

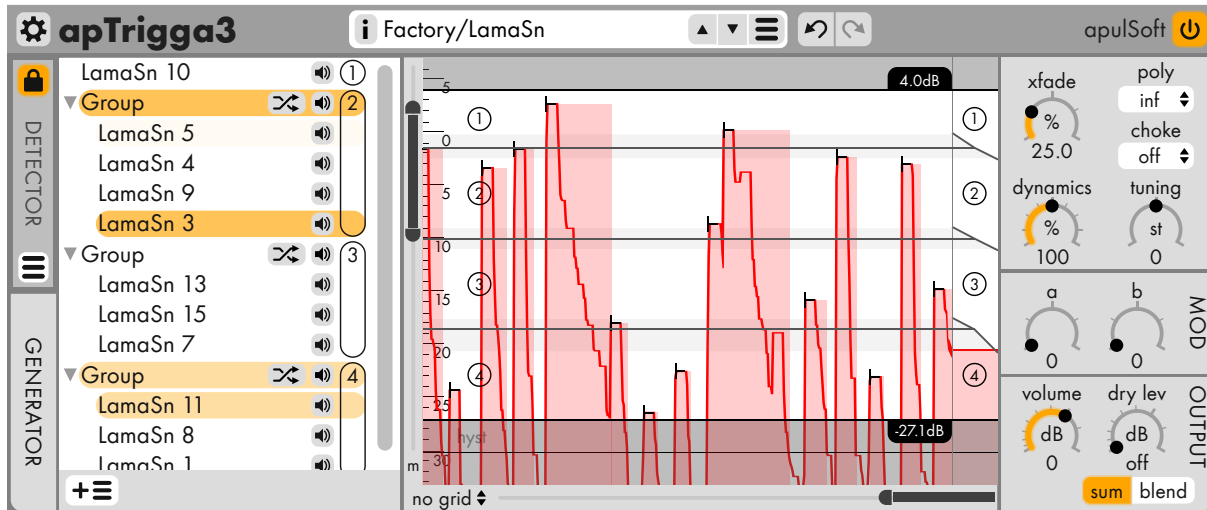
apulSoft apTrigga3 v3.7.0 Manual

trigger audio plugin
(VST/VST3/AU/AAX)

© 2021 apulSoft
<http://www.apulsoft.ch>

VST plugin technology by Steinberg.
AU plugin Technology by Apple.
AAX plugin Technology by Avid.
Manual written with \LaTeX on February 11, 2021

Introduction



apulSoft apTrigga3 is an audio insert effect plugin that detects trigger events on its input signal which are used to add or replace sounds. It has extensive sample management features, flexible synthesizer layers with multiple envelopes and a modulation section with per sample modulation of most parameters.

The plugin has various playback modes to play layers in sequence, randomly or stacked. apTrigga3 includes basic sound editing capabilities. The input can be recorded to quickly capture multi-samples from microphones or synthesizers.

Use apTrigga3 to replace or mix drum sounds on single-instrument channels. Due to its zero sample latency, it is ideal for live drum triggering (using drum pads or microphones).

Contents

1	End User License Agreement	5
2	System Requirements	6
3	Installation	6
4	Overview	7
5	Top Bar	8
5.1	Preset Section/Undo/Redo	8
5.2	License	9
5.3	Enable Processing Button	9
6	Detector Section	9
6.1	Input Frequency Graph and Filters	10
6.2	Trigger Graph	11
6.3	Detection Parameters	12
7	Generator Section	13
7.1	Dynamic Layer List	13
7.1.1	Group Mode Menu	14
7.2	Generator Main View	15
7.2.1	Trigger Graph	15
7.2.2	Generator Parameters	16
7.3	Waveform Tab	17
7.3.1	Waveform Display	17
7.3.2	Sample Settings	17
7.3.3	Actions menu	18
7.3.4	Sample Storage Path	18
7.3.5	Sample Editor Keyboard Shortcuts	19
7.4	Oscillator/Volume Envelope Tab	19
7.5	Filter Tab	20
7.6	Custom Envelope Tab	20
7.7	Modulation Tab	21
7.7.1	Modulation Targets	21
7.7.2	Modulation Sources	22
7.8	Sort Tab	23
8	Editing Envelopes	24
8.1	Curve editing	24
8.2	Multi-Selection	24
8.3	Loops	24
8.4	Envelope Time Base	25
8.5	Multi-Layer Envelope Editing	25
9	Recording Samples From The Plugin Input	25

10 Plugin Settings & Information Dialog	26
11 Sample Storage	27
12 Midi Input & Program Changes	28
13 Sample File Formats	29
14 Plugin Latency	30
15 Init and Factory Presets	30
15.1 Init Preset	30
16 Unlocking the Full Version of apTrigga3	31
17 Generator Layer Signal Flow	32
18 Frequently Asked Questions (FAQ)	32
19 Changelog	34

1 End User License Agreement

END-USER LICENSE AGREEMENT FOR apulSoft

This apulSoft End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and apulSoft for the software accompanying this EULA, which includes computer software and electronic documentation ("SOFTWARE PRODUCT" or "SOFTWARE"). By exercising your rights to make and use copies of the SOFTWARE PRODUCT, you agree to be bound by the terms of this EULA. If you do not agree to the terms of this EULA, you may not use the SOFTWARE PRODUCT.

DISCLAIMER OF WARRANTY

This product is provided on an "AS IS" basis, without warranty of any kind, expressed or implied, including any warranties of fitness for a particular purpose. The authors shall not be liable for damages of any kind. Use of this software indicates you agree to this.

SOFTWARE PRODUCT LICENSE

The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE PRODUCT is licensed, not sold.

GRANT OF LICENSE

Installation and Use: You may install and use copies of the SOFTWARE PRODUCT on all computers you own. Reproduction and Distribution: You may not reproduce or distribute the SOFTWARE PRODUCT except to make backup copies, or to install as provided for above.

DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS

Limitations on Reverse Engineering, Decompilation and Disassembly: You may not reverse engineer, decompile, or disassemble this SOFTWARE PRODUCT. Software Transfer: You may permanently transfer all of your rights under this EULA, provided you retain no copies, you transfer all of the SOFTWARE PRODUCT, and the recipient agrees to the terms of this EULA. Termination: Without prejudice to any other rights, apulSoft may terminate this EULA if you fail to comply with the terms and conditions of this EULA. In such event, you must destroy all copies of the SOFTWARE PRODUCT and all of its component parts.

COPYRIGHT

All title and copyrights in and to the SOFTWARE PRODUCT (including any images and text incorporated into the SOFTWARE PRODUCT), the accompanying printed materials, and any copies of the SOFTWARE PRODUCT are owned by apulSoft or its suppliers.

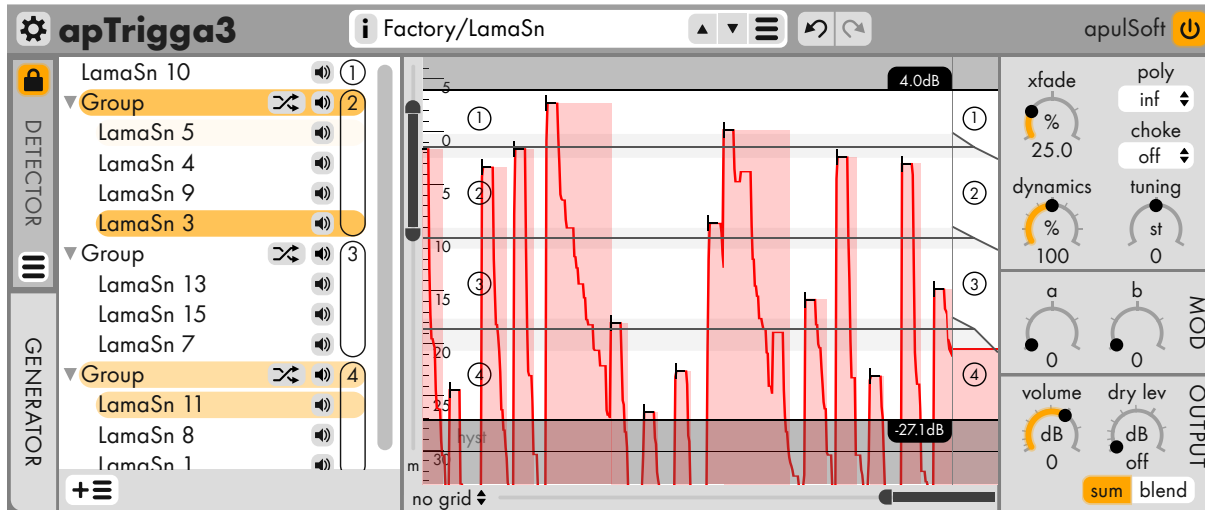
2 System Requirements

- macOS
 - macOS 10.9 or newer on an Intel or Apple Silicon CPU (64-bit only).
 - A host application compatible with VST, VST3, AU or AAX plugins running in 32-bit or 64-bit mode.
 - Pro Tools (AAX): The minimum required Pro Tools version is 10.3.5.
- Windows
 - Windows 7 or newer. Both 32-bit and 64-bit versions of Windows are supported.
 - A CPU with SSE2 instruction support (Pentium 4 or newer).
 - A host application compatible with VST, VST3 or AAX plugins running in 32-bit or 64-bit mode.
 - Pro Tools (AAX): The minimum required Pro Tools version is 10.3.5.
 - An application to view pdf files to read this manual.

3 Installation

- macOS
 - Quit all plugin host applications.
 - Double-click **aptrigga3-mac(..).pkg**.
 - Follow the standard OSX installation procedure.
 - Open a host and create an instance of apTrigga3 in a plugin slot.
 - The apTrigga3 GUI will show a welcome screen with the options to run the plugin in demo mode or to buy or enter license information.
- Windows
 - Quit all plugin host applications.
 - Double-click the **aptrigga3-installer-win(..).exe** to start the installation. On newer versions of Windows, it may be necessary to confirm the launch because of user access management.
 - Follow the installation procedure. During the install, you have the option to set the path to the apTrigga3 data folder. That is where settings, presets and the manual will be installed.
 - If VST2 versions are installed, the installer will provide the option to select destination folders for VST2 plugins for both 32-bit and 64-bit.
 - Open a host and create an instance of apTrigga3 in a plugin slot.
 - The apTrigga3 GUI will show a welcome screen with the options to run the plugin in demo mode or to buy or enter license information.

