FSUIPC Basics

The basics on how to assign flight simulator functions to buttons, switches and axis.

Flight simulator can be so much more realistic if we could assign more realistic functions to buttons, switches and axis. Yes, we can do a lot within the different Flight Simulator versions, but not everything.

Here is where FSUIPC comes in place. This program will give you almost unlimited options.
In this tutorial we will look at the basics of assigning functions to your flight simulator controls.

Yes I know there are instructions online, but why is it that still so many people struggle and give up on this program?
With this tutorial I'll try to explain the steps in a way that even a novice can make sence out of it, and really start to enjoy their controls to the fullest.

Preparations

First there are a few things we need to do to prepare the computer and Flight Simulator program.

Required: Of cours your Flight Simulator program, and a registered version of FSUIPC. You can download the FSUIPC program at www.schiratti.com/dowson.html.
Make sure to download the program for the corresponding Flight Simulator version, and a location to purchase a licence key is also shown on the website.

Verify that hidden files and folders are visible. To do this, follow the steps below.

Windows XP;
- Go to the Windows explorer by clicking on "My Computer" in the start menu.
- In the toolbar click on "Tools" and then "Folder Options".
- Continue at step 3 for Windows Vista/ 7.

Windows Vista/ 7;
- Go to the Windows explorer by clicking on "Computer" in the start menu.
- In the toolbar click on "Organize" and then "Folder and search options".
- In the window that appears, open the tab "View".
- In the "Advanced settings" window, go to "Hidden files and folders", and select "Show hidden files and folders".
- Make sure that the v marker is removed for "Hide extensions for known file types".
- Click at the top of the window on the button "Apply to (all) Folders" and then on "OK".

For windows Vista/ 7 only: In order to be able to get to, and modify certain files, you have to install FSX in a folder directly under the root drive, for instance C:\Flight Simulator X. So do NOT install it in the standard directory that is being suggested during installation. Vista and window 7 will prevent you from being able to change files in certain "protected" folders.

Also, make sure that the CUA is turned off while making the changes (you can turn it back on afterwards, if you please).

Now, depending on the Flight Simulator version you are using, we need to make a safety copy of the FSX.cfg or FS9.cfg file, as well as the Standard.xml file (for FSX only; it contains the controls settings).

Windows XP:
- Click on "My Computer" and open the C: drive.
- Open the folder "Documents and Settings".
- Open the folder that carries the name of your user account (most people use their own name).
- Now open the folder "Application data" and then the folder "Microsoft".

- Within this folder you should see the folder of your Flight Simulator program; FS9 for FS2004 and FSX for... you know which one. Open the respective folder.
- Make a copy of the FS9.cfg folder and rename it to something like FS9_backup.cfg. The same thing goes for the FSX.cfg file.

Windows Vista/ 7:- Click on "Computer" and open the C: drive.
- Open the folder "Documents and Settings". Open the folder that carries the name of your user account (most people use their own name).
- Now open the folder "AppData" and then the folder "Roaming".
- Open the folder "Microsoft". Within this folder you should see the folder of your Flight Simulator program; FS9 for FS2004 and FSX for... you know which one. Open the respective folder.
- Make a copy of the FS9.cfg folder and rename it to something like FS9_backup.cfg. The same thing goes for the FSX.cfg file.

For FSX only: - In the folder where you found the FSX.cfg file, you will also see a folder called "Controls". Open it and make a backup copy of the file "Standard.xml", which contains the controls settings. Name it for instance Standard_Backup.xml.

Now we are almost ready to start setting up our controls.

If the previous instructions were not already important.., the following one is critical for proper working of your controls with FSUIPC. Not following this one will most certainly lead to unwanted inputs/actions while handling your aircraft.
So here it goes;

We will not be using the control settings in Flight Simulator, so we have to turn them off, in order to prevent conflicting signals. We will use the previously created backup's if we decide that we want to return to our original setup (which I don't expect).

Start your Flight Simulator and go to “Settings”.
For **FS9**, remove the marker “Enable Joystick” and click on the button “Assignments”.
For **FSX**, click on “Controls” and remove the v marker for “Enable Joystick Controls”
Make sure that all Joystick assignments (axis and Buttons) are removed.

Click “OK”, shut down your Flight Simulator and restart it to verify that the controls settings in the Simulator are turned off.
Shut down the Flight Simulator.

NOW we are ready to start configuring our controls using FSUIPC.

