box "**Output**".

To send the keystrokes is necessary the **Keystrokes** button is **ON**, so if any time the keystrokes are not sent to the **Output** text box, please check it.
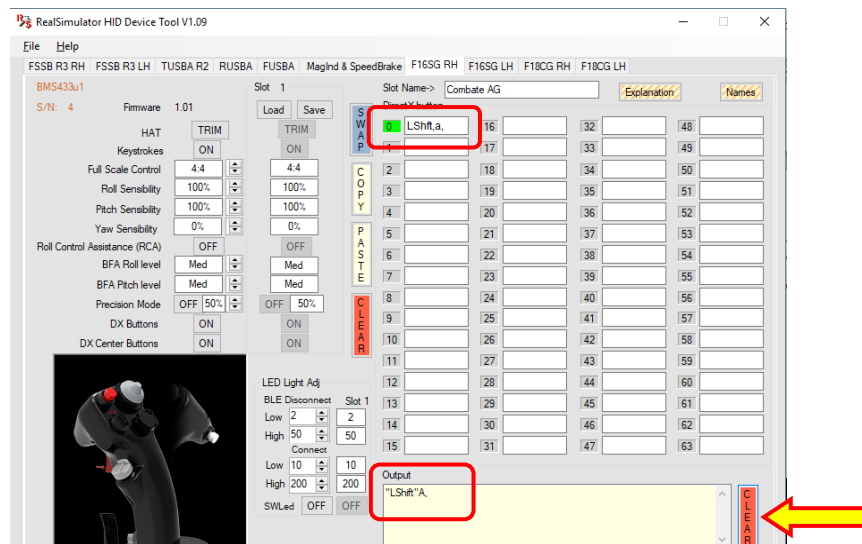
To facilitate the manipulation and relocation of slot's keystrokes information (no slot configuration) the program includes four buttons: SWAP, COPY, PASTE and CLEAR.

SWAP button allows, like its name says, swapping the actual slot configuration with other. The selection of slot is made with a new window that is displayed after pressing the **SWAP** button.
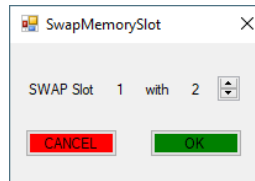
Clicking on the Up/Down indicator we select the chosen slot and after pressing "**OK**" the information is swapped.

The **COPY** and **PASTE** allows doing the standard actions of copy and paste with the slot data. To copy a slot in other change with the rotary switch to the slot source and click on the **COPY** button, after change with the rotary to the destination slot and click on the **PASTE** button.

Finally the **CLEAR** button clears all the keystrokes, explanation and slot name of active slot. After pressing, all the fields will be empty.

## ADJUSTABLE LEDS LIGHTING LEVEL

This feature allows adjusting the intensity level of three status LEDs, independently both Connected and Disconnected BLE state and for Low and High levels.

The settings are shown numerically on text boxes and the selection is done with Up/Down indicators. The setting values go from 0 to 250.
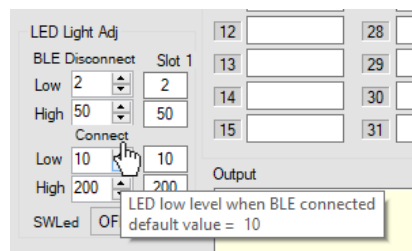
SWLED FUNCTION

This feature allows showing in the three status LEDs of stick the switch's position when pressed. The selection is made through an **ON/OFF** button.
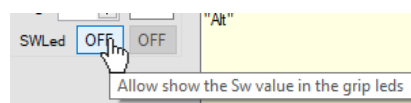
Left: on - off - off
Down: off - on - off
Right: on - on - off
Up: off - off - on

In **OFF** mode, the status LEDs show the slot number in binary mode as we mentioned in the "**How the F16SGRH works**" section.

In **ON** mode, the status LEDs show also in binary mode the last hat switch position pressed; the possible binary codes are shown above. This mode allows testing and verifies if a switch is working properly.

Load, Save and Print a .xml configuration file

Until now we have seen how to configure stick's slots but we have not told about what do with the configurations done.

Usually we will need to load configurations saved previously or copied from other

users, and we will also need to save the configurations when finished or while modifying. To do it, the program offers in the upper menu bar the next **File** actions:

- **Open**: to open an .xml configuration file and load it as active in the program and save it in the stick if it is connected (see the next section for offline mode).

- **Save:** to save the actual slots configuration with the same name as actual.

- **Save As:** to save the actual slots configuration with a different name from actual.

When a configuration file is opened, it is sent to the grip to be active. It is stored in the memory area (volatile area) and you can work with it immediately but if you want it remains on the stick after a shutdown, you must press the displayed alert button and save it in flash area. If just it is to test don't save it on flash, so you will extend your stick life.

Other option the program gives, is print a template of F16SGRH with the explanations for an easy and quick location of actions in each slot.

To access to the print option click on **File** in the upper menu bar and select **Print**, a new window will be displayed similar to shown below.

There, in the upper part we can find the Slot Name and Slot number of slot shown and

in the lower part the File Information and the Slot Configuration.

Also, in the upper part we can see the Print Selection to select print the slot shown by the button "**Print Actual**" or the button "**Print**" to print the slots selected in the Slot Selection.

The Slot Selection has two buttons to quickly select, or all slots with the "**ALL**" button, or only the active slots with the "**Actives**" button. Also there are two lines with box numbers where are shown all slots (upper line) and only the active slots (lower line).

In the upper line are shown the 8 slots, in green colour the actives, in grey colour the empties and in red colour the disabled manually by click on the box number.

In the lower line are shown only the active slots, all in green colour and the shown in lime colour.

To print only one slot, first we must to select in the lower line the slot chosen by click on the box number and it will change to lime colour. Finally click the **Print Active** button.

To print a selection of slots, first click the **ALL** or the **Actives** button in function of if we want to print a selection of actives and no actives slots, or only of actives slots; after disable the no desired slots by click on them to change to red colour. Finally press the **Print** button.

Working offline with the F16SGRH

The program allows working in the slots configuration without the stick connected. It is the named "**offline**" mode.

All the previous explanations are valid, with the exception that now how there is not stick the slots configuration can't be loaded or saved on it; it is only loaded and saved in the computer, in the .xml file.

When launch the RS_HID_DEV_TOOL and click the F16SGRH tab the program will show an image like below.
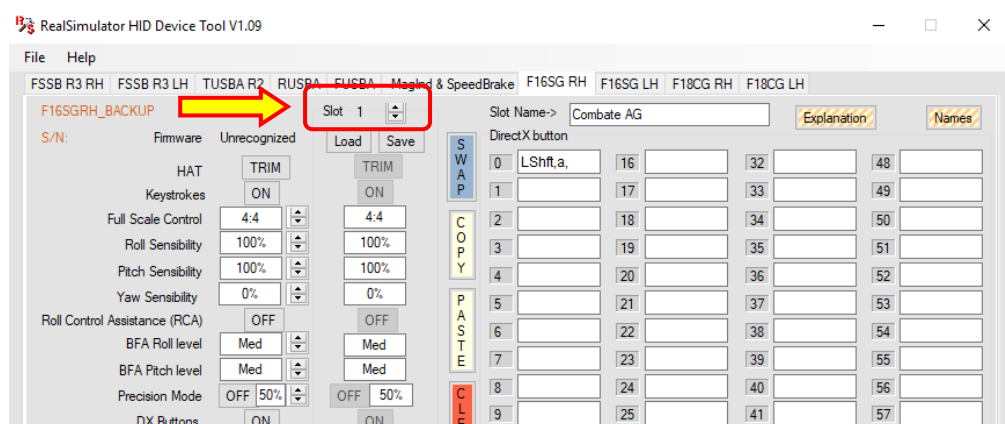

Only a new control is present, an Up/Down indicator to replace the rotary switch and to allow changing the slot in use.

As in normal operation the F16SGRH_BACKUP file is loaded, from this start point you can modify all data you want.

When you finish, you must save the configuration in a file to recover it when necessary.