4 Overview



The apTrigga3 user interface consists of a global top bar and a large bottom section which is switchable between two main modes by clicking the large tab buttons on the left side. The **Detector** mode shows all settings related to trigger event detection and the **Generator** mode everything related to the sound generator.

Most of the user interface controls have **tooltips** that get displayed if the mouse hovers over them for some time (with the tooltips preferences setting enabled). In order to keep the manual brief, the tooltip information is not repeated in the manual. If the function of a control is unclear, use the tooltips.

Many controls on the user interface can be dragged with the mouse to change values.

- If the **Shift** key is held down the values will snap to predefined markers at round values during dragging.
- Holding **Ctrl** switches dragging to be scaled by 1/20 for fine adjustments.
- Clicking a control while holding **Alt** will change the value to its default value.
- Double-clicking most of the value-based controls opens a popup editor to enter a new value with the keyboard.

5 Top Bar



Click the gear button or the plugin title to get to the plugin preferences/information dialog.

5.1 Preset Section/Undo/Redo



The white box shows the label of the current preset and can be clicked to edit the label. The “i” button on the left opens the preset description popup that can also be used to edit the description.

On the right side are up/down arrow buttons to cycle through presets inside the same folder as the currently loaded one. The rightmost button opens the preset menu. It lists all available presets with folders as they are organized on disk. Below the presets the following entries are available:

save current preset.. The current state of the plugin is added to the preset menu. In the prompt that pops up, the preset name can be edited and folder paths can be added which automatically creates folders on disk if necessary. Presets in the menu can be overwritten by using the same name/path.

import preset.. Load a preset from a .tgg3preset file anywhere on the local filesystem.

export current preset.. Store the current state of the plugin as a .tgg3preset to any location on your local filesystem.

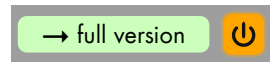
manage preset folder in finder/explorer.. This opens the filesystem folder that contains the presets shown in the menu. The usual file operations can be used to restructure this folder and therefore restructure the presets menu.

make preset portable.. This function switches all samples to use internal storage so they are all stores inside the preset file. It then resets several parameters to the values they have in the current Init.tgg3preset: The input filter section, the threshold value, the maximum trigger level, the trigger display view range and the (global) waveform zoom level. Additionally, all sample view ranges are set to show the entire playback range and samples are deselected. The idea is to prepare a preset to be moved to another machine/user/project. This function was used to have reasonable default values in the factory presets.

To the right of the white preset box are the **Undo** and the **Redo** buttons. apTrigga3 supports undoing the last 10 actions.

Note: Saving and importing of presets is only available in the full version of apTrigga3.

5.2 License



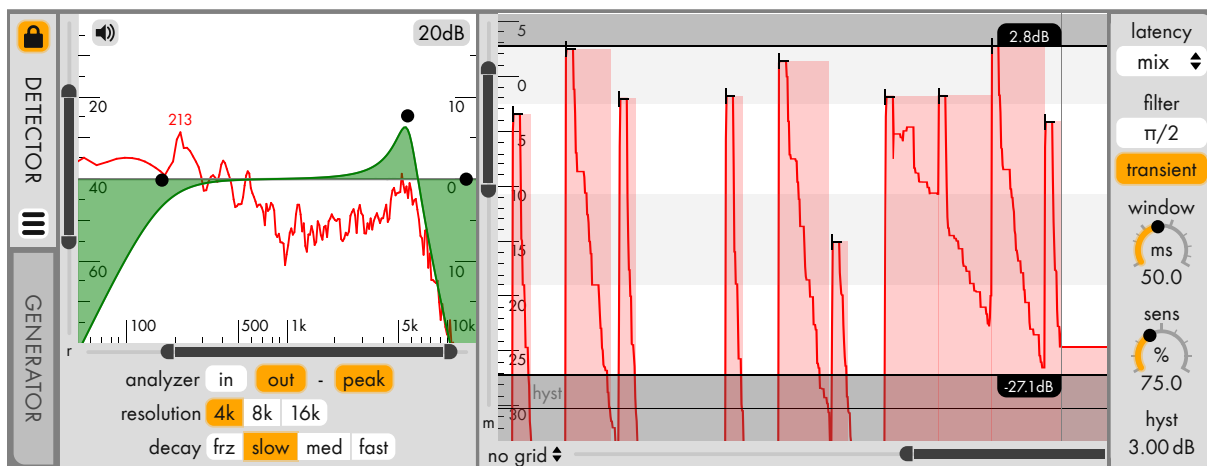
The look of the license section changes depending on your license status. In demo the [→full version](#) button is displayed. It brings up a dialog with options to buy a apTrigga3 license online, to enter the purchased license information or to keep running in demo mode.

Once full version of the plugin is unlocked, the license section displays the license ID.

5.3 Enable Processing Button

Toggle this button of to bypass all processing in apTrigga3. On compatible hosts, the button will hook up to the host bypass feature, in other hosts this button allows to automate bypassing the plugin without audible artefacts as the fade-in/out is handled by apTrigga3 if this button is used.

6 Detector Section

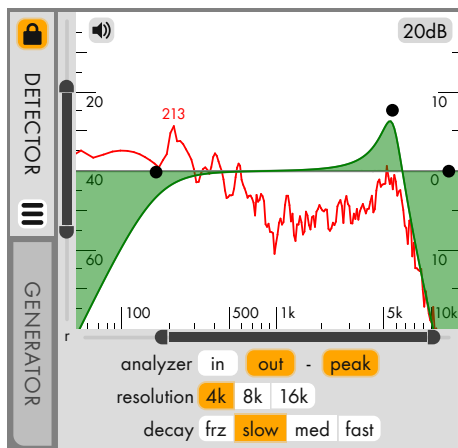


The detector section handles the detection of trigger events based on the plugin input signal. To show the detector section, click the vertical tab button labeled **Detector** on the left border of the interface. On the tab button, there are two sub-buttons.

The **lock** button on top locks all settings related to detection if plugin presets are switched. Once detection has been set up properly, use the lock to keep the settings while trying the sounds of different presets.

The **menu** button at the bottom lists available detector presets. New ones can be created by the user.

6.1 Input Frequency Graph and Filters



The input filter section processes the signal coming from the plugin input. It is first converted to mono and then fed through all the filter bands. The **speaker** button in the top left corner toggles listening to the signal leaving the filter section to check the filtered audio going into trigger event detection. In the top right corner there is a popup button to set the visible range of the filter response curves. The filter graph has a double-slider at the bottom to change the visible frequency range of both the filter curves and the analyzer graph.

Two frequency analyzers can optionally be displayed underneath the filter response curves. One before the input filters (**in**, blue curve) and one after the input filters (**out**, red curve).

The **out** analyzer has a peak frequency display feature that can be enabled using the **peak** button. If no filter band is selected, analyzer settings are displayed below the graph. If analyzers are enabled, a double-slider to the left of the graph allows adjusting the visible analyzer gain range. **Note:** this will not affect the filter curves!

The small button labeled **r** in the bottom left corner of the graph resets the graph viewport to default values.

Filter bands are created by clicking on the filter display. A menu with the available filter types pops up:

peak Boosts/attenuates frequency bands around a center frequency. It has an adjustable bandwidth in octaves that is defined by half the gain-value.

band stop Cuts out a band of frequencies completely.

high pass Cuts frequencies below a cutoff value. The gain value adds resonance to the highpass which boosts/attenuates frequencies around the cutoff frequency.

low pass Cuts frequencies above a cutoff value. The gain value adds resonance to the lowpass which boost/attenuates frequencies around the cutoff frequency.

band pass Cuts frequencies outside a frequency range. The gain value boosts the entire range.

spectral tilt Smoothly tilts the entire frequency spectrum. In most signals the lower frequencies contain more energy than high frequencies. The spectral tilt filter band type is ideal to counteract this.

The Filter bands can be edited by clicking on their circular black handles on the graph. The bottom section shows the relevant parameters which can be edited by dragging handles on the graph or dragging on the values. Double-clicking on the values opens a value editor to be used with the keyboard.

If a band has a bandwidth parameter, it can be adjusted by dragging the bandwidth area borders or by holding **Shift** when dragging on the main handle.

Filter bands have a **poles** parameter that defines slope steepness/filter shape definition. Each pole can produce a 6dB/oct slope. Symmetrical filter types (peak/band stop) require an even number of poles. Filters with high pole numbers use more processing power and produce more frequency based delay (group delay).

There is a predefined filter band called **master** to adjust the overall gain of the filter stage. Its handle stays close to the right side of the display.

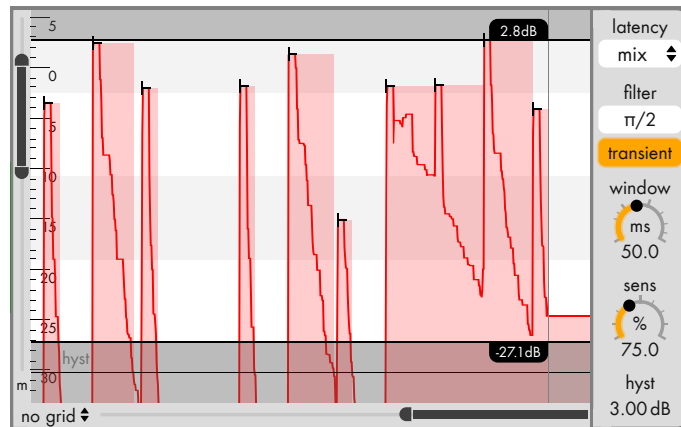
Note: Extreme filter settings can lead to latency due to phase shifts caused by the filter bands.

