Assign functions in X-Plane

X-Plane 11 & 12 - Windows PC companion guide

Make your panel part of the aircraft.

Follow on from the PWS-I/O32 User & Installation Manual. Use the real inputs from your working board to choose aircraft commands in X-Plane.

Start with one pushbutton
Then add a maintained switch, encoder, throttle lever or force-sensitive brake. Keep the aircraft parked while you test.

The normal assignment workflow is shared by X-Plane 11 and 12. Profile management requires X-Plane 11.10 or later; per-axis response curves are available from X-Plane 11.30. Use your installed aircraft instructions for special controls.

The board wiring and calibration stay in the first manual. This guide starts where you choose what each control does in the simulator.

Find your next step

Set up one simple function in a standard aircraft before assigning an entire panel.

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Joystick in X-Plane includes button boxes, throttles and pedals. **Command** means an action such as lights on or heading increase. **Axis** means a continuous input such as a throttle or brake force.

Official Laminar Research screenshots show example controllers, not a Propwash preset. Choose your Propwash device in the Device list. A generic board can be usable even when no picture or ready-made assignments are supplied.

Before opening X-Plane

Prove the control reaches Windows, then assign it in the simulator.

Check the board before the simulator

1. Finish wiring and calibration using the PWS-I/O32 User & Installation Manual. Write the working settings to the board and save a configuration backup.

2. Open the Windows Run box with Windows + R, enter **joy.cpl** and open the Propwash controller Properties. Press each test button or move the test lever.

3. Record the button indicator or moving axis. Use movement detection in the simulator rather than assuming SW1 is Button 1 or AX02 has a particular axis letter.

4. Leave other controls still while capturing an input. If another lever jitters, correct it before scanning. Test one function at a time with the aircraft parked.

If a Windows test display does not show all your button numbers, also check the Configurator monitor and the simulator input capture. A missing indicator alone is not proof of a failed control.

THE BOARD FILE AND SIMULATOR PROFILE ARE DIFFERENT

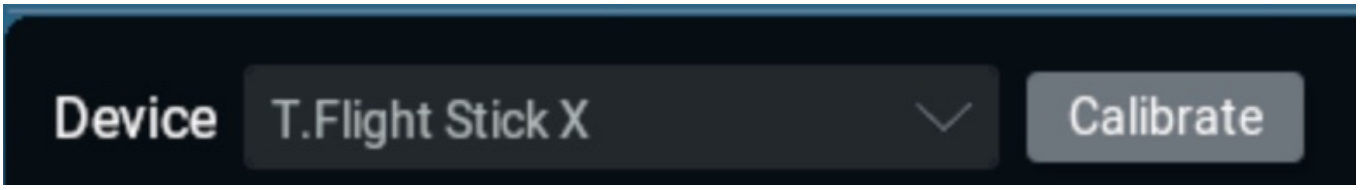
The board file stores input behavior and calibration. A simulator profile stores the aircraft commands assigned to those inputs. Keep both.

Decide what kind of input you have

Input	Use in X-Plane
Pushbutton	A command such as a light toggle
Maintained two-position switch	Separate explicit ON and OFF commands
Encoder	Separate increase and decrease commands
Potentiometer or load cell	Axis function, such as throttle or left toe brake

Select the board and find a button

In X-Plane 11 or 12, open Settings > Joystick and choose the Propwash device in the Device list.



Laminar Research close-up: Device selector and Calibrate. Select Propwash rather than the illustrated controller.



Laminar Research example of button rows and their Edit controls. Your list may use different numbers.

1. Press and release the pushbutton you want to assign. Watch which button row lights or becomes selected. Use that row, even if its number differs from Windows.

2. Click **Edit** beside that row to choose a command. Unknown devices can initially show Do nothing or None; that simply means they need assignments.

