FARADAY LIMITER

Manual for version **3.15**

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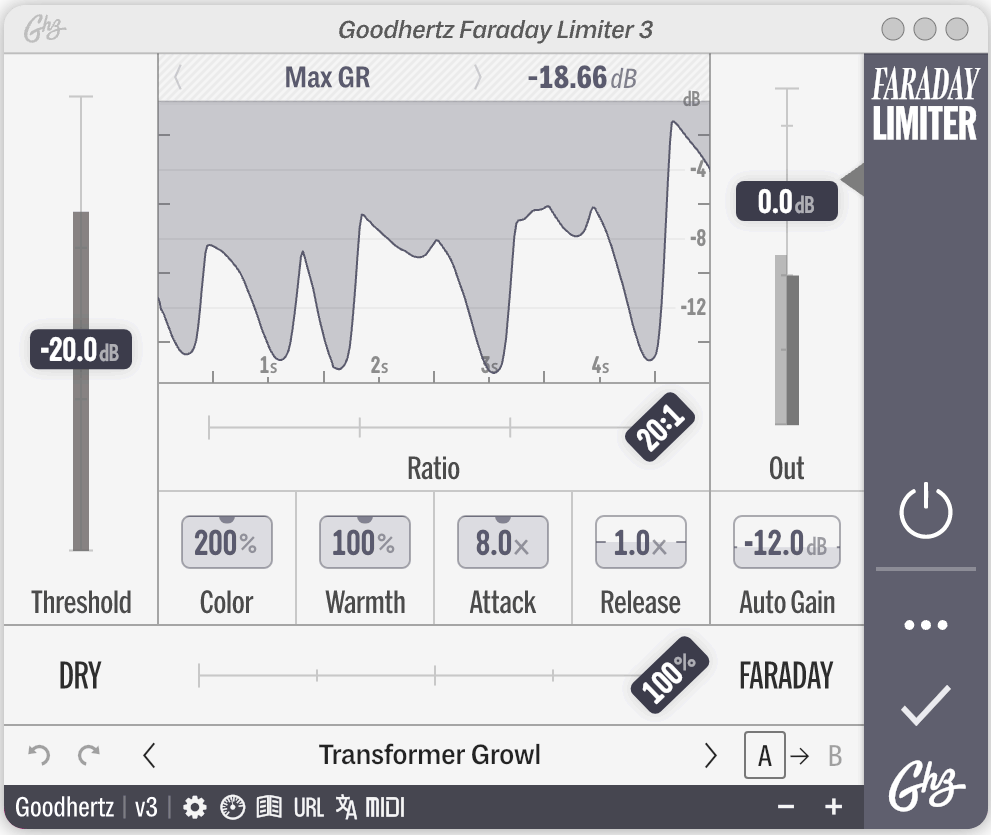
Peak limiter w/ a powerful magnetic field

Most modern digital limiters are designed to be sonically neutral, with maximum transparency and minimal coloration. In other words, they're created to do one job (to limit a signal's level) without changing the overall sound too much or imparting any specific sonic signature. Inevitably, though, digital peak limiters *do* have a sound of their own — especially when pushed hard — and, when exposed, that sound can be truly awful: harsh, brittle high end; squashed transients; & thin or mangled low end. Rather than build another "transparent" brickwall limiter, we thought we'd make something different: something **dynamic, colorful, and inspiring**; something you could use for more than just pure loudness.

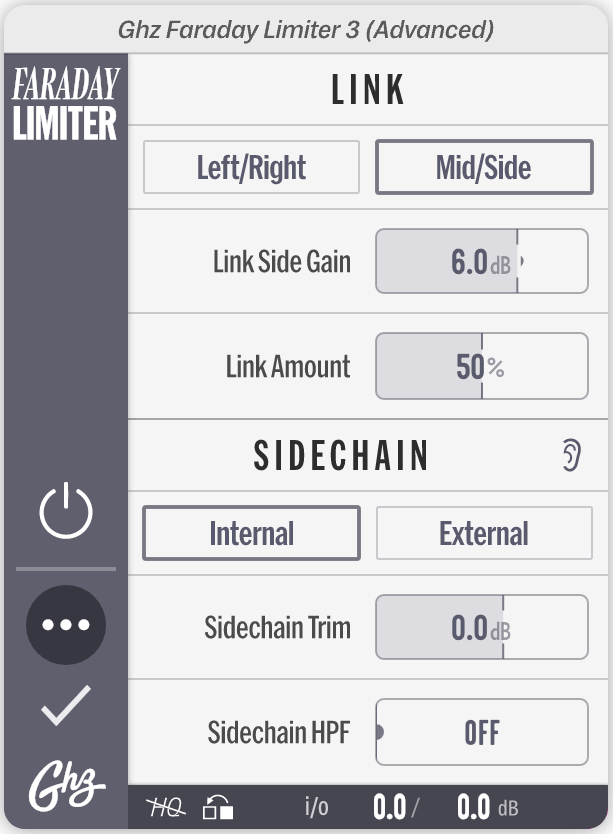
Named after the inventor of the electrical transformer, **Faraday Limiter**'s analog-modeled input/output transformers are responsible for its beefy, harmonically-rich sound. The limiter circuit is smooth yet lively — it can pump faster and further than any limiter we've ever heard while retaining its characteristic punch and warmth. **Faraday Limiter** sounds great on buses, individual instruments, vocals, dialog, etc. and allows for a level of timbral shaping and tonal coloration that can't be achieved with any other dynamics processor.

