

Configuring FSUIPC with the CH USB Yoke, Rudder Pedals and Throttle Quadrant. version 1.10

**by
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This guide describes using FSUIPC to setup the CH USB Yoke, CH Pedals and CH Throttle Quadrant.

FSUIPC is an extremely useful tool when using joystick devices and I highly recommend purchasing a licensed copy if you don't already have one.

Peter Dowson wrote the FSUIPC program, information and support can be found at:

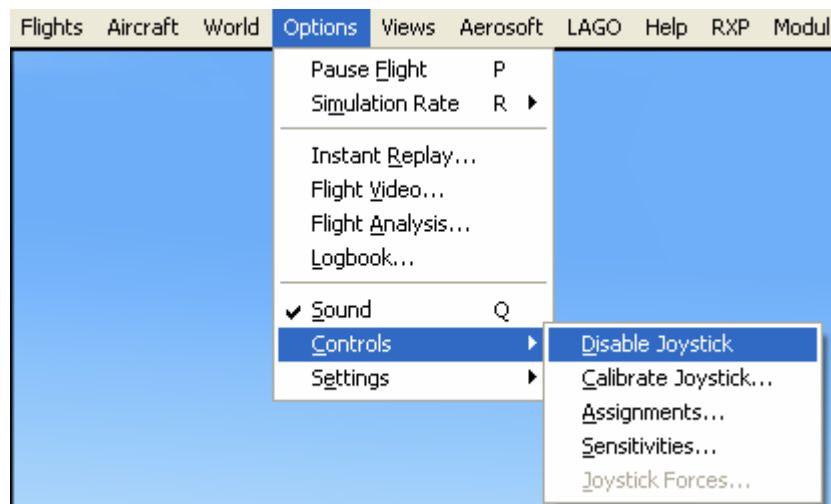
www.schiratti.com/dowson and <http://forums.simflight.com/viewforum.php?f=54>

If you're trying to get the most out of your joystick configurations in FS, don't hesitate to buy a licensed copy. I would also recommend reading the documentation from which you will learn many useful techniques that can enhance your simulator flying. If you read the FSUIPC manual first, then this guide will make more sense to you.

In this guide I'll show procedures and examples of the configuration that have worked well for me, further tweaking and advanced topics are left to you.

Many forum entries I've seen have asked about properly configuring the CH Throttle Quadrant so that's what I'll cover first. We'll also take a look at the Yoke and Rudder Pedals and programming joystick buttons.

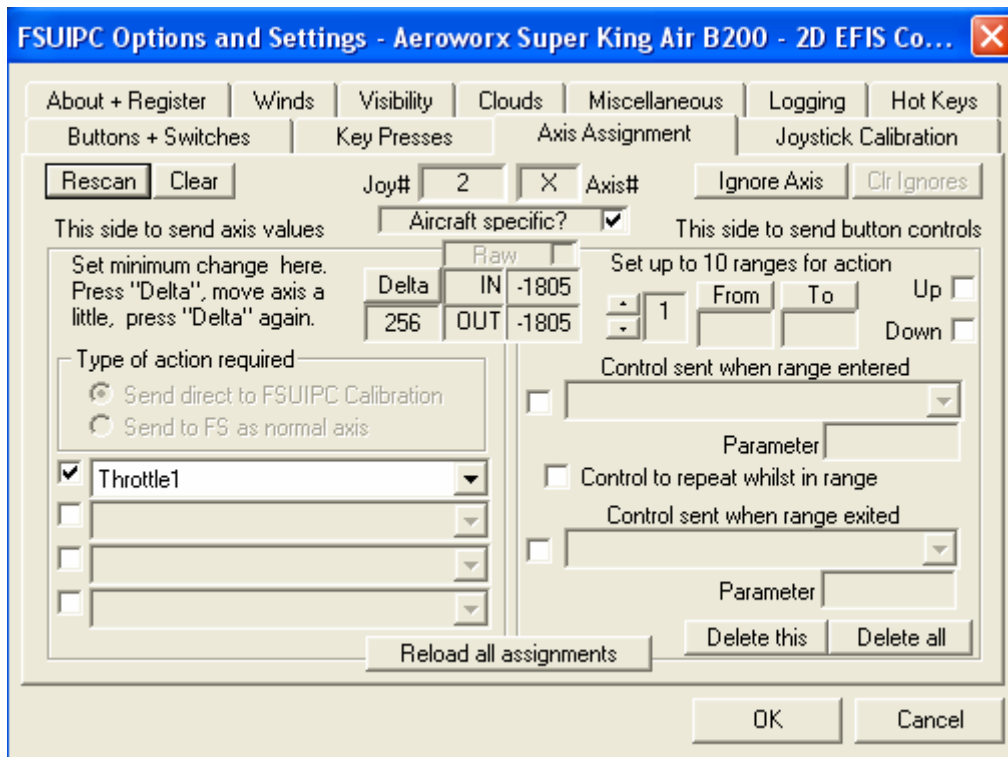
This is not an official FSUIPC document, it is just my notes for helping others use FSUIPC to get their joysticks, Yokes, Pedals and Throttles configured quickly.



Disabling the FS Joystick

This guide does not use the CH Control Manager or MS Flight Simulator processing of the joystick devices. I bypass all joystick processing by flight simulator and let FSUIPC handle all axis assignments, calibration and button assignments.

To disable the joysticks in FS go to the **Options Menu** and select **Controls – Disable Joystick**.



