

ELECTRONICA, MECANICA Y CONTROL, S.A.

RealSimulator



FUSBA

User Guide

FUSBA - User Guide v1.04.1

© EMYCSA - RealSimulator
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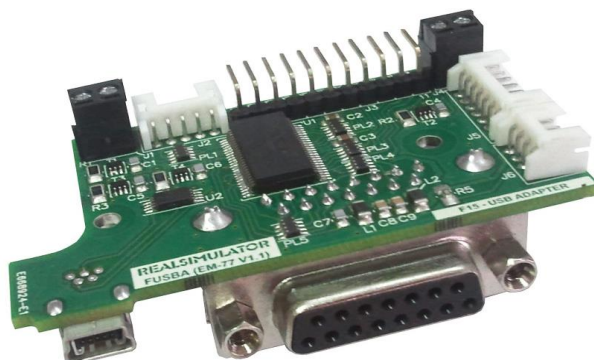
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PICTURE



DESCRIPTION

F.USB.A is the acronym for F-15 USB Adapter. This special version has been designed for the Suncom SFS F-15 throttle, and let you connect your loved and incredible well done Suncom hardware to any standard USB socket.

FUSBA uses standard HID drivers included in your installed operating system. No matter if x32 or x64, XP, W7 or W8. FUSBA will work in all situations.

FUSBA has been designed with state of the art last generation microcomputer and has been adjusted to improve the accuracy and precision of your hardware, giving you a full free noise 12 bit resolution (4096 steps) in all analog variables.

FUSBA is only available in one model: the full re-programmable one.

Additionally to manage the throttle signals FUSBA has a SUB-D 15 pin connector and PS2 keyboard connector to make possible for us to add a Suncom flight controller. At this moment it is fully compatible with SFS, Talon and Eagle sticks.

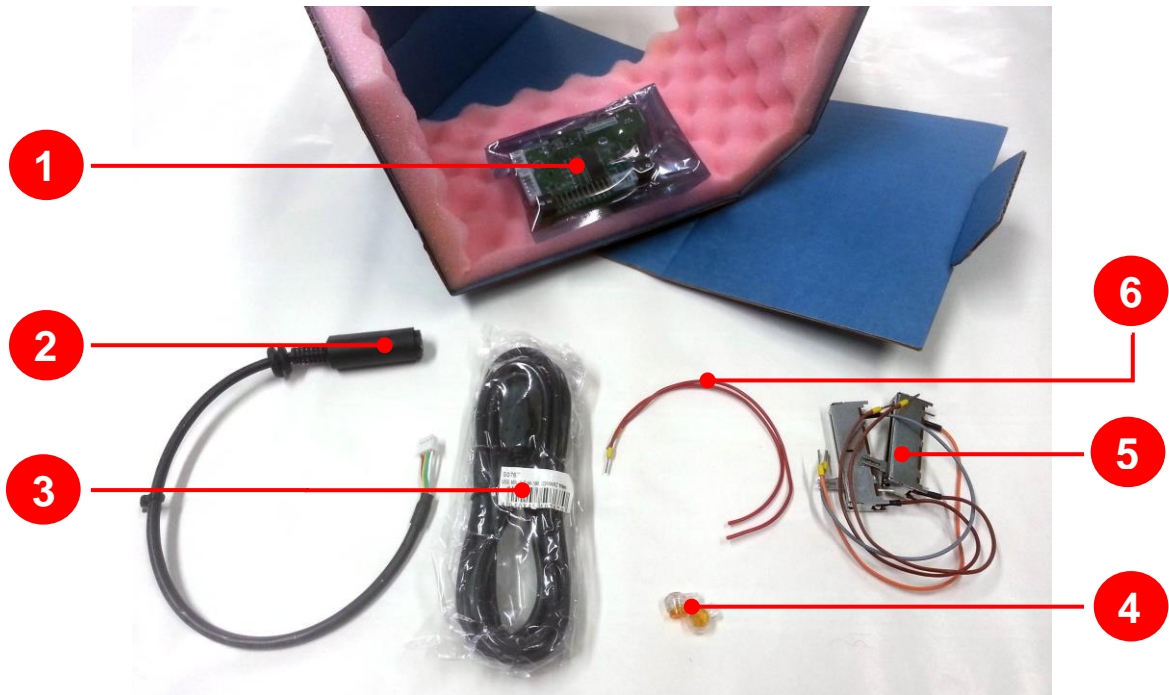
FUSBA is designed with the FSSB R3, TUSBA R2 and RUSBA soul, to be the best for today and for tomorrow.

As well as FSSB R3, TUSBA R2 and RUSBA, FUSBA is firmware upgradeable.

This guide is valid for the following Suncom Models:

- SFS Throttle and stick (keyboard programming is not supported).
- SFS Throttle and Talon stick.
- SFS Throttle and Eagle stick.

PICTURE



DESCRIPTION

FUSBA is supplied as a kit with all the necessary parts to install inside the SFS throttle. Installation is simple and quick and does not require any special knowledge or tool.

The kit, showed in the previous picture, contains the following components:

1. FUSBA electronic board.
2. PS2 keyboard wire.
3. USB wire.
4. Two butt connectors
5. Two potentiometers.
6. Two wires.

and for its installation, the following tools are needed:

- Philips PH1 screwdriver.
- Small flathead screwdriver.
- Flush cutter (or scissors)
- Pliers.

Since a picture says more than a thousand words, we explain the FUSBA electronic board installation in a video guide called: **"FUSBAHardwareInstallationShort"**, where

you can watch step by step how to install FUSBA in the SFS throttle.

You can find this video guide on RealSimulator product's website:
(<http://www.realsimulator.com/html/fusba.html>)

or, directly clicking the next image or hyperlink



[FUSBAHardwareInstallationShort](http://www.realsimulator.com/html/fusba.html)

Inside the FUSBA box there are two potentiometers that we include as spare parts. By default, it is not necessary to replace the old potentiometers installed in the throttle; you may need to replace them if they are broken or you see spikes in the measure when you move the throttle.

If you need to replace them, we suggest that you follow the steps given in the video guide called: "**FUSBAF15SFSPotenciometerInstallationShort**" that you will find in the product's website:

(<http://www.realsimulator.com/html/fusba.html>)

or, directly clicking the next image or hyperlink

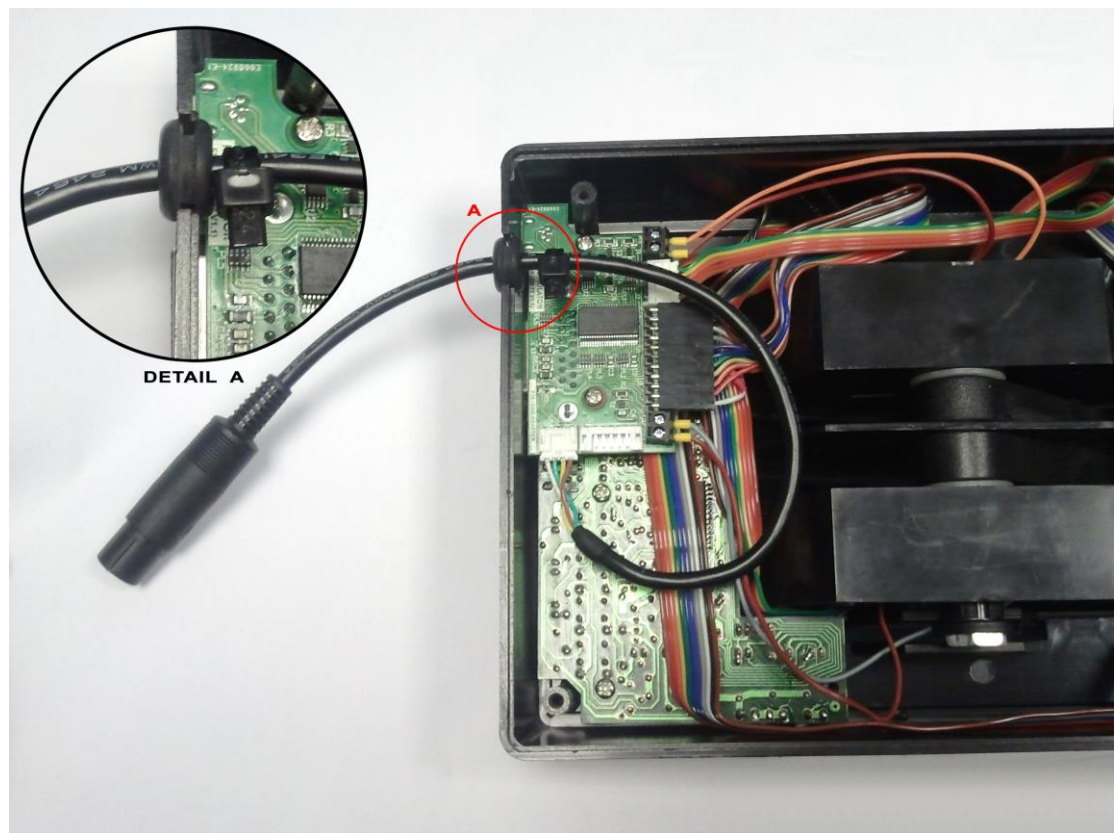


[FUSBAF15SFSPotenciometerInstallationShort](http://www.realsimulator.com/html/fusba.html)

To finish, only remain the installation of the PS/2 keyboard wire. This wire adapter

allows the connection of PS/2 keyboard connector of Suncom Eagle and Talon sticks to FUSBA and provides functionality to the Castle and Trim hats.

The SFS stick does not have keyboard connection, Trim signals are wired through the game port connector, so this cable is not necessary to install in this stick.



The wire adapter installation is very simple, you only need to plug the white connector in the 4 pin socket of FUSBA electronic board labelled as “J6”. Then pass the cable through the rectangular hole that there is on the throttle base next to the FUSBA electronic board, with the precaution of putting the rubber grommet which goes with the wire adapter guided in the hole (see detail “A” in previous image). Finally, put the cover on the base and screw the 4 screws to close the stick and finish the installation.

Now, the installation is finished and you only need to connect the SFS throttle with the PC with the USB wire supplied.

EMYCSA RealSimulator	First Connection	
	Date: 09/09/2018	Version: 1.04

PICTURE



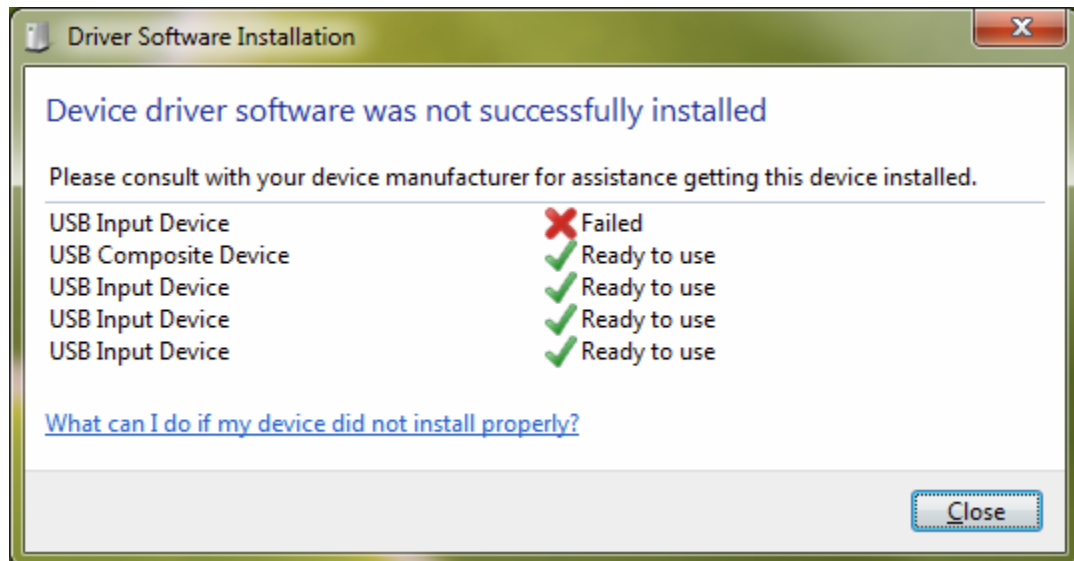
DESCRIPTION

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

- A Boot system, to allow you to update FUSBA with new firmware.
- A HID Game Device, to let you communicate FUSBA directly with MS operating system and let you control your simulator or some other game with DX axes and buttons.
- Two additional comms ports for special comms with the device.

As soon as you connect FUSBA, MS operating system will detect it and will start looking in its data base to install the appropriate drivers for it. As you know, from the FSSB R3 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 FUSBA system, use only MS drivers, so when you connect your FUSBA 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 FUSBA Boot system, and a few seconds after taking comms with MS, the FUSBA Boot will left the system and will be disconnect to allow working the Game device and additional Comms ports. You will see as this USB input device will be showed in red (have a look to the next picture). And as soon as the Boot goes out a USB Composite Device with 3 USB Input Devices will start looking for drivers.



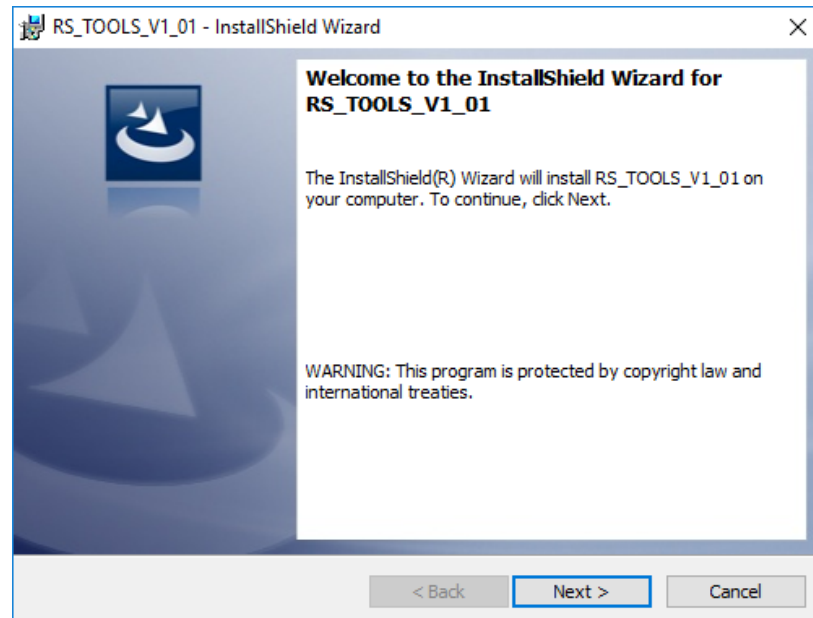
As these HID devices will not go out from your system, after a few second or minutes you will see how your MS OS will found the drivers and install them in your computer, and the USB Composite device and the 3 USB Input devices will be tick in green.

