

Sloth Manual

Version v1.0.4

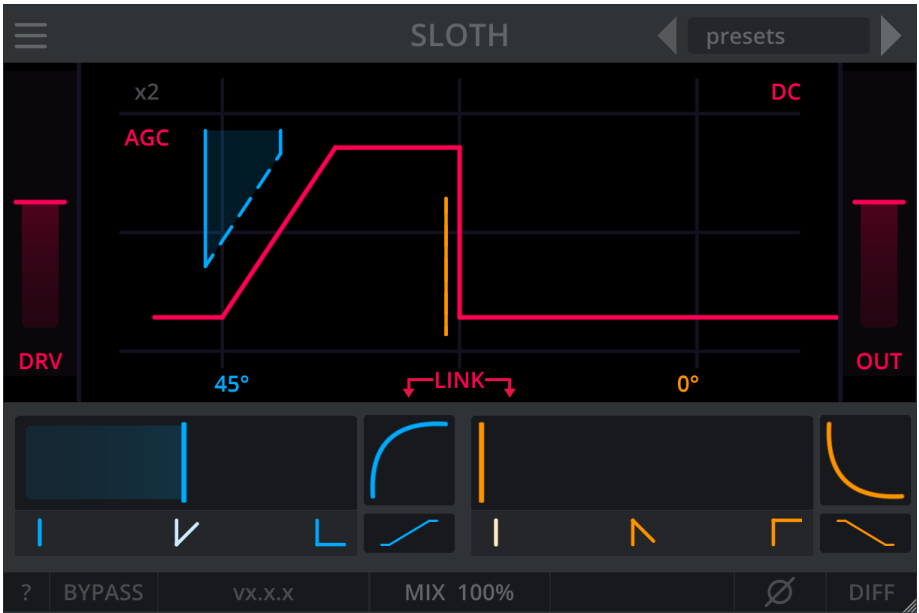


Figure 1: Sloth

1 Introduction

Sloth brings the concept of slew rate limiting to the digital domain. In electronics “slew rate” is the change of voltage over time. When the input signal at an amplifier switches instantly, the output will not immediately change, but “slew” to the new value at a certain rate.

Applying slew rate limiting can result in a variety of effects, including denser signals, subtle darkening of the tone, enhanced texture of sounds, creative transient shaping and even massively crushed effects.

2 Installation

For Windows there is an installer available.

2.1 Manual installation

- Download the zip file for your operating system.
- Select the desired plugin format and extract it to the respective plugin folder.
- If not set otherwise in your DAW, the default folders are:
 - VST3
 - * Win: C:\Program Files\Common Files\VST3\
 - * Linux: ~/.vst3/
 - * macOS: /Library/Audio/Plug-ins/VST3
 - CLAP
 - * WIN: C:\Program Files\Common Files\CLAP\
 - * Linux: ~/.clap/
 - * macOS: /Library/Audio/Plug-ins/CLAP
 - AU
 - * macOS: /Library/Audio/Plug-Ins/Components
- Extract the preset files from the zip to the respective folder:
 - **Win:** C:\Users\Public\Documents\Darkpalace Studio\sloth\presets
 - **Mac:** /Users/Shared/Darkpalace Studio/sloth/presets
 - **Linux:** ~/.config/Darkpalace Studio/sloth/presets

See section 5 for installation of preset and configuration files.

2.2 MacOS Plugins downloaded from the internet

On macOS an extra step is required to get the plugin to load correctly.

More info can be found in [this blogpost](#), [this reddit thread](#) or [this website](#).

3 Controls

- A double click on a slider resets the slider to the default value.
- Holding **SHIFT** or **CTRL** allows for precise adjustments.
- The mouse wheel can be used to adjust a slider in steps.
- Hovering over a control for a short time makes a tooltip show up.
- Changing the value of any slider makes a tooltip show the current value.
- By engaging the **?** button, in-plugin-explanations are turned on.
- The plugin can be resized by dragging any of the sides or corners.

3.1 Slew Controls



Figure 2: Slew Controls

3.1.1 Slew Rate

Adjusts the maximum slew rate.

This is the core control for adjusting slew rate limiting. Higher values result in a shallower maximum slew rate. If the slope of the input signal is steeper than the selected slew rate, the output is slew-rate-limited to the selected slew rate.

3.1.2 Slew Curve

Controls the curvature of slew-rate-limited slopes.

This transforms the shape of slew-rate-limited slopes from “square root” over “linear” to “quadratic”. Only slopes that are slew-rate-limited are affected. This usually brightens or darkens the sound and is a great option for shaping transients as well.

3.1.3 Slew Time

Modifies the time factor of the slew curve.

This changes how fast the square root or quadratic behavior is applied. This only has an effect, when the slew curve setting is non-zero. Higher values result in a faster transition through the selected slew curve.