FSUIPC installation and registration

If you have not already done so, install FSUIPC, and when done start your Flight Simulator. Load any free flight and pause the flight by pressing the “P” key on your keyboard.

In the menu bar at the top of the screen you should have an option called “Add-ons” for FSX, or “Modules” for FS2004.
If the menu bar is not visible, then press the “Alt” key once.
Click on the “Add-ons” or “Menu” option, and in the dropdown click on FSUIPC.
If there is no “Add-ons” or “Modules” option in the toolbar, or the FSUIPC option is not showing in the dropdown, then FSUIPC is not properly installed.
In that case, shutdown Flight Simulator and (re-)install FSUIPC.
When FSUIPC has been properly installed, then, after clicking on FSUIPC in the “Add-ons”/“Modules” dropdown, you should see a window similar to the one shown in image 1.

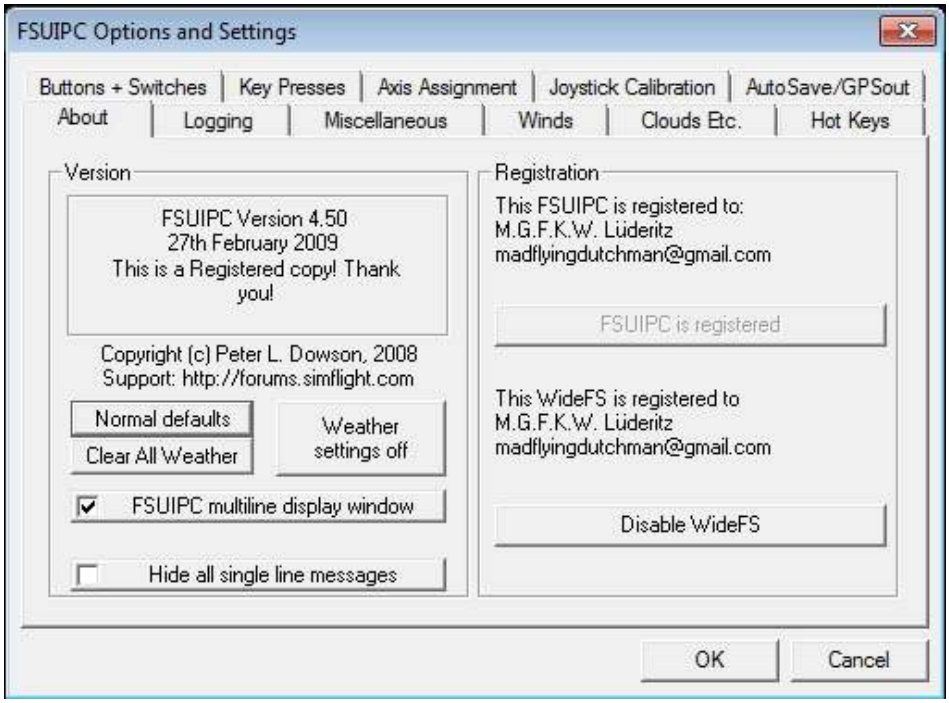

Image 1

If FSUIPC has not been registered yet, then click on the button "Register FSUIPC and enter the licence key (you will need an internet connection).

When the button is grayed out and stating "FSUIPC is registered", then you are good to go.

Configuring your general controls

Well, after all this preparation we are ready for the interresting part of this tutorial. It's what you have all been waiting for!

We will start with setting up some general controls that will be used in almost every aircraft or Flight Simulator. I am sure you can come up with some yourself, but here are some suggestions.

- Flaps up/down
- Gear up/down

- Parking brake
- looking around
- pitch trim op/down
- rudder trim left/right
- Cycling through your screen views

FSUIPC let's you set up different profiles for different aircraft, like single engine prop's, multi-engine prop's, dual engine jets and so on.
The controls we just listed above don't necessarily have to be assigned to every separate profile, but can be set up as general controls. Here is how we do that.

Buttons

Start your FS and load a free flight with the aircraft for which you want to set up the controls. For this tutorial I used the default Cessna 172SP. Select any parking position.

Image 2

Start FSUIPS from the toolbar -> Add-ons/Modules -> FSUIPC.