Interface Preview

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



Advanced Controls



Controls

Primary Controls

Threshold

Default 0.0dB

Controls the point at which limiting and more pronounced saturation will occur (the saturation intensity depends on the Color setting).

Threshold includes a level meter embedded in the slider. This meter shows the peak level of the input signal before **Faraday Limiter**'s processing, which can be helpful when choosing a threshold.

If the signal peak exceeds or equals `0.0dB` the meter color turns red, indicating that clipping *could* occur. **Faraday Limiter** will never clip internally, due to its double-precision floating-point processing, but the signal might be clipped at a later stage (by the host/DAW or DAC).

Threshold also has a triangular indicator ▶ floating to the left of the slider. This shows the threshold value where compression would begin, based on the peaks of the detector signal. When **Threshold** is set below these peaks, the triangle will disappear. If you see the triangle, no compression is occurring.

Top Bar Readout

Default Max GR

Top Bar Readout switches **Faraday Limiter**'s numeric readout mode in the top bar.

Option	*About*
Max GR	Max Gain Reduction
LUFS (LT)	Long Term LUFS
Loudness Range	Loudness Range

Ratio

Default 20:1

Controls the ratio of **Faraday Limiter**'s gain reduction.

ℹ The ratio changes the severity of the gain reduction. For example, a ratio of 8:1 means that for every 8 dB the input signal is above the Threshold, the output signal will only increase by 1 dB.

Vibe

Color

Default 100%

Controls the amount of analog coloration and transformer saturation.

ℹ At 0%, **Faraday Limiter** is rather clean sounding. 100% is a nice analog middle-ground, and 200% gives you fully-saturated transformer growl.

⚠ The perceived analog coloration is greatly influenced by the Threshold. As the threshold decreases, the **Color** character becomes more tape-like, with increasingly pronounced odd-order harmonics.

Warmth

Default 0%

Alters the frequency-dependant characteristics of the limiter's detector circuit.

A big part of **Faraday Limiter**'s thick, punchy sound is its frequency-dependent gain reduction. Low and high frequency sounds hit the limiter differently, and — depending on the **Warmth** setting — will exhibit different attack/release characteristics. High values, such as `100%`, generally sound thicker and punchier, while low values, like `-100%`, have a quick, bright limiter sound.

For example, you can often use the warmth control to emphasize different aspects of a snare drum: more **Warmth** gives more thud & low end; less **Warmth** gives more stick & snare presence.

The **Warmth** control is not an EQ, and will not change the frequency response of the plugin.

Speed

Attack Time Constant

Default 1.0x

Modifies the speed of the limiter's attack.

This control is unitless (i.e. not specified in seconds or milliseconds) because **Faraday Limiter** does not have a traditional fixed attack time. Smaller **Attack Time Constant**'s will clamp down quickly, dampen transients. Larger **Attack Time Constant**'s cause the limiter to react more slowly, emphasizing the attack and punch of the incoming signal.

Release Time Constant

Default 1.0x

Modifies the speed of the limiter's release.

Like the Attack Time Constant, this control is unitless (i.e. not specified in seconds or milliseconds). Smaller **Release Time Constant**'s cause the limiter to release more quickly, often sounding louder and causing more audible pumping. Larger **Release Time Constant**'s cause the limiter to release more slowly and smoothly.

Output

Output Gain

Default 0.0dB

Varies the output gain.

Output Gain includes a level meter embedded in the slider. This meter shows the peak level of the signal both pre (lighter color) and post (darker color) **Faraday Limiter**'s processing.

Output Gain also has a triangular indicator ◀ floating to the right side of the slider. This triangle's location is based on the peaks of the input and output signals, and indicates approximately where **Output Gain** would need to be set in order to match the input and output volume.

Auto Gain

Default 0.0dB

Sets the reference peak level used by the *auto gain* algorithm.

Faraday Limiter's *automatic gain compensation* attempts to automatically make up for the gain lost during compression & limiting so that the output volume remains

approximately constant for different Threshold and Ratio settings.

It works best when the **Auto Gain** setting matches the peak level hitting the sidechain. For example, if your detector signal consistently peaks at `-6.0dB`, set **Auto Gain** to `-6.0dB`.

The maximum gain compensation is applied when **Auto Gain** is set to `0.0 dB`. At `-20.0dB`, **Auto Gain** is turned off completely.

⚠ The *automatic gain compensation* in **Faraday Limiter** is *not* based on the input (or sidechain) signal. Instead, a combination of the settings of the Threshold, Ratio, and **Auto Gain** determine the amount of gain compensation.

Master Mix

Default `100%`

Overall **Faraday Limiter** mix. `0%` is all dry signal and `100%` is all **Faraday Limiter**.

