PSP DRC

dynamic range controller

Operation Manual

PSPaudioware.com

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We want to thank our beta testers for helping us improve the functionality of our products.

Finally, we want to thank our current and future users. We truly appreciate your support and your investment in our products.

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

PSP DRC – dynamic range controller

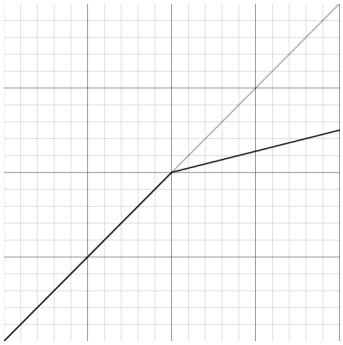
PSP DRC is a dynamic processor inspired by the **DBX 118**. We found that the concept behind this hardware offers processing capabilities that are rare in today's hardware and software, and we believe it is worth revisiting. We decided to add useful features to extend the use cases of this plug-in. However, **PSP DRC** is not an emulation of the original **118** processor or its exact response.

PSP DRC is capable of both compression and expansion across the entire dynamic range of the signal. It can also process only the signals above or below the threshold. With appropriate control settings—except for the **Ratio**, which should be set up to **2:1** in the compressor and down to **1:2** in the expander—**PSP DRC** can function as a complementary compressor-expander pair. These complementary processing capabilities, combined with advanced side chain features and support for an external side chain, allow **PSP DRC** to be used as a full **compander** system.

Principles of operation

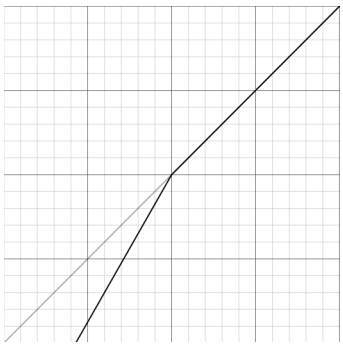
PSP DRC combines classic VCA-style level detection with versatile dynamic processing capabilities, allowing it to handle processing situations rarely addressed by traditional dynamic processors.

Downward compression is the most common compression type, where the processor attenuates signals above the threshold. To achieve this, set **PSP DRC** to **Above** mode and adjust the **Ratio** to values greater than **1:1**, e.g., **3:1**.



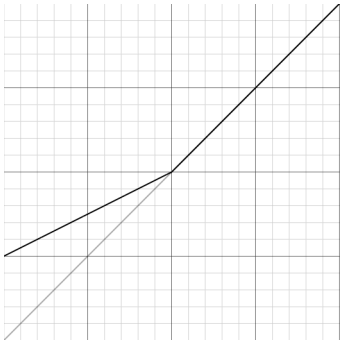
Downward compression using the Above mode.

Downward expansion is a common type of expansion, where the processor attenuates signals below the threshold. To achieve this, set **PSP DRC** to **Below** mode and adjust the **Ratio** to values lower than **1:1**, e.g., **1:2**.



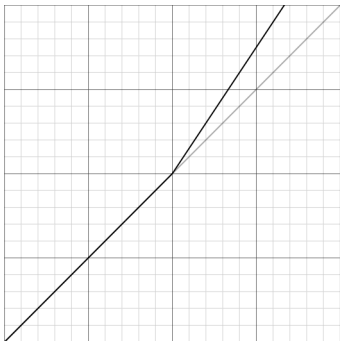
Downward expansion using the Below mode.

Upward compression is a less common type of compression, where the processor boosts signals below the threshold. To achieve this, set **PSP DRC** to **Below** mode and adjust the **Ratio** to values greater than **1:1**, e.g., **1.4:1**.



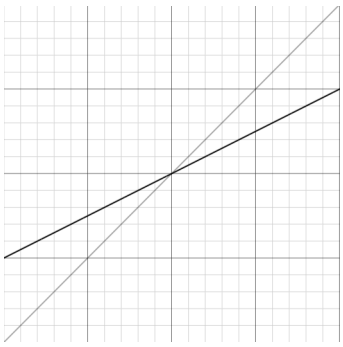
Upward compression using the Below mode.

