d16 group
AUDIO SOFTWARE

TEKTURON

MULTITAP SEQUENCED DELAY

User Manual

21 September 2018, 12:09

Requirements

Software and hardware requirements of the product

Windows PC

OS version	Win 7, Win 8, Win 10
CPU	2.8 Ghz with SSE (Multicore system 3.2 Ghz recommended)
RAM	4 GB (8 GB Recommended)
Software	VST / AAX compatible host application (32bit or 64bit)

Mac OS X

OS version	OS X 10.7 or newer
CPU	Intel based 2.8 Ghz (3.2 Ghz recommended)
RAM	4 GB (8 GB Recommended)
Software	AU / VST / AAX compatible host application (32bit or 64bit)

Overview

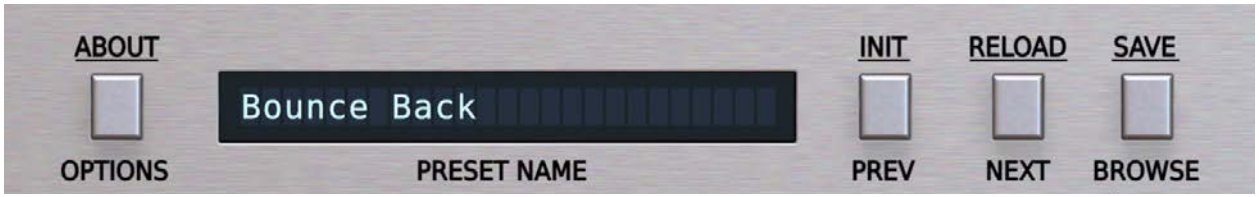
Tekturon is a multi-tap delay effect with **16** independent delay lines.

When the plug-in is loaded, its graphic interface appears:

Tekturon's graphic interface

There are two main sections on the interface:

- **Configuration and Preset management** section:



Configuration and Preset management section

- All the remaining controls are in the **Signal processing**.

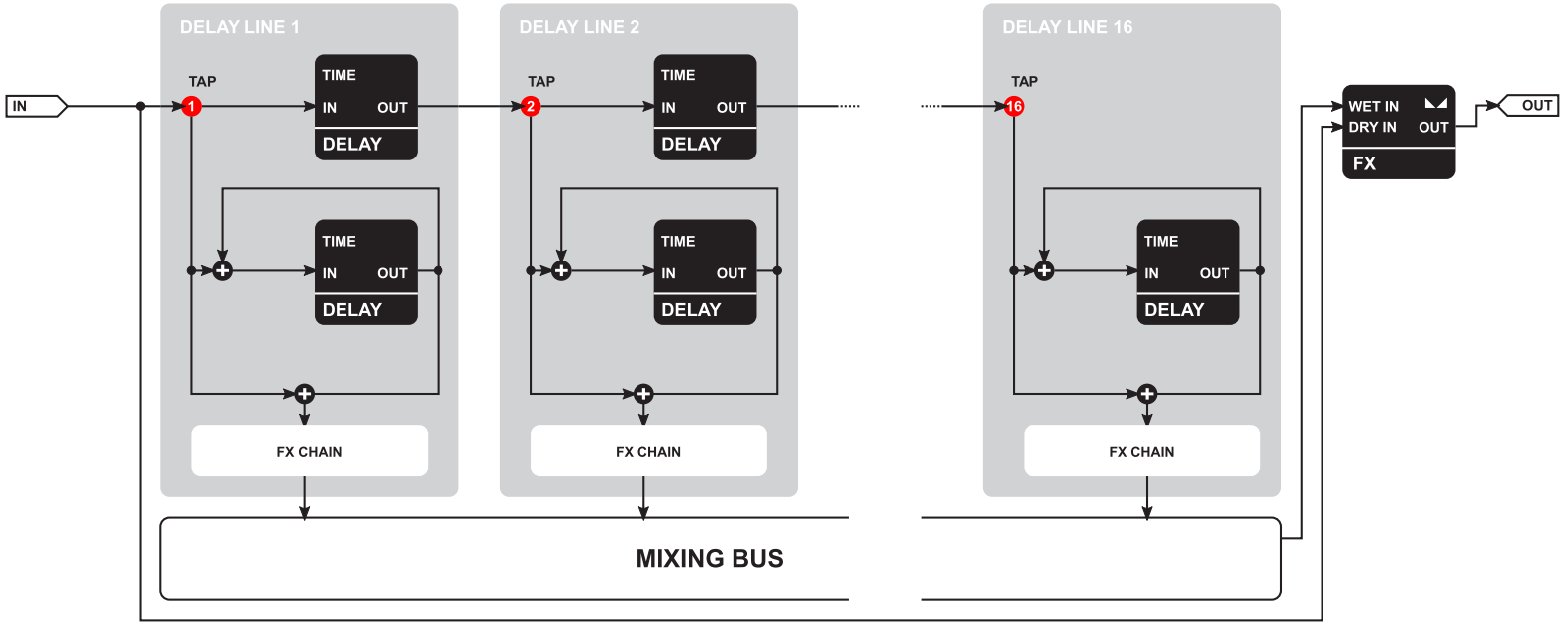
Signal Flow

At the core of **Tekturon** are **16 delay lines.** The time delay between subsequent taps is equal and controlled by a single parameter – the **Time Grid**. The taps are labeled by numbers **1** to **16**. The signal flowing into tap 1 is not delayed relative to the dry signal. **Tap** number **2** is delayed by the value of the **Time Grid** and **tap** number **3** is delayed by twice the value of the **Time grid** and so on up to tap **16** (which is delayed by **15 times** the **Time grid** value).

Each delay line also has its own independent feedback loop and an effect chain processing the signal output from the loop.

A delay line FX chain consists of:

- **Multimode filter** with adjustable **Cutoff** and **Resonance**
- Stereo **Panning**
- Stereo **Spread**



Schematic diagram of processing path in Tekturon

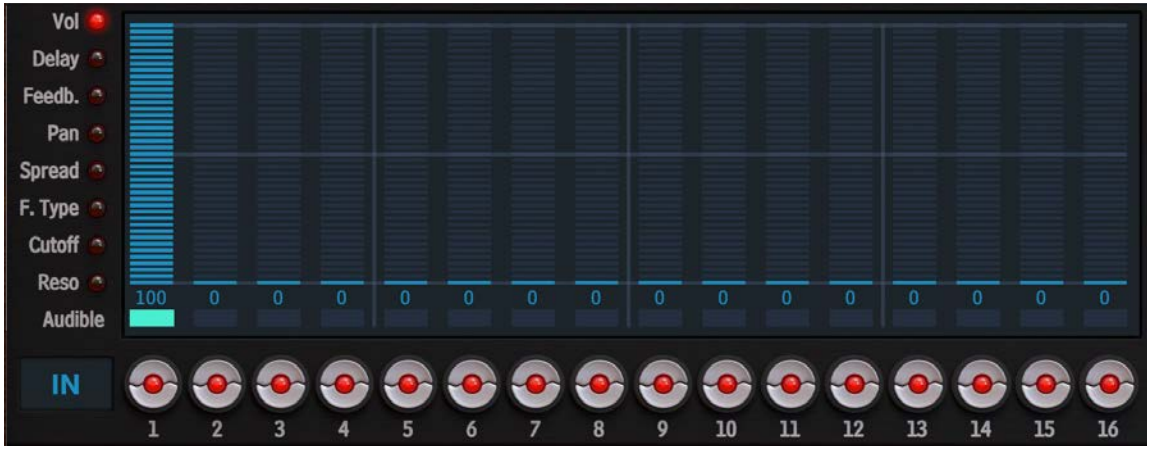
Bi-level control of the effect

The plug-in is controlled hierarchically:

- *Globally* - From the **Master** section, where the delay lines are all altered at once

Master section

- *Locally* - By adjusting each of the delay line parameters individually using the **bar graph display** situated on the left side of the GUI.



