ELECTRONICA, MECANICA Y CONTROL, S.A.

RealSimulator

User Guide

FSSB-R3 Lighting & MKII ULTRA

FSSB-R3 Lighting & MKII ULTRA

User Guide v3.01

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Contents

Document Revision History

Revision Number	Date	Description
3.01	2022.12.29	- First release. - New User Guide including only the supported firmwares for Lighting and MKII ULTRA. - Added new faqs.

IMPORTANT NOTE:

All the information contained in this document is valid for FSSB-R3 Lighting and MKII "ULTRA" models, except where otherwise indicated.

PICTURE

DESCRIPTION

The FSSB-R3 Lighting is the new standard in high quality force sensors. It puts the new levels of quality, sensitivity and precision in hard to reach values even for expensive professional equipment.

The new design of the sensor board gives a tact, smoothness and accuracy of flight control which makes that the flight experience cannot be compared to anything experienced before. High-precision maneuvers that are impossible without hundreds of training hours are now made easily, thanks to the smoothness of control in areas close to the neutral position.

It is very difficult to express with words the feelings of control that the new R3L sensor transmits, but after testing it ... you cannot fly without it.

It has provided the new design of a small deflection in the sensor system, which allows a slight angular movement in the stick, this, although very small, helps to facilitate adaptation to a force control, which is appreciated in the first flights.

During quality control process, which is done manually to each unit manufactured, the FSSB R3L is calibrated and adjusted, but has also included an electronic calibration that allows the user to perform this operation as many times as necessary.

Another new feature included in the FSSB-R3L is the inclusion of special options which

will be modified according to the needs that users transmit to us. These are some special options included in the actual firmwares.

HAT as POV or TRIM. The HAT switch can be modified at any time to behave like a POV (default) or trim command. This allows during the use of the joystick, the HAT controls the views or submits your information to 4 HID buttons for use as TRIM, which is its function in real life.

FULL SCALE CONTROL to select between four possible full scale settings of the axes X and Y, it adjusts the ratio between the applied force to the joystick and the signal sent to the computer. Although this looks like a sensitivity adjustment, control is not exactly the same. This setting is ideal for adjusting joystick response in complex situations, such as a landing, refueling maneuver, ground attack. The setting values are FSC 1:1 3:4 1:4 1:2

NEUTRAL POSITION ADJUSTMENT. The adjustment of the neutral position manually allows exact adjustment of the neutral position of FSSB R3L. In previous models R1 and R2, this adjustment was done through potentiometers on the electronic board, now is done using digital potentiometers, which are adjusted by the firmware when the user need, including in the middle of a flight mission.

SOUND/LIGHT. These two options let you independently enable or disable the beep sound and light signals.

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

BFA LEVEL. Adjustable independently in Roll and Pitch, let you select in four steps from 0 to 10% the level of force applied to break the stable cero position.

MEMORY SLOTS. Four memory slots to save/load custom configurations with compatible TM grips and 8 memory slots with RS grips.

As other Realsimulator devices, the FSSB-R3L is firmware upgradeable. At the moment there are the following firmwares available:

- **MJF_FW**: standard version for modern jet fighters.
- **SSF**: version for space ships fighters.
- **SSF_LH**: special version of SSF for left hands users.

Beside the above characteristics, the product is supplied with a firmware update tool (DCC) to install new versions of firmware and a GUI application (RS_HID_DEV_TOOL) to configure the device. Both tools can be downloaded inside the same package from the download's website.

https://realsimulator.com/downloads/

This User Guide is valid for the FSSB-R3 Lighting model. If you have doubt about the model you have purchased, you can identify it easily by the aluminum case and the label. Here you have some pictures to clarify the identification.

FSSB R3 Warthog

Aluminum case: Natural color
Label: Aluminum/Black

FSSB R3 Lighting

Aluminum case: natural color
Label: Gold/Black

FSSB R3 Lighting

Aluminum case: natural color
Label: Gold/Gray

(Current model since 2020)

FSSB-R3L MKII ULTRA

Aluminum case: Light titanium or natural color
Label: White/Black

PICTURE

DESCRIPTION

Package content

FSSB-R3L is supplied as a plug and play device with no drivers. It needs a small and quick hardware installation as you can see in the next chapter. The package, showed in the before picture, contains the following components:

- FSSB-R3 Lighting device.
- USB wire (USB type A to mini USB type B).
- Auxiliary 6-pin to 5-pin cable for TM Warthog board.

Technical data

- Independent force sensor for each axis.
- Black anodized fixation element for stick.

- Functional with Cougar or Warthog stick.
- HOTAS Warthog electronic board fixation by 2 M3x5 screws.
- Measurement electronic with separate channels.
- HAT as POV or TRIM.
- Electronic neutral position adjusts.
- Acoustic advice.
- RGB Light advice.
- Two expansion sockets.
- Double USB connection: external mini-USB type B and internal JST 5-way type B5B-PH-K-S (**only in devices sold from June 2022).**
- Full scale control with 4 levels, 1:1, 3:4, 1:2 & 1:4.
- Sensibility control for Roll in 4 levels. 2.5, 4.5, 6.5 and 13 pounds.
- Sensibility control for Pitch in 4 levels 4, 6, 9 and 13 pounds.
- 2nd and 3rd DX button set (available in some firmwares)
- 2nd and 3rd DX button set ON/OFF control
- 4/8 Memory Slots for quick custom configuration in function of firmware
- Auto-Load Memory Slot #1 if available
- Firmware upgrade.
- One piece aluminum white anodized case.
- Fixing screws not included, they are supplied with the base plate (M4x10 mm)
- Electric connections made by connectors. No soldering required.
- USB connection cable included (1,8 m).
- Max. applied force 13 lb.
- Max. allowed force 20 lb.
- Dimensions (W x D x H): 98 x 98 x 60 mm
- Weight. 350 gr.

PICTURE

DESCRIPTION

The FSSB-R3L can be used in two ways, as an upgrade for the HOTAS Warthog or independently as a standalone joystick. In both cases, for its installation the following tools are needed:

- Philips PH1 screwdriver.
- Flush cutter (or scissors)

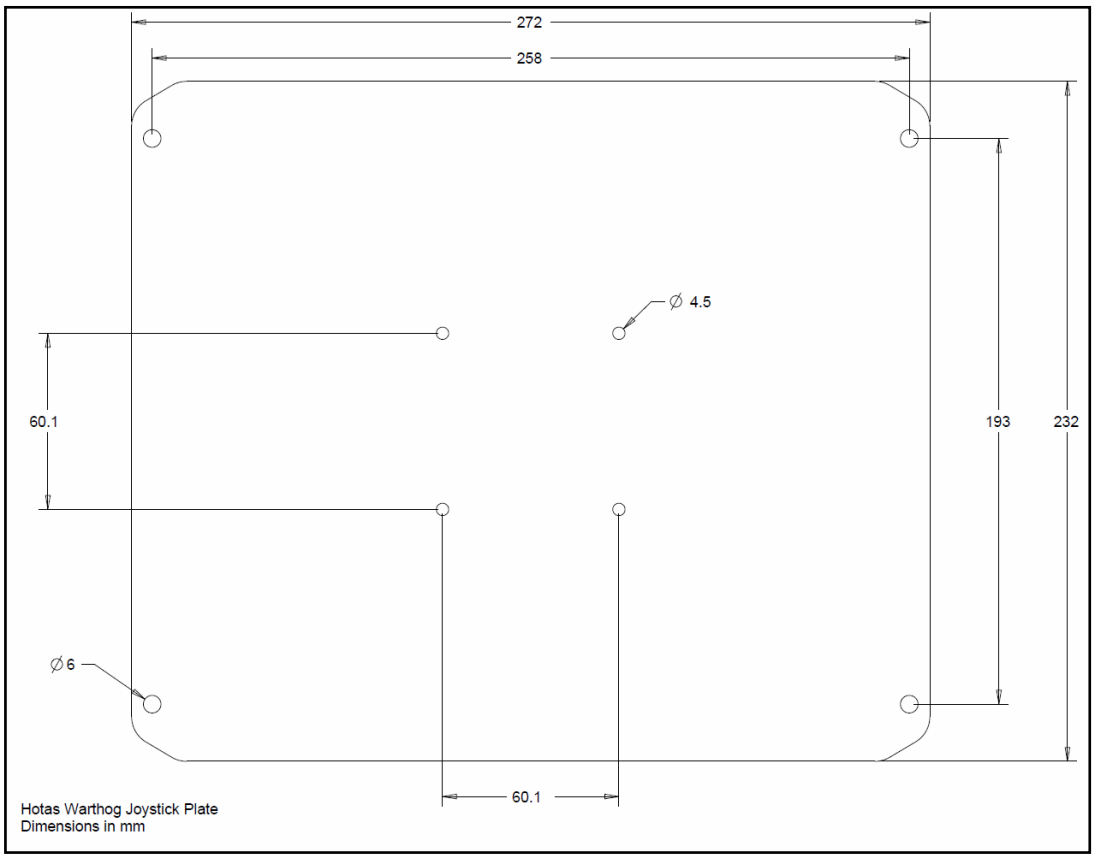
Standalone joystick

If you are going to use the FSSB-R3L as a standalone joystick, you only have to connect the FSSB-R3L to your computer via the USB wire found in the package and the FSSB-R3L will be recognized directly as an HID device.

You can use any Windows tool for game devices compatible with HID, and the joystick will be displayed on all applications that can handle HID devices with the name "FSSB R3L MJF J+B".

The installation is very easy and fast. You will need a plate to fix the FSSB-R3L. If you have the HOTAS Warthog you can use its plate, if not, you must manufacture a plate or buy it in our website, now it is available in the shop.

If you are going to manufacture it, below we show you a picture of Warthog plate with the dimensions and holes. You can download it from the Thrustmaster website (Warthog_plate).



We have made a video guide called "**FSSB-R3 Warthog Alone**" where you can watch step by step how to install the FSSB-R3. You can find this video guide on RealSimulator FSSB-R3 Lighting video gallery:

(https://realsimulator.com/download/videos/FSSB_R3_Warthog_Alone.mp4)

or, directly clicking the next image or hyperlink

FSSB-R3 Warthog Alone Installation

As the grip connector of FSSB-R3L is compatible with the Thrustmaster sticks, you will be able to connect any grip compatible with them to your FSSB-R3L.

So for example, you could renovate your old Cougar system with a few Realsimulator's devices. You will only need the above mentioned plate to screw the FSSB-R3L, a **TUSBA** to connect the Cougar Throttle and your actual Cougar grip.

In this User Guide you will find a special chapter focused to the new Realsimulator's grips, as the F16SGRH, when is connected to the FSSB-R3L, thoroughly explaining all the new features that both devices offer when they work together.

Upgrade for the HOTAS Warthog

In addition to the advantages offered by the use of the FSSB-R3L standalone, this has connectors that allow you to send data from FSSB-R3L to the TM HOTAS Warthog electronic board.

For installation using video guide called "**FSSB-R3 Warthog HOTAS Upgrade**" that you can find on the RealSimulator FSSB-R3 Lighting video gallery:

(https://realsimulator.com/download/videos/FSSB_R3_Warthog.mp4)

or, directly clicking the next image or hyperlink

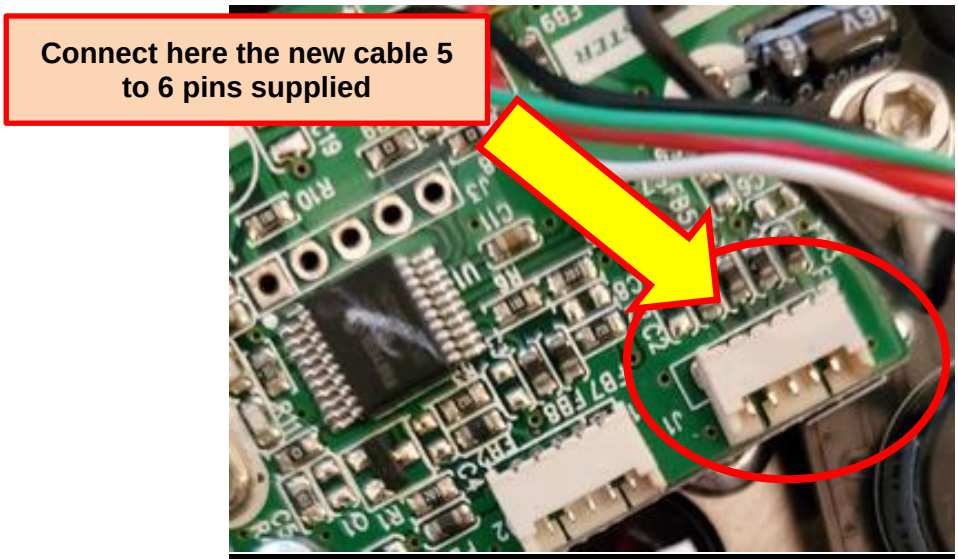
FSSB-R3 Warthog HOTAS Upgrade Installation

When used with HOTAS Warthog electronics, you can connect both USB cables to the same computer and choose with your computer which joystick use. Obviously, the user can configure the simulation program, using both, the HOTAS variables and buttons as well as native FSSB-R3L variables and buttons, being limited only through the options of the software you are using.

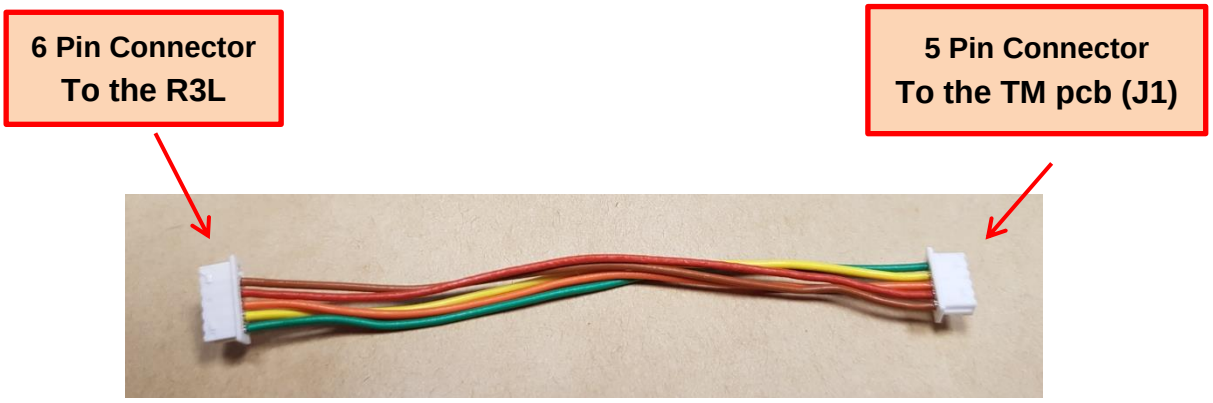
As a rule, the HOTAS could benefit from both, the high quality of X and Y data axes as well as some special modes of FSSB-R3L.

Finally, I want to inform you that we have detected Thrustmaster Warthog stick bases

with a new electronic board; on these new pcbs the J1 connector is a 5 pin instead 6 pin as previously. So, if this is your case, we send you an additional cable with a 6 pin connector in a side (to connect to the J6 socket of R3L) and a 5 pin connector in the other side (to connect to the J1 socket of TM pcb) to replace the standard 6 pin cable supplied and connected with the FSSB-R3L.



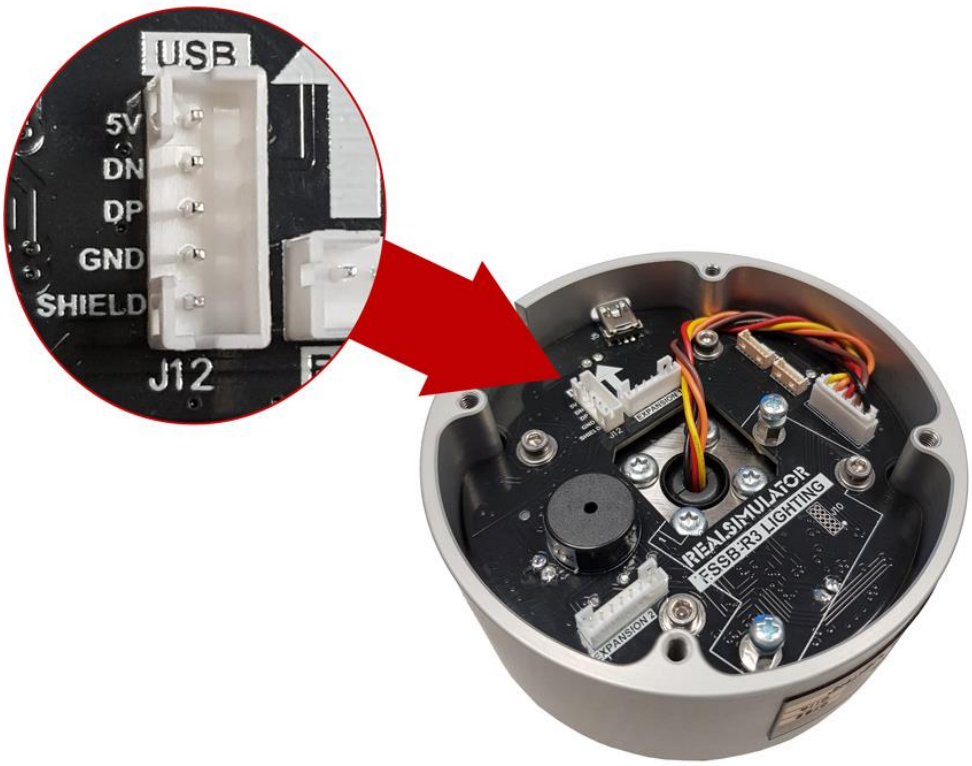
New pcb with 5 pin connector on J1



Internal USB Connector

Now, all FSSB-R3 Lighting sold since June 2022 have a dual USB connection, the external and traditional through a mini-USB type B connector and an internal one through a 5-way JST connector (B5B-PH-K-S).

This new connection is designed for assemblies where the traditional USB connector is left in the air without protection, as it happens when using the very fashionable chair supports for joysticks. In these cases, when the USB connector is in the air without protection, it can receive accidental blows that will end up spoiling the USB cable or the R3L connector.



With this new connection, the cable comes out from inside the FSSB-R3L and thus avoids rigid parts external to the FSSB-R3L, such as the USB cable connector.

PICTURE

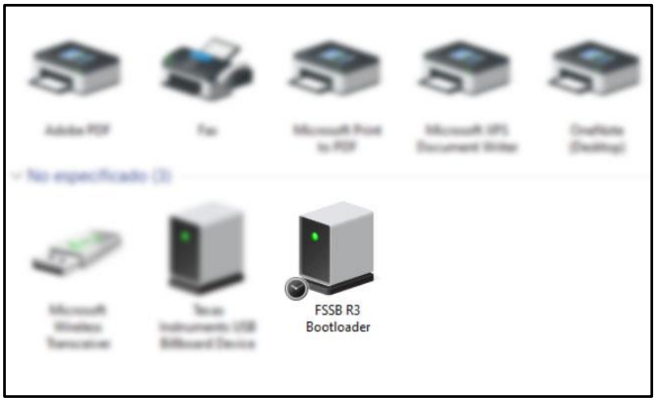
DESCRIPTION

The first time that you connect your FSSB-R3L in your computer, you will take notice about really your FSSB-R3L are several devices living in the same hardware. In fact, inside your FSSB-R3L there are:

- A Boot system, to allow you to update FSSB-R3L with new firmware.
- A HID Game Device, to let you communicate FSSB-R3L directly with MS operating system and let you control your simulator or some other game with DX axes and buttons.
- A mouse and a keyboard.
- An additional comms port for special comms with the device.

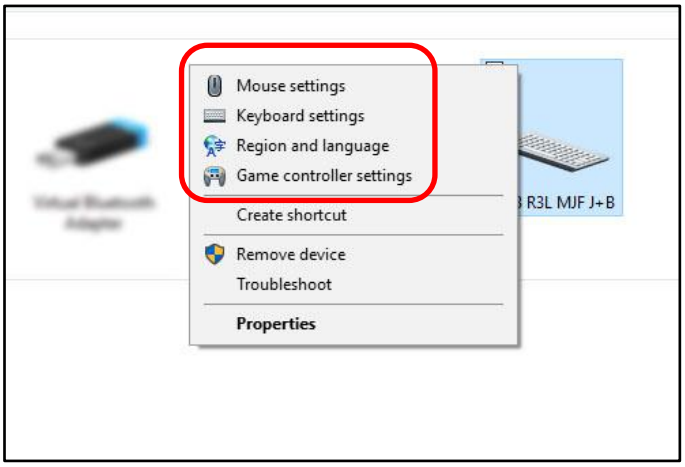
As soon as you connect FSSB-R3L, MS operating system will detect it and will start looking in its data base to install the appropriate drivers for it. We have avoided custom drivers or additional special system in order not to have any problems in the future with new MS operating systems. Just as you know, every time MS improve its OS, all of us have a headshake with incompatibilities, drivers, etc. so we have learnt from the past, that the best is to use the own legacy MS drivers for comms and this is what we have done in the FSSB-R3L system, use only MS drivers, so when you connect your FSSB-R3L to the computer, MS will look in its data base for the best MS driver for it, in fact its own HID drivers.

The first device to look for drivers is the FSSB-R3 Bootloader system, and a few seconds after taking comms with the operative system, the FSSB-R3 Boot will left the system and will be disconnect to allow working the Game device and the other additional HID devices.

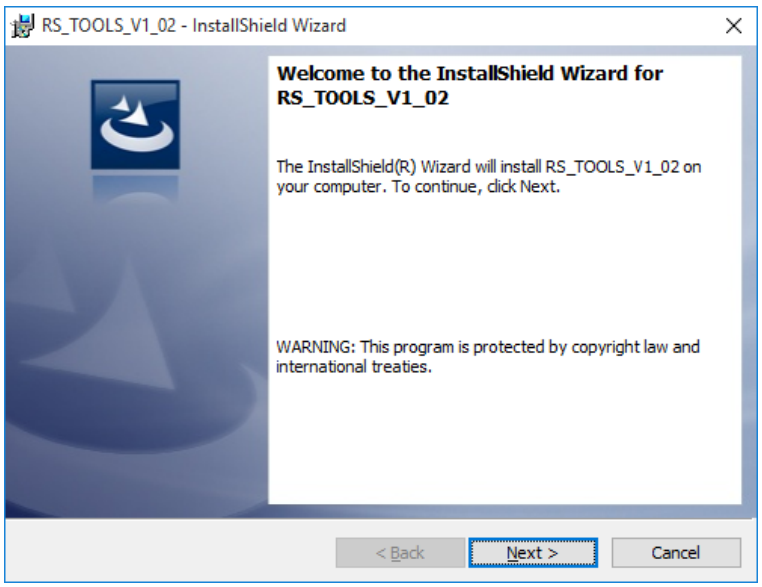


Sometimes the Boot device goes out and it is not fully installed, if this happens, don't worry, it will be installed in another occasion or when you upgrade the device.

As soon as the Boot goes out a USB Composite Device with several USB Input Devices will start looking for drivers. As these HID devices will not go out from your system, after a few second you will see as your OS will found the drivers and install them in your computer and the USB Composite device will be shown in the Devices and Printers window.



PICTURE



DESCRIPTION

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

Both tools can be downloaded from the 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:

https://www.realsimulator.com/downloads/

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
- Microsoft Visual C++ 2017 Redistributable (x86).

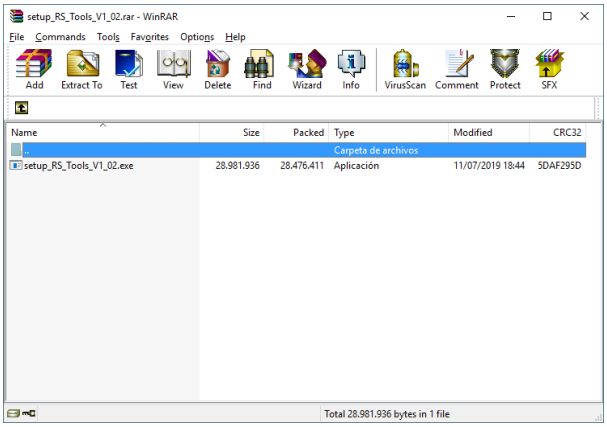
Although you don't have to worry about installing them, the installer will do it for you if

your computer needs it.

In platforms with Windows 8.1 or higher, “DCC” tool will be installed (with support for BLE devices). In previous versions of Windows, the package installs a “light” version of the program without support for BLE, named “DCC v1.xx (NO_BLE)”. This version does not allow upgrading BLE devices as the RS grips (F16SGRH / F18CGRH).

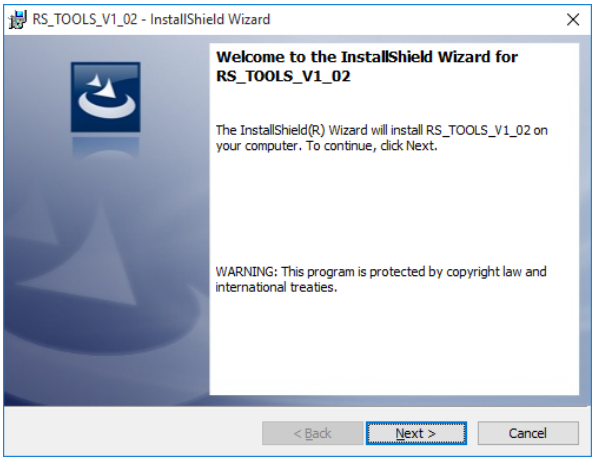
To start the installation, run the downloaded program by double-clicking the file icon. Presently, the file is named “setup_RS_Tools_V1_02.zip”, but the procedure will be identical with any new version.

Any case, you should have a window like this one.

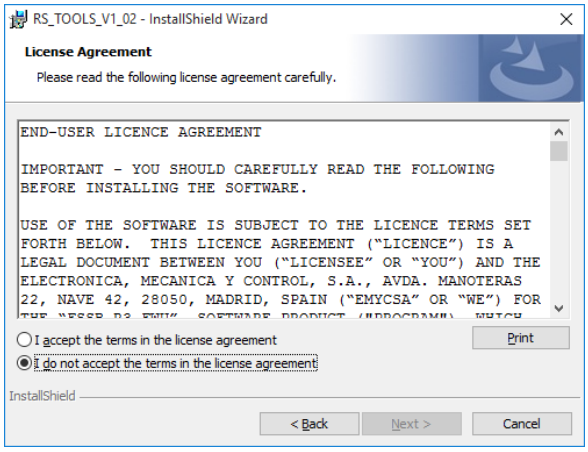


where **setup_RS_Tools_V1_02.exe** is the tools installer. To install it, please, run the file with a double click on the file name.

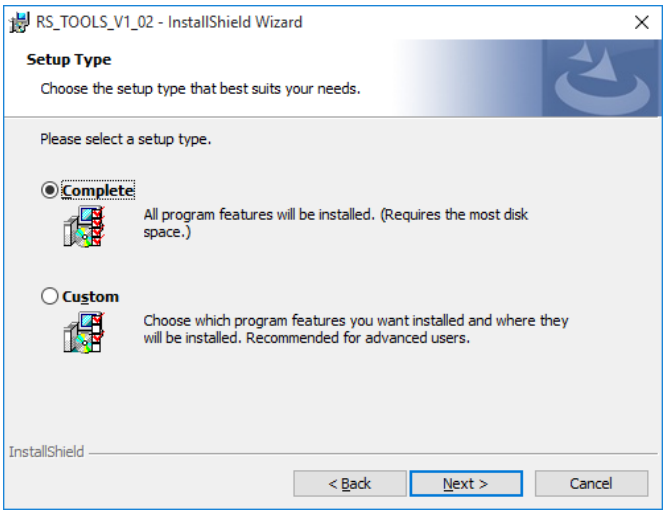
After a few seconds extracting and decompressing the package, the installation wizard will launch. Select **Next** to continue.



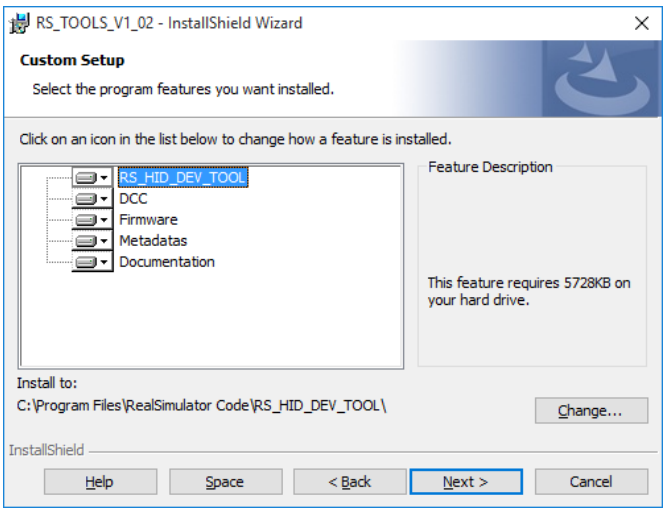
A standard licensing agreement must be accepted before moving on. Choose **I accept the terms of the license agreement** and click **Next**.



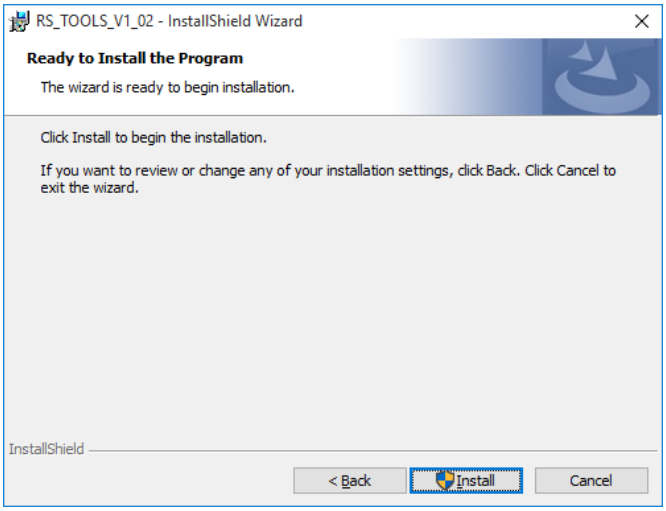
If you want to install all program features (DCC, RS_HID_DEV_TOOL, Metadata files, firmwares and User Guides) select the **Complete** setup type and click **Next** to continue.



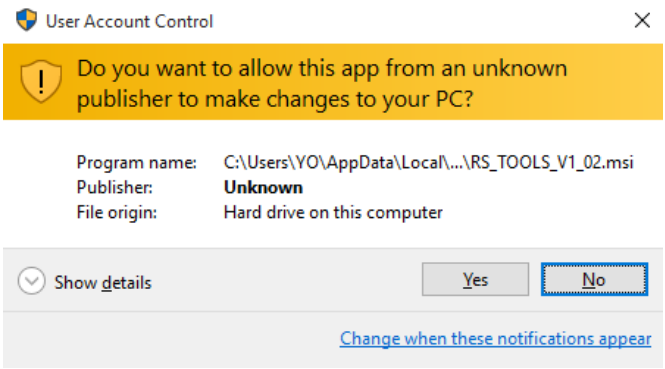
Or select **Custom** if you want to choose the features to install and click **Next** to continue.



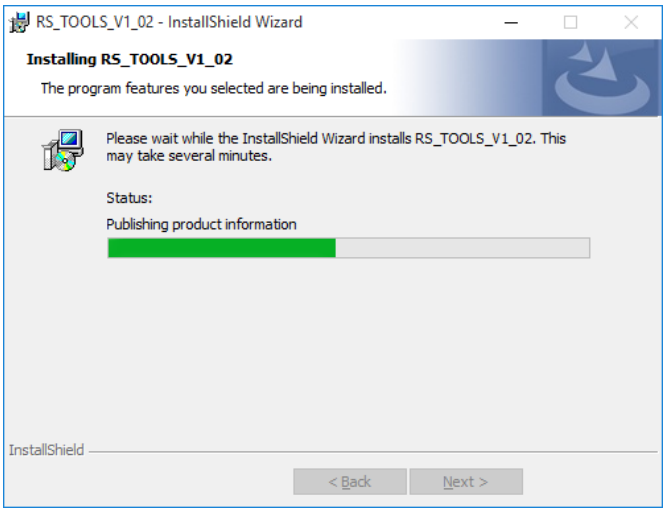
The wizard is now ready to start the installation. Please, click on **Install**.



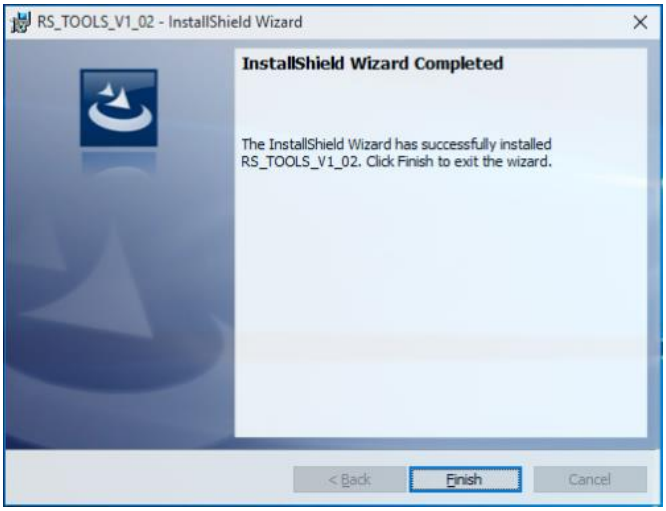
If the User Account Control window appears, click the **Yes** button to continue.



The installation of RS_TOOLS_V1_02 may take several minutes to complete.



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

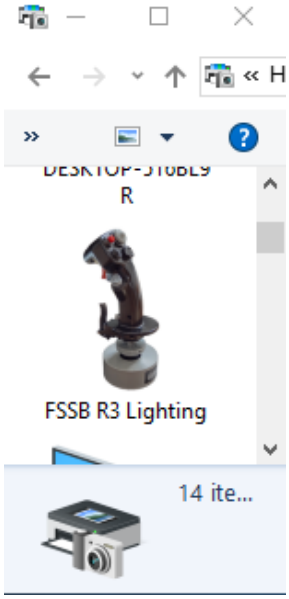


The installation is now finished and the programs are ready to use.

If you have connected to the PC your FSSB-R3L, you can see a new device image in the Devices and Printers window.

For this, click in the windows **START** button and select **Devices and Printers**. You should see an icon device like these

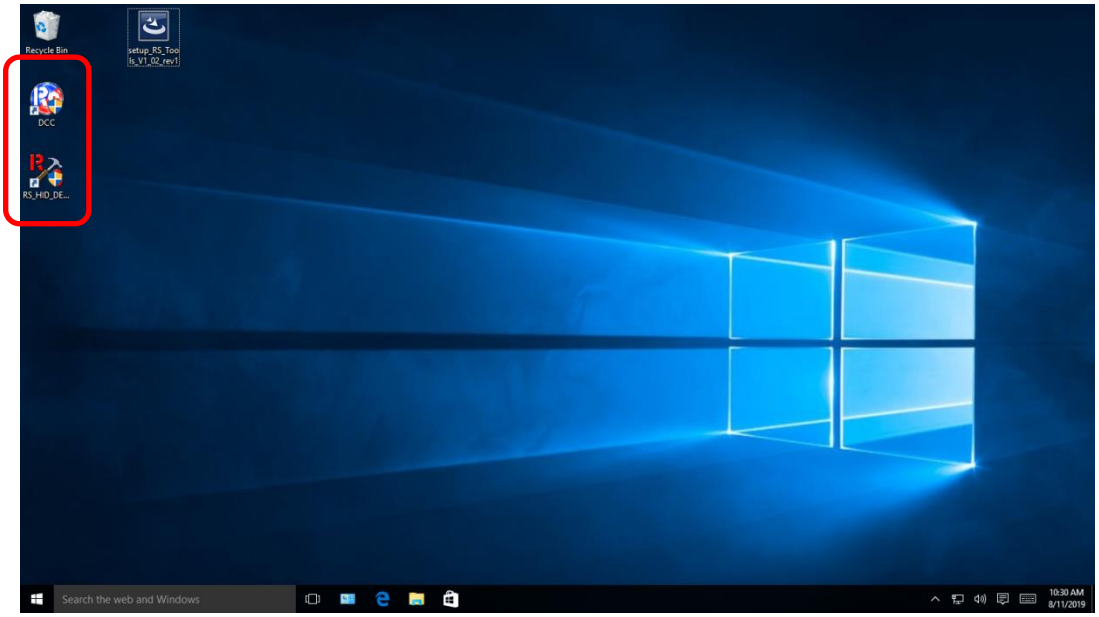
FSSB-R3 Lighting with SSF firmware



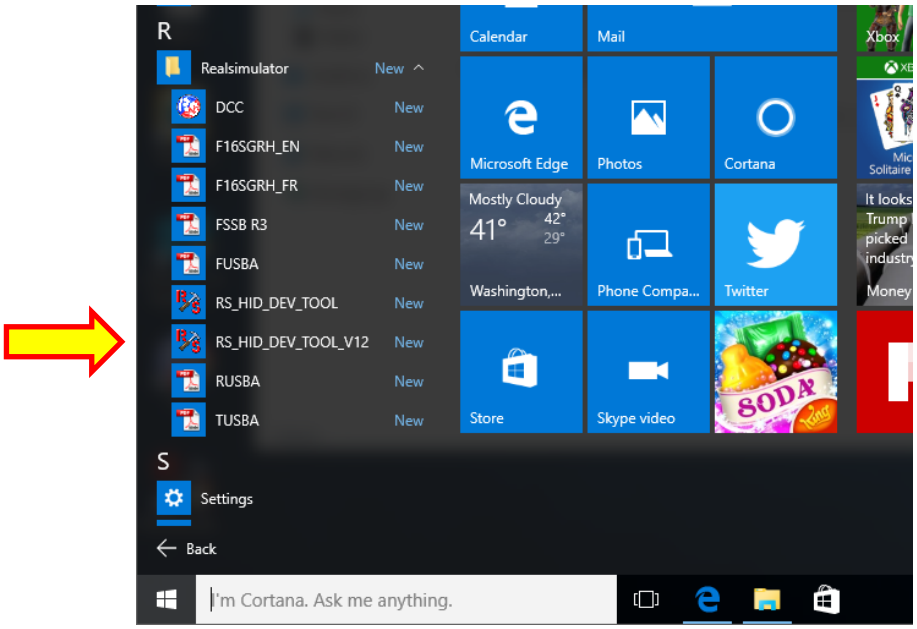
FSSB-R3 Lighting with MJF_FW_F16-18_5

***NOTE**: sometimes Windows does not update immediately the icon device and you see the standard game device icon, in those occasions press the **F5** key to force windows to update the icon devices cache.*

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 App** section in the “R” letter you will find in the Realsimulator folder shortcuts to the DCC and RS_HID_DEV_TOOL programs, the RealSimulator devices User Guide and the FSSB R3 BluePrint.