If before you save the actual configuration the stick is connected, you will receive an alert to save the offline configuration before the stick configuration is loaded.
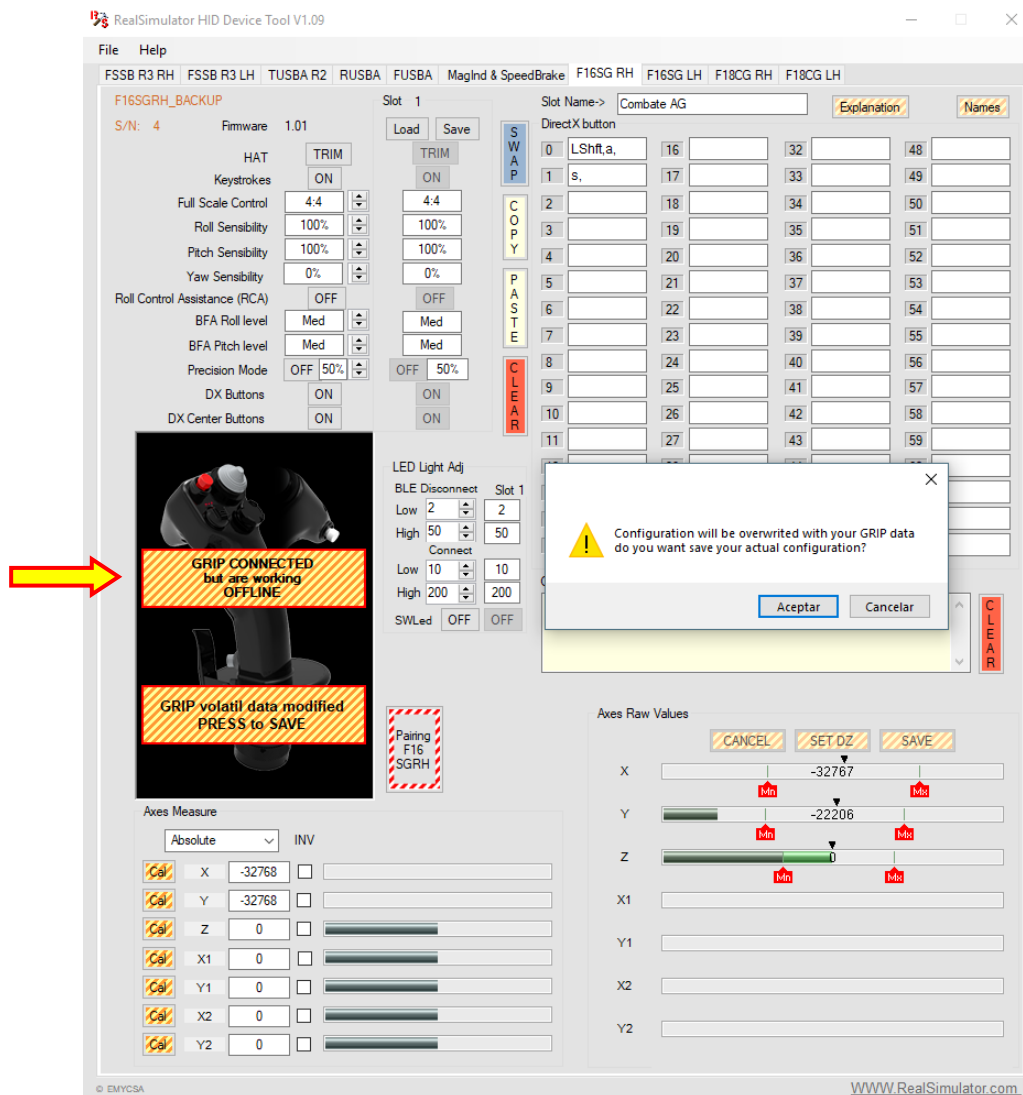
Click OK to accept and save it with the name you want. After this, the stick configuration will be loaded and all will works like normally.

Documentation

The program includes a direct and quick option to access the User Guide. For that, click **Help** in the upper menu bar and select **DOC** to directly access to the AppData folder where is stored the user guide.
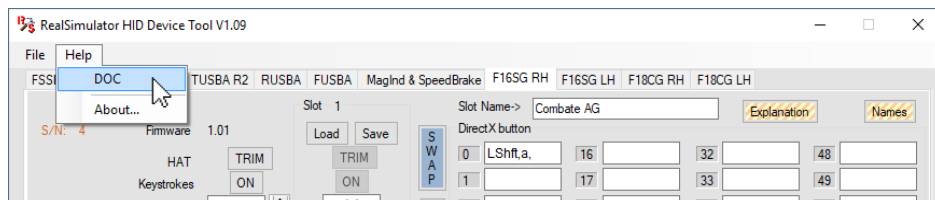
After clicking a file dialog will be displayed to select the .pdf file. Select the F16SGRH folder and finally the **F16SGRH User Guide**.
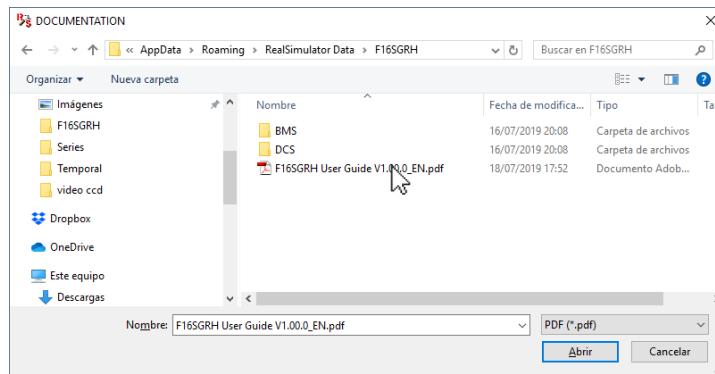
Finally, click the **Open** button to open the User Guide.

Overlay Settings

A new feature has been implemented in the RS_HID_DEV_TOOL, the possibility to show the name of active slot over the program window that you want. This allows in all moment to know which slot we have selected without looking away from the screen, so no need to look at the Status leds in the F16SGRH. This feature is named **Overlay** and we can access to it by clicking on the button **Overlay Settings**.
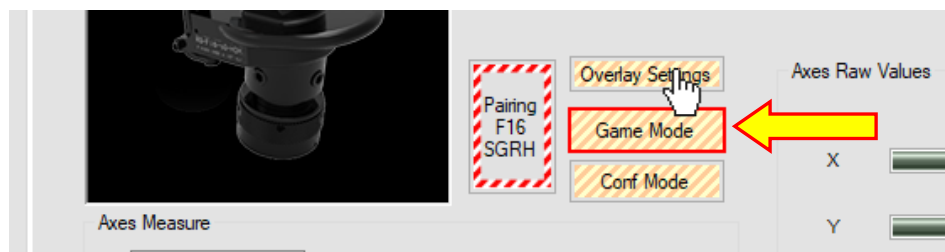

As we explain in the Connecting **RS_HID_DEV_TOOL and F16SGRH** section, the RS_HID_DEV_TOOL has two modes to work: **Configuration** and **Game mode**. <u>**We suggest**</u> before to click the **Overlay Setting** button **changing the mode to Game**, so everything will work properly and we won't need return to the main window to change the mode.

After clicking on the **Overlay Settings** button a new window will appear like this one.
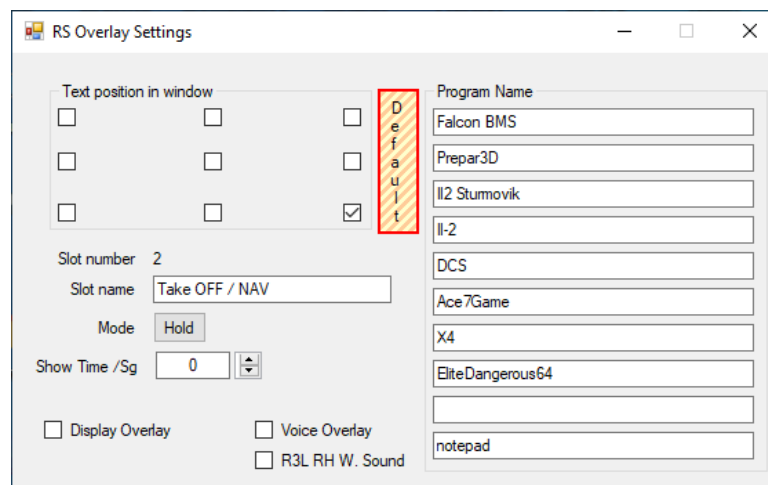

The window allows configuring the next parameters:

- **Text position in window**: 9 check boxes allow selecting by click, the position where you want the slot name must appear (Up left, Up centre, Up right, ..., Down right).

- **Default:** button to set the Program Name list to default names.
- **Program name**: a list of 10 text boxes to fill by the user with the program names where you want to do the overlay. The name to write in the text box is the "process name", which is not always the same shown in the window or in the Task Manager. For example, in the Spanish Windows version, the "notepad" program is shown as "Block de notas" in the Task Manager and in the program window.

