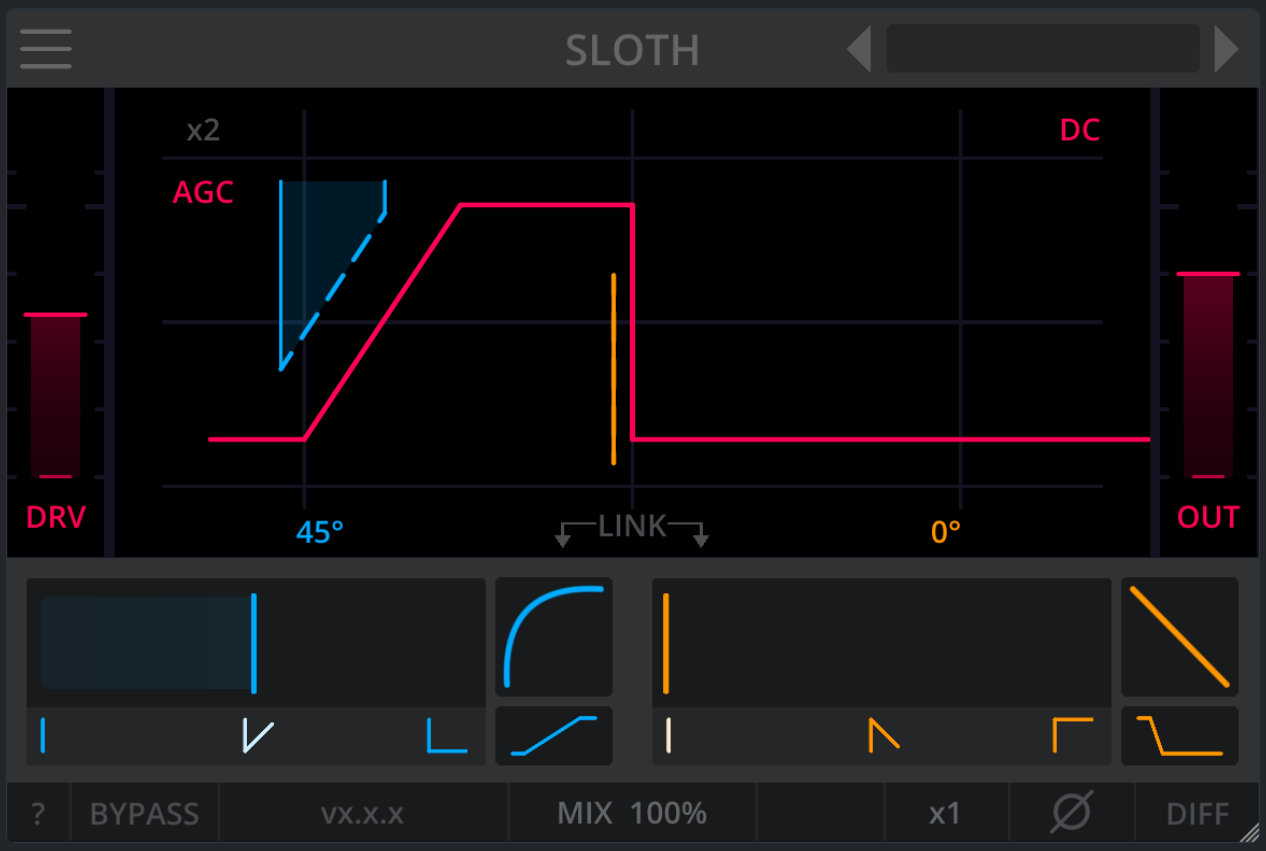
Sloth Manual



Version 1.1.1

1.0 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, fuzz-sounds up to massively crushed effects.

2.0 Installation

> For Windows an installer is also available

2.1 Manual installation

In order to install Sloth, a manual approach is required. After downloading the ZIP archive for your operating system from tentary, extract the desired plugin format into your respective plugin folder.

