PSP stereoController²

The correction tool for dual channel stereophonic signals

Operation manual

Acknowledgements

Special thanks to all PSP users who has been with us since the release of the original PSP StereoPack.

Thanks to all our users around the world for ideas and help in the development of new plug-ins!

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PSPaudioware.com s.c.
Bugaj 12;
05-806 Komorów,
Poland.

OVERVIEW

PSP stereoController[2] is a redesigned version of one of our first plug-ins: PSP StereoController. It is designed to control, adjust, and rescue incorrectly recorded dual channel stereo tracks, or process them for specialized applications or cool sonic tricks.

Features

- High quality signal processing algorithms
- Up to 2 ms of delay - can repair up to ~68 cm / 2 ft of distance mismatch between mics
- Width expansion up to 400% for narrowly recorded stereo tracks
- Master gain control up to ±12dB
- Optional dedicated width and gain controls for Low and/or High frequencies
- Low and High band gain control up to ±6dB
- Stability (sides) balance control without affecting the center content localization
- Center control to adjust the panorama location of the center content
- Standard balance control of channels
- M-S decoder
- Output monitoring and solo capability for Mid and Side signals
- Channel swap
- Polarity switches for both channels
- Correlation meter
- Balance meter
- Dedicated sections for Low and High frequency level and width control
- Parameter filtering for smooth and click-free parameter adjustment
- Support for sample rates up to 384 kHz

Applications

PSP stereoController^2 can be used in various situations:
- unbalanced stereo image due to level difference between channels, e.g. in dual microphone stereo recordings
- slight time alignment shift between channels
- a track's stereo image is too narrow or too wide for the mix
- when the center instrument seems to be shifted to one side
- virtually emulating an instrument's location in the soundfield via combined level and delay panning
- one or both channels have reversed polarity, or the channels are swapped
- decoding a Mid-Side (M-S) encoded track into L/R stereo
- reducing the stereo width of low frequencies, or making them mono, for proper speaker or subwoofer replay or for reliably cutting vinyl
- widening stereo width of high frequencies for more 'airy' harmonics and spaciousness
- fine adjustment of stereo imaging during the mastering process

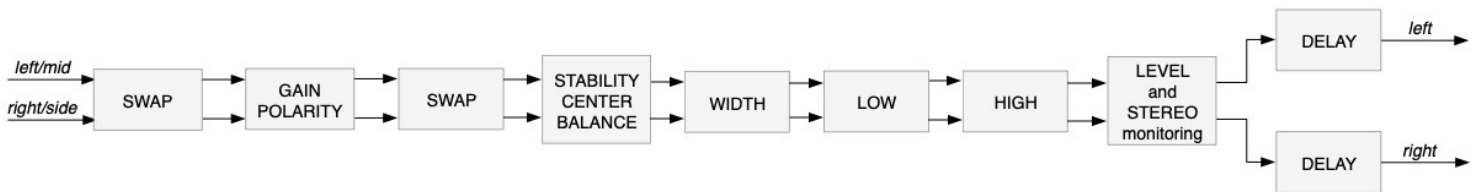# PSP stereoController² Block Diagrams

PSP stereoController² has two possible signal flow configurations, depending on the delay's location in the chain.
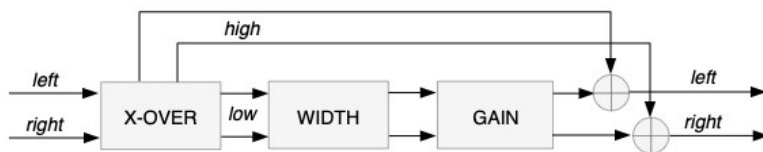
Standard delay configuration for time alignment of recorded tracks.
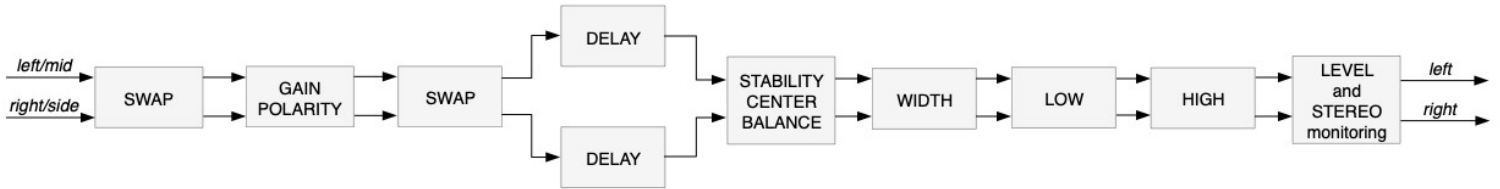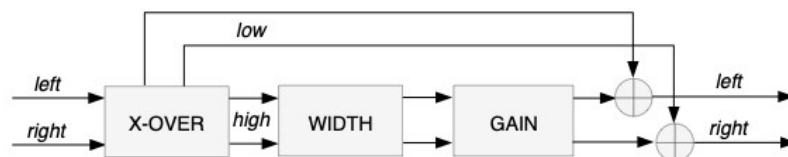

