



d16 group

Fazortan 1.2.0

/fazoɪ(r)tæn/

Owner's manual

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February 19, 2010

Chapter 1

Overview

Fazortan is a phasing effect unit with two controlling LFOs. We can distinguish two sections

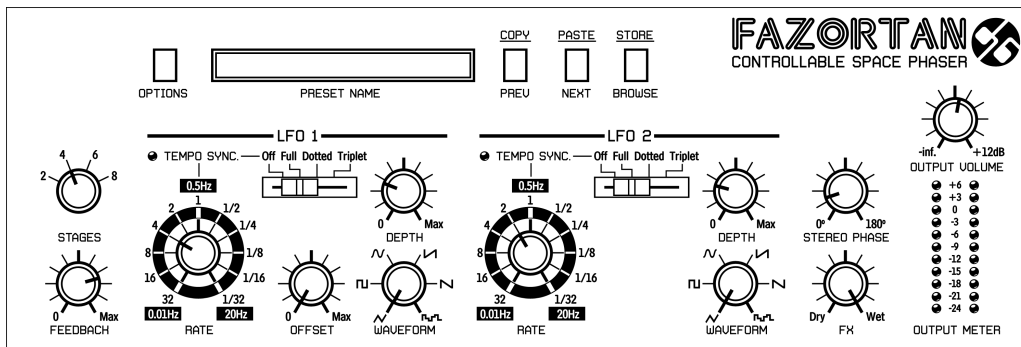


Figure 1.1: Fazortan graphical interface

there:

- Configuration and preset management

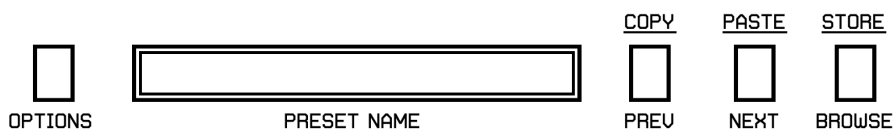


Figure 1.2: Configuration and preset management section

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

Chapter 2

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.

2.1 Basic modules

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

2.1.1 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.

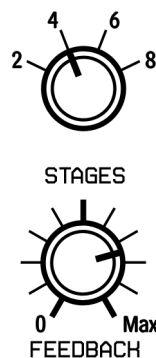


Figure 2.1: Phase shifter

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).