Upward expansion is an uncommon type of expansion, where the processor boosts signals above the threshold. To achieve this, set **PSP DRC** to **Above** mode and adjust the **Ratio** to values lower than **1:1**, e.g., **1:2**.



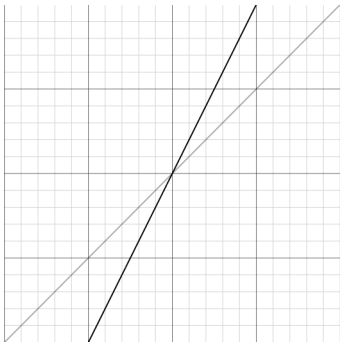
Upward expansion using the Above mode.

Linear compression works across the entire dynamic range. Signals below the threshold (the reference point) are boosted, while signals above the threshold are attenuated. To achieve this, set **PSP DRC** to **Linear** mode and adjust the **Ratio** to values greater than **1:1**, e.g., **2:1**.



Whole range compression using the Linear mode.

Linear expansion also works across the entire dynamic range. In this case, signals below the threshold (the reference point) are attenuated, while signals above the threshold are boosted. Be cautious of extreme peaks that may occur when using a low threshold and a high expansion ratio. To achieve this, set **PSP DRC** to **Linear** mode and adjust the **Ratio** to values lower than **1:1**, e.g., **1:1.4**.

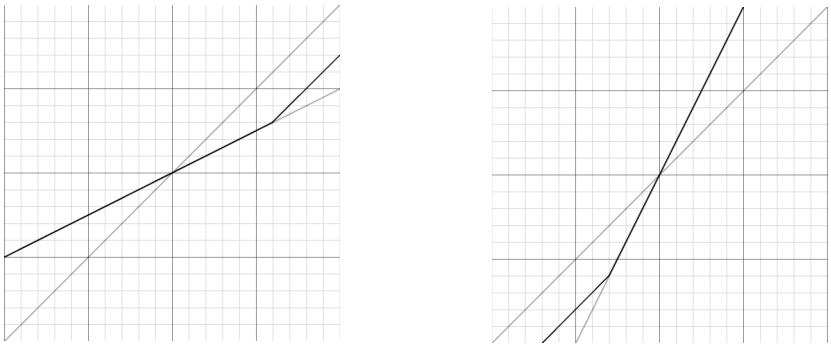


Whole range expansion using the Linear mode.

Compander refers to a complementary pair consisting of a compressor and an expander. To configure a compander, the same level detection, timing, threshold, and side-chain processing must be used, with reversed ratio values—e.g., **2:1** for compression and **1:2** for expansion. While companders are commonly used in analog tape recording, they also open the door to creative applications involving other processing elements, such as tube amp emulations. The companding process introduces its own distinctive distortion, which can be useful for achieving a lo-fi sound aesthetic. A compander typically uses the **RMS** detector to minimize the impact of phase shifts introduced during intermediate processing stages.

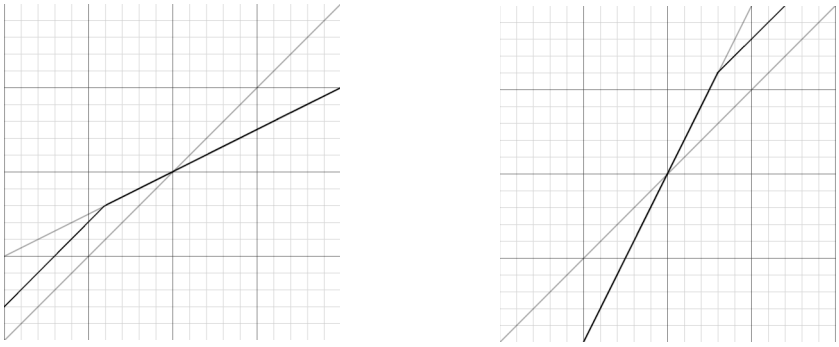
PSP DRC provides **gain boost** and **cut limits** for advanced control over dynamic processing.