The Bar graph display

The parameters set *globally* from the **Master** section are:

- **Base value** – A reference point for the relative values (offsets) set *locally* and individually for each delay line. This is the case for:
  - **Multimode filter Cutoff**
  - **Multimode filter Resonance**
  - Delay loop **Feedback** value
- **Parent value** – A default value, which can be overridden by the local value; specific for the particular delay line. This happens for
  - **Multimode filter type**

Some of the delay line parameters do not have global counterparts in the **Master** section. They are controlled individually per delay line from the **bar graph display**. This applies to:

- Stereo **Panning**
- Stereo **Spread**

Certain parameters can only be controlled globally (they cannot be adjusted per delay line). These are:

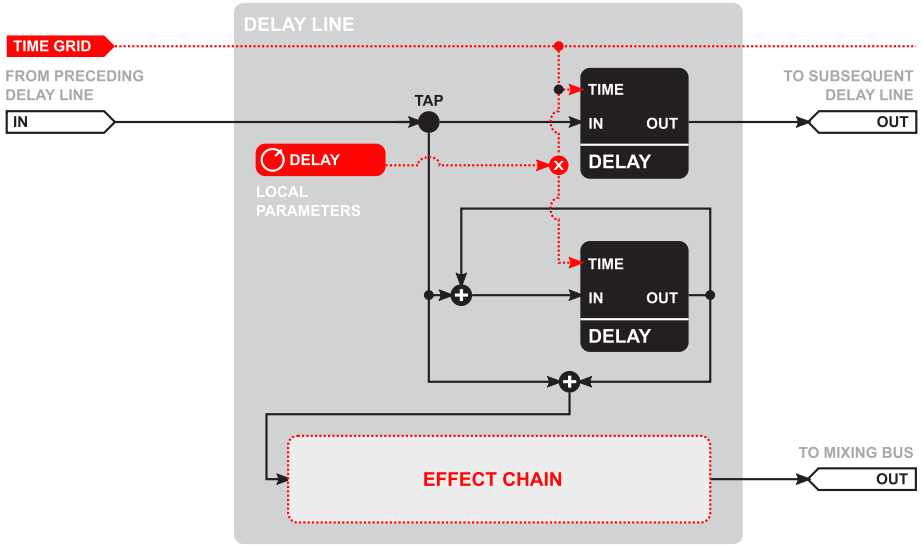
- **Shuffle**
- **Time grid**

Unit delay value – the Time grid

The **Time grid** is a *global* parameter which controls:

- The delay time between subsequent **Taps** – their time spread.
- It is also the base value of the delay time for all delay line feedback loops. Effective delay time for a delay line is defined as multiple of the **Time grid** in a range x**1** to x**16**:

*Effective Loop Delay= N*Time Grid*



Delay time in an individual delay line

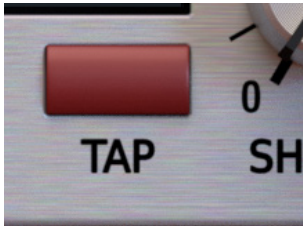
The parameter value is controlled from the **Time grid** section on GUI:

The Time grid parameter

It is expressed in *milliseconds* and controlled in a range from **1** to **500** *[ms]* (when **Sync** mode is disabled). The value can be adjusted by dragging the up-down mouse pointer above the digits representing the consecutive decimal positions on the display.

Tap function

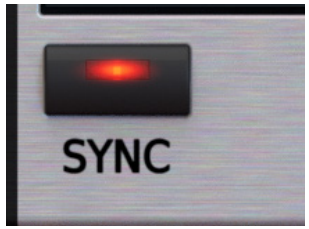
Tap is used to set the delay time *"by ear"* by clicking **Tap** rhythmically. The plug-in measures the time between the consecutive clicks, averages it and sets it as a new delay time. This function is also available when tempo **Sync** is enabled or disabled.



Tap button

Host tempo synchronization

Sync toggle button:



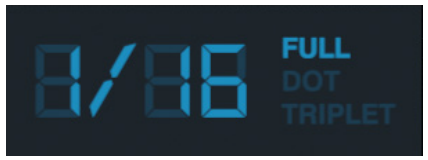
Sync button

This activates / deactivates the synchronization of the **Time grid** with the host (DAW) application tempo. When enabled, the delay is represented as a **Rhythmic value** (in tempo-dependent units) consisting of a **Note value** and a **Rhythmic modifier.** Note, when this mode is active the **Time grid** value is controlled in a different manner and the look of the **Time grid** display changes slightly.

Time Grid section when Sync is active

Note values

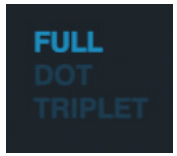
The **Time Grid Note value** can be adjusted by dragging the up-down mouse pointer over it;



Available values are: **1/8, 1/16, 1/32** and **1/64**

Rhythmic modifiers

Clicking a **Rhythmic modifier** selects it:

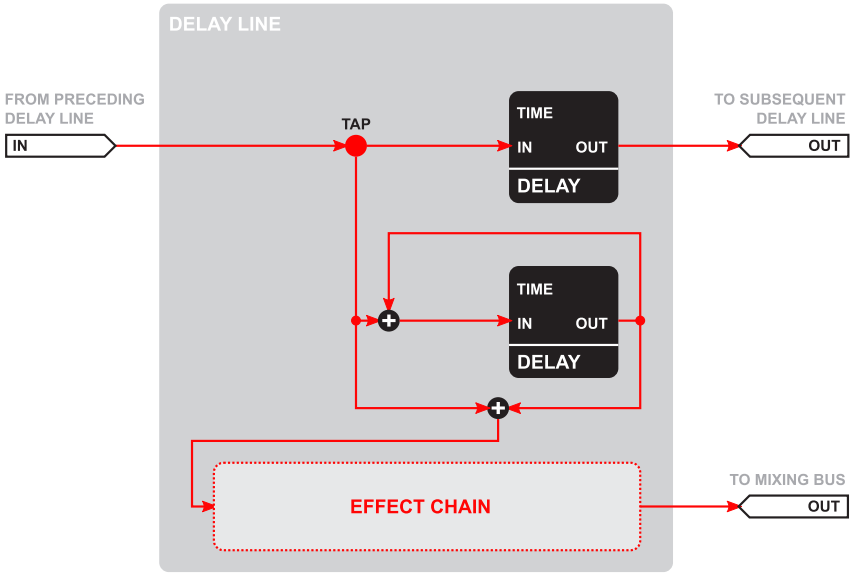


There are 3 possible values to choose from:

- **Full** – Effective delay value is equal to set **Note value.**
- **Tri** - Effective delay value is equal to **2/3rds** the duration of set **Note value.**
- **Dot** - Effective delay value is equal to **3/2nds** the duration of set **Note value.**

Delay lines

Tekturon has **16** delay lines - each with its own feedback loop and effect chain processing the signal output from the loop:

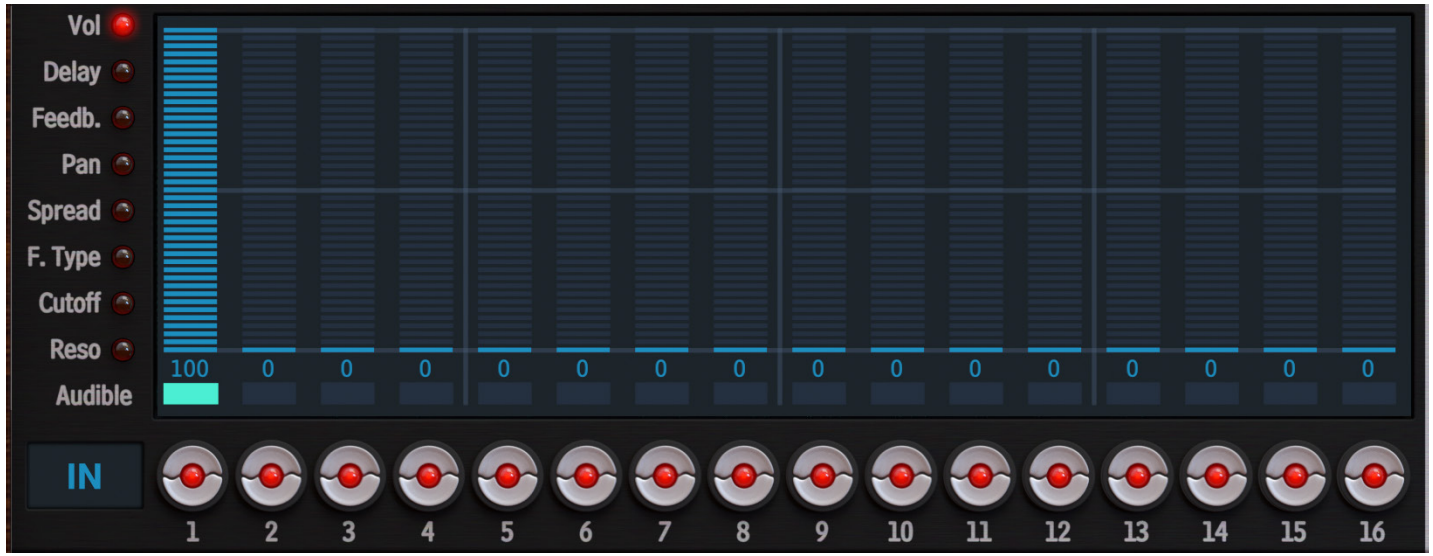


Individual Delay line in Tekturon

A single delay line is fed from the **Tap**. This is delayed with respect to the **Dry** signal by a value proportional to **Tap's** index value (subsequent **Taps** are delayed from each other by the value of the **Time grid**).