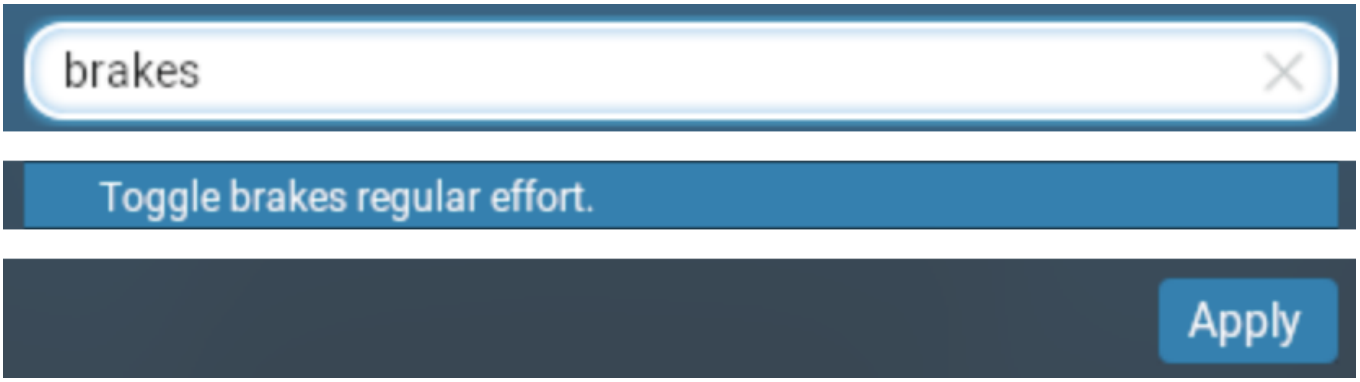
Do not copy the example button numbers from the picture. If you do not see the response, check the selected device and scroll the list. Leave other controls alone while finding your input.

NO BOARD PICTURE IS REQUIRED

A controller illustration is a convenience. What matters is the selected device and the row that responds to your real button.

Choose a command and test it

Example: a momentary pushbutton for a light toggle. Use a light that exists on your chosen aircraft.



Laminar Research command picker close-ups: search field, selected command, then Apply. This example searches brakes; use your own search word.

1. In the command picker, search a useful word such as beacon. Choose the matching toggle command if offered. Read the description rather than choosing a similarly named axis.

2. Click **Apply**, then **Done** to return to the aircraft.

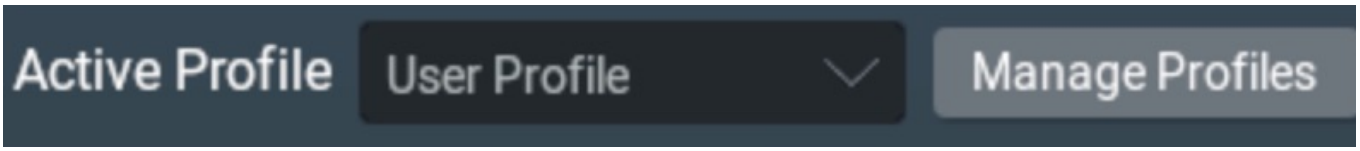
3. With electrical power available, press once and observe the light. Press again. Check that no unrelated function changes.

This is a pushbutton example. A toggle command changes the current state; it does not mean that a maintained panel switch has reliable ON and OFF positions. For that switch, use page 9.

For a temporary parked test matching the picture, a brake toggle can also demonstrate a button assignment. Remove that test assignment before using the same button for a different panel function.

Save a profile for the aircraft

Profiles store joystick and keyboard choices together. Use different names when aircraft need different functions.