The **gain cut limit** sets the maximum amount of attenuation the dynamic processor can apply. Beyond the point where the cut limit is reached, the processing curve becomes linear. Please note that the **cut limit** is applied **above the threshold** (the reference point) during **compression**, and **below the threshold** during **expansion**.



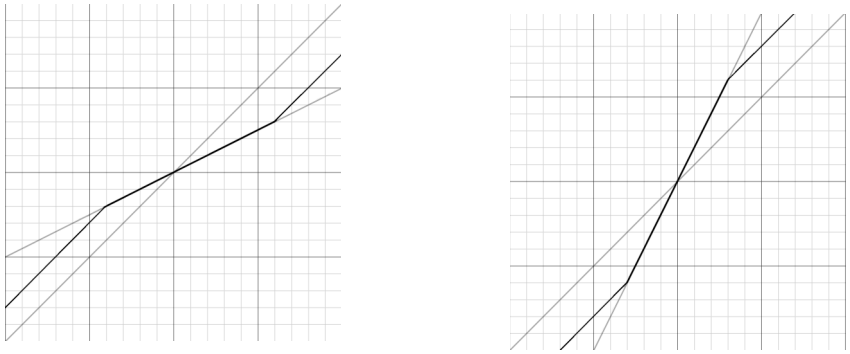
Gain cut limit in action for the compression (left) and the expansion (right).

The **gain boost limit** sets the maximum amount of gain the dynamic processor can apply. Beyond the point where the boost limit is reached, the processing curve becomes linear. Please note that the **boost limit** is applied **below the threshold** during **compression**, and **above the threshold** during **expansion**.



Gain boost limit in action for the compression (left) and the expansion (right).

The **gain cut** and **boost limits** applied to the dynamic processing curve effectively clamp the compression and expansion on both sides of the threshold, resulting in strict limits on the possible gain and attenuation.

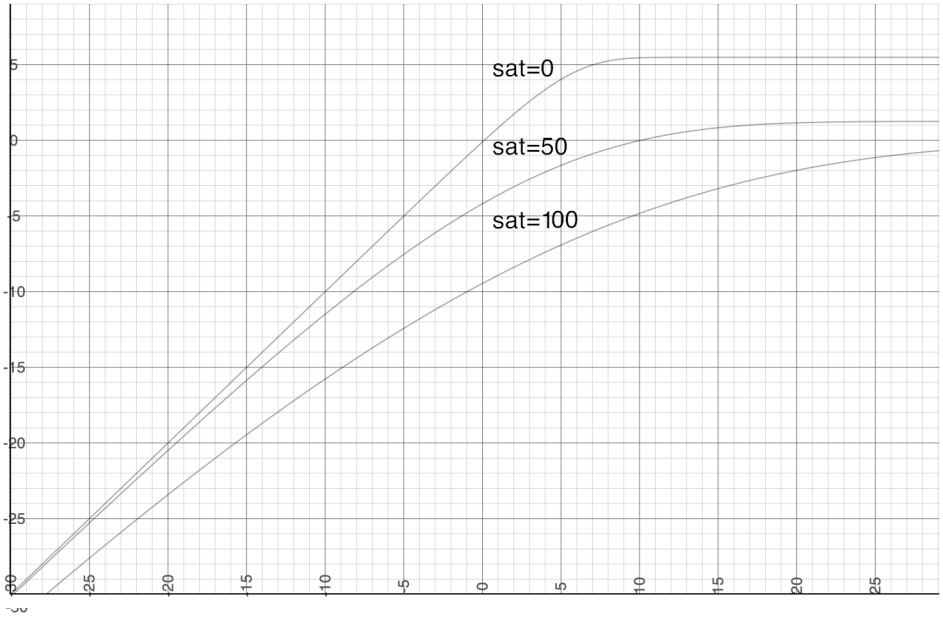


Gain cut and boost limits applied to the compression (left) and the expansion (right).

The **output saturation** is designed to mimic the clipping and saturation characteristics of hardware. It allows for a range of effects—from hard transistor-style clipping to tape saturation and soft, tube-like saturation. The output saturator also helps to control extremely high output levels that may result from aggressive expansion settings.