Delay "POST" configuration for panning and time shifting of channels.

Low frequency processing (highs are bypassed)

**High frequency processing (lows are bypassed)**

USER INTERFACE

Most of PSP stereoControl2's controls are located on its Front panel, giving instant access to most processing parameters. The exceptions are the Back panel (Global and Plug-in Settings) and the Left and Right sidebars (Low and High Frequency Controls), which we discuss below.

Although the plug-in looks simple, we recommend that you read this manual to get the most out of all included features.

Display area

The Display area contains several controls and meters.
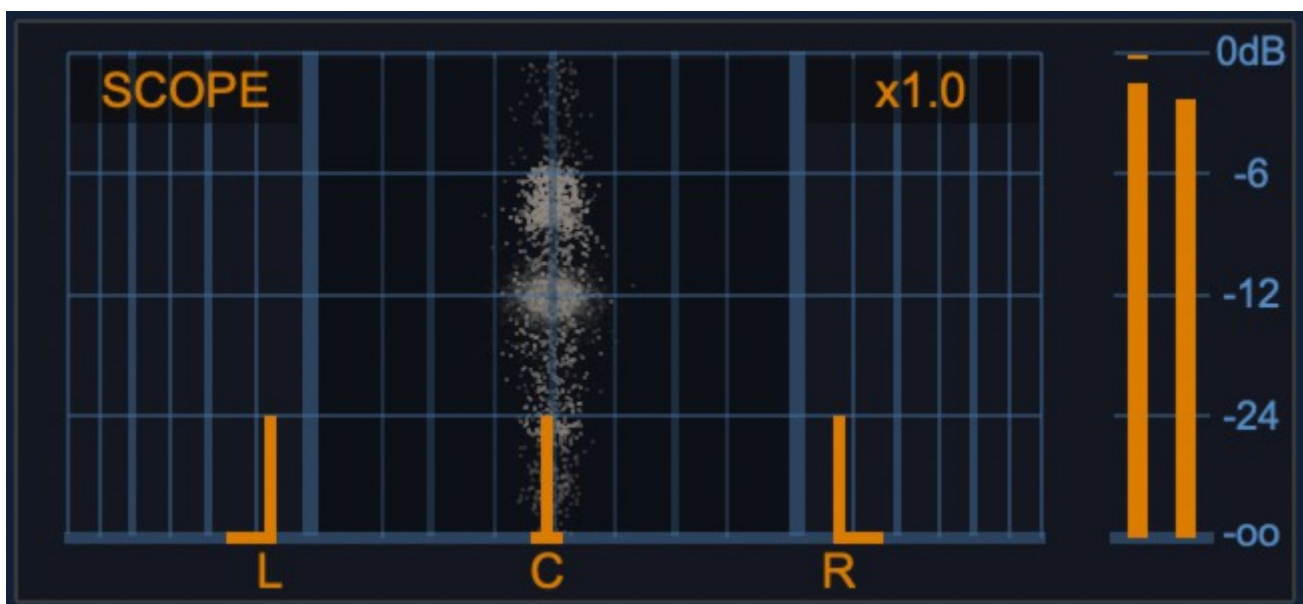
SCOPE – the goniometer oscilloscope is engaged when this label is orange. Click SCOPE to engage or disengage the goniometer.

The oscilloscope uses the display's center square area to display a stereo picture of the input signal. The shape and direction of the displayed 'cloud' gives information about the input signal's stereo content.
* A vertical line indicates a pure mono signal.
* A horizontal line indicates a mono signal with inverted polarity on one channel.
* A line from top left to bottom right indicates the signal is only in the left channel.
* A line from bottom left to top right indicates the signal is only in the right channel.
* A typical stereo signal gives a vertical 'cloud' shape like the one in the picture above; the 'cloud' grows wider if the signal contains uncorrelated Left/Right information.

x1.0 – click and drag or scroll over this number to change the goniometer's zoom amount.