  When the program searches programs from the list to overlap, the order is from up (first one) to down (last one) of the list and when a program from the list is detected working, its text box changes the back color to orange as we can see in the picture below with the notepad program.
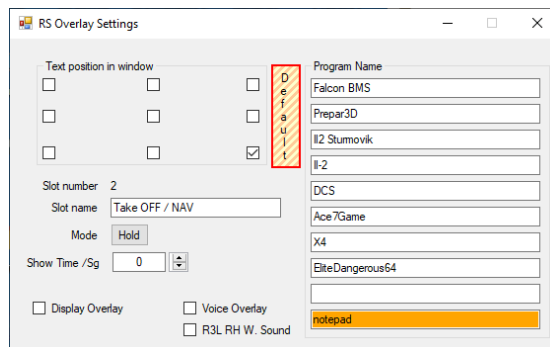
- **Slot number and Slot Name:** show the slot number and slot name of actual active slot.
- **Mode:** this button allows selecting if the overlay will be shown permanently ("**Hold**") or by the selected time ("**Time**") in the Show Time/Sg text box.
- **Show Time/Sg:** this text box shows the seconds the overlap will be shown after a slot change. The number of seconds can be changed by the numeric up/down selector associated.
- **Display Overlay:** this check box enable/disable the overlay image over the program window when the program from the list is working and it isdetected. Here you can see a screenshot of notepad with the overlay showing the slot name of slot 1.
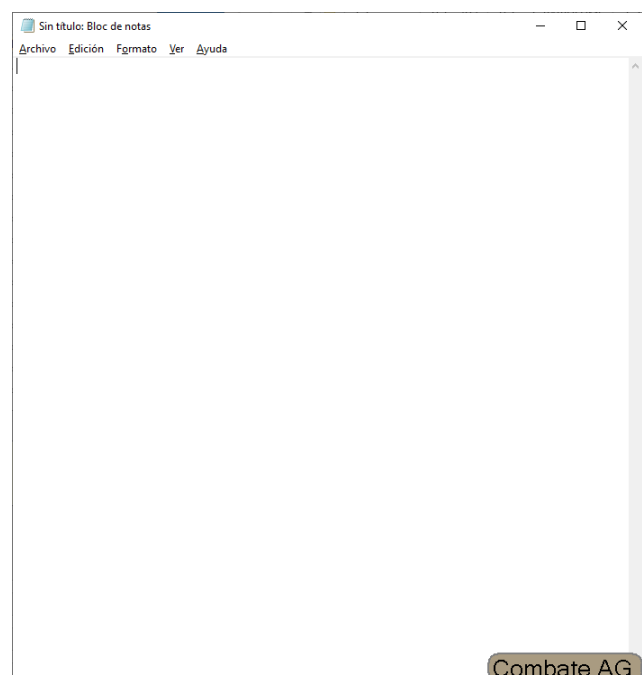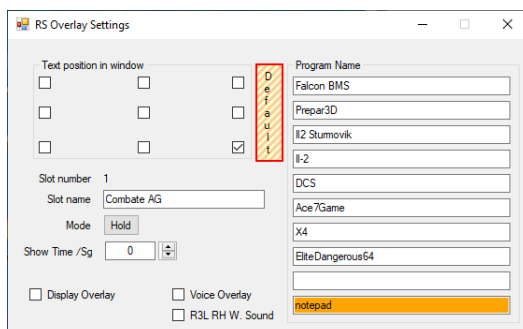
- **Voice Overlay:** this check box enables/disables the speech synthesis to read the slot name. This feature is not associated to the program detection, if it is enabled you will hear the sound on the speakers or headset each time you change the slot.
- **R3L RH W. Sound:** this check box enables and disables the aural tones reproduction: *warning* (dooot, dooot, …) and *alarm* (dot, dot, dot, …) associated to the **Warning Sound Level** setting of FSSB-R3 Lighting Right Hand. This feature is not associated to the program detection like the Display Overlay, if it is enabled you will hear the sound on the speakers or headset each time you reaches a warning or alarm level, and it is reproduced independently of sound own of R3, what it is controlled by the **Sound** setting.

NOTE: the actual version of Display Overlay is shown only over programs in window mode, not over programs in full screen mode.

When the RS Overlay Settings is configured and you click on the Display Overlay check box to show the Overlay, you can minimize the window to have a full access to the game. With this action the main window of RS_HID_DEV_TOOL also will be minimized automatically.

Finally, the configuration shown in the RS Overlay Settings window is automatically saved in the folder "%APPDATA%\Realsimulator Data\F16SGRH\" with the same name as the .xml configuration file and the extension .GameList.

PICTURE
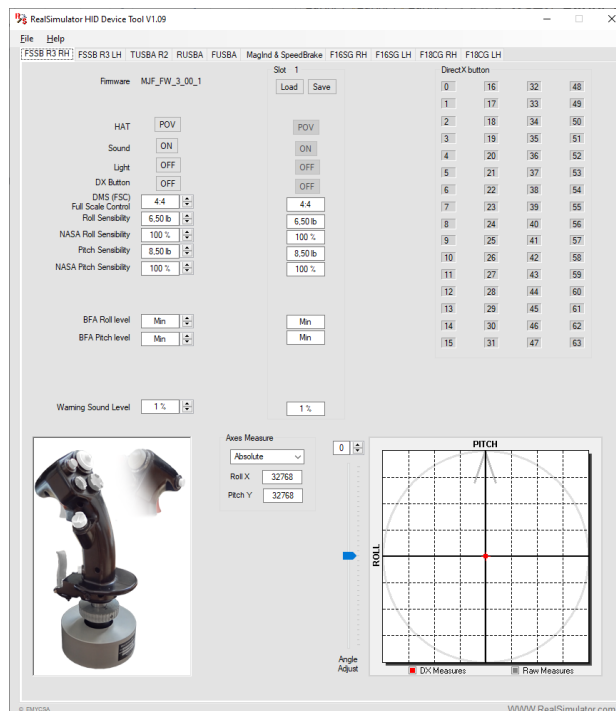
DESCRIPTION

Overview

The F16SGRH grip can be connected to different stick bases, like the FSSBs (R1, R2 and R3), Thrustmaster (Cougar or Warthog) or compatibles, but it is with the FSSB-R3 with which achieves greater integration, offering to the user a powerful and accurate flight controller.

All firmwares developed for the FSSB-R3 are valid to use with the F16SGRH, but they use it as a standard grip without additional buttons and functions. RealSimulator has developed a special version for the FSSB R3 to improve the functionality when both work together. The name of this version is:

- *"MJF_FW_F16_SG_1_00_x.FSSB_R3"* for the FSSB-R3
- *"MJF_FW_F16_SG_2_00_x.FSSB_R3"* for the FSSB-R3 Lighting

Additionally and to fix the issues some customers have reported us manifesting loss of connection in the Bluetooth signal when they are playing, we have developed a new firmware version for the FSSB-R3 that allows you working without the Bluetooth connection in the stick using the USB wired connection of FSSB-R3.

This firmware is only available for the FSSB-R3 Lighting, not for the FSSB-R3 (Warthog) and it is configurable from the version V1.10 of RS_HID_DEV_TOOL.

This new firmware is identified as:

- *"MJF_FW_F16_SG_3_20_x.FSSB_R3"* for the FSSB-R3 Lighting

and we will explain its functionality below in an independent section.

All these versions are shown in the RS_HID_DEV_TOOL as "*MJF_FW_3_xx_x*" to clearly indicate they are versions to work with the F16SGRH.
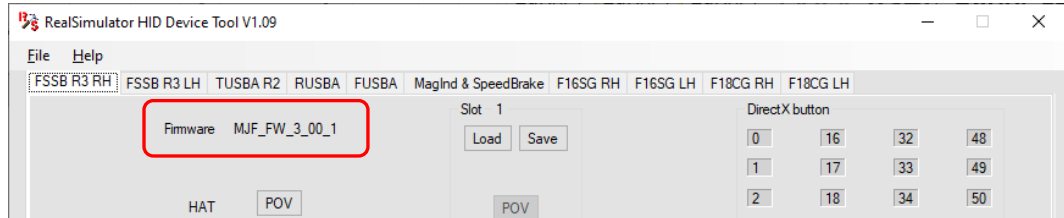

Remember this when you go to choose a firmware to install in your R3. You must pay special attention in the next number:

- Num. "**1**": it is firmware for the FSSB-R3 (Warthog), as for example:
  - *MJF_FW_**1**_06_2.FSSB_R3*: firmware to work with Thrustmaster grips like Cougar and Warthog, and compatibles grips.
  - *MJF_FW_F16_SG_**1**_00_1.FSSB_R3*: firmware to work with the F16SGRH.

- Num. "**2**": it is firmware for the FSSB-R3 Lighting, as for example:
  - *MJF_FW_**2**_00_2.FSSB_R3*: firmware to work with Thrustmaster grips like Cougar and Warthog, and compatibles grips.
  - *MJF_FW_F16_SG_**2**_00_1.FSSB_R3*: firmware to work with the F16SGRH.

- Num. "**3**": it is firmware for the FSSB-R3 Lighting to work with the F16SGRH exclusively, as for example:
  - *MJF_FW_F16_SG_**3**_20_2.FSSB_R3*: If you are a FSS-R3 Lighting owner I suggest you do not install this firmware, e

Firmware MJF_FW_F16_SG_1_00_X and 2_00_X

Both versions are shown in the RS_HID_DEV_TOOL as "*MJF_FW_3_xx_x*" to clearly indicate they are versions to work with the F16SGRH.
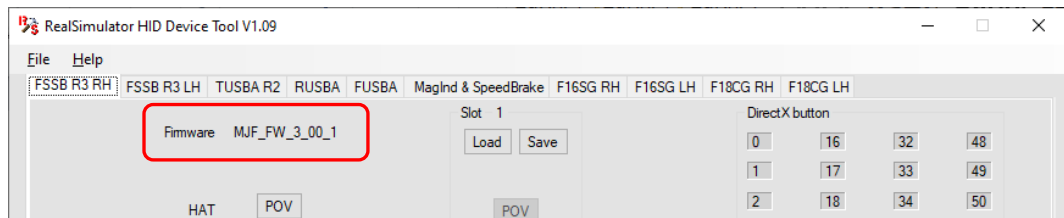
Mainly these versions increase the number the slots from 4 to 8 like in the F16SGRH and remove the SMM because the change of settings is done by the change of slots, which is made with the rotary switch of F16SGRH. When the rotary switch changes the slot in use, it changes at time in both devices, maintaining always the synchrony between them.

