

Manual for version **3.15**

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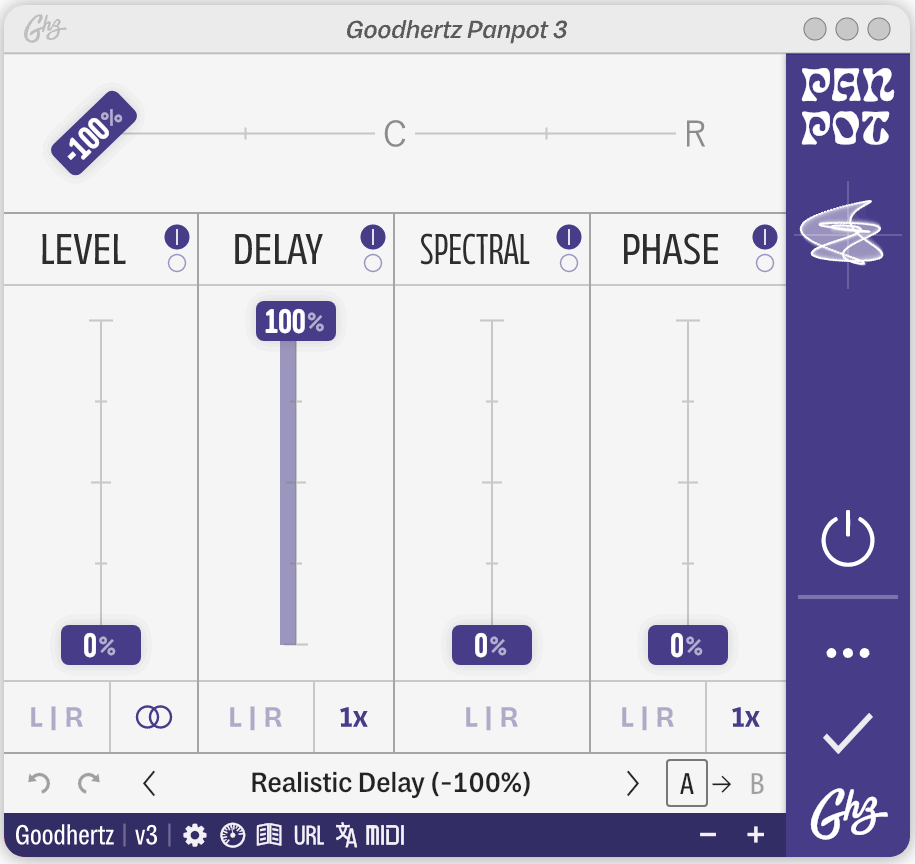
Panpot

New directions in panning

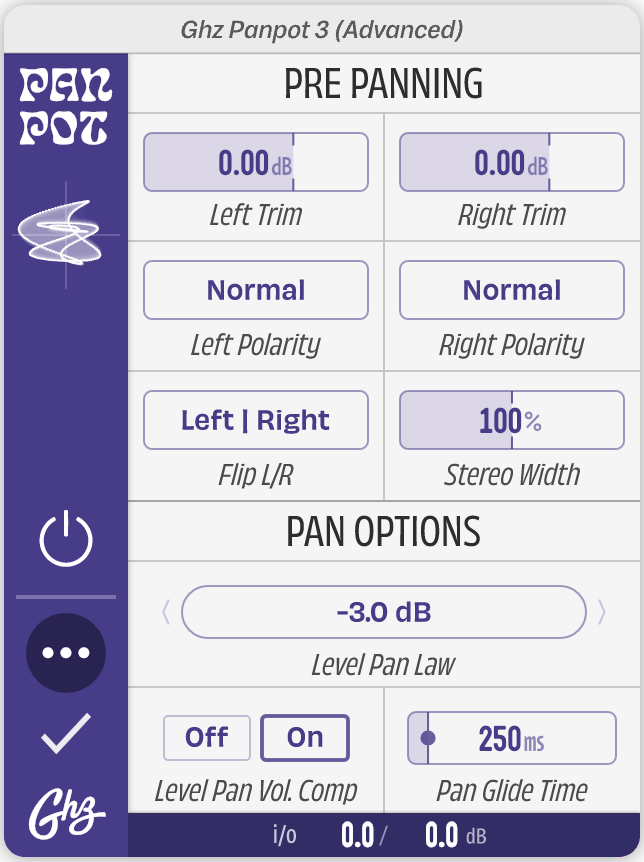
Panpot brings together four different modes of panning in a single plugin that will transform the way you think about stereo. Because **Panpot** is so different from the panner you probably used before, it's worth learning a little bit about how it works and where it came from.

