FAZORTAN

d16 group

User Manual

Overview

Fazortan is a phasing effect unit with two controlling LFOs.

Fazortan graphical interface

We can distinguish two sections there:

- Configuration and preset management

Configuration and preset selection section

- Signal processing control section consists of the all remaining controls.

Signal flow

This chapter describes the path of the signal's flow through the Fazortan plug-in, presents the basic components of this effect unit and their control parameters.

Basic modules

The interior of Fazortan is built of few basic components, that correspond to the sections on the graphical interface:

Phase shifter

It's a main Fazortan's module, which filters input signal. Its frequency response reminds a composition of few notch filters together, their cutoff frequencies are evenly spread in frequency domain.
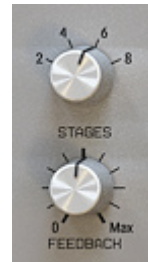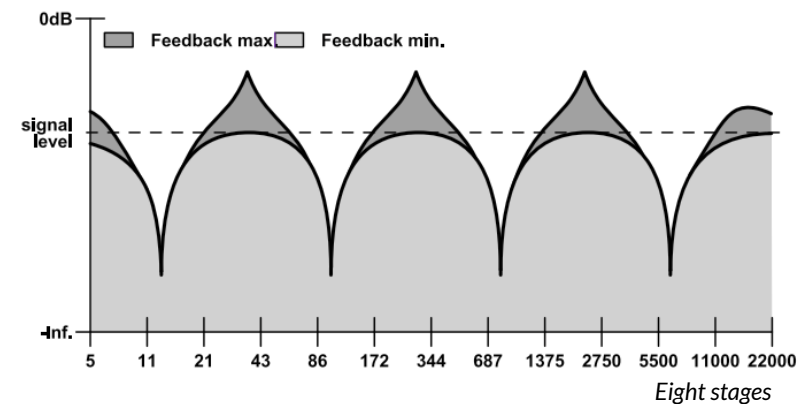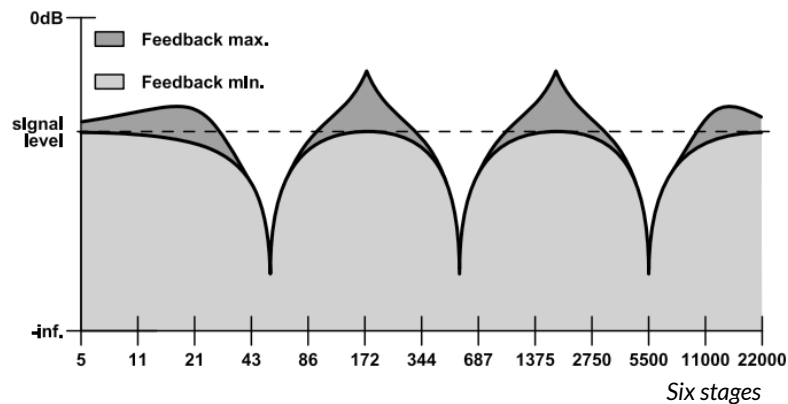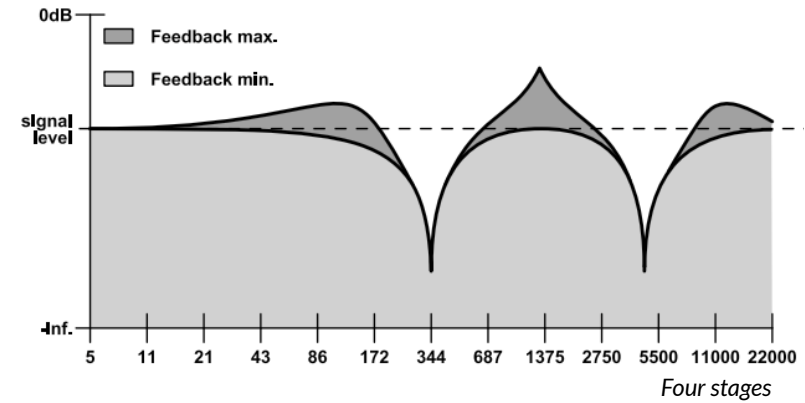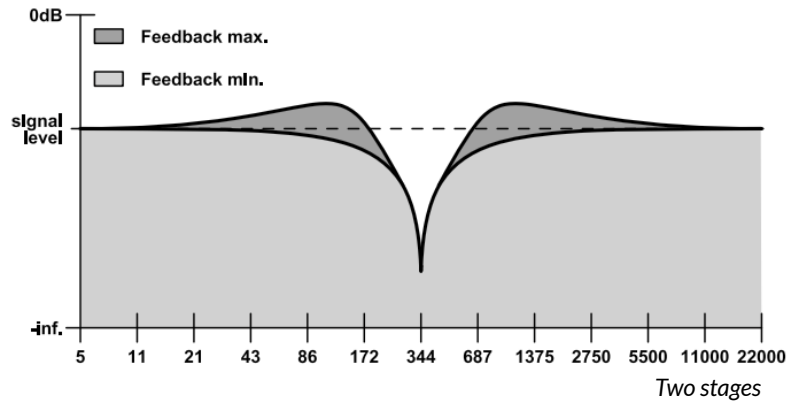