! ***IMPORTANT**: Additionally to the main and last version of RS_HID_DEV_TOOL whose icon is on the desktop, in the Realsimulator folder shortcuts you will find an icon with the direct access to the v12 of RS_HID_DEV_TOOL, program necessary to configure firmwares of R3 Warthog and classic firmwares of R3 Lighting as the SSF. If you have to use this program, we suggest that you copy the shortcut to the desktop for an easy access.*

The applications are installed in the following folders:

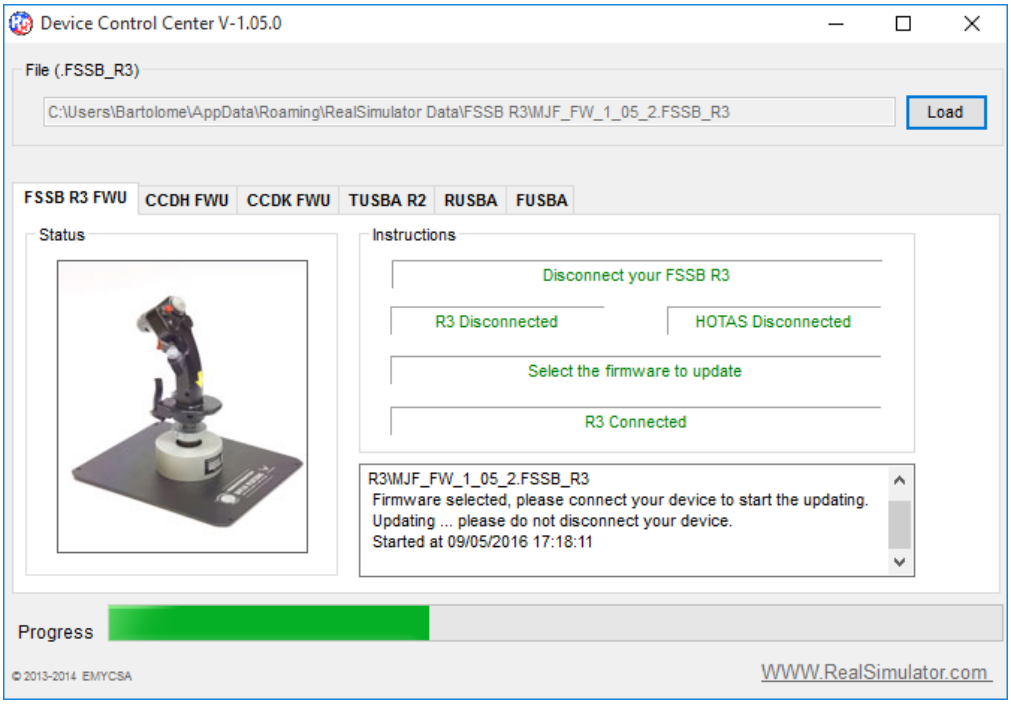
C:\Program Files (x86)\RealSimulator Code\DCC

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

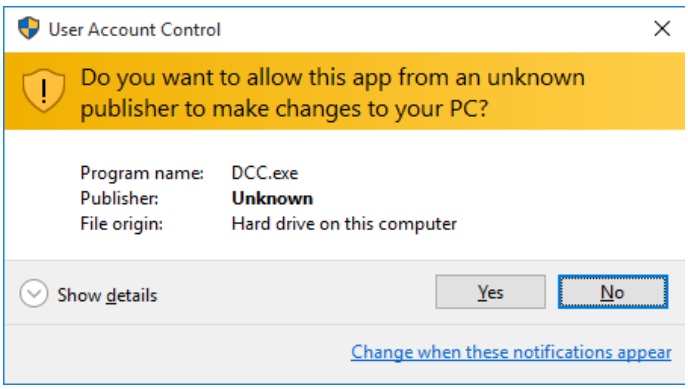


DESCRIPTION

Usually, you will receive your RealSimulator device with the last firmware version installed of MJF firmware, so it will not be necessary to use DCC to update your device immediately after its reception, unless you want to install another customized firmware, as SSF.

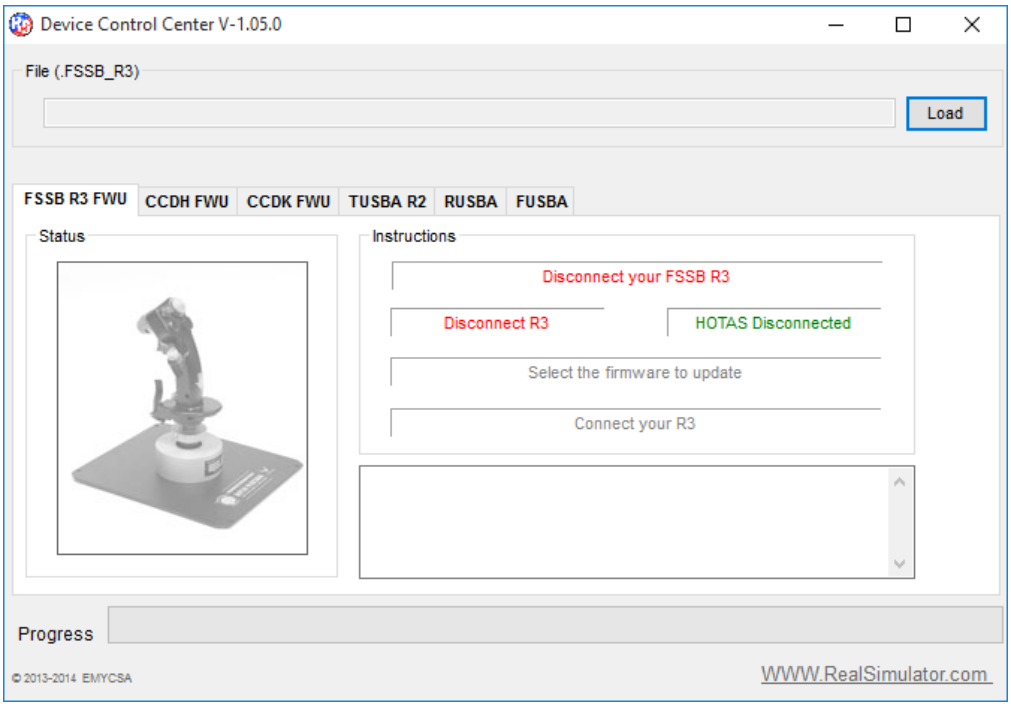
If you check the product site periodically you could find new versions with enhancements and issues fixed, so you will need to use the DCC program.

To start the DCC program, 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.

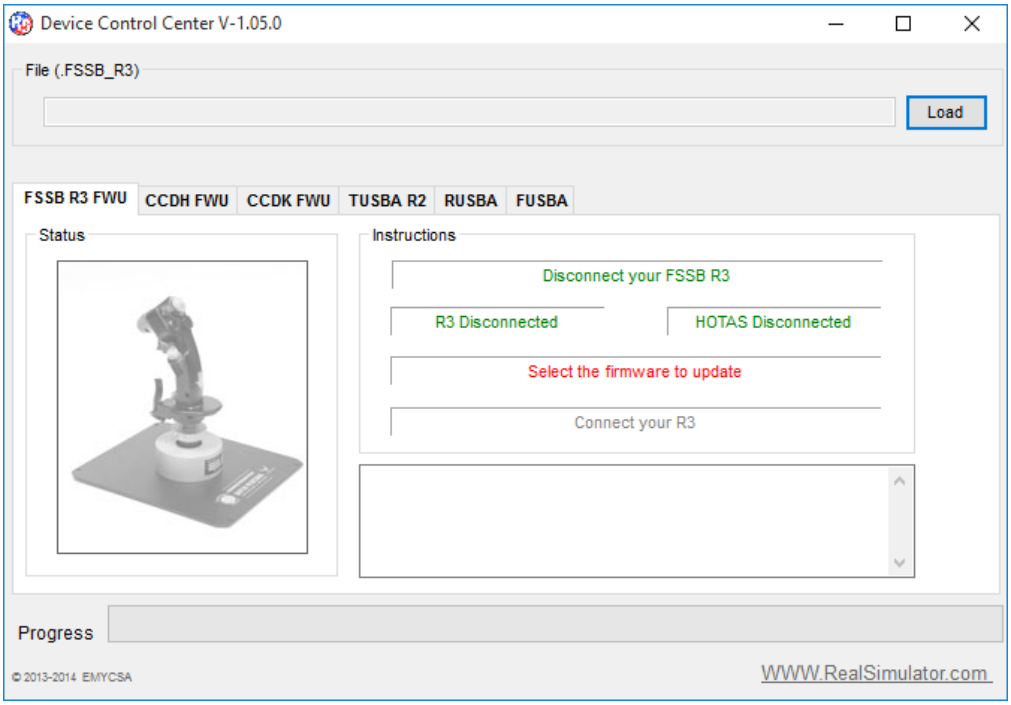


Select the tab labelled as **FSSB R3 FWU** and follow the instructions given in the groupbox **Instructions** to update the device.

Disconnect the FSSB-R3L and HOTAS Warthog (if it is installed and connected) from computer, unplugging the USB cables. If DCC detects the devices connected, the instruction messages will be in red and when the devices are disconnected the messages will be in green. The update sequence will pass the next step when both devices will be disconnected.



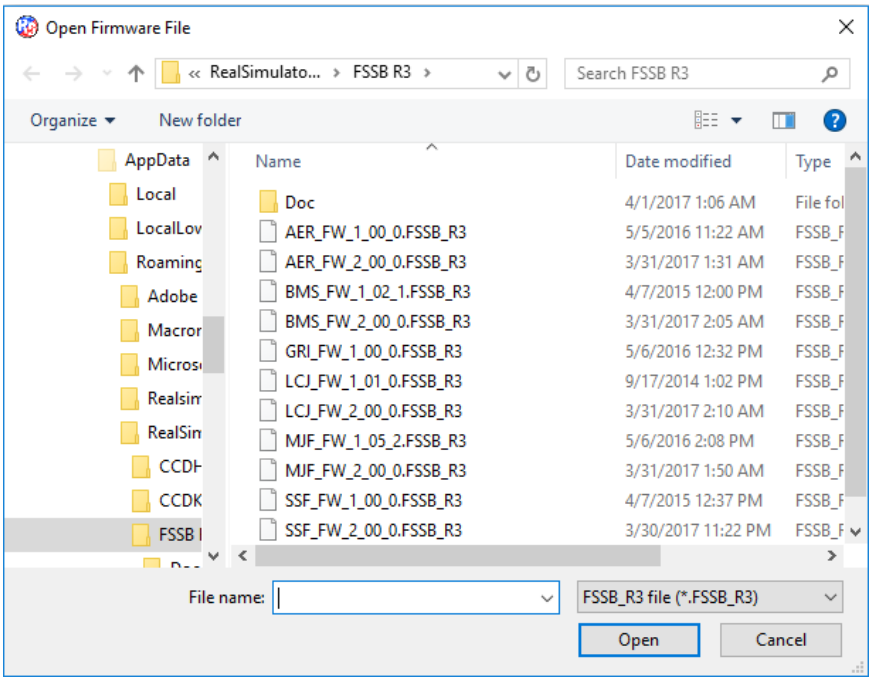
FSSB-R3L connected and HOTAS Warthog disconnected



FSSB-R3L and HOTAS Warthog disconnected

As you can see in the previous picture, **Status** groupbox shows a light device image, it is normal, this image will only be in normal colour when the device is running the bootloader program, in other cases, with the device unplugged or in normal operation the image will be light.

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



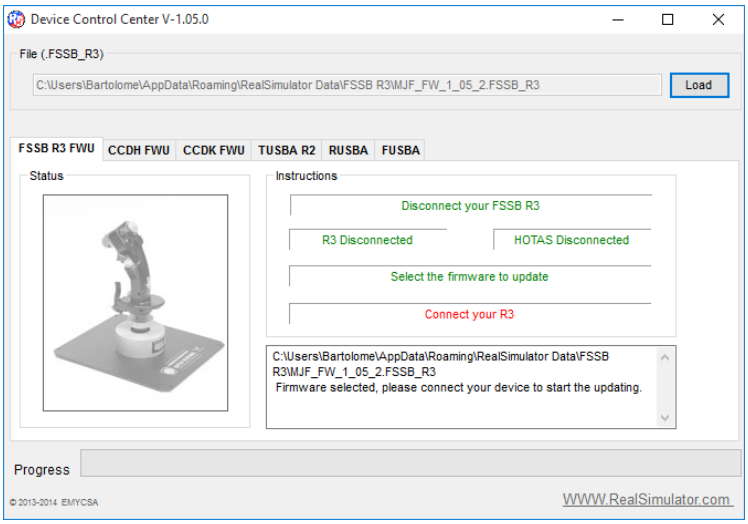
IMPORTANT NOTE:

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

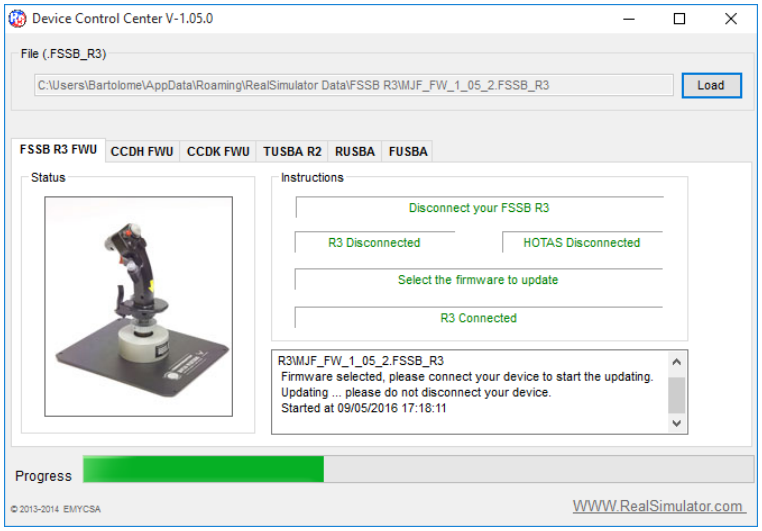
- Num. "**1**": it is the firmware for the FSSB-R3 (Warthog), as for example:
  - *MJF_FW_**1**_06_2.FSSB_R3*: firmware to work with Thrustmaster compatible grips like Cougar and Warthog.
  - *MJF_FW_F16_SG_**1**_00_1.FSSB_R3*: firmware to work with the RS grips.
- Num. "**2**": it is a firmware for the FSSB-R3 Lighting, as for example:
  - *SSF_FW_**2**_00_2.FSSB_R3*: firmware to work with Thrustmaster compatible grips like Cougar and Warthog.
- Num. "**3**" and "**4**": firmwares deprecated
- Num. "**5**": it is the firmware for the FSSB-R3 Lighting to include support for the new Realsimulator v2 grips, as for example:
  - *MJF_FW_F16-18_**5**_01_0.FSSB_R3*: this firmware includes latest features for the R3L and support for RS grips (F16 and F18) and TM compatible grips. It is the most advanced version with support for RS v2 grips and only include one HID game device.

With the previous message in green and if the **HOTAS Warthog is unplugged** (message "HOTAS disconnected" in green), the following message **Connect your R3** will blink in red.

NOTE: *It is absolutely necessary unplug the USB wire of HOTAS Warthog electronic pcb, if not, the DCC program won't request you "Connect your R3".*



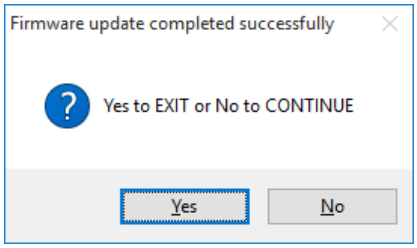
To start the updating we must plug in the FSSB-R3L USB cable, which will launch the bootloader for some seconds and DCC program will start the communications with the device sending the new firmware. During this data transference we will be able to see the progress in the Progress bar and the status image in normal colour.



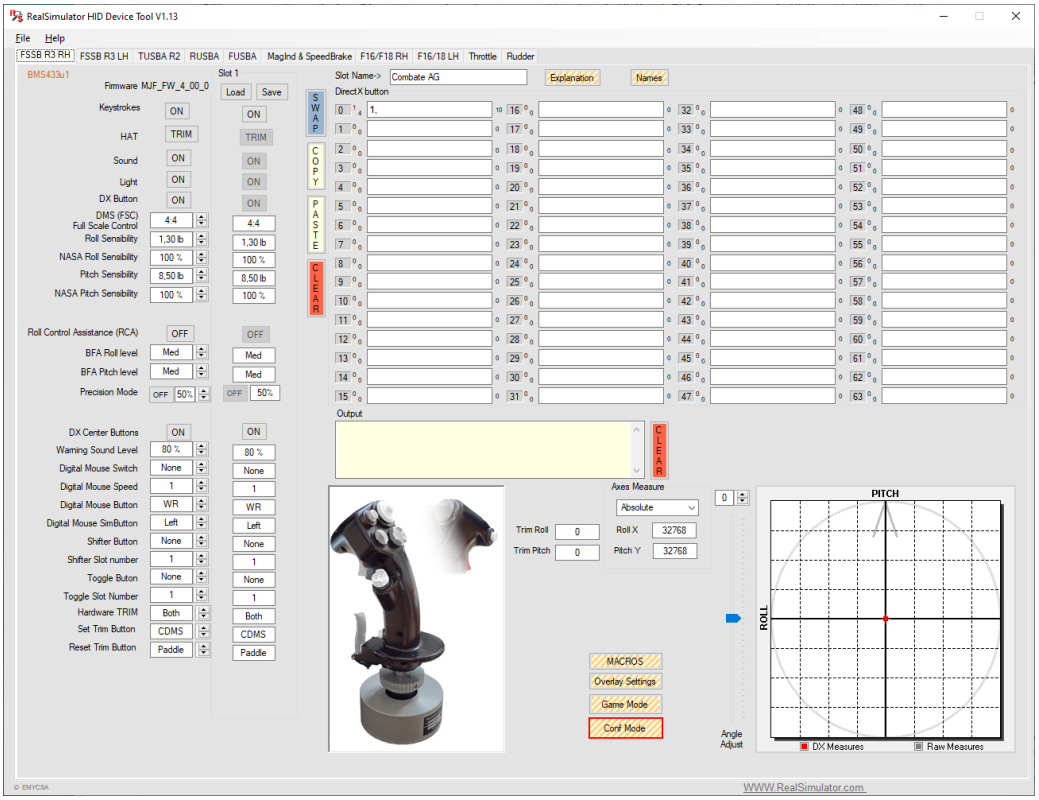
Finally, when the update finishes the device will exit from the bootloader program and will run the new firmware.

DCC program 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.



PICTURE



DESCRIPTION

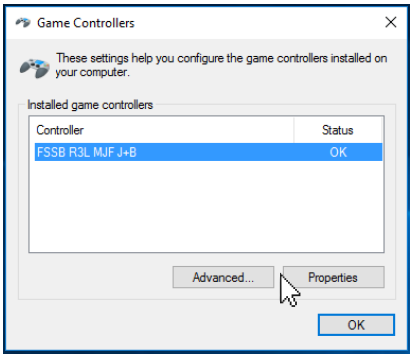
Overview

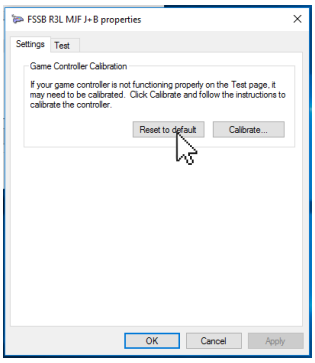
RS_HID_DEV_TOOL is a GUI developed by RealSimulator to facilitate the configuration of devices manufactured by RealSimulator. In general, it allows calibrating, customizing and adjusting easily the different options offered by the device to get the maximum performance from your hardware.

FSSB-R3L is a product closed that includes the force sensors and electronic for measure and communications and it does not need external hardware, except the stick. During the quality control process, which is done manually to each unit manufactured, the FSSB-R3L is internally calibrated and adjusted although it has also included an electronic calibration that allows the user to perform this operation as many times as necessary.

So, **we only suggest using this tool to configure and calibrate the FSSB-R3L** and do not use the standard tool of Windows, the Game Controllers window.

If you have used any time this tool to calibrate the FSSB-R3L we suggest you using the "**Reset to Default**" button of **Settings** tab of **FSSB R3L MJF J+B properties** window to delete the calibration made and set the calibration values to default.



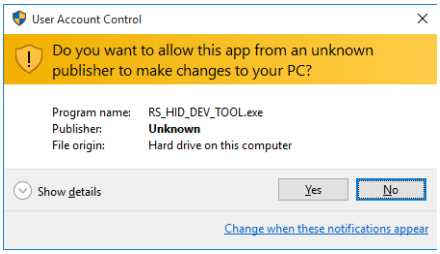


The RS_HID_DEV_TOOL program

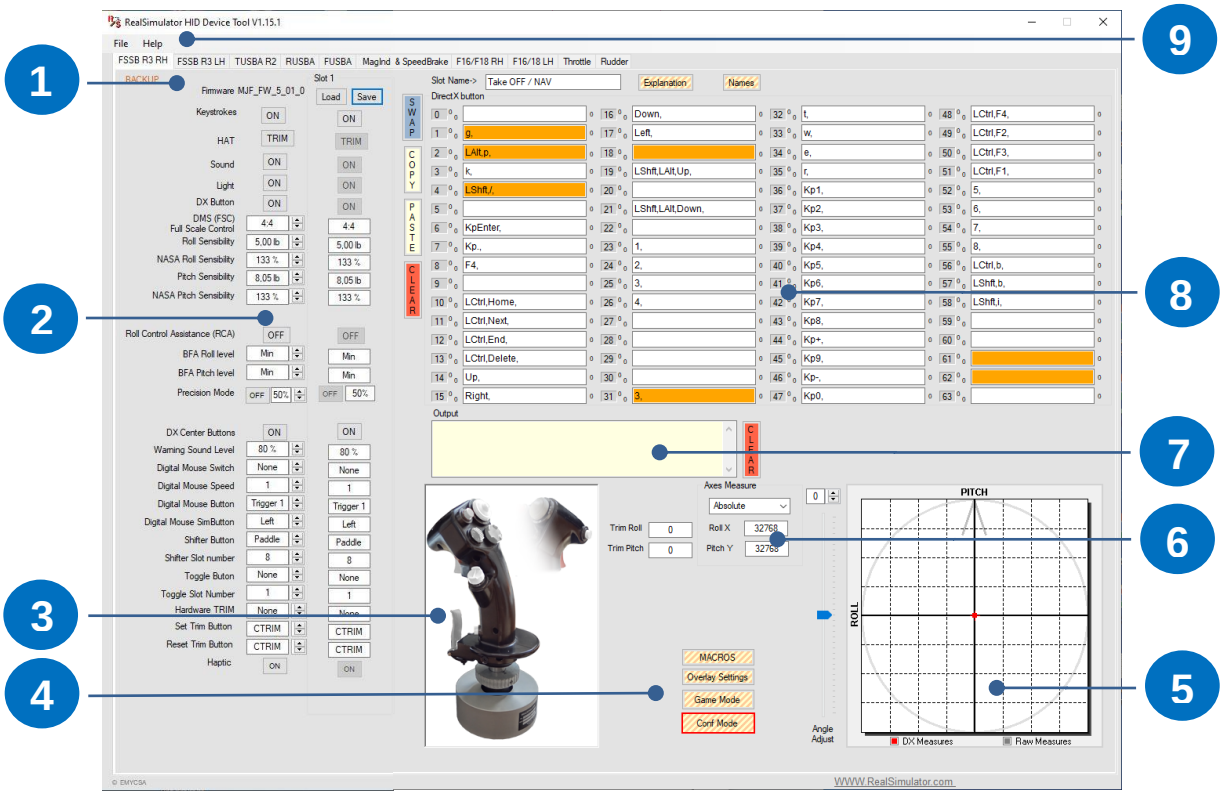
In this section we will give you a general overview of the RS_HID_DEV_TOOL program working with the FSSB-R3L.

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.

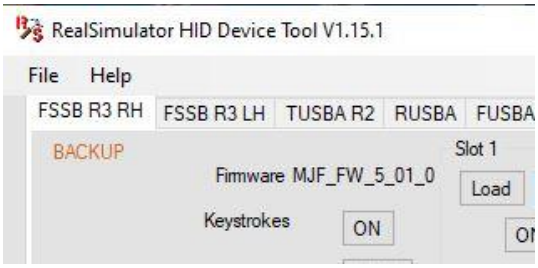


Select the "**FSSB R3 RH**" tab and you should see the following window, where we have identified with numbers the different information and configuration areas.

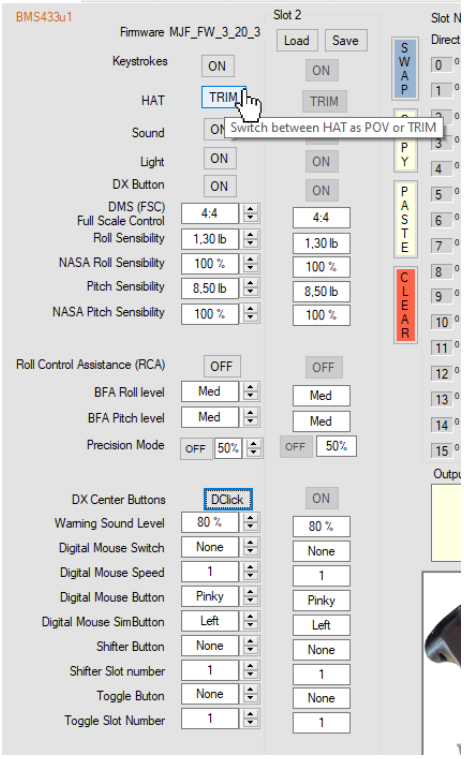


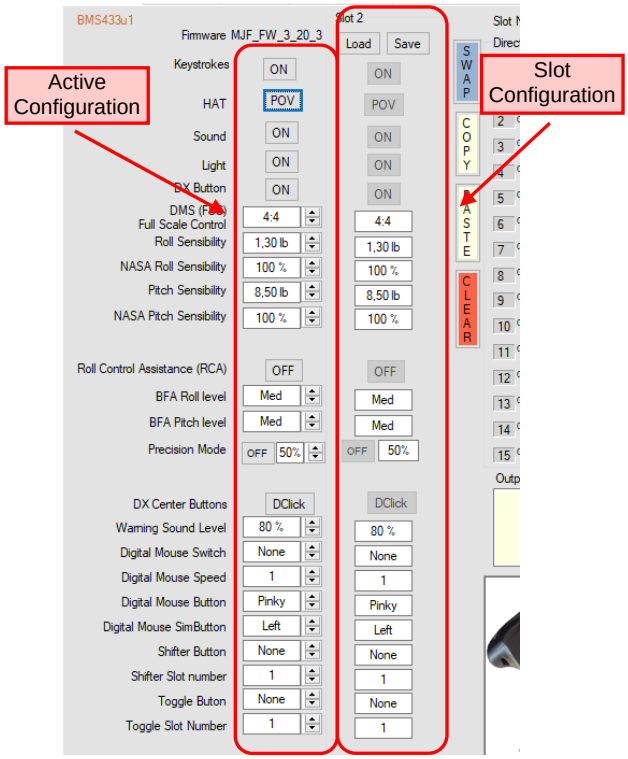
Below we present you a description of each area of previous image; we want to inform you that some images have not been updated and they are of previous versions, but they show you the necessary information.

1. Area showing the **firmware version** installed in the device 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.





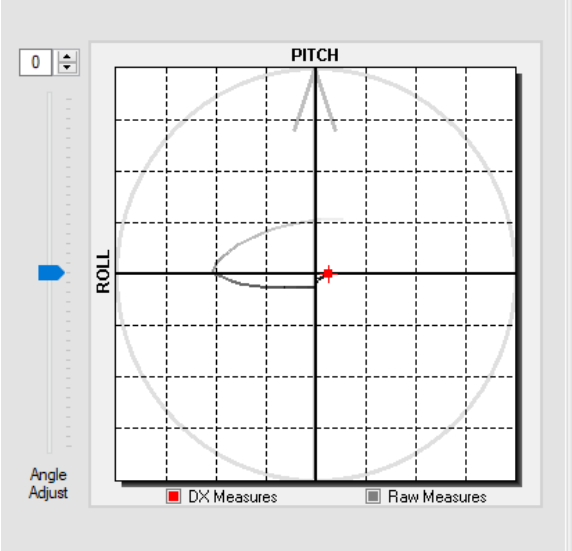
The buttons with a grey background have, in most cases, two options. The active option is shown in the button, while the alternate option will be displayed when the button is pressed. The image above the **HAT** button shows the "**TRIM**" option. If you press the button, it changes to the other possible 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.

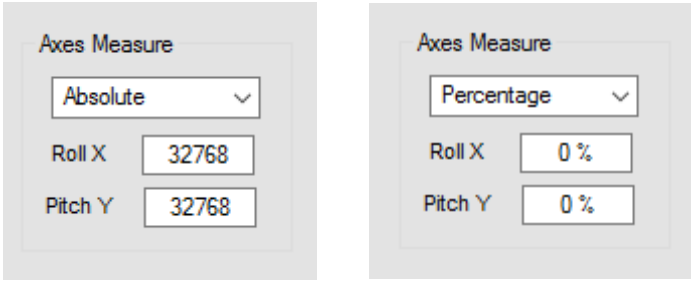
3. Animated area where the program graphically shows the buttons and hats actions of the stick.

4. 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.

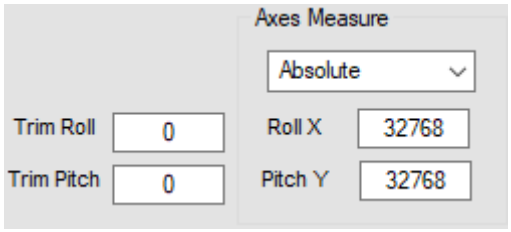
5. Animated area where shows in an X/Y graphic the Roll and Pitch measures. The actual measure is showed with a red pointer.



6. Groupbox with the axes measure, in this case Roll (axis X) and Pitch (axis Y). This information is showed numerically on text boxes and can be showed in **Absolute** or **Percentage** format. To change it, select the preferred option in the combo box.



Next to this groupbox is located two textboxes where are shown the trim values. You will see a detailed information about how it works in the Trim section.

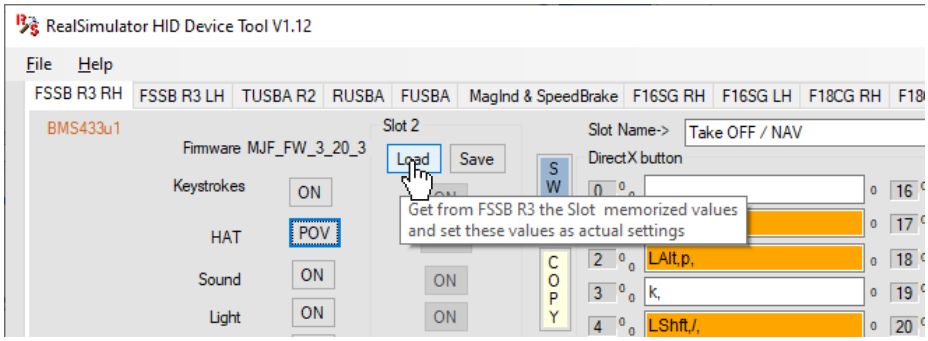


7. Text window named **Output** to test the keystrokes.

8. 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.

9. 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.



Now in next chapter we will explain all features include in the firmwares and managed by the RS_HID_DEV_TOOL.

***Note**: in this chapter we include some partial screenshots of previous RS_HID_DEV_TOOL versions; they have not been replaced because the content shown is the same than later versions. However, remind this firmware is only configurable with the RS_HID_DEV_TOOL v15 and higher.*

EMYCSA RealSimulator	MJF_FW_F16-18 Firmware	
	Date: 29-12-2022	**Version:** 3.01

PICTURE

LAST PUBLISHED FIRMWARE VERSIONS:

- *FSSB-R3 Lighting: MJF_FW_F16-18_5_01_0.FSSB_R3*
- *FSSB-R3L MKII ULTRA: MK2 MJF_FW_F16-18_5_02_0.FSSB_R3*

DESCRIPTION

Overview

This firmware includes support for F16SGRH grips, F18CGRH grips and TM compatible grips being a solid attempt to unify the functionalities of standard MJF, BMS and AER firmwares.

This is the more advanced firmware version and it will be the only firmware with maintenance and future updates.

This firmware has only a hid device with the X/Y axes and 64 buttons. Programs like MS Flight Simulator and DCS support more than 32 buttons in a hid device. Old versions of Falcon BMS only supported a maximum of 32 buttons per HID, so if you have installed an old program version, it will be necessary update it to the last version.

Other new feature included in this firmware is that it supports the new RealSimulator v2 grips with haptic feedback.

This firmware MJF_FW_F16-18 will be the only firmware with maintenance and updated in the future.

Modifications and new features included in firmware versions later than 5_00:

- **Version 5_01_0:**
  - It includes support for haptic feedback in RealSimulator v2 grips.

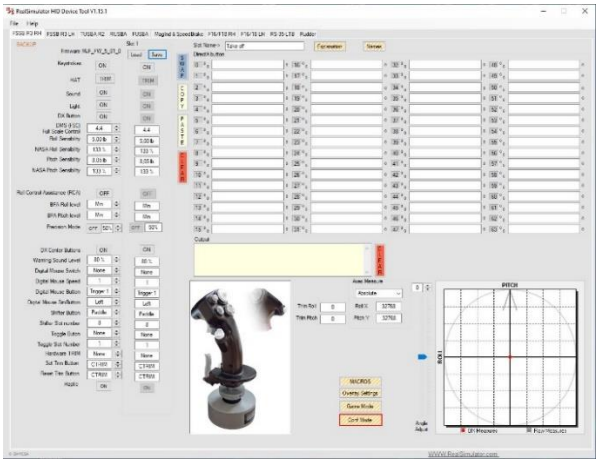
- **Version 5_02_0:**
  - Available only for the MKII ULTRA. It fixes some issues in TRIM and NASA features.

When the FSSB-R3L has connected RS grips, the user has available 8 slots selectable by the rotary switch and when has connected a TM compatible grip has 4 slots selectable by the Special Modes Menu as with the classic firmwares.

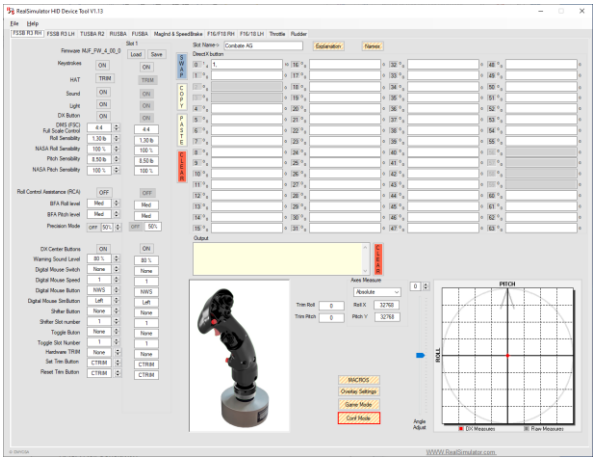
In any way, if you are going to connect a RS grip to the FSSB-R3 Lighting this firmware allows you to play without connection problems because the FSSB-R3L assumes all the stick functions and the Bluetooth connection isn't necessary. In fact, if you install this firmware in the R3 Lighting, **we suggest you remove the Bluetooth device from the "Device and Printers" window** to receive information from only the FSSB-R3 Lighting, if not, you will receive information from two devices, the FSSB-R3 Lighting and the Bluetooth grip device, and everything will be more complicated when configure the simulation program.

This firmware is only configurable with the RS_HID_DEV_TOOL v1.15 and higher, so we suggest always install and use the last version.