3.2 Header Controls



Figure 3: Header controls

3.2.1 Menu

Opens the preset menu. The preset menu can be used to browse, load and save presets.

3.2.2 Previous Preset

Loops through the presets in reverse order.

3.2.3 Current Preset Name

The name of the currently selected preset. Clicking this control also opens the preset browser.

3.2.4 Next Preset

Loops through the presets.

3.3 Display Controls

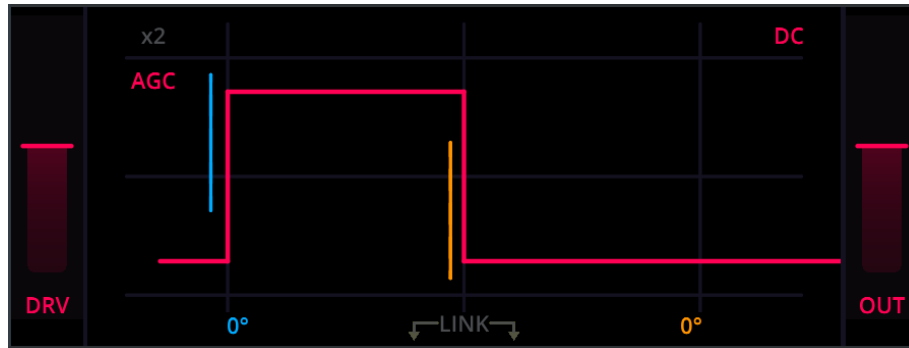


Figure 4: Display Controls

3.3.1 In/Drive

Boosts the input of the plugin. With increased input, slopes become steeper, thus slew rate limiting will be applied more aggressively.

This slider behaves differently based on AGC:

- When AGC is **on**, this slider controls the **DRIVE**, as the change in volume is automatically compensated for.
- When AGC is **off**, this slider controls the **IN**, simply boosting the input.

3.3.2 Out

Boosts the output volume of the plugin. Some settings of slew rate limiting lead to a loss in volume. This can be compensated for with this slider.

3.3.3 AGC

Toggles **A**utomatic **G**ain **C**ompensation. AGC allows to ompensate for any change in input gain. AGC will not take output gain or any change in volume from the slew rate limiting into account.

When AGC is **on**, increasing **DRIVE** leads to steeper slopes, resulting in stronger slew-rate-limiting. The enabled AGC will revert the initial increase in gain from the **DRIVE** slider. Thus the output can actually have a lower volume. This can be compensated for by the **OUT** slider.

3.3.4 x2

Increases input gain by a factor of 2. The increase in volume will always be compensated, independently of AGC. With increased input, slopes become steeper, thus slew rate limiting will apply more aggressively.

3.3.5 DC

Applies a 10Hz first order high-pass-filter to the output. This removes any dc offset introduced by slew rate limiting.

Generally asymmetric slew-rate-limiting (meaning different slew rates for rise and fall) result in dc offset at the output. This can be understood by the fact

that asymmetric slew rate limiting will “reduce” e.g. any rising slopes, while leaving falling slopes untouched. Effectively this leads to a shift of the complete waveform to negative values. A high-pass-filter can solve this issue.

3.3.6 Link

Links the slew controls (slew rate, slew curve, slew time) for rising and falling slopes. This provides easy access to “symmetric” slew rate limiting, where rising slopes are treated similarly to falling slopes.

Note that this will only affect changes via the UI. If automation is used to change any of the linked parameters, only the automated one will change, while the linked one stays untouched. This is to avoid potentially conflicting input from different automation tracks.

In case you want to automate two parameters, it is recommended to disable link and automate via two tracks (or one track bound to two parameters, which is supported by many modern DAWs).

3.4 Footer Controls



Figure 5: Footer controls

3.4.1 ?

Enables explanations directly in the UI. When enabled, You can hover over a control to get a longer explanation of the functionality.

3.4.2 Bypass

Routes the input directly to the output, bypassing the plugin completely.

3.4.3 Version

Displays the version of the plugin.

3.4.4 Mix

Blends continuously between the processed and unprocessed signal. This can be used to dial in slew rate limiting quite hard and then blend the processed signal with the original input.

3.4.5 Oversampling

Selects oversampling. The options include x1 (no oversampling), x2, x4, x8 up to x16. Increasing this option will help to optimize distortion characteristics. However some highly used distortion plugins do not offer any oversampling and still sound great.

Increasing oversampling will increase the overall plugin delay and increase processing requirements. This is reported to the host and automatically compensated for by most modern DAWs.

Note that a change in oversampling can result in cracks and audio dropouts. It is not advised to automate this control.

3.4.6 Phase

This will flip the phase of the output of the plugin after all other processing.

