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1. Overview

The Lorby-SI “AxisAndOhs” app is designed to manage your joysticks and other controllers individually and automatically for each aircraft that you fly in your simulator. AxisAndOhs will remember each joystick assignment for each aircraft livery. If you already have an assignment for another aircraft of that type in the database, AxisAndOhs will assume and apply the same assignments.

All joystick movements are then routed through the app and control your aircraft in the simulator directly. No other control assignments are required, neither in-sim nor from an external module.
2. Installation

2.1 Distribution

Lorby AxisAndOhs is distributed as a self-extracting installer package.

2.2 Installation

- This application requires .Net version 4.8 to be present on your computer
- Please use the installer LorbyAxisAndOhs_Install_MSFS.exe
Running the installer:

On the first page you may select optional installation targets:

- “Start Menu Shortcuts”: Lorby AxisAndOhs will be added to your Start Menu (advised)
- Selecting “Install” will begin the installation
3. Operations

3.1 Starting the application

– Start your simulator

– Proceed until you are sitting in the cockpit

– Start the Lorby AxisAndOhs app

– Click on the green LED in the top menu bar
  or open the “Connection” menu and select “Connect”
  or set the app to “Connect automatically” in the same menu

– As soon as your aircraft has been detected and the simulation is running, you can start adding axis controls and buttons.
  The LAAO app will remember these settings for each aircraft

– To avoid conflicts with the controller settings in the simulator, the app has features to disable controllers in the sim. You can also disable all controllers in the Controls settings of the sim, but that will also disable mouse look and other mechanisms
3.2 Main Window

- **Assigned Axis:** list of all joystick axis that you have assigned to this aircraft
  
  +/-: to add or remove an axis assignment.

- **Assigned Buttons:** All or your button assignments (Joystick, MIDI and keyboard) that you added to this aircraft
  
  +/-: to add or remove a button assignment.

- **Disable simulator controllers:** to disable or reset individual controllers in the simulator (requires restart)

- **Manage Joysticks:** special dialog to handle changes to your physical controllers (replacing joystick etc.)

Assignments for controllers that are not attached will be highlighted in red.
3.3 Handling joystick axis assignments

3.3.1. Assign a new axis

To assign a new axis to your aircraft, click on the green “+” below the axis list on the left. This will open the assignment dialog.

Select either one of the pre-configured axis OR any assignable simulator event.

Move the desired joystick axis until it shows up in the textbox.

Press “Add” to save this assignment or “Cancel” to discard it.
3.3.2. Calibrate an axis

Every assigned axis is calibrated directly on the main dialog, by hovering your mouse cursor over the various controls and turning your mouse wheel.

- Click on the triangle, hold the mouse button down and drag the mouse left/right to make larger adjustments
- Spin mouse wheel here to adjust center point
- Activate and spin mouse wheel to apply response curve
- Activate to reverse axis movement
- Spin mouse wheel in the grey area to adjust center deadzone
- Spin mouse wheel here to adjust left margin/deadzone
- Spin mouse wheel here to adjust right margin/deadzone
3.3.3. Change an axis assignment

“Smoothness” and “Filter” determine how the value transmitted by the joystick device is translated into an axis value. “Smoothness” controls the shape of the response curve, a “Filter” value > 1 forces an averaging function on the axis to iron out “fluttering” potentiometers.

Press “Change” to save this assignment or “Cancel” to discard it.
3.3.4. Remove axis

Click on the control to select it

Hold “Ctrl” while clicking to select more than one axis at the same time

Click “-“ to remove the selected controls
3.4 Handling button, MIDI and keyboard assignments

3.4.1. Assign a new button

To assign a new button to your aircraft, click on the green “+” below the Button list on the right.

Press the desired joystick button until it shows up in the textbox

OR

move the desired control sending MIDI notes

OR

Type keyboard keys a-z, 0-9, shift, ctrl, alt

Keyboard combinations must be input in sequence, do not press all keys at the same time.