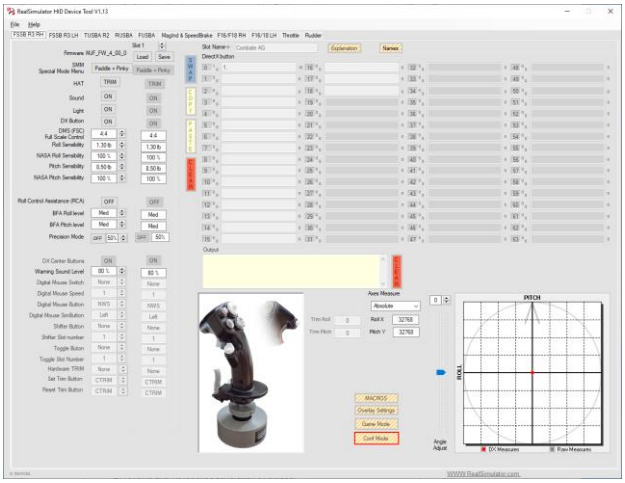
In function of grip connected the RS_HID_DEV_TOOL will show more or minus features enable.



FSSB-R3L with a RS F16SGRH v2 grip



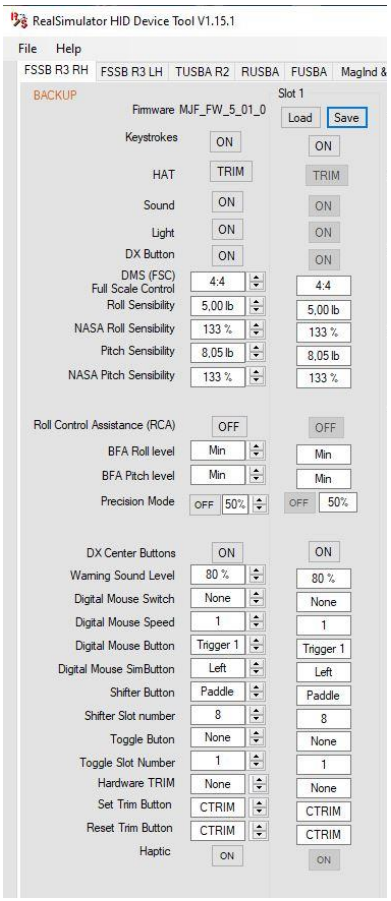
FSSB-R3L with a RS F18CGRH grip



FSSB-R3L with a TM compatible grip

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

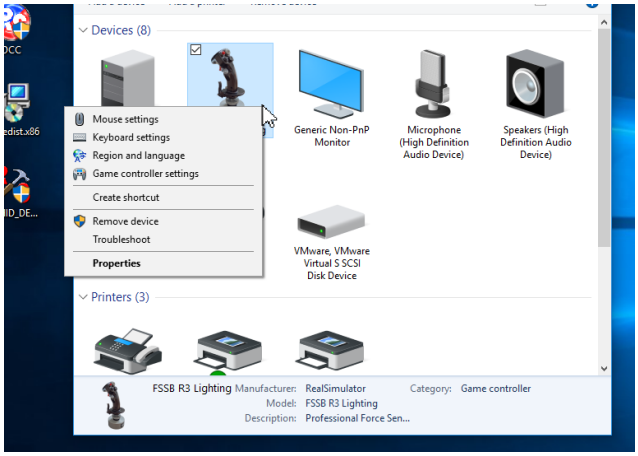
Every FSSB-R3L slot has the following settings:



- 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
- 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.
- Trim adjusts.
- Haptic.

Note: *some of previous features are only available with the RS grips.*

With this firmware the FSSB-R3L is a composite device with a **Game Controller** for the DX axes and DX buttons, a **Keyboard** to send programmable keystrokes and a **Mouse**. It is shown in the Devices and printers windows as a joystick named **FSSB R3 Lighting.**

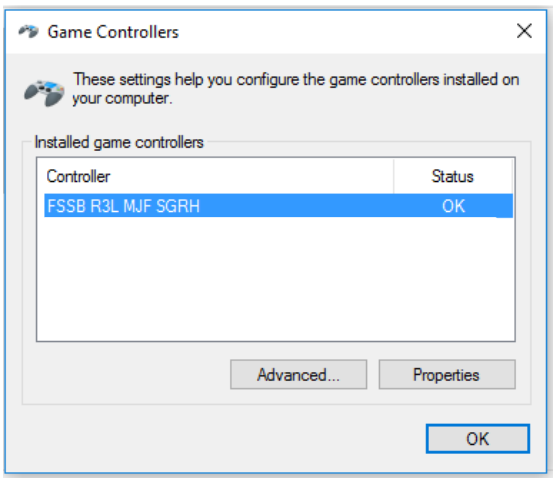


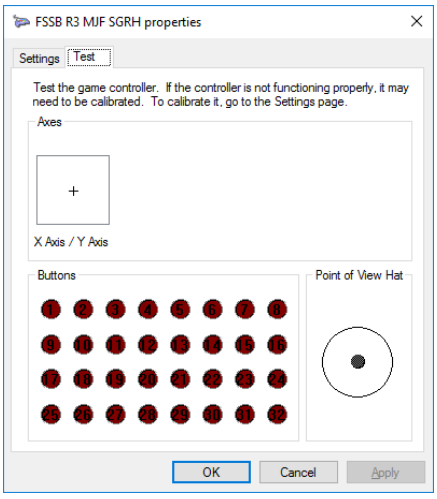
When you plug in the FSSB-R3L with this firmware installed to an USB port, the joystick will be displayed in Windows and all applications that can handle HID devices, with the name “FSSB R3 MJF SGRH”, as you can see in the next image in the Game Controllers window.

Some operating systems do not change the name directly and you find “FSSB R3 MJF J+B”, but after launch the RS_HID_DEV_TOOL with the device plugged, the name will change to “FSSB R3 MJF SGRH”.

***Note**: in this chapter we include some partial screenshots of previous RS_HID_DEV_TOOL versions; they have not been replaced because the content shown is the same than later versions. However, remind this firmware is only configurable with the RS_HID_DEV_TOOL v15 and higher.*

With this firmware installed you will see only one **FSSB R3 MJF SGRH** device. This device will show the Roll (X Axis) and Pitch (Y Axis) axes, 32 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.



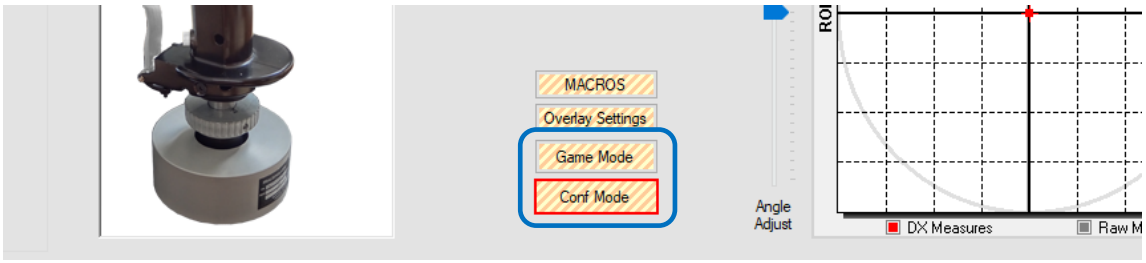


Now in next sections we will explain all features include in this firmware. First, we will show them with a RS grip because it can manage all of them, and finally we will specify the features that TM compatible grips can manage and how they do it.

RS_HID_DEV_TOOL and FSSB-R3L + RS Grips

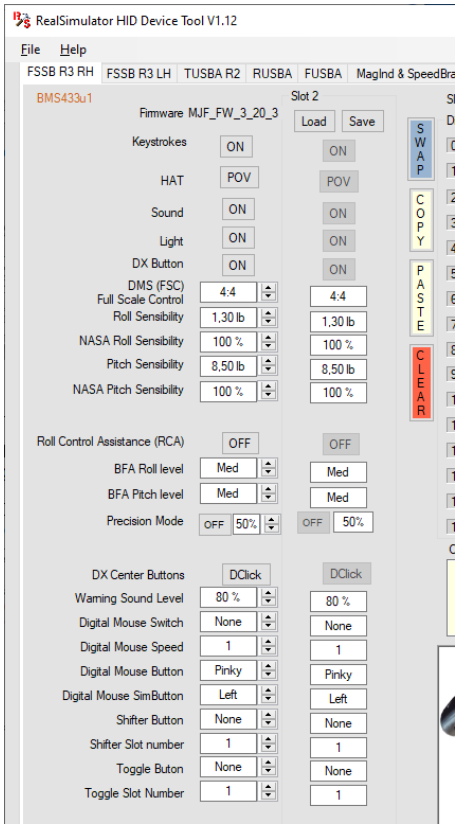
There are two important concepts that you need to know before starting with the explanation of how this FSSB-R3L firmware and RS_HID_DEV_TOOL work.

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.

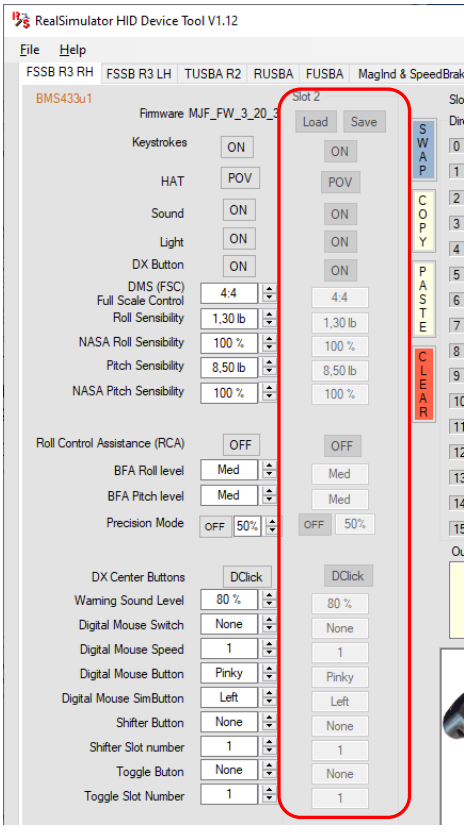


The **Configuration Mode** is the standard mode to configure the FSSB-R3L. In this mode you can load a slot in the Active Configuration area, modify it, try it and when you are satisfied with the settings to save it in the slot number that you want. In this mode, when you change the slot with the rotary only change the information shown in the Slot Configuration area. It is necessary press the Load button to pass this information to the Active Configuration area to be effective.

The **Game Mode** simulates when the RS_HID_DEV_TOOL is closed and changing the slots with the rotary switch changes fully the active configuration. As you will be able to see in next sections some features need this mode to work properly with the program opened.



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.

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

The program saves the information in two places:

a) On the computer, in an .xml file, in the folder %APPDATA%\Realsimulator Data\FSSB R3. Here, it saves the configuration settings, the keystrokes and the explanations associated with all slots.

b) The device itself (in non-volatile 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.

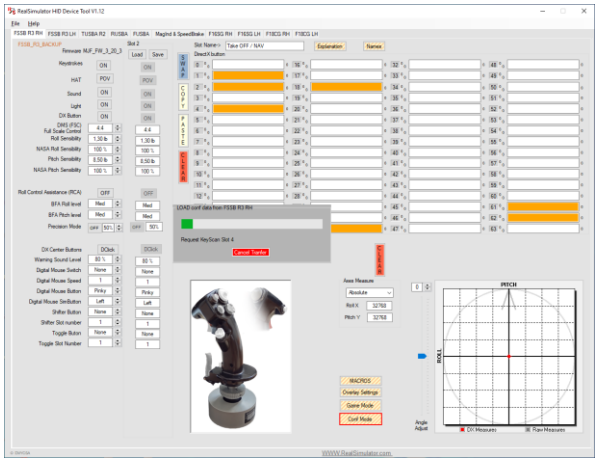
Now we can start to describe the connection between the application and the device.

As soon as the user launches the RS_HID_DEV_TOOS or clicks on the tab **FSSB R3 RH**, the application fills the slot configuration data with the information stored in the file FSSB_R3_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.

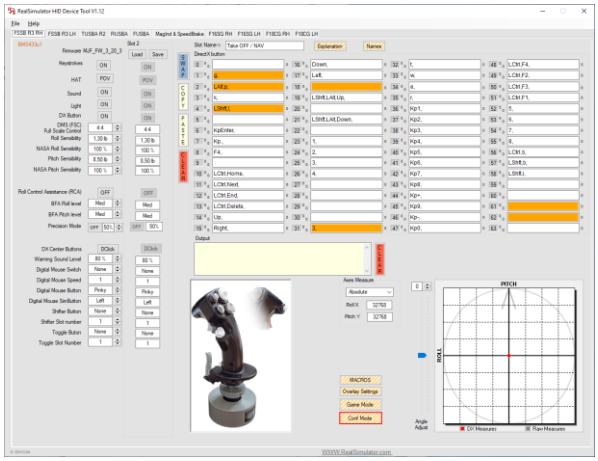
Next, it checks if a FSSB-R3L is already connected to the computer by USB. If so, the stick image changes to a colour representation and all the slots configuration data are loaded from the FSSB-R3L.

As we explained above, the application loads all the slots information except the keystrokes explanation from the FSSB-R3L, but as it loads also the .xml file name, the application searches the .xml file in the data folder and extracts the Explanations 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

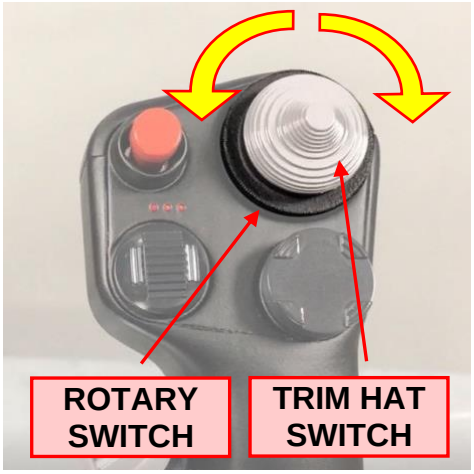


Updated info after loading

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 this firmware works

From the point of view of FSSB-R3L, the RS grip is a grip with buttons and hats 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 FSSB R3L has, allowing to reconfigure your whole system in a fraction of a second.

Users with a TM compatible grip have only four programmable configurations and they can change individual settings in the configuration by the **SMM** (you can read information about in the section "Connecting FSSB-R3L with TM compatible grips" in this chapter.

Now, with the RS grips (F16SGRH/F18CGRH) 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 fitted 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 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 grip (F16SGRH/F18CGRH) information is sent through the 5-pin mini-Din connector to the FSSB-R3L. It is only the 64 buttons status and the rotary switch position.

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 each time the device 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 the user can change the settings of this area with the buttons and numeric Up/down controls to configure it. Finally with the **Save** button can save the configuration in the non-volatile area.

Changes with the rotary switch to change the active slot or **Load** actions overwrite this area with the new information and non-saved info is lost.

Please, pay attention and understand the previous explanation, it is very important to configure the FSSB-R3L.

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.

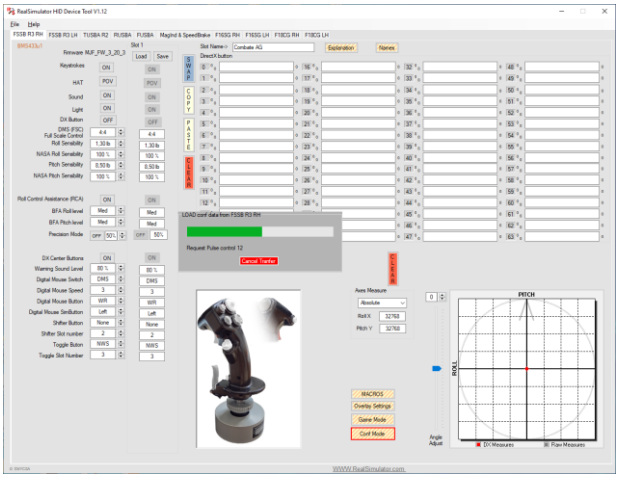
c) **Flash area**: it is in non-volatile memory and it stores the information to be loaded after the power is on.

This area is automatically updated when a slot configuration change is done and saved voluntarily with the **Save** button. The device beeps and lights in green.

This area can also be modified voluntarily with the keystrokes information after a change in this information. At that moment, an alert button will appear over the animated area to inform the user.

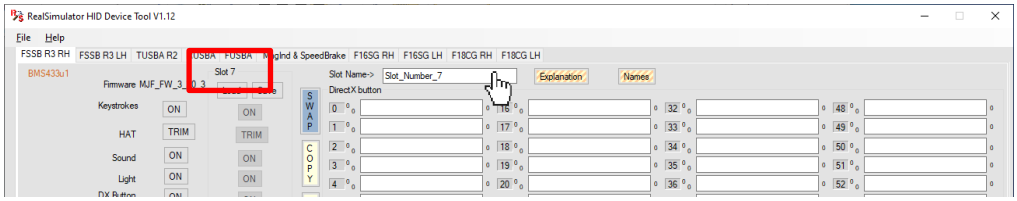
Let's see with an example the interaction between the different areas and the notifications received when, for example, you modify the slot 7 to adjust the Roll sensitivity to 75% and the DX button 0 with the keystroke "1":

1. Launch the **RS_HID_DEV_TOOL** and select the "**FSSB R3 RH**" tab. Wait until the system loads the configuration stored in the device.
   (**Instant** = changed, **Memory** = changed, **Flash** = unchanged)



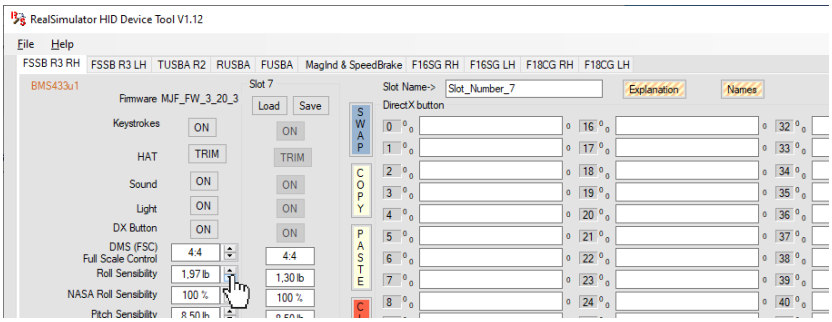
2. With the rotary switch, change the slot to 7 and verify as the slot info is transfer to the Instant area.

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



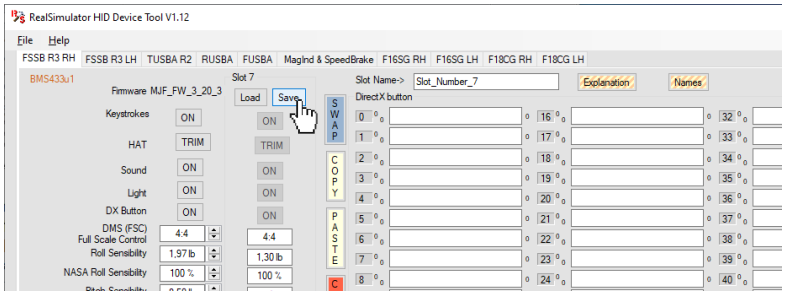
3. Change the Roll sensitivity to 1,97 lb

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



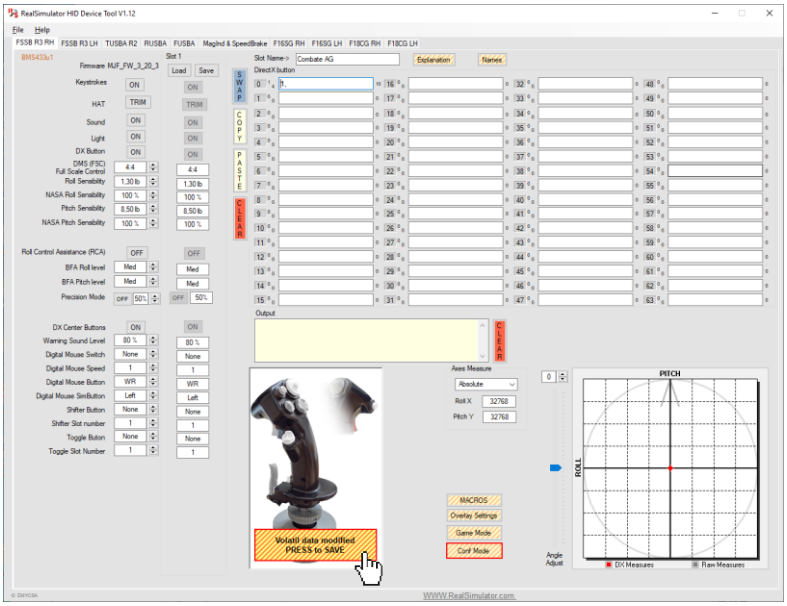
4. Click the **Save** button to pass the information from Instant area to the slot memory in Memory area and in Flash memory. The device will beeps and lights with the green light.

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



5. Now, click with the left mouse button in the text box of DirectX button “0” and enter the number “1” in the window that appears. As soon as the window closes and the keystroke “1” is shown in the text box a new alert button will appear over the animated area.

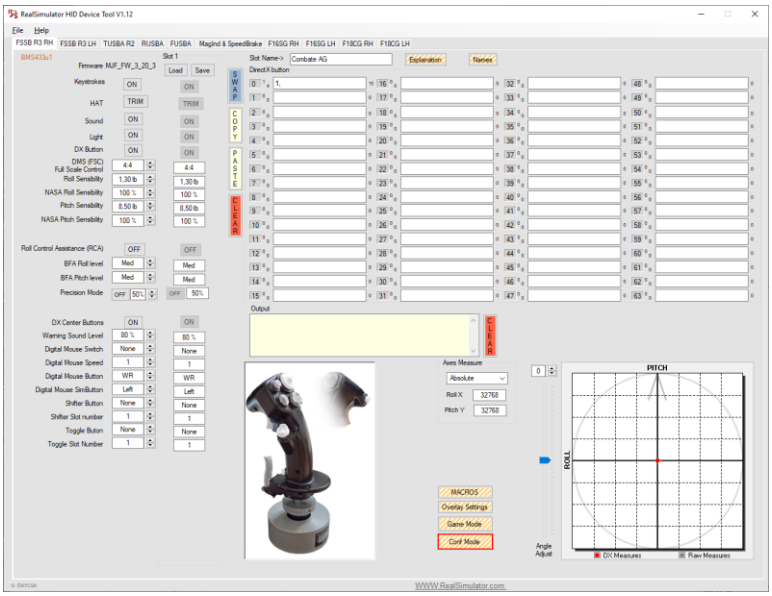
(**Instant** = changed, **Memory** = changed, **Flash** = unchanged)



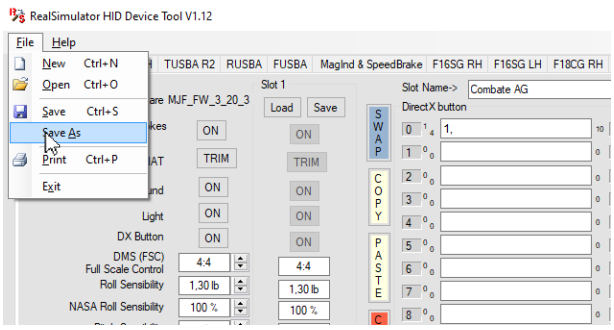
6. If click over the alert button the modification will be definitively stored in the flash area. The alert button will be deleted and a new beep and green light

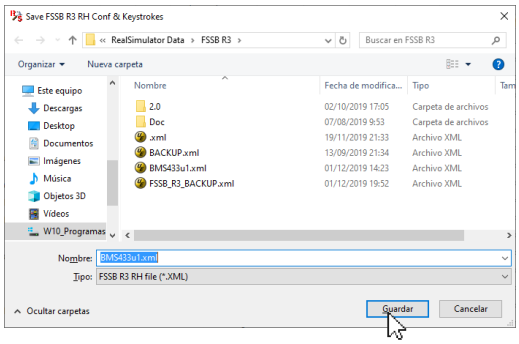
confirmation will be sent.

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



7. 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 FSSB-R3L 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.

Finally, just as when writing a letter, 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 data, it is only an alert box to inform you. Save from time to time in order not to lose the changes.

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 this firmware works**", we suggest reading it to know how to modify the settings and not to lose them.

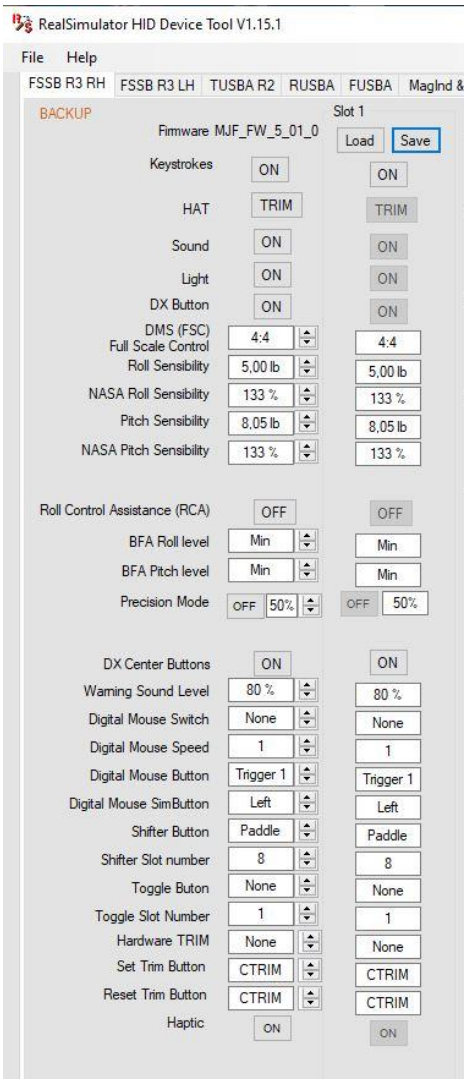
In every slot you can configure the following:

a) Analog settings:

- Full Scale Control.
- Roll Sensitivity.
- NASA Roll sensibility.
- Pitch Sensitivity.
- NASA Pitch Sensibility.
- Roll Control Assistance.
- BFA Roll level.
- BFA Pitch level.
- Precision mode.
- Roll and Pitch Trim.

b) Digital settings

- Keystrokes ON/OFF.
- HAT as POV or TRIM.
- Sound ON/OFF.
- Light ON/OFF.
- DX Buttons ON/OFF.
- DX Center Buttons mode.
- Warning Sound Level.
- Keystrokes and Explanations
- Digital Mouse.
- DX events and Keystrokes generation by pulses.
- Additional slot change thanks to the Shifter and Toggle functions.
- Haptic.

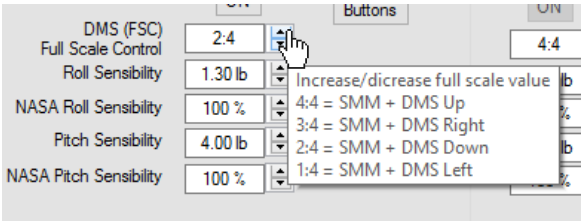


Now we will explain in detail each setting.

FULL SCALE CONTROL (FSC)

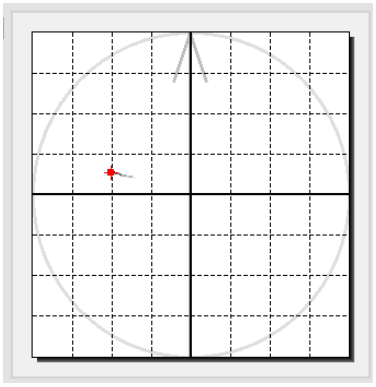
This control allows adjusting the full scale of Roll and Pitch axes in four levels. The indication is showed numerically on a textbox and the selection is done with an Up/Down indicator.

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

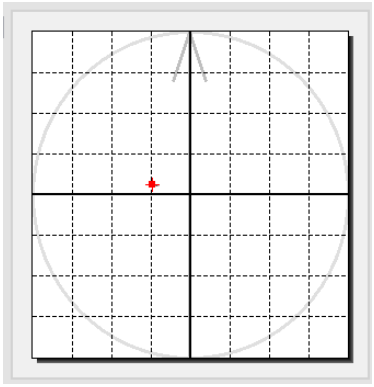


This allows configuring different flight control's response level for the same input signal of force.

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



FSC = 4:4

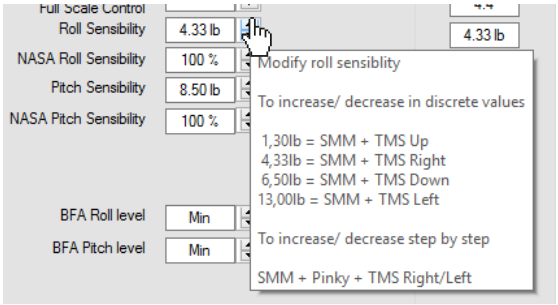


FSC = 2:4

ROLL SENSIBILITY

This control allows changing the Roll axis sensibility in discrete steps from 1.30 lb. to 13 lb. The step value is not fixed; it is variable in function of sensibility value. It goes from small values of 0,025 lb. in high sensibility until big values of 2 lb. in low sensibility.

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

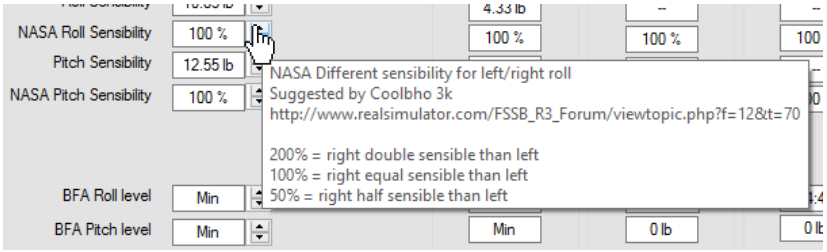


Roll sensibility

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

NASA ROLL SENSIBILITY

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



NASA Roll sensibility

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

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

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

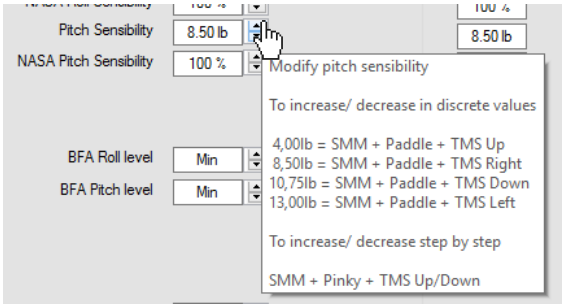
So, if you want configure more realistically your stick select a NASA Roll sensibility of:

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

but try to test between 110% and 133% and find the more comfortable value for you.

PITCH SENSIBILITY

This control allows changing the Pitch axis sensibility in discrete steps of 0.45 lb. from 4 lb. to 13 lb. The indication is showed numerically on a textbox and the selection is done with an Up/Down indicator.



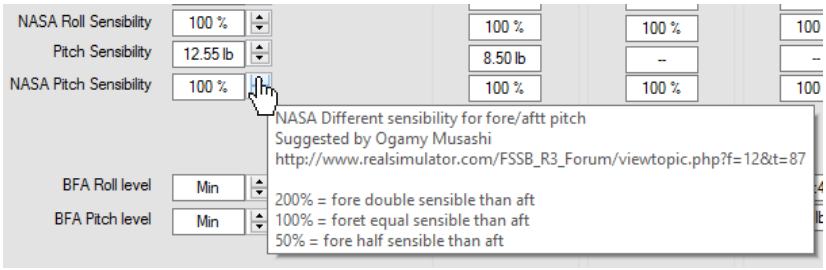
Pitch sensibility

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

NASA PITCH SENSIBILITY

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

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



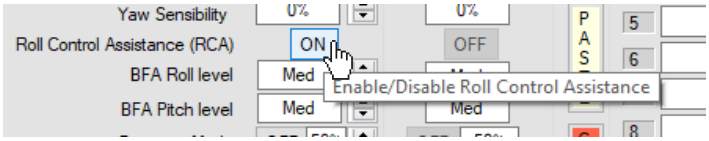
NASA Pitch sensibility

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

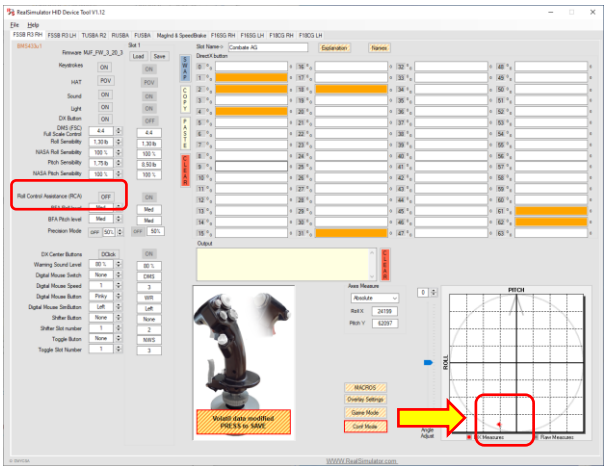
Equal to in the previous NASA Roll adjust, if you want to adjust more realistically your stick, adjust the **NASA Pitch sensibility between a value of 110% and a 133%** and find the more comfortable value for you.

ROLL CONTROL ASSISTANCE (RCA)

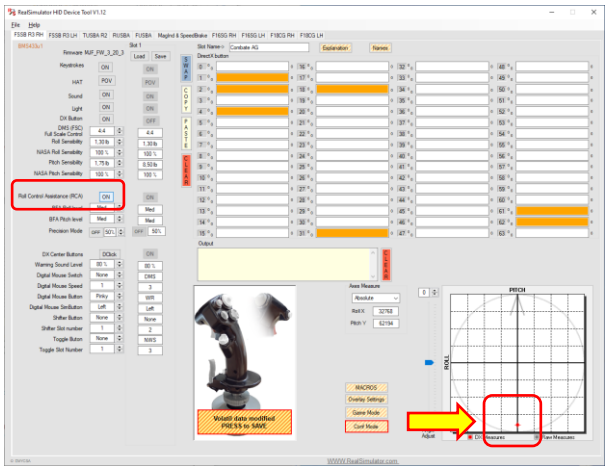
This feature enables (ON) and disables (OFF) the Roll Control Assistance. The Roll Control Assistance (RCA) intends to compensate in maneuvers with high angle of attack and small or no roll, as looping maneuvers, the effect of roll introduced "unintentionally" by the pilot during the maneuver execution. 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): 25%, Pitch (Y): 89%



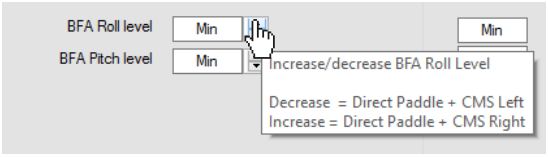
RCA: ON, Roll (X): 0%, Pitch (Y): 90%

BFA ROLL AND PITCH LEVEL

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

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

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

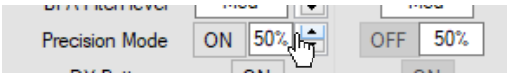


BFA Roll level

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

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.



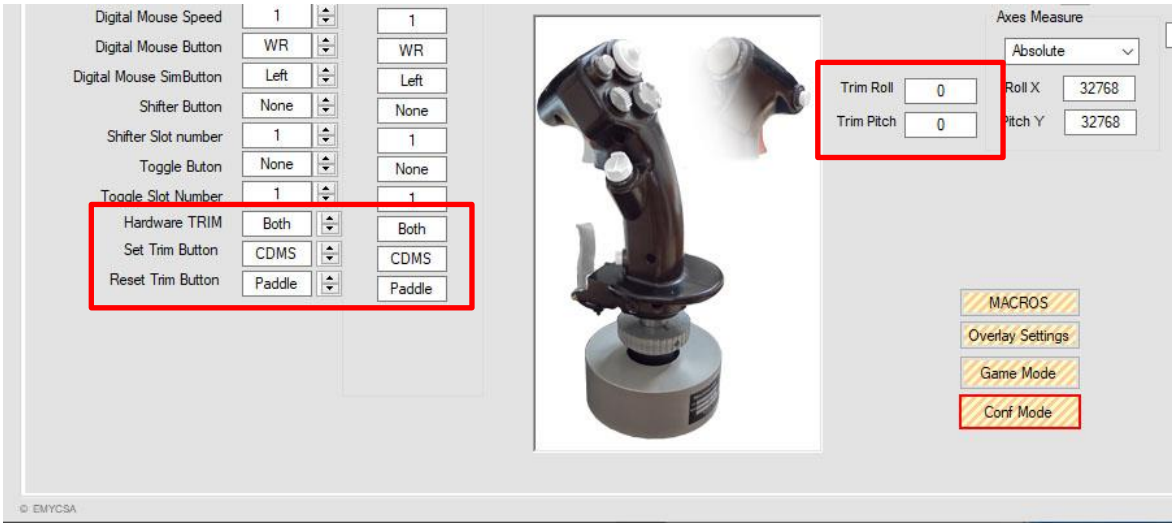
The feature is activated through an ON/OFF button and the sensitivity reduction is shown numerically in a text box and modified with an Up/Down indicator. “Trigger 1” enables/disables the feature while it is pressed, i.e., if you enable this feature by setting the button in ON, when you press the trigger 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.

ROLL AND PITCH TRIM

Now it is possible to trim your plain like in the real world with this new feature.



As you can see in the previous image the Trim system is composed by:

- Two text boxes to show the **Roll** and **Pitch Trim** values.
- The **Hardware TRIM** selector, where choose which axes will be trimmed. It has the next options: **None** (no trim), **Roll** (only trim in Roll), **Pitch** (only trim in Pitch) and **Both** (as normal trim in Roll and Pitch).
- The **Set Trim Button** selector, where you can select the center button switch to set the actual Roll/Pitch values as Trim values. You can choose between the next switches: **CTRIM, CDMS, CTMS, CCMS, CWR, CNWS, CPinky** and **Paddle.**
- The **Reset Trim Button** selector, where you can select the center button switch to set the trim values to cero. You can choose between the next switches: **CTRIM, CDMS, CTMS, CCMS, CWR, CNWS, CPinky** and **Paddle.**
- And finally, the **TRIM hat switch** to adjust the trim slowly.

