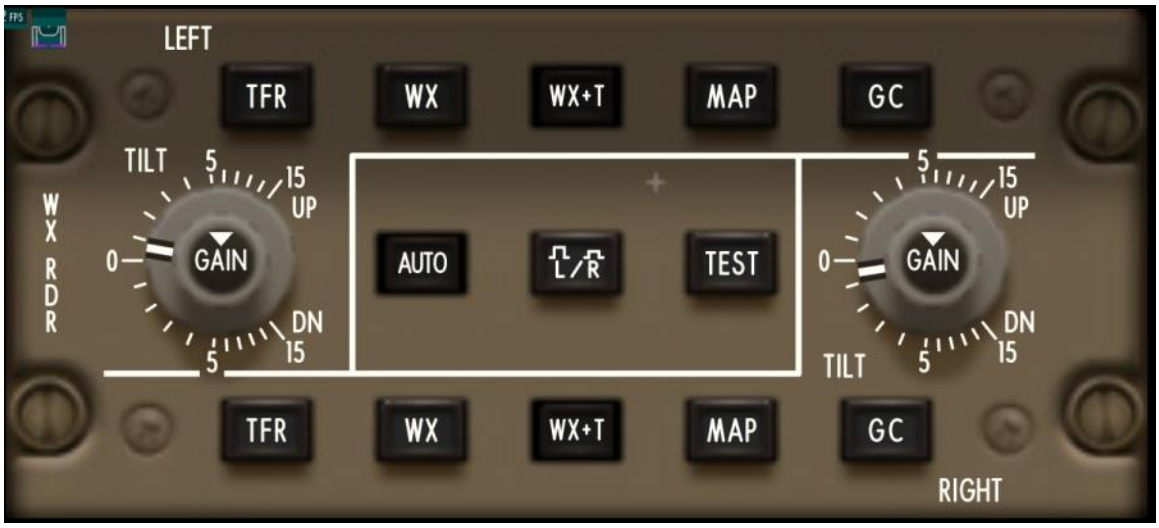
Joystick Interface Module for the Aerowinx PSX Flight Simulator

General

The Aerowinx PSX program has a built in joystick calibration and assignment page that provides for basic functional connections between hardware elements and the flight simulator program. However, several elements were left to add-on developers to provide. This module is an effort to provide some of the additional functionality that PSX offers when interfaced to the home cockpits such as the FlightDeck Solutions B747-400-FBPT and hybrid analog/digital panels such as the FDS multi-scan radar panel.

Radar Panel

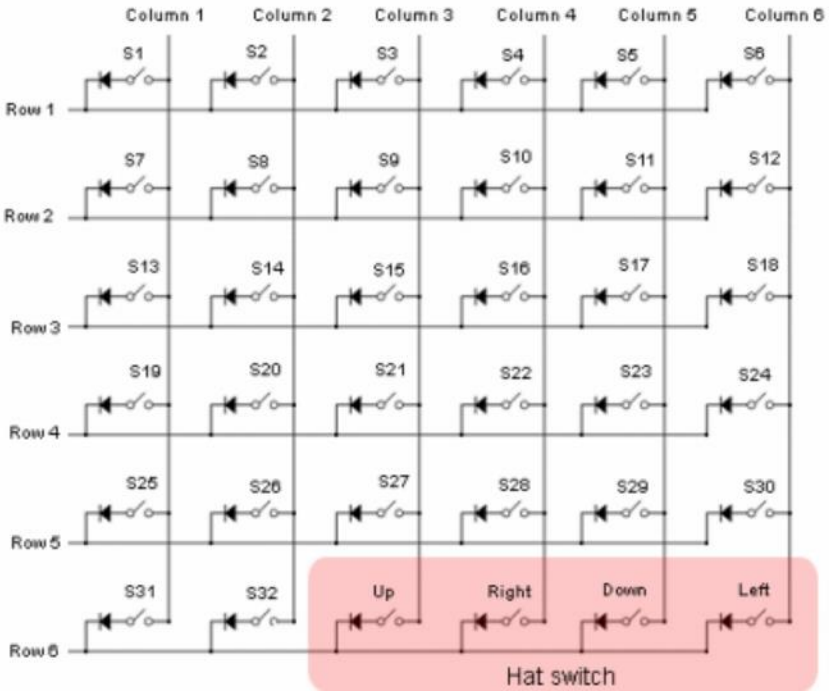


The FDS implementation of the radar panel uses duel potentiometers on both the Captain and First Officer sides to control the tilt and gain of the radar system. A top row of buttons controls the Captains side ND display and the bottom half the First Officer ND display. The center three buttons select Automatic Mode, Left or Right selection of electronics and the Test Mode of the radar system.