Phase shifter

Shifter is controlled by two parameters:

- **Stages** – It's a number of stages (minimums) in frequency response, we can choose a: 2, 4, 6 or 8.
- **Feedback** – An emphasis of frequencies about the minimum.

The pictures below illustrate the frequency response of phasing filter for (in turn).

Two stages

Four stages

Six stages

Eight stages

As it was mentioned earlier, those stages are evenly spread in frequency domain, and their distance from the beginning of audible spectrum is called as fundamental frequency of phase shifter. Those frequency is controlled by two blocks of **LFO** (Low Frequency Oscillators).

LFO – Low Frequency Oscillator

Another block we can distinguish on the GUI is generator of the low frequency waves:


Low Frequency Oscillator

It's controlled by following parameters:

- **Waveform** – Waveform's shape; we can choose one among the: triangle, square, sinus, two types of saw and noise.
- **Offset** – Wave's offset relatively to the amplitude axis.
- **Depth** – Wave's amplitude.
- **Rate** – Frequency of the wave.
- **Tempo sync.** – It's possible to sync LFO with host application.

  This switch is used for this purpose. There're four available values:

  – **Off** – Synchronization is off, the **LFO**'s frequency is controlled via **Rate** fader arbitrarily in a range 0 to 20 Hz.

  – **Full** – Synchronization is on, the **LFO**'s period length is equal to a single note set on **Rate** fader, respectively to host's tempo value.

  – **Dotted** – Synchronization is on, the **LFO**'s period length is equal to a single dotted note set on **Rate** fader, respectively to host's tempo value.

  – **Triplet** – Synchronization is on, the **LFO**'s period length is equal to a single triplet note set on **Rate** fader, respectively to host's tempo value.

When synchronisation is on, **LFO**'s rate can be set to following values: 1, 2, 4, 8 and 16 bars, half note (½), quarter note (¼), eighth ($^1/_8$), sixteenth ($^1/_{16}$) and thirdy-second ($^1/_{32}$).

One bar
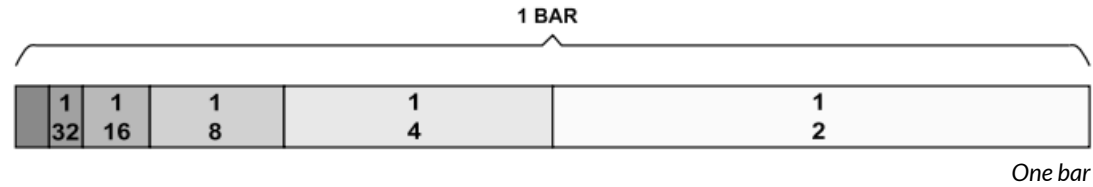
Dotted note is a $^3/_2$ longer than **Full** note, **Triplet** note is $^2/_3$ of **Full** note.
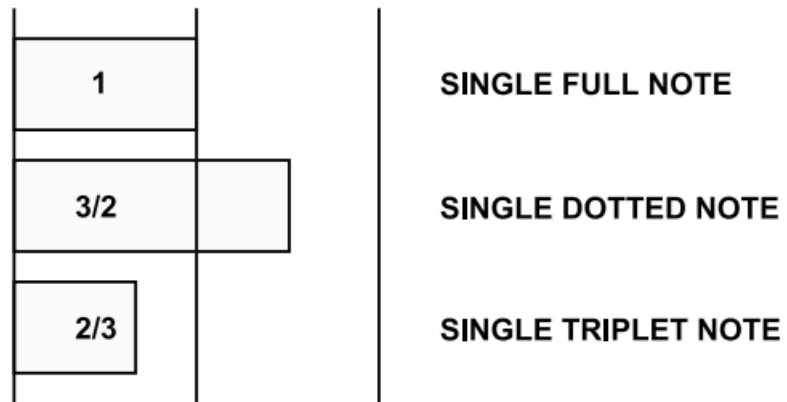
Note lengths