Let’s see how the trim feature works. The TRIM system is enabled always the

Hardware TRIM selects a different option than None. With the system enabled you can use the TRIM hat switch to manual and slowly trim the attitude of your plain in the axes selected by the selector or to apply a correction over a previous trim value.

Additionally to this previous way to trim the plain, there is another fast possibility to trim the plain attitude; it is compensate with the force applied to the FSSB-R3L until get the desired attitude and then press and release the selected Set Trim Button. When release the button the actual roll and pitch values will be used as TRIM values of axes selected in the Hardware TRIM selector, so after release the switch you can leave the stick free and the FSSB-R3L will maintain the pitch and roll values saved.

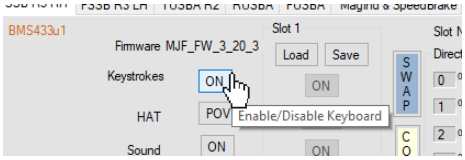
As additional information, because is more comfortable, you can fly with the selected Set Trim Button switch pressed, only it is important when you release it.

Every time you release the selected Set Trim Button the system will use the actual values of pitch and roll as TRIM values, i.e. if we set a first trim of 50% of each axis for example and after we need to do a second trim of 5% to correct it for a more precise adjust, the final trim values will be 5%. To correct the adjusted TRIM values, you must to use the TRIM hat switch.

To reset the TRIM values (or previously to do a new adjust) you must to use the Reset Trim Button, it will set the Trim Roll and Pitch to zero.

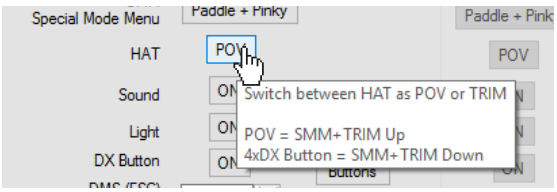
KEYSTROKES ON/OFF

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

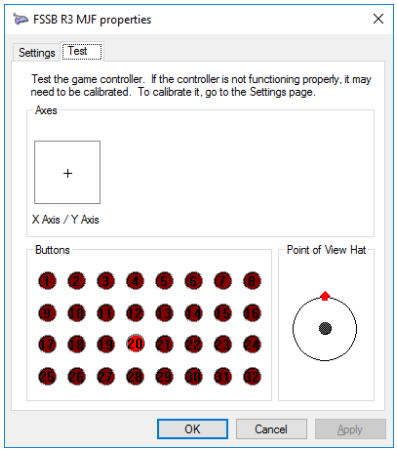


HAT (AS POV OR TRIM)

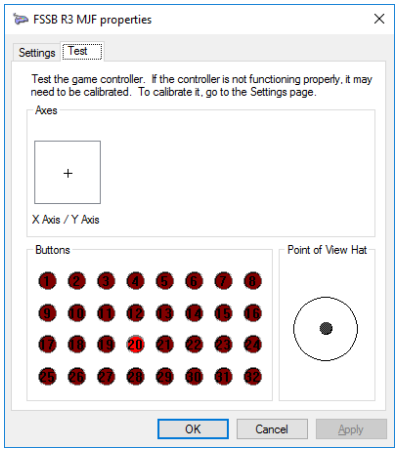
This button allows configure the HAT TRIM switch as POV (Point Of View) switch or TRIM command. This allows the HAT during the use of the joystick, control the views in POV mode or submit the information to 4 HID buttons for use as TRIM, which is its function in real life.



These DX buttons are the 20 (up), 21 (right), 22 (down) and 23 (Left).



HAT POV Up in POV mode

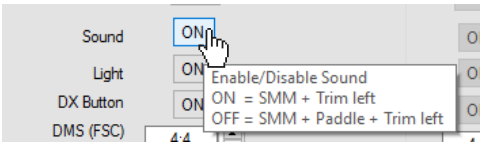


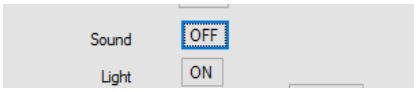
HAT POV Up in TRIM mode

DX Trim buttons are always operatives whether the HAT button is on TRIM or POV option; POV (Point of View) option is only operative when HAT button is on POV.

SOUND (ON/OFF)

Let you activate and deactivate the beep sound.

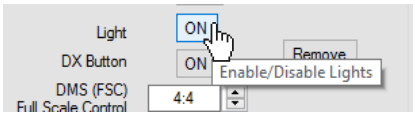




LIGHT (ON/OFF)

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

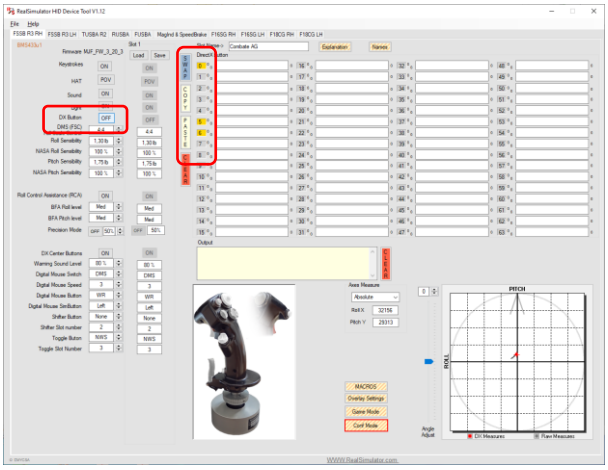
This feature is only available in the FSSB-R3+ Lighting. In the FSSB-R3 has not functionality.



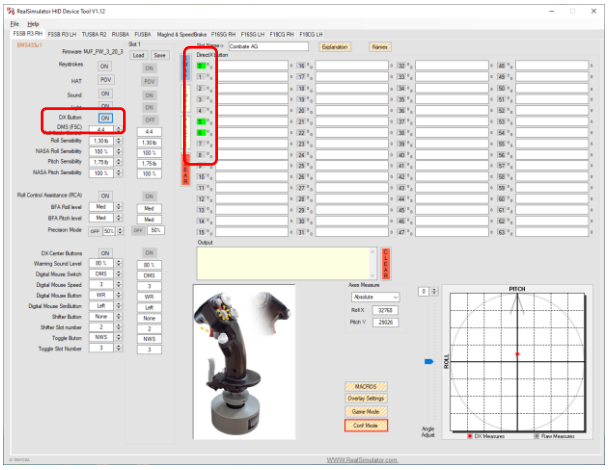
DX BUTTONS ON/OFF

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.

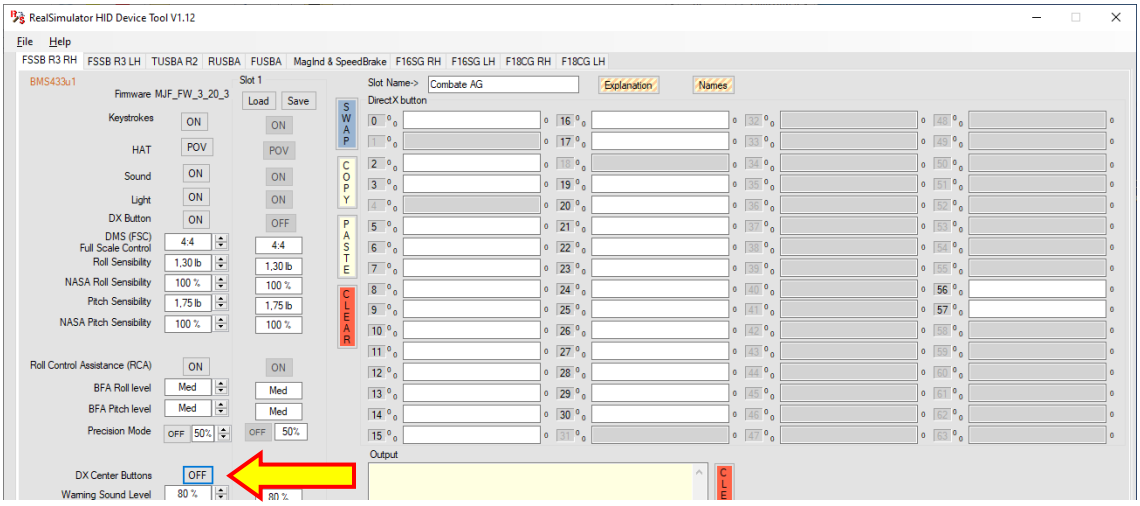
DirectX button

0	Trigger 1	16	CMS Down	32	Trim C + Nose Down	48	WR C + UP
1	WR Weapon release	17	CMS Left	33	Trim C + Left Wing Down	49	WR C + Right
2	Pinky	18	CMS C	34	Trim C + Nose Up	50	WR C + Down
3	Paddle	19	WR UP	35	Trim C + Right Wing Down	51	WR C + Left
4	NWS Nosewheel Steering	20	WR Right	36	TMS C + Up	52	NWS C + UP
5	Trigger 2	21	WR Down	37	TMS C + Right	53	NWS C + Right
6	TMS Up	22	WR Left	38	TMS C + Down	54	NWS C + Down
7	TMS Right	23	NWS UP	39	TMS C + Left	55	NWS C + Left
8	TMS Down	24	NWS Right	40	DMS C + Up	56	Pinky Left
9	TMS Left	25	NWS Down	41	DMS C + Right	57	Pinky Right
10	DMS Up	26	NWS Left	42	DMS C + Down	58	Pinky C + Left
11	DMS Right	27	Trim Nose Down	43	DMS C + Left	59	Pinky C + Right
12	DMS Down	28	Trim Left Wing Down	44	CMS C + Up	60	Trim C
13	DMS Left	29	Trim Nose Up	45	CMS C + Right	61	DMS C
14	CMS Up	30	Trim Right Wing Down	46	CMS C + Down	62	TMS C
15	CMS Right	31	Trim C	47	CMS C + Left	63	

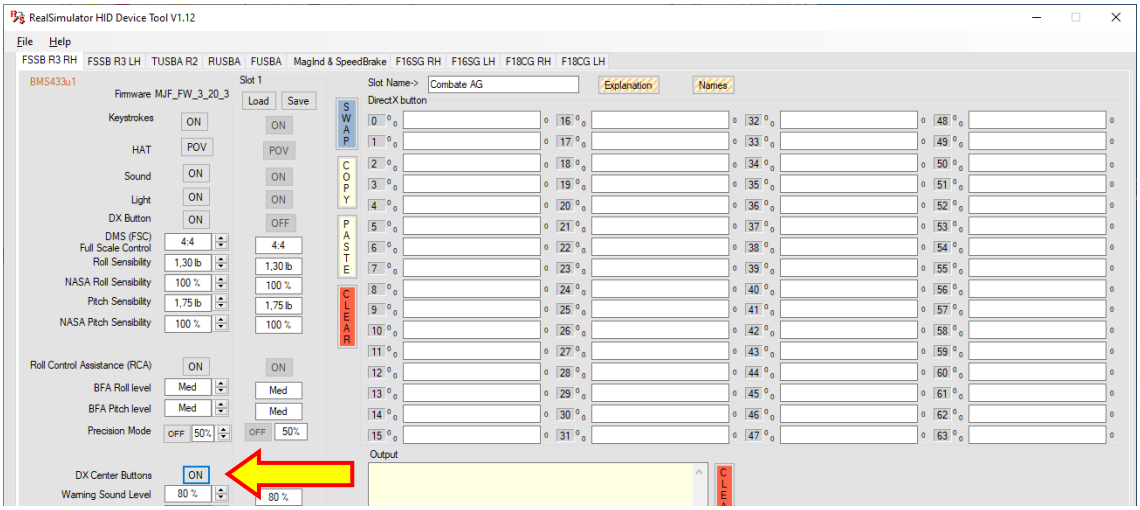
Output

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.

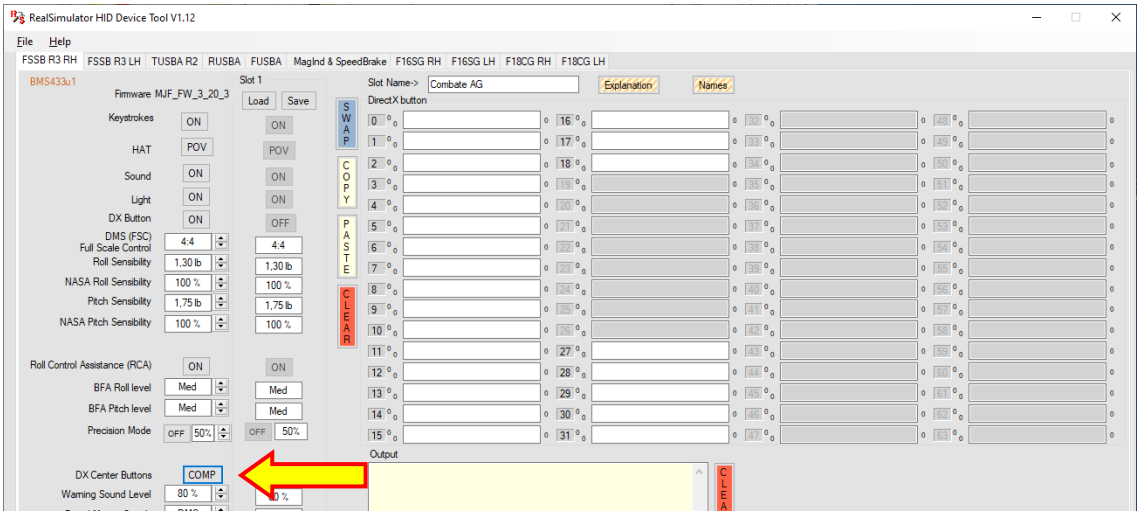


In **ON** mode, all center positions are enabled. This mode is also called **Native** mode because all assigned combinations are available.



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.

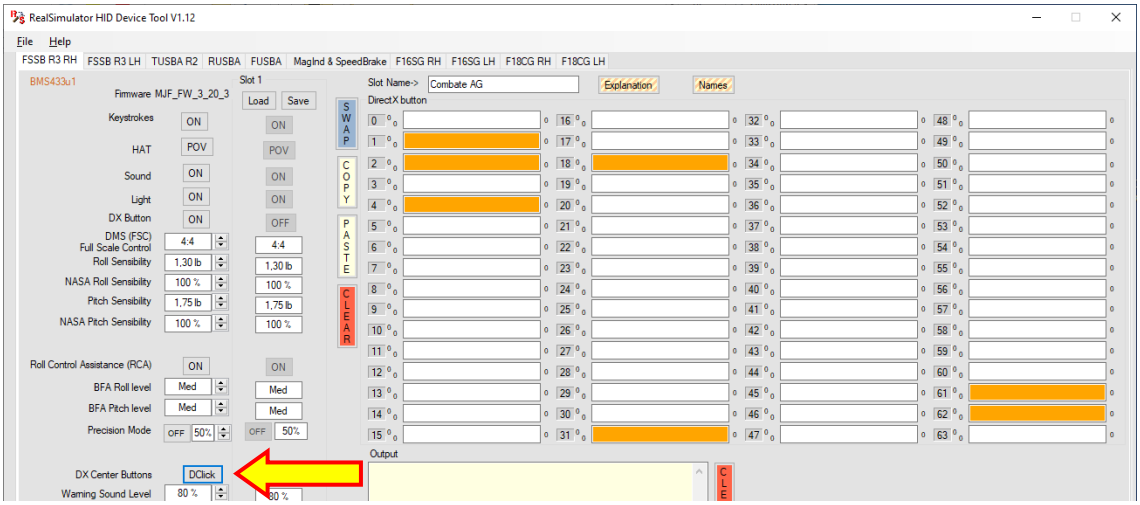
This mode is also named **Basic** because you have the standard 19 DX buttons of compatible TM sticks, plus the 5-way TRIM hat switch positions.



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***.

WARNING SOUND LEVEL

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

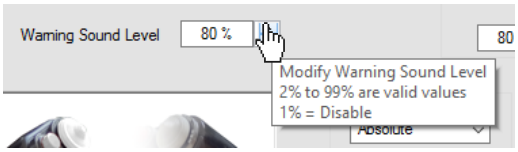
In FSSB-R3 forum "**Viggen**" explain the sense of this feature:

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

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

We have implemented this feature in the FSSB-R3L with a warning sound and a light blinking.

The level is showed on a textbox and the selection is done with the Up/Down indicator associated, with range of 1% to 99% in steps of 1%.



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

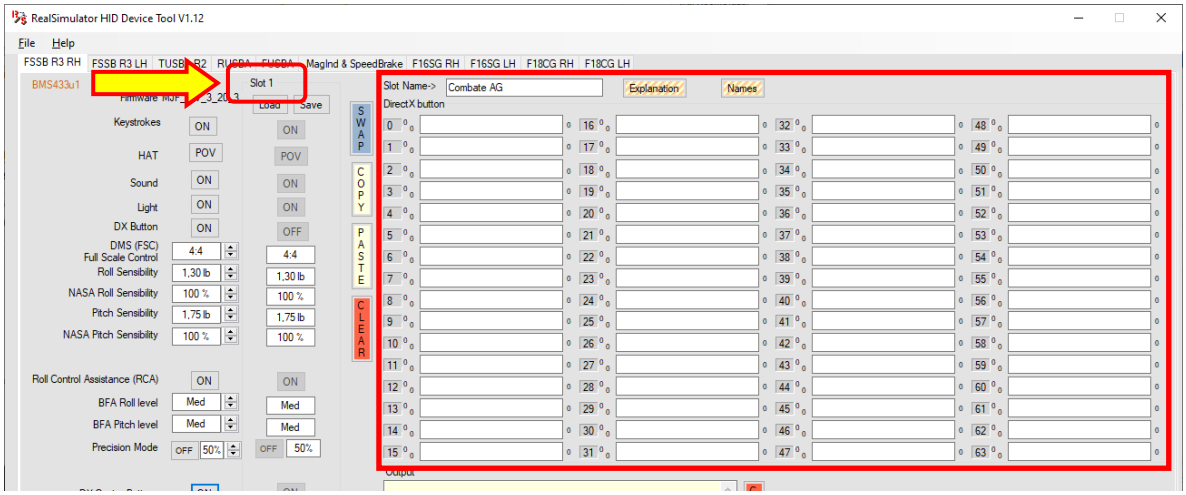
Others values from 2% until 99% enable the warning alarm from that level until 99% with a beep sound (dooot, dooot, …) and GREEM light blinking. In this case, when one or both axes are 100% scale, the alarm of maximum is enabled and the sound and light effects change to: beep sound (dot, dot, dot, …) and RED light blinking.

KEYSTROKES AND EXPLANATIONS

With this firmware the FSSB-R3L is a composite device with a **Game Controller** for the DX axes and DX buttons, a **Keyboard** to send programmable keystrokes and a **Mouse**.

We have seen before how to configure and adjust the DX axes and buttons of Game Controller, now we will see how to configure the keystrokes and later we will see how to configure the mouse. 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.

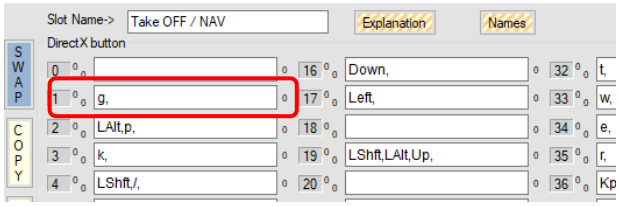


In the left upper corner of the squared area is the **Slot Name** field (“Combate AG” in the picture), where the user can write the slot name, so it will be easier to remember the slot function. To modify the content, click with the mouse on the text box and write the description you want.

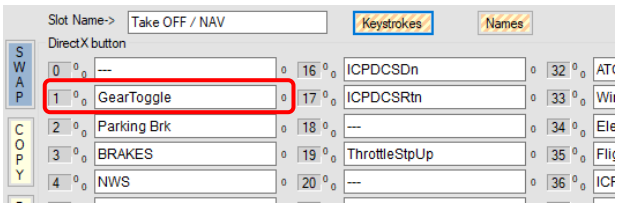
NOTE: remember that each time you change a parameter, it is immediately active and it

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 this firmware 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

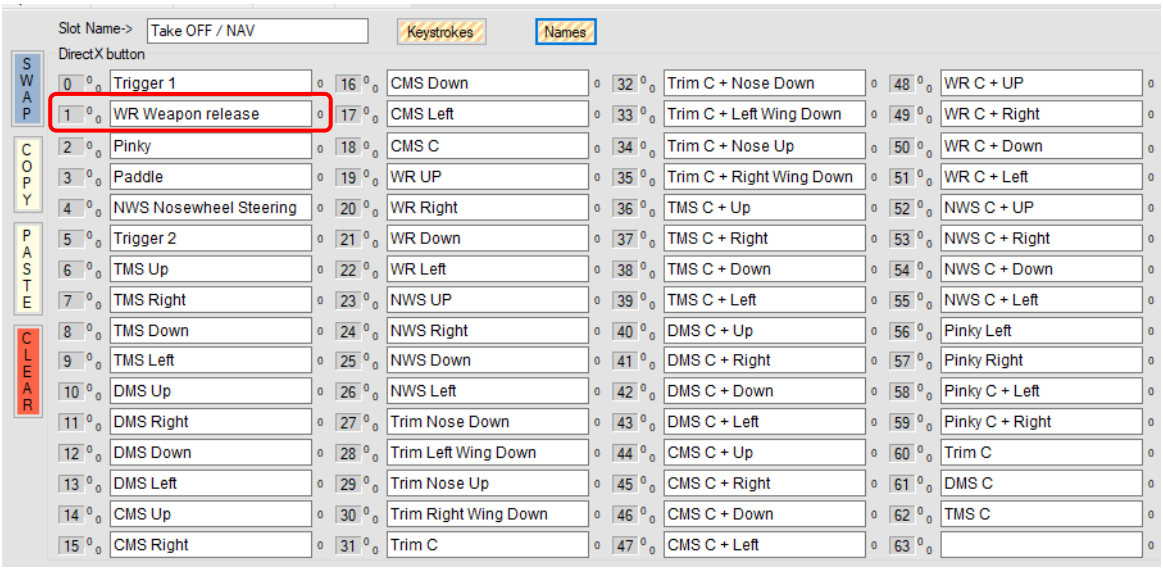


Keystrokes text box with Explanations info

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.

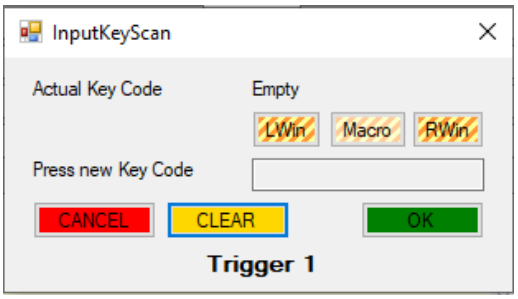
If you want to maintain shown the Names info after press the button, press at time with the two mouse buttons (left and right); to finish the presentation press the Explanation/Keystrokes button.



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).

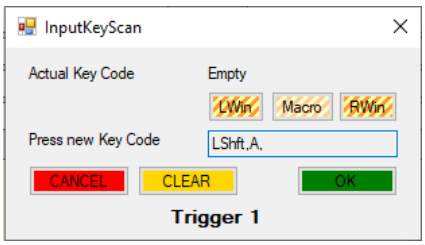
Next, with the button "**Explanation/Keystrokes**" in Explanation, click the text box assigned to the DX button lighted and a new window will be displayed to enter the key codes sequence.



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, 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 program and files where you save the configuration can use two keys, the rest are ignored.

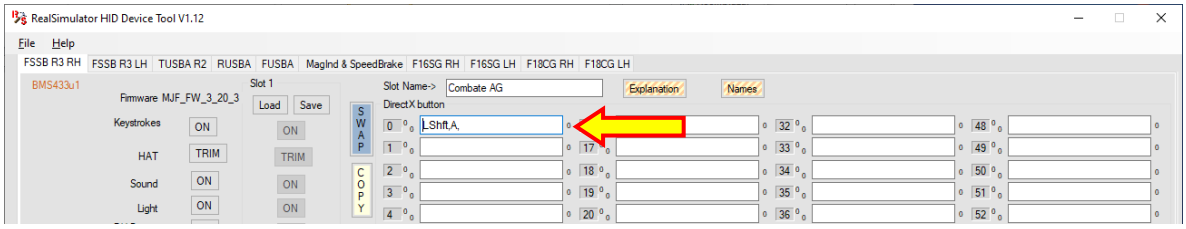
To enter the key codes, press the key sequence you want to compose the keystroke event and always maintain one key pressed, because the sequence is finished when you release the last key. In our example, we press the key "Left Shift" and the key "A".



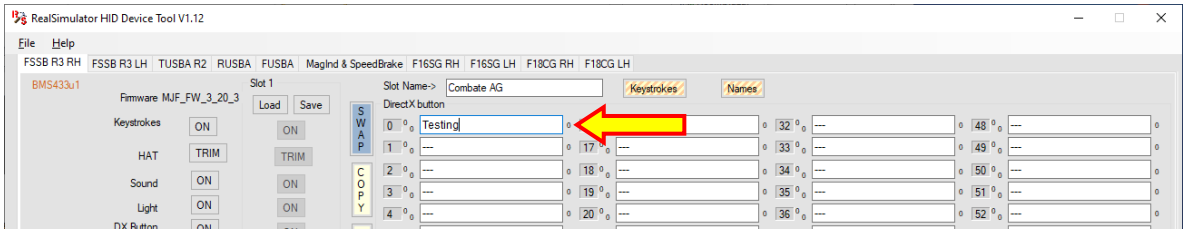
Finally, press "**OK**" to validate.

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.

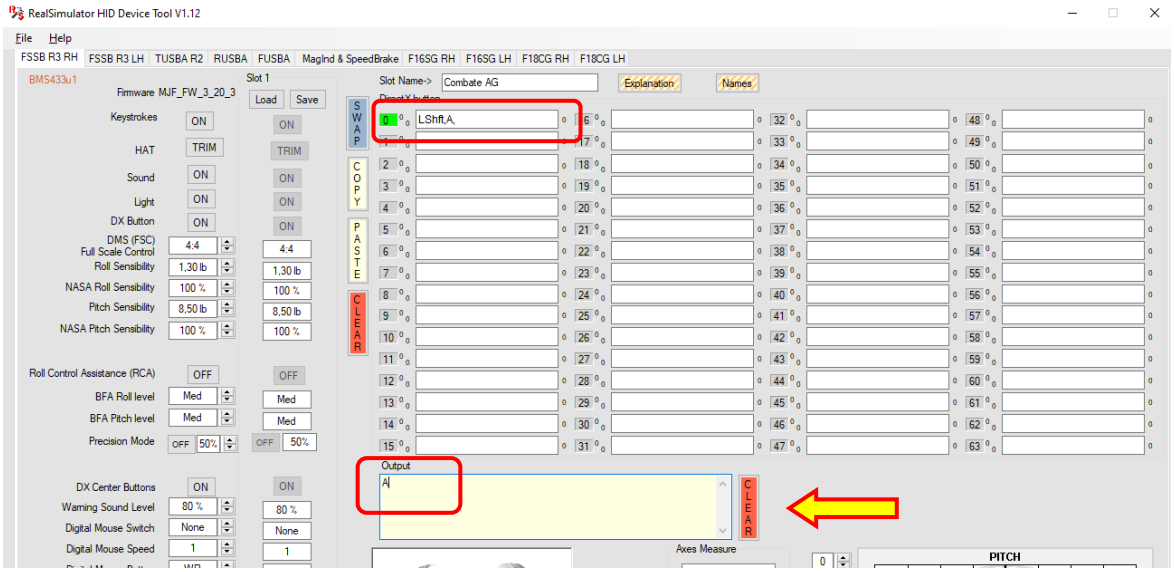


To enter the explanation of this keystroke, press the button "**Explanation/Keystrokes**" to change it to Keystrokes and then click the keystroke text box where you entered the key codes and write the comment you want. The explanation info is not necessary, it is only a help to remember the keystroke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



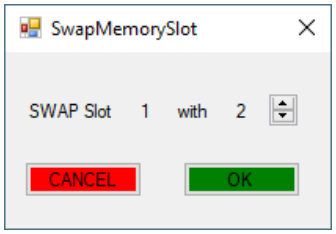
Finally, you can check the keystroke operation. For that, click the **CLEAR** button associated to the **Output** text box to clear its content and press the "**Trigger 1**" switch in the stick and check that the key codes entered are shown in the"**Output**" text box.

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 program includes four buttons: SWAP, COPY, PASTE and CLEAR.

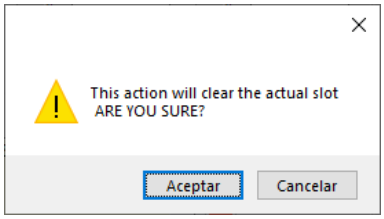
SWAP button allows, like its name says, to swap the actual slot configuration with another one. The selection of slots is made with a new window that is displayed after pressing the **SWAP** button.



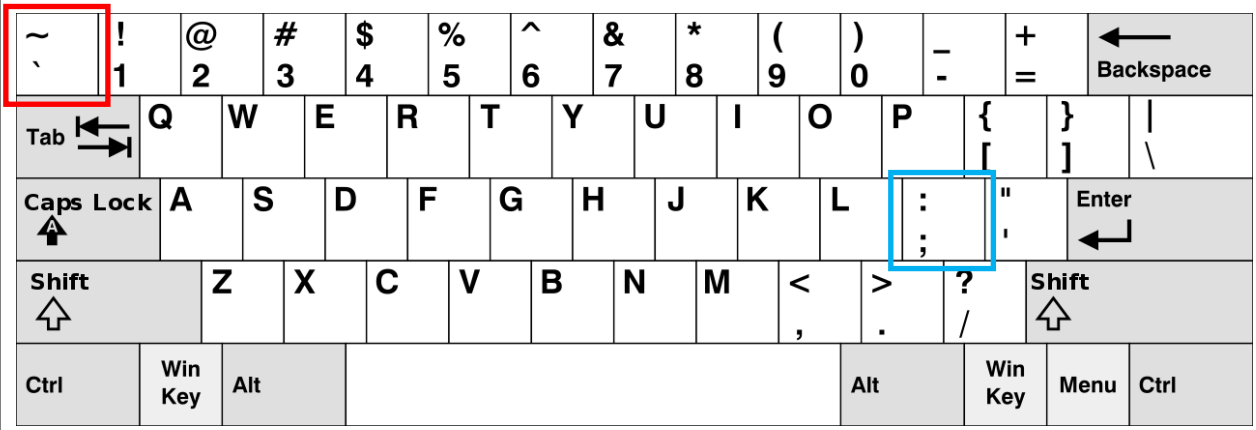
Clicking on the Up/Down indicator, select the chosen slot and after pressing "**OK**" the information is swapped.

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.

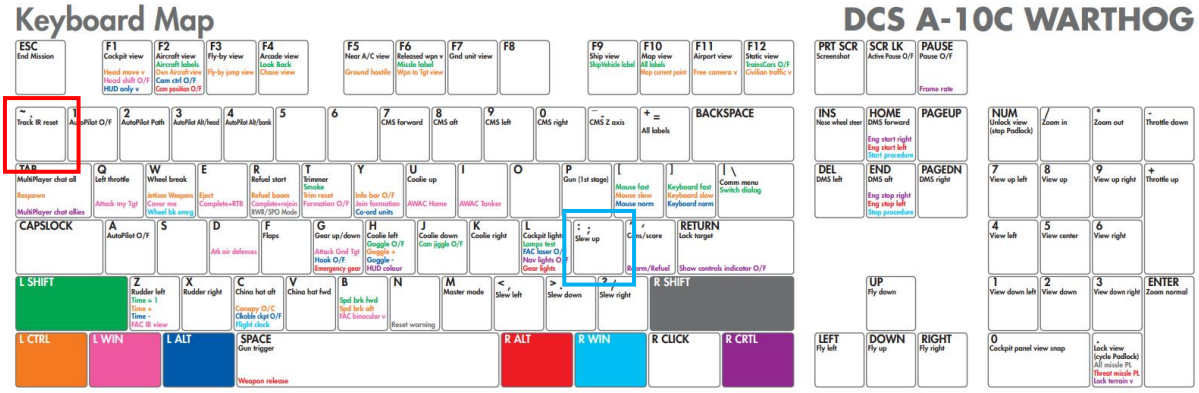
Finally, the **CLEAR** button clears all the keystrokes, explanations and slot name of the active slot. After pressing, a confirmation window is shown. If you click YES, all fields are cleared.



***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.*



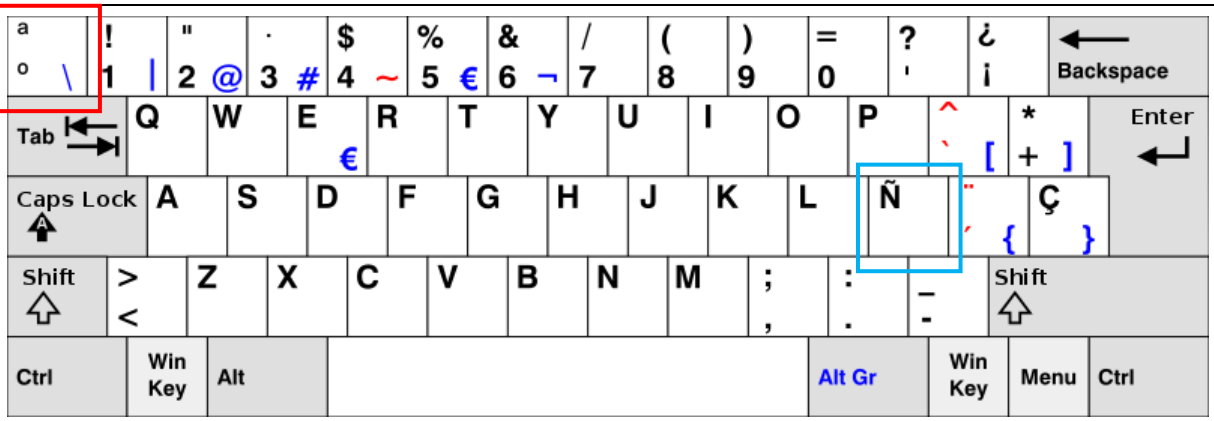
And here, as an example a keyboard map of DCS for the A-10 Warthog.



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:

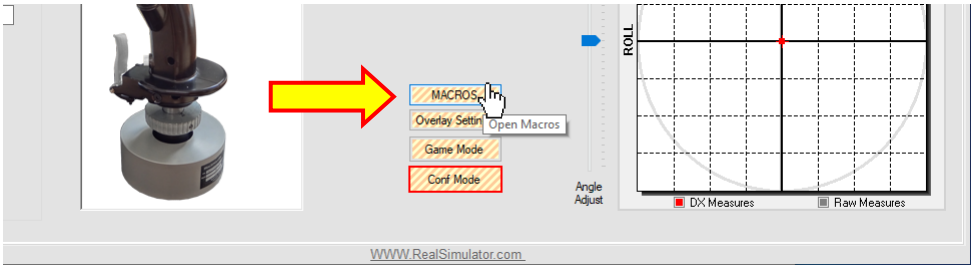
https://en.wikipedia.org/wiki/British_and_American_keyboards#/media/File:KB_United_States-NoAltGr.svg

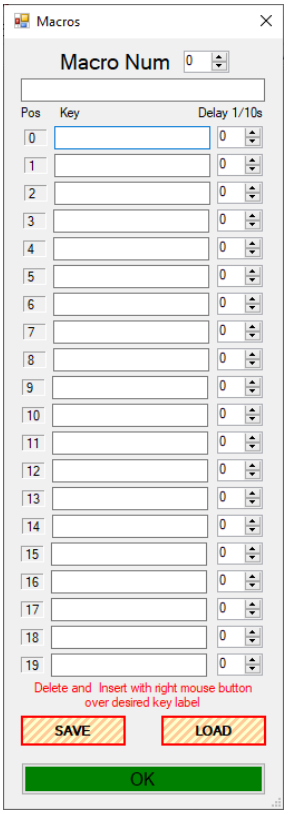
MACROS

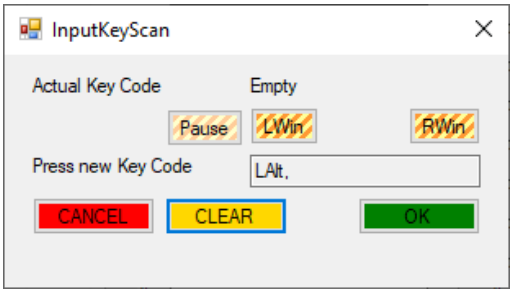
Macros are sequences of keystrokes and delays that can be activated to help with repetitive tasks or to replay sequences that are long or difficult to run.

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.







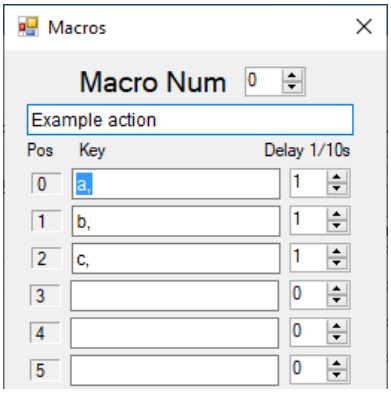
The system allows configuring up to a maximum of 10 macros (0 to 9) selectable with the numeric Up/Down control **Macro Num.** Below the numeric control, there is a text box where the user can write a title to easily remember the macro function.

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.

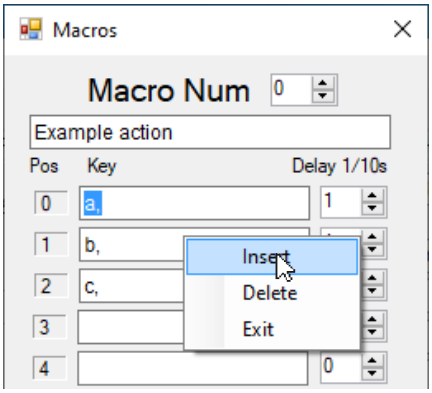
The macro sequence starts when you press and release (with the release action) the button to which you assigned the macro and finishes when the system finds the first key code text box empty.