Interface Preview

Here's a screenshot of Panpot in action. Click anywhere on the interface to jump to a control's definition below.



Advanced Controls



Background

There are a few different auditory cues that enable humans to hear spatially — that is, to identify the size, location, and distance of a sound in space. These cues fall into four main categories: *Level Differences*, *Time Differences*, *Spectral Cues*, and *Distance Effects*.

The traditional audio level panner — the one found on almost every audio console since the 1970's — gives an engineer control of only one of these cues: level differences. Level panning works well enough for some things, but it often falls short, forcing us to rely on

other tools (like delays, reverbs, stereo widening, EQ, ...) to achieve more depth and definition in the stereo field.

You can think of level panning as panning in black & white; while you can convey some sense of light and dark, you don't have access to the same depth, nuance, and range that you would if you were working in color. **Panpot** gives you the full color spectrum for stereo audio cues. You can choose to use it however you like: for realistic, hyper-realistic, or totally unrealistic spatial effects — **Panpot** gives you four different panning "colors," but we don't tell you what to paint.

Controls

Primary Controls

Master Pan

Default 0%

Controls the overall pan position.

Panpot's four panning modules (Level, Delay, Spectral, & Phase) are all controlled with a single **Master Pan** control.

At 0%, **Panpot**'s panning modules won't do anything; it's not until you move the **Master Pan** away from 0% that the individual modules begin to act.

Level Pan Module

The Level Pan module acts like a traditional pan knob: altering the left/right balance more as you pan away from center.

Level Pan On/Off

Default On

Turns On or Off the level panning module.

Level Pan Amt

Default 100%

Controls the amount of level panning (based on the position of the Master Pan).

Allows the level panning to be varied from fully On (at 100%) to fully Off (at 0%).

Level Pan Flip

Default L | R

Flips the panning direction for the Level Pan Module only.

Options: L | R, R | L

> For example, Master Pan of -100% [hard left] would become 100% [hard right].

Level Pan Mode

Default Stereo

Switches between two different Level Pan modes: Stereo and Dual Mono.

Option	*Symbol*	*Discussion*
Stereo	◎	Level Pan acts as typical stereo balance pan: as the level of one channel increases, the other decreases
Dual Mono	○○	Level Pan acts as if there were two mono panners: one for left and one for right

> When set to Dual Mono, the Level Pan acts as if there were two mono panners: one for left and one for right.

> At a Master Pan of -100% [hard left], the right channel is panned completely to left — collapsing the stereo image to the left.

> At a Master Pan of 100% [hard right], the left channel is panned completely to right.

Delay Pan Module

The Delay panning module creates a strong sense of sidedness without altering the stereo level balance by using small time delays (less than ~0.7 ms at 1x) that closely model human

hearing delays.

Tips for using Delay panning

- The Delay pan generally enhances the depth & width of a stereo image. Use it when you want something to sound more three-dimensional.
- Use Delay panning when you want to move an element out of the center of the mix without making it feel overly hard-panned.
- Delay Pan + Spectral Pan produces very lifelike panning results.
- Delay panning can sound almost like double tracking, particularly with higher Delay Pan Mult values.

Delay Pan On/Off

Default On

Turns On or Off the delay panning module.

Delay Pan Amt

Default 0%

Controls the amount of delay panning (based on the position of the Master Pan).

Delay Pan Flip

Default L | R

Flips the panning direction for the Delay Pan only.

Options: L | R, R | L

> For example, Master Pan of -100% [hard left] would become 100% [hard right].

Delay Pan Mult

Default 1x

Scales the delay amount by a multiplier.