Example; For “Shift&Ctrl&F” you would press “Shift”, release it, then press “Ctrl”, release that and finally press “F”

This is only relevant for keyboard controls. Activate this if the simulator is overriding your keyboard combo

Select if the event is to be repeated while the button is held down and set the desired speed

Select the event that is to be sent when the button is pressed

Select the event that is to be sent when the button is released

Assign a virtual key sequence to be sent when the button is pressed

Press “Add” to save this assignment or “Cancel” to discard it.
3.4.2. Sending values to events

With some events you can send specific values when the button is pressed. Spin the mouse wheel over the numerical control to the right of the selection box to set that value:

3.4.3. Virtual keys

If you assign a virtual key sequence to the button, the app will send those keys when the button is pressed, simulating a keyboard input of those characters and keys. You can assign a sequence of keys too.

In this example, the app would send Shift&Ctrl, keep them active and then send A – S – D in sequence, releasing Shift&Ctrl after the last character.

To assign a virtual key, activate the “Assign” checkbox. Your keyboard input will then be redirected to the textbox on the left. Deactivate “Assign” to return to normal operations. Use “Clear” to remove the assignment and clear the textbox.
3.4.4. The button assignment control on the main list

Event when button is pressed

Event when button is released

Assigned control

Activity indicator

Repeat setting

Controller (XBOX 360 For Windows) Button <2>

Controller (XBOX 360 For Windows) Button <1>

SHIFT CTRL F (Sim)
3.4.5. Change a button assignment

The “Change Button Assignment” dialog works the same way as the “Add” dialog (see chapter 3.4.1).

Press “Change” to save this assignment or “Cancel” to discard it.
3.4.6. Remove button assignments

Click on the control to select it
Hold “Ctrl” while clicking to select more than one button at the same time
Click “-” to remove the selected controls
3.5 Using the event selection boxes

There are more than 1000 simulator events that could theoretically be triggered with a button press. The combobox just lists all of them, please refer to the SDK documentations for the exact usage of the “Event-IDs”.

3.5.1. Type in the event name

ADF_FRACT_INC_CARRY (Increments ADF 1 frequency by 0.1 KHz, with carry)
ADF_SET (Sets ADF frequency (BCD Hz))
ADF1_RADIO_TENTHS_DEC (Decrements ADF 1 by 0.1 KHz)
ADF1_RADIO_TENTHS_INC (Increments ADF 1 by 0.1 KHz)
ADF1_WHOLE_DEC (Decrements ADF 1 by 1 KHz, with carry as digits wrap.)
ADF1_WHOLE_INC (Increments ADF 1 by 1 KHz, with carry as digits wrap.)
ADF2_1_DEC (Decrements the ADF 2 frequency 1 digit, with wrapping)
ADF2_1_INC (Increments the ADF 2 frequency 1 digit, with wrapping)
ADF2_10_DEC (Decrements the ADF 2 frequency 10 digit, with wrapping)
ADF2_10_INC (Increments the ADF 2 frequency 10 digit, with wrapping)
ADF2_100_DEC (Decrements the ADF 2 frequency 100 digit, with wrapping)
ADF2_100_INC (Increments the ADF 2 frequency 100 digit, with wrapping)
ADF2_COMPLETE_SET (Sets ADF 1 frequency (BCD Hz))
ADF_FRACT_DEC_CARRY (Decrements ADF 2 frequency by 0.1 KHz, with carry)

To make finding a specific event easier, you can just start typing the name of the event on your keyboard, the list will try to scroll to those events that match your input.
3.5.2. Using the selection dialog

A Right-Click on the combobox opens the selection dialog:

- Doubleclick on an Event-ID to select it.
- Input part of a text to search in the event list, then press “Apply Filter”.

Filter example: searching for “trim”
3.6 Using Templates

You can save a joystick configuration as a “Template”, so you can apply them quickly to new aircraft.

Saving a configuration as a Template

Once you have finished setting up your controls, use the top menu “Templates → Save current setup as template”
Applying a Template to your current aircraft

When your aircraft has been recognized, use the top menu “Templates → Apply a template to this aircraft”

Important note

Joystick assignments in AxisAndOhs are always individual assignments for each aircraft. A change in the template will NOT update all aircraft configurations that were built with it.
Applying an existing configuration to your current aircraft

When your aircraft has been recognized, use the top menu “Templates → Apply other config to this aircraft”

- Doubleclick the source aircraft
- Or single click and press “Apply”
- Delete the configuration selected in the list
4. **Mouse Yoke**

AxisAndOhs has options to use your mouse as a flight control device. You can use the mouse as yoke, rudder, throttle or spoiler handle. Mouse sensitivity can be changed in the “Tools” menu.