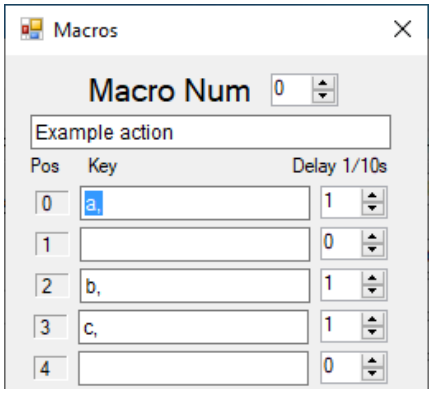
Let’s see how this works with an example. Suppose you want to create a macro to perform an “Example action”, assigned to the macro number “0” and that consists of sending keystrokes “A”, “B” and “C” and between first and second event the simulator needs at least 2 seconds to execute the “A” action. The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



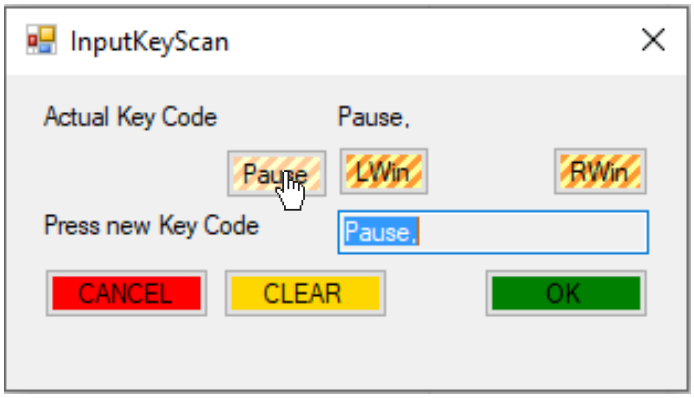
We have assigned a time of 1/10 seconds as time to send each keystroke. Also, you can see you forgot to include the time of 2 seconds the simulator needs to execute the keystroke “A”.

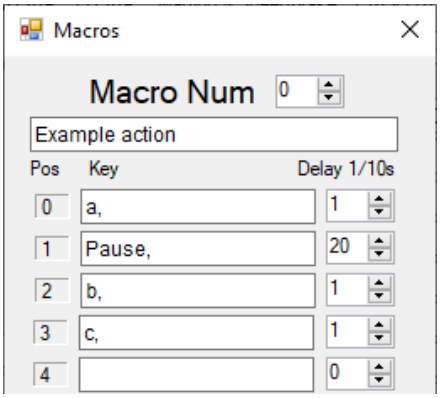
To solve this problem, you can use the extra actions assigned to the right mouse button: Insert, Delete and Exit. So, put the mouse over the text box of key code 1, where the “B” key is and after right-clicking, select the Insert option.





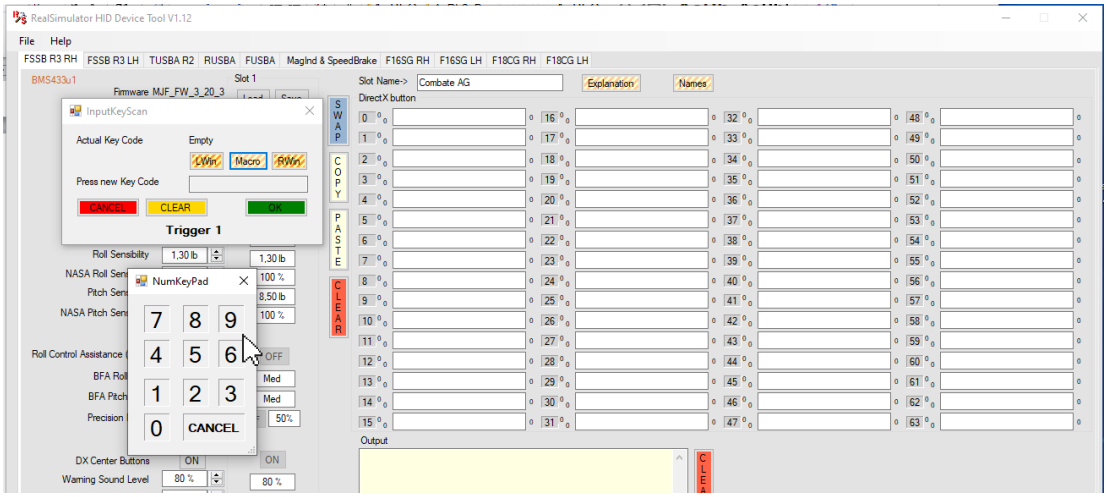
Now press the text box to enter the PAUSE, and set the delay time to 20.



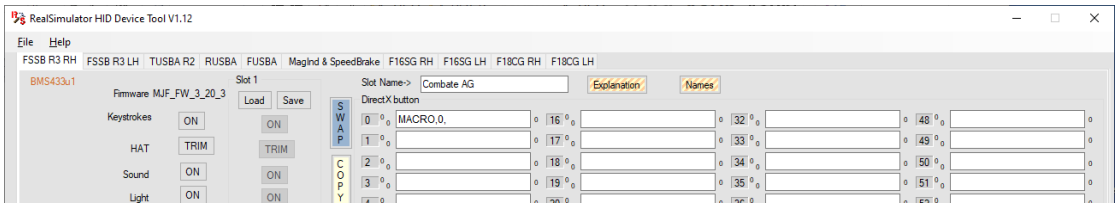


With the macro configuration finished, it is time to test it. For this, you can directly close the window because the system saves the configuration automatically.

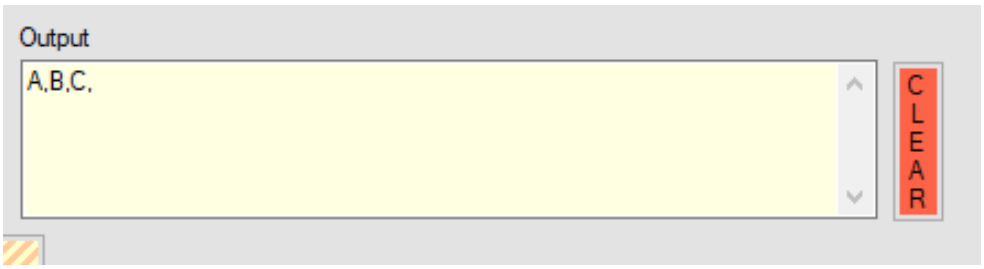
To test it, assign the macro (remember macro number 0) to the Trigger 1 button. For that, click over the text box of DX button 0 and the InputKeyScan window appears where you can press the **Macro** button. A new window with numbers (named **NumKeyPad**) is shown to enter the macro number (number 0).

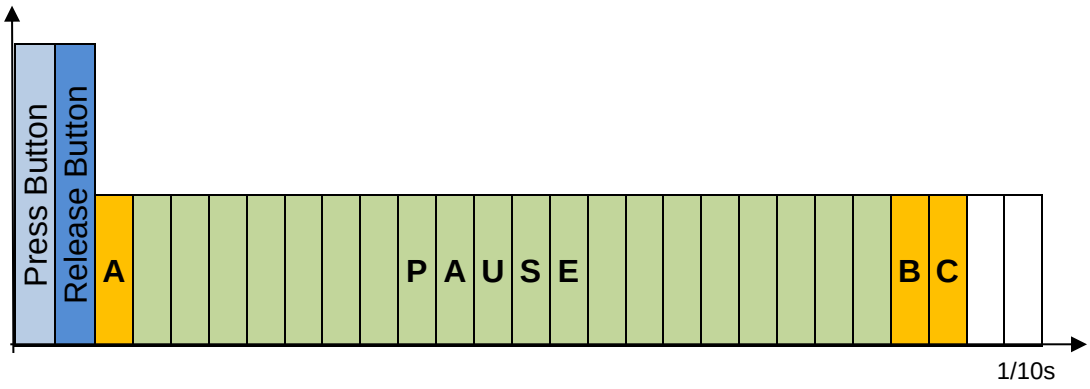


When you click “0”, all windows are closed automatically and the text box assigns the “MACRO,0”, as you can see in the picture below.

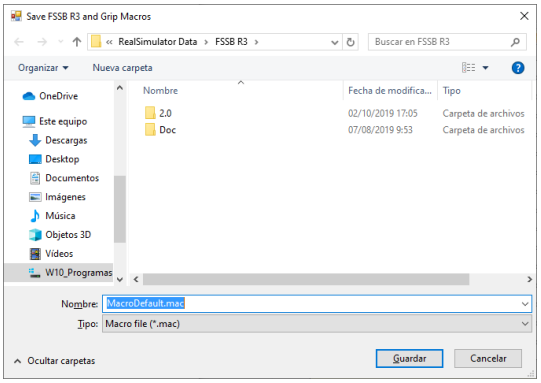


Now, it is time to test the macro. For that, press Trigger 1 (DX button 0) and verify the sequence and times in the output window.

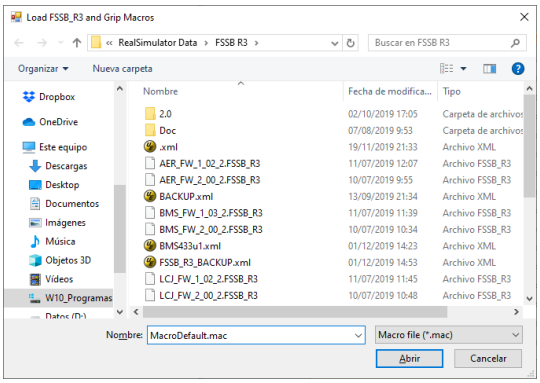




Finally, the Macros window has two buttons identified as **SAVE** and **LOAD,** to save and load the macros configuration to/from a “.mac” file. This allows you to reuse your macro configurations.



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.

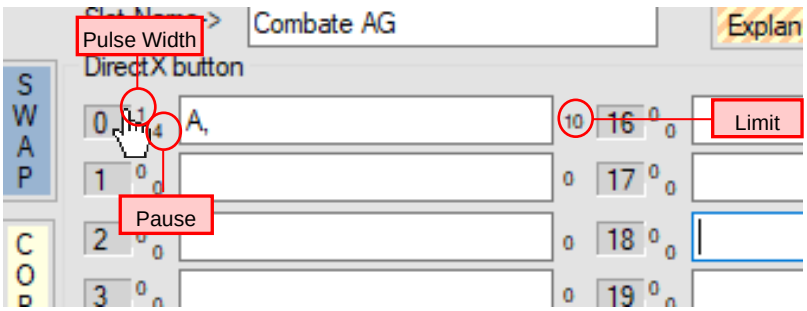
As a result of this feature, the DX button state will be pulsed and if you fill the key code text box with some key, the keystrokes will also be sent as pulsed with the same cadence that the DX button.

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:

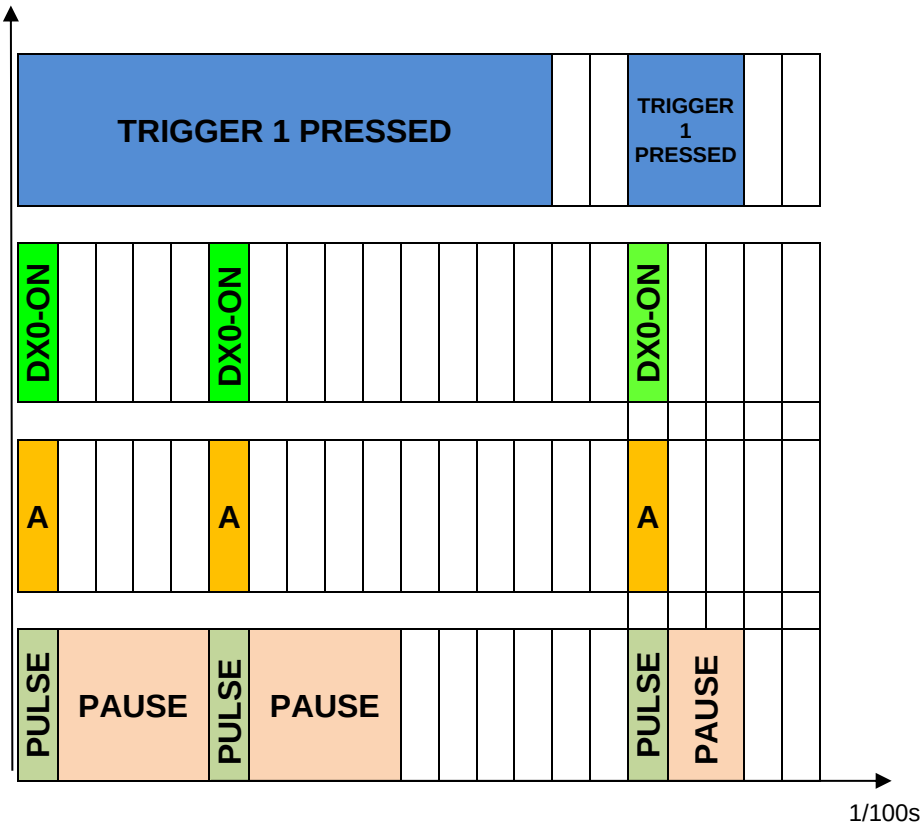
- **Pulse Width**: time in 1/100 seconds that the DX button state will be ON. Values go from 0 to 100.
- **Pause**: time in 1/100 seconds that the DX button state will be OFF after the ON state. Values go from 0 to 100.
- **Limit**: maximum time in 1/100 seconds that the sequence will be repeated, as 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:



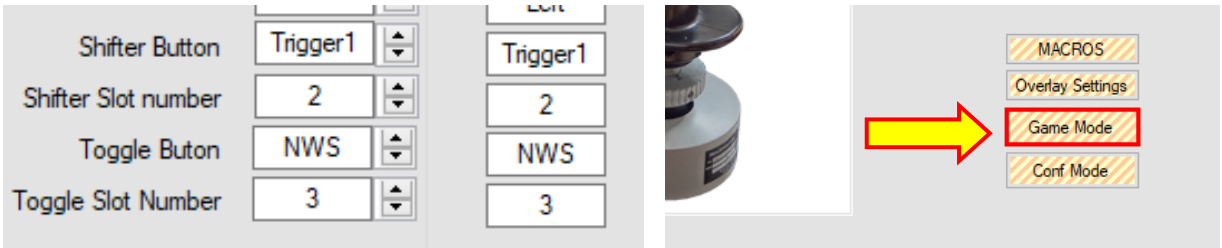
SHIFTER AND TOGGLE

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 FSSBR3L+F16SGRH** section of this chapter).



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

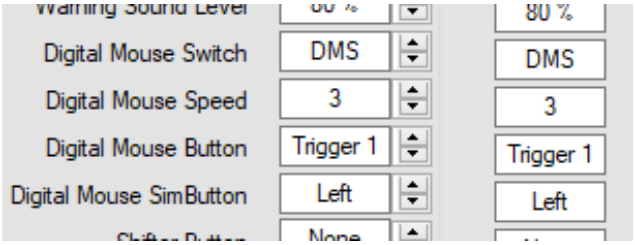
- The **Shifter/Toggle Button**: here, the user must select through the up/down

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.

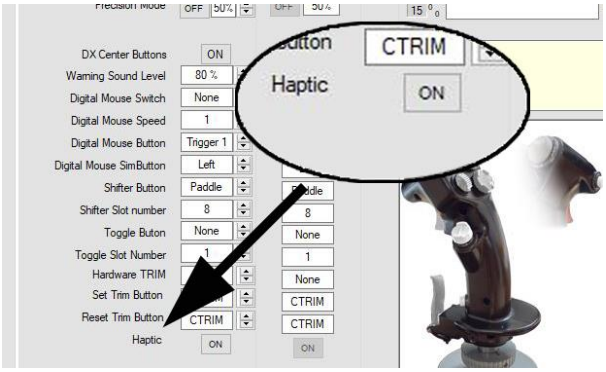


As we can see in the previous image, this feature is configured by four settings:

- **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**.

HAPTIC

This feature allows creates a physical feeling by vibration that the user can perceive and associate to different situations.



This haptic vibrational feedback is only available in the Realsimulator v2 grips.

At this moment, the feature is already associated to the warning and maximum force signals, by generating two continuous vibrations of different levels. This feature complements the existing Light and Sound features and offers a clear feedback to the VR users.

Remind this option is only available with v5 firmwares managed with RS_HID_DEV_TOOL v15 or higher.

Other Features

The "FSSB R3 RH" tab of RSHID_DEV_TOOL offers other extra functionalities

independent of slot. These are:

- Neutral Position Adjustment (NPA).
- Angle adjust.
- DX/Raw measures indicators.
- Overlay.
- Documentation.
- Load, save and print a .xml configuration file.

NEUTRAL POSITION ADJUSTMENT (NPA)

This is a feature with no access from the RS_HID_DEV_TOOL, but very important because it let you at any time, even in flight time, adjust or compensate any possible physical distortion in the gravity vector over you FSSB R3L.

The sequence to launch the Neutral Position Adjustment is*:*

Trigger 1 + NWS Center

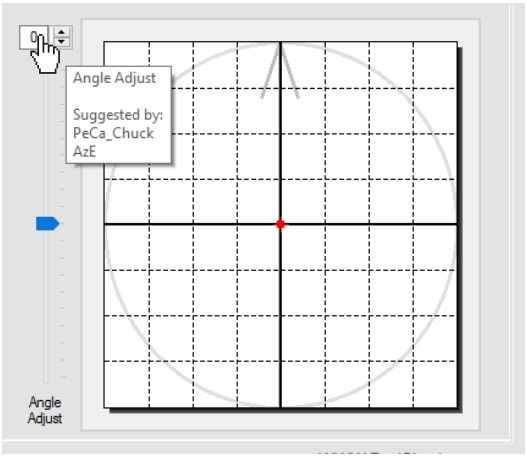
After press the buttons sequence and during the adjust time, the base will sound an intermittent beep and a green light will flash (if they are enabled). Please, release the grip during this time and don't move the FSSB-R3L.

When the sequence finishes, you will receive a long beep and the green light will turn off and the X/Y axes must be correctly centered.

ANGLE ADJUST

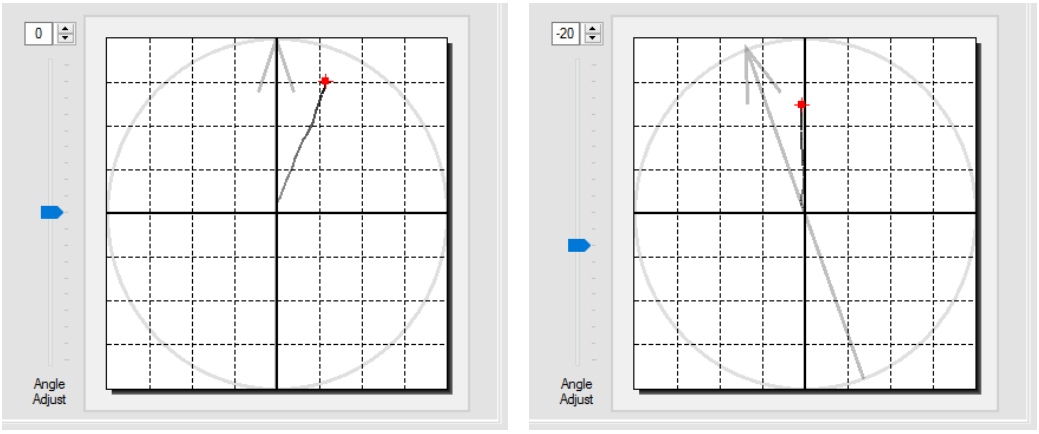
This feature allows adjusting the angular misalignment between the Y axis of joystick and the Y axis of cockpit that occur when the joystick is mounted in central position (between the legs). In this position is necessary turning the stick to ergonomically access with the buttons, switches and hats, but as the union R3L base and stick is rigid and don't turn, it is necessary turn the base and then a misalignment occurs.

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



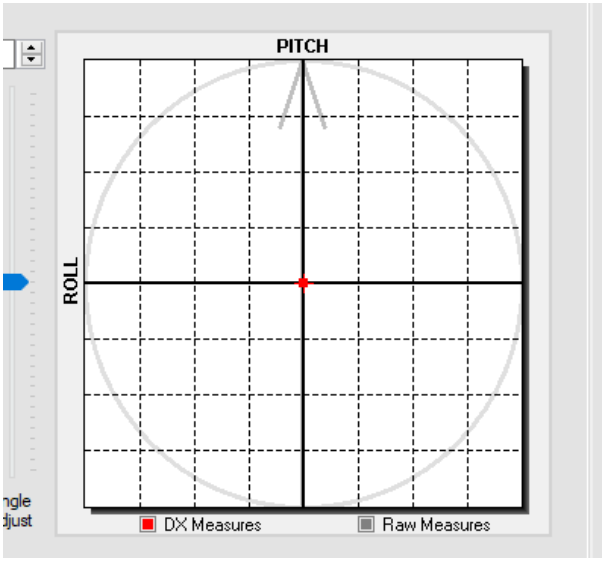
Let's look at an example; suppose we have our FSSB R3L installed in central position

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



DX/RAW MEASURES INDICATORS

We have included two check boxes under the X/Y graphics to display both values. The active option is shown in red color.



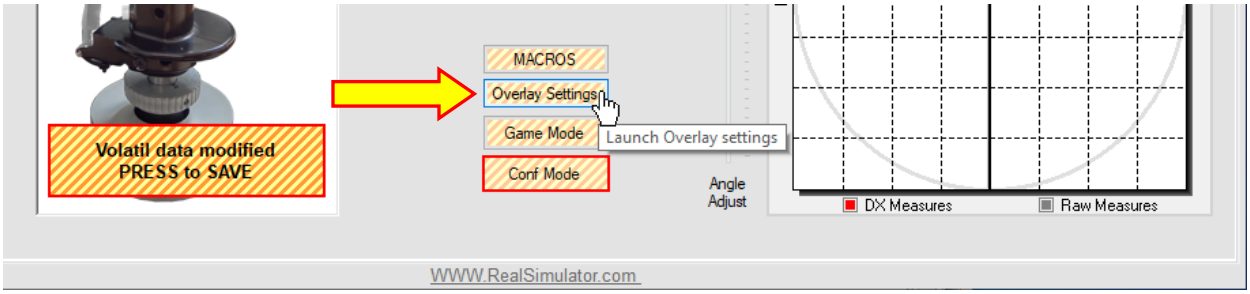
As we mentioned previously in this User Guide, this device does not need calibration, it is done in the factory and saved internally in the device. Windows must work with the default calibration and users must use the RS_HID_DEV_TOOL to modify the settings as sensitivity, auto zero, dead zones, etc. 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.

OVERLAY SETTINGS

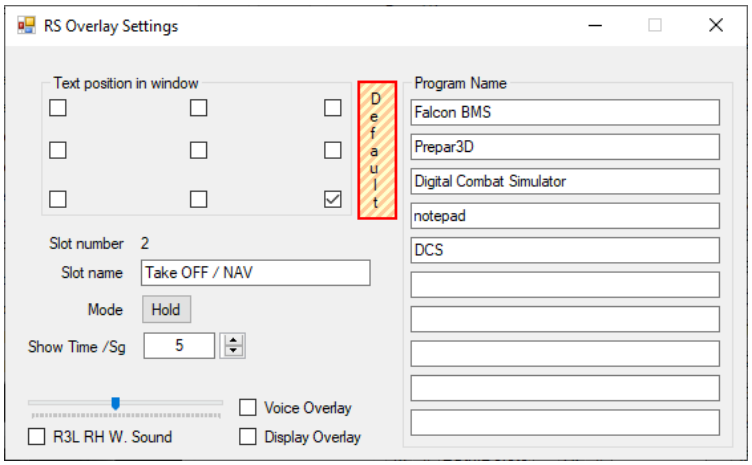
A new feature has been implemented in the RS_HID_DEV_TOOL, the possibility to show the name of the active slot over the program window that you want and/or hear the slot name through speech synthesis. This allows you to know at any given time which slot you have selected without looking away from the 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 previously 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.

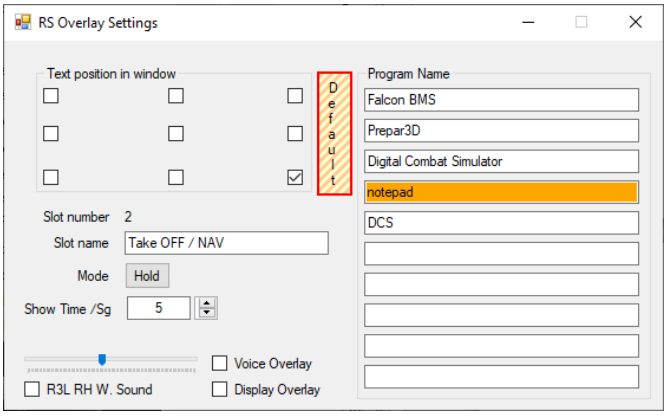
After clicking on the **Overlay Settings** button, a new window appears:



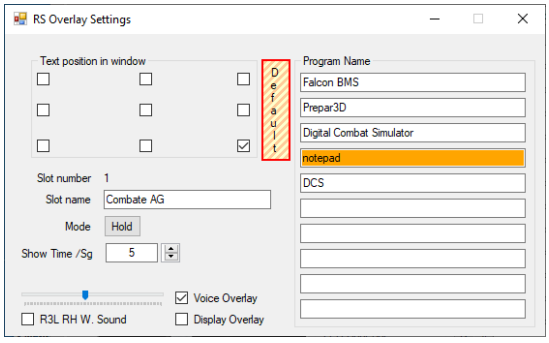
The window allows to configure the next settings:

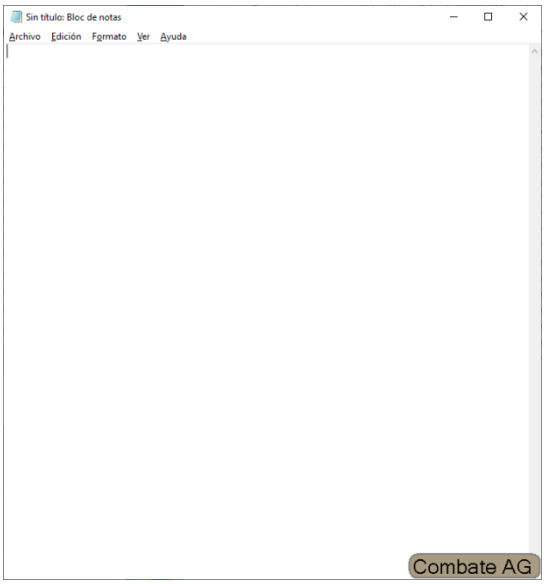
- **Text position in window**: 9 check boxes allow to select the position where you want the slot name to appear (Up left, Up centre, Up right, ……, Down right).
- **Default:** button to set the Program Name list to default names.
- **Program name**: a list of 10 text boxes to be filled by the user with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



- **Slot number and Slot Name:** show the slot number and slot name of actual active slot.
- **Mode:** this button allows selecting if the overlay will be shown permanently ("**Hold**") or by the selected time ("**Time**") in the Show Time/Sg text box.
- **Show Time/Sg:** this text box shows the seconds the overlap will be shown after a slot change. The number of seconds can be changed 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 R3L, 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.

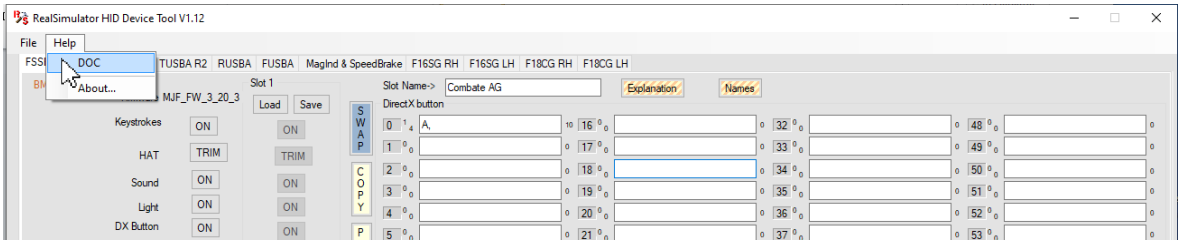
RS_HID_DEV_TOOL v15 fix the problem of not to save the selected options of RS Overlay Settings window.

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.

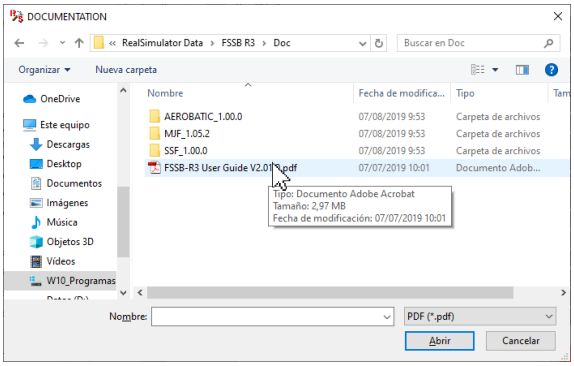
Finally, the configuration shown in the RS Overlay Settings window is automatically saved in the folder “%APPDATA%\Realsimulator Data\FSSB R3\” with the same name as the .xml configuration file and the extension .GameList.

DOCUMENTATION

The program includes a direct and quick option to access the User Guide. For that, click **Help** in the upper menu bar and select **DOC** to directly access the AppData folder where the user guide is stored.



After clicking, a file dialog will be displayed to select the .pdf file. Select the **FSSB_R3 > Doc** folder and finally the **FSSB-R3 User Guide.**



Finally, click the **Open** button to open the User Guide.

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 program offers in the upper menu bar the next **File** actions:

- **Open**: to open an .xml configurations file and load it as active in the program and

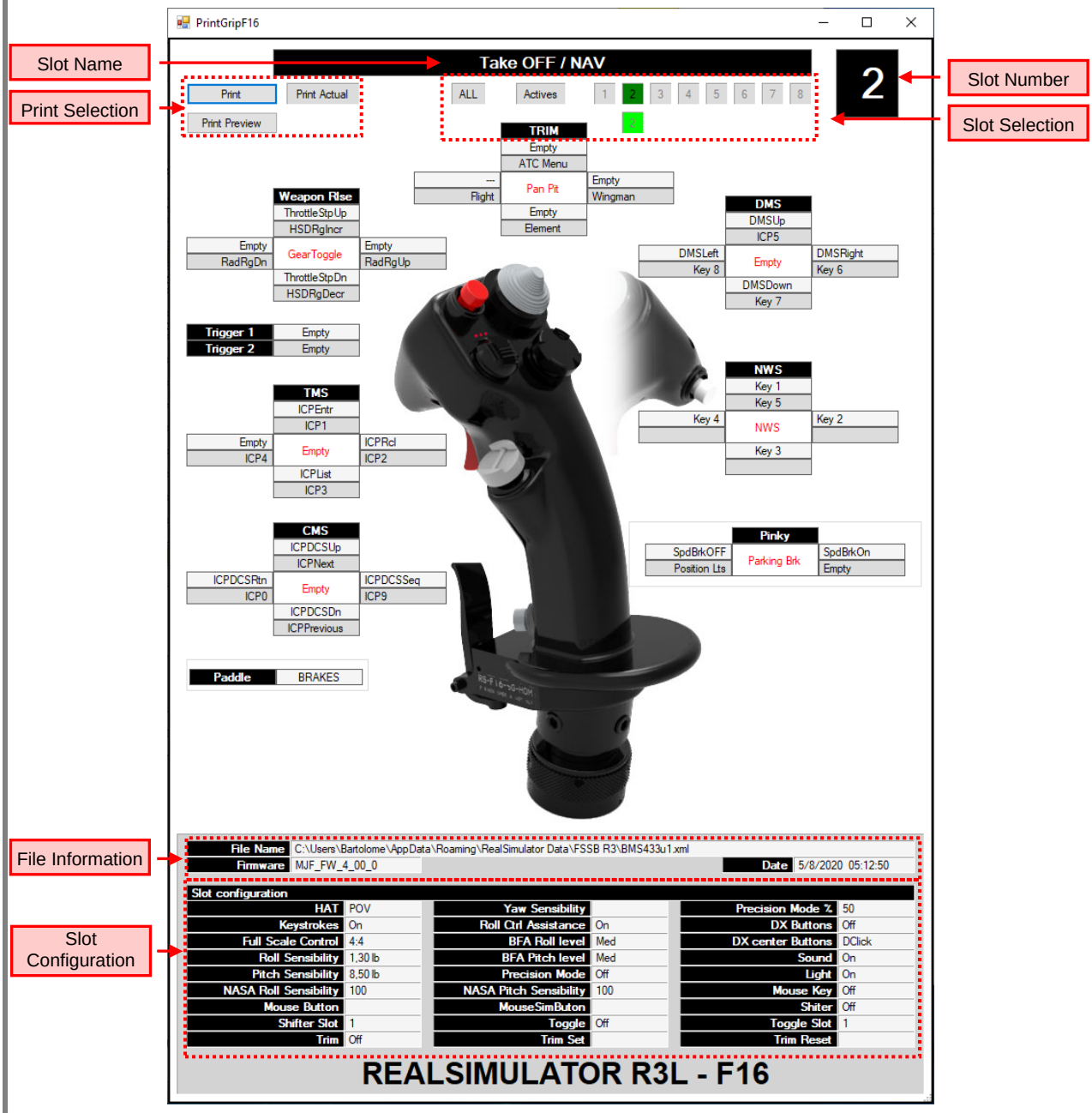
save it in the stick if it is connected (see the next section for offline mode).

- **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.

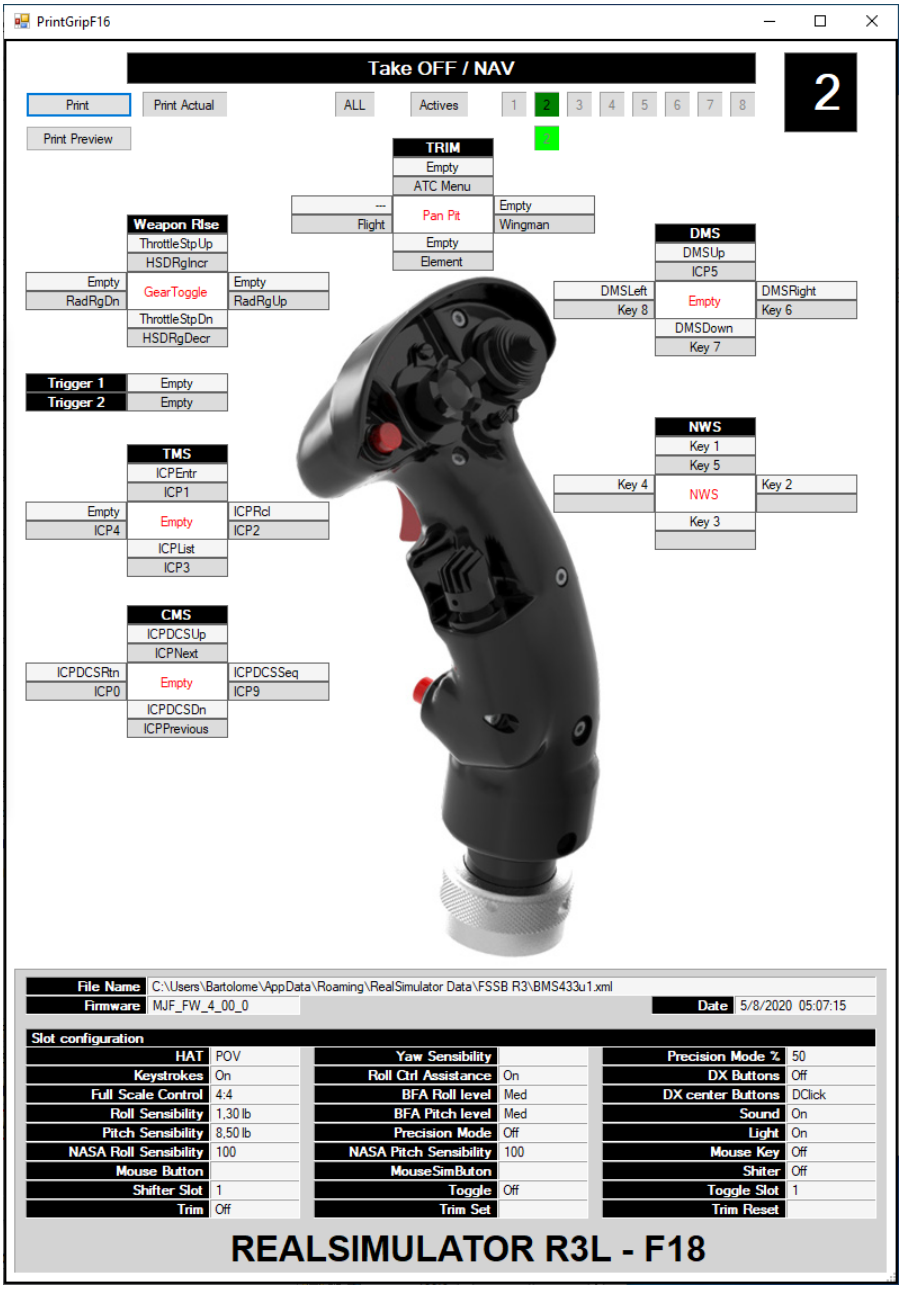
When a configuration file is opened, it is sent to the device to be active. Slots configuration is stored in non-volatile area but keystrokes information is stored in the memory area (volatile area). Although you can work with it immediately don't forget that if you want it remains on the device after 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 device life.