The program enables all of the push buttons on the panel if wired to the joystick controller buttons, the infinite range of the radar tilt if in manual mode and displays the Gain values between -6 and 4. The joystick axes will set the gain and tilt for both the captain and first officer sections of the panel. However, to enable all 13 of the pushbuttons you need to add a diode matrix to the FDS FC-1 as depicted in the FC-1 User's Manual and shown below.

Buttons / HAT

The FDS-FC1 is able to handle 32 button inputs as well as a eight (8) position hat control (up, down, left, right, upper left, upper right, lower left, lower right). When connecting the switches to the input matrix you will need to use a diode to prevent phantom keys from being seen during the scanning of the matrix. Any signal diode will be sufficient (e.g.: 1N4001 or 1N4148).



The weather radar panel as shipped by FDS has input/output connects to the FDS SYS cards for the buttons and outputs to a FDS-FC-1 for the potentiometers used to select the gain and tilt of the panel. There are three ways to utilize the panel:

The weather radar is modeled using the Collins WXR-2100 Multi-scan radar. You get the best operation by placing the unit in the Automatic mode and using just the gain selector while in flight, which means you can provision the FC-1 joystick controller axis but leave the radar panel buttons unassigned. The advantage of this solution is that it is the easiest. The downside is you don't have the Test function, the Map function or the Auto function if you want to "play" with both gain and tilt in convective weather or draw the coastlines or terrain in Map mode.

You can also rewire the outputs from the SYS card and connect to the FC-1 but you are limited to six buttons but that would allow you to enable the Test Mode as well as WX, WX + T and Map modes while in the Auto mode. The Captain side buttons as well as the center Auto, L/R and Test buttons are on one SYS

card connector so you connector would need to be removed that the wires terminated on a joystick controller.

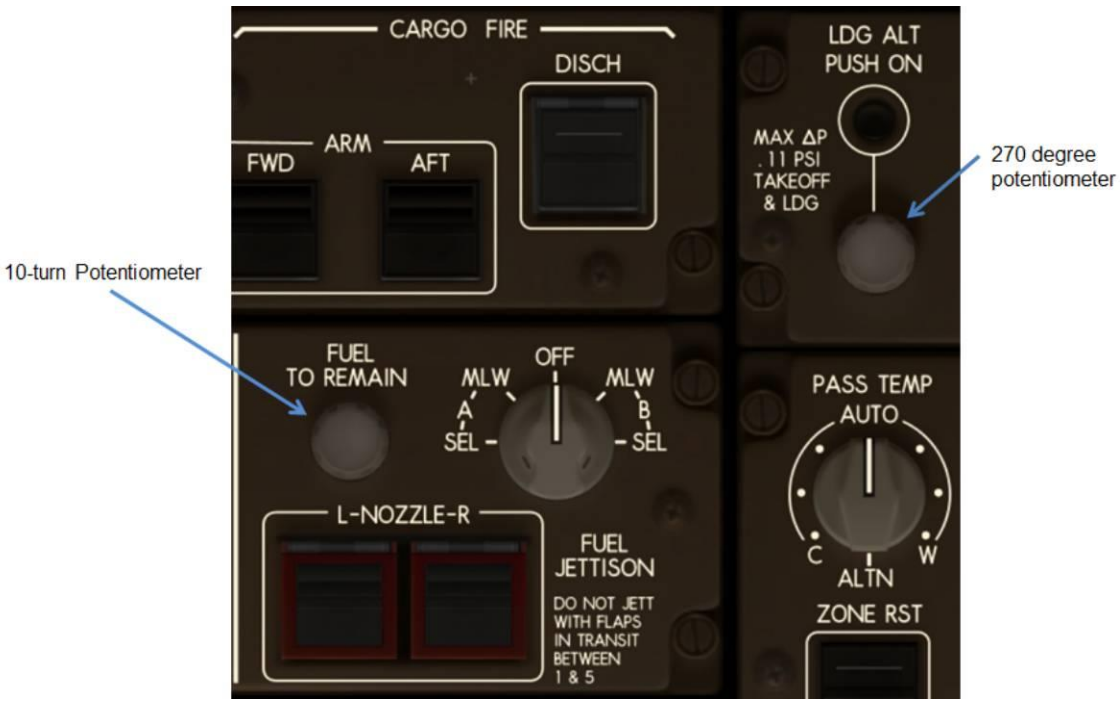
Finally, you can use a matrix as discussed above to fully wire out the panel for full functionality.