In Fazortan we have two **LFO** modules. However the second one is devoid of **Offset** parameter. It's easy to become convinced that this parameter in the 2nd **LFO** is useless. Waves generated by those two **LFO** are mixed together (added) and the resultant wave controls the fundamental frequency of the phase shifter.
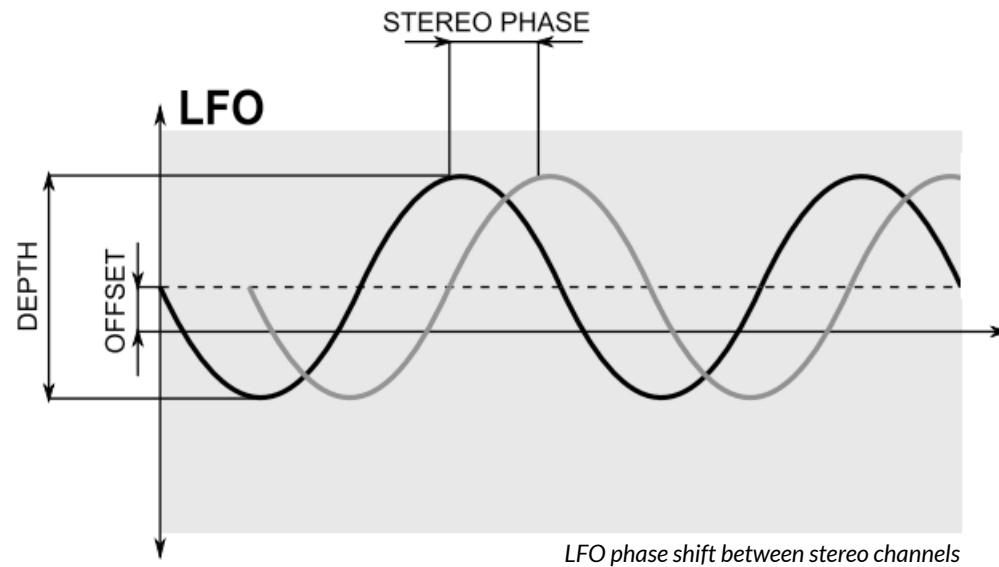

Low Frequency Oscillator 1 and 2

It's necessary to mention, that Fazortan processes stereophonic signal. Each channel independently. There's also additional parameter, which has its place in this process **Stereo phase**:

Stereo phase parameter

2

LFO phase shift between stereo channels

Waves generated by **LFO** are the stereo waves, and the phase shifter unit is also a stereo processing unit. The **Stereo phase** parameter causes the phase shifting between the channels of generated by the **LFO** wave. When we turn the knob to value equal 0, the fundamental frequencies for both (left and right) channels are the same, it means there's no phase shift between them. When we start to raise the value of **Stereo phase** the fundamental frequencies of left and right channel differs.
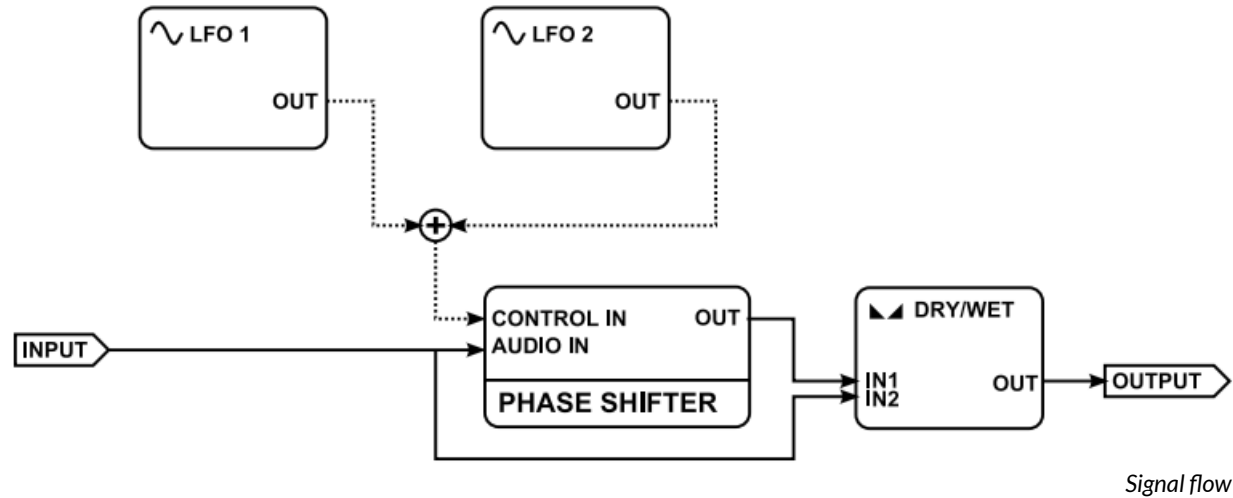
Master section