METERS – indicate the digital peak level of the signal. They include peak hold lines, and red lines to indicate an overload above 0dB.

Left, Center, and Right markers – The three vertical orange lines indicate the position and time delay of the Left, Center, and Right output signals. They are also controls for several of the plug-in's major parameters. Here's how they work:

The Left and Right markers have vertical and horizontal lines; the Center, a vertical line only.

- Click and drag the vertical lines horizontally to change the Width.
    - Click and drag the Center marker horizontally to adjust the Center position.
- Click and drag the horizontal lines vertically to change the Delay.
    - Shift-click and drag them to change the Stability.
    - CTRL-click (PC)/Cmd-click (Mac) and drag them to change the Balance.

The current operation is displayed in orange at the top of the display area.

Buttons area

M-S – Turns on the M-S decoder at the plug-in's input. This decodes Mid-Side recordings or encoded tracks into conventional L/R (Left/Right) stereo.

SWAP – Swaps the Left and Right channels before any further processing.

L– and R– – Inverts the polarity of the corresponding channel. When the diamond between the buttons is clicked, both the Left and Right channel polarities are inverted.

M (Mid) – Sets the plug-in's output to monitor the Mid (mono) component of the audio.

S (Side) – Sets the plug-in's output to monitor the Side (uncorrelated stereo) component of the audio. Shift-click to listen to the Side component "in phase."

PROC – Turns the entire plug-in's processing on or off. When it's turned off, all controls dim, the signal will pass through unprocessed, and the goniometer scope and meters indicate the state of the unprocessed signal.

Correlation and Balance meters
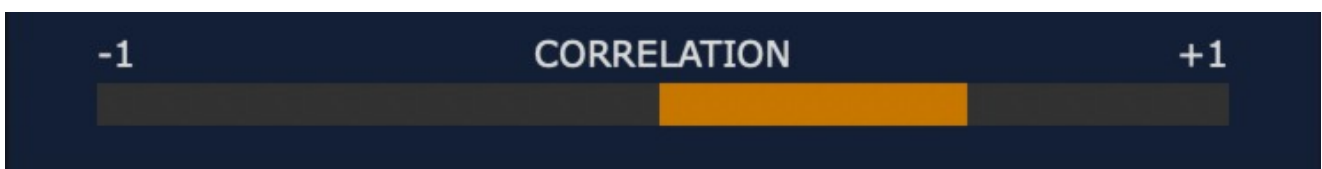
Correlation meter – indicates the ratio between Mid and Side components of the stereo signal. More Mid (L+R mono) audio will move the meter to the right; +1 indicates a mono signal. More Side (L–R out-of-phase stereo) audio will move the meter to the left; –1 indicates Left and Right signals that are completely out of phase.

A setting of 0 is a perfect balance of Mid and Side information. We recommend keeping the meter just to the right of 0; this produces a good compromise between stereo imaging and mono compatibility. Because some radio and streaming applications sum the Left and Right channels to mono, it's important to make sure that stereo audio will be compatible with mono, by verifying that relatively little of the audio content is lost if Left and Right are summed.

Correlation problems can be fixed via the input polarity switches, or width/delay adjustments, depending on the nature and origins of the problem.

Balance meter – indicates the ratio of Left to Right signal level.
If the meter reading stays near the center, the L and R channels are well-balanced. Meter readings to the left of right indicate which channel is louder.

To fix issues with unwanted imbalance please use Stability, Center and Balance controls.

Knobs

DELAY – controls the time delay between Left and Right. With a maximum delay of 2ms, this can correct the time alignment between two microphones whose distances to the sound source are mismatched by up to ~68cm / 2ft (the distance sound can travel in 2ms).
The center setting indicates no delay between channels; double-click the knob to return to this.
Turn the knob to the left to delay the Right channel vs the Left, which stays at 0 delay.
Turn the knob to the right to delay the Left channel vs the Right, which stays at 0 delay.

POST – Click this button to move the delay to the end of the audio chain, post Stability, Center, and Balance (see diagrams for details). When POST is on, you can intentionally adjust the delay between correctly recorded stereo signals, vs. correcting time alignments when POST is off.

