GOOD DITHER

Manual for version **3.14**

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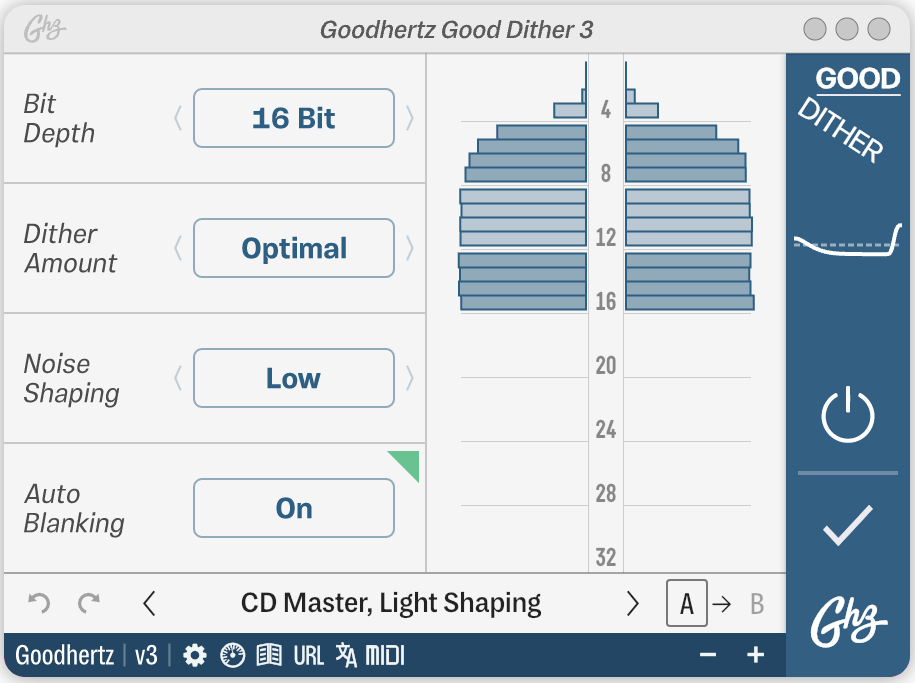
Good Dither

World-class dither, simple controls

Good Dither is a world-class mastering dither with simple controls and a great sound.

Interface Preview

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



Background

What is dither?

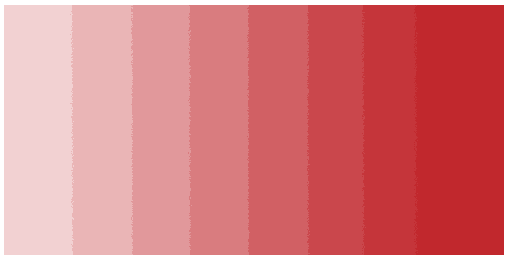
Dither is low-level noise added to digital audio when converting from higher bit depths to lower ones (e.g. 24 bit → 16 bit). This is done to suppress or eliminate truncation distortion: an unpleasant distortion that arises from reducing the bit depth.

If you're familiar with computer graphics & bit depth, dither functions similarly there. Below are examples of a gradient image that has been bit-reduced with dither &

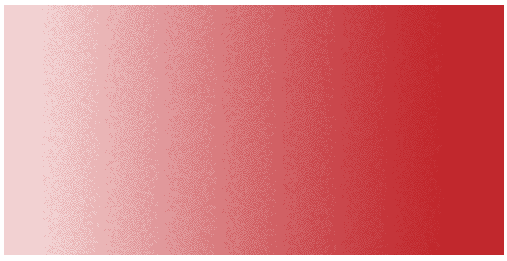
without it. Note how the added noise is clearly visible in the dithered version, but it resembles the original much more closely than the non-dithered version does.



Original



Bit depth reduced



Bit depth reduced with dither

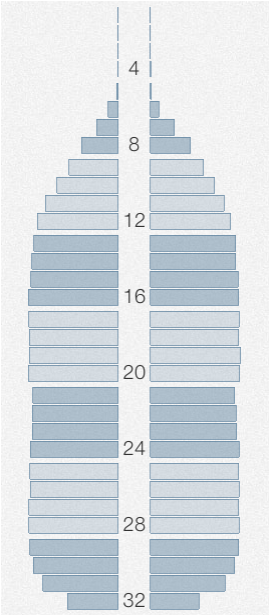
When should I use dither?