If you don't have a custom plugin folder set in your DAW, refer to the to the default locations:

- 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

As for the themes and presets from the ZIP archive, please extract them to the following locations:

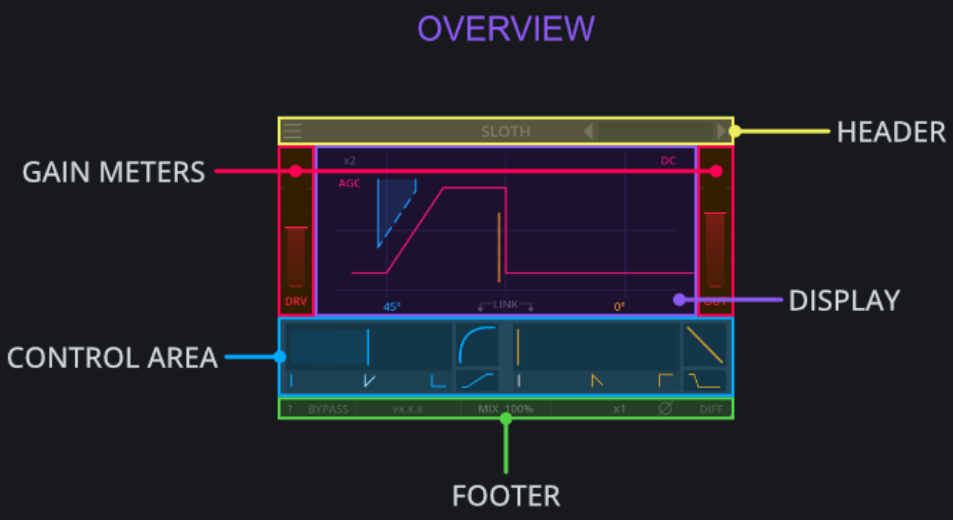
- **Win**: C:\Users\Public\Documents\Darkpalace Studio\[pluginName]\
- **Mac**: /Users/Shared/Darkpalace Studio/[pluginName]/
- **Linux**: ~/.config/Darkpalace Studio/[pluginName]/

If you would like to know more, please refer to section 5 for more information on installation of presets, themes and configuration files.

> MacOS plugins downloaded from the internet are usually 'blocked' and require an extra step in order to load correctly, please refer to this website, this blogpost, this reddit thread and/or this website.

3.0 Controls

3.1 Darkpalace Studio Plugins Overview



All Darkpalace Studio plugins share common UI elements as well as general interactions with the majority of widgets. Shared components include:

- Header
- Display
- Gain Meters
- Control Area
- Footer

Whereas shared interactions include:

- Double-Clicking on a widget to reset it to its default value.
- Holding SHIFT or CTRL while dragging a widget to allow for precise adjustments.
- Using the mouse-wheel to adjust a widget in incremental steps.
- Hovering over a widget for a short time shows a tooltip.
- Changing the value of any widget makes a tooltip show the current value.
- Pressing the ? button *(located bottom-left)* will turn on explanations.
- The plugin can be scaled by dragging any of the sides or corners.

3.2 Header

Shared across all Darkpalace Studio plugins, the header is a central component for managing various aspects including loading and saving presets as well as loading themes.

3.2.1 Menu-Button

(Located left of the Header)
Click to open the menu to browse presets and themes.

3.2.2 Previous-Preset-Button

(Located center-right of the Header)
Click to cycle through presets in reverse order.