Flight Controls

PSX models the Boeing 747-400 and not a simulated model of the B744. That is, the flight controls are linked; rudders, toe brakes, yokes and tillers. While a few builders have acquired actual flightdecks from retired 747's most don't have the space, time to tear down & rebuild, dedicated friends to help with the process and the spare funds and willing spouses to pursue that option, and other means are undertaken to build their B744 flightdeck. For example, while the FDS B747 FBPT has linked rudders and yokes it does not have linked tillers and toe brakes. The Flight Controls section of this program enables that. In addition, for users who do not have linked rudders and yokes this program provides the capability to present a linked appearance to PSX.

Display Dimmers, Fuel Remaining and Landing Altitude Adjustment

This section of the program provides the interface to adjust the screen brightness for the caption and first officer PFD/ND screens as well as the upper and lower EICAS screens. In addition, if enabled, the fuel remaining adjustment and landing pressure altitude potentiometers can be configured as well. These are located in the Overhead:



Setup and Configuration of the Joystick Module

This module, which has been written in Java, has been tested on Windows PCs running Win7 and Win10 64-bit. However, it should run on Mac or Linux systems as well. If you are running the application on a client PC you will need to download and install the Java JDK if the client doesn't already have PSX running applications as a client.

When you download and unzip the **SmartInterface** folder you will see five DLL files and the SmartInterface.jar executable file. Place this folder in a convenient location and enter a shortcut into the Start Menu to automatically run the program on system boot up. The module checks to make sure a connection is established before opening the configuration screen so if you are running in a client mode the program will return the following screen until after you have modified the **general.cfg** to update the IP address of the PSX Server PC.

When you first run the program by double clicking the Smartinterface.jar executable the program will generate two configuration files, a **general.cfg** which stores the IP address of the PSX server (by default it is set to localhost, and a **saved.cfg** which saves assignments made to the program upon closing. Simply close the application by clicking the OK icon, edit and save the **general.cfg** file with the correct IP address of the server and relaunch the application.

The **general.cfg** file allows the user to set the IP address and port number of PSX, set an option to minimize the configuration screen on startup and not display irrelevant USB connections to the computer. The following is an example of the **general.cfg** file:

> ### Please do not remove any lines of this cfg; simply edit them.## Network config# Host/port of PSX server**localhost:10747**## General config# Minimize window on add-on startup**0**# Ignored controller names (one per line)**MouseKeyboard**

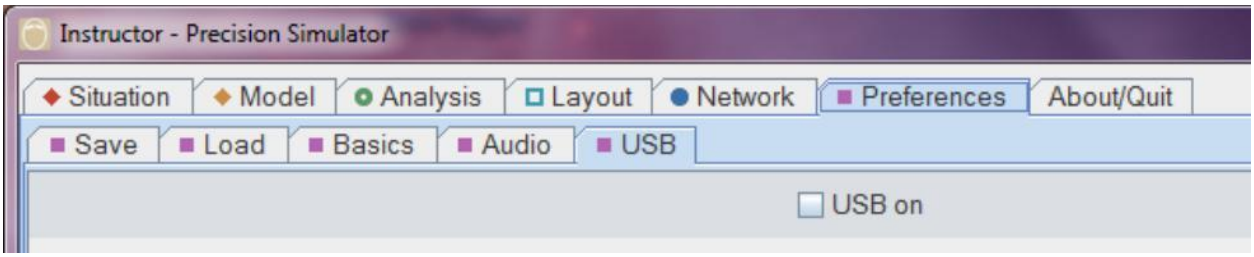
If the program is being launched from a client PC change the localhost:10747 to the IP address of the server. For example, it might be **192.168.0.10:10747**. To clean up the configuration screen of non-essential USB connections, be they keyboards, mice or other modules type in the name before the dash without the line number to exclude them from showing. For example, replacing the placeholder MouseKeyboard with USB Receiver will eliminate those entries from the configuration file.

When changing the IP address and eliminating these unwanted attachments the **general.cfg** file might look like this:

Please do not remove any lines of this cfg; simply edit them.## Network config# Host/port of PSX server192.168.0.10:10747## General config# Minimize window on add-on startup0# Ignored controller names (one per line)USB Receiver
HID Keyboard Device
HID-Compliant Mouse

To minimize the window on startup for the configuration screen change the “0” to a “1”. This is typically something that you would do once configuration has been completed and you have no further use for the configuration screen.