This picture is what you normally will have if you are running W7 64bits, perhaps it will look different in other OS, but it will be similar.

About the first USB Input Device, ticked in RED, don't worry it will be connected the next time you upgrade your system with the DCC software. Not necessary now.

EMYCSA RealSimulator	Tools Installation	
	Date: 09/09/2018	Version: 1.04

PICTURE



DESCRIPTION

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

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

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

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

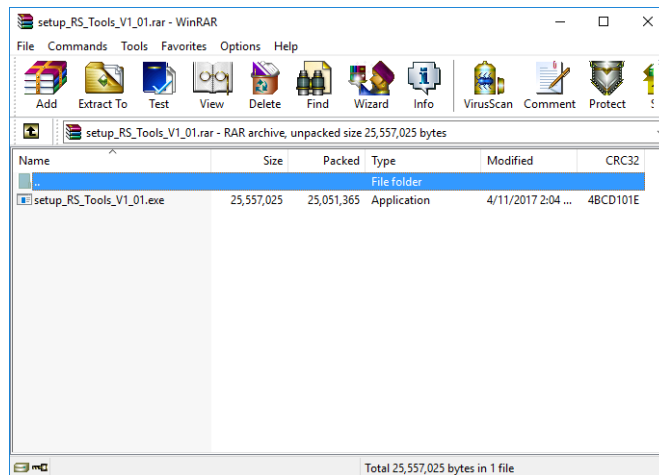
and download the latest version of **RS_TOOLS** and save it where you prefer.

NOTE: If you have a previous version installed in your computer, please, uninstall the older version prior to install the newer one.

System requirements are Windows XP sp3 or above MS operating systems and Microsoft .NET 4.5 or above.

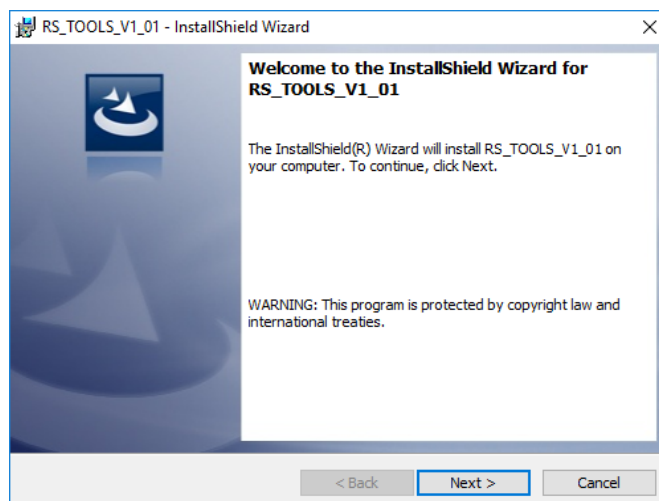
To install it, please, run the downloaded program by double-click on the file icon, at this moment "setup_RS_Tools_V1_01.rar" although the procedure is equal if there is other newer version.

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

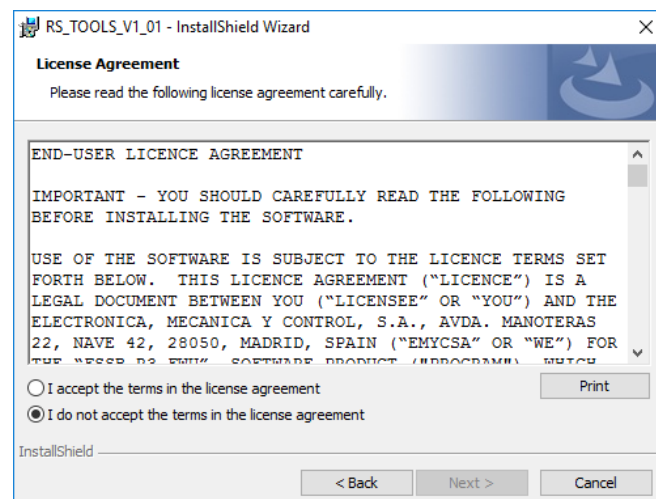


where **setup_RS_Tools_V1_01.exe** is the tools installer. To install it, please, run the file with a double click on the file name.

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

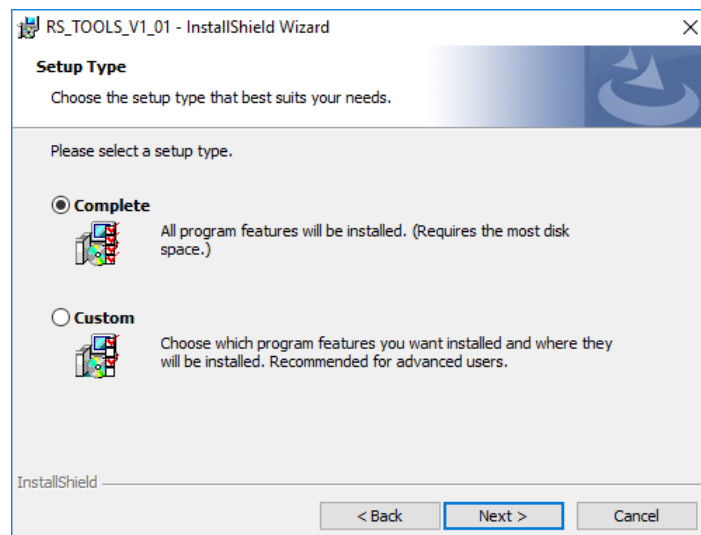


A standard licensing agreement must be accepted before moving on. Choose **I accept the terms of the license agreement** and click **Next**.

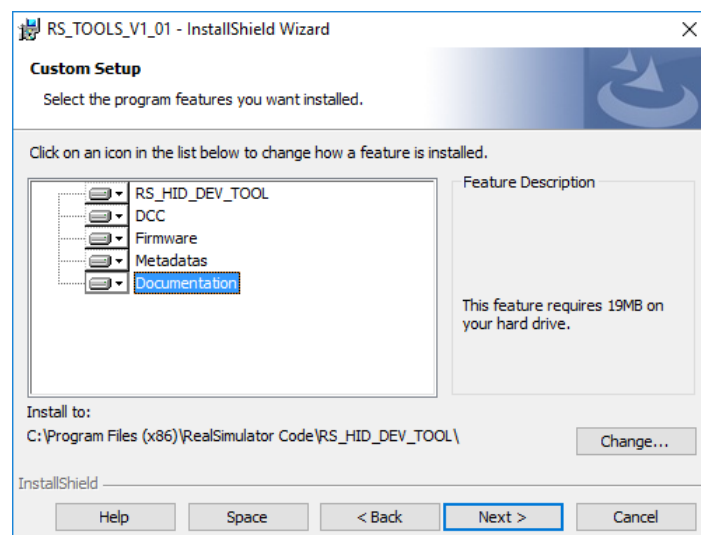


If you want to install all program features (DCC, RS_HID_DEV_TOOL, Metadata files,

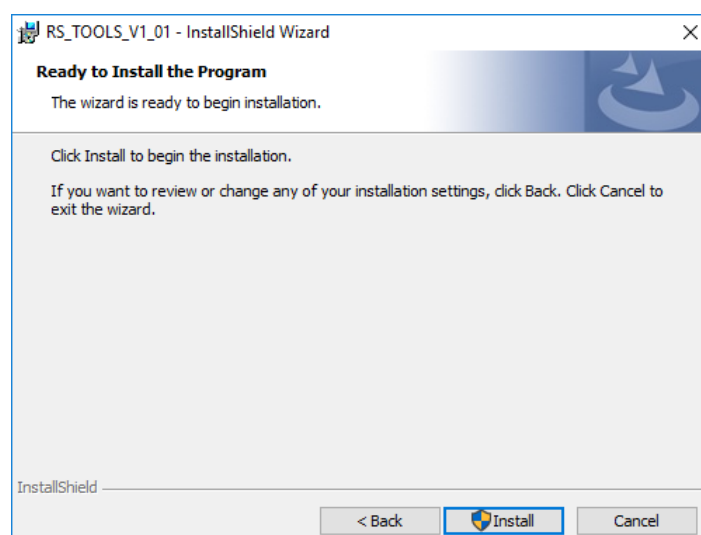
firmwares and User Guide) select the **Complete** setup type and click **Next** to continue.



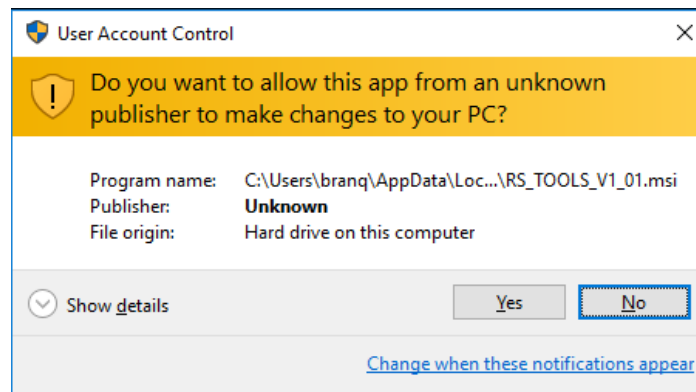
Or select **Custom** if you want to choose the features to install and click **Next** to continue. Select the features to install and click **Next**.



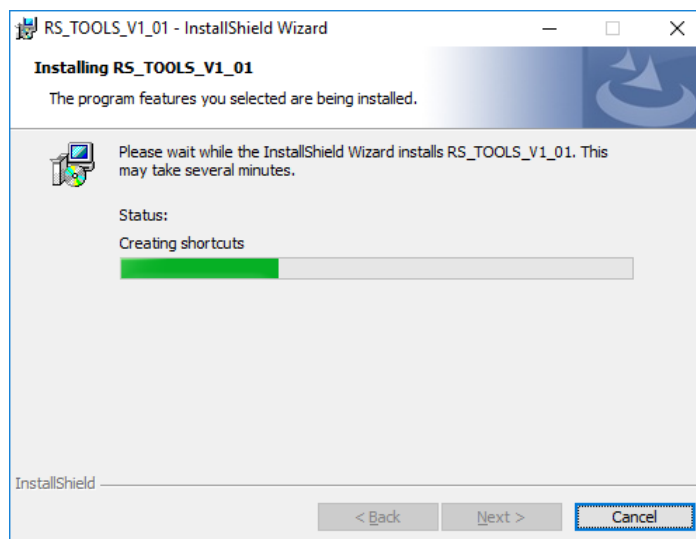
The wizard is now ready to start the installation process. Please, click on **Install**.



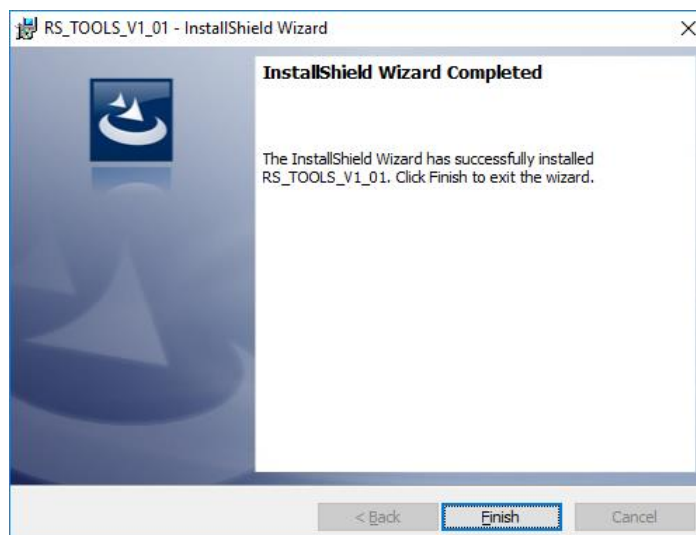
If the User Account Control window appears click the **Yes** button to continue.



The installation of RS_TOOLS_V1_01 may take several minutes to complete.

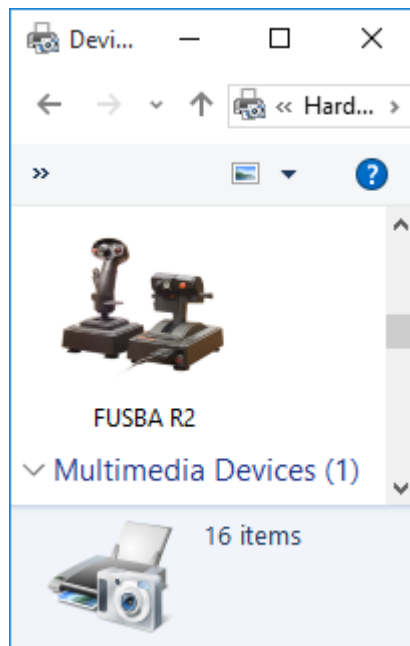


Wait until the wizard finishes the installation and click **Finish**.



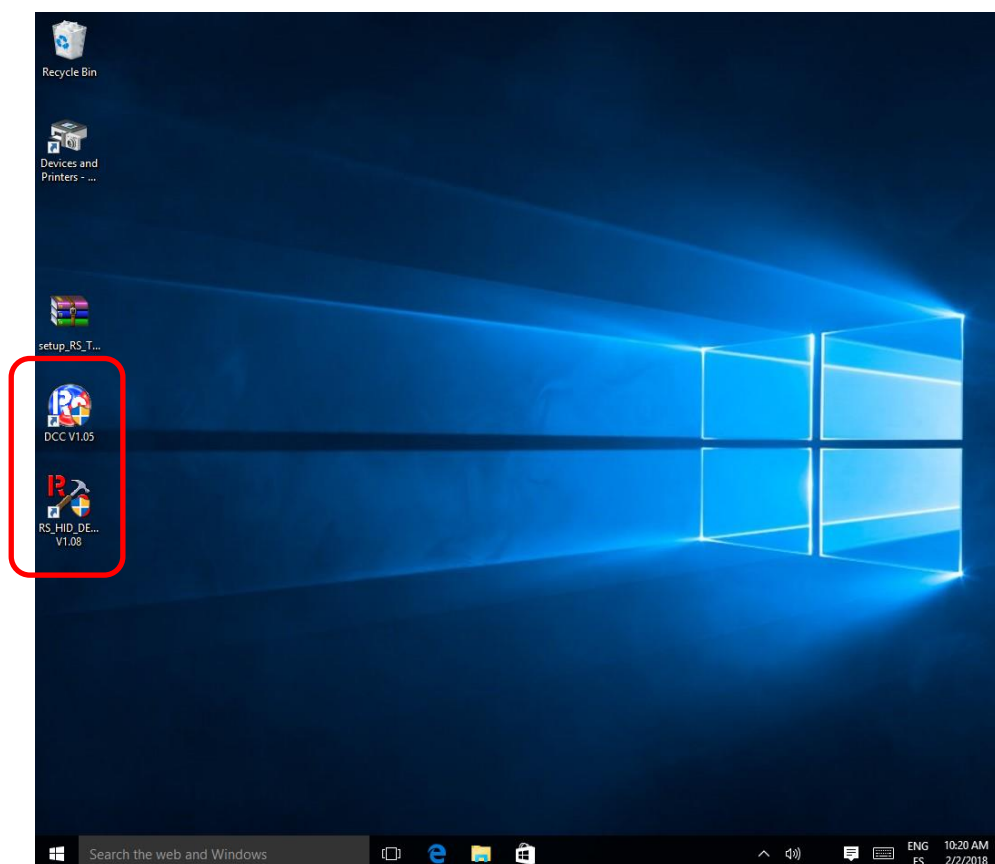
The installation is now finished, if you have connected to the PC your flight controls with the FUSBA kit installed you can see a new device image in the Devices and Printers window.