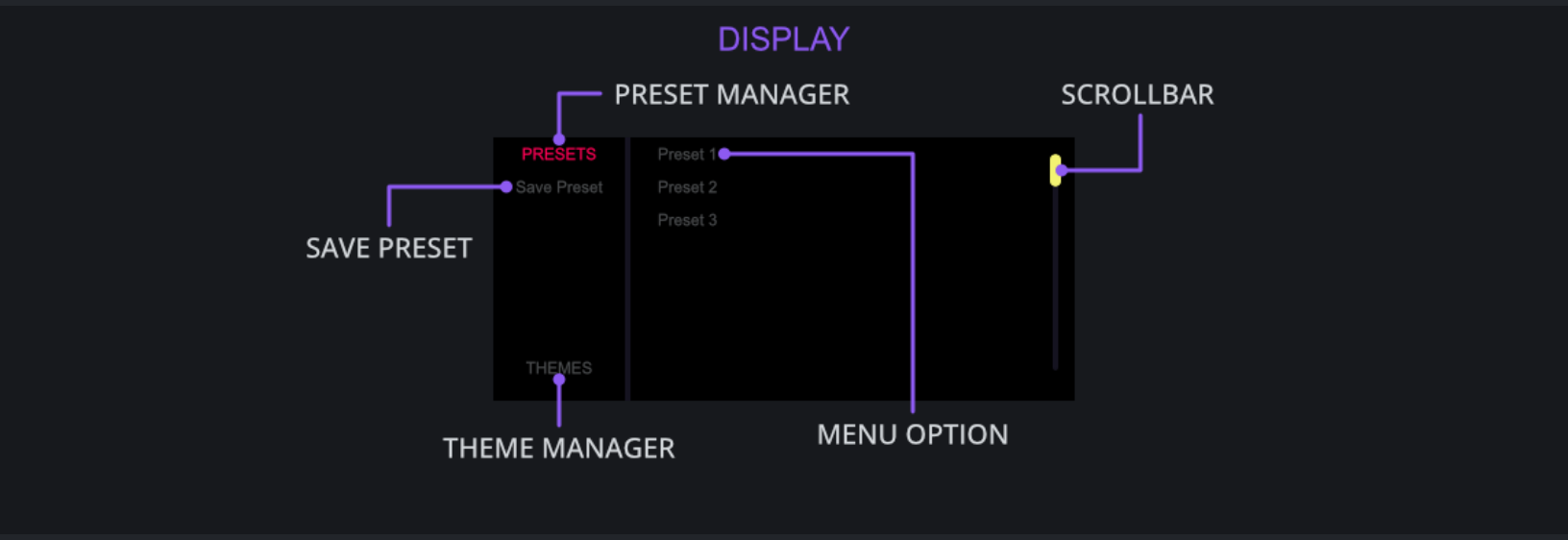
3.2.3 Current-Preset-Button

(Located right of the Header)
Displays the name of the currently selected preset. Click to open up the menu.

3.2.4 Next-Preset-Button

(Located right of the Header)
Click to cycle through presets in forward order.

3.3 Display/Menu



Shared across all Darkpalace Studio plugins, The display component contains the preset-manager and theme-manager windows that allow you to browse the various presets and themes available. Feel free to explore the presets and themes to get a taste for creative opportunities!

3.3.1 Preset-Manager-Button

(Located top-left of the Display)
Click to switch to the preset-manager mode, will display a list of available presets.

3.3.2 Save-Preset-Button

(Located top-left of the Display)
Click to save a preset, make sure the preset-manager is active by having PRESET in the top-left of the display highlighted. Clicking this will open up File-Dialogue where you will be prompted for a name and location.