Axis Assignment

Open up the FSUIPC program from the FS **Modules** menu then switch to the **Axis Assignment** Tab to assign your joysticks within FSUIPC. A Joystick is any flight control device you are connecting. A Joystick has several axis, usually assigned to levers or movement of the joystick. A Joystick device can also have various buttons available that can be programmed through FSUIPC. That will be covered later.

The **Joy#** shows the currently selected Joystick device. You change the **Joy#** by causing an axis to change its value. This is done by moving the lever on the joystick device you want to assign. While doing this you press the **Rescan** button.

As an example, I want to assign the left lever on my Throttle Quadrant (ThQ) as Throttle 1 within FSUIPC. Throttle 1 is the left engine on my twin engine aircraft. In this example I am programming a specific aircraft – the *Aeroworx B200*; as you can see in the image above the **Aircraft Specific** checkbox is checked. This means FSUIPC assignments are for this aircraft; another twin engine aircraft won't see this configuration.

While moving the left throttle forward and back on my ThQ, I click the **Rescan** button until I see the numeric values for **IN** and **OUT** changing. When that happens it means FSUIPC has scanned the **Joy#** and **Axis#** that I am interested in. It is only then that I find out that the ThQ assigned as **Joy# 2** and the left lever is **Axis# X** (the X axis).

There does not appear to be a direct way to select a Joy / Axis combination, such as just typing in numbers. You need to physically move the axis on the Joystick while clicking the **Rescan** button. You may need to do this several times until FSUIPC gets to the correct Joy / Axis combination. Again this will be indicated by changing values in the **IN** and **OUT** fields.

Now that FSUIPC has identified the Joy / Axis combination I want to assign, I set the **Type of Action Required** to the **Send Direct to FSUIPC Calibration** option. Below that I select the checkbox and then **Throttle 1** from the drop-down box. Now my B200 aircraft's left engine is assigned to the left most lever on the ThQ. There are five remaining levers on the ThQ and they are all assigned the same way as the first lever.

ThQ Lever Assignments for Twin Engine Aircraft

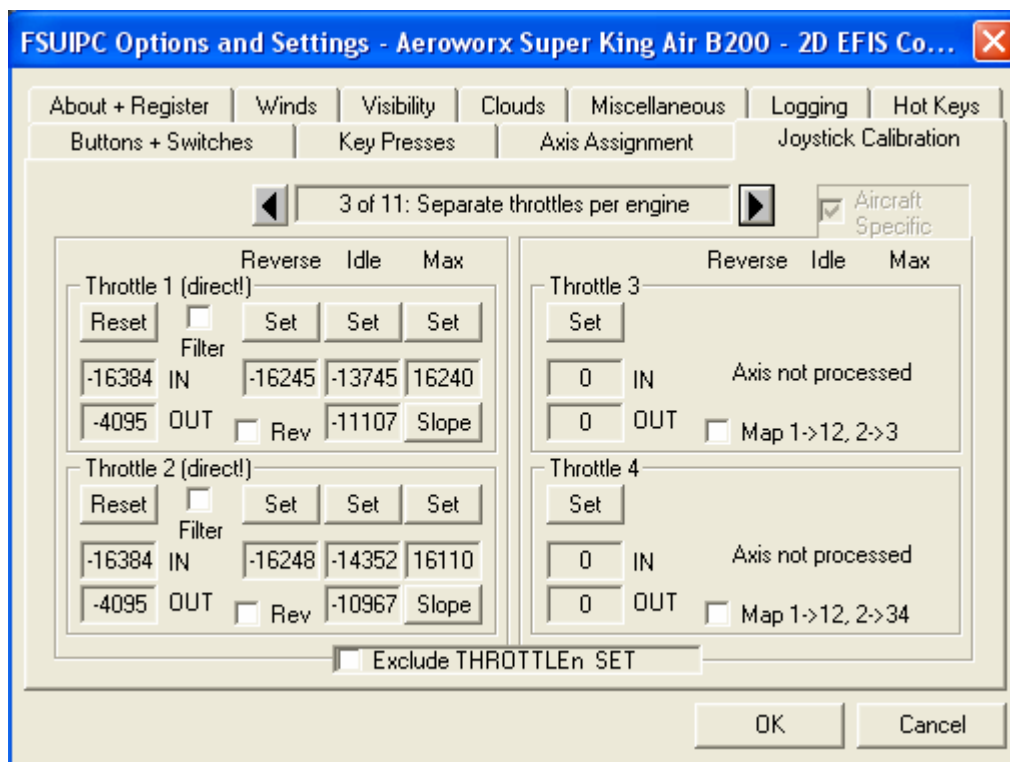
ThQ lever 1	Throttle1
ThQ lever 2	Throttle2
ThQ lever 3	Propeller1
ThQ lever 4	Propeller2
ThQ lever 5	Mixture1*
ThQ lever 6	Mixture2*

*The B200 turbine engine actually has condition levers instead of the mixture levers of a piston engine; however the FS assignment is Mixture for either type of engine.

Notes:

1. The **Joy#** may vary on your hardware, depending on your USB devices. The **Axis#** is likely to be the same as in the examples.

2. I setup each of my aircraft individually; I believe a default configuration can be used. I won't cover that in this guide, but you would basically leave the Aircraft specific checkbox unchecked. As you'll see later there is a good reason for being aircraft specific, when you're programming different types of aircraft.



Joystick Calibration

Once all six levers on the ThQ have been assigned, it is time to calibrate them. Again using Throttle1 as the example, simply apply these steps to the other five levers. Select the **Joystick Calibration** tab.

Click on the **Reset** button to clear any values already set. You see there is a **Set** button and corresponding value field for Reverse, Idle and Max. The Idle position however has two fields beneath its **Set** button. That's important, and something I initially missed.