Controls the end of signal's flow. The **Dry** / **Wet** knob is responsible for that, how much of processed/unprocessed sound (mixed within proportions set by a knob) will be sent to audio out. **Output volume** controls the final amplification.

Master section

Path of the signal's flow

The picture below shows how the signal flows through the plug-in:

Signal flow

As a summary. Signal gets through to the **Phase shifter**, which is controlled by two **LFO**s. Fundamental frequency (center frequency of the stages) is changed by those **LFO**s.

Signal goes two ways. It's split to one way which goes to **Phase shifter** and another which bypasses the filter. Both ways join together in the cross-fading unit.

Preset Management

Browsing presets

Presets in the plug-in are hierarchically organized in groups and, contrary to the linear structure, this setting is not compatible with the native methods used within the host application. The user can see the presets assigned to particular groups in the **Preset Manager**. Groups can be also defined by the user.

Configuration and preset selection section

Controls available in the preset selection section:

- **Preset name** – Displays the name of the selected preset. Allows editing of the preset name before saving the preset. Clicking on the control causes a shift into edit mode. After applying changes through the keyboard, confirm the new name with the Enter button.

- **Prev**/**Next** – Buttons used to navigate through the preset bank. **Next** button moves the browser to the next preset. If the current preset is the last preset in a group, pressing **Next** moves the browser to the first preset in the subsequent group. **Prev** button moves the browser to the previous preset. If the current preset is the first preset in a group, pressing **Prev** moves the browser to the last preset in the preceding group.

- **Prev** + **CTRL** – **Prev** button pressed while holding **CTRL** copies the edited preset to the buffer.

- **Next** + **CTRL** – **Next** button pressed while holding **CTRL** pastes the buffer to the current preset with postfix "_copy" added to its name.

- **Browse** – Opens a **Preset Browser** menu in the bottom part of the GUI.

➲ *Note: On **MacOS** use **Apple CMD** key instead of **CTRL** key.*

Changes in the preset bank are not permanent. After removing and reloading the plug-in, the default preset bank will be loaded. However, saving the project within the host application will also save the status of the plug-in including changes in the preset bank. After reloading the project, all changes in the current parameter settings and in the preset bank will be restored.
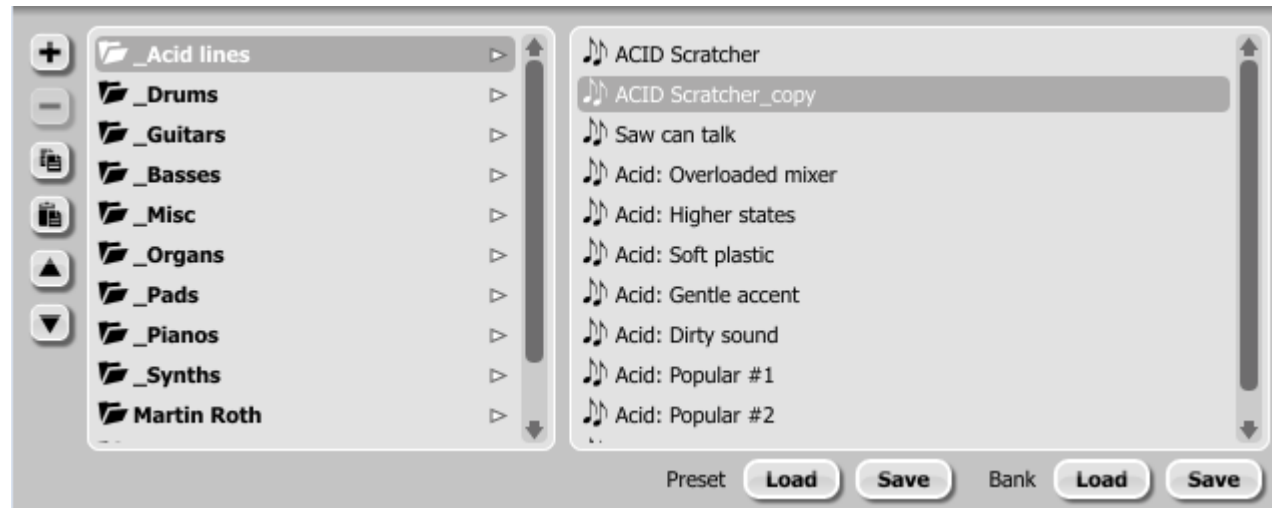
Preset Browser