Another option of the program is the ability to print a template of RS grips (F16SGRH/F18CGRH) with the explanations for an easy and quick location of actions in each slot. This option is not available for TM compatible grips.

To access the print option, click on **File** in the upper menu bar and select **Print**, a new window will be displayed similar to those shown below in function of RS grip connected. If the grip connected is the F16SGRH you will see this template:



And similarly, if you have connected the RS F-18 grip, you will have this template:



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.

RS_HID_DEV_TOOL and FSSB-R3L + TM compatible Grips

In sections previous we have seen how this firmware works with the RS grips and now in this section we will see how it works with the TM compatible grips, as the TM Cougar, TM Warthog, TM F-18, etc.

As these grips don't have rotary switch, the R3L works like with the classic firmwares and it only has available the 4 standard slots and the user must use the SMM launcher to access to special features.

At this moment this firmware includes the features and differences of next firmwares:

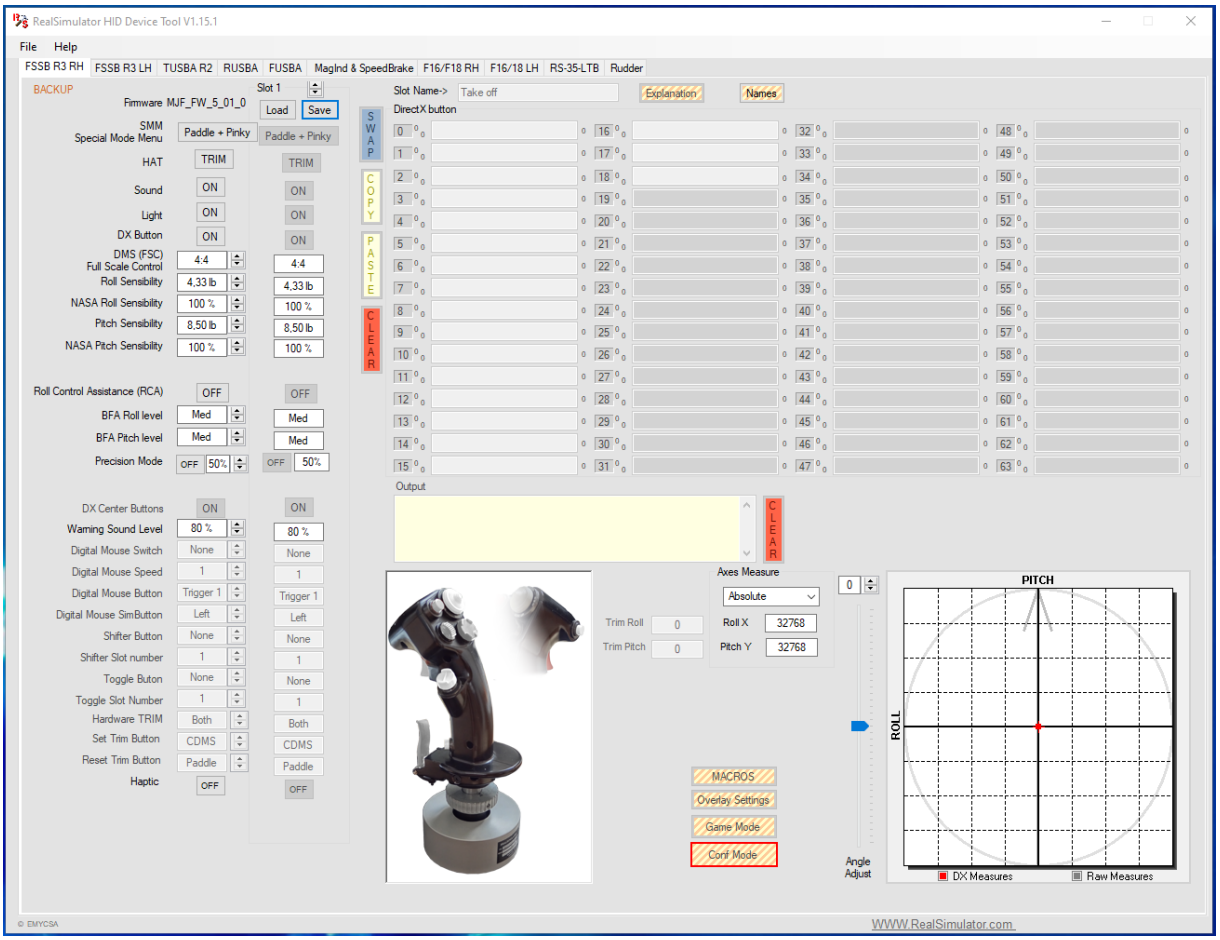
- **MJF:** the new firmware includes all features of original firmware with the difference of only a second set of DX buttons (the original firmware has two additional sets of DX buttons).
- **BMS**: this firmware includes all features of original firmware, but unlike the original has a second set of DX buttons (the original firmware doesn't have additional set of DX buttons), the SMM launcher is the standard, it has operative the Angle Adjust although you can set it to 0º and to cancel the dead zone like in the original firmware, you can set the BFA Roll and Pitch levels to Off.
- **AER**: this firmware is not full integrate yet, only has available the BFA adjust and the Roll Control Assistance. The Trim in axes, immediate access to Memory Slots, Roll and Pitch Sensibility without use the SMM launcher and finally a direct function assigned to NWS button to change the Full Scale Control to 4:4 while pressed are not supported.

As resume, this firmware has integrated the next features that user can use or not, setting it to your liking:

- **SMM** (Special Mode Menu) launcher: Paddle + Pinky / CMS Centre.
- **HAT** switch: POV / TRIM.
- **Sound**: ON / OFF.
- **Light**: ON / OFF.
- **DX Button:** ON / OFF.
- **Full Scale Control (FSC)**: 4:4 / 3:4 / 2:4 / 1:4.
- **Roll Sensibility:** 1,3 …. 13 lb.
- **NASA Roll Sensibility:** 50% .... 200%.
- **Pitch Sensibility:** 1,75 …. 13 lb.
- **NASA Pitch Sensibility:** 50% .... 200%.
- **BFA Roll Level:** Off – Min – Med – High – Full.
- **BFA Pitch Level:** Off – Min – Med – High – Full.

- **Warning Sound Level:** 1% …. 99%.
- **Angle Adjust:** -180º …. 180º.
- **Roll Control Assistance (RCA):** ON / OFF.
- **Precision Mode:** ON / OFF (0-100%).

In the RS_HID_DEV_TOOL window you can see the previous features enabled and the rest disabled in gray. In previous sections of this chapter, you can see a detailed explanation about how each one works.



The Roll Control Assistance (RCA) and the Precision Mode are only configurable by the RS_HID_DEV_TOOL tool, its activation or deactivation must be managed by changing the slot.

In the next table we show the correspondence of each DX button and the associated switch. Pay attention because the DX TRIM buttons are located in different positions that on the classic firmwares.

DX Button	Function
0	Trigger 1
1	Weapon Release
2	Pinky
3	Paddle
4	NWS/Missile step
5	Trigger 2
6	TMS Up
7	TMS Right
8	TMS Down
9	TMS Left
10	DMS Up

11	DMS Right
12	DMS Down
13	DMS Left
14	CMS Up
15	CMS Right
16	CMS Down
17	CMS Left
18	CMS Centre
19 - 26	Spare
27	Trim Up
28	Trim Right
29	Trim Down
30	Trim Left
31 - 63	Spare

DX Trim buttons are always operatives whether the HAT button is on TRIM or POV option; POV (Point of View) option is only operative when HAT button is on POV.

Next, we will show you the special options included in this firmware and that you can launch from the grip directly as with the classic firmwares.

SMM (SPECIAL MODES MENU) LAUNCHER

It allows change between “Paddle + Pinky” and “CMS Centre” as launcher of Special Modes Menu. The Cougar stick does not have physically this switch, so if you use this stick, you never have to use the CMS Centre option as SMM launcher, because will be impossible do it from the stick.

The Paddle + Pinky option as launcher does not require a sequence; the condition is both switches pressed at the same time.

How it works:

- Change to CMS Centre as launcher.
Press Paddle + Pinky -> beep, beep -> press CMS centre.

- Change to Paddle + Pinky as launcher.
Press CMS Centre -> beep, beep -> press Paddle + Pinky.

NEUTRAL POSITION ADJUSTMENT (NPA)

NPA let you at any time, even in flight time, adjust or compensate any possible physical distortion in the gravity vector over you FSSB R3L.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Trigger1, leave the stick alone and wait until the sounds finish.

HAT AS POV OR TRIM

The HAT switch can be modified at any time to behave like a POV (default) or TRIM command. This allows the HAT during the use of the joystick, control the views or submit your information to 4 HID buttons for use as TRIM, which is its function in real life.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press HAT Up -> HAT as POV (Default)
Press HAT Down -> HAT as TRIM control over DX buttons 27, 28, 29 and 30

SOUND ON/OFF CONTROL

Let you activate and deactivate the beep sound.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Paddle + HAT Left two seconds -> Deactivate sound
Press HAT Left two seconds -> Activate sound

FULLL SCALE CONTROL (FSC)

With the FSC you can control the full deflection of your control surfaces (if you are using a plane, or full wheels angle in case of a truck or car) in 4 levels using the DMS 4 ways switch.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press DMS Up -> 4:4 Full range (default)
Press DMS Right -> 3:4 Full range
Press DMS Down -> 2:4 Full range
Press DMS Left -> 1:4 Full range

ROLL AND PITCH SENSIBILITY CONTROL

TMS controls sensibility in Roll and Pitch axes. There are two ways to adjust the sensibility in axes, with preset values or continuously step by step, every 0.5 lb.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
press Paddle + TMS Up -> Pitch to Combat Mode (too aggressive), 4 lb. full deflection
press Paddle + TMS Right -> Pitch to Normal Mode, with 8.5 lb. full deflection (default)
press Paddle + TMS Down -> Pitch to Smooth Mode, with 10.75 lb. full deflection
press Paddle + TMS Left -> Pitch to too Smooth Mode, with 13 lb. full deflection

press TMS Up -> Roll to Combat Mode (too aggressive) , 1.30 lb. full deflection
press TMS Right -> Roll to Normal Mode, with 4.33 lb. full deflection (default)
press TMS Down -> Roll to Smooth Mode, with 6.5 lb. full deflection
press TMS Left -> Roll to too Smooth Mode, with 13 lb. full deflection

Pinky Pressed continuous adjustment
Press Pinky + TMS Up to increase step by step sensibility on pitch.
Press Pinky + TMS Down to decrease step by step sensibility on pitch
Press Pinky + TMS Right to increase step by step sensibility on roll
Press Pinky + TMS Left to decrease step by step sensibility on roll

When you increase the Sensibility, you will hear a 4 beeps sound
When you decrease the Sensibility, you will hear a 2 beeps sound
When you reach the limit, you will hear a continuous sound

ZEROIZE

Launching the Zeroize option you will reset all variables to default values.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Trigger2 -> Zeroize will set all variables to default values.

MEMORY SLOTS

The FSSB R3L has four memory slots to save custom configurations. "Memory Slot" makes custom option of the R3L handling very comfortable to use in flight. With only 2 actions (enter SMM mode + one button press) select a large bunch of parameters.

How it works:

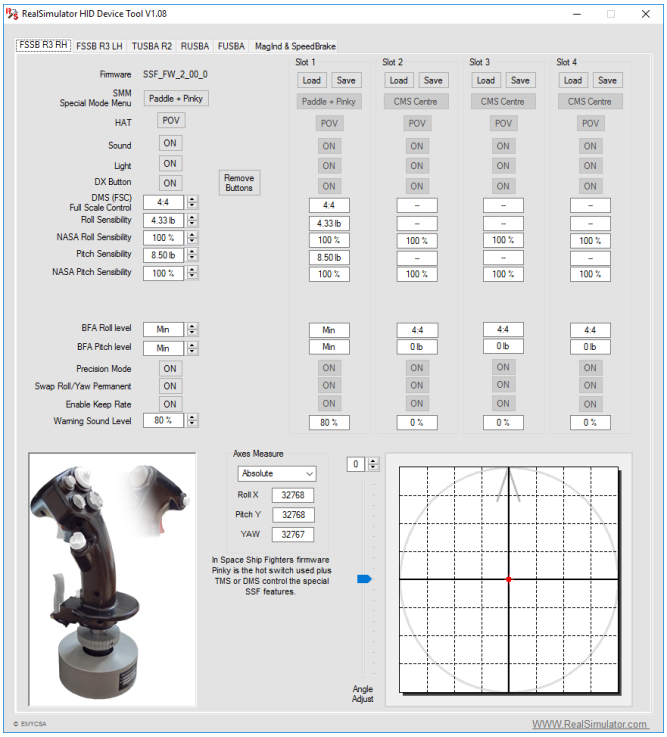
To program a profile (save the configuration in the slot)
Configure the R3L as you like even SMM, and:
Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Paddle and hold it pressed.
Press CMS in one way for two seconds.
UP -> Slot 1.
RIGHT -> Slot 2.
DOWN -> Slot 3.
LEFT -> Slot 4.

To recover a profile (load data from the slot and configure the R3L)
Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press CMS in one way for two seconds.
UP -> Slot 1.
RIGHT -> Slot 2.
DOWN -> Slot 3.
LEFT -> Slot 4.

When R3L power up, auto load the Memory Slot 1 if available.

EMYCSA RealSimulator	SSF Firmware	
	Date: 29-12-2022	**Version:** 3.01

PICTURE

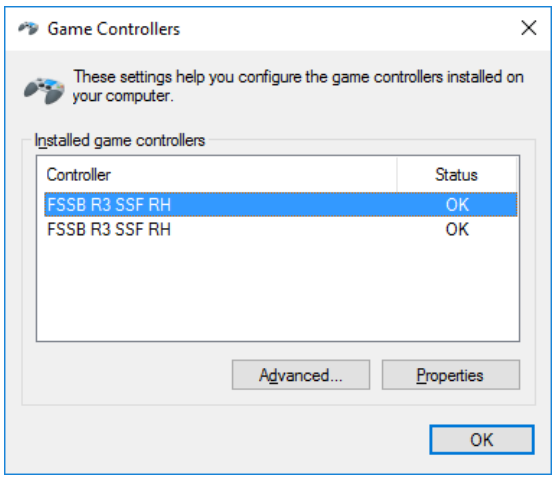


LAST PUBLISHED FIRMWARE VERSIONS: *SSF _FW_2_00_2.FSSB_R3*

DESCRIPTION

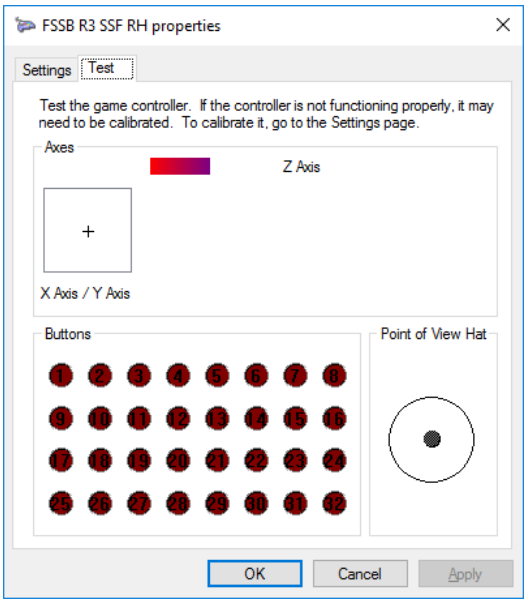
SSF firmware is the MJF firmware customized with the suggestions and necessities of space ships fighter gamers. The modifications included are a third axis (Yaw), only one additional DX Button set, and some controls and functions to improve the flight precision and swap between axes quickly. It is only supported by RS_HID_DEV_TOOL v1.12.

When you plug in the FSSB-R3L with the SSF firmware installed to an USB port, the joystick will be displayed in Windows and all applications that can handle HID devices, with the name “FSSB R3 SSF RH”, as you can see in the next image in the Game Controllers window.

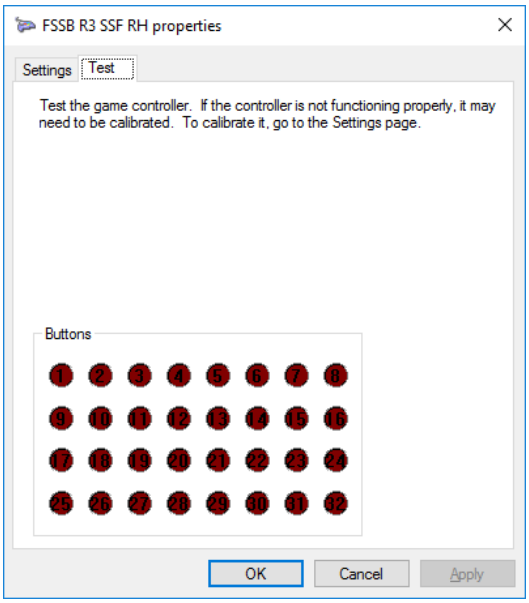


NOTE: some operating systems do not change the name directly and you find “FSSB R3 Warthog”, but after launch the RS_HID_DEV_TOOL with the device plugged the name will change to “FSSB R3 SSF RH”.

In this case, you can see two FSSB R3 SSF RH devices. The first (upper) show the standard joystick information, i.e., Roll, Pitch and Yaw axes, 32 DX buttons and Point of View Hat, and the other (lower) only show a second DX buttons set.

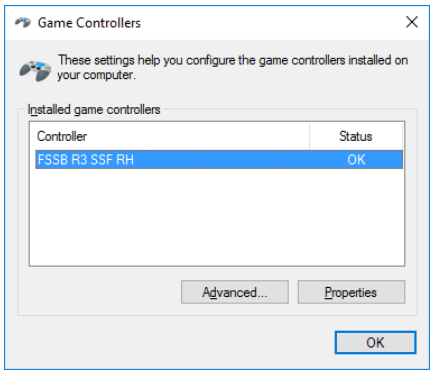


First device



Second device

With the RS_HID_DEV_TOOL program you have the possibility of enable or remove the second device. If you remove it, when open the Game Controllers window you will get the next window with only the first and main device.



Next, we show in a table the correspondence of each button and the associated switch.

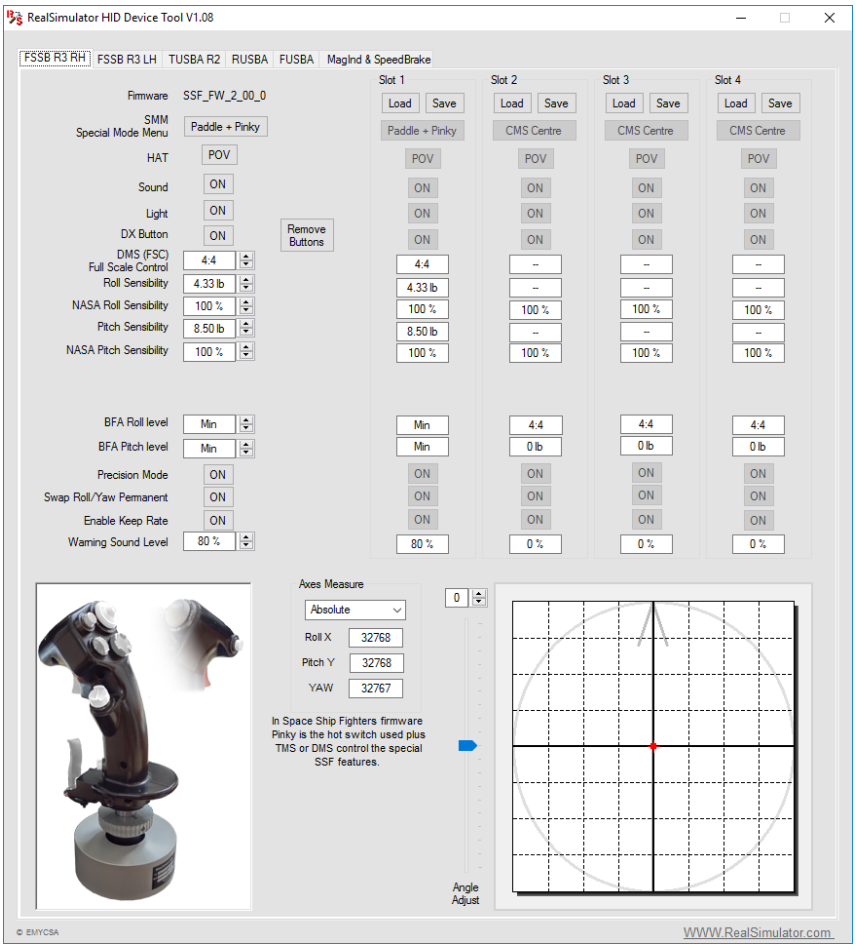
	First device	Second device
Button	Press directly	Press **Paddle** +
1	Trigger 1	Trigger 1
2	Weapon Release	Weapon Release
3	Pinky	Pinky
4	Paddle	Paddle
5	NWS/Missile step	NWS/Missile step
6	Trigger 2	Trigger 2
7	TMS Up	TMS Up
8	TMS Right	TMS Right
9	TMS Down	TMS Down
10	TMS Left	TMS Left
11	DMS Up	DMS Up
12	DMS Right	DMS Right
13	DMS Down	DMS Down
14	DMS Left	DMS Left
15	CMS Up	CMS Up

16	CMS Right	CMS Right
17	CMS Down	CMS Down
18	CMS Left	CMS Left
19	CMS Centre	CMS Centre
20	Trim Up	Trim Up
21	Trim Right	Trim Right
22	Trim Down	Trim Down
23	Trim Left	Trim Left
24 - 32	Spare	Spare

Trim buttons (20 to 23) are operatives when HAT is in TRIM option; in POV (Point of View) option is operative the DX Point of View HAT.

As we can see in the previous table the Second DX button set is available with the Paddle switch pressed.

When we launch the RS_HID_DEV_TOOL with the SSF firmware installed we must see a window like this:



In the **Slot Configuration** section of **MJF_FW_F16-18 Firmware** chapter, you will find a detailed explanation of each setting to manage and configure your R3L with this tool.

As we can see in the previous image, the RS_HID_DEV_TOOL allows to configure the next settings in the SSF firmware:

- **SMM** (Special Mode Menu) launcher: Paddle + Pinky / CMS Centre.
- **HAT** switch: POV / TRIM.
- **Sound**: ON / OFF.

- **Light**: ON / OFF.
- **DX Button:** ON / OFF.
- **Add/Remove Buttons:** 1 / 2 devices.
- **Full Scale Control (FSC)**: 4:4 / 3:4 / 2:4 / 1:4.
- **Roll Sensibility:** 1,3 …. 13 lb.
- **NASA Roll Sensibility:** 50% .... 200%.
- **Pitch Sensibility:** 4 …. 13 lb.
- **NASA Pitch Sensibility:** 50% .... 200%.
- **BFA Roll Level:** Off – Min – Med – High – Full.
- **BFA Pitch Level:** Off – Min – Med – High – Full.
- **Precision Mode:** ON / OFF.
- **Swap Roll/Yaw Permanent:** ON / OFF.
- **Enable Keep Rate:** ON / OFF.
- **Warning Sound Level:** 1% …. 99%.
- **Angle Adjust:** -180º …. 180º.

It is important to know that previous settings can be configured fully with the RS_HID_DEV_TOOL but there are others settings/actions that can only be done with the SMM of stick, as for example the NPA or Zeroize features. Also, some previous settings are not available with the SMM.

In **Power up** sequence, FSSB-R3L loads the Memory Slot 1 as actual configuration, this allows user to have a custom start configuration. If the memory slot 1 is not configured, then loads the default values, as in the Zeroize option.

To get a quick control to swap axes SSF firmware use **Pinky** as **HOT-SWITCH**. So, you do not need enter in SMM to get access to the special SSF features. Only press and hold Pinky to increase your precision by 2 or in combination with TMS or DMS configure your axes response.

For a quick user action, the SSF direct modes can be executed indistinctly with DMS or TMS hats.

SPECIAL OPTIONS DESCRIPTION

Next, we will show you the special options included in this firmware.

SMM (SPECIAL MODES MENU) LAUNCHER

It allows change between “Paddle + Pinky” and “CMS Centre” as launcher of Special Modes Menu. The Cougar stick does not have physically this switch, so if you use this stick, you never have to use the CMS Centre option as SMM launcher, because will be impossible do it from the stick.

The Paddle + Pinky option as launcher does not require a sequence; the condition is both switches pressed at the same time.

How it works:

- Change to CMS Centre as launcher.
Press Paddle + Pinky -> beep, beep -> press CMS centre.

- Change to Paddle + Pinky as launcher.
Press CMS Centre -> beep, beep -> press Paddle + Pinky.

NEUTRAL POSITION ADJUSTMENT (NPA)

NPA let you at any time, even in flight time, adjust or compensate any possible physical distortion in the gravity vector over you FSSB R3L.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Trigger1, leave the stick alone and wait until the sounds finish.

HAT AS POV OR TRIM

The HAT switch can be modified at any time to behave like a POV (default) or TRIM command. This allows the HAT during the use of the joystick, control the views or submit your information to 4 HID buttons for use as TRIM, which is its function in real life.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press HAT Up -> HAT as POV (Default)
Press HAT Down -> HAT as TRIM control over DX buttons 20, 21, 22 and 23

SOUND ON/OFF CONTROL

Let you activate and deactivate the beep sound.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Paddle + HAT Left two seconds -> Deactivate sound
Press HAT Left two seconds -> Activate sound

DX AUX BUTTON SET ON/OFF

Second DX buttons set can be turned ON and OFF if needed to avoid conflict when used with external or internal mapping tools.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Paddle + HAT Right two seconds. Deactivate DX buttons set 2 and 3.
Press HAT Right two seconds. Activate DX buttons set 2 and 3.

FULL SCALE CONTROL (FSC)

With the FSC you can control the full deflection of your control surfaces (if you are using a plane, or full wheels angle in case of a truck or car) in 4 levels using the DMS 4 ways switch.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press DMS Up -> 4:4 Full range (default)
Press DMS Right -> 3:4 Full range
Press DMS Down -> 2:4 Full range
Press DMS Left -> 1:4 Full range

ROLL AND PITCH SENSIBILITY CONTROL

TMS controls sensibility in Roll and Pitch axes. There are two ways to adjust the sensibility in axes, with preset values or continuously step by step, every 0.5 lb.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
press Paddle + TMS Up -> Pitch to Combat Mode (too aggressive), 4 lb. full deflection
press Paddle + TMS Right -> Pitch to Normal Mode, with 8.5 lb. full deflection (default)
press Paddle + TMS Down -> Pitch to Smooth Mode, with 10.75 lb. full deflection
press Paddle + TMS Left -> Pitch to too Smooth Mode, with 13 lb. full deflection

press TMS Up -> Roll to Combat Mode (too aggressive) , 1.30 lb. full deflection
press TMS Right -> Roll to Normal Mode, with 4.33 lb. full deflection (default)
press TMS Down -> Roll to Smooth Mode, with 6.5 lb. full deflection
press TMS Left -> Roll to too Smooth Mode, with 13 lb. full deflection

Pinky Pressed continuous adjustment
Press Pinky + TMS Up to increase step by step sensibility on pitch.
Press Pinky + TMS Down to decrease step by step sensibility on pitch
Press Pinky + TMS Right to increase step by step sensibility on roll
Press Pinky + TMS Left to decrease step by step sensibility on roll

When you increase the Sensibility, you will hear a 4 beeps sound
When you decrease the Sensibility, you will hear a 2 beeps sound
When you reach the limit, you will hear a continuous sound

ZEROIZE

Launching the Zeroize option you will reset all variables to default values.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Trigger2 -> Zeroize will set all variables to default values.

MEMORY SLOTS

The FSSB R3L has four memory slots to save custom configurations. "Memory Slot" makes custom option of the R3L handling very comfortable to use in flight. With only 2 actions (enter SMM mode + one button press) select a large bunch of parameters.

How it works:

To program a profile (save the configuration in the slot)
Configure the R3L as you like even SMM, and:
Press SMM launcher whatever it be (CMS center or Paddle + Pinky)

Press Paddle and hold it pressed.
Press CMS in one way for two seconds.
UP -> Slot 1.
RIGHT -> Slot 2.
DOWN -> Slot 3.
LEFT -> Slot 4.

To recover a profile (load data from the slot and configure the R3L)
Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press CMS in one way for two seconds.
UP -> Slot 1.
RIGHT -> Slot 2.
DOWN -> Slot 3.
LEFT -> Slot 4.

When R3L power up, auto load the Memory Slot 1 if available.

PRECISION MODE ON/OFF

You can enable and disable the precision mode with Pinky + TMS or DMS Up.

If enable, when you press Pinky the sensibility in axes will change to half.

SWAP ROLL/YAW

The main feature of SSF is the ability to swap between Roll and Yaw axes. This happen when your press pinky; by default, with Pinky released your X axis drive the Roll and when you press Pinky your X axis drive Yaw, but you have the possibility to invert this and also to do permanent the actual selection, we will show:

- Pinky + TMS or DMS Down, do permanent the actual selection and pinky don't swap the axes.
- Pinky + TMS or DMS Left:
    - If we come from "permanent" this action will disable permanent and the swap Roll/Yaw system will become active with Pinky. This is called "momentary".
    - If we come from "momentary" the actual Roll/Yaw axes will be swap; to swap again and goes to previous situation press Pinky + TMS or DMS Left again.

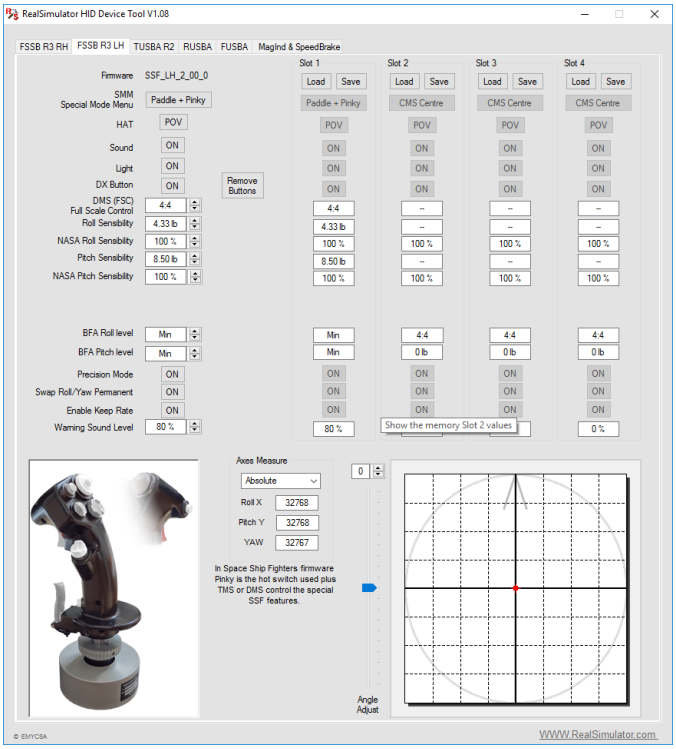
ENABLE/DISABLE KEEP RATE

You can change between enable and disable the Keep Rate mode with Pinky + TMS or DMS Right.

If enable, every time you swap between Roll/Yaw axes, the keep rate of the swapped axis will be kept; this let you keep the roll keep while you modify the yaw to turn over and shoot your opponent.

EMYCSA RealSimulator	SSF LH Firmware	
	Date: 29-12-2022	**Version:** 3.01

PICTURE



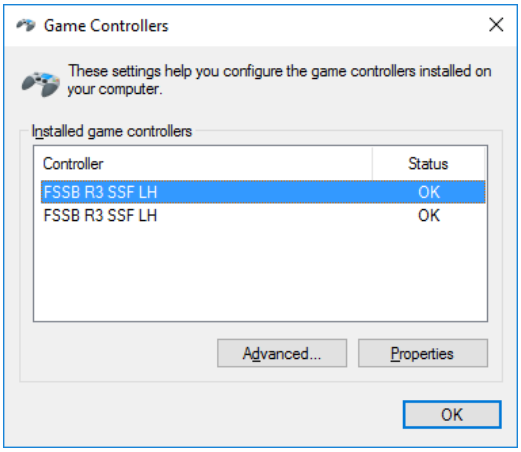
LAST PUBLISHED FIRMWARE VERSIONS: *SSF _LH_2_00_2.FSSB_R3*

DESCRIPTION

SSF LH firmware is the SSF firmware for left hand joysticks. At this moment the firmware has the same features than RH firmware but has been customized with a different VID_PID to allow the coexistence with the standard right hand FSSB-R3. It is only supported by RS_HID_DEV_TOOL v1.12.

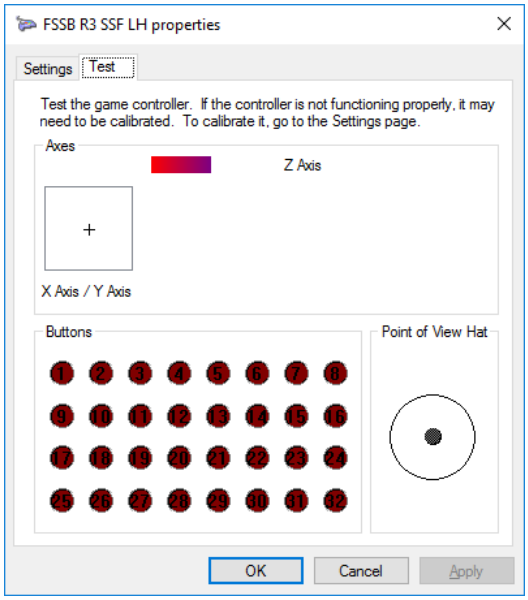
As it has a different VID_PID identification, we need press the tab FSSB R3 LH to configure it and see the actual settings.

When you plug in the FSSB-R3L with the SSF LH firmware installed to an USB port, the joystick will be displayed in Windows and all applications that can handle HID devices, with the name “FSSB R3 SSF LH”, as you can see in the next image in the Game Controllers window.

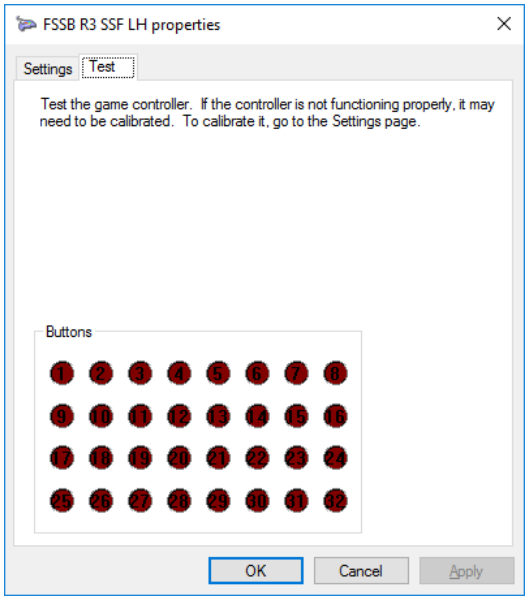


NOTE: some operating systems do not change the name directly and you find “FSSB R3 Warthog”, but after launch the RS_HID_DEV_TOOL with the device plugged, the name will change to “FSSB R3 SSF LH”.

In this case, you can see two FSSB R3 SSF LH devices. The first (upper) show the standard joystick information, i.e., Roll, Pitch and Yaw axes, 32 DX buttons and Point of View Hat, and the other (lower) only show a second DX buttons set.

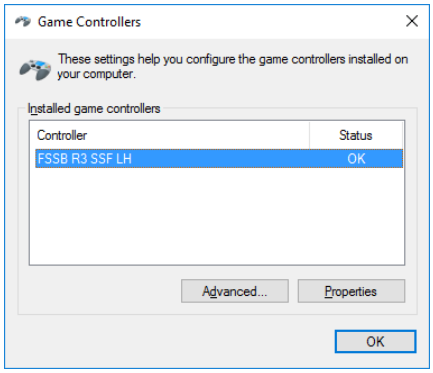


First device



Second device

With the RS_HID_DEV_TOOL program you have the possibility of enable or remove the second device. If you remove it, when open the Game Controllers window you will get the next window with only the first and main device.



Next, we show in a table the correspondence of each button and the associated switch.