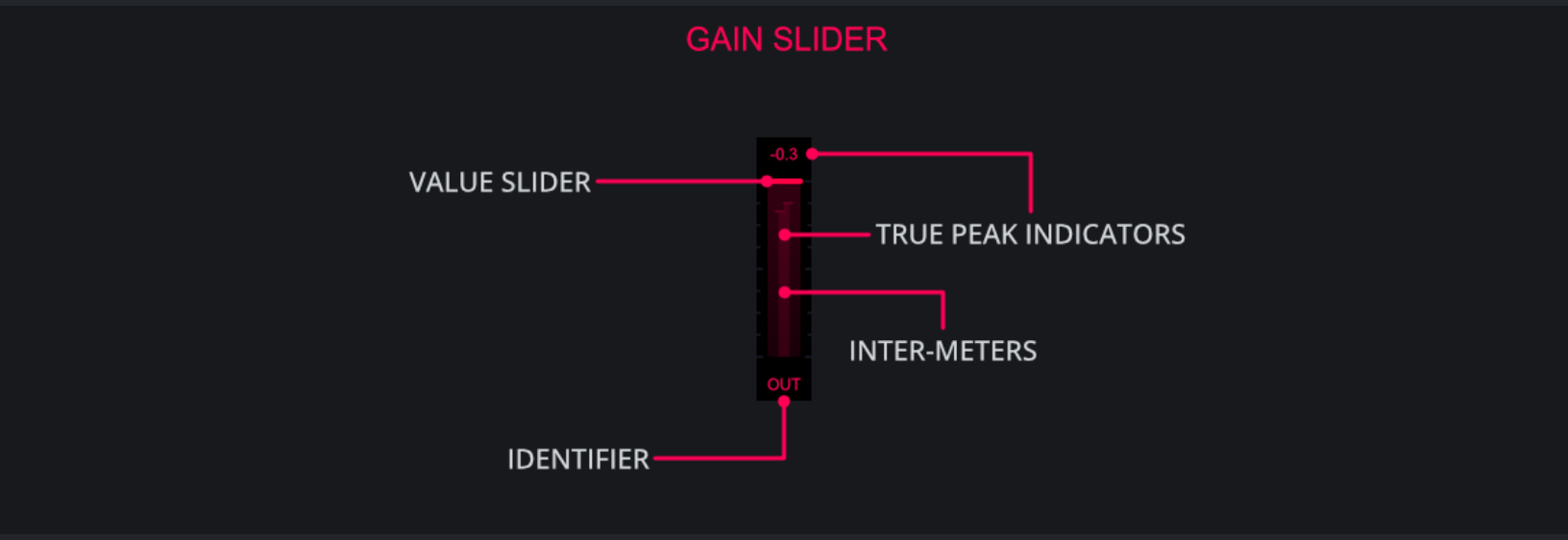
3.3.3 Theme-Manager-Button

(Located bottom-left of the Display)
Click to switch to the theme-manager mode, will display a list of available themes.

3.3.4 Menu Options

(Located right side of the Display)
Will display the available options based on which mode is active on the left side of the Display. When there is a large amount of options, the scroll-bar can be used as well as the mouse-wheel to view more options.

3.4 Gain Meter (Input/Output)



Shared across all Darkpalace Studio plugins, the Gain components allow for adjustment to the input and/or output signal of the plugin with some Darkpalace plugins offering a change in functionality.

3.4.1 Identifier

(Located top of the Meter)
Displays the current position in the processing chain of the slider.

3.4.1.1 In

The **IN** gain slider controls the volume of the signal being sent into the plugin with a range of -12dB to +12dB.

> The in gain is applied at the beginning of the processing chain and can thus be used to drive the clipper.

3.4.1.2 Out

The **OUT** gain slider controls the volume coming out of the plugin with a range od -12dB to +12dB. This is clean digital gain that does not color the sound in any way by itself.

> The out gain is applied after clipping the signal.

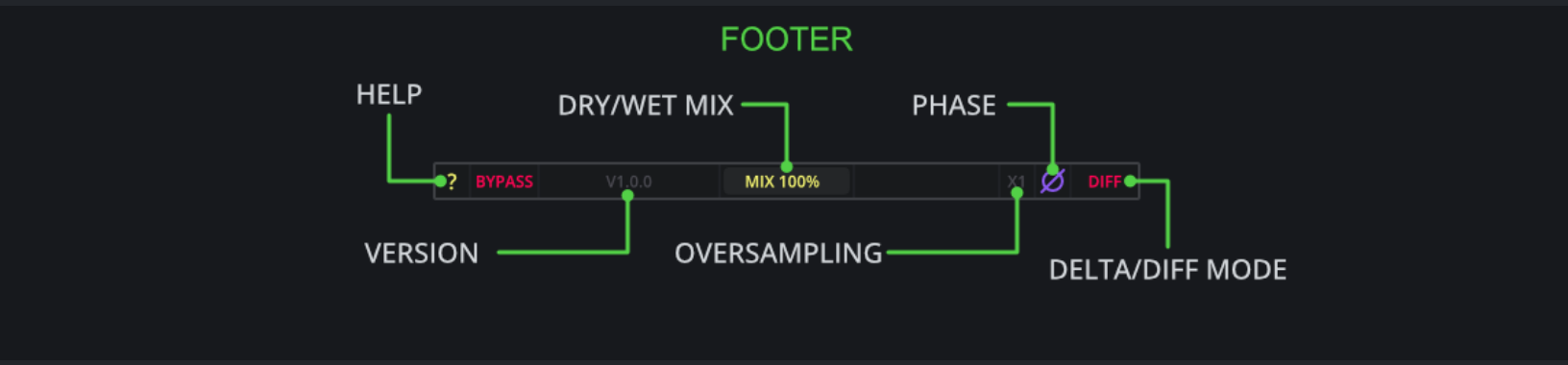
3.4.2 Value-Slider

(Located bottom of the Meter)
Click and drag to change the value of the slider. A label will show up with the current value.