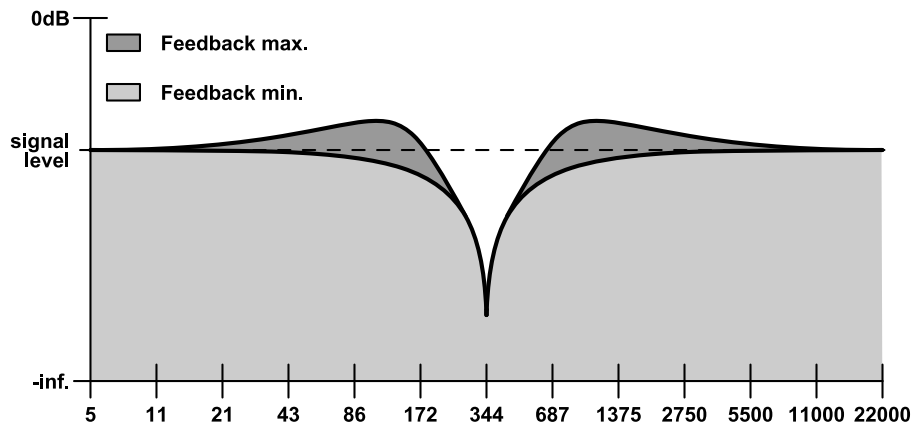


Figure 2.2: Two stages

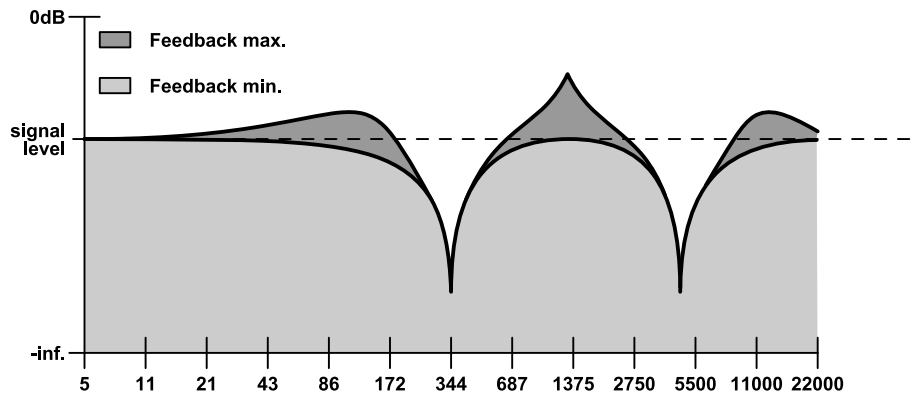


Figure 2.3: Four stages

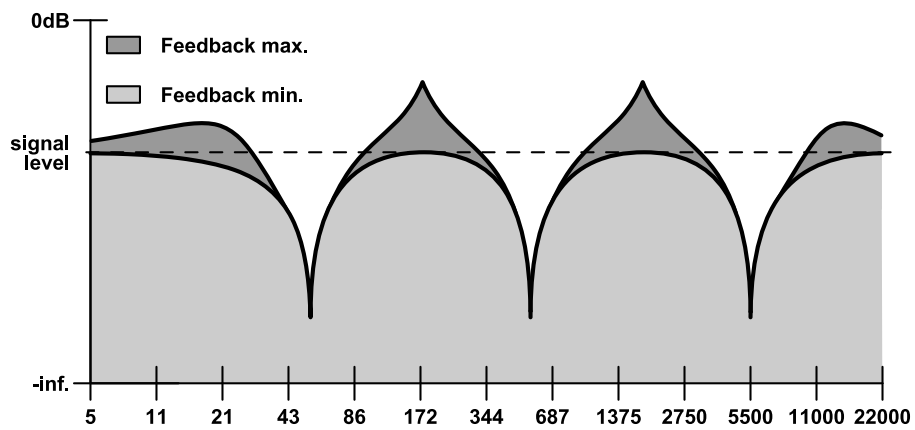


Figure 2.4: Six stages



Figure 2.5: 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).

2.1.2 LFO - Low frequency oscillator

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

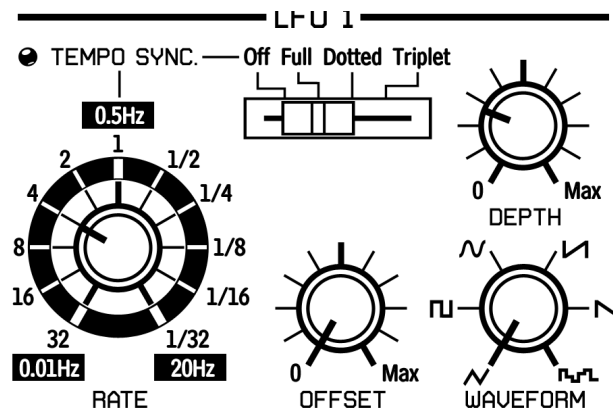


Figure 2.6: Low frequency oscillator

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 ($\frac{1}{2}$), quarter note ($\frac{1}{4}$), eighth ($\frac{1}{8}$), sixteenth ($\frac{1}{16}$) and thirty-second ($\frac{1}{32}$).



Figure 2.7: One bar

Dotted note is a $\frac{3}{2}$ longer than **Full** note, **Triplet** note is $\frac{2}{3}$ of **Full** note.

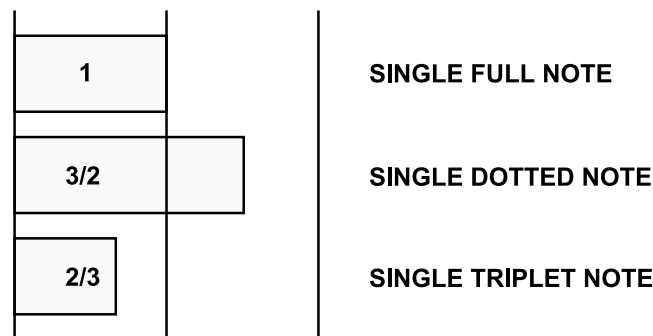


Figure 2.8: Note lengths

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.