The **IN** and **OUT** value fields are beneath the Reset button and display the current numeric value FSUIPC has for that axis. The **IN** and **OUT** values will change as you move the lever. I don't believe the numbers that show up are important and your numbers may vary from mine, but essentially at one end of the lever's range you have a small (negative) number and at the other end you have a large (positive) number. Note that the **REV** checkbox will reverse this.



To set the **Reverse** position pull the lever all the way back to the bottom of the levers slot and press the **Set** button under the **Reverse** column.



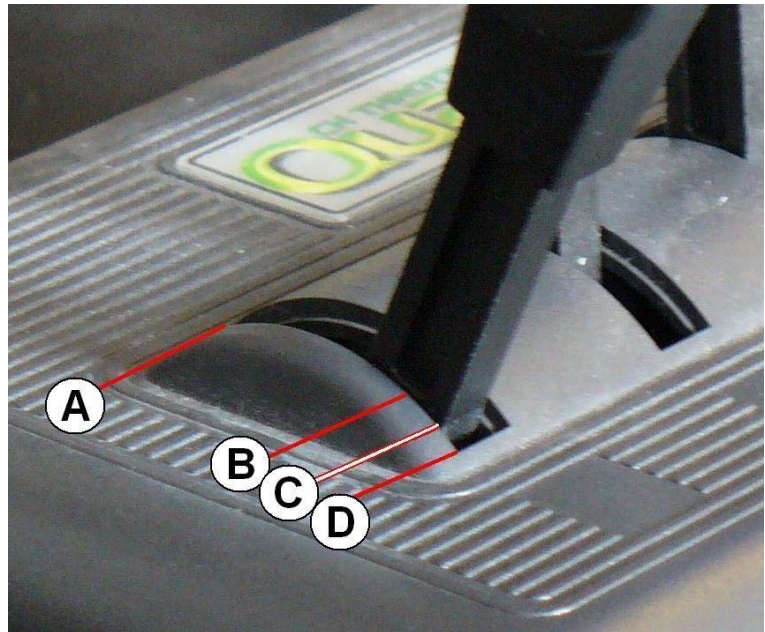
To set the Max position push the lever all the way forward and press the **Set** button under the Max column.

To set the **Idle** position correctly we need to consider an upper and lower idle range. Idle is when the lever is moved into its detent position. You'll feel this detent physically about 1 cm above the bottom of the levers slot. I set the upper Idle position as soon as I feel the lever go into detent. To set the lower detent it is important to pull the lever back toward the bottom of the slot and actually out of the detent toward the reverse position. Don't go all the way to the reverse position, but set the lower detent about half way between the reverse position and the detent position.

There is some 'play' or looseness in the detent position and if the upper and lower idle positions are set in this looseness you will find yourself easily going into reverse when you just want to go into idle. Why? Because reverse will be defined as everything from the lowest part of the levers slot up to the detent position and because of the looseness pulling the Throttle levers back to idle may slip into the reverse range.



Throttle lever in detent / idle position

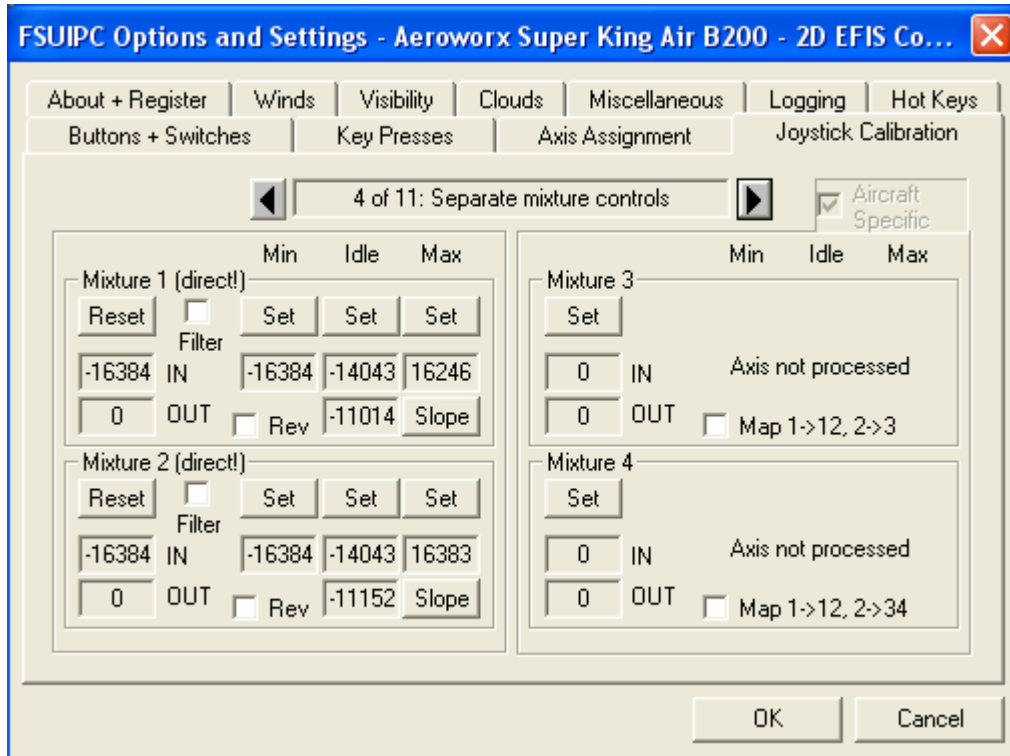


Throttle positions

We want the smallest possible reverse range and that's why the lower idle position is set between the detent and bottom part of the levers slot.