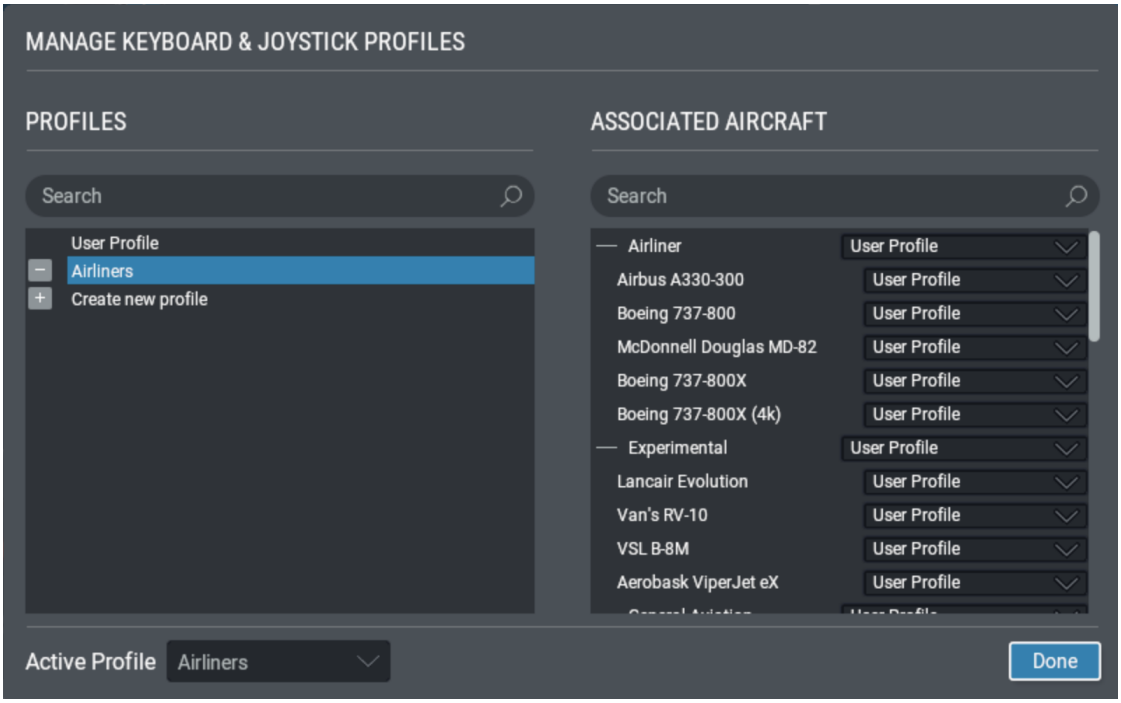


Laminar Research close-up: Active Profile and Manage Profiles.

1. From Active Profile, choose **Save as New Profile**. Name it, for example PWS - C172. Current assignments are copied into the new profile.

2. Make changes in that profile. Open **Manage Profiles** and associate it with the intended aircraft or aircraft group.

3. Load that aircraft and check the active profile before testing. Keep a separate copy for experiments.

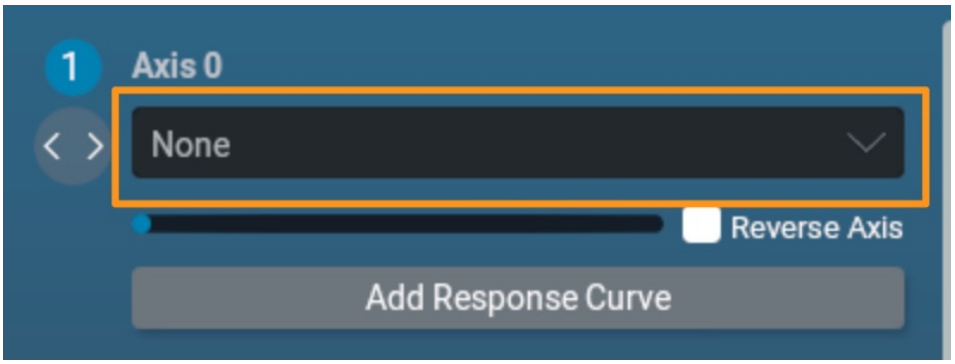


Laminar Research example: profile names at left; associated aircraft at right.

Do not casually delete a profile to fix one wrong command. First check the active name and aircraft association. Profile changes can also affect keyboard assignments, so keep a record of any shortcuts you rely on.

Calibrate and assign a lever

Example: a potentiometer on AX02 becomes a throttle. Do the board calibration first, then let X-Plane learn the reported range.



Laminar Research close-up: axis function dropdown, movement bar, Reverse Axis and Add Response Curve.

1. In Settings > Joystick, select Propwash and use **Calibrate** or **Calibrate Now**. Follow the range and centering prompts. Move each used lever through its safe full travel.

2. If the wizard waits on an unused input, use its Skip/Ignore option. Do not move an unwired channel or overload a sensor to satisfy a progress bar.

3. Find the bar that follows your throttle. Choose **Throttle** from that row function dropdown. Set unused axes to **None**.

4. If movement is opposite, use **Reverse Axis** and test again. Close with Done.

Your own acceptance test

With the aircraft parked, check idle, quarter, half, three-quarter and full throttle travel. Watch the cockpit lever for a smooth, consistent movement. If it jumps or is overridden, look for another controller assigned to throttle before changing the board wiring.