As it was mentioned, the preset bank in the plug-in has a hierarchical structure i.e. presets are organized in groups. Presets can be selected by Next/Prev buttons, which navigate through the structure in a linear way or by using the **Preset Browser**. The **Preset Browser** is a tool which allows to easily manage the preset structure. To open it, click **Browse** in the preset selection section:
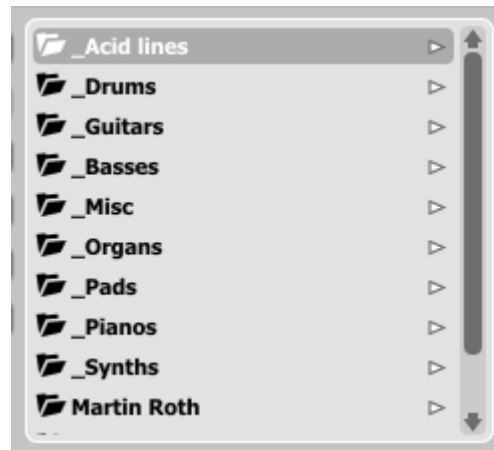

Configuration and preset selection section

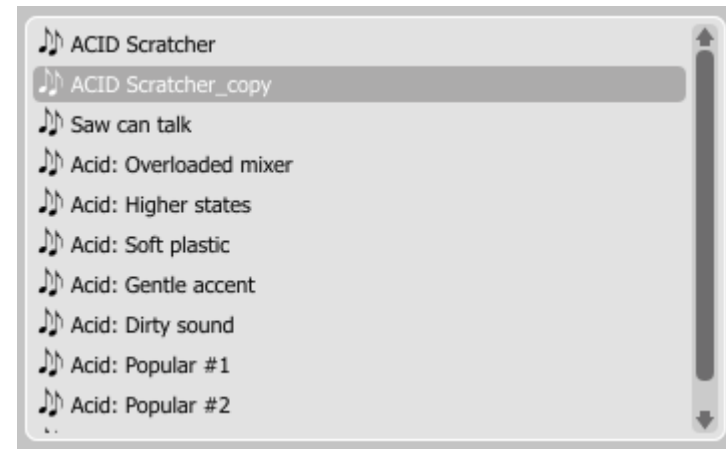The **Preset Browser** will unfold under the GUI:

Preset Manager

The left side shows the list of groups in the preset bank:

The right side shows the list of presets in the selected group:

List of groups in the preset bank

List of presets in the selected group

Actions available in the **Preset Browser**:

- Clicking on a slot in the preset list loads the selected preset.
- Clicking on a slot in the group list selects a group of presets.
- Both presets and groups can be renamed. Double clicking on a slot toggles edit mode. After entering the new name, press enter to finish.
- The bank of presets has exactly 128 items. The number of presets cannot be changed. This means that there is no possibility of adding or removing presets. Only relocating them between groups or changing their order is possible.

  By dragging the preset you may:

  – Change its position in the group by dropping it in a different slot in the list of presets in a selected group.

  – Move the preset to a different group by dragging and dropping it in the chosen slot in the group list.

  Holding CTRL or SHIFT and using the mouse button allows to select more presets:

  – Holding CTRL and clicking on presets selects single items.

