SAITEK/FSUIPC Programming Guide for Eaglesoft Citation X V2.0

The Eaglesoft Citation X v2.0 is a virtual corporate airplane with many great features that make it a must-have in any virtual pilots collection. Eaglesoft continues to outdo their self and this aircraft is a prime example of that. Now, I am one of the lucky ones that are fortunate enough to have a career as a corporate pilot. Therefore, I am very hard to please when it comes to my aircraft for FS. So, from that standpoint, let me just say that you can never go wrong with Eaglesoft for corporate aircraft because they create quality replicas of the aircraft that I see on ramps all around the US. I have to admit that one of the features that intrigued me the most with this airplane was the FADEC. I was wondering how well Eaglesoft was going to be able to represent this in FS, because FS can be very limiting at times. Therefore, I purchased the airplane and a registered copy of FSUIPC 4.6 for FSX. At first, I struggled, because I could not program my Saitek controls correctly and it was creating a plethora of problems with the airplane, from the airplane flipping & tossing violently around the airport to all kinds of MASTER WARNINGS and MASTER CAUTIONS. However, through persistence and determination, I won and let me just say the reward was well worth it. First off, I had no idea what all could be done with FSUIPC; and truthfully, I probably still do not know it all, because the possibilities are just about endless. Like the Eaglesoft aircraft, FSUIPC is a must-have for any flight simmer. In fact, many add-ons require at minimum the freeware version of FSUIPC to communicate correctly with FS. However, buying a registered copy gives you more functionality and truthfully much more enjoyment than you can imagine from your simulator, especially if you have controllers, payware aircraft, weather programs, etc. Now that I have sold you on the Eaglesoft Citation X v2.0 and a payware version of FSUIPC, let us get on to the topic that caught your eye about this article in the first place.

Before we continue any further, I need to address a few things.

1. First is the misconception that you have to purchase FSUIPC to fly the Eaglesoft Citation X v2.0. This is simply not true. You can fly this airplane even without the freeware version of FSUIPC, but you will not have functionality of the FADEC. For the FADEC to work properly, it needs a very precise direct input signal from your throttle controller, which FSUIPC provides. Therefore, you will have to manage the throttles as you normally do in most aircraft throughout the different phases of flight. While I have not tested it, the Eaglesoft documentation says that FS, the Saitek SST software, or other third party software can be used to program the controllers and the FADEC will still work correctly as long as you have a registered copy of FSUIPC. However, the way I look at it, if you are going to pay for FSUIPC for the FADEC, then why not use the full functionality of it.

2. Second, FADEC is NOT an AUTOTHROTTLE. An AUTOTHROTTLE is a function of an autopilot and it will adjust the throttles automatically depending on what the pilot asks it to do by selecting various modes on the Master Control Panel (MCP) and various inputs in the Flight Management Computer (FMC). FADEC on the other hand, is a system in itself that helps the pilot get the best performance from the engine(s), but at the same time prevents the pilot from damaging the engine(s) by overspeeding or exceeding limitations of the engine(s). FADEC takes different variables like speed, pressure, and temperature and then via a computer calculates the proper power limitation for the phase of flight the pilot has set via the throttles and then FADEC adjusts the fuel/air mixture to the engine(s), not the throttles, to get the proper power setting.

3. While I wrote this article primarily for pilots that use the Saitek controllers for their simulator, the settings that I will advise should work for most other controllers as well. The only exception will probably be Thrust Reversers. This will be dependent on the design of your throttle quadrant. I have no experience with and/or knowledge of other throttle quadrant designs. Therefore, my suggestions here may not be the answer for your setup.

So, let us get started. Shall we? The Eaglesoft Documentation states:

There are three requirements for proper FADEC\Throttle Operation with your Citation X 2.0.

1. Registered Version of FSUIPC installed**.**

2. Personal User edit of ESDG_CitationX.ini file as outlined below

Dual Throttle Yoke or Joystick:

To enable **Dual Throttle Controllers** you must modify an entry in the ESDG_CitationX.ini file.The ESDG_CitationX.ini file can be found in the following locations:

Windows XP: "C:\Documents and Settings\[USERNAME]\Application Data\ESDG\CitationX"
Windows Vista: "C:\Users\USERNAME\AppData\Roaming\ESDG\CitationX"

Open the ESDG_CitationX.ini file in notepad and locate the entry "Throttles".
If you have a **Single** Throttle Controller, the value should be set to **1**, if you have **Dual** Throttle Controller it should be set to **2**. Higher values are not supported for this aircraft.