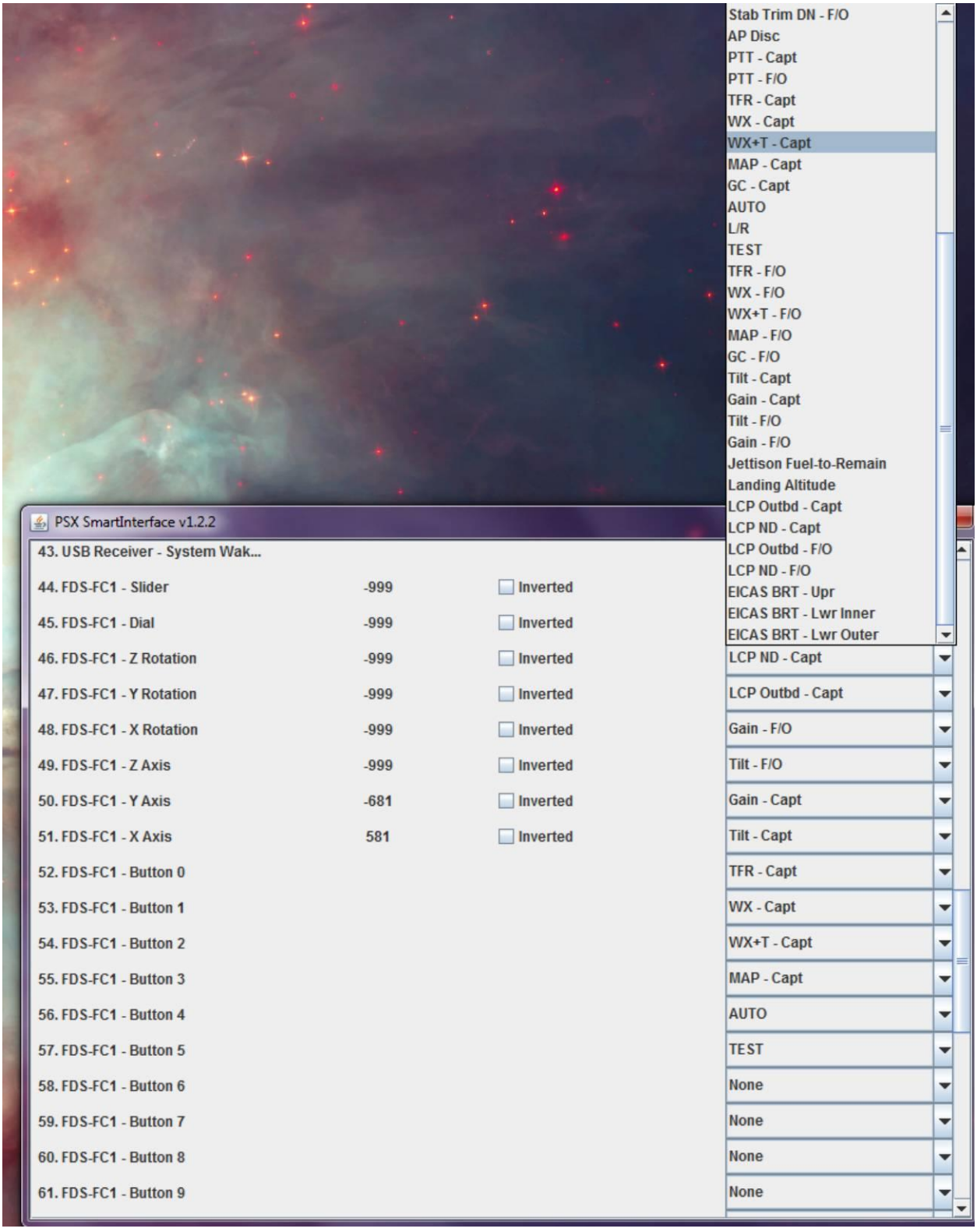
The first step is to disable the USB input in PSX for the computer that you are running the SmartInterface program on as shown in the following screenshot.