For separate engine levers, use the matching engine-specific throttle choices instead of an all-engine assignment. Use the aircraft instructions for reverse, beta and detents; a basic single-engine example does not establish an airliner detent calibration.

Use load cells for wheel brakes

A force sensor should provide a proportional axis, not merely a brake-on button. Start with both cells working in the PWS Configurator.

1. In the Configurator, unload each brake, capture Zero / Tare, apply the intended maximum force and Set Maximum. Enable Output, write and verify rest/part/full force in Windows.

2. Select Propwash in X-Plane Joystick settings. During calibration, use only the safe operating force you chose; release the sensor for its unloaded/rest condition.

3. Find the changing left sensor axis and assign **left toe brake**. Assign the right sensor to **right toe brake**. Identify each by force, not by guessed axis numbers.

4. With parking brake released, check no force means no wheel braking. Apply a little force, then full operating force to each side separately.

5. If a side is backwards, use Reverse Axis in X-Plane, preserving the board direction that made Force rise. Avoid changing both layers together.

AFTER A NEW TARE

Set maximum again in the Configurator and write the settings. Recheck X-Plane range calibration if the board endpoints or response changed.

What to check in the aircraft

Look for independent left and right brake response. Do not judge a wheel-brake axis with the parking brake engaged, or assign the same brake axis on two different controllers. Some aircraft add their own brake logic; compare a standard aircraft if the input is good but braking is not.

No rudder/yaw assignment is required merely to use two brake sensors. Do not replace an existing rudder axis with a brake-force input.

Give a toggle ON and OFF states

For a maintained two-position switch, make two complementary button outputs on the board, then bind explicit state commands.

1. Read the board in the Configurator and save a backup. Open Button Config. Move the maintained switch and identify its changing Physical input.

2. Use its existing Normal row as the ON output if that row is active in your desired ON position. Choose a second unused row with the **same Physical input** and Function **Normal**.

3. Set **Invert input** differently on the two rows: one unticked, the other ticked. Keep shift, timer and logic choices unset. Do not use an encoder input for this example.

4. Write the configuration. Verify in the Configurator and, where visible, joy.cpl that one output is active in each position. Use simulator capture to record the host buttons as ON and OFF; exchange names if their states are opposite.

Physical switch position	Expected Windows result
ON	ON button pressed; OFF button released
OFF	OFF button pressed; ON button released

This intentionally uses two joystick buttons for one physical switch. Changing earlier assignments can affect host numbering, so identify and record the result after writing. Keep the original backup until both directions are proven.

In X-Plane, find the ON output row and assign the aircraft light-on command. Assign the OFF row to the matching light-off command. Use the available named commands; do not bind both outputs to the same toggle action.

Test OFF -> ON -> OFF, then restart a flight with the switch in each position. An initially held button is not a guarantee of startup synchronization in every aircraft. If a direction is wrong, correct the assignment names after testing.

If only a toggle command is available, retain a momentary pushbutton for that action or follow the aircraft maker supported integration method. Virtual release buttons in a custom device definition are an advanced alternative; they are not created by the normal Edit button dialog.

Add an encoder or selector

An encoder turns steps into two button pulse streams. A contact selector provides separate input states. Treat them differently.

Example: heading-bug encoder

1. Confirm the clockwise and counterclockwise button pulses in Windows. Record both. Do not change the board decoder if it already gives reliable pulses.

2. On X-Plane Joystick settings, turn slowly one way and select the responding button row. Assign the aircraft heading-bug increase command if offered.

3. Turn the other way and assign heading-bug decrease. Close the settings and test one detent each way while parked.

4. Compare slow and rapid turns. If direction is wrong, exchange the two command assignments. If movement continues after stopping, compare board queue behavior and the chosen command.

A switch selector is not a heading axis

For an ON-OFF-ON contact switch, test the two end inputs independently. The center may produce neither input, so it does not automatically issue a center command. Use separate position commands or the aircraft supported method when a center action is required.

For a multi-position selector, record the button for each actual contact position and choose an explicit position command when one is offered. Avoid assigning repeated toggle commands and hoping the current aircraft state stays synchronized.

A KNOB PUSH SWITCH IS SEPARATE

Assign it as its own button command. Do not confuse its contacts or command with the two turn directions.

Adjust feel after calibration

Keep correct endpoints and direction before changing the response. Use a saved profile so you can compare changes.