  – Using SHIFT allows to select a range of presets. The first click marks the beginning of the range and the second click marks the end.

  When more than one presets are selected, it is possible to drag them to a different group.

➲ *Note: Changing the order of presets in a group is possible for a selected single preset. Changing the order by dragging several presets in a group is inactive.*

3

3

On the left side of the **Preset Browser** there are function buttons located:

[+] – Adds a new empty group to the preset bank.

[−] – Removes a group from the preset bank, but only if the selected group is empty. Before removing a group, remaining presets should be relocated to different groups. An empty group can be recognized by the lack of bold font and the lack of a pointer on the right from its name.

Empty group in the Preset Browser

Function buttons of the Preset Browser

[📋] – Pastes the edited preset to the buffer; works exactly like the combination of **Prev** and **CTRL**.

[📋] – Overwrites the selected preset with the buffer content; works exactly like the combination of **Next** and **CTRL**. The postfix "_copy" is added to the name of the preset pasted from the buffer.

[▲] – Works exactly like **Prev** on GUI; allows to move backwards on the hierarchical structure of presets.

[▼] – Works exactly like **Next** on GUI; allows to move forward on the hierarchical structure of presets.

Loading and Saving presets

At the bottom of the **Preset Browser** there are function buttons which allow to save/load presets on/from the hard drive.

Loading and Saving presets from the hard drive functions

Four buttons are available:

- Preset **Load** – loads a single preset from a file (file .fzprs – Fazortan preset).
- Preset **Save** – saves the current preset to a file.
- Bank **Load** – loads the entire bank of presets from a file (file .fzprb – Fazortan bank).
- Bank **Save** – saves the entire bank of presets to a file.

➲ *Note: Before saving the preset to a file, save it in Fazortan using **CTRL** + **Browse** when **On demand** function is selected in the plug-in configuration.*

➲ *Note: Files saved by Fazortan are compatible with XML format, which enables their edition in any text editor.*

Configuration

Configuration and preset selection section

After clicking on **Options** in the preset selection and configuration section, a configuration panel unfolds in the bottom section of GUI. The panel has two tabs:


Configuration panel tabs

- **Midi control** – configures MIDI communications with the plug-in.
- **Presets** – configures presets switching; indicates personal resources loaded instead of default presets.

Clicking on **Options** while holding **CTRL** opens a window with information about the version and the license owner.

Midi control tab

Fazortan can assign its controls (on GUI) to any MIDI CC (Midi Control Change), allowing the control of the plug-in using external hardware or software.

➲ *Note: This feature works only in the VST version of the plug-in, due to the fact that the AU specification does not include a MIDI input port necessary to receive MIDI messages.*
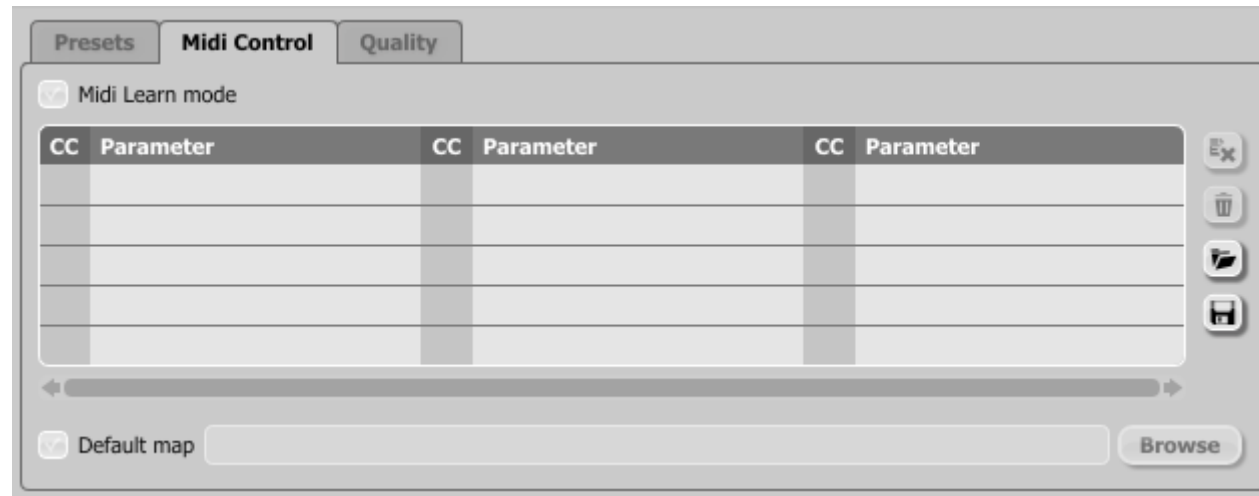
Midi Control tab