You will see the "FSUIPC Options and Settings" menu as shown in
To set up button assignments, click on the tab "Buttons+Switches"

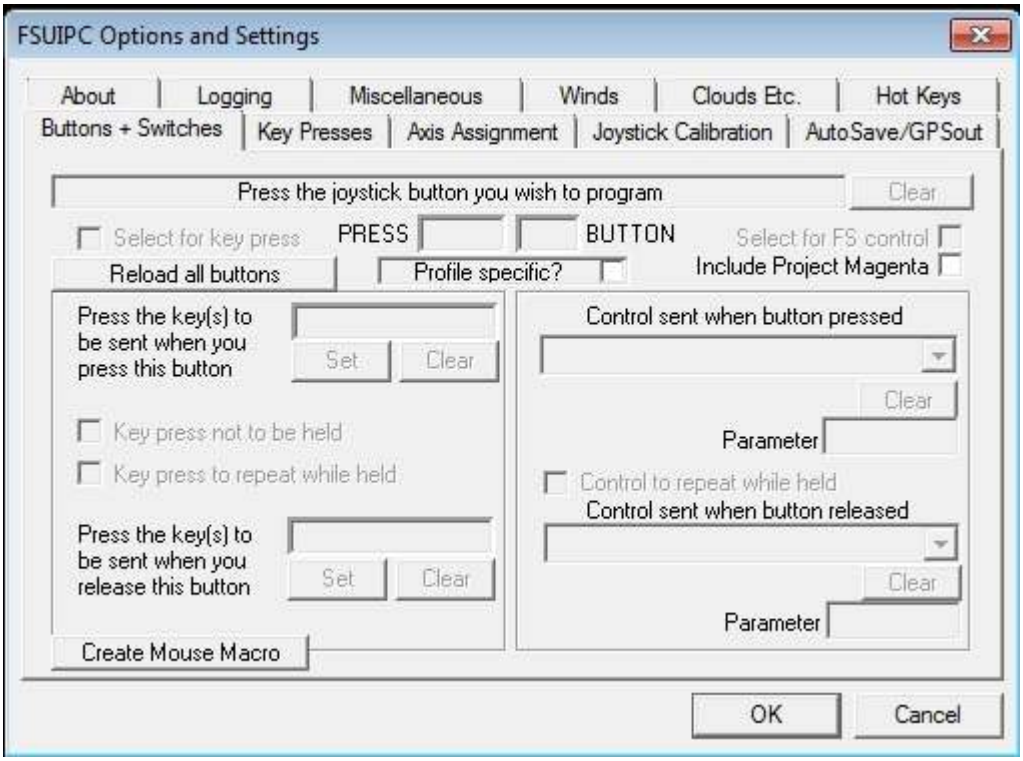

Image 3

We will set up the button for the parking brakes first.

Press the button you want to use for the parking brakes once.
You will see that the fields for Joy# and Btn# are showing numbers that are related to the control (joystick/Yoke) number and Button number assigned by FSX. This means that FSUIPC have recognized the button.
In my case I use a CH Yoke, and button 1 is on the left handle.
On the right it shows a selection box for "Select for FS control", which you need to select.
Now the field called "Control sent when button pressed" becomes available, with a arrow down to the right.
Click on the arrow down, and a pulldown menu will appear, showing all possible functions. To make the search easier type the "P", which brings you down to the functions starting with "P". Scroll down to the function "Parking Brakes" and click on that one. The menu should look similar to image 4.