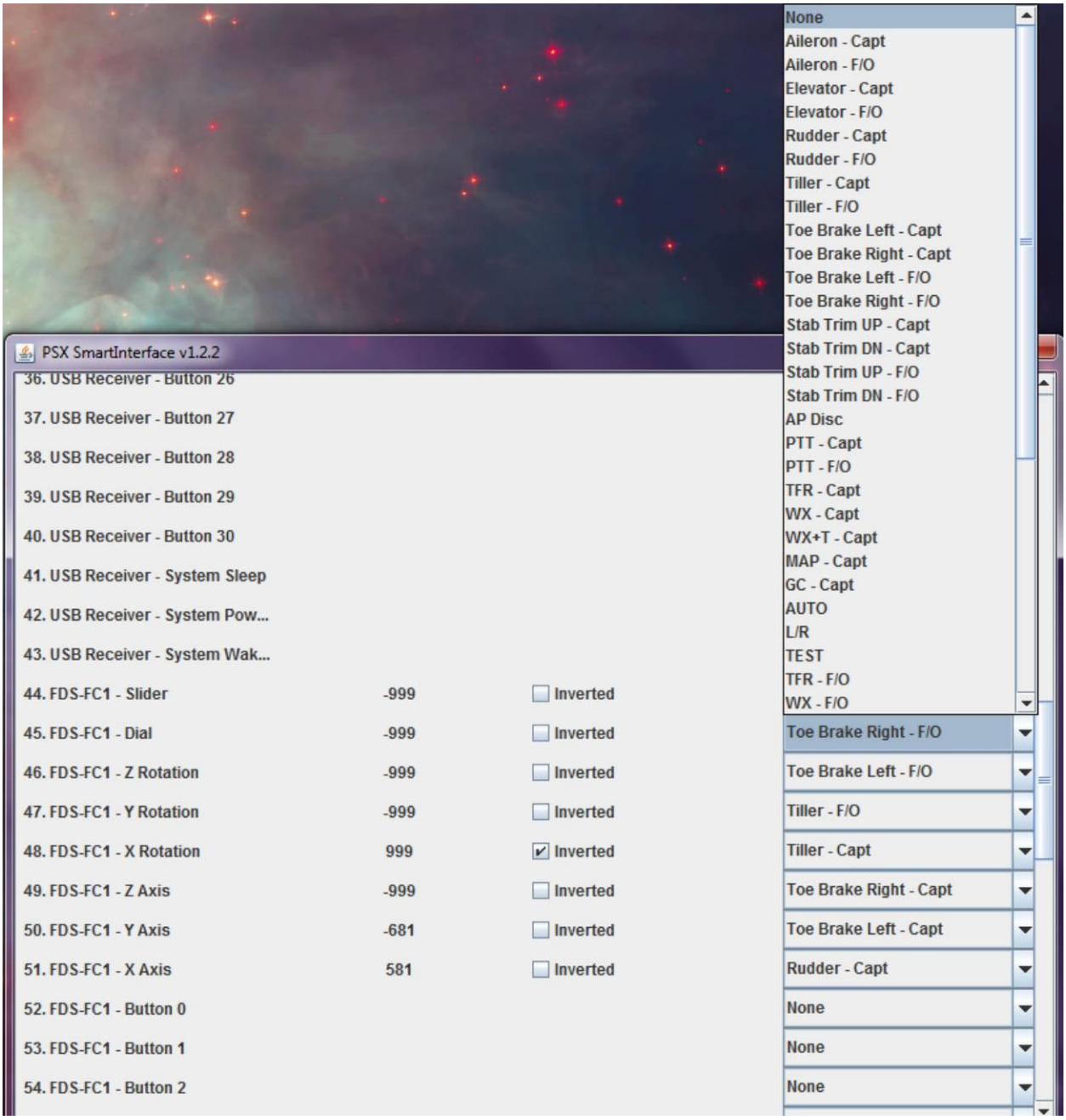
Launching SmartInterface opens the configuration screen. The pull down menu shows the assignable variables for the bottom half of the menu.

The Weather Radar panel configuration below includes assigning some of the buttons to take advantage of the six buttons available on the FC-1 without adding the diode matrix. (Option #2 discussed earlier).

In addition, spare axes on the FC-1 can be used to implement display dimming. In the example below, the captain side PFD and ND displays are assigned to the POTS on the glare shield wings.



The flight controls are assigned per the next screenshot:



The above example shows a USB controller for the rudders, toe brakes and tillers for the 747 simulator. In the above case the rudders are linked so only a **Rudder-Capt** is assigned. However the toe brakes and tillers are not linked so both Captain and First Officer assignments are made. The top assignable variables are shown in the pull down menu.

Finally, a dead zone is automatically calculated and applied to all assigned analog axes.

Multiple copies of SmartInterface can be run on different computer connected to the PSX Server PC. This is useful in cases where flight controls might be terminated on the Server but the radar panel and/or dimmer joystick controllers are on a client PC or in cases where you are happy with your flight controls and just want to add some of the other functions.