Delay value in the feedback loop

The feedback loop delay is expressed as the multiple of the unit delay value (the **Time grid**). It is set for each of the **16** delay lines independently using the **bar graph display** to the left:

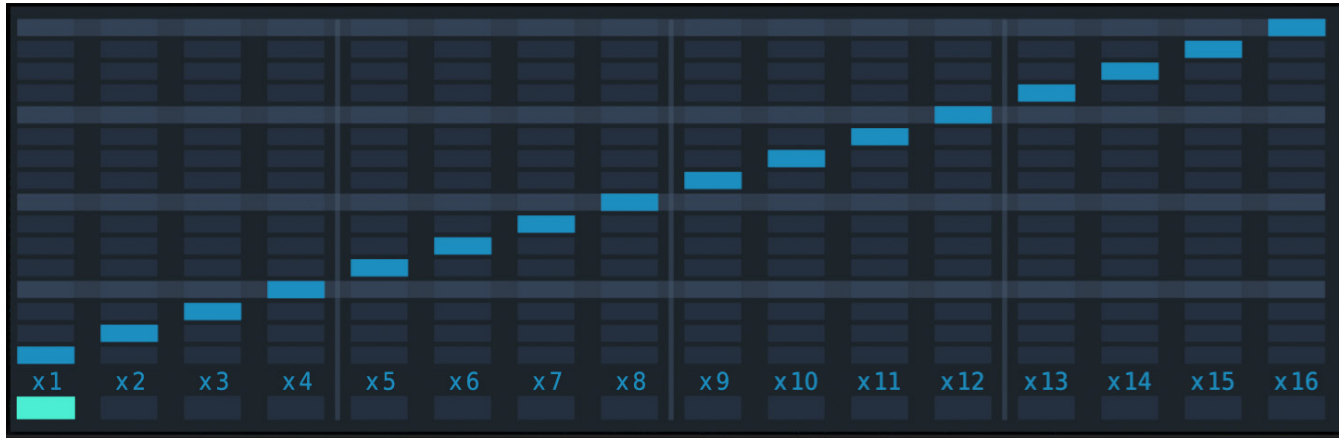


The Bar graph display

To edit delay values first switch to the **Delay** view using **View Selector:**

View Selector

The adjustment is performed by mouse clicking / dragging the vertical bars corresponding to the particular delay lines. The vertical position of the click represents the value. The bars are arranged so the delay lines' indexes corresponding to them start from the left side of the display (**1** to **16**):



Delay values for all delay lines

The numeric representation of each bar is shown in the bottom row:

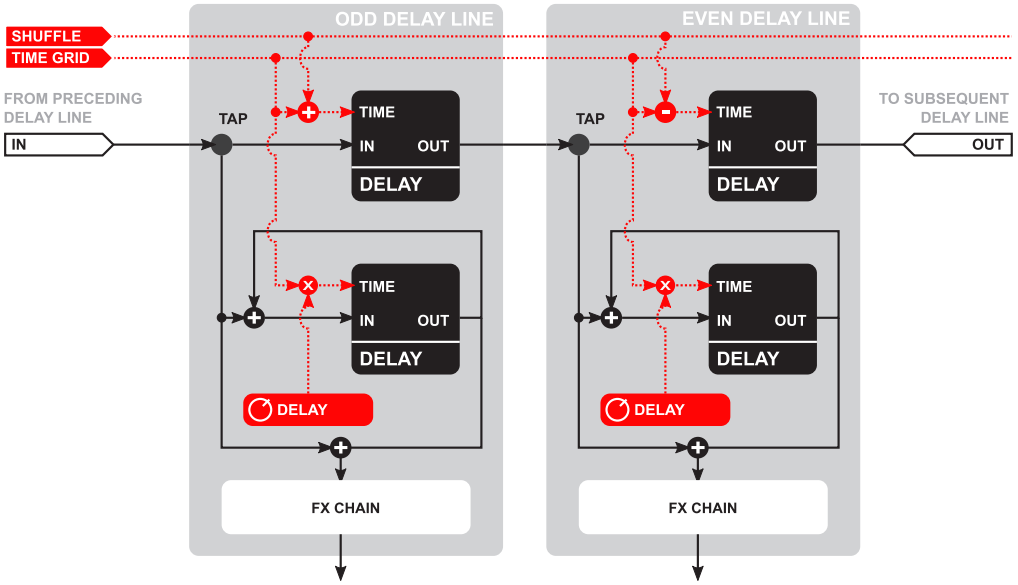
Delay values for all delay lines

Delay value (the multiple of the unit delay value – **Time grid**) can be picked from the range **x1** to **x16**.

Shuffle

Shuffle parameter

The **Shuffle** parameter introduces additional delay before each even numbered **Taps** and reduces the delay before odd numbered **Taps** by the same amount:



Influence of the Shuffle parameter on the delay times.

This causes a swing effect between the bounces output from consecutive delay lines. The **Shuffle** parameter controls the strength of the effect.

Feedback

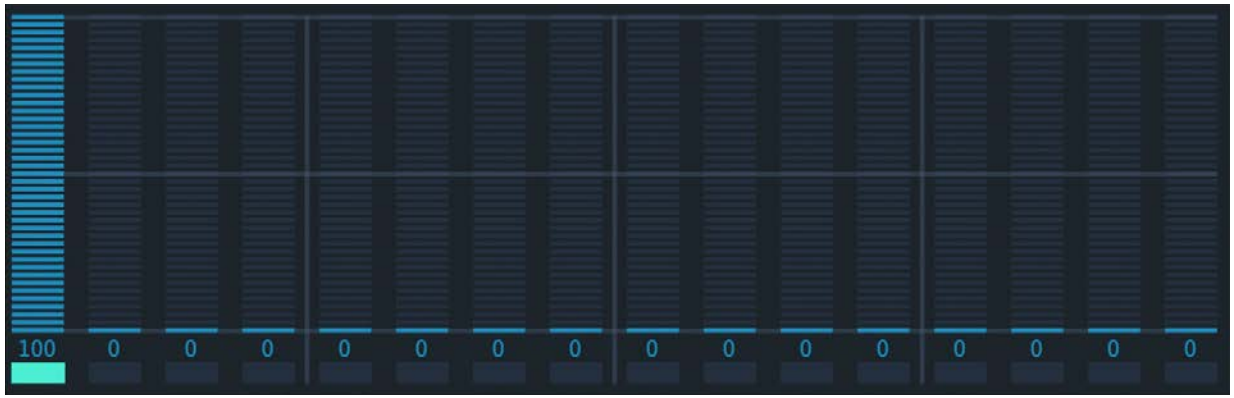
Feedback is controlled hierarchically. At a *global* level, using the **Feedback** parameter in the **Master** section affects the **Feedback** value in all delay lines at once:

Global Feedback parameter

It can also be adjusted locally using the **Bar graph display** by selecting **Feedb** using the **View Selector:**

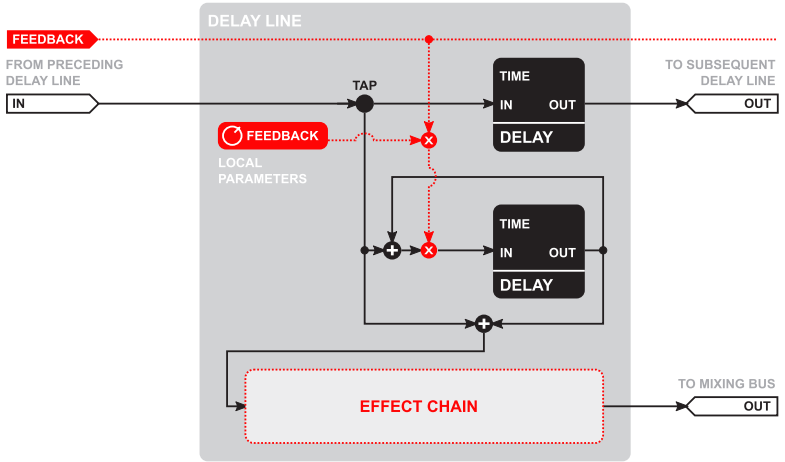
View Selector

The *local* **Feedback** values in the delay lines can then be adjusted individually:



Individual Feedback values

The effective (actual) feedback value for a particular delay line is equal to the value of the global **Feedback** parameter (from the **Master** section) limited by the amount set locally using the **Bar graph display.**



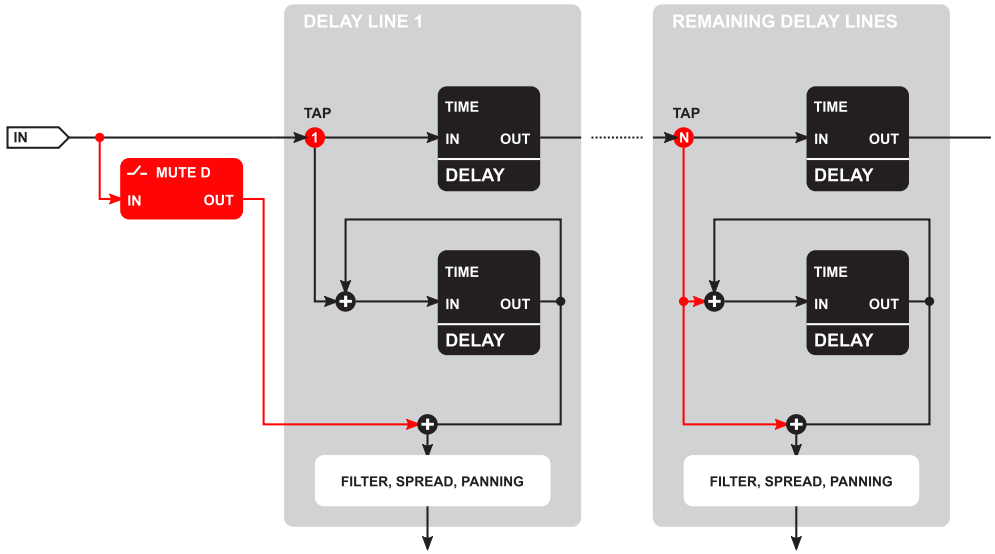
Feedback value in a single delay line

Mute Tap 1 Direct Signal

Mute Tap 1 Direct Signal switch:

Mute Tap 1 Direct Signal

When enabled, the zero numbered bounce (non-delayed signal) output from the first delay line is muted. This prevents overlapping it with the unprocessed (**Dry**) signal. This is a useful option when **Tekturon** is used as insert effect in situations where the **FX** (dry->wet) value sets the **Dry** signal as well as for cases where the plug-in is used on FX send track.

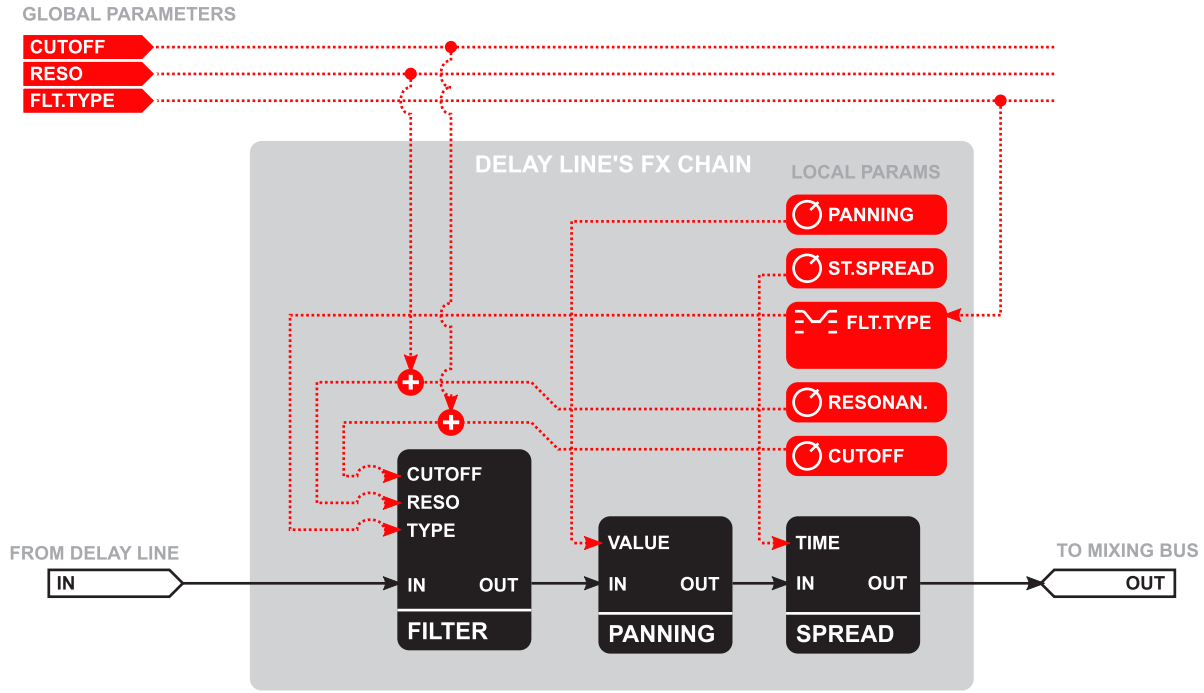


The effect of Mute Tap 1 Direct Signal parameter on the signal flow in the first delay line

Delay line's effect chain

The effect chain that is part of each delay line processes the signal when it leaves the feedback loop. The modules in the effect chain are:

- **Multimode filter**
- Stereo **Panning**
- Stereo **Spread**



Effect chain of a delay line

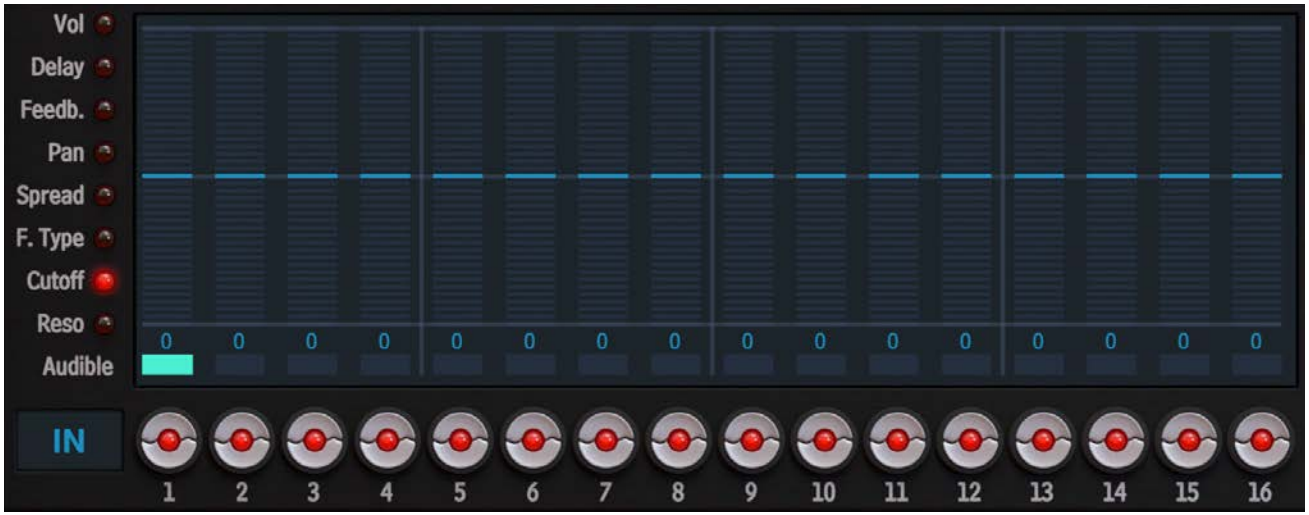
Multimode filter

Multimode filter is the first effect in the chain. It is controlled hierarchically:

- *Globally* – Influencing all delay lines simultaneously from the **Master** filter section where the following parameters can be edited:

Master filter section

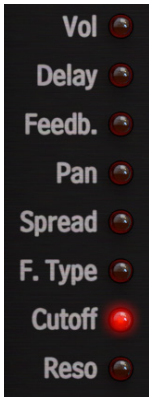
  - **Cutoff** frequency
  - Filter **Resonance**
  - Filter **Type** – Where we have following values to choose from:
    - **LP – Low pass filter**
    - **BP – Band pass filter**
    - **HP – High pass filter**
    - **Off – Filter inactive**
- *Locally* – Influencing each delay line individually using the **bar graph display** on the left side of GUI