Although the output saturator can assist in managing high levels, it is primarily intended to add **character** to the sound, not to prevent exceeding **0 dBFS** at the plug-in's output.

The **saturation ceiling** and the **saturation curve** are both variable and depend on the **Sat** knob setting. Actual output peaks may exceed the ceiling level, as the saturation algorithm is not of the brick-wall type.



Output saturation curves depending on the Sat knob setting.

Controls

PSP DRC is not a typical compressor or expander; therefore, it requires an in-depth understanding of its processing capabilities—including upward compression, expansion, and the linear mode functionality. We encourage you to read the **Principles of Operation** chapter to gain a solid understanding of the essential processes inside **PSP DRC**. Familiarizing yourself with this information can significantly enhance how you apply the processor in your workflow.

Horizontal Meter: Displays the average gain boost or cut level.

Gain Limits CUT: Sets the maximum amount of gain attenuation allowed due to downward expansion and compression.

Gain Limits BOOST: Sets the maximum amount of gain boost allowed due to upward compression and expansion.

RATIO: Sets the processor's ratio. In general, a ratio above **10:1** functions as a limiter. Ratios up to **2:1** are considered mild and can be used in a complementary compressor-expander pair for companding purposes. Please note that upward expansion may cause significant level boosts, so use caution when adjusting the **Ratio** knob below its **12 o'clock** position. The **Sat** knob can be used to tame any excessive peaks.

MODE switch: Selects the processing mode:

- **linear** refers to processing across the entire dynamic range, treating the **Threshold** level as a reference point with 0 dB of gain;
- **below** refers to processing signals detected to be below the threshold level, as in a typical expander;

- **above** refers to processing signals detected to be above the threshold level, as in a typical compressor.

Below LED: Indicates that the detected signal level is below the threshold.

Above LED: Indicates that the detected signal level is above the threshold.

THRESHOLD: Sets the processor's threshold or reference point for processing. A 0 dB threshold setting corresponds to -20 dBFS.

ATTACK: Sets the compressor's attack time.

RELEASE: Sets the release time of the compressor.

TYPE switch: Selects the level detector type:

- **peak** refers to a peak level detector;
- **rms 1** refers to a standard RMS detector;
- **rms 2** refers to a smoothed RMS level detector.

Mix: Adjusts the blend of dry and dynamically processed signals. This knob is useful for "parallel" or "New York" compression, or to simply reduce the influence of dynamic processing. Please note that the **Mix** control is placed before the saturation algorithm.

LEVEL: Sets the output gain of the processed signal. Please note that the **Level** control is also placed before the saturation algorithm.

PROC button: Turns the processor on or off. The processor is bypassed when the button is unlit.

FAT button: Enables the quad-sampling **FAT (Frequency Authentication Technique)** mode for ultra-smooth, aliasing-free operation.

SAT: Adjusts the depth and character of the saturation. A higher **Sat** value results in a stronger saturation effect on the output signal.

Sat LED: Indicates saturation activity. Moderate blinking suggests the saturation is affecting signal peaks, while prolonged or continuous illumination indicates a considerable to severe saturation effect.

Side chain EQ – HPF: Sets the cutoff frequency of the side-chain (control) high-pass filter.

Side chain EQ – LowShelf: Sets the gain of the side-chain (control) low shelf filter, which operates below approximately 100 Hz.

Side chain EQ – HighShelf: Sets the gain of the side-chain (control) high shelf filter, which operates above approximately 4000 Hz.

Side chain EQ – On: Engages or disengages the side-chain equalization section.

Side Chain Bar

We provide PSP plug-ins, especially dynamics processors, with the PSPaudioware standard SIDE CHAIN BAR. You access this bar at the bottom of the plug-in interface. Here you can select (mix) the side chain source and switch the plug-in into side chain listening (cue) mode.

INTERNAL/EXTERNAL Mix: The INTERNAL/EXTERNAL Mix slider sets the balance of internal to external signal in the final side chain audio channel.
If your DAW does not provide an external side chain source or is turned off for the plug-in, the side chain audio channel is always set to internal, independent of the mix slider position.

INTERNAL: Click this word to quickly set the mix to 100% internal source.