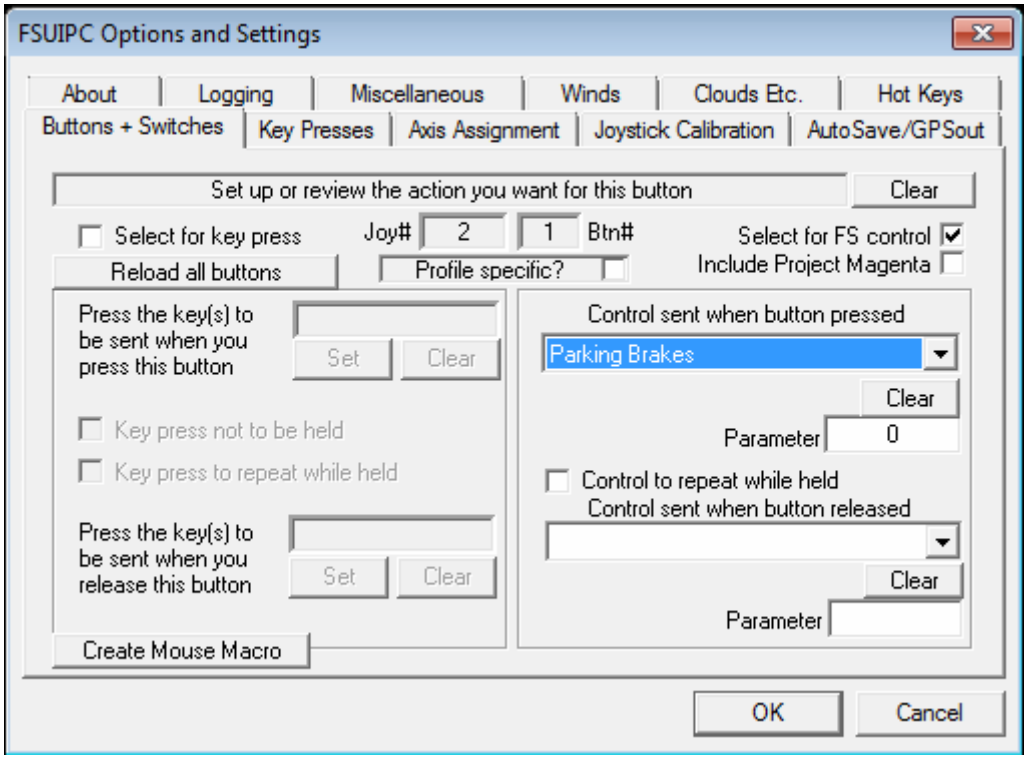

Image 4

Hit "OK" and you will return to the C172 at the fuel box.
press the button that you just assigned and you will see in the bottom left of the screen that the parking brakes are on (See image 5).

Press the button again to release the parking brakes.
Wasn't that easy?

Let's do two more controls, before we go to the set up by profile.

Go back to the FSUIPC menu (Toolbar -> Add-ons/Modules -> FSUIPC) and select the "Buttons+Switches" tab on the top left. If your control has a toggle switch (up/down), then use that one. We will set this one up for Flaps up/down.

Push the toggle switch up and make sure the Joy# and Btn# fields show the new joy/button#'s. Select the marker for "Select for FS control". Click on the arrow on the right of the field "Control sent when button pressed" and type "F". Scroll down to, and select "Flaps Decr".