Although FSSB-R3 users are used to have 4 programmable configurations and to

change individual settings in the configuration by the SMM, now with this new firmware the concept is different, the user has 8 configurable e independent slots, which allows configure the settings for 8 different flight situations; so, for example, the user can assign one slot for an A-A combat, other slot for refueling, other for NAV, other for A-G, etc. so until 8 different situations. This is equivalent to have 8 different joysticks, each one tight for a different situation and the change between them is done with a single thumb movement turning the rotary switch.

In this way, the user can enjoy the best performances of both devices, the high precision of FSSB-R3 and the versatility of F16SGRH with a very simple management in changing profiles.

Something important to keep in mind to avoid duplication in the generation of DX buttons is that as when both devices are connected there is a DX buttons information duplicity (64 in the FSSB-R3 and the same 64 in the F16SGRH), **WE SUGGEST setting to OFF the "DX buttons" of FSSB-R3 in the 8 slots**, so they will be only actives in the F16SGRH and you will be able to configure easily the DX and Keystrokes events.
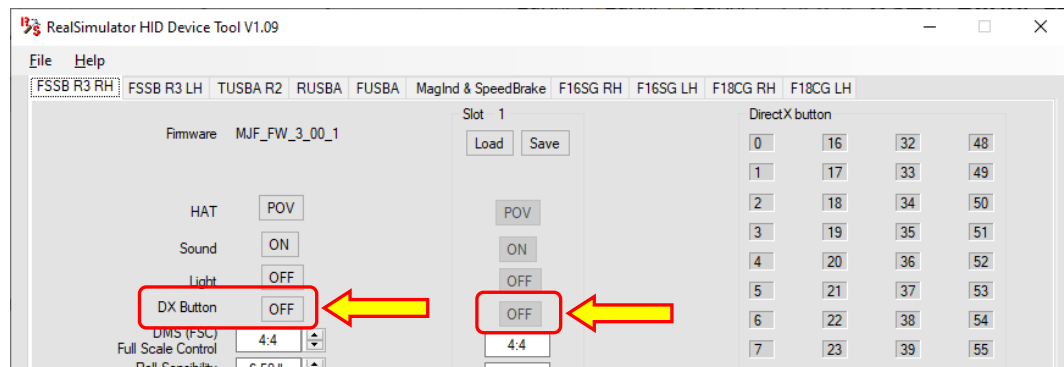
In conclusion, it is about having in the FSSB-R3 the two high precision X/Y axes with all their configuration settings and in the F16SGRH all the DX buttons and Keystrokes events.

Before to enter to explain the slot settings I would like to inform that as when you install this firmware the SMM launcher doesn't exit, there is a new sequence to do the **NPA (Neutral Position Adjustment)**; it is: "**Trigger 1**" + "**NWS center**".

Each slot in the FSSB-R3 has the next configurable settings:

- HAT as POV or TRIM.
- Sound ON/OFF
- Light ON/OFF
- DX Buttons ON/OFF.
- Full Scale Control.
- Roll Sensibility.
- NASA Roll Sensibility.
- Pitch Sensibility.
- NASA Pitch Sensibility.
- BFA Roll level.
- BFA Pitch level.
- Warning Sound Level

Although you can find information about the previous settings in the FSSB-R3 User Guide, we will explain in detail each setting below.
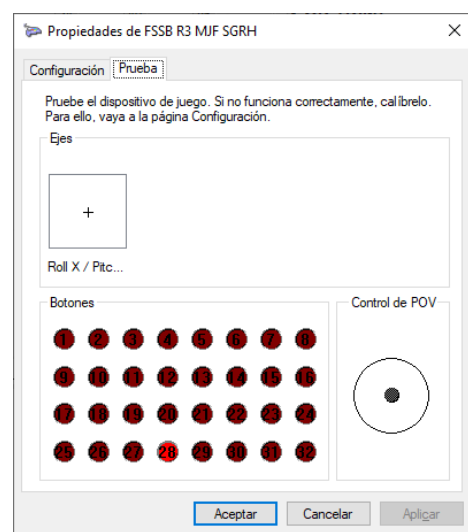
HAT (AS POV OR TRIM)

This button allows configure the TRIM hat switch as POV (Point Of View) switch or TRIM switch. This allows the HAT during the use of the joystick, control the views in POV mode or submit the information to 4 HID buttons for use as TRIM, which is its function in real life.
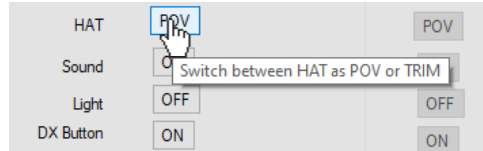
These DX buttons are the 27 (up), 28 (right), 29 (down) and 30 (Left).
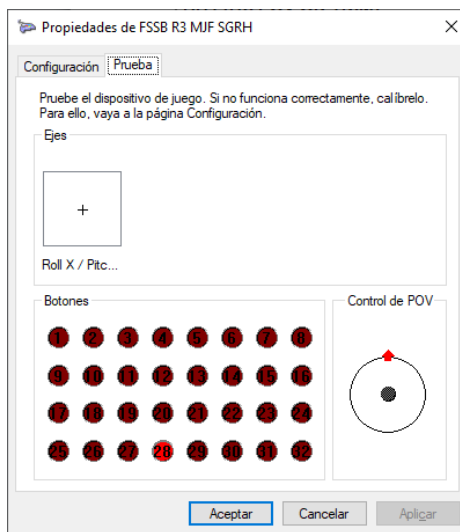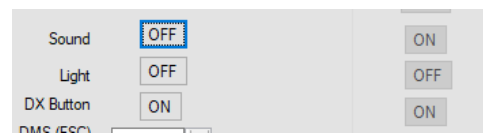

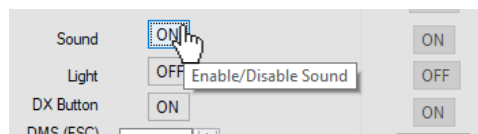| Hat TRIM switch Up in POV mode | Hat TRIM switch Up in TRIM mode |

NOTE: in both modes the hat switch information is sent to the DX buttons 27 to 30.
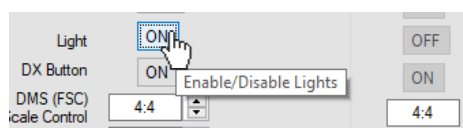
SOUND (ON/OFF)

Let you activate and deactivate the beep sound.

LIGHT (ON/OFF)

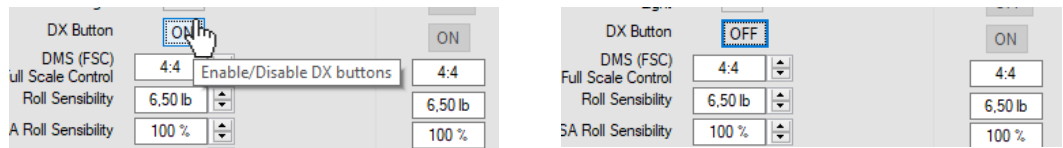Let you enable and disable the lights. This option is complementary and independent of sound setting.

This feature is only available in the FSSB-R3 Lighting. In the FSSB-R3 it does not have functionality.

DX BUTTON (ON/OFF)

This option let you enable and disable the 64 DX buttons.

As we mentioned above, to avoid duplicities with the F16SGRH DX buttons, **we suggest setting to OFF the "DX buttons" of FSSB-R3 in the 8 slots**, so they will be only actives in the F16SGRH where you will be able easily to configure the DX and Keystrokes events.

FULL SCALE CONTROL (FSC)

This control allows adjusting the full scale of Roll and Pitch axes in four levels. The indication is showed numerically on a textbox and the selection is done with an Up/Down indicator.

- 4:4. Full range is 100%
- 3:4. Full range is 75%
- 2:4. Full range is 50%
- 1:3. Full range is 25%
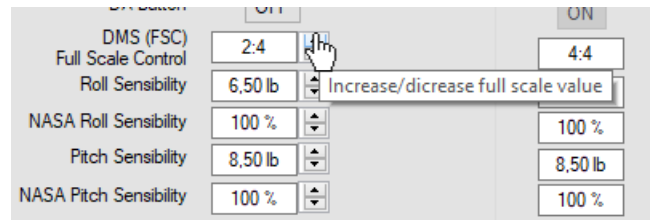
This allows configuring different flight control's response level for the same input signal of force.