Multiplier	*Notes*	*Max Delay*
1x	Lifelike	**~0.7 ms**

Multiplier	*Notes*	*Max Delay*
2x	Less lifelike	~1.4 ms
4x	Even less lifelike	~2.8 ms
8x	Not very lifelike	~5.6 ms
16x	Definitely not lifelike	~11.2 ms
32x	Unrealistic	—

Spectral Pan Module

Panpot's Spectral panning works by changing the timbre of the stereo image, focusing higher frequency sounds toward the pan direction. The Spectral algorithm mimics the type of head shadowing that occurs in nature and can sound hard-panned without feeling ungrounded or off-kilter in the low end.

Tips for using Spectral panning

- Spectral panning can sound very focused and directional (especially if the source has a decent amount of high end), yet natural.
- Use Spectral panning when you want to position an element in the stereo field while keeping the bass centered and retaining a solid mono image.

Spectral Pan On/Off

Default On

Turns On or Off the spectral panning module.

Spectral Pan Amt

Default 0%

Controls the amount of spectral panning (based on the position of the Master Pan).

Spectral Pan Flip

Default L | R

Flips the panning direction for the Spectral Pan only.

Options: L | R, R | L

> For example, Master Pan of -100% [hard left] would become 100% [hard right].

Phase Pan Module

The most unusual panning type: **Panpot**'s Phase module creates a constant phase shift between the left and right channels. Similar to Delay panning, Phase panning does not alter the stereo level balance but instead alters the arrival times of the left/right channels.

Tips for using Phase panning

- Like the Delay Pan, Phase panning can help move elements out of the center of a mix, decluttering the mono image and creating a more expansive sound field.
- At 1x, phase panning is highly mono-compatible — useful for producing a bigger, wider stereo image without sacrificing the center.
- You can use the phase pan almost like a stereo widener. Though it will still lean sounds toward the pan direction, it has the least defined panning position of the four **Panpot** modules — great for making mix elements sound more diffuse and less focused.

Phase Pan On/Off

Default On

Turns On or Off the phase panning module.

Phase Pan Amt

Default 0%

Controls the amount of phase panning (based on the position of the Master Pan).

Phase Pan Flip

Default L | R

Flips the panning direction for the Phase Pan only.

Options: L | R, R | L

For example, Master Pan of -100% [hard left] would become 100% [hard right].

Phase Pan Mult

Default 1x

Multiplies the phase shift amount.

Option	*About*	*Discussion*
1x	Mono compatible	90°
2x	Not mono compatible	180°

Master On/Off

Default On

Bypasses **Panpot**'s processing.

We recommend using the **Master On/Off** instead of your DAW's plugin bypass to avoid digital artifacts.

Advanced Controls

The Advanced section offers more precise control and fine adjustment options.

To access **Panpot**'s advanced controls, click the ••• icon in the sidebar.

Pre Panning

Left Trim

Default 0.00dB

Enables left channel gain trimming *before* panning occurs.

ℹ This can be useful to balance (or offset) a stereo source before the panning processing.

Right Trim

Default 0.00dB

Enables right channel gain trimming *before* panning occurs.

Left Polarity

Default Normal

Flips the polarity of the left channel.

Options: Normal, Inverted

Right Polarity

Default Normal

Flips the polarity of the right channel.

Options: Normal, Inverted

Flip L/R

Default Left | Right

Swaps the left and right channels such that right becomes left, and left becomes right.

Options: Left | Right, Right | Left

Stereo Width

Default 100%

Changes the width of the stereo field.

ℹ
- Increasing the **Stereo Width** widens the stereo field, emphasizing elements that are in the *sides* or

outer parts of the mix.

- Decreasing the **Stereo Width** narrows the stereo field, emphasizing elements that are in the center of the mix.
- At exactly `100%`, the stereo field is unchanged.

Pan Options

Level Pan Law

Default -3.0 dB

Enables the selection of alternate pan laws for the Level Pan Module.

Option	*Discussion*
Stereo Balancer	Typically used on stereo mixer channels.
-2.5 dB	Used in older versions of Pro Tools
-3.0 dB	The most common pan law — works well in most situations.
-4.5 dB	The pan law often associated with SSL consoles.
-6.0 dB	Occasionally used in mono-critical situations.

Level Pan Vol Comp

Default On

Provides Level Pan volume compensation such that there will be no level drop when Master Pan is panned center.