3.4.3 True-Peak Indicators

(Located top of the Meter)
Displays the current true-peak value of the signal. If the signal is mono the inter-meters will show a singular line whereas a stereo signal will display separate left/right inter-meters.

3.5 Footer



Shared across all Darkpalace Studio plugins, the footer component contains a set of controls that enhance the workflow such as flipping the phase/polarity, enabling delta/diff mode and even a global dry/wet mix.

3.5.1 ?-Button

(Located Left of the Footer)
Click to activate 'Help' mode which will display explanations directly within the plugin window when hovering over a control.

3.5.2 Bypass-Button

(Located Left of the Footer)
Click to enable bypass mode which will directly route the input signal to the output signal and completely bypassing the plugin. Most of the UI will also become grey-scale indicating its state.

3.5.3 Version

(Located Left-ish of the Footer)
Displays the current version of the plugin. If 'Help' mode is enabled via the '?'-button, the window will display the commit-hash of the plugin.

3.5.4 Mix-Slider

(Located center of the Footer)
Click and drag to blend continuously between the processed and unprocessed signal allowing for parallel-processing behavior.

3.5.5 Oversampling-Slider

(Located right of the Footer)
Click and drag to change oversampling to 1x, 2x, 4x, 8x up to x16 which can often help by optimizing and/or reducing distortion characteristics. Increasing oversampling will also introduce additional delay and increases processing requirements which is reported to the host to be automatically compensated for by most modern DAWs.

> Please note that a change in oversampling can result in audio-dropouts. It is not advices to automate this control.

3.5.6 Phase-Button

(Located right of the Footer)
Click to cycle through 3 different phase states:

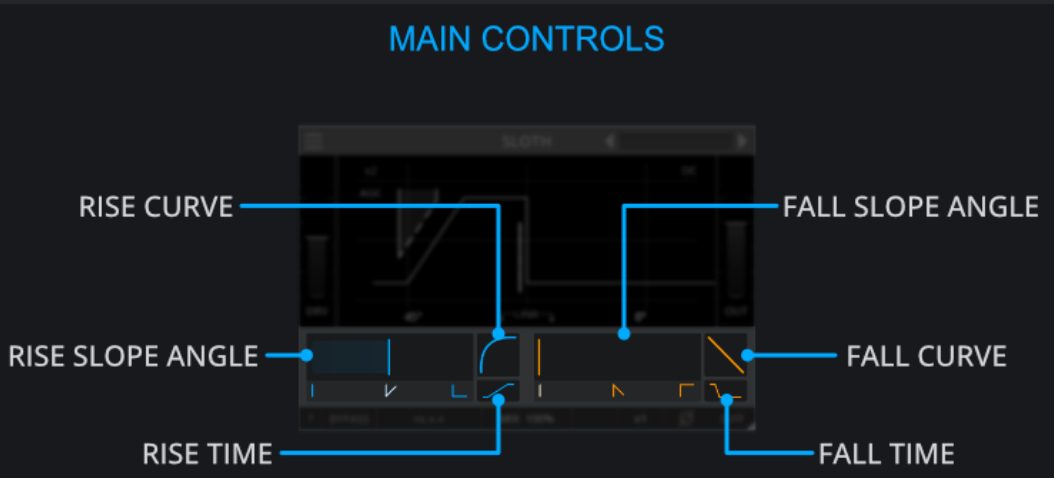
- No-Phase, which leaves the signal as is.
- Pre-Phase, which inverts the polarity at the input stage, before processing.
- Post-Phase, which flips the phase at the output of the plugin, after MIX.

3.5.7 Diff-Button

(Located right of the Footer)
Click to enable 'Diff' mode which will output the Difference/Delta in signal between the input and output.

> Note that **DIFF** is applied before the **MIX** slider.

3.6 Control Area



> The fall and rise controls are basically the same so the following information will apply to both of them.

3.6.1 Slew Slope Angle

Click and drag to adjust the Slew-Rate/angle applied to the incoming signals with higher values resulting in shallower Slew-Rate. If the slope of the input signal is steeper than the Slew-angle, the output signal will be Slew-rate-limited.