For example, if you select FSC to 2:4, now with the same force than applied in the normal 4:4, you only get the 50% of signal. So, you improve the precision in manoeuvres that need small and precise movements, as is the case of a refuelling.
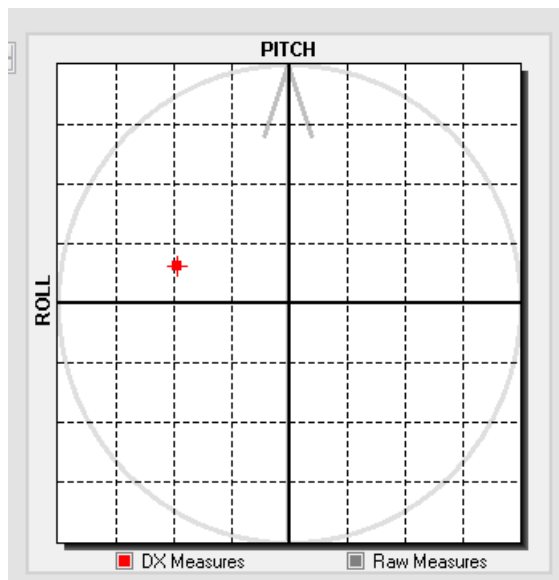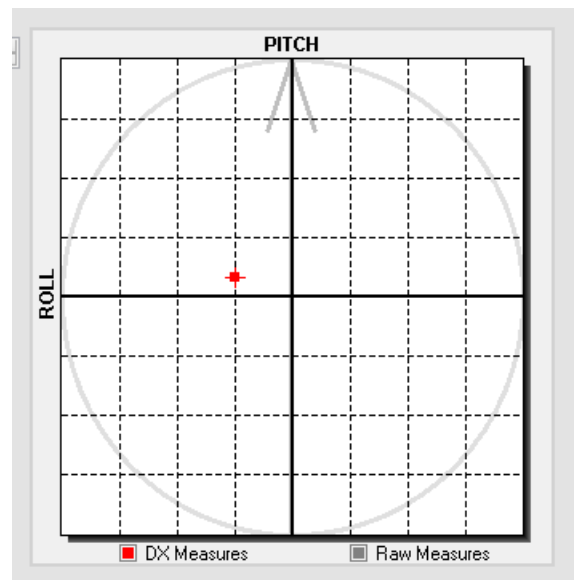
FSC = 4:4   FSC = 2:4

ROLL SENSIBILITY

This control allows changing the Roll axis sensibility in discrete steps from 1.30 lb. to

13.00 lb. The step value is not fixed; it is variable in function of sensibility value. It goes from small values of 0,025 lb. in high sensibility until big values of 2 lb. in low sensibility.

The indication is showed numerically on a textbox and the selection is done with an Up/Down indicator.

Roll sensibility

Use Roll sensibility to adjust the maximum force level applied in stick (on roll axis) to the maximum level of output signal. The default value of 4.33 lb. is optimum for a comfortable flight but always will be you own arm who tells you if it is the optimum or you need change it.
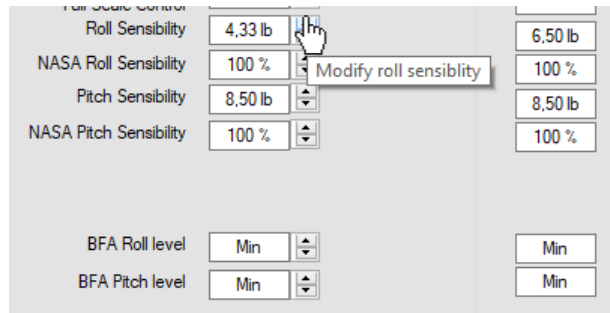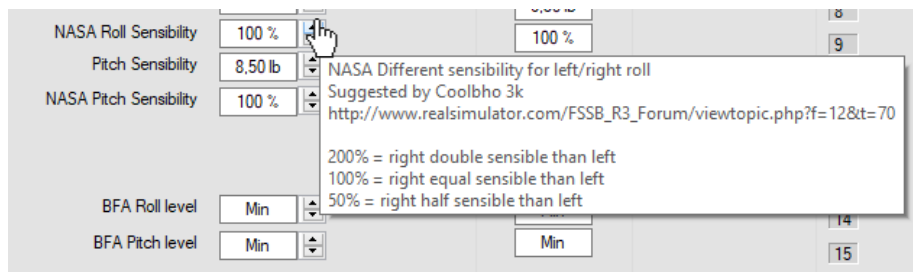
NASA ROLL SENSIBILITY

This control allows adjusting different sensibilities for left/right Roll axis. The indication is showed numerically on a textbox and the selection is done with an Up/Down indicator. Values range from 50% to 200% in steps of 1%.

NASA Roll sensibility

A value of 200% means that right is double sensible than left.
A value of 100% means that right is equal sensible than left.
A value of 50% means that right is half sensible than left.

In FSSB-R3 forum "**coolbho3k**" explain the sense of this feature:

> In short, since your arm is stronger when pulling inward than outward, they found that making rolling right more sensitive than rolling left was more ergonomic.
>
> Rolling left, the stick had a maximum displacement at 8 lbs. Rolling right, the stick had a maximum displacement at 6 lbs. In the current FSSB firmware, you can't set different values for left and right roll sensitivity.

So, if you want configure more realistically your stick select a NASA Roll sensibility of:

$$8 / 6 = 1,333 \Rightarrow \quad \textbf{NASA Roll sensibility } = \textbf{133\%}$$

PITCH SENSIBILITY

This control allows changing the Pitch axis sensibility in discrete steps of 0.45 lb. from 1.75 lb. to 13 lb. The indication is showed numerically on a textbox and the selection is done with an Up/Down indicator.
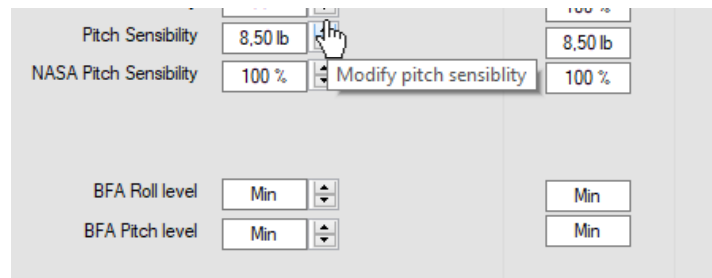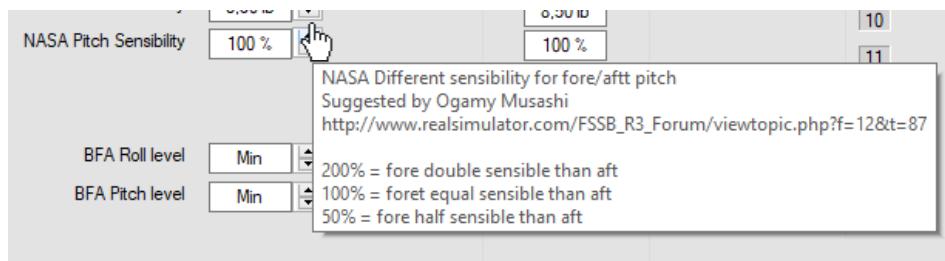

Pitch sensibility

Use Pitch sensibility to adjust the maximum force level applied in stick (on pitch axis) to the maximum level of output signal. The default value of 8.50 lb. is optimum for a comfortable flight but always will be you own arm who tells you if it is the optimum or you need change it.

NASA PITCH SENSIBILITY

This control allows adjusting different sensibilities for fore/aft Pitch axis.

The indication is showed numerically on a textbox and the selection is done with an Up/Down indicator. Values range from 50% to 200% in steps of 1%.

NASA Pitch sensibility

A value of 200% means that fore is double sensible than aft.
A value of 100% means that fore is equal sensible than aft.
A value of 50% means that fore is half sensible than aft.

Equal to in the previous NASA Roll adjust, if you want adjust more realistically your stick select a NASA Pitch sensibility of:

$$37 / 20 = 1,85 \ => \quad \textbf{NASA Pitch sensibility = 185\%}$$

BFA ROLL AND PITCH LEVEL

The Break Force Adjust (BFA) concept is to prevent small forces applied to the stick in its neutral position that have a real manifestation in the axes measures and as result the pilot has changes in the flight path that hi will have to correct continuously.

With this feature the pilot can select the BFA level separately in Roll and Pitch in four steps from 0 to 10% of full scale and identified as: Off – Min - Med - High - Full.

The actual value is showed on a textbox and the selection is done with the Up/Down indicator associated.
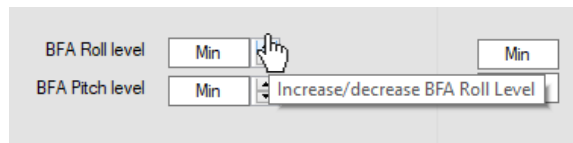
BFA Roll level

We suggest select almost the "Min" option for a center value stable.

WARNING SOUND LEVEL

Set the percentage for the warning sound level from 1 to 99% and calculated with the actual sensibility and full scale control in 4:4.