ℹ Setting **Master Mix** anywhere between `0%` and `100%` layers dry and compressed signal — an easy way to do parallel compression.

Master On/Off

Default `On`

Bypasses **Faraday Limiter**'s processing.

ℹ 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 **Faraday Limiter**'s advanced controls, click the ••• icon in the sidebar.

Sidechain

Sidechain Listen

Default Off

Listen to the detector signal instead of the output of **Faraday Limiter**.

> ℹ This is what **Faraday Limiter** is "listening" to when detecting threshold crossings.

Sidechain Source

Default Internal

Select the source of the detector signal(sidechain), which **Faraday Limiter** uses when detecting threshold crossings.

Option	*Discussion*
Internal	Signal being limited also used as the detector signal
External	Threshold detection based on different audio than the signal being compressed

> ⚠ To route audio to **Faraday Limiter**'s external input, use the host/DAW's built-in sidechain selection method.

Sidechain Trim

Default 0.0dB

Adjust the level of the detector signal before threshold detection occurs.

Sidechain HPF

Default 20Hz

Sidechain HPF controls a high pass filter (HPF) for the limiter's detector signal only.

> The **Sidechain HPF** is useful for controlling how the limiter reacts to low end and bass frequencies. At higher frequencies, like 250Hz, more low end will be removed from the sidechain signal, which in turn means that the low end will undergo *less* limiting/compression.
>
> This can be useful if you want to allow the low end to "breathe" or if you want to avoid triggering the limiter with a bass instrument (kick drum, bass synth/guitar, etc). Conversely, if you want the limiter to pump with a kick drum or low end instrument, leave the **Sidechain HPF** at 20Hz.

Link

Link Mode

Default Left/Right

For stereo operation only, **Link Mode** controls the type of stereo linking used by the limiter detector circuit.

Option	*Discussion*
Left/Right	Left & Right channels are linked together
Mid/Side	The signal is processed by an M/S matrix and the mid & side are linked together

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Link Side Gain

Default 6.0dB

Link Side Gain alters the gain of the M/S “side” signal as seen by the limiter detector.

⚠ **Link Side Gain** only affects the detector signal (sometimes called a “sidechain” or key), not the actual audio signal.

Link Side Gain is only active when Link Mode is set to Mid/Side.

Link Amount

Default 50%

Controls the strength of the stereo linking. Higher **Link Amount** values cause the gain reduction to be more similar between left/right (or mid/side) channels. At 100%, the same gain reduction is applied to all channels.

ℹ The **Link Amount** is useful for controlling how the limiter responds to stereo signals, and it can have a big impact on the stereo image of the output. Additionally, the linking can impact other timbral characteristics, like depth, punch, and clarity.

Reset Meters

Default Off

Resets the meter processing. This resets all the metering values across the plugin.

Options: Off, On

HQ Mode

Default Off

HQ Mode is our no-holds-barred processing mode where super high quality audio is given priority over CPU usage.

When **HQ Mode** is turned `On`, **Faraday Limiter** uses a higher precision algorithm, providing better spectral resolution at the expense of some added latency (~50 ms) and higher CPU usage.

Option	*Symbol*
Off	~~HQ~~
On	**HQ!**

ℹ We recommend using **HQ Mode** when you need the highest possible quality and don't mind 2-4x higher CPU usage. An important lead instrument, vocal, or a mastering session is a great place for **HQ Mode**.

ℹ **HQ Mode** cannot be MIDI mapped since automating it is not recommended.

⚠ **HQ Mode** will require more CPU resources and result in a slightly higher processing delay (latency). To ensure proper delay compensation in your host/DAW, automating **HQ Mode** is not recommended.

Preprocess Input Gain

Default 0.0

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

Postprocess Output Gain

Default 0.0

Controls the output gain *after* **Faraday Limiter**'s processing.

Specs

Supported Channel Configurations

Input Channel #	*Output Channel #*
Mono	Mono
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.

- ## General
    - *Default*
    - *Punchy Warmth*
    - *Transformer Growl*
    - *Loud & Proud*
    - *Tamed Transients*
    - *Hot Analog Glue*
    - *Fast & Bright*
    - *Big Kick Drum*
    - *Slow Auto-Leveling*
    - *More Room Sound*
    - *Wide & Close*
    - *Super Wide Stereo*
- ## Barry Rudolph
    - *Bass Guitar Crushed*
    - *When The Drum Loop Breaks*
    - *Boogie Piano*

    - *Rock Vox*

- **Mastering Compression**
    - *2-Bus Glue w/ HPF* *Vulfpeck - Back Pocket*
    - *Quick Punchy 2-Bus* *Vulfpeck - Conscious Club*
    - *Loud & Proud 2-Bus w/ HPF* *Theo Katzman - Hard Work*

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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.
"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)
文A	Opens language-selection menu
MIDI	Opens MIDI Learn menu
~~HQ~~ HQ!	Toggles HQ mode (only in certain plugins)
↺●	Resets all meters (only in certain plugins)
–	Shrink interface
+	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).

Action	*Keyboard Shortcut*
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.)
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”

Action	*Instruction*
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.

Action	*Explanation*
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.
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

Action	*Explanation*
	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.