Short answer: anytime you're reducing the bit depth, **Good Dither** should be the last thing on your master bus. 24 bit → 16 bit, 32 bit → 24 bit, etc.

- Bouncing a track down to 16 bit from Pro Tools? Yes.
- Sending 32-bit audio out of a 24-bit digital output? Yep.
- Delivering 24-bit audio for a vinyl master? Also yes.

Longer answer: the only exception to the above is if you are dealing with lower bit depth audio that is contained within a higher bit depth file or format. For example, it's possible to have 16 bit audio inside a 32 bit container — the format is capable of higher resolution, but the 16 bit audio is not utilizing that resolution. If that's the case, no dither is necessary. **Good Dither**'s built-in bit scope makes it easy to determine if the available bit depth is being utilized, and thus, if it will need dither.

Visualization



Bit Scope

Bit Scope

Good Dither features a bit scope meter that shows the current bit-utilization up to 32 bits. The width of the scope's bars represents that particular bit's activity. It allows you to see not only that there was activity, but also how much bit-usage there was relative to the other bits.

Noise Shaping Curve

The sidebar graph displays the approximate frequency response of **Good Dither**'s noise shaping curve. The dashed center line represents the frequency response of a typical flat, TPDF dither.

Controls

Primary Controls

Bit Depth

Default Pass Thru

Selects the output bit depth.

Options: 8 Bit, 12 Bit, 16 Bit, 20 Bit, 24 Bit, 32 Bit, Pass Thru

- Generally, the **Bit Depth** should be matched to the resolution of the bounce or export settings of your audio project.

- The Pass Thru option will leave the signal intact and is equivalent to the 32 Bit option in single precision signal paths.

Here's a chart listing common bit depths for a given type of project.

Project	*Standard bit depth*
CD	16 bit
DVD	16, 20, or 24 bit
Blu–ray	16, 20, or 24 bit
Mastered for iTunes	24 bit
Most DAW's	32 bit

Dither Amount

Default Optimal

Controls the amount of dither applied to the signal.

Option	*Discussion*
None	No dither
Low	Does not fully eliminate quantization distortion or dither modulation, but can be a good choice for audio that already contains some natural noise.
Optimal	Excellent quantization performance with a lower noise floor. Recommended for most situations.
High	Complete elimination of quantization distortion with a slightly higher noise floor.

Auto Blanking

Default On

Disables the dither when the input has been silent for longer than 500 ms.

Options: Off, On

> The light indicator turns green when dithering is applied as opposed to red when the audio passes through undithered.

Noise Shaping

Default Optimal

Option	*Discussion*
Optimal	Optimizes the dither noise shaping for each combination of bit depth and sample rate.
None	Flat, TPDF dither.
Low	Noise reduction: 4.5 dB / Highest peak: 10 dB
Medium	Noise reduction: 6 dB / Highest peak: 16 dB

Option	*Discussion*
High	Noise reduction: 8 dB / Highest peak: 24 dB

Good Dither's noise shaping was designed to be smooth & natural-sounding and to avoid the extreme high-frequency peaks that are common in other dither algorithms. For mastering, we generally recommend using *some* noise shaping ("Optimal" is a good place to start), but we've included a completely "flat" option as well.

Master On/Off

Default On

Bypasses **Good Dither**'s processing.

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

Specs

Supported Channel Configurations

Input Channel #	*Output Channel #*
Mono	Mono
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 (Pass Thru)*
  - *CD Master*
  - *CD Master, Light Shaping*
  - *CD Master, Low Noise*
  - *CD Master, Flat Dither*
  - *24-bit Master*
  - *24-bit, Flat Dither*

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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.

Button	*Action*
→ ←	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
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-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 or milliseconds 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”
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.
Always Open Advanced Pane	By default, this is *Off* — i.e. when the plugins open, they do not show you the advanced controls available by hitting the `•••` button in the

Action	*Explanation*
	sidebar. If you'd like to always see the advanced controls, enable this preference.
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.

Action	*Explanation*
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.