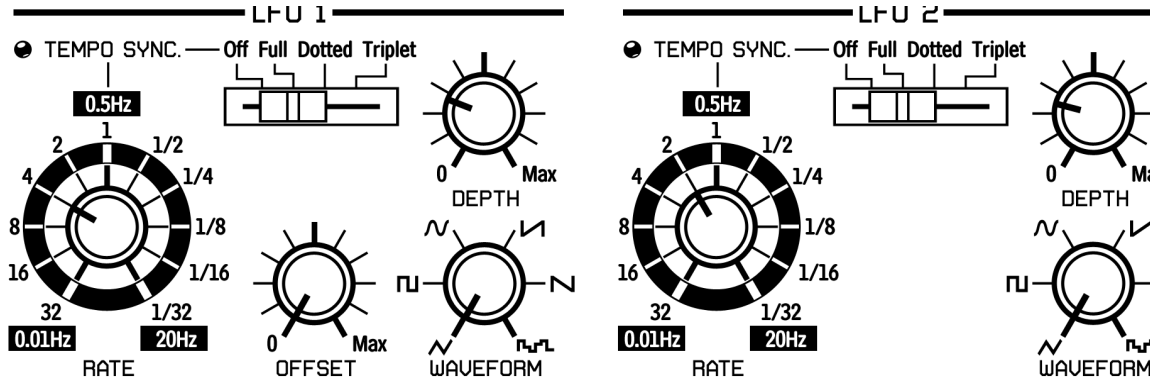


Figure 2.9: Low frequency oscillator 1 and 2

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**:

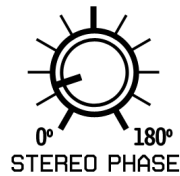


Figure 2.10: Stereo phase parameter

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.

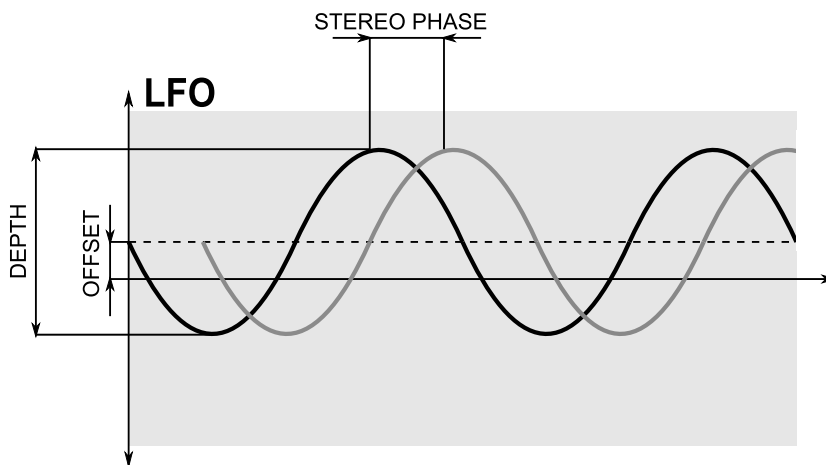


Figure 2.11: LFO phase shift between stereo channels

2.1.3 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.