6.2 Trigger Graph

The right part of the detector pane displays the level of the incoming audio signal (with the filter bands applied) and the detected trigger events.

Beat information coming from the host application can optionally be displayed (including subdivisions).

Every detected trigger event is marked, black for normal events and green for events coming from the retrigger algorithm. Each event has a transparent red area attached that shows the hold duration of the signal (important for **Gate** playback mode and for recording samples).



On the signal graph, the low and high detection thresholds can be adjusted by dragging them with the mouse. Double-click the lines or on the numerical displays to enter values with the keyboard. On the left, a double-slider defines the visible dB range.

The slider at the bottom adjusts the shown signal duration. To its left is the **beat grid** menu which opens a popup menu with the available options for the rolling beat lines.

Note: Not all host applications feed this information to plugins.

The button labeled **m** in the bottom left corner matches the dB range to the thresholds and hysteresis setting to show the full triggering range.

6.3 Detection Parameters

latency Set the latency reported to the host application. Depending on the amount of latency, you get cleaner transients and/or the ability to match transient positions.

none 0ms latency reported, attacks might be corrected.

live 2ms latency for clean detection during realtime usage.

mix mixdown mode with 25ms latency, 5ms for detection and 20ms to adjust transient positions.

huge special effect mode with 500ms latency, 10ms for detection and 490ms to adjust transient positions to allow things like reverse reverb tails.

Check the plugin latency section for more information.

$\pi/2$ filter A pair of $\pi/2$ phase shifted all-pass filters converts the input to its analytic signal envelope. This was labelled **precise** mode in previous versions. It transforms sinusoidal signal components into their envelopes and works well on tonal noise-free signals such as the output of some drum pads. $\pi/2$ filtering adds about 10 samples of latency to detection.

transient filter Instead of looking at peaks, transient detection looks at signal energy rise times and only passes the signal to detection if the rise is significant. This filter replaces all parts of the signal that are not transients with silence.

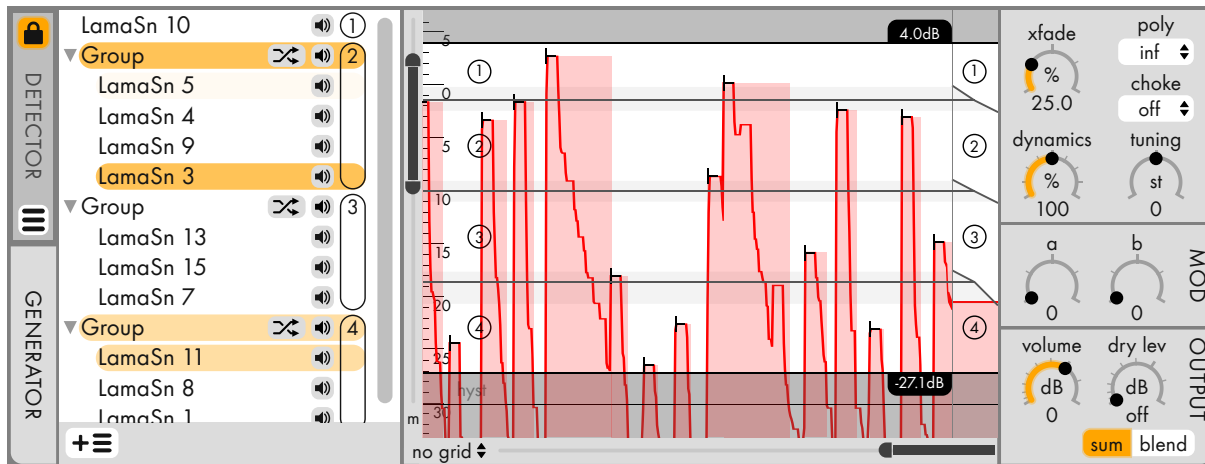
window Each incoming audio signal sample is held for this amount of time and the maxima of all these operations is used to do the triggering. Applying the window splits oscillations from the dynamic envelope of the signal. Under normal circumstances a value related to the lowest pitch present makes sense which is something in the 10-50 ms range. At the same time this time duration is the shortest time two trigger events can follow each other, so drum rolls might require lower values. If the transient filter is enabled, the window defines its working window. Faster transients need a shorter window.

retrig This setting allows detecting additional trigger events in case the trigger signal drops and rises again by the set amount. This can help with drum rolls, but it also increases the chances of unwanted trigger events. Events caused by retriggering are drawn with a green marker on the graph. This control is not available if the transient filter is used.

sensitivity This controls the sensitivity of the transient filter. More sensitivity = more things are considered to be transients.

hyst Short for trigger hysteresis. This is an additional offset to guard against unwanted trigger events near the threshold level. A trigger event only ends once the signal goes below the threshold - hysteresis.

7 Generator Section



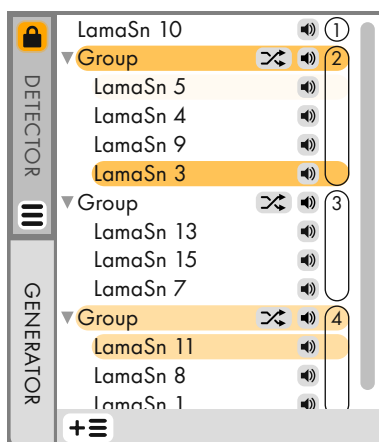
To show the generator pane, press the large vertical tab button labeled **Generator** on the left side of the interface.

The generator section controls how trigger events are used to synthesize sounds which can replace or be mixed with the audio coming through the plugin.

The selection state (using a green underlay color) of the dynamic layer list on the left side determines what is shown on the righthand side. If nothing is selected in the list, the generator main view is shown with playback/output parameters and a trigger signal graph.

Depending on the number and types of the selected layers, various tabs with specialized editors show up on the right side.

7.1 Dynamic Layer List



The list on the left side is where the layers of one preset are loaded and organized.

Samples can be loaded by dragging and dropping sample files onto the apTrigga3 user interface. If you drag right into the list, the order is determined by the drop location, otherwise samples get added at the bottom. Synthesizer layers can be created with the += menu or by right-clicking anywhere on the list.

The list order determines the dynamic order, on top is the item to be played back at the highest input level. The order can be changed by dragging entries up and down. Groups are created by dragging a layer onto another one, or by using the menu or context-menu.

Groups allow triggering layers in random or sequential order or to trigger all of them at the same time (stack mode). Clicking selects a

layer and brings up the sound editor tabs on the right side of the plugin. When holding **Shift**, multiple layers can be selected by mouse clicks which allows editing settings for all layers at once on the right side.

Clicking a group entry auto-selects all the samples it contains. Clicking below the lowest sample entry deselects all samples and switches the main area to the trigger graph display. The same thing can be achieved by re-clicking the generator tab button on the left or by using the close button on top right of any of the editor layers.

If layers are selected, the appropriate editor tabs show up on the right side of the list. If multiple layers are selected and they have different values for the same parameters, the gui controls display “...” to indicate multiple values. These controls can still be used to set the parameter to the same value for all layers at the same time.

Every time a layer or a group is played back by apTrigga3, an orange rounded rectangle will be drawn behind its list entry to provide feedback about what gets triggered. On the very right of entry is its dynamic level number. Groups share one level. These are the same numbers drawn onto the dynamic level areas on the rolling trigger signal graph described later. Left of that is a preview button that plays back the sample or the group (based on its configuration) through the plugin output. Group entries feature an additional group mode icon that can be clicked to change the group’s mode.

7.1.1 Group Mode Menu

random without repetition Layers are randomly selected for playback, but a layer is never played back twice in a row.

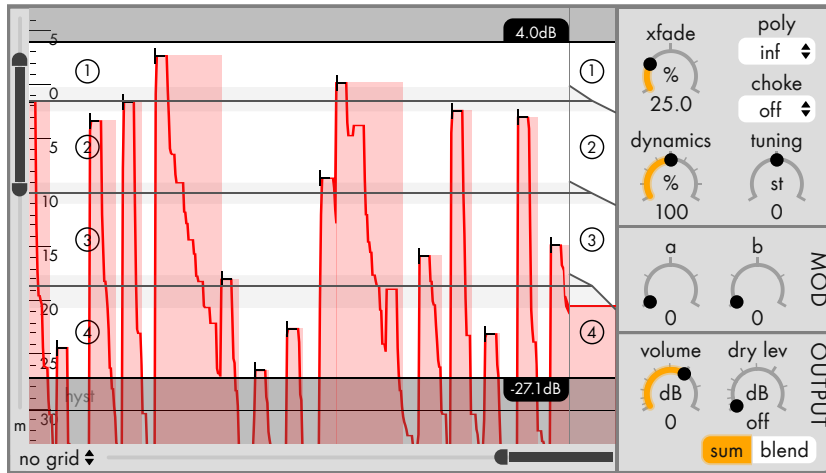
sequence The layers of the group are played back in order from top to bottom. The order can be changed by dragging & dropping layers on the list display.

stack All layers in the group are always played back at the same time.

random Every time the group is triggered, a layer is randomly chosen, the same layer can be chosen multiple times in a row.

ungroup Dissolve all selected groups.

7.2 Generator Main View



The generator main view is shown if no layer is selected. To quickly get there, click the left-side **Generator** tab button (twice if the interface is currently in detector mode).

7.2.1 Trigger Graph

The generator trigger graph is similar to the detector trigger graph. The red input signal, the trigger event markers, the dB and time range sliders are shared between the two. Additionally, the generator trigger graph shows dynamic group numbers, the dynamic dB range ratios and gray areas for the dynamic crossfade zones. The current signal is shown on the rightmost graph section and the signal history is moved leftwards while audio flows through the plugin.

On top of the curve, draggable horizontal lines allow adjusting the threshold level, the maximum trigger level and the ratios of the dynamic levels to use. These can be dragged up and down with the mouse.