The Bar graph display

Filter cutoff

Local (per delay line) value of the **Cutoff** parameter is controlled via the **bar graph display** from the **Cutoff** view selected by the **View Selector**



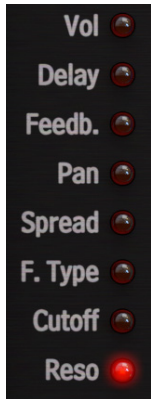
View Selector

A single bar represents the delay line's relative cutoff frequency value, a deviation from the value of **Cutoff** parameter in the **Master** section:

Relative values of the Cutoff for all delay lines

Resonance

The *local* (per delay line) value of the **Resonance** parameter is controlled via the **bar graph display** from the **Reso** view selected by the **View Selector:**



View Selector

A single bar represents the delay line's relative **Resonance** value, a deviation from the value of **Resonance** parameter in the **Master** section:

Relative values of the Resonance for all delay lines

Filter type

Selecting the **Filter type** *locally* (per delay line) is performed using the **bar graph display** from the **F.Type** view selected with **View Selector:**

View Selector

Per delay line Filter Type

The following types can be selected:

-  / **HP – High pass** filter
-  / **BP – Band pass** filter
-  / **LP – Low pass** filter
-  / **OFF –** Filter inactive
-  / **MF** – Delay line filter type is the same as filter type selected in the **Master Filter** section.

Master filter section

Panning

Stereo **Panning** is controlled only *locally* – per delay line. Editing is done via the **Bar graph delay** from the **Pan** view selected with **View Selector:**

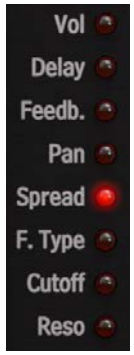
View Selector

Panning is controlled in the range **-100%** to **100%** (where **0%** means center of the stereo stage):

Panning values

Stereo spread

Stereo **Spread**, which is a phase shift between stereo channels, and creates the impression of widening the stereo image. It is controlled only locally – per delay line. Editing is done via the **Bar graph delay** from the **Spread** view selected with **View Selector:**



View Selector

Spread is controlled in range of **-100%** to **100%,** where **0%** means no spread at all.

-100% delays the left channel by ½ of the **Time grid value** with respect to the right channel and for **100%** the right channel is delayed by ½ of the **Time grid's** value with respect to left channel.

Stereo spread values

Mute buttons

Working in toggle mode, allow for quick muting of selected delay line.

Mute buttons

In / Out

IN / OUT affects how the **Mute buttons** work.

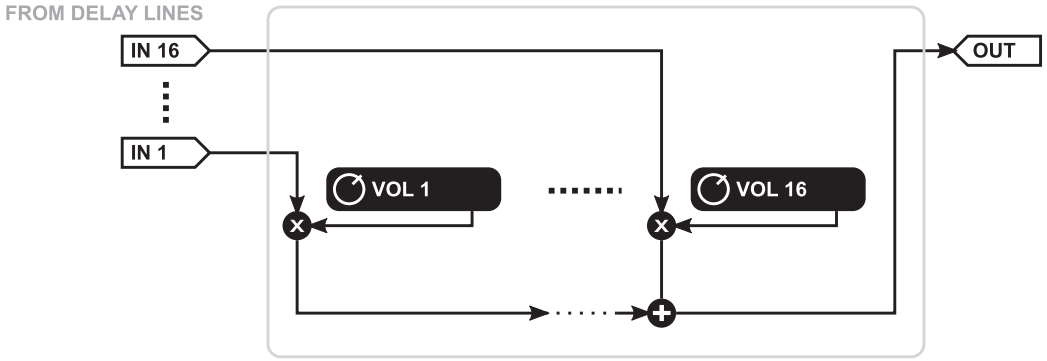
- **IN** mode – a signal gets muted before it enters a delay line.
- **OUT** mode – a signal gets muted after it leaves a delay line.

In / Out display

Toggles between **In** and **Out** modes for **Mute buttons**

Mixing bus

The **Mixing Bus** is the final module of the **Tekturon** signal processing path. It is responsible for controlling the volume of each signal leaving all **16** delay lines and then mixing them together.

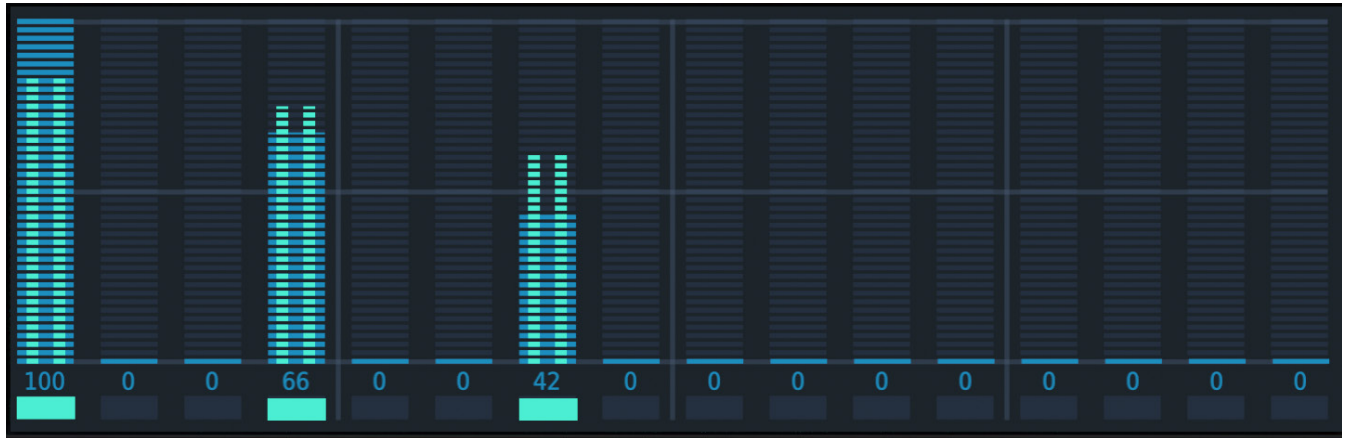


Mixing bus signal flow

The delay line outgoing signal **Volume** is adjusted via **Bar graph display** (the **Vol** view selected with **View Selector** parameter):

View Selector

Volume is in a range from **0%** to **100%** for each delay line independently:



The delay lines' output volume values

Additionally, each bar also serves as a stereo VU-meter indicating (with a pale blue color) the level of the delay line output signal.

Audible lines

At the bottom of the display is the **Audible** row. This shows the active delay lines (with illuminated rectangles).

Audible controls

The prerequisite for a line to be considered as active is its **Volume** being set to a value greater than **0%**. The row is constantly displayed.

Master section

Master section

The **Master Section** is the final part of the processing path of **Tekturon**.

The **Output volume** controls the amplification of the output signal (in the range from **–inf** do **+12** *[dB]*) The **Output meter** shows volume level visually. **FX** controls the dry/wet ratio of the unprocessed to processed signal.

Padlock allows the **FX** setting to be locked so the **Dry/Wet** ratio stays the same when loading presets. It works in toggle mode: one click locks the parameter, a second click unlocks it.