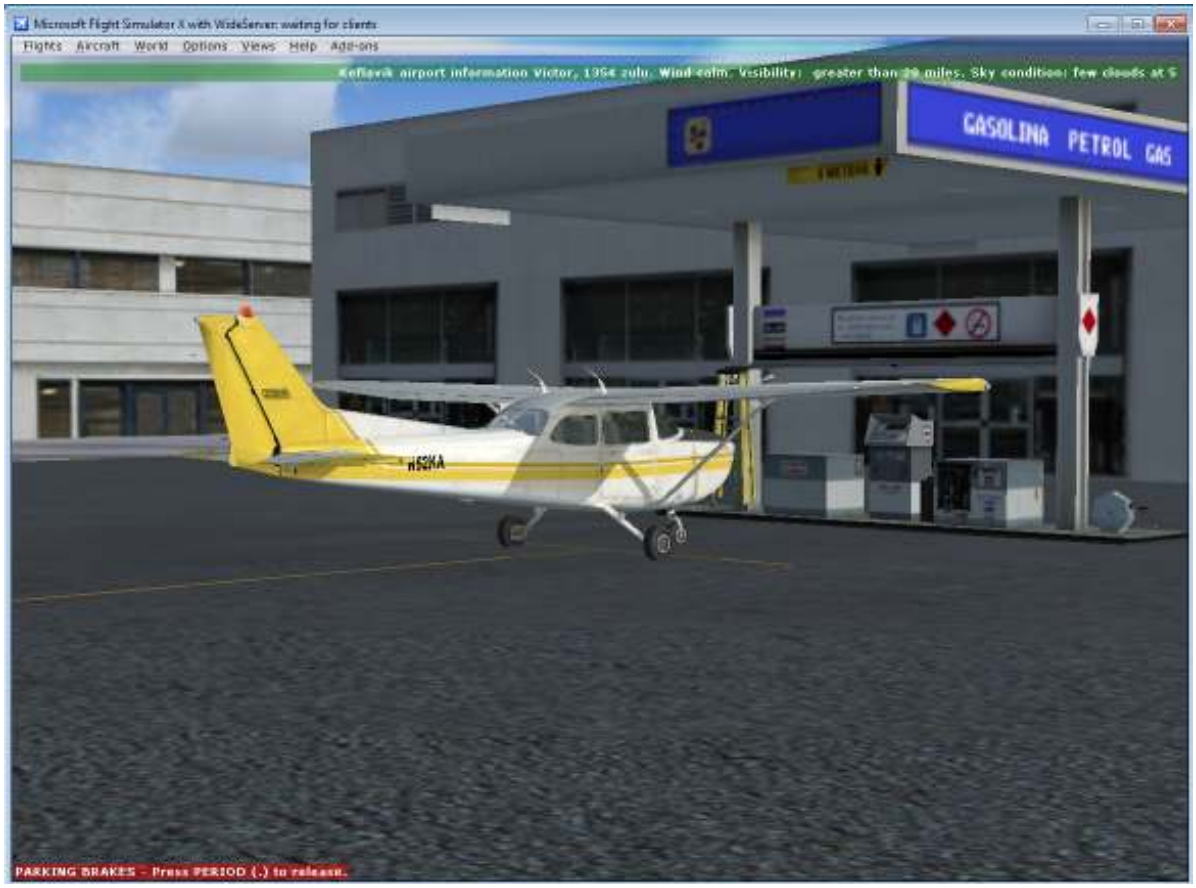

Image 5

Now push the button down and see the Joy# and Btn# change. Again mark "Select for FS control" and in the "Control sent when button pressed" field select Flaps Incr. and hit "OK".
I am sure you are now wondering why we did not select Flaps up and down for the function. Well, those functions will fully extend or retract the flaps instead of in increments. But why don't you just try and see for yourself. You can always change it back later.

So with the flaps switch set properly, let's see what the aircraft will do. Make sure that you are in a outside view, looking at the airplane with the back of the wings clearly insight. Now press the flaps switch down once and see what happens. You will see the flaps go down one increment. Verify this by looking at the flaps handle inside the cockpit. Push the switch down one more time and you'll see the flaps handle go down one more increment. Now look outside again and see that the flaps are further down. Pull the swich up once and you will see the flaps go back up

one increment. Pull it up one more time and the flaps will be fully retracted. You can again verify this by looking at the flaps handle inside the cockpit.
Is this not a lot more fun than moving the handle with your mouse, or pressing the F6/F7 key on your keyboard!

Now if you have a horizontal and vertical rocker switch on your yoke/joystick, you can use these for the rudder trim (left/right) and rudder trim (nose up/down). Those you will have to test while in flight.

One more function I want to touch base on is looking around. Most yokes/joysticks have at least one so called HAT switch. A pyramid like switch that you can move up/down/left/right as well as in circles. These work great for looking around in your virtual cockpit or at the surrounding area.

When cycling the switch around slowly, you will feel/hear that there are switch positions in it.
Open the FSUIPC menu and go back to the "Buttons+Switches" tab. While moving the switch in a circle, you will see that the Joy# will stay the same, but the Btn# will change 8 positions between 32 and 39. In the field where you select the function, you can either use the "Pan" or the "View" functions. That is one for trial and error in order to find what works best for you. For me the "View" functions work best.

The previous should get you on your way in setting up your general control functions. Hmmm, what could I think off…, "Repair&Fuel" maybe?

Now, what can FSUIPC do that you can't do in Flight Simulator, you wonder.. Well how about airplane specific button/axis assignments.
Yes here we go. Let's set up a profile for a single engine prop, like our C172.

Profile specific control assignments

Go back into the FSUIPC menu and select the tab "Axis Assignment".

As this will be a aircraft specific assignment (I will explain later why) we will select "Profile specific?" right underneath the "Joy#".
The first message box that will pop up will ask you if you want to apply

the general assignments (the ones we just created) to this aircraft. Click "Yes", and then a next message box might appear, asking you if you want changes so far to be saved first? Select "No".
Now, if you have not created any profiles yet, you will see a message asking you to specify a name for the profile to be created.
I used "OneEngingProp". Use any name that you find appropriate.
If you did already create profiles, then you will see a menu that let's you either cancel , create or select an excisting profile. Create a profile for the single engine prop. And hit "OK".

Let's take a sidestep and say we have an airplane that does have a retractable landing gear, like the Beech Baron 58.