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

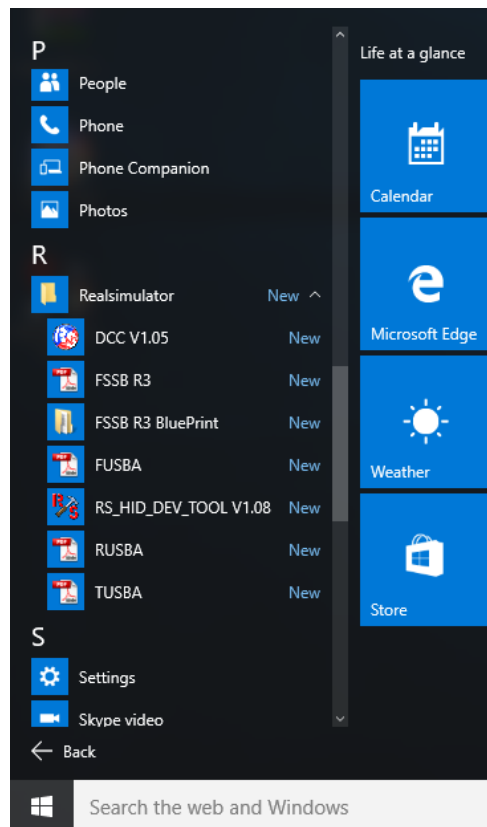


NOTE: sometimes Windows does not update immediately the icon device and you see the standard game device icon, in those occasions press the **F5** key to force windows to update the icon devices cache.

Also, after the installation you will find in your desktop, two new icons: 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, RealSimulator devices User Guide and the FSSB R3 Blueprint.



As general information, here it is the default directories where the installer saves programs:

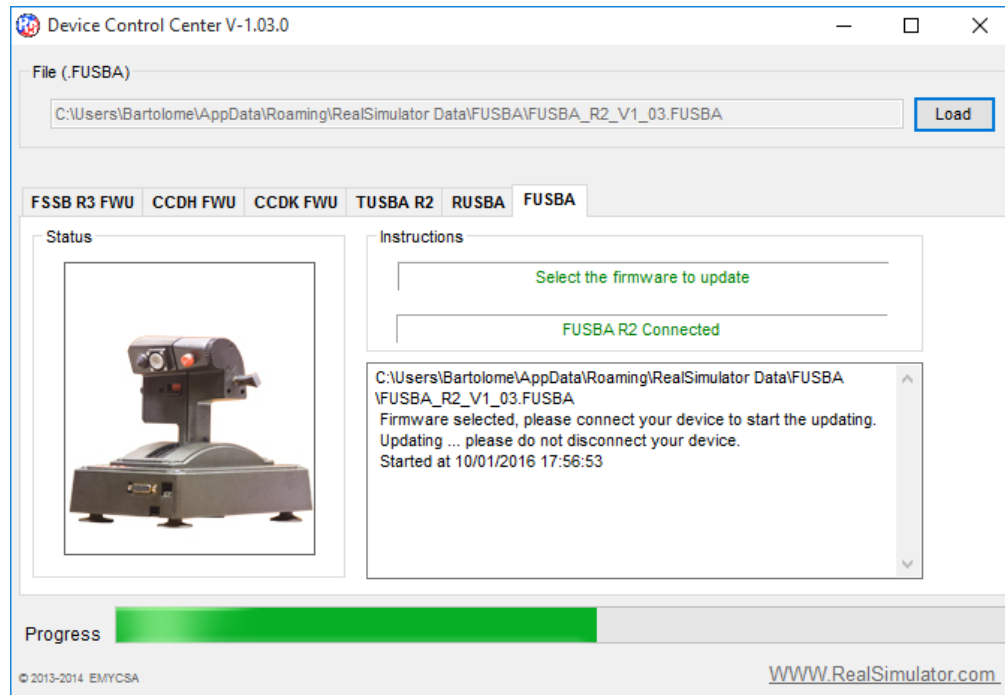
C:\Program Files (x86)\RealSimulator Code\DCC

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

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

%APPDATA%\Realsimulator Data\

PICTURE

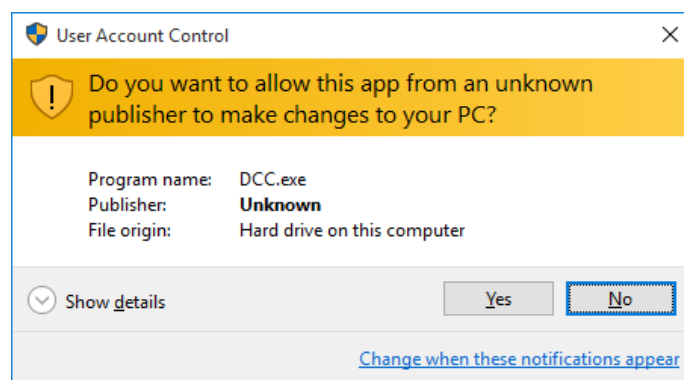


DESCRIPTION

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

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

To start the DCC program, launch by double click the DCC desktop icon or click in the windows **START** button and select **All Program > Realsimulator > DCC > Launch DCC.exe**. If the User Account Control window appears click **YES** to continue.

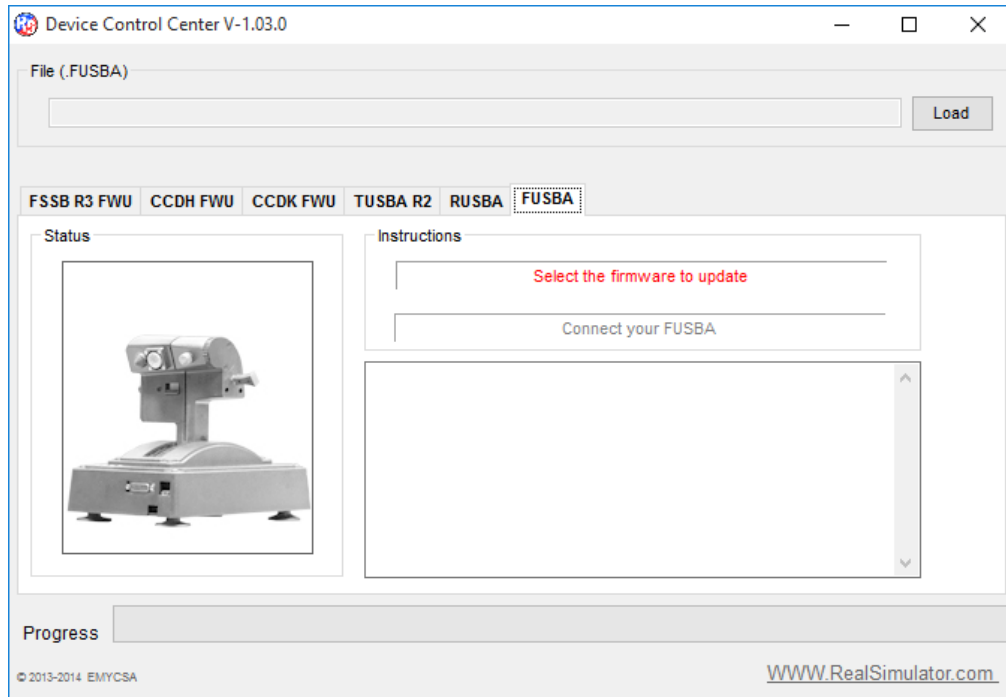


Select the tab labelled as **FUSBA** and follow the instructions given in the groupbox

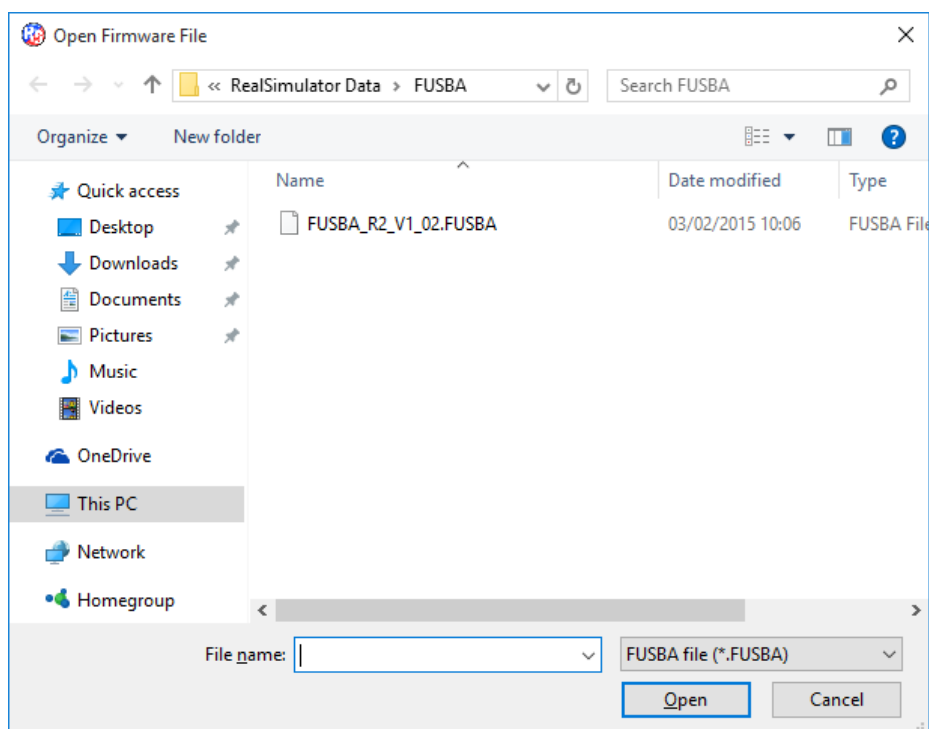
Instructions to update the device.

Unplug the USB wire from device or computer, the most accessible connector for you.

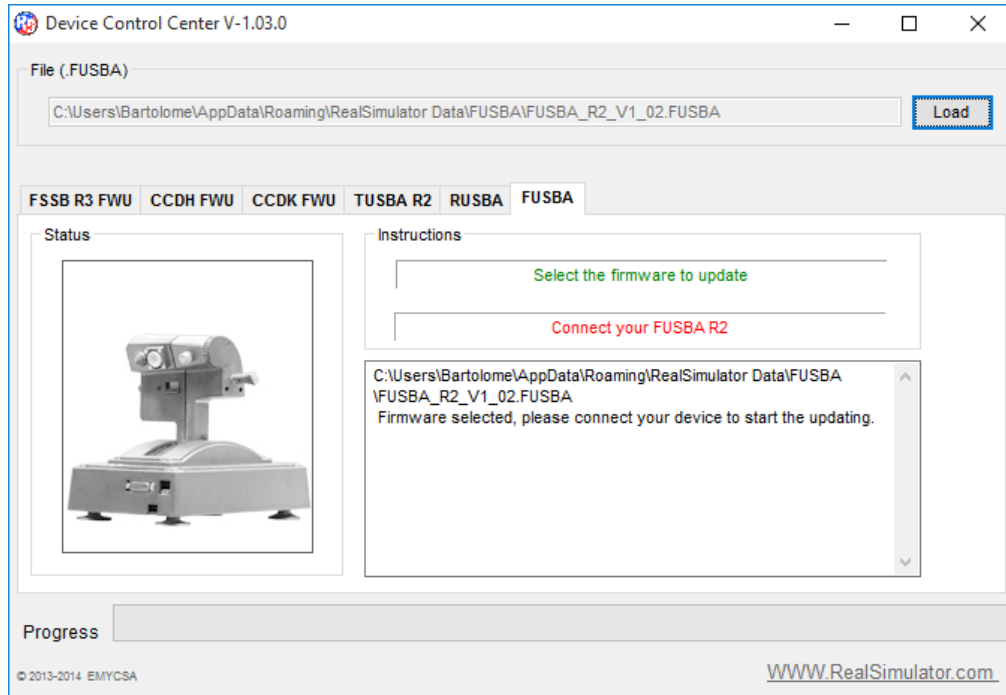
As you can see in the next picture, **Status** groupbox shows a light device image, it is normal, this image will only be in normal colour when the device is running the bootloader program, in other cases, with the device unplugged or in normal operation the image will be light.



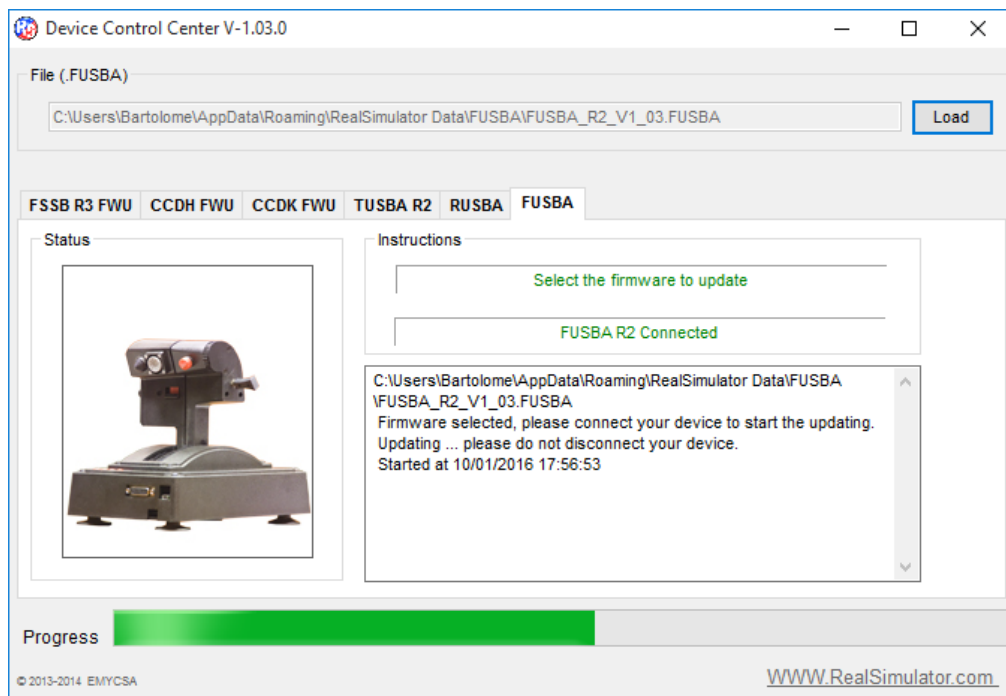
At first, the **Select the firmware to update** message will be blinking in red, so click the **Load** button to open the Open Firmware File window to select the new firmware to install, select the desire file clicking the filename and click the **Open** button to close the window.