The threshold level determines when trigger events start. The maximum trigger level normally can stay at 0 dB and defines the upper limit of modulation. Some hosts feed signals above 0 dB, therefore the trigger gain range also goes above 0 dB.

If there are multiple dynamic groups, they are marked with circled numbers that show what layers/groups are played back if an event occurs in the section. Drag the mouse while holding **Shift** on the level ratio lines to proportionally move all levels at once.

Clicking (&holding) into the graph synthesizes the trigger signal at the clicked level. Use this to test level and crossfade settings. On the very right side of the graph, it is possible to click at any vertical position as no handles are in the way.

To the left of the graph is a double-slider that can be dragged to adjust the dB range of the signal shown. The bottom slider adjusts the visible duration/scrolling speed of the display.

7.2.2 Generator Parameters

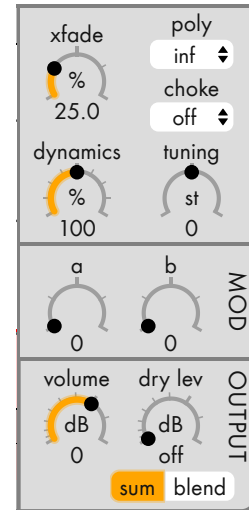
xfade This is the amount of crossfading to use between dynamic levels. It is shown in the trigger graph with a transparent gray overlay. If a trigger events happen inside the gray area, both layers/groups are played back and crossfaded/mixed.

poly This popup menu sets the number of events that can play back sounds at the same time. It goes from 2 to 8 with a few special modes:

gate Only one event produces sound and only as long as the signal stay above the lower threshold.

mono Only one event is playing back at once, but each sound plays to its end unless another trigger event happens.

inf An infinite number of voices are used for playback.



choke This menu lets you assign the current instance of apTrigga3 to one of four choke groups. Instances of the same group will cut off each others playback when a new event starts. The most obvious use case is cutting off an open hihat with a closed one in another instance.

Note: Choking only works across one host and all instances need to use the same plugin format. Choke events can be delayed by up to one buffer size.

mod a/b Using custom modulation rules, these two buttons can be assigned to change any sound synthesis parameters. As layers can have separate modulation rules, this allows for all kinds of complex modulation when these knobs are turned. Additionally, the two modulation knobs show up as automatable parameters in the host application. Double-click the knob labels to rename the parameters.

dynamics The amount of modulation caused by the input signal level. At 0% all sounds are played back the same way regardless of input level.

tuning Adjust the tuning of all layers of sound at the same time.

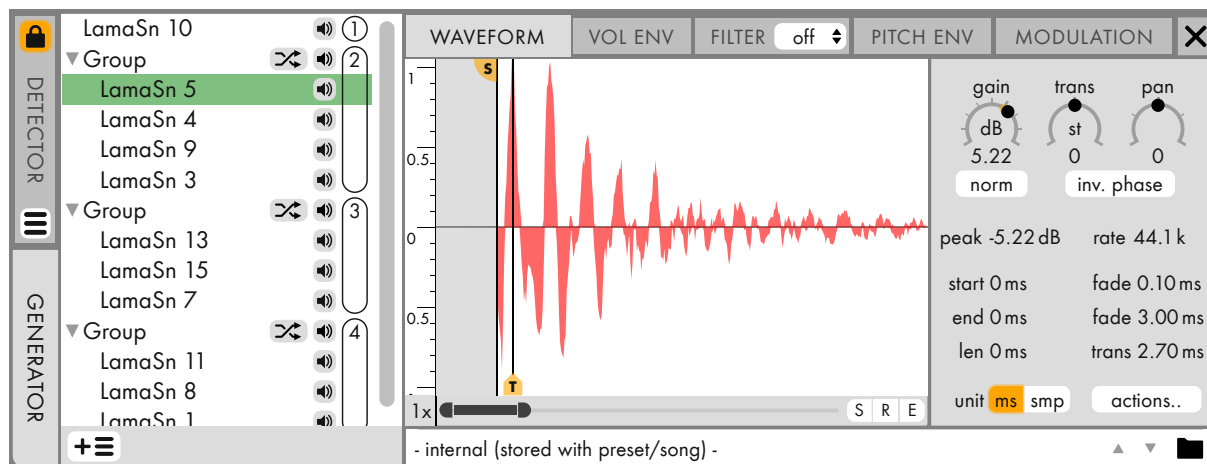
volume The generator output master level.

sum/blend Switch Switch between two different output modes controlled by the button below:

dry lev The level of the dry input signal to add to the output. 0dB means the full input signal is added to the output. If turned all the way down, the dry signal is muted and the sound going through the plugin is completely replaced by sample playback.

out mix Mix/Crossfade between sample playback and the dry audio signal. This can be automated in your host if you need to replace sound only during parts of a song.

7.3 Waveform Tab



To get to the waveform editor, go to the **Generator** view and select one or multiple sample layers in the layer list, then choose the **Waveform** tab on the right.

7.3.1 Waveform Display

The large display in the center shows the sample waveform. The playback range can be adjusted by moving the vertical start and end markers (the two lines with the **S** and **E** flags). If the plugin latency is set to a mode that allows transient matching (mix or huge), the **T** line shows the current transient matching position. If the line turns red, the value is outside the available time range.

Clicking the waveform display inside the playback range triggers the sample for preview. To the left of the display is a ruler showing the sample values and the amount of vertical zoom at the bottom. Clicking the ruler opens a menu to change the zoom level.

A double slider at the bottom controls the visible range. To the right of the slider are **S/R/E** buttons to set the view to show the start/entire range/end of the sample.

7.3.2 Sample Settings

The sample settings are on the right side of the sample editor. The label of the sample can be edited by clicking. The basic playback parameters can be adjusted with knobs: **gain** in dB, **trans** (transpose) in half-steps and **pan** (Panorama - if the plugin instance has a stereo output).

Below the **gain** knob is a button called **norm**. It sets the gain knob to the negative value of the maximum peak gain in the playback range of the sample. This means the sample will be played back normalized (with a peak gain of 0 dB).

To its right is a toggle button called **inv. phase**. It switches the playback phase of the sample, which is the same as multiplying each value by -1.

Below these knobs, sample parameters are shown as text. **start**, **end**, **length**, **trans** and the fade times can be adjusted by dragging or double-clicking to pop up a value editor. If text of trans

(transient position) turns red, the value is outside the available range defined by the detector latency mode. The **unit** field switches between showing and editing values as milliseconds or samples.

7.3.3 Actions menu

At the bottom right is the **actions..** menu button:

crop Discard all information outside start and end of the sample to save memory. This only works on internal samples.

mixdown to mono Mix stereo samples to mono. This only works on internal samples.

reverse Reverse the time on the sample. This only works on internal samples and flips fades and transient position as well.

move sample to internal storage This sets the sample to use internal storage. The sample waveform gets stored inside the preset data and is stored with projects/songs. This will make your songs larger, but it will ensure you never lose a sample.

move sample to disk.. If a sample has been stored inside the preset data, this action moves it back to disk. You can also use it to move file-based samples to a new location. Samples are always written as .wav files.

remove sample from plugin The currently shown samples are removed from the plugin.

Export a Copy to Disk.. Store the waveform of the currently selected/edited sample to disk without changing anything in apTrigga3. Use this to export internal samples from presets or to store recorded samples to disk.

Show File in Finder/Explorer.. For samples with external (file) storage, open a Finder/Explorer window to show the sample file.

7.3.4 Sample Storage Path

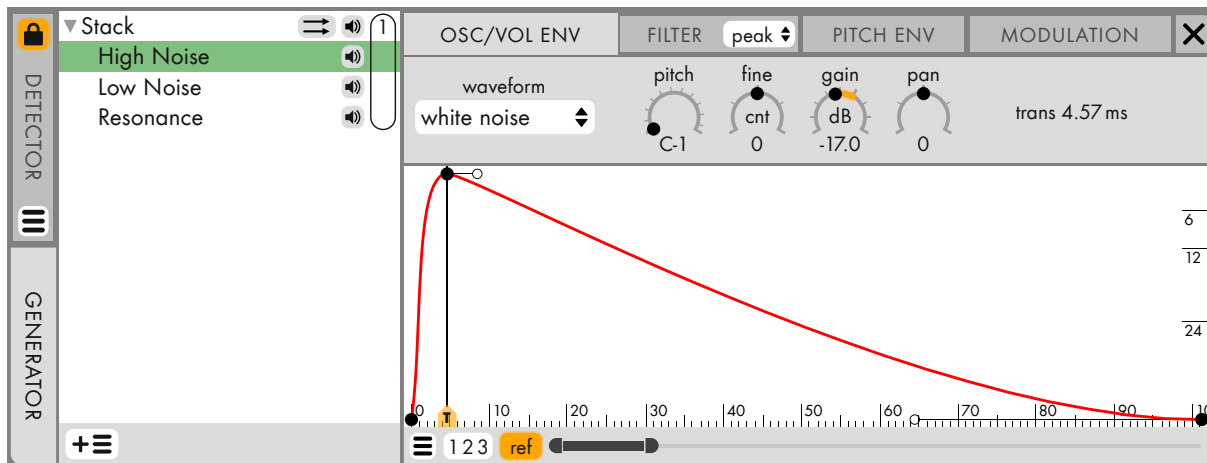
At the bottom of the sample editor, the file path of the currently edited sample is shown (in external storage mode).

There are three buttons on the right. The up and down arrow buttons replace the currently loaded sample with the previous/next sample inside the same folder on disk. This functionality is only available if the loaded sample file path exists on disk. The folder icon button on the very right opens a file chooser dialog to replace the sample file with a different one from disk. When replacing a sample, most playback parameters stay unchanged.

7.3.5 Sample Editor Keyboard Shortcuts

- A** Play the current playback range.
- S** Move the waveform display to show the start marker.
- E** Move the waveform display to show the end marker.
- R** Show the entire playback range in the waveform display.

