ELECTRONICA, MECANICA Y CONTROL, S.A.

RealSimulator

User Guide

F16SGRH

Collector's Edition

F16SGRH - User Guide v1.06

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Contents

Document Revision History

Revision Number	Date	Description
1.00	2019.07.08	First release
1.01	2019.08.05	Added this chapter Added information in **Powering in standalone mode** and **Powering from a stick base** sections Modified **Roll sensitivity** steps Added note in **HAT as POV or TRIM** section Extended information note in **Keystrokes and Explanation** section Added new case to FAQs
1.02	2019.08.14	Added information about the rotary switch in **Overview** chapter Added information about the **Configuration** and **Game mode** in the **Connecting RS_HID_DEV_TOOL and F16SGRH** section Added information about the rotary switch in **How the F16SGRH works** section Added note in **Pairing F16SGRH** section Added **Overlay Settings** section Added **F16SGR and FSSB-R3** chapter
1.03	2019.09.13	Added informative note and overlay feature in **Overview** chapter Added information in **Powering from a stick base** section Modified information about system requirement in **Tools Installation** chapter Modified and added new information to the **Overlay Settings** section Modified structure and information of **F16SGR and FSSB-R3** chapter Modified and added new information in **FAQ** chapter
1.04	2019.10.15	Modified **Pairing** information and procedure Included a Note about the use of USA keyboard layout for keystrokes Added a new information in **FAQ** chapter
1.05	2019.12.13	Added information about new features included in firmware: - **DX events and Keystrokes generation by Pulses** - **Shifter and Toggle** - **Digital mouse** General review of document
1.06	2022.01.14	Added informative notes in Pairing section. Added image with switches map in Overview chapter. Added information about differences between firmware v1.5 and v1.6 in **RS_HID_DEV_TOOL and F16SGRH** chapter. General review of document

PICTURE

DESCRIPTION

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

The professional range uses its own software and real military switches as well as custom socket and connector, according to the client specifications.

The home range comes in two versions, the F16SGRH and a special version named Collector's Edition (F16SGRH-CE). The main differences being the superficial finish, the BLE communication module and the analog axes. Both are identical to the professional unit, with the same dimensions, the same high-grade fixation system, the same high density resin in an one-piece body construction, but with the addition of the following features:

a) An upgradeable electronic module

b) **A rotary switch,** installed under the **TRIM** hat switch cap, to easily hot swap between 8 configurable memory slots. With a single thumb movement, you can reconfigure the whole system in a fraction of a second.

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

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

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 construction to allow use with VR goggles in stand-up position or disconnected from the base.

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

The following image identifies each of the grip switches.

WR	Weapon Release
TMS	Target Management Switch
NWS	Nose Wheel Steering
DMS	Display Management Switch
CMS	Countermeasures Management
TRIGGER	Camera/Gun Trigger

The **F16SGRH** is made of a surface black nylon plastic with a matte finish and a slightly grainy feel, the fixation system is made of nylon plastic and does not include the BLE communications module or analog axes.

The **F16SGRH-CE** is also manufactured in nylon plastic, but it features a handmade finish with 2K painting, a fixation system in aeronautic aluminum with knurled nut and finally, it includes the BLE communications and the Roll, Pitch and Yaw analog axes.

The **F16SGRH** corresponds to the stereotype of standard grips, i.e. communications with the base is achieved only through a 5-pin mini-Din connector, just like all Thrustmaster compatible grips. It has 5-way switches that offer up to 64 different buttons and a rotary switch with 8 positions. The information the user can obtain from the F16SGRH only depends on the base connected. That means that if the F16SGRH is used with a TM Cougar base, the features will be identical to that of a Cougar stick. But if it is used with a FSSB-R3 or FSSB-R3L, you will be able to enjoy all the new features included in the new firmware created for the R3 and R3L: 8 different configurable slots, 64 buttons to send keystrokes (only in the R3L), a digital mouse (only in the R3L), etc. If you are a F16SGRH owner, we suggest looking for more information about these new features in the **FSSB-R3 User Guide** because this user guide is focused on the F16SGRH-CE.

The **F16SGRH-CE** has everything previously mentioned for the F16SGRH, but it can also work independently since it has a BLE communications module. So if the F16SGRH-CE is connected to a FSSB-R3 or R3L, you'll enjoy the new features from the FSSB (just like the F16SGRH) or directly from the F16SGRH-CE. And if you connect it to a TM compatible base or use it in standalone mode, you'll enjoy the features directly from the F16SGRH-CE.

***IMPORTANT**: This User Guide is focused on the F16SGRH-CE to explain all features thoroughly.*

To avoid overloading the reader with acronyms, F16SGRH-CE or simply F16SGRH will designate the F16SGRH Collector's Edition.

The F16SGRH-CE is a wireless device connected by Bluetooth (BLE), so no available USB port is necessary. The computer only needs a BLE connection, integrated in the motherboard or through 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 fully operational it is just a standard stick not configurable or upgradeable. **We suggest using Windows 10.** We have fully tested the device functionality and software tools supplied in this OS.

*The 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 will 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-CE 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-CE is supplied with a firmware update tool (DCC) that can be used to install new versions of the firmware and a GUI application (RS_HID_DEV_TOOL) used to configure the device. Both tools can be extracted from the same file available on the download page of our website.

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

The RS_HID_DEV_TOOL application enables 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 independently adjust roll, pitch and yaw to anyone´s liking for each memory slot. In every slot you can configure:

- Full Scale Control
- Roll Sensitivity
- Pitch Sensitivity
- Yaw Sensitivity
- 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
- DX events and Keystrokes generation by pulses, additional slot change thanks to the Shifter and Toggle functions, and Digital Mouse.
- 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.

Finally, below you'll find a table showing and clarifying the differences between the three F16 side grip models:

	F16SGRH	F16SGRH COLLECTOR'S EDITION	F16SGRH PRO-MIL
F16 grip true replica with correct inclination.	✓	✓	✓
One-piece body manufactured in high density resin.	✓	✓	✓
Surface black nylon plastic with a matte finish and slightly grainy feel.	✓		
Handmade finish with 2K painting.		✓	✓
Hot-swap 8 memory slots, with a single thumb movement you can reconfigure your whole system in a fraction of a second.	✓	✓	
5-direction switches in all the hat switches, with the possibility to disable the center position.	✓	✓	
5-direction switches where in real life there is only 1, with the possibility to disable the additional switches.	✓	✓	
Three LEDs to show the slot number in use.	✓	✓	
Lightweight grip for usage with VR goggles in standup position or out of the base.	✓	✓	
Upgradeable electronic module.		✓	
High grade fixation system with knurled nut.		✓	
Three status LEDs used for BLE information and Slot number in use.		✓	
Independent Bluetooth communication, so you can use it alone, or with a X/Y base.		✓	
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.		✓	
1,8m Mini-din to USB cable to let you connect the Grip to any power bank and use it at your convenience.		✓	
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, as the F16SGRH have its 3 axes sensor integrated.		✓	
Firmware upgradeable through BLE, so you could need a 4.0 or higher BLE dongle if your PC doesn't have BLE included.		✓	✓
Optional lightweight aluminum one-piece body.			✓
Populated with the same switches than original real part.			✓
Fixation and connector under client specifications.			✓

PICTURE

DESCRIPTION

Package content

The F16SGRH-CE package, shown in the picture above, contains the following components:

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

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

***IMPORTANT**: Communication for configuration, upgrading and full device information is 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), keyboard (keystrokes) and mouse.
- Integrated sensors for Pitch, Roll and Yaw.
- Hot swap 8 memory slots.
- 5-direction switches in all switches.
- Functional as standalone or with FSSBs (R1, R2 and R3), 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.
- Sensitivity 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).
- DX events and Keystrokes generation by pulses.
- Additional slot change thanks to the Shifter and Toggle functions.
- Digital mouse.
- 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 (Mini-DIN to USB cable) for standalone use included (1.8 m), to let you connect the grip to any power bank and use it at your convenience.
- Weight: 340 gr.

PICTURE

DESCRIPTION

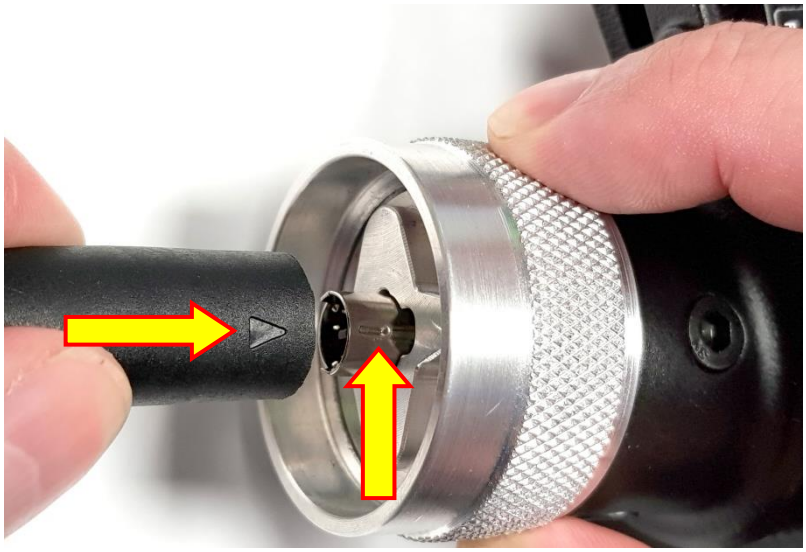
The F16SGRH-CE grip can be used in two ways, as a standalone device or connected to a stick base like the FSSBs (R1, R2 and R3), Thrustmaster (Cougar or Warthog) or compatible bases.

To install the device and use it, two steps are necessary: power it and connect it to the computer

Powering in standalone mode

In this mode, 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 module.



Please, when you connect the cable to the grip, pay special attention to correctly align the two connectors to avoid damaging the pins or connectors. For that purpose, both connectors have visible marks as you can see in the picture above.

Powering from a stick base

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

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. In this mode, 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 manage 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 as the F16SGRH has Bluetooth wireless communications, you 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 will find more information in the **Firmware MJF_FW_F16_SG_3_20_X** section

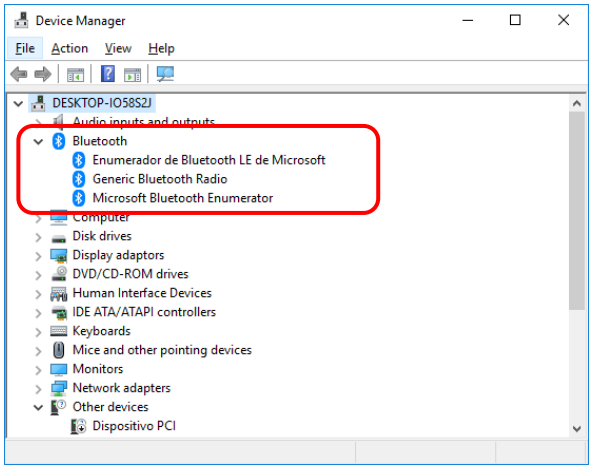
Connecting the device to the computer

As the grip is a Bluetooth (BLE) wireless device, no USB port is necessary. The computer only needs a BLE connection, integrated in the motherboard or through a dongle.

In addition, some operating system requirements need to be met because **Windows 7 and 8.0 do not support BLE devices.** In these OS versions, the F16SGRH is not fully operational, 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.

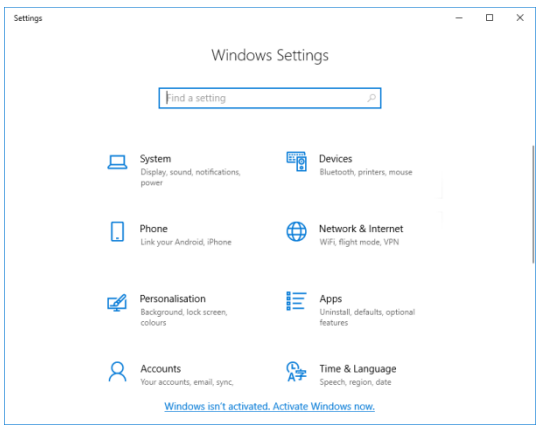
To determine whether your computer has Bluetooth BLE hardware, check the Device Manager for Bluetooth by following the steps below:

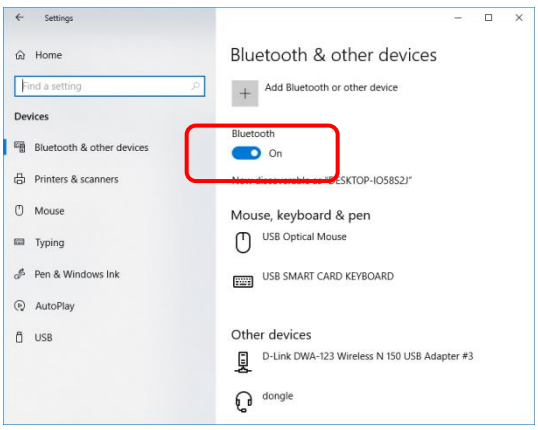
1. Press "**Windows** + X" to **open** the menu, and choose **Device Manager**.
2. Check for **Bluetooth** and verify if the item **Microsoft Bluetooth LE Enumerator** is present.



To turn on your Bluetooth follow the next steps:

1. Press "**Windows** + X" to **open** the menu, and choose **Settings**.
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.

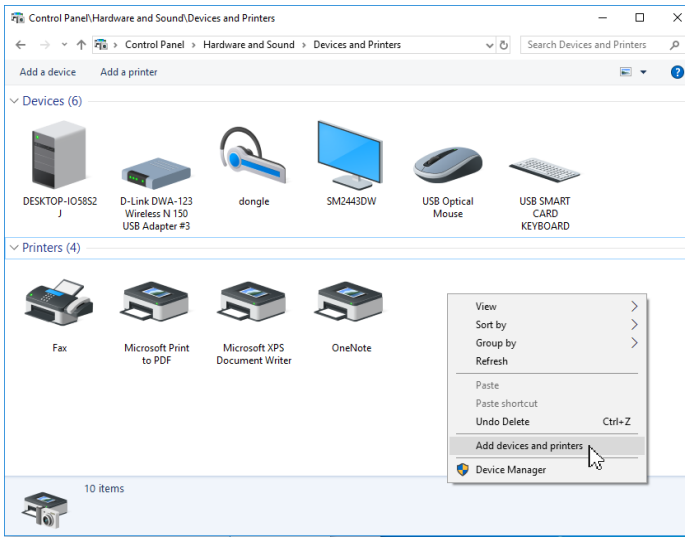




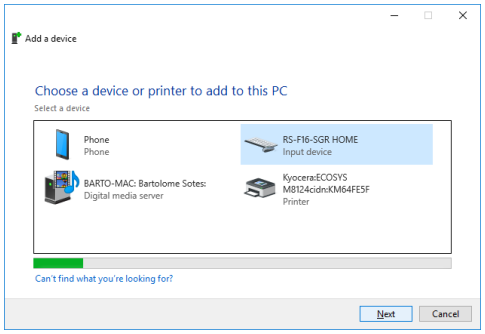
If your computer has BLE connection, you are ready to connect the stick to the computer.

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 on the stick to restart the blinking.

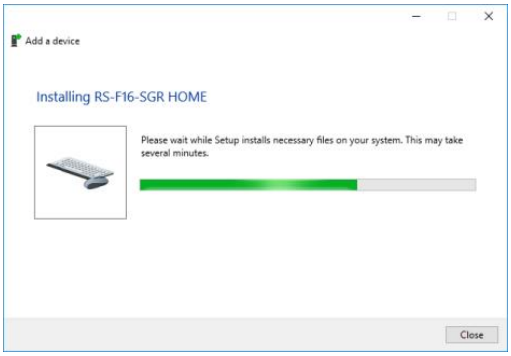
Now, in the **Control Panel,** open the **Devices and Printers** window and right-click over the window and select the **Add devices and printers** option.



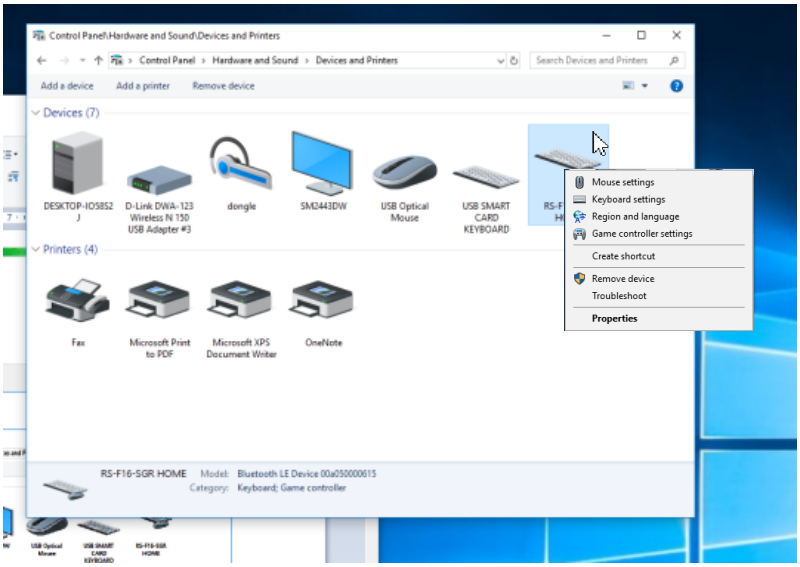
A new window opens: **Choose a device or printer to add to this PC**. Wait until the system finds the device and displays it in the window. Then select the '**RS-F16-SGR Home**' icon and press **Next** to install it.



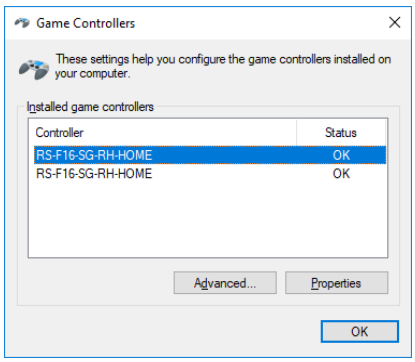
A new window for installation will open showing an installation progress bar and it will be closed automatically when the device is installed.

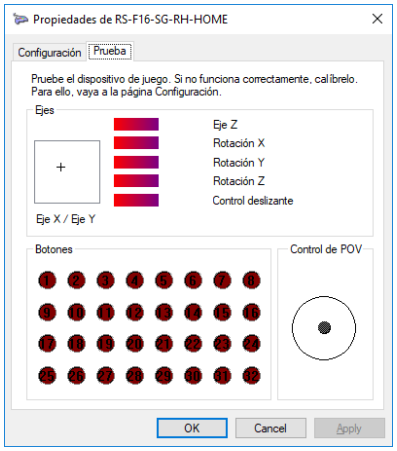


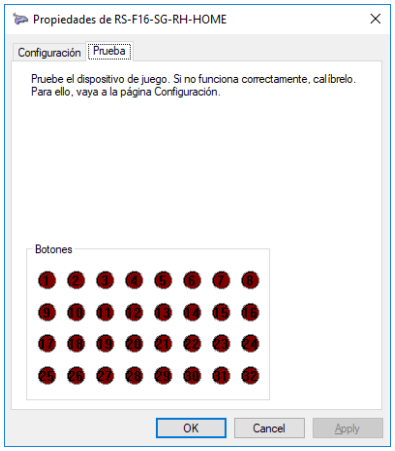
Now the device is displayed in the **Device and Printers** window and if you click with the right mouse button over it, you can see it has three devices associated: a keyboard to send programmable keystrokes, a game controller for analog axes and buttons and a mouse.



Right clicking the **Game Controller** option opens the Game Controller window. 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 only shows 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.*

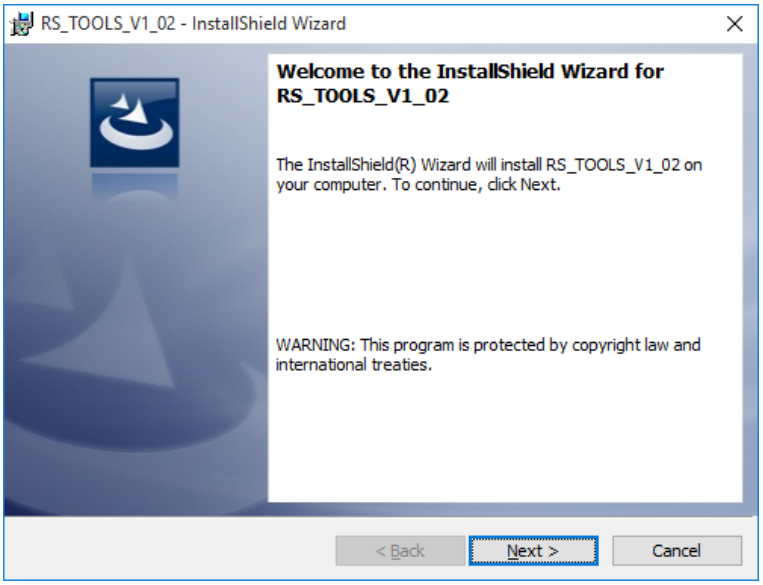
We made a video guide called “**F16SGRH Installation**” where you can watch step by step how to install the F16SGRH on your computer. You can find this video guide on the Products page of the RealSimulator website:

(https://realsimulator.com/videos-f16/)

or, directly clicking the image or the hyperlink below.

F16SGRH Installation

PICTURE



DESCRIPTION

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

Both tools can be downloaded from the Downloads page of RealSimulator website inside the same package. The package also includes the RealSimulator device metadata files, the latest firmware and the product User Guide.

To download the tools, please, go to the Downloads page of the RealSimulator website by clicking the hyperlink below:

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

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

If you have a previous version installed, please uninstall it before installing the new one, although the latest installers automatically remove the previous versions of RS_TOOLS.

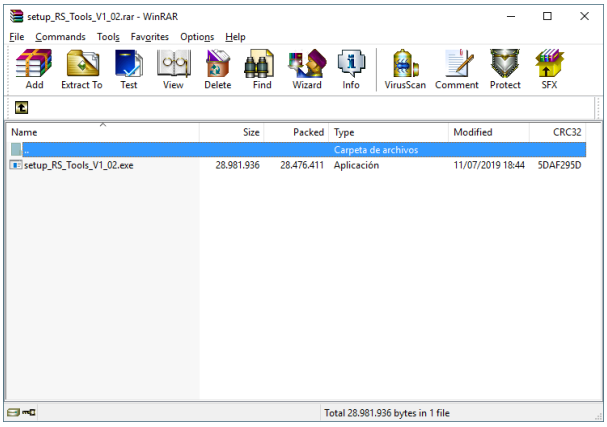
System requirements are Microsoft .NET Framework 4.5.2 and Microsoft Visual C++ 2017 Redistributable (x86).

In platforms with Windows 8.1 or higher, DCC v1.07 will be installed (with support for BLE devices). In previous versions of Windows, the package installs a “light” version of the application without support for BLE, named DCC v1.07 (NO_BLE). This version

does not allow upgrading BLE devices as the F16SGRH.

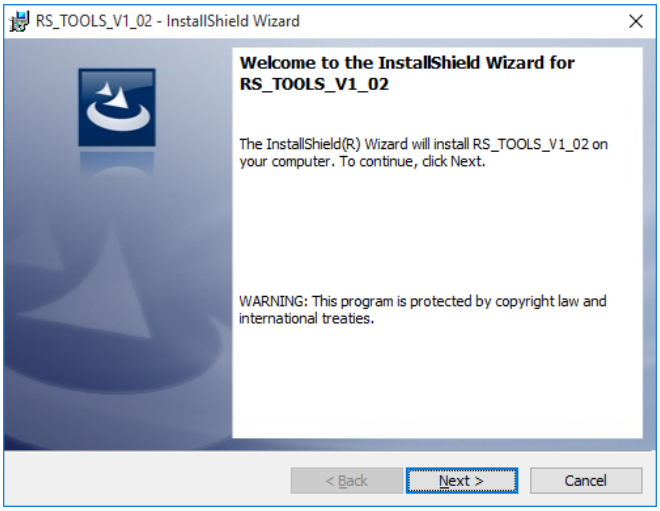
To start the installation, run the downloaded software by double-clicking the file icon. Presently, the file is named “setup_RS_Tools_V1_02.rar”, but the procedure will be identical with any new version.

In any case, you should have the following window:

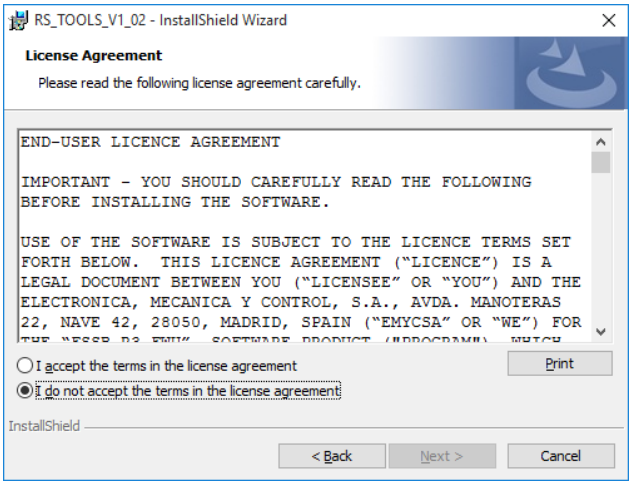


where **setup_RS_Tools_V1_02.exe** is the tools installer. To install it, please, run the file double clicking on the file name.

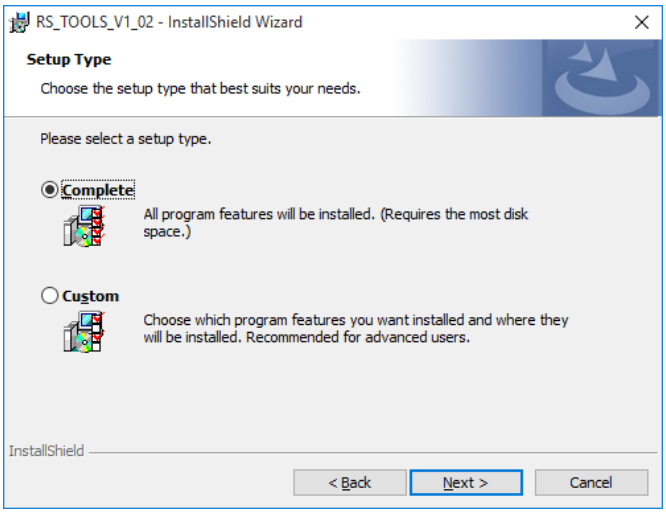
After a few seconds extracting and decompressing the package, the installation wizard will launch. Select **Next** to continue.



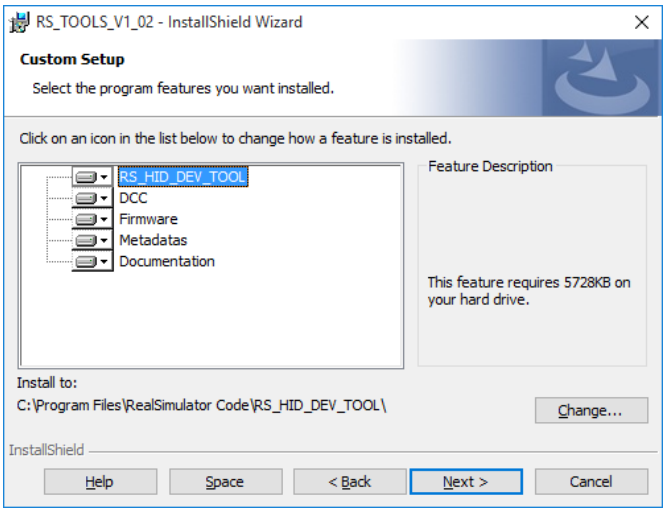
A standard licensing agreement must be accepted before moving on. Choose **I accept the terms of the license agreement** and click **Next**.



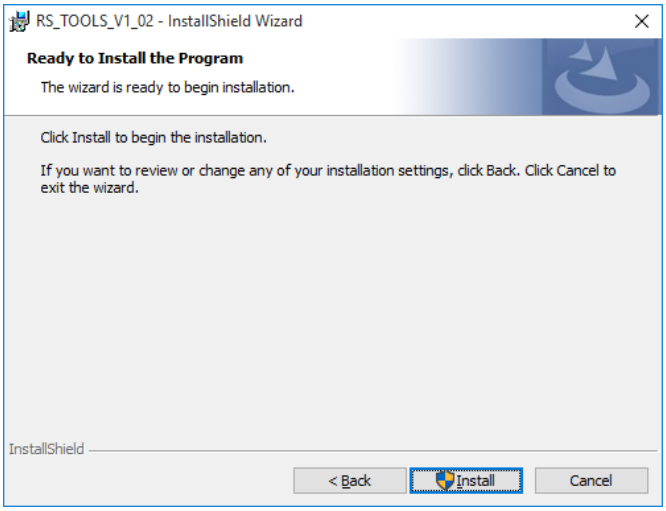
If you want to install all program features (DCC, RS_HID_DEV_TOOL, Metadata files, firmware and User Guide) select the **Complete** setup type and click **Next** to continue.



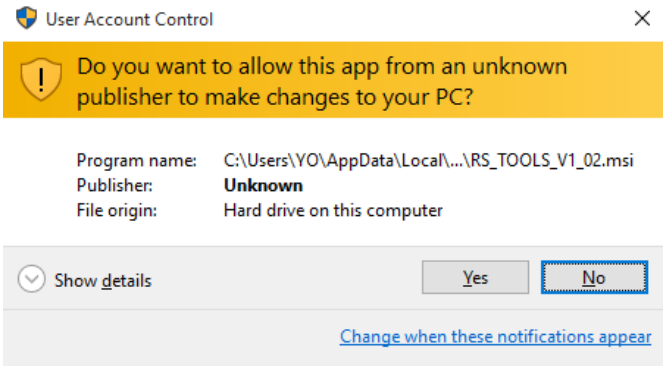
Or select **Custom** if you want to choose the features to install and click **Next** to continue.