WIDTH – controls the stereo width of the signal by adjusting of the Side component of the stereo signal. The range is from 0% (mono) to 400%. Setting up extremely high settings only

makes sense if the goniometer shows a very narrow signal. A boost of the Width value may require cutting the signal level with the Gain knob.

NOTE: Very high Width settings are good for special effects, but should be avoided otherwise. When the Width is set above 100, the indicated value inside the knob will turn ORANGE. Please observe the Scope and Correlation meter to assure that the stereo image is within reasonable bounds – usually Correlation values to the left of center on the meter are potentially dangerous.

GAIN – controls the output gain vs. the input, with a range of ±12dB.
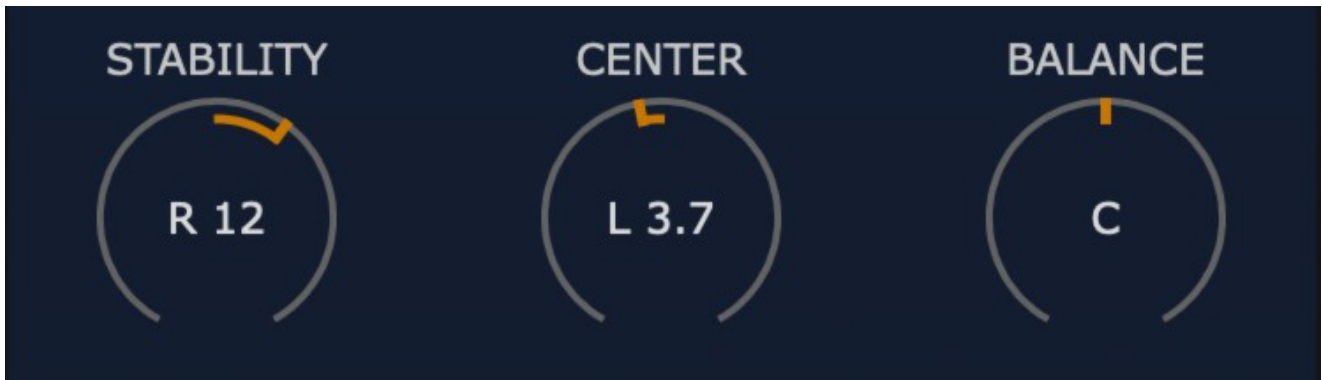
STABILITY – adjusts the balance of Left and Right side signals without affecting the location of the centrally panned signal. It is useful for adjusting the stereo field of a multi instrumental recording that was captured by a single pair of microphones..

CENTER – controls the repositioning of centrally panned signals if they tend to be slightly off axis. It is useful, when combined with Stability, for adjusting stereo recordings made with a single pair of mics.

BALANCE – is a classic Left/Right balance control.
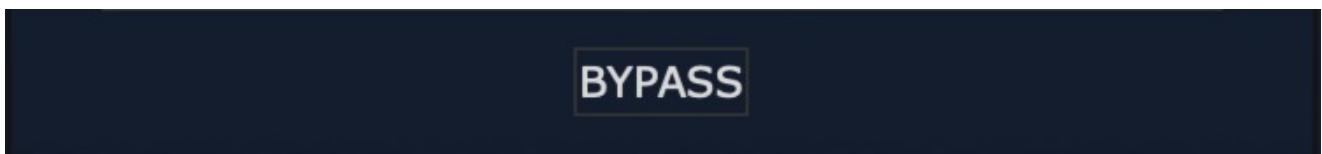
BYPASS – bypasses the main processing patch. Note that all meters will stay active, and this button does not disable the Low and/or High processing if they were enabled.

Back panel

Clicking on the front panel's PSP stereoController label opens the rear panel About box, on the Plugin Settings tab. Click on the link to open the PSPaudioware.com website. Click on any label other than the web site link to close the rear panel and return to the front panel.

The Global Settings tab lets you access this manual or set whether Hints (floating information boxes that appear when hovering over a control) are visible or not. It also shows the installed version of the software, for help with troubleshooting.