Second, with the previous message in green, the following message **Connect your FUSBA R2** will blink in red.



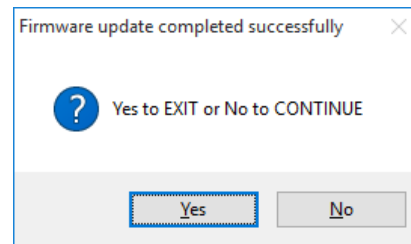
To start the updating we must plug in the previously unplugged USB wire, which will launch the bootloader for some seconds and DCC program will start the communications with the device sending the new firmware. During this data transference we will be able to see the progress in the Progress bar and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



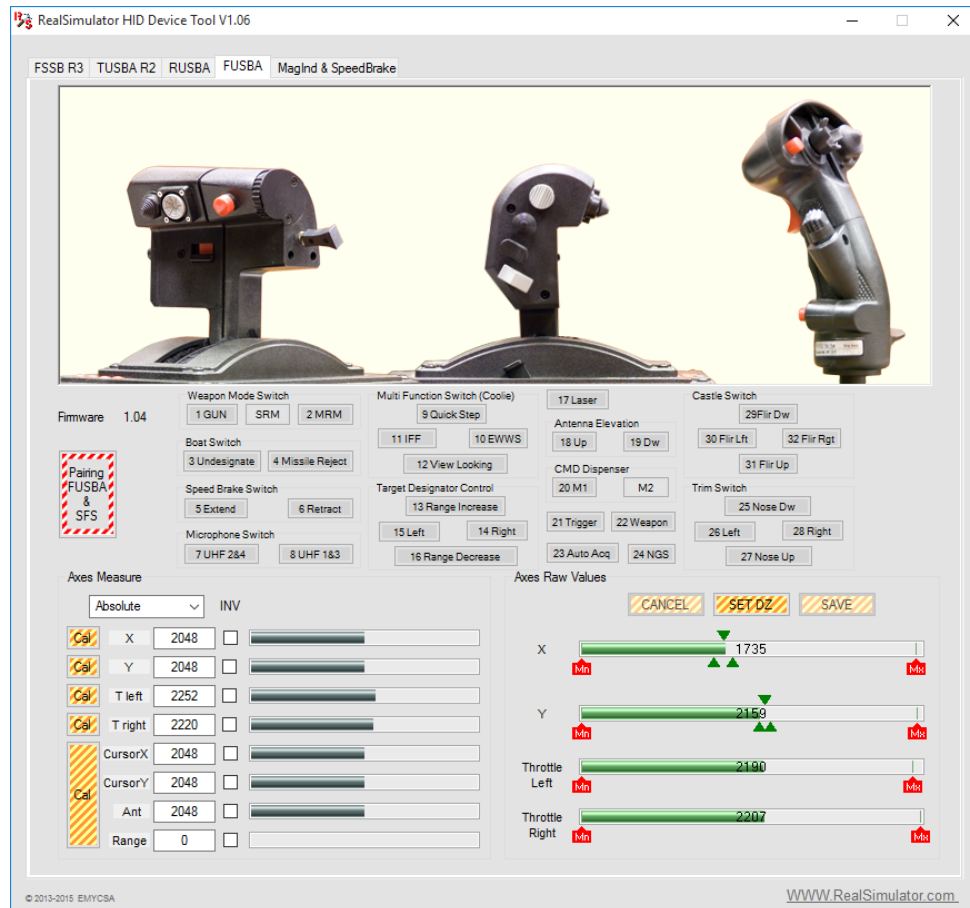
Finally, when the update finishes the device will exit from the bootloader program and will run the new firmware.

DCC program will show a new window to confirm the firmware update completed successfully and it will ask you to continue with other device or exit.

Click **Yes** to exit.



PICTURE



DESCRIPTION

FUSBA, like all devices manufactured by RealSimulator that must be connected with customer's hardware, is shipped without configuring, it is necessary to do this labour by himself when receives the device.

RealSimulator has developed a tool called **RS_HID_DEV_TOOL** to facilitate this action; thereby you will be able to customize and adjust easily the different options offered by the device and get the maximum performance from your hardware.

FUSBA gives functionality for the following axes and buttons:

- Throttle left and right axes.
- Stick X and Y axes.
- 4 virtual axes: Cursor X and Y, Antenna and Range.
- 20 buttons in the throttle.
- 12 buttons in Talon and Eagle sticks or 8 in SFS stick.

We have made a video guide called "**FUSBASoftwareInstallationShort**" to show you

the full procedure of configuration and calibration of FUSBA. You can find it in our product's website:

(<http://www.realsimulator.com/html/fusba.html>)

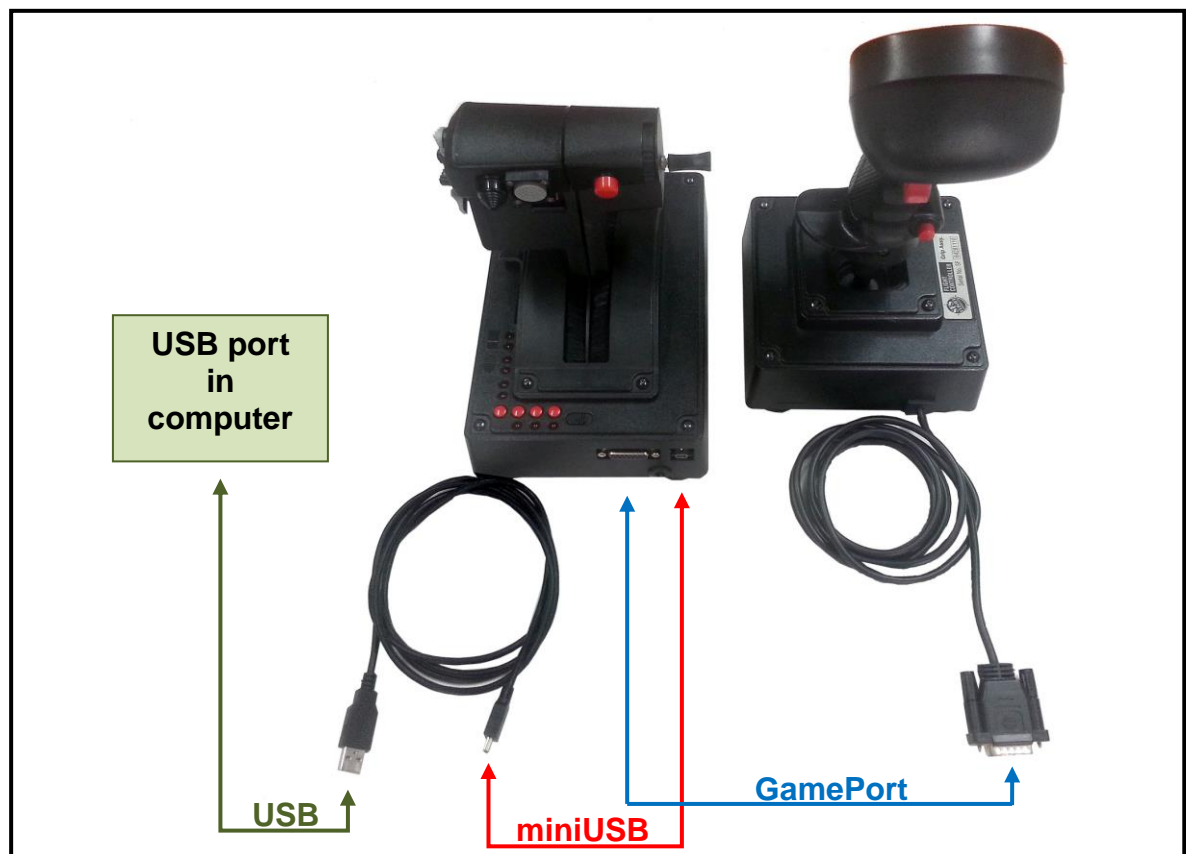
or, directly clicking the below image or hyperlink.



[FUSBASoftwareInstallationShort](#)

To complement this video guide, following we will explain you how to operate with the RS_HID_DEV_TOOL program and every step required to configure your FUSBA.

In order to do this, first we will connect our Suncom flight controls to the PC via the USB wire supplied, according to the following pictures based on the hardware version you have.



Suncom SFS throttle & stick connections



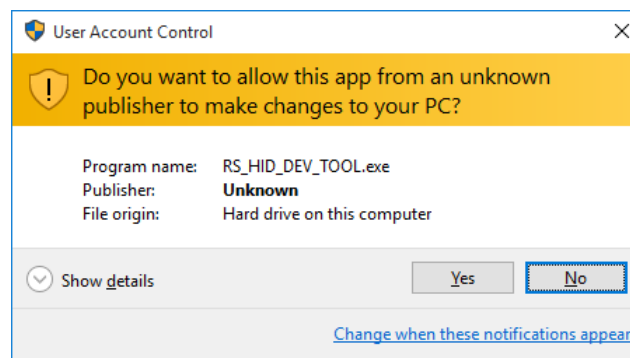
Suncom SFS throttle & Talon stick connections

Do not forget that for a proper operation of Talon and Eagle sticks they must be correctly configured: programming switch on the left position, keyboard emulation status led ON and one memory slot selected with the correct scancodes.

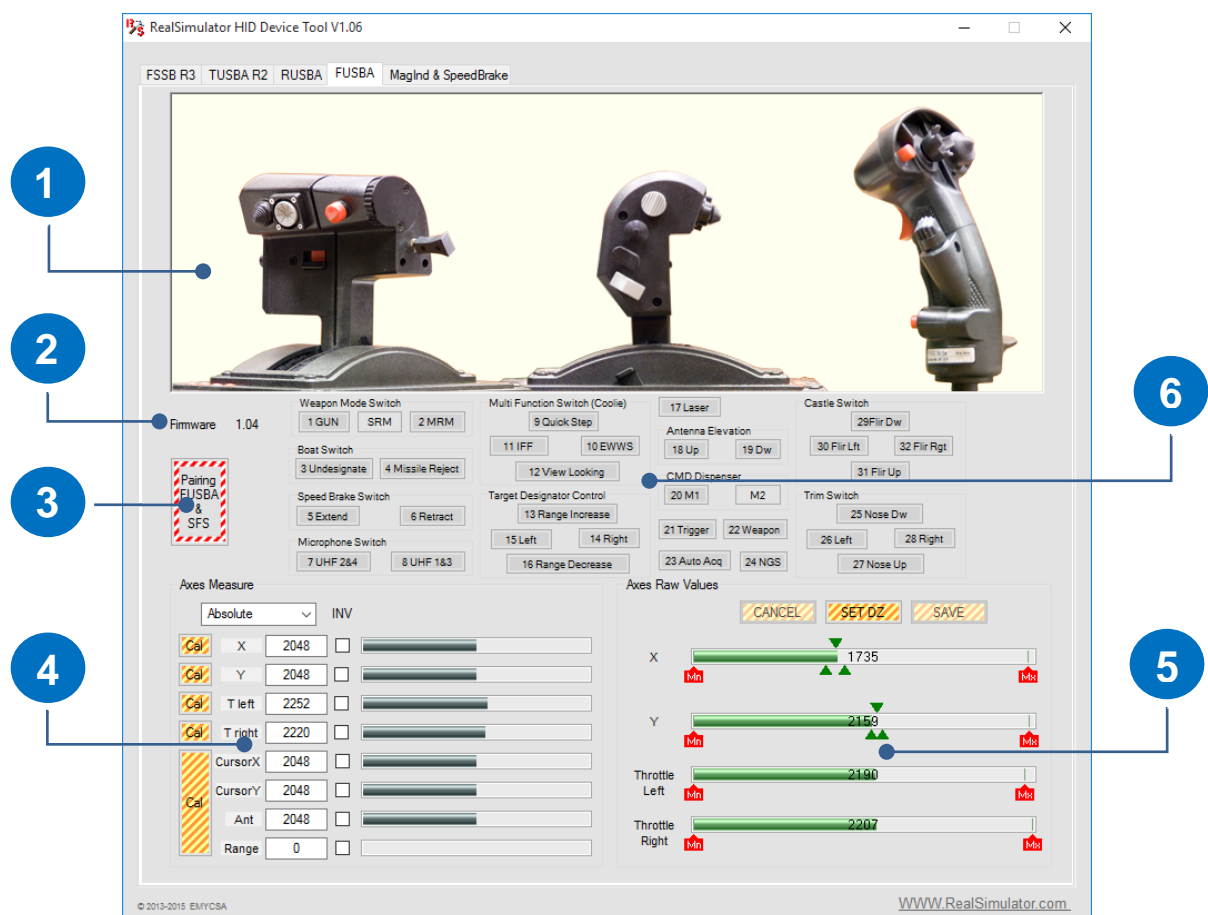


NOTE: If you have doubts about how to configure Talon or Eagle sticks, please read before continuing the “**Talon and Eagle stick programming**” chapter.

To start RS_HID_DEV_TOOL program, launch by double click the RS_HID_DEV_TOOL desktop icon or click in the Windows **START** button and select **All Program > Realsimulator > RS_HID_DEV_TOOL > Launch RS_HID_DEV_TOOL.exe**. If the User Account Control window appears, click **YES** to continue.



Select the tab labelled **FUSBA** and you should see a window like this,



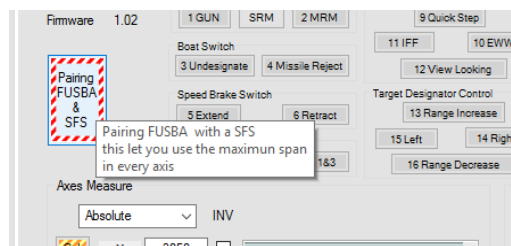
where we have identified with numbers the different information and configuration areas.

1. Animated area where the program shows interactively throttle left and right positions, and buttons, switches and hats actions of throttle and stick.
2. Area where see the firmware version installed in the device. If a message of **"Firmware non supported"** is showed you need to update your firmware because you have installed an old version and not full actions will be supported.
3. Pairing button. Below you will find a complete explanation about its

operation.

4. Groupbox with the Direct X information for real and virtual axes. We can see for the real and virtual analog axes graphical information in progress bars and text box for numerical information, buttons to calibrate individually the four real analog axes and check box to invert the axes. The information showed in this groupbox for the different axes is the same as we can see in the Microsoft Game Controllers window.
5. Groupbox with the Raw information for the real analog axes. Here we can see the measure of each real axis numerically and graphically in a progress bar, red icons for the maximum and minimum values of each axis, green icons for the dead zone of stick X and Y axes and three buttons to make manually the dead zone adjust. Additionally from V1.09 the user can see and adjust the value of each icon manually clicking on the icon and writing the desired value manually (see section **Manually configure Raw Axes**).
6. Area with the throttle and stick Direct X buttons status. Here we can see the different buttons grouped by functions in groupbox. Each button shows the DX number assigned to that button and its name.