- A – Maximum (Top of lever slot)
- B – Upper Idle (Detent)
- C – Lower Idle (Below Detent / Above Reverse)
- D – Reverse (Bottom of lever slot)

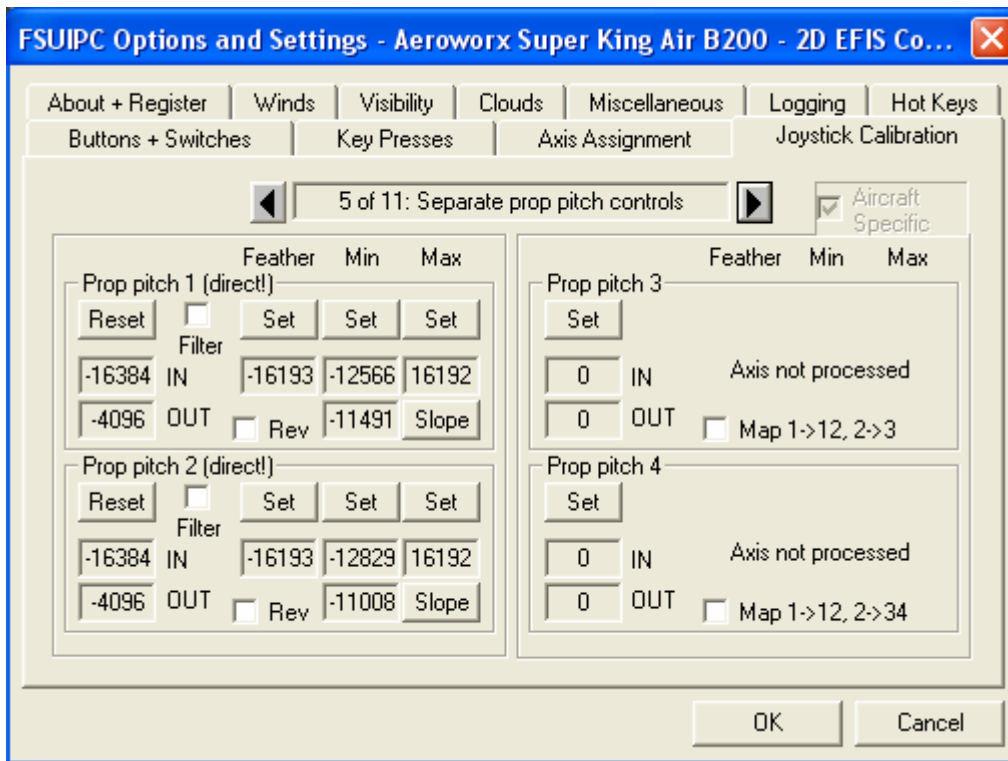
When I first began using the ThQ and an earlier version of FSUIPC I could not get my levers to work right. Reverse worked but I would have to move the Throttle lever almost all the way forward to see any change in the engine. It seemed the entire engine range was being controlled in the upper 10% of lever movement. As you can imagine this made fine tuning an engine virtually impossible. What had happened was I had set only one of the two Idle positions. I flew like that for months, before a friend mentioned a second Set value at the idle position and the problem started to make sense.



Mixture Controls

Switch to **Joystick Calibration Page 4: Separate mixture controls**.

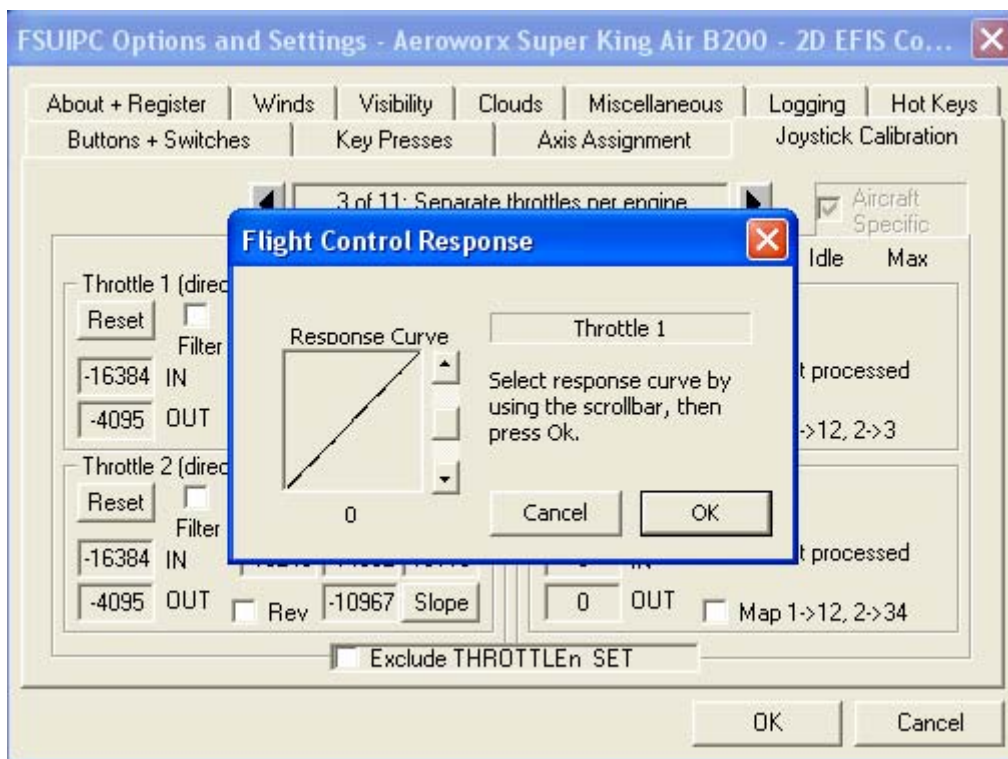
Calibrate the Mixture 1 and Mixture 2 axis's using the same method as shown in the Throttle Calibration example. **Min** will be equivalent to fuel cutoff, **Idle** is Ground Idle and **Max** is flight Idle for the B200 aircraft example. Remember to setup the Idle (upper and lower) positions as was done in the Throttle example.