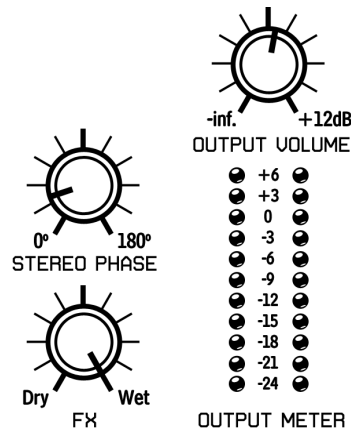


Figure 2.12: Master section

2.2 Path of the signal's flow

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

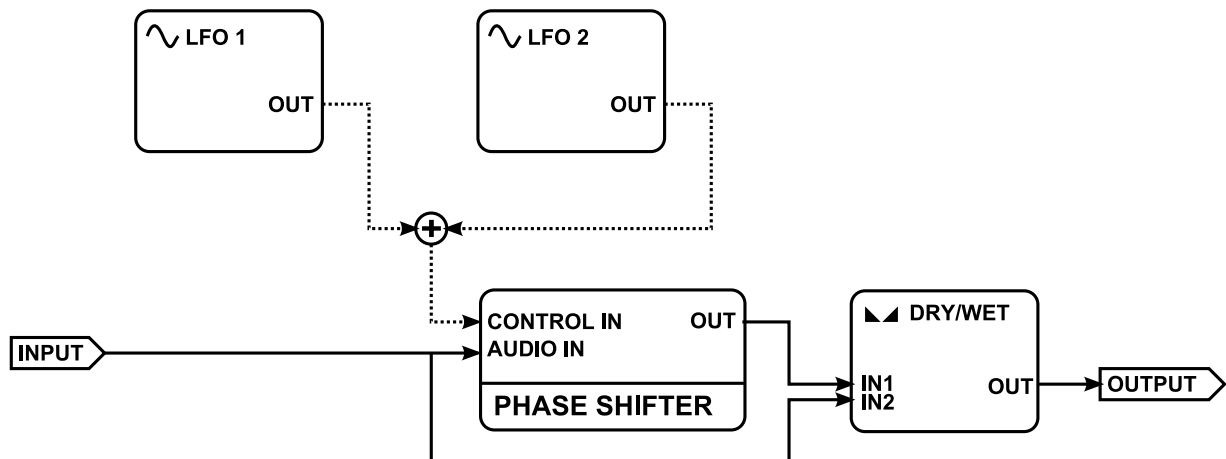


Figure 2.13: Signal flow

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

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.

Chapter 3

Preset management

3.1 Browsing presets

Presets are organized into groups. Storing like this is not compatible with the native method used by the host application. The user can see presets in the browser as being assigned to particular groups (defined by user).

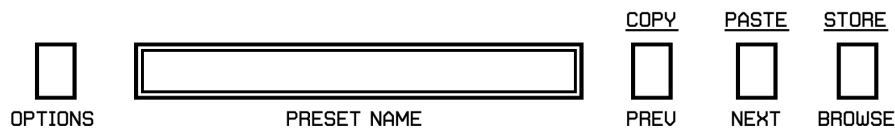


Figure 3.1: Configuration and preset management section

The user interface Preset Management controls are:

Preset name - This displays the name of currently selected preset. It also allows editing of the preset name.

Prev/Next - Those buttons are used to navigate through all presets (whole bank), **Next** button moves to the next slot, and **Prev** button to the previous one. When the end of a group of presets is reached, the first slot of the next group will be chosen when the **Next** button is pressed again. Similar action will be performed if we press the **Prev** button when the beginning of a group is reached.

Prev + Ctrl - **Prev** button pressed with **Ctrl**¹ key, copies current preset slot to buffer.

Next + Ctrl - **Next** button pressed with **Ctrl** key, pastes buffer to current preset slot with postfix *_copy* added to its name.

Browser - Allows selection of presets using a browser menu.

¹On MacOS use **Apple** key instead of **Ctrl** key.

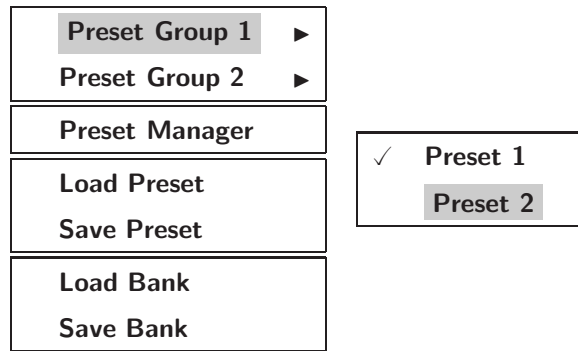


Figure 3.2: Browsing presets via context menu

It is worth mentioning that changing any of the presets is not permanent. After removing and reloading the plug-in again, the factory presets will be recalled. However, saving the project within the host application with Fazortan, and reloading that project will cause a recall of all changes we have made in this project.