Options: `Off`, `On`

Pan Glide Time

Default 250ms

Controls how long it takes the Master Pan to travel from hard left `-100%` to hard right `100%`.

> **Pan Glide Time** can be set via tap tempo. Use the `T` key when the control is highlighted to tap in your desired tempo.

> **Pan Glide Time** can also be typed in as a note value relative to the current tempo, e.g. `1/4` for a quarter note, `1/8T` for an eighth-note triplet, or `1/4D` for a dotted quarter note. The value is set once at the current tempo, so it won't follow later tempo changes.

> ⚠ Clicks and pops may result at extremely fast pan glide times (like `10ms`).

Preprocess Input Gain

Default `0.0`

Controls the input gain *before* it hits **Panpot**'s processing.

Postprocess Output Gain

Default `0.0`

Controls the output gain *after* **Panpot**'s processing.

Specs

Supported Channel Configurations

Input Channel #	*Output Channel #*
Mono	Stereo
Stereo	Stereo

Presets

The presets are a great way to get to know each plugin. The preset drawer can be accessed at the bottom of each plugin by clicking the current preset name.

- **Panned**
  - *Default*
  - *Standard (-50%)*
  - *Standard (-100%)*
  - *Standard (50%)*
  - *Standard (100%)*
  - *Dual Mono (-50%)*
  - *Dual Mono (-100%)*
  - *Dual Mono (50%)*
  - *Dual Mono (100%)*
  - *Lifelike (-50%)*
  - *Lifelike (-100%)*
  - *Lifelike (50%)*
  - *Lifelike (100%)*
  - *Lifelike, Diffuse (-50%)*
  - *Lifelike, Diffuse (-100%)*
  - *Lifelike, Diffuse (50%)*
  - *Lifelike, Diffuse (100%)*
  - *Lifelike, Mono Comp. (-50%)*
  - *Lifelike, Mono Comp. (-100%)*
  - *Lifelike, Mono Comp. (50%)*
  - *Lifelike, Mono Comp. (100%)*
  - *Spectral Focus (-50%)*
  - *Spectral Focus (-100%)*
  - *Spectral Focus (50%)*
  - *Spectral Focus (100%)*
  - *Realistic Delay (-50%)*

- *Realistic Delay (-100%)*
- *Realistic Delay (50%)*
- *Realistic Delay (100%)*
- *Artificial Delay (-100%)*
- *Artificial Delay (100%)*
- *Where is it? (-100%)*
- *Where is it? (100%)*

- **Use Current Master Pan**
  - *Standard (X)*
  - *Dual Mono (X)*
  - *Lifelike (X)*
  - *Lifelike, Diffuse (X)*
  - *Lifelike, Mono Comp. (X)*
  - *Spectral Focus (X)*
  - *Realistic Delay (X)*
  - *Artificial Delay (X)*
  - *Phase Only (X)*
  - *Phase Only, Wide (X)*

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About Goodhertz Plugins

User Interface

Goodhertz plugins are made to be workhorse tools that sound amazing. We've put a lot of thought and care into the audio quality and plugin usability, and for that reason, we've opted for simple and direct controls & interfaces that don't rely on photorealistic knobs or ornamental screw heads to communicate their meaning.

We've also decided to only include meters and graphs when we feel they will directly lead to a better sonic result. Meters/graphs can consume significant CPU resources, and we firmly believe that **if it sounds good, it is good**.

Our meters can be reset at any time using the "Reset Meters" button (in certain plugins) and manually enabled or disabled via the "Enable Metering" User Preference.

Preset Bar

Button	*Action*
↺	Undo the last parameter change.
↻	Redo the last parameter change.
‹	Switch to the previous preset.

Button	*Action*
“Preset Name”	Opens the preset drawer (Option/Alt + Click to reset all plugin settings to preset).
›	Switch to the next preset.
A	Selects the A settings state.
→ ←	This copies the current settings to the opposite A/B state; i.e. if you’re on the A state, clicking the arrow will copy those settings to the B state.
B	Selects the B settings state.

Toolbar

Introduced in version 3.10, the toolbar at the bottom of the plugin holds a handful of shortcut buttons.