Example: ESDG_CitationX.ini file for Dual Throttle Setup
[FADEC]
LeftFadec=2
RightFadec=2
Throttles=2

3. Personal User edit of Calibration\Controller Configurations in one of the following…

- **FSUIPC** Controller Configuration
- **Flight Simulator** Controller Configuration
- **Third Party** [CH, Saitek, Etc.] Controller Configuration

We are going to limit this article to basic programming of the throttles via the FSUIPC software, because I am assuming that you know how to program in FS and probably your Third Party software from your controller. In addition, I realize that you may not realize what all FSUIPC can do for you, but this is not the article for that discussion. I highly recommend spending some time to read the FSUIPC User Guide to understand what all FSUIPC can really do for you.

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The following is from the FSUIPC User Guide:

"**IMPORTANT:** Before making any assignments in FSUIPC4, you should be sure that the same axes are not being assigned in FS itself. This isn't as easy as it sounds, because when FS sees a new control attached it does automatic assignments. If you just want to use FSUIPC4 to program the odd axis, but leave the rest to FS, then it is best to just go into FS's assignment dialogues and de-assign the axis you want FSUIPC4 to handle. But be sure to check this on your next load of FS, just in case it gets reassigned automatically. It does happen—*especially* if you are in the habit of unplugging your USB devices!

The other reason you may want FS to handle some axes rather than FSUIPC4 is for Force Feedback. FSUIPC4 does not use the same methods to access joysticks as FS and does not support Force Feedback.

If Force Feedback isn't a requirement, and you want the maximum flexibility (and most efficiency—I believe FSUIPC4's joystick handling is *still* actually faster than FS's), then the best way forward is to disable FS's joystick facilities altogether, then program all buttons and axes in FSUIPC4."

Once you have met the first two requirements for proper FADEC operation, then you are ready to start FS. Load your Citation X v2.0 sitting on a ramp wherever you like. Now on your menu bar (Press ALT to bring it up if it is hidden), you should see an Add-ons menu probably to the far right. In that menu, you should see FSUIPC… If you do, then click it to bring up the FSUIPC settings display. If you do not see the Add-ons menu or FSUIPC… in the menu, then FSUIPC has not installed correctly and you need to refer to the FSUIPC User Guide to address that issue. Now, that you are in the settings display of FSUIPC, you are ready to begin programming your controls.

One last note before we get started. If you want to make your controls specific to the Eaglesoft Citation X v2.0, then I recommend reading the FSUIPC User Guide about your "Aircraft Specific" options.

Programming the Throttles: Axis Assignment

1. Select the "Axis Assignment" tab

2. If you see anything in these boxes, then click the Rescan button to clear them.

3. Move the throttle lever that you want to assign to Engine #1 and you should see a Joy# and an Axis# pop-up in the boxes.

Be very careful in doing this because FSUIPC is very sensitive and if you just bump another axis before you move the lever that you want, then you will be assigning the throttle to the wrong axis. If you want to double check, you can just hit the Rescan button and repeat the process until you are certain that you are getting the correct axis. On the Saitek Yoke Quadrant, you should get the following axes from the left to right, Z U V. This is because the Yoke is considered as X and Y. So, the quadrant just continues on that. If you are using the Saitek Throttle Quadrant (sold separately from the Yoke and Quadrant set), then you should see a different Joy# and these axes from left to right, X Y Z,