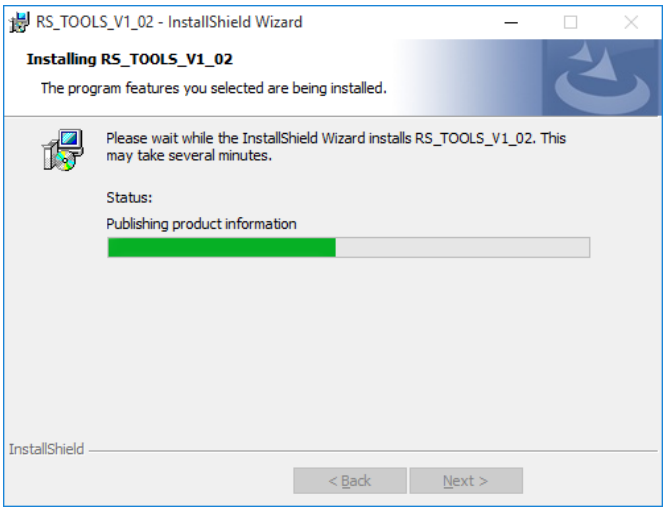
The wizard is now ready to start the installation. Please, click on **Install**.



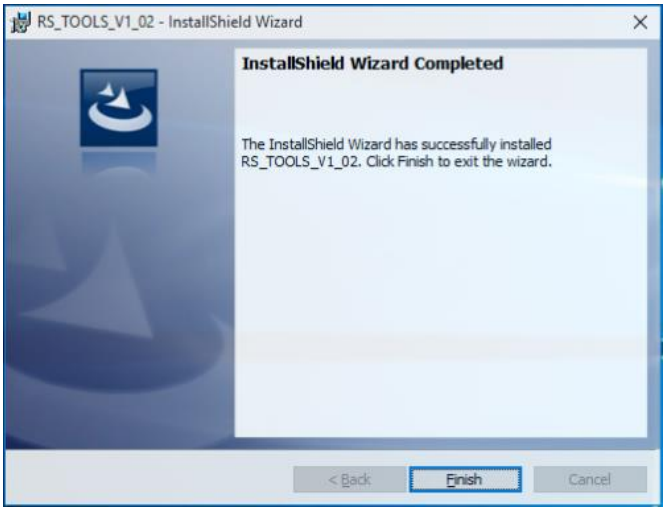
If the User Account Control window appears, click the **Yes** button to continue.



The installation of RS_TOOLS_V1_02 may take several minutes to complete.

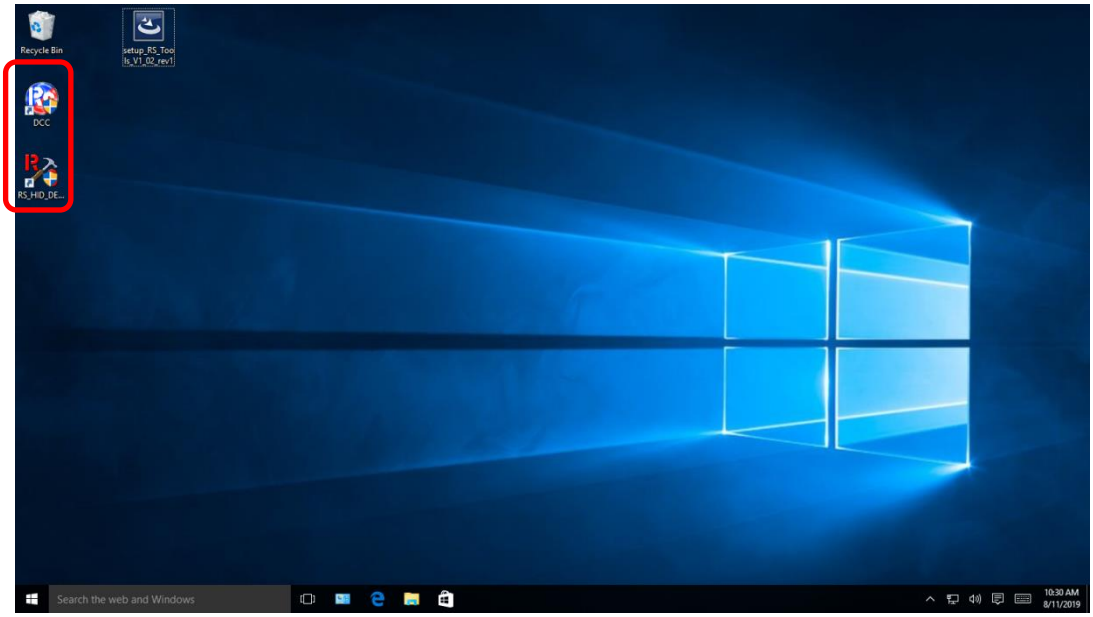


Wait until the wizard finishes the installation and click **Finish**.

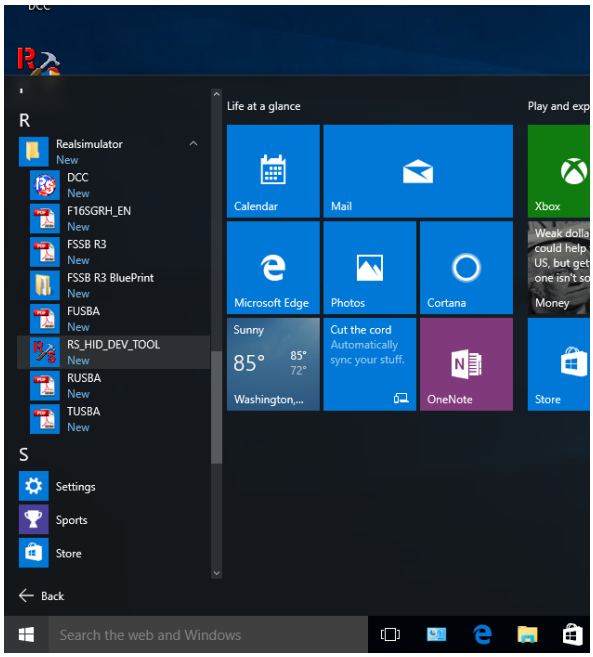


The installation is now finished and the applications are ready to be used.

In addition, after the installation, you will find two new icons on your desktop: the 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 applications, the RealSimulator devices User Guide and the FSSB R3 BluePrint.



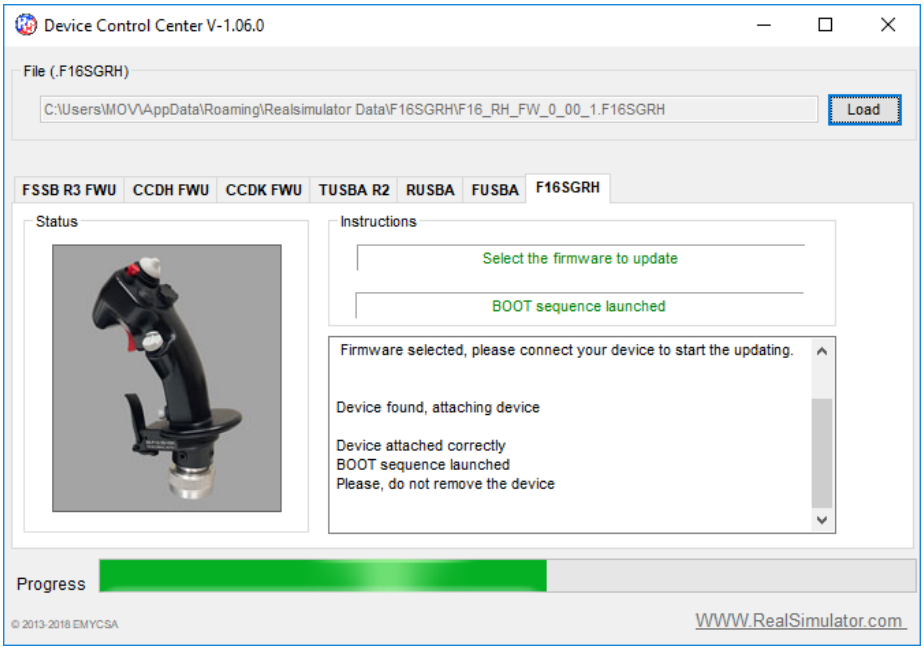
The applications are installed in the following folders:

C:\Program Files (x86)\RealSimulator Code\DCC
C:\Program Files (x86)\RealSimulator Code\RS_HID_DEV_TOOL

The User Guide, Metadata, Firmware, BluePrint files and Templates are in:

%APPDATA%\Realsimulator Data\

PICTURE



LAST PUBLISHED FIRMWARES FOR CE AND AS VERSIONS:

- **F16_RH_FW_0_01_5.F16SGRH**: 2 devices (hid 1 (axes and 32 buttons) + hid 2 (32 buttons))
- **F16_RH_FW_0_01_6.F16SGRH**: 1 device (axes and 64 buttons)

(FOR A DETAILED EXPLANATION ABOUT BOTH FIRMWARES VISIT THE NEXT SECTION)

DESCRIPTION

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

If you check the Products web page periodically, you could find new versions with enhancements and issues fixed, so you will need to use the DCC application.

To better understand the next explanation, you must imagine the F16SGRH as a device with two internal modules: a main module that works normally with the features we explain in this user guide and another one, named Bootloader, which allows changing (updating) the main module. As you will see in the update procedure, we need to follow a sequence to change between modules.

Follow the steps explained in detail below:

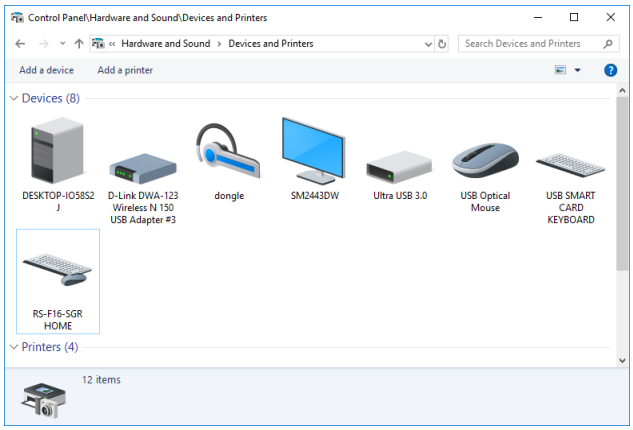
1. Make sure the F16SGRH is active.
2. In Control Panel, Device and Printers, remove the RS-F16-SGR Home device.
3. With the grip buttons, launch (Trigger 2 + TMS center + DMS center simultaneously) the sequence to start the Bootloader device.

4. Add the new device F16SGRH Bootloader.
5. Start the DCC application.
6. Select the tab labelled F16SGRH.
7. Select the firmware to update.
8. The DCC application updates the device
9. When the update is completed, the grip automatically selects the RS-F16-SGR Home device.
10. Remove the device F16SGRH Bootloader
11. Add the new device RS-F16-SGR Home.

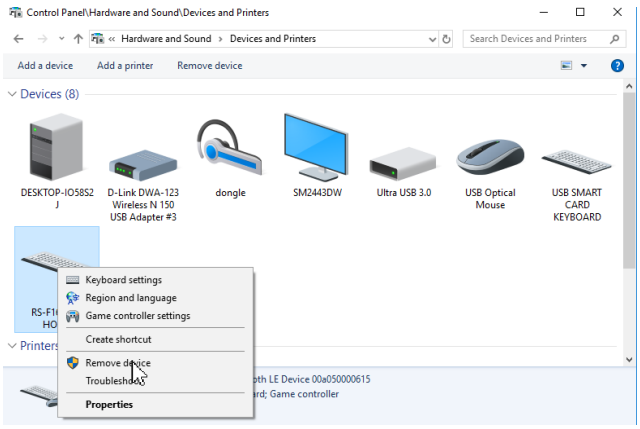
***IMPORTANT**: the firmware update procedure is valid only for computers running Windows 8.1 or 10 preferably and a BLE connection.*

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.

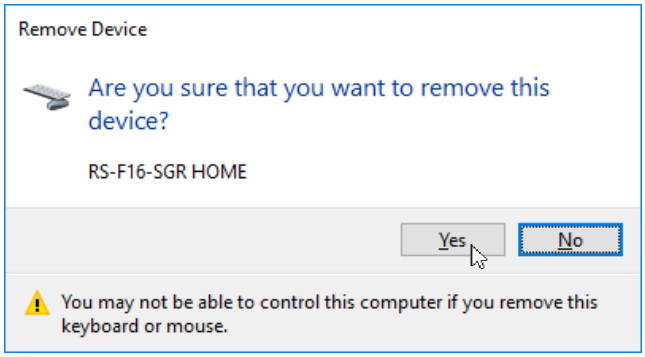
Next, open the **Device and printers** window in the **Control Panel** and check if the **RS-F16-SGR Home** is present.



If the device is present, it needs to be removed. Right-click on the **RS-F16-SGR Home** device and select **Remove device**



Next, the system will ask confirmation. Click Yes.

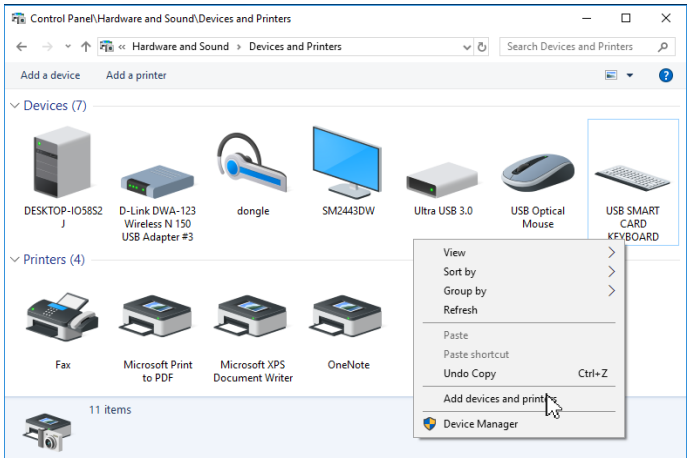


When completed, the **RS-F16-SGR Home** icon will disappear from **Devices and Printers** window**.**

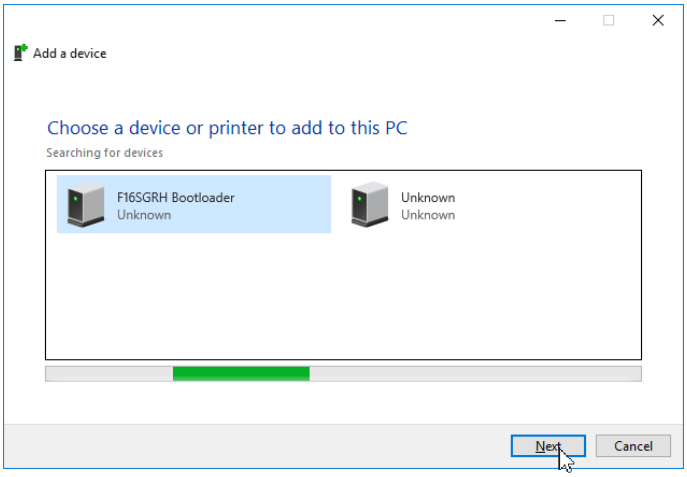
Now it is the moment to launch the **sequence to start the Bootloader**, so press the **Trigger 2 + TMS center + DMS center** buttons simultaneously and the center status led will turn on.

***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 to update the device**.*

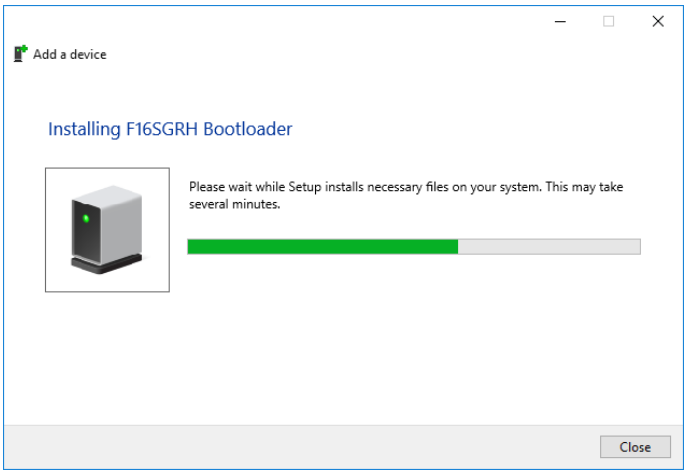
Afterwards, the new device, **F16SGRH Bootloader,** needs to be added. For this, right-click in the **Devices and Printers** window and select the **Add devices and printers** option.



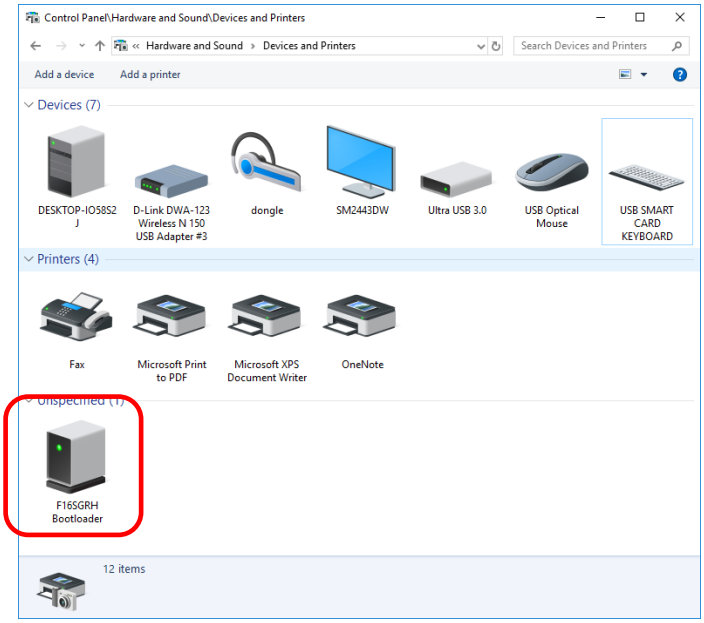
A new window will open to **Choose a device or printer to add to this PC**. Wait until the system finds the new device "**F16SGRH Bootloader**" and displays it in the window. Then select it by clicking on the icon and press **Next** to install it.



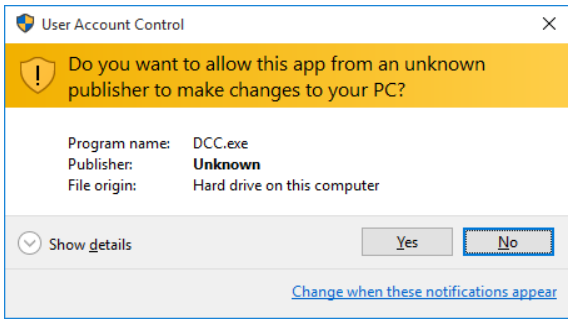
A new window for installation will be opened showing an installation progress bar and it will be closed automatically when the device is installed.



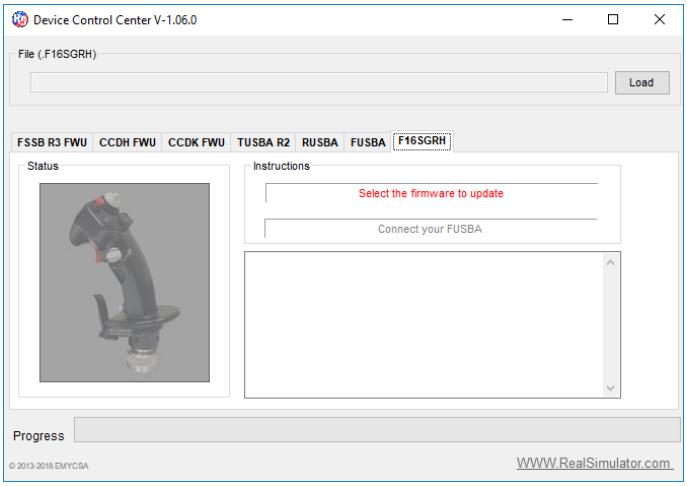
You can find the new device installed in the **Device and Printers** window.



Now you can start the DCC application. Launch it by double clicking the DCC desktop icon or click in the Windows **START** button and select **All Program > Realsimulator > DCC.** If the User Account Control window appears, click **YES** to continue.



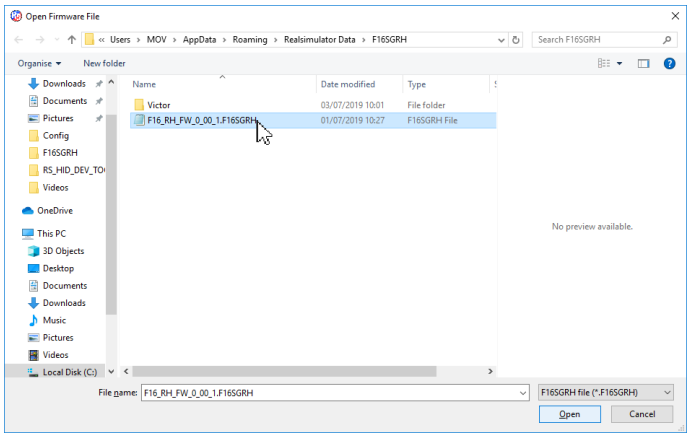
Select the tab labelled **F16SGRH** and follow the instructions given in the group box **Instructions** to update the device.



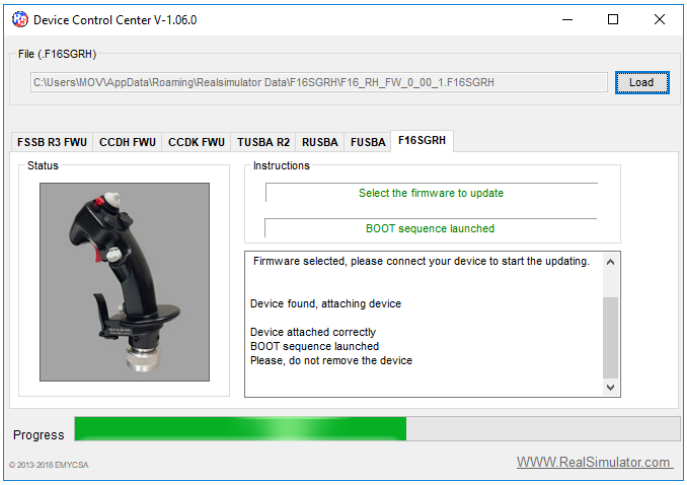
As you can see in the picture above, **Status** group box shows a grey device image, it is normal; this image will only be in normal colour when the device starts the update.

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 desired file clicking the filename and click the **Open** button to close the

window.

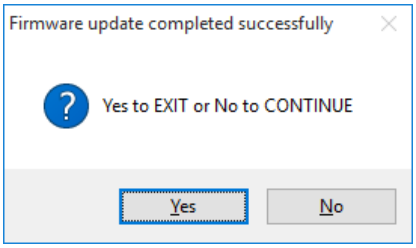


As soon as the system closes the window, the Bootloader process starts. During this data transfer, you can see the progress in the Progress bar and the status image in normal colour.



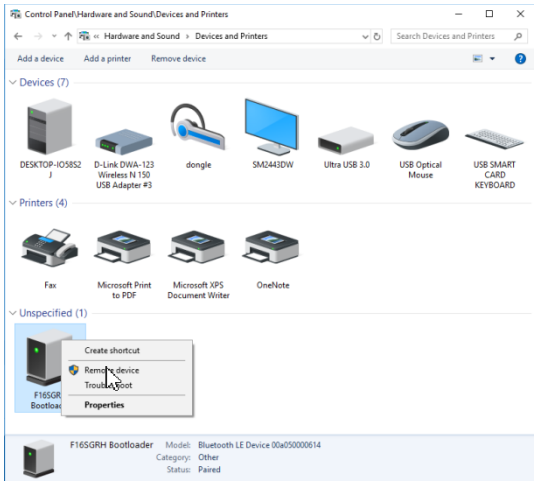
When the update is completed, the DCC application will show a new window to confirm the firmware update completed successfully and it will ask you to continue with another device or exit.

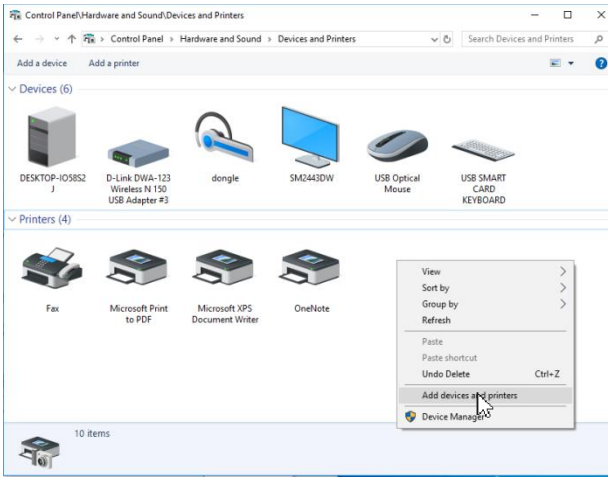
Click **Yes** to exit.



Finally, the device will exit from the Bootloader module automatically and will activate the new firmware.

Now to complete 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.





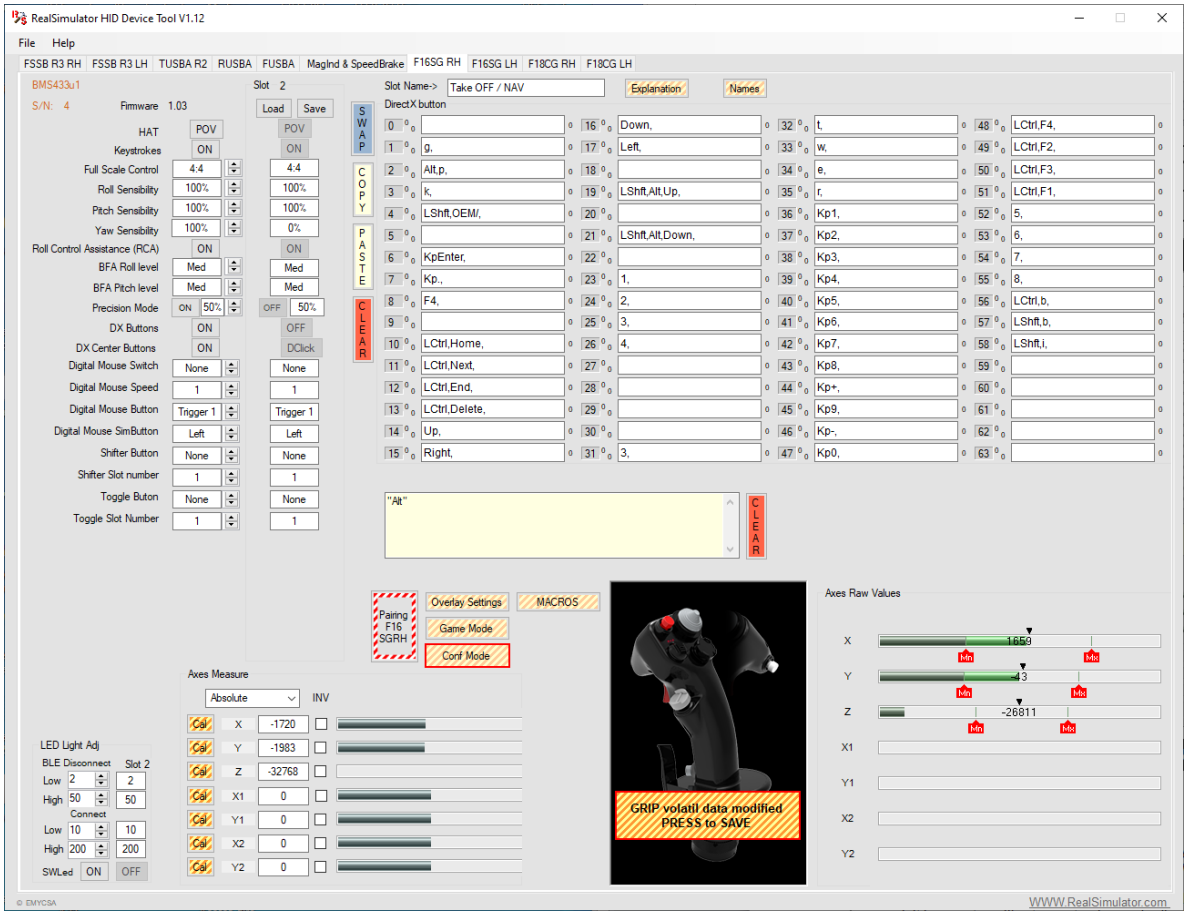
We made a video guide called “**F16SGRH Upgrading**” where you can watch step by step how to upgrade the F16SGRH on your computer. You can find this video guide on the Products page of the RealSimulator website:

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

or, directly, by clicking the image or hyperlink below.