To access these modes you have to assign the corresponding toggle events to buttons or keys:

In this example, “Ctrl C” has been assigned as the yoke toggle. Pressing these keys switches the mouse yoke on, pressing them again switches yoke mode off.
5. Enhanced Power Management (Win 8.1 and later)

The older USB devices will have issues when they are used with a computer that is running Windows 8 or later, because of the “Enhanced Power Management” feature built into these operating systems. The most notable case is the Saitek Multi Panel, where the display would light up, but not show any text on it.

To help with this, you can disable the EPM using the “Win 8/10 Enhanced Power Management” feature in the “Tools” menu.

On this dialog you will see all devices that LAAO recognized and their current EPM status.

Turn EPM off if you experience issues with devices, like missing functionality or the device constantly connecting and disconnecting.

Note: to use this dialog it is necessary to run the app “As Administrator”.

![Windows 8/10 Enhanced Power Management](image.png)
6. **Saitek Panels (Radio, Multi, Switch)**

Lorby AxisAndOhs can manage the Saitek Radio-, Multi- and Switchpanel devices. When you select “Enable Saitek” from the “Tools” menu, the app will search for attached devices and connect them to the appropriate simulator events.

**Radio panel special functionality:**

- When in “DME” mode, the button switches between DME1 and DME2

- the “ADF” setting shows ADF1 on the left and ADF2 on the right. Use the button on the device to switch between the rotary controller altering ADF1 or ADF2.

- In the XPDR setting, the device shows the transponder code on the left and the current QNH on the right. Use the button to switch between editing the transponder code and adjusting the Kohlsmann setting
  - Editing the transponder code: the inner dial changes the numbers, the outer dial select the digit to be altered
  - Changing the Kohlsmann: the inner dial changes the value, the outer dial switches between mb and inHg.
Radio- / Switch- / Multipanel configuration

You can change the parameters for panel operations in the Tools menu

• “Saitek panels enabled” turns the panel connection on or off
• “Ignore sim electrical power” will activate the panel displays regardless of the availability of electrical power in the current aircraft
• “Saitek panel config” opens the event configuration dialog:

The rotary encoders can be set to single or doubleclick action. On older Radio Panels the double click is the default.

On the “Events” dialog you can alter the events that are sent by the switches and dials on the panels. Click once on the item that you want to change in the left list, then doubleclick on the replacement event in the right list. (On the Switch Panel, some controls have multiple simultaneous events associated to them, because the aircraft can have several such devices or items)
Flight Information Panels “FIP”s

AxisAndOhs can integrate Saitek/Logitech “Flight Information Panel” devices.

- It is required to install the original Logitech drivers for the FIP. The installation file for the driver has been included in the AxisAndOhs delivery ZIP file
- *It is NOT necessary or recommended to install a PlugIn from Logitech!*
- Every time before starting AxisAndOhs, make sure that the FIP devices have been activated by the driver.
  - The page up/page down buttons will blink red for a few seconds
  - The screen then turns to the Logitech default animation:

![Logitech Default Animation](image)

The devices can only be used by AxisAndOhs when they are in this state.

- Activate the FIPs connection in the “Tools” menu:
If you want to substitute or add gauges, the definition files are located here:
C:\Users\...\AppData\Local\LORBY_SI\LorbyAxisAndOhs\FipGauges_MSFS

**FIP configuration**

Selecting “Saitek FIP config” in the “Tools” menu opens the configuration dialog:

- The combobox “Select gauge” contains all gauge definitions that are available
- In the column “Label” you can alter the text that is displayed next to the buttons on the FIP
- In the column “Event-ID” you can change the simulator event that is associated with the button
  Right-Click on the text to open the Event selection dialog
- The combobox “Select device” contains all FIPs that are present in the configuration file
- The text below the selection shows the gauge that this FIP is displaying.
  To change it, select a gauge at the top, then press “Change gauge”
- “LEDs on” controls if the buttons on the FIP should be illuminated or not.
7. Desktop FIPs

With the “Desktop FIPs” feature you can create virtual Saitek instruments anywhere on your desktop. To activate it, use the “Tools” menu, and select “Desktop FIPs”

This will open the management console:

- To add a virtual instrument, click on the “+” button
- To change the displayed instrument, select the desired gauge from the grey drop down list
- To remove an instrument, click into the corresponding panel so it turn red, then click on the “-” button

The virtual instruments can be dragged to any location and resized. If the gauge has mouse areas, the four soft keys at the bottom will trigger the associated events (altimeter setting, course, heading etc.)
Saving and loading different instrument layouts

You can save different instrument configuration as “Layouts”.