7.4 Oscillator/Volume Envelope Tab



To get to the oscillator/volume envelope tab, select one or multiple layers and click on the **Osc/Vol Env** tab button.

Set up your oscillator parameters or some sample playback parameters on top and edit the volume envelope on the bottom.

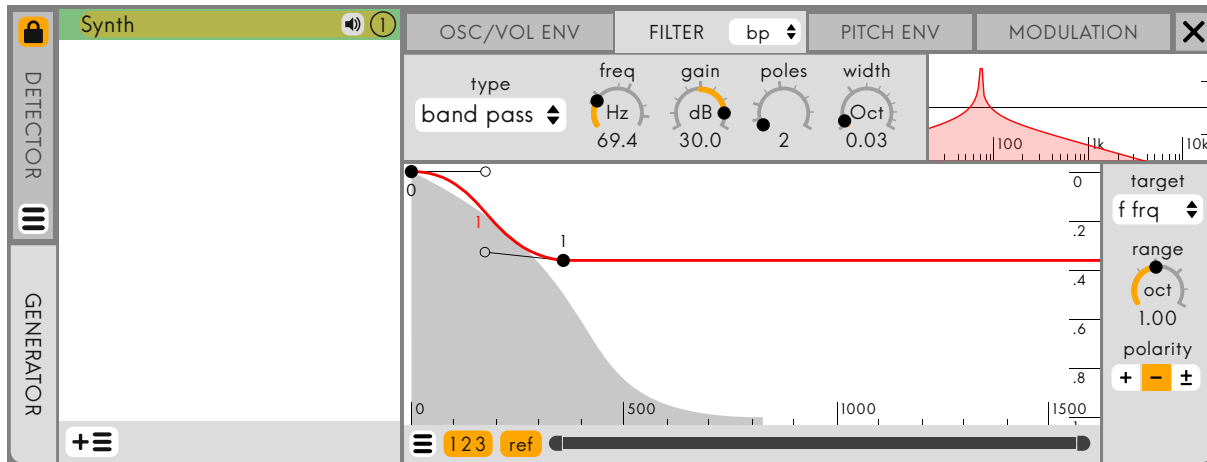
The noise oscillator types use the **pitch** and **fine** settings to control a high-pass filter that filters the noise right after it is created and before it runs through the main layer filter.

The **trans** (transient position) parameter and draggable line are only available in plugin latency modes that allow transient matching. If they turn red the current value is outside the available range depending on the mode.

The apTrigga3 volume envelope works in decibel space. (It's linear from 0dB to -39dB and then smoothly rolls off to silence/-infinity dB). This means drawing straight lines leads to fades that sound constant to the ear. Envelopes can have an unlimited number of breakpoints and each section can be edited like a bezier curve in graphics applications. Curved sections use slightly more cpu.

For more information about the envelope editor, please check the section about envelope editing.

7.5 Filter Tab



To get to the filter tab, select one or multiple layers and click on the **Filter** tab button.

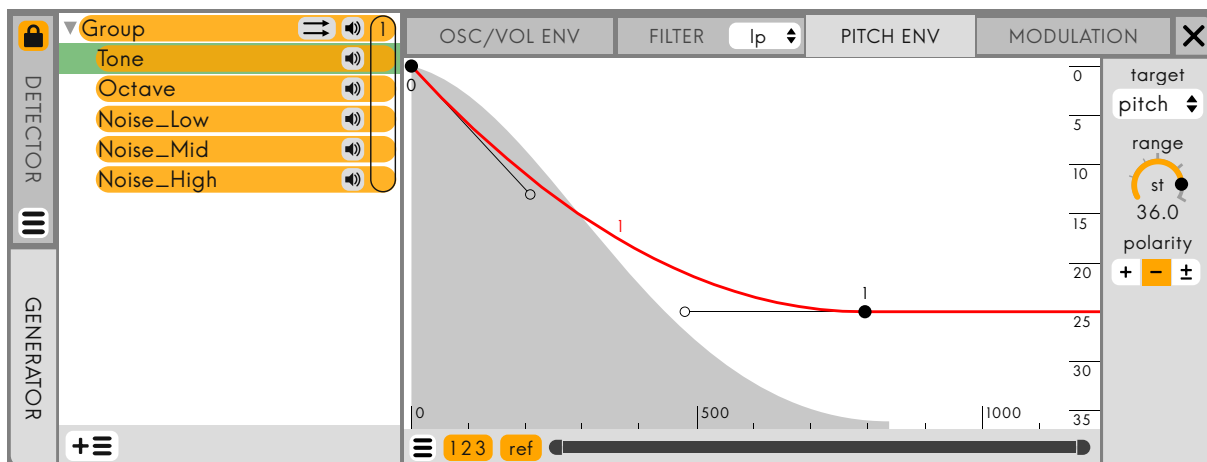
The filter is applied right after resampling samples or generating the oscillator waveforms. Various filter types are available and depending on the type, different parameters are adjustable.

Most filters allow adjusting the number of **poles**. A pole is the basic building block of these filters and each can produce a slope of 6dB per octave. The more poles are used, the steeper falloffs can be produced and the more defined each filter shape gets. CPU usage also scales with the number of poles.

The filter envelope allows modulating various filter parameters (target) over time and can itself be modulated by the modulation system. Modulated filters use more CPU than static ones.

For more information about the envelope editor, please check the section about envelope editing.

7.6 Custom Envelope Tab



To get to the filter tab, select one or multiple layers and click on the **Custom Env** tab button. The tab renames depending on the modulation target set for the custom envelope.

The custom envelope is an additional envelope that can be used to modulate synthesis parameters over time. A common use is to change the pitch/playback speed of an oscillator/sample layer.

For more information about the envelope editor, please check the section about envelope editing.

7.7 Modulation Tab



To get to the filter tab, select one or multiple layers and click on the **Modulation** tab button.

The modulation tab allows changing many playback parameters (modulation targets) based on source values such as the detected level and midi input. On top, there are a few standard modulation rules (trigger level to playback level, pitch and filter frequency). On the bottom you can create as many custom rules as you like. Rules with the same target are added up before being applied.

Modulation rules targeting envelopes can be applied to certain breakpoints/section of the envelope only. To do that, enter the section/point numbers you'd like to target in the range field. The field uses a syntax similar to printer page range dialogs. Some examples of valid entries: "full", "1-4", "1,3,6-8", etc. The values can be looked up on the envelope editors when the section/breakpoint number display setting is enabled on the envelope editor.

7.7.1 Modulation Targets

gain The oscillator gain/sample playback gain.

pitch The oscillator pitch/sample playback speed in half steps. 12 half steps = 1 octave.

panorama The layer panorama. 100 is the distance from center to full left or right.

filt freq The layer filter cutoff/center frequency. Modulated in octaves.

filt gain The layer filter gain.

filt bw The layer filter bandwidth. This only works for filter types with a bandwidth parameter.

vol env speed Volume envelope speed. This factor is applied to the envelope playback speed. This parameter can be limited to a section range using the range text field.

vol env offset Volume envelope offset. A % offset is added to the envelope breakpoint values. 100% means the breakpoint is moved all the way upwards on the envelope editor. This parameter can be limited to a breakpoint range using the range text field.

filt env speed Filter envelope speed. A factor is applied to the envelope playback speed. This parameter can be limited to a section range using the range text field.

filt env offset Filter envelope offset. A % offset is added to the envelope breakpoint values. 100% means the breakpoint is moved all the way to the max. modulation on the envelope editor. This parameter can be limited to a breakpoint range using the range text field.

custom env speed Custom envelope speed. A factor is applied to the envelope playback speed. This parameter can be limited to a section range using the range text field.

custom env offset Custom envelope offset. A % offset is added to the envelope breakpoint values. 100% means the breakpoint is moved all the way to the max. modulation on the envelope editor. This parameter can be limited to a breakpoint range using the range text field.

7.7.2 Modulation Sources

none Rule disabled

const Use a fixed offset on the target

level abs The absolute event level normalized from a range of -60dB to 0dB

level rel The relative level between the two trigger thresholds

random/event A random value that is generated once per event. It is the same for all rules on all layers.

random/layer A random number that is generated once per layer. It is the same for all rules on this layer.

random/param A random value generated separately for each modulated parameter.

midi pitch The incoming midi pitch normalized to a range of 4 octaves. Midi C3 is the center value.

midi pitchbend Midi pitch wheel value.

midi CC# Some common midi controllers.

7.8 Sort Tab

label	peak	peak+gain	gain	actions..
LamaBd 1	-5.80 dB	0 dB	5.80 dB	
LamaBd 2	-6.27 dB	0 dB	6.27 dB	
LamaBd 3	-7.53 dB	0 dB	7.53 dB	
LamaBd 4	-8.63 dB	0 dB	8.63 dB	
LamaBd 5	-9.83 dB	0 dB	9.83 dB	
LamaBd 6	-10.9 dB	0 dB	10.9 dB	
LamaBd 7	-13.1 dB	0 dB	13.1 dB	
LamaBd 8	-17.5 dB	0 dB	17.5 dB	
LamaBd 9	-23.6 dB	0 dB	23.6 dB	

The sort tab is shown whenever multiple layers or groups are selected in the layer list on the **Generator** pane.

Clicking column titles above the data selects entire columns at once. Editing a cell when a column is selected changes the same value for all selected samples at once.

The textbfactions.. button opens a menu to sort the selection, which changes the layer order in the master layer list on the left side of the gui. Therefore it changes how layers are dynamically selected.