Adjustment	Use it for
Control Sensitivity	Overall pitch, roll and yaw response. This is not a cure for wrong wiring.
Add Response Curve	Per-axis shape, including more detailed range behavior where supported.
Small null/dead zone	A little unwanted rest movement after signal/wiring checks.
Aircraft detent settings	Aircraft-specific idle, reverse, beta, feather or cutoff behavior.

X-Plane 12 includes per-axis curves. In X-Plane 11, those curves require 11.30 or later. For a first setup, keep the axis linear. Make one small change and retest rest, a small movement, half travel and full travel.

For a load-cell brake, begin with a linear force response and confirm smooth release. A large deadzone can hide the first part of useful brake force. Do not change tare, maximum force and the simulator curve all at once.

Your PWS curve and X-Plane curve combine. Keep one layer neutral while tuning the other. Stability assistance changes how the aircraft flies; it is not the same as calibrating the input device.

A useful before/after test

1. Write down the current profile and setting. Move the same control through the same test each time.

2. Make one change, repeat the test and compare.

3. If the result is worse, restore the prior setting instead of adding another correction elsewhere.

When a special function is missing

First prove the ordinary assignment workflow in a standard aircraft. Then investigate the selected aircraft command support.

1. Load the intended aircraft before searching for its commands. An add-on may register its own choices only after it loads.

2. Search by a short system word, such as beacon, battery or heading. Read the available command names rather than assuming a command used by another aircraft is equivalent.

3. If a default action is ignored, use the aircraft maker instructions to find its supported command or integration. Keep those assignments in a separate profile.

4. If the aircraft exposes only an internal value and no bindable command, normal joystick Edit is not a general-purpose value editor. A supported plugin or aircraft-specific bridge may be needed.

Do not start by editing configuration files

A custom joystick definition can add advanced switch/release behavior, but it must match the device and avoid existing button numbers. It is not necessary for the simple button, lever and paired ON/OFF examples here.

For normal assignments, work through the Joystick screen. Do not paste a button index or command path from an unrelated controller into a file and expect it to match the Propwash panel.

A GOOD SUPPORT REQUEST

Include X-Plane version, aircraft/add-on version, selected profile, detected device/input and exact command label. State whether the same control works in Windows and in a standard aircraft.

Find the failing layer

Start with the real input, then the selected device, axis/button assignment, active profile and aircraft response.

Symptom	Check in order
No Propwash device	Verify joy.cpl, data cable and connection before launch. Restart if discovery did not update.
No device picture	A picture is optional. Select the device and assign the rows that respond.
Button row does not respond	Select the correct Device; scroll. Check Windows and the board logical assignment.
Button number differs from Windows	Detect by pressing it. Lists can number inputs differently. Do not guess an offset.
Axis is dead	Board Output enabled and written; correct moving row; X-Plane calibration and function.
Calibration waits forever	Check unused axes; Skip/Ignore unused inputs rather than forcing movement.
Duplicate-axis warning	Remove the duplicate on the other controller. Each normal flight function should have its intended source.
Throttle or brake reversed	Use Reverse Axis, then check rest and both ends.
Switch only works one direction	Use the two-output ON/OFF method; verify both command rows.
Works in one aircraft only	Check active profile, aircraft association and custom command support.
Encoder skips or overshoots	Compare Windows pulses with slow/fast simulator response; inspect queue and command behavior.

A duplicate axis can fight your intended input. Select other attached devices and check their assignments too, not just the Propwash board.

Record your working panel

Save the PWS board file and record the X-Plane profile/aircraft association before expanding your setup.

Control	X-Plane input / command
Pushbutton	_____
Maintained ON / OFF pair	_____
Encoder clockwise / counterclockwise	_____
Throttle / AX label	_____
Left / right brake source	_____
Active profile / aircraft	_____

Final check: test each state; test unloaded brake release; inspect duplicate axes; restart and confirm the profile; keep a spare working profile before experiments.

Official help and picture credits

X-Plane 11 desktop manual: flight-control setup

X-Plane 12 desktop manual: buttons, axes and curves

Laminar Research: joystick and keyboard profiles

Laminar Research: joystick troubleshooting

Simulator screenshots: Laminar Research desktop manual, cropped for readability. X-Plane is a Laminar Research product; this Propwash companion guide is independent. Aircraft-specific command support and menu wording may differ.