Icon	*Action*
⚙	Opens preferences menu
	Shows diagnostic information
	Opens plugin manual in your default web browser
URL	Opens a URL representation of the current plugin control state (Command/Ctrl + Click to copy the URL to the clipboard)
	Opens language-selection menu
	Opens MIDI Learn menu
~~HQ~~ HQ!	Toggles HQ mode (only in certain plugins)
	Resets all meters (only in certain plugins)
–	Shrink interface

Icon	*Action*
+	Enlarge interface

Keyboard Shortcuts

Action	*Keyboard Shortcut*
Enter New Parameter Value	Once you've clicked or double-clicked a control, type in a value, then hit `ENTER`, `RETURN`, *or* `TAB`. Depending on the control type, we support a variety of input values, such as fractions (e.g. 1/4 for 0.25), the kilo suffix (e.g. 4k for 4000), note values for time- and rate-based controls (e.g. 1/8T for an eighth note triplet or 1/4D for a dotted quarter note, relative to the current DAW or plugin BPM), and musical notes for frequency controls (e.g. A#5 for 923.33 Hz or Eb2 for 77.78 Hz).
Increment Parameter Value	`↑` *or* `→` arrow keys
Decrement Parameter Value	`↓` *or* `←` arrow keys
Jump to Next Parameter	`TAB`
Jump to Previous Parameter	`SHIFT` + `TAB` *or* `` ` `` (backtick)
Escape Parameter Focus / Close any Open Drawers	`ESC`
Tap Tempo	`T` *or* **Click** (N.B. For this to work, you must have a BPM, milliseconds, or rate (Hz) control selected.)
Save Preset	`N` (N.B. For this to work, the preset panel must be open.)
Set Preset as Favorite	`F` (N.B. For this to work, the preset panel must be open.)

Action	*Keyboard Shortcut*
Edit Preset	`E` (N.B. For this to work, the preset panel must be open.)
Update Preset	`U` (N.B. For this to work, the preset panel must be open.)
Delete Preset	`DELETE` (N.B. For this to work, the preset panel must be open.)

Right-Click Actions

Action	*Instruction*
Read about Control in manual	Right-Click & select “Show in Plugin Manual”
Reset Control to Default	Right-Click & select “Reset to Factory Default Value”
Lock Control when switching presets	Right-Click & select “Lock When Switching Presets”
Copy current plugin settings to clipboard	Right-Click & select “Copy as URL to Clipboard”
Paste all plugin settings from clipboard	Right-Click & select “Paste From Clipboard”
Reset all plugin settings to Defaults	Right-Click & select “Reset All to Defaults”
Reset all plugin metering	Right-Click & select “Reset Meters” (only available in certain plugins)
Reset all plugin settings to Preset	Right-Click & select “Reset to [preset] Preset”
Update Preset with current plugin settings	Right-Click & select “Update [preset] Preset”
Create new Preset with current plugin settings	Right-Click & select “Create New Preset”
Go to the plugin’s manual page	Right-Click & select “Read [plugin name] Manual”

Right-Click Preferences

Action	*Explanation*
Language	Switch the display language of text elements in Goodhertz plugins. We currently support the following languages: English, Spanish, Portuguese, French, Italian, Japanese, Korean, Chinese (Simplified), Chinese (Traditional), and Arabic.
Advanced Pane	By default, this is *Closed in New Instances* — i.e. when you add a new instance of a plugin, it does not show you the advanced controls available by hitting the ••• button in the sidebar. If you'd like new instances to start with the advanced controls showing, choose *Open in New Instances*. Either way, each instance remembers whether its advanced pane was open, including when you reopen a saved session.
Control Granularity	By default, all Goodhertz controls move in small increments when dragged. If you prefer controls to operate with larger increments by default, change this option to *Coarse*. N.B. This will swap the behavior of the Shift mouse modifier - i.e. Shift-dragging will move a control with standard granularity when set to *Coarse*.
Dark Mode	Allows you to choose the color palette used for displaying the interface. If you prefer the look of dark colors (or work in a darker environment) enable this option. The *Auto* option will automatically adjust the color scheme depending on the system preferences of your machine (Mac only).
Enable Hover Markers	By default, this is *On* — i.e. all controls will show markers on hover. If you find this behavior unnecessary, deselect this option and no markers will be shown.
Enable Metering	By default, this is *On* — i.e. in normal operation, all audio meters and visualizations available in Goodhertz plugins are enabled and running. If you'd like to turn them off and disable all metering and visualization, deselect this option. And to turn them back on, simply reselect it. N.B. If you're struggling to use a large number of Goodhertz plugins on an older processor with an integrated GPU, sometimes disabling metering can help.