In FSSB-R3 forum "**Viggen**" explain the sense of this feature:

> I used to work as an instructor on a JAS-39 Gripen simulator. The Gripen fighter has a much smaller centre mounted stick with the pivot sitting almost inside your grip, which makes the pilot fly alot with the wrist (it's very nice). The stick is force sensing but with a couple of centimetres displacement at the top. To further enhance the pilots awareness of remaining performance (basically, how much more is left to pull on the stick before you are at full aft position and the FBW-system is giving you maximum available performance) there is a sound that starts when pulling the stick roughly 80% backwards, and then another similar but faster sound when pulling almost maximum. This is NOT connected to amount of Gs or AoA, it is only a feedback telling you how much more you can pull on the stick.
>
> https://www.youtube.com/watch?v=B3giMFtbZbg
> In this video at time 02:00 you can hear the sound that starts at roughly 80% back pressure on the stick. It sounds like "dooot dooot dooot dooot...", if the pilot would have pulled even more it would have sounded more like "dot dot dot dot dot...."

So, when the forces applied to the flight stick achieve certain percentage the pilot receive a feedback from the plane in the way of an aural tone like a warning to advise to the pilot. In the same way when the applied force achieve the 100% the aural tone change to advise to the pilot hi is applying the maximum deflection to aerodynamic control surfaces.

We have implemented this feature in the FSSB-R3 with a warning sound and a light blinking. The light effect is only available in the FSSB-R3+ Lighting.

The level is showed on a textbox and the selection is done with the Up/Down indicator associated, with range of 1% to 99% in steps of 1%.
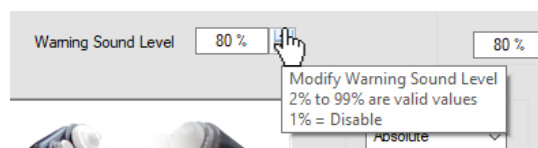
Value in textbox of 1% disables the feature both for the warning and for the maximum alarm.

Others values from 2% until 99% enable the warning alarm from that level until 99%

with a beep sound (dooot, dooot, …) and YELOW light blinking. In this case, when one or both axes are 100% scale, the alarm of maximum is enabled and the sound and light effects change to: beep sound (dot, dot, dot, …) and RED light blinking.

ANGLE ADJUST

This feature allows adjusting the angular misalignment between the Y axis of joystick and the Y axis of cockpit that occur when the joystick is mounted in central position (between the legs). In this position is necessary turning the stick to ergonomically access with the buttons, switches and hats, but as the union R3 base and stick is rigid and don't turn, it is necessary turn the base and then a misalignment occurs.

The setting range is from -90º (left) to 90º (right). The values are adjusted using the numeric Up/Down indicator in increments of 1º or directly with the slider. The visualization of the angle is done in the textbox numerically and in the X/Y graph by a gray circle and a gray rotary arrow. Each time the Angle Adjust changes the joystick send a beep sound and a blue light signal (only available in the Lighting version).
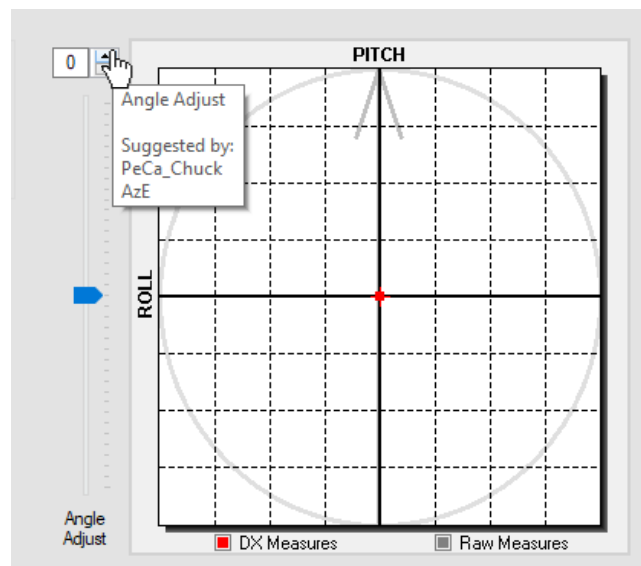

Let's look at an example; suppose we have our FSSB R3 installed in central position and we have rotated the base for a comfortable access to the buttons stick. Now apply force to the stick according to the Y axis of the cabin, or towards our chest or moving away from it perpendicularly. In this way, we will get an answer in the X/Y graph as image below left. More or less, we can estimate than the misalignment is around 20 degrees, so we set the Angle Adjust to -20º and try again the same movement and now we get the image below right, verifying the misalignment problem is fixed.
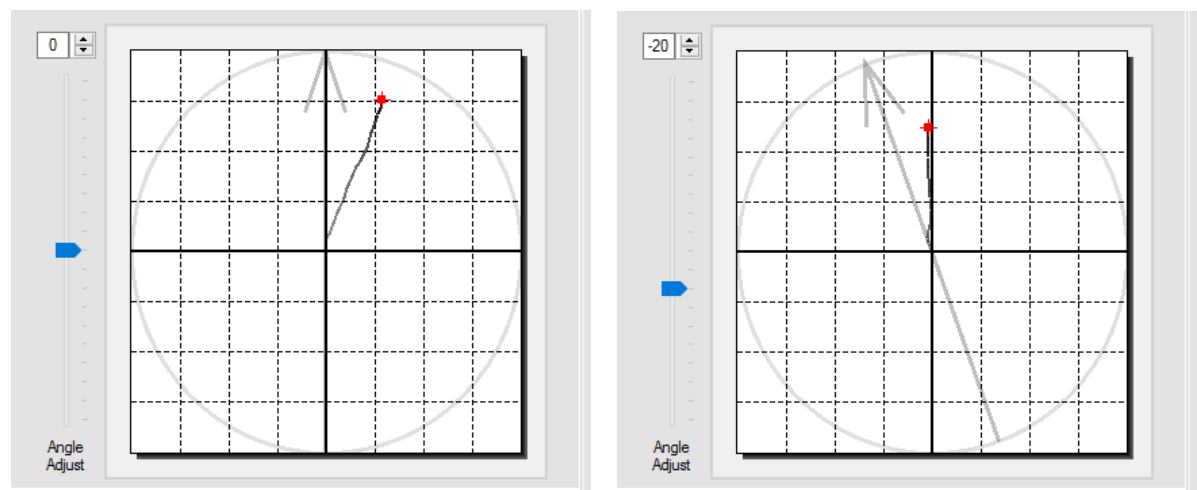
DX/RAW MEASURES INDICATORS

We have included two check boxes under the X/Y graphics to allow seeing both values. Option active is shown in red color.
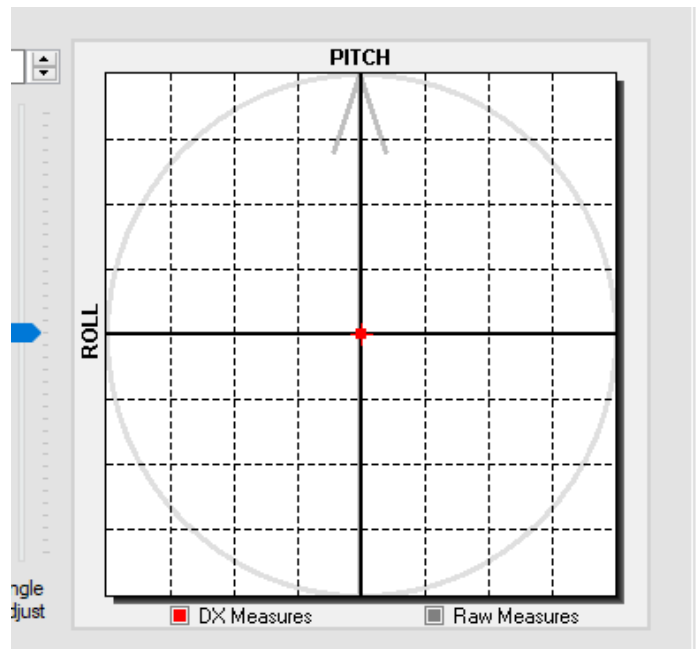
As we mention in the FSSB-R3 User Guide, this device does not need calibration, it is done in the factory and saved internally in the device; windows must to work with the default calibration and users must to use the RS_HID_DEV_TOOL to modify the settings as sensibility, auto cero, dead zones, etc. if it is necessary.

Clicking on the check boxes the user can verify both measures are equal, if not, a calibration has been done and the user must delete it and put the default calibration.

DIRECTX BUTTONS

In this group box are grouped the 64 DX buttons that the FSSB-R3 has when it is connected to the F1SGRH. The first 32 buttons (0 to 31) are located in the first and main HID, and the rest (32 to 63) in the second HID.

When a button is pressed, its corresponding DX button turns green, if not, it is on grey.