The button “Layouts” will open the management dialog:

You can

- Save the current instrument layout as a new item or overwrite an existing one
- Load a previously saved layout
- Delete layouts
8. **Manage joysticks**

If you make changes to your controller setup, for example replace a joystick with a new one, replace an USB hub etc., theoretically you would have to reassign all your controls.

To help with that, Lorby AxisAndOhs has a dialog that allows you to manually reassign or delete controllers from the AxisAndOhs database. **Changes aren't permanent until you press “Save”!**

![Diagram of management tool](image)

The list on the left shows all joystick devices that are currently connected to your computer.

The list on the right shows all joystick devices that are present in the AxisAndOhs database.

Devices that match with a connected joystick are shown in **green**, devices that are no longer present are shown in **red**.

Doubleclick on a line to get details about where the controller is assigned exactly.
-> Replace ->

With this button you can replace a joystick device in the database with a different (connected) one. The typical use case would be that you have replaced a joystick or if Windows has decided to rearrange the USB devices representing the joysticks (and your assignments no longer match the controller they were made for).

- Select the new device in the left list
- Select the device that is to be replaced in the right list
- Press “-> Replace ->”
- After a safety dialog, the app will replace the old joystick with the new one.
- Press “Save” if you are happy with the changes.

Clear ->

With this button you can set a certain joystick device to represent an “empty” joystick. This is useful if you have to make a replacement but already have the new device in the database, or if you want to disable a certain controller.

- Select the device that is to be cleared in the right list
- Press “Clear ->”
- After a safety dialog, the app will replace the old joystick with an empty device.
- Press “Save” if you are happy with the changes.
Delete ->

This will completely remove the selected entry from the right list. Use this if you have assignments in the database that are obsolete or that you are not using any more.

– Select the device that is to be cleared in the right list
– Press “Delete ->”
– After a safety dialog, the app will delete the selected device from the database.
– Press “Save” if you are happy with the changes.

Disconnecting and reconnecting joysticks

A device that is disconnected while the app is running is being ignored. When you reconnect it, you must direct AxisAndOhs to scan for joystick devices, or, better still, just restart the app.

To scan for devices you can use the “Rescan Joysticks” button on the “Manage Joysticks” dialog.
## 9. File handling

**Database**
Lorby AxisAndOhs is using a simple XML file to store all your joystick assignments. The file is named differently for each simulator that you installed the app for, and it is located here:

```
“C:\Users\...\AppData\Local\LORBY_SI\LorbyAxisAndOhsMSFS\ConfigDatabase.xml”
```

The file is saved in 4 “generations”, so if something goes wrong you can return to an earlier state of the file by renaming the n-th backup “ConfigDatabase_n.xml” to “ConfigDatabase.xml”

**Startup log**
This file lists all events that occurred during startup of the application. It is used for debugging purposes, should the app not start at all.

```
“C:\Users\...\AppData\Local\LORBY_SI\LorbyAxisAndOhsMSFS\LAAO_Startup_log.txt”
```

**Other logfiles**
Error in the app will be written to logfiles in this location. If you have duplicate aircraft definitions in the simulator, for example after an Alpha update, they will also be listed in a logfile here.

**App configuration**
Setting concerning the app itself are saved in this file

```
“C:\Users\...\AppData\Local\LORBY_SI\LorbyAxisAndOhsMSFS\LorbyAxisAndOhsConfiguration.xml”
```
10. **Settings and Tools**

The settings that can be selected for the app can be accessed in the top menu:

- “Connect” connects to the sim.
- “Connect automatically” does that when the app is started.
- “Minimize automatically” minimized the app to the task bar.

The “Tools” menu contains additional features:

- “Win 8/10 EnhancedPowerManagement” see chapter 4
- “MIDI devices enabled” controls if the app should use your MIDI devices
- For Saitek device setup, see the previous chapters

The app may have to be restarted after MIDI or Saitek Devices have been enabled.
11. Disclaimer

Lorby AxisAndOhs is provided free of charge, for private use only. All property rights remain with the author. You may not distribute this package or parts of it. Disassembling, refactoring or changes of any kind are prohibited.

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