3.2 Loading and Saving presets

There are some additional options that add functionality to preset management. They are placed in the context menu which is accessible from the **Browse** button:

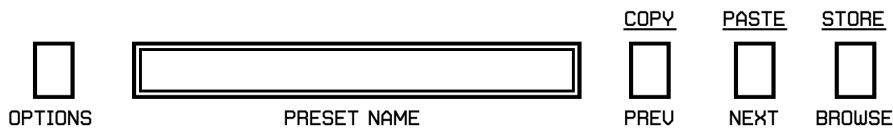


Figure 3.3: Configuration and preset management section

When we click this button, the context menu is unfolded:

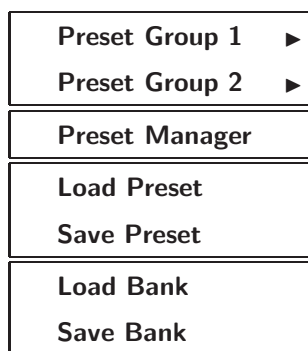


Figure 3.4: Preset management - under Browse button

In this chapter, we'll focus on the first 4 items:

Load Preset - Loading preset and overwrite the active slot from the file (**.fzprs- Fazortan Preset**).

Save Preset - Saving current preset as a file (**.fzprs- Fazortan Preset**) ².

Load Bank - Loading whole bank of presets from file (**.fzprsb- Fazortan Bank**).

Save Bank - Saving whole bank of presets as a file (**.fzprsb- Fazortan Bank**).

Note: *Internal files written by a Fazortan are in XML format and can be edited in a text editor.*

3.3 Preset manager

As was mentioned earlier, presets in Fazortan are organized into groups. Presets can be chosen from the context menu (under the **Browse** button). **Preset manager** is a tool, which allows to easy management of the presets structure. To open it, just click the **Browse** button:

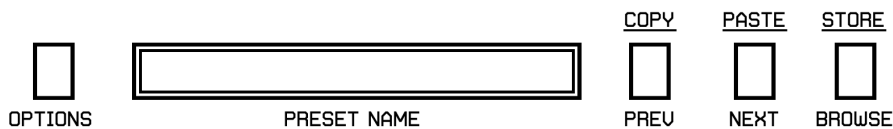


Figure 3.5: Configuration and preset management section

From the context menu choose **Preset Manager**:

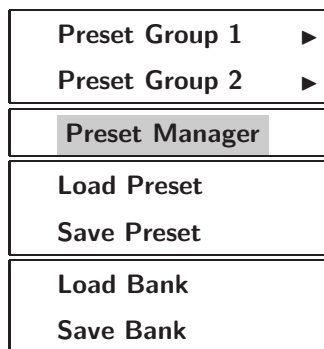


Figure 3.6: Preset manager - Item

The Preset Manager menu will appear.

²Before saving single preset, remember to **Store** it using **Ctrl + Browse** button if **On demand** preset storing is active, which is default behavior.

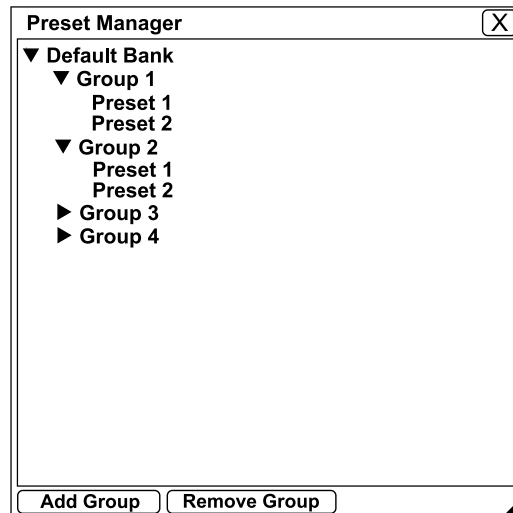


Figure 3.7: Preset manager window

This shows the preset structure with the bank name as the root. A preset represents the deepest level of the structure.

Each of the items can be renamed by double clicking on the item with the mouse.