Left sidebar

The Low frequency processor comes after the main processor section in the processing chain. It controls the width of low frequencies, and lets you narrow this frequency band and correct its gain.
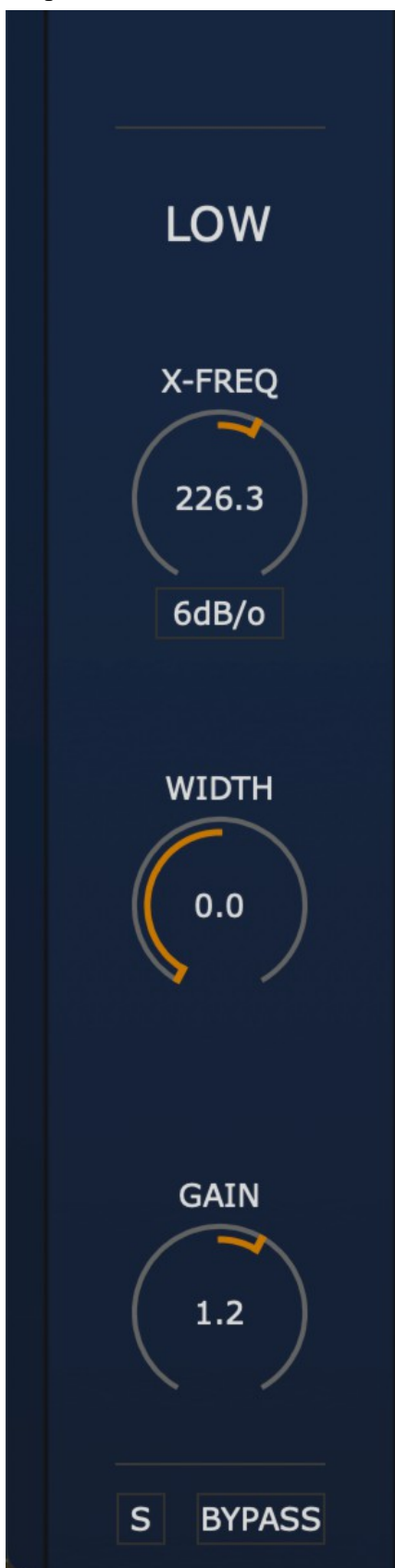
Click on the arrow to the left of the Display area to open the Left sidebar, which opens to show the relevant controls as well as turning on the processor itself.

NOTE: Closing the Left sidebar turns low frequency processing off!

X-FREQ – controls the crossover frequency. Frequencies below the set frequency will be processed according to the Low Width and Low Gain settings. The frequency range is 15Hz to 1500 Hz; the default setting is 150 Hz.

dB/o – selects the steepness of the crossover filters. Click on this display/button to choose 6, 12, or 24 dB/octave.

LOW WIDTH – sets up the width of the low frequency band. The default value is 100, which refers to unchanged stereo width; a value of 0 indicates that the low frequency signal is mono.

NOTE: Extending the Width of Low frequencies can exaggerate low-end phase issues, increase the output level significantly, and can be dangerous to your speakers. To remind you of this, the Width value indicated within the knob will turn RED at values above 100. Please use the Solo function and carefully observe the Scope and Correlation meter for low frequencies. Values left of center on the Correlation meter can potentially be dangerous.

LOW GAIN – adjusts the level of the low band. The default value leaves the level unchanged. You can use this parameter to adjust the amount of low frequency content after narrowing the stereo field.

BYPASS – bypasses the Low frequency processor.

S (Low Solo) – solos the Low frequency processor. All central section meters and the Scope will show the Low section's measurements.

Right Sidebar

The High frequency processor located after the main processor section in the processing chain. It controls the width of low frequencies, and lets you narrow or widen this frequency band and correct its gain.

Click on the arrow to the left of the Display area to open the Right sidebar, which opens to show the relevant controls as well as turning on the processor itself.

NOTE: Closing the sidebar turns high frequency processing off!

X–FREQ – controls the crossover frequency. Frequencies above the set frequency will be processed according to the High Width and High Gain settings. The frequency range is 300Hz to 30kHz, with 3000 Hz as a default setting.

dB/o – selects the steepness of the crossover filters. Click on this display/button to choose 6, 12, or 24 dB/octave.

HIGH WIDTH – sets up the width of the high frequency band. The default value is 100, which refers to unchanged stereo width;. Values below 100 result in narrowing of the high band, and values greater than 100 create an extended side (stereo) component in the high band.