3.4.7 Diff

Allows listening to the difference between the input and output. Note that **DIFF** is applied before **MIX**.

4 Examples and Tricks

- The audible effect of slew rate limiting varies drastically between symmetric slew rate limiting (same slew rate for rise and fall) and asymmetric slew rate limiting (different slew rates for rise and fall).
- Try Applying hard slew rate settings and then dialing back the **MIX** slider until the desired blend between processed and unprocessed signal is achieved.
- Sloth can be used as a transient shaper. By engaging the **DIFF** button you can listen to how Sloth modifies the signal. Naturally transients have the steepest slopes, so they are heavily affected by slew rate Limiting. Mixing the diffed signal allows for parallel transient processing.
- The selected first order high-pass-filter introduces a phase shift. The option of a linear phase filter would avoid the phase shift. However, linear phase filters introduce pre-ringing and other issues, which are often sounding way worse than the shift in phase itself. Please check carefully for any phasing issues introduced by the filter. Often they can be mitigated by flipping the phase via the **PHASE** button.

5 Configuration

All Darkpalace Studio plugins are highly customizable. This works via `json` configuration files.

5.1 Configuration files

- `sloth_ui.json`: customize the look of the plugin. This also allows to create a custom themes.
- `sloth_config.json`: customize the parameter ranges of the plugin. **Warning**: Modifying this file can result in a flawed user experience and potentially dangerous output levels.
- `editor.json`: save the last used plugin size.

The configuration files are required to be placed in the following folders:

- **Win**: `C:\Users\Public\Documents\Darkpalace Studio\sloth`
- **Mac**: `/Users/Shared/Darkpalace Studio/sloth`
- **Linux**: `~/.config/Darkpalace Studio/sloth`

If no `json` file is found or if the `json` is invalid (e.g. a typo or a missing entry), the plugin will use default settings.

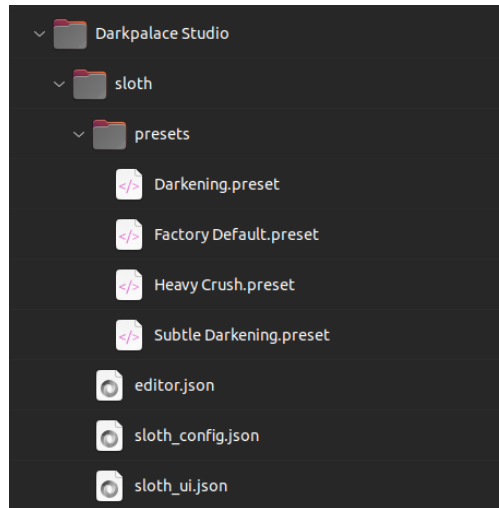


Figure 6: Folder Structure

The original `json` files can be found in the zip file and easily edited with a standard text editor. If you encounter any issues with editing `json` files, you can visit jsonlint.com for validation.

5.1.1 Fix for broken UI Scaling on Windows

Windows does not consistently forward the ui scaling to plugins. If you are using windows settings to scale your screen and the plugin looks weird (e.g. as shown in the picture below), you can fix this by changing the value `custom_ui_scaling_factor` in the config file `C:\Users\Public\Documents\Darkpalace Studio\sloth\sloth_ui.json`.

When your Windows Settings show a display scaling of 125%, you need to set `custom_ui_scaling_factor` to 1.25 respectively.

5.2 Presets

Presets are `xml` files that can easily be shared and edited. They are stored in the following folder:

- **Win:** `C:\Users\Public\Documents\Darkpalace Studio\sloth\presets`
- **Mac:** `/Users/Shared/Darkpalace Studio/sloth/presets`
- **Linux:** `~/.config/Darkpalace Studio/sloth/presets`

Another option is to click the **Save Preset** button in the menu to see where the presets are stored.



Figure 7: Sloth when scaling is not reported correctly

6 Release Notes

6.1 v1.0.4

- Fixed broken UI on macOS, caused by gradient in tooltip
- Fixed crash on some systems when changing oversampling
- Implemented short mute on change of oversampling to avoid audible cracks
- UI improvement: Highlight effect on all UI elements is no time dependent
- Use latest [filter_lib](#) which has improved error checking

6.2 v1.0.3

- Update to latest juce version, which fixes issue with UI Scaling on some systems. If you have previously set `custom_ui_scaling_factor` in `sloth_ui.json` and your UI looks broken after this update, reset the value to 1.0
- Output gain affects only the wet signal
- Small UI improvements: added a gradient on tooltips, slightly tweaked colors

6.3 v1.0.2

- Add `custom_ui_scaling_factor` in `sloth_ui.json` to allow for correcting inconsistently reported display scaling
- Fixed Windows installer

6.4 v1.0.1

- Fix crash on some systems when rapidly changing oversampling
- Include vst3 in linux release