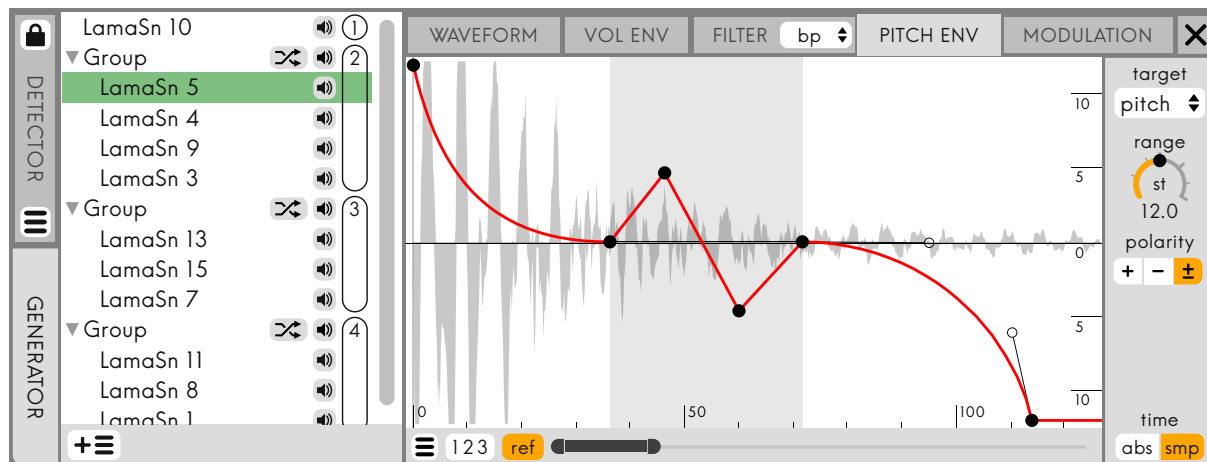
sort selection by label Sort the selected samples alphabetically by their (user-definable) label.

sort selection by waveform peak Sort the selected samples descending by the highest gain value inside the playback range. Use this to sort recorded samples by their played dynamics.

sort selection by peak+gain Sort the selected samples descending by the highest gain value inside the playback range multiplied by the **gain** setting of the sample.

reverse selection order The selected samples get their order reversed. This is independent of any groups created, it just flips the topmost sample with the bottommost etc.

8 Editing Envelopes



There are three envelope editors in apTrigga3: volume, filter and custom. They all share the same editing principles, the later two also allow adjusting the modulation target and the modulation range as well as the modulation polarity (right panel).

Envelopes can have an unlimited number of sections/breakpoints and each section can be shaped using bezier editing controls (curve weights attached to each side).

8.1 Curve editing

To add and remove breakpoints, just double-click the graph. Breakpoints can then be dragged around with the mouse. To edit the curves, hover over the section you want to edit and bezier handles appear that allow tweaking the curve. All possible targets are set up in a way that straight lines lead to sound changes that are perceived as linear changes, so curves are only necessary for accelerated or decelerated modulation.

8.2 Multi-Selection

The envelope editor allows editing multiple breakpoints at the same time. Make a selection by shift-clicking, dragging a selection rectangle or by dragging a time region on the bottom time ruler (this will catch all breakpoints regardless of level). You'll get a selection rectangle that allows moving and scaling all points at once.

8.3 Loops

The envelopes can have a loop. This is useful when using the **gate** mode or to use the filter/custom envelopes like LFOs (for effects like tremolo or autopan). In gate mode, the loop exits when the trigger

event ends. In all other modes, everything after the loop is ignored. Volume envs ignore loops unless the gate mode is used as otherwise, the sound would never stop.

8.4 Envelope Time Base

On sample layers, the envelopes can use two different time bases. The **time** switch on the lower right allows to switch between the two:

abs Absolute time. This is what's displayed on the kitchen clock and the same thing envelopes use on non-sample layers.

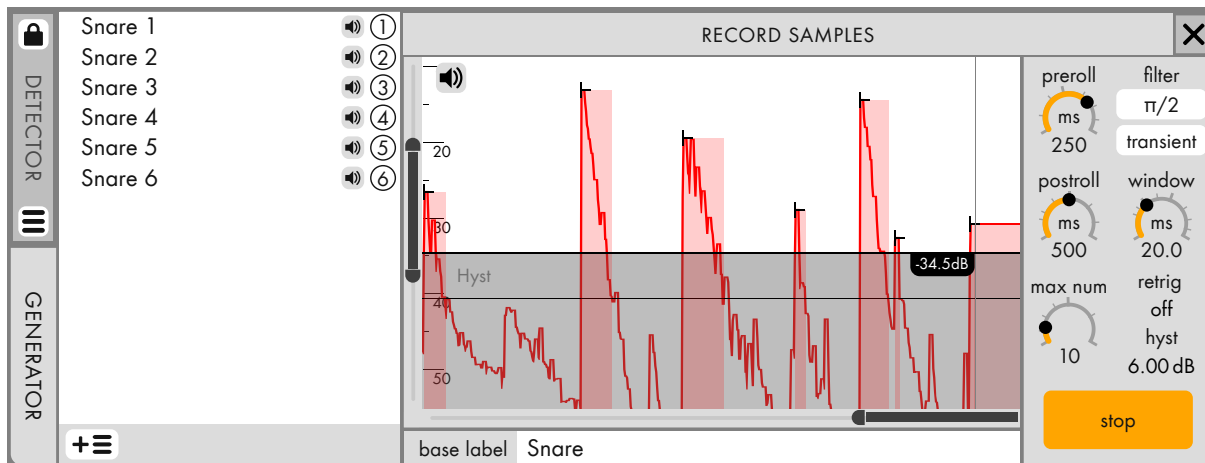
smp Sample time. In this mode, the envelope behaves as if it was baked into the samples. The envelope playback speed changes with the playback pitch of the sample, breakpoints stay where they are on the sample.

8.5 Multi-Layer Envelope Editing

If multiple layers are selected, the envelope editor displays all envelopes at once. If all are equal, they can be edited just like a single envelope. If they are different, the editor enters a special state that doesn't allow editing but allows to choose one of the envelopes by clicking on it. This will change the layer selection to the layer containing the clicked envelope.

Additionally, a double-click on any of the envelopes will apply it to all selected layers.

9 Recording Samples From The Plugin Input



To record samples using apTrigga3, navigate to the **record samples** tab using the layer list context menu (right-click) or the menu button below the layer list. Choose the entry "record samples.."

The **record samples** tab shows the input signal level and allows adjusting detection parameters. The speaker icon button on the graph toggles routing the plugin input to the output to hear the audio to be recorded.

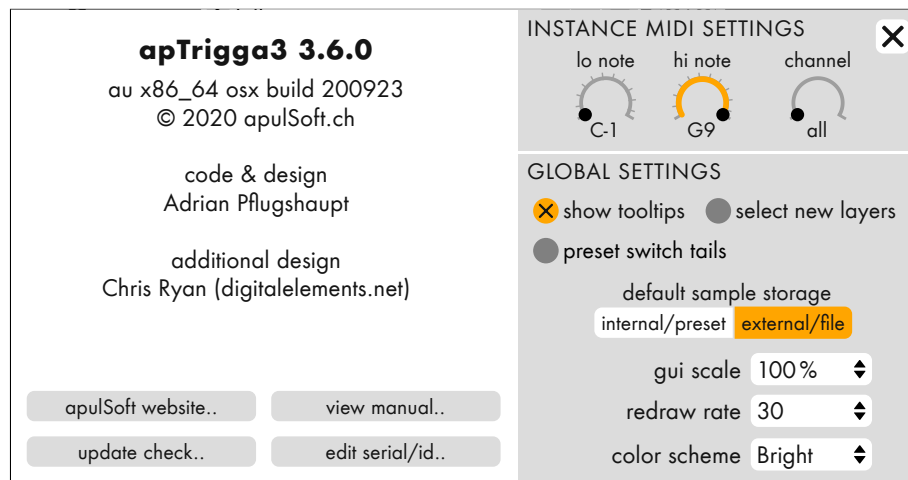
Pre- and post-roll are time durations added to each recording to allow trimming outside the recorded region. Max count is a safety number, so the plugin does not accidentally record hundreds of samples. Once the set number of samples are recorded, recording automatically stops. On the bottom, define a name to label the recorded samples. Ascending numbers will be added to the string entered.

Once everything is ready, hit the **record** button and watch as new samples appear on the layer list.

The usual next step is to sort the recorded samples by volume. To do that, select all recorded samples and click the **sort** tab button, where you can sort the samples by their peak volumes.

In many cases, it will be necessary to tweak the start times of the recorded samples to make sure they are playing in phase to allow crossfades between them.

10 Plugin Settings & Information Dialog



This dialog is opened by clicking the gears icon or the plugin name in the top left corner of the main apTrigga3 Interface.

The left side of the dialog shows some basic information about the plugin and has four buttons at the bottom.

apulSoft website.. This opens the systems default browser and points it at <http://www.apulsoft.ch>.

view manual.. The apTrigga3 manual is opened in the default pdf viewer application.

update check.. This opens a special page on the apulSoft homepage and sends version information. The homepage checks the version against the latest release and provides links to downloads if newer versions are available.

edit serial/id.. This button (re-)opens the serial information entry dialog. You can use it to enter, look up or edit your license information.

The **Instance Midi Settings** at the top-right corner allow limiting the midi notes the plugin reacts to. These settings are only valid for the current instance of the plugin.

Global Settings apply to all instances of apTrigga3. All instances using the same plugin format in the same host will update immediately, others once the plugin is reloaded.

show tooltips If this is activated, orange rectangles with little hint texts will pop up if the mouse hovers in place over a control for a second.

select new layers If turned on, apTrigga3 will always select layers that are added to the plugin right away.

preset switch tails If enabled, previous sounds play to their ends when a new preset is loaded. This uses more memory and cpu during preset switches but is very useful for switching presets in real-time.

default sample storage This changes the storage behavior for newly added samples. It switches between copying the sample to the plugin (preset/song) and just storing a path to the file on disk.