EXTERNAL: Click this word to quickly set the mix to 100% external source.

EXT LEVEL: Adjusts the +-20dB gain of the external side chain level.

MONITOR: Click this word to switch the plug-in into side chain listening (cue) mode.
When this mode is on, you'll hear the side chain audio that is being processed. To make it even more clear that the side chain input is being monitored, the entire plug-in GUI is covered by an amber colored shell.

SIDE CHAIN LEVEL METER: Shows the signal level of the side chain input.

Rear panel

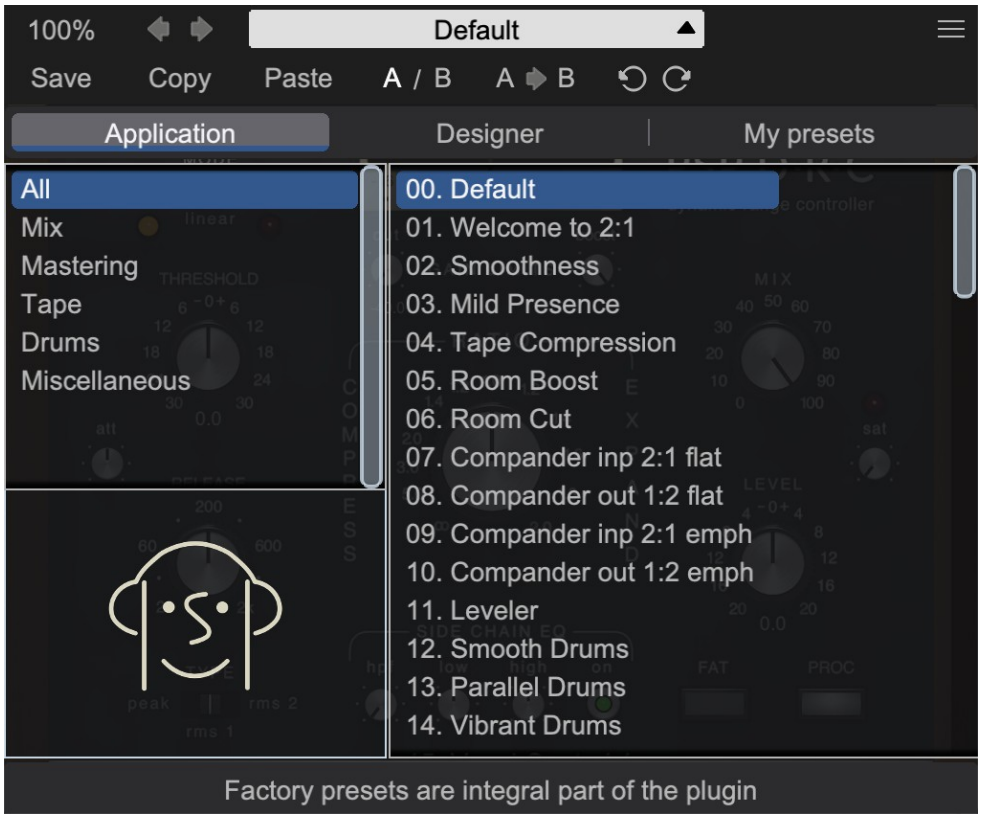
Clicking on the front panel's PSP DRC label opens the rear panel About box, on the Plug-in Settings tab. Click on the link to open the PSPaudioware.com website. Click on any label other than the web site link to close the rear panel and return to the front panel.

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. Please go to the **Config section** of this manual for more details.

PRESET HANDLING AND VIEW OPTIONS

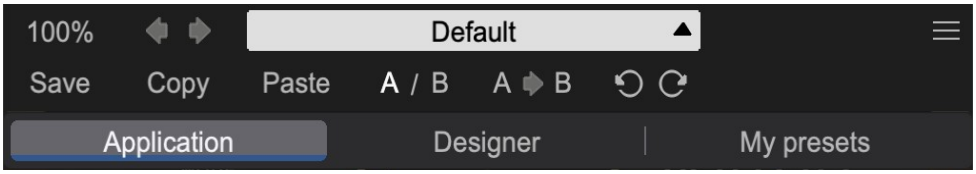
Every PSP plug-in comes with a large library of factory presets. You can use them as a starting point for experimenting with your own sounds, examine them to understand how the various features work, or keep them handy for when a track or mix needs a quick and high-quality way to create an effect or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

NOTE: The Factory presets are built into PSP DRC. 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.