The preset structure appears as a standard list of presets within the host application making it fully compatible with it. As a result, no matter how the structure is represented (either as a tree structure or flat), the maximum number of presets is 128. The number of presets in this structure cannot be changed. We can only move the presets from one group to another (by dragging) or changing their order in group. The Group order in the bank can also be changed by dragging.

There are two buttons at the bottom of the **Preset Manager** window.

Add group - Adding the empty group in a bank.

Remove group - This removes a group from a bank – but only when it is empty. It means that all preset slots were reallocated among the existing groups.

To exit from the **Preset manager** press the **Cross** button in the top right corner.

3.4 Preset storing

Using **Next**, **Prev** buttons within **Preset Manager** we can navigate through the preset bank. Any change made in preset can be stored automatically or on demand:

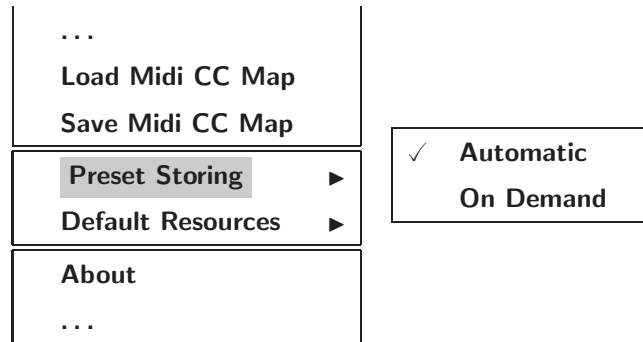


Figure 3.8: Preset storing flag

Automatic - When any parameter in the current preset is changed, it is automatically stored.

On demand - If a parameter is changed, the change is not saved within the preset until the **Store** button is pressed (**Ctrl** key + **Browse** button)³. Navigating to a new preset will cause changes to be lost unless stored. This is the default.

This Preset Storing flag is stored in a configuration file and applies to all newly inserted instances of the plug-in. Saving the configuration file is performed after closing any instance of the plug-in.

³On MacOS use **Apple** key instead of **Ctrl** key

Chapter 4

Configuration

4.1 Midi control

Fazortan has an ability to assign its controls (on GUI) to any **Midi Control Change** code (**MidiCC**), This allows control of the plug-in using external software or hardware.

Note: *This feature works only in VST version, AU effect plug-in has no midi input necessary to receive midi messages.*

4.1.1 Midi learn

To assign a Fazortan control to a midi controller:

1. From the context menu under **Options** button, we set **Midi Learn Mode**.

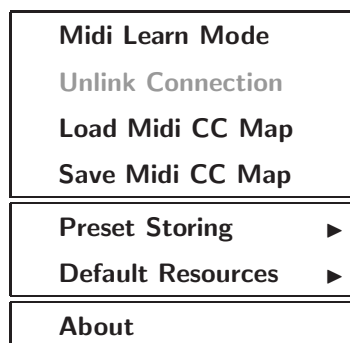


Figure 4.1: Options Menu

2. In the **Preset name** edit box, the *waiting...* message will appear. In this mode, plug-in is waiting for any movement of its controls on GUI or any of controls on the external midi controller connected to a host (with an active midi input channel directed to Fazortan). The edit box will display the name of currently modified control.
3. When the control is set, go to the **Options** context menu and uncheck the **Midi Learn Mode** option. Last modified control on GUI will be assigned to the last moved control on the midi controller.

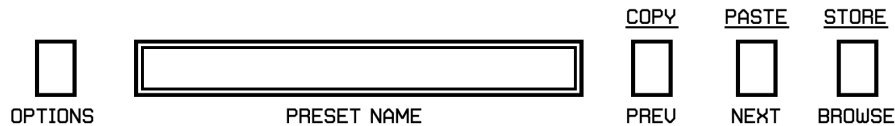


Figure 4.2: Configuration and preset management section

4.1.2 Midi Unlink

To disconnect midi controller and Fazortan GUI's control:

1. From the context menu under **Options** button, we set **Midi Learn Mode** first.

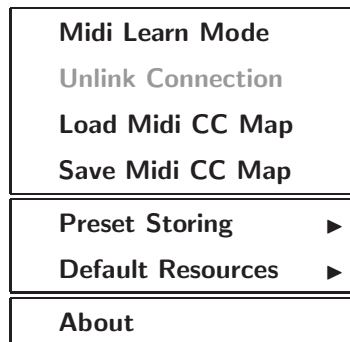


Figure 4.3: Options Menu

2. In the **Preset name** edit box, the *waiting...* message will appear. In this mode, plug-in is waiting for any movement of its controls on GUI or any of controls on the external midi controller connected to a host (with an active midi input channel directed to Fazortan). The edit box will display the name of currently modified control.
3. **Unlink Connection** item in **Options** menu is activated now. Click it to disconnect Midi CC and GUI's control. ¹
4. Uncheck the **Midi Learn Mode** option.

4.1.3 Loading and saving Midi Map

To save a Midi Map (mapping of GUI's controls with MidiCC), we can use the option from the context menu, which is accessible under the **Options** button:

¹You're allowed to unlink few connections one by one, by repeating steps 2 and 3.

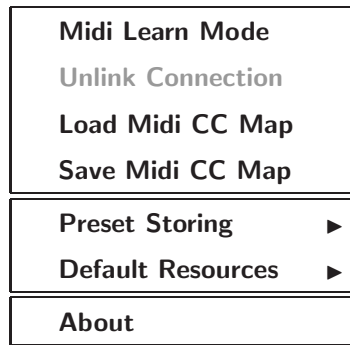


Figure 4.4: Options Menu

Load Midi CC Map - Loading a Midi Map from file (**.fzccmap- Fazortan Control Map**).

Save Midi CC Map - Saving a current Midi Map to file (**.fzccmap- Fazortan Control Map**).

Note: *Midi Map files written by a Fazortan are XML standardized, it means You can re-edit them within any text editor.*

4.2 Default resources

There're included some default presets with Fazortan or empty Midi CC map. These are loaded every time it is started. This can be changed to point to user default presets or default Midi CC map.

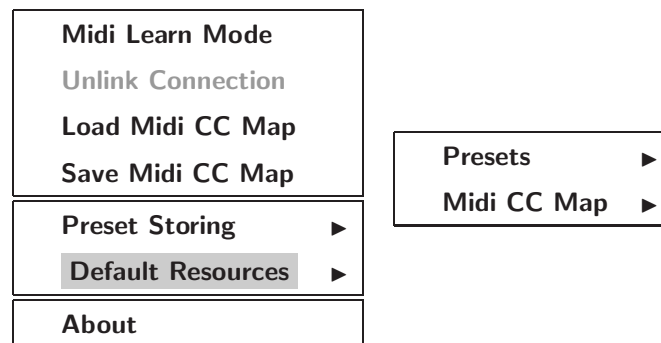


Figure 4.5: Default resources

The following types of resources can be replaced by user's ones and those will be loaded every time new instance of plug-in be loaded:

Presets - Default Fazortan's Preset Bank (**.fzprsb**)

Midi CC Map - Default Fazortan's Midi CC Map (**.fzccmap**)

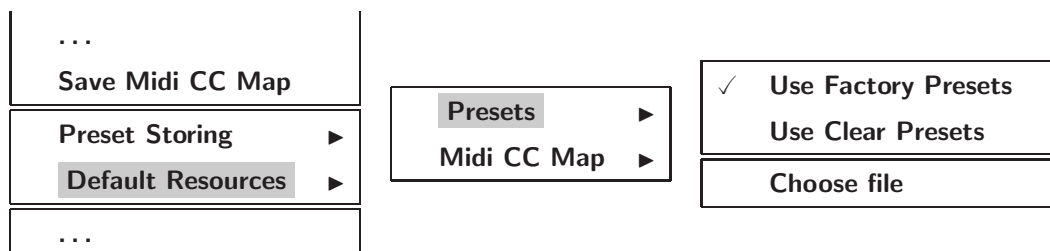


Figure 4.6: Default presets

4.2.1 Default presets

To set the default bank of presets, use the options from the **Presets** submenu: We can choose one of following options:

Use Factory Presets - This is default one after installation of Fazortan. If You choose this option, default bank of presets becomes the factory one provided within plug-in by producer.