Image 6

You can see that it also has two prop engines. The more reason to create a new profile to suite these kind of aricraft.

In Flight Simulator we can only program one and the same button for

Gear up (press once) and down (press again), which is not very natural.

Change the aircraft to a Beech Baron 58 and go back to the FSUIPC menu (Toolbar -> "Add-ons/Modules" -> FSUIPC). Select the "Buttons+Switches" tab on the top left. If your control has a toggle switch (up/down), then use that one. Up for retract landing gear and down to extend. You could also use a un-used lever, but that's for a different tutorial.

> Select "Profile specific?", and apply general assignments.
> choose "New"in the dropdown menu and create a name, like "TwoEngineProp".
> Push the toggle switch up and see that FSUIPC has detected the button position.
> Mark "Select for FS control".
> In the field "Control sent when button pressed" type "L" and scroll down to and select "Gear Up".
> Press the button down and do the same a above, but select "Gear Down".
> Click on "OK"when done.

We now have two profiles for different kinds of airplanes. Any livery of the same airplane will have to be added to the profile in order to work.

Now change the aircraft back to the C172SP and go to the Axis assignment tab in FSUIPC, so we can continue. Sorry for the interruption!

We are going to assign the elevator (up/down) and aileron (Left/right bank) axis.

Axis

Press the "Rescan" button on te top left and move your joystick/yoke left/right untill you see the joy# and axis indicated. This means FSUIPC has recognized the yoke and axis.

Now we see a lot more. We see the Joy# and the axis (X), but also value changes when moving the joke/stick. In this tutorial we will not go into the "Delta" values. That is for a more advanced tutorial.

Halfway down on the left, we see a square, titled “Type of action required”. As we want FSUIPC to take full control, we will always make sure that we select “Send direct to FSUIPC Calibration.

Underneath you see unmarkered selection boxes; select the first one and the field to the right becomes available (turns white). Press the down arrow to the right of the field and press “A”. Scroll down and select “Ailerons” (see Image 7).

Press “Rescan” again and move the yoke/stick forward untill the axis change, indicating that FSUIPC has detected it.
Now do the same as we did for the ailerons, and click “OK” when done.

Let’s see if it works. When in outside view, move your yoke/stick and you shoud see the ailerons on te wings, and the elevators on the tail move (see Image 8).

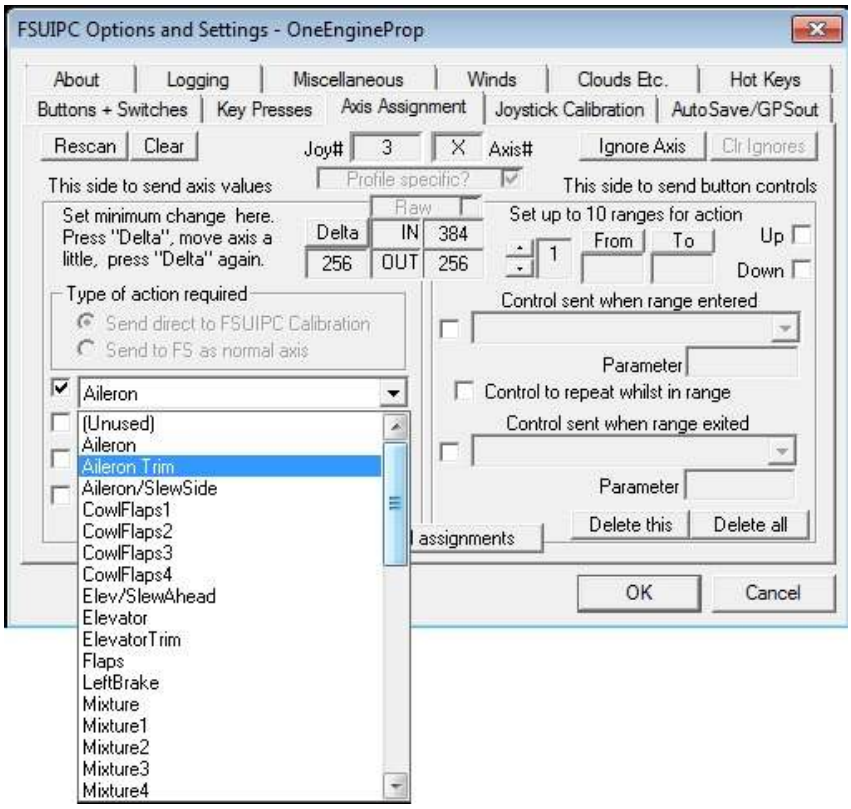

Image 7

Image 7

The Throtte, Propeller pitch and Mixture are set up in the same way as the elevator and ailerons. You see that we are setting up a propeller pitch axis in this profile so that we can use this profile for most single engine prop aircraft. Assigned controls that are not applicable for a certain aircraft will simply not work in them.