F16SGRH Upgrading

PICTURE



LAST PUBLISHED FIRMWARES FOR CE AND AS VERSIONS:

- **F16_RH_FW_0_01_5.F16SGRH**: 2 devices (hid 1 (axes and 32 buttons) + hid 2 (32 buttons))
- **F16_RH_FW_0_01_6.F16SGRH**: 1 device (axes and 64 buttons)

DESCRIPTION

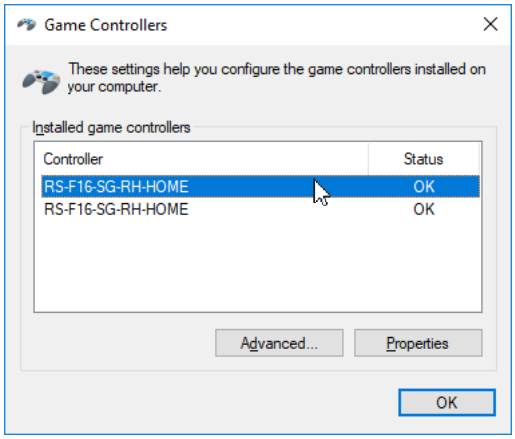
Overview

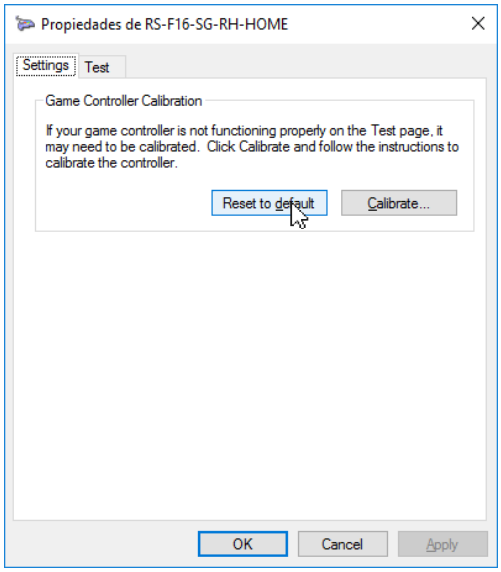
The F16SGRH, like other devices manufactured by RealSimulator, is shipped without configuration, it is necessary to do this by yourself when you receive the device.

RS_HID_DEV_TOOL is a GUI developed by RealSimulator to facilitate this task. In general, it is easy to 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** application and the device, **you should only use this tool to configure and calibrate the F16SGRH**. Do not use the standard Windows tool in the Game Controllers window.

If you have used this tool to calibrate the F16SGRH, we suggest you use the "**Reset to Default**" button of the **Settings** tab in the **RS-F16-SG-RH-HOME properties** window to delete the calibration settings created and set the calibration values to default.





With the **firmware 1_5** installed you can see two **RS-F16-SG-RH-HOME** devices in the Game Controllers window. The first (upper) one shows all the axes, 32 DX buttons and Point of View Hat, and the second (lower) device only shows a second set of 32 DX buttons.

With the **firmware 1_6** installed you will see only one **RS-F16-SG-RH-HOME** device. This device will show all the axes, 64 DX buttons although it has 64 buttons (it is a limitation of Game Controller tool of Windows) and the Point of View Hat. If you want to check the non-visible buttons you can use the RS_HID_DEV_TOOL program.

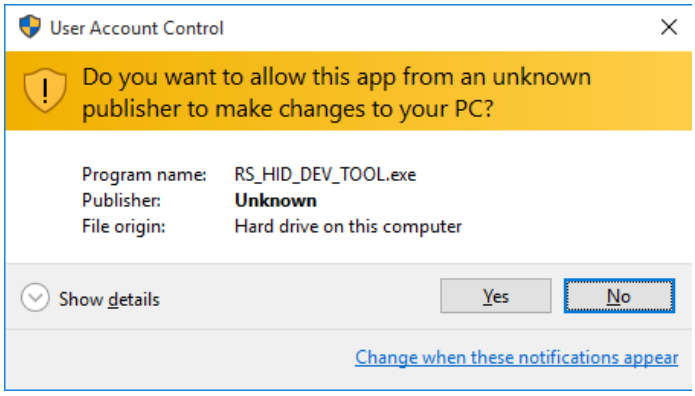
The functionality of both firmwares is equal, the only difference between both is how the 64 buttons are mapped. In the **firmware 1_5** there are 2 hid devices, the first include the 2 axes and 32 buttons, and the second device has another 32 buttons. In the **firmware 1_6** there is only a hid device with the axes and the 64 buttons. Programs like MS Flight Simulator and DCS support more than 32 buttons in a hid device, but Falcon BMS only support 32 buttons, so with this program you will have to use the 1_5 version mandatorily.

! *To prevent problems with automatic detection of buttons in some simulation programs, we have removed the DX60 button (copy of DX31) in the firmware 1_6.*

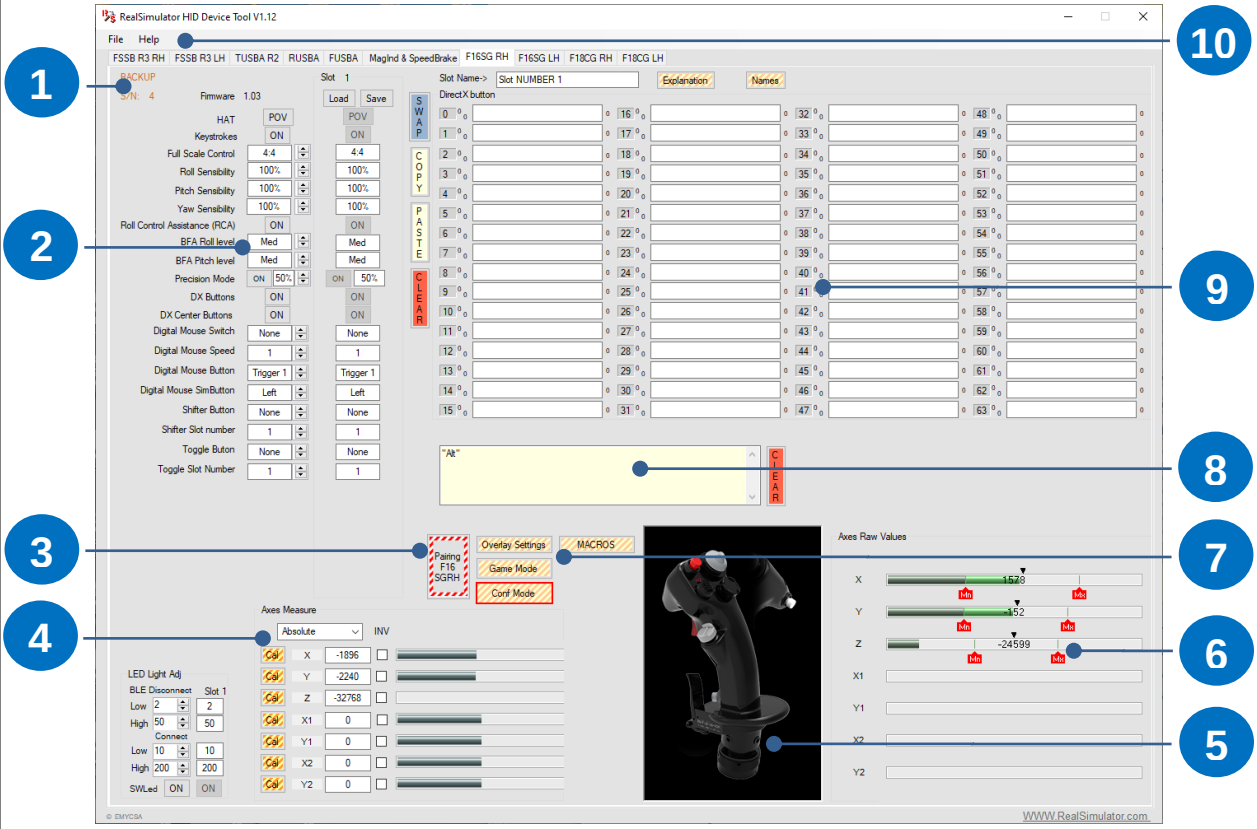
Now, we will give you a general overview of the RS_HID_DEV_TOOL program working with the F16SGRH.

To start, launch the RS_HID_DEV_TOOL application 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.**

If the User Account Control window appears, click **YES** to continue.

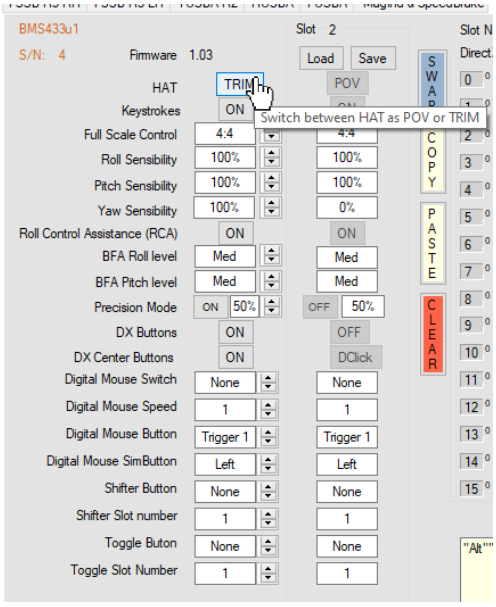


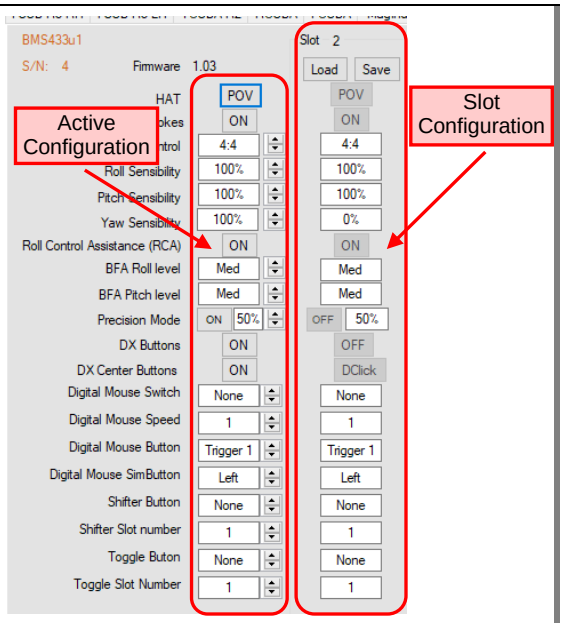
Select the "**F16SG RH**" tab and you should see the following window, where we have identified with numbers the different information and configuration areas.



1. Area showing the **firmware version** installed in the device, the device **serial number** and the **name of .xml file** containing the configuration and keystrokes settings.

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 alternate option will be displayed when the button is pressed. The image above the **HAT** button shows the "**TRIM**" option. If you press the button, it changes to the other possible state, "**POV**".

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

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

4. Group box with the Direct X information for analog axes named **Axes Measure**. Here you can see the axes values as graphical information in progress bars and in text boxes for numerical information, buttons to calibrate each axis individually and check boxes to invert the axes. The information shown in this group box for the different axes is the same you can see in the Microsoft Game Controllers window.

5. Animated area where the application graphically shows the buttons and hats actions of the stick.

6. Group box with the Raw information for each analog axis named **Axes Raw Values**. Here you can see the values 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 inserting the desired value manually (see section **Manually configure Raw Axes**).

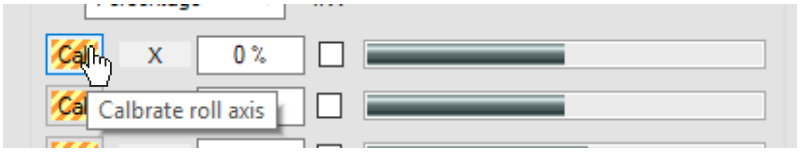
7. Buttons to select the **Configuration** or **Game** mode, button to launch and configure the **Overlay** and button to open the **Macros** window. Below you will find a complete explanation about these features and how they work.

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 turns on and the keystroke is shown in the Output box. This area contains a textbox for the slot names, buttons to **SWAP, COPY, PASTE** and **CLEAR** the 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, group box 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.



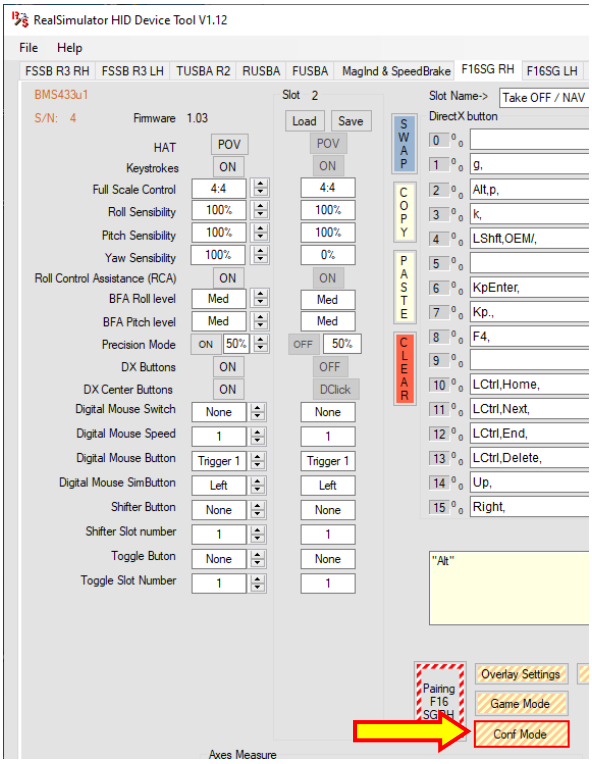
Connecting RS_HID_DEV_TOOL and F16SGRH

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.

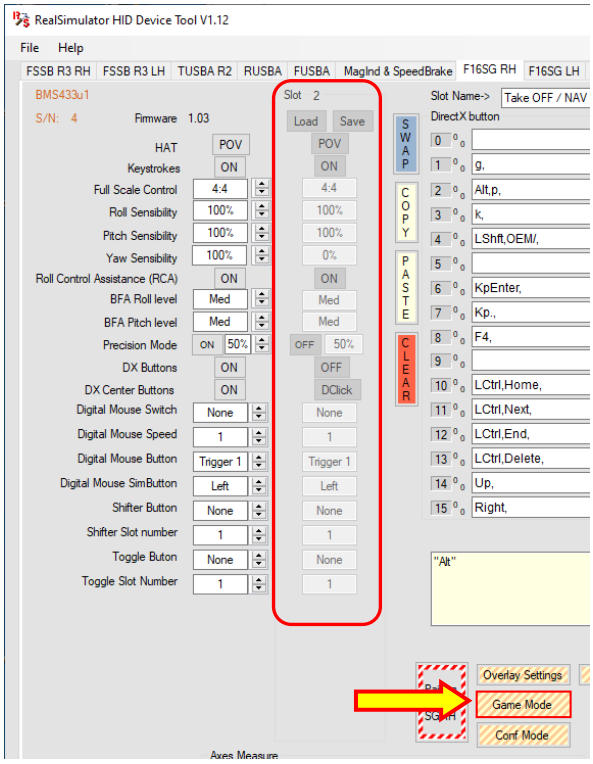
The first one is that the RS_HID_DEV_TOOL application can work in two modes selectable by buttons: in **Configuration Mode** and in **Game Mode**. The active mode is shown with a red box in the button of active mode and clicking on the other button changes the mode.

The **Configuration Mode** is the standard mode to configure the F16SGRH and as we explain in the next section (**How the F16SGRH works**), changing the slots with the rotary switch doesn't change the active configuration.

The **Game Mode** simulates when the RS_HID_DEV_TOOL is closed and changing the slots with the rotary switch changes the active configuration.



Configuration Mode



Game Mode

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

If you want to use the **Overlay** feature (you will find more information in the section **Overlay Settings**) to show or hear the name of the active slot, 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 (not in the configuration mode). If you don't select Game mode, the slot names change but the active configuration settings won't be uploaded.

The second important concept is that **you must know which configuration data is stored its location** to understand how the application works.

The application saves the information in two places:

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

b) The device itself (in the flash memory) saves the configuration settings and the keystrokes of all slots and the file name. Please, be aware that the device does not save the explanations.

Now we can start to describe the connection between the application and the device.

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

Next, it checks if a F16SGRH is already connected to the computer by Bluetooth. In the affirmative, the stick image changes to a colour representation and all the slots

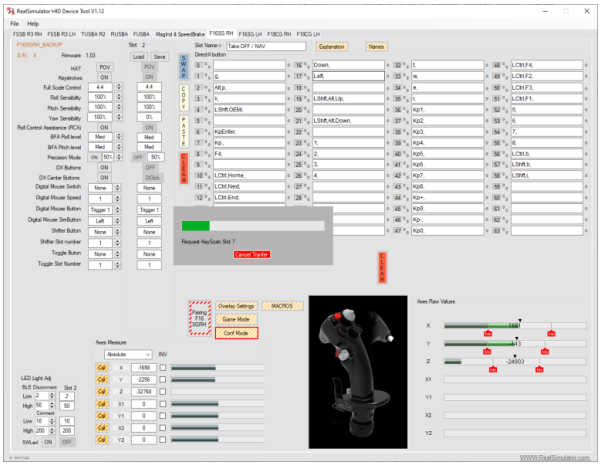
configuration data are loaded from the F16SGRH.

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

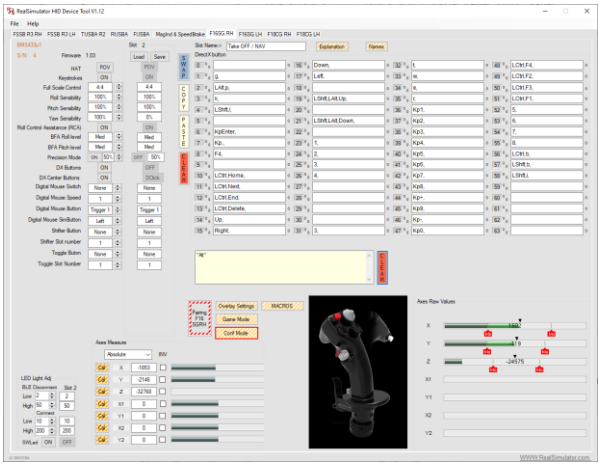
NOTE 2: The application can be used in "offline" mode, without the F16SGRH connected, to configure the slots, save the information and recover it later when the F16SGRH is attached. You can see more information about in the section "**Working offline with the F16SGRH**".

As we explained above, the application loads all the slots information except the keystrokes explanation from the F16SGRH, but as it loads also the .xml file name, the application searches the .xml file in the data folder and extracts the Explanation data from it. And finally, it fills the slots configuration data and displays the file name in the left upper corner.

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 the modifications in the stick or in the file. In this case, load the backup file and save it on the computer and in the grip with a name of your choice.



Loading data from the F16SGRH



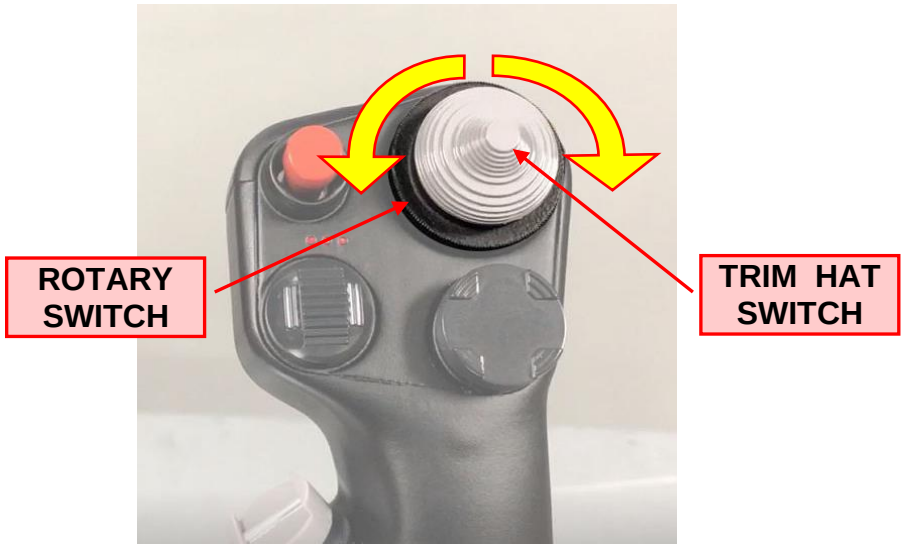
Updated info after loading

In the section "**Load, Save and Print a .xml configuration file**", you will 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 a fraction of a second.



FSSB-R3 users are used to have four programmable configurations and to change individual settings in the configuration of the 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 him/her to configure the settings for 8 different flight situations. For example, you can assign one slot for an A-A combat, another slot for refueling, another for NAV, another for A-G, etc. You can have up to 8 different situations. This is equivalent to having 8 different joysticks, each one fit for a different situation and the change between them is done with a single thumb movement, reconfiguring the whole system in a 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**, the information is shown in binary code.

Slot 2

Slot 6

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*

The information from the device is sent by Bluetooth or by the 5-pin mini-Din connector. All the information is sent through Bluetooth and only the buttons status and the rotary through the mini-Din connector. All the information sent by one or the 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.

When the RS_HID_DEV_TOOL is opened, it works differently. 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.

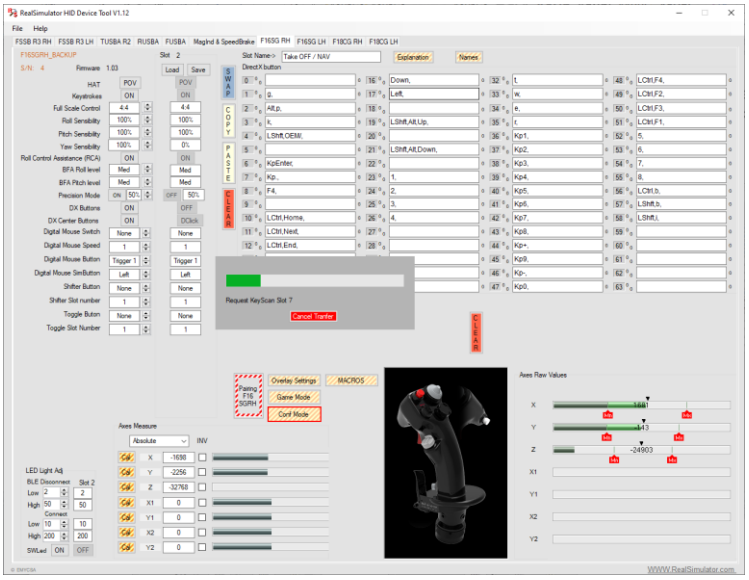
Please, pay attention and understand the previous explanation, it is very important to configure the F16SGRH.

b) **Memory area**: this area contains the slots information that can be used (in normal operation) or shown and loaded/saved when the RS_HID_DEV_TOOL is launched. This is on volatile memory and it is loaded with the information of the flash area when the stick is turned on. This information is always available to be saved it in the Flash area, to be loaded in the selected slot of the Instant area or to be saved in the selected slot of the instant area.

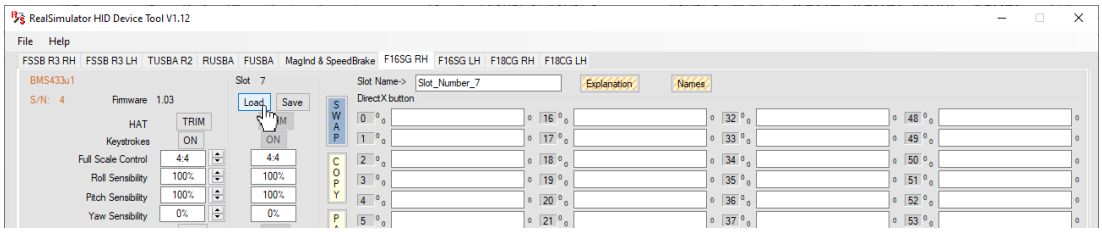
c) **Flash area**: it is in non-volatile memory and it stores the information to be loaded after the power is on. This information can only be modified voluntarily with the memory area information after a change in the memory area information. At that moment, an alert button will appear over the animated area to inform the user.

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

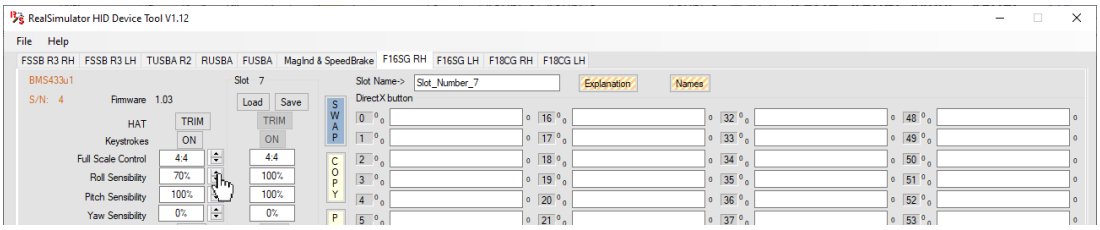
1. Launch the **RS_HID_DEV_TOOL** and select the "**F16SG RH**" tab. Wait until the system loads the configuration stored in the stick.
   (**Instant** = unchanged, **Memory** = unchanged, **Flash** = unchanged)



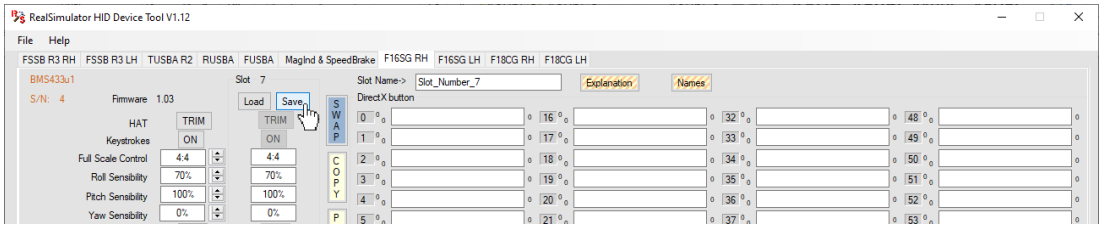
2. With the rotary switch, change the slot to 7 and click the **Load** button to transfer the information into the Instant area.
   (**Instant** = changed, **Memory** = unchanged, **Flash** = unchanged)



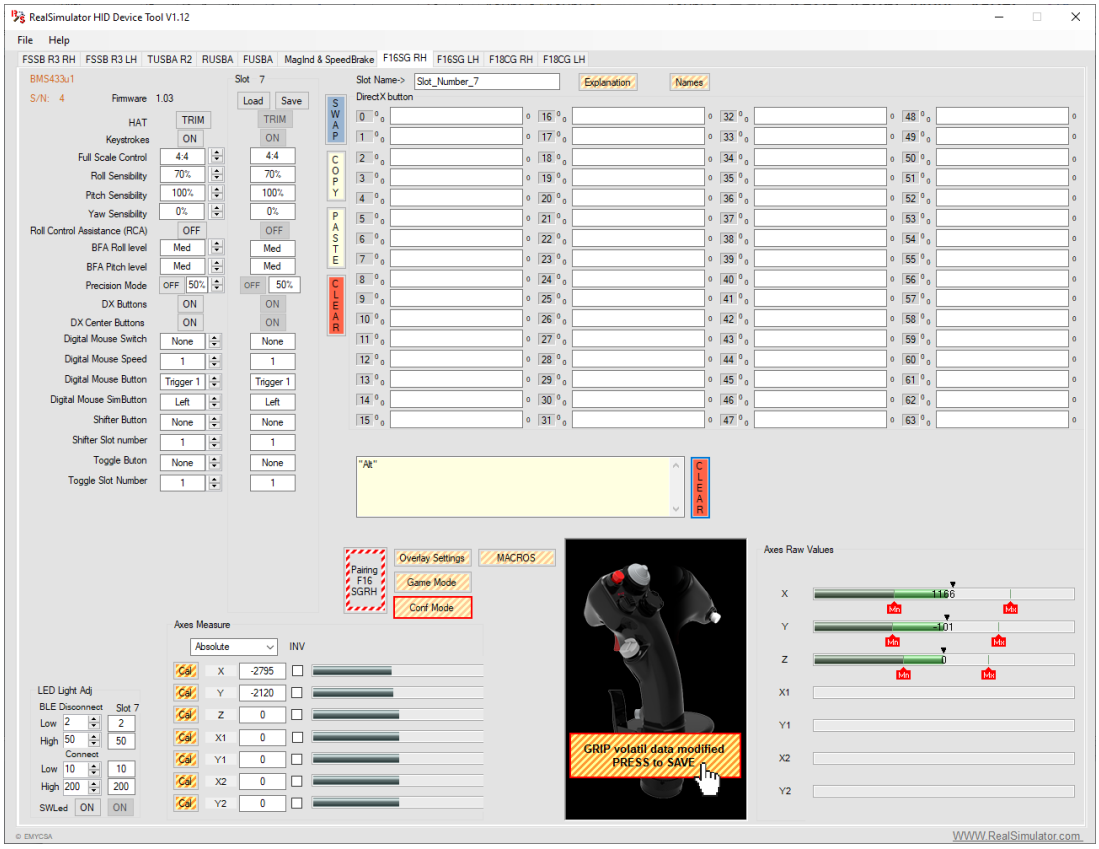
3. Change the Roll sensitivity to 70%
   (**Instant** = changed, **Memory** = unchanged, **Flash** = unchanged)



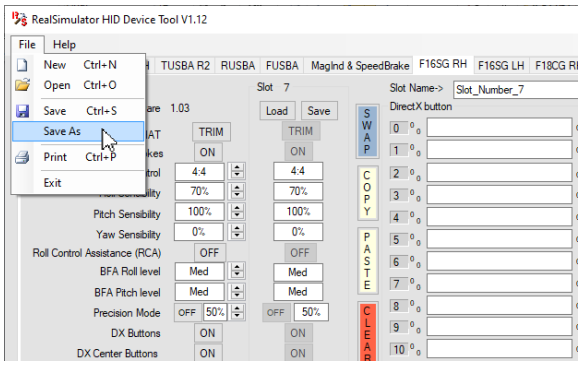
4. Click the **Save** button to pass the information from Instant area to the slot memory in Memory area. At this moment, the system will display an alert button to inform you that the memory area has different information than the flash area, so if you do not save to flash you will lose the modifications when the system is shut down.
   (**Instant** = unchanged, **Memory** = changed, **Flash** = unchanged)

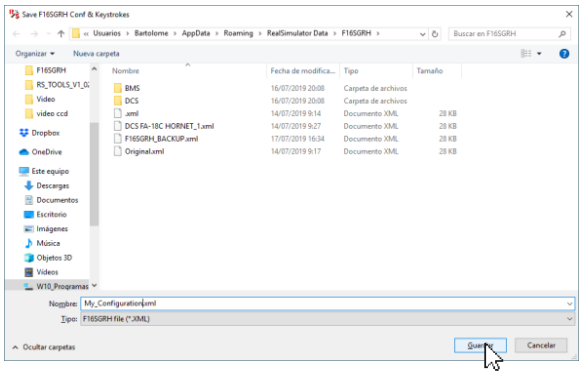


5. Press the alert button to store the Memory area information in the Flash area.
   (**Instant** = unchanged, **Memory** = unchanged, **Flash** = changed)



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 F16SGRH with the slots (with the RS_HID_DEV_TOOL application closed) 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 active configuration is loaded in the Instant area.