As we mention in the **DX Button** explanation, this button allows you enable and disable the 64 DX buttons, so if this button is set to OFF, the DirectX buttons won't turn green.
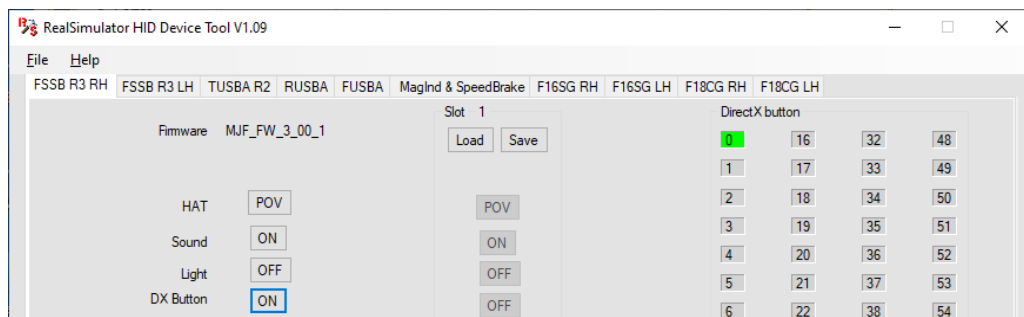
Trigger 1 pressed – DX button 0 lighted

Firmware MJF_FW_F16_SG_3_20_X

As we said in the Overview we have received several feedbacks from customer saying they lose the Bluetooth connection when they are playing. The reasons that cause this problem are several and they go from Wi-Fi interferences until distance between the F16SGRH and Bluetooth controller or even the type of Bluetooth device.

As you can read in the F16SGRH forum, there are several Bluetooth dongles in the marker and not all work fine, for that we suggest read the forums and chose a dongle model verified for other customers.

Anyway, if you are going to connect the F16SGRH to a FSSB-R3 Lighting exists a firmware named "*MJF_FW_F16_SG_3_20_x*" that allows you playing without connection problems because the FSSB-R3L is who assumes the whole stick functions and it won't be necessary the Bluetooth connection. In fact if you install this firmware in the R3 Lighting **we suggest you removing the "RS-F16-SGR Home" device from the "Device and Printers" window**, so you won't receive information from two devices, the FSSB-R3 Lighting and the F16SGRH, only from the FSSB-R3 Lighting
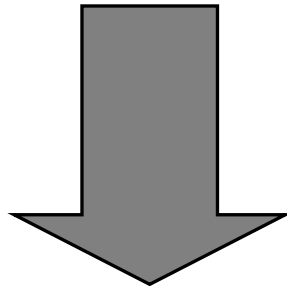
This firmware is only configurable with the RS_HID_DEV_TOOL v1.10 and higher and as you can see in the next images it is a mix of the FSSB-R3 and F16SGRH characteristics.
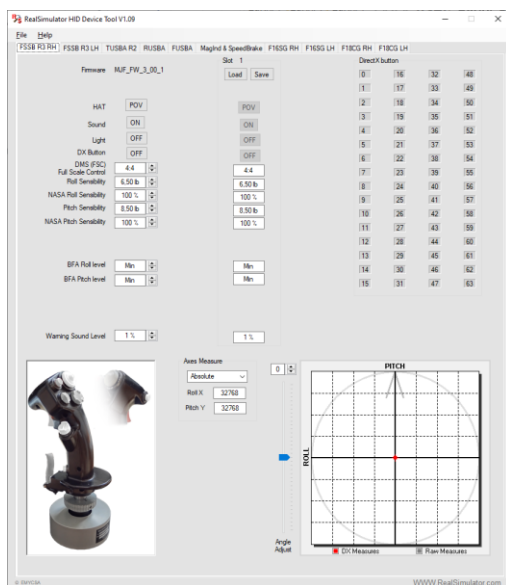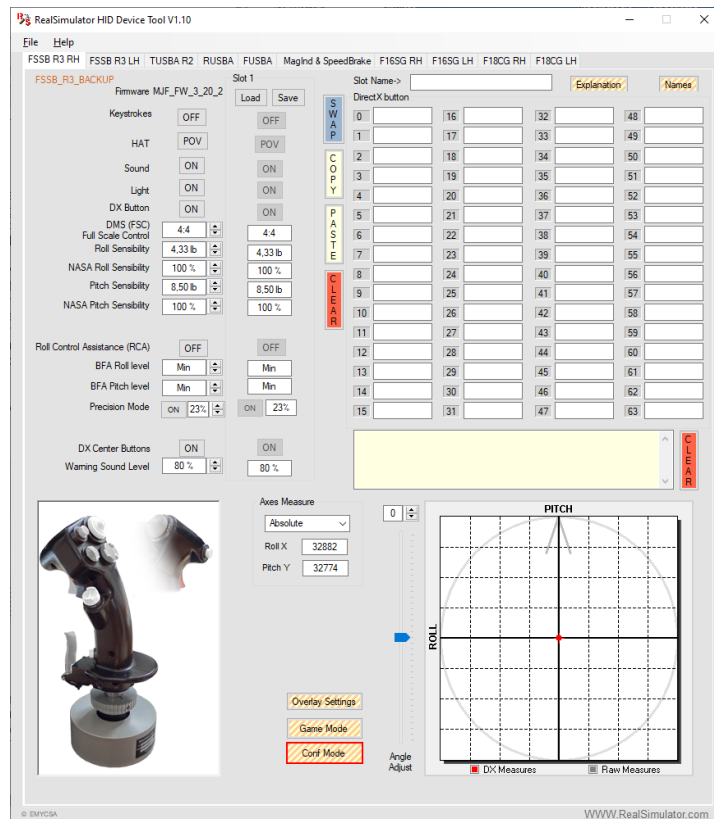

FSSB-R3 Tab
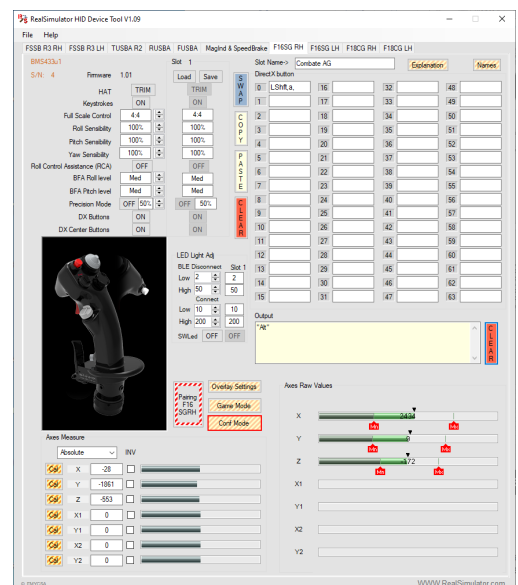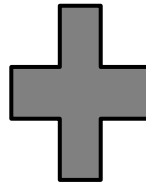
F16SGRH tab

New FSSB-R3 Tab

As you can check the new FSSB-R3 tab includes new functionalities from F16SGRH as keystrokes, overlay generation and new settings.

Now each FSSB-R3 slot has the next previous settings:

- HAT as POV or TRIM.
- Sound ON/OFF.
- Light ON/OFF
- DX Buttons ON/OFF.
- Full Scale Control.
- Roll Sensibility.
- NASA Roll Sensibility.
- Pitch Sensibility.
- NASA Pitch Sensibility.
- BFA Roll level.
- BFA Pitch level.
- Warning Sound Level

plus these new settings:

- Keystrokes ON/OFF.
- Roll Control Assistance (RCA).
- Precision Mode.
- DX Center Buttons (ON, OFF, COMP and DClick).
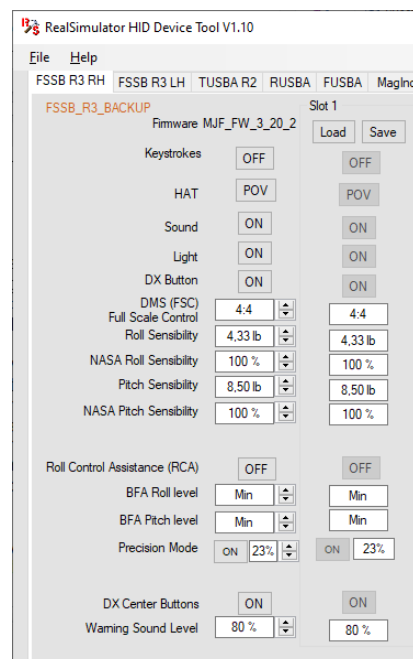
You can see detailed information about them in previous sections of FSS-R3 and F1SGRH.

The keystrokes and overlay functionality is equal than the explained in the F16SGRH section, so there you can find a detailed explanation about them.

Finally, I would like to inform you about the files compatibility between the F16SGRH and the FSSB-R3L; any configuration saved for one of them is valid for the other. So if you already have a file done for a device you only must copy it in the folder of other device and use it.

The path to the folders where the system save and load by default the .xml files is:

- **F16SGRH**: %APPDATA%\Realsimulator Data\F16SGRH
- **FSSB-R3L**: %APPDATA%\Realsimulator Data\FSSB R3

PICTURE

DESCRIPTION

Changes from v1.00.2 (14/08/2019) to v1.00.3   Page

Changes from v1.00.1 (05/08/2019) to v1.00.2   Page

Changes from v1.00.0 (08/07/2019) to v1.00.1   **Page**

EMYCSA RealSimulator	FAQ
	Date: 13/09/2019 **Version:** 1.0

PICTURE

DESCRIPTION

In this section, you will find answers to frequently asked questions. If your question is still unsolved, please feel free to contact us.