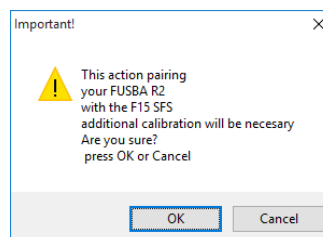
In general, every button or checkbox in the window has associated a small pop-up box (tooltip) with basic information about it. This information will appear when the mouse pointer is over the button or checkbox.



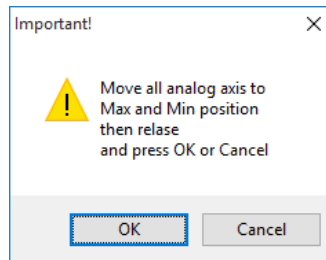
Pairing

The process of adjust and calibration of flight controls with FUSBA installed starts with the Pairing action. With this action FUSBA adjusts individually the amplifiers of each analog axis to obtain the maximum span and so to make better use of 12 bits analog converter. For this, FUSBA needs to know the maximum and minimum values of the analog measure of each axis, so as we will see after, we will need to move the axes to the extreme positions to achieve these values.

To start the pairing process, click the **Pairing FUSBA & SFS** button, and click **OK** in the new window to continue.



A new window will appear to inform us about **moving all analog axes to maximum and minimum positions** as comment above. It is very important to make this phase well for a future correct operation; we suggest maintaining the end positions for some seconds to guarantee FUSBA identifies correctly end positions. To finish, click **“OK”**.



NOTE: It is absolutely necessary to make the pairing action at the first time when receive FUSBA, but it is also advisable after a firmware update.

Axes calibration overview

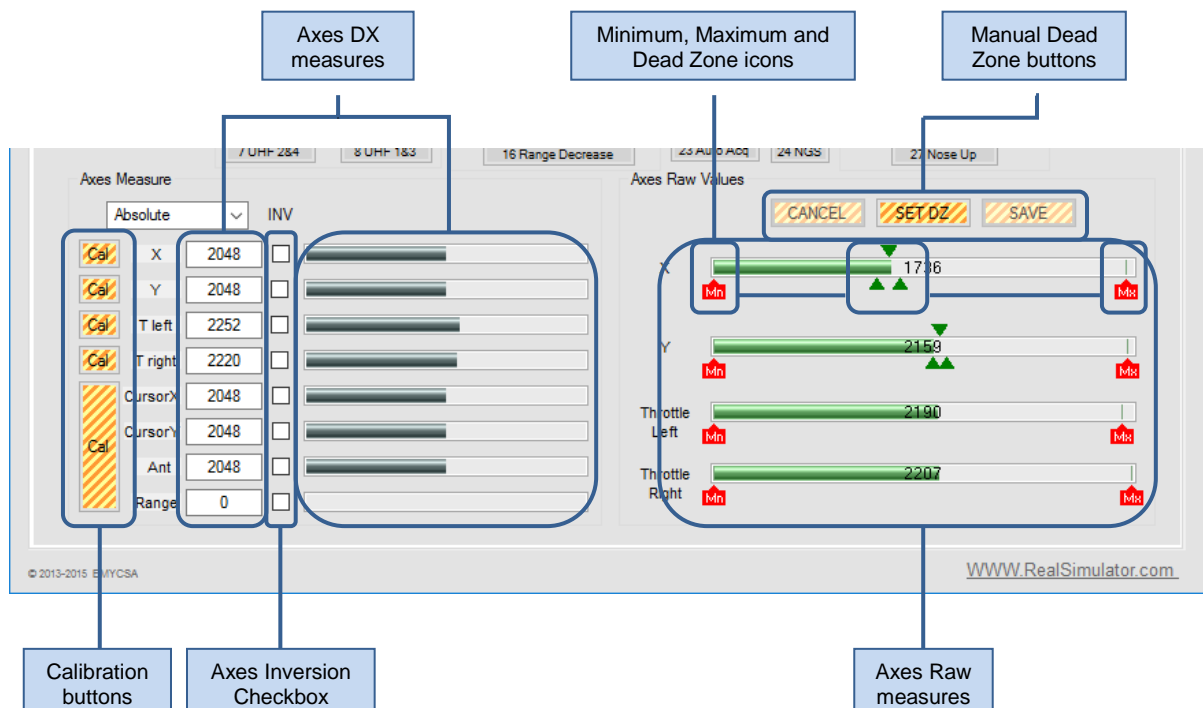
As the pairing window informed us before, after the pairing is necessary to make a calibration of each analog axis.

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

- With the RS_HID_DEV_TOOL we can calibrate individually axes, only the axis that we need.
- If the axis has central position, like the stick axes, RS_HID_DEV_TOOL allows us the possibility of adjusting a dead zone area (automatically and manually).
- Invert individually axes to adapt the hardware to the simulation program requirements.
- See the Raw and DX values graphically and numerically.

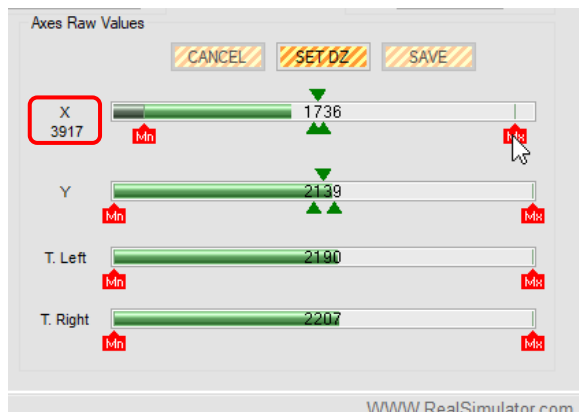
So, **we only suggest using this tool to configure FUSBA and calibrate the flight controls.**

In the next image, you can see identified the different informative areas related with the axes calibration.

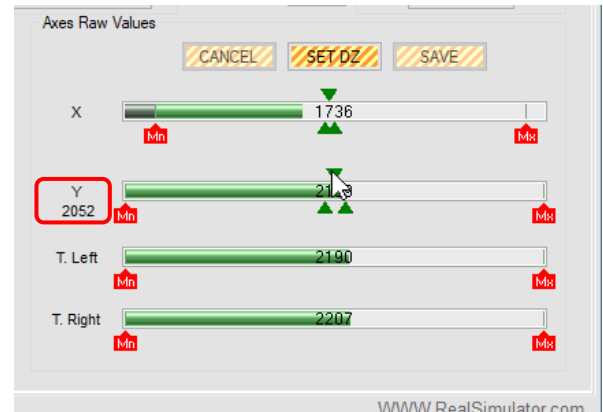


Axes Raw Values groupbox shows the internal measures of each analog axis of FUSBA, numerically and graphically through a green progress bar with the numeric value in the centre. Each axis has associated two red icons to identify the maximum and minimum positions; if the axis has central position, it has associated a dead zone identified for three green icons as well.

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



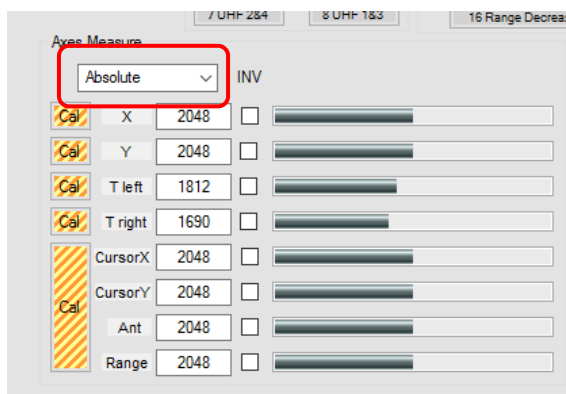
X axis Maximum value



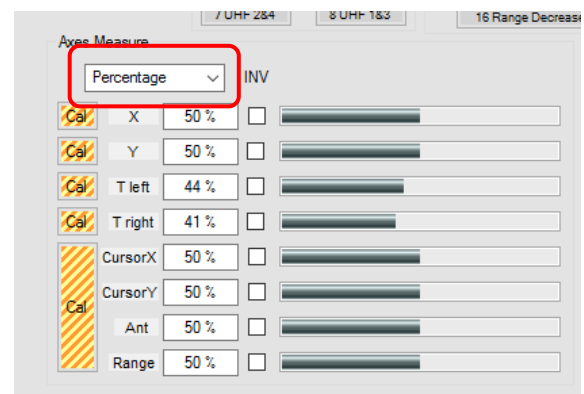
Y axis Centre Dead Zone value

If you move one axis of stick, you can check the information showed is “fully raw”, because the dead zone area is not applied to the measure showed. To see the “normally raw” values that FUSBA sends Windows to generate the DX values is necessary to open the Game Controllers properties window of device and enter in the Calibration wizard. We have made the decision to show the “fully raw” measures because we consider this is more interesting than the other one and allow us to show graphically the full information to the user.

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



Absolute format



Percentage format

FUSBA, apart from the four real analog axes (Stick X and Y, Throttle left and right), gives functionality for four extra axes called “virtual” because of they do not have an analog source.

Although the axes calibration procedure is very easy and is guided with instructions on

the screen, we are going to show you step by step how to do it.

Calibration of an axis with no central position

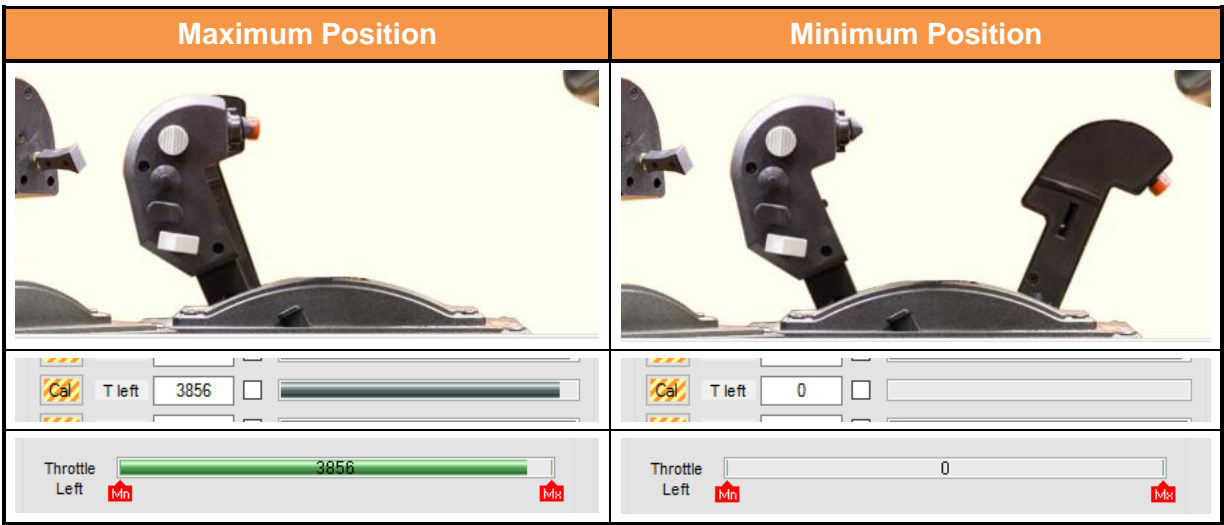
First, we are going to calibrate an axis with no central position, for example, the Throttle Left. For this, click the **Cal** button associated to the axis in the **Axis Measure** groupbox.



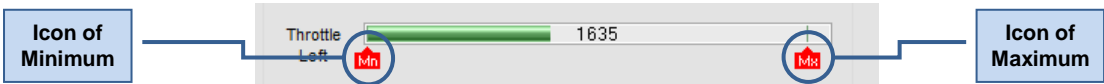
And a new small window will appear with instructions to make the axis calibration.



Following the instructions, move the Throttle Left to maximum and minimum positions, and finally click **OK**.

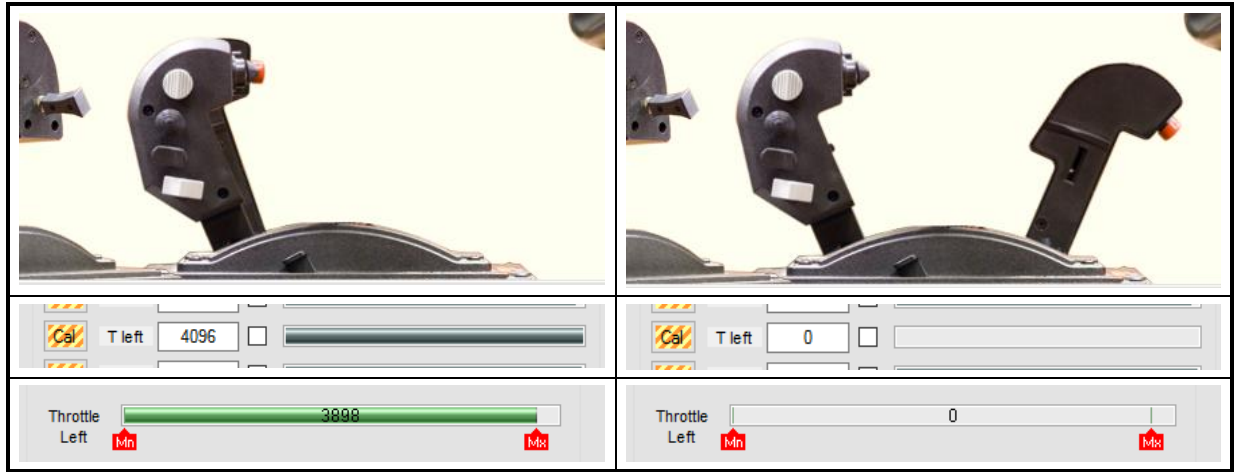


After closing the window, RS_HID_DEV_TOOL will save the new calibration values for Windows and will relocate the red icons of maximum and minimum to the new positions, as we can see here.

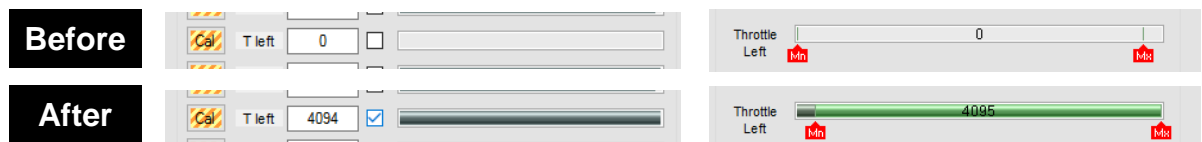


Now, after the calibration there is a direct correlation between the maximum and minimum positions of our hardware, showed with the red icons and the maximum and minimum values of DX, as we can see in this table.