Note: Samples created by the recording function will always be stored in internal storage.

gui redraw rate The number of interface redraws per second. A slow computer might not be able to reach high rates. High refresh rates will only work well with small host audio buffer sizes.

gui scale Choose how large the plugin interface should be drawn in %. The right-side popup features a few presets and it is also possible to just enter any value between 25 and 500. Some hosts might only display the plugin correctly at the new size once the plugin window is closed and reopened. In extreme cases, the host might need to be restarted.

color scheme Switch between multiple color schemes for the interface. The menu will show all installed schemes and new ones can be added by the user by renaming and editing the existing scheme files. These are located in a folder called ColorSchemes next to the apTrigga3 presets folder. Use the **Manage in Finder/Explorer..** entry of the presets menu to navigate to the presets folder. The color schemes use an xml based format that can be edited in any text editor. More information can be found inside the **Bright.xml** file.

11 Sample Storage

apTrigga3 supports two ways of storing samples.

External storage For samples with external storage, apTrigga3 just stores the path to the sample file on the local filesystem. This means the user is responsible for not moving or erasing the used files. If apTrigga3 cannot find a file anymore when a preset with external storage is used, that sample's label will be drawn red in the sample list. External storage has the advantage that multiple presets can share the same files, it always allows to select previous and next samples in the same folder and it makes presets smaller and therefore host project files stay smaller. Presets with external storage will only work on other machines if the samples can be found at exactly the same filesystem paths.

Internal storage A sample with internal storage gets stored inside presets. It does not need to exist as a file on disk and it is saved with presets and DAW projects/songs. If samples are recorded with apTrigga3, they always are set to use internal storage. The big advantage is that samples cannot be lost that way. Presets with all samples in internal storage can easily be moved to other machines and if projects/songs are moved to other machines, nothing needs to be done to ensure sample availability. However, this does lead to duplication of the same sample data.

The default storage type can be chosen on the global settings pane of apTrigga3. The external storage option is preferable for users that already have their sample folders organized (maybe because they have used apTrigga2 in the past). Using the internal storage option is the more worry-free way of using apTrigga3, but it uses more space. Usually, drums and percussive samples are short in duration which means preset size will stay manageable and even if sounds are stored multiple times they will not fill any hard drive quickly.

There are multiple ways to configure internal/external storage in apTrigga3. For new samples loaded/dropped into apTrigga3, it will use the setting from the global settings pane. Once samples are loaded, the storage mode can be changed both for individual samples or many samples at once. In the sample editor, the option to change the storage mode for the edited sample can be found in the **actions..** popup menu. If multiple samples (or groups) are selected, similar options can be found in the **actions..** popup menu of the multiple sample editor.

If you want to share presets with other people, always make sure to switch all samples to internal storage before exporting the .tgg3preset file. Only this way the preset becomes truly self-contained and machine-independent.

12 Midi Input & Program Changes

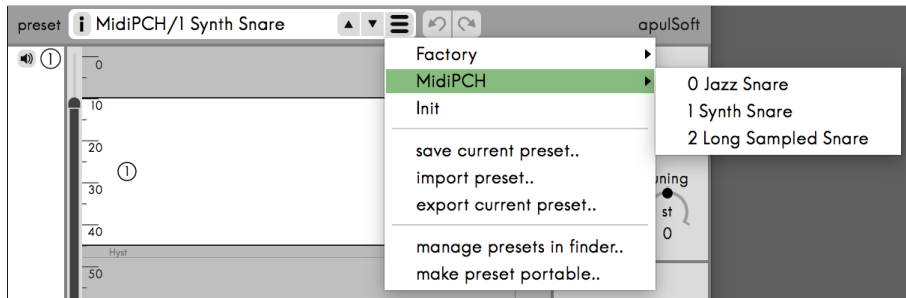
Please consult the manual of your DAW to find out how to send midi data to an audio insert plugin.

Note: Not all host applications support this feature.

apTrigga3 uses note-on events to create trigger events from midi. Note-offs are used if the plugin is in **Gate** mode.

Using modulation rules, midi pitch and pitch bend information (monophonic) as well as various midi controllers can be used to change synthesis parameters.

Sending midi program change messages switches to different presets. The sent program change number is used to select a new preset based on the order of the current preset folder. For switches during a song it is best to enable the global setting **preset switch tails**, which makes sure the previous sounds can play to their ends.



Midi program change setup example.

Midi messages are filtered the the instance midi settings **lo/hi note** and **channel**.

13 Sample File Formats

apTrigga3 accepts a variety of sample formats. It has built-in support for WAV, AiFF, OGG and FLAC files and uses operating system components to load any format the operating system understands. On OS X it uses Quicktime and thus new formats can be added by installing Quicktime extensions. On Windows, it uses Windows Media codecs and that allows for adding new formats. If Finder/Windows Explorer can read it, apTrigga3 should be able to read it too.

Note: While apTrigga3 can read compressed file formats, the internal plugin storage always stores samples uncompressed to ensure cross-platform preset compatibility.

14 Plugin Latency

Traditionally apTrigga3 has focused on providing triggering with as little latency as possible. Playback started on the first peak after crossing the threshold value. Depending on the waveform of input signal this could be perfect or lead to corrections of the detected level on subsequent signal peaks. Since version 3.7, apTrigga3 can report latency to the host application as use the gained knowledge of the "future" to produce cleaner results.

For realtime performance the latency cannot be compensated. Thus the high latency modes are only useful during mixing.

The mixdown modes include the ability to define a transient position for each sound layer which gets sample-accurately aligned with the highest peak detected. The overall latency minus the time used during detection gives the maximum position of these transients. If the numbers and handles turn red, the maximum transient position is exceeded.

mode	latency	detection delay	max transient	description
none	0 ms	0 ms	0 ms	Original mode. Detection happens as fast as possible, but non-perfect input transients will get their level corrected.
live	2 ms	2 ms	0 ms	Two milliseconds of delay are used to perfectly detect all fast transients on the input. This delay is the same as listening to a source from 60cm distance and is suitable for realtime performance.
mix	25 ms	5ms	20ms	The standard mixdown setting with transient alignment.
huge	500 ms	10ms	490ms	For special effects (like transient aligned reverse reverb) this mode can start playback up to 490 ms before an event - but a lot of latency is added to your signal chain.

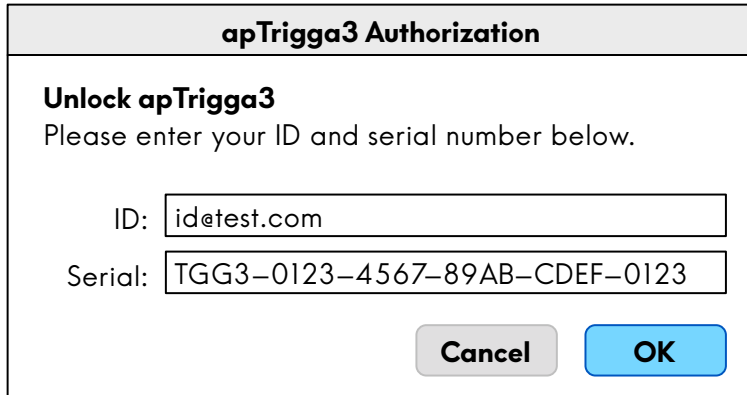
15 Init and Factory Presets

apTrigga3 installs a number of example presets by default. All factory presets include descriptions that are accessible by clicking the **i** button on the left side of the current preset name.

15.1 Init Preset

A special preset is the **Init** preset. The first time the plugin is opened it is auto-generated from the plugin's default values. Every time a new instance of apTrigga3 is created, the **Init** preset is loaded. This allows you to set up your personal default values by overwriting this preset once the plugin is in the desired default state.

16 Unlocking the Full Version of apTrigga3



apTrigga3 Authorization

Unlock apTrigga3
Please enter your ID and serial number below.

ID:

Serial:

Once you bought an apTrigga3 license via 2Checkout from the apulSoft homepage (which can be opened from the demo welcome screen or the global settings dialog) there are three ways to enter your information and unlock the plugin.

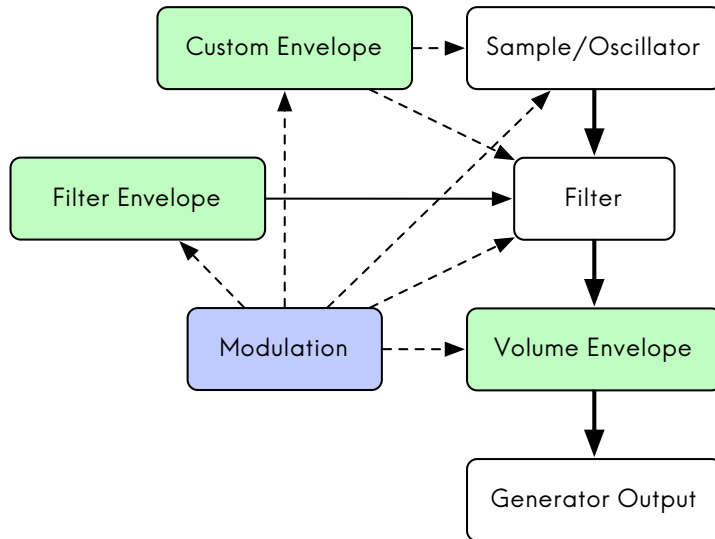
- When you open first apTrigga3 plugin interface, a demo welcome screen appears with a **Enter ID/Serial..** button. Click this button open the pictured dialog.
- If the plugin is running in demo mode, a button is displayed on the top right which brings up a license dialog where the **Enter ID/Serial..** button can be used to open the pictured dialog.
- Clicking the preferences gear button on the top left corner of the plugin opens the preferences dialog which contains an **edit id/serial..** button that brings up the pictured dialog.

Just enter the ID/serial exactly as received and click **OK**. to unlock the full version.

In case the ID/serial is not accepted, check the following things:

- The serial needs to be an apulSoft apTrigga3 serial consisting of **TGG3** followed by 5 sections of 4 hexadecimal digits (0-9, A-F).
- If copy/paste was used, try typing manually as copy/paste sometimes copies more than was intended (white spaces, tab stops, etc).
- Check whether you used the right fields for the right entries.