FAQ Links:

- I have just received my RealSimulator device and I want to install it, but I do not find the drivers in anyplace.
- Requirements to use RealSimulator grips.
- I want to install a new version of RS_HID_DEV_TOOL or DCC, but I cannot uninstall the older one.
- How to know if the computer has Bluetooth BLE hardware installed?
- I can't attach/pair my stick. Is it locked?
- Why does pressing the trigger change my axes measures?
- What firmware should I install in my R3 to work with the F16SGRH?
- Can the F16SGRH work on W7 or W8.0?

I have just received my RealSimulator device and I want to install it, but I do not find the drivers in anyplace.

Don't worry, no drivers are necessary, your device uses standard HID drivers included in your installed operating system. No matter if x32 or x64, only the computer must run under Windows 8.1 or higher, because the device is a wireless device by Bluetooth (BLE).

RealSimulator provides two tools to configure and upgrade the device:

- Device Control Center (DCC): is the firmware update tool for the RealSimulator devices.
- RealSimulator HID Device Tool (RS_HID_DEV_TOOL): is a GUI application to configure and calibrate RealSimulator devices.

You can find more information about them in this User Guide in its correspondent chapters.

Requirements to use RealSimulator grips.

As the grip is a wireless device by Bluetooth (BLE), there are only two requirements:

- Windows 8.1 or higher (windows 10 preferably).
- A Bluetooth (BLE) connection.

Windows 7 and 8.0 do not support BLE devices, so in these OS versions the device is not full operative; running in these OS the device is a standard stick not configurable or upgradeable. Only windows 8.1 and higher support these devices. We suggest using Windows 10, in this OS we have tested fully the device functionality and software tools supplied.

F16SGRH can be used without losing functionality in Windows 7 and 8.0 platforms if it is connected to a FSSB-R3 Lighting with the new firmware developed for this device. You can find more information in the **Firmware MJF_FW_F16_SG_3_20_X** section.

If your computer does not have BLE included, you will need a BLE dongle. We suggest the models SVEON STC400 or CSR 4.0, they are tested and work fine.

To see other Bluetooth dongle models tested, visit our [forums in FAQs section](#).

I want to install a new version of RS_HID_DEV_TOOL or DCC, but I cannot uninstall the older one.

The installer detects if there is a older version del package installed and this will try to uninstall it. If it can't or you want to do manually and the automatic uninstall has problems, Microsoft has created a great and free tool to fix these problems. You can find it in the next link:

https://support.microsoft.com/en-us/mats/program_install_and_uninstall

Click the previous link (or next picture) to open the webpage and press the **RUN NOW**

button to launch the wizard.
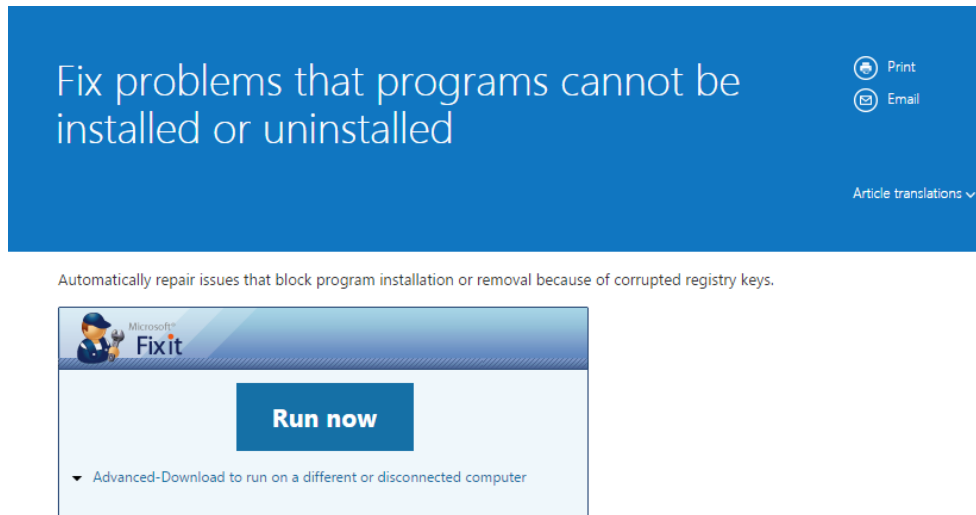
How to know if the computer has Bluetooth BLE hardware installed?

To determine whether your computer has Bluetooth BLE hardware, check the Device Manager for Bluetooth by following the steps:

1. Drag the mouse to bottom left corner and right-click on the '**Start menu'** icon.
2. Select '**Device manager'**.
3. Check for **Bluetooth** and verify if exit the item **Microsoft Bluetooth LE Enumerator**.

To turn on your Bluetooth follow the next steps:

1. Drag the mouse to bottom left corner and right-click on the '**Start menu icon'**.
2. Select '**Settings'** and click '**Devices**'.
3. Click '**Bluetooth**' and move the "**Bluetooth toggle"** to the "**On"** setting.
4. Click the '**X**' in the top right corner to save the changes and close the settings window.

I can't attach/pair my stick. Is it locked?

A lot of times we think the stick is locked because we cannot attach/pair it to the computer. Here you can find several points to test in your computer before contacting the technical service:

a) Verify the Bluetooth dongle is installed in the computer.
    Open the "Device and Printers" window in the Control panel and confirm the icon of Bluetooth device is present.

b) Verify the Bluetooth is on.
    Open the "Settings" window and click "Devices". Click Bluetooth and verify the "Bluetooth toggle" is "ON".

c) Verify your Bluetooth device is 4.0 (BLE)
    Open the "Device manager" window**,** click in "Bluetooth" and verify that exit the item

"Microsoft Bluetooth LE Enumerator".

d) Verify the device is on. It can be connected to the USB wire supplied or to the base. Check the status LEDs are lighted.

e) Verify the Bluetooth stick is attached to the computer
Open the "Device and Printers" window in the Control Panel and confirm the F16SGRH icon is present. If not, launch the "Add devices and printers" to scan and add the device and verify the left status LEDs is blinking. If not, press "TMS centre + DMS centre" simultaneously to restart the BLE advertisement phase.

f) Unplug and plug the dongle and repeat step "e".

g) Change the dongle to other USB port and repeat from step a.

Why does pressing the trigger change my axes measures?

The F16SGRH has a feature named "Precision mode", this feature has associated a button and a value in the F16SGRH tab of RS_HID_DEV_TOOL program. If you enable this feature by setting the button in ON, when you press the trigger button the axes measures will be reduced to the percent selected in the value textbox.

For example, if you select the button in ON, the value is 40% and the axis X has a value of 10000 when you press the trigger the value will change to 4000, when you release the trigger the value will change to 10000.

If the button is in OFF, no change will be produced in the measures.

What firmware should I install in my R3 to work with the F16SGRH?

All firmwares developed for the FSSB-R3 are valid to use with the F16SGRH, but they use it as a standard grip without additional buttons and functions. So RealSimulator has developed a special version for the FSSB R3 to improve the functionality when both work together. The name of this version is:

- *"**MJF_FW_F16_SG_1_00_x.FSSB_R3**"* for the FSSB-R3
- *"**MJF_FW_F16_SG_2_00_x.FSSB_R3**"* for the FSSB-R3 Lighting

Both versions are shown in the RS_HID_DEV_TOOL as "MJF_FW_3_00_x".

This version increase the number the slots from 4 to 8 like in the F16SGRH and disable the SMM because the change between slots is made with the rotary switch of F16SGRH.

So, we can enjoy the best performances of both devices, the high precision of FSSB-R3 and the versatility of F16SGRH with a very simple management in changing profiles.

As when both devices are connected there is a DX buttons information duplicity (64 in the FSSB-R3 and the same 64 in the F16SGRH), we suggest setting to OFF the "DX buttons" of FSSB-R3 in the 8 slots, so they will be only actives in the F16SGRH and

you will be able to configure easily the DX and Keystrokes events.

Remember if you install this firmware that now as the SMM launch doesn't exit there is a new sequence to do the **NPA** (Neutral Position Adjustment), it is: "**Trigger 1**" + "**NWS center**".

Finally, if you are a FSSB-R3 Lighting owner, remember there is a new firmware available for your R3L named *"MJF_FW_F16_SG_3_20_x.FSSB_R3"* that allow working with your F16SGRH without the Bluetooth connection without losing any functionality. This new firmware is ideal to work in noisy electromagnetic environments and in W7 and 8.0 platforms where the BLE is not supported.

Can the F16SGRH work on W7 or W8.0?

Windows 7 and 8.0 do not support Bluetooth Low Energy (BLE) devices, so the F16SGRH cannot communicate directly with the computer throw the BLE.

The F16SGRH will work in those platforms as a standard grip without additional buttons and functions.

But if you connect the F15SGRH to a FSSB-R3 Lighting, there is available a firmware for the FSSB-R3L named "*MJF_FW_F16_SG_3_20_x.FSSB_R3*" that allow working with your F16SGRH without the Bluetooth connection and without losing any functionality such as the keystrokes. With this firmware is the FSSB-R3L who assumes the stick functions and it won't be necessary the Bluetooth connection.

You can find more information about this firmware in the **Firmware MJF_FW_F16_SG_3_20_X** section.