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

Finally, just as when writing a document, it is not necessary to save the file after each character and 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 box to inform you that it is pending to do. Save from time to time in order not to lose the changes.

Pairing F16SGRH

Pairing is a preliminary action necessary to calibrate the sensors integrated in the F16SGRH.

NOTE: Devices after July 2021 do not need to perform the pairing operation. The new hardware and firmware included in the pcb makes this procedure automatically.

Since some users have had problems with the YAW axis due to a bad pairing function, we have decided to change the pairing procedure, which consists in three circular movements: in yaw, roll and pitch, The device also contains a factory pairing that allows the user to have a fully functional device when received and to recover it if necessary. Naturally, the user can continue doing his own pairing.

This new factory pairing is made manually device by device and saved in the memory flash of device. As of October 2019, all F16SGRH have this new feature.

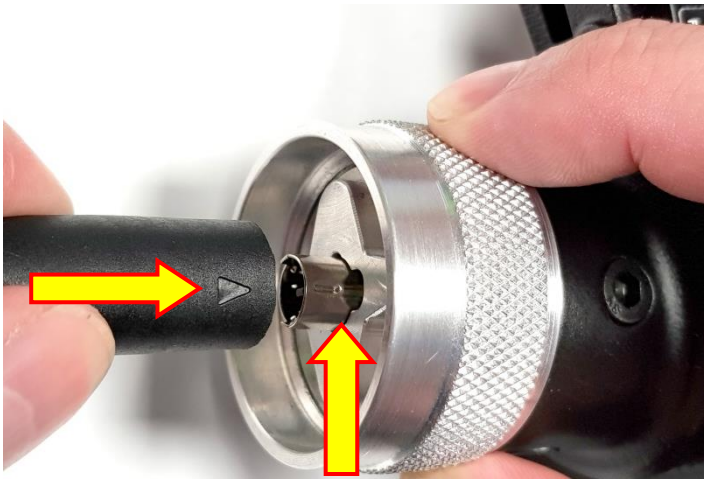
To recover the factory pairing, you must press simultaneously the next buttons:

TMS Left + DMS Right + Pinky Center

After launching this buttons sequence, the actual pairing will be deleted and replaced with the factory pairing.

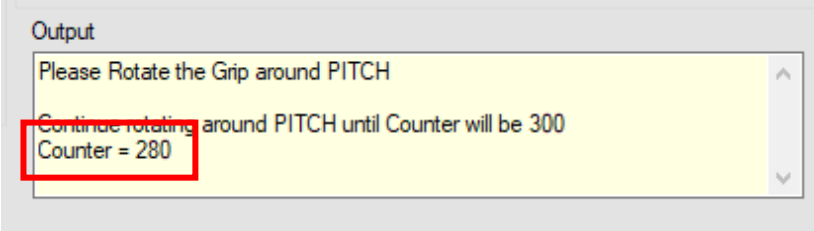
As we've said above, the user can improve the response of the sensors doing his own pairing and allowing thereby the new pairing to have information about the magnetic fields of the game room and compensate the irregularities; it will allow a better YAW precision.

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.



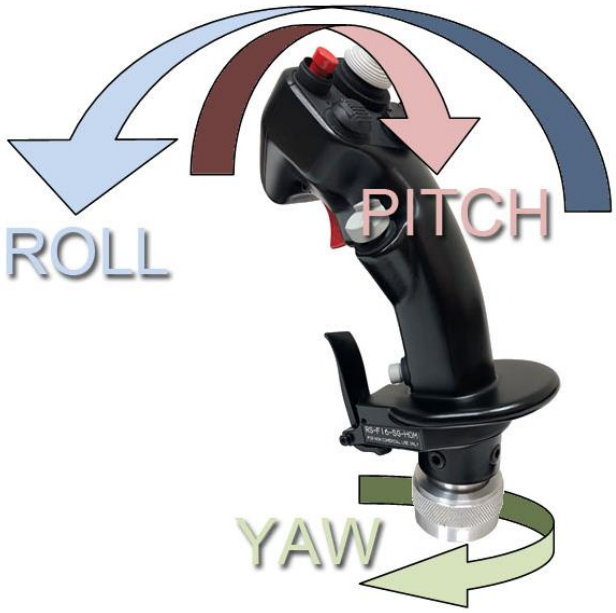
NOTE: please, when you connect the cable to the grip, pay special attention to correctly align the two connectors to avoid damaging the pins or connectors. For that, both connectors have visible marks as you can see in the picture above.

The procedure is made in three phases displayed by the "Counter" value shown in the Output window.



- Phase 1: the counter goes from 0 to 99 and the movement must be of 360º around the YAW axis.
- Phase 2: the counter goes from 100 to 199 and the movement must be of 360º around the ROLL axis.
- Phase 3: the counter goes from 200 to 300 and the movement must be of 360º around the PITCH axis.

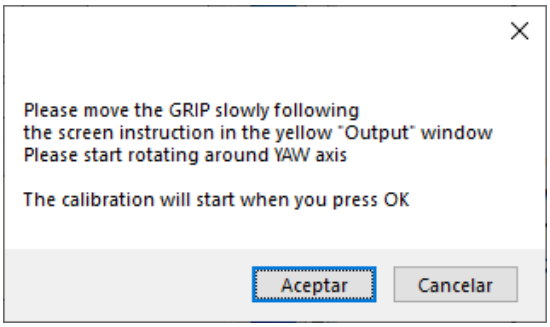
Every time it is necessary to change the axis, a new informative window appears.



To start the pairing process, click the **Pairing F16SGRH** button. After this, some windows will appear to instruct you how to move the grip. Remember to do the movements slowly, a good rule is doing 90 degrees by each 20-25 numbers of Counter.

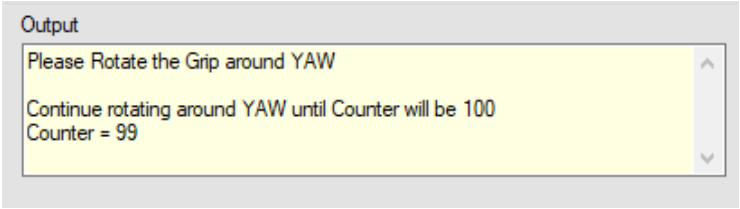
Let's see step by step how the pairing is done:

1. After clicking on the **Pairing F16SGRH** button, a new informative window appears to instruct you to start rotating the YAW axis after clicking the OK button.

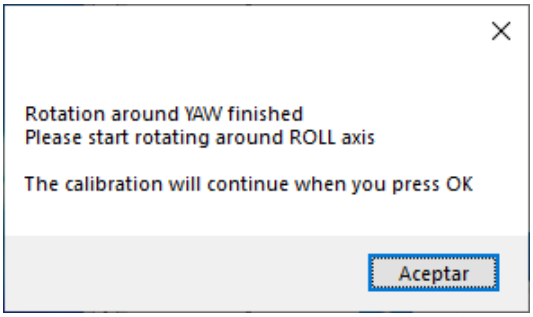


2. Put the grip vertically taking it with one hand by the nut.
3. Click on the OK button in the informative window to start the pairing.

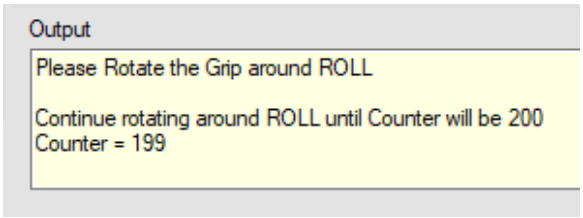
4. With the other hand, help yourself to rotate the grip 360 degrees or more over the Yaw axis until the Counter reaches the number 99.



5. At that moment, a new informative window appears to indicate that the Yaw rotation has finished. Now you must rotate the grip in the Roll axis. To continue, click the OK button.

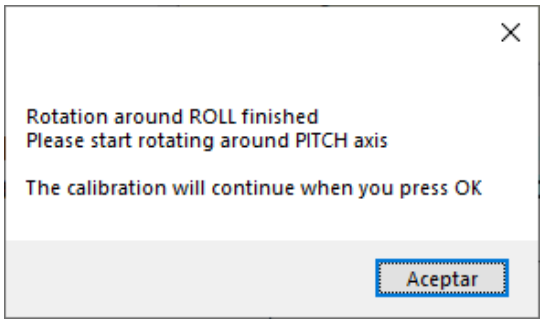


6. Now rotate the grip 360 degrees or more over the Roll axis until the Counter reaches the number 199.



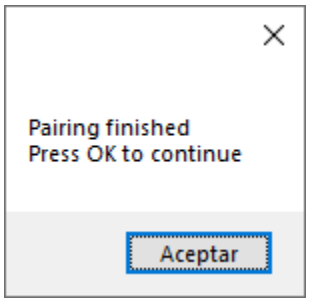
7. At that moment, a new informative window appears to indicate that the Roll

rotation has finished. Now you must rotate the grip in the Pitch axis. To continue, click the OK button.



8. Finally, rotate the grip at least 360 degrees over the Pitch axis until the Counter reaches the number 299.

9. When the Counter reaches the number 299, the pairing is complete and an informative window is displayed.



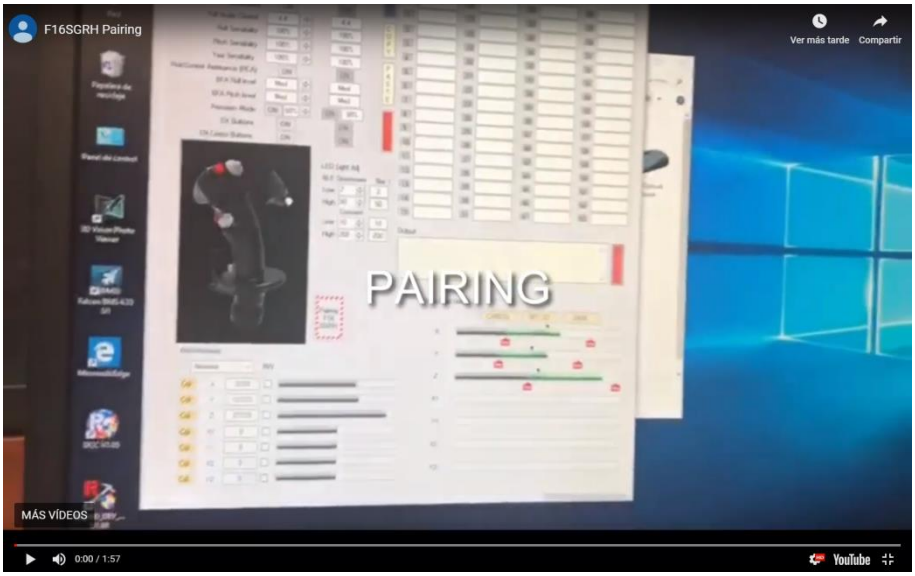
10. Click Ok to continue.
11. At this moment, the pairing is complete and you can verify in the **Axes Raw Values** area how the value bars work. Please, don't pay attention to the center positions, only to the bars movements and keep in mind that when a value reaches the maximum the next value is the minimum and vice versa.
12. 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 the next time you turn the system on, these 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) and next time you turn on the system, the old settings will be loaded.

13. Finally, to complete the pairing action, you need to calibrate the axes. We will explain how to do it in the next section.

NOTE 1: Devices shipped from October 2019 have a factory pairing saved in the flash memory, to allow the user to work with the device as soon as it is received. As we've said previously, we suggest making your own pairing for better results. The factory pairing can always be restored.

NOTE 2: Devices after July 2021 do not need to perform the pairing operation. The new hardware and firmware included in the pcb makes this procedure automatically.

On the RS Products web page (http://www.realsimulator.com/html/f16sgrh.html), you'll find a video we made called "**Pairing**" where you can watch and follow the procedure explained above step by step. You can also directly access the video by clicking the image or hyperlink below.



F16SGRH Pairing

Axes calibration overview

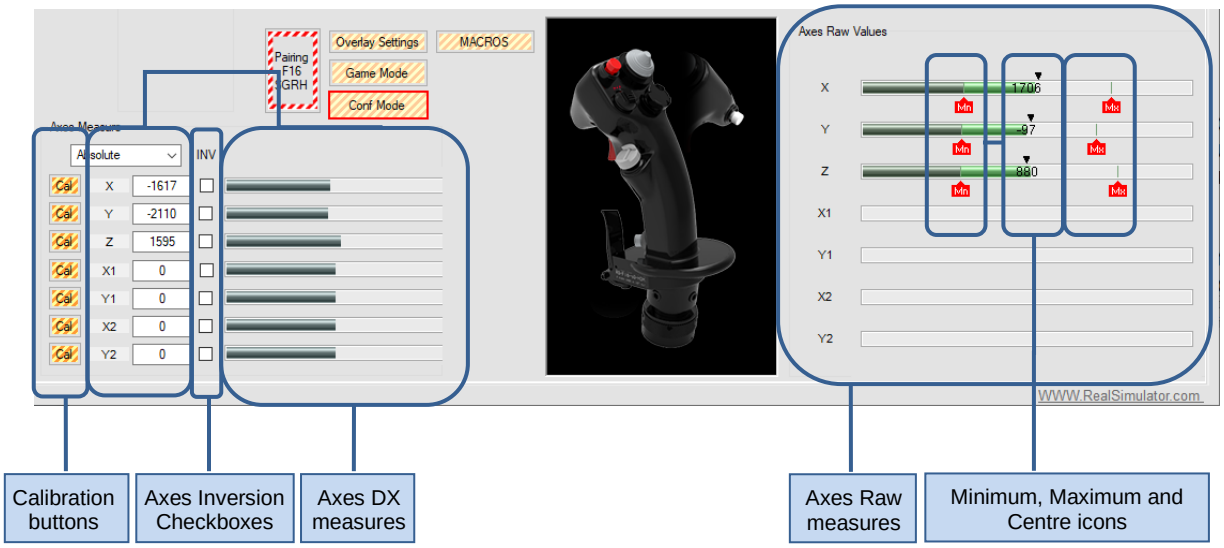
As we mentioned at the end of pairing procedure, after the pairing, it is necessary to calibrate each analog axis.

The calibration allows adjusting some internal settings and informing Windows about the maximum, minimum and central positions 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, you can individually calibrate the axes, only the axis that you 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.
- You can see the Raw and DX values graphically and numerically.

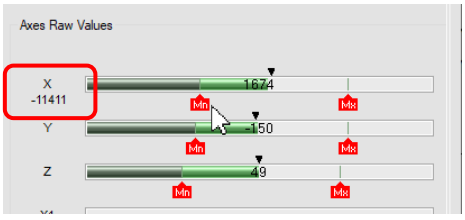
So, **we strongly suggest using ONLY this tool to configure and calibrate the F16SGRH**.

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

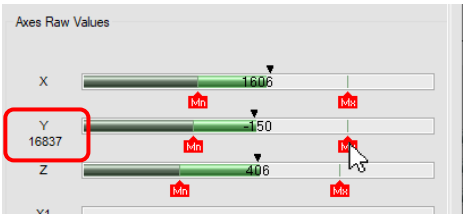


Axes Raw Values group box shows the internal measures of each F16SGRH analog axis, numerically and graphically through a green progress bar with the numeric value in the centre. Each axis has two red icons to identify the maximum and minimum positions and a black icon for the centre position.

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**.



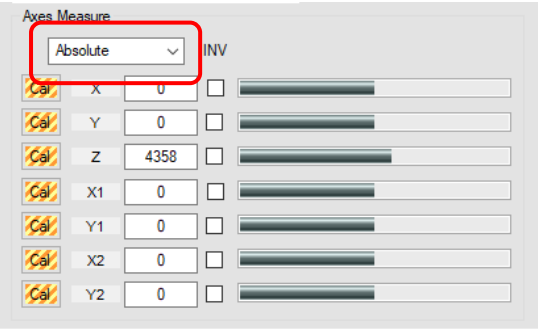
X axis Minimum value



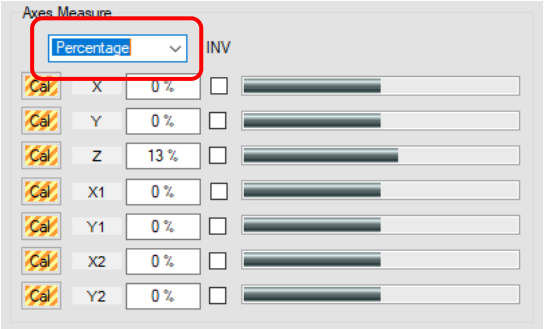
Y axis Maximum value

Axes Measure group box shows the Direct X information. This information is shown numerically in text boxes and graphically in progress bars. The numeric information can be displayed 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 it 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:

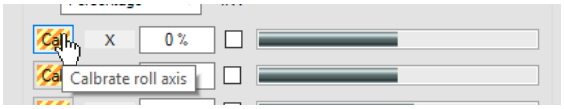
- Calibration of X and Y axes.
- Calibration of Z axis.

X and Y axes calibration

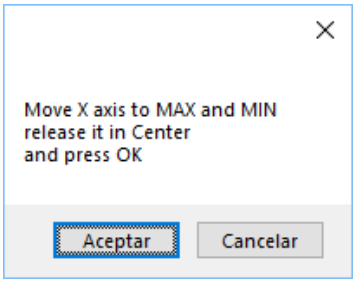
The procedures to calibrate X and Y axes are similar, so here we will only show you how to do it with the X axis.

As we explained before, to calibrate an axis in Windows, we need set the maximum, central and minimum positions of that axis. For that, we will move the stick in 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** group box.

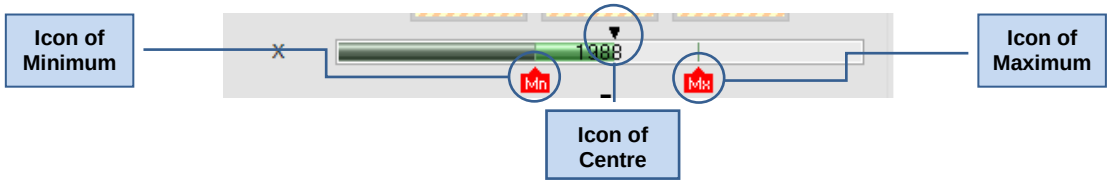


A new small window will appear with instructions for the axis calibration.

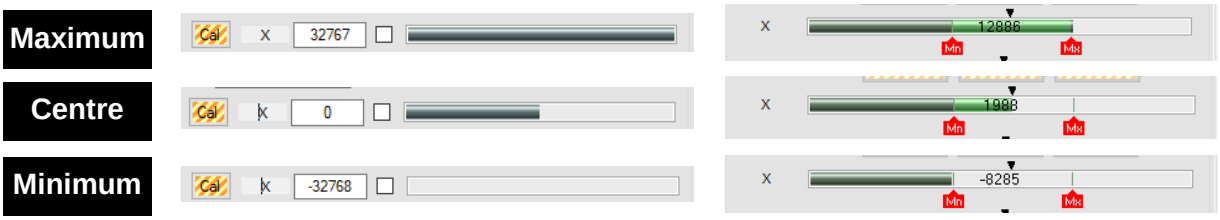


Following the instructions, move the stick to the left and right to achieve the minimum and maximum positions and release it in the center position. Then click **OK** to continue.

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



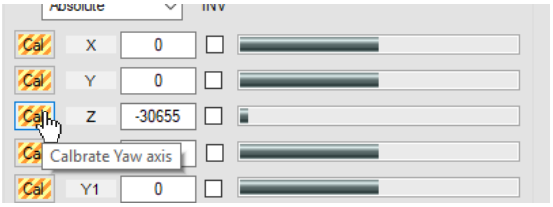
Now, with the calibration finished you can check that there is a direct correlation between the maximum, centre and minimum positions of our hardware shown with the red and black icons and the maximum, centre and minimum DX values.



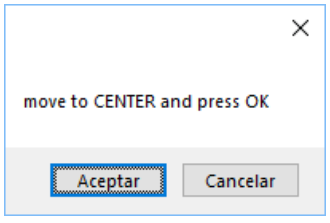
Z axis calibration

As we mentioned before, to calibrate an axis for windows, we need to set the maximum, central and minimum positions of that axis. This is all the information Windows needs. For that, we will move the stick in 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.

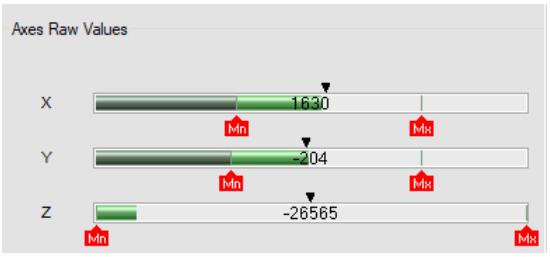
To start the calibration, click the **Cal** button associated to the axis in the **Axis Measure** group box.



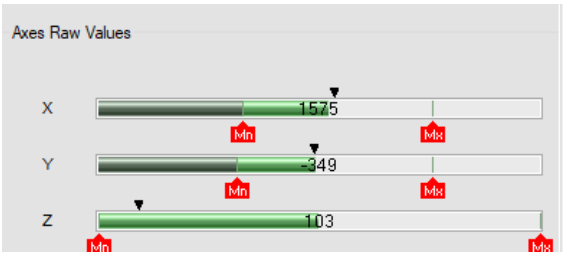
A new small window appears with instructions for the axis calibration.



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 pictures below.

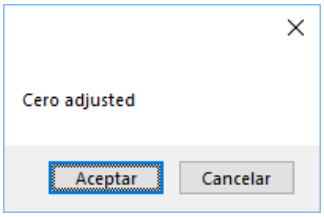


Before auto-zero

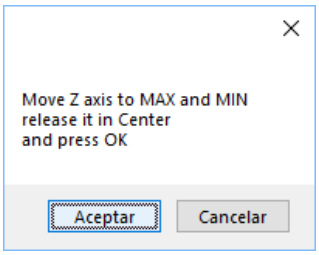


After auto-zero

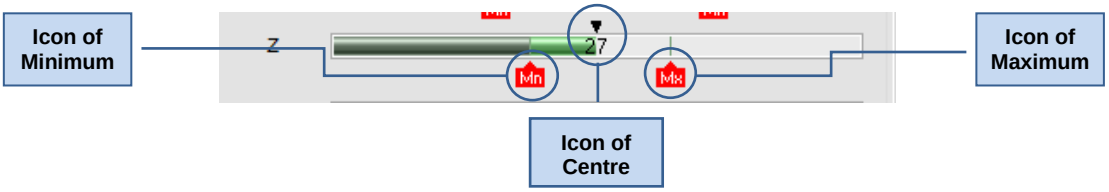
And a new window is shown to describe the action. Click **OK** to continue.



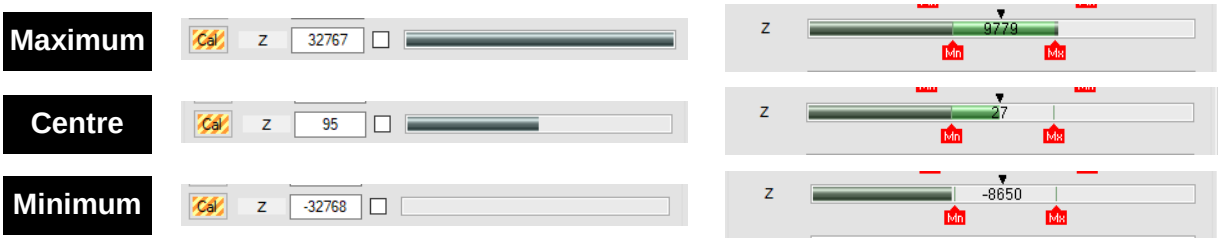
And finally, a new window asks you to move the stick over the **Z axis** to the maximum and minimum desired positions. When done, please click **OK** to finish.



After closing the window, RS_HID_DEV_TOOL saves the new calibration values in Windows. It also relocates the associated icons of minimum, centre and maximum, as you can see here.



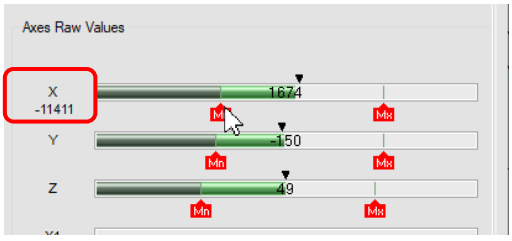
Now, with the calibration finished, you can check that there is a direct correlation between the maximum, centre and minimum positions of our hardware shown with the red and black icons and the maximum, centre and minimum DX values.



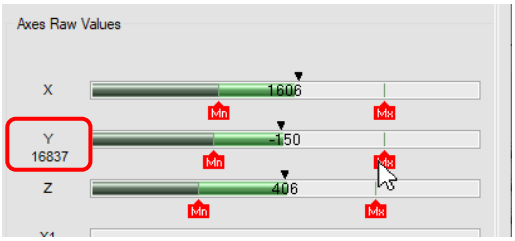
Manually configure Raw Axes

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

To see a parameter value, you must hover the mouse pointer over the parameter icon and the measure will be displayed for 4 seconds under 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

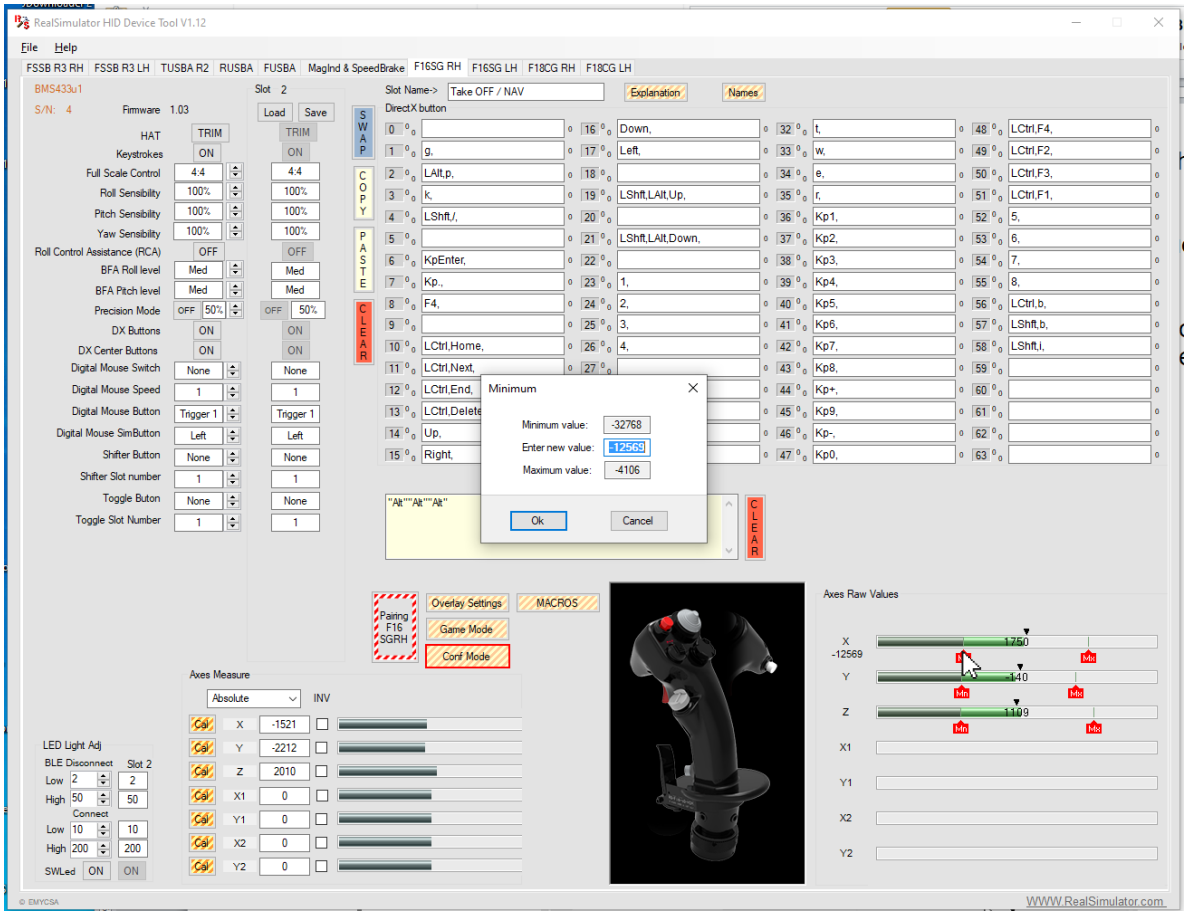


Y axis Centre Dead Zone value

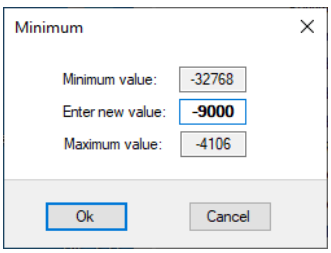
If you want to modify a value, put the mouse pointer over the chosen icon and after a double-click on the icon, the application opens a window showing the “minimum” (upper position) and “maximum” (lower position) admitted values for the selected parameter. The active value is shown in bold, in the centre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

In this example, we will modify the Minimum value of X axis. Now its value is “-12569” and we will change it to “-9000”.