Maximum Position	Minimum Position
------------------	------------------



In order to finish the axis calibration/configuration, we have to know that RS_HID_DEV_TOOL gives us the possibility of inverting the axis. To do it, click in the check box associated to axis and automatically the measure and the maximum and minimum positions will be inverted, as we can see in the next image.



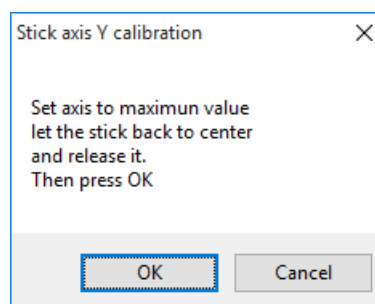
Calibration of an axis with central position

Now we are going to show you how to calibrate one axis with central position, for example the Stick Y axis. As before, it will be necessary to get the maximum and minimum values of axis, but as the axis also has a central position is necessary to detect this position and the dead zone around this central position. For that, the calibration in this type of axes is made in two phases.

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

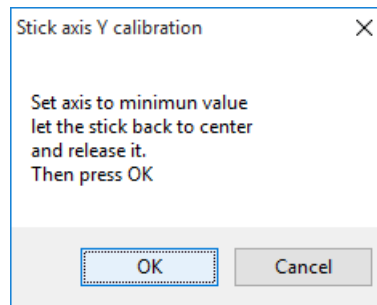


A new small window will appear with instructions for the first phase of the axis calibration.



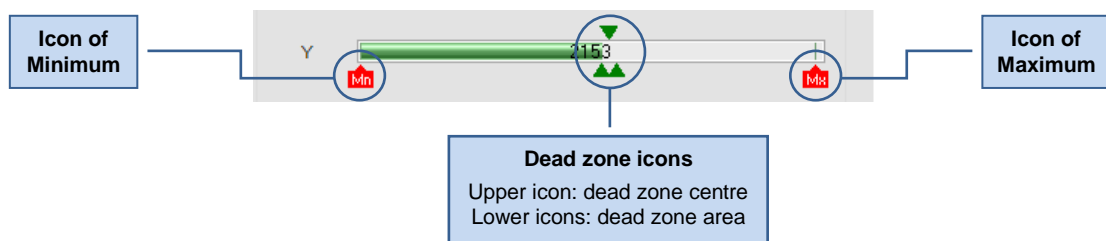
Following the instructions, move the stick backward to achieve the maximum value in the raw measure, let the stick back to centre and release it. Click **OK** to continue.

And a new second window will appear with instructions for the second phase.



Now move the stick forward to achieve the minimum value in the raw measure, let the stick back to centre and release it. Click **OK** to finish.

After closing the window, RS_HID_DEV_TOOL will save the new calibration values for Windows and the automatic calculated dead zone. It will also relocate the red icons of maximum and minimum positions and the green icons of dead zone, as we can see here.



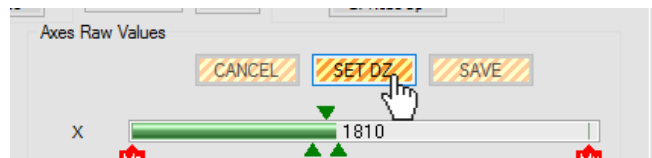
Now, with the calibration finished there is a direct correlation between the maximum and minimum positions of our hardware showed with the red icons and the maximum and minimum DX values, and a dead zone delimited for the two lower green icons where DX measure of axis does not change, although the raw measure change inside them, as we can observe in this table.

Maximum		
D.Z. 1		
D.Z. 2		
Minimum		

As we have seen in the calibration of stick X axis, RS_HID_DEV_TOOL has calculated the dead zone values in function of only one movement of stick. Normally the calculated values are valid to operate, but sometimes if our hardware is very used and has much play in the centre, then the dead zone calculated is not enough and we could need to adjust manually the dead zone.

If when the stick comes back to the central position its position is out the dead zone area, we can be absolutely sure it is our case and we will need to repeat several times the movement and release of stick, and get visually the new desired dead zone area to adjust it manually how we explain below.

To manually adjust the dead zone, click the **SET DZ** button



Automatically, if it is possible, the program spans the axes with dead zone to achieve more precision in the adjust process, and enable the green icons movement. When the axis spans occurs, the program adjusts automatically the progress bar width between the maximum and minimum positions.

To adjust the dead zone, the program allows us two possible actions:

- To displace the dead zone area.
- To increase or decrease the dead zone.

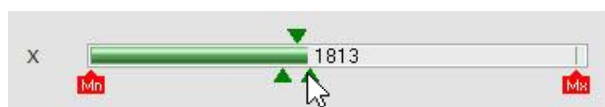
To displace the dead zone area, click and hold with the left button of mouse on the upper triangle and move it to the desired position, and release the button to finish. As you can see you displace the three triangles like a block.



Clicking the upper green triangle and without release the mouse button you can displace the area where you want



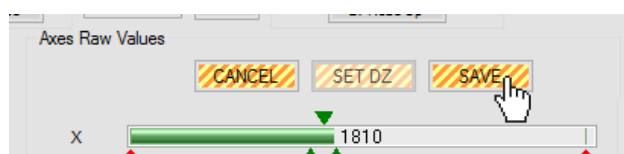
To increase or decrease the dead zone area, click and hold with the left button of mouse on either of lower triangles and move it to the desired position and release the button to finish. Both lower triangles will move symmetrically with respect to the upper triangle.



Clicking on either of lower green triangles and without release the mouse button you can increase or decrease the dead zone area



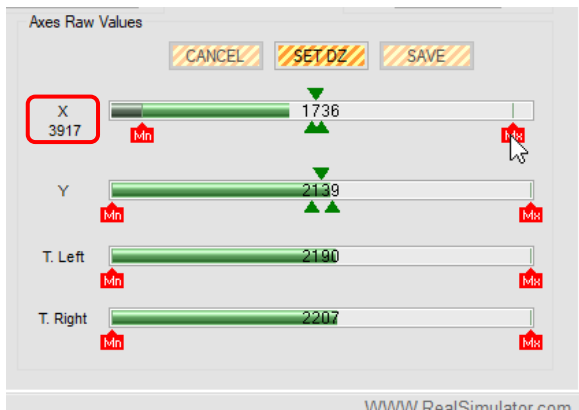
When the dead zone adjust is finished, click the **SAVE** button to save the new adjust or click **CANCEL** to restore the previous adjust.



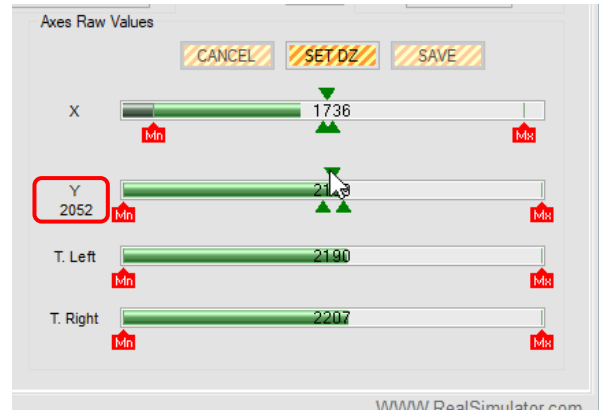
Manually configure Raw Axes

From v1.09 of RealSimulator HID Device Tool is possible see and adjust manually each parameter associated to the raw axes progress bars, as Max, Min and Dead Zones.

To see a parameter value you must put the mouse over the parameter icon and the measure will be showed for 4 second below the raw axis name. After this time the measure value disappears and will be necessary to move the mouse and put again over the icon to see it again.

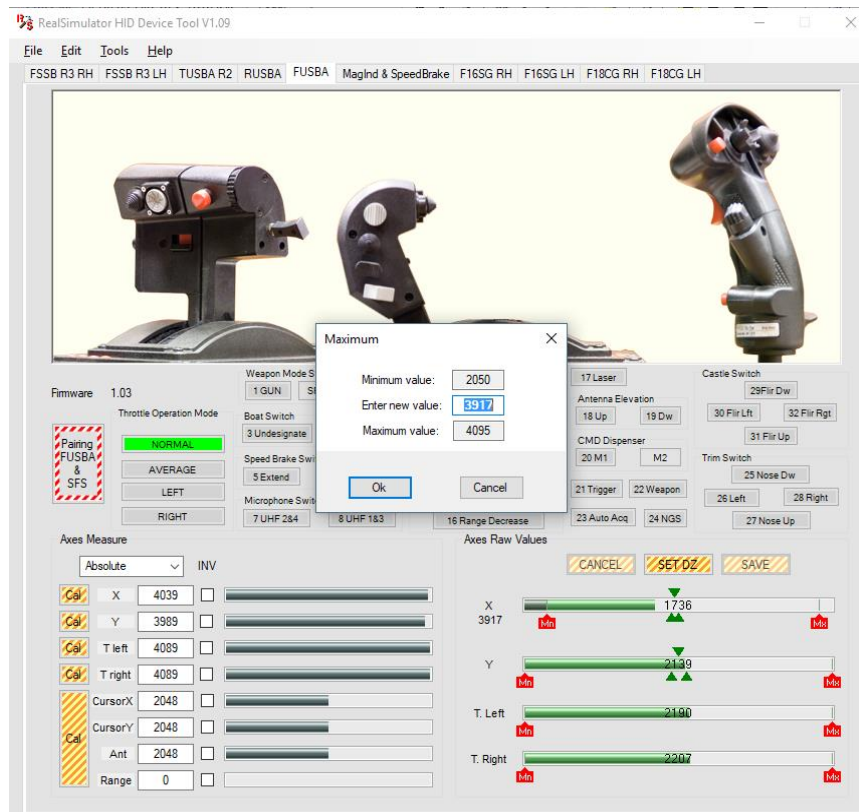


X axis Maximum value



Y axis Centre Dead Zone value

If you want to modify a value, with the mouse double-click on the icon and a new window will be opened showing the “minimum” (upper position) and “maximum” (lower position) admitted values for the selected parameter. In the centre position is showed in bold the actual value, clicking with the mouse in the box you can write the new value.



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

Maximum

Minimum value: 2050

Enter new value: 3500

Maximum value: 4095

Ok Cancel

If the value is correct the window will close and the parameter and icon position in the progress bar will be modified.

Axes Raw Values

CANCEL SET/DZ SAVE

X 3500 1736

Y 2139

T. Left 2190

T. Right 2207

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If the value written is incorrect an ERROR window will be showed to inform about the error and the operation will be cancelled after accept the error.

Maximum

Minimum value: 2050

Enter new value: 2000

Maximum value: 4095

Ok Cancel

ERROR

INCORRECT VALUE

Value must be between

2050 - 4095

Aceptar

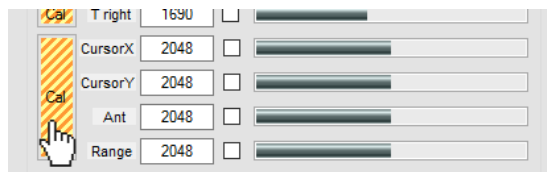
Calibration of a virtual axis

As we said before in the overview calibration, FUSBA gives functionality for four extra axes called “virtual”, because they do not have an analog source. They are generated digitally from user actions, in our case, from button actions. Thereby,

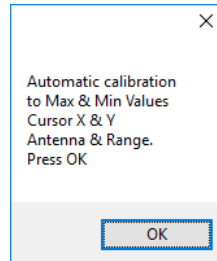
- **Cursor X** axis: is driven by the **Left** and **Right** buttons of **Target Designator Control**.
- **Cursor Y** axis; is driven by the **Range Increase** and **Range Decrease** buttons of **Target Designator Control**.
- **Antenna** axis: is driven by the **Antenna Elevation** switch.
- **Range** axis: is driven by the **Antenna Elevation** switch holding down at the same time the **Laser** switch.

Since they are virtual axes and do not have maximum and minimum real positions, the calibration must only inform to Windows about the maximum, minimum and centre default values.

To calibrate these four axes, click the **Cal** long button



A small window will appear with information. To close the window and finish, click **OK**.



If you try to move a virtual axis through the appropriate button, you will check that the associated button is also activated; this is to allow you can assign the axis or the buttons in the simulation game, depending on what it has.

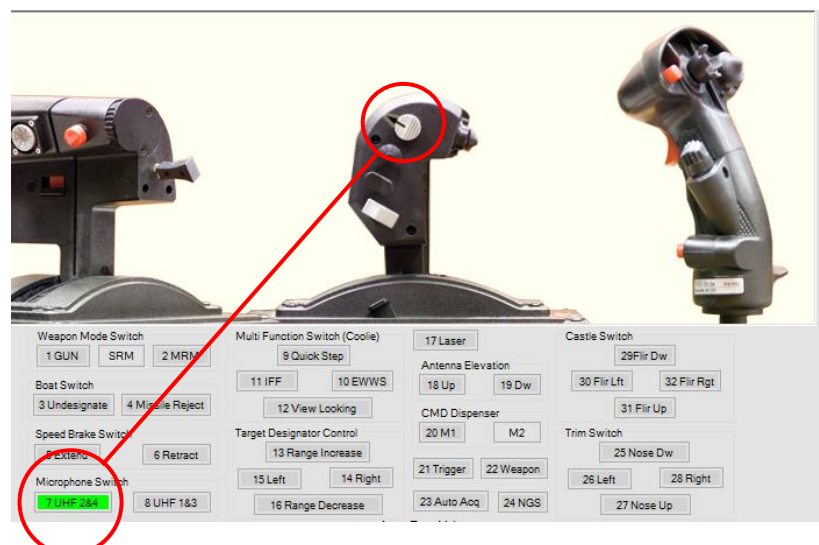
Finally, only an observation, as Cursor X and Y axes simulate a real cursor, when you release the Target Designator Control, the axes come back to the center position.

DX Buttons

DX buttons of throttle and SFS stick are ready to use, but Talon and Eagle sticks buttons need to be programmed to be functional. If you have one of these sticks, please read the next chapter where you will find a complete explanation about how to program these buttons.

Now we suggest verifying the proper operation of every button to finish the FUSBA set up.

As you can see following, every button shows the DX number assigned and its name; when the real switch or button is pressed it changes to green and it is showed with a black arrow in the animated area.



NOTE: SRM and M2 buttons are not active

PICTURE



DESCRIPTION

When Suncom designed Talon and Eagle sticks provided a very easy way to program them for keyboard emulation use, it is only necessary a computer, a PS/2 keyboard and the stick.

Both sticks can operate like a keyboard or a standard joystick with buttons. To toggle between both modes you need to press the Keyboard Emulation Button. If the Keyboard Emulation Status LED is ON, then all buttons behave as keystrokes, but if it is OFF the Pinky, Auto ACQ, Trigger and Weapon Release behave as buttons, and the Trim and Castle hats as keystrokes, these two hats always behave as keyboard emulation.