17 Generator Layer Signal Flow



18 Frequently Asked Questions (FAQ)

- **I lost my serial/ID thingy. How do I retrieve it?**

Visit <http://www.apulsoft.ch> and use the **Contact** apulSoft link. Please add enough information to locate your order in the database and you will receive your serial/ID info as soon as possible.

- **Why does apTrigga3 not have a Midi output?**

It would be impossible for apTrigga3 to achieve its low latency when outputting Midi. Midi output for plugins does not exist in many host applications and some add unpredictable latencies to Midi

when it is coming from plugins, so real-time usage would be problematic.

- **What to do if the window size does not match the interface size after adjusting the GUI scale?**

Depending on how the host application handles resizing of plugins triggered by the plugin, changing the GUI scale might not immediately work correctly. Any change to the GUI scale is stored in a global preferences file that is read whenever a new instance of apTrigga3 is created. If this problem occurs, first try to just close and reopen the plugin window/editor. If that does not help, set the desired scale on the settings pane and then restart your host application. As long as GUI scale is not changed again, window and content should match.

- **Why do Midi input and sample preview buttons sometimes not produce any sound?**

apTrigga3 can only produce audio output if an audio stream is flowing through the plugin. Modern hosts try to limit their CPU usage by not feeding audio through plugins if they believe the stream to consist of silence. In that case, apTrigga3 will not react to Midi and clicks on preview buttons. To make it work, just feed some audio through apTrigga3. Record-enabling a track usually does that. If you want to use apTrigga3 as a midi synth, place another synth in the instrument slot and make it output something inaudible.

- **After updating apTrigga3 AAX, why does Pro Tools tell me "Plugin not found" or "The following plug-ins were made inactive because of insufficient system resources: apTrigga3" or "Plugin isn't a valid 64bit AAX plugin" when I try to reload a project?**

Due to changes in the AAX wrapper of the JUCE framework which was used to create apTrigga3, Pro Tools sometimes gets confused about apTrigga3's configurations and properties. If this happens, make Pro Tools rescan all AAX plugins by erasing its plugin list.

On macOS, the plugin list can be found at:

~/Library/Preferences/Avid/Pro Tools/InstalledAAXPlugins

apTrigga3.aaxplugin is located at:

/Library/Application Support/Avid/Audio/Plug-Ins/apTrigga3.aaxplugin

On Windows the plugin list is at:

C:\Users\[UserName]\AppData\Roaming\Avid\Pro Tools\InstalledAAXPlugins

apTrigga3.aaxplugin is located at:

C:\Program Files[x86]\Common Files\Avid\Audio\Plug-Ins\apTrigga3.aaxplugin

Once these files are deleted and apTrigga3 has been reinstalled, Pro Tools will do a full rescan of all AAX plugins on the next launch and apTrigga3 should be working correctly again.

19 Changelog

- Version 3.1.0
 - Input filter bands with adjustable order (slope steepness/shape definition).
 - Improved signal hold-time processing performance for small audio buffer sizes.
 - Customizable description text for presets.
 - Adjustable random pitch generator for each trigger event.
 - The phase of each sample can be flipped.
 - The sample editor can switch between ms and samples units.
 - New preset menu entry Make Preset Portable.. to merge base settings with the Init preset.
 - Support for VST3 host bypass functionality.
 - Previous/next preset in folder buttons added.
 - BUGFIX: crash when closing the plugin GUI with the filter band creation popup open.
 - BUGFIX: crash when using the sample preview playback in a file chooser dialog.
- Version 3.1.1
 - WAV and AiFF files with missing or wrong file extensions can be loaded.
 - Additional build information is displayed on the settings pane.
 - BUGFIX: clicks in mono & gate mode if sample fadeout is set to off.
 - BUGFIX: crash when replacing samples while preview is playing.
 - BUGFIX: incorrect loading of the sample phase setting when loading presets.
- Version 3.1.2
 - There are now two output mixer modes. This enables host automation of the new dry/wet mix knob.
 - The autoplay button on file choosers now globally remembers its setting.
 - The multiple samples/group editor shows more parameters. They can be edited in the table. Parameter changes can be applied to multiple samples at once.
 - A new Remove Samples.. has been added below the sample list to allow quick removal of samples in hosts not feeding keystrokes to plugin GUIs.
 - The settings screen shows some build information below the title.
 - The dynamics level crossfade knob (XFade) has been moved right because it doesn't really belong to trigger event detection.
 - BUGFIX: drawing glitches if multiple instances show the filter display at the same time.
 - Various bug fixes.
- Version 3.2.1

- The digitalelements Lite Sound Set is included with apTrigga3.
 - User interface overhaul: separate detector and generator views.
 - Detector settings can be locked and stored separately.
 - New beat grid display on the detector view.
 - Layer groups can now be renamed and collapsed.
 - New polyphony limiter to limit playback to n simultaneous events.
 - Improved performance of the windows versions.
 - Optimized filter cpu usage.
 - The windows installer remembers where vst plugins were installed to for future updates.
 - Increased the maximum number of samples that can be recorded in one go to 64.
 - New group builder function on the multiple sample editor.
 - BUGFIX: fade times no longer reset if samples are switched in the sample editor.
 - BUGFIX: Pro Tools AAE error -7054 is fixed (caused by problems with code signing).
 - BUGFIX: midi events of length 0 (note on followed by note off on the same tick) are correctly recognized.
 - BUGFIX: loading a new sample in the single editor no longer resets the fade start and fade end times.
 - BUGFIX: The OSX installer now shows correct disk install sizes.
 - Various minor bugfixes
- Version 3.2.2
 - Adjustable GUI refresh rate for smoother displays.
 - Antialiased signal graph drawing.
 - Mouse value overlays for the filter display.
 - Poles rotary handle for filter bands.
 - Smoother pole switches on filters.
 - Switched to using apQualizr2 filter code for much more accurate high frequency filter responses.
 - BUGFIX: occasional crash on instantiating the plugin in Ableton Live.
 - BUGFIX: bad behaviour when using Shift to change filter bandwidth during freq/gain drag.
 - Version 3.3.0
 - The retrigger algorithm has been much improved.
 - 10-step Undo/Redo support.
 - Added numerical displays for threshold and max. trigger level.
 - When a layer group is selected hitting the spacebar will now play back the group.

- A tick mark is displayed on the detector preset menu for the last selected preset.
- The preset label to the left of the preset menu switches to grey drawing if there are any unsaved changes in the plugin data.
- Version 3.3.1
 - Support for color schemes.
 - New precise trigger algorithm added.
 - Added a band pass filter type to the input filter section.
 - Output filter CPU optimization.
 - BUGFIX: multiple fixes for undo.
 - BUGFIX: clicks in the audio when using the output filter with low cutoff frequencies.
- Version 3.5.0
 - Synthesizer layers.
 - Volume/filter/custom envelopes for each layer, with unlimited breakpoints and bezier editing.
 - Multimode/multipole filters for each layer.
 - Sample-accurate per layer modulation system with midi input support.
 - Most of the gui redesigned.
 - BUGFIX: one pole high- and lowpass filters produce weird responses for negative gains.
 - BUGFIX: overlapping midi notes lead to wrong dynamics.
- Version 3.5.1
 - New comb filter for sample/synth layers.
 - Noise generation uses much less CPU.
 - Modulated filters use less CPU.
 - Improved filter stability.
 - BUGFIX: in some hosts tails of previous sounds could appear after unmuting.
 - BUGFIX: preview event cue up when processing is suspended.
- Version 3.5.2
 - Midi program change events switch through presets of the current folder.
 - Preset switch tails feature preserve tails of previous presets on switching.
 - Improved comb filter.
 - CPU optimizations on filter calculations.
 - BUGFIX: various filter bugs solved.
 - BUGFIX: recorded samples now use fades by default.
 - BUGFIX: the replace sample function could lead to bad preset states.

- Version 3.5.3
 - Two user modulation knobs allow for configurable automation with settings per layer.
 - Improved filter calculations to solve a few edge cases.
 - The global tuning setting is now an automatable parameter visible in hosts.
 - Bumped minimal system requirements to Mac OSX 10.7 / Windows Vista.
 - digitalelements lite sound set removed.
 - Next/prev sample in folder buttons now work for non-existing samples.
 - BUGFIX: remove not found message if a non-existing sample is replaced.
- Version 3.5.4
 - Support for Notarization on modern versions of OS X.
 - New enable-button on top right which is hooked up to bypass on modern hosts.
 - Analyzer decay now compensates for FFT size.
 - Reworked filter code for increased accuracy and performance.
 - Better mousewheel support on controls.
 - Improved ctrl-drag fine adjustment modes.
 - BUGFIX: crash when cropping or converting an internal sample to mono during playback.
 - BUGFIX: crash when setting loop end first while a sample is playing back in gate mode.
 - BUGFIX: high-dpi scaling issues in reaper 6 on windows.
- Version 3.6.0
 - New level-independent transient filter added to the detector.
 - New spectral tilt input filter band type.
 - Added an optional FFT peak frequency display to the eq fft display.
 - Dropping a sample file onto the sound editor section now replaces the displayed sample instead of appending to the list.
 - Clicking the display during sample recording no longer triggers recording.
 - BUGFIX: Window size issues in some windows hosts when running on HiDPI machines.
 - BUGFIX: Record samples listen button now works correctly with stereo input.
- Version 3.6.1
 - Compatibility with Apple Silicon Macs.
- Version 3.6.2
 - Improved timing accuracy of host-automated parameters.
 - BUGFIX: installer signing issues on older macOS versions.

- Version 3.7.0
 - The beat grid and its popup are now available on all trigger graphs.
 - New adjustable latency and assignable transient matching position per layer.
 - New cross instance choke functionality.
 - New reverse sample functionality.
 - Improved graphic performance on macOS Big Sur.
 - BUGFIX: Rare crash when switching sample time unit between ms and smp.