3.6.2 Slew-Curve

Click and drag to adjust the curvature of the slope. Based on the position, the values will blend between:

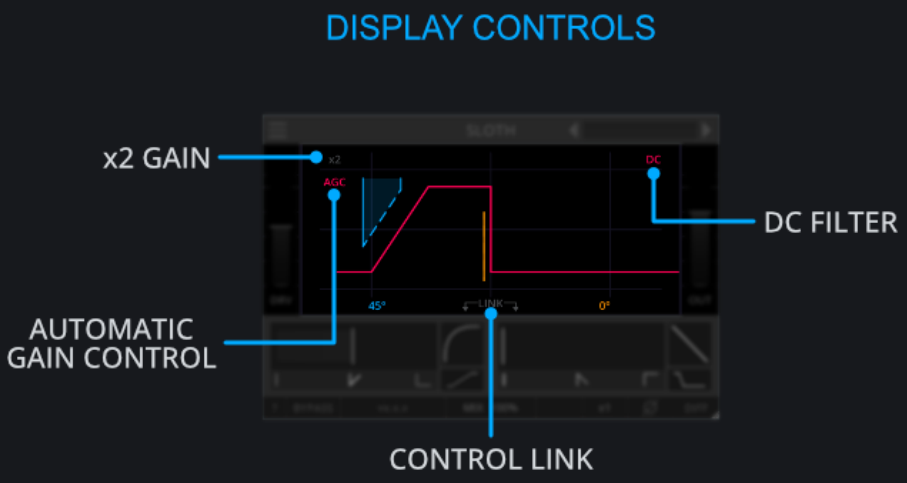
- Square-Root at a value of 1.0
- Linear at a value of 0.0
- Quadratic at a value of -1.0

This can have an effect on brightening or darkening a sound and is a great option for shaping transients as well.

3.6.3 Slew-Time

Click and drag to change how fast the behavior of the Slew-Curve is applied. With higher values resulting in a faster transition through the selected Slew-curve. This will only have an effect when the Slew-curve setting is non-zero.

3.7 Display Controls



3.7.1 x2

(Located top-left of the Display)
Click to increase the input gain by a factor of 2 causing slopes to become steeper and as a result makes the Slew-limiting more aggressive.

> The increase in volume will be compensated for, independently of AGC.

3.7.2 AGC

(Located top-left of the Display)
Click to toggle **A**utomatic **G**ain **C**ompensation which will attempt to compensate for any change in input-gain.

When enabled, the In-Gain-Meter will change its state to DRIVE allowing the signal to be forced louder into the Slew-algorithm resulting in more aggressive Slew-Rate-Limiting. This means the In-Gain-Meter on the left of the display has additional functionality:

- 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.

> AGC will not take output gain or any change in volume from the Slew-Rate-Limiting into account. This means the output can actually have a lower volume which can be compensated for with the Out-Gain-Meter

3.7.3 DC-Button

(Located top-right of the Display)
Click to apply a 10Hz first order high-pass-filter to the output to account for any DC-Offset which might be introduced by Slew-Rate-Limiting.

Generally the asymmetric Slew-Rate-Limiting (Meaning different values for Rise and Fall) results in a DC offset at the output state. 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 which can be solved by using a High-Pass-Filter.

> Adding a high-pass-filter will also increase some phase rotation at low frequencies.

3.7.4 Link

(Located bottom-center of the Display)
Click to link the Slew-Controls (Slew-Rate, Slew-Curve and Slew-Time) together for changing the values in tandem. This provides easy access to symmetric Slew-Rate-Limiting where rising and falling slopes are treated similarly.

Please note that this will only affect changes made via the interface and not automation. If automation is used to change any of the parameters when linking is enabled, only the automated parameter will change whereas the other counterpart will remain unaffected.

This is to done avoid potentially conflicting input from different automation tracks.