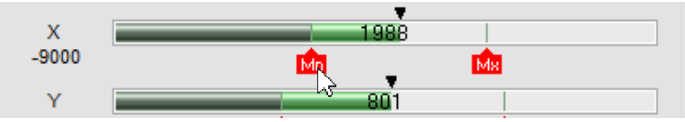
So, double-click the Minimum icon of X axis and you see the new window with the actual info “-8150”. Clicking with the mouse in the test box, you can write the new value “-9000”.



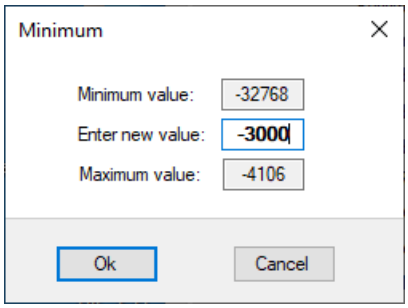
To finish the operation, click on the OK button to accept the written value.

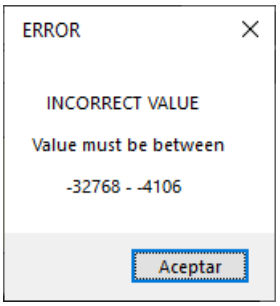


If the value is correct, the window closes and the parameter and icon position in the progress bar are modified.



If the value written is incorrect, an ERROR window appears to inform you about the error and the operation is 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 to know how to modify the settings and not to lose them.

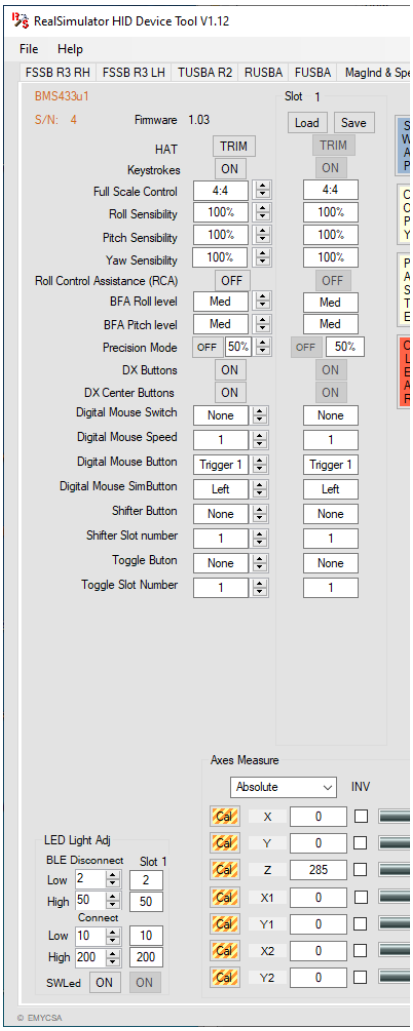
In every slot you can configure the following:

a) Analog settings:

- Full Scale Control.
- Roll Sensitivity.
- Pitch Sensitivity.
- Yaw Sensitivity.
- 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 explanation.
- Digital Mouse.
- DX events and Keystrokes generation by pulses.
- Additional slot change thanks to the Shifter and Toggle functions.
- Adjustable LEDs lighting level.
- SWled function.



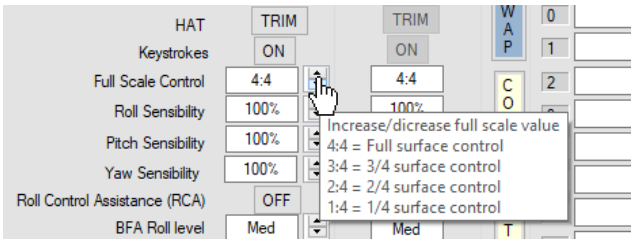
We will explain in detail each setting below.

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 maneuvers 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.

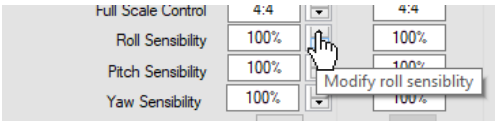
4:4 - Full range is 100%
3:4 - Full range is 75%
2:4 - Full range is 50%
1:4 - Full range is 25%



This feature allows configuring different response levels of the flight controls for the same movements. For example, if you select it to 2:4, with the same movement as in the normal 4:4, you only get the 50% of the signal. So, you improve the precision in maneuvers that need small and precise movements, as we mentioned above.

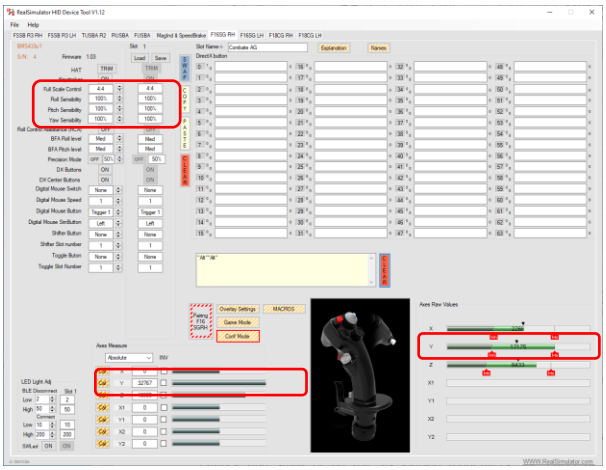
ROLL, PITCH AND YAW SENSITIVITY

These controls allow to individually change the axes sensitivity from 100% to 0% in discrete steps of 1% (except Roll sensitivity 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 situation.

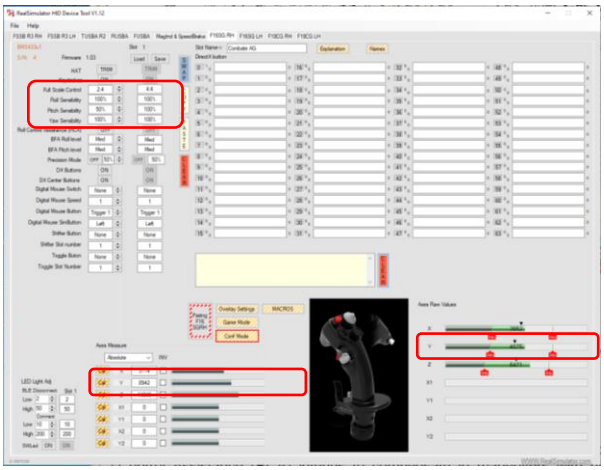


This setting is ideal to disable an axis in a slot, for example the Z axis, usually assigned to the Yaw axis. You only need to change the setting to 0% and the Z axis measure will be always “0” when that slot is active.

Pay attention because this setting is also applied to the Full Scale Control. For example, if you set the FSC to 2:4 and the sensitivity to 50%, with these two settings, the maximum level of response will be 25% in respect with the level in normal conditions (4:4 and 100%).



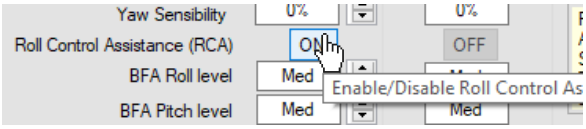
Maximum in Y with FSC 4:4 & Sensitivity 100%



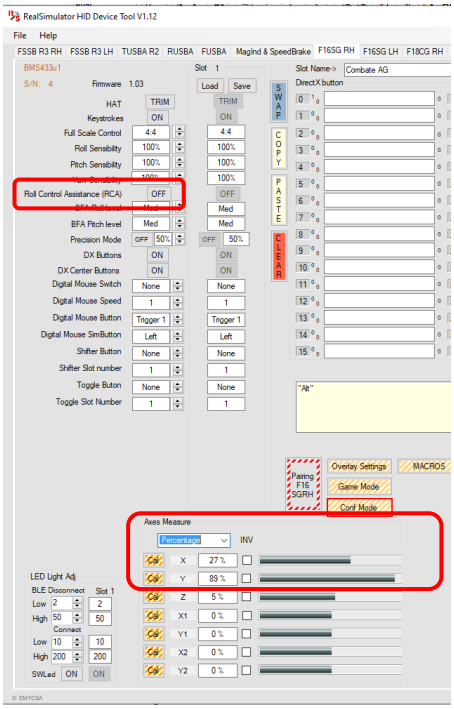
Maximum in Y with FSC 2:4 & Sensitivity 50%

ROLL CONTROL ASSISTANCE (RCA)

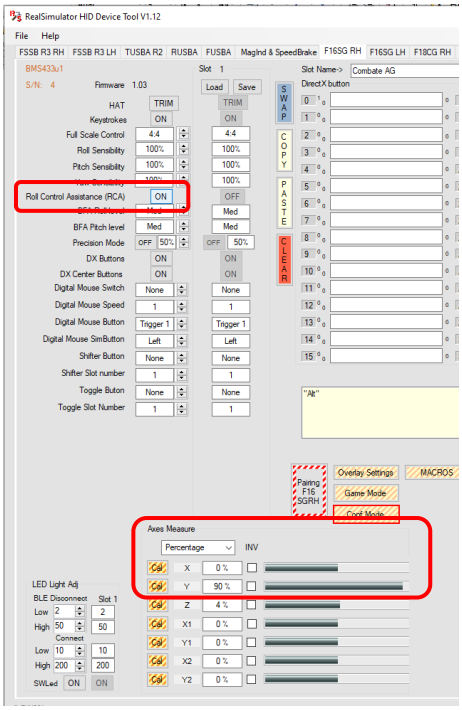
This feature enables (ON) and disables (OFF) the Roll Control Assistance. The Roll Control Assistance (RCA) intends to compensate in maneuvers with high angle of attack and small or no roll, as looping maneuvers, the effect of roll introduced “unintentionally” by the pilot during the maneuver execution. With this feature enabled, the higher the pitch, the smaller roll value.



In the images below, you can see how the RCA modify the roll value. With this feature enabled, a Roll value of 25% of input gives 0% of output.



RCA: OFF, Roll (X): 27%, Pitch (Y): 89%



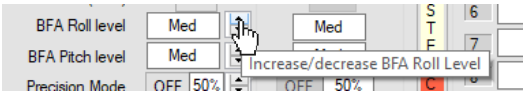
RCA: ON, Roll (X): 0%, Pitch (Y): 90%

BFA ROLL AND PITCH LEVEL

The Break Force Adjust (BFA) concept prevents small movement from being 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 he 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.

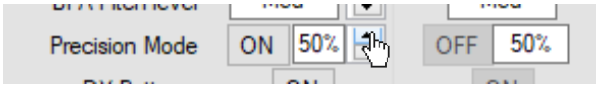
The actual value is shown in a text box and the selection is done with the Up/Down indicator associated.



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 maneuvers that require precise or small inputs, such a refueling.



The feature is activated through an ON/OFF button and the sensitivity reduction is shown numerically in a text box and modified with an Up/Down indicator. “Trigger 1” enables/disables 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.

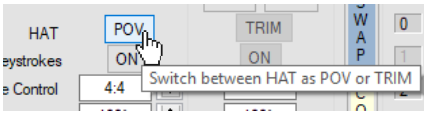
Let’s see an example: if you place the button in the ON position, the value is 40% and the axis X has a value of 10000. When you press the trigger, the value changes to 4000, when you release the trigger the value comes back to 10000.
If the button is OFF, no change will be produced in the measures.

HAT AS POV OR TRIM

This feature allows selecting how the TRIM hat switch of the grip 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.

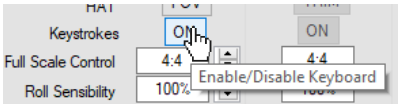
In **TRIM** mode the hat switch information is sent as four independent switches in DX buttons 27, 28, 28 and 30, to be used as TRIM, which is its function in real life.



NOTE: in both modes, the hat switch information is sent to the DX buttons 27 to 30.

KEYSTROKES ON/OFF

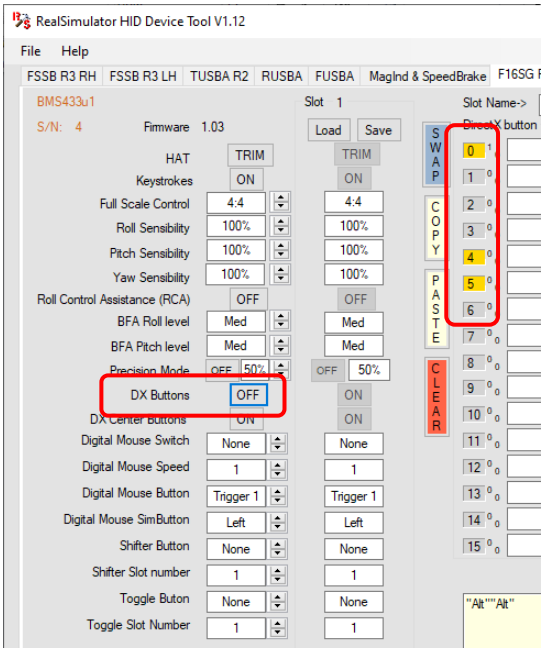
This feature allows enabling and disabling the keystrokes emulation. The selection is made through an **ON/OFF** button.



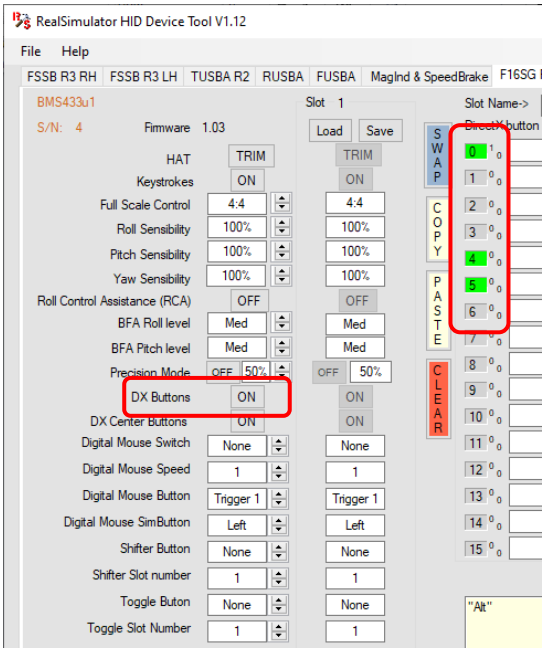
DX BUTTONS ON/OFF

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

If **DX buttons** is enabled, when you press a button, its DX button number is shown in green. When disabled, it is shown in gold.



DX buttons in OFF



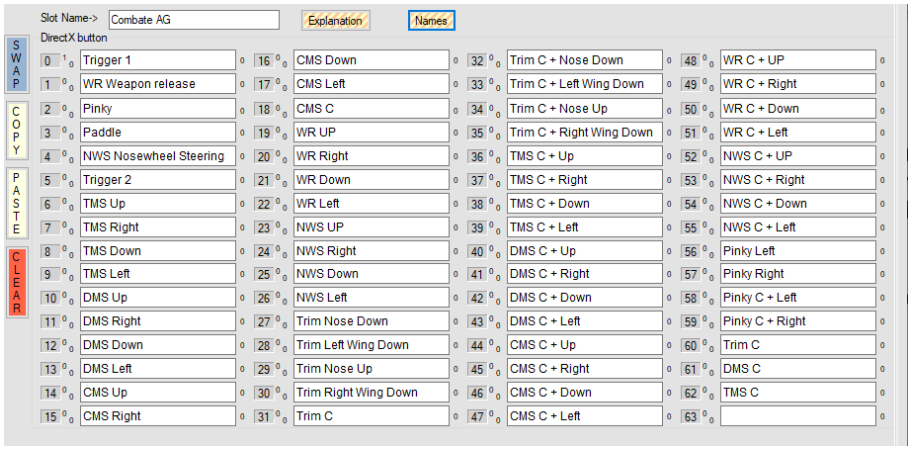
DX buttons in ON

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

DX CENTER BUTTONS MODE

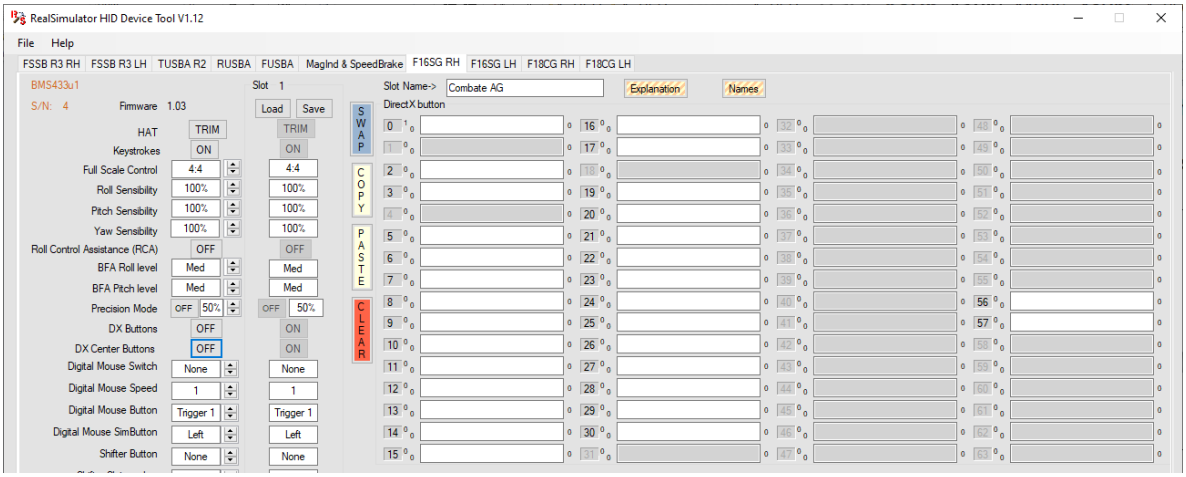
The F16SGRH has hat switches in TRIM, RW, NWS, TMS, DMS, CMS, PADLE and PINKY switches as you can see in the image below. Each hat switch has 5 positions: up, right, down, left and center, although some of them don't use the 5 positions. The PINKY button has only left, right and center and PADDLE only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

In the image on the right, you can see the DX buttons assigned to each hat switch position or combination thereof.

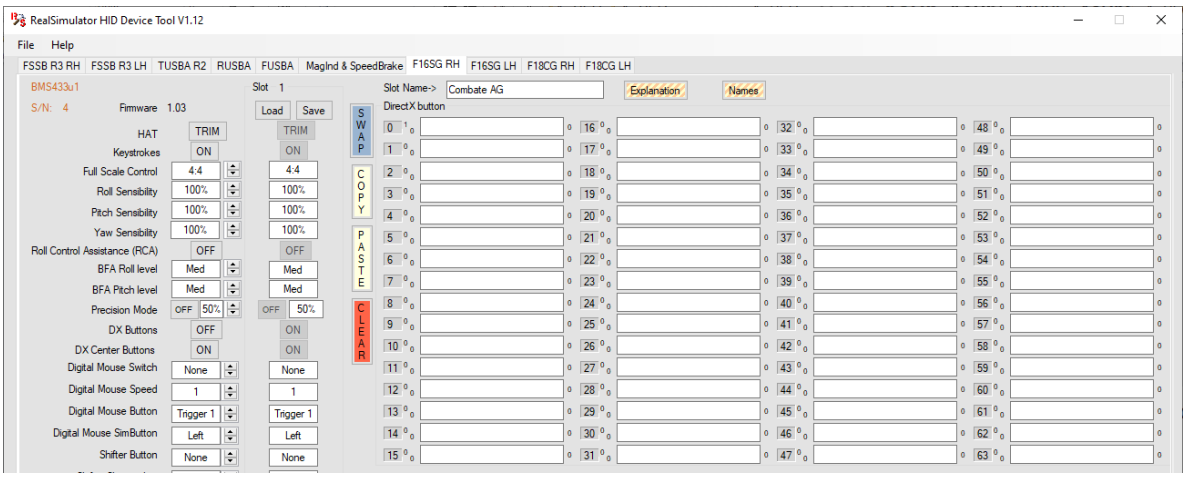


The **DX Button Centre** feature allows selecting the operation mode of the center position of hat switches. The selection is made through a button with four options: **OFF**, **ON**, **COMP** and **DClick**.

In **OFF** mode, the center position of hat switches is disabled. As you 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. That's why this mode is also named **Center removed** mode.

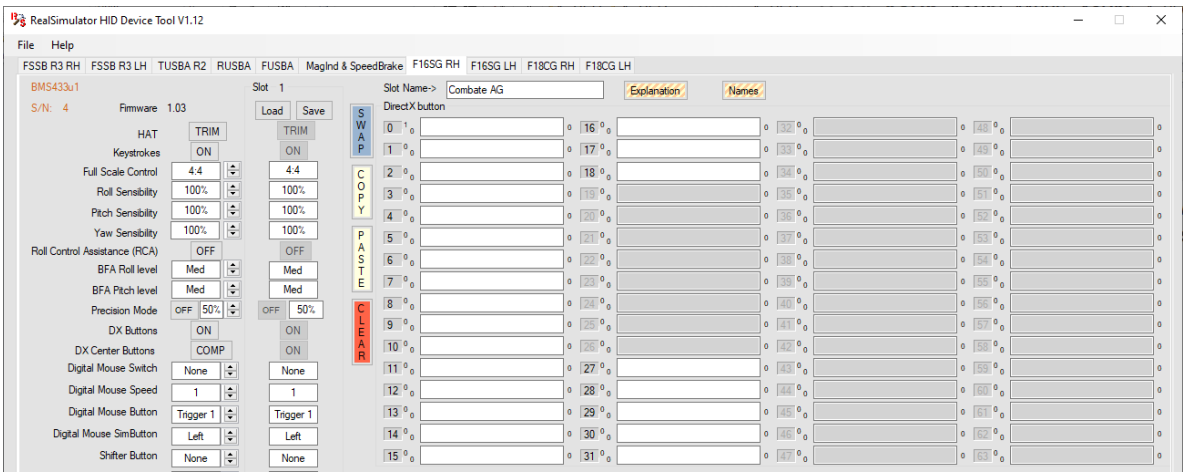


In **ON** mode, all center positions are enabled. This mode is also called **Native** mode because all assigned combinations are available.



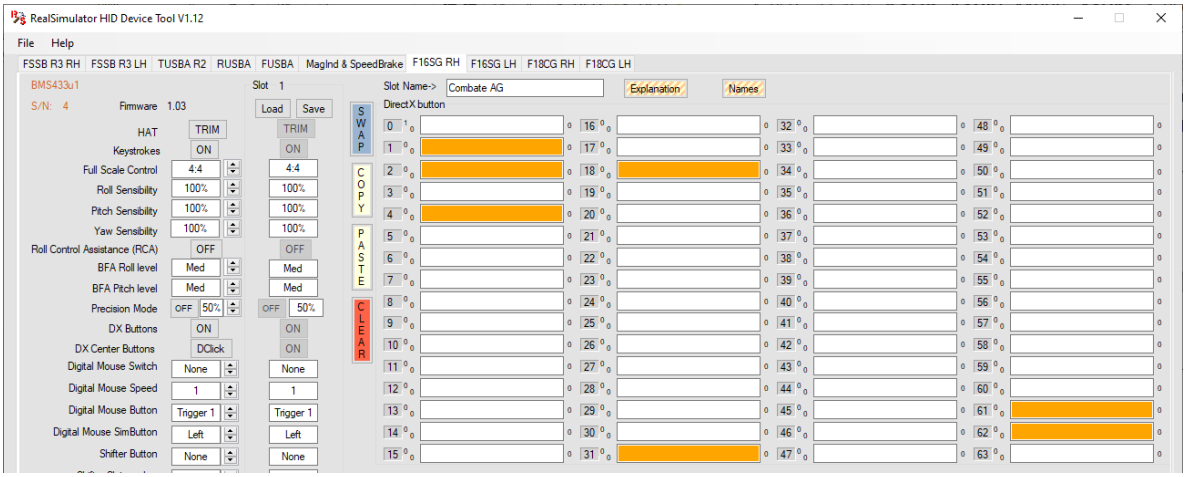
In **COMP** mode, all hat switches work as in the real stick, i.e. when you press the NWS switch only the DX button 1 is enabled, it does not matter in what direction you press the hat switch, only the DX button 1 is enabled.

This mode is also named Basic because you have the standard 19 DX buttons of compatible TM sticks, plus 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, you can see in orange color the center positions available only by double click.



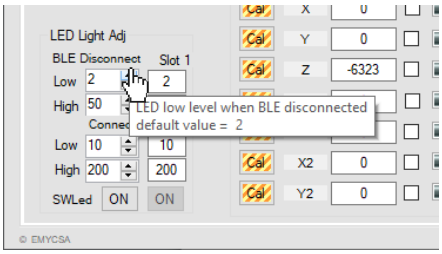
This mode corrects the problem of sending false DX buttons that happens in **ON** mode when you press a combined action of center + another position. For example, in **ON** mode, when you press to activate the DX button 48 (WR Center + Up), the DX buttons 1 and 48 are active. In DCLICK mode, with this sequence, you will only activate the DX button 48. To activate the DX button 1, you need to press the button with a double click and although you move the button with the center pressed, the status will not change.

So, we ***suggest using mainly this mode***.

ADJUSTABLE LEDS LIGHTING LEVEL

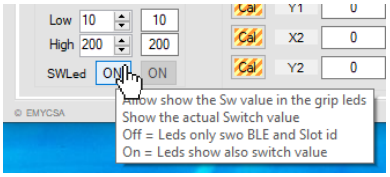
This feature allows adjusting the intensity level of three status LEDs, independently of the BLE status (connected or disconnected) and of the LED intensity (Low and High levels).

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



SWLED FUNCTION

With this feature, the three status LEDs of the grip show the switches 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.

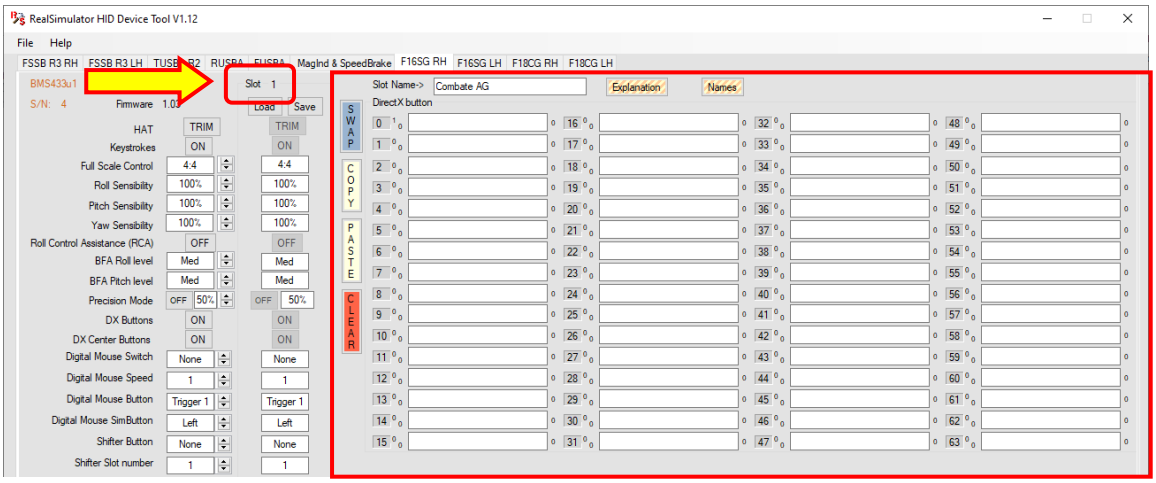
In **ON** mode, the status LEDs show also in binary mode the last hat switch position pressed; the possible binary codes are shown above. This mode allows testing and verifies if a switch is working properly.

Keystrokes and Explanations

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

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 you can configure the 64 keystrokes of each slot.

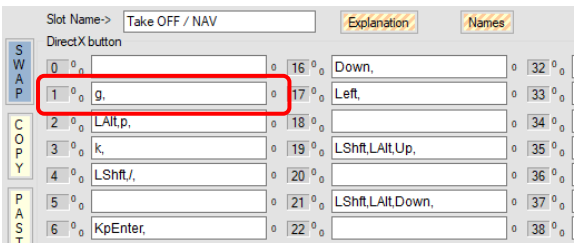
In the picture below, you can see in the squared area in red the controls allowing to configure and manipulate the keystrokes. The information shown changes in function of slot selected; in the picture, the Slot 1.



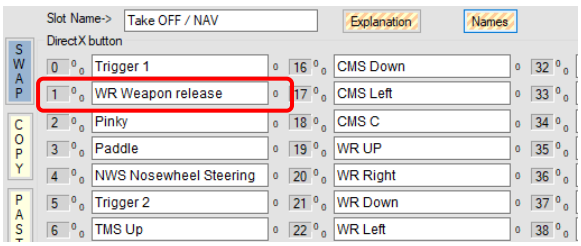
In the left upper corner of the squared area is the **Slot Name** field (“Combate AG” in the picture), where the user can write the slot name, so it will be easier to remember the slot function. To modify the content, click with the mouse on the text box and write the explanation you want.

NOTE: remember that each time you 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 it is saved to a file when press **File** > **Save**. As said in other sections of User Guide, remember to save in both parts regularly.

To the right of the **Slot Name** text box, you can find the “**Explanation/Keystrokes**” and “**Names**” buttons. The first one allows changing the keystrokes text 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.