Calibrating the axis

Now that we have set up the elevator, ailerons, throttle, propeller pitch and Mixture, it is time to calibrate them (No we are NOT using Windows or Flight Simulator calibration, remember ☺).

Go back to the FSUIPC menu and open the tab "Joystick Calibration".
You are now on page 1 of 11 of the calibration section.
Before we begin, press the reset button for the functions/axis we will be setting. That will clear any old values.
You will see that there are "Set" buttons for Min, Centre and Max. Max is for forward and left, Min is for back and right. Centre has two values, which I will explain in a moment.

We will start with the ailerons. Press the reset button in the respective area and move the joke/stick from left to right a few times and then hold it in the full left position. Move the joke/stick a few inches away from full left and press the "Set" button under Max. You will see that the value under the reset button has been set as Max value. Now move the joke/stick to full right, move again a few inches away from that and press the "Set" button under Min. The Min/full left is now set just before the joke/stick phisically reached the end position at both ends.
Why did we do that? All hardware has a lack/offset at it's full positions. One moment at full it will give a value of 16383, and the next time it might be 16172, which would mean during flight that you could not move the control surface to it's min/max position. By setting the max and min just before that, we prevent any kind of unwanted behaviour.

Now you have probably experienced situations where the aircraft you are flying will not level off, or drift to the left or right, even when the joke/stick is in it's central position (of course there are also weather reasons that influence that).
The reason for that happening is that the yoke/stick never returns in exactly the same position, with the result that it will send different values to the simulator.
That is why you have the opportunity with FSUIPC to set an offset/deadzone for the center position. While still on the "Joystick Calibration" page 1, move the joke/stick about 10 degrees to the right and click on "Set" under Centre of the ailerons. Then move the joke/stick about 10 degrees to the left and click the "Set"button again. Now you have set a so called "Deadzone" for the center position of the ailerons. Now do the same for the elevator.

Setting up the Throttle, Propeller pitch and Mixture are done the same way as the ailerons and elevator, with the exception that they have no Centre position. Just go to page 2 of the joystick calibration tab for the Prop pitch and Mixture.

For those of us that have rudder pedals; make sure to select reverse for the toe brakes and use only 2/3 of the pedal movement untill just before full down. This way you prevent unwanted "Differential brakes" to be activated. The same thing goes for the rudder calibration. You don't want the aircraft to turn left or right on te runway, just because you have your

feet on the pedals (no reverse needed).

To make the handling of the aircraft even more realistic, you can select a slope for each axis. Personally I found it most valuable for the ailerons, elevator, rudder and brakes. Play with the slope settings as they speak pretty much for themselves.

If you have a CH Throttle Quadrant or other Throttle module that have two indents in the lower part of the movement, can configure the levers to include idle and Revers thrust. I will not go into that, but I will upload an instruction, written by John Cook, that explains how to configure the levers.

In this last part of the tutorial you have seen a lot of settings that can simply not be accomplished within Flight Simulator itself.
And this is just the tip of the cookie jar that FSUIPC has to offer.

Once a profile has been set up, you can add any aircraft that suits it through the FSUIPC menu. To do so, simply load the desired aircraft in a free flight.

> Go to the FSUIPC menu and select the "Axis Assignment" tab.
> Answer Yes to apply general assignments and select the profile you want to use for the aircraft.
> Go to the tab "Buttons+Switches" and select "Pofile specific?".
> Click "OK"to complete the procedure.

Oeps, wrong profile selected

In the case that you accidently placed an aircraft in the wrong profile, then you can go to the FSUIPC.ini file in the Modules folder under Flight Simulator X. Open it with notepad and remove the airplane from the specific profile list and save the file. Make sure that the numbering of added aircraft stays correct (no missing numbers).
And in the unbelievable case that you want to return to the situation before using FSUIPC, then just rename the files we backed up at the beginning of this tutorial to their originals.

I hope that this tutorial suits it's purpose.
Happy Flying, Manfred Lüderitz