We always suggest operating in keyboard emulation mode (LED ON) because different buttons activate simultaneously are recognized.

Although both sticks have 4 memory slots to store different keyboard configurations with TUSBA will only need to use one slot.

To program your Talon or Eagle stick follow these steps:

1. Unplug the keyboard PS/2 connector from the keyboard port of computer.

2. Plug the PS/2 male connector of stick in the keyboard port of computer.
3. Plug the keyboard PS/2 connector in the PS/2 female socket of stick.

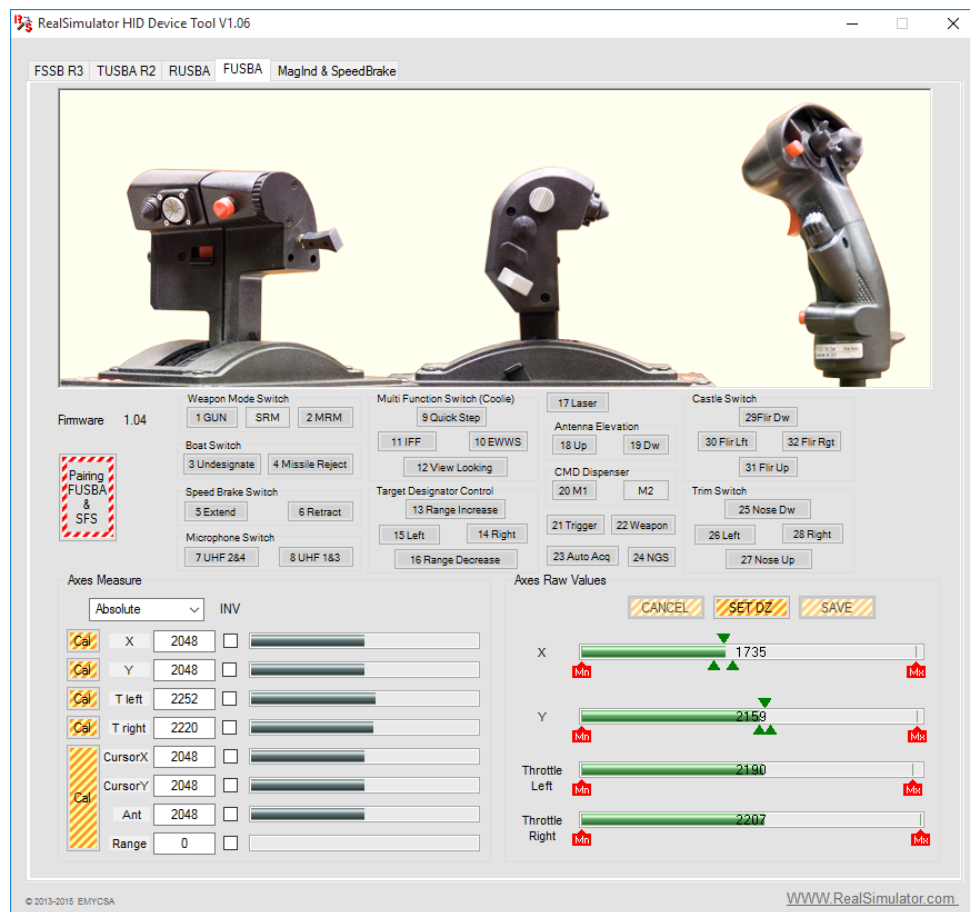


4. Press the Memory Slot button where you will save the 12 keystrokes, the associated LED will turn ON.
5. Make sure the Keyboard Emulation Status LED is ON, if not, press and release the Keyboard Emulation Button to toggle the status.
6. Open a text editor (Notepad.exe for example) in your computer to verify you press the correct keystroke when start to program.
7. Slide the Programming Switch to the right, the top LED will turn OFF.
8. Hold down the joystick button to program, the top LED will start flashing.
9. Press and release the keyboard keystroke assigned to the selected joystick button in the following table:

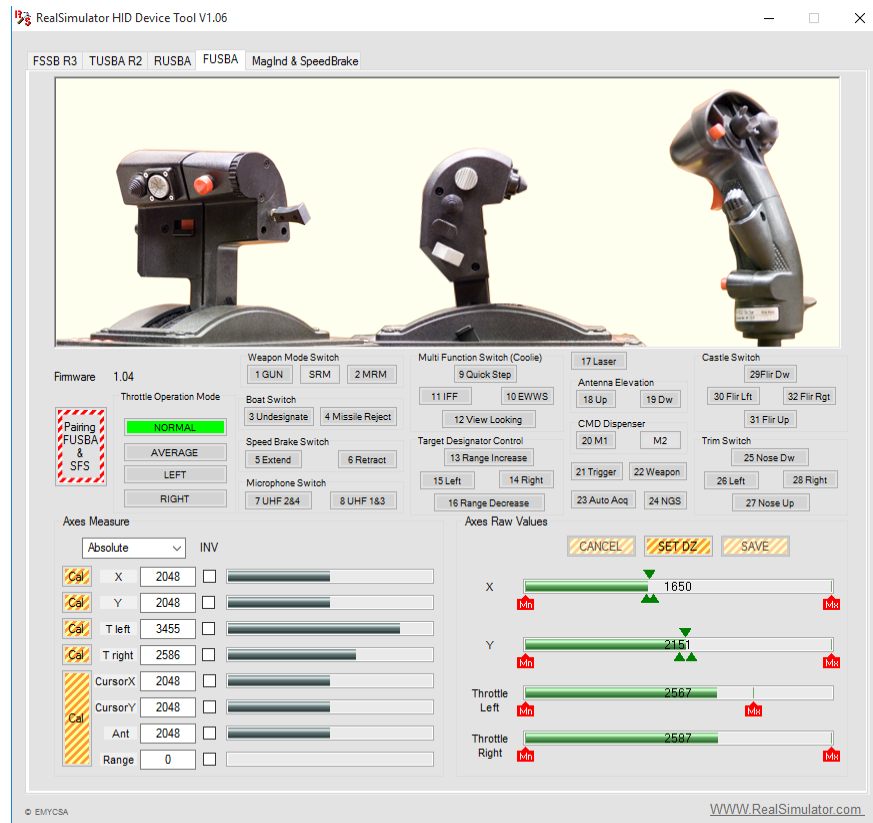
Button	Character	ScanCode
Pinky	a	28
Auto ACQ	b	50
Trigger	c	33
Weapon Release	d	35
Castle Up	e	36
Castle Left	f	43
Castle Down	g	52
Castle Right	h	51
Trim Up	i	67
Trim Left	j	59
Trim Down	k	66
Trim Right	l	75

10. Release the joystick button, the top LED will turn OFF.
11. Repeat steps 8 to 10 for each stick button.

12. Return the Programming Button to the left, the top LED will turn ON.
13. To verify you have programed it properly you can press the joystick buttons and see the characters in the Notepad program window. If everything is correct close the Notepad window, if not, reprogram the wrong joystick button.
14. Unplug the PS/2 male connector of stick from the keyboard port of computer.
15. Unplug the keyboard PS/2 connector from the PS/2 female socket of stick and plug it to the keyboard port on the computer.
16. Plug the FUSBA's PS/2 keyboard connector installed in the SFS Throttle to the PS/2 male connector of stick.
17. Open the RS_HID_DEV_TOOL program to verify it running properly.



PICTURE



DESCRIPTION

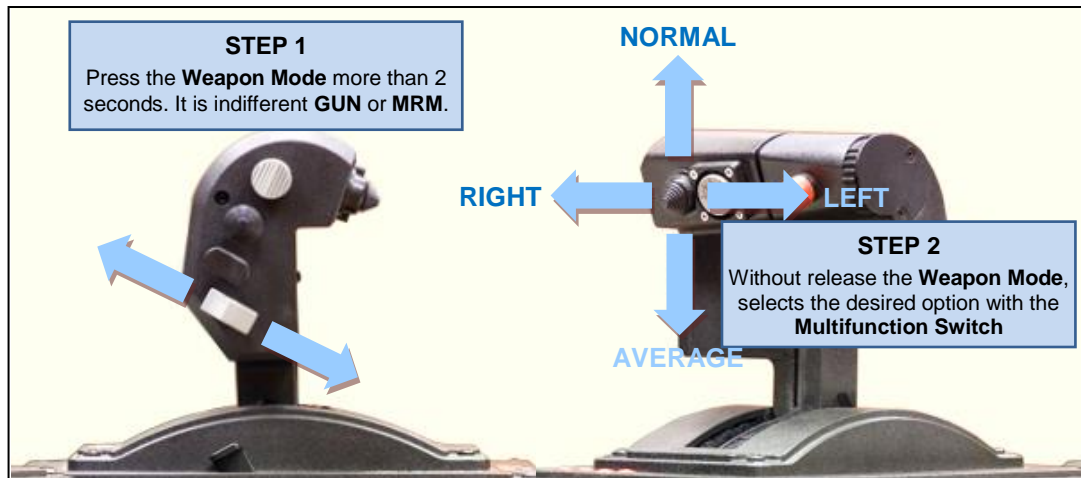
From the version 1.04 we have included a modification for the throttle control. This modification attempts to fix the problem that the idle and afterburner positions in throttle do not have the same values for left and right throttles, which causes problems in certain situations, for example in a take-off, where both throttles must send the same signal to the simulator program to maintain a straight path.

To fix the problem we have included a special functionality to throttle to digitally link or unlink both axes according to user's need.

This functionality is launched with the **Weapon Mode** switch, it is indifferent press the **GUN** or **MRM** button, according to the following sequence

- If you press less than 2 seconds the **Weapon Mode** switch, the switch works like before, the only difference is that it sends the pressed status when you release the button.
- If you press more than 2 seconds the **Weapon Mode** switch, do not send the pressed status and if you press the **Multifunction Switch (Coolie)** at same time, it changes the throttle operation according to:
 - **Move UP:** the throttle works in normal mode (like in previous versions)

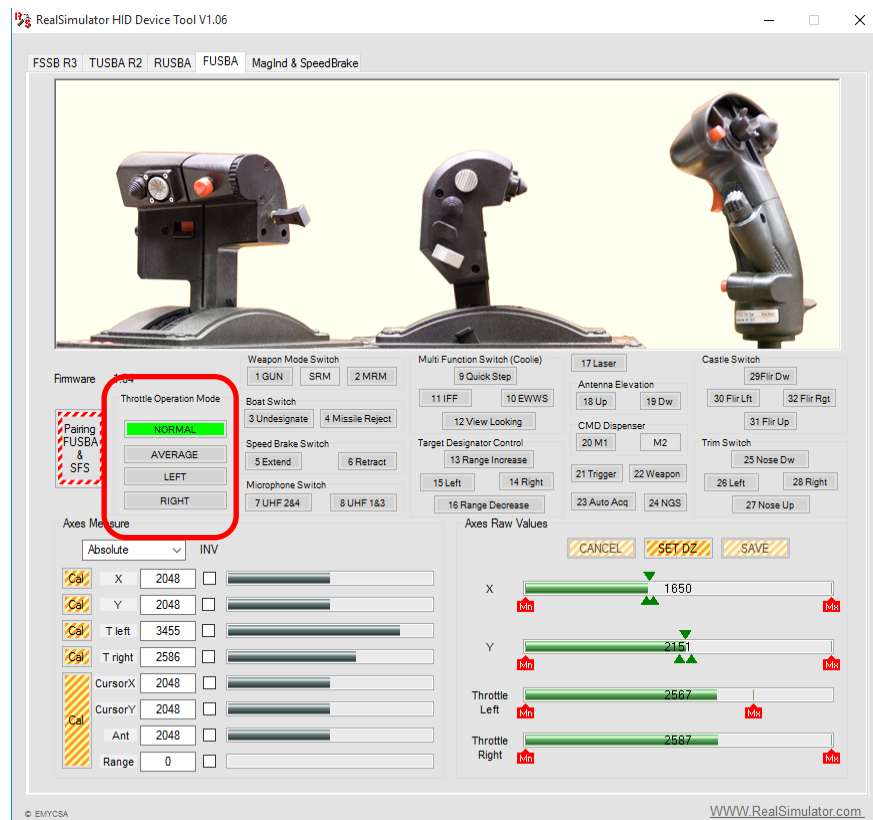
- Move **RIGHT**: the measure of both throttles is the measure of right throttle
- Move **LEFT**: the measure of both throttles is the measure of left throttle
- Move **DOWN**: the measure of both throttles is the average of left and right.



In conclusion, now you have the option of putting through the throttle control the same power in two throttles when you need it, or having two separated throttles with independent measures like before this new release.

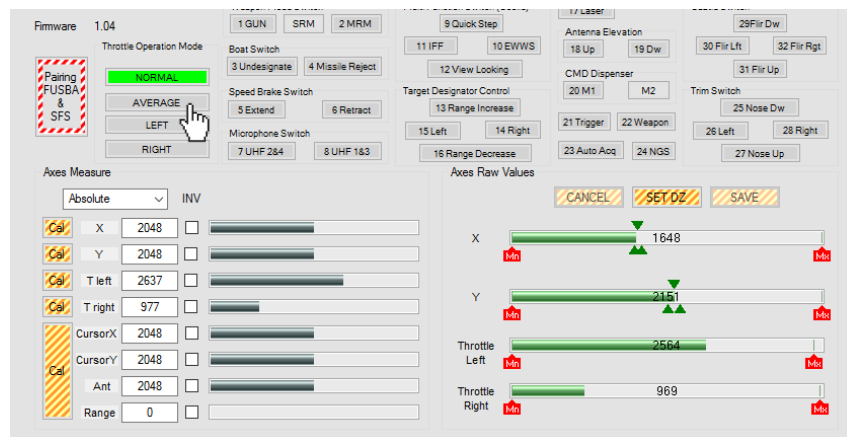
Finally, this new feature has been included in the RS_HI_DEV_TOOL through a new groupbox named **Throttle Operation Mode** with four buttons. Each button shows one of the four available modes: **NORMAL**, **AVERAGE**, **LEFT** and **RIGHT**.

The active mode is showed in green, so in this image the active mode is the **NORMAL**.



You can change the **Throttle Operation Mode** clicking in the button associated to the

desired mode, so, the button with the old mode will change to grey and the button with the new mode will change to green, and obviously the throttle response will change to the new mode. You can see in the next images the change from **NORMAL** to **AVERAGE**.



In NORMAL mode, each throttle shows its own measure (T. Left = 2564 and T. Right = 969) but when changes to AVERAGE both throttles show the same measure, the average ($[2564 + 969] / 2 = 1766$).

Independently that the change of Mode is done with the RS_HID_DEV_TOOL program or manually with the throttle buttons in any time, the new mode is always stored in memory, so after a shutdown or device unplugged, the internal sequence of power up will load the stored mode and will select it as active.