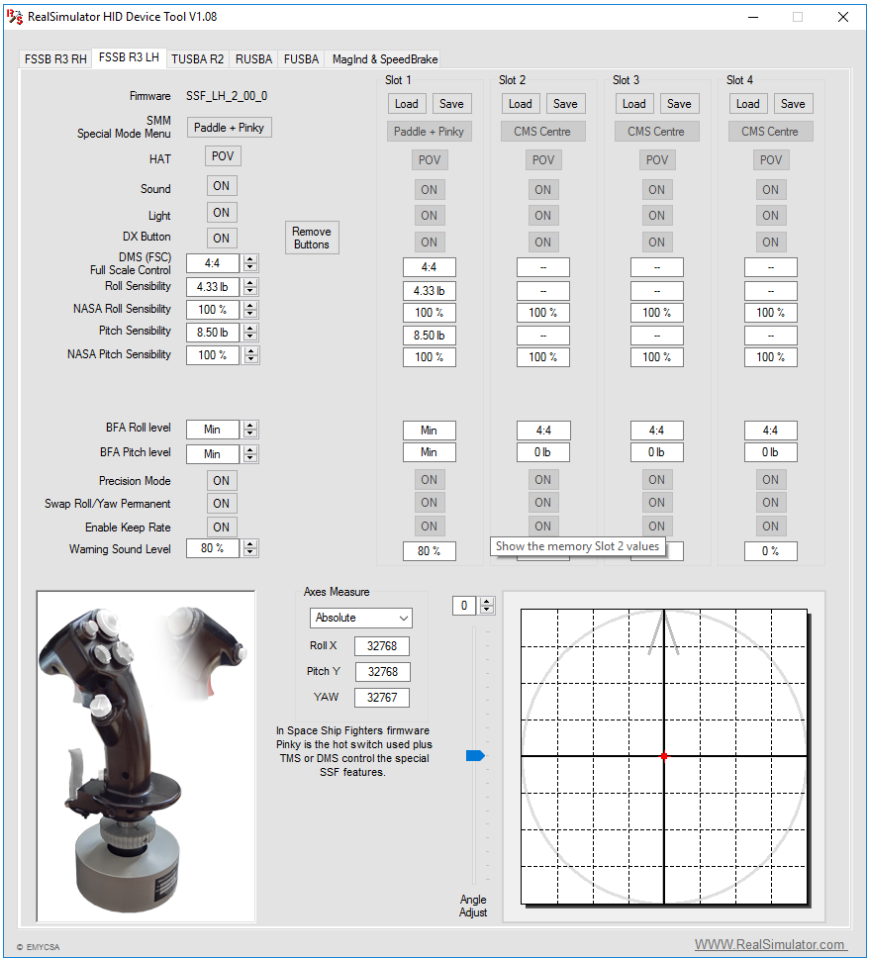
	First device	Second device
Button	Press directly	Press **Paddle** +
1	Trigger 1	Trigger 1
2	Weapon Release	Weapon Release
3	Pinky	Pinky
4	Paddle	Paddle
5	NWS/Missile step	NWS/Missile step
6	Trigger 2	Trigger 2
7	TMS Up	TMS Up
8	TMS Right	TMS Right
9	TMS Down	TMS Down
10	TMS Left	TMS Left
11	DMS Up	DMS Up
12	DMS Right	DMS Right
13	DMS Down	DMS Down
14	DMS Left	DMS Left
15	CMS Up	CMS Up

16	CMS Right	CMS Right
17	CMS Down	CMS Down
18	CMS Left	CMS Left
19	CMS Centre	CMS Centre
20	Trim Up	Trim Up
21	Trim Right	Trim Right
22	Trim Down	Trim Down
23	Trim Left	Trim Left
24 - 32	Spare	Spare

Trim buttons (20 to 23) are operatives when HAT is in TRIM option; in POV (Point of View) option is operative the DX Point of View HAT.

As we can see in the previous table the Second DX button set is available with the Paddle switch pressed.

When we launch the RS_HID_DEV_TOOL with the SSF_LH firmware installed we must see a window like this:



In the **Slot Configuration** section of **MJF_FW_F16-18 Firmware** chapter, you will find a detailed explanation of each setting to manage and configure your R3L with this tool.

As we can see in the previous image, the RS_HID_DEV_TOOL allows to configure the next settings in the SSF firmware:

- **SMM** (Special Mode Menu) launcher: Paddle + Pinky / CMS Centre.
- **HAT** switch: POV / TRIM.
- **Sound**: ON / OFF.
- **Light**: ON / OFF.

- **DX Button:** ON / OFF.
- **Add/Remove Buttons:** 1 / 2 devices.
- **Full Scale Control (FSC)**: 4:4 / 3:4 / 2:4 / 1:4.
- **Roll Sensibility:** 1,3 …. 13 lb.
- **NASA Roll Sensibility:** 50% .... 200%.
- **Pitch Sensibility:** 4 …. 13 lb.
- **NASA Pitch Sensibility:** 50% .... 200%.
- **BFA Roll Level:** Off – Min – Med – High – Full.
- **BFA Pitch Level:** Off – Min – Med – High – Full.
- **Precision Mode:** ON / OFF.
- **Swap Roll/Yaw Permanent:** ON / OFF.
- **Enable Keep Rate:** ON / OFF.
- **Warning Sound Level:** 1% …. 99%.
- **Angle Adjust:** -180º …. 180º.

It is important to know that previous settings can be configured fully with the RS_HID_DEV_TOOL but there are others settings/actions that can only be done with the SMM of stick, as for example the NPA or Zeroize features. Also, some previous settings are not available with the SMM.

In **Power up** sequence, FSSB-R3L loads the Memory Slot 1 as actual configuration, this allows user to have a custom start configuration. If the memory slot 1 is not configured, then loads the default values, as in the Zeroize option.

To get a quick control to swap axes SSF LH firmware use **Pinky** as **HOT-SWITCH**. So, you do not need enter in SMM to get access to the special SSF features. Only press and hold Pinky to increase your precision by 2 or in combination with TMS or DMS configure your axes response.

For a quick user action, the SSF direct modes can be executed indistinctly with DMS or TMS hats.

SPECIAL OPTIONS DESCRIPTION

Next, we will show you the special options included in this firmware.

SMM (SPECIAL MODES MENU) LAUNCHER

It allows change between “Paddle + Pinky” and “CMS Centre” as launcher of Special Modes Menu. The Cougar stick does not have physically this switch, so if you use this stick, you never have to use the CMS Centre option as SMM launcher, because will be impossible do it from the stick.

The Paddle + Pinky option as launcher does not require a sequence; the condition is both switches pressed at the same time.

How it works:

- Change to CMS Centre as launcher.
Press Paddle + Pinky -> beep, beep -> press CMS centre.

- Change to Paddle + Pinky as launcher.
Press CMS Centre -> beep, beep -> press Paddle + Pinky.

NEUTRAL POSITION ADJUSTMENT (NPA)

NPA let you at any time, even in flight time, adjust or compensate any possible physical distortion in the gravity vector over you FSSB R3.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Trigger1, leave the stick alone and wait until the sounds finish.

HAT AS POV OR TRIM

The HAT switch can be modified at any time to behave like a POV (default) or TRIM command. This allows the HAT during the use of the joystick, control the views or submit your information to 4 HID buttons for use as TRIM, which is its function in real life.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press HAT Up -> HAT as POV (Default)
Press HAT Down -> HAT as TRIM control over DX buttons 20, 21, 22 and 23

SOUND ON/OFF CONTROL

Let you activate and deactivate the beep sound.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Paddle + HAT Left two seconds -> Deactivate sound
Press HAT Left two seconds -> Activate sound

DX AUX BUTTON SET ON/OFF

Second DX buttons set can be turned ON and OFF if needed to avoid conflict when used with external or internal mapping tools.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Paddle + HAT Right two seconds. Deactivate DX buttons set 2 and 3.
Press HAT Right two seconds. Activate DX buttons set 2 and 3.

FULL SCALE CONTROL (FSC)

With the FSC you can control the full deflection of your control surfaces (if you are using a plane, or full wheels angle in case of a truck or car) in 4 levels using the DMS 4 ways switch.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)

Press DMS Up -> 4:4 Full range (default)
Press DMS Right -> 3:4 Full range
Press DMS Down -> 2:4 Full range
Press DMS Left -> 1:4 Full range

ROLL AND PITCH SENSIBILITY CONTROL

TMS controls sensibility in Roll and Pitch axes. There are two ways to adjust the sensibility in axes, with preset values or continuously step by step, every 0.5 lb.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
press Paddle + TMS Up -> Pitch to Combat Mode (too aggressive), 4 lb. full deflection
press Paddle + TMS Right -> Pitch to Normal Mode, with 8.5 lb. full deflection (default)
press Paddle + TMS Down -> Pitch to Smooth Mode, with 10.75 lb. full deflection
press Paddle + TMS Left -> Pitch to too Smooth Mode, with 13 lb. full deflection

press TMS Up -> Roll to Combat Mode (too aggressive) , 1.30 lb. full deflection
press TMS Right -> Roll to Normal Mode, with 4.33 lb. full deflection (default)
press TMS Down -> Roll to Smooth Mode, with 6.5 lb. full deflection
press TMS Left -> Roll to too Smooth Mode, with 13 lb. full deflection

Pinky Pressed continuous adjustment
Press Pinky + TMS Up to increase step by step sensibility on pitch.
Press Pinky + TMS Down to decrease step by step sensibility on pitch
Press Pinky + TMS Right to increase step by step sensibility on roll
Press Pinky + TMS Left to decrease step by step sensibility on roll

When you increase the Sensibility, you will hear a 4 beeps sound
When you decrease the Sensibility, you will hear a 2 beeps sound
When you reach the limit, you will hear a continuous sound

ZEROIZE

Launching the Zeroize option you will reset all variables to default values.

How it works:

Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Trigger2 -> Zeroize will set all variables to default values.

MEMORY SLOTS

The FSSB R3 has four memory slots to save custom configurations. "Memory Slot" makes custom option of the R3 handling very comfortable to use in flight. With only 2 actions (enter SMM mode + one button press) select a large bunch of parameters.

How it works:

To program a profile (save the configuration in the slot)
Configure the R3 as you like even SMM, and:
Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press Paddle and hold it pressed.
Press CMS in one way for two seconds.
UP -> Slot 1.

RIGHT -> Slot 2.
DOWN -> Slot 3.
LEFT -> Slot 4.

To recover a profile (load data from the slot and configure the R3)
Press SMM launcher whatever it be (CMS center or Paddle + Pinky)
Press CMS in one way for two seconds.
UP -> Slot 1.
RIGHT -> Slot 2.
DOWN -> Slot 3.
LEFT -> Slot 4.

When R3 power up, auto load the Memory Slot 1 if available.

PRECISION MODE ON/OFF

You can enable and disable the precision mode with Pinky + TMS or DMS Up.

If enable, when you press Pinky the sensibility in axes will change to half.

SWAP ROLL/YAW

The main feature of SSF is the ability to swap between Roll and Yaw axes. This happen when your press pinky; by default, with Pinky released your X axis drive the Roll and when you press Pinky your X axis drive Yaw, but you have the possibility to invert this and also to do permanent the actual selection, we will show:

- Pinky + TMS or DMS Down, do permanent the actual selection and pinky don't swap the axes.
- Pinky + TMS or DMS Left:
    - If we come from "permanent" this action will disable permanent and the swap Roll/Yaw system will become active with Pinky. This is called "momentary".
    - If we come from "momentary" the actual Roll/Yaw axes will be swap; to swap again and goes to previous situation press Pinky + TMS or DMS Left again.

ENABLE/DISABLE KEEP RATE

You can change between enable and disable the Keep Rate mode with Pinky + TMS or DMS Right.

If enable, every time you swap between Roll/Yaw axes, the keep rate of the swapped axis will be kept; this let you keep the roll keep while you modify the yaw to turn over and shoot your opponent.

PICTURE

DESCRIPTION

Overview

This section is focused mainly for beginners to give them a first overview on how to configure the main flight simulation games to integrate correctly the FSSB-R3L.

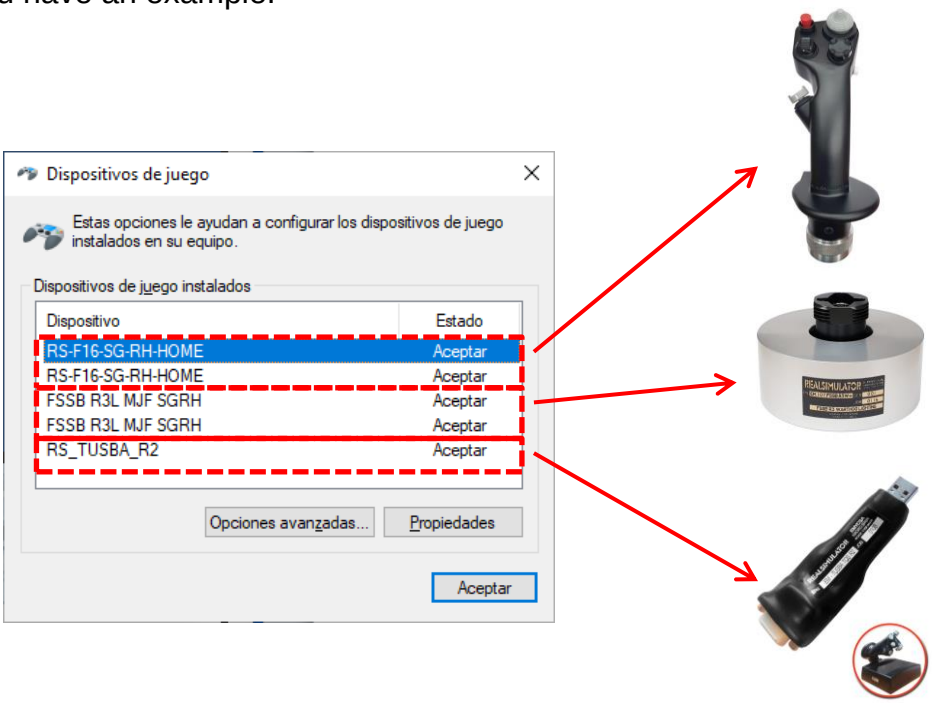
Although these programs have an extensive documentation where the user can find solutions and explanations to all his doubts, here we will guide you giving an initial orientation about of how to configure them and the different possibilities that your device offer. We will see the procedure on Falcon BMS 4.34 and on DCS.

Before to launch your simulation program you should check your system and verify your game devices are properly installed. As surely you have already read W10 has an important bug with composites devices (like the FSSB-R3, TUSBA, etc.) and sometimes the devices are not installed properly. It rarely occurs, but can occur after a new device is connected and installed, changing the connected devices configuration.

For that, open your Game controller window and check the devices are correctly installed verifying every device has the axes and buttons that you hope it has. As general rules keep in mind these:

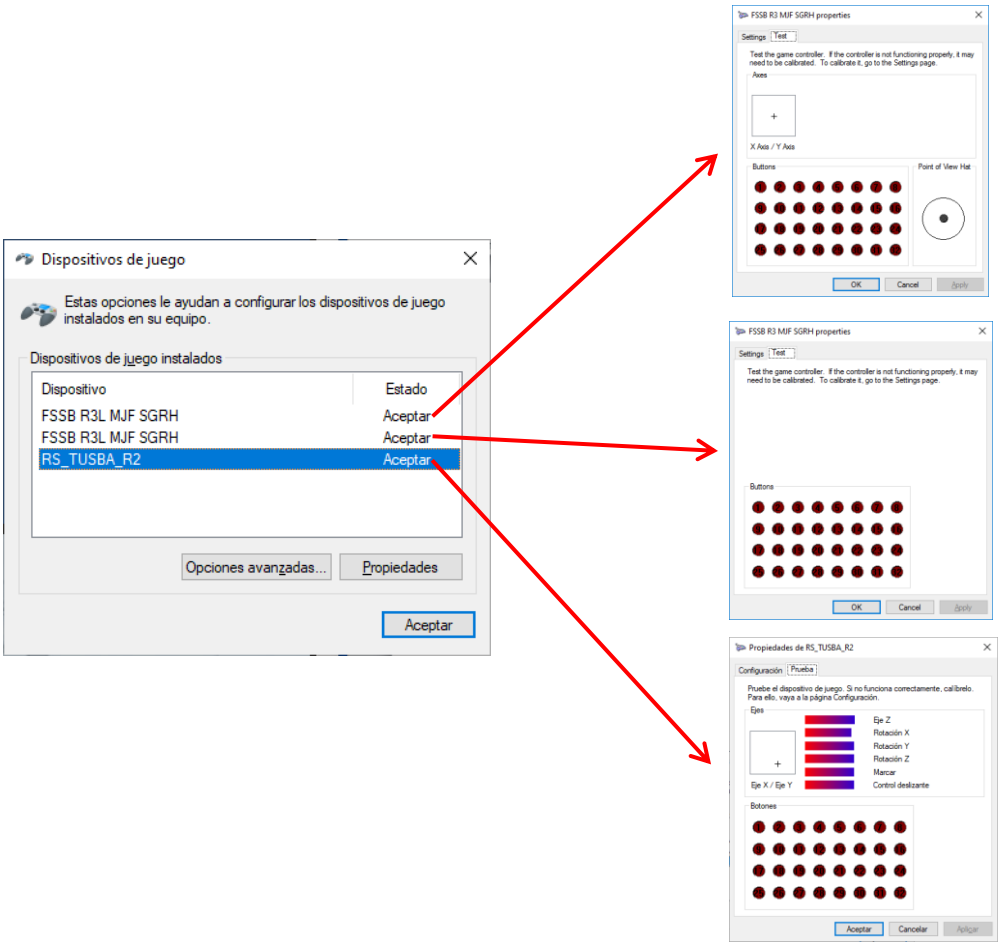
- No matter the device order in the Game Controller window.
- The first device of a composite device in the list has the axes.

Here you have an example:



As you can see there are three game devices connected to the computer: the F16SGRH, the FSSB-R3 Lighting and the TUSBA for the F-16 throttle.

As you have already read in this document we suggest unpairing the F16SGRH if we use it with the FSSB-R3L to avoid duplication of information. So, the first thing we will do is unpair this device using the Remove device windows action of Devices and printer window.



As you can see in the previous composition image both mentioned rules are met.

Finally, there is an important concept you must remember: how your device can interact with the game. Although surely you know it, I will repeat it; your device has got the next features:

- Two analog axes: Pitch and Roll.
- 32 x 2 DX buttons.
- 8 slots, and each slot 64 configurable and independent keystrokes (only the Lighting model)

Now with the assurance our hardware is correctly installed, we can start to configure our simulation program. We will do it with the next two connected devices: FSSB-R3 and TUSBA.

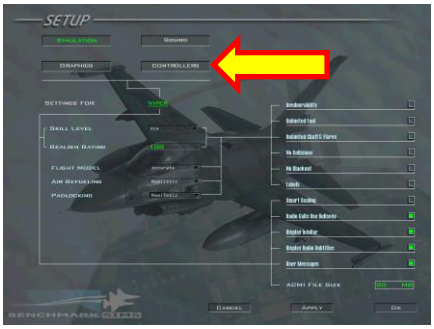
FALCON BMS

Within the extensive information and manuals that this program has, there is a great guide named **BMS Device Setup Guide** where you will find all the information necessary to configure properly your devices and program. As we mentioned before here we are going to help inexperienced users to lose their fear to start.

The integration of FSSB-R3 in the program is done assigning the analog axes and assigning the DX buttons and keystrokes to actions such as “Gears Up”. These actions are executed internally through Callbacks, so the “Gear Up” action is the callback “AFGearUP”.

AXES

Axes are assigned easily through the game control panel. Launch the program and click on **Launch**, next the **SETUP** option and finally in **CONTROLLERS**.

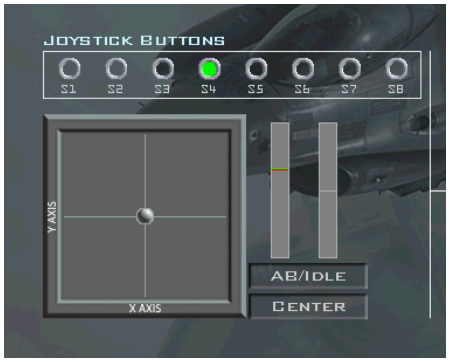


Now to assign the X and Y axes of FSSB-R3 to the Roll and Pitch axes of simulator, click on **CONTROLLER** and select from the drop down list as main controller the first **FSSB R3** device.

After this you can move the stick and check the center ball of X/Y graphic responds to your movement.

Also you can check the 8 **JOYSTICKS BUTTONS** work when you press the grip buttons.

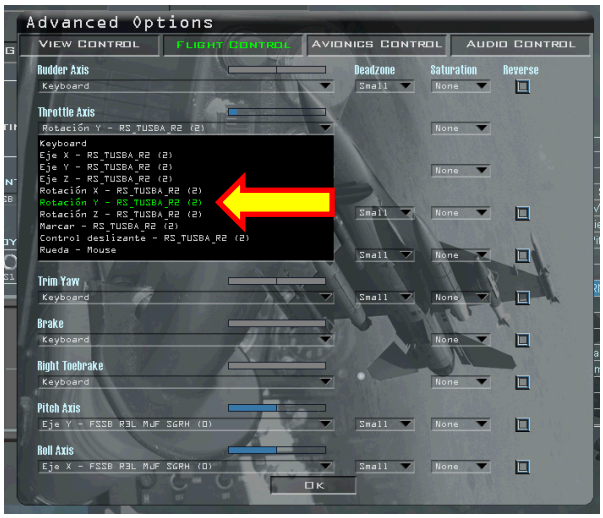
- S1: Trigger 1
- S2: Weapon Release
- S3: Pinky
- S4: Paddle



- S5: NWS
- S6: Trigger 2
- S7: TMS Up
- S8: TMS Right

Finally, click on the **ADVANCED** button to assign the other TUSBA axes. In the new window click on the **FLIGHT CONTROL** tab to assign the Throttle and in the **AVIONICS CONTROL** tab to assign the **Radar Anntenna Elevation**, **Cursor X**, **Cursor Y** and **Range Knob** according to thefollowing assignment:

- Cursor X: X Axis – RS_TUSBA_R2 (2)
- Cursor Y: Y Axis – RS_TUSBA_R2 (2)
- Range: Y Axis – RS_TUSBA_R2 (2)
- Antenna Elevation: Rotation X – RS_TUSBA_R2 (2)
- Throttle: Rotation Y – RS_TUSBA_R2 (2)



Finally, click **OK** to save the configuration.

DX BUTTONS

Now we are going to assign the DX buttons and keystrokes to the desired actions. In this program it is done through the "**Key file"**, but what is a "key file"? Next I copy the explanation given by the BMS guide:

The key file defines all key mappings on a keyboard for the various functions we have in Falcon BMS. The functions are invoked via keystrokes, either a single key (e.g. "A") or a combination of modifier keys (Shift, Alt, Control) and a key (e.g. "Shift Alt A").

In addition to that they contain also all DirectX bindings to control input devices. A DirectX input device returns a button number which is recognized and interpreted by Falcon BMS. You can now say

if I press button "A" on the device bind that to a specific function (e.g. fire the gun).

Key files are located in the …/User/Config folder. We have five different standard key files in Falcon BMS.

There are four different key file profiles which use the same keystrokes layout: Full, Basic, Minimum, Blank and Pitbuilder.

The standard key files above do not contain DX bindings. This is because there are too many different devices with different button layouts out there. You need a specific solution for each device respectively.

Yes, as you have read there is a file (the key file: *.key) where are defined the key mapping which relates the functions (callback) to the keystokes that are the event we can generate with our keyboard or simulation device. This file, as we will see below, also includes the DX buttons.

The name of key file in use is shown in the SETUP control panel, in our actual case "BMS-FULL" and below is shown as a table format the key mapping where we can see the assigned funcion of every key.

If we open this file we will see how is its internal structure. It is composed for lines that follow a format:

```
SimTMSUp -1 0 0xC7 1 0 0 1 "STICK: TMS Up"
SimTMSDown -1 0 0xCF 1 0 0 1 "STICK: TMS Down"
SimTMSLeft -1 0 0xD3 1 0 0 1 "STICK: TMS Left"
SimTMSRight -1 0 0xD1 1 0 0 1 "STICK: TMS Right"
SimDMSUp -1 0 0xC7 2 0 0 1 "STICK: DMS Up"
SimDMSDown -1 0 0xCF 2 0 0 1 "STICK: DMS Down"
SimDMSLeft -1 0 0xD3 2 0 0 1 "STICK: DMS Left"
SimDMSRight -1 0 0xD1 2 0 0 1 "STICK: DMS Right"
SimCMSUp -1 0 0xC7 4 0 0 1 "STICK: CMS Up"
SimCMSDown -1 0 0xCF 4 0 0 1 "STICK: CMS Down"
SimCMSLeft -1 0 0xD3 4 0 0 1 "STICK: CMS Left"
```

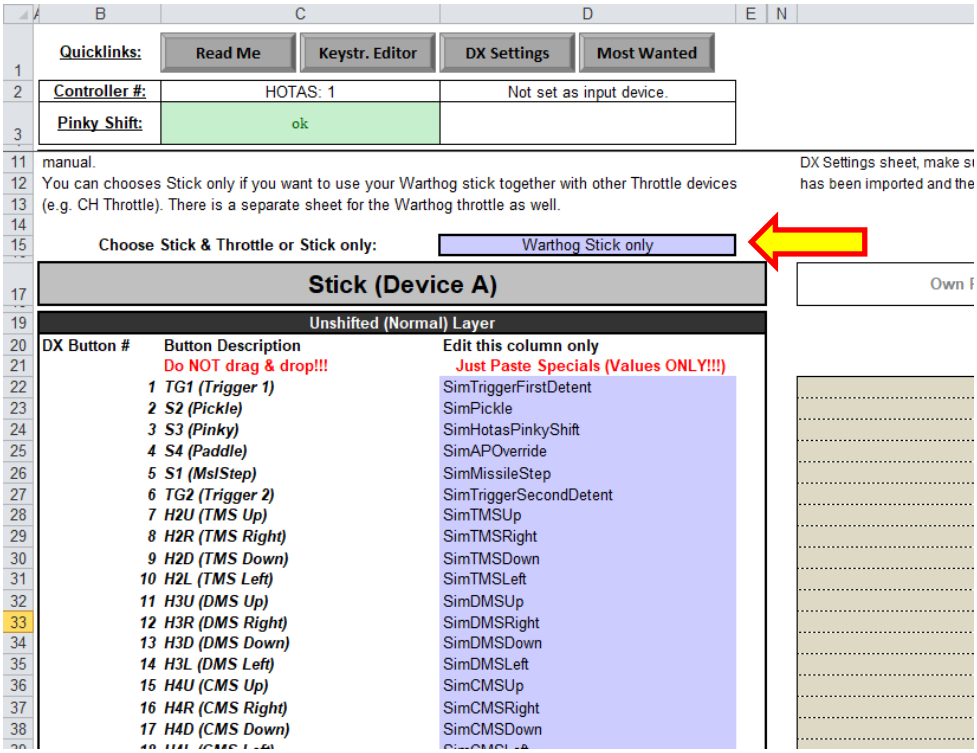
Some time ago this file had to be modified manually, so you had to be an expert to do it. Nowadays exists a tool named "**BMS Key File Editor.xls**" where you can configure the key file to you liking, and to help you in that task it has a manual ("**BMS Key File Editor Manual.pdf"**) where you will find an extensive explanation about the how to do it.

If you have a FSSB-R3 Warthog or a FSSB-R3 Lighting with the classic firmwares, your device are not able to send keystrokes, so you will need to use the DX buttons.

For this, folow the next steps:

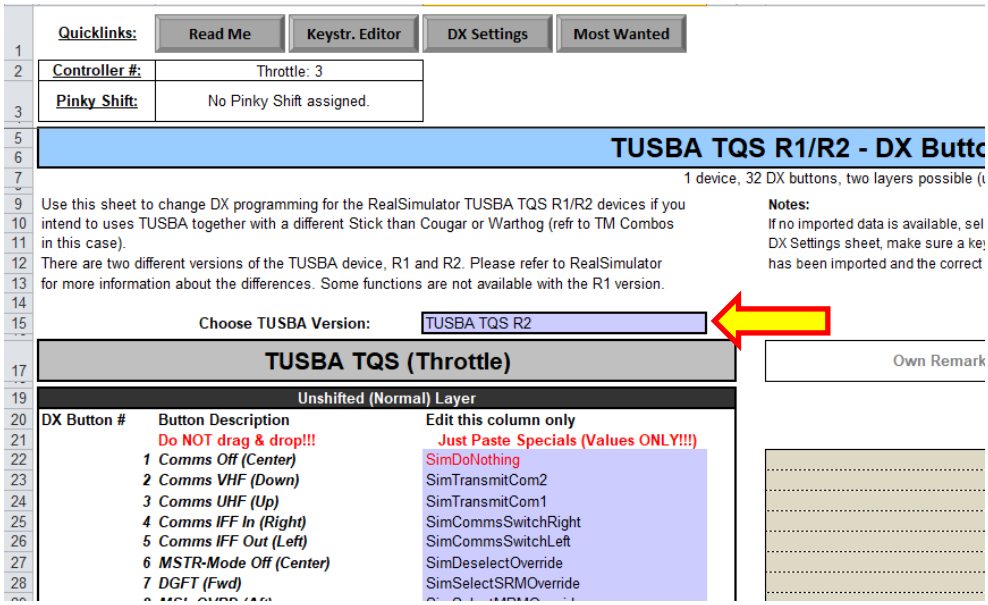
- Open the BMS Key File Editor.xls file with your Excel program.
- Click the **Keystrokes Editor** tab and select the **Keyboard Layout (Locale)** you prefer, for commodity and standarization "US International".

- Click on the **Import Key File** button to import the key file, in our example “BMS – Full.key”.
- Verify the **M3** cell show in green the text: “**Imported Key File is OK**”.
- Select the **TM Warthog** tab and choose the option **Warthog Stick only**. This file only use the 19 first DX buttons, if you want use the rest of available buttons you will have to modify the profile creating a new profile from this one in the existing tabs named Own #1 to Own #10.

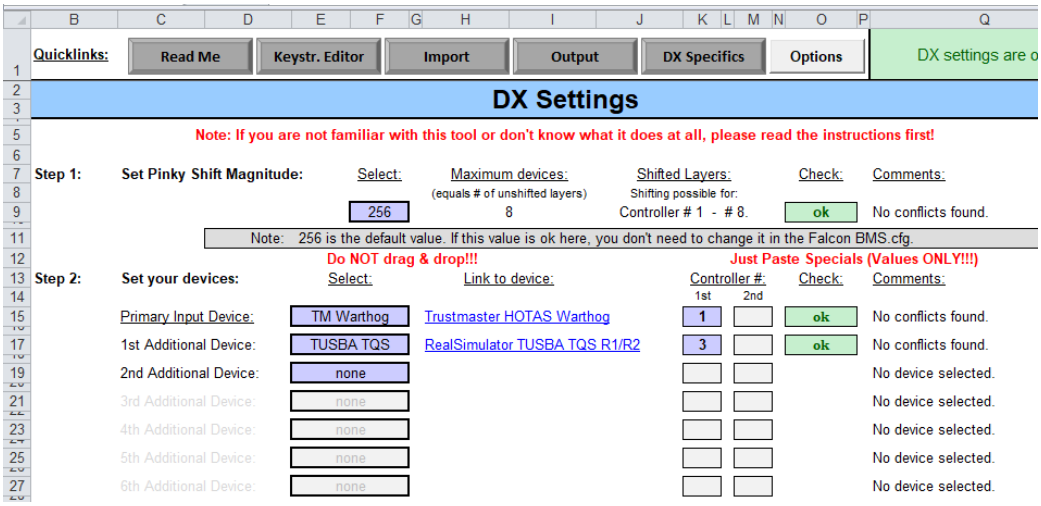


Note: for convenience and not to complicate this example we use the TM Warthog profile for the FSSB-R3 device)

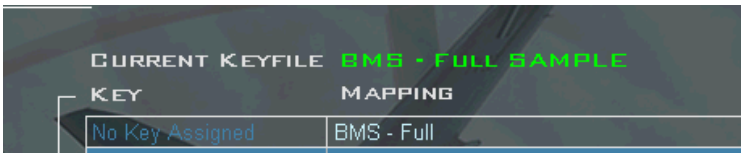
- Select the **TUSBA TQS** tab and select the TUSBA version.



- Select the **DX Settings** tab and assign the devices you are ussing: FSSB-R3 (TM Warthog) and TUSBA. And assign the **Controller** # order number (1 and 3)



- Click on te **Output tab** and check that in the end of A column there are new lines with the code to support the DX buttons of your devices. You can see three new heads for code: STICK UNSHIFTED, STICK SHIFTED and TUSBA UNSHIFTED.
- Select the **Keystrokes Editor** tab and click on the **Export Key File** button to save the actual custom profile. I suggest changing the file name to keep always the original files in the folder installation (BMS – FULL SAMPLE.key)
- Now you can open the FALCON BMS program and access to the **CONTROLLERS** control panel in the **SETUP** menu and verify the new code added works fine. For that click on the **LOAD** button and select the recent saved key file.



- To check it, press in the stick the DMS-UP button and you will see:

If you check the key file on the added code there is a line for the button 11 of Stick (on the file appear as 10, you can find more information about this difference in the guide) :

SimDMSUp 10 -1 -2 0 0x0 -1

And this Callback SimDMSUp in other part of file focused for keystrokes has associated the text “STICK: DMS Up” that you see when press the button.

SimDMSUp -1 0 0xC7 2 0 0 1 "STICK: DMS Up"

- You can repeat the action with other buttons to verify them.

KEYSTROKES

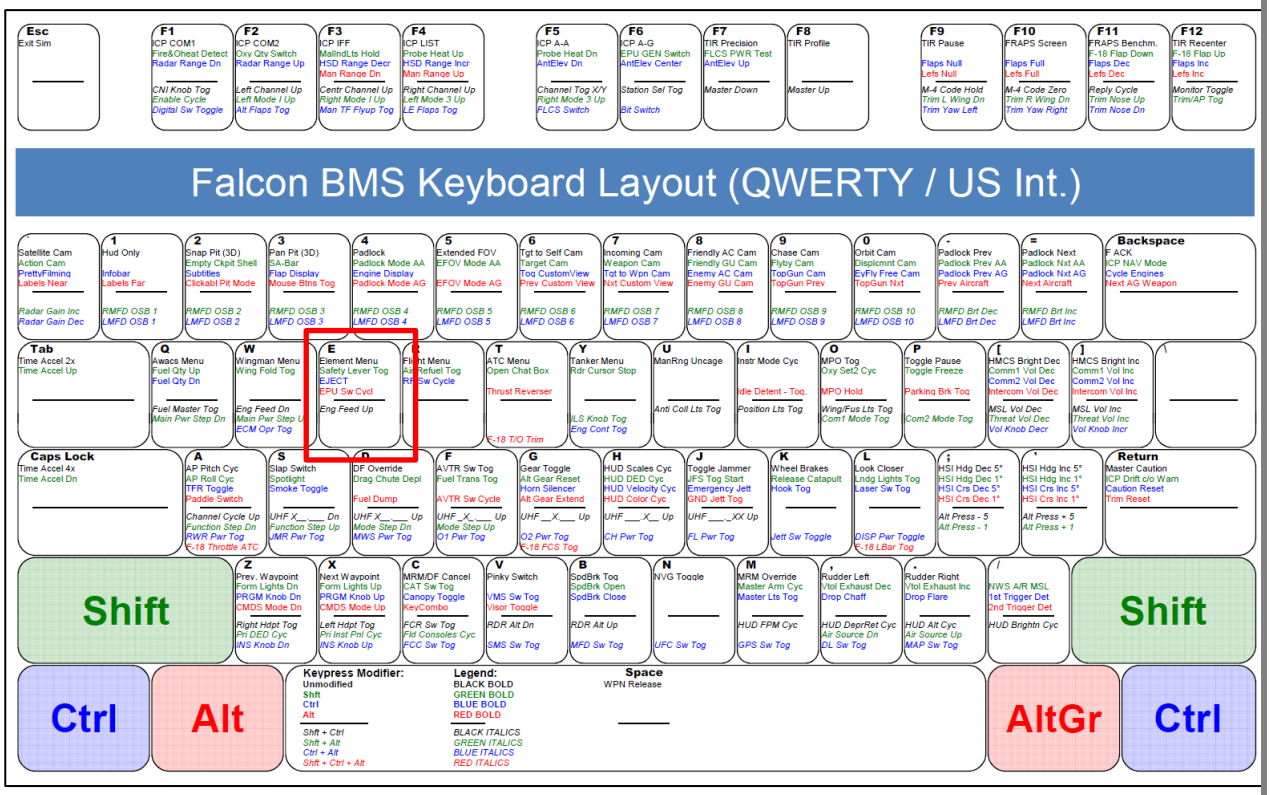
If you have a FSSB-R3 Lighting with a firmware installed with support for keystrokes generation as the released MJF_F16-18_4 that has keyboard emulation, you can use

this option.

As we said before in previous sections, it is the key file who has the key map with the relation between the keys and the actions. Fortunatly it is already done the great work of generate the files and the keyboard layout to help us.

We will show with an example how to add a new action to to our FSSB-R3L, we are going to add the action “EJECT” to the Weapon Release Up button.

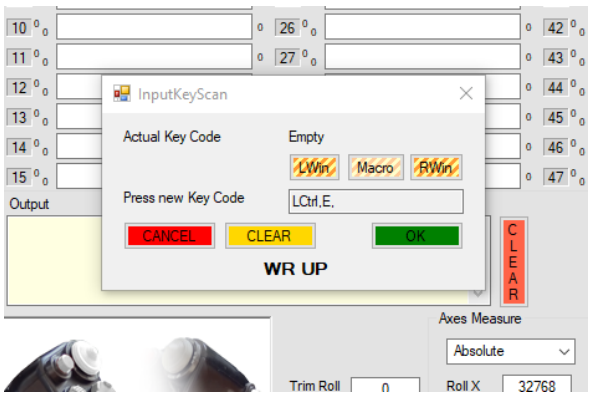
In this case we look at the file BMS Keyboard Layout.pdf to search the action and see which is the necessary key to generate this action. In this case the action is created and as you can see is “CTRL + E”, if not, we would need modify the key file following the BMS guide instructions.