Action	*Explanation*
Enable Scroll Input	By default, all Goodhertz sliders can be *scrolled* in addition to dragged. If you find this behavior unnecessary, deselect this option and no scrolling events will be used to control Goodhertz sliders.
Enable Tooltips	By default, this is *On* — i.e. all controls will show a tooltip on hover. If you find this behavior unnecessary, deselect this option and no tooltips will be shown.
GPU Acceleration	By default, this is *Enabled* — i.e. the GPU will be prioritized whenever possible to improve graphics performance. If your graphics card does not support GPU acceleration, this preference will be automatically set to *Reduced*. N.B. If you experience graphics issues, disabling this preference may help.
Keyboard Focus	By default, you can get keyboard focus on any Goodhertz control with a single click. Change this option to ensure keyboard focus only occurs on double clicks.
Window Size	Enlarge or shrink the Goodhertz plugin window by selecting an option here. This will save your preference for all instances of this plugin.
Diagnostics	Displays general information about the plugin and the configuration of your system for diagnostic purposes. If you experience any issues with the plugin, it can be helpful to include this information when contacting us. N.B. Clicking this window will copy the contents to the clipboard.
MIDI Learn	Configure the mapping used to control parameters via MIDI messages. To assign a MIDI number to a control, enable *MIDI Learn* and send a MIDI message while a control is focused. To remove an assigned mapping, click on a mapping entry in the list or select *Clear All* to reset the entire mapping. N.B. You can assign different types of MIDI messages including Pitch Bend, Note, and CC messages.

Mouse Modifiers

Action	*Combination (Mac)*	*Combination (Windows)*
Reset Parameter to Default Value	OPTION + Click	ALT + Click
Move Control with Coarse Precision	SHIFT + Drag	SHIFT + Drag
Move Control with Fine Precision	COMMAND + Drag	CTRL + Drag
Move Control with Normal Precision	Drag	Drag

Automation

Unintentional digital clicks and pops are the worst. They happen for lots of reasons and often end up wasting your time with needless revisions or mastering surgery. When they go unnoticed, they can make their way onto commercial albums and releases.

Plugin automation is a common cause of clicks and pops. Sweeping an EQ band, changing a delay setting, and even automating a plugin bypass can cause digital artifacts if poorly handled.

This is not true for Goodhertz plugins. Any parameter in a Goodhertz plugin, even on/off switches, can be automated freely and smoothly without clicks, pops, or zipper noises (unless otherwise noted). You can push them, pull them, LFO them — whatever you do, they'll handle it gracefully.

Since our Master On/Off controls won't create artifacts, we recommend that you use them rather than your DAW-supplied plugin bypass if you want to disable plugin processing.

Plugin Settings

Goodhertz plugin settings can be copied and pasted as text urls, which look like this: https://goodhertz.com/vulf-comp/3.0.9?cm=0&wf=0&lf=100&lfc=50

To copy and paste, right click anywhere on the plugin interface and select either the copy or the paste option.

E.g. If you paste "https://goodhertz.com/vulf-comp/3.0.9?cm=0&wf=0&lf=100&lfc=50" into Vulf Compressor it will recall the settings associated with that url. This way you can easily send an *exact* plugin setting to someone — in an email or a text — without any guesswork or screenshots.

System Requirements

Mac OS X ≥ 10.13
Audio Unit 64-Bit, VST 64-Bit, VST3 64-Bit, **or** AAX 64-Bit host

Windows ≥ 10
VST 64-Bit, VST3 64-Bit, **or** AAX 64-Bit host

Contact Support

To send plugin feedback, please e-mail us at feedback@goodhertz.com.

If you're having trouble, experiencing a technical issue, or you think you've found a bug, please email support@goodhertz.com.

Find all our contact info & bug-reporting protocol on the contact page.