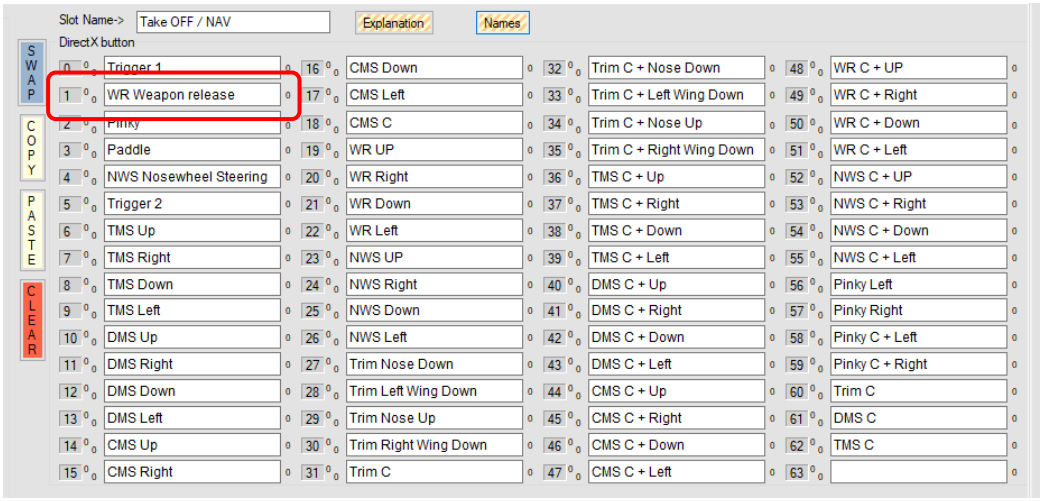
Keystrokes text box with Keystrokes info



Keystrokes text box with Explanation info

In the explanation information box, you have a place where you can describe the action keystroke assigned in the game.

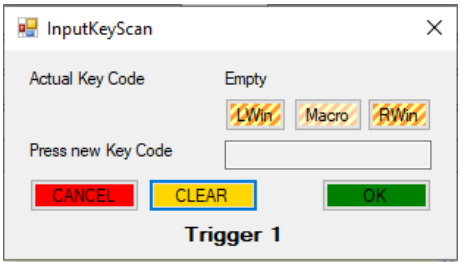
The second button, “**Names**”, allows, while it is pressed, to show the position where each DX button is placed on the stick. So, in an easy and quick way, you can check to which button you are assigning the keystroke.



So, for example, with the **DX button 1** that is enabled when you press the “**Weapon Release**” button, the stick will send the keystroke “**g**”, the key assigned to “**Gear Toggle**” in the simulation game.

To assign a keystroke to a button, first choose the slot where you want to place the keystroke action. In our example, we’ll use slot 1. Second, choose on the stick the button that will send the keystroke. For an easy location, press the chosen button and see what DX button is activated. In this example, we choose the DX button 0 (Trigger 1).

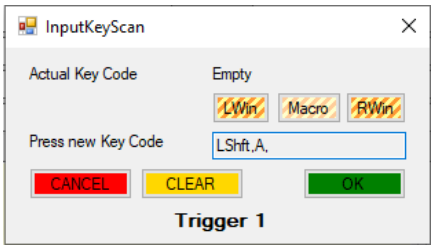
Next, with the button “**Explanation/Keystrokes**” in Explanation, click the text box assigned to the DX button lighted and a new window will be displayed to enter the key codes sequence.



In the window, you find information about the **Actual Key Code** assigned to the DX button, 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 they are necessary because some keyboards don’t have these keys, the button “**MACRO**” to assign macros (keystrokes sequence) previously filled and the text box where you can enter the key codes and in the lower area, the name of button written in bold.

The text box accepts up to five keys 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**. Although normally we only use one key, the software and files where you save the configuration can use two keys, the rest are ignored.

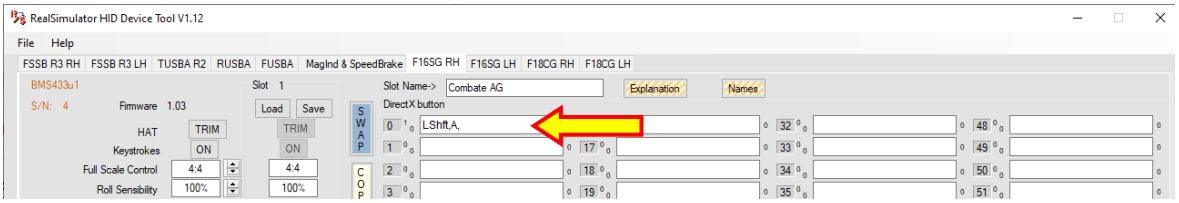
To enter the key codes, press the key sequence you want to compose the keystroke event and always maintain one key pressed, because the sequence is finished when you release the last key. In our example, we press the key “Left Shift” and the key “A”.



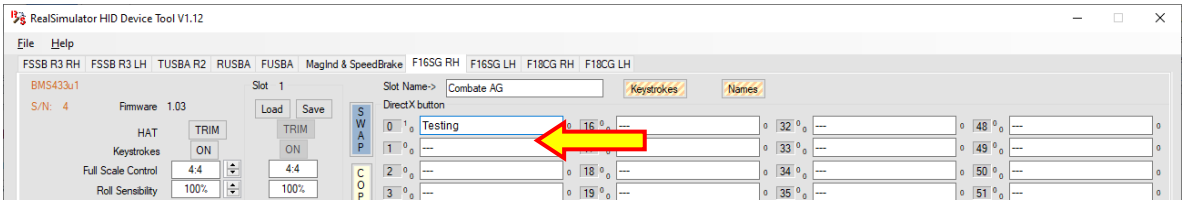
Finally, press “**OK**” to validate.

With some keypad code sequences, it can be necessary to first press the keypad key and the modifier afterwards.

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

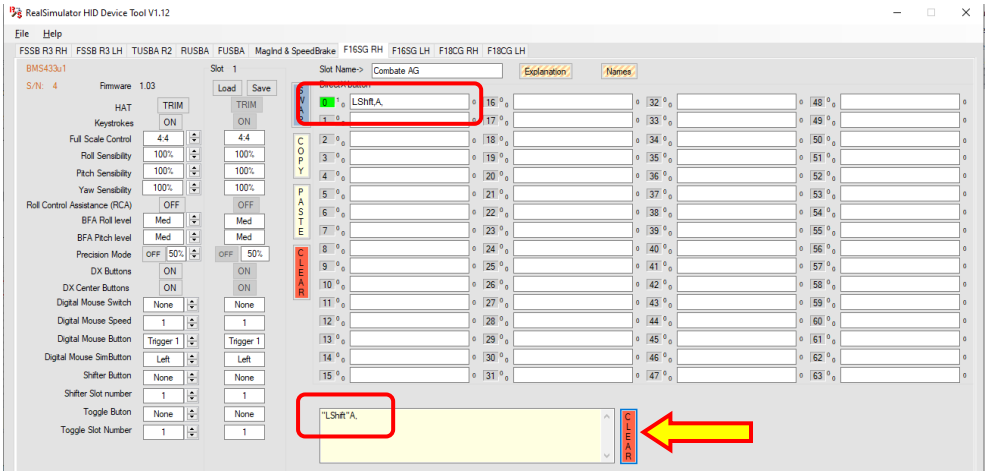


To enter the explanation of this keystroke, press the button “**Explanation/Keystrokes**” to change it to Keystrokes and then click the keystroke text box where you entered the key codes and write the comment you want. The explanation info is not necessary, it is only a help to remember the keystroke action.



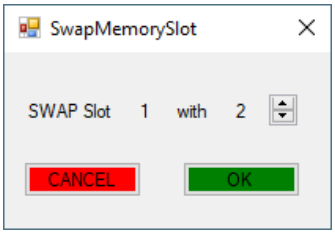
Finally, you can check the keystroke operation. For that, click the **CLEAR** button associated to the **Output** text box to clear its content and press the “**Trigger 1**” switch in the stick and check that the key codes entered are shown in the “**Output**” text box.

To send the keystrokes, it is necessary to have the **Keystrokes** button **ON**. If at any time the keystrokes are not sent to the **Output** text box, please check this.



To facilitate the manipulation and relocation of slots keystrokes information (no slot configuration), the application includes four buttons: SWAP, COPY, PASTE and CLEAR.

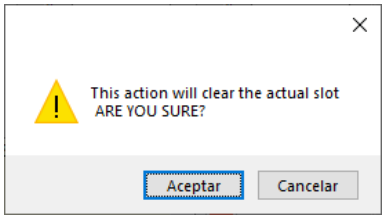
SWAP button allows, like its name says, to swap the actual slot configuration with another one. The selection of slots is made with a new window that is displayed after pressing the **SWAP** button.



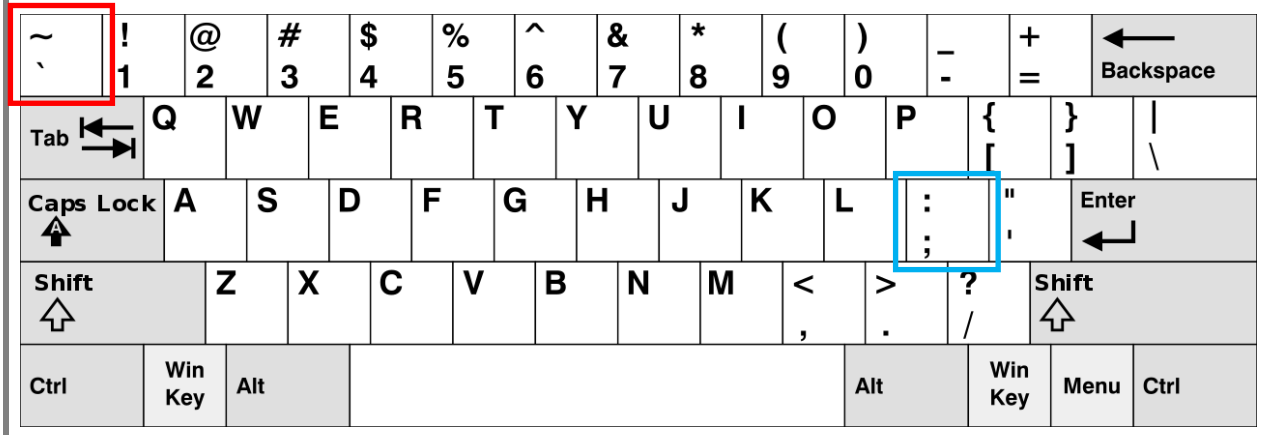
Clicking on the Up/Down indicator, select the chosen slot and after pressing "**OK**" the information is swapped.

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

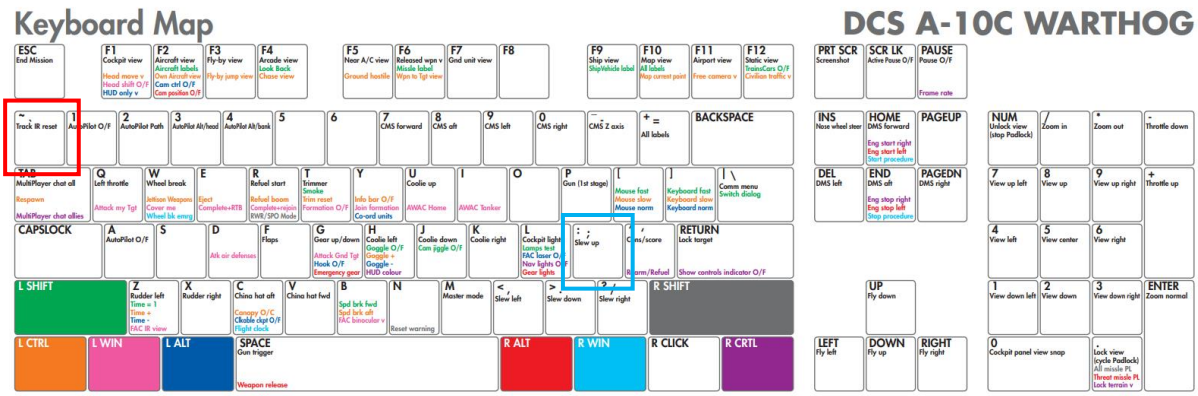
Finally, the **CLEAR** button clears all the keystrokes, explanations and slot name of the active slot. After pressing, a confirmation window is shown. If you click YES, all fields are cleared.



***IMPORTANT**: Key codes input in the **InputKeyScan** window is made according to the key map of USA keyboard, this is used in the games to assign actions to keys. Below is an image of this US key map.*



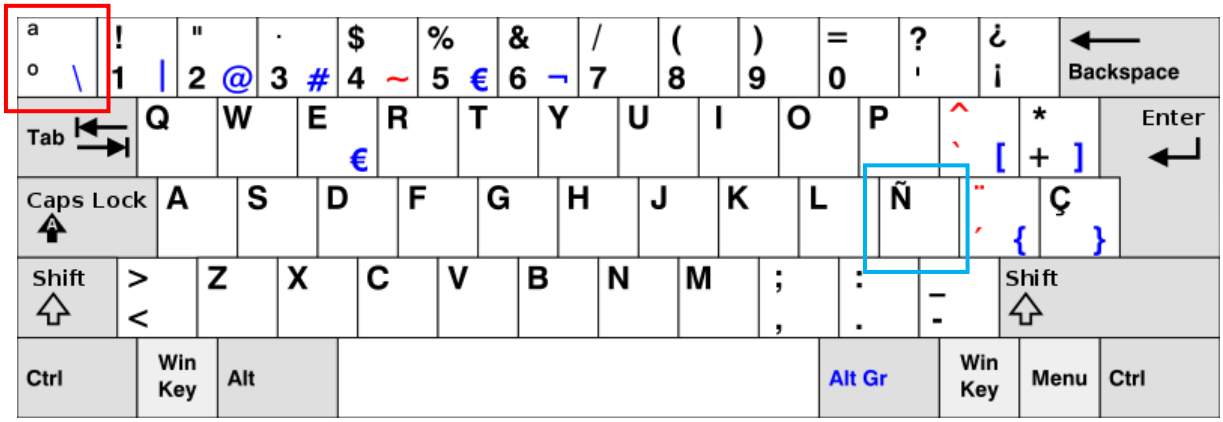
And here, as an example a keyboard map of DCS for the A-10 Warthog.



As you can check, both key maps have the same keyboard symbol layout, so users with this keyboard have the keys in the same place than the game keyboard map. But users from other countries with keyboards with other layouts will need to use the USA keyboard template to find the place of some keys.

For example, Spanish users with the keyboard layout below, when they want:

- to generate the "**Track IR reset**" action, they need to press the key "**º**" to generate the keystroke "**‘**".
- to generate the "**Slew up**" action, they need to press the key "**Ñ**" to generate the keystroke "**;**" (semicolon).



In conclusion, all you need for a correct operation is the keyboard map of the game or a USA keyboard layout printed and you can press on your keyboard the key of the game key map although it is different. Here you have a link to download and print the USA keyboard layout:

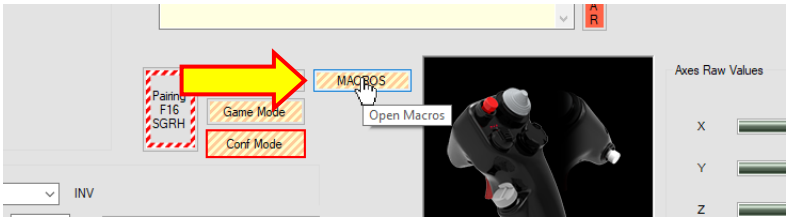
https://en.wikipedia.org/wiki/British_and_American_keyboards#/media/File:KB_United_States-NoAltGr.svg

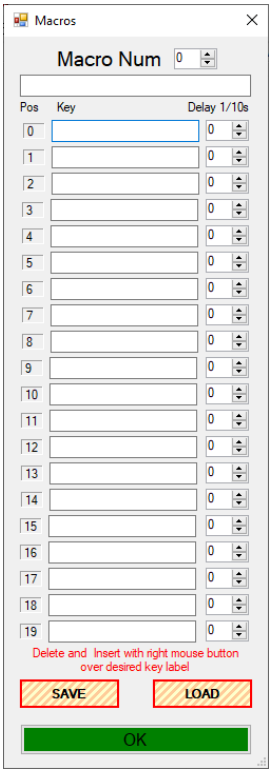
Macros

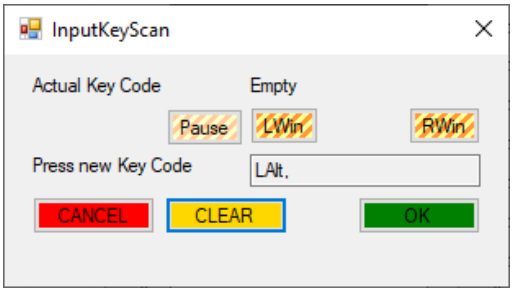
Macros are sequences of keystrokes and delays that can be activated to help with repetitive tasks or to replay sequences that are long or difficult to run.

In the previous section, we have already mentioned the macro function when we spoke about the **MACRO** button in the **Input Key Scan** window. There you could only assign a macro to one DX button. Now we will see the complete sequence with the macros creation, assignation and execution.

To create or edit a macro, press the button **MACRO** and a new window will be shown.







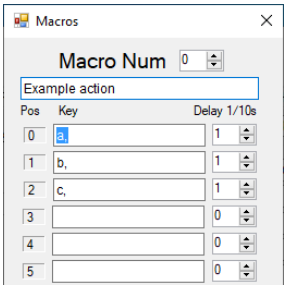
The system allows configuring up to a maximum of 10 macros (0 to 9) selectable with the numeric Up/Down control **Macro Num.** Below the numeric control, there is a text box where the user can write a title to easily remember the macro function.

Each macro can accept 20 configurable events and each event can use a **Key code** and a **Delay** in 1/10 seconds during which the keystroke will be sent.

Unlike the key codes entered in the main window for each DirectX button, here each text box of key codes can store only 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**. Also the key code text box can store a **PAUSE**; this allows you to configure standby times without sending keystrokes.

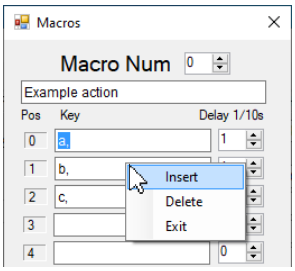
The macro sequence starts when you press and release (with the release action) the button to which you assigned the macro and finishes when the system finds the first key code text box empty.

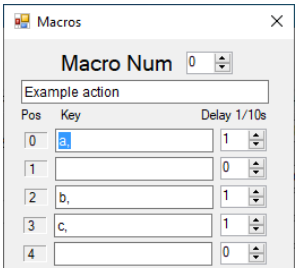
Let's see how this works with an example. Suppose you want to create a macro to perform an "Example action", assigned to the macro number "0" and that consists of sending keystrokes "A", "B" and "C" and between first and second event the simulator needs at least 2 seconds to execute the "A" action. The macro configuration would be the following:



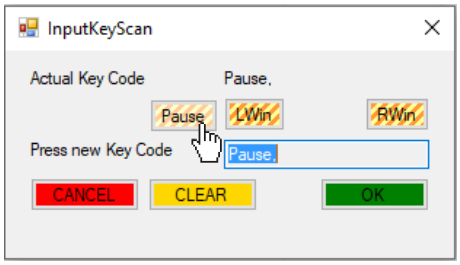
You have assigned a time of 1/10 seconds as time to send each keystroke. Also you can see you forgot to include the time of 2 seconds the simulator needs to execute the keystroke “A”.

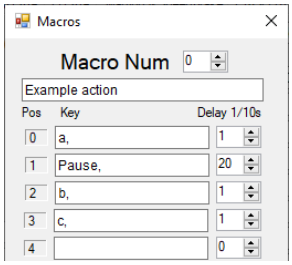
To solve this problem, you can use the extra actions assigned to the right mouse button: Insert, Delete and Exit. So, put the mouse over the text box of key code 1, where the “B” key is and after right-clicking, select the Insert option.





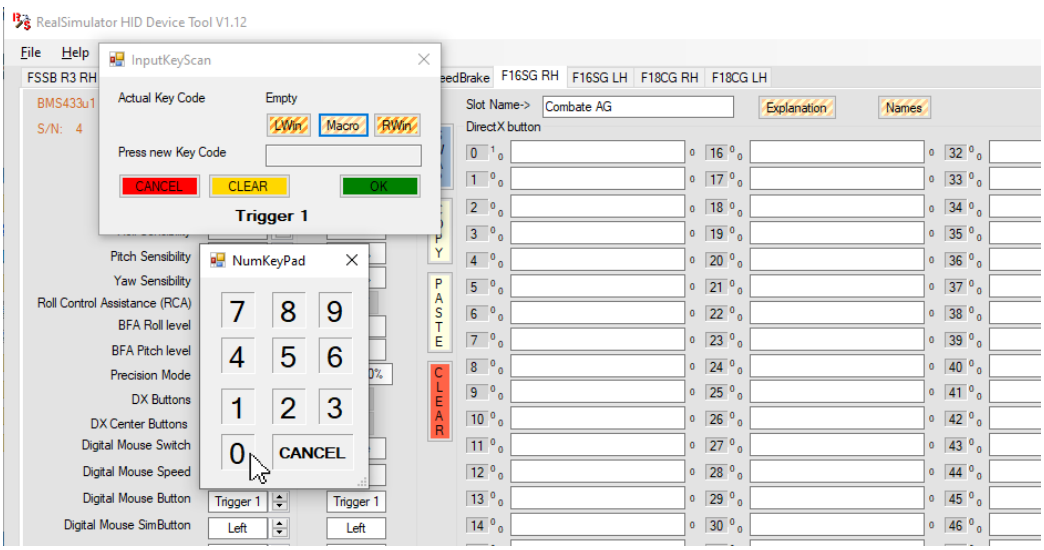
Now press the text box to enter the PAUSE, and set the delay time to 20.



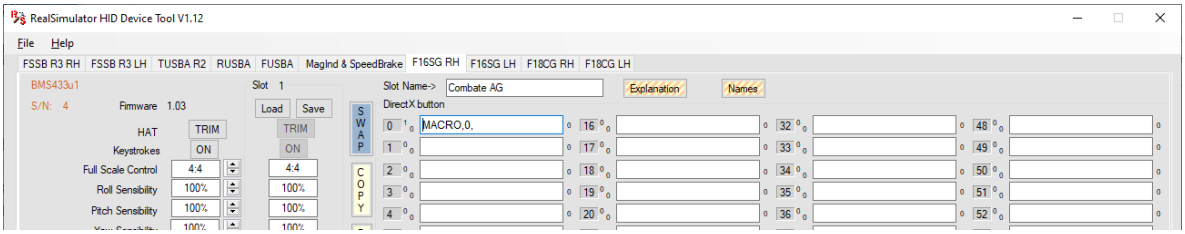


With the macro configuration finished, it is time to test it. For this, you can directly close the window because the system saves the configuration automatically.

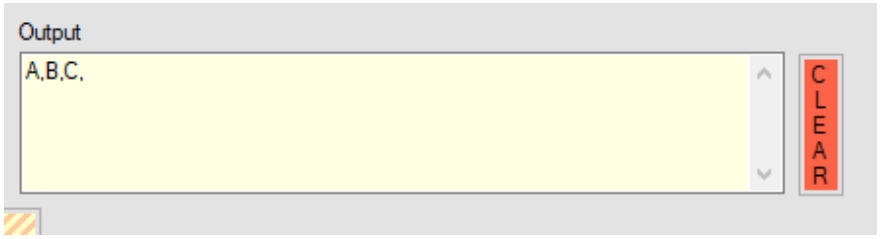
To test it, assign the macro (remember macro number 0) to the Trigger 1 button. For that, click over the text box of DX button 0 and the InputKeyScan window appears where you can press the **Macro** button. A new window with numbers (named **NumKeyPad**) is shown to enter the macro number (number 0).

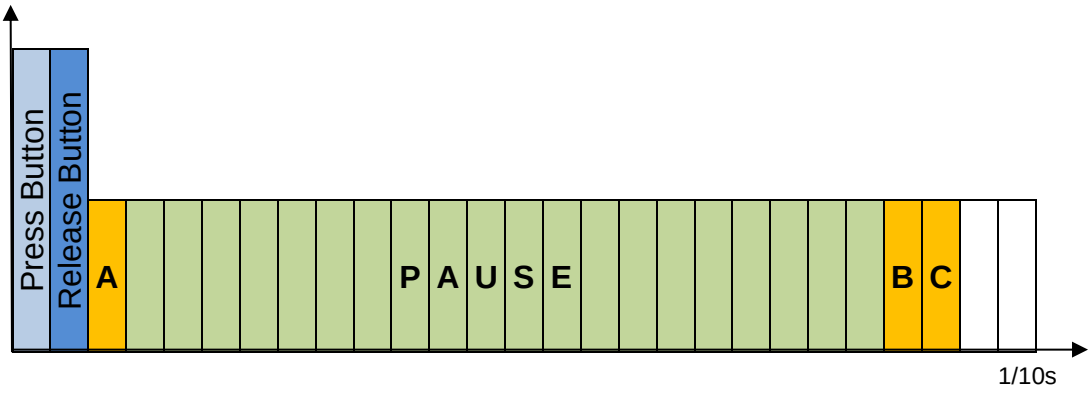


When you click “0”, all windows are closed automatically and the text box assigns the “MACRO,0”, as you can see in the picture below.

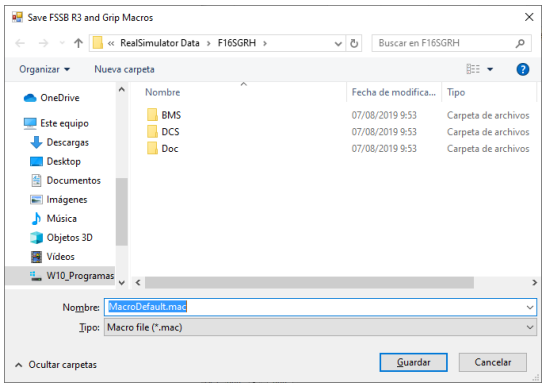


Now, it is time to test the macro. For that, press Trigger 1 (DX button 0) and verify the sequence and times in the output window.

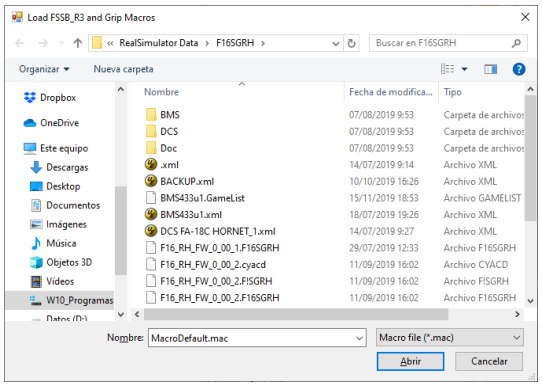




Finally, the Macros window has two buttons identified as **SAVE** and **LOAD,** to save and load the macros configuration to/from a “.mac” file. This allows you to reuse your macro configurations.



Save file dialog



Load file dialog

DX events and Keystrokes generation by Pulses

This new feature aims to generate events in a cadent manner following the ON/OFF time pattern defined by the user while the button is pressed. It allows to automatically send pulses instead of an ON signal while the button is pressed.

As a result of this feature, the DX button state will be pulsed and if you fill the key code text box with some key, the keystrokes will also be sent as pulsed with the same

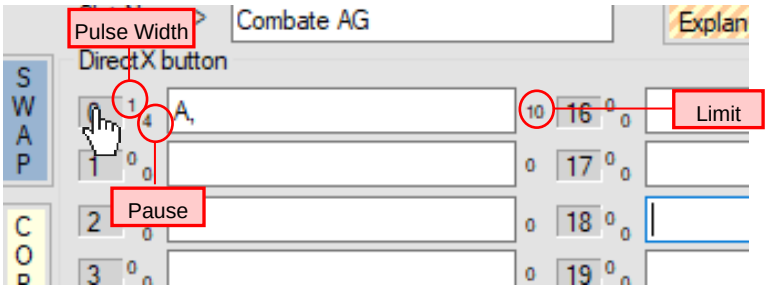
cadence that the DX button.

An immediate functionality for this feature could be turning a rotary switch in the simulator. Without this feature, you would have to press intermittently the button to generate the successive pulses for each rotary step, but with this feature you only need to press the button and release it when the rotary is in the desired position.

To configure it, press on the DirectX button that you want to configure and a configuration window is shown. There, we will configure the three following parameters:

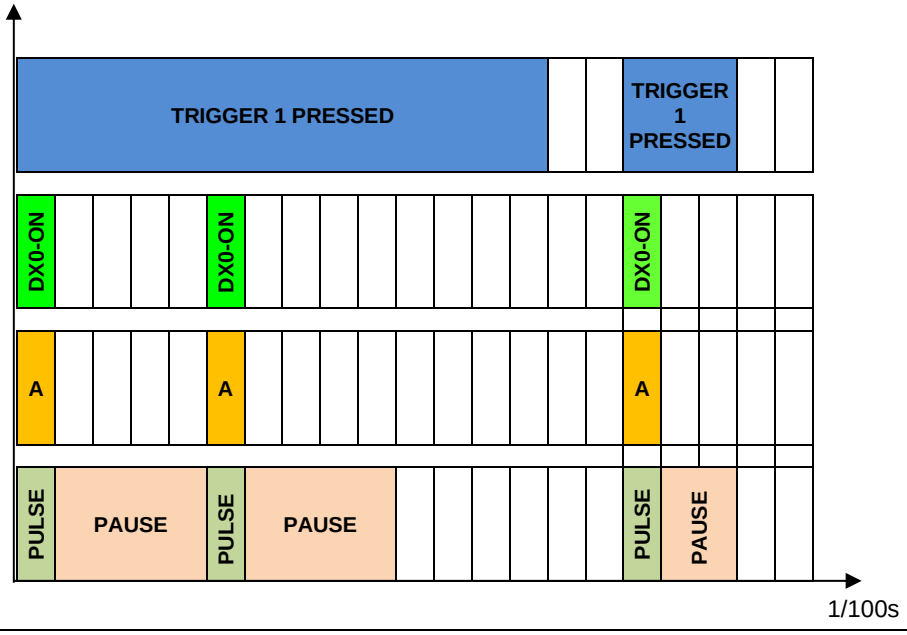
- **Pulse Width**: time in 1/100 seconds that the DX button state will be ON. Values go from 0 to 100.
- **Pause**: time in 1/100 seconds that the DX button state will be OFF after the ON state. Values go from 0 to 100.
- **Limit**: maximum time in 1/100 seconds that the sequence will be repeated, as long as the button is pressed. If value “0”, it will be repeated until the button is released. Values go from 0 to 100.