Use Clear Presets - After choosing this item from menu, the default bank will contain all presets consisting of zeroed parameters.

Choose File - It's possible to set by user his own default bank of presets he previously made, by using this option. **Choose File** opens a file dialog to browse a location where the bank of presets made by user is saved. When user confirms, the path to that bank is stored in the Fazortan's configuration file. And this bank becomes the default one.

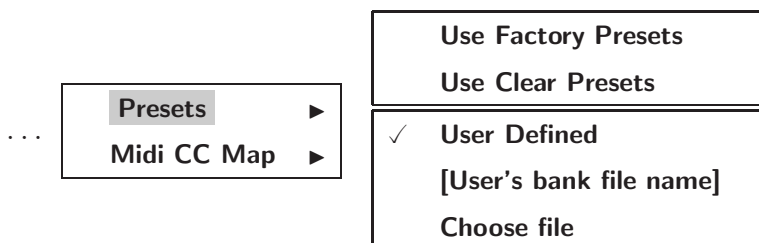


Figure 4.7: User's default presets

When the user's bank is set as a default preset bank, the menu indicates this fact by showing the checked **User Defined** menu item, and one row below the file name of user's preset bank.

4.2.2 Default Midi CC Map

The option used to set the default Midi CC map. Only two options are available in this submenu:

No Mapping - It is the default one, mean no default Midi CC mapping is available after loading Fazortan into the host application.

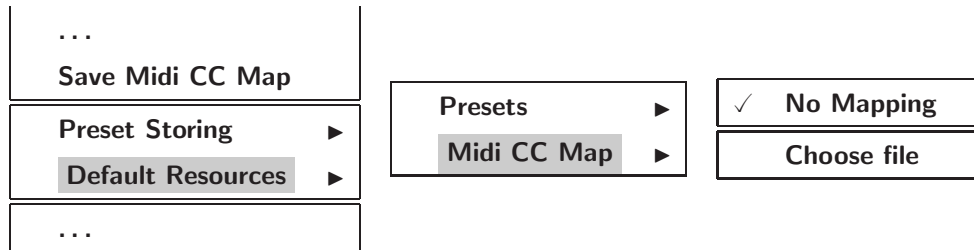


Figure 4.8: Default Midi CC Map

Choose file - Similarly to selecting default preset resource, this options is used to set the default Midi CC Map, which will be loaded every time we load Fazortan in the host application. When we set the path to Midi CC Map using this options, it's indicated by showing Midi CC Map file name in this submenu:

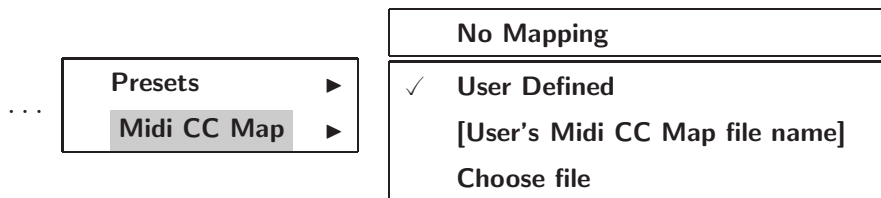


Figure 4.9: User's default Midi CC Map

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FAZORTAN

CONTROLLABLE SPACE PHASER



OPTIONS

COPY PASTE STORE
 PREV NEXT BROWSE

4 6 8
 STAGES

0 Max
 FEEDBACK

● TEMPO SYNC. — Off Full Dotted Triplet

0.5Hz

 0.01Hz 20Hz RATE

0 Max
 DEPTH

0 Max
 OFFSET

● TEMPO SYNC. — Off Full Dotted Triplet

0.5Hz

 0.01Hz 20Hz RATE

0 Max
 DEPTH

0 Max
 WAVEFORM

0° 180°
 STEREO PHASE

Dry FX
 Wet FX

-inf. +12dB
 OUTPUT VOLUME

+6
 0
 -3
 -6
 -9
 -12
 -15
 -18
 -21
 -24

OUTPUT METER