FX padlock

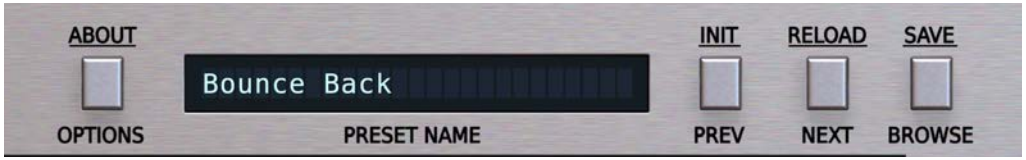
Preset Management

Preset Storage

Presets, both those from the **Factory** content, and **User** ones, are stored as files in proper locations on a disc. Each time the plug-in instance is loaded to the project, these locations are scanned and presets found there are consolidated into one linear structure (list) in the **Preset Browser.**

Browsing Presets

Presets Configuration and Management section enables quick navigation and browsing the presets structure:

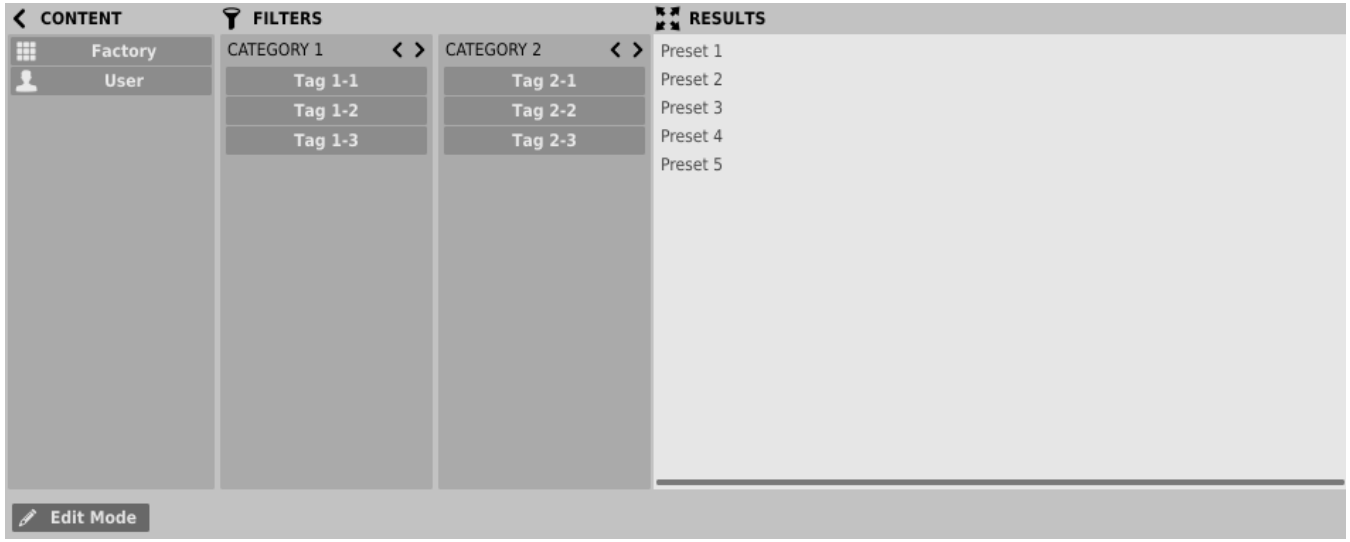


Presets Configuration and Management Section

- **PRESET NAME** – Displays the name of the currently loaded preset.
- **PREV / NEXT** – Buttons that allow for linear browsing of presets list (depending on currently set filters – see sections below).
- **INIT** – *Win* (Ctrl + **PREV**), *Mac* (Cmd ⌘ + **PREV**) – Restores initial settings of plug-in parameters.
- **RELOAD** – *Win* (Ctrl + **NEXT**), *Mac* (Cmd ⌘ + **NEXT**) – Reloads a current preset.

- **SAVE** – *Win* (Ctrl + **BROWSE**), *Mac* (Cmd ⌘ + **BROWSE**) – Saves current parameters as a new preset or allows for overwriting of the existing one (see sections below).
- **BROWSE** – Expands the **Preset Browser** panel at the bottom of GUI section.

The **Preset Browser** looks as follows:



Preset Browser

One can see three main sections:

- **Content** – Sources from which presets can be read.
- **Filters** – Configuration of presets **Filters** (non-active by default).
- **Results** – List of presets from resources that meet criteria set by **Filters.**

Resources

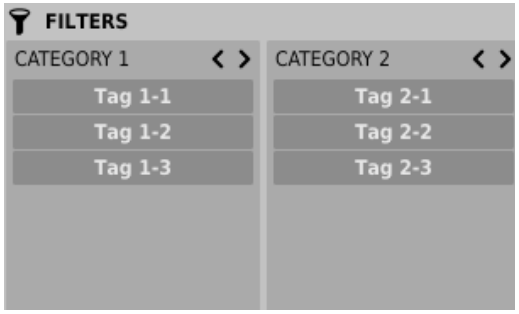
In this section you can choose a resource/resources in which you want to browse presets. There are two resources to choose from:

- **Factory** – Delivered together with the plug-in, cannot be modified (read-only).
- **User** – Created by the user during using the plug-in and can be freely modified, shared with other users etc.

Choosing any of them will cause narrowing the results to the presets from one resource.

Preset Filters

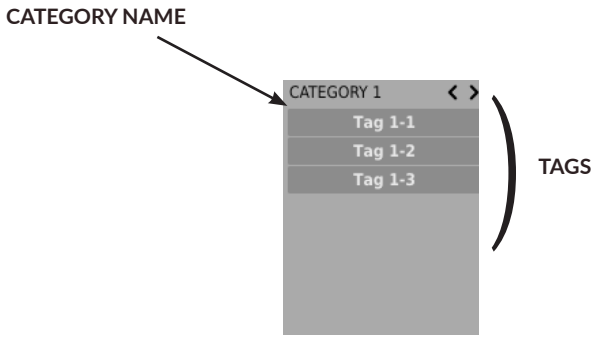
The plug-in enables classification of presets with the use of **Categories** and **Tags** system, whose aim is to facilitate the process of browsing the content by filtering.



Preset Browser Categories Filters

Categories and Tags

Each preset is described by a few common **Categories.** Within each of them there may be one or more **Tags** from a particular set.



A single category in a filter with a description of its elements

Presets from **Factory** resource were described by **Categories** and **Tags** during the stage of its creation. **Categories** and **Tags** are chosen in such a way so as to describe the content in the best possible way, taking into account the plug-in purpose.

Editing of **Categories** and **Tags** in case of **Factory** content is not possible – it is blocked. **User** presets may be described only with **Categories** and **Tags** from factory content or, alternatively, the users may define their additional **Tags** in order to describe their own presets.

Results

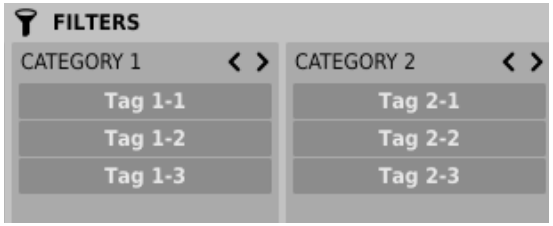
This is a list of presets from chosen resources that meet the filtering criteria. The basic function of this section is browsing and loading presets (in **Browsing Mode** – by default).

Results Section in Preset Browser

Click any name to choose and load the preset.
Double-click the name to enter preset name edit mode. ◘

Presets Filtering

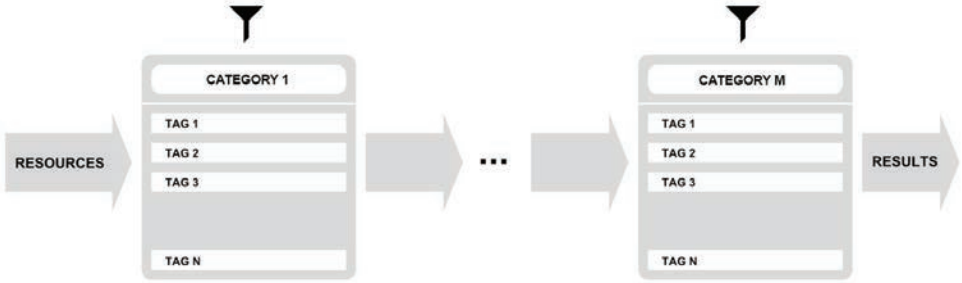
Filters section columns represent particular **Categories – Category filters,** while rows in each of these columns represent **Tags** available within each **Category.**



Preset Browser Categories Filters

Filtering results have a form of a cascade (columns), from left to right. This means that all presets available in the selected resources are filtered as to presence of **Tags** from the first **Category** (first column from the left), next a set of presets being a result of filtering by the first **Category** is filtered by the **Category** represented by the second column etc., until it is filtered with the last active **Category Filter.**

◘ Possible only in the Edit Mode



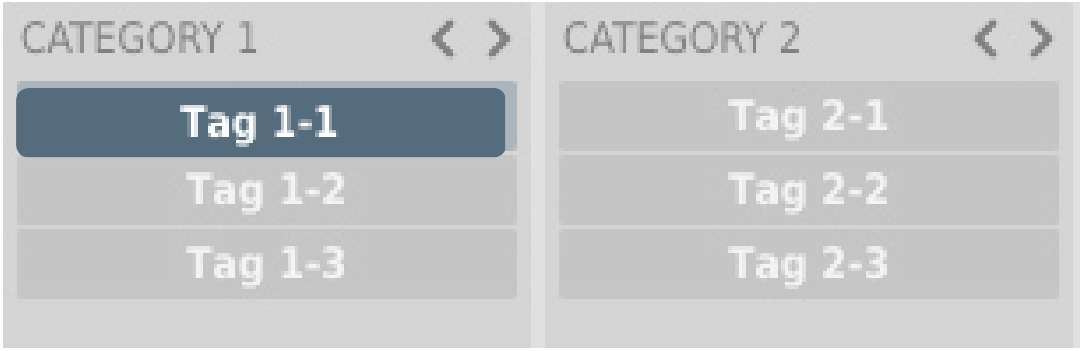
Presets Filtering with the use of Categories Tags

The result of a cascade filtering process (presets that meet the criteria of each filter) is listed below, in the **Results** section.