Controls included in the tab:

- **Midi learn mode** – Checkbox which activates Midi learn mode.
- A list of active MIDI CC links containing pairs comprising of a CC code and the name of the plug-in parameter.
- **Default Map** – Checkbox which activates a default MIDI CC map. When the map is activated it will be loaded with creating a new instance of the plug-in.
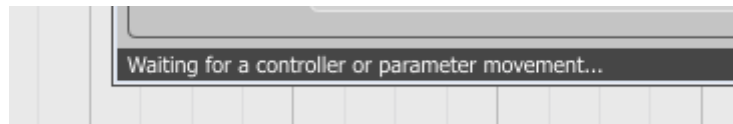
Midi learn

Assigning a Fazortan control to the MIDI controller requires:

1. Checking **Midi Learn Mode** checkbox in the **Midi Control** tab:

Midi Learn Mode selection checkbox

2. In the status bar in the bottom section of GUI a message should appear *"waiting for a controller or parameter movement..."*:

Status bar

In this mode the plug-in waits for any change in the parameter value (movement of any control on GUI) and for the movement of any MIDI CC control from the external MIDI controller, which operates on an active MIDI input channel directed to Fazortan. The order of these actions is irrelevant.

During the above-mentioned actions, the status bar informs about the currently changing values of controls and provides their names.

When a MIDI control <-> GUI control link is established, a line is added to the MIDI CC link list:

CC	Parameter	CC	Parameter	CC	Parameter
21	Filter 2 Cutoff				
23	Filter 1 Cutoff				

MIDI CC link list

When a link is established for a controller, it is possible to repeat the operation for the next MIDI CC and parameter pairs. Subsequent links will be created and added to the list.

3. When all the needed links are created, uncheck the **Midi Learn Mode** checkbox.

In order to create new links, it is possible to reactivate the **Midi Learn Mode** at any time.

The links are always sorted in an ascending manner in relation to the CC column according to the MIDI CC code.

4

Unlinking and midi link management

On the right side of the link list there are 4 function buttons located:
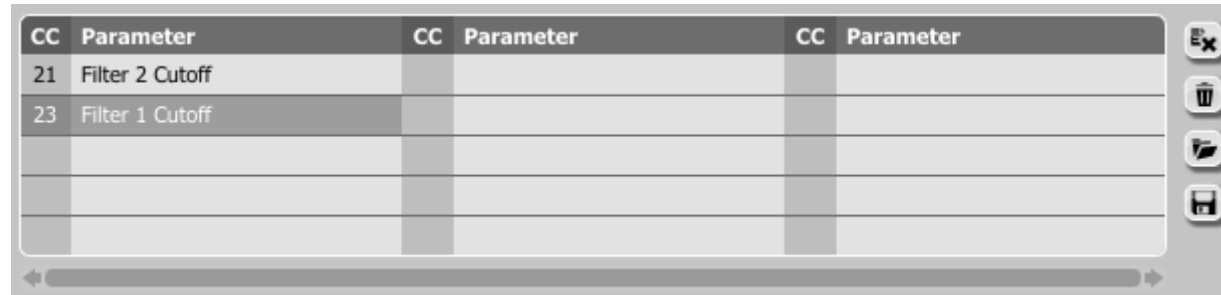
MIDI CC link list and function buttons

– Removes a selected link; choosing any link from the list and clicking on it highlights the selected link. Using this button removes the selected link.

– Removes all MIDI CC links.

– Loads link lists/MIDI maps from file (.fzccmap – Fazortan MIDI CC Map).

➲ *Note: MIDI map files are saved in **XML** format, which enables their edition in any text editor.*

– Saves link lists/MIDI maps to file.