NOTE: Extending the Width of High frequencies can exaggerate high-end phase issues and can increase tweeter output level significantly. To remind you of this, the Width value indicated within the knob will turn ORANGE at values above 100. Please use the Solo function and carefully observe the Scope and Correlation meter for high frequencies. Values left of center on the Correlation meter can potentially be dangerous.

HIGH GAIN – adjusts the level of the high band. The default value leaves the level unchanged. You can use this parameter to adjust the gain after setting the appropriate high band width.

BYPASS – bypasses the High frequency processor.

S (High Solo) – Solos the High frequency processor. All central section meters and the Scope will show the High section's measurements.

PRESET HANDLING AND VIEW OPTIONS

Every PSP plug-in comes with a large library of factory presets. You can use them as a starting point for experimenting with your own sounds, examine them to understand how the various features work, or keep them handy for when a track or mix needs a quick and high-quality way to create an effect or fix a problem.

To access the preset library, just click on the Preset Bar along the top of the plug-in window. If you're familiar with other PSPaudioware plug-ins, you'll find that this one works exactly the same way.
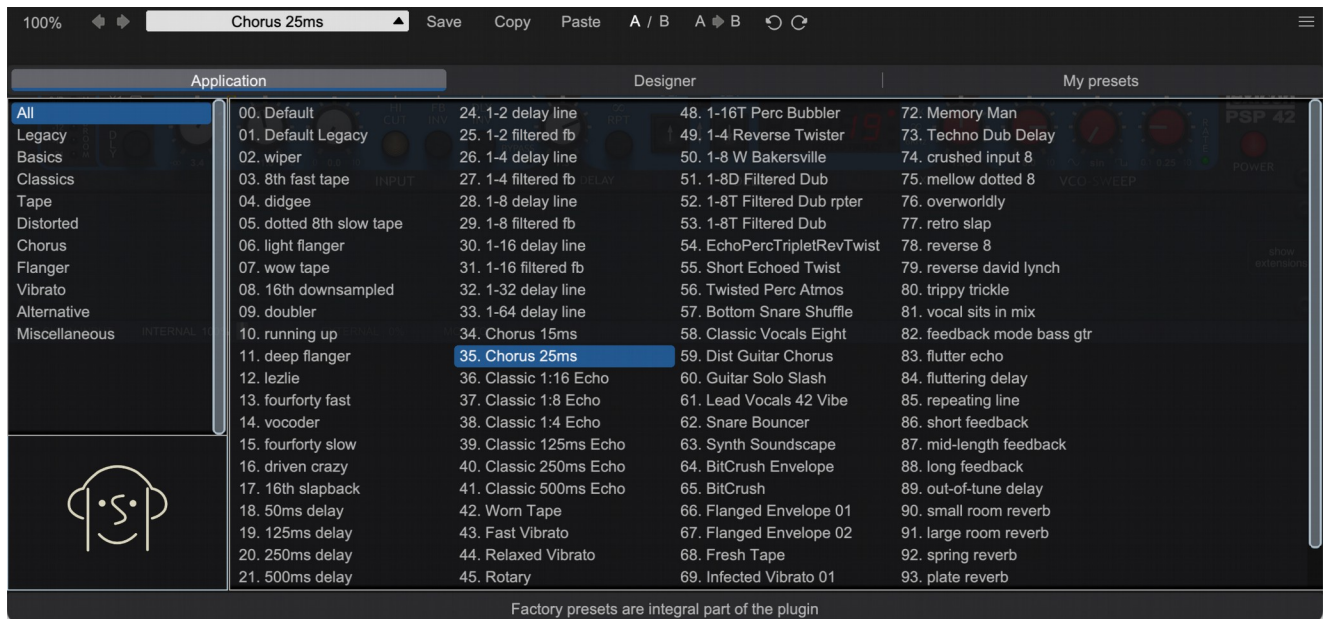
Preset Browser

PSP StereoController[2] features a comprehensive preset management and browser system. To access the preset browser, simply click on the preset name window at the top of the plug-in (which displays 'Default' when the plug-in loads).
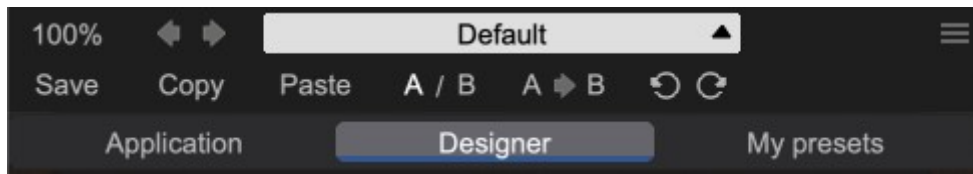
The new preset manager has three main categories which can be accessed via the tabs at the top of the preset browser: **Application**, **Designer**, and **My presets**.