Basic Actions on Filters

Tag buttons in **Filters** work in toggle mode. Click to activate/deactivate **Tag** (Grey color means that the **Tag** in inactive, teal blue means that the **Tag** is active). If at least one **Tag** in a column (**Category**) is active, then the **Filter** also becomes active.

For example, if the first column represents *Category 1* **Category** with a set of the following **Tags**: {*Tag 1-1*, *Tag 1-2*, *Tag 1-3*}, clicking the *Tag 1-1* **Tag** will activate the **Category Filter** *Category 1* and narrow down a list of presets to the items in case of which the *Tag 1-1* **Tag** appeared in the *Category 1* **Category**.



Enabling Tag 1-1 tag in Category 1 Category

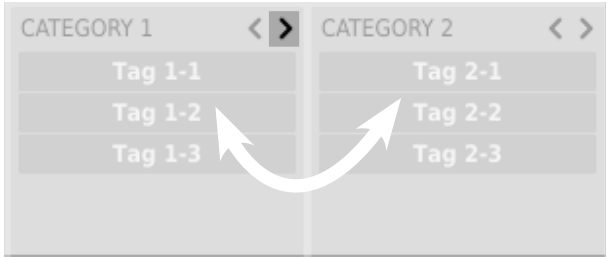
If you click the *Tag 1-1* item again, you will deactivate the **Filter,** so all presets from the content will be displayed again.

Reordering Categories

To the right of the **Category Filter** header there are buttons with arrow icons:

Filter reordering

They enable moving the **Category** to the left or right in a cascade. Clicking the right arrow replaces the current **Category** with the **Category** on the right. Clicking the left arrow replaces the current **Category** with the **Category** on the left.



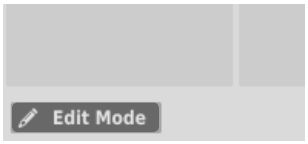
Presets Filtering with the Use of Categories Tags

Clicking the left arrow for the **Category** located on the far left does not change anything. The same is true for the **Category** located far to the right and right arrow (as the column has no predecessor/successor with which it could be replaced).

Presets Editing – Edit Mode

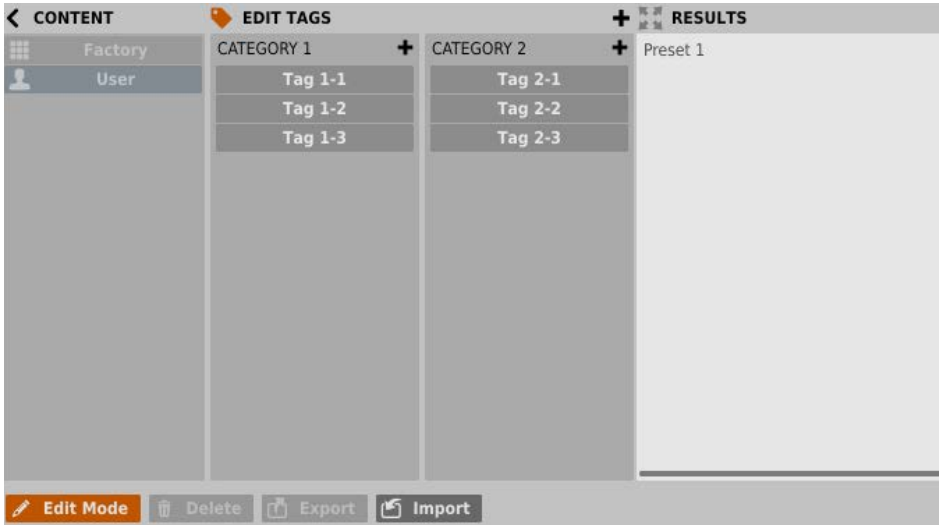
An active **Edit Mode** in **Preset Browser** changes its function (enables the change of presets names, edition of **Categories** or **Tags,** deletion of presets as well as their export or import. One should bear in mind, however, that these operations are not allowed in case of **Factory** presets, but only for the **User** presets.

Edit Mode can be activated with a button located in the bottom left-hand corner (click again to deactivate):



Edit mode button

In this mode **Preset Browser** slightly changes its appearance (not only function):



Preset Browser in Edit mode

1. The **Filters** section changes into the **Edit Tags** section, whose appearance is almost identical, but the function is different. The section is used not as a filter, but as an editor of **Categories** and **Tags** of chosen presets.
2. The role of the **Results** section is to choose presets for edition (edition is possible only for user presets).
3. At the bottom of the screen there are **Delete**, **Export** and **Import** buttons used respectively to delete or export selected **User** presets as well as to import a set of presets to the **User** resources.
4. The choice of the resource in the **Content** section does not work, as edition is possible only for user presets.

Selection of Presets for Editing

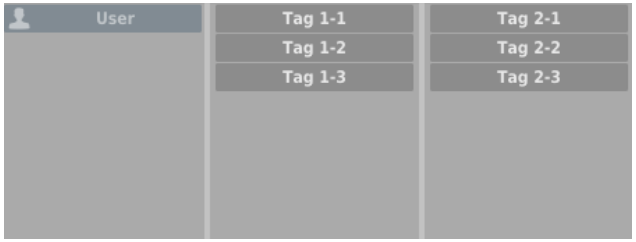
You can edit both single preset and a set of presets. Using the functionality of the **Results** section, you can choose a preset or a set of presets in the following way:

- **Click the preset** – Choose the preset from the list,
- *Win* (Ctrl + **Click the preset**), *Mac* (Cmd ⌘ + **Click the preset**)– Add another preset to an already chosen preset or a set of presets,
- Shift + **Click the preset** – Select a part of a list of presets from the last chosen preset to the item clicked together with Shift key.

Tags Edition

Change of Tags status in Presets

Tag buttons work in toggle mode, similarly as in case of filtering. Clicking them you can respectively set **Tag** or erase them from chosen presets.



Filters' tags

Choosing a greater number of presets, in which the tags were already defined, enables their re-edition. Consequently; in case when a specific **Tag** appeared in all selected presets, it will be marked with an intensive teal blue color.

When a specific **Tag** is set only in a part of chosen presets, then it is codified with a pale teal blue. The **Tag** that does not appear in any of the presets is marked with grey colour:

Notification about Tags Status in Chosen Presets

The change of the **Tag** status for one or more chosen presets sets or erases this **Tag** in all these presets. The status change is signalized with an **Asterisk** located to the left of the **Tag** buttons .

Notification about Changes in Tags Status in Chosen Presets

Elements/**Tag** buttons highlighted with pale teal blue colour (meaning different values of a particular **Tag buttons** for the highlighted pre-sets) work in a three-state system; erasing the **Tag** (grey colour), setting of the **Tag** (intensive teal blue colour) or no changes (pale teal blue) for all selected items.

Changes introduced during edition do not have to be confirmed, they are signalized by asterisks located by **Tag** changed for particular presets

Presets Names Editing

Double-click the name of a preset to enter name editing mode.

Deleting Presets

Selection of one or more presets activates **Delete** button at the bottom left corner. It can be used to delete the selected presets.