4. Under "Type of action required," select **"Send direct to FSUIPC Calibration"**

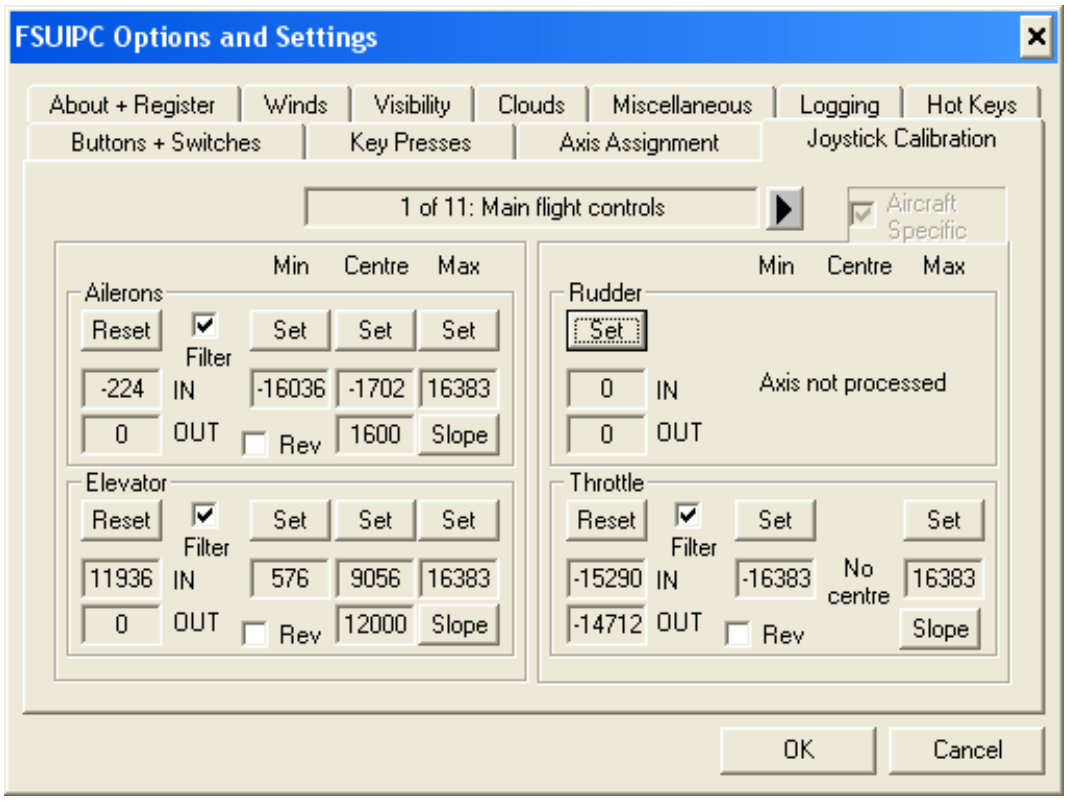
5. Select one of the boxes on the left to activate the associated drop down menu

6. Select "Throttle1" from the drop down menu

7. **Repeat** steps 2-6 now for the Engine #2. The only differences are move the throttle that you want for Engine **#**2 and then select "**THROTTLE2**" from the drop down menu. Once this is complete, then we are done with Axis assignment, but do not click OK yet because you need to calibrate the levers now.

Throttle Calibration

8. Click on the **"Joystick Calibration" tab.** It should look like this:



9. In the top middle of the page, you will see a window that says page "1 of 11: Main Flight Controls". If you plan to use only one lever for both engines, then you will calibrate your throttle here. If you plan to use two levers, one for each engine, then **navigate to page "3 of 11: Separate throttles per engine" via the right arrow button** next the window. **In either case, the calibration will be the same as the following steps.**

10. **Select "No reverse Zone" up in the top left corner.** Do this on page 3 whether you are calibrating for one or two levers.

11. There should be no settings yet, just a 0 in the boxes and you should see a button under **Throttle 1** labeled "**Set", select it.** If there are any settings before you do anything, then just click "RESET," then "SET."

12. **Set the lever that you chose for "Throttle1" earlier to its idle detent.** You should see **–16383** in the "In" window.

13. **Now, slightly advance the throttle just out of the detent.** You want to set a null zone here to ensure that when the throttle hits the idle detent then the engine is at full idle. I have a –16252 in my "In" box.

14. **Select the left "Set" button to set the position you want for idle thrust.**

15. **Now, advance the lever to full throttle.** You should see a 16383 in the "Out" window.