Application – shows all factory presets, sorted by application or type of effect. These can be selected from a list on the left side of the preset browser.

Designer – shows all factory presets, sorted by designer. A photo of the designer is displayed for each of their presets. Click on the photo to open the designer's website.

My presets – shows only the presets you have created and saved, or downloaded and added to your custom presets for PSP StereoController[2].

NOTE: The Factory presets are built into PSP StereoController[2]2. While you can't edit them directly, you can make adjustments to them, and then save the result as a user preset.

To add categories to the preset list, you can create new subfolders in the preset directory.

For Windows users, this is located at:

C:\Users\Username\Documents\PSPaudioware.com\User Presets\PSP StereoController2

For Mac users, this is located at:

~/Documents/PSPaudioware.com/User Presets/PSP StereoController2

NOTE: You can find the exact file location by clicking on the **Show File in Finder** button at the bottom of the preset browser window.
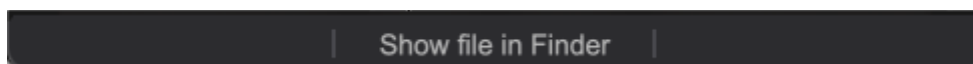
To select a preset, simply click a preset name in the right window. On the first click, the preset will be temporarily loaded so that you can audition it while still in the preset browser. To confirm the preset choice and get back to the main user interface, double-click the preset name again.

Copy / Paste

The **Copy/Paste** feature is useful for when you're running two or more instances of Lexicon PSP42 and you want them to have identical settings.

Of course, you can always open a new instance and load the same preset as your first instance has, but this only works if your first instance hasn't been tweaked at all since the preset was loaded. To share your tweaks between instances, use **Copy** and **Paste**.

To use this feature, simply click the **Copy** button, open a new instance of PSP StereoController[2] where it's needed, and click the Paste button to load the first instance's settings.

This feature can be particularly useful for processing similar instruments or sounds, when only a few minor tweaks are needed for each instance.

A/B System

The **A/B system** lets you quickly audition changes to your settings. You can compare how different tweaks work in a track or mix, or even audition two different presets on the fly.

The **A/B Button** allows you to quickly switch between the current plug-in settings (**A**) and a previous group of settings that you've previously stored (**B**).

The **A>B Button** copies the **A** settings over to the **B** slot. This lets you temporarily 'bookmark' your current settings, make more tweaks, and then compare the new tweaks with your 'bookmarked' settings using the **A/B Button**.
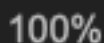
Undo / Redo
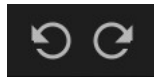
The **Undo/Redo** feature can be extremely important when designing presets! We all know the frustration when we make one too many edits and ruin a previously great sound. With the **Undo** and **Redo** buttons (the counterclockwise and clockwise arrows as shown above), you can step backward and forward through your edit actions until you're back where you wanted to be.

These buttons will let you undo a preset selection, returning you to your previous preset with all settings as they were when you stopped editing it.

GUI resizing

The percentage at the top left shows the current user interface size. Click on it to reveal a dropdown menu of size choices, or hover your mouse on it and scroll up and down to change the size quickly. Double-click to reset it to the default size (100%).

You can also resize the plug-in interface by click- dragging the right bottom corner of the plug-in to any size you like.