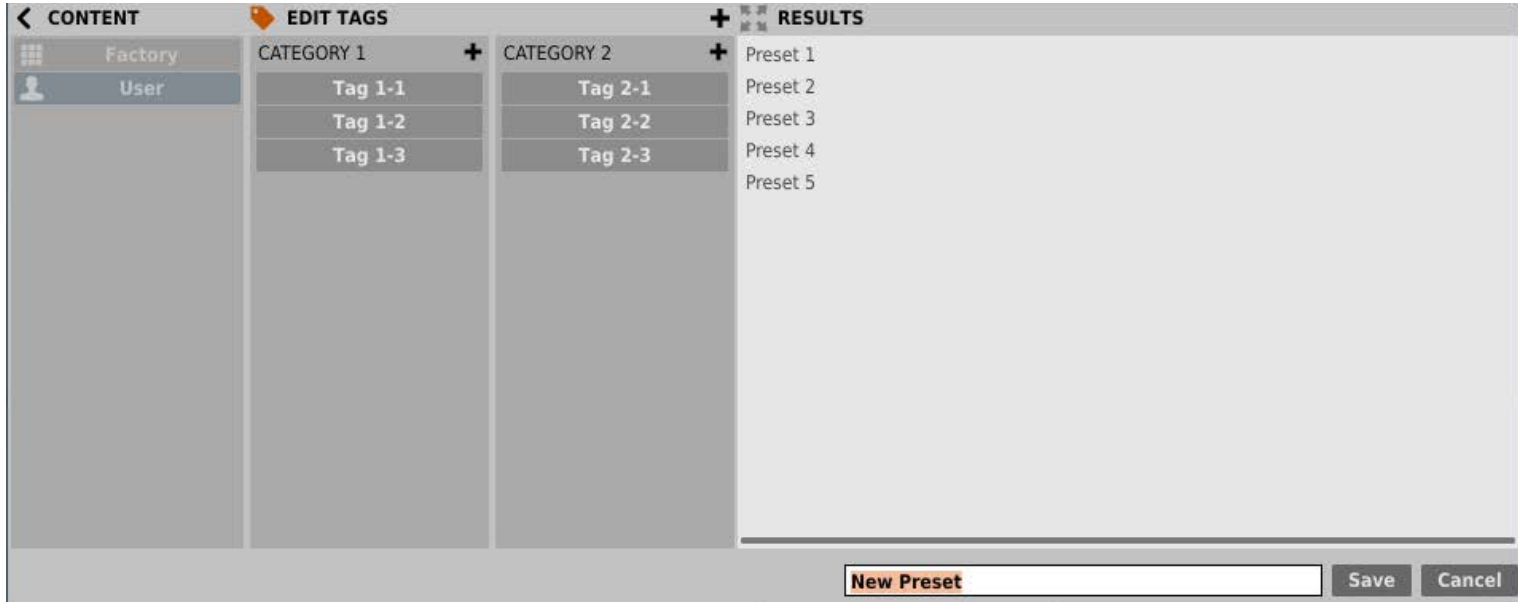
Presets Export and Import

The use of **Import** or **Export** buttons at the bottom part of the **Preset Browser** enables a proper import of presets package (exported before) or export to the presets package ▸ the presets selected in the **Results** section.

▸ Export and Importare possible only for presets from User resources.

Saving the current settings as Preset

To save plug-in parameters settings as a user preset use the -*Win* (Ctrl + **BROWSE**), *Mac* (Cmd ⌘ + **BROWSE**) in **Configuration and Presets Browsing** section. This action automatically opens the **Preset Browser** with an active **Edit Mode.**



Saving the Settings as Preset

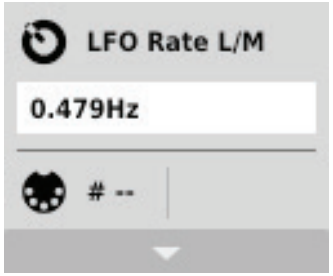
Additionally, at the bottom there will be a textbox into which you should enter a name of a newly created preset, and then confirm it by clicking **Save** or cancel by clicking **Cancel.**

As the **Preset Browser** is in the **Edit Mode** before confirmation of the newly created setting as preset, we can straightaway categorize a particular setting, using functionality of the **Edit tags** section, even just before saving it as **Preset.**

Configuration

Parameter settings

Right-click any plug-in parameter to open the context menu



Closed Context Menu

It allows for:

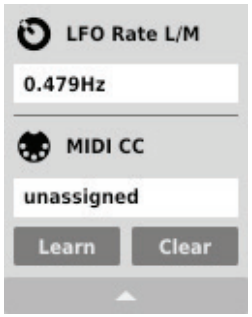
- Checking the name and current value of a parameter,
- Checking if the parameter is attributed to MIDI CC controller, and if it is – to which number,
- Linking the parameter to MIDI CC controller.

Clicking the arrow in any area of the menu expands it and displays all available options.
Next right-click on the parameter or left-click outside the menu area closes it automatically.

MIDI Learn

MIDI Learn function enables a quick assignment of physical controllers (from MIDI controller) to plug-in parameters. The assignment can be divided into a few steps:

1. Right-click the parameter which you want to attribute to physical MIDI controller in order to expand the context menu.
2. Click arrow at the bottom in order to expand the context menu.



Expanded Context Menu

3. Click the **Learn** button to put the plug-in into a pending state until you move any MIDI CC controller.
4. Click **OK** to save the change or click the **Cancel** button to restore the previous setting.

MIDI Unlink

You can also delete MIDI CC code attributed to plug-in parameter from the context menu:

5. Open the context menu, right-clicking the parameter attributed to a particular MIDI CC
6. Expand the menu, using the arrow at the bottom
7. Click the **Clear** button
8. Confi rm with **OK** button

Plug-in's current settings

Current settings are relevant to a specific instance of a plug. They are initialized with the **Default settings,** when the plug-in is loaded (see the next chapter):

At the bottom of UI there is a status bar that enables the change of **Current settings.**

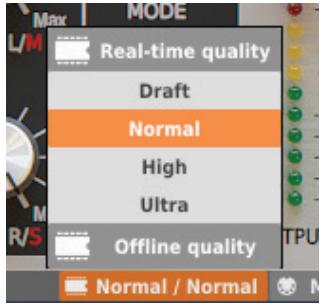
Current Settings in a Status Bar

From left to right there are:

- The setting of **Current processing path quality** for the **Offline** mode and the **Real-time** mode
- Saving/Loading the **MIDI CC Map**

Processing Path Quality

Clicking the item expands the menu that allows to select the **Current quality** of generated sound for **Real-time** or **Offline** modes.
In a case of Repeater the quality setting doesn't affect the delay loop, but audio clipper only.

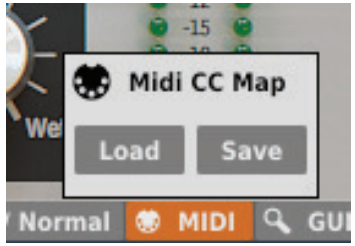


Processing Path Quality Settings

We can choose from four available grades for each mode.

Saving/Loading the MIDI CC Map

This item enables to save current parameters of MIDI CC codes as MIDI Map in a file or to load them.



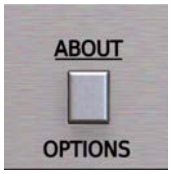
Saving/Loading the MIDI CC Map

Plug-in's default settings

The **Options** panel allows us to change the **Default settings** of the plug-in. Every time the plug-in is loaded in the host application (new instance is created) a **Default settings** are used for initialization of the **Current settings.**

Default settings are stored within a configuration file of the plug-in. This file is updated at the moment of unloading any of active plug-in instances from the host application.

Use the **Options** button on GUI to open the panel:



Options button

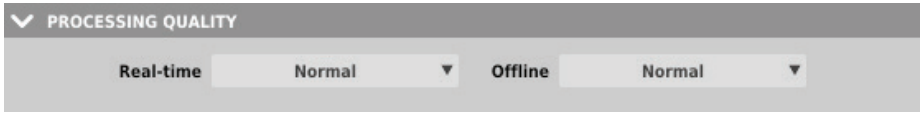
The **Options** panel operates as an accordion where you can click a specific section to expand it:

Options Panel

There are 4 sections:

- **Processing Quality** - Default Processing Path Quality
- **Presets** - Presets loading settings
- **MIDI** - Default MIDI CC Map
- **User Interface** - Default UI size

Default Processing Path Quality



Processing Quality Choice Section

In this section you can configure a default quality of the processing path for the **Real-time** mode and the **Offline** mode.

Default MIDI CC Map

Default MIDI Map Choice Section

This section allows for setting of a path to a file with a default **MIDI Map** that was prepared before. Clicking **MIDI CC** Map check box activates load of **MIDI Map** and the possibility of pointing it (**Browse** button).

Default size of UI

Processing Quality Choice Section

In the **User Interface** you can choose a default size of the UI.

Preset loading settings

Displaying confirmation dialog option

If you do a change to any of the plug-in's parameters after you load a preset or started with initial parameter setting, and you'll try to load another preset using **Prev / Next** buttons. The plug-in will try prevent against unintentional losing the changes you've made and will show a dialog confirmation window.

This checkbox allows to choose whether this dialog will be shown or not.