This DX button configuration is independent for every slot, i.e. you can configure a DX button as a pulse system in a particular slot and as a standard button in another slot.



As you see in the previous images, we have configured the Direct X button “0” of slot number “1” to send up to a maximum of two pulses of 0,01s, with a spacing of 0,04s, if the button is pressed almost 0,1 second (10 x 1/100 seconds). If we release the button before finishing the sequence, it is cancelled.

Let us see the sequence when we press Trigger 1 (button 0) more than 0,1 second and the sequence when we release before the time limit:



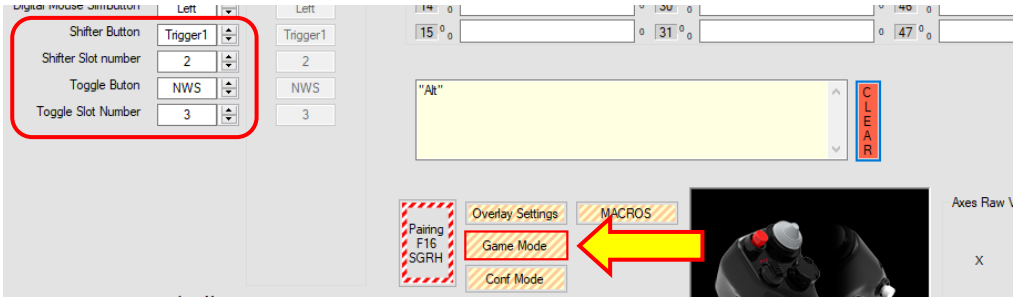
Shifter and Toggle

These two new functions allow to change the active slot to a predefined slot through an activation of a previously assigned button, without the use of the rotary switch. To do this, there are two modes: **Shifter** and **Toggle**.

In the **Shifter** mode, the new slot will be active only while the associated button is pressed. When it is released, the slot automatically returns to the previous slot.

In the **Toggle** mode, the new slot is active from the moment the associated button is pressed until the associated button is pressed again. In this mode, if, while the new slot is active, the user manually changes the slot with the rotary switch, the toggle function is cancelled.

As the execution of these functions entails the change of slots, **it is absolutely necessary to change the mode to Game mode** (you can find more information about this mode in **Connecting RS_HID_DEV_TOOL and F16SGRH** section on page 32).

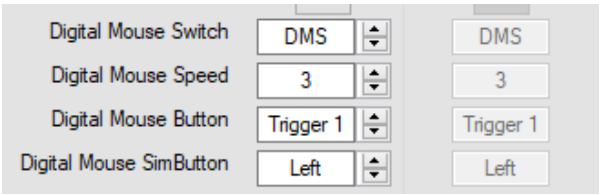


As you can see in the previous image each function only has two settings to configure it:

- The **Shifter/Toggle Button**: here, the user must select through the up/down selector the associated button that will change the slot. We can select as launcher button between: **None** (if you don't want to use the feature), **Trigger1**, **WR**, **Pinky**, **Paddle**, **NWS** and **Trigger2**.
- The **Shifter/Toggle Slot Number**: here the user must select through the up/down selector the new slot number (1 – 8).

Digital Mouse

A new feature has been added to the device, a digital mouse. It allows moving the cursor in the simulation game to execute actions and improve the VR experience.



As we can see in the previous image, this feature is configured by four settings:

- **Digital Mouse Switch**: it allows to choose a 5-direction switch to move the mouse. You can select the switch between: **None** (if you don't want mouse), **TMS**, **DMS**, **CMS**, **WR**, **NWS**, **Trim**, and the previous switches with the center pressed: **CTrim**, **CTMS**, **CDMS**, **CCMS**, **CWR**, **CNWS**.

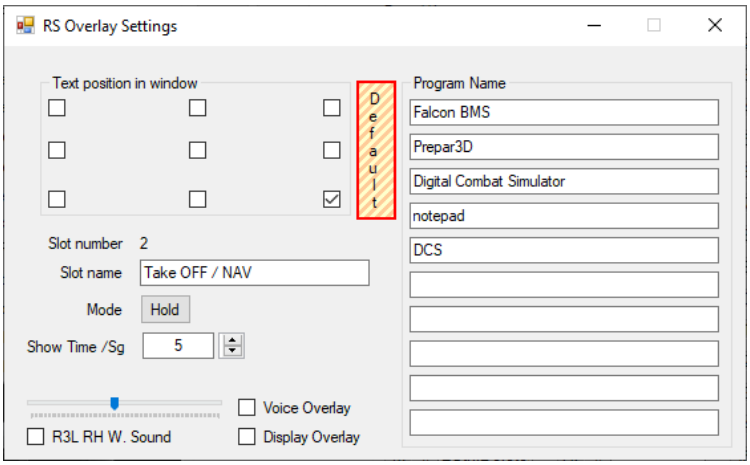
- **Digital Mouse Speed**: to select the mouse velocity in the range from 1 to 16.
- **Digital Mouse Button**: to select the button you want to use as a mouse button. You can choose between: **Trigger 1**, **WR**, **Pinky**, **Paddle**, **NWS**, **Trigger 2**, **CCMS**, **CTRIM**, **CDMS**, **CTMS**.
- **Digital Mouse SimButton**: to assign the mouse click button. You can choose between: **Left**, **Right** and **Middle**.

Overlay Settings

A new feature has been implemented in the RS_HID_DEV_TOOL, the possibility to show the name of the active slot over the application window that you want and/or hear the slot name through speech synthesis. This allows you to know at any given time which slot you 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 you can access 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 working modes: **Configuration mode** and **Game mode**. ***We suggest to change the mode to Game*** *before clicking the* ***Overlay Setting*** *button*, so everything will work properly and we won't need to return to the main window to change the mode.

After clicking on the **Overlay Settings** button, a new window appears:

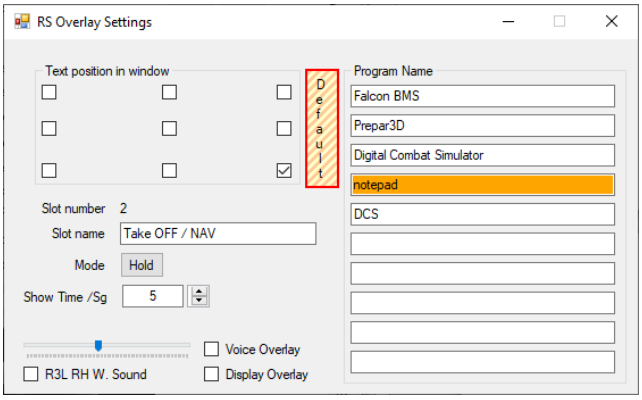


The window allows to configure the next settings:

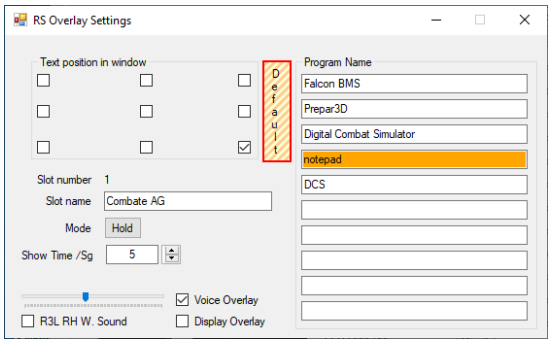
- **Text position in window**: 9 check boxes allow to select the position where you want the slot name to appear (Up left, Up centre, Up right, ……, Down right).
- **Default:** button to set the Program Name list to default names.
- **Program name**: a list of 10 text boxes to be filled by the user with the program names you want to use with the overlay function. 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

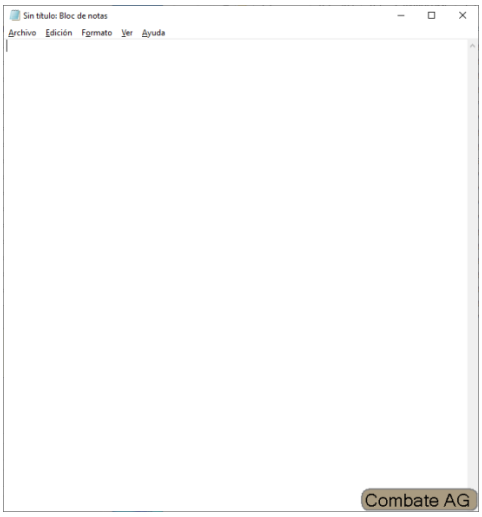
"notepad" program is shown as "Block de notas" in the Task Manager and in the program window.

When the RS_HID_DEV_TOOL 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 as working, its text box colour changes from background color to orange as you can see in the picture below with the notepad application.



- **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 with the numeric up/down selector associated.
- **Display Overlay:** this check box enables/disables the overlay image over the program window when the program from the list is working and it is detected. 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 with 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. The tone volume is controlled with the upper track bar.

This feature is not associated with the program detection like the Display Overlay. If it is enabled, you will hear the sound on the speakers or headset each time you reach a warning or alarm level, and it is reproduced independently of the sound of R3, controlled by the **Sound** setting.

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 minimise the window to have full access to the game. With this action, the main window of RS_HID_DEV_TOOL will also be automatically minimised.

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.

Load, Save and Print a .xml configuration file

So far, we have seen how to configure the grip slots, but we have not talked about what you can do when the configurations are done.

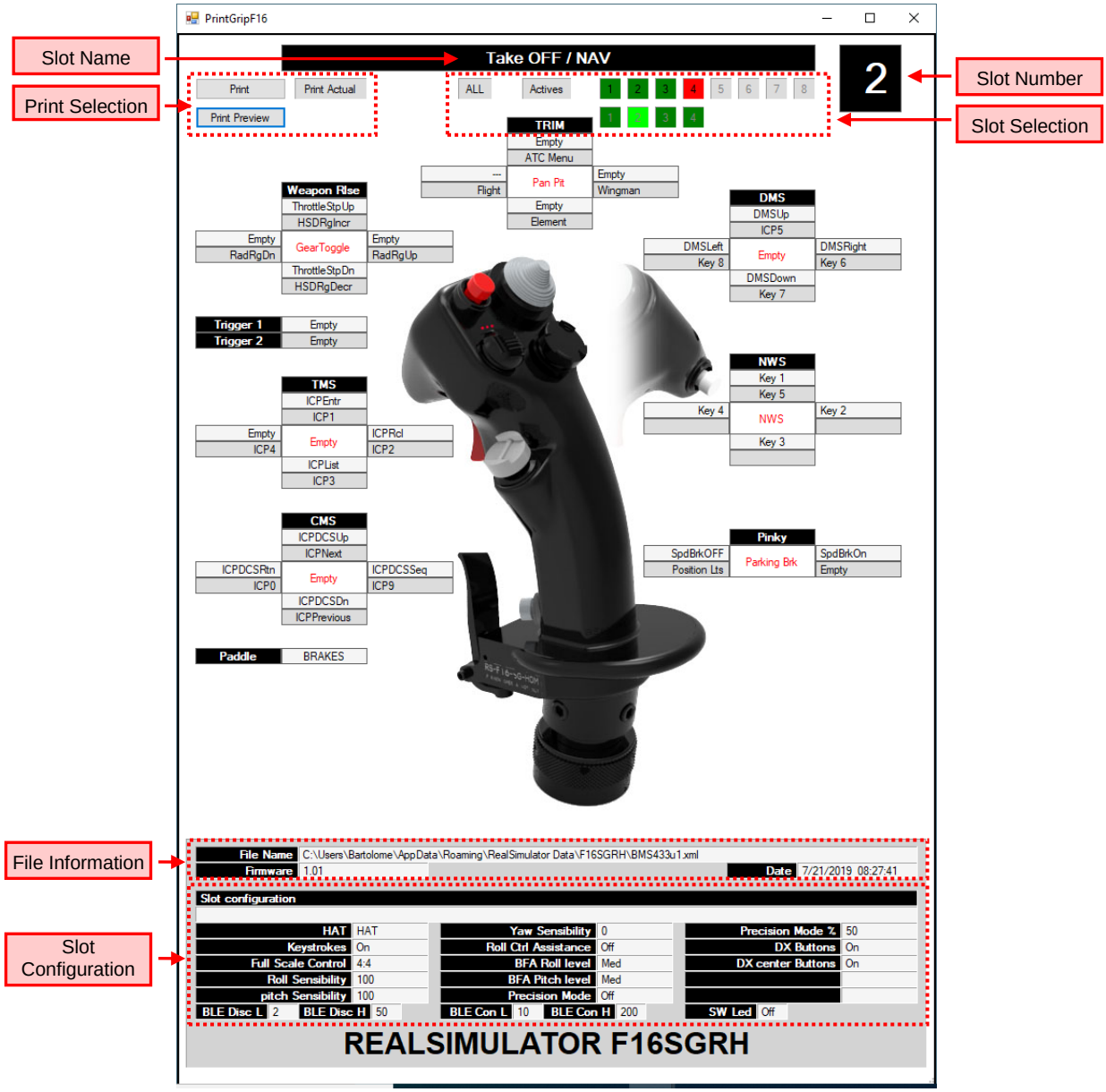
Usually, you can load configurations saved previously or copied from other users, and you will also need to save the configurations when finished or while modifying. To do this, the application offers in the upper menu bar the next **File** actions:

- **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 you only want to run some tests, don't save it on flash, so you will extend your stick life.

Another option of the application is the ability to print a template of F16SGRH with the explanations for an easy and quick location of actions in each slot.

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



There, in the upper part, you can find the Slot Name and Slot number of the slot shown and in the lower part the File Information and the Slot Configuration.

Also, in the upper part, you can see the Print Selection area that enables you to print the slot shown, using the button "**Print Actual**" or to print the slots selected in the Slot Selection with the "**Print**" button.

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

In the upper line, the 8 slots are shown, in green colour for the actives, in grey colour for the empty slots and in red colour for the slots manually disabled with a click in the box number.

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

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

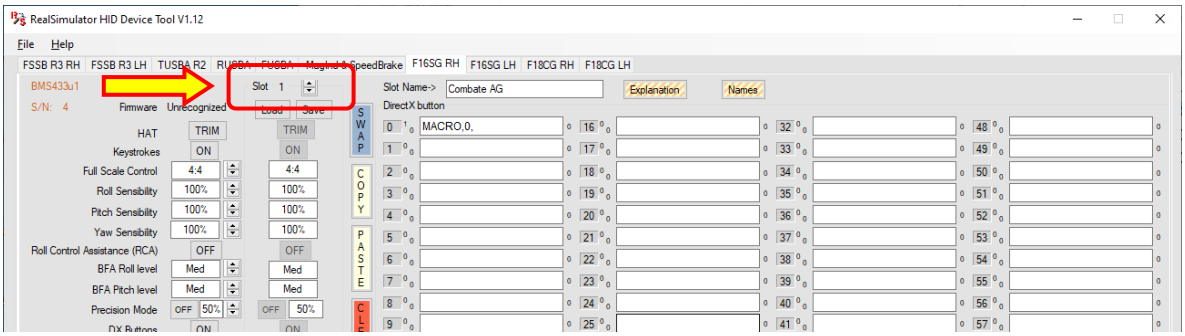
To print a selection of slots, first click the **ALL** or the **Active** button if you want to print a selection of actives and no active slots or only active slots. Disable the undesired slots by clicking on them to change to the red colour. Finally, press the **Print** button.

Working offline with the F16SGRH

The application allows to work with the slots configuration without the stick connected. It is the so-called "**offline**" mode.

All the previous explanations are valid, with the exception that now that there is no stick connected, the slots configuration can't be loaded or saved in it. It is only loaded and saved in the computer, in the .xml file.

When you launch the RS_HID_DEV_TOOL and click the F16SGRH tab, the application will show the image below.

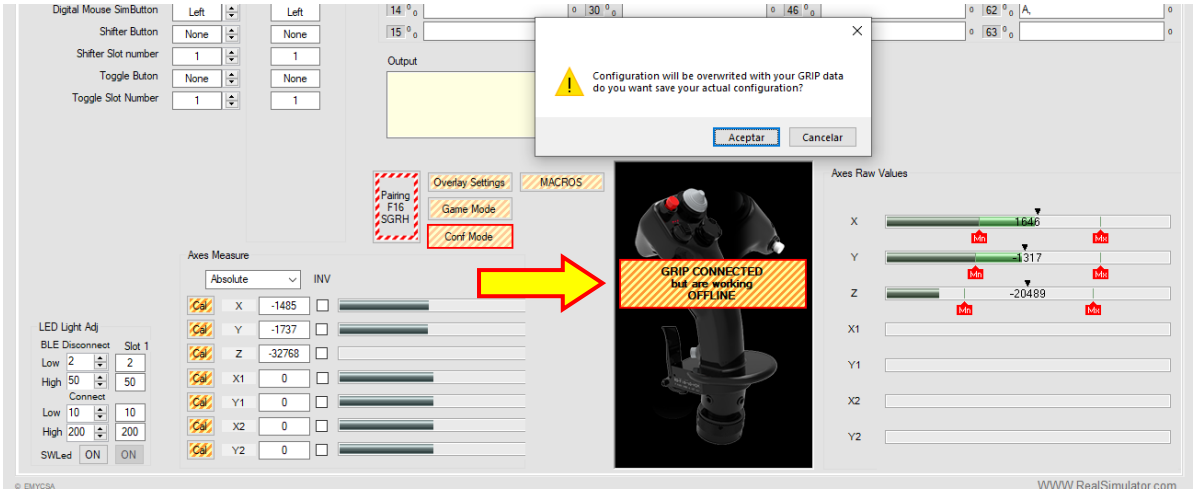


Only a new control is present, an Up/Down indicator to replace the rotary switch and to allow changing the slot in use.

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

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

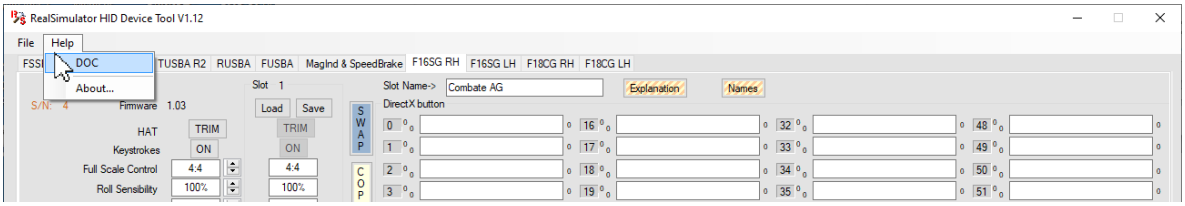
If the stick is connected before you save the actual configuration, you will receive an alert to save the offline configuration before the stick configuration is loaded.



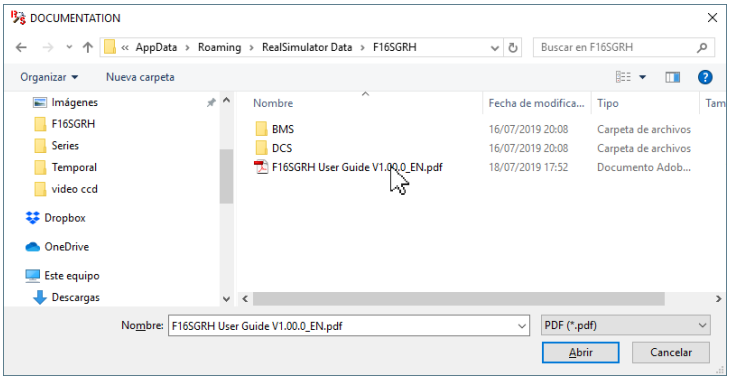
Click OK to accept and save it with the name you want. After this, the stick configuration will be loaded and all will work normally.

Documentation

The application 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 the AppData folder where the user guide is stored.



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.

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 with the FSSB-R3 it achieves the greatest integration, offering 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 features. 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 Warthog
- *"MJF_FW_F16_SG_2_00_x.FSSB_R3"* for the FSSB-R3 Lighting

Additionally and to fix the issues some customers have reported, mentioning loss of connection with the Bluetooth signal when they are playing, we have developed a new firmware version for the FSSB-R3 that allows you to work 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.

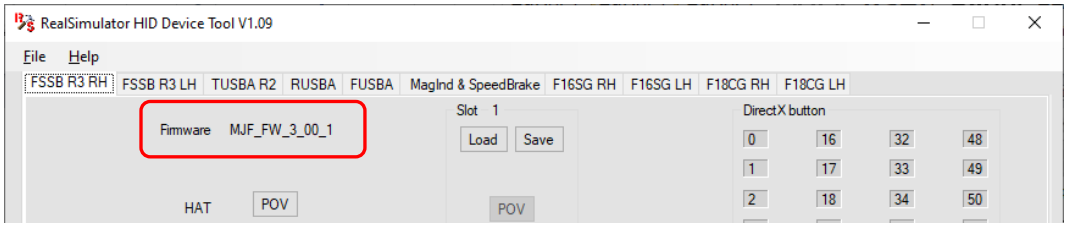
This new firmware is identified as:

- *"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.

*You can find more detailed information about the F16SGRH-CE (and F16SGRH) and the FSSB-R3 and FSSB-R3L in the **FSSB-R3 User Guide**.*

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.

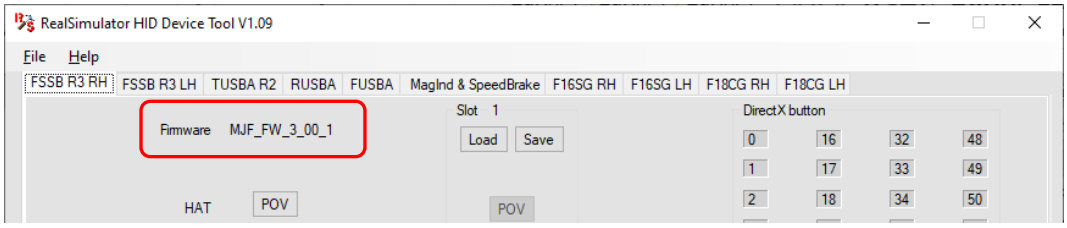


Remember this when you go to choose a firmware to install in your R3. You must pay special attention in the next number:

- Num. "**1**": it is the firmware for the FSSB-R3 (Warthog), as for example:
  - *MJF_FW_**1**_06_2.FSSB_R3*: firmware to work with Thrustmaster compatible grips like Cougar and Warthog.
  - *MJF_FW_F16_SG_**1**_00_1.FSSB_R3*: firmware to work with the F16SGRH.
- Num. "**2**": it is the firmware for the FSSB-R3 Lighting, as for example:
  - *MJF_FW_**2**_00_2.FSSB_R3*: firmware to work with Thrustmaster compatible grips like Cougar and Warthog.
  - *MJF_FW_F16_SG_**2**_00_1.FSSB_R3*: firmware to work with the F16SGRH but it doesn't include a lot of functionalities like the ones included in the num. 3. This firmware is deprecated and is replaced for the next version.
- Num. "**3**": it is the 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 FSSB-R3 Lighting owner, you must install this firmware to enjoy all new features.

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.

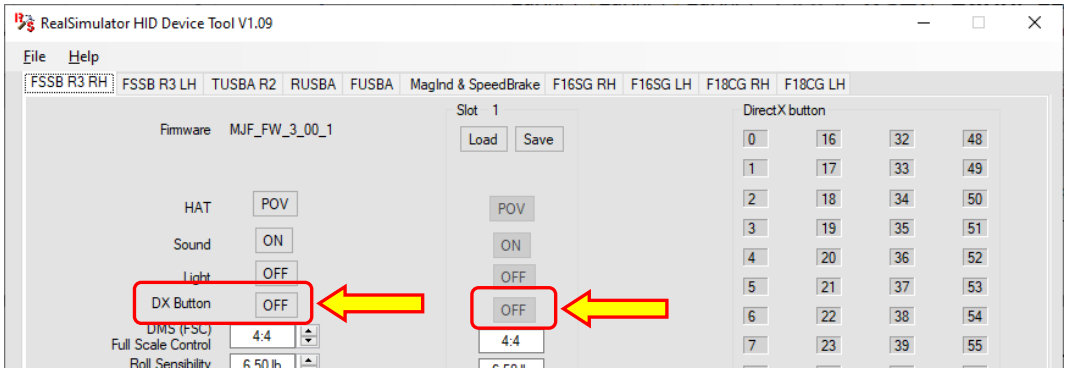


Mainly these versions increase the number the slots from 4 to 8, just like in the F16SGRH, and remove the SMM because the change of settings is done by the change of slots, which is made with the rotary switch of F16SGRH. When the rotary switch changes the slot in use, it changes simultaneously in both devices, always maintaining both devices synchronised.

Although FSSB-R3 users are used to have 4 programmable configurations and to change individual settings in the configuration with the SMM, with this new firmware the concept is now different. The user has 8 configurable and independent slots, which allows configuring the settings for 8 different flight situations. For example, the user can assign one slot for an A-A combat, another slot for refueling, another for NAV, another for A-G, etc. up to 8 different situations. This is equivalent to having 8 different joysticks, each one fit for a different situation and the change between them is done with a single thumb movement turning the rotary switch.

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

When the FSSB-R3 (<u>not FSBB-R3 Lighting</u>) is used with the F16SGRH Collector's Edition, something important should be kept in mind to avoid duplication in the generation of DX buttons: when both devices are connected, there is a DX buttons information duplication (64 in the FSSB-R3 and the same 64 in the F16SGRH), **WE SUGGEST setting the "DX buttons" of FSSB-R3 to OFF in the 8 slots**, so they will be only active in the F16SGRH-CE and you will be able to configure easily the DX and Keystrokes events.



To cut a long story short, the way to go is having two high precision X/Y axes with all their configuration settings in the FSSB-R3 and all the DX buttons and Keystrokes events in the F16SGRH.

Before starting to explain the slot settings, let me indicate that with this firmware installed, the SMM launcher doesn't exit any longer. There is a new sequence to do the **NPA (Neutral Position Adjustment):** "**Trigger 1**" + "**NWS center**".

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

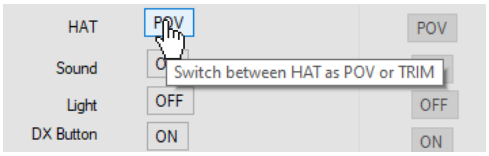
- HAT as POV or TRIM.
- Sound ON/OFF
- Light ON/OFF
- DX Buttons ON/OFF.
- Full Scale Control.
- Roll Sensitivity.
- NASA Roll Sensitivity.
- Pitch Sensitivity.

- NASA Pitch Sensitivity.
- BFA Roll level.
- BFA Pitch level.
- Warning Sound Level

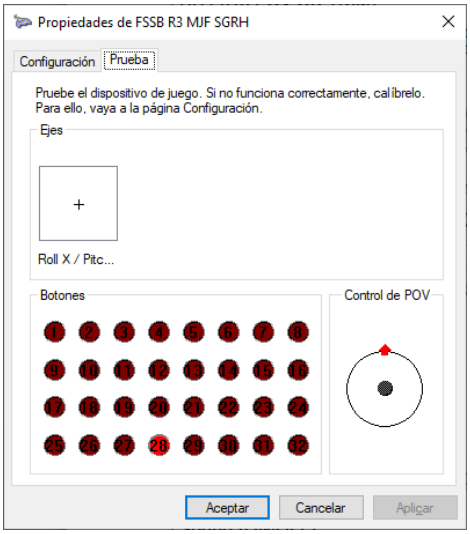
Although you can find information about the previous settings in the FSSB-R3 User Guide, we will explain in detail each setting below.

HAT (AS POV OR TRIM)

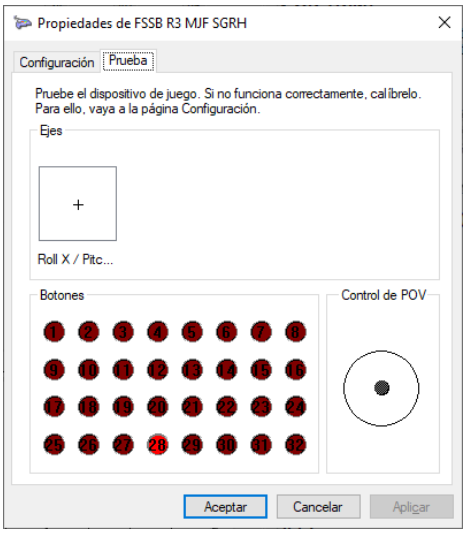
This button allows configuring the TRIM hat switch as POV (Point Of View) switch or TRIM switch. This allows the HAT to control the views in POV mode or submit the information to 4 HID buttons for use as TRIM, which is its function in real life.



These DX buttons are the 27 (up), 28 (right), 29 (down) and 30 (Left).