EMYCSA RealSimulator	FAQ	
	Date: 09/09/2018	Version: 1.04

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:

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

- 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 DCC or RS_HID_DEV_TOOL, but I cannot uninstall the older one.
- My Weapon Mode switch does not work properly; it looks like a bad contact sometimes works and others not.
- My stick is in the central position but their associated DX measures are not centred.
- When I move an analog axis, I have spikes in the measure.
- Castle and Trim switches of my Talon do not work.
- How to know if when a switch of throttle does not work the problem is in FUSBA or in the throttle hardware.
- My device has suddenly stopped working after connecting it or turning on the computer.

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

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

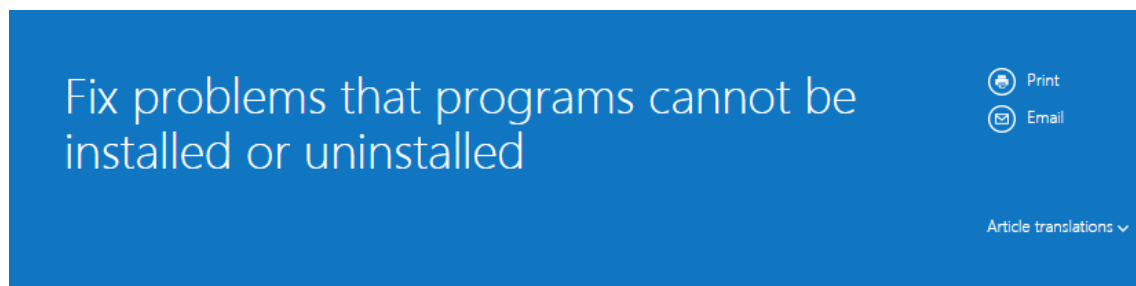
If you have followed the procedure given in the **Firmware Update** chapter and DCC cannot synchronize with your device to launch the update sequence, perhaps the source of problem is how you have connected the RS device to the computer. Please, connect the device with the supplied extension USB wire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

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

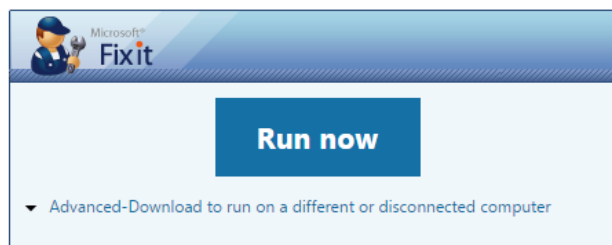
Microsoft has created a great and free tool to fix these problems. You can find it in the next link:

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

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



Automatically repair issues that block program installation or removal because of corrupted registry keys.



My Weapon Mode switch does not work properly; it looks like a bad

contact sometimes works and others not.

Possibly it is working properly. If you have installed the 1.04 or an upper version, this switch has a special functionality. In **Special Functions** section of “**FUSBA Set up**” chapter you can find more information about the special functionality of this switch.

If your problem does not match the previous explanation, please, read the “how to know if when a switch of throttle does not work the problem is in FUSBA or in the throttle hardware” question.

My stick is in the central position but their associated DX measures are not centred.

As we talk in this user guide, to obtain the best performances of your FUSBA is very important to make the pairing process and axes calibration correctly. We describe step by step how to do it in the **FUSBA Set up** charter.

If you have followed this procedure and you continue having problems with the DX measures of stick because they are not centred when the stick is released and centred, possibly the source of this problem is the mechanic play of plastic stick parts and you can solve it modifying manually the dead zone of axis with problems. You can see how to do it in the **Calibration of an axis with central position** section of **FUSBA Set up** charter.

When I move an analog axis, I have spikes in the measure.

Analog measures in all RealSimulator devices are digitally filtered, so if you have spikes in measures of one axis of your FUSBA the problem is the potentiometer, and you will need to change it.

If the problem is a throttle axis, you have two spare parts included in the FUSBA box. To replace them, we suggest that you follow the steps given in the video guide called: “**FUSBAF15SFSPotenciometerInstallationShort**” that you will find in our product’s website <http://www.realsimulator.com/html/fusba.html> or directly in this hyperlink: [FUSBAF15SFSPotenciometerInstallationShort](#)

If the problem is on an axis of the stick you must look for a spare part.

Castle and Trim switches of my Talon do not work.

If Pinky, Auto ACQ, Trigger and Weapon Release switches work properly and only Castle and Trim switches do not work, please check the following list:

- The PS2 wire of stick is connected with the PS2 wire of throttle.
- The keyboard emulation Status led is ON, if not, press the Keyboard Emulation button to change emulation mode.
- A memory slot programmed with correct scan codes is selected. If you are not

sure about it, please see “**Talon and Eagle programming**” chapter.

- The programming switch is in OFF position (left position and upper led is ON)

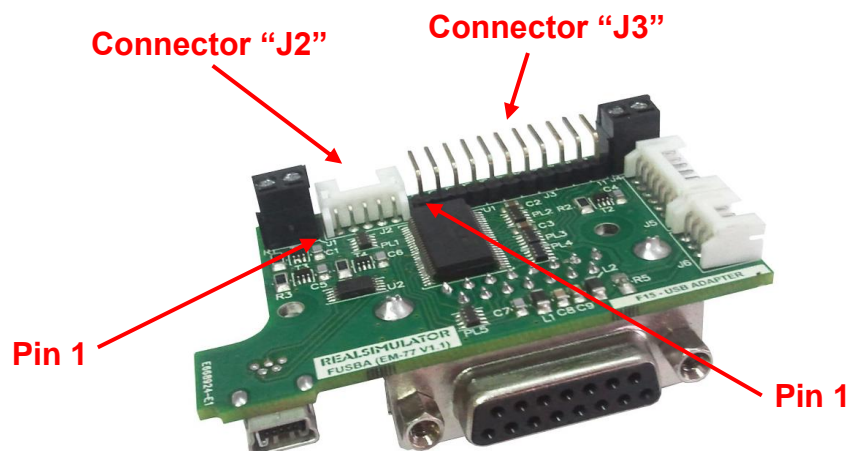


How to know if when a switch of throttle does not work the problem is in FUSBA or in the throttle hardware.

Always that a switch do not work when is pressed we have a doubt about where the problem is, on the controller board or in the hardware (wires and buttons). We give you following an easy procedure to found the damaged part.

You will only need a small wire to manually connect pins in the FUSBA electronic card and to remove the throttle bottom cover.

In the following image you can see identified the two connectors where the switches wires are connected.



And, following the pin-out information of both connectors and associated buttons

signals and common signals.

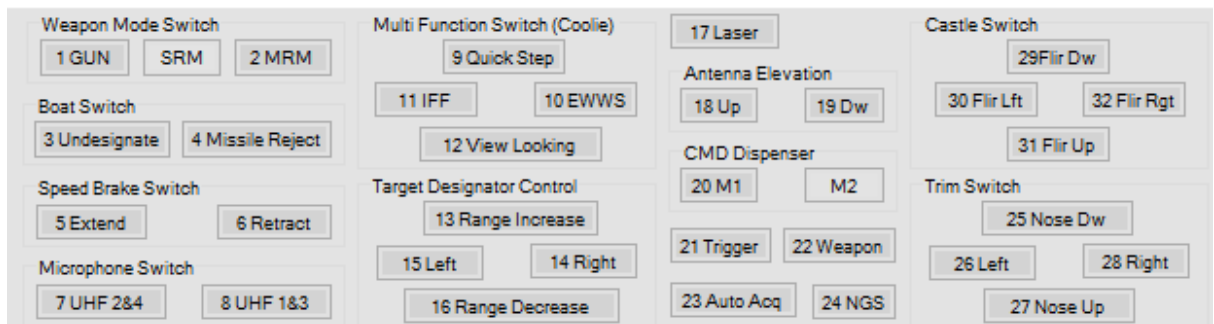
J2-1: 17 to 20
J2-2: Signal 17
J2-3: Signal 19
J2-4: Signal 20
J2-5: Signal 18

J3-1: Signal 16 and 8
J3-2: Signal 13 and 7
J3-3: Signal 11 and 1
J3-4: Signal 14 and 6
J3-5: Signal 15 and 5
J3-6: Common 1 to 4
J3-7: Signal 10 and 2
J3-8: Signal 12 and 3
J3-9: Signal 9 and 4
J3-10: Common 13 to 16
J3-11: Common 5 to 12

Before starting, please follow these instructions, unplug the USB wire, remove the bottom cover of throttle, unplug J2 and J3 connectors of FUSBA, plug the USB wire in the computer, and launch the RS_HID_DEV_TOOL program.

We will explain how to locate the problem with several examples:

- a) To test the **Laser Button** we must read first the DX button number associated with this button in the next image (the number 17), and get the pin numbers of signal and common of previous table. In this case signal for button 17 is J2-2 and common is J2-1. Now we must join with the wire pin 2 and 1 of J2 connector and if the button light green in the RS_HID_DEV_TOOL window the problem is in the hardware, if it not light then FUSBA is damaged.



- b) To test the **TDC Range Increase** button (number 13) we need to join the pin 2 and 10 of J2 connector.
- c) To test the **SBS Extend** switch (number 5) we need to join the pin 6 and 11.

We hope you have no problems with your hardware, but if you have it, this easy procedure will be able to simplify the location of problem.

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

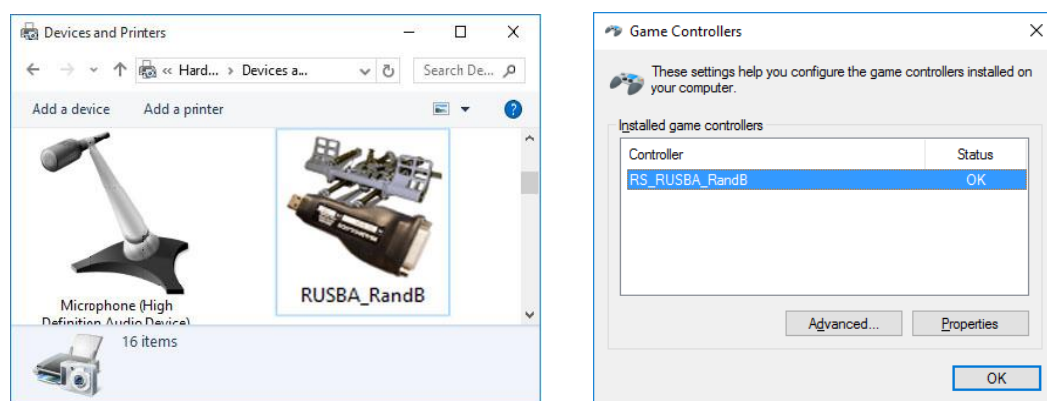
paragraph.

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.

For these occasions we suggest follow this method, we have used it when the problem has occurred and usually the problem is solved.

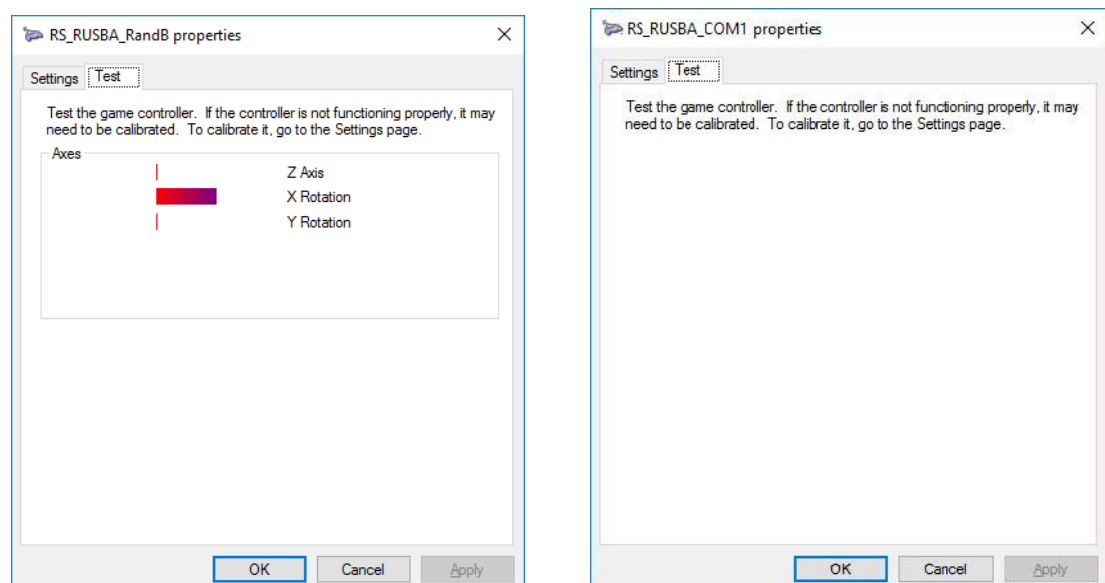
Since the problem occurs very rarely and we have not got FUSBA screenshots, the next explanation is done with RUSBA screenshots.

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.

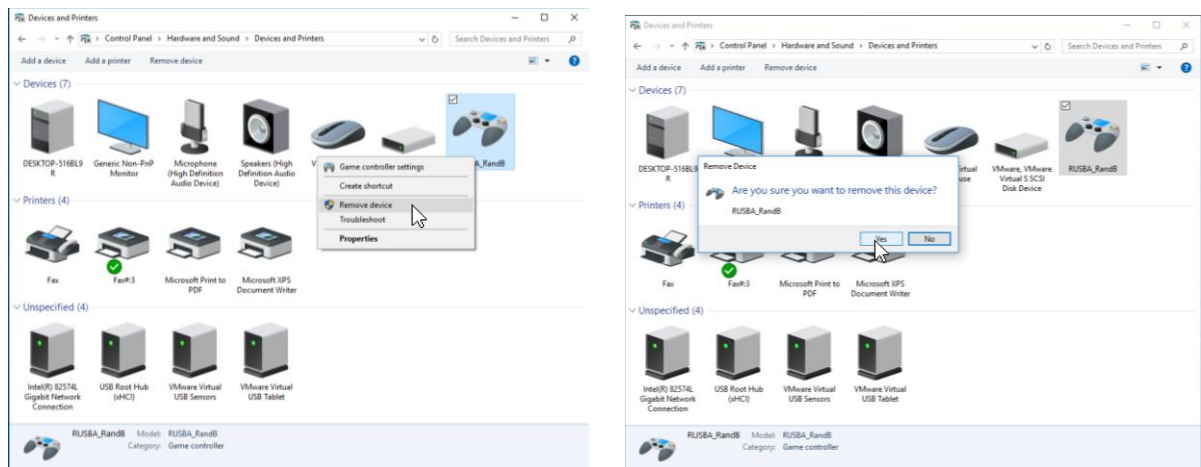


Click the **RS_RUSBA_RandB** text controller once to highlight it as shown in the previous image and next, click on the **Properties** button to open the **RS_RUSBA_RandB** properties window; you must have a window as this where you can see the four axes and the four buttons status.

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.