Config section

Click the icon with three parallel lines in the top right corner to open the **CONFIG** menu. You will find controls to open the manual, hide or show mouse-hover tool tips (Hints), and check your current plug-in version with build number.
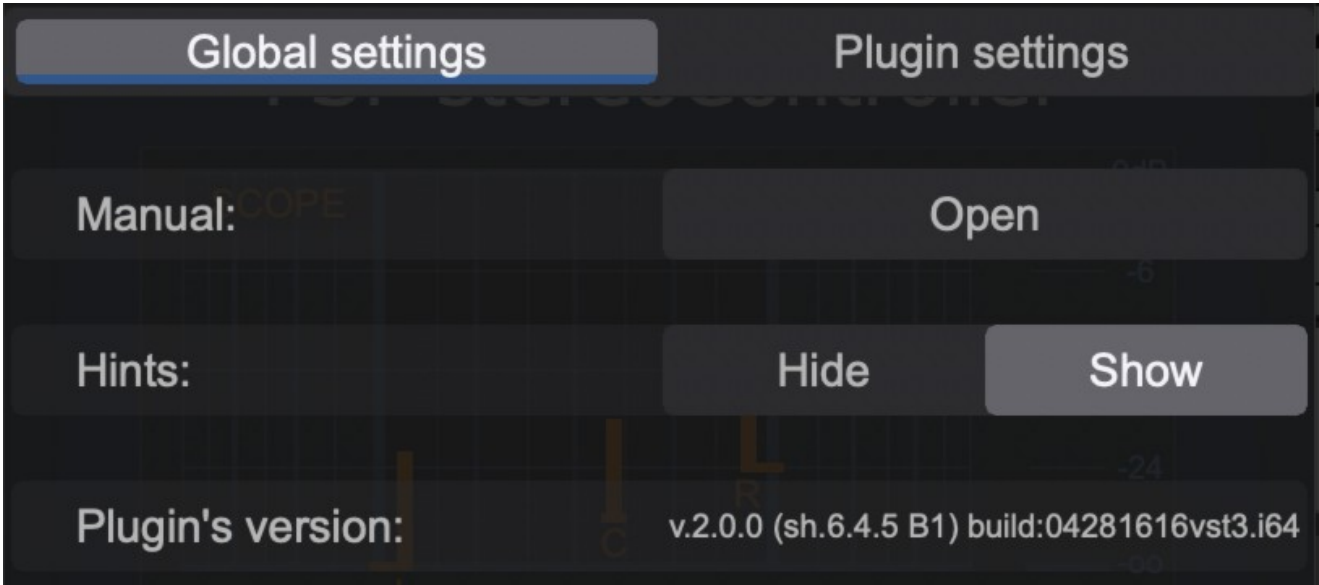
These functions are also available in the **Global Settings tab** on PSP stereoController's back panel, which is accessed by clicking the PSP stereoController name on the front panel.

Clicking the Plug-in Information and Settings tab returns you to the main view.

IMPORTANT NOTE ON PRESET COMPATIBILITY WITH THE LEGACY PLUG-IN:

The new PSP stereoControl[2] is not backward compatible to the legacy PSP StereoController plug-in.

Minimum System Requirements

PC

VST3
• Windows 7 – Windows 11
• 64-bit VST3 compatible application

VST
• Windows 7 – Windows 11
• 64-bit VST compatible application

AAX
• Windows 7 – Windows 11
• 64-bit Pro Tools 11, 12 or Pro Tools HD 11, 12 or Pro Tools Ultimate

All DAWs
• The latest iLok License Manager application installed (iLok USB license key not required)

Mac (both Intel and Apple Silicon processors are supported)

AudioUnit
• macOS 10.12 – macOS 13 Ventura
• 64-bit AudioUnit compatible host application

VST
• macOS 10.12 – macOS 13 Ventura
• 64-bit VST compatible host application

VST3
• macOS 10.12 – macOS 13 Ventura
• 64-bit VST3 compatible host application

AAX
• macOS 10.12 – macOS 13 Ventura
• 64-bit Pro Tools 11, 12 or Pro Tools HD 11, 12 or Pro Tools Ultimate

All DAWs
• Up to date iLok License Manager application installed (iLok USB license key not required)

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Processing

- All internal processing done with 64-bit double precision floats.
- PSP StereoController^2 supports 32-bit and 64-bit floating point audio streams.
- PSP StereoController^2 supports sample rates up to 384 kHz.

Limitations of the demo version

We offer a 30-day evaluation period without any audio interruptions or control limitations. To get access to the plug-in and your unique authorization details, simply login to your account at our [user area](#).

Enjoy !

PSP team

Support

If you have any questions about any of our plug-ins, please visit our website:

www.PSPaudioware.com

Where you can find the latest product information, free software updates, online support forum and answers to the most frequently asked questions.

Problems with the installation, activation or authorization?
Please watch our troubleshooting video tutorials on our YouTube channel.

You can also contact us by e-mail: support@PSPaudioware.com.
We will gladly answer all of your questions. As a rule we respond within 24 hours.

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