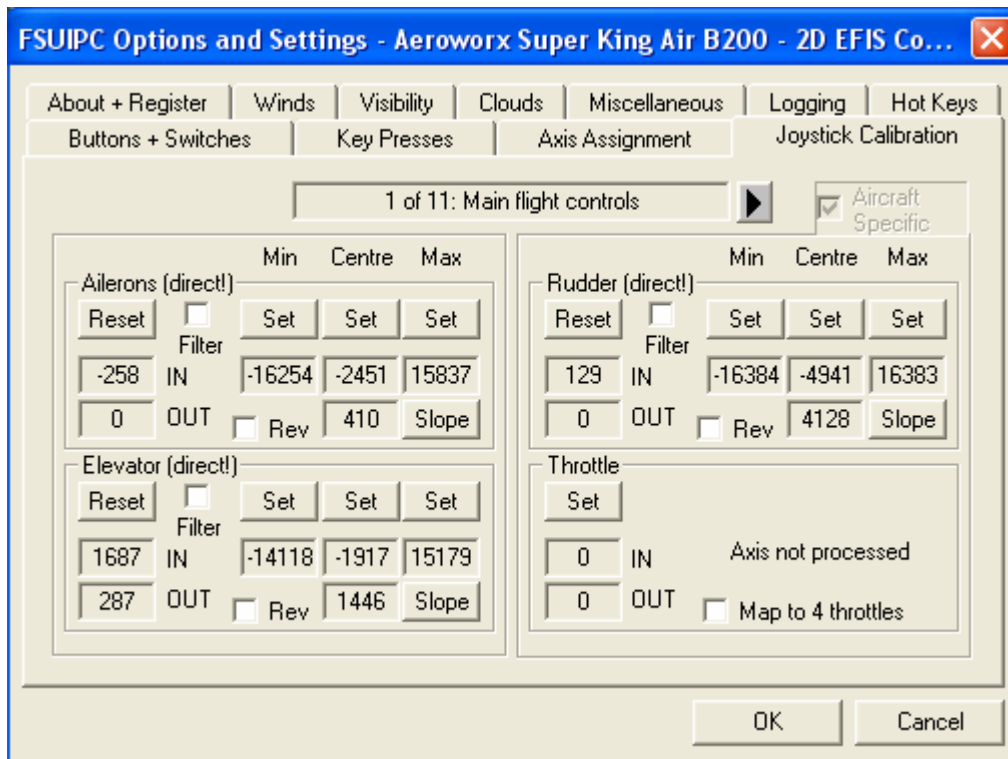
Propeller Pitch Controls

Switch to **Joystick Calibration Page 5: Separate prop pitch controls**.

Calibrate the Prop pitch 1 and Prop pitch 2 axis's using the same method as shown in the Throttle Calibration example. Feather will be for feathering a prop, **Min** is minimum pitch and **Max** is maximum pitch for the B200 aircraft example. Remember to setup the Min (upper and lower) positions as was done in the Throttle example.



You can fine tune the responsiveness of an axis by selecting the Slope button. I find this most useful on the Aileron axis, Elevator axis and Rudder axis. You can program a lighter or heavier feel for the control's responsiveness. And therefore have some variations in responsiveness for each aircraft. This is another good reason to choose the **Aircraft specific** checkbox.