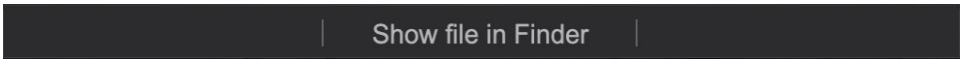
For Windows users, this is located at:

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

For Mac users, this is located at:

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

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 PSP DRC 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 DRC 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.

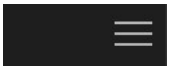
These buttons will let you undo a preset selection, returning you to your previous preset with all settings as they were when you stopped editing it.

GUI resizing

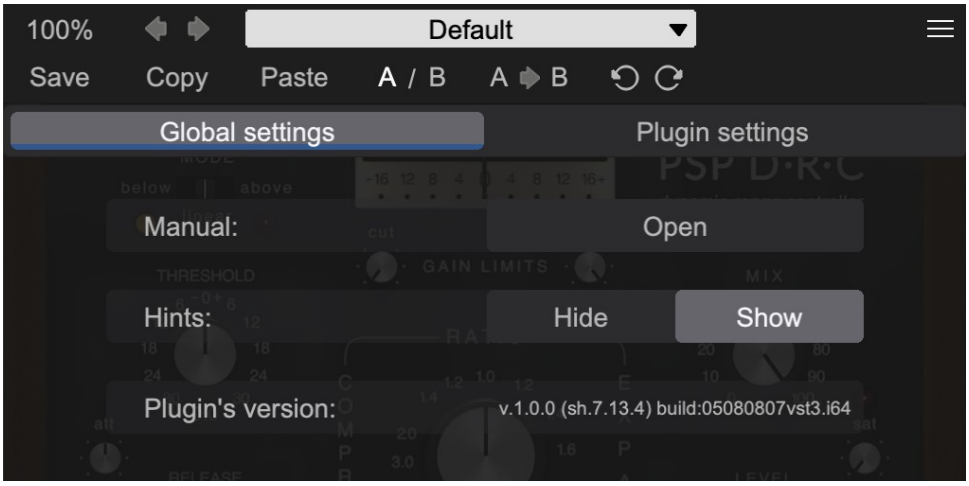
The percentage at the top left shows the current user interface size. Click on it to reveal a dropdown menu of size choices, or hover your mouse on it and scroll up and down to change the size quickly. Double-click to reset it to the default size (100%).

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 DRC back panel, which is accessed by clicking the PSP DRC name on the front panel.

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

Minimum System Requirements

In order to run PSP DRC you need to install the free iLok License Manager application but you don't need any hardware dongle. By default we provide 3 licenses which can be activated in 3 separate locations, each of which can be either a computer or an iLok dongle (2nd generation or above). You can move these licenses at any time using PACE's iLok License Manager software.

Windows

VST
- Windows 7 – Windows 11
- 64-bit VST 2.4 compatible application

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

AAX
- Windows 7 – Windows 11
- 64-bit Pro Tools

All DAWs
- Up to date iLok License Manager application installed

macOS Intel or macOS AppleSilicon

AudioUnit
- macOS 10.14 – macOS 14 Sonoma
- 64-bit AudioUnit compatible host application

VST
- macOS 10.14 – macOS 14 Sonoma
- 64-bit VST 2.4 compatible application

VST3
- macOS 10.14 – macOS 14 Sonoma
- 64-bit VST3 compatible host application

AAX
- macOS 10.14 – macOS 14 Sonoma
- 64-bit Pro Tools

All DAWs
- **Up to date iLok License Manager application installed**

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Processing

- All internal processing done with 64 bit double precision floats.
- 32 and 64 bit floating point audio streams supported
- Sample rates up to 384kHz supported.
- Latency of 6 samples.

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 authorisation?
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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