Hat TRIM switch Up in POV mode

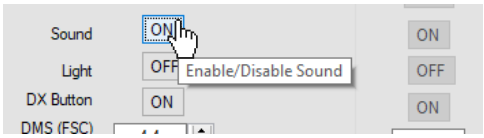


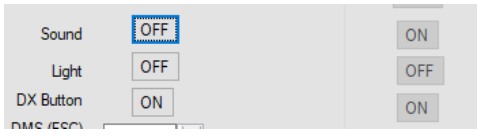
Hat TRIM switch Up in TRIM mode

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.



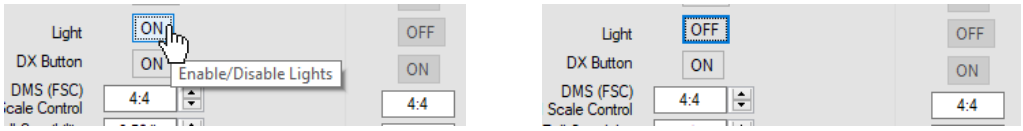


LIGHT (ON/OFF)

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

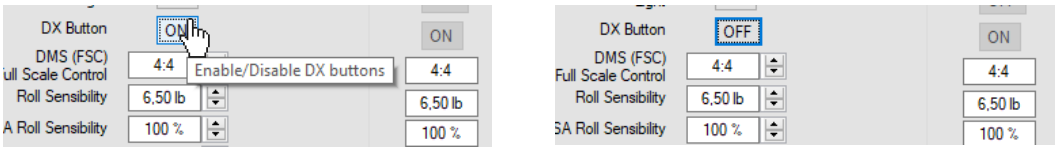
This feature is only available in the FSSB-R3 Lighting. In the FSSB-R3 it does not have

functionality.



DX BUTTON (ON/OFF)

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

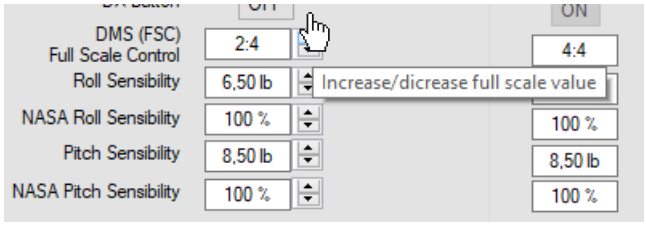


As we mentioned above, to avoid duplicities with the F16SGRH DX buttons, **we suggest setting to OFF the "DX buttons" of FSSB-R3 in the 8 slots**, so they will be only actives in the F16SGRH where you will be able easily to configure the DX and Keystrokes events.

FULL SCALE CONTROL (FSC)

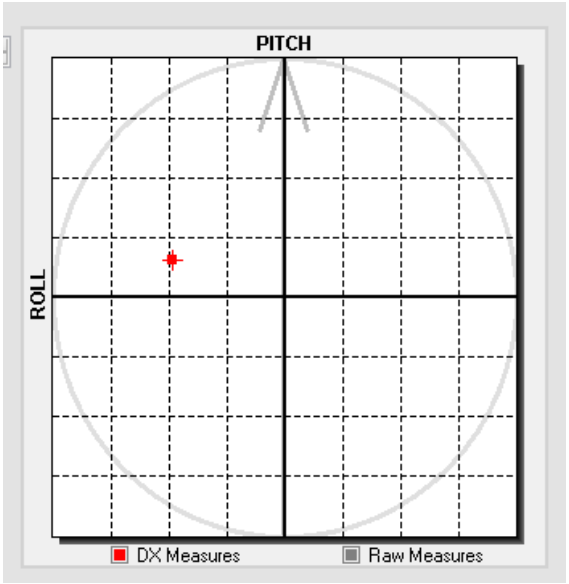
This control allows adjusting the full scale of Roll and pitching axes in four levels. The indication is shown numerically in a text box and the selection is done with an Up/Down indicator.

- 4:4. Full range is 100%
- 3:4. Full range is 75%
- 2:4. Full range is 50%
- 1:3. Full range is 25%

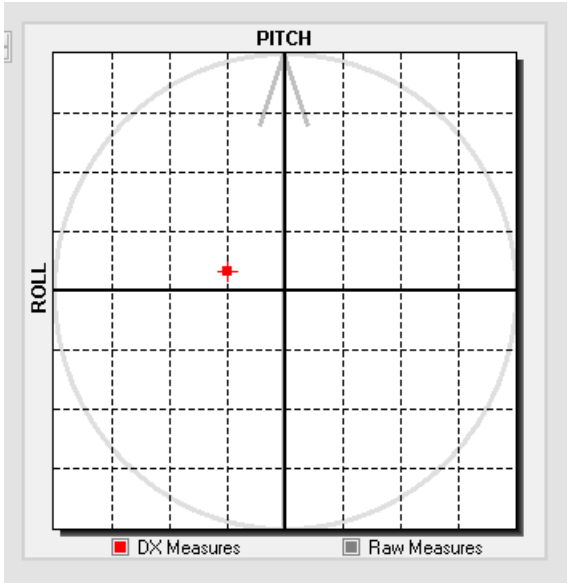


This allows configuring different flight controls response level for the same input signal of force.

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



FSC = 4:4

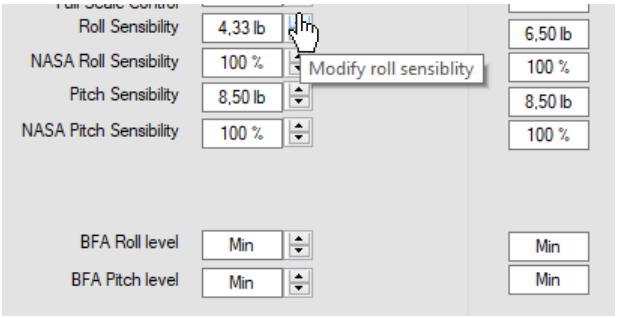


FSC = 2:4

ROLL SENSITIVITY

This control allows to change the Roll axis sensitivity in discrete steps from 1.30 lb. to 13.00 lb. The step value is not fixed; it is variable in function of sensitivity value. It goes from small values of 0,025 lb. in high sensitivity until big values of 2 lb. in low sensitivity.

The indication is shown numerically in a text box and the selection is done with an Up/Down indicator.

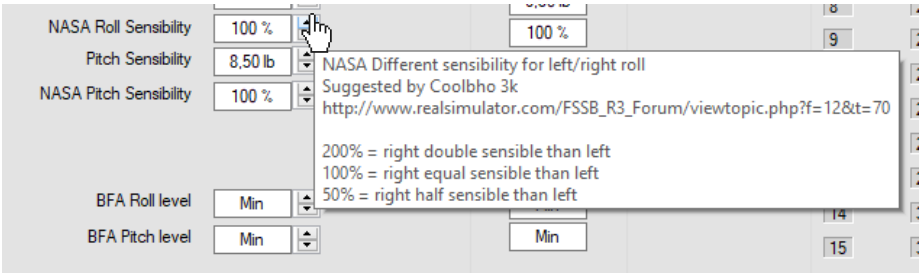


Roll sensitivity

Use Roll sensitivity 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 it will always be your own arm that'll tells you if the setting is optimum or if you need to change it.

NASA ROLL SENSITIVITY

This control allows to adjust different sensitivities for left/right Roll axis. The indication is shown numerically in a text box and the selection is done with an Up/Down indicator. Values range from 50% to 200% in steps of 1%.



NASA Roll sensitivity

A value of 200% means that right is twice as sensitive as left.
A value of 100% means that right is equally sensitive as left.
A value of 50% means that right is half sensitive as left.

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

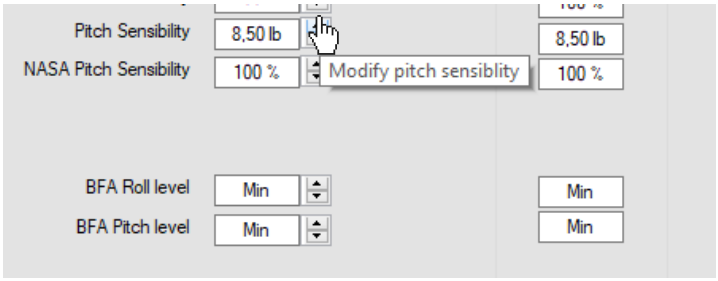
> In short, since your arm is stronger when pulling inward than outward, they found that making rolling right more sensitive than rolling left was more ergonomic.
>
> Rolling left, the stick had a maximum displacement at 8 lbs. Rolling right, the stick had a maximum displacement at 6 lbs. In the current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

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

8 / 6 = 1,333 => **NASA Roll sensitivity = 133%**

PITCH SENSITIVITY

This control allows to change the Pitch axis sensitivity in discrete steps of 0.45 lb. from 1.75 lb. to 13 lb. The indication is shown numerically in a text box and the selection is done with an Up/Down indicator.



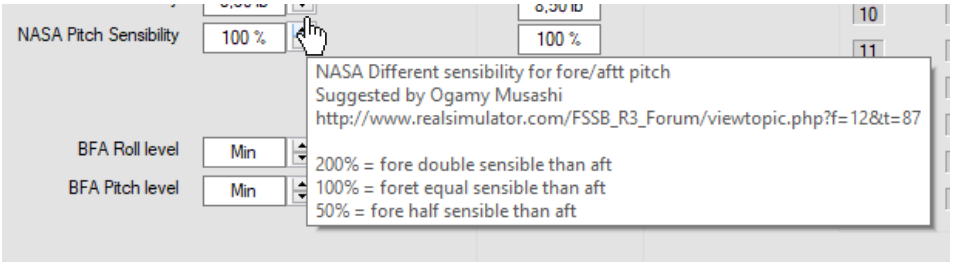
Pitch sensitivity

Use Pitch sensitivity to adjust the maximum force level applied on the 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 it will always be your own arm that'll tell you if the setting is optimum or if you need to change it.

NASA PITCH SENSITIVITY

This control allows to adjust different sensitivities for forward/aft Pitch axis.

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



NASA Pitch sensitivity

A value of 200% means that forward is twice as sensitive as aft.
A value of 100% means that forward is equally sensitive as aft.
A value of 50% means that forward is half sensitive as aft.

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

37 / 20 = 1,85 => **NASA Pitch sensitivity = 185%**

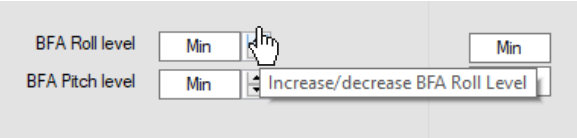
BFA ROLL AND PITCH LEVEL

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 he 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 shown in a text box and the selection is done with the Up/Down indicator associated.



BFA Roll level

We suggest to select the “Min” option for a stable center value.

WARNING SOUND LEVEL

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

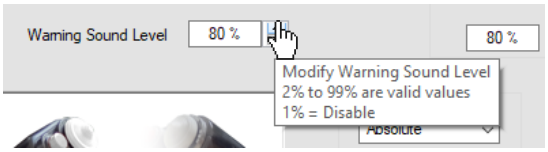
In FSSB-R3 forum, “**Viggen**” explains the sense of this feature:

> 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 receives a feedback from the plane in the way of an aural tone like a warning to advise the pilot. In the same way, when the applied force reaches 100%, the aural tone changes to inform the pilot he 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 shown in a text box and the selection is done with the Up/Down indicator associated, with range of 1% to 99% in steps of 1%.



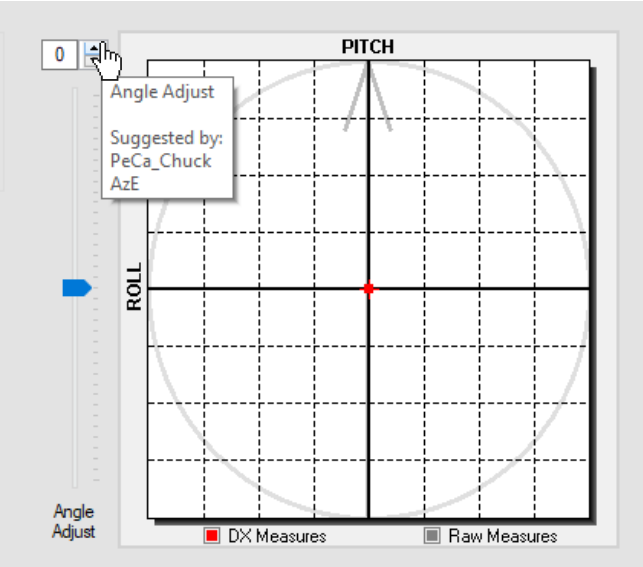
Value in text box of 1% disables the feature both for the warning and for the maximum alarm.

Others values from 2% until 99% enable the warning alarm from that level until 99% with a beep sound (dooot, dooot, …) and YELLOW 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 a beep sound (dot, dot, dot, …) and RED light blinking.

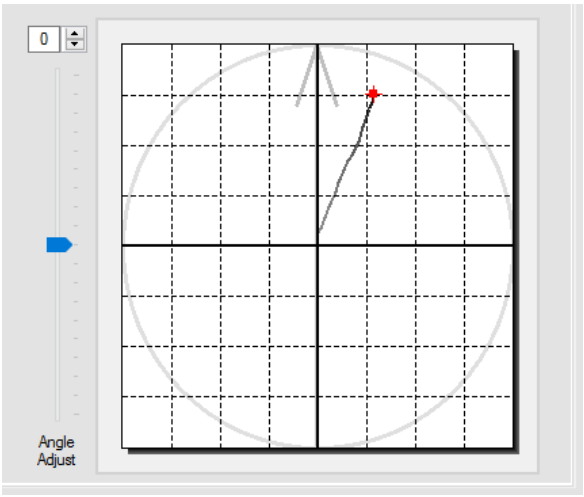
ANGLE ADJUST

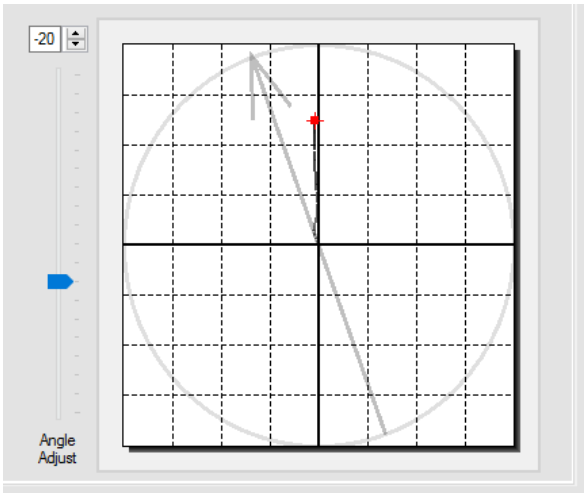
This feature allows to adjust the angular misalignment between the Y axis of the joystick and the Y axis of cockpit that occurs when the joystick is mounted in central position (between the legs). In this position it is necessary to turn the stick to ergonomically access the buttons, switches and hats, but as the connection between the R3 base and the stick is rigid and doesn't turn, it is necessary to 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 appears in the text box numerically and in the X/Y graph by a gray circle and a gray rotary arrow. Each time the Angle Adjust changes the joystick sends a beep sound and a blue light signal (only available in the Lighting version).



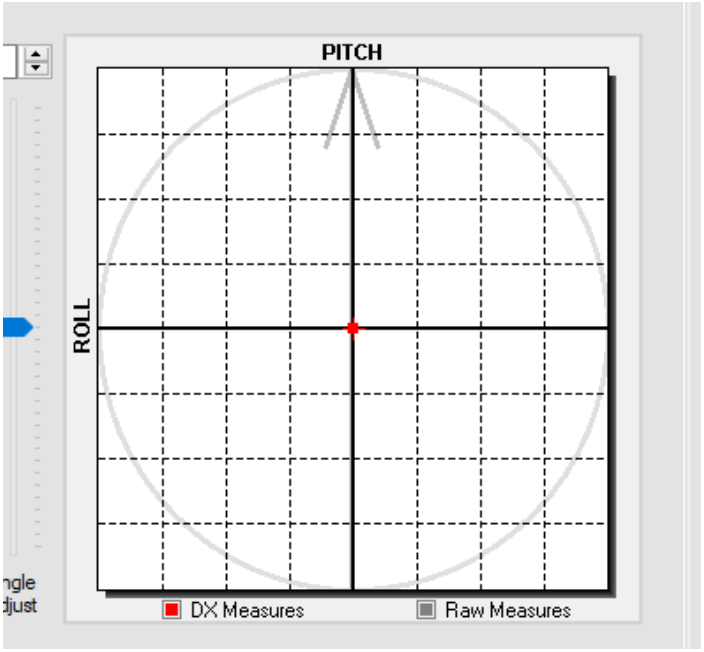
Let's look at an example: suppose we have our FSSB R3 installed in the central position and we have rotated the base for a comfortable access to the buttons. Now we apply force to the stick according to the Y axis of the cabin, or towards our chest or moving away from it perpendicularly. This way, we will get an answer in the X/Y graph as shown in the 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 with the same movement. 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 display both values. The active option is shown in red color.



As we mentioned 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 work with the default calibration and users must use the RS_HID_DEV_TOOL to modify the settings as sensitivity, auto zero, dead zones, etc. if 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.

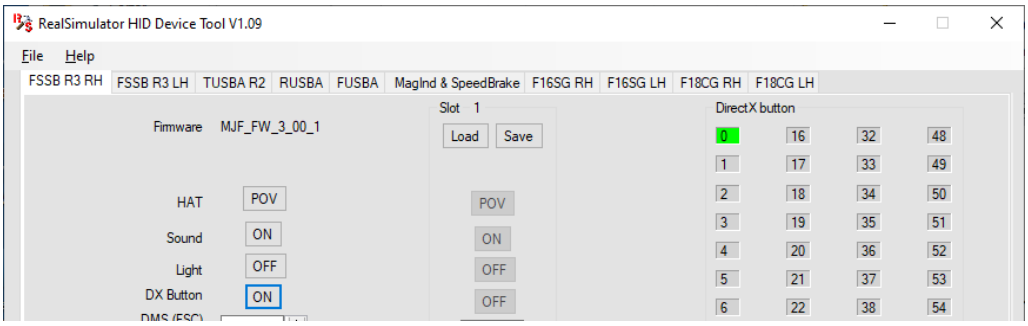
DIRECTX BUTTONS

In this group box are the 64 DX buttons that the FSSB-R3 has when it is connected to the F16SGRH. The first 32 buttons (0 to 31) are located in the first and main HID device and the rest (32 to 63) in the second HID device.

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

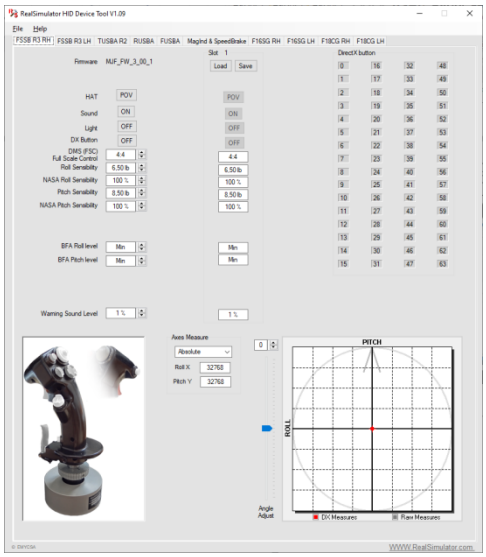
Firmware MJF_FW_F16_SG_3_20_X

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.

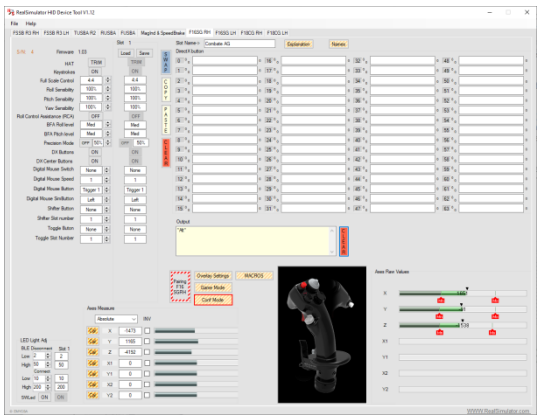
As you can read in the F16SGRH forum, there are several Bluetooth dongles on the market and not all work well. For this reason, we suggest reading the forums and choosing a dongle model verified by other customers.

Anyway, if you are going to connect the F16SGRH or F16SGRH-CE to a FSSB-R3 Lighting, there is a firmware named "*MJF_FW_F16_SG_3_20_x*" that allows you to play without connection problems because the FSSB-R3L assumes all the stick functions and the Bluetooth connection isn't necessary. In fact, if you install this firmware in the R3 Lighting, **we suggest you remove 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

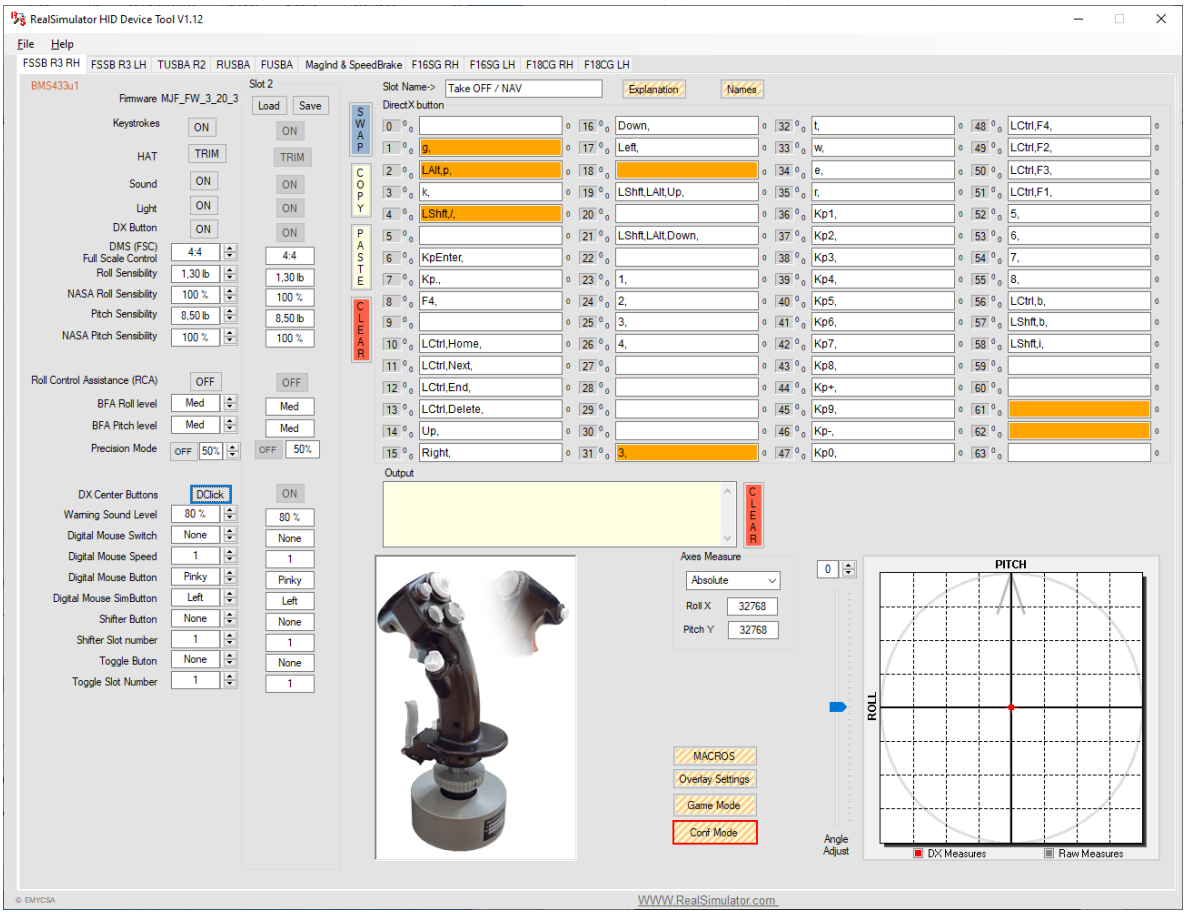
This firmware is only configurable with the RS_HID_DEV_TOOL v1.12 and higher and as you can see in the next images it is a mix of the FSSB-R3 and F16SGRH characteristics.



FSSB-R3L Tab

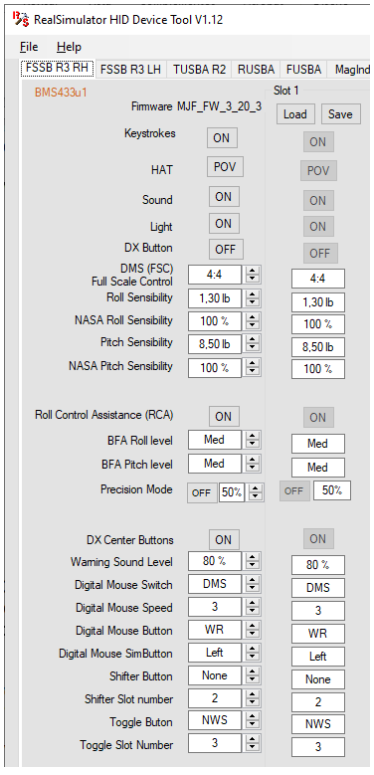


F16SGRH tab



New FSSB-R3L Tab

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



Now each FSSB-R3 slot has the following settings:

- HAT as POV or TRIM.
- Sound ON/OFF
- Light ON/OFF
- DX Buttons ON/OFF.
- Full Scale Control.
- Roll Sensitivity.
- NASA Roll Sensitivity.
- Pitch Sensitivity.
- NASA Pitch Sensitivity.
- 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).
- DX events and Keystrokes generation by pulses.
- Additional slot change thanks to the Shifter and Toggle functions.
- Digital Mouse.

You can see detailed information about them in the previous sections of FSSB-R3 and F16SGRH, or in the **FSSB-R3 User Guide V2.02** and higher.

The keystrokes, macros and overlay functionality are those 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 them is valid for the other. So if you already have a file done for a device, you only need to copy it in the folder of of the other device and use it.

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

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

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?
- Direct actions with buttons.
- My F16SGRH is frozen with the left status led ON.

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): the firmware update tool for the RealSimulator devices.
- RealSimulator HID Device Tool (RS_HID_DEV_TOOL): 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 fully operational. 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 fully tested 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.

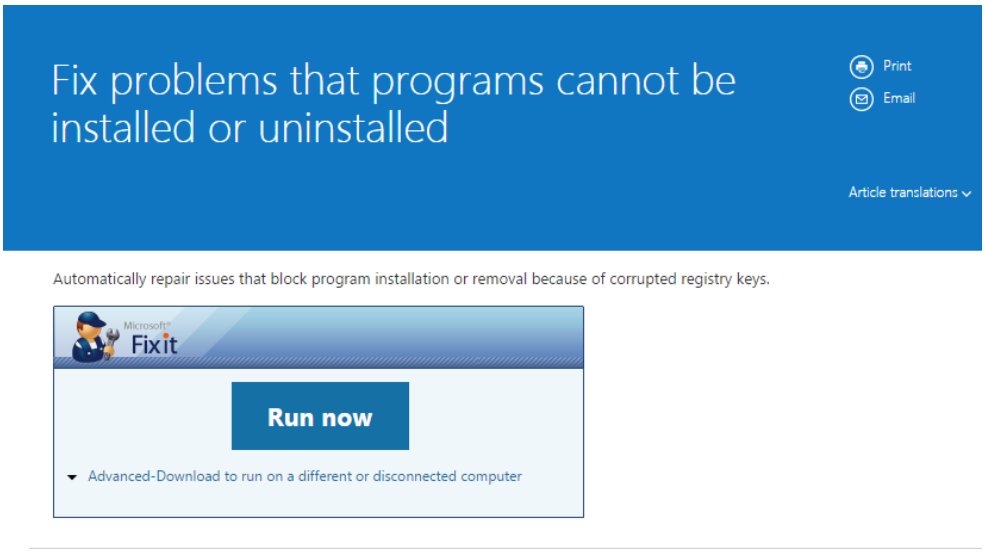
I want to install a new version of RS_HID_DEV_TOOL or DCC, but I cannot uninstall the older one.

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

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

Click the link (or the picture below) 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 the item **Microsoft Bluetooth LE Enumerator** is present.

To turn Bluetooth on, follow the next steps:

1. Drag the mouse to the 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?

Often, 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 exist the

item “Microsoft Bluetooth LE Enumerator”.

d) Verify that 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 connected 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 a button associated and a value in the F16SGRH tab of RS_HID_DEV_TOOL application. If you enable this feature by setting the button to ON, when you press the trigger button the axes measures will be reduced to the percent selected in the value text box.

For example, if you set the button to 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 back to 10000.

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

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

All firmware 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 increases the number of slots from 4 to 8 like in the F16SGRH and disables 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 duplication (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 with the SMM non-existent, there is a new sequence to do the **NPA** (Neutral Position Adjustment): "**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 allows you to work 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 through the BLE.

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

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

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

Direct actions with buttons.

Here is a summary of the sequences of buttons (press the buttons simultaneously) that the user can use to :

a) Start the Bootloader:

Trigger 2 + DMS center + TMS center

b) Restart the BLE advertisement phase:

TMS center + DMS center

c) Recover the factory pairing (only for devices supplied from October 2019):

TMS Left + DMS Right + Pinky Center

d) Neutral Position Adjustment for FSSB-R3 with MJF_FW_F16_SG firmware:

Trigger 1 + NWS center

My F16SGRH is frozen with the left status led ON.

Sometimes after connecting the F16SGRH to the base (FSSB-R3L for example), the stick is frozen with the left status led ON and although you press buttons, they are not read in the base. In this case you must disconnect the F16SGRH and check the pins of 5-pin mini-Din connector because they will be bent due to an incorrect insertion.

To fix the problem use a small plier to straighten the pins, being careful not to break them.