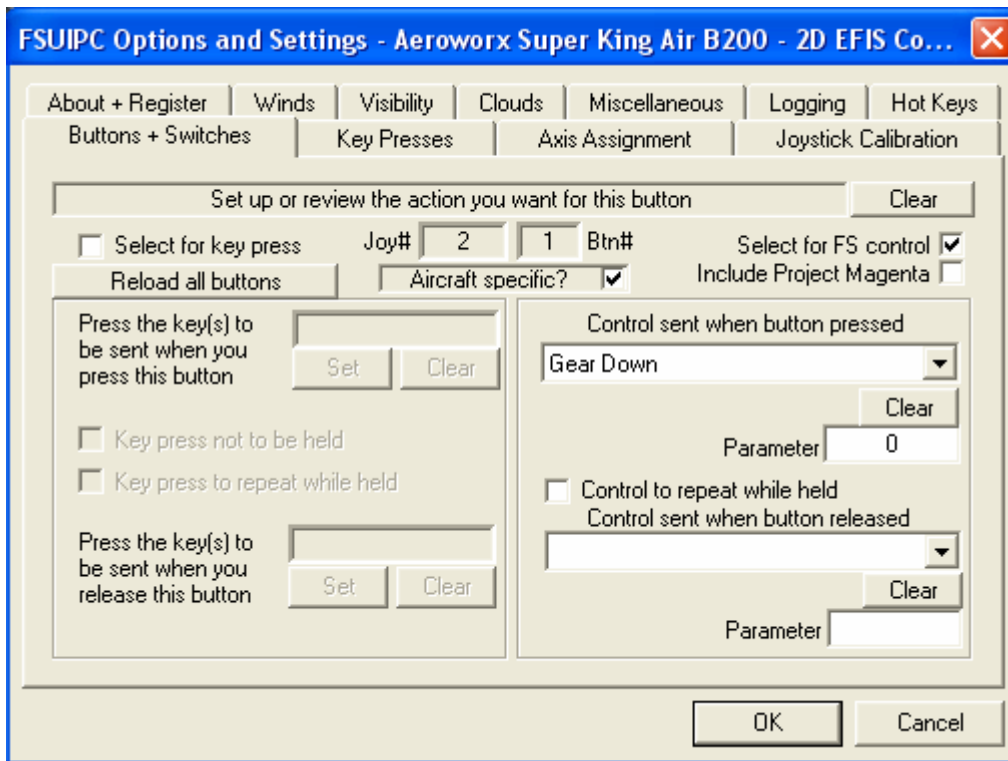


Yoke Configuration

The **Joystick Calibration** tab, **page 1** has the Ailerons, Elevator and Rudders and they are all set similarly as in the Throttle example. Remember to first assign the axis and then calibrate. The Center position here should be wide enough, left to right for the ailerons and forward back for the elevator to define a center position. In my opinion the spring loaded CH yoke doesn't have the feel and feedback of a real aircraft yoke. It will never center back to the exact position, fortunately FSUIPC lets you define a wider center.

For example if the Aileron Yoke looks centered, left to right, it might still be sending a non centered value to the simulator. For years all of my aircraft had a slight right turning tendency when the Ailerons were supposedly centered. With FSUIPC I defined a center position as a little to the left and a little to the right of what looks like center on the actual yoke. The wider range allows a more realistic center or dead zone and my aircraft fly straight now.

The rudders and toe brakes can be tricky and you may actually need to use the **Rev** checkbox when configuring the brakes. Experiment with the settings until you get something that works for you. The **Slope** option can also be useful on the rudders. The rudder has a single axis and each toe brake also has an axis. You need to calibrate for all three.



Buttons + Switches (FS control)

To assign a yoke or ThQ button to a FS command key go to the **Buttons + Switches** tab.

Press the yoke or ThQ button or any joystick button and you should see it appear as **Joy#** and **Btn#**.

Next, Check the **Select for FS control** checkbox

You can now assign a defined FS command by selecting the command from the **Control sent when button pressed** drop-down box.

In the example above the **Gear Down** FS command for lowering the aircraft's gear has been assigned to my ThQ (Joy# 2, btn# 1).

Each toggle switch on the ThQ has two positions: up and down. I've assigned the first switch (btn#1) which is the 'down' position of the switch to the Gear down command. Guess which command I've assigned to the 'up' position for that switch.

If you'd like to program the hat switch on your joystick or yoke, go to the **Buttons + Switches** tab.

Check the **Select to FS control** checkbox.

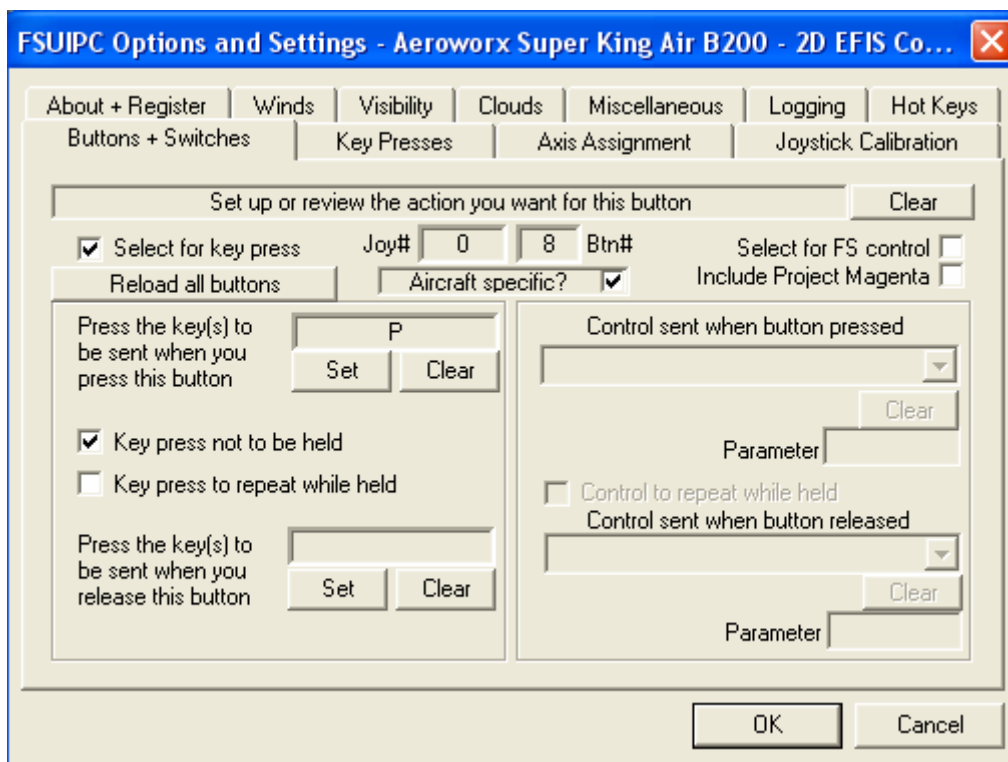
To assign a hat switch position, push the hat switch to the position you want to assign a command to and select from the **Control sent when button pressed** drop-down box. Below is a list of the positions, control assignments and parameters that I use.