Default MIDI Map

Selecting a default MIDI Map:
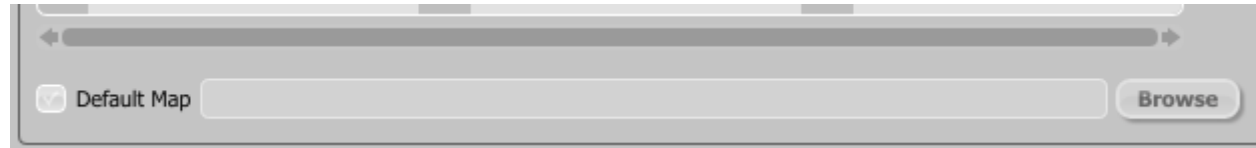

Default MIDI Map selection

1. Check the **Default Map** checkbox, which activates the **Browse** button on the right.
2. Click **Browse** and select a file with a saved MIDI Map.

After selecting the MIDI map the text box on the left from the **Browse** button shows the path to the active map file. A default MIDI map is loaded each time when the plug-in is loaded.

Presets tab

Preset Storing

Using **Prev**, **Next** buttons or the **Preset Browser** navigates through the preset bank. Any change in the current preset can be stored automatically or on demand. Depending on the selection one of the two options is active:
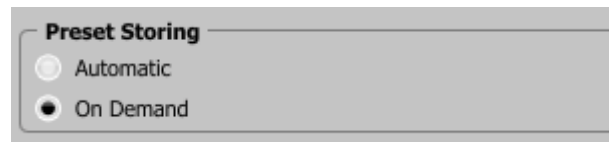

Preset Storing flag

- **Automatic** – Any change of a parameter in the current preset is automatically stored.
- **On Demand** – If any parameter is changed, the change is not saved in the current preset until the **Store** option is used (**CTRL** + **Browse**). Selecting a different preset from the bank causes irreversible loss to changes applied to the parameters, unless the **Store** option is used.

The **Preset Storing** flag is saved in the Fazortan configuration file and applies to all new instances of the plug-in. When removing any instance of the plug-in from the host application the configuration file is saved.

Changing Type

Changing between presets may cause undesirable sonic artifacts. Switching the **Changing Type** flag may prevent this phenomenon.
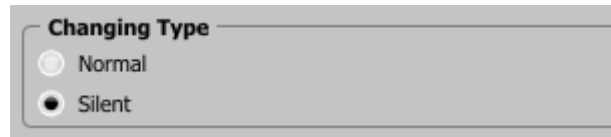

Changing Type flag

- **Normal** – Changing presets takes place in a classical manner; all parameter values are rapidly changed into new values.
- **Silent** – Before changing the preset the output signal is muted. Next, the parameters are set to new values and the signal level is restored to its previous value. This feature is significant in live performances, during which, sonic artifacts caused by preset changes are undesirable.

The flag is saved in the Fazortan configuration file and applied to all new instances of the plug-in. When removing any instance of the plug-in from the host application the configuration file is saved.

Default Presets

D16 provides a set of default presets with Fazortan. They are applied to every new instance of the plug-in. If a bank of presets is created which should be applied every time instead of factory presets, it is possible to select such an on option **Default Presets** section:
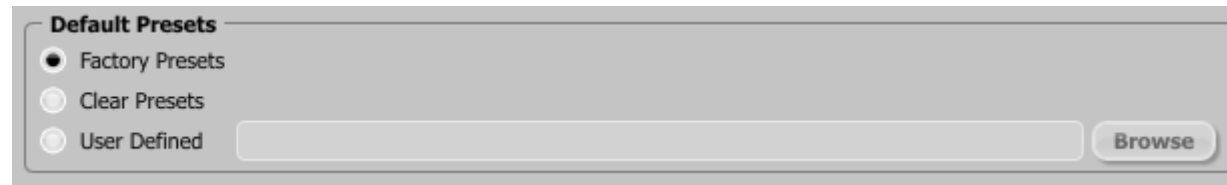
Default presets selection

Options available in the **Default Presets** section:

- **Factory Presets** – Default value after installing Fazortan. Choosing this option loads the factory presets with every new instance of the plug-in.

- **Clear Preset** – Zeroed parameters with every new instance of the plug-in.

- **User Defined** – Preset bank selected by the user. When choosing User Defined option, the **Browse** button on the right side is activated. Using this button opens a dialog box in order to select a path to the user's preset bank. Confirming the path saves it in the Fazortan configuration file. The selected preset bank will be loaded as default.

  The text box on the left from the **Browse** button shows the path to the user's preset bank.

Contents