4.0 Examples and Tricks

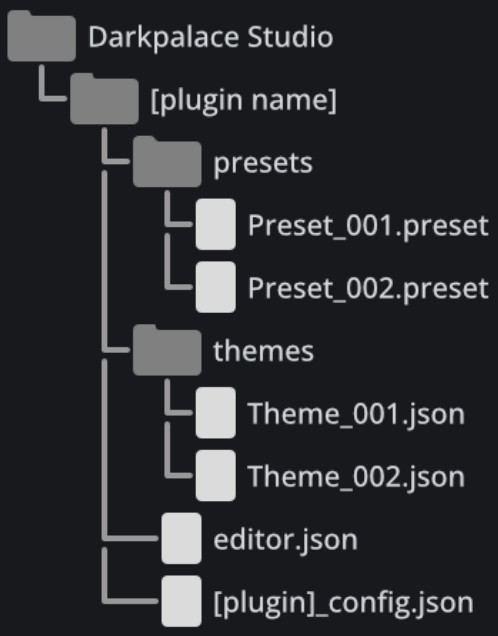
- The audible effect of slew rate limiting varies drastically between symmetric slew rate limiting (same slew rate for rise and fall) and asymmetric slew rate limiting (different slew rates for rise and fall).

- 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.

5.0 Configuration



5.1 Configuration files

All Darkpalace Studio plugins are highly customizable by changing settings via the json configuration files. This includes changing some additional settings as well as creating custom themes.

As mentioned back in 2, the files are required to be in specific locations depending on your operating system:

- **Win**: C:\Users\Public\Documents\Darkpalace Studio\[pluginName]\
- **Mac**: /Users/Shared/Darkpalace Studio/[pluginName]/
- **Linux**: ~/.config/Darkpalace Studio/[pluginName]/

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 [PluginName]_config.json

The name of this file is usually *plugin dependant*. e.g. you are browsing the files for Sloth, this would mean the file would be called sloth_config.json.

On top of that, this file contains plugin-specific settings which can be changed to alter the functionality of the plugin. e.g. you would like to change the frequency scaling in a plugin from exponentially to linearly. You can achieve this by changing the following settings in the respective plugin:

- Change the value of "exponential" to false
- Change the value for "frequency_skew" to 1.0

> 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.

5.1.2 editor_config.json

Stores the last used window-size as well as the currently selected theme

> 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.

5.1.3 Fix for broken UI Scaling on Windows

```
{
  "initialWindowSize": [
    512,
    384
  ],

  "custom_ui_scaling_factor": 1.0,
  "tooltipDelay": 250,
}
```

Windows is known to not always be consistent, this including letting applications know of the ui-scaling factor it uses. Because of this the GUI of Darkpalace Studio plugins can often look out of proportions. In order to address this you will have to change a value in the json file of the theme you are using.

The themes folder should be located in the data:

- **Win**: C:\Users\Public\Documents\Darkpalace Studio\[pluginName]\themes\
- **Mac**: /Users/Shared/Darkpalace Studio/[pluginName]/themes/
- **Linux**: ~/.config/Darkpalace Studio/[pluginName]/themes/

After this open the respective JSON file for the current theme and look for the value custom_ui_scaling_factor key which should be located at the top of the file.

Once you've found this, change is to a decimal value representing your display-scaling value. e.g. If your display-scaling is set to 125% in windows, change the value of custom_ui_scaling_factor to 1.25.

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\[plugin_name]\presets
- **Mac**: /Users/Shared/Darkpalace Studio/[plugin_name]/presets
- **Linux**: ~/.config/Darkpalace Studio/[plugin_name]/presets

Another option is to click the **Save Preset** button in the menu. This will open the system dialog that will directly show you the folder where presets are stored.

5.3 Themes

5.3.1 How to switch themes

In the plugin, click on the menu button (the three lines) in the top left corner. In the left half of the display, select **THEMES**. Then select the themes on the right side.

If no themes are listed, make sure the theme files are installed in the correct folder.

5.3.2 Themes folder location

Theme files can be found in the following folder:

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

6.0 Release Notes

6.1 v1.1.1

- Apply adjustments to themes to match upcoming plugin release
- Improve UX: Menu closes when any of the controls are used

6.2 v1.1.0

- Add peak display for In and Out Gain
- Add support for themes
- Update to juce 8.0.1

6.3 v1.0.4

- Fix broken UI on macOS, caused by gradient in tooltip
- Fix crash on some systems when changing oversampling
- Implement short mute on change of oversampling to avoid audible cracks
- UI improvement: Highlight effect on all UI elements is now time dependent
- Use latest filter_lib which has improved error checking

6.4 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: add a gradient on tooltips, slightly tweaked colors

6.5 v1.0.2

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

6.6 v1.0.1

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