<u>Hat switch position</u>	<u>Control sent when button pressed</u>	<u>Parameter</u>
Forward	Pan Reset	0
Upper Right	Pan View	45
Right	Pan View	90
Lower Right	Pan View	135
Back	Pan View	180
Lower Left	Pan View	225
Left	Pan View	270
Upper Left	Pan View	315

You may need to actually hold the hat switch in a position rather than select it and let it go when assigning a Pan View and a Parameter. This can be tricky, so once you've made all eight assignments review each position and verify the values are correct.

Check the **Control to Repeat while held button** checkbox for all positions except the Forward position. While in the Spot view, which shows the outside of the aircraft and in the Virtual cockpit view, you will be able to pan around quickly by holding a hat position. The forward position is meant to reset to a forward facing view in the 2D and Virtual Cockpit views.

Note: To go to a command more quickly in the **Control sent when button pressed** drop-down box, simply press the first letter on the command's name; such as **P** for Pan View. This will jump to the beginning of the P's, then you can scroll to the command you'd like.



Buttons + Switches (key press)

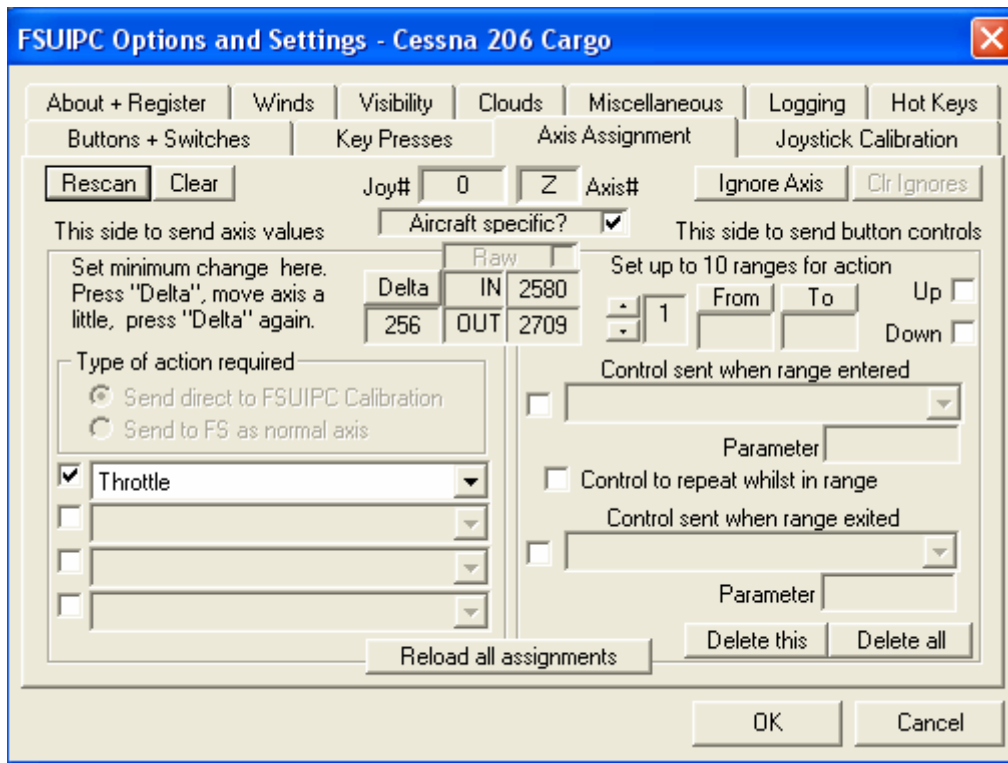
To assign a yoke or ThQ button to a keyboard key go to the **Buttons + Switches** tab.

Press the yoke or ThQ button and you should see it's value appear as **Joy#** and **Btn#**.

Next, Check the **Select for key press** checkbox

You can now assign a keyboard key by pressing the **Set** button and typing a letter in the value box.

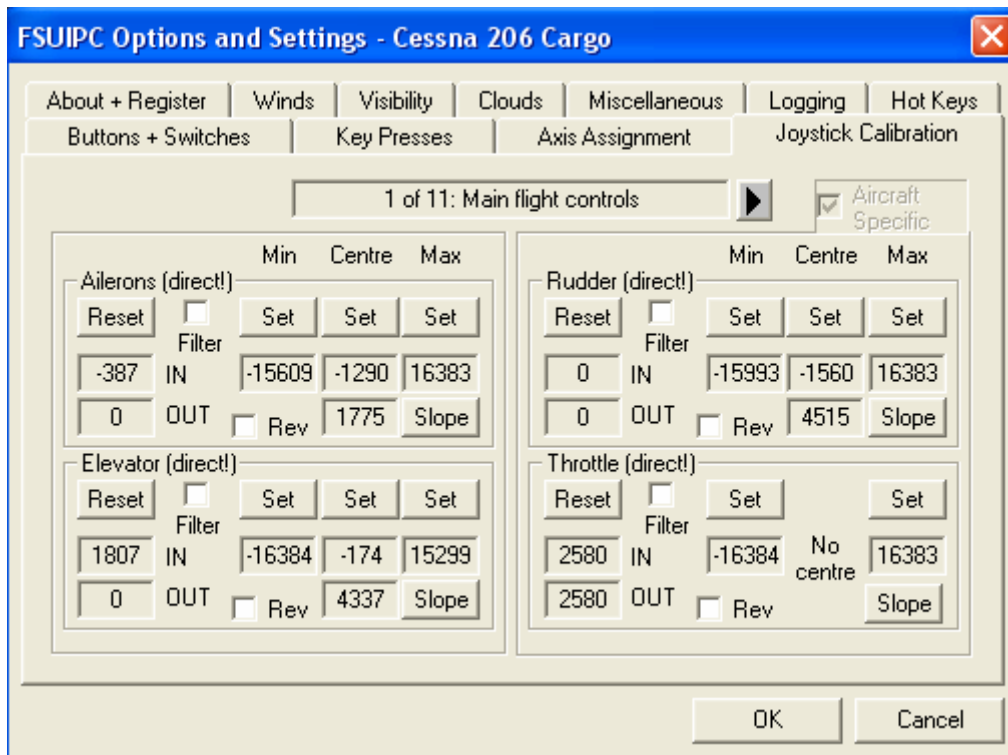
In the example above I've assigned the 'P' key for Pausing the simulator to my Yoke (Joy# 0, button# 8), and I've specified the key press is not to be held.