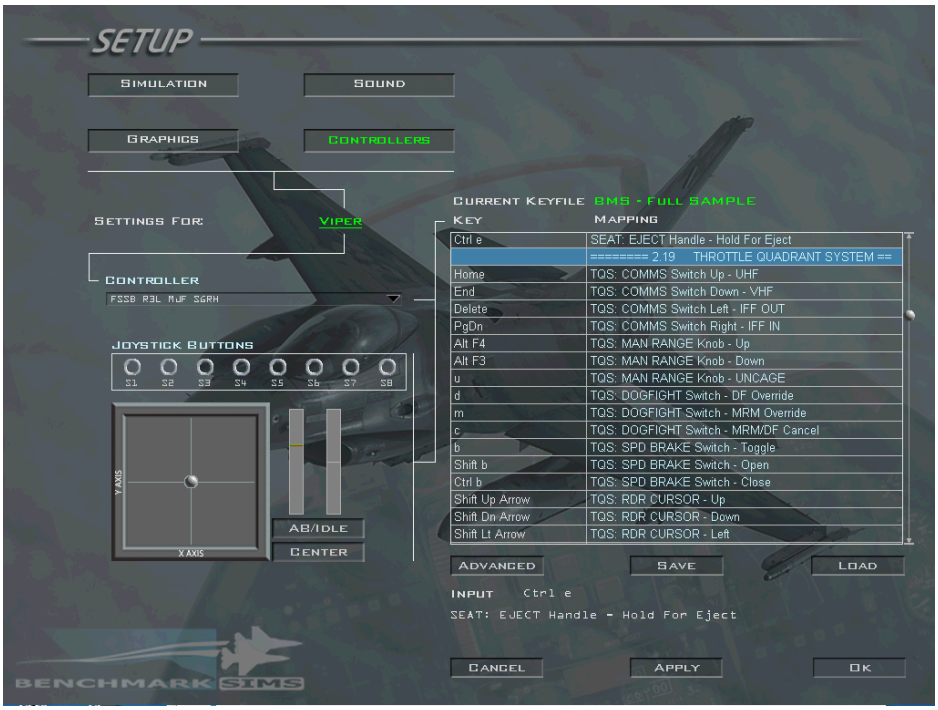
Now we need add this keys to our FSSB-R3 profile.

So, open the **RS_HID_DEV_TOOL** and choose the slot where add the action. We choose for example the **Slot 3** and next press the textbox of **WR Up**; if you don’t know where is it, press the **Names** button or press directly the button and locate the DX button lighted. In this case is the DX button 19.

After press the textbox you can enter the keys “CTRL + E”.



After click the OK button you can check it in BMS Falcon.

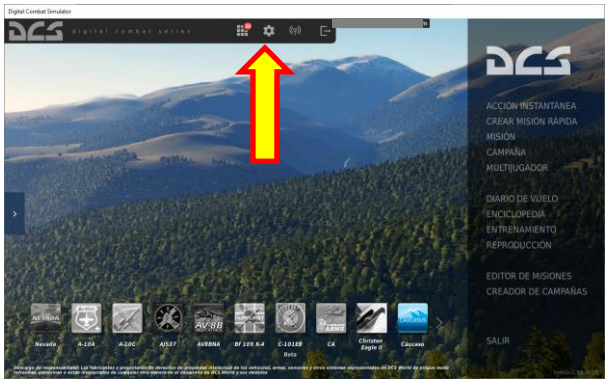


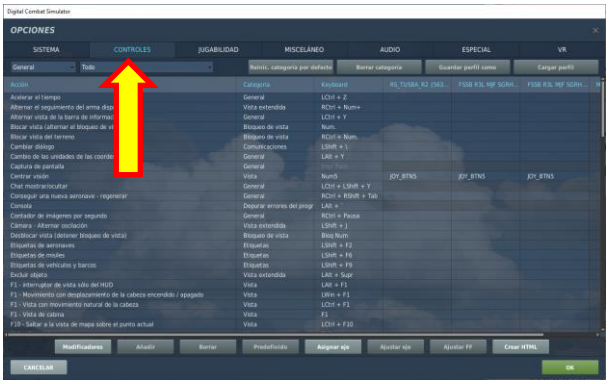
As you can see, it is a very easy method and also allows you introduce until 8 x 64 differents actions.

Finally, as general rule, don't forget disabling always the **DX Button** button in the slot where you use Keystrokes.

DCS

In DCS there is only a way to integrate the devices in the program; it is with the control panel. You will find it in the **CONTROLS** tab of **OPTIONS** menu and it allows you to customize your control input devices, such as joysticks, mouse, keyboards, rudders, etc. profile assigning to every action the axis or keystroke you choose.





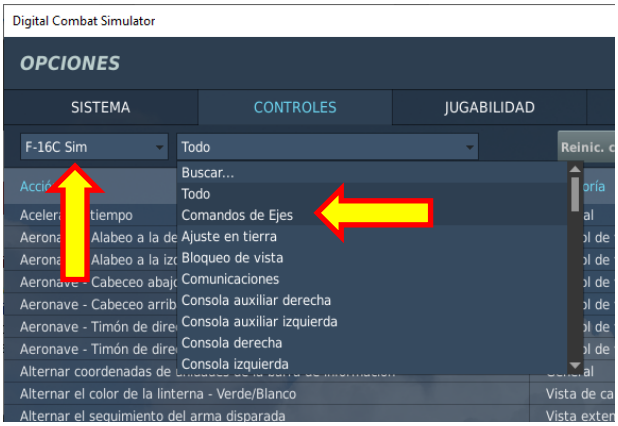
Also you can see in this control window there is in the left a column to show the assignable actions, next a column where is shown the category of each action and finally a column for each detected input device, in our example: keyboard, RS_TUSBA_R2, FSSB R3L MJF SGRH (second device of R3L), FSSB R3L MJF SGRH (first device of R3L) and the mouse.

By default, as you can see the program assign a profile to all input devices assigning default actions to the available axes and buttons of input devices. Also, it starts with the General profile, as we are going to prepare the F-16C profile we will select the **F-16C**

Sim on the **Aircraft Control Mode** drop down.

AXES

In our example, we will use the two axes of FSSB-R3L for Pitch and Roll, that as you have seen before they are located in the first HID device of FSSB R3L. For throttle we will use the TUSBA device.

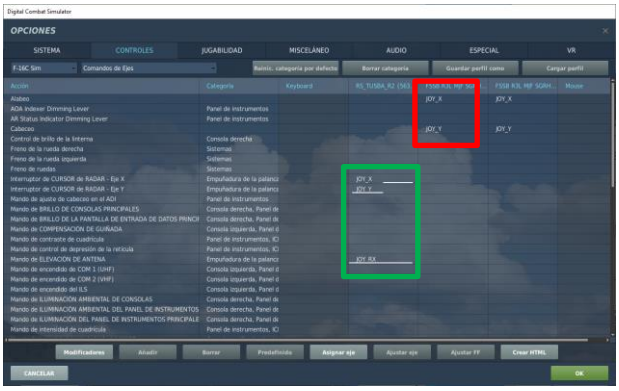


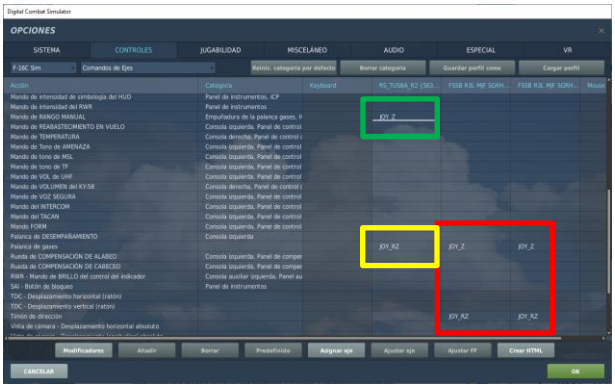
For that, select in the **Input Categories** drop down the option **Axis Commands.**

As you can see the Roll and Pitch axes is associated to 2 input devices, if you move the stick, you will see how a line under the texts moves, thereby we will verify which are the axes we are looking for.

After verify it, we will delete the other JOY_X and JOY_Y in the other device with left click mouse on the desired place to select it and left click on the **CLEAR** button.

Also we will delete the other axes asociated with the FSSB R3 because this device only has this two axes (red boxes).



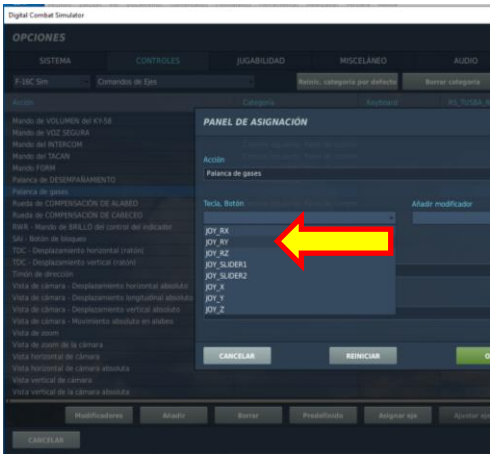


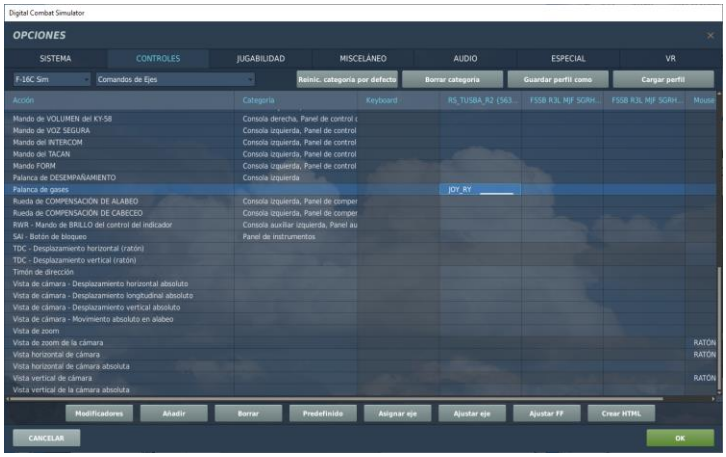
Finally we will assign the Throttle and other auxiliary axes of TUSBA device. This is the axes assignation on TUSBA:

- JOY_X: Cursor X
- JOY_Y: Cursor Y
- JOY_Z: Range
- JOY_RX: Antenna Elevation
- JOY_RY: Throttle
- JOY_RZ: Idle
- JOY_S1: Militar
- JOY_S2: AfterBurner

After checking the default assignation of axes on TUSBA, we verify that **Cursor X** (JOY_X), **Cursor Y** (JOY_Y), **Range** (JOY_Z) and **Antenna Elevation** (JOY_RX) are

well configured (green boxes) but the **Throttle** axis is bad assigned, it is assigned to JOY_RZ and it must be JOY_RY; so first we will delete the actual axis and after we will assign the axis to the correct value by double click over the box and selecting JOY_RY.

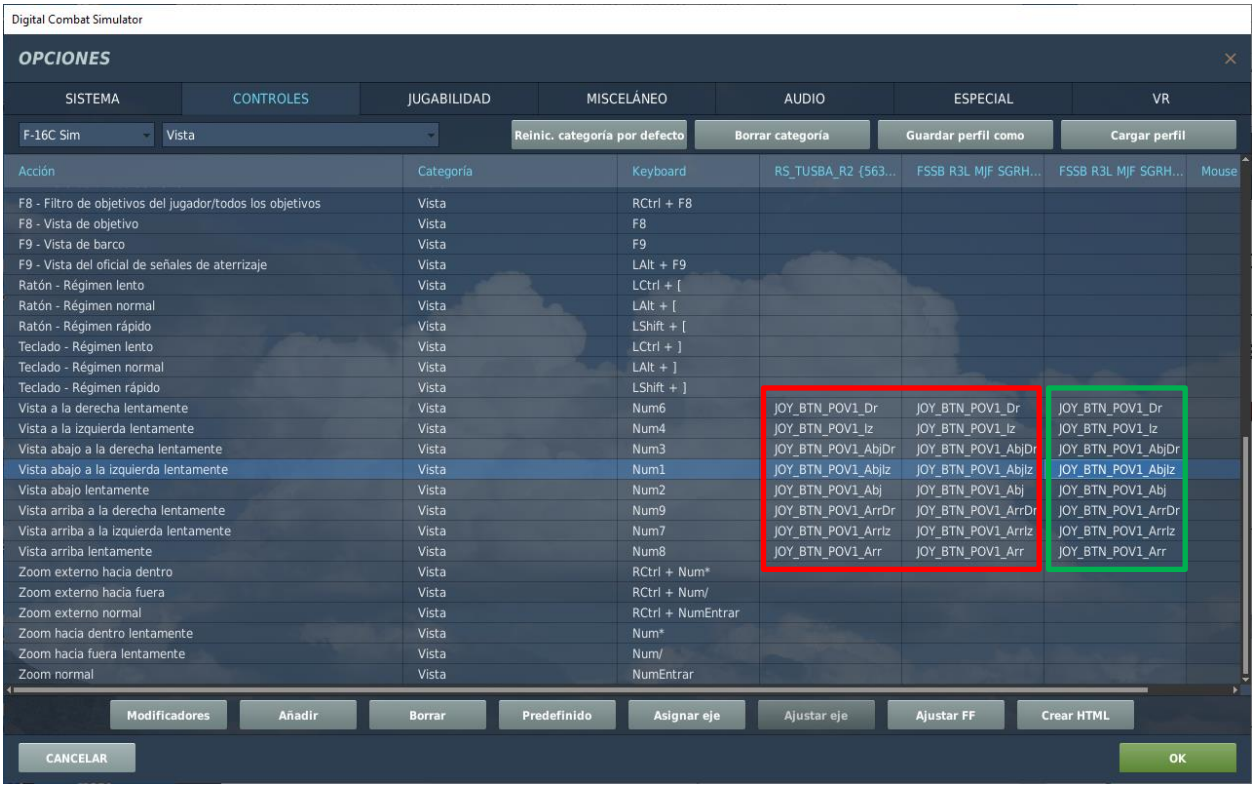




We have finished the axes configuration, so it is a good moment to save our configuration by click on the **SAVE PROFILE AS** with the name F16_Sample.

POINT OF VIEW

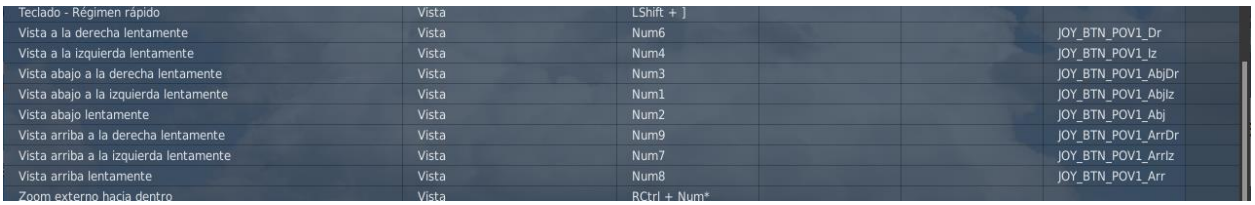
Now we are going to configure the Point Of View (POV), for that select in the **Input Categories** drop down the option **View** and we will scroll the list until finding the **View Down Left slow field**. As you can check the default profile has already assigned these actions to the three devices but as in our phisical device configuration only has POV the first device of FSSB R3 we will delete the non necessary assignations (red box) and will maintain the valid (green box).



Acción	Categoría	Keyboard	RS_TUSBA_R2 {563...	FSSB R3L MJF SGRH...	FSSB R3L MJF SGRH...	Mouse
F8 - Filtro de objetivos del jugador/todos los objetivos	Vista	RCtrl + F8				
F8 - Vista de objetivo	Vista	F8				
F9 - Vista de barco	Vista	F9				
F9 - Vista del oficial de señales de aterrizaje	Vista	LAlt + F9				
Ratón - Régimen lento	Vista	LCtrl + [				
Ratón - Régimen normal	Vista	LAlt + [				
Ratón - Régimen rápido	Vista	LShift + [				
Teclado - Régimen lento	Vista	LCtrl +]				
Teclado - Régimen normal	Vista	LAlt +]				
Teclado - Régimen rápido	Vista	LShift +]				
Vista a la derecha lentamente	Vista	Num6	JOY_BTN_POV1_Dr	JOY_BTN_POV1_Dr	JOY_BTN_POV1_Dr	
Vista a la izquierda lentamente	Vista	Num4	JOY_BTN_POV1_Iz	JOY_BTN_POV1_Iz	JOY_BTN_POV1_Iz	
Vista abajo a la derecha lentamente	Vista	Num3	JOY_BTN_POV1_AbjDr	JOY_BTN_POV1_AbjDr	JOY_BTN_POV1_AbjDr	
Vista abajo a la izquierda lentamente	Vista	Num1	JOY_BTN_POV1_AbjIz	JOY_BTN_POV1_AbjIz	JOY_BTN_POV1_AbjIz	
Vista abajo lentamente	Vista	Num2	JOY_BTN_POV1_Abj	JOY_BTN_POV1_Abj	JOY_BTN_POV1_Abj	
Vista arriba a la derecha lentamente	Vista	Num9	JOY_BTN_POV1_ArrDr	JOY_BTN_POV1_ArrDr	JOY_BTN_POV1_ArrDr	
Vista arriba a la izquierda lentamente	Vista	Num7	JOY_BTN_POV1_ArrIz	JOY_BTN_POV1_ArrIz	JOY_BTN_POV1_ArrIz	
Vista arriba lentamente	Vista	Num8	JOY_BTN_POV1_Arr	JOY_BTN_POV1_Arr	JOY_BTN_POV1_Arr	
Zoom externo hacia dentro	Vista	RCtrl + Num*				
Zoom externo hacia fuera	Vista	RCtrl + Num/				
Zoom externo normal	Vista	RCtrl + NumEntrar				
Zoom hacia dentro lentamente	Vista	Num*				
Zoom hacia fuera lentamente	Vista	Num/				
Zoom normal	Vista	NumEntrar				

You can verify that these are the valid assignations moving the TRIM switch. You will see the next image when you press it forward.

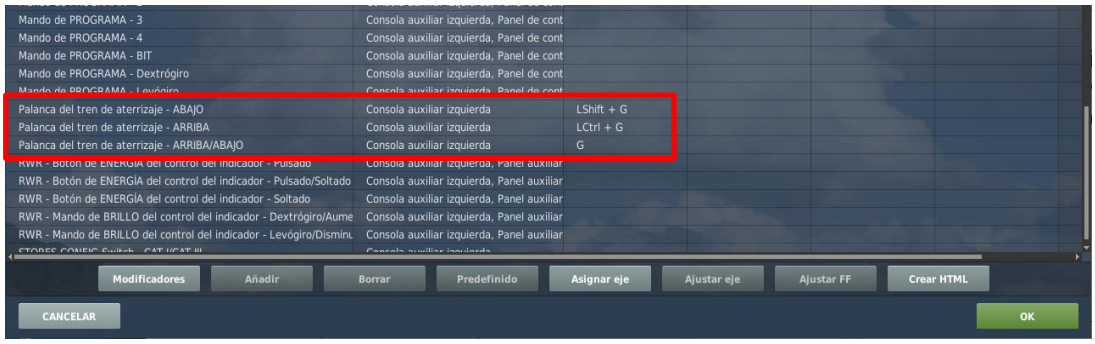
And this will be the definitive configuration after delete the default non valid assignations.



DX BUTTONS

Now we will see an example about how to assign a button to an action. We wil assign the individual Up and Down Landing Gear movement to the Up and Dow switches of Weapon Release swicth (I am doing the example with a F16SGRH grip).

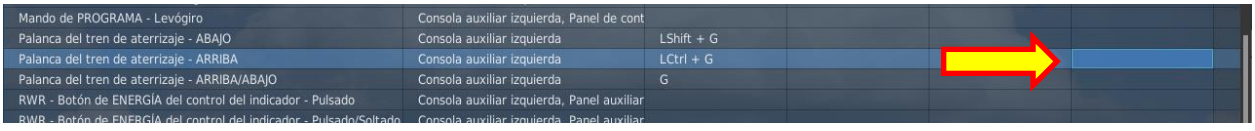
First, we need to find this action in the list but as we know the landing gear lever is on the Auxiliary Left Console of F-16, we will select on the **Input Categories** drop down the option **Auxiliary Left Console** and we will scroll the list until finding the **View Down Left slow** text.



As we can see, there is a toggle action and the individual UP and DOWD action. We won't use the toggle action, only the individual actions.

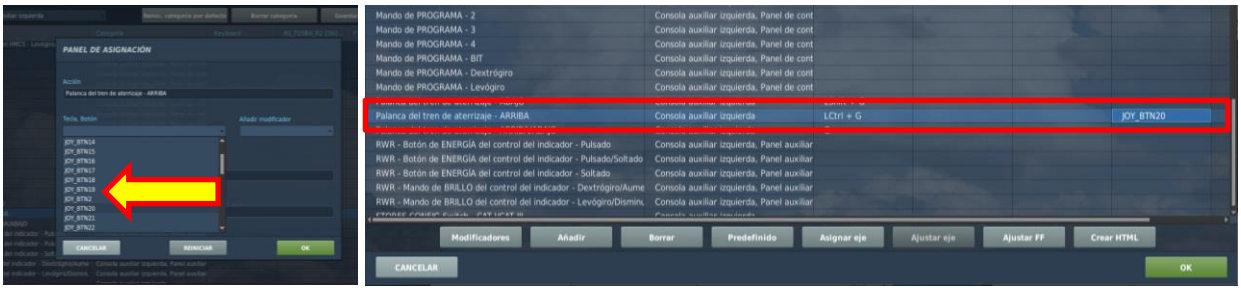
To assign the action to the buttons, first I suggest to know if the button is on the first or second HID device of FSSB R3; you can do it opening the Windows FSSB R3L properties window or with the RS_HID_DEV_TOOL. In our case they are the DX buttons 19 and 21 (20 and 22 in the program, always +1), so both are in the first device.

After this, you only need double click on the box of the Landing Gear UP action of first device.



And in the new window, select on the **Button** drop down the **JOY_BTN20** or directly

press the **WR Up switch**. The final result will be just like this new screenshot.



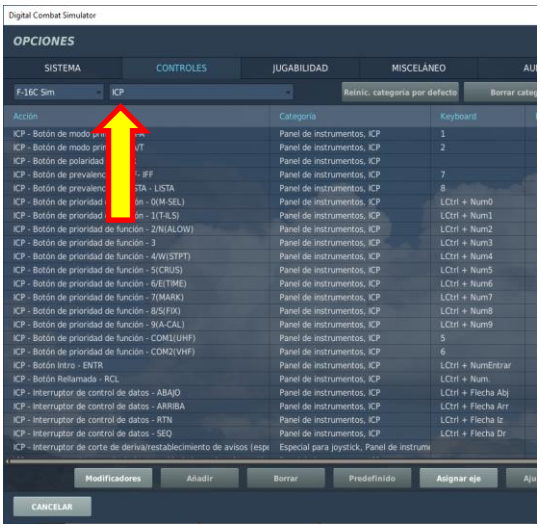
We will repeat the action wiht the Landing Gear Down to finish.

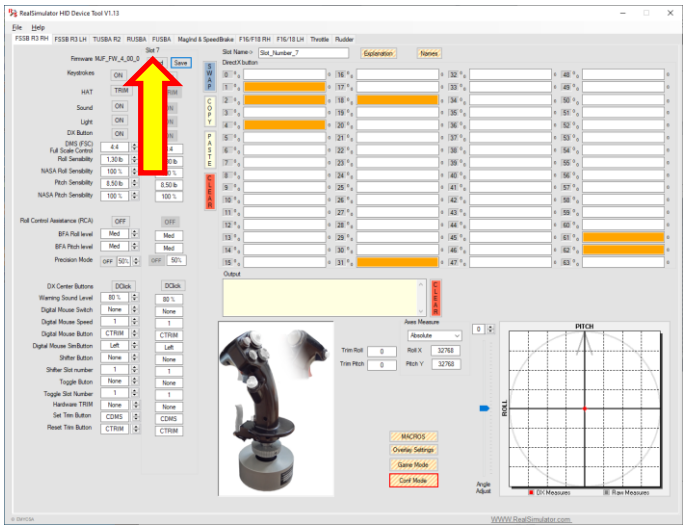
KEYSTROKES

You can only use this method to generate actions if you have a FSSB-R3 Lighting with a firmware installed with support for keystrokes generation as the released MJF_F16-18_4 that has keyboard emulation.

With this option you only need to assign the keys in the keyboard column to the FSSB-R3L profile. For example, suppose we want integrate the ICP actions in the Slot 7 of our FSSB-R3L.

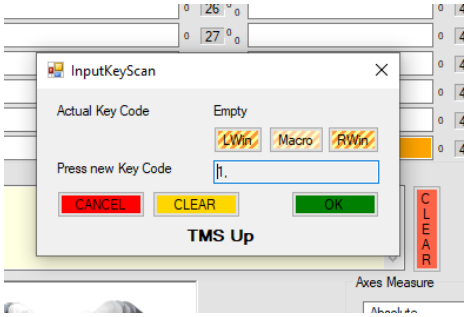
First, we will select on the **Input Categories** drop down the option **ICP** to see all the ICP actions. In other window we will open the RS_HID_DEV_TOOL and we will select the slot 7 with the rotary switch.

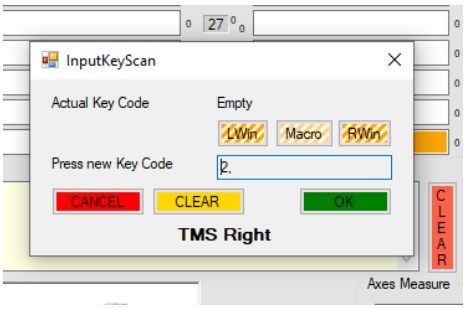




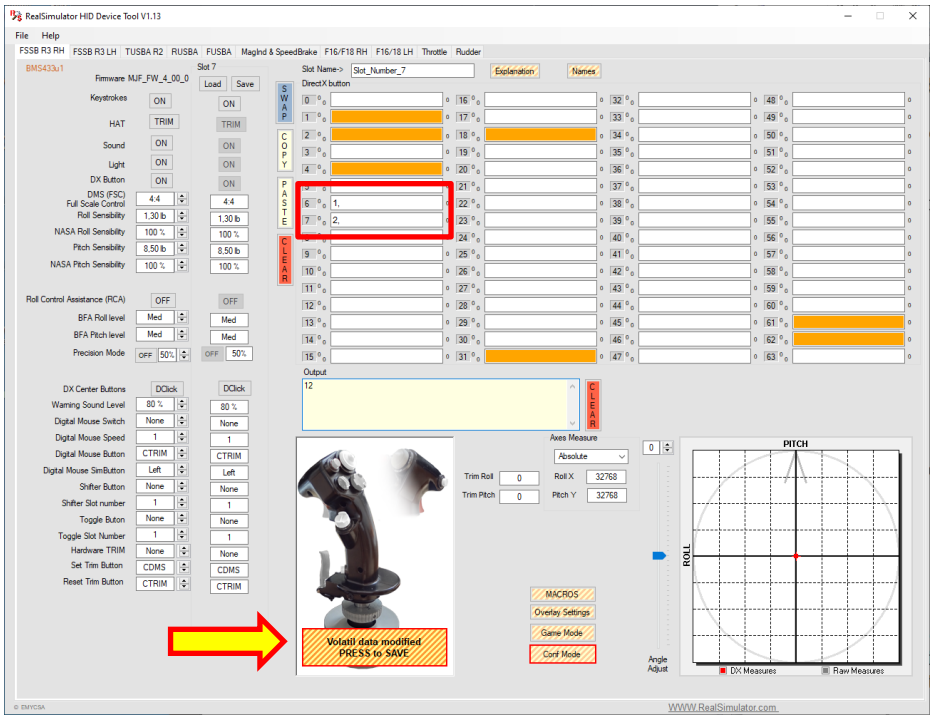
And now we only need to assign each action to a button of the selected slot. For example we are going to assign: the ICP action **A-A** (key 1) to the **TMS Up** and the ICP action **A-G** (key 2) to the **TMS Right**.

So, first we click the TMS Up textbox (if you don't know where is it, press the **Names** button or press directly the button and locate the DX button lighted) on DX 6 and enter the key 1 and after the TMS Right on DX 7 to enter the key 2.





When complete the profile you can test it on the **Ouput** box and if every is OK, don't forget to save the profile.



As general rule, I suggest to disable the DX Button button in the slot where you use Keystrokes to prevent undesirable actions.

And finally you can check the profile in DCS or simply enter and enjoy it!!

EMYCSA RealSimulator	FAQ	
	Date: 29-12-2022	**Version:** 3.01

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.
- I can’t update the firmware of my device with DCC.
- I want to install a new version of RS_HID_DEV_TOOL or DCC, but I cannot uninstall the older one.
- My device has suddenly stopped working after connecting it or turning on the computer.
- How to centre my device.
- I can’t centre my device, is it damaged?

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 FSSB-R3 uses standard HID drivers included in your installed operating system. No matter if x32 or x64, W7 or other higher MS operating system. The FSSB-R3 will work in all situations.

RealSimulator provides two tools to configure and upgrade the device:

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

You can find more information about them in this User Guide in their correspondent paragraphs.

I can't update the firmware of my device with DCC.

If you have followed the procedure given in the **Firmware Update** chapter and DCC cannot synchronize with your device to launch the update sequence, perhaps the source of problem is how you have connected the RS device to the computer. Please, connect the device with the supplied extension USB wire directly to an USB 2.0 port in the computer and try again.

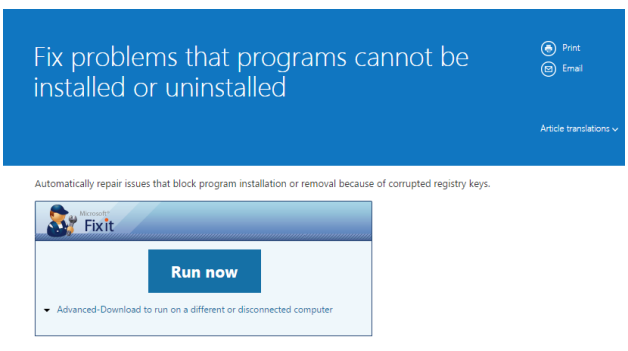
If you have connected a smart grip as RS grips to your FSSB-R3, unplug it and try again.

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 previous link (or next picture) to open the webpage and press the **RUN NOW** button to launch the wizard.



My device has suddenly stopped working after connecting it or turning on the computer.

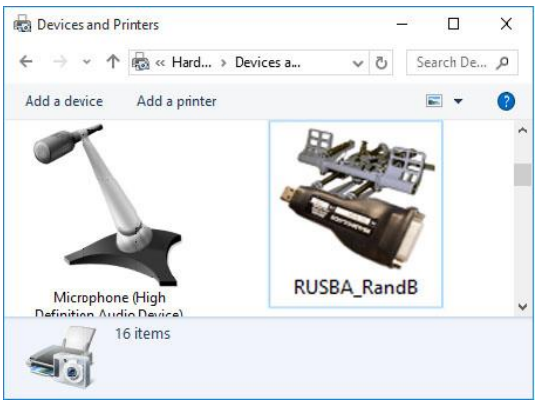
As the title says, if sometime your device does not work after connect it to the computer or after a power on and you are running Windows 10, then please, read this paragraph.

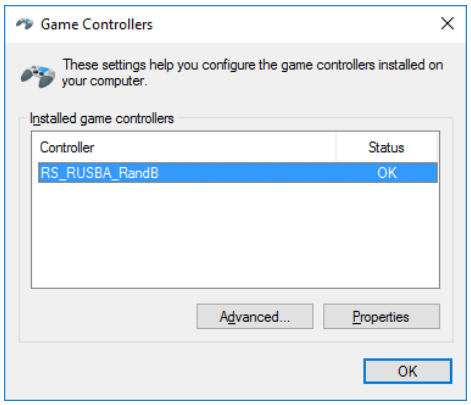
Windows 10 has a bug with the HID composite devices, sometimes it changes the HID devices order and when programs access to the device information selected, it is not correct. As we have mentioned and shown in previous sections, the first device has the two analog axes and 32 buttons and the second device only the other 32 additional buttons.

For these occasions when the sequence is not the correct, we suggest follow this method, we have used it when the problem has occurred and usually the issue is fixed.

Since the problem occurs very rarely and we have not got TUSBA screenshots, the next explanation is done with RUSBA screenshots.

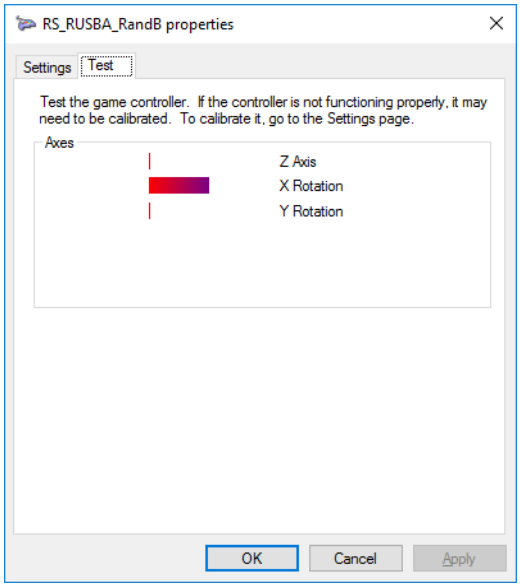
Open the **Devices and Printers** window, click with the right mouse button the **RUSBA_RandB** icon and select the **Game controller settings** option in the pop-up menu to open the **Game Controllers** window.

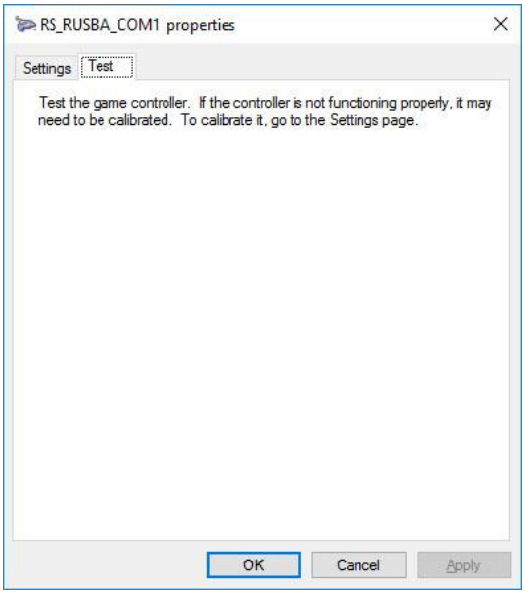




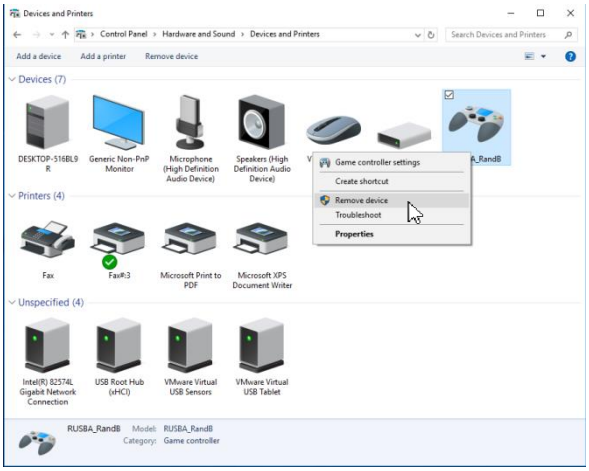
Click the **RS_RUSBA_RandB** text controller once to highlight it as shown in the previous image and next, click on the **Properties** button to open the **RS_RUSBA_RandB** properties window; you must have a window as this where you can see the four axes and the four buttons status.

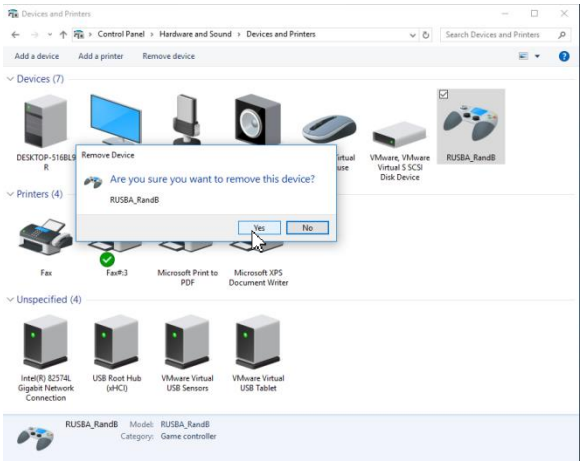
You should have a window as next left image with the axes bar graph, but if the system is wrong, you will see an image as right one. If you look at the imagen you will check the error, the window name is not correct and the axes area does not exit.





To solve the problem, you must remove the device, for that, go to the the **Devices and Printers** window and click again with the right mouse button over the **RS_RUSBA_RandB** icon and select the **Remove Device** option. Finally, press the **Yes** button in the next confirmation window.





When the device is removed, unplug the device and after some seconds plug again the device and verify if the problem is solved. Usually the problem will be fixed, if not, repeat the procedure.

How to centre my device.

The FSSB-R3L includes a feature named NPA (Neutral Procedure Adjust) that allows to compensate the small displacements of cero position as consequence of a grip change or any possible physical distortion in the gravity vector over you FSSB R3L.

The procedure to launch this feature depends of type of grip you have mounted in the FSSB-R3L.

- With Realsimulator grips the sequence is*:*

Trigger 1 + NWS Center

- With TM and compatible grips:

Press SMM launcher (CMS center or Paddle + Pinky)

Press Trigger 1

After press the buttons sequence and during the adjust time, the base will sound an intermittent beep and a green light will flash (if they are enabled). Please, release the grip during this time and don't move the FSSB-R3L.

When the sequence finishes, you will receive a long beep and the green light will turn off and the X/Y axes must be correctly centered.

I can't centre my device, is it damaged?

If you have tried to do a NPA following the sequence explained in the previous faq and the FSSB-R3L is not centred, then it is possible it is damaged but before to contact with our technical department to send it for repair, please, open the RS_HID_DEV_TOOL with the FSSB-R3L connected and check the next points:

- You have installed the last firmware version published: some old firmwares corrupt the memory and can produce these effects.

- The TRIM values are "0": perhaps you have used it and you have not reset it or perhaps you have inadvertently modified it.