16. I actually did not set a null zone for the full throttle position, but if you want to, then you can decrease the lever slightly below full throttle for a null zone.

17. **Select the right "Set" button to set the position you want for the full throttle (T/O) setting.**

18. **Select "Filter"**

19. **Repeat steps 12-18 for Throttle 2**

20. **Verify "Exclude THROTTLEn_SET" is selected in the bottom right**

21. **CONGRATULATIONS!** Your throttles are now setup. Now, if you would like, you can **select "OK"** to test the throttles. On the other hand, while you have FSUIPC still open, we can continue on to setup you Thrust Reversers. **If you do test them**, make sure to remember that you have to click on the click spot below each throttle on the panel to take them out of the cutoff position.

Programming the Thrust Reversers:

1. **Select the "Buttons + Switches" Tab**

2. **Decrease Throttle 1 down past the detent until it bottoms out.** Like the Axis Assignment earlier, you should see a Joy# and now a Btn# pop-up. You do not have to be as careful as before with the Axis Assignment page because buttons only send an impulse when the button is pressed. The Axes constantly send a signal and the software notices it as soon as it moves slightly. Therefore, if you do hit a wrong button, then who cares, just hit the right now.

3. **Select "Select for FS control" in the top right corner**

4. **Under "Control sent when button pressed," select "Throttle1 Decr" from the drop down menu.** This is like you pressing F2 in your keyboard commands, except it communicates directly to FS, not through the button programming in FS options.

5. **Select "Control to repeat while held."** Does exactly what it says. It is now like you holding down the F2 key, which is what we need here.

6. **Under "Control sent when button released," select "Throttle1 Cut."** Without this option, then the reverser will not stow if you just take throttle back to the idle detent. You would have to advance the throttle to get it to stow. However, with this option, when you do take the throttle back to the idle detent, this will the set the Throttle back to idle and then therefore stow the TR.

7. **Repeat steps 2-6 for Throttle 2**

SAITEK/FSUIPC Programming Guide for Eaglesoft Citation X V2.0

Congratulations! Your Thrust Reversers are now setup!

Do you have extra levers that you want to assign? Of course you do! You can use these for things from Raising and Lowering the Gear, Spoilers, Flaps, etc. Again, I recommend reading the FSUIPC User Guide for guidance on this because you can pretty much follow it word for word to do these functions. I have both the Saitek Yoke & Quadrant Pro Set and the Saitek Throttle Quadrant giving me six levers to play with. I have from left to right, Spoilers, Throttle 1, Throttle 2, Flaps, Gear, and a spare that I have yet to figure out what to program. I programmed my Spoilers with a detent to activate the Spoiler Arm function for auto deployment upon touchdown. I programmed the throttles separately as this document outlines. I programmed the Flaps with detents for Slats Up/Flaps Up, Slats Extend/Flaps Up, Flaps 5, Flaps 15, and Flaps 35. This is not required, but it does make the Flaps operate more smoothly than the FS Flaps function. The Gear setup has ranges as outlined in the FSUIPC User Guide to only allow Gear Up if the lever moves up through a certain range, and Gear Down if the lever moves down through a certain range. All of this can be done by reading the basic FSUIPC Users Guide. You can do a whole lot more, if you really want to, by reading the Advanced Guide. One example is to program a button with a Macro for a mouse click on a switch that does not have an option to be programmed in FS (ex. left or right landing lights like many jets have, including the Eaglesoft Citation X v2.0). Another option is a macro for those annoying switches and dials that you have a hard time clicking when you are busy with ATC and flying by hand. Another example is offsets, which allow things to only happen if certain conditions are met, like only allow the gear to retract if the airplane is off the ground. As you can see, the possibilities are endless and really, they end where your imagination stops.

This article has turned out to be a bigger project than expected, but I enjoyed every minute of it. I hope that the details that I have given here help at least one person get their controls set up correctly and then I will be happy! I apologize for the length of this article, but I wanted to cover everything for even the most novice simmer. This way, no man, wait, or woman is left behind. If you have any questions, feel free to post them on the Eaglesoft forums or on the FSUIPC forums and I am sure that if I do not then someone will help you!

Blue skies and Smooth Landings,

Chris Osborn