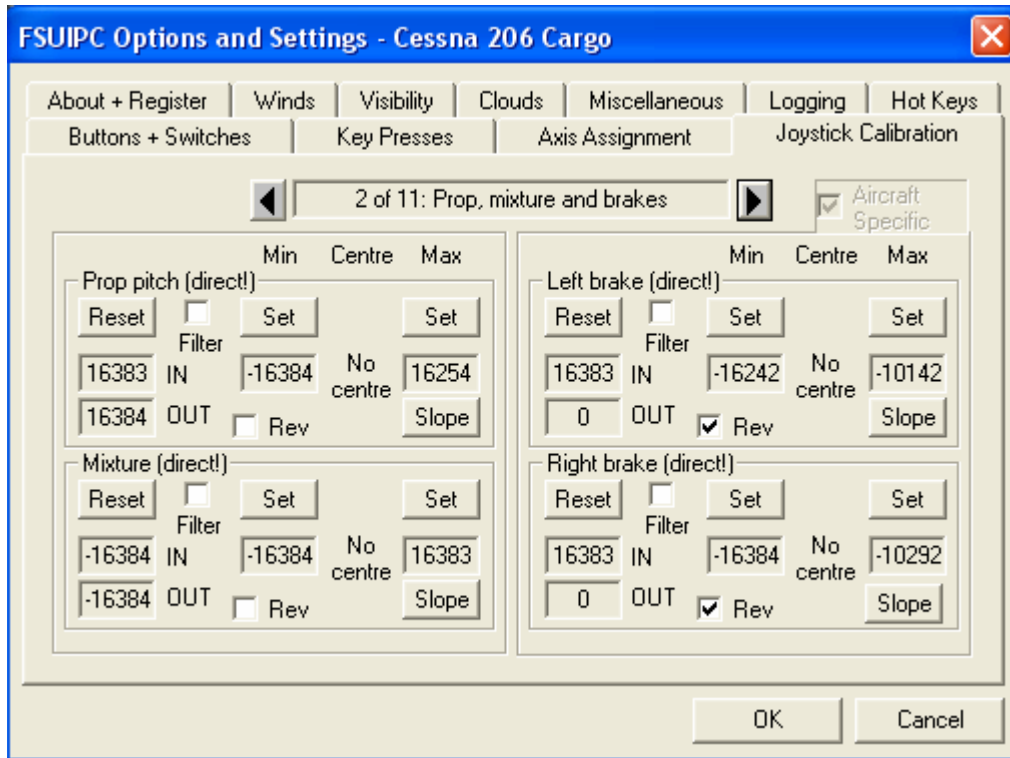
Single Engine Aircraft Option (using the Yoke levers instead)

If you'd like to use the three levers on your CH USB Yoke for a single engine aircraft like Carenado's Cessna 206, FSUIPC can do it. Follow the familiar Axis Assignment for the Throttle, Propeller and Mixture (not Throttle 1, Propeller 1, Mixture1). Make it **Aircraft Specific** so it won't be used with your twin engine ThQ configurations and then Calibrate.

You can choose to Ignore Axis on the six levers of the ThQ and then when calibrating be sure the multi-engine pages are unassigned by pressing **Reset**. The ThQ levers will then effectively be disconnected from your single engine aircraft.



Set the **Min** and **Max** for the Throttle on the **Joystick Calibration** tab, **page 1: Main flight controls**. There are no idle (detent) positions for the three levers on the Yoke, so you can't set Reverse or Feathering via a detent. This is not a problem for single engine piston aircraft. If you're flying a single engine turbine, such as the Flight1 Meridian or the FSD Turbo Porter, you'd probably want to setup three levers on the ThQ and unassign the levers on the yoke.



If the Rudder / Toe Brakes seem to be backwards try the **REV** checkbox.

My configuration

I have the CH USB Yoke, CH Rudder pedals and CH Throttle Quadrant. I also have a Saitek X45 Joystick / Throttle that I use for helicopter flying. All are devices connected at the same time. Since I program using the **Aircraft Specific** feature any non-used joysticks for a given aircraft are not scanned or configured. I am currently using FSUIPC v3.70, and do not have the CH Manager software installed. Joystick is disabled within FS.

Aircraft

Single Engine (Piston) Airplanes
 Single Engine (Turbine) Airplanes
 Twin Engine (Piston / Turbine / Jet) Airplanes
 Helicopters

Joystick Devices Used

CH USB Yoke, CH Rudder Pedals
 CH USB Yoke, CH Rudder Pedals, CH Throttle Quadrant
 CH USB Yoke, CH Rudder Pedals, CH Throttle Quadrant
 Saitek X45 Joystick / Throttle, CH Rudder Pedals



I hope this guide was easy to follow and will help you get the most out of your flight simulator. The examples and procedures I've shown here represent what has worked for me and should help you get through the basic setup. After that spend some time experimenting with FSUIPC and its many features and tweak the system to your own requirements. Have Fun.

John Cook
 January 2007